SARATOOLS.com
POWER TO PRODUCE
A BRAND OF SARTORIUS WERKZEUGE

YOUR TOOL CATALOGUE 2020/21

THE WAY YOU NEED IT.

THAT'S POWER TO PRODUCE

EUROPE-WIDE DELIVERY IN 24H *** EUROPE-WIDE DELIVERY IN 24H *** EUROPE-WIDE DELIVERY IN 24H

POWER TO PRODUCE

Dear customers,

new technologies, industry advances and changing markets. Throughout our roughly 140-year history we have been faced with new challenges to stay relevant in the industry and to preserve customer satisfaction. Thus continuous change has embedded itself as a constant in our company philosophy.

More dynamic than ever before, the direct consequences of the coronavirus pandemic have put private and professional life under scrutiny. As a result, not only have we developed a comprehensive catalogue of measures to protect our employees, we have also pressed ahead with the digitisation of numerous processes with even greater intensity. So in 2020 there will be no printed catalogue. The full range, as well as new products and services, is available in the online shop and in the PDF catalogue.

We have systematically defined new service principles in recent years, in order to remain a reliable partner for you in the future. The transition from tool merchant to experts in manufacturing is our main objective.

This development is particularly apparent in the SARTORIUS Academy, which was opened in February. Here we not only ensure greater knowledge among our employees in the future, but we also hope to develop manufacturing solutions for you, with you. The centre of excellence in manufacturing processes, which was developed in cooperation with HURCO, represents intelligent networking from goods issue, through inputting the corresponding data into the machine, right up to the automatic reordering of the tools used for this purpose – and makes Industry 4.0 a reality.

With an eye to the future, we have expanded and optimised our online shop, always in line with your needs. It is not only the fastest of its kind in the tool industry, but also displays terms and goods availability in real time. This means you'll always find the right tool for your needs and you also get an online discount. We deliver orders within 24 hours – across Europe!

We thank you for your long years of loyalty and wish you good health above all and the POWER TO PRODUCE in industry.

SARTORIUS Werkzeuge GmbH & Co. KG



Ivica Pavlinušić
Managing Director



WITHOUT WORK, TOOLS ARE JUST THINGS

WE KNOW THAT DRILLS WHICH ONLY DRILL HOLES AND MILLING CUTTERS
WHICH ONLY MILL GROOVES ARE THE STANDARD.
ONLY WHEN THE HOLES AND GROOVES BECOME A PROFESSIONAL
PRODUCT DOES THE TOOL HAVE PURPOSE.

THAT'S WHY WE OFFER NOT ONLY PROFESSIONAL TOOLS,
BUT ALSO SERVICES THAT ALLOW YOU TO PRODUCE FASTER,
BETTER AND MORE EFFICIENTLY.

BECAUSE SARTORIUS IS THERE FOR YOU. FOR THOSE WHO DO, WHO BUILD,
WHO CREATE. NOT FOR WELL-INTENTIONED DIY PROJECTS,
BUT FOR PROFESSIONAL WORK AT A PROFESSIONAL STANDARD.
FOR THOSE WHO DON'T TINKER, BUT PRODUCE.
FOR THOSE WHO NEED ONE THING ABOVE ALL:

POWER TO PRODUCE

ADVICE FOR THAT SOMETHING EXTRA

You don't need to know everything. You just need to know someone who does. Like SARTORIUS. We've assembled a network of experts to help you find the right tool and solution for your manufacturing needs.



KNOW WHAT YOU NEED: YOUR CUSTOMER ADVISOR

When it comes to finding just the right product from the seemingly endless range of professional tools, you don't have to go it alone. Your customer adviser will support you directly on site. Our customer advisers are professionals who know what matters to you. So we offer you nothing but the solution that suits you best.



KNOW WHAT WORKS: OUR CUSTOMER MANAGEMENT

Whether order acceptance, delivery inquiries or telephone advice – our specialists in customer management are happy to assist you with any issues. They will answer your questions competently and forward your queries directly to the right places.



KNOW HOW IT WORKS: OUR APPLICATIONS ENGINEERS

We know that professionals understand professionals. That's why our applications engineers are always on hand to help you find the right solution. Particularly when your work becomes more specialised and standard simply won't cut it any more.



SARA GO: YOUR TOOLS ALWAYS AVAILABLE

IMAGINE YOU'RE WORKING ON AN URGENT ORDER, AND YOUR LAST MILLING CUTTER SUDDENLY WEARS OUT. NOW IMAGINE THAT IT DOESN'T MATTER AT ALL. BECAUSE YOUR PERMANENTLY-STOCKED TOOL STORE IS JUST TWO STEPS AWAY. THIS ISN'T A VISION OF THE FUTURE, THIS IS SARA GO. THIS IS POWER TO PRODUCE.

SARA GO is the clever tool dispensing system from Sartorius that allows you to have your very own tool store right in your production hall. Whether you choose our SARA GO AWAY starter model or one of the larger tool dispensers, you'll always enjoy the following benefits:

24/7 AVAILABILITY

No matter the time, SARA GO has the tool you need. Around the clock. Seven days a week.

FLEXIBLE STOCKING

SARA GO always has the tool you need. Our customer adviser handles the initial stocking and replenishes stock at a visiting frequency of two to four weeks. Thus your SARA GO system is permanently optimised and adapted to your current requirements.

THREE SARA GO SYSTEMS, ONE OBJECTIVE: POWER TO PRODUCE

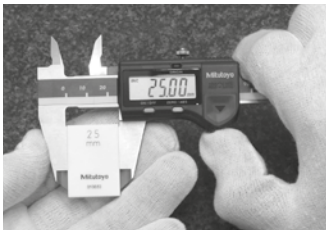
SARA GO AWAY
Our starter model. We provide it free of charge and with no contract for the first six to twelve months for the storage of up to 30 different tools.

SARA GO 1.0
Our smallest contract model. Ideal if you only need a small number of tools – 30 or more – permanently in stock.

SARA GO XPO *POWERED BY ZOLLER*
The large dispensing solution with automatic function. Space for plenty of tools and even more services. Because the SARA GO XPO takes care of everything automatically. Tool storage, tool dispensing with inventory monitoring and even automatic tool ordering.

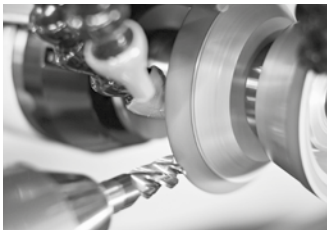


FOR THOSE WHO ALWAYS GIVE IT THEIR ALL: OUR SERVICE



CALIBRATION SERVICE

Real professionals don't work with "rough" estimates: they have to be able to rely on the precision of their measuring equipment. We therefore offer calibration of your measuring equipment to DIN EN ISO/IEC 17025:2005. We also provide free collection, fast processing, accurate logging and express delivery on request.



RESHARPENING AND COATING SERVICE

You don't always have to buy a new one: our resharpening and coating service breathes new life into your old drill bits, milling cutters, saw blades, etc. and gives them back their POWER TO PRODUCE.



SARA GO XPO
POWERED BY ZOLLER

MAKE THE BEST EVEN BETTER: RELIABLE PRODUCTS FOR PROFESSIONALS



OUR FLYERS: QUICK AND STREAMLINED. EVEN IN THE PRICING

Although the catalogue is only published once a year, the international SARTORIUS TAKEOFF! flyer is sent out on a regular basis. And while these flyers are thin, they include everything you need to know – including plenty of attractive offers for your production.
Didn't receive a TAKEOFF! flyer? Then give us a call.



TO ENSURE THE BEST QUALITY, EVERYTHING MUST BE AVAILABLE AND IN PERFECT WORKING ORDER. WE ARE PROUD TO OFFER YOU EVERYTHING YOU NEED FOR YOUR PRODUCTION: STRONG PRODUCTS FROM MACHINING, CLAMPING TECHNOLOGY, MEASUREMENT SYSTEMS AND ENVIRONMENTAL TECHNOLOGY.



OUR ONLINE SHOP: CLICK, CLICK AND DONE

Just like the catalogue, but not so heavy: our online shop at **saratools.com**.
In addition to our wide range of products, we also offer some extra benefits:

- 24-hour delivery throughout Europe
- Exclusive online offers
- Online discount



PERFECT FOR PROFESSIONALS: OUR POWER BRANDS

BECAUSE WE ARE ALWAYS WORKING CLOSELY WITH THE PROS, WE KNOW WHAT PROFESSIONALS WANT. WHAT COULD BE BETTER THAN USING OUR WEALTH OF KNOWLEDGE TO PROVIDE YOU WITH THE PERFECT TOOL? PRECISELY. THAT'S WHY WE CREATED ATORN AND SARA – THE POWER BRANDS FROM SARTORIUS.

ATORN®

PERFORMANCE DEMANDS QUALITY.

We know that professionals don't just want good tools – they want the best. That's why we created ATORN. All ATORN tools are designed based on our wealth of manufacturing expertise, so you can produce better. The ATORN brand uses only high-quality materials and first-class processing techniques – and all this at an unbeatable price-performance ratio.

ATORN offers strong products in the following areas:

- Machining
- Clamping
- Measuring and testing
- Grinding
- Hand tools
- Workshop equipment

SARA®

SMALL NAME, BIG POWER

Our power brand SARA offers you over 10,000 strong products for your production. Whether clamp mountings, boring bars, clamping jaws, multifunction tools or milling cutters of any type – professionals will always be satisfied with SARA.

- High quality for high standards
- Functional and reliable to use
- Outstanding price-performance ratio
- High availability
- Extensive range

ACHIEVING MORE TOGETHER: OUR PARTNERS

OUR PRODUCT PARTNERS

Professional products for almost any application. It's no coincidence – and it's all down to our many partners. Partners with high-quality, innovative products. Partners such as:

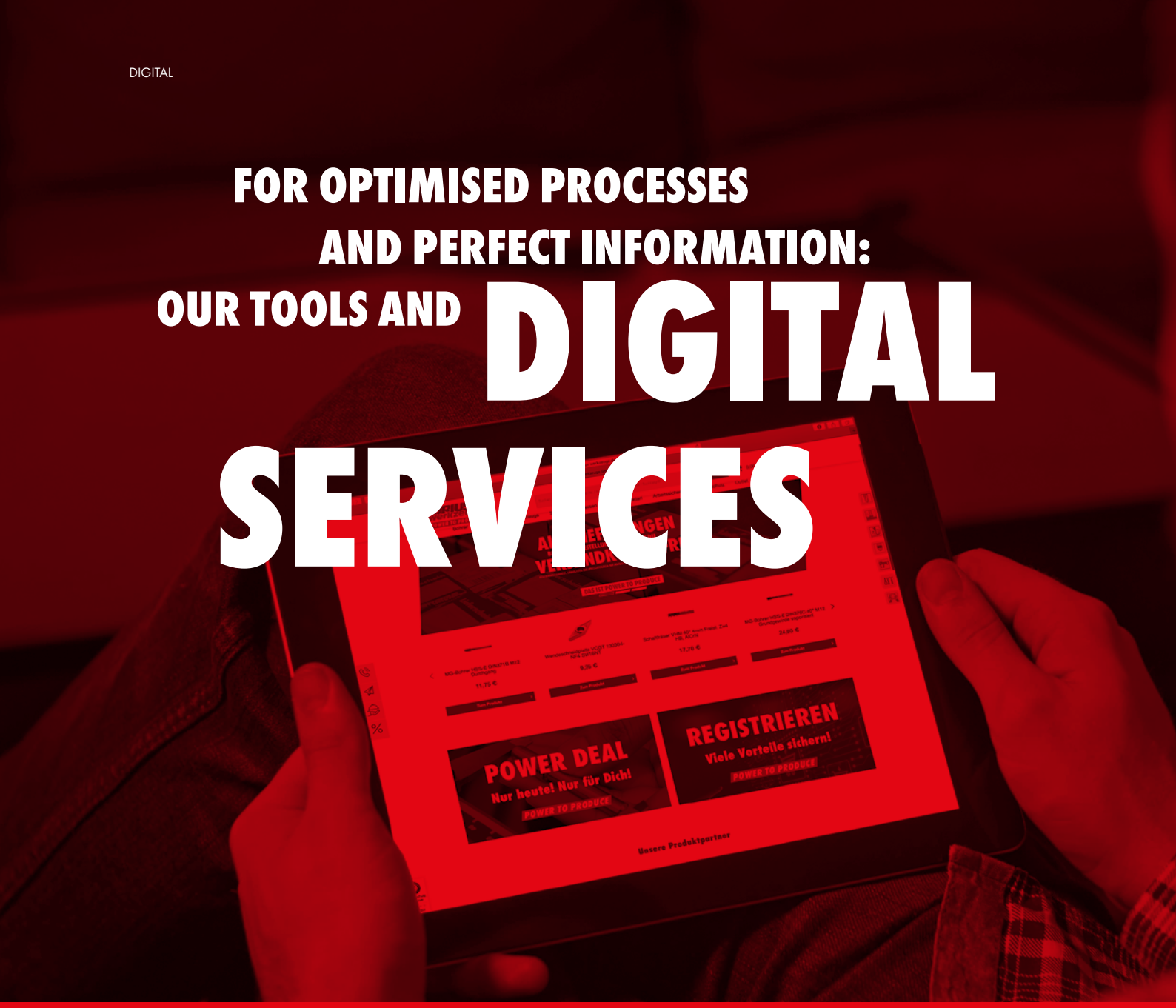
WE ARE GLOBAL. BUT WE'RE LOCAL TOO. OUR DISTRIBUTION PARTNERS:

POWER TO PRODUCE is for everyone. We've built a large network of distributors across Europe – so you can always rely on SARTORIUS. Wherever you are. Wherever you work.



- Bosnia and Herzegovina
- Bulgaria
- Denmark
- Estonia
- Finland
- Greece
- Italy
- Iceland
- Kazakhstan
- Croatia
- Latvia
- Lithuania
- Macedonia
- Netherlands
- Norway
- Austria
- Poland
- Portugal
- Romania
- Sweden
- Switzerland
- Serbia
- Slovakia
- Spain
- Branch in Czech Republic
- United Arab Emirates
- Hungary
- Ukraine
- Uzbekistan

FOR OPTIMISED PROCESSES AND PERFECT INFORMATION: OUR TOOLS AND DIGITAL SERVICES



SARTORIUS IS THERE FOR EVERYONE. INCLUDING OUR ONLINE CUSTOMERS. OUR TOOLS AND DIGITAL SERVICES ARE A POWER UPGRADE FOR YOUR COMPUTER.

SMALL TOOLS, HUGE SUPPORT

Our digital tools help you to make your manufacturing processes even more efficient.

- Electronic tool selection programme
- Clamping jaws finder
- Toodle Configurator
- Product and diameter reference values for all machining products in different material groups
- Presentation of extensive product data and technical features
- Optimised search functions for products, accessories and spare parts
- Tool data for CAD / CAM systems (STEP AP214 / DIN SPEC 68874 / BMG / 3D-PDF, etc.)
- Strategic cooperation with CAD / CAM software specialists

YOU CAN FIND US HERE: SARTORIUS ON FACEBOOK, YOUTUBE AND MORE

facebook.com/sartoriuswerkzeuge

youtube.com/user/sartoriuswerkzeuge

de.industryarena.com/sartorius

xing.com/companies/sartoriuswerkzeugegmbh&co.kg

linkedin.com/company/sartorius-werkzeuge-gmbh-co-kg

instagram.com/sartoriuswerkzeuge

POWER TO PRODUCE SINCE 1879

2020
New online shop,
Opening of the
SARTORIUS Academy

2019
140th company anniversary,
Opening of Czech Republic branch

2018
POWER TO PRODUCE
We use our integrated service package comprising process expertise and tool competence to optimise production and help our customers become more successful.

2017
The most successful year (highest sales) since the company's founding

2016
Approx. EUR 50 million in revenue with 183 employees

2014
135th company anniversary

2010
Product profile focused more distinctly onto core areas of machining, clamping technology, measurement systems, environment

1998
Accredited calibration laboratory of the German Calibration Service (DKD) for length measurements with an in-house measurement laboratory

1997
Certification to ISO 9002

1992
Construction and relocation to a new office and warehouse in Ratingen, Harkortstraße 54

1989
Company sold to
Adolf Würth GmbH & Co.

1978
Relocation to Sandstraße in the town of Ratingen outside Düsseldorf in response to the rapidly increasing demand for storage and office space

1964
As a general importer, Sartorius begins distribution of Mitutoyo measuring instruments in West Germany. This was the start of what remains a successful partnership today.

1944
Company building is destroyed by bombing. Rebuilt after the war

1929
The Hoppe family withdraws from the company. Paul E. Schrader remains the sole proprietor until 1967, when he is succeeded by his son Bernd

1904
Relocation to a new building with large warehouse space on Graf-Adolf-Strasse, Düsseldorf

1892
Company acquired by two employees, Paul Schrader and Karl Hoppe

1879
Company founded in Düsseldorf's old town district by Heinrich Sartorius. Today the entranceway of the original building is a protected historic monument.

NEWSLETTER SUBSCRIBE NOW

- News
- Special offers
- Dates
- Events
- New products
- etc.

MORE THAN JUST A WAREHOUSE

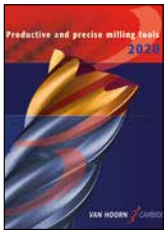
NEED A WIDER RANGE? NO PROBLEM. ALL ARTICLES FEATURED IN THIS MANUFACTURER CATALOGUE CAN BE ORDERED ONLINE!
REQUEST A FREE, ZERO-COMMITMENT MANUFACTURER CATALOGUE!



OSG
Catalogue VI
Threading, Drilling, Milling
1024 pages
Art.no. 019900 0208



HPMT
Machining tools
642 pages
Art.no. 019900 0154



VAN HOORN
End milling cutters
189 pages
Art.no. 019900 0079



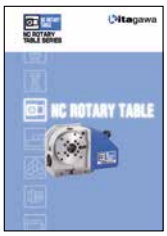
PALBIT
Full Catalogue D
816 pages
Art.no. 019900 0317



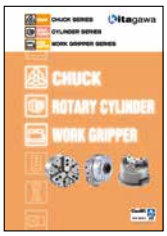
DÜMMEL
Machining tools
479 pages
Art.no. 019900 5529



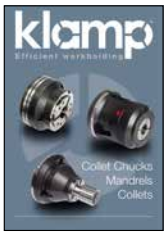
MITUTOYO
D-20004
Measuring equipment catalogue
2019-2021
approx. 620 pages
Art.no. 019900 0069



KITAGAWA
NC rotary tables
124 pages
English version
Art.no. 019900 0092



KITAGAWA
Lathe chucks
106 pages
English version
Art.no. 019900 0923



KITAGAWA
Collet chucks
48 pages
English version
Art.no. 019900 0093



AMF
Clamping technology main folder
7 individual catalogues
Art.no. 019900 5536



FAHRION
Clamping technology main folder
3 individual catalogues
Available online at
https://www.fahrion.de/kataloge.html



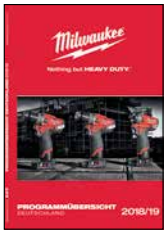
PFERD
Grinding and cutting
763 pages
Art.no. 019900 0216



WIHA
Hand tools
361 pages
Art.no. 019900 5548



STAHLWILLE
Hand tools
401 pages
Art.no. 019900 5633



MILWAUKEE
Power tools
148 pages
Art.no. 019900 5477



AEG
Power tools
68 pages
Art.no. 019900 5474



UVEX
Occupational safety
587 pages
Art.no. 019900 5470



SIMPLAFLEX COMPACTLINE
Workshop equipment
48 pages
Art.no. 019900 5577



BEDRUNKA+HIRTH
Workshop equipment
382 pages
Art.no. 019900 5628



BEDRUNKA+HIRTH
Workplace range
244 pages
Art.no. 019900 5629



BAUER
Lift truck attachments and warehouse equipment
176 pages
Art.no. 019900 5634

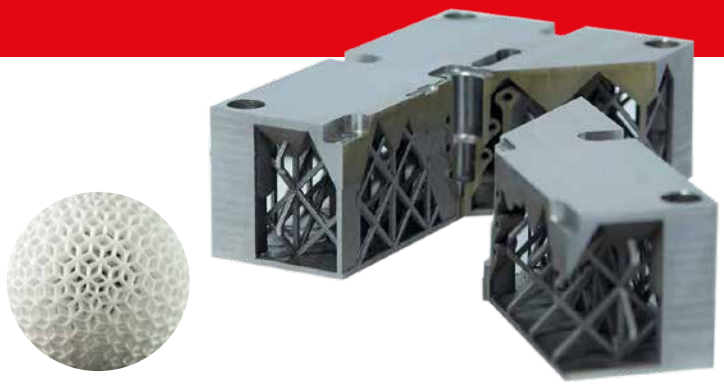
IF YOU HAVE ADDITIVE IS A FAMILIAR WORD IN MANUFACTURING.

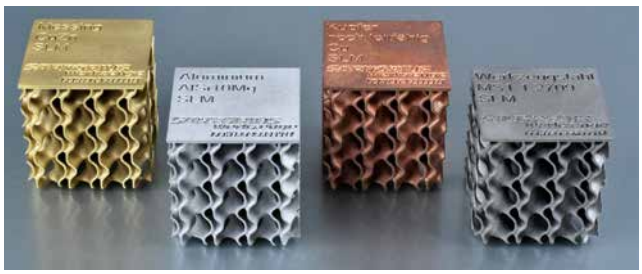
THAT'S POWER TO PRODUCE

3D OBJECTS FOR PROFESSIONAL APPLICATIONS
EASY CONFIGURATION, SIMPLE ORDERING, SWIFT DELIVERY

SARTORIUS TOOLS AND PROTIQ

Additive manufacturing is a process through which an object is formed through the gradual application of materials based on digital 3D construction data. This application-based manufacturing process differs significantly from abrasion-based manufacturing methods. For example, instead of milling a workpiece from a solid block, additive manufacturing forms components from materials layer by layer. A wide variety of materials, such as metal, plastics and composites are available. Additive manufacturing is particularly suited to the production of prototypes or small batches.







ADDITIVE FERTIGUNG

PROTIQ
A Phoenix Contact Company

IT'S AS SIMPLE AS THAT

Our services are not only high quality, they are also easy to use. You can access the PROTIQ-Market-Place via **www.sartorius-werkzeuge.de**. Here you can configure individual objects or entire assemblies swiftly and conveniently. The portal also facilitates the approval process: Each customer account can include several employees with varying roles.

So you can easily configure and order high-quality 3D objects in no time:

FOR EVERY REQUIREMENT THE RIGHT SOLUTION

The basis for this is our diverse range of materials and manufacturing methods, supplemented by key services in additive manufacturing, such as training, reverse engineering and finishing.

Our portal itself is loaded with functions that actively support your business processes. For example, you have access to a convenient approval and ordering process and can upload entire assemblies to the configurator.

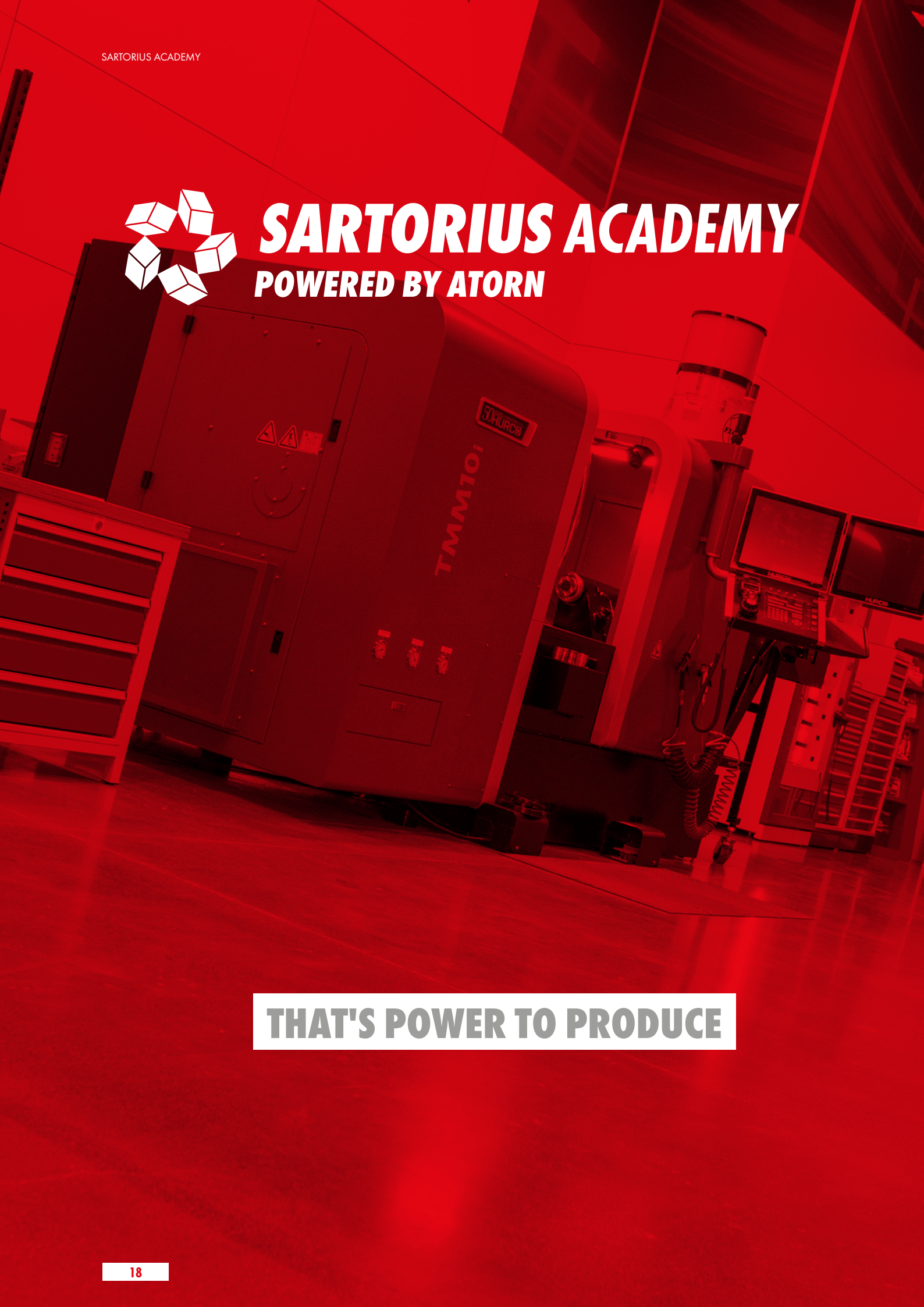
CREATE a 3D FILE
We process all conventional file formats.

UPLOAD the file
Drag'n'Drop the file into the upload field – done! Your file is automatically checked and corrected if necessary.

CONFIGURE YOUR OBJECT AND/ OR ASSEMBLY
You can adjust the size, colour and finish. The corresponding price is displayed instantly.

WE PRINT your ORDER
We manufacture quickly, with high precision and high-quality materials.

Your ORDER IS DISPATCHED
We dispatch your order by express delivery on request.



SARTORIUS ACADEMY
POWERED BY ATORN

THAT'S POWER TO PRODUCE

INVESTMENT IN KNOWLEDGE FOR A PROSPEROUS FUTURE.

FROM A VISION TO A CENTRE OF EXCELLENCE

Every journey begins with the first step. The first step towards the SARTORIUS Academy was taken in 2016. True to our POWER TO PRODUCE motto, we wanted to be closer to the customer. From pure tool merchant to experts in manufacturing. For this transformation to succeed, one aspect was paramount: the creation of our own academy. This objective was realised in conjunction with HURCO.

Founded in the USA 51 years ago, HURCO now develops and produces interactive computer controls, software and computer-aided machine tools predominantly in Europe.

And precisely two of these machines are now in the Academy. This is the perfect environment to test tools, to put innovations through their paces live on-site and to remedy user problems.

KNOWLEDGE TRANSFER FOR YOU, YOU AND YOU

Demographic change is no longer a nightmare scenario, but an industry-changing reality in the labour market. It requires the clever handling of newly-created options for increasing digitisation, whilst taking altered systematic processes into account. We recognise that and so do our customers. A skills shortage diminishes know-how. Meanwhile, the demands for productivity, efficiency and data processing are increasing.

In this difficult time of change it is important to take demographic development and changing job profiles into account, in addition to supplying the right tools, the corresponding knowledge and a cohesive production cycle. Specifically, this represents the intelligent networking of goods issue, through inputting the corresponding data into the machine, right up to the automatic reordering of the tools used. Or more simply: Industry 4.0. Toolmakers are increasingly becoming data technicians, which is no less challenging, but shifts responsibility onto finding solutions in manufacturing processes. All the more important is SARTORIUS Academy, where we can work on precisely these solutions.

In fact, SARTORIUS Academy is no less than a transition into a new era, in which our own employees are trained to develop solutions with customers and where Industry 4.0 can be experienced up close. Merchandise and knowledge enter into a virtually inseparable symbiotic relationship.
We call this: POWER TO PRODUCE.



WE'RE THERE WHEN YOU NEED US. NO MATTER WHERE:

24-HOUR DELIVERY ACROSS EUROPE

THAT'S POWER TO PRODUCE

IN RATINGEN TODAY – WITH YOU TOMORROW. THIS WORKS ONLY IF ALL LOGISTICS STATIONS MESH SEAMLESSLY.

FAST PROCESSING, PUNCTUAL DELIVERY

Our route-optimised, computer-aided warehouse management system efficiently manages over 40,000 items of stock for you.

In order to meet the high quality demands along the entire supply chain, we have engaged the services of parcel specialists UPS® to transport your orders.





We ship via UPS







SERVICE



DRILLING TOOLS



MILLING TOOLS



TURNING TOOLS



CLAMPING EQUIPMENT



MEASURING EQUIPMENT



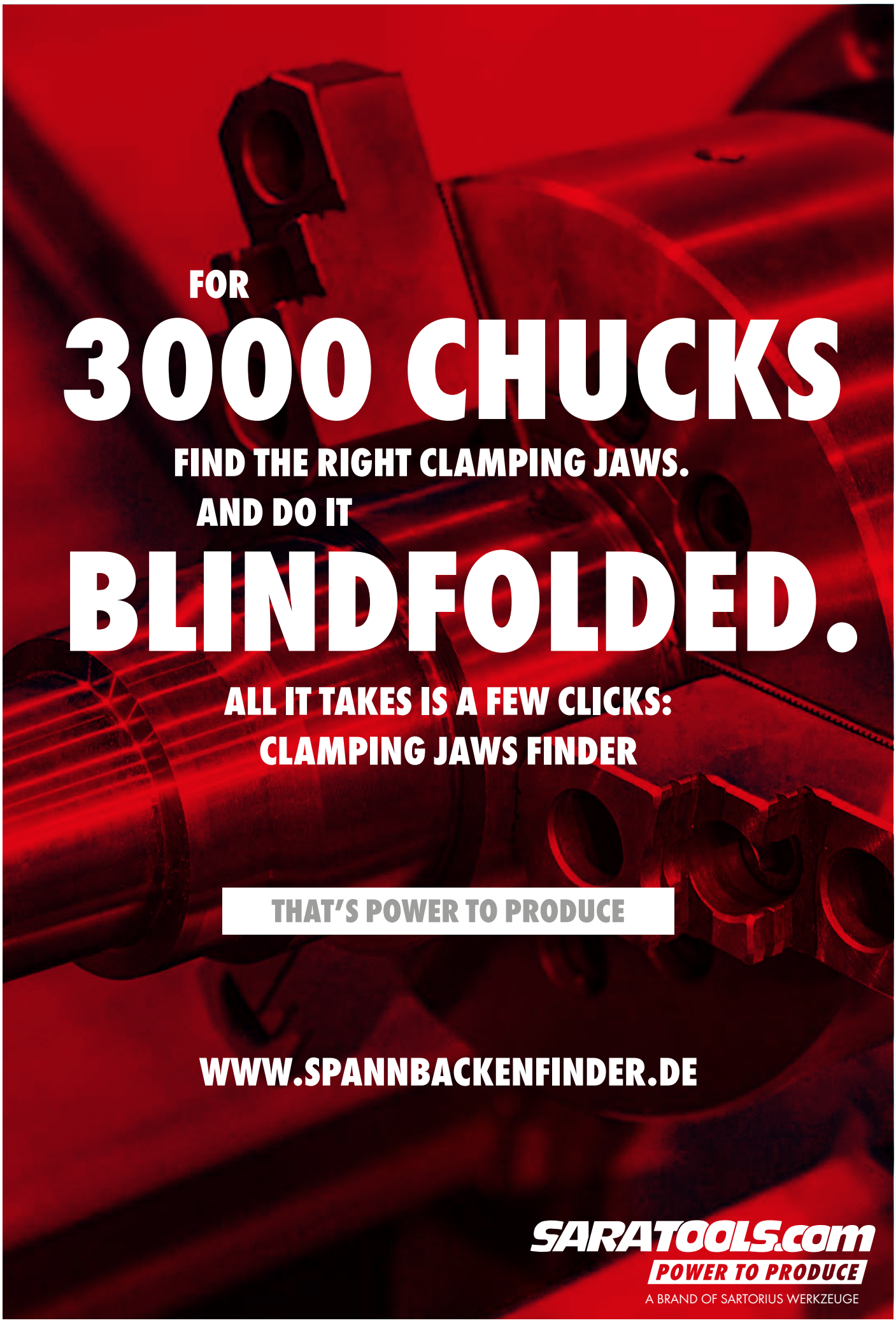
WORKSHOP SUPPLIES



SAFETY AND ENVIRONMENT



INFORMATION


FOR
3000 CHUCKS
FIND THE RIGHT CLAMPING JAWS.
AND DO IT
BLINDFOLDED.
ALL IT TAKES IS A FEW CLICKS:
CLAMPING JAWS FINDER
THAT'S POWER TO PRODUCE
WWW.SPANNBACKENFINDER.DE
SARATOOLS.com
POWER TO PRODUCE
A BRAND OF SARTORIUS WERKZEUGE

Service

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	Calibration of stationary measuring equipment	40
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	Tool repair service	41

REQUESTING THE RESHARPENING BOX

On request we provide you with a resharpening box, free of charge, to ensure the safe transit of your tools.
This can be requested free of charge from our Service Team:
Phone number: 02102 - 4400 - 3300
E-mail: service@sartorius-werkzeuge.de

FREE COLLECTION

Free, next-working-day collection of your tools within Germany with our transport boxes (eco-friendly reusable packaging). Your tools are securely delivered within 24 hours. You can also send your tools via a parcel service of your choice to:

SARTORIUS Werkzeuge GmbH & Co. KG
Resharpening service
Harkortstraße 54
40880 Ratingen

RECEIPT OF THE TOOLS

We check the type, size and efficiency of the tools – tools that cannot be resharpened shall be returned with the rest of the tools.

MACHINING

- Resharpening
- Coating
- Quality control
- Measurement log (on request)

The production areas are divided as follows:

- CNC grinding technology – shank tools
- CNC grinding technology – saw blades
- CNC grinding technology – drill bits
- Special tools and carbide saw blades
- Surface grinding technology
- Grinding rings
- Coating technology

DELIVERY

You can expect the return of your tools – resharpened, coated and measured (optional) – within 12 working days.



Now even faster: direct shipping

- Open the QR code on the regrinding box, then enter the collection address and the weight.
- Enclose the consignment note and close the box for shipping using the supplied seals
- UPS will collect the resharpening box within 24 hours and express-ship it to SARTORIUS Werkzeuge
- After the reconditioning is complete, it will be returned to you by express courier service, free of charge

Regrinding service

- Restoration of the original grinding, with new coating on request
- Fast processing, short waiting times
- Resharpening of other tools available on request
- The prices specified are a guide only
- **Additional costs are calculated based on outlay: e.g. regrinding of sets, extra-long milling cutters, trimming and re-facing**



HSS twist drill

Ø mm	Grinding €
Up to 6	1,20
Up to 8	1,54
Up to 10	2,03
Up to 12	2,81
Up to 14	3,87
Up to 16	4,77
Up to 20	7,45
Up to 25	12,15
Up to 35	15,10
Up to 45	22,20
Up to 60	30,50
Up to 70	44,80
Up to 100	65,50
	0102



Solid carbide twist drill

Ø mm	Grinding €
Up to 6	5,35
Up to 8	7,15
Up to 10	8,95
Up to 12	10,65
Up to 14	12,45
Up to 16	14,25
Up to 18	16,10
Up to 20	17,70
Up to 22	19,50
Up to 25	22,30
	0102



HSS / solid carbide end milling cutter

Ø mm	Short €
Up to 6	7,95
Up to 10	8,95
Up to 15	11,80
Up to 20	14,85
Up to 25	19,40
Up to 30	22,50
Up to 35	26,70
Up to 40	32,20
Up to 50	39,50
Up to 65	61,50
Up to 80	94,50
	0102



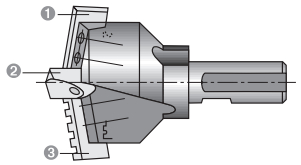
HSS NC spotting drill / deburring countersink

Ø mm	Grinding €
Up to 10	4,53
Up to 12	4,86
Up to 16	5,20
Up to 20	8,55
Up to 25	14,05
	0102



Solid carbide NC spotting drill / deburring countersink

Ø mm	Grinding €
Up to 10	9,10
Up to 12	9,70
Up to 16	10,35
Up to 20	17,10
Up to 25	28,10
	0102



1 Finishing blade
2 Centre bit
3 Roughing blade

Cutting edge SARADRILL

- One finishing blade and one roughing blade per set, see illustration

Ø mm	Default art.no.	€
Up to 100	**042015** 0100	18,40
Up to 150	042015 0150	22,40
Up to 200	042015 0200	25,90
Up to 270	042015 0270	34,10
	0102	

Centre bit SARADRILL

- See illustration

Ø mm	Default art.no.	€
12	**042016** 0012	6,85
20	042016 0020	8,10
	0102	



HSS / solid carbide radius cutter

Ø mm	Short €
Up to 6	17,–
Up to 10	18,–
Up to 15	21,30
Up to 20	25,40
Up to 25	30,90
Up to 30	36,90
Up to 35	41,60
Up to 40	50,50
Up to 50	53,–
Up to 65	80,–
Up to 80	142,–
	0102



HSS disc milling cutter

Ø mm	Up to 12 mm wide €	Up to 20 mm wide €	From 20 mm wide €
Up to 50	11,15	13,90	24,50
Up to 65	13,75	17,10	27,60
Up to 80	17,30	21,60	31,–
Up to 110	21,60	27,20	34,80
Up to 125	23,70	29,70	40,10
Up to 150	25,70	32,20	43,40
Up to 200	29,70	37,20	54,–
Up to 250	33,80	46,10	66,–
Up to 300	46,10	58,–	72,–
Up to 350	58,50	73,–	91,–
	0102	0102	0102



(Solid) carbide disc milling cutter

Ø mm	Up to 12 mm wide €	Up to 20 mm wide €	From 20 mm wide €
Up to 50	15,70	19,40	34,10
Up to 65	19,20	23,90	38,60
Up to 80	24,30	30,50	43,40
Up to 110	30,50	38,–	48,70
Up to 125	33,30	41,70	56,–
Up to 150	36,10	45,20	61,–
Up to 200	41,70	52,–	76,–
Up to 250	47,40	64,50	93,–
Up to 300	64,50	80,50	101,–
Up to 350	81,50	102,–	127,–
	0102	0102	0102



HSS plain milling cutter and shell end mill

Ø mm	Grinding €
Up to 40	15,50
Up to 50	18,20
Up to 65	21,50
Up to 75	26,–
Up to 90	29,10
Up to 110	34,10
Up to 125	38,60
Up to 150	46,60
Up to 200	56,50
	0102



(Solid) carbide plain milling cutter and shell end mill

Ø mm	Grinding €
Up to 40	21,60
Up to 50	25,20
Up to 65	30,–
Up to 75	36,40
Up to 90	40,70
Up to 110	47,70
Up to 125	54,–
Up to 150	65,–
Up to 200	80,–
	0102



(Solid) carbide step drill

Ø mm	Grinding €
Up to 10	12,45
Up to 20	21,10
Up to 30	27,20
Up to 40	35,10
Up to 50	45,20
Up to 60	61,–
Up to 70	79,50
	0102



HSS countersink and deburring countersink

Ø mm	Grinding €
Up to 10	4,70
Up to 16	5,65
Up to 21	6,30
Up to 26	8,70
Up to 35	10,20
Up to 45	13,05
Up to 60	16,40
Up to 70	19,50
Up to 80	23,30
Up to 100	27,20
	0102



(Solid) carbide countersink and deburring countersink

Ø mm	Grinding €
Up to 10	9,35
Up to 16	11,35
Up to 21	12,60
Up to 26	17,40
Up to 35	20,40
Up to 45	26,30
Up to 60	32,70
Up to 70	39,20
Up to 80	47,–
Up to 100	54,50
	0102



HSS hand reamers

Ø mm	Grinding €
Up to 10	4,20
Up to 15	7,30
Up to 20	9,35
Up to 25	11,65
Up to 30	13,75
Up to 35	15,90
Up to 40	19,70
Up to 45	22,20
Up to 50	26,60
Up to 60	32,20
Up to 80	42,80
Up to 100	54,50
	0102



Solid carbide reamers

Ø mm	Grinding €
Up to 10	6,30
Up to 15	10,85
Up to 20	14,05
Up to 25	17,40
Up to 30	20,60
Up to 35	23,70
Up to 40	29,60
Up to 45	33,20
Up to 50	39,80
Up to 60	48,20
Up to 80	64,–
Up to 100	82,–
	0102



HSS hand tap and machine tap

Ø mm	Grinding €
Up to 10	3,07
Up to 15	5,20
Up to 20	7,75
Up to 25	11,35
Up to 30	15,50
Up to 40	20,70
Up to 50	25,50
Up to 60	30,90
Up to 70	38,20
	0102



Solid carbide machine tap

Ø mm	Grinding €
Up to 10	4,70
Up to 15	7,75
Up to 20	11,65
Up to 25	17,–
Up to 30	23,30
Up to 40	31,10
Up to 50	38,30
Up to 60	46,40
Up to 70	57,–
	0102



HSS centre punch centring points

Shank	Fixed pointed tip €	Rotating pointed tip €
MT 2	11,80	15,40
MT3	17,–	22,20
MT 4	22,70	29,40
MT 5	35,90	46,70
MT 6	65,–	84,50
	0102	0102



Carbide centre punch centring point

Shank	Fixed pointed tip €	Rotating pointed tip €
MT 2	18,–	35,90
MT3	25,80	52,–
MT 4	34,10	68,50
MT 5	49,80	100,–
MT 6	89,50	179,–
	0102	0102



HSS metal circular saw blades

Ø mm	Grinding €
Up to 75	5,85
Up to 110	6,75
Up to 150	7,75
Up to 175	8,55
Up to 200	9,85
Up to 250	11,50
Up to 275	13,60
Up to 300	15,10
Up to 325	16,40
Up to 350	18,60
Up to 400	21,30
Up to 500	25,10
	0102

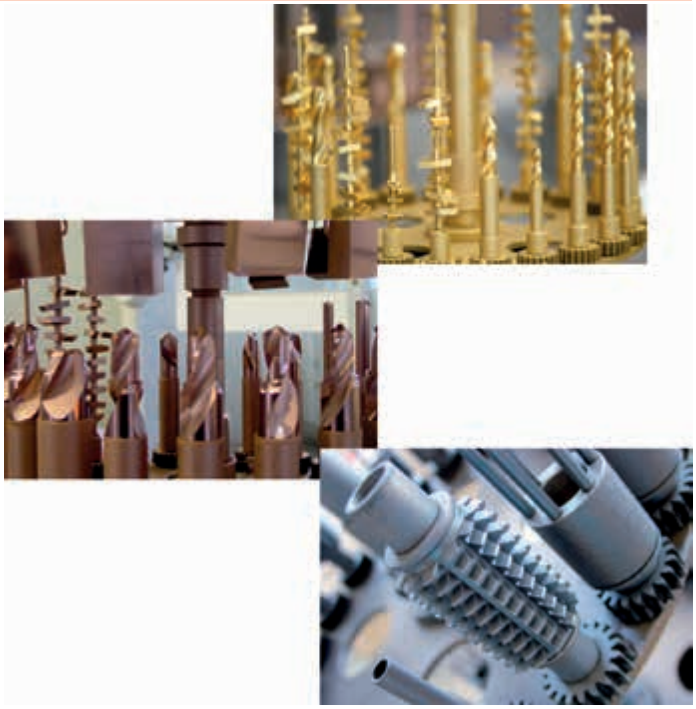


Solid carbide circular saw blades

Ø mm	Grinding €
Up to 50	19,70
Up to 65	26,–
Up to 80	38,90
Up to 100	47,90
Up to 125	77,–
Up to 150	92,50
Up to 160	110,–
Up to 200	200,–
	0102

Coating service

- Coating and recoating to maintain or improve the performance of machining tools
- Small layer thicknesses in the µ range provide significantly better wear protection
- Fast processing, short waiting times
- Other types of coating and coatings for other tools available on request



Shank tool

Ø mm	TiN €	TiCN €	TiAlN €	CrN / Multi Cut €	Ultra+ €	Ultra-Si €
Up to 6	2,10	2,10	2,54	2,54	3,20	3,42
Up to 10	2,87	3,31	3,64	3,64	4,53	5,05
Up to 12	3,42	3,86	4,19	4,19	5,20	5,70
Up to 14	3,97	4,31	4,75	4,75	5,85	6,50
Up to 16	5,50	5,70	6,40	6,40	7,95	8,70
Up to 18	8,15	9,15	10,15	10,15	12,70	13,90
Up to 20	8,15	9,80	10,80	10,80	13,45	14,90
Up to 25	13,35	14,45	15,40	15,40	19,30	21,30
Up to 30	17,–	20,30	23,20	23,20	29,–	
Up to 40	23,40	29,40	35,60	35,60	44,50	
Up to 50	32,40	44,20	45,40	45,40	53,50	
Up to 60		48,50	52,50			
	0102	0102	0102	0102	0102	0102

Countersink

Ø mm	TiN €	TiCN €	TiAlN €	CrN / Multi Cut €	Ultra+ €
Up to 6	2,21	2,65	2,98	2,98	3,86
Up to 8	2,98	3,42	3,97	3,97	5,05
Up to 10	4,41	5,20	6,10	6,10	7,50
Up to 15	6,60	7,80	9,15	9,15	11,35
Up to 18	8,05	9,60	11,15	11,15	13,90
Up to 20	8,70	10,35	12,15	12,15	15,20
Up to 25	9,50	11,25	13,25	13,25	16,60
Up to 31	10,15	12,15	14,25	14,25	17,70
Up to 36	10,80	13,–	15,10	15,10	18,90
Up to 41	11,60	13,80	16,10	16,10	20,20
Up to 48	13,15	15,60	18,20	18,20	22,70
Up to 51	17,40	21,–	24,40	24,40	30,50
	0102	0102	0102	0102	0102

Disc milling cutter

Ø mm	TiN €	TiCN €	TiAlN €	CrN / Multi Cut €	Ultra+ €
Up to 50	9,60	11,35	13,25	13,25	16,70
Up to 80	17,10	20,40	23,80	23,80	29,80
Up to 100	21,80	26,10	30,50	30,50	38,–
Up to 125	27,–	32,30	37,70	37,70	47,10
Up to 150	32,10	38,30	44,70	44,70	55,50
Up to 180	37,30	44,70	52,50	52,50	65,–
Up to 210	42,30	51,–	59,50	59,50	74,–
Up to 250	47,30	56,50	66,–	66,–	83,–
	0102	0102	0102	0102	0102

Cutting edge SARADRILL

- Per set

Ø mm	TiN €
Up to 60	5,10
Up to 85	5,75
Up to 110	11,10
Up to 150	12,80
Up to 200	15,40
Up to 270	20,40
	0102

Shell end mill

Ø mm	TiN €	TiCN €	TiAlN €	CrN / Multi Cut €	Ultra+ €
Up to 30	7,20	8,30	9,40	9,40	11,70
Up to 40	9,80	11,05	12,15	12,15	15,10
Up to 50	14,25	16,10	18,10	18,10	22,60
Up to 63	16,90	19,70	22,60	22,60	28,10
Up to 80	26,–	30,70	35,20	35,20	44,–
Up to 100	36,90	41,90	46,90	46,90	59,–
Up to 125	51,50	64,–	76,50	76,50	95,50
Up to 150	61,–	75,50	91,–	91,–	113,–
	0102	0102	0102	0102	0102

Indexable inserts

Number	TiN €	TiCN €	TiAlN €	CrN / Multi Cut €	Ultra+ €	Ultra-Si €
Price per unit	2,21	2,21	2,21	2,21	2,76	3,20
From 10 units	1,44	1,44	1,44	1,44	1,76	1,98
From 50 units	1,10	1,10	1,10	1,10	1,44	1,66
From 100 units	0,88	0,88	0,88	0,88	1,–	1,22
	0102	0102	0102	0102	0102	0102

Saw blade

Ø mm	TiN €	TiCN €	TiAlN €	CrN / Multi Cut €	Ultra+ €
Up to 50	6,85	7,80	9,25	9,25	11,60
Up to 60	8,15	9,40	11,15	11,15	13,90
Up to 70	9,50	11,05	13,–	13,–	16,20
bis 80	10,80	12,55	14,75	14,75	18,50
Up to 90	12,25	14,10	16,70	16,70	20,80
Up to 100	13,55	15,60	18,50	18,50	23,20
Up to 125	17,–	19,50	23,20	23,20	28,90
Up to 150	20,30	23,50	27,80	27,80	34,70
Up to 200	27,–	31,30	37,–	37,–	46,20
Up to 250	33,70	39,10	46,20	46,20	58,–
Up to 275	37,20	43,10	51,–	51,–	65,–
Up to 300	40,40	46,80	55,–	55,–	69,50
Up to 350	47,10	54,50	64,50	64,50	81,–
Up to 400	54,–	62,50	74,–	74,–	92,50
Up to 450	61,–	70,50	83,–	83,–	104,–
	0102	0102	0102	0102	0102

ISO 9000 ff test equipment monitoring service

element Metech

The Element Metech calibration laboratory is a calibration centre recognised by "Deutsche Akkreditierungsstelle GmbH" for dimensional measurements (length measurement equipment, diameter, thread) according to DIN EN ISO/IEC 17025:2005.

ONE CONTACT – EVERYTHING FROM A SINGLE SOURCE

We offer you extensive advice on monitoring test equipment and calibrating all physical quantities and units. We can repair and service test equipment on request, and we even calibrate stationary test equipment on-site too. Significant, internationally recognised test certificates and a short throughput time round off our range of services for you.

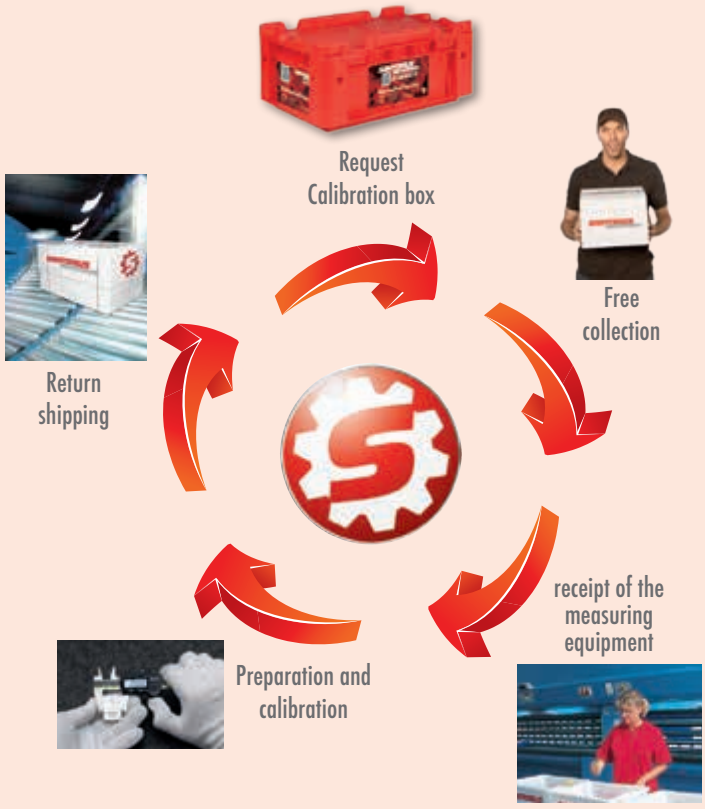
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Calibration service
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DAKKS CALIBRATION SERVICES FOR THE FOLLOWING ELEMENTS:

- Sliding callipers
- Outside micrometers
- Inside micrometers
- Dial indicators
- Indicating callipers
- Dial test indicators
- Setting gauges for outside micrometers
- Thread ring gauges
- Thread plug gauges
- Limit plug gauges
- Ring gauges
- Electrical measured variables
- Temperature
- Pressure
- Time and frequency



WE CALIBRATE THE FOLLOWING TEST EQUIPMENT:

- Length
- Diameter
- Thread
- Electrical engineering
- Mass
- Torque
- Force
- Temperature
- Humidity
- Lighting / brightness
- Pressure
- Gas flows
- Conductivity
- pH







Preparation	Calibration	Post-processing service	Complete service
• Cleaning • Demagnetising • Light reworking • Tempering	• Adjusting test equipment • Calibration according to VDI/VDE/ DGQ 2618 guidelines and DKD and the company's internal regulations • With inspection plate on request/ engraving	• Preservation • Hot-dipping • Packaging	• Repair on request

Calibration of indicating measuring instruments

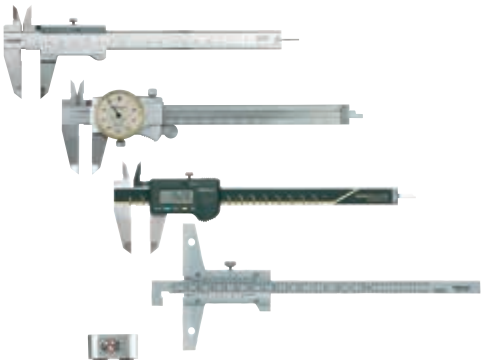
Including calibration, cleaning and de-magnetisation

- **Standard, device calibration, normal calibration:** factory calibration
- **DAkkS:** Testing and documentation in accordance with „Deutscher Akkreditierungstelle GmbH"

calipers and depth bars according to DIN 862

- Standard: Testing and documentation in compliance with VDI (Association of German Engineers) / VDE (Association for Electrical, Electronic & Information Technologies) / DGQ (German Society for Quality) 2618, Sheet 9.1 and Sheet 9.2

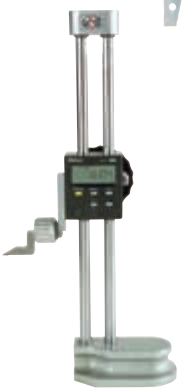
Measurement range mm	Default art.no.	€	DAkkS art.no.	€
Up to 200	**070101** 0001	8,80	**070102** 0001	16,–
Up to 300	070101 0002	16,70	070102 0002	20,20
Up to 500	070101 0003	26,–	070102 0003	35,–
Up to 1000	070101 0004	53,–	070102 0004	59,–
Up to 2000	070101 0005	75,90		
Up to 3000	070101 0006	138,–		
	0103		0103	



Height meters and marking-out instruments

- Standard: Testing and documentation in compliance with VDI (Association of German Engineers) / VDE (Association for Electrical, Electronic & Information Technologies) / DGQ (German Society for Quality) 2618, Sheet 9.3

Measurement range mm	Default art.no.	€	DAkkS art.no.	€
Up to 300	**070110** 0001	34,30	**070112** 0001	39,–
Up to 600	070110 0002	50,–	070112 0002	57,–
Up to 1000	070110 0003	66,–	070112 0003	80,–
	0103		0103	



Height meters

- Standard: Testing and documentation according to VDI (Association of German Engineers) / VDE (Association for Electrical, Electronic & Information Technologies) 2617 or the manufacturer's instructions, e.g. MITUTOYO-Linear-Height, Microhite, Trimos, Digimahr, Mauser
- **Please note:** the original probe is required for calibration!

Measurement range mm	Default art.no.	€	DAkkS art.no.	€
Up to 300	**070115** 0001	284,–	**071115** 0001	307,–
Up to 600	070115 0002	353,–	071115 0002	410,–
Up to 1000	070115 0003	400,–	071115 0003	627,–
	0103		0103	



Height micrometers

- Standard: Testing and documentation in compliance with VDI (Association of German Engineers) / VDE (Association for Electrical, Electronic & Information Technologies) / DGQ (German Society for Quality) 2618, Sheet 10.6

Measurement range mm	Default art.no.	€	DAkkS art.no.	€
Up to 300	**070120** 0001	210,–	DakkS calibration on request	
Up to 600	070120 0002	286,–		
Up to 1000	070120 0003	489,50		
	0103			



Indicating caliper

- Standard: Testing and documentation in compliance with VDI (Association of German Engineers) / VDE (Association for Electrical, Electronic & Information Technologies) / DGQ (German Society for Quality) 2618, Sheet 11.2

Measurement range mm	Default art.no.	€	DAkkS art.no.	€
All	**070125** 0001	17,80	**070126** 0001	29,–
	0103		0103	



Lever dial indicators

- Standard: Testing and documentation in compliance with VDI (Association of German Engineers) / VDE (Association for Electrical, Electronic & Information Technologies) / DGQ (German Society for Quality) 2618, Sheet 11.3

Measurement range mm	Default art.no.	€	DAkkS art.no.	€
All	**070130** 0001	17,80	**070131** 0001	45,–
	0103		0103	



Dial indicators with analogue or digital readings, 0.01 or 0.001 mm

- Standard: Testing and documentation in compliance with VDI (Association of German Engineers) / VDE (Association for Electrical, Electronic & Information Technologies) / DGQ (German Society for Quality) 2618, Sheet 11.1

Measuring span mm	Default art.no.	€	DAkkS art.no.	€
10	**070140** 0001	13,–	**070141** 0001	22,–
12.7	070140 0002	17,–	070141 0002	22,–
30	070140 0004	20,50	070141 0004	63,–
50.8	070140 0005	26,60	070141 0005	63,–
100	070140 0007	39,–	070141 0007	67,–
	0103		0103	



Outside micrometers with spindle adjusting range up to 25 mm

Including calibration, cleaning and de-magnetisation

- Standard: Testing and documentation in compliance with VDI (Association of German Engineers) / VDE (Association for Electrical, Electronic & Information Technologies) / DGQ (German Society for Quality) 2618, sheet 10.1
- In the case of outside micrometers with replaceable inserts according to DIN 863, Form D16, the calibration of inserts is charged separately.



Measurement range mm	Default art.no.	€	DAkkS art.no.	€
Up to 25	**070501** 0001	15,70	**070502** 0001	25,20
Up to 100	070501 0011	18,30	070502 0011	44,50
Up to 200	070501 0002	24,50	070502 0002	44,50
Up to 300	070501 0013	29,–	070502 0013	60,–
Up to 400	070501 0014	33,–	070502 0014	60,–
Up to 500	070501 0016	46,–	070502 0003	60,–
Up to 600	070501 0015	46,–	070502 0015	109,–
Up to 1000	070501 0004	73,–	070502 0004	109,–
Up to 1500	070501 0005	96,–		
Up to 2000	070501 0006	105,–		
	0103		0103	

Replaceable inserts for outside micrometers according to DIN 863, type D16

- Including finishing service



Nominal dimension mm	Default art.no.	€	DAkkS art.no.	€
All dimensions	**070501** 1001	12,20	DakkS calibration on request	
	0103			

Setting gauges for outside micrometers

- Standard: Testing and documentation according to DIN 863, tolerance zone: js 2, company standard
- including finishing service



Nominal dimension mm	Default art.no.	€	DAkkS art.no.	€
Up to 100	**070505** 0010	9,–	**070506** 0010	44,–
Up to 200	070505 0001	9,–	070506 0001	44,–
Up to 300	070505 0011	16,20	070506 0011	44,–
Up to 500	070505 0002	22,–	070506 0002	44,–
Up to 1000	070505 0003	41,–	070506 0003	44,–
Up to 2000	070505 0004	79,–		
Up to 3000	070505 0005	82,–		
	0103		0103	

60° or 55° setting gauges for thread micrometers

- Standard: Testing and documentation of the tip distance and the slope angles of V-blocks and tapers
- including finishing service



Nominal dimension mm	Default art.no.	€	DAkkS art.no.	€
Up to 100	**070510** 0001	33,–	DakkS calibration on request	
Up to 200	070510 0002	39,60		
Up to 300	070510 0003	56,70		
Up to 400	070510 0004	67,70		
	0103			

Inside micrometers with two-point contacts according to DIN 863, Part 4, types A1 and A2

- Standard: Testing and documentation in compliance with VDI (Association of German Engineers) / VDE (Association for Electrical, Electronic & Information Technologies) / DGQ (German Society for Quality) 2618, Sheet 10.7
- Adjusting range of the spindles up to 25mm
- Testing of inside micrometers > 3000mm on request
- For versions extensions, testing of the extensions is charged separately (see order no. 070535....)





Measurement range mm	Default art.no.	€	DAkkS art.no.	€
Up to 200	**070520** 0001	27,–	**070521** 0001	35,–
Up to 400	070520 0011	41,60	070521 0011	78,–
Up to 500	070520 0013	48,–	070521 0002	78,–
Up to 600	070520 0012	48,–	070521 0012	78,–
Up to 1000	070520 0003	76,–	070521 0003	78,–
Up to 2000	070520 0004	80,–		
Up to 3000	070520 0005	125,–		
	0103		0103	

Including calibration, cleaning and de-magnetisation

Inside micrometers with three-point contacts according to DIN 863, Part 4, types C1 and C2, and three-point internal precision instruments such as MITUTOYO-BOREMATIC or similar

- Standard: Testing and documentation in compliance with VDI (Association of German Engineers) / VDE (Association for Electrical, Electronic & Information Technologies) / DGQ (German Society for Quality) 2618, Sheet 10.8
- Adjusting range of spindles up to 25mm

Measurement range mm	Default art.no.	€	DAkkS art.no.	€
Up to 25	**070525** 0011	19,60	**070526** 0001	25,50
Up to 50	070525 0001	19,60	070526 0011	34,–
Up to 100	070525 0002	28,–	070526 0002	34,–
Up to 150	070525 0003	33,–	070526 0013	45,–
Up to 200	070525 0004	37,50	070526 0014	45,–
Up to 250	070525 0005	47,–	070526 0003	52,–
Up to 300	070525 0006	43,–		
	0103		0103	



Depth micrometers according to DIN 863, Part 2

- Standard: Testing and documentation in compliance with VDI (Association of German Engineers) / VDE (Association for Electrical, Electronic & Information Technologies) / DGQ (German Society for Quality) 2618, sheet 10.5
- Adjusting range of the spindles up to 25mm
- For versions with replaceable inserts, testing of the inserts is charged separately (see order no. 070535....)

Measurement range mm	Default art.no.	€	DAkkS art.no.	€
All	**070530** 0001	23,–		
Up to 100			**070531** 0001	29,–
Up to 200			070531 0002	43,–
	0103		0103	



Extensions for inside and depth micrometers

- Standard: Testing and documentation according to DIN 863, Part 2 or Part 4

Nominal dimension mm	Default art.no.	€	DAkkS art.no.	€
Up to 200	**070535** 0001	17,50	DakkS calibration on request	
Up to 500	070535 0002	26,–		
Up to 1000	070535 0003	41,–		
Up to 2000	070535 0004	53,–		
Up to 3000	070535 0005	135,–		
	0103			



Built-in micrometers with analogue or digital readings

- Standard: Testing and documentation in compliance with VDI (Association of German Engineers) / VDE (Association for Electrical, Electronic & Information Technologies) / DGQ (German Society for Quality) 2618, sheet 10.4

Measurement range mm	Default art.no.	€	DAkkS art.no.	€
0 to 25	**070550** 0001	22,–	**070551** 0001	56,–
0 to 50	070550 0002	39,–	070551 0002	63,–
	0103		0103	



Gap gauges with dial indicators or indicating calipers

- Standard: Testing and documentation of measuring surface parallelism according to the manufacturer's instructions
- Adjusting range up to 25mm
- Testing costs for the indicating measuring instrument are charged separately

Design	Default art.no.	€	DAkkS art.no.	€
All	**070560** 0001	40,–	DakkS calibration on request	
	0103			



Indicating caliper micrometer gauge according to DIN 863, Part 3

- Standard: Testing and documentation in compliance with VDI (Association of German Engineers) / VDE (Association for Electrical, Electronic & Information Technologies) / DGQ (German Society for Quality) 2618, sheet 10.3

Measurement range mm	Default art.no.	€	DAkkS art.no.	€
Up to 25	**070565** 0001	37,–	**071565** 0001	39,–
Up to 100	070565 0002	40,–	071565 0002	50,–
Up to 150	070565 0003	46,–	071565 0012	75,–
Up to 200			071565 0003	75,–
	0103		0103	



External or internal fast display calipers

- Standard: Testing and documentation in compliance with VDI (Association of German Engineers) / VDE (Association for Electrical, Electronic & Information Technologies) / DGQ (German Society for Quality) 2618, Internal Sheet 13.1, External Sheet 12.1/13.1

Measurement range mm	Default art.no.	€	DAkkS art.no.	€
All	**071001** 0001	26,–		
Up to 100			**071101** 0001	32,–
Up to 200			071101 0002	34,–
	0103		0103	



Quick-acting thickness gauge

- Standard: Testing and documentation in accordance with the manufacturer's instructions
- Testing costs for indicating measuring instrument are charged separately

Measurement range mm	Default art.no.	€	DAkkS art.no.	€
All	**071010** 0001	17,–		
Up to 200			**071020** 0001	62,–
	0103		0103	



Including calibration, cleaning and de-magnetisation

Internal precision instruments with dial indicators or indicating calipers

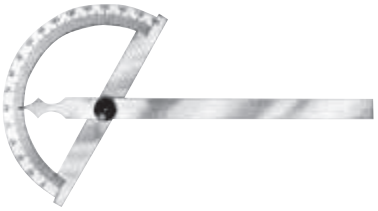
- Standard: Testing and documentation in compliance with VDI (Association of German Engineers) / VDE (Association for Electrical, Electronic & Information Technologies) / DGQ (German Society for Quality) 2618, Sheet 13.2
- Testing costs for indicating measuring instrument are charged separately



Measurement range mm	Default art.no.	€	DAkkS art.no.	€
Up to 20	**071015** 0001	26,–	DakkS calibration on request	
Up to 100	071015 0002	33,–		
Up to 160	071015 0003	36,50		
Up to 290	071015 0004	39,–		
Up to 510	071015 0005	41,–		
Up to 800	071015 0006	60,–		
	0103			

Graduator with division scale

- Standard: Testing and documentation of simple goniometres without Vernier scale according to the manufacturer's instructions



Design	Default art.no.	€	DAkkS art.no.	€
0° to 180°			**071511** 0001	42,–
All	**071501** 0001	36,–		
	0103		0103	

Goniometer with mechanical, optical or digital readings

- All versions with Vernier scale, dial indicator, optical or digital readings
- Standard: Testing and documentation in compliance with VDI (Association of German Engineers) / VDE (Association for Electrical, Electronic & Information Technologies) / DGQ (German Society for Quality) 2618, Sheet 7.2



Design	Default art.no.	€	DAkkS art.no.	€
0° to 360°			**071506** 0001	52,–
All	**071505** 0001	36,–		
	0103		0103	

Inclinometers, horizontal - spirit levels

- Standard: Testing and documentation according to DIN 877
- Other versions and precisions on request



Sensitivity mm/m	Default art.no.	€	DAkkS art.no.	€
Up to 0.02	**071515** 0001	47,20	DakkS calibration on request	
> 0.02 to 0.05	071515 0002	39,–		
> 0.05 to 0.10	071515 0003	35,90		
> 0.10 to 0.40	071515 0004	25,60		
	0103			

Inclinometers, horizontal and vertical - frame spirit levels

- Standard: Testing and documentation according to DIN 877
- Other versions and precisions on request



Sensitivity mm/m	Default art.no.	€	DAkkS art.no.	€
Up to 0.02	**071520** 0001	65,50	DakkS calibrati-on on request	
> 0.02 to 0.05	071520 0002	54,50		
> 0.05 to 0.10	071520 0003	50,–		
> 0.10 to 0.40	071520 0004	34,90		
	0103			

Roughness meters, portable design

- Standard: Testing and documentation in accordance with DKD directives
- Testing of stationary surface roughness testers at the installation site on request



Design	Device calibration art.no.	€
One probe	**072001** 0001	123,–
Two probes	072001 0002	155,–
	0103	

Roughness or groove standards for surface roughness testing equipment

- Standard: Testing and documentation in accordance with DKD directives



Design	Calibration roughness standard art.no.	€	DAkkS art.no.	€
All	**072005** 0001	85,–	DakkS calibration on request	
	0103			

Calibration of gauge blocks

Including calibration, cleaning and de-magnetisation

- Depending on user requirements, we offer four different scopes of testing for parallel gauge blocks:
- **Test Scope A**
  Test of the kick-start-ability using optical flats, determination and documentation of the centre deviation relative to the nominal dimension, the fo and fu deviations, the deviation span fs, as well as the specification of the degree of accuracy according to DIN EN ISO 3650 or VDI (Association of German Engineers) / VDE (Association for Electrical, Electronic & Information Technologies) / DGQ (German Society for Quality) 2618, Sheet 3.1
- **Test Scope B**
  Testing and documentation corresponds to A but excludes testing of the kick-start-ability
- **Test Scope C**
  Testing and documentation of the centre deviation
- **Test Scope DAkkS**
  Testing and documentation in accordance with „Deutscher Akkreditierungstelle GmbH"
- If the order does **not stipulate the scope of testing** we shall test as follows:
  new gauge blocks: Test B
  Recalibration: Test A



In accordance with DIN EN ISO 3650, acc. 0, 1 or 2

- Steel, carbide or ceramic
- Individual gauge blocks > 1000 mm, available on request
- Including finishing service

Nominal dimension mm	Test A art.no.	€	Test B art.no.	€	Test C art.no.	€	DAkkS art.no.	€
Up to 100	**073001** 0001	9,60	**073005** 0001	9,–	**073010** 0001	6,25	**073002** 0001	15,–
Up to 200	073001 0002	30,–	073005 0002	24,–	073010 0002	21,–	073002 0002	73,–
Up to 300	073001 0003	40,–	073005 0003	34,–	073010 0003	27,–	073002 0003	80,–
Up to 400	073001 0004	55,–	073005 0004	46,–	073010 0004	39,–	073002 0004	91,–
Up to 500	073001 0005	70,–	073005 0005	58,–	073010 0005	47,–	073002 0005	98,–
Up to 600	073001 0006	83,–	073005 0006	69,–	073010 0006	56,–		
Up to 700	073001 0007	97,–	073005 0007	82,–	073010 0007	65,80		
Up to 800	073001 0008	112,–	073005 0008	93,–	073010 0008	75,–		
Up to 900	073001 0009	127,–	073005 0009	107,–	073010 0009	84,–		
Up to 1000	073001 0010	141,–	073005 0010	120,–	073010 0010	94,–		
	0103		0103		0103		0103	

Gauge block sets in accordance with DIN EN ISO 3650, acc. 0, 1 or 2

- Steel, carbide or ceramic
- Other set combinations or accuracies available on request
- Including finishing service



Contents	Test A art.no.	€	Test B art.no.	€	Test C art.no.	€
32-pcs.	**073040** 0001	222,–	**073045** 0001	186,80	**073050** 0001	149,–
47-pcs.	073040 0002	318,–	073045 0002	267,–	073050 0002	214,–
87-pcs.	073040 0003	565,–	073045 0003	475,–	073050 0003	384,–
103-pcs.	073040 0004	633,–	073045 0004	533,–	073050 0004	428,–
	0103		0103		0103	

Calibration of material measures

Including calibration, cleaning and de-magnetisation

- **Standard, enhanced calibration:** factory calibration
- **DAkkS:** Testing and documentation in accordance with „Deutscher Akkreditierungstelle GmbH"

Steel step gauges

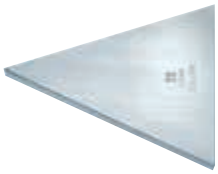
- Standard: Testing and documentation in accordance with DAkkS/DKD directives
- including finishing service



Measurement range mm	Default art.no.	€	DAkkS art.no.	€
Up to 300	**073501** 0001	346,–	DakkS calibration on request	
Up to 450	073501 0002	395,–		
Up to 600	073501 0003	430,–		
Up to 1000	073501 0004	540,–		
Up to 1500	073501 0005	692,–		
	0103			

Steel angle gauge blocks

- Standard: Testing of the measuring surfaces and documentation of the angular deviation from the nominal angle
- including finishing service



End angle tolerance	Default art.no.	€	DAkkS art.no.	€
± 2''	**073550** 0001	50,–	DakkS calibration on request	
± 10''	073550 0002	26,–		
	0103			

Setting ring gauges for measuring instruments

Including calibration, cleaning and de-magnetisation



- Standard: Testing and documentation of the diameter on three levels staggered by 90° in compliance with VDI (Association of German Engineers) / VDE (Association for Electrical, Electronic & Information Technologies) / DGQ (German Society for Quality) 2618, Sheet 4.1
- Setting ring gauges with constructional dimensions other than those specified in DIN 2250 are tested according to tolerance dimensions of the manufacturer.
- Nominal dimensions > 300mm on request
- including finishing service

Nominal dimension mm	Default art.no.	€	DAkkS art.no.	€
Up to 50	**074001** 0002	17,50	**074002** 0002	27,50
Up to 100	074001 0003	21,50	074002 0003	38,–
Up to 150	074001 0004	22,30	074002 0012	84,50
Up to 200	074001 0005	22,30	074002 0013	84,50
Up to 250	074001 0006	41,–	074002 0004	84,50
Up to 300	074001 0007	41,–		
	0103		0103	

Setting ring gauges for measuring instruments, enhanced testing



- Standard: Testing and documentation in compliance with VDI (Association of German Engineers) / VDE (Association for Electrical, Electronic & Information Technologies) / DGQ (German Society for Quality) 2618, Sheet 4.1 of the diameter including the geometrical variation in accordance with DIN 2250.
- With nominal dimensions < 3mm, the cylindrical shape cannot be checked using a cylinder form testing instrument.
- With nominal dimensions > 150mm, a form testing instrument is used to determine out-of-roundness rather than the cylindrical deviation (see DIN 2250).
- Nominal dimensions > 300mm available on request
- Additional charge for documentation with graphical representation: EUR 8.00
- including finishing service

Nominal dimension mm	Enhanced calibration art.no.	€
3 to 50	**074005** 0001	32,–
Up to 100	074005 0002	40,–
Up to 150	074005 0003	54,–
Up to 200	074005 0004	61,–
Up to 250	074005 0005	73,–
Up to 300	074005 0006	84,–
	0103	

Test pins according to DIN 2269 up to a nominal dimension of 20 mm



- Standard: Testing and documentation in compliance with VDI (Association of German Engineers) / VDE (Association for Electrical, Electronic & Information Technologies) / DGQ (German Society for Quality) 2618, Sheet 4.2
- On request: Testing with extended documentation also comprises documentation of out-of-roundness errors and the geometrical deviation of the cylinder surface line
- Test pins with nominal dimension > 20mm: see go plug gauges, art.no. 075510....

Accuracy mm	Default art.no.	€	DAkkS art.no.	€
0	**074010** 0001	7,10		
1	074010 0002	6,50		
2	074010 0003	5,–		
0 / 1 / 2			**074011** 0001	12,–
	0103		0103	

Replaceable thread measuring inserts for outside micrometers



- Standard: Testing and documentation of the flank angle of V-blocks and tapers
- Price for each V-block/taper pair
- including finishing service

Design	Default art.no.	€	DAkkS art.no.	€
For pitch diameter measurement	**074030** 0001	28,–	DakkS calibration on request	
For core diameter measurement	074030 0002	40,–		
	0103			



Test measuring rods according to DIN 865

- Standard: Testing and documentation according to DIN 865

Nominal dimension mm	Default art.no.	€	DAkkS art.no.	€
Up to 500	**074501** 0001	27,–	DakkS calibration on request	
Up to 1000	074501 0002	57,–		
Up to 2000	074501 0003	88,–		
Up to 3000	074501 0004	133,–		
	0103			



Plotting scale according to DIN 866

- Standard: Testing and documentation according to DIN 866

Nominal dimension mm	Default art.no.	€	DAkkS art.no.	€
Up to 500	**074505** 0001	27,–	DakkS calibrati- on on request	
Up to 1000	074505 0002	57,–		
Up to 2000	074505 0003	88,–		
Up to 3000	074505 0004	133,–		
	0103			

Calibration of thread gauges

Including calibration, cleaning and de-magnetisation

- The prices for the thread gauges listed in the following apply to single pitch threads. For threads with multiple pitches, the basic price for single pitch threads must be multiplied by the number of pitches.
- For the extended documentation of the thread geometry (profile check), an additional EUR 18 will be charged for go and no-go thread ring gauges, as well as for go and no-go thread plug gauges.
- For thread plug gauges, an additional fee of EUR 36 will be charged.
- **Standard:** factory calibration
- **DAkkS:** Testing and documentation in accordance with „Deutscher Akkreditierungstelle GmbH"

Go thread gauges, no-go plug gauges and adjusting mandrels



- Standard: Testing and documentation in compliance with VDI (Association of German Engineers) / VDE (Association for Electrical, Electronic & Information Technologies) / DGQ (German Society for Quality) 2618, Sheet 4.8
- Determination of the simple pitch diameter (repetitive calibration)
- Nominal dimensions > 300mm on request
- including finishing service

Nominal dimension mm	Default art.no.	€	DAkkS art.no.	€
Up to 20	**075001** 0001	11,20	**075002** 0001	41,–
Up to 60	075001 0002	15,70	075002 0002	41,–
Up to 100	075001 0003	20,50	075002 0003	64,–
Up to 150	075001 0004	28,–	075002 0013	64,–
Up to 200	075001 0005	28,–	075002 0004	64,–
Up to 250	075001 0006	29,–	075002 0014	107,–
Up to 300	075001 0007	29,–	075002 0015	107,–
Up to 350			075002 0005	107,–
	0103		0103	

Thread plug gauges



- Standard: Testing and documentation in compliance with VDI (Association of German Engineers) / VDE (Association for Electrical, Electronic & Information Technologies) / DGQ (German Society for Quality) 2618, Sheet 4.8
- Determination of the simple pitch diameter (repetitive calibration)
- Nominal dimensions > 300mm on request
- including finishing service

Nominal dimension mm	Default art.no.	€	DAkkS art.no.	€
Up to 20	**075015** 0001	17,–	**075016** 0001	48,–
Up to 60	075015 0002	21,50	075016 0002	48,–
Up to 100	075015 0003	22,–	075016 0003	89,50
Up to 150	075015 0004	29,–	075016 0013	92,–
Up to 200	075015 0005	29,–	075016 0004	92,–
Up to 250	075015 0006	35,–	075016 0014	107,–
Up to 300	075015 0007	40,–	075016 0015	107,–
Up to 350			075016 0005	107,–
	0103		0103	

Thread go or no-go ring gauges and setting ring gauges



- Standard: Testing and documentation in compliance with VDI (Association of German Engineers) / VDE (Association for Electrical, Electronic & Information Technologies) / DGQ (German Society for Quality) 2618, Sheet 4.9
- Determination of the simple pitch diameter (repetitive calibration)
- Nominal dimensions > 300mm on request
- including finishing service

Nominal dimension mm	Default art.no.	€	DAkkS art.no.	€
1.0 to 2.9	**075020** 0001	24,–	**075021** 0001	37,–
>2.9 to 20	075020 0002	16,70	075021 0002	38,70
Up to 60	075020 0003	20,80	075021 0003	39,–
Up to 100	075020 0004	25,40	075021 0004	39,–
Up to 150	075020 0005	37,–	075021 0014	65,–
Up to 200	075020 0006	37,–	075021 0005	65,–
Up to 250	075020 0007	38,–	075021 0015	106,–
Up to 300	075020 0008	45,–	075021 0016	106,–
Up to 350			075021 0006	106,–
	0103		0103	

Conical thread plug gauges and thread ring gauges



- Standard calibration of the plug gauge and ring gauge in compliance with national or international standards and documentation of the pitch diameter in the measuring plane and of the pitch diameter taper angle and/or the pitch diameter taper deviation
- DAkkS: Testing of tapered thread limit plug gauges **and** thread ring gauges
- Nominal dimension > 100mm available on request
- including finishing service

Nominal dimension mm	Plug gauge art.no.	€	Ring gauge art.no.	€	DAkkS art.no.	€
Up to 20	**075050** 0001	33,80	**075060** 0001	46,10	**075056** 0010	59,–
Up to 40	075050 0002	42,–	075060 0002	50,–	075056 0011	59,–
Up to 50	075050 0012	47,20	075060 0012	53,50	075056 0001	59,–
Up to 60	075050 0003	47,20	075060 0003	53,50	075056 0012	74,–
Up to 80	075050 0004	53,50	075060 0004	57,50	075056 0013	74,–
Up to 100	075050 0005	60,50	075060 0005	61,50	075056 0002	74,–
	0103		0103		0103	

Calibration of plain gauges

- **Standard:**factory calibration
- **DAkkS:** Testing and documentation in accordance with „Deutscher Akkreditierungstelle GmbH"

Including calibration, cleaning and de-magnetisation

Limit plug gauges or threshold flat plug gauges



- Standard: Testing and documentation in compliance with VDI (Association of German Engineers) / VDE (Association for Electrical, Electronic & Information Technologies) / DGQ (German Society for Quality) 2618, Sheet 4.1
- Nominal dimensions > 300mm, available on request
- including finishing service

Nominal dimension mm	Limit plug gauge art.no.	€	Limit plug gauge DAkkS art.no.	€	Threshold flat plug gauge art.no.	€	Threshold flat plug gauge DAkkS art.no.	€
Up to 20	**075501** 0010	11,–	**075502** 0010	40,80	**075505** 0010	10,–	**075506** 0010	30,–
Up to 50	075501 0012	13,70	075502 0001	40,80	075505 0012	12,–	075506 0001	30,–
Up to 60	075501 0011	13,70	075502 0011	50,–	075505 0011	12,–	075506 0011	40,–
Up to 100	075501 0002	19,20	075502 0002	50,–	075505 0002	17,–	075506 0002	40,–
Up to 150			075502 0012	91,–	075505 0003	21,–	075506 0012	66,30
Up to 200			075502 0003	91,–	075505 0004	25,–	075506 0003	85,–
Up to 250			075502 0004	181,–	075505 0005	30,–	075506 0013	122,–
Up to 300					075505 0006	34,–	075506 0004	122,–
	0103		0103		0103		0103	

Go or no-go plug gauges, fully cylindrical or flat design



- Standard: Testing and documentation in compliance with VDI (Association of German Engineers) / VDE (Association for Electrical, Electronic & Information Technologies) / DGQ (German Society for Quality) 2618, Sheet 4.1
- Nominal dimensions > 300mm, available on request
- including finishing service

Nominal dimension mm	Default art.no.	€	DAkkS art.no.	€
Up to 20	**075510** 0010	9,–	**075511** 0010	30,–
Up to 50	075510 0001	12,–	075511 0001	30,–
Up to 60	075510 0011	12,–	075511 0011	40,–
Up to 100	075510 0002	15,50	075511 0002	40,–
Up to 150	075510 0003	19,–	075511 0012	75,–
Up to 200	075510 0004	19,–	075511 0003	75,–
Up to 250	075510 0005	23,–	075511 0004	163,–
Up to 300	075510 0006	23,–		
	0103		0103	

Go or no-go ring gauges



- Standard: Testing and documentation in compliance with VDI (Association of German Engineers) / VDE (Association for Electrical, Electronic & Information Technologies) / DGQ (German Society for Quality) 2618, Sheet 4.1
- Nominal dimensions > 300mm, available on request
- including finishing service

Nominal dimension mm	Default art.no.	€	DAkkS art.no.	€
0.4 to 2	**075520** 0001	18,–	**075521** 0001	63,–
Up to 50	075520 0002	18,–	075521 0002	40,–
Up to 100	075520 0003	20,–	075521 0003	43,–
Up to 150	075520 0004	20,–	075521 0011	85,–
Up to 200	075520 0005	25,–	075521 0012	85,–
Up to 250	075520 0006	28,–	075521 0004	85,–
Up to 300	075520 0007	31,–		
	0103		0103	

Go or no-go gap gauges



- Standard: Testing in compliance with VDI/VDE/DGQ 2618, Sheet 4.7 and documentation of the working or intrinsic dimension.
- For gap gauges with nominal dimension < 200mm, the working dimension is determined and for nominal dimension > 200mm, the intrinsic dimension is determined.
- Nominal dimensions > 400mm available on request
- including finishing service

Nominal dimension mm	Default art.no.	€	DAkkS art.no.	€
Up to 50	**075530** 0001	13,–	**075531** 0001	21,–
Up to 100	075530 0002	15,–	075531 0002	26,–
Up to 150	075530 0003	17,–	075531 0012	41,50
Up to 200	075530 0004	22,–	075531 0003	41,50
Up to 250	075530 0005	24,–	075531 0013	52,–
Up to 300	075530 0006	26,–	075531 0004	52,–
Up to 350	075530 0007	29,–		
Up to 400	075530 0008	32,–		
	0103		0103	

Including calibration, cleaning and de-magnetisation

Limit gap gauges

- Standard: Testing in compliance with VDI/VDE/DGQ 2618, Sheet 4.7 and documentation of the working or intrinsic dimension.
- For gap gauges with nominal dimension < 200mm, the working dimension is determined and for nominal dimension > 200mm, the intrinsic dimension is determined.
- Nominal dimensions > 500mm available on request
- including finishing service



Nominal dimension mm	Default art.no.	€	DAkkS art.no.	€
Up to 50	**075540** 0001	17,–	**075541** 0001	22,50
Up to 100	075540 0002	19,60	075541 0002	26,–
Up to 150	075540 0003	24,–	075541 0012	48,–
Up to 200	075540 0004	24,–	075541 0003	48,–
Up to 250	075540 0005	24,–	075541 0013	56,–
Up to 300	075540 0006	24,–	075541 0004	56,–
Up to 350	075540 0007	33,–		
Up to 400	075540 0008	33,–		
Up to 500	075540 0009	33,–		
	0103		0103	

Taper plug gauges or taper ring gauges

- Standard: Testing and documentation in compliance with VDI (Association of German Engineers) / VDE (Association for Electrical, Electronic & Information Technologies) / DGQ (German Society for Quality) 2618, Sheet 4.12
- DAkkS: includes the testing of taper plug gauges **and** ring gauges
- Nominal dimension = largest diameter of the taper plug gauge or taper ring gauge
- Nominal dimensions > 100mm, available on request
- including finishing service



Nominal dimension mm	Taper plug gauge art.no.	€	Taper ring gauge art.no.	€	DAkkS art.no.	€
Up to 25	**075570** 0001	27,70	**075575** 0001	32,80	**075576** 0010	49,–
Up to 50	075570 0002	32,80	075575 0002	37,90	075576 0001	49,–
Up to 75	075570 0003	36,90	075575 0003	45,10	075576 0011	59,50
Up to 100	075570 0004	42,–	075575 0004	50,–	075576 0002	59,50
	0103		0103		0103	

Feeler gauge sets according to DIN 2275

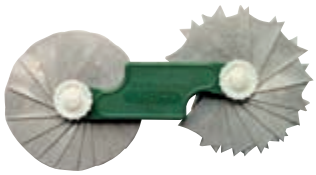
- only in calibratable version
- Standard: Testing and documentation in compliance with DIN 2275



Design	Default art.no.	€	DAkkS art.no.	€
13-blade	**075550** 0001	30,–	DakkS calibration on request	
20-blade	075550 0002	46,–		
	0103			

Sets of radius gauges for inside and outside radii

- only in calibratable version
- Standard: Testing and documentation in accordance with the manufacturer's instructions



Design	Default art.no.	€	DAkkS art.no.	€
Up to max. 17 radii sizes = 34-pcs.	**075555** 0001	61,50	DakkS calibration on request	
	0103			

Thread pitch gauges

- only in calibratable version
- Standard: Testing and documentation in accordance with the manufacturer's instructions



Design	Default art.no.	€	DAkkS art.no.	€
24-blade	**075560** 0001	55,–	DakkS calibration on request	
52-blade	075560 0002	115,–		
	0103			

Calibration of appliances

- **Standard:** factory calibration
- **DAkkS:** Testing and documentation in accordance with „Deutscher Akkreditierungstelle GmbH"

Flat rulers

- Standard: Testing and documentation in compliance with VDI (Association of German Engineers) / VDE (Association for Electrical, Electronic & Information Technologies) / DGQ (German Society for Quality) 2618, Sheet 18



Nominal dimension mm	Default art.no.	€	DAkkS art.no.	€
Up to 200	**076001** 0001	13,–	**076011** 0001	33,–
Up to 500	076001 0002	22,–	076011 0002	46,–
Up to 1000	076001 0003	39,–	076011 0003	63,–
Up to 2000	076001 0004	58,–		
Up to 3000	076001 0005	85,–		
	0103		0103	

Spring tape measure with steel strip

- Standard: Documentation of the comparison with a calibrated plotting scale according to DIN 866 relating to the entire tape length, tolerances according to accuracy class II and/or the manufacturer's data
- Calibration with documentation of the deviation at defined test stages available on request



Nominal dimension mm	Default art.no.	€	DAkkS art.no.	€
Up to 2000	**076003** 0002	8,20	**076033** 0010	48,50
Up to 3000	076003 0003	13,35	076033 0001	48,50
Up to 5000	076003 0005	15,40	076033 0002	60,–
Up to 8001	076003 0008	16,40	076033 0003	79,–
Up to 10,000	076003 0010	16,40	076033 0004	88,–
Up to 20000	076003 0020	22,–	076033 0005	147,–
Up to 25,000	076003 0025	22,–	076033 0015	200,–
Up to 30,000	076003 0030	32,80	076033 0006	200,–
	0103		0103	

Straightedges according to DIN 874, part 2

- Standard: Testing and documentation in compliance with VDI (Association of German Engineers) / VDE (Association for Electrical, Electronic & Information Technologies) / DGQ (German Society for Quality) 2618, Sheet 19



Nominal dimension mm	Default art.no.	€	DAkkS art.no.	€
Up to 100	**076005** 0010	12,50	**076055** 0001	29,–
Up to 200	076005 0011	12,50	076055 0002	35,50
Up to 300	076005 0001	12,50	076055 0011	50,–
Up to 500	076005 0002	20,–	076055 0012	50,–
Up to 600	076005 0012	31,–	076055 0003	50,–
Up to 1000	076005 0003	31,–		
	0103		0103	

Bevel edge squares according to DIN 875, acc. 00

- Standard: Testing and documentation of the maximum deviation of planarity, perpendicularity and parallelism in accordance with VDI/VDE/DGQ 2618, Sheet 22
- Nominal dimension = length of the largest leg
- other sizes on request



Nominal dimension mm	Default art.no.	€	DAkkS art.no.	€
Up to 100	**076501** 0010	20,80	**076511** 0001	33,50
Up to 200	076501 0001	20,80	076511 0011	43,–
Up to 500	076501 0002	33,–	076511 0012	43,–
Up to 600			076511 0002	43,–
	0103		0103	

Framing and wide try squares according to DIN 875, acc. 0, 1 or 2

- Standard: Testing and documentation of the maximum deviation of planarity, perpendicularity and parallelism in accordance with VDI/VDE/DGQ 2618, Sheet 22
- Nominal dimension = length of the largest leg



Nominal dimension mm	Default art.no.	€	DAkkS art.no.	€
Up to 100	**076510** 0010	21,50	**076512** 0001	33,50
Up to 200	076510 0001	21,50	076512 0011	43,–
Up to 500	076510 0002	34,–	076512 0012	43,–
Up to 600	076510 0012	48,50	076512 0002	52,–
Up to 1000	076510 0003	48,50		
Up to 1500	076510 0004	64,–		
	0103		0103	

Centring angle

- only calibratable version
- Standard: Testing and documentation in accordance with the manufacturer's instructions



Nominal dimension mm	Default art.no.	€	DAkkS art.no.	€
All	**076550** 0001	26,–		
Up to 100			**076551** 0001	53,–
Up to 600			076551 0002	62,–
	0103		0103	

Coplanar glass targets

- Standard: Testing of the planarity, parallelism and thickness as well as documentation according to VDI (Association of German Engineers) / VDE (Association for Electrical, Electronic & Information Technologies) / DGQ (German Society for Quality) 2618, Sheet 17



Ø mm	Default art.no.	€	DAkkS art.no.	€
Up to 100	**077001** 0001	26,–	DakkS calibration on request	
	0103			

Optical flats

- Standard: Testing of the planarity and documentation according to VDI (Association of German Engineers) / VDE (Association for Electrical, Electronic & Information Technologies) / DGQ (German Society for Quality) 2618, Sheet 17



Ø mm	Default art.no.	€	DAkkS art.no.	€
Up to 60	**077005** 0001	26,–	DakkS calibration on request	
	0103			

Caliper jaws for gauge blocks

- Standard: Testing and documentation in compliance with BS 888:1950



Design	Default art.no.	€	DAkkS art.no.	€
All	**077010** 0001	26,–	DakkS calibration on request	
	0103			

Dial indicator testing equipment

- Standard: Testing and documentation in accordance with the manufacturer's instructions
- Adjustment range up to 30mm

Design	Default art.no.	€	DAkkS art.no.	€
All	**077015** 0001	142,–	DakkS calibration on request	
	0103			

Sine bars according to DIN 2273

- Standard: Testing and documentation according to DIN 2273 or according to the manufacturer's instructions



Nominal dimension mm	Default art.no.	€	DAkkS art.no.	€
All	**077020** 0001	95,–		
Up to 500			**077120** 0001	107,–
	0103		0103	

Steel, hard stone or ceramic testing columns

- Standard: Testing and documentation in accordance with the manufacturer's instructions



Nominal dimension mm	Default art.no.	€	DAkkS art.no.	€
Up to 200	**077501** 0001	59,50	DakkS calibration on request	
Up to 300	077501 0002	76,–		
Up to 400	077501 0003	94,50		
Up to 500	077501 0004	122,–		
Up to 600	077501 0005	139,–		
Up to 1000	077501 0006	210,–		
	0103			

Torque wrench according to DIN EN ISO 6789

- Standard: Other versions available on request



Torque N·m	Default art.no.	€	DAkkS art.no.	€
0.5 - 400	**079310** 0001	49,70	DakkS calibration on request	
> 400 - 1000	079310 0002	65,–		
	0103			

Engraving of identification numbers on measuring equipment

- **Attaching the inspection plate**
  For attaching inspection plates, please specify the month and year of the next calibration in the order; otherwise a recalibration period of 12 months is assumed.



Designation	art.no.	€
Engraving	**079001** 0001	5,50
Inspection plate	079001 0013	1,50
	0103	

Calibration of stationary measuring equipment

INFO

Fixed measuring equipment such as measuring microscopes, measuring projectors or dual- or triple-coordinate-measuring systems with manual or CNC control are subject, as is all other measuring equipment, to periodic monitoring and calibration.

For this measuring equipment we also offer our calibration services at the installation site

Please request an offer.



Testing and measurement instrument management

INFO

MIO™ - METECH Instrument Organizer

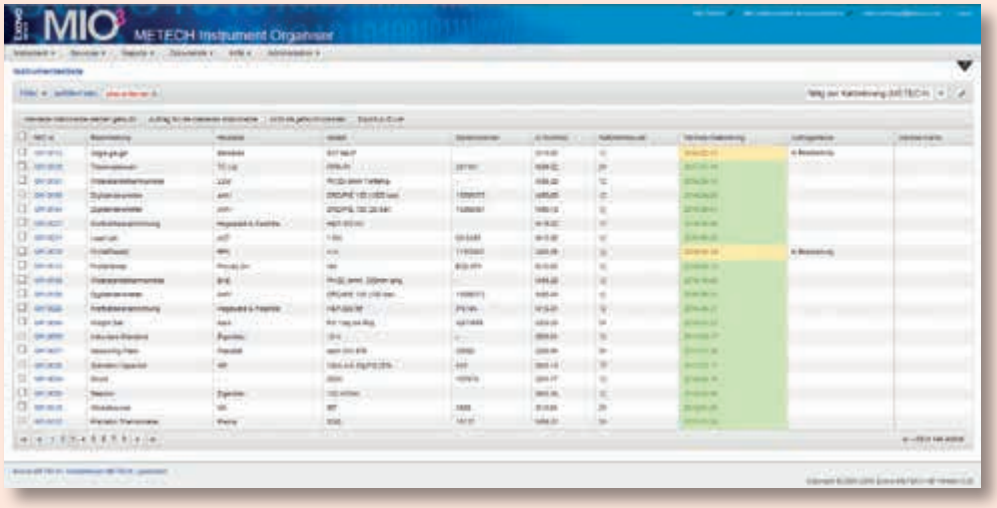
Testing and measurement instrument management

Testing and measurement instrument management are very important parts of any quality management system. Your testing and measurement instruments must be recorded in a traceable way in a management system, and it must be possible to obtain sufficient and verifiable information about your testing and measurement instruments from this management system at any time.
SARTORIUS Werkzeuge and Element Metech offer you this option with the web-based MIO™ testing and measurement instrument management system. MIO™ (METECH Instrument Organizer) covers all the requirements of the relevant regulations and standards for monitoring your measurement instruments.

MIO™ advantages

The MIO™ web-based testing and measurement instrument management system makes it possible for you to monitor, track and manage all of your testing and measurement instruments with hardly any effort on your part. MIO™ provides you with the following advantages:

- web-based access over any internet connection
- no installation of software on your computers
- archiving of data and calibration certificates on external servers, no burden on your infrastructure
- meets all requirements of ISO 9001, ISO 1012, ISO 17025 and other QM systems
- automatic reminders for measuring instruments that are due to be checked
- colour representation of calibration status
- calibration certificates directly assigned to the device as a PDF
- any document from the history can be viewed immediately
- various management options regarding allocation of information such as cost centre, place of use, etc.
- various filter options to limit the selection
- data maintenance for calibration by Element Metech



Tool repair service

- State-of-the-art reconditioning of damaged machining tools with indexable insert seats
- We guarantee the tolerances, geometrical shapes and wear resistance specified by the original tool manufacturer for standard tools, and also for drawing-based special tools
- Measurement logs on request (measurement logs are only useful from a technical perspective if all insert seats have been repaired or reconditioned, as otherwise the tolerances of the tool cannot be fully guaranteed)
- Reduces tooling costs during production, cost of refurbishment is only approx. 50 % of the new price
- Short delivery times
- Many years of experience with more than 750,000 refurbished insert seats
- Unless otherwise specified, all prices are unit prices per tool, irrespective of how many insert seats are damaged e.g. in a milling head.

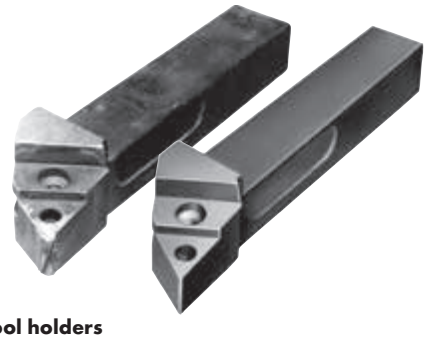
- Please send the tools free of charge to our address
- The equipment will be returned on payment of the costs incurred.



The before and after effect



- **Special tools**
  We also offer our Tool Repair Service for all special tools or machining tools with indexable insert seats which are not included in this list. Please send us the tools, including their exact specifications and drawings, as well as the necessary original spare parts such as indexable inserts, support plates, clamping screws etc. for at least one insert seat. You will then receive our estimate of costs immediately.



Repair of clamp-type tool holders

Shank width mm	With 1 insert seat art.no.	€	With 2 insert seats art.no.	€
≤ 20 x 20	**040101** 0020	26,90	**040103** 0020	41,–
≤ 25 x 25	040101 0025	31,80	040103 0025	48,–
≤ 32 x 25	040101 0032	35,60	040103 0032	53,50
≤ 32 x 32	040101 0033	46,60	040103 0033	64,50
≤ 40 x 40	040101 0040	47,–	040103 0040	71,–
≤ 50 x 50	040101 0050	83,50	040103 0050	125,–
≤ 63 x 63	040101 0063	110,–	040103 0063	164,–
	0101		0101	



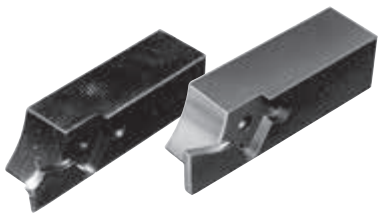
Repair of boring bars

for bore hole Ø mm	With 1 insert seat art.no.	€	With 2 insert seats art.no.	€
≤ 16	**040105** 0016	44,10	**040107** 0016	64,50
≤ 20	040105 0020	54,50	040107 0020	80,50
≤ 25	040105 0025	55,50	040107 0025	81,50
≤ 32	040105 0032	64,50	040107 0032	96,50
≤ 40	040105 0040	107,–	040107 0040	161,–
≤ 50	040105 0050	135,–	040107 0050	205,–
≤ 60	040105 0060	135,–	040107 0060	205,–
	0101		0101	



Repair of internal thread and grooving tool holders

for bore hole Ø mm	art.no.	€
≤ 16	**040110** 0016	46,–
≤ 20	040110 0020	57,–
≤ 25	040110 0025	58,–
≤ 32	040110 0032	68,–
≤ 40	040110 0040	113,–
≤ 50	040110 0050	142,–
≤ 60	040110 0060	142,–
	0101	



Repair of outside and inside grooving tool holders and cutting tool holders, planar grooving tool holders and copying holders

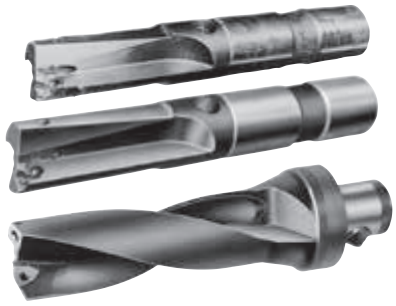
Shank width mm	art.no.	€
≤ 20	**040115** 0020	39,–
≤ 25	040115 0025	39,–
≤ 32	040115 0032	50,–
≤ 40	040115 0040	57,–
	0101	



Repair of tangs on Morse tapers

- Taper can be finished on request

Shank	art.no.	€
MT 2	**040501** 0002	35,50
MT3	040501 0003	58,–
MT 4	040501 0004	88,–
MT 5	040501 0005	124,–
MT 6	040501 0006	220,–
	0101	



Repair of indexable insert stub drill bits and step drill bits with up to 2 bore diameters

for bore hole Ø mm	**Standard** art.no.	€	**Step drill bit** art.no.	€
≤ 20	**040505** 0020	122,–	**040507** 0020	182,–
≤ 30	040505 0030	145,–	040507 0030	215,–
≤ 36	040505 0036	178,–	040507 0036	270,–
≤ 41	040505 0041	196,–	040507 0041	295,–
≤ 48	040505 0048	220,–	040507 0048	335,–
≤ 60	040505 0060	250,–	040507 0060	370,–
> 60	040505 0099	310,–	040507 0099	465,–
	0101		0101	



Repair of installation tools

Design	art.no.	€
Short clamping mount	**040510** 0001	45,–
Knife-head cartridges	040510 0002	33,20
T-Max drilling cartridges, internal	040510 0003	59,–
T-Max drilling cartridges, external	040510 0004	66,–
Wheelset turning tools	040510 0005	78,–
	0101	



Repair of attachment tools such as the „Block Tool“ system

Design	art.no.	€
External turning	**040515** 0001	60,50
External cutting of grooves and threads	040515 0002	70,–
Internal turning	040515 0003	78,–
Internal cutting of grooves and threads	040515 0004	88,50
	0101	



Repair of variable boring bar heads

for bore hole Ø mm	**With 1 insert seat** art.no.	€	**With 2 insert seats** art.no.	€
≤ 30	**040520** 0030	51,50	**040522** 0030	102,–
≤ 37	040520 0037	64,50	040522 0037	129,–
≤ 44	040520 0044	76,50	040522 0044	152,–
≤ 54	040520 0054	79,50	040522 0054	158,–
≤ 66	040520 0066	91,–	040522 0066	182,–
≤ 83	040520 0083	101,–	040522 0083	205,–
≤ 103	040520 0103	110,–	040522 0103	220,–
≤ 120	040520 0120	122,–	040522 0120	240,–
≤ 140	040520 0140	124,–	040522 0140	250,–
≤ 225	040520 0225	131,–	040522 0225	265,–
	0101		0101	



Repair of replaceable boring bar heads

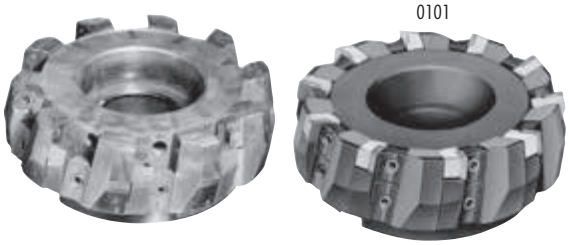
for bore hole Ø mm	**With 1 insert seat** art.no.	€	**With 2 insert seats** art.no.	€
≤ 32	**040525** 0032	67,–	**040527** 0032	101,–
≤ 40	040525 0040	70,50	040527 0040	105,–
≤ 50	040525 0050	86,50	040527 0050	128,–
≤ 63	040525 0063	106,–	040527 0063	158,–
≤ 80	040525 0080	146,–	040527 0080	220,–
	0101		0101	



Repair of end milling cutters

Ø mm	Chip chambers	art.no.	€
≤ 16	1	**041001** 0161	54,50
≤ 20	2	041001 0202	80,50
≤ 25	2	041001 0252	91,50
≤ 32	2	041001 0322	95,50
≤ 40	2	041001 0402	113,–
≤ 40	3	041001 0403	118,–
≤ 50	3	041001 0503	135,–
≤ 20	4	041001 0204	94,50
≤ 25	4	041001 0254	107,–
≤ 32	4	041001 0324	117,–
≤ 40	4	041001 0404	127,–
≤ 50	4	041001 0504	175,–

0101



Repair of face-milling cutters and shoulder milling cutters with spindle, shell-type milling cutters and milling heads

- Additional charge for fine serration + 50 %

Ø mm	Insert seats max.	art.no.	€
50	5	**041020** 0050	126,–
63	6	041020 0063	155,–
80	8	041020 0080	183,–
100	9	041020 0100	200,–
125	11	041020 0125	225,–
160	15	041020 0160	270,–
200	19	041020 0200	305,–
250	24	041020 0250	425,–
315	29	041020 0315	539,–
350	35	041020 0350	649,–
400	40	041020 0400	799,–
500	45	041020 0500	959,–

0101



Repair of disc milling cutters, irrespective of the number of insert seats

Ø mm	art.no.	€
50	**041025** 0050	143,–
80	041025 0080	193,–
100	041025 0100	260,–
125	041025 0125	325,–
160	041025 0160	365,–
200	041025 0200	410,–
250	041025 0250	450,–
315	041025 0315	519,–

0101



Repair of radius and ball-nose cutters

Ø mm	art.no.	€
≤ 20	**041005** 0020	144,–
≤ 25	041005 0025	163,–
≤ 32	041005 0032	188,–
≤ 40	041005 0040	235,–
≤ 50	041005 0050	280,–

0101



Repair of porcupine milling cutters with mounting shank or locating bore

Holding fixtures	Ø mm	Chip chambers	art.no.	€
Shank	≤ 20	2	**041010** 0202	160,–
Shank	25	2	041010 0252	190,–
Shank	32	2	041010 0322	235,–
Shank	≤ 25	4	041010 0254	220,–
Shank	32	4	041010 0324	265,–
Shank	40	4	041010 0404	300,–
Shank	50	4	041010 0504	310,–
Shank	63	4	041010 0634	549,–
Shank	≤ 50	6	041010 0506	519,–
Shank	63	6	041010 0636	549,–
Shank	80	6	041010 0806	599,–
Shank	≤ 100	8	041010 1008	719,–
Shank	125	10	041010 1251	949,–
Bore	≤ 50	4	041010 1504	300,–
Bore	63	4	041010 1634	340,–
Bore	≤ 80	6	041010 1806	380,–
Bore	≤ 100	8	041010 1108	599,–
Bore	≤ 125	10	041010 1252	719,–

0101



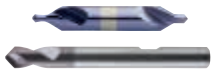
Repair of interchangeable front pieces for porcupine milling cutters

for external Ø mm	art.no.	€
50	**041015** 0050	146,–
63	041015 0063	177,–
80	041015 0080	210,–
100	041015 0100	230,–
125	041015 0125	290,–

0101

Drilling tools

HSS twist drills

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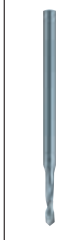
INFO

Cutting material	HSS – High-performance, high-speed steel	HSS-E – High-performance, high-speed steel Cobalt-alloyed	VHM – Solid carbide
Coating	TiN – Titanium-nitride coating	TiCN – Titanium-carbo-nitride coating	TiAlN – Titanium-aluminium-nitride coating
Surface treatment	Nit. – Nitrided surface	Vap. – Vapour-treated surface (steam-treated)	
Type/profile	Typ N – e.g. type N, for normal materials	Typ TLP – e.g. type TLP Deep hole profile	Typ VA – e.g. type VA for machining stainless steel
Standard	DIN 338 – Complies with DIN 338	ISO 10898 – Complies with ISO standard 10898	Werks-norm – Manufactured in accordance with factory standard
Shank design	DIN 6535 HA – Straight shank in accordance with DIN 6535 HA	Straight shank with Weldon clamping surface	MT shank
Drilling depth	3xD – possible drilling depth at least 3 x diameter		
Point angle	118° – Point angle of the drill is 118°		
Ground point	Cone-shaped shell	Pointed crosscut	Facet-ground
Spiral angle	15° – Spiral angle is 15° right-hand twist	40° – Tap 40° right-hand twist	
Form (centring drill)	A – Form A For centring holes without protected centre	B – Form B For centring holes with tapered protected centre	R – Form R For centring holes with radius
Countersink angle	60° – Countersink angle is 60°		
Thread	M – metric thread	MF – metric fine thread	BSW – British Standard Whitworth
Thread depth	2,5xD – possible thread depth 2.5 x nominal diameter		
Thread angle	60° – Thread angle is 60°		
Chamfer	B 3,5-5 – Tap with 3.5-5-way chamfer	Tap with spiral point	Tap straight-fluted; Forming tap with oil grooves
Threaded hole type	For blind-hole threads	For through-hole threads	For blind-hole and through-hole threads
Coolant bore version	Axial coolant outlet	Radial coolant outlet	
Cutting data	i Vc/fz – Further information such as cutting data recommendations is available in the technical appendix		

Overview of HSS / HSS-E / HSS-E-PM twist drills

	DIN 333				Factory standard		DIN 332/2		DIN 333		ISO 10898		
Sorting by drilling depth and shank design													
Brand	ATORN	SARA	ATORN	SARA	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN
Drilling depth													
Diameter range [mm]	0,5 - 10	0,8 - 10	1 - 5	1 - 5	0,75 - 5	2 - 4	M3 - M12	M4 - M24	1 - 6,3	1 - 6,3	3 - 20	3 - 20	3 - 20
Type	A	A	A	A	A, long	A, Extra-long	A	A-FL	R	B			
Point angle	60°	60°	60°	60°	60°	60°	60°	60°	60°	60°/120°	90°	90°	120°
Cutting material	HSS	HSS	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS	HSS	HSS-E	HSS-E	HSS-E
Coating, surface treatment			TiAlN									TiN	
Item number	100101....	100141....	100109....	100149....	100103....	100104....	102214....	102215....	100107....	100105....	100130....	100131....	100120....
Catalogue page	50	50	50	50	51	51	52	52	52	53	53	53	53
Material groups	Usage recommendations												
Steel < 700 N/mm²	●	●	●	●	●	●	●	●	●	●	●	●	●
Steel < 1000 N/mm²	●	●	●	●	●	●	●	●	●	●	●	●	●
Steel < 1400 N/mm²	○	○	○	○	○	○	○	○	○	○	○	○	○
Stainless steel ferritic/martensitic	○	○	○	○	○	○	○	○	○	○	●	●	●
Stainless steel austenitic	○	○	○	○	○	○	○	○	○	○	○	○	○
Stainless steel duplex													
Cast iron GG/GTS	○	○	○	○	○	○	○	○	○	○	○	○	○
Cast iron GGG	○	○	○	○	○	○	○	○	○	○	○	○	○
Titanium alloys	○	○	○	○	○	○	○	○	○	○	○	○	○
Superalloys Fe/NiCo base < 30 HRc													○
Superalloys Fe/NiCo base ≥ 30 HRc													
Aluminium < 8 % Si			●	●	●	●	●	●	●	●	●	●	●
Aluminium ≥ 8 % Si			●	●	●	●	●	●	●	●	●	●	●
Copper Cu-alloy	●	●	●	●	●	●	●	●	●	●	●	●	●
Graphite GRP/CFP/thermoset													
Hardened steel < 55 HRc													
Hardened steel < 60 HRc													
Hardened steel ≥ 60 HRc													
Hardox 500													

	ISO 10898	Factory standard		DIN 1897					Factory standard				
Sorting by drilling depth and shank design													
Brand	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN			SARA	SARA	ATORN
Drilling depth				3 x D	3 x D	3 x D	3 x D	3 x D	3 x D	3 x D	3 x D	3 x D	3 x D
Diameter range [mm]	3 - 20	4 - 20	4 - 20	1 - 25	1 - 12	1 - 20	1 - 13	1 - 14	1 - 20	1 - 12	2.5 - 6.0	3 - 6	13.5 - 25.0
Type		Extra-long	Extra-long	NV	NV	NE	NV	TLP	EX-SUS	NEXUS	NV	NV	N
Point angle	120°	90°	90°	118°	130°	130°	130°	130°	120° - 140°	120° - 140°	135°	135°	118°
Cutting material	HSS-E	HSS-E	HSS-E	HSS	HSS-E	HSS-E	HSS-E	HSS-E-PM	HSS-E-V3	HSS	HSS	HSS	HSS
Coating, surface treatment	TiN			vap.	vap.		TiN	TiN	TiN	WDI™			vap.
Item number	100121....	100132....	100122....	101050....	101055....	101052....	101051....	101085....	114045....	114046....	102310....	102320....	101080....
Catalogue page	53	54	54	54	56	56	56	58	59	61	62	62	63
Material groups	Usage recommendations												
Steel < 700 N/mm²	●	●	●	●	●	●	●	●	●	●	●	●	●
Steel < 1000 N/mm²	●	●	●	○	●	●	●	●	●	○	○	○	●
Steel < 1400 N/mm²	○	○	○		○	○	●	●	○				
Stainless steel ferritic/martensitic	●	●	●		○	○	●	●	●	●			
Stainless steel austenitic	○	○	○		○	○	○	●	●	●			
Stainless steel duplex									○	●			
Cast iron GG/GTS	○	○	○	○	●	○	●	●					●
Cast iron GGG	○	○	○		○		●	●					○
Titanium alloys	○	○	○						●				
Superalloys Fe/NiCo base < 30 HRc	○	○	○						○				
Superalloys Fe/NiCo base ≥ 30 HRc													
Aluminium < 8 % Si	●	●	●	○	○	○	○	●	●	●	○	○	○
Aluminium ≥ 8 % Si	●	●	●		○	○	○	●	●	●			○
Copper Cu-alloy	●	●	●	○	○	○	○	●	●	●			○
Graphite GRP/CFP/thermoset													
Hardened steel < 55 HRc								○					
Hardened steel < 60 HRc													
Hardened steel ≥ 60 HRc													
Hardox 500													

	DIN 1899	DIN 338											
Sorting by drilling depth and shank design													
Brand	ATORN®	SARA®	ATORN®	SARA®	ATORN®	ATORN®	ATORN®	ATORN®	ATORN®	SARA®	ATORN®	ATORN®	ATORN®
Drilling depth	5 x D	5 x D	5 x D	5 x D	5 x D	5 x D	5 x D	5 x D	5 x D	5 x D	5 x D	5 x D	5 x D
Diameter range [mm]	0.05 - 1.50	0.4 - 16	0.4 - 20.0	0.5 - 16	1 - 16	1 - 12	1 - 14	1 - 20	1 - 16	1 - 13	1 - 12	1 - 16	1 - 12
Type	N	N	N	N	N	TLP	W	N	Ti	N	TLP	TLP	TLP
Point angle	118°	118°	118°	118°	118°	130°	130°	118°	130°	130°	130°	130°	130°
Cutting material	HSS-E-PM	HSS	HSS	HSS	HSS	HSS	HSS	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E
Coating, surface treatment			vap.	vap.	TiN			vap.				TiN	TiAlN
Item number	101075....	101002....	101005....	101405....	101008....	101011....	101017....	101006....	101010....	101410....	101013....	101014....	101012....
Catalogue page	63	64	66	66	66	69	71	72	72	72	76	76	76
Material groups	Usage recommendations												
Steel < 700 N/mm²	●	●	●	●	●	●		●	●	●	●	●	●
Steel < 1000 N/mm²	●	●	●	●	●	●		●	●	●	●	●	●
Steel < 1400 N/mm²	●				○				○	○	○	○	●
Stainless steel ferritic/martensitic	○				○			○	●	○	○	○	●
Stainless steel austenitic	○				○			○	○	○		○	○
Stainless steel duplex													
Cast iron GG/GTS	●	○	○	○		●		●			●	○	●
Cast iron GGG	○					○		○			○	○	○
Titanium alloys					●				●	●			
Superalloys Fe/NiCo base < 30 HRc					○				○	○			
Superalloys Fe/NiCo base ≥ 30 HRc													
Aluminium < 8 % Si	○	○	○	○	○	○	●	○	○	○	○		○
Aluminium ≥ 8 % Si	○					○	●	○	○	○	○		○
Copper Cu-alloy	○	○	○	○	○	○	●	○	○	○	○		○
Graphite GRP/CFP/thermoset													
Hardened steel < 55 HRc													
Hardened steel < 60 HRc													
Hardened steel ≥ 60 HRc													
Hardox 500													

	DIN 338					Factory standard		DIN 340				DIN 1869	Factory standard
Sorting by drilling depth and shank design													
Brand	ATORN®	ATORN®	ATORN®	ATORN®	ATORN®			ATORN®	ATORN®	ATORN®	ATORN®	ATORN®	
Drilling depth	5 x D	5 x D	5 x D	5 x D	5 x D	5 x D	5 x D	10 x D	10 x D	10 x D	10 x D	> 10 x D	10 x D
Diameter range [mm]	1 - 13	1 - 13	1 - 13	2 - 13	1 - 14	2 - 20	2 - 12	0.6 - 16.0	1 - 12	1 - 16	1 - 12	2 - 10	1,6 - 12
Type	N	NV	VA	VA	TLP	EX-SUS	NEXUS	N	TLP	TLP	VA	TLP	TDXL
Point angle	130°	135°	130°	135°	130°	120° - 140°	120° - 140°	118°	130°	130°	130°	130°	120°
Cutting material	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E-PM	HSS-E-V3	HSS	HSS	HSS	HSS-E	HSS-E	HSS	HSS-E
Coating, surface treatment		vap.			TiN	TiN	WDI™	vap.	TiN	Nit.			WXL
Item number	101040....	101016....	101018....	101076....	101095....	114050....	114051....	101060....	101061....	101063....	101062....	101070....	101099....
Catalogue page	78	79	81	82	83	84	86	87	88	89	91	92	93
Material groups	Usage recommendations												
Steel < 700 N/mm²	●	●	○	●	●	●	●	●	●	●	○	●	●
Steel < 1000 N/mm²	●	●	○		●	●	○	●	●	●	○	●	●
Steel < 1400 N/mm²	○	○			●				○	○		○	●
Stainless steel ferritic/martensitic	●	●	●	●	●	●	●			●	●		
Stainless steel austenitic	●	○	●	●	●	●	●			○	●		
Stainless steel duplex						○	●						
Cast iron GG/GTS	●	○			●			●	●	●		●	●
Cast iron GGG	○	○			●			○	○	○		○	●
Titanium alloys	○					●					●		
Superalloys Fe/NiCo base < 30 HRc	○										○		
Superalloys Fe/NiCo base ≥ 30 HRc													
Aluminium < 8 % Si	○	○		●	○	●	●	○	○	○	●	○	
Aluminium ≥ 8 % Si	○	○		●	○	●	●	○	○	○		○	
Copper Cu-alloy	○	○		●	○	●	●	○	○	○		○	
Graphite GRP/CFP/thermoset													
Hardened steel < 55 HRc		○			○								
Hardened steel < 60 HRc													
Hardened steel ≥ 60 HRc													

	Factory standard		DIN 345			DIN 341	Factory standard	DIN 343	DIN 1898	DIN 8374			Factory standard
Sorting by drilling depth and shank design													
Brand			ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	SARA
Drilling depth	15 x D	20 x D	5 x D	5 x D	5 x D	10 x D	> 10 x D						
Diameter range [mm]	1,6 - 12	1,6 - 12	5 - 50	12 - 35	12.5 - 23.0	10 - 50	8 - 25	7.8 - 40.0	1.5 - 12.0	M3 - M10	M3 - M10	M3 - M10	4 - 30
Type	TDXL	TDXL	N	N	VA	N	TLP	N			fine		STEP
Point angle	120°	120°	118°	118°	130°	118°	130°		118°	90° / 180°	90°	180°	
Cutting material	HSS-E	HSS-E	HSS	HSS-E	HSS-E	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS
Coating, surface treatment	WXL	WXL	vap.	vap.		vap.				vap.	vap.	vap.	
Item number	101100....	101101....	101505....	101507....	101605....	101601....	101700....	101515....	101025....		102102....	102103....	102650....
Catalogue page	94	94	96	97	98	99	100	101	102	103	103	103	104
Material groups	Usage recommendations												
Steel < 700 N/mm²	●	●	●	●	○	●	●	●	●	●	●	●	●
Steel < 1000 N/mm²	●	●	●	●	○	●	●	●	○	●	●	●	●
Steel < 1400 N/mm²	●	●		○	○		○						○
Stainless steel ferritic/martensitic				○	●		○		○				○
Stainless steel austenitic				○	●		○						
Stainless steel duplex					○								
Cast iron GG/GTS	●	●	●	●		○	●	○	○	●	●	●	●
Cast iron GGG	●	●	○	○		○	○			○	○	○	○
Titanium alloys					○		○						
Superalloys Fe/NiCo base < 30 HRc					○								
Superalloys Fe/NiCo base ≥ 30 HRc													
Aluminium < 8 % Si			○	○	○	○	○	○	○				○
Aluminium ≥ 8 % Si			○	○	○	○	○						○
Copper Cu-alloy			○	○	○	○	○	○	○				○
Graphite GRP/CFP/thermoset													
Hardened steel < 55 HRc													
Hardened steel < 60 HRc													
Hardened steel ≥ 60 HRc													

	Factory standard					DIN 8037
Sorting by drilling depth and shank design						
Brand	SARA	SARA	SARA	EUROBOOR	EUROBOOR	SARA
Drilling depth				30 mm	55 mm	3 x D
Diameter range [mm]	4 - 30	3 - 61	3 - 61	12 - 60	12 - 60	2 - 16
Type	STEP	TS	TS	KB	KB	
Point angle						118°
Cutting material	HSS	HSS	HSS	HSS	HSS	HM K10
Coating, surface treatment	TiN	vap.	TiN			
Item number	102652....	102660....	102665....	100601....	100602....	110501....
Catalogue page	104	104	104	105	105	106
Material groups	Recomendaciones de uso					
Steel < 700 N/mm²	●	●	●	●	●	●
Steel < 1000 N/mm²	●	●	●	○	○	●
Steel < 1400 N/mm²	○	●	●			●
Stainless steel ferritic/martensitic	○	○	○	○	○	
Stainless steel austenitic				○	○	
Stainless steel duplex						
Cast iron GG/GTS	●	●	●	○	○	●
Cast iron GGG	○	●	●	○	○	●
Titanium alloys						○
Superalloys Fe/NiCo base < 30 HRc						
Superalloys Fe/NiCo base ≥ 30 HRc						
Aluminium < 8 % Si	○	○	○	●	●	●
Aluminium ≥ 8 % Si	○	○	○	○	○	●
Copper Cu-alloy	○	○	○			●
Graphite GRP/CFP/thermoset						○
Hardened steel < 55 HRc						●
Hardened steel < 60 HRc						○
Hardened steel ≥ 60 HRc						

ATORN® SARA® Centring drills

HSS | DIN 333 | A | 60° | Vc/fz | 348

- For centring holes without protected centre DIN 332 A
- Spiral-fluted
- Bare surface
- Ø 0.5 mm and 0.8 mm, single cutting edge
- 100101.... precision-ground design
  100141.... ground from solid material

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 25-45	● 15-25	○ 10-15	○ 6-10	○ 6-10		○ 15-25	○ 10-15	○ 6-10					● 40-50				
	Cutting speed Vc m/min.										Please adjust these guidelines according to clamping operation and machine set-up.								

D k12 mm	D1 h7 mm	L mm	L1 mm	● Feed f steel < 1000 N/mm² mm/rev	ATORN®	art.no.	€	SARA®	art.no.	€
0.5	3.15	25	0.6 - 0.9	0.05	5	**100101** 0050	3,50			
0.8	3.15	25	1.0 - 1.3	0.05	5	100101 0080	3,50	5	**100141** 0080	2,70
1	3.15	31	1.3 - 1.7	0.05	5	100101 0100	3,47	5	100141 0100	2,70
1.25	3.15	31	1.6 - 2.0	0.05	5	100101 0125	3,42	5	100141 0125	2,70
1.6	4	35	2.0 - 2.6	0.05	5	100101 0160	3,50	5	100141 0160	2,70
2	5	40	2.5 - 3.1	0.05	5	100101 0200	4,15	5	100141 0200	3,32
2.5	6.3	45	3.1 - 3.8	0.05	5	100101 0250	5,20	5	100141 0250	3,79
3.15	8	50	3.9 - 4.6	0.07	5	100101 0315	5,75	5	100141 0315	4,69
4	10	55	5.0 - 5.9	0.07	1	100101 0400	6,65	5	100141 0400	5,80
5	12.5	63	6.3 - 7.2	0.07	1	100101 0500	10,70	5	100141 0500	9,20
6.3	16	71	8.0 - 8.9	0.14	1	100101 0630	17,90	5	100141 0630	15,80
8	20	80	10.1 - 11.1	0.14	1	100101 0800	44,50	5	100141 0800	27,60
10	25	100	12.8 - 13.8	0.21	1	100101 1000	81,–	5	100141 1000	48,80
						1101			1102	

Set

Contents	ATORN®	art.no.	€	SARA®	art.no.	€
3-pcs. 1.6 x 4 mm | 3-pcs. 2 x 5 mm | 3-pcs. 2.5 x 6.3 mm | 3-pcs. 3.15 x 8 mm | 2-pcs. 4 x 10 mm | 1-pc. 5 x 12.5 mm	1	**100109** 1015	78,50	5	**100111** 0001	63,50
		1101			1102	

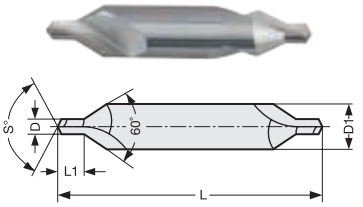
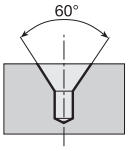


Fig. Form A




100109 1015

ATORN® SARA® Centring drills

HSS-E | DIN 333 | A | 60° | TiAlN | Vc/fz | 348

- For centring holes without protected centre DIN 332 A
- Spiral-fluted, high true-running accuracy
- 100109.... TiAlN-coated
  100149.... Bare surface

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 25-45	● 15-25	○ 10-15	○ 6-10	○ 6-10		○ 15-25	○ 10-15	○ 6-10			● 60-90	● 35-50	● 40-50				
	Cutting speed Vc m/min.										Please adjust these guidelines according to clamping operation and machine set-up.								

D k12 mm	D1 h7 mm	L mm	L1 mm	● Feed f steel < 1000 N/mm² mm/rev	ATORN® TiAlN	art.no.	€	SARA® Blank	art.no.	€
1	3.15	31	1.3 - 1.7	0.05	5	**100109** 0100	11,40	5	**100149** 0100	4,86
1.25	3.15	31	1.6 - 2.0	0.05	5	100109 0125	11,40	5	100149 0125	5,20
1.6	4	35	2.0 - 2.6	0.05	5	100109 0160	11,40	5	100149 0160	5,05
2	5	40	2.5 - 3.1	0.05	5	100109 0200	11,90	5	100149 0200	5,90
2.5	6.3	45	3.1 - 3.8	0.05	5	100109 0250	13,95	5	100149 0250	6,95
3.15	8	50	3.9 - 4.6	0.07	5	100109 0315	17,–	5	100149 0315	7,30
4	10	55	5.0 - 5.9	0.07	1	100109 0400	20,70	5	100149 0400	8,85
5	12.5	63	6.3 - 7.2	0.07	1	100109 0500	37,50	5	100149 0500	14,80
						1101			1102	

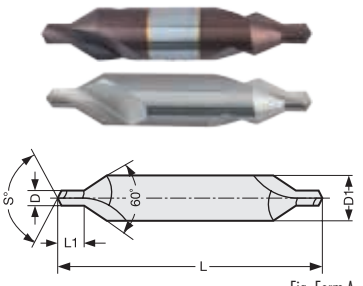
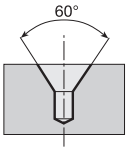


Fig. Form A



ATORN® Centring drills, long

HSS-E | Werks-norm | A | 60° | Vc/fz | 348

- Long version for centring with access problems
- For centring holes without protected centre DIN 332 A
- Spiral-fluted, high true-running accuracy
- Bare surface
- Similar to DIN 333A

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	○	○	○		○	○	○			●	●	●				
		25-45	15-25	10-15	6-10	6-10		15-25	10-15	6-10			60-90	35-50	40-50				
	Cutting speed Vc m/min.							Please adjust these guidelines according to clamping operation and machine set-up.											



D k12 mm	D1 h7 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
0.75	3.5	120	1.0 - 1.3	0.05	5	**100103** 0075	37,50
1	4	120	1.3 - 1.7	0.05	5	100103 0100	14,50
1.6	5	120	2.0 - 2.6	0.05	5	100103 0160	13,40
2	6	120	2.5 - 3.1	0.05	5	100103 0200	13,45
2.5	8	120	3.1 - 3.8	0.05	5	100103 0250	15,60
3.15	10	120	3.9 - 4.6	0.07	5	100103 0315	18,60
4	10	120	5.0 - 5.9	0.07	1	100103 0400	23,60
5	14	120	6.3 - 7.2	0.07	1	100103 0500	49,80

1101

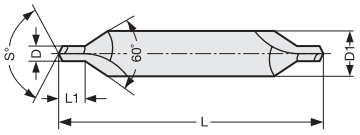
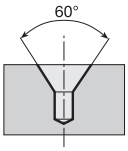


Fig. Form A



ATORN® Centring drills, extra-long

HSS-E | Werks-norm | A | 60° | Vc/fz | 348

- Extra-long version for centring with access problems
- For centring holes without protected centre DIN 332 A
- Spiral-fluted, high true-running accuracy
- Bare surface
- Similar to DIN 333A

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	○	○	○		○	○	○			●	●	●				
		25-45	15-25	10-15	6-10	6-10		15-25	10-15	6-10			60-90	35-50	40-50				
	Cutting speed Vc m/min.							Please adjust these guidelines according to clamping operation and machine set-up.											



D k12 mm	D1 h7 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
2	5	200	2.5 - 3.1	0.05	5	**100104** 0200	55,–
2.5	6.3	200	3.1 - 3.8	0.05	5	100104 0250	56,–
3.15	8	200	3.9 - 4.6	0.07	5	100104 0315	53,–
4	10	200	5.0 - 5.9	0.07	1	100104 0400	57,–

1101

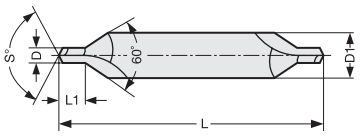
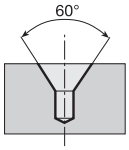


Fig. Form A



ATORN® Step centring drill

HSS-E | DIN 332/2 | A | 60° | i Vc/fz | 348

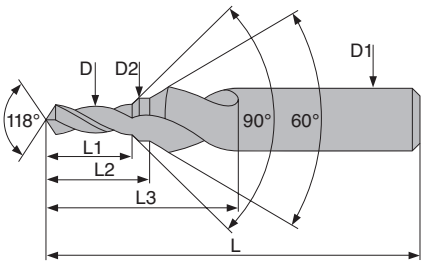
- **for threaded core hole centring characteristics in compliance with Form A, 60°**
- **simultaneous, perfectly-aligned placement of core holes, threaded entry bevel 90° and centring 60°**
- blank, profile-ground surface
- 102215: with additional shank surface

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 25-45	● 15-25	○ 10-15	○ 6-10	○ 6-10		○ 15-25	○ 10-15	○ 6-10			● 60-90	● 35-50	● 40-50				
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

for thread	D mm	D2 mm	D1 h7 mm	L3 mm	L2 mm	L1 mm	L mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€	with flat art.no.	€
M3	2.5	3.2	6	18	9	8	55	0.03	**102214** 0030	51,–		
M4	3.3	4.3	8	23	12.6	11	63	0.05	102214 0040	45,–	**102215** 0040	54,–
M5	4.2	5.3	10	27	15.1	13	67	0.07	102214 0050	51,–	102215 0050	56,–
M6	5	6.4	12.5	33	18.9	16	71	0.10	102214 0060	59,–	102215 0060	64,–
M8	6.8	8.4	14	41	23	19	88	0.12	102214 0080	71,50	102215 0080	88,–
M10	8.5	10.5	16	47	27.7	23	90	0.15	102214 0100	83,–	102215 0100	95,–
M12	10.2	13	20	59	34.5	28	105	0.15	102214 0120	112,–	102215 0120	135,–
M16	14	17	25	67	41.3	33	132	0.16			102215 0160	215,–
M20	17.5	21	31.5	77	48.3	38	145	0.18			102215 0200	340,–
M24	21	25	40	90	57	45	160	0.20			102215 0240	569,–
									1101		1101	





ATORN® Centring drills with radius

HSS | DIN 333 | R | 60° | i Vc/fz | 348

- For centring holes with radius DIN 332 R
- combines an annular application of the workpiece at the centre point with the advantages of a bell-type countersink, improved fit of the workpiece
- Greater stability due to radial transition
- Reduces risk of breaking
- Spiral-fluted, bare surface

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 25-45	● 15-25	○ 10-15	○ 6-10	○ 6-10		○ 15-25	○ 10-15	○ 6-10			● 60-90	● 35-50	● 40-50				
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

D k12 mm	D1 h7 mm	R mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
1	3.15	2.9	31	3.0 - 3.3	0.05	5	**100107** 0100	3,75
1.25	3.15	3.15	31	3.3 - 3.6	0.05	5	100107 0125	3,75
1.6	4	4	35	4.2 - 4.7	0.05	5	100107 0160	3,75
2	5	5	40	5.0 - 5.4	0.05	5	100107 0200	3,97
2.5	6.3	6.3	45	6.3 - 6.8	0.05	5	100107 0250	4,45
3.15	8	8	50	8.0 - 8.5	0.07	5	100107 0315	5,50
4	10	10	55	10.0 - 10.6	0.07	1	100107 0400	7,10
5	12.5	12.5	63	12.5 - 13.1	0.07	1	100107 0500	11,15
6.3	16	16	71	16.0 - 16.6	0.14	1	100107 0630	20,30
							1101	



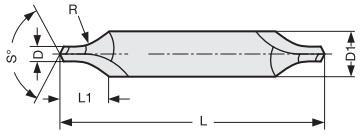
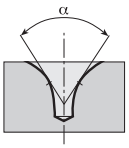


Fig. Form R



ATORN® Centring drills with protected centre

HSS | DIN 333 | B | 60° 120° | Vc/fz | 348

- For centring holes with protected centre DIN 332 B
- 60° centre holes, 120° tapered countersunk recess
- Application of the workpiece to the centre point over a large surface area with the advantages of a bell-type countersink
- Suitable for workpieces which are subject to deformation tension during machining
- Spiral-fluted, bare surface

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 25-45	● 15-25	○ 10-15	○ 6-10	○ 6-10		○ 15-25	○ 10-15	○ 6-10			● 60-90	● 35-50	● 40-50				
	Cutting speed Vc m/min.																Please adjust these guidelines according to clamping operation and machine set-up.		

● Feed f steel < 1000 N/mm² mm/rev

D k12 mm	D1 h7 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
1	4	35	1.3 - 1.7	0.05	5	**100105** 0100	5,05
1.25	5	40	1.6 - 2.0	0.05	5	100105 0125	5,75
1.6	6.3	45	2.0 - 2.6	0.05	5	100105 0160	6,50
2	8	50	2.5 - 3.1	0.05	5	100105 0200	7,15
2.5	10	55	3.1 - 3.8	0.05	5	100105 0250	9,35
3.15	11.2	62	3.9 - 4.6	0.07	5	100105 0315	11,85
4	14	69	5.0 - 5.9	0.07	1	100105 0400	17,20
5	18	77	6.3 - 7.2	0.07	1	100105 0500	27,60
6.3	20	80	8.0 - 8.9	0.14	1	100105 0630	37,50

1101



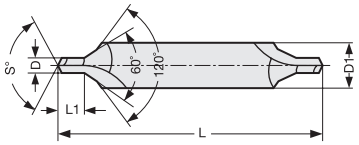
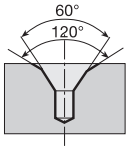


Fig. Form B

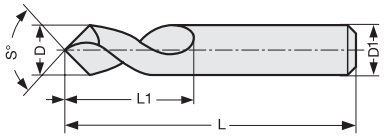


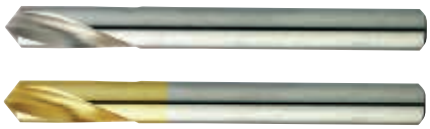
ATORN® NC spotting drill

HSS-E | ISO 10898 | 90° | 120° | DIN 1835 A | TiN | Vc/fz | 349

- S° = point angle 90° or 120°
- Precision-ground point
- Version 90° from Ø 4 mm pointed
- High stability due to short chip flutes
- For fast drilling on NC/CNC machines and machining centres with precise positioning

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 25-45	● 15-25	○ 10-15	● 6-10	○ 6-10		○ 40-50	○ 30-40	○ 6-10	○ 5-6		● 60-90	● 35-50	● 40-50				
	Cutting speed Vc m/min.																Please adjust these guidelines according to clamping operation and machine set-up.		





● Feed f steel < 1000 N/mm² mm/rev

D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	**90°** art.no.	€	**90°, TiN** art.no.	€	**120°** art.no.	€	**120°, TiN** art.no.	€
3	3	50	10	0.07	**100130** 0300	6,90	**100131** 0300	10,75	**100120** 0300	6,90	**100121** 0300	10,75
4	4	52	12	0.07	100130 0400	6,90	100131 0400	10,75	100120 0400	6,90	100121 0400	10,75
5	5	60	15	0.07	100130 0500	7,40	100131 0500	12,–	100120 0500	7,40	100121 0500	12,–
6	6	66	20	0.14	100130 0600	9,55	100131 0600	13,85	100120 0600	9,55	100121 0600	13,85
8	8	79	25	0.14	100130 0800	10,60	100131 0800	18,30	100120 0800	10,60	100121 0800	18,30
10	10	89	25	0.21	100130 1000	13,95	100131 1000	22,80	100120 1000	13,95	100121 1000	22,80
12	12	102	30	0.21	100130 1200	17,50	100131 1200	30,90	100120 1200	17,50	100121 1200	30,90
16	16	115	35	0.28	100130 1600	32,40	100131 1600	50,–	100120 1600	32,40	100121 1600	50,–
20	20	131	40	0.28	100130 2000	44,70	100131 2000	83,50	100120 2000	44,70	100121 2000	83,50
					1101		1101		1101		1101	

Set

Contents	**90°** art.no.	€
4-pcs.: 6, 8, 10 and 12 mm	**100130** 0001	49,–
	1101	



ATORN® NC spotting drill, long

HSS-E | Werks-norm | 90° | 120° | DIN 1835 A | Vc/fz | 349

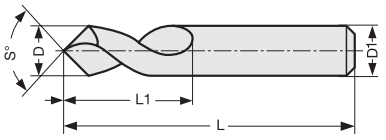
- **Long version for machining with access problems**
- S° = point angle 90° or 120°
- Precision-ground point with slender chisel edge
- High stability due to short chip flutes
- For fast drilling on NC/CNC machines and machining centres with precise positioning

material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 25-45	● 15-25	○ 10-15	● 6-10	○ 6-10		○ 40-50	○ 30-40	○ 6-10	○ 5-6		● 60-90	● 35-50	● 40-50				

Cutting speed Vc m/min. — Please adjust these guidelines according to clamping operation and machine set-up.





● Feed f steel < 1000 N/mm² mm/rev

D h6 mm	D1 h6 mm	L mm	L1 mm	90° art.no.	€	120° art.no.	€
4	4	100	12	0.07	**100132** 0400	44,20	**100122** 0400	44,20
5	5	120	15	0.07	100132 0500	44,20	100122 0500	44,20
6	6	140	20	0.14	100132 0600	42,70	100122 0600	42,70
8	8	140	25	0.14	100132 0800	51,50	100122 0800	51,50
10	10	170	25	0.21	100132 1000	54,50	100122 1000	54,50
12	12	170	30	0.21	100132 1200	80,–	100122 1200	80,–
16	16	200	35	0.28	100132 1600	116,–	100122 1600	116,–
20	20	200	40	0.28	100132 2000	143,–	100122 2000	143,–
					1101		1101	

ATORN® Twist drill bit

HSS | DIN 1897 | Typ NV | 118° | 27° | 3xD | Vap. | Vc/fz | 350

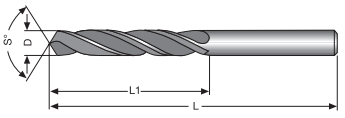
- S°= point angle 118°
- **Vapour-treated** from ⌀ 2.4 mm

material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 25-28	● 20-22					● 25-28	○ 20-23				○ 50-60	○ 40-50	○ 30-60				

Cutting speed Vc m/min. — Please adjust these guidelines according to clamping operation and machine set-up.





HSS point angle 118°

● Feed f steel < 700 N/mm² mm/rev

D h8 mm	L mm	L1 mm	Feed f steel < 700 N/mm² mm/rev		art.no.	€
1.00	26	6	0.04	10	**101050** 0100	1,73
1.10	28	7	0.04	10	101050 0110	1,92
1.20	30	8	0.04	10	101050 0120	1,73
1.30	30	8	0.04	10	101050 0130	2,10
1.40	32	9	0.04	10	101050 0140	1,99
1.50	32	9	0.04	10	101050 0150	1,69
1.60	34	10	0.04	10	101050 0160	1,62
1.70	34	10	0.04	10	101050 0170	2,05
1.80	36	11	0.04	10	101050 0180	1,88
1.90	36	11	0.04	10	101050 0190	1,99
2.00	38	12	0.04	10	101050 0200	1,62
2.10	38	12	0.04	10	101050 0210	1,75
2.20	40	13	0.04	10	101050 0220	1,62
2.30	40	13	0.04	10	101050 0230	2,10
					1104	

● Feed f steel < 700 N/mm² mm/rev

D h8 mm	L mm	L1 mm	Feed f steel < 700 N/mm² mm/rev		art.no.	€
2.40	43	14	0.04	10	101050 0240	1,69
2.50	43	14	0.09	10	101050 0250	1,46
2.60	43	14	0.09	10	101050 0260	1,69
2.70	46	16	0.09	10	101050 0270	1,78
2.80	46	16	0.09	10	101050 0280	1,62
2.90	46	16	0.09	10	101050 0290	1,83
3.00	46	16	0.09	10	101050 0300	1,62
3.10	49	18	0.09	10	101050 0310	1,69
3.20	49	18	0.09	10	101050 0320	1,56
3.30	49	18	0.09	10	101050 0330	1,56
3.40	52	20	0.09	10	101050 0340	1,73
3.50	52	20	0.09	10	101050 0350	1,62
3.60	52	20	0.09	10	101050 0360	1,78
3.70	52	20	0.09	10	101050 0370	2,42
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D h8 mm	L mm	L1 mm	Feed f steel < 700 N/mm² mm/rev		art.no.	€
3.80	55	22	0.09	10	101050 0380	1,99
3.90	55	22	0.09	10	101050 0390	2,05
4.00	55	22	0.09	10	101050 0400	1,92
4.10	55	22	0.09	10	101050 0410	1,99
4.20	55	22	0.09	10	101050 0420	1,99
4.30	58	24	0.09	10	101050 0430	2,30
4.40	58	24	0.09	10	101050 0440	3,09
4.50	58	24	0.09	10	101050 0450	2,10
4.60	58	24	0.09	10	101050 0460	2,51
4.65	58	24	0.09	10	101050 1465	4,75
4.70	58	24	0.09	10	101050 0470	2,46
4.80	62	26	0.09	10	101050 0480	2,42
4.90	62	26	0.09	10	101050 0490	2,42
5.00	62	26	0.09	10	101050 0500	2,36
5.10	62	26	0.13	10	101050 0510	2,42
5.20	62	26	0.13	10	101050 0520	2,61
5.30	62	26	0.13	10	101050 0530	2,83
5.40	66	28	0.13	10	101050 0540	2,72
5.50	66	28	0.13	10	101050 0550	2,72
5.60	66	28	0.13	10	101050 0560	3,88
5.70	66	28	0.13	10	101050 0570	2,05
5.80	66	28	0.13	10	101050 0580	3,24
5.90	66	28	0.13	10	101050 0590	3,88
6.00	66	28	0.13	1	101050 0600	2,83
6.10	70	31	0.13	1	101050 0610	4,09
6.20	70	31	0.13	1	101050 0620	3,19
6.30	70	31	0.13	1	101050 0630	4,67
6.40	70	31	0.13	1	101050 0640	3,45
6.50	70	31	0.13	1	101050 0650	3,19
6.60	70	31	0.13	1	101050 0660	3,56
6.70	70	31	0.13	1	101050 0670	5,30
6.80	74	34	0.13	1	101050 0680	3,83
6.90	74	34	0.13	1	101050 0690	4,75
7.00	74	34	0.13	1	101050 0700	3,83
7.10	74	34	0.13	1	101050 0710	4,82
7.20	74	34	0.13	1	101050 0720	5,30
7.30	74	34	0.13	1	101050 0730	5,95
7.40	74	34	0.13	1	101050 0740	4,87
7.50	74	34	0.13	1	101050 0750	4,29
7.70	79	37	0.13	1	101050 0770	7,40
7.80	79	37	0.13	1	101050 0780	5,55
7.90	79	37	0.13	1	101050 0790	5,40
8.00	79	37	0.13	1	101050 0800	4,92
8.10	79	37	0.19	1	101050 0810	5,55
8.20	79	37	0.19	1	101050 0820	5,60
8.30	79	37	0.19	1	101050 0830	7,80

D h8 mm	L mm	L1 mm	Feed f steel < 700 N/mm² mm/rev		art.no.	€
8.40	79	37	0.19	1	101050 0840	7,60
8.50	79	37	0.19	1	101050 0850	5,55
8.60	84	40	0.19	1	101050 0860	9,–
8.70	84	40	0.19	1	101050 0870	8,25
8.80	84	40	0.19	1	101050 0880	8,50
8.90	84	40	0.19	1	101050 0890	26,–
9.00	84	40	0.19	1	101050 0900	5,90
9.10	84	40	0.19	1	101050 0910	11,40
9.20	84	40	0.19	1	101050 0920	9,05
9.30	84	40	0.19	1	101050 0930	8,70
9.40	84	40	0.19	1	101050 0940	11,40
9.50	84	40	0.19	1	101050 0950	6,60
9.60	89	43	0.19	1	101050 0960	10,35
9.70	89	43	0.19	1	101050 0970	10,45
9.80	89	43	0.19	1	101050 0980	9,40
10.00	89	43	0.19	1	101050 1000	6,85
10.20	89	43	0.19	1	101050 1020	7,50
10.50	89	43	0.19	1	101050 1050	7,85
11.00	95	47	0.19	1	101050 1100	9,15
11.50	95	47	0.19	1	101050 1150	15,30
11.80	95	47	0.19	1	101050 1180	25,30
12.00	102	51	0.19	1	101050 1200	10,60
12.50	102	51	0.23	1	101050 1250	19,10
13.00	102	51	0.23	1	101050 1300	12,05
13.50	107	54	0.23	1	101050 1350	13,95
13.80	107	54	0.23	1	101050 1380	42,70
14.00	107	54	0.23	1	101050 1400	13,90
14.50	111	56	0.23	1	101050 1450	15,30
15.00	111	56	0.23	1	101050 1500	15,90
15.50	115	58	0.23	1	101050 1550	25,40
15.75	115	58	0.23	1	101050 1575	26,70
16.00	115	58	0.23	1	101050 1600	16,90
16.50	119	60	0.28	1	101050 1650	36,40
17.00	119	60	0.28	1	101050 1700	39,20
17.50	123	62	0.28	1	101050 1750	42,70
17.75	123	62	0.28	1	101050 1775	63,–
18.00	123	62	0.28	1	101050 1800	38,90
18.50	127	64	0.28	1	101050 1850	46,80
19.00	127	64	0.28	1	101050 1900	42,60
19.50	131	66	0.28	1	101050 1950	63,50
19.75	131	66	0.28	1	101050 1975	81,50
20.00	131	66	0.28	1	101050 2000	49,40
21.00	136	68	0.28	1	101050 2100	52,50
22.00	141	70	0.28	1	101050 2200	49,40
25.00	151	75	0.28	1	101050 2500	61,–
27.00	162	81	0.28	1	101050 2700	230,–

ATORN® Twist drill bit

HSS-E | DIN 1897 | Typ NV | Typ TLP | 130° | 27° | 3xD | TiN | Vap. | Vc/fz | 350 | 351

- S°= point angle 130° (self-centring)
- 101055.... Type NV, from Ø 2.4 mm, vapour-treated
  101052.... Type TLP, uncoated
  101051.... Type NV, TiN-coated

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	101055....	● 30-35	● 25-32	○ 12-18	○ 12-16	○ 12-14		● 25-35	● 22-26				○ 50-60	○ 40-50	○ 30-60				
	101052....	● 28-35	● 22-30	○ 12-18	○ 10-14	○ 10-12		○ 28-32	○ 20-23				○ 50-60	○ 40-50	○ 30-60				
	101051....	● 35-40	● 30-35	● 12-20	● 14-18	○ 10-14		● 28-35	● 22-26				○ 50-60	○ 40-50	○ 30-60		○ 3-4		
	Cutting speed Vc m/min.																		

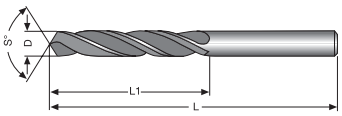
Please adjust these guidelines according to clamping operation and machine set-up.

D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	Type NV, vap.			Type TLP, blank			Type NV, TiN		
					art.no.	€		art.no.	€		art.no.	€
1.00	26	6	0.04	10	**101055** 0100	2,36	10	**101052** 0100	2,83	10	**101051** 0100	6,50
1.10	28	7	0.04	10	101055 0110	2,36	10	101052 0110	5,10	10	101051 0110	6,95
1.20	30	8	0.04	10	101055 0120	2,18	10	101052 0120	5,10	10	101051 0120	7,10
1.30	30	8	0.04	10	101055 0130	2,18	10	101052 0130	5,10	10	101051 0130	7,–
1.40	32	9	0.04	10	101055 0140	2,18	10	101052 0140	3,71	10	101051 0140	7,–
1.50	32	9	0.04	10	101055 0150	2,18	10	101052 0150	2,88	10	101051 0150	6,90
1.60	34	10	0.04	10	101055 0160	2,76	10	101052 0160	2,88	10	101051 0160	6,90
1.70	34	10	0.04	10	101055 0170	2,76	10	101052 0170	5,05	10	101051 0170	6,90
1.80	36	11	0.04	10	101055 0180	2,76	10	101052 0180	3,76	10	101051 0180	6,85
1.90	36	11	0.04	10	101055 0190	2,76	10	101052 0190	7,65	10	101051 0190	6,85
2.00	38	12	0.04	10	101055 0200	2,76	10	101052 0200	3,–	10	101051 0200	5,90
2.10	38	12	0.04	10	101055 0210	2,83	10	101052 0210	5,05	10	101051 0210	6,80
2.20	40	13	0.04	10	101055 0220	2,83	10	101052 0220	3,05	10	101051 0220	6,80
2.30	40	13	0.04	10	101055 0230	2,83	10	101052 0230	5,05	10	101051 0230	6,95
2.40	43	14	0.04	10	101055 0240	2,83	10	101052 0240	3,05	10	101051 0240	6,90
2.50	43	14	0.09	10	101055 0250	2,83	10	101052 0250	3,05	10	101051 0250	6,70
2.60	43	14	0.09	10	101055 0260	2,83	10	101052 0260	3,05	10	101051 0260	7,–
2.70	46	16	0.09	10	101055 0270	2,83	10	101052 0270	3,10	10	101051 0270	7,–
2.80	46	16	0.09	10	101055 0280	2,83	10	101052 0280	3,10	10	101051 0280	7,–
2.90	46	16	0.09	10	101055 0290	2,83	10	101052 0290	3,43	10	101051 0290	7,–
3.00	46	16	0.09	10	101055 0300	2,83	10	101052 0300	3,05	10	101051 0300	6,40
3.10	49	18	0.09	10	101055 0310	2,92	10	101052 0310	3,10	10	101051 0310	6,95
3.20	49	18	0.09	10	101055 0320	2,92	10	101052 0320	3,10	10	101051 0320	6,95
3.30	49	18	0.09	10	101055 0330	2,92	10	101052 0330	3,16	10	101051 0330	6,95
3.40	52	20	0.09	10	101055 0340	2,92	10	101052 0340	3,48	10	101051 0340	7,45
3.50	52	20	0.09	10	101055 0350	2,92	10	101052 0350	3,43	10	101051 0350	6,50
3.60	52	20	0.09	10	101055 0360	3,41	10	101052 0360	3,48	10	101051 0360	7,45
3.70	52	20	0.09	10	101055 0370	3,41	10	101052 0370	3,81	10	101051 0370	7,45
3.80	55	22	0.09	10	101055 0380	3,41	10	101052 0380	3,81	10	101051 0380	7,45
3.90	55	22	0.09	10	101055 0390	3,41	10	101052 0390	5,90	10	101051 0390	7,45
4.00	55	22	0.09	10	101055 0400	3,71	10	101052 0400	3,71	10	101051 0400	6,80
4.10	55	22	0.09	10	101055 0410	4,36	10	101052 0410	3,81	10	101051 0410	7,15
4.20	55	22	0.09	10	101055 0420	4,36	10	101052 0420	3,81	10	101051 0420	7,15
4.30	58	24	0.09	10	101055 0430	4,36	10	101052 0430	3,86	10	101051 0430	8,50
4.40	58	24	0.09	10	101055 0440	4,76	10	101052 0440	4,14	10	101051 0440	8,50
4.50	58	24	0.09	10	101055 0450	4,76	10	101052 0450	3,81	10	101051 0450	7,10
4.60	58	24	0.09	10	101055 0460	4,76	10	101052 0460	6,20	10	101051 0460	8,90
4.70	58	24	0.09	10	101055 0470	4,76	10	101052 0470	5,75	10	101051 0470	8,95
4.80	62	26	0.09	10	101055 0480	4,87	10	101052 0480	6,10	10	101051 0480	9,–
4.90	62	26	0.09	10	101055 0490	4,87	10	101052 0490	4,90	10	101051 0490	9,–
5.00	62	26	0.09	10	101055 0500	4,87	10	101052 0500	3,98	10	101051 0500	7,60
5.10	62	26	0.13	10	101055 0510	4,67	10	101052 0510	4,14	10	101051 0510	9,30
5.20	62	26	0.13	10	101055 0520	5,30	10	101052 0520	9,85	10	101051 0520	9,40
					1104			1104			1104	


Type NV, vapour-treated


type TLP


type NV, TiN



D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		Type NV, vap. art.no.	€		Type TLP, blank art.no.	€		Type NV, TiN art.no.	€
5.30	62	26	0.13	10	101055 0530	5,30	10	101052 0530	4,52	10	101051 0530	9,55
5.40	66	28	0.13	10	101055 0540	5,10	10	101052 0540	9,95	10	101051 0540	10,45
5.50	66	28	0.13	10	101055 0550	5,30	10	101052 0550	4,36	10	101051 0550	8,15
5.60	66	28	0.13	10	101055 0560	5,40	10	101052 0560	6,90	10	101051 0560	10,45
5.70	66	28	0.13	10	101055 0570	5,40	10	101052 0570	6,65	10	101051 0570	10,45
5.80	66	28	0.13	10	101055 0580	5,40	10	101052 0580	4,90	10	101051 0580	10,45
5.90	66	28	0.13	10	101055 0590	6,10	10	101052 0590	6,95	10	101051 0590	10,45
6.00	66	28	0.13	10	101055 0600	6,10	1	101052 0600	4,90	10	101051 0600	8,55
6.10	70	31	0.13	1	101055 0610	6,10	1	101052 0610	5,50	1	101051 0610	13,55
6.20	70	31	0.13	1	101055 0620	6,10	1	101052 0620	4,74	1	101051 0620	13,55
6.30	70	31	0.13	1	101055 0630	6,55	1	101052 0630	9,65	1	101051 0630	13,55
6.40	70	31	0.13	1	101055 0640	6,55	1	101052 0640	10,05	1	101051 0640	13,75
6.50	70	31	0.13	1	101055 0650	6,85	1	101052 0650	5,35	1	101051 0650	10,80
6.60	70	31	0.13	1	101055 0660	7,10	1	101052 0660	7,20	1	101051 0660	13,70
6.70	70	31	0.13	1	101055 0670	7,25	1	101052 0670	7,20	1	101051 0670	14,–
6.80	74	34	0.13	1	101055 0680	7,25	1	101052 0680	7,20	1	101051 0680	14,70
6.90	74	34	0.13	1	101055 0690	7,25	1	101052 0690	7,20	1	101051 0690	14,70
7.00	74	34	0.13	1	101055 0700	7,85	1	101052 0700	7,20	1	101051 0700	13,–
7.10	74	34	0.13	1	101055 0710	7,85	1	101052 0710	9,60	1	101051 0710	16,50
7.20	74	34	0.13	1	101055 0720	7,85	1	101052 0720	7,65	1	101051 0720	16,40
7.30	74	34	0.13	1	101055 0730	7,85	1	101052 0730	8,75	1	101051 0730	16,40
7.40	74	34	0.13	1	101055 0740	7,85	1	101052 0740	11,10	1	101051 0740	16,40
7.50	74	34	0.13	1	101055 0750	7,85	1	101052 0750	7,40	1	101051 0750	13,40
7.60	79	37	0.13	1	101055 0760	8,40	1	101052 0760	11,10	1	101051 0760	18,60
7.70	79	37	0.13	1	101055 0770	8,40	1	101052 0770	11,20	1	101051 0770	18,10
7.80	79	37	0.13	1	101055 0780	8,40	1	101052 0780	9,80	1	101051 0780	18,10
7.90	79	37	0.13	1	101055 0790	8,40	1	101052 0790	12,10	1	101051 0790	18,10
8.00	79	37	0.13	1	101055 0800	9,–	1	101052 0800	7,85	1	101051 0800	14,–
8.10	79	37	0.18	1	101055 0810	9,–	1	101052 0810	8,15	1	101051 0810	18,80
8.20	79	37	0.18	1	101055 0820	9,–	1	101052 0820	8,15	1	101051 0820	18,80
8.30	79	37	0.18	1	101055 0830	9,–	1	101052 0830	8,15	1	101051 0830	18,80
8.40	79	37	0.18	1	101055 0840	9,55	1	101052 0840	9,35	1	101051 0840	18,80
8.50	79	37	0.18	1	101055 0850	9,55	1	101052 0850	8,25	1	101051 0850	16,50
8.60	84	40	0.18	1	101055 0860	9,80	1	101052 0860	9,50	1	101051 0860	19,30
8.70	84	40	0.18	1	101055 0870	9,80	1	101052 0870	9,50	1	101051 0870	19,30
8.80	84	40	0.18	1	101055 0880	10,70	1	101052 0880	11,10	1	101051 0880	19,30
8.90	84	40	0.18	1	101055 0890	10,70	1	101052 0890	12,20	1	101051 0890	20,20
9.00	84	40	0.18	1	101055 0900	10,70	1	101052 0900	9,80	1	101051 0900	16,30
9.10	84	40	0.18	1	101055 0910	11,–	1	101052 0910	10,05	1	101051 0910	25,60
9.20	84	40	0.18	1	101055 0920	11,–	1	101052 0920	13,55	1	101051 0920	25,60
9.30	84	40	0.18	1	101055 0930	11,70	1	101052 0930	10,45	1	101051 0930	25,60
9.40	84	40	0.18	1	101055 0940	11,70	1	101052 0940	10,45	1	101051 0940	25,60
9.50	84	40	0.18	1	101055 0950	11,70	1	101052 0950	10,05	1	101051 0950	22,80
9.60	89	43	0.18	1	101055 0960	12,50	1	101052 0960	13,70	1	101051 0960	27,80
9.70	89	43	0.18	1	101055 0970	12,50	1	101052 0970	14,15	1	101051 0970	27,80
9.80	89	43	0.18	1	101055 0980	13,05	1	101052 0980	11,55	1	101051 0980	27,80
9.90	89	43	0.18	1	101055 0990	13,05	1	101052 0990	14,05	1	101051 0990	27,80
10.00	89	43	0.18	1	101055 1000	13,05	1	101052 1000	12,–	1	101051 1000	20,40
10.20	89	43	0.18	1	101055 1020	13,45	1	101052 1020	15,20	1	101051 1020	27,20
10.50	89	43	0.18	1	101055 1050	14,50	1	101052 1050	15,20	1	101051 1050	26,50
11.00	95	47	0.18	1	101055 1100	14,50	1	101052 1100	17,70	1	101051 1100	26,50
11.50	95	47	0.18	1	101055 1150	15,90	1	101052 1150	17,70	1	101051 1150	28,20
11.80	95	47	0.18	1	101055 1180	17,50	1	101052 1180	25,30			
12.00	102	51	0.18	1	101055 1200	19,50	1	101052 1200	21,10	1	101051 1200	32,30
12.50	102	51	0.22	1	101055 1250	22,20	1	101052 1250	22,50	1	101051 1250	33,10
13.00	102	51	0.22	1	101055 1300	23,30	1	101052 1300	29,90	1	101051 1300	34,50
13.50	107	54	0.22	1	101055 1350	30,40	1	101052 1350	30,90	1	101051 1350	37,60
13.80	107	54	0.22	1	101055 1380	31,20						
14.00	107	54	0.22	1	101055 1400	29,–	1	101052 1400	32,80	1	101051 1400	38,20
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D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		Type NV, vap. art.no.	€		Type TLP, blank art.no.	€		Type NV, TiN art.no.	€
14.50	111	56	0.22	1	101055 1450	30,60	1	101052 1450	34,40	1	101051 1450	40,90
15.00	111	56	0.22	1	101055 1500	31,30	1	101052 1500	34,60	1	101051 1500	40,90
15.50	115	58	0.22	1	101055 1550	35,20	1	101052 1550	40,10	1	101051 1550	53,–
15.75	115	58	0.22	1	101055 1575	45,80				1	101051 1575	54,50
16.00	115	58	0.22	1	101055 1600	36,90	1	101052 1600	41,–	1	101051 1600	57,50
16.50	119	60	0.28	1	101055 1650	71,–	1	101052 1650	64,50	1	101051 1650	82,–
17.00	119	60	0.28	1	101055 1700	69,–	1	101052 1700	52,50	1	101051 1700	78,–
17.50	123	62	0.28	1	101055 1750	70,–	1	101052 1750	55,50	1	101051 1750	75,–
17.75	123	62	0.28	1	101055 1775	92,50				1	101051 1775	90,–
18.00	123	62	0.28	1	101055 1800	73,–	1	101052 1800	71,–	1	101051 1800	86,50
18.50	127	64	0.28	1	101055 1850	89,50	1	101052 1850	72,50	1	101051 1850	96,50
19.00	127	64	0.28	1	101055 1900	91,–	1	101052 1900	72,–	1	101051 1900	94,–
19.50	131	66	0.28	1	101055 1950	98,50	1	101052 1950	92,–	1	101051 1950	106,–
19.75	131	66	0.28	1	101055 1975	103,–				1	101051 1975	106,–
20.00	131	66	0.28	1	101055 2000	93,–	1	101052 2000	83,50	1	101051 2000	101,–
					1104			1104			1104	

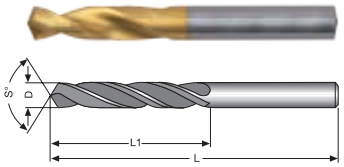
ATORN® KSB-3D twist drill

HSS-E PM | DIN 1897 | Typ TLP | 130° | 27° | 3xD | TiN | Vc/fz | 351

- Low wear on cutting edges
- Especially resistant to high temperatures
- **Extended service life**
- Excellent chip removal
- **Short chips**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 40-45	● 32-40	● 18-25	● 12-18	● 10-12		● 40-50	● 32-45								○ 4-5		
		Cutting speed Vc m/min.																	

Please adjust these guidelines according to clamping operation and machine set-up.



D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
1.0	26	6	0.04	**101085** 0100	10,40
1.1	28	7	0.04	101085 0110	10,40
1.2	30	8	0.04	101085 0120	11,05
1.3	30	8	0.04	101085 0130	11,45
1.4	32	9	0.04	101085 0140	11,65
1.5	32	9	0.04	101085 0150	10,60
1.6	34	10	0.04	101085 0160	10,20
1.7	34	10	0.04	101085 0170	10,20
1.8	36	11	0.04	101085 0180	10,40
1.9	36	11	0.04	101085 0190	10,20
2.0	38	12	0.04	101085 0200	8,30
2.1	38	12	0.04	101085 0210	9,60
2.2	40	13	0.04	101085 0220	10,40
2.3	40	13	0.04	101085 0230	10,40
2.4	43	14	0.04	101085 0240	10,80
2.5	43	14	0.05	101085 0250	9,20
2.6	43	14	0.05	101085 0260	10,80
2.7	46	16	0.07	101085 0270	10,40
2.8	46	16	0.07	101085 0280	11,45
2.9	46	16	0.07	101085 0290	10,–
3.0	46	16	0.07	101085 0300	10,60
				1106	

D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3.1	49	18	0.07	101085 0310	10,80
3.2	49	18	0.07	101085 0320	11,05
3.3	49	18	0.07	101085 0330	10,80
3.4	52	20	0.07	101085 0340	11,25
3.5	52	20	0.07	101085 0350	11,25
3.6	52	20	0.07	101085 0360	11,65
3.7	52	20	0.07	101085 0370	12,10
3.8	55	22	0.07	101085 0380	12,30
3.9	55	22	0.07	101085 0390	12,70
4.0	55	22	0.07	101085 0400	12,70
4.1	55	22	0.07	101085 0410	13,10
4.2	55	22	0.07	101085 0420	13,30
4.3	58	24	0.07	101085 0430	13,95
4.4	58	24	0.07	101085 0440	14,60
4.5	58	24	0.07	101085 0450	14,40
4.6	58	24	0.07	101085 0460	15,20
4.7	58	24	0.07	101085 0470	15,60
4.8	62	26	0.07	101085 0480	16,–
4.9	62	26	0.07	101085 0490	16,40
5.0	62	26	0.07	101085 0500	16,40
5.1	62	26	0.15	101085 0510	25,60
				1106	

D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
5.2	62	26	0.15	101085 0520	26,40
5.3	62	26	0.15	101085 0530	27,10
5.4	66	28	0.15	101085 0540	27,90
5.5	66	28	0.15	101085 0550	18,40
5.6	66	28	0.15	101085 0560	29,–
5.7	66	28	0.15	101085 0570	29,80
5.8	66	28	0.15	101085 0580	30,–
5.9	66	28	0.15	101085 0590	30,60
6.0	66	28	0.15	101085 0600	20,80
6.1	70	31	0.15	101085 0610	32,50
6.2	70	31	0.15	101085 0620	32,50
6.3	70	31	0.15	101085 0630	33,30
6.4	70	31	0.15	101085 0640	34,20
6.5	70	31	0.15	101085 0650	23,10
6.6	70	31	0.15	101085 0660	35,40
6.7	70	31	0.15	101085 0670	36,20
6.8	74	34	0.15	101085 0680	35,80
6.9	74	34	0.15	101085 0690	37,50
7.0	74	34	0.15	101085 0700	24,80
7.1	74	34	0.15	101085 0710	38,90
7.2	74	34	0.15	101085 0720	39,20
7.3	74	34	0.15	101085 0730	39,80
7.4	74	34	0.15	101085 0740	40,60
7.5	74	34	0.15	101085 0750	28,10
7.6	79	37	0.15	101085 0760	41,70
7.7	79	37	0.15	101085 0770	42,70

D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
7.8	79	37	0.15	101085 0780	43,70
7.9	79	37	0.15	101085 0790	44,80
8.0	79	37	0.15	101085 0800	29,80
8.1	79	37	0.18	101085 0810	45,80
8.2	79	37	0.18	101085 0820	46,50
8.3	79	37	0.18	101085 0830	47,30
8.4	79	37	0.18	101085 0840	48,10
8.5	79	37	0.18	101085 0850	31,90
8.8	84	40	0.18	101085 0880	51,–
9.0	84	40	0.18	101085 0900	34,40
9.3	84	40	0.18	101085 0930	56,–
9.5	84	40	0.18	101085 0950	37,90
9.8	89	43	0.18	101085 0980	60,–
10.0	89	43	0.18	101085 1000	40,20
10.2	89	43	0.22	101085 1020	64,50
10.5	89	43	0.22	101085 1050	45,20
11.0	95	47	0.22	101085 1100	47,50
11.5	95	47	0.22	101085 1150	54,–
12.0	102	51	0.22	101085 1200	58,–
12.3	102	51	0.25	101085 1230	60,50
12.5	102	51	0.25	101085 1250	64,50
12.7	102	51	0.25	101085 1270	67,–
13.0	102	51	0.25	101085 1300	70,–
13.5	107	54	0.25	101085 1350	72,–
14.0	107	54	0.25	101085 1400	88,50

EX-SUS-GDS twist drill bit

HSS-E V3 | Werks-norm | Typ VA | 120° | 130° | 140° | 35° -40° | 3xD | TiN | Vc/fz

352

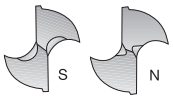
- Large chip spaces, high toughness
- Reduced heat build-up
- Shank design: straight
- **From Ø 12.1 with driving plane in accordance with DIN 1835B**
- S°= point angle: < Ø 2 mm = 140°, ≤ Ø 4 mm = 130°, > Ø 4 mm = 120°
- Centring geometry: up to Ø 13 mm S version, from Ø 13.5 mm N version
- Available on request: Intermediate dimensions from Ø 0.5 to Ø 6 mm (in 0.01 mm increments)

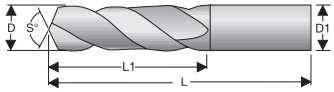
material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 32-40	○ 30-35		● 15-20	● 13-18	○ 8-12			● 6-8			● 63-100	● 32-63	● 25-50				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



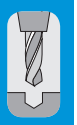




D h8 mm	L mm	L1 mm	D1 mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
1.0	38	6	3	0.03	**114045** 0100	12,50
1.1	39	7	3	0.03	114045 0110	12,30
1.2	40	8	3	0.03	114045 0120	12,30
1.3	40	8	3	0.03	114045 0130	12,30
1.4	41	9	3	0.03	114045 0140	12,30
1.5	41	9	3	0.07	114045 0150	11,60
1.6	42	10	3	0.07	114045 0160	10,80
1.7	42	10	3	0.07	114045 0170	10,80
1.8	43	11	3	0.07	114045 0180	10,80

D h8 mm	L mm	L1 mm	D1 mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
1.9	43	11	3	0.07	114045 0190	10,80
2.0	44	12	3	0.07	114045 0200	10,40
2.1	44	12	3	0.07	114045 0210	12,40
2.2	45	13	3	0.07	114045 0220	12,40
2.3	45	13	3	0.07	114045 0230	12,40
2.4	46	14	3	0.07	114045 0240	12,40
2.5	46	14	3	0.11	114045 0250	11,60
2.6	46	14	3	0.11	114045 0260	12,40
2.7	48	16	3	0.11	114045 0270	12,40

Continued on next page >>>



D h8 mm	L mm	L1 mm	D1 mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
2.8	48	16	3	0.11	114045 0280	12,40
2.9	48	16	3	0.11	114045 0290	12,40
3.0	48	16	3	0.11	114045 0300	11,60
3.1	50	18	4	0.11	114045 0310	13,90
3.2	50	18	4	0.11	114045 0320	13,90
3.3	50	18	4	0.11	114045 0330	13,90
3.4	52	20	4	0.11	114045 0340	13,90
3.5	52	20	4	0.13	114045 0350	13,90
3.6	52	20	4	0.13	114045 0360	15,20
3.7	52	20	4	0.13	114045 0370	15,20
3.8	54	22	4	0.13	114045 0380	15,20
3.9	54	22	4	0.13	114045 0390	15,20
4.0	54	22	4	0.13	114045 0400	15,20
4.1	66	22	6	0.13	114045 0410	17,80
4.2	66	22	6	0.13	114045 0420	16,90
4.3	68	24	6	0.13	114045 0430	17,80
4.4	68	24	6	0.13	114045 0440	17,80
4.5	68	24	6	0.15	114045 0450	16,90
4.6	68	24	6	0.15	114045 0460	20,20
4.7	68	24	6	0.15	114045 0470	20,20
4.8	70	26	6	0.15	114045 0480	20,20
4.9	70	26	6	0.15	114045 0490	20,20
5.0	70	26	6	0.15	114045 0500	22,40
5.1	70	26	6	0.15	114045 0510	22,40
5.2	70	26	6	0.15	114045 0520	22,40
5.3	70	28	6	0.15	114045 0530	23,90
5.4	72	28	6	0.15	114045 0540	23,90
5.5	72	28	6	0.16	114045 0550	22,40
5.6	72	28	6	0.16	114045 0560	25,60
5.7	72	28	6	0.16	114045 0570	25,60
5.8	72	28	6	0.16	114045 0580	25,60
5.9	72	28	6	0.16	114045 0590	25,60
6.0	72	28	6	0.16	114045 0600	24,30
6.1	75	31	8	0.16	114045 0610	28,50
6.2	75	31	8	0.16	114045 0620	28,50
6.3	75	31	8	0.16	114045 0630	28,50
6.4	75	31	8	0.16	114045 0640	28,50
6.5	75	31	8	0.16	114045 0650	28,50
6.6	75	31	8	0.16	114045 0660	29,40
6.7	75	31	8	0.16	114045 0670	29,40
6.8	78	34	8	0.16	114045 0680	29,40
6.9	78	34	8	0.16	114045 0690	29,40
7.0	78	34	8	0.16	114045 0700	29,40
7.1	78	34	8	0.20	114045 0710	30,90
7.2	78	34	8	0.20	114045 0720	30,90
7.3	78	34	8	0.20	114045 0730	30,90
7.4	78	34	8	0.20	114045 0740	30,90
7.5	78	34	8	0.20	114045 0750	30,90
7.6	81	37	8	0.20	114045 0760	32,30
7.7	81	37	8	0.20	114045 0770	32,30
7.8	81	37	8	0.20	114045 0780	32,30
7.9	81	37	8	0.20	114045 0790	32,30
8.0	81	37	8	0.20	114045 0800	32,30
8.1	87	37	10	0.20	114045 0810	35,60
8.2	87	37	10	0.20	114045 0820	35,60
8.3	87	37	10	0.20	114045 0830	35,60
8.4	87	37	10	0.20	114045 0840	35,60
8.5	87	37	10	0.20	114045 0850	35,60
8.6	90	40	10	0.20	114045 0860	37,10
8.7	90	40	10	0.20	114045 0870	37,10
8.8	90	40	10	0.20	114045 0880	37,10
8.9	90	40	10	0.20	114045 0890	37,10
9.0	90	40	10	0.20	114045 0900	37,10
9.1	90	40	10	0.24	114045 0910	40,20
9.2	90	40	10	0.24	114045 0920	40,20
9.3	90	40	10	0.24	114045 0930	40,20
9.4	90	40	10	0.24	114045 0940	40,20
9.5	90	40	10	0.24	114045 0950	40,20
9.6	93	43	10	0.24	114045 0960	42,40
9.7	93	43	10	0.24	114045 0970	42,40
9.8	93	43	10	0.24	114045 0980	42,40
9.9	93	43	10	0.24	114045 0990	42,40
10.0	93	43	10	0.24	114045 1000	42,40
10.1	100	43	12	0.24	114045 1010	52,60
10.2	100	43	12	0.24	114045 1020	52,60
10.3	100	43	12	0.24	114045 1030	52,60
10.4	100	43	12	0.24	114045 1040	52,60
10.5	100	43	12	0.24	114045 1050	52,60
10.6	100	43	12	0.24	114045 1060	57,60
10.7	104	47	12	0.24	114045 1070	57,60
10.8	104	47	12	0.24	114045 1080	57,60
10.9	104	47	12	0.24	114045 1090	57,60
11.0	104	47	12	0.24	114045 1100	57,60
11.1	104	47	12	0.29	114045 1110	61,90
11.2	104	47	12	0.29	114045 1120	61,90
11.3	104	47	12	0.29	114045 1130	61,90
11.4	104	47	12	0.29	114045 1140	61,90
11.5	104	47	12	0.29	114045 1150	61,90
11.6	104	47	12	0.29	114045 1160	66,20
11.7	104	47	12	0.29	114045 1170	66,20
11.8	104	47	12	0.29	114045 1180	66,20
11.9	108	51	12	0.29	114045 1190	66,20
12.0	108	51	12	0.29	114045 1200	66,20
12.1	108	51	12	0.29	114045 1210	76,70
12.2	108	51	12	0.29	114045 1220	76,70
12.3	108	51	12	0.29	114045 1230	76,70
12.4	108	51	12	0.29	114045 1240	76,70
12.5	108	51	12	0.29	114045 1250	76,70
12.6	108	51	12	0.29	114045 1260	81,20
12.7	108	51	12	0.29	114045 1270	81,20
12.8	108	51	12	0.29	114045 1280	81,20
12.9	108	51	12	0.29	114045 1290	81,20
13.0	108	51	12	0.29	114045 1300	81,20
13.5	114	54	16	0.33	114045 1350	122,90
14.0	114	54	16	0.33	114045 1400	122,90
14.5	116	56	16	0.33	114045 1450	141,30
15.0	116	56	16	0.33	114045 1500	141,30
15.5	118	58	16	0.36	114045 1550	152,20
16.0	118	58	16	0.36	114045 1600	152,20
16.5	126	60	20	0.36	114045 1650	159,70
17.0	126	60	20	0.36	114045 1700	159,70
17.5	128	62	20	0.40	114045 1750	174,40
18.0	128	62	20	0.40	114045 1800	174,40
18.5	130	64	20	0.40	114045 1850	198,–
19.0	130	64	20	0.40	114045 1900	198,–
19.5	132	66	20	0.43	114045 1950	205,–
20.0	132	66	20	0.43	114045 2000	205,–

NEXUS-GDS twist drill

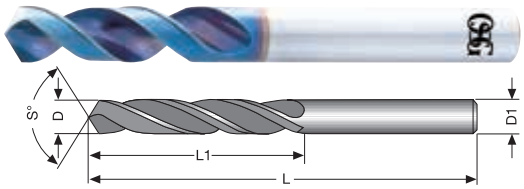
HSS-E | Werks-norm | Typ VA | 120° | 130° | 140° | 35° -40° | 3xD | TiAlN | Vc/fz | 352

- High spiral angle (35 - 40°) and unique flute shape reduce the cutting forces and the heat generated during machining
- **Short breakage chips even with tough materials such as stainless steel or copper**
- Shank design: straight
- S°= point angle: < Ø 2 mm = 140°, < Ø 4 mm = 130°, > Ø 4 mm = 120°
- **Cutting material: high-quality vanadium alloy HSS, WDI™-coated**
- Wear-resistant, suitable for a broad range of materials thanks to multi-layer coating

material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 40-60	○ 40-60		● 15-25	● 15-25	● 10-20						● 63-100	● 32-63	● 40-60				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



D h8 mm	S °	L mm	L1 mm	D1 mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
1.00	140	38	6	3	0.03	**114046** 0100	14,30
1.10	140	39	7	3	0.03	114046 0110	14,20
1.20	140	40	8	3	0.03	114046 0120	14,20
1.30	140	40	8	3	0.03	114046 0130	14,20
1.40	140	41	9	3	0.03	114046 0140	14,20
1.50	140	41	9	3	0.07	114046 0150	13,40
1.60	140	42	10	3	0.07	114046 0160	12,90
1.70	140	42	10	3	0.07	114046 0170	12,90
1.80	140	43	11	3	0.07	114046 0180	12,90
1.81	140	43	11	3	0.07	114046 0181	24,40
1.83	140	43	11	3	0.07	114046 0183	24,40
1.90	140	43	11	3	0.07	114046 0190	12,90
2.00	130	44	12	3	0.07	114046 0200	12,10
2.10	130	44	12	3	0.07	114046 0210	14,20
2.11	130	44	12	3	0.07	114046 0211	24,40
2.13	130	45	13	3	0.07	114046 0213	24,40
2.20	130	45	13	3	0.07	114046 0220	14,20
2.28	130	45	13	3	0.07	114046 0228	24,40
2.30	130	45	13	3	0.07	114046 0230	14,20
2.38	130	46	14	3	0.07	114046 0238	24,40
2.40	130	46	14	3	0.07	114046 0240	14,20
2.50	130	46	14	3	0.11	114046 0250	13,40
2.60	130	46	14	3	0.11	114046 0260	14,20
2.70	130	48	16	3	0.11	114046 0270	14,20
2.76	130	48	16	3	0.11	114046 0276	24,–
2.78	130	48	16	3	0.11	114046 0278	24,–
2.80	130	48	16	3	0.11	114046 0280	14,20
2.90	130	48	16	3	0.11	114046 0290	14,20
3.00	130	48	16	3	0.11	114046 0300	13,40
3.10	130	50	18	4	0.11	114046 0310	16,–
3.20	130	50	18	4	0.11	114046 0320	16,–
3.25	130	50	18	4	0.11	114046 0325	17,60
3.30	130	50	18	4	0.11	114046 0330	16,–
3.40	130	52	20	4	0.11	114046 0340	16,–
3.50	130	52	20	4	0.13	114046 0350	16,–
3.60	130	52	20	4	0.13	114046 0360	17,50
3.65	130	52	20	4	0.13	114046 0365	21,10
3.67	130	52	20	4	0.13	114046 0367	28,50

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D h8 mm	S °	L mm	L1 mm	D1 mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
3.70	130	52	20	4	0.13	114046 0370	17,50
3.80	130	54	22	4	0.13	114046 0380	17,50
3.90	130	54	22	4	0.13	114046 0390	17,50
4.00	130	54	22	4	0.13	114046 0400	17,20
4.10	120	66	22	6	0.13	114046 0410	20,70
4.20	120	66	22	6	0.13	114046 0420	19,50
4.30	120	68	24	6	0.13	114046 0430	20,70
4.40	120	68	24	6	0.13	114046 0440	20,70
4.50	120	68	24	6	0.15	114046 0450	19,50
4.59	120	68	24	6	0.15	114046 0459	39,50
4.60	120	68	24	6	0.15	114046 0460	23,20
4.63	120	68	24	6	0.15	114046 0463	39,50
4.70	120	68	24	6	0.15	114046 0470	23,20
4.80	120	70	26	6	0.15	114046 0480	23,20
4.90	120	70	26	6	0.15	114046 0490	23,20
5.00	120	70	26	6	0.15	114046 0500	25,70
5.10	120	70	26	6	0.15	114046 0510	25,70
5.20	120	70	26	6	0.15	114046 0520	25,70
5.30	120	70	26	6	0.15	114046 0530	27,70
5.40	120	72	28	6	0.15	114046 0540	27,70
5.48	120	72	28	6	0.15	114046 0548	45,70
5.50	120	72	28	6	0.16	114046 0550	25,70
5.60	120	72	28	6	0.16	114046 0560	29,50
5.70	120	72	28	6	0.16	114046 0570	29,50
5.80	120	72	28	6	0.16	114046 0580	29,50
5.90	120	72	28	6	0.16	114046 0590	29,50
6.00	120	72	28	6	0.16	114046 0600	28,10
6.10	120	75	28	6	0.16	114046 0610	32,50
6.20	120	75	31	6	0.16	114046 0620	32,50
6.30	120	75	31	6	0.16	114046 0630	32,50
6.40	120	75	31	6	0.16	114046 0640	32,50
6.50	120	75	31	8	0.16	114046 0650	32,50
6.60	120	75	31	8	0.16	114046 0660	33,70
6.80	120	78	34	8	0.16	114046 0680	33,70
6.90	120	78	34	8	0.16	114046 0690	33,70
7.00	120	78	34	8	0.16	114046 0700	33,70
7.34	120	78	34	8	0.20	114046 0734	57,10
7.38	120	78	34	8	0.20	114046 0738	57,10

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Continued on next page >>>

D h8 mm	S °	L mm	L1 mm	D1 mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
7.40	120	78	34	8	0.20	114046 0740	35,80
7.50	120	78	34	8	0.20	114046 0750	35,80
7.80	120	81	37	8	0.20	114046 0780	37,20
7.90	120	81	37	8	0.20	114046 0790	37,20
8.00	120	81	37	8	0.20	114046 0800	37,20
8.10	120	87	37	10	0.20	114046 0810	40,90
8.20	120	87	37	10	0.20	114046 0820	40,90
8.30	120	87	37	10	0.20	114046 0830	40,90
8.40	120	87	37	10	0.20	114046 0840	40,90
8.50	120	87	37	10	0.20	114046 0850	40,90
8.60	120	90	40	10	0.20	114046 0860	42,70
8.70	120	90	40	10	0.20	114046 0870	42,70
8.80	120	90	40	10	0.20	114046 0880	42,70
9.00	120	90	40	10	0.20	114046 0900	42,70
9.18	120	90	40	10	0.24	114046 0918	73,90

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D h8 mm	S °	L mm	L1 mm	D1 mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
9.20	120	90	40	10	0.24	114046 0920	46,10
9.24	120	90	40	10	0.24	114046 0924	73,90
9.34	120	90	40	10	0.24	114046 0934	73,90
9.36	120	90	40	10	0.24	114046 0936	73,90
9.50	120	90	40	10	0.24	114046 0950	46,10
9.80	120	93	43	10	0.24	114046 0980	53,20
10.00	120	93	43	10	0.24	114046 1000	48,70
10.20	120	100	43	12	0.24	114046 1020	60,40
10.30	120	100	43	12	0.24	114046 1030	60,40
10.40	120	100	43	12	0.24	114046 1040	60,40
10.50	120	100	43	12	0.24	114046 1050	60,40
11.00	120	104	47	12	0.24	114046 1100	66,–
11.20	120	100	43	12	0.29	114046 1120	75,30
11.50	120	104	47	12	0.29	114046 1150	71,20
12.00	120	108	51	12	0.29	114046 1200	76,20

1107

SARA® Body drill

HSS | Werks-norm | Typ N | 130° | 30°

- Especially short drill bit for sheet machining
- Dimensions **similar to DIN 1897**
- Profile-ground with point thinning, self-centring
- Without chamfer, to prevent the drill from jamming
- **Single and double-sided versions**
- For drilling thin-walled sheet metal

For sheet metal machining

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 20-22	○ 12-18										○ 30-50						
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

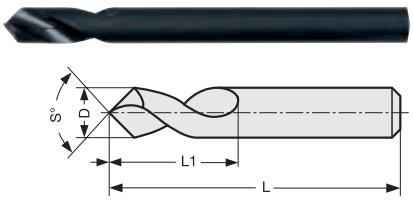
Single-sided

D h8 mm	L mm	L1 mm	art.no.	€
2.50	38	14	**102310** 0250	0,85
3.00	40	16	102310 0300	0,88
3.10	40	16	102310 0310	0,88
3.20	40	16	102310 0320	1,–
3.25	41	16	102310 0325	1,–
3.50	42	16	102310 0350	1,04
4.00	42	16	102310 0400	1,20
4.10	44	18	102310 0410	1,20

1137

D h8 mm	L mm	L1 mm	art.no.	€
4.20	44	18	102310 0420	1,20
4.80	48	20	102310 0480	1,44
4.90	50	22	102310 0490	1,44
5.00	52	24	102310 0500	1,44
5.10	52	24	102310 0510	1,67
5.20	52	24	102310 0520	1,67
6.00	55	26	102310 0600	1,94

1137



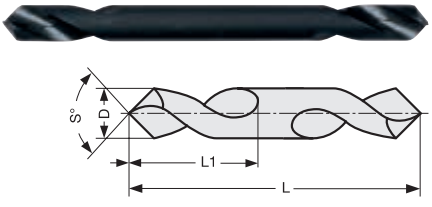
Double-sided

D h8 mm	L mm	L1 mm	art.no.	€
3.00	46	11	**102320** 0300	1,44
3.10	49	12	102320 0310	1,48
3.20	49	12	102320 0320	1,56
3.30	49	12	102320 0330	1,67
3.50	52	13	102320 0350	1,80
4.00	55	14	102320 0400	1,85

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D h8 mm	L mm	L1 mm	art.no.	€
4.10	55	14	102320 0410	1,85
4.20	55	14	102320 0420	1,85
4.50	58	17	102320 0450	2,28
5.00	62	17	102320 0500	2,28
6.00	66	19	102320 0600	2,77

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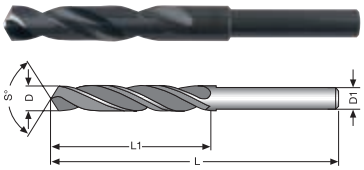


ATORN® Twist drill bit

HSS | Werks-norm | Typ N | 118° | 29° | 3xD | Vap. | Vc/fz | 353

- **Offset uniform shank**
- Clamping and tooling benefits due to uniform length of straight shank irrespective of diameter
- **Vapour-treated**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 25-28	● 20-22					● 25-28	○ 20-23				○ 50-60	○ 40-50	○ 30-60				
	Cutting speed Vc m/min.										Please adjust these guidelines according to clamping operation and machine set-up.								



with offset shank

D h8 mm	L mm	L1 mm	D1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
13.5	152	76	12.7	0.22	**101080** 1350	32,30
14.0	152	76	12.7	0.22	101080 1400	24,60
14.5	152	76	12.7	0.22	101080 1450	37,50
15.0	152	76	12.7	0.22	101080 1500	32,10
15.5	152	76	12.7	0.22	101080 1550	38,10
16.0	152	76	12.7	0.22	101080 1600	32,70
16.5	152	76	12.7	0.28	101080 1650	36,70
17.0	152	76	12.7	0.28	101080 1700	42,90
17.5	152	76	12.7	0.28	101080 1750	40,20
18.0	152	76	12.7	0.28	101080 1800	44,60

1104

D h8 mm	L mm	L1 mm	D1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
18.5	152	76	12.7	0.28	101080 1850	51,50
19.0	152	76	12.7	0.28	101080 1900	53,–
19.5	152	76	12.7	0.28	101080 1950	60,–
20.0	152	76	12.7	0.28	101080 2000	52,–
21.0	152	76	12.7	0.28	101080 2100	63,50
22.0	152	76	12.7	0.28	101080 2200	67,–
23.0	152	76	12.7	0.28	101080 2300	77,–
24.0	152	76	12.7	0.28	101080 2400	77,–
25.0	152	76	12.7	0.28	101080 2500	78,–

1104

Set

Number of drills	D mm	art.no.	€
14	13.5 to 20.0 mm in 0.5 mm increments	**101080** 0001	599,–
12	14.0 to 25.0 mm in 1.0 mm increments	101080 0002	639,–

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101080 0002


101080 0001

ATORN® Micro drill

HSS-E PM | DIN 1899 | Typ N | 118° | 27° | 5xD | Vc/fz | 354

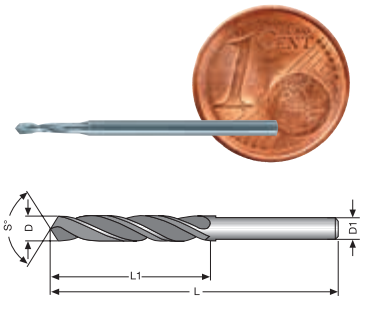
- **Reinforced shank**
- Profile-ground
- **High true-running accuracy and precision-ground point**
- Diameter tolerance 0/-0.004 mm
- HSS-E-PM for high cutting rates and high rigidity

From Ø 0.05 mm

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 18-21	● 14-18	● 12-14	○ 6-10	○ 6-10		● 22-25	○ 18-22				○ 18-22	○ 15-18	○ 20-40				
	Cutting speed Vc m/min.										Please adjust these guidelines according to clamping operation and machine set-up.								

D h8 mm	L mm	L1 mm	D1 mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
0.05	25	0.4	1.0	0.006	10	**101075** 0005	18,–
0.08	25	0.5	1.0	0.006	10	101075 0008	18,–
0.10	25	0.7	1.0	0.006	10	101075 0010	13,60
0.15	25	1.0	1.0	0.007	10	101075 0015	11,35
0.20	25	1.8	1.0	0.008	10	101075 0020	9,65
0.25	25	2.2	1.0	0.009	10	101075 0025	8,75
0.30	25	2.2	1.0	0.010	10	101075 0030	8,15
0.35	25	2.8	1.0	0.011	10	101075 0035	7,30
0.40	25	3.6	1.0	0.012	10	101075 0040	6,25

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D h8 mm	L mm	L1 mm	D1 mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
0.45	25	3.6	1.0	0.013	10	101075 0045	6,85
0.50	25	4.0	1.0	0.014	10	101075 0050	6,05
0.55	25	4.5	1.0	0.015	10	101075 0055	6,30
0.60	25	4.5	1.0	0.016	10	101075 0060	5,60
0.65	25	5.0	1.0	0.017	10	101075 0065	6,30
0.70	25	5.6	1.0	0.018	10	101075 0070	5,50
0.75	25	5.6	1.0	0.019	10	101075 0075	6,25
0.80	25	6.3	1.0	0.022	10	101075 0080	5,75
0.85	25	6.3	1.5	0.025	10	101075 0085	6,30
0.90	25	7.1	1.5	0.028	10	101075 0090	5,75
0.95	25	7.1	1.5	0.031	10	101075 0095	6,50
1.00	25	8.0	1.5	0.034	10	101075 0100	5,75
1.10	25	9.0	1.5	0.037	10	101075 0110	6,25
1.20	25	10.0	1.5	0.040	10	101075 0120	6,25
1.30	25	10.0	1.5	0.043	10	101075 0130	6,30
1.40	25	11.2	1.5	0.046	10	101075 0140	6,30
1.50	25	12.5	1.5	0.049	10	101075 0150	9,50

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SARA® Twist drill bit

HSS | DIN 338 | Typ N | 118° | 27° | 5xD | Vc/fz

353

- sima felület, csiszolt, gyártáshoz

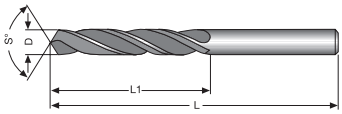
material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 30	● 20					○ 20					○ 40		○ 35				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



Blank surface



D h8 mm	L mm	L1 mm	Feed f steel < 700 N/mm² mm/rev		Blank art.no.	€
0.4	20	5	0.03	10	**101002** 0040	1,85
0.5	22	6	0.03	10	101002 0050	1,71
0.6	24	7	0.03	10	101002 0060	1,60
0.7	28	9	0.03	10	101002 0070	1,55
0.8	30	10	0.03	10	101002 0080	1,43
0.9	32	11	0.03	10	101002 0090	1,37
1.0	34	12	0.04	10	101002 0100	1,21
1.1	36	14	0.04	10	101002 0110	1,18
1.2	38	16	0.04	10	101002 0120	1,18
1.3	38	16	0.04	10	101002 0130	1,18
1.4	40	18	0.04	10	101002 0140	1,18
1.5	40	18	0.04	10	101002 0150	0,98
1.6	43	20	0.04	10	101002 0160	0,96
1.7	43	20	0.04	10	101002 0170	1,18
1.8	46	22	0.04	10	101002 0180	0,87
1.9	46	22	0.04	10	101002 0190	0,88
2.0	49	24	0.04	10	101002 0200	0,73
2.1	49	24	0.04	10	101002 0210	0,87
2.2	53	27	0.04	10	101002 0220	0,88
2.3	53	27	0.04	10	101002 0230	0,88
2.4	57	30	0.04	10	101002 0240	0,92

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D h8 mm	L mm	L1 mm	Feed f steel < 700 N/mm² mm/rev		Blank art.no.	€
2.5	57	30	0.09	10	101002 0250	0,92
2.6	57	30	0.09	10	101002 0260	0,96
2.7	61	33	0.09	10	101002 0270	0,96
2.8	61	33	0.09	10	101002 0280	0,96
2.9	61	33	0.09	10	101002 0290	0,96
3.0	61	33	0.09	10	101002 0300	0,79
3.1	65	36	0.09	10	101002 0310	0,99
3.2	65	36	0.09	10	101002 0320	0,99
3.3	65	36	0.09	10	101002 0330	1,–
3.4	70	39	0.09	10	101002 0340	0,99
3.5	70	39	0.09	10	101002 0350	0,92
3.6	70	39	0.09	10	101002 0360	1,09
3.7	70	39	0.09	10	101002 0370	1,18
3.8	75	43	0.09	10	101002 0380	1,22
3.9	75	43	0.09	10	101002 0390	1,27
4.0	75	43	0.09	10	101002 0400	0,96
4.1	75	43	0.09	10	101002 0410	1,32
4.2	75	43	0.09	10	101002 0420	1,16
4.3	80	47	0.09	10	101002 0430	1,34
4.4	80	47	0.09	10	101002 0440	1,34
4.5	80	47	0.09	10	101002 0450	1,22

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D h8 mm	L mm	L1 mm	Feed f steel < 700 N/mm² mm/rev		Blank art.no.	€
4.6	80	47	0.09	10	101002 0460	1,34
4.7	80	47	0.09	10	101002 0470	1,36
4.8	86	52	0.09	10	101002 0480	1,34
4.9	86	52	0.09	10	101002 0490	1,42
5.0	86	52	0.09	10	101002 0500	1,21
5.1	86	52	0.13	10	101002 0510	1,49
5.2	86	52	0.13	10	101002 0520	1,49
5.3	86	52	0.13	10	101002 0530	1,49
5.4	93	57	0.13	10	101002 0540	1,75
5.5	93	57	0.13	10	101002 0550	1,61
5.6	93	57	0.13	10	101002 0560	1,76
5.7	93	57	0.13	10	101002 0570	1,78
5.8	93	57	0.13	10	101002 0580	1,80
5.9	93	57	0.13	10	101002 0590	1,84
6.0	93	57	0.13	10	101002 0600	1,61
6.1	101	63	0.13	1	101002 0610	1,99
6.2	101	63	0.13	1	101002 0620	1,99
6.3	101	63	0.13	1	101002 0630	2,01
6.4	101	63	0.13	1	101002 0640	2,17
6.5	101	63	0.13	1	101002 0650	2,–
6.6	101	63	0.13	1	101002 0660	2,21
6.7	101	63	0.13	1	101002 0670	2,28
6.8	109	69	0.13	1	101002 0680	2,66
6.9	109	69	0.13	1	101002 0690	2,66
7.0	109	69	0.13	1	101002 0700	2,40
7.1	109	69	0.13	1	101002 0710	2,71
7.2	109	69	0.13	1	101002 0720	2,83
7.3	109	69	0.13	1	101002 0730	2,83
7.4	109	69	0.13	1	101002 0740	2,92
7.5	109	69	0.13	1	101002 0750	2,66
7.6	117	75	0.13	1	101002 0760	3,12
7.7	117	75	0.13	1	101002 0770	3,12
7.8	117	75	0.13	1	101002 0780	3,17
7.9	117	75	0.13	1	101002 0790	3,20
8.0	117	75	0.13	1	101002 0800	2,66
8.1	117	75	0.18	1	101002 0810	3,31
8.2	117	75	0.18	1	101002 0820	3,35
8.3	117	75	0.18	1	101002 0830	3,62
8.4	117	75	0.18	1	101002 0840	3,62
8.5	117	75	0.18	1	101002 0850	3,42
8.6	125	81	0.18	1	101002 0860	4,03
8.7	125	81	0.18	1	101002 0870	4,03
8.8	125	81	0.18	1	101002 0880	4,13

1137

D h8 mm	L mm	L1 mm	Feed f steel < 700 N/mm² mm/rev		Blank art.no.	€
8.9	125	81	0.18	1	101002 0890	4,40
9.0	125	81	0.18	1	101002 0900	3,79
9.1	125	81	0.18	1	101002 0910	4,28
9.2	125	81	0.18	1	101002 0920	4,28
9.3	125	81	0.18	1	101002 0930	4,31
9.4	125	81	0.18	1	101002 0940	4,31
9.5	125	81	0.18	1	101002 0950	4,30
9.6	133	87	0.18	1	101002 0960	4,82
9.7	133	87	0.18	1	101002 0970	4,82
9.8	133	87	0.18	1	101002 0980	5,35
9.9	133	87	0.18	1	101002 0990	5,35
10.0	133	87	0.18	1	101002 1000	4,56
10.1	133	87	0.18	1	101002 1010	5,75
10.2	133	87	0.18	1	101002 1020	5,90
10.3	133	87	0.18	1	101002 1030	7,25
10.4	133	87	0.18	1	101002 1040	7,25
10.5	133	87	0.18	1	101002 1050	6,05
10.6	133	87	0.18	1	101002 1060	7,95
10.7	142	94	0.18	1	101002 1070	8,20
10.8	142	94	0.18	1	101002 1080	8,60
10.9	142	94	0.18	1	101002 1090	8,20
11.0	142	94	0.18	1	101002 1100	7,05
11.1	142	94	0.18	1	101002 1110	8,55
11.2	142	94	0.18	1	101002 1120	8,95
11.3	142	94	0.18	1	101002 1130	8,55
11.4	142	94	0.18	1	101002 1140	8,20
11.5	142	94	0.18	1	101002 1150	7,75
11.6	142	94	0.18	1	101002 1160	10,75
11.7	142	94	0.18	1	101002 1170	10,75
11.8	142	94	0.18	1	101002 1180	10,05
11.9	151	101	0.18	1	101002 1190	10,75
12.0	151	101	0.18	1	101002 1200	8,60
12.2	151	101	0.22	1	101002 1220	11,45
12.5	151	101	0.22	1	101002 1250	9,70
12.8	151	101	0.22	1	101002 1280	13,10
13.0	151	101	0.22	1	101002 1300	10,75
13.5	160	108	0.22	1	101002 1350	12,50
14.0	160	108	0.22	1	101002 1400	15,50
14.5	169	114	0.22	1	101002 1450	15,50
15.0	169	114	0.22	1	101002 1500	18,90
15.5	178	120	0.22	1	101002 1550	19,–
16.0	178	120	0.22	1	101002 1600	20,40

1137

Sets

D mm	Number of drills	Blank art.no.	€
Ø 1.0 to 5.9 mm in 0.1 mm increments	50	**101033** 0001	77,50
Ø 6.0 to 10.0 mm in 0.1 mm increments	41	101033 0002	181,–
Ø 1.0 to 10.0 mm in 0.5 mm increments	19	101033 0003	47,20
Ø 1.0 to 13.0 mm in 0.5 mm increments	25	101033 0004	97,50
Ø 1.0 to 10.5 mm in 0.5 mm increments with the following additional dimensions for threaded bores: Ø 3.3-4.2-6.8-10.2 mm	24	101033 0005	72,–

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101033 0004

ATORN® SARA® Twist drill bit

HSS | DIN 338 | Typ N | 118° | 27° | 35° | 5xD | TiN | Vap. | Vc/fz | 353

- 101005/101035.... profile-ground, vapour-treated from Ø 2.4 mm, point thinning from Ø ≥ 1 mm
- 101405.... profile-ground, vapour-treated from Ø 2.4 mm, point thinning from Ø ≥ 1 mm
- 101008/101048.... TiN head coating, bare chip flute, point thinning from Ø ≥ 1 mm

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
101005....	● 20-28	● 10-15					● 25-28	○ 20-23				○ 40-55	○ 30-35	○ 25-35				
101405....	● 20-28	● 10-15					● 25-28	○ 20-23				○ 40-55	○ 30-35	○ 25-35				
101008....	● 25-28	● 20-22	○ 12-15	○ 10-12	○ 12-14				● 6-9	○ 6-8		○ 50-60	○ 40-50	○ 30-40				
101035....	● 20-28	● 10-15					● 23-27	○ 20-23				○ 40-55	○ 30-35	○ 25-35				
101048....	● 25-28	● 20-22	○ 12-15	○ 10-12	○ 12-14				● 6-9	○ 6-8		○ 50-60	○ 40-50	○ 30-40				
Cutting speed Vc m/min.																		

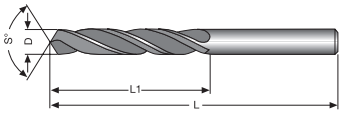
Please adjust these guidelines according to clamping operation and machine set-up.



HSS, vapour-treated



HSS, TiN

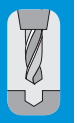


Single

D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		ATORN® Vapour-treated art.no.	€		SARA® Vapour-treated art.no.	€		ATORN® TiN art.no.	€
0.4	20	5	0.03	10	**101005** 0040	3,57						
0.5	22	6	0.03	10	101005 0050	2,83	10	**101405** 0050	1,31			
0.6	24	7	0.03	10	101005 0060	2,80	10	101405 0060	1,31			
0.7	28	9	0.03	10	101005 0070	2,62	10	101405 0070	1,31			
0.8	30	10	0.03	10	101005 0080	2,38	10	101405 0080	1,31			
0.9	32	11	0.03	10	101005 0090	2,34	10	101405 0090	1,31			
1.0	34	12	0.03	10	101005 0100	2,16	10	101405 0100	1,37	10	**101008** 0100	2,40
1.1	36	14	0.04	10	101005 0110	2,25	10	101405 0110	1,37	10	101008 0110	2,78
1.2	38	16	0.04	10	101005 0120	2,28	10	101405 0120	1,41	10	101008 0120	2,85
1.3	38	16	0.04	10	101005 0130	2,19	10	101405 0130	1,37	10	101008 0130	2,78
1.4	40	18	0.04	10	101005 0140	2,12	10	101405 0140	1,37	10	101008 0140	2,62
1.5	40	18	0.04	10	101005 0150	1,89	10	101405 0150	1,26	10	101008 0150	1,95
1.6	43	20	0.04	10	101005 0160	1,84	10	101405 0160	1,26	10	101008 0160	2,32
1.7	43	20	0.04	10	101005 0170	1,89	10	101405 0170	1,29	10	101008 0170	2,32
1.8	46	22	0.04	10	101005 0180	1,68	10	101405 0180	1,08	10	101008 0180	2,17
1.9	46	22	0.04	10	101005 0190	1,69	10	101405 0190	1,08	10	101008 0190	2,17
2.0	49	24	0.04	10	101005 0200	1,33	10	101405 0200	0,95	10	101008 0200	1,57
2.1	49	24	0.04	10	101005 0210	1,68	10	101405 0210	1,08	10	101008 0210	2,10
2.2	53	27	0.04	10	101005 0220	1,71	10	101405 0220	1,13	10	101008 0220	2,17
2.3	53	27	0.04	10	101005 0230	1,71	10	101405 0230	1,13	10	101008 0230	2,24
2.4	57	30	0.04	10	101005 0240	1,79	10	101405 0240	1,19	10	101008 0240	2,17
2.5	57	30	0.09	10	101005 0250	1,74	10	101405 0250	1,19	10	101008 0250	1,83
2.6	57	30	0.09	10	101005 0260	1,84	10	101405 0260	1,25	10	101008 0260	2,32
2.7	61	33	0.09	10	101005 0270	1,84	10	101405 0270	1,25	10	101008 0270	2,32
2.8	61	33	0.09	10	101005 0280	1,90	10	101405 0280	1,25	10	101008 0280	2,32
2.9	61	33	0.09	10	101005 0290	1,90	10	101405 0290	1,25	10	101008 0290	2,32
3.0	61	33	0.09	10	101005 0300	1,48	10	101405 0300	0,70	10	101008 0300	1,63
3.1	65	36	0.09	10	101005 0310	1,96	10	101405 0310	1,37	10	101008 0310	2,48
3.2	65	36	0.09	10	101005 0320	1,94	10	101405 0320	1,37	10	101008 0320	2,08
3.3	65	36	0.09	10	101005 0330	1,99	10	101405 0330	1,31	10	101008 0330	2,08
3.4	70	39	0.09	10	101005 0340	1,97	10	101405 0340	1,36	10	101008 0340	2,48
3.5	70	39	0.09	10	101005 0350	1,74	10	101405 0350	1,19	10	101008 0350	1,83
					1104			1137			1104	

D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		ATORN® Vapour-treated art.no.	€		SARA® Vapour-treated art.no.	€		ATORN® TiN art.no.	€
3.6	70	39	0.09	10	101005 0360	2,14	10	101405 0360	1,41	10	101008 0360	2,69
3.7	70	39	0.09	10	101005 0370	2,25	10	101405 0370	1,51	10	101008 0370	2,78
3.8	75	43	0.09	10	101005 0380	2,21	10	101405 0380	1,46	10	101008 0380	2,85
3.9	75	43	0.09	10	101005 0390	2,38	10	101405 0390	1,58	10	101008 0390	2,99
4.0	75	43	0.09	10	101005 0400	1,70	10	101405 0400	1,31	10	101008 0400	1,83
4.1	75	43	0.09	10	101005 0410	2,56	10	101405 0410	1,69	10	101008 0410	3,22
4.2	75	43	0.09	10	101005 0420	2,21	10	101405 0420	1,51	10	101008 0420	2,33
4.3	80	47	0.09	10	101005 0430	2,62	10	101405 0430	1,56	10	101008 0430	3,22
4.4	80	47	0.09	10	101005 0440	2,62	10	101405 0440	1,56	10	101008 0440	3,22
4.5	80	47	0.09	10	101005 0450	2,31	10	101405 0450	1,56	10	101008 0450	2,46
4.6	80	47	0.09	10	101005 0460	2,62	10	101405 0460	1,62	10	101008 0460	3,37
4.7	80	47	0.09	10	101005 0470	2,68	10	101405 0470	1,62	10	101008 0470	3,44
4.8	86	52	0.09	10	101005 0480	2,70	10	101405 0480	1,62	10	101008 0480	2,84
4.9	86	52	0.09	10	101005 0490	2,80	10	101405 0490	1,62	10	101008 0490	3,60
5.0	86	52	0.09	10	101005 0500	2,17	10	101405 0500	1,49	10	101008 0500	2,40
5.1	86	52	0.13	10	101005 0510	2,89	10	101405 0510	1,51	10	101008 0510	3,60
5.2	86	52	0.13	10	101005 0520	2,89	10	101405 0520	1,56	10	101008 0520	3,67
5.3	86	52	0.13	10	101005 0530	2,88	10	101405 0530	1,62	10	101008 0530	3,67
5.4	93	57	0.13	10	101005 0540	3,37	10	101405 0540	1,69	10	101008 0540	4,35
5.5	93	57	0.13	10	101005 0550	3,15	10	101405 0550	1,74	10	101008 0550	3,15
5.6	93	57	0.13	10	101005 0560	3,39	10	101405 0560	2,06	10	101008 0560	4,42
5.7	93	57	0.13	10	101005 0570	3,46	10	101405 0570	2,11	10	101008 0570	4,42
5.8	93	57	0.13	10	101005 0580	3,57	10	101405 0580	2,11	10	101008 0580	3,71
5.9	93	57	0.13	10	101005 0590	3,58	10	101405 0590	2,22	10	101008 0590	4,64
6.0	93	57	0.13	1	101005 0600	2,95	1	101405 0600	2,13	1	101008 0600	3,15
6.1	101	63	0.13	1	101005 0610	3,89	1	101405 0610	2,65	1	101008 0610	5,–
6.2	101	63	0.13	1	101005 0620	3,89	1	101405 0620	2,65	1	101008 0620	5,–
6.3	101	63	0.13	1	101005 0630	3,96	1	101405 0630	2,49	1	101008 0630	5,10
6.4	101	63	0.13	1	101005 0640	4,17	1	101405 0640	2,49	1	101008 0640	5,40
6.5	101	63	0.13	1	101005 0650	3,88	1	101405 0650	2,27	1	101008 0650	3,78
6.6	101	63	0.13	1	101005 0660	4,34	1	101405 0660	2,77	1	101008 0660	5,40
6.7	101	63	0.13	1	101005 0670	4,48	1	101405 0670	2,82	1	101008 0670	5,60
6.8	109	69	0.13	1	101005 0680	5,20	1	101405 0680	3,25	1	101008 0680	6,10
6.9	109	69	0.13	1	101005 0690	5,20	1	101405 0690	3,30	1	101008 0690	6,65
7.0	109	69	0.13	1	101005 0700	4,49	1	101405 0700	3,10	1	101008 0700	4,58
7.1	109	69	0.13	1	101005 0710	5,35	1	101405 0710	3,63	1	101008 0710	7,–
7.2	109	69	0.13	1	101005 0720	5,50	1	101405 0720	3,74	1	101008 0720	7,20
7.3	109	69	0.13	1	101005 0730	5,50	1	101405 0730	3,74	1	101008 0730	7,25
7.4	109	69	0.13	1	101005 0740	5,70	1	101405 0740	3,85	1	101008 0740	7,65
7.5	109	69	0.13	1	101005 0750	5,20	1	101405 0750	3,20	1	101008 0750	5,15
7.6	117	75	0.13	1	101005 0760	6,10	1	101405 0760	4,12	1	101008 0760	7,90
7.7	117	75	0.13	1	101005 0770	6,10	1	101405 0770	4,12	1	101008 0770	7,90
7.8	117	75	0.13	1	101005 0780	6,10	1	101405 0780	4,17	1	101008 0780	7,65
7.9	117	75	0.13	1	101005 0790	6,20	1	101405 0790	4,23	1	101008 0790	8,05
8.0	117	75	0.13	1	101005 0800	4,87	1	101405 0800	3,41	1	101008 0800	4,85
8.1	117	75	0.18	1	101005 0810	6,45	1	101405 0810	4,38	1	101008 0810	8,20
8.2	117	75	0.18	1	101005 0820	6,60	1	101405 0820	4,61	1	101008 0820	8,40
8.3	117	75	0.18	1	101005 0830	7,35	1	101405 0830	4,92	1	101008 0830	9,–
8.4	117	75	0.18	1	101005 0840	7,35	1	101405 0840	4,92	1	101008 0840	9,–
8.5	117	75	0.18	1	101005 0850	6,95	1	101405 0850	3,85	1	101008 0850	6,20
8.6	125	81	0.18	1	101005 0860	8,05	1	101405 0860	5,55	1	101008 0860	8,85
8.7	125	81	0.18	1	101005 0870	8,05	1	101405 0870	5,55	1	101008 0870	8,85
8.8	125	81	0.18	1	101005 0880	8,35	1	101405 0880	5,70	1	101008 0880	10,20
8.9	125	81	0.18	1	101005 0890	8,65	1	101405 0890	6,10	1	101008 0890	9,45
9.0	125	81	0.18	1	101005 0900	7,30	1	101405 0900	4,28	1	101008 0900	6,85
9.1	125	81	0.18	1	101005 0910	8,65	1	101405 0910	6,–	1	101008 0910	10,65
9.2	125	81	0.18	1	101005 0920	8,65	1	101405 0920	6,–	1	101008 0920	9,60
9.3	125	81	0.18	1	101005 0930	8,75	1	101405 0930	6,05	1	101008 0930	10,90
9.4	125	81	0.18	1	101005 0940	8,75	1	101405 0940	6,05	1	101008 0940	9,85
					1104			1137			1104	

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D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	ATORN® Vapour-treated			SARA® Vapour-treated			ATORN® TiN		
					art.no.	€		art.no.	€		art.no.	€
9.5	125	81	0.18	1	101005 0950	8,85	1	101405 0950	4,92	1	101008 0950	7,80
9.6	133	87	0.18	1	101005 0960	9,75	1	101405 0960	6,75	1	101008 0960	10,65
9.7	133	87	0.18	1	101005 0970	9,75	1	101405 0970	6,75	1	101008 0970	10,90
9.8	133	87	0.18	1	101005 0980	10,80	1	101405 0980	7,40	1	101008 0980	13,15
9.9	133	87	0.18	1	101005 0990	10,80	1	101405 0990	7,50	1	101008 0990	11,55
10.0	133	87	0.18	1	101005 1000	8,75	1	101405 1000	5,35	1	101008 1000	8,70
10.1	133	87	0.18	1	101005 1010	11,40	1	101405 1010	7,80	1	101008 1010	12,30
10.2	133	87	0.18	1	101005 1020	11,70	1	101405 1020	7,75	1	101008 1020	10,35
10.3	133	87	0.18	1	101005 1030	14,20	1	101405 1030	8,05	1	101008 1030	15,10
10.4	133	87	0.18	1	101005 1040	14,20	1	101405 1040	8,05	1	101008 1040	15,10
10.5	133	87	0.18	1	101005 1050	12,10	1	101405 1050	6,85	1	101008 1050	10,60
10.6	133	87	0.18	1	101005 1060	15,–	1	101405 1060	7,80	1	101008 1060	15,80
10.7	142	94	0.18	1	101005 1070	17,10	1	101405 1070	10,80	1	101008 1070	20,30
10.8	142	94	0.18	1	101005 1080	16,60	1	101405 1080	10,75	1	101008 1080	18,20
10.9	142	94	0.18	1	101005 1090	17,70	1	101405 1090	8,75	1	101008 1090	19,70
11.0	142	94	0.18	1	101005 1100	13,80	1	101405 1100	8,10	1	101008 1100	12,25
11.1	142	94	0.18	1	101005 1110	17,70	1	101405 1110	8,85	1	101008 1110	18,90
11.2	142	94	0.18	1	101005 1120	17,10	1	101405 1120	8,85	1	101008 1120	18,50
11.3	142	94	0.18	1	101005 1130	18,20	1	101405 1130	9,05	1	101008 1130	20,–
11.4	142	94	0.18	1	101005 1140	18,20	1	101405 1140	9,25	1	101008 1140	20,–
11.5	142	94	0.18	1	101005 1150	15,10	1	101405 1150	8,60	1	101008 1150	18,50
11.6	142	94	0.18	1	101005 1160	18,20	1	101405 1160	9,35	1	101008 1160	20,–
11.7	142	94	0.18	1	101005 1170	18,90	1	101405 1170	9,70	1	101008 1170	20,30
11.8	142	94	0.18	1	101005 1180	19,20	1	101405 1180	9,45	1	101008 1180	20,30
11.9	151	101	0.18	1	101005 1190	20,90	1	101405 1190	9,80	1	101008 1190	24,80
12.0	151	101	0.18	1	101005 1200	16,80	1	101405 1200	9,65	1	101008 1200	15,30
12.1	151	101	0.22	1	101005 1210	22,10	1	101405 1210	10,55	1	101008 1210	24,20
12.2	151	101	0.22	1	101005 1220	22,10	1	101405 1220	10,35	1	101008 1220	24,20
12.3	151	101	0.22	1	101005 1230	22,20	1	101405 1230	10,45	1	101008 1230	22,40
12.4	151	101	0.22	1	101005 1240	23,20	1	101405 1240	12,20	1	101008 1240	26,30
12.5	151	101	0.22	1	101005 1250	18,70	1	101405 1250	11,35	1	101008 1250	18,10
12.6	151	101	0.22	1	101005 1260	23,20	1	101405 1260	12,70	1	101008 1260	28,40
12.7	151	101	0.22	1	101005 1270	25,–	1	101405 1270	12,20	1	101008 1270	26,–
12.8	151	101	0.22	1	101005 1280	25,–	1	101405 1280	12,60	1	101008 1280	26,90
12.9	151	101	0.22	1	101005 1290	25,20	1	101405 1290	12,90	1	101008 1290	32,20
13.0	151	101	0.22	1	101005 1300	20,40	1	101405 1300	12,10	1	101008 1300	23,10
13.25	160	108	0.22	1	101005 1325	24,30				1	101008 1325	38,20
13.5	160	108	0.22	1	101005 1350	23,70	1	101405 1350	12,15	1	101008 1350	29,80
13.75	160	108	0.22	1	101005 1375	25,20				1	101008 1375	43,50
14.0	160	108	0.22	1	101005 1400	26,80	1	101405 1400	12,45	1	101008 1400	28,40
14.25	169	114	0.22	1	101005 1425	30,50				1	101008 1425	48,–
14.5	169	114	0.22	1	101005 1450	28,30	1	101405 1450	14,30	1	101008 1450	29,90
14.75	169	114	0.22	1	101005 1475	43,90				1	101008 1475	48,70
15.0	169	114	0.22	1	101005 1500	30,40	1	101405 1500	14,30	1	101008 1500	34,40
15.25	178	120	0.22	1	101005 1525	56,50				1	101008 1525	63,–
15.5	178	120	0.22	1	101005 1550	33,40	1	101405 1550	16,90	1	101008 1550	36,–
15.75	178	120	0.22	1	101005 1575	59,50				1	101008 1575	67,50
16.0	178	120	0.22	1	101005 1600	36,–	1	101405 1600	20,80	1	101008 1600	39,–
16.5	187	125	0.28	1	101005 1650	43,60						
17.0	187	125	0.28	1	101005 1700	47,20						
17.5	196	130	0.28	1	101005 1750	53,50						
18.0	196	130	0.28	1	101005 1800	49,10						
18.5	205	135	0.28	1	101005 1850	57,–						
19.0	205	135	0.28	1	101005 1900	61,–						
19.5	214	140	0.28	1	101005 1950	64,50						
20.0	214	140	0.28	1	101005 2000	59,–						
					1104			1137			1104	



101035 0004



101048 0004

Sets

D mm	Number of drills	ATORN® Vapour-treated art.no.	€	ATORN® TiN art.no.	€
Ø 1.0 to 5.9 mm in 0.1 mm increments	50	**101035** 0001	128,50	**101048** 0001	142,50
Ø 6.0 to 10.0 mm in 0.1 mm increments	41	101035 0002	269,–	101048 0002	299,–
Ø 1.0 to 10.0 mm in 0.5 mm increments	19	101035 0003	80,–	101048 0003	85,50
Ø 1.0 to 13.0 mm in 0.5 mm increments	25	101035 0004	167,50	101048 0004	192,–
Ø 1.0 to 10.5 mm in 0.5 mm increments with the following additional dimensions for threaded bores: Ø 3.3-4.2-6.8-10.2 mm	24	101035 0005	108,50	101048 0005	120,–
		1104		1104	

ATORN® Twist drill bit

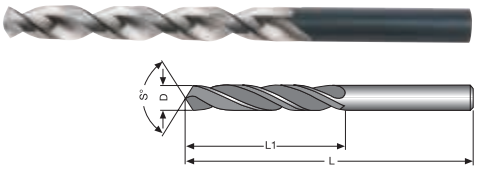
HSS | DIN 338 | Typ TLP | 130° | 38° | 5xD | Nit. | Vc/fz 354

- **Self-centring**
- Optimised chip flute profile for excellent chip removal
- Nitrided chamfers from ø 2.4 mm

material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 25-28	● 20-22					● 22-25	○ 20-23				○ 50-60	○ 40-50	○ 30-60				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
1.0	34	12	0.03	10	**101011** 0100	2,29
1.1	36	14	0.04	10	101011 0110	2,23
1.2	38	16	0.04	10	101011 0120	2,29
1.3	38	16	0.04	10	101011 0130	2,29
1.4	40	18	0.04	10	101011 0140	2,29
1.5	40	18	0.04	10	101011 0150	2,31
1.6	43	20	0.04	10	101011 0160	2,31
1.7	43	20	0.04	10	101011 0170	2,31
1.8	46	22	0.04	10	101011 0180	2,31
1.9	46	22	0.04	10	101011 0190	2,31
2.0	49	24	0.04	10	101011 0200	2,48
2.1	49	24	0.04	10	101011 0210	2,48
2.2	53	27	0.04	10	101011 0220	2,48
2.3	53	27	0.04	10	101011 0230	2,48
2.4	57	30	0.04	10	101011 0240	2,48
2.5	57	30	0.04	10	101011 0250	2,54
2.6	57	30	0.09	10	101011 0260	2,54
2.7	61	33	0.09	10	101011 0270	2,62
2.8	61	33	0.09	10	101011 0280	2,62
					1104	

D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
2.9	61	33	0.09	10	101011 0290	2,62
3.0	61	33	0.09	10	101011 0300	2,54
3.1	65	36	0.09	10	101011 0310	2,62
3.2	65	36	0.09	10	101011 0320	2,62
3.3	65	36	0.09	10	101011 0330	2,67
3.4	70	39	0.09	10	101011 0340	2,97
3.5	70	39	0.09	10	101011 0350	2,90
3.6	70	39	0.09	10	101011 0360	2,90
3.7	70	39	0.09	10	101011 0370	2,97
3.8	75	43	0.09	10	101011 0380	3,22
3.9	75	43	0.09	10	101011 0390	3,22
4.0	75	43	0.09	10	101011 0400	3,09
4.1	75	43	0.09	10	101011 0410	3,22
4.2	75	43	0.09	10	101011 0420	3,22
4.3	80	47	0.09	10	101011 0430	3,29
4.4	80	47	0.09	10	101011 0440	3,29
4.5	80	47	0.09	10	101011 0450	3,18
4.6	80	47	0.09	10	101011 0460	3,29
4.7	80	47	0.09	10	101011 0470	3,29
					1104	

Continued on next page >>>

D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
4.8	86	52	0.09	10	101011 0480	3,29
4.9	86	52	0.09	10	101011 0490	3,34
5.0	86	52	0.09	10	101011 0500	3,34
5.1	86	52	0.13	10	101011 0510	3,52
5.2	86	52	0.13	10	101011 0520	3,52
5.3	86	52	0.13	10	101011 0530	3,52
5.4	93	57	0.13	10	101011 0540	3,86
5.5	93	57	0.13	10	101011 0550	3,66
5.6	93	57	0.13	10	101011 0560	4,14
5.7	93	57	0.13	10	101011 0570	4,14
5.8	93	57	0.13	10	101011 0580	4,14
5.9	93	57	0.13	10	101011 0590	4,14
6.0	93	57	0.13	10	101011 0600	4,03
6.1	101	63	0.13	1	101011 0610	4,59
6.2	101	63	0.13	1	101011 0620	4,59
6.3	101	63	0.13	1	101011 0630	4,59
6.4	101	63	0.13	1	101011 0640	4,49
6.5	101	63	0.13	1	101011 0650	4,59
6.6	101	63	0.13	1	101011 0660	5,10
6.7	101	63	0.13	1	101011 0670	5,10
6.8	109	69	0.13	1	101011 0680	6,–
6.9	109	69	0.13	1	101011 0690	6,–
7.0	109	69	0.13	1	101011 0700	5,90
7.1	109	69	0.13	1	101011 0710	7,30
7.2	109	69	0.13	1	101011 0720	7,30
7.3	109	69	0.13	1	101011 0730	7,30
7.4	109	69	0.13	1	101011 0740	7,30
7.5	109	69	0.13	1	101011 0750	6,15
7.6	117	75	0.13	1	101011 0760	7,95

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D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
7.7	117	75	0.13	1	101011 0770	7,95
7.8	117	75	0.13	1	101011 0780	7,95
7.9	117	75	0.13	1	101011 0790	7,95
8.0	117	75	0.13	1	101011 0800	6,50
8.1	117	75	0.18	1	101011 0810	7,95
8.2	117	75	0.18	1	101011 0820	7,95
8.3	117	75	0.18	1	101011 0830	7,95
8.4	117	75	0.18	1	101011 0840	7,70
8.5	117	75	0.18	1	101011 0850	6,95
8.6	125	81	0.18	1	101011 0860	9,35
8.7	125	81	0.18	1	101011 0870	9,35
8.8	125	81	0.18	1	101011 0880	9,35
8.9	125	81	0.18	1	101011 0890	9,35
9.0	125	81	0.18	1	101011 0900	8,–
9.1	125	81	0.18	1	101011 0910	9,80
9.2	125	81	0.18	1	101011 0920	9,80
9.3	125	81	0.18	1	101011 0930	10,20
9.4	125	81	0.18	1	101011 0940	10,20
9.5	125	81	0.18	1	101011 0950	8,95
9.6	133	87	0.18	1	101011 0960	11,20
9.7	133	87	0.18	1	101011 0970	11,20
9.8	133	87	0.18	1	101011 0980	11,20
9.9	133	87	0.18	1	101011 0990	11,20
10.0	133	87	0.18	1	101011 1000	10,10
10.2	133	87	0.18	1	101011 1020	13,10
10.5	133	87	0.18	1	101011 1050	13,10
11.0	142	94	0.18	1	101011 1100	15,10
11.5	142	94	0.18	1	101011 1150	17,20
12.0	151	101	0.18	1	101011 1200	17,90

1104



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ATORN® Twist drill bit

HSS | DIN 338 | Typ W | 130° | 37° | 5xD | Vc/fz | 355

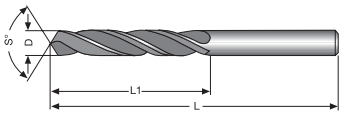
Aluminium

- Self-centring
- **Specially designed for machining aluminium/aluminium alloys**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
													● 70-80	● 60-70	● 30-60				
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.





D h8 mm	L mm	L1 mm	● Feed f aluminium < 8 % Si mm/rev		art.no.	€
1.0	34	12	0.05	10	**101017** 0100	2,75
1.2	38	16	0.05	10	101017 0120	2,73
1.5	40	18	0.05	10	101017 0150	2,73
1.6	43	20	0.05	10	101017 0160	2,47
1.7	43	20	0.05	10	101017 0170	2,57
1.8	46	22	0.05	10	101017 0180	2,55
1.9	46	22	0.05	10	101017 0190	2,55
2.0	49	24	0.05	10	101017 0200	1,91
2.1	49	24	0.05	10	101017 0210	2,34
2.2	53	27	0.05	10	101017 0220	2,34
2.3	53	27	0.05	10	101017 0230	2,34
2.4	57	30	0.05	10	101017 0240	2,46
2.5	57	30	0.05	10	101017 0250	2,07
2.6	57	30	0.05	10	101017 0260	2,54
2.7	61	33	0.05	10	101017 0270	2,60
2.8	61	33	0.05	10	101017 0280	2,84
3.0	61	33	0.09	10	101017 0300	2,17
3.1	65	36	0.09	10	101017 0310	2,84
3.2	65	36	0.09	10	101017 0320	2,56
3.3	65	36	0.09	10	101017 0330	2,60
3.4	70	39	0.09	10	101017 0340	2,87
3.5	70	39	0.09	10	101017 0350	2,64
3.6	70	39	0.09	10	101017 0360	2,87
3.7	70	39	0.09	10	101017 0370	2,92
3.8	75	43	0.09	10	101017 0380	3,14
3.9	75	43	0.09	10	101017 0390	3,14
4.0	75	43	0.09	10	101017 0400	2,61
4.1	75	43	0.09	10	101017 0410	3,14
4.2	75	43	0.09	10	101017 0420	2,84
4.3	80	47	0.09	10	101017 0430	3,85
4.5	80	47	0.09	10	101017 0450	3,44
4.8	86	52	0.09	10	101017 0480	3,85
4.9	86	52	0.09	10	101017 0490	3,85

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D h8 mm	L mm	L1 mm	● Feed f aluminium < 8 % Si mm/rev		art.no.	€
5.0	86	52	0.09	10	101017 0500	3,53
5.2	86	52	0.13	10	101017 0520	4,23
5.3	86	52	0.13	10	101017 0530	4,23
5.5	93	57	0.13	10	101017 0550	4,19
5.6	93	57	0.13	10	101017 0560	4,97
5.7	93	57	0.13	10	101017 0570	4,97
5.8	93	57	0.13	10	101017 0580	4,97
5.9	93	57	0.13	10	101017 0590	4,97
6.0	93	57	0.13	1	101017 0600	4,64
6.1	101	63	0.13	1	101017 0610	4,97
6.2	101	63	0.13	1	101017 0620	4,97
6.3	101	63	0.13	1	101017 0630	5,05
6.5	101	63	0.13	1	101017 0650	5,05
6.6	101	63	0.13	1	101017 0660	6,15
6.8	109	69	0.13	1	101017 0680	6,60
7.0	109	69	0.13	1	101017 0700	6,35
7.5	109	69	0.13	1	101017 0750	7,–
8.0	117	75	0.13	1	101017 0800	10,25
8.1	117	75	0.13	1	101017 0810	10,90
8.2	117	75	0.18	1	101017 0820	11,30
8.4	117	75	0.18	1	101017 0840	12,05
8.5	117	75	0.18	1	101017 0850	8,90
9.0	125	81	0.18	1	101017 0900	9,10
9.5	125	81	0.18	1	101017 0950	11,30
10.0	133	87	0.18	1	101017 1000	11,30
10.5	133	87	0.18	1	101017 1050	14,60
11.0	142	94	0.18	1	101017 1100	17,30
12.0	151	101	0.18	1	101017 1200	21,–
12.5	151	101	0.22	1	101017 1250	21,–
13.0	151	101	0.22	1	101017 1300	24,60
13.5	160	108	0.22	1	101017 1350	30,60
14.0	160	108	0.22	1	101017 1400	28,30

1104

ATORN® SARA® Twist drill bit

HSS-E | DIN 338 | Typ N | Typ NV | 118° | 130° | 27° | 35° | 5xD | Vap. | Vc/fz | 353

- 101006.... profile-ground, vapour-treated from Ø 2.4 mm, point thinning from ≥ Ø 1 mm
- 101010.... profile-ground, point thinning from Ø ≥ 1 mm, self-centring
- 101410.... profile-ground, point thinning from Ø ≥ 1 mm, self-centring

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
101006....	● 25-38	● 20-22		○ 12-14	○ 10-12		● 25-28	○ 20-23				○ 50-60	○ 40-50	○ 30-60				
101010....	● 30-35	● 20-22	○ 12-15	● 10-14	○ 10-12				● 6-9	○ 6-8								
101410....	● 30-35	● 20-22	○ 12-15	○ 10-14	○ 10-12				● 6-9	○ 6-8								

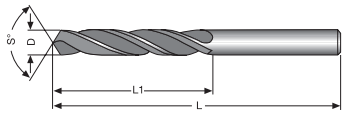
Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



HSS-E, vapour-treated



HSS-E, blank



D h8 mm	L mm	L1 mm	● Feed f steel < 1000 N/mm² mm/rev	ATORN® Type N, 118°, vap.			ATORN® Type NV, 130°, blank			SARA® Type N, 130°, blank		
					art.no.	€		art.no.	€		art.no.	€
1.0	34	12	0.03	10	**101006** 0100	2,20	10	**101010** 0100	2,33	10	**101410** 0100	1,75
1.1	36	14	0.04	10	101006 0110	2,20	10	101010 0110	2,33	10	101410 0110	1,79
1.2	38	16	0.04	10	101006 0120	2,20	10	101010 0120	2,33	10	101410 0120	1,74
1.3	38	16	0.04	10	101006 0130	2,20	10	101010 0130	2,33	10	101410 0130	1,79
1.4	40	18	0.04	10	101006 0140	2,20	10	101010 0140	2,33	10	101410 0140	1,78
1.5	40	18	0.04	10	101006 0150	2,23	10	101010 0150	2,35	10	101410 0150	1,79
1.6	43	20	0.04	10	101006 0160	2,23	10	101010 0160	2,35	10	101410 0160	1,81
1.7	43	20	0.04	10	101006 0170	2,15	10	101010 0170	2,27	10	101410 0170	1,79
1.8	46	22	0.04	10	101006 0180	2,22	10	101010 0180	2,34	10	101410 0180	1,79
1.9	46	22	0.04	10	101006 0190	2,22	10	101010 0190	2,34	10	101410 0190	1,64
2.0	49	24	0.04	10	101006 0200	2,36	10	101010 0200	2,48	10	101410 0200	1,78
2.1	49	24	0.04	10	101006 0210	2,36	10	101010 0210	2,48	10	101410 0210	1,88
2.2	53	27	0.04	10	101006 0220	2,36	10	101010 0220	2,48	10	101410 0220	1,91
2.3	53	27	0.04	10	101006 0230	2,36	10	101010 0230	2,48	10	101410 0230	1,91
2.4	57	30	0.04	10	101006 0240	2,36	10	101010 0240	2,48	10	101410 0240	1,91
2.5	57	30	0.09	10	101006 0250	2,43	10	101010 0250	2,57	10	101410 0250	1,97
2.6	57	30	0.09	10	101006 0260	2,43	10	101010 0260	2,57	10	101410 0260	1,98
2.7	61	33	0.09	10	101006 0270	2,53	10	101010 0270	2,65	10	101410 0270	1,98
2.8	61	33	0.09	10	101006 0280	2,53	10	101010 0280	2,65	10	101410 0280	2,03
2.9	61	33	0.09	10	101006 0290	2,53	10	101010 0290	2,65	10	101410 0290	2,03
3.0	61	33	0.09	10	101006 0300	2,43	10	101010 0300	2,57	10	101410 0300	1,91
3.1	65	36	0.09	10	101006 0310	2,53	10	101010 0310	2,65	10	101410 0310	2,05
3.2	65	36	0.09	10	101006 0320	2,53	10	101010 0320	2,65	10	101410 0320	1,98
3.3	65	36	0.09	10	101006 0330	2,57	10	101010 0330	2,69	10	101410 0330	2,02
3.4	70	39	0.09	10	101006 0340	2,83	10	101010 0340	2,97	10	101410 0340	2,11
3.5	70	39	0.09	10	101006 0350	2,77	10	101010 0350	2,92	10	101410 0350	1,98
3.6	70	39	0.09	10	101006 0360	2,83	10	101010 0360	2,97	10	101410 0360	2,32
3.7	70	39	0.09	10	101006 0370	2,83	10	101010 0370	2,97	10	101410 0370	2,11
3.8	75	43	0.09	10	101006 0380	3,10	10	101010 0380	3,27	10	101410 0380	2,52
3.9	75	43	0.09	10	101006 0390	3,10	10	101010 0390	3,27	10	101410 0390	2,39
4.0	75	43	0.09	10	101006 0400	2,92	10	101010 0400	3,07	10	101410 0400	2,37
4.1	75	43	0.09	10	101006 0410	3,11	10	101010 0410	3,28	10	101410 0410	2,49
4.2	75	43	0.09	10	101006 0420	3,11	10	101010 0420	3,28	10	101410 0420	2,32
4.3	80	47	0.09	10	101006 0430	3,16	10	101010 0430	3,34	10	101410 0430	2,60
4.4	80	47	0.09	10	101006 0440	3,16	10	101010 0440	3,34	10	101410 0440	2,60
4.5	80	47	0.09	10	101006 0450	3,15	10	101010 0450	3,33	10	101410 0450	2,32
					1104			1104			1137	

D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	ATORN® Type N, 118°, vap.			ATORN® Type NV, 130°, blank			SARA® Type N, 130°, blank		
					art.no.	€		art.no.	€		art.no.	€
4.6	80	47	0.09	10	101006 0460	3,16	10	101010 0460	3,34	10	101410 0460	2,60
4.7	80	47	0.09	10	101006 0470	3,16	10	101010 0470	3,34	10	101410 0470	2,54
4.8	86	52	0.09	10	101006 0480	3,16	10	101010 0480	3,34	10	101410 0480	2,60
4.9	86	52	0.09	10	101006 0490	3,19	10	101010 0490	3,38	10	101410 0490	2,60
5.0	86	52	0.09	10	101006 0500	3,19	10	101010 0500	3,39	10	101410 0500	2,42
5.1	86	52	0.13	10	101006 0510	3,36	10	101010 0510	3,53			
5.2	86	52	0.13	10	101006 0520	3,36	10	101010 0520	3,53			
5.3	86	52	0.13	10	101006 0530	3,36	10	101010 0530	3,53			
5.4	93	57	0.13	10	101006 0540	3,67	10	101010 0540	3,87			
5.5	93	57	0.13	10	101006 0550	3,54	10	101010 0550	3,71	10	101410 0550	2,65
5.6	93	57	0.13	10	101006 0560	3,97	10	101010 0560	4,17			
5.7	93	57	0.13	10	101006 0570	3,97	10	101010 0570	4,17			
5.8	93	57	0.13	10	101006 0580	3,97	10	101010 0580	4,17			
5.9	93	57	0.13	10	101006 0590	3,97	10	101010 0590	4,17			
6.0	93	57	0.13	1	101006 0600	3,87	10	101010 0600	4,07	1	101410 0600	2,87
6.1	101	63	0.13	1	101006 0610	4,41	1	101010 0610	4,65			
6.2	101	63	0.13	1	101006 0620	4,41	1	101010 0620	4,64			
6.3	101	63	0.13	1	101006 0630	4,41	1	101010 0630	4,64			
6.4	101	63	0.13	1	101006 0640	4,41	1	101010 0640	4,64			
6.5	101	63	0.13	1	101006 0650	4,37	1	101010 0650	4,59	1	101410 0650	3,52
6.6	101	63	0.13	1	101006 0660	4,74	1	101010 0660	4,99			
6.7	101	63	0.13	1	101006 0670	4,74	1	101010 0670	4,99			
6.8	109	69	0.13	1	101006 0680	5,55	1	101010 0680	5,95	1	101410 0680	4,54
6.9	109	69	0.13	1	101006 0690	5,55	1	101010 0690	5,90			
7.0	109	69	0.13	1	101006 0700	5,55	1	101010 0700	5,90	1	101410 0700	4,50
7.1	109	69	0.13	1	101006 0710	6,90	1	101010 0710	7,30			
7.2	109	69	0.13	1	101006 0720	6,90	1	101010 0720	7,30			
7.3	109	69	0.13	1	101006 0730	6,90	1	101010 0730	7,30			
7.4	109	69	0.13	1	101006 0740	6,90	1	101010 0740	7,30			
7.5	109	69	0.13	1	101006 0750	5,80	1	101010 0750	6,15	1	101410 0750	4,64
7.6	117	75	0.13	1	101006 0760	7,65	1	101010 0760	8,–			
7.7	117	75	0.13	1	101006 0770	7,65	1	101010 0770	8,–			
7.8	117	75	0.13	1	101006 0780	7,65	1	101010 0780	8,–			
7.9	117	75	0.13	1	101006 0790	7,65	1	101010 0790	8,–			
8.0	117	75	0.13	1	101006 0800	6,25	1	101010 0800	6,60	1	101410 0800	5,15
8.1	117	75	0.18	1	101006 0810	7,65	1	101010 0810	8,–			
8.2	117	75	0.18	1	101006 0820	7,65	1	101010 0820	8,–			
8.3	117	75	0.18	1	101006 0830	7,65	1	101010 0830	8,–			
8.4	117	75	0.18	1	101006 0840	7,65	1	101010 0840	8,–			
8.5	117	75	0.18	1	101006 0850	6,70	1	101010 0850	7,05	1	101410 0850	5,40
8.6	125	81	0.18	1	101006 0860	8,90	1	101010 0860	9,35			
8.7	125	81	0.18	1	101006 0870	8,90	1	101010 0870	9,35			
8.8	125	81	0.18	1	101006 0880	8,90	1	101010 0880	9,35			
8.9	125	81	0.18	1	101006 0890	8,90	1	101010 0890	9,35			
9.0	125	81	0.18	1	101006 0900	7,70	1	101010 0900	8,10	1	101410 0900	6,35
9.1	125	81	0.18	1	101006 0910	9,50	1	101010 0910	10,–			
9.2	125	81	0.18	1	101006 0920	9,50	1	101010 0920	10,–			
9.3	125	81	0.18	1	101006 0930	9,80	1	101010 0930	10,25			
9.4	125	81	0.18	1	101006 0940	9,80	1	101010 0940	10,25			
9.5	125	81	0.18	1	101006 0950	8,40	1	101010 0950	8,90	1	101410 0950	6,85
9.6	133	87	0.18	1	101006 0960	10,70	1	101010 0960	11,25			
9.7	133	87	0.18	1	101006 0970	10,70	1	101010 0970	11,25			
9.8	133	87	0.18	1	101006 0980	10,70	1	101010 0980	11,25			
9.9	133	87	0.18	1	101006 0990	10,70	1	101010 0990	11,25			
10.0	133	87	0.18	1	101006 1000	9,65	1	101010 1000	10,20	1	101410 1000	7,75
10.1	133	87	0.18	1	101006 1010	13,10						
10.2	133	87	0.18	1	101006 1020	12,45	1	101010 1020	13,10	1	101410 1020	9,25
10.3	133	87	0.18	1	101006 1030	20,20						
					1104			1104			1137	

Continued on next page >>>

D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		ATORN® Type N, 118°, vap. art.no.	€		ATORN® Type NV, 130°, blank art.no.	€		SARA® Type N, 130°, blank art.no.	€
10.4	133	87	0.18	1	101006 1040	20,60						
10.5	133	87	0.18	1	101006 1050	12,45	1	101010 1050	13,10	1	101410 1050	9,–
10.6	133	87	0.18	1	101006 1060	26,20						
10.7	142	94	0.18	1	101006 1070	26,50						
10.8	142	94	0.18	1	101006 1080	24,80						
10.9	142	94	0.18	1	101006 1090	27,70						
11.0	142	94	0.18	1	101006 1100	14,65	1	101010 1100	15,40	1	101410 1100	12,–
11.1	142	94	0.18	1	101006 1110	29,10						
11.2	142	94	0.18	1	101006 1120	28,70						
11.3	142	94	0.18	1	101006 1130	31,70						
11.4	142	94	0.18	1	101006 1140	27,90						
11.5	142	94	0.18	1	101006 1150	16,30	1	101010 1150	17,20	1	101410 1150	13,45
11.6	142	94	0.18	1	101006 1160	33,–						
11.7	142	94	0.18	1	101006 1170	33,–						
11.8	142	94	0.18	1	101006 1180	23,80	1	101010 1180	25,–			
11.9	151	101	0.18	1	101006 1190	33,–						
12.0	151	101	0.18	1	101006 1200	17,20	1	101010 1200	18,20	1	101410 1200	14,20
12.1	151	101	0.22	1	101006 1210	33,–						
12.2	151	101	0.22	1	101006 1220	33,–	1	101010 1220	14,15			
12.3	151	101	0.22	1	101006 1230	24,50						
12.4	151	101	0.22	1	101006 1240	34,50						
12.5	151	101	0.22	1	101006 1250	20,70	1	101010 1250	21,70			
12.6	151	101	0.22	1	101006 1260	39,60						
12.7	151	101	0.22	1	101006 1270	24,50						
12.8	151	101	0.22	1	101006 1280	45,20						
12.9	151	101	0.22	1	101006 1290	39,60						
13.0	151	101	0.22	1	101006 1300	24,80	1	101010 1300	26,10	1	101410 1300	18,90
13.5	160	108	0.22	1	101006 1350	30,70	1	101010 1350	32,30			
13.75	160	108	0.22	1	101006 1375	62,–						
14.0	160	108	0.22	1	101006 1400	31,40	1	101010 1400	33,20			
14.5	169	114	0.22	1	101006 1450	38,60	1	101010 1450	40,70			
15.0	169	114	0.22	1	101006 1500	48,20	1	101010 1500	50,50			
15.25	178	120	0.22	1	101006 1525	75,50						
15.5	178	120	0.22	1	101006 1550	49,90	1	101010 1550	39,–			
15.75	178	120	0.22	1	101006 1575	78,50						
16.0	178	120	0.22	1	101006 1600	44,20	1	101010 1600	46,50			
16.5	187	125	0.28	1	101006 1650	83,50						
17.0	187	125	0.28	1	101006 1700	79,–						
17.5	196	130	0.28	1	101006 1750	115,–						
18.0	196	130	0.28	1	101006 1800	88,–						
18.5	205	135	0.28	1	101006 1850	80,50						
19.0	205	135	0.28	1	101006 1900	85,50						
19.5	214	140	0.28	1	101006 1950	86,–						
20.0	214	140	0.28	1	101006 2000	91,50						
					1104			1104			1137	



ATORN® Twist drill bit sets

HSS-E | DIN 338 | Typ N | Typ NV | 118° | 130° | 27° | 35° | 5xD | Vc/fz | 353

- 101036.... profile-ground, vapour-treated from Ø 2.3 mm, point thinning from Ø ≥ 1 mm
- 101038.... profile-ground, point thinning from Ø ≥ 1 mm, drilling with no need for accurate centring
- 101039.... Plastic case

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
101036....	● 25-28	● 20-22		○ 12-14	○ 10-12		● 25-28	○ 20-23				○ 50-60	○ 40-50	○ 30-60				
101038....	● 30-35	● 20-22	○ 12-15	● 10-14	○ 10-12				● 6-9	○ 6-8								
Cutting speed Vc m/min.							Please adjust these guidelines according to clamping operation and machine set-up.											



101036 0004 | 101038 0004 | 101039 0004

D mm	Number of drills	Type N, 118°, vap. art.no.	€	Type NV, 130°, blank art.no.	€	Empty case art.no.	€
Ø 1.0 to 5.9 mm in 0.1 mm increments	50	**101036** 0001	166,–	**101038** 0001	175,–	**101039** 0001	25,70
Ø 6.0 to 10.0 mm in 0.1 mm increments	41	101036 0002	342,–	101038 0002	360,–	101039 0002	34,–
Ø 1.0 to 10.0 mm in 0.5 mm increments	19	101036 0003	96,–	101038 0003	101,–	101039 0003	10,65
Ø 1.0 to 13.0 mm in 0.5 mm increments	25	101036 0004	202,–	101038 0004	212,–	101039 0004	22,20
Ø 1.0 to 10.5 mm in 0.5 mm increments with the following additional dimensions for threaded bores: Ø 3.3-4.2-6.8-10.2 mm	24	101036 0005	141,–	101038 0005	148,–	101039 0005	34,50
		1104		1104		1104	



… HPC with internal cooling

ATORN®
High quality for great performance

ATORN® Twist drill bit

HSS-E | DIN 338 | Typ TLP | 130° | 38° | 5xD | TiN | TiAlN | Vc/fz

353
354
355

- **Self-centring**
- 101013.... profile-ground, nitrided from Ø 2.4 mm
- 101014.... profile-ground, TiN-coated
- 101012.... profile-ground, TiAlN-coated
- Optimised chip flute profile for excellent chip removal

material

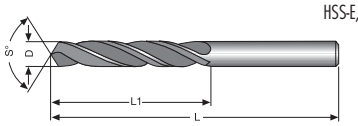
● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
101013....	● 30-35	● 22-28	○ 12-18	○ 12-16			● 28-35	○ 22-26				○ 60-70	○ 50-60	○ 30-60				
101014....	● 35-40	● 30-35	○ 12-20	○ 14-18	○ 10-14		○ 28-35	○ 22-26										
101012....	● 35-40	● 30-35	● 12-20	● 14-18	○ 10-14		● 30-40	○ 25-30				○ 75-90	○ 60-70	○ 30-60				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.


HSS-E, blank


HSS-E, TiN


HSS-E, TiAlN



● Feed f steel < 1000 N/mm² mm/rev

D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€		TiN art.no.	€		TiAlN art.no.	€
1.0	34	12	0.04	10	**101013** 0100	2,69	10	**101014** 0100	4,06	10	**101012** 0100	5,10
1.1	36	14	0.04	10	101013 0110	2,62	10	101014 0110	4,42	10	101012 0110	5,50
1.2	38	16	0.04	10	101013 0120	2,69	10	101014 0120	4,32	10	101012 0120	5,40
1.3	38	16	0.04	10	101013 0130	2,69	10	101014 0130	4,42	10	101012 0130	5,50
1.4	40	18	0.04	10	101013 0140	2,69	10	101014 0140	4,47	10	101012 0140	5,55
1.5	40	18	0.04	10	101013 0150	2,72	10	101014 0150	4,21	10	101012 0150	5,25
1.6	43	20	0.04	10	101013 0160	2,72	10	101014 0160	4,21	10	101012 0160	5,25
1.7	43	20	0.04	10	101013 0170	2,72	10	101014 0170	4,52	10	101012 0170	5,65
1.8	46	22	0.04	10	101013 0180	2,72	10	101014 0180	4,47	10	101012 0180	5,55
1.9	46	22	0.04	10	101013 0190	2,72	10	101014 0190	4,47	10	101012 0190	5,55
2.0	49	24	0.04	10	101013 0200	2,92	10	101014 0200	4,32	10	101012 0200	5,40
2.1	49	24	0.04	10	101013 0210	2,92	10	101014 0210	4,52	10	101012 0210	5,65
2.2	53	27	0.04	10	101013 0220	2,92	10	101014 0220	4,78	10	101012 0220	5,95
2.3	53	27	0.04	10	101013 0230	2,92	10	101014 0230	4,63	10	101012 0230	5,75
2.4	57	30	0.04	10	101013 0240	2,92	10	101014 0240	4,32	10	101012 0240	5,40
2.5	57	30	0.09	10	101013 0250	2,99	10	101014 0250	4,42	10	101012 0250	5,50
2.6	57	30	0.09	10	101013 0260	2,99	10	101014 0260	4,63	10	101012 0260	5,75
2.7	61	33	0.09	10	101013 0270	3,09	10	101014 0270	4,88	10	101012 0270	6,05
2.8	61	33	0.09	10	101013 0280	3,09	10	101014 0280	4,78	10	101012 0280	5,95
2.9	61	33	0.09	10	101013 0290	3,09	10	101014 0290	4,88	10	101012 0290	6,05
3.0	61	33	0.09	10	101013 0300	2,99	10	101014 0300	4,68	10	101012 0300	5,80
3.1	65	36	0.09	10	101013 0310	3,09	10	101014 0310	5,15	10	101012 0310	6,45
3.2	65	36	0.09	10	101013 0320	3,09	10	101014 0320	5,10	10	101012 0320	6,30
3.3	65	36	0.09	10	101013 0330	3,15	10	101014 0330	5,15	10	101012 0330	6,45
3.4	70	39	0.09	10	101013 0340	3,49	10	101014 0340	5,55	10	101012 0340	6,95
3.5	70	39	0.09	10	101013 0350	3,41	10	101014 0350	5,70	10	101012 0350	7,10
3.6	70	39	0.09	10	101013 0360	3,41	10	101014 0360	5,70	10	101012 0360	7,15
3.7	70	39	0.09	10	101013 0370	3,49	10	101014 0370	6,10	10	101012 0370	7,65
3.8	75	43	0.09	10	101013 0380	3,81	10	101014 0380	6,05	10	101012 0380	7,55
3.9	75	43	0.09	10	101013 0390	3,81	10	101014 0390	6,10	10	101012 0390	7,65
4.0	75	43	0.09	10	101013 0400	3,65	10	101014 0400	5,85	10	101012 0400	7,35
4.1	75	43	0.09	10	101013 0410	3,81	10	101014 0410	6,–	10	101012 0410	7,50
4.2	75	43	0.09	10	101013 0420	3,81	10	101014 0420	6,–	10	101012 0420	7,50
4.3	80	47	0.09	10	101013 0430	3,87	10	101014 0430	6,35	10	101012 0430	7,95
					1104			1104			1104	

D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€		TiN art.no.	€		TiAlN art.no.	€
4.4	80	47	0.09	10	101013 0440	3,87	10	101014 0440	6,35	10	101012 0440	7,95
4.5	80	47	0.09	10	101013 0450	3,77	10	101014 0450	6,20	10	101012 0450	7,75
4.6	80	47	0.09	10	101013 0460	3,87	10	101014 0460	6,55	10	101012 0460	8,15
4.7	80	47	0.09	10	101013 0470	3,87	10	101014 0470	6,75	10	101012 0470	8,45
4.8	86	52	0.09	10	101013 0480	3,87	10	101014 0480	6,75	10	101012 0480	8,45
4.9	86	52	0.09	10	101013 0490	3,93	10	101014 0490	6,85	10	101012 0490	8,55
5.0	86	52	0.09	10	101013 0500	3,93	10	101014 0500	6,90	10	101012 0500	8,60
5.1	86	52	0.13	10	101013 0510	4,15	10	101014 0510	6,90	10	101012 0510	8,60
5.2	86	52	0.13	10	101013 0520	4,15	10	101014 0520	7,10	10	101012 0520	8,90
5.3	86	52	0.13	10	101013 0530	4,15	10	101014 0530	7,50	10	101012 0530	9,40
5.4	93	57	0.13	10	101013 0540	4,56	10	101014 0540	8,10	10	101012 0540	10,20
5.5	93	57	0.13	10	101013 0550	4,32	10	101014 0550	7,95	10	101012 0550	9,95
5.6	93	57	0.13	10	101013 0560	4,89	10	101014 0560	8,45	10	101012 0560	10,55
5.7	93	57	0.13	10	101013 0570	4,89	10	101014 0570	8,35	10	101012 0570	10,45
5.8	93	57	0.13	10	101013 0580	4,89	10	101014 0580	8,35	10	101012 0580	10,45
5.9	93	57	0.13	10	101013 0590	4,89	10	101014 0590	8,15	10	101012 0590	10,25
6.0	93	57	0.13	10	101013 0600	4,76	10	101014 0600	8,05	10	101012 0600	10,05
6.1	101	63	0.13	1	101013 0610	5,45	1	101014 0610	9,10	1	101012 0610	11,35
6.2	101	63	0.13	1	101013 0620	5,45	1	101014 0620	8,95	1	101012 0620	11,20
6.3	101	63	0.13	1	101013 0630	5,45	1	101014 0630	8,75	1	101012 0630	10,90
6.4	101	63	0.13	1	101013 0640	5,30	1	101014 0640	8,75	1	101012 0640	10,90
6.5	101	63	0.13	1	101013 0650	5,45	1	101014 0650	9,70	1	101012 0650	12,15
6.6	101	63	0.13	1	101013 0660	6,–	1	101014 0660	10,60	1	101012 0660	13,25
6.7	101	63	0.13	1	101013 0670	6,–	1	101014 0670	10,60	1	101012 0670	13,25
6.8	109	69	0.13	1	101013 0680	7,10	1	101014 0680	11,05	1	101012 0680	13,85
6.9	109	69	0.13	1	101013 0690	7,10	1	101014 0690	11,05	1	101012 0690	13,85
7.0	109	69	0.13	1	101013 0700	7,–	1	101014 0700	10,85	1	101012 0700	13,55
7.1	109	69	0.13	1	101013 0710	8,65	1	101014 0710	12,55	1	101012 0710	15,70
7.2	109	69	0.13	1	101013 0720	8,65	1	101014 0720	12,55	1	101012 0720	15,60
7.3	109	69	0.13	1	101013 0730	8,65	1	101014 0730	12,95	1	101012 0730	16,20
7.4	109	69	0.13	1	101013 0740	8,65	1	101014 0740	12,65	1	101012 0740	15,80
7.5	109	69	0.13	1	101013 0750	7,30	1	101014 0750	12,–	1	101012 0750	14,95
7.6	117	75	0.13	1	101013 0760	9,40	1	101014 0760	14,–	1	101012 0760	17,50
7.7	117	75	0.13	1	101013 0770	9,40	1	101014 0770	15,50	1	101012 0770	19,40
7.8	117	75	0.13	1	101013 0780	9,40	1	101014 0780	13,65	1	101012 0780	17,10
7.9	117	75	0.13	1	101013 0790	9,40	1	101014 0790	15,50	1	101012 0790	19,40
8.0	117	75	0.13	1	101013 0800	7,65	1	101014 0800	13,05	1	101012 0800	16,30
8.1	117	75	0.18	1	101013 0810	9,40	1	101014 0810	14,25	1	101012 0810	17,80
8.2	117	75	0.18	1	101013 0820	9,40	1	101014 0820	14,–	1	101012 0820	17,50
8.3	117	75	0.18	1	101013 0830	9,40	1	101014 0830	15,50	1	101012 0830	19,40
8.4	117	75	0.18	1	101013 0840	9,15	1	101014 0840	15,50	1	101012 0840	19,40
8.5	117	75	0.18	1	101013 0850	8,15	1	101014 0850	13,40	1	101012 0850	16,80
8.6	125	81	0.18	1	101013 0860	11,–	1	101014 0860	18,30	1	101012 0860	22,90
8.7	125	81	0.18	1	101013 0870	11,–	1	101014 0870	18,30	1	101012 0870	22,90
8.8	125	81	0.18	1	101013 0880	11,–	1	101014 0880	15,60	1	101012 0880	19,50
8.9	125	81	0.18	1	101013 0890	11,–	1	101014 0890	17,80	1	101012 0890	22,20
9.0	125	81	0.18	1	101013 0900	9,45	1	101014 0900	14,80	1	101012 0900	18,50
9.1	125	81	0.18	1	101013 0910	11,60	1	101014 0910	18,70	1	101012 0910	23,30
9.2	125	81	0.18	1	101013 0920	11,60	1	101014 0920	18,70	1	101012 0920	23,30
9.3	125	81	0.18	1	101013 0930	12,05	1	101014 0930	17,–	1	101012 0930	21,20
9.4	125	81	0.18	1	101013 0940	12,05	1	101014 0940	19,–	1	101012 0940	23,70
9.5	125	81	0.18	1	101013 0950	10,55	1	101014 0950	15,50	1	101012 0950	19,40
9.6	133	87	0.18	1	101013 0960	13,25	1	101014 0960	18,40	1	101012 0960	23,–
9.7	133	87	0.18	1	101013 0970	13,25	1	101014 0970	20,70	1	101012 0970	25,80
9.8	133	87	0.18	1	101013 0980	13,25	1	101014 0980	18,40	1	101012 0980	23,–
9.9	133	87	0.18	1	101013 0990	13,25	1	101014 0990	20,70	1	101012 0990	25,80
10.0	133	87	0.18	1	101013 1000	11,95	1	101014 1000	17,40	1	101012 1000	21,80
10.2	133	87	0.18	1	101013 1020	15,50	1	101014 1020	20,10	1	101012 1020	25,20
10.5	133	87	0.18	1	101013 1050	15,50	1	101014 1050	20,40	1	101012 1050	25,50
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D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€		TiN art.no.	€		TiAlN art.no.	€
11.0	142	94	0.18	1	101013 1100	17,90	1	101014 1100	21,10	1	101012 1100	26,30
11.5	142	94	0.18	1	101013 1150	20,20	1	101014 1150	23,30	1	101012 1150	29,20
11.8	142	94	0.18	1	101013 1180	29,20	1	101014 1180	27,40	1	101012 1180	34,30
12.0	151	101	0.18	1	101013 1200	21,10	1	101014 1200	24,90	1	101012 1200	31,10
12.5	151	101	0.22				1	101014 1250	25,90	1	101012 1250	32,40
13.0	151	101	0.22				1	101014 1300	27,60	1	101012 1300	34,40
13.5	160	108	0.22				1	101014 1350	40,10	1	101012 1350	50,–
14.0	160	108	0.22				1	101014 1400	36,60	1	101012 1400	45,70
14.5	169	114	0.22				1	101014 1450	59,–			
15.0	169	114	0.22				1	101014 1500	44,–	1	101012 1500	55,–
15.5	178	120	0.22				1	101014 1550	80,–			
16.0	178	120	0.22				1	101014 1600	53,–	1	101012 1600	66,50
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ATORN® Twist drill UNI

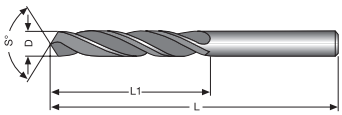
HSS-E | DIN 338 | Typ U | 118° | 38° | 5xD | Vc/fz | 353

- Special point thinning
- Self-centring
- 4-facet grinding
- **For universal applications**
- Smooth operation
- **Low torque**
- Optimum chip removal with round groove profile

Universal multi-purpose drill bit

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	○	●	●		●	○				●	○	○				
		20-32	13-16	10-15	12-14	10-12		28-35	30-36				40-55	30-35	25-35				
		Cutting speed Vc m/min.						Please adjust these guidelines according to clamping operation and machine set-up.											





D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
1.0	34	12	0.02	10	**101040** 0100	3,09
1.1	36	14	0.04	10	101040 0110	3,20
1.2	38	16	0.04	10	101040 0120	3,20
1.3	38	16	0.04	10	101040 0130	3,20
1.4	40	18	0.04	10	101040 0140	3,20
1.5	40	18	0.04	10	101040 0150	3,09
1.6	43	20	0.04	10	101040 0160	3,20
1.7	43	20	0.04	10	101040 0170	3,20
1.8	46	22	0.04	10	101040 0180	3,20
1.9	46	22	0.04	10	101040 0190	3,20
2.0	49	24	0.05	10	101040 0200	3,09
2.1	49	24	0.05	10	101040 0210	3,20
2.2	53	27	0.05	10	101040 0220	3,20
2.3	53	27	0.05	10	101040 0230	3,20
2.4	57	30	0.05	10	101040 0240	3,20
2.5	57	30	0.06	10	101040 0250	3,20
2.6	57	30	0.06	10	101040 0260	3,31
2.7	61	33	0.06	10	101040 0270	3,65
2.8	61	33	0.06	10	101040 0280	3,65
2.9	61	33	0.06	10	101040 0290	3,65
3.0	61	33	0.06	10	101040 0300	3,20
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D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
3.1	65	36	0.08	10	101040 0310	3,65
3.2	65	36	0.08	10	101040 0320	3,65
3.3	65	36	0.08	10	101040 0330	3,54
3.4	70	39	0.08	10	101040 0340	3,97
3.5	70	39	0.08	10	101040 0350	3,97
3.6	70	39	0.08	10	101040 0360	3,97
3.7	70	39	0.08	10	101040 0370	3,97
3.8	75	43	0.08	10	101040 0380	4,32
3.9	75	43	0.08	10	101040 0390	4,32
4.0	75	43	0.10	10	101040 0400	4,02
4.1	75	43	0.10	10	101040 0410	4,32
4.2	75	43	0.10	10	101040 0420	4,19
4.3	80	47	0.10	10	101040 0430	4,32
4.4	80	47	0.10	10	101040 0440	4,42
4.5	80	47	0.10	10	101040 0450	4,32
4.6	80	47	0.10	10	101040 0460	4,42
4.7	80	47	0.10	10	101040 0470	4,42
4.8	86	52	0.10	10	101040 0480	4,42
4.9	86	52	0.10	10	101040 0490	4,53
5.0	86	52	0.10	10	101040 0500	4,42
5.1	86	52	0.10	10	101040 0510	4,53
					1104	

D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
5.2	86	52	0.10	10	101040 0520	4,53
5.3	86	52	0.10	10	101040 0530	4,53
5.4	93	57	0.10	10	101040 0540	5,20
5.5	93	57	0.10	10	101040 0550	5,15
5.6	93	57	0.10	10	101040 0560	5,70
5.7	93	57	0.10	10	101040 0570	5,70
5.8	93	57	0.10	10	101040 0580	5,70
5.9	93	57	0.10	10	101040 0590	5,70
6.0	93	57	0.10	1	101040 0600	5,50
6.1	101	63	0.12	1	101040 0610	6,40
6.2	101	63	0.12	1	101040 0620	6,40
6.3	101	63	0.12	1	101040 0630	6,40
6.4	101	63	0.12	1	101040 0640	6,40
6.5	101	63	0.12	1	101040 0650	6,20
6.6	101	63	0.12	1	101040 0660	6,80
6.7	101	63	0.12	1	101040 0670	6,80
6.8	109	69	0.12	1	101040 0680	7,75
6.9	109	69	0.12	1	101040 0690	7,95
7.0	109	69	0.13	1	101040 0700	7,75
7.1	109	69	0.13	1	101040 0710	9,50
7.2	109	69	0.13	1	101040 0720	9,50
7.3	109	69	0.13	1	101040 0730	9,50
7.4	109	69	0.13	1	101040 0740	9,50
7.5	109	69	0.13	1	101040 0750	7,95
7.6	117	75	0.13	1	101040 0760	10,15
7.7	117	75	0.13	1	101040 0770	10,15
7.8	117	75	0.13	1	101040 0780	10,15
7.9	117	75	0.13	1	101040 0790	10,15

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D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
8.0	117	75	0.16	1	101040 0800	8,40
8.1	117	75	0.16	1	101040 0810	10,15
8.2	117	75	0.16	1	101040 0820	10,15
8.3	117	75	0.16	1	101040 0830	10,15
8.4	117	75	0.16	1	101040 0840	10,15
8.5	117	75	0.16	1	101040 0850	8,85
8.6	125	81	0.16	1	101040 0860	13,45
8.7	125	81	0.16	1	101040 0870	13,95
8.8	125	81	0.16	1	101040 0880	12,15
8.9	125	81	0.16	1	101040 0890	14,55
9.0	125	81	0.18	1	101040 0900	10,15
9.1	125	81	0.18	1	101040 0910	15,40
9.2	125	81	0.18	1	101040 0920	15,40
9.3	125	81	0.18	1	101040 0930	13,25
9.4	125	81	0.18	1	101040 0940	15,70
9.5	125	81	0.18	1	101040 0950	11,45
9.6	133	87	0.18	1	101040 0960	16,80
9.7	133	87	0.18	1	101040 0970	16,80
9.8	133	87	0.18	1	101040 0980	14,75
9.9	133	87	0.18	1	101040 0990	17,50
10.0	133	87	0.20	1	101040 1000	12,85
10.2	133	87	0.20	1	101040 1020	17,10
10.5	133	87	0.20	1	101040 1050	17,50
11.0	142	94	0.20	1	101040 1100	19,70
11.5	142	94	0.20	1	101040 1150	22,50
12.0	151	101	0.20	1	101040 1200	22,90
12.5	151	101	0.20	1	101040 1250	28,50
13.0	151	101	0.20	1	101040 1300	32,40

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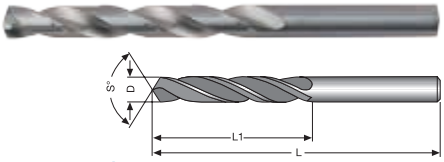
ATORN® Twist drill bit

HSS-E | DIN 338 | Typ NV | 135° | 30° | 5xD | Vc/fz | 355

- Self-centring
- **With reinforced core**
- HSS cutting material with increased heat resistance

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	○	●	○		○	○	○	○		○	○	○		○		
		30-35	22-28	12-18	12-16	10-14		28-35	22-26	6-9	6-8		70-80	60-70	30-60		3-4		
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.



D h8 mm	L mm	L1 mm	Feed f steel < 1400 N/mm² mm/rev		art.no.	€
1.0	34	12	0.04	10	**101016** 0100	1,93
1.1	36	14	0.04	10	101016 0110	2,03
1.2	38	16	0.04	10	101016 0120	1,93
1.3	38	16	0.04	10	101016 0130	2,29
1.4	40	18	0.04	10	101016 0140	2,03
1.5	40	18	0.04	10	101016 0150	1,98
1.6	43	20	0.04	10	101016 0160	1,98
1.7	43	20	0.04	10	101016 0170	2,03
1.8	46	22	0.04	10	101016 0180	2,29

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D h8 mm	L mm	L1 mm	Feed f steel < 1400 N/mm² mm/rev		art.no.	€
1.9	46	22	0.04	10	101016 0190	2,40
2.0	49	24	0.04	10	101016 0200	2,03
2.1	49	24	0.04	10	101016 0210	2,40
2.2	53	27	0.04	10	101016 0220	2,40
2.3	53	27	0.04	10	101016 0230	2,61
2.4	57	30	0.04	10	101016 0240	2,24
2.5	57	30	0.04	10	101016 0250	1,98
2.6	57	30	0.04	10	101016 0260	2,40
2.7	61	33	0.04	10	101016 0270	2,76

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D h8 mm	L mm	L1 mm	Feed f steel < 1400 N/mm² mm/rev		art.no.	€
2.8	61	33	0.04	10	101016 0280	2,50
2.9	61	33	0.04	10	101016 0290	2,66
3.0	61	33	0.05	10	101016 0300	2,24
3.1	65	36	0.05	10	101016 0310	2,40
3.2	65	36	0.05	10	101016 0320	1,98
3.3	65	36	0.05	10	101016 0330	1,98
3.4	70	39	0.05	10	101016 0340	2,50
3.5	70	39	0.05	10	101016 0350	2,14
3.6	70	39	0.05	10	101016 0360	2,92
3.7	70	39	0.05	10	101016 0370	3,44
3.8	75	43	0.05	10	101016 0380	2,87
3.9	75	43	0.05	10	101016 0390	3,28
4.0	75	43	0.05	10	101016 0400	2,56
4.1	75	43	0.05	10	101016 0410	2,76
4.2	75	43	0.05	10	101016 0420	2,92
4.3	80	47	0.05	10	101016 0430	3,28
4.4	80	47	0.05	10	101016 0440	3,49
4.5	80	47	0.05	10	101016 0450	2,81
4.6	80	47	0.05	10	101016 0460	3,44
4.7	80	47	0.05	10	101016 0470	3,86
4.8	86	52	0.05	10	101016 0480	3,49
4.9	86	52	0.05	10	101016 0490	4,38
5.0	86	52	0.05	10	101016 0500	3,18
5.1	86	52	0.08	10	101016 0510	3,54
5.2	86	52	0.08	10	101016 0520	4,17
5.3	86	52	0.08	10	101016 0530	4,38
5.4	93	57	0.08	10	101016 0540	4,85
5.5	93	57	0.08	10	101016 0550	4,48
5.6	93	57	0.08	10	101016 0560	5,30
5.7	93	57	0.08	10	101016 0570	5,20
5.8	93	57	0.08	10	101016 0580	5,15
5.9	93	57	0.08	10	101016 0590	5,10
6.0	93	57	0.08	10	101016 0600	4,17
6.1	101	63	0.08	1	101016 0610	5,65
6.2	101	63	0.08	1	101016 0620	6,–
6.3	101	63	0.08	1	101016 0630	6,10
6.4	101	63	0.08	1	101016 0640	6,10
6.5	101	63	0.08	1	101016 0650	5,30
6.6	101	63	0.08	1	101016 0660	5,70
6.7	101	63	0.08	1	101016 0670	6,10
6.8	109	69	0.08	1	101016 0680	5,40

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D h8 mm	L mm	L1 mm	Feed f steel < 1400 N/mm² mm/rev		art.no.	€
6.9	109	69	0.08	1	101016 0690	7,05
7.0	109	69	0.08	1	101016 0700	5,55
7.1	109	69	0.08	1	101016 0710	7,80
7.2	109	69	0.08	1	101016 0720	8,35
7.3	109	69	0.08	1	101016 0730	8,10
7.4	109	69	0.08	1	101016 0740	9,90
7.5	109	69	0.08	1	101016 0750	6,85
7.6	117	75	0.08	1	101016 0760	10,45
7.7	117	75	0.08	1	101016 0770	10,75
7.8	117	75	0.08	1	101016 0780	9,85
7.9	117	75	0.08	1	101016 0790	9,85
8.0	117	75	0.08	1	101016 0800	10,40
8.1	117	75	0.11	1	101016 0810	10,10
8.2	117	75	0.11	1	101016 0820	12,05
8.3	117	75	0.11	1	101016 0830	11,25
8.4	117	75	0.11	1	101016 0840	11,10
8.5	117	75	0.11	1	101016 0850	8,30
8.6	125	81	0.11	1	101016 0860	10,55
8.7	125	81	0.11	1	101016 0870	11,55
8.8	125	81	0.11	1	101016 0880	10,20
8.9	125	81	0.11	1	101016 0890	13,35
9.0	125	81	0.11	1	101016 0900	11,10
9.1	125	81	0.11	1	101016 0910	13,65
9.2	125	81	0.11	1	101016 0920	13,95
9.3	125	81	0.11	1	101016 0930	13,40
9.4	125	81	0.11	1	101016 0940	15,10
9.5	125	81	0.11	1	101016 0950	13,05
9.6	133	87	0.11	1	101016 0960	13,65
9.7	133	87	0.11	1	101016 0970	13,–
9.8	133	87	0.11	1	101016 0980	15,80
9.9	133	87	0.11	1	101016 0990	16,–
10.0	133	87	0.11	1	101016 1000	12,40
10.1	133	87	0.11	1	101016 1010	14,05
10.2	133	87	0.11	1	101016 1020	15,30
10.5	133	87	0.11	1	101016 1050	14,95
11.0	142	94	0.11	1	101016 1100	16,30
11.5	142	94	0.11	1	101016 1150	21,40
11.8	142	94	0.11	1	101016 1180	21,40
12.0	151	101	0.11	1	101016 1200	17,90
12.5	151	101	0.14	1	101016 1250	24,60
13.0	151	101	0.14	1	101016 1300	20,90

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... with precision.

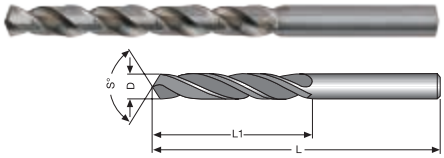
ATORN®
Performance demands quality

ATORN® Stainless steel twist drill

HSS-E | DIN 338 | Typ VA | 130° | 40° | 5xD | Vc/fz | 355

- Self-centring
- **Specially designed for machining stainless steel**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		○ 30-35	○ 22-28		● 14-18	● 10-14													
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		



D h8 mm	L mm	L1 mm	Feed f stainless steel austenitic mm/rev		art.no.	€
1.0	34	12	0.04	10	**101018** 0100	2,81
1.1	36	14	0.04	10	101018 0110	3,33
1.2	38	16	0.04	10	101018 0120	3,33
1.3	38	16	0.04	10	101018 0130	3,49
1.4	40	18	0.04	10	101018 0140	3,23
1.5	40	18	0.04	10	101018 0150	2,97
1.6	43	20	0.04	10	101018 0160	3,23
1.7	43	20	0.04	10	101018 0170	3,23
1.8	46	22	0.04	10	101018 0180	3,44
1.9	46	22	0.04	10	101018 0190	3,86
2.0	49	24	0.04	10	101018 0200	2,81
2.1	49	24	0.04	10	101018 0210	3,33
2.2	53	27	0.04	10	101018 0220	3,49
2.3	53	27	0.04	10	101018 0230	4,74
2.4	57	30	0.04	10	101018 0240	4,58
2.5	57	30	0.04	10	101018 0250	3,33
2.6	57	30	0.04	10	101018 0260	3,96
2.7	61	33	0.04	10	101018 0270	4,85
2.8	61	33	0.04	10	101018 0280	4,74
2.9	61	33	0.04	10	101018 0290	5,10
3.0	61	33	0.05	10	101018 0300	3,49
3.1	65	36	0.05	10	101018 0310	4,28
3.2	65	36	0.05	10	101018 0320	3,96
3.3	65	36	0.05	10	101018 0330	3,75
3.4	70	39	0.05	10	101018 0340	4,38
3.5	70	39	0.05	10	101018 0350	3,75
3.6	70	39	0.05	10	101018 0360	5,20
3.7	70	39	0.05	10	101018 0370	4,74
3.8	75	43	0.05	10	101018 0380	5,90
3.9	75	43	0.05	10	101018 0390	6,15
4.0	75	43	0.05	10	101018 0400	4,28
4.1	75	43	0.05	10	101018 0410	5,95
4.2	75	43	0.05	10	101018 0420	4,53
4.3	80	47	0.05	10	101018 0430	5,20
4.4	80	47	0.05	10	101018 0440	5,95
4.5	80	47	0.05	10	101018 0450	5,05
4.6	80	47	0.05	10	101018 0460	6,70
4.7	80	47	0.05	10	101018 0470	7,05
4.8	86	52	0.05	10	101018 0480	5,70
4.9	86	52	0.05	10	101018 0490	7,15
5.0	86	52	0.05	10	101018 0500	4,85
5.1	86	52	0.08	10	101018 0510	5,70
5.2	86	52	0.08	10	101018 0520	5,40

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D h8 mm	L mm	L1 mm	Feed f stainless steel austenitic mm/rev		art.no.	€
5.3	86	52	0.08	10	101018 0530	6,40
5.4	93	57	0.08	10	101018 0540	8,60
5.5	93	57	0.08	10	101018 0550	5,80
5.6	93	57	0.08	10	101018 0560	8,70
5.7	93	57	0.08	10	101018 0570	14,65
5.8	93	57	0.08	10	101018 0580	6,15
5.9	93	57	0.08	10	101018 0590	8,70
6.0	93	57	0.08	10	101018 0600	6,20
6.1	101	63	0.08	1	101018 0610	8,45
6.2	101	63	0.08	1	101018 0620	8,05
6.3	101	63	0.08	1	101018 0630	7,40
6.4	101	63	0.08	1	101018 0640	8,70
6.5	101	63	0.08	1	101018 0650	7,40
6.6	101	63	0.08	1	101018 0660	9,15
6.7	101	63	0.08	1	101018 0670	9,50
6.8	109	69	0.08	1	101018 0680	8,30
6.9	109	69	0.08	1	101018 0690	10,30
7.0	109	69	0.08	1	101018 0700	8,45
7.1	109	69	0.08	1	101018 0710	12,05
7.2	109	69	0.08	1	101018 0720	12,50
7.3	109	69	0.08	1	101018 0730	12,80
7.4	109	69	0.08	1	101018 0740	12,25
7.5	109	69	0.08	1	101018 0750	9,25
7.6	117	75	0.08	1	101018 0760	16,90
7.7	117	75	0.08	1	101018 0770	14,35
7.8	117	75	0.08	1	101018 0780	13,30
7.9	117	75	0.08	1	101018 0790	16,90
8.0	117	75	0.08	1	101018 0800	10,30
8.1	117	75	0.11	1	101018 0810	12,50
8.2	117	75	0.11	1	101018 0820	12,75
8.3	117	75	0.11	1	101018 0830	13,50
8.4	117	75	0.11	1	101018 0840	14,95
8.5	117	75	0.11	1	101018 0850	11,10
8.6	125	81	0.11	1	101018 0860	14,65
8.7	125	81	0.11	1	101018 0870	15,70
8.8	125	81	0.11	1	101018 0880	16,50
8.9	125	81	0.11	1	101018 0890	21,20
9.0	125	81	0.11	1	101018 0900	13,35
9.1	125	81	0.11	1	101018 0910	15,80
9.2	125	81	0.11	1	101018 0920	17,50
9.3	125	81	0.11	1	101018 0930	17,30
9.4	125	81	0.11	1	101018 0940	19,30
9.5	125	81	0.11	1	101018 0950	14,–

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D h8 mm	L mm	L1 mm	Feed f stainless steel austenitic mm/rev		art.no.	€
9.6	133	87	0.11	1	101018 0960	17,80
9.7	133	87	0.11	1	101018 0970	19,90
9.8	133	87	0.11	1	101018 0980	18,20
9.9	133	87	0.11	1	101018 0990	20,60
10.0	133	87	0.11	1	101018 1000	16,60
10.2	133	87	0.11	1	101018 1020	20,70

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D h8 mm	L mm	L1 mm	Feed f stainless steel austenitic mm/rev		art.no.	€
10.5	133	87	0.11	1	101018 1050	17,40
11.0	142	94	0.11	1	101018 1100	21,90
11.5	142	94	0.11	1	101018 1150	23,80
11.8	142	94	0.11	1	101018 1180	28,–
12.0	151	101	0.11	1	101018 1200	26,30
13.0	151	101	0.14	1	101018 1300	52,50

1104

ATORN® Twist drill, with 3 surface shank

HSS-E | DIN 338 | Typ VA | 135° | 40° | 5xD | Vc/fz | 353

also ideal for stainless steel

- **3-facet grinding** on shank (from Ø 4 mm) for optimum transfer of force and secure hold in the drill chuck, no possibility of slippage
- Low force application when opening and closing in the drill chuck
- **Special surface treatment** in conjunction with relief grinding for maximum lubricant adhesion and for fast, reliable chip removal
- Designed especially for use on portable drilling machines

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	○		●	●							●	●	●				
	Cutting speed Vc m/min.	30-35	20-25		8-12	6-10							60-80	40-60	30-40				

Please adjust these guidelines according to clamping operation and machine set-up.

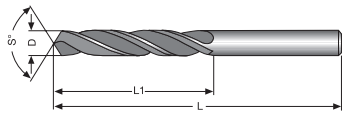
D h8 mm	L mm	L1 mm	Feed f steel < 700 N/mm² mm/rev		art.no.	€
2.0	49	24	0.04	10	**101076** 0020	2,77
2.5	57	30	0.04	10	101076 0025	2,88
3.0	61	33	0.05	10	101076 0030	2,88
3.2	65	36	0.05	10	101076 0032	3,37
3.3	65	36	0.05	10	101076 0033	3,37
3.5	70	39	0.05	10	101076 0035	3,37
4.0	75	43	0.07	10	101076 0040	3,91
4.2	75	43	0.07	10	101076 0042	3,91
4.5	80	47	0.07	10	101076 0045	4,12
5.0	86	52	0.08	10	101076 0050	4,24
5.2	86	52	0.08	5	101076 0052	4,46
5.5	93	57	0.08	5	101076 0055	4,66
6.0	93	57	0.10	1	101076 0060	5,–
6.5	101	63	0.10	1	101076 0065	5,30
6.8	109	69	0.10	1	101076 0068	5,75
7.0	109	69	0.11	1	101076 0070	5,80
7.5	109	69	0.11	1	101076 0075	6,–
8.0	117	75	0.12	1	101076 0080	6,85
8.5	117	75	0.12	1	101076 0085	7,40
9.0	125	81	0.13	1	101076 0090	9,35
9.5	125	81	0.13	1	101076 0095	9,70
10.0	133	87	0.15	1	101076 0100	10,70
10.2	133	87	0.15	1	101076 0102	14,05
10.5	133	87	0.15	1	101076 0105	14,05
11.0	142	94	0.15	1	101076 0110	15,90
11.5	142	94	0.15	1	101076 0115	18,10
12.0	151	101	0.16	1	101076 0120	19,70
12.5	151	101	0.16	1	101076 0125	21,90
13.0	151	101	0.16	1	101076 0130	22,20

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Straight shank with 3-facet grinding



Sets with plastic box

Number of drills	D mm	Contents	art.no.	€
6	2.0 - 8.0	6 pcs., Ø 2 3 4 5 6 8 mm	**101076** 0001	30,90
19	1.0 - 10.0	19 pcs., Ø 1 1.5 2 2.5 3 4 4.5 5 5.5 6 6.5 7 7.5 8 8.5 9 9.5 10 mm	101076 0002	102,–
25	1.0 - 13.0	25 pcs., Ø 1 1.5 2 2.5 3 3.5 4 4.5 5 5.5 6 6.5 7 7.5 8 8.5 9 9.5 10 10.5 11 11.5 12 12.5 13 mm	101076 0003	215,–

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101076 0003

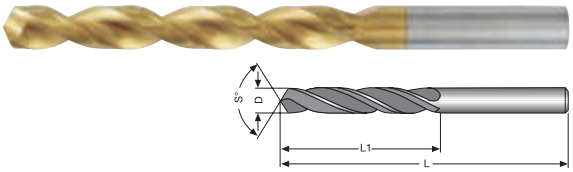
ATORN® KSB-5D twist drill

HSS-E PM | DIN 338 | Typ TLP | 130° | 38° | 5xD | TiN | Vc/fz | 356

- Self-centring
- Low wear on cutting edges
- Especially resistant to high temperatures
- Extended service life
- Excellent chip removal
- **Short chips**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 40-45	● 32-40	● 18-25	● 12-18	● 10-12		● 40-50	● 32-45				○ 60-70	○ 50-60	○ 30-60		○ 4-5		
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.



D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
1.0	34	12	0.07	**101095** 0100	13,65
1.1	36	14	0.07	101095 0110	13,85
1.2	38	16	0.07	101095 0120	14,05
1.3	38	16	0.07	101095 0130	14,90
1.4	40	18	0.07	101095 0140	13,85
1.5	40	18	0.07	101095 0150	12,95
1.6	43	20	0.07	101095 0160	13,40
1.7	43	20	0.07	101095 0170	13,60
1.8	46	22	0.07	101095 0180	13,40
1.9	46	22	0.07	101095 0190	13,60
2.0	49	24	0.07	101095 0200	10,80
2.1	49	24	0.07	101095 0210	12,55
2.2	53	27	0.07	101095 0220	13,85
2.3	53	27	0.07	101095 0230	13,85
2.4	57	30	0.07	101095 0240	14,25
2.5	57	30	0.07	101095 0250	11,90
2.6	57	30	0.07	101095 0260	15,10
2.7	61	33	0.07	101095 0270	14,05
2.8	61	33	0.07	101095 0280	15,50
2.9	61	33	0.07	101095 0290	13,60
3.0	61	33	0.07	101095 0300	10,20
3.1	65	36	0.07	101095 0310	10,60
3.2	65	36	0.07	101095 0320	10,60
3.3	65	36	0.07	101095 0330	10,40
3.4	70	39	0.07	101095 0340	10,40
3.5	70	39	0.07	101095 0350	10,60
3.6	70	39	0.07	101095 0360	11,05
3.7	70	39	0.07	101095 0370	11,50
3.8	75	43	0.07	101095 0380	11,90
3.9	75	43	0.07	101095 0390	12,15
4.0	75	43	0.07	101095 0400	11,70
4.1	75	43	0.07	101095 0410	12,75
4.2	75	43	0.07	101095 0420	12,75
4.3	80	47	0.07	101095 0430	13,40
4.4	80	47	0.07	101095 0440	13,60
4.5	80	47	0.07	101095 0450	13,60
4.6	80	47	0.07	101095 0460	14,25
4.7	80	47	0.07	101095 0470	14,70

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D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
4.8	86	52	0.07	101095 0480	15,10
4.9	86	52	0.07	101095 0490	15,10
5.0	86	52	0.07	101095 0500	15,50
5.1	86	52	0.15	101095 0510	16,30
5.2	86	52	0.15	101095 0520	16,50
5.3	86	52	0.15	101095 0530	16,90
5.4	93	57	0.15	101095 0540	17,50
5.5	93	57	0.15	101095 0550	17,50
5.6	93	57	0.15	101095 0560	27,50
5.7	93	57	0.15	101095 0570	27,90
5.8	93	57	0.15	101095 0580	28,90
5.9	93	57	0.15	101095 0590	28,90
6.0	93	57	0.15	101095 0600	19,80
6.1	101	63	0.15	101095 0610	30,40
6.2	101	63	0.15	101095 0620	30,80
6.3	101	63	0.15	101095 0630	31,40
6.4	101	63	0.15	101095 0640	32,10
6.5	101	63	0.15	101095 0650	21,40
6.6	101	63	0.15	101095 0660	33,40
6.7	101	63	0.15	101095 0670	34,20
6.8	109	69	0.15	101095 0680	33,60
6.9	109	69	0.15	101095 0690	35,70
7.0	109	69	0.15	101095 0700	23,40
7.1	109	69	0.15	101095 0710	36,80
7.2	109	69	0.15	101095 0720	37,–
7.3	109	69	0.15	101095 0730	37,–
7.4	109	69	0.15	101095 0740	38,70
7.5	109	69	0.15	101095 0750	25,90
7.6	117	75	0.15	101095 0760	39,70
7.7	117	75	0.15	101095 0770	40,40
7.8	117	75	0.15	101095 0780	41,–
7.9	117	75	0.15	101095 0790	41,50
8.0	117	75	0.15	101095 0800	28,30
8.1	117	75	0.18	101095 0810	43,40
8.2	117	75	0.18	101095 0820	44,–
8.3	117	75	0.18	101095 0830	44,80
8.4	117	75	0.18	101095 0840	45,30
8.5	117	75	0.18	101095 0850	30,–

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D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
8.8	125	81	0.18	101095 0880	48,30
9.0	125	81	0.18	101095 0900	33,–
9.3	125	81	0.18	101095 0930	52,–
9.5	125	81	0.18	101095 0950	35,90
9.8	133	87	0.18	101095 0980	39,70
10.0	133	87	0.18	101095 1000	38,10
10.2	133	87	0.22	101095 1020	58,–
10.3	133	87	0.22	101095 1030	61,50
10.5	142	87	0.22	101095 1050	42,40

1106

D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
11.0	142	94	0.22	101095 1100	45,70
11.5	151	101	0.22	101095 1150	49,90
12.0	151	101	0.22	101095 1200	53,–
12.3	151	101	0.25	101095 1230	87,50
12.5	151	101	0.25	101095 1250	61,50
12.7	160	108	0.25	101095 1270	64,–
13.0	160	108	0.25	101095 1300	67,50
13.5	160	108	0.25	101095 1350	74,50
14.0	160	108	0.25	101095 1400	78,50

1106

EX-SUS-GDR twist drill bit

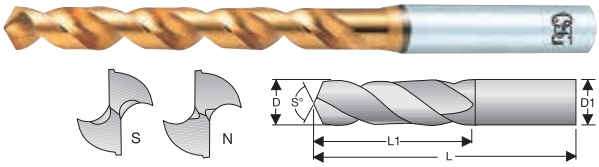
HSS-E V3 | Typ VA | 120° | 130° | 35° -40° | 5xD | TiN | Vc/fz 352

- Large chip spaces, high toughness
- **Reduced heat build-up**
- Shank design: straight
- **From Ø 12.1 with driving plane in accordance with DIN 1835B**
- S°= point angle: ≤ Ø 4 mm = 130°, > Ø 4 mm = 120°
- Centring geometry: up to Ø 13 mm S version, from Ø 13.5 mm N version
- Available on request: Intermediate dimensions from Ø 2 to Ø 6 mm (in 0.01 mm increments)

material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 32-40	● 30-35		● 15-20	● 13-18	○ 8-12			● 6-8			● 63-100	● 32-63	● 25-50				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



D h8 mm	L mm	L1 mm	D1 mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
2.0	56	24	3	0.07	**114050** 0200	12,50
2.1	56	24	3	0.07	114050 0210	14,70
2.2	59	27	3	0.07	114050 0220	14,70
2.3	59	27	3	0.07	114050 0230	14,70
2.4	62	30	3	0.07	114050 0240	14,70
2.5	62	30	3	0.11	114050 0250	13,90
2.6	62	30	3	0.11	114050 0260	14,70
2.7	65	33	3	0.11	114050 0270	14,70
2.8	65	33	3	0.11	114050 0280	14,70
2.9	65	33	3	0.11	114050 0290	14,70
3.0	65	33	3	0.11	114050 0300	14,70
3.1	68	36	4	0.11	114050 0310	16,50
3.2	68	36	4	0.11	114050 0320	16,50
3.3	68	36	4	0.11	114050 0330	16,50
3.4	71	39	4	0.11	114050 0340	16,50
3.5	71	39	4	0.13	114050 0350	16,50
3.6	71	39	4	0.13	114050 0360	18,–
3.7	71	39	4	0.13	114050 0370	18,–
3.8	75	43	4	0.13	114050 0380	18,–
3.9	75	43	4	0.13	114050 0390	18,–
4.0	75	43	4	0.13	114050 0400	18,–
4.1	87	43	6	0.13	114050 0410	21,40
4.2	87	43	6	0.13	114050 0420	20,20
4.3	91	47	6	0.13	114050 0430	21,40
4.4	91	47	6	0.13	114050 0440	21,40
4.5	91	47	6	0.15	114050 0450	21,40

1107

D h8 mm	L mm	L1 mm	D1 mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
4.6	91	47	6	0.15	114050 0460	24,20
4.7	91	47	6	0.15	114050 0470	24,20
4.8	96	52	6	0.15	114050 0480	24,20
4.9	96	52	6	0.15	114050 0490	24,20
5.0	96	52	6	0.15	114050 0500	27,–
5.1	96	52	6	0.15	114050 0510	27,–
5.2	96	52	6	0.15	114050 0520	27,–
5.3	96	52	6	0.15	114050 0530	28,50
5.4	101	57	6	0.15	114050 0540	28,50
5.5	101	57	6	0.16	114050 0550	27,–
5.6	101	57	6	0.16	114050 0560	30,70
5.7	101	57	6	0.16	114050 0570	30,70
5.8	101	57	6	0.16	114050 0580	30,70
5.9	101	57	6	0.16	114050 0590	30,70
6.0	101	57	6	0.16	114050 0600	29,20
6.1	107	63	8	0.16	114050 0610	35,60
6.2	107	63	8	0.16	114050 0620	35,60
6.3	107	63	8	0.16	114050 0630	35,60
6.4	107	63	8	0.16	114050 0640	35,60
6.5	107	63	8	0.16	114050 0650	35,60
6.6	107	63	8	0.16	114050 0660	36,50
6.7	107	63	8	0.16	114050 0670	36,50
6.8	113	69	8	0.16	114050 0680	36,50
6.9	113	69	8	0.16	114050 0690	36,50
7.0	113	69	8	0.16	114050 0700	36,50
7.1	113	69	8	0.20	114050 0710	38,40

1107

D h8 mm	L mm	L1 mm	D1 mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
7.2	113	69	8	0.20	114050 0720	38,40
7.3	113	69	8	0.20	114050 0730	38,40
7.4	113	69	8	0.20	114050 0740	38,40
7.5	113	69	8	0.20	114050 0750	38,40
7.6	119	75	8	0.20	114050 0760	40,20
7.7	119	75	8	0.20	114050 0770	40,20
7.8	119	75	8	0.20	114050 0780	40,20
7.9	119	75	8	0.20	114050 0790	40,20
8.0	119	75	8	0.20	114050 0800	40,20
8.1	125	75	10	0.20	114050 0810	43,70
8.2	125	75	10	0.20	114050 0820	43,70
8.3	125	75	10	0.20	114050 0830	43,70
8.4	125	75	10	0.20	114050 0840	43,70
8.5	125	75	10	0.20	114050 0850	43,70
8.6	131	81	10	0.20	114050 0860	46,20
8.7	131	81	10	0.20	114050 0870	46,20
8.8	131	81	10	0.20	114050 0880	46,20
8.9	131	81	10	0.20	114050 0890	46,20
9.0	131	81	10	0.20	114050 0900	46,20
9.1	131	81	10	0.24	114050 0910	50,30
9.2	131	81	10	0.24	114050 0920	50,30
9.3	131	81	10	0.24	114050 0930	50,30
9.4	131	81	10	0.24	114050 0940	50,30
9.5	131	81	10	0.24	114050 0950	50,30
9.6	137	87	10	0.24	114050 0960	55,20
9.7	137	87	10	0.24	114050 0970	55,20
9.8	137	87	10	0.24	114050 0980	55,20
9.9	137	87	10	0.24	114050 0990	55,20
10.0	137	87	10	0.24	114050 1000	55,20
10.1	144	87	12	0.24	114050 1010	68,20
10.2	144	87	12	0.24	114050 1020	68,20
10.3	144	87	12	0.24	114050 1030	68,20
10.4	144	87	12	0.24	114050 1040	68,20
10.5	144	87	12	0.24	114050 1050	68,20
10.6	144	87	12	0.24	114050 1060	74,30
10.7	151	94	12	0.24	114050 1070	74,30
10.8	151	94	12	0.24	114050 1080	74,30

1107

D h8 mm	L mm	L1 mm	D1 mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
10.9	151	94	12	0.24	114050 1090	74,30
11.0	151	94	12	0.24	114050 1100	74,30
11.1	151	94	12	0.29	114050 1110	80,20
11.2	151	94	12	0.29	114050 1120	80,20
11.3	151	94	12	0.29	114050 1130	80,20
11.4	151	94	12	0.29	114050 1140	80,20
11.5	151	94	12	0.29	114050 1150	80,20
11.6	151	94	12	0.29	114050 1160	86,70
11.7	151	94	12	0.29	114050 1170	86,70
11.8	151	94	12	0.29	114050 1180	86,70
11.9	158	101	12	0.29	114050 1190	86,70
12.0	158	101	12	0.29	114050 1200	86,70
12.1	158	101	16	0.29	114050 1210	98,90
12.2	158	101	16	0.29	114050 1220	98,90
12.3	158	101	16	0.29	114050 1230	98,90
12.4	158	101	16	0.29	114050 1240	98,90
12.5	158	101	16	0.29	114050 1250	98,90
12.6	158	101	16	0.29	114050 1260	104,50
12.7	158	101	16	0.29	114050 1270	104,50
12.8	158	101	16	0.29	114050 1280	104,50
12.9	158	101	16	0.29	114050 1290	104,50
13.0	158	101	16	0.29	114050 1300	104,50
13.5	166	106	16	0.33	114050 1350	135,60
14.0	166	106	16	0.33	114050 1400	135,60
14.5	169	109	16	0.33	114050 1450	149,40
15.0	169	109	16	0.33	114050 1500	156,10
15.5	172	112	16	0.36	114050 1550	167,70
16.0	172	112	16	0.36	114050 1600	167,70
16.5	181	115	20	0.36	114050 1650	175,30
17.0	181	115	20	0.36	114050 1700	175,30
17.5	184	118	20	0.40	114050 1750	192,30
18.0	184	118	20	0.40	114050 1800	192,30
18.5	188	122	20	0.40	114050 1850	211,40
19.0	188	122	20	0.40	114050 1900	219,30
19.5	191	125	20	0.43	114050 1950	226,40
20.0	191	125	20	0.43	114050 2000	226,40

1107

NEXUS-GDR twist drill

HSS-E | Werks-norm | Typ VA | 120° | 130° | 35° -40° | 5xD | Vc/fz | 352

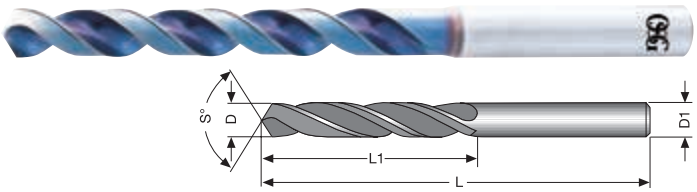
- High spiral angle (35 - 40°) and unique flute shape reduce the cutting forces and the heat generated during machining
- **Short breakage chips even with tough materials such as stainless steel or copper**
- Shank design: straight
- S°= point angle: < Ø 4 mm = 130°, > Ø 4 mm = 120°
- **Cutting material: high-quality vanadium alloy HSS, WDI™-coated**
- Wear-resistant, suitable for a broad range of materials thanks to multi-layer coating

material

● very well suited
○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 40-60	○ 40-60		15-25	15-25	10-20						63-100	32-63	40-60				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



D h8 mm	S °	L mm	L1 mm	D1 mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
2.00	130	56	24	3	0.07	**114051** 0200	14,30
2.30	130	59	27	3	0.07	114051 0230	16,90
2.50	130	62	30	3	0.11	114051 0250	16,–
2.60	130	62	30	3	0.11	114051 0260	16,90
2.80	130	65	33	3	0.11	114051 0280	16,90
3.00	130	65	33	3	0.11	114051 0300	16,90
3.30	130	68	36	4	0.11	114051 0330	19,10
3.40	130	71	39	4	0.11	114051 0340	19,10
3.50	130	71	39	4	0.13	114051 0350	19,10
4.00	130	75	43	4	0.13	114051 0400	21,–
4.20	120	87	43	6	0.13	114051 0420	23,20
4.30	120	91	47	6	0.13	114051 0430	24,50
4.50	120	91	47	6	0.15	114051 0450	24,50
5.00	120	96	52	6	0.15	114051 0500	30,90
5.10	120	96	52	6	0.15	114051 0510	30,90
5.20	120	96	52	6	0.15	114051 0520	30,90

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D h8 mm	S °	L mm	L1 mm	D1 mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
5.50	120	101	57	6	0.16	114051 0550	30,90
6.00	120	101	57	6	0.16	114051 0600	33,50
6.80	120	113	69	8	0.16	114051 0680	42,40
6.90	120	113	69	8	0.16	114051 0690	42,40
7.00	120	113	69	8	0.16	114051 0700	42,40
8.00	120	119	75	8	0.20	114051 0800	46,10
8.50	120	125	75	10	0.20	114051 0850	50,20
8.60	120	131	81	10	0.20	114051 0860	53,20
8.80	120	131	81	10	0.20	114051 0880	53,20
9.00	120	131	81	10	0.20	114051 0900	53,20
10.00	120	137	87	10	0.24	114051 1000	63,50
10.30	120	144	87	12	0.24	114051 1030	78,50
10.40	120	144	87	12	0.24	114051 1040	78,50
10.50	120	144	87	12	0.24	114051 1050	78,50
11.00	120	151	94	12	0.24	114051 1100	85,60
12.00	120	158	101	12	0.29	114051 1200	99,40

1107

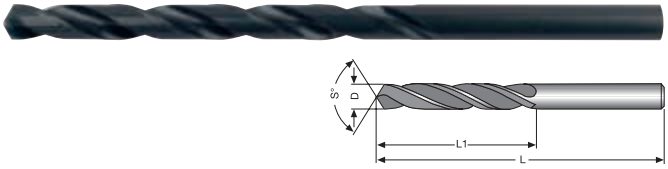
ATORN® Twist drill bit

HSS | DIN 340 | Typ N | 118° | 30° | 10xD | Vap. | Vc/fz | 353

- **For deep bores** (multiple chip removal)
- vapour-treated from ∅ 2.4 mm, point thinning from ∅ ≥ 1 mm
- Profile-ground to meet the highest demands for process reliability
- **Pilot hole recommended**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 25-28	● 20-22					● 25-28	○ 18-22				○ 45-55	○ 35-45	○ 30-60				
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.



D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
0.60	35	15	0.01	10	**101060** 0060	6,10
0.80	46	29	0.01	10	101060 0080	4,75
1.00	56	33	0.02	10	101060 0100	3,87
1.10	60	37	0.02	10	101060 0110	4,03
1.20	65	41	0.02	10	101060 0120	3,85
1.25	65	41	0.02	10	101060 0125	5,90
1.30	65	41	0.02	10	101060 0130	3,50
1.40	70	45	0.02	10	101060 0140	3,25
1.50	70	45	0.02	10	101060 0150	2,80
1.60	76	50	0.02	10	101060 0160	2,91
1.70	76	50	0.02	10	101060 0170	2,91
1.80	80	53	0.02	10	101060 0180	2,91
1.90	80	53	0.02	10	101060 0190	2,91
2.00	85	56	0.05	10	101060 0200	1,96
2.10	85	56	0.05	10	101060 0210	2,31
2.20	90	59	0.05	10	101060 0220	2,31
2.30	90	59	0.05	10	101060 0230	2,31
2.40	95	62	0.05	10	101060 0240	2,31
2.50	95	62	0.06	10	101060 0250	2,05
2.60	95	62	0.06	10	101060 0260	2,47
2.70	100	66	0.06	10	101060 0270	2,55
2.80	100	66	0.06	10	101060 0280	2,55
2.90	100	66	0.06	10	101060 0290	2,56
3.00	100	66	0.06	10	101060 0300	2,09
3.10	106	69	0.08	10	101060 0310	2,56
3.20	106	69	0.08	10	101060 0320	2,21
3.30	106	69	0.08	10	101060 0330	2,47
3.40	112	73	0.08	10	101060 0340	2,73
3.50	112	73	0.08	10	101060 0350	2,41
3.60	112	73	0.08	10	101060 0360	2,65
3.70	112	73	0.08	10	101060 0370	2,83
3.80	119	78	0.08	10	101060 0380	2,83
3.90	119	78	0.08	10	101060 0390	3,05
4.00	119	78	0.10	10	101060 0400	2,65
4.10	119	78	0.10	10	101060 0410	2,71
4.20	119	78	0.10	10	101060 0420	2,71
4.30	126	82	0.10	10	101060 0430	3,44
4.40	126	82	0.10	10	101060 0440	3,55
4.50	126	82	0.10	10	101060 0450	3,03
4.60	126	82	0.10	10	101060 0460	3,73

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D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
4.70	126	82	0.10	10	101060 0470	3,79
4.80	132	87	0.10	10	101060 0480	3,58
4.90	132	87	0.10	10	101060 0490	3,55
5.00	132	87	0.10	10	101060 0500	3,37
5.10	132	87	0.10	10	101060 0510	3,55
5.20	132	87	0.10	10	101060 0520	3,69
5.30	132	87	0.10	10	101060 0530	3,89
5.40	139	91	0.10	10	101060 0540	4,89
5.50	139	91	0.10	10	101060 0550	3,90
5.60	139	91	0.10	10	101060 0560	5,–
5.70	139	91	0.10	10	101060 0570	4,84
5.80	139	91	0.10	10	101060 0580	3,91
5.90	139	91	0.10	10	101060 0590	5,05
6.00	139	91	0.10	10	101060 0600	4,22
6.10	148	97	0.10	1	101060 0610	5,25
6.20	148	97	0.10	1	101060 0620	4,42
6.30	148	97	0.13	1	101060 0630	5,40
6.40	148	97	0.13	1	101060 0640	5,55
6.50	148	97	0.13	1	101060 0650	4,52
6.60	148	97	0.13	1	101060 0660	5,65
6.70	156	102	0.13	1	101060 0670	5,50
6.80	156	102	0.13	1	101060 0680	6,50
6.90	156	102	0.13	1	101060 0690	7,50
7.00	156	102	0.13	1	101060 0700	5,30
7.10	156	102	0.13	1	101060 0710	10,25
7.20	156	102	0.13	1	101060 0720	7,15
7.30	156	102	0.13	1	101060 0730	8,95
7.40	156	102	0.13	1	101060 0740	11,80
7.50	156	102	0.13	1	101060 0750	6,25
7.60	156	102	0.13	1	101060 0760	7,75
7.70	165	109	0.13	1	101060 0770	8,20
7.80	165	109	0.13	1	101060 0780	7,60
7.90	165	109	0.13	1	101060 0790	8,20
8.00	165	109	0.16	1	101060 0800	6,35
8.10	165	109	0.16	1	101060 0810	8,55
8.20	165	109	0.16	1	101060 0820	7,60
8.30	165	109	0.16	1	101060 0830	9,35
8.40	165	109	0.16	1	101060 0840	8,55
8.50	165	109	0.16	1	101060 0850	7,50
8.60	175	115	0.16	1	101060 0860	10,15

1104

Continued on next page >>>

D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
8.70	175	115	0.16	1	101060 0870	10,10
8.80	175	115	0.16	1	101060 0880	10,15
8.90	175	115	0.16	1	101060 0890	18,80
9.00	175	115	0.18	1	101060 0900	7,85
9.10	175	115	0.18	1	101060 0910	12,60
9.20	175	115	0.18	1	101060 0920	17,30
9.30	175	115	0.18	1	101060 0930	17,40
9.40	175	115	0.18	1	101060 0940	14,10
9.50	175	115	0.18	1	101060 0950	9,65
9.60	184	121	0.18	1	101060 0960	10,45
9.70	184	121	0.18	1	101060 0970	11,95
9.80	184	121	0.18	1	101060 0980	12,65
9.90	184	121	0.18	1	101060 0990	16,20
10.00	184	121	0.20	1	101060 1000	9,30

D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
10.20	184	121	0.20	1	101060 1020	11,95
10.25	184	121	0.20	1	101060 1025	14,40
10.50	184	121	0.20	1	101060 1050	13,55
11.00	195	128	0.20	1	101060 1100	14,10
11.50	195	128	0.20	1	101060 1150	15,50
12.00	205	134	0.20	1	101060 1200	17,70
12.50	205	134	0.20	1	101060 1250	17,70
13.00	205	134	0.20	1	101060 1300	18,50
13.50	214	140	0.20	1	101060 1350	23,40
14.00	214	140	0.20	1	101060 1400	23,10
14.50	220	144	0.20	1	101060 1450	32,80
15.00	220	144	0.20	1	101060 1500	28,60
15.50	227	149	0.20	1	101060 1550	34,30
16.00	227	149	0.25	1	101060 1600	34,20

ATORN® Twist drill bit

HSS | DIN 340 | Typ TLP | 130° | 38° | 10xD | TiN | Vc/fz | 356

Deep bore profile

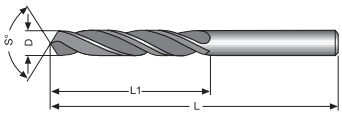
- For deep bores (no chip removal)
- **Wide chip flutes for better chip removal**
- Point thinning from Ø > 1 mm
- Profile-ground to meet the highest demands for process reliability
- **Pilot hole recommended**

material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
●	●	○				●	○				○	○	○				
28-32	22-28	12-18				28-33	22-26				45-55	35-45	30-60				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.





D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
1.0	56.0	33.0	0.05	10	**101061** 0100	10,60
1.1	60.0	37.0	0.05	10	101061 0110	12,–
1.2	65.0	41.0	0.05	10	101061 0120	11,–
1.3	65.0	41.0	0.05	10	101061 0130	11,40
1.4	70.0	45.0	0.05	10	101061 0140	10,20
1.5	70.0	45.0	0.05	10	101061 0150	8,80
1.6	76.0	50.0	0.05	10	101061 0160	8,40
1.7	76.0	50.0	0.05	10	101061 0170	8,40
1.8	80.0	53.0	0.05	10	101061 0180	8,40
1.9	80.0	53.0	0.05	10	101061 0190	8,–
2.0	85.0	56.0	0.05	10	101061 0200	7,80
2.1	85.0	56.0	0.05	10	101061 0210	8,80
2.2	90.0	59.0	0.05	10	101061 0220	9,–
2.3	90.0	59.0	0.05	10	101061 0230	9,–
2.4	95.0	62.0	0.05	10	101061 0240	9,40
2.5	95.0	62.0	0.05	10	101061 0250	8,–
2.6	95.0	62.0	0.05	10	101061 0260	9,40
2.7	100.0	66.0	0.05	10	101061 0270	9,60
2.8	100.0	66.0	0.05	10	101061 0280	9,60
2.9	100.0	66.0	0.05	10	101061 0290	9,60
3.0	100.0	66.0	0.09	10	101061 0300	8,–

D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
3.1	106.0	69.0	0.09	10	101061 0310	11,–
3.2	106.0	69.0	0.09	10	101061 0320	9,20
3.3	106.0	69.0	0.09	10	101061 0330	10,60
3.4	112.0	73.0	0.09	10	101061 0340	11,40
3.5	112.0	73.0	0.09	10	101061 0350	9,60
3.6	112.0	73.0	0.09	10	101061 0360	12,60
3.7	112.0	73.0	0.09	10	101061 0370	11,60
3.8	119.0	78.0	0.09	10	101061 0380	12,–
3.9	119.0	78.0	0.09	10	101061 0390	12,20
4.0	119.0	78.0	0.09	10	101061 0400	10,40
4.1	119.0	78.0	0.09	10	101061 0410	13,–
4.2	119.0	78.0	0.09	10	101061 0420	12,–
4.3	126.0	82.0	0.09	10	101061 0430	12,60
4.4	126.0	82.0	0.09	10	101061 0440	13,–
4.5	126.0	82.0	0.09	10	101061 0450	12,20
4.7	126.0	82.0	0.09	10	101061 0470	13,40
4.8	132.0	87.0	0.09	10	101061 0480	13,80
4.9	132.0	87.0	0.09	10	101061 0490	13,40
5.0	132.0	87.0	0.13	10	101061 0500	12,80
5.1	132.0	87.0	0.13	10	101061 0510	14,60
5.2	132.0	87.0	0.13	10	101061 0520	15,80

D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
5.3	132.0	87.0	0.13	10	101061 0530	16,60
5.4	139.0	91.0	0.13	10	101061 0540	16,60
5.5	139.0	91.0	0.13	10	101061 0550	15,20
5.6	139.0	91.0	0.13	10	101061 0560	16,60
5.7	139.0	91.0	0.13	10	101061 0570	17,20
5.8	139.0	91.0	0.13	10	101061 0580	19,40
5.9	139.0	91.0	0.13	10	101061 0590	17,20
6.0	139.0	91.0	0.13	1	101061 0600	15,80
6.1	148.0	97.0	0.13	1	101061 0610	22,40
6.2	148.0	97.0	0.13	1	101061 0620	21,80
6.3	148.0	97.0	0.13	1	101061 0630	22,40
6.4	148.0	97.0	0.13	1	101061 0640	22,40
6.5	148.0	97.0	0.13	1	101061 0650	17,40
6.6	148.0	97.0	0.13	1	101061 0660	23,40

D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
6.7	156.0	102.0	0.13	1	101061 0670	23,40
6.8	156.0	102.0	0.13	1	101061 0680	26,60
7.0	156.0	102.0	0.13	1	101061 0700	23,40
7.5	156.0	102.0	0.13	1	101061 0750	25,20
8.0	165.0	109.0	0.13	1	101061 0800	29,60
8.5	165.0	109.0	0.18	1	101061 0850	30,80
9.0	175.0	115.0	0.18	1	101061 0900	28,–
9.5	175.0	115.0	0.18	1	101061 0950	43,20
10.0	184.0	121.0	0.18	1	101061 1000	34,40
10.2	184.0	121.0	0.18	1	101061 1020	40,80
10.5	184.0	121.0	0.18	1	101061 1050	56,–
11.0	195.0	128.0	0.18	1	101061 1100	46,40
11.5	195.0	128.0	0.18	1	101061 1150	77,–
12.0	205.0	134.0	0.18	1	101061 1200	57,–

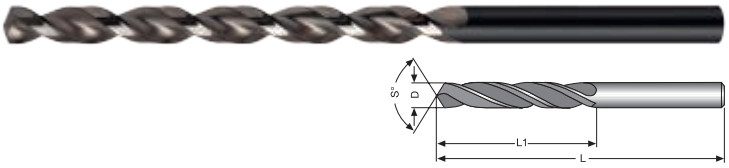
ATORN® Twist drill bit

HSS-E | DIN 340 | Typ TLP | 130° | 40° | 10xD | Nit. | Vc/fz | 353

- Wide chip flutes
- Profile-ground, chamfers nitrided from a diameter of 2.4 mm
- High wear-resistance
- Recommended in cases of poor chip removal
- **Pilot hole recommended**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 28-32	● 22-28	○ 12-18	● 10-12	○ 6-8		● 28-33	○ 22-26				○ 45-55	○ 35-45	○ 30-60				
		Cutting speed Vc m/min.																	

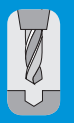
Please adjust these guidelines according to clamping operation and machine set-up.



D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
1.0	56	33	0.05	10	**101063** 0100	6,–
1.1	60	37	0.05	10	101063 0110	6,80
1.2	65	41	0.05	10	101063 0120	6,25
1.3	65	41	0.05	10	101063 0130	6,40
1.4	70	45	0.05	10	101063 0140	5,70
1.5	70	45	0.05	10	101063 0150	4,95
1.6	76	50	0.05	10	101063 0160	4,76
1.7	76	50	0.05	10	101063 0170	4,72
1.8	80	53	0.05	10	101063 0180	4,66
1.9	80	53	0.05	10	101063 0190	4,63
2.0	85	56	0.05	10	101063 0200	4,36
2.1	85	56	0.05	10	101063 0210	4,96
2.2	90	59	0.05	10	101063 0220	5,05
2.3	90	59	0.05	10	101063 0230	5,15
2.4	95	62	0.05	10	101063 0240	5,25
2.5	95	62	0.05	10	101063 0250	4,50
2.6	95	62	0.05	10	101063 0260	5,30
2.7	100	66	0.05	10	101063 0270	5,30
2.8	100	66	0.05	10	101063 0280	5,30
2.9	100	66	0.05	10	101063 0290	5,35
3.0	100	66	0.09	10	101063 0300	4,49
3.1	106	69	0.09	10	101063 0310	6,35

D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
3.2	106	69	0.09	10	101063 0320	5,25
3.3	106	69	0.09	10	101063 0330	5,95
3.4	112	73	0.09	10	101063 0340	6,45
3.5	112	73	0.09	10	101063 0350	5,30
3.6	112	73	0.09	10	101063 0360	7,05
3.7	112	73	0.09	10	101063 0370	6,65
3.8	119	78	0.09	10	101063 0380	6,80
3.9	119	78	0.09	10	101063 0390	6,90
4.0	119	78	0.09	10	101063 0400	5,80
4.1	119	78	0.09	10	101063 0410	7,20
4.2	119	78	0.09	10	101063 0420	6,80
4.3	126	82	0.09	10	101063 0430	7,60
4.4	126	82	0.09	10	101063 0440	11,50
4.5	126	82	0.09	10	101063 0450	6,90
4.6	126	82	0.09	10	101063 0460	9,35
4.7	126	82	0.09	10	101063 0470	7,85
4.8	132	87	0.09	10	101063 0480	7,75
4.9	132	87	0.09	10	101063 0490	7,45
5.0	132	87	0.13	10	101063 0500	7,25
5.1	132	87	0.13	10	101063 0510	7,45
5.2	132	87	0.13	10	101063 0520	8,95
5.3	132	87	0.13	10	101063 0530	9,35

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D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
5.4	139	91	0.13	10	101063 0540	11,90
5.5	139	91	0.13	10	101063 0550	8,65
5.6	139	91	0.13	10	101063 0560	9,55
5.7	139	91	0.13	10	101063 0570	9,55
5.8	139	91	0.13	10	101063 0580	11,–
5.9	139	91	0.13	10	101063 0590	9,80
6.0	139	91	0.13	10	101063 0600	8,95
6.1	148	97	0.13	1	101063 0610	11,70
6.2	148	97	0.13	1	101063 0620	12,40
6.3	148	97	0.13	1	101063 0630	15,–
6.4	148	97	0.13	1	101063 0640	13,45
6.5	148	97	0.13	1	101063 0650	9,90
6.6	148	97	0.13	1	101063 0660	13,–
6.7	156	102	0.13	1	101063 0670	15,20
6.8	156	102	0.13	1	101063 0680	15,–
6.9	156	102	0.13	1	101063 0690	15,40
7.0	156	102	0.13	1	101063 0700	11,60
7.1	156	102	0.13	1	101063 0710	16,–
7.2	156	102	0.13	1	101063 0720	15,80
7.3	156	102	0.13	1	101063 0730	14,75
7.4	156	102	0.13	1	101063 0740	19,80
7.5	156	102	0.13	1	101063 0750	14,20
7.6	165	109	0.13	1	101063 0760	20,80
7.7	165	109	0.13	1	101063 0770	19,80
7.8	165	109	0.13	1	101063 0780	17,50

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D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
7.9	165	109	0.13	1	101063 0790	21,90
8.0	165	109	0.13	1	101063 0800	13,30
8.1	165	109	0.13	1	101063 0810	20,–
8.2	165	109	0.13	1	101063 0820	18,10
8.3	165	109	0.13	1	101063 0830	22,40
8.4	165	109	0.13	1	101063 0840	20,80
8.5	165	109	0.18	1	101063 0850	17,50
9.0	175	115	0.18	1	101063 0900	15,80
9.5	175	115	0.18	1	101063 0950	24,50
9.8	184	121	0.18	1	101063 0980	33,10
10.0	184	121	0.18	1	101063 1000	19,60
10.2	184	121	0.18	1	101063 1020	27,80
10.5	184	121	0.18	1	101063 1050	37,80
11.0	195	128	0.18	1	101063 1100	31,50
11.5	195	128	0.18	1	101063 1150	52,50
12.0	205	134	0.18	1	101063 1200	38,60
12.5	205	134	0.22	1	101063 1250	39,80
13.0	205	134	0.22	1	101063 1300	41,50
13.5	214	140	0.22	1	101063 1350	42,–
14.0	214	140	0.22	1	101063 1400	43,50
14.5	220	144	0.22	1	101063 1450	55,–
15.0	220	144	0.22	1	101063 1500	56,–
15.5	227	149	0.22	1	101063 1550	74,50
16.0	227	149	0.22	1	101063 1600	78,50

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ATORN® Twist drill bit

HSS-E | DIN 340 | Typ VA | 130° | 35° | 10xD | Vc/fz | 356

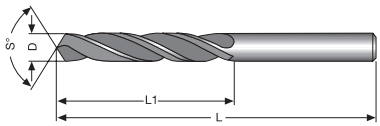
Stainless steel

- **For deep bores** (multiple chip removal)
- Point thinning from Ø ≥ 1 mm
- Increased wear-resistance with special geometry for machining stainless steel
- **Pilot hole recommended**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		○	○		●	●				●	○				●				
		25-28	20-22		10-14	8-10				5-8	4-6				30-60				
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.





D h8 mm	L mm	L1 mm	Feed f stainless steel austenitic mm/rev		art.no.	€
1.0	56.0	33.0	0.03	10	**101062** 0100	8,–
1.1	60.0	37.0	0.03	10	101062 0110	8,80
1.2	65.0	41.0	0.03	10	101062 0120	8,80
1.3	65.0	41.0	0.03	10	101062 0130	8,80
1.4	70.0	45.0	0.03	10	101062 0140	8,80
1.5	70.0	45.0	0.03	10	101062 0150	8,–
1.6	76.0	50.0	0.03	10	101062 0160	8,90
1.7	76.0	50.0	0.03	10	101062 0170	8,90
1.8	80.0	53.0	0.03	10	101062 0180	8,90
1.9	80.0	53.0	0.03	10	101062 0190	8,90
2.0	85.0	56.0	0.03	10	101062 0200	7,35
2.1	85.0	56.0	0.03	10	101062 0210	8,20
2.2	90.0	59.0	0.03	10	101062 0220	8,20
2.3	90.0	59.0	0.03	10	101062 0230	8,20
2.4	95.0	62.0	0.03	10	101062 0240	8,20
2.5	95.0	62.0	0.03	10	101062 0250	7,50
2.6	95.0	62.0	0.03	10	101062 0260	8,20
2.7	100.0	66.0	0.03	10	101062 0270	8,20
2.8	100.0	66.0	0.03	10	101062 0280	8,60
2.9	100.0	66.0	0.03	10	101062 0290	8,60
3.0	100.0	66.0	0.05	10	101062 0300	7,50
3.1	106.0	69.0	0.05	10	101062 0310	8,60
3.2	106.0	69.0	0.05	10	101062 0320	8,60
3.3	106.0	69.0	0.05	10	101062 0330	8,60
3.4	112.0	73.0	0.05	10	101062 0340	8,60
3.5	112.0	73.0	0.05	10	101062 0350	8,45
3.6	112.0	73.0	0.05	10	101062 0360	8,85
3.7	112.0	73.0	0.05	10	101062 0370	8,85
3.8	119.0	78.0	0.05	10	101062 0380	8,85
3.9	119.0	78.0	0.05	10	101062 0390	8,85
4.0	119.0	78.0	0.05	10	101062 0400	8,75
4.1	119.0	78.0	0.05	10	101062 0410	9,55
4.2	119.0	78.0	0.05	10	101062 0420	9,55
4.3	126.0	82.0	0.05	10	101062 0430	10,60
4.4	126.0	82.0	0.05	10	101062 0440	10,60
4.5	126.0	82.0	0.05	10	101062 0450	10,25
4.7	126.0	82.0	0.05	10	101062 0470	11,15
4.8	132.0	87.0	0.05	10	101062 0480	11,15

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D h8 mm	L mm	L1 mm	Feed f stainless steel austenitic mm/rev		art.no.	€
4.9	132.0	87.0	0.05	10	101062 0490	11,15
5.0	132.0	87.0	0.05	10	101062 0500	10,30
5.1	132.0	87.0	0.08	10	101062 0510	11,50
5.2	132.0	87.0	0.08	10	101062 0520	11,50
5.3	132.0	87.0	0.08	10	101062 0530	11,50
5.4	139.0	91.0	0.08	10	101062 0540	11,50
5.5	139.0	91.0	0.08	10	101062 0550	11,45
5.6	139.0	91.0	0.08	10	101062 0560	12,80
5.7	139.0	91.0	0.08	10	101062 0570	12,80
5.8	139.0	91.0	0.08	10	101062 0580	12,80
5.9	139.0	91.0	0.08	10	101062 0590	12,60
6.0	139.0	91.0	0.08	10	101062 0600	12,–
6.1	148.0	97.0	0.08	1	101062 0610	13,70
6.2	148.0	97.0	0.08	1	101062 0620	13,70
6.3	148.0	97.0	0.08	1	101062 0630	13,70
6.4	148.0	97.0	0.08	1	101062 0640	13,70
6.5	148.0	97.0	0.08	1	101062 0650	12,45
6.6	148.0	97.0	0.08	1	101062 0660	14,35
6.7	156.0	102.0	0.08	1	101062 0670	14,35
6.8	156.0	102.0	0.08	1	101062 0680	16,40
7.0	156.0	102.0	0.08	1	101062 0700	14,85
7.5	156.0	102.0	0.08	1	101062 0750	12,40
7.7	165.0	109.0	0.08	1	101062 0770	14,65
7.8	165.0	109.0	0.08	1	101062 0780	14,65
8.0	165.0	109.0	0.08	1	101062 0800	14,20
8.1	165.0	109.0	0.11	1	101062 0810	16,40
8.2	165.0	109.0	0.11	1	101062 0820	16,40
8.4	165.0	109.0	0.11	1	101062 0840	16,40
8.5	165.0	109.0	0.11	1	101062 0850	13,20
9.0	175.0	115.0	0.11	1	101062 0900	14,75
9.5	175.0	115.0	0.11	1	101062 0950	16,90
9.8	184.0	121.0	0.11	1	101062 0980	22,10
10.0	184.0	121.0	0.11	1	101062 1000	22,–
10.2	184.0	121.0	0.11	1	101062 1020	23,60
10.5	184.0	121.0	0.11	1	101062 1050	26,–
11.0	195.0	128.0	0.11	1	101062 1100	32,40
11.5	195.0	128.0	0.11	1	101062 1150	32,50
12.0	205.0	134.0	0.11	1	101062 1200	33,80

1104

ATORN® Deep hole drill bit

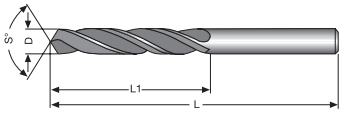
HSS | DIN 1869 | Typ TLP | 130° | 38° | >10xD | Nit. | Vc/fz | 357

- **For extremely deep bores, 15xD to 25xD**
- Flat slot shape for increased chip space, leading to less frequent chip removal in particularly deep holes
- Point thinning from ∅ ≥ 2 mm
- Slots bare
- **Nitrided chamfers from Ø 2.5 mm**
- **Pilot hole recommended**

Deep bore profile

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 18-22	● 12-18	○ 6-12				● 18-22	○ 14-20				○ 40-45	○ 35-40	○ 20-40				
	Cutting speed Vc m/min.																		





●

D h8 mm	L mm	L1 mm	Series	Feed f steel < 700 N/mm² mm/rev	art.no.	€
2.0	125	85	1	0.05	**101070** 0036	12,85
2.5	140	95	1	0.05	101070 0037	12,85
3.0	150	100	1	0.06	101070 0001	14,05
3.0	190	130	2	0.06	101070 0002	18,80
3.5	165	115	1	0.07	101070 0003	14,05
3.5	210	145	2	0.07	101070 0004	19,–
4.0	175	120	1	0.09	101070 0005	14,45
4.0	220	150	2	0.09	101070 0006	20,20
4.0	280	190	3	0.09	101070 0007	25,60
4.5	185	125	1	0.10	101070 0008	15,50
4.5	235	160	2	0.10	101070 0009	21,30
5.0	195	135	1	0.12	101070 0010	16,40
5.0	245	170	2	0.12	101070 0011	21,30
5.0	315	210	3	0.12	101070 0012	30,90
5.5	205	140	1	0.13	101070 0013	17,90
5.5	260	180	2	0.13	101070 0014	26,80
6.0	205	140	1	0.14	101070 0015	17,90
6.0	260	180	2	0.14	101070 0016	25,90

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●

D h8 mm	L mm	L1 mm	Series	Feed f steel < 700 N/mm² mm/rev	art.no.	€
6.0	330	225	3	0.14	101070 0017	35,50
6.5	215	150	1	0.16	101070 0039	24,40
6.5	275	190	2	0.16	101070 0018	30,–
6.8	225	155	1	0.16	101070 0019	31,70
7.0	225	155	1	0.17	101070 0020	25,60
7.0	290	200	2	0.17	101070 0021	32,80
7.5	225	155	1	0.17	101070 0022	29,–
7.5	290	200	2	0.17	101070 0023	38,40
8.0	240	165	1	0.20	101070 0024	31,70
8.0	305	210	2	0.20	101070 0025	38,20
8.0	390	265	3	0.20	101070 0026	57,–
8.5	240	165	1	0.21	101070 0027	41,10
8.5	305	210	2	0.21	101070 0028	59,–
9.0	250	175	1	0.21	101070 0029	43,80
9.0	320	220	2	0.21	101070 0030	58,–
10.0	265	185	1	0.22	101070 0032	45,30
10.0	340	235	2	0.22	101070 0033	62,–
10.0	430	295	3	0.22	101070 0034	90,–

1104

TDXL high-performance deep hole drill

HSS-E | Werks-norm | Typ TLP | 120° | 40° | 10xD | 15xD | 20xD | TiAlN | Vc/fz | 357

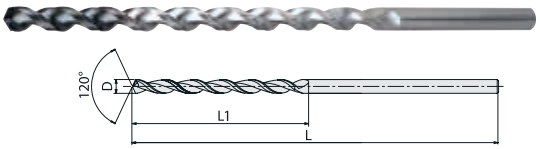
Drilling without chip removal

- **Flat flute for increased chip space, drilling without chip removal**
- **Bore depths of 10xD, 15xD and 20xD**
- New chip flute structure for enhanced chip removal, polished wave-shaped flute
- Newly developed point thinning for lower torque, axial force and friction
- New heat and wear-resistant WXL coating with a very low friction coefficient
- **Cutting material: HSS-E, WXL-coated**
- Shank tolerance h7
- Use with water-soluble emulsion recommended
- **Without internal cooling**
- **Pilot hole recommended**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 20-24	● 18-22	● 12-16				● 18-24	● 16-20										
		Cutting speed Vc m/min.																	
		Please adjust these guidelines according to clamping operation and machine set-up.																	

Chip flute shape





10xD

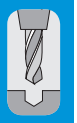
D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
1.6	75	26	0.02	**101099** 0016	23,80
1.8	75	26	0.03	101099 0018	23,80
2.0	75	26	0.03	101099 0020	22,10
2.1	75	33	0.03	101099 0021	26,–
2.2	75	33	0.03	101099 0022	26,–
2.3	75	33	0.03	101099 0023	26,–
2.4	75	33	0.04	101099 0024	26,–
2.5	75	33	0.04	101099 0025	24,80
2.6	90	40	0.04	101099 0026	26,–
2.7	90	40	0.04	101099 0027	29,80
2.8	90	40	0.04	101099 0028	29,80
2.9	90	40	0.04	101099 0029	29,80
3.0	90	40	0.05	101099 0030	28,70
3.1	100	45	0.05	101099 0031	33,70
3.2	100	45	0.05	101099 0032	33,70
3.3	100	45	0.05	101099 0033	33,70
3.4	100	50	0.05	101099 0034	38,80
3.5	100	50	0.05	101099 0035	32,10
3.6	100	50	0.05	101099 0036	33,70
3.7	100	50	0.06	101099 0037	33,70
3.8	100	50	0.06	101099 0038	37,90
3.9	100	50	0.06	101099 0039	37,90
4.0	100	50	0.06	101099 0040	36,10
4.1	115	55	0.06	101099 0041	37,90
4.2	115	55	0.06	101099 0042	37,90
4.3	115	60	0.06	101099 0043	42,90
4.4	115	60	0.07	101099 0044	42,90
4.5	115	60	0.07	101099 0045	40,90
4.6	115	60	0.07	101099 0046	42,90
4.7	115	60	0.07	101099 0047	48,90
4.8	115	65	0.07	101099 0048	48,90
4.9	115	65	0.07	101099 0049	50,10
5.0	115	65	0.08	101099 0050	45,70
5.1	128	70	0.08	101099 0051	48,90
5.2	128	70	0.08	101099 0052	48,90
5.3	128	70	0.08	101099 0053	48,90

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D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
5.4	128	78	0.08	101099 0054	65,30
5.5	128	78	0.08	101099 0055	52,20
5.6	128	78	0.08	101099 0056	69,50
5.7	128	78	0.09	101099 0057	69,50
5.8	128	78	0.09	101099 0058	69,50
5.9	128	78	0.09	101099 0059	69,50
6.0	128	78	0.09	101099 0060	58,80
6.1	140	78	0.09	101099 0061	95,70
6.2	140	87	0.09	101099 0062	79,10
6.3	140	87	0.09	101099 0063	95,70
6.4	140	87	0.10	101099 0064	95,70
6.5	140	87	0.10	101099 0065	66,20
6.6	140	87	0.10	101099 0066	79,10
6.7	140	87	0.10	101099 0067	79,10
6.8	140	90	0.10	101099 0068	79,10
6.9	140	90	0.10	101099 0069	79,10
7.0	140	90	0.11	101099 0070	75,10
7.1	155	100	0.11	101099 0071	101,90
7.2	155	100	0.11	101099 0072	101,90
7.3	155	100	0.11	101099 0073	101,90
7.4	155	100	0.11	101099 0074	101,90
7.5	155	100	0.11	101099 0075	84,70
7.6	155	105	0.11	101099 0076	115,60
7.7	155	105	0.12	101099 0077	115,60
7.8	155	105	0.12	101099 0078	115,60
7.9	155	105	0.12	101099 0079	115,60
8.0	155	105	0.12	101099 0080	96,50
8.1	165	110	0.12	101099 0081	125,–
8.2	165	110	0.12	101099 0082	125,–
8.3	165	110	0.12	101099 0083	125,–
8.4	165	110	0.13	101099 0084	125,–
8.5	165	110	0.13	101099 0085	108,60
8.6	165	115	0.13	101099 0086	147,80
8.7	165	115	0.13	101099 0087	147,80
8.8	165	115	0.13	101099 0088	147,80
8.9	165	115	0.13	101099 0089	147,80

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Continued on next page >>>



D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
9.0	165	115	0.14	101099 0090	123,30
9.1	190	125	0.14	101099 0091	160,30
9.2	190	125	0.14	101099 0092	160,30
9.3	190	125	0.14	101099 0093	160,30
9.4	190	125	0.14	101099 0094	160,30
9.5	190	125	0.14	101099 0095	139,50
9.6	190	130	0.14	101099 0096	175,70
9.7	190	130	0.15	101099 0097	175,70
9.8	190	130	0.15	101099 0098	175,70
9.9	190	130	0.15	101099 0099	175,70
10.0	190	130	0.15	101099 0100	157,–
10.1	205	140	0.15	101099 0101	196,50
10.2	205	140	0.15	101099 0102	196,50
10.3	205	140	0.15	101099 0103	196,50
10.4	205	140	0.16	101099 0104	196,50
10.5	205	140	0.16	101099 0105	178,40

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D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
10.6	205	145	0.16	101099 0106	219,–
10.7	205	145	0.16	101099 0107	219,–
10.8	205	145	0.16	101099 0108	219,–
10.9	205	145	0.16	101099 0109	219,–
11.0	205	145	0.17	101099 0110	202,50
11.1	215	155	0.17	101099 0111	224,30
11.2	215	155	0.17	101099 0112	224,30
11.3	215	155	0.17	101099 0113	224,30
11.4	215	155	0.17	101099 0114	224,30
11.5	215	155	0.17	101099 0115	213,70
11.6	215	155	0.17	101099 0116	227,70
11.7	215	155	0.18	101099 0117	227,70
11.8	215	155	0.18	101099 0118	227,70
11.9	215	155	0.18	101099 0119	227,70
12.0	215	155	0.18	101099 0120	224,50

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15xD

D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
1.6	70	30	0.02	**101100** 0016	28,–
1.8	75	34	0.03	101100 0018	28,–
2	80	36	0.03	101100 0020	26,–
2.1	80	38	0.03	101100 0021	30,70
2.2	80	40	0.03	101100 0022	30,70
2.3	85	42	0.03	101100 0023	30,70
2.4	85	44	0.04	101100 0024	30,70
2.5	85	46	0.04	101100 0025	29,40
2.6	100	48	0.04	101100 0026	30,70
2.7	100	50	0.04	101100 0027	35,30
2.8	100	50	0.04	101100 0028	35,30
2.9	105	54	0.04	101100 0029	35,30
3	105	54	0.05	101100 0030	33,60
3.1	110	56	0.05	101100 0031	39,40
3.2	110	58	0.05	101100 0032	39,40
3.3	110	60	0.05	101100 0033	39,40
3.4	115	62	0.05	101100 0034	45,80
3.5	115	64	0.05	101100 0035	37,80
3.6	115	66	0.05	101100 0036	39,40
3.7	120	68	0.06	101100 0037	39,40
3.8	120	70	0.06	101100 0038	44,60
3.9	120	70	0.06	101100 0039	44,60
4	120	72	0.06	101100 0040	42,60
4.1	135	74	0.06	101100 0041	44,60
4.2	135	76	0.06	101100 0042	44,60
4.3	140	78	0.06	101100 0043	50,40
4.4	140	80	0.07	101100 0044	50,40
4.5	140	82	0.07	101100 0045	48,–
4.6	145	84	0.07	101100 0046	50,40
4.7	145	86	0.07	101100 0047	57,40
4.8	145	86	0.07	101100 0048	57,40
4.9	150	88	0.07	101100 0049	58,70
5	150	90	0.08	101100 0050	53,60
5.1	150	92	0.08	101100 0051	57,40

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D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
5.2	155	94	0.08	101100 0052	57,40
5.3	155	96	0.08	101100 0053	57,40
5.4	155	98	0.08	101100 0054	76,70
5.5	155	100	0.08	101100 0055	61,20
5.6	160	102	0.08	101100 0056	81,90
5.7	165	104	0.09	101100 0057	81,90
5.8	165	106	0.09	101100 0058	81,90
6	170	108	0.09	101100 0060	69,20
6.2	170	112	0.09	101100 0062	92,80
6.3	175	114	0.09	101100 0063	112,30
6.5	200	118	0.10	101100 0065	78,30
6.6	200	120	0.10	101100 0066	92,80
6.8	200	124	0.10	101100 0068	92,80
6.9	200	126	0.10	101100 0069	92,80
7	200	126	0.11	101100 0070	88,30
7.1	200	128	0.11	101100 0071	142,70
7.5	205	136	0.11	101100 0075	99,80
8	215	144	0.12	101100 0080	113,20
8.1	215	146	0.12	101100 0081	143,40
8.2	220	148	0.12	101100 0082	143,40
8.5	225	154	0.13	101100 0085	127,90
8.6	225	156	0.13	101100 0086	225,80
8.8	230	160	0.13	101100 0088	225,80
9	230	162	0.14	101100 0090	145,10
9.3	240	168	0.14	101100 0093	207,80
9.5	240	172	0.14	101100 0095	164,30
9.7	245	176	0.15	101100 0097	258,90
9.8	245	178	0.15	101100 0098	228,–
10	250	180	0.15	101100 0100	184,70
10.5	270	190	0.16	101100 0105	209,70
11	280	200	0.17	101100 0110	238,20
11.5	290	208	0.17	101100 0115	266,40
11.8	295	214	0.18	101100 0118	369,–
12	300	216	0.18	101100 0120	284,50

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20XD

D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
1.6	85	38	0.02	**101101** 0016	33,–
1.8	85	42	0.03	101101 0018	33,–
2	85	46	0.03	101101 0020	31,30
2.1	90	50	0.03	101101 0021	38,30
2.2	90	52	0.03	101101 0022	38,30
2.3	95	54	0.03	101101 0023	38,30
2.4	95	56	0.04	101101 0024	38,30
2.5	100	58	0.04	101101 0025	36,–
2.6	110	60	0.04	101101 0026	38,30
2.7	115	64	0.04	101101 0027	43,50
2.8	115	66	0.04	101101 0028	43,50
2.9	120	68	0.04	101101 0029	43,50
3	120	70	0.05	101101 0030	41,10
3.1	125	72	0.05	101101 0031	48,70
3.2	125	74	0.05	101101 0032	48,70
3.3	125	76	0.05	101101 0033	48,70
3.4	130	80	0.05	101101 0034	56,–
3.5	130	82	0.05	101101 0035	45,80
3.7	135	86	0.06	101101 0037	49,10
3.8	140	88	0.06	101101 0038	55,30
4	140	92	0.06	101101 0040	52,60
4.1	155	96	0.06	101101 0041	66,60
4.2	155	98	0.06	101101 0042	55,30
4.3	160	100	0.06	101101 0043	62,50

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D h8 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
4.5	165	104	0.07	101101 0045	59,50
4.6	165	106	0.07	101101 0046	71,90
4.8	170	112	0.07	101101 0048	71,90
5	175	116	0.08	101101 0050	68,10
5.1	180	118	0.08	101101 0051	72,40
5.2	180	120	0.08	101101 0052	72,40
5.5	185	128	0.08	101101 0055	76,70
5.7	190	132	0.09	101101 0057	101,50
5.8	200	134	0.09	101101 0058	101,50
6	200	138	0.09	101101 0060	87,50
6.3	200	146	0.09	101101 0063	142,30
6.5	225	150	0.10	101101 0065	99,10
6.8	225	158	0.10	101101 0068	118,40
6.9	230	160	0.10	101101 0069	118,40
7	230	162	0.11	101101 0070	112,60
7.5	245	174	0.11	101101 0075	127,90
8	255	184	0.12	101101 0080	145,60
8.1	255	188	0.12	101101 0081	180,90
8.2	260	190	0.12	101101 0082	180,90
8.5	265	196	0.13	101101 0085	166,30
9	275	208	0.14	101101 0090	187,90
10	300	230	0.15	101101 0100	243,50
11	350	254	0.17	101101 0110	315,–
12	350	276	0.18	101101 0120	396,80

1107



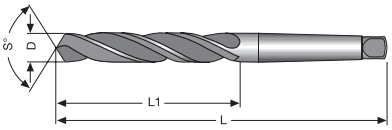
ATORN® Twist drill with MT shank

HSS | DIN 345 | Typ N | 118° | 30° | 5xD | Vap. | Vc/fz | 353

- **Point thinning from Ø 14.25 mm**
- MT shank
- **Vapour-treated, resulting in lower welding tendency and better chip removal**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 25-28	● 20-22					● 25-28	○ 20-23				○ 50-60	○ 40-50	○ 30-60				
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		





D h8 mm	L mm	L1 mm	Shank	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
5.00	133	52	MT 1	0.09	**101505** 0050	18,80
6.00	138	57	MT 1	0.13	101505 0060	19,30
6.80	150	69	MT 1	0.13	101505 0068	30,50
7.00	150	69	MT 1	0.13	101505 0070	18,80
8.00	156	75	MT 1	0.13	101505 0080	18,10
8.50	156	75	MT 1	0.18	101505 0085	20,30
9.00	162	81	MT 1	0.18	101505 0090	20,–
9.50	162	81	MT 1	0.18	101505 0095	22,–
10.00	168	87	MT 1	0.18	101505 0100	20,30
10.20	168	87	MT 1	0.18	101505 0102	29,90
10.50	168	87	MT 1	0.18	101505 0105	20,90
11.00	175	94	MT 1	0.18	101505 0110	21,60
11.50	175	94	MT 1	0.18	101505 0115	25,30
11.75	175	94	MT 1	0.18	101505 0117	29,20
11.80	175	94	MT 1	0.18	101505 0118	29,90
12.00	182	101	MT 1	0.18	101505 0120	22,40
12.10	182	101	MT 1	0.22	101505 0121	29,10
12.20	182	101	MT 1	0.22	101505 0122	29,60
12.50	182	101	MT 1	0.22	101505 0125	23,70
12.75	182	101	MT 1	0.22	101505 0127	29,60
13.00	182	101	MT 1	0.22	101505 0130	24,50
13.50	189	108	MT 1	0.22	101505 0135	27,90
13.75	189	108	MT 1	0.22	101505 0137	31,80
14.00	189	108	MT 1	0.22	101505 0140	26,10
14.25	212	114	MT 2	0.22	101505 0142	39,50
14.50	212	114	MT 2	0.22	101505 0145	27,10
14.75	212	114	MT 2	0.22	101505 0147	41,50
15.00	212	114	MT 2	0.22	101505 0150	29,20
15.25	218	120	MT 2	0.22	101505 0152	38,50
15.50	218	120	MT 2	0.22	101505 0155	31,–
15.75	218	120	MT 2	0.22	101505 0157	35,–
16.00	218	120	MT 2	0.22	101505 0160	31,20
16.25	223	125	MT 2	0.28	101505 0163	47,40
16.50	223	125	MT 2	0.28	101505 0165	33,50
16.75	223	125	MT 2	0.28	101505 0167	38,60
17.00	223	125	MT 2	0.28	101505 0170	34,80
17.25	228	130	MT 2	0.28	101505 0172	43,80
17.50	228	130	MT 2	0.28	101505 0175	35,90
17.75	228	130	MT 2	0.28	101505 0177	44,–
18.00	228	130	MT 2	0.28	101505 0180	37,50
18.50	233	135	MT 2	0.28	101505 0185	40,40

1104

D h8 mm	L mm	L1 mm	Shank	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
18.75	233	135	MT 2	0.28	101505 0187	47,40
19.00	233	135	MT 2	0.28	101505 0190	40,20
19.50	238	140	MT 2	0.28	101505 0195	46,60
19.75	238	140	MT 2	0.28	101505 0197	52,50
20.00	238	140	MT 2	0.28	101505 0200	42,90
20.50	243	145	MT 2	0.28	101505 0205	45,20
21.00	243	145	MT 2	0.28	101505 0210	48,10
21.50	248	150	MT 2	0.28	101505 0215	55,50
21.75	248	150	MT 2	0.28	101505 0217	62,50
22.00	248	150	MT 2	0.28	101505 0220	53,50
22.50	253	155	MT 2	0.28	101505 0225	58,–
23.00	253	155	MT 2	0.28	101505 0230	62,50
23.50	276	155	MT3	0.28	101505 0235	62,50
24.00	281	160	MT3	0.28	101505 0240	66,–
24.50	281	160	MT3	0.28	101505 0245	68,50
24.75	281	160	MT3	0.28	101505 0247	95,50
25.00	281	160	MT3	0.28	101505 0250	73,–
25.50	286	165	MT3	0.28	101505 0255	76,–
26.00	286	165	MT3	0.28	101505 0260	83,50
26.50	286	165	MT3	0.28	101505 0265	80,50
27.00	291	170	MT3	0.28	101505 0270	82,50
27.50	291	170	MT3	0.28	101505 0275	86,50
28.00	291	170	MT3	0.28	101505 0280	91,50
28.50	296	175	MT3	0.28	101505 0285	112,–
29.00	296	175	MT3	0.28	101505 0290	100,–
29.50	296	175	MT3	0.28	101505 0295	103,–
30.00	296	175	MT3	0.28	101505 0300	99,50
30.50	301	180	MT3	0.28	101505 0305	120,–
30.75	301	180	MT3	0.28	101505 0307	135,–
31.00	301	180	MT3	0.28	101505 0310	117,–
31.50	301	180	MT3	0.28	101505 0315	135,–
32.00	334	185	MT 4	0.28	101505 0320	124,–
32.50	334	185	MT 4	0.28	101505 0325	144,–
33.00	334	185	MT 4	0.28	101505 0330	135,–
33.50	334	185	MT 4	0.28	101505 0335	148,–
34.00	339	190	MT 4	0.28	101505 0340	157,–
34.50	339	190	MT 4	0.28	101505 0345	174,–
35.00	339	190	MT 4	0.28	101505 0350	159,–
35.50	339	190	MT 4	0.28	101505 0355	192,–
36.00	344	195	MT 4	0.28	101505 0360	173,–
36.50	344	195	MT 4	0.28	101505 0365	193,–

1104

D h8 mm	L mm	L1 mm	Shank	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
37.00	344	195	MT 4	0.28	101505 0370	189,–
38.00	349	200	MT 4	0.28	101505 0380	200,–
38.50	349	200	MT 4	0.28	101505 0385	240,–
39.00	349	200	MT 4	0.28	101505 0390	220,–
39.50	349	200	MT 4	0.28	101505 0395	275,–
40.00	349	200	MT 4	0.28	101505 0400	225,–
40.50	354	205	MT 4	0.28	101505 0405	355,–
41.00	354	205	MT 4	0.28	101505 0410	240,–
41.50	354	205	MT 4	0.28	101505 0415	415,–

1104

D h8 mm	L mm	L1 mm	Shank	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
42.00	354	205	MT 4	0.28	101505 0420	265,–
42.50	354	205	MT 4	0.28	101505 0425	225,–
43.00	359	210	MT 4	0.28	101505 0430	280,–
44.00	359	210	MT 4	0.28	101505 0440	295,–
45.00	359	210	MT 4	0.28	101505 0450	310,–
46.00	364	215	MT 4	0.28	101505 0460	320,–
48.00	369	220	MT 4	0.28	101505 0480	345,–
50.00	369	220	MT 4	0.28	101505 0500	375,–

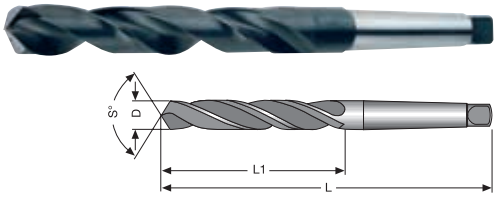
1104

ATORN® Twist drill with MT shank

HSS-E | DIN 345 | Typ N | 118° | 30° | 5xD | Vap. | Vc/fz | 357

- Point thinning from Ø 12.0 mm
- Morse taper shank
- **Vapour-treated for reduced welding tendencies and better chip removal**
- Higher wear resistance

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 30-25	● 25-30	○ 12-16	○ 14-18	○ 12-14		● 30-35	○ 28-30				○ 50-70	○ 40-55	○ 30-60				
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		



D h8 mm	L mm	L1 mm	Shank	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
12.00	182	101	MT 1	0.28	**101507** 0120	43,10
12.50	182	101	MT 1	0.31	101507 0125	44,70
13.00	182	101	MT 1	0.31	101507 0130	46,90
13.50	189	108	MT 1	0.31	101507 0135	57,50
14.00	189	108	MT 1	0.31	101507 0140	51,–
14.50	212	114	MT 2	0.31	101507 0145	57,–
15.00	212	114	MT 2	0.31	101507 0150	59,–
15.50	218	120	MT 2	0.31	101507 0155	59,50
15.75	218	120	MT 2	0.31	101507 0157	68,50
16.00	218	120	MT 2	0.31	101507 0160	62,–
16.50	223	125	MT 2	0.35	101507 0165	65,–
17.00	223	125	MT 2	0.35	101507 0170	65,–
17.50	228	130	MT 2	0.35	101507 0175	63,–
18.00	228	130	MT 2	0.35	101507 0180	68,–
18.50	233	135	MT 2	0.35	101507 0185	72,50
19.00	233	135	MT 2	0.35	101507 0190	72,–
19.50	238	140	MT 2	0.35	101507 0195	86,50
20.00	238	140	MT 2	0.35	101507 0200	77,–
20.50	243	145	MT 2	0.35	101507 0205	83,50
21.00	243	145	MT 2	0.35	101507 0210	91,50
21.50	248	150	MT 2	0.35	101507 0215	119,–
22.00	248	150	MT 2	0.35	101507 0220	105,–
22.50	253	155	MT 2	0.35	101507 0225	164,–
23.00	253	155	MT 2	0.35	101507 0230	118,–

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D h8 mm	L mm	L1 mm	Shank	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
23.50	276	155	MT3	0.35	101507 0235	129,–
24.00	281	160	MT3	0.35	101507 0240	138,–
24.50	281	160	MT3	0.35	101507 0245	146,–
25.00	281	160	MT3	0.35	101507 0250	138,–
25.50	286	165	MT3	0.35	101507 0255	178,–
26.00	286	165	MT3	0.35	101507 0260	162,–
26.50	286	165	MT3	0.35	101507 0265	190,–
27.00	291	170	MT3	0.35	101507 0270	179,–
27.50	291	170	MT3	0.35	101507 0275	199,–
28.00	291	170	MT3	0.35	101507 0280	205,–
28.50	296	175	MT3	0.35	101507 0285	230,–
29.00	296	175	MT3	0.35	101507 0290	210,–
29.50	296	175	MT3	0.35	101507 0295	210,–
30.00	296	175	MT3	0.35	101507 0300	195,–
30.50	301	180	MT3	0.35	101507 0305	325,–
31.00	301	180	MT3	0.35	101507 0310	270,–
31.50	301	180	MT3	0.35	101507 0315	315,–
32.00	334	185	MT 4	0.35	101507 0320	280,–
32.50	334	185	MT 4	0.35	101507 0325	470,–
33.00	334	185	MT 4	0.35	101507 0330	285,–
33.50	334	185	MT 4	0.35	101507 0335	475,–
34.00	339	190	MT 4	0.35	101507 0340	300,–
35.00	339	190	MT 4	0.35	101507 0350	315,–

1104

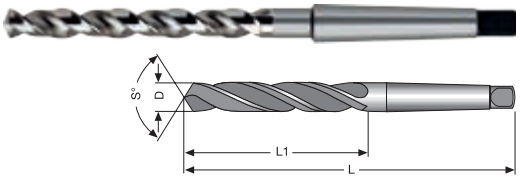
ATORN® Twist drill with MT shank

HSS-E | DIN 345 | Typ VA | 130° | 40° | 5xD | Vc/fz 353

Stainless steel

- Profile-ground
- Morse taper shank
- **For machining stainless steel**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		○ 30	○ 20	○ 10	● 12	● 10	○ 6			○ 7	○ 6		○ 70	○ 50	○ 40				
	Cutting speed Vc m/min.																		



D h8 mm	L mm	L1 mm	Shank	Feed f stainless steel austenitic mm/rev	art.no.	€
12.5	182	101	MT 1	0.18	**101605** 0125	45,60
13.0	182	101	MT 1	0.18	101605 0130	47,80
13.5	189	108	MT 1	0.19	101605 0135	58,50
14.0	189	108	MT 1	0.19	101605 0140	52,–
14.5	212	114	MT 2	0.20	101605 0145	58,50
15.0	212	114	MT 2	0.20	101605 0150	61,–
15.5	218	120	MT 2	0.21	101605 0155	61,50
16.0	218	120	MT 2	0.21	101605 0160	63,50
16.5	223	125	MT 2	0.21	101605 0165	65,50
17.0	223	125	MT 2	0.22	101605 0170	65,50
17.5	228	130	MT 2	0.22	101605 0175	63,50

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D h8 mm	L mm	L1 mm	Shank	Feed f stainless steel austenitic mm/rev	art.no.	€
18.0	228	130	MT 2	0.23	101605 0180	68,50
18.5	233	135	MT 2	0.23	101605 0185	73,50
19.0	233	135	MT 2	0.23	101605 0190	72,50
19.5	238	140	MT 2	0.24	101605 0195	88,–
20.0	238	140	MT 2	0.24	101605 0200	78,–
20.5	243	145	MT 2	0.25	101605 0205	86,–
21.0	243	145	MT 2	0.25	101605 0210	93,–
21.5	248	150	MT 2	0.25	101605 0215	122,–
22.0	248	150	MT 2	0.26	101605 0220	108,–
22.5	253	155	MT 2	0.26	101605 0225	135,–
23.0	253	155	MT 2	0.26	101605 0230	122,–

1104

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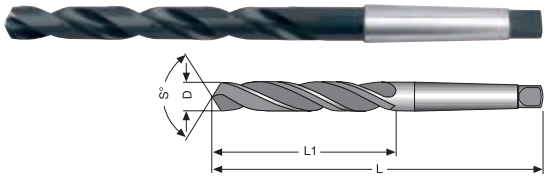


ATORN® Twist drill bit (drilling bush), with MT shank

HSS | DIN 341 | Typ N | 118° | 30° | 10xD | Vap. | Vc/fz | 358

- Special geometry
- **For drilling through drill guide bushes**
- In comparison to DIN 345, the spiral length is extended by the height of the drill guide bush so that the effective drilling depth is not reduced
- Morse taper shank
- **Vapour-treated**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 25-28	● 20-22					○ 25-28	○ 18-22				○ 45-55	○ 35-45	○ 30-60				
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		



D h8 mm	L mm	L1 mm	Shank	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
10.0	197	116	MT 1	0.23	**101601** 0100	28,90
10.2	197	116	MT 1	0.23	101601 0102	34,60
10.5	197	116	MT 1	0.23	101601 0105	29,50
11.0	206	125	MT 1	0.23	101601 0110	30,40
11.5	206	125	MT 1	0.23	101601 0115	30,40
12.0	215	134	MT 1	0.23	101601 0120	30,40
12.5	215	134	MT 1	0.23	101601 0125	30,80
13.0	215	134	MT 1	0.23	101601 0130	30,80
13.5	223	142	MT 1	0.23	101601 0135	34,30
14.0	223	142	MT 1	0.23	101601 0140	34,60
14.5	245	147	MT 2	0.23	101601 0145	43,90
15.0	245	147	MT 2	0.23	101601 0150	43,80
15.5	251	153	MT 2	0.23	101601 0155	43,80
16.0	251	153	MT 2	0.23	101601 0160	45,10
16.5	257	159	MT 2	0.35	101601 0165	47,60
17.0	257	159	MT 2	0.35	101601 0170	47,10
17.5	263	165	MT 2	0.35	101601 0175	54,–
18.0	263	165	MT 2	0.35	101601 0180	53,50
18.5	269	171	MT 2	0.35	101601 0185	60,50
19.0	269	171	MT 2	0.35	101601 0190	59,–
20.0	275	177	MT 2	0.35	101601 0200	65,–
20.5	282	184	MT 2	0.35	101601 0205	81,–
21.0	282	184	MT 2	0.35	101601 0210	74,50
21.5	282	184	MT 2	0.35	101601 0215	88,–
22.0	289	191	MT 2	0.35	101601 0220	81,–
22.5	296	198	MT 2	0.35	101601 0225	96,50
23.0	296	198	MT 2	0.35	101601 0230	83,50

1104

D h8 mm	L mm	L1 mm	Shank	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
24.0	327	206	MT3	0.35	101601 0240	103,–
25.0	327	206	MT3	0.35	101601 0250	104,–
26.0	335	214	MT3	0.45	101601 0260	118,–
27.0	343	222	MT3	0.45	101601 0270	135,–
28.0	343	222	MT3	0.45	101601 0280	143,–
29.0	351	230	MT3	0.45	101601 0290	165,–
30.0	351	230	MT3	0.45	101601 0300	164,–
31.0	360	239	MT3	0.45	101601 0310	205,–
32.0	397	248	MT 4	0.45	101601 0320	215,–
33.0	397	248	MT 4	0.45	101601 0330	220,–
34.0	406	257	MT 4	0.45	101601 0340	275,–
35.0	406	257	MT 4	0.45	101601 0350	270,–
36.0	416	267	MT 4	0.45	101601 0360	235,–
37.0	416	267	MT 4	0.45	101601 0370	345,–
38.0	426	277	MT 4	0.45	101601 0380	330,–
39.0	426	277	MT 4	0.45	101601 0390	355,–
40.0	426	277	MT 4	0.45	101601 0400	355,–
41.0	436	287	MT 4	0.56	101601 0410	435,–
42.0	436	287	MT 4	0.56	101601 0420	435,–
43.0	447	298	MT 4	0.56	101601 0430	460,–
44.0	447	298	MT 4	0.56	101601 0440	460,–
45.0	447	298	MT 4	0.56	101601 0450	465,–
47.0	459	310	MT 4	0.56	101601 0470	579,–
48.0	470	321	MT 4	0.56	101601 0480	599,–
49.0	470	321	MT 4	0.56	101601 0490	609,–
50.0	470	321	MT 4	0.56	101601 0500	609,–

1104

ATORN® Deep hole drill with MT shank

HSS | Werks-norm | Typ TLP | 130° | 38° | >10xD | Vc/fz | 353

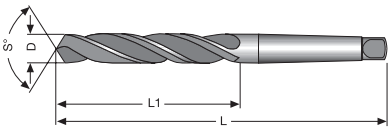
Deep bore profile

- Extra-long, for deep bores
- **Wide chip flutes for better chip removal**
- Morse taper shank
- **Pilot hole recommended**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 22	● 14	○ 6	○ 7	○ 6		● 20	○ 20	○ 5			○ 50	○ 40	○ 30				
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.





D h8 mm	L mm	L1 mm	Series	Shank	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
8.0	181	100	0	MT 1	0.15	**101700** 0800	44,–
8.0	265	165	1	MT 1	0.15	101700 0801	58,–
8.0	330	210	2	MT 1	0.15	101700 0802	90,–
8.0	500	420	3	MT 1	0.15	101700 0803	94,–
9.0	188	107	0	MT 1	0.16	101700 0900	49,–
9.0	275	175	1	MT 1	0.16	101700 0901	67,50
9.0	345	220	2	MT 1	0.16	101700 0902	97,–
9.0	500	420	3	MT 1	0.16	101700 0903	102,–
10.0	197	116	0	MT 1	0.16	101700 1000	50,–
10.0	285	185	1	MT 1	0.16	101700 1001	69,50
10.0	360	235	2	MT 1	0.16	101700 1002	97,–
10.0	500	420	3	MT 1	0.16	101700 1003	118,–
11.0	206	125	0	MT 1	0.17	101700 1100	63,50
11.0	300	195	1	MT 1	0.17	101700 1101	82,50
11.0	500	420	3	MT 1	0.17	101700 1103	129,–
12.0	215	134	0	MT 1	0.18	101700 1200	66,50
12.0	310	205	1	MT 1	0.18	101700 1201	92,–
12.0	395	260	2	MT 1	0.18	101700 1202	139,–
12.0	500	420	3	MT 1	0.18	101700 1203	137,–
13.0	215	134	0	MT 1	0.18	101700 1300	69,50
13.0	310	205	1	MT 1	0.18	101700 1301	93,–
13.0	395	260	2	MT 1	0.18	101700 1302	143,–
14.0	223	142	0	MT 1	0.19	101700 1400	69,50
14.0	325	220	1	MT 1	0.19	101700 1401	102,–
14.0	410	275	2	MT 1	0.19	101700 1402	152,–
14.0	500	420	3	MT 1	0.19	101700 1403	167,–
14.0	600	500	4	MT 1	0.19	101700 1404	230,–
15.0	245	147	0	MT 2	0.19	101700 1500	77,50
15.0	340	220	1	MT 2	0.19	101700 1501	114,–

1104

D h8 mm	L mm	L1 mm	Series	Shank	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
15.0	425	275	2	MT 2	0.19	101700 1502	155,–
15.0	600	500	4	MT 2	0.19	101700 1504	270,–
16.0	251	153	0	MT 2	0.20	101700 1600	87,–
16.0	355	230	1	MT 2	0.20	101700 1601	118,–
16.0	445	295	2	MT 2	0.20	101700 1602	159,–
16.0	500	400	3	MT 2	0.20	101700 1603	196,–
16.0	600	500	4	MT 2	0.20	101700 1604	290,–
17.0	257	159	0	MT 2	0.21	101700 1700	97,–
17.0	355	230	1	MT 2	0.21	101700 1701	123,–
18.0	263	165	0	MT 2	0.21	101700 1800	101,–
18.0	370	245	1	MT 2	0.21	101700 1801	135,–
18.0	465	310	2	MT 2	0.21	101700 1802	188,–
18.0	500	400	3	MT 2	0.21	101700 1803	215,–
18.0	600	500	4	MT 2	0.21	101700 1804	335,–
20.0	275	177	0	MT 2	0.22	101700 2000	123,–
20.0	385	260	1	MT 2	0.22	101700 2001	172,–
20.0	490	325	2	MT 2	0.22	101700 2002	230,–
20.0	500	400	3	MT 2	0.22	101700 2003	235,–
20.0	600	500	4	MT 2	0.22	101700 2004	335,–
21.0	282	184	0	MT 2	0.23	101700 2100	149,–
21.0	385	260	1	MT 2	0.23	101700 2101	194,–
21.0	600	500	4	MT 2	0.23	101700 2104	340,–
22.0	405	270	1	MT 2	0.23	101700 2201	205,–
22.0	600	500	4	MT 2	0.23	101700 2204	340,–
24.0	440	290	1	MT3	0.24	101700 2401	265,–
24.0	600	475	4	MT3	0.24	101700 2404	350,–
25.0	327	206	0	MT3	0.25	101700 2500	205,–
25.0	600	475	4	MT3	0.25	101700 2504	370,–

1104

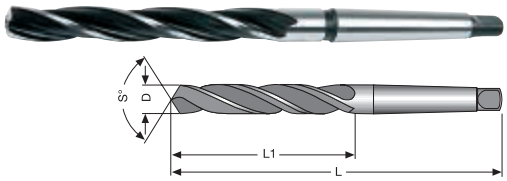
ATORN® Core drill with MT shank

HSS | DIN 343 | Typ N | 120° | 25° | Z 3 | Vc/fz | 358

3 cutting edges

- **MT shank with driving pin lugs in accordance with DIN 228**
- Robust drill with strong core for optimum guidance in the bore hole
- **For drilling pre-drilled, pre-cast or pre-punched holes**
- The sturdy design and 3 cutting edges correct alignment inaccuracies and roundness issues in prefabricated holes
- **Also available with straight shank where required**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 26-30	● 25-28					○ 10-18					○ 25-40		○ 10-30				
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		



D h8 mm	L mm	L1 mm	Pre-drill min. Ø mm	Shank	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
7.80	156	75	5.6	MT 1	0.10	**101515** 0780	57,–
8.00	156	75	5.6	MT 1	0.10	101515 0800	67,–
8.80	162	81	6.3	MT 1	0.12	101515 0880	71,–
9.80	168	87	7.0	MT 1	0.12	101515 0980	57,–
10.00	168	87	7.0	MT 1	0.12	101515 1000	71,–
10.75	175	94	7.7	MT 1	0.12	101515 1075	74,–
11.00	175	94	7.7	MT 1	0.12	101515 1100	71,–
11.75	182	101	8.4	MT 1	0.12	101515 1175	60,–
12.00	182	101	8.4	MT 1	0.12	101515 1200	74,–
12.75	182	101	9.1	MT 1	0.12	101515 1275	74,–
13.00	182	101	9.1	MT 1	0.12	101515 1300	74,–
13.75	189	108	9.8	MT 1	0.12	101515 1375	67,–
14.00	189	108	9.8	MT 1	0.12	101515 1400	86,–
14.75	212	114	10.5	MT 2	0.18	101515 1475	75,–
15.00	212	114	10.5	MT 2	0.18	101515 1500	79,–
15.75	218	120	11.2	MT 2	0.18	101515 1575	76,50
16.00	218	120	11.2	MT 2	0.18	101515 1600	95,–
16.75	223	125	11.9	MT 2	0.18	101515 1675	82,–
17.00	223	125	11.9	MT 2	0.18	101515 1700	89,50
17.75	228	130	12.6	MT 2	0.18	101515 1775	84,–
18.00	228	130	12.6	MT 2	0.18	101515 1800	101,–
18.70	233	135	13.3	MT 2	0.18	101515 1870	110,–
19.00	233	135	13.3	MT 2	0.18	101515 1900	93,50
19.70	238	140	14.0	MT 2	0.18	101515 1970	93,50
20.00	238	140	14.0	MT 2	0.18	101515 2000	83,–
20.70	243	145	14.6	MT 2	0.22	101515 2070	117,–
21.00	243	145	14.6	MT 2	0.22	101515 2100	110,–

1105

D h8 mm	L mm	L1 mm	Pre-drill min. Ø mm	Shank	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
21.70	248	150	15.3	MT 2	0.22	101515 2170	117,–
22.00	248	150	15.3	MT 2	0.22	101515 2200	110,–
22.70	253	155	16.0	MT 2	0.22	101515 2270	126,–
23.00	253	155	16.0	MT 2	0.22	101515 2300	126,–
23.70	281	160	16.6	MT3	0.22	101515 2370	132,–
24.00	281	160	16.6	MT3	0.22	101515 2400	132,–
24.70	281	160	17.3	MT3	0.22	101515 2470	139,–
25.00	281	160	17.3	MT3	0.22	101515 2500	122,–
25.70	286	165	18.0	MT3	0.22	101515 2570	142,–
26.00	286	165	18.0	MT3	0.22	101515 2600	138,–
26.70	291	170	18.6	MT3	0.22	101515 2670	166,–
27.70	291	170	19.3	MT3	0.22	101515 2770	170,–
28.00	291	170	19.3	MT3	0.22	101515 2800	170,–
28.70	296	175	20.0	MT3	0.22	101515 2870	170,–
29.70	296	175	20.5	MT3	0.22	101515 2970	173,–
30.00	296	175	20.5	MT3	0.22	101515 3000	183,–
30.60	301	180	21.0	MT3	0.22	101515 3060	225,–
31.60	334	185	22.0	MT 4	0.22	101515 3160	260,–
32.00	334	185	22.0	MT 4	0.22	101515 3200	260,–
33.00	334	185	23.0	MT 4	0.22	101515 3300	270,–
33.60	339	190	24.0	MT 4	0.22	101515 3360	285,–
34.60	339	190	25.0	MT 4	0.22	101515 3460	295,–
37.60	349	200	26.5	MT 4	0.22	101515 3760	350,–
38.00	349	200	26.5	MT 4	0.22	101515 3800	350,–
39.60	349	200	28.0	MT 4	0.22	101515 3960	375,–
40.00	349	200	28.0	MT 4	0.22	101515 4000	375,–

1105

ATORN® Pin hole drills

HSS | DIN 1898A | 118° | 25° | Vc/fz | 358

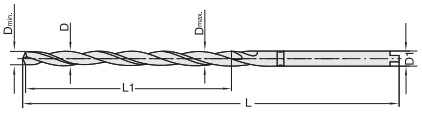
- **Cutting edges with conical gradient and chip-breaking flutes**
- Used to drill conical drill holes 1:50 for taper pins in compliance with ISO 2339 (DIN 1) and ISO 8736 (DIN 7978) in one operation.
- Further sizes available on request
- Driving plane in accordance with DIN 1809
- **Note:** drill using a low feed rate

material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
●	○		○			○					○		○				
20-28	18-25		5-12			14-25					40-80		50-60				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.





D mm	D min. mm	D max. mm	L mm	L1 mm	D1 e9 mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
1.5	1.4	2.08	64	34	2.00	0.02	**101025** 0150	67,–
2.0	1.9	2.86	86	48	3.15	0.02	101025 0200	58,–
2.5	2.4	3.36	86	48	3.15	0.02	101025 0250	62,–
3.0	2.9	4.06	100	58	4.00	0.03	101025 0300	62,–
4.0	3.9	5.26	112	68	5.00	0.03	101025 0400	65,50
5.0	4.9	6.36	122	73	6.30	0.04	101025 0500	80,–
6.0	5.9	8.00	160	105	8.00	0.05	101025 0600	91,–
8.0	7.9	10.80	207	145	10.00	0.06	101025 0800	121,–
10.0	9.9	13.40	245	175	12.50	0.07	101025 1000	171,50
12.0	11.8	16.00	290	210	16.00	0.08	101025 1200	243,–

1104



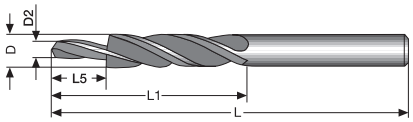
PALBIT
Machining tools
411 pages
Art.no. 019900 0315

Overview of all free manufacturers' catalogues on page 14/15

ATORN® Step drills

HSS | DIN 8378 | DIN 8374 | DIN 8376 | 118° | 29° | Vap. | Vc/fz | 353

- Cone-shaped shell
- **Vapour-treated**
- Point thinning in accordance with DIN 1412 type A
- Ø tolerance h8, other design features in accordance with DIN 1414
- **Note:** The cutting speed is determined by the large diameter, while the feed rate is determined by the small diameter for core drilling



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 25-28	● 20-22					● 25-28	○ 20-23										
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

90° through-hole countersink

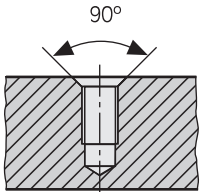
- For thread core drilling in accordance with DIN 336
- For through-holes in accordance with DIN EN 20273



for thread	D h9 mm	D2 h8 mm	L5 mm	L1 mm	L mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
M 3	3.4	2.5	8.8	39	70	0.03	**102101** 0030	22,10
M 4	4.5	3.3	11.4	47	80	0.04	102101 0040	24,20
M 5	5.5	4.2	13.6	57	93	0.05	102101 0050	24,80
M 6	6.6	5	16.5	63	101	0.07	102101 0060	28,–
M 8	9.0	6.8	21	81	125	0.08	102101 0080	32,–
M 10	11.0	8.5	25.5	94	142	0.10	102101 0100	41,–

1105

DIN 8378



90° fine countersink

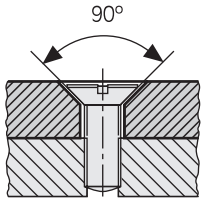
- For through-holes in accordance with DIN EN 20273
- For 90° countersunk screw heads



for thread	D h9 mm	D2 h8 mm	L5 mm	L1 mm	L mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
M 3	6.0	3.2	9	63	101	0.03	**102102** 0030	26,30
M 4	8.0	4.3	11	75	117	0.04	102102 0040	30,30
M 5	10.0	5.3	13	87	133	0.05	102102 0050	38,30
M 6	11.5	6.4	15	94	142	0.07	102102 0060	42,80
M 8	15.0	8.4	19	114	169	0.08	102102 0080	71,50
M 10	19.0	10.5	23	135	198	0.10	102102 0100	109,–

1105

DIN 8374



180° countersink

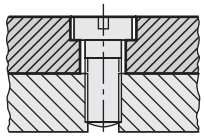
- For through-holes in accordance with DIN EN 20273
- For 180° countersunk screw heads in accordance with DIN 974-1
- For screws in accordance with DIN 6912, 7513, 7984



for thread	D h9 mm	D2 h8 mm	L5 mm	L1 mm	L mm	Feed f steel < 700 N/mm² mm/rev	art.no.	€
M 3	6.0	3.4	9	57	93	0.03	**102103** 0030	28,40
M 4	8.0	4.5	11	75	117	0.04	102103 0040	30,10
M 5	10.0	5.5	13	87	133	0.05	102103 0050	36,30
M 6	11.0	6.6	15	94	142	0.07	102103 0060	41,80
M 8	15.0	9	19	114	169	0.08	102103 0080	53,–
M 10	18.0	11	23	130	191	0.10	102103 0100	109,–

1105

DIN 8376



SARA® STEP step drill

HSS | Werks-norm | TiN

- **For burr-free drilling and reaming of sheet metal, pipes and sections and one-sided deburring in a single operation**
- The exact bore diameter results from the cylindrical graduation, the ground section of each step deburrs the next smaller bore diameter
- Point thinning in accordance with DIN 1412 C
- Especially suitable for use on hand drills when drilling thin materials
- **Corner breakers for double-sided deburring** (up to 1.5 mm sheets)
- No need for pre-drilling or centre punching even with curved surfaces
- **Straight shank with 3 driving planes prevents "slipping" in the chuck**
- Laser scaling of bore diameters and rotational speed data
- **Note:** material thickness suitable up to 5 mm

material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
●	●	○	○			●	○				○	○	○				

Single

No.	D mm	L mm	Number of steps	D1 mm	Blank art.no.	Blank €	TiN art.no.	TiN €
1	4.0 - 12.0	79	9	6	**102650** 0001	22,20	**102652** 0001	27,60
2	6.0 - 20.0	71	8	9	102650 0002	29,80	102652 0002	48,20
3	6.0 - 30.0	100	13	10	102650 0003	53,50	102652 0003	60,–
					1137		1137	


102650 0003


102652 0003

Sets

Contents	Blank art.no.	Blank €	TiN art.no.	TiN €
Step drill bit No. 1-3 (1 of each)	**102651** 0001	125,–	**102653** 0001	147,–
	1137		1137	


102651 0001


102653 0001

SARA® TS cone drill bit

HSS | Werks-norm | TiN | Vap.

- **For burr-free drilling and reaming of sheet metal, pipes and sections**
- Cylindrically ground / milled chip flute for absolutely smooth running and high cutting power
- **Straight shank with 3 driving planes prevents "slipping" in the chuck**
- Laser scaling of bore diameters and rotational speed data

material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
●	●	●	○			●	●				○	○	○				

Single

No.	D mm	L mm	D1 mm	Vapour-treated art.no.	Vapour-treated €	TiN art.no.	TiN €
0	3.0 - 14.0	58	6	**102660** 0314	13,55	**102665** 0314	24,40
1	8.0 - 20.0	66	8	102660 0820	21,10	102665 0820	31,90
2	16.0 - 30.5	77	9	102660 1630	43,80	102665 1630	54,50
3	26.0 - 40.0	90	9	102660 2640	69,50	102665 2640	103,–
4	36.0 - 50.0	87	9	102660 3650	92,–	102665 3650	168,–
6	40.0 - 61.0	90	10	102660 0430	30,90	102665 0430	59,50
				1137		1137	


102660 1630


102665 1630

Sets

Contents	Vapour-treated art.no.	Vapour-treated €	TiN art.no.	TiN €
Cone drill bit No. 0, 1 and 2 incl. cutting paste	**102661** 0001	83,–	**102666** 0001	125,–
	1137		1137	


102661 0001


102666 0001

EUROBOOR FOR PROFESSIONALS BY PROFESSIONALS Core drills

HSS | Vc/fz | 370

- **Strong HSS core drill**
- Super-fast drilling times and longer service life
- Guaranteed core removal
- **5 to 10 times longer service life than with a traditional twist drill bit**
- **No pre-drilling required**
- Surface is smooth and burr-free
- **Precise centring by means of guide pin**
- Other versions up to Ø 130 mm and various cutting material qualities (e.g. HSS-Co8) available on request

Ideal for machines with low drive power

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	○		○	○		○	○				●	○					

Core drills

- Weldon shank Ø 19.05 mm



D mm	Cutting depth 30 mm art.no.	€	Cutting depth 55 mm art.no.	€
12.0	**100601** 0120	20,90	**100602** 0120	31,30
13.0	100601 0130	20,90	100602 0130	31,30
14.0	100601 0140	20,90	100602 0140	29,30
15.0	100601 0150	20,90	100602 0150	29,30
16.0	100601 0160	22,30	100602 0160	30,60
17.0	100601 0170	23,70	100602 0170	31,30
18.0	100601 0180	23,70	100602 0180	34,10
19.0	100601 0190	24,40	100602 0190	34,80
20.0	100601 0200	25,10	100602 0200	36,20
21.0	100601 0210	26,50	100602 0210	39,–
22.0	100601 0220	27,20	100602 0220	40,40
23.0	100601 0230	28,50	100602 0230	41,10
24.0	100601 0240	30,60	100602 0240	43,20
25.0	100601 0250	31,30	100602 0250	45,30
26.0	100601 0260	32,70	100602 0260	46,70
	1150		1150	

D mm	Cutting depth 30 mm art.no.	€	Cutting depth 55 mm art.no.	€
27.0	100601 0270	33,40	100602 0270	49,40
28.0	100601 0280	34,80	100602 0280	51,50
29.0	100601 0290	35,50	100602 0290	53,50
30.0	100601 0300	39,–	100602 0300	57,–
31.0	100601 0310	43,90	100602 0310	59,–
32.0	100601 0320	46,70	100602 0320	61,50
33.0	100601 0330	49,40	100602 0330	64,–
34.0	100601 0340	53,50	100602 0340	68,50
35.0	100601 0350	59,–	100602 0350	71,–
40.0	100601 0400	69,50	100602 0400	88,50
45.0	100601 0450	85,50	100602 0450	117,–
50.0	100601 0500	102,–	100602 0500	147,–
55.0	100601 0550	121,–	100602 0550	169,–
60.0	100601 0600	135,–	100602 0600	194,–
	1150		1150	

Ejectors (centring pins)



Description	Cutting depth 30 mm art.no.	€	Cutting depth 55 mm art.no.	€
Ejector pin, Ø 12-60 mm	**100603** 0070	8,75	**100603** 0090	12,90
	1150		1150	



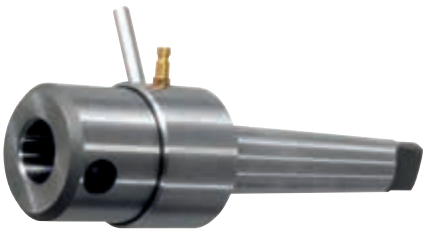
7-pcs. set

- For 30 mm cut depth

Contents	art.no.	€
1 ejector pin and 2 core drill bits in each size, Ø 14, 18, 22 mm	**100601** 1007	160,–
	1150	

Holding fixtures

- Internal coolant supply (ICS)



Description	art.no.	€
Industrial holding fixture MT 2 with internal cooling, Weldon Ø 19.05 mm	**100605** 0020	119,–
Industrial holding fixture MT 3 with internal cooling, Weldon Ø 19.05 mm	100605 0030	139,–
	1150	

SARA® Carbide-tipped twist drill bit

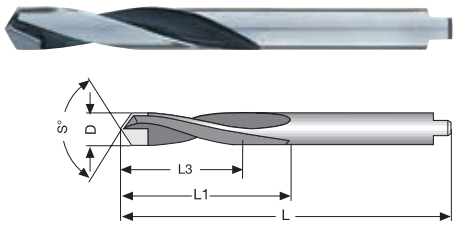
HM | DIN 8037 | 118° | 15° | 3xD

- With driving pin in accordance with DIN 1809 for use in collets
- HSS shank
- **Cutting element: carbide K10**
- Solid carbide cutting edges with four-facet grinding
- Self-centring
- Intermediate dimensions available on request

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 30-60	● 25-50	● 15-30				● 50-70	● 30-50	○ 25-35			● 40-150	● 40-150	● 40-100	○ 20-100	● 6-10		
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		

D h8 mm	L mm	L1 mm	L3 mm	Feed f steel < 1000 N/mm² mm/rev		art.no.	€
2.0	45	18	12	0.02	5	**110501** 0020	12,40
3.0	50	20	16	0.02	5	110501 0030	10,85
3.2	56	25	21	0.02	5	110501 0032	12,40
3.5	56	25	20	0.02	5	110501 0035	10,80
4.0	56	25	20	0.02	5	110501 0040	13,15
4.2	63	28	23	0.02	5	110501 0042	11,20
4.5	63	28	22	0.02	5	110501 0045	11,20
5.0	63	28	22	0.03	5	110501 0050	11,20
5.5	71	32	25	0.03	5	110501 0055	12,30
6.0	71	32	25	0.03	5	110501 0060	12,55
6.5	71	32	24	0.03	1	110501 0065	14,30
7.0	80	40	31	0.04	1	110501 0070	14,30
7.5	80	40	31	0.04	1	110501 0075	15,80
8.0	80	40	30	0.04	1	110501 0080	15,90
8.5	90	50	40	0.04	1	110501 0085	18,–
9.0	90	50	39	0.04	1	110501 0090	18,–
9.5	90	50	39	0.04	1	110501 0095	19,70
10.0	100	56	44	0.04	1	110501 0100	19,30
10.5	100	56	44	0.05	1	110501 0105	23,95
11.0	100	56	42	0.05	1	110501 0110	23,95
12.0	112	63	47	0.05	1	110501 0120	27,90
13.0	112	63	47	0.05	1	110501 0130	33,25
14.0	125	71	54	0.05	1	110501 0140	44,30
15.0	125	71	53	0.06	1	110501 0150	50,90
16.0	140	80	60	0.06	1	110501 0160	58,50

1108



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Overview of solid carbide twist drill bits

	Factory standard												
Sorting by drilling depth and shank design													
Brand	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	SARA	ATORN	DIN	DIN	DIN	DIN	DIN
Drilling depth								3 x D	2 x D	5 x D	12 x D	20 x D	30 x D
Diameter range [mm]	1 - 5	5 - 20	5 - 20	2 - 20	2 - 20	2 - 12	3 - 20	0,1 - 3,0	0,7 - 2	0,7 - 2	1 - 2	1 - 2	1 - 2
Type	A					extra long			ADO-MICRO	ADO-MICRO	ADO-MICRO	ADO-MICRO	ADO-MICRO
Point angle	60°	90°	120°	90°	90°	90°	90°	118°, 130°	140°	135°	135°	135°	135°
Cutting material	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide
Coating					TiAlN	TiAlN	TiAlN	TiAlN	IchAda	IchAda	IchAda	IchAda	IchAda
Item number	100501....	100520....	100530....	100570....	100580....	100583....	100540....	111550....	111721....	111722....	111723....	111724....	111725....
Catalogue page	110	110	110	111	111	112	112	113	114	114	115	115	115
Material groups	Usage recommendations												
Steel < 700 N/mm²	●	●	●	●	●	●	●	●	●	●	●	●	●
Steel < 1000 N/mm²	●	●	●	●	●	●	●	●	●	●	●	●	●
Steel < 1400 N/mm²	●	●	●	○	○	○	●	●	●	●	●	●	●
Stainless steel ferritic/martensitic	○	○	○	○	○	○	○	○	●	●	●	●	●
Stainless steel austenitic	○	○	○	○	○	○	○	●	●	●	●	●	●
Stainless steel duplex	○						○	○	○	○	○	○	○
Cast iron GG/GTS	●	●	●	○	○	○	●	●	●	●	●	●	●
Cast iron GGG	●	●	●	○	○	○	●	●	●	●	●	●	●
Titanium alloys	○	○	○	○	○	○	○	○	○	○	○	○	○
Superalloys Fe/NiCo base < 30 HRc	○	○	○				○	○	○	○	○	○	○
Superalloys Fe/NiCo base ≥ 30 HRc	○						○	○	○	○	○	○	○
Aluminium < 8% Si	●	●	●	●	●	●	●	●	○	○	○	○	○
Aluminium ≥ 8% Si	●	●	●	●	●	●	●	●	○	○	○	○	○
Copper Cu-alloy	●	●	●	●	●	●	●	●	○	○	○	○	○
Graphite GFRP/CFRP/thermoset								○					
Hardened steel < 55 HRc	○	○	○				○		○	○	○	○	○
Hardened steel < 60 HRc													
Hardened steel ≥ 60 HRc													

	DIN 6539			DIN 6537								Factory standard	
Sorting by drilling depth and shank design													
Brand	ATORN	ATORN	ATORN	SARA	ATORN	ATORN	SARA	ATORN	ATORN	ATORN	ATORN	DIN	ATORN
Drilling depth	3 x D	3 x D	3 x D	3 x D	3 x D	3 x D	3 x D, IC	3 x D, IC	3 x D, IC	3 x D, IC	3 x D, IC	3 x D, IC	3 x D
Diameter range [mm]	0.5 - 16.0	0.5 - 16	0.5 - 16	1 - 20	1 - 20	3 - 20	3 - 20	1 - 20	3 - 20	3 - 20	3 - 20	2.8 - 20	1 - 20
Type	N	N	N	U	U	U	U	U	U	Ultra-M	Ultra-M	VA	HARD
Point angle	118 °	118 °	118 °	140 °	140 °	140 °	140 °	140 °	140 °	140 °	140 °	140 °	140°
Cutting material	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide
Coating		TiN	TiAlN	TiNplus	TiAlNplus	TiAlNplus	TiNplus	TiAlNplus	TiAlNplus	TiAlN	TiAlN	TiAlN	TiAlSiN
Item number	111005....	111008....	111009....	111503....	111562....	111563....	111507....	111564....	111565....	111545....	111549....	111613....	111535....
Catalogue page	116	116	116	118	120	120	122	123	123	125	125	126	128
Material groups	Usage recommendations												
Steel < 700 N/mm²	●	●	●	●	●	●	●	●	●			●	
Steel < 1000 N/mm²	●	●	●	●	●	●	●	●	●			●	
Steel < 1400 N/mm²	●	●	●	●	●	●	●	●	●				○
Stainless steel ferritic/martensitic	○	●	●	●	●	●	●	●	●	●	●	●	
Stainless steel austenitic	○	○	●	●	●	●	●	●	●	●	●	●	
Stainless steel duplex					○	○		○	○	●	●	●	
Cast iron GG/GTS	●	●	●	●	●	●	●	●	●			●	
Cast iron GGG	●	●	●	●	●	●	●	●	●			●	○
Titanium alloys	○	○	●	●	●	●	●	●	●	●	●	●	
Superalloys Fe/NiCo base < 30 HRc			○		●	●		●	●	●	●		
Superalloys Fe/NiCo base ≥ 30 HRc					○	○		○	○	●	●		
Aluminium < 8% Si	●	●	●	●	○	○	●	○	○			●	
Aluminium ≥ 8% Si	●	●	●	●	●	●	●	●	●			○	
Copper Cu-alloy	●	●	●	●	○	○	●	○	○			○	
Graphite GFRP/CFRP/thermoset													
Hardened steel < 55 HRc	○	○	○	○	●	●	○	●	●				●
Hardened steel < 60 HRc				○	○	○	○	○	○				●
Hardened steel ≥ 60 HRc					○	○		○	○				●

	Similar to DIN 338			DIN 6537							Factory standard	DIN 6537	Factory standard
Sorting by drilling depth and shank design													
Brand	ATORN	ATORN	ATORN	ATORN	ATORN	SARA	ATORN	ATORN	ATORN	ATORN		SARA	ATORN
Drilling depth	5 x D	5 x D	5 x D	5 x D	5 x D	5 x D, IC	5 x D, IC	5 x D, IC	5 x D, IC	5 x D, IC	5 x D, IC	5 x D, IC	5 x D, IC
Diameter range [mm]	1 - 13	1 - 13	1 - 13	1 - 20	3 - 20	1 - 20	1 - 20	3 - 20	3 - 20	3 - 20	2.78 - 20	3 - 20	2,5 - 20
Type	N	N	N	U	U	U	U	U	VA	VA	VA	ALU	ALU
Point angle	118 °	118 °	118 °	140 °	140 °	140 °	140 °	140 °	140 °	140 °	140 °	140 °	135°
Cutting material	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide
Coating		TiN	TiAlN	TiAlNplus	TiAlNplus	TiNplus	TiAlNplus	TiAlNplus	TiAlN	TiAlN	TiAlN	ZrN	TiB_2
Item number	111010....	111011....	111012....	111566....	111567....	111512....	111568....	111569....	111547....	111551....	111615....	111410....	111400....
Catalogue page	129	129	129	131	131	133	134	135	136	136	138	139	141
Material groups	Usage recommendations												
Steel < 700 N/mm²	●	●	●	●	●	●	●	●			●		
Steel < 1000 N/mm²	●	●	●	●	●	●	●	●			●		
Steel < 1400 N/mm²	●	●	●	●	●	●	●	●			○		
Stainless steel ferritic/martensitic	○	●	●	●	●	●	●	●	●	●	●		
Stainless steel austenitic			○	●	●	●	●	●	●	●	●	○	
Stainless steel duplex				○	○	○	○	○	●	●	●		
Cast iron GG/GTS	●	●	●	●	●	●	●	●			●		
Cast iron GGG	●	●	●	●	●	●	●	●			●		
Titanium alloys	○	○	●	●	●	●	●	●	●	●	●	○	
Superalloys Fe/NiCo base < 30 HRc			○	●	●	●	●	●	●	●		○	
Superalloys Fe/NiCo base ≥ 30 HRc				○	○	○	○	○	●	●		○	
Aluminium < 8% Si	●	●	●	○	○	●	○	○			●	●	●
Aluminium ≥ 8% Si	●	●	●	●	●	●	●	●			○	●	●
Copper Cu-alloy	●	●	●	○	○	●	○	○			○	●	●
Graphite GFRP/CFRP/thermoset													
Hardened steel < 55 HRc	○	○	○	●	●	●	●	●					
Hardened steel < 60 HRc				○	○	○	○	○					
Hardened steel ≥ 60 HRc				○	○		○	○					

	Factory standard												
Sorting by drilling depth and shank design													
Brand	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN				
Drilling depth	5 x D	5 x D, IC	8 x D, IC	12 x D, IC	5 x D, IC	16 x D, IC	20 x D, IC	25 x D, IC	30 x D, IC	Pilot drill bit	Deep-hole drill bit, IC	15 x D	20 x D
Diameter range [mm]	2 - 18	1 - 20	3 - 20	3 - 20	2,02 - 12,02	3 - 12	2 - 12	3 - 12	2 - 12	3.03 - 12.03	2 - 12	3 - 12	3 - 12
Type	HARD	HARD	U	TLP	PLT	TLP	TLP	TLP	TLP	PLT	TLP	ADO	ADO
Point angle	140°	140°	140 °	140 °	140°	135°	135°	135°	135°	160 °	140 °	140°	140°
Cutting material	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	VHM	VHM
Coating	TiAlSiN	TiAlSiN	TiAlNplus	TiAlNplus	TiAlNplus	TiAlNplus	TiAlNplus	TiAlNplus	TiAlNplus	WDI	WDI	EgiAs	EgiAs
Item number	111536....	111537....	111570....	111572....	111573....	111574....	111575....	111576....	111577	111726....	111715....	111716....	111717....
Catalogue page	142	142	144	145	146	147	148	149	150	151	151	153	154
Material groups	Usage recommendations												
Steel < 700 N/mm²			●	●	●	●	●	●	●	●	●	●	●
Steel < 1000 N/mm²			●	●	●	●	●	●	●	●	●	●	●
Steel < 1400 N/mm²	○	○	●	●	●	●	●	●	●	●	●	●	●
Stainless steel ferritic/martensitic			○	○	●	○	○	○	○	○	○	○	○
Stainless steel austenitic			○	○	●	○	○	○	○	○	○	○	○
Stainless steel duplex													
Cast iron GG/GTS			●	●	●	●	●	●	●	●	●	●	●
Cast iron GGG	○	○	○	○	●	●	●	●	●	●	●	●	●
Titanium alloys			●		○								
Superalloys Fe/NiCo base < 30 HRc			●		○								
Superalloys Fe/NiCo base ≥ 30 HRc			○		○								
Aluminium < 8% Si			○	○	○								
Aluminium ≥ 8% Si			●	●	●								
Copper Cu-alloy			○	○	○								
Graphite GFRP/CFRP/thermoset													
Hardened steel < 55 HRc	●	●	○	○									
Hardened steel < 60 HRc	●	●											
Hardened steel ≥ 60 HRc													

	Factory standard							DIN 6539	
Sorting by drilling depth and shank design									
Brand					ATORN®	ATORN®	ATORN®	ATORN®	ATORN®
Drilling depth	30 x D	40 x D	50 x D	2 x D	3 x D, IC	5 x D, IC	5 x D	VHM-Bohrer, Z3	VHM-Bohrer, Z3
Diameter range [mm]	3 - 10	3 - 10	3 - 8	2 - 20	3 - 20	3 - 20	3 - 20	3 - 16	3 - 16
Type	ADO	ADO	ADO	N	Flat	N	High Feed	N	N
Point angle	140°	140°	140°	180°	180°	180°	135°	150°	150°
Cutting material	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide
Coating	EgiAs	EgiAs	EgiAs	EgiAs	TiAlN	TiAlN	TiAlN		TiN
Item number	111718....	111719....	111720....	111711....	111709....	111710....	111585....	111013....	111014....
Catalogue page	155	156	157	157	159	160	162	163	163
Material groups	Usage recommendations								
Steel < 700 N/mm²	●	●	●	●	●	●	●	●	●
Steel < 1000 N/mm²	●	●	●	●	●	●	●	●	●
Steel < 1400 N/mm²	●	●	●	○	○	○	●		●
Stainless steel ferritic/martensitic	○	○	○		●	●	○		○
Stainless steel austenitic	○	○	○		○	○	○		
Stainless steel duplex									
Cast iron GG/GTS	●	●	●	●	●	●	●	●	●
Cast iron GGG	●	●	●	●	●	●	●	●	●
Titanium alloys									○
Superalloys Fe/NiCo base < 30 HRc									
Superalloys Fe/NiCo base ≥ 30 HRc									
Aluminium < 8% Si				●	○	○		●	●
Aluminium ≥ 8% Si				○	○	○		●	●
Copper Cu-alloy					○	○			
Graphite GFRP/CFRP/thermoset									
Hardened steel < 55 HRc				○	○	○			
Hardened steel < 60 HRc									
Hardened steel ≥ 60 HRc									

	Factory standard					
Sorting by drilling depth and shank design						
Brand	ATORN®	ATORN®	ATORN®	ATORN®	ATORN®	ATORN®
Drilling depth	5 x D	3 x D	Drill reamer	Drill reamer, IC	Step drill bit	Step drill bit
Diameter range [mm]	2,4 - 16	3 - 12	2 - 12	3.98 - 20	for M3-M12	for M3 - M10
Type	CFK/GFK	CFK/GFK	CFK/GFK	N		
Point angle	90°			140 °	90 °/180 °	180°
Cutting material	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide
Coating			DLC	TiAlN	TiAlN	TiAlN
Item number	111805....	111810....	111815....	111701....	102202....	102211....
Catalogue page	165	165	164	164	166	166
Material groups	Usage recommendations					
Steel < 700 N/mm²				●	●	●
Steel < 1000 N/mm²				●	●	●
Steel < 1400 N/mm²				○	●	●
Stainless steel ferritic/martensitic					●	●
Stainless steel austenitic					●	●
Stainless steel duplex					○	○
Cast iron GG/GTS				●	●	●
Cast iron GGG				●	●	●
Titanium alloys					○	○
Superalloys Fe/NiCo base < 30 HRc					○	○
Superalloys Fe/NiCo base ≥ 30 HRc						
Aluminium < 8% Si					○	○
Aluminium ≥ 8% Si					○	○
Copper Cu-alloy					○	○
Graphite GFRP/CFRP/thermoset	●	●	●			
Hardened steel < 55 HRc					●	●
Hardened steel < 60 HRc						
Hardened steel ≥ 60 HRc						

ATORN® Centring drills

VHM | Werks-norm | A | 60° | Vc/fz | 348

- For centring holes without protected centre DIN 332 A
- Spiral-fluted, bare surface
- Precision-ground version, high true-running accuracy
- With application of the workpiece to the centre point over a large surface area
- Suitable for heavy workpieces when using revolving centre points

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 60-80	● 50-60	● 25-40	○ 20-30	○ 20-30	○ 15-25	● 50-60	● 35-50	○ 20-30	○ 20-25	○ 20-25	● 100-150	● 70-90	● 70-90		○ 20-35		
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

● Feed f steel < 1000 N/mm² mm/rev

D k12 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
1	3.15	31.5	1.3 - 1.7	0.06	**100501** 0100	37,10
1.25	3.15	31.5	1.6 - 2.0	0.06	100501 0125	37,10
1.6	4	35.5	2.0 - 2.6	0.06	100501 0160	38,70
2	5	40	2.5 - 3.1	0.06	100501 0200	43,30
2.5	6.3	45	3.1 - 3.8	0.06	100501 0250	48,60
3.15	8	50	3.9 - 4.6	0.07	100501 0315	58,70
4	10	56	5.0 - 5.9	0.07	100501 0400	70,20
5	12.5	63	6.3 - 7.2	0.07	100501 0500	104,50
					1103	

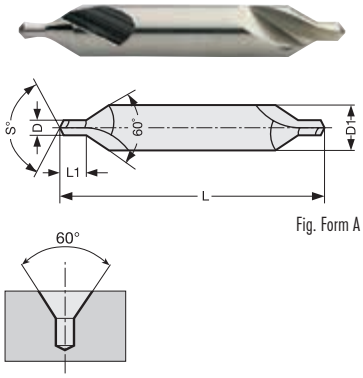


Fig. Form A

ATORN® NC spotting drill bits

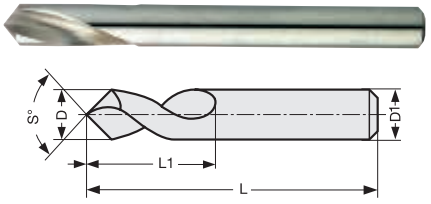
VHM | Werks-norm | 90° | 120° | Vc/fz | 349

- S°= point angle 90° or 120°
- Spiral-fluted
- **Cutting material: solid carbide K10**
- For fast drilling on NC/CNC machines and machining centres with precise positioning

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 60-100	● 55-75	● 30-50	○ 25-50	○ 25-50		● 80-100	● 60-90	○ 30-35	○ 25-35		● 100-180	● 100-180	● 90-120		○ 25-30		
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

● Feed f steel < 1000 N/mm² mm/rev

D h6 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	**90°** art.no.	€	**120°** art.no.	€
5	5	62	14	0.07	**100520** 0500	24,10	**100530** 0500	24,10
6	6	66	16	0.13	100520 0600	25,–	100530 0600	25,–
8	8	79	21	0.13	100520 0800	35,10	100530 0800	35,10
10	10	89	25	0.20	100520 1000	49,80	100530 1000	49,80
12	12	102	30	0.20	100520 1200	64,50	100530 1200	64,50
16	16	115	37.5	0.27	100520 1600	119,–	100530 1600	119,–
20	20	131	45	0.27	100520 2000	212,–	100530 2000	212,–
					1103		1103	



ATORN® NC spotting drill

VHM | Werks-norm | 90° | 120° | 142° | DIN 6535 HB | Vc/fz | 349

- S° = 90°, 120° and 142° point angle
- Straight shank with clamping surface in accordance with DIN6535-HB (from Ø 6mm)
- **Cutting material: SC, uncoated**
- Spot drilling and countersinking on NC and CNC machines
- 142° point angle version for spot drilling for the next twist drill operation

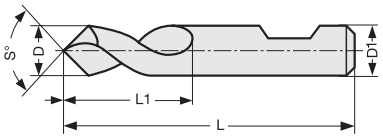
material	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
● very well suited ○ well suited	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	●	●	○	○	○		○	○	○			●	●	●				
	60-100	55-75	30-50	25-50	25-50		80-90	70-90	35-40			150-200	100-180	110-140				
	Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.								

D mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	90° art.no.	€	120° art.no.	€	142° art.no.	€
2	2	32	6	0.07	**100570** 0200	20,–	**100571** 0200	20,–	**100572** 0200	20,–
3	3	46	12	0.07	100570 0300	20,–	100571 0300	20,–	100572 0300	20,–
4	4	55	12	0.07	100570 0400	21,60	100571 0400	21,60	100572 0400	21,60
5	5	62	14	0.07	100570 0500	22,40	100571 0500	22,40	100572 0500	22,40
6	6	66	20	0.13	100570 0600	23,30	100571 0600	23,30	100572 0600	23,30
8	8	79	25	0.13	100570 0800	32,70	100571 0800	32,70	100572 0800	32,70
10	10	89	25	0.20	100570 1000	46,40	100571 1000	46,40	100572 1000	46,40
12	12	102	30	0.20	100570 1200	60,–	100571 1200	60,–	100572 1200	60,–
16	16	115	35	0.27	100570 1600	110,70	100571 1600	110,70	100572 1600	110,70
20	20	131	40	0.27	100570 2000	197,60	100571 2000	197,60	100572 2000	197,60
					1179		1179		1179	


100570....


100571....


100572....



ATORN® NC spotting drill

VHM | Werks-norm | 90° | 120° | 142° | DIN 6535 HB | TiAlN | Vc/fz | 349

- S° = 90°, 120° and 142° point angle
- Straight shank with clamping surface in accordance with DIN6535-HB (from Ø 6mm)
- **Cutting material: SC, TiAlN-coated**
- Spot drilling and countersinking on NC and CNC machines
- 142° point angle version for spot drilling for the next twist drill operation

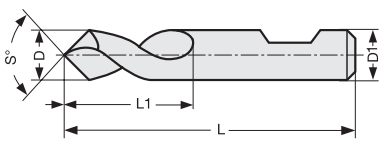
material	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
● very well suited ○ well suited	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	●	●	○	○	○		○	○	○			●	●	●				
	60-100	55-75	30-50	25-50	25-50		80-90	70-90	35-40			150-200	100-180	110-140				
	Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.								

D mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	90° art.no.	€	120° art.no.	€	142° art.no.	€
2	2	32	6	0.07	**100580** 0200	25,70	**100581** 0200	25,70	**100582** 0200	25,70
3	3	46	12	0.07	100580 0300	25,70	100581 0300	25,70	100582 0300	25,70
4	4	55	12	0.07	100580 0400	33,10	100581 0400	33,10	100582 0400	33,10
5	5	62	14	0.07	100580 0500	34,30	100581 0500	34,30	100582 0500	34,30
6	6	66	20	0.13	100580 0600	35,10	100581 0600	35,10	100582 0600	35,10
8	8	79	25	0.13	100580 0800	44,20	100581 0800	44,20	100582 0800	44,20
10	10	89	25	0.20	100580 1000	58,50	100581 1000	58,50	100582 1000	58,50
12	12	102	30	0.20	100580 1200	75,10	100581 1200	75,10	100582 1200	75,10
16	16	115	35	0.27	100580 1600	129,20	100581 1600	129,20	100582 1600	129,20
20	20	131	40	0.27	100580 2000	229,90	100581 2000	229,90	100582 2000	229,90
					1179		1179		1179	


100580....


100581....


100582....

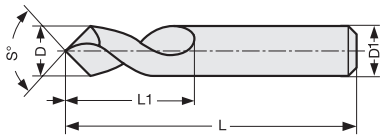


ATORN® NC spotting drill, extra-long

VHM | Werks-norm | 90° | 120° | 142° | DIN 6535 HB | TiAlN | Vc/fz | 349

- S°= 90°, 120° and 142° point angle
- Straight shank with clamping surface in accordance with DIN6535-HB (from Ø 6mm)
- **long version for bridging protruding contours**
- **Cutting material: SC, TiAlN-coated**
- Spot drilling and countersinking on NC and CNC machines

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 60-100	● 55-75	○ 30-50	○ 25-50	○ 25-50		○ 80-90	○ 70-90	○ 35-40			● 150-200	● 100-180	● 110-140				
	Cutting speed Vc m/min.																Please adjust these guidelines according to clamping operation and machine set-up.		





D mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	90° art.no.	€	120° art.no.	€	142° art.no.	€
2	2	75	6	0.07	**100583** 0200	29,60	**100584** 0200	29,60	**100585** 0200	29,60
3	3	80	12	0.07	100583 0300	29,60	100584 0300	29,60	100585 0300	29,60
4	4	100	12	0.07	100583 0400	38,10	100584 0400	38,10	100585 0400	38,10
5	5	120	14	0.07	100583 0500	44,60	100584 0500	44,60	100585 0500	44,60
6	6	140	20	0.13	100583 0600	47,40	100584 0600	47,40	100585 0600	47,40
8	8	140	25	0.13	100583 0800	65,–	100584 0800	65,–	100585 0800	65,–
10	10	170	25	0.20	100583 1000	79,–	100584 1000	79,–	100585 1000	79,–
12	12	170	30	0.20	100583 1200	101,40	100584 1200	101,40	100585 1200	101,40
16	16	200	35	0.27	100583 1600	174,40	100584 1600	174,40	100585 1600	174,40
20	20	200	40	0.27	100583 2000	310,40	100584 2000	310,40	100585 2000	310,40
					1179		1179		1179	

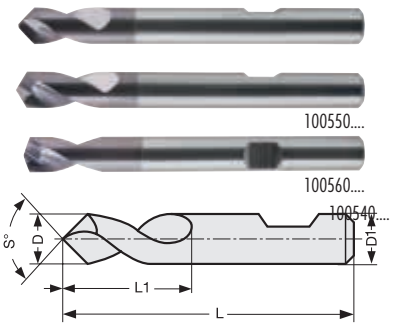
SARA® NC spotting drill bits

VHM | Werks-norm | 90° | 120° | 142° | DIN 6535 HB | TiAlN | Vc/fz | 349

- S° = point angle 90°, 120° and 142°
- Straight shank with clamping surface in accordance with DIN6535-HB (from Ø 6 mm)
- **Cutting material: ultra-superfine grain solid carbide, TiAlN-coated**
- Spot drilling and countersinking on NC and CNC machines
- 142° point angle version for spot drilling for the next twist drill operation

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 60-100	● 55-75	● 30-50	○ 25-50	○ 25-50	○ 20-35	● 80-90	● 70-90	○ 35-40	○ 30-40	○ 30-40	● 150-200	● 100-180	● 110-140		○ 25-30		
	Cutting speed Vc m/min.																Please adjust these guidelines according to clamping operation and machine set-up.		

D mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	90° art.no.	€	120° art.no.	€	142° art.no.	€
3	3	38	8	0.07	**100540** 0300	26,20	**100550** 0300	26,20	**100560** 0300	26,20
4	4	50	10	0.07	100540 0400	26,20	100550 0400	26,20	100560 0400	26,20
5	5	50	13	0.07	100540 0500	26,20	100550 0500	26,20	100560 0500	26,20
6	6	57	13	0.13	100540 0600	35,70	100550 0600	35,70	100560 0600	35,70
8	8	63	19	0.13	100540 0800	44,60	100550 0800	44,60	100560 0800	44,60
10	10	66	20	0.20	100540 1000	61,50	100550 1000	61,50	100560 1000	61,50
12	12	73	22	0.20	100540 1200	74,50	100550 1200	74,50	100560 1200	74,50
16	16	82	24	0.27	100540 1600	133,–	100550 1600	133,–	100560 1600	133,–
20	20	92	30	0.27	100540 2000	220,–	100550 2000	220,–	100560 2000	220,–
					1167		1167		1167	

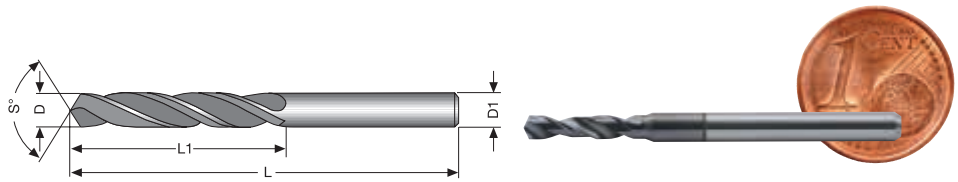


ATORN® Solid carbide micro drill bit

VHM | Werks-norm | 118° | 130° | 30° | 3xD | DIN 6535 HA | TiAlN | Vc/fz | 359

- S° = 130° point angle, 118° up to a diameter of 0.35 mm
- **Cutting material: ultra-fine grain solid carbide**
- Tolerance D = 0.004 mm

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	●	○	●	○	●	●	○	○	○	●	●	●	○			
	Cutting speed Vc m/min.	50-75	50-70	20-25	20-35	20-35	20-35	60-100	60-80	10-30	10-30	10-20	150-220	100-160	80-130	60-95			
	Please adjust these guidelines according to clamping operation and machine set-up.																		



D mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
0.10	3.0	38	1.0	0.01	**111550** 0010	29,20
0.15	3.0	38	2.0	0.01	111550 0015	25,90
0.20	3.0	38	2.5	0.01	111550 0020	22,60
0.25	3.0	38	4.0	0.01	111550 0025	15,30
0.30	3.0	38	5.5	0.01	111550 0030	15,30
0.35	3.0	38	5.5	0.01	111550 0035	15,30
0.40	3.0	38	6.0	0.01	111550 0040	15,30
0.45	3.0	38	6.0	0.01	111550 0045	15,30
0.50	3.0	38	6.0	0.01	111550 0050	15,30
0.55	3.0	38	8.0	0.01	111550 0055	15,30
0.60	3.0	38	8.0	0.01	111550 0060	15,30
0.65	3.0	38	8.0	0.01	111550 0065	15,30
0.70	3.0	38	8.0	0.01	111550 0070	15,30
0.75	3.0	38	8.0	0.01	111550 0075	15,30
0.80	3.0	38	8.0	0.01	111550 0080	15,30
0.85	3.0	38	8.0	0.01	111550 0085	15,30
0.90	3.0	38	8.0	0.01	111550 0090	15,30
0.95	3.0	38	8.0	0.01	111550 0095	15,30
0.97	3.0	38	8.0	0.02	111550 0097	15,30
0.98	3.0	38	8.0	0.02	111550 0098	15,30
0.99	3.0	38	8.0	0.02	111550 0099	15,30
1.00	3.0	38	10.0	0.02	111550 0100	15,30
1.01	3.0	38	10.0	0.02	111550 0101	15,30
1.02	3.0	38	10.0	0.03	111550 0102	15,30
1.03	3.0	38	10.0	0.03	111550 0103	15,30
1.05	3.0	38	10.0	0.03	111550 0105	15,30
1.10	3.0	38	10.0	0.03	111550 0110	15,30
1.15	3.0	38	10.0	0.03	111550 0115	15,30
1.20	3.0	38	10.0	0.03	111550 0120	15,30
1.25	3.0	38	10.0	0.03	111550 0125	15,30
1.30	3.0	38	10.0	0.03	111550 0130	15,30
1.35	3.0	38	10.0	0.03	111550 0135	15,30
1.40	3.0	38	10.0	0.03	111550 0140	15,30
1.45	3.0	38	10.0	0.03	111550 0145	15,30
1.47	3.0	38	10.0	0.03	111550 0147	15,30
1.48	3.0	38	10.0	0.03	111550 0148	15,30
1.49	3.0	38	10.0	0.03	111550 0149	15,30
1.50	3.0	38	12.0	0.03	111550 0150	15,30
1.51	3.0	38	12.0	0.03	111550 0151	15,30
1.52	3.0	38	12.0	0.03	111550 0152	15,30
1.53	3.0	38	12.0	0.03	111550 0153	15,30
1.55	3.0	38	12.0	0.03	111550 0155	15,30

1154

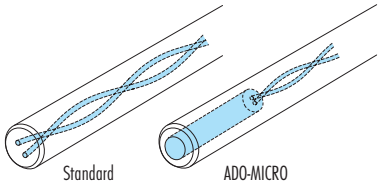
D mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
1.60	3.0	38	12.0	0.03	111550 0160	15,30
1.65	3.0	38	12.0	0.03	111550 0165	15,30
1.70	3.0	38	12.0	0.03	111550 0170	15,30
1.75	3.0	38	12.0	0.03	111550 0175	15,30
1.80	3.0	38	12.0	0.03	111550 0180	15,30
1.85	3.0	38	12.0	0.03	111550 0185	15,30
1.90	3.0	38	12.0	0.03	111550 0190	15,30
1.95	3.0	38	12.0	0.03	111550 0195	15,30
1.97	3.0	38	12.0	0.03	111550 0197	15,30
1.98	3.0	38	12.0	0.03	111550 0198	15,30
1.99	3.0	38	12.0	0.03	111550 0199	15,30
2.00	3.0	38	12.0	0.05	111550 0200	15,30
2.01	3.0	38	12.0	0.05	111550 0201	15,30
2.02	3.0	38	12.0	0.05	111550 0202	15,30
2.03	3.0	38	12.0	0.05	111550 0203	15,30
2.05	3.0	38	12.0	0.05	111550 0205	15,30
2.10	3.0	38	12.0	0.05	111550 0210	15,30
2.15	3.0	38	12.0	0.05	111550 0215	15,30
2.20	3.0	38	12.0	0.05	111550 0220	15,70
2.25	3.0	38	12.0	0.05	111550 0225	15,70
2.30	3.0	38	12.0	0.05	111550 0230	15,70
2.35	3.0	38	12.0	0.05	111550 0235	15,70
2.40	3.0	38	12.0	0.05	111550 0240	15,70
2.45	3.0	38	12.0	0.05	111550 0245	15,70
2.50	3.0	38	12.0	0.05	111550 0250	15,70
2.51	3.0	38	12.0	0.06	111550 0251	15,70
2.52	3.0	38	12.0	0.06	111550 0252	15,70
2.53	3.0	38	12.0	0.06	111550 0253	15,70
2.55	3.0	38	12.0	0.06	111550 0255	19,40
2.60	3.0	38	12.0	0.06	111550 0260	19,40
2.65	3.0	38	12.0	0.06	111550 0265	19,40
2.70	3.0	38	12.0	0.06	111550 0270	19,40
2.75	3.0	38	12.0	0.06	111550 0275	19,40
2.80	3.0	38	12.0	0.06	111550 0280	19,40
2.85	3.0	38	12.0	0.06	111550 0285	19,40
2.90	3.0	38	12.0	0.06	111550 0290	19,40
2.95	3.0	38	12.0	0.06	111550 0295	19,40
2.96	3.0	38	12.0	0.06	111550 0296	19,40
2.97	3.0	38	12.0	0.06	111550 0297	19,40
2.98	3.0	38	12.0	0.06	111550 0298	19,40
2.99	3.0	38	12.0	0.06	111550 0299	19,40
3.00	3.0	38	12.0	0.06	111550 0300	19,40

1154

SC high-performance drill ADO-MICRO

VHM | Werks-norm | Typ TLP | 140° | 135° | | 30° | 2xD | 5xD | 12xD | 20xD | 30xD | DIN 6535 HA | | TiAlN | Vc/fz | 366

- 2xD, 5xD: 0.7-2mm, 12xD, 20xD, 30xD: 1-2mm
- **SC material, IchAda coating**
- Double guide chamfers for a high degree of stability
- Internal coolant supply with a hollow shank increases the flow rate



Deep-hole bores with minimal diameters

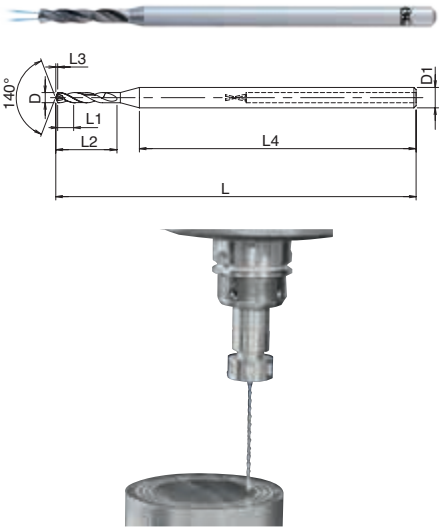
NEU · NEW · NUOVO · NY · NOUVEAU · NUEVO

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 20-60	● 20-60	● 20-40	● 20-60	● 20-60	○ 20-45	● 20-60	● 30-50	○ 40-60	○ 5-15	○ 5-15	○ 30-70	○ 20-60	○ 20-60		○ 20-40		
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

ADO-MICRO 2xD

- Point angle 140°
- Cutting tolerance: +0.001 to +0.010mm

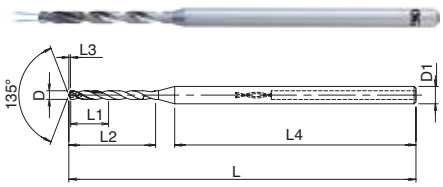


D mm	L1 mm	L2 mm	L3 mm	L4 mm	L mm	D1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
0.7	1.4	4.2	0.1	38.5	47	3	0.014	**111721** 0070	93,20
0.75	1.5	4.5	0.1	38.3	47	3	0.014	111721 0075	93,20
0.8	1.6	4.8	0.1	41.1	50	3	0.014	111721 0080	93,20
0.85	1.7	5.1	0.2	40.9	50	3	0.014	111721 0085	93,20
0.9	1.8	5.4	0.2	40.7	50	3	0.014	111721 0090	93,20
0.95	1.9	5.7	0.2	40.5	50	3	0.014	111721 0095	93,20
1	2	6	0.2	42.8	53	3	0.02	111721 0100	82,70
1.1	2.2	6.6	0.2	42.4	53	3	0.02	111721 0110	82,70
1.2	2.4	7.2	0.2	41.9	53	3	0.02	111721 0120	82,70
1.3	2.6	7.8	0.2	41.5	53	3	0.02	111721 0130	82,70
1.4	2.8	8.4	0.3	41.1	53	3	0.02	111721 0140	82,70
1.5	3	9	0.3	40.7	53	3	0.03	111721 0150	82,70
1.6	3.2	9.6	0.3	40.3	53	3	0.03	111721 0160	82,70
1.7	3.4	10.2	0.3	39.9	53	3	0.03	111721 0170	82,70
1.8	3.6	10.8	0.3	39.5	53	3	0.03	111721 0180	82,70
1.9	3.8	11.4	0.3	39	53	3	0.03	111721 0190	82,70
2	4	12	0.4	43.6	58	3	0.04	111721 0200	82,70

1107

ADO-MICRO 5xD

- Point angle 135°
- Cutting tolerance: +0.000 to -0.009mm

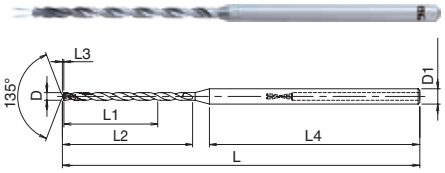


D mm	L1 mm	L2 mm	L3 mm	L4 mm	L mm	D1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
0.7	3.5	7	0.1	35.7	47	3	0.014	**111722** 0070	105,70
0.75	3.8	7.5	0.2	35.3	47	3	0.014	111722 0075	105,70
0.8	4	8	0.2	37.9	50	3	0.014	111722 0080	105,70
0.85	4.3	8.5	0.2	37.5	50	3	0.014	111722 0085	105,70
0.9	4.5	9	0.2	37.1	50	3	0.014	111722 0090	105,70
0.95	4.8	9.5	0.2	36.7	50	3	0.014	111722 0095	105,70
1	5	10	0.2	40.8	55	3	0.02	111722 0100	93,70
1.1	5.5	11	0.2	40	55	3	0.02	111722 0110	93,70
1.2	6	12	0.2	44.1	60	3	0.02	111722 0120	93,70
1.3	6.5	13	0.3	43.3	60	3	0.02	111722 0130	93,70
1.4	7	14	0.3	42.5	60	3	0.02	111722 0140	93,70
1.5	7.5	15	0.3	41.7	60	3	0.03	111722 0150	93,70
1.6	8	16	0.3	40.9	60	3	0.03	111722 0160	93,70
1.7	8.5	17	0.4	40.1	60	3	0.03	111722 0170	93,70
1.8	9	18	0.4	44.3	65	3	0.03	111722 0180	93,70
1.9	9.5	19	0.4	43.4	6	3	0.03	111722 0190	93,70
2	10	20	0.4	42.6	65	3	0.04	111722 0200	93,70

1107

ADO-MICRO 12xD

- Point angle 135°
- Cutting tolerance: +0.000 to -0.009mm

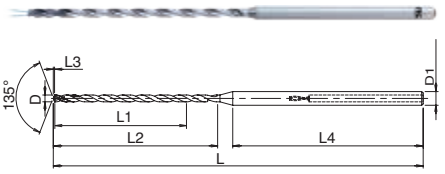


D mm	L1 mm	L2 mm	L3 mm	L4 mm	L mm	D1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
1	12	17	0.2	38.8	60	3	0.02	**111723** 0100	126,50
1.1	13.2	18.7	0.2	42.3	65	3	0.02	111723 0110	126,50
1.2	14.4	20.4	0.2	40.7	65	3	0.02	111723 0120	126,50
1.3	14.4	20.4	0.3	40.1	65	3	0.02	111723 0130	126,50
1.4	16.8	23.8	0.3	42.7	70	3	0.02	111723 0140	126,50
1.5	18	25.5	0.3	41.2	70	3	0.03	111723 0150	126,50
1.6	19.2	27.2	0.3	39.7	70	3	0.03	111723 0160	126,50
1.7	20.4	28.9	0.4	41.2	73	3	0.03	111723 0170	126,50
1.8	21.6	30.6	0.4	39.7	73	3	0.03	111723 0180	126,50
1.9	22.8	32.3	0.4	38.1	73	3	0.03	111723 0190	126,50
2	24	34	0.4	40.6	77	3	0.04	111723 0200	126,50

1107

ADO-MICRO 20xD

- Point angle 135°
- Cutting tolerance: +0.000 to -0.009mm

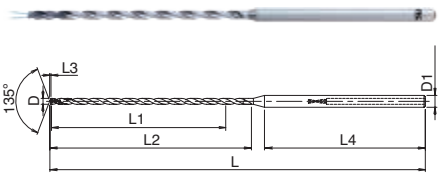


D mm	L1 mm	L2 mm	L3 mm	L4 mm	L mm	D1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
1	20	24	0.2	39.8	68	3	0.02	**111724** 0100	176,70
1.1	22	26.4	0.2	44.6	75	3	0.02	111724 0110	176,70
1.2	24	28.8	0.2	42.3	75	3	0.02	111724 0120	176,70
1.3	26	31.2	0.3	40.1	75	3	0.02	111724 0130	176,70
1.4	28	33.6	0.3	43.9	81	3	0.02	111724 0140	176,70
1.5	30	36	0.3	41.7	81	3	0.03	111724 0150	176,70
1.6	32	38.4	0.3	39.5	81	3	0.03	111724 0160	176,70
1.7	34	40.8	0.4	44.3	88	3	0.03	111724 0170	176,70
1.8	36	43.2	0.4	42.1	88	3	0.03	111724 0180	176,70
1.9	38	45.6	0.4	39.8	88	3	0.03	111724 0190	176,70
2	40	48	0.4	44.6	95	3	0.04	111724 0200	176,70

1107

ADO-MICRO 30xD

- Point angle 135°
- Cutting tolerance: +0.000 to -0.009mm



D mm	L1 mm	L2 mm	L3 mm	L4 mm	L mm	D1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
1	30	34	0.2	38.8	77	3	0.02	**111725** 0100	232,70
1.1	33	37.4	0.2	44.6	86	3	0.02	111725 0110	232,70
1.2	36	40.8	0.2	41.3	86	3	0.02	111725 0120	232,70
1.3	39	44.2	0.3	38.1	86	3	0.02	111725 0130	232,70
1.4	42	47.6	0.3	43.9	95	3	0.02	111725 0140	232,70
1.5	45	51	0.3	40.7	95	3	0.03	111725 0150	232,70
1.6	48	54.4	0.3	43.5	101	3	0.03	111725 0160	232,70
1.7	51	57.8	0.4	40.3	101	3	0.03	111725 0170	232,70
1.8	54	61.2	0.4	43.1	107	3	0.03	111725 0180	232,70
1.9	57	64.6	0.4	39.8	107	3	0.03	111725 0190	232,70
2	60	68	0.4	41.6	112	3	0.04	111725 0200	232,70

1107

ATORN® Solid carbide twist drill bit

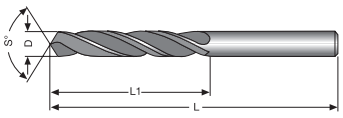
VHM | DIN 6539 | Typ N | 118° | 32° | 3xD | TiN | TiAlN | Vc/fz | 359 | 360

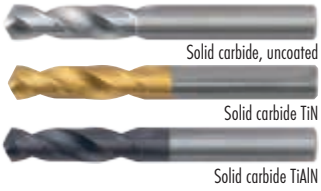
- Robust twist drill bit for automated units/revolving lathes
- Facet-ground

material

● very well suited
○ well suited

	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
111005....	● 80	● 50-70	● 50	○ 25	○ 25		● 80-90	● 70-80	○ 15-20			● 150-200	● 120-150	● 70-120		○ 20		
111008....	● 79-92	● 58-79	● 58	● 27	○ 27		● 83-98	● 92	○ 17-23			● 240	● 150	● 136-205		○ 23		
111009....	● 91-104	● 78-91	● 78	● 32	● 32		● 104-117	● 91-104	● 20-26	○ 20		● 260	● 156	● 140-210		○ 26		
	Cutting speed Vc m/min.						Please adjust these guidelines according to clamping operation and machine set-up.											




Solid carbide, uncoated
Solid carbide TiN
Solid carbide TiAlN

D h7 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€	TiN art.no.	€	TiAlN art.no.	€
0.5	20	3	0.02	**111005** 0005	4,95	**111008** 0005	7,20	**111009** 0005	7,80
0.6	21	3.5	0.02	111005 0006	4,95	111008 0006	7,20	111009 0006	7,80
0.7	23	4.5	0.02	111005 0007	4,95	111008 0007	7,20	111009 0007	7,80
0.8	24	5	0.02	111005 0008	4,95	111008 0008	7,20	111009 0008	7,80
0.9	25	5.5	0.02	111005 0009	4,95	111008 0009	7,20	111009 0009	7,80
1	26	6	0.03	111005 0010	4,95	111008 0010	7,20	111009 0010	7,80
1.1	28	7	0.03	111005 0011	4,95	111008 0011	7,20	111009 0011	7,80
1.2	30	8	0.03	111005 0012	4,95	111008 0012	7,20	111009 0012	7,80
1.3	30	8	0.03	111005 0013	4,95	111008 0013	7,20	111009 0013	7,80
1.4	32	9	0.05	111005 0014	4,95	111008 0014	7,20	111009 0014	7,80
1.5	32	9	0.05	111005 0015	4,95	111008 0015	7,20	111009 0015	7,80
1.6	34	10	0.06	111005 0016	4,95	111008 0016	7,20	111009 0016	7,80
1.7	34	10	0.06	111005 0017	4,95	111008 0017	7,20	111009 0017	7,80
1.8	36	11	0.06	111005 0018	4,95	111008 0018	7,20	111009 0018	7,80
1.9	36	11	0.06	111005 0019	4,95	111008 0019	7,20	111009 0019	7,80
2	38	12	0.06	111005 0020	5,55	111008 0020	7,90	111009 0020	9,40
2.1	38	12	0.07	111005 0021	5,55	111008 0021	7,90	111009 0021	9,40
2.2	40	13	0.07	111005 0022	5,55	111008 0022	7,90	111009 0022	9,40
2.3	40	13	0.07	111005 0023	5,55	111008 0023	7,90	111009 0023	9,40
2.4	43	14	0.07	111005 0024	5,55	111008 0024	7,90	111009 0024	9,40
2.5	43	14	0.07	111005 0025	5,55	111008 0025	7,90	111009 0025	9,40
2.6	43	14	0.08	111005 0026	5,55	111008 0026	7,90	111009 0026	9,40
2.7	46	16	0.08	111005 0027	7,60	111008 0027	9,85	111009 0027	10,60
2.8	46	16	0.08	111005 0028	7,60	111008 0028	9,85	111009 0028	10,60
2.9	46	16	0.08	111005 0029	7,60	111008 0029	9,85	111009 0029	10,60
3	46	16	0.09	111005 0030	7,60	111008 0030	9,85	111009 0030	10,60
3.1	49	18	0.09	111005 0031	7,95	111008 0031	10,90	111009 0031	13,10
3.2	49	18	0.09	111005 0032	7,95	111008 0032	10,90	111009 0032	13,10
3.3	49	18	0.09	111005 0033	7,95	111008 0033	10,90	111009 0033	13,10
3.4	52	20	0.09	111005 0034	8,45	111008 0034	11,65	111009 0034	14,30
3.5	52	20	0.09	111005 0035	8,45	111008 0035	11,65	111009 0035	14,30
3.6	52	20	0.09	111005 0036	9,20	111008 0036	12,70	111009 0036	15,10
3.7	52	20	0.09	111005 0037	9,20	111008 0037	12,70	111009 0037	15,10
3.8	55	22	0.09	111005 0038	9,75	111008 0038	13,75	111009 0038	16,30
3.9	55	22	0.09	111005 0039	9,75	111008 0039	13,75	111009 0039	16,30
4	55	22	0.09	111005 0040	9,75	111008 0040	13,75	111009 0040	16,30
4.1	55	22	0.09	111005 0041	10,35	111008 0041	14,45	111009 0041	16,80
4.2	55	22	0.09	111005 0042	10,35	111008 0042	14,45	111009 0042	16,80
4.3	58	24	0.09	111005 0043	10,90	111008 0043	15,20	111009 0043	16,80
4.4	58	24	0.09	111005 0044	10,90	111008 0044	15,20	111009 0044	16,80
				1154		1154		1154	



D h7 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€	TiN art.no.	€	TiAlN art.no.	€
4.5	58	24	0.09	111005 0045	10,90	111008 0045	15,20	111009 0045	16,80
4.6	58	24	0.09	111005 0046	10,90	111008 0046	15,20	111009 0046	16,80
4.7	58	24	0.09	111005 0047	11,80	111008 0047	16,50	111009 0047	18,80
4.8	62	26	0.09	111005 0048	11,80	111008 0048	16,50	111009 0048	18,80
4.9	62	26	0.09	111005 0049	11,80	111008 0049	16,50	111009 0049	18,80
5	62	26	0.09	111005 0050	11,80	111008 0050	16,50	111009 0050	18,80
5.1	62	26	0.09	111005 0051	11,80	111008 0051	16,50	111009 0051	18,80
5.2	62	26	0.09	111005 0052	15,30	111008 0052	21,20	111009 0052	23,30
5.3	62	26	0.09	111005 0053	15,30	111008 0053	21,20	111009 0053	23,30
5.4	66	28	0.09	111005 0054	15,30	111008 0054	21,20	111009 0054	23,30
5.5	66	28	0.10	111005 0055	15,30	111008 0055	21,20	111009 0055	23,30
5.6	66	28	0.10	111005 0056	16,20	111008 0056	22,60	111009 0056	25,20
5.7	66	28	0.10	111005 0057	16,20	111008 0057	22,60	111009 0057	25,20
5.8	66	28	0.10	111005 0058	16,20	111008 0058	22,60	111009 0058	25,20
5.9	66	28	0.10	111005 0059	16,20	111008 0059	22,60	111009 0059	25,20
6	66	28	0.10	111005 0060	16,20	111008 0060	22,60	111009 0060	25,20
6.1	70	31	0.10	111005 0061	19,60	111008 0061	27,30	111009 0061	31,–
6.2	70	31	0.10	111005 0062	19,60	111008 0062	27,30	111009 0062	31,–
6.3	70	31	0.10	111005 0063	19,60	111008 0063	27,30	111009 0063	31,–
6.4	70	31	0.10	111005 0064	19,60	111008 0064	27,30	111009 0064	31,–
6.5	70	31	0.11	111005 0065	19,60	111008 0065	27,30	111009 0065	31,–
6.6	70	31	0.11	111005 0066	22,90	111008 0066	32,20	111009 0066	35,50
6.7	70	31	0.11	111005 0067	22,90	111008 0067	32,20	111009 0067	35,50
6.8	74	34	0.11	111005 0068	22,90	111008 0068	32,20	111009 0068	35,50
6.9	74	34	0.11	111005 0069	22,90	111008 0069	32,20	111009 0069	35,50
7	74	34	0.11	111005 0070	22,90	111008 0070	32,20	111009 0070	35,50
7.1	74	34	0.11	111005 0071	27,80	111008 0071	38,30	111009 0071	40,40
7.2	74	34	0.11	111005 0072	27,80	111008 0072	38,30	111009 0072	40,40
7.3	74	34	0.11	111005 0073	27,80	111008 0073	38,30	111009 0073	40,40
7.4	74	34	0.11	111005 0074	27,80	111008 0074	38,30	111009 0074	40,40
7.5	74	34	0.12	111005 0075	27,80	111008 0075	38,30	111009 0075	40,40
7.6	79	37	0.12	111005 0076	31,40	111008 0076	43,40	111009 0076	44,40
7.7	79	37	0.12	111005 0077	31,40	111008 0077	43,40	111009 0077	44,40
7.8	79	37	0.12	111005 0078	31,40	111008 0078	43,40	111009 0078	44,40
7.9	79	37	0.12	111005 0079	31,40	111008 0079	43,40	111009 0079	44,40
8	79	37	0.12	111005 0080	31,40	111008 0080	43,40	111009 0080	44,40
8.1	79	37	0.12	111005 0081	38,80	111008 0081	49,50	111009 0081	52,–
8.2	79	37	0.12	111005 0082	38,80	111008 0082	49,50	111009 0082	52,–
8.3	79	37	0.12	111005 0083	38,80	111008 0083	49,50	111009 0083	52,–
8.4	79	37	0.13	111005 0084	38,80	111008 0084	49,50	111009 0084	52,–
8.5	79	37	0.13	111005 0085	38,80	111008 0085	49,50	111009 0085	52,–
8.6	84	40	0.13	111005 0086	40,90	111008 0086	52,70	111009 0086	55,50
8.7	84	40	0.13	111005 0087	40,90	111008 0087	52,70	111009 0087	55,50
8.8	84	40	0.13	111005 0088	40,90	111008 0088	52,70	111009 0088	55,50
8.9	84	40	0.13	111005 0089	40,90	111008 0089	52,70	111009 0089	55,50
9	84	40	0.13	111005 0090	40,90	111008 0090	52,70	111009 0090	55,50
9.1	84	40	0.13	111005 0091	45,–	111008 0091	57,50	111009 0091	59,–
9.2	84	40	0.14	111005 0092	45,–	111008 0092	57,50	111009 0092	59,–
9.3	84	40	0.14	111005 0093	45,–	111008 0093	57,50	111009 0093	59,–
9.4	84	40	0.14	111005 0094	45,–	111008 0094	57,50	111009 0094	59,–
9.5	84	40	0.14	111005 0095	45,–	111008 0095	57,50	111009 0095	59,–
9.6	89	43	0.14	111005 0096	46,60	111008 0096	64,80	111009 0096	69,50
9.7	89	43	0.14	111005 0097	46,60	111008 0097	64,80	111009 0097	69,50
9.8	89	43	0.14	111005 0098	46,60	111008 0098	64,80	111009 0098	69,50
9.9	89	43	0.14	111005 0099	46,60	111008 0099	64,80	111009 0099	69,50
10	89	43	0.15	111005 0100	46,60	111008 0100	64,80	111009 0100	69,50
10.2	89	43	0.15	111005 0102	58,50	111008 0102	75,50	111009 0102	79,–
10.5	89	43	0.15	111005 0105	58,50	111008 0105	75,50	111009 0105	79,–
11	95	47	0.16	111005 0110	58,50	111008 0110	75,50	111009 0110	79,–
				1154		1154		1154	

Continued on next page >>>

D h7 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€	TiN art.no.	TiN €	TiAlN art.no.	TiAlN €
11.2	95	47	0.16	111005 0112	68,50	111008 0112	95,50	111009 0112	97,50
11.5	95	47	0.16	111005 0115	68,50	111008 0115	95,50	111009 0115	97,50
12	102	51	0.17	111005 0120	68,50	111008 0120	95,50	111009 0120	97,50
12.5	102	51	0.17	111005 0125	88,50	111008 0125	106,50	111009 0125	113,–
13	102	51	0.18	111005 0130	82,50	111008 0130	106,50	111009 0130	113,–
14	107	54	0.19	111005 0140	124,–	111008 0140	156,–	111009 0140	177,–
15	111	56	0.19	111005 0150	140,–	111008 0150	172,–	111009 0150	195,–
16	115	58	0.20	111005 0160	153,–	111008 0160	196,–	111009 0160	235,–
				1154		1154		1154	

ATORN® Solid carbide twist drill bit set

VHM | DIN 6539 | Typ N | 118° | 32° | 3xD | TiN | Vc/fz | 360

- Set supplied in a case
- Diameter 1.0 to 10.0 mm in 1.0 mm increments
- Sturdy twist drill bits for automated units / capstan lathes

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	●	●	○		●	●	○			●	●	●		○		
		79-92	58-79	58	27	27		83-98	92	17-23			240	150	136-205		23		
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

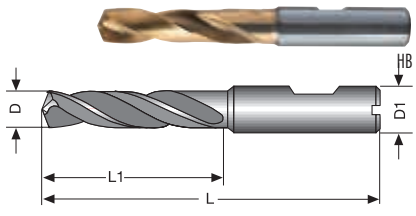


D mm	Number of drills	art.no.	€
1.0 to 10.0 mm in 1.0 mm increments	10	**111008** 1001	295,–
		1154	

SARA® TiNplus HPC 3D solid carbide high-performance drill bit without internal cooling

VHM | DIN 6537 | Typ U | 140° | 30° | 3xD | DIN 6535 HA | DIN 6535 HB | TiN plus | Vc/fz | 361

- Newly developed geometry with reinforced core and special point thinning
- **Solid carbide ultra-fine grain cutting material TiNplus** (TiAlN+TiN)
- Modern multi-layer hard coating for maximum service life and optimum chip transport
- High centring accuracy
- **For universal applications**
- Optimised shank diameter tolerance for use as a holding fixture in power chucks and hydraulic expansion chucks
- Shank designs up to Ø 2.9 mm HA, from Ø 3.0 mm HB



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	●	●	○	○	●	○	○	○	○	○	○	○		○	○	
		110-130	95-100	50-75	40-50	40	27	110-140	110	32-36	27	22	230	160	110		35-50	22-32	
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

D m7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
1	4	45	7	0.03	**111503** 0010	32,50
1.1	4	45	7	0.03	111503 0011	32,50
1.2	4	45	7	0.03	111503 0012	32,50
1.3	4	45	7	0.03	111503 0013	32,50
					1156	

D m7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
1.4	4	45	7	0.04	111503 0014	32,50
1.5	4	55	14	0.04	111503 0015	32,50
1.6	4	55	14	0.04	111503 0016	32,50
1.7	4	55	14	0.04	111503 0017	32,50
					1156	

D m7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
1.8	4	55	14	0.05	111503 0018	32,50
1.9	4	55	14	0.05	111503 0019	32,50
2	4	55	20	0.05	111503 0020	32,50
2.1	4	55	20	0.05	111503 0021	32,50
2.2	4	55	20	0.06	111503 0022	32,50
2.3	4	55	20	0.06	111503 0023	32,50
2.4	4	55	20	0.06	111503 0024	32,50
2.5	4	55	20	0.06	111503 0025	32,50
2.6	4	55	20	0.07	111503 0026	32,50
2.7	4	55	20	0.07	111503 0027	32,50
2.8	4	55	20	0.07	111503 0028	32,50
2.9	4	55	20	0.07	111503 0029	32,50
3	6	62	20	0.06	111503 0030	25,70
3.1	6	62	20	0.06	111503 0031	25,70
3.2	6	62	20	0.06	111503 0032	25,70
3.25	6	62	20	0.07	111503 0325	25,70
3.3	6	62	20	0.07	111503 0033	25,70
3.4	6	62	20	0.07	111503 0034	25,70
3.5	6	62	20	0.07	111503 0035	25,70
3.6	6	62	20	0.07	111503 0036	25,70
3.7	6	62	20	0.07	111503 0037	25,70
3.8	6	66	24	0.08	111503 0038	25,70
3.9	6	66	24	0.08	111503 0039	25,70
4	6	66	24	0.08	111503 0040	25,70
4.1	6	66	24	0.08	111503 0041	25,70
4.2	6	66	24	0.08	111503 0042	25,70
4.3	6	66	24	0.09	111503 0043	25,70
4.4	6	66	24	0.09	111503 0044	25,70
4.5	6	66	24	0.09	111503 0045	25,70
4.6	6	66	24	0.09	111503 0046	25,70
4.65	6	66	24	0.09	111503 0465	25,70
4.7	6	66	24	0.09	111503 0047	25,70
4.8	6	66	28	0.10	111503 0048	25,70
4.9	6	66	28	0.10	111503 0049	25,70
5	6	66	28	0.10	111503 0050	25,70
5.1	6	66	28	0.10	111503 0051	25,70
5.2	6	66	28	0.10	111503 0052	25,70
5.3	6	66	28	0.11	111503 0053	25,70
5.4	6	66	28	0.11	111503 0054	25,70
5.5	6	66	28	0.11	111503 0055	25,70
5.55	6	66	28	0.11	111503 0555	25,70
5.6	6	66	28	0.11	111503 0056	25,70
5.7	6	66	28	0.11	111503 0057	25,70
5.8	6	66	28	0.12	111503 0058	25,70
5.9	6	66	28	0.12	111503 0059	25,70
6	6	66	28	0.12	111503 0060	25,70
6.1	8	79	34	0.12	111503 0061	26,40
6.2	8	79	34	0.12	111503 0062	26,40
6.3	8	79	34	0.13	111503 0063	26,40
6.4	8	79	34	0.13	111503 0064	26,40
6.5	8	79	34	0.13	111503 0065	26,40
6.6	8	79	34	0.13	111503 0066	26,40
6.7	8	79	34	0.13	111503 0067	26,40
6.8	8	79	34	0.14	111503 0068	26,40
6.9	8	79	34	0.14	111503 0069	26,40
7	8	79	34	0.14	111503 0070	26,40
7.1	8	79	41	0.14	111503 0071	26,40
7.2	8	79	41	0.14	111503 0072	26,40

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D m7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
7.3	8	79	41	0.15	111503 0073	26,40
7.4	8	79	41	0.15	111503 0074	26,40
7.5	8	79	41	0.15	111503 0075	26,40
7.6	8	79	41	0.15	111503 0076	26,40
7.7	8	79	41	0.15	111503 0077	26,40
7.8	8	79	41	0.16	111503 0078	26,40
7.9	8	79	41	0.16	111503 0079	26,40
8	8	79	41	0.16	111503 0080	26,40
8.1	10	89	47	0.16	111503 0081	31,10
8.2	10	89	47	0.16	111503 0082	31,10
8.3	10	89	47	0.17	111503 0083	31,10
8.4	10	89	47	0.17	111503 0084	31,10
8.5	10	89	47	0.17	111503 0085	31,10
8.6	10	89	47	0.17	111503 0086	31,10
8.7	10	89	47	0.17	111503 0087	31,10
8.8	10	89	47	0.18	111503 0088	31,10
8.9	10	89	47	0.18	111503 0089	31,10
9	10	89	47	0.18	111503 0090	31,10
9.1	10	89	47	0.18	111503 0091	31,10
9.2	10	89	47	0.18	111503 0092	31,10
9.3	10	89	47	0.19	111503 0093	31,10
9.4	10	89	47	0.19	111503 0094	31,10
9.5	10	89	47	0.19	111503 0095	31,10
9.6	10	89	47	0.19	111503 0096	31,10
9.7	10	89	47	0.19	111503 0097	31,10
9.8	10	89	47	0.20	111503 0098	31,10
9.9	10	89	47	0.20	111503 0099	31,10
10	10	89	47	0.20	111503 0100	31,10
10.2	12	102	55	0.20	111503 0102	43,30
10.3	12	102	55	0.21	111503 0103	43,30
10.5	12	102	55	0.21	111503 0105	43,30
10.8	12	102	55	0.22	111503 0108	43,30
11	12	102	55	0.22	111503 0110	43,30
11.2	12	102	55	0.22	111503 0112	43,30
11.5	12	102	55	0.23	111503 0115	43,30
11.8	12	102	55	0.24	111503 0118	43,30
12	12	102	55	0.24	111503 0120	43,30
12.5	14	107	60	0.25	111503 0125	61,–
12.8	14	107	60	0.26	111503 0128	61,–
13	14	107	60	0.26	111503 0130	61,–
13.5	14	107	60	0.27	111503 0135	61,–
13.8	14	107	60	0.28	111503 0138	61,–
14	14	107	60	0.28	111503 0140	61,–
14.2	16	115	65	0.28	111503 0142	78,80
14.5	16	115	65	0.29	111503 0145	78,80
14.8	16	115	65	0.30	111503 0148	78,80
15	16	115	65	0.30	111503 0150	78,80
15.5	16	115	65	0.31	111503 0155	78,80
15.8	16	115	65	0.32	111503 0158	78,80
16	16	115	65	0.32	111503 0160	78,80
16.5	18	123	73	0.33	111503 0165	125,50
17	18	123	73	0.34	111503 0170	125,50
17.5	18	123	73	0.35	111503 0175	125,50
18	18	123	73	0.36	111503 0180	125,50
18.5	20	131	79	0.37	111503 0185	151,–
19	20	131	79	0.38	111503 0190	151,–
19.5	20	131	79	0.39	111503 0195	151,–
20	20	131	79	0.40	111503 0200	151,–

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ATORN® TiAlNplus HPC 3D solid carbide high-performance drill bit without internal cooling

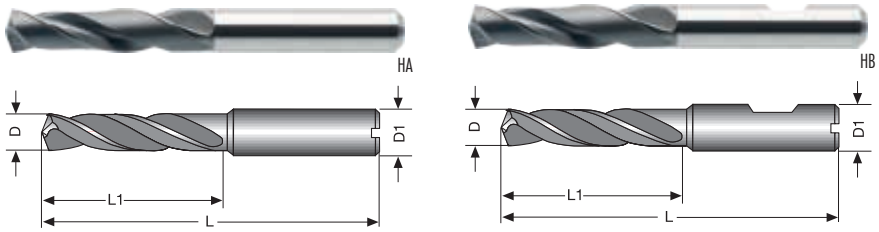
VHM | DIN 6537 | Typ U | 140° | 30° | 3xD | DIN 6535 HA | DIN 6535 HB | TiAlN plus | Vc/fz | 362

- Optimised shank diameter tolerance for use as a holding fixture in power chucks and hydraulic expansion chucks
- **Cutting material: Solid carbide ultra-fine grain TiAlNplus**
- Efficient drilling in different materials
- Newly developed geometry in conjunction with a customised multilayer coating for enhanced performance
- Special cutting edge finishing reduces micro-nicks and increases service life

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	●	●	●	●	●	○	●	●	●	●	○	○	●	○		●	○	○
	110-145	85-110	55-85	40	45	30	125-155	120	35-40	30	25	260	180	125		40-55	25-35	25
Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.



D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	HA art.no.	€	HB art.no.	€
1	4	45	7	0.03	**111562** 0100	42,–		
1.1	4	45	7	0.03	111562 0110	42,–		
1.2	4	45	7	0.03	111562 0120	42,–		
1.3	4	45	7	0.03	111562 0130	42,–		
1.4	4	45	7	0.04	111562 0140	42,–		
1.5	4	55	14	0.04	111562 0150	42,–		
1.6	4	55	14	0.04	111562 0160	42,–		
1.7	4	55	14	0.04	111562 0170	42,–		
1.8	4	55	14	0.05	111562 0180	42,–		
1.9	4	55	14	0.05	111562 0190	42,–		
2	4	55	20	0.05	111562 0200	42,–		
2.1	4	55	20	0.05	111562 0210	42,–		
2.2	4	55	20	0.06	111562 0220	42,–		
2.3	4	55	20	0.06	111562 0230	42,–		
2.4	4	55	20	0.06	111562 0240	42,–		
2.5	4	55	20	0.06	111562 0250	42,–		
2.6	4	55	20	0.07	111562 0260	42,–		
2.7	4	55	20	0.07	111562 0270	42,–		
2.8	4	55	20	0.07	111562 0280	42,–		
2.9	4	55	20	0.07	111562 0290	42,–		
3	6	62	20	0.08	111562 0300	42,–	**111563** 0300	42,–
3.1	6	62	20	0.08	111562 0310	42,–	111563 0310	42,–
3.2	6	62	20	0.08	111562 0320	42,–	111563 0320	42,–
3.25	6	62	20	0.08	111562 0325	42,–	111563 0325	42,–
3.3	6	62	20	0.08	111562 0330	42,–	111563 0330	42,–
3.4	6	62	20	0.09	111562 0340	42,–	111563 0340	42,–
3.5	6	62	20	0.09	111562 0350	42,–	111563 0350	42,–
3.6	6	62	20	0.09	111562 0360	42,–	111563 0360	42,–
3.7	6	62	20	0.09	111562 0370	42,–	111563 0370	42,–
3.8	6	66	24	0.10	111562 0380	42,–	111563 0380	42,–
3.9	6	66	24	0.10	111562 0390	42,–	111563 0390	42,–
4	6	66	24	0.10	111562 0400	42,–	111563 0400	42,–
4.1	6	66	24	0.10	111562 0410	43,20	111563 0410	43,20
4.2	6	66	24	0.11	111562 0420	43,20	111563 0420	43,20
4.3	6	66	24	0.11	111562 0430	43,20	111563 0430	43,20
4.4	6	66	24	0.11	111562 0440	43,20	111563 0440	43,20
4.5	6	66	24	0.11	111562 0450	43,20	111563 0450	43,20
4.6	6	66	24	0.12	111562 0460	43,20	111563 0460	43,20
					1111		1111	

D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	HA art.no.	€	HB art.no.	€
4.65	6	66	24	0.12	111562 0465	43,20	111563 0465	43,20
4.7	6	66	24	0.12	111562 0470	43,20	111563 0470	43,20
4.8	6	66	28	0.12	111562 0480	43,20	111563 0480	43,20
4.9	6	66	28	0.12	111562 0490	43,20	111563 0490	43,20
5	6	66	28	0.13	111562 0500	43,20	111563 0500	43,20
5.1	6	66	28	0.13	111562 0510	43,20	111563 0510	43,20
5.2	6	66	28	0.13	111562 0520	43,20	111563 0520	43,20
5.3	6	66	28	0.13	111562 0530	43,20	111563 0530	43,20
5.4	6	66	28	0.14	111562 0540	43,20	111563 0540	43,20
5.5	6	66	28	0.14	111562 0550	43,20	111563 0550	43,20
5.55	6	66	28	0.14	111562 0555	43,20	111563 0555	43,20
5.6	6	66	28	0.14	111562 0560	43,20	111563 0560	43,20
5.65	6	66	28	0.14	111562 0565	43,20	111563 0565	43,20
5.7	6	66	28	0.14	111562 0570	43,20	111563 0570	43,20
5.8	6	66	28	0.15	111562 0580	43,20	111563 0580	43,20
5.9	6	66	28	0.15	111562 0590	43,20	111563 0590	43,20
6	6	66	28	0.15	111562 0600	43,20	111563 0600	43,20
6.1	8	79	34	0.15	111562 0610	43,80	111563 0610	43,80
6.2	8	79	34	0.16	111562 0620	43,80	111563 0620	43,80
6.3	8	79	34	0.16	111562 0630	43,80	111563 0630	43,80
6.4	8	79	34	0.16	111562 0640	43,80	111563 0640	43,80
6.5	8	79	34	0.16	111562 0650	43,80	111563 0650	43,80
6.6	8	79	34	0.17	111562 0660	43,80	111563 0660	43,80
6.7	8	79	34	0.17	111562 0670	43,80	111563 0670	43,80
6.8	8	79	34	0.17	111562 0680	43,80	111563 0680	43,80
6.9	8	79	34	0.17	111562 0690	43,80	111563 0690	43,80
7	8	79	34	0.18	111562 0700	43,80	111563 0700	43,80
7.1	8	79	41	0.18	111562 0710	43,80	111563 0710	43,80
7.2	8	79	41	0.18	111562 0720	43,80	111563 0720	43,80
7.3	8	79	41	0.18	111562 0730	43,80	111563 0730	43,80
7.4	8	79	41	0.19	111562 0740	43,80	111563 0740	43,80
7.5	8	79	41	0.19	111562 0750	43,80	111563 0750	43,80
7.55	8	79	41	0.19	111562 0755	43,80	111563 0755	43,80
7.6	8	79	41	0.19	111562 0760	43,80	111563 0760	43,80
7.65	8	79	41	0.19	111562 0765	43,80	111563 0765	43,80
7.7	8	79	41	0.19	111562 0770	43,80	111563 0770	43,80
7.8	8	79	41	0.20	111562 0780	43,80	111563 0780	43,80
7.9	8	79	41	0.20	111562 0790	43,80	111563 0790	43,80
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D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	HA art.no.	€	HB art.no.	€
8	8	79	41	0.20	111562 0800	43,80	111563 0800	43,80
8.1	10	89	47	0.20	111562 0810	49,20	111563 0810	49,20
8.2	10	89	47	0.21	111562 0820	49,20	111563 0820	49,20
8.3	10	89	47	0.21	111562 0830	49,20	111563 0830	49,20
8.4	10	89	47	0.21	111562 0840	49,20	111563 0840	49,20
8.5	10	89	47	0.21	111562 0850	49,20	111563 0850	49,20
8.6	10	89	47	0.22	111562 0860	49,20	111563 0860	49,20
8.7	10	89	47	0.22	111562 0870	49,20	111563 0870	49,20
8.8	10	89	47	0.22	111562 0880	49,20	111563 0880	49,20
8.9	10	89	47	0.22	111562 0890	49,20	111563 0890	49,20
9	10	89	47	0.23	111562 0900	49,20	111563 0900	49,20
9.1	10	89	47	0.23	111562 0910	49,20	111563 0910	49,20
9.2	10	89	47	0.23	111562 0920	49,20	111563 0920	49,20
9.3	10	89	47	0.23	111562 0930	49,20	111563 0930	49,20
9.4	10	89	47	0.24	111562 0940	49,20	111563 0940	49,20
9.5	10	89	47	0.24	111562 0950	49,20	111563 0950	49,20
9.6	10	89	47	0.24	111562 0960	49,20	111563 0960	49,20
9.7	10	89	47	0.24	111562 0970	49,20	111563 0970	49,20
9.8	10	89	47	0.25	111562 0980	49,20	111563 0980	49,20
9.9	10	89	47	0.25	111562 0990	49,20	111563 0990	49,20
10	10	89	47	0.25	111562 1000	49,20	111563 1000	49,20
10.1	12	102	55	0.25	111562 1010	73,–	111563 1010	73,–
10.2	12	102	55	0.26	111562 1020	73,–	111563 1020	73,–
10.3	12	102	55	0.26	111562 1030	73,–	111563 1030	73,–
10.4	12	102	55	0.26	111562 1040	73,–	111563 1040	73,–
10.5	12	102	55	0.26	111562 1050	73,–	111563 1050	73,–
10.6	12	102	55	0.27	111562 1060	73,–	111563 1060	73,–
10.7	12	102	55	0.27	111562 1070	73,–	111563 1070	73,–
10.8	12	102	55	0.27	111562 1080	73,–	111563 1080	73,–
10.9	12	102	55	0.27	111562 1090	73,–	111563 1090	73,–
11	12	102	55	0.28	111562 1100	73,–	111563 1100	73,–
11.1	12	102	55	0.28	111562 1110	73,–	111563 1110	73,–
11.2	12	102	55	0.28	111562 1120	73,–	111563 1120	73,–
11.3	12	102	55	0.28	111562 1130	73,–	111563 1130	73,–
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D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	HA art.no.	€	HB art.no.	€
11.4	12	102	55	0.29	111562 1140	73,–	111563 1140	73,–
11.5	12	102	55	0.29	111562 1150	73,–	111563 1150	73,–
11.6	12	102	55	0.29	111562 1160	73,–	111563 1160	73,–
11.7	12	102	55	0.29	111562 1170	73,–	111563 1170	73,–
11.8	12	102	55	0.30	111562 1180	73,–	111563 1180	73,–
11.9	12	102	55	0.30	111562 1190	73,–	111563 1190	73,–
12	12	102	55	0.30	111562 1200	73,–	111563 1200	73,–
12.2	14	107	60	0.31	111562 1220	97,–	111563 1220	97,–
12.5	14	107	60	0.31	111562 1250	97,–	111563 1250	97,–
12.8	14	107	60	0.32	111562 1280	97,–	111563 1280	97,–
13	14	107	60	0.33	111562 1300	97,–	111563 1300	97,–
13.1	14	107	60	0.33	111562 1310	97,–	111563 1310	97,–
13.5	14	107	60	0.34	111562 1350	97,–	111563 1350	97,–
13.8	14	107	60	0.35	111562 1380	97,–	111563 1380	97,–
14	14	107	60	0.35	111562 1400	97,–	111563 1400	97,–
14.2	16	115	65	0.36	111562 1420	120,–	111563 1420	120,–
14.4	16	115	65	0.36	111562 1440	120,–	111563 1440	120,–
14.5	16	115	65	0.36	111562 1450	120,–	111563 1450	120,–
14.8	16	115	65	0.37	111562 1480	120,–	111563 1480	120,–
15	16	115	65	0.38	111562 1500	120,–	111563 1500	120,–
15.1	16	115	65	0.38	111562 1510	120,–	111563 1510	120,–
15.2	16	115	65	0.38	111562 1520	120,–	111563 1520	120,–
15.5	16	115	65	0.39	111562 1550	120,–	111563 1550	120,–
15.8	16	115	65	0.40	111562 1580	120,–	111563 1580	120,–
16	16	115	65	0.40	111562 1600	120,–	111563 1600	120,–
16.5	18	123	73	0.41	111562 1650	186,–	111563 1650	176,–
17	18	123	73	0.43	111562 1700	186,–	111563 1700	176,–
17.5	18	123	73	0.44	111562 1750	186,–	111563 1750	176,–
18	18	123	73	0.45	111562 1800	186,–	111563 1800	176,–
18.5	20	131	79	0.46	111562 1850	232,–	111563 1850	232,–
18.9	20	131	79	0.47	111562 1890	232,–	111563 1890	232,–
19	20	131	79	0.48	111562 1900	232,–	111563 1900	232,–
19.5	20	131	79	0.49	111562 1950	232,–	111563 1950	232,–
20	20	131	79	0.50	111562 2000	232,–	111563 2000	232,–
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SARA® TiNplus HPC 3D solid carbide high-performance drill bit with internal cooling

VHM | DIN 6537 | Typ U | 140° | 30° | 3xD | DIN 6535 HB | TiN plus | Vc/fz | 361

- Newly developed geometry with reinforced core and special point thinning
- **Solid carbide ultra-fine grain cutting material TiNplus** (TiAlN+TiN)
- Modern multi-layer hard coating for maximum service life and optimum chip transport
- High centring accuracy
- **For universal applications**
- Optimised shank diameter tolerance for use as a holding fixture in power chucks and hydraulic expansion chucks
- **With internal cooling**

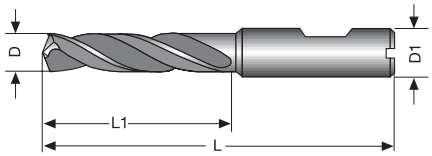
material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
●	●	●	●	●	○	●	●	●	○	○	●	●	●		○	○	
110-150	75-110	60-95	40	50	40	145	110	36-40	36	32	230-280	200	110		50	32	

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



HB with coolant bore



D m7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3	6	62	20	0.11	**111507** 0030	34,80
3.1	6	62	20	0.11	111507 0031	34,80
3.2	6	62	20	0.11	111507 0032	34,80
3.25	6	62	20	0.11	111507 0325	34,80
3.3	6	62	20	0.11	111507 0033	34,80
3.4	6	62	20	0.11	111507 0034	34,80
3.5	6	62	20	0.16	111507 0035	34,80
3.6	6	62	20	0.16	111507 0036	34,80
3.7	6	62	20	0.16	111507 0037	34,80
3.8	6	66	24	0.16	111507 0038	34,80
3.9	6	66	24	0.16	111507 0039	34,80
4	6	66	24	0.16	111507 0040	34,80
4.1	6	66	24	0.16	111507 0041	34,80
4.2	6	66	24	0.16	111507 0042	34,80
4.3	6	66	24	0.16	111507 0043	34,80
4.4	6	66	24	0.16	111507 0044	34,80
4.5	6	66	24	0.16	111507 0045	34,80
4.6	6	66	24	0.16	111507 0046	34,80
4.65	6	66	24	0.16	111507 0465	34,80
4.7	6	66	24	0.16	111507 0047	34,80
4.8	6	66	28	0.16	111507 0048	34,80
4.9	6	66	28	0.16	111507 0049	34,80
5	6	66	28	0.16	111507 0050	34,80
5.1	6	66	28	0.16	111507 0051	34,80
5.2	6	66	28	0.16	111507 0052	34,80
5.3	6	66	28	0.16	111507 0053	34,80
5.4	6	66	28	0.16	111507 0054	34,80
5.5	6	66	28	0.20	111507 0055	34,80
5.55	6	66	28	0.20	111507 0555	34,80
5.6	6	66	28	0.20	111507 0056	34,80
5.7	6	66	28	0.20	111507 0057	34,80
5.8	6	66	28	0.20	111507 0058	34,80
5.9	6	66	28	0.20	111507 0059	34,80
6	6	66	28	0.20	111507 0060	34,80
6.1	8	79	34	0.20	111507 0061	44,80
6.2	8	79	34	0.20	111507 0062	44,80

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D m7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
6.3	8	79	34	0.20	111507 0063	44,80
6.4	8	79	34	0.20	111507 0064	44,80
6.5	8	79	34	0.20	111507 0065	44,80
6.6	8	79	34	0.20	111507 0066	44,80
6.7	8	79	34	0.20	111507 0067	44,80
6.8	8	79	34	0.20	111507 0068	44,80
6.9	8	79	34	0.20	111507 0069	44,80
7	8	79	34	0.20	111507 0070	44,80
7.1	8	79	41	0.25	111507 0071	44,80
7.2	8	79	41	0.25	111507 0072	44,80
7.3	8	79	41	0.25	111507 0073	44,80
7.4	8	79	41	0.25	111507 0074	44,80
7.5	8	79	41	0.25	111507 0075	44,80
7.6	8	79	41	0.25	111507 0076	44,80
7.7	8	79	41	0.25	111507 0077	44,80
7.8	8	79	41	0.25	111507 0078	44,80
7.9	8	79	41	0.25	111507 0079	44,80
8	8	79	41	0.25	111507 0080	44,80
8.1	10	89	47	0.25	111507 0081	53,–
8.2	10	89	47	0.25	111507 0082	53,–
8.3	10	89	47	0.25	111507 0083	53,–
8.4	10	89	47	0.25	111507 0084	53,–
8.5	10	89	47	0.25	111507 0085	53,–
8.6	10	89	47	0.25	111507 0086	53,–
8.7	10	89	47	0.25	111507 0087	53,–
8.8	10	89	47	0.25	111507 0088	53,–
8.9	10	89	47	0.25	111507 0089	53,–
9	10	89	47	0.25	111507 0090	53,–
9.1	10	89	47	0.32	111507 0091	53,–
9.2	10	89	47	0.32	111507 0092	53,–
9.3	10	89	47	0.32	111507 0093	53,–
9.4	10	89	47	0.32	111507 0094	53,–
9.5	10	89	47	0.32	111507 0095	53,–
9.6	10	89	47	0.32	111507 0096	53,–
9.7	10	89	47	0.32	111507 0097	53,–
9.8	10	89	47	0.32	111507 0098	53,–

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D m7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
9.9	10	89	47	0.32	111507 0099	53,–
10	10	89	47	0.32	111507 0100	53,–
10.2	12	102	55	0.32	111507 0102	78,–
10.3	12	102	55	0.32	111507 0103	78,–
10.5	12	102	55	0.32	111507 0105	78,–
10.8	12	102	55	0.32	111507 0108	78,–
11	12	102	55	0.32	111507 0110	78,–
11.2	12	102	55	0.32	111507 0112	78,–
11.5	12	102	55	0.32	111507 0115	78,–
11.8	12	102	55	0.32	111507 0118	78,–
12	12	102	55	0.32	111507 0120	78,–
12.5	14	107	60	0.32	111507 0125	103,–
12.8	14	107	60	0.32	111507 0128	103,–
13	14	107	60	0.32	111507 0130	103,–
13.5	14	107	60	0.32	111507 0135	103,–
13.8	14	107	60	0.32	111507 0138	103,–

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D m7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
14	14	107	60	0.32	111507 0140	103,–
14.2	16	115	65	0.32	111507 0142	103,–
14.5	16	115	65	0.32	111507 0145	127,50
14.8	16	115	65	0.32	111507 0148	127,50
15	16	115	65	0.32	111507 0150	127,50
15.5	16	115	65	0.40	111507 0155	127,50
15.8	16	115	65	0.40	111507 0158	127,50
16	16	115	65	0.40	111507 0160	127,50
16.5	18	123	73	0.40	111507 0165	175,–
17	18	123	73	0.40	111507 0170	175,–
17.5	18	123	73	0.40	111507 0175	175,–
18	18	123	73	0.40	111507 0180	175,–
18.5	20	131	79	0.50	111507 0185	217,–
19	20	131	79	0.50	111507 0190	217,–
19.5	20	131	79	0.50	111507 0195	217,–
20	20	131	79	0.50	111507 0200	217,–

1156

ATORN® TiAlNplus HPC 3D solid carbide high-performance drill bit with internal cooling

VHM | DIN 6537 | Typ U | 140° | 30° | 3xD | DIN 6535 HA | DIN 6535 HB | TiAlN plus | Vc/fz

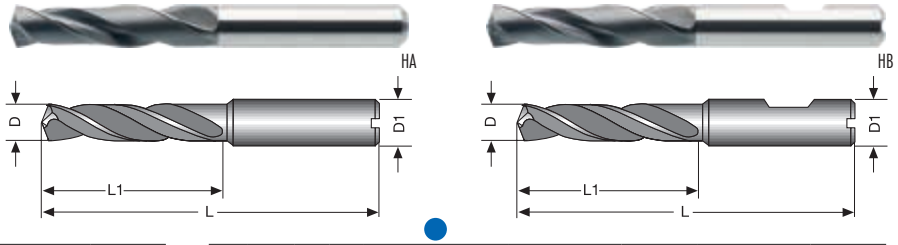
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- Optimised shank diameter tolerance for use as a holding fixture in power chucks and hydraulic expansion chucks
- **Cutting material: Solid carbide ultra-fine grain TiAlNplus**
- Efficient drilling in different materials
- Newly developed geometry in conjunction with a customised multilayer coating for enhanced performance
- Special cutting edge finishing reduces micro-nicks and increases service life
- **With internal cooling**

material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
●	●	●	●	●	○	●	●	●	●	○	○	●	○		●	○	○
120-170	85-120	65-105	45	55	44	160	120	40-45	40	35	260-310	220	125		55	35	30

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



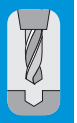
D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	HA art.no.	€	HB art.no.	€
1	4	45	7	0.03	**111564** 0100	54,–		
1.1	4	45	7	0.03	111564 0110	54,–		
1.2	4	45	7	0.03	111564 0120	54,–		
1.3	4	45	7	0.03	111564 0130	54,–		
1.4	4	45	7	0.04	111564 0140	54,–		
1.5	4	55	14	0.04	111564 0150	54,–		
1.6	4	55	14	0.04	111564 0160	54,–		
1.7	4	55	14	0.04	111564 0170	54,–		
1.8	4	55	14	0.05	111564 0180	54,–		
1.9	4	55	14	0.05	111564 0190	54,–		
2	4	55	20	0.05	111564 0200	54,–		
2.1	4	55	20	0.05	111564 0210	54,–		
2.2	4	55	20	0.06	111564 0220	54,–		
2.3	4	55	20	0.06	111564 0230	54,–		
2.4	4	55	20	0.06	111564 0240	54,–		

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D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	HA art.no.	€	HB art.no.	€
2.5	4	55	20	0.06	111564 0250	54,–		
2.6	4	55	20	0.07	111564 0260	54,–		
2.7	4	55	20	0.07	111564 0270	54,–		
2.8	4	55	20	0.07	111564 0280	54,–		
2.9	4	55	20	0.07	111564 0290	54,–		
3	6	62	20	0.08	111564 0300	54,–	**111565** 0300	54,–
3.1	6	62	20	0.08	111564 0310	57,–	111565 0310	57,–
3.2	6	62	20	0.08	111564 0320	57,–	111565 0320	57,–
3.25	6	62	20	0.08	111564 0325	57,–	111565 0325	57,–
3.3	6	62	20	0.08	111564 0330	57,–	111565 0330	57,–
3.4	6	62	20	0.09	111564 0340	57,–	111565 0340	57,–
3.5	6	62	20	0.09	111564 0350	57,–	111565 0350	57,–
3.6	6	62	20	0.09	111564 0360	57,–	111565 0360	57,–
3.7	6	62	20	0.09	111564 0370	57,–	111565 0370	57,–
3.8	6	66	24	0.10	111564 0380	57,–	111565 0380	57,–

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D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	HA art.no.	HA €	HB art.no.	HB €
3.9	6	66	24	0.10	111564 0390	57,–	111565 0390	57,–
4	6	66	24	0.10	111564 0400	57,–	111565 0400	57,–
4.1	6	66	24	0.10	111564 0410	57,–	111565 0410	57,–
4.2	6	66	24	0.11	111564 0420	57,–	111565 0420	57,–
4.3	6	66	24	0.11	111564 0430	57,–	111565 0430	57,–
4.4	6	66	24	0.11	111564 0440	57,–	111565 0440	57,–
4.5	6	66	24	0.11	111564 0450	57,–	111565 0450	57,–
4.6	6	66	24	0.12	111564 0460	57,–	111565 0460	57,–
4.65	6	66	24	0.12	111564 0465	57,–	111565 0465	57,–
4.7	6	66	24	0.12	111564 0470	57,–	111565 0470	57,–
4.8	6	66	28	0.12	111564 0480	57,–	111565 0480	57,–
4.9	6	66	28	0.12	111564 0490	57,–	111565 0490	57,–
5	6	66	28	0.13	111564 0500	57,–	111565 0500	57,–
5.1	6	66	28	0.13	111564 0510	57,–	111565 0510	57,–
5.2	6	66	28	0.13	111564 0520	57,–	111565 0520	57,–
5.3	6	66	28	0.13	111564 0530	57,–	111565 0530	57,–
5.4	6	66	28	0.14	111564 0540	57,–	111565 0540	57,–
5.5	6	66	28	0.14	111564 0550	57,–	111565 0550	57,–
5.55	6	66	28	0.14	111564 0555	57,–	111565 0555	57,–
5.6	6	66	28	0.14	111564 0560	57,–	111565 0560	57,–
5.65	6	66	28	0.14	111564 0565	57,–	111565 0565	57,–
5.7	6	66	28	0.14	111564 0570	57,–	111565 0570	57,–
5.8	6	66	28	0.15	111564 0580	57,–	111565 0580	57,–
5.9	6	66	28	0.15	111564 0590	57,–	111565 0590	57,–
6	6	66	28	0.15	111564 0600	57,–	111565 0600	57,–
6.1	8	79	34	0.15	111564 0610	75,–	111565 0610	75,–
6.2	8	79	34	0.16	111564 0620	75,–	111565 0620	75,–
6.3	8	79	34	0.16	111564 0630	75,–	111565 0630	75,–
6.4	8	79	34	0.16	111564 0640	75,–	111565 0640	75,–
6.5	8	79	34	0.16	111564 0650	75,–	111565 0650	75,–
6.6	8	79	34	0.17	111564 0660	75,–	111565 0660	75,–
6.7	8	79	34	0.17	111564 0670	75,–	111565 0670	75,–
6.8	8	79	34	0.17	111564 0680	75,–	111565 0680	75,–
6.9	8	79	34	0.17	111564 0690	75,–	111565 0690	75,–
7	8	79	34	0.18	111564 0700	75,–	111565 0700	75,–
7.1	8	79	41	0.18	111564 0710	75,–	111565 0710	75,–
7.2	8	79	41	0.18	111564 0720	75,–	111565 0720	75,–
7.3	8	79	41	0.18	111564 0730	75,–	111565 0730	75,–
7.4	8	79	41	0.19	111564 0740	75,–	111565 0740	75,–
7.5	8	79	41	0.19	111564 0750	75,–	111565 0750	75,–
7.55	8	79	41	0.19	111564 0755	75,–	111565 0755	75,–
7.6	8	79	41	0.19	111564 0760	75,–	111565 0760	75,–
7.65	8	79	41	0.19	111564 0765	75,–	111565 0765	75,–
7.7	8	79	41	0.19	111564 0770	75,–	111565 0770	75,–
7.8	8	79	41	0.20	111564 0780	75,–	111565 0780	75,–
7.9	8	79	41	0.20	111564 0790	75,–	111565 0790	75,–
8	8	79	41	0.20	111564 0800	75,–	111565 0800	75,–
8.1	10	89	47	0.20	111564 0810	87,–	111565 0810	87,–
8.2	10	89	47	0.21	111564 0820	87,–	111565 0820	87,–
8.3	10	89	47	0.21	111564 0830	87,–	111565 0830	87,–
8.4	10	89	47	0.21	111564 0840	87,–	111565 0840	87,–
8.5	10	89	47	0.21	111564 0850	87,–	111565 0850	87,–
8.6	10	89	47	0.22	111564 0860	87,–	111565 0860	87,–
8.7	10	89	47	0.22	111564 0870	87,–	111565 0870	87,–
8.8	10	89	47	0.22	111564 0880	87,–	111565 0880	87,–
8.9	10	89	47	0.22	111564 0890	87,–	111565 0890	87,–
9	10	89	47	0.23	111564 0900	87,–	111565 0900	87,–
9.1	10	89	47	0.23	111564 0910	87,–	111565 0910	87,–
9.2	10	89	47	0.23	111564 0920	87,–	111565 0920	87,–
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D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	HA art.no.	HA €	HB art.no.	HB €
9.3	10	89	47	0.23	111564 0930	87,–	111565 0930	87,–
9.4	10	89	47	0.24	111564 0940	87,–	111565 0940	87,–
9.5	10	89	47	0.24	111564 0950	87,–	111565 0950	87,–
9.6	10	89	47	0.24	111564 0960	87,–	111565 0960	87,–
9.7	10	89	47	0.24	111564 0970	87,–	111565 0970	87,–
9.8	10	89	47	0.25	111564 0980	87,–	111565 0980	87,–
9.9	10	89	47	0.25	111564 0990	87,–	111565 0990	87,–
10	10	89	47	0.25	111564 1000	87,–	111565 1000	87,–
10.1	12	102	55	0.25	111564 1010	130,–	111565 1010	130,–
10.2	12	102	55	0.26	111564 1020	130,–	111565 1020	130,–
10.3	12	102	55	0.26	111564 1030	130,–	111565 1030	130,–
10.4	12	102	55	0.26	111564 1040	130,–	111565 1040	130,–
10.5	12	102	55	0.26	111564 1050	130,–	111565 1050	130,–
10.6	12	102	55	0.27	111564 1060	130,–	111565 1060	130,–
10.7	12	102	55	0.27	111564 1070	130,–	111565 1070	130,–
10.8	12	102	55	0.27	111564 1080	130,–	111565 1080	130,–
10.9	12	102	55	0.27	111564 1090	130,–	111565 1090	130,–
11	12	102	55	0.28	111564 1100	130,–	111565 1100	130,–
11.1	12	102	55	0.28	111564 1110	130,–	111565 1110	130,–
11.2	12	102	55	0.28	111564 1120	130,–	111565 1120	130,–
11.3	12	102	55	0.28	111564 1130	130,–	111565 1130	130,–
11.4	12	102	55	0.29	111564 1140	130,–	111565 1140	130,–
11.5	12	102	55	0.29	111564 1150	130,–	111565 1150	130,–
11.6	12	102	55	0.29	111564 1160	130,–	111565 1160	130,–
11.7	12	102	55	0.29	111564 1170	130,–	111565 1170	130,–
11.8	12	102	55	0.30	111564 1180	130,–	111565 1180	130,–
11.9	12	102	55	0.30	111564 1190	130,–	111565 1190	130,–
12	12	102	55	0.30	111564 1200	130,–	111565 1200	130,–
12.2	14	107	60	0.31	111564 1220	176,–	111565 1220	176,–
12.3	14	107	60	0.31	111564 1230	176,–	111565 1230	176,–
12.5	14	107	60	0.31	111564 1250	176,–	111565 1250	176,–
12.7	14	107	60	0.32	111564 1270	176,–	111565 1270	176,–
12.8	14	107	60	0.32	111564 1280	176,–	111565 1280	176,–
12.9	14	107	60	0.32	111564 1290	176,–	111565 1290	176,–
13	14	107	60	0.33	111564 1300	176,–	111565 1300	176,–
13.5	14	107	60	0.34	111564 1350	176,–	111565 1350	176,–
13.8	14	107	60	0.35	111564 1380	176,–	111565 1380	176,–
14	14	107	60	0.35	111564 1400	176,–	111565 1400	176,–
14.2	16	115	65	0.36	111564 1420	208,–	111565 1420	208,–
14.4	16	115	65	0.36	111564 1440	208,–	111565 1440	208,–
14.5	16	115	65	0.36	111564 1450	208,–	111565 1450	208,–
14.8	16	115	65	0.37	111564 1480	208,–	111565 1480	208,–
15	16	115	65	0.38	111564 1500	208,–	111565 1500	208,–
15.1	16	115	65	0.38	111564 1510	208,–	111565 1510	208,–
15.2	16	115	65	0.38	111564 1520	208,–	111565 1520	208,–
15.5	16	115	65	0.39	111564 1550	208,–	111565 1550	208,–
15.8	16	115	65	0.40	111564 1580	208,–	111565 1580	208,–
16	16	115	65	0.40	111564 1600	208,–	111565 1600	208,–
16.5	18	123	73	0.41	111564 1650	294,–	111565 1650	294,–
17	18	123	73	0.43	111564 1700	294,–	111565 1700	294,–
17.5	18	123	73	0.44	111564 1750	294,–	111565 1750	294,–
18	18	123	73	0.45	111564 1800	294,–	111565 1800	294,–
18.5	20	131	79	0.46	111564 1850	368,–	111565 1850	368,–
18.9	20	131	79	0.47	111564 1890	368,–	111565 1890	368,–
19	20	131	79	0.48	111564 1900	368,–	111565 1900	368,–
19.3	20	131	79	0.48	111564 1930	368,–	111565 1930	368,–
19.5	20	131	79	0.49	111564 1950	368,–	111565 1950	368,–
20	20	131	79	0.50	111564 2000	368,–	111565 2000	368,–
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ATORN® SC high-performance drill Ultra-M 3D

VHM | DIN 6537 | Typ VA | 140° | 30° | 3xD | DIN 6535 HA | DIN 6535 HB | TiAlN | Vc/fz | 362

- Special geometry, facet-ground, maximum tool life, high process reliability
- Shank design:
  HA with coolant bore, smooth straight shank, DIN 6535 HA
  HB with coolant bore straight shank DIN 6535 HB
- **Cutting material: solid carbide, TiAlN-Ultra-M-coated**
- True-running accuracy of the tool when clamped max. 0.02 mm
- **Especially suitable for stainless steel and superalloys**

Especially for stainless steel

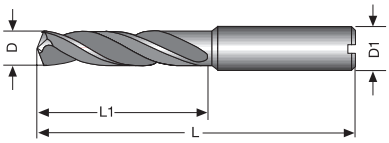
material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
			● 80	● 60	● 48			● 35	● 30	● 30							

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

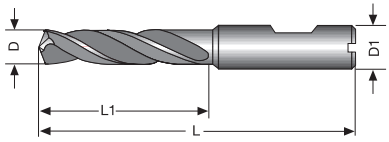


HA with coolant bore





HB with coolant bore



D m7 mm	D1 h6 mm	L mm	L1 mm	Feed f stainless steel austenitic mm/rev	HA art.no.	€	HB art.no.	€
3.00	6	62	20	0.05	**111545** 0030	58,–	**111549** 0030	58,–
3.10	6	62	20	0.05	111545 0031	58,–	111549 0031	58,–
3.20	6	62	20	0.05	111545 0032	58,–	111549 0032	58,–
3.25	6	62	20	0.05	111545 1325	58,–	111549 0325	58,–
3.30	6	62	20	0.05	111545 0033	58,–	111549 0033	58,–
3.40	6	62	20	0.05	111545 0034	58,–	111549 0034	58,–
3.50	6	62	20	0.06	111545 0035	58,–	111549 0035	58,–
3.60	6	62	20	0.06	111545 0036	58,–	111549 0036	58,–
3.70	6	62	20	0.06	111545 0037	58,–	111549 0037	58,–
3.80	6	66	24	0.06	111545 0038	58,–	111549 0038	58,–
3.90	6	66	24	0.06	111545 0039	58,–	111549 0039	58,–
4.00	6	66	24	0.06	111545 0040	58,–	111549 0040	58,–
4.10	6	66	24	0.06	111545 0041	58,–	111549 0041	58,–
4.20	6	66	24	0.06	111545 0042	58,–	111549 0042	58,–
4.30	6	66	24	0.06	111545 0043	58,–	111549 0043	58,–
4.40	6	66	24	0.06	111545 0044	58,–	111549 0044	58,–
4.50	6	66	24	0.06	111545 0045	58,–	111549 0045	58,–
4.60	6	66	24	0.06	111545 0046	58,–	111549 0046	58,–
4.65	6	66	24	0.06	111545 1465	58,–	111549 0465	58,–
4.70	6	66	24	0.06	111545 0047	58,–	111549 0047	58,–
4.80	6	66	28	0.06	111545 0048	58,–	111549 0048	58,–
4.90	6	66	28	0.06	111545 0049	58,–	111549 0049	58,–
5.00	6	66	28	0.06	111545 0050	58,–	111549 0050	58,–
5.10	6	66	28	0.06	111545 0051	58,–	111549 0051	58,–
5.20	6	66	28	0.06	111545 0052	58,–	111549 0052	58,–
5.30	6	66	28	0.06	111545 0053	58,–	111549 0053	58,–
5.40	6	66	28	0.06	111545 0054	58,–	111549 0054	58,–
5.50	6	66	28	0.08	111545 0055	58,–	111549 0055	58,–
5.55	6	66	28	0.08	111545 1555	58,–	111549 0555	58,–
5.60	6	66	28	0.08	111545 0056	58,–	111549 0056	58,–
5.70	6	66	28	0.08	111545 0057	58,–	111549 0057	58,–
5.80	6	66	28	0.08	111545 0058	58,–	111549 0058	58,–
5.90	6	66	28	0.08	111545 0059	58,–	111549 0059	58,–
6.00	6	66	28	0.08	111545 0060	58,–	111549 0060	58,–
6.10	8	79	34	0.08	111545 0061	77,–	111549 0061	77,–
6.20	8	79	34	0.08	111545 0062	77,–	111549 0062	77,–
6.30	8	79	34	0.08	111545 0063	77,–	111549 0063	77,–
6.40	8	79	34	0.08	111545 0064	77,–	111549 0064	77,–
6.50	8	79	34	0.08	111545 0065	77,–	111549 0065	77,–
6.60	8	79	34	0.08	111545 0066	77,–	111549 0066	77,–
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D m7 mm	D1 h6 mm	L mm	L1 mm	Feed f stainless steel austenitic mm/rev	HA art.no.	€	HB art.no.	€
6.70	8	79	34	0.08	111545 0067	77,–	111549 0067	77,–
6.80	8	79	34	0.08	111545 0068	77,–	111549 0068	77,–
6.90	8	79	34	0.08	111545 0069	77,–	111549 0069	77,–
7.00	8	79	34	0.08	111545 0070	77,–	111549 0070	77,–
7.10	8	79	41	0.10	111545 0071	77,–	111549 0071	77,–
7.20	8	79	41	0.10	111545 0072	77,–	111549 0072	77,–
7.30	8	79	41	0.10	111545 0073	77,–	111549 0073	77,–
7.40	8	79	41	0.10	111545 0074	77,–	111549 0074	77,–
7.50	8	79	41	0.10	111545 0075	77,–	111549 0075	77,–
7.60	8	79	41	0.10	111545 0076	77,–	111549 0076	77,–
7.70	8	79	41	0.10	111545 0077	77,–	111549 0077	77,–
7.80	8	79	41	0.10	111545 0078	77,–	111549 0078	77,–
7.90	8	79	41	0.10	111545 0079	77,–	111549 0079	77,–
8.00	8	79	41	0.10	111545 0080	77,–	111549 0080	77,–
8.10	10	89	47	0.10	111545 0081	92,50	111549 0081	92,50
8.20	10	89	47	0.10	111545 0082	92,50	111549 0082	92,50
8.30	10	89	47	0.10	111545 0083	92,50	111549 0083	92,50
8.40	10	89	47	0.10	111545 0084	92,50	111549 0084	92,50
8.50	10	89	47	0.10	111545 0085	92,50	111549 0085	92,50
8.60	10	89	47	0.10	111545 0086	92,50	111549 0086	92,50
8.70	10	89	47	0.10	111545 0087	92,50	111549 0087	92,50
8.80	10	89	47	0.10	111545 0088	92,50	111549 0088	92,50
8.90	10	89	47	0.10	111545 0089	92,50	111549 0089	92,50
9.00	10	89	47	0.10	111545 0090	92,50	111549 0090	92,50
9.10	10	89	47	0.12	111545 0091	92,50	111549 0091	92,50
9.20	10	89	47	0.12	111545 0092	92,50	111549 0092	92,50
9.25	10	89	47	0.12	111545 1925	92,50	111549 0925	92,50
9.30	10	89	47	0.12	111545 0093	92,50	111549 0093	92,50
9.40	10	89	47	0.12	111545 0094	92,50	111549 0094	92,50
9.50	10	89	47	0.12	111545 0095	92,50	111549 0095	92,50
9.60	10	89	47	0.12	111545 0096	92,50	111549 0096	92,50
9.70	10	89	47	0.12	111545 0097	92,50	111549 0097	92,50
9.80	10	89	47	0.12	111545 0098	92,50	111549 0098	92,50
9.90	10	89	47	0.12	111545 0099	92,50	111549 0099	92,50
10.00	10	89	47	0.12	111545 0100	92,50	111549 0100	92,50
10.10	12	102	55	0.12	111545 0101	134,–	111549 0101	134,–
10.20	12	102	55	0.12	111545 0102	134,–	111549 0102	134,–
10.30	12	102	55	0.12	111545 0103	134,–	111549 0103	134,–
10.40	12	102	55	0.12	111545 0104	134,–	111549 0104	134,–
10.50	12	102	55	0.12	111545 0105	134,–	111549 0105	134,–
					1154		1154	

Continued on next page >>>

D m7 mm	D1 h6 mm	L mm	L1 mm	Feed f stainless steel austenitic mm/rev	HA art.no.	€	HB art.no.	€
10.60	12	102	55	0.12	111545 0106	134,–	111549 0106	134,–
10.70	12	102	55	0.12	111545 0107	134,–	111549 0107	134,–
10.80	12	102	55	0.12	111545 0108	134,–	111549 0108	134,–
10.90	12	102	55	0.12	111545 0109	134,–	111549 0109	134,–
11.00	12	102	55	0.12	111545 0110	134,–	111549 0110	134,–
11.10	12	102	55	0.12	111545 0111	134,–	111549 0111	134,–
11.20	12	102	55	0.12	111545 0112	134,–	111549 0112	134,–
11.30	12	102	55	0.12	111545 0113	134,–	111549 0113	134,–
11.40	12	102	55	0.12	111545 0114	134,–	111549 0114	134,–
11.50	12	102	55	0.12	111545 0115	134,–	111549 0115	134,–
11.60	12	102	55	0.12	111545 0116	134,–	111549 0116	134,–
11.70	12	102	55	0.12	111545 0117	134,–	111549 0117	134,–
11.80	12	102	55	0.12	111545 0118	134,–	111549 0118	134,–
11.90	12	102	55	0.12	111545 0119	134,–	111549 0119	134,–
12.00	12	102	55	0.12	111545 0120	134,–	111549 0120	134,–
12.50	14	107	60	0.12	111545 0125	174,–	111549 0125	174,–
12.70	14	107	60	0.12	111545 0127	174,–	111549 0127	174,–
					1154		1154	

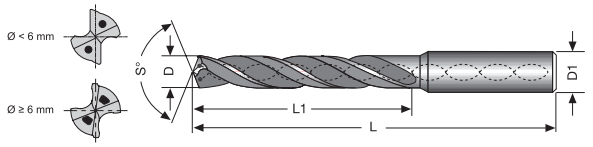
D m7 mm	D1 h6 mm	L mm	L1 mm	Feed f stainless steel austenitic mm/rev	HA art.no.	€	HB art.no.	€
13.00	14	107	60	0.12	111545 0130	174,–	111549 0130	174,–
13.50	14	107	60	0.12	111545 0135	174,–	111549 0135	174,–
14.00	14	107	60	0.12	111545 0140	174,–	111549 0140	174,–
14.50	16	115	65	0.12	111545 0145	205,–	111549 0145	205,–
15.00	16	115	65	0.12	111545 0150	205,–	111549 0150	205,–
15.50	16	115	65	0.12	111545 0155	205,–	111549 0155	205,–
16.00	16	115	65	0.12	111545 0160	205,–	111549 0160	205,–
16.50	18	123	73	0.12	111545 0165	335,–	111549 0165	335,–
16.90	18	123	73	0.12	111545 0169	335,–	111549 0169	335,–
17.00	18	123	73	0.12	111545 0170	335,–	111549 0170	335,–
17.50	18	123	73	0.14	111545 0175	335,–	111549 0175	335,–
18.00	18	123	73	0.14	111545 0180	335,–	111549 0180	335,–
18.50	20	131	79	0.14	111545 0185	365,–	111549 0185	365,–
18.90	20	131	79	0.14	111545 0189	365,–	111549 0189	365,–
19.00	20	131	79	0.14	111545 0190	365,–	111549 0190	365,–
19.50	20	131	79	0.16	111545 0195	365,–	111549 0195	365,–
20.00	20	131	79	0.16	111545 0200	365,–	111549 0200	365,–
					1154		1154	

ADO-SUS-3D solid carbide high-performance drill

VHM | Werks-norm | Typ VA | 140° | 30° | 3xD | DIN 6535 HA | TiAlN | Vc/fz | 368

- **Cutting material: solid carbide, WXL-coated**
- Sharp cutting edges reduce machining-induced material hardenings
- **Short and compact chips thanks to innovative chip flute geometry**
- Friction-reducing protective chamfer reduces heat development
- **New coolant bore design increases coolant flow rate and thus reduces heat generation in the material**
- Increased coating adhesion of the new WXL coating reduces premature wear and coating spalling





material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 80-120	● 80-120	○ 60-90	● 60-100	● 60-100	● 30-60	● 60-100	● 80-120	● 20-50			● 140	○ 120	○ 70				
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

D h8 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
2.8	3	66	17	0.06	**111613** 0280	48,25
2.83	3	66	17	0.06	111613 0283	48,25
2.87	3	66	18	0.06	111613 0287	48,25
2.9	3	66	18	0.06	111613 0290	48,25
3	3	66	18	0.06	111613 0300	48,25
3.1	4	74	19	0.08	111613 0310	52,–
3.2	4	74	20	0.08	111613 0320	52,–
3.3	4	74	20	0.08	111613 0330	52,–
3.4	4	74	21	0.08	111613 0340	52,–
3.5	4	74	21	0.08	111613 0350	52,–
3.6	4	74	22	0.08	111613 0360	54,50
3.7	4	74	23	0.08	111613 0370	54,50
3.73	4	74	23	0.08	111613 0373	54,50
3.8	4	74	23	0.08	111613 0380	54,50
3.9	4	74	24	0.08	111613 0390	54,50
4	4	74	24	0.08	111613 0400	54,50
4.1	6	80	25	0.10	111613 0410	59,–
					1107	

D h8 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
4.2	6	80	26	0.10	111613 0420	59,–
4.3	6	80	26	0.10	111613 0430	59,–
4.4	6	80	27	0.10	111613 0440	59,–
4.45	6	80	27	0.10	111613 0445	59,–
4.5	6	80	27	0.10	111613 0450	59,–
4.6	6	80	28	0.10	111613 0460	63,50
4.65	6	80	28	0.10	111613 0465	63,50
4.7	6	80	29	0.10	111613 0470	63,50
4.8	6	80	29	0.10	111613 0480	63,50
4.9	6	80	30	0.10	111613 0490	63,50
5	6	80	25	0.10	111613 0500	63,50
5.1	6	82	26	0.12	111613 0510	67,–
5.2	6	82	26	0.12	111613 0520	67,–
5.3	6	82	27	0.12	111613 0530	67,–
5.4	6	82	27	0.12	111613 0540	67,–
5.5	6	82	28	0.12	111613 0550	67,–
5.55	6	82	28	0.12	111613 0555	70,–
					1107	

D h8 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
5.6	6	82	28	0.12	111613 0560	70,–
5.7	6	82	29	0.12	111613 0570	70,–
5.8	6	82	29	0.12	111613 0580	70,–
5.9	6	82	30	0.12	111613 0590	70,–
6	6	82	30	0.12	111613 0600	70,–
6.1	8	88	31	0.14	111613 0610	78,50
6.2	8	88	31	0.14	111613 0620	78,50
6.3	8	88	32	0.14	111613 0630	78,50
6.4	8	88	32	0.14	111613 0640	78,50
6.5	8	88	33	0.14	111613 0650	78,50
6.6	8	88	33	0.14	111613 0660	78,50
6.7	8	88	34	0.14	111613 0670	78,50
6.8	8	88	34	0.14	111613 0680	78,50
6.9	8	88	35	0.14	111613 0690	78,50
7	8	88	35	0.14	111613 0700	78,50
7.1	8	94	36	0.16	111613 0710	78,50
7.2	8	94	36	0.16	111613 0720	78,50
7.3	8	94	37	0.16	111613 0730	78,50
7.4	8	94	37	0.16	111613 0740	78,50
7.45	8	94	38	0.16	111613 0745	78,50
7.5	8	94	38	0.16	111613 0750	78,50
7.55	8	94	38	0.16	111613 0755	82,50
7.6	8	94	38	0.16	111613 0760	82,50
7.7	8	94	39	0.16	111613 0770	82,50
7.8	8	94	39	0.16	111613 0780	82,50
7.9	8	94	40	0.16	111613 0790	82,50
8	8	94	40	0.16	111613 0800	82,50
8.1	10	101	41	0.18	111613 0810	98,50
8.2	10	101	41	0.18	111613 0820	98,50
8.3	10	101	42	0.18	111613 0830	98,50
8.4	10	101	42	0.18	111613 0840	98,50
8.5	10	101	43	0.18	111613 0850	98,50
8.6	10	101	43	0.18	111613 0860	98,50
8.7	10	101	44	0.18	111613 0870	98,50
8.8	10	101	44	0.18	111613 0880	98,50
8.9	10	101	45	0.18	111613 0890	98,50
9	10	101	45	0.18	111613 0900	98,50
9.1	10	106	46	0.20	111613 0910	98,50
9.2	10	106	46	0.20	111613 0920	98,50
9.3	10	106	47	0.20	111613 0930	98,50
9.4	10	106	47	0.20	111613 0940	98,50
9.5	10	106	48	0.20	111613 0950	98,50
9.55	10	106	48	0.20	111613 0955	101,–
9.6	10	106	48	0.20	111613 0960	101,–
9.7	10	106	49	0.20	111613 0970	101,–
9.8	10	106	49	0.20	111613 0980	101,–
9.9	10	106	50	0.20	111613 0990	101,–
10	10	106	50	0.20	111613 1000	101,–
10.1	12	113	51	0.22	111613 1010	114,–
10.2	12	113	51	0.22	111613 1020	114,–
10.3	12	113	52	0.22	111613 1030	114,–

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D h8 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
10.4	12	113	52	0.22	111613 1040	114,–
10.5	12	113	53	0.22	111613 1050	114,–
10.6	12	113	53	0.22	111613 1060	114,–
10.7	12	113	54	0.22	111613 1070	114,–
10.8	12	113	54	0.22	111613 1080	114,–
10.9	12	113	55	0.22	111613 1090	114,–
11	12	113	55	0.22	111613 1100	114,–
11.1	12	120	56	0.24	111613 1110	114,–
11.2	12	120	56	0.24	111613 1120	114,–
11.3	12	120	57	0.24	111613 1130	114,–
11.4	12	120	57	0.24	111613 1140	114,–
11.5	12	120	58	0.24	111613 1150	114,–
11.6	12	120	58	0.24	111613 1160	116,–
11.7	12	120	59	0.24	111613 1170	116,–
11.8	12	120	59	0.24	111613 1180	116,–
11.9	12	120	60	0.24	111613 1190	116,–
12	12	120	60	0.24	111613 1200	116,–
12.1	14	128	61	0.26	111613 1210	128,–
12.5	14	128	63	0.26	111613 1250	128,–
12.8	14	128	64	0.26	111613 1280	128,–
13	14	128	65	0.26	111613 1300	128,–
13.1	14	134	66	0.28	111613 1310	128,–
13.2	14	134	67	0.28	111613 1320	128,–
13.3	14	134	68	0.28	111613 1330	128,–
13.43	14	134	68	0.28	111613 1343	128,–
13.5	14	134	68	0.28	111613 1350	128,–
13.55	14	134	68	0.28	111613 1355	131,–
13.6	14	134	68	0.28	111613 1360	131,–
14	14	134	70	0.28	111613 1400	131,–
14.5	16	140	73	0.28	111613 1450	144,–
15	16	140	75	0.28	111613 1500	144,–
15.1	16	145	76	0.28	111613 1510	144,–
15.3	16	145	77	0.28	111613 1530	144,–
15.5	16	145	78	0.28	111613 1550	144,–
15.55	16	145	78	0.28	111613 1555	147,–
16	16	145	80	0.30	111613 1600	147,–
16.5	18	150	83	0.30	111613 1650	214,–
16.7	18	150	84	0.30	111613 1670	214,–
17	18	150	85	0.30	111613 1700	214,–
17.3	18	155	87	0.30	111613 1730	214,–
17.5	18	155	88	0.30	111613 1750	214,–
17.55	18	155	88	0.30	111613 1755	218,–
18	18	155	90	0.32	111613 1800	218,–
18.5	20	160	93	0.32	111613 1850	280,–
18.7	20	160	94	0.32	111613 1870	280,–
19	20	160	95	0.34	111613 1900	280,–
19.3	20	165	97	0.34	111613 1930	280,–
19.5	20	165	98	0.34	111613 1950	280,–
19.55	20	165	98	0.34	111613 1955	282,–
20	20	165	100	0.36	111613 2000	282,–

1107

ATORN® Solid carbide high-performance drill bit HARD 3D

VHM | Werks-norm | Typ H | 140° | 20° | 3xD | DIN 6535 HA | TiAlSiN | Vc/fz | 361

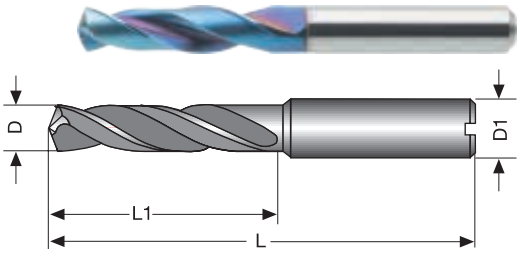
Up to 65 HRc

NEW · NUOVO · NEU · NOUVEAU · NUEVO

- for machining drill holes up to 65 HRC
- **Cutting material: SC, TiAlSiN coating**
- reinforced core and special point thinning with sharp chisel edge
- no internal coolant supply for increased stability
- **also available in 5xD**
- **Note:** Do not hard drill dry!

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
			○ 30-40					○ 60-70								● 15-20	● 10-16	● 8-13
Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									



● hardened steel ≥ 60 HRc

D mm	D1 h6 mm	L1 mm	L mm	Feed f hardened steel ≥ 60 HRc mm/rev	art.no.	€
1	4	7	45	0.04	**111535** 0010	45,–
1.3	4	7	45	0.04	111535 0013	45,–
1.5	4	14	55	0.04	111535 0015	45,–
1.6	4	14	55	0.04	111535 0016	45,–
1.7	4	14	55	0.04	111535 0017	45,–
1.8	4	14	55	0.04	111535 0018	45,–
1.9	4	14	55	0.04	111535 0019	45,–
2	4	20	55	0.04	111535 0020	45,–
2.1	4	20	55	0.04	111535 0021	45,–
2.2	4	20	55	0.04	111535 0022	45,–
2.3	4	20	55	0.04	111535 0023	45,–
2.5	4	20	55	0.04	111535 0025	45,–
2.6	4	20	55	0.04	111535 0026	45,–
2.7	4	20	55	0.04	111535 0027	45,–
2.8	4	20	55	0.04	111535 0028	45,–
2.9	4	20	55	0.04	111535 0029	45,–
3	6	20	62	0.04	111535 0030	45,–
3.1	6	20	62	0.06	111535 0031	45,–
3.2	6	20	62	0.06	111535 0032	45,–
3.3	6	20	62	0.06	111535 0033	45,–
3.4	6	20	62	0.06	111535 0034	45,–
3.5	6	20	62	0.06	111535 0035	45,–
3.7	6	20	62	0.06	111535 0037	45,–
3.8	6	24	66	0.06	111535 0038	45,–
3.9	6	24	62	0.06	111535 0039	45,–
4	6	24	66	0.06	111535 0040	45,–
4.1	6	24	66	0.06	111535 0041	45,–
4.2	6	24	66	0.06	111535 0042	45,–
4.3	6	24	66	0.06	111535 0043	45,–
4.4	6	24	66	0.06	111535 0044	45,–
4.5	6	24	66	0.06	111535 0045	45,–
4.7	6	24	66	0.06	111535 0047	45,–
4.8	6	28	66	0.06	111535 0048	45,–
4.9	6	28	66	0.06	111535 0049	45,–
5	6	28	66	0.06	111535 0050	45,–
5.1	6	28	66	0.07	111535 0051	45,–
5.2	6	28	66	0.07	111535 0052	45,–

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● hardened steel ≥ 60 HRc

D mm	D1 h6 mm	L1 mm	L mm	Feed f hardened steel ≥ 60 HRc mm/rev	art.no.	€
5.3	6	28	66	0.07	111535 0053	45,–
5.4	6	28	66	0.07	111535 0054	45,–
5.5	6	28	66	0.07	111535 0055	45,–
5.6	6	28	66	0.07	111535 0056	45,–
5.7	6	28	66	0.07	111535 0057	45,–
5.8	6	28	66	0.07	111535 0058	45,–
5.9	6	28	66	0.07	111535 0059	45,–
6	6	28	66	0.07	111535 0060	45,–
6.1	8	34	79	0.07	111535 0061	46,50
6.2	8	34	79	0.07	111535 0062	46,50
6.5	8	34	79	0.07	111535 0065	46,50
6.6	8	34	79	0.07	111535 0066	46,50
6.7	8	34	79	0.07	111535 0067	46,50
6.8	8	34	79	0.07	111535 0068	46,50
6.9	8	34	79	0.07	111535 0069	46,50
7	8	34	79	0.07	111535 0070	46,50
7.1	8	41	79	0.07	111535 0071	46,50
7.2	8	41	79	0.07	111535 0072	46,50
7.3	8	41	79	0.07	111535 0073	46,50
7.5	8	41	79	0.07	111535 0075	46,50
7.6	8	41	79	0.07	111535 0076	46,50
7.7	8	41	79	0.07	111535 0077	46,50
7.8	8	41	79	0.07	111535 0078	46,50
7.9	8	41	79	0.07	111535 0079	46,50
8	8	41	79	0.07	111535 0080	46,50
8.1	10	47	89	0.08	111535 0081	52,50
8.3	10	47	89	0.08	111535 0083	52,50
8.5	10	47	89	0.08	111535 0085	52,50
8.6	10	47	89	0.08	111535 0086	52,50
8.7	10	47	89	0.08	111535 0087	52,50
8.8	10	47	89	0.08	111535 0088	52,50
8.9	10	47	89	0.08	111535 0089	52,50
9	10	47	89	0.08	111535 0090	52,50
9.2	10	47	89	0.08	111535 0092	52,50
9.5	10	47	89	0.08	111535 0095	52,50
9.6	10	47	89	0.08	111535 0096	52,50
9.7	10	47	89	0.08	111535 0097	52,50

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D mm	D1 h6 mm	L1 mm	L mm	Feed f hardened steel ≥ 60 HRc mm/rev	art.no.	€
9.8	10	47	89	0.08	111535 0098	52,50
9.9	10	47	89	0.08	111535 0099	52,50
10	10	47	89	0.08	111535 0100	52,50
10.2	12	55	102	0.08	111535 0102	76,–
10.4	12	55	102	0.08	111535 0104	76,–
10.5	12	55	102	0.08	111535 0105	76,–
10.8	12	55	102	0.08	111535 0108	76,–
11	12	55	102	0.08	111535 0110	76,–
11.5	12	55	102	0.08	111535 0115	76,–
11.6	12	55	102	0.08	111535 0116	76,–
11.7	12	55	102	0.08	111535 0117	76,–
11.8	12	55	102	0.08	111535 0118	76,–
11.9	12	55	102	0.08	111535 0119	76,–
12	12	55	102	0.08	111535 0120	76,–
12.2	14	60	107	0.1	111535 0122	102,50
12.5	14	60	107	0.1	111535 0125	102,50
12.8	14	60	107	0.1	111535 0128	102,50
13	14	60	107	0.1	111535 0130	102,50

1154

D mm	D1 h6 mm	L1 mm	L mm	Feed f hardened steel ≥ 60 HRc mm/rev	art.no.	€
13.5	14	60	107	0.1	111535 0135	102,50
14	14	60	107	0.1	111535 0140	102,50
14.2	16	65	115	0.1	111535 0142	132,–
14.3	16	65	115	0.1	111535 0143	132,–
14.5	16	65	115	0.1	111535 0145	132,–
14.8	16	65	115	0.1	111535 0148	132,–
15	16	65	115	0.1	111535 0150	132,–
15.5	16	65	115	0.1	111535 0155	132,–
15.8	16	65	115	0.1	111535 0158	132,–
16	16	65	115	0.1	111535 0160	132,–
17	18	73	123	0.11	111535 0170	203,50
17.5	18	73	123	0.11	111535 0175	203,50
18	18	73	123	0.11	111535 0180	203,50
18.5	20	79	131	0.11	111535 0185	240,–
19	20	79	131	0.11	111535 0190	240,–
19.5	20	79	131	0.11	111535 0195	240,–
20	20	79	131	0.11	111535 0200	240,–

1154

ATORN® Solid carbide twist drill bit

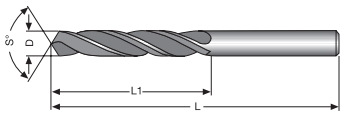
VHM | Werks-norm | Typ N | 118° | | 32° | 5xD | | TiN | TiAlN | Vc/fz 359 363

- **sim. to DIN 338**
- 111010.... Facet-ground, point thinning from ⌀ 2.0 mm
- 111011.... Facet-ground, point thinning from ⌀ 2.0 mm, TiN-coated
- 111012.... Facet-ground, point thinning from ⌀ 2.0 mm, TiAlN-coated

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
111010....	● 80	● 50-70	● 50	○ 25			● 70-90	● 80	○ 15-20			● 200	● 150	● 70-120		○ 20		
111011....	● 80-90	● 70-80	● 55	● 27			● 70-102	● 80	○ 17-22			● 230	● 135	● 135-205		○ 22		
111012....	● 90-100	● 80-90	● 65	● 30	○ 30		● 80-115	● 90	● 20-25	○ 20		● 260	● 155	● 100		○ 25		

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

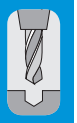




D h7 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€	TiN art.no.	€	TiAlN art.no.	€
1	34	12	0.02	**111010** 0100	5,50	**111011** 0100	8,55	**111012** 0100	8,95
1.1	36	14	0.02	111010 0110	5,50	111011 0110	8,55	111012 0110	8,95
1.2	38	16	0.02	111010 0120	5,50	111011 0120	8,55	111012 0120	8,95
1.3	38	16	0.02	111010 0130	5,50	111011 0130	8,55	111012 0130	8,95
1.4	40	18	0.02	111010 0140	5,50	111011 0140	8,55	111012 0140	8,95
1.5	40	18	0.02	111010 0150	5,50	111011 0150	8,55	111012 0150	8,95
1.6	43	20	0.02	111010 0160	6,35	111011 0160	9,70	111012 0160	10,60
1.7	43	20	0.02	111010 0170	6,35	111011 0170	9,70	111012 0170	10,60
1.8	46	22	0.02	111010 0180	6,85	111011 0180	10,25	111012 0180	12,–
1.9	46	22	0.02	111010 0190	6,85	111011 0190	10,25	111012 0190	12,–
2	49	24	0.02	111010 0200	6,85	111011 0200	10,25	111012 0200	12,–
2.1	49	24	0.03	111010 0210	8,85	111011 0210	13,15	111012 0210	13,20
2.2	53	27	0.03	111010 0220	8,85	111011 0220	13,15	111012 0220	13,20
2.3	53	27	0.03	111010 0230	8,85	111011 0230	13,15	111012 0230	13,20
2.4	57	30	0.03	111010 0240	8,85	111011 0240	13,15	111012 0240	13,20

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D h7 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€	TiN art.no.	€	TiAlN art.no.	€
2.5	57	30	0.07	111010 0250	8,85	111011 0250	13,15	111012 0250	13,20
2.6	57	30	0.07	111010 0260	12,–	111011 0260	17,10	111012 0260	15,10
2.7	61	33	0.07	111010 0270	12,–	111011 0270	17,10	111012 0270	15,10
2.8	61	33	0.07	111010 0280	12,–	111011 0280	17,10	111012 0280	15,10
2.9	61	33	0.07	111010 0290	12,–	111011 0290	17,10	111012 0290	15,10
3	61	33	0.07	111010 0300	12,65	111011 0300	19,–	111012 0300	18,80
3.1	65	36	0.07	111010 0310	12,65	111011 0310	19,–	111012 0310	18,80
3.2	65	36	0.07	111010 0320	12,65	111011 0320	19,–	111012 0320	18,80
3.3	65	36	0.07	111010 0330	12,65	111011 0330	19,–	111012 0330	18,80
3.4	70	39	0.07	111010 0340	12,65	111011 0340	19,–	111012 0340	18,80
3.5	70	39	0.07	111010 0350	13,30	111011 0350	19,90	111012 0350	20,50
3.6	70	39	0.07	111010 0360	13,30	111011 0360	19,90	111012 0360	20,50
3.7	70	39	0.07	111010 0370	13,30	111011 0370	19,90	111012 0370	20,50
3.8	75	43	0.07	111010 0380	14,40	111011 0380	21,60	111012 0380	22,70
3.9	75	43	0.07	111010 0390	14,40	111011 0390	21,60	111012 0390	22,70
4	75	43	0.07	111010 0400	14,40	111011 0400	21,60	111012 0400	22,70
4.1	75	43	0.07	111010 0410	14,40	111011 0410	21,60	111012 0410	22,70
4.2	75	43	0.07	111010 0420	14,40	111011 0420	21,60	111012 0420	22,70
4.3	80	47	0.07	111010 0430	18,90	111011 0430	28,60	111012 0430	25,40
4.4	80	47	0.07	111010 0440	18,90	111011 0440	28,60	111012 0440	25,40
4.5	80	47	0.07	111010 0450	18,90	111011 0450	28,60	111012 0450	25,40
4.6	80	47	0.07	111010 0460	20,40	111011 0460	30,60	111012 0460	26,70
4.7	80	47	0.07	111010 0470	20,40	111011 0470	30,60	111012 0470	26,70
4.8	86	52	0.07	111010 0480	20,40	111011 0480	30,60	111012 0480	26,70
4.9	86	52	0.07	111010 0490	20,40	111011 0490	30,60	111012 0490	26,70
5	86	52	0.07	111010 0500	20,40	111011 0500	30,60	111012 0500	26,70
5.1	86	52	0.10	111010 0510	23,–	111011 0510	40,70	111012 0510	34,–
5.2	86	52	0.10	111010 0520	23,–	111011 0520	40,70	111012 0520	34,–
5.3	86	52	0.10	111010 0530	23,–	111011 0530	40,70	111012 0530	34,–
5.4	93	57	0.10	111010 0540	27,30	111011 0540	40,70	111012 0540	37,10
5.5	93	57	0.10	111010 0550	27,30	111011 0550	40,70	111012 0550	37,10
5.6	93	57	0.10	111010 0560	27,30	111011 0560	40,70	111012 0560	37,10
5.7	93	57	0.10	111010 0570	27,30	111011 0570	40,70	111012 0570	37,10
5.8	93	57	0.10	111010 0580	27,30	111011 0580	40,70	111012 0580	37,10
5.9	93	57	0.10	111010 0590	27,30	111011 0590	40,70	111012 0590	37,10
6	93	57	0.10	111010 0600	27,30	111011 0600	40,70	111012 0600	37,10
6.1	101	63	0.10	111010 0610	32,80	111011 0610	49,30	111012 0610	44,40
6.2	101	63	0.10	111010 0620	32,80	111011 0620	49,30	111012 0620	44,40
6.3	101	63	0.10	111010 0630	32,80	111011 0630	49,30	111012 0630	44,40
6.4	101	63	0.10	111010 0640	32,80	111011 0640	49,30	111012 0640	44,40
6.5	101	63	0.10	111010 0650	32,80	111011 0650	49,30	111012 0650	44,40
6.6	101	63	0.10	111010 0660	38,30	111011 0660	58,50	111012 0660	52,–
6.7	101	63	0.10	111010 0670	38,30	111011 0670	58,50	111012 0670	52,–
6.8	109	69	0.10	111010 0680	38,30	111011 0680	58,50	111012 0680	52,–
6.9	109	69	0.10	111010 0690	38,30	111011 0690	58,50	111012 0690	52,–
7	109	69	0.10	111010 0700	38,30	111011 0700	58,50	111012 0700	52,–
7.1	109	69	0.10	111010 0710	40,10	111011 0710	61,–	111012 0710	56,–
7.2	109	69	0.10	111010 0720	40,10	111011 0720	61,–	111012 0720	56,–
7.3	109	69	0.10	111010 0730	40,10	111011 0730	61,–	111012 0730	56,–
7.4	109	69	0.10	111010 0740	40,10	111011 0740	61,–	111012 0740	56,–
7.5	109	69	0.10	111010 0750	40,10	111011 0750	61,–	111012 0750	56,–
7.6	117	75	0.10	111010 0760	44,80	111011 0760	68,50	111012 0760	59,50
7.7	117	75	0.10	111010 0770	44,80	111011 0770	68,50	111012 0770	59,50
7.8	117	75	0.10	111010 0780	44,80	111011 0780	68,50	111012 0780	59,50
7.9	117	75	0.10	111010 0790	44,80	111011 0790	68,50	111012 0790	59,50
8	117	75	0.10	111010 0800	44,80	111011 0800	68,50	111012 0800	59,50
8.1	117	75	0.14	111010 0810	52,50	111011 0810	79,50	111012 0810	72,–
8.2	117	75	0.14	111010 0820	52,50	111011 0820	79,50	111012 0820	72,–
8.3	117	75	0.14	111010 0830	52,50	111011 0830	79,50	111012 0830	72,–
				1154		1154		1154	

D h7 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€	TiN art.no.	€	TiAlN art.no.	€
8.4	117	75	0.14	111010 0840	52,50	111011 0840	79,50	111012 0840	72,–
8.5	117	75	0.14	111010 0850	52,50	111011 0850	79,50	111012 0850	72,–
8.6	125	81	0.14	111010 0860	56,50	111011 0860	87,–	111012 0860	83,50
8.7	125	81	0.14	111010 0870	56,50	111011 0870	87,–	111012 0870	83,50
8.8	125	81	0.14	111010 0880	56,50	111011 0880	87,–	111012 0880	83,50
8.9	125	81	0.14	111010 0890	56,50	111011 0890	87,–	111012 0890	83,50
9	125	81	0.14	111010 0900	56,50	111011 0900	87,–	111012 0900	83,50
9.1	125	81	0.14	111010 0910	66,50	111011 0910	101,–	111012 0910	93,–
9.2	125	81	0.14	111010 0920	66,50	111011 0920	101,–	111012 0920	93,–
9.3	125	81	0.14	111010 0930	66,50	111011 0930	101,–	111012 0930	93,–
9.4	125	81	0.14	111010 0940	66,50	111011 0940	101,–	111012 0940	93,–
9.5	125	81	0.14	111010 0950	66,50	111011 0950	101,–	111012 0950	93,–
9.6	133	87	0.14	111010 0960	66,50	111011 0960	101,–	111012 0960	93,–
9.7	133	87	0.14	111010 0970	66,50	111011 0970	101,–	111012 0970	93,–
9.8	133	87	0.14	111010 0980	66,50	111011 0980	101,–	111012 0980	93,–
9.9	133	87	0.14	111010 0990	66,50	111011 0990	101,–	111012 0990	93,–
10	133	87	0.14	111010 1000	66,50	111011 1000	101,–	111012 1000	93,–
10.2	133	87	0.14	111010 1020	80,50	111011 1020	122,–	111012 1020	104,–
10.5	133	87	0.14	111010 1050	80,50	111011 1050	122,–	111012 1050	104,–
11	142	94	0.14	111010 1100	99,–	111011 1100	151,–	111012 1100	139,–
11.5	142	94	0.14	111010 1150	116,–	111011 1150	166,–	111012 1150	148,–
12	151	101	0.14	111010 1200	116,–	111011 1200	170,–	111012 1200	163,–
13	151	101	0.18	111010 1300	140,–	111011 1300	194,–	111012 1300	189,–
				1154		1154		1154	

ATORN® TiAlNplus HPC 5D solid carbide high-performance drill bit without internal cooling

VHM | DIN 6537 | Typ U | 140° | 30° | 5xD | DIN 6535 HA | DIN 6535 HB | TiAlN plus | Vc/fz

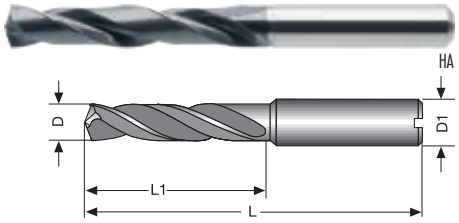
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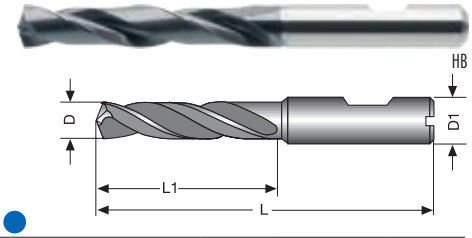
- Optimised shank diameter tolerance for use as a holding fixture in power chucks and hydraulic expansion chucks
- **Cutting material: Solid carbide ultra-fine grain TiAlNplus**
- Efficient drilling in different materials
- Newly developed geometry in conjunction with a customised multilayer coating for enhanced performance
- Special cutting edge finishing reduces micro-nicks and increases service life
- **Without internal cooling**

material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
●	●	●	●	●	○	●	●	●	●	○	○	●	○		●	○	○
110-145	85-110	55-85	40	45	30	125-155	120	35-40	30	25	260	180	125		40-55	25-35	25

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

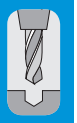




D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	HA art.no.	€	HB art.no.	€
1	4	55	8	0.03	**111566** 0100	57,–		
1.1	4	55	12	0.03	111566 0110	57,–		
1.2	4	55	12	0.03	111566 0120	57,–		
1.3	4	55	12	0.03	111566 0130	57,–		
1.4	4	55	12	0.04	111566 0140	57,–		
1.5	4	55	12	0.04	111566 0150	57,–		
1.6	4	55	16	0.04	111566 0160	57,–		
1.7	4	55	16	0.04	111566 0170	57,–		
1.8	4	55	16	0.05	111566 0180	57,–		
1.9	4	55	16	0.05	111566 0190	57,–		
2	4	57	21	0.05	111566 0200	57,–		
					1111		1111	

D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	HA art.no.	€	HB art.no.	€
2.05	4	57	21	0.05	111566 0205	59,–		
2.1	4	57	21	0.05	111566 0210	59,–		
2.2	4	57	21	0.06	111566 0220	59,–		
2.3	4	57	21	0.06	111566 0230	59,–		
2.4	4	57	21	0.06	111566 0240	59,–		
2.5	4	57	21	0.06	111566 0250	59,–		
3	6	66	28	0.08	111566 0300	59,–	**111567** 0300	59,–
3.1	6	66	28	0.08	111566 0310	61,–	111567 0310	61,–
3.2	6	66	28	0.08	111566 0320	61,–	111567 0320	61,–
3.25	6	66	28	0.08	111566 0325	61,–	111567 0325	61,–
3.3	6	66	28	0.08	111566 0330	61,–	111567 0330	61,–
					1111		1111	

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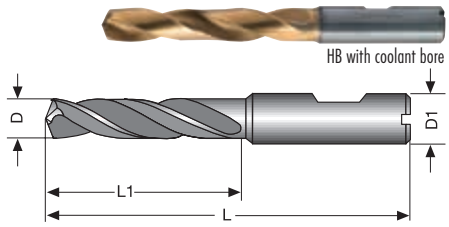
D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	HA art.no.	HA €	HB art.no.	HB €
3.4	6	66	28	0.09	111566 0340	61,–	111567 0340	61,–
3.5	6	66	28	0.09	111566 0350	61,–	111567 0350	61,–
3.6	6	66	28	0.09	111566 0360	61,–	111567 0360	61,–
3.7	6	66	28	0.09	111566 0370	61,–	111567 0370	61,–
3.8	6	74	36	0.10	111566 0380	61,–	111567 0380	61,–
3.9	6	74	36	0.10	111566 0390	61,–	111567 0390	61,–
4	6	74	36	0.10	111566 0400	61,–	111567 0400	61,–
4.1	6	74	36	0.10	111566 0410	61,–	111567 0410	61,–
4.2	6	74	36	0.11	111566 0420	61,–	111567 0420	61,–
4.3	6	74	36	0.11	111566 0430	61,–	111567 0430	61,–
4.4	6	74	36	0.11	111566 0440	61,–	111567 0440	61,–
4.5	6	74	36	0.11	111566 0450	61,–	111567 0450	61,–
4.6	6	74	36	0.12	111566 0460	61,–	111567 0460	61,–
4.65	6	74	36	0.12	111566 0465	61,–	111567 0465	61,–
4.7	6	74	36	0.12	111566 0470	61,–	111567 0470	61,–
4.8	6	82	44	0.12	111566 0480	61,–	111567 0480	61,–
4.9	6	82	44	0.12	111566 0490	61,–	111567 0490	61,–
5	6	82	44	0.13	111566 0500	61,–	111567 0500	61,–
5.1	6	82	44	0.13	111566 0510	62,–	111567 0510	62,–
5.2	6	82	44	0.13	111566 0520	62,–	111567 0520	62,–
5.3	6	82	44	0.13	111566 0530	62,–	111567 0530	62,–
5.4	6	82	44	0.14	111566 0540	62,–	111567 0540	62,–
5.5	6	82	44	0.14	111566 0550	62,–	111567 0550	62,–
5.55	6	82	44	0.14	111566 0555	62,–	111567 0555	62,–
5.6	6	82	44	0.14	111566 0560	62,–	111567 0560	62,–
5.65	6	82	44	0.14	111566 0565	62,–	111567 0565	62,–
5.7	6	82	44	0.14	111566 0570	62,–	111567 0570	62,–
5.8	6	82	44	0.15	111566 0580	62,–	111567 0580	62,–
5.9	6	82	44	0.15	111566 0590	62,–	111567 0590	62,–
6	6	82	44	0.15	111566 0600	62,–	111567 0600	62,–
6.1	8	91	53	0.15	111566 0610	67,–	111567 0610	67,–
6.2	8	91	53	0.16	111566 0620	67,–	111567 0620	67,–
6.3	8	91	53	0.16	111566 0630	67,–	111567 0630	67,–
6.4	8	91	53	0.16	111566 0640	67,–	111567 0640	67,–
6.5	8	91	53	0.16	111566 0650	67,–	111567 0650	67,–
6.6	8	91	53	0.17	111566 0660	67,–	111567 0660	67,–
6.7	8	91	53	0.17	111566 0670	67,–	111567 0670	67,–
6.8	8	91	53	0.17	111566 0680	67,–	111567 0680	67,–
6.9	8	91	53	0.17	111566 0690	67,–	111567 0690	67,–
7	8	91	53	0.18	111566 0700	67,–	111567 0700	67,–
7.1	8	91	53	0.18	111566 0710	69,–	111567 0710	69,–
7.2	8	91	53	0.18	111566 0720	69,–	111567 0720	69,–
7.3	8	91	53	0.18	111566 0730	69,–	111567 0730	69,–
7.4	8	91	53	0.19	111566 0740	69,–	111567 0740	69,–
7.5	8	91	53	0.19	111566 0750	69,–	111567 0750	69,–
7.55	8	91	53	0.19	111566 0755	69,–	111567 0755	69,–
7.6	8	91	53	0.19	111566 0760	69,–	111567 0760	69,–
7.65	8	91	53	0.19	111566 0765	69,–	111567 0765	69,–
7.7	8	91	53	0.19	111566 0770	69,–	111567 0770	69,–
7.8	8	91	53	0.20	111566 0780	69,–	111567 0780	69,–
7.9	8	91	53	0.20	111566 0790	69,–	111567 0790	69,–
8	8	91	53	0.20	111566 0800	69,–	111567 0800	69,–
8.1	10	103	61	0.20	111566 0810	79,–	111567 0810	79,–
8.2	10	103	61	0.21	111566 0820	79,–	111567 0820	79,–
8.3	10	103	61	0.21	111566 0830	79,–	111567 0830	79,–
8.4	10	103	61	0.21	111566 0840	79,–	111567 0840	79,–
8.5	10	103	61	0.21	111566 0850	79,–	111567 0850	79,–
8.6	10	103	61	0.22	111566 0860	79,–	111567 0860	79,–
8.7	10	103	61	0.22	111566 0870	79,–	111567 0870	79,–
8.8	10	103	61	0.22	111566 0880	79,–	111567 0880	79,–
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D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	HA art.no.	HA €	HB art.no.	HB €
8.9	10	103	61	0.22	111566 0890	79,–	111567 0890	79,–
9	10	103	61	0.23	111566 0900	79,–	111567 0900	79,–
9.1	10	103	61	0.23	111566 0910	80,–	111567 0910	80,–
9.2	10	103	61	0.23	111566 0920	80,–	111567 0920	80,–
9.3	10	103	61	0.23	111566 0930	80,–	111567 0930	80,–
9.4	10	103	61	0.24	111566 0940	80,–	111567 0940	80,–
9.5	10	103	61	0.24	111566 0950	80,–	111567 0950	80,–
9.6	10	103	61	0.24	111566 0960	80,–	111567 0960	80,–
9.7	10	103	61	0.24	111566 0970	80,–	111567 0970	80,–
9.8	10	103	61	0.25	111566 0980	80,–	111567 0980	80,–
9.9	10	103	61	0.25	111566 0990	80,–	111567 0990	80,–
10	10	103	61	0.25	111566 1000	80,–	111567 1000	80,–
10.1	12	118	71	0.25	111566 1010	112,–	111567 1010	112,–
10.2	12	118	71	0.26	111566 1020	112,–	111567 1020	112,–
10.3	12	118	71	0.26	111566 1030	112,–	111567 1030	112,–
10.4	12	118	71	0.26	111566 1040	112,–	111567 1040	112,–
10.5	12	118	71	0.26	111566 1050	112,–	111567 1050	112,–
10.6	12	118	71	0.27	111566 1060	112,–	111567 1060	112,–
10.7	12	118	71	0.27	111566 1070	112,–	111567 1070	112,–
10.8	12	118	71	0.27	111566 1080	112,–	111567 1080	112,–
10.9	12	118	71	0.27	111566 1090	112,–	111567 1090	112,–
11	12	118	71	0.28	111566 1100	112,–	111567 1100	112,–
11.1	12	118	71	0.28	111566 1110	114,–	111567 1110	114,–
11.2	12	118	71	0.28	111566 1120	114,–	111567 1120	114,–
11.3	12	118	71	0.28	111566 1130	114,–	111567 1130	114,–
11.4	12	118	71	0.29	111566 1140	114,–	111567 1140	114,–
11.5	12	118	71	0.29	111566 1150	114,–	111567 1150	114,–
11.6	12	118	71	0.29	111566 1160	114,–	111567 1160	114,–
11.7	12	118	71	0.29	111566 1170	114,–	111567 1170	114,–
11.8	12	118	71	0.30	111566 1180	114,–	111567 1180	114,–
11.9	12	118	71	0.30	111566 1190	114,–	111567 1190	114,–
12	12	118	71	0.30	111566 1200	114,–	111567 1200	114,–
12.1	14	124	77	0.30	111566 1210	146,–	111567 1210	146,–
12.2	14	124	77	0.31	111566 1220	146,–	111567 1220	146,–
12.5	14	124	77	0.31	111566 1250	146,–	111567 1250	146,–
12.8	14	124	77	0.32	111566 1280	146,–	111567 1280	146,–
13	14	124	77	0.33	111566 1300	146,–	111567 1300	146,–
13.2	14	124	77	0.33	111566 1320	149,–	111567 1320	149,–
13.5	14	124	77	0.34	111566 1350	149,–	111567 1350	149,–
13.8	14	124	77	0.35	111566 1380	149,–	111567 1380	149,–
14	14	124	77	0.35	111566 1400	149,–	111567 1400	149,–
14.2	16	133	83	0.36	111566 1420	178,–	111567 1420	178,–
14.4	16	133	83	0.36	111566 1440	178,–	111567 1440	178,–
14.5	16	133	83	0.36	111566 1450	178,–	111567 1450	178,–
14.8	16	133	83	0.37	111566 1480	178,–	111567 1480	178,–
15	16	133	83	0.38	111566 1500	178,–	111567 1500	178,–
15.2	16	133	83	0.38	111566 1520	178,–	111567 1520	178,–
15.5	16	133	83	0.39	111566 1550	178,–	111567 1550	178,–
15.8	16	133	83	0.40	111566 1580	178,–	111567 1580	178,–
16	16	133	83	0.40	111566 1600	178,–	111567 1600	178,–
16.5	18	143	93	0.41	111566 1650	314,–	111567 1650	314,–
17	18	143	93	0.43	111566 1700	314,–	111567 1700	314,–
17.5	18	143	93	0.44	111566 1750	314,–	111567 1750	314,–
18	18	143	93	0.45	111566 1800	314,–	111567 1800	314,–
18.5	20	153	101	0.46	111566 1850	314,–	111567 1850	314,–
18.9	20	153	101	0.47	111566 1890	314,–	111567 1890	314,–
19	20	153	101	0.48	111566 1900	314,–	111567 1900	314,–
19.5	20	153	101	0.49	111566 1950	314,–	111567 1950	314,–
20	20	153	101	0.50	111566 2000	314,–	111567 2000	314,–
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SARA® TiNplus HPC 5D solid carbide high-performance drill bit with internal cooling

VHM | DIN 6537 | Typ U | 140° | 30° | 5xD | DIN 6535 HA | DIN 6535 HB | TiN plus | Vc/fz | 361

- Newly developed geometry with reinforced core and special point thinning
- **Solid carbide ultra-fine grain cutting material TiNplus** (TiAlN+TiN)
- Modern multi-layer hard coating for maximum service life and optimum chip transport
- High centring accuracy
- **For universal applications**
- Optimised shank diameter tolerance for use as a holding fixture in power chucks and hydraulic expansion chucks
- **With internal cooling**
- Shank designs up to Ø 2.9 mm HA, from Ø 3.0 mm HB



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 110-150	● 75-110	● 60-95	● 40	● 50	○ 40	● 145	● 110	● 36-40	● 36	○ 32	● 230-280	● 200	● 110		● 50	○ 32	
	Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									

● steel < 1000 N/mm²

D m7 mm	D1 h6 mm	L mm	L1 mm	Feed f mm/rev	art.no.	€
1	3	55	10	0.03	**111512** 0010	48,40
1.1	3	55	12	0.03	111512 0011	48,40
1.2	3	55	12	0.03	111512 0012	48,40
1.3	3	55	12	0.03	111512 0013	48,40
1.4	3	55	12	0.04	111512 0014	48,40
1.5	3	55	12	0.04	111512 0015	48,40
1.6	3	55	16	0.04	111512 0016	48,40
1.7	3	55	16	0.04	111512 0017	48,40
1.8	3	55	16	0.05	111512 0018	48,40
1.9	3	55	16	0.05	111512 0019	48,40
2	3	57	16	0.05	111512 0020	48,40
2.1	3	57	21	0.05	111512 0021	48,40
2.2	3	57	21	0.06	111512 0022	48,40
2.3	3	57	21	0.06	111512 0023	48,40
2.4	3	57	21	0.06	111512 0024	48,40
2.5	3	57	21	0.06	111512 0025	48,40
2.6	3	57	21	0.07	111512 0026	48,40
2.7	3	57	21	0.07	111512 0027	48,40
2.8	3	57	21	0.07	111512 0028	48,40
2.9	3	57	21	0.07	111512 0029	48,40
3	6	66	28	0.11	111512 0030	44,30
3.1	6	66	28	0.11	111512 0031	44,30
3.2	6	66	28	0.11	111512 0032	44,30
3.25	6	66	28	0.11	111512 0325	44,30
3.3	6	66	28	0.11	111512 0033	44,30
3.4	6	66	28	0.11	111512 0034	44,30
3.5	6	66	28	0.16	111512 0035	44,30
3.6	6	66	28	0.16	111512 0036	44,30
3.7	6	66	28	0.16	111512 0037	44,30
3.8	6	74	36	0.16	111512 0038	44,30
3.9	6	74	36	0.16	111512 0039	44,30
4	6	74	36	0.16	111512 0040	44,30
4.1	6	74	36	0.16	111512 0041	44,30
4.2	6	74	36	0.16	111512 0042	44,30
4.3	6	74	36	0.16	111512 0043	44,30
4.4	6	74	36	0.16	111512 0044	44,30
4.5	6	74	36	0.16	111512 0045	44,30
4.6	6	74	36	0.16	111512 0046	44,30
4.65	6	74	36	0.16	111512 0465	44,30
4.7	6	74	36	0.16	111512 0047	44,30
4.8	6	82	44	0.16	111512 0048	44,30
4.9	6	82	44	0.16	111512 0049	44,30

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● steel < 1000 N/mm²

D m7 mm	D1 h6 mm	L mm	L1 mm	Feed f mm/rev	art.no.	€
5	6	82	44	0.16	111512 0050	44,30
5.1	6	82	44	0.16	111512 0051	44,30
5.2	6	82	44	0.16	111512 0052	44,30
5.3	6	82	44	0.16	111512 0053	44,30
5.4	6	82	44	0.16	111512 0054	44,30
5.5	6	82	44	0.20	111512 0055	44,30
5.55	6	82	44	0.20	111512 0555	44,30
5.6	6	82	44	0.20	111512 0056	44,30
5.7	6	82	44	0.20	111512 0057	44,30
5.8	6	82	44	0.20	111512 0058	44,30
5.9	6	82	44	0.20	111512 0059	44,30
6	6	82	44	0.20	111512 0060	44,30
6.1	8	91	53	0.20	111512 0061	51,–
6.2	8	91	53	0.20	111512 0062	51,–
6.3	8	91	53	0.20	111512 0063	51,–
6.4	8	91	53	0.20	111512 0064	51,–
6.5	8	91	53	0.20	111512 0065	51,–
6.6	8	91	53	0.20	111512 0066	51,–
6.7	8	91	53	0.20	111512 0067	51,–
6.8	8	91	53	0.20	111512 0068	51,–
6.9	8	91	53	0.20	111512 0069	51,–
7	8	91	53	0.20	111512 0070	51,–
7.1	8	91	53	0.25	111512 0071	51,–
7.2	8	91	53	0.25	111512 0072	51,–
7.3	8	91	53	0.25	111512 0073	51,–
7.4	8	91	53	0.25	111512 0074	51,–
7.5	8	91	53	0.25	111512 0075	51,–
7.6	8	91	53	0.25	111512 0076	51,–
7.7	8	91	53	0.25	111512 0077	51,–
7.8	8	91	53	0.25	111512 0078	51,–
7.9	8	91	53	0.25	111512 0079	51,–
8	8	91	53	0.25	111512 0080	51,–
8.1	10	103	61	0.25	111512 0081	57,40
8.2	10	103	61	0.25	111512 0082	57,40
8.3	10	103	61	0.25	111512 0083	57,40
8.4	10	103	61	0.25	111512 0084	57,40
8.5	10	103	61	0.25	111512 0085	57,40
8.6	10	103	61	0.25	111512 0086	57,40
8.7	10	103	61	0.25	111512 0087	57,40
8.8	10	103	61	0.25	111512 0088	57,40
8.9	10	103	61	0.25	111512 0089	57,40
9	10	103	61	0.25	111512 0090	57,40

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Continued on next page >>>

D m7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
9.1	10	103	61	0.32	111512 0091	57,40
9.2	10	103	61	0.32	111512 0092	57,40
9.3	10	103	61	0.32	111512 0093	57,40
9.4	10	103	61	0.32	111512 0094	57,40
9.5	10	103	61	0.32	111512 0095	57,40
9.6	10	103	61	0.32	111512 0096	57,40
9.7	10	103	61	0.32	111512 0097	57,40
9.8	10	103	61	0.32	111512 0098	57,40
9.9	10	103	61	0.32	111512 0099	57,40
10	10	103	61	0.32	111512 0100	57,40
10.1	12	118	71	0.32	111512 0101	80,60
10.2	12	118	71	0.32	111512 0102	80,60
10.3	12	118	71	0.32	111512 0103	80,60
10.4	12	118	71	0.32	111512 0104	80,60
10.5	12	118	71	0.32	111512 0105	80,60
10.8	12	118	71	0.32	111512 0108	80,60
11	12	118	71	0.32	111512 0110	80,60
11.1	12	118	71	0.32	111512 0111	80,60
11.2	12	118	71	0.32	111512 0112	80,60
11.3	12	118	71	0.32	111512 0113	80,60
11.5	12	118	71	0.32	111512 0115	80,60
11.8	12	118	71	0.32	111512 0118	80,60
12	12	118	71	0.32	111512 0120	80,60
12.2	14	124	77	0.32	111512 0122	80,60

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D m7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
12.5	14	124	77	0.32	111512 0125	110,–
12.8	14	124	77	0.32	111512 0128	110,–
13	14	124	77	0.32	111512 0130	110,–
13.5	14	124	77	0.32	111512 0135	110,–
13.8	14	124	77	0.32	111512 0138	110,–
13.9	14	124	77	0.32	111512 0139	110,–
14	14	124	77	0.32	111512 0140	110,–
14.2	16	133	83	0.32	111512 0142	141,50
14.5	16	133	83	0.32	111512 0145	141,50
14.8	16	133	83	0.32	111512 0148	141,50
15	16	133	83	0.32	111512 0150	141,50
15.2	16	133	83	0.40	111512 0152	141,50
15.5	16	133	83	0.40	111512 0155	141,50
15.7	16	133	83	0.40	111512 0157	141,50
15.8	16	133	83	0.40	111512 0158	141,50
16	16	133	83	0.40	111512 0160	141,50
16.5	18	143	93	0.40	111512 0165	221,–
17	18	143	93	0.40	111512 0170	221,–
17.5	18	143	93	0.40	111512 0175	221,–
18	18	143	93	0.40	111512 0180	221,–
18.5	20	153	101	0.50	111512 0185	241,–
19	20	153	101	0.50	111512 0190	241,–
19.5	20	153	101	0.50	111512 0195	241,–
20	20	153	101	0.50	111512 0200	241,–

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ATORN® TiAlNplus HPC 5D solid carbide high-performance drill bit with internal cooling

VHM | DIN 6537 | Typ U | 140° | 30° | 5xD | DIN 6535 HA | DIN 6535 HB | TiAlN plus | Vc/fz

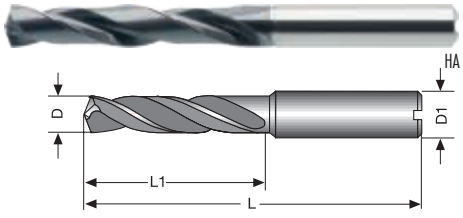
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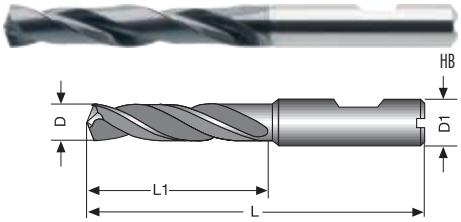
- Optimised shank diameter tolerance for use as a holding fixture in power chucks and hydraulic expansion chucks
- **Cutting material: Solid carbide ultra-fine grain TiAlNplus**
- Efficient drilling in different materials
- Newly developed geometry in conjunction with a customised multilayer coating for enhanced performance
- Special cutting edge finishing reduces micro-nicks and increases service life
- **With internal cooling**

material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
120-170	85-120	65-105	45	55	44	160	120	40-45	40	35	260-310	220	125		55	35	30

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.





D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	HA art.no.	€	HB art.no.	€
1	4	55	8	0.03	**111568** 0100	72,–		
1.1	4	55	12	0.03	111568 0110	72,–		
1.2	4	55	12	0.03	111568 0120	72,–		
1.3	4	55	12	0.03	111568 0130	72,–		
1.4	4	55	12	0.04	111568 0140	72,–		
1.5	4	55	12	0.04	111568 0150	72,–		
1.6	4	55	16	0.04	111568 0160	72,–		
1.7	4	55	16	0.04	111568 0170	72,–		
1.8	4	55	16	0.05	111568 0180	72,–		
1.9	4	55	16	0.05	111568 0190	72,–		

1111 1111

D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	HA art.no.	€	HB art.no.	€
2.0	4	57	21	0.05	111568 0200	72,–		
2.1	4	57	21	0.05	111568 0210	72,–		
2.2	4	57	21	0.06	111568 0220	72,–		
2.3	4	57	21	0.06	111568 0230	72,–		
2.4	4	57	21	0.06	111568 0240	72,–		
2.5	4	57	21	0.06	111568 0250	72,–		
2.6	4	57	21	0.07	111568 0260	72,–		
2.7	4	57	21	0.07	111568 0270	72,–		
2.8	4	57	21	0.07	111568 0280	72,–		
2.9	4	57	21	0.07	111568 0290	72,–		

1111 1111

D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	HA art.no.	€	HB art.no.	€
3	6	66	28	0.08	111568 0300	72,–	**111569** 0300	72,–
3.1	6	66	28	0.08	111568 0310	72,–	111569 0310	72,–
3.2	6	66	28	0.08	111568 0320	72,–	111569 0320	72,–
3.25	6	66	28	0.08	111568 0325	72,–	111569 0325	72,–
3.3	6	66	28	0.08	111568 0330	72,–	111569 0330	72,–
3.4	6	66	28	0.09	111568 0340	72,–	111569 0340	72,–
3.5	6	66	28	0.09	111568 0350	72,–	111569 0350	72,–
3.6	6	66	28	0.09	111568 0360	72,–	111569 0360	72,–
3.7	6	66	28	0.09	111568 0370	72,–	111569 0370	72,–
3.8	6	74	36	0.10	111568 0380	72,–	111569 0380	72,–
3.85	6	74	36	0.10	111568 0385	72,–	111569 0385	72,–
3.9	6	74	36	0.10	111568 0390	72,–	111569 0390	72,–
4	6	74	36	0.10	111568 0400	72,–	111569 0400	72,–
4.1	6	74	36	0.10	111568 0410	73,–	111569 0410	73,–
4.2	6	74	36	0.11	111568 0420	73,–	111569 0420	73,–
4.3	6	74	36	0.11	111568 0430	73,–	111569 0430	73,–
4.4	6	74	36	0.11	111568 0440	73,–	111569 0440	73,–
4.5	6	74	36	0.11	111568 0450	73,–	111569 0450	73,–
4.6	6	74	36	0.12	111568 0460	73,–	111569 0460	73,–
4.65	6	74	36	0.12	111568 0465	73,–	111569 0465	73,–
4.7	6	74	36	0.12	111568 0470	73,–	111569 0470	73,–
4.8	6	82	44	0.12	111568 0480	73,–	111569 0480	73,–
4.9	6	82	44	0.12	111568 0490	73,–	111569 0490	73,–
5	6	82	44	0.13	111568 0500	73,–	111569 0500	73,–
5.1	6	82	44	0.13	111568 0510	73,–	111569 0510	73,–
5.2	6	82	44	0.13	111568 0520	73,–	111569 0520	73,–
5.3	6	82	44	0.13	111568 0530	73,–	111569 0530	73,–
5.4	6	82	44	0.14	111568 0540	73,–	111569 0540	73,–
5.5	6	82	44	0.14	111568 0550	73,–	111569 0550	73,–
5.55	6	82	44	0.14	111568 0555	73,–	111569 0555	73,–
5.6	6	82	44	0.14	111568 0560	73,–	111569 0560	73,–
5.65	6	82	44	0.14	111568 0565	73,–	111569 0565	73,–
5.7	6	82	44	0.14	111568 0570	73,–	111569 0570	73,–
5.8	6	82	44	0.15	111568 0580	73,–	111569 0580	73,–
5.9	6	82	44	0.15	111568 0590	73,–	111569 0590	73,–
6	6	82	44	0.15	111568 0600	73,–	111569 0600	73,–
6.1	8	91	53	0.15	111568 0610	81,–	111569 0610	81,–
6.2	8	91	53	0.16	111568 0620	81,–	111569 0620	81,–
6.3	8	91	53	0.16	111568 0630	81,–	111569 0630	81,–
6.4	8	91	53	0.16	111568 0640	81,–	111569 0640	81,–
6.5	8	91	53	0.16	111568 0650	81,–	111569 0650	81,–
6.6	8	91	53	0.17	111568 0660	81,–	111569 0660	81,–
6.7	8	91	53	0.17	111568 0670	81,–	111569 0670	81,–
6.8	8	91	53	0.17	111568 0680	81,–	111569 0680	81,–
6.9	8	91	53	0.17	111568 0690	81,–	111569 0690	81,–
7	8	91	53	0.18	111568 0700	81,–	111569 0700	81,–
7.1	8	91	53	0.18	111568 0710	81,–	111569 0710	81,–
7.2	8	91	53	0.18	111568 0720	81,–	111569 0720	81,–
7.3	8	91	53	0.18	111568 0730	81,–	111569 0730	81,–
7.4	8	91	53	0.19	111568 0740	81,–	111569 0740	81,–
7.5	8	91	53	0.19	111568 0750	81,–	111569 0750	81,–
7.55	8	91	53	0.19	111568 0755	81,–	111569 0755	81,–
7.6	8	91	53	0.19	111568 0760	81,–	111569 0760	81,–
7.65	8	91	53	0.19	111568 0765	81,–	111569 0765	81,–
7.7	8	91	53	0.19	111568 0770	81,–	111569 0770	81,–
7.8	8	91	53	0.20	111568 0780	81,–	111569 0780	81,–
7.9	8	91	53	0.20	111568 0790	81,–	111569 0790	81,–
8	8	91	53	0.20	111568 0800	81,–	111569 0800	81,–
8.1	10	103	61	0.20	111568 0810	95,–	111569 0810	95,–
					1111		1111	

D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	HA art.no.	€	HB art.no.	€
8.2	10	103	61	0.21	111568 0820	95,–	111569 0820	95,–
8.3	10	103	61	0.21	111568 0830	95,–	111569 0830	95,–
8.4	10	103	61	0.21	111568 0840	95,–	111569 0840	95,–
8.5	10	103	61	0.21	111568 0850	95,–	111569 0850	95,–
8.6	10	103	61	0.22	111568 0860	95,–	111569 0860	95,–
8.7	10	103	61	0.22	111568 0870	95,–	111569 0870	95,–
8.8	10	103	61	0.22	111568 0880	95,–	111569 0880	95,–
8.9	10	103	61	0.22	111568 0890	95,–	111569 0890	95,–
9	10	103	61	0.23	111568 0900	95,–	111569 0900	95,–
9.1	10	103	61	0.23	111568 0910	95,–	111569 0910	95,–
9.2	10	103	61	0.23	111568 0920	95,–	111569 0920	95,–
9.3	10	103	61	0.23	111568 0930	95,–	111569 0930	95,–
9.4	10	103	61	0.24	111568 0940	95,–	111569 0940	95,–
9.5	10	103	61	0.24	111568 0950	95,–	111569 0950	95,–
9.55	10	103	61	0.24	111568 0955	95,–	111569 0955	95,–
9.6	10	103	61	0.24	111568 0960	95,–	111569 0960	95,–
9.7	10	103	61	0.24	111568 0970	95,–	111569 0970	95,–
9.8	10	103	61	0.25	111568 0980	95,–	111569 0980	95,–
9.9	10	103	61	0.25	111568 0990	95,–	111569 0990	95,–
10	10	103	61	0.25	111568 1000	95,–	111569 1000	95,–
10.1	12	118	71	0.25	111568 1010	134,–	111569 1010	134,–
10.2	12	118	71	0.26	111568 1020	134,–	111569 1020	134,–
10.3	12	118	71	0.26	111568 1030	134,–	111569 1030	134,–
10.4	12	118	71	0.26	111568 1040	134,–	111569 1040	134,–
10.5	12	118	71	0.26	111568 1050	134,–	111569 1050	134,–
10.6	12	118	71	0.27	111568 1060	134,–	111569 1060	134,–
10.7	12	118	71	0.27	111568 1070	134,–	111569 1070	134,–
10.8	12	118	71	0.27	111568 1080	134,–	111569 1080	134,–
10.9	12	118	71	0.27	111568 1090	134,–	111569 1090	134,–
11	12	118	71	0.28	111568 1100	134,–	111569 1100	134,–
11.1	12	118	71	0.28	111568 1110	134,–	111569 1110	134,–
11.2	12	118	71	0.28	111568 1120	134,–	111569 1120	134,–
11.3	12	118	71	0.28	111568 1130	134,–	111569 1130	134,–
11.4	12	118	71	0.29	111568 1140	134,–	111569 1140	134,–
11.5	12	118	71	0.29	111568 1150	134,–	111569 1150	134,–
11.6	12	118	71	0.29	111568 1160	134,–	111569 1160	134,–
11.7	12	118	71	0.29	111568 1170	134,–	111569 1170	134,–
11.8	12	118	71	0.30	111568 1180	134,–	111569 1180	134,–
11.9	12	118	71	0.30	111568 1190	134,–	111569 1190	134,–
12	12	118	71	0.30	111568 1200	134,–	111569 1200	134,–
12.1	14	124	77	0.30	111568 1210	180,–	111569 1210	180,–
12.2	14	124	77	0.31	111568 1220	180,–	111569 1220	180,–
12.4	14	124	77	0.31	111568 1240	180,–	111569 1240	180,–
12.5	14	124	77	0.31	111568 1250	180,–	111569 1250	180,–
12.6	14	124	77	0.32	111568 1260	180,–	111569 1260	180,–
12.8	14	124	77	0.32	111568 1280	180,–	111569 1280	180,–
13	14	124	77	0.33	111568 1300	180,–	111569 1300	180,–
13.1	14	124	77	0.33	111568 1310	180,–	111569 1310	180,–
13.2	14	124	77	0.33	111568 1320	180,–	111569 1320	180,–
13.3	14	124	77	0.33	111568 1330	180,–	111569 1330	180,–
13.5	14	124	77	0.34	111568 1350	180,–	111569 1350	180,–
13.8	14	124	77	0.35	111568 1380	180,–	111569 1380	180,–
14	14	124	77	0.35	111568 1400	180,–	111569 1400	180,–
14.2	16	133	83	0.36	111568 1420	212,–	111569 1420	212,–
14.3	16	133	83	0.36	111568 1430	212,–	111569 1430	212,–
14.4	16	133	83	0.36	111568 1440	212,–	111569 1440	212,–
14.5	16	133	83	0.36	111568 1450	212,–	111569 1450	212,–
14.8	16	133	83	0.37	111568 1480	212,–	111569 1480	212,–
15	16	133	83	0.38	111568 1500	212,–	111569 1500	212,–
					1111		1111	

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D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	HA art.no.	€	HB art.no.	€
15.1	16	133	83	0.38	111568 1510	212,–	111569 1510	212,–
15.2	16	133	83	0.38	111568 1520	212,–	111569 1520	212,–
15.25	16	133	83	0.38	111568 1525	212,–	111569 1525	212,–
15.3	16	133	83	0.38	111568 1530	212,–	111569 1530	212,–
15.5	16	133	83	0.39	111568 1550	212,–	111569 1550	212,–
15.8	16	133	83	0.40	111568 1580	212,–	111569 1580	212,–
16	16	133	83	0.40	111568 1600	212,–	111569 1600	212,–
16.2	18	143	93	0.41	111568 1620	338,–	111569 1620	338,–
16.3	18	143	93	0.41	111568 1630	338,–	111569 1630	338,–
16.5	18	143	93	0.41	111568 1650	338,–	111569 1650	338,–
16.8	18	143	93	0.42	111568 1680	338,–	111569 1680	338,–
17	18	143	93	0.43	111568 1700	338,–	111569 1700	338,–
					1111		1111	

D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	HA art.no.	€	HB art.no.	€
17.3	18	143	93	0.43	111568 1730	338,–	111569 1730	338,–
17.5	18	143	93	0.44	111568 1750	338,–	111569 1750	338,–
18	18	143	93	0.45	111568 1800	338,–	111569 1800	338,–
18.5	20	153	101	0.46	111568 1850	358,–	111569 1850	358,–
18.9	20	153	101	0.47	111568 1890	358,–	111569 1890	358,–
19	20	153	101	0.48	111568 1900	358,–	111569 1900	358,–
19.2	20	153	101	0.48	111568 1920	374,–	111569 1920	374,–
19.3	20	153	101	0.48	111568 1930	374,–	111569 1930	374,–
19.5	20	153	101	0.49	111568 1950	374,–	111569 1950	374,–
19.7	20	153	101	0.49	111568 1970	374,–	111569 1970	374,–
20	20	153	101	0.50	111568 2000	374,–	111569 2000	374,–
					1111		1111	

ATORN® SC high-performance drill Ultra-M 5D

VHM | DIN 6537 | Typ VA | 140° | 30° | 5xD | DIN 6535 HA | DIN 6535 HB | TiAlN | Vc/fz | 362

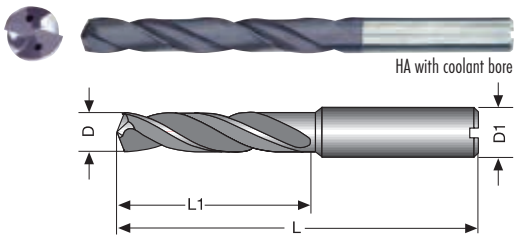
Especially for stainless steel

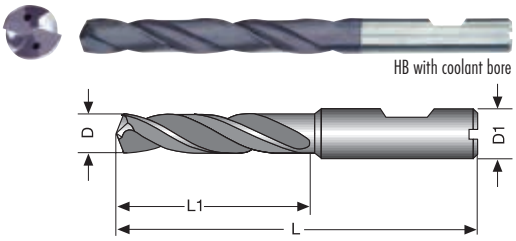
- Special geometry, facet-ground, maximum tool life, high process reliability
- Shank design:
  HA with coolant bore, smooth straight shank, DIN 6535 HA
  HB with coolant bore straight shank DIN 6535 HB
- **Cutting material: solid carbide, TiAlN-Ultra-M-coated**
- True-running accuracy of the tool when clamped max. 0.02 mm
- **Especially suitable for stainless steel and superalloys**

material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
			●	●	●			●	●	●							
			80	60	48			35	30	30							

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.





D m7 mm	D1 h6 mm	L mm	L1 mm	Feed f stainless steel austenitic mm/rev	HA art.no.	€	HB art.no.	€
3	6	66	28	0.05	**111547** 0030	67,–	**111551** 0030	67,–
3.1	6	66	28	0.05	111547 0031	67,–	111551 0031	67,–
3.2	6	66	28	0.05	111547 0032	67,–	111551 0032	67,–
3.25	6	66	28	0.05	111547 1325	67,–	111551 0325	67,–
3.3	6	66	28	0.05	111547 0033	67,–	111551 0033	67,–
3.4	6	66	28	0.05	111547 0034	67,–	111551 0034	67,–
3.5	6	66	28	0.06	111547 0035	67,–	111551 0035	67,–
3.6	6	66	28	0.06	111547 0036	67,–	111551 0036	67,–
3.7	6	66	28	0.06	111547 0037	67,–	111551 0037	67,–
3.8	6	74	36	0.06	111547 0038	67,–	111551 0038	67,–
3.9	6	74	36	0.06	111547 0039	67,–	111551 0039	67,–
4	6	74	36	0.06	111547 0040	67,–	111551 0040	67,–
4.1	6	74	36	0.06	111547 0041	67,–	111551 0041	67,–
4.2	6	74	36	0.06	111547 0042	67,–	111551 0042	67,–
4.3	6	74	36	0.06	111547 0043	67,–	111551 0043	67,–
4.4	6	74	36	0.06	111547 0044	67,–	111551 0044	67,–
4.5	6	74	36	0.06	111547 0045	67,–	111551 0045	67,–
4.6	6	74	36	0.06	111547 0046	67,–	111551 0046	67,–
					1154		1154	

D m7 mm	D1 h6 mm	L mm	L1 mm	Feed f stainless steel austenitic mm/rev	HA art.no.	€	HB art.no.	€
4.65	6	74	36	0.06	111547 1465	67,–	111551 0465	67,–
4.7	6	74	36	0.06	111547 0047	67,–	111551 0047	67,–
4.8	6	82	44	0.06	111547 0048	67,–	111551 0048	67,–
4.9	6	82	44	0.06	111547 0049	67,–	111551 0049	67,–
5	6	82	44	0.06	111547 0050	67,–	111551 0050	67,–
5.1	6	82	44	0.06	111547 0051	67,–	111551 0051	67,–
5.2	6	82	44	0.06	111547 0052	67,–	111551 0052	67,–
5.3	6	82	44	0.06	111547 0053	67,–	111551 0053	67,–
5.4	6	82	44	0.06	111547 0054	67,–	111551 0054	67,–
5.5	6	82	44	0.08	111547 0055	67,–	111551 0055	67,–
5.55	6	82	44	0.08	111547 1555	67,–	111551 0555	67,–
5.6	6	82	44	0.08	111547 0056	67,–	111551 0056	67,–
5.7	6	82	44	0.08	111547 0057	67,–	111551 0057	67,–
5.8	6	82	44	0.08	111547 0058	67,–	111551 0058	67,–
5.9	6	82	44	0.08	111547 0059	67,–	111551 0059	67,–
6	6	82	44	0.08	111547 0060	67,–	111551 0060	67,–
6.1	8	91	53	0.08	111547 0061	74,–	111551 0061	74,–
6.2	8	91	53	0.08	111547 0062	74,–	111551 0062	74,–
					1154		1154	

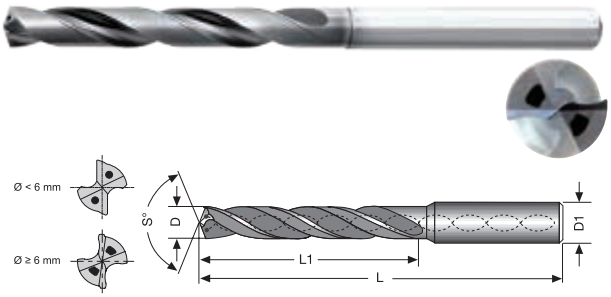
D m7 mm	D1 h6 mm	L mm	L1 mm	Feed f stainless steel austenitic mm/rev	HA art.no.	€	HB art.no.	€
6.3	8	91	53	0.08	111547 0063	74,–	111551 0063	74,–
6.4	8	91	53	0.08	111547 0064	74,–	111551 0064	74,–
6.5	8	91	53	0.08	111547 0065	74,–	111551 0065	74,–
6.6	8	91	53	0.08	111547 0066	74,–	111551 0066	74,–
6.7	8	91	53	0.08	111547 0067	74,–	111551 0067	74,–
6.8	8	91	53	0.08	111547 0068	74,–	111551 0068	74,–
6.9	8	91	53	0.08	111547 0069	74,–	111551 0069	74,–
7	8	91	53	0.08	111547 0070	74,–	111551 0070	74,–
7.1	8	91	53	0.10	111547 0071	74,–	111551 0071	74,–
7.2	8	91	53	0.10	111547 0072	74,–	111551 0072	74,–
7.3	8	91	53	0.10	111547 0073	74,–	111551 0073	74,–
7.4	8	91	53	0.10	111547 0074	74,–	111551 0074	74,–
7.5	8	91	53	0.10	111547 0075	74,–	111551 0075	74,–
7.6	8	91	53	0.10	111547 0076	74,–	111551 0076	74,–
7.7	8	91	53	0.10	111547 0077	74,–	111551 0077	74,–
7.8	8	91	53	0.10	111547 0078	74,–	111551 0078	74,–
7.9	8	91	53	0.10	111547 0079	74,–	111551 0079	74,–
8	8	91	53	0.10	111547 0080	74,–	111551 0080	74,–
8.1	10	103	61	0.10	111547 0081	89,50	111551 0081	89,50
8.2	10	103	61	0.10	111547 0082	89,50	111551 0082	89,50
8.3	10	103	61	0.10	111547 0083	89,50	111551 0083	89,50
8.4	10	103	61	0.10	111547 0084	89,50	111551 0084	89,50
8.5	10	103	61	0.10	111547 0085	89,50	111551 0085	89,50
8.6	10	103	61	0.10	111547 0086	89,50	111551 0086	89,50
8.7	10	103	61	0.10	111547 0087	89,50	111551 0087	89,50
8.8	10	103	61	0.10	111547 0088	89,50	111551 0088	89,50
8.9	10	103	61	0.10	111547 0089	89,50	111551 0089	89,50
9	10	103	61	0.10	111547 0090	89,50	111551 0090	89,50
9.1	10	103	61	0.12	111547 0091	89,50	111551 0091	89,50
9.2	10	103	61	0.12	111547 0092	89,50	111551 0092	89,50
9.3	10	103	61	0.12	111547 0093	89,50	111551 0093	89,50
9.4	10	103	61	0.12	111547 0094	89,50	111551 0094	89,50
9.5	10	103	61	0.12	111547 0095	89,50	111551 0095	89,50
9.6	10	103	61	0.12	111547 0096	89,50	111551 0096	89,50
9.7	10	103	61	0.12	111547 0097	89,50	111551 0097	89,50
9.8	10	103	61	0.12	111547 0098	89,50	111551 0098	89,50
9.9	10	103	61	0.12	111547 0099	89,50	111551 0099	89,50
10	10	103	61	0.12	111547 0100	89,50	111551 0100	89,50
10.1	12	118	71	0.12	111547 0101	130,–		
10.2	12	118	71	0.12	111547 0102	130,–	111551 0102	130,–
					1154		1154	

D m7 mm	D1 h6 mm	L mm	L1 mm	Feed f stainless steel austenitic mm/rev	HA art.no.	€	HB art.no.	€
10.3	12	118	71	0.12	111547 0103	130,–		
10.4	12	118	71	0.12	111547 0104	130,–		
10.5	12	118	71	0.12	111547 0105	130,–	111551 0105	130,–
10.6	12	118	71	0.12	111547 0106	130,–		
10.7	12	118	71	0.12	111547 0107	130,–		
10.8	12	118	71	0.12	111547 0108	130,–	111551 0108	130,–
10.9	12	118	71	0.12	111547 0109	130,–		
11	12	118	71	0.12	111547 0110	130,–	111551 0110	130,–
11.1	12	118	71	0.12	111547 0111	130,–		
11.2	12	118	71	0.12	111547 0112	130,–	111551 0112	130,–
11.3	12	118	71	0.12	111547 0113	130,–		
11.4	12	118	71	0.12	111547 0114	130,–		
11.5	12	118	71	0.12	111547 0115	130,–	111551 0115	130,–
11.6	12	118	71	0.12	111547 0116	130,–		
11.7	12	118	71	0.12	111547 0117	130,–		
11.8	12	118	71	0.12	111547 0118	130,–	111551 0118	130,–
11.9	12	118	71	0.12	111547 0119	130,–		
12	12	118	71	0.12	111547 0120	130,–	111551 0120	130,–
12.2	14	124	77	0.12	111547 0122	171,–	111551 0122	171,–
12.5	14	124	77	0.12	111547 0125	171,–	111551 0125	171,–
12.7	14	124	77	0.12	111547 0127	171,–	111551 0127	171,–
13	14	124	77	0.12	111547 0130	171,–	111551 0130	171,–
13.5	14	124	77	0.12	111547 0135	171,–	111551 0135	171,–
14	14	124	77	0.12	111547 0140	171,–	111551 0140	171,–
14.2	16	133	83	0.12	111547 0142	210,–	111551 0142	210,–
14.5	16	133	83	0.12	111547 0145	210,–	111551 0145	210,–
15	16	133	83	0.12	111547 0150	210,–	111551 0150	210,–
15.5	16	133	83	0.12	111547 0155	210,–	111551 0155	210,–
16	16	133	83	0.12	111547 0160	210,–	111551 0160	210,–
16.5	18	143	93	0.12	111547 0165	340,–	111551 0165	340,–
16.9	18	143	93	0.12	111547 0169	340,–	111551 0169	340,–
17	18	143	93	0.12	111547 0170	340,–	111551 0170	340,–
17.5	18	143	93	0.14	111547 0175	340,–	111551 0175	340,–
18	18	143	93	0.14	111547 0180	340,–	111551 0180	340,–
18.5	20	153	101	0.14	111547 0185	390,–	111551 0185	390,–
18.9	20	153	101	0.14	111547 0189	390,–	111551 0189	390,–
19	20	153	101	0.14	111547 0190	390,–	111551 0190	390,–
19.5	20	153	101	0.16	111547 0195	390,–	111551 0195	390,–
20	20	153	101	0.16	111547 0200	390,–	111551 0200	390,–
					1154		1154	

ADO-SUS-5D solid carbide high-performance drill

VHM | Werks-norm | Typ VA | 140° | 30° | 5xD | DIN 6535 HA | TiAlN | Vc/fz | 368

- **Cutting material: solid carbide, WXL-coated**
- Sharp cutting edges reduce machining-induced material hardenings
- **Short and compact chips thanks to innovative chip flute geometry**
- Friction-reducing protective chamfer reduces heat development
- **New coolant bore design increases coolant flow rate and thus reduces heat generation in the material**
- Excellent coating adhesion of the new WXL coating reduces premature wear and coating spalling



material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 80-120	● 80-120	○ 60-90	● 60-100	● 60-100	● 30-60	● 60-100	● 80-120	● 20-50			● 140	○ 120	○ 70				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D h8 mm	D1 h6 mm	L mm	L1 mm	● Feed f steel < 1000 N/mm² mm/rev	art.no.	€
2.78	3	78	26	0.06	**111615** 0278	66,–
2.8	3	78	26	0.06	111615 0280	66,–
2.83	3	78	26	0.06	111615 0283	66,–
2.87	3	78	26	0.06	111615 0287	66,–
2.9	3	78	27	0.06	111615 0290	66,–
3	3	78	27	0.06	111615 0300	66,–
3.1	4	86	28	0.08	111615 0310	68,50
3.2	4	86	29	0.08	111615 0320	68,50
3.3	4	86	30	0.08	111615 0330	68,50
3.4	4	86	31	0.08	111615 0340	68,50
3.5	4	86	32	0.08	111615 0350	68,50
3.6	4	86	33	0.08	111615 0360	69,–
3.68	4	86	34	0.08	111615 0368	69,–
3.7	4	86	34	0.08	111615 0370	69,–
3.73	4	86	34	0.08	111615 0373	69,–
3.8	4	86	35	0.08	111615 0380	69,–
3.9	4	86	36	0.08	111615 0390	69,–
4	4	86	36	0.08	111615 0400	69,–
4.1	6	95	37	0.10	111615 0410	70,50
4.2	6	95	38	0.10	111615 0420	70,50
4.3	6	95	39	0.10	111615 0430	70,50
4.4	6	95	40	0.10	111615 0440	70,50
4.45	6	95	41	0.10	111615 0445	70,50
4.5	6	95	41	0.10	111615 0450	70,50
4.6	6	95	42	0.10	111615 0460	72,50
4.64	6	95	42	0.10	111615 0464	72,50
4.7	6	95	43	0.10	111615 0470	72,50
4.8	6	95	44	0.10	111615 0480	72,50
4.9	6	95	45	0.10	111615 0490	72,50
5	6	95	45	0.10	111615 0500	72,50
5.1	6	100	41	0.12	111615 0510	76,50
5.2	6	100	42	0.12	111615 0520	76,50
5.3	6	100	43	0.12	111615 0530	76,50
5.4	6	100	44	0.12	111615 0540	76,50
5.5	6	100	44	0.12	111615 0550	76,50
5.54	6	100	45	0.12	111615 0554	76,50
5.6	6	100	45	0.12	111615 0560	80,50
5.7	6	100	46	0.12	111615 0570	80,50
5.8	6	100	47	0.12	111615 0580	80,50

1107

D h8 mm	D1 h6 mm	L mm	L1 mm	● Feed f steel < 1000 N/mm² mm/rev	art.no.	€
5.9	6	100	48	0.12	111615 0590	80,50
6	6	100	48	0.12	111615 0600	80,50
6.1	8	109	49	0.14	111615 0610	90,–
6.2	8	109	50	0.14	111615 0620	90,–
6.3	8	109	51	0.14	111615 0630	90,–
6.4	8	109	52	0.14	111615 0640	90,–
6.5	8	109	52	0.14	111615 0650	90,–
6.6	8	109	53	0.14	111615 0660	90,–
6.7	8	109	54	0.14	111615 0670	90,–
6.8	8	109	55	0.14	111615 0680	90,–
6.9	8	109	56	0.14	111615 0690	90,–
7	8	109	56	0.14	111615 0700	90,–
7.1	8	118	57	0.16	111615 0710	90,–
7.2	8	118	58	0.16	111615 0720	90,–
7.3	8	118	59	0.16	111615 0730	90,–
7.38	8	118	60	0.16	111615 0738	90,–
7.4	8	118	60	0.16	111615 0740	90,–
7.45	8	118	60	0.16	111615 0745	90,–
7.5	8	118	60	0.16	111615 0750	90,–
7.54	8	118	61	0.16	111615 0754	90,–
7.6	8	118	61	0.16	111615 0760	95,–
7.7	8	118	62	0.16	111615 0770	95,–
7.8	8	118	63	0.16	111615 0780	95,–
7.9	8	118	64	0.16	111615 0790	95,–
8	8	118	64	0.16	111615 0800	95,–
8.1	10	128	65	0.18	111615 0810	110,–
8.2	10	128	66	0.18	111615 0820	110,–
8.3	10	128	67	0.18	111615 0830	110,–
8.4	10	128	68	0.18	111615 0840	110,–
8.5	10	128	68	0.18	111615 0850	110,–
8.6	10	128	69	0.18	111615 0860	110,–
8.7	10	128	70	0.18	111615 0870	110,–
8.8	10	128	71	0.18	111615 0880	110,–
8.9	10	128	72	0.18	111615 0890	110,–
9	10	128	72	0.18	111615 0900	110,–
9.1	10	136	73	0.20	111615 0910	110,–
9.2	10	136	74	0.20	111615 0920	110,–
9.26	10	136	75	0.20	111615 0926	110,–
9.3	10	136	75	0.20	111615 0930	110,–

1107

D h8 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
9.38	10	136	76	0.20	111615 0938	110,–
9.4	10	136	76	0.20	111615 0940	110,–
9.5	10	136	76	0.20	111615 0950	110,–
9.54	10	136	77	0.20	111615 0954	110,–
9.6	10	136	77	0.20	111615 0960	112,–
9.7	10	136	78	0.20	111615 0970	112,–
9.8	10	136	79	0.20	111615 0980	112,–
9.9	10	136	80	0.20	111615 0990	112,–
10	10	136	80	0.20	111615 1000	112,–
10.1	12	146	81	0.22	111615 1010	128,–
10.2	12	146	82	0.22	111615 1020	128,–
10.3	12	146	83	0.22	111615 1030	128,–
10.4	12	146	84	0.22	111615 1040	128,–
10.5	12	146	84	0.22	111615 1050	128,–
10.6	12	146	85	0.22	111615 1060	128,–
10.7	12	146	86	0.22	111615 1070	128,–
10.8	12	146	87	0.22	111615 1080	128,–
10.9	12	146	88	0.22	111615 1090	128,–
11	12	146	88	0.22	111615 1100	128,–
11.1	12	156	89	0.24	111615 1110	128,–
11.2	12	156	90	0.24	111615 1120	128,–
11.24	12	156	90	0.24	111615 1124	128,–
11.3	12	156	91	0.24	111615 1130	128,–
11.38	12	156	92	0.24	111615 1138	128,–
11.4	12	156	92	0.24	111615 1140	128,–
11.5	12	156	92	0.24	111615 1150	128,–
11.6	12	156	93	0.24	111615 1160	134,–
11.7	12	156	94	0.24	111615 1170	134,–
11.8	12	156	95	0.24	111615 1180	134,–
11.9	12	156	96	0.24	111615 1190	134,–
12	12	156	96	0.24	111615 1200	134,–
12.1	14	167	97	0.26	111615 1210	147,–

D h8 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
12.5	14	167	100	0.26	111615 1250	147,–
12.8	14	167	103	0.26	111615 1280	147,–
13	14	167	104	0.26	111615 1300	147,–
13.1	14	176	105	0.28	111615 1310	147,–
13.2	14	176	106	0.28	111615 1320	147,–
13.25	14	176	106	0.28	111615 1325	147,–
13.43	14	176	108	0.28	111615 1343	147,–
13.5	14	176	108	0.28	111615 1350	147,–
13.55	14	176	109	0.28	111615 1355	151,–
13.6	14	176	109	0.28	111615 1360	151,–
14	14	176	112	0.28	111615 1400	151,–
14.5	16	185	116	0.28	111615 1450	166,–
15	16	185	120	0.28	111615 1500	166,–
15.1	16	193	121	0.28	111615 1510	166,–
15.25	16	193	122	0.28	111615 1525	166,–
15.5	16	193	124	0.28	111615 1550	166,–
15.55	16	193	125	0.28	111615 1555	173,–
16	16	193	128	0.30	111615 1600	173,–
16.5	18	184	113	0.30	111615 1650	228,–
16.7	18	184	117	0.30	111615 1670	228,–
17	18	184	114	0.30	111615 1700	228,–
17.3	18	191	122	0.30	111615 1730	228,–
17.5	18	191	123	0.30	111615 1750	228,–
17.55	18	191	123	0.30	111615 1755	248,–
18	18	191	126	0.32	111615 1800	248,–
18.5	20	198	130	0.32	111615 1850	284,–
18.7	20	198	131	0.32	111615 1870	284,–
19	20	198	133	0.32	111615 1900	284,–
19.3	20	205	136	0.32	111615 1930	284,–
19.5	20	205	137	0.32	111615 1950	284,–
19.55	20	205	137	0.32	111615 1955	294,–
20	20	205	140	0.34	111615 2000	294,–

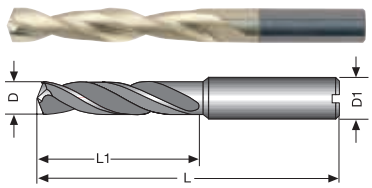
SARA® SC high-performance drill ALU 5D

VHM | DIN 6537 | Typ W | 140° | 30° | 5xD | DIN 6535 HA | ZrN | Vc/fz | 363

Aluminium

- Twisted coolant bore
- **Cutting material: solid carbide, ZrN-coated**
- Special rounded-off cutting edges to minimise micro-nicks

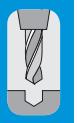
material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
						○				○	○	○	●	●	●				
						60				35-50	35	35	260	240	150				
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		



D m7 mm	D1 h6 mm	L1 mm	L mm	Feed f aluminium < 8 % Si mm/rev	art.no.	€
3.0	6	28	66	0.14	**111410** 0030	73,50
3.1	6	28	66	0.14	111410 0031	73,50
3.2	6	28	66	0.14	111410 0032	73,50
3.3	6	28	66	0.14	111410 0033	73,50
3.4	6	28	66	0.14	111410 0034	73,50

D m7 mm	D1 h6 mm	L1 mm	L mm	Feed f aluminium < 8 % Si mm/rev	art.no.	€
3.5	6	28	66	0.14	111410 0035	73,50
3.6	6	28	66	0.14	111410 0036	73,50
3.7	6	28	66	0.14	111410 0037	73,50
3.8	6	36	74	0.14	111410 0038	78,–
3.9	6	36	74	0.14	111410 0039	78,–

Continued on next page >>>



D m7 mm	D1 h6 mm	L1 mm	L mm	Feed f aluminium < 8 % Si mm/rev	art.no.	€
4.0	6	36	74	0.14	111410 0040	78,–
4.1	6	36	74	0.14	111410 0041	78,–
4.2	6	36	74	0.14	111410 0042	78,–
4.3	6	36	74	0.14	111410 0043	78,–
4.4	6	36	74	0.14	111410 0044	78,–
4.5	6	36	74	0.14	111410 0045	78,–
4.6	6	36	74	0.14	111410 0046	78,–
4.7	6	36	74	0.14	111410 0047	78,–
4.8	6	44	82	0.14	111410 0048	83,50
4.9	6	44	82	0.14	111410 0049	83,50
5.0	6	44	82	0.14	111410 0050	83,50
5.1	6	44	82	0.18	111410 0051	83,50
5.2	6	44	82	0.18	111410 0052	83,50
5.3	6	44	82	0.18	111410 0053	83,50
5.4	6	44	82	0.18	111410 0054	83,50
5.5	6	44	82	0.18	111410 0055	83,50
5.6	6	44	82	0.18	111410 0056	83,50
5.7	6	44	82	0.18	111410 0057	83,50
5.8	6	44	82	0.18	111410 0058	83,50
5.9	6	44	82	0.18	111410 0059	83,50
6.0	6	44	82	0.18	111410 0060	83,50
6.1	8	53	91	0.18	111410 0061	109,–
6.2	8	53	91	0.18	111410 0062	109,–
6.3	8	53	91	0.18	111410 0063	109,–
6.4	8	53	91	0.18	111410 0064	109,–
6.5	8	53	91	0.18	111410 0065	109,–
6.6	8	53	91	0.18	111410 0066	109,–
6.7	8	53	91	0.18	111410 0067	109,–
6.8	8	53	91	0.18	111410 0068	109,–
6.9	8	53	91	0.18	111410 0069	109,–
7.0	8	53	91	0.18	111410 0070	109,–
7.1	8	53	91	0.18	111410 0071	109,–
7.2	8	53	91	0.18	111410 0072	109,–
7.3	8	53	91	0.18	111410 0073	109,–
7.4	8	53	91	0.18	111410 0074	109,–
7.5	8	53	91	0.18	111410 0075	109,–
7.6	8	53	91	0.18	111410 0076	109,–
7.7	8	53	91	0.18	111410 0077	109,–
7.8	8	53	91	0.18	111410 0078	109,–
7.9	8	53	91	0.18	111410 0079	109,–
8.0	8	53	91	0.18	111410 0080	109,–
8.1	10	61	103	0.26	111410 0081	139,–
8.2	10	61	103	0.26	111410 0082	139,–
8.3	10	61	103	0.26	111410 0083	139,–
8.4	10	61	103	0.26	111410 0084	139,–
8.5	10	61	103	0.26	111410 0085	139,–
8.6	10	61	103	0.26	111410 0086	139,–
8.7	10	61	103	0.26	111410 0087	139,–
8.8	10	61	103	0.26	111410 0088	139,–
8.9	10	61	103	0.26	111410 0089	139,–
9.0	10	61	103	0.26	111410 0090	139,–
9.1	10	61	103	0.26	111410 0091	139,–

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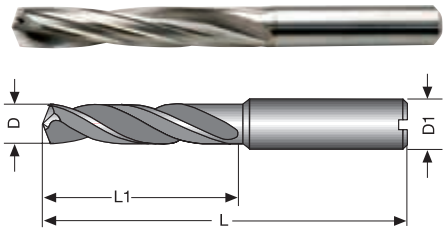
D m7 mm	D1 h6 mm	L1 mm	L mm	Feed f aluminium < 8 % Si mm/rev	art.no.	€
9.2	10	61	103	0.26	111410 0092	139,–
9.3	10	61	103	0.26	111410 0093	139,–
9.4	10	61	103	0.26	111410 0094	139,–
9.5	10	61	103	0.26	111410 0095	139,–
9.6	10	61	103	0.26	111410 0096	139,–
9.7	10	61	103	0.26	111410 0097	139,–
9.8	10	61	103	0.26	111410 0098	139,–
9.9	10	61	103	0.26	111410 0099	139,–
10.0	10	61	103	0.26	111410 0100	139,–
10.1	12	71	118	0.26	111410 0101	173,–
10.2	12	71	118	0.26	111410 0102	173,–
10.3	12	71	118	0.26	111410 0103	173,–
10.4	12	71	118	0.26	111410 0104	173,–
10.5	12	71	118	0.26	111410 0105	173,–
10.6	12	71	118	0.26	111410 0106	173,–
10.7	12	71	118	0.26	111410 0107	173,–
10.8	12	71	118	0.26	111410 0108	173,–
10.9	12	71	118	0.26	111410 0109	173,–
11.0	12	71	118	0.26	111410 0110	173,–
11.1	12	71	118	0.26	111410 0111	173,–
11.2	12	71	118	0.26	111410 0112	173,–
11.3	12	71	118	0.26	111410 0113	173,–
11.4	12	71	118	0.26	111410 0114	173,–
11.5	12	71	118	0.26	111410 0115	173,–
11.6	12	71	118	0.26	111410 0116	173,–
11.7	12	71	118	0.26	111410 0117	173,–
11.8	12	71	118	0.26	111410 0118	173,–
11.9	12	71	118	0.26	111410 0119	173,–
12.0	12	71	118	0.26	111410 0120	173,–
12.3	14	77	124	0.36	111410 0123	220,–
12.5	14	77	124	0.36	111410 0125	220,–
12.8	14	77	124	0.36	111410 0128	220,–
13.0	14	77	124	0.36	111410 0130	220,–
13.5	14	77	124	0.36	111410 0135	220,–
13.8	14	77	124	0.36	111410 0138	220,–
14.0	14	77	124	0.36	111410 0140	220,–
14.5	16	83	133	0.36	111410 0145	295,–
14.8	16	83	133	0.36	111410 0148	295,–
15.0	16	83	133	0.36	111410 0150	295,–
15.5	16	83	133	0.36	111410 0155	295,–
15.8	16	83	133	0.36	111410 0158	295,–
16.0	16	83	133	0.36	111410 0160	295,–
16.5	18	93	143	0.45	111410 0165	390,–
16.8	18	93	143	0.45	111410 0168	390,–
17.0	18	93	143	0.45	111410 0170	390,–
17.5	18	93	143	0.45	111410 0175	390,–
17.8	18	93	143	0.45	111410 0178	390,–
18.0	18	93	143	0.45	111410 0180	390,–
18.5	20	101	153	0.45	111410 0185	445,–
19.0	20	101	153	0.45	111410 0190	445,–
19.5	20	101	153	0.45	111410 0195	445,–
20.0	20	101	153	0.45	111410 0200	445,–

1148

ATORN® Solid carbide high-performance drill bit AluSpeed 5D

VHM | Werks-norm | Typ W | 135° | | 15° | 5xD | DIN 6535 HA | | TiB_2 | Vc/fz | 361

- Twisted cooling channel
- **6-fold guide chamfers, guarantees very high alignment precision and stabilisation of the drill bit**
- **Cutting material: ultra-superfine grain solid carbide K40F, Alu-CC-coated**
- Defined cutting-edge rounding to minimise micro-nicks on the tool cutting edge
- Coolant pressure min. 12 bar



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
													●	●	●				
													360-400	350-360	160-200				
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f aluminium < 8 % Si mm/rev	art.no.	€
2.5	4	57	21	0.15	**111400** 0250	68,–
2.8	4	57	21	0.15	111400 0280	68,–
3	6	66	28	0.15	111400 0300	68,–
3.25	6	66	28	0.15	111400 0325	68,–
3.3	6	66	28	0.20	111400 0330	68,–
3.5	6	66	28	0.20	111400 0350	68,–
3.8	6	74	36	0.20	111400 0380	68,–
4	6	74	36	0.20	111400 0400	68,–
4.2	6	74	36	0.25	111400 0420	68,–
4.5	6	74	36	0.25	111400 0450	68,–
4.6	6	74	36	0.25	111400 0460	68,–
4.65	6	74	36	0.25	111400 0465	68,–
4.8	6	82	44	0.30	111400 0480	68,–
5	6	82	44	0.30	111400 0500	68,–
5.5	6	82	44	0.35	111400 0550	68,–
5.8	6	82	44	0.35	111400 0580	68,–
6	6	82	44	0.35	111400 0600	68,–
6.5	8	91	53	0.40	111400 0650	73,–
6.8	8	91	53	0.40	111400 0680	73,–
7	8	91	53	0.40	111400 0700	73,–
7.4	8	91	53	0.45	111400 0740	73,–
7.45	8	91	53	0.45	111400 0745	73,–

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D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f aluminium < 8 % Si mm/rev	art.no.	€
7.8	8	91	53	0.45	111400 0780	73,–
8.0	8	91	53	0.45	111400 0800	73,–
8.5	10	103	61	0.45	111400 0850	87,–
8.8	10	103	61	0.45	111400 0880	87,–
9	10	103	61	0.50	111400 0900	87,–
9.35	10	103	61	0.50	111400 0935	87,–
9.8	10	103	61	0.50	111400 0980	87,–
10	10	103	61	0.50	111400 1000	87,–
10.2	12	118	71	0.55	111400 1020	120,–
11	12	118	71	0.55	111400 1100	120,–
11.2	12	118	71	0.55	111400 1120	120,–
12	12	118	71	0.55	111400 1200	120,–
13	14	124	77	0.55	111400 1300	166,–
14	14	124	77	0.60	111400 1400	166,–
15	16	133	83	0.60	111400 1500	214,–
15.5	16	133	83	0.60	111400 1550	214,–
16	16	133	83	0.60	111400 1600	214,–
17	18	143	93	0.60	111400 1700	282,–
17.5	18	143	93	0.60	111400 1750	282,–
18	18	143	93	0.65	111400 1800	282,–
20	20	143	101	0.70	111400 2000	352,–

1178



... without shrinkage

ATORN®
High quality for great performance

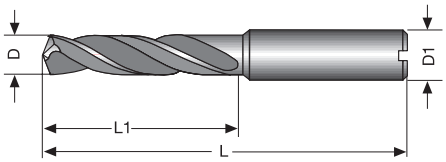
ATORN® SC high-performance drill HARD 5D

VHM | Werks-norm | Typ H | 140° | 20° | 5xD | DIN 6535 HA | TiAlSiN | Vc/fz | 361

NEW · NUOVO · NEU · NOUVEAU · NUEVO

Up to 65 HRc

- for machining drill holes up to 65 HRC
- **Cutting material: SC, TiAlSiN coating**
- reinforced core and special point thinning with sharp chisel edge
- no internal coolant supply for increased stability
- **also available in 3xD**
- **Note:** Do not hard drill dry!



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
				○ 30-40					○ 60-70								● 15-20	● 10-16	● 8-13
	Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									



Without internal cooling

● 1154

D mm	D1 h6 mm	L mm	L1 mm	Feed f hardened steel ≥ 60 HRc mm/rev	art.no.	€
2	4	57	21	0.04	**111536** 0020	57,–
2.5	4	57	21	0.04	111536 0025	57,–
2.6	4	57	21	0.04	111536 0026	57,–
2.8	4	57	21	0.04	111536 0028	57,–
3	6	66	28	0.04	111536 0030	57,–
3.3	6	66	28	0.06	111536 0033	57,–
3.4	6	66	28	0.06	111536 0034	57,–
3.5	6	66	28	0.06	111536 0035	57,–
3.7	6	66	28	0.06	111536 0037	57,–
3.8	6	74	36	0.06	111536 0038	57,–
3.9	6	74	36	0.06	111536 0039	57,–
4	6	74	36	0.06	111536 0040	57,–
4.2	6	74	36	0.06	111536 0042	57,–
4.3	6	74	36	0.06	111536 0043	57,–
4.5	6	74	36	0.06	111536 0045	57,–
4.8	6	82	44	0.06	111536 0048	57,–
4.9	6	82	44	0.06	111536 0049	57,–
5	6	82	44	0.06	111536 0050	57,–
5.1	6	82	44	0.07	111536 0051	57,–
5.2	6	82	44	0.07	111536 0052	57,–
5.5	6	82	44	0.07	111536 0055	57,–
5.8	6	82	44	0.07	111536 0058	57,–
5.9	6	82	44	0.07	111536 0059	57,–
6	6	82	44	0.07	111536 0060	57,–
6.5	8	91	53	0.07	111536 0065	63,–
6.8	8	91	53	0.07	111536 0068	63,–
7	8	91	53	0.07	111536 0070	63,–

● 1154

D mm	D1 h6 mm	L mm	L1 mm	Feed f hardened steel ≥ 60 HRc mm/rev	art.no.	€
7.2	8	91	53	0.07	111536 0072	63,–
7.8	8	91	53	0.07	111536 0078	63,–
7.9	8	91	53	0.07	111536 0079	63,–
8	8	91	53	0.07	111536 0080	63,–
8.5	10	103	61	0.08	111536 0085	71,–
8.7	10	103	61	0.08	111536 0087	71,–
8.8	10	103	61	0.08	111536 0088	71,–
9	10	103	61	0.08	111536 0090	71,–
9.8	10	103	61	0.08	111536 0098	71,–
9.9	10	103	61	0.08	111536 0099	71,–
10	10	103	61	0.08	111536 0100	71,–
10.2	12	118	71	0.08	111536 0102	104,–
10.3	12	118	71	0.08	111536 0103	104,–
10.5	12	118	71	0.08	111536 0105	104,–
11	12	118	71	0.08	111536 0110	104,–
11.8	12	118	71	0.08	111536 0118	104,–
11.9	12	118	71	0.08	111536 0119	104,–
12	12	118	71	0.08	111536 0120	104,–
12.5	14	124	77	0.1	111536 0125	136,–
13	14	124	77	0.1	111536 0130	136,–
14	14	124	77	0.1	111536 0140	136,–
14.9	16	133	83	0.1	111536 0149	174,–
15	16	133	83	0.1	111536 0150	174,–
15.9	16	133	83	0.1	111536 0159	174,–
16	16	133	83	0.1	111536 0160	174,–
17.5	18	143	93	0.11	111536 0175	322,–
18	18	143	93	0.11	111536 0180	322,–

● 1154



With internal cooling

● 1154

D mm	D1 h6 mm	L mm	L1 mm	Feed f hardened steel ≥ 60 HRc mm/rev	art.no.	€
1	4	55	8	0.04	**111537** 0010	74,–
1.1	4	55	12	0.04	111537 0011	74,–
1.2	4	55	12	0.04	111537 0012	74,–
1.3	4	55	12	0.04	111537 0013	74,–
1.4	4	55	12	0.04	111537 0014	74,–

● 1154

D mm	D1 h6 mm	L mm	L1 mm	Feed f hardened steel ≥ 60 HRc mm/rev	art.no.	€
1.5	4	55	12	0.04	111537 0015	74,–
1.6	4	55	16	0.04	111537 0016	74,–
1.7	4	55	16	0.04	111537 0017	74,–
1.8	4	55	16	0.04	111537 0018	74,–
1.9	4	55	16	0.04	111537 0019	74,–

● 1154

D mm	D1 h6 mm	L mm	L1 mm	Feed f hardened steel ≥ 60 HRc mm/rev	art.no.	€
2	4	57	21	0.04	111537 0020	74,–
2.1	4	57	21	0.04	111537 0021	74,–
2.2	4	57	21	0.04	111537 0022	74,–
2.3	4	57	21	0.04	111537 0023	74,–
2.4	4	57	21	0.04	111537 0024	74,–
2.5	4	57	21	0.04	111537 0025	74,–
2.6	4	57	21	0.04	111537 0026	74,–
2.7	4	57	21	0.04	111537 0027	74,–
2.8	4	57	21	0.04	111537 0028	74,–
2.9	4	57	21	0.04	111537 0029	74,–
3	6	66	28	0.04	111537 0030	74,–
3.1	6	66	28	0.06	111537 0031	74,–
3.2	6	66	28	0.06	111537 0032	74,–
3.3	6	66	28	0.06	111537 0033	74,–
3.4	6	66	28	0.06	111537 0034	74,–
3.5	6	66	28	0.06	111537 0035	74,–
3.7	6	66	28	0.06	111537 0037	74,–
3.8	6	74	36	0.06	111537 0038	74,–
3.9	6	74	36	0.06	111537 0039	74,–
4	6	74	36	0.06	111537 0040	74,–
4.1	6	74	36	0.06	111537 0041	74,–
4.2	6	74	36	0.06	111537 0042	74,–
4.3	6	74	36	0.06	111537 0043	74,–
4.4	6	74	36	0.06	111537 0044	74,–
4.5	6	74	36	0.06	111537 0045	74,–
4.6	6	74	36	0.06	111537 0046	74,–
4.7	6	74	36	0.06	111537 0047	74,–
4.8	6	82	44	0.06	111537 0048	74,–
4.9	6	82	44	0.06	111537 0049	74,–
5	6	82	44	0.06	111537 0050	74,–
5.1	6	82	44	0.07	111537 0051	74,–
5.2	6	82	44	0.07	111537 0052	74,–
5.3	6	82	44	0.07	111537 0053	74,–
5.5	6	82	44	0.07	111537 0055	74,–
5.6	6	82	44	0.07	111537 0056	74,–
5.7	6	82	44	0.07	111537 0057	74,–
5.8	6	82	44	0.07	111537 0058	74,–
6	6	82	44	0.07	111537 0060	74,–
6.1	8	91	53	0.07	111537 0061	85,–
6.2	8	91	53	0.07	111537 0062	85,–
6.3	8	91	53	0.07	111537 0063	85,–
6.4	8	91	53	0.07	111537 0064	85,–
6.5	8	91	53	0.07	111537 0065	85,–
6.6	8	91	53	0.07	111537 0066	85,–
6.7	8	91	53	0.07	111537 0067	85,–
6.8	8	91	53	0.07	111537 0068	85,–

1154

D mm	D1 h6 mm	L mm	L1 mm	Feed f hardened steel ≥ 60 HRc mm/rev	art.no.	€
6.9	8	91	53	0.07	111537 0069	85,–
7	8	91	53	0.07	111537 0070	85,–
7.4	8	91	53	0.07	111537 0074	85,–
7.5	8	91	53	0.07	111537 0075	85,–
7.7	8	91	53	0.07	111537 0077	85,–
7.8	8	91	53	0.07	111537 0078	85,–
8	8	91	53	0.07	111537 0080	85,–
8.2	10	103	61	0.08	111537 0082	99,–
8.4	10	103	61	0.08	111537 0084	99,–
8.5	10	103	61	0.08	111537 0085	99,–
8.6	10	103	61	0.08	111537 0086	99,–
8.7	10	103	61	0.08	111537 0087	99,–
8.8	10	103	61	0.08	111537 0088	99,–
9	10	103	61	0.08	111537 0090	99,–
9.3	10	103	61	0.08	111537 0093	99,–
9.4	10	103	61	0.08	111537 0094	99,–
9.5	10	103	61	0.08	111537 0095	99,–
9.7	10	103	61	0.08	111537 0097	99,–
9.8	10	103	61	0.08	111537 0098	99,–
10	10	103	61	0.08	111537 0100	99,–
10.2	12	118	71	0.08	111537 0102	140,–
10.3	12	118	71	0.08	111537 0103	140,–
10.5	12	118	71	0.08	111537 0105	140,–
11	12	118	71	0.08	111537 0110	140,–
11.2	12	118	71	0.08	111537 0112	140,–
11.5	12	118	71	0.08	111537 0115	140,–
11.8	12	118	71	0.08	111537 0118	140,–
12	12	118	71	0.08	111537 0120	140,–
12.2	14	124	77	0.1	111537 0122	182,–
12.5	14	124	77	0.1	111537 0125	182,–
12.8	14	124	77	0.1	111537 0128	182,–
13	14	124	77	0.1	111537 0130	182,–
13.5	14	124	77	0.1	111537 0135	182,–
14	14	124	77	0.1	111537 0140	182,–
14.5	16	133	83	0.1	111537 0145	220,–
15	16	133	83	0.1	111537 0150	220,–
15.5	16	133	83	0.1	111537 0155	220,–
15.8	16	133	83	0.1	111537 0158	220,–
16	16	133	83	0.1	111537 0160	220,–
17	18	143	93	0.11	111537 0170	352,–
17.5	18	143	93	0.11	111537 0175	352,–
18	18	143	93	0.11	111537 0180	352,–
20	20	153	101	0.11	111537 0200	378,–

1154



… HPC with internal cooling

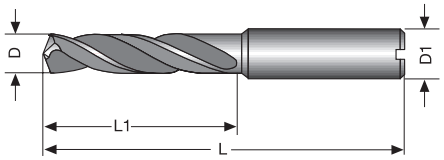
ATORN®
High quality for great performance

ATORN® TiAlNplus HPC 8D solid carbide high-performance drill bit with internal cooling

VHM | Werks-norm | Typ U | 140° | 30° | 8xD | DIN 6535 HA | TiAlN plus | Vc/fz | 364

- Optimised shank diameter tolerance for use as a holding fixture in power chucks and hydraulic expansion chucks
- **Cutting material: Solid carbide ultra-fine grain TiAlNplus**
- Efficient drilling in different materials
- Newly developed geometry in conjunction with a customised multilayer coating for enhanced performance
- Special cutting edge finishing reduces micro-nicks and increases service life
- **Excellent alignment precision thanks to 4 guide chamfers**
- High process reliability, even at difficult-to-reach bore depths
- With internal cooling





material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
●	●	●	○	○		●	○	●	●	○	○	●	○		○		
120-145	65-120	65-105	45	55		160	120	40	35	35	260-310	220	125		55		

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3	6	72	34	0.08	**111570** 0300	155,–
3.1	6	72	34	0.08	111570 0310	155,–
3.2	6	72	34	0.08	111570 0320	155,–
3.3	6	72	34	0.08	111570 0330	155,–
3.4	6	72	34	0.09	111570 0340	155,–
3.5	6	72	34	0.09	111570 0350	155,–
3.6	6	72	34	0.09	111570 0360	155,–
3.7	6	72	34	0.09	111570 0370	155,–
3.8	6	81	43	0.10	111570 0380	155,–
3.9	6	81	43	0.10	111570 0390	155,–
4	6	81	43	0.10	111570 0400	155,–
4.1	6	81	43	0.10	111570 0410	155,–
4.2	6	81	43	0.11	111570 0420	155,–
4.3	6	81	43	0.11	111570 0430	155,–
4.4	6	81	43	0.11	111570 0440	155,–
4.5	6	81	43	0.11	111570 0450	155,–
4.6	6	81	43	0.12	111570 0460	155,–
4.7	6	81	43	0.12	111570 0470	155,–
4.8	6	95	57	0.12	111570 0480	155,–
4.9	6	95	57	0.12	111570 0490	155,–
5	6	95	57	0.13	111570 0500	155,–
5.1	6	95	57	0.13	111570 0510	155,–
5.2	6	95	57	0.13	111570 0520	155,–
5.3	6	95	57	0.13	111570 0530	155,–
5.4	6	95	57	0.14	111570 0540	155,–
5.5	6	95	57	0.14	111570 0550	155,–
5.6	6	95	57	0.14	111570 0560	155,–
5.7	6	95	57	0.14	111570 0570	155,–
5.8	6	95	57	0.15	111570 0580	155,–
5.9	6	95	57	0.15	111570 0590	155,–
6	6	95	57	0.15	111570 0600	155,–
6.1	8	114	76	0.15	111570 0610	193,–
6.2	8	114	76	0.16	111570 0620	193,–
6.3	8	114	76	0.16	111570 0630	193,–
6.4	8	114	76	0.16	111570 0640	193,–
6.5	8	114	76	0.16	111570 0650	193,–
6.6	8	114	76	0.17	111570 0660	193,–
6.7	8	114	76	0.17	111570 0670	193,–
6.8	8	114	76	0.17	111570 0680	193,–
6.9	8	114	76	0.17	111570 0690	193,–
7	8	114	76	0.18	111570 0700	193,–
7.1	8	114	76	0.18	111570 0710	193,–

1110

D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
7.2	8	114	76	0.18	111570 0720	193,–
7.3	8	114	76	0.18	111570 0730	193,–
7.4	8	114	76	0.19	111570 0740	193,–
7.5	8	114	76	0.19	111570 0750	193,–
7.6	8	114	76	0.19	111570 0760	193,–
7.7	8	114	76	0.19	111570 0770	193,–
7.8	8	114	76	0.20	111570 0780	193,–
7.9	8	114	76	0.20	111570 0790	193,–
8	8	114	76	0.20	111570 0800	193,–
8.1	10	142	95	0.20	111570 0810	245,–
8.2	10	142	95	0.21	111570 0820	245,–
8.3	10	142	95	0.21	111570 0830	245,–
8.4	10	142	95	0.21	111570 0840	245,–
8.5	10	142	95	0.21	111570 0850	245,–
8.6	10	142	95	0.22	111570 0860	245,–
8.7	10	142	95	0.22	111570 0870	245,–
8.8	10	142	95	0.22	111570 0880	245,–
8.9	10	142	95	0.22	111570 0890	245,–
9	10	142	95	0.23	111570 0900	245,–
9.1	10	142	95	0.23	111570 0910	245,–
9.2	10	142	95	0.23	111570 0920	245,–
9.3	10	142	95	0.23	111570 0930	245,–
9.4	10	142	95	0.24	111570 0940	245,–
9.5	10	142	95	0.24	111570 0950	245,–
9.6	10	142	95	0.24	111570 0960	245,–
9.7	10	142	95	0.24	111570 0970	245,–
9.8	10	142	95	0.25	111570 0980	245,–
9.9	10	142	95	0.25	111570 0990	245,–
10	10	142	95	0.25	111570 1000	245,–
10.2	12	162	114	0.26	111570 1020	310,–
10.5	12	162	114	0.26	111570 1050	310,–
10.8	12	162	114	0.27	111570 1080	310,–
11	12	162	114	0.28	111570 1100	310,–
11.5	12	162	114	0.29	111570 1150	315,–
11.8	12	162	114	0.30	111570 1180	315,–
12	12	162	114	0.30	111570 1200	315,–
12.2	14	178	131	0.31	111570 1220	395,–
12.5	14	178	131	0.31	111570 1250	395,–
13	14	178	131	0.33	111570 1300	395,–
13.5	14	178	131	0.34	111570 1350	395,–
14	14	178	131	0.35	111570 1400	395,–
14.5	16	203	152	0.36	111570 1450	530,–

1110

D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
15	16	203	152	0.38	111570 1500	530,–
15.5	16	203	152	0.39	111570 1550	530,–
16	16	203	152	0.40	111570 1600	530,–
16.5	18	222	171	0.41	111570 1650	650,–
17	18	222	171	0.43	111570 1700	650,–
17.5	18	222	171	0.44	111570 1750	650,–

1110

D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
18	18	222	171	0.45	111570 1800	650,–
18.8	20	243	190	0.46	111570 1850	785,–
19	20	243	190	0.48	111570 1900	785,–
19.5	20	243	190	0.49	111570 1950	785,–
20	20	243	190	0.50	111570 2000	785,–

1110

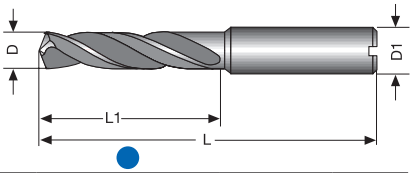
ATORN® TiAlNplus HPC 12D solid carbide high-performance drill bit with internal cooling

VHM | Werks-norm | Typ TLP | 140° | 30° | 12xD | DIN 6535 HA | TiAlN plus | Vc/fz | 364

- Optimised shank diameter tolerance for use as a holding fixture in power chucks and hydraulic expansion chucks
- **Cutting material: Solid carbide ultra-fine grain TiAlNplus**
- Efficient drilling in different materials
- Newly developed geometry in conjunction with a customised multilayer coating for enhanced performance
- Special cutting edge finishing reduces micro-nicks and increases service life
- **Excellent alignment precision thanks to 4 guide chamfers**
- High process reliability, even at difficult-to-reach bore depths
- With internal cooling

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	●	○	○		●	○				○	●	○		○		
		80-90	80	40-60	40	40		120	90				120	150	120		35		
	Cutting speed Vc m/min.																		





D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3	6	92	54	0.08	**111572** 0300	180,–
3.1	6	92	54	0.08	111572 0310	180,–
3.2	6	92	54	0.08	111572 0320	180,–
3.3	6	92	54	0.08	111572 0330	180,–
3.4	6	92	54	0.09	111572 0340	180,–
3.5	6	92	54	0.09	111572 0350	180,–
3.6	6	92	54	0.09	111572 0360	180,–
3.7	6	92	54	0.09	111572 0370	180,–
3.8	6	102	64	0.10	111572 0380	180,–
3.9	6	102	64	0.10	111572 0390	180,–
4	6	102	64	0.10	111572 0400	180,–
4.1	6	102	64	0.10	111572 0410	180,–
4.2	6	102	64	0.11	111572 0420	180,–
4.3	6	102	64	0.11	111572 0430	180,–
4.4	6	102	64	0.11	111572 0440	180,–
4.5	6	102	64	0.11	111572 0450	180,–
4.6	6	102	64	0.12	111572 0460	180,–
4.7	6	102	64	0.12	111572 0470	180,–
4.8	6	116	78	0.12	111572 0480	180,–
4.9	6	116	78	0.12	111572 0490	180,–
5	6	116	78	0.13	111572 0500	180,–
5.1	6	116	78	0.13	111572 0510	180,–
5.2	6	116	78	0.13	111572 0520	180,–

1110

D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
5.3	6	116	78	0.13	111572 0530	180,–
5.4	6	116	78	0.14	111572 0540	180,–
5.5	6	116	78	0.14	111572 0550	180,–
5.6	6	116	78	0.14	111572 0560	180,–
5.7	6	116	78	0.14	111572 0570	180,–
5.8	6	116	78	0.15	111572 0580	180,–
5.9	6	116	78	0.15	111572 0590	180,–
6	6	116	78	0.15	111572 0600	180,–
6.1	8	146	108	0.15	111572 0610	254,–
6.2	8	146	108	0.16	111572 0620	254,–
6.3	8	146	108	0.16	111572 0630	254,–
6.4	8	146	108	0.16	111572 0640	254,–
6.5	8	146	108	0.16	111572 0650	254,–
6.6	8	146	108	0.17	111572 0660	254,–
6.7	8	146	108	0.17	111572 0670	254,–
6.8	8	146	108	0.17	111572 0680	254,–
6.9	8	146	108	0.17	111572 0690	254,–
7	8	146	108	0.18	111572 0700	254,–
7.1	8	146	108	0.18	111572 0710	254,–
7.2	8	146	108	0.18	111572 0720	254,–
7.3	8	146	108	0.18	111572 0730	254,–
7.4	8	146	108	0.19	111572 0740	254,–
7.5	8	146	108	0.19	111572 0750	254,–

1110

Continued on next page >>>

D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
7.6	8	146	108	0.19	111572 0760	254,–
7.7	8	146	108	0.19	111572 0770	254,–
7.8	8	146	108	0.20	111572 0780	254,–
7.9	8	146	108	0.20	111572 0790	254,–
8	8	146	108	0.20	111572 0800	254,–
8.1	10	162	120	0.20	111572 0810	296,–
8.2	10	162	120	0.21	111572 0820	296,–
8.3	10	162	120	0.21	111572 0830	296,–
8.4	10	162	120	0.21	111572 0840	296,–
8.5	10	162	120	0.21	111572 0850	296,–
8.6	10	162	120	0.22	111572 0860	296,–
8.7	10	162	120	0.22	111572 0870	296,–
8.8	10	162	120	0.22	111572 0880	296,–
8.9	10	162	120	0.22	111572 0890	296,–
9	10	162	120	0.23	111572 0900	296,–
9.1	10	162	120	0.23	111572 0910	316,–
9.2	10	162	120	0.23	111572 0920	316,–
9.3	10	162	120	0.23	111572 0930	316,–
9.4	10	162	120	0.24	111572 0940	316,–
9.5	10	162	120	0.24	111572 0950	316,–
9.6	10	162	120	0.24	111572 0960	316,–
9.7	10	162	120	0.24	111572 0970	316,–
9.8	10	162	120	0.25	111572 0980	316,–
9.9	10	162	120	0.25	111572 0990	316,–
10	10	162	120	0.25	111572 1000	316,–
10.2	12	204	156	0.26	111572 1020	404,–
10.5	12	204	156	0.26	111572 1050	404,–

1110

D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
10.8	12	204	156	0.27	111572 1080	404,–
11	12	204	156	0.28	111572 1100	404,–
11.5	12	204	156	0.29	111572 1150	410,–
11.8	12	204	156	0.30	111572 1180	410,–
12	12	204	156	0.30	111572 1200	410,–
12.5	14	230	182	0.31	111572 1250	529,–
12.7	14	230	182	0.32	111572 1270	529,–
12.8	14	230	182	0.32	111572 1280	529,–
13	14	230	182	0.33	111572 1300	529,–
13.5	14	230	182	0.34	111572 1350	539,–
13.8	14	230	182	0.35	111572 1380	539,–
14	14	230	182	0.35	111572 1400	539,–
14.5	16	260	208	0.36	111572 1450	699,–
14.8	16	260	208	0.37	111572 1480	699,–
15	16	260	208	0.38	111572 1500	699,–
15.5	16	260	208	0.39	111572 1550	699,–
15.8	16	260	208	0.40	111572 1580	699,–
16	16	260	208	0.40	111572 1600	699,–
16.5	18	285	234	0.41	111572 1650	779,–
17	18	285	234	0.43	111572 1700	779,–
17.5	18	285	234	0.44	111572 1750	779,–
18	18	285	234	0.45	111572 1800	779,–
18.5	20	310	258	0.46	111572 1850	949,–
19	20	310	258	0.48	111572 1900	949,–
19.5	20	310	258	0.49	111572 1950	949,–
20	20	310	258	0.50	111572 2000	949,–

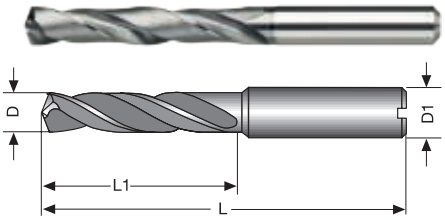
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ATORN® Solid carbide pilot drill bit TiAlNplus HPC

VHM | Werks-norm | Typ PLT | 140° | 30° | 5xD | DIN 6535 HA | TiAlN plus | Vc/fz | 362

- For setting a pilot bore for deep-hole drill bits from 12xD
- **Cutting material: ultra-superfine grain solid carbide TiAlNplus**
- Precision-ground for extreme boring accuracy to meet high dimensional demands
- High guidance accuracy thanks to innovative geometry
- High-performance coating guarantees high cutting data and service life
- The tools are coordinated by geometry and diameter.

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	Cutting speed Vc m/min.	95	80	65	50	40		95	95	35	30	30	250	200	130				
	Please adjust these guidelines according to clamping operation and machine set-up.																		



D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
2.02	4	57	21	0.08	**111573** 0202	46,90
2.22	4	57	21	0.08	111573 0222	46,90
2.32	4	57	21	0.08	111573 0232	46,90
2.42	4	57	21	0.08	111573 0242	46,90
2.52	4	57	21	0.08	111573 0252	46,90
2.62	4	57	21	0.08	111573 0262	46,90
2.72	4	57	21	0.08	111573 0272	46,90

1154

D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
2.82	4	57	21	0.08	111573 0282	46,90
2.92	4	57	21	0.08	111573 0292	46,90
3.02	6	66	28	0.08	111573 0302	62,50
3.22	6	66	28	0.08	111573 0322	62,50
3.32	6	66	28	0.08	111573 0332	62,50
3.52	6	66	28	0.08	111573 0352	62,50
3.82	6	74	36	0.15	111573 0382	62,50

1154

D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
4.02	6	74	36	0.15	111573 0402	62,50
4.22	6	74	36	0.15	111573 0422	62,50
4.52	6	74	36	0.15	111573 0452	62,50
4.82	6	82	44	0.15	111573 0482	62,50
5.02	6	82	44	0.15	111573 0502	62,50
5.52	6	82	44	0.15	111573 0552	62,50
5.82	6	82	44	0.25	111573 0582	62,50
6.02	6	82	44	0.25	111573 0602	62,50
6.52	8	91	53	0.25	111573 0652	83,–
6.82	8	91	53	0.25	111573 0682	83,–
7.02	8	91	53	0.25	111573 0702	83,–
7.52	8	91	53	0.25	111573 0752	83,–
7.82	8	91	53	0.25	111573 0782	83,–

1154

D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
8.02	8	91	53	0.25	111573 0802	83,–
8.52	10	103	61	0.27	111573 0852	111,–
8.82	10	103	61	0.27	111573 0882	111,–
9.02	10	103	61	0.27	111573 0902	111,–
9.52	10	103	61	0.27	111573 0952	111,–
9.82	10	103	61	0.27	111573 0982	111,–
10.02	10	103	61	0.27	111573 1002	111,–
10.22	12	118	71	0.27	111573 1022	158,–
10.82	12	118	71	0.27	111573 1082	158,–
11.02	12	118	71	0.27	111573 1102	158,–
11.52	12	118	71	0.27	111573 1152	158,–
11.82	12	118	71	0.27	111573 1182	158,–
12.02	12	118	71	0.27	111573 1202	158,–

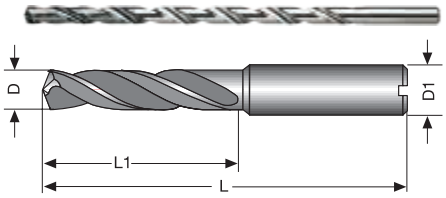
1154

ATORN® Solid carbide deep-hole drill bit TiAlNplus HPC 16D

VHM | Werks-norm | Typ TLP | 135° | | 30° | 16xD | DIN 6535 HA | | TiAlN plus | Vc/fz | 365

- High-performance deep-hole drill bit with 4 guide chamfers
- **Cutting material: ultra-superfine grain solid carbide TiAlNplus**
- Excellent all-round properties and precise cutting behaviour with high cutting data
- Unique, extremely tough, smooth, temperature-resistant and close contour TiAlN coating
- Cutting-edge preparation minimises micro-nicks on the tool cutting edge
- Range is coordinated by angle and diameter

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	●	○	○		●	●										
		90	75	65	35	30		80	80										
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		



D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3	6	100	60	0.08	**111574** 0300	199,–
3.2	6	100	60	0.08	111574 0320	199,–
3.3	6	100	60	0.08	111574 0330	199,–
3.5	6	100	60	0.08	111574 0350	199,–
3.8	6	115	75	0.08	111574 0380	207,–
4	6	115	75	0.08	111574 0400	207,–
4.2	6	115	75	0.08	111574 0420	222,–
4.5	6	130	90	0.08	111574 0450	222,–
4.8	6	130	90	0.08	111574 0480	236,–
5	6	130	90	0.08	111574 0500	236,–
5.5	6	150	108	0.12	111574 0550	248,–
5.8	6	150	108	0.12	111574 0580	248,–
6	6	150	108	0.12	111574 0600	248,–
6.5	8	165	125	0.12	111574 0650	265,–
6.8	8	165	125	0.12	111574 0680	285,–
7	8	165	125	0.12	111574 0700	285,–

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D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
7.5	8	180	140	0.12	111574 0750	315,–
7.8	8	180	140	0.12	111574 0780	315,–
8	8	180	140	0.12	111574 0800	315,–
8.5	10	205	160	0.15	111574 0850	345,–
8.8	10	205	160	0.15	111574 0880	385,–
9	10	205	160	0.15	111574 0900	385,–
9.5	10	205	160	0.15	111574 0950	385,–
9.8	10	225	180	0.15	111574 0980	385,–
10	10	225	180	0.15	111574 1000	385,–
10.2	12	240	190	0.15	111574 1020	430,–
10.5	12	240	190	0.15	111574 1050	430,–
10.8	12	240	190	0.15	111574 1080	430,–
11	12	240	190	0.15	111574 1100	430,–
11.5	12	240	190	0.15	111574 1150	430,–
11.8	12	265	215	0.15	111574 1180	430,–
12	12	265	215	0.15	111574 1200	430,–

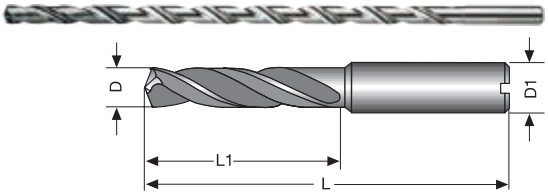
1154

ATORN® Solid carbide deep-hole drill bit TiAlNplus HPC 20D

VHM | Werks-norm | Typ TLP | 135° | | 30° | 20xD | DIN 6535 HA | | TiAlN plus | Vc/fz | 365

- High-performance deep-hole drill bit with 4 guide chamfers
- **Cutting material: ultra-superfine grain solid carbide TiAlNplus**
- Excellent all-round properties and precise cutting behaviour with high cutting data
- Unique, extremely tough, smooth, temperature-resistant and close contour TiAlN coating
- Cutting-edge preparation minimises micro-nicks on the tool cutting edge
- Range is coordinated by angle and diameter

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 90	● 75	● 65	○ 35	○ 30		● 80	● 80										
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		

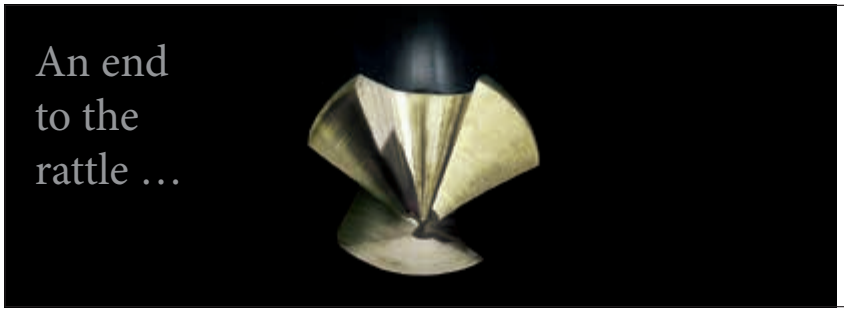


D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
2	6	92	50	0.05	**111575** 0200	148,–
2.2	6	92	50	0.05	111575 0220	148,–
2.3	6	92	50	0.05	111575 0230	148,–
2.4	6	112	70	0.05	111575 0240	165,–
2.5	6	112	70	0.05	111575 0250	165,–
2.7	6	112	70	0.05	111575 0270	165,–
2.8	6	112	70	0.05	111575 0280	165,–
2.9	6	112	70	0.05	111575 0290	165,–
3	6	120	80	0.08	111575 0300	225,–
3.2	6	120	80	0.08	111575 0320	225,–
3.3	6	120	80	0.08	111575 0330	225,–
3.5	6	120	80	0.08	111575 0350	225,–
3.8	6	130	90	0.08	111575 0380	235,–
4	6	130	90	0.08	111575 0400	235,–
4.2	6	160	110	0.08	111575 0420	255,–
4.5	6	160	110	0.08	111575 0450	255,–
4.6	6	160	120	0.08	111575 0460	255,–
4.8	6	160	120	0.08	111575 0480	270,–
5	6	160	120	0.08	111575 0500	270,–
5.5	6	185	140	0.12	111575 0550	280,–
5.8	6	185	140	0.12	111575 0580	280,–

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D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
6	6	185	140	0.12	111575 0600	280,–
6.5	8	210	160	0.12	111575 0650	295,–
6.8	8	210	160	0.12	111575 0680	320,–
7	8	210	160	0.12	111575 0700	320,–
7.5	8	230	180	0.12	111575 0750	355,–
7.8	8	230	180	0.12	111575 0780	355,–
8	8	230	180	0.12	111575 0800	355,–
8.5	10	260	195	0.15	111575 0850	390,–
8.8	10	290	230	0.15	111575 0880	435,–
9	10	290	230	0.15	111575 0900	435,–
9.5	10	290	230	0.15	111575 0950	435,–
9.8	10	290	230	0.15	111575 0980	435,–
10	10	290	230	0.15	111575 1000	435,–
10.2	12	315	268	0.15	111575 1020	480,–
10.5	12	315	268	0.15	111575 1050	480,–
10.8	12	315	268	0.15	111575 1080	480,–
11	12	315	268	0.15	111575 1100	480,–
11.5	12	315	268	0.15	111575 1150	480,–
11.8	12	315	268	0.15	111575 1180	480,–
12	12	315	268	0.15	111575 1200	480,–

1154



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ATORN® Solid carbide deep-hole drill bit TiAlNplus HPC 25D

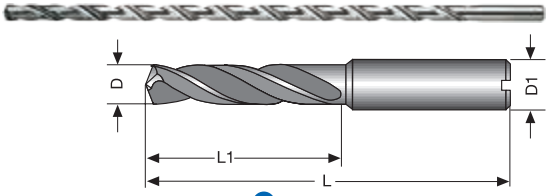
VHM | Werks-norm | Typ TLP | 135° | | 30° | 25xD | DIN 6535 HA | | TiAlN plus | Vc/fz | 365

- High-performance deep-hole drill bit with 4 guide chamfers
- **Cutting material: ultra-superfine grain solid carbide TiAlNplus**
- Excellent all-round properties and precise cutting behaviour with high cutting data
- Unique, extremely tough, smooth, temperature-resistant and close contour TiAlN coating
- Cutting-edge preparation minimises micro-nicks on the tool cutting edge
- Range is coordinated by angle and diameter

material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
●	●	●	○	○		●	●										
80	60	40	35	30		70	70										

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3	6	135	98	0.08	**111576** 0300	280,–
3.2	6	135	98	0.08	111576 0320	280,–
3.3	6	150	110	0.08	111576 0330	290,–
3.5	6	150	110	0.08	111576 0350	290,–
3.8	6	160	120	0.08	111576 0380	300,–
4	6	160	120	0.08	111576 0400	300,–
4.2	6	160	120	0.08	111576 0420	300,–
4.5	6	180	135	0.08	111576 0450	310,–
4.8	6	180	135	0.08	111576 0480	310,–
5	6	180	135	0.08	111576 0500	310,–
5.5	6	205	168	0.12	111576 0550	335,–
5.8	6	205	168	0.12	111576 0580	335,–
6	6	205	168	0.12	111576 0600	335,–
6.5	8	240	200	0.12	111576 0650	370,–
6.8	8	240	200	0.12	111576 0680	370,–
7	8	240	200	0.12	111576 0700	370,–

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D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
7.5	8	260	220	0.12	111576 0750	415,–
7.8	8	260	220	0.12	111576 0780	415,–
8	8	260	220	0.12	111576 0800	415,–
8.5	10	285	240	0.15	111576 0850	465,–
8.8	10	310	268	0.15	111576 0880	499,–
9	10	310	268	0.15	111576 0900	499,–
9.5	10	310	268	0.15	111576 0950	499,–
9.8	10	310	268	0.15	111576 0980	499,–
10	10	310	268	0.15	111576 1000	499,–
10.2	12	375	325	0.15	111576 1020	599,–
10.5	12	375	325	0.15	111576 1050	599,–
10.8	12	375	325	0.15	111576 1080	599,–
11	12	375	325	0.15	111576 1100	599,–
11.5	12	375	325	0.15	111576 1150	599,–
11.8	12	375	325	0.15	111576 1180	599,–
12	12	375	325	0.15	111576 1200	599,–

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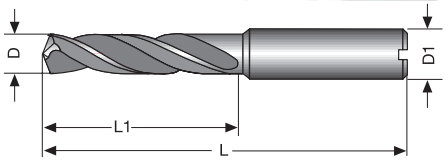
ATORN® Solid carbide deep-hole drill bit TiAlNplus HPC 30D

VHM | Werks-norm | Typ TLP | 135° | | 30° | 30xD | DIN 6535 HA | | TiAlN plus | Vc/fz | 365

- High-performance deep-hole drill bit with 4 guide chamfers
- **Cutting material: ultra-superfine grain solid carbide TiAlNplus**
- Excellent all-round properties and precise cutting behaviour with high cutting data
- Unique, extremely tough, smooth, temperature-resistant and close contour TiAlN coating
- Cutting-edge preparation minimises micro-nicks on the tool cutting edge
- Range is coordinated by angle and diameter

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 60	● 50	● 35	○ 35	○ 30		● 70	● 70										
	Cutting speed Vc m/min.																		





D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
2	4	115	70	0.08	**111577** 0200	202,–
2.2	4	115	70	0.08	111577 0220	202,–
2.3	4	115	70	0.08	111577 0230	202,–
2.4	4	138	90	0.08	111577 0240	220,–
2.5	4	138	90	0.08	111577 0250	220,–
2.7	4	138	90	0.08	111577 0270	220,–
2.8	4	138	90	0.08	111577 0280	220,–
2.9	4	138	90	0.08	111577 0290	220,–
3	6	150	105	0.08	111577 0300	335,–
3.2	6	150	105	0.12	111577 0320	335,–
3.3	6	185	135	0.12	111577 0330	345,–
3.5	6	185	135	0.12	111577 0350	345,–
3.8	6	185	135	0.12	111577 0380	345,–
4	6	185	135	0.12	111577 0400	345,–
4.2	6	185	135	0.12	111577 0420	345,–
4.5	6	215	165	0.12	111577 0450	355,–
4.6	6	215	165	0.12	111577 0460	355,–
4.8	6	215	165	0.12	111577 0480	355,–
5	6	215	165	0.12	111577 0500	355,–
5.5	6	230	180	0.15	111577 0550	370,–
5.8	6	230	180	0.15	111577 0580	370,–

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D h7 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
6	6	230	180	0.15	111577 0600	370,–
6.5	8	280	215	0.15	111577 0650	405,–
6.8	8	280	230	0.15	111577 0680	425,–
7	8	280	230	0.15	111577 0700	425,–
7.5	8	280	230	0.15	111577 0750	425,–
7.8	8	315	265	0.15	111577 0780	470,–
8	8	315	265	0.15	111577 0800	470,–
8.5	10	350	295	0.15	111577 0850	539,–
8.8	10	380	330	0.15	111577 0880	569,–
9	10	380	330	0.15	111577 0900	569,–
9.5	10	380	330	0.15	111577 0950	569,–
9.8	10	380	330	0.15	111577 0980	569,–
10	10	380	330	0.15	111577 1000	569,–
10.2	12	430	380	0.15	111577 1020	729,–
10.5	12	430	380	0.15	111577 1050	729,–
10.8	12	430	380	0.15	111577 1080	729,–
11	12	430	380	0.15	111577 1100	729,–
11.5	12	430	380	0.15	111577 1150	729,–
11.8	12	430	380	0.15	111577 1180	729,–
12	12	430	380	0.15	111577 1200	729,–

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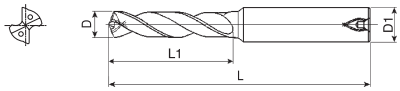
SC pilot drill ADO-PLT

VHM | Werks-norm | Typ PLT | 160° | 30° | DIN 6535 HA | TiAlN | Vc/fz | 366

- **for positioning a pilot bore for deep-hole drills from 10xD**
- with optimised shank diameter tolerance, suitable for use in shrink-fit holders
- **Cutting material: SC EgiAs-coated**
- Optimum chip removal with special cutting geometry and large chip spaces
- True-running accuracy of the tool when clamped: max. 0.02mm
- Cutting edge tolerance h8

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 60-125	● 60-125	● 60-125	○ 40-80	○ 40-80		● 60-125	● 50-80										
	Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									





D h8 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3.03	3	65	15	0.06	**111726** 0303	90,70
3.53	4	70	18	0.07	111726 0353	95,80
4.03	4	70	20	0.08	111726 0403	102,40
4.53	5	75	23	0.09	111726 0453	109,20
5.03	5	75	25	0.10	111726 0503	115,80
5.53	6	80	28	0.11	111726 0553	122,10
6.03	6	80	30	0.12	111726 0603	122,10
6.53	7	85	33	0.13	111726 0653	129,40

1107

D h8 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
7.03	7	85	35	0.14	111726 0703	136,90
8.03	8	90	40	0.16	111726 0803	152,50
8.53	9	95	43	0.17	111726 0853	158,80
9.03	9	95	45	0.18	111726 0903	166,80
10.03	10	100	50	0.20	111726 1003	180,–
11.03	11	115	55	0.22	111726 1103	193,–
12.03	12	120	60	0.24	111726 1203	210,30

1107

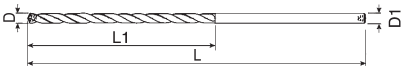
SC deep-hole drill ADO-10D

VHM | Werks-norm | Typ TLP | 140° | 30° | 10xD | DIN 6535 HA | TiAlN | Vc/fz | 366

- With optimised shank diameter tolerance, suitable for use in shrink-fit holders
- **Cutting material: SC EgiAs-coated**
- High-performance drill for cost-efficient manufacturing of deep bores up to 10xD with no step
- Optimum chip removal with special cutting geometry and large chip spaces
- True-running accuracy of the tool when clamped: max. 0.02mm
- Cutting edge tolerance h8

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 60-125	● 60-125	● 60-125	○ 40-80	○ 40-80		● 60-125	● 50-80										
	Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									





D h8 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
2	3	75	26	0.04	**111715** 0020	128,40
2.1	3	75	33	0.04	111715 0021	128,40
2.2	3	75	33	0.04	111715 0022	128,40
2.3	3	75	33	0.05	111715 0023	128,40
2.4	3	75	33	0.05	111715 0024	128,40
2.5	3	75	33	0.05	111715 0025	128,40
2.6	3	90	40	0.05	111715 0026	128,40
2.7	3	90	40	0.05	111715 0027	128,40

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D h8 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
2.8	3	90	40	0.06	111715 0028	128,40
2.9	3	90	40	0.06	111715 0029	128,40
3	3	90	40	0.06	111715 0030	107,70
3.1	4	100	45	0.06	111715 0031	109,90
3.2	4	100	45	0.06	111715 0032	109,90
3.3	4	100	45	0.07	111715 0033	109,90
3.4	4	100	50	0.07	111715 0034	109,90
3.5	4	100	50	0.07	111715 0035	109,90

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D h8 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3.6	4	100	50	0.07	111715 0036	109,90
3.7	4	100	50	0.07	111715 0037	109,90
3.8	4	100	50	0.08	111715 0038	109,90
3.9	4	100	50	0.08	111715 0039	109,90
4	4	100	50	0.08	111715 0040	109,90
4.1	6	115	55	0.08	111715 0041	124,–
4.2	6	115	55	0.08	111715 0042	124,–
4.3	6	115	60	0.09	111715 0043	124,–
4.4	6	115	60	0.09	111715 0044	124,–
4.5	6	115	60	0.09	111715 0045	124,–
4.6	6	115	60	0.09	111715 0046	124,–
4.7	6	115	65	0.09	111715 0047	124,–
4.8	6	115	65	0.1	111715 0048	124,–
4.9	6	115	65	0.1	111715 0049	124,–
5	6	115	65	0.1	111715 0050	124,–
5.1	6	128	70	0.1	111715 0051	124,–
5.2	6	128	70	0.1	111715 0052	124,–
5.3	6	128	70	0.11	111715 0053	124,–
5.4	6	128	78	0.11	111715 0054	124,–
5.5	6	128	78	0.11	111715 0055	124,–
5.6	6	128	78	0.11	111715 0056	124,–
5.7	6	128	78	0.11	111715 0057	124,–
5.8	6	128	78	0.12	111715 0058	124,–
5.9	6	128	78	0.12	111715 0059	124,–
6	6	128	78	0.12	111715 0060	124,–
6.1	8	140	87	0.12	111715 0061	150,–
6.2	8	140	87	0.12	111715 0062	150,–
6.3	8	140	87	0.13	111715 0063	150,–
6.4	8	140	87	0.13	111715 0064	150,–
6.5	8	140	87	0.13	111715 0065	150,–
6.6	8	140	87	0.13	111715 0066	150,–
6.7	8	140	87	0.13	111715 0067	150,–
6.8	8	140	90	0.14	111715 0068	150,–
6.9	8	140	90	0.14	111715 0069	150,–
7	8	140	90	0.14	111715 0070	150,–
7.1	8	155	100	0.14	111715 0071	150,–
7.2	8	155	100	0.14	111715 0072	150,–
7.3	8	155	100	0.15	111715 0073	150,–
7.4	8	155	100	0.15	111715 0074	150,–
7.5	8	155	100	0.15	111715 0075	150,–
7.6	8	155	105	0.15	111715 0076	150,–
7.7	8	155	105	0.15	111715 0077	150,–
7.8	8	155	105	0.16	111715 0078	150,–
7.9	8	155	105	0.16	111715 0079	150,–

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D h8 mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
8	8	155	105	0.16	111715 0080	150,–
8.1	10	165	110	0.16	111715 0081	168,50
8.2	10	165	110	0.16	111715 0082	168,50
8.3	10	165	110	0.17	111715 0083	168,50
8.4	10	165	110	0.17	111715 0084	168,50
8.5	10	165	110	0.17	111715 0085	168,50
8.6	10	165	115	0.17	111715 0086	168,50
8.7	10	165	115	0.17	111715 0087	168,50
8.8	10	165	115	0.18	111715 0088	168,50
8.9	10	165	115	0.18	111715 0089	168,50
9	10	165	115	0.18	111715 0090	168,50
9.1	10	190	125	0.18	111715 0091	168,50
9.2	10	190	125	0.18	111715 0092	168,50
9.3	10	190	125	0.19	111715 0093	168,50
9.4	10	190	125	0.19	111715 0094	168,50
9.5	10	190	125	0.19	111715 0095	168,50
9.6	10	190	130	0.19	111715 0096	168,50
9.7	10	190	130	0.19	111715 0097	168,50
9.8	10	190	130	0.2	111715 0098	168,50
9.9	10	190	130	0.2	111715 0099	168,50
10	10	190	130	0.2	111715 0100	168,50
10.1	12	205	140	0.2	111715 0101	215,50
10.2	12	205	140	0.2	111715 0102	215,50
10.3	12	205	140	0.21	111715 0103	215,50
10.4	12	205	140	0.21	111715 0104	215,50
10.5	12	205	140	0.21	111715 0105	215,50
10.6	12	205	140	0.21	111715 0106	215,50
10.7	12	205	140	0.21	111715 0107	215,50
10.8	12	205	145	0.22	111715 0108	215,50
10.9	12	205	145	0.22	111715 0109	215,50
11	12	205	145	0.22	111715 0110	215,50
11.1	12	215	155	0.22	111715 0111	215,50
11.2	12	215	155	0.22	111715 0112	215,50
11.3	12	215	155	0.23	111715 0113	215,50
11.4	12	215	155	0.23	111715 0114	215,50
11.5	12	215	155	0.23	111715 0115	215,50
11.6	12	215	155	0.23	111715 0116	215,50
11.7	12	215	155	0.23	111715 0117	215,50
11.8	12	215	155	0.24	111715 0118	215,50
11.9	12	215	155	0.24	111715 0119	215,50
12	12	215	155	0.24	111715 0120	215,50

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OSG
Catalogue VI
1024 pages
Art.no. 019900 0208

Overview of all free manufacturers' catalogues on page 14/15

SC deep-hole drill ADO-15D

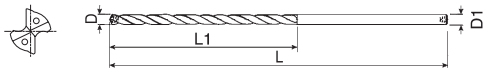
VHM | Werks-norm | Typ TLP | 140° | 30° | 15xD | DIN 6535 HA | TiAlN | Vc/fz

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- With optimised shank diameter tolerance, suitable for use in shrink-fit holders
- **Cutting material: SC EgiAs-coated**
- High-performance drill for cost-efficient manufacturing of deep bores up to 15xD with no step
- Optimum chip removal with special cutting geometry and large chip spaces
- True running accuracy of the tool when clamped: max. 0.02mm
- Cutting edge tolerance:
  Ø 3mm: -0.005 to -0.024mm
  Ø 3.1-6mm: -0.01 to -0.032mm
  Ø 6.1-10mm: -0.015 to -0.04mm
  Ø 10.1-12mm: -0.02 to -0.05mm

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 60-125	● 60-125	● 60-125	○ 40-80	○ 40-80		● 60-125	● 50-80										
	Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									





D mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3	3	105	55	0.06	**111716** 0030	174,70
3.1	4	125	60	0.06	111716 0031	178,40
3.2	4	125	60	0.06	111716 0032	178,40
3.3	4	125	60	0.07	111716 0033	178,40
3.4	4	125	65	0.07	111716 0034	178,40
3.5	4	125	65	0.07	111716 0035	178,40
3.6	4	125	65	0.07	111716 0036	178,40
3.7	4	125	65	0.07	111716 0037	178,40
3.8	4	125	75	0.08	111716 0038	178,40
3.9	4	125	75	0.08	111716 0039	178,40
4	4	125	75	0.08	111716 0040	178,40
4.1	6	140	75	0.08	111716 0041	190,70
4.2	6	140	75	0.08	111716 0042	190,70
4.3	6	140	85	0.09	111716 0043	190,70
4.4	6	140	85	0.09	111716 0044	190,70
4.5	6	140	85	0.09	111716 0045	190,70
4.6	6	140	85	0.09	111716 0046	203,–
4.7	6	140	85	0.09	111716 0047	203,–
4.8	6	140	90	0.1	111716 0048	203,–
4.9	6	140	90	0.1	111716 0049	203,–
5	6	140	90	0.1	111716 0050	203,–
5.1	6	160	95	0.1	111716 0051	210,20
5.2	6	160	95	0.1	111716 0052	210,20
5.3	6	160	95	0.11	111716 0053	210,20
5.4	6	160	110	0.11	111716 0054	210,20
5.5	6	160	110	0.11	111716 0055	210,20
5.6	6	160	110	0.11	111716 0056	217,50
5.7	6	160	110	0.11	111716 0057	217,50
5.8	6	160	110	0.12	111716 0058	217,50
5.9	6	160	110	0.12	111716 0059	217,50
6	6	160	110	0.12	111716 0060	217,50

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D mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
6.1	8	175	120	0.12	111716 0061	233,40
6.2	8	175	120	0.12	111716 0062	233,40
6.3	8	175	120	0.13	111716 0063	233,40
6.4	8	175	120	0.13	111716 0064	233,40
6.5	8	175	120	0.13	111716 0065	233,40
6.6	8	175	120	0.13	111716 0066	243,–
6.7	8	175	120	0.13	111716 0067	243,–
6.8	8	175	125	0.14	111716 0068	243,–
6.9	8	175	125	0.14	111716 0069	243,–
7	8	175	125	0.14	111716 0070	243,–
7.1	8	195	135	0.14	111716 0071	257,80
7.2	8	195	135	0.14	111716 0072	257,80
7.3	8	195	135	0.15	111716 0073	257,80
7.4	8	195	135	0.15	111716 0074	257,80
7.5	8	195	135	0.15	111716 0075	257,80
7.6	8	195	145	0.15	111716 0076	272,40
7.7	8	195	145	0.15	111716 0077	272,40
7.8	8	195	145	0.16	111716 0078	272,40
7.9	8	195	145	0.16	111716 0079	272,40
8	8	195	145	0.16	111716 0080	272,40
8.1	10	210	155	0.16	111716 0081	300,40
8.2	10	210	155	0.16	111716 0082	300,40
8.3	10	210	155	0.17	111716 0083	300,40
8.4	10	210	155	0.17	111716 0084	300,40
8.5	10	210	155	0.17	111716 0085	300,40
8.6	10	210	160	0.17	111716 0086	303,50
8.7	10	210	160	0.17	111716 0087	303,50
8.8	10	210	160	0.18	111716 0088	303,50
8.9	10	210	160	0.18	111716 0089	303,50
9	10	210	160	0.18	111716 0090	303,50
9.1	10	240	170	0.18	111716 0091	334,60

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D mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
9.2	10	240	170	0.18	111716 0092	334,60
9.3	10	240	170	0.19	111716 0093	334,60
9.4	10	240	170	0.19	111716 0094	334,60
9.5	10	240	170	0.19	111716 0095	334,60
9.6	10	240	180	0.19	111716 0096	334,60
9.7	10	240	180	0.19	111716 0097	334,60
9.8	10	240	180	0.2	111716 0098	334,60
9.9	10	240	180	0.2	111716 0099	334,60
10	10	240	180	0.2	111716 0100	334,60
10.1	12	260	190	0.2	111716 0101	368,10
10.2	12	260	190	0.2	111716 0102	368,10
10.3	12	260	190	0.21	111716 0103	368,10
10.4	12	260	190	0.21	111716 0104	368,10
10.5	12	260	190	0.21	111716 0105	368,10
10.6	12	260	190	0.21	111716 0106	368,10

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D mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
10.7	12	260	200	0.21	111716 0107	368,10
10.8	12	260	200	0.22	111716 0108	368,10
10.9	12	260	200	0.22	111716 0109	368,10
11	12	260	200	0.22	111716 0110	368,10
11.1	12	280	210	0.22	111716 0111	404,80
11.2	12	280	210	0.22	111716 0112	404,80
11.3	12	280	210	0.23	111716 0113	404,80
11.4	12	280	210	0.23	111716 0114	404,80
11.5	12	280	210	0.23	111716 0115	404,80
11.6	12	280	210	0.23	111716 0116	404,80
11.7	12	280	210	0.23	111716 0117	404,80
11.8	12	280	210	0.24	111716 0118	404,80
11.9	12	280	215	0.24	111716 0119	404,80
12	12	280	215	0.24	111716 0120	404,80

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SC deep-hole drill ADO-20D

VHM | Werks-norm | Typ TLP | 140° | 30° | 20xD | DIN 6535 HA | TiAlN | Vc/fz

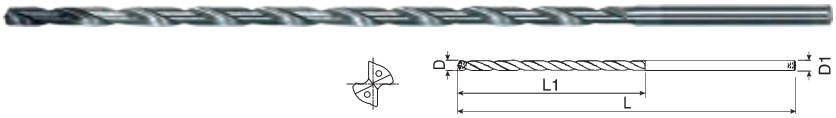
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- With optimised shank diameter tolerance, suitable for use in shrink-fit holders
- **Cutting material: SC EgiAs-coated**
- High-performance drill for cost-efficient manufacturing of deep bores up to 20xD with no step
- Optimum chip removal with special cutting geometry and large chip spaces
- True running accuracy of the tool when clamped: max. 0.02mm
- Cutting edge tolerance:
  Ø 3mm: -0.005 to -0.024mm
  Ø 3.1-6mm: -0.01 to -0.032mm
  Ø 6.1-10mm: -0.015 to -0.04mm
  Ø 10.1-12mm: -0.02 to -0.05mm

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	●	●	●	○	○		●	●										
	60-125	60-125	60-125	nein	40-80		60-125	50-80										

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



D mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3	3	120	70	0.06	**111717** 0030	192,10
3.1	4	140	80	0.06	111717 0031	196,80
3.2	4	140	80	0.06	111717 0032	196,80
3.3	4	140	80	0.07	111717 0033	196,80
3.4	4	140	85	0.07	111717 0034	196,80
3.5	4	140	85	0.07	111717 0035	196,80
3.6	4	140	85	0.07	111717 0036	196,80
3.7	4	140	85	0.07	111717 0037	196,80
3.8	4	140	90	0.08	111717 0038	196,80
3.9	4	140	90	0.08	111717 0039	196,80
4	4	140	90	0.08	111717 0040	196,80
4.1	6	165	100	0.08	111717 0041	211,40
4.2	6	165	100	0.08	111717 0042	211,40
4.3	6	165	110	0.09	111717 0043	211,40
4.4	6	165	110	0.09	111717 0044	211,40
4.5	6	165	110	0.09	111717 0045	211,40
4.6	6	165	110	0.09	111717 0046	223,70
4.7	6	165	110	0.09	111717 0047	223,70
4.8	6	165	115	0.1	111717 0048	223,70

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D mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
4.9	6	165	115	0.1	111717 0049	223,70
5	6	165	115	0.1	111717 0050	223,70
5.1	6	190	120	0.1	111717 0051	228,50
5.2	6	190	120	0.1	111717 0052	228,50
5.3	6	190	120	0.11	111717 0053	228,50
5.4	6	190	140	0.11	111717 0054	228,50
5.5	6	190	140	0.11	111717 0055	228,50
5.6	6	190	140	0.11	111717 0056	239,50
5.7	6	190	140	0.11	111717 0057	239,50
5.8	6	190	140	0.12	111717 0058	239,50
5.9	6	190	140	0.12	111717 0059	239,50
6	6	190	140	0.12	111717 0060	239,50
6.1	8	210	155	0.12	111717 0061	256,70
6.2	8	210	155	0.12	111717 0062	256,70
6.3	8	210	155	0.13	111717 0063	256,70
6.4	8	210	155	0.13	111717 0064	256,70
6.5	8	210	155	0.13	111717 0065	256,70
6.6	8	210	155	0.13	111717 0066	267,60
6.7	8	210	155	0.13	111717 0067	267,60

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D mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
6.8	8	210	160	0.14	111717 0068	267,60
6.9	8	210	160	0.14	111717 0069	267,60
7	8	210	160	0.14	111717 0070	267,60
7.1	8	230	170	0.14	111717 0071	283,50
7.2	8	230	170	0.14	111717 0072	283,50
7.3	8	230	170	0.15	111717 0073	283,50
7.4	8	230	170	0.15	111717 0074	283,50
7.5	8	230	170	0.15	111717 0075	283,50
7.6	8	230	180	0.15	111717 0076	299,20
7.7	8	230	180	0.15	111717 0077	299,20
7.8	8	230	180	0.16	111717 0078	299,20
7.9	8	230	180	0.16	111717 0079	299,20
8	8	230	180	0.16	111717 0080	299,20
8.1	10	260	195	0.16	111717 0081	329,60
8.2	10	260	195	0.16	111717 0082	329,60
8.3	10	260	195	0.17	111717 0083	329,60
8.4	10	260	195	0.17	111717 0084	329,60
8.5	10	260	195	0.17	111717 0085	329,60
8.6	10	260	210	0.17	111717 0086	334,–
8.7	10	260	210	0.17	111717 0087	334,–
8.8	10	260	210	0.18	111717 0088	334,–
8.9	10	260	210	0.18	111717 0089	334,–
9	10	260	210	0.18	111717 0090	334,–
9.1	10	290	220	0.18	111717 0091	368,80
9.2	10	290	220	0.18	111717 0092	368,80
9.3	10	290	220	0.19	111717 0093	368,80
9.4	10	290	220	0.19	111717 0094	368,80

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D mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
9.5	10	290	220	0.19	111717 0095	368,80
9.6	10	290	230	0.19	111717 0096	368,80
9.7	10	290	230	0.19	111717 0097	368,80
9.8	10	290	230	0.2	111717 0098	368,80
9.9	10	290	230	0.2	111717 0099	368,80
10	10	290	230	0.2	111717 0100	368,80
10.1	12	310	250	0.2	111717 0101	405,70
10.2	12	310	250	0.2	111717 0102	405,70
10.3	12	310	250	0.21	111717 0103	405,70
10.4	12	310	250	0.21	111717 0104	405,70
10.5	12	310	250	0.21	111717 0105	405,70
10.6	12	310	250	0.21	111717 0106	405,70
10.7	12	310	250	0.21	111717 0107	405,70
10.8	12	310	250	0.22	111717 0108	405,70
10.9	12	310	250	0.22	111717 0109	405,70
11	12	310	250	0.22	111717 0110	405,70
11.1	12	330	270	0.22	111717 0111	446,20
11.2	12	330	270	0.22	111717 0112	446,20
11.3	12	330	270	0.23	111717 0113	446,20
11.4	12	330	270	0.23	111717 0114	446,20
11.5	12	330	270	0.23	111717 0115	446,20
11.6	12	330	270	0.23	111717 0116	446,20
11.7	12	330	270	0.23	111717 0117	446,20
11.8	12	330	270	0.24	111717 0118	446,20
11.9	12	330	270	0.24	111717 0119	446,20
12	12	330	270	0.24	111717 0120	446,20

1107

SC deep-hole drill ADO-30D

VHM | Werks-norm | Typ TLP | 140° | 30° | 30xD | DIN 6535 HA | TiAlN | Vc/fz 366

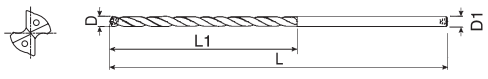
- With optimised shank diameter tolerance, suitable for use in shrink-fit holders
- **Cutting material: SC EgiAs-coated**
- High-performance drill for cost-efficient manufacturing of deep bores up to 30xD with no step
- Optimum chip removal with special cutting geometry and large chip spaces
- True running accuracy of the tool when clamped: max. 0.02mm
- Cutting edge tolerance:
  Ø 3mm: -0.005 to -0.024mm
  Ø 3.5-6mm: -0.01 to -0.032mm
  Ø 6.1-10mm: -0.015 to -0.04mm

material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
●	●	●	○	○		●	●										
60-125	60-125	60-120	40-80	40-80		60-125	50-80										

Cutting speed Vc m/min. — Please adjust these guidelines according to clamping operation and machine set-up.





D mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3	3	150	100	0.06	**111718** 0030	241,20
3.1	4	185	102	0.06	111718 0031	270,80
3.2	4	185	105	0.06	111718 0032	270,80
3.3	4	185	109	0.07	111718 0033	270,80
3.4	4	185	112	0.07	111718 0034	270,80
3.5	4	185	116	0.07	111718 0035	270,80
3.6	4	185	116	0.07	111718 0036	270,80

1107

D mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3.7	4	185	116	0.07	111718 0037	270,80
3.8	4	185	132	0.08	111718 0038	270,80
3.9	4	185	132	0.08	111718 0039	270,80
4	4	185	132	0.08	111718 0040	270,80
4.1	6	215	140	0.08	111718 0041	297,90
4.2	6	215	140	0.08	111718 0042	297,90
4.3	6	215	150	0.09	111718 0043	297,90

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Continued on next page >>>

D mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
4.4	6	215	150	0.09	111718 0044	297,90
4.5	6	215	150	0.09	111718 0045	297,90
4.6	6	215	150	0.09	111718 0046	297,90
4.7	6	215	150	0.09	111718 0047	297,90
4.8	6	215	165	0.1	111718 0048	297,90
4.9	6	215	165	0.1	111718 0049	297,90
5	6	215	165	0.1	111718 0050	297,90
5.1	6	250	180	0.1	111718 0051	304,–
5.2	6	250	180	0.1	111718 0052	304,–
5.3	6	250	180	0.11	111718 0053	304,–
5.4	6	250	200	0.11	111718 0054	304,–
5.5	6	250	200	0.11	111718 0055	304,–
5.6	6	250	200	0.11	111718 0056	319,90
5.7	6	250	200	0.11	111718 0057	319,90
5.8	6	250	200	0.12	111718 0058	319,90
5.9	6	250	200	0.12	111718 0059	319,90
6	6	250	200	0.12	111718 0060	319,90
6.1	8	280	215	0.12	111718 0061	343,30
6.2	8	280	215	0.12	111718 0062	343,30
6.3	8	280	215	0.13	111718 0063	343,30
6.4	8	280	215	0.13	111718 0064	343,30
6.5	8	280	215	0.13	111718 0065	343,30
6.6	8	280	215	0.13	111718 0066	356,60
6.7	8	280	215	0.13	111718 0067	356,60
6.8	8	280	230	0.14	111718 0068	356,60
6.9	8	280	230	0.14	111718 0069	356,60
7	8	280	230	0.14	111718 0070	356,60
7.1	8	315	250	0.14	111718 0071	376,60
7.2	8	315	250	0.14	111718 0072	376,60

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D mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
7.3	8	315	250	0.15	111718 0073	376,60
7.4	8	315	250	0.15	111718 0074	376,60
7.5	8	315	250	0.15	111718 0075	376,60
7.6	8	315	265	0.15	111718 0076	396,90
7.7	8	315	265	0.15	111718 0077	396,90
7.8	8	315	265	0.16	111718 0078	396,90
7.9	8	315	265	0.16	111718 0079	396,90
8	8	315	265	0.16	111718 0080	396,90
8.1	10	350	280	0.16	111718 0081	416,80
8.2	10	350	280	0.16	111718 0082	416,80
8.3	10	350	280	0.17	111718 0083	416,80
8.4	10	350	280	0.17	111718 0084	416,80
8.5	10	350	280	0.17	111718 0085	416,80
8.6	10	350	300	0.17	111718 0086	436,50
8.7	10	350	300	0.17	111718 0087	436,50
8.8	10	350	300	0.18	111718 0088	436,50
8.9	10	350	300	0.18	111718 0089	436,50
9	10	350	300	0.18	111718 0090	436,50
9.1	10	390	315	0.18	111718 0091	480,10
9.2	10	390	315	0.18	111718 0092	480,10
9.3	10	390	315	0.19	111718 0093	480,10
9.4	10	390	315	0.19	111718 0094	480,10
9.5	10	390	315	0.19	111718 0095	480,10
9.6	10	390	330	0.19	111718 0096	480,10
9.7	10	390	330	0.19	111718 0097	480,10
9.8	10	390	330	0.2	111718 0098	480,10
9.9	10	390	330	0.2	111718 0099	480,10
10	10	390	330	0.2	111718 0100	480,10

1107

SC deep-hole drill ADO-40D

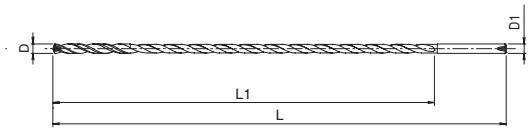
VHM | Werks-norm | Typ TLP | 140° | 25° | 40xD | DIN 6535 HA | TiAlN | Vc/fz | 366

- With optimised shank diameter tolerance, suitable for use in shrink-fit holders
- **Cutting material: SC EgiAs-coated**
- High-performance drill for cost-efficient manufacturing of deep bores up to 40xD with no step
- Optimum chip removal with special cutting geometry and large chip spaces
- True running accuracy of the tool when clamped: max. 0.02mm
- Cutting edge tolerance e8

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 60-90	● 60-90	● 50-80	○ 40-60	○ 40-60		● 60-90	● 50-80										
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		







D mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3	3	179	120	0.06	**111719** 0030	351,–
4	4	222	160	0.08	111719 0040	373,40
5	5	265	200	0.1	111719 0050	409,80
6	6	308	240	0.12	111719 0060	441,10
8	8	394	320	0.16	111719 0080	547,20
10	10	490	400	0.2	111719 0100	662,–

1107

SC deep-hole drill ADO-50D

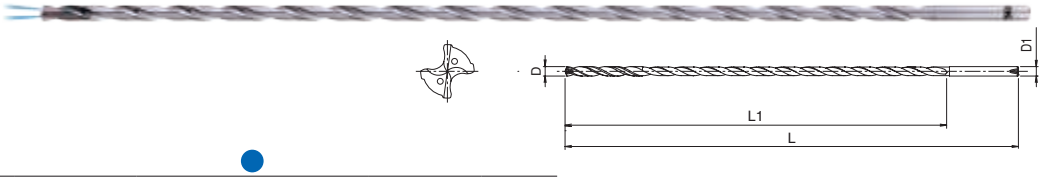
VHM | Werks-norm | Typ TLP | 140° | 25° | 50xD | DIN 6535 HA | TiAlN | Vc/fz | 366

- With optimised shank diameter tolerance, suitable for use in shrink-fit holders
- **Cutting material: SC EgiAs-coated**
- High-performance drill for cost-efficient manufacturing of deep bores up to 50xD with no step
- Optimum chip removal with special cutting geometry and large chip spaces
- True running accuracy of the tool when clamped: max. 0.02mm
- Cutting edge tolerance e8

material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 60-90	● 60-90	● 50-80	○ 40-60	○ 40-60		● 60-90	● 50-80										

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



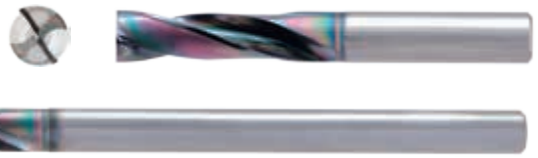
D mm	D1 h6 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3	3	209	150	0.06	**111720** 0030	386,10
4	4	262	200	0.08	111720 0040	410,70
5	5	315	250	0.1	111720 0050	449,40
6	6	368	300	0.12	111720 0060	485,20
8	8	474	400	0.16	111720 0080	601,80

1107

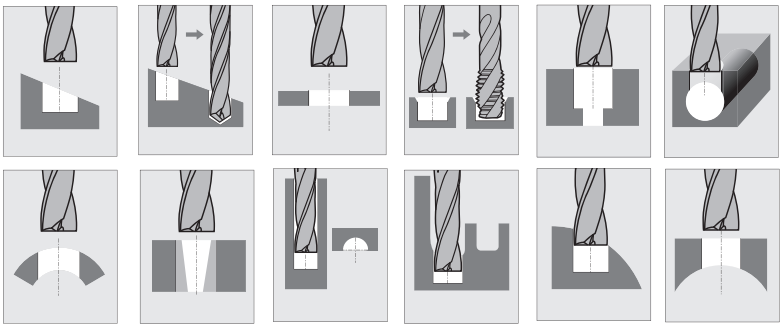
ADF-2D solid carbide flat drill

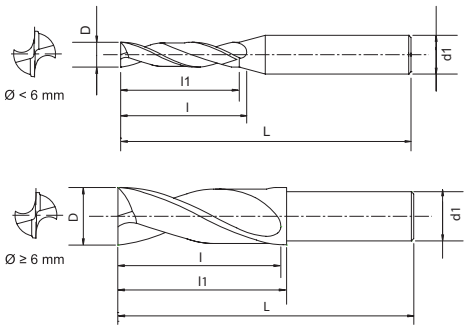
VHM | Werks-norm | Typ N | 180° | 20° | 2xD | TiAlN | Vc/fz | 368

- Suitable for a variety of applications, such as inclined surfaces, round surfaces, shallow drilling and eccentric drilling etc.
- **Cutting material: solid carbide, EgiAs-coating**
- Outstanding wear resistance thanks to new EgiAs coating
- **Reduced cutting forces thanks to innovative cutting edge geometry**
- Large chip space and adapted point thinning



Long version available on request





material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 60-100	● 30-90	○ 20-40				● 60-120	● 50-80				● 80-200	○ 80-200			○ 20-30		

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D h8 mm	L mm	l mm	l1 mm	d1 mm	art.no.	€
2	50	10.3	10	4	**111711** 0200	58,70
2.1	50	10.5	10	4	111711 0210	58,70
2.2	50	11	10.6	4	111711 0220	58,70
2.3	50	11	10.8	4	111711 0230	58,70
2.32	50	11	10.9	4	111711 0232	58,70

1107

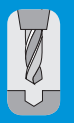
D h8 mm	L mm	l mm	l1 mm	d1 mm	art.no.	€
2.4	50	12	11	4	111711 0240	58,70
2.42	50	12	11.1	4	111711 0242	58,70
2.5	50	12	11.2	4	111711 0250	58,70
2.54	50	12	11.3	4	111711 0254	58,70
2.58	50	12	11.4	4	111711 0258	58,70

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D h8 mm	L mm	l mm	l1 mm	d1 mm	art.no.	€
2.6	50	13	11.4	4	111711 0260	58,70
2.7	50	13	11.6	4	111711 0270	58,70
2.76	50	13	11.7	4	111711 0276	58,70
2.78	50	13	11.7	4	111711 0278	58,70
2.8	50	14	11.8	4	111711 0280	58,70

1107

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D h8 mm	L mm	l mm	l1 mm	d1 mm	art.no.	€
2.9	50	14	11.9	4	111711 0290	58,70
3	55	15	11.4	6	111711 0300	58,70
3.03	55	15	11.5	6	111711 0303	63,20
3.1	55	15	11.6	6	111711 0310	63,20
3.15	55	15	11.7	6	111711 0315	63,20
3.2	55	15	11.8	6	111711 0320	63,20
3.3	55	15	12	6	111711 0330	63,20
3.4	55	16	12.1	6	111711 0340	63,20
3.5	55	16	12.3	6	111711 0350	63,20
3.53	55	16	12.4	6	111711 0353	66,40
3.6	55	16	12.5	6	111711 0360	66,40
3.66	55	16	12.6	6	111711 0366	66,40
3.68	55	16	12.7	6	111711 0368	66,40
3.7	55	16	12.7	6	111711 0370	66,40
3.8	60	19	17.9	6	111711 0380	66,40
3.9	60	19	18.1	6	111711 0390	66,40
4	60	19	18.3	6	111711 0400	66,40
4.03	60	19	18.3	6	111711 0403	71,10
4.1	60	19	18.5	6	111711 0410	71,10
4.2	60	21	18.6	6	111711 0420	71,10
4.3	60	21	18.8	6	111711 0430	71,10
4.4	60	21	19	6	111711 0440	71,10
4.5	60	21	19.2	6	111711 0450	71,10
4.53	60	21	19.3	6	111711 0453	76,30
4.6	60	21	19.4	6	111711 0460	76,30
4.62	60	21	19.4	6	111711 0462	76,30
4.64	60	21	19.5	6	111711 0464	76,30
4.7	60	21	19.6	6	111711 0470	76,30
4.8	65	24.8	24	6	111711 0480	76,30
4.9	65	24.9	24	6	111711 0490	76,30
5	65	25.1	24	6	111711 0500	76,30
5.03	65	25.2	24	6	111711 0503	80,50
5.1	65	25.3	24	6	111711 0510	80,50
5.2	65	25.5	24	6	111711 0520	80,50
5.3	65	25.7	24	6	111711 0530	80,50
5.4	65	27	25.9	6	111711 0540	80,50
5.5	65	27	26.1	6	111711 0550	80,50
5.52	65	27	26.1	6	111711 0552	84,30
5.54	65	27	26.1	6	111711 0554	84,30
5.6	65	27	26.3	6	111711 0560	84,30
5.7	65	27	26.4	6	111711 0570	84,30
5.8	65	27	26.6	6	111711 0580	84,30
5.9	65	27	26.8	6	111711 0590	84,30
6	65	27	27	6	111711 0600	84,30
6.03	70	30	32	6	111711 0603	84,30
6.1	70	30	32	6	111711 0610	84,30
6.2	70	30	32	6	111711 0620	84,30
6.3	70	30	32	6	111711 0630	84,30
6.4	70	30	32	6	111711 0640	84,30
6.5	70	30	32	6	111711 0650	84,30
6.53	70	30	32	6	111711 0653	89,70
6.6	70	30	32	6	111711 0660	89,70
6.7	70	30	32	6	111711 0670	89,70
6.8	70	30	32	6	111711 0680	89,70
6.9	70	30	32	6	111711 0690	89,70
7	70	30	32	6	111711 0700	89,70
7.03	75	34	36	6	111711 0703	95,–
7.1	75	34	36	6	111711 0710	95,–
7.2	75	34	36	6	111711 0720	95,–
7.3	75	34	36	6	111711 0730	95,–

1107

D h8 mm	L mm	l mm	l1 mm	d1 mm	art.no.	€
7.4	75	34	36	6	111711 0740	95,–
7.5	75	34	36	6	111711 0750	95,–
7.6	75	34	36	6	111711 0760	100,20
7.7	75	34	36	6	111711 0770	100,20
7.8	75	34	36	6	111711 0780	100,20
7.9	75	34	36	6	111711 0790	100,20
8	75	34	36	8	111711 0800	100,20
8.03	80	38	40	8	111711 0803	105,50
8.1	80	38	40	8	111711 0810	105,50
8.2	80	38	40	8	111711 0820	105,50
8.3	80	38	40	8	111711 0830	105,50
8.4	80	38	40	8	111711 0840	105,50
8.5	80	38	40	8	111711 0850	105,50
8.53	80	38	40	8	111711 0853	110,70
8.6	80	38	40	8	111711 0860	110,70
8.7	80	38	40	8	111711 0870	110,70
8.8	80	38	40	8	111711 0880	110,70
8.9	80	38	40	8	111711 0890	110,70
9	80	38	40	8	111711 0900	110,70
9.03	85	42	44	8	111711 0903	115,80
9.1	85	42	44	8	111711 0910	115,80
9.2	85	42	44	8	111711 0920	115,80
9.3	85	42	44	8	111711 0930	115,80
9.4	85	42	44	8	111711 0940	115,80
9.5	85	42	44	8	111711 0950	115,80
9.6	85	42	44	8	111711 0960	121,10
9.7	85	42	44	8	111711 0970	121,10
9.8	85	42	44	8	111711 0980	121,10
9.9	85	42	44	8	111711 0990	121,10
10	85	42	44	10	111711 1000	121,10
10.03	90	46	48	10	111711 1003	126,20
10.1	90	46	48	10	111711 1010	126,20
10.2	90	46	48	10	111711 1020	126,20
10.3	90	46	48	10	111711 1030	126,20
10.4	90	46	48	10	111711 1040	126,20
10.5	90	46	48	10	111711 1050	126,20
10.6	90	46	48	10	111711 1060	131,40
10.7	90	46	48	10	111711 1070	131,40
10.8	90	46	48	10	111711 1080	131,40
10.9	90	46	48	10	111711 1090	131,40
11	90	46	48	10	111711 1100	131,40
11.03	95	50	52	10	111711 1103	136,70
11.1	95	50	52	10	111711 1110	136,70
11.2	95	50	52	10	111711 1120	136,70
11.3	95	50	52	10	111711 1130	136,70
11.4	95	50	52	10	111711 1140	136,70
11.5	95	50	52	10	111711 1150	136,70
11.6	95	50	52	10	111711 1160	142,10
11.7	95	50	52	10	111711 1170	142,10
11.8	95	50	52	10	111711 1180	142,10
11.9	95	50	52	10	111711 1190	142,10
12	95	50	52	12	111711 1200	142,10
12.03	100	56	58	12	111711 1203	164,30
12.1	100	56	58	12	111711 1210	164,30
12.2	100	56	58	12	111711 1220	164,30
12.3	100	56	58	12	111711 1230	164,30
12.4	100	56	58	12	111711 1240	164,30
12.5	100	56	58	12	111711 1250	164,30
12.6	100	56	58	12	111711 1260	165,20
12.7	100	56	58	12	111711 1270	165,20

1107

D h8 mm	L mm	l mm	l1 mm	d1 mm	art.no.	€
12.8	100	56	58	12	111711 1280	165,20
12.9	100	56	58	12	111711 1290	165,20
13	100	56	58	12	111711 1300	165,20
13.1	105	60	62	12	111711 1310	200,70
13.2	105	60	62	12	111711 1320	200,70
13.3	105	60	62	12	111711 1330	200,70
13.4	105	60	62	12	111711 1340	200,70
13.5	105	60	62	12	111711 1350	200,70
13.6	105	60	62	12	111711 1360	200,70
13.7	105	60	62	12	111711 1370	200,70
13.8	105	60	62	12	111711 1380	200,70
13.9	105	60	62	12	111711 1390	200,70
14	105	60	62	12	111711 1400	200,70
14.1	110	64	66	12	111711 1410	222,30
14.2	110	64	66	12	111711 1420	222,30
14.3	110	64	66	12	111711 1430	222,30
14.4	110	64	66	12	111711 1440	222,30
14.5	110	64	66	12	111711 1450	222,30
14.6	110	64	66	12	111711 1460	222,30
14.7	110	64	66	12	111711 1470	222,30
14.8	110	64	66	12	111711 1480	222,30
14.9	110	64	66	12	111711 1490	222,30
15	110	64	66	12	111711 1500	222,30
15.1	115	68	70	12	111711 1510	251,90
15.2	115	68	70	12	111711 1520	251,90
15.3	115	68	70	12	111711 1530	251,90
15.4	115	68	70	12	111711 1540	251,90
15.5	115	68	70	12	111711 1550	251,90
15.6	115	68	70	12	111711 1560	251,90
15.7	115	68	70	12	111711 1570	251,90
15.8	115	68	70	12	111711 1580	251,90
15.9	115	68	70	12	111711 1590	251,90
16	115	68	70	16	111711 1600	251,90
16.5	125	74	76	16	111711 1650	345,50
17	125	74	76	16	111711 1700	345,50
17.5	130	78	80	16	111711 1750	356,60
18	130	78	80	16	111711 1800	356,60
18.5	135	84	86	16	111711 1850	390,–
19	135	84	86	16	111711 1900	390,–
19.5	140	88	90	16	111711 1950	443,50
20	140	88	90	20	111711 2000	443,50

1107

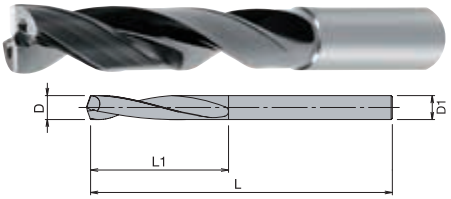
ATORN® SC flat drill FLAT 3D with internal cooling

VHM | Werks-norm | Typ N | 180° | 30° | 3xD | DIN 6535 HA | TiAlN | Vc/fz | 365

NEW · NUOVO · NEU · NY · NOUVEAU · NUEVO

- **For producing flat-bottomed holes in one single operation**
- **Facilitates drilling in a single operation on inclined surfaces**
- Improved drilling quality with special cutting and 4-guide chamfer geometry
- Better self-centring

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 100	● 90	○ 40	● 40	○ 25		● 80	● 80				○ 220	○ 180	○ 120		○ 25		
	Cutting speed Vc m/min.										Please adjust these guidelines according to clamping operation and machine set-up.								



D m7 mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3	6	62	14	0.08	**111709** 0030	71,–
3.1	6	62	14	0.08	111709 0031	71,–
3.2	6	62	14	0.08	111709 0032	71,–
3.3	6	62	14	0.08	111709 0033	71,–
3.4	6	62	14	0.08	111709 0034	71,–
3.5	6	62	14	0.08	111709 0035	71,–
3.6	6	62	14	0.08	111709 0036	71,–
3.7	6	62	14	0.08	111709 0037	71,–
3.8	6	66	17	0.08	111709 0038	71,–
3.9	6	66	17	0.08	111709 0039	71,–
4	6	66	17	0.08	111709 0040	71,–
4.1	6	66	17	0.08	111709 0041	71,–
4.2	6	66	17	0.08	111709 0042	71,–
4.3	6	66	17	0.08	111709 0043	71,–
4.4	6	66	17	0.08	111709 0044	71,–
4.5	6	66	17	0.08	111709 0045	71,–
4.6	6	66	17	0.08	111709 0046	71,–
4.65	6	66	17	0.08	111709 0465	71,–
4.7	6	66	17	0.08	111709 0047	71,–
4.8	6	66	20	0.08	111709 0048	71,–
4.9	6	66	20	0.08	111709 0049	71,–
5	6	66	20	0.12	111709 0050	71,–
5.1	6	66	20	0.12	111709 0051	71,–
5.2	6	66	20	0.12	111709 0052	71,–
5.3	6	66	20	0.12	111709 0053	71,–
5.4	6	66	20	0.12	111709 0054	71,–
5.5	6	66	20	0.12	111709 0055	71,–
5.55	6	66	20	0.12	111709 0555	71,–
5.6	6	66	20	0.12	111709 0056	71,–
5.7	6	66	20	0.12	111709 0057	71,–
5.8	6	66	20	0.12	111709 0058	71,–
5.9	6	66	20	0.12	111709 0059	71,–
6	6	66	20	0.12	111709 0060	71,–
6.1	8	79	24	0.12	111709 0061	86,60
6.2	8	79	24	0.12	111709 0062	86,60
6.3	8	79	24	0.12	111709 0063	86,60
6.4	8	79	24	0.12	111709 0064	86,60
6.5	8	79	24	0.12	111709 0065	86,60
6.6	8	79	24	0.12	111709 0066	86,60
6.7	8	79	24	0.12	111709 0067	86,60

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D m7 mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
6.8	8	79	24	0.12	111709 0068	86,60
6.9	8	79	24	0.12	111709 0069	86,60
7	8	79	24	0.12	111709 0070	86,60
7.1	8	79	29	0.12	111709 0071	86,60
7.2	8	79	29	0.12	111709 0072	86,60
7.3	8	79	29	0.12	111709 0073	86,60
7.4	8	79	29	0.12	111709 0074	86,60
7.5	8	79	29	0.12	111709 0075	86,60
7.6	8	79	29	0.12	111709 0076	86,60
7.7	8	79	29	0.12	111709 0077	86,60
7.8	8	79	29	0.12	111709 0078	86,60
7.9	8	79	29	0.12	111709 0079	86,60
8	8	79	29	0.12	111709 0080	86,60
8.1	10	89	35	0.15	111709 0081	116,70
8.2	10	89	35	0.15	111709 0082	116,70
8.3	10	89	35	0.15	111709 0083	116,70
8.4	10	89	35	0.15	111709 0084	116,70
8.5	10	89	35	0.15	111709 0085	116,70
8.6	10	89	35	0.15	111709 0086	116,70
8.7	10	89	35	0.15	111709 0087	116,70
8.8	10	89	35	0.15	111709 0088	116,70
8.9	10	89	35	0.15	111709 0089	116,70
9	10	89	35	0.15	111709 0090	116,70
9.1	10	89	35	0.15	111709 0091	116,70
9.3	10	89	35	0.15	111709 0092	116,70
9.4	10	89	35	0.15	111709 0094	116,70
9.5	10	89	35	0.15	111709 0095	116,70
9.6	10	89	35	0.15	111709 0096	116,70
9.7	10	89	35	0.15	111709 0097	116,70
9.8	10	89	35	0.15	111709 0098	116,70
9.9	10	89	35	0.15	111709 0099	116,70
10	10	89	35	0.15	111709 0100	116,70
10.1	12	102	40	0.15	111709 0101	148,90
10.2	12	102	40	0.15	111709 0102	148,90
10.3	12	102	40	0.15	111709 0103	148,90
10.4	12	102	40	0.15	111709 0104	148,90
10.5	12	102	40	0.15	111709 0105	148,90
10.6	12	102	40	0.15	111709 0106	148,90
10.7	12	102	40	0.15	111709 0107	148,90
10.8	12	102	40	0.15	111709 0108	148,90

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Continued on next page >>>

D m7 mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
10.9	12	102	40	0.15	111709 0109	148,90
11	12	102	40	0.15	111709 0110	148,90
11.1	12	102	40	0.15	111709 0111	148,90
11.2	12	102	40	0.15	111709 0112	148,90
11.3	12	102	40	0.15	111709 0113	148,90
11.4	12	102	40	0.15	111709 0114	148,90
11.5	12	102	40	0.15	111709 0115	148,90
11.6	12	102	40	0.15	111709 0116	148,90
11.7	12	102	40	0.15	111709 0117	148,90
11.8	12	102	40	0.15	111709 0118	148,90
11.9	12	102	40	0.15	111709 0119	148,90
12	12	102	40	0.15	111709 0120	148,90
12.5	14	107	43	0.16	111709 0125	242,20
12.8	14	107	43	0.16	111709 0128	242,20
13	14	107	43	0.16	111709 0130	242,20
13.5	14	107	43	0.16	111709 0135	242,20
13.8	14	107	43	0.16	111709 0138	242,20
14	14	107	43	0.16	111709 0140	242,20

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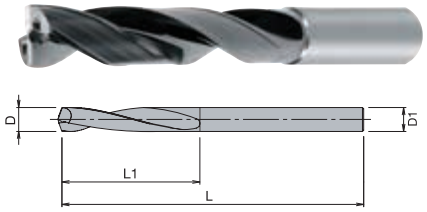
D m7 mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
14.5	16	115	45	0.16	111709 0145	305,–
14.8	16	115	45	0.16	111709 0148	305,–
15	16	115	45	0.16	111709 0150	305,–
15.5	16	115	45	0.16	111709 0155	305,–
15.8	16	115	45	0.16	111709 0158	305,–
16	16	115	45	0.16	111709 0160	305,–
16.5	18	123	51	0.2	111709 0165	405,–
16.8	18	123	51	0.2	111709 0168	405,–
17	18	123	51	0.2	111709 0170	405,–
17.5	18	123	51	0.2	111709 0175	405,–
17.8	18	123	51	0.2	111709 0178	405,–
18	18	123	51	0.2	111709 0180	405,–
18.5	20	131	55	0.2	111709 0185	499,–
18.8	20	131	55	0.2	111709 0188	499,–
19	20	131	55	0.2	111709 0190	499,–
19.5	20	131	55	0.2	111709 0195	499,–
19.8	20	131	55	0.23	111709 0198	499,–
20	20	131	55	0.23	111709 0200	499,–

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ATORN® SC flat drill FLAT 5D with internal cooling

VHM | Werks-norm | Typ N | 180° | 30° | 5xD | DIN 6535 HA | TiAlN | Vc/fz | 365

- **For producing flat-bottomed holes in a single operation**
- **facilitates drilling in a single operation on inclined surfaces**
- Improved drilling quality with special cutting and 4-guide chamfer geometry
- better self-centring



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	○	●	○		●	●				○	○	○		○		
		100	90	40	40	25		80	80				220	180	120		25		
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

D m7 mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3	6	66	28	0.08	**111710** 0030	84,–
3.1	6	66	28	0.08	111710 0031	84,–
3.2	6	66	28	0.08	111710 0032	84,–
3.3	6	66	28	0.08	111710 0033	84,–
3.4	6	66	28	0.08	111710 0034	84,–
3.5	6	66	28	0.08	111710 0035	84,–
3.6	6	66	28	0.08	111710 0036	84,–
3.7	6	66	28	0.08	111710 0037	84,–
3.8	6	74	36	0.08	111710 0038	84,–
3.9	6	74	36	0.08	111710 0039	84,–
4	6	74	36	0.08	111710 0040	84,–
4.1	6	74	36	0.08	111710 0041	84,–
4.2	6	74	36	0.08	111710 0042	84,–
4.3	6	74	36	0.08	111710 0043	84,–
4.4	6	74	36	0.08	111710 0044	84,–
4.5	6	74	36	0.08	111710 0045	84,–
4.6	6	74	36	0.08	111710 0046	84,–
4.65	6	74	36	0.08	111710 0465	84,–
4.7	6	74	36	0.08	111710 0047	84,–
4.8	6	82	44	0.08	111710 0048	84,–

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D m7 mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
4.9	6	82	44	0.08	111710 0049	84,–
5	6	82	44	0.12	111710 0050	84,–
5.1	6	82	44	0.12	111710 0051	84,–
5.2	6	82	44	0.12	111710 0052	84,–
5.3	6	82	44	0.12	111710 0053	84,–
5.4	6	82	44	0.12	111710 0054	84,–
5.5	6	82	44	0.12	111710 0055	84,–
5.55	6	82	44	0.12	111710 0555	84,–
5.6	6	82	44	0.12	111710 0056	84,–
5.7	6	82	44	0.12	111710 0057	84,–
5.8	6	82	44	0.12	111710 0058	84,–
5.9	6	82	44	0.12	111710 0059	84,–
6	6	82	44	0.12	111710 0060	84,–
6.1	8	91	53	0.12	111710 0061	94,50
6.2	8	91	53	0.12	111710 0062	94,50
6.3	8	91	53	0.12	111710 0063	94,50
6.4	8	91	53	0.12	111710 0064	94,50
6.5	8	91	53	0.12	111710 0065	94,50
6.6	8	91	53	0.12	111710 0066	94,50
6.7	8	91	53	0.12	111710 0067	94,50

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D m7 mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
6.8	8	91	53	0.12	111710 0068	94,50
6.9	8	91	53	0.12	111710 0069	94,50
7	8	91	53	0.12	111710 0070	94,50
7.1	8	91	53	0.12	111710 0071	94,50
7.2	8	91	53	0.12	111710 0072	94,50
7.3	8	91	53	0.12	111710 0073	94,50
7.4	8	91	53	0.12	111710 0074	94,50
7.5	8	91	53	0.12	111710 0075	94,50
7.6	8	91	53	0.12	111710 0076	94,50
7.7	8	91	53	0.12	111710 0077	94,50
7.8	8	91	53	0.12	111710 0078	94,50
7.9	8	91	53	0.12	111710 0079	94,50
8	8	91	53	0.12	111710 0080	94,50
8.1	10	103	61	0.15	111710 0081	136,–
8.2	10	103	61	0.15	111710 0082	136,–
8.3	10	103	61	0.15	111710 0083	136,–
8.4	10	103	61	0.15	111710 0084	136,–
8.5	10	103	61	0.15	111710 0085	136,–
8.6	10	103	61	0.15	111710 0086	136,–
8.7	10	103	61	0.15	111710 0087	136,–
8.8	10	103	61	0.15	111710 0088	136,–
8.9	10	103	61	0.15	111710 0089	136,–
9	10	103	61	0.15	111710 0090	136,–
9.1	10	103	1	0.15	111710 0091	136,–
9.2	10	103	61	0.15	111710 0092	136,–
9.3	10	103	61	0.15	111710 0093	136,–
9.4	10	103	61	0.15	111710 0094	136,–
9.5	10	103	61	0.15	111710 0095	136,–
9.6	10	103	61	0.15	111710 0096	136,–
9.7	10	103	61	0.15	111710 0097	136,–
9.8	10	103	61	0.15	111710 0098	136,–
9.9	10	103	61	0.15	111710 0099	136,–
10	10	103	61	0.15	111710 0100	136,–
10.1	12	116	69	0.15	111710 0101	189,–
10.2	12	116	69	0.15	111710 0102	189,–
10.3	12	116	69	0.15	111710 0103	189,–
10.4	12	116	69	0.15	111710 0104	189,–
10.5	12	116	69	0.15	111710 0105	189,–
10.6	12	116	69	0.15	111710 0106	189,–

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D m7 mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
10.7	12	116	69	0.15	111710 0107	189,–
10.8	12	116	69	0.15	111710 0108	189,–
10.9	12	116	69	0.15	111710 0109	189,–
11	12	116	69	0.15	111710 0110	189,–
11.1	12	116	69	0.15	111710 0111	189,–
11.2	12	116	69	0.15	111710 0112	189,–
11.3	12	116	69	0.15	111710 0113	189,–
11.4	12	116	69	0.15	111710 0114	189,–
11.5	12	116	69	0.15	111710 0115	189,–
11.6	12	116	69	0.15	111710 0116	189,–
11.7	12	116	69	0.15	111710 0117	189,–
11.8	12	116	69	0.15	111710 0118	189,–
11.9	12	116	69	0.15	111710 0119	189,–
12	12	116	69	0.15	111710 0120	189,–
12.5	14	122	75	0.16	111710 0125	260,–
12.8	14	122	75	0.16	111710 0128	260,–
13	14	122	75	0.16	111710 0130	260,–
13.5	14	122	75	0.16	111710 0135	260,–
13.8	14	122	75	0.16	111710 0138	260,–
14	14	122	75	0.16	111710 0140	260,–
14.5	16	131	81	0.16	111710 0145	315,–
14.8	16	131	81	0.16	111710 0148	315,–
15	16	131	81	0.16	111710 0150	315,–
15.5	16	131	81	0.16	111710 0155	315,–
15.8	16	131	81	0.16	111710 0158	315,–
16	16	131	81	0.16	111710 0160	315,–
16.5	18	141	91	0.2	111710 0165	419,–
16.8	18	141	91	0.2	111710 0168	419,–
17	18	141	91	0.2	111710 0170	419,–
17.5	18	141	91	0.2	111710 0175	419,–
17.8	18	141	91	0.2	111710 0178	419,–
18	18	141	91	0.2	111710 0180	419,–
18.5	20	151	99	0.2	111710 0185	525,–
18.8	20	151	99	0.2	111710 0188	525,–
19	20	151	99	0.2	111710 0190	525,–
19.5	20	151	99	0.2	111710 0195	525,–
19.8	20	151	99	0.23	111710 0198	525,–
20	20	151	99	0.23	111710 0200	525,–

1154



... solid carbide indexable insert drill.

ATORN®
Performance demands quality

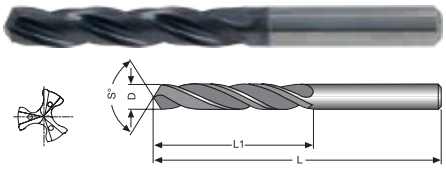
ATORN® SC high-performance drill HIGH FEED 5D

VHM | Werks-norm | 135° | 30° | 5xD | DIN 6535 HA | Z 3 | TiAlN | Vc/fz | 367

- **3-edged drill for high feed rate**
- **Cutting material: Ultra micro-grain SC TiAlNplus**
- **special HFD point thinning reduces cutting forces and generates short chip breaking**
- large chip spaces allow good chip removal
- optimum centring characteristics

for high feed rate

NEW · NUOVO · NEU · NOUVEAU · NUEVO



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 80-120	● 60-100	● 60-90	○ 60-75	○ 60-75		● 80-120	● 60-100										
	Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									

D mm	L1 mm	L mm	D1 h6 mm	● Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3	28	66	6	0.12	**111585** 0300	85,–
3.1	28	66	6	0.12	111585 0310	85,–
3.2	28	66	6	0.13	111585 0320	85,–
3.3	28	66	6	0.13	111585 0330	85,–
3.4	28	66	6	0.14	111585 0340	85,–
3.5	28	66	6	0.14	111585 0350	85,–
3.6	28	66	6	0.14	111585 0360	85,–
3.7	28	66	6	0.15	111585 0370	85,–
3.8	36	74	6	0.15	111585 0380	85,–
3.9	36	74	6	0.16	111585 0390	85,–
4	36	74	6	0.16	111585 0400	85,–
4.1	36	74	6	0.16	111585 0410	85,–
4.2	36	74	6	0.17	111585 0420	85,–
4.3	36	74	6	0.17	111585 0430	85,–
4.4	36	74	6	0.18	111585 0440	85,–
4.5	36	74	6	0.18	111585 0450	85,–
4.6	36	74	6	0.18	111585 0460	85,–
4.7	36	74	6	0.19	111585 0470	85,–
4.8	44	82	6	0.19	111585 0480	85,–
4.9	44	82	6	0.2	111585 0490	85,–
5	44	82	6	0.2	111585 0500	85,–
5.1	44	82	6	0.2	111585 0510	85,–
5.2	44	82	6	0.21	111585 0520	85,–
5.3	44	82	6	0.21	111585 0530	85,–
5.4	44	82	6	0.22	111585 0540	85,–
5.5	44	82	6	0.22	111585 0550	85,–
5.6	44	82	6	0.22	111585 0560	85,–
5.7	44	82	6	0.23	111585 0570	85,–
5.8	44	82	6	0.23	111585 0580	85,–
5.9	44	82	6	0.24	111585 0590	85,–
6	44	82	6	0.24	111585 0600	85,–
6.1	53	91	8	0.24	111585 0610	107,–
6.2	53	91	8	0.25	111585 0620	107,–
6.3	53	91	8	0.25	111585 0630	107,–
6.4	53	91	8	0.26	111585 0640	107,–
6.5	53	91	8	0.26	111585 0650	107,–
6.6	53	91	8	0.26	111585 0660	107,–
6.7	53	91	8	0.27	111585 0670	107,–
6.8	53	91	8	0.27	111585 0680	107,–
6.9	53	91	8	0.28	111585 0690	107,–
7	53	91	8	0.28	111585 0700	107,–
7.1	53	91	8	0.28	111585 0710	107,–
7.2	53	91	8	0.29	111585 0720	107,–

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D mm	L1 mm	L mm	D1 h6 mm	● Feed f steel < 1000 N/mm² mm/rev	art.no.	€
7.3	53	91	8	0.29	111585 0730	107,–
7.4	53	91	8	0.3	111585 0740	107,–
7.5	53	91	8	0.3	111585 0750	107,–
7.6	53	91	8	0.3	111585 0760	107,–
7.7	53	91	8	0.31	111585 0770	107,–
7.8	53	91	8	0.31	111585 0780	107,–
7.9	53	91	8	0.32	111585 0790	107,–
8	53	91	8	0.32	111585 0800	107,–
8.1	61	103	10	0.32	111585 0810	134,–
8.2	61	103	10	0.33	111585 0820	134,–
8.3	61	103	10	0.33	111585 0830	134,–
8.4	61	103	10	0.34	111585 0840	134,–
8.5	61	103	10	0.34	111585 0850	134,–
8.6	61	103	10	0.34	111585 0860	134,–
8.7	61	103	10	0.35	111585 0870	134,–
8.8	61	103	10	0.35	111585 0880	134,–
8.9	61	103	10	0.36	111585 0890	134,–
9	61	103	10	0.36	111585 0900	134,–
9.1	61	103	10	0.36	111585 0910	134,–
9.2	61	103	10	0.37	111585 0920	134,–
9.3	61	103	10	0.37	111585 0930	134,–
9.4	61	103	10	0.38	111585 0940	134,–
9.5	61	103	10	0.38	111585 0950	134,–
9.6	61	103	10	0.38	111585 0960	134,–
9.7	61	103	10	0.39	111585 0970	134,–
9.8	61	103	10	0.39	111585 0980	134,–
9.9	61	103	10	0.4	111585 0990	134,–
10	61	103	10	0.4	111585 1000	134,–
10.1	71	118	12	0.4	111585 1010	190,–
10.2	71	118	12	0.4	111585 1020	190,–
10.3	71	118	12	0.41	111585 1030	190,–
10.4	71	118	12	0.42	111585 1040	190,–
10.5	71	118	12	0.42	111585 1050	190,–
10.6	71	118	12	0.42	111585 1060	190,–
10.7	71	118	12	0.43	111585 1070	190,–
10.8	71	118	12	0.43	111585 1080	190,–
10.9	71	118	12	0.44	111585 1090	190,–
11	71	118	12	0.44	111585 1100	190,–
11.1	71	118	12	0.44	111585 1110	190,–
11.2	71	118	12	0.45	111585 1120	190,–
11.3	71	118	12	0.45	111585 1130	190,–
11.4	71	118	12	0.46	111585 1140	190,–
11.5	71	118	12	0.46	111585 1150	190,–

1154

D mm	L1 mm	L mm	D1 h6 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
11.6	71	118	12	0.46	111585 1160	190,–
11.7	71	118	12	0.47	111585 1170	190,–
11.8	71	118	12	0.47	111585 1180	190,–
11.9	71	118	12	0.48	111585 1190	190,–
12	71	118	12	0.48	111585 1200	190,–
12.2	77	124	14	0.49	111585 1220	250,–
12.5	77	124	14	0.5	111585 1250	250,–
12.8	77	124	14	0.51	111585 1280	250,–
13	77	124	14	0.52	111585 1300	250,–
13.2	77	124	14	0.53	111585 1320	250,–
13.5	77	124	14	0.54	111585 1350	250,–
13.8	77	124	14	0.55	111585 1380	250,–
14	77	124	14	0.56	111585 1400	250,–
14.2	83	133	16	0.57	111585 1420	311,–
14.5	83	133	16	0.58	111585 1450	311,–
14.8	83	133	16	0.59	111585 1480	311,–
15	83	133	16	0.6	111585 1500	311,–
15.1	83	133	16	0.6	111585 1510	311,–
15.2	83	133	16	0.61	111585 1520	311,–

D mm	L1 mm	L mm	D1 h6 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
15.5	83	133	16	0.62	111585 1550	311,–
15.8	83	133	16	0.63	111585 1580	311,–
16	83	133	16	0.64	111585 1600	311,–
16.2	93	143	18	0.65	111585 1620	425,–
16.5	93	143	18	0.66	111585 1650	425,–
16.8	93	143	18	0.67	111585 1680	425,–
17	93	143	18	0.68	111585 1700	425,–
17.2	93	143	18	0.69	111585 1720	425,–
17.5	93	143	18	0.7	111585 1750	425,–
17.8	93	143	18	0.71	111585 1780	425,–
18	93	143	18	0.72	111585 1800	425,–
18.2	101	153	20	0.73	111585 1820	529,–
18.5	101	153	20	0.74	111585 1850	529,–
18.8	101	153	20	0.75	111585 1880	529,–
19	101	153	20	0.76	111585 1900	529,–
19.2	101	153	20	0.77	111585 1920	529,–
19.5	101	153	20	0.78	111585 1950	529,–
19.8	101	153	20	0.79	111585 1980	529,–
20	101	153	20	0.8	111585 2000	529,–

ATORN® Solid carbide drill, 3-edged

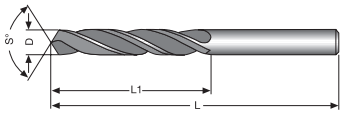
VHM | DIN 6539 | Typ N | 150° | 28° | 5xD | Z 3 | TiN | Vc/fz 367

- 3 cutting edges, with wider flutes
- **For precisely positioned and shaped bores in solid material**
- Very good self-centring
- Very good bore surfaces

3 cutting edges


TiN-coated


Uncoated



material	● very well suited ○ well suited	steel < 700 N/mm²	steel < 1000 N/mm²	steel < 1400 N/mm²	stainless steel ferrit./martens.	stainless steel austenitic	stainless steel duplex	cast iron GG/GTS	cast iron GGG	titanium alloys	superalloys Fe/NiCo-based < 30 HRc	superalloys Fe/NiCo-based ≥ 30 HRc	aluminium < 8 % Si	aluminium ≥ 8 % Si	copper Cu-alloy	graphite GRP/CFP/thermo.	hardened steel < 55 HRc	hardened steel < 60 HRc	hardened steel ≥ 60 HRc
	111013....	● 90	● 75	○ 60				● 70-85	● 80				● 160	● 120					
	111014....	● 90-100	● 50-100	● 35-70	○ 40			● 100-140	● 90-100	○ 18			● 170-200	● 140					
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

D h7 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	Blank art.no.	Blank €	TiN art.no.	TiN €
3	46	22	0.08	**111013** 0030	32,–	**111014** 0030	35,20
3.2	49	24	0.08	111013 0032	32,–	111014 0032	35,20
3.3	49	24	0.08	111013 0033	32,–	111014 0033	35,20
3.5	52	27	0.08	111013 0035	32,–	111014 0035	35,20
3.8	55	30	0.08	111013 0038	32,–	111014 0038	35,20
4	55	30	0.10	111013 0040	32,–	111014 0040	35,20
4.2	55	30	0.10	111013 0042	36,60	111014 0042	40,40
4.5	58	32	0.10	111013 0045	36,60	111014 0045	40,40
4.8	62	35	0.10	111013 0048	36,60	111014 0048	40,40
5	62	35	0.10	111013 0050	36,60	111014 0050	40,40
5.5	66	39	0.10	111013 0055	45,–	111014 0055	49,60
5.8	66	39	0.10	111013 0058	45,–	111014 0058	49,60
6	66	39	0.10	111013 0060	45,–	111014 0060	49,60
6.5	70	42	0.13	111013 0065	59,–	111014 0065	65,–
6.8	74	45	0.13	111013 0068	59,–	111014 0068	65,–
7	74	45	0.13	111013 0070	59,–	111014 0070	65,–

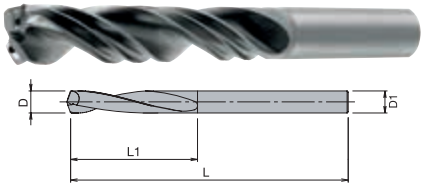
D h7 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	Blank art.no.	Blank €	TiN art.no.	TiN €
7.5	74	45	0.13	111013 0075	69,–	111014 0075	76,–
7.8	79	48	0.13	111013 0078	69,–	111014 0078	76,–
8	79	48	0.16	111013 0080	69,–	111014 0080	76,–
8.5	79	48	0.16	111013 0085	65,–	111014 0085	72,–
9	84	52	0.16	111013 0090	65,–	111014 0090	72,–
9.5	84	52	0.16	111013 0095	81,–	111014 0095	90,–
9.8	89	55	0.16	111013 0098	81,–	111014 0098	90,–
10	89	55	0.20	111013 0100	81,–	111014 0100	90,–
10.2	89	55	0.20	111013 0102	85,–	111014 0102	94,–
10.5	89	55	0.20	111013 0105	87,–	111014 0105	95,50
11	95	60	0.20	111013 0110	98,–	111014 0110	104,–
12	102	65	0.20	111013 0120	109,–	111014 0120	116,–
13	102	65	0.20	111013 0130	125,–	111014 0130	132,–
14	107	66	0.20	111013 0140	171,–	111014 0140	181,–
15	111	70	0.20	111013 0150	189,–	111014 0150	200,–
16	115	73	0.25	111013 0160	260,–	111014 0160	270,–

ATORN® Solid carbide drill reamers

VHM | Werks-norm | Typ N | 140° | 30° | 5xD | DIN 6535 HA | Z 2 | TiAlN | Vc/fz | 367

Drilling and reaming in one work step

- **Drilling and reaming in one operation**
- Reduced machining and auxiliary processing times
- Production of bores in **tolerance zone H7**
- 2 boring inserts and 4 reaming inserts for high surface quality, dimensional stability and true-running accuracy



material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 65	● 50	○ 30				● 50	● 50										

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

● Feed f steel < 1000 N/mm² mm/rev

D H7 mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3.98	6	74	36	0.14	**111701** 0398	118,50
3.99	6	74	36	0.14	111701 0399	118,50
4	6	74	36	0.14	111701 0400	118,50
4.01	6	74	36	0.14	111701 0401	118,50
4.02	6	74	36	0.14	111701 0402	118,50
4.98	6	82	44	0.17	111701 0498	118,50
4.99	6	82	44	0.17	111701 0499	118,50
5	6	82	44	0.17	111701 0500	118,50
5.01	6	82	44	0.17	111701 0501	118,50
5.02	6	82	44	0.17	111701 0502	118,50
5.98	6	91	53	0.19	111701 0598	118,50
5.99	6	91	53	0.19	111701 0599	118,50
6	6	91	53	0.19	111701 0600	118,50
6.01	6	91	53	0.19	111701 0601	118,50
6.02	6	91	53	0.19	111701 0602	118,50
7.98	8	91	53	0.23	111701 0798	118,50
7.99	8	91	53	0.23	111701 0799	118,50

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● Feed f steel < 1000 N/mm² mm/rev

D H7 mm	D1 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
8	8	91	53	0.23	111701 0800	118,50
8.01	8	91	53	0.23	111701 0801	118,50
8.02	8	91	53	0.23	111701 0802	118,50
9.98	10	103	61	0.28	111701 0998	168,–
9.99	10	103	61	0.28	111701 0999	168,–
10	10	103	61	0.28	111701 1000	168,–
10.01	10	103	61	0.28	111701 1001	168,–
10.02	10	103	61	0.28	111701 1002	168,–
11.98	12	118	71	0.32	111701 1198	240,–
11.99	12	118	71	0.32	111701 1199	240,–
12	12	118	71	0.32	111701 1200	240,–
12.01	12	118	71	0.32	111701 1201	240,–
12.02	12	118	71	0.32	111701 1202	240,–
14	14	124	77	0.35	111701 1400	305,–
16	16	133	83	0.35	111701 1600	395,–
18	18	143	93	0.35	111701 1800	470,–
20	20	153	101	0.35	111701 2000	559,–

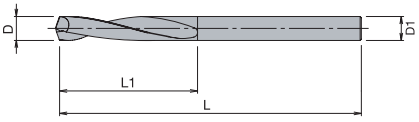
1154

ATORN® Solid carbide drill reamer for fibrous materials

VHM | Werks-norm | 2xD | Z 3 | DLC | Vc/fz | 361



- 3 cutting edges
- **Cutting material: solid carbide, DLC-coated**
- **For non-delamination boring of fibrous materials**
- Special geometry



material: ● very well suited ○ well suited

aluminium		copper	plastics			timber materials	honeycomb	AFRP	GFRP /CFRP		graphite
< 8 % Si	≥ 8 % Si	Cu-alloy	thermoplastics	elastomers	duroplasts		sandwich	aramid	< 30 % fibre content	≥ 30 % fibre content	
									● 60-100	● 60-100	

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

● Feed f graphite mm/rev

D h6 mm	D1 h6 mm	L mm	L1 mm	Feed f graphite mm/rev	art.no.	€
2	2	100	50	0.02	**111815** 0200	41,40
2.48	2.48	100	50	0.02	111815 0248	41,40
3	3	100	50	0.03	111815 0300	41,40
3.17	3.17	100	50	0.03	111815 0317	46,10
4	4	100	50	0.04	111815 0400	48,10
4.21	4.21	100	50	0.04	111815 0421	52,–
4.82	4.82	100	50	0.04	111815 0482	56,–
5.05	5.05	100	50	0.05	111815 0505	57,50
5.53	5.53	100	50	0.05	111815 0553	57,50

1176

● Feed f graphite mm/rev

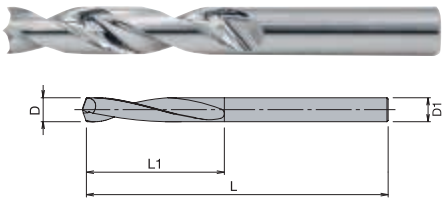
D h6 mm	D1 h6 mm	L mm	L1 mm	Feed f graphite mm/rev	art.no.	€
6	6	100	50	0.06	111815 0600	62,–
6.35	6.35	100	50	0.06	111815 0635	66,–
7	7	100	50	0.07	111815 0700	72,50
7.92	7.92	100	50	0.07	111815 0792	83,–
8	8	100	50	0.08	111815 0800	83,–
8.63	8.63	100	50	0.08	111815 0863	95,–
9	9	100	50	0.09	111815 0900	101,–
10	10	100	50	0.10	111815 1000	111,–
12	12	100	50	0.12	111815 1200	148,–

1176

ATORN® Solid carbide twist drill bit for fibrous materials

VHM | Werks-norm | 30° | Vc/fz | 361

- Special 'sickle-shaped' grinding
- **For fibrous materials (aramid)**
- **No delamination with textile structures**
- Polished surface
- Other dimensions available on request



material	● very well suited ○ well suited	aluminium < 8 % Si	aluminium ≥ 8 % Si	copper Cu-alloy	plastics thermoplastics	plastics elastomers	plastics duroplasts	timber materials	honeycomb sandwich	AFRP aramid	GFRP /CFRP < 30 % fibre content	GFRP /CFRP ≥ 30 % fibre content	graphite
					● 120-130				● 120	● 110			
	Cutting speed Vc m/min.				Please adjust these guidelines according to clamping operation and machine set-up.								

D h6 mm	D1 h6 mm	L mm	L1 mm	● Feed f graphite mm/rev	art.no.	€
3	3	45	16	0.04	**111810** 0300	20,80
4	4	55	18	0.05	111810 0400	32,40
5	5	60	26	0.06	111810 0500	33,50
6	6	66	28	0.07	111810 0600	38,80

1176

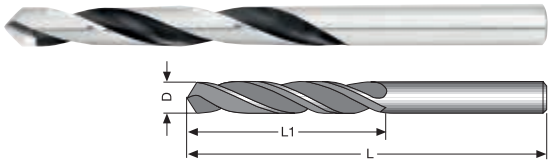
D h6 mm	D1 h6 mm	L mm	L1 mm	● Feed f graphite mm/rev	art.no.	€
8	8	80	38	0.07	111810 0800	49,50
10	10	90	50	0.08	111810 1000	67,–
12	12	100	50	0.09	111810 1200	90,50

1176

ATORN® Twist drill bit with solid carbide cutting insert for fibrous materials

HM | DIN 338 | 90° | 25° | 5xD | Vc/fz | 361

- **Specially for fibre plastics**
- Point angle 90°
- **Self-centring 4-surface grinding**
- Blank surface
- HSS shank



material	● very well suited ○ well suited	aluminium < 8 % Si	aluminium ≥ 8 % Si	copper Cu-alloy	plastics thermoplastics	plastics elastomers	plastics duroplasts	timber materials	honeycomb sandwich	AFRP aramid	GFRP /CFRP < 30 % fibre content	GFRP /CFRP ≥ 30 % fibre content	graphite
		○ 50									● 100-200	● 100-150	
	Cutting speed Vc m/min.				Please adjust these guidelines according to clamping operation and machine set-up.								

D h7 mm	L mm	L1 mm	● Feed f graphite mm/rev	art.no.	€
2.4	57	30	0.03	**111805** 0240	13,95
2.5	57	30	0.03	111805 0250	11,65
3	61	33	0.03	111805 0300	11,80
3.5	70	39	0.03	111805 0350	11,95
4	75	43	0.04	111805 0400	12,15
4.1	75	43	0.04	111805 0410	14,15
4.2	75	43	0.04	111805 0420	14,15
4.5	80	47	0.04	111805 0450	12,40
4.9	86	52	0.04	111805 0490	14,30
5	86	52	0.05	111805 0500	12,60
5.1	86	52	0.05	111805 0510	15,30
5.5	93	57	0.05	111805 0550	13,55
5.7	93	57	0.05	111805 0570	16,10
5.8	93	57	0.05	111805 0580	16,10
6	93	57	0.06	111805 0600	13,90
6.1	101	63	0.06	111805 0610	15,40
6.5	101	63	0.06	111805 0650	16,–
6.6	109	69	0.06	111805 0660	18,40
6.8	109	69	0.06	111805 0680	18,40
7	109	69	0.07	111805 0700	16,–

1176

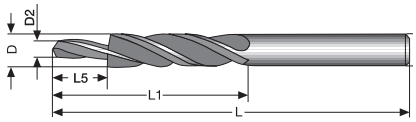
D h7 mm	L mm	L1 mm	● Feed f graphite mm/rev	art.no.	€
7.5	109	69	0.07	111805 0750	17,50
8	117	75	0.08	111805 0800	18,60
8.2	117	75	0.08	111805 0820	22,50
8.5	117	75	0.08	111805 0850	20,20
9	125	81	0.09	111805 0900	20,40
9.4	125	81	0.09	111805 0940	24,40
9.5	125	81	0.09	111805 0950	22,30
9.9	133	87	0.09	111805 0990	24,40
10	133	87	0.10	111805 1000	22,30
10.5	133	87	0.10	111805 1050	22,30
11	142	94	0.11	111805 1100	26,90
11.5	142	94	0.11	111805 1150	32,80
12	151	101	0.12	111805 1200	32,80
12.2	151	101	0.12	111805 1220	37,40
12.5	151	101	0.12	111805 1250	37,40
13	151	101	0.13	111805 1300	37,40
13.5	160	108	0.13	111805 1350	50,50
14	160	108	0.14	111805 1400	50,50
15	169	114	0.15	111805 1500	57,50
16	178	120	0.16	111805 1600	66,50

1176

ATORN® Solid carbide short step drill bit

VHM | Werks-norm | 140° | DIN 6535 HA | TiAlN | Vc/fz | 369

- ∅ tolerance h8
- **Cutting material: solid carbide, TiAlN-coated**
- For economical bore and countersink production in one operation
- Tight concentricity tolerance for precise alignment
- **Especially suitable for NC machines and automatic units**
- **Note:** The cutting speed is determined by the large diameter, while the feed rate is determined by the small diameter

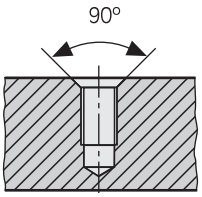


material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	●	●	●	○	●	●	○	○		○	○	○		●		
		75	60	60	25	30	25	70	60	35	35		200	180	80		25		
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		

90°



- **For core drilling**
- Step length in accordance with DIN 8378
- **For DIN-ISO 273 screw through-holes and DIN 74-1 countersinks, ISO 2009-2010 and DIN 963-966 countersunk screws**



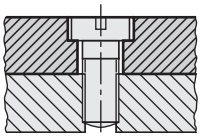
for thread	D h8 mm	D2 h8 mm	D1 mm	L5 mm	L1 mm	L mm	Feed f steel < 1000 N/mm² mm/rev	90° countersink angle art.no.	€
M 3	6	2.5	6	8.8	28	66	0.10	**102202** 0003	52,80
M 4	6	3.3	6	11.4	28	66	0.10	102202 0004	52,80
M 5	6	4.2	6	13.6	28	66	0.10	102202 0005	52,80
M 6	8	5	8	16.5	41	79	0.10	102202 0006	81,50
M 8	10	6.8	10	21	47	89	0.12	102202 0008	115,–
M 10	12	8.5	12	25.5	55	102	0.15	102202 0010	157,–
M 12	14	10.2	14	30	60	107	0.15	102202 0012	198,–

1154

180°



- **For through-holes**
- Step length in accordance with DIN 8376,
- **For screw through-holes in accordance with DIN-ISO 273 and countersinks in accordance with DIN 74 Part 2, Type H, J and K, medium version; for screws in accordance with DIN 912, 6912 and 7984, ISO 1207 (DIN 84)**



for thread	D h8 mm	D2 h8 mm	D1 mm	L5 mm	L1 mm	L mm	Feed f steel < 1000 N/mm² mm/rev	180° countersink angle art.no.	€
M 3	6	3.4	6	9	28	64	0.10	**102211** 0003	53,–
M 4	8	4.5	8	11	37	79	0.10	102211 0004	81,–
M 5	10	5.5	10	13	43	89	0.11	102211 0005	112,–
M 6	11	6.6	12	15	55	102	0.11	102211 0006	153,–
M 8	15	9	16	19	60	115	0.14	102211 0008	255,–
M 10	18	11	18	23	62	123	0.14	102211 0010	310,–

1154

Over 180,000 tools available online!
Register online now!
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Overview of modular drilling tools

	Factory standard								
Sorting by type and diameter									
Brand	palbit	ATORN				palbit	palbit	palbit	palbit
System	CHT	ETD 840	PXD	T-A® Original GEN2 T-A®	Phoenix PD	SCS	SCC	Spot Face	TDS
Type/info	NC spotting				XCMT	SPKX	SPKX	SPKX	WCKX
Drilling depth		3 x D, 7 x D, 10 x D	3 and 5 x D	to 32 x D	2, 3, 4 and 5 x D	3 and 4 x D	3 and 4 x D		3 x D
Diameter [mm]	13	8 - 40	14 - 25,4	9,5 - 114	15 - 63	13 - 50	50 - 80	10 - 25	13 - 58
Shank	Straight	Straight	Straight	Straight / MK	Straight	Straight	Straight	Straight	Straight
Cutting material	HM	HM	Solid carbide	HSS-E / HM	HM	HM	HM	HM	HM
Coating	PH7920	TiAlN	XP3425/1425, CF225	AM 200 / 300™	XP / CK	PH6920/6930	PH6920/6930	PH6920/6930	PH6920/6930
Page	168	168	173	175	187	193	195	196	197
Material groups	Usage recommendations								
Steel < 700 N/mm²	●	●	●	●	●	●	●	●	●
Steel < 1000 N/mm²	●	●	●	●	●	●	●	●	●
Steel < 1400 N/mm²	●	●	●	●	●	●	●	●	●
Stainless steel ferritic/martensitic	●	●	○	●	●	●	●	●	●
Stainless steel austenitic	●	●	○	●	●	●	●	●	●
Stainless steel duplex	○	○		●	○				
Cast iron GG/GTS	●	●	●	●	●	●	●	●	●
Cast iron GGG	●	●	●	●	●	●	●	●	●
Titanium alloys		●		●	○	○	○	○	○
Superalloys Fe/NiCo base < 30 HRc		●		●	○	○	○	○	○
Superalloys Fe/NiCo base ≥ 30 HRc		○		○	○	○	○	○	○
Aluminium < 8 % Si			●		●	○	○	○	○
Aluminium ≥ 8 % Si		○	●	○	●	○	○	○	○
Copper Cu-alloy		●	●	●	●	○	○	○	○
Graphite GRP/CFP/thermoset									
Hardened steel < 55 HRc		○		○	○				
Hardened steel < 60 HRc									
Hardened steel ≥ 60 HRc									

	Factory standard								
Sorting by type and diameter									
Brand	palbit	palbit	ATORN	SARA	ATORN	ATORN	ATORN	ATORN	SARA
System	TDC	Vortex Drill	UNI 5 in 1	SARAcut 2.0	Precision boring bar	Core and countersink drill	Solid measure core drill	Reverse countersink 45°/180°	SARADRILL
Type/info	WCKX	WCKX	WCHX	XPNT, XPET	CCMT	CCMT	CCMT	TCMT	
Drilling depth	3 x D	10 x D	1,5 and 2,25 x D	1,5 and 2,5 x D	2,5 x D				to 15 x D
Diameter	59 - 80	45 - 180	8 - 26	8 - 32	10 - 32	16 - 48	9,8 - 31,8	15 - 76	49 - 270
Shank	Straight	Straight	Straight	Straight	Straight	Straight	Straight	Straight	MK
Cutting material	HM	HM	HM	HM	HM	HM	HM	HM	HSS-E-PM
Coating	PH6920/6930	PH6920/6930	HW7310, HC7625/7535		ICI-dependent	ICI-dependent	ICI-dependent	ICI-dependent	(TiN)
Page	198	199	202	203	205	206	207	207	209
Material groups	Usage recommendations								
Steel < 700 N/mm²	●	●	●	●	●	●	●	●	●
Steel < 1000 N/mm²	●	●	●	●	●	●	●	●	●
Steel < 1400 N/mm²	●	●	●	●	●	●	●	●	●
Stainless steel ferritic/martensitic	●	●	●	●	●	●	●	●	○
Stainless steel austenitic	●	●	●	●	●	●	●	●	○
Stainless steel duplex			○	○	○	○	○	○	○
Cast iron GG/GTS	●	●	●	●	○	○	○	○	●
Cast iron GGG	●	●	●	●	○	○	○	○	●
Titanium alloys	○		○	●	○	○	○	○	
Superalloys Fe/NiCo base < 30 HRc	○		○	●	○	○	○	○	
Superalloys Fe/NiCo base ≥ 30 HRc	○		○	○	○	○	○	○	
Aluminium < 8 % Si	○	○	●	○	●	●	●	●	●
Aluminium ≥ 8 % Si	○	○	●	○	●	●	●	●	●
Copper Cu-alloy	○	○	●	○	○	○	○	○	○
Graphite GRP/CFP/thermoset									
Hardened steel < 55 HRc									○
Hardened steel < 60 HRc									
Hardened steel ≥ 60 HRc									

palbit Indexable inserts NC spotting drill bit CHT

90° | Vc/fz | 374

- Surface-hardened carrier tools
- **for NC spot drilling and chamfering**
- **Suitable indexable cutting inserts SOMT**



Centring, chamfering, engraving



100800 1310

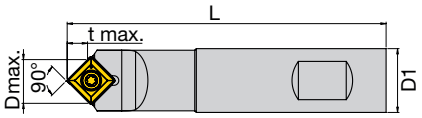


100800 1315

Single

Designation	D max. mm	t max. mm	D1 mm	L mm	Number of index. inserts	suitable indexable inserts			art.no.	€
CHT S16H N11-45	13	6.5	16	100	1	SOMT 11T308	A1	B1	**100800** 1310	115,50
CHT S16M N11-45	13	6.5	16	150	1	SOMT 11T308	A1	B1	100800 1315	146,50

2174



NC spotting drill bit incl. 10 indexable cutting inserts

Sets

Designation	Contents			art.no.	€
PK SOMT 11T308 CHTS16H	Indexable inserts centre drill bits L = 100 mm incl. 10 x SOMT 11T308	A1	B1	**100801** 1310	234,75
PK SOMT 11T308 CHTS16M	Indexable inserts centre drill bits L = 150 mm incl. 10 x SOMT 11T308	A1	B1	100801 1315	265,75

2174

Indexable cutting inserts

ISO P M K

ISO designation		PH7920 art.no.	€
SOMT 11T308	10	**100802** 1108	19,50

2170



Spare parts

	Screw art.no.	€
A1	321099 0009	4,10

3160

	TORX art.no.	€
B1	703053 0150	1,79

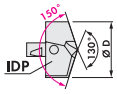
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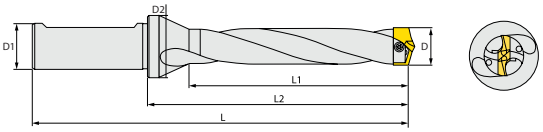
ATORN® ETD 840 indexable insert drill bit

3xD | 5xD | 7xD | Vc/fz | 374

- **Drilling in the 8.0 - 40.0 mm diameter range**
- **Innovative cutting edge geometry**
- **Up to 10xD and Ø 50 mm available on request**
- Made from high-strength, heat-resistant powdered metal
- Polished chip chambers for low-vibration, reliable chip removal
- **Indexable inserts available from the manufacturer in 0.1 mm diameter increments**
- High bore surface quality and precision
- **Coated bodies for increased wear-resistance available on request**









3xD

D mm	D1 h6 mm	D2 mm	L mm	L1 mm	L2 mm						art.no.	€
8.0 - 8.4	10 (HA)	18	87	32	42		B1			E1	**106003** 0080	191,–
8.5 - 8.9	10 (HA)	18	89	34	44		B1			E1	106003 0085	191,–
9.0 - 9.4	10 (HA)	18	92	36	47		B2			E1	106003 0090	191,–
9.5 - 9.9	12 (HA)	18	97	38	49		B2			E1	106003 0095	191,–
10.0 - 10.4	12 (HA)	18	99	40	51		B3			E1	106003 0100	191,–
10.5 - 10.9	12 (HA)	18	102	42	54		B3			E1	106003 0105	191,–
11.0 - 11.4	12 (HA)	18	104	44	56		B3			E1	106003 0110	191,–
11.5 - 11.9	12 (HA)	18	107	46	59		B3			E1	106003 0115	191,–
12.0 - 12.4	16 (HB)	21	109	48	61	A1	B4	C1		E1	106003 0120	193,–
12.5 - 12.9	16 (HB)	21	111	50	63	A1	B4	C1		E1	106003 0125	193,–
13.0 - 13.4	16 (HB)	21	114	52	66	A1	B4	C1		E1	106003 0130	193,–
13.5 - 13.9	16 (HB)	21	116	54	68	A1	B4	C1		E1	106003 0135	193,–
14.0 - 14.4	16 (HB)	21	119	56	71	A1	B5		D1	E2	106003 0140	209,–
14.5 - 14.9	20 (HB)	27	123	58	73	A1	B5		D1	E2	106003 0145	209,–

1152



D mm	D1 h6 mm	D2 mm	L mm	L1 mm	L2 mm						art.no.	€
15.0 - 15.4	20 (HB)	27	127	60	77	A1	B5		D1	E2	106003 0150	209,–
15.5 - 15.9	20 (HB)	27	130	62	80	A1	B5		D1	E2	106003 0155	209,–
16.0 - 16.4	20 (HB)	27	132	64	82	A1	B6		D1	E2	106003 0160	210,–
16.5 - 16.9	20 (HB)	27	135	66	85	A1	B6		D1	E2	106003 0165	210,–
17.0 - 17.4	20 (HB)	27	137	68	87	A1	B6		D1	E2	106003 0170	210,–
17.5 - 17.9	20 (HB)	27	139	70	89	A1	B6		D1	E2	106003 0175	210,–
18.0 - 18.4	20 (HB)	27	142	72	92	A1	B7		D1	E3	106003 0180	210,–
18.5 - 18.9	20 (HB)	27	144	74	94	A1	B7		D1	E3	106003 0185	210,–
19.0 - 19.4	20 (HB)	27	147	76	97	A1	B7		D1	E3	106003 0190	210,–
19.5 - 19.9	20 (HB)	27	149	78	99	A1	B7		D1	E3	106003 0195	210,–
20.0 - 20.4	25 (HB)	32	157	80	101	A2	B8		D2	E3	106003 0200	250,–
20.5 - 20.9	25 (HB)	32	160	82	104	A2	B8		D2	E3	106003 0205	250,–
21.0 - 21.4	25 (HB)	32	162	84	106	A2	B8		D2	E3	106003 0210	250,–
21.5 - 21.9	25 (HB)	32	165	86	109	A2	B8		D2	E3	106003 0215	250,–
22.0 - 22.4	25 (HB)	32	167	88	111	A2	B9		D2	E3	106003 0220	250,–
22.5 - 22.9	25 (HB)	32	169	90	113	A2	B9		D2	E3	106003 0225	250,–
23.0 - 23.4	25 (HB)	32	172	92	116	A2	B9		D2	E3	106003 0230	250,–
23.5 - 23.9	25 (HB)	32	174	94	118	A2	B9		D2	E3	106003 0235	250,–
24.0 - 24.4	32 (HB)	39	181	96	121	A2	B10		D2	E4	106003 0240	310,–
24.5 - 24.9	32 (HB)	39	183	98	123	A2	B10		D2	E4	106003 0245	310,–
25.0 - 25.4	32 (HB)	39	185	100	125	A2	B10		D2	E4	106003 0250	310,–
25.5 - 25.9	32 (HB)	39	188	102	128	A2	B10		D2	E4	106003 0255	310,–
26.0 - 26.4	32 (HB)	39	190	104	130	A2	B11		D2	E4	106003 0260	310,–
26.5 - 26.9	32 (HB)	39	193	106	133	A2	B11		D2	E4	106003 0265	310,–
27.0 - 27.4	32 (HB)	39	195	108	135	A3	B11		D3	E4	106003 0270	310,–
27.5 - 27.9	32 (HB)	39	197	110	137	A3	B11		D3	E4	106003 0275	310,–
28.0 - 28.4	32 (HB)	39	200	112	140	A3	B12		D3	E4	106003 0280	405,–
28.5 - 28.9	32 (HB)	39	202	114	142	A3	B12		D3	E4	106003 0285	405,–
29.0 - 29.4	32 (HB)	39	205	116	145	A3	B12		D3	E4	106003 0290	405,–
29.5 - 29.9	32 (HB)	39	207	118	147	A3	B12		D3	E4	106003 0295	405,–
30.0 - 30.4	32 (HB)	39	209	120	149	A3	B13		D3	E5	106003 0300	405,–
30.5 - 30.9	32 (HB)	39	212	122	152	A3	B13		D3	E5	106003 0305	405,–
31.0 - 31.4	32 (HB)	39	214	124	154	A4	B13		D4	E5	106003 0310	405,–
31.5 - 31.9	32 (HB)	39	217	126	157	A4	B13		D4	E5	106003 0315	405,–
32.0 - 32.4	32 (HB)	39	219	128	159	A4	B14		D4	E5	106003 0320	485,–
32.5 - 32.9	32 (HB)	39	221	130	161	A4	B14		D4	E5	106003 0325	485,–
33.0 - 334	32 (HB)	39	224	132	164	A4	B14		D4	E5	106003 0330	485,–
33.5 - 33.9	32 (HB)	39	226	134	166	A4	B14		D4	E5	106003 0335	485,–
34.0 - 34.4	40 (HB)	55	239	136	169	A4	B14		D4	E5	106003 0340	529,–
34.5 - 34.9	40 (HB)	55	241	138	171	A4	B14		D4	E5	106003 0345	529,–
35.0 - 35.4	40 (HB)	55	243	140	173	A4	B14		D4	E5	106003 0350	529,–
35.5 - 35.9	40 (HB)	55	246	142	176	A4	B14		D4	E5	106003 0355	529,–
36.0 - 36.4	40 (HB)	55	248	144	178	A4	B15		D4	E5	106003 0360	549,–
36.5 - 36.9	40 (HB)	55	251	146	181	A4	B15		D4	E5	106003 0365	549,–
37.0 - 37.4	40 (HB)	55	253	148	183	A4	B15		D4	E5	106003 0370	549,–
37.5 - 37.9	40 (HB)	55	255	150	185	A4	B15		D4	E5	106003 0375	549,–
38.0 - 38.4	40 (HB)	55	258	152	188	A4	B15		D4	E5	106003 0380	549,–
38.5 - 38.9	40 (HB)	55	260	154	196	A4	B15		D4	E5	106003 0385	549,–
39.0 - 39.4	40 (HB)	55	263	156	193	A4	B15		D4	E5	106003 0390	549,–
39.5 - 39.9	40 (HB)	55	265	158	195	A4	B15		D4	E5	106003 0395	549,–
40.0 - 40.4	40 (HB)	55	267	160	197	A5	B16		D5	E5	106003 0400	589,–

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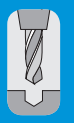


5xD

D mm	D1 h6 mm	D2 mm	L mm	L1 mm	L2 mm						art.no.	€
8.0 - 8.4	10 (HA)	18	103	48	58		B1			E1	**106005** 0080	235,–
8.5 - 8.9	10 (HA)	18	106	51	61		B1			E1	106005 0085	235,–
9.0 - 9.4	10 (HA)	18	110	54	65		B2			E1	106005 0090	235,–
9.5 - 9.9	12 (HA)	18	116	57	68		B2			E1	106005 0095	235,–
10.0 - 10.4	12 (HA)	18	119	60	71		B3			E1	106005 0100	235,–

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Continued on next page >>>



D mm	D1 h6 mm	D2 mm	L mm	L1 mm	L2 mm						art.no.	€
10.5 - 10.9	12 (HA)	18	123	63	75		B3			E1	106005 0105	235,–
11.0 - 11.4	12 (HA)	18	126	66	78		B3			E1	106005 0110	235,–
11.5 - 11.9	12 (HA)	18	130	69	82		B3			E1	106005 0115	235,–
12.0 - 12.4	16 (HB)	21	133	72	85	A1	B4	C1		E1	106005 0120	250,–
12.5 - 12.9	16 (HB)	21	136	75	88	A1	B4	C1		E1	106005 0125	250,–
13.0 - 13.4	16 (HB)	21	140	78	92	A1	B4	C1		E1	106005 0130	250,–
13.5 - 13.9	16 (HB)	21	143	81	95	A1	B4	C1		E1	106005 0135	250,–
14.0 - 14.4	16 (HB)	21	147	84	99	A1	B5		D1	E2	106005 0140	285,–
14.5 - 14.9	20 (HB)	27	152	87	102	A1	B5		D1	E2	106005 0145	285,–
15.0 - 15.4	20 (HB)	27	157	90	107	A1	B5		D1	E2	106005 0150	285,–
15.5 - 15.9	20 (HB)	27	161	93	111	A1	B5		D1	E2	106005 0155	285,–
16.0 - 16.4	20 (HB)	27	164	96	114	A1	B6		D1	E2	106005 0160	310,–
16.5 - 16.9	20 (HB)	27	168	99	118	A1	B6		D1	E2	106005 0165	310,–
17.0 - 17.4	20 (HB)	27	171	102	121	A1	B6		D1	E2	106005 0170	310,–
17.5 - 17.9	20 (HB)	27	174	105	124	A1	B6		D1	E2	106005 0175	310,–
18.0 - 18.4	20 (HB)	27	178	108	128	A1	B7		D1	E3	106005 0180	335,–
18.5 - 18.9	20 (HB)	27	181	111	131	A1	B7		D1	E3	106005 0185	335,–
19.0 - 19.4	20 (HB)	27	185	114	135	A1	B7		D1	E3	106005 0190	335,–
19.5 - 19.9	20 (HB)	27	188	117	138	A1	B7		D1	E3	106005 0195	335,–
20.0 - 20.4	25 (HB)	32	197	120	141	A2	B8		D2	E3	106005 0200	335,–
20.5 - 20.9	25 (HB)	32	201	123	145	A2	B8		D2	E3	106005 0205	335,–
21.0 - 21.4	25 (HB)	32	204	126	148	A2	B8		D2	E3	106005 0210	335,–
21.5 - 21.9	25 (HB)	32	208	129	152	A2	B8		D2	E3	106005 0215	335,–
22.0 - 22.4	25 (HB)	32	211	132	155	A2	B9		D2	E3	106005 0220	355,–
22.5 - 22.9	25 (HB)	32	214	135	158	A2	B9		D2	E3	106005 0225	355,–
23.0 - 23.4	25 (HB)	32	218	138	162	A2	B9		D2	E3	106005 0230	355,–
23.5 - 23.9	25 (HB)	32	221	141	165	A2	B9		D2	E3	106005 0235	355,–
24.0 - 24.4	32 (HB)	39	229	144	169	A2	B10		D2	E4	106005 0240	375,–
24.5 - 24.9	32 (HB)	39	232	147	172	A2	B10		D2	E4	106005 0245	375,–
25.0 - 25.4	32 (HB)	39	235	150	175	A2	B10		D2	E4	106005 0250	375,–
25.5 - 25.9	32 (HB)	39	239	153	179	A2	B10		D2	E4	106005 0255	375,–
26.0 - 26.4	32 (HB)	39	242	156	182	A2	B11		D2	E4	106005 0260	425,–
26.5 - 26.9	32 (HB)	39	246	159	186	A2	B11		D2	E4	106005 0265	425,–
27.0 - 27.4	32 (HB)	39	249	162	189	A3	B11		D3	E4	106005 0270	425,–
27.5 - 27.9	32 (HB)	39	252	165	192	A3	B11		D3	E4	106005 0275	425,–
28.0 - 28.4	32 (HB)	39	256	168	196	A3	B12		D3	E4	106005 0280	425,–
28.5 - 28.9	32 (HB)	39	259	171	199	A3	B12		D3	E4	106005 0285	425,–
29.0 - 29.4	32 (HB)	39	263	174	203	A3	B12		D3	E4	106005 0290	425,–
29.5 - 29.9	32 (HB)	39	266	177	206	A3	B12		D3	E4	106005 0295	425,–
30.0 - 30.4	32 (HB)	39	269	180	209	A3	B13		D3	E5	106005 0300	425,–
30.5 - 30.9	32 (HB)	39	273	183	213	A3	B13		D3	E5	106005 0305	425,–
31.0 - 31.4	32 (HB)	39	276	186	216	A4	B13		D4	E5	106005 0310	425,–
31.5 - 31.9	32 (HB)	39	280	189	220	A4	B13		D4	E5	106005 0315	425,–
32.0 - 32.4	32 (HB)	39	283	192	223	A4	B14		D4	E5	106005 0320	539,–
32.5 - 32.9	32 (HB)	39	286	195	226	A4	B14		D4	E5	106005 0325	539,–
33.0 - 33.4	32 (HB)	39	290	198	230	A4	B14		D4	E5	106005 0330	539,–
33.5 - 33.9	32 (HB)	39	293	201	233	A4	B14		D4	E5	106005 0335	539,–
34.0 - 34.4	40 (HB)	55	307	204	237	A4	B14		D4	E5	106005 0340	669,–
34.5 - 34.9	40 (HB)	55	310	207	240	A4	B14		D4	E5	106005 0345	669,–
35.0 - 35.4	40 (HB)	55	313	210	243	A4	B14		D4	E5	106005 0350	669,–
35.5 - 35.9	40 (HB)	55	317	213	247	A4	B14		D4	E5	106005 0355	669,–
36.0 - 36.4	40 (HB)	55	320	216	250	A4	B15		D4	E5	106005 0360	689,–
36.5 - 36.9	40 (HB)	55	324	219	254	A4	B15		D4	E5	106005 0365	689,–
37.0 - 37.4	40 (HB)	55	327	222	257	A4	B15		D4	E5	106005 0370	689,–
37.5 - 37.9	40 (HB)	55	330	225	260	A4	B15		D4	E5	106005 0375	689,–
38.0 - 38.4	40 (HB)	55	334	228	264	A4	B15		D4	E5	106005 0380	689,–
38.5 - 38.9	40 (HB)	55	337	231	267	A4	B15		D4	E5	106005 0385	689,–
39.0 - 39.4	40 (HB)	55	341	234	271	A4	B15		D4	E5	106005 0390	689,–
39.5 - 39.9	40 (HB)	55	344	237	274	A4	B15		D4	E5	106005 0395	689,–
40.0- 40.4	40 (HB)	55	347	240	277	A5	B16		D5	E5	106005 0400	719,–

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7xD

D mm	D1 h6 mm	D2 mm	L mm	L1 mm	L2 mm						art.no.	€
8.0 - 8.4	10 (HA)	18	119	64	74		B1			E1	**106007** 0080	310,–
8.5 - 8.9	10 (HA)	18	123	68	78		B1			E1	106007 0085	310,–
9.0 - 9.4	10 (HA)	18	128	72	83		B2			E1	106007 0090	310,–
9.5 - 9.9	12 (HA)	18	135	76	87		B2			E1	106007 0095	310,–
10.0 - 10.4	12 (HA)	18	139	80	91		B3			E1	106007 0100	325,–
10.5 - 10.9	12 (HA)	18	144	84	96		B3			E1	106007 0105	325,–
11.0 - 11.4	12 (HA)	18	148	88	100		B3			E1	106007 0110	325,–
11.5 - 11.9	12 (HA)	18	153	92	105		B3			E1	106007 0115	325,–
12.0 - 12.4	16 (HB)	21	157	96	109	A1	B4	C1		E1	106007 0120	360,–
12.5 - 12.9	16 (HB)	21	161	100	113	A1	B4	C1		E1	106007 0125	360,–
13.0 - 13.4	16 (HB)	21	166	104	118	A1	B4	C1		E1	106007 0130	360,–
13.5 - 13.9	16 (HB)	21	170	108	122	A1	B4	C1		E1	106007 0135	360,–
14.0 - 14.4	16 (HB)	21	175	112	127	A1	B5		D1	E2	106007 0140	390,–
14.5 - 14.9	20 (HB)	27	181	116	131	A1	B5		D1	E2	106007 0145	390,–
15.0 - 15.4	20 (HB)	27	187	120	137	A1	B5		D1	E2	106007 0150	390,–
15.5 - 15.9	20 (HB)	27	192	124	142	A1	B5		D1	E2	106007 0155	390,–
16.0 - 16.4	20 (HB)	27	196	128	146	A1	B6		D1	E2	106007 0160	460,–
16.5 - 16.9	20 (HB)	27	201	132	151	A1	B6		D1	E2	106007 0165	460,–
17.0 - 17.4	20 (HB)	27	205	136	155	A1	B6		D1	E2	106007 0170	460,–
17.5 - 17.9	20 (HB)	27	209	140	159	A1	B6		D1	E2	106007 0175	460,–
18.0 - 18.4	20 (HB)	27	214	144	164	A1	B7		D1	E3	106007 0180	450,–
18.5 - 18.9	20 (HB)	27	218	148	168	A1	B7		D1	E3	106007 0185	450,–
19.0 - 19.4	20 (HB)	27	223	152	173	A1	B7		D1	E3	106007 0190	450,–
19.5 - 19.9	20 (HB)	27	227	156	177	A1	B7		D1	E3	106007 0195	450,–
20.0 - 20.4	25 (HB)	32	237	160	181	A2	B8		D2	E3	106007 0200	549,–
20.5 - 20.9	25 (HB)	32	242	164	186	A2	B8		D2	E3	106007 0205	549,–
21.0 - 21.4	25 (HB)	32	246	168	190	A2	B8		D2	E3	106007 0210	549,–
21.5 - 21.9	25 (HB)	32	251	172	195	A2	B8		D2	E3	106007 0215	549,–
22.0 - 22.4	25 (HB)	32	255	176	199	A2	B9		D2	E3	106007 0220	539,–
22.5 - 22.9	25 (HB)	32	259	180	203	A2	B9		D2	E3	106007 0225	539,–
23.0 - 23.4	25 (HB)	32	264	184	208	A2	B9		D2	E3	106007 0230	539,–
23.5 - 23.9	25 (HB)	32	268	188	212	A2	B9		D2	E3	106007 0235	539,–
24.0 - 24.4	32 (HB)	39	277	192	217	A2	B10		D2	E4	106007 0240	639,–
24.5 - 24.9	32 (HB)	39	281	196	221	A2	B10		D2	E4	106007 0245	639,–
25.0 - 25.4	32 (HB)	39	285	200	225	A2	B10		D2	E4	106007 0250	639,–
25.5 - 25.9	32 (HB)	39	290	204	230	A2	B10		D2	E4	106007 0255	639,–
26.0 - 26.4	32 (HB)	39	294	208	234	A2	B11		D2	E4	106007 0260	639,–
26.5 - 26.9	32 (HB)	39	299	212	239	A2	B11		D2	E4	106007 0265	639,–
27.0 - 27.4	32 (HB)	39	303	216	243	A3	B11		D3	E4	106007 0270	639,–
27.5 - 27.9	32 (HB)	39	307	220	247	A3	B11		D3	E4	106007 0275	639,–
28.0 - 28.4	32 (HB)	39	312	224	252	A3	B12		D3	E4	106007 0280	829,–
28.5 - 28.9	32 (HB)	39	316	228	256	A3	B12		D3	E4	106007 0285	829,–
29.0 - 29.4	32 (HB)	39	321	232	261	A3	B12		D3	E4	106007 0290	829,–
29.5 - 29.9	32 (HB)	39	325	236	265	A3	B12		D3	E4	106007 0295	829,–
30.0 - 30.4	32 (HB)	39	329	240	269	A3	B13		D3	E5	106007 0300	829,–
30.5 - 30.9	32 (HB)	39	334	244	274	A3	B13		D3	E5	106007 0305	829,–
31.0 - 31.4	32 (HB)	39	338	248	278	A4	B13		D4	E5	106007 0310	829,–
31.5 - 31.9	32 (HB)	39	343	252	283	A4	B13		D4	E5	106007 0315	829,–
32.0 - 32.4	32 (HB)	39	347	256	287	A4	B14		D4	E5	106007 0320	899,–
32.5 - 32.9	32 (HB)	39	351	260	291	A4	B14		D4	E5	106007 0325	899,–
33.0 - 33.4	32 (HB)	39	356	264	296	A4	B14		D4	E5	106007 0330	899,–
33.5 - 33.9	32 (HB)	39	360	268	300	A4	B14		D4	E5	106007 0335	899,–
34.0 - 34.4	40 (HB)	55	375	272	305	A4	B14		D4	E5	106007 0340	969,–
34.5 - 34.9	40 (HB)	55	379	276	309	A4	B14		D4	E5	106007 0345	969,–
35.0 - 35.4	40 (HB)	55	383	280	313	A4	B14		D4	E5	106007 0350	969,–
35.5 - 35.9	40 (HB)	55	388	284	318	A4	B14		D4	E5	106007 0355	969,–
36.0 - 36.4	40 (HB)	55	392	288	322	A4	B15		D4	E5	106007 0360	1.389,–
36.5 - 36.9	40 (HB)	55	397	292	327	A4	B15		D4	E5	106007 0365	1.389,–

Continued on next page >>>

D mm	D1 h6 mm	D2 mm	L mm	L1 mm	L2 mm					art.no.	€
37.0 - 37.4	40 (HB)	55	401	296	331	A4	B15	D4	E5	106007 0370	1.389,–
37.5 - 37.9	40 (HB)	55	405	300	335	A4	B15	D4	E5	106007 0375	1.389,–
38.0 - 38.4	40 (HB)	55	410	304	340	A4	B15	D4	E5	106007 0380	1.389,–
38.5 - 38.9	40 (HB)	55	414	308	344	A4	B15	D4	E5	106007 0385	1.389,–
39.0 - 39.4	40 (HB)	55	419	312	349	A4	B15	D4	E5	106007 0390	1.389,–
39.5 - 39.9	40 (HB)	55	423	316	353	A4	B15	D4	E5	106007 0395	1.389,–
40.0 - 40.4	40 (HB)	55	427	320	357	A5	B16	D5	E5	106007 0400	1.469,–

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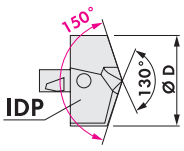
Spare parts

Clamping screw			Through bolt			Black, oiled			Nickel-plated			TORX		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	106025 0020	5,65	B1	106027 0800	8,50	C1	703001 0009	0,44	D1	703005 0013	0,27	E1	703053 0060	1,79
A2	106025 0030	5,65	B2	106027 0900	8,50				D2	703005 0015	0,33	E2	703053 0070	1,79
A3	106025 0040	5,65	B3	106027 1000	8,50				D3	703005 0020	0,33	E3	703053 0080	1,79
A4	106025 0050	5,65	B4	106027 1200	8,50				D4	703005 0025	0,35	E4	703053 0150	1,79
A5	106025 0060	5,65	B5	106027 1400	8,50				D5	703005 0030	0,37	E5	703053 0200	1,79
			B6	106027 1600	8,50									
			B7	106027 1800	8,50									
			B8	106027 2000	8,50									
			B9	106027 2200	8,50									
			B10	106027 2400	8,50									
			B11	106027 2600	8,50									
			B12	106027 2800	8,50									
			B13	106027 3000	8,50									
			B14	106027 3200	8,50									
			B15	106027 3600	8,50									
			B16	106027 4000	8,50									
1152			1152			7111			7111			7114		

ATORN® ETD 840 indexable inserts

VHM | 130° | TiAlN | Vc/fz | 374

- **innovative, efficient cutting edge geometry**
- Precision-ground
- **Adapted to tool holder**
- Excellent wear-resistance and cutting properties
- **All intermediate dimensions available in 0.1 mm increments**





material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	●	●	●	○	●	●	●	●	○		○	●		○		

D h7 mm	art.no.	€
8.0	**106020** 0080	43,10
8.5	106020 0085	43,10
8.8	106020 0088	43,10
9.0	106020 0090	50,50
9.3	106020 0093	50,50
9.5	106020 0095	50,50
9.8	106020 0098	50,50
10.0	106020 0100	52,–
10.2	106020 0102	52,–
10.5	106020 0105	52,–
10.8	106020 0108	52,–
11.0	106020 0110	61,50
11.2	106020 0112	61,50
11.5	106020 0115	61,50
11.8	106020 0118	61,50
12.0	106020 0120	72,–
12.5	106020 0125	72,–

1153

D h7 mm	art.no.	€
12.8	106020 0128	72,–
13.0	106020 0130	72,–
13.1	106020 0131	72,–
13.5	106020 0135	72,–
13.8	106020 0138	72,–
14.0	106020 0140	82,50
14.5	106020 0145	82,50
14.8	106020 0148	82,50
15.0	106020 0150	82,50
15.1	106020 0151	82,50
15.5	106020 0155	82,50
15.8	106020 0158	82,50
16.0	106020 0160	87,50
16.1	106020 0161	87,50
16.5	106020 0165	87,50
16.8	106020 0168	87,50
17.0	106020 0170	87,50

1153

D h7 mm	art.no.	€
17.5	106020 0175	87,50
17.8	106020 0178	87,50
18.0	106020 0180	105,–
18.5	106020 0185	105,–
18.8	106020 0188	105,–
19.0	106020 0190	105,–
19.5	106020 0195	105,–
19.8	106020 0198	105,–
20.0	106020 0200	105,–
20.5	106020 0205	105,–
20.8	106020 0208	105,–
21.0	106020 0210	105,–
21.5	106020 0215	105,–
21.8	106020 0218	105,–
22.0	106020 0220	117,–
22.5	106020 0225	117,–
22.8	106020 0228	117,–

1153

D h7 mm	art.no.	€
23.0	106020 0230	117,–
23.5	106020 0235	117,–
23.8	106020 0238	117,–
24.0	106020 0240	142,–
24.5	106020 0245	142,–
24.8	106020 0248	142,–
25.0	106020 0250	142,–
25.5	106020 0255	142,–
25.7	106020 0257	142,–
26.0	106020 0260	163,–
26.5	106020 0265	163,–
26.7	106020 0267	163,–
27.0	106020 0270	163,–
27.5	106020 0275	163,–
27.7	106020 0277	163,–
28.0	106020 0280	185,–
28.5	106020 0285	185,–
28.7	106020 0287	185,–

1153

D h7 mm	art.no.	€
29.0	106020 0290	185,–
29.5	106020 0295	185,–
29.7	106020 0297	185,–
30.0	106020 0300	225,–
30.5	106020 0305	225,–
30.7	106020 0307	225,–
31.0	106020 0310	225,–
31.5	106020 0315	225,–
31.7	106020 0317	225,–
32.0	106020 0320	245,–
32.5	106020 0325	245,–
32.7	106020 0327	245,–
33.0	106020 0330	245,–
33.5	106020 0335	245,–
33.7	106020 0337	245,–
34.0	106020 0340	280,–
34.5	106020 0345	280,–
34.7	106020 0347	280,–

1153

D h7 mm	art.no.	€
35.0	106020 0350	280,–
35.5	106020 0355	280,–
35.7	106020 0357	280,–
36.0	106020 0360	315,–
36.5	106020 0365	315,–
36.7	106020 0367	315,–
37.0	106020 0370	315,–
37.5	106020 0375	315,–
37.7	106020 0377	315,–
38.0	106020 0380	330,–
38.5	106020 0385	330,–
38.7	106020 0387	330,–
39.0	106020 0390	330,–
39.5	106020 0395	330,–
39.7	106020 0397	330,–
40.0	106020 0400	355,–

1153

Replaceable head drill PXD



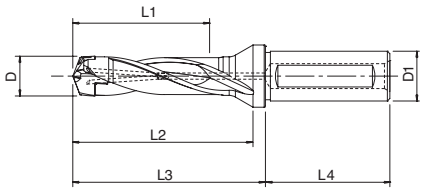
375

- **Drilling in diameter range 14 - 25.4mm**
- special cutting geometry for larger diameters
- internal coolant supply
- **bayonet system for safe and fast boring head change**
- high bore surface quality and precision
- polished chip chambers for low-vibration and reliable chip removal
- **Supplied with chuck key**









PXD-3D

D mm	L1 mm	L2 mm	L3 mm	L4 mm	D1 mm	art.no.	€
14 - 14.49	43	63.4	69.9	48	16	**125303** 0140	236,–
14.5 - 14.99	43	65.5	72	48	16	125303 0145	236,–
15 - 15.99	46.5	67.1	73.6	50	20	125303 0150	247,50
16 - 16.99	49.5	71.7	78.2	50	20	125303 0160	247,50
17 - 17.99	52.5	76.8	83.3	50	20	125303 0170	286,60
18 - 18.99	55.5	81.4	87.9	56	25	125303 0180	315,60
19 - 19.99	58.5	85.4	91.9	56	25	125303 0190	315,60
20 - 20.99	61.5	90.1	96.6	56	25	125303 0200	378,30
21 - 21.99	64.5	94.7	101.2	60	32	125303 0210	378,30
22 - 22.99	67.5	98.8	105.3	60	32	125303 0220	346,70
23 - 23.99	70.5	103.4	109.9	60	32	125303 0230	416,–
24 - 24.99	73.5	108.4	114.9	60	32	125303 0240	416,–
25 - 25.99	76.5	112	118.5	60	32	125303 0250	465,50

1169

Continued on next page >>>

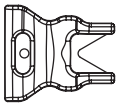
PXD-5D

D mm	L1 mm	L2 mm	L3 mm	L4 mm	D1 mm	art.no.	€
14 - 14.49	71.2	92.9	97.9	48	16	**125305** 0140	282,80
14.5 - 14.99	73.7	96	101	48	16	125305 0145	282,80
15 - 15.99	77.5	97.1	103.6	50	20	125305 0150	297,20
16 - 16.99	82.5	103.7	110.2	50	20	125305 0160	297,20
17 - 17.99	87.5	110.8	117.3	50	20	125305 0170	343,80
18 - 18.99	92.5	117.4	123.9	56	25	125305 0180	378,30
19 - 19.99	97.5	123.4	129.9	56	25	125305 0190	378,30
20 - 20.99	102.5	130.1	136.6	56	25	125305 0200	453,70
21 - 21.99	107.5	136.7	143.2	60	32	125305 0210	453,70
22 - 22.99	112.5	142.8	149.3	60	32	125305 0220	453,70
23 - 23.99	117.5	149.4	155.9	60	32	125305 0230	499,10
24 - 24.99	122.5	156.4	162.9	60	32	125305 0240	499,10
25 - 25.99	127.5	162	168.5	60	32	125305 0250	558,70
						1169	



Chuck key

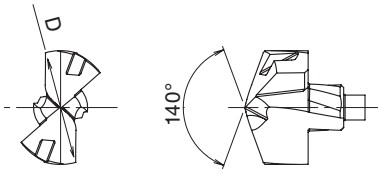
for boring head	t mm	art.no.	€
14 - 18.9 mm	1.5	**125399** 0015	21,70
19 - 22.9 mm	1.8	125399 0018	21,70
23 - 25.4 mm	2	125399 0020	22,20
		1169	

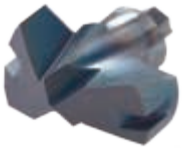


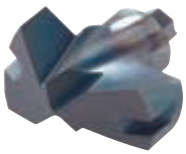
Replaceable boring heads PXD

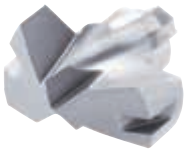
VHM | 140° | TiAlN | Vc/fz | 375

- **Diameter 14 - 25.4mm**
- **innovative cutting edge geometry and modern WDI-coatings**
- high drilling accuracy, surface finish quality and radial run-out
- wide range of applications in the ISO, P, K and N material groups




125320....


125321....


125322....

D mm	ISO P XP3425 art.no.	€	ISO K XP1425 art.no.	€	ISO N CF225 art.no.	€
14	**125320** 1400	70,60	**125321** 1400	70,60	**125322** 1400	70,60
14.5	125320 1450	70,60	125321 1450	70,60	125322 1450	70,60
14.95	125320 1495	70,60				
15	125320 1500	74,10	125321 1500	74,10	125322 1500	74,10
15.25	125320 1525	74,10				
15.5	125320 1550	74,10	125321 1550	74,10	125322 1550	74,10
16	125320 1600	74,10	125321 1600	74,10	125322 1600	74,10
16.5	125320 1650	85,70	125321 1650	85,70	125322 1650	85,70
16.7	125320 1670	85,70	125321 1670	85,70	125322 1670	85,70
17	125320 1700	85,70	125321 1700	85,70	125322 1700	85,70
17.25	125320 1725	85,70				
17.5	125320 1750	85,70	125321 1750	85,70	125322 1750	85,70
18	125320 1800	85,70	125321 1800	85,70	125322 1800	85,70
18.5	125320 1850	94,90	125321 1850	94,90	125322 1850	94,90
18.7	125320 1870	94,90	125321 1870	94,90	125322 1870	94,90
19	125320 1900	94,90	125321 1900	94,90	125322 1900	94,90
19.28	125320 1928	94,90				
	1170		1170		1170	

D mm	ISO P XP3425 art.no.	€	ISO K XP1425 art.no.	€	ISO N CF225 art.no.	€
19.5	125320 1950	94,90	125321 1950	94,90	125322 1950	94,90
20	125320 2000	104,30	125321 2000	104,30	125322 2000	104,30
20.5	125320 2050	104,30	125321 2050	104,30	125322 2050	104,30
20.7	125320 2070	104,30	125321 2070	104,30	125322 2070	104,30
21	125320 2100	112,40	125321 2100	112,40	125322 2100	112,40
21.25	125320 2125	112,40				
21.5	125320 2150	112,40	125321 2150	112,40	125322 2150	112,40
22	125320 2200	112,40	125321 2200	112,40	125322 2200	112,40
22.4	125320 2240	112,40	125321 2240	112,40	125322 2240	112,40
22.5	125320 2250	112,40	125321 2250	112,40	125322 2250	112,40
23	125320 2300	112,40	125321 2300	112,40	125322 2300	112,40
23.25	125320 2325	112,40				
23.5	125320 2350	112,40	125321 2350	112,40	125322 2350	112,40
24	125320 2400	121,10	125321 2400	121,10	125322 2400	121,10
24.5	125320 2450	121,10	125321 2450	121,10	125322 2450	121,10
25	125320 2500	121,10	125321 2500	121,10	125322 2500	121,10
25.4	125320 2540	121,10	125321 2540	121,10	125322 2540	121,10
	1170		1170		1170	

Modular drilling systems

INFO

Modular drills from Allied Machine & Engineering Co. (AMEC) meet the increasing demands of customers from various industries. Solutions are provided not only for general mechanical engineering, but also for the automotive sector and aerospace technology. The flexible drill systems are characterised by their universal application capabilities and in particular by the combination of cutting materials, coatings and geometries.

Guaranteed application

Describe your machining problem to us. Working with the manufacturer, we will draw up a quotation for you for the use of appropriate tools. Allied Machine Engineering Co. guarantees the feasibility of the project.



GEN2 T-A® and T-A® Original

- Diameter range 9.50 – 160.00 mm
- Various geometries, base substrates and coatings available
- Exchangeable cutting inserts reduce regrinding work
- 1.5 x D to 32 x D in the AMEC standard range



GEN3SYS® XT Pro

- Diameter range 11.00 to 35.00 mm
- Geometries and base materials for machining steel, stainless steel, cast iron and non-ferrous metals
- New coating for extended service life
- to 20% higher cutting speeds
- Up to 10 x D in the AMEC standard range

You can find the entire range in the Allied Maxcut special catalogue. Request your free copy now!



Drilling system T-A® Series Y

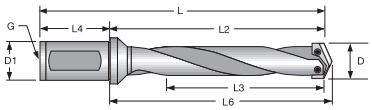
370
371

- **Internal coolant supply** (* holders also have a 1/8 inch coolant supply connection on the side)
- Also available in MT version

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	105140....	●	●	●	○	○		○	○	○	○	○		○	●				
	105147....	●	●	●	●	●	●	●	●	●	●	○		○	●		○		







Series Y holder with straight shank

Chip space design	Tool length	D mm	L3 mm	L2 mm	L6 mm	L mm	D1 mm	L4 mm	Thread			art.no.	€
Straight-fluted	Extra-short	9.50-11.00	19	47.6	50	95.6	16	48	1/16" *	A1	B1	**105001** 0010	226,60
Straight-fluted	Short	9.50-11.00	32	61.1	63.5	111.1	20	50	1/8"	A1	B1	105001 0020	209,50
Spiral-fluted	Standard	9.50-11.00	60	89.7	92.1	139.7	20	50	1/8"	A1	B1	105001 0030	234,40
Spiral-fluted	Standard plus	9.50-11.00	86	115.4	117.8	165.4	20	50	1/8"	A1	B1	105001 0035	247,50
Spiral-fluted	Extra-long	9.50-11.00	111	140.5	142.9	190.5	20	50	1/8"	A1	B1	105001 0040	264,–
Straight-fluted	XL	9.50-11.00	222	251.7	254.1	301.7	20	50	1/8"	A1	B1	105001 0050	262,30
Straight-fluted	3XL	9.50-11.00	290	319.9	322.3	369.9	20	50	1/8"	A1	B1	105001 0060	325,70

1141

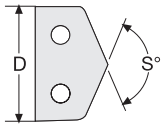
Series Y cutting inserts

- Other quality grades and diameters available on request, some from stock.

GEN2 T-A

D mm	S °		HSS Super Kobalt AM200™ art.no.	€		Carbide C1 K35 AM300™ art.no.	€
9.50	132	2	**105140** 0950	44,70	2	**105147** 0950	66,80
10.00	132	2	105140 1000	44,70	2	105147 1000	66,80
10.20	132	2	105140 1020	44,70	2	105147 1020	66,80
10.50	132	2	105140 1050	44,70	2	105147 1050	66,80
10.80	132	2	105140 1080	44,70	2	105147 1080	66,80
11.00	132	2	105140 1100	44,70	2	105147 1100	66,80
			1142			1143	





Spare parts

	Screw art.no.	€
A1	105085 0010	3,20

1145

	TORX PLUS art.no.	€
B1	705145 0007	6,25





PALBIT
Machining tools
411 pages
Art.no. 019900 0315

Overview of all free manufacturers' catalogues on page 14/15

Drilling system T-A® Series Z



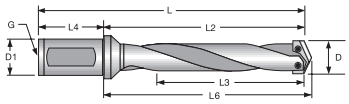
370
371

- **Internal coolant supply** (* holders also have a 1/8 inch coolant supply connection on the side)
- Also available in MT version

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	105236....	●	●	●	○	○		○	○	○	○	○		○	●				
	105242....	●	●	●	●	●	●	●	●	●	●	○		○	●		○		







Series Z holder with straight shank

Chip space design	Tool length	D mm	L3 mm	L2 mm	L6 mm	L mm	D1 mm	L4 mm	Thread			art.no.	€
Straight-fluted	Extra-short	11.11-12.80	19.1	45.6	48	93.6	16	48	1/16" *	A1	B1	**105003** 0010	226,60
Straight-fluted	Short	11.11-12.80	32	61.1	63.5	111.1	20	50	1/8"	A1	B1	105003 0020	209,50
Spiral-fluted	Standard	11.11-12.80	60	89.7	92.1	139.7	20	50	1/8"	A1	B1	105003 0030	234,40
Spiral-fluted	Standard plus	11.11-12.80	86	115.4	117.8	165.4	20	50	1/8"	A1	B1	105003 0035	247,50
Spiral-fluted	Extra-long	11.11-12.80	111	140.5	142.9	190.5	20	50	1/8"	A1	B1	105003 0040	264,–
Spiral-fluted	Lang	11.11-12.80	180	209.4	211.8	259.4	20	50	1/8"	A1	B1	105003 0045	260,40
Straight-fluted	XL	11.11-12.80	222.3	251.7	254.1	301.7	20	50	1/8"	A1	B1	105003 0050	262,30
Straight-fluted	3XL	11.11-12.80	290.5	319.9	322.3	369.9	20	50	1/8"	A1	B1	105003 0060	325,70

1141

Series Z cutting inserts

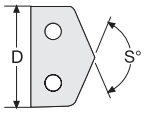
- Other quality grades and diameters available on request, some from stock.

GEN2 T-A

D mm	S °		HSS Super Kobalt AM200™ art.no.	€		Carbide C1 K35 AM300™ art.no.	€
11.50	132	2	**105236** 1150	44,70	2	**105242** 1150	66,80
12.00	132	2	105236 1200	44,70	2	105242 1200	66,80
12.50	132	2	105236 1250	44,70	2	105242 1250	66,80

1142 1143





Spare parts

	Screw art.no.	€
A1	105085 0020	3,–

1145

	TORX PLUS art.no.	€
B1	705145 0007	6,25

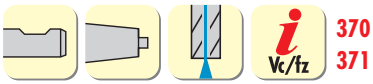




OSG
Catalogue VI
1024 pages
Art.no. 019900 0208

Overview of all free manufacturers' catalogues on page 14/15

Drilling system T-A® Series 0



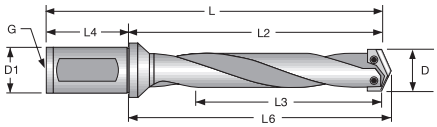
370
371

- **Internal coolant supply**
- * Holders also have a 1/8 inch coolant supply connection on the side

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	105336....	●	●	●	○	○		○	○	○	○	○		○	●				
	105342....	●	●	●	●	●	●	●	●	●	●	○		○	●		○		







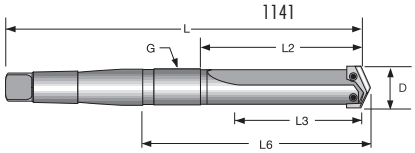
Series 0 holder with straight shank

Chip space design	Tool length	D mm	L3 mm	L2 mm	L6 mm	L mm	D1 mm	L4 mm	Thread			art.no.	€
Straight-fluted	Extra-short	13.00-17.50	22	47.6	50.4	97.6	20	50	1/8" *	A1	B1	**105005** 0010	226,60
Straight-fluted	Extra-short	15.50-17.50	22	47.6	50.4	97.6	20	50	1/8"	A2	B1	105005 0020	226,60
Straight-fluted	Short	13.00-17.50	35	63.5	66.3	113.5	20	50	1/8"	A1	B1	105005 0030	209,50
Straight-fluted	Short	15.50-17.50	35	63.5	66.3	113.5	20	50	1/8"	A2	B1	105005 0040	209,50
Spiral-fluted	Standard	13.00-17.50	64	92.1	94.9	142.1	20	50	1/8"	A1	B1	105005 0050	234,40
Spiral-fluted	Standard	15.50-17.50	64	92.1	94.9	142.1	20	50	1/8"	A2	B1	105005 0060	234,40
Spiral-fluted	Standard plus	13.00-17.50	89	117.6	120.4	167.6	20	50	1/8"	A1	B1	105005 0065	247,50
Spiral-fluted	Extra-long	13.00-17.50	114	142.9	145.7	192.9	20	50	1/8"	A1	B1	105005 0070	264,–
Spiral-fluted	Extra-long	15.50-17.50	114	142.9	145.7	192.9	20	50	1/8"	A2	B1	105005 0080	264,–
Spiral-fluted	Ultra-long	13.00-17.50	177	206.4	209.1	256.4	20	50	1/8"	A1	B1	105005 0090	311,80
Spiral-fluted	Ultra-long	15.50-17.50	177	206.4	209.1	256.4	20	50	1/8"	A2	B1	105005 0100	311,80
Spiral-fluted	Ultra-long	13.00-17.50	240	268.6	271.4	318.6	20	50	1/8"	A1	B1	105005 0105	323,90
Straight-fluted	XL	13.00-17.50	295	323.9	326.7	373.9	20	50	1/8"	A1	B1	105005 0110	293,30
Straight-fluted	3XL	13.00-17.50	387	416	418.8	466.0	20	50	1/8"	A1	B1	105005 0120	349,10

1141







Series 0 holder with Morse taper shank

Chip space design	Tool length	D mm	L3 mm	L2 mm	L6 mm	L mm	Shank	RCA	Thread			art.no.	€
Straight-fluted	Short	13.00-17.50	35	55.5	92.4	164.3	MT 2	2SRM	1/16"	A1	B1	**105006** 0010	209,50
Straight-fluted	Short	15.50-17.50	35	55.5	92.4	164.3	MT 2	2SRM	1/16"	A2	B1	105006 0020	209,50
Spiral-fluted	Standard	13.00-17.50	64	84.1	121	192.9	MT 2	2SRM	1/16"	A1	B1	105006 0030	225,–
Spiral-fluted	Standard	15.50-17.50	64	84.1	121	192.9	MT 2	2SRM	1/16"	A2	B1	105006 0040	225,–
Spiral-fluted	Extra-long	13.00-17.50	114	135	171.8	243.7	MT 2	2SRM	1/16"	A1	B1	105006 0050	256,–
Spiral-fluted	Extra-long	15.50-17.50	114	135	171.8	243.7	MT 2	2SRM	1/16"	A2	B1	105006 0060	256,–
Spiral-fluted	Ultra-long	13.00-17.50	177	198.5	235.3	307.2	MT 2	2SRM	1/16"	A1	B1	105006 0070	302,30
Spiral-fluted	Ultra-long	15.50-17.50	177	198.5	235.3	307.2	MT 2	2SRM	1/16"	A2	B1	105006 0080	302,30

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Series 0 cutting inserts

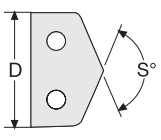
- Other quality grades and diameters available on request, some from stock.

GEN2 T-A

D mm	S °		HSS Super Kobalt AM200™ art.no.	€		Carbide C1 K35 AM300™ art.no.	€
13.00	132	2	**105336** 1300	48,–	2	**105342** 1300	73,30
13.50	132	2	105336 1350	48,–	2	105342 1350	73,30
14.00	132	2	105336 1400	48,–	2	105342 1400	73,30
14.50	132	2	105336 1450	48,–	2	105342 1450	73,30
15.00	132	2	105336 1500	48,–	2	105342 1500	73,30
15.50	132	2	105336 1550	48,–	2	105342 1550	73,30
16.00	132	2	105336 1600	48,–	2	105342 1600	73,30
16.50	132	2	105336 1650	48,–	2	105342 1650	73,30
17.00	132	2	105336 1700	48,–	2	105342 1700	73,30
17.50	132	2	105336 1750	48,–	2	105342 1750	73,30

1142 1143





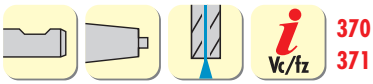
Spare parts

	Screw art.no.	€
A1	105085 0030	3,–
A2	105085 0040	3,–

1145

	TORX PLUS art.no.	€
B1	705145 0008	6,25

Drilling system T-A® Series 1

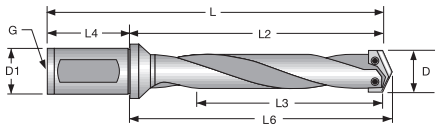


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371

- **Internal coolant supply**
- * Holders also have a 1/8 inch coolant supply connection on the side

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	105441....	●	●	●	○	○		○	○	○	○	○		○	●				
	105447....	●	●	●	●	●	●	●	●	●	●	○		○	●		○		





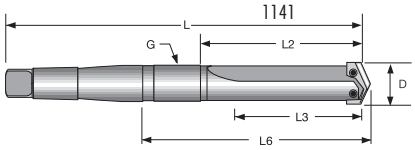
Series 1 holder with straight shank

Chip space design	Tool length	D mm	L3 mm	L2 mm	L6 mm	L mm	D1 mm	L4 mm	Thread			art.no.	€
Straight-fluted	Extra-short	18.00-24.00	47	75.8	79.4	131.8	25	56	1/8" *	A1	B1	**105007** 0010	248,50
Straight-fluted	Extra-short	22.00-24.00	57	88.5	92.1	144.5	25	56	1/8" *	A2	B1	105007 0020	268,80
Straight-fluted	Short	18.00-24.00	67	107.2	110.7	163.2	25	56	1/8"	A1	B1	105007 0030	217,30
Straight-fluted	Short	22.00-24.00	67	107.2	110.7	163.2	25	56	1/8"	A2	B1	105007 0040	234,40
Spiral-fluted	Medium-length	18.00-24.00	118	154.8	158.4	210.8	25	56	1/8"	A1	B1	105007 0050	251,50
Spiral-fluted	Medium-length	22.00-24.00	118	154.8	158.4	210.8	25	56	1/8"	A2	B1	105007 0060	270,–
Spiral-fluted	Standard	18.00-24.00	168	205.6	209.2	261.6	25	56	1/8"	A1	B1	105007 0070	277,60
Spiral-fluted	Standard	22.00-24.00	168	205.6	209.2	261.6	25	56	1/8"	A2	B1	105007 0080	294,90
Spiral-fluted	Standard plus	18.00-24.00	219	256.3	259.9	312.3	25	56	1/8"	A1	B1	105007 0085	292,10
Spiral-fluted	Extra-long	18.00-24.00	270	307.2	310.8	363.2	25	56	1/8"	A1	B1	105007 0090	311,80
Spiral-fluted	Extra-long	22.00-24.00	270	307.2	310.8	363.2	25	56	1/8"	A2	B1	105007 0100	328,80
Spiral-fluted	Ultra-long	18.00-24.00	365	402.3	405.9	458.3	25	56	1/8"	A1	B1	105007 0105	336,50
Straight-fluted	XL	18.00-24.00	457	494.5	498.1	550.5	25	56	1/8"	A1	B1	105007 0110	325,70
Straight-fluted	3XL	18.00-24.00	565	602.5	606.1	658.5	25	56	1/8"	A1	B1	105007 0120	395,70

1141







Series 1 holder with Morse taper shank

Chip space design	Tool length	D mm	L3 mm	L2 mm	L6 mm	L mm	Shank	RCA	Thread			art.no.	€
Straight-fluted	Short	18.00-24.00	70	98.4	142.5	232.5	MT3	3SRM	1/8"	A1	B1	**105008** 0010	228,30
Straight-fluted	Short	22.00-24.00	70	98.4	142.5	232.5	MT3	3SRM	1/8"	A2	B1	105008 0020	246,90
Spiral-fluted	Medium-length	18.00-24.00	121	149.2	193.3	283.3	MT3	3SRM	1/8"	A1	B1	105008 0030	253,–
Spiral-fluted	Medium-length	22.00-24.00	121	149.2	193.3	283.3	MT3	3SRM	1/8"	A2	B1	105008 0040	271,40
Spiral-fluted	Standard	18.00-24.00	172	200	244.1	334.2	MT3	3SRM	1/8"	A1	B1	105008 0050	268,80
Spiral-fluted	Standard	22.00-24.00	172	200	244.1	334.2	MT3	3SRM	1/8"	A2	B1	105008 0060	287,20
Spiral-fluted	Extra-long	18.00-24.00	273	301.6	345.7	435.8	MT3	3SRM	1/8"	A1	B1	105008 0070	311,80
Spiral-fluted	Extra-long	22.00-24.00	273	301.6	345.7	435.8	MT3	3SRM	1/8"	A2	B1	105008 0080	327,60

1141

Series 1 cutting inserts

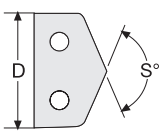
- Other quality grades and diameters available on request, some from stock.

GEN2 T-A

D mm	S °		HSS Super Kobalt AM200™ art.no.	€		Carbide C1 K35 AM300™ art.no.	€
18.00	132	2	**105441** 1800	54,30	2	**105447** 1800	84,40
18.50	132	2	105441 1850	54,30	2	105447 1850	84,40
19.00	132	2	105441 1900	54,30	2	105447 1900	84,40
19.50	132	2	105441 1950	54,30	2	105447 1950	84,40
20.00	132	2	105441 2000	54,30	2	105447 2000	84,40
20.50	132	2	105441 2050	54,30	2	105447 2050	84,40
21.00	132	2	105441 2100	54,30	2	105447 2100	84,40
21.50	132	2	105441 2150	54,30	2	105447 2150	84,40
22.00	132	2	105441 2200	54,30	2	105447 2200	84,40
22.50	132	2	105441 2250	54,30	2	105447 2250	84,40
23.00	132	2	105441 2300	54,30	2	105447 2300	84,40
23.50	132	2	105441 2350	54,30	2	105447 2350	84,40
24.00	132	2	105441 2400	54,30	2	105447 2400	84,40

1142 1143





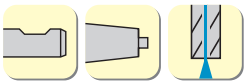
Spare parts

	Screw art.no.	€
A1	105085 0050	3,–
A2	105085 0060	2,40

1145

	TORX PLUS art.no.	€
B1	705145 0009	6,70

Drilling system T-A® Series 2



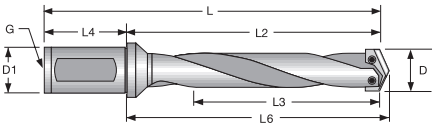
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- **Internal coolant supply**
- * Holders also have a 1/8 inch coolant supply connection on the side

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	105541....	●	●	●	○	○		○	○	○	○	○		○	●				
	105547....	●	●	●	●	●	●	●	●	●	●	●		○	●		○		







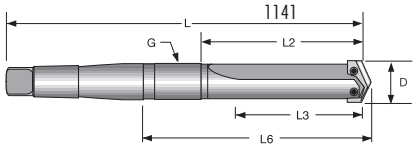
Series 2 holder with straight shank

Chip space design	Tool length	D mm	L3 mm	L2 mm	L6 mm	L mm	D1 mm	L4 mm	Thread			art.no.	€
										A1	B1		
Straight-fluted	Extra-short	24.50-35.00	57	88.5	92.1	148.5	32	60	1/4" *	A1	B1	**105009** 0010	276,10
Straight-fluted	Extra-short	30.00-35.00	92	123.4	127	183.4	32	60	1/4" *	A1	B1	105009 0020	302,60
Straight-fluted	Short	24.50-35.00	86	128.6	132.2	188.6	32	60	1/4"	A1	B1	105009 0030	234,40
Straight-fluted	Short	30.00-35.00	86	128.6	132.2	188.6	32	60	1/4"	A1	B1	105009 0040	262,30
Spiral-fluted	Medium-length	24.50-35.00	137	179.4	183	239.4	32	60	1/4"	A1	B1	105009 0050	277,60
Spiral-fluted	Medium-length	30.00-35.00	137	179.4	183	239.4	32	60	1/4"	A1	B1	105009 0060	308,70
Spiral-fluted	Standard	24.50-35.00	187	230.2	233.8	290.2	32	60	1/4"	A1	B1	105009 0070	304,10
Spiral-fluted	Standard	30.00-35.00	187	230.2	233.8	290.2	32	60	1/4"	A1	B1	105009 0080	328,80
Spiral-fluted	Standard plus	24.50-35.00	238	280.9	284.5	340.9	32	60	1/4"	A1	B1	105009 0085	330,–
Spiral-fluted	Extra-long	24.50-35.00	289	331.8	335.4	391.8	32	60	1/4"	A1	B1	105009 0090	352,30
Spiral-fluted	Extra-long	30.00-35.00	289	331.8	335.4	391.8	32	60	1/4"	A1	B1	105009 0100	367,60
Spiral-fluted	Ultra-long	24.50-35.00	410	452.9	456.5	512.9	32	60	1/4"	A1	B1	105009 0105	374,40
Straight-fluted	XL	24.50-35.00	511	554.1	557.7	614.1	32	60	1/4"	A1	B1	105009 0110	349,10
Straight-fluted	3XL	24.50-35.00	692	735.1	738.7	795.1	32	60	1/4"	A1	B1	105009 0120	426,50

1141







Series 2 holder with Morse taper shank

Chip space design	Tool length	D mm	L3 mm	L2 mm	L6 mm	L mm	Shank	RCA	Thread			art.no.	€
										A1	B1		
Straight-fluted	Short	24.50-35.00	86	114.3	160.4	273.8	MT 4	3SRM	1/8"	A1	B1	**105010** 0010	264,–
Straight-fluted	Short	30.00-35.00	86	114.3	167.6	281	MT 4	4SRM	1/4"	A1	B1	105010 0020	282,30
Spiral-fluted	Medium-length	24.50-35.00	137	165.1	211.2	324.6	MT 4	3SRM	1/8"	A1	B1	105010 0030	287,20
Spiral-fluted	Medium-length	30.00-35.00	137	165.1	218.4	331.8	MT 4	4SRM	1/4"	A1	B1	105010 0040	308,70
Spiral-fluted	Standard	24.50-35.00	188	215.9	262	375.4	MT 4	3SRM	1/8"	A1	B1	105010 0050	311,90
Spiral-fluted	Standard	30.00-35.00	188	215.9	269.2	382.6	MT 4	4SRM	1/4"	A1	B1	105010 0060	331,90
Spiral-fluted	Extra-long	24.50-35.00	289	317.5	363.6	477	MT 4	3SRM	1/8"	A1	B1	105010 0070	355,40
Spiral-fluted	Extra-long	30.00-35.00	289	317.5	370.8	484.2	MT 4	4SRM	1/4"	A1	B1	105010 0080	375,30

1141

Series 2 cutting inserts

- Other quality grades and diameters available on request, some from stock.

GEN2 T-A

D mm	S °		HSS Super Kobalt AM200™ art.no.	€		Carbide C1 K35 AM300™ art.no.	€
24.50	132	2	**105541** 2450	62,20	2	**105547** 2450	100,20
25.00	132	2	105541 2500	62,20	2	105547 2500	100,20
25.50	132	2	105541 2550	62,20	2	105547 2550	100,20
26.00	132	2	105541 2600	62,20	2	105547 2600	100,20
26.50	132	2	105541 2650	62,20	2	105547 2650	100,20
27.00	132	2	105541 2700	62,20	2	105547 2700	100,20
27.50	132	2	105541 2750	62,20	2	105547 2750	100,20
28.00	132	2	105541 2800	62,20	2	105547 2800	100,20
28.50	132	2	105541 2850	62,20	2	105547 2850	100,20
29.00	132	2	105541 2900	62,20	2	105547 2900	100,20
29.50	132	2	105541 2950	62,20	2	105547 2950	100,20
30.00	132	2	105541 3000	62,20	2	105547 3000	100,20
30.50	132	2	105541 3050	62,20	2	105547 3050	100,20

1142 1143

D mm	S °		HSS Super Kobalt AM200™ art.no.	€		Carbide C1 K35 AM300™ art.no.	€
31.00	132	2	105541 3100	62,20	2	105547 3100	100,20
31.50	132	2	105541 3150	62,20	2	105547 3150	100,20
32.00	132	2	105541 3200	62,20	2	105547 3200	100,20
32.50	132	2	105541 3250	62,20	2	105547 3250	100,20
33.00	132	2	105541 3300	62,20	2	105547 3300	100,20
33.50	132	2	105541 3350	62,20	2	105547 3350	100,20
34.00	132	2	105541 3400	62,20	2	105547 3400	100,20
34.50	132	2	105541 3450	62,20	2	105547 3450	100,20
35.00	132	2	105541 3500	62,20	2	105547 3500	100,20

1142 1143

Spare parts

	Screw art.no.	€
A1	105085 0070	3,–

1145

	TORX PLUS art.no.	€
B1	705145 0015	7,15



Drilling system T-A® Series 3

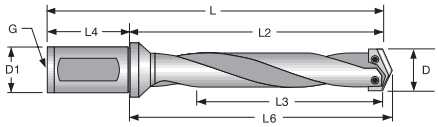
372

- **Internal coolant supply**
- * Holders also have a 1/4 inch coolant supply connection on the side

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	●	○	○		○	○	○	○	○		○	●				







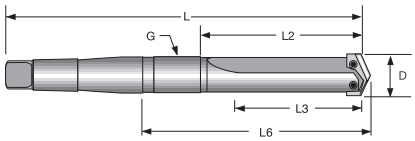
Series 3 holder with straight shank

Chip space design	Tool length	D mm	L3 mm	L2 mm	L6 mm	L mm	D1 mm	L4 mm	Thread			art.no.	€
Straight-fluted	Extra-short	36.00-47.00	76.2	125	129.8	195	40	70	1/4" *	A1	B1	**105011** 0010	327,60
Straight-fluted	Short	36.00-47.00	121	173	177.8	243	40	70	1/4"	A1	B1	105011 0020	287,20
Spiral-fluted	Medium-length	36.00-47.00	165	217.5	222.3	287.5	40	70	1/4"	A1	B1	105011 0030	386,40
Spiral-fluted	Standard	36.00-47.00	210	261.9	266.7	331.9	40	70	1/4"	A1	B1	105011 0040	400,20
Straight-fluted	Extra-long	36.00-47.00	349.3	401.6	406.4	471.6	40	70	1/4"	A1	B1	105011 0050	439,10
Straight-fluted	XL	36.00-47.00	558.8	611.1	615.9	681.1	40	70	1/4"	A1	B1	105011 0060	504,10
Straight-fluted	3XL	36.00-47.00	787.4	839.7	844.5	909.7	40	70	1/4"	A1	B1	105011 0070	612,60

1141







Series 3 holder with Morse taper shank

Chip space design	Tool length	D mm	L3 mm	L2 mm	L6 mm	L mm	Shank	RCA	Thread			art.no.	€
Straight-fluted	Short	36.00-47.00	121	152.4	206.4	319.1	MT 4	4SRM	1/4"	A1	B1	**105012** 0010	282,20
Spiral-fluted	Medium-length	36.00-47.00	165	196.9	250.9	363.6	MT 4	4SRM	1/4"	A1	B1	105012 0020	375,30
Spiral-fluted	Standard	36.00-47.00	210	241.3	295.3	408	MT 4	4SRM	1/4"	A1	B1	105012 0030	400,20
Straight-fluted	Extra-long	36.00-47.00	349	381	435	547	MT 4	4SRM	1/4"	A1	B1	105012 0040	407,90
Straight-fluted	XL	36.00-47.00	558.8	590.6	644.6	757.2	MT 4	4SRM	1/4"	A1	B1	105012 0050	504,10
Straight-fluted	3XL	36.00-47.00	787.4	819.2	873.2	985.8	MT 4	4SRM	1/4"	A1	B1	105012 0060	612,60

1141

Series 3 cutting inserts

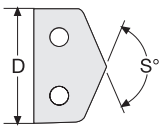
- Other quality grades and diameters available on request, some from stock.

GEN2 T-A

D mm	S °	HSS Super Kobalt AM200™ art.no.	€
36.00	132	**105641** 3600	67,10
37.00	132	105641 3700	67,10
38.00	132	105641 3800	67,10
39.00	132	105641 3900	67,10
40.00	132	105641 4000	67,10
41.00	132	105641 4100	67,10
42.00	132	105641 4200	67,10
43.00	132	105641 4300	67,10
44.00	132	105641 4400	67,10
45.00	132	105641 4500	67,10
46.00	132	105641 4600	67,10
47.00	132	105641 4700	67,10

1142



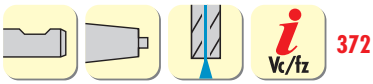


Spare parts

	Screw			TORX PLUS	
	art.no.	€		art.no.	€
A1	105085 0080	3,–	B1	705145 0020	7,60

1145

Drilling system T-A® Series 4



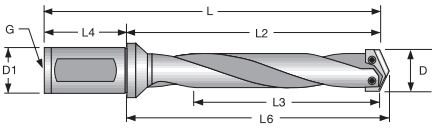
372

- **Internal coolant supply**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	●	○	○		○	○	○	○	○		○	●				







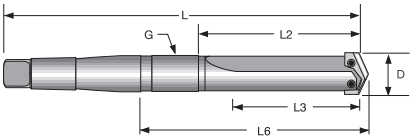
Series 4 holder with straight shank

Chip space design	Tool length	D mm	L3 mm	L2 mm	L6 mm	L mm	D1 mm	L4 mm	Thread	A1	B1	art.no.	€
Straight-fluted	Short	48.00-65.00	130	179.4	184.2	249.4	40	70	1/4"	A1	B1	**105013** 0010	313,70
Spiral-fluted	Standard	48.00-65.00	232	281	285.8	351	40	70	1/4"	A1	B1	105013 0020	459,40
Straight-fluted	Extra-long	48.00-65.00	422	471.5	476.3	541.5	40	70	1/4"	A1	B1	105013 0030	487,40
Straight-fluted	XL	48.00-65.00	625	674.7	679.5	744.7	40	70	1/4"	A1	B1	105013 0040	589,40
Straight-fluted	3XL	48.00-65.00	879	928.7	933.5	998.7	40	70	1/4"	A1	B1	105013 0050	659,–

1141







Series 4 holder with Morse taper shank

Chip space design	Tool length	D mm	L3 mm	L2 mm	L6 mm	L mm	Shank	RCA	Thread	A1	B1	art.no.	€
Straight-fluted	Short	48.00-65.00	130	165.1	219.1	363.5	MT 5	5SRM	1/4"	A1	B1	**105014** 0010	335,50
Spiral-fluted	Standard	48.00-65.00	232	266.7	320.7	465.1	MT 5	5SRM	1/4"	A1	B1	105014 0020	464,10
Straight-fluted	Extra-long	48.00-65.00	422	457	511.2	655.6	MT 5	5SRM	1/4"	A1	B1	105014 0030	464,10
Straight-fluted	XL	48.00-65.00	625	660.4	714.4	858.8	MT 5	5SRM	1/4"	A1	B1	105014 0040	590,10
Straight-fluted	3XL	48.00-65.00	879	914.4	968.4	1112.8	MT 5	5SRM	1/4"	A1	B1	105014 0050	659,70

1141

Series 4 cutting inserts

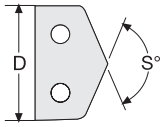
- Other quality grades and diameters available on request, some from stock.

GEN2 T-A

D mm	S °	HSS Super Kobalt AM200™ art.no.	€
48.00	132	**105716** 4800	84,50
49.00	132	105716 4900	84,50
50.00	132	105716 5000	84,50
51.00	132	105716 5100	84,50
52.00	132	105716 5200	84,50
53.00	132	105716 5300	84,50
54.00	132	105716 5400	84,50
55.00	132	105716 5500	84,50
56.00	132	105716 5600	84,50
57.00	132	105716 5700	84,50
58.00	132	105716 5800	84,50
59.00	132	105716 5900	84,50
60.00	132	105716 6000	84,50
61.00	132	105716 6100	84,50
62.00	132	105716 6200	84,50
63.00	132	105716 6300	84,50
64.00	132	105716 6400	84,50
65.00	132	105716 6500	84,50

1142





Spare parts

	Screw art.no.	€
A1	105085 0080	3,–

	TORX PLUS art.no.	€
B1	705145 0020	7,60

1145

Drilling system T-A® Series 5/6 and 7/8

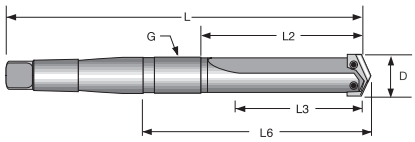
372

- **Internal coolant supply**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	●	○	○		○	○	○	○	○		○	●				







Series 5/6 holder with Morse taper shank

Chip space design	Tool length	D mm	L3 mm	L2 mm	L6 mm	L mm	Shank	RCA	Thread			art.no.	€
Straight-fluted	Short	64.00-88.00	172	215.9	287.3	430.2	MT 5	6SRM	1/2"	A1	B1	**105016** 0010	486,80
Spiral-fluted	Standard	64.00-88.00	273	317.5	388.9	531.8	MT 5	6SRM	1/2"	A1	B1	105016 0020	710,50
Straight-fluted	Extra-long	64.00-88.00	464	508	579.4	722.3	MT 5	6SRM	1/2"	A1	B1	105016 0030	750,90
Straight-fluted	XL	64.00-88.00	660	704.8	776.2	919.1	MT 5	6SRM	1/2"	A1	B1	105016 0040	853,–

1141

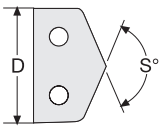
Series 7/8 holder with Morse taper shank

Chip space design	Tool length	D mm	L3 mm	L2 mm	L6 mm	L mm	Shank	RCA	Thread			art.no.	€
Straight-fluted	Short	90.00-114.00	172	225.4	296.8	439.7	MT 5	6SRM	1/2"	A1	B1	**105017** 0010	662,20
Spiral-fluted	Standard	90.00-114.00	273	327	398.5	541.3	MT 5	6SRM	1/2"	A1	B1	105017 0020	918,20
Straight-fluted	Extra-long	90.00-114.00	556	610	681	823.9	MT 5	6SRM	1/2"	A1	B1	105017 0030	1.077,80
Straight-fluted	XL	90.00-114.00	685	739.7	811.2	954	MT 5	6SRM	1/2"	A1	B1	105017 0040	1.277,–

1141

GEN2 T-A





Series 5 cutting inserts

- Other quality grades and diameters available on request, some from stock.

D mm	S °	HSS Super Kobalt AM200™ art.no.	€
64.00	144	**105765** 6400	118,50
66.00	144	105765 6600	118,50
68.00	144	105765 6800	118,50
70.00	144	105765 7000	118,50
72.00	144	105765 7200	118,50
74.00	144	105765 7400	118,50
76.00	144	105765 7600	118,50

1142

Series 6 cutting inserts

- Other quality grades and diameters available on request, some from stock.

D mm	S °	HSS Super Kobalt AM200™ art.no.	€
78.00	144	**105810** 7800	131,20
80.00	144	105810 8000	131,20
82.00	144	105810 8200	131,20
84.00	144	105810 8400	131,20
86.00	144	105810 8600	131,20
88.00	144	105810 8800	131,20

1142

Series 7 cutting inserts

- Other quality grades and diameters available on request, some from stock.

D mm	S °	HSS Super Kobalt AM200™ art.no.	€
90.00	144	**105860** 9000	154,10
92.00	144	105860 9200	154,10
94.00	144	105860 9400	154,10
96.00	144	105860 9600	154,10
98.00	144	105860 9800	154,10
100.00	144	105860 0000	154,10

1142

Series 8 cutting inserts

- Other quality grades and diameters available on request, some from stock.

D mm	S °	HSS Super Kobalt AM200™ art.no.	€
102.00	144	**105910** 0200	173,70
104.00	144	105910 0400	173,70
106.00	144	105910 0600	173,70
108.00	144	105910 0800	173,70
110.00	144	105910 1000	173,70
112.00	144	105910 1200	173,70
114.00	144	105910 1400	173,70

1142

Spare parts

	Screw art.no.	€
A1	105085 0090	3,80

1145

	TORX PLUS art.no.	€
B1	705145 0025	7,85

Accessories

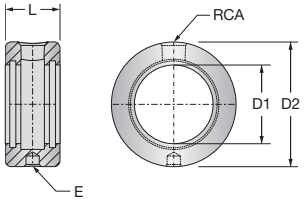


Coolant adapter

- Coolant ring, 2 O-ring seals, 2 retaining rings, 2 thrust washers

Holding fixtures	D1 mm	D2 mm	L mm	E mm	RCA	Designation	art.no.	€
MT 2	19.05	44.45	22.23	M 8	1/8"	2SRM	**105050** 0010	55,50
MT 3	25,4	53.97	28.57	M 8	1/8"	3SRM	105050 0020	61,40
MT 4	31.75	63,5	34.92	M10	1/4"	4SRM	105050 0030	74,20
MT 5	44.45	76,2	34.92	M10	1/4"	5SRM	105050 0040	84,90
MT 5	57.15	95.27	44.45	M12	1/2"	6SRM	105050 0050	102,70

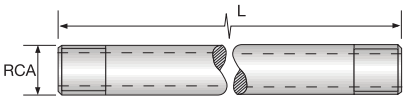
1145



Coolant pipe extension/support rod

RCA	L mm	Designation	art.no.	€
1/8"	150	302T-2SRM	**105060** 0020	7,–
1/8"	150	302T-3SRM	105060 0030	8,–
1/4"	200	302T-4SRM	105060 0040	8,–
1/4"	200	302T-5SRM	105060 0050	8,50
1/2"	200	302T-6SRM	105060 0060	14,40

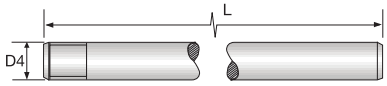
1145



Support rod, solid

D4 mm	L mm	Designation	art.no.	€
M 8	250	312T-2SRM	**105065** 0020	4,20
M 8	250	312T-3SRM	105065 0030	4,20
M10	250	312T-4SRM	105065 0040	4,60
M10	250	312T-5SRM	105065 0050	4,60
M12	250	312T-6SRM	105065 0060	7,60

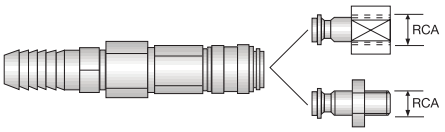
1145



Quick coupling

RCA	Hose connector Ø mm	Designation	art.no.	€
1/8"	9	322T-2SRM	**105070** 0020	52,80
1/8"	9	322T-3SRM	105070 0030	52,80
1/4"	9	322T-4SRM	105070 0040	52,80
1/4"	12	322T-5SRM	105070 0050	52,80
1/2"	12	322T-6SRM	105070 0060	76,80

1145



Chamfer ring T-ACR45™

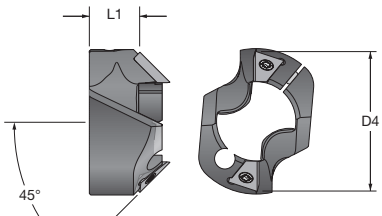
- **Chamfer rings must only be used with straight-fluted holders of the T-A® boring system, series 0-2.**
- Maximum usable holder length: Standard
- **Supplied without cutting inserts, please order separately!**





Holder	D mm	D4 mm	L1 mm	art.no.	€
Series 0	13.00 - 17.50	20.63	17.17	**105019** 4500	228,–
Series 1	18.00 - 24.00	26.59	20.24	105019 4510	246,50
Series 1	22.00 - 24.00	28.58	22.62	105019 4515	246,50
Series 2	25.00 - 35.00	39.68	25.40	105019 4520	264,90

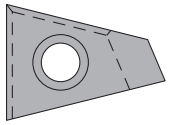
1141



Cutting inserts T-ACRI

Designation		art.no.	€
T-ACRI-45-B-C5A	2	**105020** 4500	18,–

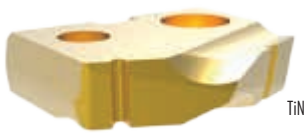
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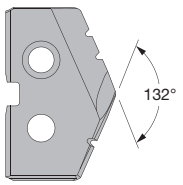
Cutting inserts T-A® Original

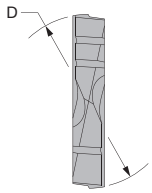
HSS TiN TiCN Vc/fz 370 372

- **Diameter 9.5 - 65mm**
- suitable for carrier tools T-A® Original, series Y to 4
- **Cutting material: HSS Super Cobalt, TiN/TiCN-coated**
- Universal geometry with a wide range of applications
- **Recommendation:** TiCN variant for applications in stainless steel


TiN


TiCN





material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	105100....	●	●	●	○	○		○	○	○	○	○		○	●				
	105102....	●	●	●	●	●	○	○	○	○	○	○	○	○	○				

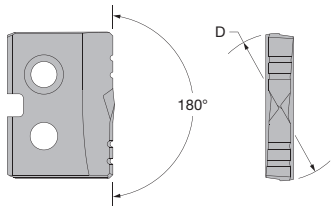
D mm	Holder		TiN art.no.	€		TiCN art.no.	€
9.5	Series Y	2	**105100** 0950	25,30	2	**105102** 0950	30,90
10	Series Y	2	105100 1000	25,30	2	105102 1000	30,90
10.2	Series Y	2	105100 1020	25,30	2	105102 1020	30,90
10.5	Series Y	2	105100 1050	25,30	2	105102 1050	30,90
10.8	Series Y	2	105100 1080	25,30	2	105102 1080	30,90
11	Series Y	2	105100 1100	25,30	2	105102 1100	30,90
11.5	Series Z	2	105200 1150	25,30	2	105202 1150	30,90
12	Series Z	2	105200 1200	25,30	2	105202 1200	30,90
12.5	Series Z	2	105200 1250	25,30	2	105202 1250	30,90
13	Series 0	2	105300 1300	27,40	2	105302 1300	33,–
13.5	Series 0	2	105300 1350	27,40	2	105302 1350	33,–
14	Series 0	2	105300 1400	27,40	2	105302 1400	33,–
14.5	Series 0	2	105300 1450	27,40	2	105302 1450	33,–
15	Series 0	2	105300 1500	27,40	2	105302 1500	33,–
15.5	Series 0	2	105300 1550	27,40	2	105302 1550	33,–
16	Series 0	2	105300 1600	27,40	2	105302 1600	33,–
16.5	Series 0	2	105300 1650	27,40	2	105302 1650	33,–
17	Series 0	2	105300 1700	27,40	2	105302 1700	33,–
17.5	Series 0	2	105300 1750	27,40	2	105302 1750	33,–
18	Series 1	2	105405 1800	31,30	2	105407 1800	37,10
18.5	Series 1	2	105405 1850	31,30	2	105407 1850	37,10
19	Series 1	2	105405 1900	31,30	2	105407 1900	37,10
19.5	Series 1	2	105405 1950	31,30	2	105407 1950	37,10
20	Series 1	2	105405 2000	31,30	2	105407 2000	37,10
20.5	Series 1	2	105405 2050	31,30	2	105407 2050	37,10
21	Series 1	2	105405 2100	31,30	2	105407 2100	37,10
22	Series 1	2	105405 2200	31,30	2	105407 2200	37,10
22.5	Series 1	2	105405 2250	31,30	2	105407 2250	37,10
23	Series 1	2	105405 2300	31,30	2	105407 2300	37,10
23.5	Series 1	2	105405 2350	31,30	2	105407 2350	37,10
24	Series 1	2	105405 2400	31,30	2	105407 2400	37,10
24.5	Series 2	2	105505 2450	35,90	2	105507 2450	42,80
25	Series 2	2	105505 2500	35,90	2	105507 2500	42,80
25.5	Series 2	2	105505 2550	35,90	2	105507 2550	42,80
26	Series 2	2	105505 2600	35,90	2	105507 2600	42,80
26.5	Series 2	2	105505 2650	35,90	2	105507 2650	42,80
27	Series 2	2	105505 2700	35,90	2	105507 2700	42,80
27.5	Series 2	2	105505 2750	35,90	2	105507 2750	42,80
28	Series 2	2	105505 2800	35,90	2	105507 2800	42,80
29	Series 2	2	105505 2900	35,90	2	105507 2900	42,80
29.5	Series 2	2	105505 2950	35,90	2	105507 2950	42,80
			1142			1161	

D mm	Holder		TiN art.no.	€		TiCN art.no.	€
30	Series 2	2	105505 3000	35,90	2	105507 3000	42,80
30.5	Series 2	2	105505 3050	35,90	2	105507 3050	42,80
31	Series 2	2	105505 3100	35,90	2	105507 3100	42,80
31.5	Series 2	2	105505 3150	35,90	2	105507 3150	42,80
32	Series 2	2	105505 3200	35,90	2	105507 3200	42,80
32.5	Series 2	2	105505 3250	35,90	2	105507 3250	42,80
33	Series 2	2	105505 3300	35,90	2	105507 3300	42,80
33.5	Series 2	2	105505 3350	35,90	2	105507 3350	42,80
34	Series 2	2	105505 3400	35,90	2	105507 3400	42,80
35	Series 2	2	105505 3500	35,90	2	105507 3500	42,80
36	Series 3	2	105605 3600	45,90	1	105607 3600	54,80
37	Series 3	2	105605 3700	45,90	1	105607 3700	54,80
38	Series 3	2	105605 3800	45,90	1	105607 3800	54,80
39	Series 3	2	105605 3900	45,90	1	105607 3900	54,80
40	Series 3	2	105605 4000	45,90	1	105607 4000	54,80
41	Series 3	2	105605 4100	45,90	1	105607 4100	54,80
42	Series 3	2	105605 4200	45,90	1	105607 4200	54,80
43	Series 3	2	105605 4300	45,90	1	105607 4300	54,80
44	Series 3	2	105605 4400	45,90	1	105607 4400	54,80
45	Series 3	2	105605 4500	45,90	1	105607 4500	54,80
46	Series 3	2	105605 4600	45,90	1	105607 4600	54,80
47	Series 3	2	105605 4700	45,90	1	105607 4700	54,80
48	Series 4	1	105705 4800	58,20	1	105707 4800	68,70
49	Series 4	1	105705 4900	58,20	1	105707 4900	68,70
50	Series 4	1	105705 5000	58,20	1	105707 5000	68,70
51	Series 4	1	105705 5100	58,20	1	105707 5100	68,70
52	Series 4	1	105705 5200	58,20	1	105707 5200	68,70
53	Series 4	1	105705 5300	58,20	1	105707 5300	68,70
54	Series 4	1	105705 5400	58,20	1	105707 5400	68,70
55	Series 4	1	105705 5500	58,20	1	105707 5500	68,70
56	Series 4	1	105705 5600	58,20	1	105707 5600	68,70
57	Series 4	1	105705 5700	58,20	1	105707 5700	68,70
58	Series 4	1	105705 5800	58,20	1	105707 5800	68,70
59	Series 4	1	105705 5900	58,20	1	105707 5900	68,70
60	Series 4	1	105705 6000	58,20	1	105707 6000	68,70
61	Series 4	1	105705 6100	58,20	1	105707 6100	68,70
62	Series 4	1	105705 6200	58,20	1	105707 6200	68,70
63	Series 4	1	105705 6300	58,20	1	105707 6300	68,70
64	Series 4	1	105705 6400	58,20	1	105707 6400	68,70
65	Series 4	1	105705 6500	58,20	1	105707 6500	68,70
			1142			1161	

Cutting inserts T-A® Original Flat Bottom 180°

HSS TiN Vc/fz 370 372

- **Diameter 9.5-65 mm**
- **For producing a flat-bottomed bore in existing bore**
- Suitable for carrier tools T-A® Original, series Y to 4
- Also suitable for flat countersinks (only with short holder)
- **Cutting material: HSS Super Cobalt, TiN-coated**





material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	●	●	●	●	●	●	●	●	○		○	●				

D mm	Holder		HSS Super Kobalt TiN art.no.	€
9.5	Series Y	2	**105125** 0950	42,–
10	Series Y	2	105125 1000	42,–
10.2	Series Y	2	105125 1020	42,–
10.5	Series Y	2	105125 1050	42,–
10.8	Series Y	2	105125 1080	42,–
11	Series Y	2	105125 1100	42,–
11.5	Series Z	2	105225 1150	42,–
12	Series Z	2	105225 1200	42,–
12.5	Series Z	2	105225 1250	42,–
13	Series 0	2	105325 1300	45,90
13.5	Series 0	2	105325 1350	45,90
14	Series 0	2	105325 1400	45,90
14.5	Series 0	2	105325 1450	45,90
15	Series 0	2	105325 1500	45,90
15.5	Series 0	2	105325 1550	45,90
16	Series 0	2	105325 1600	45,90
16.5	Series 0	2	105325 1650	45,90
17	Series 0	2	105325 1700	45,90
17.5	Series 0	2	105325 1750	45,90
18	Series 1	2	105430 1800	51,20
18.5	Series 1	2	105430 1850	51,20
19	Series 1	2	105430 1900	51,20
19.5	Series 1	2	105430 1950	51,20
20	Series 1	2	105430 2000	51,20
20.5	Series 1	2	105430 2050	51,20
21	Series 1	2	105430 2100	51,20
21.5	Series 1	2	105430 2150	51,20
22	Series 1	2	105430 2200	51,20
22.5	Series 1	2	105430 2250	51,20
23	Series 1	2	105430 2300	51,20
23.5	Series 1	2	105430 2350	51,20
24	Series 1	2	105430 2400	51,20
24.5	Series 2	2	105530 2450	58,90
25	Series 2	2	105530 2500	58,90
25.5	Series 2	2	105530 2550	58,90
26	Series 2	2	105530 2600	58,90
26.5	Series 2	2	105530 2650	58,90
27	Series 2	2	105530 2700	58,90
27.5	Series 2	2	105530 2750	58,90
28	Series 2	2	105530 2800	58,90
28.5	Series 2	2	105530 2850	58,90
29	Series 2	2	105530 2900	58,90

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D mm	Holder		HSS Super Kobalt TiN art.no.	€
29.5	Series 2	2	105530 2950	58,90
30	Series 2	2	105530 3000	58,90
30.5	Series 2	2	105530 3050	58,90
31	Series 2	2	105530 3100	58,90
31.5	Series 2	2	105530 3150	58,90
32	Series 2	2	105530 3200	58,90
32.5	Series 2	2	105530 3250	58,90
33	Series 2	2	105530 3300	58,90
33.5	Series 2	2	105530 3350	58,90
34	Series 2	2	105530 3400	58,90
34.5	Series 2	2	105530 3450	58,90
35	Series 2	2	105530 3500	58,90
36	Series 3	2	105530 3600	64,20
37	Series 3	2	105530 3700	64,20
38	Series 3	2	105530 3800	64,20
39	Series 3	2	105530 3900	64,20
40	Series 3	2	105530 4000	64,20
41	Series 3	2	105530 4100	64,20
42	Series 3	2	105530 4200	64,20
43	Series 3	2	105530 4300	64,20
45	Series 3	2	105530 4500	65,50
46	Series 3	2	105530 4600	64,20
47	Series 3	2	105530 4700	64,20
48	Series 4	1	105530 4800	81,60
49	Series 4	1	105530 4900	81,60
50	Series 4	1	105530 5000	81,60
51	Series 4	1	105530 5100	81,60
52	Series 4	1	105530 5200	81,60
53	Series 4	1	105530 5300	81,60
54	Series 4	1	105530 5400	81,60
55	Series 4	1	105530 5500	81,60
56	Series 4	1	105530 5600	81,60
57	Series 4	1	105530 5700	81,60
58	Series 4	1	105530 5800	81,60
59	Series 4	1	105530 5900	81,60
60	Series 4	1	105530 6000	81,60
61	Series 4	1	105530 6100	81,60
62	Series 4	1	105530 6200	81,60
63	Series 4	1	105530 6300	81,60
64	Series 4	1	105530 6400	81,60
65	Series 4	1	105530 6500	81,60

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Indexable inserts solid drill bits PHOENIX PD

Werks-norm | 2xD | 3xD | 4xD | 5xD | Vc/fz 376

Range expanded

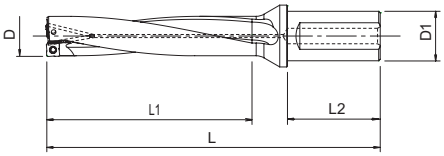
- Optimised substrate geometry for increased stability, improved chip removal and reduced cutting forces
- **Available in tool lengths of 2xD, 3xD, 4xD and 5xD**
- **Diameter 12-63mm**
- **Wide range of applications in steel, stainless steel, cast iron and aluminium materials**
- Short chips due to additional chip breaker in the chip flute
- **High efficiency thanks to 4 effective cutting edges per indexable insert**
- Same indexable insert can be used as centre and periphery plate
- **With internal coolant supply**
- **Please note:** Supplied without chuck key (Torx-Plus), please order separately!

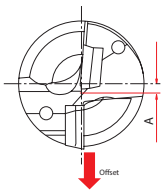
material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	○	●	●	○	○	○	○	○								

P2D - 2xD

- Bore tolerances:
  Ø 15-20.5 mm > 0/+0.25 mm; Ø 21-49 mm > 0/+0.3 mm; Ø 50-63 mm > 0/+0.35 mm







D mm	L mm	L1 mm	L2 mm	D1 mm	A mm	D max. mm	suitable indexable inserts			art.no.	€
12	87	24	50	20	0.4	12.8	XCMT 031904ER	A1	B1	**124202** 0120	282,20
12.5	88	25	50	20	0.4	13.3	XCMT 031904ER	A1	B1	124202 0125	282,20
13	89	26	50	20	0.3	13.6	XCMT 031904ER	A1	B1	124202 0130	282,20
13.5	90	27	50	20	0.2	13.9	XCMT 031904ER	A1	B1	124202 0135	282,20
14	91	28	50	20	0.2	14.4	XCMT 031904ER	A1	B1	124202 0140	282,20
14.5	92	29	50	20	0.1	14.7	XCMT 031904ER	A1	B1	124202 0145	282,20
15	95	30	50	20	0.4	15.8	XCMT 042204ER	A2	B1	124202 0150	282,20
15.5	96	31	50	20	0.3	16.1	XCMT 042204ER	A2	B1	124202 0155	282,20
16	97	32	50	20	0.3	16.6	XCMT 042204ER	A2	B1	124202 0160	282,20
16.5	98	33	50	20	0.3	17.1	XCMT 042204ER	A2	B1	124202 0165	282,20
17	102	34	50	20	0.6	18.2	XCMT 052404ER	A2	B1	124202 0170	282,20
17.5	109	35	56	25	0.5	18.5	XCMT 052404ER	A2	B1	124202 0175	295,20
18	110	36	56	25	0.5	19.0	XCMT 052404ER	A2	B1	124202 0180	295,20
18.5	111	37	56	25	0.4	19.3	XCMT 052404ER	A2	B1	124202 0185	295,20
19	112	38	56	25	0.6	20.2	XCMT 062706ER	A3	B2	124202 0190	295,20
19.5	113	39	56	25	0.5	20.5	XCMT 062706ER	A3	B2	124202 0195	295,20
20	114	40	56	25	0.4	20.8	XCMT 062706ER	A3	B2	124202 0200	295,20
20.5	115	41	56	25	0.4	21.3	XCMT 062706ER	A3	B2	124202 0205	295,20
21	121	42	56	25	1.0	23.0	XCMT 073106ER	A4	B3	124202 0210	292,70
21.5	122	43	56	25	0.9	23.3	XCMT 073106ER	A4	B3	124202 0215	311,70
22	123	44	56	25	0.8	23.6	XCMT 073106ER	A4	B3	124202 0220	311,70
22.5	124	45	56	25	0.7	23.9	XCMT 073106ER	A4	B3	124202 0225	311,70
23	125	46	56	25	0.5	24.0	XCMT 073106ER	A4	B3	124202 0230	311,70
23.5	130	47	60	32	0.4	24.3	XCMT 073106ER	A4	B3	124202 0235	311,70
24	131	48	60	32	0.3	24.6	XCMT 073106ER	A4	B3	124202 0240	311,70
24.5	132	49	60	32	0.2	24.9	XCMT 073106ER	A4	B3	124202 0245	311,70
25	133	50	60	32	1.1	27.2	XCMT 083508ER	A5	B4	124202 0250	311,70
25.5	134	51	60	32	0.9	27.3	XCMT 083508ER	A5	B4	124202 0255	311,70
26	135	52	60	32	0.8	27.6	XCMT 083508ER	A5	B4	124202 0260	311,70
26.5	136	53	60	32	0.7	27.9	XCMT 083508ER	A5	B4	124202 0265	311,70
27	137	54	60	32	0.6	28.2	XCMT 083508ER	A5	B4	124202 0270	370,70
28	139	56	60	32	0.3	28.6	XCMT 083508ER	A5	B4	124202 0280	370,70
28.5	140	57	60	32	0.2	28.9	XCMT 083508ER	A5	B4	124202 0285	370,70
29	141	58	60	32	1.3	31.6	XCMT 094008ER	A5	B4	124202 0290	370,70
30	143	60	60	32	1.1	32.2	XCMT 094008ER	A5	B4	124202 0300	370,70
31	155	62	70	40	0.8	32.6	XCMT 094008ER	A5	B4	124202 0310	370,70
32	157	64	70	40	0.6	33.2	XCMT 094008ER	A5	B4	124202 0320	370,70
33	159	66	70	40	0.3	33.6	XCMT 094008ER	A5	B4	124202 0330	370,70
33.5	160	67	70	40	0.2	33.9	XCMT 094008ER	A5	B4	124202 0335	411,20
34	161	68	70	40	1.1	36.2	XCMT 104608ER	A6	B5	124202 0340	418,–
35	163	70	70	40	0.8	36.6	XCMT 104608ER	A6	B5	124202 0350	418,–
36	165	72	70	40	0.8	37.6	XCMT 104608ER	A6	B5	124202 0360	418,–
37	167	74	70	40	0.6	38.2	XCMT 104608ER	A6	B5	124202 0370	432,70
38	169	76	70	40	0.3	38.6	XCMT 104608ER	A6	B5	124202 0380	432,70

Continued on next page >>>

D mm	L mm	L1 mm	L2 mm	D1 mm	A mm	D max. mm	suitable indexable inserts			art.no.	€
39	178	78	70	40	1.0	41.0	XCMT 125010ER	A6	B5	124202 0390	468,10
40	180	80	70	40	0.9	41.8	XCMT 125010ER	A6	B5	124202 0400	468,10
41	182	82	70	40	0.8	42.6	XCMT 125010ER	A6	B5	124202 0410	468,10
42	184	84	70	40	0.6	43.2	XCMT 125010ER	A6	B5	124202 0420	468,10
43	186	86	70	40	0.5	44.0	XCMT 125010ER	A6	B5	124202 0430	468,10
44	188	88	70	40	0.3	44.6	XCMT 125010ER	A6	B5	124202 0440	468,10
45	190	90	70	40	0.9	46.8	XCMT 135212ER	A7	B6	124202 0450	502,40
46	192	92	70	40	0.8	47.6	XCMT 135212ER	A7	B6	124202 0460	502,40
47	194	94	70	40	0.7	48.4	XCMT 135212ER	A7	B6	124202 0470	502,40
48	196	96	70	40	0.5	49.0	XCMT 135212ER	A7	B6	124202 0480	502,40
49	198	98	70	40	0.3	49.6	XCMT 135212ER	A7	B6	124202 0490	502,40
50	200	100	70	40	1.1	52.2	XCMT 145612ER	A7	B6	124202 0500	557,–
51	202	102	70	40	1.0	53.0	XCMT 145612ER	A7	B6	124202 0510	557,–
52	204	104	70	40	0.8	53.6	XCMT 145612ER	A7	B6	124202 0520	557,–
53	206	106	70	40	0.7	54.4	XCMT 145612ER	A7	B6	124202 0530	557,–
54	208	108	70	40	0.6	55.2	XCMT 145612ER	A7	B6	124202 0540	557,–
55	210	110	70	40	0.4	55.8	XCMT 145612ER	A7	B6	124202 0550	557,–
56	212	112	70	40	0.1	56.2	XCMT 145612ER	A7	B6	124202 0560	557,–
57	214	114	70	40	1.1	59.2	XCMT 165912ER	A7	B6	124202 0570	572,90
58	216	116	70	40	1.0	60.0	XCMT 165912ER	A7	B6	124202 0580	572,90
59	218	118	70	40	0.9	60.8	XCMT 165912ER	A7	B6	124202 0590	572,90
60	220	120	70	40	0.8	61.6	XCMT 165912ER	A7	B6	124202 0600	572,90
61	222	122	70	40	0.6	62.2	XCMT 165912ER	A7	B6	124202 0610	572,90
62	224	124	70	40	0.4	62.8	XCMT 165912ER	A7	B6	124202 0620	572,90
63	226	126	70	40	0.2	63.4	XCMT 165912ER	A7	B6	124202 0630	572,90

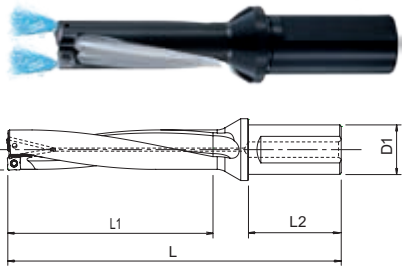
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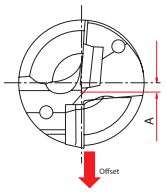
P3D - 3xD

- Bore tolerances:
  Ø 15-20.5 mm > 0/+0.25 mm; Ø 21-49 mm > 0/+0.3 mm; Ø 50-63 mm > 0/+0.35 mm

D mm	L mm	L1 mm	L2 mm	D1 mm	A mm	D max. mm	suitable indexable inserts			art.no.	€
12	99	36	50	20	0.4	12.8	XCMT 031904ER	A1	B1	**124203** 0120	314,30
12.5	100.5	37.5	50	20	0.4	13.3	XCMT 031904ER	A1	B1	124203 0125	314,30
12.7	101.1	38.1	50	20	0.3	13.3	XCMT 031904ER	A1	B1	124203 0127	314,30
13	102	39	50	20	0.3	13.6	XCMT 031904ER	A1	B1	124203 0130	314,30
13.5	103.5	40.5	50	20	0.2	13.9	XCMT 031904ER	A1	B1	124203 0135	314,30
14	105	42	50	20	0.2	14.4	XCMT 031904ER	A1	B1	124203 0140	314,30
14.5	106.5	43.5	50	20	0.1	14.7	XCMT 031904ER	A1	B1	124203 0145	314,30
15	110	45	50	20	0.4	15.8	XCMT 042204ER	A2	B1	124203 0150	314,30
15.5	112	47	50	20	0.3	16.1	XCMT 042204ER	A2	B1	124203 0155	314,30
16	113	48	50	20	0.3	16.6	XCMT 042204ER	A2	B1	124203 0160	314,30
16.5	115	50	50	20	0.3	17.1	XCMT 042204ER	A2	B1	124203 0165	314,30
17	119	51	50	20	0.6	18.2	XCMT 052404ER	A2	B1	124203 0170	314,30
17.5	121	53	50	20	0.5	18.5	XCMT 052404ER	A2	B1	124203 0175	314,30
18	128	54	56	25	0.5	19.0	XCMT 052404ER	A2	B1	124203 0180	314,30
18.5	130	56	56	25	0.4	19.3	XCMT 052404ER	A2	B1	124203 0185	314,30
19	131	57	56	25	0.6	20.2	XCMT 062706ER	A3	B2	124203 0190	314,30
19.5	133	59	56	25	0.5	20.5	XCMT 062706ER	A3	B2	124203 0195	314,30
20	134	60	56	25	0.4	20.8	XCMT 062706ER	A3	B2	124203 0200	314,30
20.5	136	62	56	25	0.4	21.3	XCMT 062706ER	A3	B2	124203 0205	314,30
21	142	63	56	25	1.0	23.0	XCMT 073106ER	A4	B3	124203 0210	328,90
21.5	144	65	56	25	0.9	23.3	XCMT 073106ER	A4	B3	124203 0215	328,90
22	145	66	56	25	0.8	23.6	XCMT 073106ER	A4	B3	124203 0220	328,90
22.5	147	68	56	25	0.7	23.9	XCMT 073106ER	A4	B3	124203 0225	328,90
23	148	69	56	25	0.5	24.0	XCMT 073106ER	A4	B3	124203 0230	345,–
23.5	154	71	60	32	0.4	24.3	XCMT 073106ER	A4	B3	124203 0235	345,–
24	155	72	60	32	0.3	24.6	XCMT 073106ER	A4	B3	124203 0240	345,–
24.5	157	74	60	32	0.2	24.9	XCMT 073106ER	A4	B3	124203 0245	345,–
25	158	75	60	32	1.1	27.2	XCMT 083508ER	A5	B4	124203 0250	345,–
25.5	160	77	60	32	0.9	27.3	XCMT 083508ER	A5	B4	124203 0255	345,–
26	161	78	60	32	0.8	27.6	XCMT 083508ER	A5	B4	124203 0260	390,90
26.5	163	80	60	32	0.7	27.9	XCMT 083508ER	A5	B4	124203 0265	390,90

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D mm	L mm	L1 mm	L2 mm	D1 mm	A mm	D max. mm	suitable indexable inserts			art.no.	€
27	164	81	60	32	0.6	28.2	XCMT 083508ER	A5	B4	124203 0270	390,90
28	167	84	60	32	0.3	28.6	XCMT 083508ER	A5	B4	124203 0280	390,90
28.5	169	86	60	32	0.2	28.9	XCMT 083508ER	A5	B4	124203 0285	390,90
29	170	87	60	32	1.3	31.6	XCMT 094008ER	A5	B4	124203 0290	390,90
30	173	90	60	32	1.1	32.2	XCMT 094008ER	A5	B4	124203 0300	390,90
31	186	93	70	40	0.8	32.6	XCMT 094008ER	A5	B4	124203 0310	434,–
32	189	96	70	40	0.6	33.2	XCMT 094008ER	A5	B4	124203 0320	434,–
33	192	99	70	40	0.3	33.6	XCMT 094008ER	A5	B4	124203 0330	434,–
33.5	194	101	70	40	0.2	33.9	XCMT 094008ER	A5	B4	124203 0335	434,–
34	195	102	70	40	1.1	36.2	XCMT 104608ER	A6	B5	124203 0340	440,20
35	198	105	70	40	0.8	36.6	XCMT 104608ER	A6	B5	124203 0350	440,20
36	201	108	70	40	0.8	37.6	XCMT 104608ER	A6	B5	124203 0360	440,20
37	204	111	70	40	0.6	38.2	XCMT 104608ER	A6	B5	124203 0370	459,60
38	207	114	70	40	0.3	38.6	XCMT 104608ER	A6	B5	124203 0380	459,60
39	217	117	70	40	1.0	41.0	XCMT 125010ER	A6	B5	124203 0390	497,80
40	220	120	70	40	0.9	41.8	XCMT 125010ER	A6	B5	124203 0400	497,80
41	223	123	70	40	0.8	42.6	XCMT 125010ER	A6	B5	124203 0410	497,80
42	226	126	70	40	0.6	43.2	XCMT 125010ER	A6	B5	124203 0420	497,80
43	229	129	70	40	0.5	44.0	XCMT 125010ER	A6	B5	124203 0430	497,80
44	232	132	70	40	0.3	44.6	XCMT 125010ER	A6	B5	124203 0440	497,80
45	235	135	70	40	0.9	46.8	XCMT 135212ER	A7	B6	124203 0450	543,60
46	238	138	70	40	0.8	47.6	XCMT 135212ER	A7	B6	124203 0460	543,60
47	241	141	70	40	0.7	48.4	XCMT 135212ER	A7	B6	124203 0470	543,60
48	244	144	70	40	0.5	49.0	XCMT 135212ER	A7	B6	124203 0480	543,60
49	247	147	70	40	0.3	49.6	XCMT 135212ER	A7	B6	124203 0490	543,60
50	250	150	70	40	1.1	52.2	XCMT 145612ER	A7	B6	124203 0500	602,–
51	253	153	70	40	1.0	53.0	XCMT 145612ER	A7	B6	124203 0510	602,–
52	256	156	70	40	0.8	53.6	XCMT 145612ER	A7	B6	124203 0520	602,–
53	259	159	70	40	0.7	55.4	XCMT 145612ER	A7	B6	124203 0530	602,–
54	262	162	70	40	0.6	55.2	XCMT 145612ER	A7	B6	124203 0540	602,–
55	265	165	70	40	0.4	55.8	XCMT 145612ER	A7	B6	124203 0550	602,–
56	268	168	70	40	0.1	56.2	XCMT 145612ER	A7	B6	124203 0560	602,–
57	271	171	70	40	1.1	59.2	XCMT 165912ER	A7	B6	124203 0570	617,10
58	274	174	70	40	1.0	60.0	XCMT 165912ER	A7	B6	124203 0580	617,10
59	277	177	70	40	0.9	60.8	XCMT 165912ER	A7	B6	124203 0590	617,10
60	280	180	70	40	0.8	61.6	XCMT 165912ER	A7	B6	124203 0600	617,10
61	283	183	70	40	0.6	62.2	XCMT 165912ER	A7	B6	124203 0610	617,10
62	286	186	70	40	0.4	62.8	XCMT 165912ER	A7	B6	124203 0620	617,10
63	289	189	70	40	0.2	63.4	XCMT 165912ER	A7	B6	124203 0630	617,10

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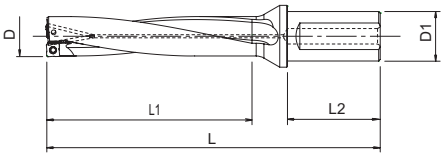
P4D - 4xD

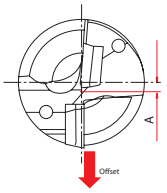
- Bore tolerances:
  ∅ 15-20.5 mm > 0/+0.3 mm; ∅ 21-49 mm > 0/+0.4 mm; ∅ 50-63 mm > 0/+0.5 mm

D mm	L mm	L1 mm	L2 mm	D1 mm	A mm	D max. mm	suitable indexable inserts			art.no.	€
12	111	48	50	20	0.4	12.8	XCMT 031904ER	A1	B1	**124204** 0120	474,30
12.5	113	50	50	20	0.4	13.3	XCMT 031904ER	A1	B1	124204 0125	474,30
13	115	52	50	20	0.3	13.6	XCMT 031904ER	A1	B1	124204 0130	474,30
13.5	117	54	50	20	0.2	13.9	XCMT 031904ER	A1	B1	124204 0135	474,30
14	119	56	50	20	0.2	14.4	XCMT 031904ER	A1	B1	124204 0140	474,30
14.5	121	58	50	20	0.1	14.7	XCMT 031904ER	A1	B1	124204 0145	474,30
15	125	60	50	20	0.4	15.8	XCMT 042204ER	A2	B1	124204 0150	474,30
15.5	127	62	50	20	0.3	16.1	XCMT 042204ER	A2	B1	124204 0155	474,30
16	129	64	50	20	0.3	16.6	XCMT 042204ER	A2	B1	124204 0160	474,30
16.5	131	66	50	20	0.3	17.1	XCMT 042204ER	A2	B1	124204 0165	474,30
17	136	68	50	20	0.6	18.2	XCMT 052404ER	A2	B1	124204 0170	498,40
17.5	138	70	50	20	0.5	18.5	XCMT 052404ER	A2	B1	124204 0175	498,40
18	146	72	56	25	0.5	19.0	XCMT 052404ER	A2	B1	124204 0180	498,40
18.5	148	74	56	25	0.4	19.3	XCMT 052404ER	A2	B1	124204 0185	498,40
19	150	76	56	25	0.6	20.2	XCMT 062706ER	A3	B2	124204 0190	517,10

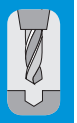
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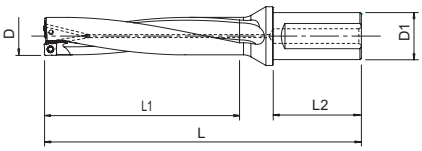
D mm	L mm	L1 mm	L2 mm	D1 mm	A mm	D max. mm	suitable indexable inserts			art.no.	€
19.5	152	78	56	25	0.5	20.5	XCMT 062706ER	A3	B2	124204 0195	517,10
20	154	80	56	25	0.4	20.8	XCMT 062706ER	A3	B2	124204 0200	517,10
20.5	156	82	56	25	0.4	21.3	XCMT 062706ER	A3	B2	124204 0205	517,10
21	163	84	56	25	1.0	23.0	XCMT 073106ER	A4	B3	124204 0210	467,80
21.5	165	86	56	25	0.9	23.3	XCMT 073106ER	A4	B3	124204 0215	467,80
22	167	88	56	25	0.8	23.6	XCMT 073106ER	A4	B3	124204 0220	467,80
22.5	169	90	56	25	0.7	23.9	XCMT 073106ER	A4	B3	124204 0225	467,80
23	171	92	56	25	0.5	24.0	XCMT 073106ER	A4	B3	124204 0230	467,80
23.5	177	94	60	32	0.4	24.3	XCMT 073106ER	A4	B3	124204 0235	467,80
24	179	96	60	32	0.3	24.6	XCMT 073106ER	A4	B3	124204 0240	467,80
24.5	181	98	60	32	0.2	24.9	XCMT 073106ER	A4	B3	124204 0245	467,80
25	183	100	60	32	1.1	27.2	XCMT 083508ER	A5	B4	124204 0250	499,20
25.5	185	102	60	32	0.9	27.3	XCMT 083508ER	A5	B4	124204 0255	499,20
26	187	104	60	32	0.8	27.6	XCMT 083508ER	A5	B4	124204 0260	499,20
26.5	189	106	60	32	0.7	27.9	XCMT 083508ER	A5	B4	124204 0265	499,20
27	191	108	60	32	0.6	28.2	XCMT 083508ER	A5	B4	124204 0270	499,20
28	195	112	60	32	0.3	28.6	XCMT 083508ER	A5	B4	124204 0280	499,20
28.5	197	114	60	32	0.2	28.9	XCMT 083508ER	A5	B4	124204 0285	499,20
29	199	116	60	32	1.3	31.6	XCMT 094008ER	A5	B4	124204 0290	528,50
30	203	120	60	32	1.1	32.2	XCMT 094008ER	A5	B4	124204 0300	528,50
31	207	124	60	32	0.8	32.6	XCMT 094008ER	A5	B4	124204 0310	528,50
32	211	128	60	32	0.6	33.2	XCMT 094008ER	A5	B4	124204 0320	528,50
33	225	132	70	40	0.3	33.6	XCMT 094008ER	A5	B4	124204 0330	528,50
33.5	227	134	70	40	0.2	33.9	XCMT 094008ER	A5	B4	124204 0335	528,50
34	229	136	70	40	1.1	36.2	XCMT 104608ER	A6	B5	124204 0340	536,10
35	233	140	70	40	0.8	36.6	XCMT 104608ER	A6	B5	124204 0350	536,10
36	237	144	70	40	0.8	37.6	XCMT 104608ER	A6	B5	124204 0360	536,10
37	241	148	70	40	0.6	38.2	XCMT 104608ER	A6	B5	124204 0370	557,30
38	245	152	70	40	0.3	38.6	XCMT 104608ER	A6	B5	124204 0380	557,30
39	256	156	70	40	1.0	41.0	XCMT 125010ER	A6	B5	124204 0390	567,70
40	260	160	70	40	0.9	41.8	XCMT 125010ER	A6	B5	124204 0400	628,10
41	264	164	70	40	0.8	42.6	XCMT 125010ER	A6	B5	124204 0410	628,10
42	268	168	70	40	0.6	43.2	XCMT 125010ER	A6	B5	124204 0420	628,10
43	272	172	70	40	0.5	44.0	XCMT 125010ER	A6	B5	124204 0430	628,10
44	276	176	70	40	0.3	44.6	XCMT 125010ER	A6	B5	124204 0440	628,10
45	280	180	70	40	0.9	46.8	XCMT 135212ER	A7	B6	124204 0450	661,80
46	284	184	70	40	0.8	47.6	XCMT 135212ER	A7	B6	124204 0460	661,80
47	288	188	70	40	0.7	48.4	XCMT 135212ER	A7	B6	124204 0470	661,80
48	292	192	70	40	0.5	49.0	XCMT 135212ER	A7	B6	124204 0480	661,80
49	296	196	70	40	0.3	49.6	XCMT 135212ER	A7	B6	124204 0490	661,80
50	300	200	70	40	1.1	52.2	XCMT 145612ER	A7	B6	124204 0500	736,30
51	304	204	70	40	1.0	53.0	XCMT 145612ER	A7	B6	124204 0510	736,30
52	308	208	70	40	0.8	53.6	XCMT 145612ER	A7	B6	124204 0520	736,30
53	312	212	70	40	0.7	54.4	XCMT 145612ER	A7	B6	124204 0530	736,30
54	316	216	70	40	0.6	55.2	XCMT 145612ER	A7	B6	124204 0540	736,30
55	320	220	70	40	0.4	55.8	XCMT 145612ER	A7	B6	124204 0550	736,30
56	324	224	70	40	0.1	56.2	XCMT 145612ER	A7	B6	124204 0560	736,30
57	328	228	70	40	1.1	59.2	XCMT 165912ER	A7	B6	124204 0570	755,–
58	332	232	70	40	1.0	60.0	XCMT 165912ER	A7	B6	124204 0580	755,–
59	336	236	70	40	0.9	60.8	XCMT 165912ER	A7	B6	124204 0590	755,–
60	340	240	70	40	0.8	61.6	XCMT 165912ER	A7	B6	124204 0600	755,–
61	344	244	70	40	0.6	62.2	XCMT 165912ER	A7	B6	124204 0610	755,–
62	348	248	70	40	0.4	62.8	XCMT 165912ER	A7	B6	124204 0620	755,–
63	352	252	70	40	0.2	63.4	XCMT 165912ER	A7	B6	124204 0630	755,–

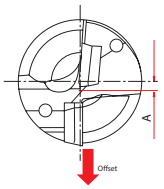
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P5D - 5xD

- Bore tolerances:
  Ø 15-20.5 mm > 0/+0.3 mm; Ø 21-49 mm > 0/+0.4 mm; Ø 50-63 mm > 0/+0.5 mm





D mm	L mm	L1 mm	L2 mm	D1 mm	A mm	D max. mm	suitable indexable inserts			art.no.	€
12	123	60	50	20	0.4	12.8	XCMT 031904ER	A1	B1	**124205** 0120	479,70
12.5	125.5	62.5	50	20	0.4	13.3	XCMT 031904ER	A1	B1	124205 0125	479,70
13	128	65	50	20	0.3	13.6	XCMT 031904ER	A1	B1	124205 0130	479,70
13.5	130.5	67.5	50	20	0.2	13.9	XCMT 031904ER	A1	B1	124205 0135	479,70
14	133	70	50	20	0.2	14.4	XCMT 031904ER	A1	B1	124205 0140	479,70
14.5	135.5	72.5	50	20	0.1	14.7	XCMT 031904ER	A1	B1	124205 0145	479,70
15	140	75	50	20	0.4	15.8	XCMT 042204ER	A2	B1	124205 0150	479,70
15.5	143	78	50	20	0.3	16.1	XCMT 042204ER	A2	B1	124205 0155	479,70
16	145	80	50	20	0.3	16.6	XCMT 042204ER	A2	B1	124205 0160	479,70
16.5	148	83	50	20	0.3	17.1	XCMT 042204ER	A2	B1	124205 0165	479,70
17	153	85	50	20	0.6	18.2	XCMT 052404ER	A2	B1	124205 0170	505,40
17.5	156	88	50	20	0.5	18.5	XCMT 052404ER	A2	B1	124205 0175	505,40
18	164	90	56	25	0.5	19.0	XCMT 052404ER	A2	B1	124205 0180	505,40
18.5	167	93	56	25	0.4	19.3	XCMT 052404ER	A2	B1	124205 0185	505,40
19	169	95	56	25	0.6	20.2	XCMT 062706ER	A3	B2	124205 0190	524,–
19.5	172	98	56	25	0.5	20.5	XCMT 062706ER	A3	B2	124205 0195	524,–
20	174	100	56	25	0.4	20.8	XCMT 062706ER	A3	B2	124205 0200	524,–
20.5	177	103	56	25	0.4	21.3	XCMT 062706ER	A3	B2	124205 0205	524,–
21	184	105	56	25	1.0	23.0	XCMT 073106ER	A4	B3	124205 0210	497,10
21.5	187	108	56	25	0.9	23.3	XCMT 073106ER	A4	B3	124205 0215	497,10
22	189	110	56	25	0.8	23.6	XCMT 073106ER	A4	B3	124205 0220	497,10
22.5	192	113	56	25	0.7	23.9	XCMT 073106ER	A4	B3	124205 0225	497,10
23	194	115	56	25	0.5	24.0	XCMT 073106ER	A4	B3	124205 0230	497,10
23.5	201	118	60	32	0.4	24.3	XCMT 073106ER	A4	B3	124205 0235	497,10
24	203	120	60	32	0.3	24.6	XCMT 073106ER	A4	B3	124205 0240	497,10
24.5	206	123	60	32	0.2	24.9	XCMT 073106ER	A4	B3	124205 0245	497,10
25	208	125	60	32	1.1	27.2	XCMT 083508ER	A5	B4	124205 0250	530,40
25.5	211	128	60	32	0.9	27.3	XCMT 083508ER	A5	B4	124205 0255	530,40
26	213	130	60	32	0.8	27.6	XCMT 083508ER	A5	B4	124205 0260	530,40
26.5	216	133	60	32	0.7	27.9	XCMT 083508ER	A5	B4	124205 0265	530,40
27	218	135	60	32	0.6	28.2	XCMT 083508ER	A5	B4	124205 0270	530,40
28	223	140	60	32	0.3	28.6	XCMT 083508ER	A5	B4	124205 0280	530,40
28.5	226	143	60	32	0.2	28.9	XCMT 083508ER	A5	B4	124205 0285	530,40
29	228	145	60	32	1.3	31.6	XCMT 094008ER	A5	B4	124205 0290	563,60
30	233	150	60	32	1.1	32.2	XCMT 094008ER	A5	B4	124205 0300	563,60
31	238	155	60	32	0.8	32.6	XCMT 094008ER	A5	B4	124205 0310	563,60
32	243	160	60	32	0.6	33.2	XCMT 094008ER	A5	B4	124205 0320	563,60
33	258	165	70	40	0.3	33.6	XCMT 094008ER	A5	B4	124205 0330	563,60
33.5	261	168	70	40	0.2	33.9	XCMT 094008ER	A5	B4	124205 0335	563,60
34	263	170	70	40	1.1	36.2	XCMT 104608ER	A6	B5	124205 0340	574,20
35	268	175	70	40	0.8	36.6	XCMT 104608ER	A6	B5	124205 0350	574,20
36	273	180	70	40	0.8	37.6	XCMT 104608ER	A6	B5	124205 0360	574,20
37	278	185	70	40	0.6	38.2	XCMT 104608ER	A6	B5	124205 0370	598,–
38	283	190	70	40	0.3	38.6	XCMT 104608ER	A6	B5	124205 0380	598,–
39	295	195	70	40	1.0	41.0	XCMT 125010ER	A6	B5	124205 0390	666,30
40	300	200	70	40	0.9	41.8	XCMT 125010ER	A6	B5	124205 0400	666,30
41	305	205	70	40	0.8	42.6	XCMT 125010ER	A6	B5	124205 0410	666,30
42	310	210	70	40	0.6	43.2	XCMT 125010ER	A6	B5	124205 0420	666,30
43	315	215	70	40	0.5	44.0	XCMT 125010ER	A6	B5	124205 0430	666,30
44	320	220	70	40	0.3	44.6	XCMT 125010ER	A6	B5	124205 0440	666,30
45	325	225	70	40	0.9	46.8	XCMT 135212ER	A7	B6	124205 0450	704,90
46	330	230	70	40	0.8	47.6	XCMT 135212ER	A7	B6	124205 0460	704,90
47	335	235	70	40	0.7	48.4	XCMT 135212ER	A7	B6	124205 0470	704,90
48	340	240	70	40	0.5	49.0	XCMT 135212ER	A7	B6	124205 0480	704,90

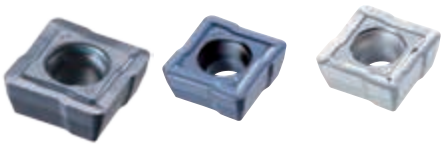
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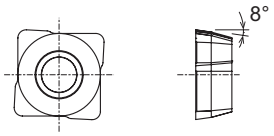
D mm	L mm	L1 mm	L2 mm	D1 mm	A mm	D max. mm	suitable indexable inserts			art.no.	€
49	345	245	70	40	0.3	49.6	XCMT 135212ER	A7	B6	124205 0490	704,90
50	350	250	70	40	1.1	52.2	XCMT 145612ER	A7	B6	124205 0500	853,90
51	355	255	70	40	1.0	53.0	XCMT 145612ER	A7	B6	124205 0510	853,90
52	360	260	70	40	0.8	53.6	XCMT 145612ER	A7	B6	124205 0520	853,90
53	365	265	70	40	0.7	54.4	XCMT 145612ER	A7	B6	124205 0530	853,90
54	370	270	70	40	0.6	55.2	XCMT 145612ER	A7	B6	124205 0540	853,90
55	375	275	70	40	0.4	55.8	XCMT 145612ER	A7	B6	124205 0550	853,90
56	380	280	70	40	0.1	56.2	XCMT 145612ER	A7	B6	124205 0560	853,90
57	385	285	70	40	1.1	59.2	XCMT 165912ER	A7	B6	124205 0570	884,–
58	390	290	70	40	1.0	60.0	XCMT 165912ER	A7	B6	124205 0580	884,–
59	395	295	70	40	0.9	60.8	XCMT 165912ER	A7	B6	124205 0590	884,–
60	400	300	70	40	0.8	61.6	XCMT 165912ER	A7	B6	124205 0600	884,–
61	405	305	70	40	0.6	62.2	XCMT 165912ER	A7	B6	124205 0610	884,–
62	410	310	70	40	0.4	62.8	XCMT 165912ER	A7	B6	124205 0620	884,–
63	415	315	70	40	0.2	63.4	XCMT 165912ER	A7	B6	124205 0630	884,–

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Indexable cutting inserts

ISO designation		ISO P M -DM XP9020 art.no.	€		ISO K -DR XP1010 art.no.	€		ISO N -DN CK110 art.no.	€
XCMT 031904ER	10	**124210** 1904	8,90	10	**124211** 1904	8,90	10	**124212** 1904	8,90
XCMT 042204ER	10	124210 2204	10,40	10	124211 2204	10,40	10	124212 2204	9,10
XCMT 052404ER	10	124210 2404	10,70	10	124211 2404	10,70	10	124212 2404	9,90
XCMT 062706ER	10	124210 2706	11,20	10	124211 2604	11,20	10	124212 2604	9,90
XCMT 073106ER	10	124210 3106	13,20	10	124211 3106	13,20	10	124212 3106	13,20
XCMT 083508ER	10	124210 3508	14,10	10	124211 3508	14,20	10	124212 3508	14,20
XCMT 094008ER	10	124210 4008	15,20	10	124211 4008	15,30	10	124212 4008	15,30
XCMT 104608ER	10	124210 4608	16,–	10	124211 4608	16,–	10	124212 4608	14,30
XCMT 125010ER	10	124210 5010	17,10	10	124211 5010	17,10	10	124212 5010	15,80
XCMT 135212ER	10	124210 5212	18,30	10	124211 5212	18,30	10	124212 5212	16,90
XCMT 145612ER	10	124210 5612	20,80	10	124211 5612	20,80	10	124212 5612	19,40
XCMT 165912ER	10	124210 5912	24,70	10	124211 5912	24,70	10	124212 5912	23,30
		1170			1170			1170	





Spare parts

	Screw art.no.	€		TORX PLUS art.no.	€
A1	124215 0003	7,80	B1	703054 0060	2,10
A2	124215 0004	8,20	B2	703054 0070	2,10
A3	124215 0006	7,80	B3	703054 0080	2,10
A4	124215 0007	6,60	B4	703054 0090	2,10
A5	124215 0008	5,30	B5	703054 0150	2,10
A6	124215 0010	6,20	B6	703054 0200	2,10
A7	124215 0013	6,20			
	1169			7114	

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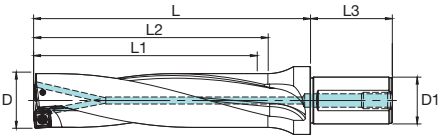
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palbit Indexable inserts - solid drill bits SCS 3D/4D



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- Surface-hardened carrier tools
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- **Diameter 13-50 mm**
- Optimised chip space geometry and cutting edge positions for stable drilling
- Wide range of applications
- Good chip control and reduced cutting forces
- **With internal coolant supply**
- **Suitable indexable cutting inserts SPKX**



SCS 3D - 3xD

- Bore tolerances: ∅ 13-21.5 mm > -0.1/+0.15 mm; ∅ 22-50 mm > -0.12/+0.2 mm

Designation	D mm	L1 mm	L2 mm	L mm	D1 mm	L3 mm	suitable indexable inserts			art.no.	€
SCS 13020-3D	13	39	42	62	20	50	SPKX 050204	A6	B1	**124403** 0130	183,25
SCS 13520-3D	13.5	41	44	64	20	50	SPKX 050204	A6	B1	124403 0135	183,25
SCS 14020-3D	14	42	45	65	20	50	SPKX 050204	A6	B1	124403 0140	183,25
SCS 14520-3D	14.5	44	47	67	20	50	SPKX 050204	A6	B1	124403 0145	183,25
SCS 15020-3D	15	45	48	68	20	50	SPKX 050204	A6	B1	124403 0150	183,25
SCS 15525-3D	15.5	47	50	75	25	56	SPKX 060204	A1	B2	124403 0155	183,25
SCS 16025-3D	16	48	51	76	25	56	SPKX 060204	A1	B2	124403 0160	183,25
SCS 16525-3D	16.5	50	53	78	25	56	SPKX 060204	A1	B2	124403 0165	183,25
SCS 17025-3D	17	51	54	79	25	56	SPKX 060204	A1	B2	124403 0170	183,25
SCS 17525-3D	17.5	53	56	81	25	56	SPKX 060204	A1	B2	124403 0175	183,25
SCS 18025-3D	18	54	57	82	25	56	SPKX 060204	A1	B2	124403 0180	183,25
SCS 18525-3D	18.5	56	59	84	25	56	SPKX 060204	A1	B2	124403 0185	183,25
SCS 19025-3D	19	57	60	85	25	56	SPKX 060204	A1	B2	124403 0190	183,25
SCS 19525-3D	19.5	59	62	87	25	56	SPKX 060204	A1	B2	124403 0195	183,25
SCS 20025-3D	20	60	63	88	25	56	SPKX 060204	A1	B2	124403 0200	183,25
SCS 20525-3D	20.5	62	65	90	25	56	SPKX 060204	A1	B2	124403 0205	183,25
SCS 21025-3D	21	63	66	91	25	56	SPKX 060204	A1	B2	124403 0210	183,25
SCS 21525-3D	21.5	65	68	93	25	56	SPKX 060204	A1	B2	124403 0215	185,75
SCS 22032-3D	22	66	69	99	32	60	SPKX 07T308	A2	B3	124403 0220	185,75
SCS 22532-3D	22.5	68	71	101	32	60	SPKX 07T308	A2	B3	124403 0225	185,75
SCS 23032-3D	23	69	72	102	32	60	SPKX 07T308	A2	B3	124403 0230	185,75
SCS 23532-3D	23.5	71	74	104	32	60	SPKX 07T308	A2	B3	124403 0235	185,75
SCS 24032-3D	24	72	75	105	32	60	SPKX 07T308	A2	B3	124403 0240	185,75
SCS 24532-3D	24.5	74	77	107	32	60	SPKX 07T308	A2	B3	124403 0245	185,75
SCS 25032-3D	25	75	78	108	32	60	SPKX 07T308	A2	B3	124403 0250	185,75
SCS 25532-3D	25.5	77	80	110	32	60	SPKX 07T308	A2	B3	124403 0255	198,–
SCS 26032-3D	26	78	81	111	32	60	SPKX 07T308	A2	B3	124403 0260	198,–
SCS 26532-3D	26.5	80	83	113	32	60	SPKX 07T308	A2	B3	124403 0265	198,–
SCS 27032-3D	27	81	84	114	32	60	SPKX 07T308	A2	B3	124403 0270	198,–
SCS 27532-3D	27.5	83	86	116	32	60	SPKX 07T308	A2	B3	124403 0275	198,–
SCS 28032-3D	28	84	87	117	32	60	SPKX 090408	A3	B4	124403 0280	198,–
SCS 28532-3D	28.5	86	89	119	32	60	SPKX 090408	A3	B4	124403 0285	198,–
SCS 29032-3D	29	87	90	120	32	60	SPKX 090408	A3	B4	124403 0290	198,–
SCS 29532-3D	29.5	89	93	123	32	60	SPKX 090408	A3	B4	124403 0295	198,–
SCS 30032-3D	30	90	95	125	32	60	SPKX 090408	A3	B4	124403 0300	198,–
SCS 31032-3D	31	93	98	128	32	60	SPKX 090408	A3	B4	124403 0310	224,50
SCS 32032-3D	32	96	101	131	32	60	SPKX 090408	A3	B4	124403 0320	228,50
SCS 33032-3D	33	99	104	134	32	60	SPKX 090408	A3	B4	124403 0330	228,50
SCS 34040-3D	34	102	107	142	40	70	SPKX 110408	A4	B4	124403 0340	228,50
SCS 35040-3D	35	105	110	145	40	70	SPKX 110408	A4	B4	124403 0350	228,50
SCS 36040-3D	36	108	113	148	40	70	SPKX 110408	A4	B4	124403 0360	228,50
SCS 37040-3D	37	111	116	151	40	70	SPKX 110408	A4	B4	124403 0370	235,75
SCS 38040-3D	38	114	119	154	40	70	SPKX 110408	A4	B4	124403 0380	235,75
SCS 39040-3D	39	117	122	157	40	70	SPKX 110408	A4	B4	124403 0390	235,75
SCS 40040-3D	40	120	125	160	40	70	SPKX 110408	A4	B4	124403 0400	235,75
SCS 41040-3D	41	123	128	163	40	70	SPKX 110408	A4	B4	124403 0410	259,75
SCS 42040-3D	42	126	131	166	40	70	SPKX 140512	A5	B5	124403 0420	259,75
SCS 43040-3D	43	129	134	169	40	70	SPKX 140512	A5	B5	124403 0430	259,75

Continued on next page >>>

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Designation	D mm	L1 mm	L2 mm	L mm	D1 mm	L3 mm	suitable indexable inserts			art.no.	€
SCS 44040-3D	44	132	137	172	40	70	SPKX 140512	A5	B5	124403 0440	259,75
SCS 45040-3D	45	135	140	175	40	70	SPKX 140512	A5	B5	124403 0450	259,75
SCS 46040-3D	46	138	143	178	40	70	SPKX 140512	A5	B5	124403 0460	272,–
SCS 47040-3D	47	141	146	181	40	70	SPKX 140512	A5	B5	124403 0470	272,–
SCS 48040-3D	48	144	149	184	40	70	SPKX 140512	A5	B5	124403 0480	272,–
SCS 49040-3D	49	147	152	187	40	70	SPKX 140512	A5	B5	124403 0490	272,–
SCS 50040-3D	50	150	155	190	40	70	SPKX 140512	A5	B5	124403 0500	272,–

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SCS 4D - 4xD

- Bore tolerances: Ø 13-21.5 mm > -0.15/+0.2 mm; Ø 22-50 mm > -0.15/+0.25 mm



Designation	D mm	L1 mm	L2 mm	L mm	D1 mm	L3 mm	suitable indexable inserts			art.no.	€
SCS 13020-4D	13	52	55	75	20	50	SPKX 050204	A6	B1	**124404** 0130	201,50
SCS 13520-4D	13.5	54	57	77	20	50	SPKX 050204	A6	B1	124404 0135	201,50
SCS 14020-4D	14	56	59	79	20	50	SPKX 050204	A6	B1	124404 0140	201,50
SCS 14520-4D	14.5	58	61	81	20	50	SPKX 050204	A6	B1	124404 0145	201,50
SCS 15020-4D	15	60	63	83	20	50	SPKX 050204	A6	B1	124404 0150	201,50
SCS 15525-4D	15.5	62	65	90	25	56	SPKX 060204	A1	B2	124404 0155	201,50
SCS 16025-4D	16	64	67	92	25	56	SPKX 060204	A1	B2	124404 0160	201,50
SCS 16525-4D	16.5	66	69	94	25	56	SPKX 060204	A1	B2	124404 0165	201,50
SCS 17025-4D	17	68	71	96	25	56	SPKX 060204	A1	B2	124404 0170	201,50
SCS 17525-4D	17.5	70	73	98	25	56	SPKX 060204	A1	B2	124404 0175	201,50
SCS 18025-4D	18	72	75	100	25	56	SPKX 060204	A1	B2	124404 0180	201,50
SCS 18525-4D	18.5	74	77	102	25	56	SPKX 060204	A1	B2	124404 0185	201,50
SCS 19025-4D	19	76	79	104	25	56	SPKX 060204	A1	B2	124404 0190	201,50
SCS 19525-4D	19.5	78	81	106	25	56	SPKX 060204	A1	B2	124404 0195	201,50
SCS 20025-4D	20	80	83	108	25	56	SPKX 060204	A1	B2	124404 0200	201,50
SCS 20525-4D	20.5	82	85	110	25	56	SPKX 060204	A1	B2	124404 0205	201,50
SCS 21025-4D	21	84	87	112	25	56	SPKX 060204	A1	B2	124404 0210	201,50
SCS 21525-4D	21.5	86	89	114	25	56	SPKX 060204	A1	B2	124404 0215	205,25
SCS 22032-4D	22	88	91	121	32	60	SPKX 07T308	A2	B3	124404 0220	205,25
SCS 22532-4D	22.5	90	93	123	32	60	SPKX 07T308	A2	B3	124404 0225	205,25
SCS 23032-4D	23	92	95	125	32	60	SPKX 07T308	A2	B3	124404 0230	205,25
SCS 23532-4D	23.5	94	97	127	32	60	SPKX 07T308	A2	B3	124404 0235	205,25
SCS 24032-4D	24	96	99	129	32	60	SPKX 07T308	A2	B3	124404 0240	205,25
SCS 24532-4D	24.5	98	101	131	32	60	SPKX 07T308	A2	B3	124404 0245	205,25
SCS 25032-4D	25	100	103	133	32	60	SPKX 07T308	A2	B3	124404 0250	205,25
SCS 25532-4D	25.5	102	105	135	32	60	SPKX 07T308	A2	B3	124404 0255	216,25
SCS 26032-4D	26	104	107	137	32	60	SPKX 07T308	A2	B3	124404 0260	216,25
SCS 26532-4D	26.5	106	109	139	32	60	SPKX 07T308	A2	B3	124404 0265	216,25
SCS 27032-4D	27	108	111	141	32	60	SPKX 07T308	A2	B3	124404 0270	216,25
SCS 27532-4D	27.5	110	113	143	32	60	SPKX 07T308	A2	B3	124404 0275	216,25
SCS 28032-4D	28	112	115	145	32	60	SPKX 090408	A3	B4	124404 0280	216,25
SCS 28532-4D	28.5	114	117	147	32	60	SPKX 090408	A3	B4	124404 0285	216,25
SCS 29032-4D	29	116	120	150	32	60	SPKX 090408	A3	B4	124404 0290	216,25
SCS 29532-4D	29.5	118	123	153	32	60	SPKX 090408	A3	B4	124404 0295	216,25
SCS 30032-4D	30	120	125	155	32	60	SPKX 090408	A3	B4	124404 0300	216,25
SCS 31032-4D	31	124	129	159	32	60	SPKX 090408	A3	B4	124404 0310	245,–
SCS 32032-4D	32	128	133	163	32	60	SPKX 090408	A3	B4	124404 0320	245,–
SCS 33032-4D	33	132	137	167	32	60	SPKX 090408	A3	B4	124404 0330	250,50
SCS 34040-4D	34	136	141	176	40	70	SPKX 110408	A4	B4	124404 0340	250,50
SCS 35040-4D	35	140	145	180	40	70	SPKX 110408	A4	B4	124404 0350	250,50
SCS 36040-4D	36	144	149	184	40	70	SPKX 110408	A4	B4	124404 0360	250,50
SCS 37040-4D	37	148	153	188	40	70	SPKX 110408	A4	B4	124404 0370	259,75
SCS 38040-4D	38	152	157	192	40	70	SPKX 110408	A4	B4	124404 0380	259,75
SCS 39040-4D	39	156	161	196	40	70	SPKX 110408	A4	B4	124404 0390	259,75
SCS 40040-4D	40	160	165	200	40	70	SPKX 110408	A4	B4	124404 0400	259,75
SCS 41040-4D	41	164	169	204	40	70	SPKX 110408	A4	B4	124404 0410	286,25
SCS 42040-4D	42	168	173	208	40	70	SPKX 140512	A5	B5	124404 0420	286,25
SCS 43040-4D	43	172	177	212	40	70	SPKX 140512	A5	B5	124404 0430	286,25
SCS 44040-4D	44	176	181	216	40	70	SPKX 140512	A5	B5	124404 0440	286,25

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Designation	D mm	L1 mm	L2 mm	L mm	D1 mm	L3 mm	suitable indexable inserts			art.no.	€
SCS 45040-4D	45	180	185	220	40	70	SPKX 140512	A5	B5	124404 0450	286,25
SCS 46040-4D	46	184	189	224	40	70	SPKX 140512	A5	B5	124404 0460	302,–
SCS 47040-4D	47	188	193	228	40	70	SPKX 140512	A5	B5	124404 0470	302,–
SCS 48040-4D	48	192	197	232	40	70	SPKX 140512	A5	B5	124404 0480	302,–
SCS 49040-4D	49	196	201	236	40	70	SPKX 140512	A5	B5	124404 0490	302,–
SCS 50040-4D	50	200	205	240	40	70	SPKX 140512	A5	B5	124404 0500	302,–
										1173	

Spare parts

	Screw	
	art.no.	€
A1	321099 0004	3,85
A2	321099 0006	3,85
A3	321099 0010	3,85
A4	321099 0017	3,35
A5	321099 0411	5,40
	3160	

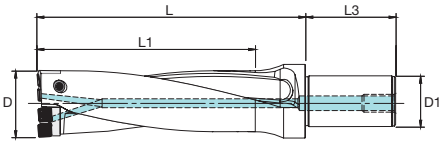
	TORX	
	art.no.	€
B1	703053 0060	1,79
B2	703053 0070	1,79
B3	703053 0080	1,79
B4	703053 0150	1,79
B5	703053 0200	1,79
	7114	

palbit Indexable inserts - solid drill bits with cartridge system SCC 3D/4D

3xD 4xD Vc/fz 382

- Surface-hardened carrier tools
- **Available tool lengths of 3xD and 4xD**
- **Diameter 50-80 mm**
- Optimised chip space geometry and cutting edge positions for stable drilling
- Wide range of applications
- Good chip control and reduced cutting forces
- **Suitable indexable cutting inserts SPKX**
- Supplied with inner and outer cartridge





SCC 3D - 3xD

Designation	D mm	L1 mm	L mm	D1 mm	L3 mm	suitable indexable inserts	suitable cartridge			art.no.	€
SCC 505540-3D	55-50	165	205	40	70	SPKX 090408	SCC 050055-I/O	A1	B1	**124413** 5055	637,50
SCC 556040-3D	60-55	180	220	40	70	SPKX 090408	SCC 055060-I/O	A1	B1	124413 5560	689,25
SCC 606540-3D	65-60	195	235	40	70	SPKX 110408	SCC 060065-I/O	A2	B1	124413 6065	792,75
SCC 657040-3D	70-65	210	250	40	70	SPKX 110408	SCC 065070-I/O	A2	B1	124413 6570	830,50
SCC 707540-3D	75-70	225	265	40	70	SPKX 110408	SCC 070075-I/O	A2	B1	124413 7075	870,75
SCC 758040-3D	80-75	240	278	40	70	SPKX 140512	SCC 075080-I/O	A3	B2	124413 7580	909,50
										1173	

SCC 4D - 4xD

Designation	D mm	L1 mm	L mm	D1 mm	L3 mm	suitable indexable inserts	suitable cartridge			art.no.	€
SCC 505540-4D	55-50	220	260	40	70	SPKX 090408	SCC 050055-I/O	A1	B1	**124414** 5055	731,50
SCC 556040-4D	60-55	240	280	40	70	SPKX 090408	SCC 055060-I/O	A1	B1	124414 5560	790,50
SCC 606540-4D	65-60	260	300	40	70	SPKX 110408	SCC 060065-I/O	A2	B1	124414 6065	912,–
SCC 657040-4D	70-65	280	320	40	70	SPKX 110408	SCC 065070-I/O	A2	B1	124414 6570	954,25
SCC 707540-4D	75-70	300	340	40	70	SPKX 110408	SCC 070075-I/O	A2	B1	124414 7075	999,75
SCC 758040-4D	80-75	320	358	40	70	SPKX 140512	SCC 075080-I/O	A3	B2	124414 7580	1.045,–
										1173	

SCC cartridges

- Inner cartridge **SCC-I**, outer cartridge **SCC-O**

Designation	D mm	for indexable inserts	suitable for solid drill bits mm	**SCC-I inner cartridge** art.no.	€	**SCC-O outer cartridge** art.no.	€
SCC 050055	55-50	SPKX 090408	SCC 505540-3D/4D	**124410** 5055	83,75	**124411** 5055	83,75
SCC 055060	60-55	SPKX 090408	SCC 556040-3D/4D	124410 5560	83,75	124411 5560	83,75
SCC 060065	65-60	SPKX 110408	SCC 606540-3D/4D	124410 6065	93,–	124411 6065	93,–
SCC 065070	70-65	SPKX 110408	SCC 657040-3D/4D	124410 6570	93,–	124411 6570	93,–
SCC 070075	75-70	SPKX 110408	SCC 707540-3D/4D	124410 7075	93,–	124411 7075	93,–
SCC 075080	80-75	SPKX 140512	SCC 758040-3D/4D	124410 7580	101,–	124411 7580	101,–
				3160		3160	



Spare parts

	Screw	
	art.no.	€
A1	321099 0010	3,85
A2	321099 0017	3,35
A3	321099 0411	5,40
	3160	

	TORX	
	art.no.	€
B1	703053 0150	1,79
B2	703053 0200	1,79
	7114	

palbit Indexable cutting inserts SPKX

- Carbide indexable cutting inserts, positive 11°
- **PH6920** PVD-coated (TiAlN)
  Fine grain carbide for universal applications, good toughness and wear resistance
- **PH6930** PVD-coated (TiAlN)
  Superfine grain carbide for applications under unstable machine conditions at moderate cutting speeds
- **PHC930** PVD-coated (TiAlN+TiN)
  Fine grain carbide for universal applications at high cutting speeds

Range expanded

ISO designation	ISO P M K S PH6920			ISO P M K S PH6930			ISO P M K S PHC930		
		art.no.	€		art.no.	€		art.no.	€
SPKX 05T104	10	**124512** 0105	8,70						
SPKX 050204	10	124512 0005	9,20	10	**124513** 0005	9,20	10	**124514** 0005	9,20
SPKX 060204	10	124512 0006	10,25	10	124513 0006	10,25	10	124514 0006	10,25
SPKX 070308	10	124512 0107	9,70						
SPKX 07T308	10	124512 0007	10,25	10	124513 0007	10,25	10	124514 0007	10,25
SPKX 090308	10	124512 0109	10,50						
SPKX 090408	10	124512 0009	10,75	10	124513 0009	10,75	10	124514 0009	10,75
SPKX 110408	10	124512 0011	11,75	10	124513 0011	11,75	10	124514 0011	11,75
SPKX 140512	10	124512 0014	12,25	10	124513 0014	12,25	10	124514 0014	12,25
		1171			1171			1171	



PHC930



PH6920, PH6930

palbit Core and countersink drill SPOT FACE

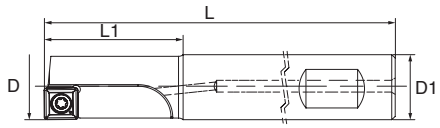


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NEW · NUOVO · NEU · NOUVEAU · NUEVO

- **with internal cooling**
- for countersinking and drilling
- flat countersinks for producing countersinks for cylinder head screws, countersinks, sealing surfaces
- Fixed dimension spiral countersink for drilling pre-machined or cast bores
- **The diameter of the hole to be drilled must not be smaller than Dimension A!**
- **suitable indexable cutting inserts SPKX**





D mm	L mm	D1 mm	L1 mm	A mm	suitable indexable inserts			art.no.	€
10	100	10	30	3	SPKX 05T104	A5	B1	**124700** 0100	85,–
11	100	12	30	3	SPKX 05T104	A5	B1	124700 0110	95,–
13	100	16	30	4	SPKX 060204	A1	B2	124700 0130	107,–
14	120	16	30	4	SPKX 060204	A1	B2	124700 0140	107,–
17	120	20	35	5	SPKX 070308	A2	B3	124700 0170	110,–
18	140	20	35	5	SPKX 070308	A2	B3	124700 0180	112,–
20	140	20	40	6	SPKX 090308	A3	B4	124700 0200	120,–
21	150	25	40	6	SPKX 090308	A3	B4	124700 0210	133,–
25	150	25	40	7	SPKX 110408	A4	B4	124700 0250	147,–
								2174	

Spare parts

Screw	art.no.	€	TORX	art.no.	€
A1	321099 0004	3,85	B1	703053 0060	1,79
A2	321099 0006	3,85	B2	703053 0070	1,79
A3	321099 0009	4,10	B3	703053 0080	1,79
A4	321099 0014	3,85	B4	703053 0150	1,79
A5	321099 0524	3,85			
	3160			7114	

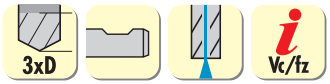




PALBIT
Machining tools
411 pages
Art.no. 019900 0315

Overview of all free manufacturers' catalogues
on page 14/15

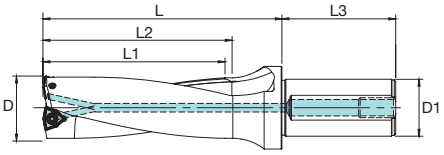
palbit Indexable inserts - solid drill bits TDS 3D



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- Surface-hardened carrier tools
- **Drilling depths up to 3xD**
- **Diameter 13-58 mm**
- Soft cutting for lower power requirement
- Optimised chip space geometry and cutting edge positions for stable drilling
- Wide range of applications in structural steel and stainless steels
- Good chip control and reduced cutting forces
- **With internal coolant supply**
- Bore tolerances:
  Ø 13-21.5 mm > -0.1/+0.15 mm; Ø 22-50 mm > -0.12/+0.2 mm; Ø 50-58 mm > -0.15/+0.25 mm
- **Suitable indexable cutting inserts WCKX**





Designation	D mm	L1 mm	L2 mm	L mm	D1 mm	L3 mm	suitable indexable inserts			art.no.	€
TDS 13020-3D	13	39	42	62	20	50	WCKX 02T104	A6	B1	**124303** 0130	163,75
TDS 13520-3D	13.5	41	44	64	20	50	WCKX 02T104	A6	B1	124303 0135	163,75
TDS 14020-3D	14	42	45	65	20	50	WCKX 02T104	A6	B1	124303 0140	163,75
TDS 14520-3D	14.5	44	47	67	20	50	WCKX 02T104	A6	B1	124303 0145	163,75
TDS 15020-3D	15	45	48	68	20	50	WCKX 02T104	A6	B1	124303 0150	163,75
TDS 15520-3D	15.5	47	50	70	20	50	WCKX 02T104	A6	B1	124303 0155	163,75
TDS 16025-3D	16	48	51	76	25	56	WCKX 030204	A1	B2	124303 0160	149,–
TDS 16525-3D	16.5	50	53	78	25	56	WCKX 030204	A1	B2	124303 0165	149,–
TDS 17025-3D	17	51	54	79	25	56	WCKX 030204	A1	B2	124303 0170	149,–
TDS 17525-3D	17.5	53	56	81	25	56	WCKX 030204	A1	B2	124303 0175	149,–
TDS 18025-3D	18	54	57	82	25	56	WCKX 030204	A1	B2	124303 0180	149,–
TDS 18525-3D	18.5	56	59	84	25	56	WCKX 030204	A1	B2	124303 0185	149,–
TDS 19025-3D	19	57	60	85	25	56	WCKX 030204	A1	B2	124303 0190	149,–
TDS 19525-3D	19.5	59	62	87	25	56	WCKX 030204	A1	B2	124303 0195	149,–
TDS 20025-3D	20	60	63	88	25	56	WCKX 030204	A1	B2	124303 0200	149,–
TDS 20525-3D	20.5	62	65	90	25	56	WCKX 040204	A2	B3	124303 0205	154,75
TDS 21025-3D	21	63	66	91	25	56	WCKX 040204	A2	B3	124303 0210	154,75
TDS 21525-3D	21.5	65	68	93	25	56	WCKX 040204	A2	B3	124303 0215	154,75
TDS 22025-3D	22	66	69	94	25	56	WCKX 040204	A2	B3	124303 0220	154,75
TDS 22525-3D	22.5	68	71	96	25	56	WCKX 040204	A2	B3	124303 0225	154,75
TDS 23025-3D	23	69	72	97	25	56	WCKX 040204	A2	B3	124303 0230	154,75
TDS 23525-3D	23.5	71	74	99	25	56	WCKX 040204	A2	B3	124303 0235	154,75
TDS 24025-3D	24	72	75	100	25	56	WCKX 040204	A2	B3	124303 0240	154,75
TDS 24525-3D	24.5	74	77	102	25	56	WCKX 040204	A2	B3	124303 0245	154,75
TDS 25025-3D	25	75	78	103	25	56	WCKX 040204	A2	B3	124303 0250	154,75
TDS 25532-3D	25.5	77	80	110	32	60	WCKX 050308	A5	B3	124303 0255	173,–
TDS 26032-3D	26	78	81	111	32	60	WCKX 050308	A5	B3	124303 0260	173,–
TDS 26532-3D	26.5	80	83	113	32	60	WCKX 050308	A5	B3	124303 0265	173,–
TDS 27032-3D	27	81	84	114	32	60	WCKX 050308	A5	B3	124303 0270	173,–
TDS 27532-3D	27.5	83	86	116	32	60	WCKX 050308	A5	B3	124303 0275	173,–
TDS 28032-3D	28	84	87	117	32	60	WCKX 050308	A5	B3	124303 0280	173,–
TDS 28532-3D	28.5	86	89	119	32	60	WCKX 050308	A5	B3	124303 0285	173,–
TDS 29032-3D	29	87	90	120	32	60	WCKX 050308	A5	B3	124303 0290	173,–
TDS 29532-3D	29.5	89	92	122	32	60	WCKX 050308	A5	B3	124303 0295	173,–
TDS 30032-3D	30	90	93	123	32	60	WCKX 050308	A5	B3	124303 0300	173,–
TDS 31032-3D	31	93	96	126	32	60	WCKX 06T308	A3	B4	124303 0310	186,75
TDS 32032-3D	32	96	99	129	32	60	WCKX 06T308	A3	B4	124303 0320	186,75
TDS 33032-3D	33	99	102	132	32	60	WCKX 06T308	A3	B4	124303 0330	186,75
TDS 34032-3D	34	102	105	135	32	60	WCKX 06T308	A3	B4	124303 0340	186,75
TDS 35032-3D	35	105	108	138	32	60	WCKX 06T308	A3	B4	124303 0350	186,75
TDS 36032-3D	36	108	111	141	32	60	WCKX 06T308	A3	B4	124303 0360	202,50
TDS 37032-3D	37	111	114	144	32	60	WCKX 06T308	A3	B4	124303 0370	202,50
TDS 38032-3D	38	114	117	147	32	60	WCKX 06T308	A3	B4	124303 0380	202,50
TDS 39032-3D	39	117	120	150	32	60	WCKX 06T308	A3	B4	124303 0390	202,50
TDS 40032-3D	40	120	123	153	32	60	WCKX 06T308	A3	B4	124303 0400	202,50
TDS 41032-3D	41	123	126	156	32	60	WCKX 06T308	A3	B4	124303 0410	202,50

Continued on next page >>>

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Designation	D mm	L1 mm	L2 mm	L mm	D1 mm	L3 mm	suitable indexable inserts			art.no.	€
TDS 42040-3D	42	126	129	164	40	70	WCKX 080408	A4	B4	124303 0420	222,–
TDS 43040-3D	43	129	132	167	40	70	WCKX 080408	A4	B4	124303 0430	222,–
TDS 44040-3D	44	132	135	170	40	70	WCKX 080408	A4	B4	124303 0440	222,–
TDS 45040-3D	45	135	138	173	40	70	WCKX 080408	A4	B4	124303 0450	222,–
TDS 46040-3D	46	138	141	176	40	70	WCKX 080408	A4	B4	124303 0460	234,75
TDS 47040-3D	47	141	144	179	40	70	WCKX 080408	A4	B4	124303 0470	234,75
TDS 48040-3D	48	144	147	182	40	70	WCKX 080408	A4	B4	124303 0480	234,75
TDS 49040-3D	49	147	150	185	40	70	WCKX 080408	A4	B4	124303 0490	234,75
TDS 50040-3D	50	150	153	188	40	70	WCKX 080408	A4	B4	124303 0500	234,75
TDS 51040-3D	51	153	156	191	40	70	WCKX 080408	A4	B4	124303 0510	246,–
TDS 52040-3D	52	156	159	194	40	70	WCKX 080408	A4	B4	124303 0520	246,–
TDS 53040-3D	53	159	162	197	40	70	WCKX 080408	A4	B4	124303 0530	246,–
TDS 54040-3D	54	162	165	200	40	70	WCKX 080408	A4	B4	124303 0540	246,–
TDS 55040-3D	55	165	168	203	40	70	WCKX 080408	A4	B4	124303 0550	246,–
TDS 56040-3D	56	168	171	206	40	70	WCKX 080408	A4	B4	124303 0560	263,25
TDS 57040-3D	57	171	174	209	40	70	WCKX 080408	A4	B4	124303 0570	263,25
TDS 58040-3D	58	174	177	212	40	70	WCKX 080408	A4	B4	124303 0580	263,25

1173

Spare parts

	Screw	
	art.no.	€
A1	321099 0004	3,85
A2	321099 0005	3,35
A3	321099 0010	3,85
A4	321099 0016	3,85
A5	321099 0047	3,85
A6	321099 0298	3,85

3160

	TORX	
	art.no.	€
B1	703053 0060	1,79
B2	703053 0070	1,79
B3	703053 0080	1,79
B4	703053 0150	1,79

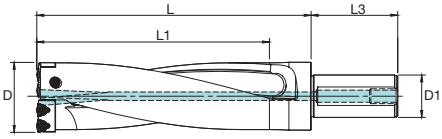
7114

palbit Indexable inserts - solid drill bits with cartridge system TDC 3D

3xD Vc/fz 379

- Surface-hardened carrier tools
- **Drilling depths up to 3xD**
- **Diameter 59-80 mm**
- Soft cutting for lower power requirement
- Wide range of applications in structural steel and stainless steels
- Good chip control and reduced cutting forces
- **With internal coolant supply**
- **Suitable indexable cutting inserts WCKX**
- Supplied with inner and outer cartridge





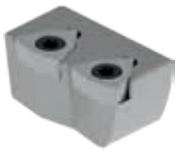
TDC 3D

Designation	D mm	L1 mm	L mm	D1 mm	L3 mm	suitable indexable inserts	suitable cartridge			art.no.	€
TDC 596540-3D	65-59	195	235	40	70	WCKX 06T308	TDC 059065	A1	B1	**124313** 5965	702,–
TDC 657040-3D	70-65	210	250	40	70	WCKX 06T308	TDC 065070	A1	B1	124313 6570	731,50
TDC 707540-3D	75-70	225	265	40	70	WCKX 06T308	TDC 070075	A1	B1	124313 7075	762,–
TDC 758040-3D	80-75	240	280	40	70	WCKX 06T308	TDC 075080	A1	B1	124313 7580	792,75

1173

TDC cartridges

- Inner cartridge **TDC-I**, outer cartridge **TDC-O**



Designation	D mm	suitable indexable inserts	suitable for solid drill bits mm	**TDC-I inner cartridge** art.no.	€	**TDC-O outer cartridge** art.no.	€
TDC 059065	65-59	WCKX 06T308	TDC 596540-3D	**124311** 5965	83,75	**124310** 5965	83,75
TDC 065070	70-65	WCKX 06T308	TDC 657040-3D	124311 6570	92,–	124310 6570	92,–
TDC 070075	75-70	WCKX 06T308	TDC 707540-3D	124311 7075	92,–	124310 7075	92,–
TDC 075080	80-75	WCKX 06T308	TDC 758040-3D	124311 7580	92,–	124310 7580	92,–

3160 3160

Spare parts

	Screw	
	art.no.	€
A1	321099 0010	3,85

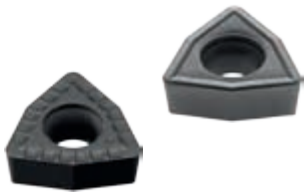
3160

	TORX	
	art.no.	€
B1	703053 0150	1,79

7114

palbit Indexable cutting inserts WCKX

- Carbide indexable cutting inserts, positive 7°
- **PH6920** - PVD-coated (TiAlN) fine grain carbide for universal applications. Good toughness and wear resistance.
- **PH6930** - PVD-coated (TiAlN) superfine grain carbide for applications under unstable machine conditions at average cutting speeds.
- **Recommendation:** Chip breaker LC specially designed for machining low-carbon steels



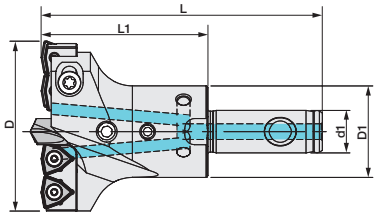
-LC

ISO designation		ISO P M K S PH6920 art.no.	€		ISO P M K S PH6930 art.no.	€		ISO P -LC PH6920 art.no.	€		ISO P -LC PH6930 art.no.	€
WCKX 02T104	10	**124522** 0002	7,40	10	**124523** 0002	7,40						
WCKX 030204	10	124522 0003	7,40	10	124523 0003	7,40						
WCKX 040204	10	124522 0004	7,40	10	124523 0004	7,40						
WCKX 050308	10	124522 0005	8,45	10	124523 0005	8,45	10	**124532** 0005	8,45	10	**124533** 0005	8,45
WCKX 06T308	10	124522 0006	8,45	10	124523 0006	8,45	10	124532 0006	8,45	10	124533 0006	8,45
WCKX 080408	10	124522 0008	9,70	10	124523 0008	9,70						
		1171			1171			1171			1171	

palbit Indexable inserts drilling system VORTEX DRILL

10xD Vc/fz 387

- **Machining of bore holes from Ø 45 to 180 mm**
- Drilling in a single work step without centring and pre-drilling
- The modular design allows efficient use through possible diameter bridging of up to 10 mm.
- Variable drilling depths of up to 10 x D due to holder system with pluggable extensions
- **Internal coolant supply**
- **Suitable indexable cutting inserts WCKX**
- Supplied with inner and outer cartridge





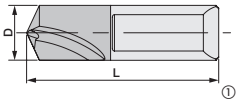
Boring head MDO 10D

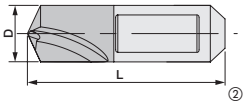
Designation	D mm	Working area mm	d1 mm	L1 mm	L mm	D1 mm	suitable cartridge	suitable indexable inserts	Number of index. inserts	suitable pilot drill			art.no.	€
MDO 04505013	50	45-50	13	50	85	28	MDC 045050-I/0	WCKX 030204	2+2	MDP 3510	A1	B1	**104503** 4550	458,50
MDO 05005513	55	50-55	13	50	85	28	MDC 050055-I/0	WCKX 030204	2+2	MDP 3510	A1	B1	104503 5055	491,25
MDO 05506016	60	55-60	16	60	100	32	MDC 055060-I/0	WCKX 040204	2+2	MDP 3812	A2	B2	104503 5560	524,–
MDO 06006516	65	60-65	16	60	100	32	MDC 060065-I/0	WCKX 050308	2+2	MDP 3812	A5	B2	104503 6065	613,75
MDO 06507016	70	65-70	16	60	100	32	MDC 065070-I/0	WCKX 050308	2+2	MDP 3812	A5	B2	104503 6570	655,–
MDO 07007522	75	70-75	22	70	115	40	MDC 070075-I/0	WCKX 050308	2+2	MDP 3812	A5	B2	104503 7075	655,–
MDO 07508022	80	75-80	22	70	115	40	MDC 075080-I/0	WCKX 06T308	2+2	MDP 4516	A3	B3	104503 7580	682,50
MDO 08008522	85	80-85	22	70	115	40	MDC 080085-I/0	WCKX 06T308	2+2	MDP 4516	A3	B3	104503 8085	723,25
MDO 08509027	90	85-90	27	70	120	48	MDC 085090-I/0	WCKX 06T308	2+2	MDP 4516	A3	B3	104503 8590	723,25
MDO 09009527	95	90-95	27	70	120	48	MDC 090095-I/0	WCKX 06T308	2+2	MDP 4516	A3	B3	104503 9095	723,25
MDO 09510027	100	95-100	27	70	120	48	MDC 095100-I/0	WCKX 06T308	2+2	MDP 4516	A3	B3	104503 9510	776,75
MDO 10010532	105	100-105	32	80	130	58	MDC 100105-I/0	WCKX 050308	3+3	MDP 4520	A5	B2	104503 1005	776,75
MDO 10511032	110	105-110	32	80	130	58	MDC 105110-I/0	WCKX 06T308	3+3	MDP 4520	A3	B3	104503 0511	776,75
MDO 11011532	115	110-115	32	80	130	58	MDC 110115-I/0	WCKX 06T308	3+3	MDP 4520	A3	B3	104503 1015	776,75
MDO 11512040	120	115-120	40	90	145	70	MDC 115120-I/0	WCKX 06T308	3+3	MDP 4520	A3	B3	104503 1520	927,75
MDO 12012540	125	120-125	40	90	145	70	MDC 120125-I/0	WCKX 06T308	3+3	MDP 5625	A3	B3	104503 2025	1.036,50
MDO 12513040	130	125-130	40	90	145	70	MDC 125130-I/0	WCKX 06T308	3+3	MDP 5625	A3	B3	104503 2530	1.036,50
MDO 13013540	135	130-135	40	90	145	70	MDC 130135-I/0	WCKX 06T308	3+3	MDP 5625	A3	B3	104503 3035	1.036,50
MDO 13514040	140	135-140	40	90	145	70	MDC 135140-I/0	WCKX 06T308	3+3	MDP 5625	A3	B3	104503 3540	1.036,50
MDO 14015050	150	140-150	50	100	160	80	MDC 140150-I/0	WCKX 080408	3+3	MDP 5625	A4	B3	104503 1415	1.254,25
MDO 15016050	160	150-160	50	100	160	80	MDC 150160-I/0	WCKX 080408	3+3	MDP 5625	A4	B3	104503 1516	1.254,25
MDO 16017050	170	160-170	50	100	160	80	MDC 160170-I/0	WCKX 080408	3+3	MDP 6830	A4	B3	104503 1617	1.281,75
MDO 17018050	180	170-180	50	100	160	80	MDC 170180-I/0	WCKX 080408	3+3	MDP 6830	A4	B3	104503 1718	1.635,75
													1173	

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Pilot drill bit MDP

- Point angle 118°
- **Cutting material:** HSS, TiN-coated
- with internal cooling

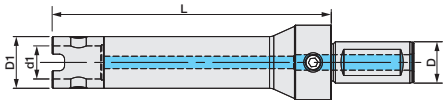






Designation	D mm	L mm	Illustration	for boring head	art.no.	€
MDP 3510	10	35	1	MDO 45-55 mm	**104519** 0010	33,75
MDP 3812	12	38	1	MDO 55-75 mm	104519 0012	43,–
MDP 4516	16	45	1	MDO 75-100 mm	104519 0016	50,50
MDP 4520	20	45	2	MDO 100-120 mm	104519 0020	77,25
MDP 5625	25	56	2	MDO 120-160 mm	104519 0025	98,–
MDP 6830	30	68	2	MDO 160-180 mm	104519 0030	136,75

3160



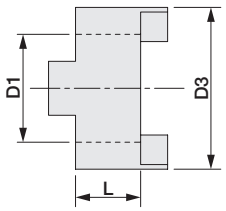


Holding fixture MDS

- **Please note:** Supplied without follower ring, please order separately!

Designation	D mm	d1 mm	D1 mm	L mm	suitable follower ring	art.no.	€
MDS 32115130	32	13	28	115	MDR 1028	**104513** 1301	123,–
MDS 32200130	32	13	28	200	MDR 1028	104513 1302	152,50
MDS 32300130	32	13	28	300	MDR 1028	104513 1303	183,25
MDS 40125160	40	16	32	125	MDR 1032	104513 1601	137,75
MDS 40200160	40	16	32	200	MDR 1032	104513 1602	152,50
MDS 40300160	40	16	32	300	MDR 1032	104513 1603	198,–
MDS 40148220	40	22	40	148	MDR 1240	104513 2201	152,50
MDS 40200220	40	22	40	200	MDR 1240	104513 2202	183,25
MDS 40300220	40	22	40	300	MDR 1240	104513 2203	214,25
MDS 40168270	40	27	48	168	MDR 1248	104513 2701	183,25
MDS 40300270	40	27	48	300	MDR 1248	104513 2702	244,–
MDS 40186320	40	32	58	186	MDR 1458	104513 3201	214,25
MDS 40300320	40	32	58	300	MDR 1458	104513 3202	244,–
MDS 50186400	50	40	70	186	MDR 1470	104513 4001	244,–
MDS 50300400	50	40	70	300	MDR 1470	104513 4002	305,50
MDS 50184500	50	50	80	184	MDR 1680	104513 5001	275,–

1173





Follower ring MDR

Designation	D3 mm	D1 mm	L mm	art.no.	€
MDR 1028	28	13	10	**104520** 0013	33,75
MDR 1032	32	16	10	104520 0016	33,75
MDR 1240	40	22	12	104520 0022	43,–
MDR 1248	48	27	12	104520 0027	49,50
MDR 1458	58	32	14	104520 0032	68,–
MDR 1470	70	40	14	104520 0040	78,25
MDR 1680	80	50	16	104520 0050	96,50

3160

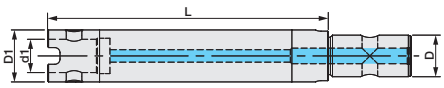
Spare parts

	Screw art.no.	€
A1	321099 0004	3,85
A2	321099 0005	3,35
A3	321099 0010	3,85
A4	321099 0016	3,85
A5	321099 0047	3,85

3160

	TORX art.no.	€
B1	703053 0070	1,79
B2	703053 0080	1,79
B3	703053 0150	1,79

7114



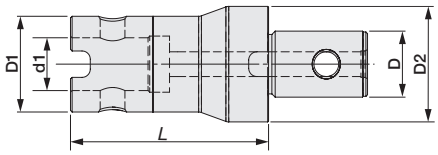


Extension MDE

- **Please note:** Supplied without follower ring, please order separately!

Designation	D mm	d1 mm	D1 mm	L mm	suitable follower ring	art.no.	€
MDE 13115280	13	13	28	115	MDR 1028	**104514** 1301	123,–
MDE 13150280	13	13	28	150	MDR 1028	104514 1302	129,75
MDE 13200280	13	13	28	200	MDR 1028	104514 1303	129,75
MDE 13300280	13	13	28	300	MDR 1028	104514 1304	152,50
MDE 16115320	16	16	32	115	MDR 1032	104514 1601	129,75
MDE 16200320	16	16	32	200	MDR 1032	104514 1602	137,75
MDE 16300320	16	16	32	300	MDR 1032	104514 1603	168,50
MDE 22113400	22	22	40	113	MDR 1240	104514 2201	137,75
MDE 22200400	22	22	40	200	MDR 1240	104514 2202	152,50
MDE 22300400	22	22	40	300	MDR 1240	104514 2203	183,25
MDE 27113480	27	27	48	113	MDR 1248	104514 2701	152,50
MDE 27200480	27	27	48	200	MDR 1248	104514 2702	183,25
MDE 27300480	27	27	48	300	MDR 1248	104514 2703	214,25
MDE 32186580	32	32	58	186	MDR 1458	104514 3201	198,–
MDE 32300580	32	32	58	300	MDR 1458	104514 3202	244,–
MDE 40186700	40	40	70	186	MDR 1470	104514 4001	214,25
MDE 40300700	40	40	70	300	MDR 1470	104514 4002	275,–
MDE 40500700	40	40	70	500	MDR 1470	104514 4003	380,50
MDE 50204800	50	50	80	204	MDR 1680	104514 5001	244,–
MDE 50300800	50	50	80	300	MDR 1680	104514 5002	335,25
MDE 50500800	50	50	80	500	MDR 1680	104514 5003	457,–

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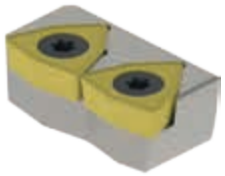


Reducer MDM

Designation	d1 mm	D mm	D1 mm	D2 mm	L mm	suitable follower ring	art.no.	€
MDM 16100130	13	16	28	32	100	MDR 1028 (D1) / MDR 1032 (D2)	**104521** 1613	127,50
MDM 22100160	16	22	32	40	100	MDR 1032 (D1) / MDR 1240 (D2)	104521 2216	127,50
MDM 27100220	22	27	40	48	100	MDR 1240 (D1) / MDR 1248 (D2)	104521 2722	127,50
MDM 32100130	13	32	28	58	100	MDR 1028 (D1) / MDR 1458 (D2)	104521 3213	159,75
MDM 32100160	16	32	32	58	100	MDR 1032 (D1) / MDR 1458 (D2)	104521 3216	159,75
MDM 32100220	22	32	40	58	100	MDR 1240 (D1) / MDR 1458 (D2)	104521 3222	159,75
MDM 32100270	27	32	48	58	100	MDR 1248 (D1) / MDR 1458 (D2)	104521 3227	159,75
MDM 40100320	32	40	58	70	100	MDR 1458 (D1) / MDR 1470 (D2)	104521 4032	159,75
MDM 50080130	13	50	28	80	80	MDR 1028 (D1) / MDR 1680 (D2)	104521 5013	159,75
MDM 50080160	16	50	32	80	80	MDR 1032 (D1) / MDR 1680 (D2)	104521 5016	159,75
MDM 50080220	22	50	40	80	80	MDR 1240 (D1) / MDR 1680 (D2)	104521 5022	159,75
MDM 50080270	27	50	48	80	80	MDR 1248 (D1) / MDR 1680 (D2)	104521 5027	159,75
MDM 50080320	32	50	58	80	80	MDR 1458 (D1) / MDR 1680 (D2)	104521 5032	159,75
MDM 50150400	40	50	70	80	150	MDR 1470 (D1) / MDR 1680 (D2)	104521 5040	159,75

1173

Continued on next page >>>



Boring head cartridges MDC

- Inner cartridge **MDC-I**, outer cartridge **MDC-O**
  < ∅ 100 mm 2 indexable cutting inserts per cartridge
  > ∅ 100 mm 3 indexable cutting inserts per cartridge

Designation	Working area mm	for indexable inserts	Number of index. inserts	for boring head	MDC-I inner cartridge art.no.	€	MDC-O outer cartridge art.no.	€
MDC 045050	45-50	WCKX 030204	2	MDO 04505013	**104517** 4550	80,75	**104518** 4550	80,75
MDC 050055	50-55	WCKX 030204	2	MDO 05005513	104517 5055	80,75	104518 5055	80,75
MDC 055060	55-60	WCKX 040204	2	MDO 05506016	104517 5560	80,75	104518 5560	80,75
MDC 060065	60-65	WCKX 050308	2	MDO 06006516	104517 6065	88,25	104518 6065	88,25
MDC 065070	65-70	WCKX 050308	2	MDO 06507016	104517 6570	88,25	104518 6570	88,25
MDC 070075	70-75	WCKX 050308	2	MDO 07007522	104517 7075	88,25	104518 7075	88,25
MDC 075080	75-80	WCKX 06T308	2	MDO 07508022	104517 7580	88,25	104518 7580	88,25
MDC 080085	80-85	WCKX 06T308	2	MDO 08008522	104517 8085	96,50	104518 8085	96,50
MDC 085090	85-90	WCKX 06T308	2	MDO 08509027	104517 8590	96,50	104518 8590	96,50
MDC 090095	90-95	WCKX 06T308	2	MDO 09009527	104517 9095	96,50	104518 9095	96,50
MDC 095100	95-100	WCKX 06T308	2	MDO 09510027	104517 9510	96,50	104518 9510	96,50
MDC 100105	100-105	WCKX 050308	3	MDO 10010532	104517 1005	112,25	104518 1005	112,25
MDC 105110	105-110	WCKX 06T308	3	MDO 10511032	104517 0511	120,50	104518 0511	120,50
MDC 110115	110-115	WCKX 06T308	3	MDO 11011532	104517 1115	120,50	104518 1115	120,50
MDC 115120	115-120	WCKX 06T308	3	MDO 11512040	104517 1520	120,50	104518 1520	120,50
MDC 120125	120-125	WCKX 06T308	3	MDO 12012540	104517 2025	120,50	104518 2025	120,50
MDC 125130	125-130	WCKX 06T308	3	MDO 12513040	104517 2530	120,50	104518 2530	120,50
MDC 130135	130-135	WCKX 06T308	3	MDO 13013540	104517 3035	120,50	104518 3035	120,50
MDC 135140	135-140	WCKX 06T308	3	MDO 13514040	104517 3540	120,50	104518 3540	120,50
MDC 140150	140-150	WCKX 080408	3	MDO 14015050	104517 1415	128,75	104518 1415	128,75
MDC 150160	150-160	WCKX 080408	3	MDO 15016050	104517 1516	128,75	104518 1516	128,75
MDC 160170	160-170	WCKX 080408	3	MDO 16017050	104517 1617	128,75	104518 1617	128,75
MDC 170180	170-180	WCKX 080408	3	MDO 17018050	104517 1718	128,75	104518 1718	128,75
					3160		3160	

ATORN® Universal Drilling and Turning Tool



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NEW · NUOVO · NEU · NOUVEAU · NUEVO

3 cutting edges per indexable insert

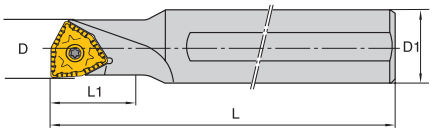
- **with internal cooling**
- **series and single-item production for facing and longitudinal turning, drilling, countersinking and chamfering**
- Optimises process costs: up to 30% reduced tooling times
- Solves the problem of tool location shortages
- wide range of holders and indexable inserts for a variety of materials
- Minimises tool costs: **one tool for 5 machining methods**

1,5 x D

D mm	D1 mm	L1 mm	L mm	suitable indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
8	12	12	80	WCHX 0401	A1	B1	**129501** 0080	176,–	**129502** 0080	176,–
10	12	15	90	WCHX 05T1	A2	B2	129501 0100	176,–	129502 0100	176,–
11	16	16.5	100	WCHX 0602	A3	B2	129501 0110	176,–	129502 0110	176,–
15	20	22.5	125	WCHX 0703	A4	B2	129501 0150	188,50	129502 0150	188,50
18	25	27	135	WCHX 0903	A5	B3	129501 0180	209,–	129502 0180	209,–
20	25	30	150	WCHX 10T3	A6	B4	129501 0200	229,–	129502 0200	229,–
26	32	39	180	WCHX 1305	A7	B5	129501 0260	274,–	129502 0260	274,–
							1181		1181	



left-hand version

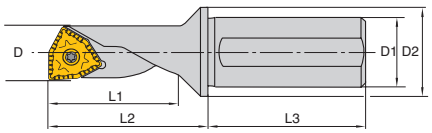


2,25 x D

D mm	D1 mm	D2 mm	L2 mm	L3 mm	L1 mm	suitable indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
8	10	12	22.5	38	18	WCHX 0401	A1	B1	**129511** 0080	252,–	**129512** 0080	252,–
10	12	16	28	42	22.5	WCHX 05T1	A2	B2	129511 0100	252,–	129512 0100	252,–
11	16	20	32	45	24.75	WCHX 0602	A3	B2	129511 0110	252,–	129512 0110	252,–
15	20	25	43	50	33.75	WCHX 0703	A4	B2	129511 0150	273,–	129512 0150	273,–
18	25	32	53	56	40.5	WCHX 0903	A5	B3	129511 0180	299,–	129512 0180	299,–
20	25	32	56	56	45	WCHX 10T3	A6	B4	129511 0200	325,–	129512 0200	325,–
26	32	40	73	60	58.5	WCHX 1305	A7	B5	129511 0260	383,–	129512 0260	383,–
									1181		1181	



Right-hand version



- Solid carbide indexable cutting inserts **WCHX** for facing and longitudinal turning, drilling, countersinking and chamfering
- **HW7310** uncoated
  innovative cutting edge geometry with extremely sharp cutting edges for reliable machining of non-ferrous metals
  very hard substrate for long service lives
  very good chip breaking thanks to chip breaker
- **HC7625** coated (TiN)
  universal and reliable use in steel and stainless steel
  excellent combination of wear resistance and toughness
- **HC7535** coated (TiAlN)
  universal and reliable use in steel and stainless steel with increased impact loads
  optimised for machining in unfavourable cutting conditions


HW7310 HC7625 HC7535

ISO designation		ISO NK HW7310 art.no.	€		ISO PM HC7625 art.no.	€		ISO PM HC7535 art.no.	€
WCHX 040102	10	**129615** 0402	16,20	10	**129640** 0402	14,60	10	**129630** 0402	14,60
WCHX 040104	10	129615 0404	16,20	10	129640 0404	14,60	10	129630 0404	14,60
WCHX 05T102	10	129615 0502	16,70	10	129640 0502	15,20	10	129630 0502	15,20
WCHX 05T104	10	129615 0504	16,70	10	129640 0504	15,20	10	129630 0504	15,20
WCHX 060202	10	129615 0602	16,70	10	129640 0602	15,20	10	129630 0602	15,20
WCHX 060204	10	129615 0604	16,70	10	129640 0604	15,20	10	129630 0604	15,20
WCHX 070304	10	129615 0704	16,80	10	129640 0704	15,40	10	129630 0704	15,40
WCHX 070308	10	129615 0708	16,80	10	129640 0708	15,40	10	129630 0708	15,40
WCHX 090304	10	129615 0904	17,20	10	129640 0904	15,70	10	129630 0904	15,70
WCHX 090308	10	129615 0908	17,20	10	129640 0908	15,70	10	129630 0908	15,70
WCHX 10T304	10	129615 1004	18,10	10	129640 1004	16,40	10	129630 1004	16,40
WCHX 10T308	10	129615 1008	18,10	10	129640 1008	16,40	10	129630 1008	16,40
WCHX 130508	10	129615 1308	22,10	10	129640 1308	20,10	10	129630 1308	20,10
		1181			1181			1181	

Spare parts

	Screw art.no.	€		Steel grey art.no.	€
A1	129599 0080	7,50	B1	703038 0060	1,97
A2	129599 0100	7,50	B2	703038 0080	1,97
A3	129599 0110	7,50	B3	703038 0150	1,79
A4	129599 0150	7,50	B4	703038 0200	1,79
A5	129599 0180	4,95	B5	703038 0250	1,79
A6	129599 0200	6,60			
A7	129599 0260	6,60			
	3106			7111	

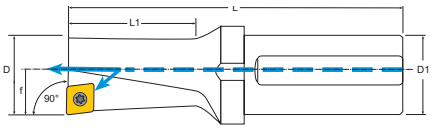
SARA® SARAcut 2.0 drilling and turning tool

392

Range expanded

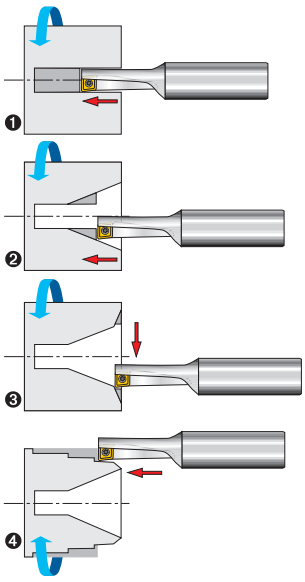
- **Drilling and turning with one tool**
- **Multifunctional:**
  Solid drilling with a level-bottomed drill hole (Drawing 1)
  Turning internal contours (Drawing 2)
  Turning of flat contours (Drawing 3)
  Turning external contours (Drawing 4)
  (Note change of rotational direction)
- Reduced storage of tools and indexable inserts, as well as reduced tooling times
- Reduction of tool costs
- Reduced programming effort and expense
- **Solves the problem of tool location shortages**





1.5 x D

D mm	D min. mm	D max. mm	L mm	L1 mm	f mm	D1 mm	suitable indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
8	7.85	8.3	80	12	4	12	XPNT 0402	A1	B1	**129101** 0080	122,–	**129102** 0080	122,–
10	9.85	10.5	90	15	5	12	XPNT 0502	A2	B1	129101 0100	124,–	129102 0100	124,–
12	11.85	12.5	100	18	6	16	XPNT 0602	A3	B2	129101 0120	128,–	129102 0120	128,–
14	13.85	14.5	110	21	7	16	XPNT 0703	A4	B3	129101 0140	128,–	129102 0140	131,–
16	15.85	16.5	125	24	8	20	XPNT 0803	A5	B4	129101 0160	138,–	129102 0160	141,–
18	17.85	18.5	135	27	9	25	XPNT 0904	A5	B4	129101 0180	144,–	129102 0180	148,–
20	19.8	20.5	150	30	10	25	XPNT 1004	A6	B5	129101 0200	159,–	129102 0200	163,–
25	24.8	25.8	180	37.5	12.5	32	XPNT 1305	A7	B6	129101 0250	170,–	129102 0250	174,–
32	31.8	33	200	48	16	40	XPNT 1706	A7	B6	129101 0320	180,–	129102 0320	180,–
										1122		1122	



Continued on next page >>>

2.25 x D

D mm	D min. mm	D max. mm	L mm	L1 mm	f mm	D1 mm	suitable indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
8	7.85	8.3	60	18	4	10	XPNT 0402	A1	B1	**129201** 0080	170,–	**129202** 0080	170,–
10	9.85	10.5	69.5	22.5	5	12	XPNT 0502	A2	B1	129201 0100	172,–	129202 0100	172,–
12	11.85	12.5	78	27	6	16	XPNT 0602	A3	B2	129201 0120	175,–	129202 0120	175,–
14	13.85	14.5	83.5	31.5	7	16	XPNT 0703	A4	B3	129201 0140	177,–	129202 0140	181,–
16	15.85	16.5	94	36	8	20	XPNT 0803	A5	B4	129201 0160	187,–	129202 0160	192,–
18	17.85	18.5	109.5	40.5	9	25	XPNT 0904	A5	B4	129201 0180	190,–	129202 0180	195,–
20	19.8	20.5	111	45	10	25	XPNT 1004	A6	B5	129201 0200	192,–	129202 0200	197,–
25	24.8	25.8	129	56.5	12.5	32	XPNT 1304	A7	B6	129201 0250	205,–	129202 0250	210,–
32	31.8	33	158	72	16	40	XPNT 1706	A7	B6	129201 0320	235,–	129202 0320	240,–
										1122		1122	

XPNT indexable inserts

- **XPNT 0402:** right holder = right indexable insert ER, left holder = left indexable insert EL



ISO designation	ISO PMS			ISO PK		
		SP300 art.no.	€		**SP350** art.no.	€
XPNT 040204 EL	10	**129300** 0002	9,75	10	**129350** 0002	9,75
XPNT 040204 ER	10	129300 0001	9,75	10	129350 0001	9,75
XPNT 050204 EN	10	129300 0003	9,75	10	129350 0003	9,75
XPNT 060204 EN	10	129300 0004	10,65	10	129350 0004	10,65
XPNT 070304 EN	10	129300 0005	10,65	10	129350 0005	10,65
XPNT 080304 EN	10	129300 0006	10,90	10	129350 0006	10,90
XPNT 090404 EN	10	129300 0007	11,05	10	129350 0007	11,05
XPNT 100404 EN	10	129300 0008	12,20	10	129350 0008	12,20
XPNT 100408 EN	10	129300 0009	12,20	10	129350 0009	12,20
XPNT 130504 EN	10	129300 0010	13,50	10	129350 0010	13,50
XPNT 130508 EN	10	129300 0011	13,50	10	129350 0011	13,50
XPNT 170608 EN	10	129300 0012	14,40	10	129350 0012	14,40
		1123			1123	

Indexable inserts XPET

- ground and polished



ISO designation	ISO N		
		SW200 art.no.	€
XPET 050204 FN	10	**129400** 0001	14,30
XPET 060204 FN	10	129400 0002	15,80
XPET 070304 FN	10	129400 0003	15,80
XPET 080304 FN	10	129400 0004	15,80
XPET 09T304 FN	10	129400 0005	16,30
XPET 10T304 FN	10	129400 0006	18,–
XPET 130404 FN	10	129400 0007	19,90
XPET 170508 FN	10	129400 0008	21,20
		1123	

Spare parts

	Screw art.no.	€		TORX PLUS art.no.	€
A1	129380 0618	4,95	B1	705145 0006	6,25
A2	129380 0620	4,95	B2	705145 0007	6,25
A3	129380 0722	4,95	B3	705145 0008	6,25
A4	129380 0825	4,95	B4	705145 0009	6,70
A5	129380 0930	4,95	B5	705145 0015	7,15
A6	129380 1535	9,95	B6	705145 0020	7,60
A7	129380 2045	9,95			
	1123				



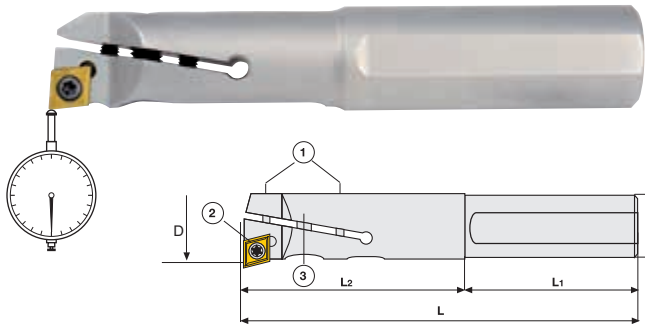
... with precision.

ATORN®
Performance demands quality

ATORN® Adjustable precision boring bars

- Nickel-plated version
- Adjusting range 2 - 5 mm
- **For ISO indexable cutting inserts CCMT and CCGT**
- Cost-efficient alternative to spindle tools
- **Other diameters and versions available on request**

The cost-efficient alternative to spindle tools



1 = adjusting screw, 2 = indexable insert screw, 3 = counter screw

D min. mm	D max. mm	L mm	L1 mm	L2 mm	d mm	suitable indexable inserts	suitable regulation screw	suitable lock screw			art.no.	€
10	12	100	70	30	10	CC..0602..	RE 1	BL 0	A1	B1	**323001** 1012	210,–
12	15	105	65	40	12	CC..0602..	RE 1	BL 1	A1	B1	323001 1215	225,–
15	20	110	60	50	16	CC..0602..	RE 2	BL 2	A1	B1	323001 1520	230,–
20	25	120	60	60	20	CC..0602..	RE 3	BL 3	A1	B1	323001 2025	250,–
25	30	140	70	70	25	CC..09T3..	RE 4	BL 4	A2	B2	323001 2530	260,–
30	35	160	70	90	25	CC..09T3..	RE 5	BL 5	A2	B2	323001 3035	280,–
35	40	170	70	100	32	CC..09T3..	RE 6	BL 6	A2	B2	323001 3540	325,–
40	45	190	70	120	32	CC..09T3..	RE 7	BL 7	A2	B2	323001 4045	350,–
45	50	220	70	150	32	CC..09T3..	RE 8	BL 8	A2	B2	323001 4550	395,–

3105

For ISO indexable inserts, please refer to the "Turning" section

Regulation screw

Designation	for Ø mm	art.no.	€
RE 1	10-15	**323002** 0002	5,10
RE 2	15-20	323002 0003	5,10
RE 3	20-25	323002 0004	5,10
RE 4	25-30	323002 0005	5,10
RE 5	30-35	323002 0006	5,10
RE 6	35-40	323002 0007	5,10
RE 7	40-45	323002 0008	5,10
RE 8	45-50	323002 0009	5,10

3106

Counter screw

Designation	for Ø mm	art.no.	€
BL 0	10-12	**323003** 0001	6,15
BL 1	12-15	323003 0002	6,15
BL 2	15-20	323003 0003	6,15
BL 3	25-30	323003 0004	6,15
BL 4	25-30	323003 0005	6,15
BL 5	30-35	323003 0006	6,75
BL 6	35-40	323003 0007	6,75
BL 7	40-45	323003 0008	7,60
BL 8	45-50	323003 0009	7,60

3106

Spare parts

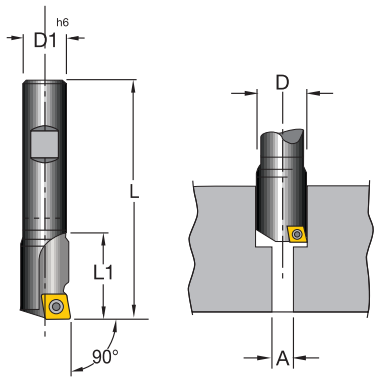
	Screw			TORX	
	art.no.	€		art.no.	€
A1	262551 0025	5,20	B1	703053 0080	1,79
A2	262551 0035	7,55	B2	703053 0150	1,79
	3106			7114	

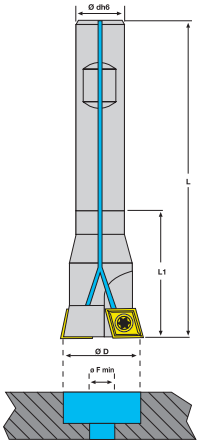
ATORN® Core and countersink drill

h6 | DIN 1835 B | Z 1 | Z 2

Range expanded

- **With internal cooling**
- For countersinking and drilling
- Counterbores for producing countersinks for cylinder head screws, countersinks, sealing surfaces
- Fixed dimension spiral countersink for drilling pre-machined or cast bores
- **The diameter to be drilled must not be smaller than dimension A!**
- **Bore tolerances:** For countersinks according to DIN 74 (H13)
- For ISO indexable inserts, please refer to the "Turning" section









Core and countersink drill bits with one indexable insert housing

D mm	L mm	L1 mm	D1 h6 mm	A mm	for indexable inserts			art.no.	€
10	85	15	12	4	CCMT 060204	A1	B1	**164003** 0100	88,–
11	85	15	12	4	CCMT 060204	A1	B1	164003 0110	88,–
12	85	18	12	4	CCMT 060204	A1	B1	164003 0120	88,–
13	85	23	12	5	CCMT 060204	A1	B1	164003 0130	90,50
14	85	23	12	5	CCMT 060204	A1	B1	164003 0140	90,50
15	85	30	12	5	CCMT 060204	A1	B1	164003 0150	88,–
16	85	30	12	5	CCMT 060204	A1	B1	164003 0160	91,50
17	95	30	16	6	CCMT 09T304	A2	B2	164003 0170	116,–
18	95	40	16	6	CCMT 09T304	A2	B2	164003 0180	113,–
19	95	40	16	6	CCMT 09T304	A2	B2	164003 0190	117,–
20	95	40	16	5	CCMT 09T304	A2	B2	164003 0200	138,–
21	95	42	16	5	CCMT 09T304	A2	B2	164003 0210	140,–
22	95	42	16	6	CCMT 09T304	A2	B2	164003 0220	140,–
23	95	42	16	6	CCMT 09T304	A2	B2	164003 0230	140,–
24	95	42	16	6	CCMT 09T304	A2	B2	164003 0240	142,–
25	95	42	16	8	CCMT 09T304	A2	B2	164003 0250	140,–
26	120	56	20	8	CCMT 09T304	A2	B2	164003 0260	150,–
27	120	56	20	9	CCMT 09T304	A2	B2	164003 0270	152,–
28	120	56	20	10	CCMT 09T304	A2	B2	164003 0280	152,–
29	120	56	20	11	CCMT 09T304	A2	B2	164003 0290	152,–
30	120	56	20	12	CCMT 09T304	A2	B2	164003 0300	152,–
31	120	56	20	12	CCMT 09T304	A2	B2	164003 0310	152,–
32	120	56	20	13	CCMT 09T304	A2	B2	164003 0320	152,–
33	120	56	20	14	CCMT 09T304	A2	B2	164003 0330	152,–

1132

Core and countersink drill bits with two indexable insert housings

D mm	L mm	L1 mm	D1 h6 mm	A mm	for indexable inserts			art.no.	€
16	92	30	12	5	CCMT 060204	A1	B1	**164005** 0016	163,–
17	94	32	16	6	CCMT 060204	A1	B1	164005 0017	163,–
18	97	41	16	7	CCMT 060204	A1	B1	164005 0018	173,–
19	100	41	16	8	CCMT 060204	A1	B1	164005 0019	173,–
20	102	41	16	9	CCMT 060204	A1	B1	164005 0020	192,–
21	105	41	16	10	CCMT 060204	A1	B1	164005 0021	192,–
22	110	41	16	11	CCMT 060204	A1	B1	164005 0022	205,–
23	112	41	16	12	CCMT 060204	A1	B1	164005 0023	205,–
24	115	41	16	13	CCMT 060204	A1	B1	164005 0024	205,–
25	120	40	16	8	CCMT 09T304	A2	B2	164005 0025	225,–
26	125	55	20	9	CCMT 09T304	A2	B2	164005 0026	225,–
27	128	55	20	10	CCMT 09T304	A2	B2	164005 0027	225,–
28	130	55	20	11	CCMT 09T304	A2	B2	164005 0028	225,–
29	132	55	20	12	CCMT 09T304	A2	B2	164005 0029	240,–
30	134	55	20	13	CCMT 09T304	A2	B2	164005 0030	240,–
31	136	55	20	14	CCMT 09T304	A2	B2	164005 0031	240,–
32	138	55	20	15	CCMT 09T304	A2	B2	164005 0032	240,–
33	140	55	20	16	CCMT 09T304	A2	B2	164005 0033	240,–
34	140	60	25	16	CCMT 09T304	A2	B2	164005 0034	250,–
35	140	60	25	17	CCMT 09T304	A2	B2	164005 0035	250,–
36	140	60	25	18	CCMT 09T304	A2	B2	164005 0036	250,–
37	140	60	25	19	CCMT 09T304	A2	B2	164005 0037	250,–
38	140	60	25	20	CCMT 09T304	A2	B2	164005 0038	250,–
39	140	60	25	21	CCMT 09T304	A2	B2	164005 0039	275,–
40	140	60	25	22	CCMT 09T304	A2	B2	164005 0040	275,–
41	140	60	25	23	CCMT 09T304	A2	B2	164005 0041	275,–
42	140	60	25	24	CCMT 09T304	A2	B2	164005 0042	275,–
43	150	70	25	24	CCMT 120404	A2	B2	164005 0043	355,–
44	150	70	25	24	CCMT 120404	A2	B2	164005 0044	355,–
45	150	70	25	24	CCMT 120404	A2	B2	164005 0045	355,–
46	150	70	25	24	CCMT 120404	A2	B2	164005 0046	355,–
47	150	70	25	24	CCMT 120404	A2	B2	164005 0047	365,–
48	150	70	25	24	CCMT 120404	A2	B2	164005 0048	365,–

1132

Spare parts

	Screw	
	art.no.	€
A1	262551 0025	5,20
A2	320901 2502	11,10

3106

	TORX	
	art.no.	€
B1	703053 0080	1,79
B2	703053 0150	1,79

7114

ATORN® Fixed dimension core drill bit

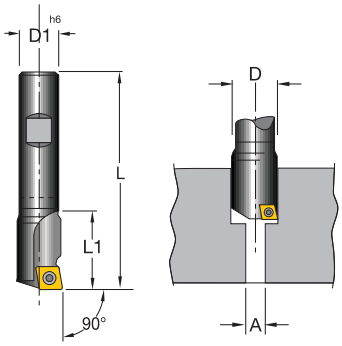
h6 | DIN 1835 B | Z 1

- **With internal cooling**
- Fixed dimension spiral countersink for drilling pre-machined or cast bores
- **The diameter to be drilled must not be smaller than dimension A!**
- **Bore tolerances:** H13
- For ISO indexable inserts, please refer to the "Turning" section



D mm	L mm	L1 mm	D1 h6 mm	A mm	for indexable inserts			art.no.	€
9.8	90	23	8	4.5	CCMT 060204	A1	B1	**164001** 0098	86,–
10.8	105	24	10	3.5	CCMT 060204	A1	B1	164001 0108	86,–
11.8	105	25	10	3	CCMT 060204	A1	B1	164001 0118	86,–
12.8	105	26	10	2.5	CCMT 060204	A1	B1	164001 0128	86,–
13.8	110	27	12	3	CCMT 060204	A1	B1	164001 0138	86,–
14.8	120	28	12	3.5	CCMT 060204	A1	B1	164001 0148	89,50
15.8	125	29	12	4	CCMT 060204	A1	B1	164001 0158	89,50
16.8	140	30	16	5	CCMT 060204	A1	B1	164001 0168	105,50
17.8	140	31	16	6	CCMT 060204	A1	B1	164001 0178	105,50
18.8	150	32	16	7	CCMT 060204	A1	B1	164001 0188	105,50
19.8	150	33	16	8	CCMT 09T304	A1	B2	164001 0198	105,50
20.8	160	34	16	9	CCMT 09T304	A2	B2	164001 0208	105,50
21.8	160	35	20	10	CCMT 09T304	A2	B2	164001 0218	105,50
22.8	165	36	20	11	CCMT 09T304	A2	B2	164001 0228	128,50
23.8	170	37	20	12	CCMT 09T304	A2	B2	164001 0238	128,50
24.8	180	38	20	13	CCMT 09T304	A2	B2	164001 0248	128,50
25.8	185	39	20	14	CCMT 09T304	A2	B2	164001 0258	128,50
26.8	190	40	20	15	CCMT 09T304	A2	B2	164001 0268	128,50
27.8	190	41	20	16	CCMT 09T304	A2	B2	164001 0278	128,50
28.8	200	42	20	17	CCMT 09T304	A2	B2	164001 0288	128,50
29.8	200	43	25	18	CCMT 09T304	A2	B2	164001 0298	128,50
30.8	200	44	25	19	CCMT 09T304	A2	B2	164001 0308	164,–
31.8	200	45	25	20	CCMT 09T304	A2	B2	164001 0318	164,–

1132



Spare parts

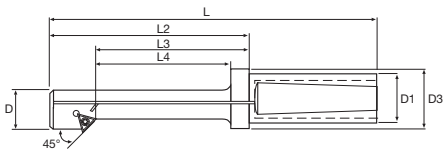
	Screw art.no.	€		TORX art.no.	€
A1	262551 0025	5,20	B1	703053 0080	1,79
A2	320901 2502	11,10	B2	703053 0150	1,79
	3106			7114	

ATORN® Reverse countersink 45°

h6 | Vc/fz | 398

- For rotating use with stationary workpieces
- **For ISO indexable cutting inserts (TCMT 0802.. and TCMT 1102..)**
- With internal cooling, (Ø15 mm without internal cooling)
- Straight shank with clamping surface (Whistle notch)





D mm	D min. mm	L mm	D3 mm	L2 mm	L3 mm	L4 mm	D1 h6 mm	E mm	for indexable inserts			art.no.	€
15	10	105	25	55	42	35	20	2.7	TCMT 0802..	A1	B1	**152504** 0150	250,–
20	14	110	25	60	47	40	20	3.2	TCMT 0802..	A1	B1	152504 0200	250,–
23	17	120	25	70	57	50	20	3.2	TCMT 1102..	A2	B2	152504 0230	265,–
27	21	140	25	90	77	70	20	3.2	TCMT 1102..	A2	B2	152504 0270	275,–
31	24	150	25	100	87	80	20	3.7	TCMT 1102..	A2	B2	152504 0310	305,–

1132

Spare parts

	Screw art.no.	€		TORX art.no.	€
A1	152599 0001	5,65	B1	703053 0070	1,79
A2	262551 0025	5,20	B2	703053 0080	1,79
	3106			7114	

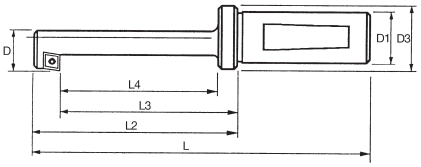
ATORN® 180° reverse countersink

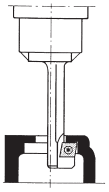
398

- For rotating use with stationary workpieces
- **For ISO indexable cutting inserts (CPMT or CCM and CCG)**
- With internal cooling, (Ø15 and Ø18 without internal cooling)
- Straight shank with clamping surface (Whistle notch)
- D5 = maximum countersink diameter

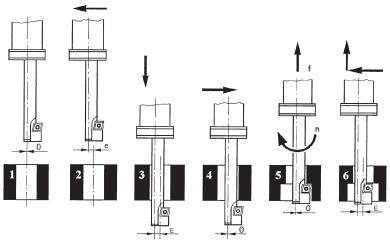
1. Positioning: pay attention to the cutting edge position!
2. Move from the centre to the cutting edge opposite "E".
3. Move eccentrically through the bore.
4. Move back to the centre.
5. Reverse countersink with speed "N" and feed "F".
6. Move from the centre to the cutting edge opposite "E" and retract from the hole.







D = max. achievable diameter



D mm	D min. mm	L mm	D3 mm	L2 mm	L3 mm	L4 mm	D1 mm	E mm	for indexable inserts	Clamping screw	Wrench dimension	A	B	art.no.	€
15	8.5	105	25	55	42	35	20	3.50	CPMT05T1..	M2.2 x 6	T7	A1	B1	**152501** 0150	191,50
18	10.5	112	25	62	47	40	20	4.00	CC..0602..	M2.5 x 6	T8	A2	B2	152501 0180	154,–
20	13.0	117	25	67	52	45	20	3.75	CC..0602..	M2.5 x 6	T8	A2	B2	152501 0200	170,–
24	15.0	122	25	72	57	50	20	4.75	CC..0602..	M2.5 x 6	T8	A2	B2	152501 0240	183,50
26	17.0	132	25	82	67	60	20	5.00	CC..0602..	M2.5 x 6	T8	A2	B2	152501 0260	198,50
30	19.0	142	25	92	77	65	20	6.00	CC..0602..	M2.5 x 6	T8	A2	B2	152501 0300	215,–
33	21.0	152	25	102	82	75	20	6.50	CC..09T3..	M4 x 8	T15	A3	B3	152501 0330	250,–
36	23.0	173	40	113	93	85	32	7.00	CC..09T3..	M4 x 8	T15	A3	B3	152501 0360	282,50
40	25.0	183	40	123	103	95	32	8.00	CC..09T3..	M4 x 8	T15	A3	B3	152501 0400	303,–
43	30.0	183	40	123	103	95	32	7.00	CC..09T3..	M4 x 8	T15	A3	B3	152501 0430	334,–
48	33.0	223	40	163	143	135	32	8.00	CC..09T3..	M4 x 8	T15	A3	B3	152501 0480	345,–
53	36.0	210	-	140	-	110	40	9.00	CC..1204..	M5 x 11	T20	A3	B3	152501 0530	379,–
57	39.0	220	-	150	-	120	40	9.50	CC..1204..	M5 x 11	T20	A3	B3	152501 0570	390,–
66	45.0	245	-	165	-	135	50	11.00	CC..1204..	M5 x 11	T20	A3	B3	152501 0660	415,–
76	52.0	265	-	185	-	155	50	12.50	CC..1204..	M5 x 11	T20	A3	B3	152501 0760	459,–

1132

Spare parts

	Screw art.no.	€
A1	152599 0001	5,65
A2	262551 0025	5,20
A3	320901 2502	11,10

3106

	TORX art.no.	€
B1	703053 0060	1,79
B2	703053 0080	1,79
B3	703053 0150	1,79

7114

ATORN® Indexable cutting inserts for reverse countersinks

- Carbide indexable cutting inserts, positive 7°
- **HC4635** - PVD-coated for universal applications

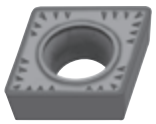
For further ISO indexable inserts, please refer to the "Turning" section

CPMT 05T104

- For reverse countersink 180°

ISO designation		ISO P M K HC 4635 art.no.	€
CPMT 05T104	10	**331260** 0032	14,10

1132



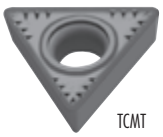
CPMT

TCMT 080204

- For reverse countersink 45°

ISO designation		ISO P M K HC4635 art.no.	€
TCMT 080204	10	**331261** 0032	19,90

1132



TCMT

SARA SARADRILL solid drilling tool

HSS-E PM | 15xD | TiN | Vc/fz | 374

- **Machining of bore holes from Ø 49 to 270 mm**
- **For machines with low drive power**
- Low-vibration, equipment-friendly machining with up to 50 % less drive power
- Drilling in a single operation without centring and pre-drilling
- No front face planing required
- Cost-efficient boring system, since differences in diameter of up to 30 mm can be machined with one boring head by changing the cutting edges
- Variable drilling depths of up to 15 x D due to holding fixture system with pluggable extensions
- Internal coolant supply directly to the cutting edge, no high-pressure pump required
- For rotating tools, the coolant is supplied via a coolant ring
- Short chips due to chip-separating grooves in the roughing blade, no chip removal, even with extremely deep bores
- Also for use on vertically operating machines
- Low tool costs as wear is limited to the cutting edges and centre bit
- Unproblematic regrinding of the centre bit and the cutting edges (in pairs) using the grinding fixture or the tool grinding machine
- **Cutting material:**
  Cutting edge **HSS-E-PM ASP30, ASP30 TiN**
  HSS centre bit
- For use on all machine tools as a rotating or stationary tool especially for machining large bore diameters on machines with low drive power
- **Caution:** Not suitable for boring out existing holes!



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	104550....	●	●	●	○	○		●	●				●	●	○		○		
	104555....	●	●	●	○	○	○	●	●				●	●	○		○		





Boring head

Designation	Working area mm	art.no.	€
A1-55	49 - 55	**104501** 0055	639,–
A2-65	55 - 65	104501 0065	639,–
B-80	65 - 80	104501 0080	779,–
C-100	80 - 100	104501 0100	909,–
D-120	100 - 120	104501 0120	1.069,–
E-150	120 - 150	104501 0150	2.429,–
F-180	150 - 180	104501 0180	3.289,–
G-210	180 - 210	104501 0210	4.029,–
H-240	210 - 240	104501 0240	5.369,–
I-270	240 - 270	104501 0270	6.809,–

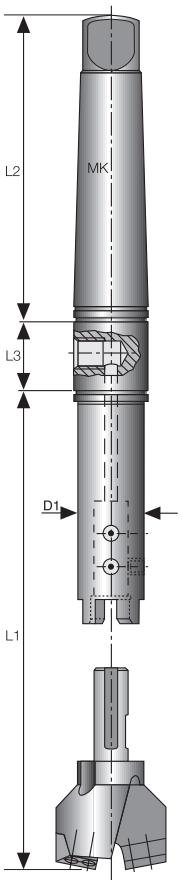
1118



Boring bar with Morse taper shank

for boring head	L1 mm	L2 mm	L3 mm	D1 mm	Shank	art.no.	€
A1/A2	200	158	30	29	MT 4	**104505** 0055	360,–
B-80	200	158	30	35	MT 4	104505 0080	380,–
C-100	200	158	30	38	MT 4	104505 0100	425,–
D-120	200	192	30	45	MT 5	104505 0120	739,–
E-150	200	192	30	55	MT 5	104505 0150	879,–
F-180	200	192	30	65	MT 5	104505 0180	1.029,–
G-210	200	192	30	75	MT 5	104505 0210	1.199,–
H-240	200	267	40	85	MT 6	104505 0240	1.599,–
I-270	200	267	40	95	MT 6	104505 0270	1.719,–

1118



Continued on next page >>>

Extension

- 150 mm and 300 mm

for boring head	D1 mm	150 mm art.no.	€	300 mm art.no.	€
A1/A2	29	**104510** 0055	295,–	**104515** 0055	345,–
B-80	35	104510 0080	320,–	104515 0080	400,–
C-100	38	104510 0100	345,–	104515 0100	420,–
D-120	45	104510 0120	395,–	104515 0120	445,–
E-150	55	104510 0150	739,–	104515 0150	819,–
F-180	65	104510 0180	849,–	104515 0180	949,–
G-210	75	104510 0210	1.019,–	104515 0210	1.049,–
H-240	85	104510 0240	1.129,–	104515 0240	1.229,–
I-270	95	104510 0270	1.349,–	104515 0270	1.459,–
		1118		1118	



Carbide guide

- For use with extremely deep bores

for boring head	Working area mm	art.no.	€
B-80	65 - 70	**104520** 0070	154,–
B-80	70 - 80	104520 0080	154,–
C-100 / D-120	80 - 120	104520 0120	154,–
		1118	

for boring head	Working area mm	art.no.	€
E-150 / F-180	120 - 180	104520 0180	465,–
G-210 / H-240 / I-270	180 - 270	104520 0270	649,–
		1118	



Centre bit

for boring head	D mm	Working area mm	art.no.	€
A1-55 to D-120	12	49 - 120	**104530** 0012	57,50
E-150 to I-270	20	120 - 270	104530 0020	82,50
			1119	



Coolant ring

- Compl. with coupling, grip bar and circlips

for boring head	Working area mm	Shank	art.no.	€
A1-55 to C-100	49 - 100	MT 4	**104540** 0001	178,–
D-120 to G-210	100 - 210	MT 5	104540 0002	280,–
H-240 to I-270	210 - 270	MT 6	104540 0003	739,–
			1118	



Replacement clamps

- For boring heads (prices per set of 2 heads)

for boring head	art.no.	€
A1-55	**104570** 0001	99,–
A2-65	104570 0002	99,–
B-80	104570 0003	99,–
C-100	104570 0004	114,–
D-120	104570 0005	132,–
E-150	104570 0006	320,–
F-180	104570 0007	395,–
G-210	104570 0008	430,–
H-240	104570 0009	430,–
I-270	104570 0010	430,–
	1118	



Drilling with 100 mm diameter into solid material with just 5 KW of drive power?

Use *SARADRILL* of course

Working example of a user of ***SARADrill***

Workpiece: Compression cylinder
Material: 1.7225, 42CrMo4V
Hole: Diameter 100 mm, depth 200 mm
Machine: Milling machine
Feed rate f: 0.18 mm/rev
Cutting speed Vc: 18 m/min

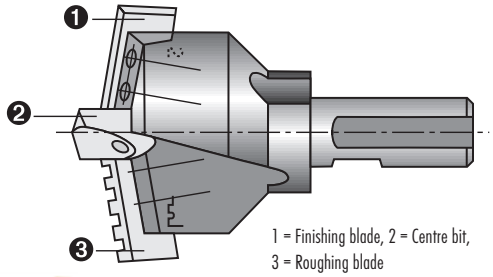
Drive power: approx. 4.5 KW

Result: 65% savings in working time

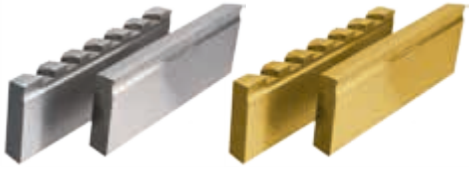


SARADRILL cutting edge

- **For SARADRILL** solid drilling tools
- The cutting edges are delivered in pairs, i.e. 1 roughing blade and 1 finishing blade.
- **Note for machining blind holes:**
  The finishing blade can be adjusted from 3 to 10 mm, depending on the size of the drill head, to machine intermediate dimensions. (Not permissible for machining through-holes!)
- **Caution: The cutting edges may only be replaced in pairs to prevent the risk of breakage!**
- Prices per pair (1 roughing blade and 1 finishing blade)



1 = Finishing blade, 2 = Centre bit, 3 = Roughing blade



D mm	for boring head	art.no.	€	TiN art.no.	TiN €
49	A1-55	**104550** 0049	165,–	**104555** 0049	177,–
50	A1-55	104550 0050	165,–	104555 0050	177,–
51	A1-55	104550 0051	165,–	104555 0051	177,–
52	A1-55	104550 0052	165,–	104555 0052	177,–
53	A1-55	104550 0053	165,–	104555 0053	177,–
54	A1-55	104550 0054	165,–	104555 0054	177,–
55	A1-55,A2-65	104550 0055	165,–	104555 0055	177,–
56	A2-65	104550 0056	165,–	104555 0056	183,–
57	A2-65	104550 0057	165,–	104555 0057	183,–
58	A2-65	104550 0058	165,–	104555 0058	183,–
59	A2-65	104550 0059	165,–	104555 0059	183,–
60	A2-65	104550 0060	165,–	104555 0060	183,–
61	A2-65	104550 0061	170,–	104555 0061	183,–
62	A2-65	104550 0062	170,–	104555 0062	183,–
63	A2-65	104550 0063	170,–	104555 0063	183,–
64	A2-65	104550 0064	170,–	104555 0064	183,–
65	A2-65,B-080	104550 0065	170,–	104555 0065	183,–
66	B- 80	104550 0066	205,–	104555 0066	220,–
67	B- 80	104550 0067	205,–	104555 0067	220,–
68	B- 80	104550 0068	205,–	104555 0068	220,–
69	B- 80	104550 0069	205,–	104555 0069	220,–
70	B- 80	104550 0070	205,–	104555 0070	220,–
71	B- 80	104550 0071	205,–	104555 0071	220,–
72	B- 80	104550 0072	205,–	104555 0072	220,–
73	B- 80	104550 0073	205,–	104555 0073	220,–
74	B- 80	104550 0074	215,–	104555 0074	245,–
75	B- 80	104550 0075	215,–	104555 0075	245,–
76	B- 80	104550 0076	215,–	104555 0076	245,–
77	B- 80	104550 0077	215,–	104555 0077	245,–
78	B- 80	104550 0078	215,–	104555 0078	245,–
79	B- 80	104550 0079	215,–	104555 0079	245,–
80	B- 80,C- 100	104550 0080	230,–	104555 0080	265,–
81	C-100	104550 0081	230,–	104555 0081	265,–
82	C-100	104550 0082	230,–	104555 0082	265,–
83	C-100	104550 0083	230,–	104555 0083	265,–
84	C-100	104550 0084	230,–	104555 0084	265,–
85	C-100	104550 0085	230,–	104555 0085	265,–
86	C-100	104550 0086	230,–	104555 0086	265,–
87	C-100	104550 0087	230,–	104555 0087	265,–
88	C-100	104550 0088	230,–	104555 0088	265,–
89	C-100	104550 0089	230,–	104555 0089	265,–
90	C-100	104550 0090	230,–	104555 0090	265,–
91	C-100	104550 0091	245,–	104555 0091	285,–
92	C-100	104550 0092	245,–	104555 0092	285,–
93	C-100	104550 0093	245,–	104555 0093	285,–
94	C-100	104550 0094	245,–	104555 0094	285,–
95	C-100	104550 0095	245,–	104555 0095	285,–
		1119		1119	

D mm	for boring head	art.no.	€	TiN art.no.	TiN €
96	C-100	104550 0096	245,–	104555 0096	285,–
97	C-100	104550 0097	245,–	104555 0097	285,–
98	C-100	104550 0098	245,–	104555 0098	285,–
99	C-100	104550 0099	245,–	104555 0099	285,–
100	C-100,D- 120	104550 0100	245,–	104555 0100	285,–
101	D-120	104550 0101	260,–	104555 0101	300,–
102	D-120	104550 0102	260,–	104555 0102	300,–
103	D-120	104550 0103	260,–	104555 0103	300,–
104	D-120	104550 0104	260,–	104555 0104	300,–
105	D-120	104550 0105	260,–	104555 0105	300,–
106	D-120	104550 0106	260,–	104555 0106	300,–
107	D-120	104550 0107	260,–	104555 0107	300,–
108	D-120	104550 0108	260,–	104555 0108	300,–
109	D-120	104550 0109	260,–	104555 0109	300,–
110	D-120	104550 0110	260,–	104555 0110	300,–
111	D-120	104550 0111	305,–	104555 0111	350,–
112	D-120	104550 0112	305,–	104555 0112	350,–
113	D-120	104550 0113	305,–	104555 0113	350,–
114	D-120	104550 0114	305,–	104555 0114	350,–
115	D-120	104550 0115	305,–	104555 0115	350,–
116	D-120	104550 0116	305,–	104555 0116	350,–
117	D-120	104550 0117	305,–	104555 0117	350,–
118	D-120	104550 0118	305,–	104555 0118	350,–
119	D-120	104550 0119	305,–	104555 0119	350,–
120	D-120	104550 0120	305,–	104555 0120	350,–
120	E-150	104550 1120	420,–	104555 1120	509,–
125	E-150	104550 0125	430,–	104555 0125	529,–
130	E-150	104550 0130	440,–	104555 0130	539,–
135	E-150	104550 0135	450,–	104555 0135	559,–
140	E-150	104550 0140	460,–	104555 0140	559,–
145	E-150	104550 0145	475,–	104555 0145	579,–
150	E-150	104550 0150	490,–	104555 0150	599,–
150	F-180	104550 1150	609,–	104555 1150	759,–
155	F-180	104550 0155	629,–	104555 0155	769,–
160	F-180	104550 0160	649,–	104555 0160	809,–
165	F-180	104550 0165	669,–	104555 0165	829,–
170	F-180	104550 0170	699,–	104555 0170	849,–
180	F-180,G-210	104550 0180	759,–	104555 0180	899,–
190	G-210	104550 0190	789,–	104555 0190	939,–
200	G-210	104550 0200	809,–	104555 0200	959,–
210	G-210,H-240	104550 0210	839,–	104555 0210	979,–
220	H-240	104550 0220	869,–	104555 0220	1.009,–
230	H-240	104550 0230	889,–	104555 0230	1.049,–
240	H-240,I-270	104550 0240	959,–	104555 0240	1.109,–
250	I-270	104550 0250	1.019,–	104555 0250	1.209,–
260	I-270	104550 0260	1.079,–	104555 0260	1.269,–
270	I-270	104550 0270	1.159,–	104555 0270	1.349,–
		1119		1119	

Overview of hand taps

	Sets											
Sorting by thread												
Brand	ATORN®	ATORN®	SARA®	ATORN®	ATORN®	SARA®	ATORN®	SARA®	ATORN®	ATORN®	ATORN®	ATORN®
Thread	M	M	M	M-LH	M	M	MF	MF	UNC	UNF	BSW	G
Type	Blind-hole/ through-hole	Blind-hole/ through-hole	Blind-hole/ through-hole	Blind-hole/ through-hole	Blind-hole/ through-hole	Blind-hole/ through-hole	Blind-hole/ through-hole	Blind-hole/ through-hole	Blind-hole/ through-hole	Blind-hole/ through-hole	Blind-hole/ through-hole	Blind-hole/ through-hole
Range	M1 - M42	M2 - M20	M2 - M52	M4 - M20	M2 - M12	M3 - M16	M4 - M36	M3 - M36	3-48-7/8"-9	4-48 5/8"-18	W1/8"-W3/4"	G1/8"-G3/4"
Tolerance	6H	6H	6H	6H	6H	6H	6H	6H	2B	2B		
Set	3-pcs.	3-pcs.	3-pcs.	3-pcs.	3-pcs.	3-pcs.	2-pcs.	2-pcs.	3-pcs.	2-pcs.	3-pcs.	2-pcs.
DIN	352	352	352	352	352	352	2181	2181	351	2181	351	5157
Cutting material	HSS	HSS-E	HSS	HSS	HSS-E	HSS-E	HSS	HSS	HSS	HSS	HSS	HSS
Surface treatment	blank	blank	blank	blank	Nitrided	Vapour-treated	blank	blank	blank	blank	blank	blank
Item number	130130....	130126....	130101....	130134....	130135....	130110....	130139....	130105....	130140....	130141....	130142....	130143....
Page	213	213	213	215	215	215	214	214	216	216	217	217
Material groups	Usage recommendations											
Steel < 700 N/mm²	●	○	●	●	○	●	●	●	●	●	●	●
Steel < 1000 N/mm²	●	○	●	●	●	●	●	●	●	●	●	●
Steel < 1400 N/mm²					●	○						
Stainless steel ferritic/martensitic		●				○						
Stainless steel austenitic		●										
Stainless steel duplex		○										
Cast iron GG/GTS	○	○		○	○	●	○		○	○	○	○
Cast iron GGG	○	○		○	○	○	○		○	○	○	○
Titanium alloys												
Superalloys Fe/NiCo base < 30 HRc												
Superalloys Fe/NiCo base ≥ 30 HRc												
Aluminium < 8 % Si	○	○			○		○		○	○	○	○
Aluminium ≥ 8 % Si	○	○			○		○		○	○	○	○
Copper Cu-alloy	○	○			○		○		○	○	○	○
Graphite GRP/CFP/thermoset												
Hardened steel < 55 HRc												
Hardened steel < 60 HRc												
Hardened steel ≥ 60 HRc												

ATORN® The ISO colour ring system

ATORN taps and thread formers are marked with coloured rings in accordance with the ISO colour code according to their **main area of use**. The respective secondary applications are specified in the catalogue.

Steel up to 1,000 N/mm²

Stainless steel

GG, GGG

Aluminium and copper alloys, long-chipping materials

Titanium and nickel alloys

Hard steel up to 62 HRc

Steel | **up to 1,400 N/mm²**

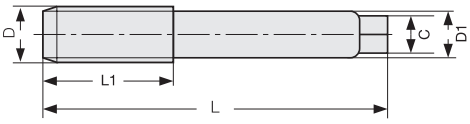
Steel | **Stainless steel**



ATORN® SARA® Hand taps

M | 60° | HSS | DIN 352 | ISO 2 6H

- **ISO metric thread, DIN 13**
- **Cutting material: HSS**
- For through-hole and blind bore threads
- 3 pcs set comprising taper tap, second tap and bottom tap





material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●					○	○				○	○	○				

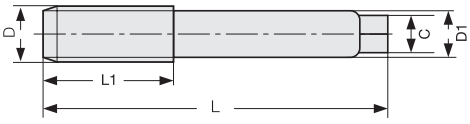
D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	ATORN® 3-pcs. set art.no.	€	SARA® 3-pcs. set art.no.	€
M 1	0.25	32	5.5	2.5	2.1	**130130** 0010	70,50		
M 1.2	0.25	32	5.5	2.5	2.1	130130 0012	61,50		
M 1.4	0.3	32	7	2.5	2.1	130130 0014	64,–		
M 1.6	0.35	32	8	2.5	2.1	130130 0016	58,–		
M 1.7	0.35	32	8	2.5	2.1	130130 0017	55,–		
M 1.8	0.35	32	8	2.5	2.1	130130 0018	58,–		
M 2.2	0.45	36	11	2.8	2.1			**130101** 0022	25,30
M 2	0.4	36	10	2.8	2.1	130130 0020	33,20	130101 0020	22,70
M 2.3	0.4	36	11	2.8	2.1	130130 0023	40,40	130101 0023	24,60
M 2.5	0.45	40	12	2.8	2.1	130130 0025	31,80	130101 0025	22,70
M 2.6	0.45	40	12	2.8	2.1	130130 0026	35,90	130101 0026	21,70
M 3	0.5	40	12	3.5	2.7	130130 0030	23,80	130101 0030	13,15
M 3.5	0.6	45	14	4	3	130130 0035	31,60	130101 0035	19,30
M 4	0.7	45	14	4.5	3.4	130130 0040	22,20	130101 0040	13,15
M 4.5	0.75	45	14	4.5	3.4	130130 0045	35,–	130101 0045	19,30
M 5	0.8	48	16	6	4.9	130130 0050	22,90	130101 0050	13,40
M 6	1	50	18	6	4.9	130130 0060	24,20	130101 0060	13,80
						1125		1133	

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	ATORN® 3-pcs. set art.no.	€	SARA® 3-pcs. set art.no.	€
M 7	1	50	18	6	4.9	130130 0070	30,90	130101 0070	21,70
M 8	1.25	56	22	6	4.9	130130 0080	27,70	130101 0080	18,20
M 9	1.25	63	22	7	5.5	130130 0090	48,70	130101 0090	22,70
M 10	1.5	70	25	7	5.5	130130 0100	34,40	130101 0100	22,90
M 11	1.5	70	25	8	6.2	130130 0110	59,50	130101 0110	44,10
M 12	1.75	75	30	9	7	130130 0120	45,40	130101 0120	29,40
M 14	2	80	32	11	9	130130 0140	53,50	130101 0140	31,30
M 16	2	80	32	12	9	130130 0160	76,50	130101 0160	49,10
M 18	2.5	95	40	14	11	130130 0180	105,–	130101 0180	52,50
M 20	2.5	95	40	16	12	130130 0200	106,–	130101 0200	71,–
M 22	2.5	100	40	18	14.5			130101 0220	86,50
M 24	3	110	50	18	14.5	130130 0240	147,–	130101 0240	99,–
M 27	3	110	50	20	16			130101 0270	129,–
M 30	3.5	132	56	22	18			130101 0300	155,–
M 33	3.5	132	56	25	20			130101 0330	205,–
M 36	4	150	63	28	22	130130 0360	385,–	130101 0360	255,–
M 42	4.5	150	63	32	24	130130 0420	559,–		
						1125		1133	

ATORN® Hand taps

M | 60° | HSS-E | DIN 352 | ISO 2 6H

- **ISO metric thread, DIN 13**
- **Cutting material: HSS**
- For through-hole and blind bore threads
- 3 pcs set comprising taper tap, second tap and bottom tap




Taper tap Form A


Second tap Form D


Bottom tap Form C

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		○	○		●	●	○	○	○				○	○	○				

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	3-pcs. set art.no.	€	Taper tap art.no.	€	Second tap art.no.	€	Bottom tap art.no.	€
M 2	0.4	36	10	2.8	2.1	**130126** 0020	84,–	**130127** 0020	28,50	**130128** 0020	28,50	**130129** 0020	28,50
M 2.5	0.45	40	12	2.8	2.1	130126 0025	73,50	130127 0025	25,30	130128 0025	25,30	130129 0025	25,30
M 3	0.5	40	12	3.5	2.7	130126 0030	55,–	130127 0030	19,90	130128 0030	19,90	130129 0030	19,90
M 3.5	0.6	45	14	4	3	130126 0035	68,–	130127 0035	23,60	130128 0035	23,60	130129 0035	23,60
M 4	0.7	45	14	4.5	3.4	130126 0040	55,–	130127 0040	19,90	130128 0040	19,90	130129 0040	19,90
M 5	0.8	48	16	6	4.9	130126 0050	61,50	130127 0050	22,20	130128 0050	22,20	130129 0050	22,20
M 6	1	50	18	6	4.9	130126 0060	63,–	130127 0060	22,20	130128 0060	22,20	130129 0060	22,20
M 8	1.25	56	22	6	4.9	130126 0080	68,–	130127 0080	24,20	130128 0080	24,20	130129 0080	24,20
M 10	1.5	70	25	7	5.5	130126 0100	90,50	130127 0100	31,40	130128 0100	31,40	130129 0100	31,40
M 12	1.75	75	30	9	7	130126 0120	116,–	130127 0120	40,–	130128 0120	40,–	130129 0120	40,–
M 16	2	80	32	12	9	130126 0160	184,–	130127 0160	65,–	130128 0160	65,–	130129 0160	65,–
M 20	2.5	95	40	16	12	130126 0200	280,–	130127 0200	97,–	130128 0200	97,–	130129 0200	97,–
						1125		1125		1125		1133	

ATORN® Hand tap set

M | 60° | HSS | HSS-E | DIN 352 | ISO 2 6H

- **For DIN 13 metric thread**
- For through-hole and blind bore threads
- **21 pcs**, with case, M3 - 12
- **Cutting material: HSS and HSS-E**
- Consisting of DIN 352 taper tap, second tap and bottom tap



material

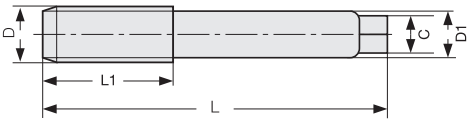
● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
130130....	●	●					○	○				○	○	○				
130126....	●	●		●	●	○	○	○				○	○	○				

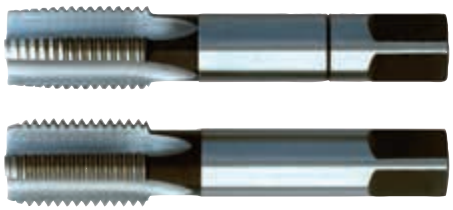
Contents	HSS art.no.	€	HSS-E art.no.	€
Hand taps DIN 352, M3-4-5-6-8-10-12 (1 set of each)	**130130** 1001	235,–	**130126** 1001	450,–
	1125		1125	

ATORN® SARA® Hand taps

MF | 60° | HSS | DIN 2181 | ISO 2 6H

- **ISO 6H fine-pitch metric thread, DIN 13**
- 2 pcs set consisting of taper tap and bottom tap
- **Cutting material: HSS**
- For through-hole and blind bore threads
- Individual taps available on request





material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	●	●					○	○				○	○	○				

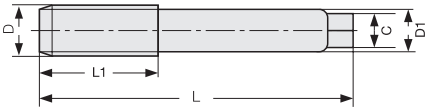
D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	ATORN® art.no.	€	SARA® art.no.	€
M 3	0.35	40	9	3.5	2.7			**130105** 0005	17,90
M 3.5	0.35	45	10	4	3			130105 0006	28,90
M 4	0.5	45	10	4.5	3.4	**130139** 0007	25,90	130105 0007	19,20
M 5	0.5	50	12	6	4.9	130139 0009	26,80	130105 0009	13,85
M 6	0.5	50	12	6	4.9	130139 0054	30,50		
M 6	0.75	50	12	6	4.9	130139 0010	27,10	130105 0010	13,40
M 7	0.75	50	14	6	4.9	130139 0011	33,–	130105 0011	26,10
M 8	0.5	50	16	6	4.9	130139 0055	35,20		
M 8	0.75	50	16	6	4.9	130139 0013	32,–	130105 0013	17,90
M 8	1	56	16	6	4.9	130139 0012	26,80	130105 0012	16,60
M 9	1	63	16	7	5.5			130105 0014	31,70
M 10	0.75	63	16	7	5.5	130139 0017	41,90	130105 0017	32,80
M 10	1	63	16	7	5.5	130139 0016	28,90	130105 0016	19,20
M 10	1.25	70	20	7	5.5	130139 0015	34,20	130105 0015	19,60
M 11	1	63	16	8	6.2			130105 0018	39,70
M 12	0.75	63	20	9	7			130105 0022	39,70
M 12	1	63	20	9	7	130139 0021	34,–	130105 0021	23,50
M 12	1.25	63	20	9	7	130139 0020	43,40	130105 0020	24,20
M 12	1.5	75	20	9	7	130139 0019	33,50	130105 0019	22,70
M 14	1	70	20	11	9	130139 0025	49,50	130105 0025	37,30
M 14	1.25	70	20	11	9	130139 0024	52,50	130105 0024	29,40
M 14	1.5	70	20	11	9	130139 0023	41,50	130105 0023	28,60
M 15	1	70	20	12	9	130139 0027	59,50	130105 0027	46,30
M 15	1.5	70	20	12	9			130105 0026	46,30
						1125		1133	

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	ATORN® art.no.	€	SARA® art.no.	€
M 16	1	70	20	12	9	130139 0030	57,–	130105 0030	37,30
M 16	1.25	70	20	12	9			130105 0029	51,–
M 16	1.5	70	20	12	9	130139 0028	48,70	130105 0028	39,10
M 18	1	80	20	14	11	130139 0032	76,50	130105 0032	55,–
M 18	1.5	80	20	14	11	130139 0031	68,–	130105 0031	49,50
M 20	1	80	22	16	12	130139 0034	84,50	130105 0034	62,–
M 20	1.5	80	22	16	12	130139 0033	66,–	130105 0033	54,–
M 22	1	80	22	18	14.5			130105 0036	72,–
M 22	1.5	80	22	18	14.5	130139 0035	88,50	130105 0035	64,50
M 24	1	80	22	18	14.5	130139 0039	119,–	130105 0039	79,50
M 24	1.5	80	22	18	14.5	130139 0038	97,–	130105 0038	77,–
M 24	2	80	22	18	14.5	130139 0037	101,–	130105 0037	79,50
M 25	1.5	80	22	18	14.5			130105 0041	130,–
M 26	1.5	80	22	18	14.5			130105 0042	85,50
M 27	1.5	90	22	20	16			130105 0044	148,–
M 27	2	90	22	20	16	130139 0043	145,–	130105 0043	108,–
M 28	1.5	90	22	20	16			130105 0046	98,–
M 28	2	90	22	20	16			130105 0045	158,–
M 30	1.5	90	22	22	18	130139 0048	159,–	130105 0048	127,–
M 30	2	90	22	22	18	130139 0047	175,–	130105 0047	139,–
M 32	1.5	90	22	22	18			130105 0050	172,–
M 36	1.5	100	25	28	22	130139 0056	235,–		
M 36	2	100	25	28	22			130105 0052	240,–
M 36	3	150	63	28	22			130105 0051	240,–
						1125		1133	

ATORN® SARA® Hand taps

M | 60° | HSS-E | DIN 352 | ISO 2 6H | Nit. | Vap.

- **ISO metric thread DIN 13**
- **Cutting material: HSS-E, nitrided; HSS-E vapour-treated**
- For through-hole and blind-hole threads
- 3-pcs. set consisting of taper tap, second tap and bottom tap
- Up to M12 (inclusive), taper tap with pilot pin





material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	130135....	○	●	●				○	○				○	○	○				
	130110....	●	●	○	○			●	○										

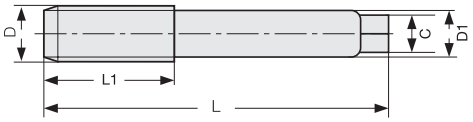
HSS-E

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	ATORN® Nitrided art.no.	€	SARA® Vapour-treated art.no.	€
M 2	0.4	36	12	2.8	2.1	**130135** 0020	87,50		
M 3	0.5	40	12	3.5	2.7	130135 0030	58,–	**130110** 0030	40,70
M 4	0.7	45	14	4.5	3.4	130135 0040	57,–	130110 0040	40,70
M 5	0.8	48	16	6	4.9	130135 0050	66,–	130110 0050	43,–
M 6	1	50	18	6	4.9	130135 0060	66,–	130110 0060	43,–
M 8	1.25	56	22	6	4.9	130135 0080	69,–	130110 0080	49,50
M 10	1.5	70	25	7	5.5	130135 0100	93,–	130110 0100	61,–
M 12	1.75	75	30	9	7	130135 0120	126,–	130110 0120	91,–
M 14	2	80	32	11	9	130135 0140	137,–	130110 0140	91,–
M 16	2	80	32	12	9	130135 0160	186,–	130110 0160	124,–
						1125		1133	

ATORN® Hand tap, left-hand thread

M-LH | 60° | HSS | DIN 352 | ISO 2 6H

- **ISO left-hand metric thread, DIN 13**
- 3 pcs set consisting of taper tap, second tap and bottom tap
- **Cutting material: HSS**
- For through-hole and blind bore threads





material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●					○	○				○	○	○				

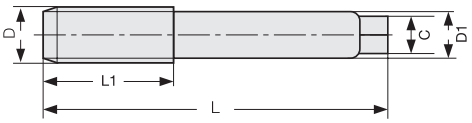
D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	art.no.	€
M 4 - LH	0.7	45	14	4.5	3.4	**130134** 0040	98,50
M 5 - LH	0.8	48	16	6	4.9	130134 0050	104,–
M 6 - LH	1	50	18	6	4.9	130134 0060	110,–
M 8 - LH	1.25	56	22	6	4.9	130134 0080	126,–
M 10 - LH	1.5	70	25	7	5.5	130134 0100	149,–
M 12 - LH	1.75	75	30	9	7	130134 0120	194,–
M 14 - LH	2	80	32	11	9	130134 0140	235,–
M 16 - LH	2	80	32	12	9	130134 0160	285,–
M 20 - LH	2.5	95	40	16	12	130134 0200	335,–
						1125	

ATORN® Hand taps

BSW | 55° | HSS | DIN 351



- **Whitworth thread, DIN 11**
- 3 pcs set consisting of taper tap, second tap and bottom tap
- **Cutting material: HSS**
- For through-hole and blind bore threads
- Individual taps available on request
- **Note:** For Whitworth threads in accordance with BSW standard BS 84 in medium tolerance zone.



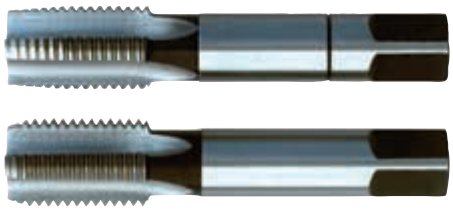
material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●					○	○				○	○	○				

D	Pitch TPI	L mm	L1 mm	D1 mm	C mm	art.no.	€
W 1/8"	40	40	12	3.5	2.7	**130142** 0002	28,50
W 5/32"	32	45	14	4.5	3.4	130142 0003	58,–
W 3/16"	24	45	14	5.5	4.3	130142 0004	54,–
W 7/32"	24	48	16	6	4.9	130142 0005	64,–
W 1/4"	20	50	18	6	4.9	130142 0006	26,70
W 5/16"	18	56	22	6	4.9	130142 0007	67,–
W 3/8"	16	63	22	7	5.5	130142 0008	45,60
W 1/2"	12	80	30	8	7	130142 0010	69,50
W 5/8"	11	80	32	12	9	130142 0012	98,50
W 3/4"	10	95	40	14	11	130142 0013	139,–

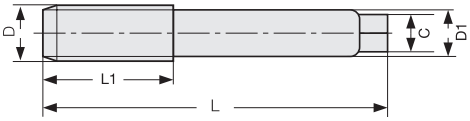
1125

ATORN® Hand taps

G | 55° | HSS | DIN 5157



- **Whitworth pipe thread, DIN 5157**
- 2 pcs set consisting of taper tap and bottom tap
- **Cutting material: HSS**
- For through-hole and blind bore threads
- Individual taps available on request
- **Note:** For straight pipe threads, DIN-ISO 228/1



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●					○	○				○	○	○				

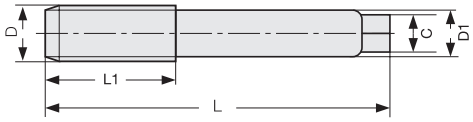
D	Pitch TPI	L mm	L1 mm	D1 mm	C mm	art.no.	€
G 1/8"	28	63	20	7	5.5	**130143** 0001	29,40
G 1/4"	19	70	22	11	9	130143 0002	37,–
G 3/8"	19	70	22	12	9	130143 0003	53,50
G 1/2"	14	80	22	16	12	130143 0004	89,–
G 3/4"	14	90	22	20	16	130143 0006	136,–

1125

ATORN® Hand taps

UNC | 60° | HSS | DIN 351 | 2 B

- **UNC (unified national standard coarse-pitch thread)**
- 3 pcs set consisting of taper tap, second tap and bottom tap
- **Cutting material: HSS**
- For through-hole and blind bore threads





material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●					○	○				○	○	○				

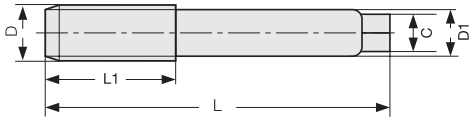
Size UNC	Pitch TPI	D mm	L mm	L1 mm	D1 mm	C mm	3-pcs. set art.no.	€
3-48	48	2.52	40	9	2.8	2.1	**130140** 0001	45,20
4-40	40	2.85	40	11	3.5	2.7	130140 0002	25,10
5-40	40	3.18	40	11	3.5	2.7	130140 0003	34,30
6-32	32	3.51	45	12	4.0	3.0	130140 0004	25,10
8-32	32	4.17	45	13	4.5	3.4	130140 0005	25,10
10-24	24	4.83	50	14	6.0	4.9	130140 0006	25,10
1/4"-20	20	6.35	50	16	6.0	4.9	130140 0007	25,10
5/16"-18	18	7.94	56	18	6.0	4.9	130140 0008	26,20
3/8"-16	16	9.53	70	20	7.0	5.5	130140 0009	30,80
7/16"-14	14	11.11	75	22	8.0	6.2	130140 0010	40,–
1/2"-13	13	12.70	75	25	9.0	7.0	130140 0011	47,10
5/8"-11	11	15.88	80	30	12.0	9.0	130140 0012	67,–
3/4"-10	10	19.05	95	33	14.0	11.0	130140 0013	94,50
7/8"-9	9	22.23	100	35	18.0	14.5	130140 0014	138,–

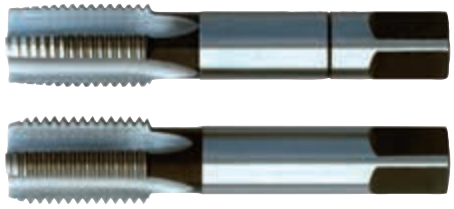
1125

ATORN® Hand taps

UNF | 60° | HSS | DIN 2181 | 2 B

- **UNF (unified national standard fine-pitch thread)**
- 2 pcs set consisting of taper tap and bottom tap
- **Cutting material: HSS**
- For through-hole and blind bore threads





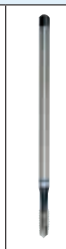
material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●					○	○				○	○	○				

Size UNF	Pitch TPI	D mm	L mm	L1 mm	D1 mm	C mm	2-piece set art.no.	€
4-48	48	2.85	40	10	3.5	2.7	**130141** 0001	41,–
6-40	40	3.51	45	11	4.0	3.0	130141 0002	34,30
8-36	36	4.17	45	12	4.5	3.4	130141 0003	42,10
10-32	32	4.83	50	14	6.0	4.9	130141 0004	20,80
12-28	28	5.49	50	16	6.0	4.9	130141 0005	36,60
1/4"-28	28	6.35	50	17	6.0	4.9	130141 0006	26,60
5/16"-24	24	7.94	56	17	6.0	4.9	130141 0007	28,–
3/8"-24	24	9.53	63	18	7.0	5.5	130141 0008	33,70
7/16"-20	20	11.11	63	20	8.0	6.2	130141 0009	44,10
1/2"-20	20	12.70	63	20	9.0	7.0	130141 0010	50,–
9/16"-18	18	14.29	70	20	11.0	9.0	130141 0011	108,–
5/8"-18	18	15.88	70	20	12.0	9.0	130141 0012	67,–

1125

Overview of machine taps

Sorting by thread and bore type																
Brand	ATORN	ATORN	ATORN	ATORN	ATORN						ATORN	ATORN	ATORN	SARA	ATORN
Thread	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M-LH
Type	Through-hole	Through-hole	Through-hole	Through-hole	Through-hole	Through-hole	Through-hole	Through-hole	Through-hole	Through-hole	Through-hole	Through-hole	Through-hole	Through-hole	Through-hole
Range	M2 - M16	M1 - M30	M3 - M16	M3 - M20	M3 - M20	M1 - M24	M3 - M16	M2 - M16	M3 - M16	M3 - M16	M2 - M30	M3 - M24	M3 - M24	M3 - M12	M4 - M20 (LH)
Tolerance	6H	6H	6H	6H	6H	6H	6H	6HX	6HX	6HX	6H	6H	6H	6H	6H
DIN	352	371/376	Factory standard	371/376	371/376	371/376	371/376	371/376	371/376	371/376	371/376	371/376	371/376	371/376	371/376
Chamfer (form)	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
Possible thread depth	3xD	3xD	3xD	3xD	3xD	2.5xD	2,5xD	3xD	3xD	3xD	3xD	3xD	3xD	3xD	3xD
Cutting material	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E-PM	HSS-E	HSS-E	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E
Coating/surface treatment	Blank	Vapour-treated	Vapour-treated	TiAlN	TiAlN	Vapour-treated	Vapour-treated	TiCN	TiCN	TiCN	Blank	TiN	TiCN	Blank	Blank
Type		UNI	UNI	ULTRA-HL	ULTRA-HL	S-POT	S-POT	A-POT	A-POT	A-OIL-POT					
Info			long				Weldon		Weldon	IC					Left-hand thread
Item number	135360....	134700....	134785....	134755....	134745....	133875....	133878....	133450....	133495....	133456....	134105....	134110....	134115....	134106....	134120....
Page	227	223	224	226	226	249	250	246	247	248	229	229	229	229	231
Material groups	Usage recommendations														
Steel < 700 N/mm²	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Steel < 1000 N/mm²	○	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Steel < 1400 N/mm²						○	○	○	○	○					
Stainless steel ferritic/martensitic		●	○	●	●	●	●	●	●	●	○	○	○	○	○
Stainless steel austenitic		●	○	●	●	●	●	●	●	●	○	○	○	○	○
Stainless steel duplex						○	○								
Cast iron GG/GTS												○	○	○	○
Cast iron GGG			○	○	○						○				
Titanium alloys								○	○	○					
Superalloys Fe/NiCo base < 30 HRc															
Superalloys Fe/NiCo base ≥ 30 HRc															
Aluminium < 8% Si		○	○	●	●			○	○	○					
Aluminium ≥ 8% Si								○	○	○					
Copper Cu-alloy		○	○	○	○	○	○	○	○	○					
Graphite GFRP/CFRP/thermoset															

Sorting by thread and bore type															
Brand	ATORN		ATORN	ATORN		ATORN	ATORN	SARA	ATORN				ATORN	ATORN	SARA
Thread	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
Type	Through-hole	Through-hole	Through-hole	Through-hole	Through-hole	Through-hole	Through-hole	Through-hole	Through-hole	Through-hole	Through-hole	Through-hole	Through-hole	Through-hole	Through-hole
Range	M3 - M20	M2 - M30	M3 - M20	M3 - M12	M2 - M10	M2 - M20	M3 - M16	M3 - M12	M3 - M16	M2 - M20	M2 - M36	M2 - M16	M3 - M20	M3 - M20	M3 - M12
Tolerance	6H	6H	6H	6H	6H	6H	6H	6H	6H	6HX	6H	6G	6H	6H	6H
DIN	WN	371/376	357	371/376	371	371/376	371/376	371/376	371/376	371/376	371/376	371/376	371/376	371/376	371/376
Chamfer (form)	B	B	20-thread	B	B	B	B	B	B	B	B	B	B	B	B
Possible thread depth	3xD	3xD	3xD	3xD	3xD	3xD	3xD	3xD	3xD	3xD	2.5xD	2.5xD	3xD	3xD	3xD
Cutting material	HSS-E	HSS-E-V3	HSS-E	HSS-E	HSS-E-V3	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E-V3	HSS-E-V3	HSS-E-V3	HSS-E	HSS-E	HSS-E
Coating/surface treatment	Blank	Blank	Blank	Blank	Blank	Vapour-treated	TiN	Vapour-treated	Blank	CrN	Vapour-treated	Vapour-treated	Blank	TiCN	Blank
Type		POT		ALU	AL-POT	VA	VA	VA	VA	CC-POT	VA-POT	VA-POT			
Info	Extra-long		Long chamfer						Exp. thread ridges						
Item number	134125....	133001....	135100....	134127....	133035....	134130....	134131....	134132....	135140....	133040....	133015....	133020....	134135....	134137....	134136....
Page	230	253	234	240	259	237	237	237	238	255	257	258	235	235	235
Material groups	Usage recommendations														
Steel < 700 N/mm²	●	●	●							●	●	●	●	●	●
Steel < 1000 N/mm²	●	○	●							○	●	●	●	●	●
Steel < 1400 N/mm²		○											●	●	○
Stainless steel ferritic/martensitic	○		○			●	●	●	●	●	●	●	○	○	○
Stainless steel austenitic	○		○			●	●	●	●	●	●	●			
Stainless steel duplex						●	●	○	●	●	○	○			
Cast iron GG/GTS	○		○							○			●	●	●
Cast iron GGG										○			●	●	●
Titanium alloys										○	○	○	○	○	○
Superalloys Fe/NiCo base < 30 HRc										○			○	○	○
Superalloys Fe/NiCo base ≥ 30 HRc															
Aluminium < 8% Si		○		●	●					●	○	○			
Aluminium ≥ 8% Si		●		●	●					○	●	●	○	○	○
Copper Cu-alloy		○		●	●					○	○	○			
Graphite GFRP/CFRP/thermoset															

Sorting by thread and bore type														
Brand	ATORN	ATORN	ATORN		ATORN	ATORN	ATORN	ATORN		ATORN		ATORN	ATORN	ATORN
Thread	M	M	M	M	M	M	M	M	M	M	M	M	M	M
Type	Through-hole	Through-hole	Through-hole	Through-hole	Through-hole	Blind-hole/ through-hole	Blind-hole/ through-hole	Blind-hole/ through-hole	Blind-hole/ through-hole	Blind-hole/ through-hole	Blind-hole/ through-hole	Through-hole	Blind-hole	Blind-hole
Range	M3 - M24	M2 - M20	M3 - M16	M2 - M20	M3 - M16	M2 - M20	M3 - M24	M3 - M16	M3 - M12	M3 - M16	M3 - M12	M3 - M20	M3 - M20	M1 - M30
Tolerance	6H	6H	6H	6HX	6H	6H	6HX	6HX	6HX	6H	6HX	6H	6H	6H
DIN	371/376	371/376	371/376	371/376	371/376	371/376	371/376	371/376	371/376	WN	WN	371/376	352	371/376
Chamfer (form)	B	B	B	B	C	C	C	D	C	D	C	D	C	C
Possible thread depth	3xD	3xD	3xD	2.5xD	3xD	1.5xD	3xD	1.5xD	1.5xD	1.5xD	1.5xD	3xD	2.5xD	2.5xD
Cutting material	HSS-E	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E	HSS-E	HSS-E-PM	HSS-E-PM	Solid carbide	Solid carbide	HSS-E	HSS-E	HSS-E
Coating/surface treatment	TiN	TiN	TiCN	TiCN	Blank	Blank	Nitrided	TiCN	TiCN	TiCN	TiCN	Blank	Blank	Vapour-treated /TiN
Type				Z-POT					V-XPM-HAT		VX-OT			UNI
Info	Synchro	Synchro		Synchro								Left-hand twist		
Item number	135385....	134570....	134196....	133045....	134142....	135150....	135155....	135165....	133255....	135170....	133250....	135365....	135395....	134710....
Page	241	242	236	260	239	234	244	245	261	245	261	233	227	222
Material groups	Usage recommendations													
Steel < 700 N/mm²	●	●	●	●		●			●			●	●	●
Steel < 1000 N/mm²	●	●	●	●		●			●			○	○	●
Steel < 1400 N/mm²	○	○	●	○					●					
Stainless steel ferritic/martensitic	●	●	●	●		○								○
Stainless steel austenitic	●	●	●	●		○								○
Stainless steel duplex	○	○	○	●										
Cast iron GG/GTS	●	●		○			●							
Cast iron GGG	●	●		○		○	●							○
Titanium alloys				○	●									
Superalloys Fe/NiCo base < 30 HRc				○	●									
Superalloys Fe/NiCo base ≥ 30 HRc					○									
Aluminium < 8% Si	○	○		○										●
Aluminium ≥ 8% Si	○	○		○			○							
Copper Cu-alloy	○	○		○			○							○
Hardened steel < 55 HRc								●	●	●				
Hardened steel < 60 HRc										●	●			
Hardened steel ≥ 60 HRc										●	●			

Sorting by thread and bore type														
Brand	ATORN	ATORN	ATORN							ATORN	ATORN	ATORN	ATORN	ATORN
Thread	M	M	M	M	M	M	M	M	M	M	M	M	M	M
Type	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole
Range	M3 - M16	M1 - M30	M3 - M20	M1 - M24	M3 - M16	M3 - M16	M2 - M24	M3 - M16	M6 - M56	M2 - M30	M3 - M16	M2 - M30	M2 - M30	M2 - M20
Tolerance	6H	6H	6H	6H	6H	6H	6HX	6HX	6HX	6	6H	6H	6H	6H
DIN	Factory standard	371/376	371/376	371/376	371/376	371/376	371/376	371/376	371/376	371/376	371/376	371/376	371/376	371/376
Chamfer (form)	C	C	C	C	C	E	C	C	C	C	B	C	C	C
Possible thread depth	2,5xD	2xD	2xD	2.5xD	2,5xD	2,5xD	2xD	2xD	2.5xD	2.5xD	2.5xD	2.5xD	2.5xD	2.5xD
Cutting material	HSS-E	HSS-E	HSS-E-PM	HSS-E	HSS-E	HSS-E	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E	HSS-E-PM	HSS-E	HSS-E	HSS-E
Coating/surface treatment	Vapour-treated	TiAlN	TiAlN	Vapour-treated	Vapour-treated	Vapour-treated	TiCN	TiCN	TiCN	Blank / TiN	Blank	Blank	TiN	TiCN
Type	UNI	ULTRA-HL		S-SFT	S-SFT	S-SFT	A-SFT	A-SFT	A-OIL-SFT		TI			
Info	long				Weldon	Form E	Synchro	Weldon	IC					
Item number	134780....	134750....	134740....	133865...	133868...	133867...	133400....	133490....	133410/15....	134175....	134192....	134200....	134205....	134210....
Page	224	226	226	249	250	251	246	247	248	232	239	228	228	228
Material groups	Usage recommendations													
Steel < 700 N/mm²	●	●	●	●	●	●	●	●	●	●		●	●	●
Steel < 1000 N/mm²	●	●	●	●	●	●	●	●	●	●		●	●	●
Steel < 1400 N/mm²				○	○	○	○	○	○					
Stainless steel ferritic/martensitic	○	●	●	●	●	●	●	●	●	○		○	○	○
Stainless steel austenitic	○	●	●	●	●	●	●	●	●	○		○	○	○
Stainless steel duplex				○	○	○								
Cast iron GG/GTS														
Cast iron GGG	○	○	○							○		○	○	○
Titanium alloys							○				●			
Superalloys Fe/NiCo base < 30 HRc											●			
Superalloys Fe/NiCo base ≥ 30 HRc								○	○		○			
Aluminium < 8% Si	●	●	●				○	○	○					
Aluminium ≥ 8% Si							○	○	○					
Copper Cu-alloy	○	○	○	○	○	○	○	○	○					
Graphite GFRP/CFRP/thermoset														

Sorting by thread and bore type															
Brand	SARA	ATORN	ATORN	DIN	ATORN	DIN	DIN	ATORN	ATORN	SARA	ATORN	DIN	DIN	ATORN	ATORN
Thread	M	M-LH	M	M	M	M	M	M	M	M	M	M	M	M	M
Type	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole
Range	M3 - M12	M3 - M20	M3 - M20	M2 - M30	M2 - M12	M1.6 - M10	M2 - M36	M2 - M20	M3 - M16	M3 - M12	M3 - M20	M2 - M36	M2 - M16	M3 - M16	M3 - M20
Tolerance	6H	6H	6H	6H	6H	6H	6HX	6H	6H	6H	6H	6H	6G	6H	6H
DIN	371/376	371/376	WN	371/376	371/376	371	371/376	371/376	371/376	371/376	371/376	371/376	371/376	371/376	371/376
Chamfer (form)	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
Possible thread depth	2.5xD	2.5xD	2.5xD	2.5xD	2.5xD	2.5xD	3xD	2.5xD	2.5xD	2.5xD	2xD	2.5xD	2.5xD	3xD	2.5xD
Cutting material	HSS-E	HSS-E	HSS-E	HSS-E-V3	HSS-E	HSS-E-V3	HSS-E-V3	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E-V3	HSS-E-V3	HSS-E-PM	HSS-E
Coating/surface treatment	Blank	Blank	Blank	Blank	Blank	Blank	CrN	Vapour-treated	TiN	Vapour-treated	Blank	Vapour-treated	Vapour-treated	TiCN	Blank
Type				SFT	ALU	AL-SFT	CC-SFT	VA	VA	VA	VA	VA-SFT	VA-SFT		
Info		Left-hand thread	Extra-long								Exp. thread ridges				
Item number	134201....	134215....	134220....	133101....	134195....	133145....	133106....	134225....	134226....	134227....	135390....	133125....	133130....	134193....	134230....
Page	228	231	230	252	240	259	254	237	237	237	238	256	258	236	235
Material groups	Usage recommendations														
Steel < 700 N/mm²	●	●	●	●			●					●	●	●	●
Steel < 1000 N/mm²	●	●	●	○			○					●	●	●	●
Steel < 1400 N/mm²				○										●	●
Stainless steel ferritic/martensitic	○	○	○				●	●	●	●	●	●	●	●	○
Stainless steel austenitic	○	○	○				●	●	●	●	●	●	●	●	
Stainless steel duplex							●	●	●	○	●	○	○	○	
Cast iron GG/GTS							○								●
Cast iron GGG	○	○	○				○								●
Titanium alloys							○					○	○	○	○
Superalloys Fe/NiCo base < 30 HRc							○								○
Superalloys Fe/NiCo base ≥ 30 HRc															
Aluminium < 8% Si				○	●	●	●					○	○		
Aluminium ≥ 8% Si				●	●	●	○								○
Copper Cu-alloy				○	●	●	○					○	○		
Graphite GFRP/CFRP/thermoset															

Sorting by thread and bore type															
Brand	ATORN	SARA	ATORN	ATORN	DIN	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	DIN	DIN	DIN	ATORN
Thread	M	M	M	M	M	M	MF	MF	MF	MF	MF	MF	MF	MF	MF
Type	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Through-hole	Through-hole	Through-hole	Blind-hole/ through-hole	Through-hole	Through-hole	Through-hole	Through-hole	Blind-hole
Range	M3 - M16	M3 - M12	M3 - M20	M3 - M24	M3 - M20	M4 - M20	M8 - M20	M3 - M40	M3 - M40	M3 - M36	M4 - M42	M3 - M24	M3 - M24	M6 - M24	M8 - M20
Tolerance	6H	6H	6H	6H	6H	6HX	6H	6H	6H	6H	6H	6H	6H	6HX	6H
DIN	371/376	371/376	371/376	371/376	371/376	371/376	374	374	374	374	374	374	374	374	374
Chamfer (form)	C	C	C	C	C	C	B	B	B	C	B	B	B	B	C
Possible thread depth	2.5xD	2.5xD	2.5xD	2.5xD	2.5xD	2.5xD	3xD	3xD	3xD	1.5xD	3xD	2.5xD	2.5xD	2.5xD	2xD
Cutting material	HSS-E	HSS-E	HSS-E-PM	HSS-E	HSS-E-PM	HSS-E-PM	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E-V3	HSS-E-PM	HSS-E
Coating/surface treatment	TiCN	Blank	Blank	TiN	TiCN	TiN	Vapour-treated	Blank	TiN	Blank	Vapour-treated	Vapour-treated	Vapour-treated	TiCN	Vapour-treated
Type					Z-SFT		Universal				VA	S-POT	VA-POT	A-POT	Universal
Info				Synchro	Synchro	Synchro									
Item number	134233....	134231....	134235....	135350....	133155....	134575....	134765....	135255....	135260....	135265....	135370....	133975....	133505....	133460....	134760....
Page	235	235	232	241	260	242	262	264	264	265	266	268	269	267	262
Material groups	Usage recommendations														
Steel < 700 N/mm²	●	●	●	●	●	●	●	●	●	●	○	●	●	●	●
Steel < 1000 N/mm²	●	●	●	●	●	●	●	●	●	●	○	●	●	●	●
Steel < 1400 N/mm²	●	○	●		○	○						○		○	
Stainless steel ferritic/martensitic	○	○	○		●	●	○	○	○	○	●	●	●	●	○
Stainless steel austenitic			○		●	●	○	○	○	○	●	●	●	●	○
Stainless steel duplex			○		●	○					○	○	●		
Cast iron GG/GTS	●	●	●		○	●									
Cast iron GGG	●	●	●		○	●	○	○	○	○		○			○
Titanium alloys	○	○	○		○									○	
Superalloys Fe/NiCo base < 30 HRc	○	○	○		○								○		
Superalloys Fe/NiCo base ≥ 30 HRc															
Aluminium < 8% Si			●		○	●	○						○	○	○
Aluminium ≥ 8% Si	○	○	○		○	○								○	
Copper Cu-alloy			●		○	○	○					○	○	○	○
Graphite GFRP/CFRP/thermoset															

Sorting by thread and bore type														
Brand	ATORN	ATORN	ATORN	HSS	HSS	HSS	ATORN	ATORN	HSS	HSS	ATORN	ATORN	ATORN	ATORN
Thread	MF	MF	MF	MF	MF	MF	G	G	G	G	G	G	G	G
Type	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole	Blind-hole/ through-hole	Through-hole	Through-hole	Through-hole	Blind-hole	Blind-hole	Blind-hole
Range	M5 - M30	M6 - M20	M8 - M24	M3 - M24	M3 - M24	M6 - M24	1/8" - 1 1/4"	1/8" - 1"	1/8" - 1"	1/8" - 1"	1/8" - 1"	1/8" - 1 1/4"	1/8" - 1"	1/8" - 1"
Tolerance	6H	6H	6H	6H	6H	6HX		ISO 228			ISO 228		ISO 228	ISO 228
DIN	374	374	374	374	374	374	5156	5156	5156	5156	5156	5156	5156	5156
Chamfer (form)	C	C	C	C	C	C	B	C	B	B	C	C	C	C
Possible thread depth	1.5xD	3xD	2.5xD	2.5xD	2.5xD	2xD	3xD	3xD	2.5xD	2.5xD	1.5xD	2xD	3xD	3xD
Cutting material	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E-V3	HSS-E-PM	HSS-E	HSS-E	HSS-E-PM	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E
Coating/surface treatment	Vapour-treated	Vapour-treated/TiN	TiAlN	Vapour-treated	Vapour-treated	TiCN	Vapour-treated	Vapour-treated	TiCN	Vapour-treated	Blank	Vapour-treated	Blank	Vapour-treated
Type			VA	S-SFT	VA-SFT	A-SFT	Universal		A-POT	S-POT		Universal		
Info														
Item number	135280....	135285....	135375....	133965....	133515....	133420....	134775....	135295....	133900....	133987....	135300....	134770....	135315....	135320....
Page	263	263	265	268	269	267	270	272	273	274	271	270	271	272
Material groups	Usage recommendations													
Steel < 700 N/mm²	●	●	○	●	●	●	●	●	●	●	●	●	●	●
Steel < 1000 N/mm²	●	●	○	●	●	●	●	●	●	●	●	●	●	●
Steel < 1400 N/mm²				○		○			○	○				
Stainless steel ferritic/martensitic	○	○	●	●	●	●	○	○	●	●	○	○	○	○
Stainless steel austenitic	○	○	●	●	●	●	○	○	●	●	○	○	○	○
Stainless steel duplex			○	○	●					○				
Cast iron GG/GTS														
Cast iron GGG	○	○		○			○	○		○	○	○	○	○
Titanium alloys						○			○					
Superalloys Fe/NiCo base < 30 HRc					○									
Superalloys Fe/NiCo base ≥ 30 HRc														
Aluminium < 8% Si					○	○	○		○			○		
Aluminium ≥ 8% Si						○			○					
Copper Cu-alloy				○	○	○	○		○	○		○		
Graphite GFRP/CFRP/thermoset														

Sorting by thread and bore type												
Brand	HSS	HSS	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN
Thread	G	G	UNC	UNC	UNC	UNC	UNF	UNF	UNF	UNF	NPT	PG
Type	Blind-hole	Blind-hole	Through-hole	Through-hole	Blind-hole	Blind-hole	Through-hole	Through-hole	Blind-hole	Blind-hole	Blind-hole/ through-hole	Through-hole
Range	1/8" - 1"	1/8" - 1"	1/4" - 1"	1/4" - 3/4"	1/4" - 1"	1/4" - 3/4"	1/4" - 1"	1/4" - 3/4"	1/4" - 1"	1/4" - 5/8"	1/16" - 1"	7 - 29
Tolerance			2B	2B	2B	2B	2B	2B	2B	2B	-	-
DIN	5156	5156	371/376	371/376	371/376	371/376	Factory standard	374	Factory standard	374	WN	40430
Chamfer (form)	C	C	B	B	C	C	B	B	C	C	C	B
Possible thread depth	2xD	2xD	3xD	3xD	2,5xD	3xD	2xD	3xD	2xD	2.5xD	1.5xD	3xD
Cutting material	HSS-E-PM	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E
Coating/surface treatment	TiCN	Vapour-treated	Vapour-treated	Vapour-treated	Vapour-treated	Vapour-treated	Vapour-treated	Vapour-treated	Vapour-treated	Vapour-treated	Blank	Blank
Type	A-SFT	S-SFT	UNI		UNI		UNI		UNI			
Info												
Item number	133860....	133986....	134795....	135325....	134790....	135330....	134796....	135335....	134791....	135340....	135345....	135380....
Page	273	274	275	276	275	276	277	278	277	278	279	279
Material groups	Usage recommendations											
Steel < 700 N/mm²	●	●	●	●	●	●	●	●	●	●	●	●
Steel < 1000 N/mm²	●	●	●	●	●	●	●	●	●	●	●	○
Steel < 1400 N/mm²	○	○										
Stainless steel ferritic/martensitic	●	●	○	○	○	○	○	○	○	○	○	
Stainless steel austenitic	●	●	○	○	○	○	○	○	○	○	○	
Stainless steel duplex		○										
Cast iron GG/GTS												
Cast iron GGG		○	○	○	○	○	○	○	○	○	○	
Titanium alloys	○											
Superalloys Fe/NiCo base < 30 HRc												
Superalloys Fe/NiCo base ≥ 30 HRc												
Aluminium < 8% Si	○		○		○		○		○			
Aluminium ≥ 8% Si	○											
Copper Cu-alloy	○	○	○		○		○		○			
Graphite GFRP/CFRP/thermoset												

ATORN® Universal machine taps

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | C 2-3 | 40° | 2,5xD | TiN | Vap. | Vc/fz | 392

- **ISO 6H metric thread**
- Type C, 2 to 3-thread chamfer, for blind-hole threads
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E, vapour-treated; HSS-E, TiN-coated**
- Possible thread depth 2.5 x D
- **for universal applications**

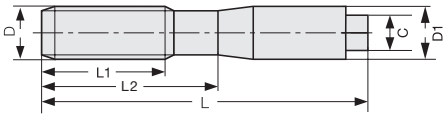
material — ● very well suited ○ well suited

	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
134710....	● 5-15	● 5-15		○ 4-6	○ 4-6			○ 5-8				○ 10-15		○ 10-15				
134715....	● 10-20	● 5-20		● 5-8	● 5-8			○ 10-15				○ 10-20		○ 10-20				
134710....	● 5-15	● 5-15		○ 4-6	○ 4-6			○ 5-8				○ 10-15		○ 10-15				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	Vapour-treated art.no.	€	TiN art.no.	€
M 1	0.25	40	5	-	2.5	2.1	0.75	**134710** 0010	31,30		
M 1.2	0.25	40	5	-	2.5	2.1	0.95	134710 0012	31,30		
M 1.4	0.3	40	7	-	2.5	2.1	1.10	134710 0014	27,90		
M 1.6	0.35	40	8	-	2.5	2.1	1.25	134710 0016	26,40		
M 1.7	0.35	40	8	-	2.5	2.1	1.35	134710 0017	27,50		
M 1.8	0.35	40	8	-	2.5	2.1	1.45	134710 0018	26,40		
M 2	0.4	45	8	-	2.8	2.1	1.60	134710 0020	22,70		
M 2.2	0.45	45	9	-	2.8	2.1	1.75	134710 0022	23,10		
M 2.3	0.4	45	9	-	2.8	2.1	1.90	134710 0023	25,90		
M 2.5	0.45	50	9	-	2.8	2.1	2.05	134710 0025	22,70		
M 2.6	0.45	50	9	-	2.8	2.1	2.15	134710 0026	23,60		
M 3	0.5	56	10	18	3.5	2.7	2.50	134710 0030	10,80	**134715** 0030	16,80
M 4	0.7	63	12	21	4.5	3.4	3.30	134710 0040	10,80	134715 0040	16,80
M 5	0.8	70	14	25	6	4.9	4.20	134710 0050	11,15	134715 0050	17,20
M 6	1.0	80	16	30	6	4.9	5.00	134710 0060	11,15	134715 0060	17,50
M 8	1.25	90	18	35	8	6.2	6.80	134710 0080	14,15	134715 0080	21,–
M 10	1.5	100	20	39	10	8	8.50	134710 0100	16,70	134715 0100	24,50
M 12	1.75	110	22	-	9	7	10.25	134710 0120	24,20	134715 0120	33,80
M 16	2.0	110	28	-	12	9	14.00	134710 0160	35,50	134715 0160	50,50
M 20	2.5	140	32	-	16	12	17.50	134710 0200	58,–	134715 0200	82,–
M 24	3.0	160	30	-	18	14.5	21.00	134710 0240	95,50		
M 27	3.0	160	30	-	20	16	24.00	134710 0270	156,–		
M 30	3.5	180	35	-	22	18	26.60	134710 0300	185,–		
								1127		1127	





Set

Contents	Vapour-treated art.no.	€
7-pcs. set: M3, M4, M5, M6, M8, M10, M12	**134710** 1000	138,–
	1127	





ATORN®
Performance demands quality

ATORN® Universal machine taps

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | B 3,5-5 | 3xD | TiN | Vap. | Vc/fz | 392

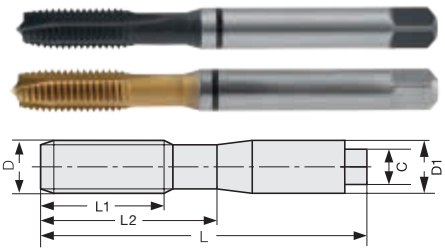
- Straight-fluted with spiral point
- DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E, vapour-treated; HSS-E, TiN-coated**
- The spiral point ensures strong chip removal to the front
- Possible thread depth 3 x D
- **for universal applications**

material — ● very well suited ○ well suited

	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
134700....	● 5-15	● 5-15		○ 4-6	○ 4-6			○ 5-8				○ 10-15		○ 10-15				
134705....	● 10-20	● 5-20		● 5-8	● 5-8			○ 10-15				○ 10-20		○ 10-20				
134700....	● 5-15	● 5-15		○ 4-6	○ 4-6			○ 5-8				○ 10-15		○ 10-15				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	Vapour-treated art.no.	Vapour-treated €	TiN art.no.	TiN €
M 1	0.25	40	5	-	2.5	2.1	0.75	**134700** 0010	30,70		
M 1.2	0.25	40	5	-	2.5	2.1	0.95	134700 0012	30,70		
M 1.4	0.30	40	7	-	2.5	2.1	1.10	134700 0014	27,40		
M 1.6	0.35	40	8	-	2.5	2.1	1.25	134700 0016	26,–		
M1.7	0.35	40	8	-	2.5	2.1	1.35	134700 0017	27,–		
M 1.8	0.35	40	8	-	2.5	2.1	1.45	134700 0018	26,–		
M 2	0.40	45	8	-	2.8	2.1	1.60	134700 0020	22,20		
M 2.2	0.45	45	9	-	2.8	2.1	1.75	134700 0022	22,60		
M 2.3	0.40	45	9	-	2.8	2.1	1.90	134700 0023	25,40		
M 2.5	0.45	50	9	-	2.8	2.1	2.05	134700 0025	22,20		
M 2.6	0.45	50	9	-	2.8	2.1	2.15	134700 0026	23,30		
M 3	0.5	56	10	18	3.5	2.7	2.50	134700 0030	10,80	**134705** 0030	16,80
M 4	0.7	63	12	21	4.5	3.4	3.30	134700 0040	10,80	134705 0040	16,80
M 5	0.8	70	14	25	6	4.9	4.20	134700 0050	11,15	134705 0050	17,20
M 6	1.0	80	16	30	6	4.9	5.00	134700 0060	11,15	134705 0060	17,50
M 8	1.25	90	18	35	8	6.2	6.80	134700 0080	14,15	134705 0080	21,–
M 10	1.5	100	20	39	10	8	8.50	134700 0100	16,70	134705 0100	24,50
M 12	1.75	110	22	-	9	7	10.25	134700 0120	24,20	134705 0120	33,80
M 16	2.0	110	28	-	12	9	14.00	134700 0160	34,80	134705 0160	50,50
M 20	2.5	140	32	-	16	12	17.50	134700 0200	57,–	134705 0200	82,–
M 24	3.0	160	36	-	18	14.5	21.00	134700 0240	94,–		
M 27	3.0	160	36	-	20	16	24.00	134700 0270	154,–		
M 30	3.5	180	40	-	22	18	26.50	134700 0300	182,–		
								1127		1127	



Set

Contents	Vapour-treated art.no.	Vapour-treated €
7-pcs. set: M3, M4, M5, M6, M8, M10, M12	**134700** 1000	138,–
	1127	





... but digital.

ATORN®
Performance demands quality

ATORN® Universal machine taps, long

M | 60° | HSS-E | Werks-norm | ISO 2 6H | C 2-3 | 40° | 2,5xD | Vap. | Vc/fz | 392

- **Metric ISO 6H thread**
- Form C, 2-3 thread chamfer, for blind-hole threads
- Constructional dimensions similar to DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E, vapour-treated**
- Possible thread depth 2.5 x D
- **For universal applications**

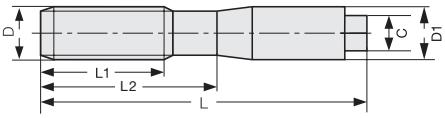
material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 5-15	● 5-15		○ 4-6	○ 4-6			○ 5-8				○ 10-15		○ 10-15				
Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									



D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	112	6	18	3.5	2.7	2.5	**134780** 0030	26,70
M 4	0.7	126	7	21	4.5	3.4	3.3	134780 0040	26,70
M 5	0.8	140	8	25	6	4.9	4.2	134780 0050	26,70
M 6	1	160	10	30	6	4.9	5	134780 0060	26,70
M 8	1.25	180	13	35	8	6.2	6.8	134780 0080	35,–
M 10	1.5	200	15	39	10	8	8.5	134780 0100	52,50
M 12	1.75	220	18	-	9	7	10.25	134780 0120	69,50
M 14	2	220	20	-	11	9	12	134780 0140	83,10
M 16	2	220	20	-	12	9	14	134780 0160	84,60

1127



ATORN® Universal machine taps, long

M | 60° | HSS-E | Werks-norm | ISO 2 6H | B 3,5-5 | 40° | 3xD | Vap. | Vc/fz | 392

- Straight-fluted with spiral point
- Constructional dimensions similar to DIN 371 = up to M 10, DIN 376 = from M12
- **Cutting material: HSS-E, vapour-treated**
- The spiral point ensures strong chip removal to the front
- Possible thread depth 3 x D
- **For universal applications**

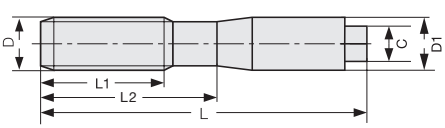
material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 5-15	● 5-15		○ 4-6	○ 4-6			○ 5-8				○ 10-15		○ 10-15				
Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									



D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	112	10	18	3.5	2.7	2.5	**134785** 0030	26,70
M 4	0.7	126	12	21	4.5	3.4	3.3	134785 0040	26,70
M 5	0.8	140	14	25	6	4.9	4.2	134785 0050	26,70
M 6	1	160	16	30	6	4.9	5	134785 0060	26,70
M 8	1.25	180	18	35	8	6.2	6.8	134785 0080	35,–
M 10	1.5	200	20	39	10	8	8.5	134785 0100	52,50
M 12	1.75	220	22	-	9	7	10.25	134785 0120	69,50
M 14	2	220	25	-	11	9	12	134785 0140	83,10
M 16	2	220	28	-	12	9	14	134785 0160	84,60

1127



ATORN® Universal machine tap sets

M | 60° | HSS-E | DIN 371/376 | ISO 2 6H | 2,5xD | Vap. | Vc/fz 392

- **Metric ISO 6H thread**
- Constructional dimensions similar to DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E, vapour-treated**
- Possible thread depth 2.5 x D
- **For universal applications**



14-pcs.



70-pcs.

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 5-15	● 5-15		○ 4-6	○ 4-6			○ 5-8				○ 10-15		○ 10-15				
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		

Contents	art.no.	€
14-pcs. set: M3-M12 through-hole and blind-hole thread (1 of each)	**134712** 1014	210,–
70-pcs. set: M3-M12 through-hole and blind-hole thread (5 of each)	134712 1070	899,–
	1127	



ATORN® Universal machine tap ULTRA-HL

M | 60° | HSS-E | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6H | C 2-3 | 40° | 2xD | TiAlN | Vc/fz | 392

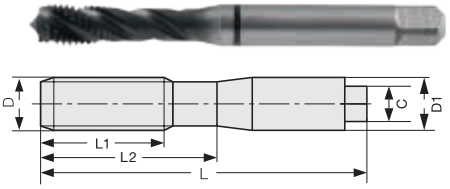
- **ISO 6H metric thread**
- 40°, spiral-fluted
- Type C, 2-3 thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material HSS-E, HSS-E-PM, Hardlube coating**
- Easy chip removal to the rear
- Possible thread depth 2xD
- **BALINIT® HARDLUBE**: The high level of hardness and temperature resistance of the TiAlN layer effectively protects cutting edges from wear, while the excellent sliding and lubricating properties of the WC/C ensure smooth chip flow. The result: Greater production reliability thanks to reliable, reproducible performance.

BALINIT® HARDLUBE

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
134750....	● 10-20	● 5-20		● 5-8	● 5-8			○ 10-15				● 10-20		○ 10-20				
134740....	● 15-35	● 10-25		● 5-15	● 5-15			○ 10-20				● 10-30		○ 10-25				
Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	HSS-E art.no.	€	HSS-E-PM art.no.	€
M 3	0.5	56	10	18	3.5	2.7	2.5	**134750** 0030	19,70	**134740** 0030	25,20
M 4	0.7	63	12	21	4.5	3.4	3.3	134750 0040	19,70	134740 0040	25,20
M 5	0.8	70	14	25	6	4.9	4.2	134750 0050	20,70	134740 0050	26,10
M 6	1	80	16	30	6	4.9	5	134750 0060	20,90	134740 0060	26,60
M 8	1.25	90	18	35	8	6.2	6.8	134750 0080	25,50	134740 0080	31,50
M 10	1.5	100	20	39	10	8	8.5	134750 0100	29,80	134740 0100	35,10
M 12	1.75	110	22	-	9	7	10.25	134750 0120	37,90	134740 0120	45,40
M 16	2	110	28	-	12	9	14	134750 0160	56,–	134740 0160	64,50
M 20	2.5	140	32	-	16	12	17.5	134750 0200	86,–	134740 0200	98,50
								1127		1127	



ATORN® Universal machine tap ULTRA-HL

M | 60° | HSS-E | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6H | B 3,5-5 | 3xD | TiAlN | Vc/fz | 392

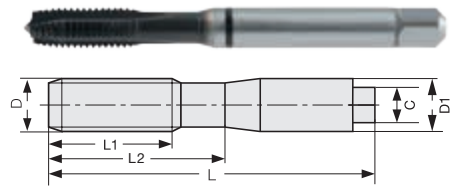
- **ISO 6H metric thread**
- Straight-fluted with spiral point
- Type B, 3.5-5 thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material HSS-E, HSS-E-PM, Hardlube coating**
- For through-hole threads
- Possible thread depth 3 x D
- **BALINIT® HARDLUBE**: The high level of hardness and temperature resistance of the TiAlN layer effectively protects cutting edges from wear, while the excellent sliding and lubricating properties of the WC/C ensure smooth chip flow. The result: Greater production reliability thanks to reliable, reproducible performance.

BALINIT® HARDLUBE

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
134755....	● 10-20	● 5-20		● 5-8	● 5-8			○ 10-15				● 10-20		○ 10-20				
134745....	● 15-35	● 10-25		● 5-15	● 5-15			○ 10-20				● 10-30		○ 10-25				
Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	HSS-E art.no.	€	HSS-E-PM art.no.	€
M 3	0.5	56	10	18	3.5	2.7	2.5	**134755** 0030	19,70	**134745** 0030	25,20
M 4	0.7	63	12	21	4.5	3.4	3.3	134755 0040	19,70	134745 0040	25,20
M 5	0.8	70	14	25	6	4.9	4.2	134755 0050	20,70	134745 0050	26,10
M 6	1	80	16	30	6	4.9	5	134755 0060	20,90	134745 0060	26,60
M 8	1.25	90	18	35	8	6.2	6.8	134755 0080	25,50	134745 0080	31,50
M 10	1.5	100	20	39	10	8	8.5	134755 0100	29,80	134745 0100	35,10
M 12	1.75	110	22	-	9	7	10.25	134755 0120	37,90	134745 0120	45,40
M 16	2	110	28	-	12	9	14	134755 0160	56,–	134745 0160	64,50
M 20	2.5	140	32	-	16	12	17.5	134755 0200	86,–	134745 0200	98,50
								1127		1127	



ATORN® Machine tap

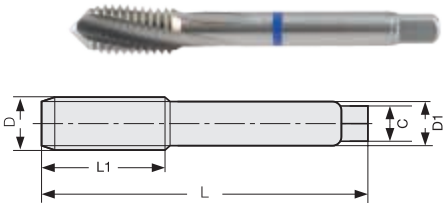
M | 60° | HSS-E | DIN 352 | ISO 2 6H | C 2-3 | 15° | 1,5xD | Vc/fz | 392

- **Metric ISO 6H thread**
- Form C, 2-3 thread chamfer, for blind-hole threads
- DIN 352
- **Cutting material: HSS-E**
- Possible thread depth 1.5 x D

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 5-20	○ 5-15																
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	40	6	3.5	2.7	2.50	**135395** 0030	9,95
M 4	0.7	45	7.5	3.4	3.4	3.30	135395 0040	10,15
M 5	0.8	50	8.5	4.9	4.9	4.20	135395 0050	10,45
M 6	1.0	56	11	4.9	4.9	5.00	135395 0060	10,60
M 8	1.25	63	14	4.9	4.9	6.80	135395 0080	12,25
M 10	1.5	70	16	5.5	5.5	8.50	135395 0100	15,80
M 12	1.75	75	18.5	7.0	7.0	10.25	135395 0120	20,70
M 16	2.0	80	20	9.0	9.0	14.00	135395 0160	35,30
M 20	2.5	95	25	16.0	12.0	17.50	135395 0200	59,–

1127



ATORN® Machine tap

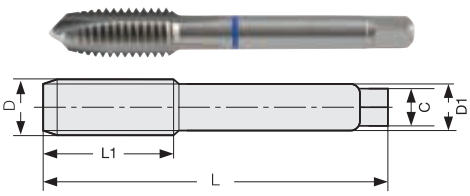
M | 60° | HSS-E | DIN 352 | ISO 2 6H | B 3,5-5 | 3xD | Vc/fz | 392

- **ISO 6H metric thread**
- **Straight-fluted with spiral point, type B, 3.5 to 5-thread chamfer**
- DIN 352
- **Cutting material: HSS-E**
- For through-hole threads
- The spiral point ensures chip removal to the front
- Possible thread depth 3 x D

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 5-20	○ 5-15																
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 2	0.4	36	8	2.8	2.1	1.60	**135360** 0020	16,50
M 2.5	0.45	40	9	2.8	2.1	2.05	135360 0025	16,50
M 3	0.5	40	10	3.5	2.7	2.50	135360 0030	10,50
M 4	0.7	45	12	4.5	3.4	3.30	135360 0040	10,30
M 5	0.8	50	14	6.0	4.9	4.20	135360 0050	10,30
M 6	1.0	56	14	6.0	4.9	5.00	135360 0060	10,30
M 8	1.25	63	18	6.0	4.9	6.80	135360 0080	12,80
M 10	1.5	70	20	7.0	5.5	8.50	135360 0100	16,90
M 12	1.75	75	24	9.0	7.0	10.25	135360 0120	22,10
M 16	2.0	80	26	12.0	9.0	14.00	135360 0160	37,–

1127



ATORN® SARA® Machine tap

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | C 2-3 | 40° | 2,5xD | TiN | TiCN | Vc/fz | 392

- **ISO 6H metric thread**
- 40°, spiral-fluted
- Type C, 2-3 thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E**; **HSS-E TiN**; **HSS-E TiCN**
- For blind-hole threads
- Strong chip removal to the rear for long-chipping materials
- Minimal thread relief grinding
- Possible thread depth 2.5 x D

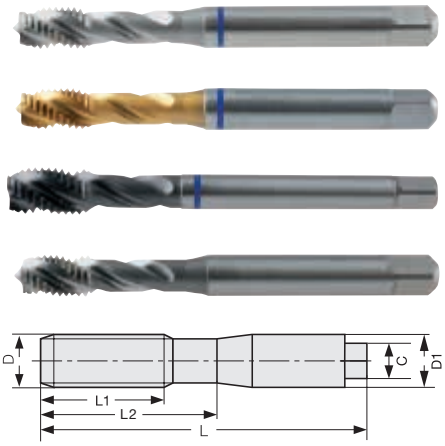
Up to 1000 N/mm²

material

● very well suited
○ well suited

	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
134200....	● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										
134205....	● 5-40	● 5-30		○ 5-20	○ 5-24			○ 8-30										
134210....	● 5-40	● 5-30		○ 5-20	○ 5-24			○ 8-30										
134201....	● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	ATORN® art.no.	€	ATORN® TiN art.no.	€	ATORN® TiCN art.no.	€	SARA® art.no.	€
M 2	0.4	45	8	-	2.8	2.1	1.60	**134200** 0020	16,90	**134205** 0020	24,10	**134210** 0020	24,10		
M 2.5	0.45	50	9	-	2.8	2.1	2.05	134200 0025	16,90	134205 0025	24,10	134210 0025	24,10		
M 3	0.5	56	6	18	3.5	2.7	2.50	134200 0030	13,45	134205 0030	21,30	134210 0030	21,30	**134201** 0030	9,40
M 4	0.7	63	7	21	4.5	3.4	3.30	134200 0040	13,45	134205 0040	21,30	134210 0040	21,30	134201 0040	9,40
M 5	0.8	70	8	25	6	4.9	4.20	134200 0050	13,55	134205 0050	21,40	134210 0050	21,40	134201 0050	9,50
M 6	1	80	10	30	6	4.9	5.00	134200 0060	13,80	134205 0060	22,30	134210 0060	22,30	134201 0060	9,65
M 8	1.25	90	13	35	8	6.2	6.80	134200 0080	17,20	134205 0080	26,20	134210 0080	26,20	134201 0080	12,05
M 10	1.5	100	15	39	10	8	8.50	134200 0100	20,40	134205 0100	30,40	134210 0100	30,40	134201 0100	14,30
M 12	1.75	110	18	-	9	7	10.25	134200 0120	29,20	134205 0120	42,10	134210 0120	42,10	134201 0120	20,50
M 14	2	110	20	-	11	9	12.00	134200 0140	41,60			134210 0140	58,50		
M 16	2	110	20	-	12	9	14.00	134200 0160	43,80	134205 0160	62,–	134210 0160	62,–		
M 20	2.5	140	25	-	16	12	17.50	134200 0200	72,–	134205 0200	102,–	134210 0200	102,–		
M 24	3	160	30	-	18	14.5	21.00	134200 0240	104,–	134205 0240	140,–				
M 30	3.5	180	35	-	22	18	26.50	134200 0300	197,–	134205 0300	245,–				
								1127		1127		1127		1156	

ATORN® SARA® Machine tap

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | B 3,5-5 | 3xD | TiN | TiCN | Vc/fz | 392

- **ISO 6H metric thread**
- Straight-fluted with spiral point, type B, 3.5 to 5-thread chamfer
- DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E**; **HSS-E TiN**; **HSS-E TiCN**
- For through-hole threads
- The spiral point ensures strong chip removal to the front
- Possible thread depth 3 x D

Up to 1000 N/mm²

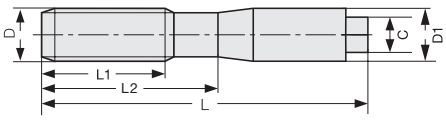
material

● very well suited
○ well suited

	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
134105....	● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										
134110....	● 5-40	● 5-30		○ 5-20	○ 5-24			○ 8-30										
134115....	● 5-40	● 5-30		○ 5-20	○ 5-24			○ 8-30										
134106....	● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.





D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	ATORN® art.no.	€	ATORN® TiN art.no.	€	ATORN® TiCN art.no.	€	SARA® art.no.	€
M 2	0.4	45	8	-	2.8	2.1	1.60	**134105** 0020	16,60						
M 2.5	0.45	50	9	-	2.8	2.1	2.05	134105 0025	13,70						
M 3	0.5	56	10	18	3.5	2.7	2.50	134105 0030	11,05	**134110** 0030	19,40	**134115** 0030	19,40	**134106** 0030	8,85
M 3.5	0.6	56	11	20	4	3	2.90	134105 0035	12,85	134110 0035	21,50	134115 0035	21,50		
M 4	0.7	63	12	21	4.5	3.4	3.30	134105 0040	11,05	134110 0040	19,40	134115 0040	19,40	134106 0040	8,85
M 5	0.8	70	14	25	6	4.9	4.20	134105 0050	11,15	134110 0050	19,50	134115 0050	19,50	134106 0050	8,95
M 6	1.0	80	16	30	6	4.9	5.00	134105 0060	11,50	134110 0060	20,80	134115 0060	20,80	134106 0060	9,20
M 7	1.0	80	16	30	7	5.5	6.00	134105 0070	17,10						
M 8	1.25	90	18	35	8	6.2	6.80	134105 0080	13,05	134110 0080	23,30	134115 0080	23,30	134106 0080	10,45
M 10	1.5	100	20	39	10	8	8.50	134105 0100	16,–	134110 0100	28,40	134115 0100	28,40	134106 0100	12,80
M 12	1.75	110	22	-	9	7	10.25	134105 0120	22,60	134110 0120	38,50	134115 0120	38,50	134106 0120	18,10
M 14	2.0	110	25	-	11	9	12.00	134105 0140	30,70	134110 0140	54,–	134115 0140	54,–		
M 16	2.0	110	28	-	12	9	14.00	134105 0160	34,80	134110 0160	57,50	134115 0160	57,50		
M 18	2.5	125	32	-	14	11	15.50	134105 0180	48,60	134110 0180	85,–	134115 0180	85,–		
M 20	2.5	140	32	-	16	12	17.50	134105 0200	54,–	134110 0200	93,–	134115 0200	93,–		
M 22	2.5	140	32	-	18	14.5	19.50	134105 0220	79,50						
M 24	3.0	160	36	-	18	14.5	21.00	134105 0240	79,50	134110 0240	126,–	134115 0240	126,–		
M 27	3.0	160	36	-	20	16	24.00	134105 0270	148,–						
M 30	3.5	180	40	-	22	18	26.50	134105 0300	156,–						
								1127		1127		1127		1156	

ATORN® Machine tap, long

M | 60° | HSS-E | Werks-norm | ISO 2 6H | C 2-3 | 40° | 2,5xD | Vc/fz | 392

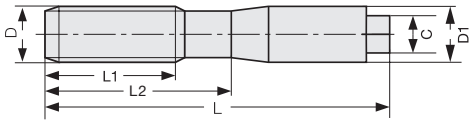
- **ISO 6H metric thread**
- 40°, spiral-fluted
- Type C, 2-3 thread chamfer
- Constructional dimensions similar to DIN 371 = up to M10, similar to DIN 376 = from M12
- **Cutting material: HSS-E**
- For blind-hole threads
- Strong chip removal to the rear for long-chipping materials
- Minimal thread relief grinding
- Possible thread depth 2.5 x D

material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.





D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	112	6	18	3.5	2.7	2.50	**134220** 0030	38,40
M 4	0.7	126	7	21	4.5	3.4	3.30	134220 0040	38,40
M 5	0.8	140	8	25	6	4.9	4.20	134220 0050	37,–
M 6	1	160	10	30	6	4.9	5.00	134220 0060	37,–
M 8	1.25	180	13	35	8	6.2	6.80	134220 0080	45,80
M 10	1.5	200	15	39	10	8	8.50	134220 0100	51,50
M 12	1.75	220	18	-	9	7	10.25	134220 0120	63,–
M 14	2	220	20	-	9	7	12.00	134220 0140	98,50
M 16	2	220	20	-	12	9	14.00	134220 0160	109,–
M 20	2.5	280	25	-	16	12	17.50	134220 0200	148,–

1127

ATORN® Machine tap, long

M | 60° | HSS-E | Werks-norm | ISO 2 6H | B 3,5-5 | 3xD | Vc/fz | 392

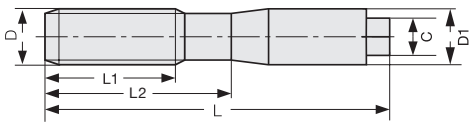
- **ISO 6H metric thread**
- Straight-fluted with spiral point, type B, 3.5 to 5-thread chamfer
- Constructional dimensions similar to DIN 371 = up to M 10, similar to DIN 376 = from M12
- **Cutting material: HSS-E**
- For through-hole threads
- The spiral point ensures strong chip removal to the front
- Possible thread depth 3 x D

material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.





D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	112	10	18	3.5	2.7	2.50	**134125** 0030	37,80
M 4	0.7	126	12	21	4.5	3.4	3.30	134125 0040	37,80
M 5	0.8	140	14	25	6	4.9	4.20	134125 0050	36,50
M 6	1.0	160	16	30	6	4.9	5.00	134125 0060	36,50
M 8	1.25	180	18	35	8	6.2	6.80	134125 0080	45,10
M 10	1.5	200	20	39	10	8	8.50	134125 0100	50,50
M 12	1.75	220	22	-	9	7	10.25	134125 0120	62,–
M 14	2.0	220	25	-	11	9.0	12.00	134125 0140	75,–
M 16	2.0	220	28	-	12	9.0	14.00	134125 0160	85,–
M 20	2.5	280	32	-	16	12.0	17.50	134125 0200	124,–

1127

ATORN® Left-hand thread machine tap

M-LH | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | C 2-3 | 40° | 2,5xD | Vc/fz | 392

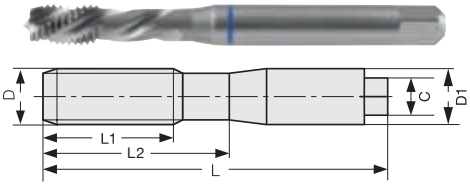
- **ISO 6H metric left-hand thread**
- 40°, spiral-fluted
- Type C, 2-3 thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E**
- For blind-hole threads
- Strong chip removal to the rear for long-chipping materials
- Minimal thread relief grinding
- Possible thread depth 2.5 x D

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										
Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3-LH	0.5	56	6	18	3.5	2.7	2.50	**134215** 0030	39,–
M 4-LH	0.7	63	7	21	4.5	3.4	3.30	134215 0040	39,–
M 5-LH	0.8	70	8	25	6	4.9	4.20	134215 0050	38,50
M 6-LH	1	80	10	30	6	4.9	5.00	134215 0060	37,30
M 8-LH	1.25	90	13	35	8	6.2	6.80	134215 0080	46,10
M 10-LH	1.5	100	15	39	10	8	8.50	134215 0100	52,–
M 12-LH	1.75	110	18	-	9	7	10.25	134215 0120	64,–
M 16-LH	2	110	20	-	12	9	14.00	134215 0160	110,–
M 20-LH	2.5	140	25	-	16	12	17.50	134215 0200	149,–

1127



ATORN® Left-hand thread machine tap

M-LH | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | B 3,5-5 | 3xD | Vc/fz | 392

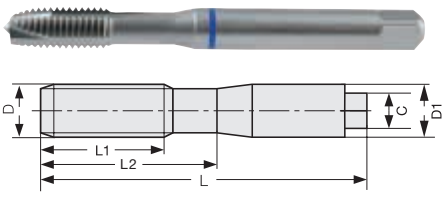
- **ISO 6H metric left-hand thread**
- Straight-fluted with spiral point, type B, 3.5 to 5-thread chamfer
- Constructional dimensions DIN 371 = up to M 10, DIN 376 = from M12
- **Cutting material: HSS-E**
- For through-hole threads
- The spiral point ensures strong chip removal to the front
- Possible thread depth 3 x D

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										
Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 4-LH	0.7	63	12	21	4.5	3.4	3.30	**134120** 0040	38,50
M 5-LH	0.8	70	14	25	6	4.9	4.20	134120 0050	36,70
M 6-LH	1.0	80	16	30	6	4.9	5.00	134120 0060	36,70
M 8-LH	1.25	90	18	35	8	6.2	6.80	134120 0080	45,50
M 10-LH	1.5	100	20	39	10	8	8.50	134120 0100	51,–
M 12-LH	1.75	110	22	-	9	7	10.25	134120 0120	62,50
M 14-LH	2.0	110	25	-	11	9	12.00	134120 0140	89,50
M 16-LH	2.0	110	28	-	12	9	14.00	134120 0160	99,–
M 20-LH	2.5	140	32	-	16	12	17.50	134120 0200	147,–

1127

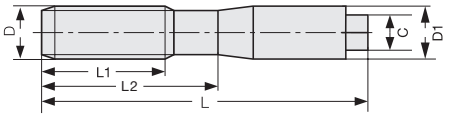


ATORN® Machine tap, weak-spiralled

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | C 2-3 | 15° | 2,5xD | TiN | Vc/fz | 392

Up to 1000 N/mm²

- **ISO 6H metric thread**
- Type C, 2 to 3-thread chamfer, for blind-hole threads
- DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E, HSS-E TiN**
- Possible thread depth 2.5 x D



material

● very well suited ○ well suited

	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
134175....	● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										
134180....	● 5-40	● 5-30		○ 5-20	○ 5-24			○ 8-30										

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

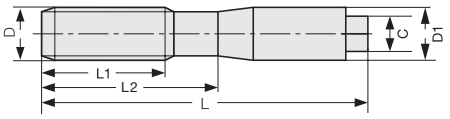



D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€	TiN art.no.	TiN €
M 2	0.4	45	8	-	2.8	2.1	1.60	**134175** 0020	22,90		
M 2.3	0.4	45	9	-	2.8	2.1	1.90	134175 0023	22,90		
M 2.5	0.45	50	9	-	2.8	2.1	2.05	134175 0025	22,–		
M 2.6	0.45	50	9	-	2.8	2.1	2.10	134175 0026	22,90		
M 3	0.5	56	10	18	3.5	2.7	2.50	134175 0030	16,–	**134180** 0030	22,20
M 3.5	0.6	56	11	20	4	3	2.90	134175 0035	22,–		
M 4	0.7	63	12	21	4.5	3.4	3.30	134175 0040	16,–	134180 0040	22,20
M 5	0.8	70	14	25	6	4.9	4.20	134175 0050	16,80	134180 0050	23,–
M 6	1.0	80	16	30	6	4.9	5.00	134175 0060	16,80	134180 0060	23,50
M 7	1.0	80	16	30	7	5.5	6.00	134175 0070	22,50		
M 8	1.25	90	18	35	8	6.2	6.80	134175 0080	21,80	134180 0080	29,10
M 10	1.5	100	20	39	10	8	8.50	134175 0100	24,90	134180 0100	33,30
M 12	1.75	110	22	-	9	7	10.25	134175 0120	31,90	134180 0120	45,90
M 14	2.0	110	25	-	11	9	12.00	134175 0140	37,90		
M 16	2.0	110	28	-	12	9	14.00	134175 0160	45,80	134180 0160	65,50
M 18	2.5	125	32	-	14	11	15.50	134175 0180	57,50		
M 20	2.5	140	32	-	16	12	17.50	134175 0200	57,50	134180 0200	88,50
M 24	3.0	160	36	-	18	14.5	21.00	134175 0240	103,–		
M 30	3.5	180	40	-	22	18	26.50	134175 0300	225,–		
								1127		1127	

ATORN® Machine tap

M | 60° | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6H | C 2-3 | 40° | 2,5xD | Vc/fz | 392

- **ISO 6H metric thread**
- 40°, spiral-fluted
- Type C, 2-3 thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E-PM**
- For blind-hole threads
- Shortened threaded part, larger relief grinding, narrow cutting inserts
- Possible thread depth 2.5 x D



material

● very well suited ○ well suited

	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 5-20	● 5-15	● 5-10	○ 5-10	○ 5-12	○ 5-8	● 8-20	● 8-20	○ 2-6	○ 2-6		● 20-40	○ 10-25	● 10-12				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	10	18	3.5	2.7	2.50	**134235** 0030	30,50
M 4	0.7	63	12	21	4.5	3.4	3.30	134235 0040	30,50
M 5	0.8	70	14	25	6	4.9	4.20	134235 0050	29,10
M 6	1.0	80	16	30	6	4.9	5.00	134235 0060	29,10
M 8	1.25	90	18	35	8	6.2	6.80	134235 0080	35,90
								1127	

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 10	1.5	100	20	39	10	8	8.50	134235 0100	40,60
M 12	1.75	110	22	-	9	7	10.25	134235 0120	49,80
M 14	2.0	110	25	-	11	9	12.00	134235 0140	70,–
M 16	2.0	110	28	-	12	9	14.00	134235 0160	77,50
M 20	2.5	140	32	-	16	12	17.50	134235 0200	111,–
								1127	

ATORN® Machine tap set

M | 60° | HSS-E | DIN 371/376 | ISO 2 6H | C 2-3 | 40° | 2,5xD | Vc/fz | 392

- In a plastic case
- **HSS-E tap for ISO 6H metric thread**
- 40°, spiral-fluted
- Type C, 2-3 thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- For blind-hole threads
- Strong chip removal to the rear for long-chipping materials
- Minimal thread relief grinding
- Possible thread depth 2.5 x D
- **HSS-E twist drill bit, type TLP**
- 130° point angle

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										
	Cutting speed Vc m/min.						Please adjust these guidelines according to clamping operation and machine set-up.											



Contents	art.no.	€
Tap No. 134200.... M3, M4, M5, M6, M8, M10, M12 Twist drill bit No. 101013.... Ø 2.5 3.3 4.2 5.0 6.8 8.5 10.2 mm	**139001** 0001	179,–

1127

ATORN® Machine tap, left-helix

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | D 3,5-5 | 15° | 3xD | Vc/fz | 392

- **ISO 6H metric thread**
- Type D, 3.5 to 5-thread chamfer
- 15° left-hand twist
- DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E**
- For through-hole threads
- Possible thread depth 3 x D

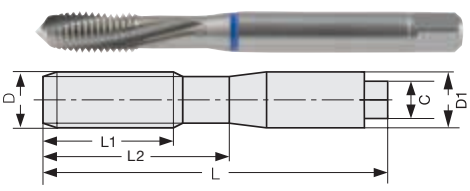
15° left-hand twist for right-hand through-hole thread

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 5-20	○ 5-15		○ 5-10	○ 5-12			○ 8-20										
	Cutting speed Vc m/min.						Please adjust these guidelines according to clamping operation and machine set-up.											

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	10	18	3.5	2.7	2.50	**135365** 0030	15,50
M 4	0.7	63	12	21	4.5	3.4	3.30	135365 0040	15,50
M 5	0.8	70	14	25	6	4.9	4.20	135365 0050	15,80
M 6	1.0	80	16	30	6	4.9	5.00	135365 0060	15,80
M 8	1.25	90	18	35	8	6.2	6.80	135365 0080	19,–
M 10	1.5	100	20	39	10	8.0	8.50	135365 0100	22,30
M 12	1.75	110	24	-	9	7.0	10.25	135365 0120	27,70
M 14	2.0	110	26	-	11	9.0	12.00	135365 0140	38,50
M 16	2.0	110	26	-	12	9.0	14.00	135365 0160	44,–
M 20	2.5	140	32	-	16	12.0	17.50	135365 0200	72,50

1127



ATORN® Machine tap, without spiral point

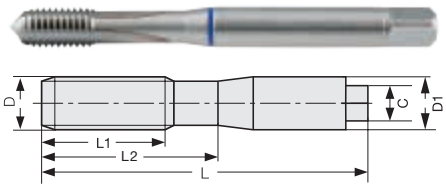
M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | C 2-3 | 1,5xD | Vc/fz 392

- **ISO 6H metric thread**
- Straight-fluted
- Type C, 2-3 thread chamfer
- DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E**
- For blind-hole and through-hole threads
- Possible thread depth 1.5xD

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										
		Cutting speed Vc m/min.						Please adjust these guidelines according to clamping operation and machine set-up.											

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 2	0.4	45	4.5	-	2.8	2.1	1.60	**135150** 0020	20,20
M 2.5	0.45	50	5.0	-	2.8	2.1	2.05	135150 0025	19,60
M 3	0.5	56	6.0	18	3.5	2.7	2.50	135150 0030	16,30
M 4	0.7	63	7.5	21	4.5	3.4	3.30	135150 0040	15,50
M 5	0.8	70	8.5	25	6	4.9	4.20	135150 0050	16,70
M 6	1.0	80	11	30	6	4.9	5.00	135150 0060	16,90
M 8	1.25	90	14	35	8	6.2	6.80	135150 0080	18,80
M 10	1.5	100	16	39	10	8	8.50	135150 0100	22,90
M 12	1.75	110	18.5	-	9	7	10.25	135150 0120	27,20
M 14	2.0	110	20	-	11	9	12.00	135150 0140	38,50
M 16	2.0	110	20	-	12	9	14.00	135150 0160	35,50
M 20	2.5	140	25	-	16	12	17.50	135150 0200	64,–

1127



ATORN® Machine nut tap

M | 60° | HSS-E | DIN 357 | ISO 2 6H | 3xD | Vc/fz 392

- **Extra-long, ISO 6H metric thread**
- Straight-fluted with extra-long shank
- Approx. 20-thread chamfer
- **Cutting material: HSS-E**
- For through-hole threads
- Possible thread depth 3 x D

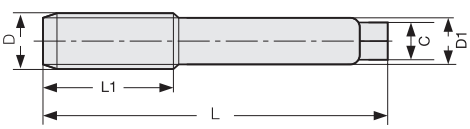
Long chamfer

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										
		Cutting speed Vc m/min.						Please adjust these guidelines according to clamping operation and machine set-up.											



D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	70	22	2.2	-	2.50	**135100** 0030	37,30
M 4	0.7	90	25	2.8	2.1	3.30	135100 0040	33,–
M 5	0.8	100	28	3.5	2.7	4.20	135100 0050	35,60
M 6	1.0	110	32	4.5	3.4	5.00	135100 0060	40,80
M 8	1.25	125	40	6	4.9	6.80	135100 0080	51,–
M 10	1.5	140	45	7	5.5	8.50	135100 0100	61,–
M 12	1.75	180	50	9	7	10.25	135100 0120	82,50
M 16	2	200	63	12	9	14.00	135100 0160	114,–
M 20	2.5	250	70	16	12	17.50	135100 0200	225,–

1127



ATORN® SARA® Machine tap

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | C 2-3 | 40° | 2,5xD | TiCN | Vc/fz | 392

- **ISO 6H metric thread**
- 40°, spiral-fluted
- Type C, 2-3 thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E; HSS-E, TiCN-coated**
- For blind-hole threads
- Possible thread depth 2.5 x D

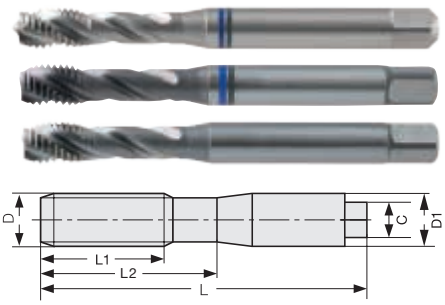
Up to 1400 N/mm²

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
134230....	● 5-20	● 5-15	● 5-10	○ 5-10			● 8-20	● 8-20	○ 2-6	○ 2-6			○ 10-25					
134233....	● 5-40	● 5-30	● 5-20	○ 5-20			● 8-30	● 8-30	○ 2-6	○ 2-6			○ 10-30					
134231....	● 5-20	● 5-15	○ 5-10	○ 5-10			● 8-20	● 8-20	○ 2-6	○ 2-6			○ 10-25					

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	ATORN® art.no.	€	ATORN® TiCN art.no.	€	SARA® art.no.	€
M 3	0.5	56	6	18	3.5	2.7	2.50	**134230** 0030	14,55	**134233** 0030	19,10	**134231** 0030	10,20
M 4	0.7	63	7	21	4.5	3.4	3.30	134230 0040	14,55	134233 0040	19,10	134231 0040	10,20
M 5	0.8	70	8	25	6	4.9	4.20	134230 0050	14,75	134233 0050	19,20	134231 0050	10,35
M 6	1.0	80	10	30	6	4.9	5.00	134230 0060	15,10	134233 0060	20,10	134231 0060	10,60
M 8	1.25	90	13	35	8	6.2	6.80	134230 0080	18,60	134233 0080	23,60	134231 0080	13,–
M 10	1.5	100	15	39	10	8	8.50	134230 0100	22,20	134233 0100	27,60	134231 0100	15,50
M 12	1.75	110	18	-	9	7	10.25	134230 0120	32,–	134233 0120	38,60	134231 0120	22,40
M 16	2.0	110	20	-	12	9	14.00	134230 0160	48,80	134233 0160	58,–		
M 20	2.5	140	25	-	16	12	17.50	134230 0200	83,50	134233 0200	108,–		
								1127		1127		1156	



ATORN® SARA® Machine tap

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | B 3,5-5 | 3xD | TiCN | Vc/fz | 392

- **ISO 6H metric thread**
- Straight-fluted
- With spiral point, type B, 3.5 to 5-thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E; HSS-E, TiCN-coated**
- For through-hole threads
- Possible thread depth 3 x D

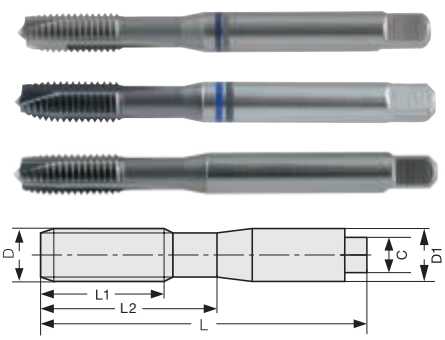
Up to 1400 N/mm²

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
134135....	● 5-20	● 5-15	● 5-10	○ 5-10			● 8-20	● 8-20	○ 2-6	○ 2-6			○ 10-25					
134137....	● 5-40	● 5-30	● 5-20	○ 5-20			● 8-30	● 8-30	○ 2-6	○ 2-6			○ 10-30					
134136....	● 5-20	● 5-15	○ 5-10	○ 5-10			● 8-20	● 8-20	○ 2-6	○ 2-6			○ 10-25					

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	ATORN® art.no.	€	ATORN® TiCN art.no.	€	SARA® art.no.	€
M 3	0.5	56	10	18	3.5	2.7	2.50	**134135** 0030	15,40	**134137** 0030	22,30	**134136** 0030	10,80
M 4	0.7	63	12	21	4.5	3.4	3.30	134135 0040	15,40	134137 0040	22,30	134136 0040	10,80
M 5	0.8	70	14	25	6	4.9	4.20	134135 0050	15,50	134137 0050	22,50	134136 0050	10,85
M 6	1.0	80	16	30	6	4.9	5.00	134135 0060	15,90	134137 0060	23,30	134136 0060	11,15
M 8	1.25	90	18	35	8	6.2	6.80	134135 0080	19,70	134137 0080	27,50	134136 0080	13,80
M 10	1.5	100	20	39	10	8	8.50	134135 0100	23,30	134137 0100	32,20	134136 0100	16,30
M 12	1.75	110	22	-	9	7	10.25	134135 0120	33,70	134137 0120	44,80	134136 0120	23,60
M 16	2.0	110	28	-	12	9	14.00	134135 0160	52,–	134137 0160	67,50		
M 20	2.5	140	32	-	16	12	17.50	134135 0200	87,50	134137 0200	111,–		
								1127		1127		1156	



ATORN® Machine tap

M | 60° | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6H | C 2-3 | 45° | 3xD | TiCN | Vc/fz | 392

- **ISO 6H metric thread**
- 45°, spiral-fluted
- Type C, 2-3 thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E-PM, TiCN-coated**
- For deep blind bore threads
- Easy chip removal to the rear
- Possible thread depth 3 x D

Ideal for steel and stainless steel

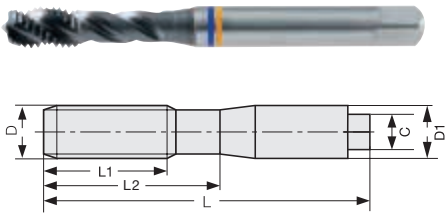
material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 5-40	● 5-30	● 5-20	● 5-20	● 5-24	○ 5-15			○ 2-6									

Cutting speed Vc m/min. — Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	6	18	3.5	2.7	2.50	**134193** 0305	26,–
M 4	0.7	63	7	21	4.5	3.4	3.30	134193 0407	26,–
M 5	0.8	70	8	25	6	4.9	4.20	134193 0508	26,10
M 6	1.0	80	10	30	6	4.9	5.00	134193 0610	27,40
M 8	1.25	90	13	35	8	6.2	6.80	134193 0812	32,90
M 10	1.5	100	15	39	10	8	8.50	134193 1015	38,40
M 12	1.75	110	18	-	9	7	10.25	134193 1217	53,–
M 16	2.0	110	20	-	12	9	14.00	134193 1620	80,–

1127



ATORN® Machine tap

M | 60° | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6H | B 3,5-5 | 3xD | TiCN | Vc/fz | 392

- **ISO 6H metric thread**
- Straight-fluted with spiral point
- Type B, 3.5-5 thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E-PM, TiCN-coated**
- For through-hole threads
- Possible thread depth 3 x D

Ideal for steel and stainless steel

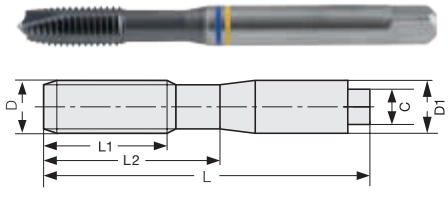
material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 5-40	● 5-30	● 5-20	● 5-20	● 5-24	○ 5-15			○ 2-6									

Cutting speed Vc m/min. — Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	6	18	3.5	2.7	2.50	**134196** 0305	26,50
M 4	0.7	63	7	21	4.5	3.4	3.30	134196 0407	26,50
M 5	0.8	70	8	25	6	4.9	4.20	134196 0508	26,60
M 6	1.0	80	10	30	6	4.9	5.00	134196 0610	28,–
M 8	1.25	90	13	35	8	6.2	6.80	134196 0812	33,70
M 10	1.5	100	15	39	10	8	8.50	134196 1015	40,20
M 12	1.75	110	18	-	9	7	10.25	134196 1217	54,–
M 16	2.0	110	20	-	12	9	14.00	134196 1620	81,–

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ATORN® SARA® Machine tap

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | C 2-3 | 40° | 2,5xD | TiN | Vap. | Vc/fz | 392

- **Metric ISO 6H thread**
- 40° spiral-fluted
- Form C, 2-3 thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E, vapour-treated; HSS-E, TiN-coated**
- For blind-hole threads, minimum thread relief grinding

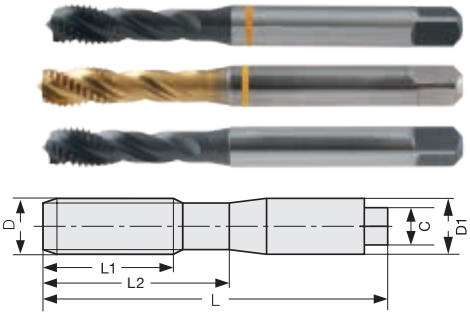
For stainless steel

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
134225....				● 5-10	● 5-12	● 5-8												
134226....				● 5-20	● 5-24	● 5-15												
134227....				● 5-8	● 5-8	○ 5-8												

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	ATORN® Vapour-treated art.no.	€	ATORN® TiN art.no.	€	SARA® Vapour-treated art.no.	€
M 2	0.4	45	8	-	2.8	2.1	1.60	**134225** 0020	23,50				
M 2.5	0.45	50	9	-	2.8	2.1	2.05	134225 0025	19,50				
M 3	0.5	56	6	18	3.5	2.7	2.50	134225 0030	15,60	**134226** 0030	23,60	**134227** 0030	10,95
M 4	0.7	63	7	21	4.5	3.4	3.30	134225 0040	15,60	134226 0040	23,60	134227 0040	10,95
M 5	0.8	70	8	25	6	4.9	4.20	134225 0050	15,80	134226 0050	23,70	134227 0050	11,05
M 6	1.0	80	10	30	6	4.9	5.00	134225 0060	16,20	134226 0060	24,90	134227 0060	11,35
M 8	1.25	90	13	35	8	6.2	6.80	134225 0080	20,10	134226 0080	30,–	134227 0080	14,10
M 10	1.5	100	15	39	10	8	8.50	134225 0100	23,90	134226 0100	34,70	134227 0100	16,75
M 12	1.75	110	18	-	9	7	10.25	134225 0120	34,50	134226 0120	48,20	134227 0120	24,20
M 16	2.0	110	20	-	11	9	14.00	134225 0160	53,–	134226 0160	72,50		
M 20	2.5	140	25	-	16	12	17.50	134225 0200	89,50				
								1127		1127		1156	



ATORN® SARA® Machine tap

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | B 3,5-5 | 3xD | TiN | Vap. | Vc/fz | 392

- **Metric ISO 6H thread**
- Straight-fluted
- With spiral point, Form B, 3.5 to 5-thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E, vapour-treated; HSS-E, TiN-coated**
- For through-hole threads

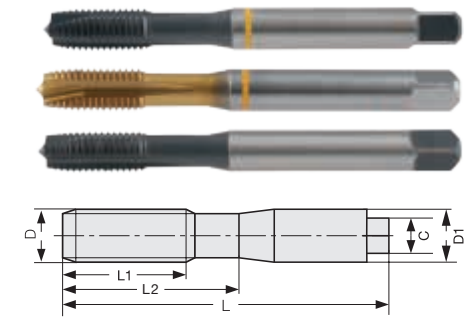
For stainless steel

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
134130....				● 5-10	● 5-12	● 5-8												
134131....				● 5-20	● 5-24	● 5-15												
134132....				● 5-8	● 5-8	○ 5-8												

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	ATORN® Vapour-treated art.no.	€	ATORN® TiN art.no.	€	SARA® Vapour-treated art.no.	€
M 2	0.4	45	8	-	2.8	2.1	1.60	**134130** 0020	22,80				
M 2.5	0.45	50	9	-	2.8	2.1	2.05	134130 0025	18,80				
M 3	0.5	56	10	18	3.5	2.7	2.50	134130 0030	15,20	**134131** 0030	23,40	**134132** 0030	10,65
M 4	0.7	63	12	21	4.5	3.4	3.30	134130 0040	15,20	134131 0040	23,40	134132 0040	10,65
M 5	0.8	70	14	25	6	4.9	4.20	134130 0050	15,30	134131 0050	23,50	134132 0050	10,75
M 6	1.0	80	16	30	6	4.9	5.00	134130 0060	15,70	134131 0060	24,70	134132 0060	11,–
M 8	1.25	90	18	35	8	6.2	6.80	134130 0080	19,40	134131 0080	29,70	134132 0080	13,60
M 10	1.5	100	20	39	10	8	8.50	134130 0100	23,–	134131 0100	34,70	134132 0100	16,10
M 12	1.75	110	22	-	9	7	10.25	134130 0120	33,10	134131 0120	47,80	134132 0120	23,20
M 16	2.0	110	28	-	12	9	14.00	134130 0160	51,–	134131 0160	72,–		
M 20	2.5	140	32	-	16	12	17.50	134130 0200	86,50				
								1127		1127		1156	



ATORN® Machine tap

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | C 2-3 | 15° | 2xD | Vc/fz | 392

- **ISO 6H metric thread**
- Type C, 2 to 3-thread chamfer, 15°, spiral-fluted with exposed ridges
- DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E**
- For blind bore threads, easy chip removal to the rear
- Possible thread depth 2xD

Exposed thread ridges

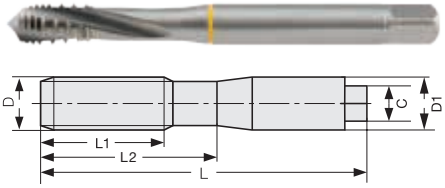
material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
			●	●	●												
			5-10	5-12	5-8												

Cutting speed Vc m/min. — Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	6.0	18	3.5	2.7	2.50	**135390** 0030	23,10
M 4	0.7	63	7.5	21	4.5	3.4	3.30	135390 0040	23,10
M 5	0.8	70	8.5	25	6	4.9	4.20	135390 0050	23,90
M 6	1.0	80	11.0	30	6	4.9	5.00	135390 0060	23,50
M 8	1.25	90	14.0	35	8	6.2	6.80	135390 0080	27,50
M 10	1.5	100	16.0	39	10	8.0	8.50	135390 0100	34,60
M 12	1.75	110	18.5	-	9	7.0	10.25	135390 0120	42,50
M 16	2.0	110	20.0	-	12	9.0	14.00	135390 0160	59,50
M 20	2.5	140	25.0	-	16	12.0	17.50	135390 0200	95,–

1127



ATORN® Machine tap

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | B 3,5-5 | 3xD | Vc/fz | 392

- **ISO 6H metric thread**
- Straight-fluted, with exposed thread ridges
- Type B, 3.5-5 thread chamfer
- Constructional dimensions DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E**
- For through-hole threads in materials that tend to jam, thin-walled parts and pipes
- Possible thread depth 3 x D

Exposed thread ridges

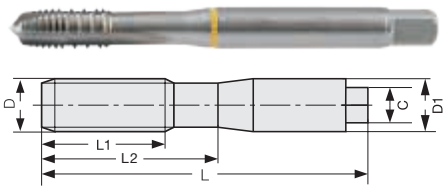
material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
			●	●	●												
			5-10	5-12	5-8												

Cutting speed Vc m/min. — Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	10	18	3.5	2.7	2.50	**135140** 0030	37,30
M 4	0.7	63	12	21	4.5	3.4	3.30	135140 0040	32,30
M 5	0.8	70	14	25	6	4.9	4.20	135140 0050	29,–
M 6	1.0	80	16	30	6	4.9	5.00	135140 0060	33,–
M 8	1.25	90	17	35	8	6.2	6.80	135140 0080	37,90
M 10	1.5	100	20	39	10	8	8.50	135140 0100	46,10
M 12	1.75	110	24	-	9	7	10.25	135140 0120	65,–
M 16	2.0	110	26	-	12	9	14.00	135140 0160	101,–

1127



ATORN® Machine tap

M | 60° | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6H | D 3,5-5 | 20° | 2,5xD | Vc/fz | 392

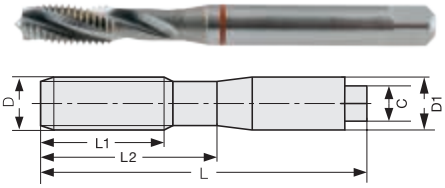
- **Metric ISO 6H thread**
- Form D, 3.5-5 thread chamfer, 20°, spiral-fluted
- DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E-PM**
- For blind-hole threads, easy chip removal to the rear
- Possible thread depth 2.5 x D

For titanium and superalloys

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
										● 2-6	● 2-6	○ 2-6							
	Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	10	18	3.5	2.7	2.50	**134192** 0030	28,60
M 4	0.7	63	12	21	4.5	3.4	3.30	134192 0040	28,60
M 5	0.8	70	14	25	6	4.9	4.20	134192 0050	27,40
M 6	1.0	80	16	30	6	4.9	5.00	134192 0060	27,40
M 8	1.25	90	18	35	8	6.2	6.80	134192 0080	33,80
M 10	1.5	100	20	39	10	8.0	8.50	134192 0100	38,10
M 12	1.75	110	22	-	9	7.0	10.25	134192 0120	46,60
M 16	2.0	110	28	-	12	9.0	14.00	134192 0160	70,–

1127



ATORN® Machine tap

M | 60° | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6H | B 3,5-5 | 3xD | Vc/fz | 392

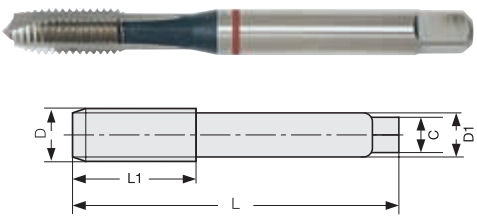
- **Metric ISO 6HX thread**
- Straight-fluted with spiral point, Form B, 3.5 to 5-thread chamfer
- DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E-PM**
- For through-hole threads
- The spiral point ensures strong chip removal to the front
- Possible thread depths 3 x D

For titanium and superalloys

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
										● 2-6	● 2-6	○ 2-6							
	Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	10	3.5	2.7	2.50	**134142** 0030	28,90
M 4	0.7	63	12	4.5	3.4	3.30	134142 0040	29,30
M 5	0.8	70	14	6.0	4.9	4.20	134142 0050	28,10
M 6	1.0	80	16	6.0	4.9	5.00	134142 0060	28,10
M 8	1.25	90	18	8.0	6.2	6.80	134142 0080	34,30
M 10	1.5	100	20	10.0	8.0	8.50	134142 0100	38,60
M 12	1.75	110	22	9.0	7.0	10.25	134142 0120	47,30
M 16	2.0	110	28	12.0	9.0	14.00	134142 0160	71,–

1127



ATORN® Machine tap

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | C 2-3 | 45° | 2,5xD | Vc/fz | 392

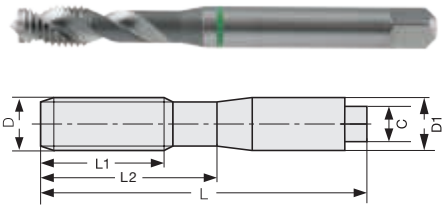
- **ISO 6H metric thread**
- Type C, 2 to 3-thread chamfer, 45° spiral-fluted
- DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E**
- For blind bore threads, with enlarged chip space
- Possible thread depth 2.5 x D

For aluminium

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
													●	●	●				
													20-40	10-25	10-12				
	Cutting speed Vc m/min.							Please adjust these guidelines according to clamping operation and machine set-up.											

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 2	0.4	45	8	-	2.8	2.1	1.60	**134195** 0020	19,80
M 3	0.5	56	6	18	3.5	2.7	2.50	134195 0030	14,55
M 4	0.7	63	7	21	4.5	3.4	3.30	134195 0040	14,75
M 5	0.8	70	8	25	6	4.9	4.20	134195 0050	15,40
M 6	1.0	80	10	30	6	4.9	5.00	134195 0060	15,50
M 8	1.25	90	13	35	8	6.2	6.80	134195 0080	20,50
M 10	1.5	100	15	39	10	8	8.50	134195 0100	25,10
M 12	1.75	110	18	-	9	7	10.25	134195 0120	38,40

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ATORN® Machine tap

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | B 3,5-5 | 3xD | Vc/fz | 392

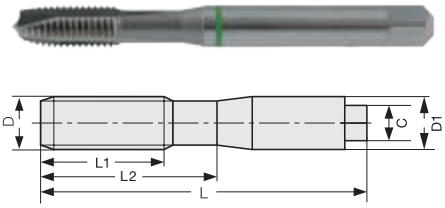
- **ISO 6H metric thread**
- Straight-fluted with spiral point, type B, 3.5 to 5-thread chamfer
- DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E**
- For through-hole threads
- With enlarged chip space
- The spiral point ensures strong chip removal to the front
- Possible thread depths 3xD

For aluminium

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
													●	●	●				
													20-40	10-25	10-12				
	Cutting speed Vc m/min.							Please adjust these guidelines according to clamping operation and machine set-up.											

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	10	18	3.5	2.7	2.50	**134127** 0030	12,75
M 4	0.7	63	12	21	4.5	3.4	3.30	134127 0040	12,85
M 5	0.8	70	14	25	6.0	4.9	4.20	134127 0050	13,50
M 6	1.0	80	16	30	6.0	4.9	5.00	134127 0060	13,60
M 8	1.25	90	18	35	8.0	6.2	6.80	134127 0080	17,90
M 10	1.5	100	20	39	10.0	8.0	8.50	134127 0100	22,–
M 12	1.75	110	22	-	9.0	7.0	10.25	134127 0120	33,70

1127



ATORN® Synchronised machine tap

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | Synchro | C 2-3 | 40° | 2,5xD | TiN | Vc/fz | 392

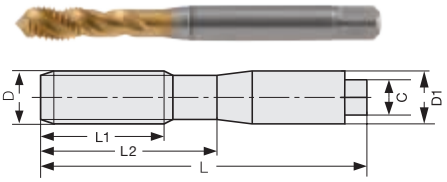
- **ISO 6H metric thread**
- 40°, spiral-fluted
- Type C, 2 to 3-thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E, TiN-coated**
- For blind-hole threads
- Minimal thread relief grinding
- Possible thread depth 2.5 x D
- Suitable for CNC machining centres with synchro tap chucks

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 5-40	● 5-30	○ 5-20	● 5-20	● 5-24	○ 5-15	● 8-30	● 8-30				○ 30-60	○ 10-30	○ 10-20				
Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	6	18	3.5	2.7	2.50	**135350** 0030	24,90
M 4	0.7	63	7.5	21	4.5	3.4	3.30	135350 0040	26,40
M 5	0.8	70	8.5	25	6	4.9	4.20	135350 0050	26,80
M 6	1.0	80	11	30	6	4.9	5.00	135350 0060	32,10
M 8	1.25	90	14	35	8	6.2	6.80	135350 0080	37,30
M 10	1.5	100	16	39	10	8	8.50	135350 0100	44,30
M 12	1.75	110	18.5	-	9	7	10.25	135350 0120	57,50
M 14	2.0	110	20	-	11	9	12.00	135350 0140	77,50
M 16	2.0	110	20	-	12	9	14.00	135350 0160	77,50
M 18	2.5	125	25	-	14	11	15.50	135350 0180	106,–
M 20	2.5	140	25	-	16	12	17.50	135350 0200	130,–
M 24	3.0	160	30	-	18	14.5	21.00	135350 0240	157,–

1127



ATORN® Synchronised machine tap

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | Synchro | B 3,5-5 | 3xD | TiN | Vc/fz | 392

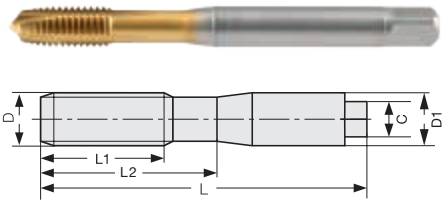
- **ISO 6H metric thread**
- Straight-fluted with spiral point
- Type B, 3.5-5 thread chamfer
- Constructional dimensions DIN 371 = up to M 10, DIN 376 = from M12
- **Cutting material: HSS-E, TiN-coated**
- For through-hole threads
- Possible thread depth 3 x D
- Suitable for conventional and CNC machining using synchronised tap chucks

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 5-40	● 5-30	○ 5-20	● 5-20	● 5-24	○ 5-15	● 8-30	● 8-30				○ 30-60	○ 10-30	○ 10-20				
Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	10	18	3.5	2.7	2.50	**135385** 0030	19,60
M 4	0.7	63	12	21	4.5	3.4	3.30	135385 0040	20,30
M 5	0.8	70	14	25	6	4.9	4.20	135385 0050	20,70
M 6	1.0	80	16	30	6	4.9	5.00	135385 0060	24,70
M 8	1.25	90	17	35	8	6.2	6.80	135385 0080	27,40
M 10	1.5	100	20	39	10	8.0	8.50	135385 0100	38,60
M 12	1.75	110	24	-	9	7.0	10.25	135385 0120	45,70
M 14	2.0	110	26	-	11	9.0	12.00	135385 0140	61,20
M 16	2.0	110	26	-	12	9.0	14.00	135385 0160	63,80
M 18	2.5	125	30	-	14	11.0	15.50	135385 0180	77,50
M 20	2.5	140	32	-	16	12.0	17.50	135385 0200	83,–
M 24	3.0	160	36	-	18	14.5	21.00	135385 0240	103,–

1127



ATORN® Synchronised machine tap

M | 60° | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6HX | Synchro | C 2-3 | 50° | 2,5xD | TiN | Vc/fz | 392

- **ISO 6HX metric thread**
- 50°, spiral-fluted
- Type C, 2-3 thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E-PM, TiN-coated**
- For blind-hole threads
- Possible thread depth 2.5 x D
- **Minimum-sized guide piece and extremely large clearance angle**
- Shank tolerance = h6
- For synchronous tap chucks

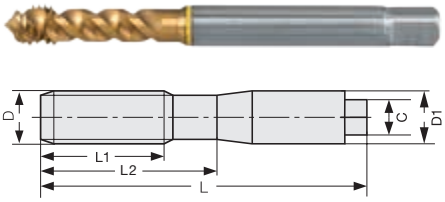
material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 5-40	● 5-30	○ 5-20	● 5-20	● 5-24	○ 5-15	● 8-30	● 8-30				● 30-60	○ 10-30	○ 10-20				

Cutting speed Vc m/min. — Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 4	0.7	63	3.5	21	4.5	3.4	3.30	**134575** 0040	40,–
M 5	0.8	70	4.0	25	6	4.9	4.20	134575 0050	39,20
M 6	1.0	80	5.0	30	6	4.9	5.00	134575 0060	43,–
M 8	1.25	90	6.3	35	8	6.2	6.80	134575 0080	50,50
M 10	1.5	100	7.5	39	10	8	8.50	134575 0100	69,–
M 12	1.75	110	8.8	-	9	7	10.25	134575 0120	86,–
M 14	2.0	110	10.0	-	11	9	12.00	134575 0140	95,50
M 16	2.0	110	10.0	-	12	9	14.00	134575 0160	122,–
M 20	2.5	140	12.5	-	16	12	17.50	134575 0200	170,–

1127



ATORN® Synchronised machine tap

M | 60° | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6H | Synchro | B 3,5-5 | 3xD | TiN | Vc/fz | 392

- **ISO 6H metric thread**
- **Straight-fluted with spiral point**
- Type B, 3.5-5 thread chamfer
- Constructional dimensions DIN 371 = up to M 10, DIN 376 = from M12
- **Cutting material: HSS-E-PM, TiN-coated**
- For through-hole threads
- Possible thread depth 3 x D
- Suitable for conventional and CNC machining using synchronised tap chucks

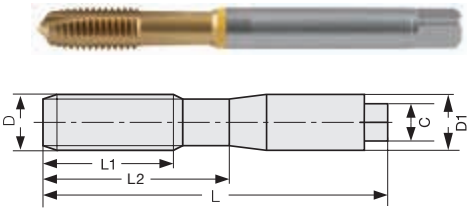
material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 20-25	● 15-20	○ 10-15	● 10-18	● 10-18	○ 10-15	● 8-30	● 8-30				○ 25-30	○ 25-30	○ 25-30				

Cutting speed Vc m/min. — Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 2	0.4	45	8	-	2.8	2.1	1.60	**134570** 0020	25,80
M 3	0.5	56	10	18	3.5	2.7	2.50	134570 0030	26,80
M 4	0.7	63	12	21	4.5	3.4	3.30	134570 0040	27,60
M 5	0.8	70	14	25	6	4.9	4.20	134570 0050	28,20
M 6	1.0	80	16	30	6	4.9	5.00	134570 0060	33,–
M 8	1.25	90	17	35	8	6.2	6.80	134570 0080	37,30
M 10	1.5	100	20	39	10	8.0	8.50	134570 0100	52,50
M 12	1.75	110	24	-	9	7.0	10.25	134570 0120	62,–
M 14	2.0	110	26	-	11	9.0	12.00	134570 0140	82,50
M 16	2.0	110	26	-	12	9.0	14.00	134570 0160	83,50
M 18	2.5	125	30	-	14	11.0	15.50	134570 0180	106,–
M 20	2.5	140	32	-	16	12.0	17.50	134570 0200	117,–

1127



ATORN® Synchronised machine tap set

M | 60° | HSS-E PM | DIN 371/376 | ISO 2 6HX | Synchro | C 2-3 | 50° | 2,5xD | TiN | Vc/fz | 392

- **ISO 6HX metric thread**
- 50°, spiral-fluted
- Type C, 2-3 thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E-PM, TiN-coated**
- For blind-hole threads
- Possible thread depth 2.5 x D
- **Minimum-sized guide piece and extremely large clearance angle**
- Shank tolerance = h6
- For synchronous tap chucks

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 5-40	● 5-30	○ 5-20	● 5-20	● 5-24	○ 5-15	● 8-30	● 8-30				● 30-60	○ 10-30	○ 10-20				
Cutting speed Vc m/min.							Please adjust these guidelines according to clamping operation and machine set-up.											



Contents	art.no.	€
5-piece set: M5, M6, M8, M10, M12	**134575** 1005	215,–
	1127	

ATORN® Synchronised machine tap set

M | 60° | HSS-E PM | DIN 371/376 | ISO 2 6H | Synchro | B 3,5-5 | 3xD | TiN | Vc/fz | 392

- **ISO 6H metric thread**
- Straight-fluted with spiral point
- Type B, 3.5-5 thread chamfer
- Constructional dimensions DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E-PM, TiN-coated**
- For through-hole threads
- Possible thread depth 3 x D
- Suitable for conventional and CNC machining using synchronised tap chucks
- M5, M6, M8, M10, M12

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 20-25	● 15-20	○ 10-15	● 10-18	● 10-18	○ 10-15	● 8-30	● 8-30				○ 25-30	○ 25-30	○ 25-30				
Cutting speed Vc m/min.							Please adjust these guidelines according to clamping operation and machine set-up.											



Contents	art.no.	€
5-piece set: M5, M6, M8, M10, M12	**134570** 1005	191,50
	1127	

ATORN® Machine tap

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6HX | C 2-3 | 3xD | Nit. | Vc/fz | 392

- **Metric ISO 6HX thread**
- Straight-fluted, without spiral point
- Form C, 2-3 thread chamfer
- DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E, nitrided**
- For blind-hole and through-hole threads
- Possible thread depth 3 x D

For cast iron

material — ● very well suited ○ well suited

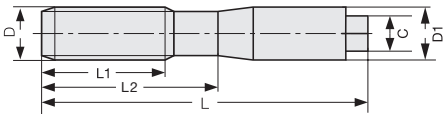
steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
						● 8-20	● 8-20					○ 10-25	○ 10-12				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	10	18	3.5	2.7	2.50	**135155** 0030	14,–
M 4	0.7	63	12	21	4.5	3.4	3.30	135155 0040	13,80
M 5	0.8	70	14	25	6	4.9	4.20	135155 0050	15,10
M 6	1.0	80	17	30	6	4.9	5.00	135155 0060	15,10
M 8	1.25	90	18	35	8	6.2	6.80	135155 0080	18,30
M 10	1.5	100	20	39	10	8	8.50	135155 0100	21,60
M 12	1.75	110	24	-	9	7	10.25	135155 0120	28,40
M 16	2.0	110	26	-	12	9	14.00	135155 0160	40,60
M 18	2.5	125	30	-	14	11	15.50	135155 0180	55,–
M 20	2.5	140	32	-	16	12	17.50	135155 0200	66,50
M 24	3.0	160	36	-	18	14.5	21.00	135155 0240	88,50

1127





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ATORN® Machine tap

M | 60° | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6HX | D 3,5-5 | 1,5xD | TiCN | Vc/fz | 392

Hard machining < 55 HRC

- **ISO 6HX metric thread**
- Type D, 3.5 to 5-thread chamfer, for blind bore and through-hole threads
- Similar to DIN 371 = up to M10, similar to DIN 376 = from M12
- **Cutting material: HSS-E-PM, TiCN-coated**
- Possible thread depth 1.5xD

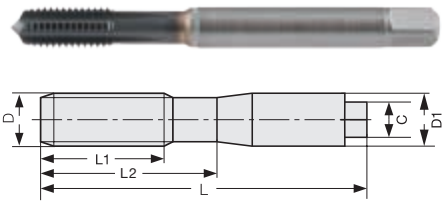
material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
																● 2-12		

Cutting speed Vc m/min. — Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	10	18	3.5	2.7	2.50	**135165** 0030	56,50
M 4	0.7	63	12	21	4.5	3.4	3.30	135165 0040	60,–
M 5	0.8	70	14	25	6	4.9	4.20	135165 0050	64,50
M 6	1.0	80	16	30	6	4.9	5.00	135165 0060	60,–
M 8	1.25	90	18	35	8	6.2	6.80	135165 0080	66,–
M 10	1.5	100	20	39	10	8	8.50	135165 0100	86,–
M 12	1.75	110	22	-	9	7	10.25	135165 0120	105,–
M 16	2.0	110	28	-	12	9	14.00	135165 0160	137,–

1127



ATORN® Machine tap

M | 60° | VHM | DIN 371 | ISO 2 6H | D 3,5-5 | 1,5xD | TiCN | Vc/fz | 392

Hard machining ≥ 60 HRC

- **ISO 6H metric thread**
- Type D, 3.5 to 5-thread chamfer, for blind bore and through-hole threads
- Similar to DIN 371
- **Cutting material: superfine grain solid carbide, TiCN-coated**
- Possible thread depth 1.5xD

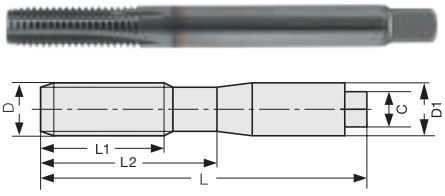
material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
																● 2-12	● 2-6	● 1-3

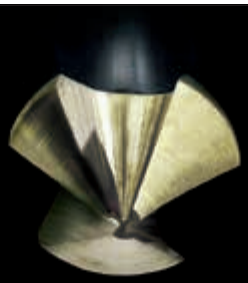
Cutting speed Vc m/min. — Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	12	18	3.5	2.7	2.50	**135170** 0030	134,–
M 4	0.7	63	14	21	4.5	3.4	3.30	135170 0040	116,–
M 5	0.8	70	17	25	6	4.9	4.20	135170 0050	149,–
M 6	1.0	80	20	30	6	4.9	5.00	135170 0060	146,–
M 8	1.25	90	20	35	8	6.2	6.80	135170 0080	175,–
M 10	1.5	100	24	39	10	8	8.50	135170 0100	205,–
M 12	1.75	110	28	-	12	9	10.25	135170 0120	285,–
M 16	2.0	110	40	-	16	12	14.00	135170 0160	475,–

1127



An end to the rattle …



… caused by uneven divisions

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A-SFT machine tap

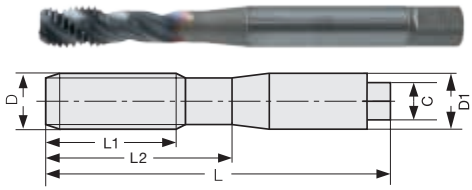
M | 60° | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6HX | C 2,5 | 45° | 2xD | TiCN | Vc/fz | 392

- **ISO 6HX metric thread**
- 45°, spiral-fluted
- Type C, 2.5-thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E-PM, TiCN-coated**
- For blind-hole threads
- **additional versions available**

Accelerated chip removal due to irregular twisted flute

material

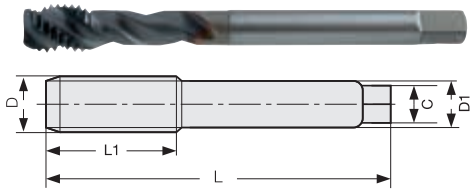
● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	●	●	○	●	●				○			○	○	○				
	15-60	10-60	8-30	8-20	8-20				5-10			15-35	15-35	15-35				
Cutting speed Vc m/min.										Please adjust these guidelines according to clamping operation and machine set-up.								



DIN 371

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 2	0.4	45	3.2	-	2.8	2.1	1.60	**133400** 0020	28,60
M 2.5	0.45	50	3.6	-	2.8	2.1	2.10	133400 0025	28,40
M 3	0.5	56	4	18	3.5	2.7	2.50	133400 0030	24,90
M 4	0.7	63	5.6	21	4.5	3.4	3.30	133400 0040	25,70
M 5	0.8	70	6.4	25	6	4.9	4.20	133400 0050	26,30
M 6	1.0	80	8	30	6	4.9	5.00	133400 0060	26,50
M 8	1.25	90	10	35	8	6.2	6.80	133400 0080	31,70
M 10	1.5	100	12	39	10	8	8.50	133400 0100	38,60

1128



DIN 376

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 12	1.75	110	14	9	7	10.30	**133405** 0120	48,60
M 14	2.0	110	16	11	9	12.00	133405 0140	57,60
M 16	2.0	110	16	12	9	14.00	133405 0160	67,50
M 18	2.5	125	25	14	11	15.50	133405 0180	91,60
M 20	2.5	140	25	16	12	17.50	133405 0200	108,20
M 22	2.5	140	25	18	14.5	19.50	133405 0220	118,40
M 24	3.0	160	30	18	14.5	21.00	133405 0240	145,40

1128

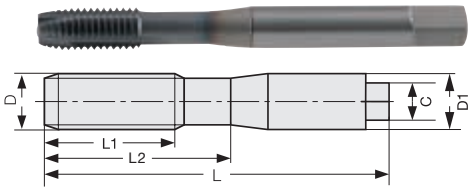
A-POT machine tap

M | 60° | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6HX | B 4 | 2,5xD | TiCN | Vc/fz | 392

- **ISO 6HX metric thread**
- Straight-fluted with spiral point
- Type B, 4-thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E-PM, TiCN-coated**
- For through-hole threads
- **additional versions available**

material

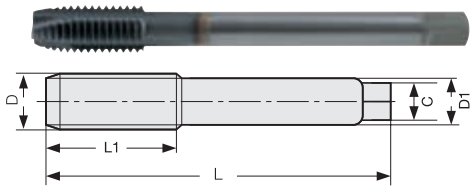
● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	●	●	○	●	●				○			○	○	○				
	15-60	10-60	8-30	8-20	8-20				5-10			15-35	15-35	15-35				
Cutting speed Vc m/min.										Please adjust these guidelines according to clamping operation and machine set-up.								



DIN 371

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 2	0.4	45	8	-	2.8	2.1	1.60	**133450** 0020	28,–
M 2.5	0.45	50	9	-	2.8	2.1	2.10	133450 0025	27,70
M 3	0.5	56	11	18	3.5	2.7	2.50	133450 0030	24,20
M4	0.7	63	13	21	4.5	3.4	3.30	133450 0040	24,80
M 5	0.8	70	16	25	6	4.9	4.20	133450 0050	25,50
M 6	1.0	80	19	30	6	4.9	5.00	133450 0060	25,80
M 8	1.25	90	22	35	8	6.2	6.80	133450 0080	30,90
M 10	1.5	100	24	39	10	8	8.50	133450 0100	37,70

1128



DIN 376

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 12	1.75	110	28	9	7	10.25	**133455** 0120	47,60
M 14	2.0	110	30	11	9	12.00	133455 0140	56,60
M 16	2.0	110	32	12	9	14.00	133455 0160	66,40
M 18	2.5	125	34	14	11	15.50	133455 0180	89,90
M 20	2.5	140	34	16	12	17.50	133455 0200	106,50
M 22	2.5	140	34	18	14.5	19.50	133455 0220	116,10
M 24	3.0	160	38	18	14.5	21.00	133455 0240	142,70

1128

A-SFT machine tap, with Weldon clamping surface

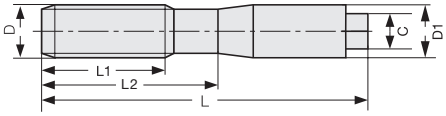
M | 60° | HSS-E PM | DIN 371 | ISO 2 6HX | C 2,5 | 45° | DIN 1835 B | TiCN | Vc/fz | 392

- **Metric ISO 6HX thread**
- 45°, spiral-fluted
- Form C, 2.5-thread chamfer
- Constructional dimensions DIN 371
- **Cutting material: HSS-E-PM, TiCN-coated**
- For blind-hole threads
- **Additional versions available**

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	●	●	○	●	●				○			○	○	○				
	15-60	10-60	8-30	8-20	8-20				5-10			15-35	15-35	15-35				
	Cutting speed Vc m/min.						Please adjust these guidelines according to clamping operation and machine set-up.											





D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	4	18	6	4.9	2.5	**133490** 0030	26,90
M 4	0.7	63	5.6	21	6	4.9	3.3	133490 0040	27,70
M 5	0.8	70	6.4	25	6	4.9	4.2	133490 0050	28,50
M 6	1.0	80	8	30	6	4.9	5	133490 0060	28,80
M 8	1.25	90	10	35	8	6.2	6.8	133490 0080	34,50
M 10	1.5	100	12	39	10	8	8.5	133490 0100	42,10
M 12	1.75	110	14	46	12	9	10.3	133490 0120	53,–
M 14	2.0	110	16	49	14	11	12	133490 0140	63,20
M 16	2.0	110	16	56	16	12	14	133490 0160	74,20

1128

A-POT machine tap, with Weldon clamping surface

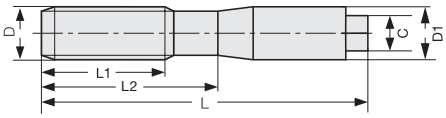
M | 60° | HSS-E PM | DIN 371 | ISO 2 6HX | B 4 | DIN 1835 B | TiCN | Vc/fz | 392

- **Metric ISO 6HX thread**
- Straight-fluted with spiral point
- Form B, 4-thread chamfer
- Constructional dimensions DIN 371
- **Cutting material: HSS-E-PM, TiCN-coated**
- For through-hole threads
- **Additional versions available**

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	●	●	○	●	●				○			○	○	○				
	15-60	10-60	8-30	8-20	8-20				5-10			15-35	15-35	15-35				
	Cutting speed Vc m/min.						Please adjust these guidelines according to clamping operation and machine set-up.											





D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	11	18	6	4.9	2.5	**133495** 0030	26,20
M 4	0.7	63	13	21	6	4.9	3.3	133495 0040	26,80
M 5	0.8	70	16	25	6	4.9	4.2	133495 0050	27,60
M 6	1	80	19	30	6	4.9	5	133495 0060	27,90
M 8	1.25	90	22	35	8	6.2	6.8	133495 0080	33,40
M 10	1.5	100	24	39	10	8	8.5	133495 0100	41,–
M 12	1.75	110	28	46	12	9	10.25	133495 0120	51,50
M 14	2	110	30	49	14	11	12	133495 0140	61,30
M 16	2	110	32	56	16	12	14	133495 0160	72,10

1128

A-OIL-SFT machine tap, with internal cooling

M | 60° | HSS-E PM | DIN 371/376 | ISO 2 6HX | C 2,5 | 45° | 2xD | TiCN | Vc/fz | 392

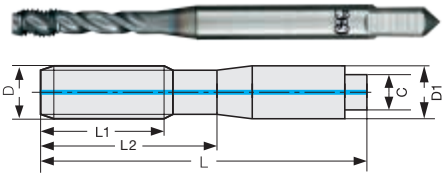
- **ISO2 6HX metric thread**
- 45°, spiral-fluted
- Type C, 2.5-thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E-PM, TiCN-coated**
- For blind-hole threads
- **With internal cooling**

With internal cooling

material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 15-60	● 10-60	○ 8-30	● 8-20	● 8-20				○ 5-10			○ 15-35	○ 15-35	○ 15-35				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 6	1.0	80	8	30	6	4.9	5	**133410** 0060	43,30
M 8	1.25	90	10	35	8	6.2	6.8	133410 0080	49,–
M 10	1.5	100	12	39	10	8	8.5	133410 0100	54,60
M 12	1.75	110	14	-	9	7	10.2	133415 0120	69,50
M 14	2.0	110	16	-	11	9	12	133415 0140	77,70
M 16	2.0	110	16	-	12	9	14	133415 0160	88,30
M 18	2.5	125	25	-	14	11	15.5	133415 0180	127,30
M 20	2.5	140	25	-	16	12	17.5	133415 0200	150,70
M 22	2.5	140	25	-	18	14.5	19.5	133415 0220	164,60
M 24	3.0	160	30	-	18	14.5	21	133415 0240	202,–

1128

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 27	3.0	160	36	-	20	16	24	133415 0270	260,80
M 30	3.5	180	42	-	22	18	26.5	133415 0300	323,20
M 33	3.5	180	42	-	25	20	29.5	133415 0330	363,40
M 36	4.0	200	48	-	28	22	32	133415 0360	400,50
M 39	4.0	200	48	-	32	24	35	133415 0390	479,90
M 42	4.5	200	54	-	32	24	37.5	133415 0420	591,10
M 45	4.5	220	54	-	36	29	40.5	133415 0450	699,90
M 48	5.0	250	60	-	36	29	43	133415 0480	813,60
M 52	5.0	250	60	-	40	32	47	133415 0520	1.074,–
M 56	5.5	250	66	-	40	32	50.5	133415 0560	1.186,90

1128

A-OIL-POT machine tap, with internal cooling

M | 60° | HSS-E PM | DIN 371/376 | ISO 2 6HX | B 4 | 2,5xD | TiCN | Vc/fz | 392

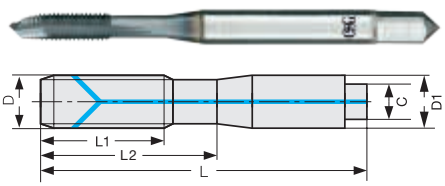
- **ISO2 6HX metric thread**
- Straight-fluted with spiral point
- Type B, 4-thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E-PM, TiCN-coated**
- For through-hole threads
- **With internal cooling**

With internal cooling

material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 15-60	● 10-60	○ 8-30	● 8-20	● 8-20				○ 5-10			○ 15-35	○ 15-35	○ 15-35				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



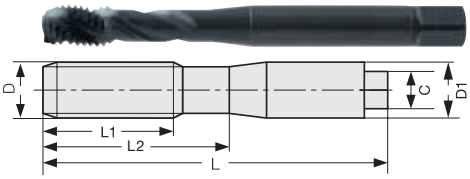
D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 6	1.0	80	19	30	6	4.9	5	**133456** 0060	44,60
M 8	1.25	90	22	35	8	6.2	6.8	133456 0080	50,20
M 10	1.5	100	24	39	10	8	8.5	133456 0100	55,80
M 12	1.75	110	29	-	9	7	10.2	133456 0120	70,20
M 14	2.0	110	30	-	11	9	12	133456 0140	82,30
M 16	2.0	110	32	-	12	9	14	133456 0160	94,10
M 18	2.5	125	34	-	14	11	15.5	133456 0180	127,–
M 20	2.5	140	34	-	16	12	17.5	133456 0200	150,50
M 22	2.5	140	34	-	18	14.5	19.5	133456 0220	164,30
M 24	3.0	160	38	-	18	14.5	21	133456 0240	201,70

1128

S-SFT machine tap

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | C 2,5 | 40° | 2,5xD | Vap. | Vc/fz | 392

- **ISO 6H metric thread**
- 40°, spiral-fluted
- Type C, 2.5-thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E, vapour-treated**
- For blind-hole threads



material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 15-24	● 10-15	○ 8-13	● 8-16	● 8-16	○ 5-8		○ 10-15						○ 12-17				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

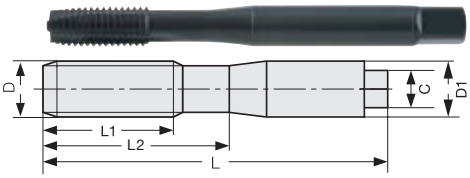
D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 1	0.25	40	5	-	2.5	2.1	0.75	**133865** 0010	24,90
M 1.1	0.25	40	5	-	2.5	2.1	0.85	133865 0011	24,90
M 1.2	0.25	40	5	-	2.5	2.1	0.95	133865 0012	24,90
M 1.4	0.3	40	6	-	2.5	2.1	1.1	133865 0014	21,70
M 1.6	0.35	40	7	-	2.5	2.1	1.25	133865 0016	21,70
M 1.7	0.35	40	8	-	2.5	2.1	1.35	133865 0017	20,30
M 1.8	0.35	40	8	-	2.5	2.1	1.45	133865 0018	20,30
M 2	0.4	45	4	10	2.8	2.1	1.6	133865 0020	16,60
M 2.2	0.45	45	5	11	2.8	2.1	1.75	133865 0022	18,10
M 2.3	0.4	45	4	12	2.8	2.1	1.9	133865 0023	17,70
M 2.5	0.45	50	4.5	13	2.8	2.1	2.05	133865 0025	17,90
M 2.6	0.45	50	4.5	13	2.8	2.1	2.15	133865 0026	16,60
M 3	0.5	56	5	18	3.5	2.7	2.5	133865 0030	15,60
M 3.5	0.6	56	6	20	4	3	2.9	133865 0035	16,40
M 4	0.7	63	7	21	4.5	3.4	3.3	133865 0040	15,90
M 4.5	0.75	70	7.5	25	6	4.9	3.7	133865 0045	21,20
M 5	0.8	70	8	25	6	4.9	4.2	133865 0050	16,50
M 5.5	0.9	80	9	30	6	4.9	4.6	133865 0055	24,70
M 6	1	80	10	30	6	4.9	5	133865 0060	16,60
M 7	1	80	10	30	7	5.5	6	133865 0070	22,20
M 8	1.25	90	13	35	8	6.2	6.8	133865 0080	19,–
M 10	1.5	100	15	39	10	8	8.5	133865 0100	24,10
M 12	1.75	110	18	-	9	7	10.2	133865 0120	29,50
M 14	2	110	20	-	11	9	12	133865 0140	36,50
M 16	2	110	20	-	12	9	14	133865 0160	42,80
M 18	2.5	125	25	-	14	11	15.5	133865 0180	57,90
M 20	2.5	140	25	-	16	12	17.5	133865 0200	68,30
M 22	2.5	140	25	-	18	14.5	19.5	133865 0220	74,30
M 24	3	160	30	-	18	14.5	21	133865 0240	91,50

1128

S-POT machine tap

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | B 4 | 2,5xD | Vap. | Vc/fz | 392

- **ISO 6H metric thread**
- Straight-fluted with spiral point
- Type B, 4-thread chamfer
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E, vapour-treated**
- For through-hole threads



material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 15-24	● 10-15	○ 8-13	● 8-16	● 8-16	○ 5-8		○ 10-15						○ 12-17				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 1	0.25	40	5	-	2.5	2.1	0.75	**133875** 0010	23,50
M 1.1	0.25	40	5	-	2.5	2.1	0.85	133875 0011	23,50
M 1.2	0.25	40	5	-	2.5	2.1	0.95	133875 0012	23,50
M 1.4	0.3	40	7	-	2.5	2.1	1.1	133875 0014	20,50
M 1.6	0.35	40	8	-	2.5	2.1	1.25	133875 0016	20,50
M 1.7	0.35	40	8	-	2.5	2.1	1.35	133875 0017	19,–
M 1.8	0.35	40	8	-	2.5	2.1	1.45	133875 0018	19,–
M 2	0.4	45	8	-	2.8	2.1	1.6	133875 0020	16,60
M 2.2	0.45	45	9	-	2.8	2.1	1.75	133875 0022	16,60
M 2.3	0.4	45	9	-	2.8	2.1	1.9	133875 0023	16,60
M 2.5	0.45	50	9	-	2.8	2.1	2.05	133875 0025	16,50
M 2.6	0.45	50	9	-	2.8	2.1	2.15	133875 0026	15,60
M 3	0.5	56	11	18	3.5	2.7	2.5	133875 0030	14,70
M 3.5	0.6	56	12	20	4	3	2.9	133875 0035	15,40
M 4	0.7	63	13	21	4.5	3.4	3.3	133875 0040	14,90
M 4.5	0.75	70	16	25	6	4.9	3.7	133875 0045	19,90
M 5	0.8	70	16	25	6	4.9	4.2	133875 0050	15,50
M 5.5	0.9	80	17	30	5	4.9	4.6	133875 0055	23,10
M 6	1	80	19	30	6	4.9	5	133875 0060	15,60
M 7	1	80	19	30	7	5.5	6	133875 0070	20,90
M 8	1.25	90	22	35	8	6.2	6.8	133875 0080	17,80
M 9	1.25	90	19	35	9	7	7.8	133875 0090	24,10
M 10	1.5	100	24	39	10	8	8.5	133875 0100	22,30
M 12	1.75	110	28	-	9	7	10.2	133875 0120	27,50
M 14	2	110	30	-	11	9	12	133875 0140	34,20
M 16	2	110	32	-	12	9	14	133875 0160	39,80
M 18	2.5	125	34	-	14	11	15.5	133875 0180	53,60
M 20	2.5	140	34	-	16	12	17.5	133875 0200	63,50
M 22	2.5	140	34	-	18	14.5	19.5	133875 0220	69,60
M 24	3	160	38	-	18	14.5	21	133875 0240	85,30

1128

Machine tap S-SFT, with Weldon clamping surface

M | 60° | HSS-E | DIN 371 | ISO 2 6H | C 2,5 | 40° | 2,5xD | DIN 1835 B | Vap. | Vc/fz | 392

- **Metric ISO 6H thread**
- 40° spiral-fluted
- Form C, 2.5-thread chamfer
- Constructional dimensions DIN 371
- **Cutting material: HSS-E, vapour-treated**
- For blind-hole threads

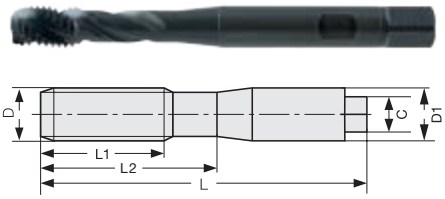
material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
●	●	○	●	●	○		○						○				
15-24	10-15	8-13	8-16	8-16	5-8		10-15						12-17				

Cutting speed Vc m/min. — Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	4	18	6	4.9	2.5	**133868** 0030	17,–
M 4	0.7	63	5.6	21	6	4.9	3.3	133868 0040	17,20
M 5	0.8	70	6.4	25	6	4.9	4.2	133868 0050	17,90
M 6	1	80	8	30	6	4.9	5	133868 0060	18,–
M 8	1.25	90	10	35	8	6.2	6.8	133868 0080	20,80
M 10	1.5	100	12	39	10	8	8.5	133868 0100	26,20
M 12	1.75	110	14	46	12	9	10.3	133868 0120	32,–
M 14	2	110	16	49	14	11	12	133868 0140	39,60
M 16	2	110	16	56	16	12	14	133868 0160	46,50

1128



Machine tap S-POT, with Weldon clamping surface

M | 60° | HSS-E | DIN 371 | ISO 2 6H | B 4 | 2,5xD | DIN 1835 B | Vap. | Vc/fz | 392

- **Metric ISO 6H thread**
- Straight-fluted with spiral point
- Form B, 4-thread chamfer
- Constructional dimensions DIN 371
- **Cutting material: HSS-E, vapour-treated**
- For through-hole threads

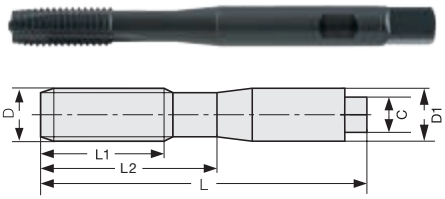
material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
●	●	○	●	●	○		○						○				
15-24	10-15	8-13	8-16	8-16	5-8		10-15						12-17				

Cutting speed Vc m/min. — Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	4	18	6	4.9	2.5	**133878** 0030	15,90
M 4	0.7	63	5.6	21	6	4.9	3.3	133878 0040	16,10
M 5	0.8	70	6.4	25	6	4.9	4.2	133878 0050	16,80
M 6	1	80	8	30	6	4.9	5	133878 0060	16,90
M 8	1.25	90	10	35	8	6.2	6.8	133878 0080	19,30
M 10	1.5	100	12	39	10	8	8.5	133878 0100	24,20
M 12	1.75	110	14	46	12	9	10.3	133878 0120	29,80
M 14	2	110	16	49	14	11	12	133878 0140	37,–
M 16	2	110	16	56	16	12	14	133878 0160	43,20

1128



Machine tap S-SFT, with short chamfer

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | E 1,5-2 | 40° | 2,5xD | Vap. | Vc/fz | 392

- **Metric ISO 6H thread**
- 40° spiral-fluted
- **With short chamfer Form E, 1.5-thread chamfer**
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E, vapour-treated**
- For blind-hole threads

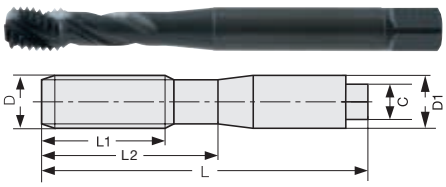
material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 15-24	● 10-15	○ 8-13	● 8-16	● 8-16	○ 5-8		○ 10-15						○ 12-17				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	4	18	3.5	2.7	2.5	**133867** 0030	15,90
M 4	0.7	63	5.6	21	4.5	3.4	3.3	133867 0040	16,10
M 5	0.8	70	6.4	25	6	4.9	4.2	133867 0050	16,70
M 6	1	80	8	30	6	4.9	5	133867 0060	16,80
M 8	1.25	90	10	35	8	6.2	6.8	133867 0080	19,40
M 10	1.5	100	12	39	10	8	8.5	133867 0100	24,40
M 12	1.75	110	14	-	9	7	10.2	133867 0120	30,–
M 14	2	110	16	-	11	9	12	133867 0140	37,10
M 16	2	110	16	-	12	9	14	133867 0160	43,40

1128



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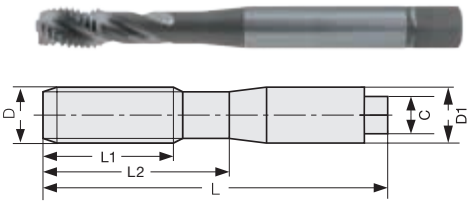
SFT machine tap

M | 60° | HSS-E V3 | DIN 371 | DIN 376 | ISO 2 6H | C 2,5 | 40° | 2,5xD | Vc/fz 392

- **ISO 6H metric thread**
- 40°, spiral-fluted
- Type C, 2.5-thread chamfer
- For blind-hole threads
- **Cutting material: HSS-E V3**
- Also available with TIN coating on request

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 5-20	○ 5-15	○ 5-10									○ 20-40	● 10-25	○ 10-12				
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		

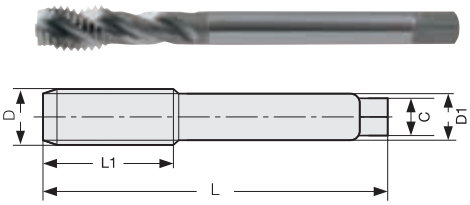
DIN 371



D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 2	0.4	45	8	-	2.8	2.1	1.60	**133101** 0020	16,70
M 2.5	0.45	50	9	-	2.8	2.1	2.10	133101 0025	15,80
M 3	0.5	56	5	18	3.5	2.7	2.50	133101 0030	13,20
M 3.5	0.6	56	6	20	4.0	3.0	2.90	133101 0035	14,40
M 4	0.7	63	7	21	4.5	3.4	3.30	133101 0040	13,70
M 5	0.8	70	8	25	6.0	4.9	4.20	133101 0050	13,70
M 6	1.0	80	10	30	6.0	4.9	5.00	133101 0060	13,70
M 8	1.25	90	13	35	8.0	6.2	6.80	133101 0080	14,40
M 10	1.5	100	15	39	10.0	8.0	8.50	133101 0100	16,90

1128

DIN 376



D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	5	2.2	-	2.50	**133105** 0030	13,20
M 4	0.7	63	7	2.8	2.1	3.30	133105 0040	13,70
M 5	0.8	70	8	3.5	2.7	4.20	133105 0050	13,70
M 6	1.0	80	10	4.5	3.4	5.00	133105 0060	13,70
M 8	1.25	90	13	6.0	4.9	6.80	133105 0080	14,40
M 10	1.5	100	15	7.0	5.5	8.50	133105 0100	16,90
M 12	1.75	110	18	9.0	7.0	10.25	133105 0120	20,–
M 14	2.0	110	20	11.0	9.0	12.00	133105 0140	26,50
M 16	2.0	110	20	12.0	9.0	14.00	133105 0160	31,90
M 18	2.5	125	25	14.0	11.0	15.50	133105 0180	38,40
M 20	2.5	140	25	16.0	12.0	17.50	133105 0200	44,90
M 22	2.5	140	25	18.0	14.5	21.00	133105 0220	71,80
M 24	3.0	160	30	18.0	14.5	21.00	133105 0240	80,20
M 27	3.0	160	30	20.0	16.0	24.00	133105 0270	96,90
M 30	3.5	180	35	22.0	18.0	26.50	133105 0300	122,50

1128

POT machine tap

M | 60° | HSS-E V3 | DIN 371 | DIN 376 | ISO 2 6H | B 3,5-5 | 2,5xD | Vc/fz | 392

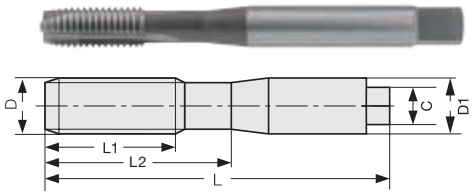
- **ISO 6H metric thread**
- Straight-fluted with spiral point
- Type B, 3.5 to 5-thread chamfer
- For through-hole threads
- **Cutting material: HSS-E V3**
- Also available with TiN coating on request

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 5-20	○ 5-15	○ 5-10									○ 20-40	● 10-25	○ 10-12				
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

DIN 371

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 2	0.4	45	8	-	2.8	2.1	1.60	**133001** 0020	14,60
M 2.5	0.45	50	9	-	2.8	2.1	2.10	133001 0025	13,20
M 3	0.5	56	11	18	3.5	2.7	2.50	133001 0030	12,40
M 3.5	0.6	56	13	20	4.0	3.0	2.90	133001 0035	13,20
M 4	0.7	63	13	21	4.5	3.4	3.30	133001 0040	12,40
M 5	0.8	70	16	25	6.0	4.9	4.20	133001 0050	12,60
M 6	1.0	80	19	30	6.0	4.9	5.00	133001 0060	12,60
M 8	1.25	90	22	35	8.0	6.2	6.80	133001 0080	14,10
M 10	1.5	100	24	39	10.0	8.0	8.50	133001 0100	16,40

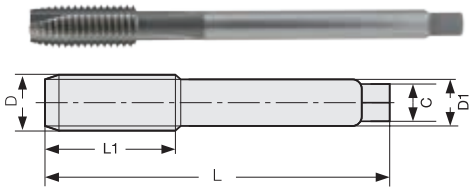
1128



DIN 376

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	11	2.2	-	2.50	**133005** 0030	12,40
M 4	0.7	63	13	2.8	2.1	3.30	133005 0040	12,40
M 5	0.8	70	16	3.5	2.7	4.20	133005 0050	12,60
M 6	1.0	80	19	4.5	3.4	5.00	133005 0060	12,60
M 8	1.25	90	22	6.0	4.9	6.80	133005 0080	14,10
M 10	1.5	100	24	7.0	5.5	8.50	133005 0100	16,40
M 12	1.75	110	29	9.0	7.0	10.25	133005 0120	19,10
M 14	2.0	110	30	11.0	9.0	12.00	133005 0140	24,60
M 16	2.0	110	32	12.0	9.0	14.00	133005 0160	30,50
M 18	2.5	125	34	14.0	11.0	15.50	133005 0180	36,–
M 20	2.5	140	34	16.0	12.0	17.50	133005 0200	43,10
M 22	2.5	140	34	18.0	14.5	19.50	133005 0220	68,90
M 24	3.0	160	38	18.0	14.5	21.00	133005 0240	76,50
M 27	3.0	160	38	20.0	16.0	24.00	133005 0270	92,20
M 30	3.5	180	45	22.0	18.0	26.50	133005 0300	117,30

1128



CC-SFT machine tap

M | 60° | HSS-E V3 | DIN 371 | DIN 376 | ISO 2 6HX | C 2,5 | 45° | 3xD | CrN | Vc/fz | 392

- **ISO 6HX metric thread**
- **For stainless steel, aluminium and steel**
- Controllable chips
- For better thread surfaces
- Low machining temperature
- Improved service life
- **For blind bore threads up to 3xD**
- 45°, spiral-fluted
- Type C, 2.5-thread chamfer
- **Material: HSS-E V3, CrN-coated**
- UNC, UNF and Whitworth thread taps available on request



Chips from a conventional tap



Chips from the CC-SFT



material

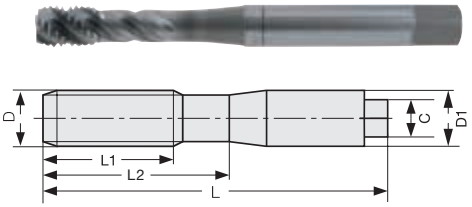
● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	●	○		●	●	●	○	○				●	○	○				
	5-40	5-30		5-20	5-24	5-15	8-30	8-30				30-60	10-30	10-20				
Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

DIN 371

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 2	0.4	45	8	-	2.8	2.1	1.6	**133106** 0020	26,–
M 2.5	0.45	50	10	-	2.8	2.1	2.1	133106 0025	25,80
M 3	0.5	56	12	-	3.5	2.7	2.5	133106 0030	22,50
M 4	0.7	63	16	-	4.5	3.4	3.3	133106 0040	23,40
M 5	0.8	70	20	-	6.0	4.9	4.2	133106 0050	23,80
M 6	1.0	80	24	-	6.0	4.9	5.0	133106 0060	24,10
M 8	1.25	90	11	35	8.0	6.2	6.8	133106 0080	28,90
M 10	1.5	100	14	39	10.0	8.0	8.5	133106 0100	35,40

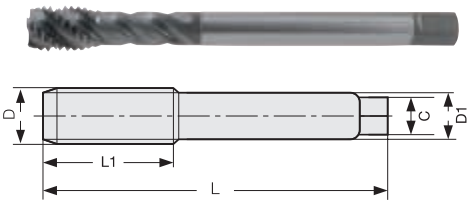
1128



DIN 376

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 12	1.75	110	16	9	7	10.3	**133107** 0120	44,10
M 14	2.0	110	18	11	9	12	133107 0140	52,30
M 16	2.0	110	18	12	9	14	133107 0160	61,60
M 18	2.5	125	23	14	11	15.5	133107 0180	83,–
M 20	2.5	140	23	16	12	17.5	133107 0200	98,10
M 24	3.0	160	27	18	14.5	21	133107 0240	131,80
M 30	3.5	180	32	22	18	26.5	133107 0300	253,40
M 36	4.0	200	36	28	22	32	133107 0360	364,10

1128



CC-POT machine tap

M | 60° | HSS-E V3 | HSS-E | DIN 371 | DIN 376 | ISO 2 6HX | B 4 | 2,5xD | CrN | Vc/fz | 392

- **Metric ISO 6HX thread**
- **For stainless steel, aluminium and steel**
- Controllable chips
- For better thread surfaces
- Low machining temperature
- Improved service life
- **For through-hole threads**
- Straight-fluted
- 4-thread chamfer
- **Material: HSS-E V3, CrN-coated**
- UNC, UNF and Whitworth thread taps available on request

material — ● very well suited ○ well suited

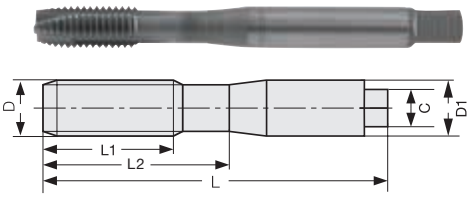
steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
●	○		●	●	●	○	○				●	○	○				
5-40	5-30		5-20	5-24	5-15	8-30	8-30				30-60	10-30	10-20				

Cutting speed Vc m/min. — Please adjust these guidelines according to clamping operation and machine set-up.

DIN 371

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 2	0.4	45	8	-	2.8	2.1	1.6	**133040** 0020	25,40
M 2.5	0.45	50	9	-	2.8	2.1	2.1	133040 0025	25,10
M 3	0.5	56	12	18	3.5	2.7	2.5	133040 0030	21,90
M 4	0.7	63	16	21	4.5	3.4	3.3	133040 0040	22,50
M 5	0.8	70	20	25	6.0	4.9	4.2	133040 0050	23,10
M 6	1.0	80	24	30	6.0	4.9	5.0	133040 0060	23,50
M 8	1.25	90	35	35	8.0	6.2	6.8	133040 0080	28,20
M 10	1.5	100	39	39	10.0	8.0	8.5	133040 0100	34,50

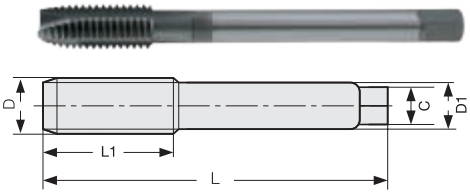
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DIN 376

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 12	1.75	110	28	9	7	10.3	**133041** 0120	43,–
M 14	2.0	110	30	11	9	12	133041 0140	50,90
M 16	2.0	110	32	12	9	14	133041 0160	59,60
M 18	2.5	125	34	14	11	15.5	133041 0180	80,70
M 20	2.5	140	34	16	12	17.5	133041 0200	95,50
M 24	3.0	160	38	18	14.5	21	133041 0240	127,70
M 30	3.5	180	45	22	18	26.5	133041 0300	246,–

1128



VA-SFT machine tap

M | 60° | HSS-E V3 | DIN 371 | DIN 376 | ISO 2 6H | C 2,5 | 40° | 2,5xD | Vap. | Vc/fz | 392

- **ISO 6H metric thread**
- 40°, spiral-fluted
- Type C, 2.5-thread chamfer
- For blind-hole threads
- **Cutting material: HSS-E V3, vapour-treated**

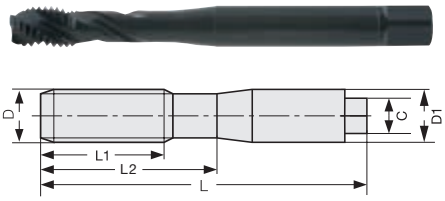
material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 5-20	● 5-15		● 5-10	● 5-12	○ 5-8				○ 2-6		○ 20-40		○ 10-12				
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

DIN 371

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 2	0.4	45	8	-	2.8	2.1	1.6	**133125** 0020	17,20
M 2.2	0.45	45	9	-	2.8	2.1	1.7	133125 0022	18,90
M 2.5	0.45	50	9	-	2.8	2.1	2.1	133125 0025	18,70
M 3	0.5	56	5	18	3.5	2.7	2.5	133125 0030	16,30
M 3.5	0.6	56	6	20	4.0	3.0	2.9	133125 0035	17,–
M 4	0.7	63	7	21	4.5	3.4	3.3	133125 0040	16,50
M 5	0.8	70	8	25	6.0	4.9	4.2	133125 0050	17,10
M 6	1.0	80	10	30	6.0	4.9	5.0	133125 0060	17,20
M 8	1.25	90	13	35	8.0	6.2	6.8	133125 0080	19,90
M 10	1.5	100	15	39	10.0	8.0	8.5	133125 0100	24,90

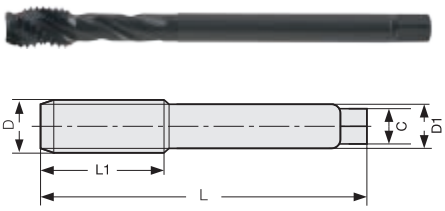
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DIN 376

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	5	2.2	-	2.5	**133135** 0030	17,60
M 4	0.7	63	7	2.8	2.1	3.3	133135 0040	17,90
M 5	0.8	70	8	3.5	2.7	4.2	133135 0050	18,70
M 6	1.0	80	10	4.5	3.4	5.0	133135 0060	18,90
M 8	1.25	90	13	6.0	4.9	6.8	133135 0080	20,60
M 10	1.5	100	15	7.0	5.5	8.5	133135 0100	24,50
M 12	1.75	110	18	9.0	7	10.25	133135 0120	30,70
M 14	2.0	110	20	11.0	9	12.0	133135 0140	38,–
M 16	2.0	110	20	12.0	9	14.0	133135 0160	44,50
M 18	2.5	125	25	14.0	11	15.5	133135 0180	60,10
M 20	2.5	140	25	16.0	12.0	17.5	133135 0200	71,–
M 22	2.5	140	25	18.0	14.5	19.5	133135 0220	77,40
M 24	3.0	160	30	18.0	14.5	21.0	133135 0240	95,30
M 27	3.0	160	30	20.0	16.0	24.0	133135 0270	123,50
M 30	3.5	180	35	22.0	18.0	26.5	133135 0300	148,40
M 33	3.5	180	35	25.0	20	29.5	133135 0330	169,80
M 36	4.0	200	40	28.0	22	32.0	133135 0360	198,20

1128



VA-POT machine tap

M | 60° | HSS-E V3 | DIN 371 | DIN 376 | ISO 2 6H | B 4 | 2,5xD | Vap. | Vc/fz | 392

- **ISO 6H metric thread**
- Straight-fluted with spiral point
- Type B, 4-thread chamfer
- For through-hole threads
- **Cutting material: HSS-E V3, vapour-treated**

material — ● very well suited ○ well suited

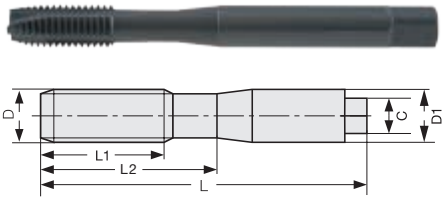
steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 5-20	● 5-15		● 5-10	● 5-12	○ 5-8				○ 2-6		○ 20-40		○ 10-12				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

DIN 371

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 2	0.4	45	8	-	2.8	2.1	1.6	**133015** 0020	17,20
M 2.2	0.45	45	9	-	2.8	2.1	1.7	133015 0022	17,10
M 2.5	0.45	50	9	-	2.8	2.1	2.1	133015 0025	17,–
M 3	0.5	56	11	18	3.5	2.7	2.5	133015 0030	15,20
M 3.5	0.6	56	11	20	4.0	3	2.9	133015 0035	16,–
M 4	0.7	63	13	21	4.5	3.4	3.3	133015 0040	15,40
M 5	0.8	70	16	25	6.0	4.9	4.2	133015 0050	16,10
M 6	1.0	80	19	30	6.0	4.9	5.0	133015 0060	16,30
M 8	1.25	90	22	35	8.0	6.2	6.8	133015 0080	18,60
M 10	1.5	100	24	39	10.0	8.0	8.5	133015 0100	23,20

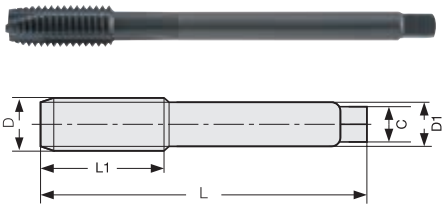
1128



DIN 376

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	11	2.2	-	2.5	**133025** 0030	16,40
M 4	0.7	63	13	2.8	2.1	3.3	133025 0040	16,70
M 5	0.8	70	16	3.5	2.7	4.2	133025 0050	17,20
M 6	1.0	80	19	4.5	3.4	5.0	133025 0060	17,60
M 8	1.25	90	22	6.0	4.9	6.8	133025 0080	19,–
M 10	1.5	100	24	7.0	5.5	8.5	133025 0100	22,80
M 12	1.75	110	29	9.0	7.0	10.25	133025 0120	28,60
M 14	2.0	110	30	11.0	9.0	12.0	133025 0140	35,60
M 16	2.0	110	32	12.0	9.0	14.0	133025 0160	41,70
M 18	2.5	125	34	14.0	11.0	15.5	133025 0180	56,–
M 20	2.5	140	34	16.0	12.0	17.5	133025 0200	66,–
M 22	2.5	140	34	18.0	14.5	19.5	133025 0220	72,40
M 24	3.0	160	38	18.0	14.5	21.0	133025 0240	88,80
M 27	3.0	160	38	20.0	16.0	24.0	133025 0270	114,80
M 30	3.5	180	45	22.0	18.0	26.5	133025 0300	137,20
M 36	4.0	200	56	28.0	22.0	32.0	133025 0360	184,20

1128



VA-SFT machine tap, tolerance 6G

M | 60° | HSS-E V3 | DIN 371 | DIN 376 | ISO 3 6G | C 2,5 | 40° | 2,5xD | Vap. | Vc/fz | 392

- **ISO 6G metric thread**
- 40°, spiral-fluted
- Type C, 2.5-thread chamfer
- For blind-hole threads
- **Cutting material: HSS-E V3, vapour-treated**

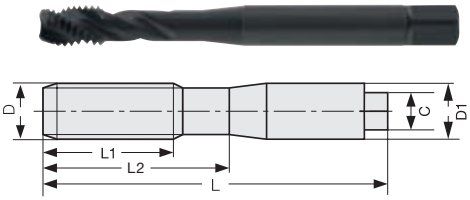
material	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
● very well suited ○ well suited	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 5-20	● 5-15		● 5-10	● 5-12	○ 5-8				○ 2-6		○ 20-40		○ 10-12				
Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

DIN 371

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 2	0.4	45	8	-	2.8	2.1	1.6	**133130** 0020	21,10
M 2.5	0.45	50	9	-	2.8	2.1	2.1	133130 0025	22,30
M 3	0.5	56	5	18	3.5	2.7	2.5	133130 0030	19,50
M 4	0.7	63	7	21	4.5	3.4	3.3	133130 0040	19,90
M 5	0.8	70	8	25	6.0	4.9	4.2	133130 0050	20,90
M 6	1.0	80	10	30	6.0	4.9	5.0	133130 0060	21,–
M 8	1.25	90	13	35	8.0	6.2	6.8	133130 0080	24,–
M 10	1.5	100	15	39	10.0	8	8.5	133130 0100	30,–

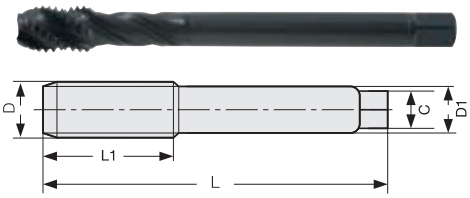
1128



DIN 376

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 12	1.75	110	18	9	7	10.25	**133140** 0120	36,90
M 14	2.0	110	20	11	9	12.0	133140 0140	45,50
M 16	2.0	110	20	12	9	14.0	133140 0160	53,40

1128



VA-POT machine tap, tolerance 6G

M | 60° | HSS-E V3 | DIN 371 | DIN 376 | ISO 3 6G | B 4 | | 2,5xD | Vap. | Vc/fz | 392

- **ISO 6G metric thread**
- Straight-fluted with spiral point
- Type B, 4-thread chamfer
- For through-hole threads
- **Cutting material: HSS-E V3, vapour-treated**

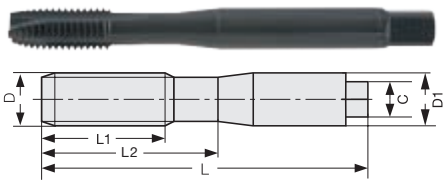
material	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
● very well suited ○ well suited	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 5-20	● 5-15		● 5-10	● 5-12	○ 5-8				○ 2-6		○ 20-40		○ 10-12				
Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

DIN 371

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 2	0.4	45	8	-	2.8	2.1	1.6	**133020** 0020	21,10
M 2.5	0.45	50	9	-	2.8	2.1	2.1	133020 0025	20,90
M 3	0.5	56	11	18	3.5	2.7	2.5	133020 0030	18,10
M 4	0.7	63	13	21	4.5	3.4	3.3	133020 0040	18,60
M 5	0.8	70	16	25	6.0	4.9	4.2	133020 0050	19,30
M 6	1.0	80	19	30	6.0	4.9	5.0	133020 0060	19,40
M 8	1.25	90	22	35	8.0	6.2	6.8	133020 0080	22,10
M 10	1.5	100	24	39	10.0	8.0	8.5	133020 0100	28,–

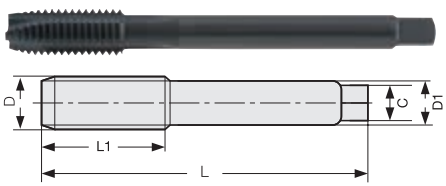
1128



DIN 376

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 12	1.75	110	29	9.0	7.0	10.25	**133030** 0120	34,50
M 14	2.0	110	30	11.0	9.0	12.0	133030 0140	42,70
M 16	2.0	110	32	12.0	9.0	14.0	133030 0160	49,90

1128



AL-SFT machine tap

M | 60° | HSS-E V3 | DIN 371 | ISO 2 6H | C 2,5 | 50° | 2,5xD | Vc/fz | 392

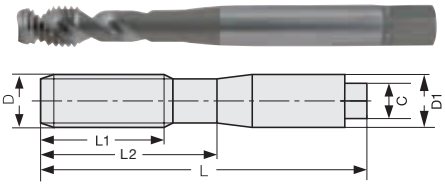
- **ISO 6H metric thread**
- 50°, spiral-fluted with spiral point
- Type C, 2.5-thread chamfer
- For blind-hole threads
- **Cutting material: HSS-E V3**

For aluminium

material	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
● very well suited ○ well suited	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
												● 20-40	● 10-25	● 10-12				
Cutting speed Vc m/min.										Please adjust these guidelines according to clamping operation and machine set-up.								

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 1.6	0.35	40	8	-	2.5	2.1	1.25	**133145** 0016	20,–
M 2	0.4	45	8	-	2.8	2.1	1.6	133145 0020	17,–
M 2.2	0.45	45	9	-	2.8	2.1	1.7	133145 0022	17,–
M 2.5	0.45	50	9	-	2.8	2.1	2.1	133145 0025	16,90
M 3	0.5	56	5	18	3.5	2.7	2.5	133145 0030	14,70
M 3.5	0.6	56	6	20	4.0	3.0	2.9	133145 0035	15,90
M 4	0.7	63	7	21	4.5	3.4	3.3	133145 0040	15,20
M 5	0.8	70	8	25	6.0	4.9	4.2	133145 0050	15,80
M 6	1.0	80	10	30	6.0	4.9	5.0	133145 0060	15,90
M 8	1.25	90	13	35	8.0	6.2	6.8	133145 0080	17,90
M 10	1.5	100	15	39	10.0	8.0	8.5	133145 0100	21,80

1128



AL-POT machine tap

M | 60° | HSS-E V3 | DIN 371 | ISO 2 6H | B 4 | 3xD | Vc/fz | 392

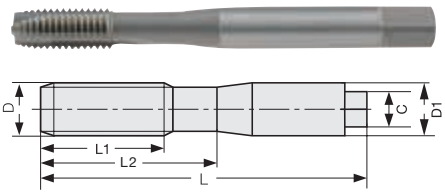
- **ISO 6H metric thread**
- Straight-fluted with spiral point
- Type B, 4-thread chamfer
- For through-hole threads
- **Cutting material: HSS-E V3**

For aluminium

material	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
● very well suited ○ well suited	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
												● 20-40	● 10-25	● 10-12				
Cutting speed Vc m/min.										Please adjust these guidelines according to clamping operation and machine set-up.								

D mm	Pitch mm	L mm	L1 mm	L2 mm	C mm	D1 mm	Tapping hole Ø mm	art.no.	€
M 2	0.4	45	8	-	2.1	2.8	1.6	**133035** 0020	16,30
M 2.5	0.45	50	9	-	2.1	2.8	2.1	133035 0025	16,20
M 3	0.5	56	11	18	2.7	3.5	2.5	133035 0030	14,20
M 4	0.7	63	13	21	3.4	4.5	3.3	133035 0040	14,60
M 5	0.8	70	16	25	4.9	6	4.2	133035 0050	15,10
M 6	1.0	80	19	30	4.9	6	5.0	133035 0060	15,20
M 8	1.25	90	22	35	6.2	8	6.8	133035 0080	17,40
M 10	1.5	100	24	39	8	10	8.5	133035 0100	21,–

1128



Synchronised machine tap Z-SFT

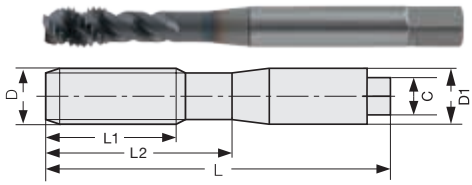
M | 60° | PM | DIN 371 | DIN 376 | ISO 2 6H | Synchro | C 2,5 | 50° | 2,5xD | TiCN | Vc/fz | 392

- **ISO 6H metric thread**
- 50°, spiral-fluted
- Type C, 2.5-thread chamfer
- For blind-hole threads
- Coolant bore version available on request
- **Cutting material: PM powder (Co5 + V5), TiCN-coated (V)**

material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
●	●	○	●	●	●			○			○	○	○				
5-40	5-30	5-20	5-20	5-24	5-15			5-10			30-60	10-30	10-20				

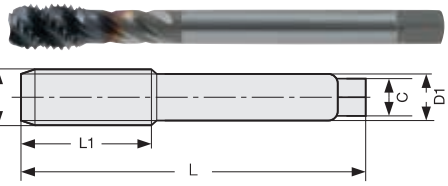
Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



DIN 371

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	5	18	3.5	2.7	2.5	**133155** 0030	29,–
M 4	0.7	63	7	21	4.5	3.4	3.3	133155 0040	30,60
M 5	0.8	70	8	25	6.0	4.9	4.2	133155 0050	31,30
M 6	1.0	80	10	30	6.0	4.9	5.0	133155 0060	31,50
M 8	1.25	90	13	35	8.0	6.2	6.75	133155 0080	37,40
M 10	1.5	100	15	39	10.0	8.0	8.5	133155 0100	43,90

1128



DIN 376

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 12	1.75	110	18	9	7	10.25	**133160** 0120	55,30
M 14	2.0	110	20	11	9	12.0	133160 0140	69,40
M 16	2.0	110	20	12	9	14.0	133160 0160	79,90
M 18	2.5	125	25	14	11	15.5	133160 0180	102,70
M 20	2.5	140	25	16	12	17.5	133160 0200	115,70
M 24	3.0	160	30	18	14.5	21	133160 0240	193,80
M 30	3.5	180	35	22	18	26.5	133160 0300	295,40

1128

Synchronised machine tap Z-POT

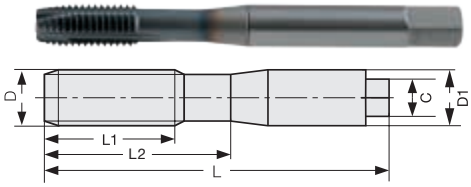
M | 60° | PM | DIN 371 | DIN 376 | ISO 2 6HX | Synchro | B 4 | 2,5xD | TiCN | Vc/fz | 392

- **ISO 6HX metric thread**
- Straight-fluted with spiral point
- Type B, 4-thread chamfer
- For through-hole threads
- Coolant bore version available on request
- **Cutting material: PM powder (Co5 + V5), TiCN-coated (V)**

material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
●	●	○	●	●	●			○			○	○	○				
5-40	5-30	5-20	5-20	5-24	5-15			5-15			30-60	10-30	10-20				

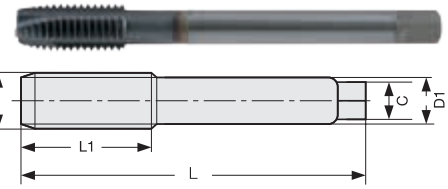
Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



DIN 371

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 2	0.4	45	8	-	2.8	2.1	1.6	**133045** 0020	35,80
M 2.5	0.45	50	9	-	2.8	2.1	2.1	133045 0025	35,70
M 3	0.5	56	11	18	3.5	2.7	2.5	133045 0030	28,40
M 4	0.7	63	13	21	4.5	3.4	3.3	133045 0040	30,20
M 5	0.8	70	16	25	6.0	4.9	4.2	133045 0050	30,60
M 6	1.0	80	19	30	6.0	4.9	5.0	133045 0060	31,10
M 8	1.25	90	22	35	8.0	6.2	6.75	133045 0080	36,50
M 10	1.5	100	24	39	10.0	8.0	8.5	133045 0100	42,90

1128



DIN 376

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 12	1.75	110	29	9	7	10.25	**133050** 0120	54,50
M 14	2.0	110	30	11	9	12.0	133050 0140	68,60
M 16	2.0	110	32	12	9	14.0	133050 0160	78,50
M 18	2.5	125	34	14	11	15.5	133050 0180	100,80
M 20	2.5	140	34	16	12	17.5	133050 0200	113,10

1128

V-XPM-HT machine tap

M | 60° | XPM | Werks-norm | ISO 2 6HX | C 2,5 | | 1,5xD | | TiCN | Vc/fz | 392

- **ISO 6HX metric thread**
- Straight-fluted
- Type C, 2.5-thread chamfer
- For blind-hole and through-hole threads
- **Cutting material: XPM powder (Co10 + V5), TiCN-coated (V)**

Hard machining < 55 HRc

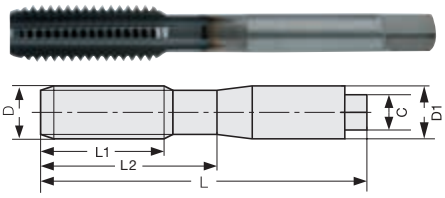
material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 5-40	● 5-30	● 5-20													● 2-12		

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	46	11	19	3.5	2.7	2.5	**133255** 0030	28,–
M 4	0.7	52	13	21	4.5	3.4	3.3	133255 0040	28,10
M 5	0.8	60	16	24	6.0	4.9	4.2	133255 0050	28,70
M 6	1.0	62	19	29	6.0	4.9	5.0	133255 0060	29,10
M 8	1.25	70	22	-	6.0	4.9	6.8	133255 0080	32,60
M 10	1.5	75	24	-	7.0	5.5	8.5	133255 0100	38,20
M 12	1.75	82	29	-	9.0	7.0	10.25	133255 0120	50,10

1128



VX-OT machine tap

M | 60° | VHM | Werks-norm | ISO 2 6HX | C 2,5 | | 1,5xD | | TiCN | Vc/fz | 392

- **ISO 6HX metric thread**
- Straight-fluted with spiral point
- Type C, 2.5-thread chamfer
- For blind-hole and through-hole threads
- **Cutting material: superfine grain solid carbide, TiCN-coated (V)**

Hard machining ≥ 60 HRC

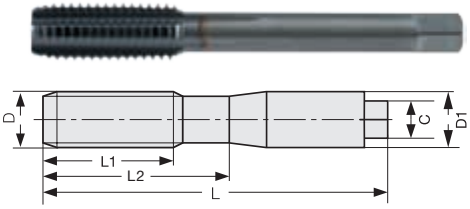
material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
																● 2-6	● 1-3

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	46	11	19	3.5	2.7	2.5	**133250** 0030	104,60
M 4	0.7	52	13	21	4.5	3.4	3.3	133250 0040	109,10
M 5	0.8	60	16	24	6.0	4.9	4.2	133250 0050	113,40
M 6	1.0	62	19	29	6.0	4.9	5.0	133250 0060	123,70
M 8	1.25	70	22	-	6.0	4.9	6.8	133250 0080	152,30
M 10	1.5	75	24	-	7.0	5.5	8.5	133250 0100	204,60
M 12	1.75	82	29	-	9.0	7.0	10.25	133250 0120	265,90

1128



ATORN® Universal machine taps

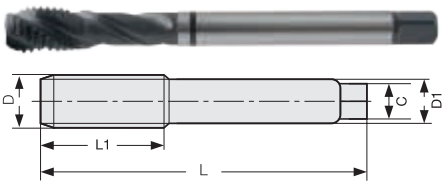
MF | 60° | HSS-E | DIN 374 | ISO 2 6H | C 2-3 | 40° | 2xD | Vap. | Vc/fz | 392

- **Metric ISO 6H fine thread**
- 40° spiral-fluted
- Form C, 2-3 thread chamfer
- **Cutting material: HSS-E, vapour-treated**
- For blind-hole threads

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 5-15	● 5-15		○ 4-6	○ 4-6			○ 5-8				○ 10-15		○ 10-15				
	Cutting speed Vc m/min.							Please adjust these guidelines according to clamping operation and machine set-up.											

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 8	1	90	22	6	4.9	7.00	**134760** 0810	17,20
M 10	1	90	20	7	5.5	9.00	134760 1010	21,70
M 10	1.25	100	24	7	5.5	8.80	134760 1012	22,10
M 12	1	100	22	9	7	11.00	134760 1210	26,50
M 12	1.25	100	22	9	7	10.80	134760 1212	26,50
M 12	1.5	100	22	9	7	10.50	134760 1215	27,30
M 14	1	100	22	11	9	13.00	134760 1410	39,70
M 14	1.5	100	22	11	9	12.50	134760 1415	41,–
M 16	1	100	22	12	9	15.00	134760 1610	48,40
M 16	1.5	100	22	12	9	14.50	134760 1615	47,60
M 18	1.5	110	25	14	11	16.50	134760 1815	62,–
M 18	2	125	34	14	11	16.00	134760 1820	66,–
M 20	1	125	25	16	12	19.00	134760 2010	75,50
M 20	1.5	125	25	16	12	18.50	134760 2015	78,50

1127



ATORN® Universal machine taps

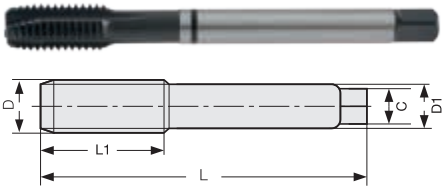
MF | 60° | HSS-E | DIN 374 | ISO 2 6H | B 3,5-5 | 3xD | Vap. | Vc/fz | 392

- **Metric ISO 6H fine thread**
- Straight-fluted with spiral point
- Type B, 3.5 to 5-thread chamfer
- **Cutting material: HSS-E, vapour-treated**
- For through-hole threads
- The spiral point ensures strong chip removal to the front
- Possible thread depth 3 x D

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 5-15	● 5-15		○ 4-6	○ 4-6			○ 5-8				○ 10-15		○ 10-15				
	Cutting speed Vc m/min.							Please adjust these guidelines according to clamping operation and machine set-up.											

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 8	1	90	22	6	4.9	7.00	**134765** 0810	16,80
M 10	1	90	20	7	5.5	9.00	134765 1010	21,30
M 10	1.25	100	24	7	5.5	8.80	134765 1012	21,70
M 12	1	100	22	9	7	11.00	134765 1210	25,90
M 12	1.25	100	22	9	7	10.80	134765 1212	25,90
M 12	1.5	100	22	9	7	10.50	134765 1215	26,70
M 14	1	100	22	11	9	13.00	134765 1410	38,70
M 14	1.5	100	22	11	9	12.50	134765 1415	40,20
M 16	1	100	22	12	9	15.00	134765 1610	47,20
M 16	1.5	100	22	12	9	14.50	134765 1615	46,60
M 18	1.5	110	25	14	11	16.50	134765 1815	60,–
M 18	2	125	34	14	11	16.00	134765 1820	64,–
M 20	1	125	25	16	12	19.00	134765 2010	73,50
M 20	1.5	125	25	16	12	18.50	134765 2015	77,50

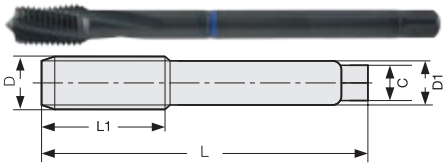
1127



ATORN® Machine tap, weak-spiralled

MF | 60° | HSS-E | DIN 374 | ISO 2 6H | C 2-3 | 15° | 1,5xD | Vap. | i Vc/fz | 392

- **ISO 6H fine-pitch metric thread**
- 15° RH, spiral-fluted
- Type C, 2-3 thread chamfer
- **Cutting material: HSS-E, vapour-treated**
- For blind-hole threads
- Easy chip removal to the rear
- Possible thread depth 1.5xD



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 5	0.5	70	5	3.5	2.7	4.50	**135280** 0505	30,30
M 6	0.75	80	8	4.5	3.4	5.20	135280 0607	23,20
M 8	0.75	80	8	6.0	4.9	7.20	135280 0807	27,–
M 8	1	90	11	6.0	4.9	7.00	135280 0810	21,50
M 10	1	90	11	7.0	5.5	9.00	135280 1010	24,70
M 10	1.25	100	14	7.0	5.5	8.80	135280 1012	26,20
M 12	1	100	11	9.0	7.0	11.00	135280 1210	43,40
M 12	1.25	100	16	9.0	7.0	10.80	135280 1212	38,30
M 12	1.5	100	16	9.0	7.0	10.50	135280 1215	42,60
M 14	1	100	11	11.0	9.0	13.00	135280 1410	56,50
M 14	1.5	100	15	11.0	9.0	12.50	135280 1415	55,50
M 16	1	100	11	12.0	9.0	15.00	135280 1610	54,50
								1127

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 16	1.5	100	15	12.0	9.0	14.50	135280 1615	54,50
M 18	1.5	110	16	14.0	11.0	16.50	135280 1815	67,50
M 20	1.5	125	16	16.0	12.0	18.50	135280 2015	77,–
M 22	1.5	125	16	18.0	14.5	20.50	135280 2215	80,50
M 24	1.5	140	16	18.0	14.5	22.50	135280 2415	88,–
M 24	2	140	22	18.0	14.5	22.00	135280 2420	100,–
M 26	1.5	140	20	18.0	14.5	24.50	135280 2615	112,–
M 27	1.5	140	20	20.0	16.0	25.50	135280 2715	123,–
M 27	2	140	28	20.0	16.0	25.00	135280 2720	135,–
M 28	1.5	140	20	20.0	16.0	26.50	135280 2815	159,–
M 30	1.5	150	20	22.0	18.0	28.50	135280 3015	161,–
M 30	2	150	20	22.0	18.0	28.00	135280 3020	178,–
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ATORN® Machine tap

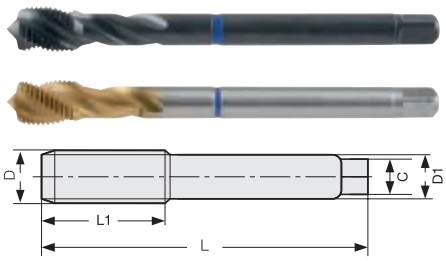
MF | 60° | HSS-E | DIN 374 | ISO 2 6H | C 2-3 | 40° | 3xD | TiN | Vap. | i Vc/fz | 392

- **ISO 6H fine-pitch metric thread**
- 40°, spiral-fluted
- Type C, 2-3 thread chamfer
- **Cutting material: HSS-E, vapour-treated**; **HSS-E, TiN-coated**
- For blind-hole threads
- Strong chip removal to the rear
- Minimal thread relief grinding
- Possible thread depth 3 x D

Up to 1000 N/mm²

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	135285....	● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										
	135290....	● 5-40	● 5-30		○ 5-20	○ 5-24			○ 8-30										
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	Vapour-treated art.no.	€	TiN art.no.	€
M 6	0.75	80	8	4.5	3.4	5.20	**135285** 0607	35,–	**135290** 0607	24,30
M 8	1	90	11	6	4.9	7.00	135285 0810	26,–	135290 0810	32,50
M 10	1	90	11	7	5.5	9.00	135285 1010	29,20	135290 1010	35,80
M 10	1.25	100	14	7	5.5	8.80	135285 1012	32,20	135290 1012	38,90
M 12	1.25	100	16	9	7	10.80	135285 1212	51,50	135290 1212	62,50
M 12	1.5	100	16	9	7	10.50	135285 1215	44,60	135290 1215	55,50
M 14	1.5	100	15	11	9	12.50	135285 1415	57,–	135290 1415	67,50
M 16	1.5	100	15	12	9	14.50	135285 1615	58,50	135290 1615	69,50
M 18	1.5	110	16	14	11	16.50	135285 1815	74,50	135290 1815	88,–
M 20	1.5	125	16	16	12	18.50	135285 2015	91,–	135290 2015	105,–
								1127		1127



ATORN® Machine tap

MF | 60° | HSS-E | DIN 374 | ISO 2 6H | B 3,5-5 | 3xD | TiN | Vc/fz | 392

- **Metric ISO 6H fine thread**
- Straight-fluted with spiral point, Form B, 3.5 to 5-thread chamfer
- **Cutting material: HSS-E; HSS-E, TiN-coated**
- For through-hole threads
- The spiral point ensures strong chip removal to the front

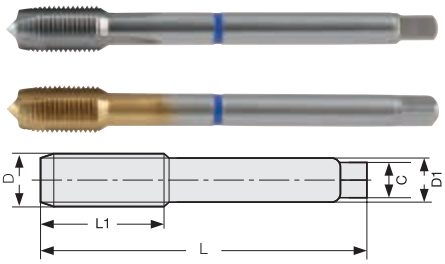
Up to 1000 N/mm²

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
135255....	● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										
135260....	● 5-40	● 5-30		○ 5-20	○ 5-24			○ 8-30										

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

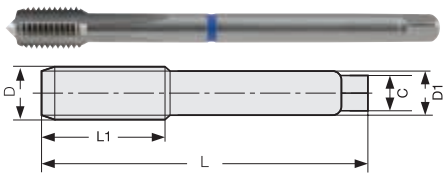
D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€	TiN art.no.	TiN €
M 3	0.35	56	7	2.2	-	2.65	**135255** 0335	29,70	**135260** 0305	36,30
M 4	0.5	63	8	2.8	2.1	3.50	135255 0405	20,10	135260 0405	27,–
M 5	0.5	70	10	3.5	2.7	4.50	135255 0505	20,30	135260 0505	27,20
M 6	0.5	80	13	4.5	3.4	5.50	135255 0605	20,30	135260 0605	27,20
M 6	0.75	80	13	4.5	3.4	5.20	135255 0607	20,30	135260 0607	27,20
M 7	0.75	80	13	5.5	4.3	6.20	135255 0675	29,90	135260 0675	36,70
M 8	0.5	80	14	6	4.9	7.50	135255 0805	27,40	135260 0805	34,30
M 8	0.75	80	14	6	4.9	7.20	135255 0807	23,80	135260 0807	30,60
M 8	1	90	17	6	4.9	7.00	135255 0810	21,90	135260 0810	29,–
M 9	1	90	17	7	5.5	8.00	135255 0910	37,40	135260 0910	44,20
M 10	0.75	90	17	7	5.5	9.20	135255 1007	33,10	135260 1007	39,80
M 10	1	90	17	7	5.5	9.00	135255 1010	25,20	135260 1010	32,50
M 10	1.25	100	20	7	5.5	8.80	135255 1012	26,80	135260 1012	37,60
M 11	1	90	20	8	6.2	10.00	135255 1110	44,70	135260 1110	55,50
M 12	1	100	20	9	7	11.00	135255 1210	29,70	135260 1210	40,60
M 12	1.25	100	20	9	7	10.80	135255 1212	31,30	135260 1212	42,30
M 12	1.5	100	20	9	7	10.50	135255 1215	28,50	135260 1215	39,40
M 14	1	100	20	11	9	13.00	135255 1410	36,70	135260 1410	48,10
M 14	1.25	100	20	11	9	12.80	135255 1412	38,20	135260 1412	49,10
M 14	1.5	100	20	11	9	12.50	135255 1415	34,40	135260 1415	45,80
M 15	1	100	20	12	9	14.00	135255 1510	55,–	135260 1510	65,–
M 15	1.5	100	20	12	9	13.50	135255 1515	56,–	135260 1515	66,50
M 16	1	100	22	12	9	15.00	135255 1610	47,70	135260 1610	59,50
M 16	1.5	100	22	12	9	14.50	135255 1615	44,30	135260 1615	56,–
M 18	1	110	25	14	11	17.00	135255 1810	64,–	135260 1810	79,–
M 18	1.5	110	25	14	11	16.50	135255 1815	59,–	135260 1815	73,–
M 18	2	125	30	14	11	16.00	135255 1820	74,–	135260 1820	87,50
M 20	1	125	25	16	12	19.00	135255 2010	79,–	135260 2010	93,–
M 20	1.5	125	25	16	12	18.50	135255 2015	65,–	135260 2015	80,50
M 20	2	140	32	16	12	18.00	135255 2020	85,50	135260 2020	98,50
M 22	1	125	25	18	14.5	21.00	135255 2210	92,50	135260 2210	107,–
M 22	1.5	125	25	18	14.5	20.50	135255 2215	77,–	135260 2215	90,50
M 22	2	140	32	18	14.5	20.00	135255 2220	92,50	135260 2220	107,–
M 24	1	140	28	18	14.5	23.00	135255 2410	108,–	135260 2410	120,–
M 24	1.5	140	28	18	14.5	22.50	135255 2415	86,50	135260 2415	100,–
M 24	2	140	28	18	14.5	22.00	135255 2420	89,50	135260 2420	105,–
M 26	1.5	140	28	18	14.5	24.50	135255 2615	108,–	135260 2615	120,–
M 27	1.5	140	28	20	16	25.50	135255 2715	122,–	135260 2715	148,–
M 27	2	140	28	20	16	25.00	135255 2720	126,–	135260 2720	152,–
M 30	1.5	150	28	22	18	28.50	135255 3015	132,–	135260 3015	161,–
M 30	2	150	28	22	18	28.00	135255 3020	140,–	135260 3020	169,–
M 32	1.5	150	28	22	18	30.50	135255 3215	160,–	135260 3215	188,–
M 33	1.5	160	28	25	20	31.50	135255 3315	190,–	135260 3315	205,–
M 35	1.5	170	30	28	22	33.50	135255 3515	210,–	135260 3515	240,–
M 36	1.5	170	30	28	22	34.50	135255 3615	191,–	135260 3615	235,–
M 38	1.5	170	30	28	22	36.50	135255 3815	240,–	135260 3815	270,–
M 40	1.5	170	30	32	24	38.50	135255 4015	265,–	135260 4015	295,–
							1127		1127	



ATORN® Machine tap, without spiral point

MF | 60° | HSS-E | DIN 374 | ISO 2 6H | C 2-3 | 1,5xD | Vc/fz | 392

- **ISO 6H fine-pitch metric thread**
- Straight-fluted
- Type C, 2-3 thread chamfer
- **Cutting material: HSS-E**
- For blind-hole and through-hole threads
- Possible thread depth 1.5xD



material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.35	56	4	2.2	2.1	2.65	**135265** 0303	36,50
M 4	0.5	63	5	2.8	2.1	3.50	135265 0405	28,20
M 5	0.5	70	5	3.5	2.7	4.50	135265 0505	23,10
M 6	0.5	80	5	4.5	3.4	5.50	135265 0605	23,50
M 6	0.75	80	8	4.5	3.4	5.20	135265 0607	21,–
M 8	0.5	80	8	6	4.9	7.50	135265 0805	29,80
M 8	0.75	80	8	6	4.9	7.20	135265 0807	23,20
M 8	1	90	11	6	4.9	7.00	135265 0810	23,20
M 9	1	90	11	7	5.5	8.00	135265 0910	26,50
M 10	0.75	90	11	7	5.5	9.20	135265 1075	24,20
M 10	1	90	11	7	5.5	9.00	135265 1010	24,40
M 10	1.25	100	14	7	5.5	8.80	135265 1012	23,40
M 12	1	100	11	9	7	11.00	135265 1210	32,50
M 12	1.25	100	16	9	7	10.80	135265 1212	31,10
M 12	1.5	100	16	9	7	10.50	135265 1215	30,30
M 14	1	100	11	11	9	13.00	135265 1410	39,70
M 14	1.25	100	15	11	9	12.80	135265 1412	46,–
M 14	1.5	100	15	11	9	12.50	135265 1415	36,50

1127

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 15	1	100	11	12	9	14.00	135265 1510	54,50
M 16	1	100	11	12	9	15.00	135265 1610	47,90
M 16	1.5	100	15	12	9	14.50	135265 1615	43,90
M 18	1	110	12	14	11	17.00	135265 1810	56,–
M 18	1.5	110	16	14	11	16.50	135265 1815	53,50
M 20	1	125	12	16	12	19.00	135265 2010	79,50
M 20	2	140	20	16	12	18.00	135265 2020	96,50
M 22	1.5	125	16	18	14.5	20.50	135265 2215	76,–
M 24	1	140	15	18	14.5	23.00	135265 2410	125,–
M 24	1.5	140	16	18	14.5	22.50	135265 2415	92,–
M 24	2	140	22	18	14.5	22.00	135265 2420	102,–
M 26	1.5	140	20	18	14.5	24.50	135265 2615	116,–
M 27	1.5	140	20	20	16	25.50	135265 2715	128,–
M 27	2	140	28	20	16	25.00	135265 2720	128,–
M 30	1.5	150	20	22	18	28.50	135265 3015	131,–
M 30	2	150	20	22	18	28.00	135265 3020	131,–
M 36	1.5	170	25	28	22	34.50	135265 3615	200,–

1127

ATORN® Machine tap

MF | 60° | HSS-E | DIN 374 | ISO 2 6HX | C 2-3 | 45° | 2,5xD | TiAlN | Vc/fz | 392

- **ISO 6H fine-pitch metric thread**
- Spiral-fluted, type C
- For blind-hole threads
- **Cutting material: HSS-E, TiAlN-coated**

For stainless steel

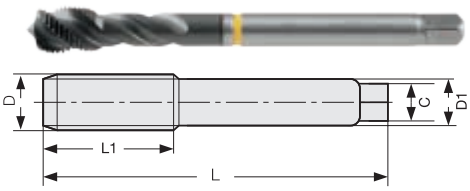
material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
○ 5-40	○ 5-30		● 5-20	● 5-24	○ 5-15												

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 6	0.75	80	8	4.5	3.4	5.2	**135375** 0675	48,80
M 8	0.75	80	8	6	4.9	7.2	135375 0875	54,–
M 8	1.0	90	11	6	4.9	7	135375 0810	53,50
M 10	1.0	90	11	7	5.5	9	135375 1010	67,50
M 10	1.25	100	14	7	5.5	8.8	135375 1012	67,50
M 12	1.0	100	11	9	7	11	135375 1210	72,–
M 12	1.25	100	16	9	7	10.8	135375 1212	72,–
M 12	1.5	100	16	9	7	10.5	135375 1215	76,50
M 14	1.5	100	15	11	9	12.5	135375 1415	88,50
M 16	1.5	100	15	12	9	14.5	135375 1615	102,–
M 18	1.5	110	16	14	11	16.5	135375 1815	119,–
M 20	1.5	125	16	16	12	18.5	135375 2015	138,–
M 24	1.5	140	16	18	14.5	22.5	135375 2415	169,–

1127



ATORN® Machine tap

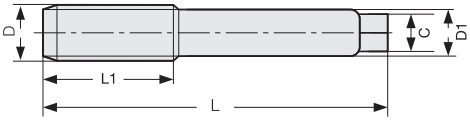
MF | 60° | HSS-E | DIN 374 | ISO 2 6H | B 3,5-5 | 3xD | Vap. | Vc/fz | 392

- **ISO 6H fine-pitch metric thread**
- Straight-fluted with spiral point, type B, 3.5 to 5-thread chamfer
- For through-hole threads
- **Cutting material: HSS-E, vapour-treated**

For stainless steel

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		○ 5-20	○ 5-15		● 5-10	● 5-12	○ 5-8												
	Cutting speed Vc m/min.							Please adjust these guidelines according to clamping operation and machine set-up.											





D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 4	0.5	63	8	2.8	2.1	3.50	**135370** 0450	28,10
M 5	0.5	70	10	3.5	2.7	4.50	135370 0550	28,10
M 6	0.5	80	13	4.5	3.4	5.50	135370 0650	29,60
M 6	0.75	80	13	4.5	3.4	5.20	135370 0675	27,90
M 7	0.75	80	13	5.5	4.3	6.20	135370 0775	37,70
M 8	0.5	80	14	6	4.9	7.50	135370 0850	33,80
M 8	0.75	80	18	6	4.9	7.20	135370 0875	32,80
M 8	1.0	90	18	6	4.9	7.00	135370 0810	29,80
M 9	1.0	90	18	7	5.5	8.00	135370 0910	47,90
M 10	0.75	90	20	7	5.5	9.20	135370 1075	41,20
M 10	1.0	90	20	7	5.5	9.00	135370 1010	35,50
M 10	1.25	100	20	7	5.5	8.80	135370 1012	31,40
M 11	1.0	90	20	8	6.2	10.00	135370 1110	46,70
M 12	1.0	100	20	9	7	11.00	135370 1210	40,40
M 12	1.25	100	20	9	7	10.80	135370 1212	43,–
M 12	1.5	100	20	9	7	10.50	135370 1215	36,70
M 14	1.0	100	20	11	9	13.00	135370 1410	53,–
M 14	1.25	100	20	11	9	12.80	135370 1412	55,–
M 14	1.5	100	20	11	9	12.50	135370 1415	46,90
M 15	1.0	100	20	12	9	14.00	135370 1510	74,50
M 16	1.0	100	22	12	9	15.00	135370 1610	59,–
M 16	1.5	100	22	12	9	14.50	135370 1615	55,–
M 18	1.0	110	25	14	11	17.00	135370 1810	86,50
M 18	1.5	110	25	14	11	16.50	135370 1815	80,50
M 20	1.0	125	25	16	11	19.00	135370 2010	95,–
M 20	1.5	125	25	16	12	18.50	135370 2015	89,50
M 20	2.0	125	25	16	12	18.00	135370 2020	122,–
M 22	1.0	140	25	18	14.5	21.00	135370 2210	128,–
M 22	1.5	125	25	18	14.5	20.50	135370 2215	100,–
M 24	1.0	125	25	18	14.5	23.00	135370 2410	128,–
M 24	1.5	140	25	18	14.5	22.50	135370 2415	112,–
M 24	2.0	140	25	18	14.5	22.00	135370 2420	120,–
M 26	1.5	140	28	18	14.5	24.50	135370 2615	118,–
M 30	1.5	150	28	22	18	28.50	135370 3015	173,–
M 30	2.0	150	28	22	18	28.00	135370 3020	179,–
M 33	1.5	160	28	25	20	31.50	135370 3315	225,–
M 33	2.0	160	28	25	20	31.00	135370 3320	225,–
M 35	1.5	170	28	28	22	33.50	135370 3515	270,–
M 36	1.5	170	30	28	22	34.50	135370 3615	245,–
M 36	2.0	170	30	28	22	34.00	135370 3620	265,–
M 38	1.5	170	30	28	22	36.50	135370 3815	260,–
M42	1.5	170	30	32	24	40.50	135370 4215	315,–

1127

A-SFT machine tap

MF | 60° | HSS-E PM | DIN 374 | ISO 2 6HX | C 2,5 | 45° | 2xD | TiCN | Vc/fz | 392

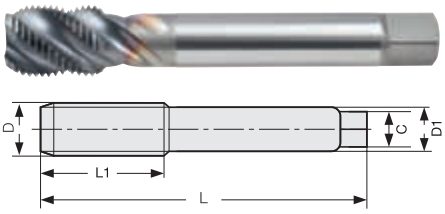
- **ISO2 6HX fine-pitch metric thread**
- 45°, spiral-fluted
- Type C, 2.5-thread chamfer
- Constructional dimensions DIN 374
- **Cutting material: HSS-E-PM, TiCN-coated**
- For blind-hole threads

Accelerated chip removal due to irregular twisted flute

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 15-60	● 10-60	○ 8-30	● 8-20	● 8-20				○ 5-10			○ 15-35	○ 15-35	○ 15-35				
	Cutting speed Vc m/min.										Please adjust these guidelines according to clamping operation and machine set-up.								

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 6	0.75	80	8	4.5	3.4	5.2	**133420** 0675	37,20
M 8	0.75	80	8	6	4.9	7.2	133420 0875	39,20
M 8	1.0	90	10	6	4.9	7	133420 0810	41,50
M 10	1.0	90	10	7	5.5	9	133420 1010	43,70
M 10	1.25	100	12	7	5.5	8.8	133420 1012	42,80
M 12	1.0	100	12	9	7	11	133420 1210	50,10
M 12	1.25	100	12	9	7	10.8	133420 1212	50,10
M 12	1.5	100	14	9	7	10.5	133420 1215	52,20
M 14	1.5	100	16	11	9	12.5	133420 1415	64,60
M 16	1.5	100	16	12	9	14.5	133420 1615	74,80
M 18	1.5	110	16	14	11	16.5	133420 1815	86,20
M 20	1.5	125	16	16	12	18.5	133420 2015	108,–
M 22	1.5	125	16	18	14.5	20.5	133420 2215	112,–
M 24	1.5	140	16	18	14.5	22.5	133420 2415	147,–

1128



A-POT machine tap

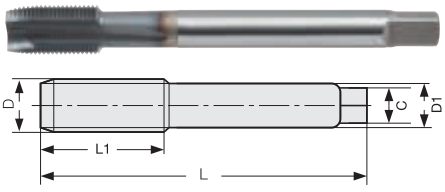
MF | 60° | HSS-E PM | DIN 374 | ISO 2 6HX | B 4 | 2,5xD | TiCN | Vc/fz | 392

- **Metric ISO2 6HX fine thread**
- Straight-fluted with spiral point
- Form B, 4-thread chamfer
- Constructional dimensions DIN 374
- **Cutting material: HSS-E-PM, TiCN-coated**
- For through-hole threads

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 15-60	● 10-60	○ 8-30	● 8-20	● 8-20				○ 5-10			○ 15-35	○ 15-35	○ 15-35				
	Cutting speed Vc m/min.										Please adjust these guidelines according to clamping operation and machine set-up.								

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 6	0.75	80	14	4.5	3.4	5.2	**133460** 0675	36,10
M 8	0.75	80	18	6	4.9	7.2	133460 0875	38,10
M 8	1.0	90	22	6	4.9	7	133460 0810	40,30
M 10	1.0	90	20	7	5.5	9	133460 1010	42,30
M 10	1.25	100	24	7	5.5	8.8	133460 1012	41,60
M 12	1.0	100	22	9	7	11	133460 1210	48,70
M 12	1.25	100	22	9	7	10.8	133460 1212	48,70
M 12	1.5	100	22	9	7	10.5	133460 1215	50,80
M 14	1.5	100	22	11	9	12.5	133460 1415	62,80
M 16	1.5	100	22	12	9	14.5	133460 1615	72,60
M 18	1.5	110	25	14	11	16.5	133460 1815	83,80
M 20	1.5	125	25	16	12	18.5	133460 2015	105,–
M 22	1.5	125	25	18	14.5	20.5	133460 2215	108,50
M 24	1.5	140	28	18	14.5	22.5	133460 2415	142,70

1128



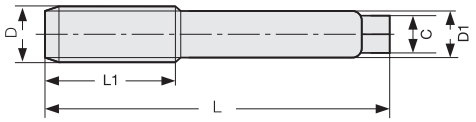
S-SFT machine tap

MF | 60° | HSS-E | DIN 374 | ISO 2 6H | C 2,5 | 40° | 2,5xD | Vap. | Vc/fz | 392

Accelerated chip removal due to unequally twisted flute

- **Metric ISO 6H fine thread**
- 40°, spiral-fluted
- Form C, 2.5-thread chamfer
- **Cutting material: HSS-E, vapour-treated**
- For blind-hole threads





material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 15-24	● 10-15	○ 8-13	● 8-16	● 8-16	○ 5-8		○ 10-15						○ 12-17				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.35	56	4	2.2	-	2.65	**133965** 0303	23,60
M 4	0.5	63	5.6	2.8	2.1	3.5	133965 0405	23,60
M 5	0.5	70	6.4	3.5	2.7	4.5	133965 0505	24,40
M 6	0.5	80	8	4.5	3.4	5.5	133965 0605	24,40
M 6	0.75	80	8	4.5	3.4	5.2	133965 0607	23,70
M 8	0.75	80	10	6	4.9	7.2	133965 0807	25,–
M 8	1	90	10	6	4.9	7	133965 0810	25,10
M 9	1	90	10	7	5.5	8	133965 0910	31,–
M 10	0.75	90	12	7	5.5	9.2	133965 1007	28,50
M 10	1	90	12	7	5.5	9	133965 1010	27,30
M 10	1.25	100	12	7	5.5	8.8	133965 1012	27,30
M 11	1	90	12	8	6.2	10	133965 1110	54,60
M 12	1	100	14	9	7	11	133965 1210	31,80
M 12	1.25	100	14	9	7	10.8	133965 1212	31,80
M 12	1.5	100	14	9	7	10.5	133965 1215	31,80
M 14	1	100	16	11	9	13	133965 1410	48,70

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D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 14	1.25	100	16	11	9	12.8	133965 1412	48,70
M 14	1.5	100	16	11	9	12.5	133965 1415	41,30
M 16	1	100	16	12	9	15	133965 1610	50,50
M 16	1.5	100	16	12	9	14.5	133965 1615	47,50
M 18	1	110	20	14	11	17	133965 1810	64,40
M 18	1.5	110	20	14	11	16.5	133965 1815	54,60
M 20	1	125	20	16	12	19	133965 2010	80,60
M 20	1.5	125	20	16	12	18.5	133965 2015	68,30
M 20	2	140	20	16	12	18	133965 2020	64,40
M 22	1	125	20	18	14.5	21	133965 2210	92,–
M 22	1.5	125	20	18	14.5	20.5	133965 2215	73,70
M 22	2	140	20	18	14.5	20	133965 2220	80,60
M 24	1	140	20	18	14.5	23	133965 2410	107,90
M 24	1.5	140	24	18	14.5	22.5	133965 2415	92,30
M 24	2	140	24	18	14.5	22	133965 2420	92,–

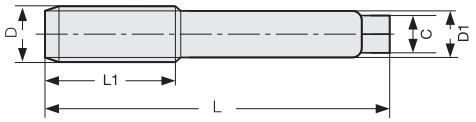
1128

S-POT machine tap

MF | 60° | HSS-E | DIN 374 | ISO 2 6H | B 4 | 2,5xD | Vap. | Vc/fz | 392

- **Metric ISO 6H fine thread**
- Straight-fluted with spiral point
- Form B, 4-thread chamfer
- **Cutting material: HSS-E, vapour-treated**
- For through-hole threads





material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 15-24	● 10-15	○ 8-13	● 8-16	● 8-16	○ 5-8		○ 10-15						○ 12-17				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.35	56	9	2.2	-	2.65	**133975** 0303	21,90
M 4	0.5	63	10	2.8	2.1	3.5	133975 0405	21,90
M 5	0.5	70	12	3.5	2.7	4.5	133975 0505	22,60
M 6	0.5	80	14	4.5	3.4	5.5	133975 0605	22,10
M 6	0.75	80	14	4.5	3.4	5.2	133975 0607	23,50
M 8	0.75	80	18	6	4.9	7.2	133975 0807	23,40
M 8	1	90	22	6	4.9	7	133975 0810	25,10
M 9	1	90	22	7	5.5	8	133975 0910	29,50
M 10	0.75	90	20	7	5.5	9.2	133975 1007	37,40
M 10	1	90	20	7	5.5	9	133975 1010	35,30
M 10	1.25	100	24	7	5.5	8.8	133975 1012	31,–
M 11	1	90	20	8	6.2	10	133975 1110	51,90
M 12	1	100	22	9	7	11	133975 1210	29,80
M 12	1.25	100	22	9	7	10.8	133975 1212	29,80
M 12	1.5	100	22	9	7	10.5	133975 1215	29,80
M 14	1	100	22	11	9	13	133975 1410	52,40

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D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 14	1.25	100	22	11	9	12.8	133975 1412	52,40
M 14	1.5	100	22	11	9	12.5	133975 1415	44,–
M 16	1	100	22	12	9	15	133975 1610	54,90
M 16	1.5	100	22	12	9	14.5	133975 1615	50,90
M 18	1	110	25	14	11	17	133975 1810	75,80
M 18	1.5	110	25	14	11	16.5	133975 1815	63,50
M 20	1	125	25	16	12	19	133975 2010	77,20
M 20	1.5	125	25	16	12	18.5	133975 2015	64,70
M 20	2	140	34	16	12	18	133975 2020	75,80
M 22	1	125	25	18	14.5	21	133975 2210	102,50
M 22	1.5	125	25	18	14.5	20.5	133975 2215	81,–
M 22	2	140	34	18	14.5	20	133975 2220	77,20
M 24	1	140	28	18	14.5	23	133975 2410	102,30
M 24	1.5	140	28	18	14.5	22.5	133975 2415	86,60
M 24	2	140	28	18	14.5	22	133975 2420	102,50

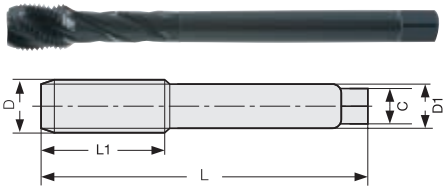
1128

VA-SFT machine tap

MF | 60° | HSS-E V3 | DIN 374 | ISO 2 6H | C 2,5 | 40° | 2,5xD | Vap. | Vc/fz | 392

- **ISO 6H fine-pitch metric thread**
- 40° spiral-fluted with spiral point, type C, 2.5-thread chamfer
- For blind-hole threads
- **Cutting material: HSS-E V3, vapour-treated**

material	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
● very well suited ○ well suited	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 5-10	● 5-15		● 5-10	● 5-12	● 5-8				○ 2-6		○ 20-40		○ 10-12				
Cutting speed Vc m/min.										Please adjust these guidelines according to clamping operation and machine set-up.								



D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.35	56	4	2.2	-	2.7	**133515** 0303	24,20
M 4	0.5	63	6	2.8	2.1	3.5	133515 0405	24,20
M 5	0.5	70	7	3.5	2.7	4.5	133515 0505	24,90
M 6	0.5	80	8	4.5	3.4	5.5	133515 0605	24,90
M 6	0.75	80	8	4.5	3.4	5.3	133515 0607	24,30
M 8	0.75	80	10	6.0	4.9	7.3	133515 0807	25,60
M 8	1.0	90	10	6.0	4.9	7.0	133515 0810	25,70
M 10	1.0	90	12	7.0	5.5	9.0	133515 1010	28,–
M 10	1.25	100	20	7.0	5.5	8.8	133515 1012	28,–
M 12	1.0	100	16	9.0	7.0	11.0	133515 1210	32,50
M 12	1.5	100	14	9.0	7.0	10.5	133515 1215	32,50
M 14	1.5	100	16	11.0	9.0	12.5	133515 1415	42,30
M 16	1.5	100	16	12.0	9.0	14.5	133515 1615	48,70
M 18	1.5	110	12	14.0	11.0	16.5	133515 1815	56,–
M 20	1.5	125	9	16.0	12.0	18.5	133515 2015	69,90
M 22	1.5	125	20	18.0	14.5	20.5	133515 2215	75,60
M 24	1.5	140	24	18.0	14.5	22.5	133515 2415	94,60

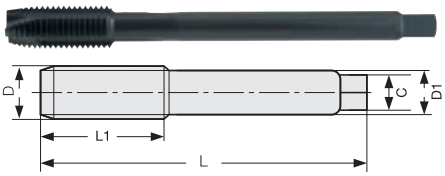
1128

VA-POT machine tap

MF | 60° | HSS-E V3 | DIN 374 | ISO 2 6H | B 4 | 2,5xD | Vap. | Vc/fz | 392

- **ISO 6H fine-pitch metric thread**
- Straight-fluted with spiral point, type B, 4-thread chamfer
- For through-hole threads
- **Cutting material: HSS-E V3, vapour-treated**

material	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
● very well suited ○ well suited	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 5-20	● 5-15		● 5-10	● 5-12	● 5-8				○ 2-6		○ 20-40		○ 10-12				
Cutting speed Vc m/min.										Please adjust these guidelines according to clamping operation and machine set-up.								



D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.35	56	9	2.2	-	2.7	**133505** 0303	22,40
M 4	0.5	63	10	2.8	2.1	3.5	133505 0405	22,40
M 5	0.5	70	12	3.5	2.7	4.5	133505 0505	23,20
M 6	0.5	80	14	4.5	3.4	5.5	133505 0605	22,60
M 6	0.75	80	14	4.5	3.4	5.3	133505 0607	24,10
M 8	0.75	80	19	6.0	4.9	7.3	133505 0807	24,–
M 8	1.0	90	22	6.0	4.9	7.0	133505 0810	25,70
M 10	1.0	90	20	7.0	5.5	9.0	133505 1010	36,10
M 10	1.25	100	24	7.0	5.5	8.8	133505 1012	31,70

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D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 12	1.0	100	22	9.0	7.0	11.0	133505 1210	30,40
M 12	1.5	100	22	9.0	7.0	10.5	133505 1215	30,40
M 14	1.5	100	22	11.0	9.0	12.5	133505 1415	45,10
M 16	1.5	100	22	12.0	9.0	14.5	133505 1615	52,–
M 18	1.5	110	25	14.0	11.0	16.5	133505 1815	65,10
M 20	1.5	125	25	16.0	12.0	18.5	133505 2015	66,20
M 22	1.5	125	25	18.0	14.5	20.5	133505 2215	83,10
M 24	1.5	140	28	18.0	14.5	22.5	133505 2415	88,80

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ATORN® Universal machine taps

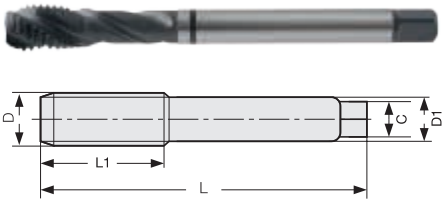
G | 55° | HSS-E | DIN 5156 | C 2-3 | 40° | 2xD | Vap. | Vc/fz | 392

- **Whitworth pipe thread, 55°**
- 40° spiral-fluted
- Form C, 2-3 thread chamfer
- **Cutting material: HSS-E, vapour-treated**
- For blind-hole threads

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 5-15	● 5-15		○ 4-6	○ 4-6			○ 5-8				○ 10-15		○ 10-15				
	Cutting speed Vc m/min.																		

D	Pitch TPI	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
G 1/8"	28	90	20	7	5.5	8.8	**134770** 0018	31,50
G 1/4"	19	100	22	11	9	11.8	134770 0014	40,40
G 3/8"	19	100	22	12	9	15	134770 0038	60,–
G 1/2"	14	125	25	16	12	19	134770 0012	90,–
G 3/4"	14	140	28	20	16	24.5	134770 0034	151,–
G 1"	11	160	30	25	20	31	134770 0100	172,–
G 1 1/4"	11	170	30	32	24	39.5	134770 0114	470,–

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ATORN® Universal machine taps

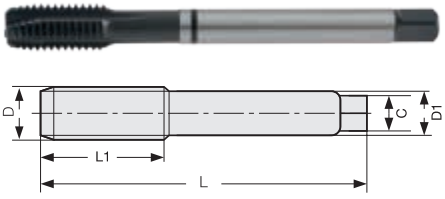
G | 55° | HSS-E | DIN 5156 | B 3,5-5 | 3xD | Vap. | Vc/fz | 392

- **Whitworth pipe thread, 55°**
- 40° spiral-fluted
- Type B, 2.5-5 thread chamfer
- **Cutting material: HSS-E, vapour-treated**
- For through-hole threads

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 5-15	● 5-15		○ 4-6	○ 4-6			○ 5-8				○ 10-15		○ 10-15				
	Cutting speed Vc m/min.																		

D	Pitch TPI	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
G 1/8"	28	90	20	7	5.5	8.8	**134775** 0018	30,60
G 1/4"	19	100	22	11	9	11.8	134775 0014	39,30
G 3/8"	19	100	22	12	9	15	134775 0038	59,–
G 1/2"	14	125	25	16	12	19	134775 0012	87,–
G 3/4"	14	140	28	20	16	24.5	134775 0034	147,–
G 1"	11	160	30	25	20	31	134775 0100	168,–
G 1 1/4"	11	170	30	32	24	39.5	134775 0114	460,–

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ATORN® Machine tap, weak-spiralled

G | 55° | HSS-E | DIN 5156 | C 2-3 | 15° | 1,5xD | | i Vc/fz | 392

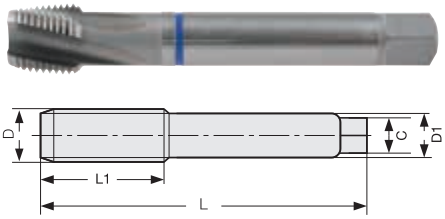
- **Whitworth pipe thread, 55°**
- 15°, right-hand, spiral-fluted
- Form C, 2-3 thread chamfer
- **Cutting material: HSS-E**
- For blind-hole threads
- Easy chip removal to the rear
- Possible thread depth 1.5 x D
- Suitable for conventional machining with quick-action chuck
- **Note:** for DIN-ISO 228/1 straight pipe threads

Up to 1000 N/mm²

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										
	Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									

D	Pitch TPI	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
G 1/8"	28	90	11	7	5.5	8.80	**135315** 0018	35,60
G 1/4"	19	100	14	11	9	11.80	135315 0014	46,60
G 3/8"	19	100	14	12	9	15.25	135315 0038	60,50
G 1/2"	14	125	18	16	12	19.00	135315 0012	73,50
G 3/4"	14	140	20	20	16	24.50	135315 0034	111,–
G 1"	11	160	24	25	20	30.75	135315 0100	220,–

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ATORN® Machine tap

G | 55° | HSS-E | DIN 5156 | C 2-3 | | 1,5xD | | i Vc/fz | 392

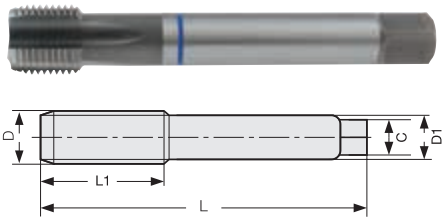
- **Whitworth pipe thread, 55°**
- Straight-fluted, without spiral point
- Through shank, type C, 2 to 3-thread chamfer
- **Cutting material: HSS-E**
- For through-hole threads
- Possible thread depth 1.5xD
- Suitable for conventional machining with quick-action chuck
- **Note:** for DIN-ISO 228/1 straight pipe threads

Up to 1000 N/mm²

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										
	Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									

D	Pitch TPI	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
G 1/8"	28	90	11	7	5.5	8.80	**135300** 0018	34,60
G 1/4"	19	100	14	11	9	11.80	135300 0014	47,70
G 3/8"	19	100	14	12	9	15.25	135300 0038	54,50
G 1/2"	14	125	18	16	12	19.00	135300 0012	87,–
G 3/4"	14	140	20	20	16	24.50	135300 0034	113,–
G 1"	11	160	24	25	20	30.75	135300 0100	169,–

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ATORN® Machine tap

G | 55° | HSS-E | DIN 5156 | C 2-3 | 40° | 3xD | Vap. | Vc/fz | 392

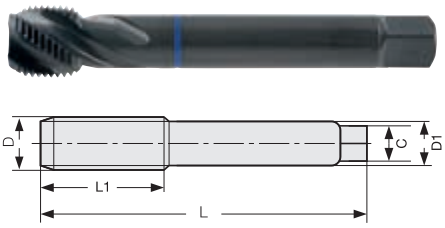
- **Whitworth pipe thread, 55°**
- 40°, spiral-fluted
- Type C, 2-3 thread chamfer
- **Cutting material: HSS-E, vapour-treated**
- For blind-hole threads
- Strong chip removal to the rear for long-chipping materials
- Minimal thread relief grinding
- Possible thread depth 3 x D
- Suitable for conventional machining with quick-action chuck
- **Note:** For DIN-ISO 228/1 straight pipe threads

For long-chipping materials

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										
	Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									

D	Pitch TPI	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
G 1/8"	28	90	18	7	5.5	8.80	**135320** 0018	34,–
G 1/4"	19	100	20	11	9	11.80	135320 0014	46,80
G 3/8"	19	100	22	12	9	15.25	135320 0038	53,–
G 1/2"	14	125	25	16	12	19.00	135320 0012	85,50
G 3/4"	14	140	28	20	16	24.50	135320 0034	111,–
G 1"	11	160	30	25	20	30.75	135320 0100	165,–

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ATORN® Machine tap

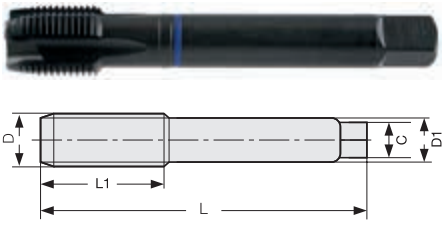
G | 55° | HSS-E | DIN 5156 | B 3,5-5 | 3xD | Vap. | Vc/fz | 392

- **Whitworth pipe thread, 55°**
- Straight-fluted with spiral point
- Type B, 3.5-5 thread chamfer
- **Cutting material: HSS-E, vapour-treated**
- For through-hole threads
- Possible thread depth 3 x D
- **Note:** For DIN-ISO 228/1 straight pipe threads

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										
	Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									

D	Pitch TPI	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
G 1/8"	28	90	11	7	5.5	8.80	**135295** 0018	27,50
G 1/4"	19	100	14	11	9	11.80	135295 0014	36,50
G 3/8"	19	100	14	12	9	15.25	135295 0038	41,80
G 1/2"	14	125	18	16	12	19.00	135295 0012	63,50
G 3/4"	14	140	20	20	16	24.50	135295 0034	113,–
G 1"	11	160	24	25	20	30.75	135295 0100	157,–

1127



A-SFT machine tap

G | 55° | HSS-E PM | DIN 5156 | C 2,5 | 45° | 2xD | TiCN | Vc/fz | 392

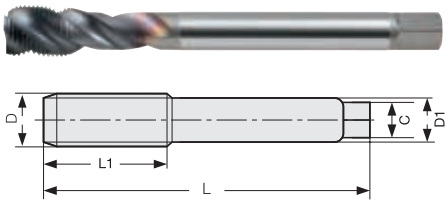
- **Whitworth pipe thread, 55°**
- 45°, spiral-fluted
- Type C, 2.5-thread chamfer
- Constructional dimensions DIN 5156
- **Cutting material: HSS-E-PM, TiCN-coated**
- For blind-hole threads

Accelerated chip removal due to irregular twisted flute

material	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
● very well suited ○ well suited	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 15-60	● 10-60	○ 8-30	● 8-20	● 8-20				○ 5-10			○ 15-35	○ 15-35	○ 15-35				
Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		

D	Pitch TPI	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
G 1/8"	28	90	20	7	5.5	8.8	**133860** 0018	60,30
G 1/4"	19	100	22	11	9	11.8	133860 0014	81,–
G 3/8"	19	100	22	12	9	15.25	133860 0038	102,–
G 1/2"	14	125	25	16	12	19	133860 0012	141,90
G 5/8"	14	125	25	18	14.5	21	133860 0058	174,30
G 3/4"	14	140	28	20	16	24.5	133860 0034	230,90
G 7/8"	14	150	28	22	18	28	133860 0078	302,10
G 1"	11	160	30	25	20	30.75	133860 0111	327,50

1128



A-POT machine tap

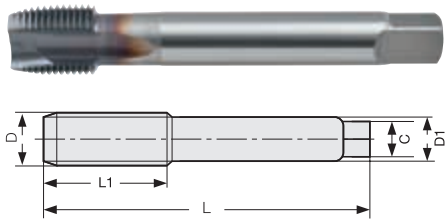
G | 55° | HSS-E PM | DIN 5156 | B 4 | 2,5xD | TiCN | Vc/fz | 392

- **Whitworth pipe thread, 55°**
- Straight-fluted with spiral point
- Type B, 4-thread chamfer
- Constructional dimensions DIN 5156
- **Cutting material: HSS-E-PM, TiCN-coated**
- For through-hole threads

material	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
● very well suited ○ well suited	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 15-60	● 10-60	○ 8-30	● 8-20	● 8-20				○ 5-10			○ 15-35	○ 15-35	○ 15-35				
Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		

D	Pitch TPI	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
G 1/8"	28	90	20	7	5.5	8.8	**133900** 0018	54,60
G 1/4"	19	100	22	11	9	11.8	133900 0014	73,10
G 3/8"	19	100	22	12	9	15	133900 0038	91,80
G 1/2"	14	125	25	16	12	19	133900 0012	127,70
G 5/8"	14	125	25	18	14.5	21	133900 0058	156,90
G 3/4"	14	140	28	20	16	24.5	133900 0034	207,90
G 7/8"	14	150	28	22	18	28	133900 0078	271,90
G 1"	11	160	30	25	20	31	133900 0111	294,90

1128



S-SFT machine tap

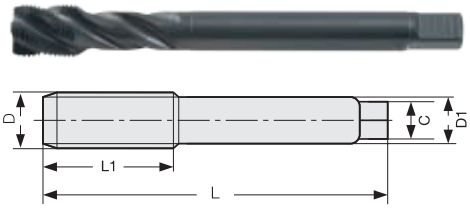
G | 55° | HSS-E | DIN 5156 | C 2,5 | 40° | 2,5xD | Vap. | Vc/fz | 392

- **Whitworth pipe thread, 55°**
- 40° spiral-fluted
- Form C, 2.5-thread chamfer
- **Cutting material: HSS-E, vapour-treated**
- For blind-hole threads

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 15-24	● 10-15	○ 8-13	● 8-16	● 8-16	○ 5-8		○ 10-15						○ 12-17				
	Cutting speed Vc m/min.				Please adjust these guidelines according to clamping operation and machine set-up.														

D	Pitch TPI	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
G 1/8"	28	90	20	7	5.5	8.8	**133986** 0018	37,20
G 1/4"	19	100	22	11	9	11.8	133986 0014	49,90
G 3/8"	19	100	22	12	9	15	133986 0038	62,90
G 1/2"	14	125	25	16	12	19	133986 0012	87,20
G 5/8"	14	125	25	18	14.5	21	133986 0058	107,30
G 3/4"	14	140	28	20	16	24.5	133986 0034	142,10
G 7/8"	14	150	28	22	18	28	133986 0078	185,80
G 1"	11	160	30	25	20	31	133986 0010	201,60

1128



S-POT machine tap

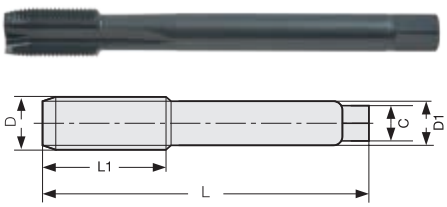
G | 55° | HSS-E | DIN 5156 | B 4 | 2,5xD | Vap. | Vc/fz | 392

- **Whitworth pipe thread, 55°**
- Straight-fluted with spiral point
- Form B, 4-thread chamfer
- **Cutting material: HSS-E, vapour-treated**
- For through-hole threads

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 15-24	● 10-15	○ 8-13	● 8-16	● 8-16	○ 5-8		○ 10-15						○ 12-17				
	Cutting speed Vc m/min.				Please adjust these guidelines according to clamping operation and machine set-up.														

D	Pitch TPI	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
G 1/8"	28	90	20	7	5.5	8.8	**133987** 0018	33,40
G 1/4"	19	100	22	11	9	11.8	133987 0014	44,90
G 3/8"	19	100	22	12	9	15	133987 0038	56,60
G 1/2"	14	125	25	16	12	19	133987 0012	78,60
G 5/8"	14	125	25	18	14.5	21	133987 0058	96,60
G 3/4"	14	140	28	20	16	24.5	133987 0034	127,90
G 7/8"	14	150	28	22	18	28	133987 0078	167,20
G 1"	11	160	30	25	20	31	133987 0010	181,40

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ATORN® Universal machine taps

UNC | 60° | HSS-E | Werks-norm | 2 B | C 2-3 | 40° | 2xD | Vap. | Vc/fz | 392

- **UNC thread, unified national standard coarse-pitch thread**
- Form C, 2-3 thread chamfer, for blind-hole threads
- Constructional dimensions similar to DIN 371 = up to 3/8", DIN 376 = from 7/16"
- **Cutting material: HSS-E, vapour-treated**
- Possible thread depth 2 x D
- **For universal applications**

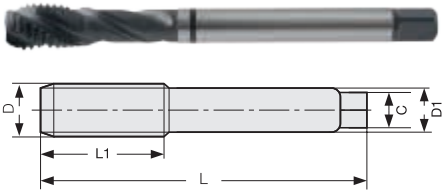
material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 5-15	● 5-15		○ 4-6	○ 4-6			○ 5-8				○ 10-15		○ 10-15				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D	Pitch TPI	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
1/4"	20	80	13	7	5.5	5.2	**134790** 0001	27,30
5/16"	18	90	14	8	6.2	6.6	134790 0002	28,90
3/8"	16	100	16	9	7	8	134790 0003	34,40
7/16"	14	100	17	8	6.2	9.4	134790 0004	34,40
1/2"	13	110	20	9	7	10.8	134790 0005	43,80
5/8"	11	110	22	12	9	13.6	134790 0006	56,30
3/4"	10	125	25	14	11	16.5	134790 0007	63,40
7/8"	9	140	27	18	14.5	19.5	134790 0008	77,90
1"	8	160	30	20	16	22.3	134790 0009	108,60

1127



ATORN® Universal machine taps

UNC | 60° | HSS-E | Werks-norm | 2 B | B 3,5-5 | | 2xD | Vap. | Vc/fz | 392

- **UNC thread, unified national standard coarse-pitch thread**
- Form B, 3.5-5 thread chamfer
- Straight-fluted with spiral point
- Constructional dimensions similar to DIN 371 = up to 3/8", DIN 376 = from 7/16"
- **Cutting material: HSS-E, vapour-treated**
- The spiral point ensures strong chip removal to the front
- Possible thread depth 2 x D
- **For universal applications**

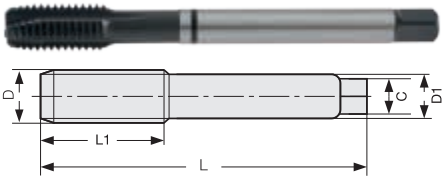
material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 5-15	● 5-15		○ 4-6	○ 4-6			○ 5-8				○ 10-15		○ 10-15				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D	Pitch TPI	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
1/4"	20	80	17	7	5.5	5.2	**134795** 0001	27,30
5/16"	18	90	20	8	6.2	6.6	134795 0002	28,90
3/8"	16	100	22	9	7	8	134795 0003	34,40
7/16"	14	100	22	8	6.2	9.4	134795 0004	34,40
1/2"	13	110	25	9	7	10.8	134795 0005	43,80
5/8"	11	110	27	12	9	13.6	134795 0006	56,30
3/4"	10	125	30	14	11	16.5	134795 0007	63,40
7/8"	9	140	32	18	14.5	19.5	134795 0008	77,90
1"	8	160	36	20	16	22.3	134795 0009	108,60

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ATORN® Machine tap

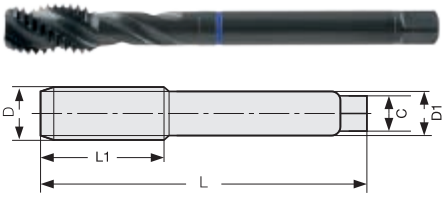
UNC | 60° | HSS-E | Werks-norm | 2 B | C 2-3 | 40° | 3xD | Vap. | Vc/fz | 392

- **UNC, unified national standard coarse-pitch thread**
- 40°, spiral-fluted
- Type C, 2-3 thread chamfer
- Constructional dimensions similar to DIN 371 = up to 3/8 inch, DIN 376 = from 7/16 inch
- **Cutting material: HSS-E, vapour-treated**
- For blind-hole threads
- Suitable for conventional machining with quick-action chuck
- Possible thread depth 3 x D

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

D	Pitch TPI	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
1/4"	20	80	13	7	5.5	5.2	**135330** 0001	33,80
5/16"	18	90	14	8	6.2	6.6	135330 0002	33,40
3/8"	16	100	16	10	8	8.0	135330 0003	44,90
7/16"	14	100	18	8	6.2	9.4	135330 0004	65,–
1/2"	13	110	20	9	7	10.75	135330 0005	65,–
9/16"	12	110	21	11	9	12.25	135330 0006	102,–
5/8"	11	110	24	12	9	13.50	135330 0007	93,–
3/4"	10	125	25	14	11	16.50	135330 0008	122,–

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ATORN® Machine tap

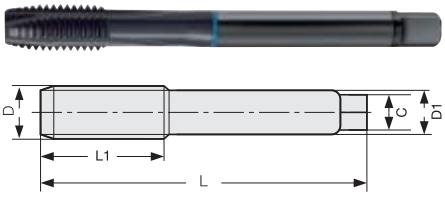
UNC | 60° | HSS-E | Werks-norm | 2 B | B 3,5-5 | 3xD | Vap. | Vc/fz | 392

- **UNC, unified national standard coarse-pitch thread**
- Type B, 3.5-5 thread chamfer
- Constructional dimensions similar to DIN 371 = up to 3/8 inch, DIN 376 = from 7/16 inch
- **Cutting material: HSS-E, vapour-treated**
- For through-hole threads
- Suitable for conventional machining with quick-action chuck
- Possible thread depth 3 x D

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

D	Pitch TPI	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
1/4"	20	80	16	7	5.5	5.20	**135325** 0001	22,20
5/16"	18	90	18	8	6.2	6.60	135325 0002	26,90
3/8"	16	100	20	10	8	8.00	135325 0003	32,30
7/16"	14	100	22	8	6.2	9.40	135325 0004	52,50
1/2"	13	110	25	9	7	10.75	135325 0005	57,–
9/16"	12	110	30	11	9	12.25	135325 0006	77,–
5/8"	11	110	30	12	9	13.50	135325 0007	77,50
3/4"	10	125	33	14	11	16.50	135325 0008	111,–

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ATORN® Universal machine taps

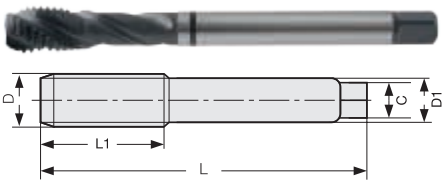
UNF | 60° | HSS-E | Werks-norm | 2 B | C 2-3 | 40° | 2xD | Vap. | Vc/fz | 392

- **UNF thread, unified national standard fine-pitch thread**
- Form C, 2-3 thread chamfer, for blind-hole threads
- **Cutting material: HSS-E, vapour-treated**
- Possible thread depth 2 x D
- **For universal applications**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 5-15	● 5-15		○ 4-6	○ 4-6			○ 5-8				○ 10-15		○ 10-15				
	Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									

D	Pitch TPI	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
1/4"	28	80	10	7	5.5	5.5	**134791** 0001	31,70
5/16"	24	90	10	8	6.2	6.9	134791 0002	34,40
3/8"	24	100	10	9	7	8.5	134791 0003	36,–
7/16"	20	100	13	8	6.2	9.9	134791 0004	45,50
1/2"	20	100	13	9	7	11.5	134791 0005	44,30
5/8"	18	100	15	12	9	14.5	134791 0006	61,40
3/4"	16	110	17	14	11	17.5	134791 0007	79,60
7/8"	14	125	17	18	14.5	20.4	134791 0008	100,60
1"	12	140	20	18	14.5	23.3	134791 0009	149,90

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ATORN® Universal machine taps

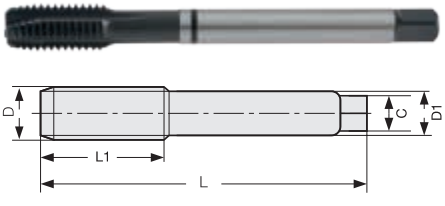
UNF | 60° | HSS-E | Werks-norm | 2 B | B 3,5-5 | 2xD | Vap. | Vc/fz | 392

- **UNF thread, unified national standard fine-pitch thread**
- Form B, 3.5-5 thread chamfer
- Straight-fluted with spiral point
- **Cutting material: HSS-E, vapour-treated**
- The spiral point ensures strong chip removal to the front
- Possible thread depth 2 x D
- **For universal applications**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 5-15	● 5-15		○ 4-6	○ 4-6			○ 5-8				○ 10-15		○ 10-15				
	Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									

D	Pitch TPI	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
1/4"	28	80	17	7	5.5	5.5	**134796** 0001	31,70
5/16"	24	90	18	8	6.2	6.9	134796 0002	34,40
3/8"	24	100	18	9	7	8.5	134796 0003	36,–
7/16"	20	100	22	8	6.2	9.9	134796 0004	45,50
1/2"	20	100	22	9	7	11.5	134796 0005	44,30
5/8"	18	100	22	12	9	14.5	134796 0006	61,40
3/4"	16	110	25	14	11	17.5	134796 0007	79,60
7/8"	14	125	26	18	14.5	20.4	134796 0008	100,60
1"	12	140	28	18	14.5	23.3	134796 0009	149,90

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ATORN® Machine tap

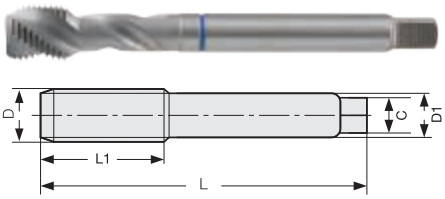
UNF | 60° | HSS-E | DIN 374 | 2 B | C 2-3 | 40° | 2,5xD | Vap. | Vc/fz | 392

- **UNF, unified national standard fine-pitch thread**
- 40°, spiral-fluted
- Type C, 2-3 thread chamfer
- Constructional dimensions DIN 374
- **Cutting material: HSS-E, vapour-treated**
- For blind-hole threads
- Possible thread depth 2.5 x D

material	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
● very well suited ○ well suited	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										
Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									

D	Pitch TPI	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
1/4"	28	80	16	4.5	3.4	5.50	**135340** 0001	34,60
5/16"	24	90	18	6	4.9	6.90	135340 0002	25,10
3/8"	24	90	18	7	5.5	8.50	135340 0003	45,60
7/16"	20	100	22	8	6.2	9.90	135340 0004	66,–
1/2"	20	100	20	9	7	11.50	135340 0005	84,50
5/8"	18	100	22	12	9	14.50	135340 0007	102,–

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ATORN® Machine tap

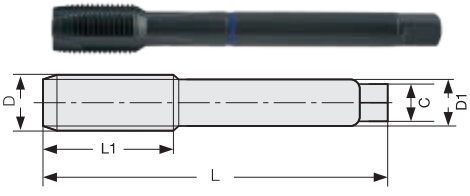
UNF | 60° | HSS-E | DIN 374 | 2 B | B 3,5-5 | 3xD | Vap. | Vc/fz | 392

- **UNF, unified national standard fine-pitch thread**
- Straight-fluted with spiral point
- Tolerance: 2B
- Type B, 3.5-5 thread chamfer
- Constructional dimensions DIN 374
- **Cutting material: HSS-E, vapour-treated**
- For through-hole threads
- Suitable for conventional machining with quick-action chuck
- Possible thread depth 3 x D

material	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
● very well suited ○ well suited	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										
Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									

D	Pitch TPI	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
1/4"	28	80	16	4.5	3.4	5.50	**135335** 0001	25,40
5/16"	24	90	18	6	4.9	6.90	135335 0002	30,60
3/8"	24	90	18	7	5.5	8.50	135335 0003	32,30
7/16"	20	100	22	8	6.2	9.90	135335 0004	50,50
1/2"	20	100	20	9	7	11.50	135335 0005	57,–
9/16"	18	100	22	11	9	12.90	135335 0006	76,50
5/8"	18	100	22	12	9	14.50	135335 0007	72,50
3/4"	16	110	25	14	11	17.50	135335 0008	95,50

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ATORN® Machine tap

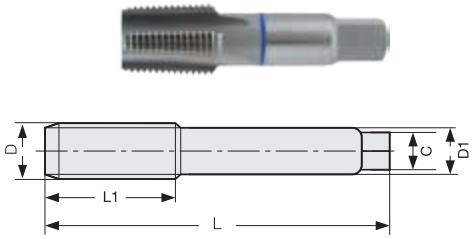
NPT | 60° | HSS-E | C 2-3 | 1,5xD | Vc/fz | 392

- **American national standard tapered pipe thread, NPT 60°**
- Straight-fluted
- Form C, 2 to 3-thread chamfer
- **Cutting material: HSS-E**
- for blind bore and through-hole threads
- Possible thread depth 1.5xD
- Taper reamer suitable for conical tapping holes (taper 1:16) available on request

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										
	Cutting speed Vc m/min.																		

D	Pitch TPI	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
NPT 1/16"	27	56	14	6	4.9	6.10	**135345** 0001	42,50
NPT 1/8"	27	63	15	7	5.5	8.50	135345 0002	46,50
NPT 1/4"	18	63	21	11	9	11.00	135345 0003	58,–
NPT 3/8"	18	70	21	12	9	14.50	135345 0004	75,–
NPT 1/2"	14	80	27	16	12	18.00	135345 0005	99,50
NPT 3/4"	14	100	27	20	16	23.00	135345 0006	124,–
NPT 1"	11.5	110	32	25	20	29.00	135345 0007	176,–

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ATORN® Machine tap

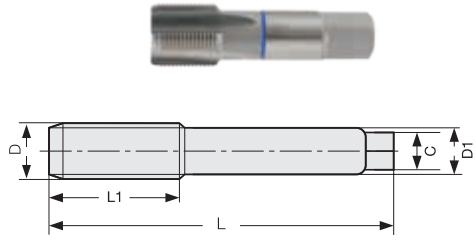
Pg | 80° | HSS-E | DIN 40430 | C 2-3 | Vc/fz | 392

- **Reinforced straight pipe thread 80°**
- Straight-fluted
- **Without spiral point**
- **Cutting material: HSS-E**
- For blind-hole and through-hole threads

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 5-20	○ 5-15																
	Cutting speed Vc m/min.																		

D	Pitch TPI	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
PG 7	20	70	22	9	7	11.40	**135380** 0070	29,30
PG 9	18	70	22	12	9	14.00	135380 0090	37,80
PG 11	18	80	22	14	11	17.30	135380 0110	53,–
PG 13.5	18	80	22	16	12	19.00	135380 0135	54,70
PG 16	18	80	22	18	14.5	21.30	135380 0160	61,20
PG 21	16	90	22	22	18	26.90	135380 0210	104,50
PG 29	16	100	25	28	22	35.50	135380 0290	162,–

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Overview of forming taps

Sorting by thread and cutting material	Forming taps											
												
Brand	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN			ATORN
Thread	M	M	M	M	M	M	M	M	M	M	M	MF
Type	Blind-hole/through-hole	Blind-hole/through-hole	Blind-hole/through-hole	Blind-hole/through-hole	Blind-hole/through-hole	Blind-hole/through-hole	Blind-hole/through-hole	Blind-hole/through-hole	Blind-hole/through-hole	Blind-hole/through-hole	Blind-hole/through-hole	Blind-hole/through-hole
Range	M1 - M20	M2 - M12	M3 - M12	M3 - M12	M3 - M16	M3 - M20	M3 - M20	M3 - M12	M5 - M20	M1 - M30	M2 - M10	M6 - M24
Tolerance	6HX	6GX	6HX	6HX	6HX	6HX	6HX	6HX	6HX	6HX	6HX	6HX
DIN	2174	2174	2174	2174	371/376	2174	WN	371/376	371	2174	371	2174
Chamfer (form)	C	C	C	C	C	C	C	C	C	C	C	C
Possible thread depth	1xD	1xD	3xD	3xD	2xD	2xD	2xD	2xD	2xD	2.5xD	2.5xD	2.5xD
Cutting material	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E	HSS-E	HSS-E
Coating / surface treatment	TiN	TiN	TiN	TiAlN	TiCN	TiCN	TiN	TiCN	TiAlN	TiCN	TiCN	TiN
Type					UNI		Extra-long			S-XPF	V-NRT-B	
Info			with oil grooves	with oil grooves	Synchro	with oil grooves	Coolant bore	with oil grooves	Coolant bore	with oil grooves		with oil grooves
Item number	135405....	135450....	135240....	135245....	134730....	135460....	135410....	134194....	135430....	133920....	133320....	135480....
Page	281	281	282	282	282	283	283	284	284	285	285	286
Material groups	Usage recommendations											
Steel < 700 N/mm²	●	●	●	●	●	●	●	●	●	●	●	●
Steel < 1000 N/mm²	●	●	●	●	●	●	●	●	●	●	●	●
Steel < 1400 N/mm²							○		○			
Stainless steel ferritic/martensitic	●	●	●	●	●	●	○	●	●	●	●	●
Stainless steel austenitic	●	●	●	●	●	●	○	●	●	●	●	●
Stainless steel duplex	●	●	●	●		●	○	●	●	●	●	●
Cast iron GG/GTS	●	●				●						
Cast iron GGG	●	●	○	○		●		○			○	○
Titanium alloys	○	○				○						
Superalloys Fe/NiCo base < 30 HRc	●	●	○	○		●	○	○	○		○	○
Superalloys Fe/NiCo base ≥ 30 HRc												
Aluminium < 8 % Si	●	●	●	●	○	●	○	●	○	●	●	●
Aluminium ≥ 8 % Si							●		○		○	
Copper Cu-alloy			○	○	○		○	○	○	●	○	○
Graphite GRP/CFP/thermoset												

Sorting by thread and cutting material		
		
Brand		ATORN
Thread	MF	G
Type	Blind-hole/through-hole	Blind-hole/through-hole
Range	M4 - M22	1/16" - 3/4"
Tolerance	6HX	
DIN	2174	2189
Chamfer (form)	C	C
Possible thread depth	2.5xD	2xD
Cutting material	HSS-E	HSS-E
Coating / surface treatment	TiCN	TiN
Type	S-XPF	
Info	with oil grooves	with oil grooves
Item number	133930....	135495....
Page	286	287
Material groups	Usage recommendations	
Steel < 700 N/mm²	●	●
Steel < 1000 N/mm²	●	●
Steel < 1400 N/mm²		
Stainless steel ferritic/martensitic	●	●
Stainless steel austenitic	●	●
Stainless steel duplex	●	●
Cast iron GG/GTS		
Cast iron GGG		
Titanium alloys		
Superalloys Fe/NiCo base < 30 HRc		○
Superalloys Fe/NiCo base ≥ 30 HRc		
Aluminium < 8 % Si	●	○
Aluminium ≥ 8 % Si		
Copper Cu-alloy	●	○
Graphite GRP/CFP/thermoset		



ATORN® Machine forming taps

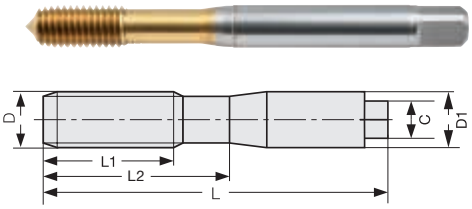
M | 60° | HSS-E | DIN 2174 | ISO 6HX | C 2-3 | 1xD | TiN | i Vc/fz | 392

- **Metric ISO 6HX thread**
- Form C, 2-3 thread chamfer
- without oil grooves
- Constructional dimensions DIN 2174
- **Cutting material: HSS-E TiN**
- For blind-hole and through-hole threads
- For materials with good cold-forming properties and a min. expansion of 8 %

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 8-60	● 8-45		● 8-30	● 8-36	● 8-22		○ 12-45	○ 3-9	● 3-9		● 45-90						
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 1	0.25	40	4	-	2.5	2.1	0.90	**135405** 0010	40,10
M 1.2	0.25	40	4.8	-	2.5	2.1	1.10	135405 0012	39,50
M 1.4	0.3	40	5.6	-	2.5	2.1	1.26	135405 0014	38,20
M 1.6	0.35	40	6.4	-	2.5	2.1	1.45	135405 0016	37,40
M 1.8	0.35	40	7.2	-	2.5	2.1	1.65	135405 0018	35,–
M 2	0.4	45	8	-	2.8	2.1	1.85	135405 0020	30,60
M 2.5	0.45	50	9	-	2.8	2.1	2.30	135405 0025	31,70
M 3	0.5	56	11	18	3.5	2.7	2.75	135405 0030	24,30
M 3.5	0.6	56	12	20	4	3	3.25	135405 0035	27,40
M 4	0.7	63	13	21	4.5	3.4	3.65	135405 0040	20,10
M 5	0.8	70	16	25	6	4.9	4.60	135405 0050	20,60
M 6	1.0	80	19	30	6	4.9	5.55	135405 0060	21,20
M 8	1.25	90	22	35	8	6.2	7.40	135405 0080	26,10
M 10	1.5	100	24	39	10	8	9.30	135405 0100	36,60
M 12	1.75	110	24	-	9	7	11.20	135405 0120	63,50
M 14	2.0	110	26	-	11	9	13.10	135405 0140	115,–
M 16	2.0	110	26	-	12	9	15.10	135405 0160	102,–
M 20	2.5	140	32	-	16	12	18.90	135405 0200	191,–

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ATORN® Machine forming taps tolerance 6GX

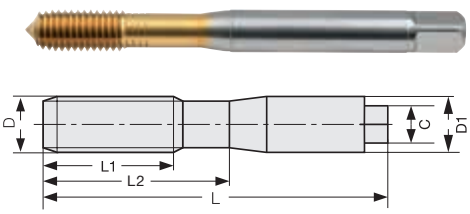
M | 60° | HSS-E | DIN 2174 | ISO 3 6G | C 2-3 | 1xD | TiN | i Vc/fz | 392

- **Metric ISO-6GX thread**
- Form C, 2-3 thread chamfer
- without oil grooves
- Constructional dimensions DIN 2174
- **Cutting material: HSS-E TiN**
- For blind-hole and through-hole threads
- For materials with good cold-forming properties and a min. expansion of 8 %

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 8-60	● 8-45		● 8-30	● 8-36	● 8-22		○ 12-45	○ 3-9	● 3-9		● 45-90						
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 2	0.4	45	8	-	2.8	2.1	1.85	**135450** 0020	33,10
M 2.5	0.45	50	9	-	2.8	2.1	2.30	135450 0025	29,80
M 3	0.5	56	11	18	3.5	2.7	2.75	135450 0030	28,20
M 3.5	0.6	56	12	20	4	3	3.25	135450 0035	30,90
M 4	0.7	63	13	21	4.5	3.4	3.65	135450 0040	28,20
M 5	0.8	70	16	25	6	4.9	4.60	135450 0050	29,30
M 6	1.0	80	19	30	6	4.9	5.55	135450 0060	29,30
M 8	1.25	90	22	35	8	6.2	7.40	135450 0080	34,80
M 10	1.5	100	24	39	10	8	9.30	135450 0100	47,60
M 12	1.75	110	24	-	9	7	11.20	135450 0120	68,–

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ATORN® Machine forming taps

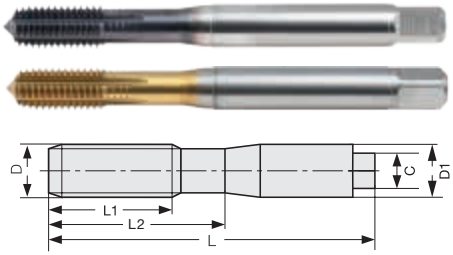
M | 60° | HSS-E | DIN 2174 | ISO 2 6HX | C 2-3 | 3xD | TiN | TiAlN | Vc/fz | 392

- **ISO 6HX metric thread**
- Type C, 2-3 thread chamfer
- With oil grooves
- Constructional dimensions DIN 2174
- **Cutting material: HSS-E TiN; HSS-E TiAlN**
- For blind-hole and through-hole threads
- For materials with good cold-forming properties and a min. expansion of 8 %
- Possible thread depth 3 x D

With oil grooves

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 8-60	● 8-45		● 8-30	● 8-36	● 8-22		○ 12-45		○ 3-9		● 45-90		○ 15-30				
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	TiN art.no.	TiN €	TiAlN art.no.	TiAlN €
M 3	0.5	56	10	18	3.5	2.7	2.75	**135240** 0030	24,70	**135245** 0030	31,10
M 4	0.7	63	12	21	4.5	3.4	3.65	135240 0040	20,60	135245 0040	24,80
M 5	0.8	70	14	25	6	4.9	4.60	135240 0050	21,60	135245 0050	20,50
M 6	1.0	80	16	30	6	4.9	5.55	135240 0060	22,30	135245 0060	21,–
M 8	1.25	90	18	35	8	6.2	7.40	135240 0080	26,40	135245 0080	21,60
M 10	1.5	100	20	39	10	8	9.30	135240 0100	37,50	135245 0100	26,70
M 12	1.75	110	24	-	9	7	11.10	135240 0120	60,–	135245 0120	43,–
								1127		1127	



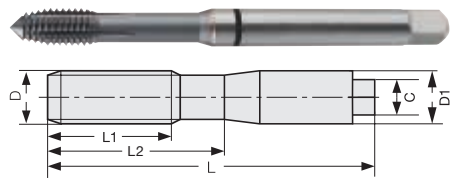
ATORN® Universal Synchro machine forming tap

M | 60° | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6HX | Synchro | C 2-3 | 2xD | TiCN | Vc/fz | 392

- **ISO 6HX metric thread**
- With oil grooves
- DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E-PM, TiCN-coated**
- **Shank tolerance h6**
- Possible thread depth 2xD
- Synchro tool for CNC machines (rigid clamping or minimal length compensation)

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 15-40	● 10-30		● 5-18	● 5-18							○ 10-40		○ 10-30				
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	5	18	3.5	2.7	2.75	**134730** 0030	47,50
M 4	0.7	63	6	21	4.5	3.4	3.65	134730 0040	47,50
M 5	0.8	70	7	25	6	4.9	4.60	134730 0050	47,80
M 6	1.0	80	8	30	6	4.9	5.55	134730 0060	50,–
M 8	1.25	90	10	35	8	6.2	7.40	134730 0080	61,–
M 10	1.5	100	12	39	10	8	9.30	134730 0100	75,–
M 12	1.75	110	18	-	9	7	11.10	134730 0120	97,–
M 16	2.0	110	20	-	12	9	15.10	134730 0160	110,–
								1127	



ATORN® Machine forming taps

M | 60° | HSS-E PM | DIN 2174 | ISO 6HX | C 2-3 | 2xD | TiCN | Vc/fz | 392

- **ISO 6HX metric thread**
- Type C, 2-3 thread chamfer
- With oil grooves
- Constructional dimensions DIN 2174
- **Cutting material: HSS-E-PM TiCN**
- For blind-hole and through-hole threads
- For materials with good cold-forming properties and a min. expansion of 8 %

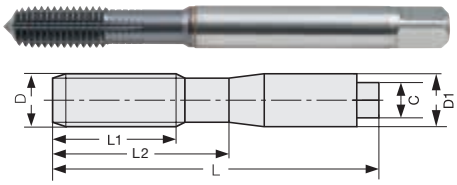
material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 8-60	● 8-45		● 8-30	● 8-36	● 8-22		○ 12-45	○ 3-9	● 3-9		● 45-90						

Cutting speed Vc m/min. — Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	11	18	3.5	2.7	2.75	**135460** 0030	35,–
M 4	0.7	63	13	21	4.5	3.4	3.65	135460 0040	43,50
M 5	0.8	70	16	25	6	4.9	4.60	135460 0050	49,30
M 6	1.0	80	19	30	6	4.9	5.55	135460 0060	51,–
M 8	1.25	90	22	35	8	6.2	7.40	135460 0080	59,50
M 10	1.5	100	24	39	10	8	9.30	135460 0100	71,50
M 12	1.75	110	24	-	9	7	11.20	135460 0120	93,50
M 16	2.0	110	26	-	12	9	15.10	135460 0160	143,–
M 20	2.5	140	32	-	16	12	18.90	135460 0200	181,50

1127



ATORN® Machine forming taps, long

M | 60° | HSS-E PM | Werks-norm | ISO 2 6HX | C 2-3 | 2xD | TiN | Vc/fz | 392

- **Metric ISO 6HX thread**
- Form C, 2-3 thread chamfer
- With oil grooves
- **Cutting material: HSS-E-PM, TiN**
- For blind-hole and through-hole threads
- **Extra-long range to bridge protruding contours**
- With axial coolant bore outlet
- Possible thread depth 2 x D
- **With internal coolant supply from M6**
- **Also available in metric fine (MF) version**

Long version

material — ● very well suited ○ well suited

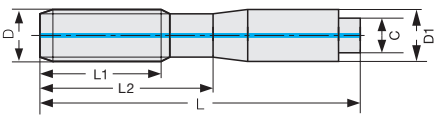
steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 8-60	● 8-45	○ 8-30	○ 8-30	○ 8-36	○ 8-22				○ 3-9		○ 45-90	○ 20-45	○ 15-30				

Cutting speed Vc m/min. — Please adjust these guidelines according to clamping operation and machine set-up.



D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	112	6	18	3.5	2.7	2.80	**135410** 0030	175,–
M 4	0.7	112	7.5	21	2.8	2.1	3.70	135410 0040	197,–
M 5	0.8	125	8.5	25	3.5	2.7	4.65	135410 0050	205,–
M 6	1.0	125	11	30	4.5	3.4	5.55	135410 0060	215,–
M 8	1.25	140	14	35	6	4.9	7.40	135410 0080	240,–
M 10	1.5	160	16	39	7	5.5	9.30	135410 0100	305,–
M 12	1.75	180	18.5	49	9	7	11.20	135410 0120	345,–
M 16	2.0	220	20	54	12	9	15.10	135410 0160	410,–
M 20	2.5	280	25	62	16	12	18.90	135410 0200	495,–

1127



ATORN® Machine forming taps

M | 60° | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6HX | C 2-3 | 2xD | TiCN | Vc/fz | 392

- **ISO 6HX metric thread**
- Type C, 2-3 thread chamfer
- With oil grooves
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E-PM TiCN**
- For blind-hole and through-hole threads
- For steel, hardened and tempered steels, and chemically stable steels
- Possible thread depth 2xD

Ideal for steel and stainless steel

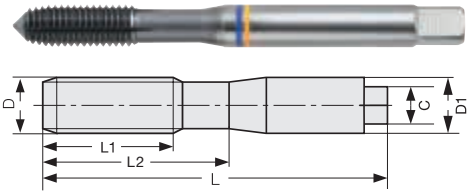
material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 8-60	● 8-45		● 8-30	● 8-36	● 8-22		○ 12-45		○ 6-9		● 45-90		○ 15-30				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 3	0.5	56	10	18	3.5	2.7	2.75	**134194** 0305	32,70
M 4	0.7	63	12	21	4.5	3.4	3.65	134194 0407	32,80
M 5	0.8	70	14	25	6	4.9	4.60	134194 0508	34,–
M 6	1.0	80	16	30	6	4.9	5.55	134194 0610	35,20
M 8	1.25	90	18	35	8	6.2	7.40	134194 0812	44,20
M 10	1.5	100	20	39	10	8	9.30	134194 1015	53,50
M 12	1.75	110	22	-	9	7	11.10	134194 1217	72,–

1127



ATORN® Machine forming tap with internal cooling

M | 60° | HSS-E PM | DIN 371 | DIN 376 | ISO 2 6HX | C 2-3 | 2xD | TiAlN | Vc/fz | 392

- **ISO 6HX metric thread**
- Type C, 2-3 thread chamfer
- With oil grooves
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E-PM TiAlN**
- For blind-hole and through-hole threads
- For materials up to max. 1200 N/mm²
- With radial coolant bore outlet
- Possible thread depth 2xD

Radial coolant bore outlet

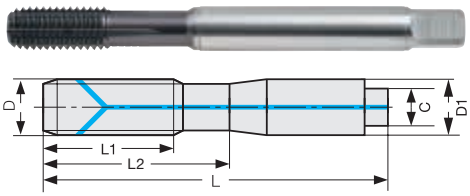
material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 8-60	● 8-45	○ 8-30	● 8-30	● 8-36	● 8-22				○ 3-9		○ 45-90	○ 15-45	○ 15-30				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 5	0.8	70	14	25	6	4.9	4.65	**135430** 0050	77,–
M 6	1.0	80	16	30	6	4.9	5.55	135430 0060	89,50
M 8	1.25	90	17	35	8	6.2	7.40	135430 0080	92,50
M 10	1.5	100	20	39	10	8	9.30	135430 0100	116,–
M 12	1.75	110	24	-	9	7	11.20	135430 0120	137,–
M 14	2.0	110	26	-	11	9	13.10	135430 0140	205,–
M 16	2.0	110	26	-	12	9	15.10	135430 0160	210,–
M 20	2.5	140	32	-	16	12	18.90	135430 0200	270,–

1127



S-XPF machine forming taps

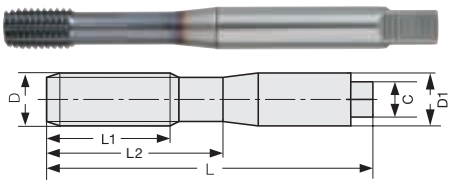
M | 60° | HSS-E | DIN 2174 | ISO 2 6HX | C 2,5 | 2,5xD | TiCN | Vc/fz | 392

- **ISO 6HX metric thread**
- ISO 2/4HX where ≤ M1.4
- Type C, 2.5-thread chamfer
- With oil grooves ≥ M3
- **additional versions available**

material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 15-40	● 15-40		● 8-20	● 8-20	● 8-20						● 20-50		● 10-30				

Cutting speed Vc m/min. — Please adjust these guidelines according to clamping operation and machine set-up.



D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 1	0.25	40	4	-	2.5	2.1	0.90	**133920** 0010	60,50
M 1.2	0.25	40	4.8	-	2.5	2.1	1.10	133920 0012	58,30
M 1.4	0.3	40	5.6	-	2.5	2.1	1.26	133920 0014	57,60
M 1.6	0.35	40	6.4	-	2.5	2.1	1.45	133920 0016	56,50
M 2	0.4	45	8	-	2.8	2.1	1.85	133920 0020	44,90
M 2.5	0.45	50	9	-	2.8	2.1	2.30	133920 0025	44,–
M 3	0.5	56	11	18	3.5	2.7	2.75	133920 0030	42,20
M 4	0.7	63	13	21	4.5	3.4	3.65	133920 0040	42,70
M 5	0.8	70	16	25	6	4.9	4.60	133920 0050	43,20
M 6	1.0	80	19	30	6	4.9	5.55	133920 0060	44,–
M 8	1.25	90	22	35	8	6.2	7.40	133920 0080	48,80
M 10	1.5	100	24	39	10	8	9.30	133920 0100	58,30
M 12	1.75	110	24	-	9	7	11.20	133920 0120	69,–
M 14	2.0	110	26	-	11	9	13.10	133920 0140	85,80
M 16	2.0	110	26	-	12	9	15.10	133920 0160	118,–
M 18	2.5	125	30	-	14	11	16.90	133920 0180	135,30
M 20	2.5	140	32	-	16	12	18.90	133920 0200	154,70
M 22	2.5	140		-	18	14.5	20.80	133920 0220	207,70
M 24	3.0	160		-	18	14.5	22.50	133920 0240	218,70
M 27	3.0	160		-	20	16	25.50	133920 0270	252,90
M 30	3.5	180		-	22	18	28.20	133920 0300	271,50

1128

V-NRT-B machine forming tap

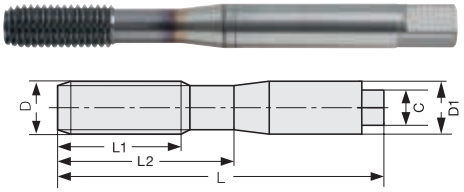
M | 60° | HSS-E | DIN 371 | ISO 2 6HX | C 2 | 2,5xD | TiCN | Vc/fz | 392

- **Metric ISO 6HX thread**
- Type C, 2-thread chamfer
- For blind-hole threads
- **Cutting material: HSS-E TiCN**
- **Also available in Tolerance 6GX version**

material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 8-60	● 8-45		● 8-30	● 8-36	● 8-22		○ 12-45		○ 3-9		● 45-90	○ 15-45	○ 15-30				

Cutting speed Vc m/min. — Please adjust these guidelines according to clamping operation and machine set-up.



D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 2	0.4	45	8	8	2.8	2.1	1.85	**133320** 0020	35,70
M 2.2	0.45	45	9	8	2.8	2.1	2.00	133320 0022	37,90
M 2.5	0.45	50	9	9	2.8	2.1	2.30	133320 0025	35,10
M 3	0.5	56	11	18	3.5	2.7	2.75	133320 0030	33,40
M 3.5	0.6	56	13	20	4.0	3.0	3.25	133320 0035	34,80
M 4	0.7	63	13	21	4.5	3.4	3.65	133320 0040	34,–
M 5	0.8	70	16	25	6.0	4.9	4.60	133320 0050	34,50
M 6	1.0	80	19	30	6.0	4.9	5.55	133320 0060	35,10
M 8	1.25	90	22	35	8.0	6.2	7.40	133320 0080	38,30
M 10	1.5	100	24	39	10.0	8.0	9.30	133320 0100	45,90

1128

ATORN® Machine forming taps

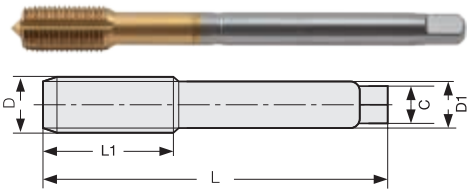
MF | 60° | HSS-E | DIN 2174 | ISO 2 6HX | C 2-3 | 2,5xD | TiN | Vc/fz | 392

- **Metric ISO 6HX fine thread**
- Form C, 2-3 thread chamfer
- With oil grooves
- Constructional dimensions DIN 2174
- **Cutting material: HSS-E TiN**
- For blind-hole and through-hole threads
- For materials with good cold-forming properties and a min. expansion of 8 %
- Possible thread depth 2.5 x D

material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 8-60	● 8-45		● 8-30	● 8-36	● 8-22		○ 12-45		○ 3-9		● 45-90		○ 15-30				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 6	0.75	80	30	4.5	3.4	5.65	**135480** 0675	41,10
M 8	0.75	80	30	6	4.9	7.65	135480 0875	46,50
M 8	1.0	90	35	6	4.9	7.55	135480 0810	36,50
M 10	1.0	90	35	7	5.5	7.55	135480 1010	37,50
M 10	1.25	100	39	7	5.5	9.40	135480 1012	50,20
M 12	1.0	100	40	9	7	11.55	135480 1210	47,50
M 12	1.25	100	40	9	7	11.40	135480 1212	51,–
M 12	1.5	100	40	9	7	11.30	135480 1215	49,30
M 14	1.0	100	40	11	9	13.55	135480 1410	64,–

1127

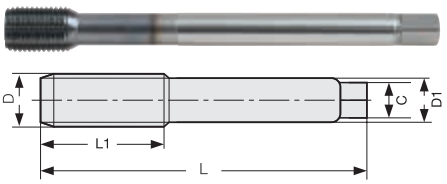
D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 14	1.5	100	40	11	9	13.30	135480 1415	61,50
M 16	1.0	100	44	12	9	15.55	135480 1610	82,–
M 16	1.5	100	44	12	9	15.30	135480 1615	58,50
M 18	1.0	110	44	14	11	17.55	135480 1810	95,–
M 18	1.5	110	44	14	11	17.30	135480 1815	85,–
M 20	1.0	125	44	16	12	19.55	135480 2010	113,–
M 20	1.5	125	44	16	12	19.30	135480 2015	97,–
M 22	1.5	125	44	18	14.5	21.30	135480 2215	124,–
M 24	1.5	140	48	18	14.5	23.30	135480 2415	129,50

1127

S-XPF machine forming taps

MF | 60° | HSS-E | DIN 2174 | ISO 2 6HX | C 2,5 | 2,5xD | TiCN | Vc/fz | 392

- **ISO 6HX fine-pitch metric thread**
- Type C, 2.5-thread chamfer
- With oil grooves
- **Cutting material: HSS-E TiCN**
- For blind-hole and through-hole threads
- **additional versions available**



material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 15-40	● 15-40		● 8-20	● 8-20	● 8-20						● 20-50		● 10-30				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 4	0.5	63	8	4.5	3.4	3.80	**133930** 0405	50,30
M 5	0.5	70	8	6	4.9	4.80	133930 0505	51,10
M 6	0.5	80	8	6	4.9	5.80	133930 0605	52,–
M 6	0.75	80	8	6	4.9	5.70	133930 0607	52,–
M 8	0.5	80	10	6	4.9	7.80	133930 0805	57,70
M 8	0.75	80	10	6	4.9	7.70	133930 0807	57,70
M 8	1.0	90	10	6	4.9	7.55	133930 0810	49,–
M 10	1.0	90	12	7	5.5	9.55	133930 1010	69,10
M 10	1.25	100	12	7	5.5	9.40	133930 1012	64,20
M 12	1.0	100	15	9	7	11.60	133930 1210	80,90
M 12	1.25	100	15	9	7	11.40	133930 1212	70,50
M 12	1.5	100	15	9	7	11.30	133930 1215	70,50

1128

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
M 14	1.0	100	15	11	9	13.60	133930 1410	101,20
M 14	1.25	100	15	11	9	13.40	133930 1412	85,80
M 14	1.5	100	15	11	9	13.30	133930 1415	85,80
M 16	1.0	100	15	12	9	15.60	133930 1610	139,30
M 16	1.5	100	15	12	9	15.30	133930 1615	118,–
M 18	1.0	110	15	14	11	17.60	133930 1810	159,80
M 18	1.5	110	15	14	11	17.30	133930 1815	132,50
M 20	1.0	125	15	16	12	19.60	133930 2010	182,60
M 20	1.5	125	15	16	12	19.30	133930 2015	151,80
M 22	1.5	125	15	18	14.5	21.30	133930 2215	203,40
M 24	1.5	140	15	18	14.5	23.30	133930 2415	214,40

1128

ATORN® Machine forming taps

G | 55° | HSS-E | C 2-3 | 2xD | TiN | Vc/fz | 392

- **Whitworth pipe thread, 55°**
- DIN 2189
- Type C, 2-3 thread chamfer
- With oil grooves
- Constructional dimensions DIN 2174
- **Cutting material: HSS-E TiN**
- For blind-hole and through-hole threads

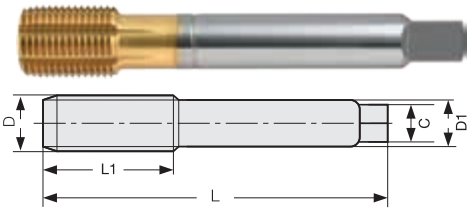
material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 8-50	● 8-45		● 8-30	● 8-36	● 8-22				○ 3-9		○ 45-90		○ 15-30				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D	Pitch TPI	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	art.no.	€
G 1/16"	28	90	18	6	4.9	7.30	**135495** 0116	40,50
G 1/8"	28	90	18	7	5.5	9.30	135495 0018	46,50
G 1/4"	19	100	20	11	9	12.50	135495 0014	57,50
G 3/8"	19	100	22	12	9	16.00	135495 0038	81,–
G 1/2"	14	125	25	16	12	20.00	135495 0012	106,–
G 3/4"	14	140	28	20	16	25.50	135495 0034	111,–

1127

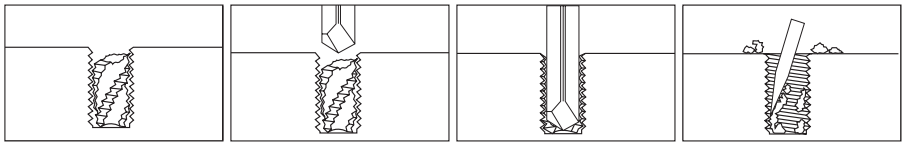


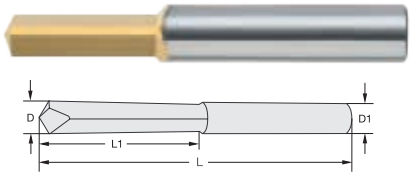
ATORN® Solid carbide tap drill-out tool

VHM | Werks-norm | Typ H | TiN | Vc/fz | 393

Coated design

- Drill bit for extracting broken-off taps
- For drilling stellites and heat-treated steels (58 – 68 HRc)
- Straight shank
- **Cutting material: solid carbide, TiN-coated**





material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
																● 11	● 11

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

for thread	D mm	L1 mm	L mm	D1 mm	art.no.	€
M3	2.5	10	38	3.0	**114075** 2025	34,10
M4	3.3	14	50	4.0	114075 2033	39,70
M5	4.2	19	50	5.0	114075 2042	45,90
M6	5.0	23	50	6.0	114075 2050	51,50
M8	6.8	23	80	8.0	114075 2068	55,50
M10	8.5	25	80	10.0	114075 2085	74,–
M12	10.2	35	80	12.0	114075 2102	107,–

1132



7 pcs. set

Contents	art.no.	€
Solid carbide tap extractor Ø 2.5 3.3 4.2 5.0 6.8 8.5 10.2 (1 of each)	**114075** 2120	400,–

1132

THERMDRILL® Thermal drill bits (flow drill)



396

For a lower wall thickness, often only 1-2 threads can be inserted. These are generally not sufficient for a load-bearing thread. With the THERMDRILL process, you can create extremely stable thread bushes in seconds in only two steps. Protected against rotation and resistant to vibrations. Ideal for thin-walled sheet steel, pipes and profiles as the thread bushes are produced as if from one cast.

- **Wobbling, loosening or rotating (as with rivet nuts) no longer possible**
- Additional inserts no longer required
- **Especially suitable for round tubes**
- **Secure hold even in sheet metal and hollow profiles**
- No waste, chip-free process by using friction heat
- Better quality thread due to shaped instead of cut thread (material reinforcement)
- **Long service life of tools thanks to polygon-ground solid carbide**







Basic equipment

- Incl. ER32 - Ø 6, 8 and 10 mm collets

Holding fixtures	Contents	art.no.	€
MT 2	1 each of paste 100 g, thread forming oil 100 ml, brass brush, bristle brush, spanner, hook wrench, tool holder with cooling ring, system case	**102900** 1000	360,–
MT3	1 each of paste 100 g, thread forming oil 100 ml, brass brush, bristle brush, spanner, hook wrench, tool holder with cooling ring, system case	102900 1001	390,–

1159

FORM type tool sets

- including forming taps
- **for bushes with collar**
- Type FORM forms a bulge from material flowing upwards



Thread	Shank Ø mm	Design	t max. mm	art.no.	€
M 4	6	Short	1.5	**102910** 0040	98,–
M 4	6	Lang	2.5	102920 0040	98,–
M 5	6	Short	2.0	102910 0050	102,–
M 5	6	Lang	3.0	102920 0050	102,–
M 6	8	Short	2.0	102910 0060	111,–
M 6	8	Lang	3.5	102920 0060	111,–
M 8	8	Short	2.5	102910 0080	131,–
M 8	8	Lang	4.0	102920 0080	131,–
M 10	10	Short	2.5	102910 0100	156,–
M 10	10	Lang	4.5	102920 0100	156,–

1159

CUT type tool sets

- including forming taps
- **for bushes without collar**
- Type CUT cuts the material protruding upwards flat



Thread	Shank Ø mm	Design	t max. mm	art.no.	€
M 4	6	Short	2.0	**102930** 0040	127,–
M 4	6	Lang	4.0	102940 0040	127,–
M 5	6	Short	3.0	102930 0050	153,–
M 5	6	Lang	4.5	102940 0050	153,–
M 6	8	Short	3.0	102930 0060	172,–
M 6	8	Lang	5.0	102940 0060	172,–
M 8	8	Short	4.0	102930 0080	194,–
M 8	8	Lang	6.0	102940 0080	187,–
M 10	10	Short	4.0	102930 0100	220,–
M 10	10	Lang	6.5	102940 0100	220,–

1159

FORM type thermal drill bits

- **for bushes with collar**
- Type FORM forms a bulge from material flowing upwards



Thread	Shank Ø mm	Design	t max. mm	art.no.	€
M 4	6	Short	1.5	**102901** 0040	63,–
M 4	6	Lang	2.5	102902 0040	63,–
M 5	6	Short	2.0	102901 0050	67,50
M 5	6	Lang	3.0	102902 0050	67,50
M 6	8	Short	2.0	102901 0060	74,50
M 6	8	Lang	3.5	102902 0060	74,50
M 8	8	Short	2.5	102901 0080	90,50
M 8	8	Lang	4.0	102902 0080	90,50
M 10	10	Short	2.5	102901 0100	111,–
M 10	10	Lang	4.5	102902 0100	111,–

1159

CUT type thermal drill bits

- **for bushes without collar**
- Type CUT cuts the material protruding upwards flat



Thread	Shank Ø mm	Design	t max. mm	art.no.	€
M 4	6	Short	2.0	**102903** 0040	89,–
M 4	6	Lang	4.0	102904 0040	89,–
M 5	6	Short	3.0	102903 0050	116,–
M 5	6	Lang	4.5	102904 0050	116,–
M 6	8	Short	3.0	102903 0060	132,–
M 6	8	Lang	5.0	102904 0060	132,–
M 8	8	Short	4.0	102903 0080	145,–
M 8	8	Lang	6.0	102904 0080	151,–
M 10	10	Short	4.0	102903 0100	172,–
M 10	10	Lang	6.5	102904 0100	172,–

1159

Paste and thread forming oil

- Paste to protect the thermal drill from excessive wear
- High-performance oil especially suitable for thread forming in aluminium, copper, brass, steel and stainless steel



Description	art.no.	€
Flow drill bit paste 100 g incl. brush	**102980** 0100	25,90
Flow drill bit paste 1 kg incl. brush	102980 1000	63,–
Thread forming oil 100 ml incl. brush	102981 0100	24,80
Thread forming oil 1 l incl. brush	102981 1000	48,40

1159

Over 180,000 tools available online!
Register online now!
www.saratools.com



HeliCoil plus made by BÖLLHOFF HELICOIL plus thread repair kits

Vc/fz 393

- Contents for each coil thread:
- **HELICOIL plus** thread inserts in three lengths (1xD, 1.5xD and 2xD)
- Twist drill bits, hand taps made from HSS, installation mandrels and tang breakers **up to M12**
- From M3 to M6, 60 **HELICOIL** inserts in a repair pack, in 3 lengths (20 of each)
- From M8 to M16, 30 **HELICOIL** inserts in a repair pack, in 3 lengths (10 of each)



137065 0001



137065 0002

Repair packs with metric thread inserts

for coil thread	Twist drill Ø mm	Number inserts	art.no.	€
M 3 x 0.5	3.2	60	**137060** 0003	48,50
M 4 x 0.7	4.2	60	137060 0004	52,–
M 5 x 0.8	5.2	60	137060 0005	49,90
M 6 x 1.0	6.3	60	137060 0006	44,30
M 8 x 1.25	8.4	30	137060 0008	44,–
M 10 x 1.5	10.5	30	137060 0010	53,80
M 12 x 1.75	12.5	30	137060 0012	55,60
M14 x 2.0	14.5	30	137060 0014	68,20
M 16 x 2.0	16.5	30	137060 0016	78,20

1149

Repair kits with metric thread inserts

- Contents: **HELICOIL** plus thread inserts
- Various dimensions and lengths
- Twist drill bits and **HELICOIL** hand taps made from HSS
- **HELICOIL** installation mandrels, tang break-off tool

for coil thread	Number inserts	art.no.	€
M 5 - M 12	230	**137065** 0001	223,–
M6/M8/M10	132	137065 0002	163,50

1149

Small refill packs

for coil thread	Contents	1 x D art.no.	€	1,5 x D art.no.	€	2 x D art.no.	€
M3	20	**137061** 0003	11,85	**137062** 0003	13,60	**137063** 0003	15,65
M4	20	137061 0004	10,20	137062 0004	11,65	137063 0004	13,20
M5	20	137061 0005	12,55	137062 0005	14,30	137063 0005	15,95
M6	20	137061 0006	13,60	137062 0006	15,85	137063 0006	17,85
M8	10	137061 0008	7,45	137062 0008	8,70	137063 0008	9,70
M10	10	137061 0010	10,20	137062 0010	11,65	137063 0010	13,20
M12	10	137061 0012	23,60	137062 0012	27,20	137063 0012	30,60
M14	10	137061 0014	23,80	137062 0014	27,30	137063 0014	30,80
M16	10	137061 0016	32,70	137062 0016	37,60	137063 0016	42,60
		1149		1149		1149	



Large refill packs

for coil thread	Contents	1 x D art.no.	€	1,5 x D art.no.	€	2 x D art.no.	€
M3	100			**137062** 0103	42,30		
M4	100	**137061** 0104	33,20	137062 0104	35,50	**137063** 0104	42,20
M5	100	137061 0105	36,70	137062 0105	39,40	137063 0105	48,–
M6	100	137061 0106	34,30	137062 0106	41,–	137063 0106	44,–
M8	100	137061 0108	39,70	137062 0108	49,70	137063 0108	56,–
M10	100	137061 0110	46,–	137062 0110	58,–	137063 0110	74,50
M12	100	137061 0112	62,50	137062 0112	86,50	137063 0112	115,–
M16	100	137061 0116	96,–	137062 0116	183,–	137063 0116	181,–
M20	100	137061 0120	295,–	137062 0120	345,–		
		1149		1149		1149	



Accessories

for coil thread	Hand taps art.no.	€	Installation mandrel art.no.	€	Tang break-off tool art.no.	€
M3	**137066** 0003	6,95	**137067** 0003	8,60	**137068** 0003	4,34
M4	137066 0004	6,40	137067 0004	8,60	137068 0004	3,57
M5	137066 0005	6,85	137067 0005	8,60	137068 0005	3,78
M6	137066 0006	5,70	137067 0006	8,60	137068 0006	3,78
M8	137066 0008	7,80	137067 0008	8,60	137068 0008	1,74
M10	137066 0010	10,20	137067 0010	8,60	137068 0010	1,94
M12	137066 0012	12,75	137067 0012	8,60	137068 0012	2,14
M16	137066 0016	22,90	137067 0016	13,90		
	1149		1149		1149	



Hand taps



Installation mandrel



Tang break-off tool

Overview of threading dies

	Threading dies									
Sorting by thread										
Brand	ATORN	SARA	ATORN	SARA	ATORN	SARA	SARA	ATORN	SARA	ATORN
Thread	M	M	M-LH	M-LH	M	M	M	MF	MF	MF-LH
Range	M2.5 - M36	M2.5 - M36	M3 - M20	M3 - M20	M2 - M24	M2 - M24	M3 - M30	M2 - M50	M2 - M36	M8 - M20
Tolerance	6g	6g	6g	6g	6g	6g	6g	6g	6g	6g
DIN	22568	22568	22568	22568	22568	22568	382	22568	22568	22568
Cutting material	HSS	HSS	HSS	HSS	HSS-E	HSS-E	HSS	HSS	HSS	HSS
Type/info			Left-hand thread	Left-hand thread			Hexagonal			Left-hand thread
Item number	136001....	136004....	136010....	136014....	136005....	136045....	136002....	136015....	136016....	136025....
Page	292	292	293	293	293	293	294	295	295	296
Material groups	Usage recommendations									
Steel < 700 N/mm²	●	●	●	●	●	●	●	●	●	●
Steel < 1000 N/mm²	○	○	○	○	●	●	○	○	○	○
Steel < 1400 N/mm²					○	○				
Stainless steel ferritic/martensitic	○	○	○	○	●	●	○	○	○	○
Stainless steel austenitic	○	○	○	○	○	○	○	○	○	○
Stainless steel duplex										
Cast iron GG/GTS										
Cast iron GGG										
Titanium alloys										
Superalloys Fe/NiCo base < 30 HRc										
Superalloys Fe/NiCo base ≥ 30 HRc										
Aluminium < 8 % Si	○	○	○	○	○	○	○	○	○	○
Aluminium ≥ 8 % Si										
Copper Cu-alloy	○	○	○	○	○	○	○	○	○	○
Graphite GRP/CFP/thermoset										
Hardened steel < 55 HRc										
Hardened steel < 60 HRc										
Hardened steel ≥ 60 HRc										

	Threading dies			
Sorting by thread				
Brand	ATORN	ATORN	ATORN	ATORN
Thread	MF	BSW	G	UNF
Range	M5 - M30	BSW1/8" - BSW5/8"	G1/8" - G2"	UNF No.4 - UNF 5/8"
Tolerance	6g	BS 84 medium	A	2A
DIN	22568	22568	22568	22568
Cutting material	HSS-E	HSS	HSS	HSS
Type/info				
Item number	136020....	136035....	136040....	136050....
Page	296	297	297	297
Material groups	Usage recommendations			
Steel < 700 N/mm²	●	●	●	●
Steel < 1000 N/mm²	●	○	○	○
Steel < 1400 N/mm²	○			
Stainless steel ferritic/martensitic	●	○	○	○
Stainless steel austenitic	○	○	○	○
Stainless steel duplex				
Cast iron GG/GTS				
Cast iron GGG				
Titanium alloys				
Superalloys Fe/NiCo base < 30 HRc				
Superalloys Fe/NiCo base ≥ 30 HRc				
Aluminium < 8 % Si	○	○	○	○
Aluminium ≥ 8 % Si				
Copper Cu-alloy	○	○	○	○
Graphite GRP/CFP/thermoset				
Hardened steel < 55 HRc				
Hardened steel < 60 HRc				
Hardened steel ≥ 60 HRc				

Thread cutting sets from page 298



ATORN® SARA® Threading dies

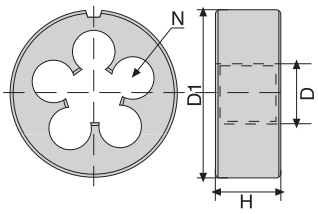
M | 60° | HSS | DIN EN 22568 | DIN 13 6g | i Vc/fz | 393

- **For ISO metric thread, DIN 13**
- Closed, pre-slotted shape
- From M3 with two-sided spiral point for clean and easy chip removal in the cutting direction
- Tolerance zone 6g
- **Cutting material: HSS**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	○		○	○							○		○				

D mm	Pitch mm	D1 mm	H mm	N	ATORN® art.no.	ATORN® €	SARA® art.no.	SARA® €
M 2.5	0.45	16	5	3	**136001** 0025	27,50	**136004** 0025	20,10
M 2.6	0.45	16	5	3	136001 0026	29,50	136004 0026	22,30
M 3	0.5	20	5	3	136001 0030	17,80	136004 0030	10,75
M 3.5	0.6	20	5	3	136001 0035	28,–	136004 0035	21,90
M 4	0.7	20	5	3	136001 0040	18,80	136004 0040	10,75
M 4.5	0.75	20	7	4	136001 0045	41,80	136004 0045	31,60
M 5	0.8	20	7	4	136001 0050	17,80	136004 0050	10,75
M 6	1.0	20	7	4	136001 0060	17,80	136004 0060	10,75
M 7	1.0	25	9	4	136001 0070	24,40	136004 0070	19,20
M 8	1.25	25	9	4	136001 0080	19,70	136004 0080	11,90
M 9	1.25	25	9	4	136001 0090	39,40	136004 0090	30,80
M 10	1.5	30	11	4	136001 0100	25,50	136004 0100	15,10
M 11	1.5	30	11	4	136001 0110	49,60	136004 0110	37,80
M 12	1.75	38	14	4	136001 0120	31,50	136004 0120	18,80
M 14	2.0	38	14	4	136001 0140	31,50	136004 0140	18,80
M 16	2.0	45	18	4	136001 0160	42,80	136004 0160	25,70
M 18	2.5	45	18	5	136001 0180	42,80	136004 0180	27,40
M 20	2.5	45	18	5	136001 0200	42,80	136004 0200	31,50
M 22	2.5	55	22	5	136001 0220	59,50	136004 0220	41,–
M 24	3.0	55	22	5	136001 0240	59,50	136004 0240	43,20
M 27	3.0	65	25	5	136001 0270	144,–	136004 0270	88,–
M 30	3.5	65	25	6	136001 0300	144,–	136004 0300	93,–
M 33	3.5	65	25	6	136001 0330	169,–	136004 0330	114,–
M 36	4.0	65	25	7	136001 0360	167,–	136004 0360	121,–
					1126		1158	









STAHLWILLE
Hand tools
401 pages
Art.no. 019900 5633

Overview of all free manufacturers' catalogues on page 14/15

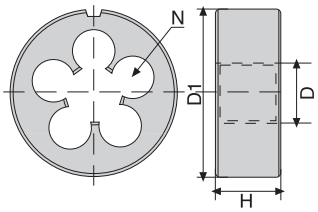
ATORN® SARA® Left-hand threading die

M-LH | 60° | HSS | DIN EN 22568 | DIN 13 6g | Vc/fz | 393

- **For ISO left-hand metric thread, DIN 13**
- Closed, pre-slotted shape
- From M3 with two-sided spiral point for clean and easy chip removal in the cutting direction
- Tolerance zone 6g
- **Cutting material: HSS**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	○		○	○							○		○				





D mm	Pitch mm	D1 mm	H mm	N	ATORN® art.no.	ATORN® €	SARA® art.no.	SARA® €
M 3-LH	0.5	20	5	4	**136010** 0030	49,90	**136014** 0030	40,–
M 4-LH	0.7	20	5	4	136010 0040	47,10	136014 0040	37,60
M 5-LH	0.8	20	7	4	136010 0050	44,40	136014 0050	35,50
M 6-LH	1.0	20	7	4	136010 0060	44,40	136014 0060	35,50
M 8-LH	1.25	25	9	4	136010 0080	48,10	136014 0080	38,40
M 10-LH	1.5	30	11	4	136010 0100	58,70	136014 0100	46,90
M 12-LH	1.75	38	14	4	136010 0120	77,50	136014 0120	61,50
M 14-LH	2.0	38	14	4	136010 0140	77,50	136014 0140	61,50
M 16-LH	2.0	45	18	4	136010 0160	101,50	136014 0160	81,–
M 20-LH	2.5	45	18	5	136010 0200	104,–	136014 0200	83,–
					1126		1158	

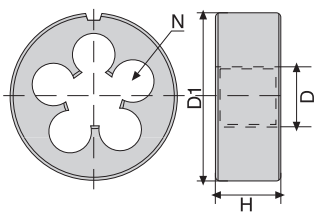
ATORN® SARA® Threading dies

M | 60° | HSS-E | DIN EN 22568 | DIN 13 6g | Vc/fz | 393

- **For DIN 13 metric ISO thread**
- Closed, pre-slotted shape
- From M3 with two-sided spiral point for clean and easy chip removal in the cutting direction
- Tolerance field 6 g
- **Cutting material HSS-E** (136005.... lapped and nitrided)

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	○	●	○							○		○				





D mm	Pitch mm	D1 mm	H mm	N	ATORN® art.no.	ATORN® €	SARA® art.no.	SARA® €
M 2	0.4	16	5	4	**136005** 0020	57,50	**136045** 0020	46,10
M 3	0.5	20	5	4	136005 0030	36,–	136045 0030	25,–
M 4	0.7	20	5	4	136005 0040	34,80	136045 0040	24,30
M 5	0.8	20	7	4	136005 0050	32,40	136045 0050	22,50
M 6	1.0	20	7	4	136005 0060	32,40	136045 0060	22,50
M 8	1.25	25	9	5	136005 0080	38,80	136045 0080	26,80
M 10	1.5	30	11	5	136005 0100	46,10	136045 0100	31,80
M 12	1.75	38	14	5	136005 0120	61,50	136045 0120	42,40
M 14	2.0	38	14	5	136005 0140	67,–	136045 0140	46,20
M 16	2.0	45	18	5	136005 0160	80,–	136045 0160	55,50
M 18	2.5	45	18	5	136005 0180	97,–	136045 0180	65,–
M 20	2.5	45	18	5	136005 0200	89,–	136045 0200	61,50
M 24	3.0	55	22	6	136005 0240	135,–	136045 0240	93,–
					1126		1158	

SARA® Threading die set

M | 60° | HSS | HSS-E | DIN 22568 | DIN 13 6g | i Vc/fz | 393

- **For ISO metric thread, DIN 13**
- Closed, pre-slotted shape
- Tolerance zone 6g
- **Cutting material: HSS and HSS-E**
- In a steel case

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	○	●	○							○		○				



139120 0001

139120 0002

Contents	art.no.	€
HSS-E-threading die M3-4-5-6-8-10-12 (1 of each)	**139120** 0001	149,–
HSS threading die M3-4-5-6-8-10-12 incl. threading die holders (1 of each)	139120 0002	63,50

1158

SARA® Hexagonal threading dies

M | 60° | HSS | DIN 382 | DIN 13 6g | i Vc/fz | 393

- **For ISO metric thread, DIN 13**
- Tolerance zone 6g
- **Cutting material: HSS**
- For re-cutting and repairing damaged threads

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	○		○	○							○		○				

D mm	Pitch mm	H mm	Wr. width mm	art.no.	€
M 3	0.5	5	18	**136002** 0030	24,20
M 4	0.7	5	18	136002 0040	23,80
M 5	0.8	7	18	136002 0050	23,40
M 6	1.0	7	18	136002 0060	23,40
M 8	1.25	9	21	136002 0080	25,–
M 10	1.5	11	27	136002 0100	31,20
M 12	1.75	14	36	136002 0120	41,30
M 14	2.0	14	36	136002 0140	46,30
M 16	2.0	18	41	136002 0160	54,–
M 20	2.5	18	41	136002 0200	54,50
M 24	3.0	22	50	136002 0240	88,–
M 30	3.5	25	60	136002 0300	142,–

1158





7 pcs. set

- In a steel case

Contents	art.no.	€
Threading dies M 3-4-5-6-8-10-12 (1 of each)	**136002** 0312	136,–

1158

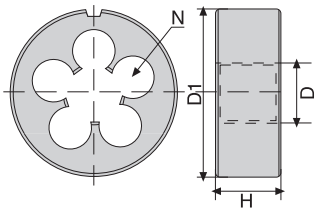
ATORN® SARA® Threading dies

MF | 60° | HSS | DIN EN 22568 | DIN 13 6g | i Vc/fz | 393

- **For ISO fine-pitch metric thread, DIN 13**
- Closed, pre-slotted shape
- From M3 with two-sided spiral point for clean and easy chip removal in the cutting direction
- Tolerance zone 6g, M2 x 0.25 = 6h, without spiral point
- **Cutting material: HSS**
- * Without spiral point

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	○		○	○							○		○				





D mm	Pitch mm	D1 mm	H mm	N	ATORN® art.no.	ATORN® €	SARA® art.no.	SARA® €
M 2*	0.25	16	5	4	**136015** 0001	68,–		
M 3	0.35	20	5	4	136015 0006	47,80	**136016** 0006	31,60
M 4	0.35	20	5	4	136015 0008	47,30	136016 0008	35,20
M 5	0.5	20	5	4	136015 0010	35,–	136016 0010	24,40
M 6	0.5	20	5	4	136015 0011	35,–	136016 0011	24,40
M 6	0.75	20	7	4	136015 0012	26,90	136016 0012	21,10
M 7	0.75	25	9	4	136015 0013	39,50	136016 0013	27,60
M 8	0.5	25	9	5	136015 0014	47,30	136016 0014	33,–
M 8	0.75	25	9	4	136015 0015	30,10	136016 0015	22,20
M 8	1.0	25	9	4	136015 0016	30,10	136016 0016	22,–
M 9	1.0	25	9	5	136015 0018	41,90	136016 0018	30,90
M 10	0.75	30	11	5	136015 0020	50,50	136016 0020	38,40
M 10	1.0	30	11	5	136015 0021	36,–	136016 0021	26,30
M 10	1.25	30	11	4	136015 0022	38,60	136016 0022	30,40
M 11	1.0	30	11	5	136015 0023	48,50	136016 0023	34,20
M 12	1.0	38	10	5	136015 0025	47,30	136016 0025	34,90
M 12	1.25	38	10	4	136015 0026	50,–	136016 0026	38,40
M 12	1.5	38	10	4	136015 0027	43,70	136016 0027	31,80
M 14	1.0	38	10	5	136015 0031	47,30	136016 0031	36,30
M 14	1.25	38	10	5	136015 0032	49,60	136016 0032	39,–
M 14	1.5	38	10	5	136015 0033	43,70	136016 0033	31,80
M 15	1.0	38	10	5	136015 0034	63,50	136016 0034	39,60
M 16	1.0	45	14	5	136015 0036	65,50	136016 0036	52,–
M 16	1.5	45	14	5	136015 0037	59,10	136016 0037	43,20
M 18	1.0	45	14	5	136015 0038	83,50	136016 0038	64,50
M 18	1.5	45	14	5	136015 0039	59,–	136016 0039	43,20
					1126		1158	

D mm	Pitch mm	D1 mm	H mm	N	ATORN® art.no.	ATORN® €	SARA® art.no.	SARA® €
M 20	1.0	45	14	6	136015 0041	83,50	136016 0041	64,50
M 20	1.5	45	14	6	136015 0042	59,–	136016 0042	43,20
M 20	2.0	45	14	6	136015 0043	87,50	136016 0043	67,–
M 22	1.0	55	16	6	136015 0044	112,–	136016 0044	88,–
M 22	1.5	55	16	6	136015 0045	80,50	136016 0045	59,–
M 22	2.0	55	16	5	136015 0046	118,–	136016 0046	81,–
M 24	1.0	55	16	6	136015 0047	112,–	136016 0047	83,–
M 24	1.5	55	16	6	136015 0048	80,50	136016 0048	59,–
M 24	2.0	55	16	6	136015 0049	110,–	136016 0049	81,50
M 25	1.5	55	16	6	136015 0051	118,–	136016 0051	92,50
M 26	1.5	55	16	6	136015 0052	95,50	136016 0052	75,–
M 27	2.0	65	18	6	136015 0055	162,–	136016 0055	117,–
M 28	1.5	65	18	6	136015 0057	119,–	136016 0057	92,50
M 30	1.5	65	18	6	136015 0060	119,–	136016 0060	94,50
M 30	2.0	65	18	6	136015 0061	162,–	136016 0061	102,–
M 32	1.5	65	18	7	136015 0062	149,–	136016 0062	103,–
M 33	2.0	65	18	7	136015 0065	166,–	136016 0065	125,–
M 34	1.5	65	18	7	136015 0066	167,–	136016 0066	125,–
M 35	1.5	65	18	8	136015 0067	160,–	136016 0067	120,–
M 36	1.5	65	18	8	136015 0068	154,–	136016 0068	114,–
M 36	2.0	65	18	8	136015 0069	166,–	136016 0069	128,–
M 36	3.0	65	25	7	136015 0070	195,–	136016 0070	128,–
M 40	1.5	75	20	8	136015 0075	235,–		
M 42	1.5	75	20	8	136015 0078	235,–		
M 45	1.5	90	22	7	136015 0082	320,–		
M 50	1.5	90	22	8	136015 0088	320,–		
					1126		1158	

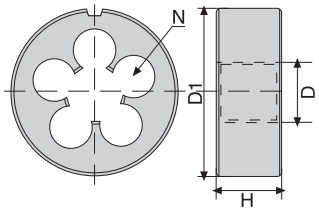
ATORN® Left-hand threading die

MF-LH | 60° | HSS | DIN EN 22568 | DIN 13 6g | Vc/fz | 393

- **For left-hand ISO fine-pitch metric thread, DIN 13**
- Closed, pre-slotted shape
- With two-sided spiral point for clean and easy chip removal in the cutting direction
- Tolerance zone 6g
- **Cutting material: HSS**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	○		○	○							○		○				





D mm	Pitch mm	D1 mm	H mm	N	art.no.	€
M 8-LH	0.75	25	9	4	**136025** 0009	66,–
M 8-LH	1.0	25	9	4	136025 0010	52,–
M 10-LH	1.0	30	11	5	136025 0015	62,–
M 12-LH	1.5	38	10	4	136025 0019	75,–
M 14-LH	1.5	38	10	4	136025 0020	75,–
M 16-LH	1.5	45	14	4	136025 0022	102,–
M 20-LH	1.5	45	14	5	136025 0025	102,–

1126

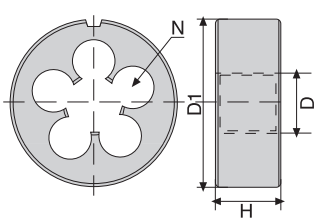
ATORN® Threading dies

MF | 60° | HSS-E | DIN EN 22568 | DIN 13 6g | Vc/fz | 393

- **For metric ISO fine threads DIN 13**
- Closed, pre-slotted shape
- With two-sided spiral point for clean and easy chip removal in the cutting direction
- Tolerance field 6 g
- **Cutting material HSS-E** (lapped and nitrided)

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	○	●	○							○		○				





D mm	Pitch mm	D1 mm	H mm	N	art.no.	€
M 5	0.5	20	5	4	**136020** 0010	51,50
M 6	0.75	20	7	4	136020 0012	46,10
M 8	0.75	25	9	4	136020 0015	51,50
M 10	1.0	30	11	5	136020 0021	56,50
M 12	1.0	38	10	5	136020 0025	73,50
M 12	1.5	38	10	5	136020 0027	70,20
M 14	1.5	38	10	5	136020 0033	70,20
M 16	1.5	45	14	5	136020 0037	96,–
M 18	1.5	45	14	5	136020 0039	96,–
M 20	1.5	45	14	6	136020 0042	96,–
M 22	1.5	55	16	6	136020 0045	136,–
M 24	1.5	55	16	6	136020 0048	136,–
M 30	1.5	65	18	6	136020 0060	195,–

1126

ATORN® Threading dies

BSW | G | 55° | HSS | DIN EN 22568 | ISO 2 6H | i Vc/fz | 393

- **for BS 84 Whitworth threads or DIN/EN/ISO 228 part 1 Whitworth pipe threads**
- Closed, pre-slotted shape
- From 1/8'' with two-sided spiral point for clean and easy chip removal in the cutting direction
- **Cutting material: HSS**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	○		○	○							○		○				

BS 84 Whitworth thread, medium tolerance zone

D	Pitch TPI	D1 mm	H mm	N	art.no.	€
BSW 1/8''	40	20	5	3	**136035** 0003	47,30
BSW 5/32''	32	20	7	4	136035 0004	54,40
BSW 7/32''	24	20	7	4	136035 0006	55,60
BSW 1/4''	20	20	7	4	136035 0007	41,90
BSW 5/16''	18	25	9	4	136035 0008	46,50
BSW 3/8''	16	30	11	4	136035 0009	56,50
BSW 1/2''	12	38	14	4	136035 0011	73,50
BSW 5/8''	11	45	18	4	136035 0013	94,50

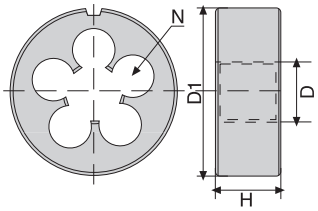
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Whitworth pipe thread, DIN/EN/ISO 228 part 1 in tolerance zone A

D	Pitch TPI	D1 mm	H mm	N	art.no.	€
G 1/8"	28	30	11	5	**136040** 0001	41,90
G 1/4"	19	38	10	5	136040 0002	41,90
G 3/8"	19	45	14	5	136040 0003	56,–
G 1/2"	14	45	14	6	136040 0004	56,–
G 3/4"	14	55	16	6	136040 0006	87,–
G 1"	11	65	18	7	136040 0008	121,50
G 1 1/2"	11	90	22	8	136040 0012	280,–
G 2"	11	105	22	9	136040 0014	350,–

1126



ATORN® Threading dies

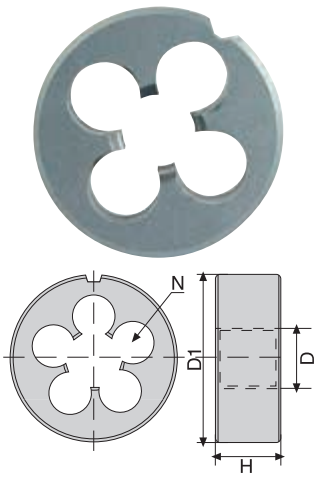
UNF | 60° | HSS | DIN EN 22568 | i Vc/fz | 393

- **For UNF (American unified national standard fine-pitch) threads**
- Closed, pre-slotted shape
- From no. 5 with two-sided spiral point for clean and easy chip removal in the cutting direction
- **Cutting material: HSS**
- Note: For cutting true-to-gauge threads in tolerance zone 2A
- * Without spiral point

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	○		○	○							○		○				

D	D1 mm	H mm	Pitch TPI	N	art.no.	€
UNF No. 4*	16	5	48	4	**136050** 0005	48,40
UNF No. 6	20	7	40	4	136050 0007	47,30
UNF No. 8	20	7	36	4	136050 0008	46,20
UNF No. 10	20	7	32	4	136050 0009	46,20
UNF No. 12	20	7	28	4	136050 0010	49,50
UNF 1/4"	20	7	28	4	136050 0011	45,30
UNF 5/16"	25	9	24	4	136050 0012	51,–
UNF 3/8"	30	11	24	4	136050 0013	61,50
UNF 7/16"	30	11	20	5	136050 0014	61,50
UNF 1/2"	38	10	20	5	136050 0015	77,–
UNF 9/16"	38	10	18	5	136050 0016	83,50
UNF 5/8"	45	14	18	5	136050 0017	102,–

1126



SARA® Thread cutting tool set, M3 - M12

M | 60° | HSS | DIN 352 | ISO 2 6H DIN 13 6g

- **In a steel case**
- Contents: 1 set of DIN 352 hand taps for each size, M3-4-5-6-8-10-12, 3 pcs per set
  1 threading die DIN 223/EN 22568, M3-4-5-6-8-10-12 in each size:
  1 adjustable tap wrench in sizes 1 + 2
  1 threading die holder (DIN 225) in each size: 20x5, 20x7, 25x9, 30x11, 38x14
  1 of each core drill (roll-milled) Ø 2.5; 3.3; 4.2; 5.0; 6.8; 8.5; 10.2 mm
  Thread pitch gauge and screw extractor
- **Cutting material: HSS**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●										○		○				



Contents	art.no.	€
Thread cutting tools M3 - M12	**137120** 0012	325,–
	1158	

SARA® Thread cutting tool set, M3 - M20

M | 60° | HSS | DIN 352 | ISO 2 6H DIN 13 6g

- **In a steel case**
- Contents: 1 set of DIN 352 hand taps for each size, M3-4-5-6-8-10-12-14-16-18-20, 3 pcs per set
  1 threading die DIN 223/EN 22568, M3-4-5-6-8-10-12-14-16-18-20 in each size:
  1 adjustable tap wrench in sizes 1 + 3
  1 threading die holder in each size: 20x5, 20x7, 25x9, 30x11, 38x14, 45x18
  Thread pitch gauge + screwdriver
- **Cutting material: HSS**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●										○		○				



Contents	art.no.	€
Thread cutting tools M3 - M20	**137130** 0020	619,–
	1158	

SARA® Hand tap set, M3 - M12

M | 60° | HSS | DIN 352 | ISO 2 6H

- **For metric threads, M3-M12**
- With adjustable tap wrench and tool holder with ratchet
- In a steel case
- **Cutting material: HSS**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●										○		○				



Contents	art.no.	€
Hand tap DIN 352 M3-4-5-6-8-10-12 (1 set of each)	**139110** 0001	129,50
	1158	

SARA® Single operation tap set, M3 - M12

M | 60° | HSS | DIN 352 | ISO 2 6H | B 3-4

- **For metric threads, M3 - M12**
- DIN 338 tapping hole twist drill bit
- Tap wrench
- In a steel case
- **Cutting material: HSS**

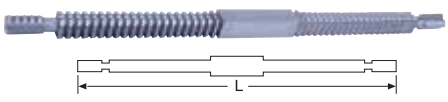
material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	○	○								○		○				



Contents	art.no.	€
Single operation tap DIN 352: M 3-4-5-6-8-10-12 (1 of each), 1 tap wrench DIN 1814 size 1 1/2 adjustable, Twist drill bit DIN 338 roll-milled: 2.5 3.3 4.2 5.0 6.8 8.5 10.2 mm (1 of each)	**150140** 0063	94,–
	1133	

HASE Universal thread file

- For metric and imperial Whitworth thread
- For internal and external thread
- Metric thread with 8 pitches from 0.80 – 3.00 mm
- Whitworth thread with 24 - 10 threads per inch
- Chrome-plated file steel
- Milled version
- Fine polished
- For cleaning and reworking damaged internal and external thread



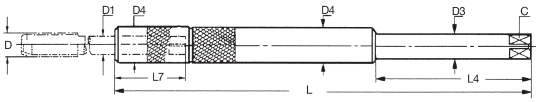
for thread	L mm	art.no.	€
Metric thread M5-M27	230	**601110** 0001	43,–
Whitworth 3/16" to 3/4"	230	601110 0002	43,–
		6102	

SARA® Machine tap extensions



- **Threading in workpieces with extremely deep female threads or for threading directly along cast walls, edges, interfering edges of equipment etc.**
- **Versions:**
  138002.... Straight shank
  138003.... Straight shank with internal cooling (IC)
  138005.... Straight shank with Weldon clamping surface, shank tolerance h6
- The front end of the extension is designed as a collet. Tightening a knurled clamping nut will clamp the collet and/or the tap. Torque is transferred via the square end. The rear end of the extension is DIN-compliant so that the tap extensions can be clamped in quick-change inserts just like taps or other thread-cutting equipment.
- **Special dimensions available on request**
- For use on CNC machines and traditional threading attachments
- No cost-intensive taps with special lengths
- No spare parts required
- The extension and standard tap combination is precise and easy to handle





Standard version



Straight shank

Type	D1 mm	for quadratic mm	L7 mm	D3 mm	C mm	D4 mm	L4 mm	L mm	art.no.	€
TE1 / TE1IK	2.8	2.1	22	6	4.9	6.1	60	130	**138002** 0001	129,–
TE1L	2.8	2.1	22	6	4.9	6.1	70	230	138002 0002	142,–
TE2 / TE2IK	3.5	2.7	23	6	4.9	7.5	60	130	138002 0003	129,–
TE2L	3.5	2.7	23	6	4.9	7.5	70	230	138002 0004	142,–
TE3 / TE3IK	4.5	3.4	23	6	4.9	8.4	60	130	138002 0005	129,–
TE3L	4.5	3.4	23	6	4.9	8.4	70	230	138002 0006	142,–
TE4 / TE4IK	6	4.9	26	7	5.5	12.1	60	130	138002 0007	129,–
TE4L / TE4LIK	6	4.9	26	8	6.2	12.1	70	230	138002 0008	142,–
TE5 / TE5IK	7	5.5	26	8	6.2	12.1	60	130	138002 0009	134,–
TE5L / TE5LIK	7	5.5	26	8	6.2	12.1	70	230	138002 0010	145,–
TE6 / TE6IK	8	6.2	30	8	6.2	13	60	130	138002 0011	134,–
TE6L / TE6LIK	8	6.2	30	8	6.2	13	80	230	138002 0012	145,–
TE7 / TE7IK	9	7	31	10	8	15	60	130	138002 0013	134,–
TE7L / TE7LIK	9	7	31	10	8	15	80	230	138002 0014	145,–
TE8 / TE8IK	10	8	33	10	8	15	60	130	138002 0015	134,–
TE8L / TE8LIK	10	8	33	10	8	15	80	230	138002 0016	145,–
TE9 / TE9IK	11	9	36	12	9	18	90	130	138002 0017	142,–
TE9L / TE9LIK	11	9	36	12	9	18	90	230	138002 0018	154,–

1166

Type	D1 mm	for quadratic mm	L7 mm	D3 mm	C mm	D4 mm	L4 mm	L mm	art.no.	€
TE10 / TE10IK	12	9	36	12	9	18	90	130	138002 0019	142,–
TE10L / TE10LIK	12	9	36	12	9	18	90	230	138002 0020	154,–
TE11 / TE11IK	14	11	40	14	11	22	90	200	138002 0021	235,–
TE11L / TE11LIK	14	11	40	14	11	22	90	330	138002 0022	260,–
TE12 / TE12IK	16	12	41	16	12	22	90	200	138002 0023	235,–
TE12L / TE12LIK	16	12	41	16	12	22	90	330	138002 0024	260,–
TE13 / TE13IK	18	14.5	43	18	14.5	26	100	200	138002 0025	255,–
TE13L / TE13LIK	18	14.5	43	18	14.5	26	100	330	138002 0026	280,–
TE14 / TE14IK	20	16	52	20	16	28	100	200	138002 0027	300,–
TE14L / TE14LIK	20	16	52	20	16	28	100	330	138002 0028	325,–
TE15 / TE15IK	22	18	55	22	18	30	100	200	138002 0029	305,–
TE15L / TE15LIK	22	18	55	22	18	30	100	330	138002 0030	345,–
TE16 / TE16IK	25	20	56	25	20	35	100	200	138002 0031	320,–
TE16L / TE16LIK	25	20	56	25	20	35	100	330	138002 0032	350,–
TE17 / TE17IK	28	22	58	28	22	40	100	200	138002 0033	340,–
TE17L / TE17LIK	28	22	58	28	22	40	100	330	138002 0034	365,–
TE18 / TE18IK	32	24	60	32	24	44	100	200	138002 0035	350,–
TE18L / TE18LIK	32	24	60	32	24	44	100	330	138002 0036	375,–

1166



Straight shank with internal cooling

Type	D1 mm	for quadratic mm	L7 mm	D3 mm	C mm	D4 mm	L4 mm	L mm	art.no.	€
TE10 / TE10IK	12	9	36	12	9	18	90	130	**138003** 0019	170,–
TE10L / TE10LIK	12	9	36	12	9	18	90	230	138003 0020	194,–
TE11 / TE11IK	14	11	40	14	11	22	90	200	138003 0021	285,–
TE11L / TE11LIK	14	11	40	14	11	22	90	330	138003 0022	315,–
TE12 / TE12IK	16	12	41	16	12	22	90	200	138003 0023	285,–
TE12L / TE12LIK	16	12	41	16	12	22	90	330	138003 0024	315,–
TE13 / TE13IK	18	14.5	43	18	14.5	26	100	200	138003 0025	310,–
TE13L / TE13LIK	18	14.5	43	18	14.5	26	100	330	138003 0026	340,–
TE14 / TE14IK	20	16	52	20	16	28	100	200	138003 0027	340,–
TE14L / TE14LIK	20	16	52	20	16	28	100	330	138003 0028	370,–
TE15 / TE15IK	22	18	55	22	18	30	100	200	138003 0029	350,–
TE15L / TE15LIK	22	18	55	22	18	30	100	330	138003 0030	395,–
TE16 / TE16IK	25	20	56	25	20	35	100	200	138003 0031	360,–
TE16L / TE16LIK	25	20	56	25	20	35	100	330	138003 0032	425,–
TE17 / TE17IK	28	22	58	28	22	40	100	200	138003 0033	380,–

1166

Type	D1 mm	for quadratic mm	L7 mm	D3 mm	C mm	D4 mm	L4 mm	L mm	art.no.	€
TE17L / TE17LIK	28	22	58	28	22	40	100	330	138003 0034	435,–
TE18 / TE18IK	32	24	60	32	24	44	100	200	138003 0035	390,–
TE18L / TE18LIK	32	24	60	32	24	44	100	330	138003 0036	445,–
TE2 / TE2IK	3.5	2.7	23	6	4.9	7.5	60	130	138003 0003	155,–
TE3 / TE3IK	4.5	3.4	23	6	4.9	8.4	60	130	138003 0005	155,–
TE4 / TE4IK	6	4.9	26	7	5.5	12.1	60	130	138003 0007	160,–
TE5 / TE5IK	7	5.5	26	8	6.2	12.1	60	130	138003 0009	160,–
TE6 / TE6IK	8	6.2	30	8	6.2	13	60	130	138003 0011	160,–
TE6L / TE6LIK	8	6.2	30	8	6.2	13	80	230	138003 0012	184,–
TE7L / TE7LIK	9	7	31	10	8	15	80	230	138003 0014	184,–
TE8 / TE8IK	10	8	33	10	8	15	60	130	138003 0015	160,–
TE8L / TE8LIK	10	8	33	10	8	15	80	230	138003 0016	184,–
TE9 / TE9IK	11	9	36	12	9	18	90	130	138003 0017	170,–
TE9L / TE9LIK	11	9	36	12	9	18	90	230	138003 0018	194,–

1166



Straight shank with Weldon clamping surface

Type	D1 mm	for quadratic mm	L7 mm	D3 mm	C mm	D4 mm	L4 mm	L mm	art.no.	€
TE1 / TE1IK	2.8	2.1	22	6	4.9	6.1	60	130	**138005** 0001	155,–
TE2 / TE2IK	3.5	2.7	23	6	4.9	7.5	60	130	138005 0003	155,–
TE3 / TE3IK	4.5	3.4	23	6	4.9	8.4	60	130	138005 0005	155,–
TE4 / TE4IK	6	4.9	26	7	5.5	12.1	60	130	138005 0007	160,–
TE4L / TE4LIK	6	4.9	26	8	6.2	12.1	70	230	138005 0008	184,–
TE5 / TE5IK	7	5.5	26	8	6.2	12.1	60	130	138005 0009	160,–
TE5L / TE5LIK	7	5.5	26	8	6.2	12.1	70	230	138005 0010	184,–
TE6 / TE6IK	8	6.2	30	8	6.2	13	60	130	138005 0011	160,–
TE6L / TE6LIK	8	6.2	30	8	6.2	13	80	230	138005 0012	184,–
TE7 / TE7IK	9	7	31	10	8	15	60	130	138005 0013	160,–
TE7L / TE7LIK	9	7	31	10	8	15	80	230	138005 0014	184,–
TE8 / TE8IK	10	8	33	10	8	15	60	130	138005 0015	160,–
TE8L / TE8LIK	10	8	33	10	8	15	80	230	138005 0016	184,–
TE9 / TE9IK	11	9	36	12	9	18	90	130	138005 0017	170,–
TE9L / TE9LIK	11	9	36	12	9	18	90	230	138005 0018	194,–
TE10 / TE10IK	12	9	36	12	9	18	90	130	138005 0019	170,–
TE10L / TE10LIK	12	9	36	12	9	18	90	230	138005 0020	194,–

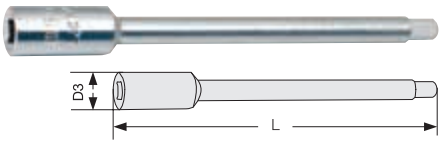
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Type	D1 mm	for quadratic mm	L7 mm	D3 mm	C mm	D4 mm	L4 mm	L mm	art.no.	€
TE11 / TE11IK	14	11	40	14	11	22	90	200	138005 0021	285,–
TE11L / TE11LIK	14	11	40	14	11	22	90	330	138005 0022	315,–
TE12 / TE12IK	16	12	41	16	12	22	90	200	138005 0023	285,–
TE12L / TE12LIK	16	12	41	16	12	22	90	330	138005 0024	315,–
TE13 / TE13IK	18	14.5	43	18	14.5	26	100	200	138005 0025	310,–
TE13L / TE13LIK	18	14.5	43	18	14.5	26	100	330	138005 0026	340,–
TE14 / TE14IK	20	16	52	20	16	28	100	200	138005 0027	340,–
TE14L / TE14LIK	20	16	52	20	16	28	100	330	138005 0028	370,–
TE15 / TE15IK	22	18	55	22	18	30	100	200	138005 0029	350,–
TE15L / TE15LIK	22	18	55	22	18	30	100	330	138005 0030	395,–
TE16 / TE16IK	25	20	56	25	20	35	100	200	138005 0031	360,–
TE16L / TE16LIK	25	20	56	25	20	35	100	330	138005 0032	425,–
TE17 / TE17IK	28	22	58	28	22	40	100	200	138005 0033	380,–
TE17L / TE17LIK	28	22	58	28	22	40	100	330	138005 0034	435,–
TE18 / TE18IK	32	24	60	32	24	44	100	200	138005 0035	390,–
TE18L / TE18LIK	32	24	60	32	24	44	100	330	138005 0036	445,–

1166

SARA® Hand tap extension

- For extending taps and other tools with square end in accordance with DIN 10
- DIN 377
- Hardened and ground



for quadratic mm	for tap M	L mm	D3 mm	art.no.	€
2.1	1 - 2.6	60	6	**138015** 0021	4,35
2.4		70	6	138015 0024	4,35
2.7	3	80	7	138015 0027	4,35
3.0	3.5	90	7	138015 0030	4,35
3.4	4	95	8	138015 0034	4,47
3.8		100	9	138015 0038	4,67
4.3		105	10	138015 0043	5,05
4.9	4.5 - 8	110	11	138015 0049	5,30
5.5	9- 10	115	12	138015 0055	5,50
6.2	11	120	14	138015 0062	7,10

1158

for quadratic mm	for tap M	L mm	D3 mm	art.no.	€
7.0	12	125	15	138015 0070	7,35
8.0		125	17	138015 0080	8,30
9.0	13 - 16	130	19	138015 0090	9,30
10.0		140	21	138015 0100	10,45
11.0	18	150	23	138015 0110	12,15
12.0	20	155	25	138015 0120	13,25
14.5	22 - 24	175	29	138015 0145	20,70
16.0	27	180	30	138015 0160	25,–
18.0	30	200	33	138015 0180	28,10
20.0	33	220	33	138015 0200	36,80

1158

SARA® Tool holder with ratchet

- Two-jaw chuck with square holding fixture
- **All-steel design**, chrome-plated
- Especially suitable for thread cutting in areas that are difficult to access
- Long version (0250 and 0300)


Long version


138010 0117

L mm	for quadratic mm	for tap M	art.no.	€
85	2.0 - 5.0	M 3 - M 10	**138010** 0085	9,90
250	2.0 - 5.0	M 3 - M 10	138010 0250	17,20
100	4.5 - 8.0	M 5 - M 12	138010 0100	13,50
300	4.5 - 8.0	M 5 - M 12	138010 0300	23,70
117	9.0 - 12.5	M 13 - M 20	138010 0117	83,50

1158

SARA® Tap wrench, adjustable

DIN 352



- DIN 1814
- Housing no. 0 - 5: high-purity die-cast zinc
- Housing no. 6: steel
- Jaws case-hardened
- Galvanised steel handles, one can be unscrewed
- For holding DIN 352 hand taps and DIN 206 hand reamers via square end

No.	for quadratic mm	L mm	art.no.	€
0	2.0 - 5.0	125	**138020** 0001	4,89
1	2.0 - 6.0	180	138020 0002	5,55
1 1/2	2.0 - 8.0	200	138020 0003	5,55
2	4.0 - 7.0	280	138020 0004	8,60
			1158	

No.	for quadratic mm	L mm	art.no.	€
3	4.9 - 12.0	375	138020 0005	15,20
4	5.5 - 16.0	480	138020 0006	25,20
5	7.0 - 20.0	700	138020 0007	42,40
6	9.0 - 25.0	960	138020 0008	78,50
			1158	

SARA® Mini tap wrench, adjustable

- Hardened steel jaws
- For small threads
- Light and handy
- For delicate and precise work



D mm	for quadratic mm	for tap M	for tap Ww	art.no.	€
40	max. 2.4	M 1 - M 2.6	1/16" - 3/32"	**138025** 0001	24,50
				1158	

SARA® Threading die holder

DIN 22568



- Housing Ø 16 - 65 mm high-purity die-cast zinc
- Housing from Ø 75 mm: steel
- Handles can be unscrewed
- For holding DIN 223/EN 22568 threading dies

D mm	H mm	suitable for threading die	L mm	art.no.	€
16	5	M 1-2.6	160	**138030** 0001	3,05
20	5	M 3 | 4	180	138030 0002	3,05
20	7	M 4.5-6	180	138030 0003	3,05
25	9	M 7-9	210	138030 0004	3,46
30	11	M 10-11	270	138030 0005	5,15
38	14	M 12-14	310	138030 0006	7,05
45	18	M 16-20	440	138030 0007	10,80
				1158	

D mm	H mm	suitable for threading die	L mm	art.no.	€
45	14	MF 16-20	440	138030 0014	10,80
55	22	M 22 | 24	490	138030 0008	14,90
55	16	MF 22 | 25	490	138030 0012	14,90
65	25	M 27 | 30 | 33 | 36	630	138030 0009	18,70
75	30	M 39 | 42	900	138030 0010	62,50
90	36	M 45 | 48 | 52	920	138030 0011	76,50
				1158	

SARA® Ball-type tap wrench

Werks-norm

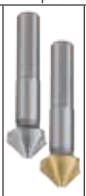


- Die-cast zinc casing
- Galvanised steel handles, one can be unscrewed
- With 4 square holes in accordance with DIN 10
- For holding DIN 352 hand taps and DIN 206 hand reamers via square end

No.	for quadratic mm	L mm	art.no.	€
0	2.1 / 2.7 / 3.0 / 3.4	200	**138022** 0000	11,50
1	3.0 / 3.4 / 4.3 / 4.9	200	138022 0001	12,40
2	3.4 / 4.3 / 4.9 / 5.5	240	138022 0002	13,35
3	4.9 / 5.5 / 6.2 / 7.0	300	138022 0003	16,10
			1158	

No.	for quadratic mm	L mm	art.no.	€
4	5.5 / 6.2 / 7.0 / 9.0	340	138022 0004	32,10
5	7.0 / 9.0 / 11.0 / 12.0	450	138022 0005	40,40
6	11.0 / 12.0 / 14.5 / 16.0	645	138022 0006	68,50
			1158	

Overview of countersink and deburring tools

Sorting by countersink angle and number of cutting edges	Taper and deburring countersinks													
														
Brand	ATORN	ATORN	BECK	BECK	ATORN	ATORN	SARA	BECK	BECK	BECK	BECK	ATORN	ATORN	SARA
Countersink angle	60°	60°	60°	60°	60°	75°	90°	90°	90°	90°	90°	90°	90°	90°
Diameter	6,3 - 25	25 - 63	6,3 - 25	6,3 - 25	8 - 25	8 - 25	6,3 - 31	4,3 - 31	4,3 - 31	6,3 - 31	6,3 - 31	10,4 - 31	4,3 - 40	4,3 - 40
Shank	Straight	MT	Straight	3F-shank	Straight	Straight	3F-shank	3F-shank	Straight	3F-shank	Straight	Straight/long	Straight	Straight
DIN	334C	334D	WN	WN	WN	WN	335C	335C	335C	335C	335C	335C	WN	335C
Number of cutting edges	3	3	3	3	3	3	3	3	3	3	3	3	4/5	3
Cutting material	HSS	HSS	HSS	HSS	Solid carbide	HSS	HSS	HSS	HSS	HSS	Solid carbide	HSS	HSS-E	HSS
Coating	bright/TiN		ZrN	ZrN			bright/TiN	ZrN	ZrN	ZrN	ZrN		bright/TiN/TiAlN	
Type/info			EUC-Speed	EUC-Speed			ADVANCED	ADVANCED	EUC-Speed	EUC-Speed	EUC-Speed	ENORMplus		
Item number	150130....	150135....	150174....	150175....	150133....	150140....	150270....	150170....	150172....	150171....	150173....	150163....	150101....	150201....
Page	304	304	304	304	305	305	306	310	310	310	310	308	307	307
Material groups	Usage recommendations													
Steel < 700 N/mm²	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Steel < 1000 N/mm²	○	●	●	●	●	○	●	●	●	●	●	●	○	○
Steel < 1400 N/mm²			○	○	●		○	○	○	●	○	●	○	○
Stainless steel ferritic/martensitic	○		○	○	●	○	○	○	○	●	○	●	○	○
Stainless steel austenitic	○		○	○	●	○	○	○	○	●	○	●	○	○
Stainless steel duplex							○			○			○	○
Cast iron GG/GTS	○		●	●	●	○	○	●	●	●	●		○	○
Cast iron GGG	○		●	●	●	○	○	●	●	●	●		○	○
Titanium alloys			○	○				○	○	●	○	●		
Superalloys Fe/NiCo base < 30 HRc										●		●		
Superalloys Fe/NiCo base ≥ 30 HRc										○		●		
Aluminium < 8 % Si	○		○	○	●	○	○	○	○	●	○		○	○
Aluminium ≥ 8 % Si	○				●	○	○			●			○	○
Copper Cu-alloy	○		○	○	●	○	○	○	○	●	○		○	○
Graphite GRP/CFP/thermoset														
Hardened steel < 55 HRc					○					○				
Hardened steel < 60 HRc														
Hardened steel ≥ 60 HRc														

Sorting by countersink angle and number of cutting edges	Taper and deburring countersinks											Flat countersinks	Combi countersinks
													
Brand	SARA	ATORN	SARA	ATORN	ATORN	SARA	ATORN	ATORN	ATORN	ATORN	ATORN	ATORN	
Countersink angle	90°	90°	90°	90°	90°	90°	100°	90°	90°	90°	90°	180°	180°
Diameter	4,3 - 31	5,3 - 31	5,3 - 31	6,3 - 31	6,3 - 25	4,3 - 25	6,3 - 25	20,5 - 80	5 - 50	10 - 35	10 - 21	6 - 20	7 - 66
Shank	Straight	Straight	Straight	Straight	Straight	Straight	Straight	MT	Straight	Straight	Straight	Straight	Str. / MT
DIN	335C	335C	335C	WN	335C	WN	WN	335D	WN	WN	WN	373	WN
Number of cutting edges	3	3	3	3	3	3	3	3	1	1	1	3	4
Cutting material	HSS	HSS-E	HSS-E	HSS	HSS-E-PM	Solid carbide	HSS	HSS	HSS-E	HSS-E	HSS-E	HSS/HSS-E	HSS
Coating	TiN					TiAlN				bright/TiN			
Type/info				Extra long							Extra long	Fine/medium	Model 0, 1, 2
Item number	150205....	150111....	150211....	150104....	150108....	150166....	150109....	150115....	150155....	150145....	150148....	150501....	151010....
Page	307	309	309	308	309	311	311	313	312	312	312	314	315
Material groups	Usage recommendations												
Steel < 700 N/mm²	●	●	●	●	●	●	●	●	●	●	●	●	●
Steel < 1000 N/mm²	○	○	○	○	●	●	●	○	○	○	○	○	●
Steel < 1400 N/mm²	○	○	○	○	○	●	○		○	○	○	○	○
Stainless steel ferritic/martensitic	○	○	○	○	●	●	○	○	○	○	○		○
Stainless steel austenitic	○	○	○	○	●	●	○	○	○	○	○		○
Stainless steel duplex	○	○	○	○	○		○	○	○	○	○		
Cast iron GG/GTS	○	○	○	○		●	○	○	○	○	○	○	○
Cast iron GGG	○	○	○	○		●	○	○	○	○	○	○	○
Titanium alloys					○								
Superalloys Fe/NiCo base < 30 HRc					○								
Superalloys Fe/NiCo base ≥ 30 HRc					○								
Aluminium < 8 % Si	○	○	○	○		●	○	○	○	○	○	○	○
Aluminium ≥ 8 % Si	○	○	○	○		●	○	○	○	○	○	○	○
Copper Cu-alloy	○	○	○	○	●	●	○	○	○	○	○	○	○
Graphite GRP/CFP/thermoset						○							
Hardened steel < 55 HRc					○	○							
Hardened steel < 60 HRc													
Hardened steel ≥ 60 HRc													

ATORN® Taper and deburring countersinks

HSS | 60° | Z 3 | TiN | Vc/fz | 397

- 3 cutting edges
- **Cutting material: HSS; HSS, TiN-coated**

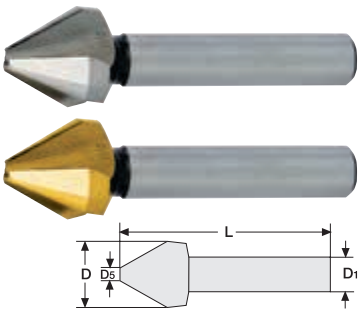
material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 20-28	○ 10-15		○ 5-8	○ 5-10		○ 8-14	○ 8-12				○ 40-80	○ 20-50	○ 25-40				
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

Straight shank

- DIN 334C

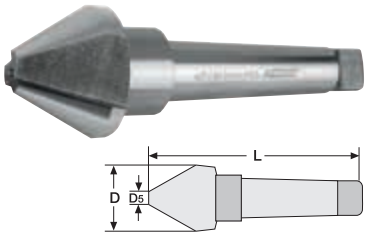
D mm	D5 mm	D1 mm	L mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€	TiN art.no.	€
6.3	1.6	5	45	0.06	**150130** 0063	8,25	**150131** 0063	13,35
8.0	2	6	50	0.06	150130 0080	8,70	150131 0080	13,85
10.0	2.5	6	50	0.09	150130 0100	10,50	150131 0100	17,10
12.5	3.2	8	56	0.12	150130 0125	11,20	150131 0125	18,80
16.0	4	10	63	0.12	150130 0160	13,70	150131 0160	23,10
20.0	5	10	67	0.16	150130 0200	18,60	150131 0200	32,40
25.0	6.3	10	71	0.16	150130 0250	25,90	150131 0250	44,–
					1129		1129	



Morse taper shank

- DIN 334D

D mm	D5 mm	Shank	L mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
25.0	6.3	MT 2	112	0.16	**150135** 0250	34,70
31.5	10.0	MT 2	118	0.16	150135 0315	42,90
40.0	12.5	MT 3	150	0.16	150135 0400	68,–
50.0	16.0	MT 3	160	0.20	150135 0500	88,50
63.0	20.0	MT 4	190	0.20	150135 0630	172,–
					1129	

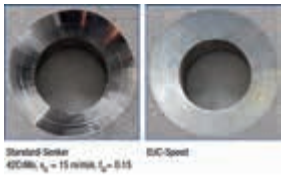


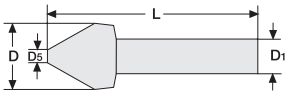
BECK MAPAL GROUP | Taper and deburring countersink EUC-Speed 60°

HSS | Werks-norm | 60° | Z 3 | ZrN | Vc/fz | 397

- Geometry with very unequal pitch (EU pitch)
- **High degree of smoothness**
- Prepared cutting edges
- Radially relief-ground
- **Reduced axial and radial forces**
- **Low vibration tendency**
- Special coating
- **Versions:**
  150174 - with straight shank tolerance h9
  150175 - with 3 clamping surfaces on the shank to stop rotation of the countersink in the drill chuck with optimum torque transfer


Very unequal pitch


Optimised countersink



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 36	● 30	○ 12	○ 10	○ 10		● 14	● 12	○ 10			○ 42		○ 42				
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

D mm	D5 mm	D1 mm	L mm	Feed f steel < 700 N/mm² mm/rev	With straight shank art.no.	€	With 3-face shank art.no.	€
6.3	1.6	5	45	0.08	**150174** 0063	23,20	**150175** 0063	25,80
8	2	6	50	0.10	150174 0080	25,20	150175 0080	27,80
10	2.5	6	50	0.10	150174 0100	26,20	150175 0100	28,70
12.5	3.2	8	56	0.12	150174 0125	31,50	150175 0125	34,40
16	4	10	63	0.14	150174 0160	36,30	150175 0160	38,90
20	5	10	67	0.18	150174 0200	45,20	150175 0200	47,70
25	6.3	10	71	0.18	150174 0250	54,50	150175 0250	57,–
					1165		1165	


Straight shank


3-face shank

ATORN® Taper and deburring countersinks

VHM | Werks-norm | 60° | Z 3 | Vc/fz | 398

- 3 cutting edges, radially relief-ground
- Shank tolerance h9
- Straight shank
- **Cutting material: solid carbide**
- Design: Ø 8 mm in solid carbide, Ø 10 - 25 mm solid carbide head and soldered shank
- We recommend the carbide version for machining solid steels.

Smooth countersinks, high endurance

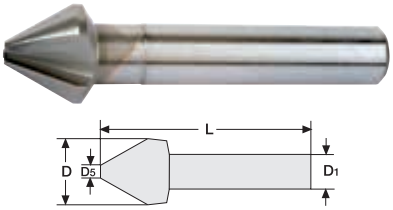
material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 30-50	● 25-40	● 8-20	● 15-25	● 15-30		● 15-25	● 12-22				● 60-100	● 40-65	● 40-80	● 5-10	○ 4-12		

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D mm	D5 mm	D1 mm	L mm	● Feed f steel < 1000 N/mm² mm/rev	art.no.	€
8.0	2.0	6.0	50	0.07	**150133** 0080	123,–
10.0	2.5	8.0	50	0.08	150133 0100	125,–
12.5	3.2	8.0	56	0.10	150133 0125	125,–
16.0	4.0	10.0	63	0.14	150133 0160	181,–
20.0	5.0	10.0	67	0.16	150133 0200	205,–
25.0	6.3	10.0	71	0.18	150133 0250	235,–

1129



ATORN® Taper and deburring countersinks

HSS | Werks-norm | 75° | Z 3 | Vc/fz | 397

- 3 cutting edges, straight shank
- Type C
- **Cutting material: HSS**
- Deburring countersinks also available with Morse taper shank and other countersink angles on request!

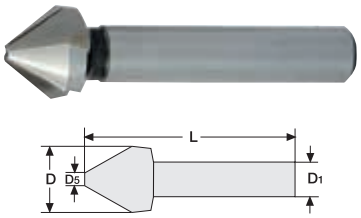
material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 20-28	○ 10-15		○ 5-8	○ 5-10		○ 8-14	○ 8-12				○ 40-80	○ 20-50	○ 25-40				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D mm	D5 mm	D1 mm	L mm	● Feed f steel < 1000 N/mm² mm/rev	art.no.	€
8.0	2.0	6	50	0.06	**150140** 0080	17,60
10.0	2.5	6	54	0.09	150140 0100	18,90
12.5	2.8	8	54	0.12	150140 0125	21,20
15.0	3.2	8	56	0.12	150140 0150	28,40
20.0	3.5	10	63	0.16	150140 0200	43,40
25.0	3.8	10	71	0.16	150140 0250	48,10

1129

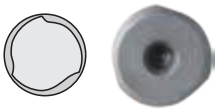


SARA® ADVANCED taper and deburring countersinks

HSS | DIN 335C | 90° | Z 3 | TiN | i Vc/fz | 397

- 3 cutting edges
- **HSS and HSS TiN cutting material**
- New cutting edge geometry prevents uneven wear of the cutting edges
- High degree of wear resistance and hot hardness for maximum service life
- High true running accuracy with considerably reduced force application
- **Patented shank to stop rotation of the countersink in the drill chuck with optimum torque transfer** (from ∅ 8.3 mm)

Patented shank and irregular pitch



material: ● very well suited ○ well suited

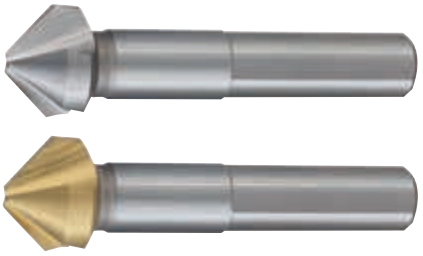
steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
●	●	○	○	○	○	○	○				○	○	○				
20-28	10-15	5-8	5-8	5-10	5-10	8-14	8-12				40-80	20-50	25-40				

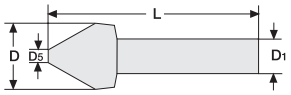
Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

Single

●

D mm	D5 mm	D1 mm	L mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€	TiN art.no.	TiN €
6.3	1.5	5	45	0.08	**150270** 0063	16,–	**150271** 0063	18,70
8.3	2	6	50	0.10	150270 0083	17,70	150271 0083	20,80
10.4	2.5	6	50	0.10	150270 0104	18,–	150271 0104	21,20
12.4	2.8	8	56	0.12	150270 0124	21,60	150271 0124	25,40
16.5	3.2	10	60	0.14	150270 0165	25,–	150271 0165	29,30
20.5	3.5	10	63	0.18	150270 0205	31,10	150271 0205	36,50
25	3.8	10	67	0.22	150270 0250	37,40	150271 0250	44,–
31	4.2	12	71	0.22	150270 0310	45,90	150271 0310	54,–
					1165		1165	







150271 1000

Sets

Contents	art.no.	€	TiN art.no.	TiN €
6.3 / 8.3 / 10.4 / 12.4 / 16.5 / 20.5 mm	**150270** 1000	127,–	**150271** 1000	146,–
6.3 / 10.4 / 16.5 / 20.5 / 25 mm	150270 2000	125,–	150271 2000	148,–
	1165		1165	





PALBIT
Machining tools
411 pages
Art.no. 019900 0315

Overview of all free manufacturers' catalogues on page 14/15

ATORN® SARA® Taper and deburring countersinks

HSS | DIN 335C | Werks-norm | 90° | Z 3 | TiN | TiAlN | Vc/fz | 397

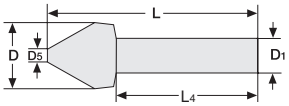
- 3 cutting edges
- Radially relief-ground
- **Cutting material: HSS, HSS TiN, HSS TiAlN**
- For countersinking and deburring
- Countersunk Ø match the respective countersunk DIN screw heads (DIN 963, 964, 965, 966, 7991)

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	○	○	○	○	○	○				○	○	○				
		20-28	10-15	5-8	5-8	5-10	5-10	8-14	8-12				40-80	20-50	25-40				
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		









Individual

D mm	D5 mm	D1 mm	L mm	L4 min. mm	Feed f steel < 1000 N/mm² mm/rev	ATORN® art.no.	€	SARA® art.no.	€	ATORN® TiN art.no.	€	SARA® TiN art.no.	€	ATORN® TiAlN art.no.	€
4.3	1.3	4	40	28	0.04	**150101** 0043	7,80	**150201** 0043	5,70	**150105** 0043	14,65	**150205** 0043	10,60	**150107** 0043	16,40
5.0	1.5	4	40	28	0.04	150101 0050	8,05	150201 0050	5,90	150105 0050	14,65	150205 0050	10,60	150107 0050	16,40
5.3	1.5	4	40	28	0.06	150101 0053	8,05	150201 0053	5,90	150105 0053	14,65	150205 0053	10,60	150107 0053	17,60
5.8	1.5	5	45	28	0.06	150101 0058	8,05	150201 0058	5,90	150105 0058	15,10	150205 0058	10,90	150107 0058	17,60
6.0	1.5	5	45	28	0.06	150101 0060	8,05	150201 0060	5,90	150105 0060	14,65	150205 0060	10,60	150107 0060	17,60
6.3	1.5	5	45	28	0.06	150101 0063	8,05	150201 0063	5,90	150105 0063	14,65	150205 0063	10,60	150107 0063	17,60
7.0	1.8	6	50	36	0.06	150101 0070	8,20	150201 0070	6,–	150105 0070	15,10	150205 0070	10,90	150107 0070	21,20
7.3	1.8	6	50	36	0.06	150101 0073	8,20	150201 0073	6,–	150105 0073	15,10	150205 0073	10,90	150107 0073	21,80
8.0	2.0	6	50	36	0.06	150101 0080	8,95	150201 0080	6,55	150105 0080	16,30	150205 0080	11,70	150107 0080	21,80
8.3	2.0	6	50	36	0.09	150101 0083	8,95	150201 0083	6,55	150105 0083	16,30	150205 0083	11,70	150107 0083	21,80
9.4	2.2	6	50	36	0.09	150101 0094	10,20	150201 0094	7,50	150105 0094	19,10	150205 0094	13,70	150107 0094	24,10
10.0	2.5	6	50	36	0.09	150101 0100	9,80	150201 0100	7,20	150105 0100	18,30	150205 0100	13,05	150107 0100	24,10
10.4	2.5	6	50	36	0.09	150101 0104	10,35	150201 0104	7,65	150105 0104	19,60	150205 0104	14,10	150107 0104	24,–
11.5	2.8	8	56	36	0.09	150101 0115	10,80	150201 0115	7,95	150105 0115	19,80	150205 0115	14,25	150107 0115	24,70
12.4	2.8	8	56	36	0.12	150101 0124	11,40	150201 0124	8,35	150105 0124	21,30	150205 0124	15,20	150107 0124	26,30
13.4	2.9	8	56	36	0.12	150101 0134	12,85	150201 0134	9,35	150105 0134	23,40	150205 0134	16,80	150107 0134	28,20
15.0	3.2	10	60	40	0.12	150101 0150	12,90	150201 0150	9,35	150105 0150	23,40	150205 0150	16,80	150107 0150	31,40
16.5	3.2	10	60	40	0.16	150101 0165	13,70	150201 0165	10,05	150105 0165	25,20	150205 0165	18,10	150107 0165	32,10
19.0	3.5	10	63	40	0.16	150101 0190	18,20	150201 0190	13,30	150105 0190	33,–	150205 0190	23,70	150107 0190	41,30
20.5	3.5	10	63	40	0.16	150101 0205	18,50	150201 0205	13,55	150105 0205	38,40	150205 0205	27,50	150107 0205	42,–
23.0	3.8	10	67	40	0.16	150101 0230	24,90	150201 0230	18,10	150105 0230	47,50	150205 0230	34,–	150107 0230	54,50
25.0	3.8	10	67	40	0.16	150101 0250	26,30	150201 0250	19,20	150105 0250	49,40	150205 0250	35,40	150107 0250	62,50
28.0	4.0	12	71	40	0.16	150101 0280	36,80	150201 0280	26,90					150107 0280	84,50
30.0	4.2	12	71	40	0.16	150101 0300	37,30							150107 0300	87,–
31.0	4.2	12	71	45	0.16	150101 0310	39,40	150201 0310	28,80	150105 0310	72,–	150205 0310	51,50	150107 0310	88,50
40.0	10.0	12	75	40	0.16	150101 0400	70,–								
40.0	10.0	15	75	40	0.16			150201 0400	52,50						
						1129		1168		1129		1168		1129	

Continued on next page >>>


150110 0001


150112 0001


150112 0002


150114 0001

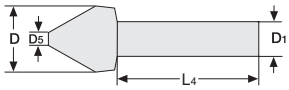
Sets

Contents	ATORN® art.no.	€	SARA® art.no.	€	ATORN® TiN art.no.	€	SARA® TiN art.no.	€	ATORN® TiAlN art.no.	€
6.3 / 8.3 / 10.4 / 12.4 / 16.5 / 20.5 mm (1 of each)	**150110** 0001	74,–	**150201** 0001	54,50	**150112** 0001	133,–	**150205** 0001	96,50	**150114** 0001	156,–
10.4 / 16.5 / 20.5 / 25.0 mm (1 of each)	150110 0002	74,–			150112 0002	131,–				
8.0 / 10.0 / 11.5 / 15.0 mm (1 of each)	150110 0003	43,10			150112 0003	77,–				
	1129		1168		1129		1168		1129	


150102 0063

Extra-long shank, similar to DIN 335C

- 40, 50 and 63 mm diameters available on request



D mm	D5 mm	D1 mm	Feed f steel < 1000 N/mm² mm/rev	ATORN® L4 = 100 mm art.no.	€	ATORN® L4 = 150 mm art.no.	€
6.3	1.5	5	0.06	**150104** 0063	26,20	**150102** 0063	31,30
8.3	2.0	6	0.09	150104 0083	27,10	150102 0083	33,30
10.4	2.5	6	0.09	150104 0104	30,20	150102 0104	37,80
12.4	2.8	8	0.12	150104 0124	31,70	150102 0124	39,30
15.0	3.2	10	0.12	150104 0150	39,50	150102 0150	49,–
16.5	3.2	10	0.16	150104 0165	39,–	150102 0165	48,30
20.5	3.5	10	0.16	150104 0205	53,–	150102 0205	70,–
25.0	3.8	10	0.16	150104 0250	76,–	150102 0250	94,–
31.0	4.2	12	0.16	150104 0310	133,–	150102 0310	159,–
				1129		1129	



Sets, extra-long shank, similar to DIN 335C

Contents	ATORN® L4 = 100 mm art.no.	€	ATORN® L4 = 150 mm art.no.	€
6.3 / 8.3 / 10.4 / 12.4 / 16.5 / 20.5 mm (1 of each)	**150116** 0001	205,–	**150113** 0001	255,–
	1129		1129	

ATORN® ENORMplus deburring countersink

HSS-E | Werks-norm | 90° | Z 4 | Z 5 | Vc/fz | 397

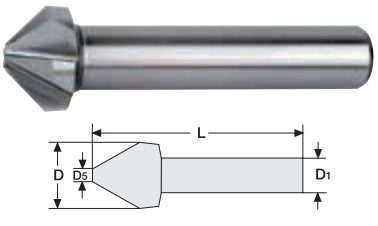
- **Cutting material: HSS-E**
- Application: especially for materials that are difficult to machine, such as Hardox 400, Creusabro, Inconel, Nimonic, Hastelloy, Monel, titanium and titanium alloys

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 8-14	● 8-14	● 6-12	● 10-15	● 10-17				● 7-12	● 8-15	● 5-12							

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D mm	D5 mm	D1 mm	L mm	Z	Feed f steel < 1400 N/mm² mm/rev	art.no.	€
10.4	4.0	6.0	50	4	0.03	**150163** 1040	49,80
12.4	4.0	8.0	56	5	0.03	150163 1240	56,–
16.5	4.5	10.0	60	5	0.04	150163 1650	69,–
20.5	5.0	10.0	63	5	0.05	150163 2050	96,–
25.0	5.5	10.0	67	5	0.06	150163 2500	140,–
31.0	6.0	12.0	71	5	0.06	150163 3100	178,–
						1129	



ATORN® SARA® Taper and deburring countersinks

HSS-E | DIN 335C | Werks-norm | 90° | Z 3 | Vc/fz | 397

- 3 cutting edges
- Radially relief-ground
- **HSS-E cutting material**
- For countersinking and deburring
- Countersunk Ø match the respective countersunk DIN screw heads (DIN 963, 964, 965, 966, 7991)

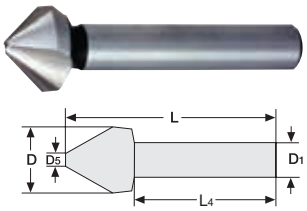
material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
●	●	○	○	○	○	○	○				○	○	○				
20-28	10-15	5-8	5-8	5-10	5-10	8-14	8-12				40-80	20-50	25-40				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

Single

D mm	D5 mm	D1 mm	L mm	L4 min. mm	Feed f steel < 1000 N/mm² mm/rev	ATORN® art.no.	€	SARA® art.no.	€
5.3	1.5	4	40	28	0.06	**150111** 0053	9,90	**150211** 0053	8,35
6.3	1.5	5	45	28	0.06	150111 0063	10,–	150211 0063	8,45
8.0	2.0	6	50	36	0.06	150111 0080	10,75	150211 0080	9,10
8.3	2.0	6	50	36	0.09	150111 0083	10,75	150211 0083	9,10
9.4	2.2	6	50	36	0.09	150111 0094	11,95	150211 0094	10,10
10.0	2.5	6	50	36	0.09	150111 0100	11,95	150211 0100	10,10
10.4	2.5	6	50	36	0.09	150111 0104	11,95	150211 0104	10,10
12.4	2.8	8	56	36	0.12	150111 0124	14,10	150211 0124	11,90
15.0	3.2	10	60	40	0.12	150111 0150	16,30	150211 0150	13,75
16.5	3.2	10	60	40	0.16	150111 0165	16,90	150211 0165	14,25
20.5	3.5	10	63	40	0.16	150111 0205	21,60	150211 0205	18,20
25.0	3.8	10	67	40	0.16	150111 0250	28,60	150211 0250	24,20
31.0	4.2	12	71	45	0.16	150111 0310	38,40	150211 0310	32,40
						1129		1168	



Sets

Contents	ATORN® art.no.	€	SARA® art.no.	€
6.3 / 8.3 / 10.4 / 12.4 / 16.5 / 20.5 mm (1 of each)	**150117** 0001	85,–	**150211** 0001	72,50
	1129		1168	



SARA® Taper and deburring countersinks

HSS-E PM | DIN 335C | 90° | Z 3 | Vc/fz | 397

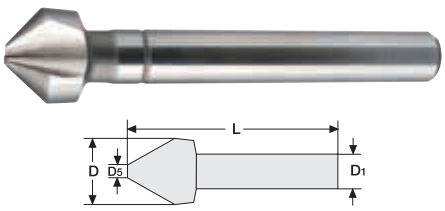
- **Cutting material: HSS-E-PM**
- Radially relief-ground
- Diameter tolerance ±0.05 mm
- Shank tolerance h9

material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
●	●	●	●	●	●										●		
6-10	6-10	6-10	4-8	4-8	4-8										5-12		

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D mm	D5 mm	D1 mm	L mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
6.3	1.5	5	45	0.03	**150108** 0063	31,20
8.3	2	6	50	0.04	150108 0083	39,60
10.4	2.5	6	50	0.05	150108 0104	50,–
12.4	2.8	8	56	0.08	150108 0124	54,–
16.5	3.2	10	60	0.09	150108 0165	60,50
20.5	3.5	10	63	0.09	150108 0205	83,50
25	3.8	10	67	0.10	150108 0250	115,–
					1165	

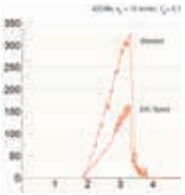


BECK MAPAL GROUP | Taper and deburring countersink EUC-Speed 90°

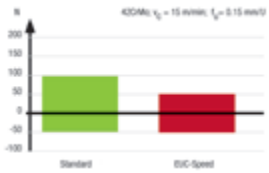
HSS | VHM | DIN 335C | Werks-norm | 90° | Z 3 | ZrN | Vc/fz

397
398

- Geometry with very unequal pitch (EU pitch)
- **High degree of smoothness**
- Precision design
- Prepared cutting edges
- Radially relief-ground
- **Reduced axial and radial forces**
- **Low vibration tendency**
- Special coating
- **Shank tolerances:**
  HSS h9
  Solid carbide h6 (suitable for hydraulic expansion and shrink fit chucks)
- **Versions:**
  150170 - HSS with straight shank, Tolerance h9
  150171 - Solid carbide, Tolerance h6 (suitable for hydraulic expansion and shrink fit chucks)
  150172 - HSS with 3 clamping surfaces on the shank to stop rotation of the countersink in the drill chuck with optimum torque transfer
  150173 - HSS with extended straight shank, Tolerance h9



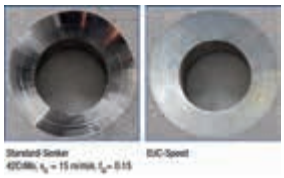
50% reduced axial force



25% reduced radial force



very unequal pitch



optimised countersink

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
150170.... 150172.... 150173....	● 36	● 30	○ 12	○ 10	○ 10		● 14	● 12	○ 10			○ 42		○ 42				
150171....	● 60	● 50	● 40	● 30	● 30	○ 25	● 35	● 45	● 15	● 15	○ 15	● 80	● 60	● 70		○ 8		
Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

Individual

●

D mm	D5 mm	D1 mm	L mm	Feed f steel < 700 N/mm² mm/rev	HSS with straight shank art.no.	€	HSS with 3-face shank art.no.	€	Solid carbide with straight shank art.no.	€
4.3	1.3	4	40	0.06	**150170** 0043	21,50	**150172** 0043	23,70		
6.3	1.5	5	45	0.08	150170 0063	23,20	150172 0063	25,80	**150171** 0063	113,–
8.3	2	6	50	0.10	150170 0083	25,80	150172 0083	28,30	150171 0083	122,40
10.4	2.5	6	50	0.10	150170 0104	26,30	150172 0104	28,70	150171 0104	127,70
12.4	2.8	8	56	0.12	150170 0124	31,50	150172 0124	34,40	150171 0124	133,80
16.5	3.2	10	60	0.14	150170 0165	36,30	150172 0165	38,90	150171 0165	163,90
20.5	3.5	10	63	0.18	150170 0205	45,20	150172 0205	47,70	150171 0205	187,70
25	3.8	10	67	0.18	150170 0250	54,50	150172 0250	57,–	150171 0250	216,80
31	4.2	12	71	0.22	150170 0310	66,70	150172 0310	69,80	150171 0310	257,20
					1165		1165		1165	



150170....



150172....



150171....

Sets, 5-pcs.

Contents	HSS with straight shank art.no.	€	HSS with 3-face shank art.no.	€
6.3 / 10.4 / 16.5 / 20.5 / 25 mm (1 of each)	**150170** 1000	177,90	**150172** 1000	190,40
	1165		1165	



150170 1000

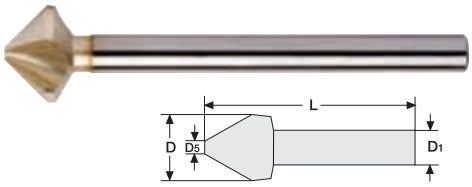


150172 1000

With extended shank

●

D mm	D5 mm	D1 mm	L mm	Feed f steel < 700 N/mm² mm/rev	HSS art.no.	€
6.3	1.5	5	104	0.08	**150173** 0063	44,70
8.3	2	6	105	0.10	150173 0083	48,10
10.4	2.5	6	107	0.10	150173 0104	51,60
12.4	2.8	8	108	0.12	150173 0124	57,50
16.5	3.2	10	111	0.14	150173 0165	61,30
20.5	3.5	10	114	0.18	150173 0205	73,40
25	3.8	10	118	0.18	150173 0250	84,50
31	4.2	12	140	0.22	150173 0310	111,70
					1165	



SARA® Solid carbide deburring countersink

VHM | Werks-norm | 90° | Z 3 | TiAlN | Vc/fz | 398

- 3 cutting edges, radially relief-ground
- **Cutting material: solid carbide TiAlN**
- Made entirely of solid carbide
- Countersunk Ø match the respective countersunk DIN screw heads (DIN 963, 964, 965, 966, 7991)

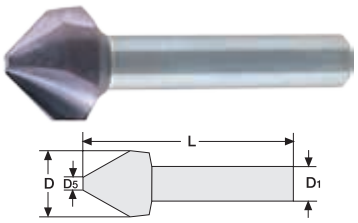
material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 30-50	● 25-40	● 8-20	● 15-28	● 15-30		● 12-25	● 12-22				● 60-100	● 40-65	● 40-80	○ 5-10	○ 4-12		
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

● Feed f steel < 1000 N/mm² mm/rev

D mm	D5 mm	D1 mm	L mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
4.3	1.5	4	40	0.05	**150166** 0430	93,50
6.3	2.0	5	45	0.06	150166 0630	98,–
8.3	2.0	6	50	0.07	150166 0830	98,–
10.4	2.5	6	50	0.08	150166 1040	98,–
12.4	2.8	8	56	0.08	150166 1240	98,–
16.5	3.2	10	60	0.14	150166 1650	98,–
20.5	3.5	10	63	0.16	150166 2050	118,–
25.0	3.8	10	67	0.18	150166 2500	155,–

1165



ATORN® Taper and deburring countersinks

HSS | Werks-norm | 100° | Z 3 | Vc/fz | 397

- 3 cutting edges
- Cutting material: HSS
- With straight shank

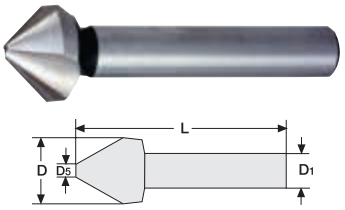
material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 20-28	● 10-15	○ 5-8	○ 5-8	○ 5-10	○ 5-10	○ 8-14	○ 8-12				○ 40-80	○ 20-50	○ 25-40				
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

● Feed f steel < 1000 N/mm² mm/rev

D mm	D5 mm	D1 mm	L mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
6.3	1.5	5	44	0.06	**150109** 0063	13,80
8	2	6	49	0.06	150109 0080	14,80
10.4	2.5	6	49	0.09	150109 0104	16,50
12.4	2.8	8	55	0.12	150109 0124	18,50
16.5	3.2	10	59	0.16	150109 0165	25,50
20.5	3.5	10	62	0.16	150109 0205	37,–
25	3.8	10	65	0.16	150109 0250	41,50

1129



ATORN® Taper and deburring countersinks

HSS | DIN 335D | 90° | Z 3 | Vc/fz | 397

- 3 cutting edges
- Morse taper shank
- **Cutting material: HSS**
- Chatter-free countersinking and deburring

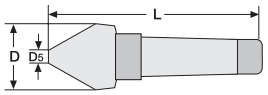
material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	○		○	○	○	○	○				○	○	○				
		20-28	10-15		5-8	5-10	5-10	8-14	8-12				40-80	20-50	25-40				
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

D mm	D5 mm	Shank	L mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
20.5	3.5	MT 2	100	0.16	**150115** 0205	45,–
25.0	3.8	MT 2	106	0.16	150115 0250	46,20
28.0	4.0	MT 2	112	0.16	150115 0280	46,20
30.0	4.2	MT 2	112	0.16	150115 0300	48,30
31.0	4.2	MT 2	112	0.18	150115 0310	50,50
34.0	4.5	MT 2	118	0.18	150115 0340	54,50
37.0	4.8	MT 2	118	0.18	150115 0370	59,–
40.0	10.0	MT3	140	0.18	150115 0400	74,–
50.0	14.0	MT3	150	0.2	150115 0500	92,–
63.0	16.0	MT 4	180	0.2	150115 1630	151,–
80.0	22.0	MT 4	190	0.2	150115 1800	260,–

1129

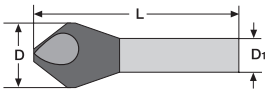




ATORN® Taper and deburring countersinks

HSS-E | Werks-norm | 90° | Z 1 | TiN | Vc/fz | 397

- With cross-hole and straight shank
- Chip removal due to slanted bore in the shank direction, light spiral point
- **Cutting material: HSS-E; HSS-E, TiN-coated**

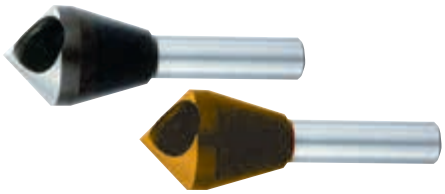


material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	○	○	○	○	○	○	○				○	○	○				
		22-30	11-16	5-9	5-9	5-11	5-11	9-15	9-13				44-88	22-55	27-44				
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

Individual

D mm	for Ø mm	L mm	D1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€	TiN art.no.	TiN €
10	2 - 5	45	6	0.04	**150145** 0025	8,30	**150146** 0025	14,60
14	5 - 10	56	6	0.08	150145 0510	11,10	150146 0510	18,70
21	10 - 15	67	10	0.11	150145 1015	20,50	150146 1015	29,40
28	15 - 20	90	12	0.15	150145 1520	41,80	150146 1520	63,–
35	20 - 25	106	15	0.16	150145 2025	59,50	150146 2025	91,50
					1129		1129	



5 pcs set

Contents	art.no.	€	TiN art.no.	TiN €
D: 10 / 14 / 21 / 28 mm	**150150** 0001	81,50	**150151** 0001	125,–
	1129		1129	



150151 0001

Extra-long

D mm	for Ø mm	L mm	D1 mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
10	2 - 5	136	6	0.04	**150148** 0001	36,80
14	5 - 10	146	6	0.08	150148 0002	45,30
21	10 - 15	156	10	0.11	150148 0003	89,50
					1129	



ATORN® Taper and deburring countersinks

HSS-E | Werks-norm | 90° | Z 1 | Vc/fz | 397

- With one cutting edge, large chip chamber, type A
- Axial-radial conical surface relief grinding
- Straight shank, from Ø 15 mm with offset shank
- **Cutting material: HSS-E**

One cutting edge

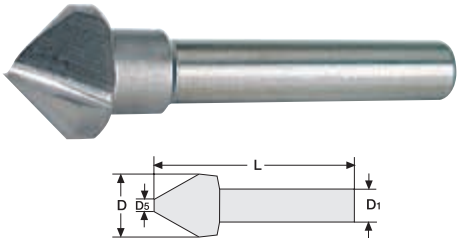
material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	○	○	○	○	○	○	○				○	○	○				
		22-30	11-16	5-9	5-9	5-11	5-11	9-15	9-13				44-88	22-55	27-44				
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

● Feed f steel < 1000 N/mm²

D mm	D5 mm	D1 mm	L mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
5	1	5	50	0.04	**150155** 0050	13,–
10	1	10	60	0.09	150155 0100	14,–
15	2	10	65	0.12	150155 0150	19,–
20	2	10	73	0.16	150155 0200	27,–
25	2	10	80	0.16	150155 0250	41,–
30	3	12	82	0.16	150155 0300	54,–
40	3	12	92	0.16	150155 0400	86,–
50	3	12	100	0.16	150155 0500	138,–

1129



SARA® 90° countersink bits

HSS | DIN 335C | 90° | Bit C 6,3 | Z 3

- **Deburring, chamfering and countersinking**
- DIN 335 Form C
- Bit shank drive DIN 3126
- **Form C 6.3** hexagonal connector, 6.35 mm (1/4")
- 3 cutting edges



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●										●	○	○				

Single

D mm	for thread	Total length mm	art.no.	€
6.3	M3	31	**150140** 0083	9,–
8.3	M4	31	150140 0104	9,10
10.4	M5	34	150140 0124	10,40
12.4	M6	35	150140 0165	11,75
16.5	M8	40	150140 0205	12,90
20.5	M10	41	150141 0001	14,75

1133

8-pcs. set

Contents	art.no.	€
In plastic box: 6.3-8.3-10.4-12.4-16.5-20.5 mm incl. handle, bit holder and cutting paste	**150130** 0001	76,50

1133



SARA® 90° hand-held deburring tool

HSS | 90° | Z 3

- Right-hand cutting

D mm	art.no.	€
12.4	**150103** 0124	15,90
16.5	150103 0165	18,60
20.5	150103 0205	23,80
25.0	150103 0250	29,80

1133



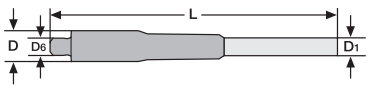
ATORN® Counterbores

HSS | HSS-E | DIN 373 |  | Z 3

- 3 cutting edges
- Spiral-fluted
- With straight shank
- Fixed pilot pin
- For countersinks in accordance with DIN 74 part 2, type H, J, K
- For screws according to DIN 912, DIN 6912, DIN 6984 and DIN 84
- **Cutting material: HSS-E, HSS-E**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	○	○	○	○		○	○				○	○	○				
		30	20	10	10	10		15	15				80	70	40				
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		

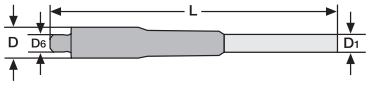




With through-hole pin, fine-grade

D mm	D6 mm	for screws	D1 mm	L mm	HSS art.no.	€	HSS-E art.no.	€
6.0	3.2	M3	5.0	71	**150501** 0001	13,80		
6.5	3.2	M3	5.0	71			**150506** 0001	20,10
8.0	4.3	M4	5.0	71	150501 0003	11,–	150506 0003	19,30
10.0	5.3	M5	8.0	80	150501 0005	12,05	150506 0005	21,80
11.0	6.4	M6	8.0	80	150501 0007	13,05	150506 0007	24,50
15.0	8.4	M8	12.5	100	150501 0009	20,60	150506 0009	31,40
18.0	10.5	M10	12.5	100	150501 0011	24,80	150506 0011	37,20
20.0	13.0	M12	12.5	100	150501 0013	26,50	150506 0013	40,70
					1129		1129	

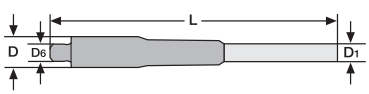




With through-hole pin, medium-grade

D mm	D6 mm	for screws	D1 mm	L mm	HSS art.no.	€	HSS-E art.no.	€
6.0	3.4	M3	5.0	71	**150501** 0002	13,80		
6.5	3.4	M3	5.0	71			**150506** 0002	20,10
8.0	4.5	M4	5.0	71	150501 0004	11,–	150506 0004	19,30
10.0	5.5	M5	8.0	80	150501 0006	12,05	150506 0006	21,80
11.0	6.6	M6	8.0	80	150501 0008	13,05	150506 0008	24,50
15.0	9.0	M8	12.5	100	150501 0010	20,60	150506 0010	31,40
18.0	11.0	M10	12.5	100	150501 0012	24,80	150506 0012	37,20
20.0	13.5	M12	12.5	100	150501 0014	26,50	150506 0014	40,70
					1129		1129	





With tapping hole pin

D mm	D6 mm	for screws	D1 mm	L mm	HSS art.no.	€	HSS-E art.no.	€
6	2.5	M3	5.0	71	**150505** 0006	14,60		
6.5	2.5	M3	5.0	71			**150507** 0006	22,70
8.0	3.3	M4	5.0	71	150505 0008	14,60	150507 0008	21,10
10.0	4.2	M5	8.0	80	150505 0010	12,85	150507 0010	24,40
11.0	5.0	M6	8.0	80	150505 0011	13,60	150507 0011	26,10
15.0	6.8	M8	12.5	100	150505 0015	21,20	150507 0015	33,80
18.0	8.5	M10	12.5	100	150505 0018	25,10	150507 0018	41,–
20.0	10.2	M12	12.5	100	150505 0020	28,50	150507 0020	42,80
					1129		1129	

Sets

- Contents: 1 unit each Counterbore for screws M3-M10 = 6-part

Description	HSS art.no.	€	HSS-E art.no.	€
Through-hole, fine-grade	**150511** 0002	110,–	**150512** 0002	153,–
Through-hole, medium-grade	150511 0003	111,–	150512 0003	153,–
Tapping hole	150511 0001	115,–	150512 0001	167,–
	1129		1129	



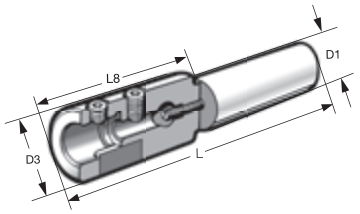
150511 0002

GRANLUND Tools Combination counterbores

HSS | Werks-norm | 22° | Z 4

- Just 3 holder sizes required to cover a countersink range of 7 - 66 mm (on request up to 84 mm).
- Any countersink and pilot pin combination possible within the same holder size.
- Tight bore and shank tolerances ensure a high degree of true-running accuracy.
- Countersink and pin are fastened quickly and securely with just one screw. An additional stud safety catch prevents countersinks from twisting.
- Combine elements to produce countersinks for DIN screws and to machine stepped bores or non-standard countersinks
- 4 cutting edges





material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 15-30	● 10-25	○ 5-20	○ 10-20	○ 10-20		○ 20-40	○ 20-40				○ 70-150	○ 70-120	○ 30-60				
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

Combination counterbore holder

model	D1 mm	Shank	Countersink area mm	L mm	D3 mm	L8 mm	Hole H7 mm	art.no.	€
0	10x50		7-16.5	92	18	42	10	**150005** 0001	123,30
0		MT 1	7-16.5	111	18	42	10	150005 0002	132,10
0		MT 2	7-16.5	132	18	57	10	150005 0008	129,60
1	12x65		14-27.5	120	24	55	14	150005 0003	132,20
1		MT 1	14-27.5	123	24	55	14	150005 0004	140,90
1		MT 2	14-27.5	137	24	55	14	150005 0009	133,70
2		MT 2	24-66	155	34.5	75	22	150005 0005	192,70
2		MT3	24-66	174	34.5	75	22	150005 0006	182,20

1130



150005 0008 150005 0003



151001 0001



151001 0002



151001 0003

Combination counterbore sets

model	Contents, piloted counterbore	Contents, pilot pin	Holder	art.no.	€
OP M4-M8	8.0 / 9.0 / 10.0 / 11.0 / 12.0 / 13.0 / 14.0 / 15.0	4.5 / 5.0 / 5.5 / 6.0 / 6.5 / 6.6 / 7.0 / 7.5 / 8.0 / 8.5 / 9.0 / 10.0	Model 0, MT 2	**151001** 0001	790,90
1P M8-M14	14.0 / 15.0 / 16.0 / 18.0 / 20.0 / 22.0 / 24.0	8.0 / 8.5 / 9.5 / 10.0 / 10.5 / 11.0 / 11.5 / 12.0 / 12.5 / 13.0 / 13.5 / 14.0 / 14.5 / 15.0 / 15.5 / 16.0	Model 1, MT 2	151001 0002	957,60
2P M14-M24	24.0 / 26.0 / 28.0 / 30.0 / 32.0 / 33.0 / 34.0 / 36.0 / 40.0	13.0 / 14.0 / 15.0 / 16.0 / 17.0 / 18.0 / 19.0 / 20.0 / 23.0 / 24.0 / 25.0 / 26.0	Model 2, MT 3	151001 0003	1.767,70

1130

Continued on next page >>>



Counterbore model 0

- Countersink range 7 - 16.5 mm
- Cutting length 19 mm
- Shank Ø 10 mm

D mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
7.0	0.1	**151010** 0070	55,80
7.5	0.1	151010 0075	61,50
8.0	0.1	151010 0080	55,20
8.5	0.1	151010 0085	60,70
9.0	0.1	151010 0090	55,20
9.5	0.1	151010 0095	60,70
10.0	0.1	151010 0100	53,20
10.5	0.1	151010 0105	59,60
11.0	0.1	151010 0110	55,20
11.5	0.1	151010 0115	61,–

1130

D mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
12.0	0.1	151010 0120	55,80
12.5	0.1	151010 0125	62,–
13.0	0.1	151010 0130	60,70
13.5	0.1	151010 0135	70,–
14.0	0.2	151010 0140	60,70
14.5	0.2	151010 0145	70,10
15.0	0.2	151010 0150	61,60
15.5	0.2	151010 0155	70,70
16.0	0.2	151010 0160	64,90
16.5	0.2	151010 0165	75,50

1130



Pilot pin, hardened and ground, model 0

- Fixed pilot pin
- Total length 59 mm
- Shank Ø 4 mm

D mm	art.no.	€
4.0	**151025** 0040	18,40
4.5	151025 0045	21,80
5.0	151025 0050	21,80
5.5	151025 0055	21,80
6.0	151025 0060	21,80
6.5	151025 0065	21,80
7.0	151025 0070	21,80
7.5	151025 0075	21,80
8.0	151025 0080	22,10
8.5	151025 0085	22,10
9.0	151025 0090	22,10
9.5	151025 0095	22,10
10.0	151025 0100	22,10
10.5	151025 0105	22,10
11.0	151025 0110	22,10
11.5	151025 0115	22,10

1130



Counterbore model 1

- Countersink range 14 - 27.5 mm
- Cutting length 22 mm
- Shank Ø 14 mm

D mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
14.0	0.2	**151015** 0140	61,20
14.5	0.2	151015 0145	69,10
15.0	0.2	151015 0150	61,20
15.5	0.2	151015 0155	69,90
16.0	0.2	151015 0160	64,50
16.5	0.2	151015 0165	74,90
17.0	0.2	151015 0170	67,40
17.5	0.2	151015 0175	75,40
18.0	0.2	151015 0180	69,70
18.5	0.2	151015 0185	81,70
19.0	0.2	151015 0190	77,60
19.5	0.2	151015 0195	86,50
20.0	0.2	151015 0200	77,60
20.5	0.2	151015 0205	88,90

1130

D mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
21.0	0.2	151015 0210	79,10
21.5	0.2	151015 0215	92,60
22.0	0.2	151015 0220	81,80
22.5	0.2	151015 0225	92,80
23.0	0.2	151015 0230	91,70
23.5	0.2	151015 0235	97,50
24.0	0.3	151015 0240	91,70
24.5	0.3	151015 0245	101,10
25.0	0.3	151015 0250	91,70
25.5	0.3	151015 0255	102,30
26.0	0.3	151015 0260	98,–
26.5	0.3	151015 0265	104,40
27.0	0.3	151015 0270	99,90
27.5	0.3	151015 0275	106,80

1130



Pilot pin, hardened and ground, model 1

- Fixed pilot pin
- Total length 79 mm
- Shank Ø 6 mm

D mm	art.no.	€
7.0	**151030** 0070	20,60
7.5	151030 0075	20,60
8.0	151030 0080	20,60
8.5	151030 0085	20,60
9.0	151030 0090	20,60
9.5	151030 0095	20,60
10.0	151030 0100	20,60
10.5	151030 0105	21,80
11.0	151030 0110	21,80
11.5	151030 0115	21,80
12.0	151030 0120	21,80
12.5	151030 0125	22,60
13.0	151030 0130	25,–
13.5	151030 0135	25,–
14.0	151030 0140	25,20
14.5	151030 0145	25,20
15.0	151030 0150	25,20
15.5	151030 0155	25,20
16.0	151030 0160	25,20
16.5	151030 0165	25,20
17.0	151030 0170	25,20
17.5	151030 0175	25,20
18.0	151030 0180	25,80

1130



Counterbore model 2

- Countersink range 24 - 66 mm
- Cutting length 27 mm
- Shank Ø 22mm

D mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
24.0	0.3	**151020** 0240	112,50
24.5	0.3	151020 0245	120,30
25.0	0.3	151020 0250	121,50
25.5	0.3	151020 0255	130,50
26.0	0.3	151020 0260	124,10
26.5	0.3	151020 0265	132,30
27.0	0.3	151020 0270	125,80
27.5	0.3	151020 0275	134,90
28.0	0.3	151020 0280	128,30
28.5	0.3	151020 0285	136,80
29.0	0.3	151020 0290	131,30
30.0	0.3	151020 0300	133,10
30.5	0.3	151020 0305	142,90
31.0	0.3	151020 0310	142,80
32.0	0.3	151020 0320	147,50
33.0	0.3	151020 0330	148,80
34.0	0.3	151020 0340	150,20
35.0	0.3	151020 0350	157,40
36.0	0.3	151020 0360	159,20
37.0	0.3	151020 0370	165,60
38.0	0.3	151020 0380	176,50
39.0	0.3	151020 0390	180,40
40.0	0.3	151020 0400	184,90

1130

D mm	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
41.0	0.3	151020 0410	195,–
42.0	0.3	151020 0420	198,20
43.0	0.3	151020 0430	222,–
44.0	0.3	151020 0440	225,10
45.0	0.3	151020 0450	228,10
46.0	0.3	151020 0460	231,30
47.0	0.3	151020 0470	234,80
48.0	0.3	151020 0480	237,90
49.0	0.3	151020 0490	251,60
50.0	0.3	151020 0500	331,30
51.0	0.3	151020 0510	334,50
52.0	0.3	151020 0520	336,80
53.0	0.3	151020 0530	339,60
54.0	0.3	151020 0540	342,30
55.0	0.3	151020 0550	348,90
56.0	0.3	151020 0560	351,10
58.0	0.3	151020 0580	357,40
60.0	0.3	151020 0600	367,70
62.0	0.3	151020 0620	373,60
64.0	0.3	151020 0640	431,40
65.0	0.3	151020 0650	413,50
66.0	0.3	151020 0660	431,40

1130



Pilot pin, hardened and ground, model 2

- Fixed pilot pin (*= rotating pilot pin)
- Total length 105 mm
- Shank Ø 10 mm

D mm	art.no.	€
11.5	**151035** 0115	23,50
12.0	151035 0120	23,50
12.5	151035 0125	23,50
13.0	151035 0130	23,50
13.5	151035 0135	23,50
14.0	151035 0140	27,40
14.5	151035 0145	27,40
15.0	151035 0150	27,40
16.0	151035 0160	27,40
17.0	151035 0170	27,40
18.0	151035 0180	27,40
19.0	151035 0190	27,40
20.0	151035 0200	27,40
21.0	151035 0210	30,60
22.0	151035 0220	30,60
23.0	151035 0230	30,60
24.0	151035 0240	30,60
25.0	151035 0250	30,60
26.0	151035 0260	37,50
27.0	151035 0270	46,40
28.0	151035 0280	46,90
29.0	151035 0290	46,90
30.0	151035 0300	46,90
33.0*	151035 0330	54,–
35.0*	151035 0350	57,90
38.0*	151035 0380	66,90
40.0*	151035 0400	78,30

1130



Overview of reamers

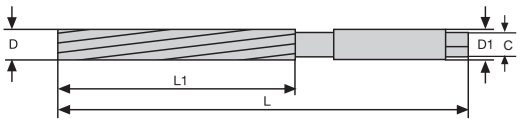
	Hand reamers				Machine reamers					
Sorting by cutting material and shank										
Brand	ATORN	ATORN	ATORN	ATORN	ATORN	SARA	ATORN	ATORN	ATORN	ATORN
Diameter	1.5 - 40	8 - 37	1.5 - 50	1.5 - 50	2 - 20	6.4 - 40	1.5 - 20	2 - 12	2 - 10	3 - 20
Tolerance	H7						H7	H7	H7	H7
DIN	206	WN	9	9	2179	311	212	WN	WN	212
Shank	Straight	Straight	Straight	Straight	Straight	MT	Straight	Straight	Straight	Straight
Cutting material	HSS	HSS	HSS	HSS	HSS	HSS	HSS-E	HSS-E	HSS-E	HSS-E
Coating										
Helix angle	6°			6°	45°	25°	10°	10°	10°	9°
Type/info		adjustable	1:50	1:50	1:50	Taper bridge		Long	Extra-long	NC
Item number	160101....	160110....	160140....	160145....	160150....	160130....	161001....	161002....	161003....	161010....
Page	319	319	320	320	321	322	323	324	324	325
Material groups	Usage recommendations									
Steel < 700 N/mm²	○	○	●	●	●	●	●	●	●	●
Steel < 1000 N/mm²	○	○	●	●	●	○	●	●	●	●
Steel < 1400 N/mm²							○	○	○	
Stainless steel ferritic/martensitic										
Stainless steel austenitic										
Stainless steel duplex										
Cast iron GG/GTS	●	○			●	●	●	●	●	●
Cast iron GGG	●	○			●	●	●	●	●	●
Titanium alloys										
Superalloys Fe/NiCo base < 30 HRc										
Superalloys Fe/NiCo base ≥ 30 HRc										
Aluminium < 8 % Si	○	○	●	●	●	●	○	○	○	○
Aluminium ≥ 8 % Si	○	○	○	○	●	○	○	○	○	○
Copper Cu-alloy					○	●	○	○	○	○
Graphite GRP/CFP/thermoset										○
Hardened steel < 55 HRc										
Hardened steel < 60 HRc										
Hardened steel ≥ 60 HRc										

	Machine reamers								High-performance reamers		
Sorting by cutting material and shank											
Brand	ATORN	ATORN	BECK	ATORN	ATORN	ATORN	ATORN	SARA	SARA	SARA	ATORN
Diameter	1 - 12.03	2 - 20	6 - 40	3 - 50	14 - 30	1.5 - 12	1 - 20	0.6 - 13.05	4 - 20	4 - 20	10 - 40
Tolerance	0/+0.003	H7	H7	H7	H7	H7	H7	0/+0.003/+0.004/+0.005	H7	H7	H7
DIN	212	212	WN	208	WN	WN	WN	WN	WN	WN	WN
Shank	Straight	Straight	Straight	MT	MT	Straight	Straight	Straight	Straight	Straight	Straight
Cutting material	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide
Coating			TiAlN						TiAlN	TiAlN	TiAlN
Helix angle	7 - 8°	45°		9°	10°	9°	9°	10°	7°		
Type/info	1/100	Spiral geometry	HNC ecoSpeed		Long, Extra-long		NC	1/100	Coolant bore	Coolant bore	modular
Item number	161030....	161015....	163010....	161005....	161006....	163001....	163005....	163002....	163510....	163512....	163610....
Page	326	326	327	328	328	329	329	330	331	331	332
Material groups	Usage recommendations										
Steel < 700 N/mm²	●	●		●	●	●	●	●	●	●	
Steel < 1000 N/mm²	●	●		●	●	●	●	●	●	●	
Steel < 1400 N/mm²				○	○	●	●	●	●	●	
Stainless steel ferritic/martensitic		○				○	○				
Stainless steel austenitic						○	○				
Stainless steel duplex											
Cast iron GG/GTS	●			●	●	●	●	●	●	●	
Cast iron GGG	●			●	●	●	●	●	●	●	
Titanium alloys											
Superalloys Fe/NiCo base < 30 HRc											
Superalloys Fe/NiCo base ≥ 30 HRc											
Aluminium < 8 % Si	○	○		○	○	○	●	○	○	○	
Aluminium ≥ 8 % Si	○	○		○	○	●	●	●	○	○	
Copper Cu-alloy	○	○		○	○	○		○	○	○	
Graphite GRP/CFP/thermoset	○										
Hardened steel < 55 HRc											
Hardened steel < 60 HRc											
Hardened steel ≥ 60 HRc											

ATORN® Hand reamers

HSS | DIN 206 | H7 | 6°





- **Type B for H7 fit**
- Right-hand cutting, manufacturing tolerances in accordance with DIN 1420
- Spiral-fluted, long chamfer along 1/4 of the cutting edge length
- Even ridge count with irregular pitch for chatter-free bore reaming
- Straight shank and square end
- **Cutting material: HSS**
- For reaming through-holes

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	○					○	○				○	○					

D H7 mm	D1 mm	L1 mm	L mm	C mm	Z	art.no.	€
1.5	1.5	20	41	1.12	4	**160101** 0015	25,60
2.0	2.0	25	50	1.60	4	160101 0020	23,80
2.5	2.5	29	58	2.00	4	160101 0025	23,80
3.0	3.0	31	62	2.24	6	160101 0030	23,80
3.5	3.5	35	71	2.80	6	160101 0035	27,40
4.0	4.0	38	76	3.15	6	160101 0040	22,90
4.5	4.5	41	81	3.55	6	160101 0045	24,30
5.0	5.0	44	87	4.00	6	160101 0050	25,–
5.5	5.5	47	93	4.50	6	160101 0055	27,40
6.0	6.0	47	93	4.50	6	160101 0060	24,90
7.0	7.0	54	107	5.60	6	160101 0070	26,40
8.0	8.0	58	115	6.30	6	160101 0080	27,40
9.0	9.0	62	124	7.10	6	160101 0090	32,20
10.0	10.0	66	133	8.00	6	160101 0100	32,20
11.0	11.0	71	142	9.00	8	160101 0110	37,80
12.0	12.0	76	152	10.00	8	160101 0120	37,80
13.0	13.0	76	152	10.00	8	160101 0130	60,–
14.0	14.0	81	163	11.20	8	160101 0140	67,–

1134

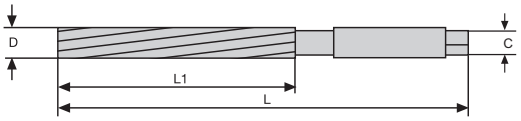
D H7 mm	D1 mm	L1 mm	L mm	C mm	Z	art.no.	€
15.0	15.0	81	163	11.20	8	160101 0150	70,–
16.0	16.0	87	175	12.50	8	160101 0160	72,50
17.0	17.0	87	175	12.50	8	160101 0170	79,50
18.0	18.0	93	188	14.00	8	160101 0180	82,50
19.0	19.0	93	188	14.00	8	160101 0190	90,–
20.0	20.0	100	201	16.00	10	160101 0200	90,–
22.0	22.0	107	215	18.00	10	160101 0220	109,–
24.0	24.0	115	231	20.00	10	160101 0240	124,–
25.0	25.0	115	231	20.00	10	160101 0250	128,–
26.0	26.0	115	231	20.00	10	160101 0260	132,–
28.0	28.0	124	247	22.40	10	160101 0280	168,–
30.0	30.0	124	247	22.40	10	160101 0300	168,–
32.0	32.0	133	265	25.00	12	160101 0320	198,–
34.0	34.0	142	284	28.00	12	160101 0340	240,–
35.0	35.0	142	284	28.00	12	160101 0350	205,–
36.0	36.0	142	284	28.00	12	160101 0360	215,–
38.0	38.0	152	305	31.50	12	160101 0380	270,–
40.0	40.0	152	305	31.50	12	160101 0400	275,–

1134

ATORN® Quick-adjustment hand reamers

HSS | Werks-norm





- Right-hand cutting, 4 cutting edges
- Straight shank and square end
- Large adjusting range, fine adjustment with ring gauges or micrometre
- **Cutting material: HSS**
- For repair work that does not require narrow fit tolerances, and for intermediate dimensions

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		○	○					○	○				○	○					

model	D mm	L1 mm	L mm	C mm	Z	art.no.	€
0	8.0 - 9.0	32	111	4.3	5	**160110** 0090	92,–
1	9.0 - 10.0	32	115	4.3	5	160110 0100	96,–
2	10.0 - 11.0	35	120	4.9	5	160110 0110	96,–
3	11.0 - 12.0	35	125	6.2	5	160110 0120	96,–
4	12.0 - 13.5	42	130	6.2	5	160110 0135	108,–
5	13.5 - 15.5	50	145	7	5	160110 0155	120,–
6	15.5 - 18.0	60	165	8	5	160110 0180	123,–
7	18.0 - 21.0	65	180	9	5	160110 0210	134,–
8	21.0 - 24.0	70	190	10	5	160110 0240	162,–
9	24.0 - 27.5	75	205	11	5	160110 0275	173,–
10	27.5 - 31.5	80	225	12	6	160110 0315	210,–
11	31.5 - 37.0	90	240	14.5	6	160110 0370	295,–
12	37.0 - 45.0	100	285	16	6	160110 0450	380,–
13	45.0 - 55.0	109	320	20	6	160110 0550	519,–
14	55.0 - 65.0	120	350	24	8	160110 0670	659,–

1134

Sets available on request



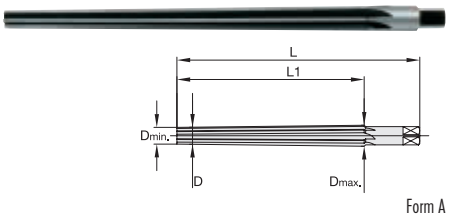
ATORN® Hand taper reamers

HSS | DIN 9 | 1:50 | 6°

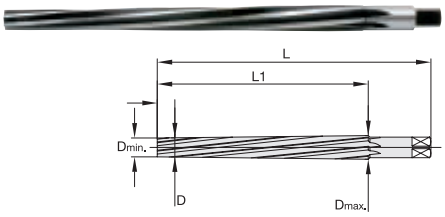
- 1:50 taper for taper pins
- **Type A**, straight-fluted
- **Type B**, spiral-fluted, 6° left-hand twist
- Shank design: straight with square end
- For taper pins in accordance with DIN EN 22339, DIN 258, DIN EN 28737 and DIN EN 28736
- For output bores, we recommend conical pin-hole drill bit no. 101025....
- Ø 13 mm and Ø 14 mm, non-DIN
- * These dimensions are not included in the standard

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●										●	○					

D mm	D min. mm	D max. mm	L mm	L1 mm	Z	Form A art.no.	Form A €	Form B art.no.	Form B €
1.50	1.40	2.14	57	37	3	**160140** 0015	35,–	**160145** 0015	35,–
1.60*	1.50	2.24	57	37	3	160140 0016	36,50	160145 0016	36,50
2.00	1.90	2.86	68	48	4	160140 0020	33,40	160145 0020	33,40
2.50	2.40	3.36	68	48	4	160140 0025	33,40	160145 0025	33,40
3.00	2.90	4.06	80	58	5	160140 0030	30,20	160145 0030	30,20
3.50*	3.40	4.90	100	75	5	160140 0035	37,–	160145 0035	37,–
4.00	3.90	5.26	93	68	5	160140 0040	33,40	160145 0040	33,40
4.50*	4.40	6.14	115	87	5	160140 0045	41,70	160145 0045	41,70
5.00	4.90	6.36	100	73	5	160140 0050	36,50	160145 0050	36,50
5.50*	5.40	7.78	150	119	6	160140 0055	54,50	160145 0055	54,50
6.00	5.90	8.00	135	105	6	160140 0060	45,60	160145 0060	45,60
6.50*	6.40	8.78	150	119	6	160140 0065	56,–	160145 0065	56,–
7.00*	6.90	9.72	177	141	6	160140 0070	66,–	160145 0070	66,–
8.00	7.90	10.80	180	145	6	160140 0080	66,50	160145 0080	66,50
9.00*	8.90	12.16	205	163	6	160140 0090	99,–	160145 0090	99,–
10.00	9.90	13.40	215	175	6	160140 0100	86,–	160145 0100	86,–
12.00	11.80	16.00	255	210	8	160140 0120	110,–	160145 0120	110,–
13.00*	12.86	16.74	240	194	8	160140 0130	127,–	160145 0130	127,–
14.00*	13.86	17.74	240	194	8	160140 0140	133,–	160145 0140	133,–
16.00	15.80	20.40	280	230	8	160140 0160	159,–	160145 0160	159,–
20.00	19.80	24.80	310	250	10	160140 0200	215,–	160145 0200	215,–
25.00	24.70	30.70	370	300	10	160140 0250	380,–	160145 0250	380,–
30.00	29.70	36.10	400	320	12	160140 0300	465,–	160145 0300	465,–
40.00	39.70	46.50	430	340	12	160140 0400	749,–	160145 0400	749,–
50.00	49.70	56.90	460	360	14	160140 0500	1.199,–	160145 0500	1.199,–
						1134		1134	



Form A



Form B

Over 180,000 tools available online!
Register online now!
www.saratools.com

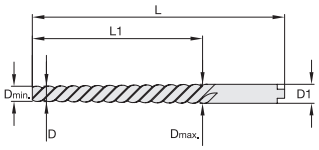


ATORN® High helix taper reamers

HSS-E | DIN 2179 | 1:50 | 45° | Vc/fz | 398

- Taper 1:50 for taper pins
- Shank design: straight with driving pin lugs in accordance with DIN 1809
- For taper pins in accordance with DIN EN 22339, DIN 258, DIN EN 28737 and DIN EN 28736
- Spiral-fluted, 45° left-hand twist
- For through-holes
- For output bores, we recommend the conical drill bit for pin holes No. 101025....
- Requires extensive chip removal (do not pre-drill too deep)
- **Cutting material: HSS-E**
- Ø 6.5, 13, 14, 16 and Ø 20 mm, non-DIN





material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 6-8	● 6-8					● 6-8	● 4-6				● 6-8	● 6-8	○ 6-8				
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

D mm	D min. mm	D max. mm	L mm	L1 mm	D1 mm	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
2.0	1.90	2.86	86	48	3.15	2	0.25	**160150** 0020	35,30
2.5	2.40	3.36	86	48	3.15	3	0.25	160150 0025	41,40
3.0	2.90	4.06	100	58	4.00	3	0.25	160150 0030	37,70
4.0	3.90	5.26	112	68	5.00	3	0.45	160150 0040	36,80
5.0	4.90	6.36	122	73	6.30	3	0.45	160150 0050	40,60
6.0	5.90	8.00	160	105	8.00	3	0.45	160150 0060	45,20
6.5	6.40	8.78	187	119	8.50	3	0.45	160150 0065	60,50
8.0	7.90	10.80	207	145	10.0	3	0.45	160150 0080	70,–
10.0	9.90	13.40	245	175	12.5	3	0.45	160150 0100	91,50
12.0	11.80	16.00	290	210	16.0	3	0.50	160150 0120	118,50
13.0	12.86	16.74	275	194	16.0	3	0.50	160150 0130	190,–
14.0	13.86	17.74	275	194	17.0	3	0.50	160150 0140	229,–
16.0	15.84	21.12	355	264	20.0	3	0.55	160150 0160	359,–
20.0	19.80	25.20	370	270	24.0	3	0.55	160150 0200	485,–

1134



... without shrinkage

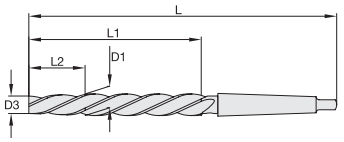
ATORN®
High quality for great performance

SARA® Taper bridge reamers

HSS | DIN 311 | 25° | Vc/fz | 397

- Right-hand cutting
- Cutting edge lengths 1/3 tapered, 2/3 straight
- Shank design: MT
- Spiral-fluted, 25° left-hand twist
- **Cutting material: HSS**
- Used for reaming bores that are too small or offset



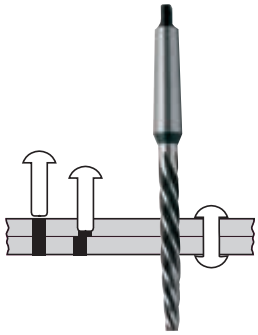


material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 10-15	○ 8-12					● 10-15	● 10-15				● 15-20	○ 15-20	● 20-30				
Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		

● Feed f steel < 1000 N/mm² mm/rev

D1 mm	D3 mm	L mm	L1 mm	L2 mm	Shank	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
6.4	4,5	151	75	19	MT 1	3	0.15	**160130** 0064	66,–
7.4	5.2	156	80	22	MT 1	3	0.15	160130 0074	70,50
8.0	5.5	161	85	25	MT 1	3	0.15	160130 0080	70,50
8.4	5.9	161	85	25	MT 1	3	0.15	160130 0084	70,50
9.0	6.3	166	90	27	MT 1	4	0.15	160130 0090	70,50
9.5	6.6	166	90	27	MT 1	4	0.15	160130 0095	70,50
10.0	7	171	95	30	MT 1	4	0.15	160130 0100	70,50
11.0	7.7	176	100	33	MT 1	4	0.25	160130 0110	70,50
12.0	8.4	199	105	39	MT 2	5	0.25	160130 0120	74,50
13.0	9.1	199	105	39	MT 2	5	0.25	160130 0130	74,50
14.0	9.8	209	115	42	MT 2	5	0.25	160130 0140	73,50
15.0	10.5	219	125	45	MT 2	5	0.25	160130 0150	74,50
16.0	11.2	229	135	48	MT 2	5	0.25	160130 0160	78,50
17.0	11.9	251	135	51	MT3	5	0.25	160130 0170	97,–
18.0	12.6	261	145	58	MT3	5	0.25	160130 0180	108,–
19.0	13.3	261	145	58	MT3	5	0.25	160130 0190	120,–
20.0	14	271	155	62	MT3	5	0.25	160130 0200	120,–
21.0	14.7	271	155	62	MT3	5	0.25	160130 0210	126,–
22.0	15.4	281	165	66	MT3	5	0.25	160130 0220	136,–
23.0	16.4	281	165	66	MT3	5	0.25	160130 0230	145,–
24.0	16.8	296	180	72	MT3	5	0.25	160130 0240	154,–
25.0	17.5	296	180	72	MT3	5	0.25	160130 0250	156,–
26.0	18.2	296	180	72	MT3	5	0.37	160130 0260	170,–
27.0	18.9	311	195	78	MT3	5	0.37	160130 0270	189,–
28.0	19.6	311	195	78	MT3	5	0.37	160130 0280	189,–
29.0	20.3	311	195	78	MT3	5	0.37	160130 0290	230,–
30.0	21	311	195	78	MT3	5	0.37	160130 0300	194,–
31.0	21.7	326	210	84	MT3	5	0.37	160130 0310	220,–
32.0	22.4	354	210	84	MT 4	5	0.40	160130 0320	250,–
33.0	23.1	354	210	84	MT 4	5	0.40	160130 0330	280,–
34.0	23.8	364	220	88	MT 4	5	0.40	160130 0340	295,–
35.0	24.5	364	220	88	MT 4	5	0.40	160130 0350	335,–
36.0	25.2	364	220	88	MT 4	5	0.40	160130 0360	335,–
37.0	25.9	364	220	88	MT 4	5	0.40	160130 0370	335,–
38.0	26.6	374	230	92	MT 4	5	0.40	160130 0380	365,–
39.0	27.3	374	230	92	MT 4	5	0.40	160130 0390	365,–
40.0	28	374	230	92	MT 4	5	0.40	160130 0400	365,–



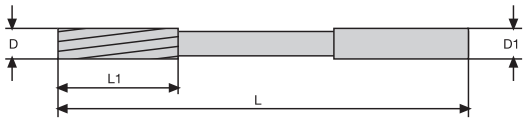
Used for reaming bores that are too small or offset

1134

ATORN® Machine reamers

HSS-E | DIN 212 | Werks-norm | H7 | 9° | 10° | Vc/fz 399

- Type B with offset shank up to Ø 2.8 mm
- Type D with offset shank up to Ø 2.9 mm
- **For H7 fit**
- Right-hand cutting, straight shank
- Manufacturing tolerances in accordance with DIN 1420
- Ground chip-space version
- **Cutting material: HSS-E**
- For reaming through-holes



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 8-10	● 6-8	○ 4-6				● 8-10	● 8-10				○ 15-20	○ 15-20	○ 8-12				
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

Standard version

- Available on request: Ø 0.90 mm to Ø 12.05 mm in 0.01 mm increments



D H7 mm	L1 mm	L mm	D1 mm	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
1.5	8	40	1.5	3	0.10	**161001** 0015	28,80
1.6	9	43	1.6	3	0.10	161001 0016	33,10
1.7	9	43	1.6	3	0.10	161001 0017	33,10
1.8	10	46	1.8	4	0.10	161001 0018	33,10
1.9	10	46	1.8	4	0.10	161001 0019	33,10
2.0	11	49	2.0	4	0.10	161001 0020	26,40
2.1	11	49	2.0	4	0.10	161001 0021	33,10
2.2	12	53	2.2	4	0.10	161001 0022	33,10
2.3	12	53	2.2	4	0.10	161001 0023	33,10
2.4	14	57	2.5	4	0.10	161001 0024	33,10
2.5	14	57	2.5	4	0.10	161001 0025	26,40
2.6	14	57	2.5	4	0.10	161001 0026	34,30
2.7	15	61	2.8	4	0.10	161001 0027	34,30
2.8	15	61	2.8	6	0.10	161001 0028	34,30
2.9	15	61	3.0	6	0.10	161001 0029	34,30
3.0	15	61	3.0	6	0.10	161001 0030	24,60
3.1	16	65	3.2	6	0.10	161001 0031	32,60
3.2	16	65	3.2	6	0.10	161001 0032	32,60
3.3	16	65	3.2	6	0.10	161001 0033	32,60
3.4	18	70	3.5	6	0.10	161001 0034	32,60
3.5	18	70	3.5	6	0.10	161001 0035	28,80
3.6	18	70	3.5	6	0.10	161001 0036	36,50
3.7	18	70	3.5	6	0.10	161001 0037	36,50
3.8	19	75	4.0	6	0.10	161001 0038	36,50
3.9	19	75	4.0	6	0.10	161001 0039	27,40
4.0	19	75	4.0	6	0.10	161001 0040	26,50
4.1	19	75	4.0	6	0.10	161001 0041	33,90
4.2	19	75	4.0	6	0.10	161001 0042	33,90
4.3	21	80	4.5	6	0.10	161001 0043	33,90
4.4	21	80	4.5	6	0.10	161001 0044	33,90
4.5	21	80	4.5	6	0.10	161001 0045	28,50
4.6	21	80	4.5	6	0.10	161001 0046	36,50
4.7	21	80	4.5	6	0.10	161001 0047	36,50
4.8	23	86	5.0	6	0.10	161001 0048	36,50
4.9	23	86	5.0	6	0.10	161001 0049	36,50
5.0	23	86	5.0	6	0.10	161001 0050	27,40
5.1	23	86	5.0	6	0.13	161001 0051	36,50
5.2	23	86	5.0	6	0.13	161001 0052	36,50
5.3	23	86	5.0	6	0.13	161001 0053	36,50
5.4	26	93	5.6	6	0.13	161001 0054	36,50
5.5	26	93	5.6	6	0.13	161001 0055	36,50
5.6	26	93	5.6	6	0.13	161001 0056	36,50

D H7 mm	L1 mm	L mm	D1 mm	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
5.7	26	93	5.6	6	0.13	161001 0057	36,50
5.8	26	93	5.6	6	0.13	161001 0058	36,50
5.9	26	93	5.6	6	0.13	161001 0059	36,50
6.0	26	93	5.6	6	0.13	161001 0060	28,80
6.1	28	101	6.3	6	0.13	161001 0061	36,50
6.2	28	101	6.3	6	0.13	161001 0062	36,50
6.3	28	101	6.3	6	0.13	161001 0063	36,50
6.4	28	101	6.3	6	0.13	161001 0064	36,50
6.5	28	101	6.3	6	0.13	161001 0065	35,90
6.6	28	101	6.3	6	0.13	161001 0066	36,50
6.7	28	101	6.3	6	0.13	161001 0067	36,50
6.8	31	109	7.1	6	0.13	161001 0068	36,50
6.9	31	109	7.1	6	0.13	161001 0069	36,50
7.0	31	109	7.1	6	0.13	161001 0070	35,90
7.1	31	109	7.1	6	0.13	161001 0071	37,60
7.2	31	109	7.1	6	0.13	161001 0072	37,60
7.3	31	109	7.1	6	0.13	161001 0073	41,20
7.4	31	109	7.1	6	0.13	161001 0074	41,20
7.5	31	109	7.1	6	0.13	161001 0075	40,10
7.6	33	117	8.0	6	0.13	161001 0076	40,10
7.7	33	117	8.0	6	0.13	161001 0077	40,10
7.8	33	117	8.0	6	0.13	161001 0078	40,10
7.9	33	117	8.0	6	0.13	161001 0079	40,10
8.0	33	117	8.0	6	0.13	161001 0080	36,50
8.1	33	117	8.0	6	0.13	161001 0081	49,70
8.2	33	117	8.0	6	0.13	161001 0082	50,–
8.3	33	117	8.0	6	0.13	161001 0083	50,–
8.4	33	117	8.0	6	0.13	161001 0084	50,–
8.5	33	117	8.0	6	0.13	161001 0085	46,30
8.6	36	125	9.0	6	0.13	161001 0086	46,30
8.7	36	125	9.0	6	0.13	161001 0087	46,30
8.8	36	125	9.0	6	0.13	161001 0088	46,30
8.9	36	125	9.0	6	0.13	161001 0089	46,30
9.0	36	125	9.0	6	0.15	161001 0090	42,50
9.1	36	125	9.0	6	0.15	161001 0091	47,–
9.2	36	125	9.0	6	0.15	161001 0092	47,–
9.3	36	125	9.0	6	0.15	161001 0093	47,–
9.4	36	125	9.0	6	0.15	161001 0094	47,–
9.5	36	125	9.0	6	0.15	161001 0095	47,–
9.6	38	133	10.0	6	0.15	161001 0096	47,–
9.7	38	133	10.0	6	0.15	161001 0097	47,–
9.8	38	133	10.0	6	0.15	161001 0098	47,–

Continued on next page >>>

D H7 mm	L1 mm	L mm	D1 mm	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
9.9	38	133	10.0	6	0.15	161001 0099	47,–
10.0	38	133	10.0	6	0.15	161001 0100	42,40
11.0	41	142	10.0	6	0.15	161001 0110	59,50
12.0	44	151	10.0	6	0.20	161001 0120	61,–
13.0	44	151	10.0	8	0.20	161001 0130	71,50
14.0	47	160	12.5	8	0.20	161001 0140	73,–

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D H7 mm	L1 mm	L mm	D1 mm	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
15.0	50	162	12.5	8	0.20	161001 0150	74,50
16.0	52	170	12.5	8	0.20	161001 0160	77,–
17.0	54	175	14.0	8	0.25	161001 0170	92,–
18.0	56	182	14.0	8	0.25	161001 0180	94,–
19.0	58	189	16.0	8	0.25	161001 0190	111,–
20.0	60	195	16.0	8	0.25	161001 0200	106,–

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Long, company standard

D H7 mm	L1 mm	L mm	D1 mm	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
2	14	65	2	6	0.10	**161002** 0020	72,–
3	14	90	3	6	0.10	161002 0030	52,50
4	16	105	4	6	0.10	161002 0040	52,50
5	16	115	5	6	0.10	161002 0050	52,50

1134

D H7 mm	L1 mm	L mm	D1 mm	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
6	16	130	6	6	0.13	161002 0060	54,–
8	18	160	8	6	0.13	161002 0080	56,50
10	20	190	10	6	0.15	161002 0100	66,–
12	20	210	12	6	0.20	161002 0120	75,50

1134



Extra-long, company standard

D H7 mm	L1 mm	L mm	D1 mm	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
2	20	80	2	6	0.10	**161003** 0020	210,–
3	30	120	3	6	0.10	161003 0030	175,–
4	30	160	4	6	0.10	161003 0040	169,–
5	30	200	5	6	0.10	161003 0050	167,–

1134

D H7 mm	L1 mm	L mm	D1 mm	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
6	35	250	6	6	0.13	161003 0060	163,–
8	35	250	8	6	0.13	161003 0080	159,–
10	35	250	10	6	0.15	161003 0100	167,–

1134



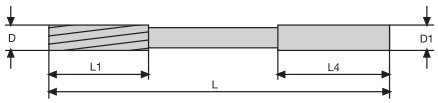
... for daily use.

ATORN®
Performance demands quality

ATORN® NC machine reamers

HSS-E | DIN 212 | Werks-norm | H7 | 9° | Vc/fz | 399

- **For H7 fit**
- Right-hand cutting
- **Cutting material: HSS-E**
- Straight shank without square end
- Form D: spiral-fluted with offset shank
- **To ensure maximum true running accuracy for use in hydraulic expansion chucks** and high-precision chucks, these reamers are delivered with **even shank diameters** suitable
- for reaming through-holes and blind holes
- **Also available in TiN-coated version**



material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 8-10	● 6-8	○ 4-6				● 8-10	● 8-10				○ 15-20	○ 15-20	○ 8-12				
Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

Single



D H7 mm	D1 h6 mm	L mm	L1 mm	L4 mm	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3	3	61	15	28	6	0.10	**161010** 0030	16,50
3.5	4	70	18	28	6	0.10	161010 0035	19,30
4	4	75	19	28	6	0.10	161010 0040	17,60
4.5	5	80	21	28	6	0.10	161010 0045	19,30
5	5	86	23	28	6	0.10	161010 0050	18,90
5.5	6	93	26	36	6	0.13	161010 0055	22,70
6	6	93	26	36	6	0.13	161010 0060	20,20
6.5	6	101	28	36	6	0.13	161010 0065	24,50
7	8	109	31	36	6	0.13	161010 0070	24,50
8	8	117	33	36	6	0.13	161010 0080	21,80
9	10	125	36	40	6	0.15	161010 0090	26,30
10	10	133	38	40	6	0.15	161010 0100	26,30
11	10	142	41	40	6	0.15	161010 0110	37,20
12	10	151	44	40	6	0.20	161010 0120	35,20
14	14	160	47	45	8	0.20	161010 0140	51,50
15	14	162	50	45	8	0.20	161010 0150	55,–
16	14	170	52	45	8	0.20	161010 0160	56,50
18	14	182	56	45	8	0.25	161010 0180	64,50
20	16	195	60	48	8	0.25	161010 0200	76,50

1134

Sets

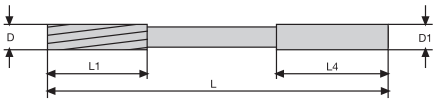


Description	art.no.	€
Set with 1 reamer in each size, Ø 3 / 4 / 5 / 6 / 8 / 10 / 12 mm	**161001** 1007	209,–

ATORN® 1/100 NC machine reamers

HSS-E | DIN 212 | 9° | Vc/fz | 399





- With straight shank and 9° left-hand twist, ground chip space
- Form B up to Ø 2.03 mm with end-to-end shank and centring point on both sides
- Form D from Ø 2.98-12.03 mm with offset shank
- Manufacturing tolerances: Nominal dimensions = 0/+ 0.003 mm

material	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
● very well suited ○ well suited	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 8-10	● 4-8					● 8-10	● 8-10				○ 15-20	○ 15-20	○ 8-12				
Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

Specify nominal dimension D in mm as a four digit figure:

- e.g. 0.72 mm = 0072, 5.14 mm = 0514, 11.00 mm = 1100

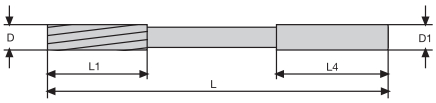
D mm	D1 h6 mm	L mm	L1 mm	L4 mm	Z	● Feed f steel < 1000 N/mm² mm/rev	**161030....** €
1.00	1	34	5.5	19	3	0.08	25,50
1.98 - 2.03	2	49	11	25	4	0.09	22,–
2.98 - 3.00	3	61	15	28	6	0.10	24,–
3.01 - 3.03	4	65	16	28	6	0.10	22,90
3.98 - 4.03	4	75	19	28	6	0.10	21,40
4.98 - 5.03	5	86	23	28	6	0.10	22,20
5.98 - 6.00	6	93	26	36	6	0.10	24,40
6.01 - 6.03	6	101	28	36	6	0.12	24,–
6.98 - 7.03	8	109	31	36	6	0.12	27,30
7.98 - 8.00	8	117	33	36	6	0.12	27,90
8.01 - 8.03	8	117	33	36	6	0.13	27,30
9.98 - 10.03	10	133	38	40	6	0.13	34,70
11.98 - 12.03	10	151	44	40	6	0.15	42,30

1134

ATORN® High helix machine reamers

HSS-E | DIN 212 | H7 | 45° | Vc/fz | 399





- **For H7 fit**
- Right-hand cutting
- 45° left-hand twist, type E
- Straight shank
- With tapered chamfer along approx. 1/6 of the cutting edge length
- For **through-holes**
- Clean, chatter-free surface
- Broad chip spaces for high cutting speeds and up to 100 % higher feed rates
- **Cutting material: HSS-E**

material	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
● very well suited ○ well suited	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 8-10	● 6-8										○ 15-20	○ 15-20	○ 8-12				
Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

D H7 mm	D1 h6 mm	L mm	L1 mm	L4 mm	Z	● Feed f steel < 1000 N/mm² mm/rev	art.no.	€
2.0	2.0	49	11	25	3	0.10	**161015** 0020	20,50
2.5	2.5	57	14	28	3	0.10	161015 0025	22,–
3.0	3.0	61	15	28	3	0.10	161015 0030	24,80
3.2	3.2	65	16	28	3	0.10	161015 0032	29,–
3.5	3.5	70	18	28	3	0.10	161015 0035	29,–
4.0	4.0	75	19	28	3	0.10	161015 0040	24,–
4.5	4.5	80	21	28	3	0.10	161015 0045	28,30
5.0	5.0	86	23	28	3	0.10	161015 0050	26,70
6.0	5.6	93	26	36	3	0.13	161015 0060	25,20
7.0	7.1	109	31	36	3	0.13	161015 0070	29,80
8.0	8.0	117	33	36	3	0.13	161015 0080	26,30
9.0	9.0	125	36	40	3	0.15	161015 0090	37,50

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D H7 mm	D1 h6 mm	L mm	L1 mm	L4 mm	Z	● Feed f steel < 1000 N/mm² mm/rev	art.no.	€
10.0	10.0	133	38	40	3	0.15	161015 0100	35,30
11.0	10.0	142	41	40	3	0.15	161015 0110	44,90
12.0	10.0	151	44	40	4	0.20	161015 0120	43,40
13.0	10.0	151	44	40	4	0.20	161015 0130	61,50
14.0	12.5	160	47	45	4	0.20	161015 0140	57,–
15.0	12.5	162	50	45	4	0.20	161015 0150	58,–
16.0	12.5	170	52	45	4	0.20	161015 0160	60,50
17.0	14.0	175	54	45	4	0.20	161015 0170	90,–
18.0	14.0	182	56	45	4	0.25	161015 0180	82,50
19.0	16.0	189	58	48	4	0.25	161015 0190	95,50
20.0	16.0	195	60	48	4	0.25	161015 0200	90,50

1134

BECK MAPAL GROUP | High-performance reamers HNC ecoSpeed

HSS-E | Werks-norm | H7 | DIN 6535 HA | TiAlN | Vc/fz | 401

- **Diameter 6-40 mm**
- Manufacturing tolerances H7
- **Cutting material: HSS, TiAlN-coated**
- NC shank for use directly in hydraulic expansion chucks and high-precision collet chucks
- Tight h6 tool shank tolerance for a high level of true running accuracy
- **With internal coolant supply:**
  Straight-fluted version, coolant discharged on the face side, for blind holes
  Straight-fluted version, coolant discharged on the cutting edges, for blind holes

With internal cooling

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	●	○			○	●										
		35-45	30-40	15-35	15-20			15-20	20-40										
	Cutting speed Vc m/min.				Please adjust these guidelines according to clamping operation and machine set-up.														

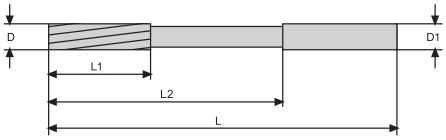
D H7 mm	D1 h6 mm	L mm	L1 mm	L2 mm	Z	Feed f steel < 1000 N/mm² mm/rev	For clearance art.no.	€	For blind holes art.no.	€
6	8	100	16	64	6	0.12	**163010** 0600	83,80	**163012** 0600	75,30
6.5	8	100	16	64	6	0.12	163010 0650	98,–	163012 0650	89,50
7	8	100	16	64	6	0.12	163010 0700	86,70	163012 0700	78,–
7.5	8	100	16	64	6	0.12	163010 0750	102,–	163012 0750	93,40
8	8	100	16	64	6	0.12	163010 0800	87,70	163012 0800	79,10
8.5	10	100	20	60	6	0.15	163010 0850	104,50	163012 0850	96,40
9	10	100	20	60	6	0.15	163010 0900	90,60	163012 0900	83,–
9.5	10	120	20	80	6	0.15	163010 0950	106,60	163012 0950	99,90
10	10	120	20	80	6	0.15	163010 1000	91,50	163012 1000	85,50
10.5	12	120	20	75	6	0.18	163010 1050	109,90	163012 1050	104,20
11	12	120	20	75	6	0.18	163010 1100	95,90	163012 1100	90,90
11.5	12	120	20	75	6	0.18	163010 1150	112,90	163012 1150	108,–
12	12	120	20	75	6	0.18	163010 1200	97,10	163012 1200	92,10
13	14	130	22	85	6	0.18	163010 1300	102,10	163012 1300	97,10
14	14	130	22	85	6	0.18	163010 1400	109,40	163012 1400	102,90
15	16	130	22	82	6	0.25	163010 1500	118,40	163012 1500	111,90
16	16	150	25	102	6	0.25	163010 1600	121,30	163012 1600	114,90
17	18	150	25	102	8	0.25	163010 1700	145,80	163012 1700	136,20
18	18	150	25	102	8	0.25	163010 1800	146,60	163012 1800	137,10
19	20	150	25	100	8	0.25	163010 1900	151,10	163012 1900	141,30
20	20	150	25	100	8	0.25	163010 2000	153,20	163012 2000	143,70
21	20	160	25	110	8	0.30	163010 2100	212,90	163012 2100	200,60
22	20	160	25	110	8	0.30	163010 2200	213,60	163012 2200	201,30
23	20	180	25	130	8	0.30	163010 2300	222,50	163012 2300	210,10
24	20	180	25	130	8	0.30	163010 2400	222,80	163012 2400	210,40
25	20	180	25	130	8	0.30	163010 2500	205,10	163012 2500	192,80
26	20	180	25	130	8	0.40	163010 2600	230,10	163012 2600	217,80
27	20	180	25	130	8	0.40	163010 2700	244,10	163012 2700	231,90
28	25	180	25	124	8	0.40	163010 2800	251,70	163012 2800	239,60
29	25	180	25	124	8	0.40	163010 2900	258,30	163012 2900	246,–
30	25	200	25	144	8	0.40	163010 3000	240,10	163012 3000	227,70
31	25	200	25	144	8	0.45	163010 3100	275,60	163012 3100	263,30
32	25	200	25	144	8	0.45	163010 3200	250,40	163012 3200	238,–
33	25	200	25	144	8	0.45	163010 3300	295,50	163012 3300	283,10
34	25	200	25	144	8	0.45	163010 3400	304,50	163012 3400	291,10
35	25	200	25	144	8	0.45	163010 3500	304,90	163012 3500	291,60
36	25	200	25	144	8	0.45	163010 3600	288,60	163012 3600	275,20
37	25	200	25	144	8	0.45	163010 3700	336,–	163012 3700	322,70
38	25	200	25	144	8	0.45	163010 3800	348,40	163012 3800	335,10
39	25	200	25	144	8	0.45	163010 3900	349,–	163012 3900	335,70
40	25	200	25	144	8	0.45	163010 4000	349,60	163012 4000	336,20
							1155		1155	



163010....



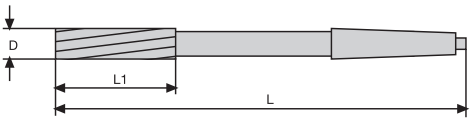
163012....



ATORN® Machine reamer with MT shank

HSS-E | DIN 208 | Werks-norm | H7 | 9° | 10° | Vc/fz | 399

- **Type B for H7 fit**
- Right-hand cutting
- **Morse taper**
- Spiral-fluted, short 45° chamfer
- Even ridge count with irregular pitch for chatter-free bore reaming
- **Cutting material: HSS-E**
- For reaming through-holes, chip removal in the cutting direction, suitable for blind bores due to short chamfer



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 8-10	● 6-8	○ 4-6				● 8-10	● 8-10				○ 15-20	○ 15-20	○ 8-12				
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

Standard version, DIN 208



- 9° left-hand twist

D H7 mm	L1 mm	L mm	Shank	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
3.0	15	112	MT 1	6	0.10	**161005** 0030	51,10
4.0	19	125	MT 1	6	0.10	161005 0040	43,10
5.0	23	133	MT 1	6	0.10	161005 0050	50,60
6.0	26	138	MT 1	6	0.13	161005 0060	50,60
7.0	31	150	MT 1	6	0.13	161005 0070	53,50
8.0	33	156	MT 1	6	0.13	161005 0080	53,50
9.0	36	162	MT 1	6	0.15	161005 0090	59,50
10.0	38	168	MT 1	6	0.15	161005 0100	45,10
11.0	41	175	MT 1	6	0.15	161005 0110	50,60
12.0	44	182	MT 1	6	0.20	161005 0120	49,30
13.0	44	182	MT 1	8	0.20	161005 0130	52,10
14.0	47	189	MT 1	8	0.20	161005 0140	52,90
15.0	50	204	MT 2	8	0.20	161005 0150	63,50
16.0	52	210	MT 2	8	0.20	161005 0160	64,50
17.0	54	214	MT 2	8	0.25	161005 0170	69,40
18.0	56	219	MT 2	8	0.25	161005 0180	71,–
19.0	58	223	MT 2	8	0.25	161005 0190	76,30
20.0	60	228	MT 2	8	0.25	161005 0200	76,30
21.0	62	232	MT 2	8	0.25	161005 0210	88,–

1134

D H7 mm	L1 mm	L mm	Shank	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
22.0	64	237	MT 2	8	0.25	161005 0220	87,–
23.0	66	241	MT 2	8	0.25	161005 0230	98,50
24.0	68	268	MT3	10	0.25	161005 0240	101,–
25.0	68	268	MT3	10	0.25	161005 0250	104,50
26.0	70	273	MT3	10	0.25	161005 0260	111,50
28.0	71	277	MT3	10	0.25	161005 0280	123,–
30.0	73	281	MT3	10	0.30	161005 0300	128,–
32.0	77	317	MT 4	12	0.30	161005 0320	168,–
34.0	78	321	MT 4	12	0.30	161005 0340	189,50
35.0	78	321	MT 4	12	0.30	161005 0350	189,50
36.0	79	325	MT 4	12	0.35	161005 0360	204,–
38.0	81	329	MT 4	12	0.35	161005 0380	225,–
40.0	81	329	MT 4	12	0.35	161005 0400	225,–
42.0	82	333	MT 4	12	0.35	161005 0420	245,–
44.0	83	336	MT 4	14	0.35	161005 0440	295,–
45.0	83	336	MT 4	14	0.35	161005 0450	295,–
46.0	84	340	MT 4	14	0.40	161005 0460	350,–
50.0	86	344	MT 4	14	0.40	161005 0500	370,–

1134

Long, company standard type D



- 10° left-hand twist

D H7 mm	L1 mm	L mm	Shank	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
14.0	22	245	MT 1	8	0.20	**161006** 0140	105,–
15.0	22	260	MT 2	8	0.20	161006 0150	115,–
16.0	25	260	MT 2	8	0.20	161006 0160	126,–
18.0	25	260	MT 2	8	0.25	161006 0180	130,–
20.0	28	270	MT 2	8	0.25	161006 0200	142,–

1134

D H7 mm	L1 mm	L mm	Shank	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
22.0	28	280	MT 2	8	0.25	161006 0220	155,–
24.0	32	300	MT3	8	0.25	161006 0240	220,–
26.0	32	330	MT3	10	0.25	161006 0260	260,–
28.0	32	340	MT3	10	0.25	161006 0280	270,–
30.0	36	350	MT3	10	0.30	161006 0300	285,–

1134

Extra-long, company standard type D



- 10° left-hand twist

D H7 mm	L1 mm	L mm	Shank	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
12.0	40	315	MT 1	6	0.20	**161007** 0120	220,–
14.0	40	315	MT 1	8	0.20	161007 0140	230,–
16.0	45	350	MT 2	8	0.20	161007 0160	325,–
18.0	45	350	MT 2	8	0.25	161007 0180	360,–
20.0	45	350	MT 2	8	0.25	161007 0200	395,–

1134

D H7 mm	L1 mm	L mm	Shank	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
22.0	45	350	MT 2	8	0.25	161007 0220	490,–
24.0	70	450	MT3	8	0.25	161007 0240	619,–
26.0	70	450	MT3	10	0.25	161007 0260	719,–
28.0	70	450	MT3	10	0.25	161007 0280	789,–
30.0	70	450	MT3	10	0.30	161007 0300	839,–

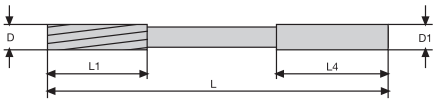
1134

ATORN® Machine reamers

VHM | Werks-norm | H7 | 9° | Vc/fz | 399

- **sim. to DIN 212/8093 for H7 fit**
- Straight shank, from Ø 10.0 mm steel shank with inner centring in accordance with DIN 332 Type B
- **Left-hand twist, type B**, 45° chamfer
- Up to Ø 2.6 mm with external line-up clamp, from Ø 2.7 mm with inner centring
- **Cutting material: solid carbide K10**
- For reaming cast iron, white iron, malleable cast iron, cast steel, steel, non-ferrous metal and plastics
- For through-holes





material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 10-15	● 8-12	● 6-10	○ 10-15	○ 8-12		● 8-12	● 8-12				○ 15-25	● 15-25	○ 20-30				
	Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									

D H7 mm	D1 h9 mm	L mm	L1 mm	L4 mm	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
1.5	1.5	40	8	16	3	0.15	**163001** 0015	30,20
2.0	2.0	49	11	20	4	0.15	163001 0020	30,–
2.5	2.5	57	14	23	4	0.15	163001 0025	32,10
3.0	3.0	61	15	20	6	0.15	163001 0030	35,70
3.5	3.5	70	18	27	6	0.15	163001 0035	39,30
4.0	4.0	75	19	32	6	0.15	163001 0040	39,70
4.5	4.5	80	21	33	6	0.15	163001 0045	47,20
5.0	5.0	86	23	34	6	0.15	163001 0050	47,20
5.5	5.6	93	26	36	6	0.18	163001 0055	63,50

1136

D H7 mm	D1 h9 mm	L mm	L1 mm	L4 mm	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
6.0	5.6	93	26	36	6	0.18	163001 0060	58,–
7.0	7.1	109	31	40	6	0.18	163001 0070	73,50
7.5	7.1	109	31	40	6	0.18	163001 0075	78,50
8.0	8.0	117	33	42	6	0.18	163001 0080	76,50
9.0	9.0	125	36	44	6	0.20	163001 0090	92,–
9.5	9.0	125	36	44	6	0.20	163001 0095	107,–
10.0	10.0	133	38	46	6	0.20	163001 0100	93,–
12.0	10.0	151	44	46	6	0.25	163001 0120	108,–

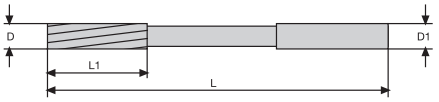
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ATORN® NC machine reamers

VHM | DIN 212 | H7 | 9° | Vc/fz | 399

- **Similar to DIN 212/8093**
- **For H7 fit**
- **NC shank for use in hydraulic expansion chucks and high-precision collet chucks**
- Form D
- Straight shank, spiral-fluted, right-hand cutting
- **Up to Ø 13.0 mm solid carbide, from Ø 14 mm with steel shank**
- For reaming through-holes
- Also suitable for blind bores





material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 10-15	● 8-12	● 6-10	○ 10-15	○ 8-12		● 8-12	● 8-12					● 15-25	● 20-30				
	Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									

D H7 mm	D1 h6 mm	L mm	L1 mm	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
1.0	1	34	6	3	0.15	**163005** 0010	48,–
1.2	1	34	6	3	0.15	163005 0012	48,–
1.4	2	40	8	3	0.15	163005 0014	48,–
1.5	2	40	8	3	0.15	163005 0015	46,70
1.6	2	43	9	3	0.15	163005 0016	48,–
1.8	2	46	10	4	0.15	163005 0018	48,–
2.0	2	49	11	4	0.15	163005 0020	46,70
2.2	3	53	12	4	0.15	163005 0022	48,–
2.5	3	57	14	4	0.15	163005 0025	46,70
2.8	3	61	15	6	0.15	163005 0028	48,–
2.9	3	61	15	6	0.15	163005 0029	48,–
3.0	3	61	15	6	0.15	163005 0030	46,70
3.2	4	65	16	6	0.15	163005 0032	48,–
3.5	4	70	18	6	0.15	163005 0035	46,70
4.0	4	75	19	6	0.15	163005 0040	46,70
4.5	5	80	21	6	0.15	163005 0045	69,50
5.0	5	86	23	6	0.15	163005 0050	67,50

1134

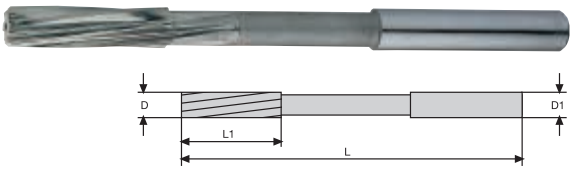
D H7 mm	D1 h6 mm	L mm	L1 mm	Z	Feed f steel < 1000 N/mm² mm/rev	art.no.	€
5.5	6	93	26	6	0.18	163005 0055	68,50
6.0	6	93	26	6	0.18	163005 0060	67,50
6.5	6	101	28	6	0.18	163005 0065	83,50
7.0	8	109	31	6	0.18	163005 0070	83,50
8.0	8	117	33	6	0.18	163005 0080	82,50
9.0	10	125	36	6	0.20	163005 0090	107,–
10.0	10	133	38	6	0.20	163005 0100	112,–
11.0	10	142	41	6	0.20	163005 0110	119,–
12.0	10	151	44	6	0.25	163005 0120	126,–
13.0	10	151	44	8	0.25	163005 0130	154,–
14.0	14	160	47	8	0.25	163005 0140	158,–
15.0	14	162	50	8	0.25	163005 0150	183,–
16.0	14	170	52	8	0.25	163005 0160	187,–
17.0	14	175	54	8	0.30	163005 0170	245,–
18.0	14	182	56	8	0.30	163005 0180	235,–
19.0	16	189	58	8	0.30	163005 0190	320,–
20.0	16	195	60	8	0.30	163005 0200	290,–

1134

SARA® 1/100 solid carbide machine reamers

VHM | Werks-norm | 10° | Vc/fz | 399

- **sim. to DIN 212**
- **Type B, type D from Ø 3.76 mm**
- 10° left-hand twist, right-hand cutting, straight shank
- **1/100 pitch**
- **Tolerances:**
  Ø 0.60 to 3.00 mm +0/+ 0.003
  Ø 3.01 to 6.00 mm +0/+ 0.004
  Ø 6.01 to 13.05 mm +0/+ 0.005
- **Cutting material: solid carbide K15F (Ø > 13.97 with carbide head)**
- For through-holes



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 10-15	● 8-12	● 6-10	○ 10-15	○ 8-12		● 6-12	● 8-12				○ 15-25	● 15-25	○ 20-30				
		Cutting speed Vc m/min.																	
		Please adjust these guidelines according to clamping operation and machine set-up.																	

Specify nominal dimension D in mm as a four digit figure:
- e.g. 0.72 mm = 0072, 5.14 mm = 0514, 11.00 mm = 1100

D mm	L mm	L1 mm	D1 mm	Z	Feed f steel < 1000 N/mm² mm/rev	163002.... €
0.60 - 0.69	33	7	= D	4	0.15	95,–
0.70 - 0.79	33	7	= D	4	0.15	71,50
0.80 - 0.94	33	7	= D	4	0.15	71,–
0.95 - 1.05	33	7	= D	4	0.15	39,60
1.06 - 1.44	40	10	= D	4	0.15	43,60
1.45 - 1.55	40	10	= D	4	0.15	39,60
1.56 - 1.79	43	11	= D	4	0.15	43,60
1.80 - 1.94	49	12	= D	4	0.15	43,60
1.95 - 2.05	49	12	= D	4	0.15	35,80
2.06 - 2.36	49	12	= D	4	0.15	43,60
2.37 - 2.94	57	18	= D	6	0.15	43,60
2.95 - 3.05	57	18	= D	6	0.15	35,90
3.06 - 3.35	57	18	= D	6	0.15	43,70
3.36 - 3.75	57	18	= D	6	0.15	45,20
3.76 - 4.25	75	19	4.0	6	0.15	60,–
4.26 - 4.75	80	21	4.5	6	0.15	57,50
4.76 - 5.00	86	23	5.0	6	0.15	63,50
5.01 - 5.30	86	23	5.0	6	0.18	63,50
5.31 - 5.80	93	26	5.5	6	0.18	75,50
5.81 - 5.94	101	28	6.0	6	0.18	78,–
5.95 - 6.05	101	28	6.0	6	0.18	71,50
6.06 - 6.70	101	28	6.0	6	0.18	78,–
6.71 - 7.55	109	31	7.0	6	0.18	114,–
7.56 - 7.94	117	33	8.0	6	0.18	135,–
7.95 - 8.05	117	33	8.0	6	0.18	118,–
8.06 - 8.55	117	33	8.0	6	0.18	131,–
8.56 - 8.99	125	36	9.0	6	0.18	145,–
9.00 - 9.55	125	36	9.0	6	0.2	145,–
9.56 - 9.94	133	38	10	6	0.2	150,–
9.95 - 10.05	133	38	10	6	0.2	143,–
10.06 - 11.05	133	38	10	6	0.2	150,–
11.06 - 11.30	133	38	10	6	0.2	156,–
11.31 - 11.94	151	44	12	6	0.2	205,–
11.95 - 11.99	151	44	12	6	0.2	187,–
12.00 - 12.05	151	44	12	6	0.25	187,–
12.06 - 13.05	151	44	12	6	0.25	235,–

1136

SARA® Solid carbide high-performance reamers

VHM | Werks-norm | H7 | 10° | DIN 6535 HA | TiAlN | Vc/fz | 401

- **Manufacturing tolerances: H7 in accordance with DIN 1420**
- Right-hand cutting, **with internal cooling**
- **Cutting material: solid carbide, TiAlN-coated**
- NC shank for use directly in hydraulic expansion chucks and high-precision collet chucks
- Tight h6 tool shank tolerance for a high level of true running accuracy
- Version with linear flutes, coolant exits on the face side, for blind holes
- Version with 10° left-hand twist, lateral coolant outlet on the cutting edges, for through-holes
- **Other versions for machining stainless steels, aluminium, copper, zinc and Cu/Zn/Mg alloys, as well as hardened steels up to 65 HRc available on request**

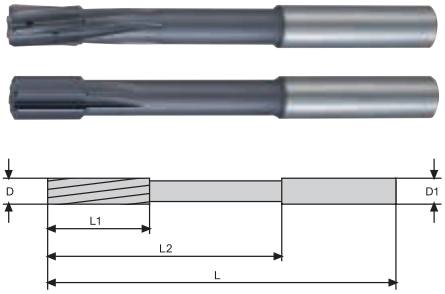
material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
●	●	●				●	●										
80-225	80-200	60-180				70-150	60-115										

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

● Feed f steel < 1000 N/mm² mm/rev

D H7 mm	D1 h6 mm	L mm	L1 mm	L2 mm	Z	Feed f steel < 1000 N/mm² mm/rev	For through-holes art.no.	€	For blind holes art.no.	€
4	4	75	12	47	4	0.30	**163510** 0400	112,50	**163512** 0400	112,50
4.5	6	75	12	39	4	0.30	163510 0450	116,–	163512 0450	116,–
5	6	75	12	39	4	0.40	163510 0500	116,–	163512 0500	116,–
5.5	6	75	16	39	4	0.40	163510 0550	122,50	163512 0550	122,50
6	6	75	16	39	4	0.40	163510 0600	119,–	163512 0600	119,–
6.5	8	100	16	64	6	0.40	163510 0650	129,–	163512 0650	129,–
7	8	100	16	64	6	0.70	163510 0700	129,–	163512 0700	129,–
7.5	8	100	16	64	6	0.70	163510 0750	129,–	163512 0750	129,–
8	8	100	16	64	6	0.70	163510 0800	125,50	163512 0800	125,50
8.5	10	100	19	60	6	0.70	163510 0850	157,50	163512 0850	157,50
9	10	100	19	60	6	0.70	163510 0900	157,50	163512 0900	157,50
9.5	10	120	19	80	6	0.80	163510 0950	182,–	163512 0950	182,–
10	10	120	19	80	6	0.80	163510 1000	181,–	163512 1000	181,–
10.5	12	120	19	75	6	0.80	163510 1050	235,–	163512 1050	235,–
11	12	120	19	75	6	0.80	163510 1100	235,–	163512 1100	235,–
11.5	12	120	19	75	6	0.80	163510 1150	250,–	163512 1150	250,–
12	12	120	19	75	6	0.80	163510 1200	242,–	163512 1200	242,–
13	14	120	19	75	6	0.80	163510 1300	260,–	163512 1300	260,–
14	14	135	22	90	6	0.80	163510 1400	270,–	163512 1400	270,–
15	16	135	22	87	6	0.80	163510 1500	270,–	163512 1500	270,–
16	16	135	22	87	6	0.80	163510 1600	277,–	163512 1600	277,–
17	18	145	22	97	8	0.80	163510 1700	277,–	163512 1700	277,–
18	18	145	22	97	8	0.80	163510 1800	320,–	163512 1800	320,–
19	20	145	22	95	8	0.80	163510 1900	320,–	163512 1900	320,–
20	20	145	22	95	8	1.00	163510 2000	345,–	163512 2000	345,–
							1155		1155	



Over 180,000 tools available online!
Register online now!
www.saratools.com



ATORN® High-performance exchangeable head reamers

VHM | Werks-norm | H7 | TiAlN | Vc/fz | 402

- Modular reaming tool system
- **Diameter 10-40 mm**
- **For through-holes and blind bores**
- **Cutting material: solid carbide, TiAlN-coated**
- **With internal coolant supply**
- Particularly efficient from machining diameters of 20 mm
- Flexible machining depths thanks to various holder lengths
- Faster and more secure tool changes without new tool calibration
- **2 geometries available:**
  ST - for steel and cast iron (ISO P, K)
  VA - for stainless steels (ISO M)
- **Other designs for the efficient machining of aluminium, titanium, CFRP/GFRP, and hardened materials available on request**

Modular system

material

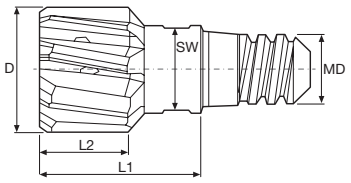
● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
163610....	● 140-160	● 120-160	● 80-140				● 100-120	● 100-120										
163620....				○ 35-40	○ 35-40	○ 25-30												
Cutting speed Vc m/min.				Please adjust these guidelines according to clamping operation and machine set-up.														

Through-hole

- Left-handed twist 10°
- Radial coolant outlet
- **From Ø 28 mm use exchangeable head holder with enlarged planar support (MD = 16*)**

D H7 mm	MD	L1 mm	L2 mm	Z	Wr. width mm	Tightening torque N-m	ST art.no.	ST €	VA art.no.	VA €
10	6	18	10	6	6 mm	5	**163610** 1000	178,–	**163620** 1000	178,–
11	8	20	10	6	8 mm	12.5	163610 1100	184,–	163620 1100	184,–
12	8	20	10	6	8 mm	12.5	163610 1200	188,–	163620 1200	188,–
13	10	22	10	6	10 mm	15	163610 1300	196,–	163620 1300	196,–
14	10	22	12	6	10 mm	15	163610 1400	199,–	163620 1400	199,–
15	10	22	12	6	10 mm	15	163610 1500	206,–	163620 1500	206,–
16	10	22	12	6	10 mm	15	163610 1600	210,–	163620 1600	210,–
17	10	22	12	8	10 mm	15	163610 1700	216,–	163620 1700	216,–
18	12	26	14	8	13 mm	20	163610 1800	220,–	163620 1800	220,–
19	12	26	14	8	13 mm	20	163610 1900	226,–	163620 1900	226,–
20	12	26	14	8	13 mm	20	163610 2000	232,–	163620 2000	232,–
21	12	26	14	8	13 mm	20	163610 2100	238,–	163620 2100	238,–
22	16	26	14	8	16 mm	25	163610 2200	242,–	163620 2200	242,–
23	16	26	14	8	16 mm	25	163610 2300	248,–	163620 2300	248,–
24	16	26	14	8	16 mm	25	163610 2400	252,–	163620 2400	252,–
25	16	26	14	8	16 mm	25	163610 2500	258,–	163620 2500	258,–
26	16	26	14	8	16 mm	25	163610 2600	262,–	163620 2600	262,–
27	16	26	14	8	16 mm	25	163610 2700	268,–	163620 2700	268,–
28	16*	26	14	8	24 mm	25	163610 2800	272,–	163620 2800	272,–
29	16*	26	14	8	24 mm	25	163610 2900	278,–	163620 2900	278,–
30	16*	26	14	8	24 mm	25	163610 3000	284,–	163620 3000	284,–
31	16*	30	14	8	24 mm	25	163610 3100	290,–	163620 3100	290,–
32	16*	30	14	8	24 mm	25	163610 3200	294,–	163620 3200	294,–
33	16*	30	14	8	24 mm	25	163610 3300	299,–	163620 3300	299,–
34	16*	30	14	8	24 mm	25	163610 3400	304,–	163620 3400	304,–
35	16*	30	14	8	24 mm	25	163610 3500	310,–	163620 3500	310,–
36	16*	30	14	8	24 mm	25	163610 3600	314,–	163620 3600	314,–
37	16*	30	14	8	24 mm	25	163610 3700	320,–	163620 3700	320,–
38	16*	30	14	8	24 mm	25	163610 3800	324,–	163620 3800	324,–
39	16*	30	14	8	24 mm	25	163610 3900	330,–	163620 3900	330,–
40	16*	30	14	8	24 mm	25	163610 4000	336,–	163620 4000	336,–
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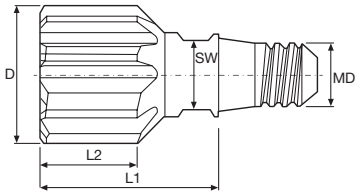




Blind hole

- Straight-fluted
- Axial coolant outlet
- **From Ø 33 mm use exchangeable head holder with enlarged planar support (MD = 16*)**





D H7 mm	MD	L1 mm	L2 mm	Z	Wr. width mm	Tightening torque N·m	ST art.no.	ST €	VA art.no.	VA €
10	6	18	10	6	6 mm	12.5	**163612** 1000	178,–	**163622** 1000	178,–
11	6	20	10	6	6 mm	12.5	163612 1100	188,–	163622 1100	184,–
12	6	20	10	6	6 mm	12.5	163612 1200	188,–	163622 1200	188,–
13	6	22	12	6	6 mm	15	163612 1300	195,–	163622 1300	196,–
14	6	22	12	6	6 mm	15	163612 1400	199,–	163622 1400	199,–
15	8	22	12	6	8 mm	15	163612 1500	199,–	163622 1500	206,–
16	8	22	12	6	8 mm	15	163612 1600	210,–	163622 1600	210,–
17	10	22	12	8	10 mm	15	163612 1700	216,–	163622 1700	216,–
18	10	26	14	8	10 mm	20	163612 1800	220,–	163622 1800	220,–
19	10	26	14	8	10 mm	20	163612 1900	226,–	163622 1900	226,–
20	10	26	14	8	10 mm	20	163612 2000	232,–	163622 2000	232,–
21	12	26	14	8	13 mm	20	163612 2100	238,–	163622 2100	238,–
22	12	26	14	8	13 mm	25	163612 2200	242,–	163622 2200	242,–
23	12	26	14	8	13 mm	25	163612 2300	248,–	163622 2300	248,–
24	12	26	14	8	13 mm	25	163612 2400	252,–	163622 2400	252,–
25	16	26	14	8	16 mm	25	163612 2500	258,–	163622 2500	258,–
26	16	26	14	8	16 mm	25	163612 2600	262,–	163622 2600	262,–
27	16	26	14	8	16 mm	25	163612 2700	268,–	163622 2700	268,–
28	16	26	14	8	16 mm	25	163612 2800	272,–	163622 2800	272,–
29	16	26	14	8	16 mm	25	163612 2900	278,–	163622 2900	278,–
30	16	26	14	8	16 mm	25	163612 3000	284,–	163622 3000	284,–
31	16	30	14	8	16 mm	25	163612 3100	290,–	163622 3100	290,–
32	16	30	14	8	16 mm	25	163612 3200	294,–	163622 3200	294,–
33	16*	30	14	8	24 mm	25	163612 3300	299,–	163622 3300	299,–
34	16*	30	14	8	24 mm	25	163612 3400	304,–	163622 3400	304,–
35	16*	30	14	8	24 mm	25	163612 3500	310,–	163622 3500	310,–
36	16*	30	14	8	24 mm	25	163612 3600	314,–	163622 3600	314,–
37	16*	30	14	8	24 mm	25	163612 3700	320,–	163622 3700	320,–
38	16*	30	14	8	24 mm	25	163612 3800	324,–	163622 3800	324,–
39	16*	30	14	8	24 mm	25	163612 3900	330,–	163622 3900	330,–
40	16*	30	14	8	24 mm	25	163612 4000	336,–	163622 4000	336,–
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Exchangeable head holder

- Straight version
- Internal coolant supply
- **MD = 16* exchangeable head holder with enlarged planar support**



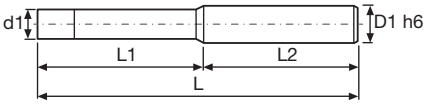
163630 1204



163630 0602



163630 1204



d1 mm	MD	D1 h6 mm	L mm	L1 mm	L2 mm	Tightening torque N·m	art.no.	€
7.8	6	10	60	20	40	5	**163630** 0601	87,–
7.8	6	10	85	45	40	5	163630 0602	97,–
7.8	6	10	150	110	40	5	163630 0603	142,–
9.8	8	12	70	25	45	12.5	163630 0801	97,–
9.8	8	12	90	45	45	12.5	163630 0802	102,–
9.8	8	12	150	105	45	12.5	163630 0803	149,–
11.8	10	16	70	22	48	15	163630 1001	108,–
11.8	10	16	90	42	48	15	163630 1002	108,–
11.8	10	16	150	102	48	15	163630 1003	154,–
15.8	12	16	80	32	48	20	163630 1201	118,–
15.8	12	16	105	57	48	20	163630 1202	128,–
15.8	12	16	150	102	48	20	163630 1203	180,–
15.8	12	16	200	152	48	20	163630 1204	328,–
19.8	16	25	90	34	56	25	163630 1611	141,–
19.8	16	25	120	64	56	25	163630 1612	159,–
19.8	16	25	200	144	56	25	163630 1613	229,–
19.8	16	25	250	194	56	25	163630 1614	349,–
26	16*	25	90	34	56	25	163630 1601	210,–
26	16*	25	120	64	56	25	163630 1602	242,–
26	16*	25	200	144	56	25	163630 1603	384,–
26	16*	25	250	194	56	25	163630 1604	520,–
								1177

Continued on next page >>>

Assembly key



Wr. width mm	L mm	B mm	art.no.	€
6 mm	75	2.3	**163631** 0006	8,–
8 mm	92	2.8	163631 0008	8,20
10 mm	100	3.8	163631 0010	9,40
13 mm	135	3.8	163631 0013	10,–
16 mm	145	4.8	163631 0016	13,40
24 mm	215	4.8	163631 0024	20,–

1177

Open-end snap-in spanner

- For torque wrenches





Wr. width mm	Quadratic mm	B mm	art.no.	€
6 mm	9x12	2.3	**163632** 0006	79,–
8 mm	9x12	2.8	163632 0008	79,–
10 mm	9x12	3.8	163632 0010	79,–
13 mm	9x12	3.8	163632 0013	79,–
16 mm	9x12	4.8	163632 0016	79,–
24 mm	14x18	4.8	163632 0024	99,50

1177

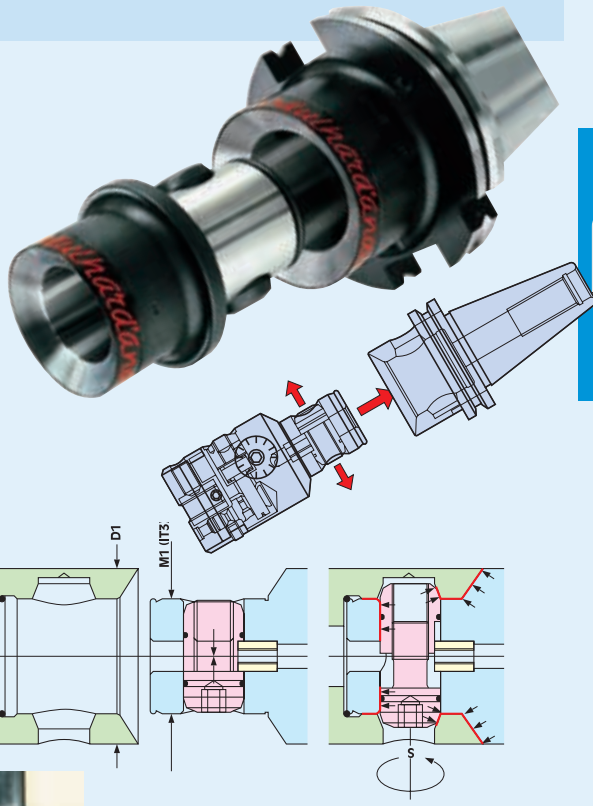


D'ANDREA® MHD modular tool system

- Modular tool holder system for **line boring, milling, drilling, thread cutting**
- Rigid high-precision system, developed and manufactured with state-of-the-art design engineering and production resources based on decades of experience
- A system of extreme flexibility and simplicity for machine tools, machining centres and flexible production facilities.

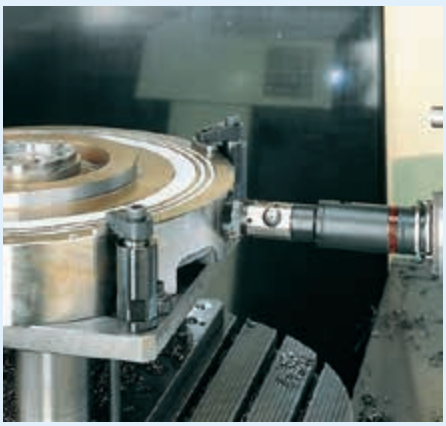
- For machining with very strict tolerances with a high-grade surface finish
- Patented cylindrical/conical coupling and radial expansion bolts to ensure maximum rigidity and concentricity during boring and milling work
- Internal coolant supply in all elements

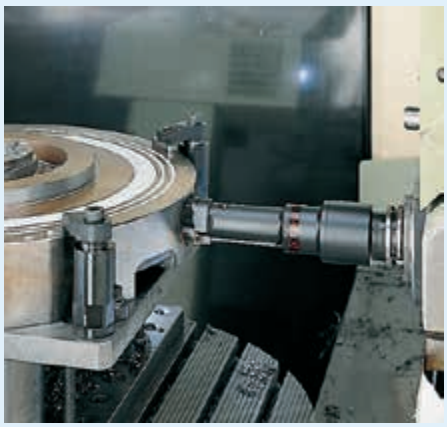
- Available in eight sizes, which allows full interchangeability



Type	D1	M1	S	Nm
MHD´16	16	10	2.5	2 - 2.5
MHD´20	20	13	3	4 - 4.5
MHD´25	25	16	3	6.5 - 7.5
MHD´32	32	20	4	7 - 8
MHD´40	40	25	5	16 - 18
MHD´50	50	32	6	30 - 35
MHD´63	63	42	8	70 - 80
MHD´80	80	42	8	70 - 80















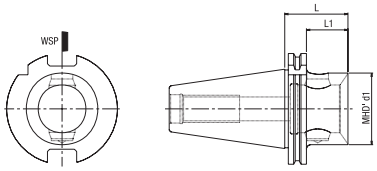




D'ANDREA® MHD base holding fixtures

- **Case-hardened steel, hardened and ground to tolerance AT3.**
- ISO 40 taper recommended exclusively for sizes MHD-50 and MHD-63
- For heavy milling work and bores with a depth of more than 250 mm and greater than 125 mm in Ø, an MHD-80 base holding fixture should be used.
- Base holding fixtures in special designs or with **planar support** are available **on request**.

DIN 69871 AD, ISO 7388/1

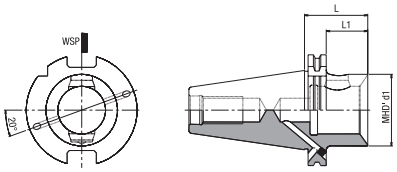




Shank	Type	MHD'd1	L mm	L1 mm	Weight kg	art.no.	€
ISO 40	DIN69871-A40 MHD'50,48	50	48	29	0.9	**372001** 0002	136,–
ISO 40	DIN69871-A40 MHD'63,80	63	80	-	1.5	372001 0003	156,–
ISO 50	DIN69871-A50 MHD'50,48	50	48	28	2.7	372001 0007	178,–
ISO 50	DIN69871-A50 MHD'63,56	63	56	37	2.8	372001 0008	178,–
ISO 50	DIN69871-A50 MHD'80,62	80	62	43	3.4	372001 0009	218,–

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DIN 69871-B

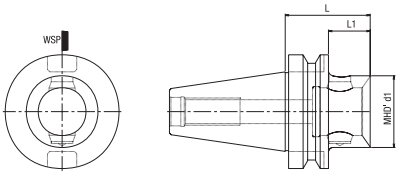




Shank	Type	MHD'd1	L mm	L1 mm	Weight kg	art.no.	€
ISO 40	69871-B40 MHD'50,48	50	48	29	0.9	**372003** 0001	152,–
ISO 40	69871-B40 MHD'63,80	63	80	-	1.5	372003 0002	173,–

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MAS 403 BT

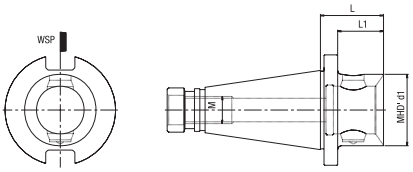




Shank	Type	MHD'd1	L mm	L1 mm	Weight kg	art.no.	€
ISO 30	MAS403-BT30 MHD 50,60	50	60	-	0.7	**372005** 0001	136,–
ISO 40	MAS403-BT40 MHD 50,48	50	48	21	0.9	372005 0003	136,–
ISO 40	MAS403-BT40 MHD 63,66	63	66	-	1.2	372005 0004	156,–
ISO 50	MAS403-BT50 MHD 50,66	50	66	28	3.5	372005 0008	178,–

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DIN 2080-A, „OTT"

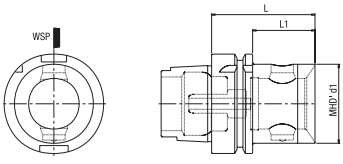




Shank	Type	MHD'd1	L mm	L1 mm	M	Weight kg	art.no.	€
ISO 40	DIN2080-A40 MHD'50,48	50	48	36.5	M16	0.9	**372009** 0001	136,–
ISO 50	DIN2080-A50 MHD'50,48	50	48	33	M24	2.6	372009 0006	178,–
ISO 50	DIN2080-A50 MHD'63,56	63	56	41	M24	2.7	372009 0007	178,–
ISO 50	DIN2080-A50 MHD'80,60	80	60	45	M24	3.2	372009 0008	218,–

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DIN 69893-A, HSK





Type	MHD'd1	L mm	L1 mm	Weight kg	art.no.	€
HSK-A63 MHD'50,66	50	66	40	0.9	**372017** 0002	191,–

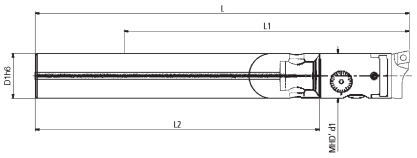
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D'ANDREA® BMD solid carbide MHD base holding fixture, straight

- Due to the use of solid carbide MHD base holding fixtures, different machining depths can be achieved.
- Straight shank for use in hydraulic expansion chucks or power chucks

Line boring up to 10xD





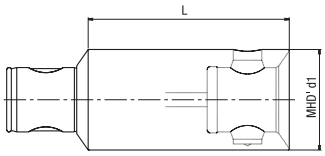
Type	MHD'd1	D1 mm	L mm	L1 mm	L2 mm	Weight kg	art.no.	€
BMD 16/16,110	16	16	144	100	110	0.3	**372010** 1611	341,–
BMD 16/16,140	16	16	174	125	140	0.4	372010 1614	416,–
BMD 16/16,170	16	16	204	160	170	0.5	372010 1617	491,–
BMD 20/20,135	20	20	175	125	135	0.6	372010 2013	471,–
BMD 20/20,175	20	20	210	160	170	0.75	372010 2017	568,–
BMD 20/20,210	20	20	250	200	210	0.9	372010 2021	686,–
BMD 25/25,160	25	25	210	160	160	1.0	372010 2516	694,–
BMD 25/25,205	25	25	255	200	205	1.3	372010 2520	858,–
BMD 25/25,255	25	25	305	250	255	1.6	372010 2525	1.044,–
BMD 32/32,195	32	32	258	200	195	2.1	372010 3219	1.089,–
BMD 32/32,250	32	32	313	250	250	2.8	372010 3225	1.355,–
BMD 32/32,315	32	32	378	320	315	3.5	372010 3231	1.679,–

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D'ANDREA® MHD extensions PR

- The use of MHD extensions allows different machining depths to be achieved; various extensions are available for any MHD size.





Type	MHD'd1	L mm	Weight kg	art.no.	€
PR 16,25	16	25	0.04	**372201** 1625	95,20
PR 20,32	20	32	0.07	372201 2032	95,20
PR 25,25	25	25	0.09	372201 2525	95,20
PR 25,40	25	40	0.15	372201 2540	98,30
PR 32,32	32	32	0.2	372201 3232	98,30
PR 32,50	32	50	0.3	372201 3250	104,–
PR 40,40	40	40	0.4	372201 4040	104,–
PR 40,63	40	63	0.6	372201 4063	109,–
PR 50,50	50	50	1.1	372201 5050	109,–

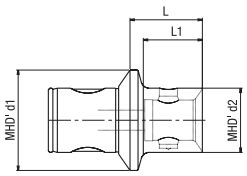
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Type	MHD'd1	L mm	Weight kg	art.no.	€
PR 50,80	50	80	1.5	372201 5080	118,–
PR 50,100	50	100	0.7	372201 5010	126,–
PR 63,63	63	63	2.9	372201 6363	126,–
PR 63,100	63	100	1.4	372201 6310	140,–
PR 63,125	63	125	2.2	372201 6312	147,–
PR 80,80	80	80	6.1	372201 8080	178,–
PR 80,125	80	125	3.0	372201 8012	197,–
PR 80,160	80	160	4.6	372201 8016	208,–

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D'ANDREA® MHD reducers RD

- Reducers permit the use of elements for smaller MHD sizes.
- This makes the MHD system even more flexible.
- Greater rigidity is achieved by using smaller MHD tools in larger holding fixtures.





Type	MHD'd1	MHD'd2	L1 mm	L mm	Weight kg	art.no.	€
RD 20/16,20	20	16	16	20	0.05	**372203** 2016	93,20
RD 25/16,20	25	16	15	20	0.07	372203 2516	95,20
RD 25/20,25	25	20	20	25	0.08	372203 2520	95,20
RD 32/16,24	32	16	18	24	0.15	372203 3216	98,30
RD 32/20,25	32	20	20	25	0.15	372203 3220	98,30
RD 32/25,28	32	25	23	28	0.15	372203 3225	98,30
RD 40/16,24	40	16	17	24	0.18	372203 4016	104,–
RD 40/20,26	40	20	20	26	0.20	372203 4020	104,–
RD 40/25,28	40	25	22	28	0.25	372203 4025	104,–
RD 40/32,32	40	32	27	32	0.30	372203 4032	104,–
RD 50/16,24	50	16	15	24	0.40	372203 5016	110,–

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Type	MHD'd1	MHD'd2	L1 mm	L mm	Weight kg	art.no.	€
RD 50/16,40	50	16	32	40	0.20	372203 5116	131,–
RD 50/20,26	50	20	18	26	0.40	372203 5020	110,–
RD 50/20,70	50	20	62	70	0.30	372203 5120	137,–
RD 50/25,28	50	25	21	28	0.40	372203 5025	110,–
RD 50/25,87	50	25	80	87	0.60	372203 5125	142,–
RD 50/32,32	50	32	25	32	0.45	372203 5032	115,–
RD 50/32,87	50	32	80	87	0.75	372203 5132	147,–
RD 50/40,36	50	40	30	36	0.50	372203 5040	115,–
RD 50/40,87	50	40	80	87	0.90	372203 5140	154,–
RD 63/50,40	63	50	34	40	0.90	372203 6250	121,–
RD 80/63,60	80	63	52	60	1.70	372203 8063	154,–

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D'ANDREA® MHD reducers RAV

- **Low vibration**

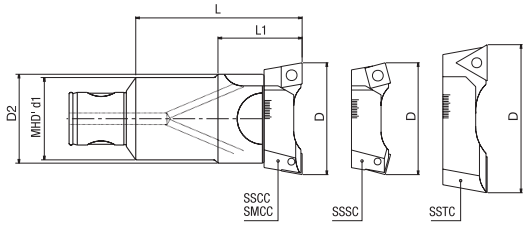


Type	MHD'd1	MHD'd2	D3 mm	L1 mm	L mm	Weight kg	art.no.	€
RAV 50/16,74	50	16	17.5	65	74	0.4	**372204** 5016	219,–
RAV 50/20,93	50	20	21.5	85	93	0.5	372204 5020	246,–
RAV 50/25,117	50	25	27	110	117	0.8	372204 5025	306,–
RAV 50/32,144	50	32	35	138	144	1.4	372204 5032	438,–
RAV 50/40,176	50	40	47	170	176	2.5	372204 5040	684,–
RAV 63/50,220	63	50	60	214	220	5.6	372204 6042	1.205,–
RAV 80/63,280	80	63	77	272	280	10.6	372204 8042	2.465,–

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D'ANDREA® MHD two-flute boring bars TS

- Rigid design, spline surfaces between the insert holders
- Constant distance between the insert holder clamping screw and the cutting edge
- **Note:** when using only one insert holder, protective plug PT should be fitted (optional)
- Chamfer rings (AS) available on request





TS Ø 18 - 200

Type	D mm	MHD'd1	D2 mm	L mm	L1 mm	S...	for exchangeable CC plates	for exchangeable CC plates	for exchangeable SC plates	for exchangeable SC plates	for exchangeable TC plates	for exchangeable TC plates	Weight kg	art.no.	€
TS 16/16	18- 22	16	16	34	-	S...16	Yes	Yes					0.05	**372603** 1616	159,–
TS 20/20	22- 28	20	20	40	-	S...20	Yes	Yes					0.09	372603 2020	170,–
TS 25/25	28- 38	25	25	50	-	S...25	Yes	Yes					0.20	372603 2525	198,–
TS 32/32	35.5- 50	32	32	63	-	S...32-33	Yes	Yes	Yes	Yes			0.35	372603 3232	225,–
TS 40/40	50- 68	40	40	80	-	S...40-41	Yes	Yes	Yes	Yes			0.70	372603 4040	246,–
TS 50/50	68- 90	50	55	100	50	S...50	Yes	Yes	Yes	Yes			1.5	372603 5050	271,–
TS 50/63	90-120	50	72	80	60	S...63	Yes	Yes	Yes	Yes	Yes	Yes	2.0	372603 5063	271,–
TS 63/63	90-120	63	72	125	63	S...63	Yes	Yes	Yes	Yes	Yes	Yes	3.0	372603 6363	334,–
TS 80/80	120-160 160-200	80	95	140	75	S...80 S...90	Yes	Yes	Yes	Yes	Yes	Yes	5.3	372603 8080	411,–

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DRILLING
THREADING
MILLING



OSG
Catalogue VI
1024 pages
Art.no. 019900 0208

Overview of all free manufacturers' catalogues on page 14/15

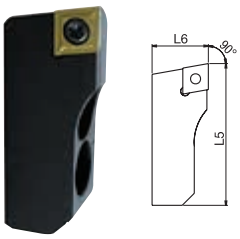
D'ANDREA® MHD insert holder SSCC / SMCC / SSSC

- For twin-cutter boring bars
- Type SSTC insert holders available on request

SSCC

Type	D mm	L6 mm	L5 mm	for indexable inserts	Screw	Wrench size	art.no.	€
SSCC 16	18 - 22	8	15	CC.. 0602..	TS25	T 08	**372610** 0016	62,10
SSCC 20	22 - 28	9.5	19	CC.. 0602..	TS25	T 08	372610 0020	66,20
SSCC 25	28 - 38	12.5	23	CC.. 0602..	TS25	T 08	372610 0025	68,30
SSCC 32	38 - 50	15	32	CC.. 0602..	TS25	T 08	372610 0032	71,40
SSCC 33	38 - 50	15	32	CC.. 09T3..	TS4	T 15	372610 0033	71,40
SSCC 40	50 - 68	19	40	CC.. 09T3..	TS4	T 15	372610 0040	74,50
SSCC 41	50 - 68	19	40	CC.. 1204..	TS5	T 25	372610 0041	74,50
SSCC 50	68 - 90	22	54	CC.. 1204..	TS5	T 25	372610 0050	76,60
SSCC 63	90 - 120	27	70.5	CC.. 1204..	TS5	T 25	372610 0063	132,–
SSCC 80	120 - 160	32	94.5	CC.. 1204..	TS5	T 25	372610 0080	149,–
SSCC 90	160 - 500	32	130	CC.. 1204..	TS5	T 25	372610 0090	191,–

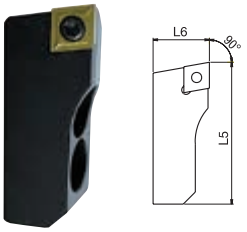
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SMCC

Type	D mm	L6 mm	L5 mm	for indexable inserts	Screw	Wrench size	art.no.	€
SMCC 25	28 - 38	12.3	23	CC.. 0602..	TS25	T 08	**372612** 0025	68,30
SMCC 32	38 - 50	14.8	32	CC.. 0602..	TS25	T 08	372612 0032	71,40
SMCC 33	38 - 50	14.8	32	CC.. 09T3..	TS4	T 15	372612 0033	71,40
SMCC 40	50 - 68	18.7	40	CC.. 09T3..	TS4	T 15	372612 0040	74,50
SMCC 41	50 - 68	18.7	40	CC.. 1204..	TS5	T 25	372612 0041	74,50
SMCC 50	68 - 90	21.7	54	CC.. 1204..	TS5	T 25	372612 0050	76,60
SMCC 63	90 - 120	26.7	70.5	CC.. 1204..	TS5	T 25	372612 0063	132,–
SMCC 80	120 - 160	31.7	94.5	CC.. 1204..	TS5	T 25	372612 0080	149,–
SMCC 90	160 - 500	31.7	130	CC.. 1204..	TS5	T 25	372612 0090	191,–

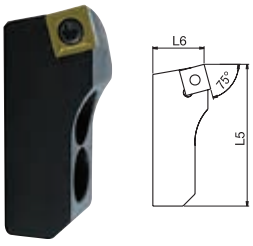
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SSSC

Type	D mm	L6 mm	L5 mm	for indexable inserts	Screw	Wrench size	art.no.	€
SSSC 32	38 - 50	15	32.5	SC.. 09T3..	TS4	T 15	**372614** 0032	71,40
SSSC 40	50 - 68	19	40	SC.. 09T3..	TS4	T 15	372614 0040	74,50
SSSC 50	68 - 90	22	54	SC.. 1204..	TS5	T 25	372614 0050	76,60
SSSC 63	90 - 120	27	70.5	SC.. 1204..	TS5	T 25	372614 0063	132,–
SSSC 80	120 - 160	32	94.5	SC.. 1204..	TS5	T 25	372614 0080	149,–
SSSC 90	160 - 500	32	130	SC.. 1204..	TS5	T 25	372614 0090	191,–

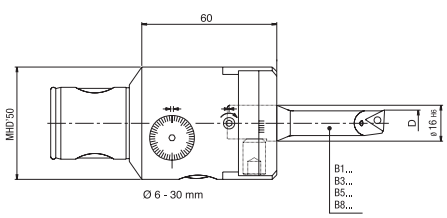
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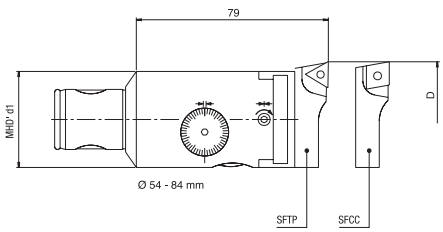


D'ANDREA® MHD micrometric boring bar system

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- TRM boring heads and micrometric boring bars ensure a tolerance of IT6 with an optimum surface finish quality.
- Settings with a radial correction of 1µm can easily be read off the Vernier scale and executed directly on the machine.







TRM 50/50 high-precision boring head, Ø 6 - 84 mm

Type	D mm	L mm	SF..	Weight kg	art.no.	€
TRM 50/50	6-84	60	50	1.0	**372801** 5050	662,–

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Continued on next page >>>

High-precision boring head, digital, TRE50/50 Ø 6-110 mm

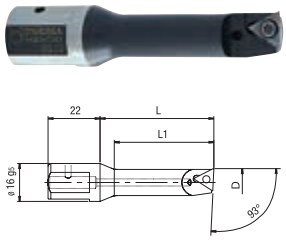
- Multifunctional button for the functions "On", "Reset" and switching between "mm/inch"
- **Display resolution Ø 0.002 mm**
- Energy-saving function, automatic display switch-off and saving last value after 30 seconds
- Internal coolant supply
- **Protection class IP67**



Type	D mm	L mm	SF..	Weight kg	art.no.	€
TRE 50/50	6-110	61	50	1.0	**372802** 0050	1.221,–
					1138	

Boring bar

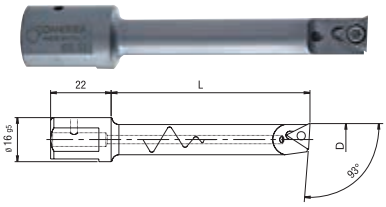
- For TRM 50/50 and TRM 50HS high-precision boring heads



Type	D mm	L mm	L1 mm	for indexable inserts	Screw	Wrench size	art.no.	€
B3,06	6- 8	29	21	WCGT 0201..	TS 21	T 06	**372807** 0006	71,40
B3,08	8-10	36	28	WCGT 0201..	TS 21	T 06	372807 0008	74,50
B3,10	10-12	43	35	TPGX 0902..	CS250T	T 08	372807 0010	79,70
B3,11	11-13	48	40	TPGX 0902..	CS250T	T 08	372807 0011	81,80
B3,12	12-14	48	42	TPGX 0902..	CS250T	T 08	372807 0012	84,90
B3,14	14-16	52	50	TPGX 0902..	CS250T	T 08	372807 0014	88,–
B3,16	16-18	58	50	TPGX 0902..	CS250T	T 08	372807 0016	91,10
B3,18	18-22	63	-	TPGX 0902..	CS250T	T 08	372807 0018	94,20
B3,22	22-30	68	-	TPGX 0902..	CS250T	T 08	372807 0022	97,30
							1138	

Low-vibration boring bar

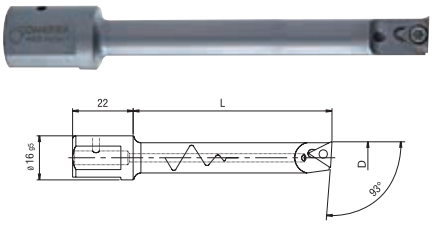
- For TRM 50/50 and TRM 50HS high-precision boring heads



Type	D mm	L mm	for indexable inserts	Screw	Wrench size	art.no.	€
B5,06	6 - 8	36	WCGT 0201..	TS21	T 06	**372808** 0006	180,–
B5,08	8 - 10	45	WCGT 0201..	TS21	T 06	372808 0008	200,–
B5,10	10 - 12	60	TPGX 0902..	CS250T	T 08	372808 0010	220,–
B5,12	12 - 14	72	TPGX 0902..	CS250T	T 08	372808 0012	242,–
B5,14	14 - 16	84	TPGX 0902..	CS250T	T 08	372808 0014	265,–
B5,16	16 - 18	96	TPGX 0902..	CS250T	T 08	372808 0016	307,–
						1138	

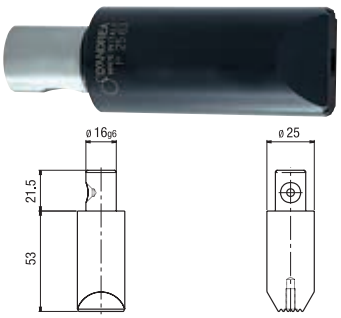
Solid carbide boring bar (approx. 8xD)

- For TRM 50/50 and TRM 50HS high-precision boring heads



Type	D mm	L mm	for indexable inserts	Screw	Wrench size	art.no.	€
B8,06	6 - 8	45	WCGT 0201..	TS21	T 06	**372809** 0006	322,–
B8,08	8 - 10	60	WCGT 0201..	TS21	T 06	372809 0008	331,–
B8,10	10 - 12	75	TPGX 0902..	CS250T	T 08	372809 0010	354,–
B8,12	12 - 14	90	TPGX 0902..	CS250T	T 08	372809 0012	388,–
B8,14	14 - 16	105	TPGX 0902..	CS250T	T 08	372809 0014	431,–
B8,16	16 - 18	120	TPGX 0902..	CS250T	T 08	372809 0016	474,–
						1138	

P 25.63 base holder



Type	suitable for	Weight kg	art.no.	€
P 25,63	SFTP 25 and SFTP 32	0.3	**372815** 2563	66,20
			1138	

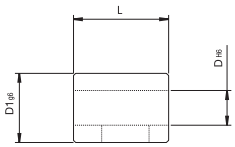
Reducing bushes, straight

- For TRM 50/50 and TRM 50HS high-precision boring heads

Type	L mm	D H6 mm	D1 g6 mm	art.no.	€
D04,16	23	4	16	**370620** 0004	51,80
D08,16	22	8	16	370620 0008	51,80
D10,16	23	10	16	370620 0010	51,80
D12,16	23	12	16	370620 0012	51,80

1138



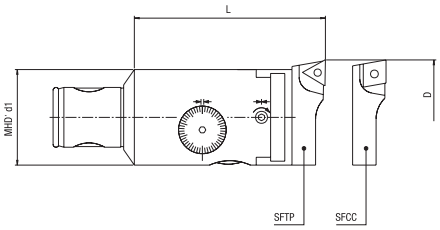


TRM high-precision boring head, Ø 18 - 63

Type	D mm	MHD'd1	L mm	L7 mm	SF..	Weight kg	art.no.	€
TRM 16/16	18 - 23	16	34	1	16	0.05	**372810** 1616	461,–
TRM 20/20	22 - 29	20	40	2	20	0.1	372810 2020	490,–
TRM 25/25	28 - 38	25	50	2	25	0.2	372810 2525	518,–
TRM 32/32	35.5 - 50	32	63	3	32	0.35	372810 3232	548,–
TRM 40/40	48 - 63	40	80	4	40	0.7	372810 4040	575,–

1138



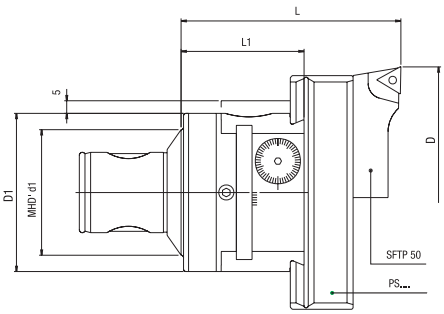


TRM high-precision boring head, Ø 77 - 500

Type	D mm	MHD'd1	D1 mm	L mm	L1 mm	PS..	Weight kg	art.no.	€
TRM 50/63	77-100 , 95-125	50	63	87.5	49	11.30 , 12.30	1.7 / 1.8	**372832** 5063	732,–
TRM 63/63	77-100 , 95-125	63	63	87.5	49	11.30 , 12.30	2.0 / 2.1	372832 6363	732,–
TRM 50/80	95-140 , 140-160	50	80	96.5	58	12.30 , 13.30	2.6 / 2.8	372832 5080	786,–
TRM 80/80	95-140 , 140-160	80	80	96.5	58	12.30 , 13.30	3.1 / 3.3	372832 8080	786,–
TRM 80/125	135-210 , 205-310 , 305-410 , 405-500	80	125	114	63	11.40 , 12.40 , 13.40 , 14.40	7.2 / 8.1 / 9.2 / 10.3	372832 8012	1.326,–

1138





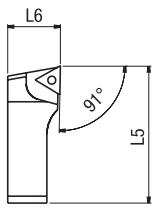
SFTP insert holder

- For TRM high-precision boring head

Type	D mm	L6 mm	L5 mm	for indexable inserts	Screw	Wrench size	art.no.	€
SFTP 25	28 - 38	10	26.5	TPGX 0902..	CS250T	T 08	**372825** 0025	68,30
SFTP 32	35.5 - 50	11.5	34.5	TPGX 0902..	CS250T	T 08	372825 0032	71,40
SFTP 40	48 - 63	14	44	TPGX 1103..	CS300890T	T 08	372825 0040	74,50
SFTP 50	54 - 84	19	52	TPGX 1103..	CS300890T	T 08	372825 0050	76,60

1138





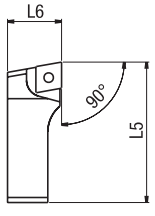
SFCC insert holder

- For TRM high-precision boring head

Type	D mm	L6 mm	L5 mm	for indexable inserts	Screw	Wrench size	art.no.	€
SFCC 16	18 - 23	8	17	CC.. 0602..	TS25	T 08	**372827** 0016	62,10
SFCC 20	22 - 29	8.5	21	CC.. 0602..	TS25	T 08	372827 0020	66,20
SFCC 25	28 - 38	10	26.5	CC.. 0602..	TS25	T 08	372827 0025	68,30
SFCC 32	35.5 - 50	11.5	34.5	CC.. 0602..	TS4	T 15	372827 0032	71,40
SFCC 40	48 - 63	14	44	CC.. 09T3..	TS4	T 15	372827 0040	74,50
SFCC 50	54 - 84	19	52	CC.. 09T3..	TS4	T 15	372827 0050	76,60

1138





D'ANDREA® MHD base holder

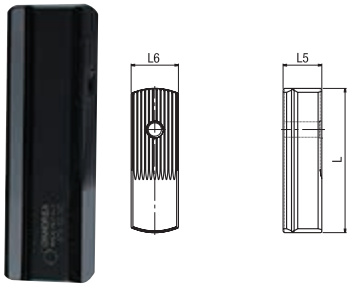
403

PS base holder

- For TRM high-precision boring heads (insert holder SF.. 50)

Type	L5 mm	L mm	L6 mm	Weight kg	art.no.	€
PS 31,24	14.5	75	24	0.2	**372835** 3124	76,60
PS 11,30	25	75	30.5	0.4	372835 1130	92,10
PS 12,30	25	93	30.5	0.5	372835 1230	100,–
PS 13,30	25	135	30,5	0.7	372835 1330	145,–
PS 11,40	40	133	40	1.5	372835 1140	149,–
PS 12,40	40	200	40	2.4	372835 1240	170,–
PS 13,40	40	300	40	3.5	372835 1340	232,–
PS 14,40	40	400	40	4.6	372835 1440	339,–

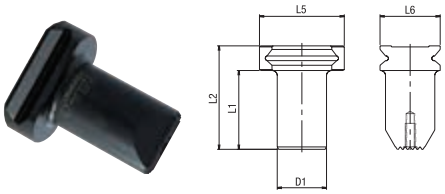
1138



P.. base holder

Type	for indexable inserts	D1 mm	L1 mm	L2 mm	L5 mm	L6 mm	Weight kg	art.no.	€
P 02,30	SFCC/SFTP 25-32	25	40	52.5	43	30.5	0.3	**372820** 0230	76,60
P 03,30	SFCC/SFTP 25-32	25	70	82.5	43	30.5	0.4	372820 0330	83,80
P 04,30	SFCC/SFTP 25-32	27	115	127.5	43	30.5	0.7	372820 0430	122,–
P 02,40	SFCC/SFTP 32-40	32	69	86	56	40	0.7	372820 0240	102,–
P 03,40	SFCC/SFTP 32-40	32	114	131	56	40	1.0	372820 0340	112,–
P 04,40	SFCC/SFTP 32-40	38	189	206	56	40	2.0	372820 0440	166,–

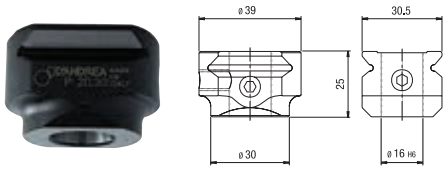
1138



P 20.30 base holder

Type	suitable for boring bars mm	Weight kg	art.no.	€
P 20,30	06, 08, 11, 16, 22 mm	0.2	**372837** 2030	73,50

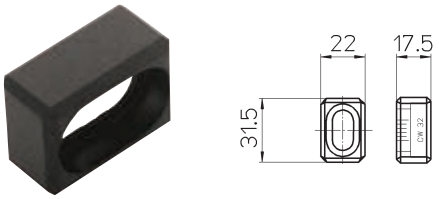
1138



CW 32 counterweight

Type	art.no.	€
CW 32	**372836** 0032	34,20

1138



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Machining tools
411 pages
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Overview of all free manufacturers' catalogues
on page 14/15

D'ANDREA® Modular tool system, Ø 6-110 mm

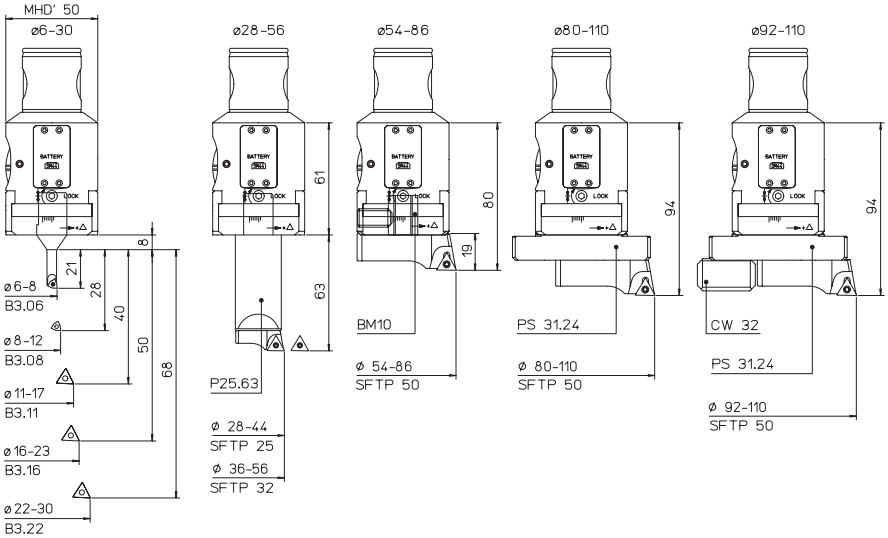
403

- **modular MHD interface**
- Multifunctional button for the functions "On", "Reset" and switching between "mm/inch"
- **Display resolution Ø 0.002 mm**
- Energy-saving function, automatic display switch-off and saving last value after 30 seconds
- Internal coolant supply
- **Protection class IP67**



Ø 6-110 mm

Contents	art.no.	€
1 TRE 50/50: B3.06 / B3.08 / B3.11 / B3.16 / B3.22 (1 of each) 1 P25.63 SFTP25 / SFTP32 / SFTP50 (1 of each) 1 PS 31.24 5 TPGX090202L 1 TPGX110302L 2 WCGT020102L 1 CW32	**373002** 0001	1.858,–
	1138	



D'ANDREA® Modular tool system, Ø 6 - 108 mm

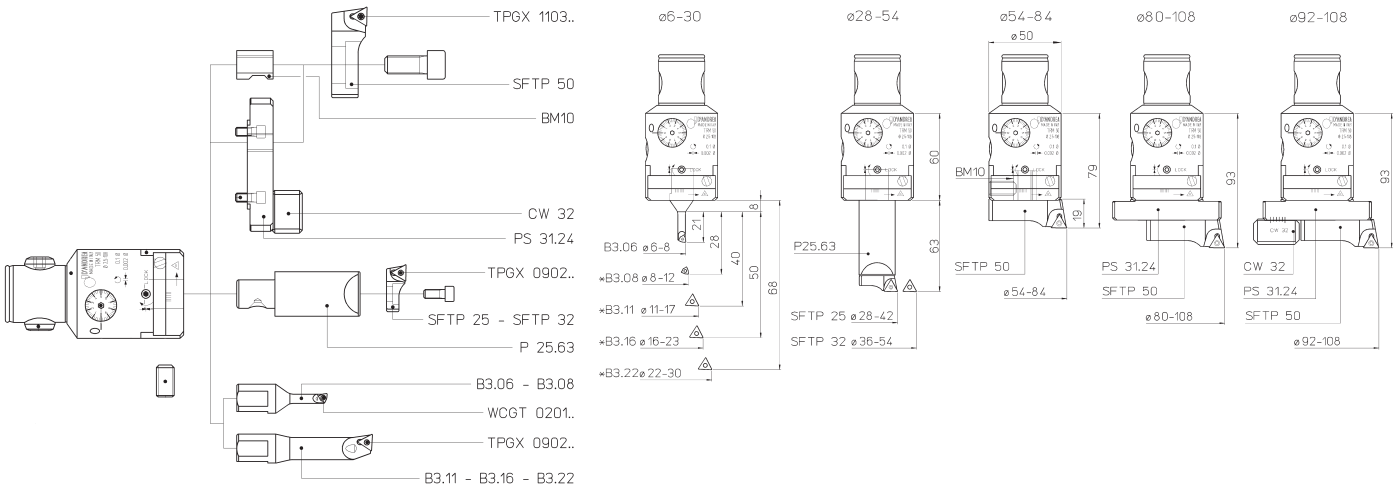
403

- **K01 and TRM 50/50 sets**



Ø 6 - 108 mm

Contents	art.no.	€
1 TRM 50/50: B3.06 / B3.08 / B3.11 / B3.16 / B3.22 (1 of each) 1 P25.63 SFTP25 / SFTP32 / SFTP50 (1 of each) 1 PS 31.24 5 TPGX090202L 1 TPGX110302L 2 WCGT020102L 1 CW32	**373001** 0001	1.273,–
	1138	



D'ANDREA® Modular tool system, Ø 6 - 125 mm



373001 0003

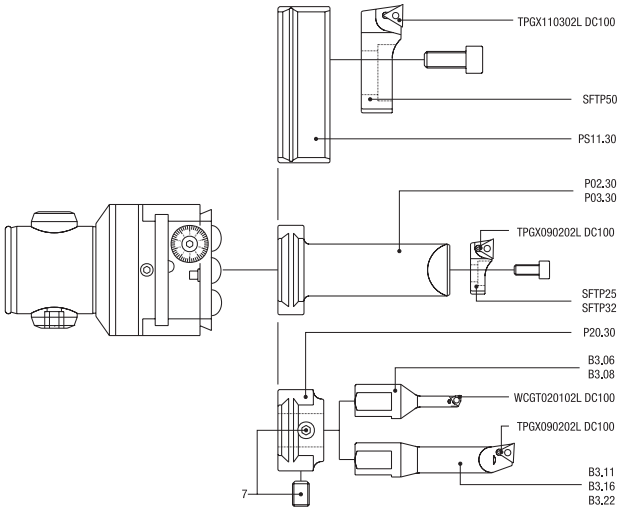
403

- **K01, TRM 50/63 and TRM 63/63 sets**

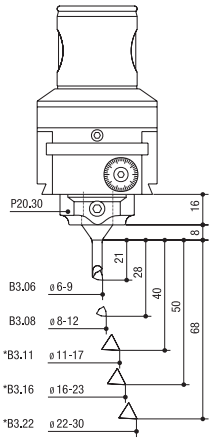
Ø 6 - 125 mm

Contents	art.no.	€
1 TRM 50/63: B3.06 / B3.08 / B3.11 / B3.16 / B3.22 (1 of each) P20.30 / P02.30 / P03.30 (1 of each) 1 PS 11.30 SFTP25 / SFTP32/ SFTP50 (1 of each) 5 TPGX090202L 1 TPGX110302L 2 WCGT020102L	**373001** 0002	1.532,–
1 TRM 63/63: B3.06 / B3.08 / B3.11 / B3.16 / B3.22 (1 of each), P20.30 / P02.30 / P03.30, 1 PS 11.30 (1 of each), SFTP25 / SFTP32/ SFTP50 (1 of each), 5 TPGX090202L, 1 TPGX110302L, 2 WCGT020102L	373001 0003	1.532,–

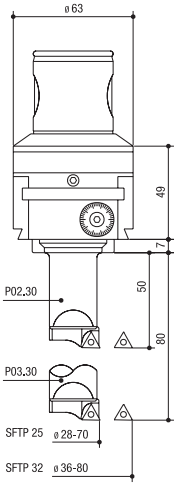
1138



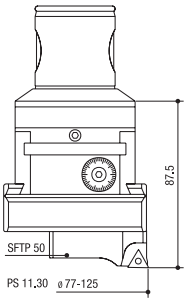
Ø 6 - 30



Ø 28 - 80



Ø 77 - 125



D'ANDREA® Modular tool system, Ø 6 - 220 mm



373001 0005

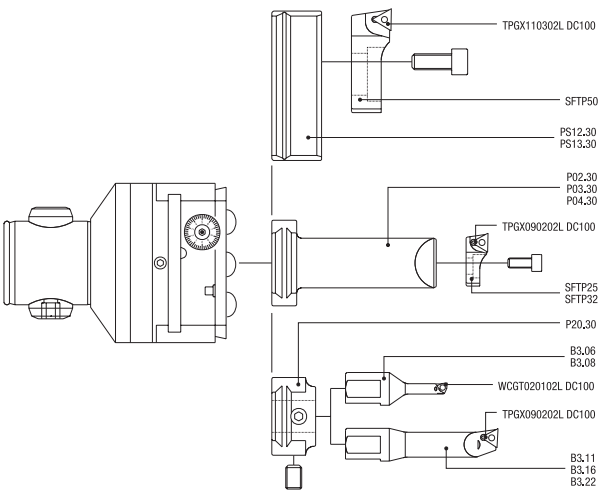
403

- **K01, TRM 50/80 and TRM 80/80 sets**

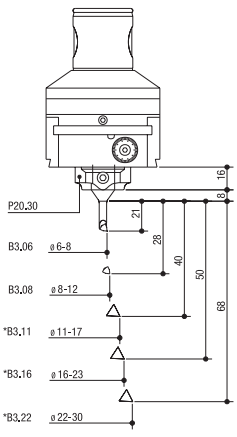
Ø 6 - 220 mm

Contents	art.no.	€
1 TRM 50/80: B3.06 / B3.08 / B3.11 / B3.16 / B3.22 (1 of each) P20.30 / P02.30 (1 of each) P03.30 / P04.30 (1 of each) PS 12.30 / PS13.30 (1 of each) SFTP25 / SFTP32 / SFTP50 (1 of each) 5 TPGX090202L 1 TPGX110302L 2 WCGT020102L	**373001** 0004	1.811,–
1 TRM 80/80: B3.06 / B3.08 / B3.11/ B3.16 / B3.22 (1 of each), P20.30 / P02.30(1 of each), P03.30 / P04.30 (1 of each), PS 12.30 / PS 13.30 (1 of each), SFTP25 / SFTP32 / SFTP50 (1 of each), 5 TPGX090202L, 1 TPGX110302L, 2 WCGT020102L	373001 0005	1.811,–

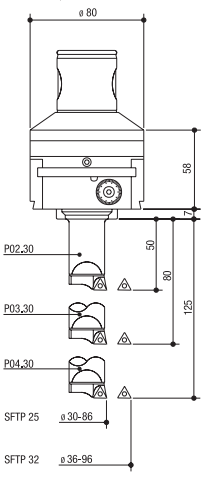
1138



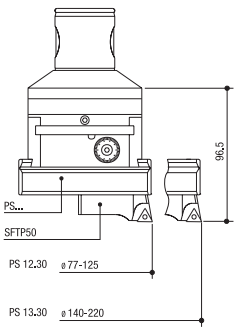
Ø 6 - 30



Ø 30 - 96



Ø 95 - 220



D'ANDREA® ISO indexable cutting inserts

403

Indexable inserts for reaming and line boring

- **DP 300** uncoated,
  roughing and finishing, low-carbon steel, stainless steel
- **DK 100** uncoated,
  roughing and finishing, aluminium alloys, cast iron
- **DC 100** uncoated,
  finishing, alloyed steel, cast iron
- **DC 100T** coated,
  finishing, alloyed steel, stainless steel, cast iron
- **D25 CBN** cubic boron nitride (one corner tipped),
  finishing, steel with a hardness over 50 HRc and for interrupted cutting
- **D20 MDC** diamond,
  finishing, aluminium alloys, non-ferrous metals
- **DP 100R** coated,
  roughing, low-carbon steel, stainless steel

WCGT

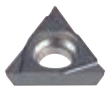
- Cermet

ISO designation		ISO P K Cermet, DC 100 art.no.	€
WCGT 020102 L	10	**373503** 0569	14,80
WCGT 020104 L	10	373503 0669	14,80
		1138	



TPGX

ISO designation	ISO P M DP 300		ISO N K DK 100		ISO P K Cermet, DC 100	
	art.no.	€	art.no.	€	art.no.	€
TPGX 090202 L	10 **373507** 2004	10,95	10 **373507** 2010	10,95	10 **373507** 2069	12,40
TPGX 090204 L	10 373507 2104	10,95	10 373507 2110	10,95	10 373507 2169	12,40
TPGX 110302 L	10 373507 2304	11,90	10 373507 2310	11,90	10 373507 2369	13,40
TPGX 110304 L	10 373507 2404	11,90	10 373507 2410	11,90	10 373507 2469	13,40
	1138		1138		1138	



TPGX

ISO designation	ISO P M K Cermet, DC 100T		ISO P H D25 CBN		ISO N D20 MDC, diamond	
	art.no.	€	art.no.	€	art.no.	€
TPGX 090202 L	10 **373507** 2071	13,40	1 **373507** 2073	74,–	1 **373507** 2075	140,–
TPGX 090204 L	10 373507 2171	13,40	1 373507 2173	74,–	1 373507 2175	140,–
TPGX 110302 L	10 373507 2371	14,40	1 373507 2373	74,–	1 373507 2375	140,–
TPGX 110304 L	10 373507 2471	14,40	1 373507 2473	74,–	1 373507 2475	140,–
	1138		1138		1138	



CCMT

- CVD coated

ISO designation		ISO P K DP 100 R art.no.	€
CCMT 09T308	10	**373509** 3729	7,65
CCMT 120404	10	373509 4029	10,70
CCMT 120408	10	373509 4129	10,70
		1138	



Clamping screws

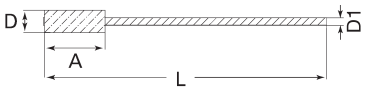
Designation	Dimensions	Wrench size	for indexable inserts		art.no.	€
TS 21	M 2 x 0.4	T06	WCGT 0201..	5	**373205** 0001	3,10
CS 250 T	M 2.5 x 0.45	T08	TPGX 0902..	5	373205 0002	3,10
CS 300890 T	M 3 x 0.5	T08	TPGX 1103..	5	373205 0003	3,10
TS 4	M 4 x 0.7	T15	CCMT 09T3.. SCMT 09T3..	5	373205 0005	3,10
TS 5	M 5 x 0.8	T25	CCMT 1204.. SCMT 1204..	5	373205 0006	3,10
					1138	

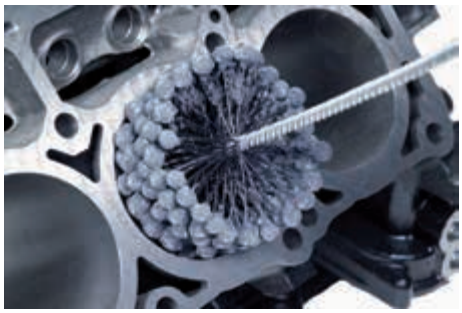


osborn Novoflex-B honing tool

- Robust, self-centring honing tool for smooth grinding processes
- Flexible brush design ensures ideal adjustment of the abrasive balls to the surface
- For chamfering and finishing
- Can also be used in non-circular bores
- For use on hand-held drills, honing machines and automatic machines
- For a uniform, fine-ground surface
- Silicon carbide, SiC
- Recommended speed: 350 to 700 rpm



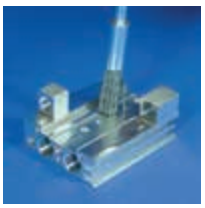


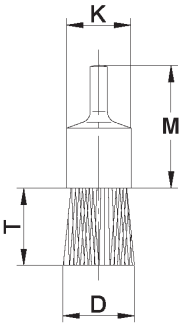


D mm	Bore hole Ø mm	A mm	L mm	D1 mm	Grain 120 art.no.	€	Grain 180 art.no.	€
9	8	50	200	3.7	**627004** 0009	25,70	**627005** 0009	25,70
10	9	50	200	3.7	627004 0010	26,70	627005 0010	26,80
11	10	60	200	3.7	627004 0011	27,30	627005 0011	27,30
12	11	60	200	3.7	627004 0012	27,70	627005 0012	27,70
13	12	60	200	3.7	627004 0013	28,30	627005 0013	28,30
15.5	14	60	200	3.7	627004 0155	28,90	627005 0155	28,90
18	16	60	200	4.6	627004 0018	30,70	627005 0018	30,70
20	18	60	200	4.6	627004 0020	31,20	627005 0020	31,20
22	20	70	200	4.6	627004 0022	31,80	627005 0022	31,90
25	22	70	200	4.6	627004 0025	32,90	627005 0025	32,90
27	24	70	200	5.1	627004 0027	34,20	627005 0027	34,20
28	25	70	200	5.1	627004 0028	35,20	627005 0028	35,20
30	27	70	200	5.1	627004 0030	36,30	627005 0030	36,30
32	29	70	200	5.1	627004 0032	37,50	627005 0032	37,50
35	32	70	200	5.1	627004 0035	38,50	627005 0035	38,50
38	35	70	200	5.7	627004 0038	41,30	627005 0038	41,30
41	38	70	200	5.7	627004 0041	43,–	627005 0041	43,–
45	41	70	200	5.7	627004 0045	44,90	627005 0045	44,90
48	45	70	200	5.7	627004 0048	46,70	627005 0048	46,70
51	48	70	200	6.5	627004 0051	48,50	627005 0051	48,60
54	51	70	200	6.5	627004 0054	50,–	627005 0054	50,–
57	54	70	200	6.5	627004 0057	50,50	627005 0057	50,50
60	57	70	200	7.3	627004 0060	51,50	627005 0060	51,50
64	60	70	200	7.3	627004 0064	52,50	627005 0064	52,50
					6120		6120	

osborn End brush with grinding bristles

- For machining workpiece contours
- Silicon carbide
- Design adapts ideally to the contours of the workpiece without causing significant changes to the surface
- Continuous abrasion capacity
- Shank diameter 6 mm
- For cleaning, smoothing, deburring
- Unit prices when purchased in packs



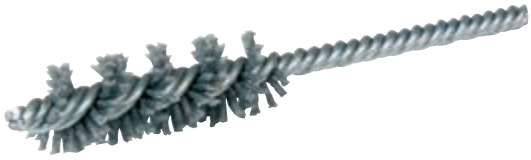




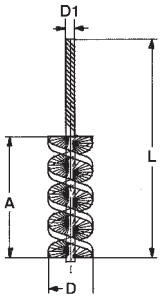
D mm	T mm	K mm	M mm	Rotational speed max. r/min	Grain 320 art.no.	€	Grain 180 art.no.	€	Grain 120 art.no.	€
10	25	10	50	5,000	12 **624003** 0010	22,90	12 **624004** 0010	22,90		
15	25	15	43	5,000			12 624004 0015	24,50	12 **624005** 0015	24,50
22	25	22	43	5,000			12 624004 0022	28,50	12 624005 0022	28,50
28	25	28	45	5,000			12 624004 0028	32,80	12 624005 0028	32,80
					6120		6120		6120	

osborn Cylindrical tube brush with grinding bristles

- For internal machining of bores and finishing non-ferrous metals, steel and cast-iron parts
- Silicon carbide, SiC
- Particularly suitable for deburring transverse bores, control components, O-ring recesses and straight bores
- We recommend bristles that are 10 - 15 % wider than the bore
- For cleaning, smoothing, deburring
- Unit prices when purchased in packs



D mm	A mm	L mm	D1 mm		Grain 320 art.no.	€		Grain 120 art.no.	€		Grain 80 art.no.	€
6	50	125	3.0	4	**625001** 0006	11,05	4	**625002** 0006	11,05			
8	50	125	3.0	4	625001 0008	11,05	4	625002 0008	11,05			
10	50	125	4.0	4	625001 0010	9,10	4	625002 0010	9,10	4	**625003** 0010	9,10
13	50	125	4.0	4	625001 0013	9,30	4	625002 0013	9,30	4	625003 0013	9,30
16	50	125	5.0	4	625001 0016	9,75	4	625002 0016	9,75	4	625003 0016	9,75
19	65	125	5.0	4	625001 0019	10,–	4	625002 0019	10,–	4	625003 0019	10,–
22	65	125	5.5	4	625001 0022	10,05	4	625002 0022	10,10	4	625003 0022	10,10
25	65	125	5.5	4	625001 0025	10,35	4	625002 0025	10,35	4	625003 0025	10,35
32	65	125	6.0	4	625001 0032	12,50	4	625002 0032	12,50	4	625003 0032	12,50
38	65	125	6.0	4	625001 0038	13,35	4	625002 0038	13,35	4	625003 0038	13,35
50	65	125	6.0	4	625001 0050	14,90	4	625002 0050	14,90	4	625003 0050	14,90
					6120			6120			6120	

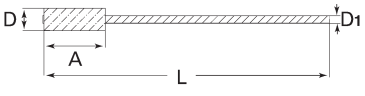




osborn HELITUF® interior brush

- Particularly suitable for cleaning and deburring threaded bores
- Also for brushing edges and longitudinal recesses e.g. for keyways
- Twist-fastened, crimped genuine OSBORN wire, Ø 0.13 mm
- **HELITUF**® brushes are very dense internal brushes for mechanical and manual use
- For cleaning, deburring, brushing
- Unit prices when purchased in packs





Individual

- Dimension D refers to the bore diameter

D mm	A mm	L mm	D1 mm		art.no.	€
8	25	89	approx. 3.18	4	**626001** 0008	5,40
10	25	89	approx. 3.18	4	626001 0010	5,75
13	25	89	approx. 3.18	4	626001 0013	6,–
16	25	89	approx. 3.18	4	626001 0016	6,50
22	25	89	approx. 3.18	4	626001 0022	6,90
29	25	89	approx. 3.18	4	626001 0029	7,65
					6120	



Set

- 12 brushes, 2 holders

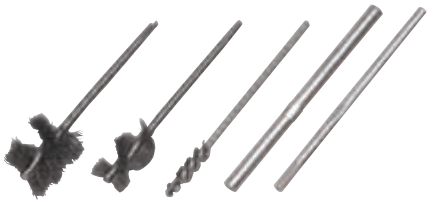
Contents	art.no.	€
Set of brushes: diameter 10, 11, 13, 14, 16, 18, 19, 21, 22, 24, 25, 29 mm	**626002** 1000	140,–
	6120	



Holder

- Tapered shank hole on one side and either an external or internal thread on the other
- Can be used singly or screwed together up to an overall length of 225 mm including the brush

D1 mm	L mm	Type	art.no.	€
5	90	External thread	**627002** 0005	25,70
6	90	Internal thread	627002 0006	25,70
			6120	



Centring drills and Step centring drills HSS-E




- Please adjust these guideline values according to clamping operation and machine set-up!

100101....
100141....
100109....
100149....
100103....
100104....
100107....
100105....
102214....
102215....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min Uncoated	Cutting speed Vc m/min Coated	Feed f in mm/rev in relation to drill bit diameter in mm				
							2	3	6	10	16
P	Machining steel	Up to 700	9 SMn 28	1.0715	30 - 45	35 - 60	0,08	0,1	0,2	0,3	0,4
	Unalloyed structural steel	Up to 700	St-52	1.0052	30 - 45	35 - 60	0,08	0,1	0,2	0,3	0,4
	Structural steel	700 - 950	Ck45	1.1191	30 - 45	35 - 60	0,08	0,1	0,2	0,3	0,4
	Tempering steel	500 - 950	42 CrMo4	1.7225	15 - 25	22 - 40	0,05	0,07	0,14	0,21	0,28
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	10 - 15	15 - 20	0,05	0,07	0,14	0,21	0,28
	Tempering steel	950 -1300	43CrMo4	1.3563	10 - 15	15 - 20	0,05	0,07	0,14	0,21	0,28
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	10 - 15	15 - 20	0,05	0,07	0,14	0,21	0,28
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	10 - 15	15 - 20	0,05	0,07	0,14	0,21	0,28
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	6 - 10	10 - 15	0,04	0,06	0,12	0,18	0,25
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	6 - 10	10 - 15	0,04	0,06	0,12	0,18	0,25
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	15 - 25	20 - 35	0,08	0,1	0,2	0,3	0,4
	Ductile iron	Up to 280 HB	GGG 60	0.7060	10 - 15	15 - 20	0,06	0,07	0,15	0,25	0,35
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	60 - 90	70 - 90	0,1	0,12	0,18	0,3	0,35
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	35 - 50	40 - 60	0,1	0,12	0,18	0,3	0,35
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	40 - 50	50 - 60	0,1	0,12	0,18	0,3	0,35
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	40 - 50	50 - 60	0,1	0,12	0,18	0,3	0,35
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	40 - 50	50 - 60	0,1	0,12	0,18	0,3	0,35
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	40 - 50	50 - 60	0,1	0,12	0,18	0,3	0,35
	Thermoplastic		PVC		110 - 140	100 - 130	0,12	0,14	0,2	0,35	0,45
	Thermoset		Melamin		110 - 140	100 - 130	0,12	0,14	0,2	0,35	0,45
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	6 - 10	10 - 15	0,04	0,06	0,12	0,18	0,25
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	5 - 6	8 - 12	0,03	0,05	0,1	0,16	0,22

Solid carbide centring drills



- Please adjust these guideline values according to clamping operation and machine set-up!

100501....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						2	3	6	10	16
P	Machining steel	Up to 700	9 SMn 28	1.0715	70 - 80	0,1	0,12	0,22	0,33	0,45
	Unalloyed structural steel	Up to 700	St-52	1.0052	70 - 80	0,1	0,12	0,22	0,33	0,45
	Structural steel	700 - 950	Ck45	1.1191	60 - 75	0,1	0,12	0,22	0,33	0,45
	Tempering steel	500 - 950	42 CrMo4	1.7225	60 - 75	0,1	0,12	0,22	0,33	0,45
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	50 - 60	0,07	0,08	0,15	0,23	0,31
	Tempering steel	950 -1300	43CrMo4	1.3563	25 - 40	0,06	0,07	0,13	0,2	0,27
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	25 - 40	0,06	0,07	0,13	0,2	0,27
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	25 - 40	0,06	0,07	0,13	0,2	0,27
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	20 - 30	0,06	0,08	0,15	0,2	0,3
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	20 -30	0,06	0,08	0,15	0,2	0,3
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	50 - 60	0,1	0,12	0,22	0,33	0,45
	Ductile iron	Up to 280 HB	GGG 60	0.7060	35 - 50	0,08	0,1	0,17	0,3	0,4
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	100 - 150	0,12	0,15	0,2	0,25	0,4
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	70 - 90	0,12	0,15	0,2	0,25	0,4
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	70 - 90	0,12	0,15	0,2	0,25	0,4
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	70 - 90	0,12	0,15	0,2	0,25	0,4
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	70 - 90	0,12	0,15	0,2	0,25	0,4
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	70 - 90	0,12	0,15	0,2	0,25	0,4
	Thermoplastic		PVC		150 - 200	0,13	0,15	0,25	0,4	0,5
	Thermoset		Melamin		150 - 200	0,13	0,15	0,25	0,4	0,5
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	20 - 30	0,06	0,08	0,15	0,2	0,3
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	20 - 25	0,05	0,07	0,13	0,2	0,27

NC spotting drill HSS-E



- Please adjust these guideline values according to clamping operation and machine set-up!

100130....
100131....
100120....
100121....
100132....
100122....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min Uncoated	Cutting speed Vc m/min Coated	Feed f in mm/rev in relation to drill bit diameter in mm					
							2	3	6	10	16	20
P	Machining steel	Up to 700	9 SMn 28	1.0715	30 - 45	35 - 60	0,08	0,1	0,2	0,3	0,4	0,45
	Unalloyed structural steel	Up to 700	St-52	1.0052	30 - 45	35 - 60	0,08	0,1	0,2	0,3	0,4	0,45
	Structural steel	700 - 950	Ck45	1.1191	25 - 30	35 - 50	0,08	0,1	0,2	0,3	0,4	0,45
	Tempering steel	500 - 950	42 CrMo4	1.7225	25 - 30	35 - 50	0,08	0,1	0,2	0,3	0,4	0,45
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	15 - 25	22 - 40	0,05	0,07	0,14	0,21	0,28	0,33
	Tempering steel	950 -1300	43CrMo4	1.3563	10 - 15	15 - 20	0,05	0,07	0,14	0,21	0,28	0,33
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	10 - 15	15 - 20	0,05	0,07	0,14	0,21	0,28	0,33
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	10 - 15	15 - 20	0,05	0,07	0,14	0,21	0,28	0,33
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	6 - 10	10 - 15	0,04	0,06	0,12	0,18	0,25	0,3
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	6 - 10	10 - 15	0,04	0,06	0,12	0,18	0,25	0,3
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	15 - 25	20 - 35	0,08	0,1	0,2	0,3	0,4	0,45
	Ductile iron	Up to 280 HB	GGG 60	0.7060	10 - 15	15 - 20	0,06	0,07	0,15	0,25	0,35	0,4
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	60 - 90	70 - 90	0,1	0,12	0,18	0,3	0,35	0,4
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	35 - 50	40 - 60	0,1	0,12	0,18	0,3	0,35	0,4
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	40 - 50	50 - 60	0,1	0,12	0,18	0,3	0,35	0,4
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	40 - 50	50 - 60	0,1	0,12	0,18	0,3	0,35	0,4
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	40 - 50	50 - 60	0,1	0,12	0,18	0,3	0,35	0,4
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	40 - 50	50 - 60	0,1	0,12	0,18	0,3	0,35	0,4
	Thermoplastic		PVC		110 - 140	100 - 130	0,12	0,14	0,2	0,35	0,45	0,5
	Thermoset		Melamin		110 - 140	100 - 130	0,12	0,14	0,2	0,35	0,45	0,5
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	6 - 10	10 - 15	0,04	0,06	0,12	0,18	0,25	0,3
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	5 - 6	8 - 12	0,03	0,05	0,1	0,16	0,22	0,27

Solid carbide NC spotting drill





- Please adjust these guideline values according to clamping operation and machine set-up!

100520....
100530....
100540....
100550....
100560....
100570....
100571....
100572....
100580....
100581....
100582....
100583....
100584....
100585....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min Uncoated	Cutting speed Vc m/min Coated	Feed f in mm/rev in relation to drill bit diameter in mm					
							2	3	6	10	16	20
P	Machining steel	Up to 700	9 SMn 28	1.0715	80 - 100	100 - 120	0,1	0,12	0,22	0,33	0,45	0,5
	Unalloyed structural steel	Up to 700	St-52	1.0052	80 - 100	100 - 120	0,1	0,12	0,22	0,33	0,45	0,5
	Structural steel	700 - 950	Ck45	1.1191	60 - 90	80 - 110	0,1	0,12	0,22	0,33	0,45	0,5
	Tempering steel	500 - 950	42 CrMo4	1.7225	60 - 90	80 - 110	0,1	0,12	0,22	0,33	0,45	0,5
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	55 - 75	60 - 80	0,07	0,08	0,15	0,23	0,31	0,36
	Tempering steel	950 -1300	43CrMo4	1.3563	30 - 50	40 - 60	0,06	0,07	0,13	0,2	0,27	0,32
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	30 - 50	40 - 60	0,06	0,07	0,13	0,2	0,27	0,32
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	30 - 50	40 - 60	0,06	0,07	0,13	0,2	0,27	0,32
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	25 - 50	30 - 60	0,06	0,08	0,15	0,2	0,3	0,35
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	25 - 50	30 - 60	0,06	0,08	0,15	0,2	0,3	0,35
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	80 - 100	80 - 90	0,1	0,12	0,22	0,33	0,45	0,5
	Ductile iron	Up to 280 HB	GGG 60	0.7060	60 - 90	70 - 90	0,08	0,1	0,17	0,3	0,4	0,45
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	100 - 180	150 - 200	0,12	0,15	0,2	0,25	0,4	0,45
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	100 - 180	150 - 200	0,12	0,15	0,2	0,25	0,4	0,45
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	90 - 120	110 - 140	0,12	0,15	0,2	0,25	0,4	0,45
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	90 - 120	110 - 140	0,12	0,15	0,2	0,25	0,4	0,45
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	90 - 120	110 - 140	0,12	0,15	0,2	0,25	0,4	0,45
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	90 - 120	110 - 140	0,12	0,15	0,2	0,25	0,4	0,45
	Thermoplastic		PVC		100 - 180	150 - 200	0,12	0,15	0,2	0,25	0,4	0,45
	Thermoset		Melamin		100 - 180	150 - 200	0,12	0,15	0,2	0,25	0,4	0,45
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	30 - 35	30 - 40	0,06	0,08	0,15	0,2	0,3	0,35
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	25 - 35	30 - 40	0,05	0,07	0,13	0,18	0,27	0,32
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	25 - 35	30 - 40	0,05	0,07	0,13	0,18	0,27	0,32

ATORN® Twist drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

101050....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	36	0.1 - 0.13	0.13 - 0.22	0.22 - 0.25	0.25 - 0.32	0.32 - 0.44
	Unalloyed structural steel	Up to 700	St-52	1.0052	28	0.1 - 0.13	0.13 - 0.22	0.22 - 0.25	0.25 - 0.32	0.32 - 0.44
	Structural steel	700 - 950	Ck45	1.1191	28	0.08 - 0.11	0.1 - 0.16	0.16 - 0.22	0.22 - 0.25	0.25 - 0.32
	Cast steel	Up to 950	GS 40	1.0416	28	0.1 - 0.13	0.13 - 0.22	0.22 - 0.25	0.25 - 0.32	0.32 - 0.44
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	36	0.1 - 0.13	0.13 - 0.22	0.22 - 0.25	0.25 - 0.32	0.32 - 0.44
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	18	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.22	0.22 - 0.25
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	36	0.1 - 0.13	0.13 - 0.22	0.22 - 0.25	0.25 - 0.32	0.32 - 0.44
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	28	0.1 - 0.13	0.13 - 0.22	0.22 - 0.25	0.25 - 0.32	0.32 - 0.44
	Ductile iron	Up to 280 HB	GGG 60	0.7060	23	0.1 - 0.13	0.13 - 0.22	0.22 - 0.25	0.25 - 0.32	0.32 - 0.44
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	23	0.1 - 0.13	0.13 - 0.22	0.22 - 0.25	0.25 - 0.32	0.32 - 0.44

ATORN® Twist drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

101055....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	35	0.08 - 0.11	0.1 - 0.16	0.16 - 0.22	0.22 - 0.25	0.25 - 0.32
	Structural steel	700 - 950	Ck45	1.1191	30	0.08 - 0.11	0.1 - 0.16	0.16 - 0.22	0.22 - 0.25	0.25 - 0.32
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	16	0.05 - 0.06	0.06 - 0.11	0.1 - 0.13	0.13 - 0.16	0.16 - 0.22
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	12	0.05 - 0.06	0.06 - 0.11	0.1 - 0.13	0.13 - 0.16	0.16 - 0.22
M	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	12	0.05 - 0.06	0.06 - 0.11	0.1 - 0.13	0.13 - 0.16	0.16 - 0.22
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	40	0.1 - 0.13	0.13 - 0.22	0.22 - 0.25	0.25 - 0.32	0.32 - 0.44
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	30	0.1 - 0.13	0.13 - 0.22	0.22 - 0.25	0.25 - 0.32	0.32 - 0.44
	Ductile iron	Up to 280 HB	GGG 60	0.7060	36	0.1 - 0.13	0.13 - 0.22	0.22 - 0.25	0.25 - 0.32	0.32 - 0.44
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	25	0.1 - 0.13	0.13 - 0.22	0.22 - 0.25	0.25 - 0.32	0.32 - 0.44
N	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	40	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.22	0.22 - 0.25
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	36	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.22	0.22 - 0.25
	Thermoset		Melamine		20	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.22	0.22 - 0.25
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	8	0.04 - 0.05	0.05 - 0.08	0.08 - 0.11	0.1 - 0.13	0.13 - 0.16
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	8	0.03 - 004	0.04 - 0.06	0.06 - 0.08	0.08 - 0.11	0.1 - 0.13

ATORN® Twist drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

101052....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	28	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Unalloyed structural steel	Up to 700	St-52	1.0052	36	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Structural steel	700 - 950	Ck45	1.1191	28	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Cast steel	Up to 950	GS 40	1.0416	28	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	36	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	28	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Ductile iron	Up to 280 HB	GGG 60	0.7060	32	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	23	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	90	0.13 - 0.16	0.16 - 0.25	0.25 - 0.32	0.32 - 0.4	0.4-0.5
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	55	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	45	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	36	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
	Thermoplastic		PVC		28	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Thermoset		Melamine		18	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25

ATORN® Twist drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

101051....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	40	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
P	Structural steel	700 - 950	Ck45	1.1191	40	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
P	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	22	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
P	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	15	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	18	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2
M	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	20	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	50	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
K	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	40	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	45	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	32	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
N	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	40	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
N	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	50	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	10	0.04 - 0.05	0.05 - 0.08	0.08 - 0.1	0.1 - 0.13	0.13 - 0.16
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	10	0.03 - 0.04	0.04 - 0.63	0.63 - 0.08	0.08 - 0.1	0.1 - 0.13
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	5	0.03 - 0.04	0.04 - 0.06	0.06 - 0.08	0.08 - 0.1	0.1 - 0.13

ATORN® KSB-3 Twist drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!
- The specified values apply for application up to 3 x D

101085....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 10	10.1 - 12	12.1 - 14
P	Machining steel	Up to 700	9 SMn 28	1.0715	50 - 60	0.05 - 0.1	0.1 - 0.2	0.16 - 0.2	0.2 - 0.25	0.2 - 0.3
P	Unalloyed structural steel	Up to 700	St-52	1.0052	40 - 50	0.05 - 0.1	0.1 - 0.2	0.16 - 0.2	0.2 - 0.25	0.2 - 0.3
P	Structural steel	700 - 950	Ck45	1.1191	30 - 50	0.05 - 0.1	0.1 - 0.2	0.16 - 0.2	0.2 - 0.25	0.2 - 0.3
P	Cast steel	Up to 950	GS 40	1.0416	30 - 50	0.05 - 0.1	0.1 0.2	0.16 - 0.2	0.2 - 0.25	0.2 - 0.3
P	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	25 - 45	0.04 - 0.08	0.06 - 0.1	0.1 - 0.14	0.12 - 0.15	0.14 - 0.16
P	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	20 - 28	0.04 - 0.08	0.06 - 0.1	0.1 - 0.16	0.16 - 0.22	0.16 - 0.25
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	12 - 18	0.06 - 0.08	0.08 - 0.12	0.12 - 0.16	0.14 - 0.16	0.15 - 0.18
M	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	10 - 12	0.03 - 0.06	0.06 - 0.1	0.1 - 0.12	0.12 - 0.13	0.12 - 0.15
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	50 - 60	0.1 - 0.16	0.16 - 0.23	0.23 - 0.3	0.3 - 0.32	0.31 - 0.35
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	40 - 60	0.1 - 0.16	0.16 - 0.23	0.23 - 0.3	0.3 - 0.32	0.31 - 0.35
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	40 - 60	0.1 - 0.16	0.16 - 0.23	0.23 - 0.3	0.3 - 0.32	0.31 - 0.35
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	80 - 90	0.1 - 0.16	0.16 - 0.23	0.23 - 0.3	0.3 - 0.32	0.31 - 0.35
N	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	80 - 90	0.1 - 0.16	0.16 - 0.23	0.23 - 0.3	0.3 - 0.32	0.31 - 0.35
N	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	60 - 65	0.08 - 0.1	0.1 - 0.15	0.15 - 0.2	0.18 - 0.2	0.2 - 0.23
N	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	60 - 65	0.08 - 0.1	0.1 - 0.15	0.15 - 0.2	0.18 - 0.2	0.2 - 0.23
N	Thermoset		Melamine		25 - 30	0.08 - 0.1	0.1 - 0.15	0.15 - 0.2	0.18 - 0.2	0.2 - 0.23

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EX-SUS-GDS/GDR Twist drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!
- Cutting data for application with coolant and for drilling depths up to 3 x D

114045.... **114050....**

Cutting speed correction factor:
Drilling depth 4 x D = 0.9
5 x D = 0.8
6 x D = 0.8

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm						
						1	2	3	4	5	6	8
P	Machining steel	Up to 700	9 SMn 28	1.0715	32 - 40	0.02 - 0.05	0.06 - 0.09	0.1 - 0.13	0.11 - 0.15	0.12 - 0.18	0.13 - 0.19	0.17 - 0.24
	Unalloyed structural steel	Up to 700	St-52	1.0052	32 - 40	0.02 - 0.05	0.06 - 0.09	0.1 - 0.13	0.11 - 0.15	0.12 - 0.18	0.13 - 0.19	0.17 - 0.24
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	15-20	0.02 - 0.04	0.05 - 0.07	0.06 - 0.09	0.08 - 0.12	0.1 - 0.15	0.15 - 0.18	0.2 - 0.24
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	15-20	0.02 - 0.04	0.05 - 0.07	0.06 - 0.09	0.08 - 0.12	0.1 - 0.15	0.15 - 0.18	0.2 - 0.24
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	63 -100	0.02 - 0.06	0.04 - 0.12	0.06 - 0.18	0.08 - 0.24	0.1 - 0.3	0.12 - 0.36	0.16 - 0.45
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	63 -100	0.02 - 0.06	0.04 - 0.12	0.06 - 0.18	0.08 - 0.24	0.1 - 0.3	0.12 - 0.36	0.16 - 0.45
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	25 - 50	0.01 - 0.03	0.04 - 0.06	0.06 - 0.09	0.08 - 0.11	0.1 - 0.13	0.12 - 0.15	0.16 - 0.2
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	25 - 50	0.01 - 0.03	0.04 - 0.06	0.06 - 0.09	0.08 - 0.11	0.1 - 0.13	0.12 - 0.15	0.16 - 0.2

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm					
						10	12	14	16	18	20
P	Machining steel	Up to 700	9 SMn 28	1.0715	32 - 40	0.2 - 0.28	0.24 - 0.34	0.27 - 0.39	0.29 - 0.43	0.32 - 0.49	0.34 - 0.52
	Unalloyed structural steel	Up to 700	St-52	1.0052	32 - 40	0.2 - 0.28	0.24 - 0.34	0.27 - 0.39	0.29 - 0.43	0.32 - 0.49	0.34 - 0.52
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	15-20	0.25 - 0.3	0.3 - 0.36	0.35 - 0.45	0.37 - 0.5	0.39 - 0.54	0.4 - 0.56
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	15-20	0.25 - 0.3	0.3 - 0.36	0.35 - 0.45	0.37 - 0.5	0.39 - 0.54	0.4 - 0.56
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	63 - 100	0.2 - 0.55	0.24 - 0.66	0.27 - 0.74	0.3 - 0.83	0.32 - 0.94	0.36 - 1
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	63 - 100	0.2 - 0.55	0.24 - 0.66	0.27 - 0.74	0.3 - 0.83	0.32 - 0.94	0.36 - 1
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	25 - 50	0.2 - 0.25	0.24 - 0.3	0.26 - 0.34	0.27 - 0.37	0.29 - 0.41	0.3 - 0.44
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	25 - 50	0.2 - 0.25	0.24 - 0.3	0.26 - 0.34	0.27 - 0.37	0.29 - 0.41	0.3 - 0.44

NEXUS-GDS/GDR Twist drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!
- Cutting data for application with coolant and for drilling depths up to 3 x D

114046.... **114051....**

Cutting speed correction factors:
Drilling depth 4 x D = 0.9
5 x D = 0.8
6 x D = 0.8

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm								
						Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø8	Ø10	Ø12
P	Machining steel	Up to 700	9 SMn 28	1.0715	40 - 45	0.02 - 0.05	0.06 - 0.09	0.1 - 0.13	0.11 - 0.15	0.12 - 0.18	0.13 - 0.19	0.17 - 0.24	0.2 - 0.28	0.24 - 0.34
	Unalloyed structural steel	Up to 700	St-52	1.0052	40 - 60	0.02 - 0.05	0.06 - 0.09	0.1 - 0.13	0.11 - 0.15	0.12 - 0.18	0.13 - 0.19	0.17 - 0.24	0.2 - 0.28	0.24 - 0.34
	Structural steel	700 - 950	Ck45	1.1191	40 - 60	0.02 - 0.05	0.06 - 0.09	0.1 - 0.13	0.11 - 0.15	0.12 - 0.18	0.13 - 0.19	0.17 - 0.24	0.2 - 0.28	0.24 - 0.34
	Tempering steel	500 - 950	42 CrMo4	1.7225	20 - 40	0.02 - 0.05	0.06 - 0.09	0.1 - 0.13	0.11 - 0.15	0.12 - 0.18	0.13 - 0.19	0.17 - 0.24	0.2 - 0.28	0.24 - 0.34
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	15 - 30	0.01 - 0.02	0.02 - 0.04	0.03 - 0.06	0.04 - 0.08	0.05 - 0.1	0.06 - 0.12	0.08 - 0.16	0.1 - 0.2	0.12 - 0.24
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	15 - 25	0.02 - 0.04	0.05 - 0.07	0.06 - 0.09	0.08 - 0.12	0.1 - 0.15	0.12 - 0.18	0.16 - 0.24	0.2 - 0.28	0.24 - 0.34
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	30 - 60	0.02 - 0.06	0.04 - 0.12	0.06 - 0.18	0.08 - 0.24	0.1 - 0.3	0.12 - 0.36	0.16 - 0.45	0.2 - 0.55	0.24 - 0.66
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	60 - 100	0.02 - 0.06	0.04 - 0.12	0.06 - 0.18	0.08 - 0.24	0.1 - 0.3	0.12 - 0.36	0.16 - 0.45	0.2 - 0.55	0.24 - 0.66
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	40 - 60	0.01 - 0.03	0.04 - 0.06	0.06 - 0.09	0.08 - 0.11	0.1 - 0.13	0.12 - 0.15	0.16 - 0.2	0.2 - 0.25	0.24 - 0.3
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	40 - 60	0.01 - 0.03	0.04 - 0.06	0.06 - 0.09	0.08 - 0.11	0.1 - 0.13	0.12 - 0.15	0.16 - 0.2	0.2 - 0.25	0.24 - 0.3
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	40 - 60	0.01 - 0.03	0.04 - 0.06	0.06 - 0.09	0.08 - 0.11	0.1 - 0.13	0.12 - 0.15	0.16 - 0.2	0.2 - 0.25	0.24 - 0.3
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	40 - 60	0.01 - 0.03	0.04 - 0.06	0.06 - 0.09	0.08 - 0.11	0.1 - 0.13	0.12 - 0.15	0.16 - 0.2	0.2 - 0.25	0.24 - 0.3

ATORN® Twist drill bit

- Please adjust these guideline values according to clamping operation and machine set-up!



101080....



101505.... 101501....



101001.... 101035....
101002.... 101060....
101005.... 101405....



102101.... 102102....
102103....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	121 - 16	16.1 - 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	32	0.1 - 0.12	0.12 - 0.2	0.2 - 0.25	0.25 - 0.31	0.3 - 0.4
	Unalloyed structural steel	Up to 700	St-52	1.0052	25	0.1 - 0.12	0.12 - 0.2	0.2 - 0.25	0.25 - 0.31	0.3 - 0.4
	Structural steel	700 - 950	Ck45	1.1191	25	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.31
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	25	0.1 - 0.12	0.12 - 0.2	0.2 - 0.25	0.25 - 0.31	0.3 - 0.4
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	16	0.06 - 0.08	0.08 - 0.12	0.12 - 0.16	0.16 - 0.2	0.2 - 0.25
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	32	0.1 - 0.12	0.12 - 0.2	0.2 - 0.25	0.25 - 0.31	0.31 - 0.4
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	25	0.1 - 0.12	0.12 - 0.2	0.2 - 0.25	0.25 - 0.31	0.31 - 0.4
	Ductile iron	Up to 280 HB	GGG 60	0.7060	20	0.1 - 0.12	0.12 - 0.2	0.2 - 0.25	0.25 - 0.31	0.31 - 0.4
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	20	0.1 - 0.12	0.12 - 0.2	0.2 - 0.25	0.25 - 0.31	0.31 - 0.4

ATORN® Twist drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

101006.... 101036....
101013.... 101063....
101700....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	121 - 16	16.1 - 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	28	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Structural steel	700 - 950	Ck45	1.1191	28	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	16	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	10	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	12	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	14	0.06 - 0.08	0.8 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	36	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	28	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Ductile iron	Up to 280 HB	GGG 60	0.7060	30	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	22	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
N	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	55	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	45	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	28	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
	Thermoset		Melamine		18	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25

ATORN® Twist drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

101008.... 101038.... 101410....
101010.... 101040.... 101605....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	121 - 16	16.1 - 20
P	Structural steel	700 - 950	Ck45	1.1191	18	0.05 - 0.06	0.06 - 0.1	0.1 - 0.12	0.12 - 0.16	0.16 - 0.2
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	12	0.05 - 0.06	0.06 - 0.1	0.1 - 0.12	0.12 - 0.16	0.16 - 0.2
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	10	0.05 - 0.06	0.06 - 0.1	0.1 - 0.12	0.12 - 0.16	0.16 - 0.2
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	12	0.05 - 0.06	0.06 - 0.1	0.1 - 0.12	0.12 - 0.16	0.16 - 0.2
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	14	0.05 - 0.06	0.06 - 0.1	0.1 - 0.12	0.12 - 0.16	0.16 - 0.2
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	6	0.04 - 0.05	0.05 - 0.08	0.08 - 0.1	0.1 - 0.12	0.12 - 0.16
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	6	0.03 - 0.04	0.04 - 0.06	0.06 - 0.08	0.08 - 0.1	0.1 - 0.12

ATORN® Mini twist drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

101075....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						0.05 - 0.2	0.25 - 0.45	0.5 - 0.7	0.75 - 0.95	1 - 1.5
P	Machining steel	Up to 700	9 SMn 28	1.0715	16	0.004 - 0.008	0.009 - 0.012	0.014 - 0.022	0.023 - 0.039	0.041 - 0.52
	Unalloyed structural steel	Up to 700	St-52	1.0052	21	0.005 - 0.01	0.011 - 0.016	0.019 - 0.028	0.029 - 0.045	0.050 - 0.06
	Structural steel	700 - 950	Ck45	1.1191	18	0.004 - 0.008	0.009 - 0.012	0.014 - 0.022	0.023 - 0.039	0.041 - 0.52
	Cast steel	Up to 950	GS 40	1.0416	18	0.004 - 0.008	0.009 - 0.012	0.014 - 0.022	0.023 - 0.039	0.041 - 0.52
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	14	0.003 - 0.006	0.007 - 0.01	0.011 - 0.018	0.019 - 0.033	0.035 - 0.046
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	14	0.002 - 0.004	0.005 - 0.007	0.008 - 0.014	0.015 - 0.028	0.029 - 0.04
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	6	0.002 - 0.004	0.005 - 0.007	0.008 - 0.014	0.015 - 0.028	0.029 - 0.04
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	6	0.003 - 0.006	0.007 - 0.010	0.011 - 0.018	0.019 - 0.033	0.036 - 0.046
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	26	0.007 - 0.01	0.011 - 0.016	0.019 - 0.028	0.029 - 0.045	0.050 - 0.06
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	22	0.007 - 0.01	0.011 - 0.016	0.019 - 0.028	0.029 - 0.045	0.050 - 0.06
	Ductile iron	Up to 280 HB	GGG 60	0.7060	18	0.007 - 0.01	0.011 - 0.016	0.019 - 0.028	0.029 - 0.045	0.050 - 0.06
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	22	0.007 - 0.01	0.011 - 0.016	0.019 - 0.028	0.029 - 0.045	0.050 - 0.06
N	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	18	0.007 - 0.01	0.011 - 0.016	0.019 - 0.028	0.029 - 0.045	0.05 - 0.06
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	22	0.004 - 0.008	0.009 - 0.012	0.014 - 0.022	0.023 - 0.039	0.041 - 0.52
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	22	0.003 - 0.006	0.007 - 0.01	0.011 - 0.018	0.019 - 0.033	0.035 - 0.046
	Thermoplastic		PVC		18	0.003 - 0.006	0.007 - 0.01	0.011 - 0.018	0.019 - 0.033	0.035 - 0.046
	Thermoset		Melamine		16	0.003 - 0.006	0.007 - 0.01	0.011 - 0.018	0.019 - 0.033	0.035 - 0.046

ATORN® Twist drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

101011....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	32	0.1 - 0.12	0.12 - 0.2	0.2 - 0.25	0.25 - 0.31	0.31 - 0.4
	Unalloyed structural steel	Up to 700	St-52	1.0052	25	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.31
	Structural steel	700 - 950	Ck45	1.1191	25	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.31
	Cast steel	Up to 950	GS 40	1.0416	25	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.31
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	32	0.1 - 0.12	0.12 - 0.2	0.2 - 0.25	0.25 - 0.31	0.31 - 0.4
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	28	0.1 - 0.12	0.12 - 0.2	0.2 - 0.25	0.25 - 0.31	0.31 - 0.4
	Ductile iron	Up to 280 HB	GGG 60	0.7060	20	0.1 - 0.12	0.12 - 0.2	0.2 - 0.25	0.25 - 0.31	0.31 - 0.4
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	20	0.1 - 0.12	0.12 - 0.2	0.2 - 0.25	0.25 - 0.31	0.31 - 0.4
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	80	0.12 - 0.16	0.16 - 0.25	0.25 - 0.31	0.31 - 0.4	0.4-0.5
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	80	0.12 - 0.16	0.16 - 0.25	0.25 - 0.31	0.31 - 0.4	0.4-0.5
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	63	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.31
	Thermoset		Melamine		25	0.06 - 0.08	0.08 - 0.12	0.12 - 0.16	0.16 - 0.2	0.2 - 0.25

ATORN® Twist drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

101012....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	47	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.31	0.31 - 0.4
	Structural steel	700 - 950	Ck45	1.1191	42	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.31	0.31 - 0.4
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	26	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.31
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	17	0.06 - 0.08	0.08 - 0.12	0.12 - 0.16	0.16 - 0.2	0.2 - 0.25
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	20	0.06 - 0.08	0.08 - 0.12	0.12 - 0.16	0.16 - 0.2	0.2 - 0.25
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	23	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.31
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	59	0.12 -0.16	0.16 - 0.25	0.25 - 0.31	0.31 - 0.4	0.4-0.5
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	47	0.12 -0.16	0.16 - 0.25	0.25 - 0.31	0.31 - 0.4	0.4-0.5
	Ductile iron	Up to 280 HB	GGG 60	0.7060	52	0.12 -0.16	0.16 - 0.25	0.25 - 0.31	0.31 - 0.4	0.4-0.5
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	23	0.12 -0.16	0.16 - 0.25	0.25 - 0.31	0.31 - 0.4	0.4-0.5
N	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	91	0.12 - 0.16	0.16 - 0.25	0.25 - 0.31	0.31 - 0.4	0.4-0.5
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	47	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.31	0.31 - 0.4
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	30	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.31	0.31 - 0.4
	Thermoset		Melamine		28	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.31

ATORN® Twist drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

101014....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	36	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Structural steel	700 - 950	Ck45	1.1191	32	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	20	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	13	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	15	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	18	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	45	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	36	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Ductile iron	Up to 280 HB	GGG 60	0.7060	40	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	28	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
N	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	70	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4

ATORN® Twist drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

101016....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
P	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	10	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	12	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	6	0.04 - 0.05	0.05 - 0.08	0.08 - 0.1	0.1 - 0.13	0.13 - 0.16
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	8	0.03 - 0.04	0.04 - 0.63	0.63 - 0.08	0.08 - 0.1	0.1 - 0.13
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	3	0.03 - 0.04	0.04 - 0.06	0.06 - 0.08	0.08 - 0.1	0.1 - 0.13

ATORN® Twist drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

101018....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	12	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	14	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16- 0.2	0.2 - 0.25
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	90	0.13 - 0.16	0.16 - 0.25	0.25 - 0.32	0.32 - 0.4	0.4-0.5
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	55	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 0.4
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	45	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	22	0.03 - 0.04	0.04 - 0.06	0.06 - 0.08	0.08 - 0.1	0.1 - 0.13

ATORN® Twist drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

101017....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	80	0.13 - 0.16	0.16 - 0.25	0.25 - 0.32	0.32 - 0.4	0.4-0.5
	Thermoplastic		PVC		25	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32

ATORN® KSB-5 Twist drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!
- The specified values apply for insert up to 5 x D

101095....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	45 - 55	0.05 - 0.1	0.1 - 0.2	0.16 - 0.2	0.2 - 0.25	0.2 - 0.3
	Unalloyed structural steel	Up to 700	St-52	1.0052	35 - 45	0.05 - 0.1	0.1 - 0.2	0.16 - 0.2	0.2 - 0.25	0.2 - 0.3
	Structural steel	700 - 950	Ck45	1.1191	25 - 45	0.05 - 0.1	0.1 - 0.2	0.16 - 0.2	0.2 - 0.25	0.2 - 0.3
	Cast steel	Up to 950	GS 40	1.0416	25 - 45	0.05 - 0.1	0.1 - 0.2	0.16 - 0.2	0.2 - 0.25	0.2 - 0.3
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	23 - 40	0.04 - 0.08	0.06 - 0.1	0.1 - 0.14	0.12 - 0.15	0.14 - 0.16
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	18 - 25	0.04 - 0.08	0.06 - 0.1	0.1 - 0.14	0.12 - 0.15	0.14 - 0.16
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	10 - 16	0.06 - 0.08	0.08 - 0.12	0.12 - 0.16	0.14 - 0.16	0.15 - 0.18
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	10 - 12	0.03 - 0.06	0.06 - 0.1	0.1 - 0.12	0.12 - 0.13	0.12 - 0.15
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	40 - 50	0.1 - 0.16	0.16 - 0.23	0.23 - 0.3	0.3 - 0.32	0.31 - 0.35
	Ductile iron	Up to 280 HB	GGG 60	0.7060	30 - 50	0.1 - 0.16	0.16 - 0.23	0.23 - 0.3	0.3 - 0.32	0.31 - 0.35
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	70 - 80	0. - 0.16	0.16 - 0.23	0.23 - 0.3	0.3 - 0.32	0.31 - 0.35
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	70 - 80	0. - 0.16	0.16 - 0.23	0.23 - 0.3	0.3 - 0.32	0.31 - 0.35

ATORN® Twist drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

101061....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	28	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Unalloyed structural steel	Up to 700	St-52	1.0052	36	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Structural steel	700 - 950	Ck45	1.1191	28	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Cast steel	Up to 950	GS 40	1.0416	28	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	14	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	8	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	36	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	28	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Ductile iron	Up to 280 HB	GGG 60	0.7060	28	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	22	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
N	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	55	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	28	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	22	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25

ATORN® Twist drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

101062....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	10	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	12	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
N	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	20	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	5	0.04 - 0.05	0.05 - 0.08	0.08 - 0.1	0.1 - 0.13	0.13 - 0.16
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	5	0.03 - 0.04	0.04 - 0.63	0.63 - 0.08	0.08 - 0.1	0.1 - 0.13

ATORN® Deep-hole drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

101070....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	22	0.08 - 0.11	0.1 - 0.16	0.16 - 0.22	0.22 - 0.25	0.25 - 0.32
	Unalloyed structural steel	Up to 700	St-52	1.0052	18	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.22	0.22 - 0.25
	Structural steel	700 - 950	Ck45	1.1191	22	0.08 - 0.11	0.1 - 0.16	0.16 - 0.22	0.22 - 0.25	0.25 - 0.32
	Cast steel	Up to 950	GS 40	1.0416	18	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.22	0.22 - 0.25
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	9	0.05 - 0.06	0.06 - 0.11	0.1 - 0.13	0.13 - 0.16	0.16 - 0.22
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	6	0.04 - 0.05	0.05 - 0.08	0.08 - 0.11	0.1 - 0.13	0.13 - 0.16
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	8	0.05 - 0.06	0.06 - 0.11	0.1 - 0.13	0.13 - 0.16	0.16 - 0.22
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	22	0.08 - 0.11	0.1 - 0.16	0.16 - 0.22	0.22 - 0.25	0.25 - 0.32
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	18	0.08 - 0.11	0.1 - 0.16	0.16 - 0.22	0.22 - 0.25	0.25 - 0.32
	Ductile iron	Up to 280 HB	GGG 60	0.7060	20	0.08 - 0.11	0.1 - 0.16	0.16 - 0.22	0.22 - 0.25	0.25 - 0.32
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	14	0.08 - 0.11	0.1 - 0.16	0.16 - 0.22	0.22 - 0.25	0.25 - 0.32
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	45	0.1 - 0.13	0.13 - 0.22	0.22 - 0.25	0.25 - 0.32	0.32 - 0.44
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	22	0.05 - 0.06	0.06 - 0.11	0.1 - 0.13	0.13 - 0.16	0.16 - 0.22
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	28	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.22	0.22 - 0.25
	Thermoplastic		PVC		18	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.22	0.22 - 0.25

High-performance deep-hole drill bit TDXL

- Please adjust these guideline values according to clamping operation and machine set-up!

101099.... **101100....** **101101....**

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						1.6 - 2	3 - 4	5 - 6	8 - 10	12
P	Machining steel	Up to 700	9 SMn 28	1.0715	20 - 24	0.016 - 0.05	0.03 - 0.1	0.05 - 0.15	0.08 - 0.25	0.12 - 0.3
	Unalloyed structural steel	Up to 700	St-52	1.0052	20 - 24	0.016 - 0.05	0.03 - 0.1	0.05 - 0.15	0.08 - 0.25	0.12 - 0.3
	Structural steel	700 - 950	Ck45	1.1191	18 - 22	0.016 - 0.04	0.03 - 0.1	0.05 - 0.15	0.08 - 0.25	0.12 - 0.3
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	16 - 20	0.01 - 0.04	0.02 - 0.1	0.03 - 0.13	0.06 - 0.2	0.12 - 0.3
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	8 - 12	0.016 - 0.04	0.03 - 0.09	0.05 - 0.13	0.06 - 0.18	0.12 - 0.26
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	18 - 24	0.03 - 0.05	0.06 - 0.13	0.1 - 0.19	0.16 - 0.32	0.24 - 0.38
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	16 - 20	0.01 - 0.06	0.02 - 0.1	0.03 - 0.15	0.05 - 0.25	0.07 - 0.3

ATORN® Twist drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

101507....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
P	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	16	0.02 - 0.2	0.2 - 0.25	0.25 - 0.3	0.2 - 0.32	0.32 - 0.38
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	14	0.02 - 0.2	0.2 - 0.25	0.25 - 0.3	0.3 - 0.32	0.32 - 0.38
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	10	0.12 - 0.16	0.16 - 0.2	0.2 - 0.24	0.24- 0.26	0.26 - 0.3
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	36	0.05 - 0.06	0.06 - 0.11	0.1 - 0.13	0.13 - 0.16	0.16 - 0.22
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	70	0.3 - 0.4	0.4-0.5	0.5 - 0.6	0.6 - 0.65	0.65 - 0.7
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	55	0.2 - 0.25	0.28 - 0.32	0.32 - 0.38	0.38 - 0.4	0.4 - 0.45
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	45	0.2 - 0.25	0.28 - 0.32	0.32 - 0.38	0.38 - 0.4	0.4 - 0.45
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	36	0.02 - 0.2	0.2 - 0.25	0.25 - 0.3	0.3 - 0.32	0.32 - 0.38
	Thermoplastic		PVC		25	0.2 - 0.25	0.28 - 0.32	0.32 - 0.38	0.38 - 0.4	0.4 - 0.45
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	6	0.1 - 0.13	0.13 - 0.16	0.16 - 0.18	0.18 - 0.19	0.19 - 0.22

ATORN® Twist drill bit (drilling bush)



- Please adjust these guideline values according to clamping operation and machine set-up!

101601....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 8	8.1 - 16	16.1 - 25	25.1 - 40	40.1 - 50
P	Machining steel	Up to 700	9 SMn 28	1.0715	28	0.12 - 0.2	0.2 - 0.28	0.28 - 0.5	0.5 - 0.63	0.5 - 0.63
	Unalloyed structural steel	Up to 700	St-52	1.0052	22	0.1 - 0.16	0.16 - 0.3	0.3 - 0.4	0.4-0.5	0.5 - 0.63
	Structural steel	700 - 950	Ck45	1.1191	22	0.1 - 0.16	0.16 - 0.3	0.3 - 0.4	0.4-0.5	0.5 - 0.63
	Cast steel	Up to 950	GS 40	1.0416	22	0.1 - 0.16	0.16 - 0.3	0.3 - 0.4	0.4-0.5	0.5 - 0.63
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	12	0.05 - 0.13	0.13 - 0.19	0.19 - 0.32	0.32 - 0.4	0.4-0.5
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	28	0.12 - 0.2	0.2 - 0.28	0.28 - 0.5	0.5 - 0.63	0.63 - 0.8
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	22	0.12 - 0.2	0.2 - 0.28	0.28 - 0.5	0.5 - 0.63	0.63 - 0.8
	Ductile iron	Up to 280 HB	GGG 60	0.7060	22	0.12 - 0.2	0.2 - 0.28	0.28 - 0.5	0.5 - 0.63	0.63 - 0.8
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	18	0.12 - 0.2	0.2 - 0.28	0.28 - 0.5	0.5 - 0.63	0.63 - 0.8
N	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	55	0.1 - 0.25	0.25 - 0.4	0.4 - 0.63	0.63 - 0.8	0.8 - 1
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	34	0.1 - 0.16	0.16 - 0.3	0.3 - 0.4	0.4-0.5	0.5 - 0.63
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	28	0.05 - 0.13	0.13 - 0.19	0.19 - 0.32	0.32 - 0.4	0.4-0.5
	Thermoplastic		PVC		22	0.1 - 0.16	0.16 - 0.3	0.3 - 0.4	0.4-0.5	0.5 - 0.63
	Thermoset		Melamine		14	0.05 - 0.13	0.13 - 0.19	0.19 - 0.32	0.32 - 0.4	0.4-0.5

ATORN® Core drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

101510.... **101515....**

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 14	14.1 - 20	20.1 - 40
P	Machining steel	Up to 700	9 SMn 28	1.0715	25 - 28	0.07	0.1	0.12	0.18	0.22
	Unalloyed structural steel	Up to 700	St-52	1.0052	26 - 30	0.07	0.1	0.12	0.18	0.22
	Structural steel	700 - 950	Ck45	1.1191	25 - 28	0.07	0.1	0.12	0.18	0.22
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	6 - 10	0.03	0.04	0.06	0.08	0.01
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	2-5	0.03	0.04	0.06	0.08	0.01
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	3 - 6	0.03	0.04	0.06	0.08	0.01
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	4 - 10	0.03	0.04	0.06	0.08	0.01
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	10 - 18	0.07	0.1	0.12	0.18	0.22
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	9 - 13	0.05	0.08	0.1	0.15	0.18
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	25 - 40	0.07	0.1	0.12	0.18	0.22
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	10 - 30	0.07	0.1	0.12	0.18	0.22
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	10 - 30	0.07	0.1	0.12	0.18	0.22
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	10 - 30	0.07	0.1	0.12	0.18	0.22
	Thermoplastic		PVC		20 - 30	0.07	0.1	0.12	0.18	0.22
	Thermoset		Melamine		15 - 25	0.05	0.08	0.1	0.15	0.18

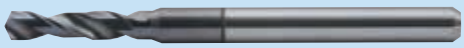
ATORN® Pin hole drill bit



Vc = 20-24 m/min.; V = 0.05 mm/rev

101025....

ATORN® Solid carbide micro drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

111550....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm			
						0.1 - 1	1.1 - 1.5	1.6 - 2	2.1 - 3
P	Machining steel	Up to 700	9 SMn 28	1.0715	50 - 75	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075
	Unalloyed structural steel	Up to 700	St-52	1.0052	50 - 75	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075
	Structural steel	700 - 950	Ck45	1.1191	50 - 75	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075
	Cast steel	Up to 950	GS 40	1.0416	50 - 70	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	45 - 60	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	20 - 25	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	20 - 35	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	20 - 35	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	60 - 100	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	60 - 80	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075
	Ductile iron	Up to 280 HB	GGG 60	0.7060	60 - 80	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	60 - 80	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	150 - 220	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	100 - 160	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	80 - 130	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	80 - 130	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075
	Thermoplastic		PVC		20 - 60	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075
	Thermoset		Melamine		20 - 55	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075
	Graphite		C8000		60 - 95	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	10 - 30	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	10 - 30	0.035 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.075

ATORN® Solid carbide twist drill bit

- Please adjust these guideline values according to clamping operation and machine set-up!



111005....



111010....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	80	0.08 - 0.11	0.1 - 0.16	0.16 - 0.22	0.22 - 0.25	0.25 - 0.32
	Unalloyed structural steel	Up to 700	St-52	1.0052	80	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.22	0.22 - 0.25
	Structural steel	700 - 950	Ck45	1.1191	70	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.22	0.22 - 0.25
	Cast steel	Up to 950	GS 40	1.0416	70	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.22	0.22 - 0.25
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	60	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.22	0.22 - 0.25
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	50	0.05 - 0.06	0.06 - 0.11	0.1 - 0.13	0.13 - 0.16	0.16 - 0.22
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	25	0.05 - 0.06	0.06 - 0.11	0.1 - 0.13	0.13 - 0.16	0.16 - 0.22
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	25	0.05 - 0.06	0.06 - 0.11	0.1 - 0.13	0.13 - 0.16	0.16 - 0.22
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	90	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.22	0.22 - 0.25
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	80	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.22	0.22 - 0.25
	Ductile iron	Up to 280 HB	GGG 60	0.7060	80	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.22	0.22 - 0.25
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	70	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.22	0.22 - 0.25
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	200	0.13 - 0.16	0.16 - 0.25	0.25 - 0.32	0.32 - 0.44	0.44 - 0.55
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	150	0.1 - 0.13	0.13 - 0.22	0.22 - 0.25	0.25 - 0.32	0.32 - 0.44
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	70	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.22	0.22 - 0.25
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	120	0.08 - 0.11	0.1 - 0.16	0.16 - 0.22	0.22 - 0.25	0.25 - 0.32
	Thermoplastic		PVC		40	0.05 - 0.06	0.06 - 0.11	0.1 - 0.13	0.13 - 0.16	0.16 - 0.22
	Thermoset		Melamine		50	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.22	0.22 - 0.25
	Graphite		C8000		80	0.05 - 0.06	0.06 - 0.11	0.1 - 0.13	0.13 - 0.16	0.16 - 0.22
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	15	0.04 - 0.05	0.05 - 0.08	0.08 - 0.11	0.1 - 0.13	0.13 - 0.16
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	15	0.04 - 0.05	0.05 - 0.08	0.08 - 0.11	0.1 - 0.13	0.13 - 0.16
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	20	0.05 - 0.06	0.06 - 0.11	0.1 - 0.13	0.13 - 0.16	0.16 - 0.22
	Hardened materials up to 64 HRc		100Cr6	1.2067	10	0.04 - 0.05	0.05 - 0.08	0.08 - 0.11	0.1 - 0.13	0.13 - 0.16

ATORN® Solid carbide twist drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

111008....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	79	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
	Unalloyed structural steel	Up to 700	St-52	1.0052	92	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
	Structural steel	700 - 950	Ck45	1.1191	79	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
	Cast steel	Up to 950	GS 40	1.0416	79	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	58	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	27	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	27	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	98	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	92	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
	Ductile iron	Up to 280 HB	GGG 60	0.7060	92	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	83	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	240	0.13 - 0.16	0.16 - 0.25	0.25 - 0.32	0.32 - 0.4	0.4-0.5
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	136	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	205	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	136	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Thermoplastic		PVC		45	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2
	Thermoset		Melamine		56	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
	Graphite		C8000		92	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	17	0.04 - 0.05	0.05 - 0.08	0.08 - 0.1	0.1 - 0.13	0.13 - 0.16
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	17	0.04 - 0.05	0.05 - 0.08	0.08 - 0.1	0.1 - 0.13	0.13 - 0.16
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	23	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2

ATORN® Solid carbide twist drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

111009....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	91	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Unalloyed structural steel	Up to 700	St-52	1.0052	104	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Structural steel	700 - 950	Ck45	1.1191	91	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Cast steel	Up to 950	GS 40	1.0416	91	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	78	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	32	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	32	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	117	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	104	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Ductile iron	Up to 280 HB	GGG 60	0.7060	91	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	104	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	260	0.02 - 0.2	0.2 - 0.32	0.32 - 0.4	0.4-0.5	0.5 - 0.63
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	156	0.13 - 0.16	0.16 - 0.25	0.25 - 0.32	0.32 - 0.4	0.4-0.5
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	234	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	156	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Thermoplastic		PVC		52	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
	Thermoset		Melamine		65	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Graphite		C8000		104	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	20	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	20	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	26	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.22

SARA® TiNplus HPC solid carbide high-performance drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

111503.... **111507....** **111512....**

ISO	Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	Cutting speed Vc m/min	Feed rates in mm/revolution in relation to drill bit diameter range in mm								
						With IC	3	4	5	6	8	10	12.50	16	20
P	Machining steel	Up to 700	9 SMn 28	1.0715	115	135	0.14	0.2	0.2	0.25	0.32	0.4	0.4	0.5	0.63
	Unalloyed structural steel	Up to 700	St-52	1.0052	90	95	0.09	0.13	0.16	0.2	0.25	0.25	0.32	0.4	0.5
	Structural steel	700 - 950	Ck45	1.1191	90	95	0.11	0.16	0.16	0.2	0.25	0.32	0.32	0.4	0.5
	Cast steel	Up to 950	GS 40	1.0416	60	68	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
	Alloyed case-hardened steel	Up to 950	16 MnCr 5	1.7131	70	68	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
	Tool steel	950 -1400	X 38 CrMoV 5 1	1.2343	45	50	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
M	Stainless steel, ferr./marten.	500 - 950	X 10 Cr 13	1.4006	36	36	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
	Stainless steel, austenitic	500 - 950	X 12 CrMoS 17	1.4104	45	52	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
K	Grey cast iron	100 - 400	GG 25	0.6025	125	125	0.16	0.2	0.25	0.32	0.32	0.4	0.5	0.63	0.63
	Alloyed grey cast iron	150-250	GGL-NiCr 35 2	0.6678	36	40	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
	Ductile iron	400 - 800	GGG 60	0.7060	95	95	0.14	0.2	0.2	0.25	0.32	0.4	0.4	0.5	0.63
	Malleable cast iron	350 - 700	GTS 55	0.8155	95	95	0.14	0.2	0.2	0.25	0.32	0.4	0.4	0.5	0.63
N	Al. alloy long-chipping	Up to 550	AlMg 3	3.3535	210	250	0.16	0.2	0.25	0.32	0.32	0.4	0.5	0.63	0.63
	Al. alloy short-chipping	Up to 400	G-AlSi 12	3.2581	145	180	0.16	0.2	0.25	0.32	0.32	0.4	0.5	0.63	0.63
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	145	180	0.11	0.16	0.16	0.2	0.25	0.32	0.32	0.4	0.5
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	215	250	0.14	0.2	0.2	0.25	0.32	0.4	0.4	0.5	0.63
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	28	32	0.06	0.08	0.08	0.1	0.13	0.16	0.16	0.2	0.25
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	20	28	0.06	0.08	0.08	0.1	0.13	0.16	0.16	0.2	0.25
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	32	45	0.05	0.06	0.06	0.08	0.1	0.13	0.13	0.16	0.2
	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	20	28	0.04	0.05	0.05	0.06	0.08	0.1	0.1	0.13	0.16

ATORN® AluSpeed 5D solid carbide high-performance drill bit



111400....

ISO	Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	Feed rates in mm/revolution in relation to drill bit diameter range in mm					
						2,5 - 3	3 - 5	5 - 8	8 - 12	12 - 16	16 - 20
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	360	0,25	0,30	0,40	0,50	0,60	0,65
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	400	0,30	0,35	0,45	0,55	0,65	0,70
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	200	0,15	0,23	0,30	0,38	0,45	0,52
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	160	0,15	0,23	0,30	0,38	0,45	0,52
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	200	0,15	0,23	0,30	0,38	0,45	0,52
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	200	0,15	0,23	0,30	0,38	0,45	0,52

Solid carbide high-performance drill bit HARD 3D / 5D



- Please adjust these guideline values according to clamping operation and machine set-up!

111535.... **111537....** **111536....**

ISO	Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	Feed rates in mm/revolution in relation to drill bit diameter range in mm					
						1 - 3	3 - 5	5 - 8	8 - 12	12 - 16	16 - 20
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	16 - 28	0,03 - 0,06	0,06 - 0,08	0,08 - 0,09	0,09 - 0,11	0,11 - 0,13	0,13 - 0,15
	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	10 - 16	0,02 - 0,04	0,04 - 0,06	0,06 - 0,07	0,07 - 0,08	0,08 - 0,09	0,09 - 0,1
	Hardened materials up to 64 HRc		100Cr6	1.2067	8 - 14	0,02 - 0,04	0,04 - 0,06	0,06 - 0,07	0,07 - 0,08	0,08 - 0,09	0,09 - 0,1

ATORN® Solid carbide drilling tools for fibrous materials



111805.... **111815....** **111810....**

ISO	Materials group	Cutting speed Vc m/min	Feed rates in mm/revolution in relation to drill bit diameter range in mm				
			4	6	8	10	12
N	Fibre-reinforced plastics CFK	100 - 200	0,03	0,05	0,07	0,09	0,1
	Fibre-reinforced plastics GFK	100 - 150	0,03	0,05	0,07	0,09	0,1
	Fibre-reinforced plastics AFK	90 - 140	0,03	0,05	0,07	0,09	0,1

ATORN® TiAlNplus HPC solid carbide high-performance drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

111566.... **111563....**
111567.... **111573....**
111562....

Solid carbide high-performance drill bit

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm								
						3	4	5	6	8	10	12.50	16	20
P	Machining steel	Up to 700	9 SMn 28	1.0715	145	0.14	0.2	0.2	0.25	0.32	0.4	0.4	0.5	0.63
	Unalloyed structural steel	Up to 700	St-52	1.0052	110	0.09	0.13	0.16	0.2	0.25	0.25	0.32	0.4	0.5
	Structural steel	700 - 950	Ck45	1.1191	110	0.11	0.16	0.16	0.2	0.25	0.32	0.32	0.4	0.5
	Cast steel	Up to 950	GS 40	1.0416	75	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	85	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	55	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	45	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	55	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	155	0.16	0.2	0.25	0.32	0.32	0.4	0.5	0.63	0.63
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	45	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
	Ductile iron	Up to 280 HB	GGG 60	0.7060	120	0.14	0.2	0.2	0.25	0.32	0.4	0.4	0.5	0.63
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	120	0.14	0.2	0.2	0.25	0.32	0.4	0.4	0.5	0.63
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	260	0.16	0.2	0.25	0.32	0.32	0.4	0.5	0.63	0.63
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	180	0.16	0.2	0.25	0.32	0.32	0.4	0.5	0.63	0.63
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	180	0.11	0.16	0.16	0.2	0.25	0.32	0.32	0.4	0.5
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	270	0.14	0.2	0.2	0.25	0.32	0.4	0.4	0.5	0.63
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	35	0.06	0.08	0.08	0.1	0.13	0.16	0.16	0.2	0.25
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	25	0.06	0.08	0.08	0.1	0.13	0.16	0.16	0.2	0.25
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	40	0.05	0.06	0.06	0.08	0.1	0.13	0.13	0.16	0.2
	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	25	0.04	0.05	0.05	0.06	0.08	0.1	0.1	0.13	0.16

111564.... **111568....**
111565.... **111569....**

Solid carbide high-performance drill bit with internal cooling

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm								
						3	4	5	6	8	10	12.50	16	20
P	Machining steel	Up to 700	9 SMn 28	1.0715	170	0.14	0.2	0.2	0.25	0.32	0.4	0.4	0.5	0.63
	Unalloyed structural steel	Up to 700	St-52	1.0052	120	0.09	0.13	0.16	0.2	0.25	0.25	0.32	0.4	0.5
	Structural steel	700 - 950	Ck45	1.1191	120	0.11	0.16	0.16	0.2	0.25	0.32	0.32	0.4	0.5
	Cast steel	Up to 950	GS 40	1.0416	85	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	85	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	65	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	45	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	60	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	160	0.16	0.2	0.25	0.32	0.32	0.4	0.5	0.63	0.63
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	50	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
	Ductile iron	Up to 280 HB	GGG 60	0.7060	120	0.14	0.2	0.2	0.25	0.32	0.4	0.4	0.5	0.63
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	120	0.14	0.2	0.2	0.25	0.32	0.4	0.4	0.5	0.63
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	310	0.16	0.2	0.25	0.32	0.32	0.4	0.5	0.63	0.63
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	220	0.16	0.2	0.25	0.32	0.32	0.4	0.5	0.63	0.63
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	220	0.11	0.16	0.16	0.2	0.25	0.32	0.32	0.4	0.5
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	325	0.14	0.2	0.2	0.25	0.32	0.4	0.4	0.5	0.63
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	40	0.06	0.08	0.08	0.1	0.13	0.16	0.16	0.2	0.25
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	35	0.06	0.08	0.08	0.1	0.13	0.16	0.16	0.2	0.25
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	55	0.05	0.06	0.06	0.08	0.1	0.13	0.13	0.16	0.2
	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	35	0.04	0.05	0.05	0.06	0.08	0.1	0.1	0.13	0.16

ATORN® Ultra-M solid carbide high-performance drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

111545.... **111549....**
111547.... **111551....**

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm									
						3	4	5	6	8	10	12	16	18	20
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	80	0.080	0.1	0.1	0.125	0.16	0.2	0.2	0.25	0.28	0.315
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	60	0.05	0.063	0.063	0.08	0.1	0.125	0.125	0.125	0.14	0.16
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	35	0.04	0.05	0.05	0.063	0.08	0.1	0.1	0.125	0.14	0.16
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	30	0.04	0.05	0.05	0.063	0.08	0.1	0.1	0.125	0.14	0.16

SARA® ALU solid carbide high-performance drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

111410....

ISO	Materials group	Strength/ Hardness N/mm²	Material examples chemical	Material number	Cutting speed Vc m/min	Feed rates in mm/rev in relation to drill bit diameter range in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
M	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	60	0.08	0.18	0.144	0.165	0.23
N	Al. alloy long-chipping	Up to 550	AlMg 3	3.3535	260	0.14	0.182	0.264	0.357	0.45
	Al. alloy short-chipping	Up to 400	G-AlSi 12	3.2581	240	0.14	0.182	0.264	0.357	0.45
	Copper alloy (brass) long-chipping	300 - 700	MS 63	2.0320	150	0.14	0.182	0.264	0.357	0.45
	Copper alloy (brass) short-chipping	Up to 500	MS 58	2.0402	150	0.14	0.182	0.264	0.357	0.45
	Thermoplastic		PVC		200	0.14	0.182	0.264	0.357	0.45
	Thermoset		Melamine		200	0.14	0.182	0.264	0.357	0.45
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	50	0.06	0.088	0.116	0.132	0.16
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	35	0.06	0.088	0.116	0.132	0.16

ATORN® Solid carbide twist drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

111011....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	80	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
	Unalloyed structural steel	Up to 700	St-52	1.0052	90	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
	Structural steel	700 - 950	Ck45	1.1191	80	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
	Cast steel	Up to 950	GS 40	1.0416	80	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	70	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	27	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	27	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	102	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	90	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
	Ductile iron	Up to 280 HB	GGG 60	0.7060	80	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	70	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	230	0.13 - 0.16	0.16 - 0.25	0.25 - 0.32	0.32 - 0.4	0.4-0.5
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	135	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	205	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	135	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Thermoplastic		PVC		55	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2
	Thermoset		Melamine		45	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	17	0.04 - 0.05	0.05 - 0.08	0.08 - 0.1	0.1 - 0.13	0.13 - 0.16
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	17	0.04 - 0.05	0.05 - 0.08	0.08 - 0.1	0.1 - 0.13	0.13 - 0.16
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	22	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2

ATORN® Solid carbide twist drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

111012....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	90	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Unalloyed structural steel	Up to 700	St-52	1.0052	100	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Structural steel	700 - 950	Ck45	1.1191	90	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Cast steel	Up to 950	GS 40	1.0416	90	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	80	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	30	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	30	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	115	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	100	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Ductile iron	Up to 280 HB	GGG 60	0.7060	90	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	80	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	260	0.02 - 0.2	0.2 - 0.32	0.32 - 0.4	0.4-0.5	0.5 - 0.63
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	155	0.13 - 0.16	0.16 - 0.25	0.25 - 0.32	0.32 - 0.4	0.4-0.5
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	235	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	155	0.1 - 0.16	0.16 - 0.2	0.22 - 0.25	0.25 - 0.32	0.32 - 0.4
	Thermoplastic		PVC		65	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
	Thermoset		Melamine		50	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	20	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	20	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	25	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2

ATORN® TiAlNplus HPC 8D solid carbide high-performance drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

111570....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	145	0.13 - 0.16	0.16 - 0.25	0.25 - 0.32	0.32 - 0.4	0.4-0.5
	Unalloyed structural steel	Up to 700	St-52	1.0052	145	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Structural steel	700 - 950	Ck45	1.1191	125	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Cast steel	Up to 950	GS 40	1.0416	120	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	120	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	65	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	45	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	60	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	210	0.02 - 0.2	0.2 - 0.32	0.32 - 0.4	0.4-0.5	0.5 - 0.63
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	180	0.02 - 0.2	0.2 - 0.32	0.32 - 0.4	0.4-0.5	0.5 - 0.63
	Ductile iron	Up to 280 HB	GGG 60	0.7060	160	0.02 - 0.2	0.2 - 0.32	0.32 - 0.4	0.4-0.5	0.5 - 0.63
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	130	0.13 - 0.16	0.16 - 0.25	0.25 - 0.32	0.32 - 0.4	0.4-0.5
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	310	0.02 - 0.2	0.2 - 0.32	0.32 - 0.4	0.4-0.5	0.5 - 0.63
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	220	0.02 - 0.2	0.2 - 0.32	0.32 - 0.4	0.4-0.5	0.5 - 0.63
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	220	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	125	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	40	0.04 - 0.05	0.05 - 0.08	0.08 - 0.1	0.1 - 0.13	0.13 - 0.16
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	35	0.05 - 0.06	0.06 - 0.1	0.1 - 0.13	0.13 - 0.16	0.16 - 0.2
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	55	0.04 - 0.05	0.05 - 0.08	0.08 - 0.1	0.1 - 0.13	0.13 - 0.16
	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	35	0.03 - 0.04	0.04 - 0.63	0.63 - 0.1	0.08 - 0.1	0.1 - 0.13

ATORN® TiAlNplus HPC 12D solid carbide high-performance drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

111572....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	90	0.13 - 0.16	0.16 - 0.25	0.25 - 0.32	0.32 - 0.4	0.4-0.5
	Unalloyed structural steel	Up to 700	St-52	1.0052	90	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Structural steel	700 - 950	Ck45	1.1191	80	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Cast steel	Up to 950	GS 40	1.0416	80	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	80	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	40	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	40	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	40	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	120	0.02 - 0.2	0.2 - 0.32	0.32 - 0.4	0.4-0.5	0.5 - 0.63
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	120	0.02 - 0.2	0.2 - 0.32	0.32 - 0.4	0.4-0.5	0.5 - 0.63
	Ductile iron	Up to 280 HB	GGG 60	0.7060	90	0.02 - 0.2	0.2 - 0.32	0.32 - 0.4	0.4-0.5	0.5 - 0.63
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	80	0.13 - 0.16	0.16 - 0.25	0.25 - 0.32	0.32 - 0.4	0.4-0.5
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	150	0.02 - 0.2	0.2 - 0.32	0.32 - 0.4	0.4-0.5	0.5 - 0.63
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	120	0.02 - 0.2	0.2 - 0.32	0.32 - 0.4	0.4-0.5	0.5 - 0.63
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	120	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	40	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4

ATORN® Solid carbide deep drill bits TiAlNplus HPC 16D/20D

- Please adjust these guideline values according to clamping operation and machine set-up!
- **Pilot hole point angle 140°, 1-3 x D deep**

111574.... **111575....**

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm			
						3 - 5	5 - 8	8 - 10	10 - 12
P	Machining steel	Up to 700	9 SMn 28	1.0715	80 - 120	0,06 - 0,12	0,1 - 0,2	0,16 - 0,28	0,2 - 0,35
	Unalloyed structural steel	Up to 700	St-52	1.0052	80 - 120	0,06 - 0,12	0,1 - 0,2	0,16 - 0,28	0,2 - 0,35
	Structural steel	700 – 950	Ck45	1.1191	80 - 120	0,06 - 0,12	0,1 - 0,2	0,16 - 0,28	0,2 - 0,35
	Cast steel	Up to 950	GS 40	1.0416	80 - 100	0,06 - 0,1	0,1 - 0,18	0,16 - 0,24	0,2 - 0,32
	Case-hardened steel	Up to 950	16 MnCr 5	1.7131	80 - 110	0,06 - 0,1	0,1 - 0,18	0,16 - 0,24	0,2 - 0,32
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	60 - 100	0,06 - 0,1	0,1 - 0,18	0,16 - 0,24	0,2 - 0,32
M	Stainless steel, ferr./marten.	500 – 950	X10 Cr13	1.4006	50 - 70	0,06 - 0,1	0,1 - 0,18	0,16 - 0,24	0,2 - 0,32
	Stainless steel, austenitic	500 – 950	X5 CrNi 18 10	1.4301	40 - 70	0,06 - 0,1	0,1 - 0,18	0,16 - 0,24	0,2 - 0,32
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	70 - 110	0,06 - 0,12	0,1 - 0,2	0,16 - 0,28	0,2 - 0,35
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	70 - 110	0,06 - 0,12	0,1 - 0,2	0,16 - 0,28	0,2 - 0,35
	Ductile iron	Up to 280 HB	GGG 60	0.7060	70 - 110	0,06 - 0,12	0,1 - 0,2	0,16 - 0,28	0,2 - 0,35
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	70 - 110	0,06 - 0,12	0,1 - 0,2	0,16 - 0,28	0,2 - 0,35

ATORN® Solid carbide deep drill bits TiAlNplus HPC 25D/30D



- Please adjust these guideline values according to clamping operation and machine set-up!
- **Pilot hole point angle 140°, 1-3 x D deep**

111576.... **111577....**

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm			
						3 - 5	5 - 8	8 - 10	10 - 12
P	Machining steel	Up to 700	9 SMn 28	1.0715	70 - 110	0,06 - 0,12	0,1 - 0,2	0,16 - 0,28	0,2 - 0,35
	Unalloyed structural steel	Up to 700	St-52	1.0052	70 - 110	0,06 - 0,12	0,1 - 0,2	0,16 - 0,28	0,2 - 0,35
	Structural steel	700 – 950	Ck45	1.1191	70 - 110	0,06 - 0,12	0,1 - 0,2	0,16 - 0,28	0,2 - 0,35
	Cast steel	Up to 950	GS 40	1.0416	70 - 90	0,06 - 0,1	0,1 - 0,18	0,16 - 0,24	0,2 - 0,32
	Case-hardened steel	Up to 950	16 MnCr 5	1.7131	60 - 100	0,06 - 0,1	0,1 - 0,18	0,16 - 0,24	0,2 - 0,32
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	50 - 90	0,06 - 0,1	0,1 - 0,18	0,16 - 0,24	0,2 - 0,32
M	Stainless steel, ferr./marten.	500 – 950	X10 Cr13	1.4006	40 - 60	0,06 - 0,1	0,1 - 0,18	0,16 - 0,24	0,2 - 0,32
	Stainless steel, austenitic	500 – 950	X5 CrNi 18 10	1.4301	30 - 60	0,06 - 0,1	0,1 - 0,18	0,16 - 0,24	0,2 - 0,32
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	70 - 100	0,06 - 0,12	0,1 - 0,2	0,16 - 0,28	0,2 - 0,35
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	70 - 100	0,06 - 0,12	0,1 - 0,2	0,16 - 0,28	0,2 - 0,35
	Ductile iron	Up to 280 HB	GGG 60	0.7060	70 - 100	0,06 - 0,12	0,1 - 0,2	0,16 - 0,28	0,2 - 0,35
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	70 - 100	0,06 - 0,12	0,1 - 0,2	0,16 - 0,28	0,2 - 0,35

ATORN® Solid carbide flat drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

111709.... **111710....**

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter range in mm				
						3 - 5	5.1 – 8	8.1 – 12	12.1 – 16	16.1 – 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	100	0.15	0.2	0.22	0.3	0.35
	Unalloyed structural steel	Up to 700	St-52	1.0052	90	0.15	0.2	0.22	0.3	0.35
	Structural steel	700 – 950	Ck45	1.1191	70	0.13	0.18	0.27	0.27	0.34
	Cast steel	Up to 950	GS 40	1.0416	80	0.15	0.2	0.22	0.30	0.34
	Case-hardened steel	Up to 950	16 MnCr 5	1.7131	70	0.13	0.18	0.27	0.27	0.34
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	70	0.13	0.18	0.27	0.27	0.34
M	Stainless steel, ferr./marten.	500 – 950	X 5 CrNi 18 10	1.4301	40	0.07	0.1	0.11	0.15	0.18
	Stainless steel, austenitic	500 – 950	X 12 CrMoS 17	1.4104	25	0.06	0.08	0.1	0.14	0.16
	Duplex	500 – 950	X 10 Cr 13	1.4006	25	0.06	0.08	0.1	0.14	0.16
K	Grey cast iron	100 – 400	GG 25	0.6025	90	0.15	0.2	0.22	0.3	0.34
	Alloyed grey cast iron	150-250	GGL-NiCr 35 2	0.6678	80	0.15	0.2	0.22	0.3	0.34
	Ductile iron	400 – 800	GGG 60	0.7060	80	0.15	0.2	0.22	0.3	0.34
	Malleable cast iron	350 – 700	GTS 55	0.8155	80	0.15	0.2	0.22	0.3	0.34
N	Al. alloy long-chipping	Up to 550	AlMg 3	3.3535	220	0.15	0.2	0.2	0.26	0.32
	Al. alloy short-chipping	Up to 400	G-AlSi 12	3.2581	180	0.15	0.2	0.2	0.26	0.32
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	120	0.15	0.2	0.18	0.24	0.28
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	120	0.15	0.2	0.18	0.24	0.28
	Thermoplastic		PVC		100	0.07	0.1	0.12	0.14	0.2
	Thermoset		Melamine		-	0.07	0.1	0.12	0.14	0.2
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	35	0.06	0.08	0.09	0.13	0.15
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	35	0.06	0.08	0.09	0.13	0.15
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	25	0.05	0.07	0.08	0.11	0.13

ADO

- Please adjust these guideline values according to clamping operation and machine set-up!
- **Pilot hole point angle 140°, 1-3 x D deep**



111715.... **111717....**
111716.... **111718....**

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Ø3		Ø4		Ø5		Ø6	
					Rotational speed rpm	Feed mm/rev	Rotational speed rpm	Feed mm/rev	Rotational speed rpm	Feed mm/rev	Rotational speed rpm	Feed mm/rev
P	Structural steel	700 - 950	Ck45	1.1191	7.500	0.06 - 0.12	6.400	0.08 - 0.16	5.800	0.1 - 0.2	4.800	0.12 - 0.24
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	7.500	0.06 - 0.12	6.400	0.08 - 0.16	5.800	0.1 - 0.2	4.800	0.12 - 0.24
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	5.300	0.06 - 0.12	5.000	0.08 - 0.16	4.500	0.1 - 0.2	3.800	0.12 - 0.24
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	5.300	0.06 - 0.12	5.000	0.08 - 0.16	4.500	0.1 - 0.2	3.800	0.12 - 0.24
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	7.500	0.06 - 0.12	6.400	0.08 - 0.16	5.800	0.1 - 0.2	4.800	0.12 - 0.24
	Ductile iron	Up to 280 HB	GGG 60	0.7060	7.500	0.06 - 0.12	5.600	0.08 - 0.16	4.500	0.1 - 0.2	3.800	0.12 - 0.24

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Ø8		Ø10		Ø12	
					Rotational speed rpm	Feed mm/rev	Rotational speed rpm	Feed mm/rev	Rotational speed rpm	Feed mm/rev
P	Structural steel	700 - 950	Ck45	1.1191	3.600	0.16 - 0.28	2.900	0.2 - 0.35	2.400	0.24 - 0.42
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	3.600	0.16 - 0.28	2.900	0.2 - 0.35	2.400	0.24 - 0.42
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	2.800	0.16 - 0.28	2.300	0.2 - 0.35	1.900	0.24 - 0.42
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	2.800	0.16 - 0.28	2.300	0.2 - 0.35	1.900	0.24 - 0.42
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	3.600	0.16 - 0.28	2.900	0.2 - 0.35	2.400	0.24 - 0.42
	Ductile iron	Up to 280 HB	GGG 60	0.7060	2.800	0.16 - 0.28	2.300	0.2 - 0.35	1.900	0.24 - 0.42

ADO-40D/50D solid carbide deep-hole drill bit

- Please adjust these guideline values according to clamping operation and machine set-up!

111719.... **111720....**

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm					
						3	4	5	6	8	10
P	Machining steel	Up to 700	9 SMn 28	1.0715	60 - 90	0,06 - 0,12	0,08 - 0,16	0,1 - 0,2	0,12 - 0,24	0,16 - 0,28	0,2 - 0,35
	Unalloyed structural steel	Up to 700	St-52	1.0052	60 - 90	0,06 - 0,12	0,08 - 0,16	0,1 - 0,2	0,12 - 0,24	0,16 - 0,28	0,2 - 0,35
	Structural steel	700 – 950	Ck45	1.1191	60 - 90	0,06 - 0,12	0,08 - 0,16	0,1 - 0,2	0,12 - 0,24	0,16 - 0,28	0,2 - 0,35
	Tempering steel	500 - 950	42 CrMo4	1.7225	50 - 80	0,06 - 0,12	0,08 - 0,16	0,1 - 0,2	0,12 - 0,24	0,16 - 0,28	0,2 - 0,35
	Tempering steel	950 -1300	43CrMo4	1.3563	40 - 70	0,06 - 0,11	0,08 - 0,14	0,1 - 0,17	0,12 - 0,21	0,16 - 0,24	0,2 - 0,3
	Tool steel	950 – 1400	X 38 CrMoV 5 1	1.2343	40 - 70	0,06 - 0,11	0,08 - 0,14	0,1 - 0,17	0,12 - 0,21	0,16 - 0,24	0,2 - 0,3
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	40 - 60	0,06 - 0,12	0,08 - 0,16	0,1 - 0,2	0,12 - 0,24	0,16 - 0,28	0,2 - 0,35
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	40 - 60	0,06 - 0,12	0,08 - 0,16	0,1 - 0,2	0,12 - 0,24	0,16 - 0,28	0,2 - 0,35
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	60 - 90	0,06 - 0,12	0,08 - 0,16	0,1 - 0,2	0,12 - 0,24	0,16 - 0,28	0,2 - 0,35
	Ductile iron	Up to 280 HB	GGG 60	0.7060	50 - 80	0,06 - 0,12	0,08 - 0,16	0,1 - 0,2	0,12 - 0,24	0,16 - 0,28	0,2 - 0,35

ADO-MICRO solid carbide high-performance drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

111721.... **111724....**
111722.... **111725....**
111723....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm			
						0,7	1	1,5	2
P	Machining steel	Up to 700	9 SMn 28	1.0715	20 - 60	0,007 - 0,021	0,01 - 0,03	0,015 - 0,045	0,02 - 0,06
	Unalloyed structural steel	Up to 700	St-52	1.0052	20 - 60	0,007 - 0,021	0,01 - 0,03	0,015 - 0,045	0,02 - 0,06
	Structural steel	700 – 950	Ck45	1.1191	20 - 60	0,007 - 0,021	0,01 - 0,03	0,015 - 0,045	0,02 - 0,06
	Tempering steel	500 - 950	42 CrMo4	1.7225	20 - 60	0,014 - 0,028	0,02 - 0,04	0,03 - 0,06	0,04 - 0,08
	Tempering steel	950 -1300	43CrMo4	1.3563	20 - 40	0,014 - 0,028	0,02 - 0,04	0,03 - 0,06	0,04 - 0,08
	Tool steel	950 – 1400	X 38 CrMoV 5 1	1.2343	20 - 40	0,014 - 0,028	0,02 - 0,04	0,03 - 0,06	0,04 - 0,08
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	20 - 70	0,007 - 0,021	0,01 - 0,03	0,015 - 0,045	0,02 - 0,06
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	20 - 70	0,007 - 0,021	0,01 - 0,03	0,015 - 0,045	0,02 - 0,06
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	20 - 60	0,014 - 0,028	0,02 - 0,04	0,03 - 0,06	0,04 - 0,08
	Ductile iron	Up to 280 HB	GGG 60	0.7060	30 - 50	0,014 - 0,028	0,02 - 0,04	0,03 - 0,06	0,04 - 0,08
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	20 - 60	0,007 - 0,021	0,01 - 0,03	0,015 - 0,045	0,02 - 0,06
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	30 - 70	0,014 - 0,028	0,02 - 0,04	0,03 - 0,06	0,04 - 0,08
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	40 - 60	0,011 - 0,018	0,015 - 0,025	0,023 - 0,038	0,03 - 0,05
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	5 - 15	0,004 - 0,014	0,005 - 0,02	0,008 - 0,03	0,01 - 0,04

ATORN® Solid carbide countersink



- Please adjust these guideline values according to clamping operation and machine set-up!

111013....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	85	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	80	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Ductile iron	Up to 280 HB	GGG 60	0.7060	80	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	70	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	160	0.13 - 0.16	0.16 - 0.25	0.25 - 0.32	0.32 - 0.4	0.4-0.5
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	120	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4

ATORN® Solid carbide countersink



- Please adjust these guideline values according to clamping operation and machine set-up!

111014....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
P	Cast steel	Up to 950	GS 40	1.0416	95	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	100	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	40	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	80	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	100	0.06 - 0.08	0.08 - 0.13	0.13 - 0.16	0.16 - 0.2	0.2 - 0.25
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	80	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	80	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	70	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4
	Thermoplastic		PVC		120	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25	0.25 - 0.32	0.32 - 0.4

ATORN® HIGH FEED 5D solid carbide high-performance drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

111585....

ISO	Materials group	Strength/ Hardness N/mm²	Material examples chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm					
						1 - 3	3 - 5	5 - 8	8 - 12	12 - 16	16 - 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	110 - 150	0,08 - 0,19	0,19 - 0,26	0,26 - 0,38	0,38 - 0,45	0,45 - 0,52	0,52 - 0,58
	Unalloyed structural steel	Up to 700	St-52	1.0052	120 - 160	0,08 - 0,19	0,19 - 0,26	0,26 - 0,38	0,38 - 0,45	0,45 - 0,52	0,52 - 0,58
	Structural steel	700 – 950	Ck45	1.1191	110 - 150	0,08 - 0,19	0,19 - 0,26	0,26 - 0,38	0,38 - 0,45	0,45 - 0,52	0,52 - 0,58
	Tempering steel	500 - 950	42 CrMo4	1.7225	100 - 130	0,09 - 0,22	0,22 - 0,3	0,30 - 0,44	0,44 - 0,52	0,52 - 0,60	0,60 - 0,65
	Cast steel	Up to 950	GS 40	1.0416	90 - 125	0,08 - 0,19	0,19 - 0,26	0,26 - 0,38	0,38 - 0,45	0,45 - 0,52	0,52 - 0,6
	Alloyed case-hardened steel	Up to 1200	16 MnCr 5	1.7131	90 - 130	0,08 - 0,19	0,19 - 0,26	0,26 - 0,38	0,38 - 0,45	0,45 - 0,52	0,52 - 0,6
	Tempering steel	950 -1300	43CrMo4	1.3563	50 - 100	0,09 - 0,22	0,22 - 0,3	0,30 - 0,44	0,44 - 0,52	0,52 - 0,60	0,60 - 0,65
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	100 - 130	0,09 - 0,22	0,22 - 0,3	0,30 - 0,44	0,44 - 0,52	0,52 - 0,60	0,60 - 0,65
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	40 - 80	0,06 - 0,15	0,15 - 0,2	0,2 - 0,35	0,35 - 0,4	0,4 - 0,46	0,46 - 0,51
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	85 - 130	0,2 - 0,32	0,32 - 0,38	0,38 - 0,55	0,55 - 0,65	0,65 - 0,7	0,7 - 0,75
	Ductile iron	Up to 280 HB	GGG 60	0.7060	60 - 80	0,05 - 0,12	0,12 - 0,16	0,16 - 0,27	0,27 - 0,35	0,35 - 0,45	0,45 - 0,5
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	75 - 115	0,15 - 0,29	0,29 - 0,35	0,35 - 0,5	0,5 - 0,6	0,6 - 0,65	0,65 - 0,7

ATORN® Solid carbide drill reamer



- Please adjust these guideline values according to clamping operation and machine set-up!

111701....

ISO	Materials group	Strength/ Hardness N/mm²	Material examples chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	65	0.15	0.18	0.24	0.37	0.4
	Unalloyed structural steel	Up to 700	St-52	1.0052	70	0.15	0.18	0.24	0.37	0.4
	Structural steel	700 – 950	Ck45	1.1191	55	0.15	0.18	0.24	0.37	0.4
	Cast steel	Up to 950	GS 40	1.0416	50	0.15	0.18	0.24	0.37	0.4
	Alloyed case-hardened steel	Up to 950	16 MnCr 5	1.7131	55	0.15	0.18	0.24	0.37	0.4
	Tool steel	950 – 1400	X 38 CrMoV 5 1	1.2343	55	0.15	0.18	0.24	0.37	0.4
K	Grey cast iron	100 – 400	GG 25	0.6025	60	0.15	0.18	0.24	0.37	0.4
	Alloyed grey cast iron	150-250	GGL-NiCr 35 2	0.6678	50	0.15	0.18	0.24	0.37	0.4
	Ductile iron	400 – 800	GGG 60	0.7060	50	0.15	0.18	0.24	0.37	0.4
	Malleable cast iron	350 – 700	GTS 55	0.8155	50	0.15	0.18	0.24	0.37	0.4

ADO-SUS-3D/5D solid carbide high-performance drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

111613.... 111615....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm							
						3	4	5	6	7	8	9	10
P	Machining steel	Up to 700	9 SMn 28	1.0715	80-120	0.06 - 0.12	0.08 - 0.16	0.1 - 0.2	0.12 - 0.24	0.14 - 0.26	0.16 - 0.28	0.18 - 0.3	0.2 - 0.3
	Unalloyed structural steel	Up to 700	St-52	1.0052	80-120	0.06 - 0.12	0.08 - 0.16	0.1 - 0.2	0.12 - 0.24	0.14 - 0.26	0.16 - 0.28	0.18 - 0.3	0.2 - 0.3
	Structural steel	700 - 950	Ck45	1.1191	80-120	0.06 - 0.12	0.08 - 0.16	0.1 - 0.2	0.12 - 0.24	0.14 - 0.26	0.16 - 0.28	0.18 - 0.3	0.2 - 0.3
	Tempering steel	950 -1300	43CrMo4	1.3563	60 - 90	0.06 - 0.12	0.08 - 0.16	0.1 - 0.2	0.12 - 0.24	0.14 - 0.26	0.16 - 0.28	0.18 - 0.3	0.2 - 0.3
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	60 - 100	0.06 - 0.12	0.08 - 0.16	0.1 - 0.2	0.12 - 0.24	0.14 - 0.26	0.16 - 0.28	0.18 - 0.3	0.2 - 0.3
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	60 - 100	0.06 - 0.12	0.08 - 0.16	0.1 - 0.2	0.12 - 0.24	0.14 - 0.26	0.16 - 0.28	0.18 - 0.3	0.2 - 0.3
	Duplex	700 - 950	X2 CrNiMoN 22-5-3	1.4462	30 - 60	0.06 - 0.09	0.08 - 0.12	0.1 - 0.15	0.12 - 0.18	0.14 - 0.21	0.16 - 0.24	0.18 - 0.27	0.2 - 0.3
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	20-50	0.05 - 0.09	0.06 - 0.12	0.08 - 0.15	0.09 - 0.18	0.11 - 0.21	0.12 - 0.24	0.14 - 0.27	0.15 - 0.3
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	20-50	0.05 - 0.09	0.06 - 0.12	0.08 - 0.15	0.09 - 0.18	0.11 - 0.21	0.12 - 0.24	0.14 - 0.27	0.15 - 0.3

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm						
						11	12	13	14	16	18	20
P	Machining steel	Up to 700	9 SMn 28	1.0715	80-120	0.2 - 0.3	0.21 - 0.3	0.21 - 0.33	0.22 - 0.35	0.25 - 0.36	0.28 - 0.38	0.3 - 0.4
	Unalloyed structural steel	Up to 700	St-52	1.0052	80-120	0.2 - 0.3	0.21 - 0.3	0.21 - 0.33	0.22 - 0.35	0.25 - 0.36	0.28 - 0.38	0.3 - 0.4
	Structural steel	700 - 950	Ck45	1.1191	80-120	0.2 - 0.3	0.21 - 0.3	0.21 - 0.33	0.22 - 0.35	0.25 - 0.36	0.28 - 0.38	0.3 - 0.4
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	60 - 100	0.2 - 0.3	0.21 - 0.3	0.21 - 0.33	0.22 - 0.35	0.25 - 0.36	0.28 - 0.38	0.3 - 0.4
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	60 - 100	0.2 - 0.3	0.21 - 0.3	0.21 - 0.33	0.22 - 0.35	0.25 - 0.36	0.28 - 0.38	0.3 - 0.4
	Duplex	700 - 950	X2 CrNiMoN 22-5-3	1.4462	30 - 60	0.2 - 0.3	0.21 - 0.3	0.21 - 0.33	0.22 - 0.35	0.25 - 0.36	0.28 - 0.38	0.3 - 0.4
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	20-50	0.15 - 0.3	0.16 - 0.3	0.18 - 0.33	0.19 - 0.35	0.22 - 0.36	0.24 - 0.38	0.27 - 0.4
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	20-50	0.15 - 0.3	0.16 - 0.3	0.18 - 0.33	0.19 - 0.35	0.22 - 0.36	0.24 - 0.38	0.27 - 0.4

ADF-2D solid carbide flat drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

111711....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm					
						2	3	4	6	8	10
P	Machining steel	Up to 700	9 SMn 28	1.0715	60 - 100	0.01 - 0.06	0.015 - 0.09	0.02 - 0.12	0.03 - 0.18	0.04 - 0.24	0.05 - 0.3
	Tempering steel	500 - 950	42 CrMo4	1.7225	60 - 100	0.01 - 0.06	0.015 - 0.09	0.02 - 0.12	0.03 - 0.18	0.04 - 0.24	0.05 - 0.3
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	30 - 90	0.01 - 0.06	0.015 - 0.09	0.02 - 0.12	0.03 - 0.18	0.04 - 0.24	0.05 - 0.3
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	20 - 40	0.01 - 0.04	0.015 - 0.06	0.02 - 0.08	0.03 - 0.12	0.04 - 0.16	0.05 - 0.2
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	60 - 120	0.01 - 0.06	0.015 - 0.09	0.02 - 0.12	0.03 - 0.18	0.04 - 0.24	0.05 - 0.3
	Ductile iron	Up to 280 HB	GGG 60	0.7060	50 - 80	0.01 - 0.06	0.015 - 0.09	0.02 - 0.12	0.03 - 0.18	0.04 - 0.24	0.05 - 0.3
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	80 - 200	0.01 - 0.06	0.015 - 0.09	0.02 - 0.12	0.03 - 0.18	0.04 - 0.24	0.05 - 0.3
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	80 - 200	0.01 - 0.06	0.015 - 0.09	0.02 - 0.12	0.03 - 0.18	0.04 - 0.24	0.05 - 0.3
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	20 - 30	0.01 - 0.03	0.015 - 0.045	0.02 - 0.06	0.03 - 0.09	0.04 - 0.12	0.05 - 0.15

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						12	14	16	18	20
P	Machining steel	Up to 700	9 SMn 28	1.0715	60 - 100	0.06 - 0.3	0.07 - 0.35	0.08 - 0.36	0.09 - 0.38	0.1 - 0.4
	Tempering steel	500 - 950	42 CrMo4	1.7225	60 - 100	0.06 - 0.3	0.07 - 0.35	0.08 - 0.36	0.09 - 0.38	0.1 - 0.4
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	30 - 90	0.06 - 0.3	0.07 - 0.35	0.08 - 0.36	0.09 - 0.38	0.1 - 0.4
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	20 - 40	0.06 - 0.24	0.07 - 0.28	0.08 - 0.32	0.09 - 0.36	0.1 - 0.4
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	60 - 120	0.06 - 0.3	0.07 - 0.35	0.08 - 0.36	0.09 - 0.38	0.1 - 0.4
	Ductile iron	Up to 280 HB	GGG 60	0.7060	50 - 80	0.06 - 0.3	0.07 - 0.35	0.08 - 0.36	0.09 - 0.38	0.1 - 0.4
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	80 - 200	0.06 - 0.36	0.07 - 0.42	0.08 - 0.48	0.09 - 0.54	0.1 - 0.60
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	80 - 200	0.06 - 0.36	0.07 - 0.42	0.08 - 0.48	0.09 - 0.54	0.1 - 0.60
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	20 - 30	0.06 - 0.18	0.07 - 0.21	0.08 - 0.24	0.09 - 0.27	0.1 - 0.3

ATORN® Solid carbide short step drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

102202....

ISO	Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm			
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16
P	Machining steel	Up to 700	9 SMn 28	1.0715	75	0.1	0.15	0.190	0.21
	Unalloyed structural steel	Up to 700	St-52	1.0052	75	0.1	0.15	0.190	0.21
	Structural steel	700 - 950	Ck45	1.1191	60	0.1	0.12	0.153	0.17
	Cast steel	Up to 950	GS 40	1.0416	60	0.18	0.24	0.37	0.34
	Alloyed case-hardened steel	Up to 950	16 MnCr 5	1.7131	60	0.1	0.12	0.153	0.17
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	60	0.1	0.12	0.153	0.17
M	Stainless steel, ferr./marten.	500 - 950	X 10 Cr 13	1.4006	25	0.08	0.11	0.143	0.16
	Stainless steel, austenitic	500 - 950	X 12 CrMoS 17	1.4104	30	0.09	0.12	0.16	0.18
K	Grey cast iron	100 - 400	GG 25	0.6025	70	0.18	0.24	0.37	0.34
	Alloyed grey cast iron	150-250	GGL-NiCr 35 2	0.6678	60	0.18	0.24	0.37	0.34
	Ductile iron	400 - 800	GGG 60	0.7060	60	0.18	0.24	0.37	0.34
	Malleable cast iron	350 - 700	GTS 55	0.8155	60	0.18	0.24	0.37	0.34
N	Al. alloy long-chipping	Up to 550	AlMg 3	3.3535	200	0.14	0.2	0.28	0.32
	Al. alloy short-chipping	Up to 400	G-AlSi 12	3.2581	180	0.14	0.2	0.28	0.32
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	80	0.11	0.18	0.247	0.28
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	80	0.11	0.18	0.247	0.28
	Thermoplastic		PVC		40	0.08	0.14	0.18	0.2
	Thermoset		Melamine		40	0.08	0.14	0.18	0.2
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	35	0.06	0.1	0.133	0.15
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	35	0.06	0.1	0.133	0.15
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	25	0.1	0.12	0.153	0.17



102211....

ISO	Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm		
						3 - 5	5.1 - 8	8.1 - 12
P	Machining steel	Up to 700	9 SMn 28	1.0715	75	0.1	0.125	0.18
	Unalloyed structural steel	Up to 700	St-52	1.0052	75	0.1	0.125	0.18
	Structural steel	700 - 950	Ck45	1.1191	60	0.1	0.11	0.145
	Alloyed case-hardened steel	Up to 950	16 MnCr 5	1.7131	60	0.1	0.11	0.145
	Cast steel	Up to 950	GS 40	1.0416	60	0.18	0.21	0.29
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	60	0.1	0.11	0.145
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	25	0.08	0.095	0.135
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	25	0.08	0.095	0.135
K	Grey cast iron	100 - 400	GG 25	0.6025	70	0.18	0.21	0.29
	Alloyed grey cast iron	150-250	GGL-NiCr 35 2	0.6678	60	0.18	0.21	0.29
	Ductile iron	400 - 800	GGG 60	0.7060	60	0.18	0.21	0.29
	Malleable cast iron	350 - 700	GTS 55	0.8155	60	0.18	0.21	0.29
N	Al. alloy long-chipping	Up to 550	AlMg 3	3.3535	200	0.14	0.17	0.26
	Al. alloy short-chipping	Up to 400	G-AlSi 12	3.2581	180	0.14	0.17	0.26
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	80	0.110	0.145	0.23
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	80	0.110	0.145	0.23
	Thermoplastic	40 - 70	PVC		40	0.08	0.11	0.17
	Thermoset	20 - 40	Melamine		40	0.08	0.11	0.17
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	35	0.06	0.08	0.125

HSS core drill bit



- Please adjust these guideline values according to manufacturer specifications, clamping operation and machine set-up.

100601.... **100602....**

Cooling with air, drilling emulsion or cutting oil

	Unalloyed steel Up to 700 N/mm²	Alloyed steel, stainless steels Up to 1000 N/mm²	Aluminium alloy
Cutting speed Vc m/min	30	20	30

HSS cutting inserts, Series Y to 2



- Please adjust these guideline values according to manufacturer specifications, clamping operation and machine set-up!
- As starting values, we recommend reducing the specified cutting data by 20%.

- **Note:** The recommended cutting speeds for AM200-coated cutting inserts are based on a rule of thumb of data and apply under optimum conditions. In many applications the optimum conditions are not present. Thus it is necessary to adapt the cutting speed to the respective circumstances. We are happy to provide technical support for your specific application.

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm			
						9.5 - 12.95	12.98 - 17.53	17.53 - 24.38	24.41 - 35
P	Machining steel	Up to 700	9 SMn 28	1.0715	75	0.15	0.23	0.33	0.41
P	Unalloyed structural steel	Up to 700	St-52	1.0052	56	0.15	0.25	0.33	0.38
P	Structural steel	700 - 950	Ck45	1.1191	66	0.13	0.2	0.3	0.38
P	Tempering steel	500 - 950	42 CrMo4	1.7225	56	0.13	0.2	0.3	0.38
P	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	59	0.15	0.23	0.33	0.41
P	Nitriding steel	950 - 1300	31CrMoV9	1.8519	23	0.1	0.18	0.23	0.28
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	30	0.1	0.18	0.25	0.3
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	29	0.15	0.2	0.28	0.3
M	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	34	0.18	0.23	0.3	0.36
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	82	0.2	0.3	0.41	0.51
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	66	0.15	0.23	0.33	0.43
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	44	0.13	0.18	0.25	0.28
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	12	0.1	0.15	0.2	0.25
S	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	14	0.1	0.18	0.23	0.28

Formulae:

Rotational speed:

$$n = \frac{Vc \times 1000}{\pi \times D} \quad (rpm)$$

Cutting speed:

$$Vc = \frac{n \times \pi \times D}{1000} \quad (m/min)$$

Feed rate:

$$V_f = f \times n \quad (mm/min)$$

Multiplier for cutting speed and feed for various tool lengths

	Tool length							
	Extra-short	Short	Medium-length	Standard	Extra-long	Ultra-long	XL	3XL
Cutting speed	See table	See table	See table	See table	x 0.90	x 0.85	x 0.80	x 0.75
Feed	See table	See table	See table	See table	See table	x 0.95	x 0.90	x 0.90

Carbide cutting inserts, Series Y to 2



105146.... **105341....**
105241.... **105446....**
105546....

- Please adjust these guideline values according to manufacturer specifications, clamping operation and machine set-up!
- As starting values, we recommend reducing the specified cutting data by 20%.

- **Note:** The recommended cutting speeds for AM200-coated cutting inserts are based on a rule of thumb of data and apply under optimum conditions. In many applications the optimum conditions are not present. Thus it is necessary to adapt the cutting speed to the respective circumstances. We are happy to provide technical support for your specific application.

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm			
						9.5 - 12.5	13 - 17.5	17.86 - 24	25 - 35
P	Machining steel	Up to 700	9 SMn 28	1.0715	108	0.15	0.23	0.33	0.41
	Unalloyed structural steel	Up to 700	St-52	1.0052	87	0.15	0.25	0.33	0.38
	Structural steel	700 - 950	Ck45	1.1191	80	0.13	0.2	0.3	0.38
	Tempering steel	500 - 950	42 CrMo4	1.7225	87	0.13	0.2	0.3	0.38
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	95	0.15	0.23	0.33	0.41
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	56	0.1	0.18	0.23	0.28
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	59	0.1	0.18	0.25	0.3
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	56	0.15	0.2	0.28	0.3
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	73	0.18	0.23	0.3	0.36
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	152	0.2	0.3	0.38	0.48
	Ductile iron	Up to 280 HB	GGG 60	0.7060	131	0.15	0.23	0.3	0.38
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	102	0.13	0.18	0.25	0.28
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	29	0.1	0.15	0.2	0.25
	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	37	0.1	0.18	0.23	0.28

Formulae:

Rotational speed:

$$n = \frac{Vc \times 1000}{\pi \times D} \quad (rpm)$$

Cutting speed:

$$Vc = \frac{n \times \pi \times D}{1000} \quad (m/min)$$

Feed rate:

$$V_f = f \times n \quad (mm/min)$$

Multiplier for cutting speed and feed for various tool lengths

	Tool length							
	Extra-short	Short	Medium-length	Standard	Extra-long	Ultra-long	XL	3XL
Cutting speed	See table	See table	See table	See table	-	-	-	-
Feed	See table	See table	See table	See table	-	-	-	-

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HSS cutting inserts, Series 3 to 8



- Please adjust these guideline values according to manufacturer specifications, clamping operation and machine set-up!
- As starting values, we recommend reducing the specified cutting data by 20%.

- **Note:** The recommended cutting speeds for AM200-coated cutting inserts are based on a rule of thumb of data and apply under optimum conditions. In many applications the optimum conditions are not present. Thus it is necessary to adapt the cutting speed to the respective circumstances. We are happy to provide technical support for your specific application.

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm		
						35 - 47.8	47.85 - 65	66 - 114.48
P	Machining steel	Up to 700	9 SMn 28	1.0715	79	0.46	0.53	0.61
P	Unalloyed structural steel	Up to 700	St-52	1.0052	57	0.41	0.48	0.61
P	Structural steel	700 - 950	Ck45	1.1191	68	0.41	0.48	0.56
P	Tempering steel	500 - 950	42 CrMo4	1.7225	59	0.38	0.43	0.51
P	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	64	0.43	0.48	0.56
P	Nitriding steel	950 - 1300	31CrMoV9	1.8519	24	0.3	0.41	0.46
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	32	0.3	0.38	0.43
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	32	0.3	0.36	0.46
M	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	36	0.36	0.41	0.51
M	Duplex	700 - 950	X2 CrNiMoN 22-5-3	1.4462	22	0.3	0.36	0.46
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	84	0.61	0.69	0.76
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	68	0.46	0.53	0.61
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	47	0.28	0.36	0.41
N	Al. alloy long-chipping	Up to 550	AlMg 3	3.3535	-	0.56	0.64	0.64
N	Al. alloy short-chipping	Up to 400	G-AlSi 12	3.2581	-	0.56	0.64	0.64
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	15	0.25	0.3	0.3
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	12	0.25	0.3	0.3
S	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	13	0.3	0.38	0.38
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	29	0.3	0.41	0.46
H	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	14	0.25	0.3	0.4

Formulae:

Rotational speed:

$$n = \frac{Vc \times 1000}{\pi \times D} \quad (rpm)$$

Cutting speed:

$$Vc = \frac{n \times \pi \times D}{1000} \quad (m/min)$$

Feed rate:

$$V_f = f \times n \quad (mm/min)$$

Multiplier for cutting speed and feed for various tool lengths

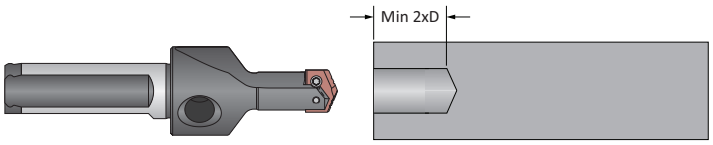
	Tool length							
	Extra-short	Short	Medium-length	Standard	Extra-long	Ultra-long	XL	3XL
Cutting speed	See table	See table	See table	See table	x 0.90	x 0.85	x 0.80	x 0.75
Feed	See table	See table	See table	See table	See table	x 0.95	x 0.90	x 0.90

Machining notes drilling system T-A®

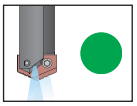
- Please adjust these guideline values according to clamping operation and machine set-up!
- **Note:** Tool breakage can cause serious damage. Without support bushings, please pre-drill a pilot bore 2-3xD deep with a short holder. The rotational speed of the tool outside the component may not exceed 50 rpm.

1. **Pilot bore**
   100 % rpm
   100 % mm/rev

Pre-drill a pilot bore of at least 2xD deep using the AMEC® pilot drill bit.
Use a short AMEC® pilot drill bit with an equal or greater point angle.

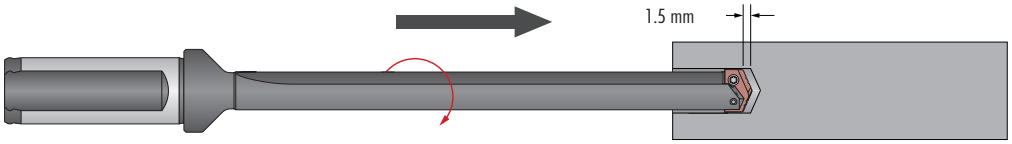


With cooling

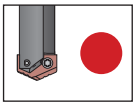


2. **Insert the deep-hole drill bit into the pilot bore**
   50 rpm max
   300 mm/min

Position the AMEC® deep-hole drill bit up to 1.5 mm from the root of the pilot bore with max. 50 rpm (clockwise rotation) and with a feed of 300 mm/min.

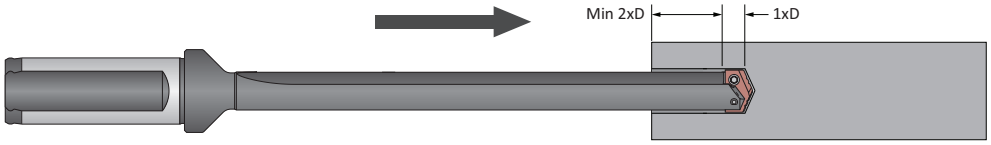


Without cooling

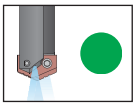


3. **Deep-hole drilling - Between-drilling**
   50 % rpm
   75 % mm/rev

Drill 1xD beyond the root of the pilot bore. Reduce cutting speed by 50 % and reduce feed by 25 %. At least 1 seconds' dwell time is required prior to further machining to reach full speed (prevents vibration).

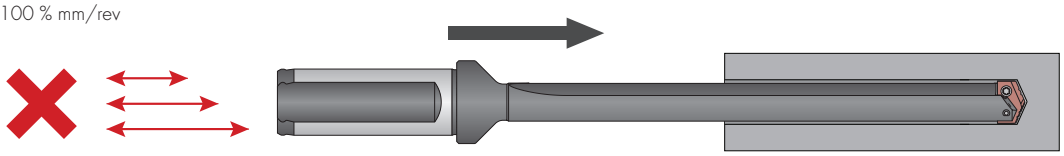


With cooling

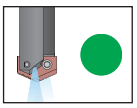


4. **Deep-hole drilling bit - Blind hole**
   100 % rpm
   100 % mm/rev

Drill to the full depth using the recommended cutting data.
Clamping cycles not recommended.

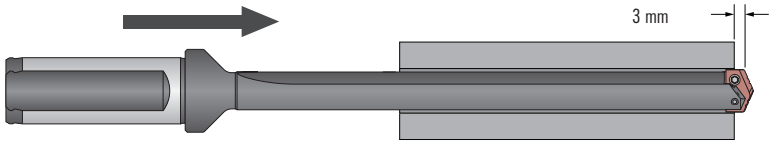


With cooling

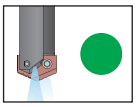


5. **Deep-hole drilling bit - Through-hole**
   50 % rpm
   75 % mm/rev

Only for through-holes:
Reduce cutting speed by 50 % and reduce feed by 25 % before exit.
Use no more than 3 mm beyond the full diameter.

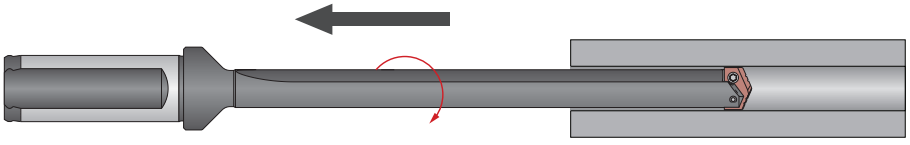


With cooling

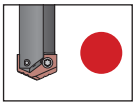


6. **Retracting the drill bit**
   50 rpm max

Reduction of the rotational speed to **max. 50 rpm** before the AMEC® drill bit is retracted from the hole.



Without cooling



palbit CHT Indexable inserts-NC spotting drill bits



- Please adjust these guideline values according to clamping operation and machine set-up!

100800.... **100802....**
100801....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz mm/tooth
					PH7920	SOMT 11T308
P	Unalloyed structural steel	Up to 700	St-52	1.0052	120 - 150	0,04 - 0,08
P	Tempering steel	500 - 950	42 CrMo4	1.7225	100 - 120	0,03 - 0,07
P	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	60 - 100	0,03 - 0,06
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	100 - 150	0,04 - 0,07
M	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	80 - 120	0,03 - 0,06
M	Duplex	700 - 950	x 2 CrNiMoN 22-5-3	1.4462	50 - 90	0,03 - 0,06
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	90 - 150	0,05 - 0,1
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	80 - 120	0,05 - 0,08
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	70 - 110	0,04 - 0,08

ATORN® ETD 840 Indexable insert drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

106003.... **106005....**
106007....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min 3 x D	Cutting speed Vc m/min 5 x D	Cutting speed Vc m/min 7 x D	Feed f in mm/rev in relation to drill bit diameter in mm			
								8 - 12	12 - 20	20 - 31.5	31.5 - 40
P	Machining steel	Up to 700	9 SMn 28	1.0715	100 - 110	100 - 105	85 - 100	0.2 - 0.25	0.25 - 0.4	0.4 - 0.5	0.5 - 0.63
P	Unalloyed structural steel	Up to 700	St-52	1.0052	100 - 110	100 - 105	85 - 100	0.2 - 0.25	0.25 - 0.4	0.4 - 0.5	0.5 - 0.63
P	Structural steel	700 - 950	Ck45	1.1191	85 - 110	85 - 105	85 - 100	0.16 - 0.2	0.2 - 0.315	0.315 - 0.4	0.4 - 0.5
P	Tempering steel	500 - 950	42 CrMo4	1.7225	85 - 110	85 - 105	85 - 100	0.16 - 0.2	0.2 - 0.315	0.315 - 0.4	0.4 - 0.5
P	Cast steel	Up to 950	GS 40	1.0416	85 - 100	85 - 105	85 - 100	0.16 - 0.2	0.2 - 0.315	0.315 - 0.4	0.4 - 0.5
P	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	85 - 110	85 - 105	85 - 100	0.16 - 0.2	0.2 - 0.315	0.315 - 0.4	0.4 - 0.5
P	Tempering steel	950 -1300	43CrMo4	1.3563	70 - 80	50 - 55	35 - 45	0.16 - 0.2	0.2 - 0.315	0.315 - 0.4	0.4 - 0.5
P	Nitriding steel	950 - 1300	31CrMoV9	1.8519	55 - 60	50 - 55	35 - 45	0.125 - 0.16	0.16 - 0.25	0.25 - 0.315	0.315 - 0.4
P	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	30 - 35	25 - 30	25 - 30	0.125 - 0.16	0.16 - 0.25	0.25 - 0.315	0.315 - 0.4
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	30 - 40	30 - 35	25 - 30	0.1 - 0.125	0.125 - 0.2	0.2 - 0.25	0.25 - 0.315
M	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	25 - 35	20 - 30	20 - 25	0.1 - 0.125	0.125 - 0.2	0.2 - 0.25	0.25 - 0.315
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	120 - 210	120 - 200	120 - 180	0.25 - 0.315	0.315 - 0.5	0.5 - 0.63	0.63 - 0.8
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	120 - 155	120 - 145	120 - 135	0.2 - 0.25	0.25 - 0.4	0.4 - 0.5	0.5 - 0.63
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	100 - 130	100 - 120	100 - 110	0.2 - 0.25	0.25 - 0.4	0.4 - 0.5	0.5 - 0.63
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	220 - 300	210 - 270	200 - 260	0.25 - 0.315	0.315 - 0.5	0.5 - 0.63	0.63 - 0.8
N	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	220 - 280	200 - 260	200 - 250	0.25 - 0.315	0.315 - 0.5	0.5 - 0.63	0.63 - 0.8
N	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	200 - 240	180 - 220	180 - 210	0.2 - 0.25	0.25 - 0.4	0.4 - 0.5	0.5 - 0.63
N	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	200 - 240	180 - 220	180 - 210	0.2 - 0.25	0.25 - 0.4	0.4 - 0.5	0.5 - 0.63
N	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	200 - 240	180 - 220	180 - 210	0.2 - 0.25	0.25 - 0.4	0.4 - 0.5	0.5 - 0.63
N	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	200 - 240	180 - 220	180 - 210	0.2 - 0.25	0.25 - 0.4	0.4 - 0.5	0.5 - 0.63
N	Thermoplastic		PVC		200 - 240	180 - 220	180 - 210	0.2 - 0.25	0.25 - 0.4	0.4 - 0.5	0.5 - 0.63
N	Thermoset		Melamine		200 - 240	180 - 220	180 - 210	0.2 - 0.25	0.25 - 0.4	0.4 - 0.5	0.5 - 0.63
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	30 - 40	30 - 35	25 - 30	0.1 - 0.125	0.125 - 0.2	0.2 - 0.25	0.25 - 0.315
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	25 - 35	30 - 35	25 - 30	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25
S	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	20 - 25	20 - 22	18 - 22	0.08 - 0.1	0.1 - 0.16	0.16 - 0.2	0.2 - 0.25

SARA® SARADRILL solid drilling tool



- Please adjust these guideline values according to clamping operation and machine set-up!

104501.... **104550....**
104555....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						49 - 65	65 - 100	100 - 150	150 - 210	210-270
P	Machining steel	Up to 700	9 SMn 28	1.0715	25 - 35	0.16 - 0.2	0.16 - 0.2	0.16 - 0.2	0.16 - 0.2	0.16 - 0.2
P	Unalloyed structural steel	Up to 700	St-52	1.0052	25 - 35	0.16 - 0.2	0.16 - 0.2	0.16 - 0.2	0.16 - 0.2	0.16 - 0.2
P	Structural steel	700 - 950	Ck45	1.1191	18 - 22	0.16 - 0.2	0.16 - 0.2	0.16 - 0.2	0.16 - 0.2	0.16 - 0.2
P	Cast steel	Up to 950	GS 40	1.0416	25 - 30	0.12 - 0.18	0.12 - 0.18	0.12 - 0.18	0.12 - 0.18	0.12 - 0.18
P	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	15 - 25	0.12 - 0.18	0.12 - 0.18	0.12 - 0.18	0.12 - 0.18	0.12 - 0.18
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	15 - 25	0.12 - 0.16	0.12 - 0.16	0.12 - 0.16	0.12 - 0.16	0.12 - 0.16
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	15-20	0.16 - 0.2	0.16 - 0.2	0.16 - 0.2	0.16 - 0.2	0.16 - 0.2
M	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	10 - 12	0.12 - 0.15	0.12 - 0.15	0.12 - 0.15	0.12 - 0.15	0.12 - 0.15
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	20- 25	0.15 - 0.18	0.15 - 0.18	0.15 - 0.18	0.15 - 0.18	0.15 - 0.18
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	20- 25	0.15 - 0.18	0.15 - 0.18	0.15 - 0.18	0.15 - 0.18	0.15 - 0.18
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	50 - 70	0.16 - 0.2	0.16 - 0.2	0.16 - 0.2	0.16 - 0.2	0.16 - 0.2

PXD Indexable insert drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

125303.... **125305....**

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm					
						14	15	16	17	18	19
P	Machining steel	Up to 700	9 SMn 28	1.0715	80 - 120	0,21 - 0,35	0,23 - 0,38	0,24 - 0,4	0,26 - 0,43	0,27 - 0,45	0,29 - 0,48
	Unalloyed structural steel	Up to 700	St-52	1.0052	80 - 120	0,21 - 0,35	0,23 - 0,38	0,24 - 0,4	0,26 - 0,43	0,27 - 0,45	0,29 - 0,48
	Structural steel	700 - 950	Ck45	1.1191	60 - 120	0,21 - 0,35	0,23 - 0,38	0,24 - 0,4	0,26 - 0,43	0,27 - 0,45	0,29 - 0,48
	Tempering steel	500 - 950	42 CrMo4	1.7225	60 - 120	0,21 - 0,35	0,23 - 0,38	0,24 - 0,4	0,26 - 0,43	0,27 - 0,45	0,29 - 0,48
	Tempering steel	950 -1300	43CrMo4	1.3563	60 - 120	0,21 - 0,35	0,23 - 0,38	0,24 - 0,4	0,26 - 0,43	0,27 - 0,45	0,29 - 0,48
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	60 - 120	0,21 - 0,35	0,23 - 0,38	0,24 - 0,4	0,26 - 0,43	0,27 - 0,45	0,29 - 0,48
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	60 - 120	0,21 - 0,35	0,23 - 0,38	0,24 - 0,4	0,26 - 0,43	0,27 - 0,45	0,29 - 0,48
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	80 - 120	0,21 - 0,35	0,23 - 0,38	0,24 - 0,4	0,26 - 0,43	0,27 - 0,45	0,29 - 0,48
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	80 - 120	0,21 - 0,35	0,23 - 0,38	0,24 - 0,4	0,26 - 0,43	0,27 - 0,45	0,29 - 0,48
	Ductile iron	Up to 280 HB	GGG 60	0.7060	60 - 100	0,21 - 0,35	0,23 - 0,38	0,24 - 0,4	0,26 - 0,43	0,27 - 0,45	0,29 - 0,48
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	60 - 100	0,21 - 0,35	0,23 - 0,38	0,24 - 0,4	0,26 - 0,43	0,27 - 0,45	0,29 - 0,48
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	80 - 180	0,28 - 0,42	0,3 - 0,45	0,32 - 0,48	0,34 - 0,51	0,36 - 0,54	0,38 - 0,57
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	80 - 180	0,28 - 0,42	0,3 - 0,45	0,32 - 0,48	0,34 - 0,51	0,36 - 0,54	0,38 - 0,57
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	80 - 180	0,28 - 0,42	0,3 - 0,45	0,32 - 0,48	0,34 - 0,51	0,36 - 0,54	0,38 - 0,57
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	80 - 180	0,28 - 0,42	0,3 - 0,45	0,32 - 0,48	0,34 - 0,51	0,36 - 0,54	0,38 - 0,57
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	80 - 180	0,28 - 0,42	0,3 - 0,45	0,32 - 0,48	0,34 - 0,51	0,36 - 0,54	0,38 - 0,57
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	80 - 180	0,28 - 0,42	0,3 - 0,45	0,32 - 0,48	0,34 - 0,51	0,36 - 0,54	0,38 - 0,57

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm					
						20	21	22	23	24	25
P	Machining steel	Up to 700	9 SMn 28	1.0715	80 - 120	0,3 - 0,5	0,32 - 0,53	0,33 - 0,55	0,35 - 0,58	0,36 - 0,6	0,38 - 0,63
	Unalloyed structural steel	Up to 700	St-52	1.0052	80 - 120	0,3 - 0,5	0,32 - 0,53	0,33 - 0,55	0,35 - 0,58	0,36 - 0,6	0,38 - 0,63
	Structural steel	700 - 950	Ck45	1.1191	60 - 120	0,3 - 0,5	0,32 - 0,53	0,33 - 0,55	0,35 - 0,58	0,36 - 0,6	0,38 - 0,63
	Tempering steel	500 - 950	42 CrMo4	1.7225	60 - 120	0,3 - 0,5	0,32 - 0,53	0,33 - 0,55	0,35 - 0,58	0,36 - 0,6	0,38 - 0,63
	Tempering steel	950 -1300	43CrMo4	1.3563	60 - 120	0,3 - 0,5	0,32 - 0,53	0,33 - 0,55	0,35 - 0,58	0,36 - 0,6	0,38 - 0,63
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	60 - 120	0,3 - 0,5	0,32 - 0,53	0,33 - 0,55	0,35 - 0,58	0,36 - 0,6	0,38 - 0,63
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	60 - 120	0,3 - 0,5	0,32 - 0,53	0,33 - 0,55	0,35 - 0,58	0,36 - 0,6	0,38 - 0,63
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	80 - 120	0,3 - 0,5	0,32 - 0,53	0,33 - 0,55	0,35 - 0,58	0,36 - 0,6	0,38 - 0,63
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	80 - 120	0,3 - 0,5	0,32 - 0,53	0,33 - 0,55	0,35 - 0,58	0,36 - 0,6	0,38 - 0,63
	Ductile iron	Up to 280 HB	GGG 60	0.7060	60 - 100	0,3 - 0,5	0,32 - 0,53	0,33 - 0,55	0,35 - 0,58	0,36 - 0,6	0,38 - 0,63
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	60 - 100	0,3 - 0,5	0,32 - 0,53	0,33 - 0,55	0,35 - 0,58	0,36 - 0,6	0,38 - 0,63
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	80 - 180	0,4 - 0,6	0,42 - 0,63	0,44 - 0,66	0,46 - 0,69	0,48 - 0,72	0,5 - 0,75
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	80 - 180	0,4 - 0,6	0,42 - 0,63	0,44 - 0,66	0,46 - 0,69	0,48 - 0,72	0,5 - 0,75
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	80 - 180	0,4 - 0,6	0,42 - 0,63	0,44 - 0,66	0,46 - 0,69	0,48 - 0,72	0,5 - 0,75
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	80 - 180	0,4 - 0,6	0,42 - 0,63	0,44 - 0,66	0,46 - 0,69	0,48 - 0,72	0,5 - 0,75
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	80 - 180	0,4 - 0,6	0,42 - 0,63	0,44 - 0,66	0,46 - 0,69	0,48 - 0,72	0,5 - 0,75
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	80 - 180	0,4 - 0,6	0,42 - 0,63	0,44 - 0,66	0,46 - 0,69	0,48 - 0,72	0,5 - 0,75





PALBIT
Machining tools
411 pages
Art.no. 019900 0315

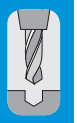
Overview of all free manufacturers' catalogues
on page 14/15

PHOENIX PD Indexable inserts solid drill bit



- Please adjust these guideline values according to clamping operation and machine set-up!

124202.... 124203....
124204.... 124205....



2 x D, 3 x D

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm							
						12 - 14,5	15 - 16.5	17 - 18.5	19 - 20.5	21 - 24.5	25 - 28.5	29 - 33.5	34 - 63
P	Machining steel	Up to 700	9 SMn 28	1.0715	150 - 250	0,04 - 0,08	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1	0.04 - 0.12	0.04 - 0.12	0.05 - 0.15	0.05 - 0.18
	Structural steel	700 - 950	Ck45	1.1191	150 - 250	0,04 - 0,08	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1	0.04 - 0.12	0.04 - 0.12	0.05 - 0.15	0.05 - 0.18
	Tempering steel	500 - 950	42 CrMo4	1.7225	100 - 220	0,04 - 0,12	0.04 – 0.14	0.04 - 0.16	0.04 - 0.18	0.04 - 0.2	0.06 - 0.25	0.08 - 0.3	0.08 - 0.35
	Tempering steel	950 -1300	43CrMo4	1.3563	80 - 180	0,04 - 0,08	0.04 - 0.1	0.04 - 0.1	0.04 - 0.12	0.04 - 0.15	0.06 - 0.2	0.08 - 0.25	0.08 - 0.25
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	80 - 180	0,04 - 0,08	0.04 - 0.1	0.04 - 0.1	0.04 - 0.12	0.04 - 0.15	0.06 - 0.2	0.08 - 0.25	0.08 - 0.25
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	80 - 180	0,04 - 0,1	0.04 - 0.1	0.04 - 0.1	0.04 - 0.12	0.04 - 0.15	0.06 - 0.2	0.08 - 0.25	0.08 - 0.25
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	80 - 180	0,04 - 0,1	0.04 - 0.1	0.04 - 0.1	0.04 - 0.12	0.04 - 0.15	0.06 - 0.2	0.08 - 0.25	0.08 - 0.25
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	150 - 280	0,04 - 0,14	0.04 - 0.14	0.04 - 0.16	0.04 - 0.2	0.08 - 0.25	0.06 - 0.3	0.08 - 0.3	0.08 - 0.35
	Ductile iron	Up to 280 HB	GGG 60	0.7060	100 - 220	0,04 - 0,1	0.04 - 0.12	0.04 - 0.14	0.04 - 0.18	0.04 - 0.2	0.06 - 0.25	0.08 - 0.25	0.08 - 0.25
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	100 - 500	0,04 - 0,12	0.04 - 0.12	0.04 - 0.16	0.04 - 0.2	0.04 - 0.25	0.06 - 0.3	0.08 - 0.3	0.08 - 0.3
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	100 - 500	0,04 - 0,12	0.04 - 0.12	0.04 - 0.16	0.04 - 0.2	0.04 - 0.25	0.06 - 0.3	0.08 - 0.3	0.08 - 0.3
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	30 - 100	0,04 - 0,08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.15	0.06 - 0.2	0.08 - 0.2	0.08 - 0.2
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	15 - 50	0,02 - 0,06	0.02 - 0.06	0.03 - 0.06	0.03 - 0.06	0.04 - 0.08	0.06 - 0.1	0.06 - 0.12	0.06 - 0.12
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	40 - 80	0,04 - 0,08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1

4 x D

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm							
						12 - 14,5	15 - 16.5	17 - 18.5	19 - 20.5	21 - 24.5	25 - 28.5	29 - 33.5	34 - 63
P	Machining steel	Up to 700	9 SMn 28	1.0715	150 - 250	0,04 - 0,08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.1	0.04 - 0.12	0.04 - 0.12	0.05 - 0.15	0.05 - 0.18
	Structural steel	700 - 950	Ck45	1.1191	150 - 250	0,04 - 0,08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.1	0.04 - 0.12	0.04 - 0.12	0.05 - 0.15	0.05 - 0.18
	Tempering steel	500 - 950	42 CrMo4	1.7225	100 - 220	0,04 - 0,1	0.04 - 0.14	0.04 - 0.16	0.04 - 0.18	0.04 - 0.15	0.06 - 0.25	0.08 - 0.25	0.08 - 0.3
	Tempering steel	950 -1300	43CrMo4	1.3563	80 - 180	0,04 - 0,08	0.04 - 0.1	0.04 - 0.1	0.04 - 0.12	0.04 - 0.13	0.06 - 0.2	0.08 - 0.25	0.08 - 0.25
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	80 - 180	0,04 - 0,08	0.04 - 0.1	0.04 - 0.1	0.04 - 0.12	0.04 - 0.13	0.06 - 0.2	0.08 - 0.25	0.08 - 0.25
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	80 - 180	0,04 - 0,1	0.04 - 0.08	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1	0.06 - 0.2	0.08 - 0.2	0.08 - 0.2
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	80 - 180	0,04 - 0,1	0.04 - 0.08	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1	0.06 - 0.2	0.08 - 0.2	0.08 - 0.2
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	150 - 280	0,04 - 0,12	0.04 - 0.14	0.04 - 0.16	0.04 - 0.2	0.04 - 0.15	0.06 - 0.3	0.08 - 0.3	0.08 - 0.3
	Ductile iron	Up to 280 HB	GGG 60	0.7060	100 - 220	0,04 - 0,1	0.04 - 0.1	0.04 - 0.12	0.04 - 0.15	0.04 - 0.15	0.06 - 0.25	0.08 - 0.25	0.08 - 0.25
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	100 - 500	0,04 - 0,12	0.04 - 0.12	0.04 - 0.12	0.04 - 0.2	0.04 - 0.2	0.04 - 0.3	0.08 - 0.3	0.08 - 0.3
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	100 - 500	0,04 - 0,12	0.04 - 0.12	0.04 - 0.12	0.04 - 0.2	0.04 - 0.2	0.04 - 0.3	0.08 - 0.3	0.08 - 0.3
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	30 - 100	0,04 - 0,08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.1	0.04 - 0.2	0.08 - 0.2	0.08 - 0.2
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	15 - 50	0,02 - 0,06	0.02 - 0.06	0.02 - 0.06	0.02 - 0.06	0.04 - 0.08	0.06 - 0.1	0.06 - 0.12	0.06 - 0.12
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	40 - 80	0,04 - 0,08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1

5 x D

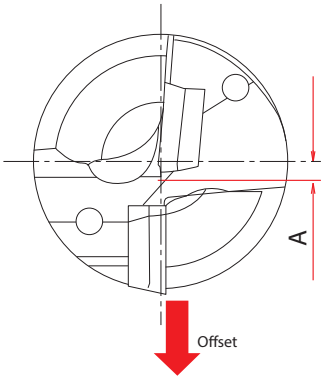
ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm							
						12 - 14,5	15 - 16.5	17 - 18.5	19 - 20.5	21 - 24.5	25 - 28.5	29 - 33.5	34 - 63
P	Machining steel	Up to 700	9 SMn 28	1.0715	150 - 250	0,04 - 0,08	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1	0.04 - 0.12	0.04 - 0.12	0.05 - 0.15	0.05 - 0.18
	Structural steel	700 - 950	Ck45	1.1191	150 - 250	0,04 - 0,08	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1	0.04 - 0.12	0.04 - 0.12	0.05 - 0.15	0.05 - 0.18
	Tempering steel	500 - 950	42 CrMo4	1.7225	100 - 220	0,04 - 0,09	0.04 - 0.09	0.04 - 0 .12	0.04 - 0.14	0.04 - 0.15	0.06 - 0.2	0.08 - 0.2	0.08 - 0.25
	Tempering steel	950 -1300	43CrMo4	1.3563	80 - 180	0,04 - 0,08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.1	0.04 - 0.13	0.06 - 0.15	0.08 - 0.18	0.08 - 0.22
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	80 - 180	0,04 - 0,08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.1	0.04 - 0.13	0.06 - 0.15	0.08 - 0.18	0.08 - 0.22
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	80 - 180	0,04 - 0,08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.09	0.04 - 0.1	0.06 - 0.15	0.06 - 0.18	0.06 - 0.2
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	80 - 180	0,04 - 0,08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.09	0.04 - 0.1	0.06 - 0.15	0.06 - 0.18	0.06 - 0.2
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	150 - 280	0,04 - 0,1	0.04 - 0.1	0.04 - 0.12	0.04 - 0.13	0.04 - 0.15	0.06 - 0.2	0.08 - 0.2	0.08 - 0.25
	Ductile iron	Up to 280 HB	GGG 60	0.7060	100 - 220	0,04 - 0,09	0.04 - 0.09	0.04 - 0.12	0.04 - 0.12	0.04 - 0.13	0.06 - 0.15	0.08 - 0.18	0.08 - 0.25
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	100 - 500	0,04 - 0,1	0.04 - 0.1	0.04 - 0.12	0.04 - 0.15	0.04 - 0.15	0.06 - 0.25	0.08 - 0.3	0.08 - 0.3
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	100 - 500	0,04 - 0,1	0.04 - 0.1	0.04 - 0.12	0.04 - 0.15	0.04 - 0.15	0.06 - 0.25	0.08 - 0.3	0.08 - 0.3
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	30 - 100	0,04 - 0,08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.1	0.06 - 0.15	0.08 - 0.15	0.08 - 0.15
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	15 - 50	0,02 - 0,06	0.02 - 0.06	0.02 - 0.06	0.02 - 0.06	0.02 - 0.06	0.06 - 0.08	0.06 - 0.08	0.06 - 0.08
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	40 - 80	0,04 - 0,07	0.04 - 0.07	0.04 - 0.07	0.04 - 0.07	0.04 - 0.08	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1

Solid drill bit radial adjustment

D mm	D + A Offset mm	D Max. mm
12	0,4	12,8
12,5	0,4	13,3
12,7	0,3	13,3
13	0,3	13,6
13,5	0,2	13,9
14	0,2	14,4
14,5	0,1	14,7
15	0,4	15,8
15,5	0,3	16,1
16	0,3	16,6
16,5	0,3	17,1
17	0,6	18,2
17,5	0,5	18,5
18	0,5	19
18,5	0,4	19,3
19	0,6	20,2
19,5	0,5	20,5
20	0,4	20,8
20,5	0,4	21,3
21	1	23
21,5	0,9	23,3
22	0,8	23,6
22,5	0,7	23,9
23	0,5	24
23,5	0,4	24,3
24	0,3	24,6
24,5	0,2	24,9
25	1,1	27,2
25,5	0,9	27,3
26	0,8	27,6

D mm	D + A Offset mm	D Max. mm
26,5	0,7	27,9
27	0,6	28,2
28	0,3	28,6
28,5	0,2	28,9
29	1,3	31,6
30	1,1	32,2
31	0,8	32,6
32	0,6	33,2
33	0,3	33,6
33,5	0,2	33,9
34	1,1	36,2
35	0,8	36,6
36	0,8	37,6
37	0,6	38,2
38	0,3	38,6
39	1,0	41,0
40	0,9	41,8
41	0,8	42,6
42	0,6	43,2
43	0,5	44,0
44	0,3	44,6
45	0,9	46,8
46	0,8	47,6
47	0,7	48,4
48	0,5	49,0
49	0,3	49,6
50	1,1	52,2
51	1,0	53,0
52	0,8	53,6
53	0,7	54,4

D mm	D + A Offset mm	D Max. mm
54	0,6	55,2
55	0,4	55,8
56	0,1	56,2
57	1,1	59,2
58	1,0	60,0
59	0,9	60,8
60	0,8	61,6
61	0,6	62,2
62	0,4	62,8
63	0,2	63,4





palbit Core and countersink drill SPOT FACE



- Please adjust these guideline values according to clamping operation and machine set-up!

124700....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min ◄ Wear resistance Toughness ► PH6920	PH6930	PHC930
P	Machining steel	Up to 700	9 SMn 28	1.0715	180 - 250	160 - 240	160 - 240
P	Unalloyed structural steel	Up to 700	St-52	1.0052	180 - 250	160 - 240	160 - 240
P	Structural steel	700 - 950	Ck45	1.1191	160 - 220	140 - 200	140 - 200
P	Tempering steel	500 - 950	42 CrMo4	1.7225	160 - 220	140 - 200	140 - 200
P	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	160 - 220	140 - 200	140 - 200
P	Tempering steel	950 -1300	43CrMo4	1.3563	160 - 220	140 - 200	140 - 200
P	Nitriding steel	950 - 1300	31CrMoV9	1.8519	160 - 220	140 - 200	140 - 200
P	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	130 - 180	110 - 160	110 - 160
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	170 - 230	140 - 210	140 - 210
M	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	140 - 180	120 - 190	120 - 190
M	Duplex	700 - 950	X2 CrNiMoN 22-5-3	1.4462	140 - 180	120 - 190	120 - 190
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	180 - 250	150 - 220	150 - 220
K	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	130 - 200	110 - 180	110 - 180
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	130 - 200	110 - 180	110 - 180

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Feed fz/tooth SPKX 05...	SPKX 06...	SPKX 07...	SPKX 09...	SPKX 11...
P	Machining steel	bis 700	9 SMn 28	1.0715	0,05 - 0,08	0,06 - 0,10	0,06 - 0,12	0,07 - 0,13	0,08 - 0,15
P	Unalloyed structural steel	bis 700	St-52	1.0052	0,05 - 0,08	0,06 - 0,10	0,06 - 0,12	0,07 - 0,13	0,08 - 0,15
P	Structural steel	700 - 950	Ck45	1.1191	0,06 - 0,12	0,08-0,15	0,10 - 0,18	0,12 - 0,22	0,12 - 0,25
P	Tempering steel	500 - 950	42 CrMo4	1.7225	0,06 - 0,12	0,08-0,15	0,10 - 0,18	0,12 - 0,22	0,12 - 0,25
P	Case-hardened steel	bis 1200	16 MnCr 5	1.7131	0,06 - 0,12	0,08-0,15	0,10 - 0,18	0,12 - 0,22	0,12 - 0,25
P	Tempering steel	950 -1300	43CrMo4	1.3563	0,06 - 0,12	0,08-0,15	0,10 - 0,18	0,12 - 0,22	0,12 - 0,25
P	Nitriding steel	950 - 1300	31CrMoV9	1.8519	0,06 - 0,12	0,08-0,15	0,10 - 0,18	0,12 - 0,22	0,12 - 0,25
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	0,06 - 0,10	0,08-0,15	0,10 - 0,20	0,12 - 0,23	0,12 - 0,26
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	0,05 - 0,10	0,06 - 0,12	0,08 - 0,15	0,09 - 0,16	0,10 - 0,20
M	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	0,05 - 0,10	0,06 - 0,12	0,08 - 0,15	0,09 - 0,16	0,10 - 0,20
M	Duplex	700 - 950	X2 CrNiMoN 22-5-3	1.4462	0,04 - 0,08	0,05 - 0,11	0,06 - 0 ,13	0,07 - 0,14	0,08 - 0,19
K	Grey cast iron	bis 260 HB	GG 25	0.6025	0,06 - 0,12	0,08 - 0,16	0,12 - 0,20	0,15 - 0,25	0,15 - 0,30
K	Alloyed grey cast iron	bis 310 HB	GGL-NiCr 35 2	0.6678	0,06 - 0,10	0,08 - 0,15	0,10 - 0,18	0,12 - 0,20	0,15 - 0,25
K	Ductile iron	bis 280 HB	GGG 60	0.7060	0,06 - 0,10	0,08 - 0,15	0,10 - 0,18	0,12 - 0,20	0,15 - 0,25

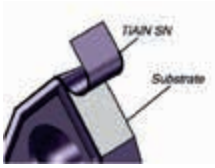
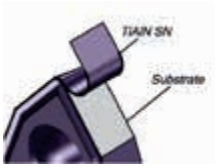
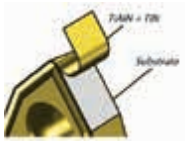
palbit Overview of drilling systems

	Diameter (mm)									
	03	12	20	32	50	60	70	80	110	180
Jet Drill						SCC (3D-4D) L1 max. = 320 mm				
			SCS (3D-4D) L1 max. = 200 mm							
							TDC 3D L1 max. = 240 mm			
			TDS 3D L1 max. = 174 mm							
Vortex Drill						L1 max. = 900 mm				

palbit Type descriptions

- Carbide, coated

PVD types

PH6920 (P10-P35) (M10-M25) (K10-K30) (S10-S30)  PVD-coated (TiAlN), fine grade carbide for universal applications. Good toughness and wear resistance.	PH6930 (P20-P40) (M20-M30) (K20-K40) (S20-S40)  PVD-coated (TiAlN) superfine grain carbide for applications under unstable machine conditions at average cutting speeds.	PHC930 (P20-P40) (M20-M30) (K20-K40) (S20-S40)  PVD-coated (TiAlN+TiN), fine grain carbide type for general machining of steel, stainless steel, cast iron and superalloys with high cutting speeds.

Type recommendation

- **Note:** The recommendation applies to steel, high-alloy steels and heat-resistant steels.



palbit TDS/TDC Indexable inserts solid drill bit



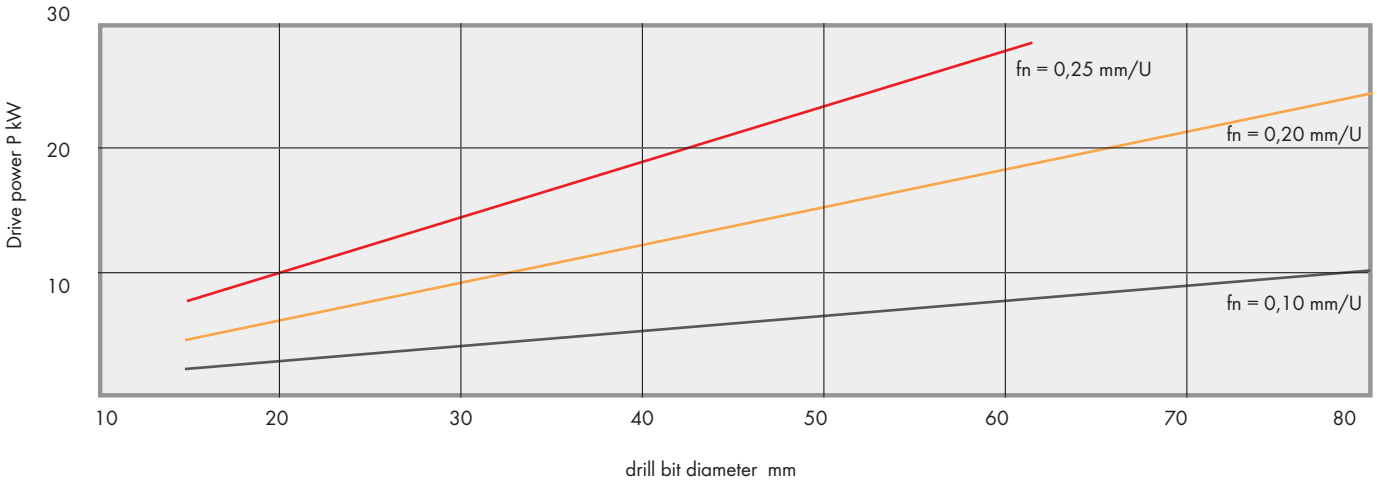
Cutting data recommendations **124303....** **124313....**

- Please adjust these guideline values according to clamping operation and machine set-up!

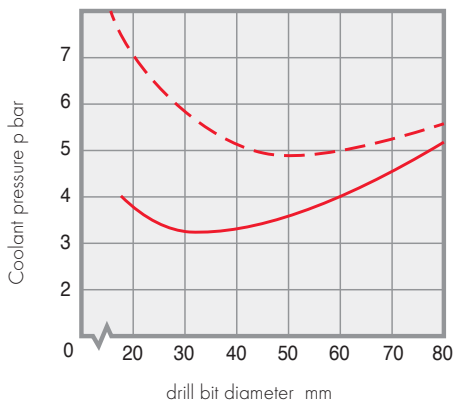
ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm						
						13 - 15,5	16 - 20	20,5 - 25	25,5 -30	31 - 41	42 - 58	59 - 80
P	Machining steel	Up to 700	9 SMn 28	1.0715	180 - 260	0,05 - 0,08	0,06 - 0,10	0,07 - 0,12	0,09 - 0,15	0,11 - 0,18	0,15 - 0,28	0,11 - 0,18
	Structural steel	700 - 950	Ck45	1.1191	180 - 260	0,05 - 0,08	0,06 - 0,10	0,07 - 0,12	0,09 - 0,15	0,11 - 0,18	0,15 - 0,28	0,11 - 0,18
	Tempering steel	500 - 950	42 CrMo4	1.7225	150 - 240	0,05 - 0,08	0,06 - 0,10	0,07 - 0,12	0,09 - 0,15	0,11 - 0,18	0,15 - 0,28	0,11 - 0,18
	Tempering steel	950 -1300	43CrMo4	1.3563	120 - 240	0,05 - 0,08	0,06 - 0,10	0,07 - 0,12	0,09 - 0,15	0,11 - 0,18	0,15 - 0,28	0,11 - 0,18
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	130 - 220	0,05 - 0,08	0,06 - 0,10	0,07 - 0,12	0,09 - 0,15	0,11 - 0,18	0,15 - 0,28	0,11 - 0,18
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	150 - 220	0,04 - 0,08	0,05 - 0,09	0,06 - 0,12	0,07 - 0,13	0,08 - 0,16	0,10 - 0,20	0,08 - 0,16
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	150 - 220	0,04 - 0,08	0,05 - 0,09	0,06 - 0,12	0,07 - 0,13	0,08 - 0,16	0,10 - 0,20	0,08 - 0,16
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	150 - 250	0,05 - 0,11	0,07 - 0,13	0,08 - 0,12	0,10 - 0,18	0,14 - 0,26	0,18 - 0,35	0,14 - 0,26
	Ductile iron	Up to 280 HB	GGG 60	0.7060	120 - 200	0,05 - 0,11	0,06 - 0,13	0,07 - 0,12	0,08 - 0,18	0,14 - 0,26	0,18 - 0,35	0,14 - 0,26
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	300 - 380	0,04 - 0,06	0,05 - 0,07	0,06 - 0,08	0,07 - 0,09	0,10 - 0,14	0,12 - 0,17	0,10 - 0,14
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	260 - 330	0,04 - 0,06	0,05 - 0,07	0,06 - 0,08	0,07 - 0,09	0,10 - 0,14	0,12 - 0,17	0,10 - 0,14
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	40 - 80	0,03 - 0,05	0,04 - 0,06	0,04 - 0,07	0,05 - 0,08	0,06 - 0,10	0,07 - 0,13	0,06 - 0,10
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	30 - 50	0,03 - 0,05	0,04 - 0,06	0,04 - 0,07	0,05 - 0,08	0,06 - 0,10	0,07 - 0,13	0,06 - 0,10

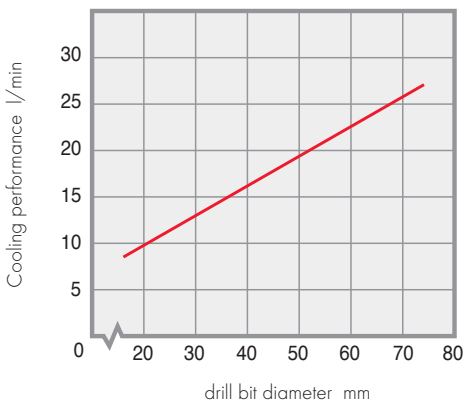
Power requirement

- This diagram is based on machining experience of steels with a hardness of 200-250 HB and a cutting speed of 100 m/min
- For cast iron machining, the power requirement is approx. 30 % lower



Coolant recommendation





palbit Solid drill bit radial adjustment TDS/TDC

D mm	Solid drill bit radial adjustment	D max. mm
13,00	1,50	16,00
13,50	1,50	16,50
14,00	1,50	17,00
14,50	1,50	17,50
15,00	1,50	18,00
15,50	1,50	18,50
16,00	1,50	19,00
16,50	1,50	19,50
17,00	1,50	20,00
17,50	1,50	20,50
18,00	1,40	20,80
18,50	1,30	21,10
19,00	1,20	21,40
20,00	1,00	22,00
21,00	1,60	24,20
22,00	1,50	25,00
23,00	1,25	25,50
24,00	1,00	26,00
25,00	0,80	26,60
26,00	2,50	31,00
27,00	2,20	31,40
28,00	2,10	32,20
29,00	1,80	32,60
30,00	1,50	33,00
31,00	3,50	38,00
32,00	3,20	38,40

D mm	Solid drill bit radial adjustment	D max. mm
33,00	3,00	39,00
34,00	2,80	39,60
35,00	2,50	40,00
36,00	2,30	40,60
37,00	2,00	41,00
38,00	1,80	41,60
39,00	1,50	42,00
40,00	1,20	42,40
41,00	1,00	43,00
42,00	4,20	50,40
43,00	4,00	51,00
44,00	3,70	51,40
45,00	3,50	52,00
46,00	3,30	52,60
47,00	3,00	53,00
48,00	2,70	53,40
49,00	2,50	54,00
50,00	2,20	54,40
51,00	2,00	55,00
52,00	1,80	55,60
53,00	1,50	56,00
54,00	1,20	56,40
55,00	0,80	56,60
56,00	0,60	57,20
58,00	0,40	58,80

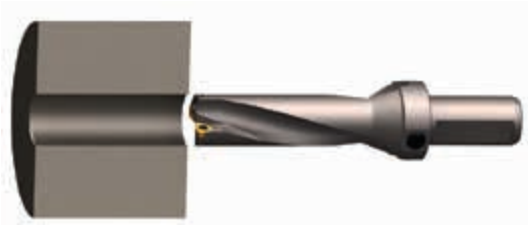
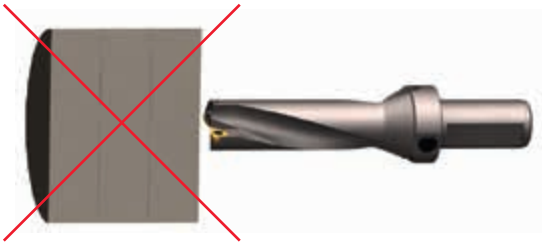
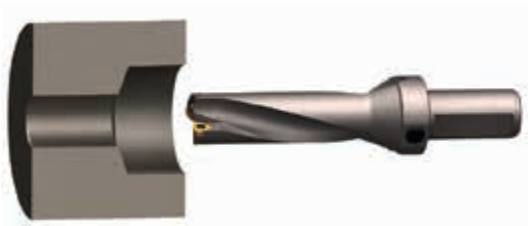




OSG
Catalogue VI
1024 pages
Art.no. 019900 0208

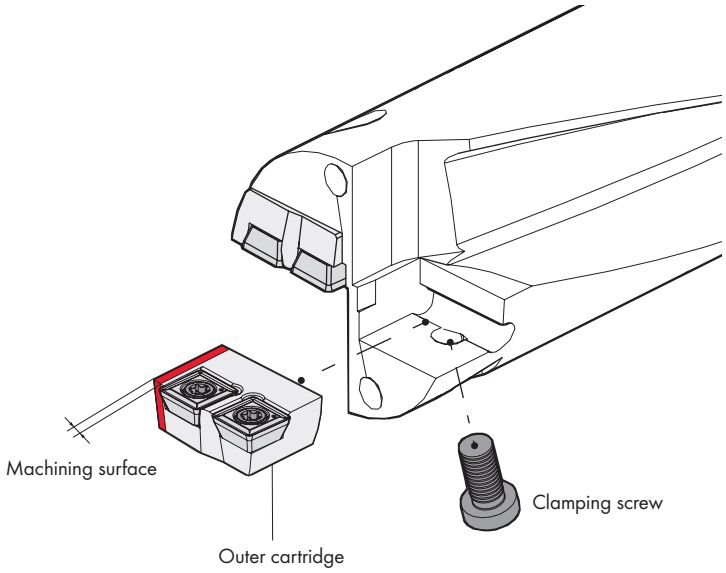
Overview of all free manufacturers' catalogues
on page 14/15

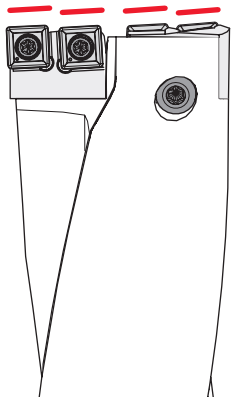
palbit Machining notes TDS/TDC

Application	Description
Drilling on inclined surfaces 	Drilling of an inclined surface is possible up to a 30° incline without reducing the cutting parameters. Reduce feed force by 50 % on the incline for angles between 30° and 40°.
Interrupted cutting 	For reliable drilling, reduce cutting force and feed by 30 % for the greatest possible stability of machine and clamp.
Bundled drilling 	Series TDS and TDS drill bits are not suitable for this, as they create a disc in the bore diameter when exiting the material which prevents the drilling of subsequent material. Attention: In through-hole drilling these discs also occur upon exit. With a fixed drill bit and rotating workpiece, these can fly out uncontrolled from the workpiece. Please use enclosed machines and wear adequate occupational safety equipment.
Drilling 	For drilling tasks with TDS and TSC Series, turn the drill bit in the direction of the indexable cutting inserts. Observe the wear on the outer cutting edges, the greater chip volume can shorten the change intervals.

palbit Cartridge system

- **Diameter adjustment 5 mm**
- Loosen clamping screw on the outer cartridge and dismantle cartridge
- Cartridge is shortened on the outer diameter to the desired drill diameter
- Deburr shortened cartridge
- Press cartridge against the contact surface when screwing tight





palbit SCS/SCC Indexable inserts solid drill bit



Cutting data recommendations

- Please adjust these guideline values according to clamping operation and machine set-up!

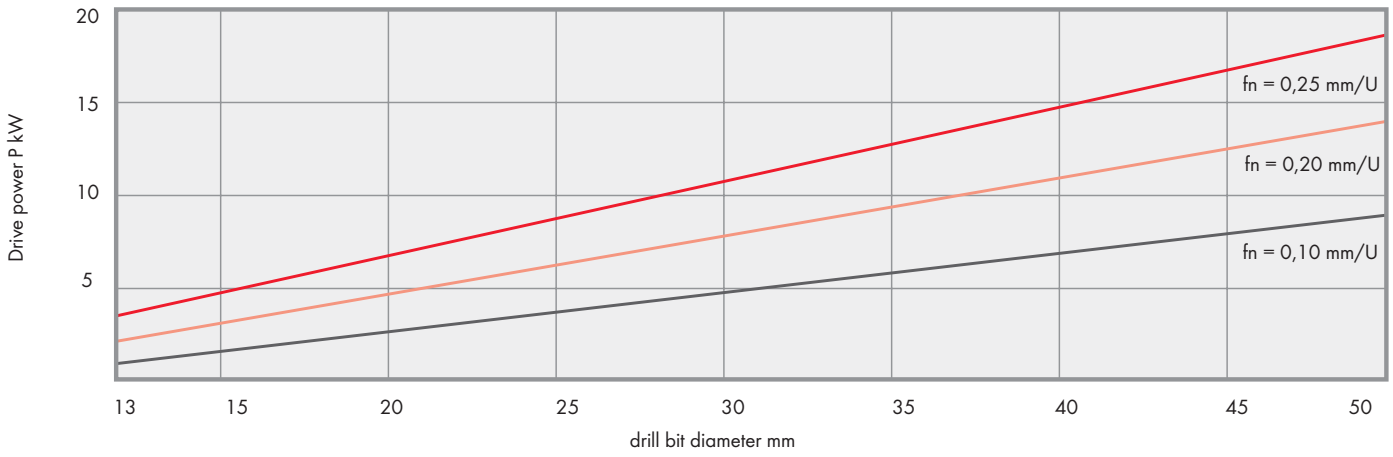
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ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						13 - 15	15,5 - 21,5	22 - 27,5	28 - 33	34 - 41
P	Machining steel	Up to 700	9 SMn 28	1.0715	180 - 250	0,05 - 0,08	0,06 - 0,10	0,06 - 0,12	0,07 - 0,13	0,08 - 0,15
	Structural steel	700 - 950	Ck45	1.1191	180 - 250	0,05 - 0,08	0,06 - 0,10	0,06 - 0,12	0,07 - 0,13	0,08 - 0,15
	Tempering steel	500 - 950	42 CrMo4	1.7225	160 - 220	0,06 - 0,12	0,08 - 0,15	0,10 - 0,18	0,12 - 0,22	0,12 - 0,24
	Tempering steel	950 -1300	43CrMo4	1.3563	150 - 220	0,06 - 0,12	0,08 - 0,14	0,10 - 0,18	0,12 - 0,22	0,12 - 0,23
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	130 - 180	0,06 - 0,10	0,08 - 0,15	0,10 - 0,20	0,12 - 0,23	0,12 - 0,24
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	170 - 240	0,05 - 0,10	0,06 - 0,12	0,08 - 0,15	0,09 - 0,16	0,10 - 0,17
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	170 - 240	0,05 - 0,10	0,06 - 0,12	0,08 - 0,15	0,09 - 0,16	0,10 - 0,17
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	180 - 250	0,06 - 0,12	0,08 - 0,16	0,12 - 0,20	0,15 - 0,25	0,16 - 0,28
	Ductile iron	Up to 280 HB	GGG 60	0.7060	130 - 200	0,06 - 0,10	0,08 - 0,15	0,10 - 0,18	0,12 - 0,20	0,15 - 0,23
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	330 - 380	0,06 - 0,14	0,08 - 0,15	0,10 - 0,20	0,12 - 0,22	0,14 - 0,23
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	330 - 380	0,06 - 0,14	0,08 - 0,15	0,10 - 0,20	0,12 - 0,22	0,14 - 0,23
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	30 - 60	0,05 - 0,10	0,06 - 0,14	0,08 - 0,18	0,10 - 0,22	0,12 - 0,22
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	30 - 50	0,05 - 0,10	0,06 - 0,14	0,08 - 0,18	0,10 - 0,22	0,12 - 0,22

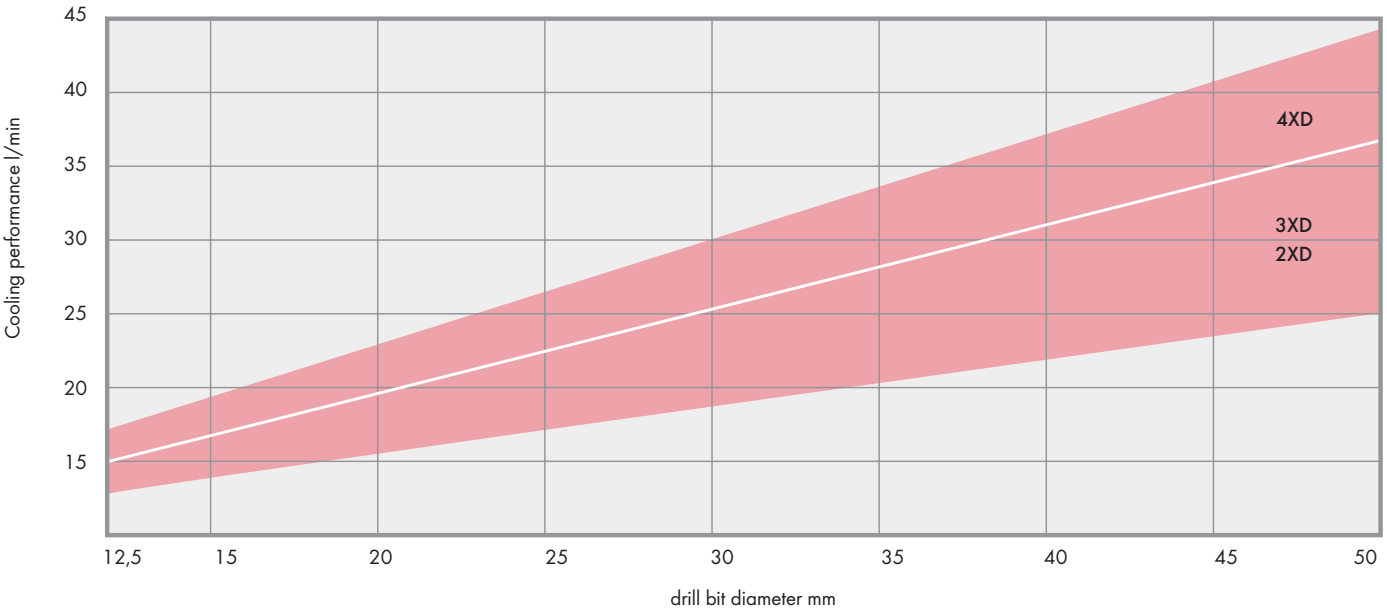
ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm			
						42 - 50	50 - 60	60 - 75	75 - 80
P	Machining steel	Up to 700	9 SMn 28	1.0715	180 - 250	0,08 - 0,16	0,06 - 0,12	0,08 - 0,12	0,08 - 0,12
	Structural steel	700 - 950	Ck45	1.1191	180 - 250	0,08 - 0,16	0,06 - 0,12	0,08 - 0,12	0,08 - 0,12
	Tempering steel	500 - 950	42 CrMo4	1.7225	160 - 220	0,13 - 0,25	0,10 - 0,14	0,12 - 0,18	0,11 - 0,18
	Tempering steel	950 -1300	43CrMo4	1.3563	150 - 220	0,13 - 0,24	0,08 - 0,15	0,10 - 0,18	0,10 - 0,18
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	130 - 180	0,13 - 0,25	0,08 - 0,14	0,09 - 0,15	0,09 - 0,14
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	170 - 240	0,11 - 0,19	0,06 - 0,13	0,08 - 0,15	0,08 - 0,14
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	170 - 240	0,11 - 0,19	0,06 - 0,13	0,08 - 0,15	0,08 - 0,14
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	180 - 250	0,18 - 0,30	0,12 - 0,20	0,15 - 0,20	0,15 - 0,20
	Ductile iron	Up to 280 HB	GGG 60	0.7060	130 - 200	0,16 - 0,25	0,10 - 0,15	0,09 - 0,18	0,10 - 0,18
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	330 - 380	0,15 - 0,26	0,14 - 0,20	0,14 - 0,23	0,15 - 0,23
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	330 - 380	0,15 - 0,26	0,14 - 0,20	0,14 - 0,23	0,15 - 0,23
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	30 - 60	0,14 - 0,24	0,10 - 0,15	0,10 - 0,15	0,10 - 0,15
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	30 - 50	0,14 - 0,24	0,10 - 0,15	0,10 - 0,15	0,10 - 0,15

Power requirement

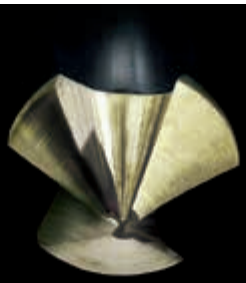
- This diagram is based on machining experience of steels with a hardness of 200-250 HB and a cutting speed of 100 m/min
- For cast iron machining, the power requirement is approx. 30 % lower



Coolant recommendation



An end to the rattle …



… caused by uneven divisions

ATORN®
High quality for great performance

palbit Solid drill bit radial adjustment SCS

D mm	Solid drill bit radial adjustment	D max mm
13	0,50	14,0
14	0,50	15,0
15	0,50	16,0
16	0,50	17,0
17	0,50	18,0
18	0,50	19,0
19	0,50	20,0
20	0,50	21,0
21	0,25	21,5
22	0,50	23,0
23	0,50	24,0
24	0,50	25,0
25	0,50	26,0
26	0,25	26,5
27	0,25	27,5
28	0,50	29,0
29	0,50	30,0
30	0,50	31,0
31	0,25	31,5

D mm	Solid drill bit radial adjustment	D max mm
32	0,25	32,5
33	0,25	33,5
34	0,50	35,0
35	0,50	36,0
36	0,50	37,0
37	0,50	38,0
38	0,50	39,0
39	0,50	40,0
40	0,25	40,5
41	0,25	41,5
42	0,50	43,0
43	0,50	44,0
44	0,50	45,0
45	0,50	46,0
46	0,50	47,0
47	0,50	48,0
48	0,25	48,5
49	0,25	49,5
50	0,25	50,5

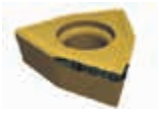


… HPC with internal cooling

ATORN®
High quality for great performance

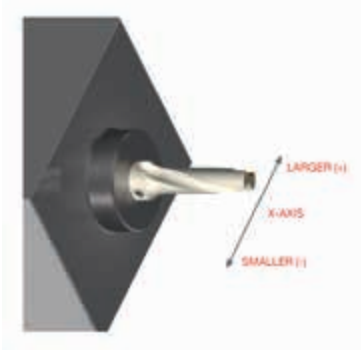
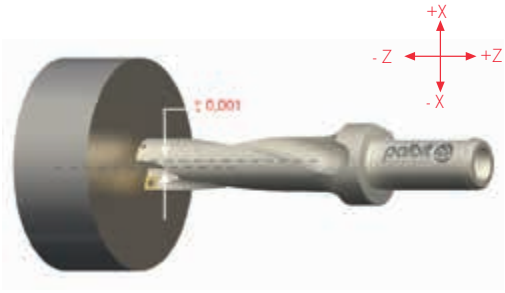
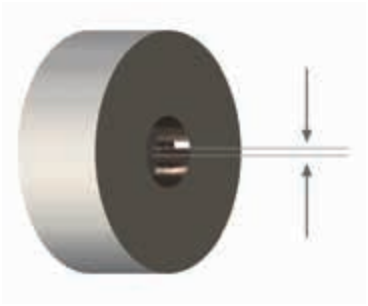
palbit Problem-solver

- **Note:** When drilling through-holes, a disc is created when the drill bit exits. With a fixed drill bit and rotating workpiece, these can be forced out. Protect the operator and personnel with adequate occupational safety equipment. When the drill bit exits the material, a small recess is created as the pilot drill bit is no longer in the cut.

Problem	Corrective measures
Nicks 	Use on lathes: • Check machine settings • If the tool clamping cannot be improved, reduce feed by 30 % • If machine or tool clamping is unstable, reduce feed by 30 % **Note:** Types can be mixed for optimal machining. **Example:** PH6930 on inner and PH6920 on outer insert seat
Sub-optimal chip removal 	• Increase pressure and flow of coolant • Increase cutting speed by 20 %
Increased wear 	• Increase pressure and flow of coolant • Reduce cutting speed by 20 % • Choose a more wear-resistant model
Poor bore quality 	• Increase pressure and volume of coolant for better chip removal • Increase cutting speed by up to 20 % • Improve workpiece and tool clamping, alternatively reduce feed rate **Note**: High cutting speeds and low feed rates achieve better surfaces.

palbit Turning work with indexable inserts solid drill bits

- Notes for use on lathes

Application	Description
Axis alignment 	The cutting edge of the indexable cutting insert must be parallel to the x-axis of the machine in order to change the bore dimensions by moving the tool. To do this, a surface is applied to the tool shank which runs parallel to the cutting edge. The tool alignment can be oriented towards this.
Cutting edge orientation 	The outermost cutting edge of the drill bit should be in the (+) direction of the x-axis to allow offset drilling. The inner cutting edge should point towards the operator.
Test bore 	Please perform a test bore of approx. 5 mm deep to check the setting before producing the finished bore. The setting range is between 0.2 mm and 0.7 mm.

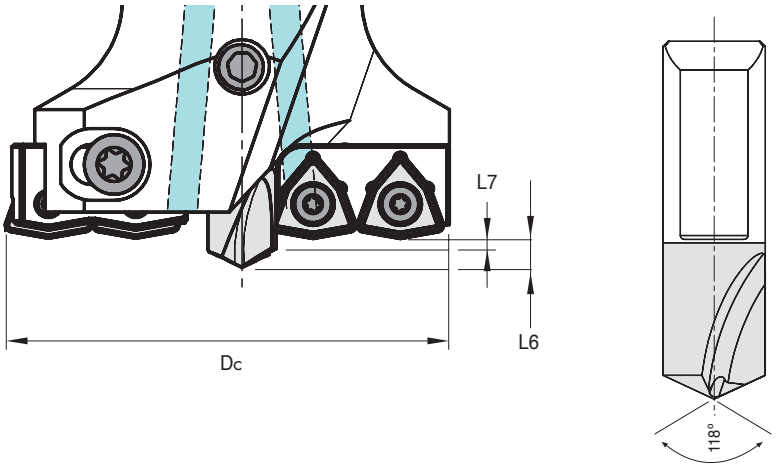
palbit Indexable insert drilling system VORTEX DRILL

1. Clamping screws for indexable cutting insert
2. Cartridge
3. Clamping screw for pilot drill bit
4. Clamping bolt for pilot drill bit
5. Adjusting screw for pilot drill bit
6. Pilot drill bit
7. Clamping screw for cartridge
8. Boring head
9. Clamping screw for boring head
10. Follower ring
11. Mounting shank or extension



palbit Settings pilot drill bit VORTEX DRILL

104519....



Dc mm	2-4 x D		4-6 x D		> 6 x D	
	L7	L6	L7	L6	L7	L6
45-55	1.6	4.0	1.8	4.2	2.0	4.4
55-75	1.8	5.4	2.0	5.6	2.2	5.8
75-100	2.2	6.5	2.5	6.8	2.8	7.1
100-120	2.4	7.7	2.8	8.1	3.2	8.5
120-170	3.2	9.9	3.6	10.3	4.0	10.7
170-180	3.5	12.2	3.9	12.6	4.3	13.0

palbit Cutting data recommendations VORTEX DRILL



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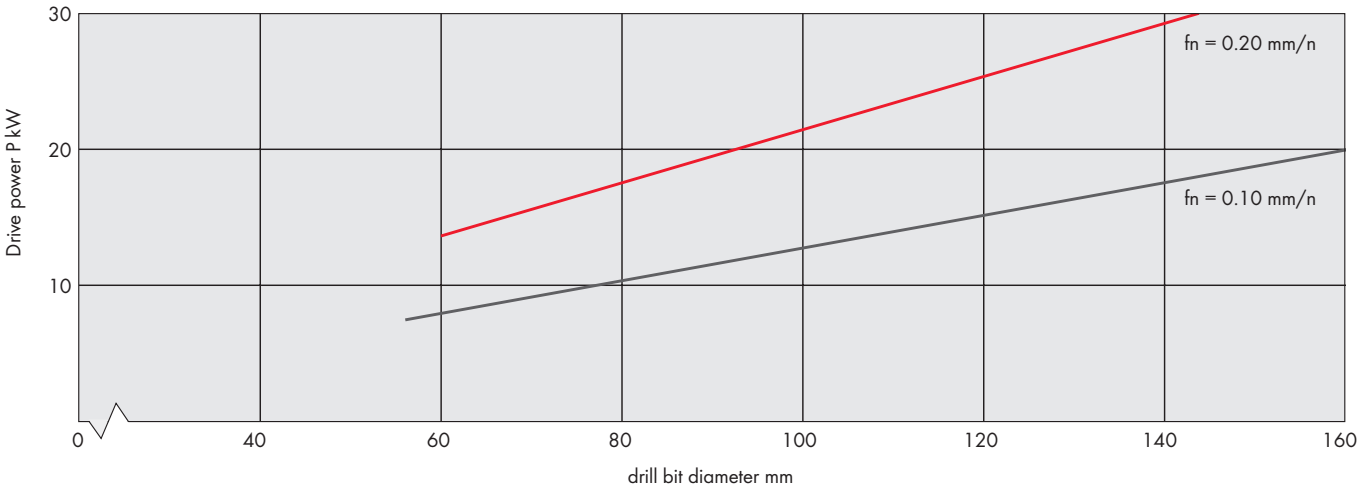
- Please adjust these guideline values according to clamping operation and machine set-up!

Cutting speed and feed

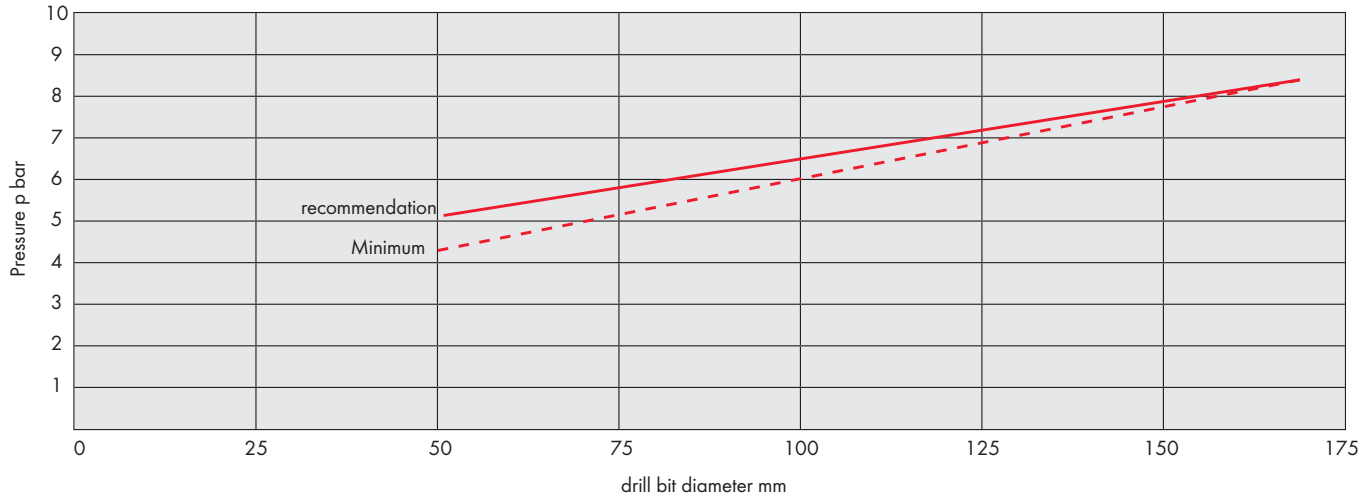
ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed rates in mm/rev based on the tool diameter in mm						
						Ø 45 - 55	Ø 55 - 60	Ø 60 - 75	Ø 75 - 100	Ø 100 - 105	Ø 105 - 150	Ø 150 - 180
P	Machining steel	Up to 700	9 SMn 28	1.0715	120 - 180	0,06 - 010	0,07 - 0,11	0,08 - 0,12	0,10 - 0,14	0,14 - 0,20	0,08 - 0,12	0,10 - 0,14
P	Unalloyed structural steel	Up to 700	St-52	1.0052	120 - 180	0,06 - 010	0,07 - 0,11	0,08 - 0,12	0,10 - 0,14	0,14 - 0,20	0,08 - 0,12	0,10 - 0,14
P	Structural steel	700 - 950	Ck45	1.1191	110 - 170	0,06 - 010	0,07 - 0,11	0,08 - 0,12	0,10 - 0,14	0,12 - 0,18	0,08 - 0,12	0,10 - 0,14
P	Tempering steel	500 - 950	42 CrMo4	1.7225	110 - 170	0,06 - 010	0,07 - 0,11	0,08 - 0,12	0,10 - 0,14	0,12 - 0,18	0,08 - 0,12	0,10 - 0,14
P	Cast steel	Up to 950	GS 40	1.0416	100 - 160	0,06 - 010	0,07 - 0,11	0,08 - 0,12	0,10 - 0,14	0,14 - 0,20	0,08 - 0,12	0,10 - 0,14
P	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	90 - 130	0,05 - 0,07	0,05 - 0,07	0,06 - 0,08	0,06 - 0,10	0,09 - 0,13	0,06 - 0,08	0,06 - 0,10
P	Tempering steel	950 -1300	43CrMo4	1.3563	90 - 130	0,05 - 0,07	0,05 - 0,07	0,06 - 0,08	0,06 - 0,10	0,09 - 0,13	0,06 - 0,08	0,06 - 0,10
P	Nitriding steel	950 - 1300	31CrMoV9	1.8519	60 - 100	0,05 - 0,07	0,05 - 0,07	0,06 - 0,08	0,06 - 0,10	0,09 - 0,13	0,06 - 0,08	0,06 - 0,10
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	60 - 100	0,05 - 0,07	0,05 - 0,07	0,06 - 0,08	0,06 - 0,10	0,09 - 0,13	0,06 - 0,08	0,06 - 0,10
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	60 - 110	0,04 - 0,07	0,04 - 0,11	0,06 - 0,12	0,08 - 0,14	0,10 - 0,18	0,06 - 0,12	0,08 - 0,14
M	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	60 - 110	0,04 - 0,07	0,04 - 0,11	0,06 - 0,12	0,08 - 0,14	0,10 - 0,18	0,06 - 0,12	0,08 - 0,14
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	120 - 180	0,07 - 0,13	0,07 - 0,15	0,08 - 0,16	0,10 - 0,18	0,12 - 0,22	0,08 - 0,16	0,10 - 0,18
K	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	120 - 180	0,07 - 0,13	0,07 - 0,15	0,08 - 0,16	0,10 - 0,18	0,12 - 0,22	0,08 - 0,16	0,10 - 0,18
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	100 - 180	0,04 - 0,13	0,07 - 0,15	0,08 - 0,16	0,10 - 0,25	0,12 - 0,26	0,08 - 0,16	0,10 - 0,25
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	100 - 170	0,04 - 0,13	0,07 - 0,15	0,08 - 0,16	0,10 - 0,25	0,12 - 0,26	0,08 - 0,16	0,10 - 0,25
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	180 - 280	0,04 - 0,06	0,07 - 0,12	0,08 - 0,13	0,09 - 0,15	0,12 - 0,20	0,08 - 0,13	0,09 - 0,15
N	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	180 - 280	0,04 - 0,06	0,07 - 0,12	0,08 - 0,13	0,09 - 0,15	0,12 - 0,20	0,08 - 0,13	0,09 - 0,15
N	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	180 - 280	0,04 - 0,06	0,07 - 0,12	0,08 - 0,13	0,09 - 0,15	0,12 - 0,20	0,08 - 0,13	0,09 - 0,15
N	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	150 - 270	0,04 - 0,06	0,07 - 0,12	0,08 - 0,13	0,09 - 0,15	0,12 - 0,20	0,08 - 0,13	0,09 - 0,15
N	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	150 - 270	0,04 - 0,06	0,07 - 0,12	0,08 - 0,13	0,09 - 0,15	0,12 - 0,20	0,08 - 0,13	0,09 - 0,15
N	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	150 - 270	0,04 - 0,06	0,07 - 0,12	0,08 - 0,13	0,09 - 0,15	0,12 - 0,20	0,08 - 0,13	0,09 - 0,15

Power requirement

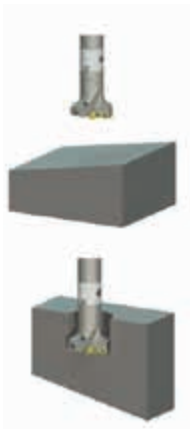
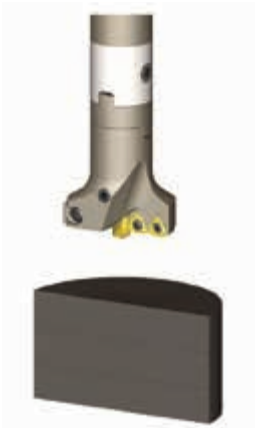
- This diagram is based on machining experience of steels with a hardness of 200-250 HB and a cutting speed of 100 m/min



Coolant recommendation

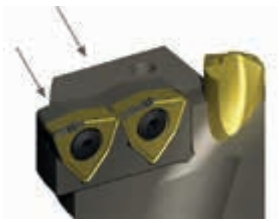
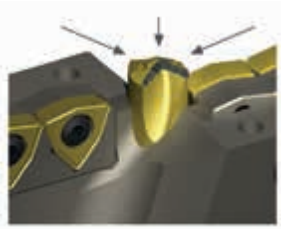


palbit Machining notes VORTEX DRILL

Incorrect	Correct	Description
		No spot drilling is necessary on flat surfaces. For centring holes, the centring drill bit must be smaller than the pilot drill bit.
		Boring into an inclined surface is possible up to an 8° incline. Boring through an inclined surface is possible up to a 4° incline. For greater inclines, the incline and/or uneven surface must be face milled in advance.
		VORTEX drill bits are not recommended for drilling. Use Integrex drill bits for large diameters. Use solid carbide drill bits for small diameters. The solid carbide drill bit is centred using the centring hole of the pilot drill bit.
		VORTEX drill bits are not recommended. Note: Material residues are generated when boring through-holes. With a fixed drill bit and rotating workpiece, the centrifugal force can cause these material residues to fly out uncontrolled from the chuck. Use enclosed machines and wear adequate occupational safety equipment.

palbit Problem solving VORTEX DRILL

- **Note:** When drilling through-holes, a disc is created when the drill bit exits. With a fixed drill bit and rotating workpiece, these can be forced out. Protect the operator and personnel with adequate occupational safety equipment. When the drill bit exits the material, a small recess is created as the pilot drill bit is no longer in the cut.

Problem	Corrective measure
Nicks on the pilot drill bit 	Use on lathes: • Check tool centring, realign machine if necessary • Check and/or improve workpiece and tool clamping
Nicks on the indexable cutting insert 	• Use tougher model • Reduce feed by 20 % • Check and/or improve workpiece and tool clamping
Excessive pilot drill bit wear 	• Use coated pilot drill bit • Increase pressure and flow of coolant • Reduce cutting speed by 20 % • Choose a more wear-resistant model
Sub-optimal chip breaking 	• Increase cutting speed by 20 % and reduce feed by 20 %
Sub-optimal chip removal, poor bore quality 	• Increase pressure and volume of coolant for better chip removal • Increase speed by up to 20 %

ATORN® Universal Drilling and Turning Tool

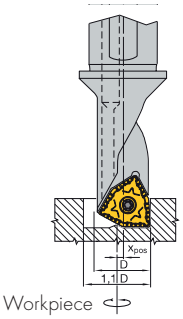


- Please adjust these guideline values according to clamping operation and machine set-up!

129501.... 129511....
129502.... 129512....

ISO	Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min		
					HC7625	HC7535	HW7310
P	Machining steel	up to 700	9 SMn 28	1.0715	170 - 300	120 - 150	
	Unalloyed structural steel	up to 700	St-52	1.0052	150 - 255	100 - 200	
	Structural steel	700 - 950	Ck45	1.1191	100 - 200	70 - 180	
	Tempering steel	500 - 950	42 CrMo4	1.7225	90 - 160	50 - 150	
	Case-hardened steel	up to 1200	16 MnCr 5	1.7131	90 - 145	70 - 150	
	Tempering steel	950 -1300	43CrMo4	1.3563	80 - 140	50 - 120	
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	90 - 145	70 - 150	
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	80 - 140	50 - 120	
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	110 - 200	70 - 150	
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	90 - 160	50 - 150	
K	Grey cast iron	up to 260 HB	GG 25	0.6025			150 - 250
	Alloyed grey cast iron	up to 310 HB	GGL-NiCr 35 2	0.6678			100 - 150
	Ductile iron	up to 280 HB	GGG 60	0.7060			80 - 150
	Malleable cast iron	up to 280 HB	GTS 55	0.8155			100 - 180
N	Al. alloys, long-chipping	up to 500	AlMg 3	3.3535			320 - 2000
	Al. alloys, short-chipping	up to 500	G-AlSi 12	3.2581			160 - 1600
	Copper alloy (bronze), long-chipping	up to 1200	CuSn4	2.1016			120 - 320
	Copper alloy (bronze), short-chipping	up to 850	CuNi12Zn24	2.0730			120 - 520
	Copper alloy (brass), long-chipping	up to 600	Cu ZN 20	2.0250			200 - 520
	Copper alloy (brass), short-chipping	up to 600	Cu Zn 39 Pb 3	2.0381			200 - 800

Solid off-centre drilling, positive offset



$X_{pos.}$: positive offset from the centre

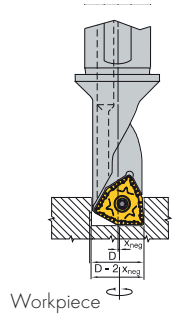
D: tool nominal diameter

D	Steel		Aluminium	
	D max.	$X_{pos.}$	D max.	$X_{pos.}$
08H13	8.8	0.40	12.0	2.00
10H13	11.0	0.50	15.0	2.50
11H13	12.1	0.55	16.5	2.75
15H13	16.5	0.75	22.5	3.75
18H13	19.8	0.90	27.0	4.50
20H13	22.0	1.00	30.0	5.00
26H13	28.6	1.30	39.0	6.50

Steel $X_{pos.} = \frac{(1.1 \times D) - D}{2}$

Aluminium $X_{pos.} = \frac{(1.5 \times D) - D}{2}$

Solid off-centre drilling, negative offset



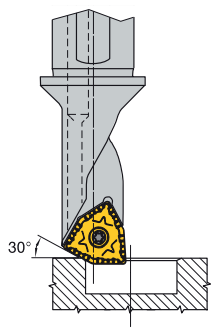
$X_{neg.}$: negative offset from the centre

D: tool nominal diameter

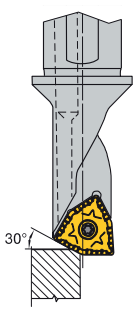
D	D min.	$X_{neg.}$
08H13	7.8	0.10
10H13	9.8	0.10
11H13	10.8	0.10
15H13	14.7	0.15
18H13	17.7	0.15
20H13	19.7	0.15
26H13	25.7	0.15

$X_{neg.} = \frac{(D\ min) - D}{2}$

Internal chamfering



External chamfering

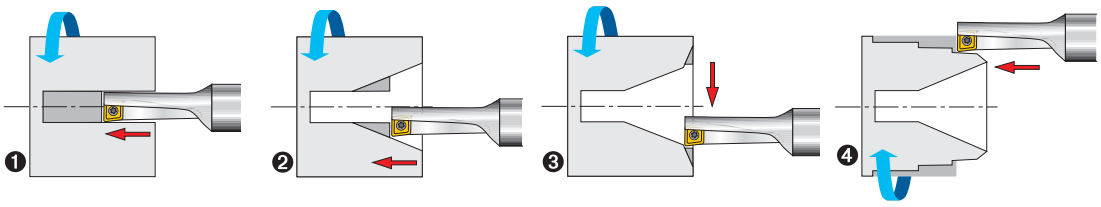


SARA SARAcut 2.0 Drilling and turning tool



- Please adjust these guideline values according to clamping operation and machine set-up!

129101.... 129102....
129201.... 129202....



ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min		Feed f in mm/rev in relation to drill bit diameter in mm			
					SP 300	SP 350	8-10 - 12	14 - 16	18 - 20	25 - 32
P	Unalloyed structural steel	Up to 700	St-52	1.0052	50 - 230	70 - 250	0.02 - 0.04	0.03 - 0.05	0.03 - 0.06	0.04 - 0.1
P	Tempering steel	500 - 950	42 CrMo4	1.7225	50 - 160	60 - 180	0.02 - 0.04	0.03 - 0.05	0.03 - 0.06	0.04 - 0.1
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	50- 150	50 - 160	0.02 - 0.04	0.03 - 0.05	0.03 - 0.06	0.04 - 0.1
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	50 - 180	70 - 180	0.02 - 0.04	0.02 - 0.05	0.02 - 0.06	0.03 - 0.08
M	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	50 - 160	90 - 180	0.02 - 0.04	0.02 - 0.05	0.02 - 0.06	0.03 - 0.08
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	90 - 180	90 - 230	0.02 - 0.06	0.04 - 0.08	0.05 - 0.08	0.04 - 0.12
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	90 - 180	110 - 230	0.02 - 0.06	0.04 - 0.08	0.05 - 0.08	0.04 - 0.12
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	60-140	90 - 230	0.02 - 0.06	0.04 - 0.08	0.05 - 0.08	0.04 - 0.12
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	70 - 1350	70 - 1350	0.05 - 0.1	0.06 - 0.1	0.06 - 0.12	0.05 - 0.25
N	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	70 - 1500	70 - 1500	0.05 - 0.1	0.06 - 0.1	0.06 - 0.12	0.05 - 0.25
N	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	70 - 360	70 - 360	0.05 - 0.1	0.06 - 0.1	0.06 - 0.12	0.05 - 0.25
N	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	70 - 360	70 - 360	0.05 - 0.1	0.06 - 0.1	0.06 - 0.12	0.05 - 0.25
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	30 - 90	30 - 110	0.02 - 0.04	0.02 - 0.05	0.02 - 0.06	0.03 - 0.08
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	20 - 80	10 - 50	0.02 - 0.04	0.02 - 0.05	0.02 - 0.06	0.03 - 0.08

Taps and thread formers

- Please adjust these guideline values according to clamping operation and machine set-up!
- Vc formers = Vc + 30-50%
- *Solid carbide taps

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min		Coolant
					Blank	Coated	
P	Machining steel	Up to 700	9 SMn 28	1.0715	10-15	15 - 25	Emulsion, cutting oil
P	Unalloyed structural steel	Up to 700	St-52	1.0052	10-15	15 - 25	Emulsion, cutting oil
P	Structural steel	700 - 950	Ck45	1.1191	10-15	15 - 25	Emulsion, cutting oil
P	Tempering steel	500 - 950	42 CrMo4	1.7225	2-5	5 - 10	Emulsion, cutting oil
P	Cast steel	Up to 950	GS 40	1.0416	10-15	15 - 25	Emulsion, cutting oil
P	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	10-15	15 - 25	Emulsion, cutting oil
P	Tempering steel	950 -1300	43CrMo4	1.3563	2-5	5 - 10	Emulsion, cutting oil
P	Nitriding steel	950 - 1300	31CrMoV9	1.8519	3 - 5	5 - 8	Emulsion, cutting oil
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	8 - 10	10-15	Emulsion, cutting oil
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	3 - 5	5 - 8	Emulsion
M	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	3 - 5	5 - 8	Emulsion
M	Duplex	700 - 950	x 2 CrNiMoN 22-5-3	1.4462	3 - 5	5 - 8	Emulsion
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	8 - 12	12 - 20	Emulsion, dry
K	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	5 - 8	10 - 20	Emulsion, cutting oil
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	5 - 8	10 - 20	Emulsion, cutting oil
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	10-15	15-20	Emulsion, cutting oil
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	20 - 25	25 - 35	Emulsion, cutting oil
N	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	20 - 30	30 - 40	Emulsion, cutting oil
N	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	10-15	15-20	Emulsion, cutting oil
N	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	10-15	15-20	Emulsion, cutting oil
N	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	20 - 25	25 - 35	Emulsion, cutting oil
N	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	20 - 25	25 - 35	Emulsion, cutting oil
N	Thermoplastic		PVC		20 - 30	30 - 40	Cutting oil
N	Thermoset		Melamine		3 - 5	5 - 8	Dry
N	Fibre-reinforced plastics		CFRP, GFRP		2 - 4	4 - 6	Dry
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	2 - 4	4 - 6	Cutting oil
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	2 - 4	4 - 6	Cutting oil
S	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	2 - 4	4 - 6	Cutting oil
H	Hardened materials up to 55 HRc		X40Cr14	1.2083		1 - 3 (2 - 12)*	Cutting oil
H	Hardened materials up to 60 HRc		X153CrMoV12	1.2379		2 - 6*	Cutting oil
H	Hardened materials up to 64 HRc		100Cr6	1.2067		1 - 3*	Cutting oil

Repair of damaged or worn thread

Application
- Thread repair of damage or worn thread
- Thread reinforcement of materials with low shear strength, e.g. aluminium and magnesium alloys
- In mechanical, automotive, electrical and medical engineering

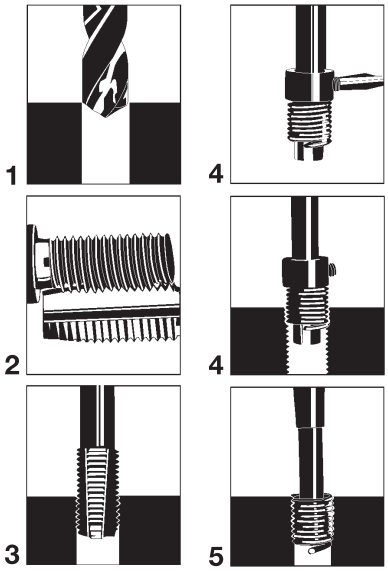
1 Drilling
Bore out damaged thread with twist drill bit.

2 Inspection
Inspect thread and threaded bolt for even thread and pitch.

3 Thread
Cut the holding thread into the bored-out hole using a special coil tap. The use of cutting oil is advisable.

4 Install thread insert
Place the insert on the tool and ensure the tang sits in the keyway opening. Correctly adjust using the adjusting ring. Gently screw-in the thread insert in the rotation direction. Do not turn against the running direction; the tang may break.

5 Break-off tang
After installation, remove the screwing tool and remove the tang using the tang breaker.

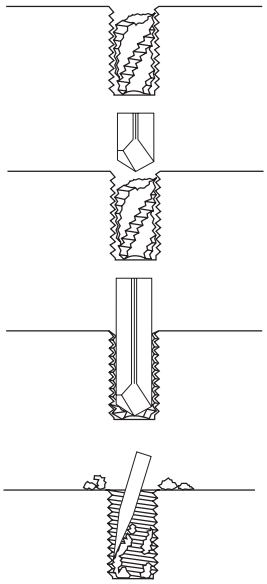


Solid carbide extractors for extracting damaged taps

Cutting data and comments

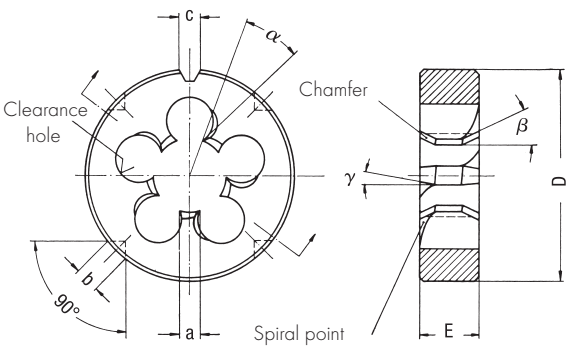
- Vc = ca. 20-25 m/min.
- Feed f = ca. 0.01-0.05 mm/rev

- Please ensure stable clamping!
- Please use high-quality lubricant!
- This tool should not be used to machine soft steels, aluminium alloys or other soft materials.
- The tool should be sharpened from time to time.



1. Position the drill bit on the centre of the damaged tap; please ensure that the workpiece and drill bit are securely clamped. If the head of the damaged tap protrudes from the workpiece, smooth the damaged surface to allow easier boring of the centre of the tap.
2. Perform initial centring at a low feed rate. Then retract the drill bit. Please use a little lubricant for this step.
3. Select the corresponding drill bit. Bore the hole with firm feed/speed. Pause the operation occasionally to remove chips. Please use lubricant of a sufficiently high quality.
4. If the bore is clean, the remaining tap can be easily removed using a scriber or a similar pointed tool; the thread cutting can then be continued.

Definitions and dimension explanations for threading dies

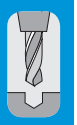


D External diameter (n. DIN, tolerance f10)
E Width
a Tooth width
c Groove width
b Diameter of the bore for retaining screw
α Rake angle
β Chamfer angle, half countersink angle
γ Spiral point angle

Threading die tolerances
We supply threading dies for the tolerance class "medium" as standard. Threading dies for other tolerance classes are available on request.

Tapping holes for taps

- Please adjust these guideline values according to clamping operation and machine set-up!



M Metric ISO standard thread / DIN 13

M	Pitch	Borehole mm
M 1	0,25	0,75
M 1,1	0,25	0,85
M 1,2	0,25	0,95
M 1,4	0,30	1,1
M 1,6	0,35	1,25
M 1,8	0,35	1,45
M 2	0,40	1,6
M 2,2	0,45	1,75
M 2,5	0,45	2,05
M 3	0,50	2,5
M 3,5	0,60	2,9
M 4	0,70	3,3
M 4,5	0,75	3,7
M 5	0,80	4,2
M 6	1,00	5
M 7	1,00	6
M 8	1,25	6,8
M 9	1,25	7,8
M 10	1,50	8,5
M 11	1,50	9,5
M 12	1,75	10,2
M 14	2,00	12
M 16	2,00	14
M 18	2,50	15,5
M 20	2,50	17,5
M 22	2,50	19,5
M 24	3,00	21
M 27	3,00	24
M 30	3,50	26,5
M 33	3,50	29,5
M 36	4,00	32
M 39	4,00	35
M 42	4,50	37,5
M 45	4,50	40,5
M 48	5,00	43
M 52	5,00	47
M 56	5,50	50,5
M 60	5,50	54,5
M 64	6,00	58
M 68	6,00	62

Rp Whitworth pipe thread DIN 2999

Rp	Number of threads to 1 inch	Borehole mm
Rp 1/8"	28	8,60
Rp 1/4"	19	11,50
Rp 3/8"	19	15,00
Rp 1/2"	14	18,50
Rp 3/4"	14	24,00
Rp 1"	11	30,25
Rp 1.1/4"	11	39,00
Rp 1.1/2"	11	44,85
Rp 2"	11	56,50

BSW British Standard Whitworth / BS 84

BSW	Number of threads to 1 inch	Borehole mm
1/4"	20	5,10
5/6"	18	6,50
3/8"	16	7,90
7/16"	14	9,20
1/2"	12	10,50
5/8"	11	13,50
3/4"	10	16,30
7/8"	9	19,25
1"	8	22,00
1.1/8"	7	24,75
1.1/4"	7	27,75
1.3/8"	6	30,20
1.1/2"	6	33,50
1.5/8"	5	35,50
1.3/4"	5	38,50
1.7/8"	4,5	41,50
2"	4,5	44,50
2.1/4"	4	50,00
2.1/2"	4	56,50
2.3/4"	3,5	62,00
3"	3,5	68,00

MF ISO fine-pitch metric thread / DIN 13

MF	Pitch	Borehole mm
M 2	0,25	1,75
M 2,2	0,25	1,95
M 2,5	0,35	2,15
M 3	0,35	2,65
M 3,5	0,35	3,15
M 4	0,5	3,50
M 5	0,5	4,50
M 6	0,5	5,50
M 6	0,75	5,20
M 8	0,75	7,20
M 10	0,75	9,20
M 12	0,75	11,20
M 8	1,00	7,00
M 10	1,00	9,00
M 12	1,00	11,00
M 14	1,00	13,00
M 16	1,00	15,00
M 18	1,00	17,00
M 20	1,00	19,00
M 22	1,00	21,00
M 24	1,00	23,00
M 26	1,00	25,00
M 28	1,00	27,00
M 30	1,00	29,00
M 10	1,25	8,80
M 12	1,25	10,80
M 14	1,25	12,80
M 12	1,50	10,50
M 14	1,50	12,50
M 16	1,50	14,50
M 18	1,50	16,50
M 20	1,50	18,50
M 22	1,50	20,50
M 24	1,50	22,50
M 26	1,50	24,50
M 27	1,50	25,50
M 28	1,50	26,50
M 30	1,50	28,50
M 32	1,50	30,50
M 33	1,50	31,50
M 36	1,50	34,50
M 38	1,50	36,50
M 40	1,50	38,50
M 42	1,50	40,50
M 45	1,50	43,50
M 48	1,50	46,50
M 50	1,50	48,50
M 52	1,50	50,50
M 18	2,00	16,00
M 20	2,00	18,00
M 22	2,00	20,00
M 24	2,00	22,00
M 27	2,00	25,00
M 28	2,00	26,00
M 30	2,00	28,00
M 32	2,00	30,00
M 33	2,00	31,00
M 36	2,00	34,00
M 39	2,00	37,00
M 40	2,00	38,00
M 42	2,00	40,00
M 45	2,00	43,00
M 48	2,00	46,00
M 50	2,00	48,00

UN American thread 8 and 12 Gg ANSI B 1.1

UN	Number of threads to 1 inch	Borehole mm
1.1/8"	8	25,50
1.1/4"	8	28,50
1.3/8"	8	31,75
1.1/2"	8	35,00
1.5/8"	8	38,00
1.3/4"	8	41,28
1.7/8"	8	44,50
2"	8	47,62
1.3/4"	12	42,50
2"	12	48,75

UNC American thread ANSI B 1.1

UNC	Number of threads to 1 inch	Borehole mm
Nr. 1	64	1,50
Nr. 2	56	1,80
Nr. 3	48	2,10
Nr. 4	40	2,30
Nr. 5	40	2,60
Nr. 6	32	2,80
Nr. 8	32	3,50
Nr. 10	24	3,90
Nr. 12	24	4,50
1/4"	20	5,20
5/16"	18	6,60
3/8"	16	8,00
7/16"	14	9,40
1/2"	13	10,80
9/16"	12	12,20
5/8"	11	13,60
3/4"	10	16,50
7/8"	9	19,50
1"	8	22,25
1.1/8"	7	25,00
1.1/4"	7	28,18
1.3/8"	6	30,75
1.1/2"	6	34,00
1.3/4"	5	39,50
2"	4,5	45,00
2.1/4"	4,5	51,50
2.1/2"	4	57,00
2.3/4"	4	63,50
3"	4	70,00

UNF American thread ANSI B 1.1

UNF	Number of threads to 1 inch	Borehole mm
Nr. 0	80	1,25
Nr. 1	72	1,55
Nr. 2	64	1,90
Nr. 3	56	2,10
Nr. 4	48	2,40
Nr. 5	44	2,70
Nr. 6	40	2,95
Nr. 8	36	3,50
Nr. 10	32	4,10
Nr. 12	28	4,70
1/4"	28	5,50
5/16"	24	6,90
3/8"	24	8,50
7/16"	20	9,90
1/2"	20	11,50
9/16"	18	12,90
5/8"	18	14,50
3/4"	16	17,50
7/8"	14	20,40
1"	12	23,25
1.1/8"	12	26,50
1.1/4"	12	29,50
1.3/8"	12	32,75
1.1/2"	12	36,00

UNEF American thread ANSI B 1.1

UNEF	Number of threads to 1 inch	Borehole mm
Nr. 12	32	4,75
1/4"	32	5,60
5/16"	32	7,20
3/8"	32	8,80
7/16"	28	10,30
1/2"	28	11,80
9/16"	24	13,30
5/8"	24	14,90
11/16"	24	16,50
3/4"	20	17,75
13/16"	20	19,40
7/8"	20	21,00
15/16"	20	22,50
1"	20	24,25
1.1/16"	18	25,50
1.1/8"	18	27,25
1.1/4"	18	30,40
1.5/16"	18	32,00
1.3/8"	18	33,50
1.1/2"	18	36,75

EG - M Metric ISO standard thread

EG - M	Pitch	Borehole mm
EG - M 2	0,40	2,10
EG - M 2,5	0,45	2,60
EG - M 3	0,50	3,20
EG - M 3,5	0,60	3,70
EG - M 4	0,70	4,20
EG - M 5	0,80	5,20
EG - M 6	1	6,30
EG - M 8	1,25	8,40
EG - M 10	1,50	10,40
EG - M 12	1,75	12,50
EG - M 14	2,00	14,50
EG - M 16	2,00	16,50
EG - M 18	2,50	18,75
EG - M 20	2,50	20,75
EG - M 22	2,50	22,75
EG - M 24	3,00	24,75
EG - M 30	3,50	31,00

EG - MF ISO fine-pitch metric thread

EG - MF	Pitch	Borehole mm
EG - M 8	1	8,30
EG - M 10	1	10,30
EG - M 10	1,25	10,30
EG - M 12	1,25	12,30
EG - M 12	1,50	12,50
EG - M 14	1,25	14,30
EG - M 14	1,50	14,50
EG - M 16	1,50	16,50
EG - M 18	1,50	18,50
EG - M 20	1,50	20,50
EG - M 22	1,50	22,50
EG - M 24	1,50	24,50

EG - UNC American thread ANSI B 1.1

EG - UNC	Number of threads to 1 inch	Borehole mm
Nr. 1	64	2,00
Nr. 2	56	2,40
Nr. 3	48	2,80
Nr. 4	40	3,10
Nr. 5	40	3,40
Nr. 6	32	3,80
Nr.8	32	4,50
Nr.10	24	5,30
Nr. 12	24	5,90
1/4"	20	6,80
5/16"	18	8,40
3/8"	16	10,00
7/16"	14	11,75
1/2"	13	13,30
9/16"	12	15,00
5/8"	11	16,50
3/4"	10	19,75
7/8"	9	23,00
1"	8	26,50

EG - UNF American thread ANSI B 1.1

EG-UNF	Number of threads to 1 inch	Borehole mm
Nr. 0	80	1,60
Nr. 1	72	2,00
Nr. 2	64	2,40
Nr. 3	56	2,70
Nr. 4	48	3,10
Nr. 5	44	3,40
Nr. 6	40	3,80
Nr. 8	36	4,40
Nr. 10	32	5,10
Nr.12	28	5,80
1/4"	28	6,60
5/16"	24	8,30
3/8"	24	9,80
7/16"	20	11,50
1/2"	20	13,10
9/16"	18	14,75
5/8"	18	16,27
3/4"	16	19,50
7/8"	14	22,75
1"	12	26,00

BSPT / Rc thread ISO 7 / 1 - Konizität 1:16				
BSPT	Number of threads to 1 inch	D Straight mm	D kon. mm	Bore length
Rc 1/8"	28	8,30	8,50	10,20
Rc 1/4"	19	11,10	11,35	15,70
Rc 3/8"	19	14,50	14,85	16,00
Rc 1/2"	14	18,10	18,50	21,50
Rc 3/4"	14	23,50	24,00	22,80
Rc 1"	11	29,75	30,15	27,30
Rc 1.1/4"	11	38,20	38,80	30,00
Rc 1.1/2"	11	44,00	44,70	30,00
Rc 2"	11	55,56	56,50	34,00

NPT / NPTF thread ANSI B 2.1 - Konizität 1:16				
NPT/ NPTF	Number of threads to 1 inch	D Straight mm	D kon. mm	Bore length
1/16"	27	6,25	6,40	12,10
1/8"	27	8,40	8,70	12,10
1/4"	18	11,10	11,40	17,50
3/8"	18	14,30	14,80	17,70
1/2"	14	17,90	18,30	23,00
3/4"	14	23,00	23,70	23,00
1"	11,5	29,00	29,70	27,40
1.1/4"	11,5	37,70	38,40	28,00
1.1/2"	11,5	44,00	44,50	28,40
2"	11,5	56,00	56,60	28,40

G - R pipe thread / DIN ISO 228		
G	Number of threads to 1 inch	Borehole mm
G 1/8"	28	8,70
G 1/4"	19	11,80
G 3/8"	19	15,25
G 1/2"	14	19,00
G 5/8"	14	21,00
G 3/4"	14	24,50
G 7/8"	14	28,25
G 1"	11	30,75
G 1.1/8"	11	35,50
G 1.1/4"	11	39,50
R*1.3/8"	11	41,67
G 1.1/2"	11	45,24
G 1.3/4"	11	51,00
G 2"	11	57,00
G 2.1/4"	11	63,10
G 2.1/2"	11	72,50
G 2.3/4"	11	79,00
G 3"	11	85,20
R*3.1/4"	11	91,50
G 3.1/2"	11	97,80
R 3.3/4"	11	104,00
G 4"	11	110,50

*not included in DIN ISO 228

Tr metric ISO trapezoidal thread DIN 103/7H		
Tr	Pitch	Borehole mm
Tr 10	2	8,10
Tr 12	3	9,20
Tr 14	3	11,20
Tr 14	4	10,50
Tr 16	4	12,25
Tr 18	4	14,25
Tr 20	4	16,25
Tr 22	5	17,25
Tr 24	5	19,25
Tr 28	5	23,25
Tr 30	6	24,25
Tr 32	6	26,25
Tr 36	6	30,25
Tr 38	7	31,25

Tapping holes for taps

- Please adjust these guideline values according to clamping operation and machine set-up!

M Metric ISO standard thread / DIN 13		
M	Pitch	Borehole mm
M 1,6	0,35	1,45 ± 0,02
M 2	0,40	1,80 ± 0,02
M 2,5	0,45	2,30 ± 0,02
M 3	0,50	2,75 ± 0,03
M 3,5	0,60	3,20 ± 0,03
M 4	0,70	3,65 ± 0,03
M 5	0,80	4,60 ± 0,03
M 6	1,00	5,55 ± 0,04
M 8	1,25	7,40 ± 0,04
M 10	1,50	9,30 ± 0,05
M 12	1,75	11,10 ± 0,05
M 14	2,00	13,10 ± 0,05
M 16	2,00	15,10 ± 0,05
M 18	2,50	16,90 ± 0,05
M 20	2,50	18,90 ± 0,05
M 22	2,50	20,90 ± 0,05
M 24	3,00	22,65 ± 0,05
M 27	3,00	25,65 ± 0,05

MF ISO fine-pitch metric thread / DIN 13		
MF	Pitch	Borehole mm
M 4	0,50	3,75 ± 0,03
M 5	0,50	4,75 ± 0,03
M 6	0,50	5,75 ± 0,03
M 6	0,75	5,65 ± 0,03
M 8	1,00	7,55 ± 0,04
M 10	1,00	9,55 ± 0,04
M 12	1,00	11,55 ± 0,04
M 14	1,00	13,55 ± 0,04
M 16	1,00	15,55 ± 0,04
M 10	1,25	9,40 ± 0,04
M 12	1,25	11,40 ± 0,04
M 14	1,25	13,40 ± 0,04
M 16	1,25	15,40 ± 0,04
M 12	1,50	11,30 ± 0,05
M 14	1,50	13,30 ± 0,05
M 16	1,50	15,30 ± 0,05
M 18	1,50	17,30 ± 0,05
M 20	1,50	19,30 ± 0,05
M 20	2,00	19,10 ± 0,05
M 22	2,00	21,10 ± 0,05
M 24	2,00	23,10 ± 0,05

G - R pipe thread / DIN ISO 228		
G	Number of threads to 1 inch	Borehole mm
G 1/8"	28	9,25 ± 0,04
G 1/4"	19	12,40 ± 0,04
G 3/8"	19	16,00 ± 0,04
G 1/2"	14	20,00 ± 0,05
G 5/8"	14	22,00 ± 0,05
G 3/4"	14	25,40 ± 0,05
G 7/8"	14	29,25 ± 0,05

UNC American thread ANSI B 1.1		
UNC	Number of threads to 1 inch	Borehole mm
Nr. 2	56	2,00 ± 0,02
Nr. 3	48	2,30 ± 0,03
Nr. 4	40	2,55 ± 0,03
Nr. 5	40	2,90 ± 0,03
Nr. 6	32	3,15 ± 0,03
Nr. 8	32	3,80 ± 0,03
Nr. 10	24	4,35 ± 0,03
1/4"	20	5,80 ± 0,04
5/16"	18	7,30 ± 0,05
3/8"	16	8,80 ± 0,05
7/16"	14	10,30 ± 0,05
1/2"	13	11,80 ± 0,05
9/16"	12	13,35 ± 0,05
5/8"	11	14,85 ± 0,05
3/4"	10	17,90 ± 0,05

UNF American thread ANSI B 1.1		
UNF	Number of threads to 1 inch	Borehole mm
Nr. 2	64	2,00 ± 0,02
Nr. 3	56	2,30 ± 0,02
Nr. 4	48	2,60 ± 0,03
Nr. 5	44	2,90 ± 0,03
Nr. 6	40	3,20 ± 0,03
Nr. 8	36	3,85 ± 0,03
Nr. 10	32	4,45 ± 0,03
Nr. 12	28	5,10 ± 0,03
1/4"	28	5,90 ± 0,04
5/16"	24	7,45 ± 0,04
3/8"	24	9,00 ± 0,04
7/16"	20	10,55 ± 0,04
1/2"	20	12,10 ± 0,04
9/16"	18	13,65 ± 0,05
5/8"	18	15,25 ± 0,05
3/4"	16	18,35 ± 0,05
7/8"	14	21,43 ± 0,05
1"	12	24,45 ± 0,05

EG - M Metric ISO standard thread		
EG - M	Pitch	Borehole mm
EG - M 2	0,40	2,35 ± 0,02
EG - M 2,5	0,45	2,90 ± 0,02
EG - M 3	0,50	3,45 ± 0,03
EG - M 3,5	0,60	4,00 ± 0,03
EG - M 4	0,70	4,60 ± 0,03
EG - M 5	0,80	5,70 ± 0,03
EG - M 6	1,00	6,85 ± 0,04
EG - M 8	1,25	9,05 ± 0,04
EG - M 10	1,50	11,25 ± 0,05
EG - M 12	1,75	13,50 ± 0,05
EG - M 14	2,00	15,70 ± 0,05
EG - M 16	2,00	17,70 ± 0,05
EG - M 18	2,50	20,10 ± 0,05
EG - M 20	2,50	22,10 ± 0,05
EG - M 22	2,50	24,10 ± 0,05
EG - M 24	3,00	26,50 ± 0,05

EG - MF ISO fine-pitch metric thread		
EG - MF	Pitch	Borehole mm
EG - M 8	1,00	8,85 ± 0,04
EG - M 10	1,00	10,85 ± 0,04
EG - M 12	1,00	12,85 ± 0,04
EG - M 14	1,00	14,85 ± 0,04
EG - M 10,25	1,25	11,05 ± 0,04
EG - M 12	1,25	13,05 ± 0,04
EG - M 14	1,25	15,05 ± 0,04
EG - M 12	1,50	13,25 ± 0,05
EG - M 14	1,50	15,25 ± 0,05
EG - M 16	1,50	17,25 ± 0,05
EG - M 18	1,50	19,25 ± 0,05
EG - M 20	1,50	21,25 ± 0,05
EG - M 20	2,00	21,70 ± 0,05
EG - M 22	2,00	23,75 ± 0,05
EG - M 24	2,00	25,75 ± 0,05

EG - UNC American thread ANSI B 1.1		
EG - UNC	Number of threads to 1 inch	Borehole mm
Nr. 2	56	2,70 ± 0,02
Nr. 3	48	3,00 ± 0,03
Nr. 4	40	3,35 ± 0,03
Nr. 5	40	3,70 ± 0,03
Nr. 6	32	4,20 ± 0,03
Nr. 8	32	4,85 ± 0,03
Nr. 10	24	5,70 ± 0,03
1/4"	20	7,45 ± 0,04
5/16"	18	9,10 ± 0,05
3/8"	16	10,80 ± 0,05
7/16"	14	12,65 ± 0,05
1/2"	13	14,30 ± 0,05
9/16"	12	16,10 ± 0,05
5/8"	11	17,86 ± 0,05
3/4"	10	21,20 ± 0,05

EG - UNF American thread ANSI B 1.1		
EG - UNF	Number of threads to 1 inch	Borehole mm
Nr. 2	64	2,50 ± 0,02
Nr. 3	56	2,90 ± 0,02
Nr. 4	48	3,30 ± 0,03
Nr. 5	44	3,65 ± 0,03
Nr. 6	40	4,00 ± 0,03
Nr. 8	36	4,75 ± 0,03
Nr. 10	32	5,50 ± 0,03
Nr. 12	28	6,25 ± 0,03
1/4"	28	7,05 ± 0,04
5/16"	24	8,80 ± 0,04
3/8"	24	10,40 ± 0,04
7/16"	20	12,20 ± 0,04
1/2"	20	13,75 ± 0,04
9/16"	18	15,50 ± 0,05
5/8"	18	17,07 ± 0,05
3/4"	16	20,40 ± 0,05
7/8"	14	23,75 ± 0,05
1"	12	27,20 ± 0,05

Core diameter-tolerance field for thread forming in accordance with DIN 13, Part 50

For strength reasons it is not necessary to maintain the core diameter tolerances of tolerance class 6H; tolerance class 7H satisfies the demand that the flank coverage of bolt and nut thread 0.32 x P should not be exceeded. Formed threads are normally stronger than cut threads due to the uninterrupted fibre orientation and the work hardening.

M Metric ISO standard thread

M	Pitch	Hole Ø	Core Ø 7H nut thread	
	mm	mm	min.	max.
M1	0.25	0.88	-	-
M1.1	0.25	0.98	-	-
M1.2	0.25	1.08	-	-
M1.4	0.30	1.25	-	-
M1.6	0.35	1.45	-	-
M1.7	0.35	1.55	-	-
M1.8	0.35	1.65	-	-
M2.0	0.40	1.80	-	-
M2.2	0.45	2.00	-	-
M2.3	0.40	2.10	-	-
M2.5	0.45	2.30	-	-
M2.6	0.45	2.40	-	-
M3.0	0.50	2.80	2.459	2.639
M3.5	0.60	3.25	2.850	3.050
M4.0	0.70	3.70	3.242	3.466
M4.5	0.75	4.15	3.688	3.924
M5.0	0.80	4.65	4.134	4.384
M6.0	1.00	5.55	4.917	5.217
M7.0	1.00	6.55	5.917	6.217
M8.0	1.25	7.40	6.647	6.982
M9.0	1.25	8.40	7.647	7.982
M10	1.50	9.25	8.376	8.751
M11	1.50	10.25	9.376	9.751
M12	1.75	11.20	10.106	10.531
M14	2.00	13.10	11.835	12.310
M16	2.00	15.10	13.835	14.310
M18	2.50	16.90	15.294	15.854
M20	2.50	18.90	17.294	17.854

MF Metric ISO fine thread

MF	Pitch	Hole Ø	Core Ø 7H nut thread	
	mm	mm	min.	max.
M5	0.50	4.75	4.459	4.639
M5.5	0.50	5.25	4.959	5.139
M6	0.75	5.65	5.188	5.424
M7	0.75	6.65	6.188	6.424
M8	0.75	7.65	7.188	7.424
M8	1.00	7.55	6.917	7.217
M9	0.75	8.65	8.188	8.424
M9	1.00	8.55	7.917	8.217
M10	0.75	9.65	9.188	9.424
M10	1.00	9.55	8.917	9.217
M10	1.25	9.40	8.647	8.982
M11	0.75	10.65	10.188	10.424
M11	1.00	10.55	9.917	10.217
M12	1.00	11.55	10.917	11.217
M12	1.25	11.40	10.647	10.982
M12	1.50	11.30	10.376	10.751
M14	1.00	13.55	12.917	13.217
M14	1.25	13.40	12.647	12.982
M14	1.50	13.30	12.376	12.751
M15	1.00	14.55	13.917	14.217
M15	1.50	14.30	13.376	13.751
M16	1.00	15.55	14.917	15.217
M16	1.50	15.30	14.376	14.751
M17	1.00	16.55	15.917	16.217
M17	1.50	16.30	15.376	15.751
M18	1.00	17.55	16.917	17.217
M18	1.50	17.30	16.376	16.751
M18	2.00	17.10	15.835	16.310
M20	1.00	19.55	18.917	19.217
M20	1.50	19.30	18.376	18.751
M22	1.50	21.30	20.376	20.751
M24	1.50	23.30	22.376	22.751

THERMDRILL® Thermal drill bit (flow drill)



- Please adjust these guideline values according to clamping operation and machine set-up!

102900....

FORM Without cutting edges	Thread	Short version	Material thickness max. mm	Long version	Material thickness max. mm	Shank Ø mm	Rotational speeds rpm			
							Thermal drilling			Thread forming
							Min.	Optimal	Alu, Cu	
With collar 	M3		1.5		2.0	6	2.600	3.000	4.000	1.350
	M4		1.5		2.5	6	2.300	2.600	3.800	1.000
	M5		2.0		3.0	6	2.200	2.500	3.700	800
	M6		2.0		3.5	8	2.000	2.400	3.600	65
	M8		2.5		4.0	8	1.600	2.200	3.200	500
	M10		2.5		4.5	10	1.500	2.000	3.000	400
	M12		3.0		5.0	12	1.400	1.800	2.800	350
	M16		3.5		6.0	16	1.200	1.400	2.200	250
	M18		3.5		6.0	18	1.100	1.300	2.000	230
	M20		4.0		8.0	20	1.000	1.200	1.900	200
	1/8"		2.5		4.5	10	1.500	2.000	3.000	400
	1/4"		2.5		5.0	14	1.400	1.600	2.600	350
Additional thread in collar provides greater clamping force	3/8"		2.5		5.0	16	1.200	1.400	2.200	300
	1/2"		2.5			18	1.000	1.200	1.800	250
	3/4"		2.5			20	900	1.000	1.600	200
	1"		2.5			20	900	1.000	1.500	150

CUT With cutting edges	Thread	Short version	Material thickness max. mm	Long version	Material thickness max. mm	Shank Ø mm	Rotational speeds rpm			
							Thermal drilling			Thread forming
							Min.	Optimal	Alu, Cu	
Without collar 	M3		1.5		3.0	6	2.600	3.000	4.000	1.350
	M4		2.0		4.0	6	2.300	2.600	3.800	1.000
	M5		3.0		4.5	6	2.200	2.500	3.700	800
	M6		3.0		5.0	8	2.000	2.400	3.600	65
	M8		4.0		6.0	8	1.600	2.200	3.200	500
	M10		4.0		6.5	10	1.500	2.000	3.000	400
	M12		4.5		7.0	12	1.400	1.800	2.800	350
	M16		5.0		8.0	16	1.200	1.400	2.200	250
	M18		5.0		8.0	18	1.100	1.300	2.000	230
	M20		6.0		10.0	20	1.000	1.200	1.900	200
	1/8"		4.0		6.5	10	1.500	2.000	3.000	400
	1/4"		4.0		7.0	14	1.400	1.600	2.600	350
For smooth surfaces	3/8"		4.0		7.0	16	1.200	1.400	2.200	300
	1/2"		4.0			18	1.000	1.200	1.800	250
	3/4"		4.0			20	900	1.000	1.600	200
	1"		4.0			20	900	1.000	1.500	150

HSS countersink



- Please adjust the guideline values according to clamping operation and machine set-up!

150101.... 150102.... 150104.... 150105.... 150106.... 150107.... 150110.... 150111.... 150112.... 150113.... 150114.... 150116.... 150117.... 150130.... 150131.... 150135.... 150140.... 150145.... 146.... 147.... 150148.... 150150.... 150151.... 150115.... 150155.... 150201.... 150270.... 150271....

- **Recommended cutting data for coated HSS, as well as HSS-E countersinks:**
- The aforementioned values can be increased by approx. 10 and 20%.

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						3 - 5	5.1 - 8	8.1 - 12	12.1 - 16	16.1 - 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	20 - 28	0.05 - 0.07	0.08 - 0.1	0.09 - 0.12	0.12 - 0.16	0.16 - 0.2
	Unalloyed structural steel	Up to 700	St-52	1.0052	20 - 28	0.05 - 0.07	0.08 - 0.1	0.09 - 0.12	0.12 - 0.16	0.16 - 0.2
	Structural steel	700 - 950	Ck45	1.1191	10-15	0.03 - 0.05	0.05 - 0.08	0.08 - 0.1	0.1 - 0.14	0.14 - 0.18
	Cast steel	Up to 950	GS 40	1.0416	6 - 10	0.03 - 0.05	0.05 - 0.08	0.08 - 0.1	0.1 - 0.14	0.14 - 0.18
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	10-15	0.03 - 0.05	0.05 - 0.08	0.08 - 0.1	0.1 - 0.14	0.14 - 0.18
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	5 - 8	0.02 - 0.04	0.04 - 0.06	0.04 - 0.06	0.04 - 0.08	0.04 - 0.1
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	5 - 8	0.03 - 0.05	0.05 - 0.08	0.08 - 0.1	0.1 - 0.14	0.14 - 0.18
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	5 - 10	0.03 - 0.05	0.05 - 0.08	0.08 - 0.1	0.1 - 0.14	0.14 - 0.18
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	8 - 14	0.04 - 0.05	0.05 - 0.1	0.1 - 0.14	0.14 - 0.18	0.18 - 0.22
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	6 - 10	0.02 - 0.04	0.04 - 0.06	0.04 - 0.06	0.04 - 0.08	0.04 - 0.1
	Ductile iron	Up to 280 HB	GGG 60	0.7060	8 - 12	0.03 - 0.05	0.05 - 0.08	0.08 - 0.1	0.1 - 0.14	0.14 - 0.18
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	8 - 12	0.03 - 0.05	0.05 - 0.08	0.08 - 0.1	0.1 - 0.14	0.14 - 0.18
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	40 - 80	0.08 - 0.11	0.1 - 0.14	0.12 - 0.16	0.16 - 0.22	0.2 - 0.25
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	20 - 50	0.06 - 0.09	0.08 - 0.1	0.1 - 0.12	0.12 - 0.16	0.16 - 0.2
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	35 - 50	0.06 - 0.09	0.09 - 0.12	0.12 - 0.16	0.12 - 0.16	0.16 - 0.24
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	25 - 40	0.08 - 0.11	0.1 - 0.14	0.12 - 0.16	0.16 - 0.22	0.2 - 0.25
	Thermoplastic		PVC		20 - 40	0.05 - 0.08	0.07 - 0.1	0.09 - 0.12	0.12 - 0.16	0.16 - 0.2
	Thermoset		Melamine		10 - 20	0.04 - 0.06	0.06 - 0.09	0.08 - 0.1	0.1 - 0.12	0.12 - 0.16
	Graphite		C8000		3 - 6	Manual feed	Manual feed	Manual feed	Manual feed	Manual feed
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	5 - 8	0.02 - 0.04	0.04 - 0.06	0.04 - 0.06	0.04 - 0.08	0.04 - 0.1
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	6 - 10	0.03 - 0.05	0.05 - 0.08	0.08 - 0.1	0.1 - 0.14	0.14 - 0.18

ATORN® ENORMplus Taper and deburring countersinks



- Please adjust these guideline values according to clamping operation and machine set-up!

150163....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						10.4	12.4	16.5	20.5	25 / 31
P	Cast steel	Up to 950	GS 40	1.0416	8 - 14	0.04	0.05	0.07	0.1	0.12
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	6 - 12	0.03	0.03	0.04	0.05	0.06
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	8 - 11	0.04	0.06	0.08	0.1	0.12
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	10 - 17	0.06	0.08	0.1	0.12	0.15
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	5 - 10	0.04	0.05	0.06	0.08	0.1
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	5 - 12	0.07	0.1	0.12	0.15	0.18

SARA® Taper bridge reamers



- Please adjust these guideline values according to clamping operation and machine set-up!

160130....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						6 - 10	10 - 16	16 - 25	25 - 32	32 - 40
P	Machining steel	Up to 700	9 SMn 28	1.0715	10-15	0.1 - 0.2	0.2 - 0.3	0.2 - 0.3	0.3 - 0.45	0.3 - 0.5
	Unalloyed structural steel	Up to 700	St-52	1.0052	10-15	0.1 - 0.2	0.2 - 0.3	0.2 - 0.3	0.3 - 0.45	0.3 - 0.5
	Structural steel	700 - 950	Ck45	1.1191	8 - 12	0.1 - 0.2	0.2 - 0.3	0.2 - 0.3	0.3 - 0.45	0.3 - 0.5
	Cast steel	Up to 950	GS 40	1.0416	6 - 10	0.1 - 0.15	0.2 - 0.3	0.2 - 0.3	0.3 - 0.45	0.3 - 0.5
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	6 - 10	0.1 - 0.2	0.2 - 0.3	0.2 - 0.3	0.3 - 0.45	0.3 - 0.5
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	10-15	0.1 - 0.15	0.2 - 0.3	0.2 - 0.3	0.3 - 0.45	0.3 - 0.5
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	10 - 12	0.1 - 0.15	0.2 - 0.3	0.2 - 0.3	0.3 - 0.45	0.3 - 0.5
	Ductile iron	Up to 280 HB	GGG 60	0.7060	10 - 12	0.1 - 0.15	0.2 - 0.3	0.2 - 0.3	0.3 - 0.45	0.3 - 0.5
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	15-20	0.1 - 0.2	0.2 - 0.35	0.2 - 0.3	0.3 - 0.45	0.3 - 0.5
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	15-20	0.1 - 0.2	0.2 - 0.35	0.2 - 0.3	0.3 - 0.45	0.3 - 0.5
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	20 - 30	0.1 - 0.2	0.2 - 0.35	0.2 - 0.3	0.3 - 0.45	0.3 - 0.5
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	20 - 30	0.1 - 0.2	0.2 - 0.35	0.2 - 0.3	0.3 - 0.45	0.3 - 0.5

ATORN® Solid carbide taper and deburring countersink



150133....

150166....
150171....

- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						6	10	16	20	25
P	Machining steel	Up to 700	9 SMn 28	1.0715	30 - 50	0.1	0.1	0.12	0.14	0.16
	Unalloyed structural steel	Up to 700	St-52	1.0052	30 - 50	0.1	0.1	0.12	0.14	0.16
	Structural steel	700 - 950	Ck45	1.1191	25 - 40	0.06	0.08	0.14	0.16	0.18
	Cast steel	Up to 950	GS 40	1.0416	12 - 20	0.06	0.07	0.1	0.12	0.15
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	20 - 35	0.07	0.1	0.16	0.18	0.2
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	8 - 20	0.05	0.05	0.06	0.07	0.08
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	12 - 20	0.05	0.06	0.08	0.1	0.12
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	15 - 30	0.08	0.1	0.12	0.15	0.18
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	12 - 25	0.07	0.1	0.12	0.15	0.18
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	10 - 20	0.05	0.07	0.1	0.12	0.14
	Ductile iron	Up to 280 HB	GGG 60	0.7060	12 - 22	0.06	0.08	0.11	0.14	0.16
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	12 - 22	0.06	0.08	0.11	0.14	0.16
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	60 - 100	0.12	0.15	0.2	0.24	0.27
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	40 - 65	0.09	0.11	0.15	0.18	0.23
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	40 - 80	0.1	0.12	0.16	0.2	0.24
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	40 - 120	0.12	0.14	0.18	0.21	0.27
	Thermoplastic		PVC		30 - 65	0.12	0.14	0.17	0.2	0.25
	Thermoset		Melamine		15 - 35	0.1	0.12	0.15	0.18	0.24
	Graphite		C8000		5 - 10	Manual feed	Manual feed	Manual feed	Manual feed	Manual feed

ATORN® Reverse countersink 180°



152501....

- Please adjust these guideline values according to clamping operation and machine set-up!

- For rotating use with stationary workpieces
- For ISO indexable cutting inserts (CPMT or CCM and CCG)
- With internal cooling, straight shank with clamping surface (Whistle-Notch)
  Ø15 and Ø 18 without internal cooling
  1. Positioning: pay attention to the cutting edge position!
  2. Move from the centre to the cutting edge opposite "E".
  3. Move eccentrically through the bore.
  4. Move back to the centre.
  5. Reverse countersink with rotational speed "N" and feed "F".
  6. Move from the centre to the cutting edge opposite "E" and retract from the hole.

Cutting speed Vc m/min	Feed F mm/rev
50 - 80	0.08 - 0.1

ATORN® High helix taper reamer



160150....

- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm				
						2 - 3	3 - 6	6 - 10	10 - 14	14 - 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	6 - 8	0.2 - 0.3	0.4-0.5	0.4-0.5	0.4 - 0.6	0.5 - 0.6
	Unalloyed structural steel	Up to 700	St-52	1.0052	6 - 8	0.2 - 0.3	0.4-0.5	0.4-0.5	0.4 - 0.6	0.5 - 0.6
	Structural steel	700 - 950	Ck45	1.1191	6 - 8	0.2 - 0.3	0.4-0.5	0.4-0.5	0.4 - 0.6	0.5 - 0.6
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	4 - 6	0.1 - 0.2	0.2 - 0.3	0.2 - 0.3	0.3 - 0.4	0.4-0.5
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	6 - 8	0.2 - 0.3	0.4-0.5	0.4-0.5	0.4 - 0.6	0.5 - 0.6
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	4 - 6	0.1 - 0.2	0.2 - 0.3	0.2 - 0.3	0.3 - 0.4	0.4-0.5
	Ductile iron	Up to 280 HB	GGG 60	0.7060	4 - 6	0.1 - 0.2	0.2 - 0.3	0.2 - 0.3	0.3 - 0.4	0.4-0.5
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	6 - 8	0.2 - 0.3	0.4-0.5	0.4-0.5	0.4 - 0.6	0.4 - 0.6
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	6 - 8	0.2 - 0.3	0.4-0.5	0.4-0.5	0.4 - 0.6	0.4 - 0.6
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	6 - 8	0.2 - 0.3	0.4-0.5	0.4-0.5	0.4 - 0.6	0.4 - 0.6
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	6 - 8	0.2 - 0.3	0.4-0.5	0.4-0.5	0.4 - 0.6	0.4 - 0.6

ATORN® HSS-E machine reamers



- Please adjust these guideline values according to clamping operation and machine set-up!

161001.... **161005....** **161015....**
161002.... **161006....** **161035....**
161003.... **161010....** **161020....**

TIN-coated reamers
f up to 100% greater than uncoated reamers
Vc can be increased up to 50%

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm									Coolant and lubricant
						5	8	10	15	20	25	30	40	50	
P	Machining steel	Up to 700	9 SMn 28	1.0715	8 - 10	0.1	0.13	0.15	0.2	0.25	0.25	0.3	0.35	0.4	**Mild steel:** Drilling oil emulsion, tallow, cutting oil
	Unalloyed structural steel	Up to 700	St-52	1.0052	10 - 12	0.1	0.13	0.15	0.2	0.25	0.25	0.3	0.35	0.4	**Tool steel, cast steel, tempering steel:** Rapeseed oil substitute
	Structural steel	700 - 950	Ck45	1.1191	6 - 8	0.1	0.13	0.15	0.2	0.25	0.25	0.3	0.35	0.4	
	Tempering steel	500 - 950	42 CrMo4	1.7225	6 - 10	0.1	0.13	0.15	0.2	0.25	0.25	0.3	0.35	0.4	**Alloyed steel:** Rapeseed oil substitute, cutting oil
	Cast steel	Up to 950	GS 40	1.0416	4 - 6	0.07	0.08	0.1	0.13	0.18	0.18	0.22	0.25	0.3	
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	4 - 6	0.08	0.1	0.1	0.15	0.2	0.25	0.3	0.35	0.4	**Heat-resistant and stainless steel:**Drilling oil
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	8 - 10	0.18	0.2	0.23	0.25	0.3	0.3	0.35	0.4	0.45	Dry, rapeseed oil
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	4 - 6	0.12	0.15	0.17	0.2	0.25	0.25	0.3	0.35	0.4	
	Ductile iron	Up to 280 HB	GGG 60	0.7060	8 - 10	0.18	0.2	0.23	0.25	0.3	0.3	0.35	0.4	0.45	Dry, drilling oil emulsion
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	6 - 8	0.15	0.18	0.2	0.2	0.25	0.3	0.35	0.4	0.4	
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	15-20	0.15	0.18	0.2	0.25	0.3	0.3	0.35	0.4	0.45	Tough aluminium: Turpentine oil substitute and petroleum 4:5 Hardened aluminium: Rapeseed oil
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	10 - 12	0.15	0.18	0.2	0.25	0.3	0.3	0.35	0.4	0.4	Petroleum, turpentine oil
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	8 - 12	0.15	0.18	0.2	0.25	0.3	0.3	0.35	0.4	0.45	Drilling emulsion
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	10 - 12	0.2	0.25	0.3	0.35	0.4	0.4	0.45	0.5	0.6	Dry, rapeseed oil, drilling oil emulsion
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	12 - 14	0.2	0.25	0.3	0.35	0.4	0.4	0.45	0.5	0.6	
	Thermoplastic		PVC		6 - 10	0.25	0.3	0.35	0.4	0.45	0.5	0.55	0.6	0.6	Dry, compressed air, no water
	Thermoset		Melamine		4 - 6	0.2	0.25	0.3	0.35	0.4	0.45	0.45	0.5	0.5	

ATORN® Solid carbide machine reamers



- Please adjust these guideline values according to clamping operation and machine set-up!

163001.... **163002....**
163005....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm									Coolant and lubricant
						5	8	10	15	20	25	30	40	50	
P	Machining steel	Up to 700	9 SMn 28	1.0715	10-15	0.15	0.18	0.2	0.25	0.3	0.3	0.35	0.4	0.5	**Mild steel:** Drilling oil emulsion, tallow, cutting oil
	Structural steel	700 - 950	Ck45	1.1191	8 - 12	0.15	0.18	0.2	0.25	0.3	0.3	0.35	0.4	0.5	**Tool steel, cast steel, tempering steel:** Rapeseed oil substitute
	Tempering steel	500 - 950	42 CrMo4	1.7225	8 - 12	0.15	0.18	0.2	0.25	0.3	0.3	0.35	0.4	0.5	**Alloyed steel:** Rapeseed oil substitute, cutting oil
	Cast steel	Up to 950	GS 40	1.0416	6 - 10	0.12	0.15	0.15	0.18	0.2	0.2	0.25	0.3	0.4	**Heat-resistant and stainless steel:**Drilling oil
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	6 - 10	0.12	0.15	0.15	0.18	0.2	0.2	0.25	0.3	0.4	
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	8 - 12	0.2	0.26	0.3	0.35	0.4	0.4	0.45	0.5	0.6	Dry, rapeseed oil
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	6 - 10	0.15	0.18	0.2	0.25	0.3	0.3	0.35	0.4	0.5	
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	8 - 12	0.15	0.18	0.2	0.25	0.3	0.3	0.35	0.4	0.5	Dry, drilling oil emulsion
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	15 - 25	0.2	0.26	0.3	0.35	0.4	0.4	0.45	0.5	0.6	Tough aluminium: Turpentine oil substitute and petroleum 4:5 Hardened aluminium: Rapeseed oil
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	15 - 25	0.2	0.26	0.3	0.35	0.4	0.4	0.45	0.5	0.6	
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	20 - 30	0.3	0.36	0.4	0.45	0.5	0.5	0.55	0.6	0.7	Drilling emulsion
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	15 - 25	0.2	0.26	0.3	0.35	0.4	0.4	0.45	0.5	0.6	
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	15 - 25	0.2	0.26	0.3	0.35	0.4	0.4	0.45	0.5	0.6	Dry, rapeseed oil, drilling oil emulsion
	Thermoset		Melamine		15 - 25	0.3	0.36	0.4	0.45	0.5	0.5	0.55	0.6	0.7	Dry, compressed air, no water

Undersize for reaming (guide values)

Normally the pre-drilled hole is reamed in one operation, whereby the undersize values specified in the table below are recommended for the use of fixed reamers.

Materials group	Diameter range of the bore in mm				
	3 - 5	5 - 10	10 - 20	20 - 30	Over 30
Machining steel	0.1 - 0.2	0.2	0.2 - 0.3	0.3 - 0.4	0.4-0.5
Structural steel	0.1 - 0.2	0.2	0.2	0.3	0.3 - 0.4
Cast steel	0.1 - 0.2	0.2	0.2	0.2 - 0.3	0.3 - 0.4
Grey cast iron	0.1 - 0.2	0.2	0.2 - 0.3	0.3 - 0.4	0.4-0.5
Malleable cast iron	0.1 - 0.2	0.2	0.3	0.4	0.5
Copper	0.1 - 0.2	0.2 - 0.3	0.3 - 0.4	0.4-0.5	0.5
Copper alloy (bronze, brass)	0.1 - 0.2	0.2	0.2 - 0.3	0.3	0.3 - 0.4
Al. alloy long-chipping	0.1 - 0.2	0.2 - 0.3	0.3 - 0.4	0.4-0.5	0.5
Thermoset	0.1 - 0.2	0.3	0.4	0.4-0.5	0.5
Thermoplastic	0.1 - 0.2	0.2	0.2	0.3	0.3 - 0.4

The reaming allowance should be reduced for reamers with slotted bodies or inserted blades.

Pre- and post-reaming is performed for specific hole requirements and with particularly hard materials. Here, the table values below are reamed expediently in two equal parts.

Insufficient chip removal normally results in premature blunting because the teeth no longer cut, but simply press on the bore.

Fitting table for 1/100 machine reamers according to DIN 212



- Please adjust these guideline values according to clamping operation and machine set-up!

161030.... **163002....**

Bore diameter in mm	C8	C9	C10	C11	CD7	D7	D8	D9	D10	D11	D12	E7	E8	E9	EF8	F7	F8	F9	F10	G6	G7	H5
1.0	1.07	1.07	1.08	1.10	1.04	1.02	1.03		1.04	1.06	1.08	1.02	1.02	1.03	1.02	1.01	1.01	1.02			1.01	1.00
2.0	2.07	2.07	2.08	2.10	2.04	2.02	2.03		2.04	2.06	2.08	2.02	2.02	2.03	2.02	2.01	2.01	2.02			2.01	2.00
3.0	3.07	3.07	3.08	3.10	3.04	3.02	3.03		3.04	3.06	3.08	3.02	3.02	3.03	3.02	3.01	3.01	3.02			3.01	3.00
4.0	4.08	4.09			4.05	4.04	4.04	4.05	4.06	4.08	4.10		4.03	4.04	4.03		4.02	4.03	4.04	4.01	4.01	4.00
5.0	5.08	5.09			5.05	5.04	5.04	5.05	5.06	5.08	5.10		5.04	5.04	5.03		5.02	5.03	5.04	5.01	5.01	5.00
6.0	6.08	6.09			6.05	6.04	6.04	6.05	6.06	6.08	6.10		6.04	6.04	6.03		6.02	6.03	6.04	6.01	6.01	6.00
7.0	7.09	7.10			7.06	7.05	7.05	7.06	7.08	7.10		7.03	7.05	7.05	7.03	7.02	7.03		7.05	7.01	7.01	7.00
8.0	8.09	8.10			8.06	8.05	8.05	8.06	8.08	8.10		8.03	8.05	8.05	8.03	8.02	8.03		8.05	8.01	8.01	8.00
9.0	9.09	9.10			9.06	9.05	9.05	9.06	9.08	9.10		9.03	9.05	9.05	9.03	9.02	9.03		9.05	9.01	9.01	9.00
10.0	10.09	10.1			10.06	10.05	10.05	10.06	10.08	10.1		10.03	10.05	10.05	10.03	10.02	10.03		10.05	10.01	10.01	10.00
11.0						11.06		11.08	11.10			11.04	11.06	11.06			11.03	11.04	11.06	11.01		11.00
12.0						12.06		12.08	12.10			12.04	12.06	12.06			12.03	12.04	12.06	12.01		12.00

Bore diameter in mm	H6	H7	H8	H9	H10	H11	H12	H13	J6	J7	J8	JS7	JS8	JS9	K6	K7	K8	M6	M7	M8	N6	N7
1.0	1.00		1.01		1.02	1.04	1.06	1.09	1.00	1.00	1.00	1.00	1.00	1.00			0.99			0.99	0.99	0.99
2.0	2.00		2.01		2.02	2.04	2.06	2.09	2.00	2.00	2.00	2.00	2.00	2.00			1.99			1.99	1.99	1.99
3.0	3.00		3.01		3.02	3.04	3.06	3.09	3.00	3.00	3.00	3.00	3.00	3.00			2.99			2.99	2.99	2.99
4.0	4.00		4.01	4.02	4.03	4.05	4.08		4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	3.99		3.99	3.99	3.99
5.0	5.00		5.01	5.02	5.03	5.05	5.08		5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	4.99		4.99	4.99	4.99
6.0	6.00		6.01	6.02	6.03	6.05	6.08		6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	5.99		5.99	5.99	5.99
7.0	7.00	7.01	7.01	7.02	7.04	7.06	7.10		7.00	7.00	7.00	7.00	7.00			7.00	7.00	6.99	6.99	6.99		6.99
8.0	8.00	8.01	8.01	8.02	8.04	8.06	8.10		8.00	8.00	8.00	8.00	8.00			8.00	8.00	7.99	7.99	7.99		7.99
9.0	9.00	9.01	9.01	9.02	9.04	9.06	9.10		9.00	9.00	9.00	9.00	9.00			9.00	9.00	8.99	8.99	8.99		8.99
10.0	10.00	10.01	10.02	10.02	10.04	10.06	10.1		10.00	10.00	10.00	10.00	10.00			10.00	10.00	9.99	9.99	9.99		9.99
11.0		11.01	11.02	11.03	11.05	11.07			11.00	11.00	11.00	11.00	11.00			11.00	11.00	10.99	10.99	10.99		10.99
12.0		12.01	12.02	12.03	12.05	12.07			12.00	12.00	12.00	12.00	12.00			12.00	12.00	11.99	11.99	11.99		11.99

Bore diameter in mm	N8	P6	P7	P8	R6	R7	S6	S7	U6	U7	X7	X8	X9	Z7	Z8	Z9	Z10	ZA7	ZA8	ZB8	ZB9
1.0	0.99	0.99	0.99	0.99			0.98	0.98	0.98	0.98		0.97	0.97	0.97	0.97		0.96	0.96		0.95	0.95
2.0	1.99	1.99	1.99	1.99			1.98	1.98	1.98	1.98		1.97	1.97	1.97	1.97		1.96	1.96		1.95	1.95
3.0	2.99	2.99	2.99	2.99			2.98	2.98	2.98	2.98		2.97	2.97	2.97	2.97		2.96	2.96		2.95	2.95
4.0	3.99			3.98			3.98	3.98			3.97		3.96	3.96	3.96	3.95	3.95	3.96		3.94	3.94
5.0	4.99			4.98			4.98	4.98			4.97		4.96	4.96	4.96	4.95	4.95	4.96		4.94	4.94
6.0	5.99			5.98			5.98	5.98			5.97		5.96	5.96	5.96	5.95	5.95	5.96		5.94	5.94
7.0	6.99				6.98	6.98			6.97	6.97		6.96	6.95	6.96	6.95		6.94	6.94	6.94		6.92
8.0	7.99				7.98	7.98			7.97	7.97		7.96	7.95	7.96	7.95		7.94	7.94	7.94		7.92
9.0	8.99				8.98	8.98			8.97	8.97		8.96	8.95	8.96	8.95		8.94	8.94	8.94		8.92
10.0	9.99				9.98	9.98			9.97	9.97		9.96	9.95	9.96	9.95		9.94	9.94	9.94		9.92
11.0	10.99	10.98	10.98	10.97			10.97	10.97			10.96	10.95		10.95	10.94		10.93		10.93	10.90	10.90
12.0	11.99	11.98	11.98	11.97			11.97	11.97			11.96	11.95		11.95	11.94		11.93		11.93	11.90	11.90

BECK MAPAL GROUP | High-performance reamers HNC ecoSpeed



- Please adjust these guideline values according to clamping operation and machine set-up!

163010.... **163012....**

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed rates in mm/rev based on the tool diameter in mm						
						6 - 8	8 - 10	10 - 14	14 - 20	20 - 25	25 - 30	30 - 40
P	Unalloyed structural steel	Up to 700	St-52	1.0052	40 - 45	0,12	0,15	0,18	0,25	0,3	0,4	0,45
	Tempering steel	500 - 950	42 CrMo4	1.7225	30 - 35	0,12	0,15	0,18	0,25	0,3	0,4	0,45
	Cast steel	Up to 950	GS 40	1.0416	15 - 20	0,12	0,15	0,18	0,25	0,3	0,4	0,45
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	30 - 35	0,12	0,15	0,18	0,25	0,3	0,4	0,45
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	20 - 30	0,12	0,15	0,18	0,25	0,3	0,4	0,45
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	35 - 40	0,15	0,2	0,25	0,3	0,4	0,5	0,6
	Ductile iron	Up to 280 HB	GGG 60	0.7060	30 - 35	0,15	0,2	0,25	0,3	0,4	0,5	0,6
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	15 - 20	0,15	0,2	0,25	0,3	0,4	0,5	0,6

SARA® Solid carbide high-performance reamers



- Please adjust these guideline values according to clamping operation and machine set-up!

163510....



163512....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm					
						4	5	6	8	10	12
P	Machining steel	Up to 700	9 SMn 28	1.0715	80 - 225	0.3	0.4	0.7	0.1	0.8	1
	Unalloyed structural steel	Up to 700	St-52	1.0052	80 - 225	0.3	0.4	0.7	0.1	0.8	1
	Structural steel	700 - 950	Ck45	1.1191	80 - 225	0.3	0.4	0.7	0.1	0.8	1
	Tempering steel	500 - 950	42 CrMo4	1.7225	80 - 225	0.3	0.4	0.7	0.1	0.8	1
	Tempering steel	950 -1300	43CrMo4	1.3563	80 - 225	0.3	0.4	0.7	0.1	0.8	1
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	60 - 180	0.3	0.4	0.7	0.1	0.8	1
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	60 - 180	0.3	0.4	0.7	0.1	0.8	1
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	70 - 150	0.3	0.4	0.7	0.1	0.8	1
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	60 - 100	0.3	0.4	0.7	0.1	0.8	1
	Ductile iron	Up to 280 HB	GGG 60	0.7060	60 - 115	0.3	0.4	0.7	0.1	0.8	1

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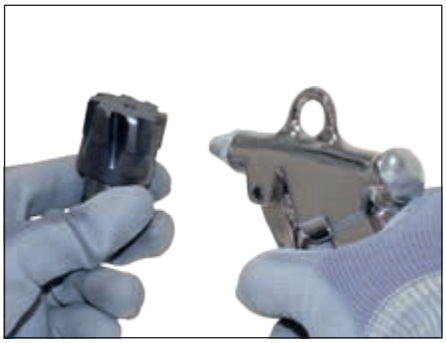


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ATORN® High-performance exchangeable head reamers

The universal exchangeable heads are characterised by a complete and particularly user-friendly range. The joint means the exchangeable heads can be changed quickly and easily, and with high repetition precision. Meanwhile perfect hold with maximum stability and rigidity is achieved. The exchangeable head is tightened with a defined torque and requires a force-fitting and positive-fitting connection. High true running accuracy in conjunction with excellent rigidity are key features of this system.



Clean the taper, thread and flat surface of the exchangeable head using compressed air and a cloth.



Clean the taper, thread and flat surface of the exchangeable head mount using compressed air and a cloth.



Hand-tighten the exchangeable head clockwise in the exchangeable head mount. Then clamp the exchangeable head mount along with the tool in the machine mount.



Place the torque wrench as horizontal as possible on the exchangeable head and ensure the wrench surface is not tilted.



Tighten the exchangeable head using the torque wrench and the appropriate open-end snap-in spanner with the indicated tightening torque (see Table 'Exchangeable head tightening torque').



Result:
the gap between the exchangeable head and exchangeable head holder is closed and the connection is force-fitting and positive-fitting. The exchangeable head is now ready for use.

ATORN® High-performance exchangeable head reamers



- Please adjust these guideline values according to clamping operation and machine set-up!

Geometry ST **163610.... 163612....**

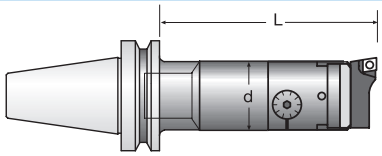
ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed rates in mm/rev based on the tool diameter in mm		
						10 - 16	16 - 30	30 - 40
P	Unalloyed structural steel	Up to 700	St-52	1.0052	140 - 160	0,7 - 1	1 - 1,5	1,5 - 2
P	Tempering steel	500 - 950	42 CrMo4	1.7225	120 - 160	0,7 - 1	1 - 1,5	1,5 - 2
P	Cast steel	Up to 950	GS 40	1.0416	75 - 80	0,5 - 0,8	0,8 - 1,5	1,5 - 1,6
P	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	80 - 140	0,7 - 1	1 - 1,5	1,5 - 2
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	80 - 140	0,7 - 1	1 - 1,5	1,5 - 2
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	100 - 120	0,5 - 0,6	0,6 - 1,2	1,2 - 1,6
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	100 - 120	0,5 - 0,6	0,6 - 1,2	1,2 - 1,6
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	100 - 120	0,4 - 0,6	0,6 - 1,2	1,2 - 1,6

Geometry VA **163620.... 163622....**

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed rates in mm/rev based on the tool diameter in mm		
						10 - 16	16 - 30	30 - 40
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	35 - 40	0,3 - 0,4	0,4 - 0,5	0,5 - 1,2
M	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	35 - 40	0,3 - 0,4	0,4 - 0,5	0,5 - 1,2
M	Duplex	700 - 950	X2 CrNiMoN 22-5-3	1.4462	25 - 30	0,3 - 0,4	0,4 - 0,5	0,5 - 1,2

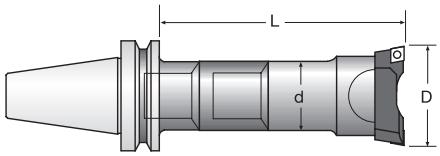
D'ANDREA® Modular tool system

- Please adjust these guideline values according to clamping operation and machine set-up!



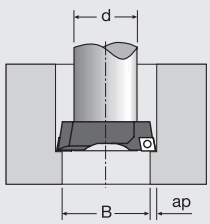
Cutting data for micrometric boring bars

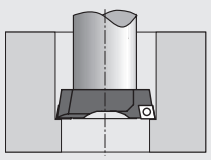
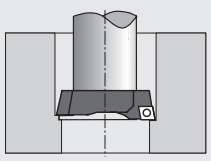
ISO	Materials group	Strength/ Hardness	Boring bars Dimensions L / d mm	Working conditions	Cutting speed Vc m/min	Feed f mm/rev		Indexable insert quality	Clamp depth ap mm
						r = 0.2 mm	r = 0.4 mm		
P	Carbon steel	≤ 200 HB	2.5	Good	200 - 300	0.05 - 0.08	0.07 - 0.1	Cermet DC 100 (T) LN 10 DP 300	0.1 - 0.25
			4	Normal	160 - 250	0.05 - 0.08	0.07 - 0.1		
			6.3	Difficult	70 - 100	0.05 - 0.08	-		
		> 200 HB	2.5	Good	160 - 250	0.05 - 0.08	0.07 - 0.1	Cermet DC 100 (T) LN 10	
			4	Normal	150 - 200	0.05 - 0.08	0.07 - 0.1		
			6.3	Difficult	70 -100	0.05 - 0.08	-		
M	Stainless steel		2.5	Good	120 - 160	0.05 - 0.08	0.07 - 0.1	DP 300 LN 10	
			4	Normal	100 - 140	0.05 - 0.08	0.07 - 0.1		
			6.3	Difficult	70 - 100	0.05 - 0.08	-		
K	Cast iron		2.5	Good	120 - 160	0.05 - 0.08	0.07 - 0.1	Cermet DC 100 (T) LN 10 DK 100	
			4	Normal	100 - 140	0.05 - 0.08	0.07 - 0.1		
			6.3	Difficult	70 - 100	0.05 - 0.08	-		
N	Aluminium		2.5	Good	300 - 400	0.05 - 0.08	0.07 - 0.1	DK 100 D20 MDC Diamant	
			4	Normal	250- 350	0.05 - 0.08	0.07 - 0.1		
			6.3	Difficult	100 - 150	0.05 - 0.08	-		
H	Hardened materials	> 50 HRc	2.5	Good	80-100	0.04 - 0.06	0.05 - 0.07	D25 CBN	
			4	Normal	50 - 100	0.04 - 0.06	0.05 - 0.07		



Cutting data for roughing operations with two-flute cutter boring bars

ISO	Materials group	Strength/ Hardness	Boring bars Dimensions L / d mm	Working conditions	Cutting speed Vc m/min			Feed f mm/rev		
					Ø < 38 mm	Ø 38-120 mm	Ø > 120 mm	r = 0.2 mm	r = 0.4 mm	r = 0.8 mm
P	Carbon steel	≤ 200 HB	2.5	Good	120-180	140 - 200	160 - 250	-	0.2 - 0.4	0.3 - 0.5
			4	Normal	100 - 160	120-180	140 - 200	-	0.2 - 0.4	0.3 - 0.5
			6.3	Difficult	70 - 100	70 - 100	70 - 100	0.15 - 0.3	0.2 - 0.4	-
		> 200 HB	2.5	Good	100 - 160	120-180	140 - 200	-	0.2 - 0.4	0.3 - 0.5
			4	Normal	80 - 140	100 - 160	120-180	-	0.2 - 0.4	0.3 - 0.5
			6.3	Difficult	60 - 90	70 - 100	70 - 100	0.15 - 0.3	0.2 - 0.4	-
M	Stainless steel		2.5	Good	80 - 110	90 - 120	100 - 140	-	0.2 - 0.4	0.3 - 0.5
			4	Normal	70 - 100	80 - 110	90 - 120	-	0.2 - 0.4	0.3 - 0.5
			6.3	Difficult	60 - 90	60 - 90	60 - 90	0.15 - 0.3	0.2 - 0.4	-
K	Cast iron		2.5	Good	90 - 120	100 - 140	120 - 160	-	0.2 - 0.4	0.3 - 0.5
			4	Normal	70 - 100	90 - 120	100 - 140	-	0.2 - 0.4	0.3 - 0.5
			6.3	Difficult	60 - 90	60 - 90	60 - 90	0.15 - 0.3	0.2 - 0.4	-
N	Aluminium		2.5	Good	160 - 250	200 - 300	250 - 350	-	0.3 - 0.5	0.4 - 0.6
			4	Normal	140 - 200	160 - 250	200 - 300	-	0.3 - 0.5	0.4 - 0.6
			6.3	Difficult	100 - 150	100 - 150	100 - 150	0.2 - 0.4	0.3 - 0.5	-

	Working area Ø mm	Max. clamp depth ap mm	
		Steel	Cast iron / aluminium
	18 - 28	1.5 - 2	2 - 2.5
	28 - 50	2 - 3	2.5 - 3.5
	50 - 68	3 - 4	3.5 - 5
	68 - 200	4 - 5	5 - 7
It is advisable to start with hole Ø B ≥ boring bars Ø d .	200 - 500	5 -6	6 - 8

	Twin-cutter boring with equal bore diameter
	Twin-cutter boring with different bore diameters Attention: For boring bars with different bore Ø the pre-feed must be reduced by half in accordance with the table!

Milling tools

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Summary of icons used for milling tools

INFO

Cutting material	HSS – High-performance, high-speed steel	HSS-E – High-performance, high-speed steel Cobalt-alloyed	VHM – Solid carbide
Coating	TiN – Titanium-nitride coating	TiCN – Titanium-carbo-nitride coating	TiAlN – Titanium-aluminium-nitride coating
Surface treatment	Nit. – Nitrided surface	Vap. – Vapour-treated surface (steam-treated)	
Type/profile	Typ N – e.g. type N, for normal materials	NF – e.g. NF Roughing-finishing toothing	HR – e.g. HR Fine knuckle-type toothing
Standard	DIN 327 – Complies with DIN 327	DIN 844 – Complies with DIN 844	Werks-norm – Complies with factory standard
Shank design	DIN 6535 HA – e.g. straight shank according to DIN 6535 HA	e.g. straight shank with Weldon clamping surface	e.g. MT shank
Number of cutting edges	Z 3 – e.g. 3 cutting edges and/or 3 insert seats	Z 5 – e.g. 5 cutting edges and/or 5 insert seats	Z 8+ – e.g. 8 or more cutting edges and/or 8 or more insert seats
Spiral angle	30° – e.g. 30° right-hand twist	41° 43° 45° – e.g. unequal helix angle	10° – e.g. 10° left-handed twist
Tooth pitch	Unequal tooth pitch		
Tolerance	h5 – Shank tolerance	e8 – Diameter tolerance	±0,005 r – Radius tolerance
Application	Centre cutting	Over-centre cutting	
Coolant design	Axial coolant bore	Radial coolant bore	
Milling technology	HSC – High-Speed-Cutting (High-speed milling)	HPC – High-Performance-Cutting (High-performance milling)	TVC – Trochoidal-Volume-Cutting (Trochoidal milling)
Cutting data	i Vc/fz – More information such as cutting data recommendations in the technical appendix		
Milling applications	Face milling	Corner milling	Groove milling
	Face milling	Pocket milling	Chamfering
	Circular cutting	Drill cutting	Ramping
	Copy milling	Contour milling	T-groove milling
suitable for	3D PRINT – 3D additive		

Usage recommendations diagram (example)

- **Materials group**
- **Usage recommendation**: Depicted by ISO colour code. Full dot = very well suited, circle = well suited
- **Recommended cutting speed:** Cutting speed range Vc m/min. for medium-sized tool diameter.

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG / GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	Cutting speed Vc m/min.	150-200	80-120	70-90	60-90	40-70	40-70	80-120	80-120	60-70	20-35	15-30	280-350	200-250	120-200	120-200	60-90	40-70	40-70

Please adjust these guidelines according to clamping operation and machine set-up.

Cutting data recommendations for groove and side milling directly on the item

INFO



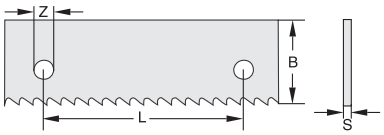
D h9 mm	F mm	L1 mm	L mm	D1 h5 mm	Z	Feed rate fz Steel < 1,000 N/mm² mm/Z	Feed rate fz Steel < 1,000 N/mm² mm/Z	Item no.	€
6.0	0.25	16	64	6.0	3	0.050	0.049	**254015** 0060	54.20
8.0	0.50	20	64	8.0	3	0.070	0.049	254015 0080	70.90

ATORN® Machine saw blades HSS

i Vc/fz 715

- Precision-machined machine saw blade HSS with special heat treatment for a long service life
- Very high surface quality for exact and straight cutting
- High-quality cutting material for high demands on service life
- **Use:** for precise, quick and efficient sawing
- **Quality:** HSS DMo 5 Quality (Material No. 1.3343)
- **For materials up to a tensile strength of 1100 N/mm²**





L mm	B mm	S mm	Z mm	Tooth per inch	art.no.	€
300	25	1.50	8.5	10	**620520** 3010	7,50
300	25	1.50	8.5	14	620520 3014	7,50
350	30	1.50	8.5	6	620520 3506	9,55
350	30	1.50	8.5	8	620520 3508	9,55
350	30	1.50	8.5	10	620520 3510	9,55
350	30	1.50	8.5	14	620520 3514	9,55
350	30	2.00	8.5	4	620520 3604	11,70
350	30	2.00	8.5	6	620520 3606	11,70
350	30	2.00	8.5	8	620520 3608	11,70
350	30	2.00	8.5	10	620520 3610	11,70
400	25	1.25	8.5	14	620520 4014	7,60
400	25	1.25	8.5	22	620520 4022	7,60
400	25	1.50	8.5	10	620520 4110	8,90
400	25	1.50	8.5	14	620520 4114	8,90
400	30	1.50	8.5	6	620520 4106	10,35
400	30	1.50	8.5	8	620520 4108	10,35
400	30	1.50	8.5	10	620520 4210	10,35
400	30	1.50	8.5	14	620520 4214	10,35
400	30	1.50	8.5	18	620520 4218	10,35
400	30	1.50	8.5	22	620520 4222	10,35
400	30	2.00	8.5	4	620520 4304	12,80
400	30	2.00	8.5	6	620520 4306	12,80
400	30	2.00	8.5	8	620520 4308	12,80
400	30	2.00	8.5	10	620520 4310	12,80
400	40	2.00	10.5	4	620520 4404	16,40
400	40	2.00	10.5	6	620520 4406	16,40
400	40	2.00	10.5	8	620520 4408	16,40
450	30	2.00	10.5	6	620520 4506	13,90
450	30	2.00	10.5	8	620520 4508	13,90
450	40	2.00	10.5	4	620520 4604	17,80
450	40	2.00	10.5	6	620520 4606	17,80
450	40	2.00	10.5	8	620520 4608	17,80
450	40	2.00	10.5	10	620520 4610	17,80
500	40	2.00	10.5	6	620520 5006	19,20
500	40	2.00	10.5	8	620520 5008	19,20
550	50	2.50	12.5	6	620520 5506	32,40
600	50	2.50	12.5	6	620520 6006	34,60
650	50	2.50	12.5	4	620520 6504	36,80
650	50	2.50	12.5	6	620520 6506	36,80

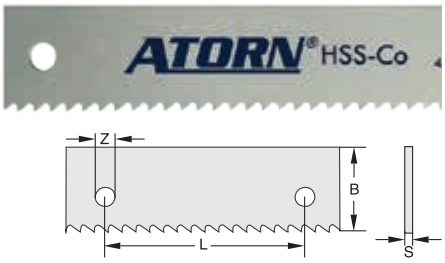
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ATORN® Machine saw blades HSS-Co



715

- Long service life and short cutting times
- Cobalt-alloyed machine saw blades are particularly suitable for tough and hard materials such as alloyed, unalloyed and heat-treated steel, as well as high-strength steel and stainless steel.
- High-quality cutting material for high demands on service life
- **Use:** for precise, quick and efficient sawing
- **Quality:** HSS-Co. EMo 5 Co 5 Quality (Material No. 1.3243).
- **For extremely hard materials up to 1300 N/mm² e.g. austenitic steels and steels with a high chromium-nickel content**



L mm	B mm	S mm	Z mm	Tooth per inch	art.no.	€
400	32	2.00	8.5	4	**620521** 4004	21,60
400	32	2.00	8.5	6	620521 4006	21,60
400	32	2.00	8.5	8	620521 4008	21,60
450	40	2.00	10.5	4	620521 4504	28,30
450	40	2.00	10.5	6	620521 4506	28,30
450	40	2.00	10.5	8	620521 4508	28,30

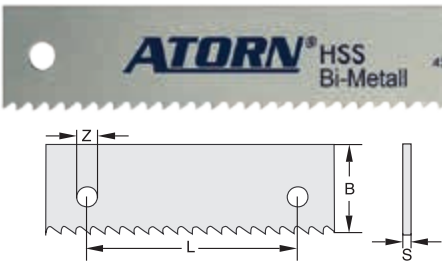
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ATORN® Machine saw blades HSS bi-metal



715

- Long service life and short cutting times
- The perfect combination of flexibility and durability with special heat treatment for a long service life
- Very high surface quality for exact and straight cutting
- **Use:** for precise, quick and efficient sawing
- **Quality:** HSS bi-metal, DMo 5-cutting edge quality (Material No. 1.3343) on a special steel back
- **For materials up to a tensile strength of 1100 N/mm²**



L mm	B mm	S mm	Z mm	Tooth per inch	art.no.	€
300	32	1.60	8.5	10	**620522** 3010	10,60
350	32	1.60	8.5	6	620522 3506	11,50
350	32	1.60	8.5	8	620522 3508	11,50
400	32	1.60	8.5	4	620522 4004	12,40
400	32	1.60	8.5	6	620522 4006	12,40
400	32	1.60	8.5	8	620522 4008	12,40
500	38	1.90	10.5	6	620522 5006	21,–
500	50	2.50	12.5	6	620522 5106	35,70
600	50	2.50	12.5	4	620522 6004	40,30
600	50	2.50	12.5	6	620522 6006	40,30

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Grinding and cutting
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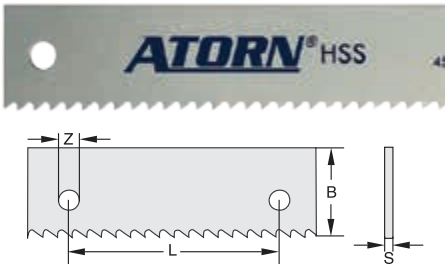
Overview of all free manufacturers' catalogues on page 14/15

ATORN® Machine saw blades HSS for KASTO saws



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- Precision-machined machine saw blade HSS with special heat treatment for a long service life
- Very high surface quality for exact and straight cutting
- High-quality cutting material for high demands on service life
- **Use:** for precise, quick and efficient sawing
- **Quality:** HSS DMo 5 Quality (Material No. 1.3343)
- **For materials up to a tensile strength of 1100 N/mm²**



L mm	B mm	S mm	Z mm	Tooth per inch	art.no.	€
300	30	1.50	8.5	6	**620523** 3006	8,70
300	30	1.50	8.5	10	620523 3010	8,70
300	30	1.50	8.5	14	620523 3014	8,70
350	36	2.00	8.5	4	620523 3504	13,50
350	36	2.00	8.5	6	620523 3506	13,50
350	36	2.00	8.5	10	620523 3510	13,50
400	32	2.00	8.5	4	620523 4004	13,25
400	32	2.00	8.5	6	620523 4006	13,25
400	32	2.00	8.5	8	620523 4008	13,25
400	32	2.00	8.5	10	620523 4010	13,25
450	36	2.00	8.5	4	620523 4504	16,–
450	36	2.00	8.5	6	620523 4506	16,–
450	36	2.00	8.5	8	620523 4508	16,–
450	40	2.00	8.5	4	620523 4604	17,80
450	40	2.00	8.5	6	620523 4606	17,80
450	40	2.00	8.5	8	620523 4608	17,80
450	40	2.00	8.5	10	620523 4610	17,80
550	45	2.00	10.5	4	620523 5504	22,70
550	45	2.00	10.5	6	620523 5506	22,70
575	50	2.50	10.5	4	620523 5704	33,50
575	50	2.50	10.5	6	620523 5706	33,50
600	50	2.50	10.5	4	620523 6004	34,60
600	50	2.50	10.5	6	620523 6006	34,60
650	55	2.50	10.5	4	620523 6504	40,90
650	55	2.50	10.5	6	620523 6506	40,90
700	55	2.50	10.5	4	620523 7004	43,40
700	55	2.50	10.5	6	620523 7006	43,40

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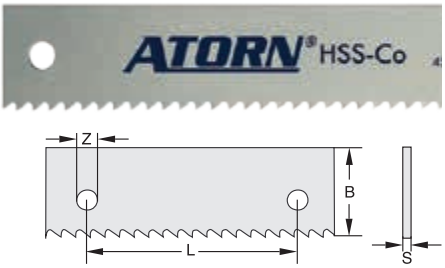
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ATORN® Machine saw blades HSS-Co for KASTO saws



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- Long service life and short cutting times
- Cobalt-alloyed machine saw blades are particularly suitable for tough and hard materials such as alloyed, unalloyed and heat-treated steel, as well as high-strength steel and stainless steel.
- High-quality cutting material for high demands on service life
- **Use:** for precise, quick and efficient sawing
- **Quality:** HSS-Co. EMo 5 Co 5 Quality (Material No. 1.3243).
- **For extremely hard materials up to 1300 N/mm² e.g. austenitic steels and steels with a high chromium-nickel content**



L mm	B mm	S mm	Z mm	Tooth per inch	art.no.	€
400	36	2.00	8.5	4	**620524** 4004	23,40
400	36	2.00	8.5	6	620524 4006	23,40
450	40	2.00	8.5	4	620524 4504	28,30
450	40	2.00	8.5	6	620524 4506	28,30
450	40	2.00	8.5	8	620524 4508	28,30
450	40	2.00	8.5	10	620524 4510	28,30
500	40	2.00	8.5	6	620524 5006	30,40
550	45	2.00	10.5	6	620524 5506	35,90
600	50	2.50	10.5	4	620524 6004	55,–
600	50	2.50	10.5	6	620524 6006	55,–
700	55	2.50	10.5	4	620524 7004	69,50
700	55	2.50	10.5	6	620524 7006	69,50

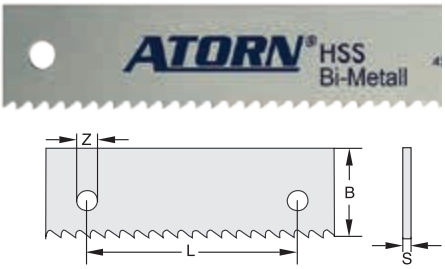
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ATORN® Machine saw blades HSS bi-metal for KASTO saws



715

- Long service life and short cutting times
- The perfect combination of flexibility and durability with special heat treatment for a long service life
- Very high surface quality for exact and straight cutting
- **Use:** for precise, quick and efficient sawing
- **Quality:** HSS bi-metal. DMo 5-cutting-edge quality (Material No. 1.3343) on a special steel back
- **For materials up to a tensile strength of 1100 N/mm²**



L mm	B mm	S mm	Z mm	Tooth per inch	art.no.	€
400	38	1.90	8.5	4	**620525** 4004	21,40
400	38	1.90	8.5	6	620525 4006	21,40
400	38	1.90	8.5	10	620525 4010	21,40
500	38	1.90	10.5	6	620525 5006	24,50
575	50	2.50	10.5	4	620525 5704	39,20
575	50	2.50	10.5	6	620525 5706	39,20
600	50	2.50	10.5	4	620525 6004	40,30
600	50	2.50	10.5	6	620525 6006	40,30
700	50	2.50	10.5	4	620525 7004	44,90
700	50	2.50	10.5	6	620525 7006	44,90

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ATORN® Metal band saw blades, continuous



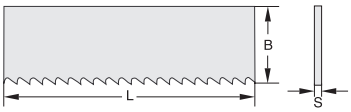
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- Additional dimensions and toothing available on request



Bi-metal band saw blades with combination teeth, continuous

- **For machines, for example Heska, Amada, DoAll, Jaespa, Pehaka, Kaltenbach, Müller**
- Particularly wear-resistant with a high degree of cutting precision
- For rust-proof and acid-proof steel in medium and large cross-sections
- For all steel grades up to 45 HRc
- For non-ferrous metals
- For all material diameters and contour cuts





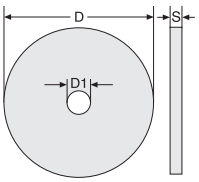
L mm	B mm	S mm	Combination toothing per inch	Bi-metal M42 art.no.	€
1,325	13	0.65	6 / 10	**620540** 1306	15,20
1,325	13	0.65	8 / 12	620540 1308	15,20
1,325	13	0.65	10 / 14	620540 1310	15,20
2,362	20	0.90	5 / 8	620540 2305	25,70
2,362	20	0.90	6 / 10	620540 2306	25,70
2,362	20	0.90	8 / 12	620540 2308	25,70
2,750	27	0.90	3 / 4	620540 2703	29,50
2,750	27	0.90	4 / 6	620540 2704	29,50
2,750	27	0.90	6 / 10	620540 2706	29,50
2,750	27	0.90	10 / 14	620540 2710	29,50
2,835	27	0.90	3 / 4	620540 2803	30,40
2,835	27	0.90	4 / 6	620540 2804	30,40
2,835	27	0.90	6 / 10	620540 2806	30,40
2,835	27	0.90	10 / 14	620540 2810	30,40
3,150	27	0.90	3 / 4	620540 3103	33,50
3,150	27	0.90	4 / 6	620540 3104	33,50
3,150	27	0.90	6 / 10	620540 3106	33,50
3,150	27	0.90	10 / 14	620540 3110	33,50
3,660	27	0.90	3 / 4	620540 3604	37,50
3,660	27	0.90	5 / 8	620540 3606	37,50
3,660	27	0.90	6 / 10	620540 3608	37,50
3,660	27	0.90	8 / 12	620540 3610	37,50
3,660	27	0.90	10 / 14	620540 3614	37,50
3,830	27	0.90	3 / 4	620540 3803	39,50
3,830	27	0.90	4 / 6	620540 3804	39,50
3,830	27	0.90	6 / 10	620540 3806	39,50
3,830	27	0.90	10 / 14	620540 3810	39,50
4,150	27	0.90	3 / 4	620540 4103	42,10
4,150	27	0.90	4 / 6	620540 4104	42,10
4,150	27	0.90	6 / 10	620540 4106	42,10
4,150	27	0.90	10 / 14	620540 4110	42,10
4,100	34	1.10	2 / 3	620540 4123	53,50
4,100	34	1.10	3 / 4	620540 4134	53,50
4,100	34	1.10	4 / 6	620540 4146	53,50
4,100	34	1.10	5 / 8	620540 4158	53,50
4,640	34	1.10	2 / 3	620540 4623	61,–
4,640	34	1.10	3 / 4	620540 4634	61,–
4,640	34	1.10	4 / 6	620540 4646	61,–
4,640	34	1.10	5 / 8	620540 4658	61,–
4,115	41	1.30	2 / 3	620540 4112	69,50
4,115	41	1.30	3 / 4	620540 4113	69,50
4,115	41	1.30	4 / 6	620540 4114	69,50
4,115	41	1.30	5 / 8	620540 4115	69,50
4,570	41	1.30	2 / 3	620540 4523	78,–
4,570	41	1.30	3 / 4	620540 4534	78,–
4,570	41	1.30	4 / 6	620540 4546	78,–
4,570	41	1.30	5 / 8	620540 4558	78,–
5,800	41	1.30	2 / 3	620540 5823	97,50
5,800	41	1.30	3 / 4	620540 5834	97,50
5,800	41	1.30	4 / 6	620540 5846	97,50
5,800	41	1.30	5 / 8	620540 5858	97,50

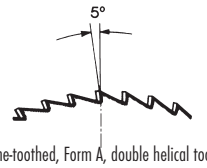
6132

SARA® Metal circular saw blade

HSS | DIN 1837A | Typ N | i Vc/fz | 716

- **Fine-toothed**
- **Double helical tooth, form A,** lateral bevel grinding (hollow-ground)
- Hole without keyway
- For fine slotting and end-to-end cutting work, for low-depth cutting or for thin-walled materials





Fine-toothed, Form A, double helical tooth, DIN 1840 (rake angle 5°)



material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
○ 25-45	○ 15-25	○ 10-15	○ 7-15	○ 7-15		○ 25-45	○ 25-30				○ 120-400	○ 120-400					

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D mm	S mm	D1 mm	Number of teeth	art.no.	€
20.0	0.2	5	80	**200101** 0001	19,30
20.0	0.25	5	64	200101 0002	19,30
20.0	0.3	5	64	200101 0003	17,30
20.0	0.4	5	64	200101 0004	17,30
20.0	0.5	5	48	200101 0005	16,–
20.0	0.6	5	48	200101 0006	16,–
20.0	0.8	5	48	200101 0007	16,–
20.0	1.0	5	40	200101 0008	16,10
20.0	1.2	5	40	200101 0009	18,–
20.0	1.6	5	40	200101 0010	20,30
20.0	2.0	5	32	200101 0011	21,20
20.0	2.5	5	32	200101 0012	22,60
20.0	3.0	5	32	200101 0013	24,40
20.0	4.0	5	24	200101 0014	28,–
20.0	5.0	5	24	200101 0015	33,10
20.0	6.0	5	24	200101 0016	37,50
25.0	0.2	8	80	200101 0017	19,70
25.0	0.25	8	80	200101 0018	19,70
25.0	0.3	8	80	200101 0019	18,50
25.0	0.4	8	64	200101 0020	18,50
25.0	0.5	8	64	200101 0021	17,–
25.0	0.6	8	64	200101 0022	17,–
25.0	0.8	8	48	200101 0023	17,–
25.0	1.0	8	48	200101 0024	17,–
25.0	1.2	8	48	200101 0025	19,40
25.0	1.6	8	40	200101 0026	20,80
25.0	2.0	8	40	200101 0027	22,20
25.0	2.5	8	40	200101 0028	24,–
25.0	3.0	8	32	200101 0029	26,20
25.0	4.0	8	32	200101 0030	31,10
25.0	5.0	8	32	200101 0031	36,20
25.0	6.0	8	24	200101 0032	40,60
32.0	0.2	8	100	200101 0033	21,10
32.0	0.25	8	100	200101 0034	21,10
32.0	0.3	8	80	200101 0035	19,30
32.0	0.4	8	80	200101 0036	19,30

2101

D mm	S mm	D1 mm	Number of teeth	art.no.	€
32.0	0.5	8	80	200101 0037	17,70
32.0	0.6	8	64	200101 0038	17,70
32.0	0.8	8	64	200101 0039	17,70
32.0	1.0	8	64	200101 0040	17,70
32.0	1.2	8	48	200101 0041	20,80
32.0	1.6	8	48	200101 0042	21,70
32.0	2.0	8	48	200101 0043	23,50
32.0	2.5	8	40	200101 0044	25,30
32.0	3.0	8	40	200101 0045	27,10
32.0	4.0	8	40	200101 0046	34,30
32.0	5.0	8	32	200101 0047	38,80
32.0	6.0	8	32	200101 0048	42,50
40.0	0.2	10	128	200101 0049	23,–
40.0	0.25	10	100	200101 0050	23,–
40.0	0.3	10	100	200101 0051	22,–
40.0	0.4	10	100	200101 0052	22,–
40.0	0.5	10	80	200101 0053	19,90
40.0	0.6	10	80	200101 0054	19,90
40.0	0.8	10	80	200101 0055	19,90
40.0	1.0	10	64	200101 0056	19,90
40.0	1.2	10	64	200101 0057	21,20
40.0	1.6	10	64	200101 0058	22,50
40.0	2.0	10	48	200101 0059	24,40
40.0	2.5	10	48	200101 0060	27,10
40.0	3.0	10	48	200101 0061	31,10
40.0	4.0	10	40	200101 0062	37,10
40.0	5.0	10	40	200101 0063	46,–
40.0	6.0	10	40	200101 0064	50,50
50.0	0.2	13	128	200101 0065	27,20
50.0	0.25	13	128	200101 0066	27,20
50.0	0.3	13	128	200101 0067	25,–
50.0	0.4	13	100	200101 0068	25,–
50.0	0.5	13	100	200101 0069	22,90
50.0	0.6	13	100	200101 0070	22,90
50.0	0.8	13	80	200101 0071	22,90
50.0	1.0	13	80	200101 0072	22,80

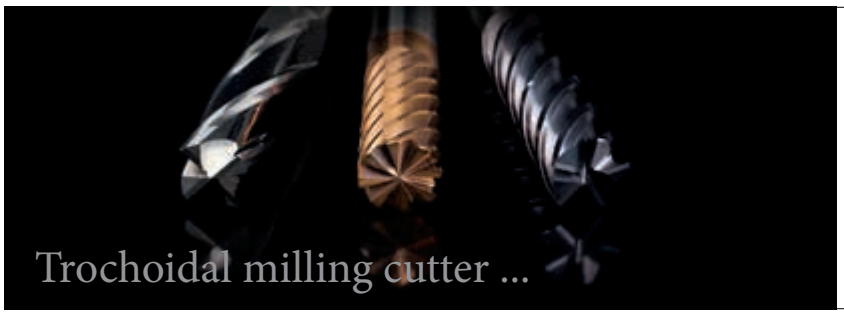
2101

D mm	S mm	D1 mm	Number of teeth	art.no.	€
50.0	1.2	13	80	200101 0073	24,–
50.0	1.6	13	64	200101 0074	26,20
50.0	2.0	13	64	200101 0075	28,10
50.0	2.5	13	64	200101 0076	30,20
50.0	3.0	13	48	200101 0077	34,30
50.0	4.0	13	48	200101 0078	40,20
50.0	5.0	13	48	200101 0079	52,50
50.0	6.0	13	40	200101 0080	59,50
63.0	0.25	16	160	200101 0081	29,60
63.0	0.3	16	128	200101 0082	28,40
63.0	0.4	16	128	200101 0083	28,40
63.0	0.5	16	128	200101 0084	26,70
63.0	0.6	16	100	200101 0085	26,70
63.0	0.8	16	100	200101 0086	26,70
63.0	1.0	16	100	200101 0087	26,70
63.0	1.2	16	80	200101 0088	27,30
63.0	1.6	16	80	200101 0089	30,20
63.0	2.0	16	80	200101 0090	32,50
63.0	2.5	16	64	200101 0091	35,10
63.0	3.0	16	64	200101 0092	38,10
63.0	4.0	16	64	200101 0093	47,80
63.0	5.0	16	48	200101 0094	60,50
63.0	6.0	16	48	200101 0095	68,–
80.0	0.3	22	160	200101 0096	34,20
80.0	0.4	22	160	200101 0097	34,20
80.0	0.5	22	128	200101 0098	32,20
80.0	0.6	22	128	200101 0099	32,20
80.0	0.8	22	128	200101 0100	32,20
80.0	1.0	22	100	200101 0101	32,20
80.0	1.2	22	100	200101 0102	33,–
80.0	1.6	22	100	200101 0103	35,20
80.0	2.0	22	80	200101 0104	38,80
80.0	2.5	22	80	200101 0105	46,–
80.0	3.0	22	80	200101 0106	50,50
80.0	4.0	22	64	200101 0107	60,50
80.0	5.0	22	64	200101 0108	74,50
80.0	6.0	22	64	200101 0109	85,–
100.0	0.5	22	160	200101 0110	38,10
100.0	0.6	22	160	200101 0111	38,10

2101

D mm	S mm	D1 mm	Number of teeth	art.no.	€
100.0	0.8	22	128	200101 0112	38,10
100.0	1.0	22	128	200101 0113	38,10
100.0	1.2	22	128	200101 0114	39,50
100.0	1.6	22	100	200101 0115	48,30
100.0	2.0	22	100	200101 0116	52,50
100.0	2.5	22	100	200101 0117	58,–
100.0	3.0	22	80	200101 0118	64,50
100.0	4.0	22	80	200101 0119	86,50
100.0	5.0	22	80	200101 0120	98,–
100.0	6.0	22	64	200101 0121	114,–
125.0	0.6	22	160	200101 0122	60,50
125.0	0.8	22	160	200101 0123	60,50
125.0	1.0	22	160	200101 0124	60,50
125.0	1.2	22	128	200101 0125	61,50
125.0	1.6	22	128	200101 0126	64,50
125.0	2.0	22	128	200101 0127	67,50
125.0	2.5	22	100	200101 0128	71,–
125.0	3.0	22	100	200101 0129	79,–
125.0	4.0	22	100	200101 0130	118,–
125.0	5.0	22	80	200101 0131	137,–
125.0	6.0	22	80	200101 0132	155,–
160.0	1.0	32	160	200101 0133	68,–
160.0	1.2	32	160	200101 0134	68,–
160.0	1.6	32	160	200101 0135	70,–
160.0	2.0	32	128	200101 0136	73,50
160.0	2.5	32	128	200101 0137	79,–
160.0	3.0	32	128	200101 0138	89,–
160.0	4.0	32	100	200101 0139	127,–
160.0	5.0	32	100	200101 0140	148,–
160.0	6.0	32	100	200101 0141	172,–
200.0	1.0	32	200	200101 0142	123,–
200.0	1.2	32	200	200101 0143	123,–
200.0	1.6	32	160	200101 0144	132,–
200.0	2.0	32	160	200101 0145	141,–
200.0	2.5	32	160	200101 0146	154,–
200.0	3.0	32	128	200101 0147	171,–
200.0	4.0	32	128	200101 0148	245,–
200.0	5.0	32	128	200101 0149	290,–
200.0	6.0	32	100	200101 0150	335,–

2101



... maximum material removal rate

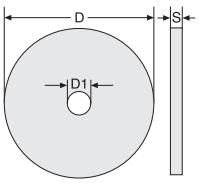
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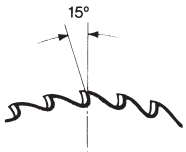
High quality for great performance

SARA® Metal circular saw blade

HSS | DIN 1838B | Typ N | Vc/fz | 716

- **Coarse-toothed**
- **With curved tooth, form B,** lateral bevel grinding (hollow-grounded)
- Hole without keyway
- For coarse slotting and end-to-end cutting work, and for machining with large cutting depths and cross-sections up to max. 100 mm depending on dimensions, pitch, number of teeth and feed rate/ cutting speed





Coarse-toothed, Form B, curved tooth, DIN 1840 (rake angle 15°)



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		○ 25-45	○ 15-25	○ 10-15	○ 7-15	○ 7-15		○ 25-45	○ 25-30				○ 120-400	○ 120-400					
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

D mm	S mm	D1 mm	Number of teeth	art.no.	€
50.0	0.5	13	48	**200105** 0001	22,90
50.0	0.6	13	48	200105 0002	22,90
50.0	0.8	13	40	200105 0003	22,90
50.0	1.0	13	40	200105 0004	22,80
50.0	1.2	13	40	200105 0005	24,–
50.0	1.6	13	32	200105 0006	26,20
50.0	2.0	13	32	200105 0007	28,10
50.0	2.5	13	32	200105 0008	30,20
50.0	3.0	13	24	200105 0009	34,30
50.0	4.0	13	24	200105 0010	40,20
50.0	5.0	13	24	200105 0011	52,50
50.0	6,0	13	20	200105 0012	59,50
63.0	0.5	16	64	200105 0013	26,70
63.0	0.6	16	48	200105 0014	26,70
63.0	0.8	16	48	200105 0015	26,70
63.0	1.0	16	48	200105 0016	26,70
63.0	1.2	16	40	200105 0017	27,30
63.0	1.6	16	40	200105 0018	30,20
63.0	2.0	16	40	200105 0019	32,50
63.0	2.5	16	32	200105 0020	35,10
63.0	3.0	16	32	200105 0021	38,10
63.0	4.0	16	32	200105 0022	47,80
63.0	5.0	16	24	200105 0023	60,50
63.0	6.0	16	24	200105 0024	68,–
80.0	0.5	22	64	200105 0025	32,20
80.0	0.6	22	64	200105 0026	32,20
80.0	0.8	22	64	200105 0027	32,20
80.0	1.0	22	48	200105 0028	32,20
80.0	1.2	22	48	200105 0029	33,–
80.0	1.6	22	48	200105 0030	35,20
80.0	2.0	22	40	200105 0031	38,80
80.0	2.5	22	40	200105 0032	46,–
80.0	3.0	22	40	200105 0033	50,50
80.0	4.0	22	32	200105 0034	60,50
80.0	5.0	22	32	200105 0035	74,50
80.0	6.0	22	32	200105 0036	85,–
100.0	0.6	22	80	200105 0037	38,10
100.0	0.8	22	64	200105 0038	38,10
100.0	1.0	22	64	200105 0039	38,10
100.0	1.2	22	64	200105 0040	39,50
100.0	1.6	22	48	200105 0041	48,30

2101

D mm	S mm	D1 mm	Number of teeth	art.no.	€
100.0	2.0	22	48	200105 0042	52,50
100.0	2.5	22	48	200105 0043	58,–
100.0	3.0	22	40	200105 0044	64,50
100.0	4.0	22	40	200105 0045	86,50
100.0	5.0	22	40	200105 0046	98,–
100.0	6.0	22	32	200105 0047	114,–
125.0	0.8	22	80	200105 0048	60,50
125.0	1.0	22	80	200105 0049	60,50
125.0	1.2	22	64	200105 0050	61,50
125.0	1.6	22	64	200105 0051	64,50
125.0	2.0	22	64	200105 0052	67,50
125.0	2.5	22	48	200105 0053	71,–
125.0	3.0	22	48	200105 0054	79,–
125.0	4.0	22	48	200105 0055	118,–
125.0	5.0	22	40	200105 0056	137,–
125.0	6.0	22	40	200105 0057	155,–
160.0	1.0	32	80	200105 0058	68,–
160.0	1.2	32	80	200105 0059	68,–
160.0	1.6	32	80	200105 0060	70,–
160.0	2.0	32	64	200105 0061	73,50
160.0	2.5	32	64	200105 0062	79,–
160.0	3.0	32	64	200105 0063	89,–
160.0	4.0	32	48	200105 0064	127,–
160.0	5.0	32	48	200105 0065	148,–
160.0	6.0	32	48	200105 0066	172,–
200.0	1.0	32	100	200105 0067	123,–
200.0	1.2	32	100	200105 0068	123,–
200.0	1.6	32	80	200105 0069	132,–
200.0	2.0	32	80	200105 0070	141,–
200.0	2.5	32	80	200105 0071	154,–
200.0	3.0	32	64	200105 0072	171,–
200.0	4.0	32	64	200105 0073	245,–
200.0	5.0	32	64	200105 0074	290,–
200.0	6.0	32	48	200105 0075	335,–
250.0	1.6	32	100	200105 0076	128,–
250.0	2.0	32	100	200105 0077	142,–
250.0	2.5	32	80	200105 0078	161,–
250.0	3.0	32	80	200105 0079	178,–
250.0	4.0	32	80	200105 0080	255,–
250.0	5.0	32	64	200105 0081	305,–
250.0	6.0	32	64	200105 0082	360,–

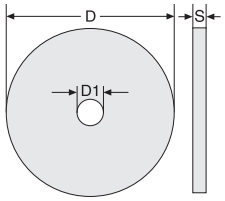
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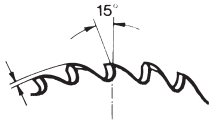
SARA® Metal circular saw blade

HSS | DIN 1838C | Typ N | Vc/fz | 716

- **Coarse-toothed**
- **Curved toothing with lead and raker teeth (HZ toothing)**
- Lateral bevel grinding (hollow grinding), bore hole without keyway
- This tooth form is primarily used for end-to-end cutting as the raised lead tooth makes it impossible to achieve a straight finish at the base of the cut with non-continuous cutting or milling. Otherwise, these blades can be used as specified in DIN 1838 B.







Coarse-toothed/HZ, Form C, curved tooth, DIN 1840 (rake angle 15°)

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		○ 25-45	○ 15-25	○ 10-15	○ 7-15	○ 7-15		○ 25-45	○ 25-30				○ 120-400	○ 120-400					
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

D mm	S mm	D1 mm	Number of teeth	art.no.	€
50.0	1.0	13	40	**200110** 0001	30,30
50.0	1.2	13	40	200110 0002	30,30
50.0	1.6	13	32	200110 0003	33,–
50.0	2.0	13	32	200110 0004	34,30
50.0	2.5	13	32	200110 0005	36,50
50.0	4.0	13	24	200110 0007	47,80
50.0	5.0	13	24	200110 0008	59,50
50.0	6.0	13	20	200110 0009	65,–
63.0	1.0	16	48	200110 0010	38,10
63.0	1.2	16	40	200110 0011	38,10
63.0	1.6	16	40	200110 0012	38,10
63.0	2.0	16	40	200110 0013	38,80
63.0	2.5	16	32	200110 0014	40,60
63.0	3.0	16	32	200110 0015	44,70
63.0	4.0	16	32	200110 0016	57,–
63.0	5.0	16	24	200110 0017	68,–
63.0	6.0	16	24	200110 0018	76,–
80.0	1.0	22	48	200110 0019	43,80
80.0	1.2	22	48	200110 0020	43,80
80.0	1.6	22	48	200110 0021	43,90
80.0	2.0	22	40	200110 0022	44,10
80.0	2.5	22	40	200110 0023	55,–
80.0	3.0	22	40	200110 0024	59,–
80.0	4.0	22	32	200110 0025	71,50
80.0	5.0	22	32	200110 0026	83,50
80.0	6.0	22	32	200110 0027	96,50
100.0	1.0	22	64	200110 0028	56,50
100.0	1.2	22	64	200110 0029	56,50
100.0	1.6	22	48	200110 0030	56,50
100.0	2.0	22	48	200110 0031	58,–
100.0	2.5	22	48	200110 0032	63,–
100.0	3.0	22	40	200110 0033	70,50
100.0	4.0	22	40	200110 0034	95,–
100.0	5.0	22	40	200110 0035	104,–

2101

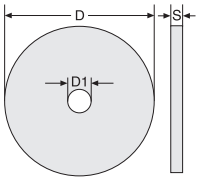
D mm	S mm	D1 mm	Number of teeth	art.no.	€
100.0	6.0	22	32	200110 0036	121,–
125.0	1.0	22	80	200110 0037	74,50
125.0	1.2	22	64	200110 0038	74,50
125.0	1.6	22	64	200110 0039	74,50
125.0	2.0	22	64	200110 0040	76,–
125.0	2.5	22	48	200110 0041	77,50
125.0	3.0	22	48	200110 0042	86,50
125.0	4.0	22	48	200110 0043	130,–
125.0	5.0	22	40	200110 0044	146,–
125.0	6.0	22	40	200110 0045	166,–
160.0	1.0	32	80	200110 0046	80,50
160.0	1.2	32	80	200110 0047	80,50
160.0	1.6	32	80	200110 0048	80,50
160.0	2.0	32	64	200110 0049	81,–
160.0	2.5	32	64	200110 0050	88,–
160.0	3.0	32	64	200110 0051	100,–
160.0	4.0	32	48	200110 0052	141,–
160.0	5.0	32	48	200110 0053	160,–
160.0	6.0	32	48	200110 0054	189,–
200.0	1.2	32	100	200110 0056	146,–
200.0	1.6	32	80	200110 0057	146,–
200.0	2.0	32	80	200110 0058	149,–
200.0	2.5	32	80	200110 0059	164,–
200.0	3.0	32	64	200110 0060	185,–
200.0	4.0	32	64	200110 0061	260,–
200.0	5.0	32	64	200110 0062	310,–
200.0	6.0	32	48	200110 0063	355,–
250.0	1.6	32	100	200110 0064	136,–
250.0	2.0	32	100	200110 0065	150,–
250.0	2.5	32	80	200110 0066	170,–
250.0	3.0	32	80	200110 0067	188,–
250.0	4.0	32	80	200110 0068	270,–
250.0	5.0	32	64	200110 0069	320,–
250.0	6.0	32	64	200110 0070	375,–

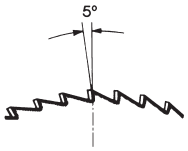
2101

SARA® Solid carbide circular saw blade

VHM | DIN 1837 | Vc/fz | 417

- **Fine-toothed**
- **Double helical tooth, form A,** lateral bevel grinding (hollow-ground)
- Hole without keyway
- For fine slotting and end-to-end cutting work, for low-depth cutting or for thin-walled materials





Fine-toothed, Form A, double helical tooth, DIN 1840 (rake angle 5°)



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		○ 100-150	○ 80-120		○ 60-80	○ 60-80	○ 40-60	○ 80-100	○ 60-80	○ 40-60			○ 800-1000	○ 800-1000	○ 200-300				
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

D mm	S mm	D1 mm	Number of teeth	art.no.	€
20	0.25	5	64	**202001** 0033	17,20
20	0.3	5	64	202001 0034	17,60
20	0.5	5	48	202001 0037	19,20
20	0.6	5	48	202001 0038	19,70
20	1.0	5	40	202001 0042	26,20
20	1.6	5	40	202001 0048	33,90
25	0.2	8	80	202001 0061	18,80
25	0.3	8	80	202001 0063	17,50
25	0.4	8	64	202001 0065	19,70
25	0.5	8	64	202001 0066	19,70
25	0.6	8	64	202001 0067	20,30
25	0.7	8	48	202001 0068	25,–
25	1.0	8	48	202001 0071	26,–
25	1.2	8	40	202001 0073	28,60
25	1.6	8	40	202001 0077	37,60
25	2.0	8	40	202001 0081	43,70
30	0.25	8	100	202001 0091	21,80
30	0.3	8	80	202001 0092	20,30
30	0.4	8	80	202001 0094	20,30
30	0.5	8	80	202001 0095	20,80
30	0.6	8	64	202001 0096	23,60
30	0.8	8	64	202001 0098	26,90
30	1.0	8	64	202001 0100	29,30
30	1.2	8	48	202001 0102	33,10
30	1.6	8	48	202001 0106	41,70
30	2.0	8	48	202001 0110	47,50
30	2.5	8	40	202001 0111	57,–
40	0.4	10	100	202001 0123	27,80
40	0.5	10	80	202001 0124	29,10
40	0.6	10	80	202001 0125	30,50
40	0.8	10	80	202001 0127	33,80
40	1.0	10	64	202001 0129	37,–
40	1.2	10	64	202001 0131	41,70
40	1.6	10	64	202001 0135	50,50
40	2.0	10	48	202001 0139	53,–
40	2.5	10	48	202001 0140	62,–
40	3.0	10	48	202001 0141	73,50
50	0.5	13	100	202001 0151	36,90
50	0.6	13	100	202001 0152	37,60
50	0.8	13	80	202001 0154	40,80
50	1.0	13	80	202001 0156	45,40

2142

D mm	S mm	D1 mm	Number of teeth	art.no.	€
50	1.2	13	80	202001 0158	48,70
50	1.6	13	64	202001 0162	63,50
50	2.0	13	64	202001 0166	67,–
50	2.5	13	64	202001 0167	82,50
50	3.0	13	48	202001 0168	91,50
63	0.3	16	128	202001 0175	53,–
63	0.4	16	128	202001 0177	51,50
63	0.5	16	128	202001 0178	50,50
63	0.6	16	100	202001 0179	50,50
63	0.8	16	100	202001 0181	56,–
63	1.0	16	100	202001 0183	59,50
63	1.2	16	80	202001 0185	66,–
63	1.6	16	80	202001 0189	78,50
63	2.0	16	80	202001 0193	85,50
63	2.5	16	64	202001 0194	97,–
63	3.0	16	64	202001 0195	107,–
80	0.5	22	128	202001 0203	72,50
80	0.6	22	128	202001 0204	75,–
80	0.8	22	128	202001 0206	76,–
80	1.0	22	100	202001 0208	80,–
80	1.2	22	100	202001 0210	85,50
80	1.6	22	100	202001 0214	95,50
80	2.0	22	80	202001 0218	118,–
80	2.5	22	80	202001 0219	134,–
80	3.0	22	80	202001 0220	159,–
100	0.6	22	160	202001 0226	108,–
100	0.8	22	128	202001 0228	107,50
100	1.0	22	128	202001 0230	114,–
100	1.2	22	128	202001 0232	122,–
100	1.6	22	100	202001 0236	151,–
100	2.0	22	100	202001 0240	167,–
100	3.0	22	80	202001 0242	225,–
125	0.8	22	160	202001 0249	172,–
125	1.0	22	160	202001 0251	184,–
125	1.2	22	128	202001 0253	200,–
125	1.6	22	128	202001 0257	235,–
125	2.0	22	128	202001 0261	235,–
125	3.0	22	100	202001 0263	350,–
160	1.0	32	160	202001 0268	380,–
160	2.5	32	128	202001 0273	609,–
160	3.0	32	128	202001 0274	659,–

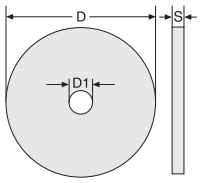
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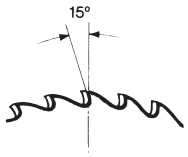
SARA® Solid carbide circular saw blade

VHM | DIN 1838 | Vc/fz | 417

- **Coarse-toothed**
- **With curved tooth, form B,** lateral bevel grinding (hollow-ground)
- Hole without keyway
- For coarse slotting and end-to-end cutting work, and for machining with large cutting depths and cross-sections up to max. 100 mm depending on dimensions, pitch, number of teeth and feed rate/cutting speed







Coarse-toothed, Form B, curved tooth, DIN 1840 (rake angle 15°)

material

● very well suited
○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
○	○		○	○	○	○	○	○			○	○	○				
100-150	80-120		60-80	60-80	40-60	80-100	60-80	40-60			800-1000	800-1000	200-300				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D mm	S mm	D1 mm	Number of teeth	art.no.	€
20	0.25	5	20	**202002** 0022	17,20
20	0.3	5	20	202002 0023	17,60
20	0.5	5	20	202002 0025	19,20
20	0.6	5	20	202002 0026	19,70
20	1.0	5	20	202002 0030	26,20
20	1.6	5	20	202002 0033	33,90
25	0.2	8	20	202002 0041	18,80
25	0.5	8	20	202002 0045	19,70
25	0.6	8	20	202002 0046	20,30
25	0.8	8	20	202002 0048	23,50
25	1.0	8	20	202002 0050	26,–
25	1.2	8	20	202002 0051	28,60
25	1.6	8	20	202002 0053	37,60
25	2.0	8	20	202002 0055	43,70
30	0.4	8	30	202002 0064	20,30
30	0.5	8	30	202002 0065	20,80
30	0.6	8	30	202002 0066	23,60
30	0.8	8	24	202002 0068	26,90
30	1.0	8	24	202002 0070	29,30
30	1.2	8	24	202002 0071	33,10
30	1.6	8	24	202002 0073	41,70
30	2.0	8	24	202002 0075	47,50
30	2.5	8	24	202002 0076	57,–
40	0.4	10	40	202002 0084	27,80
40	0.5	10	40	202002 0085	29,10
40	0.6	10	40	202002 0086	30,50
40	0.8	10	32	202002 0088	33,80
40	1.0	10	32	202002 0090	37,–
40	1.2	10	32	202002 0091	41,70
40	1.6	10	32	202002 0093	50,50
40	2.0	10	32	202002 0095	53,–
40	2.5	10	32	202002 0096	62,–
40	3.0	10	32	202002 0097	73,50
50	0.5	13	48	202002 0102	36,90
50	0.6	13	48	202002 0103	37,60
50	0.8	13	40	202002 0105	40,80
50	1.0	13	40	202002 0107	45,40

2142

D mm	S mm	D1 mm	Number of teeth	art.no.	€
50	1.2	13	40	202002 0108	48,70
50	1.6	13	32	202002 0110	63,50
50	2.0	13	32	202002 0112	67,–
50	2.5	13	32	202002 0113	82,50
50	3.0	13	24	202002 0114	91,50
63	0.5	16	64	202002 0119	50,50
63	0.6	16	48	202002 0120	50,50
63	0.8	16	48	202002 0122	56,–
63	1.0	16	48	202002 0124	59,50
63	1.2	16	40	202002 0125	66,–
63	1.6	16	40	202002 0127	78,50
63	2.0	16	40	202002 0129	85,50
63	2.5	16	32	202002 0130	97,–
63	3.0	16	32	202002 0131	107,–
80	0.6	22	64	202002 0135	75,–
80	0.8	22	64	202002 0137	76,–
80	1.0	22	48	202002 0139	80,–
80	1.2	22	48	202002 0140	85,50
80	1.6	22	48	202002 0142	95,50
80	2.0	22	40	202002 0144	118,–
80	2.5	22	40	202002 0145	134,–
80	3.0	22	40	202002 0146	159,–
100	0.6	22	80	202002 0150	108,–
100	0.8	22	64	202002 0152	107,50
100	1.0	22	64	202002 0154	114,–
100	1.2	22	64	202002 0155	122,–
100	1.6	22	48	202002 0157	151,–
100	2.0	22	48	202002 0159	167,–
100	3.0	22	40	202002 0161	225,–
125	0.8	22	80	202002 0165	172,–
125	1.0	22	80	202002 0167	184,–
125	1.2	22	64	202002 0168	200,–
125	1.6	22	64	202002 0170	235,–
125	2.0	22	64	202002 0172	235,–
125	2.5	22	48	202002 0173	300,–
125	3.0	22	48	202002 0174	350,–

2142

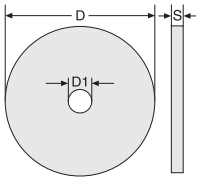
SARA® Metal circular saw blade, precision version

HSS | HSS-E | Vc/fz | 718

- Precision version for use on slow-running circular saw machines or cold circular saws from various manufacturers (ADIGE, EISELE, BERG&SCHMID, IBP, THOMAS, MEP, KALTENBACH, TRENNJÄGER, HÄBERLE etc.)
- Steam-treated surface to prevent material welding, enhance coolant absorption and increase wear resistance
- **Quantity and dimensions of driving pin holes: (quantity / bore hole Ø / pitch circle Ø)**



Usage recommendation for
tooth pitch t: 3 + 4
tooth form BW = profiles and pipes, wall thickness 1.0-2.0 mm
approx. 40-60 rpm depending on diameter
tooth pitch t: 5
tooth form BW = profiles and pipes, wall thickness 2.0-3.0 mm
approx. 40-60 rpm depending on diameter
solid material, cross section 10-20 mm,
approx. 20-40 rpm depending on diameter
tooth pitch t: 6 + 8
tooth form HZ = solid material, cross section 20-40 mm
approx. 20-40 rpm depending on diameter
tooth pitch t: 10
tooth form HZ = solid material, cross section 40-60 mm
approx. 20-40 rpm depending on diameter



Note: Please ensure that the saw blade is undamaged, that it has been mounted correctly, that there is sufficient cooling, that the blade is engaged correctly and that workpieces are properly secured to prevent slippage. Failure to do so puts the saw blade at risk of breaking!


Form BW


Form HZ

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		○ 35-45	○ 20-35	○ 10-20	○ 10-18	○ 10-18	○ 10-15	○ 20-35	○ 20-35				○ 200-300	○ 200-300	○ 30-45				
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		

D mm	S mm	D1 mm	Tooth pitch	Number of teeth	Tooth form	Follower drill holes	HSS art.no.	HSS €	HSS Co5 art.no.	HSS Co5 €
225.0	2.0	32	4	180	BW	2/8/45 + 2/11/63 + 4/9/50	**200150** 0104	84,50	**200151** 0104	113,–
225.0	2.0	32	6	120	HZ		200150 0106	84,50	200151 0106	113,–
225.0	2.0	32	8	90	HZ		200150 0108	84,50	200151 0108	113,–
225.0	2.0	40	4	180	BW	2/8/55 + 4/12/64	200150 0204	84,50	200151 0204	113,–
225.0	2.0	40	6	120	HZ		200150 0206	84,50	200151 0206	113,–
225.0	2.0	40	8	90	HZ		200150 0208	84,50	200151 0208	113,–
250.0	2.0	32	4	200	BW	2/8/45 + 2/11/63 + 4/9/50	200150 0304	90,–	200151 0304	117,–
250.0	2.0	32	5	160	BW		200150 0305	90,–	200151 0305	117,–
250.0	2.0	32	6	128	HZ		200150 0306	90,–	200151 0306	117,–
250.0	2.0	32	8	100	HZ		200150 0308	90,–	200151 0308	117,–
250.0	2.0	40	4	200	BW	2/8/55 + 4/12/64	200150 0404	90,–	200151 0404	117,–
250.0	2.0	40	5	160	BW		200150 0405	90,–	200151 0405	117,–
250.0	2.0	40	6	128	HZ		200150 0406	90,–	200151 0406	117,–
250.0	2.0	40	8	100	HZ		200150 0408	90,–	200151 0408	117,–
275.0	2.5	32	4	220	BW	2/8/45 + 2/11/63 + 4/9/50	200150 0504	105,–	200151 0504	142,–
275.0	2.5	32	5	180	BW		200150 0505	105,–	200151 0505	142,–
275.0	2.5	32	6	140	HZ		200150 0506	105,–	200151 0506	142,–
275.0	2.5	32	8	110	HZ		200150 0508	105,–	200151 0508	142,–
275.0	2.5	32	10	90	HZ		200150 0510	105,–	200151 0510	142,–
275.0	2.5	40	4	220	BW	2/8/55 + 4/12/64	200150 0604	105,–	200151 0604	142,–
275.0	2.5	40	5	180	BW		200150 0605	105,–	200151 0605	142,–
275.0	2.5	40	6	140	HZ		200150 0606	105,–	200151 0606	142,–
275.0	2.5	40	8	110	HZ		200150 0608	105,–	200151 0608	142,–
275.0	2.5	40	10	84	HZ		200150 0610	105,–	200151 0610	142,–
							2102		2102	

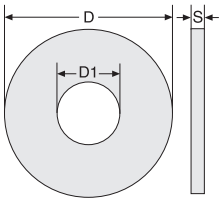
D mm	S mm	D1 mm	Tooth pitch	Number of teeth	Tooth form	Follower drill holes	HSS art.no.	HSS €	HSS Co5 art.no.	HSS Co5 €
300.0	2.5	32	4	240	BW		200150 0704	146,–	200151 0704	185,–
300.0	2.5	32	6	160	HZ	2/8/45 + 2/11/63 + 4/9/50	200150 0706	146,–	200151 0706	185,–
300.0	2.5	32	8	120	HZ		200150 0708	146,–	200151 0708	185,–
300.0	2.5	40	4	240	BW		200150 0804	146,–	200151 0804	185,–
300.0	2.5	40	6	160	HZ	2/8/55 + 4/12/64	200150 0806	146,–	200151 0806	185,–
300.0	2.5	40	8	120	HZ		200150 0808	146,–	200151 0808	185,–
315.0	2.5	32	4	250	BW		200150 0904	166,–	200151 0904	205,–
315.0	2.5	32	5	200	BW		200150 0905	166,–	200151 0905	205,–
315.0	2.5	32	6	160	HZ	2/8/45 + 2/11/63 + 4/9/50	200150 0906	166,–	200151 0906	205,–
315.0	2.5	32	8	120	HZ		200150 0908	166,–	200151 0908	205,–
315.0	2.5	32	10	100	HZ		200150 0910	166,–	200151 0910	205,–
315.0	2.5	40	4	250	BW		200150 1004	166,–	200151 1004	205,–
315.0	2.5	40	5	200	HZ		200150 1005	166,–	200151 1005	205,–
315.0	2.5	40	6	160	HZ	2/8/55 + 4/12/64	200150 1006	166,–	200151 1006	205,–
315.0	2.5	40	8	120	HZ		200150 1008	166,–	200151 1008	205,–
315.0	2.5	40	10	100	HZ		200150 1010	166,–	200151 1010	205,–
315.0	3.0	32	4	250	BW		200150 1104	194,–	200151 1104	245,–
315.0	3.0	32	5	200	BW		200150 1105	194,–	200151 1105	245,–
315.0	3.0	32	6	160	HZ	2/8/45 + 2/11/63 + 4/9/50	200150 1106	194,–	200151 1106	245,–
315.0	3.0	32	8	120	HZ		200150 1108	194,–	200151 1108	245,–
315.0	3.0	32	10	100	HZ		200150 1110	194,–	200151 1110	245,–
315.0	3.0	40	4	250	BW		200150 1204	194,–	200151 1204	245,–
315.0	3.0	40	5	200	BW		200150 1205	194,–	200151 1205	245,–
315.0	3.0	40	6	160	HZ	2/8/55 + 4/12/64	200150 1206	194,–	200151 1206	245,–
315.0	3.0	40	8	120	HZ		200150 1208	194,–	200151 1208	245,–
315.0	3.0	40	10	100	HZ		200150 1210	194,–	200151 1210	245,–
350.0	3.0	32	5	220	BW		200150 1305	220,–	200151 1305	290,–
350.0	3.0	32	6	180	HZ		200150 1306	220,–	200151 1306	290,–
350.0	3.0	32	7	160	HZ	2/8/45 + 2/11/63	200150 1307	220,–	200151 1307	290,–
350.0	3.0	32	8	140	HZ		200150 1308	220,–	200151 1308	290,–
350.0	3.0	32	10	110	HZ		200150 1310	220,–	200151 1310	290,–
350.0	3.0	40	5	220	BW		200150 1405	220,–	200151 1405	290,–
350.0	3.0	40	6	180	HZ		200150 1406	220,–	200151 1406	290,–
350.0	3.0	40	7	160	HZ	2/8/55 + 4/12/64	200150 1407	220,–	200151 1407	290,–
350.0	3.0	40	8	140	HZ		200150 1408	220,–	200151 1408	290,–
350.0	3.0	40	10	110	HZ		200150 1410	220,–	200151 1410	290,–
370.0	3.0	50	7	160	HZ		200150 1507	290,–	200151 1507	370,–
370.0	3.0	50	9	120	HZ		200150 1509	290,–	200151 1509	370,–
370.0	3.0	50	11	100	HZ		200150 1512	290,–	200151 1512	370,–
400.0	3.0	50	6	200	HZ	4/15/80 + 4/14/85	200150 1606	340,–	200151 1606	460,–
400.0	3.0	50	8	160	HZ		200150 1608	340,–	200151 1608	460,–
400.0	3.0	50	10	120	HZ		200150 1610	340,–	200151 1610	460,–
400.0	3.0	50	12	100	HZ		200150 1612	340,–	200151 1612	460,–
							2102		2102	



SARA® Disc milling cutters

HSS-E | DIN 1834 | Typ N

- **Narrow version**
- **3 cutting edges**
- Type N, cross-cut toothing
- Bore with longitudinal groove in accordance with DIN 138
- Smooth cut thanks to helical toothing
- Optimum chip removal with spacious chip chambers
- Milling cutters are self-freeing to prevent jamming





material

● very well suited
○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
○	○	○	○	○	○	○	○				○	○	○				
20-27	15-22	10-15	5-12	5-12	5-10	20-25	20-25				100-200	100-200	30-50				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D js16 mm	S k11 mm	D1 H7 mm	Number of teeth	art.no.	€
63	1.6	22	28	**210105** 0001	79,50
63	2.0	22	28	210105 0002	72,50
63	2.5	22	28	210105 0003	74,–
63	3.0	22	28	210105 0004	72,50
63	4.0	22	28	210105 0005	75,50
63	5.0	22	28	210105 0006	79,50
80	1.6	27	32	210105 0007	87,50
80	2.0	27	32	210105 0008	85,–
80	2.5	27	32	210105 0009	86,50
80	3.0	27	32	210105 0010	84,50
80	4.0	27	32	210105 0011	79,50
80	5.0	27	32	210105 0012	97,–
80	6.0	27	32	210105 0013	104,–
100	1.6	32	36	210105 0014	105,–
100	2.0	32	36	210105 0015	104,–
100	2.5	32	36	210105 0016	104,–
100	3.0	32	36	210105 0017	101,–
100	4.0	32	36	210105 0018	104,–
100	5.0	32	36	210105 0019	110,–
100	6.0	32	36	210105 0020	123,–
125	1.6	32	40	210105 0022	133,–

2103

D js16 mm	S k11 mm	D1 H7 mm	Number of teeth	art.no.	€
125	2.0	32	40	210105 0023	127,–
125	2.5	32	40	210105 0024	131,–
125	3.0	32	40	210105 0025	134,–
125	4.0	32	40	210105 0026	130,–
125	5.0	32	40	210105 0027	139,–
125	6.0	32	40	210105 0028	149,–
125	8.0	32	32	210105 0029	186,–
125	10.0	32	32	210105 0030	205,–
160	2.0	40	48	210105 0031	205,–
160	3.0	40	48	210105 0033	200,–
160	4.0	40	48	210105 0034	193,–
160	5.0	40	48	210105 0035	205,–
160	6.0	40	48	210105 0036	220,–
160	8.0	40	36	210105 0037	250,–
160	10.0	40	36	210105 0038	270,–
200	2.5	40	52	210105 0040	290,–
200	3.0	40	52	210105 0041	275,–
200	4.0	40	52	210105 0042	280,–
200	6.0	40	52	210105 0044	315,–
200	10.0	40	40	210105 0046	405,–

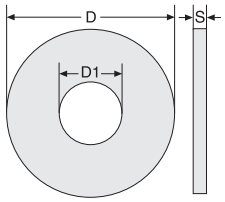
2103



SARA® Disc milling cutters

HSS-E | DIN 885 | Typ N

- Type N, cross-cut toothing
- Bore with longitudinal groove in accordance with DIN 138
- Helix angle up to Ø 100 mm = 12°, from Ø 125 mm = 15°
- 3 cutting edges
- Milling cutters are self-freeing to prevent jamming





material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		○ 20-27	○ 15-22	○ 10-15	○ 5-12	○ 5-12	○ 5-10	○ 20-25	○ 20-25				○ 100-200	○ 100-200					
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

D js16 mm	S k11 mm	D1 H7 mm	Number of teeth	art.no.	€
63	4	22	12	**210115** 0006	77,–
63	5	22	12	210115 0007	82,–
63	6	22	12	210115 0008	80,50
63	8	22	12	210115 0009	89,–
63	10	22	12	210115 0010	100,–
63	14	22	12	210115 0012	128,–
80	5	27	14	210115 0015	104,–
80	6	27	14	210115 0016	105,–
80	8	27	14	210115 0017	113,–
80	10	27	14	210115 0018	116,–
80	12	27	14	210115 0019	130,–
80	14	27	14	210115 0020	149,–
80	16	27	14	210115 0021	162,–
100	6	32	14	210115 0024	147,–

2103

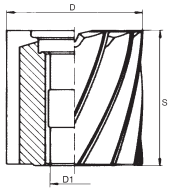
D js16 mm	S k11 mm	D1 H7 mm	Number of teeth	art.no.	€
100	8	32	14	210115 0025	150,–
100	10	32	14	210115 0026	161,–
100	12	32	14	210115 0027	173,–
100	14	32	14	210115 0028	193,–
100	16	32	14	210115 0029	205,–
125	8	32	16	210115 0034	199,–
125	10	32	16	210115 0035	215,–
125	12	32	16	210115 0036	230,–
125	14	32	16	210115 0037	260,–
125	16	32	16	210115 0038	275,–
125	20	32	16	210115 0040	320,–
160	8	40	18	210115 0044	295,–
160	10	40	18	210115 0045	315,–

2103

SARA® Shell end mills

HSS-E | DIN 841 | Typ N | NR | 30° | Vc/fz | 719

- **With longitudinal and transverse grooves in accordance with DIN 138**
- Right-hand cutting, right-hand twist = 30°
- Profile relief grinding



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 25-30	● 20-25	○ 15-20	○ 10-20	○ 10-20	○ 10-15	○ 20-30	○ 20-30				○ 100-180	○ 100-150	○ 40-60				
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

D mm	S mm	D1 mm	Number of teeth	**Type N, finishing** art.no.	€
30.0	30	13	6	**210530** 0001	77,50
35.0	35	16	6	210530 0002	85,50
40.0	20	16	8	210530 0003	77,50
40.0	40	16	8	210530 0004	101,–
50.0	50	22	8	210530 0005	152,–
60.0	60	27	8	210530 0006	210,–
75.0	75	27	10	210530 0007	350,–

2104



D mm	S mm	D1 mm	Number of teeth	**Type NR, roughing** art.no.	€
40.0	40	16	6	**210540** 0004	125,–
50.0	50	22	6	210540 0005	170,–
60.0	60	27	8	210540 0006	225,–
75.0	75	27	10	210540 0007	405,–

2104



SARA® Shell end mills

HSS-E | DIN 1880 | Typ N | NR | HR | NF | 30° | TiAlN | Vc/fz 719

- **With longitudinal and transverse grooves in accordance with DIN 138**
- Right-hand cutting, right-hand twist = 30°
- Profile relief grinding

Type N: Finishing version
Type NR: Knuckle-type tooth profile for roughing work, chip separator with round profile, designed for large machining volumes
Type HR: Knuckle-type tooth profile for roughing work, chip separator with fine round profile, designed for high-strength materials
Type NF: Roughing / finishing toothing, chip separator with flat profile, for medium surface finish quality

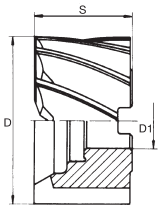
material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
●	●	○	○	○	○	○	○				○	○	○				
25-30	20-25	15-20	10-20	10-20	10-15	20-30	20-30				100-180	100-150	40-60				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

Type N, finishing version

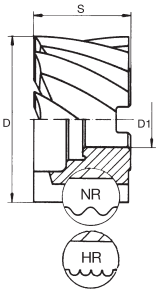
D mm	S mm	D1 mm	Number of teeth	art.no.	€	TiAlN art.no.	TiAlN €
40.0	32	16	6	**210501** 0040	83,–	**210506** 0040	140,–
50.0	36	22	8	210501 0050	117,–	210506 0050	148,–
63.0	40	27	8	210501 0063	179,–	210506 0063	250,–
80.0	45	27	10	210501 0080	260,–	210506 0080	375,–
100.0	50	32	10	210501 0100	390,–		
				2104		2104	





Type NR, roughing version

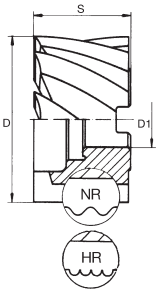
D mm	S mm	D1 mm	Number of teeth	art.no.	€
40.0	32	16	6	**210520** 0040	99,–
50.0	36	22	6	210520 0050	135,–
63.0	40	27	8	210520 0063	198,–
80.0	45	27	8	210520 0080	300,–
100.0	50	32	10	210520 0100	455,–
				2104	





Type HR, roughing version

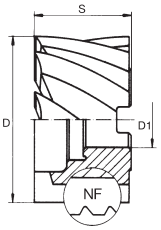
D mm	S mm	D1 mm	Number of teeth	TiAlN art.no.	TiAlN €
40.0	32	16	8	**210523** 0040	151,–
50.0	36	22	8	210523 0050	196,–
63.0	40	27	10	210523 0063	270,–
80.0	45	27	10	210523 0080	410,–
100.0	50	32	12	210523 0100	619,–
				2104	





Type NF, roughing / finishing version

D mm	S mm	D1 mm	Number of teeth	art.no.	€
40.0	32	16	6	**210525** 0040	111,–
50.0	36	22	6	210525 0050	155,–
63.0	40	27	8	210525 0063	220,–
80.0	45	27	8	210525 0080	355,–
100.0	50	32	10	210525 0100	559,–
125.0	56	40	12	210525 0125	839,–
				2104	

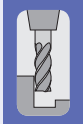




HSS

High-speed steel is a high-alloy tool steel that is largely used as a cutting material i.e. for milling tools, drills, turning tools and broaching tools. The name refers to three to four-times higher cutting speeds compared with conventional tool steel. While conventional tool steel loses its hardness from approx. 200°C, high-speed steel retains it hardness up to approx 600°C.

Universal primarily for ISO P	**Page 424**



Solid carbide

Cutting tools that are made entirely of carbide, compared with coated tools or tools composed of various materials, are classified as **solid carbide** or SC.

Universal primarily for ISO P	**Page 448**
Stainless steel / superalloys primarily for ISO M	**Page 508**
Aluminium primarily for ISO N	**Page 482**
Graphite primarily for ISO N	**Page 518**
Composites primarily for ISO N	**Page 524**
Hard materials primarily for ISO H	**Page 536**

Solid carbide milling cutter range

for modern **milling strategies**.

HPC	**Page 466**
HPC Power	**Page 474**
Trochoidal	**Page 477**
Form milling cutters and deburring tools	**from Page 584**

Overview of HSS / HSS-E / HSS-E-PM end milling cutters

	End milling cutters							
Sorting by type and number of cutting edges								
Brand	ATORN®	ATORN®	ATORN®	ATORN®	ATORN®	ATORN®	SARA®	SARA®
							ALU	ALU
Number of cutting edges	1	1	2	2	2	2	2	2
Diameter range / mm	3 - 8	3 - 8	1 - 40	2 - 25	2 - 22	2 - 20	6 - 25	6 - 20
Standard	Factory standard	Factory standard	327D	327D	327D	327D	DIN844	DIN844
Version	Short	Long	Short	Short	Long	Long	Short	Long
Type/profile	W	W	N	N	N	N	W	W
Cutting material	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E
Coating				AlCrN		AlCrN		
Order No.	290534....	290535....	220101....	220110....	220115....	220125....	290533....	290539....
Catalogue page	428	428	429	429	429	429	430	430
Material groups	Usage recommendations							
Steel < 700 N/mm²			●	●	●	●		
Steel < 1000 N/mm²			●	●	●	●		
Steel < 1400 N/mm²			●	●	●	●		
Stainless steel ferritic/martensitic			○	○	○	○		
Stainless steel austenitic			○	○	○	○		
Stainless steel duplex			○	○	○	○		
Cast iron GG/GTS			○	○	○	○		
Cast iron GGG			○	○	○	○		
Titanium alloys								
Superalloys Fe/NiCo base < 30 HRc								
Superalloys Fe/NiCo base ≥ 30 HRc								
Aluminium < 8 % Si	●	●	○	○	○	○	●	●
Aluminium ≥ 8 % Si	●	●	○	○	○	○	●	●
Copper Cu-alloy	●	●	○	○	○	○	○	○
Graphite GRP/CFP/thermoset								
Hardened steel < 55 HRc								
Hardened steel < 60 HRc								
Hardened steel ≥ 60 HRc								

	End milling cutters					
Sorting by type and number of cutting edges						
Brand	ATORN®	ATORN®	ATORN®	ATORN®	ATORN®	ATORN®
Number of cutting edges	2	3	3	3	3	3
Diameter range / mm	4 - 28	1 - 10	2 - 10	1.5 - 30.0	2 - 20	3 - 30
Standard	DIN327N	Factory standard	Factory standard	DIN844B	DIN844B	DIN844B
Version	Short	Short	Long	Short	Short	Long
Type/profile	N	N	N	N	N	N
Cutting material	HSS-E-PM	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E
Coating	TiAlN				AlCrN	
Order No.	226205....	222001....	222010....	220501....	220510....	220515....
Catalogue page	430	431	431	432	432	432
Material groups	Usage recommendations					
Steel < 700 N/mm²	●	●	●	●	●	●
Steel < 1000 N/mm²	●	●	●	●	●	●
Steel < 1400 N/mm²	●	○	○	○	○	○
Stainless steel ferritic/martensitic	●	○	○	○	○	○
Stainless steel austenitic	○	○	○	○	○	○
Stainless steel duplex	○	○	○	○	○	○
Cast iron GG/GTS	●	○	○	○	○	○
Cast iron GGG	○	○	○	○	○	○
Titanium alloys	○					
Superalloys Fe/NiCo base < 30 HRc	○					
Superalloys Fe/NiCo base ≥ 30 HRc						
Aluminium < 8 % Si	○	○	○	○	○	○
Aluminium ≥ 8 % Si	○	○	○	○	○	○
Copper Cu-alloy	○	○	○	○	○	○
Graphite GRP/CFP/thermoset						
Hardened steel < 55 HRc	○					
Hardened steel < 60 HRc						
Hardened steel ≥ 60 HRc						

	End milling cutters							
Sorting by type and number of cutting edges								
Brand	ATORN®	ATORN®	ATORN®	ATORN®	ATORN®	ATORN®	ATORN®	ATORN®
Number of cutting edges	3	4 - 6	4	4 - 6	4	4 - 6	3	4 - 6
Diameter range / mm	3 - 20	2 - 30	3 - 20	3 - 32	6 - 20	2 - 32	4 - 28	6 - 32
Standard	DIN844B	DIN844B	DIN844	DIN844	DIN844	DIN844N	DIN844W	DIN844N
Version	Long	Short	Short	Long	Long	Short	Short	Long
Type/profile	N	N	N	N	N	N	N	N
Cutting material	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E-PM	HSS-E-PM	HSS-E-PM
Coating	AlCrN		AlCrN		AlCrN	TiAlN	TiAlN	TiAlN
Order No.	220525....	224001....	224010....	224015....	224055....	226225....	226215....	226235....
Catalogue page	432	433	433	433	433	434	434	435
Material groups	Usage recommendations							
Steel < 700 N/mm²	●	●	●	●	●	●	●	●
Steel < 1000 N/mm²	●	●	●	●	●	●	●	●
Steel < 1400 N/mm²	○	○	●	●	●	●	●	●
Stainless steel ferritic/martensitic	○	○	●	●	●	●	●	●
Stainless steel austenitic	○	○	○	○	○	○	○	○
Stainless steel duplex	○	○	○	○	○	○	○	○
Cast iron GG/GTS	○	○	●	●	●	●	●	●
Cast iron GGG	○	○	○	○	○	○	○	○
Titanium alloys			○	○	○	○	○	○
Superalloys Fe/NiCo base < 30 HRc			○	○	○	○	○	○
Superalloys Fe/NiCo base ≥ 30 HRc								
Aluminium < 8 % Si	○	○	○	○	○	○	○	○
Aluminium ≥ 8 % Si	○	○	○	○	○	○	○	○
Copper Cu-alloy	○	○	○	○	○	○	○	○
Graphite GRP/CFP/thermoset								
Hardened steel < 55 HRc			○	○	○	○	○	○
Hardened steel < 60 HRc								
Hardened steel ≥ 60 HRc								



... maximum material removal rate

ATORN®
High quality for great performance

Overview of HSS / HSS-E / HSS-E-PM end milling cutters (cont'd)

	Roughing cutter							
Sorting by type and number of cutting edges								
Brand	SARA	SARA	ATORN	ATORN	ATORN	ATORN	SARA	SARA
Number of cutting edges	4 - 6	4	4 - 5	4	4 - 6	4 - 6	4 - 5	4 - 5
Diameter range / mm	6 - 40	6 - 20	6 - 20	6 - 20	6 - 32	6 - 32	6 - 25	6 - 25
Standard	DIN844B	DIN844B	DIN844	DIN844	DIN844	DIN844	DIN844B	DIN844B
Version	Short	Short	Short	Long	Short	Long	Short	Short
Type/profile	NF	NF	NF	NF	NR-F	NR-F	HR	HR
Cutting material	HSS-E	HSS-E	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E	HSS-E
Coating		AlCrN	TiAlN	TiAlN	TiAlN	TiAlN		AlCrN
Order No.	226001....	226010....	226255....	226275....	226245....	226265....	225030....	225040....
Catalogue page	435	435	436	436	436	437	437	437
Material groups	Usage recommendations							
Steel < 700 N/mm²	●	●	●	●	●	●	●	●
Steel < 1000 N/mm²	●	●	●	●	●	●	●	●
Steel < 1400 N/mm²	○	○	●	●	●	●	○	○
Stainless steel ferritic/martensitic	○	○	●	●	●	●	○	○
Stainless steel austenitic	○	○	○	○	○	○	○	○
Stainless steel duplex	○	○	○	○	○	○	○	○
Cast iron GG/GTS	○	○	●	●	●	●	○	○
Cast iron GGG	○	○	○	○	○	○	○	○
Titanium alloys			○	○	○	○		
Superalloys Fe/NiCo base < 30 HRc			○	○	○	○		
Superalloys Fe/NiCo base ≥ 30 HRc								
Aluminium < 8 % Si	○	○	○	○	○	○	○	○
Aluminium ≥ 8 % Si	○	○	○	○	○	○	○	○
Copper Cu-alloy	○	○	○	○	○	○	○	○
Graphite GRP/CFP/thermoset								
Hardened steel < 55 HRc			○	○	○	○		
Hardened steel < 60 HRc								
Hardened steel ≥ 60 HRc								

	Roughing cutter							
Sorting by type and number of cutting edges								
Brand	SARA	SARA	SARA	SARA	SARA	SARA	SARA	SARA
								ALU
Number of cutting edges	4 - 6	4 - 6	3 - 6	3 - 6	4 - 6	4 - 5	3 - 6	3
Diameter range / mm	8 - 30	8 - 30	6 - 40	6 - 32	6 - 40	6 - 32	4 - 25	6 - 30
Standard	DIN844B	DIN844B	DIN844B	DIN844B	DIN844HR	DIN844B	DIN844HR	DIN844
Version	Long	Long	Short	Short	Long	Long	Short	Short
Type/profile	HR	HR	NR	NR	NR		HR	WR
Cutting material	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E-PM	HSS-E
Coating		AlCrN		AlCrN		AlCrN	TiAlN	
Order No.	290929....	290931....	225001....	225010....	225015....	225025....	226247....	290963....
Catalogue page	437	437	438	438	438	438	439	439
Material groups	Usage recommendations							
Steel < 700 N/mm²	●	●	●	●	●	●	●	
Steel < 1000 N/mm²	●	●	●	●	●	●	●	
Steel < 1400 N/mm²	○	○	○	○	○	○	●	
Stainless steel ferritic/martensitic	○	○	○	○	○	○	●	
Stainless steel austenitic	○	○	○	○	○	○	○	
Stainless steel duplex	○	○	○	○	○	○	○	
Cast iron GG/GTS	○	○	○	○	○	○	●	
Cast iron GGG	○	○	○	○	○	○	○	
Titanium alloys							○	
Superalloys Fe/NiCo base < 30 HRc							○	
Superalloys Fe/NiCo base ≥ 30 HRc								
Aluminium < 8 % Si	○	○	○	○	○	○	○	●
Aluminium ≥ 8 % Si	○	○	○	○	○	○	○	●
Copper Cu-alloy	○	○	○	○	○	○	○	○
Graphite GRP/CFP/thermoset								
Hardened steel < 55 HRc							○	
Hardened steel < 60 HRc								
Hardened steel ≥ 60 HRc								

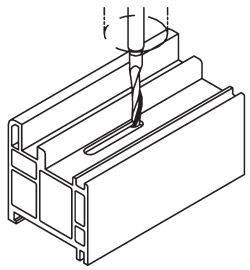
	Radius milling cutters		Form milling cutters		
Sorting by type and number of cutting edges					
Brand	ATORN	ATORN	SARA	SARA	SARA
Number of cutting edges	2	2	6 - 10	6 - 10	4 - 8
Diameter range / mm	3 - 20	3 - 20	4.5 - 45.5	11 - 60	12.5 - 40.0
Standard	327	327	DIN850	DIN851	DIN851
Version	Short	Long	Short	Short	Short
Type/profile	N	N	N	N	NR
Cutting material	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E
Coating					
Order No.	221001....	221005....	291360....	291365....	291367....
Catalogue page	440	440	441	441	442
Material groups	Usage recommendations				
Steel < 700 N/mm²	●	●	○	○	○
Steel < 1000 N/mm²	●	●	○	○	○
Steel < 1400 N/mm²	○	○			
Stainless steel ferritic/martensitic	○	○	○	○	○
Stainless steel austenitic	○	○	○	○	○
Stainless steel duplex	○	○			
Cast iron GG/GTS	○	○	○	○	○
Cast iron GGG	○	○	○	○	○
Titanium alloys					
Superalloys Fe/NiCo base < 30 HRc					
Superalloys Fe/NiCo base ≥ 30 HRc					
Aluminium < 8 % Si	○	○	○	○	○
Aluminium ≥ 8 % Si	○	○	○	○	○
Copper Cu-alloy	○	○	○	○	○
Graphite GRP/CFP/thermoset					
Hardened steel < 55 HRc					
Hardened steel < 60 HRc					
Hardened steel ≥ 60 HRc					

	Form milling cutters				
Sorting by type and number of cutting edges					
Brand	SARA	SARA	SARA	SARA	SARA
Number of cutting edges	6 - 10	6 - 10	4 - 6	10 - 12	10 - 12
Diameter range / mm	16 - 32	16 - 32	8 - 56	16 - 32	16 - 32
Standard	DIN1833	DIN1833	DIN6518	DIN1833	DIN1833
Version	Short 45°	Short 60°	Short	Short 45°	Short 60°
Type/profile	N	N	N	N	N
Cutting material	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E
Coating					
Order No.	291392....	291393....	291304....	291394....	291395....
Catalogue page	442	442	443	443	443
Material groups	Usage recommendationse				
Steel < 700 N/mm²	○	○	○	○	○
Steel < 1000 N/mm²	○	○	○	○	○
Steel < 1400 N/mm²					
Stainless steel ferritic/martensitic	○	○	○	○	○
Stainless steel austenitic	○	○	○	○	○
Stainless steel duplex					
Cast iron GG/GTS	○	○	○	○	○
Cast iron GGG	○	○	○	○	○
Titanium alloys					
Superalloys Fe/NiCo base < 30 HRc					
Superalloys Fe/NiCo base ≥ 30 HRc					
Aluminium < 8 % Si	○	○	○	○	○
Aluminium ≥ 8 % Si	○	○	○	○	○
Copper Cu-alloy	○	○	○	○	○
Graphite GRP/CFP/thermoset					
Hardened steel < 55 HRc					
Hardened steel < 60 HRc					
Hardened steel ≥ 60 HRc					

SARA® Single-blade end milling cutters

HSS-E | Werks-norm | Typ W | 30° | DIN 6535 HA | Z 1 | Vc/fz | 719

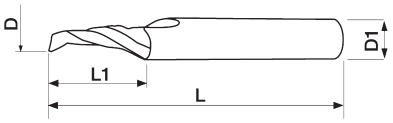
- **Special geometry for aluminium and plastics**
- Centre cutting



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
													● 100	● 120	● 90				
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.



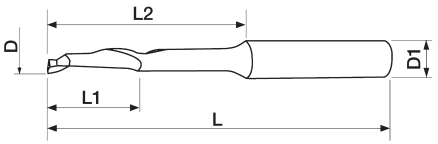


Short

D mm	L1 mm	L mm	D1 mm	● Feed fz aluminium < 8 % Si mm/tooth	● Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
3.0	12	60	8	0.005	0.007	**290534** 0030	14,10
4.0	12	60	8	0.006	0.008	290534 0040	14,10
5.0	14	60	8	0.009	0.013	290534 0050	14,10
6.0	14	60	8	0.012	0.017	290534 0060	14,10
8.0	14	80	8	0.018	0.025	290534 0080	15,70

2105





Long

D mm	L1 mm	L mm	L2 mm	D1 mm	● Feed fz aluminium < 8 % Si mm/tooth	● Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
4.0	16	80	45	8	0.006	0.008	**290535** 0040	22,50
5.0	16	80	45	8	0.009	0.013	290535 0050	22,50
6.0	16	90	45	8	0.012	0.017	290535 0060	22,50
8.0	30	100	70	8	0.018	0.025	290535 0080	34,40

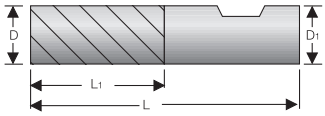
2105



ATORN® Slot drill

HSS-E | DIN 327 | Typ N | 30° | DIN 1835 B | Z 2 | AlCrN | Vc/fz | 719

- **For P9 keyways**



material

	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
● very well suited ○ well suited	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
220101....	● 24	● 24		○ 13	○ 17		○ 27	○ 27				○ 180	○ 55	○ 45				
220110....	● 41	● 41		○ 19	○ 24		○ 38	○ 38				○ 260	○ 80	○ 55				
220115....	● 24	● 24		○ 13	○ 17		○ 27	○ 27				○ 180	○ 55	○ 45				
220125....	● 41	● 41		○ 19	○ 24		○ 38	○ 38				○ 260	○ 80	○ 55				
	Cutting speed Vc m/min.						Please adjust these guidelines according to clamping operation and machine set-up.											



Short

D mm	L1 mm	L mm	D1 mm	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€	AlCrN art.no.	€
1.0	2.5	47	6	0.002	**220101** 0010	13,40		
1.5	3	47	6	0.002	220101 0015	13,–		
2.0	4	48	6	0.003	220101 0020	9,75	**220110** 0020	13,85
2.5	5	49	6	0.003	220101 0025	9,75	220110 0025	13,85
3.0	5	49	6	0.003	220101 0030	7,60	220110 0030	13,85
3.5	6	50	6	0.003	220101 0035	9,75	220110 0035	13,85
3.8	7	51	6	0.003	220101 0038	9,75	220110 0038	13,85
4.0	7	51	6	0.005	220101 0040	7,60	220110 0040	13,85
4.5	7	51	6	0.005	220101 0045	9,75	220110 0045	13,85
4.8	8	52	6	0.005	220101 0048	9,75	220110 0048	13,85
5.0	8	52	6	0.005	220101 0050	7,85	220110 0050	13,85
5.5	8	52	6	0.005	220101 0055	9,75	220110 0055	13,85
6.0	8	52	6	0.007	220101 0060	7,85	220110 0060	14,95
6.5	10	60	10	0.007	220101 0065	11,60		
7.0	10	60	10	0.007	220101 0070	11,60	220110 0070	17,–
7.5	10	60	10	0.007	220101 0075	11,60		
7.75	11	61	10	0.007	220101 0077	11,60		
8.0	11	61	10	0.01	220101 0080	10,40	220110 0080	17,–
8.5	11	61	10	0.01	220101 0085	14,–		
					2106		2106	

D mm	L1 mm	L mm	D1 mm	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€	AlCrN art.no.	€
9.0	11	61	10	0.01	220101 0090	14,–		
9.5	11	61	10	0.01	220101 0095	14,–		
10.0	13	63	10	0.016	220101 0100	11,60	220110 0100	17,–
11.0	13	70	12	0.016	220101 0110	18,70	220110 0110	24,30
12.0	16	73	12	0.025	220101 0120	16,60	220110 0120	24,30
13.0	16	73	12	0.025	220101 0130	21,80		
14.0	16	73	12	0.025	220101 0140	22,–	220110 0140	29,30
15.0	16	73	16	0.025	220101 0150	26,50	220110 0150	35,70
16.0	19	79	16	0.03	220101 0160	26,70	220110 0160	35,20
18.0	19	79	16	0.03	220101 0180	31,90	220110 0180	43,20
20.0	22	88	20	0.035	220101 0200	37,–	220110 0200	53,50
22.0	22	98	25	0.035	220101 0220	54,–	220110 0220	83,–
25.0	26	102	25	0.035	220101 0250	59,–	220110 0250	101,–
26.0	26	102	25	0.035	220101 0260	68,50		
28.0	26	102	25	0.035	220101 0280	69,–		
30.0	26	102	25	0.035	220101 0300	87,50		
32.0	32	112	32	0.035	220101 0320	94,–		
36.0	32	112	32	0.035	220101 0360	127,–		
40.0	38	120	40	0.035	220101 0400	160,–		
					2106		2106	



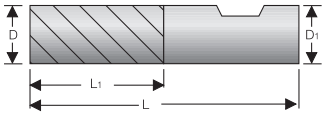
Long

D mm	L1 mm	L mm	D1 mm	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€	AlCrN art.no.	€
2.0	7	51	6	0.003	**220115** 0020	15,10	**220125** 0020	20,80
2.5	8	52	6	0.003	220115 0025	15,10	220125 0025	21,70
3.0	8	52	6	0.003	220115 0030	14,–	220125 0030	20,40
3.5	10	54	6	0.003	220115 0035	15,10	220125 0035	21,70
4.0	11	55	6	0.004	220115 0040	14,–	220125 0040	20,40
4.5	11	55	6	0.004	220115 0045	15,10	220125 0045	21,70
5.0	13	57	6	0.004	220115 0050	14,–	220125 0050	20,40
5.5	13	57	6	0.004	220115 0055	15,10	220125 0055	21,80
6.0	13	57	6	0.006	220115 0060	14,–	220125 0060	20,50
6.5	16	66	10	0.006	220115 0065	21,40	220125 0065	26,60
7.0	16	66	10	0.006	220115 0070	21,40		
					2106		2106	

D mm	L1 mm	L mm	D1 mm	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€	AlCrN art.no.	€
8.0	19	69	10	0.009	220115 0080	19,80	220125 0080	23,10
8.5	19	69	10	0.009	220115 0085	21,40		
9.0	19	69	10	0.009	220115 0090	21,40		
10.0	22	72	10	0.014	220115 0100	19,80	220125 0100	25,–
11.0	22	79	12	0.014	220115 0110	29,90		
12.0	26	83	12	0.021	220115 0120	23,10	220125 0120	27,70
14.0	26	83	12	0.021	220115 0140	39,60	220125 0140	49,40
16.0	32	92	16	0.025	220115 0160	47,10	220125 0160	58,50
18.0	32	92	16	0.025	220115 0180	60,50	220125 0180	76,–
20.0	38	104	20	0.031	220115 0200	62,–	220125 0200	76,–
22.0	38	104	20	0.031	220115 0220	86,50		
					2106		2106	

SARA® Aluminium slot drill

HSS-E | DIN 844 | Typ W | 40° | DIN 1835 B | Z 2 | Vc/fz | 719



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
													● 70-85	● 35-45	○ 30-35				
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

Short



D mm	L1 mm	L mm	D1 mm	Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
6.0	13	57	6	0.013	**290533** 0060	15,70
8.0	19	69	10	0.019	290533 0080	18,70
10.0	22	72	10	0.025	290533 0100	20,80
12.0	26	83	12	0.03	290533 0120	24,–
16.0	32	92	16	0.038	290533 0160	35,40
20.0	38	104	20	0.045	290533 0201	49,40
25.0	45	121	25	0.055	290533 0250	72,50

2105

Long



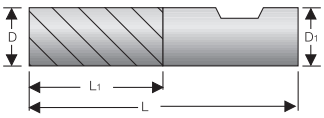
D mm	L1 mm	L mm	D1 mm	Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
6.0	24	68	6	0.013	**290539** 0060	19,90
8.0	38	88	10	0.019	290539 0080	24,20
10.0	45	95	10	0.025	290539 0100	24,70
12.0	53	110	12	0.03	290539 0120	29,–
16.0	63	123	16	0.038	290539 0160	42,30
20.0	75	141	20	0.045	290539 0201	72,50

2105

ATORN® Slot drill

HSS-E PM | DIN 327N | 30° | DIN 1835 B | Z 2 | TiAlN | Vc/fz | 719

- Eccentric relief grinding
- For P9 keyways



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 55-80	● 55-80	○ 45-75	● 30-45	○ 30-45		● 35-65	● 35-65	● 30-45			○ 290-420	○ 90-170	● 110-210		○ 20-35		
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

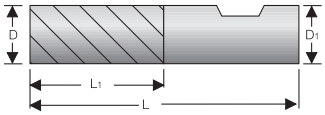


D mm	L1 mm	L mm	D1 mm	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
4.0	7	51	6	0.012	**226205** 0040	18,90
5.0	8	52	6	0.012	226205 0050	18,90
6.0	8	52	6	0.018	226205 0060	18,90
7.0	10	60	10	0.018	226205 0070	24,80
8.0	11	61	10	0.021	226205 0080	24,80
9.0	11	61	10	0.021	226205 0090	25,80
10.0	13	63	10	0.035	226205 0100	28,30
12.0	16	73	12	0.041	226205 0120	36,60
14.0	16	73	12	0.041	226205 0140	45,20
16.0	19	79	16	0.069	226205 0160	53,50
18.0	19	79	16	0.069	226205 0180	63,50
20.0	22	88	20	0.069	226205 0200	73,–
25.0	26	102	25	0.069	226205 0250	129,–
28.0	26	102	25	0.069	226205 0280	167,–

2106

ATORN® End milling cutters

HSS-E | Werks-norm | Typ N | 30° | DIN 1835 B | Z 3 | Vc/fz | 719



material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
222001....	● 40	● 30		○ 15	○ 20		○ 30	○ 30				○ 70	○ 60	○ 50				
222010....	● 24	● 24		○ 13	○ 17		○ 27	○ 27				○ 180	○ 55	○ 45				
Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

Short



D mm	L1 mm	L mm	D1 mm	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
1.0	2	34	6	0.002	**222001** 0010	7,20
1.5	3	34	6	0.002	222001 0015	7,20
1.8	3	34	6	0.002	222001 0018	7,20
2.0	3	35	6	0.002	222001 0020	7,20
2.3	4	35	6	0.004	222001 0023	7,20
2.5	5	36	6	0.004	222001 0025	7,20
2.8	5	36	6	0.004	222001 0028	7,20
3.0	5	36	6	0.007	222001 0030	7,20
3.3	6	37	6	0.007	222001 0033	7,20
3.5	6	37	6	0.007	222001 0035	7,20
3.8	7	38	6	0.007	222001 0038	7,20
4.0	7	38	6	0.007	222001 0040	7,20
4.3	7	38	6	0.01	222001 0043	7,20
4.5	7	38	6	0.01	222001 0045	7,20
4.8	8	39	6	0.01	222001 0048	7,20
5.0	8	39	6	0.01	222001 0050	7,20
5.3	8	39	6	0.013	222001 0053	7,20
5.5	8	39	6	0.013	222001 0055	7,20
6.0	8	39	6	0.013	222001 0060	7,20
6.5	10	42	8	0.013	222001 0065	7,20
7.0	10	42	8	0.016	222001 0070	8,75
8.0	11	43	8	0.016	222001 0080	8,75
8.5	11	48	10	0.02	222001 0085	9,90
9.0	11	48	10	0.02	222001 0090	11,70
10.0	13	50	10	0.02	222001 0100	11,15

2106

Long

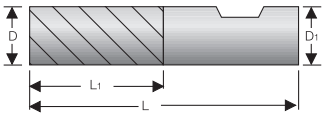


D mm	L1 mm	L mm	D1 mm	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
2.0	7	38	6	0.002	**222010** 0020	8,20
2.5	8	39	6	0.002	222010 0025	8,20
3.0	8	39	6	0.007	222010 0030	8,20
3.5	10	41	6	0.007	222010 0035	8,20
4.0	11	42	6	0.007	222010 0040	8,20
4.5	11	42	6	0.01	222010 0045	8,20
5.0	13	44	6	0.01	222010 0050	8,20
5.5	13	44	6	0.013	222010 0055	8,20
6.0	13	44	6	0.013	222010 0060	8,20
6.5	16	48	8	0.015	222010 0065	9,35
7.0	16	48	8	0.016	222010 0070	9,75
8.0	19	51	8	0.016	222010 0080	9,75
9.0	19	56	10	0.02	222010 0090	12,50
10.0	22	59	10	0.02	222010 0100	12,50

2106

ATORN® End milling cutters

HSS-E | DIN 844 | Typ N | 30° | DIN 1835 B | Z 3 | AlCrN | Vc/fz | 719



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	220501....	● 24	● 24		○ 13	○ 17		○ 27	○ 27				○ 180	○ 55	○ 45				
	220510....	● 41	● 41		○ 19	○ 24		○ 38	○ 38				○ 260	○ 80	○ 55				
	220515....	● 23	● 23		○ 12	○ 16		○ 25	○ 25				○ 162	○ 50	○ 40				
	220525....	● 37	● 37		○ 17	○ 22		○ 28	○ 28				○ 234	○ 72	○ 50				
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

Short



D mm	L1 mm	L mm	D1 mm	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€	AlCrN art.no.	€
1.5	7	51	6	0.002	**220501** 0015	11,35		
2.0	7	51	6	0.003	220501 0020	11,35	**220510** 0020	14,70
3.0	8	52	6	0.003	220501 0030	11,35	220510 0030	14,95
4.0	11	55	6	0.005	220501 0040	11,35	220510 0040	14,95
4.5	11	55	6	0.005	220501 0045	11,35	220510 0045	14,95
5.0	13	57	6	0.005	220501 0050	11,35	220510 0050	14,95
5.5	13	57	6	0.005	220501 0055	11,35	220510 0055	14,95
6.0	13	57	6	0.007	220501 0060	11,35	220510 0060	14,95
6.5	16	66	10	0.007	220501 0065	15,10		
7.0	16	66	10	0.007	220501 0070	14,85	220510 0070	19,30
7.5	16	66	10	0.007	220501 0075	14,85		
8.0	19	69	10	0.01	220501 0080	14,85	220510 0080	19,30
8.5	19	69	10	0.01	220501 0085	14,85		
9.0	19	69	10	0.01	220501 0090	14,85	220510 0090	19,90
9.5	19	69	10	0.01	220501 0095	14,85		
10.0	22	72	10	0.016	220501 0100	14,15	220510 0100	20,10
11.0	22	79	12	0.016	220501 0110	21,90	220510 0110	27,90
12.0	26	83	12	0.025	220501 0120	19,20	220510 0120	27,90
13.0	26	83	12	0.025	220501 0130	29,80	220510 0130	37,50
14.0	26	83	12	0.025	220501 0140	29,80	220510 0140	37,50
15.0	26	83	16	0.025	220501 0150	31,10	220510 0150	38,70
16.0	32	92	16	0.03	220501 0160	29,40	220510 0160	36,60
17.0	32	92	16	0.03	220501 0170	41,40		
18.0	32	92	16	0.03	220501 0180	40,10	220510 0180	50,–
20.0	38	104	20	0.035	220501 0200	45,–	220510 0200	56,–
22.0	38	104	20	0.035	220501 0220	70,–	220510 0220	86,50
24.0	45	121	25	0.035	220501 0240	65,50		
25.0	45	121	25	0.035	220501 0250	68,50		
28.0	45	121	25	0.035	220501 0280	113,–		
30.0	45	121	25	0.035	220501 0300	129,–		
					2106		2106	

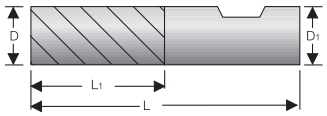
Long



D mm	L1 mm	L mm	D1 mm	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€	AlCrN art.no.	€
3.0	12	56	6	0.003	**220515** 0030	16,40	**220525** 0030	22,60
4.0	19	63	6	0.004	220515 0040	16,40	220525 0040	22,60
5.0	24	68	6	0.004	220515 0050	15,80	220525 0050	22,80
6.0	24	68	6	0.006	220515 0060	15,20	220525 0060	22,80
8.0	38	88	10	0.009	220515 0080	20,50	220525 0080	26,80
10.0	45	95	10	0.014	220515 0100	21,40	220525 0100	27,90
12.0	53	110	12	0.021	220515 0120	26,70	220525 0120	32,10
14.0	53	110	12	0.021	220515 0140	40,50	220525 0140	50,50
16.0	63	123	16	0.025	220515 0160	43,40	220525 0160	53,50
18.0	63	123	16	0.025	220515 0180	55,50	220525 0180	61,–
20.0	75	141	20	0.031	220515 0200	61,–	220525 0200	71,–
					2106		2106	

ATORN® End milling cutters

HSS-E | DIN 844 | Typ N | 30° | DIN 1835 B | Z 4 | Z 5 | Z 6 | AlCrN | Vc/fz | 719



- **Face cutter geometry for plunge milling (not extra-long version)**

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
224001....	● 20-25	● 20-25		○ 10-15	○ 10-15		○ 18-20	○ 18-20				○ 80-100	○ 40-50	○ 35-45				
224010....	● 50-60	● 50-60		○ 25-30	○ 25-30		○ 45-55	○ 45-55				○ 120-14	○ 100-130	○ 85-105				
224015....	● 20-25	● 18-22		○ 10-15	○ 10-15		○ 10-15	○ 15-20				○ 70-90	○ 35-45	○ 50-60				
224055....	● 45-55	● 40-50		○ 30-40	○ 30-40		○ 35-45	○ 35-45				○ 100-130	○ 100-120	○ 80-100				
	Cutting speed Vc m/min.																	

Please adjust these guidelines according to clamping operation and machine set-up.

Short



D mm	L1 mm	L mm	D1 mm	Z	● Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€	AlCrN art.no.	€
2.0	7	51	6	4	0.002	**224001** 0020	10,10		
2.5	8	52	6	4	0.002	224001 0025	10,10		
3.0	8	52	6	4	0.003	224001 0030	10,10	**224010** 0030	14,65
3.5	10	54	6	4	0.003	224001 0035	10,10		
4.0	11	55	6	4	0.007	224001 0040	10,10	224010 0040	14,65
5.0	13	57	6	4	0.009	224001 0050	10,10	224010 0050	14,65
6.0	13	57	6	4	0.011	224001 0060	10,10	224010 0060	14,85
7.0	16	66	10	4	0.011	224001 0070	13,80	224010 0070	18,30
8.0	19	69	10	4	0.016	224001 0080	13,80	224010 0080	18,30
8.5	19	69	10	4	0.016	224001 0085	13,80		
9.0	19	69	10	4	0.016	224001 0090	13,80		
10.0	22	72	10	4	0.021	224001 0100	13,–	224010 0100	18,90
11.0	22	79	12	4	0.021	224001 0110	19,80		
12.0	26	83	12	4	0.026	224001 0120	17,30	224010 0120	23,–
13.0	26	83	12	4	0.026	224001 0130	31,–		
14.0	26	83	12	4	0.026	224001 0140	31,–	224010 0140	32,–
15.0	26	83	16	4	0.026	224001 0150	31,10		
16.0	32	92	16	4	0.032	224001 0160	27,10	224010 0160	36,80
18.0	32	92	16	4	0.032	224001 0180	44,90	224010 0180	42,70
20.0	38	104	20	4	0.038	224001 0200	39,30	224010 0200	52,50
22.0	38	104	20	5	0.038	224001 0220	47,20		
24.0	45	121	25	5	0.04	224001 0240	65,50		
28.0	45	121	25	6	0.045	224001 0280	71,50		
30.0	45	121	25	6	0.05	224001 0300	106,–		
						2106		2106	

Long

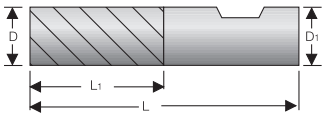


D mm	L1 mm	L mm	D1 mm	Z	● Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€	AlCrN art.no.	€
3.0	12	56	6	4	0.002	**224015** 0030	16,–		
4.0	19	63	6	4	0.004	224015 0040	16,–		
5.0	24	68	6	4	0.006	224015 0050	16,–		
6.0	24	68	6	4	0.008	224015 0060	16,–	**224055** 0060	20,90
7.0	30	80	10	4	0.008	224015 0070	23,–		
8.0	38	88	10	4	0.012	224015 0080	23,–	224055 0080	30,60
9.0	38	88	10	4	0.012	224015 0090	23,–		
10.0	45	95	10	4	0.015	224015 0100	23,–	224055 0100	32,50
11.0	45	102	12	4	0.015	224015 0110	31,50		
12.0	53	110	12	4	0.018	224015 0120	31,50	224055 0120	40,90
14.0	53	110	12	4	0.018	224015 0140	45,60	224055 0140	56,50
16.0	63	123	16	4	0.023	224015 0160	55,50	224055 0160	69,–
18.0	63	123	16	4	0.023	224015 0180	68,50	224055 0180	83,50
20.0	75	141	20	4	0.028	224015 0200	64,50	224055 0200	91,–
22.0	75	141	20	5	0.03	224015 0220	77,–		
25.0	90	166	25	5	0.038	224015 0250	96,–		
28.0	90	166	25	6	0.04	224015 0280	117,–		
30.0	90	166	25	6	0.045	224015 0300	134,–		
32.0	106	186	32	6	0.05	224015 0320	148,50		
						2106		2106	

ATORN® End milling cutters

HSS-E PM | DIN 844N | 45° | DIN 1835 B | Z 3 | TiAlN | Vc/fz | 721

- Eccentric relief grinding



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 45-75	● 45-65	● 30-45		● 20-35		● 25-45	○ 25-45	● 30-45									
	Cutting speed Vc m/min.																		

material



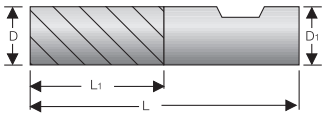
D mm	L1 mm	L mm	D1 h6 mm	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
4.0	11	55	6	0.008	**226215** 0040	22,60
5.0	13	57	6	0.008	226215 0050	22,60
6.0	13	57	6	0.018	226215 0060	22,60
7.0	16	66	10	0.018	226215 0070	28,10
8.0	19	69	10	0.021	226215 0080	28,10
9.0	19	69	10	0.021	226215 0090	33,40
10.0	22	72	10	0.036	226215 0100	30,30
12.0	26	83	12	0.036	226215 0120	37,10
14.0	26	83	12	0.036	226215 0140	48,30
16.0	32	92	16	0.053	226215 0160	57,50
18.0	32	92	16	0.053	226215 0180	67,–
20.0	38	104	20	0.053	226215 0200	79,50
25.0	45	121	25	0.053	226215 0250	142,–
28.0	45	121	25	0.053	226215 0280	173,–

2106

ATORN® End milling cutters

HSS-E PM | DIN 844N | 30° | DIN 1835 B | Z 4 | Z 6 | TiAlN | Vc/fz | 721

- Eccentric relief grinding



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
			● 45-75	○ 30-45	● 20-35	● 30-45		● 35-65	● 35-65	● 30-45			● 290-420	● 90-170	● 110-210		○ 20-35		
	Cutting speed Vc m/min.																		

Short



D mm	L1 mm	L mm	D1 h6 mm	Z	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
2.0	7	51	6	4	0.008	**226225** 0020	19,–
3.0	8	52	6	4	0.008	226225 0030	19,–
4.0	11	55	6	4	0.009	226225 0040	19,–
5.0	13	57	6	4	0.01	226225 0050	19,–
6.0	13	57	6	4	0.018	226225 0060	19,–
7.0	16	66	10	4	0.018	226225 0070	25,40
8.0	19	69	10	4	0.021	226225 0080	23,80
9.0	19	69	10	4	0.021	226225 0090	29,50
10.0	22	72	10	4	0.035	226225 0100	26,30
12.0	26	83	12	4	0.041	226225 0120	33,–
14.0	26	83	12	4	0.041	226225 0140	41,80
16.0	32	92	16	4	0.069	226225 0160	48,60
18.0	32	92	16	4	0.069	226225 0180	58,50
20.0	38	104	20	4	0.069	226225 0200	67,50
25.0	45	121	25	6	0.069	226225 0250	111,–
28.0	45	121	25	6	0.069	226225 0280	158,–
30.0	45	121	25	6	0.069	226225 0300	165,–
32.0	53	133	32	6	0.069	226225 0320	164,–

2106

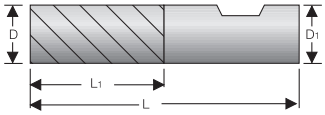


Long

D mm	L1 mm	L mm	D1 h6 mm	Z	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
6.0	24	68	6	4	0.018	**226235** 0060	29,–
8.0	38	88	10	4	0.021	226235 0080	36,80
10.0	45	95	10	4	0.035	226235 0100	40,–
12.0	53	110	12	4	0.011	226235 0120	52,–
14.0	53	110	12	4	0.011	226235 0140	59,50
16.0	63	123	16	4	0.069	226235 0160	74,50
18.0	63	123	16	4	0.069	226235 0180	91,50
20.0	75	141	20	4	0.069	226235 0200	106,–
25.0	90	166	25	6	0.069	226235 0250	175,–
32.0	106	186	32	6	0.069	226235 0320	240,–
						2106	

SARA® Roughing / finishing cutter

HSS-E | DIN 844B | NF | 30° | DIN 1835 B | Z 4 | Z 5 | Z 6 | AlCrN | Vc/fz | 719



material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
226001....	● 25-30	● 25-30		○ 18-25	○ 18-25		○ 25-30	○ 25-30										
226010....	● 50-60	● 45-55		○ 35-45	○ 35-45		○ 45-55	○ 45-55										
Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

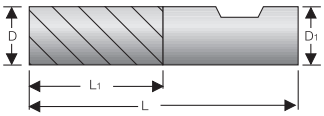


D mm	L1 mm	L mm	D1 mm	Z	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€	AlCrN art.no.	€
6.0	13	57	6	4	0.009	**226001** 0060	23,60	**226010** 0060	37,70
7.0	16	60	8	4	0.009	226001 0070	28,10		
8.0	19	69	10	4	0.014	226001 0080	27,80	226010 0080	42,50
10.0	22	72	10	4	0.018	226001 0100	30,70	226010 0100	47,80
11.0	22	79	12	4	0.018	226001 0110	36,20		
12.0	26	83	12	4	0.022	226001 0120	33,–	226010 0120	53,–
14.0	26	83	12	4	0.022	226001 0140	37,–	226010 0140	63,50
16.0	32	92	16	4	0.027	226001 0160	43,30	226010 0160	77,50
18.0	32	92	16	4	0.027	226001 0180	45,90	226010 0180	93,–
20.0	38	104	20	4	0.033	226001 0200	56,50	226010 0200	103,–
22.0	38	104	20	4	0.035	226001 0220	65,50		
28.0	45	121	25	5	0.045	226001 0280	99,50		
32.0	53	133	32	6	0.055	226001 0320	131,–		
						2105		2105	

ATORN® Roughing / finishing cutter

HSS-E PM | DIN 844 NF | 30° | DIN 1835 B | Z 4 | Z 5 | TiAlN | Vc/fz | 722

- Eccentric relief grinding



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 55-80	● 45-65	● 30-45	● 30-45	○ 30-45		● 25-45	○ 25-45	● 30-45					○ 90-190		○ 20-35		
	Cutting speed Vc m/min.										Please adjust these guidelines according to clamping operation and machine set-up.								

Short



D mm	L1 mm	L mm	D1 h6 mm	Z	● Feed fz steel < 1000 N/mm² mm/tooth	● Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
6.0	13	57	6	4	0.009	0.018	**226255** 0060	30,–
8.0	19	69	10	4	0.011	0.021	226255 0080	37,20
10.0	22	72	10	5	0.017	0.035	226255 0100	31,40
12.0	26	83	12	5	0.021	0.042	226255 0120	40,50
14.0	26	83	12	5	0.021	0.042	226255 0140	46,10
16.0	32	92	16	5	0.035	0.069	226255 0160	54,50
20.0	38	104	20	5	0.035	0.069	226255 0200	77,50

2106

Long



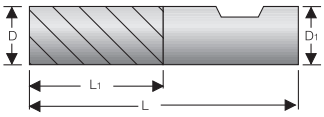
D mm	L1 mm	L mm	D1 h6 mm	Z	● Feed fz steel < 1000 N/mm² mm/tooth	● Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
6.0	24	68	6	4	0.009	0.018	**226275** 0060	47,80
8.0	38	88	10	4	0.011	0.021	226275 0080	55,–
10.0	45	95	10	4	0.017	0.035	226275 0100	53,50
12.0	53	110	12	4	0.021	0.042	226275 0120	71,50
16.0	63	123	16	4	0.035	0.069	226275 0160	100,–
20.0	75	141	20	4	0.035	0.069	226275 0200	136,–

2106

ATORN® Roughing cutter

HSS-E PM | DIN 844 NR-F | 30° | DIN 1835 B | Z 4 | Z 5 | Z 6 | TiAlN | Vc/fz | 722

- **With fine knuckle-type tooth profile**
- Eccentric relief grinding



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 45-75	● 45-75	○ 20-35	● 30-45			● 25-45	○ 25-45	● 30-45							○ 20-35		
	Cutting speed Vc m/min.										Please adjust these guidelines according to clamping operation and machine set-up.								

Short



D mm	L1 mm	L mm	D1 mm	Z	● Feed fz steel < 1000 N/mm² mm/tooth	● Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
6.0	13	57	6	4	0.012	0.021	**226245** 0060	31,–
7.0	16	66	10	4	0.012	0.021	226245 0070	41,20
8.0	19	69	10	4	0.014	0.0245	226245 0080	35,–
9.0	19	69	10	4	0.014	0.0245	226245 0090	39,60
10.0	22	72	10	5	0.0232	0.0406	226245 0100	34,–
12.0	26	83	12	5	0.0276	0.041	226245 0120	43,70
14.0	26	83	12	5	0.0276	0.041	226245 0140	52,–
16.0	32	92	16	5	0.046	0.0805	226245 0160	64,–
18.0	32	92	16	5	0.046	0.0805	226245 0180	70,–
20.0	38	104	20	5	0.046	0.0805	226245 0200	86,50
22.0	38	104	20	5	0.046	0.0805	226245 0220	109,–
25.0	45	121	25	5	0.046	0.0805	226245 0250	127,–
28.0	45	121	25	5	0.046	0.0805	226245 0280	143,–
30.0	45	121	25	5	0.046	0.0805	226245 0300	173,–
32.0	53	133	32	6	0.046	0.0805	226245 0320	179,–

2106



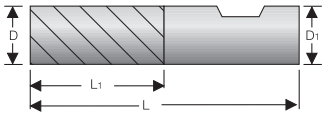
Long

D mm	L1 mm	L mm	D1 mm	Z	Feed fz steel < 1000 N/mm² mm/tooth	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
6.0	24	68	6	4	0.012	0.021	**226265** 0060	54,–
8.0	38	88	10	4	0.014	0.0245	226265 0080	56,50
10.0	45	95	10	4	0.0232	0.0406	226265 0100	52,–
12.0	53	110	12	4	0.0276	0.0421	226265 0120	65,50
14.0	53	110	12	4	0.0276	0.0421	226265 0140	74,50
16.0	63	123	16	4	0.046	0.0805	226265 0160	92,–
18.0	63	123	16	4	0.046	0.0805	226265 0180	104,–
20.0	75	141	20	4	0.046	0.0805	226265 0200	132,–
25.0	90	166	25	5	0.046	0.0805	226265 0250	205,–
32.0	106	186	32	6	0.046	0.0805	226265 0320	290,–
							2106	

SARA® Roughing cutter

HSS-E | DIN 844 | HR | 30° | DIN 1835 B | Z 4 | Z 5 | AlCrN | Vc/fz | 719

- **Relief-ground knuckle profile**



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	225030....	● 25-30	● 25-30		○ 18-25	○ 18-25		○ 25-30	○ 25-30										
	225040....	● 50-60	● 45-55		○ 35-45	○ 35-45		○ 45-55	○ 45-55										
	290929....	● 25-30	● 20-25	○ 15-20	○ 15-20	○ 15-20		○ 20-30	○ 20-30										
	290931....	● 45-55	● 40-50	○ 30-40	○ 30-40	○ 30-40		○ 40-50	○ 40-50				○ 100-130	○ 100-120	○ 80-100				
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

Short



D mm	L1 mm	L mm	D1 mm	Z	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€	AlCrN art.no.	€
6.0	13	57	6	4	0.009	**225030** 0060	20,70	**225040** 0060	26,30
8.0	19	69	10	4	0.014	225030 0080	23,50	225040 0080	29,10
10.0	22	72	10	4	0.018	225030 0100	24,30	225040 0100	29,90
12.0	26	83	12	4	0.022	225030 0120	27,40	225040 0120	33,–
14.0	26	83	12	4	0.022	225030 0140	32,40	225040 0140	46,–
16.0	32	92	16	4	0.027	225030 0160	35,30	225040 0160	48,90
18.0	32	92	16	4	0.027	225030 0180	42,50	225040 0180	56,–
20.0	38	104	20	4	0.033	225030 0200	52,–	225040 0200	66,–
25.0	45	121	25	5	0.04	225030 0250	83,–	225040 0250	101,–
						2105		2105	

Long

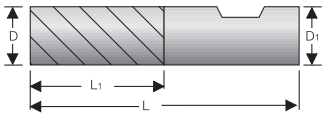


D mm	L1 mm	L mm	D1 mm	Z	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€	AlCrN art.no.	€
8.0	38	88	10	4	0.012	**290929** 0080	31,50	**290931** 0080	38,80
10.0	45	95	10	4	0.015	290929 0100	37,30	290931 0100	43,–
12.0	53	110	12	4	0.018	290929 0120	43,30	290931 0120	48,90
16.0	63	123	16	4	0.023	290929 0160	56,50	290931 0160	70,50
18.0	63	123	16	4	0.023	290929 0180	69,–	290931 0180	83,–
20.0	75	141	20	4	0.028	290929 0201	75,–	290931 0201	89,–
25.0	90	166	25	5	0.035	290929 0250	99,–	290931 0250	116,–
						2105		2105	

SARA® Roughing cutter

HSS-E | DIN 844 | NR | 30° | DIN 1835 B | Z 4 | Z 5 | Z 6 | AlCrN | Vc/fz | 719

- **Multi-blade milling cutter, relief-ground knurled profile**



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	225001....	● 25-30	● 25-30		○ 18-25	○ 18-25		○ 25-30	○ 25-30										
	225010....	● 50-60	● 45-55		○ 35-45	○ 35-45		○ 45-55	○ 45-55										
	225015....	● 25-30	● 25-30		○ 18-25	○ 18-25		○ 25-30	○ 25-30										
	225025....	● 50-60	● 45-55		○ 35-45	○ 35-45		○ 45-55	○ 45-55										
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

Short



D mm	L1 mm	L mm	D1 mm	Z	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€	AlCrN art.no.	€
6.0	13	57	6	4	0.009	**225001** 0060	16,60	**225010** 0060	19,40
8.0	19	69	10	4	0.014	225001 0080	18,70	225010 0080	22,10
10.0	22	72	10	4	0.018	225001 0100	18,70	225010 0100	22,70
12.0	26	83	12	4	0.022	225001 0120	23,90	225010 0120	26,40
14.0	26	83	12	4	0.022	225001 0140	27,40	225010 0140	38,70
16.0	32	92	16	4	0.027	225001 0160	31,10	225010 0160	37,70
18.0	32	92	16	4	0.027	225001 0180	35,–	225010 0180	48,40
20.0	38	104	20	4	0.033	225001 0200	43,10	225010 0200	49,70
22.0	38	104	20	5	0.033	225001 0220	61,50	225010 0220	66,50
25.0	45	121	25	5	0.04	225001 0250	65,50	225010 0250	69,50
28.0	45	121	25	5	0.045	225001 0280	84,–	225010 0280	89,–
30.0	45	121	25	5	0.05	225001 0300	90,–	225010 0300	102,–
32.0	53	133	32	6	0.055	225001 0320	104,–	225010 0320	108,–
36.0	53	133	32	6	0.06	225001 0360	135,–		
40.0	63	155	40	6	0.065	225001 0400	149,–		
						2105		2105	

Long

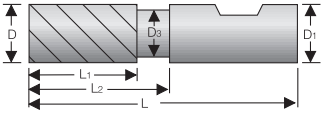


D mm	L1 mm	L mm	D1 mm	Z	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€	AlCrN art.no.	€
6.0	24	68	6	4	0.009	**225015** 0060	23,50	**225025** 0060	28,70
8.0	38	88	10	4	0.014	225015 0080	36,50	225025 0080	44,40
10.0	45	95	10	4	0.018	225015 0100	38,70	225025 0100	46,90
12.0	53	110	12	4	0.022	225015 0120	51,–	225025 0120	62,50
14.0	53	110	12	4	0.022	225015 0140	48,80	225025 0140	59,50
16.0	63	123	16	4	0.027	225015 0160	61,50	225025 0160	74,50
18.0	63	123	16	4	0.027	225015 0180	74,50	225025 0180	90,50
20.0	75	141	20	4	0.033	225015 0200	95,50	225025 0200	116,–
22.0	75	141	20	4	0.033	225015 0220	115,–	225025 0220	141,–
25.0	90	166	25	5	0.04	225015 0250	136,–	225025 0250	164,–
28.0	90	166	25	5	0.045	225015 0280	169,–	225025 0280	205,–
30.0	90	166	25	5	0.05	225015 0300	181,–	225025 0300	220,–
32.0	106	186	32	6	0.055	225015 0320	193,–	225025 0320	235,–
36.0	106	186	32	6	0.06	225015 0360	230,–		
40.0	125	217	32	6	0.07	225015 0400	260,–		
						2105		2105	

SARA® Roughing cutter

HSS-E PM | DIN 844HR | HR | 45° | DIN 1835 B | Z 3 | Z 4 | Z 5 | Z 6 | TiAlN | Vc/fz | 722

- Eccentric relief grinding



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 45-75	● 45-65	● 30-45	● 30-45	○ 30-45		● 25-45	○ 25-45								○ 20-35		
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.



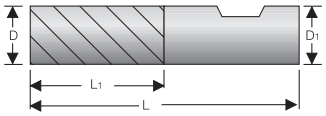
D mm	L1 mm	L mm	D1 h6 mm	L2 mm	D3 mm	Z	● Feed fz steel < 1000 N/mm² mm/tooth	● Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
4.0	11	55	6	19	4.0	3	0.008	0.014	**226247** 0040	28,20
5.0	13	57	6	21	4.8	4	0.008	0.014	226247 0050	28,90
6.0	13	57	6	21	5.5	4	0.012	0.021	226247 0060	29,–
8.0	19	69	10	29	7.5	4	0.014	0.0245	226247 0080	33,70
10.0	22	72	10	32	9.5	4	0.0232	0.0406	226247 0100	36,80
12.0	26	83	12	38	11.5	4	0.024	0.042	226247 0120	46,50
16.0	32	92	16	44	15.5	5	0.046	0.0805	226247 0160	69,–
20.0	38	104	20	54	19.5	6	0.046	0.0805	226247 0200	104,–
25.0	45	121	25	65	12.5	6	0.046	0.0805	226247 0250	145,–

2105

SARA® Aluminium roughing cutter

HSS-E | DIN 844 | WR | 30° | DIN 1835 B | Z 3 | Vc/fz | 719

- **Aluminium teeth**



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
													● 70-85	● 35-45	○ 30-35				
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.



D mm	L1 mm	L mm	D1 mm	● Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
6.0	13	57	6	0.013	**290963** 0060	23,20
8.0	19	69	10	0.019	290963 0080	24,80
10.0	22	72	10	0.025	290963 0100	24,80
12.0	26	83	12	0.03	290963 0120	33,40
14.0	26	83	12	0.03	290963 0140	37,30

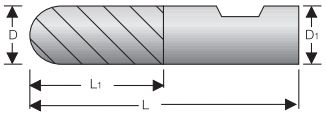
2105

D mm	L1 mm	L mm	D1 mm	● Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
16.0	32	92	16	0.038	290963 0160	41,60
18.0	32	92	16	0.045	290963 0180	45,10
20.0	38	104	20	0.05	290963 0201	56,50
25.0	45	121	25	0.055	290963 0250	87,–
30.0	45	121	25	0.06	290963 0300	123,–

2105

ATORN® Radius milling cutter

HSS-E | DIN 844 | Typ N | 30° | DIN 1835 B | Z 2 | Vc/fz | 719



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 28	● 23		○ 12	○ 16		○ 25	○ 25				○ 162	○ 50	○ 40				
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		



Short

D mm	L1 mm	L mm	D1 mm	R mm	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
3.0	8	52	6	1.5	0.004	**221001** 0030	15,70
4.0	11	55	6	2	0.01	221001 0040	15,70
5.0	13	57	6	2.5	0.01	221001 0050	15,70
6.0	13	57	6	3	0.014	221001 0060	15,70
8.0	19	69	10	4	0.022	221001 0080	18,40
10.0	22	72	10	5	0.036	221001 0100	20,–

2106

D mm	L1 mm	L mm	D1 mm	R mm	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
12.0	26	83	12	6	0.05	221001 0120	25,50
14.0	26	83	12	7	0.05	221001 0140	28,20
16.0	32	92	16	8	0.062	221001 0160	31,60
18.0	32	92	16	9	0.064	221001 0180	35,90
20.0	38	104	20	10	0.07	221001 0200	41,10

2106



Long

D mm	L1 mm	L mm	D1 mm	R mm	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
3.0	8	56	6	1.5	0.003	**221005** 0030	12,35
4.0	19	63	6	2	0.01	221005 0040	17,60
5.0	24	68	6	2.5	0.01	221005 0050	17,60
6.0	24	68	6	3	0.012	221005 0060	17,60
8.0	38	82	10	4	0.02	221005 0080	21,30
10.0	45	95	10	5	0.034	221005 0100	22,80

2106

D mm	L1 mm	L mm	D1 mm	R mm	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
12.0	53	110	12	6	0.048	221005 0120	29,50
14.0	53	110	12	7	0.048	221005 0140	32,20
16.0	63	123	16	8	0.058	221005 0160	36,50
18.0	63	123	16	9	0.06	221005 0180	41,–
20.0	75	141	20	10	0.068	221005 0200	47,10

2106



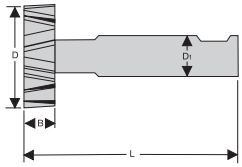
STAHLWILLE
Hand tools
401 pages
Art.no. 019900 5633

Overview of all free manufacturers' catalogues
on page 14/15

SARA® Slotting cutter

HSS-E | DIN 850 | Typ N | h12 | h6 | DIN 1835 B | Z 6 | Z 8+ | Vc/fz | 719

- With cross-cut toothing
- For groove milling in accordance with DIN 6888, P9 fit
- * = not DIN-compliant



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		○ 30-40	○ 25-35		○ 20-30	○ 20-30		○ 20-30	○ 20-30				○ 35-55	○ 65-250					
	Cutting speed Vc m/min.				Please adjust these guidelines according to clamping operation and machine set-up.														



D h12 mm	B mm	for DIN 6888-compliant groove mm	L mm	D1 mm	Z	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
4.5	1	1 x 1.4	50	6	6	0.045	**291360** 0045	33,30
7.5	1.5	1.5 x 2.6	50	6	6	0.045	291360 0075	26,60
7.5	2	2 x 2.6	50	6	6	0.045	291360 0076	26,60
10.5	2	2 x 3.7	50	6	6	0.045	291360 0105	33,90
10.5	2.5	2.5 x 3.7	50	6	6	0.045	291360 0106	33,90
10.5	3	3 x 3.7	50	6	6	0.045	291360 0107	33,90
13.5	2	2 x 5	56	10	6	0.06	291360 0135	32,30
13.5	3	3 x 5	56	10	6	0.06	291360 0137	32,30
13.5	4	4 x 5	56	10	6	0.06	291360 0138	32,30
16.5	3	3 x 6.5	56	10	6	0.06	291360 0166	35,20
16.5	4	4 x 6.5	56	10	6	0.06	291360 0167	35,20
16.5	5	5 x 6.5	56	10	6	0.06	291360 0168	35,20
19.5	3	3 x 7.5*	63	10	8	0.06	291360 0195	41,10
19.5	4	4 x 7.5	63	10	8	0.06	291360 0196	41,10
19.5	5	5 x 7.5	63	10	8	0.06	291360 0197	41,10
19.5	6	6 x 7.5	63	10	8	0.06	291360 0198	41,10

2107

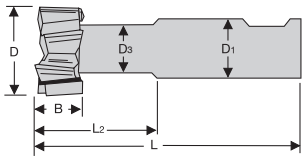
D h12 mm	B mm	for DIN 6888-compliant groove mm	L mm	D1 mm	Z	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
22.5	4	4 x 9	63	10	8	0.08	291360 0225	48,50
22.5	5	5 x 9	63	10	8	0.08	291360 0226	48,50
22.5	6	6 x 9	63	10	8	0.08	291360 0227	48,50
22.5	8	8 x 9	63	10	8	0.08	291360 0228	48,50
25.5	5	5 x 10*	63	10	10	0.08	291360 0255	52,50
25.5	6	6 x 10	63	10	10	0.08	291360 0256	52,50
28.5	6	6 x 11	63	10	10	0.08	291360 0286	61,50
28.5	8	8 x 11	63	10	10	0.08	291360 0288	61,50
28.5	10	10 x 11	71	12	10	0.08	291360 0289	61,50
32.5	6	6 x 13*	71	12	10	0.09	291360 0326	64,50
32.5	7	*	71	12	10	0.09	291360 0327	64,50
32.5	8	8 x 13	71	12	10	0.09	291360 0328	64,50
32.5	10	10 x 13	71	12	10	0.09	291360 0329	64,50
38.5	8	*	71	12	10	0.09	291360 0385	76,50
45.5	8	8 x 16*	71	12	12	0.09	291360 0454	91,50
45.5	10	10 x 16	71	12	12	0.09	291360 0455	91,50

2107

SARA® T-slot milling cutter

HSS-E | DIN 851 | Typ N | d11 | h6 | DIN 1835 B | Z 6 | Z 8+ | Vc/fz | 719

- With cross-cut toothing
- * = not DIN-compliant



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		○ 30-40	○ 25-35		○ 20-30	○ 20-30		○ 20-30	○ 20-30				○ 35-55	○ 65-250					
	Cutting speed Vc m/min.				Please adjust these guidelines according to clamping operation and machine set-up.														



for DIN 650-compliant T-slot	B mm	D mm	L2 mm	L mm	D1 mm	D3 mm	Z	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
M5	4	11.0	10.5	54	10	4	6	0.06	**291365** 0040	52,–
M 6	6	12.5	17.0	57	10	5	6	0.06	291365 0060	52,–
M 8	8	16.0	22.0	62	10	7	6	0.06	291365 0080	54,50
M10	8	18.0	25.0	70	12	8	6	0.06	291365 0100	56,50
*	9	190	22.0	71	12	8	6	0.08	291365 0110	59,–
M12	9	21.0	29.0	74	12	10	6	0.08	291365 0120	61,–
*	10	22.0	27.0	75	12	10	6	0.08	291365 0130	63,50
M14	11	25.0	34.0	82	16	12	8	0.08	291365 0140	67,–

2107

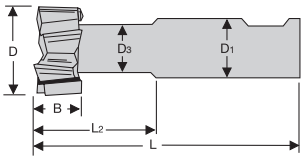
for DIN 650-compliant T-slot	B mm	D mm	L2 mm	L mm	D1 mm	D3 mm	Z	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
M16	12	28.0	37.0	85	16	13	8	0.08	291365 0160	80,50
M18	14	32.0	42.0	90	16	15	8	0.09	291365 0180	85,–
M20	16	36.0	47.0	103	25	17	8	0.09	291365 0200	115,–
M22	18	40.0	52.0	108	25	19	10	0.09	291365 0220	148,–
M24	20	45.0	57.0	113	25	21	10	0.11	291365 0240	180,–
M28	22	50.0	56.0	124	32	25	10	0.13	291365 0250	215,–
M36	28	60.0	71.0	139	32	30	10	0.2	291365 0260	260,–

2107

SARA® T-slot milling cutter

HSS-E | DIN 851 | NR | d11 | h6 | DIN 1835 B | Z 6 | Z 8+ | Vc/fz | 719

- With cross-cut toothing
- * = not DIN-compliant



material	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
● very well suited ○ well suited	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	○ 30-40	○ 25-35		○ 20-30	○ 20-30		○ 20-30	○ 20-30				○ 35-55	○ 65-250					
Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.



for DIN 650-compliant T-slot	B mm	D mm	L2 mm	L mm	D1 mm	D3 mm	Z	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
M 6	6	12.5	13.0	57	10	5	6	0.06	**291367** 0125	57,50
M 8	8	16.0	18.0	62	10	7	6	0.06	291367 0160	60,50
M10	8	18.0	21.0	70	12	8	6	0.06	291367 0180	63,50
*	9	19.0	22.0	71	12	8	6	0.08	291367 0190	65,50
M12	9	21.0	25.0	74	12	10	6	0.08	291367 0210	68,–
*	10	22.0	27.0	75	12	10	6	0.08	291367 0220	71,–
M14	11	25.0	28.0	82	16	12	6	0.08	291367 0250	74,50
M16	12	28.0	29.0	85	16	13	8	0.08	291367 0280	90,–
M18	14	32.0	32.0	90	16	15	8	0.09	291367 0320	94,50
M20	16	36.0	38.0	108	25	17	8	0.09	291367 0360	129,–
M22	18	40.0	45.0	108	25	19	8	0.09	291367 0400	165,–

2107

SARA® Angle milling cutter

HSS-E | DIN 1833 | Typ N | js16 | h6 | DIN 1835 B | Z 8+ | Vc/fz | 719

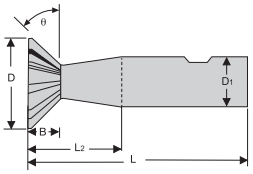
- **Type N, 45° and 60°**
- Straight-fluted

material	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
● very well suited ○ well suited	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	○ 30-40	○ 25-35		○ 20-30	○ 20-30		○ 20-30	○ 20-30				○ 35-55	○ 65-250					
Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

Form C, 45°



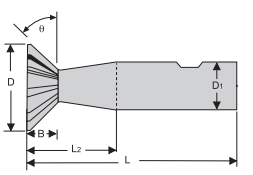


D mm	θ	B mm	L2 mm	L mm	D1 mm	Z	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
16.0	45°	4	15	60	12	10	0.06	**291392** 0160	40,10
20.0	45°	5	18	63	12	10	0.08	291392 0200	50,50
25.0	45°	6.3	22	67	12	10	0.08	291392 0250	62,50
32.0	45°	8	23	71	16	10	0.09	291392 0320	85,–

2107

Form C, 60°





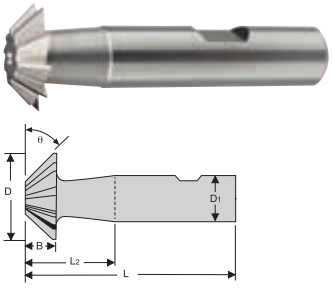
D mm	θ	B mm	L2 mm	L mm	D1 mm	Z	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
16.0	60°	6.3	15	60	12	10	0.06	**291393** 0160	40,10
20.0	60°	8	18	63	12	10	0.08	291393 0200	50,50
25.0	60°	10	22	67	12	10	0.08	291393 0250	62,50
32.0	60°	12.5	23	71	16	10	0.09	291393 0320	85,–

2107

Form D, 45°

D mm	θ	B mm	L2 mm	L mm	D1 mm	Z	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
16.0	45°	4	15	60	12	10	0.06	**291394** 0160	40,10
20.0	45°	5	18	63	12	10	0.08	291394 0200	50,50
25.0	45°	6.3	22	67	12	10	0.08	291394 0250	62,50
32.0	45°	8	23	71	16	12	0.09	291394 0320	85,–

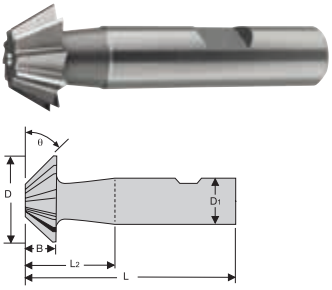
2107



Form D, 60°

D mm	θ	B mm	L2 mm	L mm	D1 mm	Z	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
16.0	60°	6.3	15	60	12	10	0.06	**291395** 0160	40,10
20.0	60°	8	18	63	12	10	0.08	291395 0200	50,50
25.0	60°	10	22	67	12	10	0.08	291395 0250	62,50
32.0	60°	12.5	23	71	16	12	0.09	291395 0320	85,–

2107

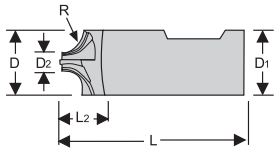


SARA® Quadrant milling cutter, concave

HSS-E | DIN 6518 | Typ N | h11 | h6 | DIN 1835 B | Z 4 | Z 6 | Vc/fz

719

- Radially / axially relieved
- Cutting edge angle (axial) approx. 5°
- Straight shank in accordance with DIN 1835 B, up to shank ∅ 16 mm with additional driving planes



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		○ 25-35	○ 30					○ 20-30	○ 20-30				○ 60-100	○ 45-70					
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		



R mm	D mm	D2 mm	L2 mm	L mm	D1 mm	Z	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
1.0	8.0	6	20	60	10.0	4	0.002	**291304** 0010	40,30
1.5	10.0	6	20	60	10.0	4	0.002	291304 0015	40,30
1.6	10.0	6	20	60	10.0	4	0.002	291304 0016	40,30
2.0	10.0	6	20	60	10.0	4	0.003	291304 0020	40,30
2.5	10.0	6	20	60	10.0	4	0.003	291304 0025	40,30
3.0	12.0	6	15	60	12.0	4	0.003	291304 0030	40,30
3.5	12.0	6	15	60	12.0	4	0.003	291304 0035	43,10
4.0	14.0	6	15	60	12.0	4	0.004	291304 0040	43,10
4.5	15.0	6	15	60	12.0	4	0.004	291304 0045	51,–
5.0	16.0	6	15	60	12.0	4	0.004	291304 0050	51,–
6.0	21.0	8	19	67	16.0	4	0.006	291304 0060	59,50
6.5	24.0	8	23	71	16.0	4	0.006	291304 0065	68,–
7.0	24.0	8	23	71	16.0	4	0.006	291304 0070	68,–
7.5	24.0	8	23	71	16.0	4	0.009	291304 0075	68,–

2107

R mm	D mm	D2 mm	L2 mm	L mm	D1 mm	Z	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
8.0	24.0	8	23	71	16.0	4	0.009	291304 0080	68,–
8.5	28.0	8	29	85	25.0	4	0.009	291304 0085	88,50
9.0	28.0	8	29	85	25.0	4	0.009	291304 0090	88,50
10.0	28.0	8	29	85	25.0	4	0.014	291304 0100	88,50
10.5	35.0	10	34	90	25.0	4	0.014	291304 0105	112,–
11.0	35.0	10	34	90	25.0	4	0.018	291304 0110	112,–
12.0	35.0	10	34	90	25.0	4	0.021	291304 0120	112,–
12.5	42.0	14	40	100	25.0	6	0.021	291304 0125	158,–
13.0	42.0	14	40	100	25.0	6	0.021	291304 0130	158,–
14.0	42.0	14	40	100	25.0	6	0.023	291304 0140	158,–
15.0	46.0	16	44	100	25.0	6	0.023	291304 0150	187,–
16.0	48.0	16	44	100	25.0	6	0.025	291304 0160	181,–
18.0	52.0	16	52	112	32.0	6	0.028	291304 0180	187,–
20.0	56.0	16	52	112	32.0	6	0.03	291304 0200	225,–

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Overview of solid carbide end milling cutters

	End milling cutters					
Sorting by type and number of cutting edges						
Brand	SARA	SARA	SARA	SARA	SARA	SARA
				HSC		
Number of cutting edges	2	2	2	2	3	3
Diameter range / mm	0.3 - 20.0	2.0 - 20.0	2.0 - 20.0	1.0 - 20.0	0.5 - 20.0	0.5 - 20.0
Standard	Factory standard	Factory standard	Factory standard	Factory standard	Factory standard	Factory standard
Version	Short	Short	Short	Short	Extra-short	Extra-short
Type/profile	N	N	N	N	N	N
Cutting material	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide
Coating	TiAlN Ultra		TiAlN	TiAlN		TiAlN Ultra
Order No.	254050....	250102....	250106....	254001....	251006....	251009....
Catalogue page	448	449	449	449	450	450
Material groups	Usage recommendations					
Steel < 700 N/mm²	●	●	●	●	●	●
Steel < 1000 N/mm²	●	●	●	●	●	●
Steel < 1400 N/mm²	●	●	●	●	●	●
Stainless steel ferritic/martensitic	●	○	○	○	●	●
Stainless steel austenitic	●	○	○	○	●	●
Stainless steel duplex	○				○	○
Cast iron GG/GTS	●	●	●	●	●	●
Cast iron GGG	●	○	○	●	●	●
Titanium alloys	●			○	●	●
Superalloys Fe/NiCo base < 30 HRc	●			○	●	●
Superalloys Fe/NiCo base ≥ 30 HRc	○				○	○
Aluminium < 8 % Si	●	○	○		●	●
Aluminium ≥ 8 % Si	●	○	○		●	●
Copper Cu-alloy	●	○	○		●	●
Graphite GRP/CFP/thermoset						
Hardened steel < 55 HRc	○			●	○	○
Hardened steel < 60 HRc				○		
Hardened steel ≥ 60 HRc						

	End milling cutters						
Sorting by type and number of cutting edges							
Brand	SARA	SARA	SARA	SARA	SARA	SARA	SARA
					HPC	HPC	
Number of cutting edges	3	3	3	3	4	4	4
Diameter range / mm	3.0 - 20.0	3.0 - 20.0	2.0 - 20.0	2.0 - 20.0	2.0 - 20.0	3.0 - 16.0	2.0 - 20.0
Standard	Factory standard	Factory standard	Factory standard	Factory standard	Factory standard	Factory standard	Factory standard
Version	Normal	Short	Short	Short	Normal	Extra-long	Short
Type/profile	N	N	N	N	N	N	N
Cutting material	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide
Coating	TiAlN	TiAlN Ultra		TiAlN	TiAlN Ultra	TiAlN Ultra	
Order No.	251033....	254052....	251050....	251053....	254054....	254056....	251506....
Catalogue page	451	452	451	451	453	453	454
Material groups	Usage recommendations						
Steel < 700 N/mm²	●	●	●	●	●	●	●
Steel < 1000 N/mm²	●	●	●	●	●	●	●
Steel < 1400 N/mm²	●	●	●	●	●	●	●
Stainless steel ferritic/martensitic	●	●	●	●	●	●	○
Stainless steel austenitic	●	●	○	●	●	●	○
Stainless steel duplex	●	○			○	○	
Cast iron GG/GTS	●	●	●	●	●	●	●
Cast iron GGG	●	●	○	○	●	●	○
Titanium alloys		●			●	●	
Superalloys Fe/NiCo base < 30 HRc		●			●	●	
Superalloys Fe/NiCo base ≥ 30 HRc		○			○	○	
Aluminium < 8 % Si		●	○	○	●	●	○
Aluminium ≥ 8 % Si		●	○	○	●	●	○
Copper Cu-alloy		●	○	○	●	●	○
Graphite GRP/CFP/thermoset							
Hardened steel < 55 HRc		○			○	○	
Hardened steel < 60 HRc							
Hardened steel ≥ 60 HRc							

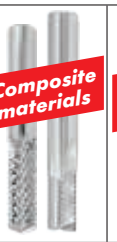
Sorting by type and number of cutting edges	End milling cutters							
								
Brand	SARA	SARA	SARA	SARA	VAN HOORN CARBIDE	VAN HOORN CARBIDE	SARA	SARA
		HSC	HSC	HSC			HSC	HSC
Number of cutting edges	4	4	4	4	4	5	6 - 8	6
Diameter range / mm	2.0 - 20.0	2.0 - 25.0	3.0 - 25.0	2.0 - 25.0	2.0 - 25.0	2.0 - 25.0	4 - 20	6 - 25
Standard	Factory standard	Factory standard	Factory standard	Factory standard	Factory standard	Factory standard	Factory standard	Factory standard
Version	Short	Short	Short	Long	Normal	Normal	Normal	Extra-long
Type/profile	N	N	N	N	N	N	N	N
Cutting material	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide
Coating	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN Ultra	TiAlN
Order No.	251509....	254005....	254006....	254007....	255100....	255101....	254058....	254109....
Catalogue page	454	454	455	455	455	456	457	457
Material groups	Usage recommendations							
Steel < 700 N/mm²	●	●	●	●	●	●	●	●
Steel < 1000 N/mm²	●	●	●	●	●	●	●	●
Steel < 1400 N/mm²	●	●	●	●	●	●	●	●
Stainless steel ferritic/martensitic	○	○	○	○			●	○
Stainless steel austenitic	○	○	○	○			●	○
Stainless steel duplex							○	
Cast iron GG/GTS	●	●	●	●	●	●	●	●
Cast iron GGG	○	●	●	●	●	●	●	●
Titanium alloys		○	○	○				○
Superalloys Fe/NiCo base < 30 HRc		○	○	○			●	○
Superalloys Fe/NiCo base ≥ 30 HRc							○	
Aluminium < 8 % Si	○							
Aluminium ≥ 8 % Si	○							
Copper Cu-alloy	○							
Graphite GRP/CFP/thermoset								
Hardened steel < 55 HRc		●	●	●			○	●
Hardened steel < 60 HRc		○	○	○				○
Hardened steel ≥ 60 HRc								

Sorting by type and number of cutting edges	Roughing cutter				Torus milling cutters		
							
Brand	SARA	VAN HOORN CARBIDE	SARA	ATORN	SARA	SARA	
			HPC			HSC	
Number of cutting edges	3 - 5	3 - 4	2	4	2	4	4 - 5
Diameter range / mm	6 - 25	6 - 20	5 - 20	4 - 20	3 - 20	3 - 20	6 - 12
Standard	Factory standard	Factory standard	Factory standard	Factory standard	Factory standard	Factory standard	Factory standard
Version	Short	Short	Short	Short	Long	Long	Short - Long
Type/profile	HR	NR	N	NR	N	N	N
Cutting material	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide
Coating	TiAlN	TiAlN	TiAlN Ultra	AlCrN	TiAlN	TiAlN	TiAlN
Order No.	254016....	254015....	254090....	254030....	254017....	254019....	294248.... 294249....
Catalogue page	458	458	459	459	460	461	462
Material groups	Usage recommendations						
Steel < 700 N/mm²	●	●	●	●	●	●	●
Steel < 1000 N/mm²	●	●	●	●	●	●	●
Steel < 1400 N/mm²	●	●	●	●	●	●	●
Stainless steel ferritic/martensitic				●	○	○	
Stainless steel austenitic				●	○	○	
Stainless steel duplex				○			
Cast iron GG/GTS	●		●	●	●	●	
Cast iron GGG	●		●	●	●	●	
Titanium alloys				○	○	○	
Superalloys Fe/NiCo base < 30 HRc				○	○	○	
Superalloys Fe/NiCo base ≥ 30 HRc				○			
Aluminium < 8 % Si							
Aluminium ≥ 8 % Si		○					
Copper Cu-alloy		○					
Graphite GRP/CFP/thermoset							
Hardened steel < 55 HRc	○	○	○		●	●	●
Hardened steel < 60 HRc					○	○	●
Hardened steel ≥ 60 HRc							●

Radius milling cutters

Sorting by type and number of cutting edges							
Brand	SARA	SARA	SARA	SARA	SARA	SARA	SARA
Number of cutting edges	2	2	2	2	4	4	2
Diameter range / mm	3 - 20	3 - 20	1 - 20	2 - 20	3 - 20	1 - 20	1 - 16
Standard	Factory standard	Factory standard	Factory standard	Factory standard	Factory standard	Factory standard	Factory standard
Version	Short	Short	Long	Extra-long	Short	Extra-long	Short
Type/profile	N	N	N	N	N	N	N
Cutting material	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	VHM
Coating		TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	AlTiN
Order No.	250502....	250505....	254011....	254112....	251532....	254013....	250510....
Catalogue page	462	462	463	463	464	464	465
Material groups	Usage recommendations						
Steel < 700 N/mm²	●	●	●	●	●	●	●
Steel < 1000 N/mm²	●	●	●	●	●	●	●
Steel < 1400 N/mm²	●	●	●	●	●	●	●
Stainless steel ferritic/martensitic	○	○	○	○	○	○	
Stainless steel austenitic	○	○	○	○	○	○	
Stainless steel duplex	○						
Cast iron GG/GTS	●	●	●	●	●	●	●
Cast iron GGG	○	○	●	●	○	●	●
Titanium alloys			○	○		○	
Superalloys Fe/NiCo base < 30 HRc			○	○		○	
Superalloys Fe/NiCo base ≥ 30 HRc							
Aluminium < 8 % Si	○	○			○		
Aluminium ≥ 8 % Si	○	○			○		
Copper Cu-alloy	○	○			○		
Graphite GRP/CFP/thermoset							
Hardened steel < 55 HRc			●	●		●	○
Hardened steel < 60 HRc			○	○			○
Hardened steel ≥ 60 HRc							○

Ranges of milling cutters

Sorting by type and number of cutting edges	 HPC	 HPC Power	 Trochoidal	 aluminium	 Stainless steel Titanium	 Graphite DIA+	 Composite materials	 RockTec 52 RockTec 65	 RockTec Pro
Brand	SARA	ATORN	SARA	ATORN		SARA	ATORN	ATORN	ATORN
	HPC	HPC	Trochoidal	aluminium	Stainless steel and titanium range	DIA+	Composite materials	RockTec 52 and 65	RockTec Pro
Number of cutting edges	4	3 - 4	3 - 8	1 - 4	2 - 4	2 - 4		2 - 8	2 - 8
Diameter range / mm	3.0 - 25.0	4.0 - 20.0	3 - 20	0.5 - 20.0	0.2 - 20.0	1 - 16	4 -20	0.1 - 20.0	0,1 - 20
Standard	Factory standard	Factory standard	Factory standard	Factory standard	Factory standard	Factory standard	Factory standard	Factory standard	Factory standard
Version	Short - extra-long	Normal	Normal	Short - extra-long	Short - long	Short - long	long	Short - long	Short - long
Type/profile	N / NA	N	N / H	W / WR	N / H	N		N / H	N / H
Cutting material	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide
Coating	TiAlN / AlTiN	TiAlN	TiAlSiN	ZrCN	AlCrN	DIA+	DIA HC	TiSi	TiAlSiN
Order No.	From 254130....	From 254503....	From 254155....	From 249001....	From 256011....	From 258005....	From 250600....	From 257002....	From 257100....
Catalogue page	**Overview 466**	**Overview 475**	**Overview 538**	**Overview 482**	**Overview 508**	**Overview 514**	**Overview 524**	**Overview 536**	**Overview 567**
Material groups	Usage recommendations								
Steel < 700 N/mm²	●	●	●		●				
Steel < 1000 N/mm²	●	●	●		●				
Steel < 1400 N/mm²	●	●	●		○			○	●
Stainless steel ferritic/martensitic	●	●	●		●				
Stainless steel austenitic	●	●	●		●				
Stainless steel duplex	●	●	●		●				
Cast iron GG/GTS	●	●			○				
Cast iron GGG	●	●			○				
Titanium alloys	●	●	●		●			○	
Superalloys Fe/NiCo base < 30 HRc	●	●	●		●			○	
Superalloys Fe/NiCo base ≥ 30 HRc	●	●	●		●			○	
Aluminium < 8 % Si	●	○	●	●					
Aluminium ≥ 8 % Si	●	○	●	●					
Copper Cu-alloy	●	○	●	●					
Graphite GRP/CFP/thermoset	●		●			●	●		
Hardened steel < 55 HRc	●		●					●	●
Hardened steel < 60 HRc	●		●					●	●
Hardened steel ≥ 60 HRc			●					●	●

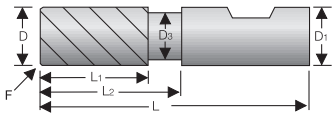
	Sealing surface milling cutter	High feed-rate milling cutters RockTec	Ceramics milling cutter	Circle segment milling cutter	Die-sinking cutter
Sorting by type and number of cutting edges					
Brand	ATORN®	ATORN®	ATORN®	ATORN®	SARA®
		RockTec 52 + RockTec 65			
Number of cutting edges	3	4 - 6	4	4	3 - 4
Diameter range / mm	3 - 20	4 - 12	6 - 20	2 - 8	2.5 - 8.0
Standard	WN	Factory standard	WN	WN	Factory standard
Version	Short	Normal	Normal	Normal	Short / long
Type/profile	N	N / H	N	N	N
Cutting material	Solid carbide	Solid carbide	Ceramics	Solid carbide	Solid carbide
Coating	TiAlN	TiSi		TiAlN	TiAlN
Order No.	255151/255152	257040/45/46/48/50....	255153	254170 - 254173	253002....
Catalogue page	581	from 544	581	582	583
Material groups	Usage recommendations				
Steel < 700 N/mm²	●			●	●
Steel < 1000 N/mm²	●			●	●
Steel < 1400 N/mm²	●	●		●	●
Stainless steel ferritic/martensitic	●			●	○
Stainless steel austenitic	○			○	○
Stainless steel duplex					
Cast iron GG/GTS	●			●	●
Cast iron GGG					●
Titanium alloys					
Superalloys Fe/NiCo base < 30 HRc			●		
Superalloys Fe/NiCo base ≥ 30 HRc			●		
Aluminium < 8 % Si	●			●	○
Aluminium ≥ 8 % Si	●			●	○
Copper Cu-alloy	●			●	○
Graphite GRP/CFP/thermoset					
Hardened steel < 55 HRc	●	●		●	○
Hardened steel < 60 HRc		●			
Hardened steel ≥ 60 HRc		●			

	Quadrant milling cutter	Form milling cutters	Engraving milling cutter	Multifunction tool	Deburring tools	
Sorting by type and number of cutting edges						
Brand	SARA®	SARA®	SARA®	SARA®	SARA®	
						Forward and reverse deburring tool
Number of cutting edges	4	6 - 10	1	2	3 - 6	3 - 4
Diameter range / mm	8 - 16	10 - 45	3 - 6	0.5 - 20	1 - 16	1.5 - 12
Standard	Factory standard	Factory standard	Factory standard	Factory standard	Factory standard	Factory standard
Version	Short	Short	Short	Normal	Short	Normal
Type/profile	N	N	N	N	N	N / H
Cutting material	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide
Coating	AlCrN	AlCrN		TiAlN	TiAlN	TiAlN
Order No.	291310....	292004....	251545....	251541/46/49....	251550....	2981320.... 250004/05/06....
Catalogue page	584	584	585	586	587	588
Material groups	Usage recommendations					
Steel < 700 N/mm²	●	●		●	●	●
Steel < 1000 N/mm²	●	●		●	●	●
Steel < 1400 N/mm²	●			●	●	●
Stainless steel ferritic/martensitic	●			○	●	●
Stainless steel austenitic	●			○	○	○
Stainless steel duplex	○				○	○
Cast iron GG/GTS	●	●		●	●	●
Cast iron GGG	●	●		●	●	●
Titanium alloys				○	○	○
Superalloys Fe/NiCo base < 30 HRc	●			○	○	○
Superalloys Fe/NiCo base ≥ 30 HRc	●				○	○
Aluminium < 8 % Si	○		●	●	○	●
Aluminium ≥ 8 % Si	○		●	○	○	●
Copper Cu-alloy	●		○	○	○	●
Graphite GRP/CFP/thermoset						
Hardened steel < 55 HRc	●				●	●
Hardened steel < 60 HRc	●				○	●
Hardened steel ≥ 60 HRc	○					

SARA® Slot milling cutter

VHM | 30° | e8 | h5 | DIN 6535 HA | DIN 6535 HB | Z 2 | TiAlN | HSC | Vc/fz | 725

- **With clearance**
- Straight shank up to Ø 2.5 mm smooth, from Ø 2.8 mm with driving planes in accordance with DIN 6535-HB
- **Optimum chip removal due to extremely smooth surface**
- **For P9 grooves**
- **Cutting material: ultra-fine grain solid carbide, TiAlN-Ultra-coated**



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 100-120	● 80-100	● 60-80	● 50-65	● 50-60	○ 40-50	● 100-130	● 80-120	● 40-60	● 40-50	○ 30-40	● 300-400	● 200-300	● 100-140				
	Cutting speed Vc m/min.																		



ULTRA

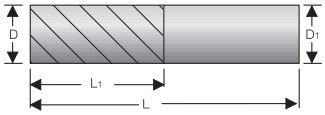
D mm	L1 mm	L2 mm	L mm	D1 mm	D3 mm	F x 45° mm	Feed fz steel < 1400 N/mm² mm/tooth	Feed fz steel < 1400 N/mm² mm/tooth	art.no.	€
1.0	3	-	50	3.0	-	-	0.006	0.007	**254050** 0010	29,80
1.1	3	-	50	3.0	-	-	0.006	0.007	254050 0011	29,50
1.2	4	-	50	3.0	-	-	0.006	0.007	254050 0012	29,50
1.4	4	-	50	3.0	-	-	0.006	0.007	254050 0014	29,50
1.5	4	-	50	3.0	-	-	0.006	0.007	254050 0015	29,50
1.6	4	-	50	3.0	-	-	0.006	0.007	254050 0016	29,50
1.8	5	-	50	3.0	-	-	0.006	0.007	254050 0018	29,50
2.0	5	-	50	3.0	-	0.05	0.006	0.007	254050 0020	29,50
2.5	6	-	50	3.0	-	0.05	0.012	0.015	254050 0025	29,50
2.8	8	15	57	6.0	2.6	0.05	0.012	0.015	254050 0028	25,20
3.0	8	15	57	6.0	2.8	0.05	0.012	0.015	254050 0030	25,20
3.8	11	15	57	6.0	3.6	0.1	0.012	0.015	254050 0038	25,20
4.0	11	15	57	6.0	3.8	0.1	0.012	0.015	254050 0040	25,20
4.8	13	21	57	6.0	4.6	0.1	0.024	0.030	254050 0048	26,80
5.0	13	21	57	6.0	4.8	0.1	0.024	0.030	254050 0050	26,80
5.8	13	21	57	6.0	5.6	0.1	0.024	0.030	254050 0058	26,80
6.0	13	21	57	6.0	5.8	0.1	0.024	0.030	254050 0060	26,80
6.8	16	27	63	8.0	6.6	0.1	0.024	0.030	254050 0068	31,20
7.0	16	27	63	8.0	6.8	0.1	0.024	0.030	254050 0070	30,90
7.8	19	27	63	8.0	7.5	0.1	0.024	0.030	254050 0078	30,60
8.0	19	27	63	8.0	7.7	0.1	0.024	0.030	254050 0080	30,30
8.7	19	32	72	10.0	8.5	0.1	0.032	0.040	254050 0087	44,30
9.0	19	32	72	10.0	8.8	0.1	0.032	0.040	254050 0090	44,30
9.7	22	32	72	10.0	9.5	0.1	0.032	0.040	254050 0097	44,30
10.0	22	32	72	10.0	9.8	0.1	0.032	0.040	254050 0100	44,30
10.7	26	38	83	12.0	10.5	0.1	0.032	0.040	254050 0107	64,–
11.0	26	38	83	12.0	10.8	0.1	0.032	0.040	254050 0110	64,–
11.7	26	38	83	12.0	11.5	0.1	0.032	0.040	254050 0117	64,–
12.0	26	38	83	12.0	11.8	0.1	0.032	0.040	254050 0120	64,–
13.7	26	38	83	14.0	13.5	0.1	0.040	0.050	254050 0137	78,50
14.0	26	38	83	14.0	13.8	0.1	0.040	0.050	254050 0140	78,50
15.7	32	44	92	16.0	15.4	0.1	0.040	0.050	254050 0157	102,–
16.0	32	44	92	16.0	15.7	0.1	0.040	0.050	254050 0160	102,–
17.7	32	44	92	18.0	17.4	0.1	0.048	0.060	254050 0177	139,–
18.0	32	44	92	18.0	17.7	0.1	0.048	0.060	254050 0180	123,–
19.7	38	54	104	20.0	19.4	0.1	0.048	0.060	254050 0197	176,–
20.0	38	54	104	20.0	19.7	0.1	0.048	0.060	254050 0200	156,–

2145

SARA® Slot drill

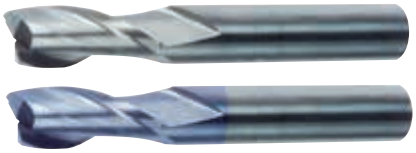
VHM | 30° | e8 | h5 | DIN 6535 HA | Z 2 | TiAlN | Vc/fz | 723

- Eccentric relief grinding



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	250102....	● 90-110	● 70-90	● 50-70	○ 50-80	○ 50-80		● 90-110	○ 35-55				○ 135-225	○ 90-180	○ 70-130				
	250106....	● 100-120	● 80-100	● 60-80	○ 60-90	○ 60-90		● 100-120	○ 40-60				○ 150-250	○ 100-200	○ 80-150				
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.



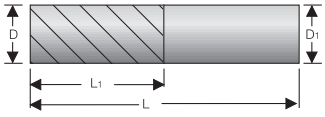
D mm	L1 mm	L mm	D1 mm	● Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€	TiAlN art.no.	€
2.0	7.0	39.0	3.0	0.010	**250102** 0020	11,75	**250106** 0020	16,80
2.5	7.0	39.0	3.0	0.010	250102 0025	11,75	250106 0025	16,80
3.0	9.0	39.0	3.0	0.010	250102 0030	11,85	250106 0030	16,80
3.5	12.0	51.0	4.0	0.010	250102 0035	13,35	250106 0035	18,50
4.0	14.0	51.0	4.0	0.020	250102 0040	13,35	250106 0040	18,50
4.5	14.0	51.0	5.0	0.020	250102 0045	14,20	250106 0045	19,40
5.0	16.0	51.0	5.0	0.020	250102 0050	14,20	250106 0050	19,40
5.5	16.0	64.0	6.0	0.020	250102 0055	15,90	250106 0055	21,10
6.0	19.0	64.0	6.0	0.030	250102 0060	15,90	250106 0060	21,10
7.0	19.0	64.0	8.0	0.030	250102 0070	21,70	250106 0070	29,40
8.0	21.0	64.0	8.0	0.040	250102 0080	25,50	250106 0080	34,50
9.0	22.0	70.0	10.0	0.040	250102 0090	36,10	250106 0090	45,80
10.0	22.0	70.0	10.0	0.050	250102 0100	38,70	250106 0100	48,60
12.0	25.0	78.0	12.0	0.060	250102 0120	54,–	250106 0120	65,–
14.0	30.0	89.0	14.0	0.060	250102 0140	74,–	250106 0140	86,50
16.0	32.0	89.0	16.0	0.080	250102 0160	94,–	250106 0160	105,–
20.0	38.0	102.0	20.0	0.100	250102 0200	157,–	250106 0200	182,–
					2109		2109	

SARA® Slot drill

VHM | 30° | e8 | h5 | DIN 6535 HA | Z 2 | TiAlN | HSC | Vc/fz | 725

- Driving planes in accordance with DIN 6535-HB, up to Ø 2.5 mm smooth
- **Cutting material: ultra-fine grain solid carbide, TiAlN-coated**

Up to 55 HRc



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 60-85	● 45-70	● 40-70	○ 30-45	○ 30-45		● 60-85	● 45-60								● 25-30	○ 15-20	
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

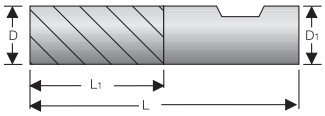


D mm	L1 mm	L mm	D1 mm	● Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
1.0	2.5	40	4.0	0.020	**254001** 0010	27,10
1.5	4	40	4.0	0.030	254001 0015	27,10
2.0	6	40	4.0	0.030	254001 0020	24,80
2.5	8	40	4.0	0.030	254001 0025	24,80
3.0	8	45	6.0	0.040	254001 0030	36,30
4.0	11	45	6.0	0.040	254001 0040	36,30
6.0	13	50	6.0	0.040	254001 0060	36,30
8.0	19	60	8.0	0.050	254001 0080	46,50
10.0	22	70	10.0	0.050	254001 0100	67,50
12.0	26	75	12.0	0.060	254001 0120	91,50
					2109	

SARA Mini end milling cutter

VHM | 30° | e8 | h5 | DIN 6535 HA | DIN 6535 HB | Z 3 | TiAlN | Vc/fz | 723

- Straight shank with driving plane, up to Ø 1.8 mm smooth
- **Cutting material: ultra-fine grain solid carbide, TiAlN-Ultra-coated**
- **Note:** This milling cutter is not cost-effective to re-sharpen. It is more economical to use the cutters up to their wear limit and replace them with brand new tools.



material — ● very well suited ○ well suited

material	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
251006....	● 80-100	● 70-90	● 50-60	● 30-55	● 30-45	○ 25-30	● 100-120	● 70-90	● 20-40	● 15-30	○ 15-30	● 150-250	● 100-200	● 80-150				
251009....	● 90-110	● 80-100	● 45-55	● 40-60	● 35-50	○ 25-35	● 110-130	● 80-100	● 25-45	● 20-35	○ 20-35	● 175-275	● 120-220	● 90-170				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

D mm	L1 mm	L mm	D1 mm	● Feed fz steel < 1000 N/mm² mm/tooth	● Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€	TiAlN art.no.	€
0.5	2.0	38.0	3.0	0.012	0.015	**251006** 0005	11,80	**251009** 0005	17,80
0.6	2.0	38.0	3.0	0.012	0.015	251006 0006	11,80	251009 0006	17,80
0.8	2.0	38.0	3.0	0.012	0.015	251006 0008	11,80	251009 0008	17,80
1.0	2.0	38.0	3.0	0.012	0.015	251006 0010	11,80	251009 0010	17,80
1.2	2.0	38.0	3.0	0.012	0.015	251006 0012	11,80	251009 0012	17,80
1.5	2.0	38.0	3.0	0.012	0.015	251006 0015	11,80	251009 0015	17,80
1.8	2.0	38.0	3.0	0.012	0.015	251006 0018	11,80	251009 0018	17,80
2.0	4.0	35.0	6.0	0.012	0.015	251006 0020	11,75	251009 0020	17,80
2.5	4.0	35.0	6.0	0.023	0.03	251006 0025	12,45	251009 0025	17,80
3.0	5.0	36.0	6.0	0.031	0.038	251006 0030	11,75	251009 0030	17,80
3.5	5.0	36.0	6.0	0.040	0.045	251006 0035	12,45	251009 0035	19,30
4.0	7.0	38.0	6.0	0.048	0.052	251006 0040	11,75	251009 0040	17,80
4.5	7.0	38.0	6.0	0.050	0.056	251006 0045	12,45	251009 0045	19,30
5.0	8.0	39.0	6.0	0.051	0.057	251006 0050	11,75	251009 0050	17,80
5.5	8.0	39.0	6.0	0.053	0.06	251006 0055	12,45	251009 0055	19,30
5.75	8.0	39.0	6.0	0.053	0.06	251006 0057	12,45	251009 0057	19,30
6.0	8.0	39.0	6.0	0.054	0.06	251006 0060	11,75	251009 0060	17,80
6.75	11.0	43.0	8.0	0.056	0.062	251006 0067	16,50	251009 0067	23,70
7.0	11.0	43.0	8.0	0.057	0.062	251006 0070	15,70	251009 0070	22,–
7.75	11.0	43.0	8.0	0.059	0.066	251006 0077	16,60	251009 0077	23,80
8.0	11.0	43.0	8.0	0.060	0.066	251006 0080	18,30	251009 0080	23,50
8.7	13.0	50.0	10.0	0.061	0.067	251006 0087	25,70	251009 0087	35,60
9.0	13.0	50.0	10.0	0.062	0.067	251006 0090	23,50	251009 0090	32,40
9.7	13.0	50.0	10.0	0.063	0.068	251006 0097	25,70	251009 0097	35,60
10.0	13.0	50.0	10.0	0.063	0.068	251006 0100	26,40	251009 0100	33,90
12.0	15.0	55.0	12.0	0.063	0.068	251006 0120	33,40	251009 0120	43,80
						2109		2109	



ULTRA

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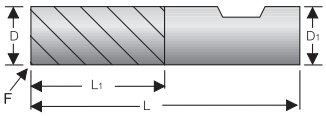


SARA® End milling cutters

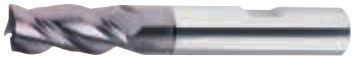
VHM | 38°/40°/42° | h10 | h6 | DIN 6535 HB | Z 3 | TiAlN | HPC | Vc/fz | 726

- **38°/40°/42° right-hand helix**
- For universal applications
- **For roughing and finishing**
- For large cutting depths
- **Very high degree of smoothness**
- Protective chamfer for increased service life

Universal



material	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
● very well suited ○ well suited	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 240	● 160	● 85	● 75	● 220	● 110	● 180	● 140										
Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		

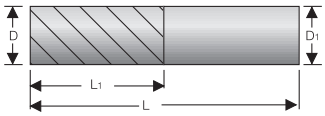


D mm	L1 mm	L mm	D1 mm	F mm	● Feed fz steel < 1000 N/mm² mm/tooth	● Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
3	8	57	6	0.1	0.01	0.012	**251033** 0030	17,60
4	11	57	6	0.1	0.017	0.02	251033 0040	17,–
5	13	57	6	0.15	0.029	0.035	251033 0050	19,30
6	13	57	6	0.2	0.029	0.035	251033 0060	19,40
8	19	63	8	0.2	0.038	0.045	251033 0080	26,10
10	22	72	10	0.2	0.038	0.045	251033 0100	34,40
12	26	83	12	0.3	0.063	0.075	251033 0120	48,10
16	32	92	16	0.3	0.084	0.1	251033 0160	75,–
20	38	104	20	0.4	0.101	0.12	251033 0200	116,–
							2145	

SARA® End milling cutters

VHM | 30° | e8 | h5 | DIN 6535 HA | Z 3 | TiAlN | Vc/fz | 723

- Eccentric relief grinding



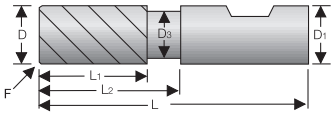
material	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
● very well suited ○ well suited	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
251050....	● 90-110	● 70-90	● 50-70	○ 50-80	○ 50-80	○ 25-35	● 90-110	○ 35-55				○ 135-225	○ 90-180	○ 70-130				
251053....	● 100-120	● 80-100	● 60-80	○ 60-90	○ 60-90	○ 30-40	● 100-120	○ 40-60				○ 150-250	○ 100-200	○ 80-150				
Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		



D mm	L1 mm	L mm	D1 mm	● Feed fz steel < 1000 N/mm² mm/tooth	● Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€	**TiAlN** art.no.	€
2.0	7.0	39.0	3.0	0.009	0.010	**251050** 0020	14,95	**251053** 0020	21,10
3.0	9.0	39.0	3.0	0.010	0.011	251050 0030	14,95	251053 0030	21,10
4.0	14.0	51.0	4.0	0.020	0.023	251050 0040	16,–	251053 0040	21,10
5.0	16.0	51.0	5.0	0.020	0.023	251050 0050	17,30	251053 0050	21,10
6.0	19.0	64.0	6.0	0.030	0.033	251050 0060	17,30	251053 0060	21,10
7.0	19.0	64.0	8.0	0.030	0.033	251050 0070	19,90	251053 0070	28,90
8.0	21.0	64.0	8.0	0.040	0.045	251050 0080	21,10	251053 0080	28,50
9.0	22.0	70.0	10.0	0.040	0.045	251050 0090	35,60	251053 0090	45,10
10.0	22.0	70.0	10.0	0.050	0.060	251050 0100	33,60	251053 0100	40,90
12.0	25.0	78.0	12.0	0.060	0.080	251050 0120	47,30	251053 0120	56,–
16.0	32.0	89.0	16.0	0.080	0.100	251050 0160	82,–	251053 0160	92,–
20.0	38.0	102.0	20.0	0.100	0.120	251050 0200	136,–	251053 0200	152,–
						2109		2109	

SARA® End milling cutters

VHM | 45° | e8 | h5 | DIN 6535 HB | Z 3 | TiAlN | HPC | Vc/fz | 723



- **With clearance**
- **First-rate chip removal due to extremely smooth surface**
- **Cutting material: ultra-fine grain solid carbide, TiAlN-Ultra-coated**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 100-120	● 80-100	● 60-80	● 50-65	● 50-60	○ 40-50	● 100-130	● 80-120	● 40-60	● 40-50	○ 30-40	● 300-400	● 200-300	● 100-140				
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		



ULTRA

D mm	L1 mm	L2 mm	L mm	D1 mm	D3 mm	F x 45° mm	Feed fz steel < 1400 N/mm² mm/tooth	Feed fz steel < 1400 N/mm² mm/tooth	art.no.	€
3.0	8	15	57	6.0	2.8	0.1	0.012	0.015	**254052** 0030	28,20
3.5	11	15	57	6.0	3.3	0.1	0.012	0.015	254052 0035	29,80
4.0	11	15	57	6.0	3.8	0.1	0.012	0.015	254052 0040	27,50
4.5	13	21	57	6.0	4.3	0.1	0.024	0.03	254052 0045	29,80
5.0	13	21	57	6.0	4.8	0.1	0.024	0.03	254052 0050	27,50
5.5	13	21	57	6.0	5.3	0.1	0.024	0.03	254052 0055	29,80
6.0	13	21	57	6.0	5.8	0.1	0.024	0.03	254052 0060	27,50
6.5	16	27	63	8.0	6.3	0.1	0.024	0.03	254052 0065	36,80
7.0	16	27	63	8.0	6.8	0.1	0.024	0.03	254052 0070	36,10
7.5	19	27	63	8.0	7.3	0.1	0.024	0.03	254052 0075	34,60
8.0	21	27	63	8.0	7.7	0.1	0.024	0.03	254052 0080	35,10
8.5	21	32	72	10.0	8.3	0.1	0.032	0.04	254052 0085	55,–
9.0	21	32	72	10.0	8.8	0.1	0.032	0.04	254052 0090	54,–
9.5	22	32	72	10.0	9.3	0.1	0.032	0.04	254052 0095	59,50
10.0	22	32	72	10.0	9.8	0.1	0.032	0.04	254052 0100	51,50
11.0	26	32	83	12.0	10.8	0.1	0.032	0.04	254052 0110	83,–
12.0	26	38	83	12.0	11.8	0.1	0.032	0.04	254052 0120	76,50
14.0	26	38	83	14.0	13.8	0.1	0.04	0.05	254052 0140	96,50
16.0	36	44	92	16.0	15.7	0.1	0.04	0.05	254052 0160	130,–
18.0	36	44	92	18.0	17.7	0.1	0.048	0.06	254052 0180	160,–
20.0	41	54	104	20.0	19.7	0.1	0.048	0.06	254052 0200	205,–

2145



SARA End milling cutters

VHM | 30° | e8 | h5 | DIN 6535 HA | DIN 6535 HB | Z 4 | TiAlN | HPC | Vc/fz | 723

- **With clearance**
- Straight shank in accordance with DIN 6535 HA and with driving plane in accordance with DIN 6535 HB
- **First-rate chip removal due to extremely smooth surface**
- **Cutting material: ultra-fine grain solid carbide, TiAlN-Ultra-coated**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 100-120	● 80-100	● 60-80	● 50-65	● 50-60	○ 40-50	● 100-130	● 80-120	● 40-60	● 40-50	○ 30-40	● 300-400	● 200-300	● 100-140				
	Cutting speed Vc m/min.																		

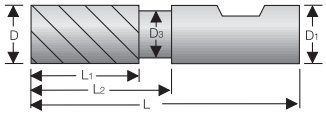
Please adjust these guidelines according to clamping operation and machine set-up.

Standard version

- Smooth shank
- up to Ø 6 mm with driving planes in accordance with DIN 6535 HB







D mm	L1 mm	L2 mm	L mm	D1 mm	D3 mm	Feed fz steel < 1400 N/mm² mm/tooth	Feed fz steel < 1400 N/mm² mm/tooth	art.no.	€
2.0	8	-	32	2.0	-	0.0056	0.007	**254054** 0020	22,50
3.0	12	-	38	3.0	-	0.012	0.015	254054 0030	24,20
4.0	12	-	40	4.0	-	0.012	0.015	254054 0040	26,–
5.0	15	20	50	5.0	4.8	0.024	0.03	254054 0050	27,60
6.0	16	20	58	6.0	5.8	0.024	0.03	254054 0060	38,–
8.0	22	32	70	8.0	7.7	0.024	0.03	254054 0080	41,50
10.0	25	31	73	10.0	9.6	0.032	0.04	254054 0100	62,–
12.0	28	37	84	12.0	11.6	0.032	0.04	254054 0120	90,–
16.0	35	43	93	16.0	15.5	0.04	0.05	254054 0160	145,–
20.0	40	52	104	20.0	19.5	0.048	0.06	254054 0200	215,–

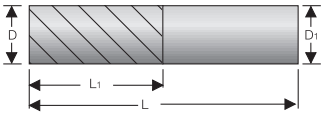
2145

Extra-long without clearance

- Smooth shank







D mm	L1 mm	L mm	D1 mm	Feed fz steel < 1400 N/mm² mm/tooth	Feed fz steel < 1400 N/mm² mm/tooth	art.no.	€
3.0	30	60	3.0	0.012	0.015	**254056** 0030	27,60
4.0	30	75	4.0	0.012	0.015	254056 0040	29,40
5.0	35	75	5.0	0.024	0.03	254056 0050	32,80
6.0	40	100	6.0	0.024	0.03	254056 0060	52,–
8.0	40	100	8.0	0.024	0.03	254056 0080	65,50
10.0	40	100	10.0	0.032	0.04	254056 0100	100,–
12.0	45	100	12.0	0.032	0.04	254056 0120	169,–
14.0	45	100	14.0	0.04	0.05	254056 0140	200,–
16.0	75	150	16.0	0.04	0.05	254056 0160	275,–

2145



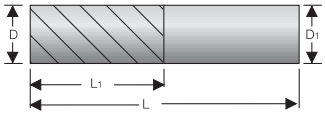
... with precision.

ATORN®
Performance demands quality

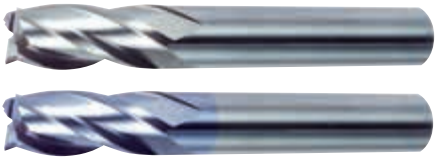
SARA® End milling cutters

VHM | 30° | e8 | h5 | DIN 6535 HA | Z 4 | TiAlN | Vc/fz | 723

- Eccentric relief grinding



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	251506....	● 90-110	● 70-90	● 50-70	○ 50-80	○ 50-80	○ 25-35	● 90-110	○ 35-55				○ 135-225	○ 90-180	○ 70-130				
	251509....	● 100-120	● 80-100	● 60-80	○ 60-90	○ 60-90	○ 30-40	● 100-120	○ 40-60				○ 150-250	○ 100-200	○ 80-150				
	Cutting speed Vc m/min.				Please adjust these guidelines according to clamping operation and machine set-up.														



D mm	L1 mm	L mm	D1 mm	● Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€	TiAlN art.no.	€
2.0	7	39	3.0	0.011	**251506** 0020	11,20	**251509** 0020	16,20
3.0	9	39	3.0	0.011	251506 0030	11,20	251509 0030	16,20
3.5	12	51	4.0	0.011	251506 0035	12,75	251509 0035	19,40
4.0	14	51	4.0	0.023	251506 0040	12,75	251509 0040	17,80
4.5	14	51	5.0	0.023	251506 0045	13,55	251509 0045	18,50
5.0	16	51	5.0	0.023	251506 0050	13,55	251509 0050	18,50
6.0	19	64	6.0	0.033	251506 0060	15,20	251509 0060	20,20
7.0	19	64	8.0	0.033	251506 0070	19,40	251509 0070	28,–
8.0	21	64	8.0	0.045	251506 0080	24,30	251509 0080	32,90
9.0	22	70	10.0	0.045	251506 0090	34,70	251509 0090	43,80
10.0	22	70	10.0	0.060	251506 0100	37,10	251509 0100	46,60
12.0	25	78	12.0	0.080	251506 0120	52,–	251509 0120	62,50
14.0	30	89	14.0	0.080	251506 0140	71,–	251509 0140	81,50
16.0	32	89	16.0	0.100	251506 0160	90,50	251509 0160	101,–
20.0	38	102	20.0	0.120	251506 0200	150,–	251509 0200	173,–
					2109		2109	

SARA® End milling cutters

VHM | 30° | h9 | h5 | DIN 6535 HA | DIN 6535 HB | Z 4 | TiAlN | HSC | Vc/fz | 729

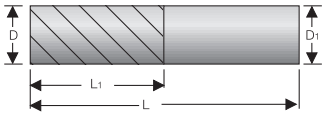
- **Short and long versions**
- **Cutting material: ultra-fine grain solid carbide, TiAlN-coated**

Up to 55 HRc

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 60-80	● 50-70	● 40-70	○ 35-45	○ 40-50		● 80-100	● 75-95								● 25-30	○ 15-20	
	Cutting speed Vc m/min.				Please adjust these guidelines according to clamping operation and machine set-up.														

Short

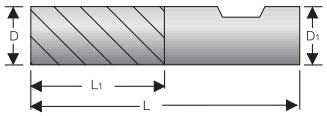




D mm	L1 mm	L mm	D1 mm	● Feed fz steel < 1000 N/mm² mm/tooth	● Feed fz steel < 1000 N/mm² mm/tooth	DIN 6535-HA art.no.	€
2.0	6	40	4.0	0.010	0.055	**254005** 0020	25,80
3.0	8	45	6.0	0.010	0.055	254005 0030	36,30
4.0	11	45	6.0	0.020	0.044	254005 0040	36,30
5.0	13	50	6.0	0.020	0.044	254005 0050	36,30
6.0	13	50	6.0	0.020	0.041	254005 0060	36,30
7.0	16	60	8.0	0.030	0.041	254005 0070	45,70
8.0	19	60	8.0	0.030	0.041	254005 0080	45,70
10.0	22	70	10.0	0.045	0.042	254005 0100	67,50
12.0	26	75	12.0	0.050	0.042	254005 0120	91,50
14.0	26	85	14.0	0.060	0.042	254005 0140	118,–
16.0	32	100	16.0	0.060	0.042	254005 0160	157,–
20.0	38	105	20.0	0.080	0.045	254005 0200	230,–
25.0	45	120	25.0	0.100	0.058	254005 0250	400,–
						2109	

Short with driving plane



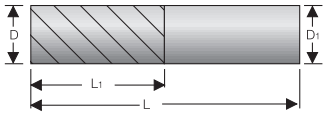


D mm	L1 mm	L mm	D1 mm	Feed fz steel < 1000 N/mm² mm/tooth	Feed fz steel < 1000 N/mm² mm/tooth	DIN 6535-HB art.no.	€
3.0	8	45	6.0	0.010	0.055	**254006** 0030	36,30
4.0	11	45	6.0	0.010	0.044	254006 0040	36,30
5.0	13	50	6.0	0.020	0.044	254006 0050	36,30
6.0	13	50	6.0	0.020	0.041	254006 0060	36,30
7.0	16	60	8.0	0.020	0.041	254006 0070	45,70
8.0	19	60	8.0	0.030	0.041	254006 0080	45,70
9.0	19	70	10.0	0.030	0.041	254006 0090	67,50
10.0	22	70	10.0	0.040	0.042	254006 0100	67,50
11.0	22	75	12.0	0.045	0.042	254006 0110	91,50
12.0	26	75	12.0	0.050	0.042	254006 0120	91,50
14.0	26	85	14.0	0.060	0.042	254006 0140	118,–
16.0	32	100	16.0	0.060	0.042	254006 0160	157,–
20.0	38	105	20.0	0.080	0.045	254006 0200	220,–
25.0	45	120	25.0	0.100	0.058	254006 0250	400,–

2109

Long





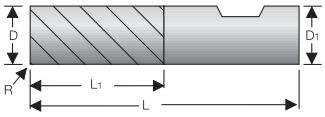
D mm	L1 mm	L mm	D1 mm	Feed fz steel < 1000 N/mm² mm/tooth	Feed fz steel < 1000 N/mm² mm/tooth	DIN 6535-HA art.no.	€
2.0	8	40	4.0	0.010	0.055	**254007** 0020	29,–
3.0	12	50	6.0	0.010	0.055	254007 0030	42,60
4.0	15	50	6.0	0.020	0.044	254007 0040	42,60
5.0	20	60	6.0	0.020	0.044	254007 0050	42,60
6.0	20	60	6.0	0.020	0.041	254007 0060	42,60
8.0	25	70	8.0	0.030	0.041	254007 0080	52,50
10.0	30	90	10.0	0.040	0.042	254007 0100	80,50
12.0	30	90	12.0	0.050	0.042	254007 0120	109,–
14.0	40	110	16.0	0.060	0.042	254007 0140	157,–
16.0	50	110	16.0	0.060	0.042	254007 0160	205,–
20.0	55	110	20.0	0.080	0.045	254007 0200	350,–
25.0	75	140	25.0	0.100	0.058	254007 0250	579,–

2109

VAN HOORN CARBIDE VHRS end milling cutter



727



- **Cutting material, solid carbide ultra-fine grain TiAlN-coated**
- Special pre-treatment and finishing treatment due to **micro radiation**
- **Version with 4 or 5 cutting edges**
- For wet and dry machining, **extremely high chip removal rates and service life**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		140-220	100-180	70-160	80-130	60-100		100-160	90-140										
		Cutting speed Vc m/min.																	
		Please adjust these guidelines according to clamping operation and machine set-up.																	

Standard, 4 cutting edges



The specialist in steel

D mm	R mm	D1 mm	L mm	L1 mm	Z	Feed fz steel < 1000 N/mm² mm/tooth	Feed fz steel < 1000 N/mm² mm/tooth	DIN 6535-HB art.no.	€
3	0.2	6	51	7	4	0.01	0.015	**255100** 0302	38,10
4	0.2	6	51	9	4	0.012	0.02	255100 0402	41,80
5	0.2	6	51	11	4	0.02	0.03	255100 0502	45,20
6	0.1	6	64	13	4	0.025	0.035	255100 0601	49,10
6	0.3	6	64	13	4	0.025	0.035	255100 0603	49,10
6	0.5	6	64	13	4	0.025	0.035	255100 0605	49,10
6	1	6	64	13	4	0.025	0.035	255100 0610	49,10
8	0.1	8	64	18	4	0.035	0.045	255100 0801	64,60
8	0.3	8	64	18	4	0.035	0.045	255100 0803	64,60

2113

Continued on next page >>>

D mm	R mm	D1 mm	L mm	L1 mm	Z	Feed fz steel < 1000 N/mm² mm/tooth	Feed fz steel < 1000 N/mm² mm/tooth	DIN 6535-HB art.no.	€
8	0.5	8	64	18	4	0.035	0.045	255100 0805	64,60
8	1	8	64	18	4	0.035	0.045	255100 0810	64,60
10	0.1	10	70	22	4	0.04	0.055	255100 1001	84,10
10	0.3	10	70	22	4	0.04	0.055	255100 1003	84,10
10	0.5	10	70	22	4	0.04	0.055	255100 1005	84,10
10	1	10	70	22	4	0.04	0.055	255100 1010	84,10
12	0.1	12	78	25	4	0.05	0.065	255100 1201	118,50
12	0.3	12	78	25	4	0.05	0.065	255100 1203	118,50
12	0.5	12	78	25	4	0.05	0.065	255100 1205	118,50
12	1	12	78	25	4	0.05	0.065	255100 1210	118,50
14	0.5	14	89	30	4	0.055	0.08	255100 1405	175,–
14	1	14	89	30	4	0.055	0.08	255100 1410	175,–
16	0.1	16	89	35	4	0.06	0.08	255100 1601	172,–
16	0.5	16	89	35	4	0.06	0.08	255100 1605	172,–
16	1	16	89	35	4	0.06	0.08	255100 1610	172,–
20	0.5	20	102	42	4	0.08	0.1	255100 2005	276,–
20	1	20	102	42	4	0.08	0.1	255100 2010	276,–
25	0.5	25	120	45	4	0.11	0.12	255100 2505	381,–
25	1	25	120	45	4	0.11	0.12	255100 2510	381,–

2113

Standard, 5 cutting edges



D mm	R mm	D1 mm	L mm	L1 mm	Z	Feed fz steel < 1000 N/mm² mm/tooth	DIN 6535-HB art.no.	€
3	0.2	6	51	7	5	0.015	**255101** 0302	38,10
4	0.2	6	51	9	5	0.02	255101 0402	41,80
5	0.2	6	51	11	5	0.03	255101 0502	45,20
6	0.1	6	64	13	5	0.035	255101 0601	49,10
6	0.3	6	64	13	5	0.035	255101 0603	49,10
6	0.5	6	64	13	5	0.035	255101 0605	49,10
6	1	6	64	13	5	0.035	255101 0610	49,10
8	0.1	8	64	18	5	0.045	255101 0801	64,60
8	0.3	8	64	18	5	0.045	255101 0803	64,60
8	0.5	8	64	18	5	0.045	255101 0805	64,60
8	1	8	64	18	5	0.045	255101 0810	64,60
10	0.1	10	70	22	5	0.055	255101 1001	84,10
10	0.3	10	70	22	5	0.055	255101 1003	84,10
10	0.5	10	70	22	5	0.055	255101 1005	84,10
10	1	10	70	22	5	0.055	255101 1010	84,10
12	0.1	12	78	25	5	0.065	255101 1201	118,50
12	0.3	12	78	25	5	0.065	255101 1203	118,50
12	0.5	12	78	25	5	0.065	255101 1205	118,50
12	1	12	78	25	5	0.065	255101 1210	118,50
14	0.5	14	89	30	5	0.08	255101 1405	175,–
14	1	14	89	30	5	0.08	255101 1410	175,–
16	0.1	16	89	35	5	0.08	255101 1601	172,–
16	0.5	16	92	35	5	0.08	255101 1605	172,–
16	1	16	92	35	5	0.08	255101 1610	172,–
20	0.5	20	102	42	5	0.1	255101 2005	276,–
20	1	20	102	42	5	0.1	255101 2010	276,–
25	0.5	25	120	45	5	0.12	255101 2505	381,–
25	1	25	120	45	5	0.12	255101 2510	381,–

2113

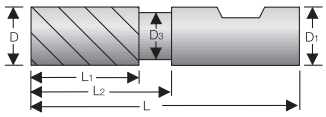
for trochoid milling

Other tools with clearance in the van Hoorn manufacturer catalogue

SARA End milling cutters

VHM | 45° | e8 | h5 | DIN 6535 HB | Z 6 | Z 8+ | TiAlN | HSC | Vc/fz | 725

- **With clearance**
- **First-rate chip removal due to extremely smooth surface**
- **Cutting material: ultra-fine grain solid carbide, TiAlN-Ultra-coated**



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 140-160	● 120-140	● 100-140	● 70-90	● 80-100		● 180-200	● 170-190								○ 40-50		
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

Standard version

- Shank with driving planes in accordance with DIN 6535 HB





D mm	L1 mm	L2 mm	L mm	D1 mm	D3 mm	Z	● Feed fz steel < 1400 N/mm² mm/tooth	● Feed fz steel < 1400 N/mm² mm/tooth	DIN 6535-HB art.no.	€
4.0	11	19	57	6.0	3.7	6	0.015	0.020	**254058** 0040	35,70
5.0	13	19	57	6.0	4.7	6	0.150	0.020	254058 0050	33,–
6.0	13	19	57	6.0	5.7	6	0.020	0.030	254058 0060	32,50
8.0	19	25	63	8.0	7.7	6	0.020	0.030	254058 0080	37,90
10.0	22	30	72	10.0	9.7	6	0.030	0.040	254058 0100	60,–
12.0	26	36	83	12.0	11.5	6	0.050	0.060	254058 0120	79,–
14.0	26	36	83	14.0	13.5	6	0.050	0.060	254058 0140	113,–
16.0	32	42	92	16.0	15.5	6	0.070	0.080	254058 0160	141,–
18.0	32	42	92	18.0	17.5	8	0.090	0.100	254058 0180	175,–
20.0	38	52	104	20.0	19.5	8	0.100	0.120	254058 0200	200,–

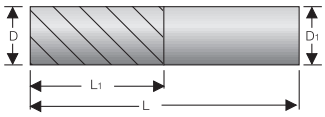
2145

SARA End milling cutters

VHM | 45° | e8 | h5 | DIN 6535 HA | Z 6 | TiAlN | HSC | Vc/fz | 739

- **Extra-long version**
- **Cutting material: ultra-fine grain solid carbide, TiAlN-coated**

Up to 55 HRc



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 140-160	● 120-140	● 100-140	○ 70-90	○ 80-100		● 180-200	● 170-190								● 40-50	○ 30-40	
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.



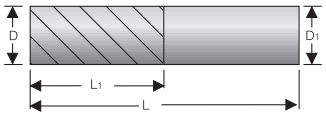
D mm	L1 mm	L mm	D1 mm	● Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
6.0	26	70	6.0	0.030	**254109** 0060	53,50
8.0	36	90	8.0	0.040	254109 0080	70,–
10.0	46	100	10.0	0.060	254109 0100	110,–
12.0	56	110	12.0	0.060	254109 0120	156,–
16.0	66	130	16.0	0.080	254109 0160	270,–
20.0	76	140	20.0	0.100	254109 0200	420,–
25.0	92	180	25.0	0.150	254109 0250	799,–

2109

SARA® Roughing cutter

VHM | HR | 20° | e8 | h5 | DIN 6535 HB | Z 3 | Z 4 | Z 5 | TiAlN | HSC | Vc/fz | 735

- **Long version**
- **Cutting material: ultra-fine grain solid carbide, TiAlN-coated**



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 130-150	● 110-130	● 90-120				● 100-120	● 60-80								○ 60-80		
	Cutting speed Vc m/min.										Please adjust these guidelines according to clamping operation and machine set-up.								



D mm	L1 mm	L mm	D1 mm	Z	● Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
6.0	16	57	6.0	3	0.026	**254016** 0060	45,80
7.0	16	63	8.0	3	0.032	254016 0070	53,–
8.0	16	63	8.0	3	0.040	254016 0080	53,–
9.0	19	72	10.0	4	0.047	254016 0090	82,50
10.0	22	72	10.0	4	0.048	254016 0100	82,50
12.0	26	83	12.0	4	0.152	254016 0120	103,–
16.0	32	92	16.0	4	0.151	254016 0160	169,–
20.0	38	104	20.0	4	0.151	254016 0200	290,–
25.0	45	121	25.0	5	0.149	254016 0250	519,–

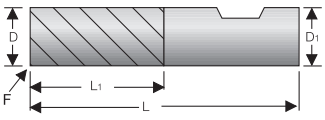
2109

VAN HOORN CARBIDE VHRFFW roughing cutter

VHM | 40° | e8 | h5 | DIN 6535 HB | Z 3 | Z 4 | TiAlN | HPC | Vc/fz | 728

- **Cutting material: ultra-fine grain solid carbide, TiAlN-coated**
- Special **microwave** pre-treatment and finishing treatment
- **New chip flute geometry** for enhanced cooling and chip flow
- For wet and dry machining, **extremely high chip removal rates and long service life**

Feed rate up to 3 m/min.



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 250-300	● 150-200	● 110-150				● 110-170	● 100-150										
	Cutting speed Vc m/min.										Please adjust these guidelines according to clamping operation and machine set-up.								



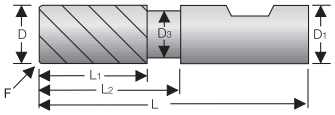
D mm	F mm	L1 mm	L mm	D1 mm	Z	● Feed fz steel < 1000 N/mm² mm/tooth	● Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
6.0	0.25	16	64	6.0	3	0.035	0.050	**254015** 0060	53,–
8.0	0.50	20	64	8.0	3	0.045	0.060	254015 0080	69,30
10.0	0.50	22	70	10.0	3	0.050	0.070	254015 0100	95,–
12.0	0.50	25	78	12.0	3	0.060	0.080	254015 0120	122,50
14.0	1.00	25	89	14.0	3	0.070	0.090	254015 0140	137,–
16.0	1.00	35	89	16.0	3	0.080	0.10	254015 0160	175,–
20.0	1.00	40	102	20.0	4	0.10	0.12	254015 0200	239,–

2113

SARA® Roughing cutter

VHM | NR | 30° | e8 | h5 | DIN 6535 HB | Z 4 | TiAlN | HPC | Vc/fz | 739

- **With clearance**
- **First-rate chip removal due to extremely smooth surface**
- **Cutting material: ultra-fine grain solid carbide, TiAlN-Ultra-coated**



material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 90-160	● 80-110	● 60-80				● 130-160	● 130-150										
Cutting speed Vc m/min.																		
Please adjust these guidelines according to clamping operation and machine set-up.																		

D mm	L1 mm	L2 mm	L mm	D1 mm	D3 mm	F x 45° mm	● Feed fz steel < 1400 N/mm² mm/tooth	● Feed fz steel < 1400 N/mm² mm/tooth	art.no.	€
5.0	13	19	57	6.0	4.8	0.5	0.024	0.030	**254090** 0050	89,50
6.0	13	19	57	6.0	5.8	0.5	0.024	0.030	254090 0060	89,50
8.0	19	25	63	8.0	7.7	0.5	0.024	0.030	254090 0080	102,–
10.0	22	30	72	10.0	9.8	0.5	0.032	0.040	254090 0100	112,–
12.0	26	36	83	12.0	11.8	0.5	0.032	0.040	254090 0120	134,–
14.0	26	36	83	14.0	13.8	0.5	0.040	0.050	254090 0140	186,–
16.0	32	42	92	16.0	15.7	0.5	0.040	0.050	254090 0160	210,–
18.0	32	42	92	18.0	17.7	0.5	0.048	0.060	254090 0180	280,–
20.0	38	52	104	20.0	19.7	0.5	0.048	0.060	254090 0200	315,–

2145



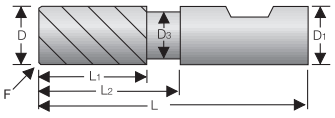
ULTRA

ATORN® Roughing / finishing cutter

VHM | NR | e8 | h6 | Z 4 | AlCrN | Vc/fz | 741

NEW · NUOVO · NY · NOUVEAU · NUEVO

- Unequal pitch for low-vibration milling
- **two roughing cutters Type NR and two smoothing cutters Type N**
- smooth surface



material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 160	● 150	● 140	● 90	● 95	○ 45	● 160	● 115	○ 100	○ 45	○ 40							
Cutting speed Vc m/min.																		
Please adjust these guidelines according to clamping operation and machine set-up.																		

D mm	L1 mm	L2 mm	L mm	D1 mm	D3 mm	● Feed fz steel < 1000 N/mm² mm/tooth	● Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
6	14	20	62	6	5.5	0.052	0.057	**254030** 0060	76,50
8	18	26	68	8	7.4	0.073	0.081	254030 0080	93,50
10	22	32	80	10	9.2	0.094	0.107	254030 0100	119,–
12	26	38	83	12	11	0.117	0.136	254030 0120	142,–
16	34	44	92	16	15	0.168	0.202	254030 0160	225,–
20	42	60	110	20	19	0.224	0.277	254030 0200	335,–

2153



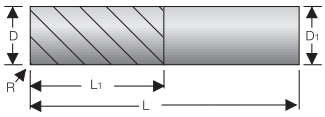


SARA® Torus milling cutter

VHM | 30° | e8 | h5 | DIN 6535 HA | Z 2 | TiAlN | HSC | Vc/fz | 740

- **Long version**
- **Cutting material: ultra-fine grain solid carbide, TiAlN-coated**

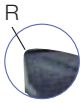
Up to 60 HRc



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 70-85	● 60-70	● 50-70	○ 40-50	○ 40-50		● 55-85	● 50-60								● 20-30	● 15-20	
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.





D mm	R mm	L1 mm	L mm	D1 mm	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
3.0	0.3	12	50	6.0	0.152	**254017** 0001	38,50
4.0	0.3	15	50	6.0	0.151	254017 0002	38,50
4.0	0.5	15	50	6.0	0.151	254017 0003	38,50
5.0	0.3	20	60	6.0	0.149	254017 0004	38,50
5.0	0.5	20	60	6.0	0.149	254017 0005	38,50
6.0	0.3	20	60	6.0	0.149	254017 0006	38,50
6.0	0.5	20	60	6.0	0.149	254017 0060	38,50
6.0	1.0	20	60	6.0	0.149	254017 1060	38,50
8.0	0.3	25	70	8.0	0.149	254017 0010	46,50
8.0	0.5	25	70	8.0	0.149	254017 0080	46,50
8.0	1.0	25	70	8.0	0.149	254017 1080	46,50
8.0	1.5	25	70	8.0	0.149	254017 1580	46,50
8.0	2.0	25	70	8.0	0.149	254017 2080	46,50
10.0	0.3	30	90	10.0	0.157	254017 0015	67,–
10.0	0.5	30	90	10.0	0.157	254017 0100	67,–
10.0	1.0	30	90	10.0	0.157	254017 1100	67,–
10.0	1.5	30	90	10.0	0.157	254017 1105	67,–
10.0	2.0	30	90	10.0	0.157	254017 2100	67,–
12.0	0.5	30	90	12.0	0.157	254017 0120	98,–
12.0	1.0	30	90	12.0	0.157	254017 1120	98,–
12.0	1.5	30	90	12.0	0.157	254017 1125	98,–
12.0	2.0	30	90	12.0	0.157	254017 2120	98,–
16.0	0.5	50	110	16.0	0.161	254017 0024	173,–
16.0	1.0	50	110	16.0	0.161	254017 0025	173,–
16.0	1.5	50	110	16.0	0.161	254017 0026	173,–
16.0	2.0	50	110	16.0	0.161	254017 0027	173,–
20.0	0.5	50	110	20.0	0.167	254017 0028	300,–
20.0	1.0	50	110	20.0	0.167	254017 0029	300,–
20.0	1.5	50	110	20.0	0.167	254017 0030	300,–
20.0	2.0	50	110	20.0	0.167	254017 0031	300,–

2109





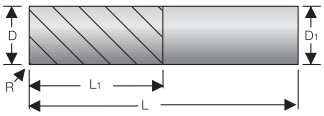
UVEX
Occupational safety
587 pages
Art.no. 019900 5470

Overview of all free manufacturers' catalogues on page 14/15

SARA® Torus milling cutter

VHM | 30° | e8 | h5 | DIN 6535 HA | Z 4 | TiAlN | HSC | Vc/fz | 731

Up to 60 HRc



- **Long version**
- **Cutting material: ultra-fine grain solid carbide, TiAlN-coated**

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 70-85	● 60-70	● 50-70	○ 40-50	○ 40-50		● 55-85	● 50-60								● 20-30	● 15-20	
Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		





D mm	R mm	L1 mm	L mm	D1 mm	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
3.0	0.3	12	50	6.0	0.041	**254019** 0001	38,50
4.0	0.3	15	50	6.0	0.041	254019 0002	38,50
4.0	0.5	15	50	6.0	0.041	254019 0003	38,50
5.0	0.3	20	60	6.0	0.041	254019 0004	38,50
5.0	0.5	20	60	6.0	0.041	254019 0005	38,50
6.0	0.3	20	60	6.0	0.041	254019 0006	38,50
6.0	0.5	20	60	6.0	0.041	254019 0060	38,50
6.0	1.0	20	60	6.0	0.041	254019 1060	38,50
8.0	0.3	25	70	8.0	0.041	254019 0010	46,50
8.0	0.5	25	70	8.0	0.041	254019 0080	46,50
8.0	1.0	25	70	8.0	0.041	254019 1080	46,50
8.0	1.5	25	70	8.0	0.041	254019 1580	46,50
8.0	2.0	25	70	8.0	0.041	254019 2080	46,50
10.0	0.3	30	90	10.0	0.042	254019 0015	67,–
10.0	0.5	30	90	10.0	0.042	254019 0100	67,–
10.0	1.0	30	90	10.0	0.042	254019 1100	67,–
10.0	1.5	30	90	10.0	0.042	254019 1105	67,–
10.0	2.0	30	90	10.0	0.042	254019 2100	67,–
12.0	0.5	30	90	12.0	0.042	254019 0120	98,–
12.0	1.0	30	90	12.0	0.042	254019 1120	98,–
12.0	1.5	30	90	12.0	0.042	254019 1125	98,–
12.0	2.0	30	90	12.0	0.042	254019 2120	98,–
16.0	0.5	50	110	16.0	0.043	254019 0024	173,–
16.0	1.0	50	110	16.0	0.043	254019 1160	173,–
16.0	1.5	50	110	16.0	0.043	254019 1165	173,–
16.0	2.0	50	110	16.0	0.043	254019 2160	173,–
20.0	0.5	50	110	20.0	0.044	254019 0028	300,–
20.0	1.0	50	110	20.0	0.044	254019 1200	300,–
20.0	1.5	50	110	20.0	0.044	254019 1205	300,–
20.0	2.0	50	110	20.0	0.044	254019 2200	300,–

2109

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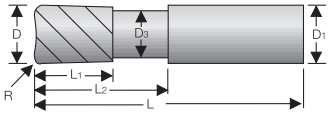
Torus milling cutter WXS-CRE HPC-Turbomill

VHM | DIN 6535 HA | Z 5 | Z 4 | TiAlN | HPC | HSC | Vc/fz | 723

NEW · NUOVO · NY · NOUVEAU · NUEVO

Twisted cutting edge, quiet operation up to 65 HRc, finishing geometry, feed rates up to 20,000 mm/min

- **5 cutting edges, face cutter geometry for plunge milling**
- Straight shank, suitable for use in shrink fit holders
- Thanks to a **newly developed cutting edge geometry**, this milling cutter is especially suitable for **extremely high feed rates** with normal-strength and **hardened materials**
- New, extremely ductile and fracture-proof ultra-fine grain quality with enhanced multi-layer coating (Ultra-WXS)
- **Cutting material: ultra-fine grain solid carbide, TiAlN-coated**



material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
●	●	●													●	●	●



Short (WXS-HS-CRE)



D mm	R mm	D1 mm	D3 mm	L mm	L1 mm	L2 mm	Z	art.no.	€
6.0	1.5	6	5.4	50	2.5	24	5	**294248** 0615	108,80
8.0	2.0	8	7.2	60	3.5	32	5	294248 0820	131,40
10.0	2.0	10	9.0	70	4.0	40	5	294248 1020	168,60
12.0	3.0	12	11.0	80	5.0	48	5	294248 1230	200,10
								2110	

long (WXS-HS-CRE)

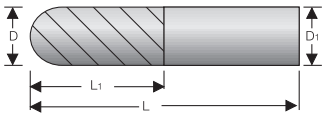


D mm	R mm	D1 mm	D3 mm	L mm	L1 mm	L2 mm	Z	art.no.	€
2	0.5	6	2	50	0.8	8	4	**294249** 0020	87,40
3	0.75	6	2.7	55	1.2	12	5	294249 0030	98,40
4	1	6	3.6	55	1.6	12	5	294249 0040	102,40
6	1.5	6	5.4	90	2.5	12	5	294249 0060	122,80
8	2	8	7.2	100	3.5	16	5	294249 0080	148,20
10	2	10	9	100	4	20	5	294249 0100	190,30
12	3	12	11	110	5	24	5	294249 0120	225,70
								2110	

SARA® Radius milling cutter

VHM | 30° | e8 | h5 | DIN 6535 HA | Z 2 | TiAlN | Vc/fz | 723

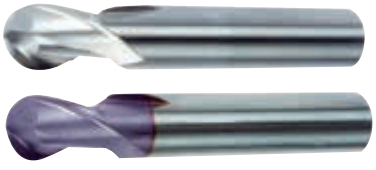
- Eccentric relief grinding



material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
●	●	●	○	○		●	○				○	○	○				
100-120	80-100	40-80	60-90	60-90		90-120	60-120				200-400	100-200	100-300				

Cutting speed Vc m/min. — Please adjust these guidelines according to clamping operation and machine set-up.



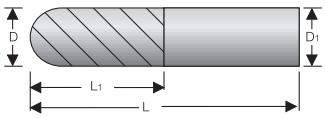
D mm	L1 mm	L mm	D1 mm	Feed fz steel < 1000 N/mm² mm/tooth	Uncoated art.no.	€	TiAlN-coated art.no.	€
3.0	9	39	3.0	0.013	**250502** 0030	16,50	**250505** 0030	21,70
4.0	14	51	4.0	0.025	250502 0040	17,30	250505 0040	22,60
5.0	16	51	5.0	0.025	250502 0050	18,20	250505 0050	23,40
6.0	19	64	6.0	0.037	250502 0060	19,90	250505 0060	25,10
8.0	21	64	8.0	0.051	250502 0080	30,50	250505 0080	39,60
10.0	22	70	10.0	0.068	250502 0100	49,–	250505 0100	58,50
12.0	25	78	12.0	0.090	250502 0120	64,–	250505 0120	75,–
14.0	30	89	14.0	0.090	250502 0140	76,–	250505 0140	86,50
16.0	32	89	16.0	0.113	250502 0160	102,–	250505 0160	115,–
18.0	35	102	18.0	0.113	250502 0180	111,–	250505 0180	127,–
20.0	38	102	20.0	0.135	250502 0200	157,–	250505 0200	179,–
					2109		2109	

SARA® Radius milling cutter

VHM | 30° | e8 | h5 | DIN 6535 HA | Z 2 | TiAlN | HSC | Vc/fz | 742

- **Long and extra-long versions**
- **Cutting material: ultra-fine grain solid carbide, TiAlN-coated**

Up to 60 HRc



material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
254011....	● 150-170	● 120-150	● 100-140	○ 60-100	○ 60-100		● 180-220	● 160-200								● 60-80	● 50-60	
254112....	● 120-150	● 100-130	● 90-130	○ 45-80	○ 45-80											● 50-70	● 40-50	
Cutting speed Vc m/min.							Please adjust these guidelines according to clamping operation and machine set-up.											

Long



D mm	L1 mm	L mm	D1 mm	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
1.0	2.5	50	4.0	0.082	**254011** 0010	32,80
1.5	4	50	4.0	0.082	254011 0015	32,80
2.0	5	50	6.0	0.082	254011 0020	30,30
3.0	8	60	6.0	0.081	254011 0030	30,30
4.0	8	70	6.0	0.081	254011 0040	32,80
5.0	10	80	6.0	0.078	254011 0050	34,20
6.0	12	90	6.0	0.078	254011 0060	35,90
7.0	14	90	8.0	0.078	254011 0070	56,50
8.0	14	100	8.0	0.066	254011 0080	56,50
10.0	18	100	10.0	0.066	254011 0100	90,–
12.0	22	110	12.0	0.074	254011 0120	115,–
16.0	30	140	16.0	0.081	254011 0160	195,–
20.0	38	160	20.0	0.089	254011 0200	310,–

2109



Extra-long

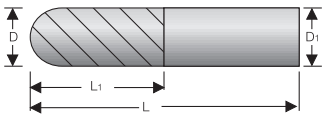
D mm	L1 mm	L mm	D1 mm	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
2.0	6	80	3.0	0.082	**254112** 0020	44,–
3.0	8	100	3.0	0.081	254112 0030	44,–
4.0	8	100	4.0	0.081	254112 0040	44,–
5.0	10	120	6.0	0.078	254112 0050	44,–
6.0	10	120	6.0	0.078	254112 0060	44,–
8.0	14	140	8.0	0.066	254112 0080	78,50
10.0	18	180	10.0	0.066	254112 0100	146,–
12.0	22	200	12.0	0.074	254112 0120	191,–
16.0	30	250	16.0	0.081	254112 0160	325,–
20.0	38	250	20.0	0.089	254112 0200	509,–

2109

SARA® Radius milling cutter

VHM | 30° | e8 | h5 | DIN 6535 HA | Z 4 | TiAlN | Vc/fz | 723

- **Short version**
- Eccentric relief grinding



material	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
● very well suited ○ well suited	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	●	●	●	○	○		●	○				○	○	○				
	100-120	80-100	40-80	60-90	60-90		90-120	60-120				200-400	100-200	100-300				
	Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.								



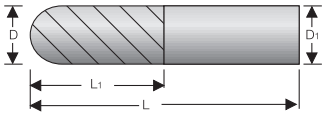
D mm	L1 mm	L mm	D1 mm	Feed fz steel < 1000 N/mm² mm/tooth	TiAlN-coated art.no.	€
3.0	10	40	3.0	0.009	**251532** 0030	28,30
4.0	15	50	4.0	0.030	251532 0040	29,10
5.0	15	50	5.0	0.030	251532 0050	30,10
6.0	20	65	6.0	0.041	251532 0060	31,70
8.0	20	65	8.0	0.050	251532 0080	44,50
10.0	22	70	10.0	0.058	251532 0100	65,–
12.0	25	78	12.0	0.680	251532 0120	83,–
14.0	30	89	14.0	0.095	251532 0140	97,–
16.0	32	89	16.0	0.095	251532 0160	129,–
20.0	38	102	20.0	0.115	251532 0200	205,–

2109

SARA® Radius milling cutter

VHM | 30° | h9 | h5 | DIN 6535 HA | Z 4 | TiAlN | HSC | Vc/fz | 742

- **Long version**
- **Cutting material: ultra-fine grain solid carbide, TiAlN-coated**



material	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
● very well suited ○ well suited	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	●	●	●	○	○		●	●								●		
	150-170	120-150	100-140	60-100	60-100		180-220	160-200								60-80		
	Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.								



D mm	L1 mm	L mm	D1 mm	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
1.0	2.5	50	4.0	0.020	**254013** 0010	45,80
1.5	4	50	4.0	0.025	254013 0015	45,80
2.0	5	50	6.0	0.025	254013 0020	42,40
3.0	8	60	6.0	0.025	254013 0030	42,40
5.0	10	80	6.0	0.030	254013 0050	41,70
6.0	12	90	6.0	0.040	254013 0060	44,30
7.0	14	90	8.0	0.050	254013 0070	65,–
8.0	14	100	8.0	0.058	254013 0080	65,–
10.0	18	100	10.0	0.068	254013 0100	97,–
12.0	22	110	12.0	0.095	254013 0120	128,–
16.0	30	140	16.0	0.095	254013 0160	210,–
20.0	38	160	20.0	0.115	254013 0200	350,–

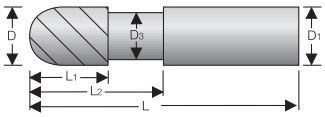
2109

SARA® Radius milling cutter 220°

VHM | 15° | f7 | h5 | DIN 6535 HA | Z 2 | AlTiN | Vc/fz | 745

- **with clearance**
- **Enclosing angle 220°**
- **Cutting material: ultra micro-grain SC, TiAlN-Ultra-coated**





material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 350	● 250	● 170				● 450	● 410								○ 120	○ 90	○ 70
Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

D mm	D1 mm	D3 mm	L mm	L1 mm	L2 mm	R mm	● Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
1.00	6.00	0.90	80	0.72	5	0.5	0.007	**250510** 0010	85,70
2.0	6.0	1.80	80	1.44	10	1.0	0.011	250510 0020	85,70
3.0	6.0	2.80	80	2.04	15	1.5	0.011	250510 0030	85,70
4.0	6.0	3.80	80	2.62	20	2.0	0.035	250510 0040	85,70
5.0	6.0	4.70	90	3.35	25	2.5	0.035	250510 0050	85,70
6.0	6.0	5.70	70	3.94	30	3.0	0.045	250510 0060	85,70
6.0	6.0	5.70	100	3.94	30	3.0	0.045	250510 1060	85,70
8.0	8.0	7.50	100	5.39	50	4.0	0.055	250510 0080	110,50
10.0	10.0	9.40	120	6.71	50	5.0	0.065	250510 0100	154,50
12.0	12.0	11.20	120	8.15	50	6.0	0.065	250510 0120	197,50
16.0	16.0	15.0	150	10.78	60	8.0	0.09	250510 0160	210,–

2109



250510 0010





… caused by uneven divisions

ATORN®
High quality for great performance

Overview of the 35 - 38° *HPC* series

	End milling cutters				Drilling and plunge milling cutters		End milling cutters	
Sorting by type and number of cutting edges								
Brand	SARA	SARA	SARA	SARA	SARA	SARA	SARA	SARA
Number of cutting edges	4	4	4	4	4	4	4	4
Diameter range / mm	3.0 - 25.0	3.0 - 25.0	5.0 - 20.0	3.0 - 25.0	5.7 - 20.0	5.7 - 20.0	6.0 - 20.0	3.0 - 25.0
Standard	Factory standard	Factory standard	Factory standard	Factory standard	Factory standard	Factory standard	Factory standard	Factory standard
Version	Short	Long	Extra-long	Long	HA shank	HB shank	Long	Short
Type/profile	N / H	N / H	N / H	N / H			N / H	N / H
Cutting material	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide
Coating	TiAlN	TiAlN	TiAlN	TiAlN	AlTiN	AlTiN	AlTiN	AlTiN
Order No.	254130....	254131....	254132....	254133....	254144....	254145....	254140....	254134....
Catalogue page	467	467	468	468	469	469	470	470
Material groups	Usage recommendation							
Steel < 700 N/mm²	●	●	●	●	●	●	●	●
Steel < 1000 N/mm²	●	●	●	●	●	●	●	●
Steel < 1400 N/mm²	●	●	●	●	●	●	●	
Stainless steel ferritic/martensitic	○	○	○	○	●	●	●	●
Stainless steel austenitic	○	○	○	○	●	●	●	●
Stainless steel duplex					○	○	●	●
Cast iron GG/GTS	●	●	●	●	●	●	●	○
Cast iron GGG	●	●	●	●	○	○	●	○
Titanium alloys					○	○		●
Superalloys Fe/NiCo base < 30 HRc					○	○		●
Superalloys Fe/NiCo base ≥ 30 HRc					○	○		●
Aluminium < 8 % Si								
Aluminium ≥ 8 % Si								
Copper Cu-alloy								
Graphite GRP/CFP/thermoset								
Hardened steel < 55 HRc								
Hardened steel < 60 HRc								
Hardened steel ≥ 60 HRc								

	End milling cutters		Roughing cutter			Torus milling cutters	Radius milling cutters
Sorting by type and number of cutting edges							
Brand	SARA	SARA	SARA	SARA	SARA	SARA	SARA
Number of cutting edges	4	4	4	4	4	4	4
Diameter range / mm	3.0 - 25.0	3.0 - 25.0	4.0 - 20.0	4.0 - 20.0	6.0 - 20.0	4.0 - 20.0	3.0 - 20.0
Standard	Factory standard	Factory standard	Factory standard	Factory standard	Factory standard	Factory standard	Factory standard
Version	Long	Long	Short	Standard	Long		
Type/profile	N / H	N / H	NF	NF	NF	NH	
Cutting material	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide
Coating	AlTiN	AlTiN	AlTiN	AlTiN	AlTiN	TiAlN	TiAlN
Order No.	254135....	254136....	254141....	254137....	254142....	254139....	254138....
Catalogue page	471	471	472	472	472	473	473
Material groups	Usage recommendations						
Steel < 700 N/mm²	●	●	●	●	●	●	●
Steel < 1000 N/mm²	●	●	●	●	●	●	●
Steel < 1400 N/mm²			●	●	●	●	●
Stainless steel ferritic/martensitic	●	●	○	○	○	○	
Stainless steel austenitic	●	●	○	○	○	○	
Stainless steel duplex	●	●	○	○	○		
Cast iron GG/GTS	○	○	●	●	●	●	●
Cast iron GGG	○	○	●	●	●	●	●
Titanium alloys	●	●					
Superalloys Fe/NiCo base < 30 HRc	●	●					
Superalloys Fe/NiCo base ≥ 30 HRc	●	●					
Aluminium < 8 % Si							
Aluminium ≥ 8 % Si							
Copper Cu-alloy							
Graphite GRP/CFP/thermoset							
Hardened steel < 55 HRc							
Hardened steel < 60 HRc							
Hardened steel ≥ 60 HRc							

SARA® The 35 – 38° *HPC* series

INFO

The universal tool for all roughing and finishing work

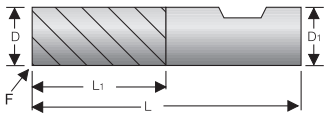


With irregular helix angle and an extremely high material removal rate

- Minimisation of vibration
- Better surface finish
- Protective chamfer F for increased service life
- Optional shank for greater cutting depths
- High-performance layer for high hot hardness and oxidation resistance
- Ideally suited for high performance cutting
- Short and long designs for machining steel, cast iron, stainless steel and titanium alloys

SARA® End milling cutters

VHM | NH | 35°-38° | h10 | h6 | DIN 6535 HB | Z 4 | TiAlN | HPC | Vc/fz | 730



- **Irregular helix angle and pitch for low-vibration milling**
- With protective chamfer F for improved service life
- Also suitable for dry machining

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
254130....	● 115-135	● 100-120	● 60-80	○ 50-75	○ 50-75		● 100-140	● 100-140										
254131....	● 115-135	● 100-120	● 60-80	○ 50-75	○ 50-75		● 100-140	● 100-140										
254132....	● 90-110	● 60-85	● 40-60	○ 40-60	○ 40-60		● 85-120	● 85-120										

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

Short



D mm	L1 mm	L mm	D1 mm	F x 45° mm	● Feed fz steel < 1000 N/mm² mm/tooth	● Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
3.0	6	54	6	0.10	0.008	0.009	**254130** 0030	25,60
4.0	8	54	6	0.13	0.013	0.015	254130 0040	25,60
5.0	9	54	6	0.18	0.021	0.025	254130 0050	25,60
6.0	10	54	6	0.20	0.021	0.025	254130 0060	25,60
7.0	12	58	8	0.20	0.027	0.032	254130 0070	33,40
8.0	12	58	8	0.20	0.027	0.032	254130 0080	33,40
9.0	14	66	10	0.30	0.027	0.032	254130 0090	46,80
10.0	14	66	10	0.30	0.044	0.052	254130 0100	46,80
11.0	16	73	12	0.30	0.044	0.052	254130 0110	60,–
12.0	16	73	12	0.30	0.044	0.052	254130 0120	60,–
13.0	18	75	14	0.30	0.044	0.052	254130 0130	74,50
14.0	18	75	14	0.30	0.059	0.07	254130 0140	74,50
16.0	22	82	16	0.40	0.059	0.07	254130 0160	97,–
18.0	24	84	18	0.40	0.071	0.084	254130 0180	142,50
20.0	26	92	20	0.50	0.071	0.084	254130 0200	149,–
25.0	32	92	25	0.50	0.077	0.091	254130 0250	345,–

2156

Long



D mm	L1 mm	L mm	D1 mm	F x 45° mm	● Feed fz steel < 1000 N/mm² mm/tooth	● Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
3.0	8	57	6	0.10	0.008	0.009	**254131** 0030	29,–
4.0	11	57	6	0.13	0.013	0.015	254131 0040	29,–
5.0	13	57	6	0.18	0.021	0.025	254131 0050	29,–
6.0	13	57	6	0.20	0.021	0.025	254131 0060	29,–
7.0	19	63	8	0.20	0.027	0.032	254131 0070	39,–
8.0	19	63	8	0.20	0.027	0.032	254131 0080	39,–
9.0	22	72	10	0.30	0.027	0.032	254131 0090	56,50
10.0	22	72	10	0.30	0.044	0.052	254131 0100	56,50
11.0	26	83	12	0.30	0.044	0.052	254131 0110	71,50
12.0	26	83	12	0.30	0.044	0.052	254131 0120	71,50
13.0	26	83	14	0.30	0.059	0.07	254131 0130	96,–

2156

Continued on next page >>>

D mm	L1 mm	L mm	D1 mm	F x 45° mm	Feed fz steel < 1000 N/mm² mm/tooth	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
14.0	26	83	14	0.30	0.059	0.07	254131 0140	96,–
16.0	32	92	16	0.40	0.059	0.07	254131 0160	125,–
18.0	32	92	18	0.40	0.071	0.084	254131 0180	172,50
20.0	38	104	20	0.50	0.071	0.084	254131 0200	189,50
25.0	38	104	25	0.50	0.077	0.091	254131 0250	389,–

2156

Extra-long



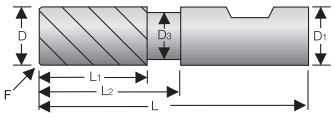
D mm	L1 mm	L mm	D1 mm	F x 45° mm	Feed fz steel < 1000 N/mm² mm/tooth	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
5.0	21	63	6	0.18	0.021	0.025	**254132** 0050	44,60
6.0	22	63	6	0.20	0.021	0.025	254132 0060	44,60
8.0	28	80	8	0.20	0.027	0.032	254132 0080	55,50
10.0	33	100	10	0.30	0.044	0.052	254132 0100	71,50
12.0	42	100	12	0.30	0.044	0.052	254132 0120	92,50
14.0	48	100	14	0.30	0.059	0.07	254132 0140	113,50
16.0	53	150	16	0.40	0.059	0.07	254132 0160	169,50
20.0	68	150	20	0.50	0.071	0.084	254132 0200	244,–

2156

SARA® End milling cutters

VHM | NH | 35° -38° | h10 | h6 | DIN 6535 HB | Z 4 | TiAlN | HPC | Vc/fz 732

- **With clearance**
- **Irregular helix angle and pitch for low-vibration milling**
- With protective chamfer F for improved service life
- Also suitable for dry machining



material	● very well suited ○ well suited	steel < 700 N/mm²	steel < 1000 N/mm²	steel < 1400 N/mm²	stainless steel ferrit./martens.	stainless steel austenitic	stainless steel duplex	cast iron GG/GTS	cast iron GGG	titanium alloys	superalloys Fe/NiCo-based < 30 HRc	superalloys Fe/NiCo-based ≥ 30 HRc	aluminium < 8 % Si	aluminium ≥ 8 % Si	copper Cu-alloy	graphite GRP/CFP/thermo.	hardened steel < 55 HRc	hardened steel < 60 HRc	hardened steel ≥ 60 HRc
		● 115-135	● 100-120	● 60-80	○ 50-75	○ 50-75		● 100-140	● 100-140										
	Cutting speed Vc m/min.	Please adjust these guidelines according to clamping operation and machine set-up.																	



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	F x 45° mm	Feed fz steel < 1000 N/mm² mm/tooth	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
3.0	8	18	57	2.8	6	0.13	0.008	0.009	**254133** 0030	32,30
4.0	11	21	57	3.6	6	0.18	0.013	0.015	254133 0040	32,30
5.0	13	21	57	4.6	6	0.20	0.021	0.025	254133 0050	32,30
6.0	13	21	57	5.5	6	0.20	0.021	0.025	254133 0060	32,30
7.0	19	27	63	6.5	8	0.20	0.027	0.032	254133 0070	43,50
8.0	19	27	63	7.5	8	0.20	0.027	0.032	254133 0080	43,50
9.0	22	32	72	8.5	10	0.30	0.027	0.032	254133 0090	61,50
10.0	22	32	72	9.5	10	0.30	0.044	0.052	254133 0100	61,50
11.0	26	38	83	10.5	12	0.30	0.044	0.052	254133 0110	75,50
12.0	26	38	83	11.5	12	0.30	0.044	0.052	254133 0120	75,50
13.0	26	42	83	12.5	14	0.30	0.059	0.07	254133 0130	99,–
14.0	26	42	83	13.5	14	0.30	0.059	0.07	254133 0140	99,–
16.0	32	44	92	15.5	16	0.40	0.059	0.07	254133 0160	129,–
18.0	32	50	100	17.5	18	0.40	0.071	0.084	254133 0180	177,–
20.0	38	54	104	19.5	20	0.50	0.071	0.084	254133 0200	195,–
25.0	42	65	121	24.0	25	0.50	0.077	0.091	254133 0250	395,–

2156

End milling cutter set, 5 pcs

Contents	art.no.	€
Set, solid carbide 35°/38° Ø 6/8/10/12/16 mm, 4 cutting edges, TiAlN	**254133** 1005	340,–

2156

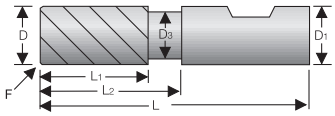


SARA® Drilling and plunge milling cutter

VHM | 36° -38° | h10 | h6 | DIN 6535 HA | DIN 6535 HB | Z 4 | AlTiN | HPC | Vc/fz | 737

- **Face geometry for drilling and ramping**
- With clearance
- **Irregular pitch to minimise vibrations**
- High material removal rate
- **High feed rates for plunge milling and groove milling**
- Up to 45° plunge angle
- Undersized for precise fitting grooves

Drilling and milling with one tool



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 210	● 175	● 120	● 110	● 110	○ 90	● 150	○ 110	○ 60-70	○ 20-35	○ 15-30							
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.





Standard

D mm	L1 mm	L2 mm	D1 mm	L mm	D3 mm	F x 45° mm	● Feed fz steel < 1000 N/mm² mm/tooth	● Feed fz steel < 1000 N/mm² mm/tooth	DIN 6535-HA art.no.	€
5.7	13	19	6	57	5.4	0.1	0.03	0.04	**254144** 0057	34,70
6	13	19	6	57	5.7	0.1	0.03	0.04	254144 0060	34,70
7.7	19	25	8	63	7.3	0.2	0.045	0.055	254144 0077	47,–
8	19	25	8	63	7.6	0.2	0.045	0.055	254144 0080	47,–
10	22	30	10	72	9.5	0.25	0.055	0.065	254144 0100	70,50
12	26	36	12	83	11.5	0.3	0.06	0.08	254144 0120	90,–
14	26	36	14	83	13.5	0.35	0.07	0.09	254144 0140	118,–
16	32	42	16	92	15.5	0.4	0.085	0.1	254144 0160	155,–
20	38	52	20	104	19.5	0.5	0.1	0.12	254144 0200	235,–

2156



Standard with driving plane

D mm	L1 mm	L2 mm	D1 mm	L mm	D3 mm	F x 45° mm	● Feed fz steel < 1000 N/mm² mm/tooth	● Feed fz steel < 1000 N/mm² mm/tooth	DIN 6535-HB art.no.	€
5.7	13	19	6	57	5.4	0.1	0.03	0.04	**254145** 0057	34,70
6	13	19	6	57	5.7	0.1	0.03	0.04	254145 0060	34,70
7.7	19	25	8	63	7.3	0.2	0.045	0.055	254145 0077	47,–
8	19	25	8	63	7.6	0.2	0.045	0.055	254145 0080	47,–
10	22	30	10	72	9.5	0.25	0.055	0.065	254145 0100	70,50
12	26	36	12	83	11.5	0.3	0.06	0.08	254145 0120	90,–
14	26	36	14	83	13.5	0.35	0.07	0.09	254145 0140	118,–
16	32	42	16	92	15.5	0.4	0.085	0.1	254145 0160	155,–
20	38	52	20	104	19.5	0.5	0.1	0.12	254145 0200	235,–

2156



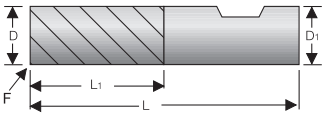
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ATORN®
High quality for great performance

SARA® End milling cutters

VHM | NH | 35°-38° | h10 | h6 | DIN 6535 HB | Z 4 | AlTiN | HPC | Vc/fz | 731

- **With internal coolant supply**
- **Irregular helix angle and pitch for low-vibration milling**
- With protective chamfer F for improved service life



material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 120-140	● 100-125	● 60-80	● 50-85	● 50-85	● 40-60	● 100-140	● 80-100										
Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									



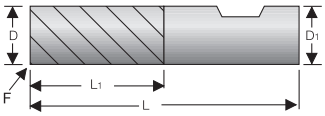
D mm	L1 mm	L mm	D1 mm	F x 45° mm	● Feed fz steel < 1000 N/mm² mm/tooth	● Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
6.0	13	57	6	0.20	0.021	0.025	**254140** 0060	71,50
8.0	19	63	8	0.20	0.027	0.032	254140 0080	77,–
10.0	22	72	10	0.30	0.044	0.052	254140 0100	83,50
12.0	26	83	12	0.30	0.044	0.052	254140 0120	102,50
16.0	32	92	16	0.40	0.059	0.07	254140 0160	156,–
20.0	38	104	20	0.50	0.071	0.084	254140 0200	228,–

2156

SARA® Stainless steel end milling cutter

VHM | Typ N | 35°-38° | h10 | h6 | DIN 6535 HB | Z 4 | AlTiN | HPC | Vc/fz | 734

- **Irregular helix angle and pitch for low-vibration milling**
- With protective chamfer F for improved service life
- Specially designed for stainless steel machining



material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 120-150	● 80-110		● 40-65	● 40-65	● 30-50	○ 100-140	○ 80-100	● 30-45	● 30-45	● 25-40							
Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									



Short

D mm	L1 mm	L mm	D1 mm	F x 45° mm	● Feed fz stainless steel austenitic mm/tooth	● Feed fz stainless steel austenitic mm/tooth	art.no.	€
3.0	6	54	6	0.10	0.008	0.009	**254134** 0030	25,60
4.0	8	54	6	0.13	0.013	0.015	254134 0040	25,60
5.0	9	54	6	0.18	0.021	0.025	254134 0050	25,60
6.0	10	54	6	0.20	0.021	0.025	254134 0060	25,60
7.0	12	58	8	0.20	0.027	0.032	254134 0070	33,40
8.0	12	58	8	0.20	0.027	0.032	254134 0080	33,40
9.0	14	66	10	0.30	0.027	0.032	254134 0090	46,80
10.0	14	66	10	0.30	0.044	0.052	254134 0100	46,80
11.0	16	73	12	0.30	0.044	0.052	254134 0110	60,–
12.0	16	73	12	0.30	0.044	0.052	254134 0120	60,–
13.0	18	75	14	0.30	0.059	0.07	254134 0130	74,50
14.0	18	75	14	0.30	0.059	0.07	254134 0140	74,50
16.0	22	82	16	0.40	0.059	0.07	254134 0160	97,–
18.0	24	84	18	0.40	0.071	0.084	254134 0180	142,50
20.0	26	92	20	0.50	0.071	0.084	254134 0200	149,50
25.0	32	92	25	0.50	0.077	0.091	254134 0250	344,–

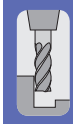
2156

Long



D mm	L1 mm	L mm	D1 mm	F x 45° mm	Feed fz stainless steel austenitic mm/tooth	Feed fz stainless steel austenitic mm/tooth	art.no.	€
3.0	8	57	6	0.13	0.009	0.009	**254135** 0030	29,–
4.0	11	57	6	0.13	0.013	0.015	254135 0040	29,–
5.0	13	57	6	0.18	0.021	0.025	254135 0050	29,–
6.0	13	57	6	0.2	0.021	0.025	254135 0060	29,–
7.0	19	63	8	0.2	0.027	0.032	254135 0070	39,–
8.0	19	63	8	0.2	0.027	0.032	254135 0080	39,–
9.0	22	72	10	0.3	0.027	0.032	254135 0090	57,–
10.0	22	72	10	0.3	0.044	0.052	254135 0100	57,–
11.0	26	83	12	0.3	0.044	0.052	254135 0110	71,50
12.0	26	83	12	0.3	0.044	0.052	254135 0120	71,50
14.0	26	83	14	0.3	0.059	0.07	254135 0140	96,–
16.0	32	92	16	0.4	0.059	0.07	254135 0160	125,–
18.0	32	92	18	0.4	0.071	0.084	254135 0180	172,50
20.0	38	104	20	0.5	0.071	0.084	254135 0200	190,50
25.0	42	104	25	0.5	0.077	0.091	254135 0250	389,–

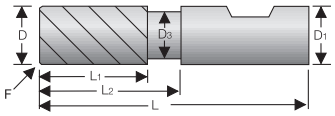
2156



SARA® End milling cutters Stainless steel

VHM | Typ N | 35°-38° | h10 | h6 | DIN 6535 HB | Z 4 | AlTiN | HPC | Vc/fz | 734

- **With clearance**
- **Irregular helix angle and pitch for low-vibration milling**
- With protective chamfer F for improved service life
- Specially designed for stainless steel machining



material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 120-150	● 80-110		● 40-65	● 40-65	● 30-50	○ 100-140	○ 80-100	● 30-45	● 30-45	● 25-40							
Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.



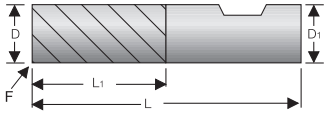
D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	F x 45° mm	Feed fz stainless steel austenitic mm/tooth	Feed fz stainless steel austenitic mm/tooth	art.no.	€
3.0	8	18	57	2.8	6	0.13	0.008	0.009	**254136** 0030	32,30
4.0	11	21	57	3.6	6	0.18	0.013	0.015	254136 0040	32,30
5.0	13	21	57	4.6	6	0.20	0.021	0.025	254136 0050	32,30
6.0	13	21	57	5.5	6	0.20	0.021	0.025	254136 0060	32,30
7.0	19	27	63	6.5	8	0.20	0.027	0.032	254136 0070	43,40
8.0	19	27	63	7.5	8	0.20	0.027	0.032	254136 0080	43,40
9.0	22	32	72	8.5	10	0.30	0.027	0.032	254136 0090	61,50
10.0	22	32	72	9.5	10	0.30	0.044	0.052	254136 0100	61,50
11.0	26	38	83	10.5	12	0.30	0.044	0.052	254136 0110	75,50
12.0	26	38	83	11.5	12	0.30	0.044	0.052	254136 0120	75,50
13.0	26	42	83	12.5	14	0.30	0.059	0.07	254136 0130	99,–
14.0	26	42	83	13.5	14	0.30	0.059	0.07	254136 0140	99,–
16.0	32	44	92	15.5	16	0.40	0.059	0.07	254136 0160	129,–
18.0	32	50	100	17.5	18	0.40	0.071	0.084	254136 0180	176,–
20.0	38	54	104	19.5	20	0.50	0.071	0.084	254136 0200	195,–
25.0	42	65	121	24.0	25	0.50	0.077	0.091	254136 0250	389,–

2156

SARA® Roughing cutter

VHM | NF | 35°-38° | h10 | h6 | DIN 6535 HB | Z 4 | AlTiN | HPC | Vc/fz | 740

- **Irregular helix angle for low-vibration milling**
- With protective chamfer F for improved service life
- Also suitable for dry machining
- High material removal rate



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 130-150	● 80-100	● 40-70	○ 50-60	○ 50-60	○ 30-50	● 100-120	● 50-70										
	Cutting speed Vc m/min.				Please adjust these guidelines according to clamping operation and machine set-up.														

Short



D mm	L1 mm	L mm	D1 mm	F x 45° mm	● Feed fz steel < 1000 N/mm² mm/tooth	● Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
4.0	6	54	6	0.13	0.013	0.015	**254141** 0040	26,20
5.0	8	54	6	0.15	0.021	0.025	254141 0050	26,20
6.0	10	54	6	0.20	0.021	0.025	254141 0060	26,20
8.0	12	58	8	0.20	0.027	0.032	254141 0080	36,80
10.0	14	66	10	0.30	0.044	0.052	254141 0100	52,50
12.0	16	73	12	0.30	0.044	0.052	254141 0120	65,–
14.0	18	75	14	0.30	0.059	0.07	254141 0140	90,–
16.0	22	82	16	0.40	0.059	0.07	254141 0160	115,–
20.0	26	92	20	0.50	0.071	0.084	254141 0200	244,–

2156

Standard



D mm	L1 mm	L mm	D1 mm	F x 45° mm	● Feed fz steel < 1000 N/mm² mm/tooth	● Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
4.0	11	57	6	0.13	0.044	0.015	**254137** 0040	31,20
5.0	13	57	6	0.18	0.044	0.025	254137 0050	31,20
6.0	13	57	6	0.20	0.059	0.025	254137 0060	31,20
8.0	19	63	8	0.20	0.059	0.032	254137 0080	42,30
10.0	22	72	10	0.30	0.071	0.052	254137 0100	62,50
12.0	26	83	12	0.30	0.021	0.052	254137 0120	78,–
14.0	26	83	14	0.30	0.027	0.070	254137 0140	102,50
16.0	32	92	16	0.40	0.044	0.070	254137 0160	136,–
20.0	38	104	20	0.50	0.044	0.084	254137 0200	284,–

2156

Extra-long



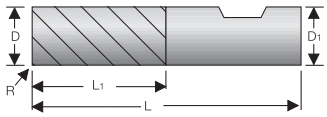
D mm	L1 mm	L mm	D1 mm	F x 45° mm	● Feed fz steel < 1000 N/mm² mm/tooth	● Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
6.0	24	68	6	0.3	0.021	0.025	**254142** 0060	49,–
8.0	38	88	8	0.3	0.027	0.032	254142 0080	67,–
10.0	45	95	10	0.4	0.044	0.052	254142 0100	91,50
12.0	53	110	12	0.5	0.044	0.052	254142 0120	121,50
16.0	63	123	16	0.6	0.059	0.07	254142 0160	206,–
20.0	75	141	20	0.6	0.071	0.084	254142 0200	345,–

2156

SARA® Torus milling cutter

VHM | NH | 35° -38° | h10 | h6 | DIN 6535 HB | Z 4 | TiAlN | HPC | Vc/fz | 731

- **Irregular helix angle for low-vibration milling**
- Also suitable for dry machining

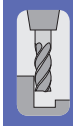


material — ● very well suited ○ well suited

steel < 700 N/mm²	steel < 1000 N/mm²	steel < 1400 N/mm²	stainless steel ferrit./martens.	stainless steel austenitic	stainless steel duplex	cast iron GG/GTS	cast iron GGG	titanium alloys	superalloys Fe/NiCo-based < 30 HRc	superalloys Fe/NiCo-based ≥ 30 HRc	aluminium < 8 % Si	aluminium ≥ 8 % Si	copper Cu-alloy	graphite GRP/CFP/thermo.	hardened steel < 55 HRc	hardened steel < 60 HRc	hardened steel ≥ 60 HRc
● 120-130	● 100-120	● 50-75	○ 30-60	○ 30-60		● 100-130	● 70-100								● 40-60	● 30-40	

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.





D mm	L1 mm	L mm	D1 mm	R mm	Feed fz steel < 1000 N/mm² mm/tooth	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
4.0	11	57	6	0.25	0.013	0.015	**254139** 0402	30,10
4.0	11	57	6	0.50	0.013	0.015	254139 0405	30,10
4.0	11	57	6	1.00	0.013	0.015	254139 0410	30,10
5.0	13	57	6	0.50	0.021	0.025	254139 0505	30,10
5.0	13	57	6	1.00	0.021	0.025	254139 0510	30,10
5.0	13	57	6	1.50	0.021	0.025	254139 0515	30,10
6.0	13	57	6	0.50	0.021	0.025	254139 0605	30,10
6.0	13	57	6	1.00	0.021	0.025	254139 0610	30,10
6.0	13	57	6	1.50	0.021	0.025	254139 0615	30,10
6.0	13	57	6	2.00	0.021	0.025	254139 0620	30,10
8.0	19	63	8	0.50	0.027	0.032	254139 0805	41,20
8.0	19	63	8	1.00	0.027	0.032	254139 0810	41,20
8.0	19	63	8	1.50	0.027	0.032	254139 0815	41,20
8.0	19	63	8	2.00	0.027	0.032	254139 0820	41,20
10.0	22	72	10	0.50	0.044	0.052	254139 1005	60,–
10.0	22	72	10	1.00	0.044	0.052	254139 1010	60,–
10.0	22	72	10	1.50	0.044	0.052	254139 1015	60,–
10.0	22	72	10	2.00	0.044	0.052	254139 1020	60,–
12.0	26	83	12	0.50	0.044	0.052	254139 1205	75,50

2156

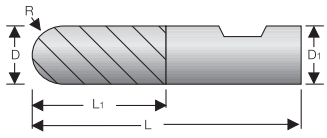
D mm	L1 mm	L mm	D1 mm	R mm	Feed fz steel < 1000 N/mm² mm/tooth	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
12.0	26	83	12	1.00	0.044	0.052	254139 1210	75,50
12.0	26	83	12	1.50	0.044	0.052	254139 1215	75,50
12.0	26	83	12	2.00	0.044	0.052	254139 1220	75,50
14.0	26	83	14	1.00	0.059	0.07	254139 1410	101,50
14.0	26	83	14	2.00	0.059	0.07	254139 1420	101,50
16.0	32	92	16	1.00	0.059	0.07	254139 1610	132,–
16.0	32	92	16	1.50	0.059	0.07	254139 1615	132,–
16.0	32	92	16	2.00	0.059	0.07	254139 1620	132,–
16.0	32	92	16	2.50	0.059	0.07	254139 1625	132,–
18.0	32	92	18	1.50	0.071	0.084	254139 1815	183,–
18.0	32	92	18	2.50	0.071	0.084	254139 1825	183,–
20.0	38	104	20	1.00	0.071	0.084	254139 2010	201,–
20.0	38	104	20	1.50	0.071	0.084	254139 2015	201,–
20.0	38	104	20	2.00	0.071	0.084	254139 2020	201,–
20.0	38	104	20	2.50	0.071	0.084	254139 2025	201,–
20.0	38	104	20	3.00	0.071	0.084	254139 2030	201,–
20.0	38	104	20	4.00	0.071	0.084	254139 2040	201,–
20.0	38	104	20	5.00	0.071	0.084	254139 2050	201,–

2156

SARA® Radius milling cutter

VHM | 35° -38° | h10 | h6 | DIN 6535 HB | Z 4 | TiAlN | HPC | Vc/fz | 744

- **Irregular helix angle for low-vibration milling**
- Also suitable for dry machining



material — ● very well suited ○ well suited

steel < 700 N/mm²	steel < 1000 N/mm²	steel < 1400 N/mm²	stainless steel ferrit./martens.	stainless steel austenitic	stainless steel duplex	cast iron GG/GTS	cast iron GGG	titanium alloys	superalloys Fe/NiCo-based < 30 HRc	superalloys Fe/NiCo-based ≥ 30 HRc	aluminium < 8 % Si	aluminium ≥ 8 % Si	copper Cu-alloy	graphite GRP/CFP/thermo.	hardened steel < 55 HRc	hardened steel < 60 HRc	hardened steel ≥ 60 HRc
● 450-550	● 250-350	● 200-250				● 450-550	● 400-500								● 100-140		

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



D mm	L1 mm	L mm	D1 mm	R mm	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
3.0	8	57	6	1.50	0.011	**254138** 0030	31,20
4.0	10	57	6	2.00	0.035	254138 0040	31,20
5.0	13	57	6	2.50	0.035	254138 0050	31,20
6.0	13	57	6	3.0	0.045	254138 0060	31,20
8.0	16	63	8	4.0	0.055	254138 0080	42,30

2156

D mm	L1 mm	L mm	D1 mm	R mm	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
10.0	22	72	10	5.0	0.065	254138 0100	62,50
12.0	26	83	12	6.0	0.065	254138 0120	78,–
14.0	26	83	14	7.0	0.09	254138 0140	103,50
16.0	32	92	16	8.0	0.09	254138 0160	136,–
20.0	38	104	20	10.0	0.12	254138 0200	207,–

2156

ATORN® HPC POWER high-performance range

INFO

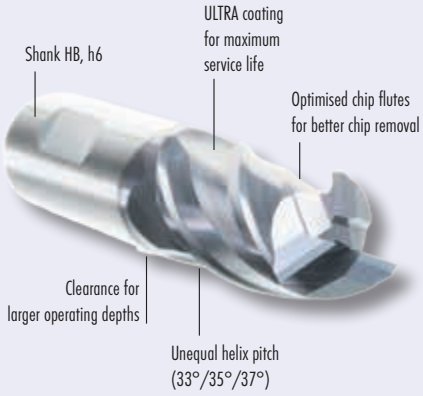
Tough on everything!

The performance of the low-vibration premium tools was significantly increased with the new ATORN HPC POWER high-performance range. It offers a milling range with innovative HPC geometry designed for efficient and universal machining of steel, stainless steel, non-ferrous metal, cast iron and special alloys.
Significantly higher material removal rates in machining are the result of various spiral angles in conjunction with newly developed, robust face and surface cutting edges. Even with extreme cutting data, the tools impress with their ultra-smooth operation, high process safety and low machine loads. Plunge milling and ramping processes are enhanced by the optimised face geometries. The new solid carbide with an innovative PVD high-performance coating also contributes to improved service life and safer chip removal.

Advantages:
- Increased productivity – roughing and finishing with the same tool
- Excellent surface quality even with high feed rates
- Long service life thanks to optimised cutting edge geometries and high-performance coatings
- Machining methods such as plunge milling/drilling or ramping possible
- Low machine load thanks to smooth operation, long service life
- Comprehensive possible uses and efficient machining of tough materials
- Suitable for all modern milling strategies e.g. trochoidal milling

UNIVERSAL

P M K N S





Dual cutting edge protection with edge protection chamfer and robust face-cutter

Optimised face-cutter geometry with large chip spaces

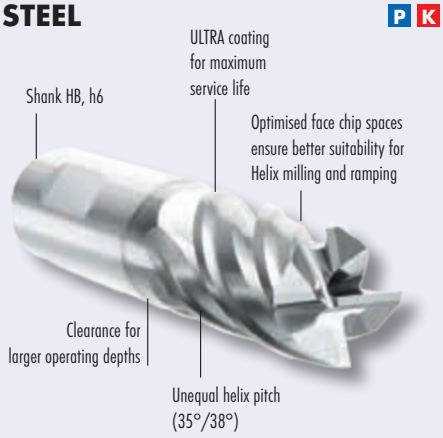
Long design with axial internal cooling available

The HPC POWER groove milling cutter is a 3-edge high-performance tool. With its large chip spaces and excellent chip removal, it is ideal for groove milling. Each cutting edge has another helix angle (33°/35°/37°). In addition to the entire range of stainless and acid-resistant steels, it can also be used in all aspects of steel machining.

Features:
- Ø range 4 - 20 mm
- Long version
- Each cutting edge has another helix angle (33°/35°/37°)

STEEL

P K





Dual cutting edge protection with edge protection chamfer and robust face-cutter

Defined cutting edge honing increases the service life and process safety

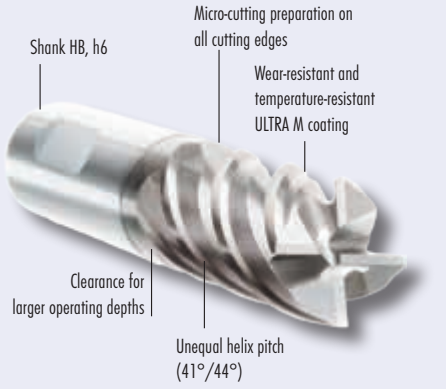
Radius-shaped gashing for improved chip removal

The performance of the low-vibration premium tools was considerably increased with the HPC POWER solid carbide end milling cutter for steel and cast iron: significantly higher material removal rates in machining are the result of various spiral angles in conjunction with newly developed, robust face and surface cutting edges.
A feature of the ATORN HPC POWER milling cutter is its multi-functional application: Roughing and finishing can be achieved with the same tool. Similarly, narrow bridges and grooves up to 2xD with outstanding surface quality can be produced.

Features:
- Ø range 4 - 20 mm
- Long version
- Unequal helix pitch (35°/38°)
- Low power consumption
- Stable cutting edge and edge protection chamfer
- Optimised face-cutter design

Stainless steel

M N S





New edge protection in the form multi-chamfer grinding

Optimised gashing in the centre

Long version with radial internal cooling available

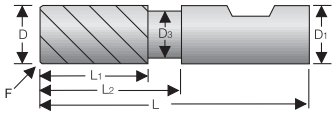
The 4-edge high-speed milling cutter was specially developed for cutting stainless and acid-resistant steels, titanium and nickel-based alloys, as well as short-chipping aluminium.
Special cutting geometries combined with the optimum carbide quality and multi-layer, fine-crystal PVD coating set new standards in machining demanding materials. Chip formation, chip removal and temperature resistance were optimised and guarantee high-performance with demanding cutting data.

Features:
- Ø range 4 - 20 mm
- Unequal helix pitch (41°/44°)
- Optimised cutting edge design (multi-chamfer grinding)
- Perfect for modern milling strategies

ATORN® HPC Power end milling cutter, universal

VHM | NH | 33° -35° -37° | h10 | h6 | DIN 6535 HB | Z 3 | TiAlN | HPC | Vc/fz | 735

- **Irregular helix angle and pitch for low-vibration milling**
- With protective chamfer F for improved tool life and stable face cutter, double protected
- Optimised face-cutter geometry with large chip spaces
- **With clearance**
- ULTRA coated for maximum service life



material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 180-220	● 140-180	● 100-150	● 100-130	● 100-120	○ 80-100	● 150-170	○ 150-170	● 50-80	○ 30-50	○ 30-50	● 280-320	● 240-280	● 180-220				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



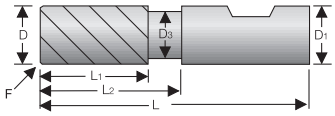
D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	F x 45° mm	● Feed fz steel < 1000 N/mm² mm/tooth	● Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
4	8	12	54	3.8	6	0.1	0.04	0.06	**254503** 0040	38,–
5	10	15	54	4.8	6	0.15	0.05	0.08	254503 0050	38,–
6	13	21	57	5.7	6	0.2	0.06	0.1	254503 0060	38,–
8	19	27	63	7.7	8	0.2	0.08	0.12	254503 0080	44,50
10	22	32	72	9.7	10	0.2	0.1	0.14	254503 0100	59,50
12	26	38	83	11.6	12	0.2	0.12	0.18	254503 0120	91,50
14	26	38	83	13.6	14	0.3	0.16	0.2	254503 0140	122,–
16	32	44	92	15.6	16	0.3	0.16	0.2	254503 0160	136,–
18	32	44	92	17.6	18	0.3	0.2	0.26	254503 0180	174,–
20	38	54	104	19.6	20	0.3	0.2	0.26	254503 0200	205,–

2119

ATORN® HPC Power end milling cutter, steel

VHM | NH | 35° -38° | h10 | h6 | DIN 6535 HA | DIN 6535 HB | Z 4 | TiAlN | HPC | Vc/fz | 736

- **Irregular helix angle and pitch for low-vibration milling**
- With protective chamfer F for improved tool life and stable face cutter, double protected
- Optimised face-cutter geometry with large chip spaces
- Radius-shaped face gashing for improved chip removal
- Defined cutting-edge rounding
- **With clearance**
- ULTRA coated for maximum service life



material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 220-270	● 180-220	● 140-180				● 150-180	● 130-170										

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



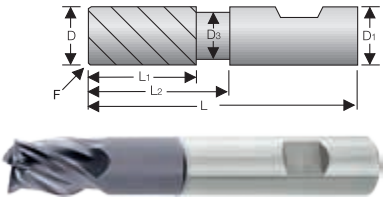
Long

D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	F x 45° mm	● Feed fz steel < 1000 N/mm² mm/tooth	● Feed fz steel < 1000 N/mm² mm/tooth	DIN 6535-HB art.no.	€	DIN 6535-HA art.no.	€
1	2.5	3	40	0.9	4	0.025	0.008	0.012			**254510** 0010	39,60
2	4	6	40	1.8	4	0.05	0.014	0.014			254510 0020	39,60
3	6	9	40	2.8	4	0.075	0.02	0.03			254510 0030	39,60
4	8	12	54	3.8	6	0.1	0.04	0.06	**254511** 0040	38,80	254510 0040	39,60
5	10	15	54	4.8	6	0.15	0.06	0.08	254511 0050	38,80	254510 0050	39,60
6	13	21	57	5.7	6	0.2	0.07	0.1	254511 0060	38,80	254510 0060	39,60
8	19	27	63	7.7	8	0.2	0.09	0.12	254511 0080	42,60	254510 0080	44,–
10	22	32	72	9.7	10	0.2	0.11	0.14	254511 0100	59,–	254510 0100	62,50
12	26	38	83	11.6	12	0.2	0.13	0.18	254511 0120	87,–	254510 0120	91,50
14	26	38	83	13.6	14	0.3	0.18	0.2	254511 0140	124,–	254510 0140	131,–
16	32	44	92	15.6	16	0.3	0.18	0.2	254511 0160	135,–	254510 0160	142,–
18	32	44	92	17.6	18	0.3	0.22	0.26	254511 0180	177,–	254510 0180	185,–
20	38	54	104	19.6	20	0.3	0.22	0.26	254511 0200	210,–	254510 0200	220,–

2119 2119

Extra-long

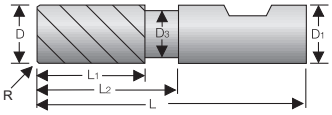
D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	F x 45° mm	Feed fz steel < 1000 N/mm² mm/tooth	Feed fz steel < 1000 N/mm² mm/tooth	DIN 6535-HB art.no.	€
6	9	29	65	5.7	6	0.2	0.07	0.1	**254513** 0060	45,80
8	12	39	75	7.7	8	0.2	0.09	0.12	254513 0080	55,50
10	15	40	80	9.6	10	0.2	0.11	0.14	254513 0100	73,–
12	18	48	93	11	12	0.2	0.13	0.18	254513 0120	113,–
16	24	60	108	15	16	0.3	0.18	0.2	254513 0160	162,–
20	30	76	126	19	20	0.3	0.22	0.26	254513 0200	250,–
									2119	



ATORN® HPC Power end milling cutter, stainless steel

VHM | NH | 41°-44° | h10 | h6 | DIN 6535 HA | DIN 6535 HB | Z 4 | TiAlN | HPC | Vc/fz | 736

- **Irregular helix angle and pitch for low-vibration milling**
- New edge protection in the form of multi-chamfer grinding
- Optimised gashing in the centre
- Micro-cutting preparation on all cutting edges
- **With clearance**
- Wear-resistant and temperature-resistant **Ultra-M** coating



material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
			115-135	100-120	90-110			60-80	40-60	40-60	280-320	260-300	260-300				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	R mm	Z	Feed fz stainless steel austenitic mm/tooth	Feed fz stainless steel austenitic mm/tooth	DIN 6535-HA art.no.	€	DIN 6535-HB art.no.	€
4	8	12	54	3.8	6	0.15	4	0.03	0.05	**254516** 0040	44,–	**254517** 0040	42,60
5	10	15	54	4.8	6	0.2	4	0.04	0.06	254516 0050	44,–	254517 0050	42,60
6	13	21	57	5.7	6	0.3	4	0.04	0.06	254516 0060	44,–	254517 0060	42,60
8	19	27	63	7.7	8	0.3	4	0.06	0.08	254516 0080	48,10	254517 0080	46,80
10	22	32	72	9.7	10	0.3	4	0.07	0.09	254516 0100	68,–	254517 0100	65,–
12	26	38	83	11.6	12	0.3	4	0.09	0.11	254516 0120	99,50	254517 0120	96,–
16	32	44	92	15.6	16	0.4	4	0.11	0.13	254516 0160	153,–	254517 0160	149,–
20	38	54	104	19.6	20	0.4	4	0.14	0.16	254516 0200	240,–	254517 0200	230,–
										2119		2119	



PALBIT
Machining tools
411 pages
Art.no. 019900 0315

Overview of all free manufacturers' catalogues on page 14/15

Trochoidal milling

INFO

						
Brand	ATORN	ATORN	SARA	HPMT	ATORN	SARA
Number of cutting edges	5	5	4-6	5	4	6-8
Diameter range / mm	6-20	6-20	3-20	4-20	4-20	2.5-20
Standard	WN	WN	WN	WN	WN	WN
Version	N	N	N	N	WN	H
Type/profile	TVC	TVC	TVC	TVC	TVC	TVC
Cutting material	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide
Coating	AlTiN	TiAlSiN	TiAlSiN	AlCRN		TiAlSiN
Item number	254155	254157	254153	254235	254159	254154
Page	478	479	480	480	481	481
Material groups	Usage recommendations					
Steel < 700 N/mm²	●			●		
Steel < 1000 N/mm²	●			●		
Steel < 1400 N/mm²	●			●		
Stainless steel ferritic/martensitic		●		●		
Stainless steel austenitic		●		●		
Stainless steel duplex		●				
Cast iron GG/GTS				●		
Cast iron GGG				●		
Titanium alloys			●	●		
Superalloys Fe/NiCo base < 30 HRc			●	○		
Superalloys Fe/NiCo base ≥ 30 HRc			●	○		
Aluminium < 8 % Si					●	
Aluminium ≥ 8 % Si					●	
Copper Cu-alloy					●	
Graphite GRP/CFP/thermoset					●	
Hardened steel < 55 HRc						●
Hardened steel < 60 HRc						●
Hardened steel ≥ 60 HRc						●

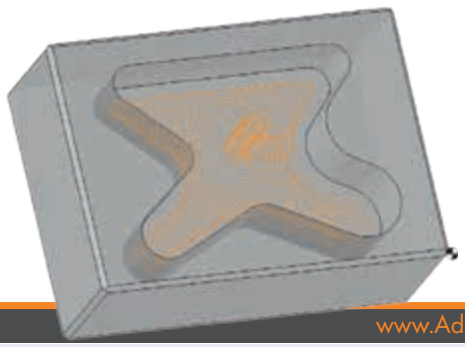
TopSolid

ADEQUATE SOLUTION

MAKE THE MOST OF THE SARA® TROCHOIDAL RANGE AND TOPSOLID'7 VOLUMILL

- VoluMill is a user-friendly software solution for large-volume rough milling
- Longer cutting tool and machine service life
- Greater cutting depths and feed rates
- Low arc of contact
- Work up to 60% faster with the VoluMill TopSolid Edition
- An alternative to conventional roughing routines





- Use of the entire length of the cutting edge
- Reduced tool costs
- Productivity gains
- More machining capacity

VoluMill TopSolid EDITION

www.AdeQuateSolutions.com

ATORN® Trochoidal end milling cutter (steel)

VHM | Typ N | 44° -45° | e8 | h5 | DIN 6535 HB | Z 5 | Z 4 | AlTiN | TVC | Vc/fz | 770

- With clearance
- **Milling cutter designed for TVC use**
- Reinforced core
- With chip breaker
- **Cutting material: superfine grain solid carbide**
- Rounded chip space for improved chip removal
- **ae max. 20 %**

Trochoidal

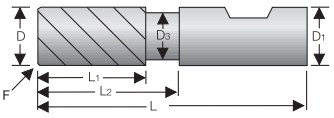


material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 250	● 180	● 140															
		Cutting speed Vc m/min.			Please adjust these guidelines according to clamping operation and machine set-up.														

3 x D

D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	F mm	Z	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
6.0	19.0	21.0	62	5.8	6	0.12	5	0.050	**254155** 0060	53,–
8.0	26.0	28.0	68	7.8	8	0.16	5	0.065	254155 0080	70,50
10.0	32.0	32.0	80	9.8	10	0.20	5	0.080	254155 0100	89,–
12.0	38.0	42.0	93	11.8	12	0.24	5	0.095	254155 0120	116,–
16.0	50.0	56.0	108	15.8	16	0.32	5	0.13	254155 0160	200,–
20.0	62.0	70.0	126	19.8	20	0.40	5	0.16	254155 0200	315,–

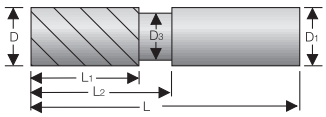
2153



4 x D

D mm	L1 mm	L mm	D3 mm	D1 mm	F mm	Z	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
6.0	25	70	5.8	6	0.12	4	0.050	**254156** 0060	62,80
8.0	34.0	80	7.8	8	0.16	4	0.065	254156 0080	81,40
10.0	42.0	95	9.8	10	0.20	4	0.080	254156 0100	105,10
12.0	50.0	105	11.8	12	0.24	4	0.095	254156 0120	136,–
16.0	66	125	15.8	16	0.32	4	0.13	254156 0160	233,–

2153





... maximum material removal rate

ATORN®
High quality for great performance

ATORN® Trochoidal end milling cutter (stainless steel)

VHM | Typ N | 37°-40° | e8 | h5 | DIN 6535 HB | Z 5 | Z 4 | TiAlSiN | TVC | Vc/fz | 768

Trochoidal

- With clearance
- **Milling cutter designed for TVC use**
- Reinforced core
- With chip breaker
- **Cutting material: superfine grain solid carbide**
- Irregular tooth pitch for a strong head centre
- **ae max. 15 %**

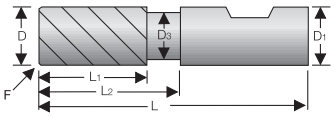


material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
					● 140	● 100	● 75												
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		

3 x D

D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	F mm	Z	Feed fz stainless steel ferrit./martens. mm/tooth	art.no.	€
6.0	19.0	21.0	62	5.8	6	0.12	5	0.050	**254157** 0060	66,–
8.0	26.0	28.0	68	7.8	8	0.16	5	0.065	254157 0080	86,–
10.0	32.0	35.0	80	9.8	10	0.20	5	0.080	254157 0100	111,–
12.0	38.0	42.0	93	11.8	12	0.24	5	0.095	254157 0120	135,–
16.0	50.0	56.0	108	15.8	16	0.32	5	0.13	254157 0160	235,–
20.0	62.0	70.0	126	19.8	20	0.40	5	0.16	254157 0200	360,–

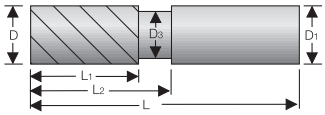
2153

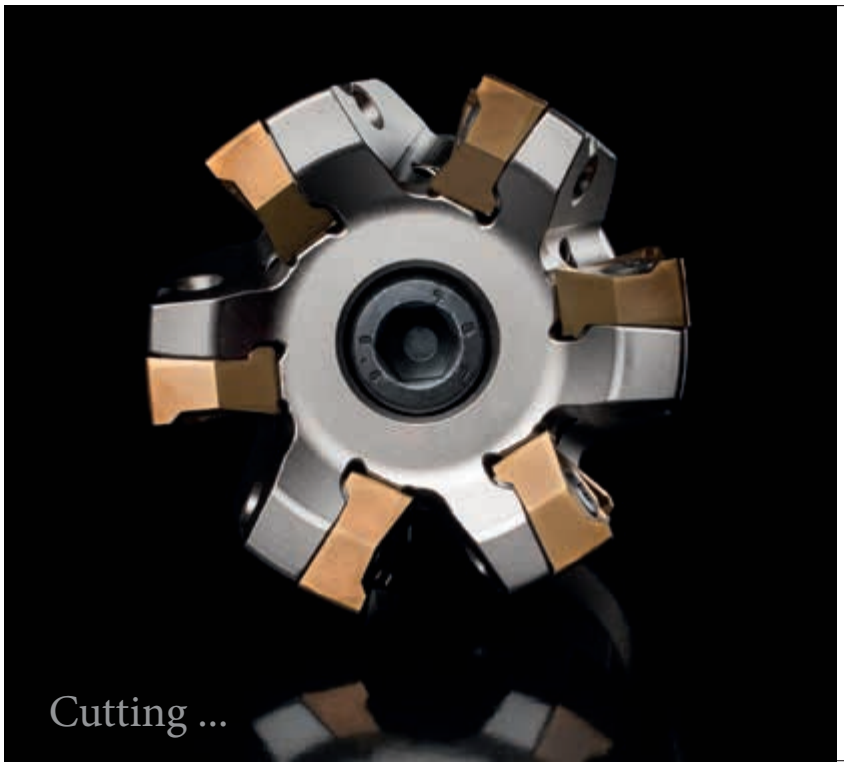


4 x D

D mm	L1 mm	L mm	D3 mm	D1 mm	F mm	Z	Feed fz stainless steel ferrit./martens. mm/tooth	art.no.	€
6.0	25.0	70	5.8	6	0.12	4	0.050	**254158** 0060	76,–
8.0	34.0	80	7.8	8	0.16	4	0.065	254158 0080	101,–
10.0	42.0	95	9.8	10	0.20	4	0.080	254158 0100	130,–
12.0	50.0	105	11.8	12	0.24	4	0.095	254158 0120	157,–
16.0	66.0	125	15.8	16	0.32	4	0.13	254158 0160	272,–

2153





... with every indexable insert.

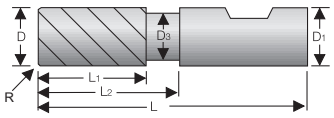
ATORN®
Performance demands quality

HPMT End milling cutter Trochoidal 2.5 x D / 3.5 x D

VHM | h8 | h6 | DIN 6535 HB | Z 5 | AlCrN | TVC | Vc/fz | 771

- With clearance
- **Milling cutter designed for TVC use**
- Reinforced core
- With chip breaker
- **Cutting material: superfine grain solid carbide**
- **With internal coolant supply**

Trochoidal



material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
254235 2,5xD....	● 275	● 240	● 220	● 60	● 90		● 220	● 150	● 75	○ 30	○ 60							
254236 3,5xD....	● 200	● 180	● 150	● 55	● 80		● 180	● 85	● 70	○ 30	○ 55							
Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									

2.5 x D



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	R mm	art.no.	€
4	10	15	57	3.7	6	0.1	**254235** 0040	58,40
6	15	20	57	5.5	6	0.1	254235 0060	58,40
8	20	25	64	7.4	8	0.2	254235 0080	81,70
10	25	30	72	9.2	10	0.2	254235 0100	119,40
12	30	40	83	11	12	0.3	254235 0120	159,70
16	40	50	92	15	16	0.3	254235 0160	262,40
20	50	60	104	19	20	0.3	254235 0200	398,30

2153

3.5 x D



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	R mm	art.no.	€
6	26	32	75	5.5	6	0.1	**254236** 0060	105,30
8	32	38	75	7.4	8	0.2	254236 0080	141,80
10	42	52	100	9.2	10	0.2	254236 0100	180,40
12	48	60	100	11	12	0.3	254236 0120	223,50
16	60	68	125	15	16	0.3	254236 0160	371,20
20	70	78	125	19	20	0.3	254236 0200	522,–

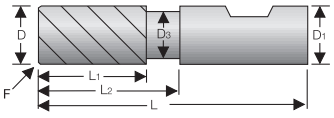
2153

SARA® Trochoidal end milling cutter (titanium)

VHM | Typ N | 37°-40° | e8 | h5 | DIN 6535 HB | Z 4 | Z 5 | Z 6 | Z 7 | TiAlSiN | TVC | Vc/fz | 768

- With clearance
- **Milling cutter designed for TVC use**
- Reinforced core
- With chip breaker
- **Cutting material: superfine grain solid carbide**
- Irregular pitch angle to minimise vibration
- **ae max. 12 %**

Trochoidal



material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
									● 70	● 50	● 35							
Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	F mm	Z	Feed fz titanium alloys mm/tooth	art.no.	€
3	10	15	57	5.8	6	0.1	4	0.025	**254153** 0030	55,50
4	13	15	57	5.8	6	0.1	4	0.035	254153 0040	55,50
5	16	20	57	5.8	6	0.1	4	0.040	254153 0050	55,50
6	19	25	57	5.8	6	0.1	5	0.050	254153 0060	55,50
8	25	30	63	7.8	8	0.15	5	0.065	254153 0080	88,50
10	32	35	72	9.8	10	0.2	5	0.080	254153 0100	116,–
12	38	45	83	11.8	12	0.2	6	0.095	254153 0120	158,–
16	42	55	108	15.8	16	0.3	6	0.130	254153 0160	265,–
20	50	70	126	19.8	20	0.4	7	0.160	254153 0200	445,–

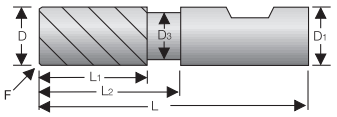
2153

ATORN® Trochoidal end milling cutter (aluminium)

VHM | Typ W | 20° | e8 | h5 | DIN 6535 HB | Z 4 | TVC | Vc/fz | 770

- With clearance
- **Milling cutter designed for TVC use**
- Reinforced core
- **Cutting material: superfine grain solid carbide**
- Polished cutting edges for perfect chip removal
- **ae max. 30 %**

Trochoidal



material	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
● very well suited ○ well suited	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
												● 600	● 400					
Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	F mm	Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
4.0	13.0	14.0	62	3.8	6	0.08	0.06	**254159** 0040	42,20
5.0	16.0	17.5	62	4.8	6	0.10	0.08	254159 0050	42,20
6.0	19.0	21.0	62	5.8	6	0.12	0.1	254159 0060	42,20
8.0	26.0	28.0	68	7.8	8	0.16	0.12	254159 0080	52,–
10.0	32.0	35.0	80	9.8	10	0.20	0.15	254159 0100	89,50
12.0	38.0	42.0	93	11.8	12	0.24	0.17	254159 0120	121,–
16.0	50.0	56.0	108	15.8	16	0.32	0.20	254159 0160	225,–
20.0	62.0	70.0	126	19.8	20	0.40	0.25	254159 0200	330,–

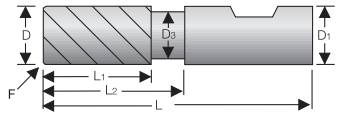
2153

SARA® Trochoidal end milling cutter (hard)

VHM | Typ H | 37°-40° | e8 | h5 | DIN 6535 HB | Z 6 | Z 8+ | TiAlSiN | TVC | Vc/fz | 769

- **For use up to 70 HRc**
- With clearance
- **Milling cutter designed for TVC use**
- Reinforced core
- **Cutting material: superfine grain solid carbide**
- **ae max. 5 %**

Trochoidal



material	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
● very well suited ○ well suited	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
																● 140	● 100	● 80
Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	F mm	Z	Feed fz hardened steel < 60 HRc mm/tooth	art.no.	€
2.5	4	8	57	5.9	6	0.1	6	0.025	**254154** 0025	47,90
3	5	10	57	5.9	6	0.1	6	0.035	254154 0030	47,90
4	11	13	57	5.8	6	0.1	6	0.045	254154 0040	47,90
5	13	16	57	5.8	6	0.1	6	0.055	254154 0050	47,90
6	13	19	57	5.8	6	0.1	6	0.065	254154 0060	47,90
8	20	25	63	7.8	8	0.15	6	0.080	254154 0080	67,50
10	22	32	72	9.8	10	0.15	6	0.095	254154 0100	94,–
12	26	38	83	11.8	12	0.2	6	0.110	254154 0120	129,–
14	26	42	83	13.8	14	0.2	6	0.120	254154 0140	164,–
16	34	44	92	15.8	16	0.2	8	0.125	254154 0160	215,–
18	34	44	92	17.8	18	0.3	8	0.130	254154 0180	265,–
20	41	54	104	19.8	20	0.3	8	0.140	254154 0200	315,–

2153

ATORN®

The ULTRA-N
high-speed milling range for the milling of aluminium



With the new ATORN range. Sartorius offers a complete milling range for machining aluminium.
The ATORN milling program ULTRA-N sets technical benchmarks here:

- extremely soft cut. optimum chip removal and excellent running smoothness
- short processing times thanks to high usage parameters
- excellent surface quality
- no or minimal burr formation
- Precision thanks to low manufacturing tolerances
- coating specially designed for machining aluminium

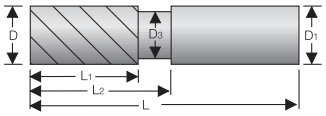
Overview of the range	Z	Ultra-N	stan-dard	short	long	extra long	HA	HB	Ø-area mm	Page
Solid carbide, single cutting edge end milling cutter	1		●				●		Ø 1,5 - 16	483
Solid carbide mini end milling cutters	2		●				●		Ø 0,5 - 2,5	484
Solid carbide slot drills	2		●				●	●	Ø 3 - 20	484
Solid carbide end milling cutters	3			●			●	●	Ø 3 - 20	480
					●		●		Ø 3 - 20	486
Solid carbide end milling cutter with edge protection F	3			●			●	●	Ø 3 - 20	487
					●		●		Ø 3 - 20	488
Solid carbide end milling cutter with internal cooling	3			●			●		Ø 4 - 16	488
Solid carbide end milling cutters with edge protection F	4			●			●	●	Ø 3 - 20	489
					●		●		Ø 4 - 16	489
						●	●		Ø 6 - 16	489
Solid carbide end milling cutters HPC with edge protection F Unequal helix angle 35° - 38°	4			●			●		Ø 3 - 20	490
					●		●		Ø 4 - 20	490
Solid carbide end milling cutter with internal cooling and face chip breaker	4		●				●		Ø 6 - 20	491
Solid carbide roughing cutters	3		●				●	●	Ø 6 - 20	491
Solid carbide roughing cutter with internal cooling	3			●			●		Ø 6 - 20	492
Solid carbide mini-torus cutter	2		●				●		Ø 0,5 - 2,5	493
Solid carbide torus cutters	2			●			●		Ø 3 - 16	494
					●		●		Ø 3 - 16	494
						●	●		Ø 6 - 16	495
Solid carbide torus cutters	3		●				●	●	Ø 5 - 20	495
Solid carbide mini-radius milling cutter	2		●				●		Ø 0,5 - 2,5	497
Solid carbide torus milling cutter with internal cooling and face chip breaker	4		●				●		Ø 10 - 20	496
Solid carbide radius milling cutters	2			●			●		Ø 3 - 16	498
					●		●		Ø 3 - 16	498
						●	●		Ø 3 - 12	498

material	● very well suited ○ nagyon alkalmas	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
													●	●	●	●			

ATORN® Ultra-N single-blade end milling cutter

VHM | Typ W | 30° | h9 | h5 | DIN 6535 HA | Z 1 | Vc/fz | 745

- **with clearance**
- **1 cutting edge, sharp**
- **with defined cutting edge rounding**
- for non-ferrous materials
- Superfine grain SC (uncoated) with **mirror finish/polished version**
- large chip space for unhindered chip removal



material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
249100....												● 350-500	● 150-250	● 150-350	● 200-350			
249700....												● 150-250	● 350-500	● 150-350	● 200-350			
Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		



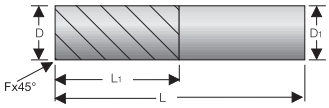
D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	● Feed fz aluminium < 8 % Si mm/tooth	● Feed fz aluminium < 8 % Si mm/tooth	Mirror finish art.no.	€	polished art.no.	€
1.5	6	50	22.0	1.45	3	0.0175	0.025	**249100** 0015	25,50	**249700** 0015	26,80
2.0	8	50	22.0	1.8	3	0.02555	0.0365	249100 0020	25,90	249700 0020	28,60
3.0	12	50	22.0	2.8	3	0.04025	0.0575	249100 0030	26,10	249700 0030	29,30
4.0	15	57	29.0	3.8	4	0.0455	0.065	249100 0040	27,50	249700 0040	32,60
5.0	17	60	32.0	4.8	5	0.056	0.08	249100 0050	35,60	249700 0050	39,20
6.0	20	64	28.0	5.8	6	0.06825	0.0975	249100 0060	36,60	249700 0060	40,90
8.0	24	64	28.0	7.8	8	0.08225	0.1175	249100 0080	49,60	249700 0080	58,70
10.0	25	73	33.0	9.7	10	0.091	0.13	249100 0100	77,50	249700 0100	89,60
12.0	32	84	39.0	11.7	12	0.105	0.15	249100 0120	105,–	249700 0120	113,–
16.0	38	93	45.0	15.7	16	0.1155	0.165	249100 0160	150,–	249700 0160	165,–
								2149		2149	

VAN HOORN CARBIDE Single-blade end milling cutter

VHM | 30° | e8 | h5 | DIN 6535 HA | Z 1 | HSC | Vc/fz | 745

- **Especially for machining non-ferrous materials**

Also very good for synthetic materials



material

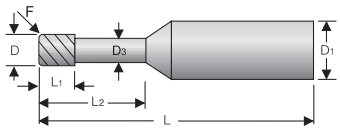
● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
												● 100-400	● 100-250	○ 100-200				
Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		



D mm	D1 mm	L1 mm	L mm	F x 45° mm	● Feed fz aluminium < 8 % Si mm/tooth	● Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
0.6	3	3	38	-	0.00875	0.0125	**250001** 0006	35,35
0.8	3	4	38	-	0.0112	0.016	250001 0008	35,35
1.0	3	5	38	-	0.01225	0.0175	250001 0010	34,–
1.2	3	5	38	-	0.01435	0.0205	250001 0012	34,–
1.5	3	5	38	-	0.0175	0.025	250001 0015	34,–
1.6	3	6	38	-	0.01995	0.0285	250001 0016	32,40
1.8	3	7	38	-	0.02205	0.0315	250001 0018	32,40
2.0	3	8	38	-	0.02765	0.0395	250001 0020	27,90
2.5	3	9	38	-	0.0329	0.047	250001 0025	27,90
3.0	3	12	38	0.10	0.04025	0.0575	250001 0030	27,30
4.0	4	12	50	0.10	0.0455	0.065	250001 0040	29,45
5.0	5	15	50	0.15	0.056	0.08	250001 0050	35,70
6.0	6	16	50	0.20	0.06825	0.0975	250001 0060	35,20
7.0	7	20	60	0.20	0.07525	0.1075	250001 0070	49,70
8.0	8	20	60	0.25	0.08575	0.1225	250001 0080	47,90
10.0	10	22	70	0.30	0.105	0.15	250001 0100	69,50
12.0	12	25	75	0.35	0.1295	0.185	250001 0120	86,50
							2112	

ATORN® Ultra-N mini end milling cutter

VHM | Typ W | 30° | e8 | h5 | DIN 6535 HA | Z 2 | ZrCN | 3D PRINT | Vc/fz | 746



- **With clearance**
- **2 cutting edges, with edge chamfer F**
- **With defined cutting edge rounding from Ø 1.5 mm**
- Long-necked version for non-ferrous materials
- Cutting edge tolerance 0/-0.015 mm
- Cutting material: superfine grain solid carbide, **ZrCN Ultra-N**-coated

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
													●	●	●				
	Cutting speed Vc m/min.												400-550	180-320	180-420				
	Please adjust these guidelines according to clamping operation and machine set-up.																		



D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	F mm	● Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
0.5	0.9	55	4.0	0.48	4	0.05	0.012	**249001** 0504	48,60
0.5	0.9	65	6.0	0.48	4	0.05	0.012	249001 0506	58,–
0.5	0.9	65	10.0	0.48	4	0.05	0.012	249001 0510	58,–
1.0	1.5	55	5.0	0.95	4	0.10	0.021	249001 1005	48,60
1.0	1.5	65	10.0	0.95	4	0.10	0.021	249001 1010	56,–
1.0	1.5	65	15.0	0.95	4	0.10	0.021	249001 1015	58,–
1.5	1.8	55	8.0	1.44	4	0.10	0.033	249001 1508	48,60
1.5	1.8	65	15.0	1.44	4	0.10	0.033	249001 1515	57,–
1.5	1.8	65	20.0	1.44	4	0.10	0.033	249001 1520	58,–
2.0	2.0	55	10.0	1.92	4	0.10	0.043	249001 2010	48,60
2.0	2.0	65	20.0	1.92	4	0.10	0.043	249001 2020	57,–
2.5	2.5	55	12.0	2.40	4	0.10	0.050	249001 2512	50,50
2.5	2.5	65	20.0	2.40	4	0.10	0.050	249001 2520	58,–

2149

ATORN® Ultra-N slot drill

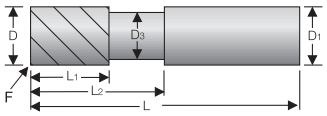
VHM | Typ W | 45° | h9 | h5 | DIN 6535 HA | DIN 6535 HB | Z 2 | ZrCN | Vc/fz | 747

- **with clearance**
- **2 cutting edges with F-edge chamfer**
- **with defined cutting edge rounding**
- for non-ferrous materials
- Superfine grain SC (uncoated) with **mirror finish/polished version**
- Cutting material: micro-grain SC **ZrCN Ultra-N** coated

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
													●	●	●				
	Cutting speed Vc m/min.												350-500	150-250	150-350				
	Please adjust these guidelines according to clamping operation and machine set-up.																		

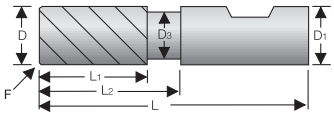
Standard





D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	F mm	● Feed fz aluminium < 8 % Si mm/tooth	ZrCN DIN 6535-HA art.no.	€
3.0	8	57	18	2.9	6	0.1	0.045	**249201** 0030	32,80
4.0	11	57	18	3.9	6	0.1	0.053	249201 0040	32,80
5.0	13	57	20	4.9	6	0.1	0.060	249201 0050	32,80
6.0	13	57	20	5.8	6	0.1	0.068	249201 0060	34,60
8.0	19	63	26	7.8	8	0.1	0.075	249201 0080	41,90
10.0	22	72	29	9.7	10	0.2	0.085	249201 0100	52,–
12.0	26	83	36	11.7	12	0.2	0.095	249201 0120	81,50
16.0	32	92	42	15.7	16	0.2	0.110	249201 0160	118,–

2149



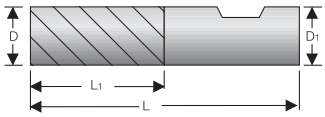


Standard with driving plane

D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	F mm	Feed fz aluminium < 8 % Si mm/tooth	Mirror finish DIN 6535-HB art.no.	€	polished DIN 6535-HB art.no.	€	ZrCN DIN 6535-HB art.no.	€
3.0	8	57	18	2.9	6	0.1	0.045	**249200** 0030	28,80	**249207** 0030	30,80	**249202** 0030	33,60
4.0	11	57	18	3.9	6	0.1	0.053	249200 0040	28,80	249207 0040	30,80	249202 0040	33,60
5.0	13	57	20	4.9	6	0.1	0.060	249200 0050	28,80	249207 0050	30,80	249202 0050	33,80
6.0	13	57	20	5.8	6	0.1	0.068	249200 0060	30,40	249207 0060	33,–	249202 0060	35,20
8.0	19	63	26	7.8	8	0.1	0.075	249200 0080	38,70	249207 0080	41,60	249202 0080	42,70
10.0	22	72	29	9.7	10	0.2	0.085	249200 0100	48,20	249207 0100	52,20	249202 0100	53,50
12.0	26	83	36	11.7	12	0.2	0.095	249200 0120	69,50	249207 0120	74,10	249202 0120	81,50
16.0	32	92	42	15.7	16	0.2	0.110	249200 0160	103,–	249207 0160	113,–	249202 0160	122,–
20.0	38	104	52	19.7	20	0.2	0.125	249200 0200	167,–	249207 0200	181,50		
								2149		2149		2149	

VAN HOORN CARBIDE VHLAW end milling cutter

VHM | 25° | h9 | h5 | DIN 6535 HB | Z 3 | HSC | Vc/fz | 747



- **Roughing cutter** for a broad range of applications (non-ferrous metals and plastics)
- Highly positive rake and clearance angles as well as sharp cutting edges guarantee
- **very low cutting forces** and **minimal cutting pressure**
  Large chip flutes for reliable chip removal at **up to 50 % higher feed rates**, resulting in shorter machining times

material

● very well suited
○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
											●	●	●				
											400-500	150-280	250-300				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

VHLAW finishing version, 25° helix angle



D mm	D1 mm	L1 mm	L mm	Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
6.0	6	13	64	0.050	**255169** 0060	39,60
8.0	8	19	64	0.060	255169 0080	53,10
10.0	10	22	70	0.120	255169 0100	67,50
12.0	12	26	78	0.120	255169 0120	82,50
16.0	16	32	89	0.180	255169 0160	149,–
20.0	20	38	102	0.200	255169 0200	265,–
25.0	25	45	120	0.220	255169 0250	411,–
					2112	



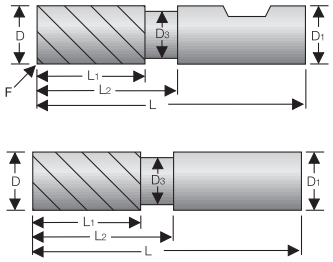
ATORN® Ultra-N end milling cutter

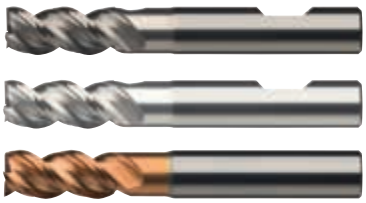
VHM | Typ W | 45° | h9 | h5 | DIN 6535 HA | DIN 6535 HB | Z 3 | ZrCN | Vc/fz | 748

- **with clearance**
- **3 cutting edges, sharp-edged**
- **with defined cutting edge rounding**
- for non-ferrous materials
- Cutting material: micro-grain (uncoated) SC with **mirror finish/polished design**
- Cutting material: micro-grain SC **coated with** ZrCN Ultra-N

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
													●	●	●				
	Cutting speed Vc m/min.												350-500	150-250	150-350				

Please adjust these guidelines according to clamping operation and machine set-up.





Short

D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	Feed fz aluminium < 8 % Si mm/tooth	Feed fz aluminium < 8 % Si mm/tooth	ZrCN DIN 6535-HA art.no.	€	polished DIN 6535-HB art.no.	€	Mirror finish DIN 6535-HB art.no.	€
3.0	12	57	16	2.8	6	0.018	0.025	**249304** 0030	33,60	**249309** 0030	31,90	**249305** 0030	29,60
4.0	12	57	18	3.8	6	0.021	0.030	249304 0040	33,60	249309 0040	31,90	249305 0040	29,60
5.0	15	57	18	4.7	6	0.026	0.038	249304 0050	33,60	249309 0050	31,90	249305 0050	29,60
6.0	16	57	21	5.6	6	0.032	0.045	249304 0060	39,20	249309 0060	34,90	249305 0060	32,30
8.0	22	64	28	7.6	8	0.042	0.060	249304 0080	47,40	249309 0080	43,90	249305 0080	40,50
10.0	25	73	33	9.6	10	0.053	0.075	249304 0100	57,–	249309 0100	55,10	249305 0100	50,50
12.0	28	84	39	11.4	12	0.060	0.085	249304 0120	81,50	249309 0120	78,50	249305 0120	70,50
16.0	35	93	45	15.4	16	0.068	0.098	249304 0160	118,–	249309 0160	113,–	249305 0160	103,–
20.0	40	104	54	19.4	20	0.079	0.113	249304 0200	187,–	249309 0200	190,50	249305 0200	173,–
								2149		2149		2149	

4 pcs sets

Contents	ZrCN DIN 6535-HA art.no.	€	Mirror finish DIN 6535-HB art.no.	€
Ø 6, 8, 10, 12 mm	**249304** 0001	225,–	**249305** 0001	193,–
	2149		2149	



Long



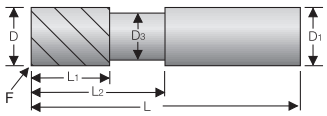
D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	Feed fz aluminium < 8 % Si mm/tooth	Feed fz aluminium < 8 % Si mm/tooth	ZrCN DIN 6535-HA art.no.	€
3.0	15	64	21	2.8	6	0.020	0.025	**249352** 0030	39,90
4.0	19	64	27	3.8	6	0.024	0.030	249352 0040	39,90
5.0	20	64	28	4.7	6	0.030	0.038	249352 0050	39,90
6.0	20	64	28	5.6	6	0.036	0.045	249352 0060	45,80
8.0	38	80	44	7.6	8	0.048	0.060	249352 0080	59,–
10.0	45	95	55	9.6	10	0.060	0.075	249352 0100	78,50
12.0	53	100	55	11.4	12	0.068	0.085	249352 0120	102,–
16.0	63	123	75	15.4	16	0.078	0.098	249352 0160	169,–
20.0	65	125	75	19.4	20	0.090	0.113	249352 0200	235,–
								2149	

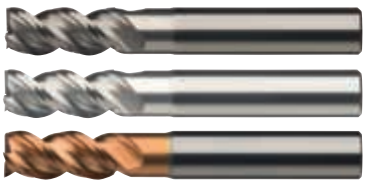
ATORN® Ultra-N end milling cutter

VHM | Typ W | 45° | h9 | h5 | DIN 6535 HA | DIN 6535 HB | Z 3 | ZrCN | Vc/fz | 748

- **with clearance**
- **3 cutting edges with F-edge protection**
- **with defined cutting edge rounding**
- for non-ferrous materials
- Cutting material: micro-grain (uncoated) SC with **mirror finish/polished design**
- Cutting material: micro-grain SC **coated with** ZrCN Ultra-N

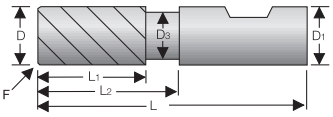
material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
													●	●	●				
													350-500	150-250	150-350				
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		





Short

D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	F mm	Feed fz aluminium < 8 % Si mm/tooth	Feed fz aluminium < 8 % Si mm/tooth	Mirror finish DIN 6535-HA art.no.	€	polished DIN 6535-HA art.no.	€	ZrCN DIN 6535-HA art.no.	€
3.0	12	57	16	2.8	6	0.1	0.018	0.025	**249300** 0030	29,60	**249307** 0030	31,90	**249302** 0030	33,60
4.0	12	57	18	3.8	6	0.1	0.021	0.030	249300 0040	29,60	249307 0040	31,90	249302 0040	33,60
5.0	15	57	18	4.7	6	0.1	0.026	0.038	249300 0050	29,60	249307 0050	31,90	249302 0050	33,60
6.0	16	57	21	5.6	6	0.1	0.032	0.045	249300 0060	32,30	249307 0060	34,90	249302 0060	39,20
8.0	22	64	28	7.6	8	0.1	0.042	0.060	249300 0080	40,50	249307 0080	43,90	249302 0080	47,40
10.0	25	73	33	9.6	10	0.2	0.053	0.075	249300 0100	50,50	249307 0100	55,10	249302 0100	57,–
12.0	28	84	39	11.4	12	0.2	0.060	0.085	249300 0120	70,50	249307 0120	78,50	249302 0120	81,50
16.0	35	93	45	15.4	16	0.2	0.068	0.098	249300 0160	103,–	249307 0160	113,–	249302 0160	118,–
20.0	40	104	54	19.4	20	0.2	0.079	0.113	249300 0200	173,–	249307 0200	190,50	249302 0200	187,–
									2149		2149		2149	

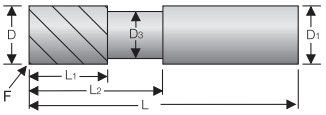


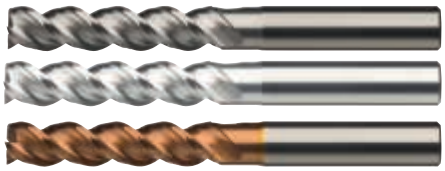


Short with driving plane

D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	F mm	Feed fz aluminium < 8 % Si mm/tooth	Feed fz aluminium < 8 % Si mm/tooth	Mirror finish DIN 6535-HB art.no.	€	polished DIN 6535-HB art.no.	€	ZrCN DIN 6535-HB art.no.	€
3.0	12	57	16	2.8	6	0.1	0.018	0.025	**249301** 0030	29,60	**249308** 0030	31,90	**249303** 0030	33,60
4.0	12	57	18	3.8	6	0.1	0.021	0.030	249301 0040	29,60	249308 0040	31,90	249303 0040	33,60
5.0	15	57	18	4.7	6	0.1	0.026	0.038	249301 0050	29,60	249308 0050	31,90	249303 0050	33,60
6.0	16	57	21	5.6	6	0.1	0.032	0.045	249301 0060	32,30	249308 0060	34,90	249303 0060	39,20
8.0	22	64	28	7.6	8	0.1	0.042	0.060	249301 0080	40,50	249308 0080	43,90	249303 0080	47,40
10.0	25	73	33	9.6	10	0.2	0.053	0.075	249301 0100	50,50	249308 0100	55,10	249303 0100	57,–
12.0	28	84	39	11.4	12	0.2	0.060	0.085	249301 0120	70,50	249308 0120	78,50	249303 0120	81,50
16.0	35	93	45	15.4	16	0.2	0.068	0.098	249301 0160	103,–	249308 0160	113,–	249303 0160	118,–
20.0	40	104	54	19.4	20	0.2	0.079	0.113	249301 0200	173,–	249308 0200	190,50	249303 0200	187,–
									2149		2149		2149	

Continued on next page >>>





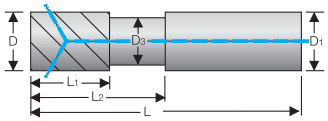
Long

D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	F mm	Feed fz aluminium < 8 % Si mm/tooth	Feed fz aluminium < 8 % Si mm/tooth	Mirror finish DIN 6535-HA art.no.	€	polished DIN 6535-HA art.no.	€	ZrCN DIN 6535-HA art.no.	€
3.0	15	64	21	2.8	6	0.1	0.020	0.025	**249351** 0030	34,–	**249355** 0030	36,30	**249350** 0030	39,90
4.0	19	64	27	3.8	6	0.1	0.024	0.030	249351 0040	34,–	249355 0040	36,30	249350 0040	39,90
5.0	20	64	28	4.7	6	0.1	0.030	0.038	249351 0050	34,–	249355 0050	36,30	249350 0050	40,50
6.0	20	64	28	5.6	6	0.1	0.036	0.045	249351 0060	40,50	249355 0060	43,90	249350 0060	45,80
8.0	38	80	44	7.6	8	0.1	0.048	0.060	249351 0080	48,40	249355 0080	51,80	249350 0080	58,–
10.0	45	95	55	9.6	10	0.2	0.060	0.075	249351 0100	68,–	249355 0100	74,–	249350 0100	78,50
12.0	53	100	55	11.4	12	0.2	0.068	0.085	249351 0120	95,–	249355 0120	102,–	249350 0120	102,–
16.0	63	123	75	15.4	16	0.2	0.078	0.098	249351 0160	155,–	249355 0160	170,–	249350 0160	169,–
20.0	65	125	75	19.4	20	0.2	0.090	0.113	249351 0200	225,–	249355 0200	245,–	249350 0200	235,–
									2149		2149		2149	

ATORN® End milling cutter Ultra-N

VHM | NH | 40° | e8 | h6 | DIN 6535 HA | Z 3 | Vc/fz | 749

- **with internal coolant supply**
- Ø 4mm and Ø 5mm with central coolant outlet
- unequal pitch for low-vibration milling
- with clearance
- high material removal rate
- **Cutting material: fine-grain SC**



material	● very well suited ○ well suited	steel < 700 N/mm²	steel < 1000 N/mm²	steel < 1400 N/mm²	stainless steel ferrit./martens.	stainless steel austenitic	stainless steel duplex	cast iron GG/GTS	cast iron GGG	titanium alloys	superalloys Fe/NiCo-based < 30 HRc	superalloys Fe/NiCo-based ≥ 30 HRc	aluminium < 8 % Si	aluminium ≥ 8 % Si	copper Cu-alloy	graphite GRP/CFP/thermo.	hardened steel < 55 HRc	hardened steel < 60 HRc	hardened steel ≥ 60 HRc
													● 550	● 355	● 185				
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	Feed fz aluminium < 8 % Si mm/tooth	Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
4.0	12	20	50	3.7	6.0	0.017	0.031	**249601** 0400	35,–
5.0	15	20	50	4.6	6.0	0.024	0.043	249601 0500	35,–
6.0	16	20	50	5.5	6.0	0.034	0.058	249601 0600	55,–
8.0	20	30	64	7.4	8.0	0.050	0.086	249601 0800	62,–
10.0	22	32	70	9.2	10.0	0.068	0.117	249601 1000	81,–
12.0	25	37	75	11.0	12.0	0.085	0.154	249601 1200	128,–
16.0	32	46	90	15.0	16.0	0.134	0.212	249601 1600	184,–
								2149	



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ATORN® Ultra-N end milling cutter

VHM | Typ W | 45° | h9 | h5 | DIN 6535 HA | DIN 6535 HB | Z 4 | ZrCN | 3D PRINT | Vc/fz | 748

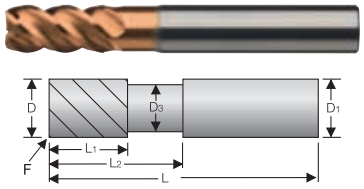
- **With clearance**
- **4 cutting edges, with edge protection F**
- **With defined cutting edge rounding**
- For non-ferrous materials
- Cutting material: superfine grain solid carbide, **ZrCN Ultra-N**-coated

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
												●	●	●				
												350-500	150-250	150-350				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

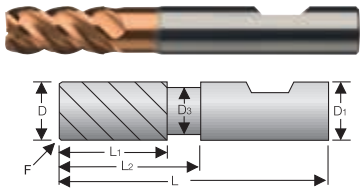
Short



D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	F mm	Feed fz aluminium < 8 % Si mm/tooth	Feed fz aluminium < 8 % Si mm/tooth	DIN 6535-HA art.no.	€
3.0	6	57	10	2.8	6	0.1	0.021	0.030	**249400** 0030	40,50
4.0	8	57	14	3.8	6	0.1	0.025	0.035	249400 0040	40,90
5.0	10	57	16	4.7	6	0.1	0.030	0.043	249400 0050	40,90
6.0	12	57	19	5.6	6	0.2	0.033	0.048	249400 0060	43,60
8.0	16	63	25	7.6	8	0.2	0.042	0.060	249400 0080	53,50
10.0	20	72	30	9.6	10	0.2	0.053	0.075	249400 0100	71,50
12.0	24	83	36	11.4	12	0.2	0.060	0.085	249400 0120	89,50
16.0	32	92	42	15.4	16	0.2	0.077	0.110	249400 0160	161,–
20.0	40	104	52	19.4	20	0.2	0.126	0.180	249400 0200	210,–

2149

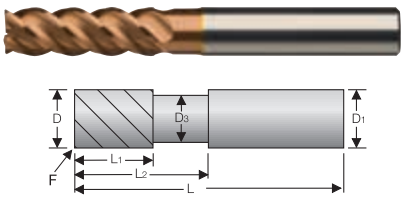
Short with driving plane



D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	F mm	Feed fz aluminium < 8 % Si mm/tooth	Feed fz aluminium < 8 % Si mm/tooth	DIN 6535-HB art.no.	€
3.0	6	57	10	2.8	6	0.1	0.021	0.030	**249401** 0030	40,50
4.0	8	57	14	3.8	6	0.1	0.025	0.035	249401 0040	40,50
5.0	10	57	16	4.7	6	0.1	0.030	0.043	249401 0050	40,50
6.0	12	57	19	5.6	6	0.2	0.033	0.048	249401 0060	43,60
8.0	16	63	25	7.6	8	0.2	0.042	0.060	249401 0080	52,–
10.0	20	72	30	9.6	10	0.2	0.053	0.075	249401 0100	71,50
12.0	24	83	36	11.4	12	0.2	0.060	0.085	249401 0120	88,–
16.0	32	92	42	15.4	16	0.2	0.077	0.110	249401 0160	163,–
20.0	40	104	52	19.4	20	0.2	0.126	0.180	249401 0200	220,–

2149

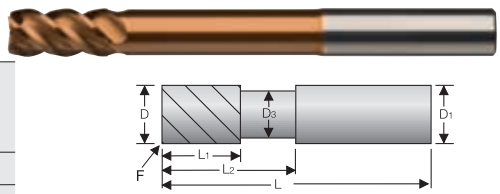
Long



D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	F mm	Feed fz aluminium < 8 % Si mm/tooth	Feed fz aluminium < 8 % Si mm/tooth	DIN 6535-HA art.no.	€
4.0	16	62	22	3.8	6	0.1	0.032	0.035	**249450** 0040	45,80
5.0	17	62	24	4.7	6	0.1	0.038	0.043	249450 0050	46,70
6.0	18	62	24	5.6	6	0.2	0.043	0.048	249450 0060	52,50
8.0	24	72	30	7.6	8	0.2	0.054	0.060	249450 0080	68,–
10.0	30	80	38	9.6	10	0.2	0.068	0.075	249450 0100	88,–
12.0	36	93	46	11.4	12	0.2	0.077	0.085	249450 0120	114,–
16.0	48	108	58	15.4	16	0.2	0.099	0.110	249450 0160	210,–

2149

Extra-long

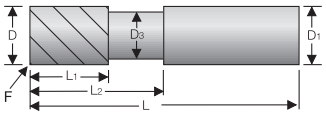


D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	F mm	Feed fz aluminium < 8 % Si mm/tooth	Feed fz aluminium < 8 % Si mm/tooth	DIN 6535-HA art.no.	€
6.0	12	80	42	5.6	6	0.2	0.038	0.048	**249460** 0060	62,–
8.0	16	100	58	7.6	8	0.2	0.048	0.060	249460 0080	86,50
10.0	20	100	62	9.6	10	0.2	0.060	0.075	249460 0100	109,–
12.0	24	120	75	11.4	12	0.2	0.068	0.085	249460 0120	155,–
16.0	32	150	100	15.4	16	0.2	0.088	0.110	249460 0160	245,–

2149

ATORN® Ultra-N end milling cutter

VHM | Typ W | 35° -38° | h9 | h5 | DIN 6535 HA | Z 4 | ZrCN | HPC | Vc/fz | 752



- **With clearance**
- **4 cutting edges, with edge protection F**
- **With defined cutting edge rounding**
- For non-ferrous materials
- Irregular helix angle for vibration-free milling
- Cutting material: superfine grain solid carbide, **ZrCN Ultra-N**-coated

material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
											●	●	●				
											350-500	150-250	150-350				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

Short



D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	F mm	Feed fz aluminium < 8 % Si mm/tooth	Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
3.0	6	57	10	2.8	6	0.1	0.019	0.028	**249480** 0030	43,20
4.0	8	57	14	3.8	6	0.1	0.023	0.033	249480 0040	43,20
5.0	10	57	16	4.7	6	0.1	0.028	0.040	249480 0050	43,20
6.0	12	57	19	5.6	6	0.2	0.033	0.048	249480 0060	48,20
8.0	16	63	25	7.6	8	0.2	0.042	0.060	249480 0080	61,–
10.0	20	72	30	9.6	10	0.2	0.242	0.345	249480 0100	77,50
12.0	24	83	36	11.4	12	0.2	0.060	0.085	249480 0120	98,–
16.0	32	92	42	15.4	16	0.2	0.077	0.110	249480 0160	164,–
20.0	40	104	52	19.4	20	0.2	0.126	0.180	249480 0200	235,–

2149

Long



D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	F mm	Feed fz aluminium < 8 % Si mm/tooth	Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
4.0	16	62	22	3.8	6	0.1	0.029	0.033	**249490** 0040	52,–
5.0	17	62	24	4.7	6	0.1	0.036	0.040	249490 0050	52,–
6.0	18	62	24	5.6	6	0.2	0.043	0.048	249490 0060	58,–
8.0	24	68	30	7.6	8	0.2	0.054	0.060	249490 0080	71,50
10.0	30	80	38	9.6	10	0.2	0.311	0.345	249490 0100	96,–
12.0	36	93	46	11.4	12	0.2	0.077	0.085	249490 0120	126,–
16.0	48	108	58	15.4	16	0.2	0.099	0.110	249490 0160	215,–
20.0	60	126	74	19.4	20	0.2	0.162	0.180	249490 0200	300,–

2149

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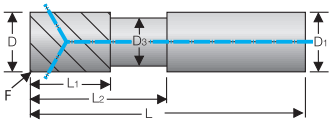
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ATORN® End milling cutter Ultra-N

VHM | 38° -41° | e8 | h6 | DIN 6535 HA | Z 4 | HPC | Vc/fz | 750

- **With internal coolant supply**
- Irregular helix angle and unequal pitch for low-vibration milling
- With clearance
- With edge chamfer F
- **Cutting material: fine grain solid carbide**



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
													● 750	● 615	● 200				
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

Internal cooling





Face-cutter

D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	F mm	Feed fz aluminium < 8 % Si mm/tooth	Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
6.0	13	20	57	5.5	6.0	0.1	0.050	0.069	**249605** 0600	70,–
8.0	20	26	64	7.4	8.0	0.1	0.067	0.092	249605 0800	89,–
10.0	22	30	72	9.2	10.0	0.2	0.084	0.116	249605 1000	116,–
12.0	26	36	83	11.0	12.0	0.2	0.101	0.139	249605 1200	140,–
14.0	26	38	83	13.0	14.0	0.2	0.118	0.162	249605 1400	169,–
16.0	32	42	92	15.0	16.0	0.2	0.134	0.185	249605 1600	256,–
18.0	32	42	92	17.0	18.0	0.3	0.151	0.208	249605 1800	295,–
20.0	38	52	104	19.0	20.0	0.3	0.168	0.231	249605 2000	366,–

2149

Internal cooling and chip breaker





Face-cutter

D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	F mm	Feed fz aluminium < 8 % Si mm/tooth	Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
6.0	13	20	57	5.5	6.0	0.1	0.053	0.073	**249607** 0600	80,–
8.0	20	26	64	7.4	8.0	0.1	0.071	0.097	249607 0800	102,–
10.0	22	30	72	9.2	10.0	0.2	0.088	0.121	249607 1000	132,–
12.0	26	36	83	11.0	12.0	0.2	0.106	0.146	249607 1200	160,–
14.0	26	38	83	13.0	14.0	0.2	0.123	0.170	249607 1400	210,–
16.0	32	42	92	15.0	16.0	0.2	0.141	0.194	249607 1600	292,–
18.0	32	42	92	17.0	18.0	0.3	0.159	0.218	249607 1800	325,–
20.0	38	52	104	19.0	20.0	0.3	0.176	0.243	249607 2000	418,–

2149



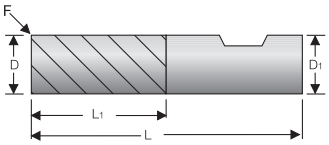
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ATORN®
High quality for great performance

VAN HOORN CARBIDE Roughing cutter

VHM | 40° | h9 | h6 | DIN 6535 HB | Z 3 | HSC | Vc/fz | 747

- **Very low cutting forces** and **minimal cutting pressure**
- Large chip flutes for reliable chip removal at **up to 50 % higher feed rates**



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
													●	●	●				
													400-500	150-280	250-300				
	Cutting speed Vc m/min.							Please adjust these guidelines according to clamping operation and machine set-up.											



D mm	D1 mm	F mm	L1 mm	L mm	Feed fz aluminium < 8 % Si mm/tooth	Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
6.0	6	0.25	16	64	0.031	0.050	**255168** 0060	58,30
8.0	8	0.50	20	64	0.036	0.060	255168 0080	73,80
10.0	10	0.50	22	70	0.040	0.100	255168 0100	84,20
12.0	12	0.50	25	78	0.048	0.120	255168 0120	99,70
16.0	16	1.00	35	89	0.072	0.180	255168 0160	155,50
20.0	20	1.00	40	102	0.081	0.200	255168 0200	278,–
25.0	25	1.00	50	120	0.090	0.220	255168 0250	419,–

2112

ATORN® Ultra-N roughing cutter

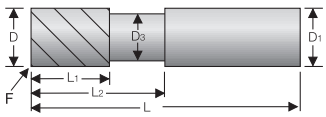
VHM | WR | 40° | h9 | h5 | DIN 6535 HA | DIN 6535 HB | Z 3 | ZrCN | Vc/fz | 753

- **With clearance**
- **3 cutting edges, with edge protection F**
- **With defined cutting edge rounding**
- For non-ferrous materials
- Cutting material: superfine grain solid carbide, **ZrCN Ultra-N**-coated
- **249372.... with internal cooling**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
													●	●	●				
													350-500	150-250	150-350				
	Cutting speed Vc m/min.							Please adjust these guidelines according to clamping operation and machine set-up.											

Standard



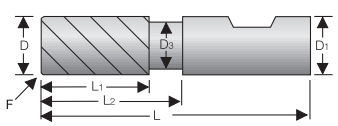


D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	F mm	Feed fz aluminium < 8 % Si mm/tooth	Feed fz aluminium < 8 % Si mm/tooth	DIN 6535-HA art.no.	€	DIN 6535-HA with internal cooling art.no.	€
6.0	13	57	18	5.6	6	0.4	0.039	0.055	**249370** 0060	43,40	**249372** 0060	66,–
8.0	21	63	25	7.6	8	0.4	0.049	0.070	249370 0080	56,–	249372 0080	90,50
10.0	22	72	30	9.6	10	0.4	0.060	0.085	249370 0100	64,–	249372 0100	106,–
12.0	26	83	36	11.4	12	0.4	0.067	0.095	249370 0120	81,50	249372 0120	150,–
16.0	36	92	42	15.4	16	0.4	0.084	0.120	249370 0160	136,–	249372 0160	250,–
20.0	41	104	52	19.4	20	0.4	0.140	0.200	249370 0200	205,–	249372 0200	395,–

2149 2149

Standard with driving plane





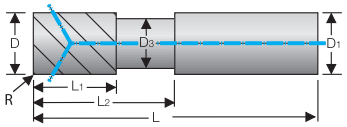
D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	F mm	Feed fz aluminium < 8 % Si mm/tooth	Feed fz aluminium < 8 % Si mm/tooth	DIN 6535-HB art.no.	€
6.0	13	57	18	5.6	6	0.4	0.039	0.055	**249371** 0060	43,40
8.0	21	63	25	7.6	8	0.4	0.049	0.070	249371 0080	56,–
10.0	22	72	30	9.6	10	0.4	0.060	0.085	249371 0100	64,–
12.0	26	83	36	11.4	12	0.4	0.067	0.095	249371 0120	81,50
16.0	36	92	42	15.4	16	0.4	0.084	0.120	249371 0160	136,–
20.0	41	104	52	19.4	20	0.4	0.140	0.200	249371 0200	205,–

2149

ATORN® Roughing cutter Ultra-N

VHM | NF | 40° | e8 | h6 | DIN 6535 HA | Z 3 | Vc/fz | 749

- **With internal coolant supply**
- Unequal pitch for vibration-free milling
- With clearance
- High material removal rate
- **Cutting material: fine grain solid carbide**



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
													● 575	● 375	● 195				
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		



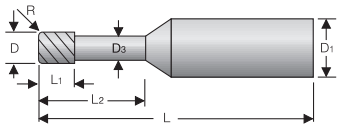
D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	R mm	● Feed fz aluminium < 8 % Si mm/tooth	● Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
6.0	13	24	60	5.5	6.0	0.1	0.036	0.061	**249603** 0600	72,–
8.0	20	28	64	7.4	8.0	0.1	0.052	0.090	249603 0800	76,–
10.0	22	35	75	9.2	10.0	0.1	0.071	0.123	249603 1000	102,–
12.0	26	40	75	11.0	12.0	0.12	0.089	0.162	249603 1200	156,–
16.0	32	40	90	15.0	16.0	0.16	0.141	0.223	249603 1600	226,–
20.0	40	50	100	19.0	20.0	0.2	0.169	0.267	249603 2000	312,–

2149

ATORN® Ultra-N mini torus cutter

VHM | Typ W | 30° | e8 | h5 | DIN 6535 HA | Z 2 | ZrCN | 3D PRINT | Vc/fz | 746

- **With clearance**
- **With defined cutting edge rounding from Ø 1.5 mm**
- Long-necked version for non-ferrous materials
- Radius tolerance +/- 0.01 mm
- Cutting material: superfine grain solid carbide, **ZrCN Ultra-N**-coated



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
													● 400-550	● 180-320	● 180-420				
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		



D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	R mm	● Feed fz aluminium < 8 % Si mm/tooth	● Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
0.5	0.9	55	4.0	0.48	4	0.05	0.008	0.012	**249002** 0504	50,50
0.5	0.9	65	6.0	0.48	4	0.05	0.008	0.012	249002 0506	58,–
0.5	0.9	65	10.0	0.48	4	0.08	0.008	0.012	249002 0510	58,–
1.0	1.5	55	5.0	0.95	4	0.08	0.014	0.021	249002 1005	49,60
1.0	1.5	65	10.0	0.95	4	0.10	0.014	0.021	249002 1010	57,–
1.0	1.5	65	15.0	0.95	4	0.10	0.014	0.021	249002 1015	58,–
1.5	1.8	55	8.0	1.44	4	0.15	0.023	0.033	249002 1508	49,60

2149

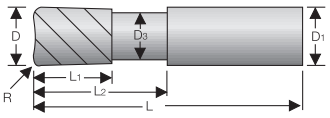
D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	R mm	● Feed fz aluminium < 8 % Si mm/tooth	● Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
1.5	1.8	65	15.0	1.44	4	0.15	0.023	0.033	249002 1515	58,–
1.5	1.8	65	20.0	1.44	4	0.15	0.023	0.033	249002 1520	58,–
2.0	2.0	55	10.0	1.92	4	0.20	0.030	0.043	249002 2010	48,60
2.0	2.0	65	20.0	1.92	4	0.20	0.030	0.043	249002 2020	58,–
2.5	2.5	55	12.0	2.40	4	0.25	0.035	0.050	249002 2512	49,60
2.5	2.5	65	20.0	2.40	4	0.25	0.035	0.050	249002 2520	58,–

2149

ATORN® Ultra-N torus cutter

VHM | Typ W | 30° | e8 | h5 | DIN 6535 HA | Z 2 | ZrCN | Vc/fz | 753

- **With clearance**
- **With defined cutting edge rounding**
- For non-ferrous materials
- Radius tolerance +/- 0.015 mm
- Cutting material: superfine grain solid carbide, **ZrCN Ultra-N**-coated



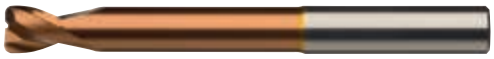
material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
													● 375-550	● 175-275	● 175-375				
	Cutting speed Vc m/min.							Please adjust these guidelines according to clamping operation and machine set-up.											

Short



D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	R mm	● Feed fz aluminium < 8 % Si mm/tooth	● Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
3.0	4	50	14	2.9	3	0.3	0.019	0.028	**249211** 0303	40,70
4.0	5	50	16	3.8	4	0.3	0.023	0.033	249211 0203	47,–
5.0	6	54	18	4.8	5	0.3	0.028	0.040	249211 0503	51,50
6.0	7	57	21	5.7	6	0.3	0.033	0.048	249211 0603	57,–
6.0	7	57	21	5.7	6	1.0	0.033	0.048	249211 0610	56,–
6.0	7	57	21	5.7	6	2.0	0.033	0.048	249211 0620	57,–
8.0	9	63	27	7.7	8	0.3	0.042	0.060	249211 0803	78,50
8.0	9	63	27	7.7	8	1.0	0.042	0.060	249211 0810	75,–
8.0	9	63	27	7.7	8	2.0	0.042	0.060	249211 0820	78,50
10.0	11	72	32	9.6	10	0.3	0.053	0.075	249211 1003	100,–
10.0	11	72	32	9.6	10	1.5	0.053	0.075	249211 1015	100,–
10.0	11	72	32	9.6	10	3.0	0.053	0.075	249211 1030	102,–
12.0	12	83	38	11.6	12	1.5	0.060	0.085	249211 1215	136,–
12.0	12	83	38	11.6	12	4.0	0.060	0.085	249211 1240	139,–
16.0	16	92	44	15.5	16	2.0	0.077	0.110	249211 1620	225,–
16.0	16	92	44	15.5	16	4.0	0.077	0.110	249211 1640	225,–

2149



Long

D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	R mm	● Feed fz aluminium < 8 % Si mm/tooth	● Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
3.0	4	75	32	2.8	3	0.3	0.025	0.028	**249212** 0303	57,–
4.0	5	75	36	3.75	4	0.3	0.029	0.033	249212 0203	64,–
5.0	6	75	40	4.7	5	0.3	0.036	0.040	249212 0503	70,50
6.0	7	80	44	5.6	6	0.3	0.043	0.048	249212 0603	74,–
6.0	7	80	44	5.6	6	1.0	0.043	0.048	249212 0610	76,–
6.0	7	80	44	5.6	6	2.0	0.043	0.048	249212 0620	76,–
8.0	9	100	54	7.6	8	0.3	0.054	0.060	249212 0803	106,–
8.0	9	100	54	7.6	8	1.0	0.054	0.060	249212 0810	105,–
8.0	9	100	54	7.6	8	2.0	0.054	0.060	249212 0820	105,–
10.0	11	100	60	9.5	10	0.3	0.068	0.075	249212 1003	143,–
10.0	11	100	60	9.5	10	1.5	0.068	0.075	249212 1015	143,–
10.0	11	100	60	9.5	10	3.0	0.068	0.075	249212 1030	143,–
12.0	12	120	75	11.5	12	1.5	0.077	0.085	249212 1215	179,–
12.0	12	120	75	11.5	12	4.0	0.077	0.085	249212 1240	183,–
16.0	16	150	92	15.5	16	2.0	0.099	0.110	249212 1620	315,–
16.0	16	150	92	15.5	16	4.0	0.099	0.110	249212 1640	315,–

2149



Extra-long

D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	R mm	Feed fz aluminium < 8 % Si mm/tooth	Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
6.0	7	120	80	5.6	6	0.3	0.038	0.048	**249213** 0603	116,–
6.0	7	120	80	5.6	6	1.0	0.038	0.048	249213 0610	116,–
8.0	9	130	90	7.6	8	0.3	0.048	0.060	249213 0803	150,–
8.0	9	130	90	7.6	8	1.0	0.048	0.060	249213 0810	150,–
8.0	9	130	90	7.6	8	2.0	0.048	0.060	249213 0820	150,–
10.0	11	150	110	9.5	10	0.3	0.060	0.075	249213 1003	179,–
10.0	11	150	110	9.5	10	3.0	0.060	0.075	249213 1030	181,–
12.0	12	160	115	11.5	12	1.5	0.060	0.075	249213 1215	265,–
12.0	12	160	115	11.5	12	4.0	0.060	0.075	249213 1240	270,–
16.0	16	200	140	15.5	16	2.0	0.088	0.110	249213 1620	410,–

2149

ATORN® Ultra-N torus cutter

VHM | Typ W | 45° | h9 | h5 | DIN 6535 HA | DIN 6535 HB | Z 3 | ZrCN | Vc/fz 753

- **With clearance**
- **With defined cutting edge rounding**
- For non-ferrous materials
- Radius tolerance +/- 0.015 mm
- Cutting material: superfine grain solid carbide, **ZrCN Ultra-N**-coated

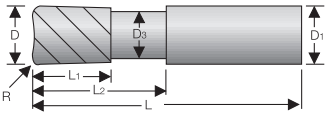
material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
												●	●	●				
												375-550	175-275	175-375				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

Standard



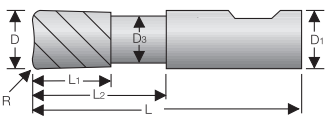


D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	R mm	Feed fz aluminium < 8 % Si mm/tooth	Feed fz aluminium < 8 % Si mm/tooth	DIN 6535-HA art.no.	€
5.0	13	57	18	4.7	6	0.5	0.026	0.038	**249311** 0505	43,70
5.0	13	57	18	4.7	6	1.0	0.026	0.038	249311 0510	43,70
6.0	13	57	18	5.6	6	0.5	0.032	0.045	249311 0605	49,20
6.0	13	57	18	5.6	6	1.0	0.032	0.045	249311 0610	49,20
8.0	21	63	25	7.6	8	0.5	0.042	0.060	249311 0805	57,–
8.0	21	63	25	7.6	8	1.0	0.042	0.060	249311 0810	57,–
10.0	22	72	30	9.6	10	0.5	0.053	0.075	249311 1005	90,50
10.0	22	72	30	9.6	10	1.0	0.053	0.075	249311 1010	90,50
12.0	26	83	36	11.4	12	0.5	0.060	0.085	249311 1205	124,–
12.0	26	83	36	11.4	12	1.0	0.060	0.085	249311 1210	124,–
16.0	36	92	42	15.4	16	2.0	0.068	0.098	249311 1620	229,–
16.0	36	92	42	15.4	16	4.0	0.068	0.098	249311 1640	229,–
20.0	41	104	52	19.4	20	4.0	0.079	0.113	249311 2040	329,–

2149

Standard with driving plane





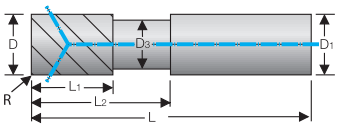
D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	R mm	Feed fz aluminium < 8 % Si mm/tooth	Feed fz aluminium < 8 % Si mm/tooth	DIN 6535-HB art.no.	€
5.0	13	57	18	4.7	6	0.5	0.026	0.038	**249312** 0505	43,70
5.0	13	57	18	4.7	6	1.0	0.026	0.038	249312 0510	43,70
6.0	13	57	18	5.6	6	0.5	0.032	0.045	249312 0605	49,20
6.0	13	57	18	5.6	6	1.0	0.032	0.045	249312 0610	49,20
8.0	21	63	25	7.6	8	0.5	0.042	0.060	249312 0805	57,70
8.0	21	63	25	7.6	8	1.0	0.042	0.060	249312 0810	57,70
10.0	22	72	30	9.6	10	0.5	0.053	0.075	249312 1005	90,50
10.0	22	72	30	9.6	10	1.0	0.053	0.075	249312 1010	90,50
12.0	26	83	36	11.4	12	0.5	0.060	0.085	249312 1205	124,–
12.0	26	83	36	11.4	12	1.0	0.060	0.085	249312 1210	124,–
16.0	36	92	42	15.4	16	2.0	0.068	0.098	249312 1620	229,–
16.0	36	92	42	15.4	16	4.0	0.068	0.098	249312 1640	229,–
20.0	41	104	52	19.4	20	4.0	0.079	0.113	249312 2040	329,–

2149

ATORN® Torus milling cutter Ultra-N

VHM | NH | NF | 38°-41° | e8 | h6 | DIN 6535 HA | Z 4 | HPC | Vc/fz | 751

- **With internal coolant supply**
- Irregular helix angle and unequal pitch for low-vibration milling
- With clearance
- With defined cutting edge rounding
- **Cutting material: fine grain solid carbide**



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
													● 750	● 615	● 200				
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

Internal cooling



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	R mm	● Feed fz aluminium < 8 % Si mm/tooth	● Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
10.0	22	30	72	9.2	10.0	2.0	0.084	0.116	**249609** 1020	124,–
10.0	22	30	72	9.2	10.0	2.5	0.084	0.116	249609 1025	124,–
10.0	22	30	72	9.2	10.0	3.0	0.084	0.116	249609 1030	124,–
10.0	22	30	72	9.2	10.0	4.0	0.084	0.116	249609 1040	124,–
12.0	26	36	83	11.0	12.0	2.0	0.101	0.139	249609 1220	148,–
12.0	26	36	83	11.0	12.0	2.5	0.101	0.139	249609 1225	148,–
12.0	26	36	83	11.0	12.0	3.0	0.101	0.139	249609 1230	148,–
12.0	26	36	83	11.0	12.0	4.0	0.101	0.139	249609 1240	148,–
16.0	32	42	92	15.0	16.0	2.0	0.134	0.185	249609 1620	272,–
16.0	32	42	92	15.0	16.0	2.5	0.134	0.185	249609 1625	272,–
16.0	32	42	92	15.0	16.0	3.0	0.134	0.185	249609 1630	272,–
16.0	32	42	92	15.0	16.0	4.0	0.134	0.185	249609 1640	272,–
20.0	38	52	104	19.0	20.0	2.0	0.168	0.231	249609 2020	388,–
20.0	38	52	104	19.0	20.0	2.5	0.168	0.231	249609 2025	388,–
20.0	38	52	104	19.0	20.0	3.0	0.168	0.231	249609 2030	388,–
20.0	38	52	104	19.0	20.0	4.0	0.168	0.231	249609 2040	388,–

2149

Internal cooling and chip breaker



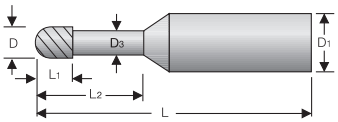
D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	R mm	● Feed fz aluminium < 8 % Si mm/tooth	● Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
10.0	22	30	72	9.2	10.0	2.0	0.088	0.121	**249611** 1020	140,–
10.0	22	30	72	9.2	10.0	2.5	0.088	0.121	249611 1025	140,–
10.0	22	30	72	9.2	10.0	3.0	0.088	0.121	249611 1030	140,–
10.0	22	30	72	9.2	10.0	4.0	0.088	0.121	249611 1040	140,–
12.0	26	36	83	11.0	12.0	2.0	0.106	0.146	249611 1220	168,–
12.0	26	36	83	11.0	12.0	2.5	0.106	0.146	249611 1225	168,–
12.0	26	36	83	11.0	12.0	3.0	0.106	0.146	249611 1230	168,–
12.0	26	36	83	11.0	12.0	4.0	0.106	0.146	249611 1240	168,–
16.0	32	42	92	15.0	16.0	2.0	0.141	0.194	249611 1620	310,–
16.0	32	42	92	15.0	16.0	2.5	0.141	0.194	249611 1625	310,–
16.0	32	42	92	15.0	16.0	3.0	0.141	0.194	249611 1630	310,–
16.0	32	42	92	15.0	16.0	4.0	0.141	0.194	249611 1640	310,–
20.0	38	52	104	19.0	20.0	2.0	0.176	0.243	249611 2020	442,–
20.0	38	52	104	19.0	20.0	2.5	0.176	0.243	249611 2025	442,–
20.0	38	52	104	19.0	20.0	3.0	0.176	0.243	249611 2030	442,–
20.0	38	52	104	19.0	20.0	4.0	0.176	0.243	249611 2040	442,–

2149

ATORN® Ultra-N mini radius milling cutter

VHM | Typ W | 30° | e8 | h5 | DIN 6535 HA | Z 2 | ZrCN | 3D PRINT | Vc/fz | 754

- **With clearance**
- **With defined cutting edge rounding from Ø 1.5 mm**
- Long-necked version for non-ferrous materials
- Radius tolerance +/- 0.01 mm
- Cutting material: superfine grain solid carbide, **ZrCN Ultra-N**-coated



material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
											●	●	●				
											400-550	180-320	180-420				

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	● Feed fz aluminium < 8 % Si mm/tooth	● Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
0.5	0.9	55	4.0	0.48	4	0.009	0.014	**249003** 0504	48,60
0.5	0.9	65	6.0	0.48	4	0.009	0.014	249003 0506	57,–
0.5	0.9	65	10.0	0.48	4	0.009	0.014	249003 0510	58,–
1.0	1.5	55	5.0	0.95	4	0.018	0.025	249003 1005	48,60
1.0	1.5	65	10.0	0.95	4	0.018	0.025	249003 1010	56,–
1.0	1.5	65	15.0	0.95	4	0.018	0.025	249003 1015	57,–
1.5	1.8	55	8.0	1.44	4	0.026	0.038	249003 1508	48,60
1.5	1.8	65	15.0	1.44	4	0.026	0.038	249003 1515	57,–
1.5	1.8	65	20.0	1.44	4	0.026	0.038	249003 1520	58,–
2.0	2.0	55	10.0	1.92	4	0.033	0.048	249003 2010	48,60
2.0	2.0	65	20.0	1.92	4	0.033	0.048	249003 2020	56,–
2.5	2.5	55	12.0	2.40	4	0.040	0.058	249003 2512	50,50
2.5	2.5	65	20.0	2.40	4	0.040	0.058	249003 2520	58,–

2149

ATORN® High-performance milling tools *Ultra-N*

INFO

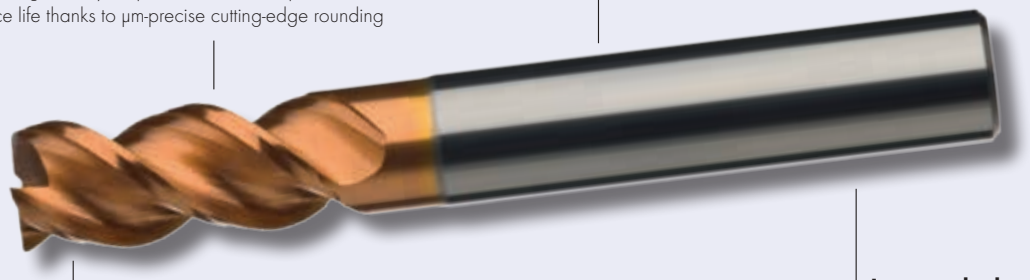
Tool geometry

An optimal cutting-, micro- and chip-space geometry is particularly crucial in aluminium machining. Based on numerous machining tests, the geometries have been revised and adapted perfectly to the requirements of aluminium machining:

- maximum core diameter for high stability
- special cutting geometry to reduce cutting pressure
- optimal chip-space geometry for process-reliable chip removal
- Increased service life thanks to µm-precise cutting-edge rounding

Wear-resistant carbide metal

The basic substrate consists of H10F fine-grade solid carbide for aluminium with a grain size of 0.6 - 0.8 µm. This substrate is especially wear-resistant, hard and resistant to pressure.
It can best withstand the dynamic and mechanical loads to be encountered. This is particularly important in the event of vibrations, which can easily lead to chunking on the cutting edge.



Defined cutting-edge rounding

The basic aim of a cutting-edge rounding is to increase the service life of the tool and of the cutting edge. In the cutting tool grinding process, the cutting edge loses its definition due to micro-fractures (chunking). Through a defined honing, a process environment can be achieved at an early stage; that is, grinding-related points are removed and the risk of comb cracks minimised.

Conventional methods for the cutting edge rounding had the disadvantage that they were unable to create a reproducible and even honing of the cutting edge. The new technology allows optimum process control and reproducibility. With it, a uniform, µm-precise honing of the cutting edge and face can be achieved. This has a positive effect on the quality and service life of the tools and significantly improves your workpiece surfaces.

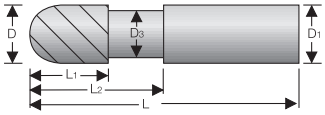
Improved tolerances

Precision produces quality: one reason why this new generation of tools is manufactured to tighter tolerances. Basically, all shanks are made in h5 quality and all cutting edges in g7 quality.

ATORN® Ultra-N radius milling cutter

VHM | Typ W | 45° | e8 | h5 | DIN 6535 HA | Z 2 | ZrCN | Vc/fz | 754

- **With clearance**
- **With defined cutting edge rounding**
- For non-ferrous materials
- Radius tolerance +/- 0.01 mm
- Cutting material: superfine grain solid carbide, **ZrCN Ultra-N**-coated



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
													●	●	●				
													400-550	180-320	180-420				
	Cutting speed Vc m/min.							Please adjust these guidelines according to clamping operation and machine set-up.											

Short



D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	● Feed fz aluminium < 8 % Si mm/tooth	● Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
3.0	6	50	16	2.9	3	0.021	0.030	**249240** 0030	37,90
4.0	7	54	17	3.8	4	0.023	0.033	249240 0040	44,90
5.0	8	54	18	4.8	5	0.026	0.038	249240 0050	50,–
6.0	10	54	21	5.7	6	0.030	0.043	249240 0060	48,80
8.0	12	60	27	7.7	8	0.042	0.060	249240 0080	64,–
10.0	13	67	32	9.6	10	0.053	0.075	249240 0100	83,50
12.0	16	73	38	11.6	12	0.060	0.085	249240 0120	112,–
16.0	20	83	44	15.5	16	0.077	0.110	249240 0160	179,–

2149



Long

D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	● Feed fz aluminium < 8 % Si mm/tooth	● Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
3.0	10	75	32	2.9	3	0.027	0.030	**249250** 0030	54,50
4.0	13	75	36	3.8	4	0.029	0.033	249250 0040	64,–
5.0	15	75	40	4.8	5	0.034	0.038	249250 0050	74,–
6.0	16	100	44	5.7	6	0.038	0.043	249250 0060	67,–
8.0	22	100	54	7.7	8	0.054	0.060	249250 0080	93,50
10.0	25	100	60	9.6	10	0.068	0.075	249250 0100	126,–
12.0	26	100	60	11.6	12	0.077	0.085	249250 0120	163,–
16.0	30	150	92	15.5	16	0.099	0.110	249250 0160	260,–

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Extra-long

D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	● Feed fz aluminium < 8 % Si mm/tooth	● Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
3.0	10	125	82	2.8	3	0.024	0.030	**249260** 0030	97,–
4.0	13	125	86	3.75	4	0.026	0.033	249260 0040	108,–
5.0	15	150	90	4.8	5	0.030	0.038	249260 0050	127,–
6.0	16	150	94	5.6	6	0.034	0.043	249260 0060	141,–
8.0	22	150	104	7.6	8	0.048	0.060	249260 0080	176,–
10.0	25	150	110	9.6	10	0.060	0.075	249260 0100	205,–
12.0	26	150	110	11.4	12	0.068	0.085	249260 0120	235,–

2149

ATORN® Coating Ultra-N PRO

INFO

Carbon high-performance thin-layer coating

for machining CFRP, GFRP, aluminium, copper, graphite, ceramic, wood and sandwich materials, for forming materials with an adhesive tendency (e.g. aluminium)

Ta-C

Hardness **6000 HV**



Coating properties

Material	amorphous, hydrogen-free carbon layer
Micro hardness	> 5000 HVpl 20 mN; standard: 6000-7500 HVpl 20 mN
Application temperature	max. 550°C
Colour	rainbow colours, up to anthracite

Advantages

- Good sliding properties and high layer hardness (approx. 60-80 % the hardness of diamond)
- Extremely durable and low-friction (wear protection coating for lubricated and non-lubricated inserts)
- Good milling and cutting quality
- No rounding of sharp-edged tools
- Coating performed at < 250°C. Even temperature-sensitive substrates can be coated.

Range overview	Z	Ultra-N PRO range	Standard	Short	Long	Extra-long	HA	HB	Ø range mm	Page
Solid carbide, single cutting edge end milling cutter	1		●				●		Ø 1-12	500
Solid carbide drill groove cutter	2		●				●	●	Ø 3-20	500
Solid carbide end milling cutter	3		●			●	●	●	Ø 4-20	501
Solid carbide end milling cutter HPC	3						●	●	Ø 3-20	502
Solid carbide end milling cutter HPC	4		●				●	●	Ø 3-20	503
Solid carbide torus cutter	2		●		●		●		Ø 3-16	504
Solid carbide torus cutter	3		●				●		Ø 6-20	505
Solid carbide radius milling cutter	2		●				●		Ø 3-16	506
Solid carbide roughing cutter	3		●				●	●	Ø 6-20	507
Solid carbide trochoidal milling cutter	3				●		●	●	Ø 6-20	507





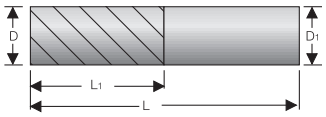
VAN HOORN
End milling cutters
189 pages
Art.no. 019900 0079

Overview of all free manufacturers' catalogues on page 14/15

ATORN® Single-blade milling cutter Ultra-N PRO

VHM | e8 | h6 | DIN 6535 HA | Z 1 | Ta-C | Vc/fz | 755

- **1 cutting edge, sharp**
- For non-ferrous materials
- **Cutting material: solid carbide with DLC-sp3 coating**
- Spiral angle 30°
- With polish grinding in the chip chambers
- Large chip space for unhindered chip removal



material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
											● 440	● 400					

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



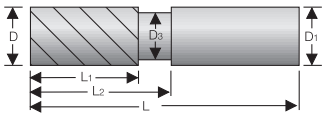
D mm	L1 mm	L mm	D1 mm	● Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
1.0	4	50	3.0	0.004	**249005** 0010	29,90
1.5	6	50	3.0	0.004	249005 0015	30,40
2.0	8	50	3.0	0.008	249005 0020	31,90
3.0	12	50	3.0	0.008	249005 0030	33,60
4.0	15	60	4.0	0.015	249005 0040	37,50
5.0	17	60	5.0	0.015	249005 0050	43,60
6.0	20	65	6.0	0.025	249005 0060	45,90
8.0	22	65	8.0	0.03	249005 0080	64,–
10.0	25	75	10.0	0.04	249005 0100	95,–
12.0	30	80	12.0	0.05	249005 0120	132,–

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ATORN® Drill groove milling cutter 20° Ultra-N PRO

VHM | 20° | e8 | h6 | DIN 6535 HA | Z 2 | Z 3 | Z 4 | Ta-C | Vc/fz | 755

- **With clearance**
- **Spiral angle 20°**
- For non-ferrous materials
- **Cutting material: solid carbide with DLC-sp3 coating**
- With polish grinding in the chip chambers
- Large chip space for unhindered chip removal



material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
											● 440	● 400					

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	Z	● Feed fz aluminium ≥ 8 % Si mm/tooth	● Feed fz aluminium ≥ 8 % Si mm/tooth	art.no.	€
3.0	11	50	14	2.9	6.0	2	0.008	0.01	**249006** 0030	50,30
4.0	13	54	16	3.9	6.0	2	0.015	0.025	249006 0040	54,90
5.0	15	54	18	4.9	6.0	2	0.015	0.025	249006 0050	58,90
6.0	16	64	21	5.8	6.0	2	0.025	0.04	249006 0060	64,40
8.0	22	70	27	7.8	8.0	2	0.03	0.05	249006 0080	71,40
10.0	25	72	32	9.7	10.0	2	0.04	0.065	249006 0100	99,50
12.0	28	83	38	11.7	12.0	3	0.05	0.09	249006 0120	125,–
16.0	36	92	44	15.7	16.0	3	0.065	0.12	249006 0160	211,–
20.0	41	104	54	19.5	20.0	4	0.085	0.15	249006 0200	342,–

2169

ATORN® Drill groove milling cutter 45° Ultra-N PRO

VHM | 45° | e8 | h6 | DIN 6535 HA | DIN 6535 HB | Z 2 | Ta-C | Vc/fz | 755

- **With clearance**
- **2 cutting edges, with edge chamfer**
- **Spiral angle 45°**
- For non-ferrous materials
- **Cutting material: solid carbide with DLC-sp3 coating**
- With polish grinding in the chip chambers
- Large chip space for unhindered chip removal

material: ● very well suited ○ well suited

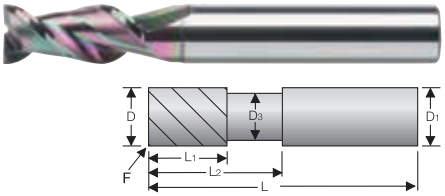
steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
											● 440	● 400					

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

Shank version HA

D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	F x 45° mm	● Feed fz aluminium < 8 % Si mm/tooth	● Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
3.0	8	57	18	2.9	6.0	0.1	0.010	0.008	**249007** 0030	40,50
4.0	11	57	18	3.9	6.0	0.1	0.025	0.015	249007 0040	40,50
5.0	11	57	20	4.9	6.0	0.1	0.032	0.020	249007 0050	40,50
6.0	13	57	20	5.8	6.0	0.1	0.040	0.025	249007 0060	40,70
8.0	19	63	26	7.8	8.0	0.1	0.050	0.030	249007 0080	45,90
10.0	22	72	29	9.7	10.0	0.2	0.065	0.040	249007 0100	63,50
12.0	26	83	36	11.7	12.0	0.2	0.090	0.050	249007 0120	98,–

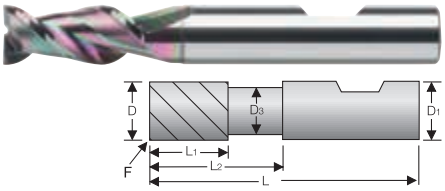
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Shank version HB

D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	F x 45° mm	● Feed fz aluminium < 8 % Si mm/tooth	● Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
16.0	32	92	42	15.7	16.0	0.2	0.12	0.065	**249007** 0160	155,–
20.0	38	104	52	19.5	20.0	0.2	0.15	0.080	249007 0200	224,–

2169



ATORN® End milling cutter Ultra-N PRO

VHM | e8 | h6 | DIN 6535 HA | DIN 6535 HB | Z 3 | Ta-C | HPC | Vc/fz | 755

- **With clearance**
- **3 cutting edges, with edge chamfer**
- **Irregular spiral angle 43° / 47°**
- For non-ferrous materials
- **Cutting material: solid carbide with DLC-sp3 coating**
- With polish grinding in the chip chambers
- Large chip space for unhindered chip removal

material: ● very well suited ○ well suited

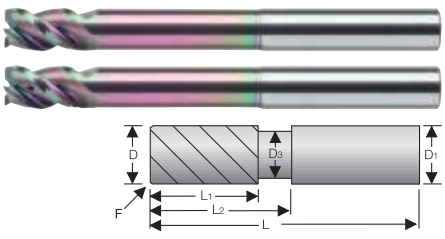
steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
											● 270	● 180					

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

Shank version HA

D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	F x 45° mm	● Feed fz aluminium < 8 % Si mm/tooth	● Feed fz aluminium < 8 % Si mm/tooth	Without internal cooling art.no.	€	With internal cooling art.no.	€
4.0	6.5	80	24	3.9	6.0	0.1	0.02	0.015	**249008** 0040	44,70		
5.0	8.0	80	30	4.9	6.0	0.1	0.02	0.025	249008 0050	44,70		
6.0	10.0	80	42	5.8	6.0	0.2	0.03	0.025	249008 0060	44,70	**249009** 0060	89,30
8.0	13.0	100	62	7.8	8.0	0.2	0.04	0.03	249008 0080	61,90	249009 0080	109,50
10.0	16.0	100	58	9.7	10.0	0.2	0.05	0.04	249008 0100	83,10	249009 0100	128,–
12.0	19.0	120	73	11.7	12.0	0.2	0.07	0.05	249008 0120	122,50	249009 0120	165,–

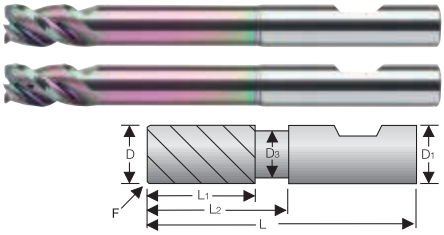
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Continued on next page >>>

Shank version HB

D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	F x 45° mm	Feed fz aluminium < 8 % Si mm/tooth	Feed fz aluminium < 8 % Si mm/tooth	Without internal cooling art.no.	€	With internal cooling art.no.	€
16.0	25	150	92	15.7	16.0	0.2	0.09	0.065	**249008** 0160	229,–	**249009** 0160	258,–
20.0	32	150	100	19.5	20.0	0.2	0.12	0.085	249008 0200	326,–	249009 0200	352,–
									2169		2169	



ATORN® End milling cutter HPC Ultra-N PRO

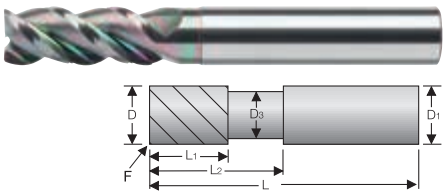
VHM | e8 | h6 | DIN 6535 HA | DIN 6535 HB | Z 3 | Ta-C | HPC | Vc/fz 756

- **With clearance**
- **3 cutting edges, with edge chamfer**
- **Irregular spiral angle 43° / 47°**
- For non-ferrous materials
- **Cutting material: solid carbide with DLC-sp3 coating**
- With polish grinding in the chip chambers
- Large chip space for unhindered chip removal

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
													● 270	● 180					
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

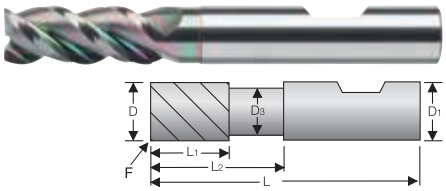
Shank version HA

D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	F x 45° mm	Feed fz aluminium < 8 % Si mm/tooth	Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
3.0	12	57	16	2.9	6.0	0.1	0.020	0.015	**249010** 0030	39,–
4.0	12	57	18	3.9	6.0	0.1	0.025	0.020	249010 0040	39,–
5.0	15	57	18	4.9	6.0	0.1	0.030	0.025	249010 0050	39,–
6.0	15	57	21	5.8	6.0	0.1	0.040	0.030	249010 0060	39,–
8.0	22	64	28	7.8	8.0	0.1	0.050	0.040	249010 0080	45,60
10.0	25	73	33	9.7	10.0	0.2	0.070	0.050	249010 0100	68,60
12.0	28	84	39	11.7	12.0	0.2	0.015	0.010	249010 0120	95,50
									2169	



Shank version HB

D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	F x 45° mm	Feed fz aluminium < 8 % Si mm/tooth	Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
16.0	35	93	45	15.7	16.0	0.2	0.090	0.065	**249010** 0160	137,50
20.0	41	104	52	19.5	20.0	0.2	0.120	0.085	249010 0180	217,–
									2169	





... with every indexable insert.

ATORN®
Performance demands quality

ATORN® End milling cutter HPC Ultra-N PRO

VHM | e8 | h6 | DIN 6535 HA | DIN 6535 HB | Z 4 | Ta-C | HPC | Vc/fz | 756

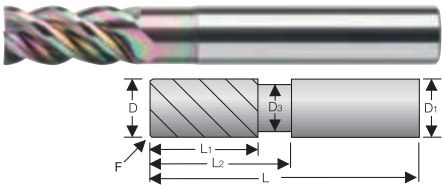
- **With clearance**
- **4 cutting edges, with edge chamfer**
- **Irregular spiral angle 43° / 47°**
- For non-ferrous materials
- **Cutting material: solid carbide with DLC-sp3 coating**
- With polish grinding in the chip chambers
- Large chip space for unhindered chip removal

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
													● 270	● 180					
	Cutting speed Vc m/min.										Please adjust these guidelines according to clamping operation and machine set-up.								

Shank version HA

D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	F x 45° mm	● Feed fz aluminium < 8 % Si mm/tooth	● Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
3.0	6	57	10	2.9	6.0	0.1	0.015	0.010	**249011** 0030	45,30
4.0	8	57	14	3.9	6.0	0.1	0.20	0.015	249011 0040	45,30
5.0	10	57	16	4.9	6.0	0.1	0.025	0.020	249011 0050	45,30
6.0	12	57	19	5.8	6.0	0.2	0.030	0.025	249011 0060	47,20
8.0	16	63	25	7.8	8.0	0.2	0.040	0.030	249011 0080	54,30
10.0	20	72	30	9.7	10.0	0.2	0.050	0.040	249011 0100	93,50
12.0	24	83	36	11.7	12.0	0.2	0.070	0.050	249011 0120	127,50

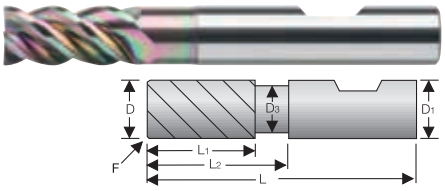
2169



Shank version HB

D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	F x 45° mm	● Feed fz aluminium < 8 % Si mm/tooth	● Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
16.0	32	92	42	15.7	16.0	0.2	0.090	0.065	**249011** 0160	238,–
20.0	40	104	52	19.5	20.0	0.2	0.120	0.085	249011 0200	344,–

2169

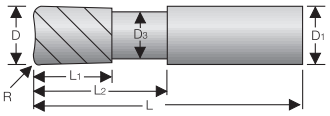




ATORN® Torus milling cutter Ultra-N PRO

VHM | 45° | e8 | h6 | DIN 6535 HA | Z 2 | Ta-C | Vc/fz | 756

- **With clearance**
- **2 cutting edges**
- **Spiral angle 45°**
- For non-ferrous materials
- **Cutting material: solid carbide with DLC-sp3 coating**
- With polish grinding in the chip chambers
- Large chip space for unhindered chip removal



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	249013....												● 300	● 230					
	249012....												● 160	● 120					
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		

Short



D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	R mm	● Feed fz aluminium < 8 % Si mm/tooth	● Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
3.0	4	50	14	2.9	6.0	0.3	0.01	0.011	**249013** 0303	41,10
4.0	5	50	16	3.9	6.0	0.3	0.02	0.023	249013 0403	47,10
5.0	6	54	18	4.9	6.0	0.3	0.02	0.023	249013 0503	50,90
6.0	7	57	21	5.8	6.0	0.3	0.03	0.034	249013 0603	56,50
6.0	7	57	21	5.8	6.0	1.0	0.03	0.034	249013 0610	56,50
6.0	7	57	21	5.8	6.0	2.0	0.03	0.034	249013 0620	56,50
8.0	9	63	27	7.8	8.0	0.3	0.04	0.045	249013 0803	75,50
8.0	9	63	27	7.8	8.0	1.0	0.04	0.045	249013 0810	75,50
8.0	9	63	27	7.8	8.0	2.0	0.04	0.045	249013 0820	75,50
10.0	11	72	32	9.7	10.0	0.3	0.05	0.056	249013 1003	99,90
10.0	11	72	32	9.7	10.0	1.5	0.05	0.056	249013 1015	99,90
10.0	11	72	32	9.7	10.0	3.0	0.05	0.056	249013 1030	99,90
12.0	13	83	38	11.7	12.0	1.5	0.07	0.079	249013 1215	135,–
12.0	13	83	38	11.7	12.0	4.0	0.07	0.079	249013 1240	135,–
16.0	17	92	44	15.7	16.0	2.0	0.09	0.1	249013 1620	219,–
16.0	17	92	44	15.7	16.0	5.0	0.09	0.1	249013 1650	219,–

2169



Long

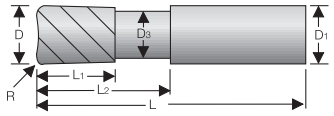
D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	R mm	● Feed fz aluminium < 8 % Si mm/tooth	● Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
3.0	4	75	32	2.9	6.0	0.3	0.01	0.011	**249012** 0303	54,40
4.0	5	75	36	3.9	6.0	0.3	0.02	0.023	249012 0403	60,30
5.0	6	75	40	4.9	6.0	0.3	0.02	0.023	249012 0503	66,60
6.0	7	80	44	5.8	6.0	0.3	0.03	0.034	249012 0603	71,80
6.0	7	80	44	5.8	6.0	1.0	0.03	0.034	249012 0610	71,80
6.0	7	80	44	5.8	6.0	2.0	0.03	0.034	249012 0620	71,80
8.0	9	100	54	7.8	8.0	0.3	0.04	0.045	249012 0803	101,–
8.0	9	100	54	7.8	8.0	1.0	0.04	0.045	249012 0810	101,–
8.0	9	100	54	7.8	8.0	2.0	0.04	0.045	249012 0820	101,–
10.0	11	100	60	9.7	10.0	0.3	0.05	0.056	249012 1003	136,–
10.0	11	100	60	9.7	10.0	1.5	0.05	0.056	249012 1015	136,–
10.0	11	100	60	9.7	10.0	3.0	0.05	0.056	249012 1030	136,–
12.0	13	120	75	11.7	12.0	1.5	0.07	0.079	249012 1215	181,–
12.0	13	120	75	11.7	12.0	4.0	0.07	0.079	249012 1240	181,–
16.0	17	150	92	15.7	16.0	2.0	0.09	0.1	249012 1620	306,–
16.0	17	150	92	15.7	16.0	5.0	0.09	0.1	249012 1650	306,–

2169

ATORN® Torus milling cutter Ultra-N PRO

VHM | e8 | h6 | DIN 6535 HA | Z 3 | Ta-C | TVC | Vc/fz | 757

- **with clearance**
- **3 cutting edges**
- **unequal spiral angle 43°/47°**
- for non-ferrous materials
- **Cutting material: solid carbide with DLC-sp3 coating**
- with polish grinding in the chip chambers
- large chip space for unhindered chip removal
- **chip separator**



material

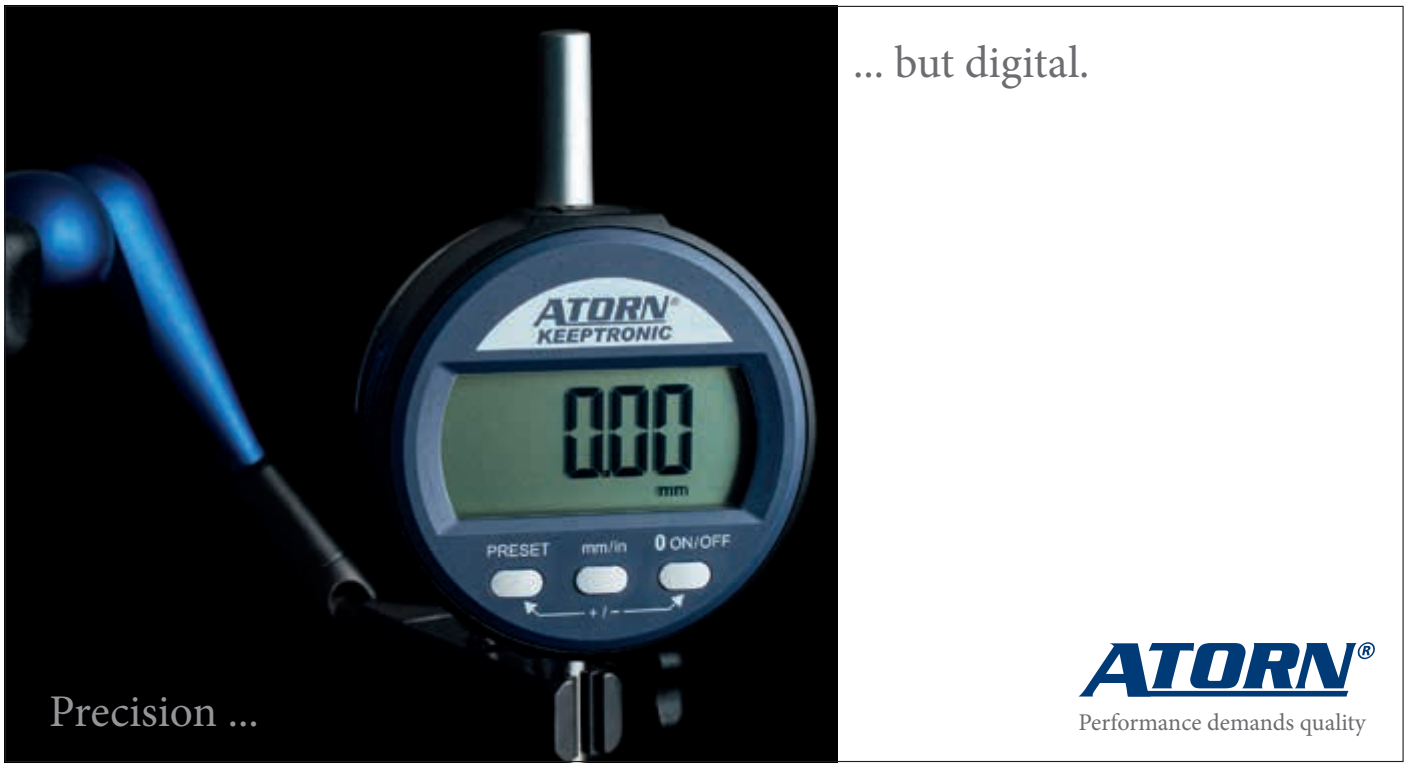
● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
												● 270	● 180					
Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.



D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	R mm	● Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
6.0	25	71	31	5.8	6.0	0.5	0.032	**249014** 0605	60,80
6.0	25	71	31	5.8	6.0	1.0	0.032	249014 0610	60,80
8.0	33	80	41	7.8	8.0	0.5	0.045	249014 0805	72,10
8.0	33	80	41	7.8	8.0	1.0	0.045	249014 0810	72,10
8.0	33	80	41	7.8	8.0	2.0	0.045	249014 0820	72,10
10.0	41	95	51	9.7	10.0	0.5	0.055	249014 1005	99,50
10.0	41	95	51	9.7	10.0	1.0	0.055	249014 1010	99,50
10.0	41	95	51	9.7	10.0	2.0	0.055	249014 1020	99,50
12.0	49	109	61	11.7	12.0	0.5	0.08	249014 1205	133,–
12.0	49	109	61	11.7	12.0	1.0	0.08	249014 1210	133,–
12.0	49	109	61	11.7	12.0	2.0	0.08	249014 1220	133,–
16.0	65	132	81	15.7	16.0	2.0	0.095	249014 1620	245,–
16.0	65	132	81	15.7	16.0	3.0	0.095	249014 1630	245,–
20.0	82	154	101	19.5	20.0	2.0	0.125	249014 2020	356,–
20.0	82	154	101	19.5	20.0	3.0	0.125	249014 2030	356,–

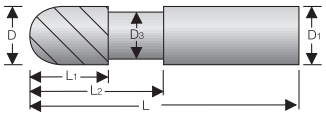
2169



ATORN® Radius milling cutter Ultra-N PRO

VHM | 45° | e8 | h6 | DIN 6535 HA | Z 2 | Ta-C | Vc/fz | 757

- **With clearance**
- **2 cutting edges**
- **Spiral angle 45°**
- For non-ferrous materials
- **Cutting material: solid carbide with DLC-sp3 coating**
- With polish grinding in the chip chambers
- Large chip space for unhindered chip removal



material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
249015....												● 600	● 400					
249016....												● 525	● 350					
Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

Short



D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
3.0	6	50	16	2.9	3.0	0.03	**249015** 0030	39,90
4.0	7	54	17	3.9	4.0	0.03	249015 0040	46,90
5.0	8	54	18	4.9	5.0	0.06	249015 0050	53,50
6.0	10	54	21	5.8	6.0	0.06	249015 0060	53,30
8.0	12	59	27	7.8	8.0	0.06	249015 0080	65,20
10.0	13	67	32	9.8	10.0	0.08	249015 0100	86,50
12.0	16	73	38	11.7	12.0	0.08	249015 0120	111,–
16.0	20	83	44	16.7	16.0	0.15	249015 0160	184,–

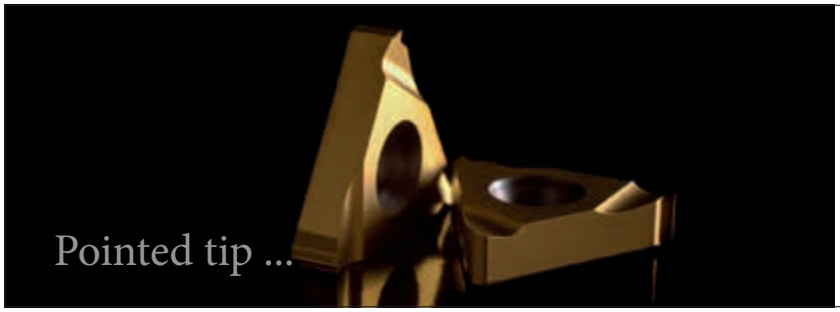
2169

Long



D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
3.0	10	75	32	2.9	3.0	0.03	**249016** 0030	57,30
4.0	13	75	36	3.9	4.0	0.03	249016 0040	67,60
5.0	15	75	40	4.9	5.0	0.06	249016 0050	73,90
6.0	16	100	44	5.8	6.0	0.06	249016 0060	73,90
8.0	22	100	54	7.8	8.0	0.06	249016 0080	99,50
10.0	25	100	60	7.8	10.0	0.08	249016 0100	131,–
12.0	26	100	60	11.7	12.0	0.08	249016 0120	172,–
16.0	30	150	92	15.7	16.0	0.15	249016 0160	271,–

2169



... with reversible option.

ATORN®
Performance demands quality

ATORN® Roughing cutter Ultra-N PRO

VHM | WR | 30° | e8 | h6 | DIN 6535 HA | DIN 6535 HB | Z 3 | Ta-C | Vc/fz

757
758

- **With clearance**
- **3 cutting edges, with edge chamfer**
- **Spiral angle 30°**
- For non-ferrous materials
- **Cutting material: solid carbide with DLC-sp3 coating**
- With polish grinding in the chip chambers
- Large chip space for unhindered chip removal

material: ● very well suited ○ well suited

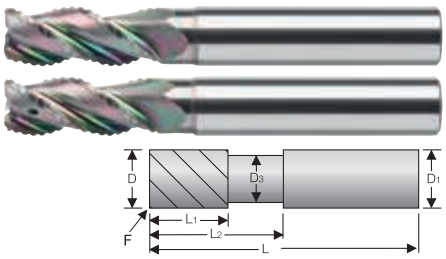
steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
											● 320	● 260					

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

Shank version HA

● Feed fz aluminium < 8 % Si mm/tooth | ● Feed fz aluminium < 8 % Si mm/tooth

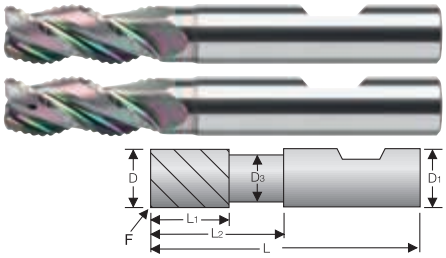
D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	F x 45° mm	Feed fz aluminium < 8 % Si mm/tooth	Feed fz aluminium < 8 % Si mm/tooth	Without internal cooling art.no.	€	With internal cooling art.no.	€
6.0	14	57	20	5.9	6.0	0.2	0.08	0.06	**249017** 0060	42,90	**249018** 0060	81,50
8.0	21	63	26	7.8	8.0	0.25	0.08	0.06	249017 0080	53,50	249018 0080	94,50
10.0	23	72	31	9.8	10.0	0.3	0.09	0.07	249017 0100	73,–	249018 0100	115,–
12.0	27	83	37	11.7	12.0	0.35	0.09	0.07	249017 0120	97,–	249018 0120	141,–
									2169		2169	



Shank version HB

● Feed fz aluminium < 8 % Si mm/tooth | ● Feed fz aluminium < 8 % Si mm/tooth

D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	F x 45° mm	Feed fz aluminium < 8 % Si mm/tooth	Feed fz aluminium < 8 % Si mm/tooth	Without internal cooling art.no.	€	With internal cooling art.no.	€
16.0	36	92	43	15.7	16.0	0.4	0.11	0.09	**249017** 0160	141,–	**249018** 0160	194,–
20.0	41	104	52	19.5	20.0	0.4	0.14	0.12	249017 0200	207,–	249018 0200	272,–
									2169		2169	



ATORN® Trochoidal milling cutter Ultra-N PRO

VHM | 30° | e8 | h6 | DIN 6535 HA | DIN 6535 HB | Z 3 | Ta-C | TVC | Vc/fz

757

- **3 cutting edges, with edge chamfer**
- **Spiral angle 30°**
- **3.5 x D**
- For non-ferrous materials
- **Cutting material: solid carbide with DLC-sp3 coating**
- With polish grinding in the chip chambers
- Large chip space for unhindered chip removal

material: ● very well suited ○ well suited

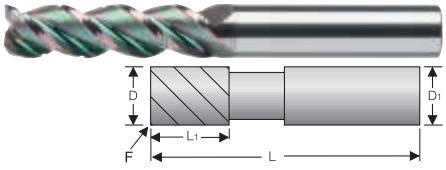
steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
											● 270	● 180					

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

Shank version HA

● Feed fz aluminium < 8 % Si mm/tooth

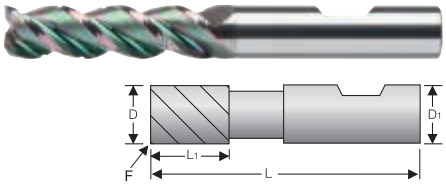
D mm	L1 mm	L mm	D1 mm	F x 45° mm	Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
6.0	21	62	6.0	0.2	0.036	**249019** 0060	66,–
8.0	28	68	8.0	0.2	0.048	249019 0080	72,–
10.0	35	80	10.0	0.2	0.06	249019 0100	96,–
12.0	42	93	12.0	0.2	0.084	249019 0120	144,–
						2169	



Shank version HB

● Feed fz aluminium < 8 % Si mm/tooth

D mm	L1 mm	L mm	D1 mm	F x 45° mm	Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
16.0	56	108	16.0	0.2	0.108	**249019** 0160	204,–
20.0	70	126	20.0	0.2	0.144	249019 0200	288,–
						2169	



ATORN® High-speed milling cutters for stainless steel and special alloys

INFO

The new generation of ATORN milling cutters are characterised by excellent performance in the machining of stainless steel and special alloys containing metals such as nickel, cobalt and titanium. An ultra-fine-grain carbide metal substrate in combination with high-performance geometry and specially developed ULTRA-MS coating make these tools absolutely process-safe and wear-resistant and allow a high metal removal rate.
The new geometries – i.e., adapted core diameters, optimal and positive rake and helix angles and corresponding microgeometries – allow for high feed rates and deliveries. One example of this are the 4-edge HPC milling cutters. These are designed with unequal flute spacing and unequal helix pitch. This design not only makes the tools suitable for use in **HPC milling**, but allows trouble-free **trochoidal milling** as well.
The range includes HSC- and HPC-enabled tools for roughing, semi-roughing and finishing from Ø 0.2-20 mm. The excellent stability during machining leads to process safety and high-quality surfaces, which cuts costs and boosts efficiency.
The mini-end milling cutters, also available as torus and radius milling cutters, round out the range.

ATORN®

High quality for great performance



Extreme temperature resistance thanks to ULTRA-MS
The special ULTRA-MS coating can handle application temperatures of up to 1100 ° C. That's important, because these special alloys are poor heat dissipaters.

Maximum service life
The ULTRA-MS coating significantly increases the service life of the tools.

Perfect cutting edge geometry makes for quiet running
Perfectly matched to the machining conditions in stainless steel and special alloys:
positive cutting geometries ensure soft cuts and smooth running

Low vibrations, even in border areas
The unequal helix pitch and unequal flute spacing reduce vibrations during machining

High precision
For precise components, high-precision edge radii, among other things, with a tolerance of less than 0.01 mm, ensure

The highest surface quality
The multitude of special features guarantees the highest quality surface finishes with no chatter marks, and much more.

Overview of the range

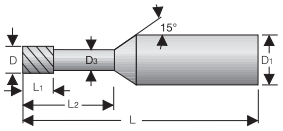
		Ø-area mm	Page
Solid carbide mini end milling cutters		Ø 0.5 - 4	509
Solid carbide mini torus cutters		Ø 0.5 - 4	514
Solid carbide mini radius milling cutters		Ø 0.5 - 4	516
Solid carbide end milling cutters for stainless steel		Ø 4 - 20	510
Solid carbide end milling cutters for titanium materials		Ø 3 - 25	512
Solid carbide torus cutters		Ø 4 - 20	515
Solid carbide radius milling cutters, standard		Ø 3 - 20	517

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	○	●	●	●	○	○	●	●	●							

ATORN® Ultra-MS mini end milling cutter

VHM | NH | 40° | e8 | h6 | DIN 6535 HA | Z 2 | AlCrN | 3D PRINT | Vc/fz | 759

- With clearance



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 96-112	● 96-112	○ 96-112	● 60-80	● 60-80	● 60-80	○ 96-112	○ 96-112	● 60-80	● 60-80	● 60-80							
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	Feed fz stainless steel austenitic mm/tooth	art.no.	€
0.5	0.7	2.0	50	0.45	4	0.001	**256011** 0011	39,30
0.5	0.7	4.0	50	0.45	4	0.001	256011 0012	39,30
0.5	0.7	6.0	50	0.45	4	0.001	256011 0013	39,30
0.5	0.7	8.0	50	0.45	4	0.001	256011 0014	39,30
0.8	1.2	4.0	50	0.75	4	0.003	256011 0020	37,20
0.8	1.2	6.0	50	0.75	4	0.003	256011 0021	37,20
0.8	1.2	8.0	50	0.75	4	0.003	256011 0022	37,20
0.8	1.2	10.0	50	0.75	4	0.003	256011 0023	37,20
0.8	1.2	12.0	50	0.75	4	0.003	256011 0024	37,20
1,0	1.5	6,0	50	0.95	4	0.004	256011 0025	27,20
1,0	1.5	8,0	50	0.95	4	0.004	256011 0026	27,20
1,0	1.5	10.0	50	0.95	4	0.004	256011 0027	27,20
1,0	1.5	12.0	50	0.95	4	0.004	256011 0028	28,20
1,0	1.5	16.0	50	0.95	4	0.004	256011 0029	28,20
1.2	1.8	6,0	50	1.15	4	0.005	256011 0030	28,20
1.2	1.8	8,0	50	1.15	4	0.005	256011 0031	28,20
1.2	1.8	10.0	50	1.15	4	0.005	256011 0032	29,30
1.2	1.8	12.0	50	1.15	4	0.005	256011 0033	29,30
1.5	2.3	6,0	50	1.45	4	0.006	256011 0034	28,20
1.5	2.3	8,0	50	1.45	4	0.006	256011 0035	28,20
1.5	2.3	10.0	50	1.45	4	0.006	256011 0036	28,20
1.5	2.3	12.0	50	1.45	4	0.006	256011 0037	29,30
1.5	2.3	16.0	50	1.45	4	0.006	256011 0038	29,30
1.5	2.3	20.0	60	1.45	4	0.006	256011 0039	29,30
2.0	3	6.0	50	1.95	4	0.008	256011 0040	28,20
2.0	3	8.0	50	1.95	4	0.008	256011 0041	28,20
2.0	3	10.0	50	1.95	4	0.008	256011 0042	28,20
2.0	3	12.0	50	1.95	4	0.008	256011 0043	28,20
2.0	3	16.0	50	1.95	4	0.008	256011 0044	29,30
2.0	3	20.0	60	1.95	4	0.008	256011 0045	30,40
2.0	3	25.0	75	1.95	4	0.008	256011 0046	31,20
2.5	3.7	8.0	50	2.40	4	0.010	256011 0048	28,20
2.5	3.7	10.0	50	2.40	4	0.010	256011 0049	28,20
2.5	3.7	12.0	50	2.40	4	0.010	256011 0050	28,20
2.5	3.7	16.0	50	2.40	4	0.010	256011 0051	29,30
2.5	3.7	20.0	60	2.40	4	0.010	256011 0052	31,70
2.5	3.7	25.0	60	2.40	4	0.010	256011 0053	32,30
3.0	4.5	8.0	50	2.85	6	0.012	256011 0055	39,30
3.0	4.5	10.0	50	2.85	6	0.012	256011 0056	39,30
3.0	4.5	12.0	50	2.85	6	0.012	256011 0057	39,30
3.0	4.5	16.0	60	2.85	6	0.012	256011 0058	39,30
3.0	4.5	20.0	60	2.85	6	0.012	256011 0059	40,60
3.0	4.5	25.0	75	2.85	6	0.012	256011 0060	41,70
4.0	4.5	20.0	60	3.85	6	0.016	256011 0063	40,60
4.0	4.5	25.0	75	3.85	6	0.016	256011 0064	41,70
4.0	4.5	30.0	75	3.85	6	0.016	256011 0065	41,70
4.0	4.5	40.0	75	3.85	6	0.016	256011 0066	41,70

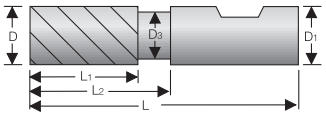
2153

HPMT End milling cutters

VHM | 40° | h10 | h6 | DIN 6535 HB | Z 4 | AlCrN | HPC | 3D PRINT | Vc/fz | 733

- **With clearance**
- **Irregular pitch to minimise vibrations**
- CNC repetition precision to within 10 µm
- **For milling stainless steel, machining exotic materials, and general applications**
- Especially suitable for groove milling and lateral machining

EXCLUSIVE item: The all-rounder!



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 150-200	● 100-120	○ 70-90	● 40-70	● 40-70	● 50-60			● 60-70	● 15-25	● 15-20	● 280-350	● 200-250	● 150-200				
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		



D mm	L1 mm	L2 mm	D1 mm	L mm	D3 mm	● Feed fz steel < 1000 N/mm² mm/tooth	● Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
3	9	15	6	57	2.80	0.016	0.020	**254121** 0030	25,30
4	12	20	6	57	3.70	0.021	0.026	254121 0040	25,30
5	13	20	6	57	4.60	0.026	0.032	254121 0050	25,30
6	13	20	6	57	5.50	0.031	0.038	254121 0060	25,30
8	20	30	8	64	7.40	0.037	0.046	254121 0080	35,80
10	22	32	10	72	9.20	0.044	0.054	254121 0100	53,–
12	26	37	12	83	11.00	0.050	0.062	254121 0120	68,50
16	32	46	16	92	15.00	0.063	0.078	254121 0160	119,–
20	38	58	20	104	19.00	0.075	0.094	254121 0200	193,–

2146



... with precision.

ATORN®
Performance demands quality

ATORN® Ultra-MS end milling cutter

VHM | NH | 35°-38° | e8 | h6 | DIN 6535 HA | DIN 6535 HB | Z 4 | AlCrN | HPC | Vc/fz | 759

- With clearance

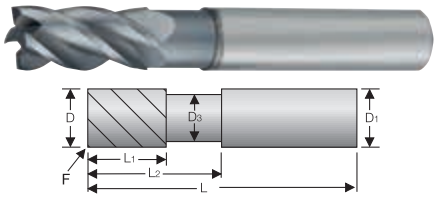
material

● very well suited
○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 120-140	● 120-140	○ 120-140	● 60-80	● 60-80	● 60-80	○ 120-140	○ 120-140	● 60-80	● 60-80	● 60-80							

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

Standard



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	F x 45° mm	Feed fz stainless steel austenitic mm/tooth	Feed fz stainless steel austenitic mm/tooth	DIN 6535-HA art.no.	€
4	11	20	57	3.70	6	0.1	0.016	0.021	**256008** 0040	35,80
5	13	20	57	4.60	6	0.1	0.020	0.026	256008 0050	35,80
6	13	20	57	5.50	6	0.1	0.024	0.031	256008 0060	35,80
8	20	30	64	7.40	8	0.2	0.030	0.038	256008 0080	52,50
10	22	32	72	9.20	10	0.2	0.036	0.046	256008 0100	64,50
12	26	37	83	11.00	12	0.2	0.043	0.054	256008 0120	93,–
16	32	46	92	15.00	16	0.3	0.054	0.068	256008 0160	154,–
20	38	58	104	19.00	20	0.4	0.066	0.083	256008 0200	240,–

2153

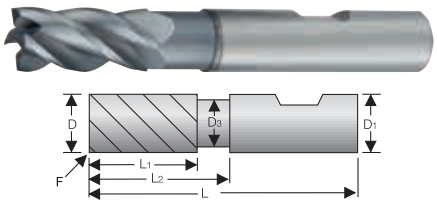
Standard end milling cutter set



Contents	art.no.	€
End milling cutter set, solid carbide 35°/38°, irreg. pitch, Ø6, 8, 10, 12 mm, clear. (stainless steel) 4 S., HA, Ultra-MS	**256008** 1004	245,–

2153

Standard with driving plane



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	F x 45° mm	Feed fz stainless steel austenitic mm/tooth	Feed fz stainless steel austenitic mm/tooth	DIN 6535-HB art.no.	€
4	11	20	57	3.70	6	0.1	0.016	0.021	**256007** 0040	36,80
5	13	20	57	4.60	6	0.1	0.020	0.026	256007 0050	36,80
6	13	20	57	5.50	6	0.1	0.024	0.031	256007 0060	36,80
8	20	30	64	7.40	8	0.2	0.030	0.038	256007 0080	53,50
10	22	32	72	9.20	10	0.2	0.036	0.046	256007 0100	66,50
12	26	37	83	11.00	12	0.2	0.043	0.054	256007 0120	95,–
16	32	46	92	15.00	16	0.3	0.054	0.068	256007 0160	156,–
20	38	58	104	19.00	20	0.4	0.066	0.083	256007 0200	245,–

2153

Standard end milling cutter set with driving plane



Contents	art.no.	€
End milling cutter set, solid carbide 35°/38°, irreg. pitch, Ø6, 8, 10, 12 mm, clear. (stainless steel) 4 S., HB, Ultra-MS	**256007** 1004	250,–

2153

VAN HOORN CARBIDE VHVTR/W 4/5 end milling cutter

VHM | 35°-38° | e8 | h9 | DIN 6535 HA | DIN 6535 HB | Z 4 | Z 5 | TiAlSiN | Vc/fz | 738

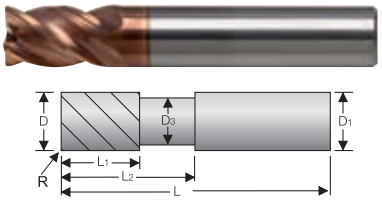
- **Cutting material: ultra-fine grain solid carbide, TiAlSiN-coated**
- Special pre-treatment and finishing treatment due to **micro radiation**
- **New chip flute geometry** for enhanced cooling and chip flow
- For wet machining, **high material removal rate**

For machining titanium and stainless steel

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
					● 80-150	● 60-120	● 40-100			● 70-100	● 30-50	● 20-30							
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

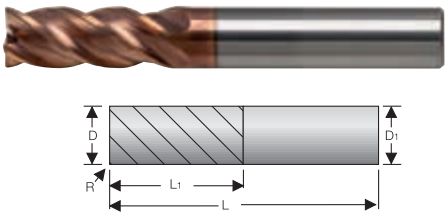
Short Z4



D mm	R mm	D3 mm	D1 mm	L mm	L1 mm	Z	L2 mm	● Feed fz stainless steel ferrit./martens. mm/tooth	● Feed fz stainless steel ferrit./martens. mm/tooth	DIN 6535-HB art.no.	€
3.0	0.2	2.8	6.0	51	5	4	7	0.015	0.020	**255088** 0030	36,50
4.0	0.2	3.8	6.0	51	6	4	9	0.025	0.030	255088 0040	40,–
5.0	0.2	4.6	6.0	51	7	4	11	0.025	0.030	255088 0050	43,20
6.0	0.3	5.6	6.0	64	8	4	13	0.030	0.040	255088 0060	47,10
8.0	0.5	7.4	8.0	64	11	4	18	0.040	0.050	255088 0080	61,90
10.0	0.5	9.4	10.0	70	13	4	22	0.055	0.070	255088 0100	81,30
12.0	1.0	11.4	12.0	78	15	4	25	0.065	0.080	255088 0120	115,50
16.0	1.0	15.4	16.0	89	19	4	35	0.080	0.100	255088 0160	166,–
20.0	1.0	19.2	20.0	102	23	4	42	0.010	0.200	255088 0200	272,–
25.0	1.0	24.2	25.0	120	28	4	45	0.125	0.250	255088 0250	371,–

2113

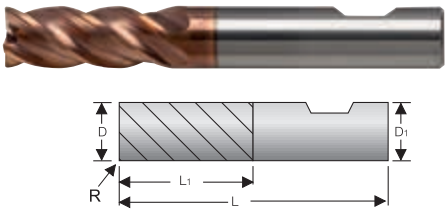
Standard Z4



D mm	R mm	D1 mm	L mm	L1 mm	Z	● Feed fz stainless steel ferrit./martens. mm/tooth	● Feed fz stainless steel ferrit./martens. mm/tooth	DIN 6535-HA art.no.	€
4.0	0.2	6.0	51	9	4	0.025	0.030	**255087** 0040	41,80
5.0	0.2	6.0	51	11	4	0.025	0.030	255087 0050	45,20
6.0	0.3	6.0	64	13	4	0.030	0.040	255087 0060	49,10
8.0	0.5	8.0	64	18	4	0.040	0.050	255087 0080	64,60
10.0	0.5	10.0	70	22	4	0.055	0.070	255087 0100	84,10
12.0	1.0	12.0	78	25	4	0.065	0.080	255087 0120	118,50
16.0	1.0	16.0	89	35	4	0.080	0.100	255087 0160	172,–
20.0	1.0	20.0	102	42	4	0.010	0.200	255087 0200	276,–
25.0	1.0	25.0	120	45	4	0.125	0.250	255087 0250	381,–

2113

Standard with driving plane Z4



D mm	R mm	D1 mm	L mm	L1 mm	Z	● Feed fz stainless steel ferrit./martens. mm/tooth	● Feed fz stainless steel ferrit./martens. mm/tooth	DIN 6535-HB art.no.	€
6.0	0.3	6.0	64	13	4	0.030	0.040	**255084** 0060	49,10
8.0	0.5	8.0	64	18	4	0.040	0.050	255084 0080	64,60
10.0	0.5	10.0	70	22	4	0.055	0.070	255084 0100	84,10
12.0	1.0	12.0	78	25	4	0.065	0.080	255084 0120	118,50
16.0	1.0	16.0	89	35	4	0.080	0.100	255084 0160	172,–
20.0	1.0	20.0	102	42	4	0.010	0.200	255084 0200	276,–
25.0	1.0	25.0	120	45	4	0.125	0.250	255084 0250	381,–

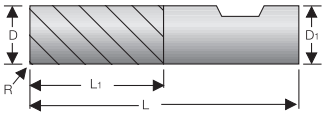
2113

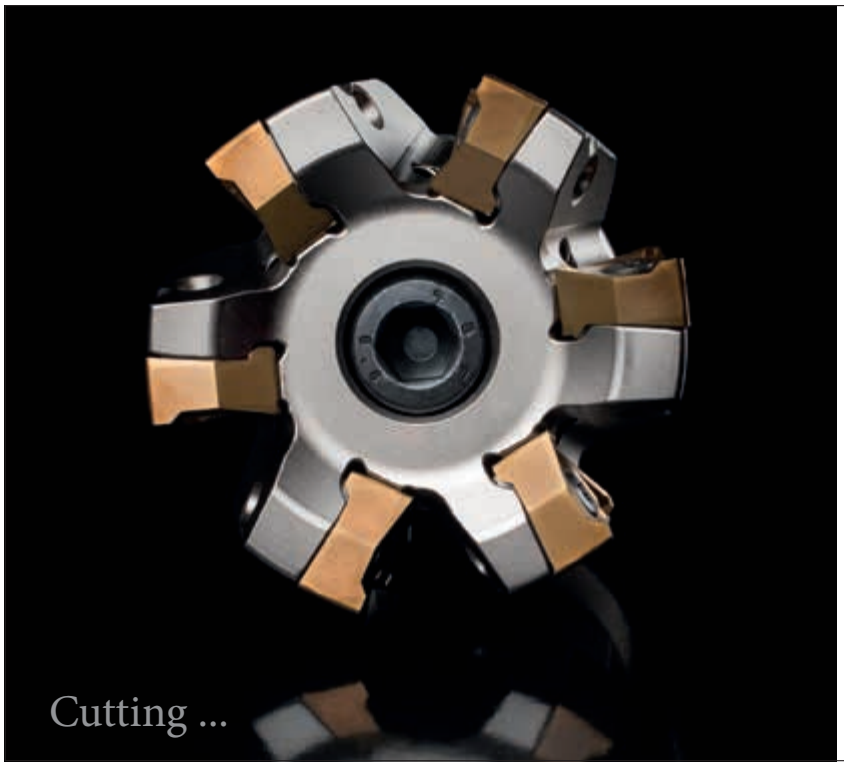
Standard with driving plane Z5

D mm	R mm	D1 mm	L mm	L1 mm	Z	Feed fz stainless steel ferrit./martens. mm/tooth	DIN 6535-HB art.no.	€
3	0.2	6	51	7	5	0.01	**255102** 0302	38,10
4	0.2	6	51	9	5	0.012	255102 0402	41,80
5	0.2	6	51	11	5	0.02	255102 0502	45,20
6	0.1	6	64	13	5	0.025	255102 0601	49,10
6	0.3	6	64	13	5	0.025	255102 0603	49,10
6	0.5	6	64	13	5	0.025	255102 0605	49,10
6	1	6	64	13	5	0.025	255102 0610	49,10
8	0.1	8	64	18	5	0.035	255102 0801	64,60
8	0.3	8	64	18	5	0.035	255102 0803	64,60
8	0.5	8	64	18	5	0.035	255102 0805	64,60
8	1	8	64	18	5	0.035	255102 0810	64,60
10	0.1	10	70	22	5	0.04	255102 1001	84,10
10	0.3	10	70	22	5	0.04	255102 1003	84,10
10	0.5	10	70	22	5	0.04	255102 1005	84,10
10	1	10	70	22	5	0.04	255102 1010	84,10
12	0.1	12	78	25	5	0.05	255102 1201	118,50
12	0.3	12	78	25	5	0.05	255102 1203	118,50
12	0.5	12	78	25	5	0.05	255102 1205	118,50
12	1	12	78	25	5	0.05	255102 1210	118,50
14	0.5	14	89	30	5	0.055	255102 1405	175,–
14	1	14	89	30	5	0.055	255102 1410	175,–
16	0.1	16	89	35	5	0.06	255102 1601	172,–
16	0.5	16	89	35	5	0.06	255102 1605	172,–
16	1	16	89	35	5	0.06	255102 1610	172,–
20	0.5	20	102	42	5	0.08	255102 2005	276,–
20	1	20	102	42	5	0.08	255102 2010	276,–
25	0.5	25	120	45	5	0.11	255102 2505	381,–
25	1	25	120	45	5	0.11	255102 2510	381,–

2113







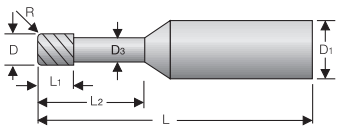
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ATORN®
Performance demands quality

ATORN® Ultra-MS mini torus cutter

VHM | NH | 40° | e8 | h6 | DIN 6535 HA | Z 2 | AlCrN | 3D PRINT | Vc/fz | 759

- With clearance



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 96-112	● 96-112	○ 96-112	● 60-80	● 60-80	● 60-80	○ 96-112	○ 96-112	● 60-80	● 60-80	● 60-80							
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		



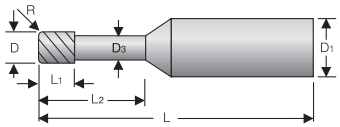
D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	R mm	● Feed fz stainless steel austenitic mm/tooth	● Feed fz stainless steel austenitic mm/tooth	art.no.	€
0.5	0.7	2.0	50	0.45	4	0.05	0.001	0.002	**256012** 0011	42,80
0.5	0.7	4.0	50	0.45	4	0.05	0.001	0.002	256012 0012	42,80
0.5	0.7	6.0	50	0.45	4	0.05	0.001	0.002	256012 0013	40,60
0.5	0.7	8.0	50	0.45	4	0.05	0.001	0.002	256012 0014	40,60
0.8	1.2	4.0	50	0.75	4	0.10	0.003	0.004	256012 0018	39,30
0.8	1.2	6.0	50	0.75	4	0.10	0.003	0.004	256012 0019	39,30
0.8	1.2	8.0	50	0.75	4	0.10	0.003	0.004	256012 0020	39,30
0.8	1.2	10.0	50	0.75	4	0.10	0.003	0.004	256012 0021	40,60
0.8	1.2	12.0	50	0.75	4	0.10	0.003	0.004	256012 0022	40,60
1,0	1.5	6,0	50	0.95	4	0.10	0.004	0.005	256012 0023	29,30
1,0	1.5	8,0	50	0.95	4	0.10	0.004	0.005	256012 0024	29,30
1,0	1.5	10.0	50	0.95	4	0.10	0.004	0.005	256012 0025	29,30
1,0	1.5	12.0	50	0.95	4	0.10	0.004	0.005	256012 0026	30,40
1,0	1.5	16.0	50	0.95	4	0.10	0.004	0.005	256012 0027	30,40
1.2	1.8	6,0	50	1.15	4	0.10	0.005	0.006	256012 0028	29,30
1.2	1.8	8,0	50	1.15	4	0.10	0.005	0.006	256012 0029	29,30
1.2	1.8	10.0	50	1.15	4	0.10	0.005	0.006	256012 0030	29,30
1.2	1.8	12.0	50	1.15	4	0.10	0.005	0.006	256012 0031	29,30
1.5	2.3	6,0	50	1.45	4	0.20	0.006	0.007	256012 0032	29,30
1.5	2.3	8,0	50	1.45	4	0.20	0.006	0.007	256012 0033	29,30
1.5	2.3	10.0	50	1.45	4	0.20	0.006	0.007	256012 0034	29,30
1.5	2.3	12.0	50	1.45	4	0.20	0.006	0.007	256012 0035	29,30
1.5	2.3	16.0	50	1.45	4	0.20	0.006	0.007	256012 0036	30,40
1.5	2.3	20.0	60	1.45	4	0.20	0.006	0.007	256012 0037	30,40
2.0	3	6.0	50	1.95	4	0.20	0.008	0.010	256012 0038	29,30
2.0	3	8.0	50	1.95	4	0.20	0.008	0.010	256012 0039	29,30
2.0	3	10.0	50	1.95	4	0.20	0.008	0.010	256012 0040	29,30
2.0	3	12.0	50	1.95	4	0.20	0.008	0.010	256012 0041	29,30
2.0	3	16.0	50	1.95	4	0.20	0.008	0.010	256012 0042	30,40
2.0	3	20.0	60	1.95	4	0.20	0.008	0.010	256012 0043	31,70
2.0	3	25.0	75	1.95	4	0.20	0.008	0.010	256012 0044	32,70
2.5	3.7	8.0	50	2.40	4	0.30	0.010	0.013	256012 0046	29,30
2.5	3.7	10.0	50	2.40	4	0.30	0.010	0.013	256012 0047	29,30
2.5	3.7	12.0	50	2.40	4	0.30	0.010	0.013	256012 0048	29,30
2.5	3.7	16.0	50	2.40	4	0.30	0.010	0.013	256012 0049	30,40
2.5	3.7	20.0	60	2.40	4	0.30	0.010	0.013	256012 0050	33,80
2.5	3.7	25.0	60	2.40	4	0.30	0.010	0.013	256012 0051	34,90
3.0	4.5	8.0	50	2.85	6	0.30	0.012	0.015	256012 0053	41,70
3.0	4.5	10.0	50	2.85	6	0.30	0.012	0.015	256012 0054	41,70
3.0	4.5	12.0	50	2.85	6	0.30	0.012	0.015	256012 0055	41,70
3.0	4.5	16.0	60	2.85	6	0.30	0.012	0.015	256012 0056	41,70
3.0	4.5	20.0	60	2.85	6	0.30	0.012	0.015	256012 0057	41,70
3.0	4.5	25.0	75	2.85	6	0.30	0.012	0.015	256012 0058	43,80
4.0	4.5	20.0	60	3.85	6	0.40	0.016	0.021	256012 0061	41,70
4.0	4.5	25.0	75	3.85	6	0.40	0.016	0.021	256012 0062	43,80
4.0	4.5	30.0	75	3.85	6	0.40	0.016	0.021	256012 0063	43,80
4.0	4.5	40.0	75	3.85	6	0.40	0.016	0.021	256012 0064	45,10

2153

ATORN® Ultra-MS torus cutter

VHM | NH | 35° -38° | e8 | h6 | DIN 6535 HA | Z 4 | AlCrN | HSC | Vc/fz | 759

- With clearance



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 120-140	● 120-140	○ 120-140	● 60-80	● 60-80	● 60-80	○ 120-140	○ 120-140	● 60-80	● 60-80	● 60-80							
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		

Standard



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	R mm	Feed fz stainless steel austenitic mm/tooth	Feed fz stainless steel austenitic mm/tooth	art.no.	€
4.0	11	20	57	3.70	6	0.30	0.016	0.021	**256010** 0001	38,30
4.0	11	20	57	3.70	6	0.50	0.016	0.021	256010 0002	38,30
5.0	13	20	57	4.60	6	0.30	0.020	0.026	256010 0003	38,30
5.0	13	20	57	4.60	6	0.50	0.020	0.026	256010 0004	38,30
6.0	13	20	57	5.50	6	0.30	0.024	0.031	256010 0005	38,30
6.0	13	20	57	5.50	6	0.50	0.024	0.031	256010 0006	38,30
6.0	13	20	57	5.50	6	1.00	0.024	0.031	256010 0007	38,30
8.0	20	30	64	7.40	8	0.50	0.030	0.038	256010 0009	54,50
8.0	20	30	64	7.40	8	1.00	0.030	0.038	256010 0010	54,50
10.0	22	32	72	9.20	10	0.50	0.036	0.046	256010 0012	72,50
10.0	22	32	72	9.20	10	1.00	0.036	0.046	256010 0013	72,50
12.0	26	37	83	11.00	12	0.50	0.043	0.054	256010 0014	97,–
12.0	26	37	83	11.00	12	1.00	0.043	0.054	256010 0015	97,–
12.0	26	37	83	11.00	12	2.00	0.043	0.054	256010 0016	97,–
12.0	26	37	83	11.00	12	3.00	0.043	0.054	256010 0018	97,–
16.0	32	46	92	15.00	16	1.00	0.054	0.068	256010 0020	159,–
16.0	32	46	92	15.00	16	2.00	0.054	0.068	256010 0021	159,–
16.0	32	46	92	15.00	16	3.00	0.054	0.068	256010 0022	159,–
20.0	38	58	104	19.00	20	1.00	0.066	0.083	256010 0025	245,–
20.0	38	58	104	19.00	20	2.00	0.066	0.083	256010 0026	245,–
20.0	38	58	104	19.00	20	3.00	0.066	0.083	256010 0027	245,–
20.0	38	58	104	19.00	20	4.00	0.066	0.083	256010 0028	245,–

2153

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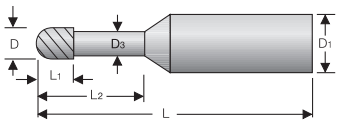
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ATORN® Ultra-MS mini radius milling cutter

VHM | NH | 30° | e8 | h6 | DIN 6535 HA | Z 2 | AlCrN | 3D PRINT | Vc/fz | 759

- With clearance



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 96-112	● 96-112	○ 96-112	● 60-80	● 60-80	● 60-80	○ 96-112	○ 96-112	● 60-80	● 60-80	● 60-80							
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		



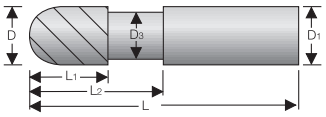
D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	R mm	● Feed fz stainless steel austenitic mm/tooth	● Feed fz stainless steel austenitic mm/tooth	art.no.	€
0.5	0.4	2,0	50	0.45	4	0.25	0.002	0.003	**256013** 0012	45,10
0.5	0.4	4,0	50	0.45	4	0.25	0.002	0.003	256013 0014	45,10
0.5	0.4	6,0	50	0.45	4	0.25	0.002	0.003	256013 0016	45,10
0.5	0.4	8,0	50	0.45	4	0.25	0.002	0.003	256013 0017	45,10
0.8	0.6	2,0	50	0.75	4	0.40	0.002	0.003	256013 0024	42,80
0.8	0.6	4,0	50	0.75	4	0.40	0.003	0.004	256013 0025	42,80
0.8	0.6	6,0	50	0.75	4	0.40	0.003	0.004	256013 0027	42,80
0.8	0.6	8,0	50	0.75	4	0.40	0.003	0.004	256013 0028	42,80
0.8	0.6	10,0	50	0.75	4	0.40	0.003	0.004	256013 0029	42,80
1,0	0.8	3,0	50	0.95	4	0.50	0.004	0.005	256013 0030	31,70
1,0	0.8	4,0	50	0.95	4	0.50	0.004	0.005	256013 0031	31,70
1,0	0.8	6,0	50	0.95	4	0.50	0.004	0.005	256013 0033	31,70
1,0	0.8	8,0	50	0.95	4	0.50	0.004	0.005	256013 0034	31,70
1,0	0.8	10,0	50	0.95	4	0.50	0.004	0.005	256013 0035	32,70
1,0	0.8	12,0	50	0.95	4	0.50	0.004	0.005	256013 0036	32,70
1,0	0.8	20,0	50	0.95	4	0.50	0.004	0.005	256013 0037	33,80
1.5	1.2	8,0	50	1.45	4	0.75	0.006	0.007	256013 0042	31,70
1.5	1.2	12,0	50	1.45	4	0.75	0.006	0.007	256013 0043	31,70
1.5	1.2	16,0	50	1.45	4	0.75	0.006	0.007	256013 0044	32,70
2.0	1.6	6.0	50	1.95	4	1.00	0.008	0.010	256013 0045	31,70
2.0	1.6	8.0	50	1.95	4	1.00	0.008	0.010	256013 0046	31,70
2.0	1.6	10.0	50	1.95	4	1.00	0.008	0.010	256013 0047	31,70
2.0	1.6	12.0	50	1.95	4	1.00	0.008	0.010	256013 0048	31,70
2.0	1.6	16.0	50	1.95	4	1.00	0.008	0.010	256013 0049	32,70
2.0	1.6	20.0	60	1.95	4	1.00	0.008	0.010	256013 0050	36,10
2.0	1.6	25.0	75	1.95	4	1.00	0.008	0.010	256013 0051	39,30
3.0	2.4	8.0	50	2.85	6	1.50	0.012	0.015	256013 0053	47,20
3.0	2.4	10.0	50	2.85	6	1.50	0.012	0.015	256013 0054	47,20
3.0	2.4	16.0	60	2.85	6	1.50	0.012	0.015	256013 0055	47,20
3.0	2.4	20.0	60	2.85	6	1.50	0.012	0.015	256013 0056	47,20
3.0	2.4	25.0	75	2.85	6	1.50	0.012	0.015	256013 0057	49,60
3.0	2.4	30.0	75	2.85	6	1.50	0.012	0.015	256013 0058	49,60
4.0	3.2	10.0	50	3.85	6	2.00	0.016	0.021	256013 0059	47,20
4.0	3.2	16.0	60	3.85	6	2.00	0.016	0.021	256013 0060	47,20
4.0	3.2	20.0	60	3.85	6	2.00	0.016	0.021	256013 0061	47,20
4.0	3.2	25.0	75	3.85	6	2.00	0.016	0.021	256013 0062	52,–
4.0	3.2	30.0	75	3.85	6	2.00	0.016	0.021	256013 0063	52,–
4.0	3.2	35.0	75	3.85	6	2.00	0.016	0.021	256013 0064	53,–
4.0	3.2	40.0	100	3.85	6	2.00	0.016	0.021	256013 0065	54,50
4.0	3.2	50.0	100	3.85	6	2.00	0.016	0.021	256013 0066	56,50

2153

ATORN® Ultra-MS radius milling cutter

VHM | NH | 30° | e8 | h6 | DIN 6535 HA | Z 2 | AlCrN | Vc/fz | 746

- With clearance



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 150-200	● 150-200	○ 150-200	● 60-80	● 70-90	● 70-90	○ 150-200	○ 150-200	● 60-80	● 60-80	● 60-80							
	Cutting speed Vc m/min.				Please adjust these guidelines according to clamping operation and machine set-up.														

Standard



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	R mm	Feed fz stainless steel austenitic mm/tooth	Feed fz stainless steel austenitic mm/tooth	DIN 6535-HA art.no.	€
3.0	5	20	57	2.80	6	1.50	0.012	0.015	**256016** 0030	35,10
4.0	6	20	57	3.70	6	2.00	0.016	0.021	256016 0040	35,10
5.0	7	20	57	4.60	6	2.50	0.020	0.026	256016 0050	35,10
6.0	8	20	57	5.50	6	3.00	0.024	0.031	256016 0060	35,10
8.0	10	25	64	7.40	8	4.00	0.030	0.038	256016 0080	47,–
10.0	12	35	75	9.20	10	5.00	0.036	0.046	256016 0100	66,50
12.0	14	35	75	11.00	12	6.00	0.043	0.054	256016 0120	90,–
16.0	18	45	90	15.00	16	8.00	0.054	0.068	256016 0160	156,–
20.0	22	50	100	19.00	20	10.00	0.066	0.083	256016 0200	245,–

2153

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SARA® Diamond-coated end milling cutter DIA+

INFO

Specially designed for our diamond range, the crystalline diamond coating is ideal for machining **graphite**, **GFRP materials** and **copper**. Thanks to the outstanding coating adhesion on the specially selected carbide, you achieve maximum service life with our diamond range.

This coating is also extremely abrasion-resistant, and there is no typical CVD nose on the sharp cutting edges. This means greater efficiency, lower costs and thus increased yield.

Special features

- High-tech CVD diamond coating
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- Increased wear resistance thanks to crystalline diamond coating
- Layer thickness 10+2 µm
- Hardness 10,000 HV

Especially for machining graphite

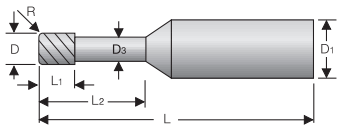
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Mini torus milling cutter DIA+		Ø 0.2-12	518
Mini radius milling cutter DIA+		Ø 0.2-12	520
Torus milling cutter DIA+, short		Ø 3-16	522
Torus milling cutter DIA+, long		Ø 3-16	523

SARA® DIA+ mini torus cutter

VHM | Typ N | 30° | h9 | h5 | DIN 6535 HA | Z 2 | DIA | HSC | Vc/fz 760

- Crystalline diamond coating
- Reliable graphite, GFRP and CFRP machining
- With clearance
- Radius tolerance +/- 0.0003

Layer thickness 10+2 µm



material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
															● 95-300			

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	R mm	● Feed for grooving fz graphite mm/tooth	● Feed for side milling fz graphite mm/tooth	art.no.	€
0.20	0.20	1	55	0.20	3.00	0.05	0.002	0.003	**258005** 0001	89,–
0.30	0.30	3	55	0.27	3.00	0.05	0.003	0.004	258005 0004	83,50
0.30	0.30	3	55	0.27	4.00	0.05	0.003	0.004	258005 0005	83,50
0.40	0.40	2	55	0.35	3.00	0.05	0.003	0.004	258005 0007	75,50
0.40	0.40	4	55	0.35	3.00	0.05	0.003	0.004	258005 0008	75,50
0.40	0.40	8	55	0.35	3.00	0.05	0.003	0.004	258005 0009	75,50
0.40	0.40	8	55	0.35	4.00	0.05	0.003	0.004	258005 0010	75,50
0.40	0.40	4	55	0.35	4.00	0.05	0.003	0.004	258005 0012	75,50
0.50	0.50	2	55	0.45	3.00	0.05	0.003	0.004	258005 0013	61,50
0.50	0.50	5	55	0.45	3.00	0.05	0.003	0.004	258005 0014	61,50
0.50	0.50	10	55	0.45	3.00	0.05	0.003	0.004	258005 0015	61,50
0.50	0.50	10	55	0.45	4.00	0.05	0.003	0.004	258005 0016	61,50
0.50	0.50	2	55	0.45	4.00	0.05	0.003	0.004	258005 0017	61,50
0.50	0.50	5	55	0.45	4.00	0.05	0.003	0.004	258005 0018	61,50
0.60	0.80	3	55	0.56	3.00	0.06	0.005	0.008	258005 0019	60,–
0.60	0.80	6	55	0.56	3.00	0.06	0.005	0.008	258005 0020	60,–
0.60	0.80	9	55	0.56	3.00	0.06	0.005	0.008	258005 0021	60,–
0.60	0.80	3	55	0.56	4.00	0.06	0.005	0.008	258005 0023	66,–
0.60	0.80	9	55	0.56	4.00	0.06	0.005	0.008	258005 0025	66,–
0.80	1.00	4	55	0.75	3.00	0.08	0.005	0.008	258005 0027	60,–
0.80	1.00	8	55	0.75	3.00	0.08	0.005	0.008	258005 0028	60,–
0.80	1.00	12	55	0.75	3.00	0.08	0.005	0.008	258005 0029	60,–
0.80	1.00	16	55	0.75	3.00	0.08	0.005	0.008	258005 0030	60,–
0.80	1.00	4	55	0.75	4.00	0.08	0.005	0.008	258005 0031	71,50

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D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	R mm	Feed for grooving fz graphite mm/tooth	Feed for side milling fz graphite mm/tooth	art.no.	€
0.80	1.00	8	55	0.75	4.00	0.08	0.005	0.008	258005 0032	71,50
0.80	1.00	12	55	0.75	4.00	0.08	0.005	0.008	258005 0033	71,50
0.80	1.00	16	55	0.75	4.00	0.08	0.005	0.008	258005 0034	71,50
1.00	1.00	5	55	0.90	3.00	0.10	0.01	0.015	258005 0035	60,–
1.00	1.00	10	55	0.90	3.00	0.10	0.01	0.015	258005 0036	60,–
1.00	1.00	15	55	0.90	3.00	0.10	0.01	0.015	258005 0037	60,–
1.00	1.00	20	55	0.90	3.00	0.10	0.01	0.015	258005 0038	60,–
1.00	1.00	25	55	0.90	3.00	0.10	0.01	0.015	258005 0039	60,–
1.00	1.00	5	55	0.90	4.00	0.10	0.01	0.015	258005 0040	60,–
1.00	1.00	10	55	0.90	4.00	0.10	0.01	0.015	258005 0041	60,–
1.00	1.00	15	55	0.90	4.00	0.10	0.01	0.015	258005 0042	60,–
1.00	1.00	20	55	0.90	4.00	0.10	0.01	0.015	258005 0043	60,–
1.00	1.00	25	55	0.90	4.00	0.10	0.01	0.015	258005 0044	60,–
1.20	1.50	10	55	1.10	3.00	0.12	0.01	0.015	258005 0047	60,–
1.20	1.50	15	55	1.10	4.00	0.12	0.01	0.015	258005 0049	60,–
1.20	1.50	10	55	1.10	4.00	0.12	0.01	0.015	258005 0050	60,–
1.20	1.50	5	55	1.10	4.00	0.12	0.01	0.015	258005 0051	60,–
1.50	2.00	5	55	1.40	3.00	0.15	0.012	0.02	258005 0052	60,–
1.50	2.00	8	55	1.40	3.00	0.15	0.012	0.02	258005 0053	60,–
1.50	2.00	10	55	1.40	3.00	0.15	0.012	0.02	258005 0054	60,–
1.50	2.00	15	55	1.40	3.00	0.15	0.012	0.02	258005 0055	60,–
1.50	2.00	20	55	1.40	3.00	0.15	0.012	0.02	258005 0056	60,–
1.50	2.00	25	55	1.40	3.00	0.15	0.012	0.02	258005 0057	60,–
1.50	2.00	25	55	1.40	4.00	0.15	0.012	0.02	258005 0058	60,–
1.50	2.00	20	55	1.40	4.00	0.15	0.012	0.02	258005 0059	60,–
1.50	2.00	15	55	1.40	4.00	0.15	0.012	0.02	258005 0060	60,–
1.50	2.00	10	55	1.40	4.00	0.15	0.012	0.02	258005 0061	60,–
1.80	2.00	20	55	1.70	3.00	0.18	0.012	0.025	258005 0066	60,–
2.00	2.00	10	65	1.90	3.00	0.20	0.015	0.025	258005 0069	60,–
2.00	2.00	15	65	1.90	3.00	0.20	0.015	0.025	258005 0070	60,–
2.00	2.00	20	65	1.90	3.00	0.20	0.015	0.025	258005 0071	60,–
2.00	2.00	25	65	1.90	3.00	0.20	0.015	0.025	258005 0072	60,–
2.00	2.00	10	65	1.90	3.00	0.50	0.015	0.025	258005 0073	60,–
2.00	2.00	15	65	1.90	3.00	0.50	0.015	0.025	258005 0074	60,–
2.00	2.00	20	65	1.90	3.00	0.50	0.015	0.025	258005 0075	60,–
2.00	2.00	25	65	1.90	3.00	0.50	0.015	0.025	258005 0076	60,–
2.00	2.00	25	65	1.90	4.00	0.50	0.015	0.025	258005 0077	60,–
2.00	2.00	10	65	1.90	4.00	0.20	0.015	0.025	258005 0079	60,–
2.00	2.00	15	65	1.90	4.00	0.20	0.015	0.025	258005 0080	60,–
2.00	2.00	20	65	1.90	4.00	0.20	0.015	0.025	258005 0081	60,–
2.00	2.00	25	65	1.90	4.00	0.20	0.015	0.025	258005 0082	60,–
2.00	2.00	10	65	1.90	4.00	0.50	0.015	0.025	258005 0083	60,–
2.00	2.00	15	65	1.90	4.00	0.50	0.015	0.025	258005 0085	60,–
2.00	2.00	20	65	1.90	4.00	0.50	0.015	0.025	258005 0086	60,–
3.00	3.00	15	65	2.90	4.00	0.30	0.02	0.03	258005 0087	74,50
3.00	3.00	25	75	2.90	4.00	0.30	0.02	0.03	258005 0088	74,50
3.00	3.00	10	65	2.90	4.00	0.50	0.02	0.03	258005 0089	74,50
3.00	3.00	15	65	2.90	4.00	0.50	0.02	0.03	258005 0090	74,50
3.00	3.00	20	65	2.90	4.00	0.50	0.02	0.03	258005 0091	74,50
3.00	3.00	25	75	2.90	4.00	0.50	0.02	0.03	258005 0092	74,50
3.00	3.00	30	75	2.90	4.00	0.50	0.02	0.03	258005 0093	74,50
3.00	3.00	20	65	2.90	6.00	0.50	0.02	0.03	258005 0095	97,–
4.00	4.00	15	65	3.90	6.00	0.30	0.03	0.04	258005 0094	97,–
4.00	4.00	15	65	3.90	6.00	0.40	0.03	0.04	258005 0097	97,–
4.00	4.00	25	75	3.90	6.00	0.40	0.03	0.04	258005 0098	97,–
4.00	4.00	20	65	3.90	6.00	0.50	0.03	0.04	258005 0099	89,–
4.00	4.00	30	75	3.90	6.00	0.50	0.03	0.04	258005 0100	89,–
4.00	4.00	40	90	3.90	6.00	0.50	0.03	0.04	258005 0101	92,50
5.00	5.00	20	75	4.90	6.00	0.50	0.045	0.06	258005 0102	106,–

Continued on next page >>>

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D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	R mm	Feed for grooving fz graphite mm/tooth	Feed for side milling fz graphite mm/tooth	art.no.	€
5.00	5.00	30	75	4.90	6.00	0.50	0.045	0.06	258005 0103	106,–
5.00	5.00	40	90	4.90	6.00	0.50	0.045	0.06	258005 0104	106,–
5.00	5.00	50	90	4.90	6.00	0.50	0.045	0.06	258005 0105	106,–
6.00	6.00	30	75	5.90	6.00	0.30	0.045	0.06	258005 0106	106,–
6.00	6.00	30	75	5.90	6.00	0.50	0.045	0.06	258005 0107	106,–
6.00	6.00	40	90	5.90	6.00	0.50	0.045	0.06	258005 0108	112,50
6.00	6.00	50	90	5.90	6.00	0.50	0.045	0.06	258005 0109	112,50
6.00	6.00	60	100	5.90	6.00	0.50	0.045	0.06	258005 0110	112,50
6.00	6.00	30	75	5.90	6.00	1.00	0.045	0.06	258005 0111	112,50
6.00	6.00	40	90	5.90	6.00	1.00	0.045	0.06	258005 0112	112,50
8.00	8.00	30	80	7.80	8.00	0.50	0.06	0.08	258005 0113	156,–
8.00	8.00	60	100	7.80	8.00	0.50	0.06	0.08	258005 0114	156,–
8.00	8.00	30	80	7.80	8.00	1.00	0.06	0.08	258005 0115	156,–
8.00	8.00	60	100	7.80	8.00	1.00	0.06	0.08	258005 0116	156,–
10.00	10.00	30	80	9.80	10.00	0.50	0.08	0.1	258005 0117	189,50
10.00	10.00	60	100	9.80	10.00	0.50	0.08	0.1	258005 0118	189,50
10.00	10.00	30	80	9.80	10.00	1.00	0.08	0.1	258005 0119	189,50
10.00	10.00	60	100	9.80	10.00	1.00	0.08	0.1	258005 0120	189,50
12.00	12.00	60	100	11.80	12.00	1.00	0.1	0.12	258005 0124	257,50

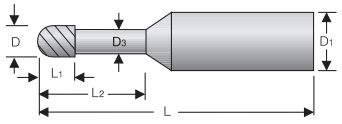
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SARA® DIA+ mini radius milling cutter

VHM | Typ N | 30° | h9 | h5 | DIN 6535 HA | Z 2 | DIA | HSC | Vc/fz | 760

- Crystalline diamond coating
- Reliable graphite, GFRP and CFRP machining
- With clearance
- Radius tolerance +/- 0.0003

Layer thickness 10+2 µm



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
																● 95-300			
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	R mm	Feed for grooving fz graphite mm/tooth	Feed for side milling fz graphite mm/tooth	art.no.	€
0.20	0.20	1	55	0.18	3.00	0.1	0.002	0.003	**258006** 0001	89,–
0.20	0.20	1	55	0.18	4.00	0.1	0.002	0.003	258006 0002	89,–
0.30	0.30	1	55	0.27	3.00	0.15	0.003	0.004	258006 0003	83,50
0.30	0.30	3	55	0.27	3.00	0.15	0.003	0.004	258006 0004	83,50
0.30	0.30	5	55	0.27	3.00	0.15	0.003	0.004	258006 0005	83,50
0.30	0.30	1	55	0.27	4.00	0.15	0.003	0.004	258006 0006	83,50
0.30	0.30	3	55	0.27	4.00	0.15	0.003	0.004	258006 0007	83,50
0.30	0.30	5	55	0.27	4.00	0.15	0.003	0.004	258006 0008	83,50
0.30	0.30	8	55	0.27	4.00	0.15	0.003	0.004	258006 0009	83,50
0.40	0.40	4	55	0.35	3.00	0.2	0.003	0.004	258006 0011	75,50
0.40	0.40	6	55	0.35	3.00	0.2	0.003	0.004	258006 0012	75,50
0.40	0.40	8	55	0.35	3.00	0.2	0.003	0.004	258006 0013	75,50
0.40	0.40	4	55	0.35	4.00	0.2	0.003	0.004	258006 0014	75,50
0.40	0.40	6	55	0.35	4.00	0.2	0.003	0.004	258006 0015	75,50
0.40	0.40	8	55	0.35	4.00	0.2	0.003	0.004	258006 0016	75,50
0.50	0.50	5	55	0.45	3.00	0.25	0.003	0.004	258006 0017	61,50
0.50	0.50	10	55	0.45	3.00	0.25	0.003	0.004	258006 0018	61,50

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D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	R mm	Feed for grooving fz graphite mm/tooth	Feed for side milling fz graphite mm/tooth	art.no.	€
0.50	0.50	5	55	0.45	4.00	0.25	0.003	0.004	258006 0019	64,50
0.50	0.50	10	55	0.45	4.00	0.25	0.003	0.004	258006 0020	64,50
0.60	0.80	6	55	0.56	3.00	0.3	0.005	0.008	258006 0021	61,50
0.60	0.80	9	55	0.56	3.00	0.3	0.005	0.008	258006 0022	61,50
0.60	0.80	12	55	0.56	3.00	0.3	0.005	0.008	258006 0023	61,50
0.60	0.80	6	55	0.56	4.00	0.3	0.005	0.008	258006 0024	64,50
0.60	0.80	9	55	0.56	4.00	0.3	0.005	0.008	258006 0025	64,50
0.60	0.80	12	55	0.56	4.00	0.3	0.005	0.008	258006 0026	64,50
0.70	0.90	7	55	0.65	3.00	0.35	0.005	0.008	258006 0027	61,50
0.70	0.90	14	55	0.65	3.00	0.35	0.005	0.008	258006 0028	61,50
0.70	0.90	7	55	0.65	4.00	0.35	0.005	0.008	258006 0029	64,50
0.80	1.00	8	55	0.75	3.00	0.4	0.005	0.008	258006 0031	61,50
0.80	1.00	12	55	0.75	3.00	0.4	0.005	0.008	258006 0032	61,50
0.80	1.00	16	55	0.75	3.00	0.4	0.005	0.008	258006 0033	61,50
0.80	1.00	8	55	0.75	4.00	0.4	0.005	0.008	258006 0034	64,50
0.80	1.00	12	55	0.75	4.00	0.4	0.005	0.008	258006 0035	64,50
0.80	1.00	16	55	0.75	4.00	0.4	0.005	0.008	258006 0036	64,50
1.00	1.00	5	55	0.90	3.00	0.5	0.01	0.015	258006 0037	61,50
1.00	1.00	10	55	0.90	3.00	0.5	0.01	0.015	258006 0038	61,50
1.00	1.00	15	55	0.90	3.00	0.5	0.01	0.015	258006 0039	61,50
1.00	1.00	20	55	0.90	3.00	0.5	0.01	0.015	258006 0040	61,50
1.00	1.00	25	55	0.90	3.00	0.5	0.01	0.015	258006 0041	61,50
1.00	1.00	30	55	0.90	3.00	0.5	0.01	0.015	258006 0042	61,50
1.00	1.00	5	55	0.90	4.00	0.5	0.01	0.015	258006 0077	64,50
1.00	1.00	10	55	0.90	4.00	0.5	0.01	0.015	258006 0078	64,50
1.00	1.00	15	55	0.90	4.00	0.5	0.01	0.015	258006 0079	64,50
1.00	1.00	20	55	0.90	4.00	0.5	0.01	0.015	258006 0080	64,50
1.00	1.00	25	55	0.90	4.00	0.5	0.01	0.015	258006 0081	64,50
1.00	1.00	30	55	0.90	4.00	0.5	0.01	0.015	258006 0082	64,50
1.20	1.50	5	55	1.10	3.00	0.6	0.01	0.015	258006 0044	61,50
1.20	1.50	10	55	1.10	3.00	0.6	0.01	0.015	258006 0045	61,50
1.20	1.50	15	55	1.10	3.00	0.6	0.01	0.015	258006 0046	61,50
1.20	1.50	10	55	1.10	4.00	0.6	0.01	0.015	258006 0084	64,50
1.20	1.50	15	55	1.10	4.00	0.6	0.01	0.015	258006 0085	64,50
1.50	2.00	5	55	1.40	3.00	0.75	0.012	0.02	258006 0047	61,50
1.50	2.00	10	55	1.40	3.00	0.75	0.012	0.02	258006 0048	61,50
1.50	2.00	15	55	1.40	3.00	0.75	0.012	0.02	258006 0049	61,50
1.50	2.00	20	55	1.40	3.00	0.75	0.012	0.02	258006 0050	61,50
1.50	2.00	25	55	1.40	3.00	0.75	0.012	0.02	258006 0051	61,50
1.50	2.00	15	55	1.40	6.00	0.75	0.012	0.02	258006 0052	97,–
1.50	2.00	5	55	1.40	4.00	0.75	0.012	0.02	258006 0086	64,50
1.50	2.00	10	55	1.40	4.00	0.75	0.012	0.02	258006 0087	64,50
1.50	2.00	15	55	1.40	4.00	0.75	0.012	0.02	258006 0088	64,50
1.50	2.00	20	55	1.40	4.00	0.75	0.012	0.02	258006 0089	64,50
1.50	2.00	25	55	1.40	4.00	0.75	0.012	0.02	258006 0090	64,50
2.00	2.00	10	55	1.90	3.00	1	0.015	0.025	258006 0055	61,50
2.00	2.00	15	55	1.90	3.00	1	0.015	0.025	258006 0056	61,50
2.00	2.00	20	55	1.90	3.00	1	0.015	0.025	258006 0057	61,50
2.00	2.00	25	65	1.90	3.00	1	0.015	0.025	258006 0058	61,50
2.00	2.00	30	65	1.90	3.00	1	0.015	0.025	258006 0059	61,50
2.00	2.00	20	65	2.40	6.00	1.25	0.015	0.025	258006 0061	97,–
2.00	2.00	10	55	1.90	4.00	1	0.015	0.025	258006 0093	64,50
2.00	2.00	15	55	1.90	4.00	1	0.015	0.025	258006 0094	64,50
2.00	2.00	20	55	1.90	4.00	1	0.015	0.025	258006 0095	64,50
2.00	2.00	25	65	1.90	4.00	1	0.015	0.025	258006 0096	64,50
2.00	2.00	30	65	1.90	4.00	1	0.015	0.025	258006 0097	64,50
3.00	3.00	10	65	2.90	4.00	1.5	0.02	0.03	258006 0063	73,50
3.00	3.00	15	65	2.90	4.00	1.5	0.02	0.03	258006 0064	73,50
3.00	3.00	20	65	2.90	4.00	1.5	0.02	0.03	258006 0065	73,50

Continued on next page >>>

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D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	R mm	Feed for grooving fz graphite mm/tooth	Feed for side milling fz graphite mm/tooth	art.no.	€
3.00	3.00	25	75	2.90	4.00	1.5	0.02	0.03	258006 0066	73,50
3.00	3.00	30	75	2.90	4.00	1.5	0.02	0.03	258006 0067	73,50
3.00	3.00	20	65	2.90	6.00	1.5	0.02	0.03	258006 0068	97,–
4.00	4.00	20	65	3.90	6.00	2	0.03	0.04	258006 0070	106,–
4.00	4.00	30	75	3.90	6.00	2	0.03	0.04	258006 0071	107,–
4.00	4.00	40	90	3.90	6.00	2	0.03	0.04	258006 0072	110,–
5.00	5.00	20	65	4.90	6.00	2.5	0.045	0.06	258006 0073	107,–
5.00	5.00	30	75	4.90	6.00	2.5	0.045	0.06	258006 0074	110,–
5.00	5.00	40	90	4.90	6.00	2.5	0.045	0.06	258006 0075	110,–
5.00	5.00	50	90	4.90	6.00	2.5	0.045	0.06	258006 0076	110,–
6.00	6.00	30	75	5.90	6.00	3	0.045	0.06	258006 0098	111,50
6.00	6.00	40	90	5.90	6.00	3	0.045	0.06	258006 0099	117,–
6.00	6.00	50	90	5.90	6.00	3	0.045	0.06	258006 0100	117,–
6.00	6.00	60	100	5.90	6.00	3	0.045	0.06	258006 0101	117,–
8.00	8.00	30	80	7.80	8.00	4	0.06	0.08	258006 0102	158,–
8.00	8.00	60	100	7.80	8.00	4	0.06	0.08	258006 0103	161,50
10.00	10.00	30	80	9.80	10.00	5	0.08	0.1	258006 0104	189,50
10.00	10.00	60	100	9.80	10.00	5	0.08	0.1	258006 0105	189,50
12.00	12.00	30	83	11.80	12.00	6	0.1	0.12	258006 0106	235,–
12.00	12.00	60	100	11.80	12.00	6	0.1	0.12	258006 0107	257,50

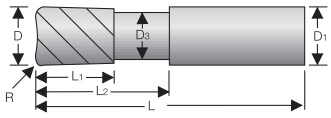
2154

SARA® DIA+ torus cutter

VHM | Typ N | 30° | h9 | h5 | DIN 6535 HA | Z 4 | DIA | HSC | Vc/fz 760

- Crystalline diamond coating
- Reliable graphite, GFRP and CFRP machining
- With clearance

Layer thickness 6+2 µm



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
																● 95-300			
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

Short



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	R mm	Feed for grooving fz graphite mm/tooth	Feed for side milling fz graphite mm/tooth	art.no.	€
3.00	6.00	14	50	2.70	3.00	0.3	0.02	0.03	**258013** 0001	56,50
3.00	6.00	14	50	2.70	3.00	0.5	0.02	0.03	258013 0002	56,50
4.00	8.00	16	50	3.70	4.00	0.4	0.03	0.04	258013 0004	60,–
4.00	8.00	16	50	3.70	4.00	0.5	0.03	0.04	258013 0005	60,–
4.00	8.00	16	50	3.70	4.00	1	0.03	0.04	258013 0006	60,–
5.00	10.00	18	54	4.60	5.00	0.5	0.045	0.06	258013 0007	70,–
6.00	13.00	21	57	5.50	6.00	0.5	0.045	0.06	258013 0009	83,50
8.00	15.00	27	63	7.40	8.00	0.5	0.06	0.08	258013 0012	115,–
8.00	15.00	27	63	7.40	8.00	1	0.06	0.08	258013 0013	115,–
10.00	18.00	32	72	9.20	10.00	0.5	0.08	0.1	258013 0016	146,–
10.00	18.00	32	72	9.20	10.00	1	0.08	0.1	258013 0017	146,–
12.00	26.00	38	83	11.00	12.00	0.5	0.1	0.12	258013 0020	170,–

2154



Long

D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	R mm	Feed for grooving fz graphite mm/tooth	Feed for side milling fz graphite mm/tooth	art.no.	€
3.00	6.00	32	80	2.70	3.00	0.3	0.020	0.030	**258014** 0001	63,50
3.00	6.00	32	80	2.70	3.00	0.5	0.020	0.030	258014 0002	63,50
4.00	8.00	36	80	3.70	4.00	0.5	0.030	0.040	258014 0005	72,50
6.00	13.00	44	90	5.50	6.00	0.5	0.045	0.055	258014 0009	97,–
6.00	13.00	44	90	5.50	6.00	1	0.045	0.055	258014 0010	97,–
8.00	15.00	54	100	7.40	8.00	0.5	0.060	0.070	258014 0012	133,50
10.00	18.00	60	100	9.20	10.00	0.5	0.080	0.100	258014 0016	170,–
10.00	18.00	60	100	9.20	10.00	1	0.080	0.100	258014 0017	170,–
10.00	18.00	60	100	9.20	10.00	1.5	0.080	0.100	258014 0018	170,–
10.00	18.00	60	100	9.20	10.00	2	0.080	0.100	258014 0019	170,–
12.00	26.00	75	120	11.00	12.00	0.5	0.100	0.120	258014 0020	207,–
12.00	26.00	75	120	11.00	12.00	1	0.100	0.120	258014 0021	207,–
12.00	26.00	75	120	11.00	12.00	1.5	0.100	0.120	258014 0022	207,–
12.00	26.00	75	120	11.00	12.00	2	0.100	0.120	258014 0023	207,–
16.00	32.00	85	120	15.00	16.00	0.5	0.200	0.250	258014 0024	365,–
16.00	32.00	85	120	15.00	16.00	1	0.200	0.250	258014 0025	365,–
16.00	32.00	85	120	15.00	16.00	1.5	0.200	0.250	258014 0026	365,–
16.00	32.00	85	120	15.00	16.00	2	0.200	0.250	258014 0027	365,–

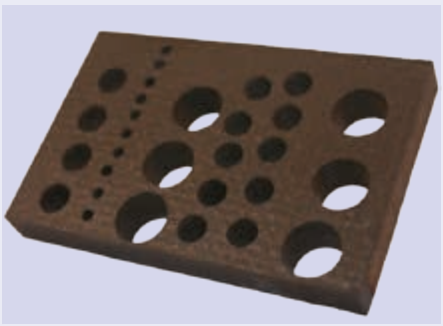
2154



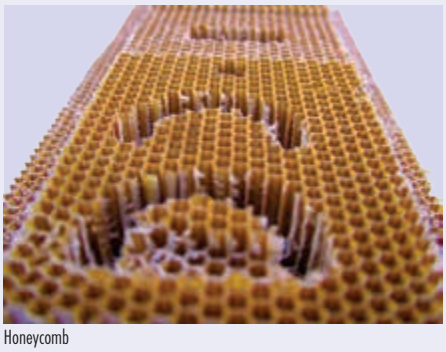
Solutions for composite

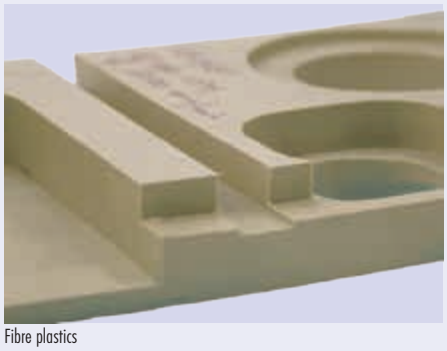
The efficient machining of modern materials such as fibre-reinforced plastics, honeycomb composites, aluminium, titanium and composites requires a new generation of cutting tools. The interaction of geometry, cutting material and coating creates the right material for machining such modern materials. All materials are designed to satisfy a range of requirements that occur when machining new materials.

Our tools have proven their quality in various tests: Proven cutting angle and cutting material combined with specially polished chip flutes ensure low cutting forces and problem-free chip removal.
This prevents delamination, outstanding residual fibres, roll-over and thermal damage to the workpiece.
We offer a comprehensive range of high-performance tools for optimum drilling and milling results in modern materials.


CFRP

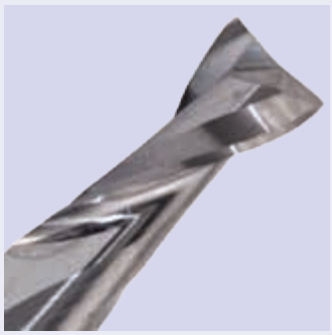

CFRP-titanium sandwich


Honeycomb


Fibre plastics

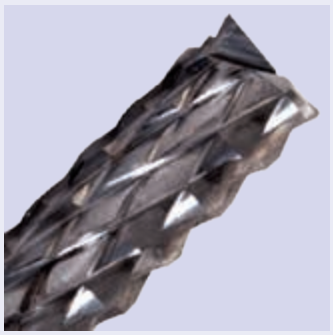

Alu honeycomb with GFRP cover


Aluminium honeycomb with aluminium cover



Polished chip flute

Rapid-Line HSC milling cutters have considerably enhanced chip flow. Machining temperatures are lower, thus avoiding overheating and welding pick-up. Rapid-Line milling cutters have a significantly longer service life and can also produce better surface qualities.
We recommend our "RAPID-Shine" product range for machining ultra-transparent surfaces. Thanks to their special cutting geometry and lapped cutting edges, these milling cutters are ideal for machining ultra-transparent plastic materials.



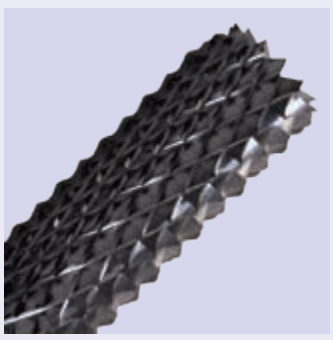
Pyramid toothing

A special grinding process combines polished chip flutes and ultra-sharp cutting edges. This results in low friction coefficients and high cutting stability. Designed primarily for machining CFRP and GFRP, we offer 3 different profile types – Fine, Medium and Coarse – as well as 3 different spur toothings for drilling, face milling and edge banding.



Honeycomb

The honeycomb structure is first cut and then separated, but never crushed.
The result is high-quality surfaces that can be machined further with ease.

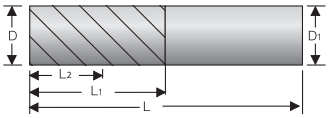


Coating

Our customers' requirements are diverse. Depending on the machining process, we offer various coatings to enhance the machining result.
Whether extremely thin diamond HC coating or a multi-layer diamond coating, we have the right coating for your application.

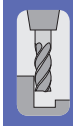
ATORN® Compression milling cutter

VHM | h10 | h6 | DLC | Vc/fz | 761



- For fibre plastics
- **Counter-rotating chip flutes with chip breakers**
- Spiralisation change from left to right
- Axial cutting forces converge in the centre
- **Finishing quality (ra < 2 µm)**
- Simultaneously pulling and pushing cut
- **Surface Dia-HC-coated**

material	● very well suited ○ well suited	aluminium < 8 % Si	aluminium ≥ 8 % Si	copper Cu-alloy	plastics thermoplastics	plastics elastomers	plastics duroplasts	timber materials	honeycomb sandwich	AFRP aramid	GFRP/CFRP < 30 % fibre content	GFRP/CFRP ≥ 30 % fibre content	graphite
											● 150-250	● 150-250	
	Cutting speed Vc m/min.	Please adjust these guidelines according to clamping operation and machine set-up.											



Short



D mm	L1 mm	L mm	L2 mm	D1 mm	art.no.	€
6	13	57	4	6	**250600** 0060	87,–
8	19	63	6	8	250600 0080	113,–
10	22	72	7	10	250600 0100	135,–
12	26	83	8	12	250600 0120	210,–

2168

Medium

D mm	L1 mm	L mm	L2 mm	D1 mm	art.no.	€
6	13	57	6.5	6	**250601** 0060	87,–
8	19	63	9.5	8	250601 0080	113,–
10	22	72	11	10	250601 0100	135,–
12	26	83	13	12	250601 0120	210,–

2168

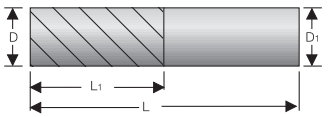
Long

D mm	L1 mm	L mm	L2 mm	D1 mm	art.no.	€
6	22	60	11	6	**250602** 0060	96,–
8	32	78	16	8	250602 0080	128,–
10	35	78	35	10	250602 0100	150,–
12	40	83	40	12	250602 0120	225,–

2168

ATORN® HSC milling cutter Z5

VHM | 0° | h10 | h6 | Z 5 | DLC | Vc/fz | 761



- For fibre composite materials
- Large chip flutes with synchronous chip-breakers
- **Continuous cut, good chip removal**
- Straight grooves, no tensile forces on the workpiece
- **Dia-HC-coated**

material	● very well suited ○ well suited	aluminium < 8 % Si	aluminium ≥ 8 % Si	copper Cu-alloy	plastics thermoplastics	plastics elastomers	plastics duroplasts	timber materials	honeycomb sandwich	AFRP aramid	GFRP/CFRP < 30 % fibre content	GFRP/CFRP ≥ 30 % fibre content	graphite
											● 150-250	● 150-250	
	Cutting speed Vc m/min.	Please adjust these guidelines according to clamping operation and machine set-up.											

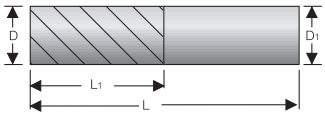


D mm	L1 mm	L mm	D1 mm	art.no.	€
4	14	40	6	**250603** 0040	46,90
5	16	50	6	250603 0050	42,60
6	18	50	6	250603 0060	45,80
8	20	63	8	250603 0080	69,–
10	25	72	10	250603 0100	94,–
12	30	83	10	250603 0120	128,–

2168

ATORN® HSC milling cutter Z6

VHM | 10° | h10 | h6 | Z 6 | DLC | Vc/fz | 761



- Fibre composite materials
- **Large chip flutes with synchronous chip-breakers**
- Continuous cut, good chip removal
- **Dia-HC-coated**

material	● very well suited ○ well suited	aluminium		copper	plastics			timber materials	honeycomb	AFRP	GFRP /CFRP		graphite
		< 8 % Si	≥ 8 % Si	Cu-alloy	thermoplastics	elastomers	duroplasts		sandwich	aramid	< 30 % fibre content	≥ 30 % fibre content	
											● 150-250	● 150-250	
	Cutting speed Vc m/min.				Please adjust these guidelines according to clamping operation and machine set-up.								

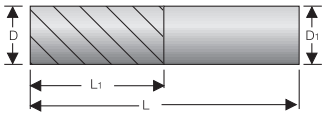


D mm	L1 mm	L mm	D1 mm	art.no.	€
4	20	50	6	**250604** 0040	46,90
5	16	50	6	250604 0050	42,60
6	18	50	6	250604 0060	45,80
6	35	75	6	250604 0061	63,–
8	20	63	8	250604 0080	69,–
8	40	100	8	250604 0081	87,50
10	25	72	10	250604 0100	94,–
12	30	83	12	250604 0120	128,–

2168

ATORN® Milling cutters with pyramid-shaped toothing

VHM | Vc/fz | 761



- Pyramid-shaped bevel toothing, draw cutting
- Multi-tooth milling cutter front for grooving and face milling
- Extremely sharp cutting edges
- **Fine: Fibre plastics with a high fibre content**
- **Medium: soft fibre plastics with an adhesive tendency**
- **Coarse: Sandwich materials and foams**
- Polished surface

material	● very well suited ○ well suited	aluminium		copper	plastics			timber materials	honeycomb	AFRP	GFRP /CFRP		graphite
		< 8 % Si	≥ 8 % Si	Cu-alloy	thermoplastics	elastomers	duroplasts		sandwich	aramid	< 30 % fibre content	≥ 30 % fibre content	
							● 200-300		● 200-250		● 150-250	● 150-250	
	Cutting speed Vc m/min.				Please adjust these guidelines according to clamping operation and machine set-up.								



D mm	L1 mm	L mm	D1 mm	Fine art.no.	Fine €	Medium art.no.	Medium €	Coarse art.no.	Coarse €
4	15	40	4	**250605** 0040	17,20	**250606** 0040	17,20	**250607** 0040	17,20
5	16	50	5	250605 0050	22,60	250606 0050	22,60	250607 0050	22,60
6	18	50	6	250605 0060	25,–	250606 0060	25,–	250607 0060	25,–
8	25	63	8	250605 0080	37,70	250606 0080	37,70	250607 0080	37,70
10	30	72	10	250605 0100	52,50	250606 0100	52,50	250607 0100	52,50
12	32	83	12	250605 0120	74,–	250606 0120	74,–	250607 0120	74,–
				2168		2168		2168	





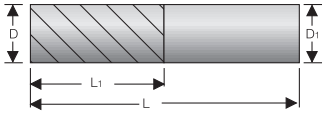
PFERD
Grinding and cutting
763 pages
Art.no. 019900 0216

Overview of all free manufacturers' catalogues
on page 14/15

ATORN® Milling cutters with groove milling head

VHM | h10 | h6 | Z 2 | DLC | Vc/fz | 761

- Pyramid-shaped bevel toothing, draw cutting
- Groove milling cutter bit for drilling, grooving, edge banding
- Extremely sharp cutting edges
- **Fine: fibre plastics with a high fibre content**
- **Medium: soft fibre plastics with an adhesive tendency**
- **Coarse: sandwich materials and foams**
- Polished and/or **Dia-HC-coated**



material: ● very well suited ○ well suited

aluminium < 8 % Si	aluminium ≥ 8 % Si	copper Cu-alloy	plastics thermoplastics	plastics elastomers	plastics duroplasts	timber materials	honeycomb sandwich	AFRP aramid	GFRP/CFRP < 30 % fibre content	GFRP/CFRP ≥ 30 % fibre content	graphite
					●		●		●	●	
					200-300		200-250		150-250	150-250	

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

Uncoated



D mm	L1 mm	L mm	D1 mm	Fine art.no.	Fine €	Medium art.no.	Medium €	Coarse art.no.	Coarse €
4	15	40	4	**250608** 0040	18,30	**250610** 0040	18,30	**250612** 0040	18,30
5	16	50	5	250608 0050	24,20	250610 0050	24,20	250612 0050	24,20
6	18	50	6	250608 0060	26,70	250610 0060	26,70	250612 0060	26,70
6	35	75	6	250608 0061	45,40	250610 0061	45,40	250612 0061	45,40
8	25	63	8	250608 0080	39,90	250610 0080	39,90	250612 0080	39,90
8	40	100	8	250608 0081	62,50	250610 0081	62,50	250612 0081	62,50
10	30	72	10	250608 0100	54,50	250610 0100	54,50	250612 0100	54,50
12	32	83	12	250608 0120	76,50	250610 0120	76,50	250612 0120	76,50
				2168		2168		2168	

Dia-HC-coated

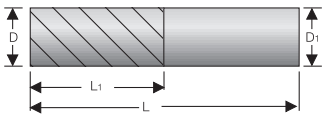


D mm	L1 mm	L mm	D1 mm	Fine art.no.	Fine €	Medium art.no.	Medium €	Coarse art.no.	Coarse €
4	15	40	4	**250609** 0040	26,80	**250611** 0040	26,80	**250613** 0040	26,80
5	16	50	5	250609 0050	32,70	250611 0050	32,70	250613 0050	32,70
6	18	50	6	250609 0060	35,40	250611 0060	35,40	250613 0060	35,40
6	35	75	6	250609 0061	54,50	250611 0061	54,50	250613 0061	54,50
8	25	63	8	250609 0080	52,50	250611 0080	52,50	250613 0080	52,50
8	40	100	8	250609 0081	75,50	250611 0081	75,50	250613 0081	75,50
10	30	72	10	250609 0100	71,50	250611 0100	71,50	250613 0100	71,50
12	32	83	12	250609 0120	96,50	250611 0120	96,50	250613 0120	96,50
				2168		2168		2168	

ATORN® Face milling cutter with face radius

VHM | h10 | h6 | DLC | Vc/fz | 761

- Pyramid-shaped bevel toothing, draw cutting
- Face radius for copy milling
- Extremely sharp cutting edges
- **Medium: soft fibre plastics with an adhesive tendency**
- **Dia-HC-coated**



material: ● very well suited ○ well suited

aluminium < 8 % Si	aluminium ≥ 8 % Si	copper Cu-alloy	plastics thermoplastics	plastics elastomers	plastics duroplasts	timber materials	honeycomb sandwich	AFRP aramid	GFRP/CFRP < 30 % fibre content	GFRP/CFRP ≥ 30 % fibre content	graphite
									●	●	
									150-250	150-250	

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

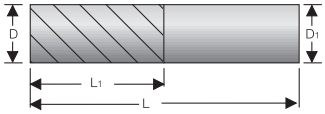


D mm	L1 mm	L mm	D1 mm	Medium art.no.	Medium €
4	15	40	4	**250614** 0040	29,30
6	18	50	6	250614 0060	36,90
8	25	36	8	250614 0080	55,–
8	40	100	8	250614 0081	83,–
10	30	72	10	250614 0100	74,50
12	32	83	12	250614 0120	99,–
				2168	

ATORN® Drilling cutter with drill bit

VHM | 135° | h10 | h6 | Vc/fz | 761

- Pyramid-shaped bevel toothing, draw cutting
- Drill bit 135° for drilling and edge banding
- Extremely sharp cutting edges
- **Fine: Fibre plastics with a high fibre content**
- **Medium: soft fibre plastics with an adhesive tendency**
- **Coarse: Sandwich materials and foams**
- Polished surface



material	● very well suited ○ well suited	aluminium < 8 % Si	aluminium ≥ 8 % Si	copper Cu-alloy	plastics thermoplastics	plastics elastomers	plastics duroplasts	timber materials	honeycomb sandwich	AFRP aramid	GFRP /CFRP < 30 % fibre content	GFRP /CFRP ≥ 30 % fibre content	graphite
							●		●		●	●	
	Cutting speed Vc m/min.						200-300		200-250		150-250	150-250	

Please adjust these guidelines according to clamping operation and machine set-up.

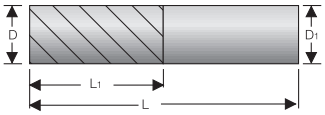


D mm	L1 mm	L mm	D1 mm	Fine art.no.	Fine €	Medium art.no.	Medium €	Coarse art.no.	Coarse €
4	15	40	4	**250615** 0040	19,40	**250616** 0040	19,40	**250617** 0040	19,40
5	16	50	5	250615 0050	25,50	250616 0050	25,50	250617 0050	25,50
6	18	50	6	250615 0060	27,70	250616 0060	27,70	250617 0060	27,70
8	25	63	8	250615 0080	41,60	250616 0080	41,60	250617 0080	41,60
10	30	72	10	250615 0100	56,50	250616 0100	56,50	250617 0100	56,50
12	32	83	12	250615 0120	80,–	250616 0120	80,–	250617 0120	80,–
				2168		2168		2168	

ATORN® Milling cutters for honeycomb composite materials

VHM | 10° | h10 | h6 | Vc/fz | 761

- For honeycomb composite materials
- Special toothing with drawing cut
- Good surface for further finishing
- **Extremely sharp cutting edges**
- Multi-flute spur toothing
- From Ø 16 mm with HSS shank



material	● very well suited ○ well suited	aluminium < 8 % Si	aluminium ≥ 8 % Si	copper Cu-alloy	plastics thermoplastics	plastics elastomers	plastics duroplasts	timber materials	honeycomb sandwich	AFRP aramid	GFRP /CFRP < 30 % fibre content	GFRP /CFRP ≥ 30 % fibre content	graphite
									●				
	Cutting speed Vc m/min.								300				

Please adjust these guidelines according to clamping operation and machine set-up.



D mm	L1 mm	L mm	D1 mm	art.no.	€
6	16	50	6	**250619** 0060	36,90
8	19	63	8	250619 0080	55,50
10	22	72	10	250619 0100	76,50
12	26	83	12	250619 0120	107,–
16	17	100	12	250619 0160	169,–
20	17	100	12	250619 0200	225,–
				2168	



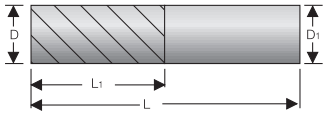
... from Ø 0.2 mm

ATORN®
High quality for great performance

ATORN® Milling cutters for Aramid fibrous materials

VHM | h10 | h6 | Vc/fz | 761

- For fibrous materials (aramid, Kevlar®)
- Counter-rotating toothing
- Right-hand cutting with right-hand/left-hand twist
- Extremely sharp cutting edges
- No delamination with textile structures
- Polished surface



material

● very well suited ○ well suited	aluminium		copper	plastics			timber materials	honeycomb	AFRP	GFRP /CFRP		graphite
	< 8 % Si	≥ 8 % Si	Cu-alloy	thermoplastics	elastomers	duroplasts		sandwich	aramid	< 30 % fibre content	≥ 30 % fibre content	
							● 200-250		● 250-350			

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

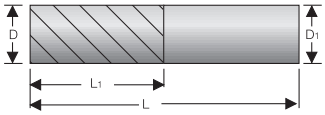
D mm	L1 mm	L mm	D1 mm	art.no.	€
6	20	60	6	**250618** 0060	77,50
8	22	63	8	250618 0080	101,–
10	25	72	10	250618 0100	130,–
12	30	83	12	250618 0120	168,–
				2168	



SARA® Contour cutter for GFRP and CFRP

VHM | Typ N | h5 | Vc/fz | 761

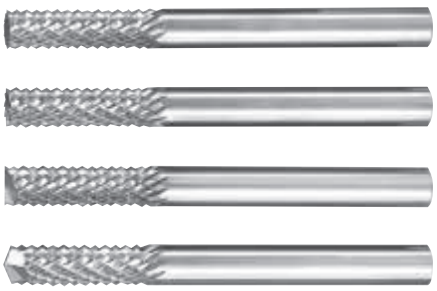
- Various versions
- Type A - smooth front face
- Type B - rotary cutter front face
- Type C - end mill front face
- Type D - drill point



material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
															● 200-230			

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



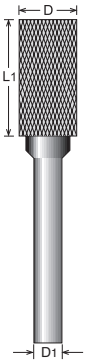
● Feed for side milling fz graphite mm/tooth

D mm	L1 mm	L mm	D1 mm	Type A art.no.	€	Type B art.no.	€	Type C art.no.	€	Type D art.no.	€
1.6	5	38	3	1000-1500	**250050** 0001	8,60	**250051** 0001	10,25	**250052** 0001	10,25	**250053** 0001	10,85
2.4	9.5	38	3	1100-1800	250050 0002	9,15	250051 0002	10,25	250052 0002	11,10	250053 0002	11,70
3.0	12	38	3	1100-1800	250050 0003	8,75	250051 0003	9,75	250052 0003	10,55	250053 0003	11,20
4.0	16	50	4	900-1700	250050 0004	14,30	250051 0004	15,90	250052 0004	16,60	250053 0004	16,70
4.0	16	50	6	900-1700	250050 0005	15,60	250051 0005	17,40	250052 0005	18,60	250053 0005	19,30
6.0	19	50	6	900-1700	250050 0007	15,60	250051 0007	17,40	250052 0007	18,60	250053 0007	19,30
6.0	19	63	6	900-1700	250050 0008	15,60	250051 0008	17,40	250052 0008	18,60	250053 0008	19,30
6.0	25	75	6	900-1700	250050 0009	19,30	250051 0009	21,–	250052 0009	22,–	250053 0009	22,70
8.0	25	63	8	900-1700	250050 0006	32,40	250051 0006	34,50	250052 0006	35,90	250053 0006	36,90
10.0	25	75	10	500-1300	250050 0010	40,30	250051 0010	43,80	250052 0010	45,60	250053 0010	47,30
12.0	25	75	12	500-1300	250050 0011	55,50	250051 0011	61,–	250052 0011	64,–	250053 0011	67,–
					2109		2109		2109		2109	

ATORN® Carbide rotary burs

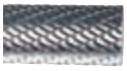
3D PRINT | Vc/fz | 762

- **Similar to DIN 8033**
- **Shank Ø 6 mm**
- Solid carbide up to head Ø 6 mm, brazed from head Ø 8 mm
- Precision manufacturing on the latest CNC grinding machines guarantees exact and uniform cut with optimised cutting geometry
- For machining high-strength and tough materials as well as non-ferrous and lightweight metals
- Roughing and finishing on hand-operated machines
- Effective when used on stationary internal grinding machines and jig boring machines (milling and finish milling)





ZYA - cylindrical shape without spur cut





D mm	L1 mm	D1 mm	Cut 6 art.no.	€	Cut 2 art.no.	€	Aluminium cut art.no.	€
6	18	6	**605051** 0618	16,80	**608054** 0618	16,80	**608035** 0618	21,60
8	20	6	605051 0820	21,30	608054 0820	21,30	608035 0820	30,10
10	20	6	605051 1020	22,90	608054 1020	22,90	608035 1020	28,70
12	25	6	605051 1225	35,80	608054 1225	35,80	608035 1225	44,70
15	25	6	605051 1525	45,–	608054 1525	45,–	608035 1525	56,50
			6108		6108		6108	




ZYAS - cylindrical shape with spur cut

D mm	L1 mm	D1 mm	Cut 6 art.no.	€	Aluminium cut art.no.	€
6	18	6	**605001** 0616	18,30		
8	20	6	605001 0819	23,40	**608001** 0819	30,10
10	20	6	605001 0919	25,10	608001 0919	41,10
12	25	6	605001 1225	39,30	608001 1225	56,50
15	25	6	605001 1625	64,–		
			6108		6108	




WRC - radius end shape

D mm	L1 mm	D1 mm	Cut 6 art.no.	€	Cut 2 art.no.	€	Aluminium cut art.no.	€
6	18	6	**605005** 0616	19,50	**608006** 0616	19,50		
8	20	6	605005 0819	23,20	608006 0819	23,20		
10	20	6	605005 0919	25,40	608006 0919	25,40	**608005** 0919	31,90
12	25	6	605005 1225	40,10	608006 1225	40,10	608005 1225	50,–
15	25	6	605005 1625	50,50	608006 1625	50,50	608005 1625	63,–
			6108		6108		6108	




KUD - ball shape

D mm	D1 mm	Cut 6 art.no.	€	Cut 2 art.no.	€	Aluminium cut art.no.	€
5	6	**605010** 0530	19,70				
6	6	605010 0650	18,–	**605013** 0606	18,–	**608010** 0606	28,90
8	6	605010 0860	18,80	605013 0860	18,80		
10	6	605010 0980	20,50			608010 0906	26,20
12	6	605010 1211	28,20	605013 1211	27,40	608010 1206	35,30
15	6	605010 1614	35,–			608010 1606	43,70
		6108		6108		6108	



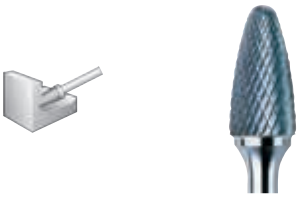

TRE - drop shape

D mm	L1 mm	D1 mm	Cut 6 art.no.	€	Cut 2 art.no.	€	Aluminium cut art.no.	€
6	10	6	**605015** 0609	21,30	**605018** 0609	21,30		
8	15	6	605015 0815	23,30	605018 0815	23,30		
10	15	6	605015 0916	25,40	605018 0916	25,40	**608015** 0916	35,70
12	20	6	605015 1222	37,30	605018 1222	37,30	608015 1222	57,50
15	25	6	605015 1625	52,–			608015 1625	72,50
			6108		6108		6108	



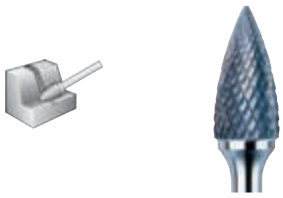

RBF - rounded arch shape

D mm	L1 mm	D1 mm	Cut 6 art.no.	€	Cut 2 art.no.	€	Aluminium cut art.no.	€
6	18	6	**605020** 0616	20,90	**608023** 0616	20,90		
8	20	6	605020 0820	26,20	608023 0820	26,20	**608020** 0820	32,90
10	20	6	605020 0919	25,–	608023 0919	25,–	608020 0919	31,10
12	25	6	605020 1225	36,90	608023 1225	36,90	608020 1225	46,20
15	25	6	605020 1625	51,–			608020 1625	64,–
20	25	6	605020 1925	67,–				
			6108		6108		6108	



SPG - pointed arch shape

D mm	L1 mm	D1 mm	Cut 6 art.no.	€	Cut 2 art.no.	€
6	18	6	**605025** 0616	20,40	**605028** 0616	20,40
8	20	6	605025 0819	24,–	605028 0819	24,–
10	20	6	605025 0919	26,60	605028 0919	26,60
12	25	6	605025 1219	36,20		
15	25	6	605025 1625	50,50	605028 1625	50,50
			6108		6108	



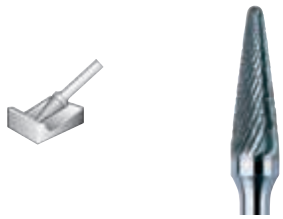
H - flame shape

D mm	L1 mm	D1 mm	Cut 6 art.no.	€	Cut 2 art.no.	€
8	20	6	**605035** 0819	26,20	**605038** 0819	26,20
12	32	6	605035 1232	53,50	605038 1232	53,50
15	35	6	605035 1636	90,–		
			6108		6108	



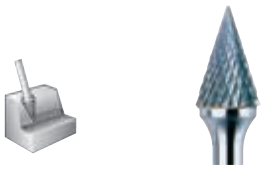
KEL - round taper

D mm	L1 mm	D1 mm	Cut 6 art.no.	€	Cut 2 art.no.	€	Aluminium cut art.no.	€
6	18	6	**605030** 0616	20,30	**608033** 0616	20,30		
8	22	6	605030 0822	32,40				
10	26	6	605030 0927	31,90	608033 0927	31,90	**608030** 0927	44,90
12	32	6	605030 1228	39,–	608033 1228	39,–	608030 1228	48,70
15	33	6	605030 1630	76,50	608033 1630	76,50	608030 1630	96,–
			6108		6108		6108	



SKM - pointed taper

D mm	L1 mm	D1 mm	Cut 6 art.no.	€	Cut 2 art.no.	€
6	20	6	**605040** 0619	20,80	**605043** 0619	20,20
10	20	6	605040 0916	31,90	605043 0916	31,90
12	25	6	605040 1222	40,–		
15	25	6	605040 1625	53,50	605043 1625	53,50
			6108		6108	



WKN - angle milling cutter shape

D mm	L1 mm	D1 mm	Cut 1 art.no.	€	Cut 2 art.no.	€
10	10	6	**605045** 0909	28,20	**605048** 0909	28,20
12	13	6	605045 1212	39,90	605048 1212	39,90
			6108		6108	



Sets

Contents	Cut 6 art.no.	€
5-pcs. in plastic box: ZYAS 12x25, WRC 12x25, KUD 12, RBF 12x25, SKM 12x25	**605083** 0005	180,–
10-pcs. in metal cartridge: ZYA 10x20, ZYA 12x25, WRC 10x20, WRC 12x25, KUD 12, TRE 10x15, RBF 12x25, SPG 10x20, SPG 12x25, KEL 12x28	605083 0010	272,50
	6108	



605083 0005 605083 0010

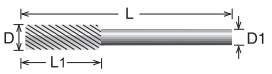
ATORN® Carbide miniature burrs

3D PRINT | Vc/fz 762

Up to a head Ø of 6 mm

- Similar to DIN 8033
- Shank Ø 3 mm





ZYA - cylindrical shape without spur cut

D mm	L1 mm	D1 mm	L mm	Cut 6 art.no.	€	Cut 2 art.no.	€
2	11	3	38			**605502** 0211	9,25
3	14	3	38	**605501** 0314	9,65		
6	12	3	42	605501 0612	16,10		
				6108		6108	




ZYAS - cylindrical shape with spur cut

D mm	L1 mm	D1 mm	L mm	Cut 6 art.no.	€	Cut 2 art.no.	€
2	11	3	38	**605541** 0211	10,65		
3	14	3	38	605541 0314	10,65	**605544** 0314	9,65
6	12	3	42	605541 0612	17,70	605544 0612	16,10
				6108		6108	




WRC - radius end shape

D mm	L1 mm	D1 mm	L mm	Cut 6 art.no.	€	Cut 2 art.no.	€
2	11	3	38	**605505** 0211	9,65	**605508** 0211	9,65
3	12	3	38	605505 0314	9,65	605508 0314	9,65
6	12	3	42	605505 0612	16,10	605508 0612	16,10
				6108		6108	




KUD - ball shape

D mm	D1 mm	L mm	Cut 6 art.no.	€	Cut 2 art.no.	€
3	3	38	**605510** 0303	9,65		
6	3	38	605510 0306	16,10	**605513** 0306	16,10
			6108		6108	




TRE - drop shape

D mm	L1 mm	D1 mm	L mm	Cut 6 art.no.	€	Cut 2 art.no.	€
3	6	3	38	**605515** 0355	9,65	**605518** 0355	9,65
6	10	3	40	605515 0610	16,10	605518 0610	16,10
				6108		6108	




RBF - rounded arch shape

D mm	L1 mm	D1 mm	L mm	Cut 6 art.no.	€	Cut 2 art.no.	€
3	8	3	38	**605520** 0308	9,65	**605523** 0308	9,65
3	12	3	38	605520 0312	9,65	605523 0312	9,65
6	12	3	42	605520 0612	16,10	605523 0612	16,10
				6108		6108	




SPG - pointed arch shape

D mm	L1 mm	D1 mm	L mm	Cut 6 art.no.	€	Cut 2 art.no.	€
3	6	3	38	**605525** 0307	9,65	**605524** 0307	9,65
3	12	3	38	605525 0395	9,65	605524 0395	9,65
6	12	3	42	605525 0642	16,10	605524 0642	16,10
				6108		6108	




KEL - round taper

D mm	L1 mm	D1 mm	L mm	Cut 6 art.no.	€	Cut 2 art.no.	€
3	12	3	38	**605525** 0312	9,65	**605534** 0312	9,65
6	12	3	42	605525 0612	16,10	605534 0612	16,10
				6108		6108	




SKM - pointed taper

D mm	L1 mm	D1 mm	L mm	Cut 6 art.no.	€	Cut 2 art.no.	€
3	8	3	38	**605530** 0308	11,55	**605533** 0308	11,55
3	11	3	38	605530 0311	9,65	605533 0311	9,65
3	15	3	38	605530 0315	9,65	605533 0315	9,95
6	12	3	42	605530 0612	16,10	605533 0612	16,10
				6108		6108	




H - flame shape

D mm	L1 mm	D1 mm	L mm	Cut 6 art.no.	€	Cut 2 art.no.	€
3	6	3	38	**605525** 0306	9,65	**605528** 0306	9,65
				6108		6108	



Set

Contents	Cut 6 art.no.	€
10-pcs. in plastic box: ZYA 2x14, ZYAS 3x14, WRC 3x12, KUD 3, TRE 3x6, RBF 3x12, H 3x6, SPG 3x12, KEL 3x12, SKM 3x12	**605583** 0010	106,–
	6108	



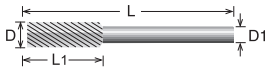
ATORN® Carbide miniature burrs, extra-long

3D PRINT

762

- **Shank Ø 3 mm**





ZYA - cylindrical shape

D mm	L1 mm	D1 mm	L mm	Cut 6 art.no.	€
3	14	3	75	**606001** 0014	19,20
				6108	



WRC - radius end shape

D mm	L1 mm	D1 mm	L mm	Cut 6 art.no.	€
3	12	3	75	**606005** 0014	19,20
				6108	



KUD - ball shape

D mm	D1 mm	L mm	Cut 6 art.no.	€
3	3	75	**606010** 0003	19,20
			6108	



TRE - drop shape

D mm	L1 mm	D1 mm	L mm	Cut 6 art.no.	€
3	6	3	75	**606015** 0055	19,20
				6108	



RBF - rounded arch shape

D mm	L1 mm	D1 mm	L mm	Cut 6 art.no.	€
3	12	3	75	**606020** 0127	19,20
				6108	



SPG - pointed arch shape

D mm	L1 mm	D1 mm	L mm	Cut 6 art.no.	€
3	12	3	75	**606025** 0127	19,20
				6108	



KEL - round taper

D mm	L1 mm	D1 mm	L mm	Cut 6 art.no.	€
3	12	3	75	**606035** 0127	19,20
				6108	



SKM - pointed taper

D mm	L1 mm	D1 mm	L mm	Cut 6 art.no.	€
3	11	3	75	**606030** 0011	19,20
				6108	



PFERD Carbide rotary cutter for fine machining

3D PRINT | Vc/fz | 761

Carbide metal rotary cutters with **MICRO teeth** are specially designed for **fine cutting** and are used in areas where grinding points are normally used. They offer a higher cutting performance and produce a high-quality surface finish, particularly compared with conventional milled surfaces. At the same time, they are **low vibration and produce little noise**. They retain their geometry throughout their entire service life. They are ideally suited for machining tasks during manual and machine use.

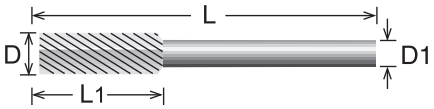
Advantages:
- High-quality surface finish
- No change in geometry due to wear and tear compared to grinding points
- Machining of almost all materials up to 68 HRc

Machining tasks:
- Fine machining
- Very fine plaster work
- Corrections to tool and mould making
- Sharpening of cutting tools

Machinable materials:
- Steel and cast steel
- Stainless steel (INOX)
- Non-ferrous metals
- Cast iron

Recommendations for use:
- Where possible, use the tools on high-performance drives with flexibly-mounted spindles to avoid vibrations.
- To ensure the efficient use of rotary cutters, work at high rotational speeds/cutting speeds. Performance recommendation for tool drives:
  - Shank Ø 3 mm: 75 to 300 watt
  - Shank Ø 6 mm: from 300 watt
- Please observe the recommended speeds.

Suitable tool drives:
- Flexible shaft drives, straight grinders, robot applications, tool machines



ZYA shank 3 mm

D mm	L1 mm	L mm	D1 mm	MICRO art.no.	€
2	10	40	3	**250031** 0210	21,60
3	13	43	3	250031 0313	21,60
4	13	43	3	250031 0413	22,65
6	13	43	3	250031 0613	22,65

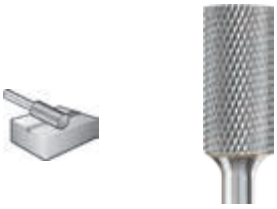
2177



ZYA shank 6 mm

D mm	L1 mm	L mm	D1 mm	MICRO art.no.	€
6	16	55	6	**250061** 0616	25,15
8	20	60	6	250061 0820	33,60
10	20	60	6	250061 1020	38,25
12	25	65	6	250061 1225	48,95

2177



ZYAS shank 6 mm

D mm	L1 mm	L mm	D1 mm	MICRO art.no.	€
6	16	55	6	**250062** 0616	27,50
8	20	60	6	250062 0820	36,95
10	20	60	6	250062 1020	42,05
12	25	65	6	250062 1225	53,80

2177



KUD shank 3 mm

D mm	L1 mm	L mm	D1 mm	MICRO art.no.	€
2	1.5	33	3	**250034** 0215	19,55
3	2	33	3	250034 0302	19,55
4	3	34	3	250034 0403	20,50
6	5	35	3	250034 0605	20,50

2177



KUD shank 6 mm

D mm	L1 mm	L mm	D1 mm	MICRO art.no.	€
6	5	45	6	**250064** 0605	23,55
8	7	47	6	250064 0807	26,95
10	9	49	6	250064 1009	30,75
12	10	51	6	250064 1210	38,25

2177



WRC shank 3 mm

D mm	L1 mm	L mm	D1 mm	MICRO art.no.	€
2	10	40	3	**250033** 0210	23,95
3	13	43	3	250033 0313	23,95
6	13	43	3	250033 0613	25,20

2177



WRC shank 6 mm

D mm	L1 mm	L mm	D1 mm	MICRO art.no.	€
6	16	55	6	**250063** 0616	27,95
8	20	60	6	250063 0820	39,25
10	20	60	6	250063 1020	44,35
12	25	65	6	250063 1225	60,20

2177



SPG shank 3 mm

D mm	L1 mm	L mm	D1 mm	MICRO art.no.	€
3	7	37	3	**250036** 0307	23,95
3	13	43	3	250036 0313	23,95
6	13	43	3	250036 0613	25,20

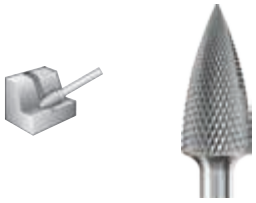
2177



SPG shank 6 mm

D mm	L1 mm	L mm	D1 mm	MICRO art.no.	€
6	18	55	6	**250066** 0618	26,95
8	20	60	6	250066 0820	39,25
10	20	60	6	250066 1020	44,35
12	25	65	6	250066 1225	51,15

2177



SKM shank 3 mm

D mm	L1 mm	L mm	D1 mm	a °	MICRO art.no.	€
3	7	37	3	21°	**250037** 0307	23,95
3	11	41	3	14°	250037 0311	23,95
6	13	43	3	25°	250037 0613	25,20

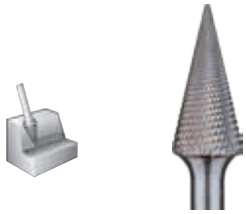
2177



SKM shank 6 mm

D mm	L1 mm	L mm	D1 mm	a °	MICRO art.no.	€
6	18	55	6	18°	**250067** 0618	26,95
8	20	60	6	22°	250067 0820	29,85
10	20	60	6	28°	250067 1020	36,05
12	25	65	6	26°	250067 1225	50,05

2177



RBF shank 3 mm

D mm	L1 mm	L mm	D1 mm	r mm	MICRO art.no.	€
3	7	37	3	0.75	**250035** 0307	23,95
3	13	43	3	0.75	250035 0313	23,95
6	13	43	3	1.5	250035 0613	25,20

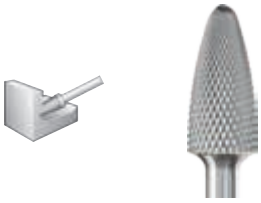
2177



RBF shank 6 mm

D mm	L1 mm	L mm	D1 mm	r mm	MICRO art.no.	€
6	18	55	6	1.5	**250065** 0618	27,75
8	20	60	6	1.2	250065 0820	39,25
10	20	60	6	2.5	250065 1020	45,45
12	25	65	6	2.5	250065 1225	52,70

2177



ATORN® RockTec complete range for materials up to 52/65 HRc

INFO

- For all instances of machining and usage, you now get a complete ATORN range of solid carbide end milling cutters, solid carbide torus milling cutters and solid carbide radius milling cutters.
- **Diameter range from Ø 0.1 – Ø 20 mm**
- The different geometries are matched to different milling operations.
- **Cutting material: solid carbide ultra-micrograin of high hardness and extreme toughness**

Over 660 innovative solid carbide milling tools

	Ø-range mm	RockTec 52	Page	RockTec 65	Page
Solid carbide miniature end milling cutters	Ø 0,1 - 0,9		538		538
Solid carbide miniature end milling cutters, long neck	Ø 0,2 - 3,0		539		540
Solid carbide miniature torus milling cutters, long neck	Ø 0,2 - 3,0		553		554
Solid carbide miniature radius milling cutters	Ø 0,2 - 0,9		560		560
Solid carbide miniature radius milling cutters, long neck	Ø 0,2 - 3,0		561		562
Solid carbide end milling cutters	Ø 3,0 - 20,0		541		541
Solid carbide end milling cutter with short cutting edge, long design	Ø 3,0 - 20,0		542		543
Solid carbide end milling cutter with short cutting edge, extra-long design	Ø 3,0 - 20,0		542		543
Solid carbide multi-flute milling cutters, standard design	Ø 3,0 - 20,0		548		549
Solid carbide multi-flute milling cutters, long design	Ø 3,0 - 20,0		548		549
Solid carbide multi-flute milling cutters, standard, Z7	Ø 3,0 - 20,0		550		550
Solid carbide multi-flute milling cutters, standard, Z7, Corner radius	Ø 3,0 - 20,0		551		552
Solid carbide torus milling cutters	Ø 3,0 - 20,0		555		556
Solid carbide torus milling cutter with short cutting edge, standard design	Ø 3,0 - 16,0		557		558
Solid carbide torus milling cutter with short cutting edge, long design	Ø 3,0 - 16,0		557		559
Solid carbide torus milling cutter with short cutting edge, extra-long design	Ø 3,0 - 16,0		558		559
Solid carbide radius milling cutters, short, Z 2	Ø 2,0 - 20,0		563		564
Solid carbide radius milling cutters, long, Z 2	Ø 2,0 - 20,0		563		564
Solid carbide radius milling cutters, extra-long, Z 2	Ø 2,0 - 20,0		563		564
Solid carbide radius milling cutters, short, Z 4	Ø 3,0 - 20,0		565		566
Solid carbide radius milling cutters, long, Z 4	Ø 3,0 - 20,0		565		565

material

● very well suited
○ well suited

	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
RockTec 52	●	●	●	●	●	○	●	●	●	●	●					●		
RockTec 65			○						○	○	○					●	●	●

ATORN® RockTec Highest efficiency through new coatings

INFO

ATORN milling tools offer the best conditions for the efficient machining of materials up to 65 HRc.
Through a special cutting-edge treatment, as well as the new coatings, you achieve the highest machining performance, precision and durability.

RockTec 52

Cutting material:	Ultra-superfine grain
Grain size:	0.005 mm
ISO quality:	K 10/K 40
Coating:	AlTiN (monolayer PVD)
Layer thickness:	2.5 ~ 3.5 µm
Micro-hardness:	(HV 0.05) 3,300
Application temperature:	≥ 900 °C
Friction coefficient:	0.25

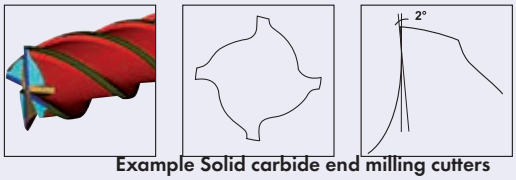


RockTec 65

Cutting material:	Ultra-superfine grain
Grain size:	0.005 mm
ISO quality:	K 10/K 40
Coating:	TiSi-based (multilayer PVD)
Layer thickness:	2.5 ~ 3.5 µm
Micro-hardness:	(HV 0.05) 3,600
Application temperature:	≥ 1,200 °C
Friction coefficient:	0.3



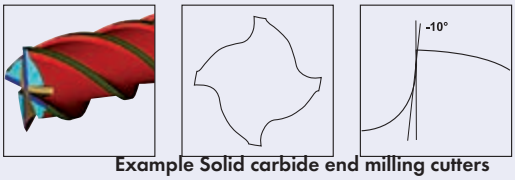
Tools up to 52 HRc



Example Solid carbide end milling cutters

Helix angle:	40°
Rake angle on the external Ø:	2°
Core diameter:	65%

Tools up to 65 HRc



Example Solid carbide end milling cutters

Helix angle:	40°
Rake angle on the external Ø:	-10°
Core diameter:	65%

ATORN®

Advantages of hard machining

Save on costs – boost efficiency with hard machining

HSC HPC

High flexibility

- Hard machining can replace grinding and EDM in many cases

Boost quality

- No heat warping due to subsequent tempering
- High-quality surface finish

Time savings

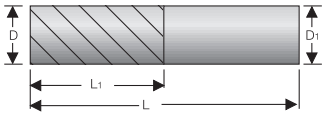
- Workpiece can be machined in one clamping procedure
- Fewer work-steps thanks to high machining volume

Discover maximum quality in all areas of tool and mould manufacture.

ATORN® RockTec 52 mini end milling cutter

VHM | 40° | h6 | DIN 6535 HA | Z 2 | AlTiN | Vc/fz | 722

- Short, stable design for machining materials **up to 52 HRc**
- Cutting edge tolerance: at Ø 0.1 – 0.7 mm = 0/– 0.012 mm, at Ø 0.8 – 0.9 mm = 0/– 0.020 mm
- **Cutting material: ultra-fine grain solid carbide**
- Rake angle 3°



material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 100-120	● 80-100	● 60-80	● 50-90	● 50-90	○ 50-70	● 50-90	● 50-90	● 50-90	● 50-90	● 50-80					● 30-60		

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



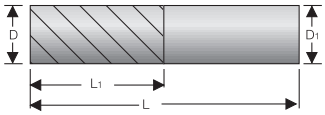
D mm	L1 mm	L mm	D1 mm	Feed fz steel < 1400 N/mm² mm/tooth	art.no.	€
0.1	0.2	40	4.0	0.005	**257001** 0001	20,20
0.2	0.4	40	4.0	0.005	257001 0002	20,20
0.3	0.6	40	4.0	0.005	257001 0003	20,20
0.4	0.8	40	4.0	0.009	257001 0004	20,20
0.5	1.0	40	4.0	0.009	257001 0005	20,20
0.6	1.2	40	4.0	0.009	257001 0006	20,20
0.7	1.4	40	4.0	0.009	257001 0007	20,20
0.8	1.6	40	4.0	0.009	257001 0008	20,20
0.9	1.8	40	4.0	0.013	257001 0009	20,20

2146

ATORN® RockTec 65 mini end milling cutter

VHM | 40° | h6 | DIN 6535 HA | Z 2 | TiSiN | Vc/fz | 763

- Short, stable design for machining materials **up to 65 HRc**
- Cutting edge tolerance: at Ø 0.1 – 0.7 mm = 0/– 0.012 mm, at Ø 0.8 – 0.9 mm = 0/– 0.020 mm
- **Cutting material: ultra-fine grain solid carbide**
- Rake angle -5°~-7°



material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		○ 60-100						○ 15-80	○ 15-80	○ 13-65					● 50-90	● 50-90	● 40-80

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



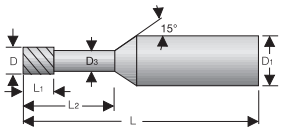
D mm	L1 mm	L mm	D1 mm	Feed fz hardened steel ≥ 60 HRc mm/tooth	art.no.	€
0.1	0.2	40	4.0	0.002	**257002** 0001	25,20
0.2	0.4	40	4.0	0.002	257002 0002	25,20
0.3	0.6	40	4.0	0.002	257002 0003	25,20
0.4	0.8	40	4.0	0.002	257002 0004	25,20
0.5	1.0	40	4.0	0.002	257002 0005	25,20
0.6	1.2	40	4.0	0.002	257002 0006	25,20
0.7	1.4	40	4.0	0.002	257002 0007	25,20
0.8	1.6	40	4.0	0.002	257002 0008	25,20
0.9	1.8	40	4.0	0.006	257002 0009	25,20

2146

ATORN® RockTec 52 mini end milling cutter

VHM | 40° | h6 | DIN 6535 HA | Z 2 | AlTiN | 3D PRINT | Vc/fz | 722

- Long-necked version for machining materials **up to 52 HRc**
- Cutting edge tolerance: at Ø 0.1 – 0.7 mm = 0/– 0.012 mm, at Ø 0.8 – 3.0 mm = 0/– 0.020 mm
- **Cutting material: ultra-fine grain solid carbide**
- Rake angle 3°



material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 100-120	● 80-100	● 60-80	● 50-90	● 50-90	○ 50-70	● 50-90	● 50-90	● 50-90	● 50-90	● 50-80					● 30-60		
Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
0.2	0.3	0.5	50	0.16	4.0	0.005	**257009** 0001	34,40
0.2	0.3	1.0	50	0.16	4.0	0.005	257009 0002	34,40
0.2	0.3	1.5	50	0.16	4.0	0.009	257009 0003	34,40
0.3	0.4	1.0	50	0.26	4.0	0.009	257009 0004	34,40
0.3	0.4	2.0	50	0.26	4.0	0.009	257009 0005	34,40
0.3	0.4	3.0	50	0.26	4.0	0.009	257009 0006	34,40
0.4	0.6	2.0	50	0.37	4.0	0.009	257009 0007	34,40
0.4	0.6	3.0	50	0.37	4.0	0.009	257009 0008	34,40
0.4	0.6	4.0	50	0.37	4.0	0.009	257009 0009	34,40
0.4	0.6	5.0	50	0.37	4.0	0.009	257009 0010	34,40
0.5	0.7	2.0	50	0.45	4.0	0.009	257009 0011	34,–
0.5	0.7	4.0	50	0.45	4.0	0.009	257009 0012	34,–
0.5	0.7	6.0	50	0.45	4.0	0.009	257009 0013	34,–
0.5	0.7	8.0	50	0.45	4.0	0.009	257009 0014	34,–
0.6	0.9	2.0	50	0.55	4.0	0.009	257009 0015	32,30
0.6	0.9	4.0	50	0.55	4.0	0.009	257009 0016	32,30
0.6	0.9	6.0	50	0.55	4.0	0.009	257009 0017	32,30
0.6	0.9	8.0	50	0.55	4.0	0.009	257009 0018	32,40
0.6	0.9	10.0	50	0.55	4.0	0.009	257009 0019	32,60
0.8	1.2	4.0	50	0.75	4.0	0.009	257009 0020	32,30
0.8	1.2	6.0	50	0.75	4.0	0.013	257009 0021	32,30
0.8	1.2	8.0	50	0.75	4.0	0.013	257009 0022	32,40
0.8	1.2	10.0	50	0.75	4.0	0.013	257009 0023	32,60
0.8	1.2	12.0	50	0.75	4.0	0.013	257009 0024	32,70
1.0	1.5	6.0	50	0.95	4.0	0.013	257009 0025	24,10
1.0	1.5	8.0	50	0.95	4.0	0.013	257009 0026	24,10
1.0	1.5	10.0	50	0.95	4.0	0.013	257009 0027	24,80

2146

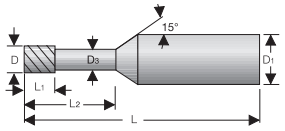
D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
1.0	1.5	12.0	50	0.95	4.0	0.013	257009 0028	25,10
1.0	1.5	14.0	50	0.95	4.0	0.013	257009 0029	25,70
1.0	1.5	16.0	50	0.95	4.0	0.013	257009 0030	25,70
1.2	1.8	6.0	50	1.15	4.0	0.013	257009 0031	23,60
1.2	1.8	10.0	50	1.15	4.0	0.013	257009 0032	23,90
1.5	2.3	8.0	50	1.45	4.0	0.020	257009 0033	23,60
1.5	2.3	12.0	50	1.45	4.0	0.020	257009 0034	23,90
1.5	2.3	16.0	50	1.45	4.0	0.020	257009 0035	24,50
1.5	2.3	20.0	60	1.45	4.0	0.020	257009 0036	26,–
2.0	3.0	6.0	50	1.95	4.0	0.020	257009 0037	23,30
2.0	3.0	8.0	50	1.95	4.0	0.020	257009 0038	23,30
2.0	3.0	12.0	50	1.95	4.0	0.027	257009 0039	23,90
2.0	3.0	16.0	50	1.95	4.0	0.027	257009 0040	24,50
2.0	3.0	20.0	60	1.95	4.0	0.027	257009 0041	27,30
2.0	3.0	25.0	75	1.95	4.0	0.027	257009 0042	28,70
2.5	3.7	8.0	50	2.40	4.0	0.027	257009 0043	23,30
2.5	3.7	10.0	50	2.40	4.0	0.027	257009 0044	23,30
2.5	3.7	12.0	50	2.40	4.0	0.027	257009 0045	23,30
2.5	3.7	16.0	50	2.40	4.0	0.027	257009 0046	24,50
2.5	3.7	20.0	60	2.40	4.0	0.027	257009 0047	27,30
2.5	3.7	25.0	75	2.40	4.0	0.027	257009 0048	29,40
3.0	4.5	8.0	50	2.85	6.0	0.027	257009 0049	34,60
3.0	4.5	10.0	50	2.85	6.0	0.027	257009 0050	34,60
3.0	4.5	12.0	50	2.85	6.0	0.027	257009 0051	34,60
3.0	4.5	16.0	60	2.85	6.0	0.027	257009 0052	34,60
3.0	4.5	20.0	60	2.85	6.0	0.027	257009 0053	34,60
3.0	4.5	25.0	75	2.85	6.0	0.027	257009 0054	36,70

2146

ATORN® RockTec 65 mini end milling cutter

VHM | 40° | h6 | DIN 6535 HA | Z 2 | TiSiN | Vc/fz | 763

- Long-necked version for machining materials **up to 65 HRc**
- Cutting edge tolerance: at Ø 0.1 – 0.7 mm = 0/– 0.012 mm, at Ø 0.8 – 3.0 mm = 0/– 0.020 mm
- **Cutting material: ultra-fine grain solid carbide**
- Rake angle -5°~-7°
- With clearance



material	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
● very well suited ○ well suited	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
			○ 60-100						○ 15-80	○ 15-80	○ 13-65					● 50-90	● 50-90	● 40-80
Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

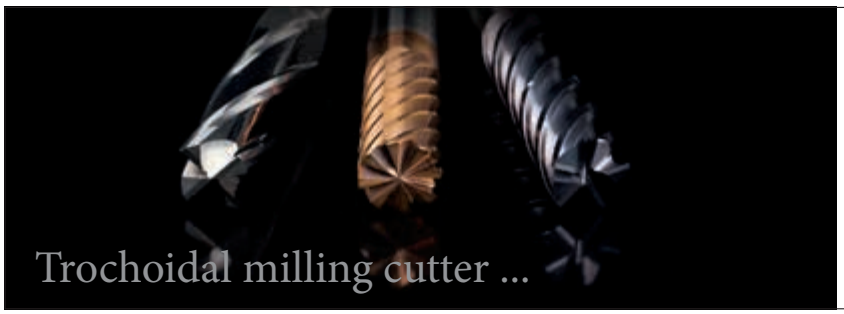


D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	Feed fz hardened steel ≥ 60 HRc mm/tooth	art.no.	€
0.2	0.3	0.5	50	0.16	4.0	0.002	**257010** 0001	40,40
0.2	0.3	1.0	50	0.16	4.0	0.002	257010 0002	40,40
0.2	0.3	1.5	50	0.16	4.0	0.002	257010 0003	40,40
0.3	0.4	1.0	50	0.26	4.0	0.002	257010 0004	40,40
0.3	0.4	2.0	50	0.26	4.0	0.002	257010 0005	40,40
0.3	0.4	3.0	50	0.26	4.0	0.002	257010 0006	40,40
0.4	0.6	2.0	50	0.37	4.0	0.002	257010 0007	40,40
0.4	0.6	3.0	50	0.37	4.0	0.002	257010 0008	40,40
0.4	0.6	4.0	50	0.37	4.0	0.002	257010 0009	40,40
0.4	0.6	5.0	50	0.37	4.0	0.002	257010 0010	40,40
0.5	0.7	2.0	50	0.45	4.0	0.002	257010 0011	38,90
0.5	0.7	4.0	50	0.45	4.0	0.002	257010 0012	38,90
0.5	0.7	6.0	50	0.45	4.0	0.002	257010 0013	38,90
0.5	0.7	8.0	50	0.45	4.0	0.002	257010 0014	38,90
0.6	0.9	2.0	50	0.55	4.0	0.002	257010 0015	37,20
0.6	0.9	4.0	50	0.55	4.0	0.002	257010 0016	37,20
0.6	0.9	6.0	50	0.55	4.0	0.002	257010 0017	37,20
0.6	0.9	8.0	50	0.55	4.0	0.002	257010 0018	37,40
0.6	0.9	10.0	50	0.55	4.0	0.002	257010 0019	37,50
0.8	1.2	4.0	50	0.75	4.0	0.002	257010 0020	37,20
0.8	1.2	6.0	50	0.75	4.0	0.002	257010 0021	37,20
0.8	1.2	8.0	50	0.75	4.0	0.002	257010 0022	37,40
0.8	1.2	10.0	50	0.75	4.0	0.002	257010 0023	37,50
0.8	1.2	12.0	50	0.75	4.0	0.002	257010 0024	37,60
1.0	1.5	6.0	50	0.95	4.0	0.006	257010 0025	27,90
1.0	1.5	8.0	50	0.95	4.0	0.006	257010 0026	27,90
1.0	1.5	10.0	50	0.95	4.0	0.006	257010 0027	28,50

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D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	Feed fz hardened steel ≥ 60 HRc mm/tooth	art.no.	€
1.0	1.5	12.0	50	0.95	4.0	0.006	257010 0028	28,80
1.0	1.5	14.0	50	0.95	4.0	0.006	257010 0029	29,50
1.0	1.5	16.0	50	0.95	4.0	0.006	257010 0030	29,50
1.2	1.8	6.0	50	1.15	4.0	0.006	257010 0031	27,20
1.2	1.8	10.0	50	1.15	4.0	0.006	257010 0032	27,60
1.5	2.3	8.0	50	1.45	4.0	0.006	257010 0033	27,20
1.5	2.3	12.0	50	1.45	4.0	0.006	257010 0034	27,60
1.5	2.3	16.0	50	1.45	4.0	0.006	257010 0035	28,20
1.5	2.3	20.0	60	1.45	4.0	0.006	257010 0036	29,90
2.0	3.0	6.0	50	1.95	4.0	0.012	257010 0037	26,70
2.0	3.0	8.0	50	1.95	4.0	0.012	257010 0038	26,70
2.0	3.0	12.0	50	1.95	4.0	0.012	257010 0039	27,60
2.0	3.0	16.0	50	1.95	4.0	0.012	257010 0040	28,20
2.0	3.0	20.0	60	1.95	4.0	0.012	257010 0041	31,50
2.0	3.0	25.0	75	1.95	4.0	0.012	257010 0042	33,–
2.5	3.7	8.0	50	2.40	4.0	0.019	257010 0043	26,70
2.5	3.7	10.0	50	2.40	4.0	0.019	257010 0044	26,70
2.5	3.7	12.0	50	2.40	4.0	0.019	257010 0045	26,70
2.5	3.7	16.0	50	2.40	4.0	0.019	257010 0046	28,20
2.5	3.7	20.0	60	2.40	4.0	0.019	257010 0047	31,50
2.5	3.7	25.0	75	2.40	4.0	0.019	257010 0048	33,80
3.0	4.5	8.0	50	2.85	6.0	0.019	257010 0049	39,70
3.0	4.5	10.0	50	2.85	6.0	0.019	257010 0050	39,70
3.0	4.5	12.0	50	2.85	6.0	0.019	257010 0051	39,70
3.0	4.5	16.0	60	2.85	6.0	0.019	257010 0052	39,70
3.0	4.5	20.0	60	2.85	6.0	0.019	257010 0053	39,70
3.0	4.5	25.0	75	2.85	6.0	0.019	257010 0054	42,30

2146



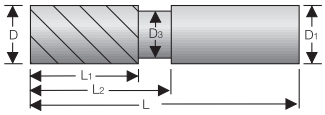
... maximum material removal rate

ATORN®
High quality for great performance

ATORN® RockTec 52 end milling cutter

VHM | 40° | e8 | h6 | DIN 6535 HA | Z 4 | AlTiN | 3D PRINT | Vc/fz | 728

- **With clearance**
- For machining materials **up to 52 HRc**
- Cutting edge tolerance: at Ø 3.0 – 20.0 mm = 0/– 0.020 mm
- **Cutting material: ultra-fine grain solid carbide**
- Rake angle 3°



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 140-160	● 130-150	● 120-140	● 100-120	● 100-120	○ 80-100	● 100-120	● 100-120	● 80-100	● 80-100	● 70-90					● 60-80		
	Cutting speed Vc m/min.				Please adjust these guidelines according to clamping operation and machine set-up.														



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	Feed fz steel < 1400 N/mm² mm/tooth	art.no.	€
3.0	9	15	50	2.8	6.0	0.02	**257003** 0030	27,30
4.0	12	20	50	3.7	6.0	0.02	257003 0040	27,30
5.0	15	20	50	4.6	6.0	0.03	257003 0050	27,30
6.0	16	20	50	5.5	6.0	0.03	257003 0060	27,30
8.0	20	30	64	7.4	8.0	0.04	257003 0080	43,10
10.0	22	32	70	9.2	10.0	0.05	257003 0100	58,–
12.0	25	37	75	11.0	12.0	0.06	257003 0120	66,50
16.0	32	46	90	15.0	16.0	0.08	257003 0160	116,–
20.0	38	58	100	19.0	20.0	0.1	257003 0200	159,–

2146



Set

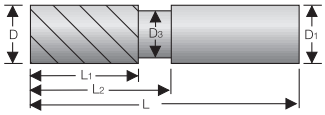
Contents	art.no.	€
Set, solid carbide 40°, Ø 6/8/10/12 mm, 4 cutting edges, RockTec 52	**257003** 0001	195,–

2146

ATORN® RockTec 65 end milling cutter

VHM | 40° | e8 | h6 | DIN 6535 HA | Z 4 | TiSiN | Vc/fz | 763

- **With clearance**
- For machining materials **up to 65 HRc**
- Cutting edge tolerance: at Ø 3.0 – 20.0 mm = 0/– 0.020 mm
- **Cutting material: ultra-fine grain solid carbide**
- Rake angle -6°



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
				○ 160-200						○ 250-300	○ 250-300	○ 250-300					● 120-140	● 140-140	● 80-120
	Cutting speed Vc m/min.				Please adjust these guidelines according to clamping operation and machine set-up.														



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	Feed fz hardened steel ≥ 60 HRc mm/tooth	art.no.	€
3.0	9	15	50	2.8	6.0	0.015	**257004** 0030	29,70
4.0	12	20	50	3.7	6.0	0.02	257004 0040	29,70
5.0	15	20	50	4.6	6.0	0.025	257004 0050	29,70
6.0	16	20	50	5.5	6.0	0.038	257004 0060	29,70
8.0	20	30	64	7.4	8.0	0.05	257004 0080	47,40
10.0	22	32	70	9.2	10.0	0.052	257004 0100	65,–
12.0	25	37	75	11.0	12.0	0.06	257004 0120	79,–
16.0	32	46	90	15.0	16.0	0.07	257004 0160	139,–
20.0	38	58	100	19.0	20.0	0.08	257004 0200	168,–

2146



Set

Contents	art.no.	€
Set, solid carbide 40°, Ø 6/8/10/12 mm, 4 cutting edges, RockTec 65	**257004** 0001	215,–

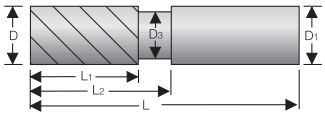
2146

ATORN® RockTec 52 end milling cutter

VHM | 40° | e8 | h6 | DIN 6535 HA | Z 4 | AlTiN | 3D PRINT | Vc/fz | 729

- **With clearance**
- For machining materials **up to 52 HRc**
- Cutting edge tolerance: at Ø 3.0 – 20.0 mm = 0/– 0.020 mm
- **Cutting material: ultra-fine grain solid carbide**
- Rake angle 3°

Long neck



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	257005....	120-140	110-130	80-110	90-110	90-110	70-90	90-110	90-110	70-90	70-90	60-80					50-70		
	257007....	100-120	90-110	80-100	80-100	80-100	60-80	80-100	80-100	70-90	60-80	50-70					40-60		
	Cutting speed Vc m/min.				Please adjust these guidelines according to clamping operation and machine set-up.														

Long



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	Feed fz steel < 1400 N/mm² mm/tooth	art.no.	€
3.0	5	30	75	2.8	6.0	0.02	**257005** 0030	38,70
4.0	8	32	75	3.7	6.0	0.02	257005 0040	38,70
5.0	9	32	75	4.6	6.0	0.03	257005 0050	38,70
6.0	10	40	75	5.5	6.0	0.03	257005 0060	38,70
8.0	12	40	75	7.4	8.0	0.04	257005 0080	49,70
10.0	14	60	100	9.2	10.0	0.05	257005 0100	76,–
12.0	16	60	100	11.0	12.0	0.06	257005 0120	88,50
16.0	22	85	125	15.0	16.0	0.08	257005 0160	133,–
20.0	26	85	125	19.0	20.0	0.1	257005 0200	250,–

2146



Extra-long

D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	Feed fz steel < 1400 N/mm² mm/tooth	art.no.	€
3.0	5	60	100	2.8	6.0	0.02	**257007** 0030	45,40
4.0	8	60	100	3.7	6.0	0.03	257007 0040	45,40
5.0	9	60	100	4.6	6.0	0.04	257007 0050	45,40
6.0	10	60	100	5.5	6.0	0.055	257007 0060	45,40
8.0	12	60	100	7.4	8.0	0.08	257007 0080	67,–
10.0	14	85	125	9.2	10.0	0.09	257007 0100	98,50
12.0	16	110	150	11.0	12.0	0.1	257007 0120	114,–
16.0	22	110	150	15.0	16.0	0.11	257007 0160	165,–
20.0	26	110	150	19.0	20.0	0.12	257007 0200	307,–

2146

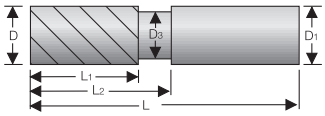


… for special measurement tasks

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High quality for great performance

ATORN® RockTec 65 end milling cutter

VHM | 40° | e8 | h6 | DIN 6535 HA | Z 4 | TiSiN | 3D PRINT | Vc/fz | 764



- **With clearance**
- For machining materials **up to 65 HRc**
- Cutting edge tolerance: at Ø 3.0 – 20.0 mm = 0/– 0.020 mm
- **Cutting material: ultra-fine grain solid carbide**
- Rake angle -6°

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
257006....			○ 140-160						○ 200-260	○ 200-260	○ 200-260					● 100-130	● 100-130	● 70-100
257008....			○ 120-140						○ 130-170	○ 130-170	○ 130-170					● 80-110	● 80-110	● 50-80

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

Long



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	Feed fz hardened steel ≥ 60 HRc mm/tooth	art.no.	€
3.0	5	30	75	2.8	6.0	0.015	**257006** 0030	43,80
4.0	8	32	75	3.7	6.0	0.02	257006 0040	43,80
5.0	9	32	75	4.6	6.0	0.025	257006 0050	43,80
6.0	10	40	75	5.5	6.0	0.035	257006 0060	43,80
8.0	12	40	75	7.4	8.0	0.05	257006 0080	56,–
10.0	14	60	100	9.2	10.0	0.055	257006 0100	86,50
12.0	16	60	100	11.0	12.0	0.06	257006 0120	100,–
16.0	22	85	125	15.0	16.0	0.07	257006 0160	150,–
20.0	26	85	125	19.0	20.0	0.08	257006 0200	265,–

2146

Extra-long



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	Feed fz hardened steel ≥ 60 HRc mm/tooth	art.no.	€
3.0	5	60	100	2.8	6.0	0.015	**257008** 0030	47,80
4.0	8	60	100	3.7	6.0	0.02	257008 0040	47,80
5.0	9	60	100	4.6	6.0	0.025	257008 0050	47,80
6.0	10	60	100	5.5	6.0	0.04	257008 0060	47,80
8.0	12	60	100	7.4	8.0	0.05	257008 0080	68,50
10.0	14	85	125	9.2	10.0	0.055	257008 0100	104,–
12.0	16	110	150	11.0	12.0	0.06	257008 0120	138,–
16.0	22	110	150	15.0	16.0	0.07	257008 0160	201,–
20.0	26	110	150	19.0	20.0	0.08	257008 0200	335,–

2146



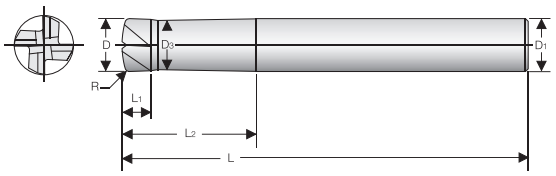
… with safety

ATORN®
High quality for great performance

ATORN® Mini high feed-rate milling cutter RockTec 52

VHM | 25° | e8 | h6 | DIN 6535 HA | Z 4 | AlTiN | Vc/fz | 764

- 4 cutting edges
- **For machining materials up to 52 HRc**
- **For copy and line milling**
- **Very high machining volumes are achieved with special milling strategy**
- Solid carbide ultra-fine grain cutting material



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	●	●	●	○	●	●	●	●	●					●		



D mm	L1 mm	L2 mm	L mm	D1 mm	R mm	D3 mm	art.no.	€
1	1	4	50	6	0.1	0.95	**257045** 0010	59,–
1	1	6,0	50	6	0.1	0.95	257045 0011	59,–
1	1	8,0	50	6	0.1	0.95	257045 0012	59,–
1	1	10	50	6	0.1	0.1	257045 0013	59,–
1	1	12	50	6	0.1	0.95	257045 0014	61,50
1.5	1.5	6,0	50	6	0.2	1.45	257045 0015	61,50
1.5	1.5	8,0	50	6	0.2	1.45	257045 0016	61,50
1.5	1.5	10	50	6	0.2	1.45	257045 0017	61,50
1.5	1.5	12	50	6	0.2	1.95	257045 0018	62,–
2	2	6	50	6	0.2	1.95	257045 0020	63,–
2	2	8	50	6	0.2	1.95	257045 0021	63,–
2	2	10	50	6	0.2	1.95	257045 0022	63,–
2	2	12	50	6	0.2	1.95	257045 0023	64,–
2	2	16	50	6	0.2	1.95	257045 0024	64,–
2.5	2.5	8	50	6	0.3	2.4	257045 0025	63,–
2.5	2.5	10	50	6	0.3	2.4	257045 0026	63,–
2.5	2.5	12	50	6	0.3	2.4	257045 0027	64,–
2.5	2.5	16	50	6	0.3	2.4	257045 0028	64,–
3	3	8	50	6	0.3	2.85	257045 0030	66,–
3	3	10	50	6	0.3	2.85	257045 0031	66,–
3	3	12	50	6	0.3	2.85	257045 0032	66,–
3	3	16	60	6	0.3	2.85	257045 0033	69,50
3	3	20	60	6	0.3	2.85	257045 0034	69,50
4	4	10	60	6	0.5	3.85	257045 0040	71,50
4	4	15	60	6	0.5	3.85	257045 0041	71,50
4	4	20	60	6	0.5	3.85	257045 0042	71,50
4	4	25	75	6	0.5	3.85	257045 0043	80,50

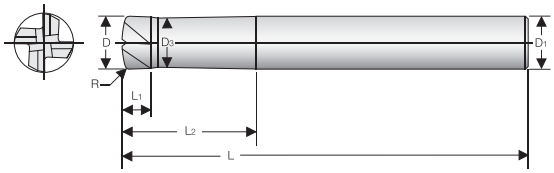
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ATORN® Mini high feed-rate milling cutter RockTec 65

VHM | 25° | e8 | h6 | DIN 6535 HA | Z 4 | TiSiN | Vc/fz | 764

- 4 cutting edges
- **For machining materials up to 65 HRc**
- **For copy and line milling**
- **Very high machining volumes are achieved with special milling strategy**
- Solid carbide ultra-fine grain cutting material



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
			○	●													●	●	●

D mm	L1 mm	L2 mm	L mm	D1 mm	R mm	D3 mm	art.no.	€
1	1	4	50	6	0.1	0.95	**257046** 0010	59,–
1	1	6,0	50	6	0.1	0.95	257046 0011	59,–
1	1	8,0	50	6	0.1	0.95	257046 0012	59,–
1	1	10	50	6	0.1	0.95	257046 0013	59,–
1	1	12	50	6	0.1	0.95	257046 0014	61,50
1.5	1.5	6,0	50	6	0.2	1.45	257046 0015	61,50
1.5	1.5	8,0	50	6	0.2	1.45	257046 0016	61,50
1.5	1.5	10	50	6	0.2	1.45	257046 0017	61,50
1.5	1.5	12	50	6	0.2	1.45	257046 0018	62,–
2	2	6	50	6	0.2	1.95	257046 0020	63,–
2	2	8	50	6	0.2	1.95	257046 0021	63,–
2	2	10	50	6	0.2	1.95	257046 0022	63,–
2	2	12	50	6	0.2	1.95	257046 0023	64,–
2	2	16	50	6	0.2	1.95	257046 0024	64,–
2.5	2.5	8	50	6	0.2	2.4	257046 0025	63,–
2.5	2.5	10	50	6	0.3	2.4	257046 0026	63,–
2.5	2.5	12	50	6	0.3	2.4	257046 0027	64,–
2.5	2.5	16	50	6	0.3	2.4	257046 0028	64,–
3	3	8	50	6	0.3	2.85	257046 0030	66,–
3	3	10	50	6	0.3	2.85	257046 0031	66,–
3	3	12	50	6	0.3	2.85	257046 0032	66,–
3	3	16	60	6	0.3	2.85	257046 0033	69,50
3	3	20	60	6	0.3	2.85	257046 0034	69,50
4	4	10	60	6	0.5	3.85	257046 0040	71,50
4	4	15	60	6	0.5	3.85	257046 0041	71,50
4	4	20	60	6	0.5	3.85	257046 0042	71,50
4	4	25	75	6	0.5	3.85	257046 0043	80,50

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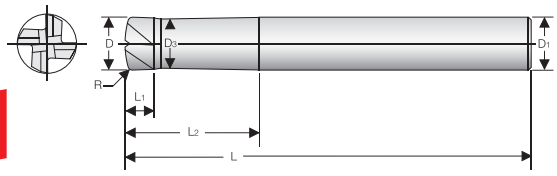
ATORN®
Performance demands quality

ATORN® High feed-rate end milling cutter RockTec 65

VHM | e8 | h6 | DIN 6535 HA | Z 4 | Z 6 | TiSiN | Vc/fz | 764

- 4-6 cutting edges
- **For machining materials up to 65 HRc**
- **For copy and line milling**
- **Very high machining volumes are achieved with a special milling strategy**
- Solid carbide ultra-fine grain cutting material

High feed-rate milling cutter



material

● very well suited
○ well suited

	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
257040....			● 140-160													● 140-160	● 100-120	● 80-120
257048....			● 75-105													● 80-100	● 60-90	● 45-75
257050....			● 75-105													● 80-100	● 80-90	● 45-75

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



Roughing cutter, standard



D mm	L1 mm	L2 mm	L mm	D1 mm	R mm	D3 mm	Z	Feed fz hardened steel ≥ 60 HRc mm/tooth	art.no.	€
4.0	1.5	8	57	6	0.4	3.7	4	0.028	**257040** 0001	71,50
4.0	1.5	15	57	6	0.4	3.7	4	0.028	257040 0002	71,50
5.0	2.0	10	57	6	0.5	4.6	4	0.035	257040 0003	71,50
5.0	2.0	21	57	6	0.5	4.6	4	0.035	257040 0004	71,50
6.0	2.5	12	57	6	0.6	5.5	4	0.045	257040 0005	71,50
6.0	2.5	26	57	6	0.6	5.5	4	0.045	257040 0006	71,50
8.0	3.0	16	63	8	0.8	7.4	6	0.060	257040 0007	103,–
8.0	3.0	31	63	8	0.8	7.4	6	0.060	257040 0008	103,–
10.0	3.5	20	72	10	1.0	9.2	6	0.070	257040 0009	154,–
10.0	3.5	36	72	10	1.0	9.2	6	0.070	257040 0010	154,–
12.0	4.0	24	83	12	1.2	11.0	6	0.080	257040 0011	191,–
12.0	4.0	41	83	12	1.2	11.0	6	0.080	257040 0012	191,–

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Finishing milling cutter, standard



D mm	L1 mm	L2 mm	L mm	D1 mm	R mm	Z	Feed fz hardened steel ≥ 60 HRc mm/tooth	art.no.	€
2	2	10	60	6	0.3	4	0.055	**257048** 0020	65,–
2	2	20	60	6	0.5	4	0.055	257048 0021	66,50
3	3	21	60	6	0.3	4	0.085	257048 0030	66,50
3	3	21	60	6	0.5	4	0.085	257048 0031	67,–
4	4	12	60	6	0.3	4	0.135	257048 0040	66,50
4	4	12	60	6	0.5	4	0.135	257048 0041	67,50
6	6	20	60	6	0.3	4	0.185	257048 0060	68,–
6	6	20	60	6	0.5	4	0.185	257048 0061	69,–
6	6	20	60	6	1	4	0.185	257048 0062	69,50
8	8	24	64	8	0.3	6	0.225	257048 0080	111,–
8	8	24	64	8	0.5	6	0.225	257048 0081	111,–
8	8	24	64	8	1	6	0.225	257048 0082	113,–
8	8	24	64	8	2	6	0.225	257048 0083	116,–
10	10	30	75	10	0.3	6	0.275	257048 0100	156,–
10	10	30	75	10	0.5	6	0.275	257048 0101	157,–
10	10	30	75	10	1	6	0.275	257048 0102	158,–
10	10	30	75	10	2	6	0.275	257048 0103	160,–
12	12	30	75	12	0.3	6	0.325	257048 0120	176,–
12	12	30	75	12	0.5	6	0.325	257048 0121	177,–
12	12	30	75	12	1	6	0.325	257048 0122	179,–
12	12	30	75	12	2	6	0.325	257048 0123	184,–

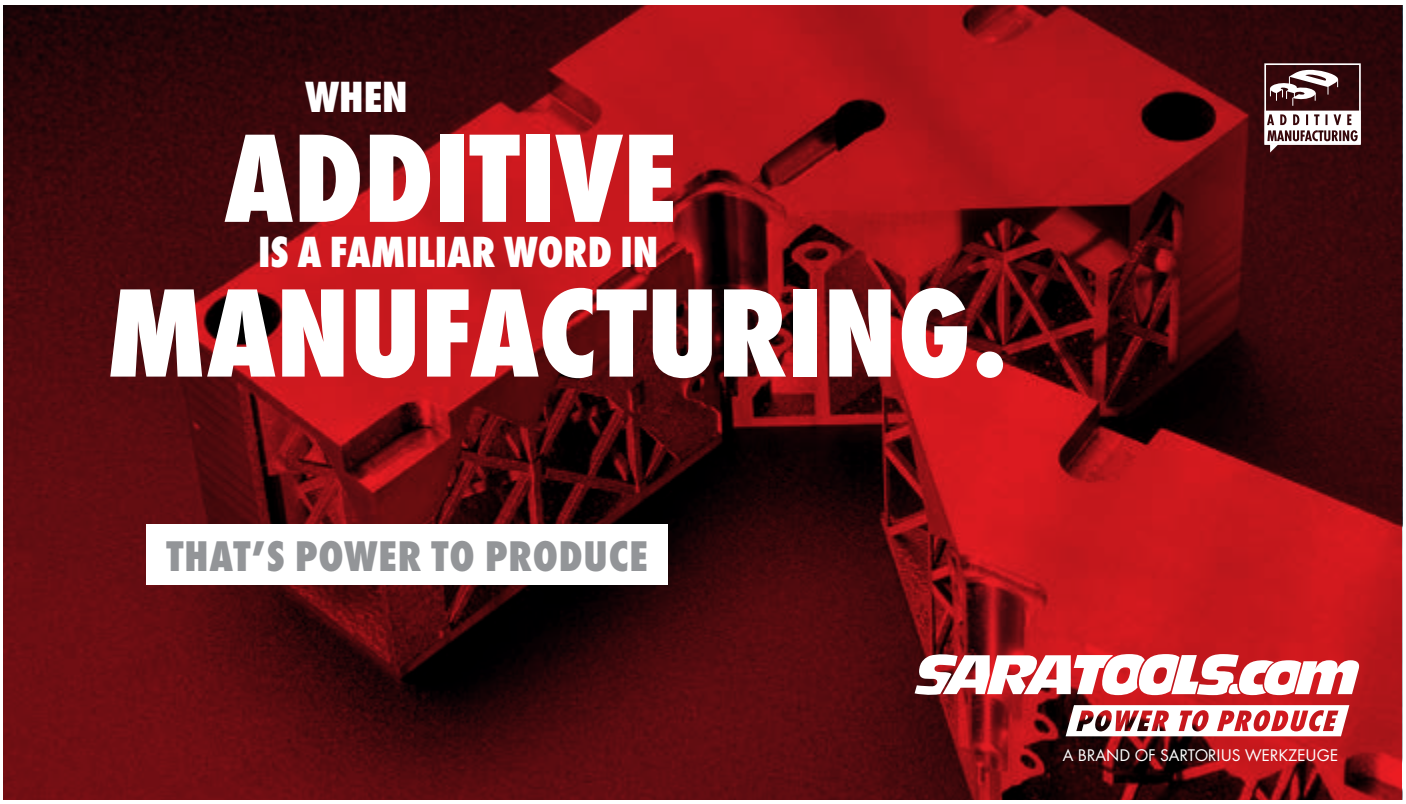
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Finishing milling cutter, long

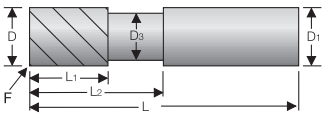
D mm	L1 mm	L2 mm	L mm	D1 mm	R mm	Z	Feed fz hardened steel ≥ 60 HRc mm/tooth	art.no.	€
2	2	35	75	6	0.3	4	0.055	**257050** 0020	78,–
2	2	35	75	6	0.5	4	0.055	257050 0021	80,–
3	3	30	75	6	0.3	4	0.085	257050 0030	78,–
3	3	30	75	6	0.5	4	0.085	257050 0031	80,–
4	4	32	75	6	0.3	4	0.118	257050 0040	78,–
4	4	32	75	6	0.5	4	0.118	257050 0041	80,–
6	6	40	75	6	0.3	4	0.180	257050 0060	75,–
6	6	40	75	6	0.5	4	0.180	257050 0061	80,50
6	6	40	75	6	1	4	0.180	257050 0062	81,50
8	8	60	100	8	0.3	6	0.220	257050 0080	146,–
8	8	60	100	8	0.5	6	0.220	257050 0081	147,–
8	8	60	100	8	1	6	0.220	257050 0082	149,–
8	8	60	100	8	2	6	0.220	257050 0083	153,–
10	10	60	100	10	0.3	6	0.275	257050 0100	192,–
10	10	60	100	10	0.5	6	0.275	257050 0101	193,–
10	10	60	100	10	1	6	0.275	257050 0102	195,–
10	10	60	100	10	2	6	0.275	257050 0103	196,–
12	12	60	100	12	0.3	6	0.325	257050 0120	220,–
12	12	60	100	12	0.5	6	0.325	257050 0121	220,–
12	12	60	100	12	1	6	0.325	257050 0122	220,–
12	12	60	100	12	2	6	0.325	257050 0123	215,–

2146



ATORN® RockTec 52 multi-flute milling cutter

VHM | 50° | e8 | h6 | DIN 6535 HA | Z 6 | Z 8+ | AlTiN | 3D PRINT | Vc/fz | 728



- For machining materials **up to 52 HRc**
- Edge protection chamfer
- **Cutting material: ultra-fine grain solid carbide**
- Rake angle 3°

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 140-160	● 130-150	● 120-140	● 100-120	● 100-120	○ 80-100	● 100-120	● 100-120	● 80-100	● 80-100	● 70-90					● 60-80		
Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

Standard



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	F x 45° mm	Z	Feed fz steel < 1400 N/mm² mm/tooth	art.no.	€
3.0	8	20	50	2.8	6.0	0.03	6	0.02	**257011** 0030	24,60
4.0	11	20	50	3.7	6.0	0.04	6	0.02	257011 0040	24,60
5.0	13	20	50	4.6	6.0	0.05	6	0.03	257011 0050	23,20
6.0	15	20	50	5.5	6.0	0.06	6	0.03	257011 0060	32,–
8.0	20	30	64	7.4	8.0	0.08	6	0.04	257011 0080	38,–
10.0	22	32	70	9.2	10.0	0.10	6	0.05	257011 0100	59,–
12.0	25	37	75	11.0	12.0	0.12	6	0.06	257011 0120	77,50
16.0	30	46	90	15.0	16.0	0.16	8	0.08	257011 0160	138,–
20.0	38	58	100	19.0	20.0	0.20	8	0.1	257011 0200	185,–

2146

Long



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	F x 45° mm	Z	Feed fz steel < 1400 N/mm² mm/tooth	art.no.	€
3.0	19	30	75	2.8	6.0	0.03	6	0.02	**257013** 0030	31,80
4.0	19	32	75	3.7	6.0	0.04	6	0.02	257013 0040	31,80
5.0	19	32	75	4.6	6.0	0.05	6	0.03	257013 0050	31,80
6.0	31	40	75	5.5	6.0	0.06	6	0.03	257013 0060	32,20
8.0	31	40	75	7.4	8.0	0.08	6	0.04	257013 0080	41,70
10.0	45	60	100	9.2	10.0	0.10	6	0.06	257013 0100	63,50
12.0	50	60	100	11.0	12.0	0.12	6	0.06	257013 0120	82,50
16.0	57	85	125	15.0	16.0	0.16	8	0.08	257013 0160	154,–
20.0	57	85	125	19.0	20.0	0.20	8	0.1	257013 0200	220,–

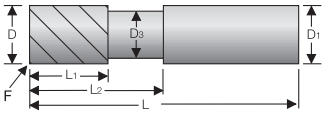
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ATORN® RockTec 65 multi-flute milling cutter

VHM | 50° | e8 | h6 | DIN 6535 HA | Z 6 | Z 8+ | TiSiN | Vc/fz | 763



- For machining materials **up to 65 HRc**
- Edge protection chamfer
- **Cutting material: ultra-fine grain solid carbide**
- Rake angle -26°

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
257012....			○ 160-200						○ 250-300	○ 250-300	○ 250-300					● 120-140	● 140-140	● 80-120
257014....			○ 140-160						○ 200-260	○ 200-260	○ 200-260					● 100-130	● 100-130	● 70-100

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

Standard



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	F x 45° mm	Z	Feed fz hardened steel ≥ 60 HRc mm/tooth	art.no.	€
3.0	8	20	50	2.8	6.0	0.03	6	0.015	**257012** 0030	30,50
4.0	11	20	50	3.7	6.0	0.04	6	0.03	257012 0040	30,50
5.0	13	20	50	4.6	6.0	0.05	6	0.05	257012 0050	28,40
6.0	15	20	50	5.5	6.0	0.06	6	0.05	257012 0060	39,60
8.0	20	30	64	7.4	8.0	0.08	6	0.05	257012 0080	47,–
10.0	22	32	70	9.2	10.0	0.10	6	0.06	257012 0100	73,–
12.0	25	37	75	11.0	12.0	0.12	6	0.06	257012 0120	96,–
16.0	30	46	90	15.0	16.0	0.16	8	0.07	257012 0160	172,–
20.0	38	58	100	19.0	20.0	0.20	8	0.08	257012 0200	210,–

2146

Long



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	F x 45° mm	Z	Feed fz hardened steel ≥ 60 HRc mm/tooth	art.no.	€
3.0	19	30	75	2.8	6.0	0.03	6	0.015	**257014** 0030	34,40
4.0	19	32	75	3.7	6.0	0.04	6	0.03	257014 0040	34,40
5.0	19	32	75	4.6	6.0	0.05	6	0.05	257014 0050	34,40
6.0	31	40	75	5.5	6.0	0.06	6	0.05	257014 0060	36,40
8.0	31	40	75	7.4	8.0	0.08	6	0.05	257014 0080	44,30
10.0	45	60	100	9.2	10.0	0.10	6	0.06	257014 0100	70,50
12.0	50	60	100	11.0	12.0	0.12	6	0.06	257014 0120	96,50
16.0	57	85	125	15.0	16.0	0.16	8	0.07	257014 0160	180,–
20.0	57	85	125	19.0	20.0	0.20	8	0.08	257014 0200	270,–

2146



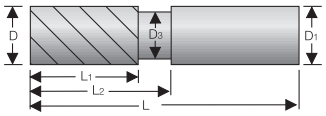
... with every indexable insert.

ATORN®
Performance demands quality

ATORN® Multi-flute milling cutter, sharp RockTec 52

VHM | Typ H | e8 | h6 | Z 6 | Z 7 | AlTiN | i Vc/fz | 728





- for machining materials **up to 52 HRc**
- sharp
- **Cutting material: ultra micro-grain SC**
- Rake angle 0 to -3°

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 140-160	● 120-140	● 130-150	● 100-120	● 100-120	○ 80-100	● 100-120	● 100-120	● 80-100	● 80-100	● 70-90					● 60-80		
	Cutting speed Vc m/min.				Please adjust these guidelines according to clamping operation and machine set-up.														

Standard



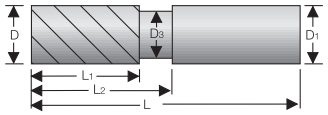
D mm	D1 mm	D3 mm	L mm	L1 mm	L2 mm	Z	Feed fz steel < 1400 N/mm² mm/tooth	art.no.	€
3	6	2.8	57	8	20	6	0.02	**257041** 0030	32,30
4	6	3.7	57	11	20	6	0.02	257041 0040	32,30
5	6	4.6	57	12	20	6	0.03	257041 0050	32,30
6	6	5.5	57	15	20	7	0.03	257041 0060	32,30
8	8	7.4	64	20	26	7	0.04	257041 0080	51,–
10	10	9.2	72	22	30	7	0.05	257041 0100	71,–
12	12	11	83	25	36	7	0.06	257041 0120	95,50
16	16	15	92	30	42	7	0.08	257041 0160	175,–
20	20	19	104	38	52	7	0.1	257041 0200	290,–

2146

ATORN® Multi-flute milling cutter, sharp RockTec 65

VHM | e8 | h6 | Z 6 | Z 7 | TiAlSiN | i Vc/fz | 763





- for machining materials **up to 65 HRc**
- sharp
- **Cutting material: ultra micro-grain SC**
- Rake angle 0 to -3°

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
				○ 140-160													● 80-110	● 80-110	● 50-80
	Cutting speed Vc m/min.				Please adjust these guidelines according to clamping operation and machine set-up.														

Standard



D mm	D1 mm	D3 mm	L mm	L1 mm	L2 mm	Feed fz hardened steel < 60 HRc mm/tooth	Z	art.no.	€
3.0	6	2.8	57	8	20	0.015	6	**257042** 0030	40,40
4.0	6	3.7	57	11	20	0.03	6	257042 0040	40,40
5.0	6	4.6	57	12	20	0.05	6	257042 0050	40,40
6.0	6	5.5	57	15	20	0.05	7	257042 0060	40,40
8.0	8	7.4	64	20	26	0.05	7	257042 0080	64,–
10.0	10	9.2	72	22	30	0.06	7	257042 0100	89,–
12.0	12	11	83	25	36	0.06	7	257042 0120	119,–
16.0	16	15	92	30	42	0.07	7	257042 0160	220,–
20.0	20	19	104	38	52	0.08	7	257042 0200	365,–

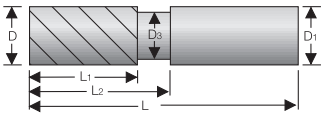
2146

ATORN® Multi-flute milling cutter, corner radius RockTec 52

VHM | Typ H | e8 | h6 | Z 6 | Z 7 | AlTiN | Vc/fz | 728

NEW · NUOVO · NEU · NOUVEAU · NUEVO

- for machining materials **up to 52 HRc**
- sharp
- **Cutting material: ultra micro-grain SC**
- Rake angle 0 to -3°



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 140-160	● 130-150	● 140-160	● 100-120	● 100-120	○ 80-100	● 100-120	● 100-120	● 80-100	● 80-100	● 70-90					● 60-80		
	Cutting speed Vc m/min.				Please adjust these guidelines according to clamping operation and machine set-up.														



Standard

● Feed fz steel < 1400 N/mm² mm/tooth

D mm	D1 mm	D3 mm	L mm	L1 mm	L2 mm	R mm	Feed fz steel < 1400 N/mm² mm/tooth	Z	art.no.	€
3	6	2.8	57	8	20	0.2	0.02	6	**257043** 0001	31,40
4	6	3.7	57	11	20	0.2	0.02	6	257043 0002	33,20
5	6	4.6	57	12	20	0.3	0.03	6	257043 0003	44,40
6	6	5.5	57	15	20	0.5	0.03	7	257043 0004	47,40
6	6	5.5	57	15	20	1	0.03	7	257043 0005	47,40
8	8	7.4	63	20	26	0.5	0.04	7	257043 0006	72,50
8	8	7.4	63	20	26	0.8	0.04	7	257043 0007	72,50
10	10	9.2	72	22	30	0.5	0.05	7	257043 0008	91,50
10	10	9.2	72	22	30	0.8	0.05	7	257043 0009	91,50
10	10	9.2	72	22	30	1	0.05	7	257043 0010	91,50
12	12	11	83	25	36	0.5	0.06	7	257043 0011	123,–
12	12	11	83	25	36	1	0.06	7	257043 0012	123,–
12	12	11	83	25	36	1.5	0.06	7	257043 0013	124,–
16	16	15	92	30	42	2	0.08	7	257043 0014	199,–
16	16	15	92	30	42	3	0.08	7	257043 0015	200,–
20	20	19	104	38	52	3	0.1	7	257043 0016	320,–

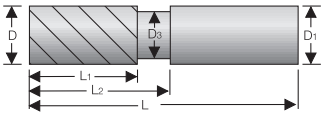
2146



ATORN® Multi-flute milling cutter, corner radius RockTec 65

VHM | e8 | h6 | Z 6 | Z 7 | TiAlSiN | Vc/fz | 763

- for machining materials **up to 65 HRc**
- sharp
- **Cutting material: ultra micro-grain SC**
- Rake angle 0 to -3°



material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
			○ 160-200						○ 250-300	○ 250-300	○ 250-300					● 120-140	● 140-140	● 80-120
Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

Standard



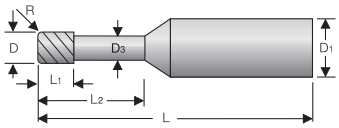
D mm	D1 mm	D3 mm	L mm	L1 mm	L2 mm	R mm	Z	Feed fz hardened steel < 60 HRc mm/tooth	art.no.	€
3.0	6	2.8	57	8	20	0.2	6	0.02	**257044** 0001	39,20
4.0	6	3.7	57	11	20	0.2	6	0.02	257044 0002	41,50
5.0	6	4.6	57	12	20	0.3	6	0.03	257044 0003	55,50
6.0	6	5.5	57	15	20	0.5	7	0.03	257044 0004	59,–
6.0	6	5.5	57	15	20	1	7	0.03	257044 0005	59,–
8.0	8	7.4	63	20	26	0.5	7	0.04	257044 0006	90,50
8.0	8	7.4	63	20	26	0.8	7	0.04	257044 0007	90,50
10.0	10	9.2	72	22	30	0.5	7	0.05	257044 0008	114,–
10.0	10	9.2	72	22	30	0.8	7	0.05	257044 0009	114,–
10.0	10	9.2	72	22	30	1	7	0.05	257044 0010	114,–
12.0	12	11	83	25	36	0.5	7	0.06	257044 0011	153,–
12.0	12	11	83	25	36	1	7	0.06	257044 0012	153,–
12.0	12	11	83	25	36	1.5	7	0.06	257044 0013	155,–
16.0	16	15	92	30	42	2	7	0.08	257044 0014	250,–
16.0	16	15	92	30	42	3	7	0.08	257044 0015	250,–
20.0	20	19	104	38	52	3	7	0.1	257044 0016	400,–

2146



ATORN® RockTec 52 mini torus cutter

VHM | 40° | h6 | DIN 6535 HA | Z 2 | AlTiN | 3D PRINT | Vc/fz | 722



- Long-necked version for machining materials **up to 52 HRc**
- Cutting edge tolerance: at Ø 0.1 – 0.7 mm = 0/– 0.012 mm, at Ø 0.8 – 3.0 mm = 0/– 0.020 mm
- Radius tolerance: 0/-0.01 mm
- **Cutting material: ultra-fine grain solid carbide**
- Rake angle 3°

material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
● 100-120	● 80-100	● 60-80	● 50-90	● 50-90	○ 50-70	● 50-90	● 50-90	● 50-90	● 50-90	● 50-80					● 30-60		

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	R mm	Feed fz steel < 1400 N/mm² mm/tooth	art.no.	€
0.2	0.3	0.5	50	0.16	4.0	0.02	0.005	**257023** 0001	47,50
0.2	0.3	1.0	50	0.16	4.0	0.02	0.005	257023 0002	47,50
0.2	0.3	1.5	50	0.16	4.0	0.02	0.005	257023 0003	47,50
0.3	0.4	1.0	50	0.26	4.0	0.03	0.005	257023 0004	44,50
0.3	0.4	2.0	50	0.26	4.0	0.03	0.005	257023 0005	44,50
0.3	0.4	3.0	50	0.26	4.0	0.03	0.005	257023 0006	44,50
0.4	0.6	2.0	50	0.37	4.0	0.03	0.0085	257023 0007	41,50
0.4	0.6	3.0	50	0.37	4.0	0.03	0.0085	257023 0008	41,50
0.4	0.6	4.0	50	0.37	4.0	0.03	0.0085	257023 0009	41,50
0.4	0.6	5.0	50	0.37	4.0	0.03	0.0085	257023 0010	41,50
0.5	0.7	2.0	50	0.45	4.0	0.05	0.0085	257023 0011	39,30
0.5	0.7	4.0	50	0.45	4.0	0.05	0.0085	257023 0012	39,30
0.5	0.7	6.0	50	0.45	4.0	0.05	0.0085	257023 0013	39,30
0.5	0.7	8.0	50	0.45	4.0	0.05	0.0085	257023 0014	39,30
0.6	0.9	2.0	50	0.55	4.0	0.05	0.0085	257023 0015	37,60
0.6	0.9	4.0	50	0.55	4.0	0.05	0.0085	257023 0016	37,60
0.6	0.9	6.0	50	0.55	4.0	0.05	0.0085	257023 0017	37,60
0.6	0.9	8.0	50	0.55	4.0	0.05	0.0085	257023 0018	37,60
0.6	0.9	10.0	50	0.55	4.0	0.05	0.0085	257023 0019	37,60
0.8	1.2	4.0	50	0.75	4.0	0.08	0.0085	257023 0020	37,60
0.8	1.2	6.0	50	0.75	4.0	0.08	0.0085	257023 0021	37,60
0.8	1.2	8.0	50	0.75	4.0	0.08	0.0085	257023 0022	37,60
0.8	1.2	10.0	50	0.75	4.0	0.08	0.0085	257023 0023	37,60
0.8	1.2	12.0	50	0.75	4.0	0.08	0.0085	257023 0024	37,60
1.0	1.5	6.0	50	0.95	4.0	0.10	0.013	257023 0025	36,70
1.0	1.5	8.0	50	0.95	4.0	0.10	0.013	257023 0026	36,70
1.0	1.5	10.0	50	0.95	4.0	0.10	0.013	257023 0027	36,70

2146

D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	R mm	Feed fz steel < 1400 N/mm² mm/tooth	art.no.	€
1.0	1.5	12.0	50	0.95	4.0	0.10	0.013	257023 0028	36,70
1.0	1.5	14.0	50	0.95	4.0	0.10	0.013	257023 0029	36,70
1.0	1.5	16.0	50	0.95	4.0	0.10	0.013	257023 0030	36,70
1.2	1.8	6.0	50	1.15	4.0	0.10	0.013	257023 0031	36,70
1.2	1.8	10.0	50	1.15	4.0	0.10	0.013	257023 0032	36,70
1.5	2.3	8.0	50	1.45	4.0	0.15	0.013	257023 0033	36,70
1.5	2.3	12.0	50	1.45	4.0	0.15	0.013	257023 0034	36,70
1.5	2.3	16.0	50	1.45	4.0	0.15	0.013	257023 0035	36,70
1.5	2.3	20.0	60	1.45	4.0	0.15	0.013	257023 0036	38,90
2.0	3.0	6.0	50	1.95	4.0	0.20	0.0195	257023 0037	36,70
2.0	3.0	8.0	50	1.95	4.0	0.20	0.0195	257023 0038	36,70
2.0	3.0	12.0	50	1.95	4.0	0.20	0.0195	257023 0039	36,70
2.0	3.0	16.0	50	1.95	4.0	0.20	0.0195	257023 0040	36,70
2.0	3.0	20.0	60	1.95	4.0	0.20	0.0195	257023 0041	38,90
2.0	3.0	25.0	75	1.95	4.0	0.20	0.0195	257023 0042	42,40
2.5	3.7	8.0	50	2.40	4.0	0.30	0.0265	257023 0043	36,70
2.5	3.7	10.0	50	2.40	4.0	0.30	0.0265	257023 0044	36,70
2.5	3.7	12.0	50	2.40	4.0	0.30	0.0265	257023 0045	36,70
2.5	3.7	16.0	50	2.40	4.0	0.30	0.0265	257023 0046	36,70
2.5	3.7	20.0	60	2.40	4.0	0.30	0.0265	257023 0047	38,90
2.5	3.7	25.0	75	2.40	4.0	0.30	0.0265	257023 0048	36,70
3.0	4.5	8.0	50	2.85	6.0	0.30	0.0265	257023 0049	40,40
3.0	4.5	10.0	50	2.85	6.0	0.30	0.0265	257023 0050	40,40
3.0	4.5	12.0	50	2.85	6.0	0.30	0.0265	257023 0051	40,40
3.0	4.5	16.0	60	2.85	6.0	0.30	0.0265	257023 0052	40,40
3.0	4.5	20.0	60	2.85	6.0	0.30	0.0265	257023 0053	40,40
3.0	4.5	25.0	75	2.85	6.0	0.30	0.0265	257023 0054	42,90

2146

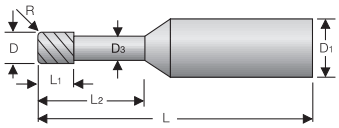


… HPC with internal cooling

ATORN®
High quality for great performance

ATORN® RockTec 65 mini torus cutter

VHM | 40° | h6 | DIN 6535 HA | Z 2 | TiSiN | Vc/fz | 763



- Long-necked version for machining materials **up to 65 HRc**
- Cutting edge tolerance: at Ø 0.1 – 0.7 mm = 0/– 0.012 mm, at Ø 0.8 – 3.0 mm = 0/– 0.020 mm
- Radius tolerance: 0/-0.01 mm
- **Cutting material: ultra-fine grain solid carbide**
- Rake angle -5°~-7°

material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		○ 60-100						○ 15-80	○ 15-80	○ 13-65					● 50-90	● 50-90	● 40-80

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	R mm	Feed fz hardened steel ≥ 60 HRc mm/tooth	art.no.	€
0.2	0.3	0.5	50	0.16	4.0	0.02	0.002	**257024** 0001	57,–
0.2	0.3	1.0	50	0.16	4.0	0.02	0.002	257024 0002	57,–
0.2	0.3	1.5	50	0.16	4.0	0.02	0.002	257024 0003	57,–
0.3	0.4	1.0	50	0.26	4.0	0.03	0.002	257024 0004	53,50
0.3	0.4	2.0	50	0.26	4.0	0.03	0.002	257024 0005	53,50
0.3	0.4	3.0	50	0.26	4.0	0.03	0.002	257024 0006	53,50
0.4	0.6	2.0	50	0.37	4.0	0.03	0.002	257024 0007	50,50
0.4	0.6	3.0	50	0.37	4.0	0.03	0.002	257024 0008	50,50
0.4	0.6	4.0	50	0.37	4.0	0.03	0.002	257024 0009	50,50
0.4	0.6	5.0	50	0.37	4.0	0.03	0.002	257024 0010	50,50
0.5	0.7	2.0	50	0.45	4.0	0.05	0.002	257024 0011	41,90
0.5	0.7	4.0	50	0.45	4.0	0.05	0.002	257024 0012	41,90
0.5	0.7	6.0	50	0.45	4.0	0.05	0.002	257024 0013	41,90
0.5	0.7	8.0	50	0.45	4.0	0.05	0.002	257024 0014	41,90
0.6	0.9	2.0	50	0.55	4.0	0.05	0.002	257024 0015	41,90
0.6	0.9	4.0	50	0.55	4.0	0.05	0.002	257024 0016	41,90
0.6	0.9	6.0	50	0.55	4.0	0.05	0.002	257024 0017	41,90
0.6	0.9	8.0	50	0.55	4.0	0.05	0.002	257024 0018	41,90
0.6	0.9	10.0	50	0.55	4.0	0.05	0.002	257024 0019	42,50
0.8	1.2	4.0	50	0.75	4.0	0.08	0.002	257024 0020	40,20
0.8	1.2	6.0	50	0.75	4.0	0.08	0.002	257024 0021	43,20
0.8	1.2	8.0	50	0.75	4.0	0.08	0.002	257024 0022	43,20
0.8	1.2	10.0	50	0.75	4.0	0.08	0.002	257024 0023	43,20
0.8	1.2	12.0	50	0.75	4.0	0.08	0.002	257024 0024	43,20
1.0	1.5	6.0	50	0.95	4.0	0.10	0.006	257024 0025	43,20
1.0	1.5	8.0	50	0.95	4.0	0.10	0.006	257024 0026	43,20
1.0	1.5	10.0	50	0.95	4.0	0.10	0.006	257024 0027	43,20

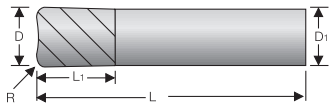
2146

D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	R mm	Feed fz hardened steel ≥ 60 HRc mm/tooth	art.no.	€
1.0	1.5	12.0	50	0.95	4.0	0.10	0.006	257024 0028	43,20
1.0	1.5	14.0	50	0.95	4.0	0.10	0.006	257024 0029	43,20
1.0	1.5	16.0	50	0.95	4.0	0.10	0.006	257024 0030	43,20
1.2	1.8	6.0	50	1.15	4.0	0.10	0.006	257024 0031	43,50
1.2	1.8	10.0	50	1.15	4.0	0.10	0.006	257024 0032	43,50
1.5	2.3	8.0	50	1.45	4.0	0.15	0.006	257024 0033	43,50
1.5	2.3	12.0	50	1.45	4.0	0.15	0.006	257024 0034	43,50
1.5	2.3	16.0	50	1.45	4.0	0.15	0.006	257024 0035	43,50
1.5	2.3	20.0	60	1.45	4.0	0.15	0.006	257024 0036	43,50
2.0	3.0	6.0	50	1.95	4.0	0.20	0.012	257024 0037	43,50
2.0	3.0	8.0	50	1.95	4.0	0.20	0.012	257024 0038	43,50
2.0	3.0	12.0	50	1.95	4.0	0.20	0.012	257024 0039	43,50
2.0	3.0	16.0	50	1.95	4.0	0.20	0.012	257024 0040	43,50
2.0	3.0	20.0	60	1.95	4.0	0.20	0.012	257024 0041	43,50
2.0	3.0	25.0	75	1.95	4.0	0.20	0.012	257024 0042	43,50
2.5	3.7	8.0	50	2.40	4.0	0.30	0.0185	257024 0043	44,60
2.5	3.7	10.0	50	2.40	4.0	0.30	0.0185	257024 0044	44,60
2.5	3.7	12.0	50	2.40	4.0	0.30	0.0185	257024 0045	44,60
2.5	3.7	16.0	50	2.40	4.0	0.30	0.0185	257024 0046	44,60
2.5	3.7	20.0	60	2.40	4.0	0.30	0.0185	257024 0047	44,60
2.5	3.7	25.0	75	2.40	4.0	0.30	0.0185	257024 0048	44,60
3.0	4.5	8.0	50	2.85	6.0	0.30	0.0185	257024 0049	46,20
3.0	4.5	10.0	50	2.85	6.0	0.30	0.0185	257024 0050	46,20
3.0	4.5	12.0	50	2.85	6.0	0.30	0.0185	257024 0051	46,20
3.0	4.5	16.0	60	2.85	6.0	0.30	0.0185	257024 0052	46,20
3.0	4.5	20.0	60	2.85	6.0	0.30	0.0185	257024 0053	46,20
3.0	4.5	25.0	75	2.85	6.0	0.30	0.0185	257024 0054	46,20

2146

ATORN® RockTec 52 torus cutter

VHM | 40° | e8 | h6 | DIN 6535 HA | Z 4 | AlTiN | Vc/fz | 728



- For machining materials **up to 52 HRc**
- Radius tolerance: 0/-0.01 mm
- **Cutting material: ultra-fine grain solid carbide**
- Rake angle 3°

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 140-160	● 130-150	● 120-140	● 100-120	● 100-120	○ 80-100	● 100-120	● 100-120	● 80-100	● 80-100	● 70-90					● 60-80		
	Cutting speed Vc m/min.				Please adjust these guidelines according to clamping operation and machine set-up.														

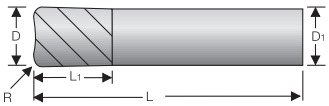


D mm	L1 mm	L mm	D1 mm	R mm	Feed fz steel < 1400 N/mm² mm/tooth	art.no.	€
3.0	9	50	6.0	0.3	0.02	**257015** 0001	40,60
3.0	9	50	6.0	0.5	0.02	257015 0002	40,60
4.0	12	50	6.0	0.3	0.02	257015 0003	40,60
4.0	12	50	6.0	0.5	0.02	257015 0004	40,60
4.0	12	50	6.0	1.0	0.02	257015 0005	40,60
5.0	15	50	6.0	0.3	0.03	257015 0027	40,90
5.0	15	50	6.0	0.5	0.03	257015 0006	40,90
5.0	15	50	6.0	1.0	0.03	257015 0007	40,90
6.0	20	60	6.0	0.3	0.03	257015 0008	34,50
6.0	20	60	6.0	0.5	0.03	257015 0009	34,50
6.0	20	60	6.0	1.0	0.03	257015 0010	34,50
8.0	20	64	8.0	0.5	0.04	257015 0011	46,70
8.0	20	64	8.0	1.0	0.04	257015 0012	46,70
8.0	20	64	8.0	1.5	0.04	257015 0013	46,70
8.0	20	64	8.0	2.0	0.04	257015 0014	46,70
10.0	22	75	10.0	0.5	0.05	257015 0015	55,50
10.0	22	75	10.0	1.0	0.05	257015 0028	55,50
10.0	22	75	10.0	1.5	0.05	257015 0016	55,50
10.0	22	75	10.0	2.0	0.05	257015 0017	55,50
12.0	25	75	12.0	1.0	0.06	257015 0018	87,50
12.0	25	75	12.0	2.0	0.06	257015 0019	87,50
12.0	25	75	12.0	3.0	0.06	257015 0020	87,50
16.0	32	90	16.0	1.0	0.08	257015 0021	131,–
16.0	32	90	16.0	2.0	0.08	257015 0022	134,–
16.0	32	90	16.0	3.0	0.08	257015 0023	135,–
20.0	38	100	20.0	1.0	0.1	257015 0024	205,–
20.0	38	100	20.0	2.0	0.1	257015 0025	205,–
20.0	38	100	20.0	3.0	0.1	257015 0026	210,–

2146

ATORN® Torus milling cutter RockTec 65

VHM | 40° | e8 | h6 | DIN 6535 HA | Z 4 | TiSiN | Vc/fz | 763



- Long-necked version for machining materials **up to 65 HRc**
- Cutting edge tolerance: at Ø 0.1 – 0.7 mm = 0/– 0.012 mm, at Ø 0.8 – 3.0 mm = 0/– 0.020 mm
- Radius tolerance: 0/-0.01 mm
- **Cutting material: ultra-fine grain solid carbide**
- Rake angle -5°~-7°

material

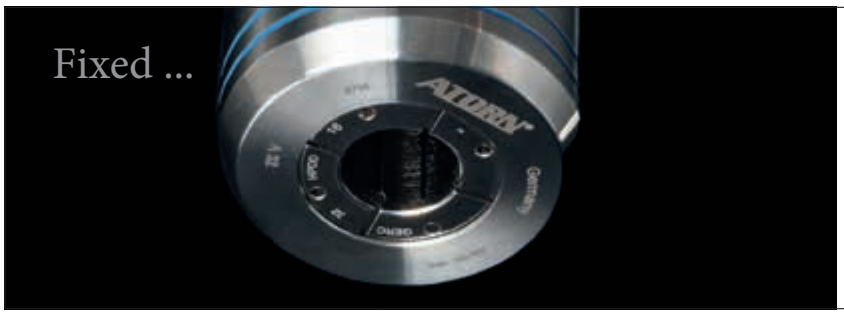
● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
			○ 160-200						○ 250-300	○ 250-300	○ 250-300					● 120-140	● 140-140	● 80-120
Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.



D mm	L1 mm	L mm	D1 mm	R mm	Feed fz hardened steel ≥ 60 HRc mm/tooth	art.no.	€
3.0	9	50	6.0	0.3	0.015	**257016** 0001	40,70
3.0	9	50	6.0	0.5	0.015	257016 0002	40,70
4.0	12	50	6.0	0.3	0.015	257016 0003	40,70
4.0	12	50	6.0	0.5	0.015	257016 0004	40,70
4.0	12	50	6.0	1.0	0.015	257016 0005	40,70
5.0	15	50	6.0	0.3	0.025	257016 0027	41,30
5.0	15	50	6.0	0.5	0.025	257016 0006	41,30
5.0	15	50	6.0	1.0	0.025	257016 0007	41,30
6.0	20	60	6.0	0.3	0.025	257016 0008	46,70
6.0	20	60	6.0	0.5	0.025	257016 0009	46,70
6.0	20	60	6.0	1.0	0.025	257016 0010	46,70
8.0	20	64	8.0	0.5	0.05	257016 0011	52,–
8.0	20	64	8.0	1.0	0.05	257016 0012	52,–
8.0	20	64	8.0	1.5	0.05	257016 0013	52,–
8.0	20	64	8.0	2.0	0.05	257016 0014	52,–
10.0	22	75	10.0	0.5	0.05	257016 0015	66,50
10.0	22	75	10.0	1.0	0.05	257016 0028	66,50
10.0	22	75	10.0	1.5	0.05	257016 0016	66,50
10.0	22	75	10.0	2.0	0.05	257016 0017	66,50
12.0	25	75	12.0	1.0	0.06	257016 0018	103,–
12.0	25	75	12.0	2.0	0.06	257016 0019	103,–
12.0	25	75	12.0	3.0	0.06	257016 0020	103,–
16.0	32	90	16.0	1.0	0.07	257016 0021	156,–
16.0	32	90	16.0	2.0	0.07	257016 0022	156,–
16.0	32	90	16.0	3.0	0.07	257016 0023	156,–
20.0	38	100	20.0	1.0	0.08	257016 0024	230,–
20.0	38	100	20.0	2.0	0.08	257016 0025	230,–
20.0	38	100	20.0	3.0	0.08	257016 0026	230,–

2146

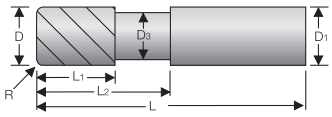


... and stable.

ATORN®
Performance demands quality

ATORN® RockTec 52 torus cutter

VHM | 40° | e8 | h6 | DIN 6535 HA | Z 4 | AlTiN | 3D PRINT | Vc/fz | 728



- **With clearance**
- For machining materials **up to 52 HRc**
- Radius tolerance: 0/-0.01 mm
- **Cutting material: ultra-fine grain solid carbide**
- Rake angle 3°

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
257017....	140-160	130-150	120-140	100-120	100-120	80-100	100-120	100-120	80-100	80-100	70-90					60-80		
257019....	120-140	110-130	80-110	90-110	90-110	70-90	90-110	90-110	70-90	70-90	60-80					50-70		
257021....	100-120	90-110	80-100	80-100	80-100	60-80	80-100	80-100	70-90	60-80	50-70					40-60		

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

Standard



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	R mm	Feed fz steel < 1400 N/mm² mm/tooth	art.no.	€
3.0	4	14	60	2.8	6.0	0.3	0.02	**257017** 0001	30,70
3.0	4	14	60	2.8	6.0	0.5	0.02	257017 0002	30,70
4.0	5	16	60	3.7	6.0	0.3	0.02	257017 0003	32,70
4.0	5	16	60	3.7	6.0	0.5	0.02	257017 0004	32,70
5.0	6	18	60	4.6	6.0	0.3	0.03	257017 0005	35,80
5.0	6	18	60	4.6	6.0	0.5	0.03	257017 0006	35,80
6.0	7	20	60	5.5	6.0	0.5	0.03	257017 0007	40,50
6.0	7	20	60	5.5	6.0	1.0	0.03	257017 0008	40,50
8.0	9	26	64	7.4	8.0	0.5	0.04	257017 0009	50,–
8.0	9	26	64	7.4	8.0	1.0	0.04	257017 0010	50,–
10.0	11	31	70	9.2	10.0	1.0	0.05	257017 0011	69,50
10.0	11	31	70	9.2	10.0	2.0	0.05	257017 0012	69,50
12.0	13	37	75	11.0	12.0	1.0	0.06	257017 0013	91,–
12.0	13	37	75	11.0	12.0	2.0	0.06	257017 0014	91,–
16.0	17	43	90	15.0	16.0	1.0	0.08	257017 0015	148,–
16.0	17	43	90	15.0	16.0	2.0	0.08	257017 0016	148,–

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Long



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	R mm	Feed fz steel < 1400 N/mm² mm/tooth	art.no.	€
3.0	5	30	75	2.8	6.0	0.3	0.02	**257019** 0001	38,–
3.0	5	30	75	2.8	6.0	0.5	0.02	257019 0002	38,–
4.0	8	32	75	3.7	6.0	0.3	0.02	257019 0003	38,–
4.0	8	32	75	3.7	6.0	0.5	0.02	257019 0004	38,–
5.0	9	32	75	4.6	6.0	0.3	0.03	257019 0005	38,–
5.0	9	32	75	4.6	6.0	0.5	0.03	257019 0006	38,–
6.0	10	40	75	5.5	6.0	0.5	0.03	257019 0007	43,10
6.0	10	40	75	5.5	6.0	1.0	0.03	257019 0008	43,10
8.0	12	40	75	7.4	8.0	0.5	0.04	257019 0009	58,50
8.0	12	40	75	7.4	8.0	1.0	0.04	257019 0010	58,50
10.0	14	60	100	9.2	10.0	1.0	0.05	257019 0011	81,50
10.0	14	60	100	9.2	10.0	2.0	0.05	257019 0012	81,50
12.0	16	60	100	11.0	12.0	1.0	0.06	257019 0013	99,–
12.0	16	60	100	11.0	12.0	2.0	0.06	257019 0014	99,–
16.0	22	85	125	15.0	16.0	1.0	0.08	257019 0015	185,–
16.0	22	85	125	15.0	16.0	2.0	0.08	257019 0016	185,–

2146

Continued on next page >>>



Extra-long

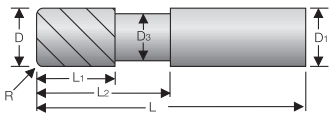
D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	R mm	Feed fz steel < 1400 N/mm² mm/tooth	art.no.	€
3.0	5	60	100	2.8	6.0	0.3	0.02	**257021** 0001	49,50
3.0	5	60	100	2.8	6.0	0.5	0.02	257021 0002	49,50
4.0	8	60	100	3.7	6.0	0.3	0.03	257021 0003	54,–
4.0	8	60	100	3.7	6.0	0.5	0.03	257021 0004	54,–
5.0	9	60	100	4.6	6.0	0.3	0.04	257021 0005	54,–
5.0	9	60	100	4.6	6.0	0.5	0.04	257021 0006	54,–
6.0	10	60	100	5.5	6.0	0.5	0.06	257021 0007	55,–
6.0	10	60	100	5.5	6.0	1.0	0.06	257021 0008	55,–
8.0	12	60	100	7.4	8.0	0.5	0.08	257021 0009	73,50
8.0	12	60	100	7.4	8.0	1.0	0.08	257021 0010	73,50
10.0	14	85	125	9.2	10.0	1.0	0.09	257021 0011	103,–
10.0	14	85	125	9.2	10.0	2.0	0.09	257021 0012	103,–
12.0	16	110	150	11.0	12.0	1.0	0.1	257021 0013	132,–
12.0	16	110	150	11.0	12.0	2.0	0.1	257021 0014	132,–
16.0	22	110	150	15.0	16.0	1.0	0.11	257021 0015	245,–
16.0	22	110	150	15.0	16.0	2.0	0.11	257021 0016	245,–

2146

ATORN® RockTec 65 torus cutter

VHM | 40° | e8 | h6 | DIN 6535 HA | Z 4 | TiSiN | Vc/fz

763
764



- **With clearance**
- For machining materials **up to 65 HRc**
- Radius tolerance: 0/-0.01 mm
- **Cutting material: ultra-fine grain solid carbide**
- -6°~-10° rake angle

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
257018....			○ 160-200						○ 250-300	○ 250-300	○ 250-300					● 120-140	● 140-140	● 80-120
257020....			○ 140-160						○ 200-260	○ 200-260	○ 200-260					● 100-130	● 100-130	● 70-100
257022....			○ 120-140						○ 130-170	○ 130-170	○ 130-170					● 80-110	● 80-110	● 50-80

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

Standard



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	R mm	Feed fz hardened steel ≥ 60 HRc mm/tooth	art.no.	€
3.0	4	14	60	2.8	6.0	0.3	0.015	**257018** 0001	33,70
3.0	4	14	60	2.8	6.0	0.5	0.015	257018 0002	33,70
4.0	5	16	60	3.7	6.0	0.3	0.015	257018 0003	36,70
4.0	5	16	60	3.7	6.0	0.5	0.015	257018 0004	36,70
5.0	6	18	60	4.6	6.0	0.3	0.025	257018 0005	36,70
5.0	6	18	60	4.6	6.0	0.5	0.025	257018 0006	36,70
6.0	7	20	60	5.5	6.0	0.5	0.025	257018 0007	42,80
6.0	7	20	60	5.5	6.0	1.0	0.025	257018 0008	42,80
8.0	9	26	64	7.4	8.0	0.5	0.05	257018 0009	59,50
8.0	9	26	64	7.4	8.0	1.0	0.05	257018 0010	59,50
10.0	11	31	70	9.2	10.0	1.0	0.05	257018 0011	76,50
10.0	11	31	70	9.2	10.0	2.0	0.05	257018 0012	76,50
12.0	13	37	75	11.0	12.0	1.0	0.06	257018 0013	104,–
12.0	13	37	75	11.0	12.0	2.0	0.06	257018 0014	104,–
16.0	17	43	90	15.0	16.0	1.0	0.07	257018 0015	174,–
16.0	17	43	90	15.0	16.0	2.0	0.07	257018 0016	174,–

2146

Long



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	R mm	Feed fz hardened steel ≥ 60 HRc mm/tooth	art.no.	€
3.0	5	30	75	2.8	6.0	0.3	0.015	**257020** 0001	44,–
3.0	5	30	75	2.8	6.0	0.5	0.015	257020 0002	44,–
4.0	8	32	75	3.7	6.0	0.3	0.015	257020 0003	44,–
4.0	8	32	75	3.7	6.0	0.5	0.015	257020 0004	44,–
5.0	9	32	75	4.6	6.0	0.3	0.025	257020 0005	44,–
5.0	9	32	75	4.6	6.0	0.5	0.025	257020 0006	44,–
6.0	10	40	75	5.5	6.0	0.5	0.025	257020 0007	48,–
6.0	10	40	75	5.5	6.0	1.0	0.025	257020 0008	48,–
8.0	12	40	75	7.4	8.0	0.5	0.05	257020 0009	63,50
8.0	12	40	75	7.4	8.0	1.0	0.05	257020 0010	63,50
10.0	14	60	100	9.2	10.0	1.0	0.05	257020 0011	87,50
10.0	14	60	100	9.2	10.0	2.0	0.05	257020 0012	87,50
12.0	16	60	100	11.0	12.0	1.0	0.06	257020 0013	107,–
12.0	16	60	100	11.0	12.0	2.0	0.06	257020 0014	107,–
16.0	22	85	125	15.0	16.0	1.0	0.07	257020 0015	210,–
16.0	22	85	125	15.0	16.0	2.0	0.07	257020 0016	210,–

2146

Extra-long



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	R mm	Feed fz hardened steel ≥ 60 HRc mm/tooth	art.no.	€
3.0	5	60	100	2.8	6.0	0.3	0.015	**257022** 0001	57,50
3.0	5	60	100	2.8	6.0	0.5	0.015	257022 0002	57,50
4.0	8	60	100	3.7	6.0	0.3	0.02	257022 0003	57,50
4.0	8	60	100	3.7	6.0	0.5	0.02	257022 0004	57,50
5.0	9	60	100	4.6	6.0	0.3	0.025	257022 0005	57,50
5.0	9	60	100	4.6	6.0	0.5	0.025	257022 0006	57,50
6.0	10	60	100	5.5	6.0	0.5	0.035	257022 0007	57,50
6.0	10	60	100	5.5	6.0	1.0	0.035	257022 0008	57,50
8.0	12	60	100	7.4	8.0	0.5	0.05	257022 0009	81,–
8.0	12	60	100	7.4	8.0	1.0	0.05	257022 0010	81,–
10.0	14	85	125	9.2	10.0	1.0	0.05	257022 0011	119,–
10.0	14	85	125	9.2	10.0	2.0	0.05	257022 0012	119,–
12.0	16	110	150	11.0	12.0	1.0	0.06	257022 0013	154,–
12.0	16	110	150	11.0	12.0	2.0	0.06	257022 0014	154,–
16.0	22	110	150	15.0	16.0	1.0	0.07	257022 0015	270,–
16.0	22	110	150	15.0	16.0	2.0	0.07	257022 0016	270,–

2146

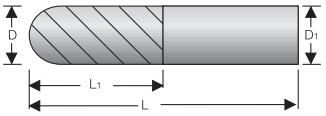


... solid carbide indexable insert drill.

ATORN®
Performance demands quality

ATORN® RockTec 52 mini radius milling cutter

VHM | 30° | h6 | DIN 6535 HA | Z 2 | AlTiN | Vc/fz | 742



- Short, stable design for machining materials **up to 52 HRc**
- Cutting edge tolerance: at Ø 0.1 – 0.7 mm = 0/– 0.012 mm, at Ø 0.8 – 0.9 mm = 0/– 0.020 mm
- Radius tolerance: 0/-0.01 mm
- **Cutting material: ultra-fine grain solid carbide**
- Rake angle 3°

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	●	●	●	○	●	●	●	●	●					●		
		100-120	80-100	60-80	50-90	50-90	50-70	50-90	50-90	50-90	50-90	50-80					30-60		
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

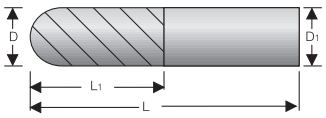


D mm	R mm	L1 mm	L mm	D1 mm	Feed fz steel < 1400 N/mm² mm/tooth	art.no.	€
0.2	0.10	0.4	40	4.0	0.004	**257025** 0002	46,60
0.3	0.15	0.6	40	4.0	0.004	257025 0003	43,10
0.4	0.20	0.8	40	4.0	0.0065	257025 0004	36,60
0.5	0.25	1.2	40	4.0	0.0065	257025 0005	30,50
0.6	0.30	1.4	40	4.0	0.0065	257025 0006	32,10
0.7	0.35	1.6	40	4.0	0.0065	257025 0007	30,50
0.8	0.40	1.8	40	4.0	0.0065	257025 0008	30,50
0.9	0.45	2.0	40	4.0	0.0085	257025 0009	30,50

2146

ATORN® RockTec 65 mini radius milling cutter

VHM | 30° | DIN 6535 HA | Z 2 | TiSiN | Vc/fz | 765



- Short, stable design for machining materials **up to 65 HRc**
- Cutting edge tolerance: at Ø 0.1 – 0.7 mm = 0/– 0.012 mm, at Ø 0.8 – 0.9 mm = 0/– 0.020 mm
- Radius tolerance: 0/-0.01 mm
- **Cutting material: ultra-fine grain solid carbide**
- Rake angle -5°

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
				○						○	○	○					●	●	●
				60-100						30-100	25-80	25-80					50-90	50-90	40-80
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

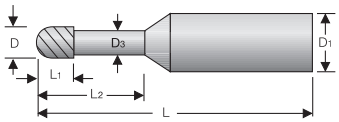


D mm	R mm	L1 mm	L mm	D1 mm	Feed fz hardened steel ≥ 60 HRc mm/tooth	art.no.	€
0.2	0.10	0.4	40	4.0	0.0025	**257026** 0002	52,–
0.3	0.15	0.6	40	4.0	0.0025	257026 0003	47,70
0.4	0.20	0.8	40	4.0	0.003	257026 0004	43,30
0.5	0.25	1.2	40	4.0	0.003	257026 0005	43,30
0.6	0.30	1.4	40	4.0	0.003	257026 0006	41,20
0.7	0.35	1.6	40	4.0	0.003	257026 0007	43,30
0.8	0.40	1.8	40	4.0	0.003	257026 0008	43,30
0.9	0.45	2.0	40	4.0	0.0065	257026 0009	43,30

2146

ATORN® RockTec 52 mini radius milling cutter

VHM | 30° | h6 | DIN 6535 HA | Z 2 | AlTiN | 3D PRINT | Vc/fz | 742



- **With clearance**
- Long-necked version for machining materials **up to 52 HRc**
- Cutting edge tolerance: at Ø 0.1 – 0.7 mm = 0/– 0.012 mm, at Ø 0.8 – 3.0 mm = 0/– 0.020 mm
- Radius tolerance: 0/-0.01 mm
- **Cutting material: ultra-fine grain solid carbide**
- Rake angle 3°

material: ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
100-120	80-100	60-80	50-90	50-90	50-70	50-90	50-90	50-90	50-90	50-80					30-60		

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



D mm	R mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	Feed fz steel < 1400 N/mm² mm/tooth	art.no.	€
0.2	0.10	0.2	0.5	50	0.15	4.0	0.003	**257033** 0001	44,90
0.2	0.10	0.2	1.0	50	0.15	4.0	0.003	257033 0002	44,90
0.2	0.10	0.2	1.5	50	0.15	4.0	0.003	257033 0003	44,90
0.3	0.15	0.3	1.0	50	0.25	4.0	0.003	257033 0004	44,90
0.3	0.15	0.3	2.0	50	0.25	4.0	0.003	257033 0005	44,90
0.3	0.15	0.3	3.0	50	0.25	4.0	0.003	257033 0006	44,90
0.4	0.20	0.4	1.0	50	0.35	4.0	0.0065	257033 0007	41,60
0.4	0.20	0.4	2.0	50	0.35	4.0	0.0065	257033 0008	41,60
0.4	0.20	0.4	3.0	50	0.35	4.0	0.0065	257033 0009	41,60
0.4	0.20	0.4	4.0	50	0.35	4.0	0.0065	257033 0010	41,60
0.4	0.20	0.4	5.0	50	0.35	4.0	0.0065	257033 0011	41,60
0.5	0.25	0.4	2.0	50	0.45	4.0	0.0065	257033 0012	39,30
0.5	0.25	0.4	3.0	50	0.45	4.0	0.0065	257033 0013	39,30
0.5	0.25	0.4	4.0	50	0.45	4.0	0.0065	257033 0014	39,30
0.5	0.25	0.4	5.0	50	0.45	4.0	0.0065	257033 0015	39,30
0.5	0.25	0.4	6.0	50	0.45	4.0	0.0065	257033 0016	39,30
0.5	0.25	0.4	8.0	50	0.45	4.0	0.0065	257033 0017	39,30
0.6	0.30	0.5	2.0	50	0.55	4.0	0.0065	257033 0018	37,50
0.6	0.30	0.5	3.0	50	0.55	4.0	0.0065	257033 0019	37,50
0.6	0.30	0.5	4.0	50	0.55	4.0	0.0065	257033 0020	37,50
0.6	0.30	0.5	5.0	50	0.55	4.0	0.0065	257033 0021	37,50
0.6	0.30	0.5	6.0	50	0.55	4.0	0.0065	257033 0022	37,50
0.6	0.30	0.5	8.0	50	0.55	4.0	0.0065	257033 0023	37,60
0.8	0.40	0.6	2.0	50	0.75	4.0	0.0065	257033 0024	37,50
0.8	0.40	0.6	4.0	50	0.75	4.0	0.0065	257033 0025	37,50
0.8	0.40	0.6	5.0	50	0.75	4.0	0.0065	257033 0026	37,50
0.8	0.40	0.6	6.0	50	0.75	4.0	0.0065	257033 0027	37,50

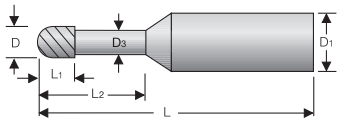
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D mm	R mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	Feed fz steel < 1400 N/mm² mm/tooth	art.no.	€
0.8	0.40	0.6	7.0	50	0.75	4.0	0.0065	257033 0028	37,50
0.8	0.40	0.6	8.0	50	0.75	4.0	0.0065	257033 0029	37,50
0.8	0.40	0.6	10.0	50	0.75	4.0	0.0065	257033 0030	37,50
1.0	0.50	0.8	3.0	50	0.95	4.0	0.0085	257033 0031	27,80
1.0	0.50	0.8	6.0	50	0.95	4.0	0.0085	257033 0032	27,80
1.0	0.50	0.8	8.0	50	0.95	4.0	0.0085	257033 0033	27,80
1.0	0.50	0.8	10.0	50	0.95	4.0	0.0085	257033 0034	28,50
1.0	0.50	0.8	12.0	50	0.95	4.0	0.0085	257033 0035	28,80
1.0	0.50	0.8	16.0	50	0.95	4.0	0.0085	257033 0036	29,50
1.0	0.50	0.8	20.0	60	0.95	4.0	0.0085	257033 0037	29,50
1.2	0.60	1.0	6.0	50	1.15	4.0	0.0085	257033 0038	29,40
1.2	0.60	1.0	10.0	50	1.15	4.0	0.0085	257033 0039	29,70
1.5	0.75	1.2	8.0	50	1.45	4.0	0.0085	257033 0040	27,50
1.5	0.75	1.2	12.0	50	1.45	4.0	0.0085	257033 0041	27,70
1.5	0.75	1.2	16.0	50	1.45	4.0	0.0085	257033 0042	28,–
1.5	0.75	1.2	18.0	60	1.45	4.0	0.0085	257033 0043	29,40
2.0	1.0	1.6	4.0	50	1.95	4.0	0.019	257033 0044	26,90
2.0	1.0	1.6	8.0	50	1.95	4.0	0.019	257033 0045	27,20
2.0	1.0	1.6	12.0	50	1.95	4.0	0.019	257033 0046	27,50
2.0	1.0	1.6	16.0	50	1.95	4.0	0.019	257033 0047	28,20
2.0	1.0	1.6	20.0	60	1.95	4.0	0.019	257033 0048	31,60
2.0	1.0	1.6	25.0	75	1.95	4.0	0.019	257033 0049	34,50
3.0	1.50	2.4	8.0	50	2.85	6.0	0.0235	257033 0050	40,60
3.0	1.50	2.4	10.0	50	2.85	6.0	0.0235	257033 0051	40,60
3.0	1.50	2.4	16.0	60	2.85	6.0	0.0235	257033 0052	40,60
3.0	1.50	2.4	20.0	60	2.85	6.0	0.0235	257033 0053	40,60
3.0	1.50	2.4	25.0	75	2.85	6.0	0.0235	257033 0054	44,50

2146

ATORN® RockTec 65 mini radius milling cutter

VHM | 30° | h6 | DIN 6535 HA | Z 2 | TiSiN | Vc/fz | 765



- **With clearance**
- Long-necked version for machining materials **up to 65 HRc**
- Cutting edge tolerance: at Ø 0.1 – 0.7 mm = 0/– 0.012 mm, at Ø 0.8 – 3.0 mm = 0/– 0.020 mm
- Radius tolerance: 0/-0.01 mm
- **Cutting material: ultra-fine grain solid carbide**
- Rake angle -5°

material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		○ 60-100						○ 30-100	○ 25-80	○ 25-80					● 50-90	● 50-90	● 40-80

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.



D mm	R mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	Feed fz hardened steel ≥ 60 HRc mm/tooth	art.no.	€
0.2	0.10	0.2	0.5	50	0.15	4.0	0.0025	**257034** 0001	53,50
0.2	0.10	0.2	1.0	50	0.15	4.0	0.0025	257034 0002	53,50
0.2	0.10	0.2	1.5	50	0.15	4.0	0.0025	257034 0003	53,50
0.3	0.15	0.3	1.0	50	0.25	4.0	0.0025	257034 0004	51,50
0.3	0.15	0.3	2.0	50	0.25	4.0	0.0025	257034 0005	51,50
0.3	0.15	0.3	3.0	50	0.25	4.0	0.0025	257034 0006	51,50
0.4	0.20	0.4	1.0	50	0.35	4.0	0.003	257034 0007	47,90
0.4	0.20	0.4	2.0	50	0.35	4.0	0.003	257034 0008	47,90
0.4	0.20	0.4	3.0	50	0.35	4.0	0.003	257034 0009	47,90
0.4	0.20	0.4	4.0	50	0.35	4.0	0.003	257034 0010	47,90
0.4	0.20	0.4	5.0	50	0.35	4.0	0.003	257034 0011	47,90
0.5	0.25	0.4	2.0	50	0.45	4.0	0.003	257034 0012	45,30
0.5	0.25	0.4	3.0	50	0.45	4.0	0.003	257034 0013	45,30
0.5	0.25	0.4	4.0	50	0.45	4.0	0.003	257034 0014	45,30
0.5	0.25	0.4	5.0	50	0.45	4.0	0.003	257034 0015	45,30
0.5	0.25	0.4	6.0	50	0.45	4.0	0.003	257034 0016	45,30
0.5	0.25	0.4	8.0	50	0.45	4.0	0.003	257034 0017	45,30
0.6	0.30	0.5	2.0	50	0.55	4.0	0.003	257034 0018	43,10
0.6	0.30	0.5	3.0	50	0.55	4.0	0.003	257034 0019	43,10
0.6	0.30	0.5	4.0	50	0.55	4.0	0.003	257034 0020	43,10
0.6	0.30	0.5	5.0	50	0.55	4.0	0.003	257034 0021	43,10
0.6	0.30	0.5	6.0	50	0.55	4.0	0.003	257034 0022	43,10
0.6	0.30	0.5	8.0	50	0.55	4.0	0.003	257034 0023	43,10
0.8	0.40	0.6	2.0	50	0.75	4.0	0.003	257034 0024	43,10
0.8	0.40	0.6	4.0	50	0.75	4.0	0.003	257034 0025	43,10
0.8	0.40	0.6	5.0	50	0.75	4.0	0.003	257034 0026	43,10
0.8	0.40	0.6	6.0	50	0.75	4.0	0.003	257034 0027	43,10

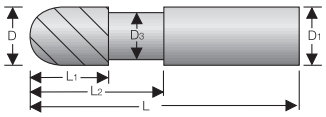
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D mm	R mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	Feed fz hardened steel ≥ 60 HRc mm/tooth	art.no.	€
0.8	0.40	0.6	7.0	50	0.75	4.0	0.003	257034 0028	43,10
0.8	0.40	0.6	8.0	50	0.75	4.0	0.003	257034 0029	43,10
0.8	0.40	0.6	10.0	50	0.75	4.0	0.003	257034 0030	43,10
1.0	0.50	0.8	3.0	50	0.95	4.0	0.0065	257034 0031	31,90
1.0	0.50	0.8	6.0	50	0.95	4.0	0.0065	257034 0032	31,90
1.0	0.50	0.8	8.0	50	0.95	4.0	0.0065	257034 0033	31,90
1.0	0.50	0.8	10.0	50	0.95	4.0	0.0065	257034 0034	32,70
1.0	0.50	0.8	12.0	50	0.95	4.0	0.0065	257034 0035	33,10
1.0	0.50	0.8	16.0	50	0.95	4.0	0.0065	257034 0036	34,–
1.0	0.50	0.8	20.0	60	0.95	4.0	0.0065	257034 0037	34,–
1.2	0.60	1.0	6.0	50	1.15	4.0	0.0065	257034 0038	33,80
1.2	0.60	1.0	10.0	50	1.15	4.0	0.0065	257034 0039	34,20
1.5	0.75	1.2	8.0	50	1.45	4.0	0.0065	257034 0040	31,50
1.5	0.75	1.2	12.0	50	1.45	4.0	0.0065	257034 0041	31,90
1.5	0.75	1.2	16.0	50	1.45	4.0	0.0065	257034 0042	32,20
1.5	0.75	1.2	18.0	60	1.45	4.0	0.0065	257034 0043	33,80
2.0	1.0	1.6	4.0	50	1.95	4.0	0.0075	257034 0044	31,10
2.0	1.0	1.6	8.0	50	1.95	4.0	0.0075	257034 0045	31,20
2.0	1.0	1.6	12.0	50	1.95	4.0	0.0075	257034 0046	31,60
2.0	1.0	1.6	16.0	50	1.95	4.0	0.0075	257034 0047	32,30
2.0	1.0	1.6	20.0	60	1.95	4.0	0.0075	257034 0048	36,20
2.0	1.0	1.6	25.0	75	1.95	4.0	0.0075	257034 0049	39,60
3.0	1.50	2.4	8.0	50	2.85	6.0	0.0155	257034 0050	46,60
3.0	1.50	2.4	10.0	50	2.85	6.0	0.0155	257034 0051	46,60
3.0	1.50	2.4	16.0	60	2.85	6.0	0.0155	257034 0052	46,60
3.0	1.50	2.4	20.0	60	2.85	6.0	0.0155	257034 0053	46,60
3.0	1.50	2.4	25.0	75	2.85	6.0	0.0155	257034 0054	51,–

2146

ATORN® RockTec 52 radius milling cutter

VHM | 30° | e8 | h6 | DIN 6535 HA | Z 2 | AlTiN | 3D PRINT | Vc/fz | 743



- **With clearance**
- For machining materials **up to 52 HRc**
- Radius tolerance: 0/-0.01 mm
- **Cutting material: ultra-fine grain solid carbide**
- Rake angle 3°

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
257027....	● 180-370	● 180-350	● 180-350	● 180-370	● 180-370	○ 150-300	● 180-350	● 180-350	● 180-350	● 180-350	● 150-270					● 120-240		
257029....	● 160-320	● 160-300	● 160-300	● 160-320	● 160-320	○ 100-250	● 160-300	● 160-300	● 160-300	● 160-300	● 150-260					● 110-200		
257031....	● 90-190	● 90-190	● 90-190	● 90-190	● 90-190	○ 60-150	● 90-190	● 90-190	● 90-190	● 90-190	● 70-160					● 60-130		

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

Short



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	R mm	● Feed fz steel < 1400 N/mm² mm/tooth	art.no.	€
2.0	4	8	40	1.85	4.0	1.00	0.035	**257027** 0020	23,40
2.5	4	10	40	2.35	4.0	1.25	0.035	257027 0025	28,10
3.0	5	14	50	2.80	4.0	1.50	0.035	257027 0030	35,80
4.0	8	20	50	3.70	4.0	2.00	0.0475	257027 0040	35,80
5.0	9	20	50	4.60	6.0	2.50	0.0475	257027 0050	32,70
6.0	10	20	50	5.50	6.0	3.00	0.065	257027 0060	32,70
8.0	12	30	64	7.40	8.0	4.00	0.065	257027 0080	43,90
10.0	14	32	70	9.20	10.0	5.00	0.1	257027 0100	55,–
12.0	16	38	75	11.0	12.0	6.00	0.1	257027 0120	80,50
16.0	32	46	90	15.0	16.0	8.00	0.105	257027 0160	135,–
20.0	38	58	100	19.0	20.0	10.00	0.105	257027 0200	205,–

2146

Long



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	R mm	● Feed fz steel < 1400 N/mm² mm/tooth	art.no.	€
2.0	4	14	75	1.85	6.0	1.00	0.035	**257029** 0020	48,–
2.5	4	18	75	2.35	6.0	1.25	0.035	257029 0025	48,–
3.0	5	21	75	2.80	6.0	1.50	0.035	257029 0030	49,–
4.0	8	28	75	3.70	6.0	2.00	0.0475	257029 0040	49,–
5.0	9	32	75	4.60	6.0	2.50	0.0475	257029 0050	49,–
6.0	10	40	75	5.50	6.0	3.00	0.065	257029 0060	49,–
8.0	12	40	75	7.40	8.0	4.00	0.065	257029 0080	57,50
10.0	14	60	100	9.20	10.0	5.00	0.1	257029 0100	75,50
12.0	16	60	100	11.0	12.0	6.00	0.1	257029 0120	98,–
16.0	32	80	125	15.0	16.0	8.00	0.105	257029 0160	193,–
20.0	38	80	125	19.0	20.0	10.00	0.105	257029 0200	275,–

2146

Extra-long

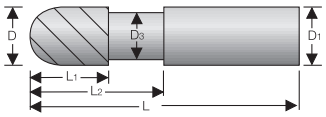


D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	R mm	● Feed fz steel < 1400 N/mm² mm/tooth	art.no.	€
2.0	4	20	100	1.85	6.0	1.00	0.035	**257031** 0020	50,50
2.5	4	25	100	2.35	6.0	1.25	0.035	257031 0025	50,50
3.0	5	30	100	2.80	6.0	1.50	0.035	257031 0030	50,50
4.0	8	40	100	3.70	6.0	2.00	0.0475	257031 0040	50,50
5.0	9	50	100	4.60	6.0	2.50	0.0475	257031 0050	50,50
6.0	10	60	150	5.50	6.0	3.00	0.065	257031 0060	51,50
8.0	12	80	150	7.40	8.0	4.00	0.065	257031 0080	76,–
10.0	14	100	150	9.20	10.0	5.00	0.1	257031 0100	105,–
12.0	16	110	150	11.00	12.0	6.00	0.1	257031 0120	150,–
16.0	32	150	200	15.00	16.0	8.00	0.105	257031 0160	245,–
20.0	38	150	200	19.00	20.0	10.00	0.105	257031 0200	320,–

2146

ATORN® RockTec 65 radius milling cutter

VHM | 30° | e8 | h6 | DIN 6535 HA | Z 2 | TiSiN | Vc/fz | 766



- **With clearance**
- For machining materials **up to 65 HRc**
- Radius tolerance: 0/-0.01 mm
- **Cutting material: ultra-fine grain solid carbide**
- Rake angle -10°

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
257028....			○ 180-370						○ 180-250	○ 180-250	○ 150-210					● 100-220	● 100-220	● 50-80
257030....			○ 130-320						○ 130-300	○ 130-300	○ 120-260					● 100-200	● 100-200	● 40-65
257032....			○ 80-190						○ 80-190	○ 80-190	○ 70-180					● 60-130	● 60-130	● 25-45

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

Short



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	R mm	Feed fz hardened steel ≥ 60 HRc mm/tooth	art.no.	€
2.0	4	8	40	1.85	4.0	1.00	0.03	**257028** 0020	28,70
2.5	4	10	40	2.35	4.0	1.25	0.03	257028 0025	33,80
3.0	5	14	50	2.80	4.0	1.50	0.03	257028 0030	36,90
4.0	8	20	50	3.70	4.0	2.00	0.0425	257028 0040	38,50
5.0	9	20	50	4.60	6.0	2.50	0.0425	257028 0050	39,70
6.0	10	20	50	5.50	6.0	3.00	0.0625	257028 0060	38,30
8.0	12	30	64	7.40	8.0	4.00	0.0625	257028 0080	48,30
10.0	14	32	70	9.20	10.0	5.00	0.09	257028 0100	63,50
12.0	16	38	75	11.0	12.0	6.00	0.09	257028 0120	91,50
16.0	32	46	90	15.0	16.0	8.00	0.095	257028 0160	144,–
20.0	38	58	100	19.0	20.0	10.00	0.095	257028 0200	225,–

2146

Long



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	R mm	Feed fz hardened steel ≥ 60 HRc mm/tooth	art.no.	€
2.0	4	14	75	1.85	6.0	1.00	0.03	**257030** 0020	49,70
2.5	4	18	75	2.35	6.0	1.25	0.03	257030 0025	49,70
3.0	5	21	75	2.80	6.0	1.50	0.03	257030 0030	49,70
4.0	8	28	75	3.70	6.0	2.00	0.0425	257030 0040	49,70
5.0	9	32	75	4.60	6.0	2.50	0.0425	257030 0050	49,70
6.0	10	40	75	5.50	6.0	3.00	0.0625	257030 0060	49,70
8.0	12	40	75	7.40	8.0	4.00	0.0625	257030 0080	61,50
10.0	14	60	100	9.20	10.0	5.00	0.09	257030 0100	101,–
12.0	16	60	100	11.0	12.0	6.00	0.09	257030 0120	132,–
16.0	32	80	125	15.0	16.0	8.00	0.095	257030 0160	220,–
20.0	38	80	125	19.0	20.0	10.00	0.095	257030 0200	310,–

2146

Extra-long

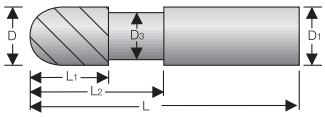


D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	R mm	Feed fz hardened steel ≥ 60 HRc mm/tooth	art.no.	€
2.0	4	20	100	1.85	6.0	1.00	0.03	**257032** 0020	58,50
2.5	4	25	100	2.35	6.0	1.25	0.03	257032 0025	58,50
3.0	5	30	100	2.80	6.0	1.50	0.03	257032 0030	58,50
4.0	8	40	100	3.70	6.0	2.00	0.0425	257032 0040	58,50
5.0	9	50	100	4.60	6.0	2.50	0.0425	257032 0050	58,50
6.0	10	60	150	5.50	6.0	3.00	0.0625	257032 0060	58,50
8.0	12	80	150	7.40	8.0	4.00	0.0625	257032 0080	85,50
10.0	14	100	150	9.20	10.0	5.00	0.09	257032 0100	120,–
12.0	16	110	150	11.00	12.0	6.00	0.09	257032 0120	171,–
16.0	32	150	200	15.00	16.0	8.00	0.095	257032 0160	275,–
20.0	38	150	200	19.00	20.0	10.00	0.095	257032 0200	349,–

2146

ATORN® RockTec 52 radius milling cutter

VHM | 30° | e8 | h6 | DIN 6535 HA | Z 4 | AlTiN | 3D PRINT | Vc/fz | 743



- **With clearance**
- For machining materials **up to 52 HRc**
- Radius tolerance: 0/-0.01 mm
- **Cutting material: ultra-fine grain solid carbide**
- Rake angle 3°

material

● very well suited
○ well suited

	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
257035....	● 180-370	● 180-350	● 180-350	● 180-370	● 180-370	○ 150-300	● 180-350	● 180-350	● 180-350	● 180-350	● 150-270					● 120-240		
257037....	● 160-320	● 160-300	● 160-300	● 160-320	● 160-320	○ 100-250	● 160-300	● 160-300	● 160-300	● 160-300	● 150-260					● 110-200		

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

Short



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	R mm	Feed fz steel < 1400 N/mm² mm/tooth	art.no.	€
3.0	5	14	50	2.80	6	1.50	0.035	**257035** 0030	39,–
4.0	8	20	50	3.70	6	2.00	0.0475	257035 0040	39,–
5.0	9	20	50	4.60	6	2.50	0.0475	257035 0050	39,–
6.0	10	20	50	5.50	6	3.00	0.065	257035 0060	39,–
8.0	12	30	64	7.40	8	4.00	0.065	257035 0080	52,–
10.0	14	32	70	9.20	10	5.00	0.1	257035 0100	67,–
12.0	16	38	75	11.00	12	6.00	0.1	257035 0120	93,50
16.0	32	46	90	15.00	16	8.00	0.105	257035 0160	141,–
20.0	38	58	100	19.00	20	10.00	0.105	257035 0200	245,–

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Long



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	R mm	Feed fz steel < 1400 N/mm² mm/tooth	art.no.	€
3.0	5	21	75	2.80	6	1.50	0.035	**257037** 0030	49,80
4.0	8	28	75	3.70	6	2.00	0.0475	257037 0040	49,80
5.0	9	32	75	4.60	6	2.50	0.0475	257037 0050	49,80
6.0	10	40	75	5.50	6	3.00	0.065	257037 0060	49,80
8.0	12	40	75	7.40	8	4.00	0.065	257037 0080	66,–
10.0	14	60	100	9.20	10	5.00	0.1	257037 0100	110,–
12.0	16	60	100	11.00	12	6.00	0.1	257037 0120	141,–
16.0	32	80	125	15.00	16	8.00	0.105	257037 0160	220,–
20.0	38	80	125	19.00	20	10.00	0.105	257037 0200	310,–

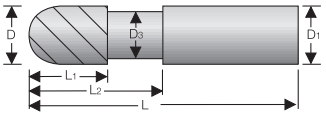
2146



ATORN®
Performance demands quality

ATORN® RockTec 65 radius milling cutter

VHM | 30° | e8 | h6 | DIN 6535 HA | Z 4 | TiSiN | Vc/fz | 766



- **With clearance**
- For machining materials **up to 65 HRc**
- Radius tolerance: 0/-0.01 mm
- **Cutting material: ultra-fine grain solid carbide**
- Rake angle -10°

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	257036....			○ 180-370						○ 180-250	○ 180-250	○ 150-210					● 100-220	● 100-220	● 50-80
	257038....			○ 130-320						○ 130-300	○ 130-300	○ 120-260					● 100-200	● 100-200	● 40-65
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		

Short



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	R mm	Feed fz hardened steel ≥ 60 HRc mm/tooth	art.no.	€
3.0	5	14	50	2.80	6	1.50	0.03	**257036** 0030	45,–
4.0	8	20	50	3.70	6	2.00	0.0425	257036 0040	45,–
5.0	9	20	50	4.60	6	2.50	0.0425	257036 0050	45,–
6.0	10	20	50	5.50	6	3.00	0.0625	257036 0060	45,–
8.0	12	30	64	7.40	8	4.00	0.0625	257036 0080	61,50
10.0	14	32	70	9.20	10	5.00	0.09	257036 0100	77,50
12.0	16	38	75	11.00	12	6.00	0.09	257036 0120	121,–
16.0	32	46	90	15.00	16	8.00	0.095	257036 0160	167,–
20.0	38	58	100	19.00	20	10.00	0.095	257036 0200	275,–

2146

Long



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	R mm	Feed fz hardened steel ≥ 60 HRc mm/tooth	art.no.	€
3.0	5	21	75	2.80	6	1.50	0.03	**257038** 0030	56,–
4.0	8	28	75	3.70	6	2.00	0.0425	257038 0040	56,–
5.0	9	32	75	4.60	6	2.50	0.0425	257038 0050	56,–
6.0	10	40	75	5.50	6	3.00	0.0625	257038 0060	56,–
8.0	12	40	75	7.40	8	4.00	0.0625	257038 0080	69,–
10.0	14	60	100	9.20	10	5.00	0.09	257038 0100	117,–
12.0	16	60	100	11.00	12	6.00	0.09	257038 0120	150,–
16.0	32	80	125	15.00	16	8.00	0.095	257038 0160	255,–
20.0	38	80	125	19.00	20	10.00	0.095	257038 0200	375,–

2146

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ATORN® RockTec PRO

INFO

TRUE, INHERENT POWER

- **particularly suited to machining steels <1400 N/mm, <55 HRC, <60 HRC and <65 HRC**
- **wide product range, all geometries with maximum precision**
- **new TiAlSiN multi-layer coating, extreme hardness and minimal friction**

Hard machining is playing a growing role in tool and mould making and is increasingly replacing time-consuming processes such as grinding or eroding. But also in other sectors, components must still be reworked after hardening. This often poses enormous challenges for milling tools. And now, ATORN presents ultra-specialist milling tools for all conceivable milling applications.

These **high-performance tools** are optimally designed for hard machining **up to 65 HRC**.

Due to their optimised geometry and the new extremely hard multi-layer coating, ATORN RockTec PRO milling tools guarantee low abrasion and are therefore particularly wear-resistant.

For example, they can handle high-alloy tool steels such as 1.2379 at high feed rates up to 250 m/min and tooth feeds 0.001 to 0.15 mm.

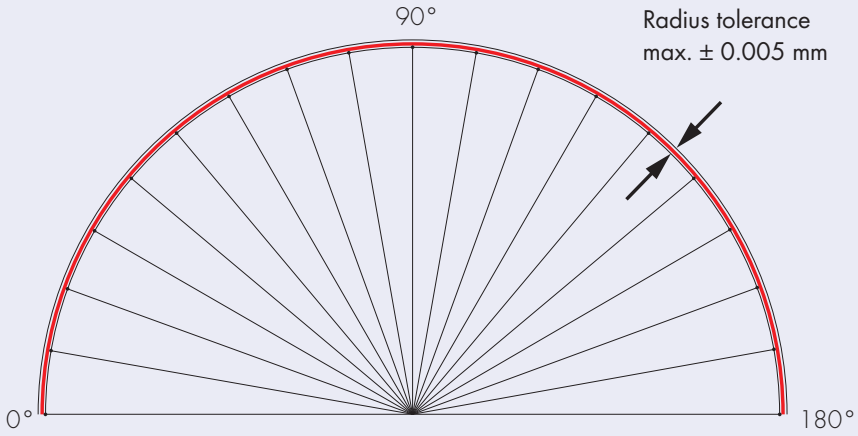



Mini-radius milling cutter from Ø 0.1 mm



Range overview	Z	RockTec PRO Range	Short	Standard	Long	Ø range mm	Page
Multi-flute milling cutters 90°	6 - 10		●	●	●	Ø 3-20	569
Multi-flute milling cutters with corner radius	6 - 10		●	●	●	Ø 3-20	570
Mini-torus milling cutters R= 0.05	2			●		Ø 0.2-0.5	572
Mini-torus milling cutters R=0.1	2			●		Ø 0.5-2	572
Mini-torus milling cutters R=0.2	2			●		Ø 1-2	573
Mini-torus milling cutters R=0.3	2			●		Ø 1.5-3	574
Mini-torus milling cutters R=0.5	2			●		Ø 2.5-3	574
Torus milling cutters	4			●	●	Ø 1-16	575
Mini-radius milling cutters	2			●		Ø 0.1-3	577
Radius milling cutters	2		●	●	●	Ø 1-20	579





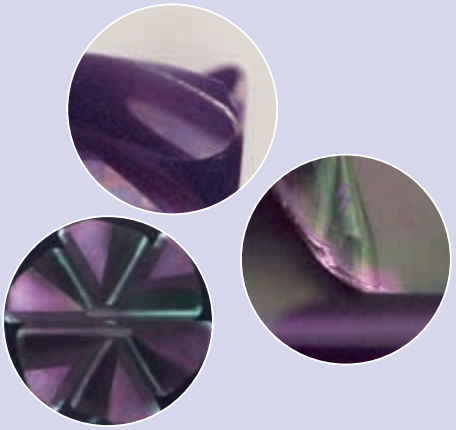
Tolerances

Cutting edge diameter	0 / -0.005 mm
Radius / torus milling cutter	± 0.0025 mm
Radius contour radius copy milling cutter	0 / -0.005 mm
Clearance diameter	0 / -0.01 mm

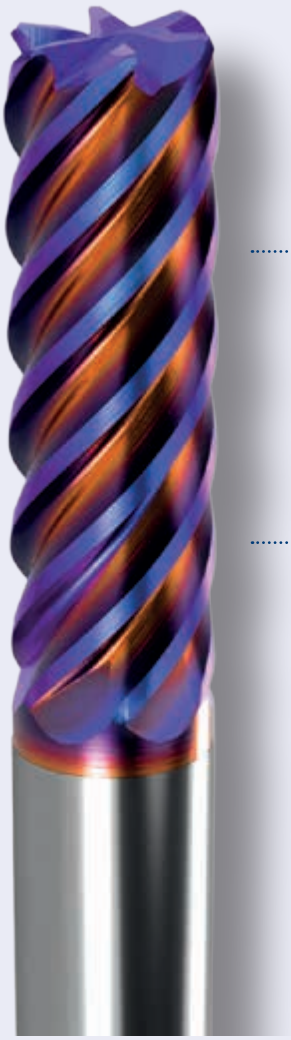
Test Winner

RockTec PRO emerged the winner in a comparative test conducted by GFE Gesellschaft für Fertigungstechnik und Entwicklung Schmalkalden e.V. Set against the competition, RockTec PRO milling cutters proved themselves in hard milling trials.

A 1.2379 (X153 CrMo V12) tool steel with a hardness of 58 HRc was machined. This involved milling test tracks with defined ap and ae using different solid carbide milling cutters. RockTec PRO milling cutters exhibited the longest tool life overall and thus were Number 1 in the overall rating.



Test results
- low flank wear
- few nicks
- low edge build-up
- minimal coating wear



Front face
optimised radii and front face geometries

Spiral angle
for extremely soft cutting in hard materials

Cutting edges
relief-ground cutting edges

Geometry
reliable chip removal and consistently high process reliability

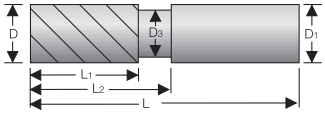
Coating
TiAlSiN multi-layer coating with extreme hardness

Cutting material
Micrograin solid carbide, especially for hardened steels

ATORN® Multi-flute milling cutter 90° RockTec PRO

VHM | 45° | f7 | h5 | DIN 6535 HA | Z 6 | Z 8+ | TiAlSiN | Vc/fz | 774





- For machining materials **from 47 to 65 HRc**
- Optimised geometry for hard machining
- **Cutting material: ultra micro-grain SC**
- state-of-the-art coating technology for reduced wear and extreme hardness
- **Subject to process-related colour variations in the coating.**

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
			● 140-160													● 80-110	● 80-110	● 50-80
Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

Short



D mm	D1 mm	D3 mm	L mm	L1 mm	L2 mm	Z	Feed fz hardened steel < 60 HRc mm/tooth	art.no.	€
3	6	2.9	57	4	12	6	0.009	**257170** 0030	34,20
4	6	3.8	57	5	14	6	0.011	257170 0040	34,20
5	6	4.7	57	6	16	6	0.013	257170 0050	39,90
6	6	5.6	57	7	20	6	0.015	257170 0060	46,–
8	8	7.6	63	9	26	6	0.018	257170 0080	52,50
10	10	9.4	72	11	32	6	0.019	257170 0100	90,50
12	12	11.4	83	12	38	6	0.023	257170 0120	124,–
16	16	15.4	92	16	44	8	0.025	257170 0160	220,–
20	20	19.4	104	20	52	10	0.03	257170 0200	315,–

2178

Standard



D mm	D1 mm	D3 mm	L mm	L1 mm	Z	Feed fz hardened steel < 60 HRc mm/tooth	art.no.	€
3	6	-	57	9	6	0.009	**257175** 0030	41,50
4	6	-	57	11	6	0.011	257175 0040	46,20
5	6	-	57	13	6	0.013	257175 0050	49,80
6	6	-	57	15	6	0.015	257175 0060	53,–
8	8	-	63	19	6	0.018	257175 0080	62,–
10	10	-	72	24	6	0.019	257175 0100	105,–
12	12	-	83	28	6	0.023	257175 0120	147,–
16	16	-	92	36	8	0.025	257175 0160	275,–
20	20	-	104	44	10	0.03	257175 0200	405,–

2178

Long



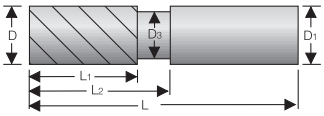
D mm	D1 mm	D3 mm	L mm	L1 mm	L2 mm	Z	Feed fz hardened steel < 60 HRc mm/tooth	art.no.	€
3	6	-	65	9	11	6	0.009	**257180** 0030	51,50
4	6	-	65	12	13	6	0.011	257180 0040	56,–
5	6	-	65	15	15	6	0.013	257180 0050	59,50
6	6	-	65	18	-	6	0.015	257180 0060	61,–
8	8	-	70	24	-	6	0.018	257180 0080	65,50
10	10	-	85	30	-	6	0.019	257180 0100	128,–
12	12	-	93	36	-	6	0.023	257180 0120	170,–
16	16	-	110	48	-	8	0.025	257180 0160	305,–
20	20	-	126	60	-	10	0.03	257180 0200	495,–

2178

ATORN® Multi-flute milling cutter with corner radius RockTec PRO

VHM | 45° | f7 | h5 | DIN 6535 HA | Z 6 | Z 8+ | TiAlSiN | Vc/fz | 774

- For machining materials **from 47 to 65 HRc**
- Optimised geometry for hard machining
- **Cutting material: ultra micro-grain SC**
- state-of-the-art coating technology for reduced wear and extreme hardness
- **Subject to process-related colour variations in the coating.**



material	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
● very well suited ○ well suited	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
			● 140-160													● 80-110	● 80-110	● 50-80
Cutting speed Vc m/min.							Please adjust these guidelines according to clamping operation and machine set-up.											

Short



D mm	D1 mm	D3 mm	L mm	L1 mm	L2 mm	Z	R mm	Feed fz hardened steel < 60 HRc mm/tooth	art.no.	€
3	6	2.9	57	4	12	6	0.1	0.009	**257155** 0301	63,50
3	6	2.9	57	4	12	6	0.5	0.009	257155 0305	63,50
4	6	3.8	57	5	14	6	0.1	0.011	257155 0401	63,50
4	6	3.8	57	5	14	6	0.5	0.011	257155 0405	63,50
4	6	3.8	57	5	14	6	1	0.011	257155 0410	63,50
5	6	4.7	57	6	16	6	0.1	0.013	257155 0501	63,50
5	6	4.7	57	6	16	6	0.5	0.013	257155 0505	63,50
5	6	4.7	57	6	16	6	1	0.013	257155 0510	63,50
6	6	5.6	57	7	20	6	0.1	0.015	257155 0601	63,50
6	6	5.6	57	7	20	6	0.5	0.015	257155 0605	63,50
6	6	5.6	57	7	20	6	0.8	0.015	257155 0608	63,50
6	6	5.6	57	7	20	6	1	0.015	257155 0610	63,50
6	6	5.6	57	7	20	6	1.5	0.015	257155 0615	63,50
8	8	7.6	63	9	26	6	0.1	0.018	257155 0801	82,50
8	8	7.6	63	9	26	6	0.5	0.018	257155 0805	82,50
8	8	7.6	63	9	26	6	0.8	0.018	257155 0808	82,50
8	8	7.6	63	9	26	6	1	0.018	257155 0810	82,50
8	8	7.6	63	9	26	6	1.5	0.018	257155 0815	82,50
8	8	7.6	63	9	26	6	2.0	0.018	257155 0820	82,50
10	10	9.4	72	11	32	6	0.1	0.019	257155 1001	108,–
10	10	9.4	72	11	32	6	0.5	0.019	257155 1005	108,–
10	10	9.4	72	11	32	6	0.8	0.019	257155 1008	108,–
10	10	9.4	72	11	32	6	1	0.019	257155 1010	108,–
10	10	9.4	72	11	32	6	1.5	0.019	257155 1015	108,–
10	10	9.4	72	11	32	6	2	0.019	257155 1020	108,–
12	12	11.4	83	12	38	6	0.1	0.023	257155 1201	145,–
12	12	11.4	83	12	38	6	0.5	0.023	257155 1205	145,–
12	12	11.4	83	12	38	6	1	0.023	257155 1210	145,–
12	12	11.4	83	12	38	6	1.5	0.023	257155 1215	145,–
12	12	11.4	83	12	38	6	2	0.023	257155 1220	145,–
16	16	15.4	92	16	44	8	0.5	0.025	257155 1605	245,–
16	16	15.4	92	16	44	8	1	0.025	257155 1610	245,–
16	16	15.4	92	16	44	8	2	0.025	257155 1620	245,–
16	16	15.4	92	16	44	8	3	0.025	257155 1630	245,–
20	20	19.4	104	20	52	10	1	0.03	257155 2010	375,–

2178

Standard



D mm	D1 mm	D3 mm	L mm	L1 mm	L2 mm	Z	R mm	Feed fz hardened steel < 60 HRc mm/tooth	art.no.	€
3	6	-	57	9	11	6	0.1	0.009	**257160** 0301	57,–
3	6	-	57	9	11	6	0.5	0.009	257160 0305	57,–
4	6	-	57	11	13	6	0.1	0.011	257160 0401	57,–
4	6	-	57	11	13	6	0.5	0.011	257160 0405	57,–
4	6	-	57	11	13	6	1	0.011	257160 0410	57,–
5	6	-	57	13	15	6	0.1	0.013	257160 0501	57,–
5	6	-	57	13	15	6	0.5	0.013	257160 0505	57,–
5	6	-	57	13	15	6	1	0.013	257160 0510	57,–
6	6	-	57	15	-	6	0.1	0.015	257160 0601	57,–
6	6	-	57	15	-	6	0.5	0.015	257160 0605	57,–
6	6	-	57	15	-	6	1	0.015	257160 0610	57,–
8	8	-	63	19	-	6	0.1	0.018	257160 0801	65,50
8	8	-	63	19	-	6	0.5	0.018	257160 0805	65,50
8	8	-	63	19	-	6	1	0.018	257160 0810	65,50
10	10	-	72	24	-	6	0.1	0.019	257160 1001	114,–
10	10	-	72	24	-	6	0.5	0.019	257160 1005	114,–
10	10	-	72	24	-	6	1	0.019	257160 1010	114,–
10	10	-	72	24	-	6	1.5	0.019	257160 1015	114,–
12	12	-	83	28	-	6	0.1	0.023	257160 1201	153,–
12	12	-	83	28	-	6	0.5	0.023	257160 1205	153,–
12	12	-	83	28	-	6	1	0.023	257160 1210	153,–
12	12	-	83	28	-	6	1.5	0.023	257160 1215	153,–
16	16	-	92	36	-	8	0.5	0.025	257160 1605	275,–
16	16	-	92	36	-	8	1	0.025	257160 1610	275,–
20	20	-	104	44	-	10	1	0.03	257160 2010	405,–

2178

Long



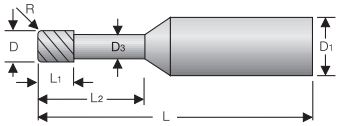
D mm	D1 mm	D3 mm	L mm	L1 mm	L2 mm	Z	R mm	Feed fz hardened steel < 60 HRc mm/tooth	art.no.	€
3	6	-	65	9	-	6	0.1	0.009	**257165** 0301	63,50
3	6	-	65	9	-	6	0.5	0.009	257165 0305	63,50
4	6	-	65	12	-	6	0.1	0.011	257165 0401	63,50
4	6	-	65	12	-	6	0.5	0.011	257165 0405	63,50
4	6	-	65	12	-	6	1	0.011	257165 0410	63,50
5	6	-	65	15	-	6	0.1	0.013	257165 0501	63,50
5	6	-	65	15	-	6	0.5	0.013	257165 0505	63,50
5	6	-	65	15	-	6	1	0.013	257165 0510	63,50
6	6	-	65	18	-	6	0.1	0.015	257165 0601	63,50
6	6	-	65	18	-	6	0.5	0.015	257165 0605	63,50
6	6	-	65	18	-	6	1	0.015	257165 0610	63,50
8	8	-	70	24	-	6	0.1	0.018	257165 0801	71,50
8	8	-	70	24	-	6	0.5	0.018	257165 0805	71,50
8	8	-	80	24	-	6	1	0.018	257165 0810	71,50
10	10	-	85	30	-	6	0.1	0.019	257165 1001	128,–
10	10	-	85	30	-	6	0.5	0.019	257165 1005	128,–
10	10	-	85	30	-	6	1	0.019	257165 1010	128,–
10	10	-	85	30	-	6	1.5	0.019	257165 1015	128,–
12	12	-	93	36	-	6	0.1	0.023	257165 1201	174,–
12	12	-	93	36	-	6	0.5	0.023	257165 1205	174,–
12	12	-	93	36	-	6	1	0.023	257165 1210	174,–
16	16	-	110	48	-	8	0.5	0.025	257165 1605	330,–
16	16	-	110	48	-	8	1	0.025	257165 1610	330,–
20	20	-	126	60	-	10	1	0.03	257165 2010	490,–

2178

ATORN® Mini torus milling cutter RockTec PRO

VHM | 30° | f7 | h5 | DIN 6535 HA | Z 2 | TiAlSiN | Vc/fz | 775

- For machining materials **from 47 to 65 HRc**
- Optimised geometry for hard machining
- **Cutting material: ultra micro-grain SC**
- state-of-the-art coating technology for reduced wear and extreme hardness
- **Subject to process-related colour variations in the coating.**



material	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
● very well suited ○ well suited	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
			● 140-160													● 80-110	● 80-110	● 50-80
Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		

Corner radius 0.05

D mm	D1 mm	D3 mm	L mm	L1 mm	L2 mm	Z	R mm	Feed fz hardened steel < 60 HRc mm/tooth	art.no.	€
0.2	4	0.18	50	0.2	0.5	2	0.05	0.009	**257120** 0001	62,50
0.2	4	0.18	50	0.2	1	2	0.05	0.009	257120 0002	62,50
0.2	4	0.18	50	0.2	3	2	0.05	0.009	257120 0003	62,50
0.3	4	0.28	50	0.3	1	2	0.05	0.012	257120 0004	62,50
0.3	4	0.28	50	0.3	2	2	0.05	0.012	257120 0005	62,50
0.3	4	0.28	50	0.3	4	2	0.05	0.009	257120 0006	62,50
0.4	4	0.38	50	0.4	1	2	0.05	0.012	257120 0007	62,50
0.4	4	0.38	50	0.4	2	2	0.05	0.012	257120 0008	62,50
0.4	4	0.38	50	0.4	5	2	0.05	0.009	257120 0009	62,50
0.5	4	0.48	50	0.5	1	2	0.05	0.015	257120 0010	50,50
0.5	4	0.48	50	0.5	2	2	0.05	0.015	257120 0011	50,50
0.5	4	0.48	50	0.5	4	2	0.05	0.015	257120 0012	50,50
0.5	4	0.48	50	0.5	6	2	0.05	0.012	257120 0013	50,50
0.5	4	0.48	50	0.5	8	2	0.05	0.012	257120 0014	50,50
0.5	4	0.48	50	0.5	10	2	0.05	0.009	257120 0015	50,50

2178


257120 0003


257120 0013

Corner radius 0.1

D mm	D1 mm	D3 mm	L mm	L1 mm	L2 mm	Z	R mm	Feed fz hardened steel < 60 HRc mm/tooth	art.no.	€
0.5	4	0.48	50	0.5	1	2	0.1	0.015	**257125** 0001	50,50
0.5	4	0.48	50	0.5	2	2	0.1	0.015	257125 0002	50,50
0.5	4	0.48	50	0.5	4	2	0.1	0.015	257125 0003	50,50
0.5	4	0.48	50	0.5	6	2	0.1	0.012	257125 0004	50,50
0.5	4	0.48	50	0.5	8	2	0.1	0.012	257125 0005	50,50
0.5	4	0.48	50	0.5	10	2	0.1	0.009	257125 0006	50,50
0.6	4	0.58	50	0.6	2	2	0.1	0.015	257125 0007	50,50
0.6	4	0.58	50	0.6	4	2	0.1	0.015	257125 0008	50,50
0.6	4	0.58	50	0.6	6	2	0.1	0.015	257125 0009	50,50
0.6	4	0.58	50	0.6	8	2	0.1	0.012	257125 0010	50,50
0.6	4	0.58	50	0.6	10	2	0.1	0.012	257125 0011	50,50
0.8	4	0.78	50	0.8	2	2	0.1	0.015	257125 0012	53,–
0.8	4	0.78	50	0.8	4	2	0.1	0.015	257125 0013	53,–
0.8	4	0.78	50	0.8	6	2	0.1	0.015	257125 0014	53,–
0.8	4	0.78	50	0.8	8	2	0.1	0.012	257125 0015	53,–
0.8	4	0.78	50	0.8	10	2	0.1	0.02	257125 0016	53,–
1	4	0.95	50	1	2	2	0.1	0.02	257125 0017	48,–
1	4	0.95	50	1	4	2	0.1	0.02	257125 0018	48,–
1	4	0.95	50	1	6	2	0.1	0.02	257125 0019	48,–
1	4	0.95	50	1	8	2	0.1	0.02	257125 0020	48,–
1	4	0.95	50	1	10	2	0.1	0.015	257125 0021	48,–
1	4	0.95	50	1	15	2	0.1	0.015	257125 0022	62,50

2178


257125 0006


257125 0027


257125 0038

D mm	D1 mm	D3 mm	L mm	L1 mm	L2 mm	Z	R mm	Feed fz hardened steel < 60 HRc mm/tooth	art.no.	€
1	4	0.95	60	1	20	2	0.1	0.01	257125 0023	69,–
1	4	0.95	60	1	25	2	0.1	0.01	257125 0024	69,–
1.2	4	1.14	50	1.2	5	2	0.1	0.02	257125 0025	53,–
1.2	4	1.14	50	1.2	10	2	0.1	0.02	257125 0026	53,–
1.2	4	1.14	50	1.2	15	2	0.1	0.015	257125 0027	69,–
1.2	4	1.14	60	1.2	20	2	0.1	0.015	257125 0028	69,–
1.2	4	1.14	60	1.2	25	2	0.1	0.02	257125 0029	69,–
1.5	4	1.44	50	1.5	3	2	0.1	0.02	257125 0030	50,50
1.5	4	1.44	50	1.5	4	2	0.1	0.02	257125 0031	50,50
1.5	4	1.44	50	1.5	6	2	0.1	0.02	257125 0032	50,50
1.5	4	1.44	50	1.5	8	2	0.1	0.02	257125 0033	50,50
1.5	4	1.44	50	1.5	10	2	0.1	0.02	257125 0034	50,50
1.5	4	1.44	50	1.5	15	2	0.1	0.015	257125 0035	53,–
1.5	4	1.44	60	1.5	20	2	0.1	0.015	257125 0036	53,–
1.5	4	1.44	60	1.5	25	2	0.1	0.01	257125 0037	53,–
2	4	1.91	50	2	4	2	0.1	0.03	257125 0038	50,50

2178



Corner radius 0.2

D mm	D1 mm	D3 mm	L mm	L1 mm	L2 mm	Z	R mm	Feed fz hardened steel < 60 HRc mm/tooth	art.no.	€
1	4	0.95	50	1	2	2	0.2	0.02	**257130** 0001	48,–
1	4	0.95	50	1	4	2	0.2	0.02	257130 0002	48,–
1	4	0.95	50	1	6	2	0.2	0.02	257130 0003	48,–
1	4	0.95	50	1	8	2	0.2	0.02	257130 0004	48,–
1	4	0.95	50	1	10	2	0.2	0.015	257130 0005	48,–
1	4	0.95	50	1	15	2	0.2	0.015	257130 0006	62,50
1	4	0.95	60	1	20	2	0.2	0.01	257130 0007	69,–
1	4	0.95	60	1	25	2	0.2	0.01	257130 0008	69,–
1.2	4	1.14	50	1.2	5	2	0.2	0.02	257130 0009	53,–
1.2	4	1.14	50	1.2	10	2	0.2	0.02	257130 0010	53,–
1.2	4	1.14	50	1.2	15	2	0.2	0.015	257130 0011	69,–
1.2	4	1.14	60	1.2	20	2	0.2	0.015	257130 0012	69,–
1.2	4	1.14	60	25	25	2	0.2	0.02	257130 0013	69,–
1.5	4	1.44	50	1.5	3	2	0.2	0.02	257130 0014	50,50
1.5	4	1.44	50	1.5	4	2	0.2	0.02	257130 0015	50,50
1.5	4	1.44	50	1.5	6	2	0.2	0.02	257130 0016	50,50
1.5	4	1.44	50	1.5	8	2	0.2	0.02	257130 0017	50,50
1.5	4	1.44	50	1.5	10	2	0.2	0.02	257130 0018	50,50
1.5	4	1.44	50	1.5	15	2	0.2	0.015	257130 0019	53,–
1.5	4	1.44	60	1.5	20	2	0.2	0.015	257130 0020	53,–
1.5	4	1.44	60	1.5	25	2	0.2	0.01	257130 0021	53,–
2	4	1.91	50	2	4	2	0.2	0.03	257130 0022	50,50
2	4	1.91	50	2	6	2	0.2	0.03	257130 0023	50,50
2	4	1.91	50	2	8	2	0.2	0.03	257130 0024	50,50
2	4	1.91	50	2	10	2	0.2	0.03	257130 0025	50,50
2	4	1.91	50	2	15	2	0.2	0.03	257130 0026	53,–
2	4	1.91	60	2	20	2	0.2	0.03	257130 0027	53,–
2	4	1.91	60	2	25	2	0.2	0.025	257130 0028	53,–
2	4	1.91	65	2	30	2	0.2	0.025	257130 0029	62,50
2	4	1.91	70	2	35	2	0.2	0.025	257130 0030	69,–
2	4	1.91	75	2	40	2	0.2	0.02	257130 0031	69,–

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257130 0008



257130 0018



257130 0022

Continued on next page >>>

Corner radius 0.3

D mm	D1 mm	D3 mm	L mm	L1 mm	L2 mm	Z	R mm	Feed fz hardened steel < 60 HRc mm/tooth	art.no.	€
1.5	4	1.44	50	1.5	3	2	0.3	0.02	**257135** 0001	50,50
1.5	4	1.44	50	1.5	4	2	0.3	0.02	257135 0002	50,50
1.5	4	1.44	50	1.5	6	2	0.3	0.02	257135 0003	50,50
1.5	4	1.44	50	1.5	8	2	0.3	0.02	257135 0004	50,50
1.5	4	1.44	50	1.5	10	2	0.3	0.02	257135 0005	50,50
1.5	4	1.44	50	1.5	15	2	0.3	0.015	257135 0006	53,–
1.5	4	1.44	60	1.5	20	2	0.3	0.015	257135 0007	53,–
1.5	4	1.44	60	1.5	25	2	0.3	0.01	257135 0008	53,–
2	4	1.91	50	2	4	2	0.3	0.03	257135 0009	50,50
2	4	1.91	50	2	6	2	0.3	0.03	257135 0010	50,50
2	4	1.91	50	2	8	2	0.3	0.03	257135 0011	50,50
2	4	1.91	50	2	10	2	0.3	0.03	257135 0012	50,50
2	4	1.91	50	2	15	2	0.3	0.03	257135 0013	53,–
2	4	1.91	60	2	20	2	0.3	0.025	257135 0014	53,–
2	4	1.91	60	2	25	2	0.3	0.025	257135 0015	53,–
2	4	1.91	65	2	30	2	0.3	0.025	257135 0016	62,50
2	4	1.91	70	2	35	2	0.3	0.025	257135 0017	69,–
2	4	1.91	75	2	40	2	0.3	0.02	257135 0018	69,–
2.5	4	2.41	50	2.5	8	2	0.3	0.03	257135 0019	50,50
2.5	4	2.41	50	2.5	10	2	0.3	0.03	257135 0020	50,50
2.5	4	2.41	50	2.5	15	2	0.3	0.03	257135 0021	53,–
2.5	4	2.41	60	2.5	20	2	0.3	0.03	257135 0022	53,–
2.5	4	2.41	60	2.5	25	2	0.3	0.025	257135 0023	53,–
2.5	4	2.41	65	2.5	30	2	0.3	0.025	257135 0024	62,50
2.5	4	2.41	70	2.5	35	2	0.3	0.025	257135 0025	69,–
2.5	4	2.41	75	2.5	40	2	0.3	0.02	257135 0026	69,–
3	4	2.92	50	3	8	2	0.3	0.03	257135 0027	53,–
3	4	2.92	50	3	10	2	0.3	0.03	257135 0028	53,–
3	4	2.92	50	3	15	2	0.3	0.03	257135 0029	53,–
3	4	2.92	60	3	20	2	0.3	0.03	257135 0030	57,–
3	4	2.92	60	3	25	2	0.3	0.03	257135 0031	57,–
3	4	2.92	65	3	30	2	0.3	0.025	257135 0032	69,–
3	4	2.92	70	3	35	2	0.3	0.02	257135 0033	69,–
3	4	2.92	75	3	40	2	0.3	0.02	257135 0034	69,–

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257135 0006


257135 0027

Corner radius 0.5

D mm	D1 mm	D3 mm	L mm	L1 mm	L2 mm	Z	R mm	Feed fz hardened steel < 60 HRc mm/tooth	art.no.	€
2.5	4	2.41	50	2.5	8	2	0.5	0.03	**257140** 0001	50,50
2.5	4	2.41	50	2.5	10	2	0.5	0.03	257140 0002	50,50
2.5	4	2.41	50	2.5	15	2	0.5	0.03	257140 0003	53,–
2.5	4	2.41	60	2.5	20	2	0.5	0.03	257140 0004	53,–
2.5	4	2.41	60	2.5	25	2	0.5	0.025	257140 0005	53,–
2.5	4	2.41	65	2.5	30	2	0.5	0.025	257140 0006	62,50
2.5	4	2.41	70	2.5	35	2	0.5	0.025	257140 0007	69,–
2.5	4	2.41	75	2.5	40	2	0.5	0.02	257140 0008	69,–
3	4	2.92	50	3	8	2	0.5	0.03	257140 0009	53,–
3	4	2.92	50	3	10	2	0.5	0.03	257140 0010	53,–
3	4	2.92	50	3	15	2	0.5	0.03	257140 0011	53,–
3	4	2.92	60	3	20	2	0.5	0.03	257140 0012	57,–
3	4	2.92	60	3	25	2	0.5	0.03	257140 0013	57,–
3	4	2.92	65	3	30	2	0.5	0.025	257140 0014	69,–
3	4	2.92	70	3	35	2	0.5	0.02	257140 0015	69,–
3	4	2.92	75	3	40	2	0.5	0.02	257140 0016	69,–

2178

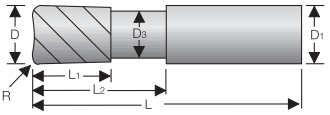

257140 0003


257140 0009

ATORN® Torus milling cutter RockTec PRO

VHM | 30° | f7 | h5 | DIN 6535 HA | Z 4 | TiAlSiN | Vc/fz | 774





- For machining materials **from 47 to 65 HRc**
- Optimised geometry for hard machining
- **Cutting material: ultra micro-grain SC**
- state-of-the-art coating technology for reduced wear and extreme hardness
- **Subject to process-related colour variations in the coating.**

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
				● 140-160													● 80-110	● 80-110	● 50-80
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

Standard



D mm	D1 mm	D3 mm	L mm	L1 mm	L2 mm	Z	R mm	Feed fz hardened steel < 60 HRc mm/tooth	art.no.	€
1	6	0.95	57	1.5	10	4	0.1	0.005	**257145** 0101	45,–
1	6	0.95	57	1.5	10	4	0.2	0.005	257145 0102	45,–
2	6	1.85	57	2.5	12	4	0.1	0.005	257145 0201	45,–
2	6	1.85	57	2.5	12	4	0.3	0.005	257145 0203	44,70
2	6	1.85	57	2.5	12	4	0.5	0.005	257145 0205	44,70
3	6	2.9	57	3.5	12	4	0.1	0.019	257145 0301	41,70
3	6	2.9	57	3.5	12	4	0.3	0.019	257145 0303	41,70
3	6	2.9	57	3.5	12	4	0.5	0.019	257145 0305	41,70
3	6	2.9	57	3.5	12	4	1	0.019	257145 0310	41,70
4	6	3.8	57	4.5	14	4	0.1	0.019	257145 0401	45,–
4	6	3.8	57	4.5	14	4	0.3	0.019	257145 0403	45,–
4	6	3.8	57	4.5	14	4	0.5	0.019	257145 0405	45,–
4	6	3.8	57	4.5	14	4	1	0.019	257145 0410	45,–
5	6	4.7	57	5.5	16	4	0.1	0.048	257145 0501	49,10
5	6	4.7	57	5.5	16	4	0.3	0.048	257145 0503	49,10
5	6	4.7	57	5.5	16	4	0.5	0.048	257145 0505	49,10
5	6	4.7	57	5.5	16	4	1	0.048	257145 0510	49,10
6	6	5.7	57	7	20	4	0.1	0.048	257145 0601	57,–
6	6	5.7	57	7	20	4	0.3	0.048	257145 0603	57,–
6	6	5.7	57	7	20	4	0.5	0.048	257145 0605	56,–
6	6	5.7	57	7	20	4	1	0.048	257145 0610	56,–
6	6	5.7	57	7	20	4	1.5	0.048	257145 0615	56,–
6	6	5.7	57	7	20	4	2	0.048	257145 0620	56,–
8	8	7.6	63	9	26	4	0.1	0.06	257145 0801	73,50
8	8	7.6	63	9	26	4	0.3	0.06	257145 0803	73,50
8	8	7.6	63	9	26	4	0.5	0.06	257145 0805	73,50
8	8	7.6	63	9	26	4	1	0.06	257145 0810	73,50
8	8	7.6	63	9	26	4	2	0.06	257145 0820	73,50
8	8	7.6	63	9	26	4	3	0.06	257145 0830	73,50
10	10	9.6	72	12	32	4	0.1	0.07	257145 1001	97,–
10	10	9.6	72	12	32	4	0.3	0.07	257145 1003	97,–
10	10	9.6	72	12	32	4	0.5	0.07	257145 1005	97,–
10	10	9.6	72	12	32	4	1	0.07	257145 1010	97,–
10	10	9.6	72	12	32	4	2	0.07	257145 1020	97,–
10	10	9.6	72	12	32	4	3	0.07	257145 1030	97,–
12	12	11.6	83	14	38	4	0.5	0.08	257145 1205	132,–
12	12	11.6	83	14	38	4	1	0.08	257145 1210	132,–
12	12	11.6	83	14	38	4	2	0.08	257145 1220	132,–
12	12	11.6	83	14	38	4	3	0.08	257145 1230	132,–
16	16	15.4	92	18	44	4	1	0.09	257145 1610	225,–
16	16	15.4	92	18	44	4	2	0.09	257145 1620	225,–
16	16	15.4	92	18	44	4	3	0.09	257145 1630	225,–

Continued on next page >>>



Long

D mm	D1 mm	D3 mm	L mm	L1 mm	L2 mm	Z	R mm	Feed fz hardened steel < 60 HRc mm/tooth	art.no.	€
1	6	0.95	65	1.5	20	4	0.1	0.005	**257150** 0101	65,–
1	6	0.95	65	1.5	20	4	0.2	0.005	257150 0102	65,–
2	6	1.85	70	2.5	25	4	0.1	0.005	257150 0201	64,–
2	6	1.85	70	2.5	25	4	0.3	0.005	257150 0203	64,–
2	6	1.85	70	2.5	25	4	0.5	0.005	257150 0205	64,–
3	6	2.9	75	3.5	32	4	0.1	0.019	257150 0301	58,50
3	6	2.9	75	3.5	32	4	0.3	0.019	257150 0303	58,50
3	6	2.9	75	3.5	32	4	0.5	0.019	257150 0305	58,50
3	6	2.9	75	3.5	32	4	1	0.019	257150 0310	58,50
4	6	3.8	80	4.5	36	4	0.1	0.019	257150 0401	65,50
4	6	3.8	80	4.5	36	4	0.3	0.019	257150 0403	65,50
4	6	3.8	80	4.5	36	4	0.5	0.019	257150 0405	65,50
4	6	3.8	80	4.5	36	4	1	0.019	257150 0410	65,50
5	6	4.7	80	5.5	40	4	0.1	0.048	257150 0501	72,–
5	6	4.7	80	5.5	40	4	0.3	0.048	257150 0503	72,–
5	6	4.7	80	5.5	40	4	0.5	0.048	257150 0505	72,–
5	6	4.7	80	5.5	40	4	1	0.048	257150 0510	72,–
6	6	5.7	80	7	44	4	0.1	0.048	257150 0601	77,50
6	6	5.7	80	7	44	4	0.3	0.048	257150 0603	77,50
6	6	5.7	80	7	44	4	0.5	0.048	257150 0605	77,50
6	6	5.7	80	7	44	4	1	0.048	257150 0610	77,50
6	6	5.7	80	7	44	4	1.5	0.048	257150 0615	77,50
6	6	5.7	80	7	44	4	2	0.048	257150 0620	77,50
8	8	7.6	100	9	54	4	0.1	0.06	257150 0801	109,–
8	8	7.6	100	9	54	4	0.3	0.06	257150 0803	109,–
8	8	7.6	100	9	54	4	0.5	0.06	257150 0805	109,–
8	8	7.6	100	9	54	4	1	0.06	257150 0810	109,–
8	8	7.6	100	9	54	4	2	0.06	257150 0820	109,–
8	8	7.6	100	9	54	4	3	0.06	257150 0830	109,–
10	10	9.6	100	12	60	4	0.1	0.07	257150 1001	146,–
10	10	9.6	100	12	60	4	0.3	0.07	257150 1003	146,–
10	10	9.6	100	12	60	4	0.5	0.07	257150 1005	146,–
10	10	9.6	100	12	60	4	1	0.07	257150 1010	146,–
10	10	9.6	100	12	60	4	2	0.07	257150 1020	146,–
10	10	9.6	100	12	60	4	3	0.07	257150 1030	146,–
12	12	11.6	120	14	75	4	0.5	0.08	257150 1205	193,–
12	12	11.6	120	14	75	4	1	0.08	257150 1210	193,–
12	12	11.6	120	14	75	4	2	0.08	257150 1220	193,–
12	12	11.6	120	14	75	4	3	0.08	257150 1230	193,–
16	16	15.4	150	18	92	4	1	0.09	257150 1610	330,–
16	16	15.4	150	18	92	4	2	0.09	257150 1620	330,–
16	16	15.4	150	18	92	4	3	0.09	257150 1630	330,–

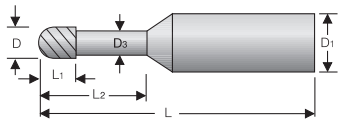
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ATORN® Mini radius milling cutter RockTec PRO

VHM | 30° | f7 | h5 | DIN 6535 HA | Z 2 | TiAlSiN | Vc/fz | 776

NEW · NUOVO · NY · NOUVEAU · NUEVO

- For machining materials **from 47 to 65 HRc**
- Optimised geometry for hard machining
- **Cutting material: ultra micro-grain SC**
- state-of-the-art coating technology for reduced wear and extreme hardness
- **Subject to process-related colour variations in the coating.**



material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 140-160													● 80-110	● 80-110	● 50-80

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

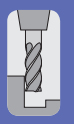
Standard

● Feed fz hardened steel < 60 HRc mm/tooth



D mm	D1 mm	D3 mm	L mm	L1 mm	L2 mm	Z	Feed fz hardened steel < 60 HRc mm/tooth	art.no.	€
0.1	4	0.08	50	0.08	0.3	2	0.009	**257100** 0001	74,–
0.1	4	0.08	50	0.08	0.5	2	0.009	257100 0002	74,–
0.1	4	0.08	50	0.08	1	2	0.005	257100 0003	74,–
0.2	4	0.17	50	0.16	0.5	2	0.009	257100 0004	62,50
0.2	4	0.17	50	0.16	1	2	0.009	257100 0005	62,50
0.2	4	0.17	50	0.16	2	2	0.005	257100 0006	62,50
0.2	4	0.17	50	0.16	3	2	0.005	257100 0007	62,50
0.3	4	0.27	50	0.24	0.5	2	0.012	257100 0008	62,50
0.3	4	0.27	50	0.24	1	2	0.012	257100 0009	62,50
0.3	4	0.27	50	0.24	2	2	0.012	257100 0010	62,50
0.3	4	0.27	50	0.24	3	2	0.009	257100 0011	62,50
0.3	4	0.27	50	0.24	4	2	0.009	257100 0012	62,50
0.4	4	0.37	50	0.32	1	2	0.012	257100 0013	62,50
0.4	4	0.37	50	0.32	2	2	0.012	257100 0014	62,50
0.4	4	0.37	50	0.32	3	2	0.012	257100 0015	62,50
0.4	4	0.37	50	0.32	4	2	0.009	257100 0016	62,50
0.4	4	0.37	50	0.32	5	2	0.009	257100 0017	62,50
0.4	4	0.37	50	0.32	6	2	0.009	257100 0018	62,50
0.5	4	0.47	50	0.4	1	2	0.015	257100 0019	50,50
0.5	4	0.47	50	0.4	2	2	0.015	257100 0020	50,50
0.5	4	0.47	50	0.4	3	2	0.015	257100 0021	50,50
0.5	4	0.47	50	0.4	4	2	0.015	257100 0022	50,50
0.5	4	0.47	50	0.4	5	2	0.012	257100 0023	50,50
0.5	4	0.47	50	0.4	6	2	0.012	257100 0024	50,50
0.5	4	0.47	50	0.4	8	2	0.012	257100 0025	50,50
0.5	4	0.47	50	0.4	10	2	0.012	257100 0026	50,50
0.6	4	0.57	50	0.48	2	2	0.015	257100 0027	50,50
0.6	4	0.57	50	0.48	4	2	0.015	257100 0028	50,50
0.6	4	0.57	50	0.48	6	2	0.012	257100 0029	50,50
0.6	4	0.57	50	0.48	8	2	0.012	257100 0030	50,50
0.6	4	0.57	50	0.48	10	2	0.012	257100 0031	50,50
0.8	4	0.77	50	0.64	2	2	0.015	257100 0032	53,–
0.8	4	0.77	50	0.64	4	2	0.015	257100 0033	53,–
0.8	4	0.77	50	0.64	6	2	0.015	257100 0034	53,–
0.8	4	0.77	50	0.64	8	2	0.012	257100 0035	53,–
0.8	4	0.77	50	0.64	10	2	0.012	257100 0036	53,–
1	4	0.96	50	0.8	2	2	0.02	257100 0037	48,–
1	4	0.96	50	0.8	4	2	0.02	257100 0038	48,–
1	4	0.96	50	0.8	6	2	0.02	257100 0039	48,–
1	4	0.96	50	0.8	8	2	0.02	257100 0040	48,–
1	4	0.96	50	0.8	10	2	0.015	257100 0041	48,–
1	4	0.96	50	0.8	15	2	0.015	257100 0042	54,50
1	4	0.96	60	0.8	20	2	0.01	257100 0043	62,50
1	4	0.96	60	0.8	25	2	0.01	257100 0044	69,–

Continued on next page >>>



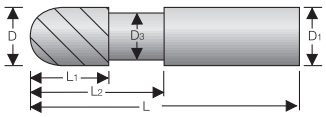
D mm	D1 mm	D3 mm	L mm	L1 mm	L2 mm	Z	Feed fz hardened steel < 60 HRc mm/tooth	art.no.	€
1.2	4	1.16	50	0.96	2	2	0.02	257100 0045	50,50
1.2	4	1.16	50	0.96	4	2	0.02	257100 0046	50,50
1.2	4	1.16	50	0.96	6	2	0.02	257100 0047	50,50
1.2	4	1.16	50	0.96	8	2	0.02	257100 0048	50,50
1.2	4	1.16	50	0.96	10	2	0.02	257100 0049	53,–
1.2	4	1.16	50	0.96	15	2	0.015	257100 0050	53,–
1.2	4	1.16	60	0.96	20	2	0.01	257100 0051	62,50
1.2	4	1.16	60	0.96	25	2	0.01	257100 0052	75,50
1.5	4	1.44	50	1.2	3	2	0.02	257100 0053	50,50
1.5	4	1.44	50	1.2	4	2	0.02	257100 0054	50,50
1.5	4	1.44	50	1.2	6	2	0.02	257100 0055	50,50
1.5	4	1.44	50	1.2	8	2	0.02	257100 0056	50,50
1.5	4	1.44	50	1.2	10	2	0.02	257100 0057	50,50
1.5	4	1.44	50	1.2	15	2	0.015	257100 0058	54,50
1.5	4	1.44	60	1.2	20	2	0.015	257100 0059	62,50
1.5	4	1.44	60	1.2	25	2	0.01	257100 0060	69,–
1.6	4	1.54	50	1.28	4	2	0.03	257100 0061	53,–
1.6	4	1.54	50	1.28	8	2	0.03	257100 0062	53,–
1.6	4	1.54	50	1.28	10	2	0.03	257100 0063	53,–
1.6	4	1.54	50	1.28	15	2	0.025	257100 0064	53,–
1.6	4	1.54	60	1.28	20	2	0.025	257100 0065	62,50
1.6	4	1.54	60	1.28	25	2	0.02	257100 0066	75,50
1.8	4	1.74	50	1.44	8	2	0.03	257100 0067	53,–
1.8	4	1.74	50	1.44	10	2	0.03	257100 0068	53,–
1.8	4	1.74	50	1.44	15	2	0.03	257100 0069	53,–
1.8	4	1.74	60	1.44	20	2	0.025	257100 0070	62,50
1.8	4	1.74	60	1.44	25	2	0.02	257100 0071	69,–
2	4	1.94	50	1.6	4	2	0.03	257100 0072	50,50
2	4	1.94	50	1.6	6	2	0.03	257100 0073	50,50
2	4	1.94	50	1.6	8	2	0.03	257100 0074	50,50
2	4	1.94	50	1.6	10	2	0.03	257100 0075	50,50
2	4	1.94	50	1.6	15	2	0.03	257100 0076	50,50
2	4	1.94	60	1.6	20	2	0.025	257100 0077	62,50
2	4	1.94	60	1.6	25	2	0.025	257100 0078	62,50
2	4	1.94	65	1.6	30	2	0.025	257100 0079	69,–
2	4	1.94	70	1.6	35	2	0.02	257100 0080	74,–
2	4	1.94	75	1.6	40	2	0.02	257100 0081	74,–
2.5	4	2.41	50	2	6	2	0.03	257100 0082	53,–
2.5	4	2.41	50	2	8	2	0.03	257100 0083	53,–
2.5	4	2.41	50	2	10	2	0.03	257100 0084	53,–
2.5	4	2.41	50	2	15	2	0.03	257100 0085	57,–
2.5	4	2.41	60	2	20	2	0.03	257100 0086	62,50
2.5	4	2.41	60	2	25	2	0.025	257100 0087	69,–
2.5	4	2.41	65	2	30	2	0.025	257100 0088	69,–
2.5	4	2.41	70	2	35	2	0.02	257100 0089	74,–
2.5	4	2.41	75	2	40	2	0.02	257100 0090	74,–
3	4	2.92	50	3.5	6	2	0.03	257100 0091	53,–
3	4	2.92	50	3.5	8	2	0.03	257100 0092	53,–
3	4	2.92	50	3.5	10	2	0.03	257100 0093	53,–
3	4	2.92	50	3.5	15	2	0.03	257100 0094	57,–
3	4	2.92	60	3.5	20	2	0.03	257100 0095	62,50
3	4	2.92	60	3.5	25	2	0.03	257100 0096	62,50
3	4	2.92	65	3.5	30	2	0.025	257100 0097	69,–
3	4	2.92	70	3.5	35	2	0.025	257100 0098	69,–
3	4	2.92	75	3.5	40	2	0.025	257100 0099	69,–

2178

ATORN® Radius milling cutter RockTec PRO

VHM | 30° | f7 | h5 | DIN 6535 HA | Z 2 | TiAlSiN | Vc/fz | 776





- For machining materials **from 47 to 65 HRc**
- Optimised geometry for hard machining
- **Cutting material: ultra micro-grain SC**
- state-of-the-art coating technology for reduced wear and extreme hardness
- **Subject to process-related colour variations in the coating.**

material

● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
			● 140-160													● 80-110	● 80-110	● 50-80
Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

Short



D mm	D1 mm	D3 mm	L mm	L1 mm	L2 mm	Z	Feed fz hardened steel < 60 HRc mm/tooth	art.no.	€
1	6	0.96	57	1.5	3.5	2	0.005	**257105** 0010	49,30
1.5	6	1.44	57	1.5	4	2	0.005	257105 0015	47,70
2	6	1.95	57	2	4.5	2	0.005	257105 0020	47,–
2.5	6	-	57	3	6.5	2	0.019	257105 0025	47,–
3	6	-	57	3.5	7	2	0.019	257105 0030	46,10
4	6	-	57	4.5	7	2	0.019	257105 0040	46,10
5	6	-	57	5.5	10	2	0.048	257105 0050	45,70
6	6	-	57	7	-	2	0.048	257105 0060	45,50
8	8	-	70	9	-	2	0.06	257105 0080	57,–
10	10	-	72	12	-	2	0.07	257105 0100	77,50
12	12	-	83	14	-	2	0.08	257105 0120	104,–
16	16	-	92	18	-	2	0.09	257105 0160	174,–
20	20	-	104	22	-	2	0.1	257105 0200	275,–

2178

Standard



D mm	D1 mm	D3 mm	L mm	L1 mm	L2 mm	Z	Feed fz hardened steel < 60 HRc mm/tooth	art.no.	€
1	6	0.96	65	1.5	3.5	2	0.005	**257110** 0010	60,50
1.5	6	1.44	65	2	4	2	0.005	257110 0015	59,50
2	6	1.95	65	2.5	4.5	2	0.005	257110 0020	59,–
2.5	6	-	65	3	6.5	2	0.019	257110 0025	58,–
3	6	-	65	3.5	7	2	0.019	257110 0030	57,50
4	6	-	65	4.5	7	2	0.019	257110 0040	57,–
5	6	-	65	5.5	10	2	0.048	257110 0050	56,–
6	6	-	65	7	-	2	0.048	257110 0060	54,50
8	8	-	85	9	-	2	0.06	257110 0080	69,–
10	10	-	85	12	-	2	0.07	257110 0100	91,–
12	12	-	93	14	-	2	0.08	257110 0120	120,–
16	16	-	110	18	-	2	0.09	257110 0160	230,–
20	20	-	126	22	-	2	0.1	257110 0200	330,–

2178

Continued on next page >>>

Long



D mm	D1 mm	D3 mm	L mm	L1 mm	L2 mm	Z	Feed fz hardened steel < 60 HRc mm/tooth	art.no.	€
1	6	0.96	80	1.5	3.5	2	0.005	**257115** 0010	72,–
1.5	6	1.44	80	2	4	2	0.005	257115 0015	71,50
2	6	1.95	80	2.5	4.5	2	0.005	257115 0020	71,–
2.5	6	-	80	3	6.5	2	0.019	257115 0025	69,50
3	6	-	80	3.5	7	2	0.019	257115 0030	68,50
4	6	-	80	3.5	7	2	0.019	257115 0040	68,50
5	6	-	80	5.5	10	2	0.048	257115 0050	66,50
6	6	-	80	7	-	2	0.048	257115 0060	64,–
8	6	-	100	9	-	2	0.06	257115 0080	81,50
10	8	-	100	12	-	2	0.07	257115 0100	104,–
12	12	-	100	14	-	2	0.08	257115 0120	136,–
16	16	-	150	18	-	2	0.09	257115 0160	270,–
20	20	-	150	22	-	2	0.1	257115 0200	380,–

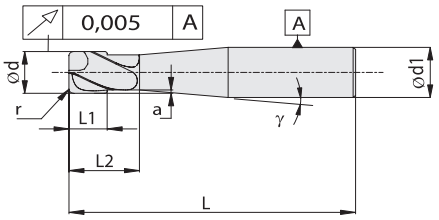
2178



ATORN® Sealing surface milling cutter

VHM | e8 | h5 | DIN 6535 HA | Z 3 | TiAlN+ | Vc/fz | 773

- **For manufacturing concentric sealing surfaces for high-quality products**
- Only concentric milling contours
- No post-machining required
- Smooth surface
- Helix angle 30°



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	●	●	○		●					●	●	●		●		

uncoated



d mm	r mm	d1 mm	L mm	L1 mm	L2 mm	a mm	γ °	art.no.	€
3.0	0.02	6	51	1.0	4.0	0.05	15	**255151** 0030	66,50
4.0	0.03	6	51	2.0	4.0	0.05	15	255151 0040	66,50
5.0	0.03	6	51	2.0	4.0	0.05	15	255151 0050	72,–
6.0	0.06	6	51	4.0				255151 0060	77,50
8.0	0.08	8	64	6.0				255151 0080	103,–
10.0	0.1	10	64	7.0				255151 0100	134,–
12.0	0.12	12	73	9.0				255151 0120	186,–
16.0	0.14	16	89	12.0				255151 0160	270,–
20.0	0.15	20	102	15.0				255151 0200	360,–

2111

coated



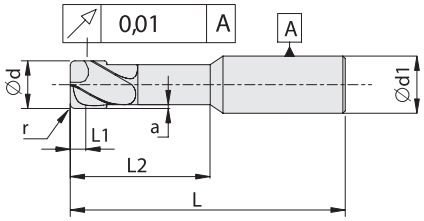
d mm	r mm	d1 mm	L mm	L1 mm	L2 mm	a mm	γ °	art.no.	€
3.0	0.02	6	51	1.0	4.0	0.05	15	**255152** 0030	66,50
4.0	0.05	6	51	2.0	4.0	0.05	15	255152 0040	73,50
5.0	0.05	6	51	2.0	4.0	0.05	15	255152 0050	86,50
6.0	0.1	6	51	4.0				255152 0060	94,–
8.0	0.1	8	64	6.0				255152 0080	116,–
10.0	0.15	10	64	7.0				255152 0100	149,–
12.0	0.15	12	73	9.0				255152 0120	215,–
16.0	0.15	16	89	12.0				255152 0160	305,–
20.0	0.2	20	102	15.0				255152 0200	400,–

2111

ATORN® Ceramics milling cutter

DIN 6535 HA | Z 4 | Vc/fz | 772

- Helix angle 15°
- For machining nickel-based alloys e.g. Inconel
- Always use air cooling
- Ensure continuous machining
- Do not remove the chips from the cutting area
- **Attention:** Tool, chips and workpiece can get very hot



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
											●	●							
	Cutting speed Vc m/min.										550	550							

Please adjust these guidelines according to clamping operation and machine set-up.

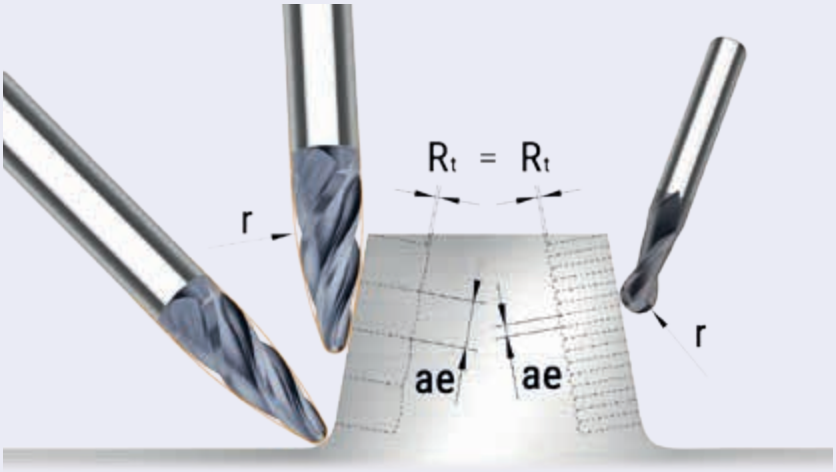


d mm	r mm	d1 mm	L mm	L1 mm	L2 mm	a mm	art.no.	€
6.0	0.40	6	51	3.0	12.0	0.15	**255153** 0060	199,50
8.0	0.52	8	63	4.0	16.0	0.15	255153 0080	239,–
10.0	0.65	10	72	5.0	20.0	0.2	255153 0100	278,50
12.0	0.75	12	83	6.0	24.0	0.2	255153 0120	327,–
16.0	1.0	16	92	8.0	32.0	0.25	255153 0160	383,–
20.0	1.3	20	102	10.0	40.0	0.25	255153 0200	449,50

2177

ATORN® Curve segment milling cutter

INFO



r = Radius curve segment milling cutter / copy milling cutter
ae = line spacing
Rt = theoretical roughness

Reduction of workpiece costs and considerably shorter manufacturing times based on the significant increase in the line spacing ae.

$$ae = 2 \times \sqrt{r^2 - (r - R_t)^2} \quad [mm]$$

$$R_t = r - \sqrt{r^2 - \left(\frac{ae}{2}\right)^2} \quad [mm]$$

$$\rightarrow R_t \times 1000 \quad [\mu m]$$

ATORN® Circle segment milling cutter

VHM | Typ N | DIN 6535 HA | Z 4 | TiAlN | 3D PRINT | Vc/fz

772

- **Reduction of workpiece costs and considerably shorter manufacturing times based on the significant increase in the line spacing ae**
- **New manufacturing possibilities**
  - Undercuts
  - Semi-finishing and finishing of tight contours
  - Variable setting angle possible
  - Machining of tight inner radii
  - Freeform surfaces
- **Improved surface finish**
- Increased tool life

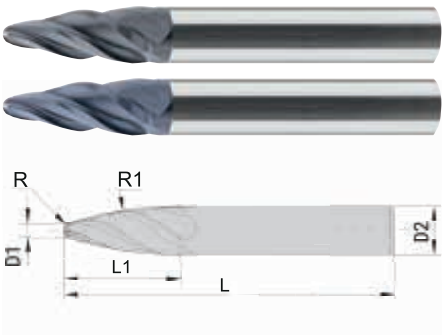
material — ● very well suited ○ well suited

steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
●	●	●	●	○		●					●	●	●		●		
190	180	130	80	100		180					600	550	180		120		

Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.

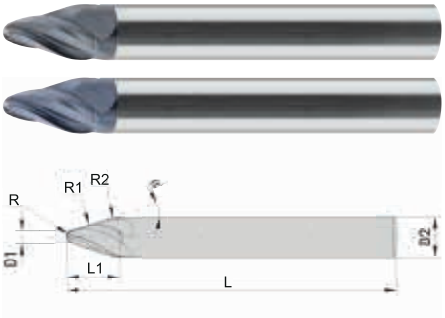
Tangential

D1 mm	D2 mm	L mm	L1 mm	R mm	R1 mm	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€	TiAlN art.no.	€
2	8	70	24	1	95	0.048	**254170** 0020	121,–	**254171** 0020	133,–
4	12	83	28	2	90	0.072	254170 0040	166,–	254171 0040	182,–
6	16	105	30	3	80	0.096	254170 0060	245,–	254171 0060	260,–
							2169		2169	



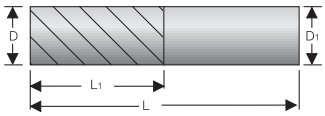
Conical

D1 mm	D2 mm	L mm	L1 mm	a °	R mm	R1 mm	R2 mm	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€	TiAlN art.no.	€
2	8	75	10	18	1	300	1	0.048	**254172** 1820	124,–	**254173** 1820	136,–
4	12	100	14	18	2	450	2	0.072	254172 1840	174,–	254173 1840	191,–
6	16	120	18	18	3	1200	3	0.096	254172 1860	270,–	254173 1860	285,–
6	16	120	12	28	3	800	3	0.096	254172 2860	270,–	254173 2860	285,–
8	16	120	16	18	4	1200	4	0.096	254172 1880	270,–	254173 1880	285,–
8	16	120	11	28	4	800	4	0.096	254172 2880	270,–	254173 2880	285,–
									2169		2169	



SARA® Die-sinking cutter

VHM | 30° | h6 | DIN 6535 HA | Z 3 | Z 4 | TiAlN



- Tapered form
- Constructional dimensions in compliance with factory standard
- For use in extruder, die, mould, model and tool making

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 40-60	● 40-55	● 40-50	● 30-45	● 30-45	○ 20-30	● 40-60	● 40-60								● 30-40		
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		



Taper angle one-side °	D mm	L1 mm	L mm	D1 mm	Z	art.no.	€
1	2.5	20	60	4	3	**253002** 1001	38,90
1	3.0	20	60	4	3	253002 1002	43,30
1	4.0	20	65	5	3	253002 1003	43,70
1	5.0	30	75	6	3	253002 1004	53,50
1	6.0	30	75	8	3	253002 1005	74,–
1	8.0	30	75	10	4	253002 1006	95,–
1	10.0	30	75	12	4	253002 1007	110,–
1	12.0	55	100	14	4	253002 1008	194,–
1	16.0	55	100	18	4	253002 1009	300,–
1.5	2.5	20	60	4	3	253002 1501	38,90
1.5	3.0	19	60	4	3	253002 1502	38,90
1.5	4.0	19	60	5	3	253002 1503	43,–
1.5	5.0	35	75	8	3	253002 1504	70,50
1.5	6.0	35	75	8	3	253002 1505	72,50
1.5	8.0	35	75	10	4	253002 1506	92,50
1.5	10.0	38	75	12	4	253002 1507	112,–
1.5	12.0	60	100	16	4	253002 1508	225,–
1.5	16.0	65	100	20	4	253002 1509	375,–
2	2.5	20	60	4	3	253002 2001	38,90
2	3.0	25	60	5	3	253002 2002	43,–
2	3.5	20	60	5	3	253002 2003	43,–
2	4.0	20	60	6	3	253002 2004	46,90
2	5.0	35	75	8	3	253002 2006	78,50
2	6.0	28	75	8	3	253002 2008	68,–
2	6.0	57	100	10	3	253002 2009	126,–
2	8.0	28	75	10	4	253002 2010	90,50
2	8.0	57	100	12	4	253002 2011	145,–
2	10.0	28	75	12	4	253002 2012	116,–
2	12.0	28	75	14	4	253002 2013	169,–

2109

Taper angle one-side °	D mm	L1 mm	L mm	D1 mm	Z	art.no.	€
2	12.0	57	100	16	4	253002 2014	240,–
2	16.0	55	100	20	4	253002 2015	400,–
3	2.5	20	60	5	3	253002 3001	39,30
3	3.0	25	60	6	3	253002 3002	49,30
3	3.0	40	75	8	3	253002 3003	74,50
3	4.0	38	75	8	3	253002 3004	80,50
3	5.0	28	75	8	3	253002 3005	81,50
3	6.0	38	75	10	3	253002 3006	104,–
3	6.0	57	100	12	3	253002 3007	141,–
3	8.0	38	75	12	4	253002 3008	121,–
3	8.0	57	100	14	4	253002 3009	185,–
3	10.0	38	75	14	4	253002 3010	157,–
3	12.0	55	100	18	4	253002 3012	325,–
5	2.5	20	60	6	3	253002 5001	43,20
5	3.0	28	75	8	3	253002 5002	78,–
5	3.0	40	75	10	3	253002 5003	107,–
5	3.5	25	75	8	3	253002 5004	78,–
5	4.0	22	75	8	3	253002 5005	78,–
5	5.0	28	75	10	3	253002 5008	105,–
5	6.0	34	75	12	3	253002 5009	116,–
5	6.0	57	100	16	3	253002 5010	220,–
5	8.0	57	100	18	4	253002 5011	320,–
5	10.0	34	75	16	4	253002 5012	205,–
5	10.0	45	100	18	4	253002 5013	330,–
5	12.0	45	100	20	4	253002 5015	370,–
7	2.5	22	75	8	3	253002 7001	74,50
7	5.0	28	75	12	3	253002 7002	119,–
10	2.5	21	75	10	3	253002 1101	101,–
10	3.0	25	75	12	3	253002 1102	125,–

2109





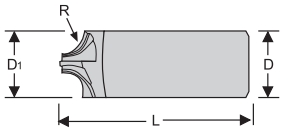
VAN HOORN
End milling cutters
189 pages
Art.no. 019900 0079

Overview of all free manufacturers' catalogues
on page 14/15

SARA® Quadrant milling cutter

VHM | Werks-norm | Typ N | h10 | h6 | DIN 6535 HA | Z 4 | Vc/fz | 767

- Factory standard
- **Design**: straight-fluted, no profile distortion
- **Application**: for rounding off and deburring edges



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 70-100	● 60-90	● 35-60	● 35-70	● 25-60	○ 25-60	● 70-95	● 60-80		● 10-30	● 10-30	○ 140-500	○ 140-500	● 85-190		● 65-90	● 65-90	○ 40-60
	Cutting speed Vc m/min.										Please adjust these guidelines according to clamping operation and machine set-up.								

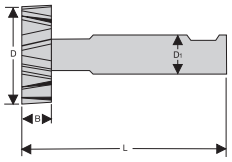


D mm	L mm	R mm	D1 mm	● Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
8.0	70	0.5	7	0.004	**291310** 0050	84,50
8.0	70	1.0	6	0.009	291310 0100	85,–
10.0	75	1.5	7	0.009	291310 0150	90,–
10.0	75	2.0	6	0.015	291310 0200	90,–
12.0	75	2.5	7	0.015	291310 0250	98,–
12.0	75	3.0	6	0.015	291310 0300	98,–
16.0	80	3.5	9	0.015	291310 0350	124,–
16.0	80	4.0	8	0.033	291310 0400	124,–
16.0	80	4.5	7	0.033	291310 0450	124,–
20.0	80	5.0	10	0.033	291310 0500	174,–
20.0	80	6.0	8	0.055	291310 0600	174,–
25.0	100	8.0	9	0.064	291310 0800	285,–
25.0	100	10.0	5	0.073	291310 1000	290,–

SARA® Slotting cutter

VHM | DIN 850 | Typ N | h11 | h6 | DIN 1835 B | Z 6 | Z 8+ | AlCrN | Vc/fz | 744

- For keyway milling in accordance with DIN 6888
- For slot milling
- Circumferential cutting
- With cross-cut toothing
- in accordance with DIN 850



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 90-120	● 60-80					● 100-120	● 80-100										
	Cutting speed Vc m/min.										Please adjust these guidelines according to clamping operation and machine set-up.								

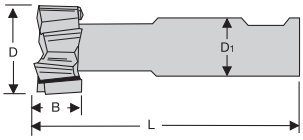


D h11 mm	B mm	L mm	D1 mm	Z	● Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
10.5	2	50	6.0	6	0.036	**292004** 1052	225,–
10.5	3	50	6.0	6	0.036	292004 1053	245,–
13.5	2	56	10.0	8	0.036	292004 1352	305,–
13.5	3	56	10.0	8	0.036	292004 1353	325,–
13.5	4	56	10.0	8	0.036	292004 1354	340,–
16.5	3	56	10.0	10	0.036	292004 1653	350,–
16.5	4	56	10.0	10	0.036	292004 1654	370,–
19.5	3	63	10.0	10	0.039	292004 1953	355,–
19.5	4	63	10.0	10	0.039	292004 1954	380,–
22.5	4	63	10.0	10	0.039	292004 2254	445,–
25.5	5	63	10.0	10	0.039	292004 2555	509,–
28.5	5	63	10.0	10	0.041	292004 2855	579,–
32.5	5	71	12.0	10	0.041	292004 3255	679,–
38.5	10	71	12.0	10	0.041	292004 3851	749,–
45.5	10	71	12.0	10	0.041	292004 4551	809,–

SARA® T-slot milling cutter

VHM | DIN 851 | Typ N | NF | d11 | h6 | DIN 6535 HB | Z 6 | AlCrN | Vc/fz | 744

- For milling T-slots in accordance with DIN 650
- Circumferential cutting
- With cross-cut toothing



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 90-120	● 60-80					● 100-120	● 80-100										
		Cutting speed Vc m/min.																	
		Please adjust these guidelines according to clamping operation and machine set-up.																	

Type N



D h11 mm	B mm	L mm	D1 mm	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
12.5	6	57	5	0.033	**292005** 1256	365,–
16	8	62	7	0.034	292005 1680	460,–
18	8	70	8	0.034	292005 1880	470,–
21	9	74	10	0.034	292005 2190	539,–
25	11	82	12	0.034	292005 2511	625,–
28	12	85	13	0.35	292005 2812	689,–
32	14	90	15	0.045	292005 3214	809,–

2152

Type NF



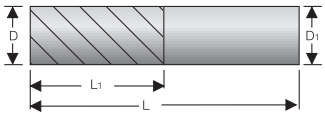
D h11 mm	B mm	L mm	D1 mm	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
12.5	6	57	5	0.033	**292006** 1256	400,–
16	8	62	7	0.034	292006 1608	509,–
18	8	70	8	0.034	292006 1808	519,–
21	9	74	10	0.034	292006 2109	595,–
25	11	82	12	0.034	292006 2511	689,–
28	12	85	13	0.035	292006 2812	759,–
32	14	90	15	0.045	292006 3214	889,–

2152

SARA® Engraving cutter

VHM | Werks-norm | Typ N | 60° | h11 | DIN 6535 HA | Z 1

- 1 cutting edge, centre cutting
- For engraving plastics and non-ferrous metals
- Lettering width 0.1 mm



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		○ 40-60	○ 25-45	○ 15-35	○ 20-40	○ 20-40		○ 35-55					● 120-140	● 85-105	○ 160-180				
		Cutting speed Vc m/min.																	
		Please adjust these guidelines according to clamping operation and machine set-up.																	



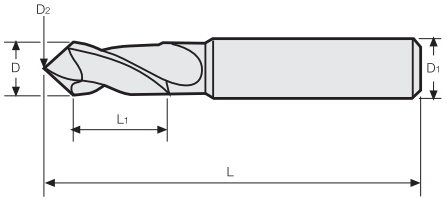
D mm	D1 mm	L mm	L1 mm	Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
3.0	3.0	40	15	0.01	**251545** 0030	35,50
4.0	4.0	40	15	0.02	251545 0040	37,80
6.0	6.0	40	15	0.03	251545 0060	41,–

2162

SARA® MULTI-V multifunction tool

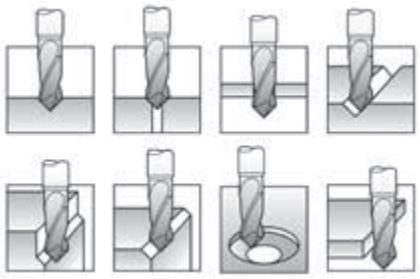
VHM | Typ N | 60° | 90° | 120° | 30° | Z 2 | TiAlN | Vc/fz | 767

- Reinforced straight shank
- **Cutting material: K15F solid carbide, TiAlN-coated**
- Milling, drilling and countersinking with a single tool
- Especially suitable for use on CNC machining centres
- Up to eight machining operations without tool change



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 40-75	● 35-40	● 30-35	○ 30-35	○ 30-35		● 35-40	● 30-35	○ 25-30	○ 10-20		● 100-150	○ 50-120	○ 60-80				
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.



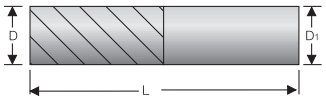


D mm	L mm	L1 mm	D1 mm	D2 mm	● Feed fz steel < 1000 N/mm² mm/tooth	● Feed fz steel < 1000 N/mm² mm/tooth	60° art.no.	€	90° art.no.	€	120° art.no.	€
0.5	39	1.0	3.0	0.05	0.002	0.004			**251556** 0050	43,–		
0.6	39	1.2	3.0	0.06	0.002	0.004			251556 0060	43,–		
0.7	39	1.4	3.0	0.07	0.002	0.004			251556 0070	43,–		
0.8	39	1.6	3.0	0.08	0.002	0.004			251556 0080	43,–		
0.9	39	1.8	3.0	0.09	0.002	0.004			251556 0090	43,–		
1.0	39	2.0	3.0	0.10	0.003	0.006	**251548** 0100	52,50	251556 0100	43,–	**251542** 0100	43,–
1.2	39	2.4	3.0	0.12	0.003	0.006			251556 0120	43,–		
1.4	39	2.8	3.0	0.14	0.003	0.006			251556 0140	43,–		
1.5	39	3.0	3.0	0.15	0.003	0.006	251548 0150	52,50	251556 0150	43,–	251542 0150	43,–
1.8	39	3.6	3.0	0.18	0.003	0.006			251556 0180	43,–		
2.0	39	4.0	3.0	0.20	0.004	0.008	251548 0200	52,50	251556 0200	43,–	251542 0200	43,–
2.5	39	5.0	3.0	0.25	0.004	0.008	251548 0250	52,50	251556 0250	43,–	251542 0250	43,–
3.0	50	6.0	4.0	0.30	0.004	0.008	251548 0300	66,–	251556 0300	53,–	251542 0300	54,–
4.0	50	8.0	5.0	0.40	0.004	0.008	251548 0400	69,–	251556 0400	55,–	251542 0400	56,–
5.0	50	10.0	6.0	0.50	0.006	0.013	251548 0500	72,50	251556 0500	58,–	251542 0500	59,–
6.0	60	12.0	8.0	0.60	0.006	0.013	251548 0600	89,–	251556 0600	71,–		
8.0	70	16.0	10.0	0.80	0.012	0.025	251548 0800	123,–	251556 0800	98,50	251542 0800	100,–
10.0	70	18.0	12.0	1.00	0.012	0.025	251548 1000	159,–	251556 1000	127,–	251542 1000	129,–
12.0	70	20.0	12.0	1.20	0.017	0.040	251548 1200	156,–	251556 1200	125,–	251542 1200	127,–
16.0	80	26.0	16.0	1.60	0.020	0.050	251548 1600	225,–	251556 1600	180,–	251542 1600	183,–
20.0	100	32.0	20.0	2.00	0.027	0.062	251548 2000	385,–	251556 2000	310,–	251542 2000	315,–
							2108		2108		2108	

ATORN® Deburring tool

VHM | Typ N | 60° | 90° | 120° | DIN 6535 HA | Z 3 | Z 4 | Z 5 | Z 6 | TiAlN

- **Ideal for chamfering and deburring workpiece edges, and for contour milling**



material	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
● very well suited ○ well suited	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 160-180	● 120-140	● 100-120	● 80-100	○ 60-80	○ 60-80	● 140-160	● 140-160	○ 80-100	○ 80-100	○ 60-80							
Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		



D mm	L mm	D1 mm	Z	60° art.no.	60° €	90° art.no.	90° €	120° art.no.	120° €
1.0	38	3	3	**251550** 0010	26,10	**251551** 0010	26,10	**251552** 0010	26,10
2.0	38	3	3	251550 0020	26,10	251551 0020	26,10	251552 0020	26,10
3.0	38	3	3	251550 0030	26,10	251551 0030	26,10	251552 0030	26,10
4.0	51	4	4	251550 0040	27,70	251551 0040	27,70	251552 0040	27,70
6.0	64	6	4	251550 0060	34,20	251551 0060	34,20	251552 0060	34,20
8.0	64	8	5	251550 0080	42,60	251551 0080	42,60	251552 0080	42,60
10.0	70	10	6	251550 0100	50,50	251551 0100	50,50	251552 0100	50,50
12.0	78	12	6	251550 0120	74,–	251551 0120	74,–	251552 0120	74,–
16.0	89	16	6	251550 0160	126,–	251551 0160	126,–	251552 0160	126,–
				2119		2119		2119	

90° deburring tool set

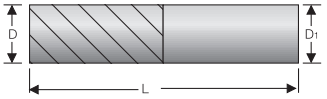
Contents	art.no.	€
Ø 6, 8, 10, 12 mm (1 of each)	**251551** 0001	195,–
	2119	



SARA® Deburring tool

VHM | Typ N | 60° | 90° | 120° | DIN 6535 HA | DIN 6535 HB | Z 4 | TiAlN

- **4 cutting edges**
- Ideal for chamfering and deburring workpiece edges, and for contour milling
- **Cutting material: superfine grain solid carbide, TiAlN-coated**



material	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
● very well suited ○ well suited	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	● 160-180	● 120-140	● 100-120	● 80-100	○ 60-80	○ 60-80	● 140-160	● 140-160	○ 80-100	○ 80-100	○ 60-80							
Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up.																		

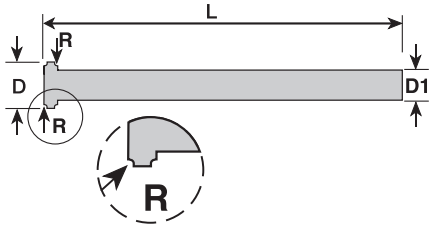


D mm	L mm	D1 mm	60° HA art.no.	60° HA €	90° HA art.no.	90° HA €	90° HB art.no.	90° HB €	120° HA art.no.	120° HA €
4	51	4	**251538** 0040	23,10	**251540** 0040	23,10			**255165** 0040	23,10
6	64	6	251538 0060	28,40	251540 0060	28,40	**251543** 0060	29,20	255165 0060	28,40
8	64	8	251538 0080	35,30	251540 0080	35,30	251543 0080	36,30	255165 0080	35,30
10	70	10	251538 0100	41,70	251540 0100	41,70	251543 0100	42,80	255165 0100	41,70
12	78	12	251538 0120	62,–	251540 0120	62,–	251543 0120	63,50	255165 0120	62,–
			2112		2112		2112		2112	

SARA® Front and rear-side quadrant milling cutter

VHM | DIN 6535 HA | Z 4 | TiAlN

- **For linear and circular front and rear-side radius milling**



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 40-65	● 40-50	● 25-35	● 30-40	● 15-20	● 15-20	● 25-35	● 25-35				● 150-230	● 80-115	● 40-60		● 20-25	● 15-20	
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		



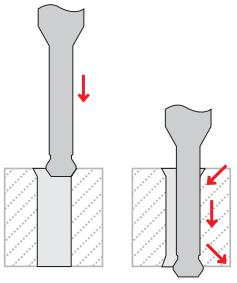
D mm	D1 mm	L mm	R mm	art.no.	€
8.0	6	100	0.2	**291320** 0002	128,50
8.0	6	100	0.3	291320 0003	128,50
8.0	6	100	0.4	291320 0004	128,50
8.0	6	100	0.5	291320 0005	128,50
10.0	6	100	0.8	291320 0008	135,–
10.0	6	100	1.0	291320 0010	135,–
10.0	6	100	1.2	291320 0012	135,–
10.0	6	100	1.5	291320 0015	135,–

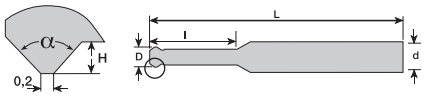
2162

ATORN® Front and rear-side deburring tool

VHM | 90° | DIN 6535 HA | Z 3 | TiAlN

- **For linear and circular front and rear-side deburring or chamfering**
- Two cutting edges
- Spiral-fluted for an easy cut





material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 60-120	● 60-90	● 50-80	● 70-100	○ 60-90	○ 60-90	● 40-80	● 40-80	○ 20-40	○ 20-40	○ 20-30	○ 100-200	○ 60-140	○ 60-100		● 50-60		
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

90°

D mm	d mm	L mm	l mm	H mm	α °	art.no.	€
1.5	3	39	3.8	0.3	90	**250005** 0015	50,50
2.0	3	39	5.0	0.4	90	250005 0020	50,50
2.5	3	39	6.3	0.5	90	250005 0025	50,50
3.0	3	39	7.5	0.6	90	250005 0030	50,50
3.5	4	51	8.8	0.7	90	250005 0035	53,50
4.0	4	51	10.0	0.8	90	250005 0040	53,50
4.5	5	51	11.3	1.0	90	250005 0045	55,–
5.0	5	51	12.5	1.1	90	250005 0050	55,–
5.5	6	51	13.8	1.2	90	250005 0055	58,–
6.0	6	51	15.0	1.5	90	250005 0060	58,–

2108



90° for large projecting lengths

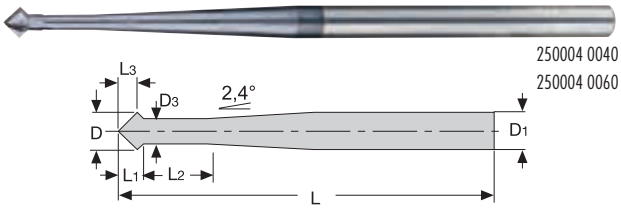
D mm	d mm	L mm	l mm	H mm	a °	art.no.	€
3.0	3	39	12.0	0.6	90	**250006** 0030	50,50
3.5	4	51	14.0	0.7	90	250006 0035	53,50
4.0	4	51	16.0	0.8	90	250006 0040	53,50
4.5	5	51	18.0	1.0	90	250006 0045	55,–
5.0	5	51	20.0	1.1	90	250006 0050	55,–
5.5	6	58	22.0	1.2	90	250006 0055	58,–
6.0	6	58	24.0	1.5	90	250006 0060	58,–
8.0	8	64	28.0	1.6	90	250006 0080	75,50
10.0	10	73	35.0	1.8	90	250006 0100	98,–
12.0	12	84	42.0	2.1	90	250006 0120	120,–

2108

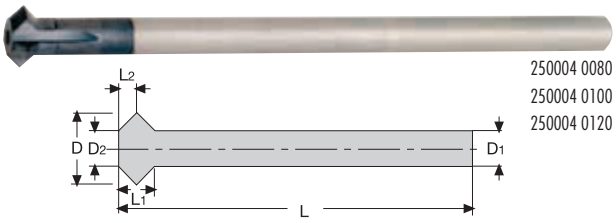
ATORN® Front and rear-side deburring tool

VHM | 90° | DIN 6535 HA | Z 4 | TiAlN

- **For linear and circular front and rear-side deburring or chamfering**



250004 0040
250004 0060



250004 0080
250004 0100
250004 0120

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 60-120	● 60-90	● 50-80	● 70-100	○ 60-90	○ 60-90	● 40-80	● 40-80	○ 20-40	○ 20-40	○ 20-30	○ 100-200	○ 60-140	○ 60-100		● 50-60		
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

D mm	D1 h6 mm	D2 mm	L mm	L1 mm	L3 mm	L2 mm	D3 mm	art.no.	€
3.9	4	-	75	2.95	1.95	10	1.9	**250004** 0040	72,20
5.8	6	-	100	3.8	1.9	15	4	250004 0060	80,50
7.8	6	6.0	100	1.8	-	0.9	-	250004 0080	104,–
9.8	6	6.0	100	3.8	-	1.9	-	250004 0100	128,–
11.8	6	6.0	100	5.8	-	2.9	-	250004 0120	154,–

2108

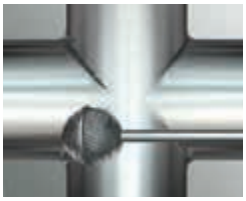


... but digital.

ATORN®
Performance demands quality

Orbitool deburring tool® for machining on the inside



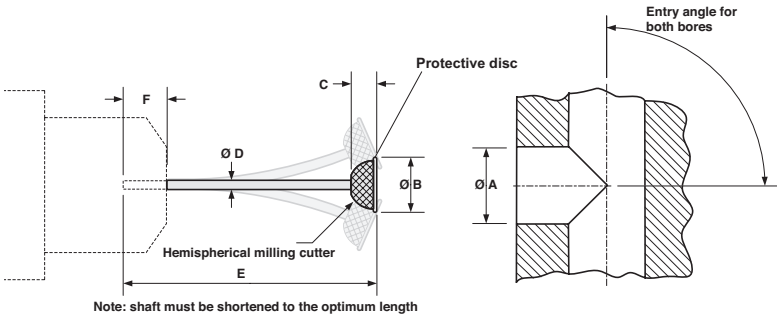


791

- **Deburring tool system for intersecting bores**
- Can be used reliably in automated applications with CNC machines
- Fully integrated into the production process **from 2.0 mm bore diameter**
- Free of burrs with no manual finishing
- With the ORBITOOL®deburring tool, the deburring process is easy to control. Material abrasion only occurs on the edges of the workpiece. The (bore) surfaces are not touched thanks to the protective disc. Intact surfaces are not scratched and workpieces are not damaged. This makes work considerably easier, especially with precision parts. Once the protective disc has passed the edges, the cutting surfaces of the deburring tool can cut away material from the edges. Deburring is carried out as the milling cutter moves in a spiral through the axial bore to the centre of the radial bore. In the case of manual deburring with an electric grinding machine, the burrs are removed by forward and backward movements.

Advantages:

- Consistent results – consistent quality
- Increased throughput capacity/shorter cycle times
- Reduced deburring costs
- No additional deburring work required
- No backlogs in the machining process
- Ideal for CNC machining

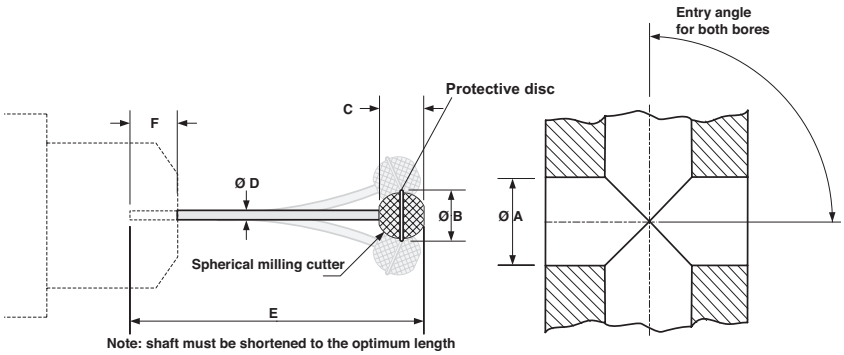




Hemisphere

Dimensions	Approach angle 90°/ A min. mm	Approach angle 60°/ A min. mm	Approach angle 45°/ A min. mm	B mm	C mm	D mm	E mm	F min. mm	F max. mm	art.no.	€
1.90	2.0	a.A.	a.A.	-	2.1	0.78	60	3.8	9.2	**250010** 0001	230,–
2.38	3.2	4.5	6.2	2.7	2.1	0.78	60	3.8	9.2	250010 0002	194,–
3.18	4.4	6.0	8.2	3.6	2.4	1.14	100	3.8	9.2	250010 0003	189,–
3.97	5.5	7.5	10.2	4.4	2.8	1.55	100	3.8	14.2	250010 0004	215,–
4.77	6.6	9.0	12.3	5.2	3.2	1.55	100	3.8	14.2	250010 0005	220,–
6.35	8.8	12.0	16.4	6.9	3.9	2.39	150	3.8	14.2	250010 0006	215,–
9.58	13.2	18.0	22.5	10.3	5.5	2.39	150	3.8	18.3	250010 0007	245,–

2147





Ball

Dimensions	Approach angle 90°/ A min. mm	Approach angle 60°/ A min. mm	Approach angle 45°/ A min. mm	B mm	C mm	D mm	E mm	F min. mm	F max. mm	art.no.	€
1.9	2.0	a.A.	a.A.	-	3.2	0.78	60	3.8	9.2	**250011** 0001	320,–
2.38	3.2	4.5	6.2	2.7	3.2	0.78	60	3.8	9.2	250011 0002	285,–
3.18	4.4	6.0	8.2	3.6	3.9	1.14	100	3.8	9.2	250011 0003	285,–
3.97	5.5	7.5	10.2	4.4	4.6	1.55	100	3.8	14.2	250011 0004	340,–
4.77	6.6	9.0	12.3	5.2	5.4	1.55	100	3.8	14.2	250011 0005	340,–
6.35	8.8	12.0	16.4	6.9	6.8	2.39	150	3.8	14.2	250011 0006	330,–
9.58	13.2	18.0	22.5	10.3	10.1	2.39	150	3.8	18.3	250011 0007	405,–

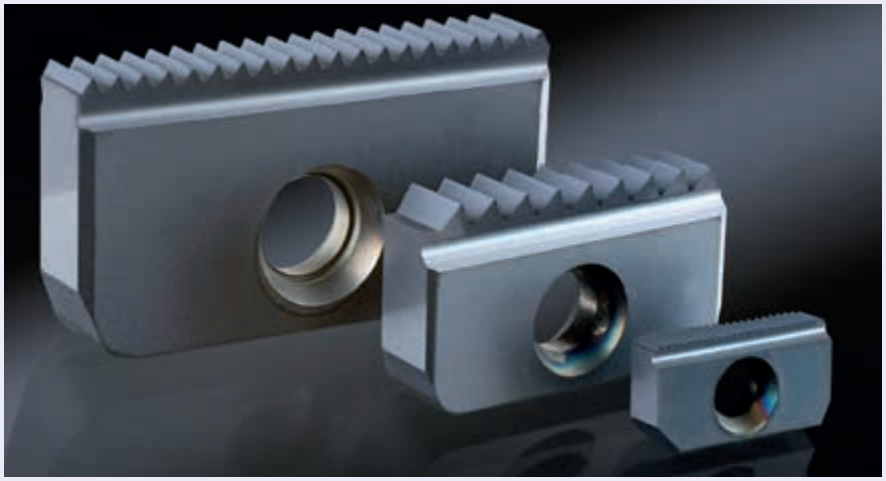
2147

Thread milling / circular cutting

INFO

Thread milling cutters are specially designed for use on CNC milling machines and machining centres which have 3-axis control with helical interpolation.





Advantages and application

- Male and female threads
- For through-hole and blind bore threads
- Synchronous and up-cut milling and change of the axial feed direction
- Enables production of straight and conical threads and of all standard thread variants
- Thread production with varying tolerances
- Optimal clamping
- Short chips
- Low cutting pressure

HM quality AMT7

TiAlN-coated ultra-fine grain quality for universal applications with all materials at medium to high cutting speeds

Overview of solid carbide thread milling cutters

							
Brand	ATORN	ATORN SARA	ATORN SARA	ATORN SARA	ATORN SARA	ATORN	
Thread	M MF UN	M MF	G55 BSF BSP	M	M	M	M G55
Thread depth	2 X D	2.2 x D	1.5 x D	2 x D	2 x D	2 x D	2,2 x D
Size range	3 - 16	4 - 27	⅛" - 1"	1 - 20	2 - 16	6 - 23	6 - 24
Coating	-	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	-
Application	ALU				Hard machining	DMT	
Item number	258050 bis 256053	258002.... 258027....	258003....	258010.... 258025....	258011....	258100....	249300.... 249301....
Page	592	593	594	595	595	596	599
Material groups		Usage recommendations					
Steel < 700 N/mm²		●	●	●		●	●
Steel < 1000 N/mm²		●	●	●		●	●
Steel < 1400 N/mm²		●	●	●		●	●
Stainless steel ferritic/martensitic		●	●	●		●	●
Stainless steel austenitic		●	●	●		●	●
Stainless steel duplex		○	○	○		●	
Cast iron GG/GTS		●	●	●		●	●
Cast iron GGG		○	○	○		●	●
Titanium alloys		●	●	●	●		
Superalloys Fe/NiCo base < 30 HRc		○	○	○	●		
Superalloys Fe/NiCo base ≥ 30 HRc		○	○	○	●		
Aluminium < 8 % Si	●	●	●	●		●	●
Aluminium ≥ 8 % Si	●	●	●	●		●	●
Copper Cu-alloy	○	○	○	○		●	
Graphite GRP/CFP/thermoset	○	○	○	○		●	
Hardened steel < 55 HRc					●		●
Hardened steel < 60 HRc					●		
Hardened steel ≥ 60 HRc					●		

Modular thread/circular milling cutters

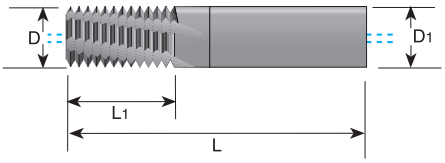
			
Brand	ATORN	ATORN	ATORN
Number of cutting edges	1 - 2	3 - 6	1 - 6
Coolant bore	IC	IC	IC
ISO milling insert type	ISO UN BSW NPT	ISO BSE	ISO UN BSW, BSF NPT TR
Item number	25900.	26300.	26600. ....
Page	600	604	607
Material groups	Usage recommendations		
Steel < 700 N/mm²	●	●	●
Steel < 1000 N/mm²	●	●	●
Steel < 1400 N/mm²	●	●	●
Stainless steel ferritic/martensitic	●	●	●
Stainless steel austenitic	●	○	●
Stainless steel duplex			
Cast iron GG/GTS	●	●	●
Cast iron GGG	●	●	●
Titanium alloys		○	
Superalloys Fe/NiCo base < 30 HRc		○	
Superalloys Fe/NiCo base ≥ 30 HRc			
Aluminium < 8 % Si	●	○	●
Aluminium ≥ 8 % Si	●	○	●
Copper Cu-alloy	●	○	●
Graphite GRP/CFP/thermoset	○		○
Hardened steel < 55 HRc		○	
Hardened steel < 60 HRc			
Hardened steel ≥ 60 HRc			

ATORN® Thread milling cutter for high-speed machining

VHM | Z 3 | Z 4 | Z 5 | Vc/fz | 778

- Low adhesion to the cutting edges
- **Thread length 2 x D**
- Optimised carbide metal types for aluminium, cast iron and stainless steels
- With internal cooling
- Extremely smooth cutting edge
- For thread with highest surface quality

Especially for aluminium





ISO with internal coolant supply

- * Without internal cooling

Designation	Pitch mm	Standard thread	Fine thread	D mm	D1 mm	L1 mm	L mm	Z	Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
AMT03024C6 0.5 ISO *	0.5	M3	M4	2.4	3	6.8	39	3	0.04	**258050** 0010	181,–
AMT06043C10 0.5 ISO	0.5		M5	4.3	6	10.8	58	3	0.04	258050 0020	181,–
AMT06031C8 0.7 ISO	0.7	M4		3.1	6	8.8	58	3	0.04	258050 0030	181,–
AMT0605C13 0.75 ISO	0.75		M6	5.0	6	13.1	58	3	0.06	258050 0040	181,–
AMT0604C10 0.8 ISO	0.8	M5		4.0	6	10.8	58	3	0.06	258050 0050	181,–
AMT06048C13 1.0 ISO	1.0	M6		4.8	6	13.5	58	3	0.06	258050 0060	181,–
AMT0808D21 1.0 ISO	1.0		M10	8.0	8	21.5	64	4	0.06	258050 0070	230,–
AMT08064C16 1.25 ISO	1.25	M8	M10	6.4	8	16.9	64	3	0.06	258050 0080	230,–
AMT0808C21 1.5 ISO	1.5	M10		8.0	8	21.8	64	3	0.06	258050 0090	230,–
AMT12112D29 1.5 ISO	1.5		M14	11.2	12	29.3	84	4	0.13	258050 0100	335,–
AMT10095D25 1.75 ISO	1.75	M12		9.5	10	25.4	73	4	0.13	258050 0110	275,–
AMT14126D35 2.0 ISO	2.0	M16	M17	12.6	14	35	83	4	0.13	258050 0120	435,–

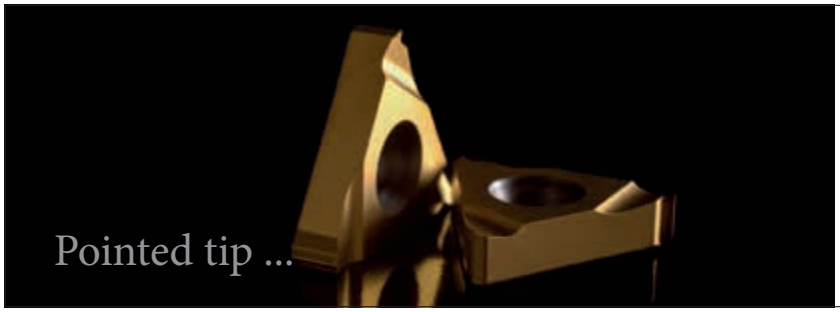
2115



UN with internal coolant supply

Designation	Pitch TPI	D mm	D1 mm	L1 mm	L mm	Z	Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
AMT06032C9 32UN	32	3.2	6	9.1	58	3	0.04	**258052** 0010	181,–
AMT06052C14 28UN	28	5.2	6	14.0	58	3	0.06	258052 0020	181,–
AMT0808D20 24UN	24	8.0	8	20.6	64	4	0.06	258052 0030	230,–
AMT06048C14 20UN	20	4.8	6	14.6	58	3	0.06	258052 0040	181,–
AMT10092C23 20UN	20	9.2	10	23.5	73	3	0.13	258052 0050	275,–
AMT0606C17 18UN	18	6.0	6	17.6	58	3	0.06	258052 0060	181,–
AMT1212D30 18UN	18	12.0	12	30.3	84	4	0.13	258052 0070	335,–
AMT08074C21 16UN	16	7.4	8	21.4	64	3	0.06	258052 0080	230,–
AMT1616E38 16UN	16	16.0	16	38.9	105	5	0.13	258052 0090	480,–

2115



... with reversible option.

ATORN®
Performance demands quality

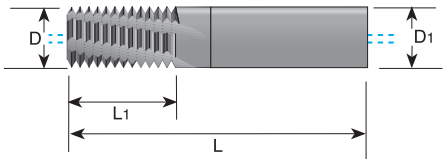
ATORN® Thread end milling cutter

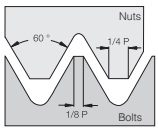
VHM | Z 3 | Z 4 | Z 5 | Z 6 | Vc/fz 777



- The thread is machined in just one operation
- Chip flutes permit an easy cut
- Short machine times thanks to multiple (3-6) cutting edges
- Operating range from dimension D = 2.2 mm
- Allows thread cutting in blind bores up to the shoulder
- One tool for right-hand and left-hand threads
- One tool for material groups P, M, K, S and H
- Excellent surface finish quality
- Long service life due to special multi-layer coating
- Low cutting pressure makes it possible to machine thin-walled workpieces
- **Cutting material: AMT7 solid carbide, multi-layer TiAlN coating for universal applications**
- **Through-hole version (internal cooling outlet in flute) available on request!**

Solid carbide thread end milling cutter for the following thread types available on request:
-UN
-BSPT
-NPT
-NPS
-NPTF
-NPSF
-external threads, metr. full profile
-external threads, UN





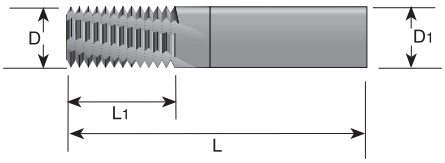


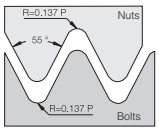
Metric, full profile, ISO 60°, internal, with internal coolant supply

Designation	Pitch mm	Standard thread	Fine thread	D mm	D1 mm	L1 mm	L mm	Z	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
MTB06038C10 0.5 ISO	0.5	-	Ø ≥ 5	3.8	6	10.3	58	3	0.03	**258002** 0002	189,–
MTB06031C7 0.7 ISO	0.7	M 4	Ø ≥ 5	3.1	6	7.4	58	3	0.03	258002 0003	189,–
MTB06045C10 0.75 ISO	0.75	-	Ø ≥ 6	4.5	6	10.1	58	3	0.03	258002 0004	189,–
MTB06038C9 0.8 ISO	0.8	M 5	Ø ≥ 6	3.8	6	9.2	58	3	0.03	258002 0005	189,–
MTB06046C10 1.0 ISO	1.0	M 6	Ø ≥ 7	4.6	6	10.5	58	3	0.03	258002 0010	189,–
MTB06046C14 1.0 ISO	1.0	M 6	Ø ≥ 7	4.6	6	14.5	58	3	0.03	258002 0015	225,–
MTB0606C12 1.0 ISO	1.0	-	Ø ≥ 9	6.0	6	12.5	58	3	0.03	258002 0020	189,–
MTB0808D16 1.0 ISO	1.0	-	Ø ≥ 10	8.0	8	16.5	64	4	0.04	258002 0030	240,–
MTB0606C14 1.25 ISO	1.25	M 8	Ø ≥ 10	6.0	6	14.4	58	3	0.03	258002 0040	189,–
MTB0606C19 1.25 ISO	1.25	M 8	Ø ≥ 10	6.0	6	19.4	58	3	0.03	258002 0045	225,–
MTB08078C17 1.5 ISO	1.5	M10	Ø ≥ 12	7.8	8	17.0	64	3	0.04	258002 0050	240,–
MTB08078C24 1.5 ISO	1.5	M10	Ø ≥ 12	7.8	8	24.8	76	3	0.04	258002 0055	290,–
MTB1010D21 1.5 ISO	1.5	-	Ø ≥ 14	10.0	10	21.8	73	4	0.05	258002 0060	290,–
MTB1212D26 1.5 ISO	1.5	-	Ø ≥ 16	12.0	12	26.3	84	4	0.05	258002 0065	350,–
MTB1616F33 1.5 ISO	1.5	-	Ø ≥ 20	16.0	16	33.8	105	6	0.07	258002 0070	499,–
MTB1009C20 1.75 ISO	1.75	M12	Ø ≥ 12	9.0	10	20.1	73	3	0.05	258002 0080	290,–
MTB1009C28 1.75 ISO	1.75	M12	Ø ≥ 12	9.0	10	28.9	73	3	0.05	258002 0085	345,–
MTB1010C27 2.0 ISO	2.0	M14	Ø ≥ 15	10.0	10	27.0	73	3	0.05	258002 0090	290,–
MTB12118D27 2.0 ISO	2.0	M16	Ø ≥ 17	11.8	12	27.0	84	4	0.05	258002 0100	350,–
MTB12118D39 2.0 ISO	2.0	M16	Ø ≥ 17	11.8	12	39.0	105	4	0.05	258002 0105	415,–
MTB2020F41 2.0 ISO	2.0	-	Ø ≥ 26	20.0	20	41.0	105	6	0.08	258002 0110	629,–
MTB1615E33 2.5 ISO	2.5	M20	Ø ≥ 22	15.0	16	33.8	105	5	0.07	258002 0120	499,–
MTB1615E48 2.5 ISO	2.5	M20	Ø ≥ 22	15.0	16	48.8	105	5	0.07	258002 0125	609,–
MTB2018D40 3.0 ISO	3.0	M24	Ø ≥ 25	18.0	20	40.5	105	4	0.08	258002 0130	629,–
MTB2018D58 3.0 ISO	3.0	M24	Ø ≥ 25	18.0	20	58.5	120	4	0.08	258002 0135	759,–
MTB2020D43 3.0 ISO	3.0	M27	Ø ≥ 27	20.0	20	43.5	105	4	0.08	258002 0140	629,–

2115

Continued on next page >>>





Ww 55° internal = external

Designation	Pitch TPI	D mm	D1 mm	L1 mm	L mm	Z	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
MT0606C9 28W	28	6.0	6	9.5	58	3	0.03	**258003** 0010	190,–
MT0808C14 19W	19	8.0	8	14.0	64	3	0.04	258003 0020	245,–
MT1212D19 14W	14	12.0	12	19.0	84	4	0.05	258003 0030	350,–
MT1212D26 14W	14	12.0	12	26.3	84	4	0.05	258003 0035	420,–
MT1212C24 11W	11	12.0	12	24.2	84	3	0.05	258003 0040	350,–
MT1616D38 11W	11	16.0	16	38.1	105	4	0.07	258003 0050	509,–
MT2020E47 11W	11	20.0	20	47.3	105	5	0.08	258003 0060	629,–

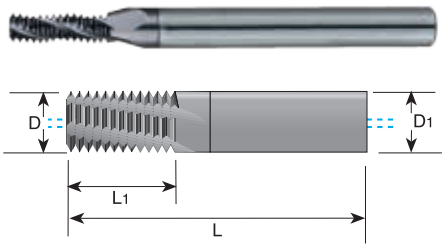
2115

SARA® Thread end milling cutter

VHM | Z 3 | Z 4 | Vc/fz | 777



- the thread is machined in only one process step
- chip flutes permit soft cutting
- short machining times due to multiple (3-6) cutting edges
- operating range from dimension D = 2.2mm
- thread cutting in blind holes possible up to the shoulder
- one tool for right-handed and left-handed threads
- one tool for the material groups P, M, K, S, H
- excellent surface quality
- long service life thanks to special multi-layer coating
- low cutting pressure permits the machining of thin-walled workpieces



Metric, ISO full profile, internal

Designation	Pitch mm	Standard thread	D mm	D1 mm	L1 mm	L mm	Z	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
VHTM 3 M040 064 06 40	0.70	M4	3.10	6	9.0	64	3	0.03	**258027** 0010	99,–
VHTM 3 M050 064 06 40	0.80	M5	4.00	6	11.0	64	3	0.03	258027 0015	99,–
VHTM 3 M060 064 06 40	1.00	M6	4.50	6	13.5	64	3	0.03	258027 0020	99,–
VHTM 3 M080 064 06 40	1.25	M8	6.00	6	18.0	64	3	0.03	258027 0025	99,–
VHTM 3 M100 064 08 40	1.50	M10	7.50	8	22.0	64	3	0.04	258027 0030	136,–
VHTM 4 M120 070 10 40	1.75	M12	9.50	10	26.0	70	4	0.05	258027 0035	175,–
VHTM 4 M140 070 10 40	2.00	M14	10.0	10	30.0	70	4	0.05	258027 0040	175,–
VHTM 4 M160 083 12 40	2.00	M16	12.00	12	34.0	83	4	0.05	258027 0045	215,–
VHTM 4 M200 100 16 40	2.50	M20	16.00	16	42.0	100	4	0.07	258027 0050	275,–

2166

Metric, full profile ISO, internal, with internal coolant supply

Designation	Pitch mm	Standard thread	D mm	D1 mm	L1 mm	L mm	Z	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
VHTMI 3 M040 064 06 40	0.70	M4	3.10	6	9.0	64	3	0.03	**258028** 0010	114,–
VHTMI 3 M050 064 06 40	0.80	M5	4.00	6	11.0	64	3	0.03	258028 0015	114,–
VHTMI 3 M060 064 06 40	1.00	M6	4.50	6	13.5	64	3	0.03	258028 0020	114,–
VHTMI 3 M080 064 06 40	1.25	M8	6.00	6	18.0	64	3	0.03	258028 0025	114,–
VHTMI 3 M100 064 08 40	1.50	M10	7.50	8	22.0	64	4	0.04	258028 0030	151,–
VHTMI 4 M120 070 10 40	1.75	M12	9.50	10	26.0	70	4	0.05	258028 0035	195,–
VHTMI 4 M140 070 10 40	2.00	M14	10.0	10	30.0	70	4	0.05	258028 0040	195,–
VHTMI 4 M160 083 12 40	2.00	M16	12.00	12	34.0	83	4	0.05	258028 0045	235,–
VHTMI 4 M200 100 16 40	2.50	M20	16.00	16	42.0	100	4	0.07	258028 0050	295,–

2166

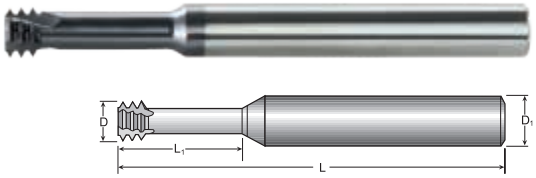
ATORN® Thread end milling cutter for small bores

VHM | Z 3 | Z 4 | Z 5 | HSC | Vc/fz | 777

- **Especially for small bores, with straight shank**
- Thread cutting from M1 x 0.25 mm, **thread depth up to 2 x D1**
- **Version for thread depths up to 3 x D1 available on request**
- Suitable for HSC, extremely low cutting pressure, excellent surface finish quality
- Allows thread cutting in blind bores up to the shoulder
- Long service life due to special multi-layer coating
- One tool for right-hand and left-hand threads
- **Cutting material: AMT7 solid carbide, multi-layer TiAlN coating for universal applications**
- **MTSH version for hard machining up to 62 HRc available on request!**







Metric, full profile, ISO 60°, internal

Designation	Pitch mm	Standard thread	D mm	D1 mm	L1 mm	L mm	Z	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
MTS03007C2 0.25 ISO	0.25	M1	0.72	3	2.5	39	3	0.04	**258010** 0010	128,–
MTS06016C4 0.4 ISO	0.4	M2	1.53	6	4.5	58	3	0.04	258010 0020	128,–
MTS06017C5 0.45 ISO	0.45	M2.2	1.65	6	5.0	58	3	0.04	258010 0022	128,–
MTS0602C5 0.45 ISO	0.45	M2.5	1.95	6	5.5	58	3	0.04	258010 0025	128,–
MTS06024C6 0.5 ISO	0.5	M3	2.37	6	6.5	58	3	0.04	258010 0030	128,–
MTS06028C7 0.6 ISO	0.6	M3.5	2.75	6	7.5	58	3	0.05	258010 0035	128,–
MTS06031C9 0.7 ISO	0.7	M4	3.10	6	9.0	58	3	0.05	258010 0040	128,–
MTS06038C12 0.8 ISO	0.8	M5	3.80	6	12.5	58	3	0.05	258010 0050	128,–
MTS06047C14 1.0 ISO	1.0	M6	4.65	6	14.0	58	3	0.06	258010 0060	128,–
MTS0606C18 1.25 ISO	1.25	M8	6.00	6	18.0	58	3	0.07	258010 0080	128,–
MTS08078C23 1.5 ISO	1.5	M10	7.80	8	23.0	64	3	0.07	258010 0100	170,–
MTS01009C26 1.75 ISO	1.75	M12	9.00	10	26.0	73	3	0.07	258010 0120	196,–
MTS12118D35 2.0 ISO	2.0	M16	11.80	12	35.0	84	4	0.07	258010 0160	280,–
MTS1615E43 2.5 ISO	2.5	M20	15.00	16	43.0	105	5	0.07	258010 0200	355,–

2115

Code M04, anti-clockwise

Metric, full profile, ISO 60°, internal, for hard machining up to 62 HRc, anticlockwise rotation (code M04)

Designation	Pitch mm	Standard thread	D mm	D1 mm	L1 mm	L mm	Z mm	Feed fz hardened steel ≥ 60 HRc mm/tooth	art.no.	€
MTSH06016C4 0.4 ISO	0.4	M2	1.53	6	4.5	58	3	0.02	**258011** 0020	137,–
MTSH06017C5 0.45 ISO	0.45	M2.2	1.65	6	5.0	58	3	0.02	258011 0022	137,–
MTSH0602C5 0.45 ISO	0.45	M2.5	1.95	6	5.5	58	3	0.02	258011 0025	137,–
MTSH06024C6 0.5 ISO	0.5	M3	2.37	6	6.5	58	3	0.02	258011 0030	137,–
MTSH06028C7 0.6 ISO	0.6	M3.5	2.75	6	7.5	58	3	0.03	258011 0035	137,–
MTSH06031C9 0.7 ISO	0.7	M4	3.10	6	9.0	58	3	0.03	258011 0040	137,–
MTSH06038C12 0.8 ISO	0.8	M5	3.80	6	12.5	58	3	0.03	258011 0050	137,–
MTSH06047C14 1.0 ISO	1.0	M6	4.65	6	14.0	58	3	0.04	258011 0060	137,–
MTSH0606C18 1.25 ISO	1.25	M8	6.00	6	18.0	58	3	0.04	258011 0080	137,–
MTSH08078C23 1.5 ISO	1.5	M10	7.80	8	23.0	64	3	0.05	258011 0100	180,–
MTSH1009C26 1.75 ISO	1.75	M12	9.00	10	26.0	73	3	0.06	258011 0120	245,–
MTSH12118D35 2.0 ISO	2.0	M16	11.80	12	35.0	84	4	0.07	258011 0160	295,–

2115

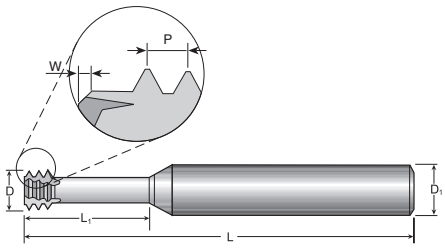
ATORN® DMT drilling and thread milling cutter

VHM | Z 3 | Z 4 | Vc/fz | 777

Drilling
Thread milling
Chamfering

- **High-performance tool with IC for manufacturing female threads**
- Using a circular motion, you cut the tapping hole, mill the thread and countersink in a single operation
- Eliminates the need to pre-drill the tapping hole
- Fast turnaround reduces your machine times
- Suitable for through-holes and blind bores
- **No time wasted on tool changes as only one tool is used for drilling, thread milling and chamfering**
- Full profile tool
- **Anticlockwise spindle rotation, code M04: Left-hand thread = reverse rotation Right-hand thread = synchronous rotation**
- Can be used with a large variety of materials
- **Thread depth 2 x D**
- **Cutting material: AMT7 solid carbide, multi-layer TiAlN coating for universal applications**





Metric, full profile, ISO 60°, internal

Designation	Pitch mm	Standard thread	D mm	D1 mm	L1 mm	L mm	W mm	Z	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
DMT08047C14 1.0 ISO	1.0	M 6 - M 9	4.7	8	14	64	0.4	3	0.02	**258100** 0060	210,–
DMT08061D18 1.25 ISO	1.25	M 8 - M 12	6.1	8	18	64	0.5	4	0.02	258100 0080	210,–
DMT08078D23 1.5 ISO	1.5	M 10 - M 15	7.8	8	23	64	0.6	4	0.02	258100 0100	210,–
DMT1009D26 1.75 ISO	1.75	M 12	9.0	10	26	73	0.6	4	0.03	258100 0120	285,–
DMT12118D35 2.0 ISO	2.0	M 16 - M 23	11.8	12	35	84	0.6	4	0.04	258100 0160	345,–

2115

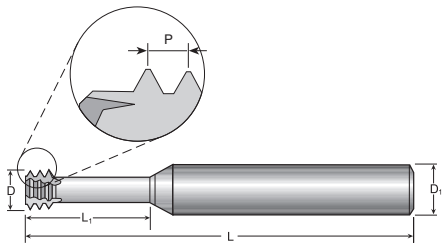
SARA® Thread end milling cutter

VHM | Z 3 | Z 4 | Vc/fz | 777

NEW · NUOVO · NEU · NY · NOUVEAU · NUEVO

- Thread cutting from M1.6 x 0.35mm to M36 x 4
- **Thread depth 3 to 5 x D**
- HSC-suitable, extremely low cutting pressure, excellent surface quality
- Thread cutting in blind holes possible up to the shoulder
- long service life thanks to special multi-layer coating
- one tool for right-handed and left-handed threads





Metric, full profile, ISO 60°, internal

Designation	Pitch mm	Standard thread	D mm	D1 mm	L1 mm	L mm	Z	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
VHTMM 3 M016 064 06 40	0.35	M1.6	1.20	6	4.8	64	3	0.04	**258025** 0010	71,50
VHTMM 3 M016 064 06 40 L080	0.35	M1.6	1.20	6	8.0	64	3	0.04	258025 0015	75,50
VHTMM 3 M018 064 06 40	0.35	M1.8	1.40	6	5.4	64	3	0.04	258025 0020	71,50
VHTMM 3 M018 064 06 40 L090	0.35	M1.8	1.40	6	9.0	64	3	0.04	258025 0025	75,50
VHTMM 3 M020 064 06 40	0.40	M2.0	1.50	6	6.0	64	3	0.04	258025 0030	71,50
VHTMM 3 M020 064 06 40 L100	0.40	M2.0	1.50	6	10.0	64	3	0.04	258025 0035	75,50
VHTMM 3 M025 064 06 40	0.45	M2.5	1.90	6	7.5	64	3	0.04	258025 0040	71,50
VHTMM 3 M025 064 06 40 L125	0.45	M2.5	1.90	6	12.5	64	3	0.04	258025 0045	75,50
VHTMM 3 M030 064 06 40	0.50	M3	2.40	6	9.5	64	3	0.04	258025 0050	71,50
VHTMM 3 M030 064 06 40 L150	0.50	M3	2.40	6	15.0	64	3	0.04	258025 0055	75,50
VHTMM 3 M040 064 06 40	0.70	M4	3.10	6	12.5	64	3	0.05	258025 0060	71,50
VHTMM 3 M040 064 06 40 L200	0.70	M4	3.10	6	20.0	64	3	0.05	258025 0065	75,50

2166

Designation	Pitch mm	Standard thread	D mm	D1 mm	L1 mm	L mm	Z	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
VHTMM 3 M050 064 06 40	0.80	M5	4.00	6	16.0	64	3	0.05	258025 0070	71,50
VHTMM 3 M050 064 06 40 L250	0.80	M5	4.00	6	25.00	64	3	0.05	258025 0075	75,50
VHTMM 3 M060 064 06 40	1.00	M6	4.50	6	20.0	64	3	0.06	258025 0080	71,50
VHTMM 3 M060 070 06 40 L300	1.00	M6	4.50	6	30.0	70	3	0.06	258025 0085	78,–
VHTMM 4 M080 064 06 40	1.25	M8	6.00	6	24.0	64	4	0.07	258025 0090	71,50
VHTMM 4 M080 078 06 40 L400	1.25	M8	6.00	6	40.0	78	4	0.07	258025 0095	80,–
VHTMM 4 M100 078 08 40	1.50	M10	7.50	8	33.0	78	4	0.07	258025 0100	99,50
VHTMM 4 M100 089 08 40 L500	1.50	M10	7.50	8	50.0	89	4	0.07	258025 0105	105,–
VHTMM 4 M120 089 10 40	1.75	M12	9.50	10	38.0	89	4	0.07	258025 0110	119,–
VHTMM 4 M120 110 10 40 L600	1.75	M12	9.50	10	60.0	110	4	0.07	258025 0115	130,–
VHTMM 4 M160 100 12 40	2.00	M16	12.00	12	50.0	100	4	0.07	258025 0120	200,–
VHTMM 4 M160 130 12 40 L800	2.00	M16	12.00	12	80.0	130	4	0.07	258025 0125	230,–
VHTMM 4 M200 102 16 40	2.50	M20	14.95	16	50.0	102	4	0.07	258025 0130	300,–
VHTMM 4 M240 102 18 40	3.00	M24	17.95	18	50.0	102	4	0.07	258025 0135	340,–
VHTMM 4 M300 120 20 40	3.50	M30	19.95	20	60.0	120	4	0.07	258025 0140	400,–
VHTMM 4 M360 120 20 40	4.00	M36	19.95	20	60.0	120	4	0.07	258025 0145	420,–

2166

Metric, full profile, ISO 60°, internal, with internal coolant supply

Designation	Pitch mm	Standard thread	D mm	D1 mm	L1 mm	L mm	Z	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
VHTMMI 3 M030 064 06 40	0.50	M3	2.40	6	9.5	64	3	0.04	**258026** 0010	86,50
VHTMMI 3 M030 064 06 40 L150	0.50	M3	2.40	6	15.0	64	3	0.04	258026 0015	90,–
VHTMMI 3 M040 064 06 40	0.70	M4	3.10	6	12.5	64	3	0.04	258026 0020	86,50
VHTMMI 3 M040 064 06 40 L200	0.70	M4	3.10	6	20.0	64	3	0.04	258026 0025	90,–
VHTMMI 3 M050 064 06 40	0.80	M5	4.00	6	16.0	64	3	0.05	258026 0030	86,50
VHTMMI 3 M050 064 06 40 L250	0.80	M5	4.0	6	25.0	64	3	0.05	258026 0035	90,–
VHTMMI 3 M060 064 06 40	1.00	M6	4.50	6	20.0	64	3	0.06	258026 0040	86,50
VHTMMI 3 M060 070 06 40 L300	1.00	M6	4.50	6	30.0	70	3	0.06	258026 0045	91,50
VHTMMI 4 M080 064 06 40	1.25	M8	6.0	6	24.0	64	4	0.07	258026 0050	86,50
VHTMMI 4 M080 078 06 40 L400	1.25	M8	6.0	6	40.0	78	4	0.07	258026 0055	93,50
VHTMMI 4 M100 078 08 40	1.50	M10	7.50	8	33.0	78	4	0.07	258026 0060	120,–
VHTMMI 4 M100 089 08 40 L500	1.50	M10	7.50	8	50.0	89	4	0.07	258026 0065	135,–
VHTMMI 4 M120 089 10 40	1.75	M12	9.50	10	38.0	89	4	0.07	258026 0070	139,–
VHTMMI 4 M120 110 10 40 L600	1.75	M12	9.50	10	60.0	110	4	0.07	258026 0075	150,–
VHTMMI 4 M160 100 12 40	2.00	M16	12.00	12	50.0	100	4	0.07	258026 0080	220,–
VHTMMI 4 M160 130 12 40 L130	2.00	M16	12.00	12	80.0	130	4	0.07	258026 0085	250,–
VHTMMI 4 M200 102 16 40	2.50	M20	14.95	16	50.0	102	4	0.07	258026 0090	360,–
VHTMMI 4 M240 102 18 40	3.00	M24	17.95	18	50.0	102	4	0.07	258026 0095	400,–
VHTMMI 4 M300 120 20 40	3.50	M30	19.95	20	60.0	120	4	0.07	258026 0100	470,–
VHTMMI 4 M360 120 20 40	4.00	M36	19.95	20	60.0	120	4	0.07	258026 0105	500,–

2166

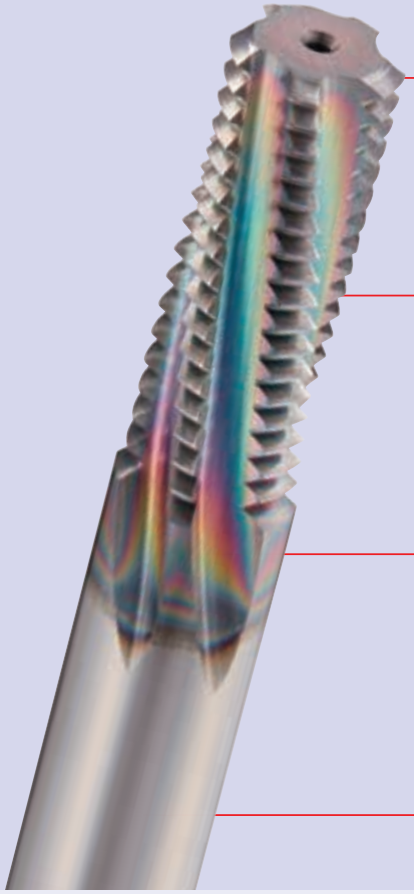


... without shrinkage

ATORN®
High quality for great performance

1-cut thread milling cutter *AT-1*

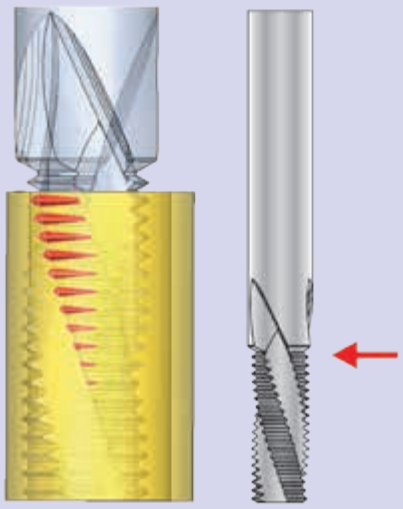
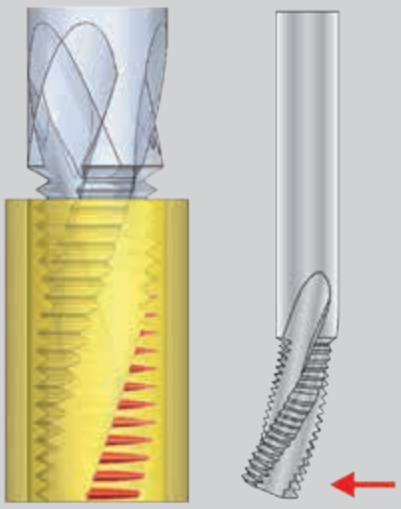
INFO



1. The **unequal pitch** and **irregular spiral angle** reduce vibrations.
2. The **left-hand twist** prevents lateral deflection.
3. New **EgiAs coating**: Outstanding wear resistance and robustness
4. **Ultra-fine carbide** with high resistance and durability

The secret of 1-cut machining:

Evolution from 2-cut machining to 1-cut machining, Minimised lateral deflection

AT-1 Left-hand twist	Conventional thread milling cutter Right-hand twist
	
Enters the material at the top end **Reduced deflection** Up-cut milling recommended	Enters the material at the bottom end **Strong deflection**

1-cut thread milling cutter AT-1

VHM | DIN 6535 HA | Z 4 | Z 5 | Z 6 | Vc/fz | 778

- Evolution from 2-cut machining to 1-cut machining
- Unequal pitch and irregular spiral angle reduce vibrations
- Left-hand twist prevents lateral deflection
- New EgiAs coating
- Outstanding wear resistance and robustness
- Ultra-fine carbide with high resistance and durability
- Milling cutter for female threads
- For hardened materials of 25-45 HRC

material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 80-160	● 80-160	● 60-120		● 60-120		○ 80-160	○ 60-120				○ 80-160	○ 100-300			● 80-200		
	Cutting speed Vc m/min.																		

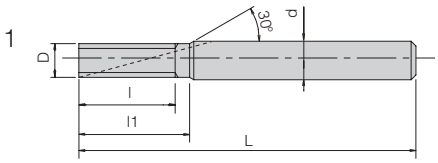
Please adjust these guidelines according to clamping operation and machine set-up.

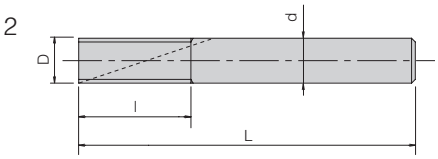
Metric, ISO full profile, internal

Pitch mm	Standard thread	Fine thread	D mm	d mm	l mm	l1 mm	L mm	Type	Z	art.no.	€
0.75		M6	4.5	6	13.5	16	75	1	4	**294300** 0001	173,70
1.0	M6		4.5	6	14	16	75	1	4	294300 0002	173,70
0.5		M8	5.7	6	17		75	2	4	294300 0003	174,60
1.0		M8	5.7	6	18		75	2	4	294300 0004	174,60
1.25	M8		5.7	6	18.75		75	2	4	294300 0005	174,60
1.0		M10	7.7	8	22		85	2	4	294300 0006	182,–
1.25		M10	7.7	8	22.5		85	2	4	294300 0007	182,–
1.5	M10		7.7	8	24		85	2	4	294300 0008	182,–
1.0		M12	9.7	10	26		100	2	5	294300 0009	219,20
1.25		M12	9.7	10	27.5		100	2	5	294300 0010	219,20
1.5		M12	9.7	10	27		100	2	5	294300 0011	219,20
1.75	M12		9.7	10	28		100	2	5	294300 0012	219,20
0.5		M14	11.7	12	29		120	2	5	294300 0013	330,90
0.75		M14	11.7	12	30		120	2	5	294300 0014	330,90
1.0		M14	11.7	12	30		120	2	5	294300 0015	330,90
1.5		M14	10.7	12	31.5	34.5	120	1	5	294300 0016	330,90
2.0	M14		9.7	10	32		100	2	5	294300 0017	219,20
1.0		M16	13.7	16	34	39	135	1	5	294300 0018	565,90
1.5		M16	13.7	16	36	39	135	1	5	294300 0019	565,90
2.0	M16		11.7	12	36		120	2	5	294300 0020	330,90
2.5	M18		11.7	12	42.5		120	2	5	294300 0021	330,90
1.5		M20	15.7	16	43.5		135	2	5	294300 0022	565,90
2.5	M20		13.7	16	45	50	135	1	5	294300 0023	565,90
1.5		M24	19.7	20	51		150	2	6	294300 0024	788,70
2.0		M24	19.7	20	52		150	2	6	294300 0025	788,70
3.0	M24		19.7	20	54		150	2	6	294300 0026	788,70

2110





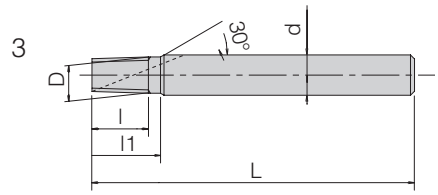


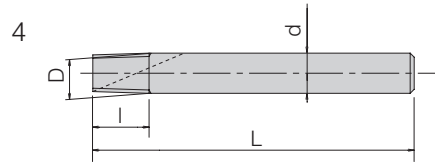
Ww 55° full profile, internal

Pitch TPI	Standard thread	D mm	d mm	l mm	l1 mm	L mm	Type	Z	art.no.	€
28	1/16	5.67	6	9.1		60	4	4	**294301** 0001	198,70
28	1/8	7.67	8	9.1	12.7	60	3	4	294301 0002	182,–
19	1/4 3/8	9.67	10	14.7		75	4	5	294301 0003	219,20
19	3/8	11.67	12	14.7	20	85	3	5	294301 0004	372,80
14	1/2 3/4	11.67	12	20		85	4	5	294301 0005	372,80
14	3/4	15.67	16	20		95	4	5	294301 0006	565,90
11	1 - 2	19.67	20	27.7		105	4	6	294301 0007	607,30

2110







ATORN® Holder for thread mill inserts

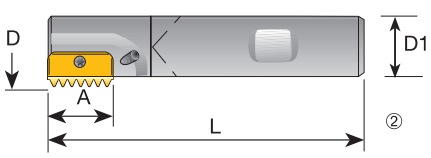


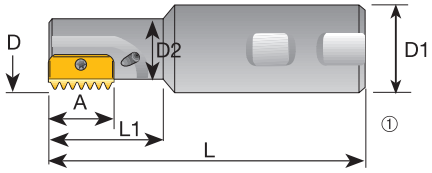
779

- **With internal cooling**
- Supplied with clamping screw and chuck key
- **Force-fit insert seat due to 15° bevel on the milling insert**

Standard holder

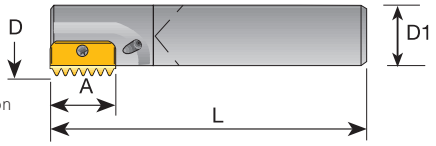
- Straight shank in accordance with DIN 1835B
- Holder SR0009H12 not for use with the following inserts: 12-18 NPT/NPTF, 12-19 BSPT
- Holder SR0018H21 not for use with the following inserts: 21 I34 ISO, 21 I8 UN, 21 I7 UN, 21-11 BSPT, 21-11.5 NPT, 21-11.5 NPTF





Designation	A mm	D mm	D1 mm	D2 mm	L mm	L1 mm	Illustration			art.no.	€
SR0009 H12	12	9.5	20	7.5	85	14	1	A1	B1	**259001** 0912	151,–
SR0010 H12	12	9.9	20	7.6	85	16	1	A1	B1	259001 1012	193,–
SR0012 F14	14	12	20	8.9	75	20	1	A2	B1	259001 1214	137,–
SR0014 H14	14	14.5	20	11.2	85	25	1	A2	B1	259001 1414	151,–
SR0017 H14	14	17.0	20	13.4	85	30	1	A2	B1	259001 1714	161,–
SR0018 H21	21	18.0	20	14.4	85	30	1	A3	B2	259001 1821	215,–
SR0021 H21	21	21.0	20	16.5	94	40	1	A3	B2	259001 2121	220,–
SR0025 K21	21	25.0	20	-	125	-	2	A3	B2	259001 2521	245,–
SR0029 J30	30	29.0	25	22.4	110	50	1	A4	B3	259001 2930	270,–
SR0031 M30	30	31.0	25	-	150	-	2	A4	B3	259001 3130	275,–
SR0038 M30	30	38.0	32	-	150	-	2	A4	B3	259001 3830	285,–
SR0048 M40	40	48.0	40	35.0	153	78	1	A5	B3	259001 4840	365,–

2116

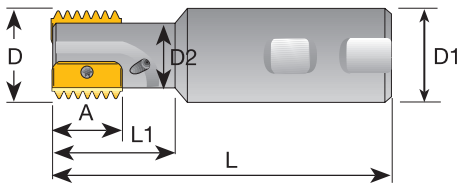


Solid carbide holder

- **Long version**
- Particularly low-vibration thanks to solid carbide construction
- Straight shank
- SR0010 K12C without internal cooling

Designation	A mm	D mm	D1 mm	L mm			art.no.	€
SR0010 K12C	12	9.9	8	125	A1	B1	**259002** 1012	380,–
SR0013 H14C	14	13.2	10	110	A2	B1	259002 1214	320,–
SR0013 J14C	14	13.2	10	155	A2	B1	259002 1314	330,–
SR0015 K14C	14	15.2	12	175	A2	B1	259002 1514	415,–
SR0021 K21C	21	21.0	16	130	A3	B2	259002 2125	589,–
SR0021 M21C	21	21.0	16	200	A3	B2	259002 2121	609,–
SR0027 S30C	30	27.0	20	270	A4	B3	259002 2730	969,–

2116



Double-seat holder

- **For use with two thread mill inserts**
- For increased feed rates and specially for hard materials
- Straight shank in accordance with DIN 1835B

Designation	A mm	D mm	D1 mm	D2 mm	L mm	L1 mm			art.no.	€
SR0020 H14-2	14	20.0	20	16.0	93	41	A2	B1	**259003** 2014	330,–
SR0030 J21-2	21	30.0	25	24.0	108	52	A3	B2	259003 3021	405,–
SR0040 L30-2	30	40.0	32	30.0	130	70	A4	B3	259003 4030	475,–
SR0050 M40-2	40	50.0	40	38.0	153	78	A5	B3	259003 5040	559,–

2116







Spare parts

	Screw			TORX	
	art.no.	€		art.no.	€
A1	259501 9000	1,99	B1	703040 0080	4,60
A2	259501 9001	1,89	B2	703040 0150	4,80
A3	259501 9002	3,70	B3	703040 0250	5,70
A4	259501 9003	3,70			
A5	259501 9004				

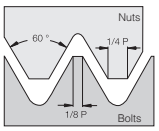
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ATORN® ISO thread mill inserts

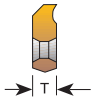


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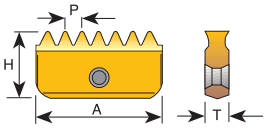
- **Metric, full profile, ISO**
- **Carbide quality AMT7**
  TiAlN-coated ultra-fine grain quality for universal applications in all materials at medium to high cutting speeds







Size A inserts = 12 mm have one cutting edge!



Full profile, 60°, internal

A mm	Pitch P mm	H mm	T mm	Designation	Feed fz steel < 1000 N/mm² mm/tooth		art.no.	€
12	0.5	6.3	2.9	12 I 0.5 ISO	0.05-0.15	5	**259501** 4135	41,–
12	0.75	6.3	2.9	12 I 0.75 ISO	0.05-0.15	5	259501 4235	41,–
12	1.0	6.3	2.9	12 I 1.0 ISO	0.05-0.15	5	259501 4335	41,–
12	1.25	6.3	2.9	12 I 1.25 ISO	0.05-0.15	5	259501 4435	41,–
12	1.5	6.3	2.9	12 I 1.5 ISO	0.05-0.15	5	259501 4535	41,–
14	0.5	7.5	3.1	14 I 0.5 ISO	0.05-0.15	5	259501 0135	41,–
14	0.75	7.5	3.1	14 I 0.75 ISO	0.05-0.15	5	259501 0235	41,–
14	1.0	7.5	3.1	14 I 1.0 ISO	0.05-0.15	5	259501 0335	41,–
14	1.25	7.5	3.1	14 I 1.25 ISO	0.05-0.15	5	259501 0435	41,–
14	1.5	7.5	3.1	14 I 1.5 ISO	0.05-0.15	5	259501 0535	41,–
14	1.75	7.5	3.1	14 I 1.75 ISO	0.05-0.15	5	259501 0835	41,–
14	2.0	7.5	3.1	14 I 2.0 ISO	0.05-0.15	5	259501 0635	41,–
14	2.5	7.5	3.1	14 I 2.5 ISO	0.05-0.15	5	259501 0735	41,–
21	1.0	12	4.7	21 I 1.0 ISO	0.05-0.15	5	259501 1035	53,50
21	1.5	12	4.7	21 I 1.5 ISO	0.05-0.15	5	259501 1135	53,50
21	1.75	12	4.7	21 I 1.75ISO	0.05-0.15	5	259501 1635	53,50
21	2.0	12	4.7	21 I 2.0 ISO	0.05-0.15	5	259501 1235	53,50
21	2.5	12	4.7	21 I 2.5 ISO	0.05-0.15	5	259501 1335	53,50

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A mm	Pitch P mm	H mm	T mm	Designation	Feed fz steel < 1000 N/mm² mm/tooth		art.no.	€
21	3.0	12	4.7	21 I 3.0 ISO	0.05-0.15	5	259501 1435	53,50
21	3.5	12	4.7	21 I 3.5 ISO	0.05-0.15	5	259501 1535	53,50
30	1.5	16	5.5	30 I 1.5 ISO	0.05-0.15	5	259501 2035	74,–
30	2.0	16	5.5	30 I 2.0 ISO	0.05-0.15	5	259501 2135	74,–
30	3.0	16	5.5	30 I 3.0 ISO	0.05-0.15	5	259501 2235	74,–
30	3.5	16	5.5	30 I 3.5 ISO	0.05-0.15	5	259501 2435	74,–
30	4.0	16	5.5	30 I 4.0 ISO	0.05-0.15	5	259501 2335	74,–
30	4.5	16	5.5	30 I 4.5 ISO	0.05-0.15	5	259501 3635	74,–
30	5.0	16	5.5	30 I 5.0 ISO	0.05-0.15	5	259501 2535	74,–
40	1.5	20	6.3	40 I 1.5 ISO	0.05-0.15	2	259501 3035	129,–
40	2.0	20	6.3	40 I 2.0 ISO	0.05-0.15	2	259501 3135	129,–
40	3.0	20	6.3	40 I 3.0 ISO	0.05-0.15	2	259501 3235	129,–
40	3.5	20	6.3	40 I 3.5 ISO	0.05-0.15	2	259501 3735	129,–
40	4.0	20	6.3	40 I 4.0 ISO	0.05-0.15	2	259501 3335	129,–
40	4.5	20	6.3	40 I 4.5 ISO	0.05-0.15	2	259501 3835	129,–
40	5.0	20	6.3	40 I 5.0 ISO	0.05-0.15	2	259501 3435	129,–
40	5.5	20	6.3	40 I 5.5 ISO	0.05-0.15	2	259501 3935	129,–
40	6.0	20	6.3	40 I 6.0 ISO	0.05-0.15	2	259501 3535	129,–

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Full profile, 60°, external

A mm	Pitch P mm	H mm	T mm	Designation	Feed fz steel < 1000 N/mm² mm/tooth		art.no.	€
14	0.75	7.5	3.1	14 E 0.75 ISO	0.05-0.15	5	**259502** 0135	41,–
14	1.0	7.5	3.1	14 E 1.0 ISO	0.05-0.15	5	259502 0235	41,–
14	1.25	7.5	3.1	14 E 1.25 ISO	0.05-0.15	5	259502 0335	41,–
14	1.5	7.5	3.1	14 E 1.5 ISO	0.05-0.15	5	259502 0435	41,–
14	1.75	7.5	3.1	14 E 1.75 ISO	0.05-0.15	5	259502 0735	41,–
14	2.0	7.5	3.1	14 E 2.0 ISO	0.05-0.15	5	259502 0535	41,–
14	2.5	7.5	3.1	14 E 2.5 ISO	0.05-0.15	5	259502 0635	41,–
21	1.0	12	4.7	21 E 1.0 ISO	0.05-0.15	5	259502 1035	53,50
21	1.5	12	4.7	21 E 1.5 ISO	0.05-0.15	5	259502 1135	53,50
21	2.0	12	4.7	21 E 2.0 ISO	0.05-0.15	5	259502 1235	53,50
21	2.5	12	4.7	21 E 2.5 ISO	0.05-0.15	5	259502 1335	53,50
21	3.0	12	4.7	21 E 3.0 ISO	0.05-0.15	5	259502 1435	53,50

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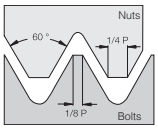
A mm	Pitch P mm	H mm	T mm	Designation	Feed fz steel < 1000 N/mm² mm/tooth		art.no.	€
30	1.5	16	5.5	30 E 1.5 ISO	0.05-0.15	5	259502 2035	74,–
30	2.0	16	5.5	30 E 2.0 ISO	0.05-0.15	5	259502 2135	74,–
30	3.0	16	5.5	30 E 3.0 ISO	0.05-0.15	5	259502 2235	74,–
30	3.5	16	5.5	30 E 3.5 ISO	0.05-0.15	5	259502 2435	74,–
30	4.0	16	5.5	30 E 4.0 ISO	0.05-0.15	5	259502 2335	74,–
40	1.5	20	6.3	40 E 1.5 ISO	0.05-0.15	2	259502 3035	129,–
40	2.0	20	6.3	40 E 2.0 ISO	0.05-0.15	2	259502 3135	129,–
40	3.0	20	6.3	40 E 3.0 ISO	0.05-0.15	2	259502 3235	129,–
40	4.0	20	6.3	40 E 4.0 ISO	0.05-0.15	2	259502 3335	129,–
40	5.0	20	6.3	40 E 5.0 ISO	0.05-0.15	2	259502 3435	129,–
40	6.0	20	6.3	40 E 6.0 ISO	0.05-0.15	2	259502 3535	129,–

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ATORN® UN thread mill inserts



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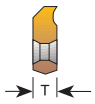


- **Metric, full profile, UN**
- **Carbide quality AMT7**
  TiAlN-coated ultra-fine grain quality for universal applications in all materials at medium to high cutting speeds
- **Other thread pitches available on request**

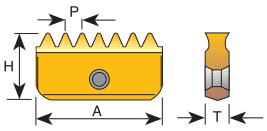
Full profile, UN, internal

A mm	Pitch TPI	H mm	T mm	Designation	Feed fz steel < 1000 N/mm² mm/tooth		art.no.	€
12	32	6.3	2.9	12 I 32 UN	0.05-0.15	5	**259503** 4135	41,–
12	28	6.3	2.9	12 I 28 UN	0.05-0.15	5	259503 4235	41,–
12	24	6.3	2.9	12 I 24 UN	0.05-0.15	5	259503 4335	41,–
12	20	6.3	2.9	12 I 20 UN	0.05-0.15	5	259503 4435	41,–
12	18	6.3	2.9	12 I 18 UN	0.05-0.15	5	259503 4535	41,–
12	16	6.3	2.9	12 I 16 UN	0.05-0.15	5	259503 4635	41,–
14	32	7.5	3.1	14 I 32 UN	0.05-0.15	5	259503 0135	41,–
14	28	7.5	3.1	14 I 28 UN	0.05-0.15	5	259503 0235	41,–
14	24	7.5	3.1	14 I 24 UN	0.05-0.15	5	259503 0335	41,–
14	20	7.5	3.1	14 I 20 UN	0.05-0.15	5	259503 0435	41,–
14	18	7.5	3.1	14 I 18 UN	0.05-0.15	5	259503 0535	41,–
14	16	7.5	3.1	14 I 16 UN	0.05-0.15	5	259503 0635	41,–
14	14	7.5	3.1	14 I 14 UN	0.05-0.15	5	259503 0735	41,–
14	12	7.5	3.1	14 I 12 UN	0.05-0.15	5	259503 0835	41,–
21	24	12	4.7	21 I 24 UN	0.05-0.15	5	259503 1035	53,50
21	20	12	4.7	21 I 20 UN	0.05-0.15	5	259503 1135	53,50
21	18	12	4.7	21 I 18 UN	0.05-0.15	5	259503 1235	53,50
21	16	12	4.7	21 I 16 UN	0.05-0.15	5	259503 1335	53,50
21	14	12	4.7	21 I 14 UN	0.05-0.15	5	259503 1435	53,50
21	12	12	4.7	21 I 12 UN	0.05-0.15	5	259503 1535	53,50
21	10	12	4.7	21 I 10 UN	0.05-0.15	5	259503 1635	53,50
30	20	16	5.5	30 I 20 UN	0.05-0.15	5	259503 2035	74,–
30	18	16	5.5	30 I 18 UN	0.05-0.15	5	259503 2135	74,–
30	16	16	5.5	30 I 16 UN	0.05-0.15	5	259503 2235	74,–
30	14	16	5.5	30 I 14 UN	0.05-0.15	5	259503 2335	74,–
30	12	16	5.5	30 I 12 UN	0.05-0.15	5	259503 2435	74,–
30	10	16	5.5	30 I 10 UN	0.05-0.15	5	259503 2535	74,–
30	8	16	5.5	30 I 8 UN	0.05-0.15	5	259503 2635	74,–
30	6	16	5.5	30 I 6 UN	0.05-0.15	5	259503 2735	74,–
40	14	20	6.3	40 I 14 UN	0.05-0.15	5	259503 3035	129,–
40	12	20	6.3	40 I 12 UN	0.05-0.15	2	259503 3135	129,–
40	10	20	6.3	40 I 10 UN	0.05-0.15	2	259503 3235	129,–
40	8	20	6.3	40 I 8 UN	0.05-0.15	2	259503 3335	129,–
40	6	20	6.3	40 I 6 UN	0.05-0.15	2	259503 3435	129,–

2117

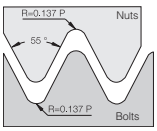


Size A inserts = 12 mm have one cutting edge



ATORN® BSW/NPT thread mill inserts

779



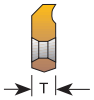


- **BSW, NPT**
- **Carbide quality AMT7**
  TiAlN-coated ultra-fine grain quality for universal applications in all materials at medium to high cutting speeds
- **Other versions available on request (NPTF, BSPT, NPS and NPSF)**

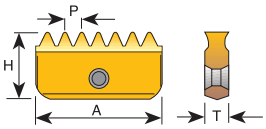
BSW, internal = external

A mm	Pitch TPI	H mm	T mm	Designation	Feed fz steel < 1000 N/mm² mm/tooth		art.no.	€
12	19	6.3	2.9	12-19 W	0.05-0.15	5	**259505** 0035	41,–
14	24	7.5	3.1	14-24 W	0.05-0.15	5	259505 0135	41,–
14	20	7.5	3.1	14-20 W	0.05-0.15	5	259505 0235	41,–
14	19	7.5	3.1	14-19 W	0.05-0.15	5	259505 0335	41,–
14	16	7.5	3.1	14-16 W	0.05-0.15	5	259505 0435	41,–
14	14	7.5	4.7	14-14 W	0.05-0.15	5	259505 0535	41,–
21	20	12	4.7	21-20 W	0.05-0.15	5	259505 1035	53,50
21	19	12	4.7	21-19 W	0.05-0.15	5	259505 1135	53,50
21	16	12	4.7	21-16 W	0.05-0.15	5	259505 1235	53,50
21	14	12	4.7	21-14 W	0.05-0.15	5	259505 1335	53,50
21	11	12	4.7	21-11 W	0.05-0.15	5	259505 1435	53,50
30	16	16	5.5	30-16 W	0.05-0.15	5	259505 2035	74,–
30	14	16	5.5	30-14 W	0.05-0.15	5	259505 2135	74,–
30	11	16	5.5	30-11 W	0.05-0.15	5	259505 2235	74,–
40	11	20	6.3	40-11 W	0.05-0.15	2	259505 3035	129,–
40	8	20	6.3	40- 8 W	0.05-0.15	2	259505 3135	129,–

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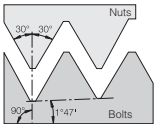
Size A inserts = 12 mm have one cutting edge!



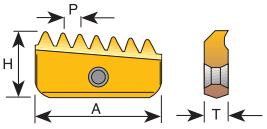
NPT, internal = external

A mm	Pitch TPI	H mm	T mm	Designation	Feed fz steel < 1000 N/mm² mm/tooth		art.no.	€
12	18.0	6.3	2.9	12-18 NPT	0.05-0.15	5	**259506** 0035	45,10
14	18.0	7.5	3.1	14-18 NPT	0.05-0.15	5	259506 0135	45,10
14	14.0	7.5	3.1	14-14 NPT	0.05-0.15	5	259506 0235	45,10
21	14.0	12	4.7	21-14 NPT	0.05-0.15	5	259506 1035	59,50
21	11.5	12	4.7	21-11.5 NPT	0.05-0.15	5	259506 1135	59,50
30	11.5	16	5.5	30-11.5 NPT	0.05-0.15	5	259506 2035	82,–
30	8.0	16	5.5	30- 8 NPT	0.05-0.15	5	259506 2135	82,–
40	11.5	20	6.3	40-11.5 NPT	0.05-0.15	2	259506 3035	142,–
40	8.0	20	6.3	40- 8 NPT	0.05-0.15	2	259506 3135	142,–

2117







Inserts for conical threads have one cutting edge!

THE COMPLETE
MACHINING
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PALBIT
Machining tools
411 pages
Art.no. 019900 0315

Overview of all free manufacturers' catalogues
on page 14/15

ATORN® Tool system for machining drill holes MINI-MILL

DIN 6535 HA | DIN 6535 HB | Vc/fz | 786

- Type ZH 22 **from bore Ø 22 mm**
- Solid carbide inserts, quality grade **HC 8620**
- **Solid carbide milling cutter shank** with internal coolant supply
- **Steel milling cutter shank** with internal coolant supply
- 3-rib toothing
- For machining grooves, circlip grooves, ISO metric threads, Whitworth pipe threads and full radius grooves, as well as for chamfering and deburring



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	●	●	○		●	●	○	○		○	○	○		○		





DIN 6535 HA solid carbide

Designation	D3 mm	L mm	L2 mm	Cutting circle average mm	t max. mm			art.no.	€
ZH22,1212..42.A.HM	-	100	42	21.7	4.5	A1	B1	**263001** 1242	185,–
ZH22,1212..60.A.HM	-	130	60	21.7	4.5	A1	B1	263001 1260	220,–
ZH22,1611..30.A.HM	11.5	90	30	21.7	3.9	A1	B1	263001 1630	235,–
ZH22,1612..42.A.HM	12.0	100	42	21.7	4.5	A1	B1	263001 1642	245,–
ZH22,1612..60.A.HM	12.0	130	60	21.7	4.5	A1	B1	263001 1660	295,–
ZH22,1612..85.A.HM	12.0	160	85	21.7	4.5	A1	B1	263001 1685	335,–
ZH22,2016..45.A.HM	16.0	110	45	21.7	2.5	A1	B1	263001 2045	355,–
ZH22,2016..65.A.HM	16.0	130	65	21.7	2.5	A1	B1	263001 2065	360,–

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DIN 1835 A steel shank

Designation	D3 mm	L mm	L2 mm	Cutting circle average mm	t max. mm			art.no.	€
ZH22,1011,10.A.ST	11.3	60	10.7	21.7	4.5	A1	B1	**263005** 0010	118,–
ZH22,1311,25.A.ST	11.3	70	25.7	21.7	4.0	A1	B1	263005 0025	122,–
ZH22,1612,24.A.ST	12.0	80	24.0	21.7	4.5	A1	B1	263005 0024	131,–

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DIN 6535 HB solid carbide

Designation	D3 mm	L mm	L2 mm	Cutting circle average mm	t max. mm			art.no.	€
ZH22,1212..42.B.HM	-	100	42	21.7	4.5	A1	B1	**263002** 1242	185,–
ZH22,1212..60.B.HM	-	130	60	21.7	4.5	A1	B1	263002 1260	220,–
ZH22,1611..30.B.HM	11.5	90	30	21.7	3.9	A1	B1	263002 1630	235,–
ZH22,1612..42.B.HM	12.0	100	42	21.7	4.5	A1	B1	263002 1642	245,–
ZH22,1612..60.B.HM	12.0	130	60	21.7	4.5	A1	B1	263002 1660	295,–
ZH22,1612..85.B.HM	12.0	160	85	21.7	4.5	A1	B1	263002 1685	335,–
ZH22,2016..45.B.HM	16.0	110	45	21.7	2.5	A1	B1	263002 2045	355,–
ZH22,2016..65.B.HM	16.0	130	65	21.7	2.5	A1	B1	263002 2065	360,–

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DIN 1835 B steel shank

Designation	D3 mm	L mm	L2 mm	Cutting circle average mm	t max. mm			art.no.	€
ZH22,1612,24.B.ST	12.0	80	24	21.7	4.5	A1	B1	**263004** 0024	131,–

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Spare parts

	Screw	
	art.no.	€
A1	263999 0001	3,60

2141

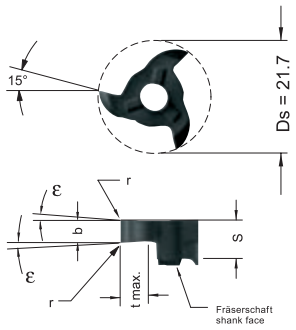
	TORX	
	art.no.	€
B1	703053 0200	1,79

7114

Cutting inserts for DIN 471/472 circlip grooves

Designation	S mm	r mm	ε °	t max. mm	b -0.02 mm	HC8620 art.no.	€
Z 22,0070,00	5.7	-	1.0	1.5	0.74	**263100** 0007	36,40
Z 22,0080,00	5.7	-	1.0	1.7	0.84	263100 0008	36,40
Z 22,0090,00	5.7	-	1.0	1.9	0.94	263100 0009	32,60
Z 22,0100,00	5.7	-	1.0	2.1	1.04	263100 0010	34,50
Z 22,0110,00	5.7	-	1.0	2.5	1.21	263100 0011	34,50
Z 22,0130,00	5.7	0.1	3.0	4.5	1.41	263100 0013	32,90
Z 22,0160,00	5.7	0.1	3.0	4.5	1.71	263100 0016	32,90
Z 22,0185,02	5.7	0.15	3.0	4.5	1.96	263100 0185	32,90
Z 22,0215,02	5.7	0.15	3.0	4.5	2.26	263100 0215	32,90
Z 22,0265,02	5.7	0.15	3.0	4.5	2.76	263100 0265	32,90
Z 22,0315,02	5.7	0.15	3.0	4.5	3.26	263100 0315	32,90
Z 22,0415,02	5.7	0.15	3.0	4.5	4.26	263100 0414	32,90
Z 22,0515,02	5.7	0.15	3.0	4.5	5.26	263100 0515	32,90

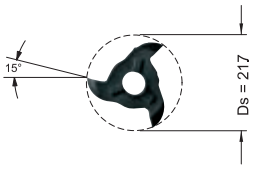
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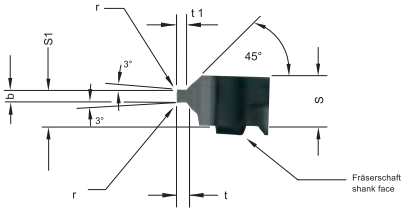


Cutting inserts with groove outer edge chamfering for DIN 471/472 circlip grooves

Designation	S mm	s1 mm	r mm	b -0.02 mm	t mm	t1 max. mm	HC8620 art.no.	€
Z 22,1105,30	5.85	5.07	-	1.21	0.5	0.49	**263101** 1105	35,70
Z 22,1307,30	5.85	5.17	-	1.41	0.7	0.67	263101 1307	35,70
Z 22,1308,30	5.85	5.17	-	1.41	0.85	0.83	263101 1308	35,70
Z 22,1609,35	5.85	5.07	-	1.71	0.85	0.83	263101 1609	35,70
Z 22,1610,35	5.85	5.07	-	1.71	1.0	0.97	263101 1610	35,70
Z 22,1812,35	5.85	5.19	0.15	1.96	1.25	1.23	263101 1812	35,70
Z 22,2215,35	5.85	5.34	0.15	2.26	1.5	1.47	263101 2215	35,70
Z 22,2616,45	5.85	5.09	0.15	2.76	1.5	1.47	263101 2616	35,70
Z 22,2617,45	5.85	5.09	0.15	2.76	1.75	1.72	263101 2617	35,70
Z 22,3118,45	5.85	5.34	0.20	3.26	1.75	1.72	263101 3118	35,70
Z 22,4120,55	5.85	5.34	0.20	4.26	2.0	1.97	263101 4120	35,70
Z 22,4125,55	5.85	5.34	0.20	4.26	2.5	2.47	263101 4125	35,70

2141

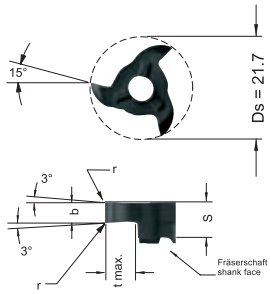




Cutting inserts for general groove milling

Designation	S mm	r mm	b +0.02 mm	t max. mm	HC8620 art.no.	€
Z 22,0150,02	5.7	0.2	1.5	4.5	**263102** 0015	33,60
Z 22,0200,02	5.7	0.2	2.0	4.5	263102 0020	33,60
Z 22,0250,02	5.7	0.2	2.5	4.5	263102 0025	33,60
Z 22,0300,02	5.7	0.2	3.0	4.5	263102 0030	33,60
Z 22,0400,02	5.7	0.2	4.0	4.5	263102 0040	33,60

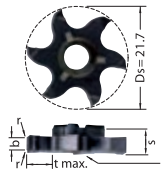
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6-tooth cutting inserts for general groove milling

Designation	S mm	r mm	b mm	t max. mm	HC8620 art.no.	€
Z622,0150,01	6.2	0.1	1.5	4.5	**263108** 0015	56,50
Z622,0200,02	6.2	0.2	2.0	4.5	263108 0020	56,50
Z622,0250,02	6.2	0.2	2.5	4.5	263108 0025	56,50
Z622,0300,02	6.2	0.2	3.0	4.5	263108 0030	56,50
Z622,0400,02	6.2	0.2	4.0	4.5	263108 0040	56,50

2141



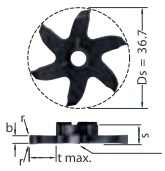
Bevel grinding on the front face

6-tooth cutting inserts for general groove milling

- t-max. 12 mm only with holder ZH22

Designation	S mm	r mm	b mm	t max. mm	D min. mm	HC8620 art.no.	€
Z637,0050,00	5.85	-	0.5	12.0	37.0	**263111** 0005	94,50
Z637,0100,01	5.85	0.1	1.0	12.0	37.0	263111 0010	86,–
Z637,0150,01	5.85	0.1	1.5	12.0	37.0	263111 0015	77,–

2141

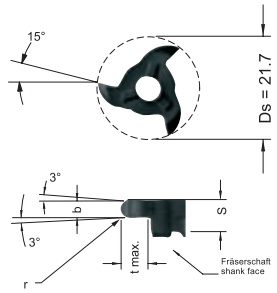


Bevel grinding on the front face for b ≥ 1 mm

Cutting inserts for full radius grooves

Designation	S mm	r mm	b +0.03 mm	t max. mm	HC8620 art.no.	€
Z 22,0005,10	5,75	0.5	1.0	4.5	**263103** 0010	38,60
Z 22,0010,20	5,75	1.0	2.0	4.5	263103 0020	38,60
Z 22,0014,28	5,75	1.4	2.8	4.5	263103 0028	39,90
Z 22,0015,30	5,75	1.5	3.0	4.5	263103 0030	38,60
Z 22,0020,40	5,75	2.0	4.0	4.5	263103 0040	38,60

2141

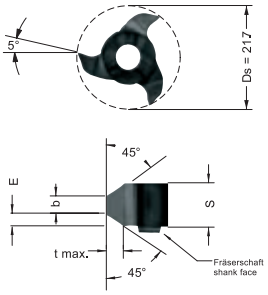


Continued on next page >>>

Bore milling cutter inserts, front and rear-side chamfering

Designation	S mm	E mm	b mm	t max. mm	HC8620 art.no.	€
Z 22,4545,58	5.85	2.00	2.0	1.7	**263106** 0015	28,70
Z 22,4545,94	9.4	3.25	3.0	3.0	263106 0020	30,10

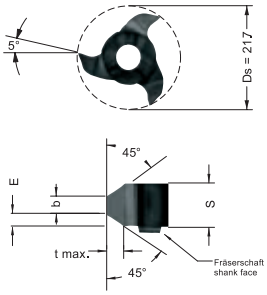
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Bore milling cutter inserts, front and rear-side chamfering

Designation	S mm	E mm	b mm	t max. mm	HC8620 art.no.	€
Z 22,4545,58	5.85	2.00	2.0	1.7	**263106** 0015	28,70
Z 22,4545,94	9.4	3.25	3.0	3.0	263106 0020	30,10

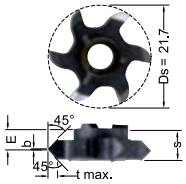
2141



Bore milling cutter inserts, front and rear-side chamfering with 6 teeth

Designation	S mm	E mm	b +0.03 mm	t max. mm	HC8620 art.no.	€
Z622,4545,63	6.4	3.9	0.2	1.9	**263109** 0015	57,–

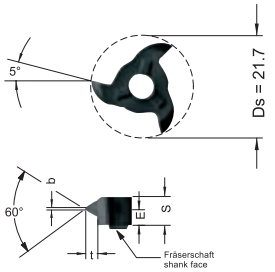
2141



Cutting inserts for ISO metric threads, partial profile

Designation	S mm	Pitch P mm	E mm	b mm	t mm	HC8620 art.no.	€
Z 22,0720,01	5.85	1.0 - 2.0	4.6	0.12	1.19	**263104** 1020	42,–
Z 22,2545,01	5.85	2.0 - 4.5	3.7	0.31	2.71	263104 2545	43,40
Z 22,0815,01	5.85	1.5 - 2.75	4.8	0.18	1.62	263104 0015	42,–
Z 22,1020,01	5.85	2.0 - 3.75	4.6	0.25	2.22	263104 0020	42,–
Z 22,1630,01	5.85	2.5 - 5.0	4.3	0.37	2.98	263104 0030	42,10

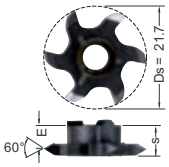
2141



Cutting inserts for ISO metric threads, internal, partial profile, 6 teeth

Designation	S mm	Pitch P mm	E mm	Thread nominal Ø mm	HC8620 art.no.	€
Z622,0720,01	6.20	1.0 - 2.0	5.1	> 27.0	**263110** 1020	67,–
Z622,2545,01	6.05	2.0 - 4.5	4.3	> 33.0	263110 2545	68,50

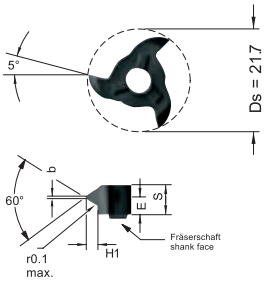
2141



Cutting inserts for ISO metric threads, full profile

Designation	S mm	Pitch P mm	E mm	b mm	H1 mm	HC8620 art.no.	€
Z 22,0815,02	5.85	1.5	4.8	0.18	0.81	**263105** 0150	44,10
Z 22,0917,02	5.85	1.75	4.7	0.20	0.95	263105 0175	44,10
Z 22,1020,02	5.85	2.0	4.6	0.25	1.08	263105 0200	46,10
Z 22,1630,02	5.85	3.0	4.3	0.37	1.62	263105 0300	46,10
Z 22,1835,02	5.85	3.5	4.1	0.43	1.89	263105 0350	49,70
Z 22,2140,02	5.85	4.0	3.9	0.5	2.16	263105 0400	49,70
Z 22,2445,02	5.85	4.5	3.7	0.56	2.43	263105 0450	49,70

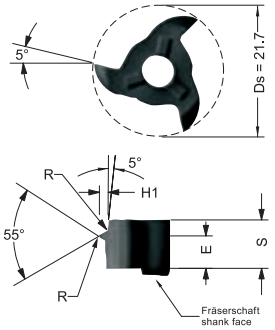
2141



Cutting inserts for Whitworth pipe threads, DIN ISO 228 (259) + 2999 full profile

Designation	S mm	Pitch TPI	E mm	R mm	H1 mm	HC8620 art.no.	€
Z 22,5506,02	5.85	6 (4.23)	3.1	0.58	2.71	**263107** 0060	55,50
Z 22,5508,02	5.85	8 (3.17)	3.5	0.43	2.03	263107 0080	55,50
Z 22,5511,02	5.85	11 (2.30)	4.0	0.31	1.48	263107 0011	52,–

2141



ATORN® The CMT system

INFO

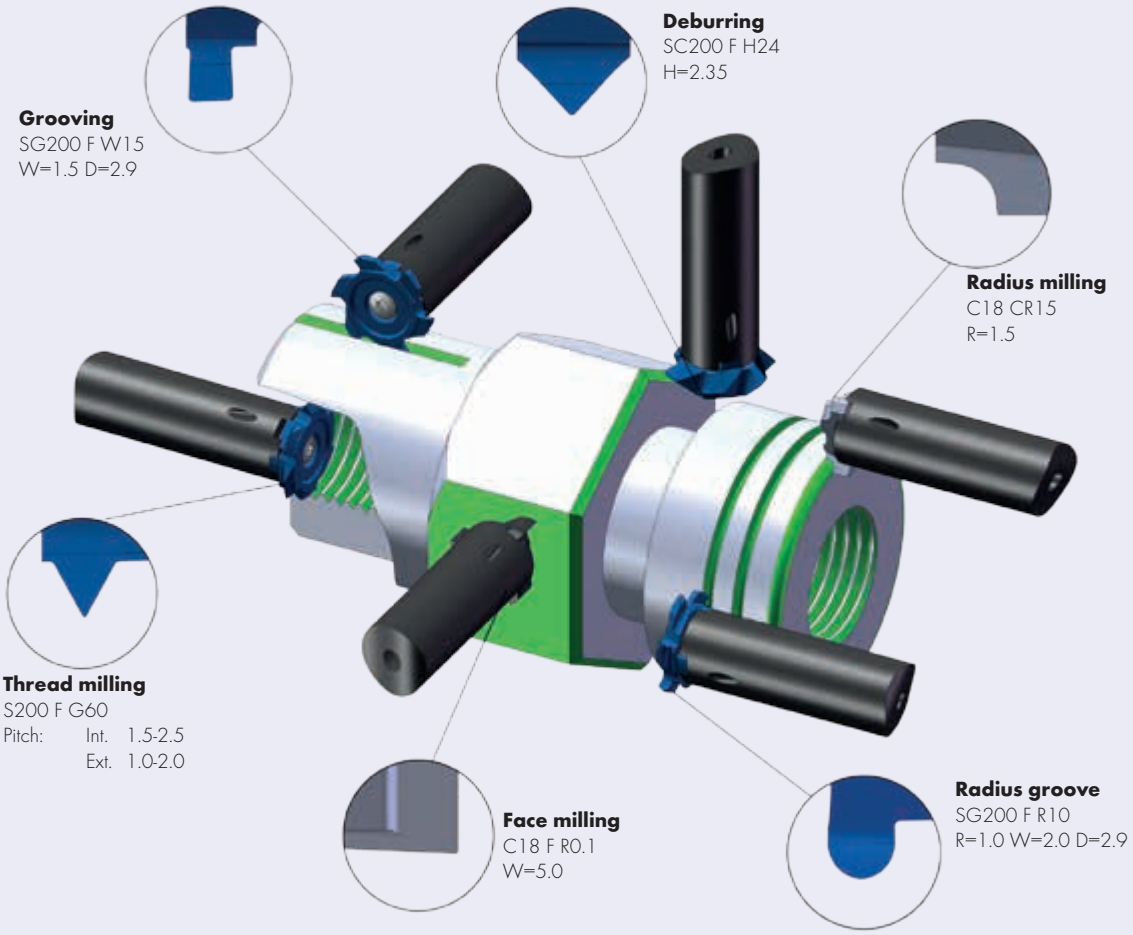
Removable, vertical thread-mill inserts and holders for a variety of thread profiles

- Front-mounted plate for high precision and excellent performance
- Milling with high cutting rates and perfect surface finish
- Stable and precise clamping for consistent reproducibility
- Same plate for right-hand and left-hand threads
- Tool holders with Weldon shank and internal cooling
- Plates for countersinking, grooving and face milling



One holder for all machining situations

SRC 2018 J with internal coolant supply

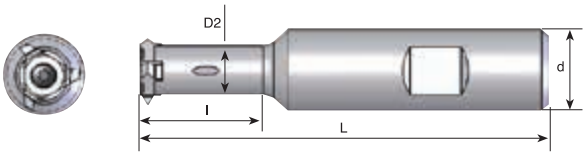


ATORN® CMT tool system for vertical thread milling

DIN 6535 HB | DIN 6535 HA | Vc/fz | 786

- **Type C10, from Ø 11 mm bore**
- **Solid carbide cutting inserts in quality grade AMT7 for all materials up to 55 HRc**
- **Solid carbide cutting inserts in quality grade AMT8, extremely heat-resistant, for all materials up to 62 HRc**
- Solid carbide milling cutter shank with internal coolant supply
- Steel milling cutter shank with internal coolant supply
- **For partial profile (55 and 60°), full profile (ISO, UN and G55°) and trapezoidal threading, countersinking, grooving, plunge milling, face milling and finishing**



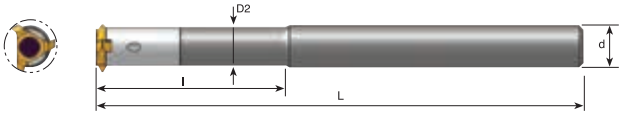


DIN 6535 HB steel shank with internal coolant supply

ISO P M K N S H

model	Holder	Insert size mm	d mm	D2 mm	l mm	L mm			art.no.	€
SRC 1210 E	H1	C10	12	7.3	19	70	A1	B1	**266001** 0001	137,–
SRC 1610 G	H2	C10	16	7.3	19	90	A1	B1	266001 0002	137,–
SRC 1212 E	H3	C12, S17	12	9.0	25	70	A2	B2	266001 0003	137,–
SRC 1612 G	H4	C12, S17	16	9.0	25	90	A2	B2	266001 0004	137,–
SRC 1612 H	H5	C12, S17	16	9.0	35	100	A2	B2	266001 0005	151,–
SRC 1618 H	H6	C18, S20	16	13.8	48	100	A3	B2	266001 0006	154,–
SRC 2018 H	H7	C18, S20	20	13.8	32	100	A3	B2	266001 0007	154,–
SRC 2018 J	H8	C18, S20	20	13.8	48	110	A3	B2	266001 0008	158,–
SRC 2018 L	H9	C18, S20	20	13.8	74	140	A3	B2	266001 0009	180,–
SRC 2525 J	H10	C25	25	17.5	45	115	A4	B3	266001 0010	215,–
SRC 2525 M	H11	C25	25	17.5	80	150	A4	B3	266001 0011	235,–

2150





DIN 1835 A solid carbide shank with internal coolant supply

ISO P M K N S H

model	Holder	Insert size mm	d mm	D2 mm	l mm	L mm			art.no.	€
CRC 0810 L35 K	H12	C10	8	7.3	35	125	A1	B1	**266002** 0001	235,–
CRC 0810 K	H13	C10	8	8.0	-	125	A1	B1	266002 0002	245,–
CRC 1012 M	H14	C12, S17	10	10.0	-	150	A3	B2	266002 0003	250,–
CRC 1218 P	H15	C18, S20	12	12.0	-	170	A3	B2	266002 0004	370,–
CRC 1625 R	H16	C25	16	16.0	-	205	A4	B3	266002 0005	430,–
CRC 2025 L85 S	H17	C25	20	17.5	85	250	A4	B3	266002 0006	599,–

2150

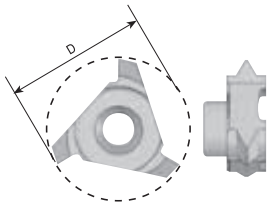
Spare parts

	Screw		
	art.no.		€
A1	259501 9009		4,30
A2	259501 9010		4,30
A3	341401 0011		1,58
A4	341401 0041		3,61

3116

	Wrench		
	art.no.		€
B1	705141 0006		5,25
B2	705141 0010		5,90
B3	705141 0025		6,55

7114





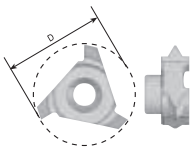
Partial profile, 60°

- the same tool for internal and external threads

ISO P M K N S H

model	Insert size mm	D mm	D min. mm	Pitch int. mm	Pitch int. TPI	Pitch ex. mm	Pitch ex. TPI	Holder	AMT7 art.no.	€
C10 A60	C10	10	11	0.5 - 0.8	56 - 28	0.4 - 0.8	64 - 32	H1, 2, 12, 13	**266100** 1001	42,60
C10 G60	C10	10	12	1.0 -2.0	28 - 13	0.8 - 1.75	32 - 15	H1, 2, 12	266100 1002	38,50
C12 A60	C12	12	13	0.5 - 0.8	56 - 28	0.4 - 0.8	64 - 32	H3, 4, 5, 14	266100 1201	43,10
C12 G60	C12	12.4	14	1.0 - 2.0	28 - 13	0.8 - 1.75	32 - 15	H3, 4, 5, 14	266100 1202	39,–
C18 A60	C18	17.8	19	0.5 - 0.8	56 - 28	0.4 - 0.8	64 - 32	H6, 7, 8, 9, 15	266100 1801	50,–
C18 G60	C18	17.8	20	1.0 - 1.75	28 - 14	0.8 - 1.5	32 - 16	H6, 7, 8, 9, 15	266100 1802	45,70
C18 D60	C18	17.8	21	2.0 - 3.0	13 - 8	1.75 - 2.5	15 - 10	H6, 7, 8, 9, 15	266100 1803	45,70
C25 G60	C25	25	28	1.5 - 2.5	16 - 10	1.0 - 2.0	28 - 13	H10, 11, 16, 17	266100 2501	53,–
C25 N60	C25	25	30	3.0 - 5.0	8 - 5	2.5 - 4.5	10 - 6	H10, 11, 16, 17	266100 2502	53,–
C25 Q60	C25	25	34	5.0 - 6.0	5 - 4	4.5 - 5.0	6 - 5	H10, 11, 16, 17	266100 2503	53,–

2151





Partial profile, 60°, multi-flute

- the same tool for internal and external threads

ISO P M K N S H

model	Insert size mm	Pitch int. mm	Pitch int. TPI	Pitch ex. mm	Pitch ex. TPI	D mm	D min. mm	Number of teeth	Holder	AMT8 art.no.	€
S200 D N60	S20	3.0-5.0	8-5	2.5-4.5	10-6	20	25	4	H15	**266110** 2002	59,50
S200 F G60	S20	1.5-2.5	16-10	1.0-2.0	28-13	20	23	6	H6, 7, 8, 9, 15	266110 2001	57,50

2151

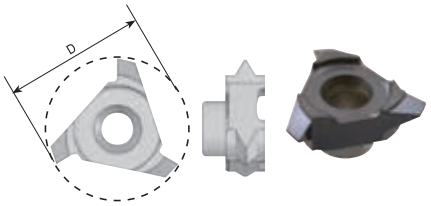
Partial profile, 55°

- the same tool for internal and external threads

ISO P M K N S H

model	Insert size mm	Pitch TPI	D mm	D min. mm	Holder	AMT7 art.no.	€
C10 G55	C10	19-14	10.0	13	H1, 2, 12	**266101** 1001	38,50
C12 G55	C12	28-19	12.0	14	H3, 4, 5, 14	266101 1201	39,–
C12 N55	C12	14-11	12.2	16	H3, 4, 5,	266101 1202	39,–
C18 G55	C18	14-8	18.0	23	H6, 7, 8, 9, 15	266101 1801	45,70
C25 N55	C25	7-5	25.0	31	H10, 11, 16, 17	266101 2501	53,–

2151



Partial profile, 55°, BSP (G), BSF, BSW, multi-flute

- the same tool for internal and external threads

ISO P M K N S H

model	Insert size mm	Pitch TPI	D mm	D min. mm	Number of teeth	Holder	AMT8 art.no.	€
S195 F G55	S20	14	19.5	23	6	H6, 7, 8, 9, 15	**266112** 2001	59,50
S200 D N55	S20	8-6	20.0	25	4	H15	266112 2002	59,50

2151



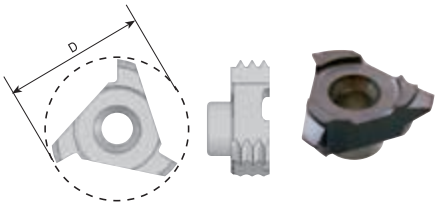
Full profile, ISO

- for female threads

ISO P M K N S H

model	Insert size mm	Pitch mm	D mm	D min. mm	T per cutting edge	Holder	AMT7 art.no.	€
C10 I 0.5 ISO	C10	0.5	9.0	10	6	H1, 2, 12, 13	**266102** 1001	58,–
C10 I 1.0 ISO	C10	1.0	10.0	12	3	H1, 2, 12, 13	266102 1002	47,90
C10 I 1.5 ISO	C10	1.5	10.0	13	2	H1, 2, 12, 13	266102 1003	47,90
C10 I 2.0 ISO	C10	2.0	10.0	14	1	H1, 2, 12	266102 1004	47,90
C12 I 0.5 ISO	C12	0.5	12.0	13	6	H3, 4, 5, 14	266102 1201	58,–
C12 I 0.75 ISO	C12	0.75	12.0	13	4	H3, 4, 5, 14	266102 1202	53,50
C12 I 1.0 ISO	C12	1.0	12.0	14	3	H3, 4, 5, 14	266102 1203	48,30
C12 I 1.5 ISO	C12	1.5	12.0	15	2	H3, 4, 5, 14	266102 1204	48,30
C12 I 2.0 ISO	C12	2.0	12.4	16	1	H3, 4, 5, 14	266102 1205	48,30
C12 I 2.5 ISO	C12	2.5	12.0	17	1	H3, 4, 5, 14	266102 1206	48,30
C12 I 3.0 ISO	C12	3.0	12.4	17	1	H3, 4, 5, 14	266102 1207	48,30
C18 I 0.5 ISO	C18	0.5	17.8	19	9	H6, 7, 8, 9, 15	266102 1801	66,50
C18 I 0.75 ISO	C18	0.75	17.8	19	6	H6, 7, 8, 9, 15	266102 1802	65,50
C18 I 1.0 ISO	C18	1.0	17.8	20	5	H6, 7, 8, 9, 15	266102 1803	60,–
C18 I 1.5 ISO	C18	1.5	17.8	20	3	H6, 7, 8, 9, 15	266102 1804	60,–
C18 I 2.0 ISO	C18	2.0	17.8	21	2	H6, 7, 8, 9, 15	266102 1805	60,–
C18 I 2.5 ISO	C18	2.5	17.8	22	2	H6, 7, 8, 9, 15	266102 1806	60,–
C18 I 3.0 ISO	C18	3.0	17.8	23	1	H6, 7, 8, 9, 15	266102 1807	60,–
C18 I 3.5 ISO	C18	3.5	17.8	24	1	H6, 7, 8, 9, 15	266102 1808	60,–
C25 I 3.0 ISO	C25	3.0	25.0	30	2	H10, 11, 16, 17	266102 2501	68,–
C25 I 4.0 ISO	C25	4.0	25.0	32	1	H10, 11, 16, 17	266102 2502	68,–
C25 I 4.5 ISO	C25	4.5	25.0	33	1	H10, 11, 16, 17	266102 2503	68,–
C25 I 5.0 ISO	C25	5.0	25.0	34	1	H10, 11, 16, 17	266102 2504	68,–
C25 I 5.5 ISO	C25	5.5	25.0	35	1	H10, 11, 16, 17	266102 2505	68,–
C25 I 6.0 ISO	C25	6.0	25.0	36	1	H10, 11, 16, 17	266102 2506	68,–

2151



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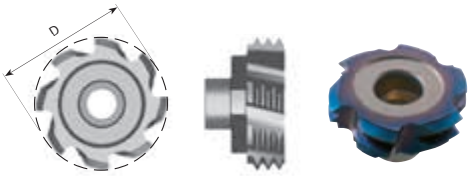
Full profile, ISO, multi-flute

• for female threads

ISO P M K N S H

model	Insert size mm	Pitch mm	D mm	D min. mm	T per cutting edge	Number of teeth	Holder	AMT8 art.no.	€
S163 H 1.0 ISO	S20	1.0	16.3	18	5	8	H6, 7, 8, 9, 15	**266113** 2001	78,–
S175 H 1.5 ISO	S20	1.5	17.5	20	3	8	H6, 7, 8, 9, 15	266113 2002	78,–
S178 F 2.5 ISO	S20	2.5	17.8	22	2	6	H6, 7, 8, 9, 15	266113 2004	78,–
S186 F 2.0 ISO	S20	2.0	18.6	22	2	6	H6, 7, 8, 9, 15	266113 2003	78,–
S189 F 3.0 ISO	S20	3.0	18.9	24	1	6	H6, 7, 8, 9, 15	266113 2005	78,–
S200 F 3.5 ISO	S20	3.5	20.0	26	1	6	H6, 7, 8, 9, 15	266113 2006	78,–
S200 F 4.0 ISO	S20	4.0	20.0	27	1	6	H6, 7, 8, 9, 15	266113 2007	78,–
S200 F 4.5 ISO	S20	4.5	20.0	28	1	5	H6, 7, 8, 9, 15	266113 2008	78,–
S200 F 5.0 ISO	S20	5.0	20.0	29	1	4	H15	266113 2009	78,–

2151



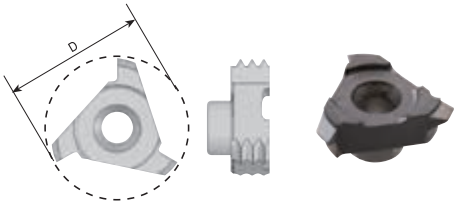
Full profile, UN

• for female threads

ISO P M K N S H

model	Insert size mm	Pitch TPI	D mm	T per cutting edge	Holder	AMT7 art.no.	€
C10 I 20 UN	C10	20	10.0	2	H1, 2, 12, 13	**266103** 1001	47,90
C10 I 18 UN	C10	18	10.0	2	H1, 2, 12, 13	266103 1002	47,90
C10 I 12 UN	C10	12	10.0	1	H1, 2, 12	266103 1003	47,90
C12 I 32 UN	C12	32	12.0	3	H3, 4, 5, 14	266103 1201	53,50
C12 I 28 UN	C12	28	12.0	3	H3, 4, 5, 14	266103 1202	48,30
C12 I 24 UN	C12	24	12.0	2	H3, 4, 5, 14	266103 1203	48,30
C12 I 20 UN	C12	20	12.0	2	H3, 4, 5, 14	266103 1204	48,30
C12 I 18 UN	C12	18	12.0	2	H3, 4, 5, 14	266103 1205	48,30
C12 I 16 UN	C12	16	12.0	1	H3, 4, 5, 14	266103 1206	48,30
C12 I 11 UN	C12	11	12.0	1	H3, 4, 5	266103 1207	48,30
C12 I 10 UN	C12	10	12.0	1	H3, 4, 5	266103 1208	48,30
C18 I 32 UN	C18	32	17.8	6	H6, 7, 8, 9, 15	266103 1801	65,50
C18 I 28 UN	C18	28	17.8	5	H6, 7, 8, 9, 15	266103 1802	60,–
C18 I 24 UN	C18	24	17.8	4	H6, 7, 8, 9, 15	266103 1803	60,–
C18 I 20 UN	C18	20	17.8	3	H6, 7, 8, 9, 15	266103 1804	60,–
C18 I 18 UN	C18	18	17.8	3	H6, 7, 8, 9, 15	266103 1805	60,–
C18 I 16 UN	C18	16	17.8	3	H6, 7, 8, 9, 15	266103 1806	60,–
C18 I 14 UN	C18	14	17.8	2	H6, 7, 8, 9, 15	266103 1807	60,–
C18 I 12 UN	C18	12	17.8	2	H6, 7, 8, 9, 15	266103 1808	60,–
C18 I 11 UN	C18	11	17.8	2	H6, 7, 8, 9, 15	266103 1809	60,–
C18 I 9 UN	C18	9	17.8	1	H6, 7, 8, 9, 15	266103 1810	60,–
C18 I 8 UN	C18	8	17.8	1	H6, 7, 8, 9, 15	266103 1811	60,–
C25 I 8 UN	C25	8	25.0	2	H10, 11, 16, 17	266103 2501	68,–
C25 I 7 UN	C25	7	25.0	1	H10, 11, 16, 17	266103 2502	68,–
C25 I 6 UN	C25	6	25.0	1	H10, 11, 16, 17	266103 2503	68,–
C25 I 5 UN	C25	5	25.0	1	H10, 11, 16, 17	266103 2504	68,–
C25 I 4 UN	C25	4	25.0	1	H10, 11, 16, 17	266103 2505	68,–

2151



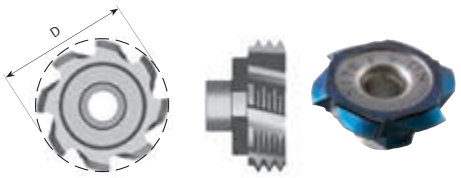
Full profile, UN, multi-flute

• for female threads

ISO P M K N S H

model	Insert size mm	Pitch TPI	D mm	Number of teeth	T per cutting edge	Holder	AMT8 art.no.	€
S160 H 24 UN	S20	24	16.0	8	4	H6, 7, 8, 9, 15	**266114** 2001	78,–
S164 F 16 UN	S20	16	16.4	6	3	H6, 7, 8, 9, 15	266114 2003	78,–
S169 H20 UN	S20	20	16.9	8	4	H6, 7, 8, 9, 15	266114 2002	78,–
S178 F 9 UN	S20	9	17.8	6	1	H6, 7, 8, 9, 15	266114 2006	78,–
S186 F 12 UN	S20	12	18.6	6	2	H6, 7, 8, 9, 15	266114 2005	78,–
S191 F14 UN	S20	14	19.1	6	2	H6, 7, 8, 9, 15	266114 2004	78,–
S200 D 5 UN	S20	5	20.0	4	1	H15	266114 2010	78,–
S200 E 6 UN	S20	6	20.0	5	1	H6, 7, 8, 9, 15	266114 2009	78,–
S200 F 7 UN	S20	7	20.0	6	1	H6, 7, 8, 9, 15	266114 2008	78,–
S200 F 8 UN	S20	8	20.0	6	1	H6, 7, 8, 9, 15	266114 2007	78,–

2151



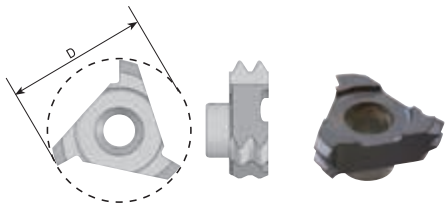
G55° BSW, BSF, BSP

- the same tool for internal and external threads

ISO P M K N S H

model	Insert size mm	Pitch TPI	D mm	T per cutting edge	Holder	AMT7 art.no.	€
C10 19 W	C10	19	10.0	2	H1, 2, 12, 13	**266104** 1001	47,90
C12 19 W	C12	19	12.0	2	H3, 4, 5, 14	266104 1201	48,30
C18 14 W	C18	14	17.8	2	H6, 7, 8, 9, 15	266104 1801	60,–
C18 11 W	C18	11	17.8	2	H6, 7, 8, 9, 15	266104 1802	60,–

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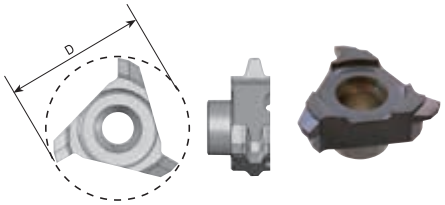
Trapezoid

- DIN 103
- For female threads

ISO P M K N S H

model	Insert size mm	Pitch mm	D mm	Holder	AMT7 art.no.	€
C10 I 2 TR	C10	2	10.0	H1, 2, 12	**266105** 1001	47,90
C18 I 3 TR	C18	3	17.8	H6, 7, 8, 9, 15	266105 1801	60,–
C18 I 4 TR	C18	4	17.8	H15	266105 1802	60,–
C18 I 5 TR	C18	5	17.8	H15	266105 1803	60,–
C25 I 6 TR	C25	6	25.0	H10, 11, 16, 17	266105 2501	68,–

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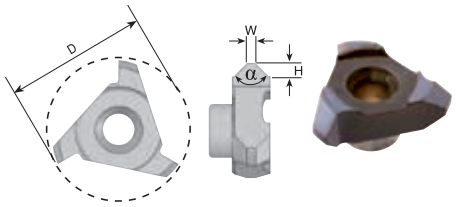
Countersinking and grooving

- suitable for deburring, reverse countersinking, and grooving
- Two cutting edges
- suitable for all materials

ISO P M K N S H

model	Insert size mm	D mm	H mm	W mm	a °	Holder	AMT7 art.no.	€
C10 C90	C10	10.0	1.30	0.4	90	H1, 2, 12	**266107** 1001	36,–
C12 C90	C12	12.0	1.35	0.3	90	H3.4.5	266107 1201	36,40
C18 C90	C18	17.8	1.95	1.1	90	H6, 7, 8, 9, 15	266107 1801	41,40
C25 C90	C25	25.0	2.50	1.0	90	H10, 11, 16, 17	266107 2501	60,–

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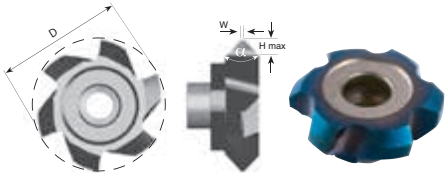
Countersinking and grooving, multi-flute

- suitable for deburring, reverse countersinking, and grooving
- Two cutting edges
- suitable for all materials

ISO P M K N S H

model	Insert size mm	D mm	H mm	W mm	a °	Number of teeth	Holder	AMT8 art.no.	€
SC170 E H14	S20	17.0	1.35	0.2	90°	5	H6, 7, 8, 9, 15	**266116** 2001	54,–
SC200 F H12	S20	20.0	1.20	2.5	90°	6	H6, 7, 8, 9, 15	266116 2007	54,–
SC200 F H14	S20	20.0	1.35	0.2	90°	6	H6, 7, 8, 9, 15	266116 2002	54,–
SC200 F H15	S20	20.0	1.50	2.0	90°	6	H6, 7, 8, 9, 15	266116 2006	54,–
SC200 F H17	S20	20.0	1.70	1.5	90°	6	H6, 7, 8, 9, 15	266116 2005	54,–
SC200 F H20	S20	20.0	1.95	1.0	90°	6	H6, 7, 8, 9, 15	266116 2004	54,–
SC200 F H24	S20	20.0	2.35	0.2	90°	6	H6, 7, 8, 9, 15	266116 2003	54,–

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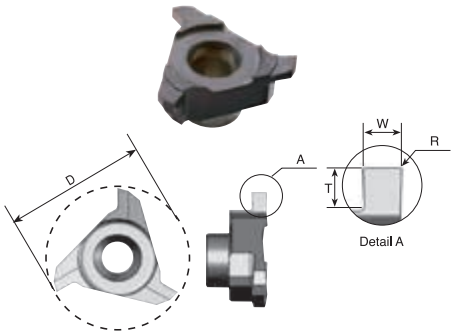
Continued on next page >>>

Plunge milling

ISO P M K N S H

model	Insert size mm	D mm	W±0.02 mm	T max. mm	R mm	D min. mm	Holder	AMT7 art.no.	€
C10 W08	C10	10.0	0.80	0.80	0.1	10.0	H1, 2, 12, 13	**266108** 1001	34,30
C10 W09	C10	10.0	0.90	0.90	0.1	10.0	H1, 2, 12, 13	266108 1002	34,30
C10 W10	C10	10.0	1.00	0.90	0.1	10.0	H1, 2, 12, 13	266108 1003	34,30
C12 W08	C12	12.0	0.80	0.80	0.1	12.0	H3, 4, 5, 14	266108 1201	34,90
C12 W10	C12	12.0	1.00	0.90	0.1	12.0	H3, 4, 5, 14	266108 1202	34,90
C18 W10	C18	17.8	1.00	1.50	0.1	17.8	H6, 7, 8, 9, 15	266108 1801	41,60
C18 W12	C18	17.8	1.20	1.50	0.1	17.8	H6, 7, 8, 9, 15	266108 1802	41,60
C18 W15	C18	17.8	1.50	1.95	0.1	17.8	H6, 7, 8, 9, 15	266108 1803	41,60
C18 W20	C18	17.8	2.00	2.80	0.1	17.8	H15	266108 1804	41,60
C25 W20	C25	25.0	2.00	3.00	0.2	25.0	H10, 11, 16, 17	266108 2501	48,80
C25 W25	C25	25.0	2.50	3.00	0.2	25.0	H10, 11, 16, 17	266108 2502	48,80
C25 W30	C25	25.0	3.00	3.00	0.2	25.0	H10, 11, 16, 17	266108 2503	48,80
C25 W35	C25	25.0	3.50	3.50	0.2	25.0	H10, 11, 16, 17	266108 2504	48,80
C25 W40	C25	25.0	4.00	3.50	0.2	25.0	H10, 11, 16, 17	266108 2505	48,80
C25 W50	C25	25.0	5.00	3.50	0.2	25.0	H10, 11, 16, 17	266108 2506	48,80

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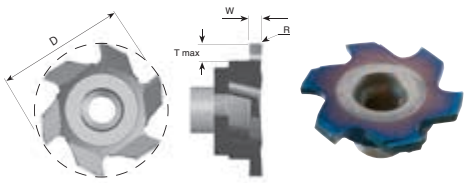


Plunge milling, multi-flute

ISO P M K N S H

model	Insert size mm	D mm	W±0.02 mm	T max. mm	R mm	D min. mm	Number of teeth	Holder	AMT8 art.no.	€
SG200 E W20T	S20	20.0	2.0	3.7	0.2	20	5	H15	**266117** 2007	56,–
SG200 E W25T	S20	20.0	2.5	3.7	0.2	20	5	H15	266117 2008	56,–
SG200 E W30T	S20	20.0	3.0	3.7	0.2	20	5	H15	266117 2009	56,–
SG200 F W15	S20	20.0	1.5	2.9	0.2	20	6	H6, 7, 8, 9, 15	266117 2001	54,–
SG200 F W20	S20	20.0	2.0	2.9	0.2	20	6	H6, 7, 8, 9, 15	266117 2002	52,50
SG200 F W25	S20	20.0	2.5	2.9	0.2	20	6	H6, 7, 8, 9, 15	266117 2003	54,–
SG200 F W30	S20	20.0	3.0	2.9	0.2	20	6	H6, 7, 8, 9, 15	266117 2004	54,–
SG200 F W40	S20	20.0	4.0	2.9	0.2	20	6	H6, 7, 8, 9, 15	266117 2005	54,–
SG200 F W49	S20	20.0	4.9	2.9	0.2	20	6	H6, 7, 8, 9, 15	266117 2006	54,–

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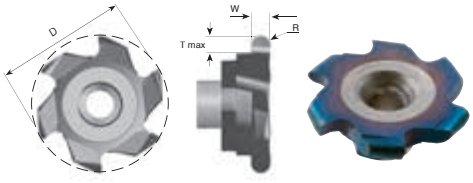


Full radius plunge milling, multi-flute

ISO P M K N S H

model	Insert size mm	D mm	W±0.02 mm	T max. mm	R mm	D min. mm	Number of teeth	Holder	AMT8 art.no.	€
SG200 F R10	S20	20.0	2.0	2.9	1.0	20	6	H6, 7, 8, 9, 15	**266118** 2001	56,–
SG200 F R12	S20	20.0	2.4	2.9	1.2	20	6	H6, 7, 8, 9, 15	266118 2002	56,–
SG200 F R15	S20	20.0	3.0	2.9	1.5	20	6	H6, 7, 8, 9, 15	266118 2003	54,50
SG200 F R20	S20	20.0	4.0	2.9	2.0	20	6	H6, 7, 8, 9, 15	266118 2004	56,–

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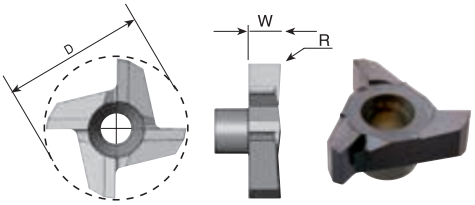


Face milling and finishing

ISO P M K N S H

model	Insert size mm	D mm	W mm	R mm	Holder	AMT7 art.no.	€
C18 F R 0.1	C18	17.8	5.0	0.1	H6, 7, 8, 9, 15	**266109** 1801	53,–
C25 F R 0.2	C25	25.0	6.0	0.2	H10, 11, 16, 17	266109 2501	60,50

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Overview of tool holders

	Exchangeable head milling cutters	Face milling cutters			
Sorting by type					
Brand	ATORN®	ATORN®	ATORN®	ATORN®	ATORN®
Order No.	255500-504.... 255600-615....	260801.... 260202....	262555....	260200....	262550....
Tool cutting edge angle	Various	45°	45°	45°	45°
Number of cutting edges	2 - 8	2-16	4-20	4-13	4-16
Coolant bore		●	●	●	●
ISO milling inserts		SE.T 1204	SN.X 1206 SNMU 1206	SE.N 1203	SE.T 13T3 XEHW 13T3
Page	617	626	627	630	632
Material groups	**Usage recommendations**				
Steel < 700 N/mm²	●	●	●	●	●
Steel < 1000 N/mm²	●	●	●	●	●
Steel < 1400 N/mm²	●	●	●	●	●
Stainless steel ferritic/martensitic	●	●	●	●	●
Stainless steel austenitic	●	●	●	●	●
Stainless steel duplex					
Cast iron GG/GTS	●	●	●	●	●
Cast iron GGG	●	●	●	●	●
Titanium alloys					●
Superalloys Fe/NiCo base < 30 HRc					●
Superalloys Fe/NiCo base ≥ 30 HRc					
Aluminium < 8 % Si	●	●	●	●	●
Aluminium ≥ 8 % Si	●	●	●	●	●
Copper Cu-alloy	●				
Graphite GRP/CFP/thermoset					
Hardened steel < 55 HRc	●				●
Hardened steel < 60 HRc	●				●
Hardened steel ≥ 60 HRc	●				

	Face milling cutters			Drilling/die sinking cutters	
Sorting by type					
Brand	ATORN®	ATORN®	ATORN®	ATORN®	ATORN®
Order No.	260111....	265232....	262533....	262515.... 262516....	262515.... 262516....
Tool cutting edge angle		75°	75°	90°	90°
Number of cutting edges	4-8	4	3-7	3	3
Coolant bore				●	●
ISO milling inserts	OCKX 1606 XCKX 1606 RCKX 1606 SAHT 1306	APKT 1003 APHX 1003	APKT 1604 APHX 1604	APKT 1003 APHX 1003	APKT 1604 APHX 1604
Page	631	640	644	638	643
Material groups	**Usage recommendations**				
Steel < 700 N/mm²	●	●	●	●	●
Steel < 1000 N/mm²	●	●	●	●	●
Steel < 1400 N/mm²	●	●	●	●	●
Stainless steel ferritic/martensitic	●	●	●	●	●
Stainless steel austenitic	●	●	●	●	●
Stainless steel duplex					
Cast iron GG/GTS	●	●	●	●	●
Cast iron GGG	●	●	●	●	●
Titanium alloys					
Superalloys Fe/NiCo base < 30 HRc					
Superalloys Fe/NiCo base ≥ 30 HRc					
Aluminium < 8 % Si		●	●	●	●
Aluminium ≥ 8 % Si		●	●	●	●
Copper Cu-alloy		●	●	●	●
Graphite GRP/CFP/thermoset		●	●	●	●
Hardened steel < 55 HRc					
Hardened steel < 60 HRc					
Hardened steel ≥ 60 HRc					

	Shoulder milling cutters						
Sorting by type							
Brand	ATORN®	ATORN®	ATORN®	ATORN®	ATORN®	ATORN®	ATORN®
Order No.	Various	262547....	262535....	262540.... 262542.... 262546....	262559.... 262561.... 262563....	262523.... 262525.... 262530....	262537....
Tool cutting edge angle	89.5	90°	90°	90°	90°	90°	90°
Number of cutting edges	1-9	4-9	8 - 11	1-12	3-10	4-16	8 - 30
Coolant bore	●	●	●	●		●	●
ISO milling inserts	SPMT 06.. SPMT 12.. SPGT 06.. SPGT 12..	SDMT 1205	APKT 06	AP.. 1003	LN.X 100605	APKT 1604 APHX 1604	APKT 06
Page	649	634	635	636	647	644	635
Material groups	**Usage recommendations**						
Steel < 700 N/mm²	●	●	●	●	●	●	●
Steel < 1000 N/mm²	●	●	●	●	●	●	●
Steel < 1400 N/mm²	●	●	●	●	●	●	●
Stainless steel ferritic/martensitic	●	●	●	●	●	●	●
Stainless steel austenitic	●	●	●	●	●	●	●
Stainless steel duplex	○						
Cast iron GG/GTS	●	●	●	●	●	●	●
Cast iron GGG	●	●	●	●	●	●	●
Titanium alloys		●					
Superalloys Fe/NiCo base < 30 HRc		●					
Superalloys Fe/NiCo base ≥ 30 HRc							
Aluminium < 8 % Si	●			●	●	●	
Aluminium ≥ 8 % Si	●			●	●	●	
Copper Cu-alloy	●			●	●	●	
Graphite GRP/CFP/thermoset				●	●	●	
Hardened steel < 55 HRc							
Hardened steel < 60 HRc							
Hardened steel ≥ 60 HRc							

	Shoulder milling cutters			Roughing spiral flute milling cutters		Spiral flute chamfer milling cutters	
Sorting by type							
Brand	ATORN®	ATORN®	palbit	ATORN®	ATORN®	ATORN®	ATORN®
Order No.	262568....	262565....	260293.... 260294.... 260295....	262529.... 262544....	262523....	262531....	262527....
Tool cutting edge angle	90°	90°	95°	90°	90°	15-75°	15-75°
Number of cutting edges	4 - 8	5 - 11	2 - 7	1-4	3-6	9	6
Coolant bore	●	●	●	●		●	
ISO milling inserts	WNEU 04	WNEU 08	XD.. 04.. XD.. 06.. XD.. 08..	APKT 1003 APHX 1003	APKT 1604 APHX 1604	APKT 1003 APHX 1003	APKT 1604 APHX 1604
Page	652	653	681	639	644	639	645
Material groups	**Usage recommendations**						
Steel < 700 N/mm²	●	●		●	●	●	●
Steel < 1000 N/mm²	●	●		●	●	●	●
Steel < 1400 N/mm²	●	●		●	●	●	●
Stainless steel ferritic/martensitic	●	●		●	●	●	●
Stainless steel austenitic	●	●		●	●	●	●
Stainless steel duplex							
Cast iron GG/GTS	●	●		●	●	●	●
Cast iron GGG	●	●		●	●	●	●
Titanium alloys							
Superalloys Fe/NiCo base < 30 HRc							
Superalloys Fe/NiCo base ≥ 30 HRc							
Aluminium < 8 % Si				●	●	●	●
Aluminium ≥ 8 % Si				●	●	●	●
Copper Cu-alloy				●	●	●	●
Graphite GRP/CFP/thermoset				●	●	●	●
Hardened steel < 55 HRc							
Hardened steel < 60 HRc							
Hardened steel ≥ 60 HRc							

	Countersinking mill, adjustable		Chamfer cutters		High-speed corner milling cutters		
Sorting by type							
Brand	ATORN®	ATORN®	ATORN®	ATORN®	ATORN®	ATORN®	ATORN®
Order No.	260123....	260123....	260121.... 260125....	260126....	264001.... 264002....	264003.... 264004....	264006.... 264007.... 264009....
Tool cutting edge angle	10-80°	10-80°	30-45-60°	45°	90°	90°	90°
Number of cutting edges	1	1	1-3	1	1-6	2-6	2-9
Coolant bore				●	●	●	●
ISO milling inserts	TC.. 1102	TC.. 16T3 SCMT 1204	TCMT 1102 TCMT 16T3 SCMT 0602 SCMT 09T3	TCMT 16T3	AD..X 06..	AD..X 09..	AD..X 12..
Page	693	693	695	699	657	658	659
Material groups	**Usage recommendations**						
Steel < 700 N/mm²	●	●	●	●	●	●	●
Steel < 1000 N/mm²	●	●	●	●	●	●	●
Steel < 1400 N/mm²	●	●	●	●	●	●	●
Stainless steel ferritic/martensitic	●	●	●	●	●	●	●
Stainless steel austenitic	●	●	●	●	●	●	●
Stainless steel duplex					●	●	●
Cast iron GG/GTS	●	●	●	●	●	●	●
Cast iron GGG	●	●	●	●	●	●	●
Titanium alloys	●	●	●	●			
Superalloys Fe/NiCo base < 30 HRc	●	●	●	●			
Superalloys Fe/NiCo base ≥ 30 HRc							
Aluminium < 8 % Si					●	●	●
Aluminium ≥ 8 % Si					●	●	●
Copper Cu-alloy					●	●	●
Graphite GRP/CFP/thermoset					●	●	●
Hardened steel < 55 HRc							
Hardened steel < 60 HRc							
Hardened steel ≥ 60 HRc							

	High-speed corner milling cutters	High-speed spiral flute milling cutters			T-slot milling cutters	Plunge milling cutters
Sorting by type						
Brand	ATORN®	ATORN®	ATORN®	ATORN®	SARA®	ATORN®
Order No.	264011.... 264012.... 264014....	264005....	264008.... 264010....	264013....	263007....	260400.... 260402....
Tool cutting edge angle	90°	90°	90°	90°		90°
Number of cutting edges	2-9	6-15	8-20	12-20	2-4	2-5
Coolant bore	●	●	●	●	●	●
ISO milling inserts	AD..X 17..	AD..X 09..	AD..X 12..	AD..X 17..	SPMT 0603 SPMT 09T3 SPMT 1204	VCGT 220530 VPGT 160412
Page	661	658	660	662	700	680
Material groups	**Usage recommendations**					
Steel < 700 N/mm²	●	●	●	●	●	
Steel < 1000 N/mm²	●	●	●	●	●	
Steel < 1400 N/mm²	●	●	●	●	●	
Stainless steel ferritic/martensitic	●	●	●	●	●	
Stainless steel austenitic	●	●	●	●	●	
Stainless steel duplex	●	●	●	●		
Cast iron GG/GTS	●	●	●	●	●	
Cast iron GGG	●	●	●	●	●	
Titanium alloys						
Superalloys Fe/NiCo base < 30 HRc						
Superalloys Fe/NiCo base ≥ 30 HRc						
Aluminium < 8 % Si	●	●	●	●		●
Aluminium ≥ 8 % Si	●	●	●	●		●
Copper Cu-alloy	●	●	●	●		●
Graphite GRP/CFP/thermoset	●	●	●	●		●
Hardened steel < 55 HRc						
Hardened steel < 60 HRc						
Hardened steel ≥ 60 HRc						

	Plunge milling cutters	High feed-rate milling cutters					Copy milling cutters
Sorting by type							
Brand	palbit	ATORN	palbit	palbit	palbit	palbit	palbit
Order No.	260252.... 260253.... 260250.... 260251....	diverse	260218.... 260219....	260220.... 260221....	260239.... 260243....	260312.... 260313....	260289.... 260290.... 260281.... 260884.... 260817....
Tool cutting edge angle	90°		10°	10°	90°		
Number of cutting edges	3 - 6	2 - 10	2 - 5	3 - 8	2 - 9	2 - 9	2 - 7
Coolant bore	●	●	●	●	●	●	●
ISO milling inserts	XDGX 15...	XCNT/W 07 XCNT/W 09 XCNT/W 12 XDM 09	SOE...08	SOE...13	XP 06... XP 10... XP 17...	XNMU06...	RD.. 07.. RD.. 10.. RD.. 12.. RD.. 16..
Page	679	664	700	701	672	677	683
Material groups	**Usage recommendations**						
Steel < 700 N/mm²		●	●	●	●	●	●
Steel < 1000 N/mm²		●	●	●	●	●	●
Steel < 1400 N/mm²		●	●	●	●	●	●
Stainless steel ferritic/martensitic		●	●	●	●	●	
Stainless steel austenitic		●	●	●	●	●	
Stainless steel duplex		●	●	●	●		
Cast iron GG/GTS		●	●	●	●	●	●
Cast iron GGG		●	●	●	●	●	●
Titanium alloys			●	●		●	
Superalloys Fe/NiCo base < 30 HRc			●	●		●	
Superalloys Fe/NiCo base ≥ 30 HRc			●	●			
Aluminium < 8 % Si	●	●			●		
Aluminium ≥ 8 % Si	●	●			●		
Copper Cu-alloy	●	●			●		
Graphite GRP/CFP/thermoset							
Hardened steel < 55 HRc							●
Hardened steel < 60 HRc							
Hardened steel ≥ 60 HRc							

	Ball-nose cutter	Torus cutter	High feed-rate milling cutters	Tangential milling cutter	Disc milling cutters	
Sorting by type						
Brand			palbit	ATORN	ATORN	SARA
Order No.	260530.... - 260534....	260540.... 260544....	260247.... 260248....	262566....	262600.... 262610....	262630....
Tool cutting edge angle			90°	90°		
Number of cutting edges	1	1	2 - 11	5 - 20	8 - 24	4 - 10
Coolant bore			●			
ISO milling inserts	PFB	PFR	LNXT13	XNMU	SNHX 110.T SNHX 120.T	GELCG...19
Page	686	690	655	654	709	711
Material groups	**Usage recommendations**					
Steel < 700 N/mm²	●	●	●	●	●	●
Steel < 1000 N/mm²	●	●	●	●	●	●
Steel < 1400 N/mm²	●	●	●	●	●	●
Stainless steel ferritic/martensitic	●	●	●	●	●	●
Stainless steel austenitic	●	●	●	●	●	●
Stainless steel duplex						
Cast iron GG/GTS	●	●	●	●	●	●
Cast iron GGG	●	●	●	●	●	●
Titanium alloys	●	●				
Superalloys Fe/NiCo base < 30 HRc	●	●				
Superalloys Fe/NiCo base ≥ 30 HRc						
Aluminium < 8 % Si	●	●			●	●
Aluminium ≥ 8 % Si	●	●			●	●
Copper Cu-alloy					●	
Graphite GRP/CFP/thermoset						
Hardened steel < 55 HRc	●	●				
Hardened steel < 60 HRc						
Hardened steel ≥ 60 HRc						

ATORN® Modular milling system

INFO

Properties

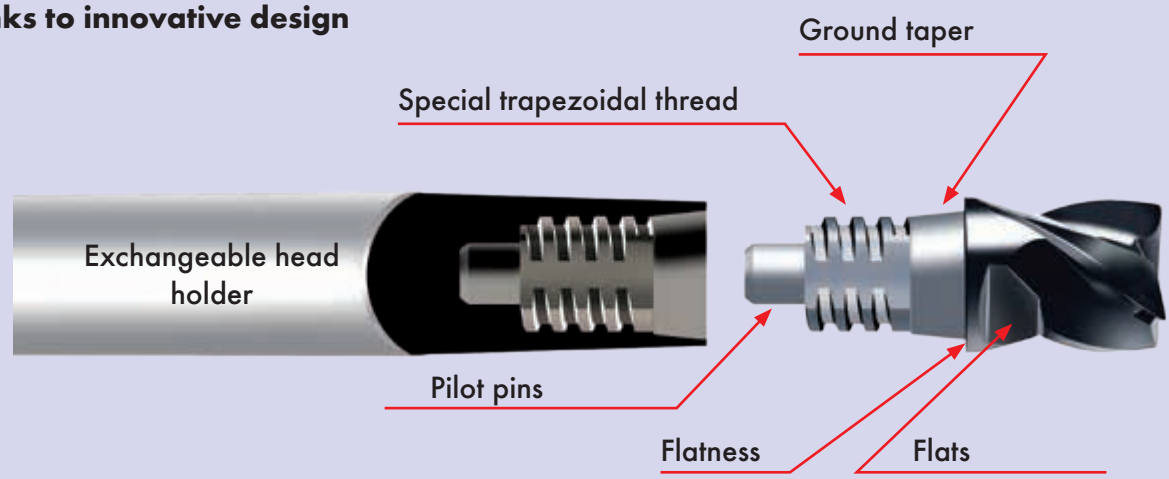
- Low tooling times
- A wide range of geometries
- Various shank shapes
- Diameters from 10 to 20 mm

Advantages

Reduced costs

- High true-running accuracy < 20µm
- High stability and stiffness thanks to pilot pins
- Low-vibration
- Guaranteed repetition precision

Perfect friction and form fit thanks to innovative design



A modular system for a wide range of tasks

- For ISO material groups P, M, N, K, H
- For roughing and finishing all contours
- Optimal for series production
- Particularly suitable for multiple-spindle automated lathes without tool changer and lathes with driven tools



Cost advantages

- Replacement of the head, shank remains clamped
- Up to 50 change cycles per shank possible
- Replaceable heads can be resharpened
- Quick change
- Reduced auxiliary processing times

Modular milling system

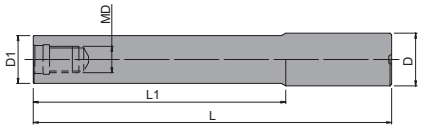
								
Brand	ATORN®	ATORN®	ATORN®	ATORN®	ATORN®	ATORN®	ATORN®	ATORN®
Number of cutting edges	2	3	3	4	4	6-8	4-6	4-5
Diameter range / mm	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20
Standard	WN	WN	WN	WN	WN	WN	WN	WN
Version			HPC		HPC		MTC	MTC
Type/profile	N	N	W	N	NH	N	NRf	NR
Cutting material	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide
Coating	TiAlN	TiAlN	ZrN	TiAlN	AlTiN	TiAlN	AlTiN	AlTiN
Item number	255604...	255605...	255603...	255606...	255600	255607	255601	255602
Page	620	620	621	621	621	622	622	622
Material groups	Usage recommendations							
Steel < 700 N/mm²	●	●	●	●	●	●	●	●
Steel < 1000 N/mm²	●	●	●	●	●	●	●	●
Steel < 1400 N/mm²	●	●	●	●	●	●	●	●
Stainless steel ferritic/martensitic								
Stainless steel austenitic	●	●		●	●	●	●	●
Stainless steel duplex								
Cast iron GG/GTS	●	●		●	●	●	●	●
Cast iron GGG	●	●		●	●	●	●	●
Titanium alloys								
Superalloys Fe/NiCo base < 30 HRc								
Superalloys Fe/NiCo base ≥ 30 HRc								
Aluminium < 8 % Si	●	●						
Aluminium ≥ 8 % Si	●	●	●					
Copper Cu-alloy	●	●	●					
Graphite GRP/CFP/thermoset								
Hardened steel < 55 HRc								
Hardened steel < 60 HRc								
Hardened steel ≥ 60 HRc								

								
Brand	ATORN®	ATORN®	ATORN®	ATORN®	ATORN®	ATORN®	ATORN®	ATORN®
Number of cutting edges	4	2	2	2	4	2	6	4
Diameter range / mm	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20
Standard	WN	WN	WN	WN	WN	WN	WN	WN
Version	HPC/HSC	HPC	HPC/HSC	HSC				
Type/profile	N	NH	H	H	N	N	N	N
Cutting material	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide
Coating	AlTiN+	AlTiN	AlTiN+	AlTiN	TiAlN	TiAlN	TiAlN	TiAlN
Item number	255608	255609	255610	255612	255611	255613	255614	255615
Page	623	623	623	624	624	624	625	625
Material groups	Usage recommendations							
Steel < 700 N/mm²	●	●	●	●	●	●	●	●
Steel < 1000 N/mm²	●	●	●	●	●	●	●	●
Steel < 1400 N/mm²	●	●	●	●	●	●	●	●
Stainless steel ferritic/martensitic						●	●	●
Stainless steel austenitic						●	●	●
Stainless steel duplex								
Cast iron GG/GTS	●	●	○	●	●	●	●	●
Cast iron GGG	●	●	○	●	●	●	●	●
Titanium alloys								
Superalloys Fe/NiCo base < 30 HRc								
Superalloys Fe/NiCo base ≥ 30 HRc								
Aluminium < 8 % Si						●	●	●
Aluminium ≥ 8 % Si						●	●	●
Copper Cu-alloy						●	●	●
Graphite GRP/CFP/thermoset								
Hardened steel < 55 HRc	●	●	●	●	●			
Hardened steel < 60 HRc	●	●	●	●				
Hardened steel ≥ 60 HRc	●	●	●	●				

ATORN® Straight exchangeable head holder

h6 DIN 6535 HA

- Please order chuck key separately





Steel holder, short

D mm	L mm	L1 mm	D1 mm	MD	art.no.	€
10	65	5	9.6	20	**255500** 0020	93,50
12	75	5	11.6	30	255500 0030	93,50
16	80	6	15.4	40	255500 0040	103,50
20	90	6	19.2	50	255500 0050	105,50

2159

Steel holder, long

D mm	L mm	L1 mm	D1 mm	MD	art.no.	€
10	75	18	9.6	20	**255501** 0020	104,50
12	85	21	11.6	30	255501 0030	104,50
16	95	23	15.4	40	255501 0040	114,50
20	110	28	19.2	50	255501 0050	116,50

2159

Solid carbide holder, extra-long

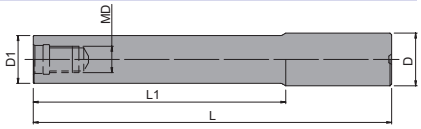
D mm	L mm	L1 mm	D1 mm	MD	art.no.	€
10	111	56	9.6	20	**255502** 0020	235,–
12	128	63	11.6	30	255502 0030	252,–
16	149	79	15.4	40	255502 0040	331,–
20	174	94	19.2	50	255502 0050	451,–

2159

ATORN® Tapered exchangeable head holder

h6 DIN 6535 HA

- Please order chuck key separately





Steel holder 5 °

D mm	L mm	L1 mm	D1 mm	MD	art.no.	€
16	105	36	9.6	20	**255503** 0020	126,50
20	120	48	11.6	30	255503 0030	126,50
20	135	26	15.4	40	255503 0040	128,–
25	150	33	19.2	50	255503 0050	132,50

2159

Steel holder 1 °

D mm	L mm	L1 mm	D1 mm	MD	art.no.	€
16	110	36	9.6	20	**255504** 0020	126,50
20	130	53	11.6	30	255504 0030	126,50
20	145	59	15.4	40	255504 0040	128,–
25	180	74	19.2	50	255504 0050	132,50

2159

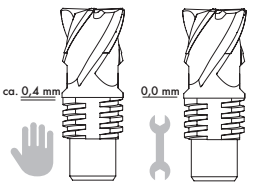
ATORN® Assembly key for exchangeable head holder



MD	Wr. width mm	L mm	h mm	art.no.	€
20	8 mm	92	2.8	**255698** 0020	5,85
30	10 mm	100	3.8	255698 0030	6,30
40	13 mm	135	3.8	255698 0040	8,15
50	16 mm	145	4.8	255698 0050	8,80

2161

Initial tightening by hand, then using specified torque



ATORN® Open-end snap-in spanner for exchangeable head holder

MD	Wr. width mm	h mm	Quadratic mm	art.no.	€
20	8	2.8	9x12	**255699** 0020	68,–
30	10	3.8	9x12	255699 0030	68,–
40	13	3.8	9x12	255699 0040	68,–
50	16	4.8	9x12	255699 0050	68,–

2161



For snap-in tools
- Accuracy ± 3 % of scale value
- Including serial number and certificate
- DIN EN ISO 6789:2003 (D)





For snap-in tools, please visit the online shop

Torque N-m	Quadratic mm	Scale division N-m	Length mm	art.no.	€	Calibration art.no.	Calibration €
10-60	9x12	0.5	312	**702603** 0002	138,50	079310 0001	31,50

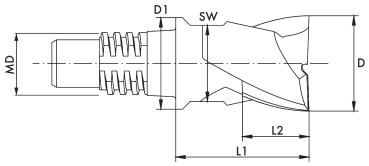
7109



702603 0002

ATORN® Exchangeable head milling cutter, Z2

VHM | Typ N | 30° | h10 | h6 | Z 2 | TiAlN | Vc/fz | 781



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 220	● 190	● 155		● 120		● 180	● 140				● 300	● 220	● 200				
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

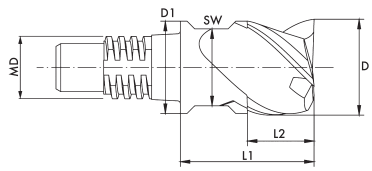
D mm	L2 mm	L1 mm	D1 mm	Wr. width mm	MD	Tightening torque max. N-m	● Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
10	7	14	9.6	8 x 3 mm	20	12	0.084	**255604** 0100	50,–
12	9	17	11.6	10 x 4 mm	30	15	0.084	255604 0120	63,50
16	12	21	15.4	13 x 4 mm	40	30	0.11	255604 0160	91,50
20	15	26	19.2	16 x 5 mm	50	45	0.14	255604 0200	111,50

2160



ATORN® Exchangeable head milling cutter, Z3 Type N

VHM | Typ N | 45° | h10 | h6 | Z 3 | TiAlN | Vc/fz | 781



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 220	● 190	● 155		● 120		● 180	● 140				● 250	● 300	● 200				
	Cutting speed Vc m/min.																		
	Please adjust these guidelines according to clamping operation and machine set-up.																		

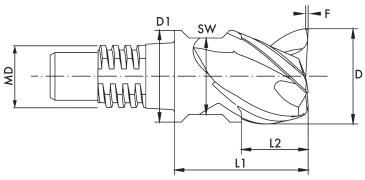
D mm	L2 mm	L1 mm	D1 mm	Wr. width mm	MD	Tightening torque max. N-m	● Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
10	7	14	9.6	8 x 3 mm	20	12	0.084	**255605** 0100	50,–
12	9	17	11.6	10 x 4 mm	30	15	0.084	255605 0120	63,50
16	12	21	15.4	13 x 4 mm	40	30	0.11	255605 0160	91,50
20	15	26	19.2	16 x 5 mm	50	45	0.14	255605 0200	111,50

2160



ATORN® Exchangeable head milling cutter, Z3 Type W

VHM | Typ W | 45° | h10 | h6 | Z 3 | ZrN | HPC | Vc/fz | 780



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
													● 400	● 350	● 160				
	Cutting speed Vc m/min.										Please adjust these guidelines according to clamping operation and machine set-up.								

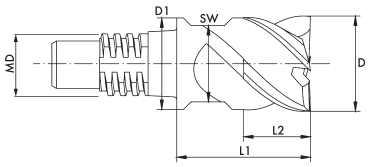
D mm	L2 mm	L1 mm	D1 mm	F x 45° mm	Wr. width mm	MD	Tightening torque max. N·m	● Feed fz aluminium < 8 % Si mm/tooth	art.no.	€
10	7	14	9.6	0.20	8 x 3 mm	20	12	0.065	**255603** 0100	50,–
12	9	17	11.6	0.20	10 x 4 mm	30	15	0.065	255603 0120	62,50
16	12	21	15.4	0.20	13 x 4 mm	40	30	0.085	255603 0160	92,50
20	15	26	19.2	0.20	16 x 5 mm	50	45	0.11	255603 0200	117,–

2160



ATORN® Exchangeable head milling cutter, Z4

VHM | Typ N | 45° | h10 | h6 | Z 4 | TiAlN | Vc/fz | 781



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 220	● 190	● 155		● 120		● 180	● 140					● 300	● 200				
	Cutting speed Vc m/min.										Please adjust these guidelines according to clamping operation and machine set-up.								

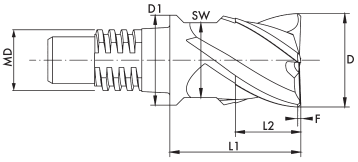
D mm	L2 mm	L1 mm	D1 mm	Wr. width mm	MD	Tightening torque max. N·m	● Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
10	7	14	9.6	8 x 3 mm	20	12	0.084	**255606** 0100	50,–
12	9	17	11.6	10 x 4 mm	30	15	0.084	255606 0120	63,50
16	12	21	15.4	13 x 4 mm	40	30	0.11	255606 0160	91,50
20	15	26	19.2	16 x 5 mm	50	45	0.14	255606 0200	111,50

2160



ATORN® Exchangeable head milling cutter, Z4 irregular

VHM | NH | 35°-38° | h10 | h6 | Z 4 | AlTiN | HPC | Vc/fz | 780



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 190	● 160	● 110		● 75		● 190	● 140										
	Cutting speed Vc m/min.										Please adjust these guidelines according to clamping operation and machine set-up.								

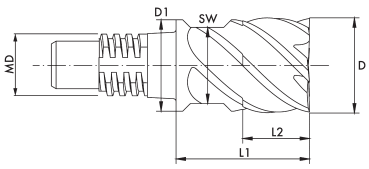
D mm	L2 mm	L1 mm	D1 mm	F x 45° mm	Wr. width mm	MD	Tightening torque max. N·m	● Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
10	7	14	9.6	0.3	8 x 3 mm	20	12	0.075	**255600** 0100	59,–
12	9	17	11.6	0.3	10 x 4 mm	30	15	0.075	255600 0120	73,50
16	12	21	15.4	0.4	13 x 4 mm	40	30	0.1	255600 0160	116,–
20	15	26	19.2	0.5	16 x 5 mm	50	45	0.12	255600 0200	132,50

2160



ATORN® Exchangeable head milling cutter, multi-flute

VHM | Typ N | 45° | h10 | h6 | Z 6 | Z 8+ | TiAlN | Vc/fz | 781



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 220	● 160	● 90		● 120		● 200	● 170										
	Cutting speed Vc m/min.				Please adjust these guidelines according to clamping operation and machine set-up.														



D mm	L2 mm	L1 mm	D1 mm	Z	Wr. width mm	MD	Tightening torque max. N·m	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
10	7	14	9.6	6	8 x 3 mm	20	12	0.065	**255607** 0100	58,–
12	9	17	11.6	6	10 x 4 mm	30	15	0.065	255607 0120	74,50
16	12	21	15.4	6	13 x 4 mm	40	30	0.075	255607 0160	112,50
20	15	26	19.2	8	16 x 5 mm	50	45	0.1	255607 0200	152,50

2160

ATORN® Exchangeable head roughing cutter NR

VHM | NRf | NR | 45° | h10 | h6 | Z 4 | Z 5 | Z 6 | AlTiN | MTC | Vc/fz | 780

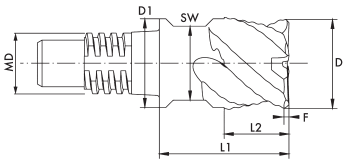
material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 190	● 150	● 110		● 90		● 170	● 120										
	Cutting speed Vc m/min.				Please adjust these guidelines according to clamping operation and machine set-up.														



NRf - toothing

D mm	L2 mm	L1 mm	D1 mm	F x 45° mm	Z	Wr. width mm	MD	Tightening torque max. N·m	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
10	7	14	9.6	0.20	4	8 x 3 mm	20	12	0.052	**255601** 0100	54,50
12	9	17	11.6	0.20	4	10 x 4 mm	30	15	0.052	255601 0120	69,–
16	12	21	15.4	0.25	5	13 x 4 mm	50	30	0.07	255601 0160	104,50
20	15	26	19.2	0.25	6	16 x 5 mm	50	45	0.084	255601 0200	132,50

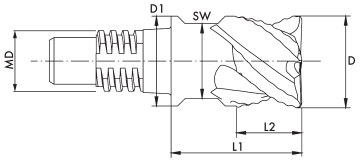
2160



NR - toothing

D mm	L2 mm	L1 mm	D1 mm	Z	Wr. width mm	MD	Tightening torque max. N·m	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
10	7	14	9.6	4	8 x 3 mm	20	12	0.052	**255602** 0100	54,50
12	9	17	11.6	4	10 x 4 mm	30	15	0.052	255602 0120	69,–
16	12	21	15.4	5	13 x 4 mm	40	30	0.07	255602 0160	104,50
20	15	26	19.2	5	16 x 5 mm	50	45	0.084	255602 0200	132,50

2160



ATORN® Exchangeable head torus milling cutter

VHM | Typ H | NH | 45° | 15° | h10 | h6 | Z 4 | Z 2 | AlTiN+ | AlTiN | HPC | HSC | | i Vc/fz | 782

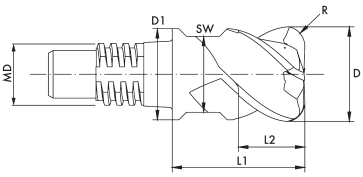
material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
	255608....	● 194-355	● 181-330	● 137-320				● 178-325	● 162-295								● 107-195	● 60-110	● 52-95
	255609....	● 200	● 140	● 120				● 180	● 150								● 95	● 70	● 60
	Cutting speed Vc m/min.										Please adjust these guidelines according to clamping operation and machine set-up.								

Type H (HPC/HSC) 45°

• For dry machining

D mm	L2 mm	L1 mm	D1 mm	R mm	Z	Wr. width mm	MD	Tightening torque max. N·m	● Feed fz steel < 1000 N/mm² mm/tooth	● Feed fz steel < 1000 N/mm² mm/tooth	AlTiN+ art.no.	€
10	7	14	9.6	0.5	4	8 x 3 mm	20	12	0.074	0.1	**255608** 1005	60,–
10	7	14	9.6	1.0	4	8 x 3 mm	20	12	0.074	0.1	255608 1010	60,–
10	7	14	9.6	1.5	4	8 x 3 mm	20	12	0.074	0.1	255608 1015	60,–
10	7	14	9.6	2.0	4	8 x 3 mm	20	12	0.074	0.1	255608 1020	60,–
12	9	17	11.6	0.5	4	10 x 4 mm	30	15	0.074	0.1	255608 1205	75,50
12	9	17	11.6	1.0	4	10 x 4 mm	30	15	0.074	0.1	255608 1210	75,50
12	9	17	11.6	1.5	4	10 x 4 mm	30	15	0.074	0.1	255608 1215	75,50
12	9	17	11.6	2.0	4	10 x 4 mm	30	15	0.074	0.1	255608 1220	75,50
16	12	21	15.4	1.0	4	13 x 4 mm	40	30	0.089	0.12	255608 1605	118,–
16	12	21	15.4	1.5	4	13 x 4 mm	40	30	0.089	0.12	255608 1610	118,–
16	12	21	15.4	2.0	4	13 x 4 mm	40	30	0.089	0.12	255608 1615	118,–
16	12	21	15.4	3.0	4	13 x 4 mm	40	30	0.089	0.12	255608 1620	118,–
20	15	26	19.2	1.0	4	16 x 5 mm	50	45	0.111	0.15	255608 2010	136,–

2160

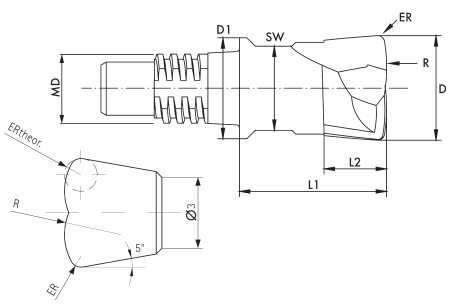




Type H-N (HSC) 15°

D mm	L2 mm	L1 mm	D1 mm	R mm	Z	Wr. width mm	MD	Tightening torque max. N·m	ERtheor. mm	● Feed fz steel < 1000 N/mm² mm/tooth	AlTiN art.no.	€
10	7	14	9.6	0.64	2	8 x 3 mm	20	12	0.90	0.2	**255609** 0100	50,–
12	9	17	11.6	0.75	2	10 x 4 mm	30	15	1.10	0.2	255609 0120	63,50
16	12	21	15.4	1.06	2	13 x 4 mm	40	30	1.45	0.25	255609 0160	93,50
20	15	26	19.2	1.25	2	16 x 5 mm	50	45	1.65	0.3	255609 0200	110,50

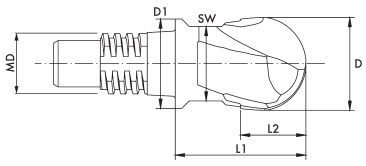
2160





ATORN® Exchangeable head radius milling cutter, Type H Z2

VHM | Typ H | 30° | h10 | h6 | Z 2 | AlTiN+ | HPC | HSC | | i Vc/fz | 783



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 570	● 350	● 240				○ 400	○ 380								● 180	● 160	● 150
	Cutting speed Vc m/min.										Please adjust these guidelines according to clamping operation and machine set-up.								

30°

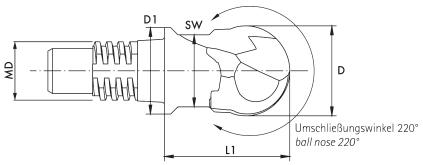
D mm	L2 mm	L1 mm	D1 mm	R mm	Wr. width mm	MD	Tightening torque max. N·m	● Feed fz steel < 1000 N/mm² mm/tooth	AlTiN+ art.no.	€
10	7	14	9.6	5	8 x 3 mm	20	12	0.065	**255610** 0100	50,–
12	9	17	11.6	6	10 x 4 mm	30	15	0.065	255610 0120	62,50
16	12	21	15.4	8	13 x 4 mm	40	30	0.09	255610 0160	94,50
20	15	26	19.2	10	16 x 5 mm	50	45	0.12	255610 0200	117,–

2160



ATORN® Exchangeable head radius milling cutter, Type H Z2 220°

VHM | NH | 15° | h10 | h6 | Z 2 | AlTiN | HSC | Vc/fz | 784



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 450	● 310	● 170				● 450	● 410								● 120	● 90	● 70
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

15°

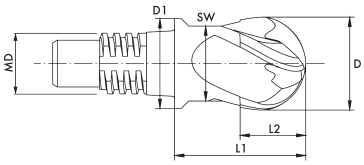
D mm	L2 mm	L1 mm	D1 mm	R mm	Wr. width mm	MD	Tightening torque max. N·m	Feed fz steel < 1000 N/mm² mm/tooth	AlTiN art.no.	€
10	7	14	9.6	5	8 x 3 mm	20	12	0.065	**255612** 0100	58,–
12	9	17	11.6	6	10 x 4 mm	30	15	0.065	255612 0120	71,50
16	12	21	15.4	8	13 x 4 mm	40	30	0.09	255612 0160	108,–
20	15	26	19.2	10	16 x 5 mm	50	45	0.1	255612 0200	132,50

2160



ATORN® Exchangeable head radius milling cutter, Type N

VHM | Typ N | 30° | h10 | h6 | Z 4 | TiAlN | Vc/fz | 783



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 570	● 350	● 200				● 550	● 500								● 130		
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

30°

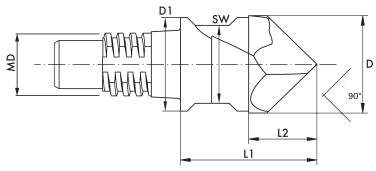
D mm	L2 mm	L1 mm	D1 mm	R mm	Wr. width mm	MD	Tightening torque max. N·m	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
10	7	14	9.6	5	8 x 3 mm	20	12	0.065	**255611** 0100	55,50
12	9	17	11.6	6	10 x 4 mm	30	15	0.065	255611 0120	69,–
16	12	21	15.4	8	13 x 4 mm	40	30	0.09	255611 0160	106,–
20	15	26	19.2	10	16 x 5 mm	50	45	0.12	255611 0200	131,50

2160



ATORN® Exchangeable head milling cutter, multimill

VHM | Typ N | 90° | 30° | h10 | h6 | Z 2 | TiAlN | Vc/fz | 784



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 120	● 90	● 65	● 80	● 80		● 120	● 90				● 300	● 280	● 200				
	Cutting speed Vc m/min.																		

Please adjust these guidelines according to clamping operation and machine set-up.

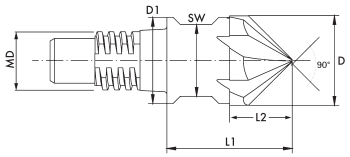
D mm	L2 mm	L1 mm	D1 mm	Wr. width mm	MD	Tightening torque max. N·m	Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
10	7	14	9.6	8 x 3 mm	20	12	0.045	**255613** 0100	43,40
12	9	17	11.6	10 x 4 mm	30	15	0.065	255613 0120	54,50
16	12	21	15.4	13 x 4 mm	40	30	0.08	255613 0160	82,50
20	15	26	19.2	16 x 5 mm	50	45	0.09	255613 0200	100,–

2160



ATORN® Exchangeable head deburring milling cutter

VHM | Typ N | 90° | h10 | h6 | Z 6 | TiAlN | Vc/fz | 784



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 190	● 120	● 160	● 75	● 110		● 150	● 100				● 700	● 500	● 300				
	Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									

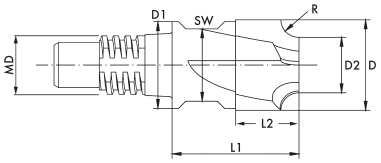
D mm	L2 mm	L1 mm	D1 mm	Wr. width mm	MD	Tightening torque max. N·m	● Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
10	7	14	9.6	8 x 3 mm	20	12	0.044	**255614** 0100	43,40
12	9	17	11.6	10 x 4 mm	30	15	0.05	255614 0120	54,50
16	12	21	15.4	13 x 4 mm	40	30	0.075	255614 0160	82,50
20	15	26	19.2	16 x 5 mm	50	45	0.1	255614 0200	100,–

2160



ATORN® Exchangeable head quadrant milling cutter

VHM | Typ N | h10 | h6 | Z 4 | TiAlN | Vc/fz | 785



material	● very well suited ○ well suited	steel			stainless steel			cast iron		titanium alloys	superalloys Fe/NiCo-based		aluminium		copper	graphite	hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		● 190	● 140	● 80	● 75	● 110		● 150	● 100				● 600	● 500	● 300				
	Cutting speed Vc m/min.									Please adjust these guidelines according to clamping operation and machine set-up.									

D mm	D2 mm	L2 mm	L1 mm	D1 mm	R mm	Wr. width mm	MD	Tightening torque max. N·m	● Feed fz steel < 1000 N/mm² mm/tooth	art.no.	€
10	7	7	14	7	1.5	8 x 3 mm	20	12	0.012	**255615** 1015	54,50
10	6	7	14	6	2.0	8 x 3 mm	20	12	0.012	255615 1020	54,50
12	7	9	17	7	2.5	10 x 4 mm	30	15	0.015	255615 1225	63,50
12	6	9	17	6	3.0	10 x 4 mm	30	15	0.015	255615 1230	63,50
16	9	12	21	9	3.5	13 x 4 mm	40	30	0.025	255615 1635	94,50
16	8	12	21	8	4.0	13 x 4 mm	40	30	0.025	255615 1640	94,50
16	7	12	21	7	4.5	13 x 4 mm	40	30	0.025	255615 1645	94,50
20	10	15	26	10	5.0	16 x 5 mm	50	45	0.032	255615 2050	120,50
20	8	15	26	8	6.0	16 x 5 mm	50	45	0.032	255615 2060	120,50

2160







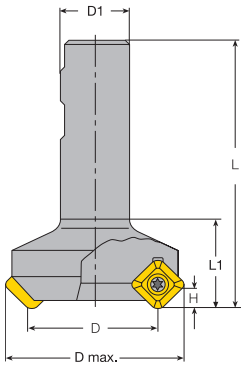
PALBIT
Machining tools
411 pages
Art.no. 019900 0315

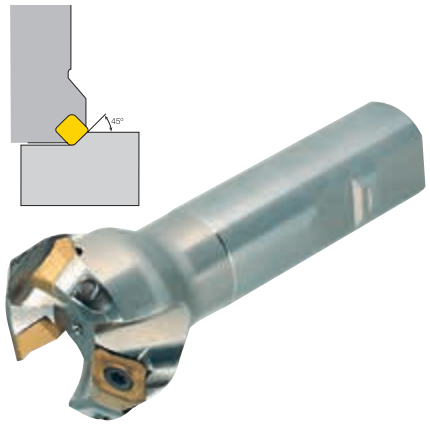
Overview of all free manufacturers' catalogues on page 14/15

ATORN® 45° end milling cutter, SE.T 1204



- **For ISO milling inserts, type SE.T 1204**
- Highly positive rake angle
- Weldon shank
- Easy-action, low-noise milling
- Large insert thickness
- For plunge milling and face milling
- Supplied with clamping screws and wrench
- Can be used on machines with low drive power and in unstable conditions
- **Cutting angle:** Tool cutting edge angle 45°, axial rake angle 16°, radial rake angle -6°





D mm	D1 mm	D max. mm	L mm	H mm	L1 mm	Z	Weight kg	Tightening torque max. N·m			art.no.	€
25.0	25	38.0	100	6	44	2	0.40	7.93	A1	B1	**260801** 0025	216,–
32.0	25	45.0	110	6	54	3	0.45	7.93	A1	B1	260801 0032	222,–
40.0	32	53.0	115	6	55	4	0.50	7.93	A1	B1	260801 0040	335,–

2124

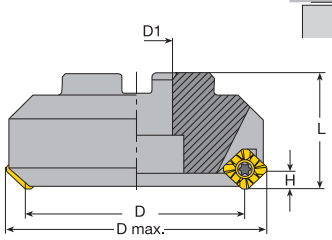
Spare parts

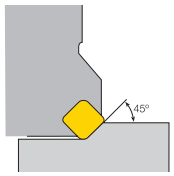
	Screw			Wrench	
	art.no.	€		art.no.	€
A1	321701 0108	9,25	B1	705141 0020	6,35
	3106			7114	

ATORN® 45° face milling cutter



- **For ISO milling inserts, type SE.T 1204**
- Highly positive rake angle
- Easy-action, low-noise milling
- Large insert thickness
- For plunge milling and face milling
- **Up to Ø 160 mm with internal coolant supply**
- Supplied with clamping screws and wrench
- Can be used on machines with low drive power and in unstable conditions
- **Cutting angle:** Tool cutting edge angle 45°, axial rake angle 20°, radial rake angle -10°







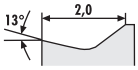
D mm	D1 mm	D max. mm	L mm	H mm	Z	Weight kg	Tightening torque max. N·m			art.no.	€
40.0	16	53.0	40	6	3	0.30	7.93	A1	B1	**260202** 0040	175,–
50.0	22	63.0	48	6	4	0.50	7.93	A1	B1	260202 0050	196,–
50.0	22	63.0	48	6	5	0.49	7.93	A1	B1	260202 0150	226,–
63.0	22	76.0	48	6	5	0.59	7.93	A1	B1	260202 0063	237,–
63.0	22	76.0	48	6	6	0.56	7.93	A1	B1	260202 0163	255,–
80.0	27	93.0	50	6	6	1.08	7.93	A1	B1	260202 0080	278,–
80.0	27	93.0	50	6	7	1.04	7.93	A1	B1	260202 0180	310,–
100.0	32	113.0	50	6	6	1.77	7.93	A1	B1	260202 0100	320,–
100.0	32	113.0	50	6	8	1.70	7.93	A1	B1	260202 1100	340,–
125.0	40	138.0	63	6	7	3.42	7.93	A1	B1	260202 0125	400,–
125.0	40	138.0	63	6	9	3.10	7.93	A1	B1	260202 1125	453,–
160.0	40	173.0	63	6	8	5.16	7.93	A1	B1	260202 0160	599,–
160.0	40	173.0	63	6	10	5.10	7.93	A1	B1	260202 1160	749,–
200.0	60	213.0	63	6	12	6.20	7.93	A1	B1	260202 0200	1.419,–
250.0	60	263.0	63	6	16	13.00	7.93	A1	B1	260202 0250	1.689,–

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Spare parts

	Screw			Wrench	
	art.no.	€		art.no.	€
A1	321701 0108	9,25	B1	705141 0020	6,35
	3106			7114	

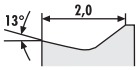
SEET

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	●	●											
						●	●			HW 4410	10	**284225** 3001	9,10
Universal application			SEET 1204 AFSN	●	●	●				HC 4620	10	284225 3005	10,90
				●	●	●				HC 4540	10	284225 3007	10,90

ISO		HC 4620	HW 4410
ISO P steel	Vc = 200 - 255	Vc = 205 - 280	
ISO M stainless steel	Vc = 120 - 150	Vc = 120 - 165	
ISO K cast iron	Vc = 190 - 240	Vc = 190 - 265	Vc = 125 - 145
ISO N Al/non-ferrous			Vc = 125 - 680
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 to 0.4 per cutting edge ap = max. 6.0		

2129

SEHT

F finishing	M medium	R roughing	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	●	●											
			SEHT 1204 AFEN	●	●	●				PH 6740	10	**285229** 0139	9,95
Universal application													
													

ISO	PH 6740
ISO P steel	Vc = 80 - 180
ISO M stainless steel	Vc = 80 - 220
ISO K cast iron	Vc = 80 - 290
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 to 0.4 per cutting edge ap = max. 6.0

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ATORN® 45° face milling cutter

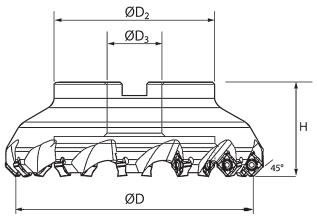


787

- **For ISO milling inserts, SN.X 1206, SNMU 1260, ONMU1205**
- Innovative double-sided indexable cutting inserts with large rake angle, use of eight cutting edges (SN_X, SNMU)
- Innovative double-sided indexable cutting inserts, use of sixteen cutting edges (ONMU)
- Easy cutting action with low machining force
- Excellent surface finish
- Very broad range of applications
- Use on many metals including steel, stainless steel, cast iron and aluminium
- Supplied with clamping screw and wrench
- ap max. 5.5 mm (SN_X, SNMU)
- ap max. 3.0 mm (ONMU)









Standard

D mm	D2 mm	D3 mm	H mm	Z	Tightening torque max. N·m			art.no.	€
50.0	49	22	40	4	4.01	A1	B1	**262555** 0050	240,–
63.0	48	22	40	6	4.01	A1	B1	262555 0063	280,–
80.0	57	27	50	7	4.01	A1	B1	262555 0080	340,–
100.0	67	32	50	8	4.01	A1	B1	262555 0100	360,–
125.0	87	40	63	10	4.01	A1	B1	262555 0125	415,–
160.0	107	40	63	12	4.01	A1	B1	262555 0160	629,–
200.0	160	60	63	14	4.01	A1	B1	262555 0200	1.299,–
250.0	160	60	63	16	4.01	A1	B1	262555 0250	1.399,–

2124

Set includes SNMU 1260 and ONMU 1205 HC4630 indexable cutting inserts (10 of each)

D mm	D2 mm	D3 mm	H mm	Z	Tightening torque max. N·m	Contents	art.no.	€
63	48	22	40	6	4.01	incl. 10 indexable inserts SNMU 1260 and ONMU 1205 HC4630	**262555** 2063	599,–

2124

Narrow pitch

- Ø 160 mm supplied with sealing washers

D mm	D2 mm	D3 mm	H mm	Z	Tightening torque max. N·m			art.no.	€
50.0	42	22	40	6	4.01	A1	B1	**262555** 1050	315,–
63.0	49	22	40	8	4.01	A1	B1	262555 1063	360,–
80.0	57	27	50	10	4.01	A1	B1	262555 1080	440,–
100.0	67	32	50	12	4.01	A1	B1	262555 1100	455,–
125.0	87	40	63	16	4.01	A1	B1	262555 1125	569,–
160.0	107	40	63	20	4.01	A1	B1	262555 1160	1.059,–

2124

Spare parts

	Screw art.no.	€
A1	260124 0002	9,–

3106

	TORX art.no.	€
B1	703053 0200	1,79

7114

Continued on next page >>>



Milling inserts

ISO designation	ISO P Coated HC4630 art.no.	€	ISO M Coated HC 4535 art.no.	€	ISO PK Coated HC4410 art.no.	€	ISO N HW 4310 art.no.	€	ISO PMK Coated HC4635 art.no.	€
SNEX 1206 ANN-MA							10 **295730** 0101	15,50		
SNKX 1206 ANN MM1									10 **295734** 0101	14,80
SNMX 1206 ANN-MM1	10 **295732** 0101	17,–	10 **295731** 0101	17,–	10 **295733** 0101	17,–				
	2129		2129		2129		2129		2129	

Double-sided, 8 cutting edges, with chip breaker



Milling insert with chip breaker

- For particularly good surface quality

ISO designation	ISO PMK Coated HC4535 art.no.	€	ISO PK Coated HC4410 art.no.	€
SNMU 1260 A NER	10 **295735** 0101	16,80	10 **295737** 0101	16,80
	2129		2129	

double-sided, 16 cutting edges



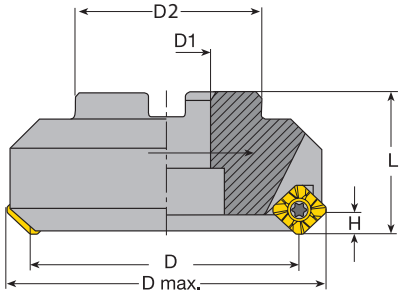
Milling insert with 16 cutting edges

ISO designation	ISO PMK Coated HC4630 art.no.	€	ISO PM Coated HC4535 art.no.	€	ISO PK Coated HC4410 art.no.	€
ONMU 1205 ANN	10 **295738** 0101	16,80	10 **295739** 0101	16,80	10 **295740** 0101	16,80
	2129		2129		2129	

palbit Face milling cutter 45° PLUS 91245

788

- **For ISO milling inserts SN.. 16.., ON.. 06..**
- Excellent surface finish
- Very broad range of applications
- Wide range of materials, including steel, stainless steel, cast iron and aluminium
- Supplied with clamping screw and wrench
- ap. max. 8.5 mm (SN..)
- ap. max. 3.8 mm (ON..)





D mm	D1 mm	D max. mm	D2 mm	L mm	H mm	Z	Weight kg	Tightening torque max. N·m	suitable indexable inserts	A1	B1	C1	art.no.	€
63	22	80.1	52	50	8.5/3.8	5	0.81	5.0	SN..16/ON..06	A1	B1	C1	**260211** 0063	460,25
80	27	97.1	60	50	8.5/3.8	6	1.06	5.0	SN..16/ON..06	A1	B1	C1	260211 0080	496,75
80	27	97.1	60	50	8.5/3.8	8	1.09	5.0	SN..16/ON..06	A1	B1	C1	260211 0081	575,50
100	32	117.1	80	63	8.5/3.8	7	2.24	5.0	SN..16/ON..06	A1	B2	C1	260211 0100	617,25
100	32	117.1	80	63	8.5/3.8	10	2.28	5.0	SN..16/ON..06	A1	B2	C1	260211 0101	680,–
125	40	142.1	90	63	8.5/3.8	8	3.04	5.0	SN..16/ON..06	A1		C1	260211 0125	711,–
160	40	177.1	110	63	8.5/3.8	10	4.4	5.0	SN..16/ON..06	A1		C1	260211 0160	930,75
200	60	217.1	172	63	8.5/3.8	12	9.12	5.0	SN..16/ON..06	A1		C1	260211 0200	1.218,50
250	60	267.1	172	63	8.5/3.8	14	11.93	5.0	SN..16/ON..06	A1		C1	260211 0250	1.349,–
													2174	

Spare parts

	Screw art.no.	€
A1	321099 0019	3,85
	3160	

	Cutter retaining screw with through-hole art.no.	€
B1	321099 0043	42,–
B2	321099 0044	42,–
	3160	

	TORX art.no.	€
C1	703053 0200	1,79
	7114	

Indexable milling inserts SN..1606 / ON..0606 PLUS 91245

SNHX 1606..

F finishing -	M medium -	R roughing -	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
			SNHX 1606 ANER-LP	●	●					PH 7740	10	**285217** 0148	21,50
				●						PH 7920	10	285217 0150	21,50
				●	●					PH 7930	10	285217 0151	21,50
			SNHX 1606 ANER-MP	●	●					PH 7740	10	285217 0248	21,50
				●						PH 7920	10	285217 0250	21,50
			SNHX 1606 ANER-MK			●				PH 5740	10	285217 0330	21,50

2170

ISO	PH 5740	PH 7740	PH 7920	PH 7930
ISO P steel		Vc = 120 - 240	Vc = 140 - 320	Vc = 160 - 260
ISO M stainless steel		Vc = 80 - 160		Vc = 90 - 200
ISO K cast iron	Vc = 115 - 290			
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 - 0.4 ap = max. 3.8			

SNKX 1606..

F finishing -	M medium -	R roughing -	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
			SNKX 1606 ANER-MP	●						PH 7740	10	**285218** 0148	18,50
				●						PH 7920	10	285218 0150	18,50
			SNKX 1606 ANER-MK			●				PH 5740	10	285218 0230	18,50

2170

ISO	PH 5740	PH 7740	PH 7920
ISO P steel		Vc = 120 - 240	Vc = 140 - 320
ISO K cast iron	Vc = 115 - 290		
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 - 0.4 ap = max. 3.8		

ONHX 0606..

F finishing -	M medium -	R roughing -	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
			ONHX 0606 ANEN-LP	●	●					PH 7740	10	**285222** 0148	21,50
				●						PH 7920	10	285222 0150	21,50
					●					PH 7930	10	285222 0151	21,50
			ONHX 0606 ANEN-MP	●	●					PH 7740	10	285222 0248	21,50
				●						PH 7920	10	285222 0250	21,50
			ONHX 0606 ANEN-MK			●				PH 5705	10	285222 0328	21,50
						●				PH 5740	10	285222 0330	21,50
			ONHX 0606 ANEN-W			●				PH 5705	10	285222 0428	25,–
				●						PH 7920	10	285222 0450	25,–

2170

ISO	PH 5705	PH 5740	PH 7740	PH 7920	PH 7930
ISO P steel			Vc = 120 - 240	Vc = 140 - 320	
ISO M stainless steel			Vc = 80 - 160		Vc = 90 - 200
ISO K cast iron	Vc = 130 - 350	Vc = 115 - 290			
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 - 0.17 ap = max. 8.5				

ONKX 0606..

F finishing -	M medium -	R roughing -	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
			ONKX 0606 ANEN-LP			●				PH 5320	10	**285228** 0126	18,50
				●	●					PH 7740	10	285228 0148	18,50
				●						PH 7920	10	285228 0150	18,50
					●					PH 7930	10	285228 0151	18,50
			ONKX 0606 ANEN-MP	●						PH 7740	10	285228 0248	18,50
				●						PH 7920	10	285228 0250	18,50
			ONKX 0606 ANEN-MK			●				PH 5705	10	285228 0328	18,50
						●				PH 5740	10	285228 0330	18,50

2170

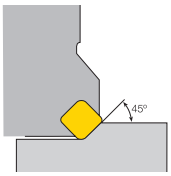
ISO	PH 5320	PH 5705	PH 5740	PH 7740	PH 7920	PH 7930
ISO P steel				Vc = 120 - 240	Vc = 140 - 320	
ISO M stainless steel				Vc = 80 - 160		Vc = 90 - 200
ISO K cast iron	Vc = 130 - 350	Vc = 130 - 350	Vc = 115 - 290			
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 - 0.17 ap = max. 8.5					

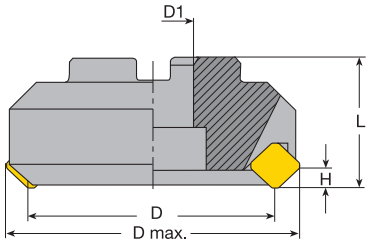
ATORN® 45° face milling cutter

- **For ISO milling inserts, type SE.N 1203**
- Highly positive cutting edge geometry
- Easy cutting action
- Also for machines with low drive power or unstable conditions
- Wedge for fast and reliable clamping of the indexable insert
- Supplied with clamping screws and wrench
- from Ø 160 mm with sealing washers
- **Cutting angle:** Tool cutting edge angle 45°, axial rake angle 20°, radial rake angle -4.5°



Ø 160 to 250 mm with sealing washers







D mm	D1 mm	D max. mm	L mm	H mm	Z	Weight kg	Tightening torque max. N·m	A1	B1	C1	D1	art.no.	€
50.0	22	63	48	6	4	0.53	4.01	A1	B1	C1	D1	**260200** 0050	300,–
63.0	22	76	40	6	5	0.60	4.01	A1	B1	C1	D1	260200 0063	360,–
80.0	27	93	50	6	6	1.10	4.01	A1	B1	C1	D1	260200 0080	395,–
100.0	32	113	50	6	6	1.80	4.01	A1	B1	C1	D1	260200 0100	440,–
125.0	40	138	63	6	7	3.40	4.01	A1	B1	C1	D1	260200 0125	579,–
160.0	40	173	63	6	7	5.20	4.01	A1	B1	C1	D1	260200 0160	689,–
200.0	60	213	63	6	10	8.60	4.01	A1	B1	C1	D1	260200 0200	999,–
250.0	60	263	63	6	13	14.20	4.01	A1	B1	C1	D1	260200 0250	1.189,–

2124

Spare parts

Spacer			Screw			Clamping screw			TORX PLUS		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321701 0002	11,50	B1	321701 0109	6,50	C1	321701 0111	14,10	D1	705145 0025	7,85
3106			3106			3106					

SEEN

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	●	●											
 Universal application			SEEN 1203 AFFN			●				HW 4410	10	**284215** 2901	8,05
				●	●					HC 4620	10	284215 2905	10,90
				●	●	●				HC 4540	10	284215 2907	10,90
			SEEN 1203 AFSN	●						HW 4640	10	284215 3003	7,40
				●	●					HC 4620	10	284215 3005	11,10
				●	●	●				HC 4540	10	284215 3007	11,10

2129

ISO	HC 4540	HC 4620	HW 4410	HW 4640
ISO P steel	Vc = 180 - 230	Vc = 120 - 210		Vc = 90 - 190
ISO M stainless steel	Vc = 105 - 135	Vc = 110 - 155		
ISO K cast iron	Vc = 170 - 215		Vc = 125 - 145	
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 to 0.4 per cutting edge ap = max. 6.0			

SEKN

F finishing	M medium	R roughing	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	●	●											
 Universal application			SEKN 1203 AFSN	●	●	●				PH 6920	10	**285448** 0142	8,45

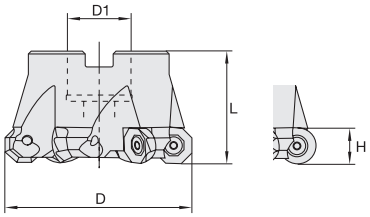
2170

ISO	PH 6920
ISO P steel	Vc = 120 - 250
ISO M stainless steel	Vc = 100 - 200
ISO K cast iron	Vc = 120 - 220
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 to 0.4 per cutting edge ap = max. 6.0

ATORN® Face and copy milling cutter (OCKX, XCKX, RCKX)

789

- **Can be fitted with octagonal, double-hexagon or round milling inserts**
- High feed rates and smooth operation
- Low power requirements due to small number of teeth
- Allows axial and diagonal plunging, well suited to excavation and pocket milling
- Directly-pressed indexable insert with 8 or 12 effective cutting edges
- Stable insert seat, anti-twist protection and defined indexing possible
- Indexable insert with rotational direction index, reliable production and high usability





- Ø 125 mm without internal coolant supply

D mm	H mm	L mm	D1 mm	Z	Tightening torque max. N·m			art.no.	€
52.0	16	40	22	4	10	A1	B1	**260111** 0052	240,–
66.0	16	50	27	5	10	A1	B1	260111 0066	265,–
80.0	16	50	27	6	10	A1	B1	260111 0080	320,–
100.0	16	50	32	7	10	A1	B1	260111 0100	370,–
125.0	16	63	40	8	10	A1	B1	260111 0125	539,–

2125

Spare parts

	Screw art.no.	€		Wrench art.no.	€
A1	260400 0050	5,50	B1	705141 0015	6,10

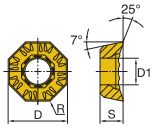
2125 7114

OCKX octagonal milling inserts

- With cutting depths up to ap = 3 mm, all 8 cutting edges can be used

ISO designation	S mm	D mm	D1 mm	R mm	ISO P M HC 4640			ISO K HC 4410		
						art.no.	€		art.no.	€
OCKX 0606 AD-TR	6.35	16.0	5.8	0.5	10	**270100** 0624	10,40	10	**270100** 0661	10,40

2126 2126



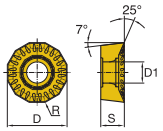


XCKX double-hexagon milling inserts

- With cutting depths up to ap = 1 mm, all 12 cutting edges can be used

ISO designation	S mm	D mm	D1 mm	ISO P M HC 4640		
					art.no.	€
XCKX 1606 AD-TR	6.35	16.0	5.8	10	**270101** 1624	11,–

2126

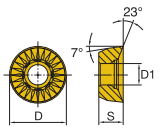




RCKX round milling inserts

ISO designation	S mm	D mm	D1 mm	ISO P M HC 4640			ISO K HC 4410		
					art.no.	€		art.no.	€
RCKX 1606 MO-TR	6.35	16.0	5.8	10	**270102** 1624	9,35	10	**270102** 1661	9,35

2126 2126







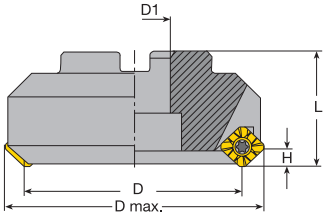
... with every indexable insert.

ATORN®
Performance demands quality

SARA® Smooth-running 45° face milling cutter

787

- **For ISO milling inserts, SEMT 13T3 / SEGT 13T3 / XEHW 13T3**
- **Internal cooling up to Ø 125 mm**
- High productivity from finishing to roughing
- Excellent surface finish
- Very broad range of applications
- Universal application for steel, stainless steel and cast iron
- Supplied with clamping screw and wrench
- **Now also with indexable cutting insert for non-ferrous materials**
- **ap max. 6 mm**





Compatible with: SANDVIK Coro Mill® 245, MITSUBISHI ASX445, SUMITOMO WGC

Narrow pitch

D mm	D max. mm	D1 mm	L mm	H mm	Z	Tightening torque max. N-m			art.no.	€
50.0	63.0	22	40	6	4	2.68	A1	B1	**262550** 0050	215,–
63.0	76.0	22	40	6	5	2.68	A1	B1	262550 0063	260,–
80.0	93.0	27	50	6	6	2.68	A1	B1	262550 0080	320,–
100.0	113.0	32	50	6	7	2.68	A1	B1	262550 0100	365,–
125.0	138.0	40	63	6	8	2.68	A1	B1	262550 0125	425,–
160.0	173.0	40	63	6	10	2.68	A1	B1	262550 0160	819,–
200.0	213.0	60	63	6	12	2.68	A1	B1	262550 0200	1.199,–
250.0	263.0	60	63	6	16	2.68	A1	B1	262550 0250	1.539,–

2118

Extra-narrow pitch

D mm	D max. mm	D1 mm	L mm	H mm	Z	Tightening torque max. N-m			art.no.	€
50.0	63.0	22	40	6	5	2.68	A1	B1	**262550** 1050	275,–
63.0	76.0	22	40	6	6	2.68	A1	B1	262550 1063	325,–
80.0	93.0	27	50	6	8	2.68	A1	B1	262550 1080	380,–
100.0	113.0	32	50	6	10	2.68	A1	B1	262550 1100	460,–
125.0	138.0	40	63	6	12	2.68	A1	B1	262550 1125	549,–
160.0	173.0	40	63	6	16	2.68	A1	B1	262550 1160	999,–

2118

Spare parts

	Screw			Wrench	
	art.no.	€		art.no.	€
A1	262551 3511	8,55	B1	705141 0015	6,10
	3106			7114	

SEMT

F finishing	M medium	R roughing	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	●	●	SEMT 13T3 AGSN-PM	●						**JC 5040**	10	**288001** 0040	10,30
				●	●	●		●	●	**JC 8015**	10	288001 0015	10,30
				●	●			●		**JC 8050**	10	288001 0050	10,30
			SEMT 13T3 AGSN-KM			●				**JC 605 W**	10	288001 0605	10,30

Universal application

2167

ISO	JC 5040	JC 605 W	JC 8015	JC 8050
ISO P steel	Vc = 100 - 200		Vc = 100 - 200	Vc = 100 - 200
ISO M stainless steel			Vc = 100 - 200	Vc = 100 - 200
ISO K cast iron		Vc = 150 - 250	Vc = 150 - 250	
ISO S superalloys			Vc = 30 - 40	Vc = 20 - 50
ISO H hard			Vc = 50 - 100	
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 - 0.3 ap = max. 6 mm			

Wiper (wide finishing) insert for smooth-running 45° face milling cutter

F finishing	M medium	R roughing	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	-	-	XEHW 13T3 AGSN-W	●		●		●	●	**DH 103**	10	**288002** 0003	16,70

Micro finishing

2167

ISO	DH 103
ISO P steel	Vc = 200 - 300
ISO K cast iron	Vc = 200 - 300
ISO S superalloys	Vc = 30 - 40
ISO H hard	Vc = 70 - 120
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 - 0.3 ap = max. 1.0 mm

SEGT

F finishing	M medium	R roughing	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	●	●	SEGT 13T3AGFN-AL				●			**Uncoated**	10	**288004** 0005	10,70

Universal application

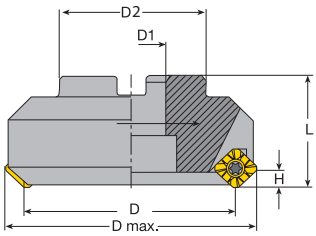
2167

ISO	Uncoated
ISO N Al/non-ferrous	Vc = 250 - 300
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 - 0.3 ap = max. 6 mm

palbit Face milling cutter 45° LINEPRO 09945

788

- **For ISO milling inserts SE.. 13T3**
- Highly positive rake angle
- With spacer
- Smooth, low-noise milling
- For plunge milling and face milling
- Supplied with clamping screws and wrench
- **Cutting angle:** Tool cutting-edge angle 45°, axial rake angle 20°





D mm	D1 mm	D max. mm	D2 mm	L mm	H mm	Z	Weight kg	Tightening torque max. N·m	suitable indexable inserts	A1	B1	C1	D1	art.no.	€
50	22	63	40	40	6.0	4	0.36	3.0	SE..13T3	A1	B1	C1	D1	**260213** 0050	257,75
63	22	76	48	40	6.0	5	0.59	3.0	SE..13T3	A1	B1	C1	D1	260213 0063	314,75
80	27	93	60	50	6.0	6	1.02	3.0	SE..13T3	A1	B1	C1	D1	260213 0080	372,–
100	32	113	70	50	6.0	7	1.52	3.0	SE..13T3	A1	B1	C1	D1	260213 0100	457,–
125	40	138	90	63	6.0	8	3.16	3.0	SE..13T3	A1	B1	C1	D1	260213 0125	542,75
160	40	173	110	63	6.0	10	4.61	3.0	SE..13T3	A1	B1	C1	D1	260213 0160	742,75

2174

Spare parts

Spacer			Screw			Screw for spacer			TORX		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	260219 0101	9,45	B1	321099 0011	3,85	C1	321099 0046	5,65	D1	703053 0150	1,79
3160			3160			3160			7114		

Milling inserts SE..13T3.. LINEPRO 09945

SEHT 13T3

F finishing -	M medium -	R roughing -	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
			SEHT 13T3 AGFN-LN				●			**PH 0910**	10	**285234** 0320	11,75
			SEHT 13T3 AGSN	●	●	●				**PH 6740**	10	285234 0139	11,75
				●		●				**PH 6920**	10	285234 0142	11,75

2170

ISO	PH 0910	PH 6740	PH 6920
ISO P steel		Vc = 100 - 160	Vc = 130 - 230
ISO M stainless steel		Vc = 70 - 120	
ISO K cast iron		Vc = 80 - 250	Vc = 80 - 280
ISO N Al/non-ferrous	Vc = 350 - 1400		
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 - 0.2	fz = 0.1 - 0.25	
	ap = 0.05 - 6.0		

F finishing -	M medium -	R roughing -	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
			SEHT 13T3 AGSN-WIPER	●		●				**PH 6920**	10	**285234** 0442	14,–

2170

ISO	PH 6920
ISO P steel	Vc = 130 - 230
ISO K cast iron	Vc = 80 - 280
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 - 0.3 ap = 0.05 - 6.0

SEHW 13T3

F finishing -	M medium -	R roughing -	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
			SEHW 13T3 AGFN	●		●				**PH 6920**	10	**285237** 0142	11,75

2170

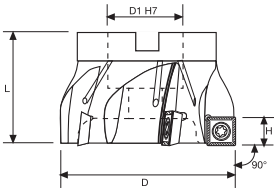
ISO	PH 6920
ISO P steel	Vc = 130 - 230
ISO K cast iron	Vc = 80 - 280
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 - 0.25 ap = 0.05 - 6.0

ATORN® 90° shoulder milling cutter



789

- **For ISO milling inserts, type SDMT 1205 PDR.69**
- **Exactly 90°**
- **Internal coolant supply**
- General corner milling and face milling
- Drilling by means of circular interpolation
- Insert design with four cutting edges per plate
- Cutting depths up to max. 10.5 mm





D mm	D1 H7 mm	L mm	H mm	Z	Tightening torque max. N·m			art.no.	€
40.0	16.0	45	10.5	4	4.01	A1	B1	**262547** 0040	360,–
50.0	22.0	40	10.5	5	4.01	A1	B1	262547 0050	360,–
63.0	22.0	40	10.5	6	4.01	A1	B1	262547 0063	360,–
80.0	27.0	50	10.5	6	4.01	A1	B1	262547 0080	415,–
100.0	32.0	50	10.5	8	4.01	A1	B1	262547 0100	559,–
125.0	40.0	63	10.5	9	4.01	A1	B1	262547 0125	649,–

2124

Indexable cutting inserts

ISO P M K S

ISO designation		HC 4625 art.no.	€
SDMT 1205 PDR69	10	**283310** 2765	18,30

2129

Spare parts

Screw	art.no.	€
A1	320901 2504	6,10

3106

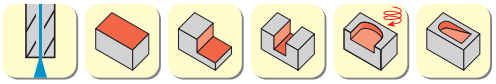
Wrench	art.no.	€
B1	705141 0015	6,10

7114

Improved model

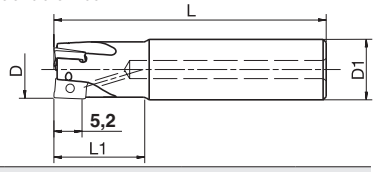


ATORN® 90° end milling cutter





- **For ISO milling inserts, type AP.. 0602**
- **Internal coolant supply**
- Easy cutting action due to the positive installation position of the indexable insert
- Tools deliver smooth milling performance
- Axial run-out max. 0.03 mm
- Radial run-out max. 0.03 mm
- For groove milling and side milling
- Precise 90° corner milling
- Supplied with clamping screws and wrench



D mm	D1 h6 mm	L mm	L1 mm	Z	Tightening torque max. N·m			art.no.	€
10	10	100	28	2	0.6	A1	B1	**262534** 0010	114,–
12	12	100	30	3	0.6	A1	B1	262534 0012	145,–
14	12	120	32	3	0.6	A1	B1	262534 0014	151,–
16	16	120	32	4	0.6	A1	B1	262534 0016	185,–
18	16	120	32	4	0.6	A1	B1	262534 0018	193,–
20	20	150	35	5	0.6	A1	B1	262534 0020	215,–
25	20	150	35	7	0.6	A1	B1	262534 0025	240,–
32	25	150	35	8	0.6	A1	B1	262534 0032	255,–

2124

Spare parts

Screw	art.no.	€
A1	262551 1801	7,60

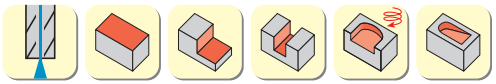
3106

TORX	art.no.	€
B1	703053 0060	1,79

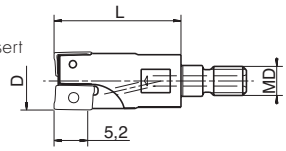
7114



ATORN® 90° screw-in milling cutter



- **For ISO milling inserts, type AP.. 0602**
- Easy cutting action due to the positive installation position of the indexable insert
- Tools deliver smooth milling performance
- **Internal coolant supply**
- Axial run-out max. 0.03 mm
- Radial run-out max. 0.03 mm





D mm	L mm	MD	Z	Tightening torque max. N·m			art.no.	€
10	16	M6	2	0.6	A1	B1	**262536** 0010	113,–
12	16	M6	3	0.6	A1	B1	262536 0012	147,–
16	21	M8	4	0.6	A1	B1	262536 0016	175,–
20	26	M10	5	0.6	A1	B1	262536 0020	190,–
25	30	M12	7	0.6	A1	B1	262536 0025	205,–

2124

Spare parts

	Screw art.no.	€
A1	262551 1801	7,60

3106

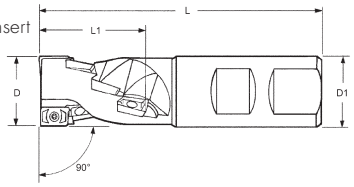
	TORX art.no.	€
B1	703053 0060	1,79

7114

ATORN® Roughing spiral flute milling cutter 90°



- **For ISO milling inserts, type AP.. 0602**
- Soft cutting due to the positive installation position of the indexable insert
- Tools deliver smooth milling performance
- **Internal coolant supply**
- Axial run-out max. 0.03 mm
- Radial run-out max. 0.03 mm





D mm	D1 h6 mm	L mm	L1 mm	Z	Tightening torque max. N·m			art.no.	€
16	16	80	19.8	8	0.6	A1	B1	**262537** 0016	425,–
20	20	90	24.6	15	0.6	A1	B1	262537 0020	629,–
25	25	100	29.4	30	0.6	A1	B1	262537 0025	789,–

2124

Spare parts

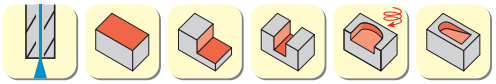
	Screw art.no.	€
A1	262551 1801	7,60

3106

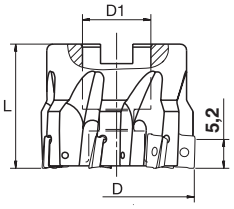
	TORX art.no.	€
B1	703053 0060	1,79

7114

ATORN® 90° corner milling cutter



- **For ISO milling inserts, type AP.. 0602**
- Easy cutting action due to the positive installation position of the indexable insert
- Tools deliver smooth milling performance
- **Internal coolant supply**
- Axial run-out max. 0.03 mm
- Radial run-out max. 0.03 mm





D mm	D1 H7 mm	L mm	Z	Tightening torque max. N·m			art.no.	€
32	16	40	8	0.6	A1	B1	**262535** 0032	265,–
40	16	40	10	0.6	A1	B1	262535 0040	295,–
50	22	40	11	0.6	A1	B1	262535 0050	320,–

2124

Spare parts

	Screw art.no.	€
A1	262551 1801	7,60

3106

	TORX art.no.	€
B1	703053 0060	1,79

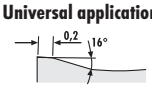
7114

APKT

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	●	●	APKT 060204 PDTR-K	●	●	●				HC 4635	10	**281518** 0609	8,70



Universal application



2129

ISO	HC 4635
ISO P steel	Vc = 70 - 130
ISO M stainless steel	Vc = 60 - 100
ISO K cast iron	Vc = 120 - 200
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.03 - 0.25 per cutting edge ap = 0.1 - 3.0

Continued on next page >>>

APMX

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	●	●											
			APMX 0602	●	●	●				**HC 4635**	10	**281525** 0602	14,50
				●						**HC 4410**	10	281525 0605	14,50
				●	●					**HC 4535**	10	281525 0607	14,50

ISO	HC 4410	HC 4535	HC 4635
ISO K cast iron			Vc = 120 - 330
ISO M stainless steel		Vc = 120 - 180	Vc = 100 - 160
ISO P steel	Vc = 160 - 250	Vc = 140 - 230	Vc = 160 - 220
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.4 - 0.6 ap = 0.3		

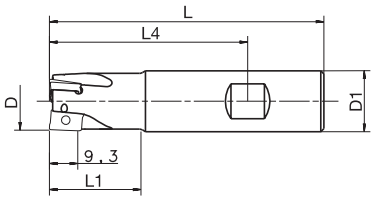
2129

SARA® 90° end milling cutter



The affordable alternative

- **For ISO milling inserts, type AP.. 1003**
- Easy cutting action due to the positive installation position of the indexable insert
- Tools deliver smooth milling performance
- Axial run-out max. 0.03 mm
- Radial run-out max. 0.03 mm
- For groove milling and side milling
- Precise 90° corner milling
- Shank according to DIN 1835B
- Supplied with clamping screws and wrench





D mm	D1 h6 mm	L mm	L1 mm	L4 mm	Z	Tightening torque max. N-m			art.no.	€
16	16	85	34	60	2	1.2	A1	B1	**262556** 0016	74,–
20	20	90	37	65	3	1.2	A1	B1	262556 0020	98,50
25	25	95	46	70	4	1.2	A1	B1	262556 0025	115,–

2118

Spare parts

	Screw art.no.	€
A1	262551 0025	5,20

3106

	TORX art.no.	€
B1	703053 0080	1,79

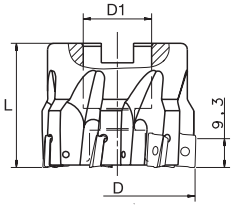
7114

SARA® 90° corner milling cutter



The affordable alternative

- **For ISO milling inserts, type AP.. 1003**
- Easy cutting action due to the positive installation position of the indexable insert
- Tools deliver smooth milling performance
- Axial run-out max. 0.03 mm
- Radial run-out max. 0.03 mm





D mm	D1 H7 mm	L mm	Z	Tightening torque max. N-m			art.no.	€
40	16	40	6	1.2	A1	B1	**262557** 0040	147,–
50	22	40	7	1.2	A1	B1	262557 0050	158,–

2118

Spare parts

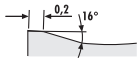
	Screw art.no.	€
A1	262551 0025	5,20

3106

	TORX art.no.	€
B1	703053 0080	1,79

7114

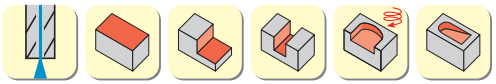
APMT 10

F finishing	M medium	R roughing	SARA® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	●	●											
 Universal application 			APMT 1003 PDER-M	●	●	●				**SC 4635**	10	**281516** 3009	6,30

ISO	SC 4635
ISO P steel	Vc = 110 - 220
ISO M stainless steel	Vc = 90 - 160
ISO K cast iron	Vc = 120 - 250
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 - 0.3 per cutting edge ap = max. 0.7 x cutting edge length

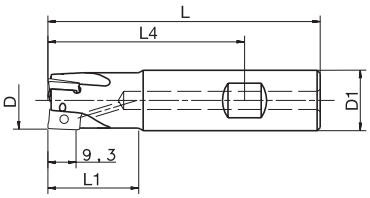
2167

ATORN® 90° end milling cutter



- **For ISO milling inserts, type AP.. 1003**
- **Internal coolant supply**
- Easy cutting action due to the positive installation position of the indexable insert
- Tools deliver smooth milling performance
- Axial run-out max. 0.03 mm
- Radial run-out max. 0.03 mm
- For groove milling and side milling
- Precise 90° shoulder milling
- Shank according to DIN 1835B
- Supplied with clamping screws and wrench





Short

D mm	D1 h6 mm	L mm	L1 mm	L4 mm	Z	Tightening torque max. N-m			art.no.	€
10.0	16	80	24	56	1	1.0	A1	B1	**262540** 0100	93,–
11.0	16	80	24	56	1	1.0	A1	B1	262540 0110	134,–
12.0	16	80	24	56	1	1.0	A1	B1	262540 0120	93,–
13.0	16	80	24	56	1	1.0	A1	B1	262540 0130	134,–
14.0	16	80	24	56	1	1.0	A1	B1	262540 0140	93,–
15.0	16	85	25	60	2	1.0	A1	B1	262540 0150	134,–
15.7	16	85	25	60	2	1.0	A1	B1	262540 0157	153,50
16.0	16	85	25	60	2	1.0	A1	B1	262540 0160	123,50
17.0	16	85	25	60	2	1.0	A1	B1	262540 0170	175,–
18.0	20	85	25	60	2	1.0	A1	B1	262540 0180	134,–
19.5	20	90	25	65	3	1.0	A1	B1	262540 0195	235,–
19.7	20	90	25	65	3	1.0	A1	B1	262540 0197	255,–
20.0	20	90	25	65	3	1.0	A1	B1	262540 0200	153,50
22.0	25	95	25	70	3	1.0	A1	B1	262540 0220	175,–
24.7	25	95	25	70	4	1.0	A1	B1	262540 0247	255,–
25.0	25	95	25	70	4	1.0	A1	B1	262540 0250	185,–
28.0	25	95	25	70	4	1.0	A1	B1	262540 0280	205,–
30.0	25	95	25	70	4	1.0	A1	B1	262540 0300	205,–
32.0	25	95	31	70	5	1.0	A1	B1	262540 0320	215,–

2124

Long

D mm	D1 h6 mm	L mm	L1 mm	L4 mm	Z	Tightening torque max. N-m			art.no.	€
10.0	16	150	24	126	1	1.0	A1	B1	**262540** 0101	144,–
12.0	16	150	24	126	1	1.0	A1	B1	262540 0121	144,–
16.0	16	150	100	126	2	1.0	A1	B1	262540 0161	165,–
18.0	16	150	25	126	2	1.0	A1	B1	262540 0181	237,–
20.0	20	150	100	125	3	1.0	A1	B1	262540 0201	205,–
25.0	20	150	100	125	4	1.0	A1	B1	262540 0251	245,–
32.0	25	150	26	124	5	1.0	A1	B1	262540 0321	285,–

2124

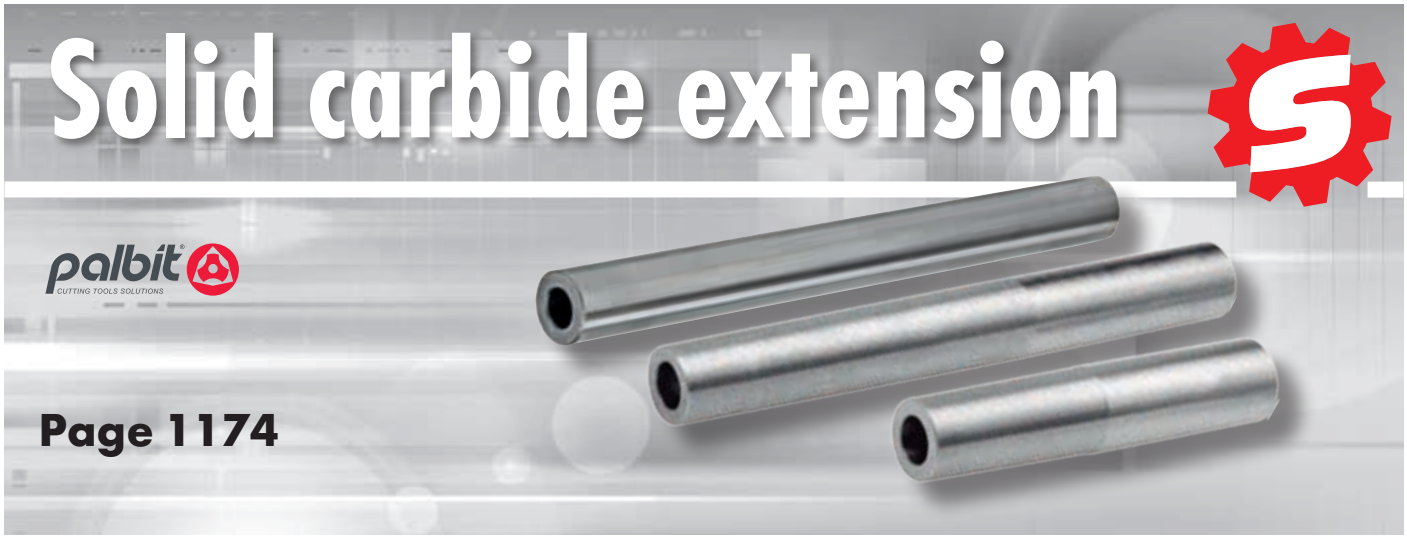
Spare parts

	Screw	
	art.no.	€
A1	262551 0025	5,20

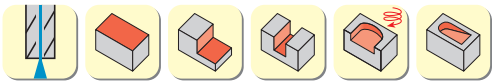
3106

	TORX	
	art.no.	€
B1	703053 0080	1,79

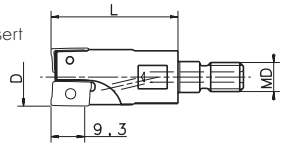
7114



ATORN® 90° screw-in milling cutter



- **For ISO milling inserts, type AP.. 1003**
- Easy cutting action due to the positive installation position of the indexable insert
- Tools deliver smooth milling performance
- **Internal coolant supply**
- Axial run-out max. 0.03 mm
- Radial run-out max. 0.03 mm





D mm	L mm	MD	Z	Tightening torque max. N-m	art.no.	€
10.0	20	M6	1	1.0	**262542** 0010	153,50
12.0	20	M6	1	1.0	262542 0012	153,50
16.0	25	M8	2	1.0	262542 0016	166,–
20.0	30	M10	3	1.0	262542 0020	175,50
25.0	35	M12	4	1.0	262542 0025	240,–
28.0	35	M12	4	1.0	262542 0028	305,–
30.0	34	M16	4	1.0	262542 0030	305,–
32.0	43	M16	5	1.0	262542 0032	295,–

2124

Spare parts

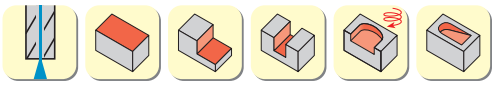
Screw	art.no.	€
A1	262551 0025	5,20

3106

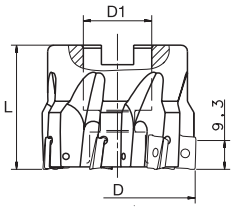
TORX	art.no.	€
B1	703053 0080	1,79

7114

ATORN® 90° shoulder milling cutter



- **For ISO milling inserts, type AP.. 1003**
- Easy cutting action due to the positive installation position of the indexable insert
- Tools deliver smooth milling performance
- **Internal coolant supply**
- Axial run-out max. 0.03 mm
- Radial run-out max. 0.03 mm





D mm	D1 H7 mm	L mm	Z	Tightening torque max. N-m			art.no.	€
40.0	16.0	40	6	1.0	A1	B1	**262546** 0040	225,–
50.0	22.0	40	7	1.0	A1	B1	262546 0050	245,–
63.0	22.0	40	8	1.0	A1	B1	262546 0063	265,–
80.0	27.0	50	11	1.0	A1	B1	262546 0080	380,–
100.0	32.0	50	12	1.0	A1	B1	262546 0100	440,–

2124

Spare parts

Screw	art.no.	€
A1	262551 0025	5,20

3106

TORX	art.no.	€
B1	703053 0080	1,79

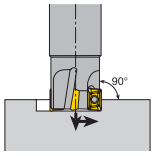
7114

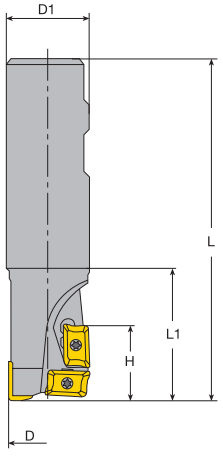
ATORN® 90° drilling/die sinking cutter



- **For ISO milling inserts, type AP.. 1003**
- **Internal coolant supply**
- With Weldon shank
- High cutting capacity
- Reliable chip flow even when drilling due to positive indexable insert geometry
- Supplied with clamping screws and wrench







Short

D mm	D1 mm	H mm	L1 mm	L mm	Z	Tightening torque max. N-m			art.no.	€
20.0	20	17	35	90	3	1.0	A1	B1	**262515** 0002	227,–
25.0	25	19	50	110	3	1.0	A1	B1	262515 0003	270,–

2124

Long

D mm	D1 mm	H mm	L1 mm	L mm	Z	Tightening torque max. N-m			art.no.	€
20.0	20	17	98	150	3	1.0	A1	B1	**262516** 0002	290,–
25.0	25	19	94	150	3	1.0	A1	B1	262516 0003	320,–

2124

Extra-long

D mm	D1 mm	H mm	L1 mm	L mm	Z	Tightening torque max. N-m			art.no.	€
20	20	17	125	180	3	1.0	A1	B1	**262517** 0020	279,–
25	25	19	140	200	3	1.0	A1	B1	272517 0025	320,–

2124

Spare parts

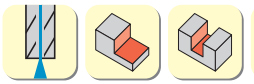
Screw	art.no.	€
A1	262551 0025	5,20

3106

TORX	art.no.	€
B1	703053 0080	1,79

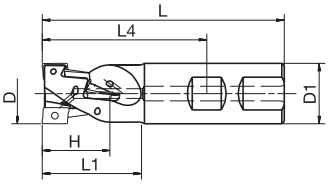
7114

ATORN® 90° roughing spiral flute end mill



789

- **For ISO milling inserts, type AP.. 1003**
- Easy cutting action due to the positive installation position of the indexable insert
- Tools deliver smooth milling performance
- **Internal coolant supply**
- Axial run-out max. 0.03 mm
- Radial run-out max. 0.03 mm
- Shank according to DIN 1835B





D mm	D1 mm	L mm	L1 mm	L4 mm	H mm	Z	Z eff.	Tightening torque max. N·m			art.no.	€
20.0	20	87	37	58	28	4	1	1.0	A1	B1	**262544** 0020	289,–
25.0	25	105	49	64	37	8	2	1.0	A1	B1	262544 0025	340,–
32.0	32	115	55	75	46	10	2	1.0	A1	B1	262544 0032	529,–
32.0	32	115	55	75	46	15	3	1.0	A1	B1	262544 0033	769,–
40.0	32	130	70	76	55	18	3	1.0	A1	B1	262544 0040	665,–

2124

Spare parts

	Screw	
	art.no.	€
A1	262551 0025	5,20

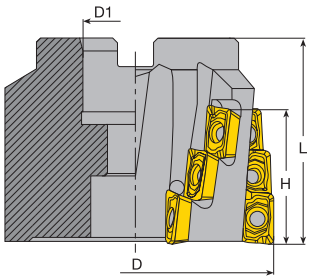
3106

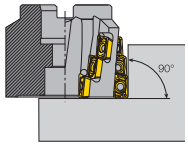
	TORX	
	art.no.	€
B1	703053 0080	1,79

7114

ATORN® 90° roughing spiral flute milling cutter

- **For ISO milling inserts, type AP.. 1003**
- **Internal coolant supply**
- Just one insert type for both face and side cutting edges
- High right-hand helix configuration for good chip shaping
- Full coverage within one row of teeth
- Supplied with clamping screws and wrench







D mm	D1 mm	H mm	L mm	Z eff.	Z	Tightening torque max. N·m			art.no.	€
40.0	16	37	50	3	12	1.0	A1	B1	**262529** 0040	609,–
50.0	22	46	60	3	15	1.0	A1	B1	262529 0050	769,–
63.0	27	46	60	4	20	1.0	A1	B1	262529 0063	899,–

2124

Spare parts

	Screw	
	art.no.	€
A1	262551 0025	5,20

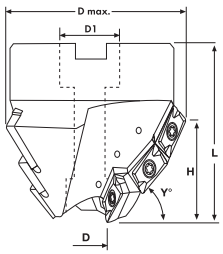
3106

	TORX	
	art.no.	€
B1	703053 0080	1,79

7114

ATORN® Spiral flute chamfer milling cutter

- **For roughing**
- **15 °, 30 °, 40 °, 45 °, 60 °, 75 °**
- **For ISO milling inserts, type AP.. 1003**
- **Internal coolant supply**
- Ideal for pre-machining welded seams
- Manufacturing and indexable insert tolerances allow crank formation
- Supplied with clamping screws and wrench
- **Additional versions with user-defined chamfer angles are manufactured on request (minimum purchase 2 units)**





D mm	D max. mm	D1 mm	L mm	γ °	H mm	Z eff.	Z	Tightening torque max. N·m				art.no.	€
17.0	70.0	22	50	15	7	3	9	1.0	A1	B1	C1	**262531** 1715	585,–
17.0	69.0	22	50	20	9	3	9	1.0	A1	B1	C1	262531 1720	585,–
17.0	65.0	22	50	30	13	3	9	1.0	A1	B1	C1	262531 1730	585,–
17.0	60.0	22	50	40	17	3	9	1.0	A1	B1	C1	262531 1740	585,–
17.0	56.0	22	50	45	19	3	9	1.0	A1	B1	C1	262531 1745	585,–
17.0	45.0	16	50	60	24	3	9	1.0	A1	B2	C1	262531 1760	585,–
19.0	33.0	16	60	75	27	3	9	1.0	A1	B2	C1	262531 1975	585,–

2124

Spare parts

	Screw	
	art.no.	€
A1	262551 0025	5,20

3106

	Retaining screw	
	art.no.	€
B1	320901 2509	43,60
B2	320901 2510	43,60

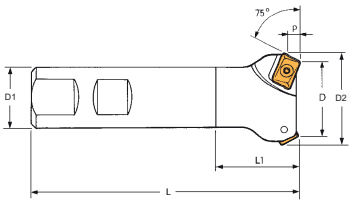
3106

	TORX	
	art.no.	€
C1	703053 0080	1,79

7114

ATORN® 75° end / face milling cutter

- With Weldon shank
- **For ISO milling inserts, type AP..1003**
- Also ideal for indexable inserts that are already worn from use in 90° shoulder milling cutters or 90° end milling cutters. Worn inserts can be reused by utilising the unworn cutting edges.
- Supplied with clamping screws and wrench





D mm	D2 mm	D1 mm	L1 mm	L mm	Z	P mm	Tightening torque max. N-m			art.no.	€
25	28.6	20	25	95	2	4	1.0	A1	B1	**262532** 0025	185,–
32	35.6	25	25	95	3	4	1.0	A1	B1	262532 0032	235,–
40	43.6	25	25	100	4	4	1.0	A1	B1	262532 0040	285,–

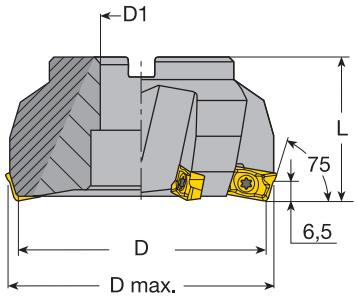
2124

Spare parts

	Screw art.no.	€		TORX art.no.	€
A1	262551 0025	5,20	B1	703053 0080	1,79
	3106			7114	

ATORN® 75° face milling cutter

- **For ISO milling inserts, type AP..1003**
- Also ideal for indexable inserts that are already worn from use in 90° shoulder milling cutters or 90° end milling cutters. Worn inserts can be reused by utilising the unworn cutting edges.
- Supplied with clamping screws and wrench





D mm	D1 mm	D max. mm	L mm	Z	Tightening torque max. N-m			art.no.	€
50.0	22	54	40	5	1.0	A1	B1	**262533** 0050	269,–
63.0	22	67	40	6	1.0	A1	B1	262533 0063	299,–

2124

Spare parts

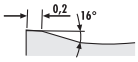
	Screw art.no.	€		TORX art.no.	€
A1	262551 0025	5,20	B1	703053 0080	1,79
	3106			7114	

APKT

F finishing	M medium	R roughing
●	●	●



Universal application



Duracarb ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
APKT 1003 PDSR	●	●	●				**DC 9235**	10	**281513** 1049	11,75

2167

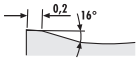
ISO	DC 9235
ISO P steel	Vc = 80 - 180
ISO M stainless steel	Vc = 80 - 220
ISO K cast iron	Vc = 80 - 290
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 to 0.4 per cutting edge ap = max. 0.7 x cutting edge length

APKT

F finishing	M medium	R roughing
●	●	●



Universal application



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
APKT 1003 PDER-S	●		●				**HC 4615**	10	**281514** 3005	9,40
	●	●					**HC 4535**	10	281514 3007	9,40
	●	●	●				**HC 4635**	10	281514 3009	9,40

2129

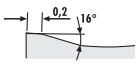
ISO	HC 4535	HC 4615	HC 4635
ISO P steel	Vc = 100 - 170	Vc = 180 - 280	Vc = 110 - 220
ISO M stainless steel	Vc = 70 - 130		Vc = 90 - 160
ISO K cast iron		Vc = 160 - 270	Vc = 120 - 250
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 to 0.4 per cutting edge ap = max. 0.7 x cutting edge length		

APKT

F finishing	M medium	R roughing
●	●	●



Universal application



SARA ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
APKT 1003-PDER-HCT	●						SP 35 PM	10 **281519** 1010	8,75
APKT 1003-PDER-SCT		●					SP 35 MM	10 281519 1020	8,75
					●		SP 35 SM	10 281519 1030	8,75

2167

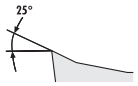
ISO	SP 35 MM	SP 35 PM	SP 35 SM
ISO P steel		Vc = 60 - 220	
ISO M stainless steel	Vc = 60 - 200		
ISO S superalloys			Vc = 25 - 75
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.08 - 0.25 per cutting edge ap = max. 0.7 x cutting edge length		

APKR specially for non-ferrous metals

F finishing	M medium	R roughing
●	●	●



Universal application



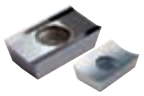
ATORN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
APKT 1003 PDFR R04				●			HW 4415	10 **281715** 0025	15,30

2129

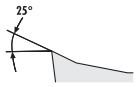
ISO	HW 4415
ISO N Al/non-ferrous	Vc = 200 - 700
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 to 0.4 per cutting edge ap = max. 0.7 x cutting edge length

APHX specially for non-ferrous metals

F finishing	M medium	R roughing
●	●	●



Universal application



ATORN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
APHX 100304 FR-ALU				●			HW 4415	10 **281517** 2003	15,50

Polished design!

2129

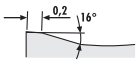
ISO	HW 4415
ISO N Al/non-ferrous	Vc = 200 - 700
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 to 0.4 per cutting edge ap = max. 0.7 x cutting edge length

APKT Radius

F finishing	M medium	R roughing
●	●	●



Universal application



ATORN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
APKT 100308PDER	●	●	●				HC 4540	10 **281514** 4011	12,30
APKT 100312PDER	●	●	●				HC 4540	10 281514 4012	12,30
APKT 100320PDER	●	●	●				HC 4540	10 281514 4013	12,30

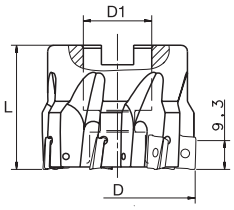
2129

ISO	HC 4540
ISO P steel	Vc = 70 - 130
ISO M stainless steel	Vc = 90 - 160
ISO K cast iron	Vc = 120 - 230
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 to 0.4 per cutting edge ap = max. 0.7 x cutting edge length

SARA® Shoulder milling cutter 90°



- **For ISO milling inserts AP.. 1604**
- Soft cutting due to the positive installation position of the indexable insert
- Tools deliver smooth milling performance
- Axial run-out max. 0.03 mm
- Radial run-out max. 0.03 mm





D mm	D1 H7 mm	L mm	Z	Tightening torque max. N-m			art.no.	€
40	16	40	4	4.01	A1	B1	**262558** 0040	116,–
50	22	40	5	4.01	A1	B1	262558 0050	138,–
63	22	40	6	4.01	A1	B1	262558 0063	148,–

2118

Spare parts

	Screw art.no.	€		Wrench art.no.	€
A1	320901 2502	11,10	B1	705141 0015	6,10

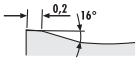
3106 7114

APMT 16

F finishing	M medium	R roughing	SARA® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	●	●	APMT 1604 PDER-M	●	●	●				SC 4635	10	**281517** 3009	7,75



Universal application

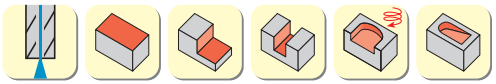


2167

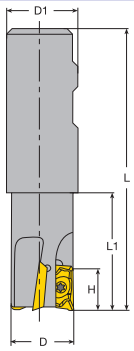
ISO	SC 4635
ISO P steel	Vc = 110 - 220
ISO M stainless steel	Vc = 90 - 160
ISO K cast iron	Vc = 120 - 250
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 - 0.3 per cutting edge ap = max. 0.7 x cutting edge length

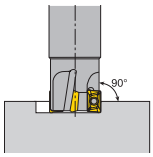


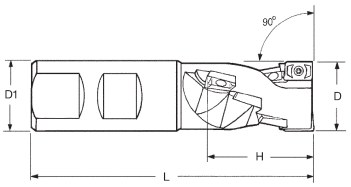
ATORN® 90° end milling cutter



- **For ISO milling inserts, type AP.. 1604**
- **Internal coolant supply**
- Easy cutting action due to the positive installation position of the indexable insert
- Tools deliver smooth milling performance
- Axial run-out max. 0.03 mm
- Radial run-out max. 0.03 mm
- For groove milling and side milling
- Precise 90° shoulder milling
- Shank according to DIN 1835B
- Supplied with clamping screws and wrench









262505 0025



262505 0032





Short

D mm	D1 mm	L1 mm	H mm	L mm	Z	Tightening torque max. N·m			art.no.	€
25.0	25	44	14.9	100	2	4.01	A1	B1	**262505** 0025	154,–
32.0	32	50	14.9	110	3	4.01	A1	B1	262505 0032	175,–
40.0	32	45	14.9	115	4	4.01	A1	B1	262505 0040	205,–

2124

Long

D mm	D1 mm	L1 mm	H mm	L mm	Z	Tightening torque max. N·m			art.no.	€
25.0	25	140	14.9	200	2	4.01	A1	B1	**262510** 0025	250,–
32.0	32	140	14.9	200	3	4.01	A1	B1	262510 0032	285,–
40.0	32	60	14.9	200	4	4.01	A1	B1	262510 0040	360,–

2124

Roughing spiral flute end mill

D mm	D1 mm	L mm	H mm	Z eff.	Z	Tightening torque max. N·m			art.no.	€
25.0	25	105	29	1	2	4.01	A1	B1	**262511** 0025	380,–
32.0	32	115	44	2	6	4.01	A1	B1	262511 0032	505,–
40.0	32	130	58	2	8	4.01	A1	B1	262511 0040	599,–

2124

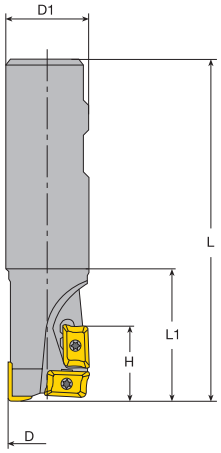
Spare parts

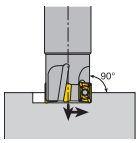
	Screw			Wrench	
	art.no.	€		art.no.	€
A1	320901 2502	11,10	B1	705141 0015	6,10
3106			7114		

ATORN® 90° drilling/die sinking cutter



- **For ISO milling inserts, type AP.. 1604**
- **Internal coolant supply**
- With Weldon shank
- High cutting capacity
- Reliable chip flow even when drilling due to positive indexable insert geometry
- Supplied with clamping screws and wrench







Short

D mm	D1 mm	H mm	L1 mm	L mm	Z	Tightening torque max. N·m			art.no.	€
32.0	32	30	50	130	3	4.01	A1	B1	**262515** 0004	299,–

2124

Extra-long

D mm	D1 mm	H mm	L1 mm	L mm	Z	Tightening torque max. N·m			art.no.	€
32.0	32	30	160	220	3	4.01	A1	B1	**262516** 0004	350,–

2124

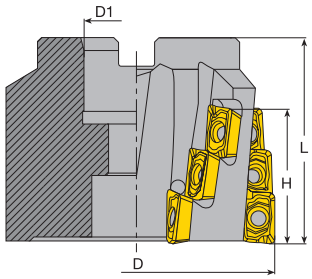
Spare parts

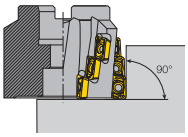
	Screw			Wrench	
	art.no.	€		art.no.	€
A1	320901 2502	11,10	B1	705141 0015	6,10
3106			7114		

ATORN® 90° roughing spiral flute milling cutter



- **For ISO milling inserts, type AP.. 1604**
- Just one insert type for both face and side cutting edges
- High right-hand helix configuration for good chip shaping
- Full coverage within one row of teeth
- Supplied with clamping screws and wrench





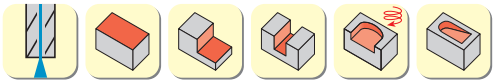


D mm	D1 mm	H mm	L mm	Z eff.	Z	Tightening torque max. N·m			art.no.	€
50.0	27	30	50	3	6	4.01	A1	B1	**262523** 0050	440,–
63.0	27	44	60	4	12	4.01	A1	B1	262523 0063	599,–
80.0	32	44	60	5	15	4.01	A1	B1	262523 0080	849,–
100.0	40	44	60	6	18	4.01	A1	B1	262523 0100	1.079,–
									2124	

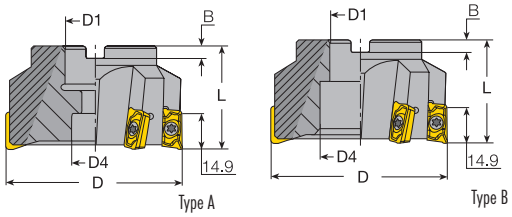
Spare parts

Screw			Wrench		
	art.no.	€		art.no.	€
A1	320901 2502	11,10	B1	705141 0015	6,10
	3106			7114	

ATORN® 90° shoulder milling cutter



- **For ISO milling inserts, type AP.. 1604**
- Precise 90° shoulder milling
- Rhombic shape for large cutting depths
- **Internal coolant supply**
- Supplied with clamping screws and wrench
- **Cutting angle:** Tool cutting edge angle 90°, axial rake angle 7° + 13°, radial rake angle 20°
- * Without internal coolant supply





Type	D mm	D1 mm	L mm	D4 mm	B mm	Z	Tightening torque max. N·m			art.no.	€
A	40.0	16	40	12.0	5.6	4	4.01	A1	B1	**262525** 0040	195,–
A	50.0	22	40	18.0	6.3	5	4.01	A1	B1	262525 0050	216,–
A	63.0	22	40	18.0	6.3	6	4.01	A1	B1	262525 0063	245,–
A	80.0	27	50	20.0	7	7	4.01	A1	B1	262525 0080	320,–
B	100.0	32	50	45.0	8	8	4.01	A1	B1	262525 0100	399,–
B	125.0	40	63	56.0	9	9	4.01	A1	B1	262525 0125	470,–
B*	160.0	40	63	87.0	9	10	4.01	A1	B1	262525 0160	649,–
B*	200.0	60	63	87.0	9	13	4.01	A1	B1	262525 0200	875,–
B*	250.0	60	63	87.0	9	16	4.01	A1	B1	262525 0250	1.439,–
									2124		

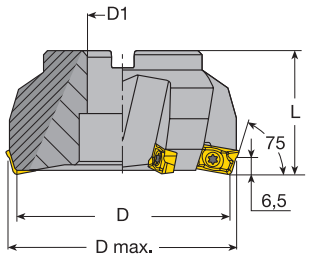
Spare parts

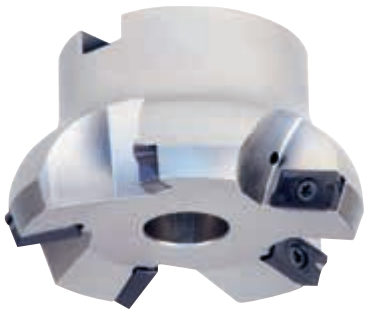
Screw			Wrench		
	art.no.	€		art.no.	€
A1	320901 2502	11,10	B1	705141 0015	6,10
	3106			7114	

ATORN® 75° face milling cutter



- **For ISO milling inserts, type AP..1604**
- Also ideal for indexable inserts that are already worn from use in 90° shoulder milling cutters or 90° end milling cutters. Worn inserts can be reused by utilising the unworn cutting edges.
- Supplied with clamping screws and wrench





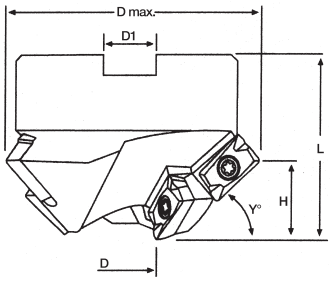
D mm	D1 mm	D max. mm	L mm	Z	Tightening torque max. N·m			art.no.	€
50.0	16	54	40	3	4.01	A1	B1	**262530** 0050	165,–
63.0	22	67	40	4	4.01	A1	B1	262530 0063	215,–
80.0	27	84	50	5	4.01	A1	B1	262530 0080	235,–
100.0	32	104	50	6	4.01	A1	B1	262530 0100	285,–
125.0	40	129	63	7	4.01	A1	B1	262530 0125	330,–
								2124	

Spare parts

Screw			Wrench		
	art.no.	€		art.no.	€
A1	320901 2502	11,10	B1	705141 0015	6,10
	3106			7114	

ATORN® Spiral flute chamfer milling cutter

- **For roughing**
- **15 °, 30 °, 40 °, 45 °, 60 °, 75 °**
- **For ISO milling inserts, type AP.. 1604**
- Ideal for pre-machining welded seams
- Indexable insert tolerances allow crank formation
- Supplied with clamping screws and wrench
- **Additional versions with user-defined chamfer angles are manufactured on request (minimum purchase 2 units)**





D mm	D max. mm	D1 mm	L mm	γ °	H mm	Z eff.	Z	Tightening torque max. N·m			art.no.	€
35.0	94.0	27	50	15	8	3	6	4.01	A1	B1	**262527** 3515	509,–
35.0	91.0	27	50	20	10	3	6	4.01	A1	B1	262527 3520	509,–
35.0	88.0	27	50	30	15	3	6	4.01	A1	B1	262527 3530	509,–
35.0	84.0	27	50	40	19	3	6	4.01	A1	B1	262827 3540	509,–
35.0	77.8	27	50	45	21.5	3	6	4.01	A1	B1	262527 3545	509,–
35.0	65.0	27	50	60	26.5	3	6	4.01	A1	B1	262527 3560	509,–
35.0	50.7	22	60	75	29.5	3	6	4.01	A1	B1	262527 3575	509,–

2124

Spare parts

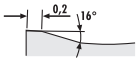
	Screw			Wrench	
	art.no.	€		art.no.	€
A1	320901 2502	11,10	B1	705141 0015	6,10
	3106			7114	

APKT

F finishing	M medium	R roughing	Duracarb ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	●	●	APKT 1604 PD-R-7	●	●	●				**DC 9235**	10	**281520** 6949	16,20



Universal application



2167

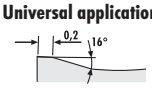
ISO	DC 9235
ISO P steel	Vc = 80 - 180
ISO M stainless steel	Vc = 80 - 220
ISO K cast iron	Vc = 80 - 290
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 to 0.4 per cutting edge ap = max. 0.7 x cutting edge length

APKT

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	●	●	APKT 1604 PDER-S	●		●				**HC 4615**	10	**281514** 3205	10,75
				●	●					**HC 4535**	10	281514 3207	10,75
				●	●	●				**HC 4635**	10	281514 3209	10,75



Universal application



2129

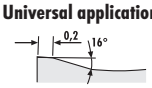
ISO	HC 4535	HC 4615	HC 4635
ISO P steel	Vc = 100 - 170	Vc = 180 - 280	Vc = 110 - 220
ISO M stainless steel	Vc = 70 - 130		Vc = 90 - 160
ISO K cast iron		Vc = 160 - 270	Vc = 120 - 250
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 to 0.4 per cutting edge ap = max. 0.7 x cutting edge length		

APKT

F finishing	M medium	R roughing	SARA® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	●	●	APKT 1604-PDER-HCT	●						**SP 35 PM**	10	**281519** 1610	10,25
			APKT 1604-PDER-SCT		●					**SP 35 MM**	10	281519 1620	10,25
								●		**SP 35 SM**	10	281519 1630	10,25



Universal application



2167

ISO	SP 35 MM	SP 35 PM	SP 35 SM
ISO P steel		Vc = 60 - 220	
ISO M stainless steel	Vc = 60 - 200		
ISO S superalloys			Vc = 25 - 75
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.08 - 0.25 per cutting edge ap = max. 0.7 x cutting edge length		

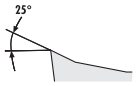
Continued on next page >>>

APKR specially for non-ferrous metals

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
●	●	●	APKT 1604 PDFR R04				●			**HW 4415**	10 **281715** 0030	16,90



Universal application



ISO	HW 4415
ISO N Al/non-ferrous	Vc = 200 - 700
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 to 0.4 per cutting edge ap = max. 0.7 x cutting edge length

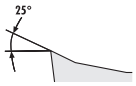
2129

APHX specially for non-ferrous metals

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
●	●	●	APHX 160404 FR-ALU				●			**HW 4415**	10 **281517** 2203	17,50



Universal application



Polished design!

ISO	HW 4415
ISO N Al/non-ferrous	Vc = 200 - 700
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 to 0.4 per cutting edge ap = max. 0.7 x cutting edge length

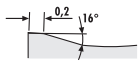
2129

APKT Radius

F finishing	M medium	R roughing	SARA® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
●	●	●	APKT 160416-PDER-HCM	●	●	●				**SP 35 P**	10 **281522** 1610	13,90
			APKT 160424-PDER-HCM	●	●	●				**SP 35 P**	10 281522 2410	13,90
			APKT 160432-PDER-HCM	●	●	●				**SP 35 P**	10 281522 3210	13,90
			APKT 160448-PDER-HCM	●	●	●				**SP 35 P**	10 281522 4810	13,90



Universal application



ISO	SP 35 P
ISO P steel	Vc = 80 - 180
ISO M stainless steel	Vc = 80 - 220
ISO K cast iron	Vc = 80 - 290
Vc = [m/min] f = [mm/U] ap = [mm]	fz = 0.1 - 0.4 ap = max. 0.7 x cutting edge length

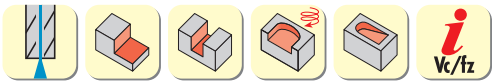
2167



PALBIT
Machining tools
411 pages
Art.no. 019900 0315

Overview of all free manufacturers' catalogues
on page 14/15

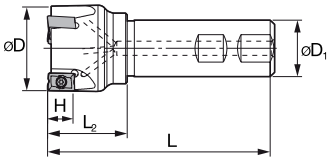
ATORN® End milling cutters 4-10 Power



790

- **For ISO milling inserts, type LN.X 100605 PNR**
- **Internal coolant supply**
- **For face milling, shoulder milling, straight-line edge milling and groove milling**
- Multi-functional milling tool system with **4 cutting edges** on a **double-sided indexable cutting insert**
- High tool life quantities due to low machining forces
- Special chip shape geometry allows low power consumption due to a large rake angle despite the thick cutting edge
- With the new carbide types, the chip geometry ensures consistently high tool life quantities
- Nickel-plated design for high wear-resistance and increased base body service life





Short

D mm	D1 mm	L mm	L2 mm	H mm	Z	Tightening torque max. N·m			art.no.	€
20.0	20	100	30	9	3	1.75	A1	C1	**262559** 0020	196,–
25.0	25	115	35	9	3	1.75	A1	C1	262559 0025	245,–
32.0	25	125	40	9	4	1.75	A1	C1	262559 0032	270,–

2124



Long

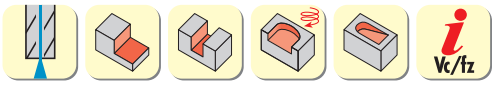
D mm	D1 mm	L mm	L2 mm	H mm	Z	Tightening torque max. N·m			art.no.	€
20	20	150	50	9	3	1.75	A1	B1	**262561** 0020	205,–
25	25	150	50	9	3	1.75	A1	B1	262561 0025	248,–
32	32	200	60	9	4	1.75	A1	B1	262561 0032	275,–

2124

Spare parts

	Screw			TORX			TORX PLUS	
	art.no.	€		art.no.	€		art.no.	€
A1	285799 0102	7,60	B1	703053 0090	1,79	C1	703054 0080	2,10
	3106			7114			7114	

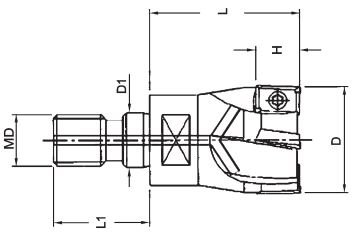
ATORN® Screw-in milling cutter 4-10 Power



790

- **For ISO milling inserts, type LN.X 100605 PNR**
- **Internal coolant supply**
- **For face milling, shoulder milling, straight-line edge milling and groove milling**
- Multi-functional milling tool system with **4 cutting edges** on a **double-sided indexable cutting insert**
- High tool life quantities due to low machining forces
- Special chip shape geometry allows low power consumption due to a large rake angle despite the thick cutting edge
- With the new carbide types, the chip geometry ensures consistently high tool life quantities
- Nickel-plated design for high wear-resistance and increased base body service life





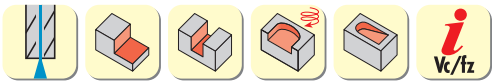
D mm	L mm	Z	D1 mm	H mm	L1 mm	MD	Tightening torque max. N·m			art.no.	€
20	30	3	10.5	9	20	M10	1.75	A1	B1	**262563** 0020	191,–
25	35	3	12.5	9	22	M12	1.75	A1	B1	262563 0025	230,–
32	43	4	17	9	24	M16	1.75	A1	B1	262563 0032	250,–

2124

Spare parts

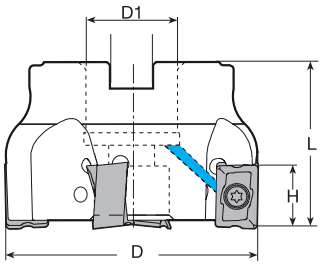
	Screw			TORX	
	art.no.	€		art.no.	€
A1	285799 0102	7,60	B1	703053 0090	1,79
	3106			7114	

ATORN® Shoulder milling cutter 4-10 power / 4-15 power



790

- **Internal coolant supply**
- **For face milling, shoulder milling, straight-line edge milling and groove milling**
- Multi-functional milling tool system with **4 cutting edges** on a **double-sided milling insert**
- High tool life quantities due to low machining forces.
- Special chip shape geometry allows low power consumption due to a large rake angle despite the thick cutting edge
- With the new carbide types, the chip geometry ensures consistently high tool life quantities
- Nickel-plated design for high wear-resistance and increased base body service life





4-10 Power

- **For ISO milling inserts, type LN.X 100605 PNR**

D mm	D1 mm	L mm	H mm	Z	Tightening torque max. N-m			art.no.	€
40.0	16	40	9	5	1.75	A1	B1	**262560** 0040	320,–
50.0	22	40	9	7	1.75	A1	B1	262560 0050	350,–
63.0	22	40	9	9	1.75	A1	B1	262560 0063	435,–

2124



4-15 Power

- **For ISO milling inserts, type LN.X 151008 PNR**

D mm	D1 mm	L mm	H mm	Z	Tightening torque max. N-m			art.no.	€
50.0	22	40	14	5	4.01	A2	B2	**262562** 0050	290,–
63.0	22	40	14	6	4.01	A2	B2	262562 0063	320,–
80.0	27	50	14	7	4.01	A2	B2	262562 0080	340,–
100.0	32	50	14	8	4.01	A2	B2	262562 0100	410,–
125.0	40	63	14	10	4.01	A2	B2	262562 0125	739,–
160.0	40	63	14	11	4.01	A2	B2	262562 0160	919,–

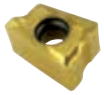
2124

Spare parts

Screw			TORX		
	art.no.	€		art.no.	€
A1	285799 0102	7,60	B1	703053 0090	1,79
A2	285799 0103	7,60	B2	703053 0150	1,79
	3106			7114	

LNM(E)X 10

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	●	●	LNMX 100605PNR-MM	●	●	●				**HC 4630**	10	**295811** 0001	15,10
					●					**HC 4535**	10	295813 0001	15,10
			LNEX 100605PNR-MA				●			**HW 4310**	10	295815 0002	14,10



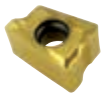
Universal application

2129

ISO	HC 4535	HC 4630	HW 4310
ISO P steel		Vc = 110 - 220	
ISO M stainless steel	Vc = 120 - 180	Vc = 90 - 160	
ISO K cast iron		Vc = 120 - 230	
ISO N Al/non-ferrous			Vc = 200 - 300
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.05 - 0.20 per cutting edge ap = max. 0.7 x cutting edge length		

LNM(E)X 15

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	●	●	LNMX 151008PNR-MM	●	●	●				**HC 4630**	10	**295821** 0001	18,60
					●					**HC 4535**	10	295825 0001	18,60
			LNEX 151008PNR-MA				●			**HW 4310**	10	295826 0002	18,10



Universal application

2129

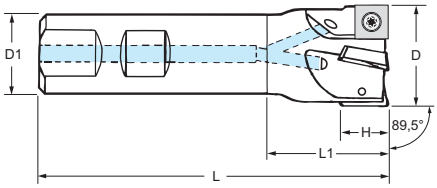
ISO	HC 4535	HC 4630	HW 4310
ISO P steel		Vc = 110 - 220	
ISO M stainless steel	Vc = 120 - 180	Vc = 90 - 160	
ISO K cast iron		Vc = 120 - 230	
ISO N Al/non-ferrous			Vc = 200 - 300
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.05 - 0.20 per cutting edge ap = max. 0.7 x cutting edge length		

ATORN® 89.5° end milling cutter



Particularly cost-effective thanks to 4 cutting edges

- **For milling inserts SP.T 0603**
- Positive indexable insert basic form
- Four cutting edges per indexable insert
- Also suitable for machines with low drive power
- For excellent surfaces
- Burr-free milling
- **Internal coolant supply**
- Shank according to DIN 1835B
- Supplied with clamping screw and wrench





Short

D mm	D1 mm	H mm	L1 mm	L mm	Z	Tightening torque max. N·m			art.no.	€
10	16	6	24	80	1	1.0	A1	B1	**265000** 0010	91,–
12	16	6	24	80	1	1.0	A1	B1	265000 0012	91,–
16	16	6	37	85	2	1.0	A1	B1	265000 0016	121,–
20	20	6	40	90	3	1.0	A1	B1	265000 0020	158,–
25	25	6	39	95	4	1.0	A1	B1	265000 0025	194,–
32	25	6	30	95	5	1.0	A1	B1	265000 0032	215,–

2124

Long

D mm	D1 mm	H mm	L1 mm	L mm	Z	Tightening torque max. N·m			art.no.	€
16	16	6	100	150	2	1.0	A1	B1	**265001** 0016	140,–
20	20	6	100	150	3	1.0	A1	B1	265001 0020	190,–
25	20	6	25	150	4	1.0	A1	B1	265001 0025	215,–
32	25	6	30	150	5	1.0	A1	B1	265001 0032	250,–

2124

Spare parts

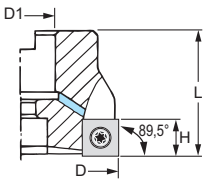
Screw			TORX		
	art.no.	€		art.no.	€
A1	262551 0025	5,20	B1	703053 0080	1,79
3106			7114		

ATORN® 89.5° shell-type milling cutter



Particularly cost-effective thanks to 4 cutting edges

- **For milling inserts SP.T 0603**
- Positive indexable insert basic form
- Four cutting edges per indexable insert
- Also suitable for machines with low drive power
- For excellent surfaces
- Burr-free milling
- **Internal coolant supply**
- Supplied with clamping screw and wrench





D mm	L mm	D1 mm	Z	H mm	Tightening torque max. N·m			art.no.	€
40	40	16	6	6	1.0	A1	B1	**265002** 0040	245,–
50	40	22	7	6	1.0	A1	B1	265002 0050	290,–
63	40	22	8	6	1.0	A1	B1	265002 0063	395,–

2124

Spare parts

Screw			TORX		
	art.no.	€		art.no.	€
A1	262551 0025	5,20	B1	703053 0080	1,79
3106			7114		

SPMT

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
○	○	○	SPMT 060304	●	○	○				**HC 4635**	10	**263008** 0006	10,65



Finishing/medium machining

2129

ISO	HC 4635
ISO P steel	Vc = 110 - 220
ISO M stainless steel	Vc = 70 - 130
ISO K cast iron	Vc = 120 - 230
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.05 - 0.15 ap = 0.5 - 5.0

SPGT ALU

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
○	●	○	SPGT 060304-ALU				●			**HW 4415**	10	**263009** 0006	13,–



Universal application

2129

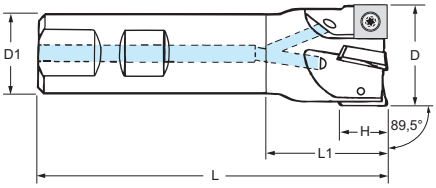
ISO	HW 4415
ISO N Al/non-ferrous	Vc = 200 - 700
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.10 - 0.20 ap = 0.5 - 5.0

ATORN® 89.5° end milling cutter

DIN 1835 B

Particularly cost-effective thanks to 4 cutting edges

- **For milling inserts SP.T 09T3**
- Positive indexable insert basic form
- Four cutting edges per indexable insert
- Also suitable for machines with low drive power
- For excellent surfaces
- Burr-free milling
- **Internal coolant supply**
- Shank according to DIN 1835B
- Supplied with clamping screw and wrench





D mm	D1 mm	H mm	L1 mm	L mm	Z	Tightening torque max. N-m			art.no.	€
25	25	9	44	100	2	2.68	A1	B1	**265003** 0025	159,–
32	32	9	50	110	3	2.68	A1	B1	265003 0032	182,–
40	32	9	45	115	4	2.68	A1	B1	265003 0040	230,–

2124

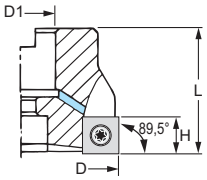
Spare parts

	Screw art.no.	€		TORX art.no.	€
A1	262551 0035	7,55	B1	703053 0150	1,79
	3106			7114	

ATORN® 89.5° shell-type milling cutter

- **For milling inserts SP.T 09T3**
- Positive indexable insert basic form
- Four cutting edges per indexable insert
- Also suitable for machines with low drive power
- For excellent surfaces
- Burr-free milling
- **Internal coolant supply**
- Supplied with clamping screw and wrench

Particularly cost-effective thanks to 4 cutting edges





D mm	L mm	D1 mm	Z	H mm	Tightening torque max. N-m			art.no.	€
40	40	16	4	9	2.68	A1	B1	**265004** 0040	210,–
50	40	22	5	9	2.68	A1	B1	265004 0050	230,–
63	40	22	6	9	2.68	A1	B1	265004 0063	270,–
80	50	27	7	9	2.68	A1	B1	265004 0080	295,–
100	50	32	8	9	2.68	A1	B1	265004 0100	365,–

2124

Spare parts

	Screw art.no.	€		TORX art.no.	€
A1	262551 0035	7,55	B1	703053 0150	1,79
	3106			7114	

SPMT

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
○	○	○	SPMT 09T308	●	○	○				**HC 4635**	10	**263008** 0009	11,45



Finishing/medium machining

2129

ISO	HC 4635
ISO P steel	Vc = 110 - 220
ISO M stainless steel	Vc = 70 - 130
ISO K cast iron	Vc = 120 - 230
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.05 - 0.18 ap = 0.5 - 5.0

SPGT ALU

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
○	●	○	SPGT 09T308-ALU				●			**HW 4415**	10	**263009** 0009	14,–



Universal application

2129

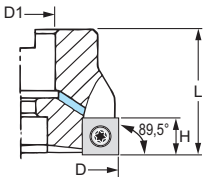
ISO	HW 4415
ISO N Al/non-ferrous	Vc = 200 - 700
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.10 - 0.20 ap = 0.5 - 5.0

ATORN® 89.5° shell-type milling cutter



- **for milling inserts SP.T 1204**
- Positive indexable insert basic form
- Four cutting edges per indexable insert
- Also suitable for machines with low drive power
- For excellent surface quality
- Burr-free milling cutter
- **Internal coolant supply**
- Supplied with clamping screw and wrench

Particularly cost-effective thanks to 4 cutting edges





D mm	L mm	D1 mm	Z	H mm	Tightening torque max. N·m			art.no.	€
50	40	22	5	12	7.93	A1	B1	**265005** 0050	305,–
63	40	22	6	12	7.93	A1	B1	265005 0063	330,–
80	50	27	6	12	7.93	A1	B1	265005 0080	375,–
100	50	32	8	12	7.93	A1	B1	265005 0100	465,–
125	63	40	9	12	7.93	A1	B1	265005 0125	569,–

2124

Spare parts

Screw			TORX		
	art.no.	€		art.no.	€
A1	321701 0108	9,25	B1	703053 0200	1,79
3106			7114		

SPMT

F finishing	M medium	R roughing	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
○	○	○											
 Finishing/medium machining	SPMT 120408	●	○	○				**HC 4635**	10	**263008** 0012	12,75

2129

ISO	HC 4635
ISO P steel	Vc = 110 - 220
ISO M stainless steel	Vc = 70 - 130
ISO K cast iron	Vc = 120 - 230
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.05 - 0.2 ap = 0.5 - 5.0

SPGT ALU

F finishing	M medium	R roughing	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
○	●	○											
 Universal application	SPGT 120408-ALU						●			**HW 4415**	10	**263009** 0012	15,–

2129

ISO	HW 4415
ISO N Al/non-ferrous	Vc = 200 - 700
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.10 - 0.20 ap = 0.5 - 5.0



... with precision.

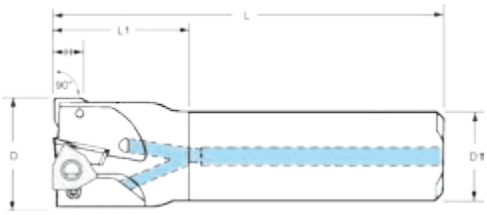
ATORN®
Performance demands quality

ATORN® End milling cutter 90°

804



- **For WNEU 403 milling inserts**
- Wear-resistant, nickel-plated design
- Positive indexable insert basic form
- Very low power consumption thanks to special chip shape geometry
- Six cutting edges per indexable insert
- Double-sided indexable insert
- Large insert thickness
- **Internal coolant supply**
- Supplied with clamping screw and wrench



Short version

D mm	L mm	L1 mm	D1 mm	Z	H mm	Tightening torque max. N·m			art.no.	€
20	90	40	20	3	4	1.2	A1	B1	**262566** 0020	175,–
25	100	44	25	4	4	1.2	A1	B1	262566 0025	210,–
32	110	50	32	5	4	1.2	A1	B1	262566 0032	230,–

2124

Long version

D mm	L mm	L1 mm	D1 mm	Z	H mm	Tightening torque max. N·m			art.no.	€
20	150	40	20	3	4	1.2	A1	B1	**262567** 0020	205,–
25	170	50	25	4	4	1.2	A1	B1	262567 0025	245,–
32	195	70	32	5	4	1.2	A1	B1	262567 0032	285,–

2124

Spare parts

	Screw art.no.	€
A1	262551 2551	5,45

3106

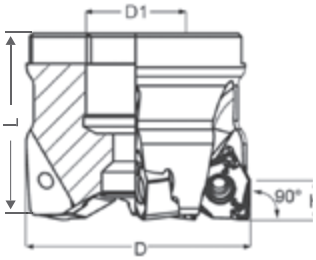
	TORX art.no.	€
B1	703053 0080	1,79

7114

ATORN® Shoulder milling cutter 90°

804

- **For WNEU 403 milling inserts**
- Wear-resistant, nickel-plated design
- Positive indexable insert basic form
- Very low power consumption thanks to special chip shape geometry
- Six cutting edges per indexable insert
- Double-sided indexable insert
- Large insert thickness
- **Internal coolant supply**
- Supplied with clamping screw and wrench





D mm	L mm	D1 mm	Z	H mm	Tightening torque max. N·m			art.no.	€
32	40	16	6	4	1.2	A1	B1	**262568** 0032	262,50
40	40	16	6	4	1.2	A1	B1	262568 0040	275,–
50	40	22	8	4	1.2	A1	B1	262568 0050	295,–

2124

Spare parts

	Screw art.no.	€
A1	262551 2551	5,45

3106

	TORX art.no.	€
B1	703053 0080	1,79

7114



ATORN® Milling inserts MNEU 04



804



ISO designation		ISO PK Coated HC4620 art.no.	€		ISO PM Coated HC4630 art.no.	€		ISO PMK Coated HC4430 art.no.	€
WNEU 040304-M	10	**295830** 0002	18,10	10	**295831** 0002	18,10	10	**295832** 0002	18,10
WNEU 040308-M	10	295830 0001	18,10	10	295831 0001	18,10	10	295832 0001	18,10
		2131			2131			2131	

ATORN® 90° corner milling cutter

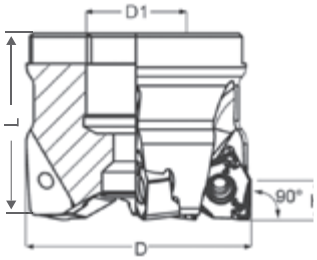






804

- **For WNE.. 0806 milling inserts**
- Wear-resistant, nickel-plated design
- Positive indexable insert basic form
- Very low power consumption thanks to special chip shape geometry
- Six cutting edges per indexable insert
- Double-sided indexable insert
- Large insert thickness
- **Internal coolant supply**
- Supplied with clamping screw and wrench



6 cutting edges



D mm	L mm	D1 mm	Z	H mm	Tightening torque max. N-m			art.no.	€
40	40	22	3	7	3.0	A1	B1	**262565** 0040	240,–
50	40	22	5	7	3.0	A1	B1	262565 0050	340,–
63	40	22	6	7	3.0	A1	B1	262565 0063	380,–
63	40	22	7	7	3.0	A1	B1	262565 1063	495,–
80	50	27	7	7	3.0	A1	B1	262565 0080	430,–
80	50	27	9	7	3.0	A1	B1	262565 1080	529,–
100	50	32	8	7	3.0	A1	B1	262565 0100	529,–
100	50	32	10	7	3.0	A1	B1	262565 1100	659,–
125	63	40	10	7	3.0	A1	B1	262565 0125	679,–
125	63	40	11	7	3.0	A1	B1	262565 1125	699,–
160	63	40	11	7	3.0	A1	B1	262565 0160	789,–
160	63	40	12	7	3.0	A1	B1	262565 1160	1.019,–
								2124	

Spare parts

Screw	art.no.	€
A1	262551 4035	5,45
	3106	

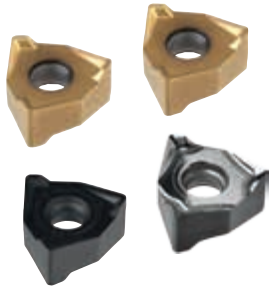
TORX	art.no.	€
B1	703053 0150	1,79
	7114	

ATORN® Milling inserts WNE.. 08






804

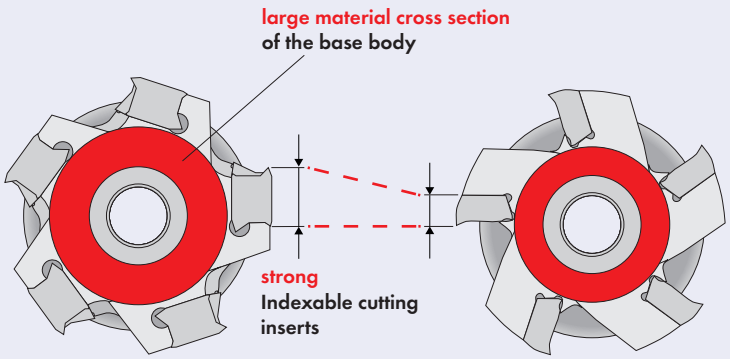


ISO designation		ISO PK Coated HC4620 art.no.	€		ISO PM Coated HC4630 art.no.	€		ISO PMK Coated HC4430 art.no.	€		ISO N Uncoated HW4415 art.no.	€
WNEU 080608-M	10	**295827** 0001	19,80	10	**295828** 0001	18,70	10	**295829** 0001	18,70			
WNEX 080608-M										10	**295833** 0001	21,80
		2131			2131			2131			2131	

Tangential Milling Cutters

INFO

- **Process reliability due to tangential installation position**
  The tangential installation position of the indexable cutting inserts provides some special features. The favourable contact surface and clamping force conditions ensure maximum stability. The tools are therefore extremely reliable even at high cutting performance.
- **Efficiency due to good cutting properties**
  The stable indexable cutting inserts have a positive rake angle, resulting in excellent cutting performance and low power consumption of the machine. This significantly increases the service life of the cutting edge. This has a direct and positive effect on tool costs.
- **Cost savings thanks to reduced cycle times**
  The ratio of tool diameter to the number of teeth, combined with high achievable feed rates, facilitates enormous removal rates. This results in significantly shorter cycle times, which considerably reduces the total process costs and cost per part.

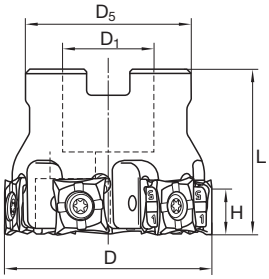


ATORN® Tangential shoulder milling cutter 90°

809

- Process reliability due to tangential installation position
- **8-blade indexable insert for high efficiency**
- Efficiency due to good cutting properties
- Cost savings thanks to reduced cycle times
- For roughing and semi-finishing operations / steel and cast iron machining
- **Infeed depth ap max. = 10 mm**
- up to Ø 125 mm with internal cooling

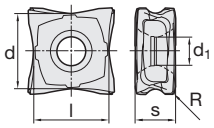
Tangential

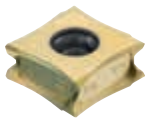




D mm	L mm	D5 mm	D1 mm	H mm	Z	Tightening torque max. N-m	Designation			art.no.	€
50	40	40	22	10	5	5.2	FMP90T X12,050AN-I	A1	B1	**262566** 0050	350,–
50	40	40	22	10	6	5.2	FMP90T X12,050AN-IF	A1	B1	262566 0051	405,–
63	40	50	22	10	6	5.2	FMP90T X12,063AN-I	A1	B1	262566 0063	455,–
63	40	50	22	10	8	5.2	FMP90T X12,063AN-IF	A1	B1	262566 0064	509,–
80	50	60	27	10	8	5.2	FMP90T X12,080AN-I	A1	B1	262566 0080	559,–
80	50	60	27	10	10	5.2	FMP90T X12,080AN-IF	A1	B1	262566 0081	619,–
100	50	65	32	10	9	5.2	FMP90T X12,100AN-I	A1	B1	262566 0100	669,–
100	50	65	32	10	12	5.2	FMP90T X12,100AN-IF	A1	B1	262566 0101	749,–
125	63	90	40	10	11	5.2	FMP90T X12,125AN-I	A1	B1	262566 0125	779,–
125	63	90	40	10	16	5.2	FMP90T X12,125AN-IF	A1	B1	262566 0126	909,–
160	63	130	40	10	13	5.2	FMP90T X12,160AN	A1	B1	262566 0160	999,–
160	63	130	40	10	20	5.2	FMP90T X12,160AN-F	A1	B1	262566 0161	1.199,–

2127





XNMU

ISO designation	l mm	d mm	S mm	d1 mm	R mm	ISO K HC4420 art.no.	€	ISO PK HC4430 art.no.	€	ISO M HC4640 art.no.	€	ISO P HC4544 art.no.	€
XNMU 120608ER	12	12	5.56	4.4	0.8	**283320** 0120	22,10	**283321** 0130	22,10	**283322** 0140	22,10	**283323** 0144	22,80
						2131		2131		2131		2131	

Spare parts

	Screw art.no.	€
A1	264000 9906	4,50

3106

	TORX art.no.	€
B1	703053 0150	1,79

7114

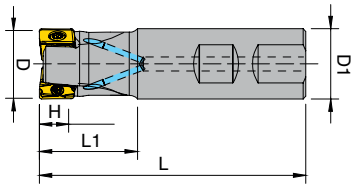
palbit End milling cutter 90° TGPLUS 90190

802

- **for milling inserts LNXT 1306..**
- maximum stability thanks to tangentially-arranged indexable inserts
- high feed rates for maximum removal rate
- **internal coolant supply**







D mm	D1 mm	L mm	L1 mm	H mm	Z	Tightening torque max. N·m	Designation			art.no.	€
25	25	95	45	11	2	3.0	025W90190-02-04-025095	A1	B1	**260248** 0025	229,–
32	32	110	50	11	3	3.0	032W90190-03-04-032110	A2	B1	260248 0032	274,50
40	32	110	50	11	4	3.0	040W90190-04-04-032110	A2	B1	260248 0040	349,50

2174

Spare parts

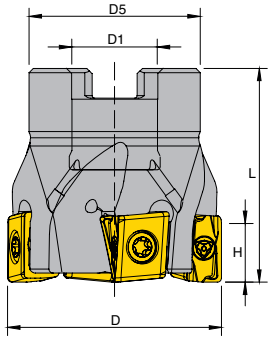
	Screw			TORX	
	art.no.	€		art.no.	€
A1	321099 0014	3,85	B1	703053 0150	1,79
A2	321099 0017	3,35			
	3160			7114	

palbit Shoulder milling cutter 90° TGPLUS 90190

802

- **for milling inserts LNXT 1306..**
- maximum stability thanks to tangentially-arranged indexable inserts
- high feed rates for maximum removal rate
- **internal coolant supply**





D mm	L mm	D5 mm	D1 mm	H mm	Z	Tightening torque max. N·m	Designation			art.no.	€
40	40	32	16	11	4	3.0	040A90190-04-04-016040	A1	B1	**260247** 0040	274,50
40	40	32	16	11	5	3.0	040A90190-05-04-016040	A1	B1	260247 0041	306,75
50	40	42	22	11	5	3.0	050A90190-05-04-022040	A1	B1	260247 0050	379,–
50	40	42	22	11	6	3.0	050A90190-06-04-022040	A1	B1	260247 0051	415,25
63	40	52	22	11	6	3.0	063A90190-06-04-022040	A1	B1	260247 0063	416,25
63	40	52	22	11	8	3.0	063A90190-08-04-022040	A1	B1	260247 0064	488,75
80	50	60	27	11	7	3.0	080A90190-07-04-027050	A1	B1	260247 0080	491,75
80	50	60	27	11	10	3.0	080A90190-10-04-027050	A1	B1	260247 0081	582,50
100	50	80	32	11	9	3.0	100A90190-09-04-032050	A1	B1	260247 0100	627,50
100	50	80	32	11	13	3.0	100A90190-13-04-032050	A1	B1	260247 0101	831,50
125	63	90	40	11	11	3.0	125A90190-11-04-040063	A1	B1	260247 0125	865,–
125	63	90	40	11	11	3.0	125A90190-16-04-040063	A1	B1	260247 0126	1.098,25

2174

Spare parts

	Screw			TORX	
	art.no.	€		art.no.	€
A1	321099 0017	3,35	B1	703053 0150	1,79
	3160			7114	

Milling inserts LN.. 1306.. TGPLUS 90190

F finishing	M medium	R roughing	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	●	●											
			LNXT 130604 PNER-MP			●				**PH 5320**	10	**285295** 0126	17,–
				●	●					**PH 7740**	10	285295 0148	17,–
				●		●				**PH 7920**	10	285295 0150	17,–
			LNXT 130608 PNER-MP			●				**PH 5320**	10	285295 0226	17,–
				●	●					**PH 7740**	10	285295 0248	17,–
				●		●				**PH 7920**	10	285295 0250	17,–
				●						**PHS 740**	10	285295 0274	19,50

2170

ISO	PH 5320	PH 7740	PH 7920	PHS 740
ISO P steel		Vc = 110 - 170	Vc = 160 - 250	Vc = 110 - 170
ISO M stainless steel		Vc = 70 - 180		
ISO K cast iron	Vc = 100 - 270		Vc = 90 - 300	
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 - 0.25	fz = 0.1 - 0.2	fz = 0.1 - 0.35	
	ap = 11			

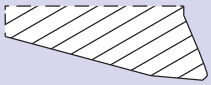
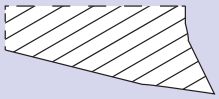
ATORN® High-speed milling cutters range

INFO

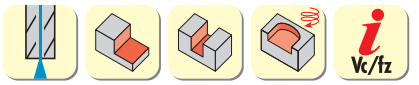
Exactly 90°

- Shoulder milling at exactly 90° in steel, cast iron, stainless steel and non-ferrous materials
- Extremely smooth running with low power consumption
- Large selection of base bodies and indexable cutting inserts
- Indexable cutting inserts in four sizes with different corner radii
- Extra-long end milling cutters for deep cavities
- Cutting depths of up to 16.5 mm
- High feed rate due to the large number of thread ridges
- Soft cut due to extremely positive geometry and irregular pitch
- All milling cutters have an internal coolant supply and have been surface-treated



Indexable insert designation	Features	Chip shape levels
ADKX	Universal indexable cutting insert geometry with circumferential protective chamfer for machining steel and cast iron materials as well as stainless steels	 -SR -SR-TR
ADHX	Special ground indexable cutting insert geometry with polished face and sharp cutting edges for machining non-ferrous materials (aluminium, soft copper alloys and plastics)	 -FR-ALC

ATORN® 90° end milling cutter



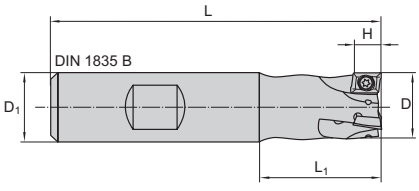
801

- **For milling inserts, type AD..X 06..**
- Easy cutting action due to the positive cutting edge geometry
- Tools deliver smooth milling performance due to irregular pitch
- Precise 90° shoulder milling
- **Internal coolant supply**
- Shank according to DIN 1835B
- Precision-sintered milling inserts (ADKX)
- Precision-ground milling inserts (ADHX) for maximum accuracy



D mm	D1 mm	H mm	L1 mm	L mm	Z	Tightening torque max. N-m			art.no.	€
10	10	5.5	20	60	1	0.7	A1	B1	**264002** 0010	207,–
12	12	5.5	25	70	2	0.7	A1	B1	264002 0012	219,–
14	14	5.5	25	70	3	0.7	A1	B1	264002 0014	212,–
16	16	5.5	28	76	3	0.7	A1	B1	264002 0016	229,–
16	16	5.5	28	76	4	0.7	A1	B1	264002 0116	253,–
18	16	5.5	28	76	4	0.7	A1	B1	264002 0018	265,–
20	20	5.5	36	86	4	0.7	A1	B1	264002 0020	270,–
20	20	5.5	36	86	5	0.7	A1	B1	264002 0120	305,–
25	20	5.5	36	86	6	0.7	A1	B1	264002 0025	310,–
25	25	5.5	40	96	7	0.7	A1	B1	264002 0125	345,–
32	25	5.5	86	96	8	0.7	A1	B1	264002 0032	375,–

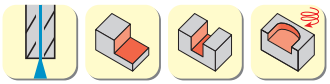
2127



Spare parts

	Screw			TORX	
	art.no.	€		art.no.	€
A1	264000 9901	4,70	B1	703053 0060	1,79
	3106			7114	

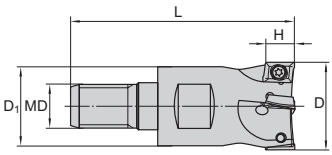
ATORN® 90° screw-in milling cutter



801

- **For milling inserts, type AD..X 06..**
- Easy cutting action due to the positive cutting edge geometry
- Tools deliver smooth milling performance due to irregular pitch
- Precise 90° shoulder milling
- **Internal coolant supply**
- Precision-sintered milling inserts (ADKX)
- Precision-ground milling inserts (ADHX) for maximum accuracy





D mm	D1 mm	L mm	MD	Z	H mm	Tightening torque max. N·m			art.no.	€
12	13	45	M8	2	5.5	0.7	A1	B1	**264001** 0012	198,–
16	13	45	M8	3	5.5	0.7	A1	B1	264001 0016	229,–
16	13	45	M8	4	5.5	0.7	A1	B1	264001 0017	233,–
20	18	49	M10	4	5.5	0.7	A1	B1	264001 0020	239,–
20	18	49	M10	5	5.5	0.7	A1	B1	264001 0021	274,–
25	21	55	M10	7	5.5	0.7	A1	B1	264001 0025	295,–
									2127	

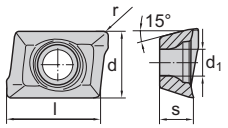
Spare parts

	Screw art.no.	€		TORX art.no.	€
A1	264000 9901	4,70	B1	703053 0060	1,79
	3106			7114	

ATORN® AD..X 06.. milling inserts

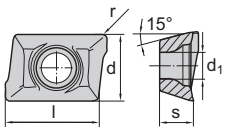
Milling inserts

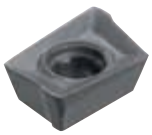
ISO designation	l mm	d mm	s mm	d1 mm	R mm		ISO KN HC4410 art.no.	€		ISO N HW4410 art.no.	€
ADHX 060202 FR-ALC	6.35	4.76	2.38	2	0.2	10	**282001** 1006	11,90	10	**282001** 1007	11,30
							2131			2131	



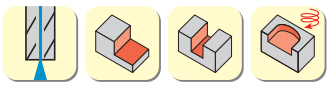


ISO designation	l mm	d mm	s mm	d1 mm	R mm		ISO PMS HC4640 art.no.	€		ISO PKN HC4410 art.no.	€
ADKX 060202SR	6.35	4.76	2.38	2	0.2	10	**282002** 1001	10,–	10	**282002** 1006	10,–
ADKX 060204SR	6.35	4.76	2.38	2	0.4	10	282002 2001	10,–	10	282002 2006	10,–
							2131			2131	





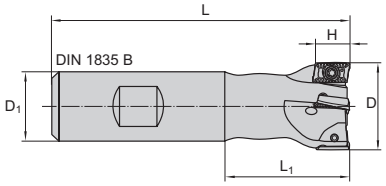
ATORN® 90° end milling cutter



801

- **For milling inserts, type AD..X 09..**
- Easy cutting action due to the positive cutting edge geometry
- Tools deliver smooth milling performance due to irregular pitch
- Precise 90° shoulder milling
- **Internal coolant supply**
- Shank according to DIN 1835B
- Precision-sintered milling inserts (ADKX)
- Precision-ground milling inserts (ADHX) for maximum accuracy





D mm	D1 mm	H mm	L1 mm	L mm	Z	Tightening torque max. N·m			art.no.	€
16	16	8.5	28	76	2	1.2	A1	B1	**264004** 0016	187,–
20	20	8.5	36	86	3	1.2	A1	B1	264004 0020	219,–
20	20	8.5	36	86	4	1.2	A1	B1	264004 0021	229,–
25	20	8.5	36	86	4	1.2	A1	B1	264004 0025	249,–
25	20	8.5	36	86	5	1.2	A1	B1	264004 0026	270,–
32	25	8.5	40	86	6	1.2	A1	B1	264004 0032	310,–
									2127	

Spare parts

	Screw art.no.	€		TORX art.no.	€
A1	264000 9902	5,50	B1	703053 0080	1,79
	3106			7114	

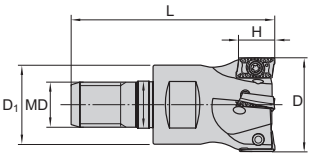
ATORN® 90° screw-in milling cutter



801

- **For milling inserts, type AD..X 09..**
- Easy cutting action due to the positive cutting edge geometry
- Tools deliver smooth milling performance due to irregular pitch
- Precise 90° shoulder milling
- **Internal coolant supply**
- Precision-sintered milling inserts (ADKX)
- Precision-ground milling inserts (ADHX) for maximum accuracy





D mm	D1 mm	L mm	MD	Z	H mm	Tightening torque max. N·m			art.no.	€
20	18	49	M10	3	8.5	1.2	A1	B1	**264003** 0020	198,–
25	21	55	M12	4	8.5	1.2	A1	B1	264003 0025	249,–
32	29	67	M16	6	8.5	1.2	A1	B1	264003 0032	280,–
									2127	

Spare parts

	Screw art.no.	€
A1	264000 9902	5,50
	3106	

	TORX art.no.	€
B1	703053 0080	1,79
	7114	

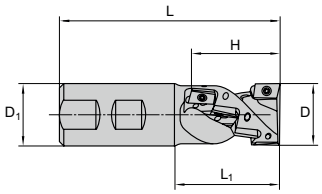
ATORN® 90° porcupine milling cutter



801

- **For milling inserts, type AD..X 09..**
- Easy cutting action due to the positive cutting edge geometry
- Tools deliver smooth milling performance due to irregular pitch
- Precise 90° shoulder milling
- **Internal coolant supply**
- Shank according to DIN 1835B
- Precision-sintered milling inserts (ADKX)
- Precision-ground milling inserts (ADHX) for maximum accuracy





D mm	D1 mm	H mm	L1 mm	L mm	Z	Tightening torque max. N·m			art.no.	€
20	20	25	36	86	6	1.2	A1	B1	**264005** 0020	405,–
25	25	33	44	100	8	1.2	A1	B1	264005 0025	459,–
32	32	41	55	115	15	1.2	A1	B1	264005 0032	549,–
									2127	

Spare parts

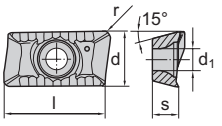
	Screw art.no.	€
A1	264000 9902	5,50
	3106	

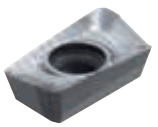
	TORX art.no.	€
B1	703053 0080	1,79
	7114	

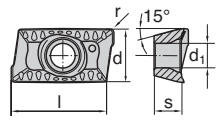
ATORN® AD..X 09.. milling inserts

ADHX FR

ISO designation	l mm	d mm	s mm	d1 mm	R mm	ISO K N HC4410			ISO N HW4410		
							art.no.	€		art.no.	€
ADHX090308FR-ALC	9.52	5.56	3.18	2.8	0.8	10	**282003** 1006	12,70	10	**282003** 1007	12,10
ADHX090312FR-ALC	9.52	5.56	3.18	2.8	1.2	10	282003 2006	12,70	10	282003 2007	12,10
							2131			2131	









ADKX SR-TR

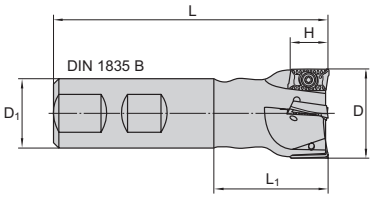
ISO designation	l mm	d mm	s mm	d1 mm	R mm	ISO P M S HC4640			ISO M HC4540 dry milling			ISO M HC4544 wet milling			ISO P K N HC4410		
							art.no.	€		art.no.	€		art.no.	€		art.no.	€
ADKX090304SR-TR	9.52	5.56	3.18	2.8	0.4	10	**282004** 1001	10,60							10	**282004** 1006	10,60
ADKX090308SR-TR	9.52	5.56	3.18	2.8	0.8	10	282004 2001	10,60	10	**282004** 2003	10,60	10	**282004** 2004	10,60	10	282004 2006	10,60
ADKX090312SR-TR	9.52	5.56	3.18	2.8	1.2	10	282004 3001	10,60	10	282004 3003	10,60	10	282004 3004	10,60	10	282004 3006	10,60
ADKX090316SR-TR	9.52	5.56	3.18	2.8	1.6	10	282004 4001	10,60	10	282004 4003	10,60	10	282004 4004	10,60	10	282004 4006	10,60
							2131			2131			2131			2131	

ATORN® 90° end milling cutter



801

- **For milling inserts, type AD..X 12..**
- Easy cutting action due to the positive cutting edge geometry
- Tools deliver smooth milling performance due to irregular pitch
- Precise 90° shoulder milling
- **Internal coolant supply**
- Shank according to DIN 1835B
- Precision-sintered milling inserts (ADKX)
- Precision-ground milling inserts (ADHX) for maximum accuracy





D mm	D1 mm	H mm	L1 mm	L mm	Z	Tightening torque max. N·m			art.no.	€
20	20	12	36	86	2	2.25	A1	B1	**264007** 0020	198,–
25	20	12	36	86	3	2.25	A1	B1	264007 0025	219,–
32	25	12	40	96	4	2.25	A1	B1	264007 0032	290,–
32	25	12	40	96	5	2.25	A1	B1	264007 0033	345,–
40	32	12	50	110	6	2.25	A1	B1	264007 0040	375,–

2127

Spare parts

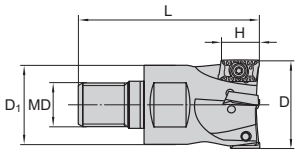
	Screw art.no.	€		TORX art.no.	€
A1	264000 9903	6,45	B1	703053 0080	1,79
	3106			7114	

ATORN® 90° screw-in milling cutter



801

- **For milling inserts, type AD..X 12..**
- Easy cutting action due to the positive cutting edge geometry
- Tools deliver smooth milling performance due to irregular pitch
- Precise 90° shoulder milling
- **Internal coolant supply**
- Precision-sintered milling inserts (ADKX)
- Precision-ground milling inserts (ADHX) for maximum accuracy





D mm	D1 mm	L mm	MD	Z	H mm	Tightening torque max. N·m			art.no.	€
32	29	67	M16	4	12	2.25	A1	B1	**264006** 0032	280,–
40	29	67	M16	6	12	2.25	A1	B1	264006 0040	320,–

2127

Spare parts

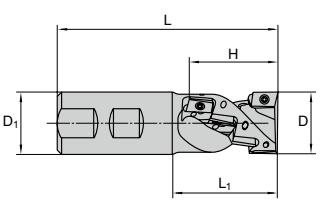
	Screw art.no.	€		TORX art.no.	€
A1	264000 9903	6,45	B1	703053 0080	1,79
	3106			7114	

ATORN® 90° roughing spiral flute end milling cutter



801

- **For milling inserts, type AD..X 12..**
- Easy cutting action due to the positive cutting edge geometry
- Tools deliver smooth milling performance due to irregular pitch
- Precise 90° shoulder milling
- **Internal coolant supply**
- Shank according to DIN 1835B
- Precision-sintered milling inserts (ADKX)
- Precision-ground milling inserts (ADHX) for maximum accuracy





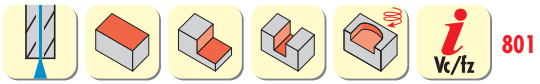
D mm	D1 mm	H mm	L1 mm	L mm	Z	Tightening torque max. N·m			art.no.	€
32	32	45	55	115	8	2.25	A1	B1	**264008** 0032	489,–
40	40	55	70	140	15	2.25	A1	B1	264008 0040	839,–

2127

Spare parts

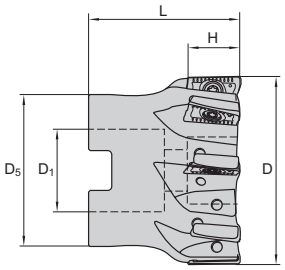
	Screw art.no.	€		TORX art.no.	€
A1	264000 9903	6,45	B1	703053 0080	1,79
	3106			7114	

ATORN® 90° shoulder milling cutter



801

- **For milling inserts, type AD..X 12..**
- Easy cutting action due to the positive cutting edge geometry
- Tools deliver smooth milling performance due to irregular pitch
- Precise 90° shoulder milling
- **Internal coolant supply**
- Precision-sintered milling inserts (ADKX)
- Precision-ground milling inserts (ADHX) for maximum accuracy





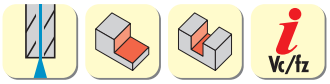
D mm	L mm	D5 mm	D1 mm	Z	H mm	Tightening torque max. N·m			art.no.	€
40	40	32	16	4	12	2.25	A1	B1	**264009** 0040	239,–
40	40	32	16	6	12	2.25	A1	B1	264009 0041	250,–
50	40	40	22	5	12	2.25	A1	B1	264009 0050	300,–
50	40	40	22	7	12	2.25	A1	B1	264009 0051	355,–
63	40	50	22	6	12	2.25	A1	B1	264009 0063	385,–
63	40	50	22	9	12	2.25	A1	B1	264009 0064	435,–

2127

Spare parts

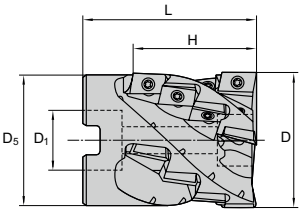
	Screw art.no.	€		TORX art.no.	€
A1	264000 9903	6,45	B1	703053 0080	1,79
	3106			7114	

ATORN® 90° roughing spiral flute milling cutter



801

- **For milling inserts, type AD..X 12..**
- Just one insert type for both face and side cutting edges
- Easy cutting action due to the positive cutting edge geometry
- Tools deliver smooth milling performance due to irregular pitch
- Precise 90° shoulder milling
- **Internal coolant supply**
- Precision-sintered milling inserts (ADKX)
- Precision-ground milling inserts (ADHX) for maximum accuracy





D mm	L mm	D5 mm	D1 mm	Z	H mm	Tightening torque max. N·m			art.no.	€
40	55	38	16	9	34	2.25	A1	B1	**264010** 0040	649,–
50	65	48	22	16	45	2.25	A1	B1	264010 0050	879,–
63	70	58	27	20	45	2.25	A1	B1	264010 0063	1.019,–

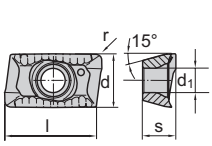
2127

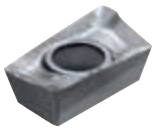
Spare parts

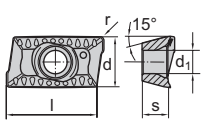
	Screw art.no.	€		TORX art.no.	€
A1	264000 9903	6,45	B1	703053 0080	1,79
	3106			7114	

ATORN® AD..X 12.. milling inserts

ISO designation	l mm	d mm	s mm	d1 mm	R mm	ISO K N HC4410			ISO N HW4410		
							art.no.	€		art.no.	€
ADHX 120408FR-ALC	12.7	7.4	4.76	3.4	0.8	10	**282005** 1006	13,60	10	**282005** 1007	12,30
ADHX 120412FR-ALC	12.7	7.4	4.76	3.4	1.2	10	282005 2006	13,60	10	282005 2007	12,30
ADHX 120416FR-ALC	12.7	7.4	4.76	3.4	1.6	10	282005 3006	13,60	10	282005 3007	12,30
							2131			2131	









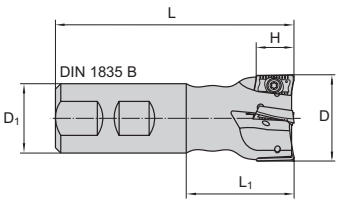
ISO designation	l mm	d mm	s mm	d1 mm	R mm	ISO P M S HC4640			ISO M HC4540 dry milling			ISO M HC4544 wet milling			ISO P K N HC4410		
							art.no.	€		art.no.	€		art.no.	€		art.no.	€
ADKX 120408SR-TR	12.7	7.4	4.76	3.4	0.8	10	**282006** 1001	11,–	10	**282006** 1003	11,–	10	**282006** 1004	11,–	10	**282006** 1006	11,–
ADKX 120412SR-TR	12.7	7.4	4.76	3.4	1.2	10	282006 2001	11,–	10	282006 2003	11,–	10	282006 2004	11,–	10	282006 2006	11,–
ADKX 120416SR-TR	12.7	7.4	4.76	3.4	1.6	10	282006 3001	11,–	10	282006 3003	11,–	10	282006 3004	11,–	10	282006 3006	11,–
ADKX 120420SR-TR	12.7	7.4	4.76	3.4	2.0	10	282006 4001	11,–							10	282006 4006	11,–
							2131			2131			2131			2131	

ATORN® 90° end milling cutter



801

- **For milling inserts, type AD..X 17..**
- Easy cutting action due to the positive cutting edge geometry
- Tools deliver smooth milling performance due to irregular pitch
- Precise 90° shoulder milling
- **Internal coolant supply**
- Shank according to DIN 1835B
- Precision-sintered milling inserts (ADKX)
- Precision-ground milling inserts (ADHX) for maximum accuracy





D mm	D1 mm	H mm	L1 mm	L mm	Z	Tightening torque max. N-m			art.no.	€
25	25	16.5	40	96	2	3.5	A1	B1	**264011** 0025	175,–
32	32	16.5	40	110	3	3.5	A2	B1	264011 0032	219,–
40	32	16.5	50	110	4	3.5	A2	B1	264011 0040	280,–
									2127	

Spare parts

	Screw art.no.	€		TORX art.no.	€
A1	264000 9904	7,30	B1	703053 0150	1,79
A2	264000 9905	7,30			
	3106			7114	

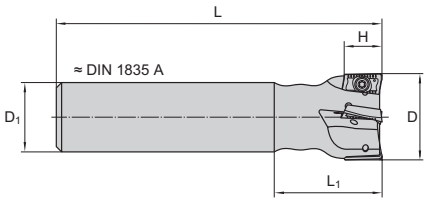
ATORN® 90° end milling cutter, long



801



- **For milling inserts, type AD..X 17..**
- Easy cutting action due to the positive cutting edge geometry
- Tools deliver smooth milling performance due to irregular pitch
- Precise 90° shoulder milling
- **Internal coolant supply**
- Shank in accordance with DIN 1835 A
- Precision-sintered milling inserts (ADKX)
- Precision-ground milling inserts (ADHX) for maximum accuracy



D mm	D1 mm	H mm	L1 mm	L mm	Z	Tightening torque max. N-m			art.no.	€
25	25	16.5	40	200	2	3.5	A1	B1	**264012** 0025	207,–
32	32	16.5	50	250	3	3.5	A2	B1	264012 0032	270,–
40	32	16.5	50	250	4	3.5	A2	B1	264012 0040	365,–
									2127	

Spare parts

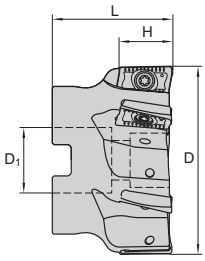
	Screw art.no.	€		TORX art.no.	€
A1	264000 9904	7,30	B1	703053 0150	1,79
A2	264000 9905	7,30			
	3106			7114	

ATORN® 90° shoulder milling cutter



801

- **For milling inserts, type AD..X 17..**
- Easy cutting action due to the positive cutting edge geometry
- Tools deliver smooth milling performance due to irregular pitch
- Precise 90° shoulder milling
- **Internal coolant supply**
- Precision-sintered milling inserts (ADKX)
- Precision-ground milling inserts (ADHX) for maximum accuracy



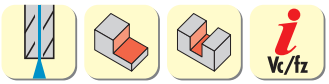


D mm	L mm	D1 mm	Z	H mm	Tightening torque max. N-m			art.no.	€
40	36	16	4	16.5	3.5	A1	B1	**264014** 0040	250,–
50	40	22	5	16.5	3.5	A1	B1	264014 0050	300,–
63	40	22	6	16.5	3.5	A1	B1	264014 0063	355,–
80	50	27	8	16.5	3.5	A1	B1	264014 0080	459,–
100	50	32	9	16.5	3.5	A1	B1	264014 0100	599,–
125	63	40	9	16.5	3.5	A1	B1	264014 0125	749,–
125	63	40	11	16.5	3.5	A1	B1	264014 0126	759,–
								2127	

Spare parts

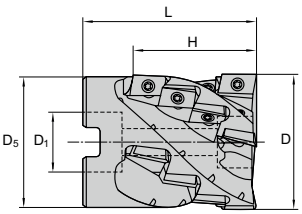
	Screw art.no.	€		TORX art.no.	€
A1	264000 9905	7,30	B1	703053 0150	1,79
	3106			7114	

ATORN® 90° roughing spiral flute milling cutter



801

- **For milling inserts, type AD..X 17..**
- Just one insert type for both face and side cutting edges
- Easy cutting action due to the positive cutting edge geometry
- Tools deliver smooth milling performance due to irregular pitch
- Precise 90° shoulder milling
- **Internal coolant supply**
- Precision-sintered milling inserts (ADKX)
- Precision-ground milling inserts (ADHX) for maximum accuracy





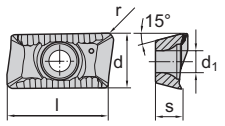
D mm	D5 mm	L mm	D1 mm	Z	H mm	Tightening torque max. N·m			art.no.	€
63	58	70	27	12	48	3.5	A1	B1	**264013** 0063	809,–
80	63	85	32	20	63	3.5	A1	B1	264013 0080	1.099,–
									2127	

Spare parts

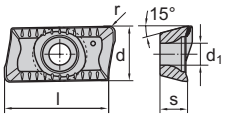
	Screw			TORX	
	art.no.	€		art.no.	€
A1	264000 9905	7,30	B1	703053 0150	1,79
	3106			7114	

ATORN® AD..X 17.. milling inserts

ISO designation	l mm	d mm	s mm	d1 mm	R mm		ISO K N HC4410 art.no.	€		ISO N HW4410 art.no.	€
ADHX 170508FR-ALC	17.5	9.62	5.6	3.8	0.8	10	**282007** 1006	14,80	10	**282007** 1007	13,60
ADHX 170512FR-ALC	17.5	9.62	5.6	3.8	1.2	10	282007 2006	14,80	10	282007 2007	13,60
ADHX 170516FR-ALC	17.5	9.62	5.6	3.8	1.6	10	282007 3006	14,80	10	282007 3007	13,60
							2131			2131	









ISO designation	l mm	d mm	s mm	d1 mm	R mm	ISO P M S HC4640 art.no.	€	ISO P K HC4430 art.no.	€	ISO M HC4540 dry milling art.no.	€	ISO M HC4544 wet milling art.no.	€	ISO P K N HC4410 art.no.	€
ADKX 170508SR-TR	17.5	9.62	5.6	3.8	0.8	**282008** 1001	11,50	**282008** 1002	11,50					**282008** 1006	11,50
ADKX 170512SR-TR	17.5	9.62	5.6	3.8	1.2	282008 2001	11,50	282008 2002	11,50	**282008** 2003	11,50	**282008** 2004	11,50	282008 2006	11,50
ADKX 170516SR-TR	17.5	9.62	5.6	3.8	1.6	282008 3001	11,50	282008 3002	11,50	282008 3003	11,50	282008 3004	11,50	282008 3006	11,50
ADKX 170520SR-TR	17.5	9.62	5.6	3.8	2.0	282008 4001	11,50	282008 4002	11,50	282008 4003	11,50	282008 4004	11,50	282008 4006	11,50
						2131		2131		2131		2131		2131	

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High feed-rate milling cutters are not only able to achieve longer service lives and greater removal rates, but also minimise production costs and processing times. It differs from high-speed machining, which is used primarily for finish machining with outstanding surface qualities, in the sense that high feed-rate milling predominantly offers short machining times for roughing. Special high feed-rate geometries were developed for this, which generally possess large radii. Thus the axial feed ap is limited somewhat.

Depending on the reduced setting angle K (Kappa), the radial cutting force "F_r" on the milling cutter and on the machine spindle is significantly reduced, allowing very high tooth feeds to be achieved without issue (Image 1). Tooth feed rates of up to f_z = 5 mm are already used for machining steel. However should the axial force F_a increase in high feed-rate milling, this is not disruptive as it is absorbed directly by the tool and the machine spindle and in no way causes significant deformation or damage.

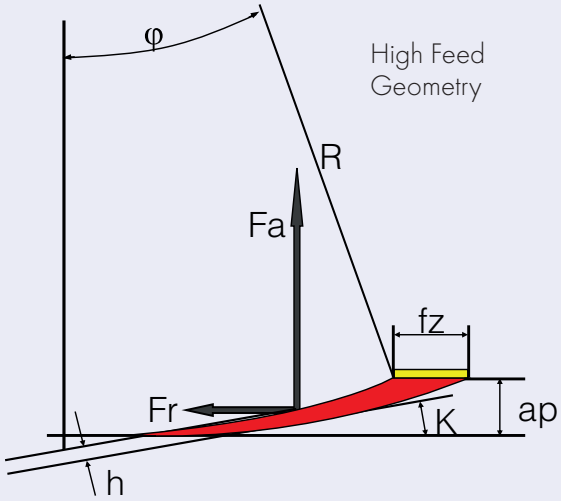


Image 1

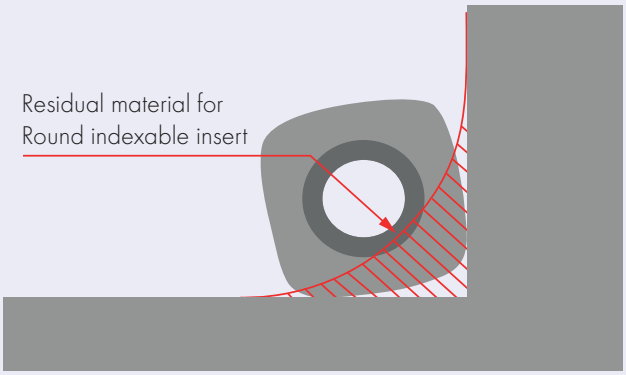


Image 2

The special indexable insert geometry for high feed-rate milling helps to minimise the residual material during roughing tasks and thus improves the prerequisites for the subsequent finish machining. Image 2 illustrates the reduced residual material compared to machining with round indexable inserts.



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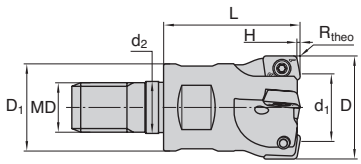
ATORN® High feed-rate screw-in milling cutter XDM.



790

- **For milling inserts XDM.. 09**
- 2-edged, small, extremely robust indexable insert
- Positive geometry for easy cutting
- **High material removal rate, even with less powerful machining centres**
- Long service life thanks to nickel-plated design
- **High feed rates achievable**
- Uniform size of indexable cutting inserts





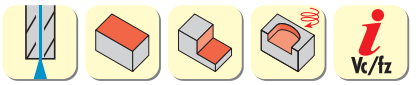
D mm	D1 mm	d1 mm	d2 mm	L mm	MD	Z	Tightening torque max. N-m	H mm	ERtheor. mm	A1	B1	art.no.	€
16	13	7	8.5	28	M8	2	1.2	1	1.3	A1	B1	**286001** 2016	212,–
16	13	7	8.5	28	M8	3	1.2	1	1.3	A1	B1	286001 3016	230,–
20	18	11	10.5	30	M10	3	1.2	1	1.3	A2	B1	286001 3020	230,–
20	18	11	10.5	30	M10	4	1.2	1	1.3	A2	B1	286001 4020	240,–
25	21	16	12.5	33	M12	4	1.2	1	1.3	A2	B1	286001 4025	240,–
32	29	23	17	43	M16	5	1.2	1	1.3	A2	B1	286001 5032	300,–
35	29	26	17	43	M16	5	1.2	1	1.3	A2	B1	286001 5035	300,–
42	29	33	17	43	M16	6	1.2	1	1.3	A2	B1	286001 6042	360,–

2125

Spare parts

	Screw			TORX	
	art.no.	€		art.no.	€
A1	286900 9901	3,35	B1	703053 0080	1,79
A2	286900 9902	4,40			
	3106			7114	

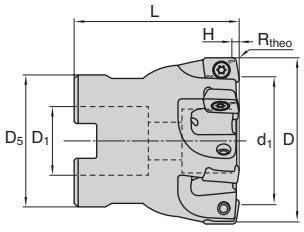
ATORN® High feed-rate shell-type milling cutter XDM.



790

- **For milling inserts XDM.. 09**
- 2-edged, small, extremely robust indexable insert
- Positive geometry for easy cutting
- **High material removal rate, even with less powerful machining centres**
- Long service life thanks to nickel-plated design
- **High feed rates achievable**
- Uniform size of indexable cutting inserts





D mm	L mm	D5 mm	D1 mm	H mm	d1 mm	Z	Tightening torque max. N-m	ERtheor. mm	A1	B1	art.no.	€
35	40	32	16	1	26	5	1.2	1.3	A1	B1	**286002** 5035	325,–
35	40	32	16	1	26	6	1.2	1.3	A1	B1	286002 6035	359,–
40	40	32	16	1	31	6	1.2	1.3	A1	B1	286002 6040	365,–
42	40	32	16	1	33	6	1.2	1.3	A1	B1	286002 6042	395,–
50	40	40	22	1	41	7	1.2	1.3	A1	B1	286002 7050	415,–
52	40	40	22	1	43	7	1.2	1.3	A1	B1	286002 7052	440,–
63	50	50	27	1	54	8	1.2	1.3	A1	B1	286002 8063	460,–
66	50	50	27	1	57	8	1.2	1.3	A1	B1	286002 8066	460,–
80	50	50	27	1	71	9	1.2	1.3	A1	B1	286002 9080	509,–

2125

Spare parts

	Screw			TORX	
	art.no.	€		art.no.	€
A1	286900 9902	4,40	B1	703053 0080	1,79
	3106			7114	

ATORN® High feed-rate milling cutter XDM.

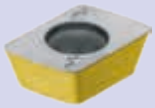
INFO

The ATORN high feed-rate milling cutter is used for roughing small and medium-sized components. The positive high feed-rate geometry of the standard, small indexable inserts allows for the maximum material removal rate, even on low-output machining centres.

Two different insert geometries in two different types of cutting material ensure that virtually all standard materials used in tool and mould making can be machined.

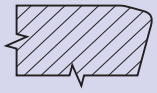
The Mini system is available as a screw-on milling cutter in diameters 16-42 mm with 2-6 cutting edges, and as a shell-type milling cutter in diameters 40-80 mm with up to 9 cutting edges. All cutting edges have an internal coolant supply. Only one indexable insert size is required for all tool diameters.

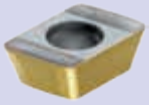
Chip shape levels



XDMW
- Stable indexable cutting insert geometry for cutting high-strength tempered and tool steels
- Negative protective chamfer with cutting edge rounding

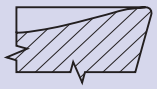
SR





XDMT
- Soft-cutting indexable cutting insert geometry for reduced cutting forces
- Use in unstable setups
- Particularly suitable for tool machines with low drive output

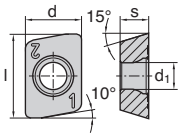
ER



ATORN® Milling inserts XDM.. 0903

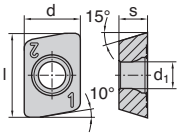
- **HC4640**
  Ideal for high feed rates, tough carbide substrate with double PVD coating and outstanding suitability for roughing, with additional TiN layer around circumference for improved wear detection
- **HC4410**
  Wear-resistant superfine grain substrate for high machining capacity, universally suitable for high cutting speeds in steel at reduced feed rates
- **HC4544**
  Special superfine grain substrate for high machining capacity with stainless steel materials

ISO designation	l mm	d mm	s mm	d1 mm	R mm	ISO P K H HC4410 art.no.	€	ISO P M HC4640 art.no.	€
XDMW 0903SR	9	6	3	2.8	1.3	10 **286100** 0110 2126	11,50	10 **286100** 0140 2126	11,50



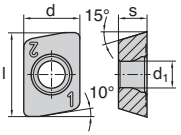


ISO designation	l mm	d mm	s mm	d1 mm	R mm	ISO P K H HC4410 art.no.	€	ISO P M HC4640 art.no.	€
XDMT 0903ER	9	6	3	2.8	1.3	10 **286101** 0110 2126	11,50	10 **286101** 0140 2126	11,50



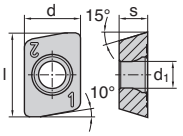


ISO designation	l mm	d mm	s mm	d1 mm	R mm	ISO M HC4544 art.no.	€
XDMW 090316SR	9	6	3	2.8	1.6	10 **286102** 0144 2126	12,70



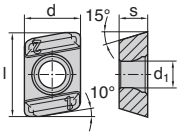


ISO designation	l mm	d mm	s mm	d1 mm	R mm	ISO K H HC4415 art.no.	€
XDMW090316SR	9	6	3	2.8	1.6	10 **286103** 0115 2126	12,70



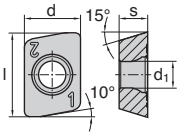


ISO designation	l mm	d mm	s mm	d1 mm	R mm	ISO P M HC4640 art.no.	€
XDMW090316SR	9	6	3	2.8	1.6	10 **286104** 0140 2126	12,70





ISO designation	l mm	d mm	s mm	d1 mm	R mm	ISO P M HC4640 art.no.	€
XDMT090316ER	9	6	3	2.8	1.6	10 **286105** 0140 2126	12,70





ATORN® High feed-rate milling cutter

INFO

- Roughing of smooth surfaces and cavities with high feed rates
- Machining of cavities by linear and circular interpolation
- Plunge milling even in unstable conditions
- Use of the same CAD/CAM programs as for milling with circular indexable inserts
- Can be used on traditional and modern high-performance machines
- High material removal rates and cost-effective machining of moulds, dies and other components
- Efficient machining even on low-performance machines
- Heat dissipation through the chips, so that heat-sensitive workpieces can be machined

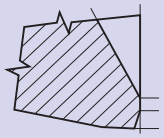


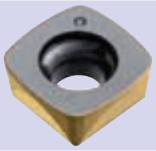
Chip breaker



XCNT
- Universal geometry for a wide range of applications
- Wide negative protective chamfer for increased cutting edge stability
- Ideal for use on high-performance machines

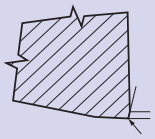
-SN-TR





XCNW
- Stable geometry for cutting high-strength tempered and tool steels
- Negative protective chamfer with cutting edge rounding

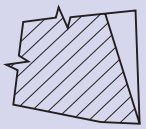
-SN



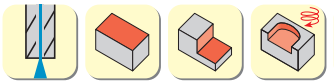


XCNT
- Soft-cutting geometry for reduced cutting forces
- Used with stainless steel and long-chipping materials
- Particularly suitable for machine tools with low drive output

-EN-TR



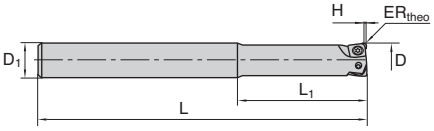
ATORN® High feed-rate milling cutter XCN.



791

- **for milling inserts, type XCN.. 07**
- 4-cutting-edge, extremely robust indexable inserts
- Deep cutting troughs with cutting surface topography
- **Irregular pitch for low-vibration milling even for high exposed lengths**
- Long service life thanks to nickel-plated design
- **Wide range of applications**





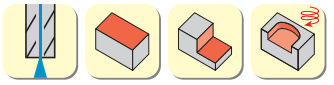
D mm	D1 mm	H mm	L1 mm	L mm	Z	Tightening torque max. N-m	ERtheor. mm			art.no.	€
20	20	1	60	175	2	2.25	1.5	A1	B1	**285001** 0020	300,–
25	25	1	75	190	3	2.25	1.5	A1	B1	285001 0025	358,–
32	32	1	80	210	4	2.25	1.5	A1	B1	285001 0033	410,–

2125

Spare parts

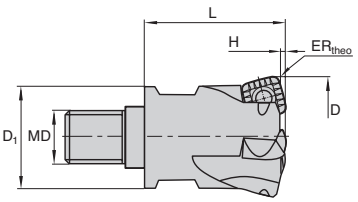
Screw			TORX		
	art.no.	€		art.no.	€
A1	285000 9901	4,40	B1	703053 0080	1,79
3106			7114		

ATORN® High feed-rate screw-in milling cutter XCN.



791

- **for milling inserts, type XCN.. 07**
- 4-cutting-edge, extremely robust indexable inserts
- Deep cutting troughs with cutting surface topography
- **Irregular pitch for low-vibration milling even for high exposed lengths**
- Long service life thanks to nickel-plated design
- **Wide range of applications**





D mm	D1 mm	L mm	MD	H mm	Z	Tightening torque max. N-m	ERtheor. mm			art.no.	€
20	18	30	M10	1.0	2	2.25	1.5	A1	B1	**285003** 0020	289,–
25	21	33	M12	1.0	3	2.25	1.5	A1	B1	285003 0025	335,–
32	29	43	M16	1.0	4	2.25	1.5	A1	B1	285003 0033	395,–
35	29	43	M16	1.0	5	2.25	1.5	A1	B1	285003 0035	425,–

2125

Spare parts

Screw			TORX		
	art.no.	€		art.no.	€
A1	285000 9901	4,40	B1	703053 0080	1,79
3106			7114		

ATORN® XCN..07 milling inserts

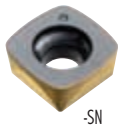
- **HC4640** ideal for high feed rates, tough carbide substrate with double PVD coating and outstanding suitability for roughing; with additional TiN layer around circumference for improved wear detection
- **HC4410** wear-resistant superfine grain substrate for high machining capacity, universally suitable for high cutting speeds in steel at reduced feed rates.


-EN-TR


-SN-TR

ISO designation	R mm	ISO P K N S HC4410			ISO P M K HC4640			ISO P K M S HC4410			ISO P M K HC4640		
			art.no.	€		art.no.	€		art.no.	€		art.no.	€
XCNT 070308 EN-TR	0.8							10	**285101** 0110	16,10	10	**285101** 0140	16,90
XCNT 070308 SN-TR	0.8	10	**285100** 0110	16,90	10	**285100** 0140	17,90						
			2126			2126			2126			2126	

ISO designation	R mm	ISO P K N S HC4410			ISO P M K HC4640		
			art.no.	€		art.no.	€
XCNW 070308 SN	0.8	10	**285102** 0110	16,30	10	**285102** 0140	18,30
			2126			2126	

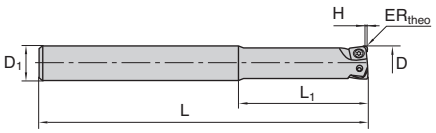

-SN

ATORN® High feed-rate milling cutter XCN.

791

- **for milling inserts, type XCN.. 09**
- 4-cutting-edge, extremely robust indexable inserts
- Deep cutting troughs with cutting surface topography
- **Irregular pitch for low-vibration milling even for high exposed lengths**
- Long service life thanks to nickel-plated design
- **Wide range of applications**







D mm	D1 mm	H mm	L1 mm	L mm	Z	Tightening torque max. N-m	ERtheor. mm			art.no.	€
32	32	1.2	80	210	3	3.5	2.5	A1	B1	**285002** 0032	385,–
32	32	1.2	80	210	4	3.5	2.5	A1	B1	285002 0033	405,–
										2125	

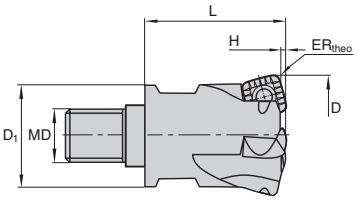
Spare parts

	Screw art.no.	€		Wrench art.no.	€
A1	285000 9902	4,40	B1	705141 0015	6,10
	3106			7114	

ATORN® High feed-rate screw-in milling cutter XCN.

791

- **for milling inserts, type XCN.. 09**
- 4-cutting-edge, extremely robust indexable inserts
- Deep cutting troughs with cutting surface topography
- **Irregular pitch for low-vibration milling even for high exposed lengths**
- Long service life thanks to nickel-plated design
- **Wide range of applications**



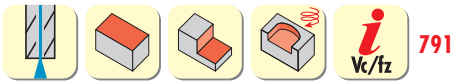


D mm	D1 mm	L mm	MD	Z	Tightening torque max. N-m	ERtheor. mm	H mm			art.no.	€
32	29	43	M16	3	3.5	2.5	1.2	A1	B1	**285004** 0032	379,–
32	29	43	M16	4	3.5	2.5	1.2	A1	B1	285004 0033	339,–
35	29	43	M16	4	3.5	2.5	1.2	A1	B1	285004 0035	433,–
42	29	43	M16	5	3.5	2.5	1.2	A1	B1	285004 0043	472,–
										2125	

Spare parts

	Screw art.no.	€		Wrench art.no.	€
A1	285000 9902	4,40	B1	705141 0015	6,10
	3106			7114	

ATORN® High feed-rate shell-type milling cutter XCN.

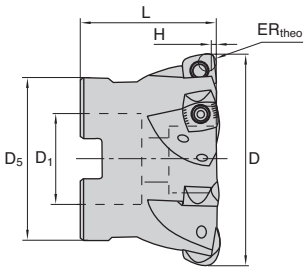


791

- **for milling inserts, type XCN.. 09**
- 4-cutting-edge, extremely robust indexable inserts
- Deep cutting troughs with cutting surface topography
- **Irregular pitch for low-vibration milling even for high exposed lengths**
- Long service life thanks to nickel-plated design
- **Wide range of applications**







D mm	L mm	D5 mm	D1 mm	H mm	Z	Tightening torque max. N-m	ERtheor. mm			art.no.	€
42	40	32	16	1.2	4	3.5	2.5	A1	B1	**285005** 0043	475,–
42	40	32	16	1.2	5	3.5	2.5	A1	B1	285005 0044	509,–
52	40	40	22	1.2	5	3.5	2.5	A1	B1	285005 0053	515,–
52	40	40	22	1.2	6	3.5	2.5	A1	B1	285005 0054	549,–

2125

Spare parts

	Screw art.no.	€
A1	285000 9903	3,90

3106

	Wrench art.no.	€
B1	705141 0015	6,10

7114

ATORN® XCN..09 milling inserts

- **HC4640** ideal for high feed rates, tough carbide substrate with double PVD coating and outstanding suitability for roughing; with additional TiN layer around circumference for improved wear detection
- **HC4410** wear-resistant superfine grain substrate for high machining capacity, universally suitable for high cutting speeds in steel at reduced feed rates.



-EN-TR



-SN-TR

ISO designation	R mm	ISO P K N S HC4410			ISO P M K HC4640			ISO P K M S HC4410			ISO P M K HC4640		
			art.no.	€		art.no.	€		art.no.	€		art.no.	€
XCNT 09T312 EN-TR	0.8							10	**285101** 0210	16,90			
XCNT 09T312 EN-TR	1.2										10	**285101** 0240	18,10
XCNT 09T312 SN-TR	1.2	10	**285100** 0210	18,30	10	**285100** 0240	19,–						

2126 2126 2126 2126

ISO designation	R mm	ISO P K N S HC4410			ISO P M K HC4640		
			art.no.	€		art.no.	€
XCNW 09T312 SN	1.2	10	**285102** 0210	18,80	10	**285102** 0240	19,40

2126 2126



-SN

THE COMPLETE
MACHINING
RANGE
palbit



PALBIT
Machining tools
411 pages
Art.no. 019900 0315

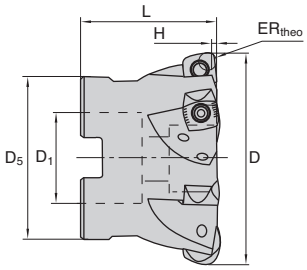
Overview of all free manufacturers' catalogues on page 14/15

ATORN® High feed-rate shell-type milling cutter XCN.



791

- **for milling inserts, type XCN.. 12**
- 4-cutting-edge, extremely robust indexable inserts
- Deep cutting troughs with cutting surface topography
- **Irregular pitch for low-vibration milling even for high exposed lengths**
- Long service life thanks to nickel-plated design
- **Wide range of applications**





D mm	L mm	D5 mm	D1 mm	H mm	Z	Tightening torque max. N·m	ERtheor. mm			art.no.	€
42	40	32	16	1.5	3	7.6	3.5	A1	B1	**285006** 0042	449,–
42	40	32	16	1.5	4	7.6	3.5	A1	B1	285006 0043	469,–
52	40	40	22	1.5	4	7.6	3.5	A1	B1	285006 0052	479,–
52	40	40	22	1.5	5	7.6	3.5	A1	B1	285006 0053	505,–
66	50	50	27	1.5	5	7.6	3.5	A1	B1	285006 0066	499,–
66	50	50	27	1.5	6	7.6	3.5	A1	B1	285006 0067	549,–
66	50	50	27	1.5	7	7.6	3.5	A1	B1	285006 0068	579,–
80	50	60	27	1.5	6	7.6	3.5	A1	B1	285006 0080	559,–
80	50	60	27	1.5	8	7.6	3.5	A1	B1	285006 0081	629,–
100	50	65	32	1.5	7	7.6	3.5	A1	B1	285006 0100	579,–
100	50	65	32	1.5	10	7.6	3.5	A1	B1	285006 0101	729,–

2125

Spare parts

	Screw art.no.	€
A1	285000 9904	5,–

3106

	Wrench art.no.	€
B1	705141 0020	6,35

7114

ATORN® XCN..12 milling inserts

- **HC4640** ideal for high feed rates, tough carbide substrate with double PVD coating and outstanding suitability for roughing; with additional TiN layer around circumference for improved wear detection
- **HC4410** wear-resistant superfine grain substrate for high machining capacity, universally suitable for high cutting speeds in steel at reduced feed rates.



-EN-TR



-SN-TR

ISO designation	R mm	ISO P K N S HC4410	art.no.	€	ISO P M K HC4640	art.no.	€	ISO P K M S HC4410	art.no.	€	ISO P M K HC4640	art.no.	€
XCNT 120520 EN-TR	1.2							10	**285101** 0310	17,90			
XCNT 120520 EN-TR	2.0										10	**285101** 0340	19,–
XCNT 120520 SN-TR	2.0	10	**285100** 0310	19,–	10	**285100** 0340	20,–						
		2126			2126			2126			2126		

ISO designation	R mm	ISO P K N S HC4410	art.no.	€	ISO P M K HC4640	art.no.	€
XCNW 120520 SN	2.0	10	**285102** 0310	18,30	10	**285102** 0340	20,–
		2126			2126		



-SN

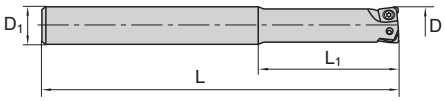


palbit High feed-rate end milling cutter HIFEED 06410



792

- **For milling inserts SO.. 0803**
- 4-edged, extremely robust indexable insert
- **Wide range of applications**





D mm	D1 mm	L mm	L1 mm	Z	Tightening torque max. N·m	suitable indexable inserts			art.no.	€
20	20	130	75	2	1.4	SO..0803..	A1	B1	**260218** 0020	154,75
20	20	190	110	2	1.4	SO..0803..	A1	B1	260218 1020	183,25
25	25	140	80	3	1.4	SO..0803..	A1	B1	260218 0025	172,–
25	25	200	130	3	1.4	SO..0803..	A1	B1	260218 1025	200,50
32	32	150	90	4	1.4	SO..0803..	A1	B1	260218 0032	200,50
32	32	200	130	4	1.4	SO..0803..	A1	B1	260218 1032	228,50

2174

Spare parts

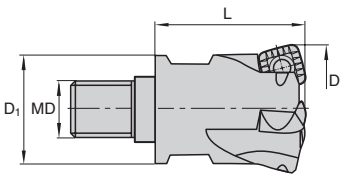
	Screw			TORX	
	art.no.	€		art.no.	€
A1	321099 0007	3,85	B1	703053 0090	1,79
	3160			7114	

palbit High feed-rate screw-in milling cutter HIFEED 06410



792

- **For milling inserts SO.. 0803**
- 4-edged, extremely robust indexable insert
- **Wide range of applications**





D mm	D1 mm	L mm	Z	MD	suitable indexable inserts	Tightening torque max. N·m			art.no.	€
20	16	25	2	10	SO..0803..	1.4	A1	B1	**260219** 0020	154,75
25	21	28	3	12	SO..0803..	1.4	A1	B1	260219 0025	172,–
32	29	35	4	16	SO..0803..	1.4	A1	B1	260219 0032	200,50
35	29	35	4	16	SO..0803..	1.4	A1	B1	260219 0035	200,50
42	29	35	5	16	SO..0803..	1.4	A1	B1	260219 0042	228,50

2174

Spare parts

	Screw			TORX	
	art.no.	€		art.no.	€
A1	321099 0007	3,85	B1	703053 0090	1,79
	3160			7114	

Milling inserts SO..0803.... HIFEED 06410

SOET 080315

F finishing -	M medium -	R roughing -	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
			SOET 080315-MS		●			●		**PHM 740**	10	**285242** 0169	14,–
				●	●			●		**PH 7740**	10	285242 0148	12,75
				●	●			●		**PH 7930**	10	285242 0151	12,75

2170

ISO	PH 7740	PH 7930	PHM 740
ISO P steel	Vc = 80 - 180	Vc = 100 - 220	
ISO M stainless steel	Vc = 70 - 180	Vc = 70 - 220	Vc = 70 - 180
ISO S superalloys	Vc = 25 - 60	Vc = 35 - 65	Vc = 25 - 60
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.40 - 1.8 ap = 0.05 - 1.0		fz = 0.40 - 1.0

SOEW 080310

F finishing -	M medium -	R roughing -	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
			SOEW 080310 S	●		●				**PH 7910**	10	**285241** 0149	12,75
				●		●				**PH 7920**	10	285241 0150	12,75

2170

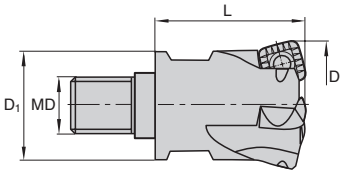
ISO	PH 7910	PH 7920
ISO P steel	Vc = 140 - 280	Vc = 140 - 280
ISO K cast iron	Vc = 120 - 350	Vc = 120 - 350
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.30 - 1.80 ap = 0.05 - 1.0	

palbit High feed-rate screw-in milling cutter HIFEED 06690



793

- **For milling inserts SO.. 13M**
- 4-edged, extremely robust indexable insert
- **Wide range of applications**





D mm	D1 mm	L mm	Z	MD	Tightening torque max. N·m	suitable indexable inserts			art.no.	€
32	29	35	3	16	3.0	SO..13M5..	A1	B1	**260220** 0032	200,50
35	29	35	3	16	3.0	SO..13M5..	A1	B1	260220 0035	200,50
42	29	35	4	16	3.0	SO..13M5..	A1	B1	260220 0042	228,50

2174

Spare parts

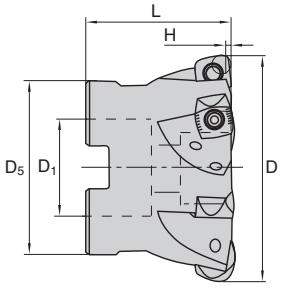
	Screw art.no.	€		TORX art.no.	€
A1	321099 0017	3,35	B1	703053 0150	1,79
	3160			7114	

palbit High feed-rate shoulder milling cutter HIFEED 06690



793

- **For milling inserts SO.. 13M**
- 4-edged, extremely robust indexable insert
- **Wide range of applications**





D mm	L mm	D5 mm	D1 mm	H mm	Z	Tightening torque max. N·m	suitable indexable inserts			art.no.	€
50	45	40	22	1.5	4	3.0	SO..13M5	A1	B1	**260221** 0050	275,–
52	45	40	22	1.5	4	3.0	SO..13M5	A1	B1	260221 0052	275,–
63	50	48	27	1.5	5	3.0	SO..13M5	A1	B1	260221 0063	291,25
66	50	48	27	1.5	5	3.0	SO..13M5	A1	B1	260221 0066	291,25
80	50	60	27	1.5	6	3.0	SO..13M5	A1	B1	260221 0080	360,25
100	50	70	32	1.5	8	3.0	SO..13M5	A1	B1	260221 0100	444,75

2174

Spare parts

	Screw art.no.	€		TORX art.no.	€
A1	321099 0017	3,35	B1	703053 0150	1,79
	3160			7114	

Milling inserts SO..13M5.... HIFEED 06690

SOET 13M520

F finishing -	M medium -	R roughing -	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
			SOET 13M520-MS	●	●			●		**PH 7930**	10	**285245** 0151	15,–
					●			●		**PHM 740**	10	285245 0169	16,–
				●	●			●		**PH 7740**	10	285245 0148	15,–
					●			●		**PHH 930**	10	285245 0193	16,–

2170

ISO	PH 7740	PH 7930	PHH 930	PHM 740
ISO P steel	Vc = 80 - 180	Vc = 100 - 220		
ISO M stainless steel	Vc = 70 - 180	Vc = 70 - 220	Vc = 90 - 190	Vc = 70 - 180
ISO S superalloys	Vc = 25 - 60	Vc = 35 - 65	Vc = 40 - 80	Vc = 25 - 60
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.4 - 2.0 ap = 0.05 - 1.5			fz = 0.4 - 1.8

SOEW 13M510

F finishing -	M medium -	R roughing -	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
			SOEW 13M510 S	●						**PH 7740**	10	**285244** 0148	15,–
				●		●				**PH 7910**	10	285244 0149	15,–
				●		●				**PH 7920**	10	285244 0150	15,–

2170

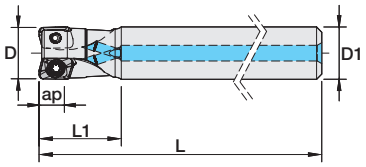
ISO	PH 7740	PH 7910	PH 7920
ISO P steel	Vc = 80 - 180	Vc = 140 - 280	Vc = 130 - 230
ISO K cast iron		Vc = 120 - 350	Vc = 100 - 310
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.5 - 2.2 ap = 0.05 - 1.5		

palbit End milling cutter 90° LINEPRO 20090



795

- **For milling inserts XP.. 0602**
- Easy cutting action due to the positive installation position of the indexable insert
- Tools deliver smooth milling performance
- **Internal coolant supply**





D mm	D1 mm	L1 mm	L mm	Z	suitable indexable inserts	Tightening torque max. N·m			art.no.	€
10	10	25	100	2	XP..0602..	0.3	A1	B1	**260239** 0010	146,50
10	10	16	55	2	XP..0602..	0.3	A1	B1	260239 1010	152,–
12	12	17	80	2	XP..0602..	0.3	A1	B1	260239 0012	152,–
12	12	30	120	3	XP..0602..	0.3	A1	B1	260239 0013	178,–
16	16	20	90	3	XP..0602..	0.3	A1	B1	260239 0016	183,25
16	16	20	90	4	XP..0602..	0.3	A1	B1	260239 1016	214,75
17	16	35	90	5	XP..0602..	0.3	A1	B1	260239 0017	246,–
21	20	35	90	5	XP..0602..	0.3	A1	B1	260239 0021	251,–
									2174	

Spare parts

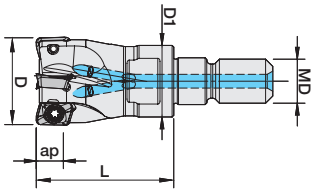
Screw			TORX		
	art.no.	€		art.no.	€
A1	321099 0001	4,85	B1	703053 0060	1,79
	3160			7114	

palbit Screw-in milling cutter 90° LINEPRO 20090



795

- **For milling inserts XP.. 0602**
- Easy cutting action due to the positive installation position of the indexable insert
- Tools deliver smooth milling performance
- **Internal coolant supply**





D mm	D1 mm	L mm	MD	Z	suitable indexable inserts	Tightening torque max. N·m			art.no.	€
10	9.8	20	M6	2	XP..0602..	0.3	A1	B1	**260240** 0010	141,50
11	9.8	20	M6	2	XP..0602..	0.3	A1	B1	260240 0011	146,50
12	9.8	20	M6	2	XP..0602..	0.3	A1	B1	260240 0012	152,–
12	9.8	20	M6	3	XP..0602..	0.3	A1	B1	260240 1012	152,–
16	13.0	25	M8	4	XP..0602..	0.3	A1	B1	260240 0016	157,25
17	13.0	25	M8	4	XP..0602..	0.3	A1	B1	260240 0017	157,25
20	18.0	30	M10	5	XP..0602..	0.3	A1	B1	260240 0020	194,–
25	21.0	30	M12	7	XP..0602..	0.3	A1	B1	260240 0025	251,–
32	29.0	35	M16	8	XP..0602..	0.3	A1	B1	260240 0032	308,75
									2174	

Spare parts

Screw			TORX		
	art.no.	€		art.no.	€
A1	321099 0002	4,85	B1	703053 0060	1,79
	3160			7114	

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Milling inserts XP.. 0602.. LINEPRO 20090

XPET-LP shoulder milling insert

F finishing -	M medium -	R roughing -	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
			XPET 060204 PDER-LP	●		●				PH 7920	10	**285276** 0150	12,75
				●	●	●		●		PH 7930	10	285276 0151	12,75
			XPET 060208 PDER-LP	●		●				PH 7920	10	285276 0250	12,75
				●	●	●		●		PH 7930	10	285276 0251	12,75
			XPET 060216 PDER-LP	●		●				PH 7920	10	285276 0450	12,75
				●	●	●		●		PH 7930	10	285276 0451	12,75

2170

ISO	PH 7920	PH 7930
ISO P steel	Vc = 160 - 250	Vc = 140 - 230
ISO M stainless steel		Vc = 70 - 220
ISO K cast iron	Vc = 120 - 350	Vc = 100 - 260
ISO S superalloys		Vc = 35 - 65
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.05 - 0.07 ap = 1.0 - 4.0	

XPET-MH finishing insert

F finishing -	M medium -	R roughing -	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
			XPHW 060208 ZER-MH	●					●	PH 7603	10	**285276** 1547	14,–
				●						PH 7910	10	285276 1549	14,–
													

2170

ISO	PH 7603	PH 7910
ISO P steel	Vc = 210 - 290	Vc = 180 - 270
ISO H hard	Vc = 120 - 260	
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.03 - 0.10 ap = 1.0 - 4.0	fz = 0.05 - 0.12

XPET-HF high feed-rate insert

F finishing -	M medium -	R roughing -	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
			XPET 060210 ZER-HF	●					●	PH 7603	10	**285276** 0347	12,75
				●						PH 7910	10	285276 0349	12,75
				●		●				PH 7920	10	285276 0350	12,75
				●	●	●		●		PH 7930	10	285276 0351	12,75

2170

ISO	PH 7603	PH 7910	PH 7920	PH 7930
ISO P steel	Vc = 200 - 290	Vc = 180 - 270	Vc = 160 - 250	Vc = 140 - 230
ISO M stainless steel				Vc = 120 - 180
ISO K cast iron			Vc = 160 - 250	Vc = 120 - 350
ISO S superalloys				Vc = 35 - 65
ISO H hard	Vc = 120 - 260			
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.40 - 0.80 ap = max. 0.3			

XPET-LN aluminium insert

F finishing -	M medium -	R roughing -	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
			XPET 060202 PDFR-LN				●			PH 0910	10	**285276** 1320	10,50
			XPET 060204 PDFR-LN				●			PH 0910	10	285276 1420	10,50
													

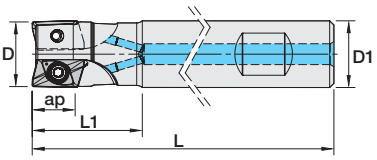
2171

ISO	PH 0910
ISO N Al/non-ferrous	Vc = 350 - 1400
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.05 - 0.07 ap = 1.0 - 4.0

palbit End milling cutter 90° LINEPRO 20190

796

- **For milling inserts XP..1003**
- Easy cutting action due to the positive installation position of the indexable insert
- Tools deliver smooth milling performance
- **Internal coolant supply**





D mm	D1 mm	L1 mm	L mm	Z	suitable indexable inserts	Tightening torque max. N·m			art.no.	€
16	16	32	85	2	XP..1003..	1.2	A1	B1	**260241** 0016	167,50
16	16	70	150	2	XP..1003..	1.2	A1	B1	260241 1016	178,–
17	16	36	150	2	XP..1003..	1.2	A1	B1	260241 0017	199,–
20	20	28	90	3	XP..1003..	1.2	A1	B1	260241 0020	178,–
20	20	70	150	3	XP..1003..	1.2	A1	B1	260241 1020	188,25
22	20	70	150	3	XP..1003..	1.2	A1	B1	260241 0022	220,–
25	25	30	95	4	XP..1003..	1.2	A1	B1	260241 0025	256,75
25	25	80	150	4	XP..1003..	1.2	A1	B1	260241 1025	266,75
27	25	80	150	4	XP..1003..	1.2	A1	B1	260241 0027	272,–

2174

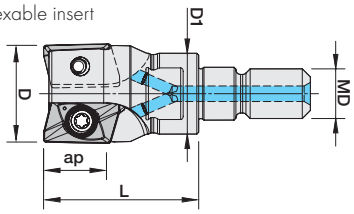
Spare parts

	Screw			TORX	
	art.no.	€		art.no.	€
A1	321099 0006	3,85	B1	703053 0080	1,79
3160			7114		

palbit Screw-in milling cutter 90° LINEPRO 20190

796

- **For milling inserts XP..1003**
- Easy cutting action due to the positive installation position of the indexable insert
- Tools deliver smooth milling performance
- **Internal coolant supply**





D mm	D1 mm	L mm	MD	Z	suitable indexable inserts	Tightening torque max. N·m			art.no.	€
16	14	25	M8	2	XP..1003..	1.2	A1	B1	**260242** 0016	157,25
20	18	30	M10	3	XP..1003..	1.2	A1	B1	260242 0020	194,–
25	21	35	M12	4	XP..1003..	1.2	A1	B1	260242 0025	209,25
32	29	35	M16	5	XP..1003..	1.2	A1	B1	260242 0032	235,75

2174

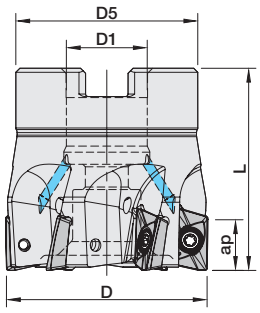
Spare parts

	Screw			TORX	
	art.no.	€		art.no.	€
A1	321099 0006	3,85	B1	703053 0080	1,79
3160			7114		

palbit Shoulder milling cutter 90° LINEPRO 20190

796

- **For milling inserts XP..1003**
- Easy cutting action due to the positive installation position of the indexable insert
- Tools deliver smooth milling performance
- **Internal coolant supply**





D mm	L mm	D5 mm	D1 mm	Z	suitable indexable inserts	Tightening torque max. N·m			art.no.	€
40	40	36	16	6	XP..1003..	1.2	A1	B1	**260243** 0040	282,75
50	40	42	22	7	XP..1003..	1.2	A1	B1	260243 0050	319,50
63	40	52	22	8	XP..1003..	1.2	A1	B1	260243 0063	350,50

2174

Spare parts

	Screw			TORX	
	art.no.	€		art.no.	€
A1	321099 0006	3,85	B1	703053 0080	1,79
3160			7114		

Milling inserts XP.. 1003.. LINEPRO 20190

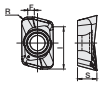
XPET-LP shoulder milling insert

F finishing -	M medium -	R roughing -	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
			XPET 100304 PDER-LP	●		●				PH 7920	10	**285276** 0550	14,–
				●	●	●		●		PH 7930	10	285276 0551	14,–
			XPET 100308 PDER-LP	●		●				PH 7920	10	285276 0850	14,–
				●	●	●		●		PH 7930	10	285276 0851	14,–
			XPET 100316 PDER-LP	●		●				PH 7920	10	285276 1250	14,–
				●	●	●		●		PH 7930	10	285276 1251	14,–

2170

ISO	PH 7920	PH 7930
ISO P steel	Vc = 140 - 230	Vc = 100 - 200
ISO K cast iron	Vc = 120 - 350	Vc = 100 - 260
ISO M stainless steel		Vc = 70 - 220
ISO S superalloys		Vc = 35 - 65
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.08 - 0.20	fz = 0.05 - 0.07
	ap = 2.0 - 9.0	

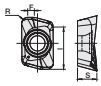
XPET-MP shoulder milling insert

F finishing -	M medium -	R roughing -	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
			XPET 100304 PDSR-MP			●				PH 5705	10	**285276** 0728	14,–
						●				PH 5740	10	285276 0730	14,–
				●		●				PH 7910	10	285276 0749	14,–
				●		●				PH 7920	10	285276 0750	14,–
				●	●	●				PH 7930	10	285276 0751	14,–
			XPET 100308 PDSR-MP			●				PH 5705	10	285276 0928	14,–
						●				PH 5740	10	285276 0930	14,–
				●		●				PH 7910	10	285276 0949	14,–
				●		●				PH 7920	10	285276 0950	14,–
				●	●	●				PH 7930	10	285276 0951	14,–

2170

ISO	PH 5705	PH 5740	PH 7910	PH 7920	PH 7930
ISO P steel			Vc = 160 - 250	Vc = 140 - 230	Vc = 100 - 200
ISO M stainless steel					Vc = 70 - 220
ISO K cast iron	Vc = 120 - 390	Vc = 90 - 240	Vc = 130 - 380	Vc = 120 - 350	Vc = 100 - 260
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.10 - 0.25 ap = 2.0 - 9.0				

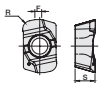
XPET-MH finishing insert

F finishing -	M medium -	R roughing -	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
			XPHW 100308 ZER-MH	●					●	PH 7603	10	**285276** 1647	15,–
				●						PH 7910	10	285276 1649	15,–
													

2170

ISO	PH 7603	PH 7910
ISO P steel	Vc = 190 - 270	Vc = 170 - 250
ISO H hard	Vc = 120 - 260	
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.08 - 0.25 ap = 2.0 - 9.0	

XPET-HF high feed-rate insert

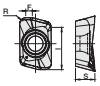
F finishing -	M medium -	R roughing -	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
			XPET 100312 ZDR-HF	●		●				PH 7910	10	**285276** 1149	14,50
				●		●				PH 7920	10	285276 1150	14,50
				●	●	●		●		PH 7930	10	285276 1151	14,50
				●					●	PH 7603	10	285276 1147	14,50
				●		●				PHP 930	10	285276 1190	14,50

2170

ISO	PH 7603	PH 7910	PH 7920	PH 7930	PHP 930
ISO P steel	Vc = 125 - 380	Vc = 160 - 250	Vc = 120 - 350	Vc = 100 - 200	Vc = 100 - 220
ISO M stainless steel				Vc = 70 - 220	
ISO K cast iron		Vc = 130 - 380	Vc = 120 - 350	Vc = 100 - 260	Vc = 130 - 350
ISO S superalloys				Vc = 35 - 65	
ISO H hard	Vc = 120 - 260				
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.40 - 0.80 ap = max. 0.8				

Continued on next page >>>

XPET-LN aluminium shoulder milling insert

F finishing -	M medium -	R roughing -	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
			XPET 100304 PDFR-LN				●			**PH 0910**	10	**285276** 0620	15,50
			XPET 100308 PDFR-LN				●			**PH 0910**	10	285276 0920	15,50
			XPET 100312 PDFR-LN				●			**PH 0910**	10	285276 1020	15,50

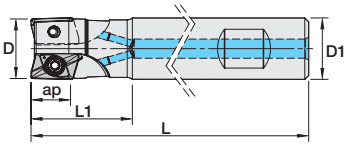
2171

ISO	PH 0910
ISO N Al/non-ferrous	V_c = 350 - 1400
V_c = [m/min] f_z = [mm/Z] a_p = [mm]	f_z = 0.07 - 0.25 a_p = 2.0 - 9.0

palbit End milling cutter 90° LINEPRO 20290

797

- **For milling inserts XP..1706**
- Easy cutting action due to the positive installation position of the indexable insert
- Tools deliver smooth milling performance
- **Internal coolant supply**





D mm	D1 mm	L1 mm	L mm	Z	suitable indexable inserts	Tightening torque max. N·m			art.no.	€
32	32	50	110	2	XPET 1706..	5.0	A1	B1	**260244** 0032	199,–
32	32	60	200	2	XPET 1706..	5.0	A1	B1	260244 1032	230,25
40	40	50	115	3	XPET 1706..	5.0	A1	B1	260244 0040	256,75
40	40	60	200	3	XPET 1706..	5.0	A1	B1	260244 1040	298,50

2174

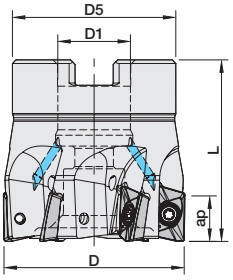
Spare parts

	Screw art.no.	€		TORX art.no.	€
A1	321099 0018	4,10	B1	703053 0200	1,79
	3160			7114	

palbit Shoulder milling cutter 90° LINEPRO 20290

797

- **For milling inserts XP..1706**
- Easy cutting action due to the positive installation position of the indexable insert
- Tools deliver smooth milling performance
- **Internal coolant supply**





D mm	L mm	D5 mm	D1 mm	Z	suitable indexable inserts	Tightening torque max. N·m			art.no.	€
40	40	32	16	4	XPET 1706..	5.0	A1	B1	**260245** 0040	230,25
50	40	42	22	5	XPET 1706..	5.0	A1	B1	260245 0050	272,–
63	40	52	27	6	XPET 1706..	5.0	A1	B1	260245 0063	298,50
80	50	60	27	7	XPET 1706..	5.0	A1	B1	260245 0080	371,50
100	50	80	32	8	XPET 1706..	5.0	A1	B1	260245 0100	476,–
125	63	90	40	9	XPET 1706..	5.0	A1	B1	260245 0125	549,50

2174

Spare parts

	Screw art.no.	€		TORX art.no.	€
A1	321099 0018	4,10	B1	703053 0200	1,79
	3160			7114	

Milling inserts XPET 1706.. LINEPRO 20290

XPET-LP shoulder milling insert

F finishing -	M medium -	R roughing -	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 			XPET 170608 PDER-LP	●	●	●		●		PH 7740	10	**285288** 0148	15,50
				●		●				PH 7920	10	285288 0150	15,50
			XPET 170616 PDER-LP	●		●				PH 7920	10	285289 0150	15,50
				●	●	●		●		PH 7740	10	285289 0148	15,50

2170

ISO	PH 7740	PH 7920
ISO P steel	Vc = 100 - 220	Vc = 140 - 280
ISO M stainless steel	Vc = 70 - 220	
ISO K cast iron	Vc = 100 - 260	Vc = 120 - 350
ISO S superalloys	Vc = 30 - 65	
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 - 0.35 ap = 0.05 - 17.0	

XPET-MP shoulder milling insert

F finishing -	M medium -	R roughing -	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 			XPET 170608 PDSR-MP			●				PH 5705	10	**285290** 0128	15,50
						●				PH 5740	10	285290 0130	15,50
				●	●	●				PH 7740	10	285290 0148	15,50
				●		●				PH 7920	10	285290 0150	15,50
			XPET 170616 PDSR-MP			●				PH 5705	10	285291 0128	15,50
						●				PH 5740	10	285291 0130	15,50
				●	●	●				PH 7740	10	285291 0148	15,50
				●		●				PH 7920	10	285291 0150	15,50

2170

ISO	PH 5705	PH 5740	PH 7740	PH 7920
ISO P steel			Vc = 100 - 220	Vc = 140 - 280
ISO M stainless steel			Vc = 70 - 220	
ISO K cast iron	Vc = 120 - 380	Vc = 120 - 300	Vc = 100 - 260	Vc = 120 - 350
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 - 0.35 ap = 0.05 - 17.0			

XPET-LN aluminium shoulder milling insert

F finishing -	M medium -	R roughing -	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 			XPET 170608 PDFR-LN				●			PH 0910	10	**285292** 0120	18,–
			XPET 170620 PDFR-LN				●			PH 0910	10	285293 0120	18,–
			XPET 170632 PDFR-LN				●			PH 0910	10	285294 0120	18,–

2171

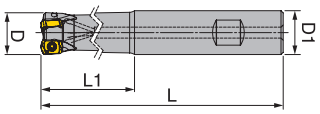
ISO	PH 0910
ISO N Al/non-ferrous	Vc = 350 - 1400
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.10 - 0.35 ap = 0.05 - 17.0

palbit End milling cutter 20° TETRAFEED



798

- **for milling inserts XNKU 06**
- easy cutting action due to the positive installation position of the indexable insert
- **four cutting edges per insert**
- tools deliver smooth milling performance
- **internal coolant supply**





D mm	D1 mm	L mm	L1 mm	Z	Tightening torque max. N·m	art.no.	€
20	20	160	90	3	1.20	**260311** 0020	215,–
25	25	180	100	4	1.20	260311 0025	235,–
32	32	200	120	5	1.20	260311 0032	275,–

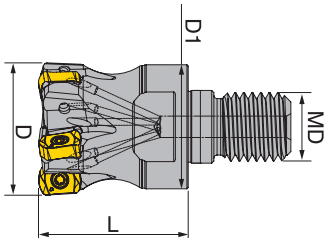
2174

palbit Screw-in milling cutter 20° TETRAFEED



798

- **for milling inserts XNKU 06**
- easy cutting action due to the positive installation position of the indexable insert
- **four cutting edges per insert**
- tools deliver smooth milling performance
- **internal coolant supply**





D mm	MD	D1 mm	L mm	Z	Tightening torque max. N-m	art.no.	€
16	M8	13	25	2	1.20	**260312** 0016	155,–
20	M10	18	28	3	1.20	260312 0020	210,–
25	M12	18	30	4	1.20	260312 0025	230,–
32	M16	29	35	5	1.20	260312 0032	270,–
35	M16	29	35	6	1.20	260312 0035	280,–
40	M16	29	45	5	1.20	260312 0040	315,–
42	M16	29	35	7	1.20	260312 0042	320,–

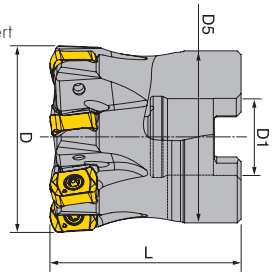
2174

palbit Shoulder milling cutter 20° TETRAFEED



798

- **for milling inserts XNKU 06**
- easy cutting action due to the positive installation position of the indexable insert
- **four cutting edges per insert**
- tools deliver smooth milling performance
- **internal coolant supply**





D mm	D1 mm	D5 mm	L mm	Z	Tightening torque max. N-m	art.no.	€
40	16	36	40	7	1.20	**260313** 0040	305,–
50	22	42	40	8	1.20	260313 0050	355,–
52	22	40	40	8	1.20	260313 0052	365,–
63	22	40	40	9	1.20	260313 0063	405,–

2174

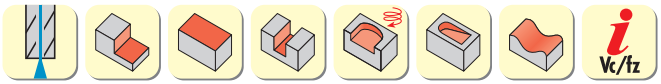
Milling inserts XNKU.. 06.. TETRAFEED

F finishing	M medium	R roughing	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
-	-	-	XNKU 06T310-MP		●			●		**PHH 930**	10	**285560** 0167	15,–
				●		●				**PHP 920**	10	285560 0168	12,–
				●	●	●		●		**PHS 740**	10	285560 0174	15,–
				●						**PHP 930**	10	285560 0190	12,–

2170

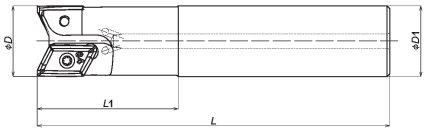
ISO	PHH 930	PHP 920	PHP 930	PHS 740
ISO P steel		Vc = 160 - 250	Vc = 140 - 230	Vc = 140 - 230
ISO M stainless steel	Vc = 80 - 170			Vc = 70 - 180
ISO K cast iron		Vc = 100 - 320		Vc = 70 - 260
ISO S superalloys	Vc = 30 - 75			Vc = 30 - 70
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.5 - 1.4	fz = 0.5 - 1.5		fz = 0.5 - 1.3
	ap = 1.0			

palbit End milling cutter 90° ALUPRO 76090



800

- **For milling inserts XDGX 15M..**
- Tools deliver smooth milling performance
- **Internal coolant supply**





up to r = 3.2

D mm	D1 mm	L mm	L1 mm	Z	suitable indexable inserts	Tightening torque max. N·m			art.no.	€
20	20	150	60	1	XDGX 15M5	3.0	A1	B1	**260252** 0020	261,75
25	25	180	90	2	XDGX 15M5	3.0	A1	B1	260252 0025	287,75
32	32	200	120	2	XDGX 15M5	3.0	A2	B1	260252 0032	313,75
40	32	250	65	3	XDGX 15M5	3.0	A2	B1	260252 0040	418,25

2174

greater than r = 4.0

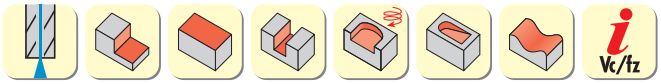
D mm	D1 mm	L mm	L1 mm	Z	Tightening torque max. N·m	suitable indexable inserts			art.no.	€
20	20	150	60	1	3.0	XDGX 15M5	A1	B1	**260253** 0020	261,75
25	25	180	90	2	3.0	XDGX 15M5	A1	B1	260253 0025	287,75
32	32	200	120	2	3.0	XDGX 15M5	A2	B1	260253 0032	313,75
40	32	250	65	3	3.0	XDGX 15M5	A2	B1	260253 0040	418,25

2174

Spare parts

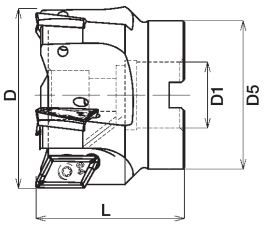
	Screw			TORX	
	art.no.	€		art.no.	€
A1	321099 0012	3,85	B1	703053 0150	1,79
A2	321099 0014	3,85			
	3160			7114	

palbit Shoulder milling cutter 90° ALUPRO 76090



800

- **For milling inserts XDGX 15M..**
- Tools deliver smooth milling performance
- **Internal coolant supply**





up to r = 3.2

D mm	L mm	D1 mm	D5 mm	Z	Tightening torque max. N·m	suitable indexable inserts			art.no.	€
40	50	16	32	3	3.0	XDGX 15M5	A1	B1	**260250** 0040	366,25
50	50	22	42	4	3.0	XDGX 15M5	A1	B1	260250 0050	418,25
63	50	22	48	5	3.0	XDGX 15M5	A1	B1	260250 0063	470,75
80	50	27	60	5	3.0	XDGX 15M5	A1	B1	260250 0080	496,75
100	63	32	73	6	3.0	XDGX 15M5	A1	B1	260250 0100	575,50

2174

greater than r = 4.0

D mm	L mm	D1 mm	D5 mm	Z	Tightening torque max. N·m	suitable indexable inserts			art.no.	€
40	50	16	32	3	3.0	XDGX 15M5	A1	B1	**260251** 0040	366,25
50	50	22	42	4	3.0	XDGX 15M5	A1	B1	260251 0050	418,25
63	50	22	48	5	3.0	XDGX 15M5	A1	B1	260251 0063	470,75
80	50	27	60	5	3.0	XDGX 15M5	A1	B1	260251 0080	496,75
100	63	32	73	6	3.0	XDGX 15M5	A1	B1	260251 0100	575,50

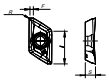
2174

Spare parts

	Screw			TORX	
	art.no.	€		art.no.	€
A1	321099 0014	3,85	B1	703053 0150	1,79
	3160			7114	

Milling inserts XDGX 15M5.. ALUPRO 76090

XDGX 15M5..

F finishing -	M medium -	R roughing -	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
			XDGX 15M504 PDFR-LN				●			**PH 0910**	10	**285301** 0120	19,50
			XDGX 15M508 PDFR-LN				●			**PH 0910**	10	285301 0220	19,50
			XDGX 15M512 PDFR-LN				●			**PH 0910**	10	285301 0320	19,50
			XDGX 15M516 PDFR-LN				●			**PH 0910**	10	285301 0420	19,50
			XDGX 15M520 PDFR-LN				●			**PH 0910**	10	285301 0520	19,50
			XDGX 15M530 PDFR-LN				●			**PH 0910**	10	285301 0620	19,50
			XDGX 15M532 PDFR-LN				●			**PH 0910**	10	285301 0720	19,50
			XDGX 15M540 PDFR-LN				●			**PH 0910**	10	285301 0820	19,50
			XDGX 15M550 PDFR-LN				●			**PH 0910**	10	285301 0920	19,50

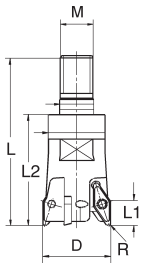
2171

ISO	PH 0910
ISO N Al/non-ferrous	Vc = 350 - 1400
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.15 - 0.4 ap = 0.05 - 14.0

ATORN® 90° indexable insert milling cutter for non-ferrous metals and plastics

Z 2 | Z 3 | Z 4 | Z 5 | HPC | Vc/fz | 801

- **For excavation and plunge milling without pilot holes**

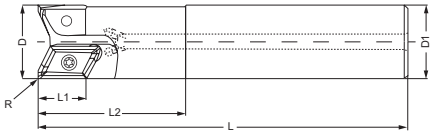




Screw-in milling cutter

D mm	R mm	L1 mm	L2 mm	Z	d1 mm	Tightening torque max. N·m	Thread	suitable indexable inserts			art.no.	€
25	1.2	13.5	40	2	21	5.2	M 12	VPGT 160412-ALM	A1	B1	**260400** 2540	259,–
32	3.0	15	50	2	29	10	M 16	VCGT 220530-ALM	A2	B2	260400 3250	295,–
42	3.0	15	50	3	29	10	M 16	VCGT 220530-ALM	A2	B2	260400 4250	350,–

2125



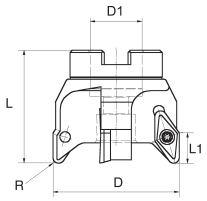


End milling cutters

D mm	R mm	L1 mm	L2 mm	D1 mm	L mm	Z	Tightening torque max. N·m	suitable indexable inserts			art.no.	€
25	1.2	13.5	40	20	200	2	5.2	VPGT 160412-ALM	A1	B1	**260402** 5200	255,–
32	3.0	15	50	25	220	2	10	VCGT 220530-ALM	A2	B2	260403 2220	295,–

2125





Shell-type milling cutter

D mm	R mm	L1 mm	L mm	D1 mm	Z	Tightening torque max. N·m	suitable indexable inserts			art.no.	€
42	3.0	15	55	16	3	10	VCGT 220530-ALM	A2	B2	**260400** 4255	345,–
52	3.0	15	55	22	3	10	VCGT 220530-ALM	A2	B2	260400 5255	380,–
66	3.0	15	60	27	4	10	VCGT 220530-ALM	A2	B2	260400 6660	425,–
80	3.0	15	60	27	4	10	VCGT 220530-ALM	A2	B2	260400 8060	460,–
100	3.0	15	65	32	5	10	VCGT 220530-ALM	A2	B2	260401 0065	529,–

2125

Spare parts

	Screw art.no.	€
A1	260400 0040	4,90
A2	260400 0050	5,50

2125

	TORX art.no.	€
B1	703040 0080	4,60
B2	703040 0150	4,80

7111

VCGT/VPGT ISO milling inserts

R mm	ISO designation	ISO N Uncoated HW4410			ISO N Coated HC4410		
			art.no.	€		art.no.	€
1.2	VPGT 160412-ALM	10	**270104** 0161	15,80			
3.0	VCGT 160412-ALM				10	**270104** 1661	16,70
3.0	VCGT 220530-ALM	10	270104 1221	21,–	10	270104 0221	21,40

2126 2126


HC44210

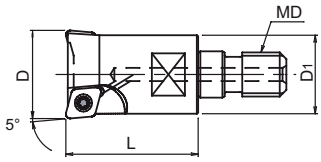

HW4410

palbit Screw-in milling cutter 95° LINEPRO 40095 / 41095



805

- **For milling inserts XD..0401.. / XD.. 0602..**
- Easy cutting action due to the positive installation position of the indexable insert
- Tools deliver smooth milling performance
- **Internal coolant supply**





D mm	D1 mm	L mm	Z	MD	Tightening torque max. N·m	suitable indexable inserts			art.no.	€
10	9.8	20	2	6	0.3	XD..0401..	A1	B1	**260293** 0010	143,50
12	9.8	20	2	6	0.3	XD..0401..	A1	B1	260293 0012	143,50
16	13	23	2	8	1.2	XD..0602..	A2	B2	260293 0016	143,50
20	18	28	3	10	1.2	XD..0602..	A2	B2	260293 0020	149,–
25	21	30	3	12	1.2	XD..0602..	A2	B2	260293 0025	160,75
25	21	30	4	12	1.2	XD..0602..	A2	B2	260293 1025	160,75

2174

Spare parts

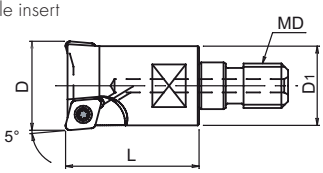
	Screw			TORX	
	art.no.	€		art.no.	€
A1	321099 0003	6,90	B1	703053 0060	1,79
A2	321099 0005	3,35	B2	703053 0080	1,79
	3160			7114	

palbit Screw-in milling cutter 95° LINEPRO 40595



805

- **For milling inserts XD..1003**
- Easy cutting action due to the positive installation position of the indexable insert
- Tools deliver smooth milling performance
- **Internal coolant supply**



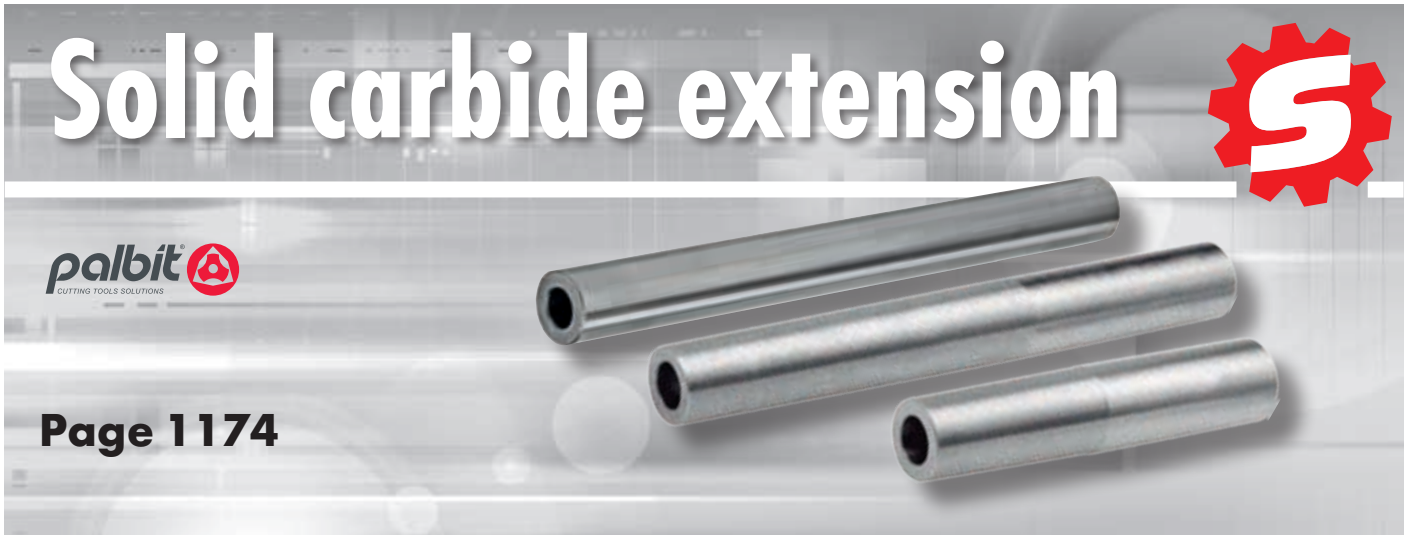


D mm	D1 mm	L mm	Z	MD	Tightening torque max. N·m	suitable indexable inserts			art.no.	€
25	40	50	2	12	3.0	XD..10T3..	A1	B1	**260294** 0025	143,50
35	48	50	3	16	3.0	XD..10T3..	A1	B1	260294 0035	172,–
42	60	50	4	16	3.0	XD..10T3..	A1	B1	260294 0042	200,50

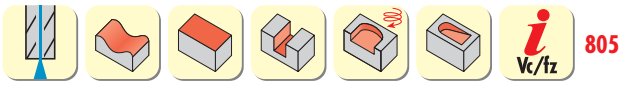
2174

Spare parts

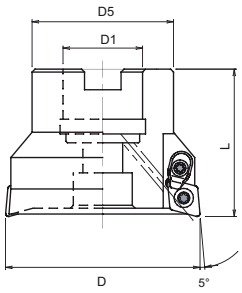
	Screw			TORX	
	art.no.	€		art.no.	€
A1	321099 0009	4,10	B1	703053 0150	1,79
	3160			7114	



palbit Shoulder milling cutter 95° LINEPRO 40595



- **For milling inserts XP..10T3**
- Easy cutting action due to the positive installation position of the indexable insert
- Tools deliver smooth milling performance
- **Internal coolant supply**





D mm	L mm	D5 mm	D1 mm	Z	Tightening torque max. N-m	suitable indexable inserts				art.no.	€
52	50	40	22	5	3.0	XD..10T3..	A1	B1	C1	**260295** 0052	269,–
66	50	48	27	6	3.0	XD..10T3..	A1	B1	C1	260295 0066	320,50
80	50	60	27	7	3.0	XD..10T3..	A1	B1	C1	260295 0080	400,–

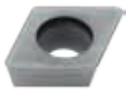
2174

Spare parts

Clamping screw			Screw			TORX		
	art.no.	€		art.no.	€		art.no.	€
A1	321099 0008	3,85	B1	321099 0009	4,10	C1	703053 0150	1,79
3160			3160			7114		

Milling inserts XDHW LINEPRO 40095 / 40595 / 41095

XDHT shoulder milling inserts

F finishing -	M medium -	R roughing -	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
			XDHW 040105				●			**PHD 103**	10	**285367** 0162	37,75
			XDHW 040110	●					○	**PH 6103**	10	285367 0231	7,95
				●		●				**PH 6125**	10	285367 0232	7,95
			XDHW 060210	●					○	**PH 6103**	10	285367 0331	7,95
				●		●				**PH 6125**	10	285367 0332	7,95
				●						**PH 6135**	10	285367 0333	7,95
				●		●				**PH 6910**	10	285367 0341	7,95
			XDHW 10T310	●					○	**PH 6103**	10	285367 0431	9,20
				●		●				**PH 6125**	10	285367 0432	9,20
				●						**PH 6135**	10	285367 0433	9,20
				●		●				**PH 6910**	10	285367 0441	9,20

2170

ISO	PH 6103	PH 6125	PH 6135	PH 6910	PHD 103
ISO P steel	Vc = 180 - 300	Vc = 130 - 190	Vc = 120 - 180	Vc = 160 - 250	
ISO K cast iron		Vc = 80 - 290		Vc = 90 - 300	
ISO N Al/non-ferrous					Vc = 300 - 1000
ISO H hard	Vc = 120 - 260				
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 - 02		fz = 0.1 - 0.35	fz = 0.1 - 0.3	fz = 0.1 - 0.2
	ap = 0.05 - 1.0				

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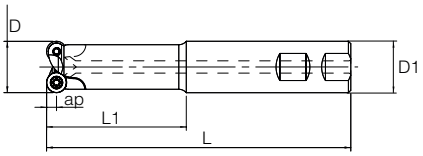
Overview of all free manufacturers' catalogues
on page 14/15

palbit Copy milling cutter TOROMILL 24590 / 25090 / 25190



802

- For copy milling, radius cutting and contour milling in die and mould production
- Suitable for diagonal or axial plunge milling thanks to the clearance of the round indexable insert
- Internal coolant supply

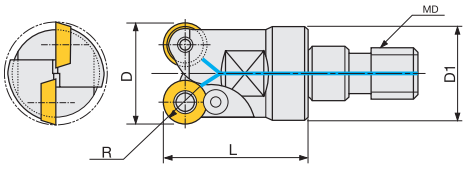




End milling cutter

D mm	Z	suitable indexable inserts	L mm	L1 mm	ap max. mm	Tightening torque max. N·m	D1 mm			art.no.	€
15	2	RD..0702..	160	60	3.5	1.2	16	A1	C1	**260281** 0001	152,50
15	2	RD..0702..	220	120	3.5	1.2	25	A1	C1	260281 0002	186,75
20	2	RD..1003..	160	60	5.0	3.0	20	A2	C2	260281 0003	161,75
20	2	RD..1003..	220	120	5.0	3.0	25	A2	C2	260281 0004	196,–
25	2	RD..12T3..	220	120	6.0	3.0	25	A2	C2	260281 0005	221,–
25	2	RD..12T3..	230	130	6.0	3.0	32	A2	C2	260281 0006	248,50

2174

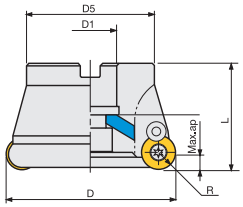




Screw-in milling cutter

D mm	R mm	MD	Z	suitable indexable inserts	L mm	ap max. mm	Tightening torque max. N·m	D1 mm			art.no.	€
15	3.5	M8	3	RD..0702..	20	3.5	1.2	13	A1	C1	**260284** 0001	143,50
16	3.5	M8	2	RD..0702..	20	3.5	1.2	13	A1	C1	260284 0002	143,50
16	3.5	M8	3	RD..0702..	20	3.5	1.2	13	A1	C1	260284 0003	143,50
20	3.5	M10	4	RD..0702..	25	3.5	1.2	18	A1	C1	260284 0004	177,50
20	5.0	M10	2	RD..1003..	25	5	3.0	18	A2	C2	260284 0005	126,–
25	5.0	M12	3	RD..1003..	30	5	3.0	21	A2	C2	260284 0006	131,75
35	5.0	M16	5	RD..1003..	43	5	3.0	29	A2	C2	260284 0008	211,75
42	5.0	M16	5	RD..1003..	40	5	3.0	29	A2	C2	260284 0009	215,75
24	6.0	M16	2	RD..12T3..	32	6	3.0	21	A2	C2	260284 0010	131,75
35	6.0	M16	3	RD..12T3..	42	6	3.0	29	A2	C2	260284 0011	149,–
42	6.0	M16	4	RD..12T3..	42	6	3.0	29	A2	C2	260284 0012	206,25

2174





Shell-type milling cutter

D mm	R mm	D5 mm	γ °	Z	suitable indexable inserts	L mm	ap max. mm	Tightening torque max. N·m	D1 mm				art.no.	€
42	5	36	0	6	RD..1003..	44	5	3.0	16	A2		C2	**260287** 0001	263,25
52	5	40	0	7	RD..1003..	50	5	3.0	22	A2		C2	260287 0002	303,–
50	6	48	7	5	RD..12T3..	50	6	3.0	22	A2	B1	C2	260288 0001	234,75
52	6	40	0	5	RD..12T3..	50	6	3.0	22	A2	B1	C2	260287 0003	234,75
52	6	48	7	5	RD..12T3..	50	6	3.0	22	A2	B1	C2	260288 0002	234,75
66	6	40	0	6	RD..12T3..	50	6	3.0	27	A2	B1	C2	260287 0004	275,–
66	6	60	7	6	RD..12T3..	50	6	3.0	27	A2	B1	C2	260288 0003	275,–
80	6	40	0	7	RD..12T3..	50	6	3.0	27	A2	B1	C2	260287 0005	342,75
80	6	60	7	7	RD..12T3..	52.5	6	3.0	27	A2	B1	C2	260288 0004	342,75

2174

Spare parts

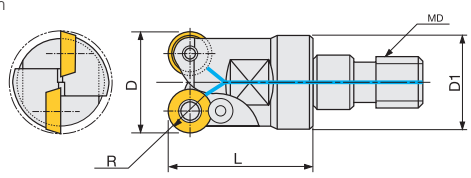
Screw			Clamping screw			TORX		
	art.no.	€		art.no.	€		art.no.	€
A1	321099 0005	3,35	B1	321099 0008	3,85	C1	703053 0080	1,79
A2	321099 0009	4,10				C2	703053 0150	1,79
	3160			3160			7114	

palbit Copy milling cutter TOROMILL 25290 / 25390



802

- For copy milling, radius cutting and contour milling in die and mould production
- Suitable for diagonal or axial plunge milling thanks to the clearance of the round indexable insert
- Internal coolant supply
- 7° positive setting angle for moderate and heavy machining, long-chipping materials with lower power consumption

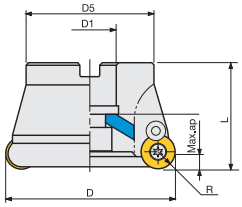




Screw-in milling cutter

D mm	R mm	MD	Z	suitable indexable inserts	L mm	ap max. mm	Tightening torque max. N·m	D1 mm			art.no.	€
32	8	M16	2	RD..1604..	40	8	5.0	29	A1	C1	**260289** 0032	172,–

2174





Shell-type milling cutter

D mm	R mm	D5 mm	γ °	Z	Z mm	suitable indexable inserts	L mm	ap max. mm	Tightening torque max. N·m	D1 mm				art.no.	€
52	8	40	0	4	4	RD..1604..	50	8	5.0	22	A1	B1	C1	**260290** 0001	228,50
52	8	48	7	4	4	RD..1604..	50	8	5.0	22	A1	B1	C1	260291 0001	228,50
66	8	40	0	5	5	RD..1604..	50	8	5.0	27	A1	B1	C1	260290 0002	269,–
66	8	60	7	5	5	RD..1604..	52	8	5.0	27	A1	B1	C1	260291 0002	269,–
80	8	48	0	6	6	RD..1604..	50	8	5.0	27	A1	B1	C1	260290 0003	337,75
80	8	60	7	6	6	RD..1604..	52	8	5.0	27	A1	B1	C1	260291 0003	337,75
125	8	90	7	8	8	RD..1604..	52	8	5.0	40	A1	B1	C1	260291 0004	571,25
160	8	120	7	9	9	RD..1604..	52	8	5.0	40	A1	B1	C1	260291 0005	811,–
80	10	60	7	5	5	RD..2006..	50	10	10.0	27	A2	B1	C1	260291 0006	415,75
100	10	70	7	6	6	RD..2006..	52	10	10.0	32	A2	B1	C1	260291 0007	445,75
125	10	90	7	7	7	RD..2006..	52	10	10.0	40	A2	B1	C1	260291 0008	542,75
160	10	120	7	8	8	RD..2006..	52	10	10.0	40	A2	B1	C1	260291 0009	788,50

2174

Spare parts

Screw			Washer			TORX		
	art.no.	€		art.no.	€		art.no.	€
A1	321099 0018	4,10	B1	321099 0241	3,85	C1	703053 0200	1,79
A2	321099 0429	8,20						
	3160			3160			7114	

Milling inserts RD.. TOROMILL 24590 / 25090 / 25190 / 25290 / 25390

RDHT

F finishing	M medium	R roughing	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
-	-	-	RDHT 1003 M0T	●						**PH 6125**	10	**285351** 0132	8,70
				●						**PH 6135**	10	285351 0133	8,70
			RDHT 1003 M0E-LS		●			●		**PHH 930**	10	285351 0293	9,35
			RDHT 12T3 M0T	●						**PH 6125**	10	285356 0132	9,20
				●						**PH 6135**	10	285356 0133	9,20
			RDHT 12T3 M0T	●						**PH 6125**	10	285361 0132	9,95
			RDHT 12T3 M0S-MP	●		●				**PH 6740**	10	285355 0139	9,20
				●	●	●		●	●	**PH 6920**	10	285355 0142	9,20
			RDHT 1604 M0S-MP	●		●				**PH 6740**	10	285360 0139	9,95
				●	●	●		●	●	**PH 6920**	10	285360 0142	9,95

2170

ISO	PH 6125	PH 6135	PH 6740	PH 6920	PHH 930
ISO P steel	Vc = 130 - 190	Vc = 120 - 180	Vc = 100 - 160	Vc = 130 - 230	
ISO M stainless steel				Vc = 100 - 200	Vc = 80 - 130
ISO K cast iron			Vc = 80 - 250	Vc = 80 - 280	
ISO S superalloys				Vc = 20 - 30	Vc = 20 - 80
ISO H hard				Vc = 50 - 100	
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.15 - 0.45 ap = [mm]	ap = max. 6.0	fz = 0.20 - 0.45 ap = max. 8.0		fz = 0.15 - 0.45 ap = max. 5.0

RDHW

F finishing -	M medium -	R roughing -	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
			RDHW 0702 M0T	●		●		●	○	**PH 6103**	10	**285349** 0131	8,70
				●		●				**PH 6910**	10	285349 0141	8,70
				●	●	●		●	●	**PH 6920**	10	285349 0142	8,70
			RDHW 1003 M0T	●		●		●	○	**PH 6103**	10	285350 0131	8,70
				●						**PH 6135**	10	285350 0133	8,70
				●		●				**PH 6910**	10	285350 0141	8,70
				●	●	●		●	●	**PH 6920**	10	285350 0142	8,70
			RDHW 12T3 M0T	●		●		●	○	**PH 6103**	10	285354 0131	9,20
				●						**PH 6135**	10	285354 0133	9,20
				●		●				**PH 6910**	10	285354 0141	9,20
				●	●	●		●	●	**PH 6920**	10	285354 0142	9,20
			RDHW 1604 M0T	●		●		●	○	**PH 6103**	10	285359 0131	9,95
				●						**PH 6135**	10	285359 0133	9,95
				●		●				**PH 6910**	10	285359 0141	9,95
				●	●	●		●	●	**PH 6920**	10	285359 0142	9,95

2170

ISO	PH 6103	PH 6135	PH 6910	PH 6920
ISO P steel	Vc = 180 - 300	Vc = 130 - 190	Vc = 160 - 250	Vc = 130 - 230
ISO M stainless steel				Vc = 100 - 200
ISO K cast iron	Vc = 200 - 300		Vc = 90 - 300	Vc = 80 - 280
ISO S superalloys	Vc = 30 - 40			Vc = 20 - 30
ISO H hard	Vc = 120 - 240			Vc = 50 - 100
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.15 - 0.45 ap = max. 3.5			



RDMT

F finishing -	M medium -	R roughing -	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
			RDMT 1003 M0T	●						**PH 6125**	10	**285352** 0132	7,95
				●						**PH 6135**	10	285352 0133	7,95
			RDMT 12T3 M0T	●						**PH 6125**	10	285357 0132	8,70
				●						**PH 6135**	10	285357 0133	8,70
			RDMT 1604 M0T	●						**PH 6125**	10	285362 0132	9,20
				●						**PH 6135**	10	285362 0133	9,20
			RDMT 2006 M0T	●						**PH 6125**	10	285364 0132	15,–
				●						**PH 6135**	10	285364 0133	15,–

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ISO	PH 6125	PH 6135
ISO P steel	Vc = 130 - 190	Vc = 120 - 180
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.15 - 0.45 ap = max. 8.0	

RDMW

F finishing -	M medium -	R roughing -	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
			RDMW 1003 M0T	●						**PH 6125**	10	**285353** 0132	7,95
				●						**PH 6135**	10	285353 0133	7,95
				●		●				**PH 6920**	10	285353 0142	7,95
			RDMW 12T3 M0T	●						**PH 6125**	10	285358 0132	8,70
				●						**PH 6135**	10	285358 0133	8,70
				●		●				**PH 6920**	10	285358 0142	8,70
			RDMW 1604 M0T	●						**PH 6125**	10	285363 0132	9,20
				●						**PH 6135**	10	285363 0133	9,20
				●		●				**PH 6920**	10	285363 0142	9,20
			RDMW 2006 M0T	●						**PH 6125**	10	285365 0132	15,–
				●						**PH 6135**	10	285365 0133	15,–

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ISO	PH 6125	PH 6135	PH 6920
ISO P steel	Vc = 130 - 190	Vc = 120 - 180	Vc = 130 - 230
ISO K cast iron			Vc = 80 - 280
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.15 - 0.45 ap = max. 8.0		

PHOENIX PFB ball-nose cutter and *PFR* torus cutter

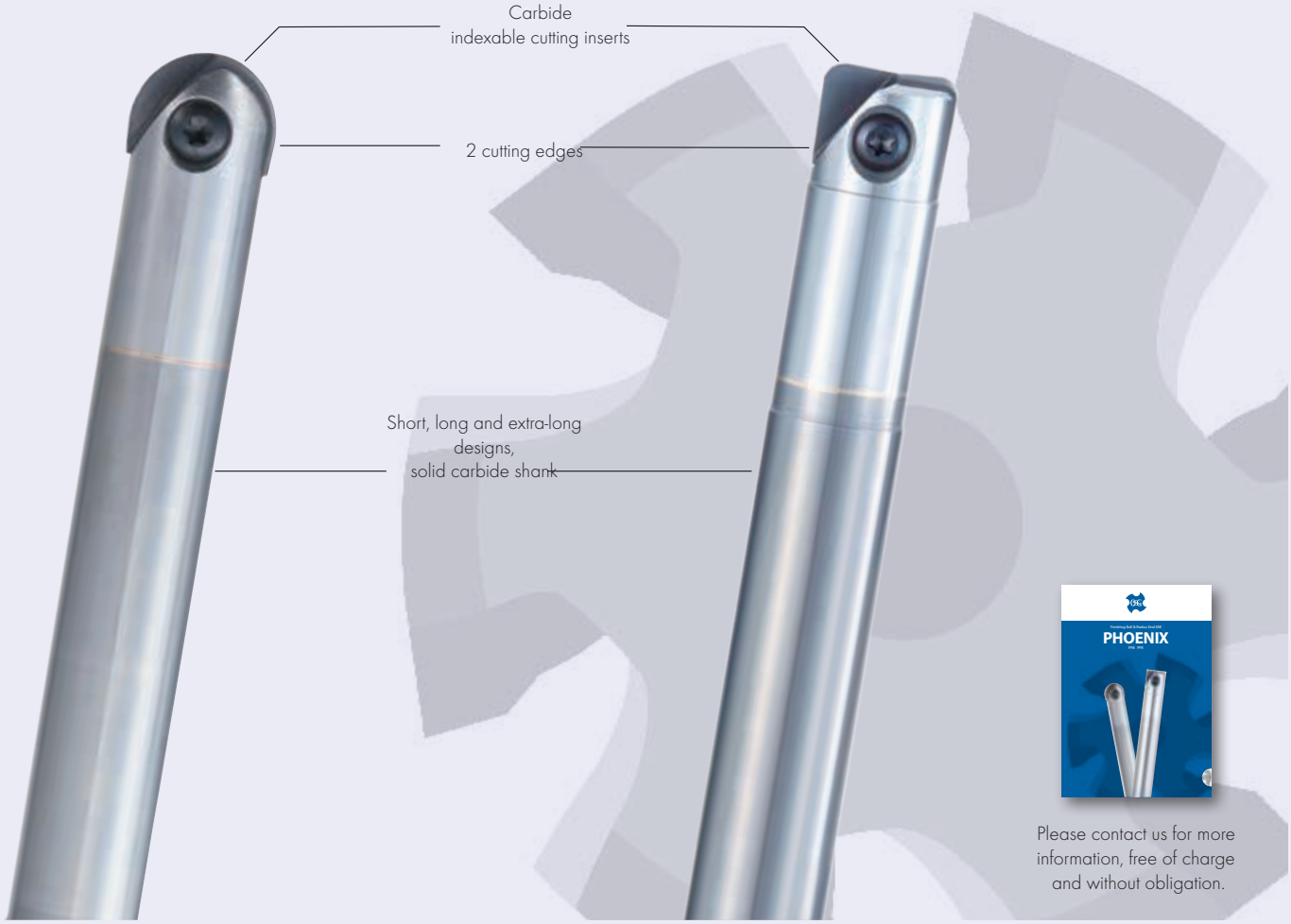
INFO

- **PFB: Radius accuracy ± 6 µm**
- **PFR: Surface tolerance + 0 / - 20 µm, corner radius ± 8 µm**
- **Spiralled, stable and extremely sharp cutting edges**
- **Steel and solid carbide shanks**

Advantages
- Optimum surface finishes with short and long projection lengths
- Vibration reduction

Plain ball cutter *PHOENIX PFB*

Torus milling cutter *PHOENIX PFR*



Please contact us for more information, free of charge and without obligation.

DRILLING
THREADING
MILLING



OSG
Catalogue VI
1024 pages
Art.no. 019900 0208

Overview of all free manufacturers' catalogues
on page 14/15

Ball-nose cutter PFB



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- **Radius accuracy ± 6 µm**
- High performance
- Ball cutter for finishing
- 2 cutting edges
- **Spiralled, stable and extremely sharp cutting edges**
- Steel and solid carbide shanks
- Short, long and extra-long designs

Advantages

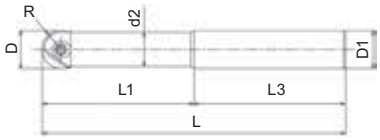
- Optimum surface finishes with short and long projecting lengths
- Vibration reduction



Steel shank

Type	R mm	D mm	L1 mm	L3 mm	L mm	d2 mm	D1 mm	Tightening torque max. N·m				art.no.	€
PFB-R080SS08-S120	4	8	36	84	120	7	8	1.0	A2		C2	**260530** 0080	260,30
PFB-R100SS10-S130	5	10	45	85	130	9	10	1.2	A3		C3	260530 0100	262,50
PFB-R120SS12-S130	6	12	54	76	130	11	12	2.0	A4		C4	260530 0120	281,10
PFB-R160SS16-S140	8	16	64	76	140	14	16	3.0	A5		C5	260530 0160	285,80
PFB-R200SS20-S160	10	20	80	80	160	18	20	5.0	A6		C6	260530 0200	288,10
PFB-R250SS25-S160	12.5	25	75	85	160	22	25	5.0	A7		C6	260530 0250	332,10
PFB-R300SS32-S170	15	30	90	80	170	27	32	6.0	A8	B1		260530 0300	585,20
PFB-R320SS32-S180	16	32	96	84	180	29	32	6.0	A8	B1		260530 0320	640,70

2132

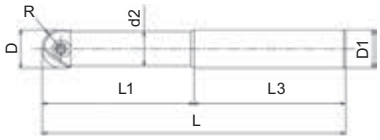




Solid carbide shank, short

Type	R mm	D mm	L1 mm	L3 mm	L mm	D1 mm	d2 mm	Tightening torque max. N·m				art.no.	€
PFB-R060SS06-S80CS	3	6	15	65	80	6	5.4	0.8	A1		C1	**260531** 0060	381,80
PFB-R080SS08-S100CS	4	8	20	80	100	8	7	1.0	A2		C2	260531 0080	360,–
PFB-R100SS10-S100CS	5	10	25	75	100	10	9	1.2	A3		C3	260531 0100	407,40
PFB-R120SS12-S110CS	6	12	30	80	110	12	11	2.0	A4		C4	260531 0120	427,90
PFB-R160SS16-S140CS	8	16	40	100	140	16	14	3.0	A5		C5	260531 0160	512,70
PFB-R200SS20-S160CS	10	20	50	110	160	20	18	5.0	A6		C6	260531 0200	746,90
PFB-R250SS25-S160CS	12.5	25	62.5	97.5	160	25	22	5.0	A7		C6	260531 0250	950,60
PFB-R300SS32-S170CS	15	30	75	95	170	32	27	6.0	A8	B1		260531 0300	1.184,70
PFB-R320SS32-S180CS	16	32	80	100	180	32	29	6.0	A8	B1		260531 0320	1.401,60

2132



Solid carbide shank, long

Type	R mm	D mm	L1 mm	L3 mm	L mm	D1 mm	d2 mm	Tightening torque max. N·m				art.no.	€
PFB-R060SS06-L100CS	3	6	30	70	100	6	5.4	0.8	A1		C1	**260532** 0060	414,20
PFB-R080SS08-L120CS	4	8	40	80	120	8	7	1.0	A2		C2	260532 0080	432,50
PFB-R100SS10-L130CS	5	10	50	80	130	10	9	1.2	A3		C3	260532 0100	439,40
PFB-R120SS12-L140CS	6	12	60	80	140	12	11	2.0	A4		C4	260532 0120	513,40
PFB-R160SS16-L160CS	8	16	72	88	160	16	14	3.0	A5		C5	260532 0160	610,70
PFB-R200SS20-L180CS	10	20	90	90	180	20	18	5.0	A6		C6	260532 0200	902,10
PFB-R250SS25-L200CS	12.5	25	100	100	200	25	22	5.0	A7		C6	260532 0250	1.174,90
PFB-R300SS32-L220CS	15	30	120	100	220	32	27	6.0	A8	B1		260532 0300	1.575,–
PFB-R320SS32-L230CS	16	32	128	102	230	32	29	6.0	A8	B1		260532 0320	1.669,90

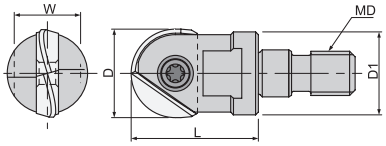
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Solid carbide shank, extra-long

Type	R mm	D mm	L1 mm	L3 mm	L mm	d2 mm	D1 mm	Tightening torque max. N-m			art.no.	€
PFB-R060SS06-LL120CS	3	6	42	78	120	5.4	6	0.8	A1	C1	**260533** 0060	437,20
PFB-R080SS08-LL140CS	4	8	56	84	140	7	8	1.0	A2	C2	260533 0080	457,40
PFB-R100SS10-LL150CS	5	10	70	80	150	9	10	1.2	A3	C3	260533 0100	464,20
PFB-R120SS12-LL160CS	6	12	84	76	160	11	12	2.0	A4	C4	260533 0120	582,80
PFB-R160SS16-LL200CS	8	16	96	104	200	14	16	3.0	A5	C5	260533 0160	645,40
PFB-R200SS20-LL240CS	10	20	120	120	240	18	20	5.0	A6	C6	260533 0200	972,70
PFB-R250SS25-LL260CS	12.5	25	137.5	122.5	260	22	25	5.0	A7	C6	260533 0250	1.376,50
PFB-R300SS32-LL290CS	15	30	165	125	290	27	32	6.0	A8	B1	260533 0300	1.972,70
PFB-R320SS32-LL300CS	16	32	176	124	300	29	32	6.0	A8	B1	260533 0320	2.067,80

2132





Screw-in milling cutter

Type	Tightening torque max. N-m	D mm	D1 mm	L mm	MD	W mm			art.no.	€
PFB-R100SF6	1.2	10	9	26	M6	7	A3	C3	**260534** 0100	187,90
PFB-R120SF6	2.0	12	11	26	M6	7	A4	C4	260534 0120	194,80
PFB-R160SF8	3.0	16	14.5	32	M8	10	A5	C5	260534 0160	226,20
PFB-R200SF10	5.0	20	18	38	M10	14	A6	C6	260534 0200	251,90
PFB-R250SF12	5.0	25	23	38	M12	17	A7	C6	260534 0250	300,–
PFB-R300SF16	6.0	30	28	43	M16	22	A8	B1	260534 0300	391,40

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Spare parts

TORX screw	art.no.	€
A1	260561 9901	22,20
A2	260561 9902	24,40
A3	260561 9903	24,40
A4	260561 9904	24,40
A5	260561 9905	24,40
A6	260561 9906	26,90
A7	260561 9907	29,20
A8	260561 9908	30,50

2132

TORX	art.no.	€
B1	703040 0300	5,90

7111

TORX	art.no.	€
C1	703053 0060	1,79
C2	703053 0070	1,79
C3	703053 0080	1,79
C4	703053 0100	1,79
C5	703053 0150	1,79
C6	703053 0200	1,79

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Geometries

PFB-SP
- Wide range of applications, from soft steel to superalloy
- Sharp but rigid cutting edge
- Outstanding wear resistance

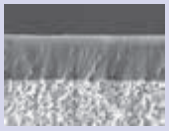
PFB-Q
- 220° full radius
- Effective cutting edge insert
- No straight cutting edge on the outside
- Wall milling without rattling

PFB-SH
- Milling of cast iron and hardened steel
- Reinforced indexable cutting insert
- High-grade resistant carbide

PFB-D
- Sharp cutting edges especially for milling graphite
- Diamond coatings for adhesive materials

Qualities / Substrates

XP3320
- for dry machining of steel and stainless steel, as well as cast iron
- for wet machining of heat-resistant superalloy



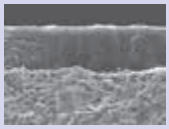
XP3225
- Stable milling of various materials
- Excellent lubrication and wear resistance
- For wet machining of steel and stainless steel

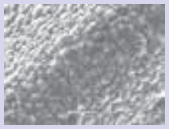


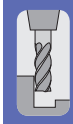
XP3310
- Ideal for dry machining of hardened steel and cast iron
- Excellent heat and wear resistance



XC4505
- Machining of non-ferrous materials
- Optimal diamond coating for milling graphite







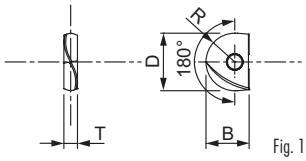


Fig. 1

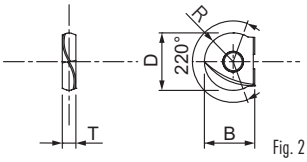


Fig. 2

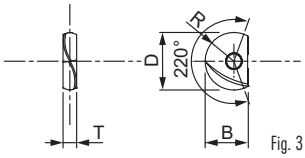


Fig. 3



Type SP

Type	D mm	R mm	T mm	B mm	Illustration	ISO P M N S XP3225 art.no.	€	ISO P M K S H XP3320 art.no.	€
PFB080-SP	8	4	2.4	7	1	**260600** 0080	41,70	**260601** 0080	41,70
PFB100-SP	10	5	2.6	8.5	1	260600 0100	43,70	260601 0100	43,70
PFB120-SP	12	6	3	10	1	260600 0120	46,60	260601 0120	46,60
PFB160-SP	16	8	4	12	1	260600 0160	48,30	260601 0160	48,30
PFB200-SP	20	10	5	15	1	260600 0200	50,40	260601 0200	50,40
PFB250-SP	25	12.5	6	18.5	1	260600 0250	57,10	260601 0250	57,10
PFB300-SP	30	15	7	22.5	1	260600 0300	72,60	260601 0300	72,60

2133 2133

Type SH

Type	D mm	R mm	T mm	B mm	Illustration	ISO K H XP3310 art.no.	€
PFB060-SH	6	3	2	5	2	**260602** 0060	36,70
PFB080-SH	8	4	2.4	7	1	260602 0080	41,70
PFB100-SH	10	5	2.6	8.5	1	260602 0100	43,70
PFB120-SH	12	6	3	10	1	260602 0120	46,60
PFB160-SH	16	8	4	12	1	260602 0160	48,30
PFB200-SH	20	10	5	15	1	260602 0200	50,40
PFB250-SH	25	12.5	6	18.5	1	260602 0250	57,10
PFB300-SH	30	15	7	22.5	1	260602 0300	72,60
PFB320-SH	32	16	7	23.5	1	260602 0320	80,40

2133

Type D
- **dijamantski obloženi**

Type	D mm	R mm	T mm	B mm	Illustration	ISO N XC4505 art.no.	€
PFB060-D	6	3	2	5	2	**260603** 0060	108,20
PFB070-D	7	3.5	2	5.5	2	260603 0070	111,90
PDF080-D	8	4	2.4	7	1	260603 0080	121,40
PFB100-D	10	5	2.6	8.5	1	260603 0100	127,–
PFB120-D	12	6	3	10	1	260603 0120	135,80
PFB160-D	16	8	4	12	1	260603 0160	140,90
PFB200-D	20	10	5	15	1	260603 0200	146,60
PFB250-D	25	12.5	6	18.5	1	260603 0250	167,60
PFB300-D	30	15	7	22.5	1	260603 0300	212,60

2133

Type Q

Type	D mm	R mm	T mm	B mm	Illustration	ISO P M N S XP3225 art.no.	€
PFB060-Q	6	3	2	5	2	**260604** 0060	36,70
PFB070-Q	7	3.5	2	5.5	2	260604 0070	37,90
PFB080-Q	8	4	2.4	7	2	260604 0080	41,70
PFB100-Q	10	5	2.6	8.5	2	260604 0100	43,70
PFB120-Q	12	6	3	10	2	260604 0120	46,60
PFB160-Q	16	8	4	12	3	260604 0160	48,30
PFB200-Q	20	10	5	15	3	260604 0200	50,40
PFB250-Q	25	12.5	6	18.5	3	260604 0250	57,10
PFB300-Q	30	15	7	22.5	3	260604 0300	72,60

2133

Torus milling cutter PFR

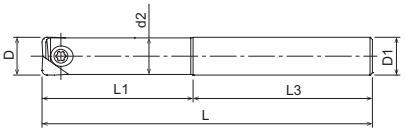
808

- **Radius accuracy ± 8 µm**
- High performance
- High measurement accuracy
- 2 cutting edges
- Steel and solid carbide shanks
- Short, long and extra-long designs

Advantages

- Optimum surface finishes with short and long projecting lengths
- Vibration reduction



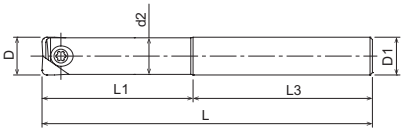


Steel shank

Type	D mm	L1 mm	L3 mm	L mm	d2 mm	D1 mm	Tightening torque max. N-m				art.no.	€
PFR-R080SS08-S120	8	36	84	120	7.5	8	1.0	A1		C1	**260540** 0080	215,70
PFR-R100SS10-S130	10	45	85	130	9.5	10	1.2	A2		C2	260540 0100	217,80
PFR-R120SS12-S130	12	54	76	130	11.5	12	2.0	A3		C3	260540 0120	233,20
PFR-R160SS16-S140	16	64	76	140	15.5	16	3.0	A4		C4	260540 0160	237,–
PFR-R200SS20-S160	20	80	80	160	19.5	20	5.0	A5		C5	260540 0200	239,10
PFR-R250SS25-S160	25	75	85	160	24.5	25	5.0	A6		C5	260540 0250	275,60
PFR-R300SS32-S170	30	90	80	170	29.5	32	6.0	A7	B1		260540 0300	485,40
PFR-R320SS32-S180	32	96	84	180	31.5	32	6.0	A7	B1		260540 0320	533,70

2132





Solid carbide shank, short

Type	D mm	L1 mm	L3 mm	L mm	d2 mm	D1 mm	Tightening torque max. N-m				art.no.	€
PFR-R080SS08-S100CS	8	20	80	100	7.5	8	1.0	A1		C1	**260541** 0080	331,40
PFR-R100SS10-S100CS	10	25	75	100	9.5	10	1.2	A2		C2	260541 0100	337,20
PFR-R120SS12-S110CS	12	30	80	110	11.5	12	2.0	A3		C3	260541 0120	396,80
PFR-R160SS16-S140CS	16	40	100	140	15.5	16	3.0	A4		C4	260541 0160	474,10
PFR-R200SS20-S160CS	20	50	110	160	19.5	20	5.0	A5		C5	260541 0200	674,20
PFR-R250SS25-S160CS	25	62.5	97.5	160	24.5	25	5.0	A6		C5	260541 0250	878,50
PFR-R300SS32-S170CS	30	75	95	170	29.5	32	6.0	A7	B1		260541 0300	1.105,80
PFR-R320SS32-S180CS	32	80	100	180	31.5	32	6.0	A7	B1		260541 0320	1.167,50

2132

Solid carbide shank, long

Type	D mm	L1 mm	L3 mm	L mm	d2 mm	D1 mm	Tightening torque max. N-m				art.no.	€
PFR-R080SS08-L120CS	8	40	80	120	7.5	8	1.0	A1		C1	**260542** 0080	355,–
PFR-R100SS10-L130CS	10	50	80	130	9.5	10	1.2	A2		C2	260542 0100	360,80
PFR-R120SS12-L140CS	12	60	80	140	11.5	12	2.0	A3		C3	260542 0120	421,50
PFR-R160SS16-L160CS	16	72	88	160	15.5	16	3.0	A4		C4	260542 0160	501,10
PFR-R200SS20-L180CS	20	90	90	180	19.5	20	5.0	A5		C5	260542 0200	740,30
PFR-R250SS25-L200CS	25	100	100	200	24.5	25	5.0	A6		C5	260542 0250	964,40
PFR-R300SS32-L220CS	30	120	100	220	29.5	32	6.0	A7	B1		260542 0300	1.300,30
PFR-R320SS32-L230CS	32	128	102	230	31.5	32	6.0	A7	B1		260542 0320	1.370,40

2132

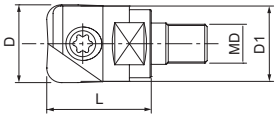
Solid carbide shank, extra-long

Type	D mm	L1 mm	L3 mm	L mm	d2 mm	D1 mm	Tightening torque max. N-m				art.no.	€
PFR-R080SS08-LL140CS	8	56	84	140	7.5	8	1.0	A1		C1	**260543** 0080	379,70
PFR-R100SS10-LL150CS	10	70	80	150	9.5	10	1.2	A2		C2	260543 0100	385,40
PFR-R120SS12-LL160CS	12	84	76	160	11.5	12	2.0	A3		C3	260543 0120	483,70
PFR-R160SS16-LL200CS	16	96	104	200	15.5	16	3.0	A4		C4	260543 0160	535,60
PFR-R200SS20-LL240CS	20	120	120	240	19.5	20	5.0	A5		C5	260543 0200	807,30
PFR-R250SS25-LL260CS	25	137.5	122.5	260	24.5	25	5.0	A6		C5	260543 0250	1.142,40
PFR-R300SS32-LL290CS	30	165	125	290	29.5	32	6.0	A7	B1		260543 0300	1.637,50
PFR-R320SS32-LL300CS	32	176	124	300	31.5	32	6.0	A7	B1		260543 0320	1.722,30

2132

Screw-in milling cutter





Type	Tightening torque max. N·m	D mm	D1 mm	L mm	MD			art.no.	€
PFR-R100SF6	1.2	10	9	26	M6	A2		C2	**260544** 0100	158,10
PFR-R120SF6	2.0	12	11	26	M6	A3		C3	260544 0120	163,90
PFR-R160SF8	3.0	16	15	32	M8	A4		C4	260544 0160	190,50
PFR-R200SF10	5.0	20	19	38	M10	A5		C5	260544 0200	212,10
PFR-R250SF12	5.0	25	24	38	M12	A6		C5	260544 0250	252,40
PFR-R300SF16	6.0	30	29	43	M16	A7	B1		260544 0300	329,60
PFR-R320SF16	6.0	32	31	43	M16	A7	B1		260544 0320	366,20

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Spare parts

TORX screw			TORX			TORX		
	art.no.	€		art.no.	€		art.no.	€
A1	260561 9902	24,40	B1	703040 0300	5,90	C1	703053 0070	1,79
A2	260561 9903	24,40				C2	703053 0080	1,79
A3	260561 9904	24,40				C3	703053 0100	1,79
A4	260561 9905	24,40				C4	703053 0150	1,79
A5	260561 9906	26,90				C5	703053 0200	1,79
A6	260561 9907	29,20						
A7	260561 9908	30,50						
2132			7111			7114		

Geometries

PFR-ST
- Wide range of applications from soft to hard steel
- Positive rake angle
- Excellent sharpness and hardness

PFR-SH
- For milling cast iron, ductile iron and hardened steel
- Ultra-rigid cutting edge with two-dimensional negative chamfer
- For stable machining
- Especially for milling graphite

PFR-D
- Sharp cutting edges especially for milling graphite
- Diamond coatings for adhesive materials

Qualities / Substrates

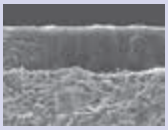
XP3225
- Stable milling of various materials
- Excellent lubrication and wear resistance
- For wet machining of steel and stainless steel

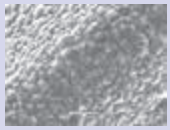


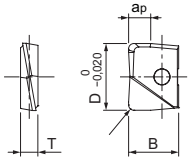
XP3310
- Ideal for dry machining of hardened steel and cast iron
- Excellent heat and wear resistance

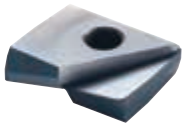


XC4505
- Machining of non-ferrous materials
- Optimal diamond coating for milling graphite









Type ST

ISO P M K N S H

Type	R mm	D mm	B mm	T mm	ap mm	XP3225 art.no.	€
PFR080R03-ST	0.3	8	2.7	2.4	2.7	**260650** 0803	32,30
PFR080R05-ST	0.5	8	2.7	2.4	2.7	260650 0805	32,30
PFR080R10-ST	1	8	2.7	2.4	2.7	260650 0810	32,30
PFR080R20-ST	2	8	2.7	2.4	2.7	260650 0820	32,30
PFR100R03-ST	0.3	10	3.3	2.6	3.3	260650 1003	34,50
PFR100R05-ST	0.5	10	3.3	2.6	3.3	260650 1005	34,50
PFR100R10-ST	1	10	3.3	2.6	3.3	260650 1010	34,50
PFR100R20-ST	2	10	3.3	2.6	3.3	260650 1020	34,50
PFR120R03-ST	0.3	12	4	3	4	260650 1203	36,30
PFR120R05-ST	0.5	12	4	3	4	260650 1205	36,30
PFR120R10-ST	1	12	4	3	4	260650 1210	36,30
PFR120R20-ST	2	12	4	3	4	260650 1220	36,30
PFR120R30-ST	3	12	4	3	4	260650 1230	36,30
PFR160R03-ST	0.3	16	5.3	4	5.3	260650 1603	44,90
PFR160R05-ST	0.5	16	5.3	4	5.3	260650 1605	44,90
PFR160R10_ST	1	16	5.3	4	5.3	260650 1610	44,90

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Type SH

ISO P M K N H

Type	R mm	D mm	B mm	T mm	ap mm	XP3310 art.no.	€
PFR080R03-SH	0.3	8	7	2.4	2.7	**260651** 0803	32,30
PFR080R05-SH	0.5	8	7	2.4	2.7	260651 0805	32,30
PFR080R10-SH	1	8	7	2.4	2.7	260651 0810	32,30
PFR080R20-SH	2	8	7	2.4	2.7	260651 0820	32,30
PFR100R03-SH	0.3	10	8.5	2.6	3.3	260651 1003	34,50
PFR100R05-SH	0.5	10	8.5	2.6	3.3	260651 1005	34,50
PFR100R10-SH	1	10	8.5	2.6	3.3	260651 1010	34,50
PFR100R20-SH	2	10	8.5	2.6	3.3	260651 1020	34,50
PFR120R03-SH	0.3	12	10	3	4	260651 1203	36,30
PFR120R05-SH	0.5	12	10	3	4	260651 1205	36,30
PFR120R10-SH	1	12	10	3	4	260651 1210	36,30
PFR120R20-SH	2	12	10	3	4	260651 1220	36,30
PFR120R30-SH	3	12	10	3	4	260651 1230	36,30
PFR160R03-SH	0.3	16	12	4	5.3	260651 1603	44,90
PFR160R05-SH	0.5	16	12	4	5.3	260651 1605	44,90
PFR160R10-SH	1	16	12	4	5.3	260651 1610	44,90

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Continued on next page >>>

ISO P M K N S H

Type	R mm	D mm	B mm	T mm	ap mm	XP3225 art.no.	€
PFR160R20-ST	2	16	5.3	4	5.3	260650 1620	44,90
PFR160R30-ST	3	16	5.3	4	5.3	260650 1630	44,90
PFR200R03-ST	0.3	20	6.7	5	6.7	260650 2003	47,10
PFR200R05-ST	0.5	20	6.7	5	6.7	260650 2005	47,10
PFR200R10-ST	1	20	6.7	5	6.7	260650 2010	47,10
PFR200R20-ST	2	20	6.7	5	6.7	260650 2020	47,10
PFR200R30-ST	3	20	6.7	5	6.7	260650 2030	47,10
PFR250R03-ST	0.3	25	8.3	6	8.3	260650 2503	55,50
PFR250R05-ST	0.5	25	8.3	6	8.3	260650 2505	55,50
PFR250R10-ST	1	25	8.3	6	8.3	260650 2510	55,50
PFR250R20-ST	2	25	8.3	6	8.3	260650 2520	55,50
PFR250R30-ST	3	25	8.3	6	8.3	260650 2530	55,50
PFR300R03-ST	0.3	30	10	7	10	260650 3003	86,90
PFR300R05-ST	0.5	30	10	7	10	260650 3005	86,90
PFR300R10_ST	1	30	10	7	10	260650 3010	86,90
PFR300R20-ST	2	30	10	7	10	260650 3020	86,90
PFR300R30_ST	3	30	10	7	10	260650 3030	86,90
PFR320R03-ST	0.3	32	10.3	7	10.3	260650 3203	93,60
PFR320R05-ST	0.5	32	10.3	7	10.3	260650 3205	93,60
PFR320R10-ST	1	32	10.3	7	10.3	260650 3210	93,60
PFR320R20-ST	2	32	10.3	7	10.3	260650 3220	93,60
PFR320R30-ST	3	32	10.3	7	10.3	260650 3230	93,60

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ISO P M K N H

Type	R mm	D mm	B mm	T mm	ap mm	XP3310 art.no.	€
PFR160R20-SH	2	16	12	4	5.3	260651 1620	44,90
PFR160R30-SH	3	16	12	4	5.3	260651 1630	44,90
PFR200R03-SH	0.3	20	15	5	6.7	260651 2003	47,10
PFR200R05-SH	0.5	20	15	5	6.7	260651 2005	47,10
PFR200R10-SH	1	20	15	5	6.7	260651 2010	47,10
PFR200R20-SH	2	20	15	5	6.7	260651 2020	47,10
PFR200R30-SH	3	20	15	5	6.7	260651 2030	47,10
PFR250R03-SH	0.3	25	18.5	6	8.3	260651 2503	55,50
PFR250R05-SH	0.5	25	18.5	6	8.3	260651 2505	55,50
PFR250R10-SH	1	25	18.5	6	8.3	260651 2510	55,50
PFR250R20-SH	2	25	18.5	6	8.3	260651 2520	55,50
PFR250R30-SH	3	25	18.5	6	8.3	260651 2530	55,50
PFR300R03-SH	0.3	30	22.5	7	10	260651 3003	86,90
PFR300R05-SH	0.5	30	22.5	7	10	260651 3005	86,90
PFR300R10-SH	1	30	22.5	7	10	260651 3010	86,90
PFR300R20-SH	2	30	22.5	7	10	260651 3020	86,90
PFR300R30-SH	3	30	22.5	7	10	260651 3030	86,90
PFR320R03-SH	0.3	32	23.5	7	10.3	260651 3203	93,60
PFR320R05-SH	0.5	32	23.5	7	10.3	260651 3205	93,60
PFR320R10-SH	1	32	23.5	7	10.3	260651 3210	93,60
PFR320R20-SH	2	32	23.5	7	10.3	260651 3220	93,60
PFR320R30-SH	3	32	23.5	7	10.3	260651 3230	93,60

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Type D diamond-coated

ISO N

Type	R mm	D mm	B mm	T mm	ap mm	XC4505 art.no.	€
PFR080R05-D	0.5	8	7	2.4	2.7	**260652** 0805	136,90
PFR080R10-D	1	8	7	2.4	2.7	260652 0810	136,90
PFR100R03-D	0.3	10	8.5	2.6	3.3	260652 1003	149,70
PFR100R05-D	0.5	10	8.5	2.6	3.3	260652 1005	149,70
PFR100R10-D	1	10	8.5	2.6	3.3	260652 1010	149,70
PFR120R03-D	0.3	12	10	3	4	260652 1203	164,50
PFR120R05-D	0.5	12	10	3	4	260652 1205	164,50

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ISO N

Type	R mm	D mm	B mm	T mm	ap mm	XC4505 art.no.	€
PFR120R10-D	1	12	10	3	4	260652 1210	164,50
PFR160R03-D	0.3	16	12	4	5.3	260652 1603	180,20
PFR160R05-D	0.5	16	12	4	5.3	260652 1605	180,20
PFR160R10-D	1	16	12	4	5.3	260652 1610	180,20
PFR200R03-D	0.3	20	15	5	6.7	260652 2003	189,70
PFR200R05-D	0.5	20	15	5	6.7	260652 2005	189,70
PFR200R10-D	1	20	15	5	6.7	260652 2010	189,70

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PALBIT
Machining tools
411 pages
Art.no. 019900 0315

Overview of all free manufacturers' catalogues
on page 14/15

ATORN® Countersinking mill, adjustable

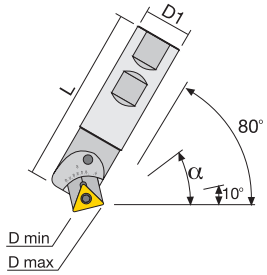
- **Adjustable from 10° to 80°**
- Universal indexable insert countersinking mill for chamfering, deburring and countersinking in fixed operating conditions. Cannot be used on drilling machines
- Stable, smooth operation
- Straight shank with driving planes in accordance with DIN 1835B in tolerance zone h6
- Scale tolerance ± 2.5°, please use a pre-setting device for precise adjustment
- Supplied with clamping screws and wrench



For ISO indexable inserts, type TC.. 1102

D1 mm	L mm	a °	D min. mm	D max. mm	Tightening torque max. N-m	suitable indexable inserts					art.no.	€
20	95	10°	5.0	26.0	1	TC..1102	A1	B1	C1	D1	**260122** 0020	241,–
		20°	8.0	27.0								
		30°	10.0	27.0								
		40°	13.0	27.0								
		45°	14.0	27.0								
		50°	15.0	27.0								
		60°	17.0	26.0								
		70°	19.0	25.0								
		80°	20.0	24.0								

2124



Spare parts

Cartridge			Screw			Screw for cartridge			TORX		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	320901 2001	89,–	B1	320901 2002	9,25	C1	320901 2003	9,25	D1	703053 0080	1,79
3106			3106			3106			7114		

ATORN® Countersinking mill with 2 cartridges, adjustable

- **Adjustable from 10° to 80°**
- Universal indexable insert countersinking mill for chamfering, deburring and countersinking in fixed operating conditions. Cannot be used on drilling machines. Stable, smooth operation
- Straight shank with driving planes in accordance with DIN 1835B in tolerance zone h6
- Scale tolerance ± 2.5°, please use a pre-setting device for precise adjustment
- Supplied with clamping screws and wrench



Cartridge for SC.. 1204..

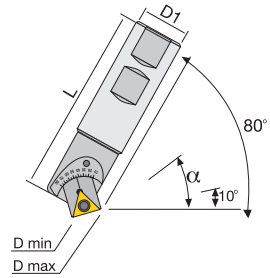


Cartridge for TC.. 16T3..

Including two cartridges, one cartridge each for **TCMT 16T3..** and **SCMT 1204..**

D1 mm	L mm	a °	D min. mm	D max. mm	Tightening torque max. N-m	suitable indexable inserts	art.no.	€
25	95	10°	5.0	32.0	4.01	TC..16T3 / SC..1204	**260123** 0025	287,50
		20°	6.0	33.0				
		30°	7.0	34.0				
		40°	10.0	33.0				
		45°	11.0	33.0				
		50°	13.0	32.0				
		60°	16.0	31.0				
		70°	19.0	29.0				
		80°	23.0	27.0				

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Spare cartridges

Description				art.no.	€
Cartridge for SCMT1204..	A1	B1	C2	**260124** 0012	86,50
Cartridge for TCMT16T3..	A2	B1	C1	260124 0016	86,50

3106



260124 0012



260124 0016

Spare parts

Screw			Screw for cartridge			TORX		
	art.no.	€		art.no.	€		art.no.	€
A1	260124 0002	9,–	B1	260124 0010	10,80	C1	703053 0150	1,79
A2	320901 2502	11,10				C2	703053 0200	1,79
3106			3106			7114		

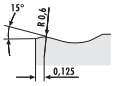
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Chip breaker type MP

F finishing	M medium	R roughing
-	●	-



Medium machining



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
TCMT 16T304-MP	●		○				**HC 7610**	10	**311501** 3411	9,90
	●		○				**HC 7620**	10	311501 3412	9,90
	●						**HC 7630**	10	311501 3413	9,90
TCMT 16T308-MP	●		○				**HC 7610**	10	311501 3511	9,90
	●		○				**HC 7620**	10	311501 3512	9,90
	●						**HC 7630**	10	311501 3513	9,90

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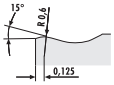
ISO	HC 7610	HC 7620	HC 7630
ISO P steel	Vc = 110 - 250	Vc = 110 - 250	Vc = 110 - 250
ISO K cast iron	Vc = 140 - 240	Vc = 140 - 240	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.25 ap = 0.4 - 3.0		

Chip breaker type MP, stainless steel

F finishing	M medium	R roughing
-	●	-



Medium machining



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
TCMT 16T304-MP		●			○		**HC 7520**	10	**310501** 3425	9,90
TCMT 16T308-MP		●			○		**HC 7520**	10	310501 3525	9,90
		●			○		**HC 7530**	10	310501 3526	9,90

3108

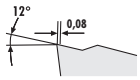
ISO	HC 7520	HC 7530
ISO M stainless steel	Vc = 80 - 210	Vc = 90 - 160
ISO S superalloys	Vc = 30 - 60	Vc = 20 - 50
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.25 ap = 0.4 - 3.0	

Chip breaker MP5

F finishing	M medium	R roughing
-	●	○



Medium machining



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
TCMT 16T304-MP5	●	○	○				**ACP 25 T**	10	**366665** 0625	7,90
	●	○					**ACP 35 T**	10	366665 0735	7,90
TCMT 16T308-MP5	●	○	○				**ACP 25 T**	10	366665 0825	7,90
	●	○					**ACP 35 T**	10	366665 0935	7,90

3135

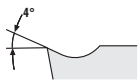
ISO	ACP 25 T	ACP 35 T
ISO P steel	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel	Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.4 ap = 0.25 - 4.5	

Chip breaker FFP Cermet version

F finishing	M medium	R roughing
●	-	-



Micro finishing



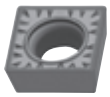
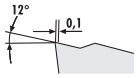
ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
TCMT 110202-FFP	●	○	○				**ATU 10 T**	10	**366666** 0140	10,20
TCMT 110204-FFP	●	○	○				**ATU 10 T**	10	366666 0240	6,30

ISO P

3135

ISO	ATU 10 T
ISO P steel	Vc = 160 - 300
ISO M stainless steel	Vc = 130 - 240
ISO K cast iron	Vc = 220 - 350
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.2 ap = 0.1 - 1.65

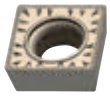
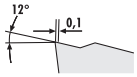
Chip breaker type MP

F finishing -	M medium ●	R roughing -	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Medium machining 	SCMT 120404-MP			●		○				**HC 7620**	10	**311401** 2612	12,05
	SCMT 120408-MP			●		○				**HC 7620**	10	311401 2712	12,05

ISO	HC 7620
ISO P steel	Vc = 110 - 250
ISO K cast iron	Vc = 140 - 240
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.35 ap = 0.1 - 3.0

3108

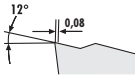
Chip breaker type MP, stainless steel

F finishing -	M medium ●	R roughing -	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Medium machining 	SCMT 120408-MP				●			○		**HC 7520**	10	**311401** 2722	12,55

ISO	HC 7520
ISO M stainless steel	Vc = 80 - 220
ISO S superalloys	Vc = 30 - 60
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.32 ap = 0.5 - 2.5

3108

Chip breaker MP5

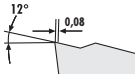
F finishing -	M medium ●	R roughing ○	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Medium machining 	SCMT 120404-MP5			●	○	○				**ACP 25 T**	10	**366649** 0525	10,20
	SCMT 120408-MP5			●	○	○				**ACP 25 T**	10	366649 0625	10,20

ISO P

ISO	ACP 25 T
ISO P steel	Vc = 100 - 240
ISO M stainless steel	Vc = 70 - 210
ISO K cast iron	Vc = 120 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.4 ap = 0.25 - 4.5

3135

Chip breaker MM3, especially for stainless steel

F finishing -	M medium ●	R roughing ○	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Medium machining 	SCMT 120404-MM3			○	●					**APM 25 T**	10	**366650** 0321	10,20
	SCMT 120408-MM3			○	●					**APM 25 T**	10	366650 0421	10,20

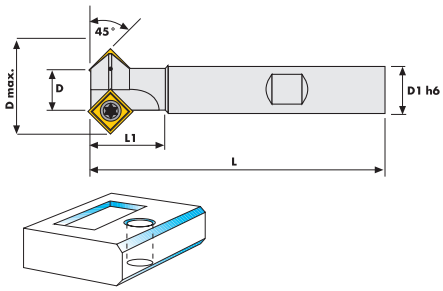
ISO M

ISO	APM 25 T
ISO P steel	Vc = 60 - 250
ISO M stainless steel	Vc = 40 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.4 ap = 0.25 - 3.5

3135

ATORN® 30°/45°/60° chamfer cutter, SCMT and TCMT

- With Weldon shank
- Suitable for bore diameters from Ø 12 mm
- Uses ISO indexable cutting inserts SCMT.. and TCMT..
- **Internal coolant supply**

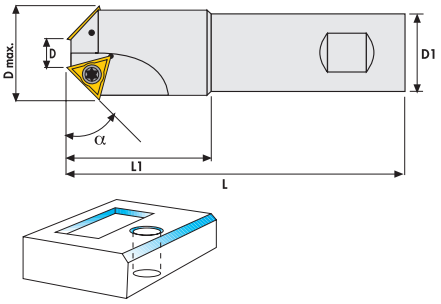




45° SCMT.. with IC

D mm	D max. mm	L mm	L1 mm	D1 h6 mm	Z	Tightening torque max. N-m	suitable indexable inserts	suitable clamping screw	suitable TORX wrench			art.no.	€
4.0	12	80	28	12.0	1	1	SCMT 0602..	M 2.5 x 5.5	TX 8	A3	B1	**260121** 0001	113,–
11.0	20.0	80	32	12.0	2	1	SCMT 0602..	M 2.5 x 5.5	TX 8	A3	B1	260121 0002	167,–
12.0	23.7	100	37	20.0	1	4	SCMT 09T3..	M 4.0 x 8	TX 15	A2	B2	260121 0003	95,–
12.0	23.7	200	37	20.0	1	4	SCMT 09T3..	M 4.0 x 8	TX 15	A2	B2	260121 1001	113,–
16.0	28.8	100	32	16.0	2	4	SCMT 09T3..	M 4.0 x 8	TX 15	A2	B2	260121 0004	149,–
16.0	28.8	200	32	16.0	2	4	SCMT 09T3..	M 4.0 x 8	TX 15	A2	B2	260121 1002	170,–
30.0	42.3	100	32	20.0	3	4	SCMT 09T3..	M 4.0 x 8	TX 15	A2	B2	260121 0005	173,–
30.0	42.3	200	32	20	3	4	SCMT 09T3..	M 4.0 x 8	TX 15	A2	B2	260121 1003	195,–

2124





30° 45° 60° TCMT.. with internal cooling

D mm	D max. mm	L mm	L1 mm	D1 h6 mm	a °	Z	suitable indexable inserts	Tightening torque max. N-m	suitable clamping screw	suitable TORX wrench			art.no.	€
1.2	16.0	70	20	12.0	45°	1	TCMT 1102..	1	M 2.5 x 5.5	TX 8	A3	B1	**260125** 4516	75,–
5.4	16.0	70	20	12.0	60°	1	TCMT 1102..	1	M 2.5 x 5.5	TX 8	A3	B1	260125 6016	78,–
6.0	32.0	100	38	25.0	30°	2	TCMT 16T3..	4	M 4.0 x 8	TX 15	A2	B2	260125 3032	173,–
6.2	21.0	90	35	20.0	45°	2	TCMT 1102..	1	M 2.5 x 5.5	TX 8	A1	B1	260125 4521	102,–
10.4	32.5	100	42	25.0	45°	2	TCMT 16T3..	4	M 4.0 x 8	TX 15	A2	B2	260125 4532	169,–
15.8	26.0	90	35	20.0	60°	2	TCMT 1102..	1	M 2.5 x 5.5	TX 8	A1	B1	260125 6026	103,–
20.0	35.0	100	39	25.0	60°	2	TCMT 16T3..	4	M 4.0 x 8	TX 15	A2	B2	260125 6035	173,–

2124

Spare parts

	Screw	
	art.no.	€
A1	262551 0025	5,20
A2	320901 2502	11,10
A3	320901 2513	11,10

3106

	TORX	
	art.no.	€
B1	703053 0080	1,79
B2	703053 0150	1,79

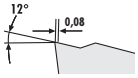
7114

Chip breaker MP5

F finishing	M medium	R roughing
-	●	○



Medium machining



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
TCMT 110204-MP5	●	○	○				**ACP 25 T**	10 **366665** 0225	6,30
	●	○					**ACP 35 T**	10 366665 0325	6,30
TCMT 16T304-MP5	●	○	○				**ACP 25 T**	10 366665 0625	7,90
	●	○					**ACP 35 T**	10 366665 0735	7,90
TCMT 16T308-MP5	●	○	○				**ACP 25 T**	10 366665 0825	7,90
	●	○					**ACP 35 T**	10 366665 0935	7,90

3135

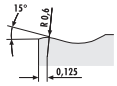
ISO	ACP 25 T	ACP 35 T
ISO P steel	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel	Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.4 ap = 0.25 - 4.5	

Chip breaker type MP, stainless steel

F finishing	M medium	R roughing
-	●	-



Medium machining



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
TCMT 110204-MP		●			○		**HC 7520**	10 **310501** 1525	6,90
TCMT 16T304-MP		●			○		**HC 7520**	10 310501 3425	9,90
TCMT 16T308-MP		●			○		**HC 7520**	10 310501 3525	9,90
		●			○		**HC 7530**	10 310501 3526	9,90

3108

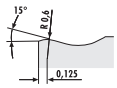
ISO	HC 7520	HC 7530
ISO M stainless steel	Vc = 80 - 210	Vc = 90 - 160
ISO S superalloys	Vc = 30 - 60	Vc = 20 - 50
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.25 ap = 0.4 - 3.0	

Chip breaker type MP

F finishing	M medium	R roughing
-	●	-



Medium machining



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
TCMT 110204-MP	●		○				**HC 7610**	10 **311501** 1511	6,80
	●		○				**HC 7620**	10 311501 1512	6,80
	●						**HC 7630**	10 311501 1513	6,80
TCMT 16T304-MP	●		○				**HC 7610**	10 311501 3411	9,90
	●		○				**HC 7620**	10 311501 3412	9,90
	●						**HC 7630**	10 311501 3413	9,90
TCMT 16T308-MP	●		○				**HC 7610**	10 311501 3511	9,90
	●		○				**HC 7620**	10 311501 3512	9,90
	●						**HC 7630**	10 311501 3513	9,90

3108

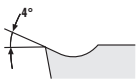
ISO	HC 7610	HC 7620	HC 7630
ISO P steel	Vc = 110 - 250	Vc = 110 - 250	Vc = 110 - 250
ISO K cast iron	Vc = 140 - 240	Vc = 140 - 240	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.25 ap = 0.4 - 3.0		

Chip breaker FFP Cermet version

F finishing	M medium	R roughing
●	-	-



Micro finishing



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
TCMT 110202-FFP	●	○	○				**ATU 10 T**	10 **366666** 0140	10,20
TCMT 110204-FFP	●	○	○				**ATU 10 T**	10 366666 0240	6,30

ISO P

3135

ISO	ATU 10 T
ISO P steel	Vc = 160 - 300
ISO M stainless steel	Vc = 130 - 240
ISO K cast iron	Vc = 220 - 350
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.2 ap = 0.1 - 1.65

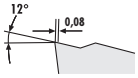
Continued on next page >>>

Chip breaker MP5

F finishing	M medium	R roughing
-	●	○



Medium machining



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
SCMT 09T304-MP5	●	○	○				ACP 25 T	10	**366649** 0125	8,80
SCMT 09T308-MP5	●	○	○				ACP 25 T	10	366649 0225	8,80
	●	○					ACP 35 T	10	366649 0335	8,80
SCMT 120404-MP5	●	○	○				ACP 25 T	10	366649 0525	10,20
SCMT 120408-MP5	●	○	○				ACP 25 T	10	366649 0625	10,20

ISO P

3135

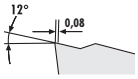
ISO	ACP 25 T	ACP 35 T
ISO P steel	Vc = 100 - 240	Vc = 90 - 190
ISO M stainless steel	Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.4 ap = 0.25 - 4.5	

Chip breaker MM3, especially for stainless steel

F finishing	M medium	R roughing
-	●	○



Medium machining



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
SCMT 09T304-MM3	○	●					APM 25 T	10	**366650** 0121	8,80
SCMT 09T308-MM3	○	●					APM 25 T	10	366650 0221	8,80
SCMT 120404-MM3	○	●					APM 25 T	10	366650 0321	10,20
SCMT 120408-MM3	○	●					APM 25 T	10	366650 0421	10,20

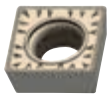
ISO M

3135

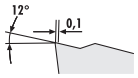
ISO	APM 25 T
ISO P steel	Vc = 60 - 250
ISO M stainless steel	Vc = 40 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.4 ap = 0.25 - 3.5

Chip breaker type MP, stainless steel

F finishing	M medium	R roughing
-	●	-



Medium machining



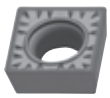
ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
SCMT 09T308-MP		●			○		HC 7520	10	**311401** 1322	8,50
SCMT 120408-MP		●			○		HC 7520	10	311401 2722	12,55

3108

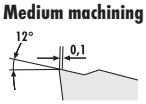
ISO	HC 7520
ISO M stainless steel	Vc = 80 - 220
ISO S superalloys	Vc = 30 - 60
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.32 ap = 0.5 - 2.5

Chip breaker type MP

F finishing	M medium	R roughing
-	●	-



Medium machining

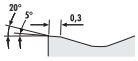


ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
SCMT 09T304-MP	●		○				HC 7620	10	**311401** 1212	8,50
	●						HC 7630	10	311401 1213	8,50
SCMT 09T308-MP	●		○				HC 7620	10	311401 1312	8,50
	●						HC 7630	10	311401 1313	8,50
SCMT 120404-MP	●		○				HC 7620	10	311401 2612	12,05
SCMT 120408-MP	●		○				HC 7620	10	311401 2712	12,05

3108

ISO	HC 7620	HC 7630
ISO P steel	Vc = 110 - 250	Vc = 80 - 220
ISO K cast iron	Vc = 140 - 240	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.35 ap = 0.1 - 3.0	

SCMT

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	●	-											
 Finishing/medium machining 			SCMT 060204	●						HC 4635	10	**327410** 1510	19,95

ISO	HC 4635
ISO P steel	Vc = 60 - 160
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 - 0.4 ap = max. 0.7 x cutting edge length

3108

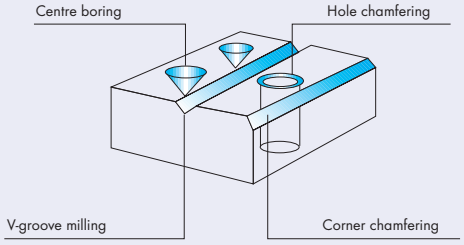
ATORN® 45° chamfer and centring cutter

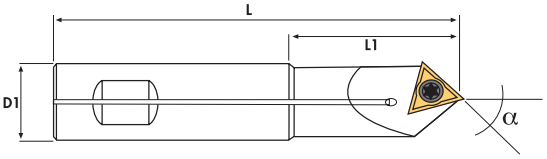
  791

- **Internal coolant supply**
- NC spot drilling, engraving, chamfering, centring, V-groove milling
- **When used for chamfering only, an ISO turning insert of type TCMT 16T3.. can be utilised instead**



Suitable for use as standing tool on turning machines for facing





D1 h6 mm	L mm	L1 mm	a °	Z	D min. mm	D max. mm	suitable indexable inserts	Tightening torque max. N-m			art.no.	€
20	115	40	45°	1	0.4	20.0	TCMX 16T3ZR..	4	A1	B1	**260126** 4540	169,–
20	150	60	45°	1	0.4	20.0	TCMX 16T3ZR..	4	A1	B1	260126 4560	196,–
20	200	80	45°	1	0.4	20.0	TCMX 16T3ZR..	4	A1	B1	260126 4580	225,–

2124

Spare parts

	Screw art.no.	€
A1	320901 2502	11,10

3106

	TORX art.no.	€
B1	703053 0150	1,79

7114

Turning insert for centring

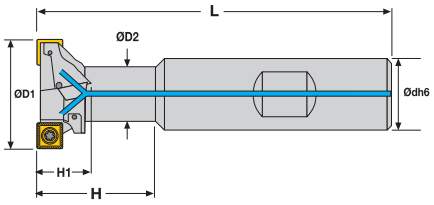
ISO designation		ISO P HC4625 art.no.	€		ISO P HC4630 (V-groove) art.no.	€
TCMX 16T3ZR	10	**260127** 1603	16,–	10	**260127** 1613	16,50
		2129			2129	

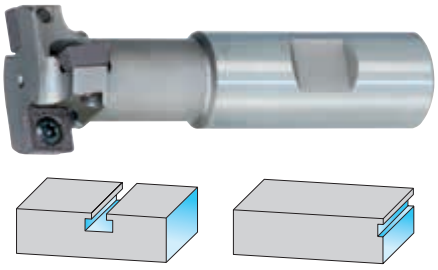


ATORN® T-slot milling cutter

DIN 6535 HB | Vc/fz | 790

- **For T-slots in accordance with DIN 650-UNI 4788-ISO 299**
- Straight shank with driving plane
- For ISO milling inserts, type SPMT....
- Supplied with clamping screws and wrench





D1 mm	D2 mm	L mm	H mm	H1 mm	D h6 mm	Z	Tightening torque max. N·m	suitable indexable inserts			art.no.	€
21	11	76	26	9	16	2	1.0	SPMT 060304	A1	B1	**263007** 0021	290,–
25	13	82	31	11	16	4	1.0	SPMT 060304	A1	B1	263007 0025	340,–
32	17	88	38	14	20	4	2.68	SPMT 09T308	A2	B2	263007 0032	370,–
40	21	108	50	17	25	4	2.68	SPMT 09T308	A2	B2	263007 0040	395,–
50	27	120	56	22	32	4	7.93	SPMT 120408	A3	B3	263007 0050	455,–

2124

Spare parts

	Screw			TORX	
	art.no.	€		art.no.	€
A1	262551 0025	5,20	B1	703053 0080	1,79
A2	262551 0035	7,55	B2	703053 0150	1,79
A3	321701 0108	9,25	B3	703053 0200	1,79
	3106			7114	

SPMT

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
○	○	○	SPMT 060304	●	○	○				**HC 4635**	10	**263008** 0006	10,65
			SPMT 09T308	●	○	○				**HC 4635**	10	263008 0009	11,45
			SPMT 120408	●	○	○				**HC 4635**	10	263008 0012	12,75



Finishing/medium machining

2129

ISO	HC 4635
ISO P steel	Vc = 110 - 220
ISO M stainless steel	Vc = 70 - 130
ISO K cast iron	Vc = 120 - 230
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.05 - 0.15 ap = 0.5 - 5.0

SPGT ALU

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
○	●	○	SPGT 060304-ALU				●			**HW 4415**	10	**263009** 0006	13,–
			SPGT 09T308-ALU				●			**HW 4415**	10	263009 0009	14,–
			SPGT 120408-ALU				●			**HW 4415**	10	263009 0012	15,–



Universal application

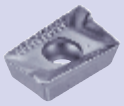
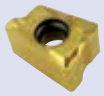
2129

ISO	HW 4415
ISO N Al/non-ferrous	Vc = 200 - 700
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.10 - 0.20 ap = 0.5 - 5.0

Milling insert geometries

INFO

ISO designation codes in the INFO section

	AP...	from page 702		SP...	from page 707
	OF...	from page 704		LN...	from page 708
	SC...	from page 704		XE...	from page 705
	SE...	from page 705			



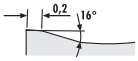
ISO milling inserts APKT / APMX / APMT / ADKT / APKR / APHX

APKT

F finishing	M medium	R roughing
●	●	●



Universal application



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
APKT 060204 PDTR-K	●	●	●				HC 4635	10 **281518** 0609	8,70

ISO	HC 4635
ISO P steel	Vc = 70 - 130
ISO M stainless steel	Vc = 60 - 100
ISO K cast iron	Vc = 120 - 200
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.03 - 0.25 per cutting edge ap = 0.1 - 3.0

2129

APMX

F finishing	M medium	R roughing
●	●	●



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
APMX 0602	●	●	●				HC 4635	10 **281525** 0602	14,50
	●						HC 4410	10 281525 0605	14,50
	●	●					HC 4535	10 281525 0607	14,50

ISO	HC 4410	HC 4535	HC 4635
ISO K cast iron			Vc = 120 - 330
ISO M stainless steel		Vc = 120 - 180	Vc = 100 - 160
ISO P steel	Vc = 160 - 250	Vc = 140 - 230	Vc = 160 - 220
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.4 - 0.6 ap = 0.3		

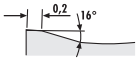
2129

APMT 10

F finishing	M medium	R roughing
●	●	●



Universal application



SARA® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
APMT 1003 PDER-M	●	●	●				SC 4635	10 **281516** 3009	6,30

ISO	SC 4635
ISO P steel	Vc = 110 - 220
ISO M stainless steel	Vc = 90 - 160
ISO K cast iron	Vc = 120 - 250
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 - 0.3 per cutting edge ap = max. 0.7 x cutting edge length

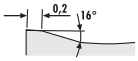
2167

APMT 16

F finishing	M medium	R roughing
●	●	●



Universal application



SARA® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
APMT 1604 PDER-M	●	●	●				SC 4635	10 **281517** 3009	7,75

ISO	SC 4635
ISO P steel	Vc = 110 - 220
ISO M stainless steel	Vc = 90 - 160
ISO K cast iron	Vc = 120 - 250
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 - 0.3 per cutting edge ap = max. 0.7 x cutting edge length

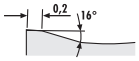
2167

APKT

F finishing	M medium	R roughing
●	●	●



Universal application



Duracarb ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
APKT 1003 PDSR	●	●	●				DC 9235	10 **281513** 1049	11,75
APKT 1604 PD-R-7	●	●	●				DC 9235	10 281520 6949	16,20

ISO	DC 9235
ISO P steel	Vc = 80 - 180
ISO M stainless steel	Vc = 80 - 220
ISO K cast iron	Vc = 80 - 290
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 to 0.4 per cutting edge ap = max. 0.7 x cutting edge length

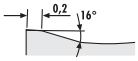
2167

APKT

F finishing ● M medium ● R roughing ●



Universal application



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
APKT 1003 PDER-S	●		●				HC 4615	10	**281514** 3005	9,40
	●	●					HC 4535	10	281514 3007	9,40
	●	●	●				HC 4635	10	281514 3009	9,40
APKT 1604 PDER-S	●		●				HC 4615	10	281514 3205	10,75
	●	●					HC 4535	10	281514 3207	10,75
	●	●	●				HC 4635	10	281514 3209	10,75

2129

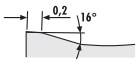
ISO	HC 4535	HC 4615	HC 4635
ISO P steel	Vc = 100 - 170	Vc = 180 - 280	Vc = 110 - 220
ISO M stainless steel	Vc = 70 - 130		Vc = 90 - 160
ISO K cast iron		Vc = 160 - 270	Vc = 120 - 250
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 to 0.4 per cutting edge ap = max. 0.7 x cutting edge length		

APKT

F finishing ● M medium ● R roughing ●



Universal application



SARA® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
APKT 1003-PDER-HCT	●						SP 35 PM	10	**281519** 1010	8,75
APKT 1003-PDER-SCT		●					SP 35 MM	10	281519 1020	8,75
					●		SP 35 SM	10	281519 1030	8,75
APKT 1604-PDER-HCT	●						SP 35 PM	10	281519 1610	10,25
APKT 1604-PDER-SCT		●					SP 35 MM	10	281519 1620	10,25
					●		SP 35 SM	10	281519 1630	10,25

2167

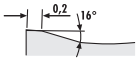
ISO	SP 35 MM	SP 35 PM	SP 35 SM
ISO P steel		Vc = 60 - 220	
ISO M stainless steel	Vc = 60 - 200		
ISO S superalloys			Vc = 25 - 75
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.08 - 0.25 per cutting edge ap = max. 0.7 x cutting edge length		

APKT Radius

F finishing ● M medium ● R roughing ●



Universal application



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
APKT 100308PDER	●	●	●				HC 4540	10	**281514** 4011	12,30
APKT 100312PDER	●	●	●				HC 4540	10	281514 4012	12,30
APKT 100320PDER	●	●	●				HC 4540	10	281514 4013	12,30

2129

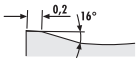
ISO	HC 4540
ISO P steel	Vc = 70 - 130
ISO M stainless steel	Vc = 90 - 160
ISO K cast iron	Vc = 120 - 230
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 to 0.4 per cutting edge ap = max. 0.7 x cutting edge length

APKT Radius

F finishing ● M medium ● R roughing ●



Universal application



SARA® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
APKT 160416-PDER-HCM	●	●	●				SP 35 P	10	**281522** 1610	13,90
APKT 160424-PDER-HCM	●	●	●				SP 35 P	10	281522 2410	13,90
APKT 160432-PDER-HCM	●	●	●				SP 35 P	10	281522 3210	13,90
APKT 160448-PDER-HCM	●	●	●				SP 35 P	10	281522 4810	13,90

2167

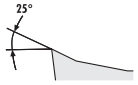
ISO	SP 35 P
ISO P steel	Vc = 80 - 180
ISO M stainless steel	Vc = 80 - 220
ISO K cast iron	Vc = 80 - 290
Vc = [m/min] f = [mm/U] ap = [mm]	fz = 0.1 - 0.4 ap = max. 0.7 x cutting edge length

APKR specially for non-ferrous metals

F finishing ● M medium ● R roughing ●



Universal application



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
APKT 1003 PDFR R04				●			HW 4415	10	**281715** 0025	15,30
APKT 1604 PDFR R04				●			HW 4415	10	281715 0030	16,90
APKT 1604 PDFR R08				●			HW 4415	10	281715 0035	16,90

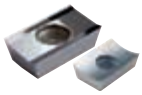
2129

ISO	HW 4415
ISO N Al/non-ferrous	Vc = 200 - 700
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 to 0.4 per cutting edge ap = max. 0.7 x cutting edge length

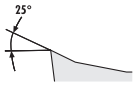
Continued on next page >>>

APHX specially for non-ferrous metals

F finishing	M medium	R roughing	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	●	●	APHX 100304 FR-ALU				●			**HW 4415**	10	**281517** 2003	15,50
			APHX 160404 FR-ALU				●			**HW 4415**	10	281517 2203	17,50



Universal application



Polished design!

2129

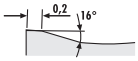
ISO	HW 4415
ISO N Al/non-ferrous	Vc = 200 - 700
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 to 0.4 per cutting edge ap = max. 0.7 x cutting edge length

ADKT

F finishing	M medium	R roughing	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	●	●	ADKT 1505 PDR	●	●					**PH 6920**	10	**285338** 0142	10,50



Universal application



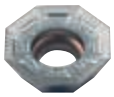
2170

ISO	PH 6920
ISO P steel	Vc = 90 - 160
ISO M stainless steel	Vc = 80 - 140
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 - 0.3 per cutting edge ap = max. 0.7 x cutting edge length

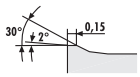
OFMT ISO milling inserts

OFMT

F finishing	M medium	R roughing	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	●	●	OFMT 05T305-TN-7	●	●	●				**DC 9235**	10	**286915** 0149	14,–



Universal application



2167

ISO	DC 9235
ISO P steel	Vc = 80 - 180
ISO M stainless steel	Vc = 80 - 220
ISO K cast iron	Vc = 80 - 290
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 to 0.4 per cutting edge ap = max. 8.3

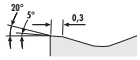
SCMT ISO milling inserts

SCMT

F finishing	M medium	R roughing	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	●	-	SCMT 060204	●						**HC 4635**	10	**327410** 1510	19,95



Finishing/medium machining



3108

ISO	HC 4635
ISO P steel	Vc = 60 - 160
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 - 0.4 ap = max. 0.7 x cutting edge length

SEMT ISO milling inserts

SEMT

F finishing	M medium	R roughing	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	●	●											
													
Universal application			SEMT 13T3 AGSN-PM	●		●		●	●	JC 5040	10	**288001** 0040	10,30
				●	●	●		●	●	JC 8015	10	288001 0015	10,30
				●	●			●		JC 8050	10	288001 0050	10,30
			SEMT 13T3 AGSN-KM			●				JC 605 W	10	288001 0605	10,30

2167

ISO	JC 5040	JC 605 W	JC 8015	JC 8050
ISO P steel	Vc = 100 - 200		Vc = 100 - 200	Vc = 100 - 200
ISO M stainless steel			Vc = 100 - 200	Vc = 100 - 200
ISO K cast iron		Vc = 150 - 250	Vc = 150 - 250	
ISO S superalloys			Vc = 30 - 40	Vc = 20 - 50
ISO H hard			Vc = 50 - 100	
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 - 0.3 ap = max. 6 mm			

SEGT ISO milling inserts

SEGT

F finishing	M medium	R roughing	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	●	●											
													
Universal application			SEGT 13T3AGFN-AL				●			Uncoated	10	**288004** 0005	10,70

2167

ISO	Uncoated
ISO N Al/non-ferrous	Vc = 250 - 300
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 - 0.3 ap = max. 6 mm

XEHW ISO milling inserts

Wiper (wide finishing) insert for smooth-running 45° face milling cutter

F finishing	M medium	R roughing	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	-	-											
													
Micro finishing			XEHW 13T3 AGSN-W	●		●		●	●	DH 103	10	**288002** 0003	16,70

2167

ISO	DH 103
ISO P steel	Vc = 200 - 300
ISO K cast iron	Vc = 200 - 300
ISO S superalloys	Vc = 30 - 40
ISO H hard	Vc = 70 - 120
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 - 0.3 ap = max. 1.0 mm

SEEN ISO milling inserts

SEEN

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	●	●											
													
Universal application						●				HW 4410	10	**284215** 2901	8,05
			SEEN 1203 AFFN	●	●					HC 4620	10	284215 2905	10,90
				●	●	●				HC 4540	10	284215 2907	10,90
				●						HW 4640	10	284215 3003	7,40
			SEEN 1203 AFSN	●	●					HC 4620	10	284215 3005	11,10
				●	●	●				HC 4540	10	284215 3007	11,10

2129

ISO	HC 4540	HC 4620	HW 4410	HW 4640
ISO P steel	Vc = 180 - 230	Vc = 120 - 210		Vc = 90 - 190
ISO M stainless steel	Vc = 105 - 135	Vc = 110 - 155		
ISO K cast iron	Vc = 170 - 215		Vc = 125 - 145	
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 to 0.4 per cutting edge ap = max. 6.0			

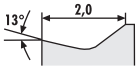
SEET ISO milling inserts

SEET

F finishing	M medium	R roughing	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	●	●	ATORN®										
						●	●			HW 4410	10	**284225** 3001	9,10
			SEET 1204 AFSN	●	●	●				HC 4620	10	284225 3005	10,90
				●	●	●				HC 4540	10	284225 3007	10,90



Universal application



ISO	HC 4540	HC 4620	HW 4410
ISO P steel	Vc = 200 - 255	Vc = 205 - 280	
ISO M stainless steel	Vc = 120 - 150	Vc = 120 - 165	
ISO K cast iron	Vc = 190 - 240	Vc = 190 - 265	Vc = 125 - 145
ISO N Al/non-ferrous			Vc = 125 - 680
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 to 0.4 per cutting edge ap = max. 6.0		

2129

SEKN ISO milling inserts

SEKN

F finishing	M medium	R roughing	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	●	●	palbit										
			SEKN 1203 AFSN	●	●	●				PH 6920	10	**285448** 0142	8,45



Universal application

ISO	PH 6920
ISO P steel	Vc = 120 - 250
ISO M stainless steel	Vc = 100 - 200
ISO K cast iron	Vc = 120 - 220
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 to 0.4 per cutting edge ap = max. 6.0

2170

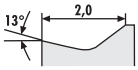
SEHT ISO milling inserts

SEHT

F finishing	M medium	R roughing	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	●	●	palbit										
			SEHT 1204 AFEN	●	●	●				PH 6740	10	**285229** 0139	9,95



Universal application



ISO	PH 6740
ISO P steel	Vc = 80 - 180
ISO M stainless steel	Vc = 80 - 220
ISO K cast iron	Vc = 80 - 290
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 to 0.4 per cutting edge ap = max. 6.0

2170

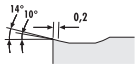
SEKR ISO milling inserts

SEKR

F finishing	M medium	R roughing	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	●	●	palbit										
			SEKR 1204 AFEN	●	●	●				PH 6135	10	**285455** 0133	8,45



Universal application



ISO	PH 6135
ISO P steel	Vc = 80 - 180
ISO M stainless steel	Vc = 80 - 220
ISO K cast iron	Vc = 80 - 290
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 to 0.4 per cutting edge ap = max. 6.0

2170

SPKN ISO milling inserts

SPKN

F finishing	M medium	R roughing
●	●	●



Universal application

ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
SPKN 1203 EDSR	●	●	●				HC 4620	10	**285720** 5605	8,55
	●	●	●				HC 4540	10	285720 5607	8,55

2129

ISO	HC 4540	HC 4620
ISO P steel	Vc = 200 - 270	Vc = 205 - 280
ISO M stainless steel	Vc = 120 - 160	Vc = 120 - 165
ISO K cast iron	Vc = 190 - 255	Vc = 190 - 265
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 to 0.4 per cutting edge ap = max. 6.0	

ISO milling inserts SPMT / SPGT

SPMT

F finishing	M medium	R roughing
○	○	○



Finishing/medium machining

ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
SPMT 060304	●	○	○				HC 4635	10	**263008** 0006	10,65
SPMT 09T308	●	○	○				HC 4635	10	263008 0009	11,45
SPMT 120408	●	○	○				HC 4635	10	263008 0012	12,75

2129

ISO	HC 4635
ISO P steel	Vc = 110 - 220
ISO M stainless steel	Vc = 70 - 130
ISO K cast iron	Vc = 120 - 230
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.05 - 0.15 ap = 0.5 - 5.0

SPGT ALU

F finishing	M medium	R roughing
○	●	○



Universal application

ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
SPGT 060304-ALU				●			HW 4415	10	**263009** 0006	13,–
SPGT 09T308-ALU				●			HW 4415	10	263009 0009	14,–
SPGT 120408-ALU				●			HW 4415	10	263009 0012	15,–

2129

ISO	HW 4415
ISO N Al/non-ferrous	Vc = 200 - 700
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.10 - 0.20 ap = 0.5 - 5.0

SPUN ISO milling inserts

SPUN

F finishing	M medium	R roughing
●	●	●



Universal application

ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
SPUN 120308	●						HW 4640	10	**286020** 0203	5,65

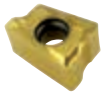
2129

ISO	HW 4640
ISO P steel	Vc = 75 - 120
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 - 0.3 per cutting edge ap = max. 6.0

4-10 Power/4-15 Power ISO milling inserts

- Cutting edges are marked with dots; please always use cutting edges with the same dots
- Quality grade HC 4535, ideal for stainless steel
- MM universal milling
- HW 4310 for aluminium, uncoated K10
- **PVD TiAlN/TiN**: coated carbide metal types

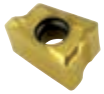
LNM(E)X 10

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
●	●	●										
 Universal application			LNMX 100605PNR-MM	●	●	●				**HC 4630**	10 **295811** 0001	15,10
					●					**HC 4535**	10 295813 0001	15,10
			LNEX 100605PNR-MA				●			**HW 4310**	10 295815 0002	14,10

2129

ISO	HC 4535	HC 4630	HW 4310
ISO P steel		Vc = 110 - 220	
ISO M stainless steel	Vc = 120 - 180	Vc = 90 - 160	
ISO K cast iron		Vc = 120 - 230	
ISO N Al/non-ferrous			Vc = 200 - 300
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.05 - 0.20 per cutting edge ap = max. 0.7 x cutting edge length		

LNM(E)X 15

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
●	●	●										
 Universal application			LNMX 151008PNR-MM	●	●	●				**HC 4630**	10 **295821** 0001	18,60
					●					**HC 4535**	10 295825 0001	18,60
			LNEX 151008PNR-MA				●			**HW 4310**	10 295826 0002	18,10

2129

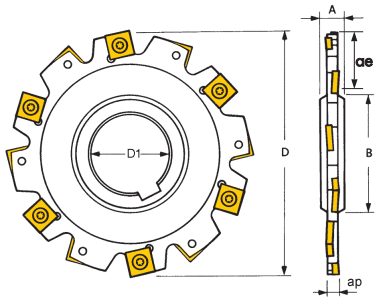
ISO	HC 4535	HC 4630	HW 4310
ISO P steel		Vc = 110 - 220	
ISO M stainless steel	Vc = 120 - 180	Vc = 90 - 160	
ISO K cast iron		Vc = 120 - 230	
ISO N Al/non-ferrous			Vc = 200 - 300
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.05 - 0.20 per cutting edge ap = max. 0.7 x cutting edge length		

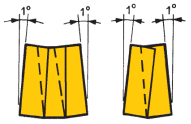


ATORN® Disc milling cutters

809

- Three cutting edges
- Fixed width
- Generates a slight roof shape at the base of the groove
- Screw-in indexable inserts
- For slotting, cutting and groove milling
- Supplied with clamping screws





Axial angle -3°, radial angle -12°



D mm	D1 mm	ap mm	A mm	B mm	Z	Z eff.	Cutting depth ae max. mm	suitable indexable inserts	suitable clamping screw	suitable TORX wrench			art.no.	€
63.0	22.0	4	8	34	8	4	14	SNHX 1102T	VTX 3503	TX 9	A1	B1	**262600** 6304	485,–
63.0	22.0	5	8	34	8	4	14	SNHX 1103T	VTX 3504	TX 9	A2	B1	262600 6305	485,–
63.0	22.0	6	8	34	6	3	14	SNHX 1203T	VTX 405	TX 15	A3	B2	262600 6306	485,–
80.0	22.0	4	8	34	10	5	22	SNHX 1102T	VTX 3503	TX 9	A1	B1	262600 8004	559,–
80.0	22.0	5	8	34	10	5	22	SNHX 1103T	VTX 3504	TX 9	A2	B1	262600 8005	559,–
80.0	22.0	6	8	34	8	4	22	SNHX 1203T	VTX 405	TX 15	A3	B2	262600 8006	559,–
100.0	27.0	4	12	45	12	6	25	SNHX 1102T	VTX 3503	TX 9	A1	B1	262600 1004	679,–
100.0	27.0	5	12	45	12	6	25	SNHX 1103T	VTX 3504	TX 9	A2	B1	262600 1005	679,–
100.0	27.0	6	12	45	10	5	25	SNHX 1203T	VTX 405	TX 15	A3	B2	262600 1006	679,–
100.0	27.0	10	12	45	10	5	25	SNHX 1205T	VTX 408	TX 15	A4	B2	262600 1010	729,–
125.0	40.0	4	12	58	12	6	31	SNHX 1102T	VTX 3503	TX 9	A1	B1	262600 1204	809,–
125.0	40.0	5	12	58	12	6	31	SNHX 1103T	VTX 3504	TX 9	A2	B1	262600 1205	809,–
125.0	40.0	6	12	58	12	6	31	SNHX 1203T	VTX 405	TX 15	A3	B2	262600 1206	809,–
125.0	40.0	10	12	58	12	6	31	SNHX 1205T	VTX 408	TX 15	A4	B2	262600 1210	839,–
160.0	40.0	4	12	68	18	9	44	SNHX 1102T	VTX 3503	TX 9	A1	B1	262600 1604	949,–
160.0	40.0	5	12	68	18	9	44	SNHX 1103T	VTX 3504	TX 9	A2	B1	262600 1605	949,–
160.0	40.0	6	12	68	16	8	44	SNHX 1203T	VTX 405	TX 15	A3	B2	262600 1606	949,–
160.0	40.0	10	12	68	16	8	44	SNHX 1205T	VTX 408	TX 15	A4	B2	262600 1610	989,–
160.0	40.0	14	14	68	15	5	44	SNHX 1205T	VTX 408	TX 15	A4	B2	262600 1614	1.009,–
200.0	50.0	4	12	72	18	9	62	SNHX 1102T	VTX 3503	TX 9	A1	B1	262600 2004	1.279,–
200.0	50.0	5	12	72	18	9	62	SNHX 1103T	VTX 3504	TX 9	A2	B1	262600 2005	1.279,–
200.0	50.0	6	12	72	18	9	62	SNHX 1203T	VTX 405	TX 15	A3	B2	262600 2006	1.279,–
200.0	50.0	10	12	72	18	9	62	SNHX 1205T	VTX 408	TX 15	A4	B2	262600 2010	1.309,–
200.0	50.0	14	14	72	18	6	62	SNHX 1205T	VTX 408	TX 15	A4	B2	262600 2014	1.309,–
250.0	50.0	10	12	72	24	12	87	SNHX 1205T	VTX 408	TX 15	A4	B2	262600 2510	1.569,–

2124

Spare parts

	Screw	
	art.no.	€
A1	285799 3530	7,60
A2	285799 3540	7,60
A3	285799 4050	7,60
A4	285799 4080	7,60

3106

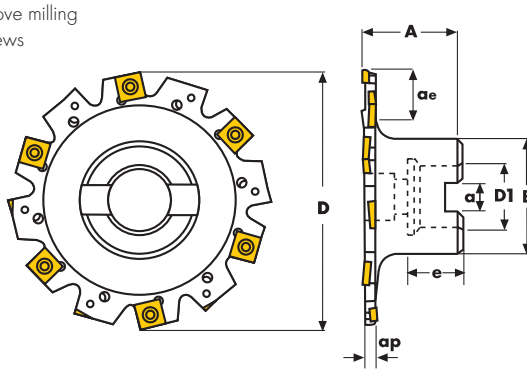
	TORX	
	art.no.	€
B1	703053 0090	1,79
B2	703053 0150	1,79

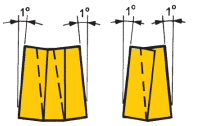
7114

ATORN® Disc milling cutter with collar

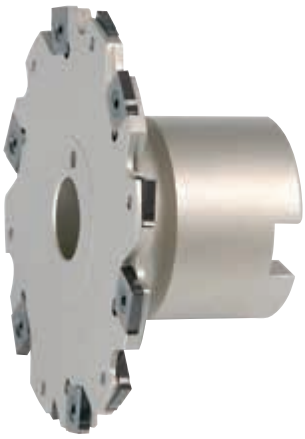
809

- Three cutting edges
- Fixed width
- Generates a slight roof shape at the base of the groove
- Screw-in indexable inserts
- For slotting, cutting and groove milling
- Supplied with clamping screws





Axial angle -3°, radial angle -12°



D mm	D1 mm	ap mm	A mm	B mm	Z	Z eff.	Cutting depth ae max. mm	a mm	e mm	suitable indexable inserts	suitable clamping screw	suitable TORX wrench			art.no.	€
50	16	4	50	32	4	2	8.5	8.5	18.5	SNHX 1102T	VTX3503	TX09	A1	B1	**262610** 5004	589,–
50	16	5	50	32	4	2	8.5	8.5	18.5	SNHX 1103T	VTX3504	TX09	A1	B1	262610 5005	589,–
50	16	6	50	32	4	2	8.5	8.5	18.5	SNHX 1203T	VTX405	TX15	A1	B1	262610 5006	589,–
50	16	10	50	32	4	2	8.5	8.5	18.5	SNHX 1205T	VTX408	TX15	A1	B1	262610 5010	599,–
63.0	22	4	50	40	8	4	10.5	10.4	21	SNHX 1102T	VTX 3503	TX 9	A1	B1	262610 6304	539,–
63.0	22	5	50	40	8	4	10.5	10.4	21	SNHX 1103T	VTX 3504	TX 9	A2	B1	262610 6305	539,–
63.0	22	6	50	40	6	3	10.5	10.4	21	SNHX 1203T	VTX 405	TX 15	A3	B2	262610 6306	519,–
80.0	22	4	50	40	10	5	20.0	10.4	21	SNHX 1102T	VTX 3503	TX 9	A1	B1	262610 8004	609,–
80.0	22	5	50	40	10	5	20.0	10.4	21	SNHX 1103T	VTX 3504	TX 9	A2	B1	262610 8005	609,–
80.0	22	6	50	40	8	4	20.0	10.4	21	SNHX 1203T	VTX 405	TX 15	A3	B2	262610 8006	609,–
100.0	27	4	50	48	12	6	24.2	12.4	23	SNHX 1102T	VTX 3503	TX 9	A1	B1	262610 1004	799,–
100.0	27	5	50	48	12	6	24.2	12.4	23	SNHX 1103T	VTX 3504	TX 9	A2	B1	262610 1005	809,–
100.0	27	6	50	48	10	5	24.2	12.4	23	SNHX 1203T	VTX 405	TX 15	A3	B2	262610 1006	809,–
100.0	27	10	50	48	10	5	24.2	12.4	23	SNHX 1205T	VTX 408	TX 15	A4	B2	262610 1010	809,–
125.0	40	6	50	70	12	6	23.7	16.4	30	SNHX 1203T	VTX 405	TX 15	A3	B2	262610 1206	859,–
125.0	40	10	50	70	12	6	23.7	16.4	30	SNHX 1205T	VTX 408	TX 15	A4	B2	262610 1210	859,–
160.0	40	6	50	70	16	8	41.2	16.4	30	SNHX 1203T	VTX 405	TX 15	A3	B2	262610 1606	1.009,–
160.0	40	10	50	70	16	8	41.2	16.4	30	SNHX 1205T	VTX 408	TX 15	A4	B2	262610 1610	1.009,–

2124

Spare parts

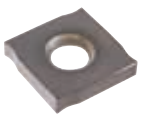
	Screw art.no.	€
A1	285799 3530	7,60
A2	285799 3540	7,60
A3	285799 4050	7,60
A4	285799 4080	7,60

3106

	TORX art.no.	€
B1	703053 0090	1,79
B2	703053 0150	1,79

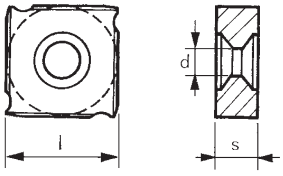
7114

ATORN® SNHX milling inserts



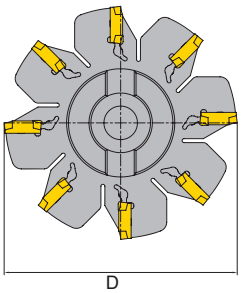
Type	l mm	s mm	d mm	ISO P M K HC4630 TiAlN			ISO N K HW4415 uncoated		
					art.no.	€		art.no.	€
SNHX 1102T	11.0	2.3	4.4	10	**285705** 0107	17,70	10	**285707** 0107	19,50
SNHX 1103T	11.0	2.7	4.4	10	285705 0207	17,80	10	285707 0207	19,60
SNHX 1203T	12.7	3.2	5.0	10	285705 0307	17,90	10	285707 0307	19,70
SNHX 1205T	12.7	5.4	5.0	10	285705 0507	20,70	10	285707 0507	22,80

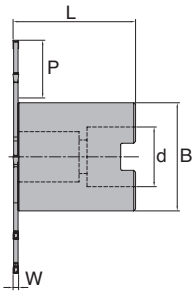
2129 2129



SARA® Disc milling cutters with long inserts

- Slot disc milling cutter with indexable inserts
- **for slot and burr cutting**
- single-sided and double-sided recessing inserts
- **Supplied with: without assembly key and recessing inserts**







D mm	A mm	ap mm	P mm	B mm	D1 mm	Z mm	suitable cutting inserts		art.no.	€
80	39.9	2.0	25	29	M16	4	GELCG.. 1920002	A1	**262630** 2080	692,–
100	51.9	2.0	28	40	22	6	GELCG.. 1920002	A1	262630 2100	799,–
125	51.9	2.0	36	48	27	8	GELCG.. 1920002	A1	262630 2125	864,–
160	64.9	2.0	39	80	40	10	GELCG.. 1920002	A1	262630 2160	1.025,–
80	40.7	3.0	25	29	M16	4	GELCG.. 1920002	A1	262630 3080	707,–
100	52.7	3.0	28	40	22	6	GELCG.. 1930002	A1	262630 3100	812,–
125	52.7	3.0	36	48	27	8	GELCG.. 1930002	A1	262630 3125	883,–
160	65.7	3.0	39	80	40	10	GELCG.. 1930002	A1	262630 3160	1.042,–
125	53.5	4.0	37.5	48	27	6	GELCG.. 1940002	A1	262630 4125	848,–
160	66.5	4.0	39	80	40	8	GELCG.. 1940002	A1	262630 4160	963,–

2177

Spare parts

	Chuck key	
	art.no.	€
A1	262631 9901	2,50

2177

SARA® Cutting insert GELCG...

Cutting insert, one-sided

ISO designation	Width mm	r mm	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
GELCGS 192002	2	0.2				●			**SWN 15 G**	10	**285711** 2015	10,–
	2	0.2	●	●	●				**SCU 30 G**	10	285711 2030	10,–
	2	0.2	●	●					**SCM 30 G**	10	285711 2035	10,–
GELCGS 193002	3	0.2				●			**SWN 15 G**	10	285711 3015	10,50
	3	0.2	●	●	●				**SCU 30 G**	10	285711 3030	10,50
	3	0.2	●	●					**SCM 30 G**	10	285711 3035	10,50
GELCGS 234002	4	0.2				●			**SWN 15 G**	10	285711 4015	11,30
	4	0.2	●	●	●				**SCU 30 G**	10	285711 4030	11,30
	4	0.2	●	●					**SCM 30 G**	10	285711 4035	11,30

2177

ISO	SCM 30 G	SCU 30 G	SWN 15 G
ISO P steel	Vc = 120 - 220	Vc = 120 - 220	
ISO M stainless steel	Vc = 180 - 200	Vc = 130 - 150	
ISO K cast iron		Vc = 180 - 200	
ISO N Al/non-ferrous			Vc = 280 - 300
Vc = [m/min] fz = [mm/Z]	fz = 0.04 - 0.26		fz = 0.04 - 0.35

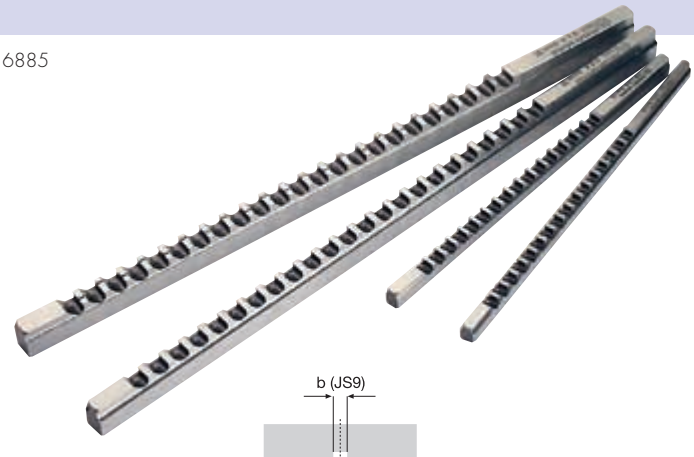
Cutting insert, double-sided

ISO designation	Width mm	r mm	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
GELCGD 192002	2	0.2				●			**SWN 15 G**	10	**285712** 2015	11,80
	2	0.2	●	●	●				**SCU 30 G**	10	285712 2030	11,80
	2	0.2	●	●					**SCM 30 G**	10	285712 2035	11,80
GELCGD 193002	3	0.2				●			**SWN 15 G**	10	285712 3015	12,60
	3	0.2	●	●	●				**SCU 30 G**	10	285712 3030	12,60
	3	0.2	●	●					**SCM 30 G**	10	285712 3035	12,60
GELCGD 234002	4	0.2				●			**SWN 15 G**	10	285712 4015	13,10
	4	0.2	●	●	●				**SCU 30 G**	10	285712 4030	13,10
	4	0.2	●	●					**SCM 30 G**	10	285712 4035	13,10

2177

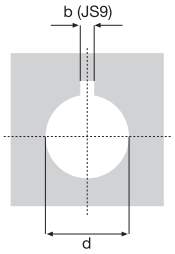
ISO	SCM 30 G	SCU 30 G	SWN 15 G
ISO P steel	Vc = 120 - 220	Vc = 120 - 220	
ISO M stainless steel	Vc = 180 - 200	Vc = 130 - 150	
ISO K cast iron		Vc = 180 - 200	
ISO N Al/non-ferrous			Vc = 280 - 380
Vc = [m/min] fz = [mm/Z]	fz = 0.04 - 0.26		fz = 0.04 - 0.35

Push broaches (keyway broaches)



- For manufacturing true-to-size and precisely centred keyways in accordance with DIN 6885
- Can be used on normal workshop presses (hand press or hydraulic press); no special machinery required
- Low tooling time
- Good surface finish on machined workpieces
- Manufacturing time for one keyway only approx. 1 minute
- Broaches supplied with inserts for achieving the cutting depth
- Special alloy HSS steel for machining any materials with a hardness of up to 34 HRc
- Broaches with other rake angles are available on request for machining solid or very soft materials.
- Square and multi-purpose four square broaches are available on request.
- **From size 32 x 102, guide bush without collar**

- **Use:**
  1. Slide guide bush into workpiece bore and insert broach until the first tooth on the workpiece is standing upright
  2. Lubricate broach
  3. Push broach in approx. 1/3
  4. Briefly release plunger and push broach in fully
  5. Clean broach and fit insert for the second pass
  6. Repeat broaching operation



Broaches

Groove in workpiece b (JS9) x depth mm	Broach length mm	Broaching length min./max. mm	Number of faces	art.no.	€
2 x 1.0	133	6 - 30	1	**234001** 0020	132,–
3 x 1.4	133	6 - 30	2	234001 0030	132,–
4 x 1.8	178	8 - 43	2	234001 0040	155,–
5 x 2.3	178	8 - 43	2	234001 0050	155,–
6 x 2.8	302	10 - 64	2	234001 0060	188,–
8 x 3.3	302	10 - 64	2	234001 0080	188,–
10 x 3.3	352	20 - 150	3	234001 0100	270,–
12 x 3.3	352	20 - 150	3	234001 0120	270,–
14 x 3.8	352	20 - 150	3	234001 0140	270,–
16 x 4.3	387	20 - 150	4	234001 0160	470,–
18 x 4.4	387	20 - 150	4	234001 0180	470,–

2114



Guide bushes

d h9 mm	Length mm	Guide bushes for broaches mm	art.no.	€
6	32	2-3	**234005** 0632	28,20
7	32	2-3	234005 0732	28,20
8	32	2-3	234005 0832	28,20
9	32	2-3	234005 0932	28,20
10	32	2-3	234005 1032	28,20
11	46	4-5	234005 1146	30,50
12	46	4-5	234005 1246	30,50
14	46	4-5	234005 1446	30,50
15	46	4-5	234005 1546	30,50
16	46	4-5	234005 1646	30,50
17	46	4-5	234005 1746	30,50
17	65	6-8	234005 1765	33,60
18	65	6-8	234005 1865	33,60
19	65	6-8	234005 1965	33,60
20	65	6-8	234005 2065	33,60
22	65	6-8	234005 2265	33,60
24	65	6-8	234005 2465	33,60
25	65	6-8	234005 2565	33,60

2114

d h9 mm	Length mm	Guide bushes for broaches mm	art.no.	€
26	65	6-8	234005 2665	33,60
28	65	6-8	234005 2865	40,20
30	65	6-8	234005 3065	40,20
32	102	10-14	234005 3210	52,50
34	102	10-14	234005 3410	52,50
35	102	10-14	234005 3510	52,50
36	102	10-14	234005 3610	52,50
38	102	10-14	234005 3810	52,50
40	102	10-14	234005 4010	62,–
42	102	10-14	234005 4210	62,–
44	102	10-14	234005 4410	62,–
45	127	10-14	234005 4512	62,–
46	127	10-14	234005 4612	62,–
48	127	10-14	234005 4812	62,–
50	127	10-14	234005 5012	62,–
52	127	16-18	234005 5212	139,–
54	127	16-18	234005 5412	139,–
55	127	16-18	234005 5512	139,–

2114

d h9 mm	Length mm	Guide bushes for broaches mm	art.no.	€
56	127	16-18	234005 5612	139,–
58	127	16-18	234005 5812	141,–
60	154	16-18	234005 6015	141,–
62	154	16-18	234005 6215	141,–
64	154	16-18	234005 6415	141,–
65	154	16-18	234005 6515	150,–
66	154	16-18	234005 6615	150,–
68	154	16-18	234005 6815	150,–
70	154	16-18	234005 7015	157,–

2114

Sets

Contents	art.no.	€
1 broach for each keyway width, 2/3/4/5/6/8 mm, incl. inserts. 1 guide bush in each size, 8/10/12/14/15/16/18/20/22/24/25/28/30	**234010** 0208	1.469,–
1 broach for each keyway width, 4/5/6/8 mm, incl. inserts. 1 guide bush in each size, 12/14/15/16/18/20/22/24/25	234010 0408	949,–

2114



ATORN® Cutting material table Carbide qualities, coated

Cutting speed – Wear resistance

Feed – Toughness

	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H
	1 5 10 15 20 25 30 35 40 45 50	1 5 10 15 20 25 30 35 40 45 50	1 5 10 15 20 25 30 35 40 45 50	1 5 10 15 20 25 30 35 40 45 50	1 5 10 15 20 25 30 35 40 45 50	1 5 10 15 20 25 30 35 40 45 50
Recess milling						
HC3635						
Milling						
HC4535						
HC4635						
HC4535						
HC4540						
HC4615						
HC4620						
HC4630						
HC4635						
HC4636						
HC7630						
Thread milling						
AMT7						
AMT8						
AMT9						

ATORN® Cutting material table Carbide qualities, uncoated

Cutting speed – Wear resistance

Feed – Toughness

	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H
	1 5 10 15 20 25 30 35 40 45 50	1 5 10 15 20 25 30 35 40 45 50	1 5 10 15 20 25 30 35 40 45 50	1 5 10 15 20 25 30 35 40 45 50	1 5 10 15 20 25 30 35 40 45 50	1 5 10 15 20 25 30 35 40 45 50
Recess milling						
HW3410						
Milling						
HW4640						
HW4410						
HW4415						

ATORN® Cutting material table CBN / PKD

Cutting speed – Wear resistance

Feed – Toughness

	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H
	1 5 10 15 20 25 30 35 40 45 50	1 5 10 15 20 25 30 35 40 45 50	1 5 10 15 20 25 30 35 40 45 50	1 5 10 15 20 25 30 35 40 45 50	1 5 10 15 20 25 30 35 40 45 50	1 5 10 15 20 25 30 35 40 45 50
Milling						
ABC10						
ABC25						

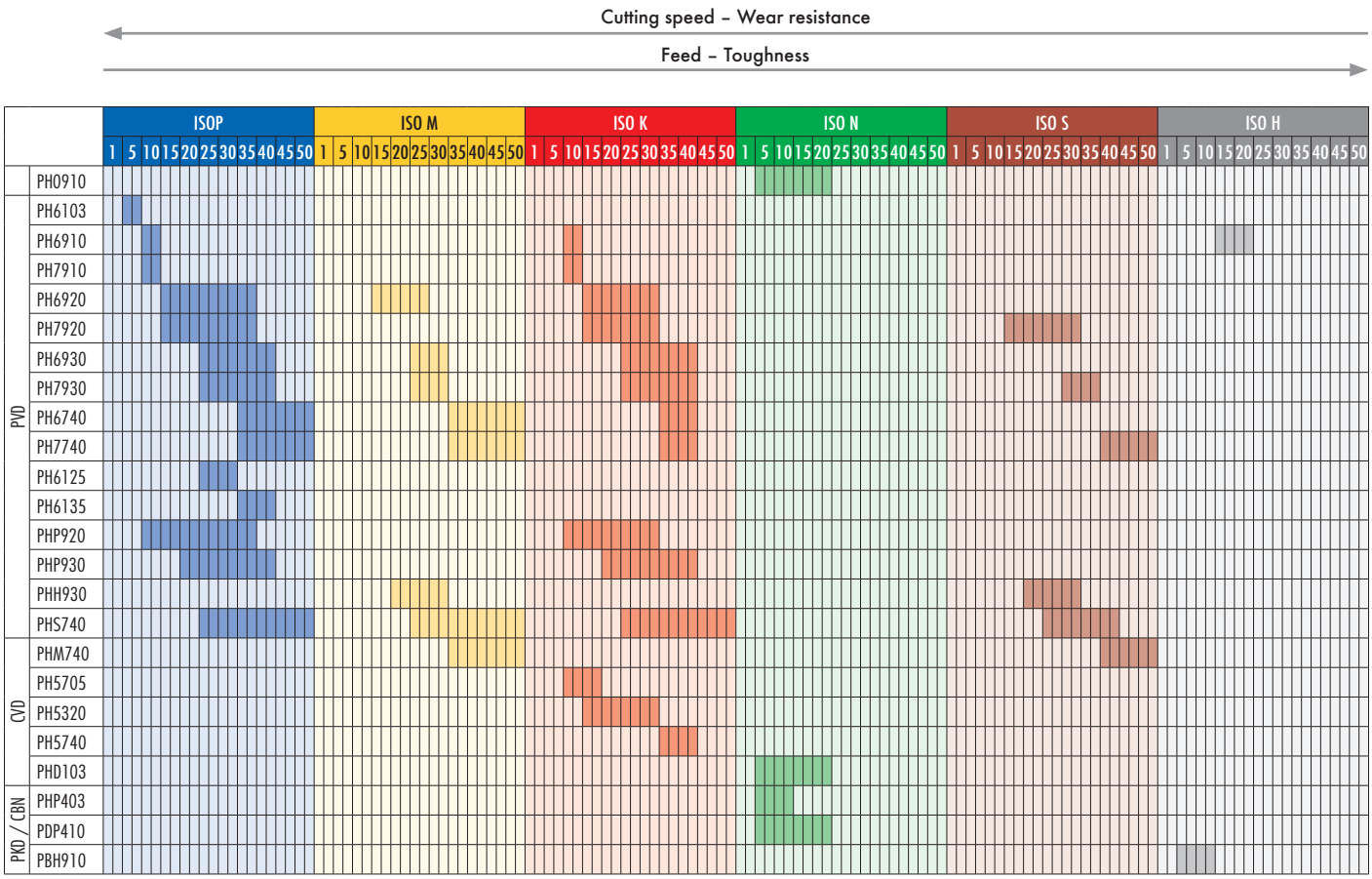
Cutting material table Carbide qualities

Cutting speed – Wear resistance

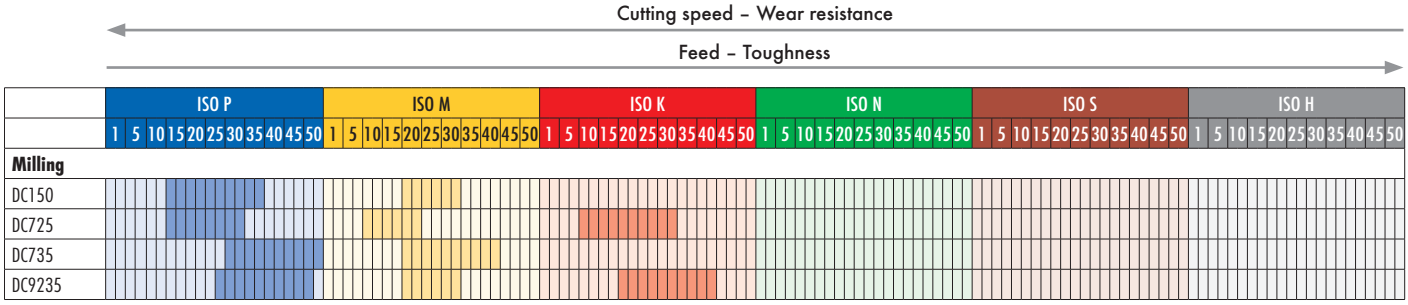
Feed – Toughness

	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H
	1 5 10 15 20 25 30 35 40 45 50	1 5 10 15 20 25 30 35 40 45 50	1 5 10 15 20 25 30 35 40 45 50	1 5 10 15 20 25 30 35 40 45 50	1 5 10 15 20 25 30 35 40 45 50	1 5 10 15 20 25 30 35 40 45 50
DH 103						
JC 605W						
JC 5040						
JC 8015						
JC 8050						
JC 5118						

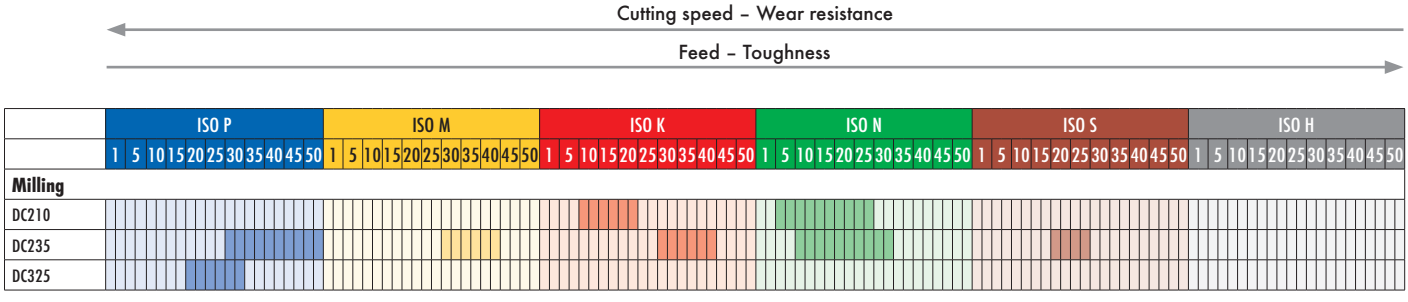
palbit Cutting material table Carbide qualities



Duracarb Cutting material table Carbide qualities, coated



Duracarb Cutting material table Carbide qualities, uncoated



Recommendations for toothing and tooth shapes

INFO

Sawing solid material

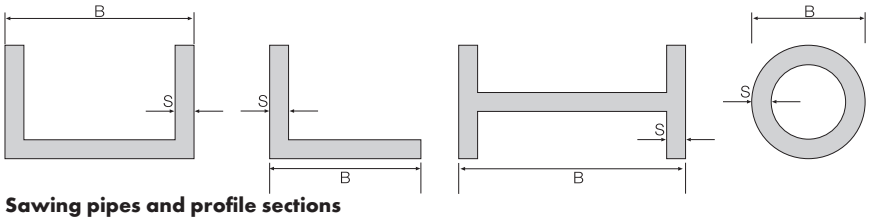
Standard toothing		Combination toothing	
Material cross-section	Tooth pitch with tooth shape	Material cross-section	Tooth pitch with tooth shape
< 12 mm	**14 TPI.N**	**< 25 mm**	**10/14 standard**
12 - 30 mm	**10 TPI.N**	**20 - 40 mm**	**8/12 standard**
30 - 50 mm	**8 TPI.N**	**25 - 70 mm**	**6/10 standard**
50 - 80 mm	**6 TPI.N**	**35 - 90 mm**	**5/8 ZpZ. standard**
80 - 100 mm	4 TPI.small	50 - 100 mm	4/6 TPI.plus
110 - 200 mm	3 TPI.small	80 - 150 mm	3/4 TPI.plus
200 - 350 mm	2 TPI.small	120 - 350 mm	2/3 TPI.plus
300 - 700 mm	1,25 small	300 - 500 mm	1,33/2 TPI.plus
> 700 mm	0,75 small	> 500 mm	0,75 - 1,25 TPI.plus

in bold = catalogue version

Correct toothing

Selecting the correct tooth pitch is essential to achieve the best possible cutting results:

- The tooth pitch is calculated from the working length of the saw band.
- Selecting too low a pitch can cause deviations in cutting, as chips may block the cutting teeth and force the saw band off its cutting line.
- Selecting too high a pitch can cause teeth to become bent, as the cutting pressure on individual teeth is too large.
- At least three teeth should be engaged to achieve cost-effective results.



Sawing pipes and profile sections

Wall thickness S mm	Teeth per inch diam. B 20	40	60	80	100	120	150	200	300	500	750	1000
2	32	24	18	18	**14**	**14**	**10/14**	**10/14**	**8/12**	**6/10**	**5/8**	**5/8**
3	24	18	**14**	**14**	**10/14**	**10/14**	**8/12**	**8/12**	**6/10**	**5/8**	**4/6 0°**	**4/6 0°**
4	**18**	**10/14**	**10/14**	**10/14**	**8/12**	**8/12**	**6/10**	**6/10**	**5/8**	**4/6 0°**	**4/6 0°**	**4/6 0°**
5	**18**	**10/14**	**10/14**	**8/12**	**6/10**	**6/10**	**6/10**	**5/8**	**4/6 0°**	**4/6 0°**	**4/6 0°**	**3/4 0°**
6	**14**	**8/12**	**8/12**	**8/12**	**6/10**	**6/10**	**5/8**	**5/8**	**4/6 0°**	**4/6 0°**	**3/4 0°**	**3/4 0°**
8		**6/10**	**6/10**	**6/10**	**5/8**	**5/8**	**5/8**	**4/6 0°**	**4/6 0°**	**3/4 0°**	**3/4 0°**	**3/4 0°**
10		**6/10**	**6/10**	**5/8**	**5/8**	**5/8**	**4/6 0°**	**4/6 0°**	**4/6 0°**	**3/4 0°**	**3/4 0°**	**3/4 0°**
12		**5/8**	**5/8**	**5/8**	4/6 pos	4/6 pos	4/6 pos	4/6 pos	3/4 pos	3/4 pos	2/3 pos	2/3 pos
15			**5/8**	4/6 pos	4/6 pos	4/6 pos	4/6 pos	3/4 pos	3/4 pos	2/3 pos	2/3 pos	2/3 pos
20			4/6 pos	4/6 pos	4/6 pos	3/4 pos	3/4 pos	3/4 pos	2/3 pos	2/3 pos	2/3 pos	2/3 pos
30			3/4 pos	3/4 pos	3/4 pos	3/4 pos	2/3 pos	2/3 pos	2/3 pos	2/3 pos	1,33/2 pos	1,33/2 pos
50						3/4 pos	2/3 pos	2/3 pos	2/3 pos	1,33/2 pos	1,33/2 pos	1,33/2 pos
75								2/3 pos	1,33/2 pos	1,33/2 pos	1,33/2 pos	0,75/1,25 pos
100									1,33/2 pos	0,75/1,25 pos	0,75/1,25 pos	0,75/1,25 pos
150										0,75/1,25 pos	0,75/1,25 pos	0,75/1,25 pos
200										0,75/1,25 pos	0,75/1,25 pos	0,75/1,25 pos

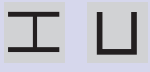
in bold = catalogue version

If two or more pipes need to be cut alongside one another, take into consideration the doubled wall thickness when using the table.

Critical factors in choosing the correct tooth pitch:
- Sawing pipes and profile sections in layers and bandles
- Sawing pipes and profile sections individually

Summary of icons used for metal saws

INFO

Pipes	
Supports	
Bandles	
Solid material	

SARA® Metal circular saw blade



200101....

200105....
200110....

Vc = Cutting speed (m/min)
n = Rotational speed (rpm), mean value
f = The feed per revolution must be calculated depending on the material cross-section and stability, saw blade toothing, as well as the mechanical circumstances.

ISO		Cutting speed Vc m/min	Rotational speed min. - max. rpm									Coolant / lubricant
			Ø 32 mm	Ø 40 mm	Ø 50 mm	Ø 63 mm	Ø 80 mm	Ø 100 mm	Ø 125 mm	Ø 160 mm	Ø 200 mm	Ø 250 mm	
P	Steel up to 500 N/mm²	25 - 50	250 - 500	200-400	160 - 320	125 - 250	100 - 200	80-100	63 - 130	50 - 100	40 - 80	31 - 62	High-performance cooling lubricant concentrate with water 1:20
P	Steel up to 800 N/mm²	15 - 30	120 - 300	120 - 240	95 - 190	75 - 150	60 - 120	47 - 95	38 - 76	30 - 60	24 - 47	19 - 38	
P	Steel up to 1100 N/mm²	10 - 20	100 - 200	79 - 160	63 - 125	50 - 100	40 - 80	31 - 63	25 - 50	20 - 40	16 - 32	12.7 - 25	High-performance cooling lubricant concentrate with water 1:15
M	Stainless steel (V2A, V4A)	7 - 15	75 - 150	55 - 120	45 - 95	35 - 75	28 - 60	22 - 47	18 - 38	14 - 30	11 - 24	9 - 19	High-performance cooling lubricant concentrate with water 1:12
K	Grey cast iron up to GG18	25 - 45	250 - 450	200 - 350	160 - 290	125 - 225	100 - 180	80 - 145	63 - 115	50 - 90	40 - 70	31 - 57	Dry or compressed air
K	Grey cast iron above GG18	25 - 30	250 - 300	200 - 240	160 - 190	125 - 150	100 - 120	80 - 95	63 - 76	50 - 60	40 - 47	31 - 38	Dry or compressed air
S	Bronze, Cu alloys	120 - 200	1,200 - 2,000	955 - 1,600	760 - 1,300	610 - 1,000	480 - 800	380 - 630	300 - 500	240 - 400	190 - 320	152 - 250	High-performance cooling lubricant concentrate with water 1:30
S	Copper, brass, aluminium	400 - 1,000	4,000 - 10,000	3,200 - 8,000	2,500 - 6,300	2,000 - 5,050	1,600 - 4,000	1,300 - 3,200	1,000 - 2,500	800 - 2,000	650 - 1,600	510 - 1,270	High-performance cooling lubricant concentrate with water 1:50
S	Lightweight metal profiles*	1,000 - 2,400	10,000 - 24,000	8,000 - 19,100	6,300 - 15,300	5,050 - 12,120	4,000 - 9,560	3,200 - 7,650	2,500 - 6,120	2,000 - 4,780	1,600 - 3,820	1,270 - 3,050	Lubrication pin
S	Plastics*	1,500 - 2,400	15,000 - 24,000	12,000 - 19,100	9,500 - 15,300	7,500 - 12,120	6,000 - 9,560	5,000 - 7,650	3,800 - 4,780	3,000 - 4,780	2,400 - 3,820	1,900 - 3,050	Dry

* = for high cutting speeds (from 1000 m/min) always use extra-tough saw blades!
When ordering, please indicate: machine speed or cutting speed and material to be cut.

All blades are laterally bevel-ground (hollow grinding).
All sizes from Ø 200 mm and very slim blades have a borehole collar for extra stability.
Accuracy, tooth form and lateral bevel grinding correspond to DIN 1840.

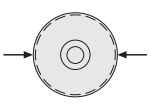


DIN 1837 A fine-toothed with Type A double helical tooth
- Straight teeth with relatively small tooth pockets
- For thin-walled workpieces and smaller cutting depths
- Ideal for machining brittle, short-chipping materials

DIN 1838 B coarse-toothed with Type B curved tooth
- Curved teeth with relatively large tooth pockets
- More universal than DIN 1837 A thanks to improved chip formation and increased chip space
- For stronger material and greater cutting depths

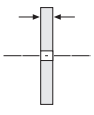
DIN 1838 C coarse-toothed with Type C curved tooth
- High-performance toothing (HZ) with taper tap and regroover
- The taper tap is 0.15-0.3 mm higher than the regroover and is tapered on both tooth corners.
- Thus both teeth share the task of machining.
- Ideal for separating workpieces with low to medium strength
- Excellent chip management is achieved by the chip-separating tooth form.

Manufacturing accuracy according to DIN and ISO for HSS metal circular saw blades



Diameter tolerance according to ISO

	Nominal dimension range mm					
	30 - 50	50 - 80	80-120	120-180	180 -250	250 - 315
Tolerance field in accordance with js 15 (µm)	± 500	± 600	± 700	± 800	± 925	± 1050



Thickness tolerance according to ISO

	Nominal dimension range mm		
	≤ 1	1 - 3	3 - 6
Tolerance field in accordance with js 11 (µm)	± 20	± 30	± 38



Bore tolerance according to ISO

	Nominal dimension range mm					
	3 - 6	6 - 10	10 - 18	18 - 30	30 - 50	50 - 80
Tolerance field in accordance with js 15 (µm)	+ 12 - 0	+ 15 - 0	+ 18 - 0	+ 21 - 0	+ 25 - 0	+ 30 - 0



Radial run-out according to DIN 1840

External Ø mm	Perm. deviation mm
≤ 100	0.10
> 100	0.16



Front run-out (lateral run-out) according to DIN 1840

External Ø mm	Perm. deviation mm
≤ 40	0.10
> 40-100	0.16
> 100-200	0.25
> 200-315	0.40

SARA® Solid carbide circular saw blade



202001....

- **Tooth type A**
- For small cutting depths and short-chipping material
- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	Feed fz mm/tooth	Coolant / lubricant
P	Steel	Up to 700	St-52	1.0052	150	0.010 - 0.03	Emulsion 1:20
P	Steel	Up to 1000	16 MnCr 5	1.7131	120	0.005 - 0.02	Emulsion 1:10
M	Stainless steel, austenitic	500 – 950	X 5 CrNi 18 10	1.4301	80	0.005 - 0.015	Emulsion 1:10
K	Grey cast iron	100 – 400	GG 25	0.6025	100	0.005 - 0.010	Dry
S	Titanium alloy	Up to 950	TiAl6V4	3.7165	60	0.003 - 0.005	Cutting oil
N	Copper alloys				300	0.02 - 0.040	Emulsion
N	Brass alloys				500	0.010 - 0.040	Emulsion
N	Aluminium				1,000 - 2,000	0.010 - 0.040	Emulsion

SARA® Solid carbide circular saw blade



202002....

- **Tooth type B**
- For solid materials, large cutting depths and long-chipping material
- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	Feed fz mm/tooth	Coolant / lubricant
P	Steel	Up to 700	St-52	1.0052	150	0.010 - 0.03	Emulsion 1:20
P	Steel	Up to 1000	16 MnCr 5	1.7131	120	0.005 - 0.02	Emulsion 1:10
M	Stainless steel, austenitic	500 – 950	X 5 CrNi 18 10	1.4301	80	0.005 - 0.015	Emulsion 1:10
K	Grey cast iron	100 – 400	GG 25	0.6025	100	0.005 - 0.010	Dry
S	Titanium alloy	Up to 950	TiAl6V4	3.7165	60	0.003 - 0.005	Cutting oil
N	Copper alloys				300	0.02 - 0.040	Emulsion
N	Brass alloys				500	0.010 - 0.040	Emulsion
N	Aluminium				1,000 - 2,000	0.010 - 0.040	Emulsion



SARA® Metal circular saw blade, precision version

200150.... **200151....**

- Choose the correct tooth pitch in relation to the materials to be cut
- Feed, in relation to the materials to be cut and the selected tooth pitch
- Rotational speed, in relation to the materials to be cut and the saw blade diameter
- The data relates to the circular saw blades with standard surface. Surface coatings can increase the feed and revolution values.
- When cutting ensure the saw blade is correctly tensioned, as well as sufficient cooling, correct machine operation and optimum condition of the saw blade.
- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Tooth pitch											
			Pipes / profiles, wall thickness mm					Solid material, cross section mm						
			< 1	1 - 1.5	1.5 - 2	2 - 3	> 3	10 - 20	20 - 40	40 - 60	60 - 90	90 - 110	110 - 130	130 - 150
P	Steel	Up to 500	3	4	4	5	≥ 6	5	8	10	12	14	16	18
P	Steel	Up to 600	3	4	4	5	≥ 6	5	6	1	12	14	16	16
P	Steel	Up to 1200	3	3	4	4	≥ 5	4	6	8	10	12	14	14
M	Stainless steel, austenitic		3	4	4	5	≥ 6	4	6	8	11	14	16	16
K	Grey cast iron							5	6	8	11	14	16	16
N	Bronze and copper		4	5	6	7	≥ 8	6	8	10	12 - 14	14 - 16	16 - 18	18 - 20
N	Aluminium alloys		4	5	6	7	≥ 8	6	8	12	16	18	20	20
N	Brass alloys		4	4	5	5	≥ 8	6	8	10	12	16	18	18

ISO	Materials group	Strength/ Hardness N/mm²	Feed mm/min.																	
			Pipes / profiles, for tooth pitch									Solid material, for tooth pitch								
			3	4	5	6	8	10	12	14	16	3	4	5	6	8	10	12	14	16
P	Steel	Up to 500	450	400	350	300	250	200	150	130	120	350	300	250	200	150	100	80	70	50
P	Steel	Up to 600	350	300	250	180	130	100	90	80	70	250	200	150	100	80	70	65	60	55
P	Steel	Up to 1200	160	140	130	120	90	80	65	50	40	90	80	70	60	45	40	35	25	15
M	Stainless steel, austenitic		150	130	110	90	75	60	55	50	35	70	60	55	50	40	35	30	20	15
K	Grey cast iron		550	440	350	300	220	180	150	125	110	350	280	210	180	140	120	90	75	65
N	Bronze and copper					2.000	1.600	1.200	850	700	600				1.400	1.000	700	550	500	400
N	Aluminium alloys						8.500	6.000	5.000	4.600	3.700					4.500	3.800	3.000	2.800	3.700
N	Brass alloys					4.000	3.200	2.500	1.800	1.400	1.000				2.000	1.500	1.000	800	700	600

ISO	Materials group	Strength/ Hardness N/mm²	Rotational speed rpm																	
			Pipes / profiles, for saw blade Ø mm									Solid material, for saw blade Ø mm								
			200	225	250	275	300	315	350	370	400	200	225	250	275	300	315	350	370	400
P	Steel	Up to 500	80	70	65	60	55	50	45	45	5	45	45	40	35	30	30	25	25	5
P	Steel	Up to 600	65	60	50	45	45	40	35	35	40	30	30	25	25	20	20	20	15	20
P	Steel	Up to 1200	40	35	30	30	25	25	25	20	30	25	20	20	15	15	15	15	15	15
M	Stainless steel, austenitic		35	30	25	25	20	20	20	15	20	15	15	15	10	10	10	10	10	10
K	Grey cast iron		80	70	65	60	55	50	45	45	40	45	45	40	35	30	30	25	25	20
N	Bronze and copper		480	430	380	350	350	300	270	260	240	320	300	250	230	210	200	180	170	160
N	Aluminium alloys		1500	1250	1100	1050	950	900	820	770	720	950	850	750	700	650	600	550	520	470
N	Brass alloys		950	850	770	700	640	600	550	520	480	650	550	500	450	430	400	350	350	300



... maximum material removal rate

ATORN®
High quality for great performance

Calculation of HSS-E milling cutter

Note:

- Please use the tables on pages 20-14 to 20-17 to assign the materials to be machined.
- All milling specifications apply to a rigid setup, including clamping, sufficient machine output and applications of coolant.
- Please adjust these guideline values according to clamping operation and machine set-up!
- The feed (Vf) should be halved for milling in long version.

1. Table

Please see Table 1 for the cutting speed of the respective material.

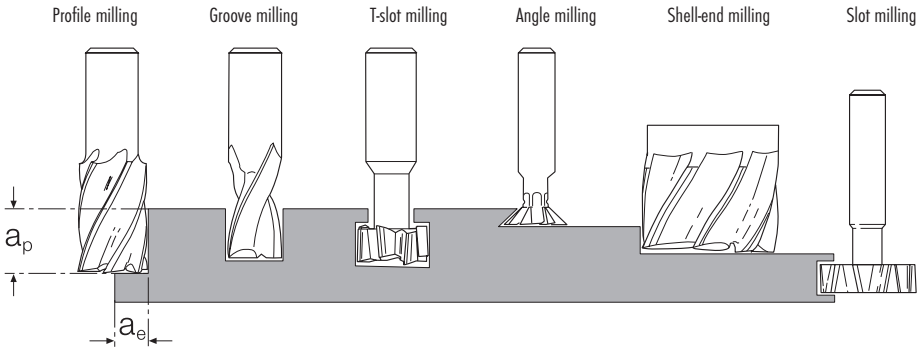
ISO	Material	Hardness HB	Tensile strength N/mm²	Cutting speed Vc m/min.
P	magnetic, soft steel	< 120	< 400	40
	Structural steel, steel for case hardening	< 200	< 700	32
	Carbon steel, unalloyed	< 250	< 850	25
	Alloyed steel	< 250	< 850	25
	Alloyed steel, hardened and tempered	250-350	850-1.200	20
	Alloyed steel, hardened and tempered	> 350	> 1200	12
M	Good machinability	< 250	< 850	20
	austenitic	< 250	< 850	16
	ferritic, austenitic	< 300	< 1000	12
K	with lamellar graphite	< 150	< 500	32
	with lamellar graphite	150-300	500-1.000	25
	with spheroidal graphite, malleable cast iron	< 200	< 700	32
	with spheroidal graphite, malleable cast iron	200-300	700-1.000	20
S	Titanium, unalloyed	< 200	< 700	16
	Titanium, alloyed	< 270	< 900	12
	Titanium, alloyed	270-350	900-1.250	10
	Nickel, unalloyed	< 150	< 500	8
	Nickel, alloyed	> 270	< 900	8
	Nickel, alloyed	270-350	900-1.200	6
N	Copper	< 100	< 350	80
	Brass, bronze	< 200	< 700	40
	Brass	< 200	< 700	50
	High-strength bronze	< 470	< 1500	16
	Aluminium, magnesium, non-alloyed	< 100	< 350	100
	Aluminium alloyed, Si < 5%	< 150	< 500	80
	Aluminium alloyed, Si 5-10%	< 120	< 400	60
	Aluminium alloyed, Si > 10% Whisker-reinforced Aluminium and aluminium alloy	< 120	< 400	50
	Thermoplastics	-	-	80
	Thermoset plastics	-	-	60
	Fibre-reinforced plastics	-	-	60

2. Table

Using the cutting speed (Vc) from Table 1, you obtain the rotational speed depending on the diameter of the tool use.

∅ mm	Cutting speed Vc m/min.															
	6	8	10	12	16	20	25	32	40	50	60	80	100	125	160	200
	Rotational speed rev/min.															
2	955	1.273	1.592	1.910	2.546	3.183	3.979	5.093	6.366	7.958	9.549	12.732	15.915	19.894	25.465	31.831
2.5	764	1.019	1.273	1.528	2.037	2.546	3.183	4.074	5.093	6.366	7.639	10.186	12.732	15.915	20.372	25.465
3	637	849	1.061	1.273	1.698	2.122	2.653	3.395	4.244	5.305	6.366	8.488	10.610	13.263	16.977	21.221
4	477	637	796	955	1.273	1.592	1.989	2.546	3.183	3.979	4.775	6.366	7.958	9.947	12.732	15.915
5	382	509	637	764	1.019	1.273	1.592	2.037	2.546	3.183	3.820	5.093	6.366	7.958	10.186	12.732
6	318	424	531	637	849	1.061	1.326	1.698	2.122	2.653	3.183	4.244	5.305	6.631	8.488	10.610
8	239	318	398	477	637	796	995	1.273	1.592	1.989	2.387	3.183	3.979	4.974	6.366	7.958
10	191	255	318	382	509	637	796	1.019	1.273	1.592	1.910	2.546	3.183	3.979	5.093	6.366
12	159	212	265	318	424	531	663	849	1.061	1.326	1.592	2.122	2.653	3.316	4.244	5.305
16	119	159	199	239	318	398	497	637	796	995	1.194	1.592	1.989	2.487	3.183	3.979
20	95	127	159	191	255	318	398	509	637	796	955	1.273	1.592	1.989	2.546	3.183
25	76	102	127	153	204	255	318	407	509	637	764	1.019	1.273	1.592	2.037	2.546
32	60	80	99	119	159	199	249	318	398	497	597	796	995	1.243	1.592	1.989
40	48	64	80	95	127	159	199	255	318	398	477	637	796	995	1.273	1.592
50	38	51	64	76	102	127	159	204	255	318	382	509	637	796	1.019	1.273
63	30	40	51	61	81	101	126	162	202	253	303	404	505	632	808	1.011
80	24	32	40	48	64	80	99	127	159	199	239	318	398	497	637	796
100	19	25	32	38	51	64	80	102	127	159	191	255	318	398	509	637
125	15	20	25	31	41	51	64	81	102	127	153	204	255	318	407	509
160	12	16	20	24	32	40	50	64	80	99	119	159	199	249	318	398

Calculation of HSS-E milling cutter Continued



3. Table

The cross section to be machined can be selected here. This also indicates the recommended tool type and the feed code letter.

	Tool application																							
	Profile milling												Groove milling				Special							
Radial cutting width ae	0.125 X D			0.25 X D			0.5 X D			0.75 X D			1 X D				0.5 X D	0.25 X D	0.75 X D					
Axial cut depth ap	1.25 X D	1.5 X D	2 X D	1.25 X D	1.5 X D	2 X D	1.25 X D	1.5 X D	2 X D	1.25 X D	1.5 X D	2 X D	0.5 X D	1 X D	1.5 X D	2 X D	0.5 X D	0.5 X D	3 mm	6 mm	10 mm	6 mm	12 mm	20 mm
Disposable milling cutter	-	-	-	-	-	-	J	I	H	G	E	C	L	F	-	-	-	-	-	-	-	-	-	-
2-flute cutter	-	-	-	-	-	-	-	-	-	-	-	-	J	E	-	-	-	-	-	-	-	-	-	-
3-flute cutter	-	-	-	-	-	-	I	H	G	F	D	B	J	E	-	-	-	-	-	-	-	-	-	-
3-flute cutter, aluminium	-	-	-	-	-	-	M	L	J	I	G	F	N	H	E	-	-	-	-	-	-	-	-	-
Multi-flute cutter	P	P	M	N	L	I	K	I	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Roughing cutter	-	-	-	-	-	-	L	L	L	J	H	F	L	J	F	C	-	-	-	-	-	-	-	-
Roughing cutter (fine)	-	-	-	-	-	-	M	M	M	M	K	I	M	M	I	E	-	-	-	-	-	-	-	-
T-slot milling cutter	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	J	-	-	-	-	-	-	-
Slotting cutter	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	E	-	-	-	-	-	-
Angle milling cutter	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	G	-	-	-	-	-	-
Shell-end milling cutter (finishing)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	J	J	H	-	-	-
Shell-end milling cutter (roughing)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	J	J	H

4. Table

The cutting speed from Table 1 and the feed code letter from Table 3 produce the feed (Vf) in Table 4.

Feed code letter	Cutting speed Vc m/min.															
	6	8	10	12	16	20	25	32	40	50	60	80	100	125	160	200
	Feed (Vf) mm/min.															
A	6	8	10	12	16	20	25	32	40	50	60	80	100	120	160	200
B	7	9	11	14	18	22	28	35	45	55	70	90	110	140	180	220
C	8	10	12	16	20	25	32	40	50	60	80	100	120	160	200	250
D	9	11	14	18	22	28	35	45	55	70	90	110	140	180	220	280
E	10	12	16	20	25	32	40	50	60	80	100	120	160	200	250	320
F	11	14	18	22	28	35	45	55	70	90	110	140	180	220	280	350
G	12	16	20	25	32	40	50	60	80	100	120	160	200	250	320	400
H	14	18	22	28	35	45	55	70	90	110	140	180	220	280	350	450
I	16	20	25	32	40	50	60	80	100	120	160	200	250	320	400	500
J	18	22	28	35	45	55	70	90	110	140	180	220	280	350	450	560
K	20	25	32	40	50	60	80	100	120	160	200	250	320	400	500	600
L	22	28	35	45	55	70	90	110	140	180	220	280	350	450	560	700
M	25	32	40	50	60	80	100	120	160	200	250	320	400	500	600	800
N	28	35	45	55	70	90	110	140	180	220	280	350	450	560	700	900
O	32	40	50	60	80	100	120	160	200	250	320	400	500	600	800	1000
P	35	45	55	70	90	110	140	180	220	280	350	450	560	700	900	1100

ATORN® HSS-E-PM-milling cutter — Groove milling

- Please adjust these guideline values according to clamping operation and machine set-up!
- The guide values apply for the TiAlN-coating version; for uncoated tools the cutting speeds must be reduced by 20-30%.



226215....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm							
						4 - 5	6 - 7	8 - 9	10	12 - 14	16 - 18	20	25 - 28
P	Machining steel	Up to 700	9 SMn 28	1.0715	45 - 75	0.02	0.03	0.035	0.058	0.069	0.115	0.115	0.115
	Unalloyed structural steel	Up to 700	St-52	1.0052	45 - 75	0.02	0.03	0.035	0.058	0.069	0.115	0.115	0.115
	Structural steel	700 - 950	Ck45	1.1191	45 - 75	0.02	0.03	0.035	0.058	0.069	0.115	0.115	0.115
	Cast steel	Up to 950	GS 40	1.0416	30 - 45	0.02	0.03	0.035	0.058	0.069	0.115	0.115	0.115
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	45 - 65	0.02	0.03	0.035	0.058	0.06	0.115	0.115	0.115
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	30 - 45	0.014	0.03	0.035	0.058	0.069	0.115	0.115	0.115
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	30 - 45	0.012	0.025	0.03	0.052	0.052	0.075	0.075	0.075
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	30 - 45	0.012	0.025	0.03	0.052	0.052	0.075	0.075	0.075
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	35 - 65	0.02	0.03	0.035	0.058	0.069	0.115	0.115	0.115
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	25 - 45	0.014	0.03	0.035	0.058	0.069	0.115	0.115	0.115
	Ductile iron	Up to 280 HB	GGG 60	0.7060	25 - 45	0.014	0.03	0.035	0.058	0.069	0.115	0.115	0.115
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	25 - 45	0.02	0.03	0.035	0.058	0.069	0.115	0.115	0.115
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	20 - 35	0.012	0.025	0.03	0.052	0.052	0.075	0.075	0.075
	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	20 - 35	0.012	0.025	0.03	0.052	0.052	0.075	0.075	0.075
	Hardened materials up to 64 HRc		100Cr6	1.2067	10 - 20	0.012	0.025	0.03	0.052	0.052	0.075	0.075	0.075

ae	ap	Correction factor
2-flute cutter 1 x D	0.5 x D	1
3-flute cutter 1 x D	0.5 x D	0.7

ATORN® HSS-E-PM milling cutter



226225.... 226235....

- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm							
						4 - 5	6 - 7	8 - 9	10	12 - 14	16 - 18	20	25 - 28
P	Machining steel	Up to 700	9 SMn 28	1.0715	45 - 75	0.02	0.03	0.035	0.058	0.069	0.115	0.115	0.115
	Unalloyed structural steel	Up to 700	St-52	1.0052	45 - 75	0.02	0.03	0.035	0.058	0.069	0.115	0.115	0.115
	Structural steel	700 - 950	Ck45	1.1191	45 - 75	0.02	0.03	0.035	0.058	0.069	0.115	0.115	0.115
	Cast steel	Up to 950	GS 40	1.0416	30 - 45	0.02	0.03	0.035	0.058	0.069	0.115	0.115	0.115
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	45 - 65	0.02	0.03	0.035	0.058	0.06	0.115	0.115	0.115
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	30 - 45	0.014	0.03	0.035	0.058	0.069	0.115	0.115	0.115
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	30 - 45	0.012	0.025	0.03	0.052	0.052	0.075	0.075	0.075
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	30 - 45	0.012	0.025	0.03	0.052	0.052	0.075	0.075	0.075
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	35 - 65	0.02	0.03	0.035	0.058	0.069	0.115	0.115	0.115
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	25 - 45	0.014	0.03	0.035	0.058	0.069	0.115	0.115	0.115
	Ductile iron	Up to 280 HB	GGG 60	0.7060	25 - 45	0.014	0.03	0.035	0.058	0.069	0.115	0.115	0.115
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	25 - 45	0.02	0.03	0.035	0.058	0.069	0.115	0.115	0.115
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	20 - 35	0.012	0.025	0.03	0.052	0.052	0.075	0.075	0.075
	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	20 - 35	0.012	0.025	0.03	0.052	0.052	0.075	0.075	0.075
	Hardened materials up to 64 HRc		100Cr6	1.2067	10 - 20	0.012	0.025	0.03	0.052	0.052	0.075	0.075	0.075

ae	ap	Correction factor
0.10 x D	1.5 x D	1
0.25 x D	1.5 x D	0.7
0.50 x D	1.5 x D	0.4

ATORN® HSS-E-PM milling cutter

- Please adjust these guideline values according to clamping operation and machine set-up!

226245....
226265....
226255....
226275....
226247....

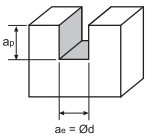


ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm							
						4 - 5	6 - 7	8 - 9	10	12 - 14	16 - 18	20	25 - 28
P	Machining steel	Up to 700	9 SMn 28	1.0715	45 - 75	0.02	0.03	0.035	0.058	0.069	0.115	0.115	0.115
P	Unalloyed structural steel	Up to 700	St-52	1.0052	45 - 75	0.02	0.03	0.035	0.058	0.069	0.115	0.115	0.115
P	Structural steel	700 - 950	Ck45	1.1191	45 - 75	0.02	0.03	0.035	0.058	0.069	0.115	0.115	0.115
P	Cast steel	Up to 950	GS 40	1.0416	30 - 45	0.02	0.03	0.035	0.058	0.069	0.115	0.115	0.115
P	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	45 - 65	0.02	0.03	0.035	0.058	0.06	0.115	0.115	0.115
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	30 - 45	0.014	0.03	0.035	0.058	0.069	0.115	0.115	0.115
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	30 - 45	0.012	0.025	0.03	0.052	0.052	0.075	0.075	0.075
M	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	30 - 45	0.012	0.025	0.03	0.052	0.052	0.075	0.075	0.075
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	35 - 65	0.02	0.03	0.035	0.058	0.069	0.115	0.115	0.115
K	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	25 - 45	0.014	0.03	0.035	0.058	0.069	0.115	0.115	0.115
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	25 - 45	0.014	0.03	0.035	0.058	0.069	0.115	0.115	0.115
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	25 - 45	0.02	0.03	0.035	0.058	0.069	0.115	0.115	0.115
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	20 - 35	0.012	0.025	0.03	0.052	0.052	0.075	0.075	0.075
H	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	20 - 35	0.012	0.025	0.03	0.052	0.052	0.075	0.075	0.075
H	Hardened materials up to 64 HRc		100Cr6	1.2067	10 - 20	0.012	0.025	0.03	0.052	0.052	0.075	0.075	0.075

ae	ap	Correction factor
0.10 x D	1.5 x D	1
0.25 x D	1.5 x D	0.7
1 x D	1 x D	0.4

ATORN® Mini end milling cutter, Mini torus milling cutter RockTec 52

- The lower Vc values apply respectively for long clearances and the smaller diameter range; the higher Vc values for short clearance lengths and the larger diameter range.
  This also applies for the specified ap max. values.
- Please adjust these guideline values according to clamping operation and machine set-up.





257001....
257009....
257023....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Diameter range ≤ 0.5 mm		Diameter range 0.6 - 1 mm		Diameter range > 1 mm		Feed fz in mm/tooth in relation to milling cutter diameter in mm		
					Vc m/min	ap max.	Vc m/min	ap max.	Vc m/ min	ap max.	0.1 - 0.3	0.4-0.8	0.9 - 1.5
P	Machining steel	Up to 700	9 SMn 28	1.0715	60 - 80	0.003 - 0.025	70 - 90	0.004 - 0.05	80-100	0.02 - 0.4	0.003 - 0.007	0.005 - 0.012	0.008 - 0.018
P	Tempering steel	500 - 950	42 CrMo4	1.7225	60 - 80	0.003 - 0.025	70 - 90	0.004 - 0.05	80-100	0.02 - 0.4	0.003 - 0.007	0.005 - 0.012	0.008 - 0.018
P	Tempering steel	950 -1300	43CrMo4	1.3563	60 - 80	0.002 - 0.02	70 - 90	0.003 - 0.045	80-100	0.015 - 0.35	0.003 - 0.007	0.005 - 0.012	0.008 - 0.018
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	60 - 80	0.002 - 0.02	70 - 90	0.003 - 0.045	80-100	0.015 - 0.35	0.003 - 0.007	0.005 - 0.012	0.008 - 0.018
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	50 - 70	0.003 - 0.025	60 - 80	0.004 - 0.05	70 - 90	0.02 - 0.4	0.003 - 0.007	0.005 - 0.012	0.008 - 0.018
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	50 - 70	0.003 - 0.025	60 - 80	0.004 - 0.05	70 - 90	0.02 - 0.4	0.003 - 0.007	0.005 - 0.012	0.008 - 0.018
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	50 - 70	0.003 - 0.025	60 - 80	0.004 - 0.05	70 - 90	0.02 - 0.4	0.003 - 0.007	0.005 - 0.012	0.008 - 0.018
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	50 - 70	0.003 - 0.025	60 - 80	0.004 - 0.05	70 - 90	0.02 - 0.4	0.003 - 0.007	0.005 - 0.012	0.008 - 0.018
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	50 - 70	0.003 - 0.025	60 - 80	0.004 - 0.05	70 - 90	0.02 - 0.4	0.003 - 0.007	0.005 - 0.012	0.008 - 0.018
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	50 - 70	0.002 - 0.02	60 - 80	0.003 - 0.045	70 - 90	0.015 - 0.35	0.003 - 0.007	0.005 - 0.012	0.008 - 0.018
S	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	40 - 60	0.002 - 0.02	50 - 70	0.003 - 0.04	60 - 80	0.015 - 0.3	0.002 - 0.005	0.003 - 0.007	0.008 - 0.014
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	30 - 50	0.002 - 0.02	40 - 60	0.003 - 0.04	50 - 70	0.015 - 0.15	0.002 - 0.004	0.002 - 0.007	0.006 - 0.012

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Diameter range ≤ 0.5 mm		Diameter range 0.6 - 1 mm		Diameter range > 1 mm		Feed fz in mm/tooth in relation to milling cutter diameter in mm	
					Vc m/min	ap max.	Vc m/min	ap max.	Vc m/min	ap max.	1.6 - 2	2.5 - 3
P	Machining steel	Up to 700	9 SMn 28	1.0715	60 - 80	0.003 - 0.025	70 - 90	0.004 - 0.05	80-100	0.02 - 0.4	0.014 - 0.025	0.018 - 0.035
P	Tempering steel	500 - 950	42 CrMo4	1.7225	60 - 80	0.003 - 0.025	70 - 90	0.004 - 0.05	80-100	0.02 - 0.4	0.014 - 0.025	0.018 - 0.035
P	Tempering steel	950 -1300	43CrMo4	1.3563	60 - 80	0.002 - 0.02	70 - 90	0.003 - 0.045	80-100	0.015 - 0.35	0.014 - 0.025	0.018 - 0.035
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	60 - 80	0.002 - 0.02	70 - 90	0.003 - 0.045	80-100	0.015 - 0.35	0.014 - 0.025	0.018 - 0.035
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	50 - 70	0.003 - 0.025	60 - 80	0.004 - 0.05	70 - 90	0.02 - 0.4	0.014 - 0.025	0.018 - 0.035
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	50 - 70	0.003 - 0.025	60 - 80	0.004 - 0.05	70 - 90	0.02 - 0.4	0.014 - 0.025	0.018 - 0.035
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	50 - 70	0.003 - 0.025	60 - 80	0.004 - 0.05	70 - 90	0.02 - 0.4	0.014 - 0.025	0.018 - 0.035
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	50 - 70	0.003 - 0.025	60 - 80	0.004 - 0.05	70 - 90	0.02 - 0.4	0.014 - 0.025	0.018 - 0.035
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	50 - 70	0.003 - 0.025	60 - 80	0.004 - 0.05	70 - 90	0.02 - 0.4	0.014 - 0.025	0.018 - 0.035
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	50 - 70	0.002 - 0.02	60 - 80	0.003 - 0.045	70 - 90	0.015 - 0.35	0.014 - 0.025	0.018 - 0.035
S	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	40 - 60	0.002 - 0.02	50 - 70	0.003 - 0.04	60 - 80	0.015 - 0.3	0.012 - 0.023	0.018 - 0.035
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	30 - 50	0.002 - 0.02	40 - 60	0.003 - 0.04	50 - 70	0.015 - 0.15	0.011 - 0.018	0.016 - 0.022

Calculation: solid carbide end milling cutter

Note:

- Please use the tables on pages 20-34 to 20-35 to assign the materials to be machined.
- All milling specifications apply to a rigid setup, including clamping, sufficient machine output and applications of coolant.
- Please adjust these guideline values according to clamping operation and machine set-up!
- The feed (Vf) should be halved for milling in long version.



1. Table

Please see Table 1 for the cutting speed of the respective material.

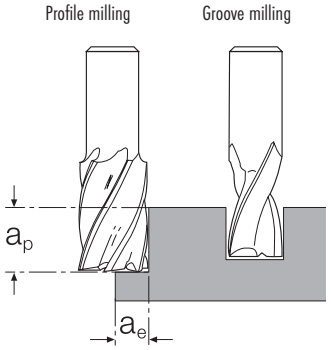
ISO	Material	Hardness HB	Tensile strength N/mm²	Cutting speed Vc m/min.
P	magnetic, soft steel	< 120	< 400	150
	Structural steel, steel for case hardening	< 200	< 700	120
	Carbon steel, unalloyed	< 250	< 850	96
	Alloyed steel	< 250	< 850	96
	Alloyed steel, hardened and tempered	250-350	850-1.200	72
	Alloyed steel, hardened and tempered	> 350	> 1200	48
M	Good machinability	< 250	< 850	96
	austenitic	< 250	< 850	72
	ferritic, austenitic	< 300	< 1000	60
K	with lamellar graphite	< 150	< 500	120
	with lamellar graphite	150-300	500-1.000	96
	with spheroidal graphite, malleable cast iron	< 200	< 700	120
	with spheroidal graphite, malleable cast iron	200-300	700-1.000	60
S	Titanium, unalloyed	< 200	< 700	72
	Titanium, alloyed	< 270	< 900	60
	Titanium, alloyed	270-350	900-1.250	38
	Nickel, unalloyed	< 150	< 500	72
	Nickel, alloyed	> 270	< 900	38
	Nickel, alloyed	270-350	900-1.200	24
N	Copper	< 100	< 350	300
	Brass, bronze	< 200	< 700	150
	Brass	< 200	< 700	192
	High-strength bronze	< 470	< 1500	60
	Aluminium, magnesium, non-alloyed	< 100	< 350	384
	Aluminium alloyed, Si < 5%	< 150	< 500	300
	Aluminium alloyed, Si 5-10%	< 120	< 400	192
	Aluminium alloyed, Si > 10% Whisker-reinforced Aluminium and aluminium alloy	< 120	< 400	120
	Thermoplastics	-	-	300
	Thermoset plastics	-	-	240
	Fibre-reinforced plastics	-	-	240

2. Table

Using the cutting speed (Vc) from Table 1, you obtain the rotational speed depending on the diameter of the tool use.

Ø mm	Cutting speed Vc m/min.															
	14	19	24	30	38	48	60	72	96	120	150	192	240	300	384	480
	Rotational speed rev/min.															
2	2.292	3.055	3.820	4.775	6.112	7.639	9.550	11.459	15.278	19.098	23.873	30.558	38.197	47.747	61.116	76.394
2.5	1.834	2.444	3.055	3.820	4.889	6.112	7.639	9.167	12.223	15.278	19.098	24.446	30.558	38.197	48.893	61.116
3	1.528	2.038	2.546	3.184	4.074	5.093	6.366	7.639	10.186	12.732	15.916	20.372	25.465	31.831	40.744	50.929
4	1.146	1.528	1.910	2.387	3.055	3.820	4.775	5.730	7.639	9.550	11.936	15.278	19.098	23.873	30.558	38.197
5	917	1.223	1.528	1.910	2.444	3.055	3.820	4.584	6.112	7.639	9.550	12.223	15.278	19.098	24.446	30.558
6	764	1.019	1.273	1.591	2.038	2.546	3.184	3.820	5.093	6.366	7.957	10.186	12.732	15.916	20.372	25.465
8	572	764	955	1.194	1.528	1.910	2.387	2.864	3.820	4.775	5.969	7.639	9.550	11.936	15.278	19.098
10	458	611	764	955	1.223	1.528	1.910	2.292	3.055	3.820	4.775	6.112	7.639	9.550	12.223	15.278
12	382	509	637	796	1.019	1.273	1.591	1.910	2.546	3.184	3.979	5.093	6.366	7.957	10.186	12.732
16	287	382	478	596	764	955	1.194	1.433	1.910	2.387	2.984	3.820	4.775	5.969	7.639	9.550
20	229	306	382	478	611	764	955	1.146	1.528	1.910	2.387	3.055	3.820	4.775	6.112	7.639
25	184	245	306	382	488	611	764	917	1.223	1.528	1.910	2.444	3.055	3.820	4.889	6.112

Calculation: solid carbide end milling cutterContinued



3. Table

The cross section to be machined can be selected here. This also indicates the recommended tool type and the feed code letter.

	Tool application															
	Profile milling												Groove milling			
Radial cutting width ae	0.125 X D			0.25 X D			0.5 X D			0.75 X D			1 X D			
Axial cut depth ap	1.25 X D	1.5 X D	2 X D	1.25 X D	1.5 X D	2 X D	1.25 X D	1.5 X D	2 X D	1.25 X D	1.5 X D	2 X D	0.5 X D	1 X D	1.5 X D	2 X D
2-flute cutter	-	-	-	-	-	-	-	-	-	-	-	-	J	E	-	-
3-flute cutter	-	-	-	-	-	-	I	H	G	F	D	B	J	E	-	-
4-flute cutter	P	P	M	N	L	I	K	I	G	-	-	-	-	-	-	-
60° milling cutter	N	N	K	O	J	G	I	G	E	-	-	-	-	-	-	-
2-flute cutter, aluminium	-	-	-	-	-	-	L	K	I	H	F	E	M	G	D	-
Roughing cutter	-	-	-	-	-	-	L	L	L	J	H	F	L	J	F	C
Roughing cutter (fine)	-	-	-	-	-	-	M	M	M	M	K	I	M	M	I	E

4. Table

The cutting speed from Table 1 and the feed code letter from Table 3 produce the feed (Vf) in Table 4.

Feed code letter	Cutting speed Vc m/min.															
	14	19	24	30	38	48	60	72	96	120	150	192	240	300	384	480
	Feed (Vf) mm/min.															
A	12	14	19	24	30	38	48	60	72	96	120	144	192	240	300	384
B	13	17	22	26	34	42	54	66	84	108	132	168	216	264	336	420
C	14	19	24	30	38	48	60	72	96	120	144	192	240	300	384	480
D	17	22	26	34	42	54	66	84	108	132	168	216	264	336	420	540
E	19	24	30	38	48	60	72	96	120	144	192	240	300	384	480	600
F	22	26	34	42	54	66	84	108	132	168	216	264	336	420	540	672
G	24	30	38	48	60	72	96	120	144	192	240	300	384	480	600	720
H	26	34	42	54	66	84	108	132	168	216	264	336	420	540	672	840
I	30	38	48	60	72	96	120	144	192	240	300	384	480	600	720	960
J	34	42	54	66	84	108	132	168	216	264	336	420	540	672	840	1.080
K	38	48	60	72	96	120	144	192	240	300	384	480	600	720	960	1.200
L	42	54	66	84	108	132	168	216	264	336	420	540	672	840	1.080	1.320
M	48	60	72	96	120	144	192	240	300	384	480	600	720	960	1.200	1.440
N	54	66	84	108	132	168	216	264	336	420	540	672	840	1.080	1.320	1.680
O	60	72	96	120	144	192	240	300	384	480	600	720	960	1.200	1.440	1.920
P	66	84	108	132	168	216	264	336	420	540	672	840	1.080	1.320	1.680	2.160

Solid carbide end milling cutter

HSC milling



- Please adjust these guideline values according to clamping operation and machine set-up!

254001....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed	Vf mm/min For milling cutter Ø	Cutting speed	Vf mm/min For milling cutter Ø	Feed fz in mm/tooth in relation to milling cutter diameter in mm			
					Vc m/min	1 - 1.5 mm	Vc m/min	2 - 4 mm	5 - 8	10 - 14	16 - 18	20
P	Machining steel	Up to 700	9 SMn 28	1.0715	60 - 65	130	70 - 75	135 - 235	315 - 295	280	260 - 230	205 - 190
	Unalloyed structural steel	Up to 700	St-52	1.0052	60 - 65	130	70 - 75	135 - 235	315 - 295	280	260 - 230	205 - 190
	Structural steel	700 - 950	Ck45	1.1191	60 - 65	130	70 - 75	135 - 235	315 - 295	280	260 - 230	205 - 190
	Cast steel	Up to 950	GS 40	1.0416	45 - 50	125	50 - 60	125 - 185	235	230 - 215	200 - 180	155 - 145
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	45 - 50	125	50 - 60	125 - 185	235	230 - 215	200 - 180	155 - 145
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	45 - 50	125	50 - 60	125 - 185	235	230 - 215	200 - 180	155 - 145
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	30 - 35	60	35 - 40	65 - 85	95	90	80 - 70	60 - 55
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	35 - 40	65	40 - 45	70 - 90	100	95	85 - 75	65 - 60
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	60 - 65	130	70 - 75	135 - 235	315 - 295	280	260 - 230	205 - 190
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	40	90	45 - 55	90 - 125	130 - 125	125 - 110	100 - 90	80 - 70
	Ductile iron	Up to 280 HB	GGG 60	0.7060	45	95	50 - 60	95 - 130	135 - 130	130 - 115	105 -95	85 - 75
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	45	95	50 - 60	95 - 130	135 - 130	130 - 115	105 -95	85 - 75
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	30 - 40	25	40 - 50		55 - 50	50 - 40	35 - 30	30 - 25
	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	25	17 - 20	25 - 30		30 - 25	25 - 18	16 - 14	13 - 11

Axial cut depth ap in ISO range P M K	
	ap
Diameter less than 3 mm:	0.3 x D
Diameter from 3 mm	0.5 x D

Axial cut depth ap in ISO range H	
Hardness 45-50 HRc	ap
Diameter from 1 mm:	0.05 x D
Hardness 50-60 HRc	ap
Diameter less than 3 mm:	0.02 x D
Diameter from 3 mm:	0.05 x D

SARA® Solid carbide end milling cutter

- Please adjust these guideline values according to clamping operation and machine set-up!



254058....



254052....



254050....



254054....
254056....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm					
						≤ Ø 2	≤ Ø 4	≤ Ø 8	≤ Ø 12	≤ Ø 16	≤ Ø 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	110 - 160	0.01	0.02	0.04	0.05	0.06	0.07
	Unalloyed structural steel	Up to 700	St-52	1.0052	90 - 160	0.01 - 0.015	0.02 - 0.03	0.04 - 0.05	0.05	0.06 - 0.07	0.07 - 0.08
	Cast steel	Up to 950	GS 40	1.0416	90 - 150	0.015	0.03	0.05	0.05	0.07	0.08
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	90 - 140	0.007 - 0.01	0.015 - 0.02	0.03 - 0.04	0.04 - 0.05	0.05 - 0.06	0.06 - 0.07
	Tempering steel	950 -1300	43CrMo4	1.3563	80-120	0.007	0.015	0.03	0.04	0.05	0.06
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	80 - 110	0.007	0.015	0.03	0.04	0.05	0.06
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	70 - 84	0.005	0.01	0.02	0.03	0.04	0.05
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	70	0.005	0.01	0.02	0.03	0.04	0.05
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	90 - 156	0.007 - 0.018	0.015 - 0.035	0.03 - 0.06	0.04 - 0.07	0.05 - 0.09	0.06 - 0.12
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	104 - 156	0.005 - 0.015	0.01 - 0.03	0.02 - 0.05	0.03 - 0.05	0.04 - 0.07	0.05 - 0.08
	Ductile iron	Up to 280 HB	GGG 60	0.7060	130 - 156	0.018	0.035	0.06	0.07	0.09	0.12
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	100	0.01	0.02	0.04	0.06	0.08	0.12
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	120	0.01	0.02	0.04	0.06	0.08	0.12
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	120	0.01	0.02	0.04	0.06	0.08	0.12
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	140	0.01	0.02	0.04	0.06	0.08	0.12
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	150	0.01	0.02	0.04	0.06	0.08	0.12
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	200	0.01	0.02	0.04	0.06	0.08	0.12
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	20 - 50	0.01	0.01	0.02	0.03	0.04	0.05
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	30	0.01	0.01	0.02	0.03	0.04	0.05

Cutting speed and feed correction factors

ae	10%	20%	50%	100%
Factor for Vc	1.3	1.1	1	0.85
Factor for fz	1.5	1.3	1	0.8

Solid carbide high-performance end milling cutter



251033....

- Note:
  The recommended cutting data are guide values for conventional roughing and assume stable machine conditions, low-vibration workpiece clamping and the application of suitable cooling lubricant. The cutting speed Vc can be increased by 20% for finishing. For full slot milling we recommend reducing the cutting speed Vc by approx. 15% and the feed Vf mm/min by 30%.

ISO	**Grooving** ap: 1.00 x D/ ae: 1.00 x D Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter range in mm				
						3-4	5 - 6	8 -10	12 - 16	18 - 25
P	Unalloyed structural steel	Up to 700	St-52	1.0052	156	0.01	0.029	0.038	0.063	0.101
	Machining steel	Up to 700	9 SMn 28	1.0715	170	0.01	0.029	0.038	0.063	0.101
	Unalloyed tempered steel	500 - 950	Ck45	1.1191	127	0.01	0.029	0.038	0.063	0.101
	Alloyed case-hardened steel	Up to 950	16 MnCr 5	1.7131	99	0.008	0.021	0.027	0.044	0.071
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	85	0.008	0.021	0.027	0.044	0.071
	Cast steel	Up to 950	GS 40	1.0416	105	0.01	0.029	0.038	0.063	0.101
M	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	156	0.01	0.029	0.038	0.063	0.101
	Stainless steel, sulphurised	500 - 950	X 12 CrMoS 17	1.4104	53	0.008	0.021	0.027	0.044	0.071
	Stainless steel, martensitic	500 - 950	X 10 Cr 13	1.4006	53	0.008	0.021	0.027	0.044	0.071
K	Grey cast iron	100 - 400	GG 25	0.6025	127	0.01	0.029	0.038	0.063	0.101
	Alloyed grey cast iron	150-250	GGL-NiCr 35 2	0.6678	99	0.01	0.029	0.038	0.063	0.101
	Ductile iron	400 - 800	GGG 60	0.7060	99	0.01	0.029	0.038	0.063	0.101
	Malleable cast iron	350 - 700	GTS 55	0.8155	99	0.01	0.029	0.038	0.063	0.101
S	Titanium alloy	900 - 1400	TiAl6Sn 2	3.7174	25	0.006	0.013	0.021	0.027	0.059
	Nickel-based alloy	900 - 1400	NiCr19Fe19NbMo	Inconel 718	25	0.006	0.013	0.021	0.027	0.059

ISO	**Finishing / Edge-banding** ap: 1.00 x D/ ae: 0.50 x D Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter range in mm				
						3-4	5 - 6	8 -10	12 - 16	18 - 25
P	Unalloyed structural steel	Up to 700	St-52	1.0052	156	0.012	0.035	0.045	0.075	0.12
	Machining steel	Up to 700	9 SMn 28	1.0715	170	0.012	0.035	0.045	0.075	0.12
	Unalloyed tempered steel	500 - 950	Ck45	1.1191	127	0.012	0.035	0.045	0.075	0.12
	Alloyed case-hardened steel	Up to 950	16 MnCr 5	1.7131	99	0.009	0.025	0.032	0.052	0.084
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	85	0.009	0.025	0.032	0.052	0.084
	Cast steel	Up to 950	GS 40	1.0416	105	0.012	0.035	0.045	0.075	0.12
M	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	156	0.012	0.035	0.045	0.075	0.12
	Stainless steel, sulphurised	500 - 950	X 12 CrMoS 17	1.4104	53	0.009	0.025	0.032	0.052	0.084
	Stainless steel, martensitic	500 - 950	X 10 Cr 13	1.4006	53	0.009	0.025	0.032	0.052	0.084
K	Grey cast iron	100 - 400	GG 25	0.6025	127	0.012	0.035	0.045	0.075	0.12
	Alloyed grey cast iron	150-250	GGL-NiCr 35 2	0.6678	99	0.012	0.035	0.045	0.075	0.12
	Ductile iron	400 - 800	GGG 60	0.7060	99	0.012	0.035	0.045	0.075	0.12
	Malleable cast iron	350 - 700	GTS 55	0.8155	99	0.012	0.035	0.045	0.075	0.12
S	Titanium alloy	900 - 1400	TiAl6Sn 2	3.7174	25	0.007	0.015	0.025	0.032	0.07
	Nickel-based alloy	900 - 1400	NiCr19Fe19NbMo	Inconel 718	25	0.007	0.015	0.025	0.032	0.07





VAN HOORN
End milling cutters
189 pages
Art.no. 019900 0079

Overview of all free manufacturers' catalogues
on page 14/15

VAN HOORN CARBIDE End milling cutter VHRSW Z4



- Please adjust these guideline values according to clamping operation and machine set-up!

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ISO	**Roughing / Grooving** fz for ae = 1.0 x D and ap = 1.0 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm										
	Materials group					3	4	5	6	8	10	12	14	16	20	25
P	Machining steel	Up to 700	9 SMn 28	1.0715	200	0.01	0.015	0.02	0.025	0.035	0.04	0.05	0.055	0.065	0.08	0.110
P	Unalloyed structural steel	Up to 700	St-52	1.0052	200	0.01	0.015	0.02	0.025	0.035	0.04	0.05	0.055	0.065	0.08	0.110
P	Structural steel	700 - 950	Ck45	1.1191	200	0.01	0.015	0.02	0.025	0.035	0.04	0.05	0.055	0.065	0.08	0.110
P	Cast steel	Up to 950	GS 40	1.0416	130	0.01	0.015	0.02	0.025	0.035	0.04	0.05	0.055	0.065	0.08	0.110
P	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	180	0.01	0.015	0.02	0.025	0.035	0.04	0.05	0.055	0.065	0.08	0.110
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	130	0.01	0.015	0.02	0.025	0.035	0.04	0.05	0.055	0.065	0.08	0.110
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	80	0.01	0.015	0.02	0.025	0.035	0.04	0.05	0.055	0.065	0.08	0.110
M	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	90	0.01	0.015	0.02	0.025	0.035	0.04	0.05	0.055	0.065	0.08	0.110
M	Duplex	700 - 950	x 2 CrNiMoN 22-5-3	1.4462	100	0.01	0.015	0.02	0.025	0.035	0.04	0.05	0.055	0.065	0.08	0.110
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	180	0.01	0.015	0.02	0.025	0.035	0.04	0.05	0.055	0.065	0.08	0.110
K	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	160	0.01	0.015	0.02	0.025	0.035	0.04	0.05	0.055	0.065	0.08	0.110
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	100	0.01	0.015	0.02	0.025	0.035	0.04	0.05	0.055	0.065	0.08	0.110
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	100	0.01	0.015	0.02	0.025	0.035	0.04	0.05	0.055	0.065	0.08	0.110
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	50	0.01	0.015	0.02	0.025	0.035	0.04	0.05	0.055	0.065	0.08	0.110
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	30	0.01	0.015	0.02	0.025	0.035	0.04	0.05	0.055	0.065	0.08	0.110
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	100	0.01	0.015	0.02	0.025	0.035	0.04	0.05	0.055	0.065	0.08	0.110

ISO	**Finishing / Edge-banding** fz for ae = 0.5 x D and ap = 1.0 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm										
	Materials group					3	4	5	6	8	10	12	14	16	20	25
P	Machining steel	Up to 700	9 SMn 28	1.0715	225	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.08	0.1	0.125
P	Unalloyed structural steel	Up to 700	St-52	1.0052	225	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.08	0.1	0.125
P	Structural steel	700 - 950	Ck45	1.1191	225	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.08	0.1	0.125
P	Cast steel	Up to 950	GS 40	1.0416	150	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.08	0.1	0.125
P	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	200	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.08	0.1	0.125
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	150	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.08	0.1	0.125
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	110	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.08	0.1	0.125
M	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	120	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.08	0.1	0.125
M	Duplex	700 - 950	x 2 CrNiMoN 22-5-3	1.4462	130	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.08	0.1	0.125
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	200	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.08	0.1	0.125
K	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	180	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.08	0.1	0.125
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	120	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.08	0.1	0.125
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	120	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.08	0.1	0.125
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	60	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.08	0.1	0.125
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	40	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.08	0.1	0.125
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	120	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.08	0.1	0.125

ATORN® End milling cutter VHRSW Z5



- Please adjust these guideline values according to clamping operation and machine set-up!

255101 ....

ISO	**Finishing / Edge-banding** fz for ae = 0.5 x D and ap = 1.0 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm										
	Materials group					3	4	5	6	8	10	12	14	16	20	25
P	Machining steel	Up to 700	9 SMn 28	1.0715	225	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.08	0.1	0.125
P	Unalloyed structural steel	Up to 700	St-52	1.0052	225	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.08	0.1	0.125
P	Structural steel	700 - 950	Ck45	1.1191	225	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.08	0.1	0.125
P	Cast steel	Up to 950	GS 40	1.0416	150	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.08	0.1	0.125
P	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	200	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.08	0.1	0.125
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	150	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.08	0.1	0.125
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	110	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.08	0.1	0.125
M	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	120	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.08	0.1	0.125
M	Duplex	700 - 950	x 2 CrNiMoN 22-5-3	1.4462	130	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.08	0.1	0.125
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	200	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.08	0.1	0.125
K	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	180	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.08	0.1	0.125
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	120	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.08	0.1	0.125
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	120	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.08	0.1	0.125
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	60	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.08	0.1	0.125
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	40	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.08	0.1	0.125
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	120	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.08	0.1	0.125

Solid carbide milling cutter VHVFFW3 and VHRFFW3/4



254015....

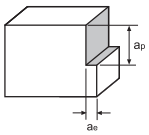
- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	**Roughing / Grooving** fz for ae = 1.0 x D and ap = 1.0 x D Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm									
						3	4	5	6	8	10	12	14	16	20
P	Machining steel	Up to 700	9 SMn 28	1.0715	200	0.01	0.015	0.02	0.025	0.03	0.035	0.04	0.045	0.05	0.06
	Unalloyed structural steel	Up to 700	St-52	1.0052	200	0.01	0.015	0.02	0.025	0.03	0.035	0.04	0.045	0.05	0.06
	Structural steel	700 - 950	Ck45	1.1191	200	0.01	0.015	0.02	0.025	0.03	0.035	0.04	0.045	0.05	0.06
	Cast steel	Up to 950	GS 40	1.0416	180	0.01	0.015	0.02	0.025	0.03	0.035	0.04	0.045	0.05	0.06
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	130	0.01	0.015	0.02	0.025	0.03	0.035	0.04	0.045	0.05	0.06
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	130	0.01	0.015	0.02	0.025	0.03	0.035	0.04	0.045	0.05	0.06
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	110	0.01	0.015	0.02	0.025	0.03	0.035	0.04	0.045	0.05	0.06
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	80	0.01	0.015	0.02	0.025	0.03	0.035	0.04	0.045	0.05	0.06
	Duplex	700 - 950	x 2 CrNiMoN 22-5-3	1.4462	80	0.01	0.015	0.02	0.025	0.03	0.035	0.04	0.045	0.05	0.06
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	140	0.01	0.015	0.02	0.025	0.03	0.035	0.04	0.045	0.05	0.06
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	140	0.01	0.015	0.02	0.025	0.03	0.035	0.04	0.045	0.05	0.06
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	60	0.01	0.015	0.02	0.025	0.03	0.035	0.04	0.045	0.05	0.06
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	40	0.01	0.015	0.02	0.025	0.03	0.035	0.04	0.045	0.05	0.06
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	90	0.01	0.015	0.02	0.025	0.03	0.035	0.04	0.045	0.05	0.06

ISO	**Finishing / Edge-banding** fz for ae = 0.5 x D and ap = 1.0 x D Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm									
						3	4	5	6	8	10	12	14	16	20
P	Machining steel	Up to 700	9 SMn 28	1.0715	200	0.015	0.02	0.025	0.03	0.035	0.045	0.055	0.06	0.065	0.08
	Unalloyed structural steel	Up to 700	St-52	1.0052	200	0.015	0.02	0.025	0.03	0.035	0.045	0.055	0.06	0.065	0.08
	Structural steel	700 - 950	Ck45	1.1191	200	0.015	0.02	0.025	0.03	0.035	0.045	0.055	0.06	0.065	0.08
	Cast steel	Up to 950	GS 40	1.0416	180	0.015	0.02	0.025	0.03	0.035	0.045	0.055	0.06	0.065	0.08
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	130	0.015	0.02	0.025	0.03	0.035	0.045	0.055	0.06	0.065	0.08
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	130	0.015	0.02	0.025	0.03	0.035	0.045	0.055	0.06	0.065	0.08
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	110	0.015	0.02	0.025	0.03	0.035	0.045	0.055	0.06	0.065	0.08
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	80	0.015	0.02	0.025	0.03	0.035	0.045	0.055	0.06	0.065	0.08
	Duplex	700 - 950	x 2 CrNiMoN 22-5-3	1.4462	80	0.015	0.02	0.025	0.03	0.035	0.045	0.055	0.06	0.065	0.08
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	140	0.015	0.02	0.025	0.03	0.035	0.045	0.055	0.06	0.065	0.08
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	140	0.015	0.02	0.025	0.03	0.035	0.045	0.055	0.06	0.065	0.08
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	60	0.015	0.02	0.025	0.03	0.035	0.045	0.055	0.06	0.065	0.08
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	40	0.015	0.02	0.025	0.03	0.035	0.045	0.055	0.06	0.065	0.08
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	90	0.015	0.02	0.025	0.03	0.035	0.045	0.055	0.06	0.065	0.08

ATORN® End milling cutter, multi-flute milling cutter, torus cutter RockTec 52

- Please adjust these guideline values according to clamping operation and machine set-up!





257003....



257015....



257011....
257013....
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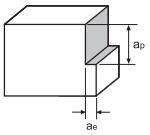


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ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	ae max.	ap max.	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm					
								3	5	8	12	16	20
P	Machining steel	Up to 700	9 SMn 28	1.0715	0.2 x D	1.5 x D	140 - 160	0.02	0.04	0.06	0.09	0.12	0.15
	Tempering steel	500 - 950	42 CrMo4	1.7225	0.2 x D	1.5 x D	130 - 150	0.02	0.03	0.05	0.07	0.1	0.12
	Tempering steel	950 -1300	43CrMo4	1.3563	0.2 x D	1.5 x D	120 - 140	0.02	0.03	0.04	0.06	0.08	0.1
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	0.2 x D	1.5 x D	120 - 140	0.02	0.03	0.04	0.06	0.08	0.1
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	0.2 x D	1.5 x D	100 - 120	0.02	0.03	0.05	0.06	0.08	0.1
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	0.2 x D	1.5 x D	100 - 120	0.02	0.03	0.04	0.06	0.08	0.1
	Ductile iron	Up to 280 HB	GGG 60	0.7060	0.2 x D	1.5 x D	100 - 120	0.02	0.03	0.04	0.06	0.08	0.1
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	0.2 x D	1.5 x D	100 - 120	0.02	0.03	0.04	0.06	0.08	0.1
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	0.2 x D	1.5 x D	80-100	0.02	0.03	0.04	0.06	0.08	0.1
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	0.2 x D	1.5 x D	80-100	0.02	0.03	0.04	0.06	0.08	0.1
	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	0.2 x D	1.5 x D	70 - 90	0.02	0.03	0.04	0.06	0.08	0.1
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	0.05 x D	1 x D	60 - 80	0.01	0.02	0.03	0.04	0.06	0.07

ATORN® End milling cutter, torus milling cutter RockTec 52

- Please adjust these guideline values according to clamping operation and machine set-up!





257005....

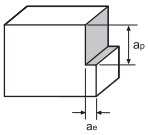


257019....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	ae max.	ap max.	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm					
								3	5	8	12	16	20
P	Machining steel	Up to 700	9 SMn 28	1.0715	0.2 x D	1.5 x D	120 - 140	0.02	0.04	0.06	0.09	0.12	0.15
P	Tempering steel	500 - 950	42 CrMo4	1.7225	0.2 x D	1.5 x D	110 - 130	0.02	0.03	0.05	0.07	0.1	0.12
P	Tempering steel	950 -1300	43CrMo4	1.3563	0.2 x D	1.5 x D	100 - 120	0.02	0.03	0.04	0.06	0.08	0.1
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	0.2 x D	1.5 x D	100 - 120	0.02	0.03	0.04	0.06	0.08	0.1
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	0.2 x D	1.5 x D	90 - 110	0.02	0.03	0.05	0.06	0.08	0.1
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	0.2 x D	1.5 x D	90 - 110	0.02	0.03	0.04	0.06	0.08	0.1
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	0.2 x D	1.5 x D	90 - 110	0.02	0.03	0.04	0.06	0.08	0.1
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	0.2 x D	1.5 x D	90 - 110	0.02	0.03	0.04	0.06	0.08	0.1
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	0.2 x D	1.5 x D	70 - 90	0.02	0.03	0.04	0.06	0.08	0.1
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	0.2 x D	1.5 x D	70 - 90	0.02	0.03	0.04	0.06	0.08	0.1
S	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	0.2 x D	1.5 x D	60 - 80	0.02	0.03	0.04	0.06	0.08	0.1
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	0.05 x D	1 x D	50 - 70	0.01	0.02	0.03	0.04	0.06	0.07

ATORN® End milling cutter, torus milling cutter RockTec 52

- Please adjust these guideline values according to clamping operation and machine set-up!





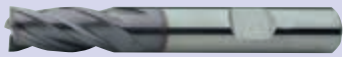
257007....



257021....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	ae max.	ap max.	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm					
								3	5	8	12	16	20
P	Tempering steel	950 -1300	43CrMo4	1.3563	0.2 x D	1.5 x D	120 - 140	0.02	0.04	0.08	0.1	0.11	0.12
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	0.2 x D	1.5 x D	120 - 140	0.02	0.04	0.08	0.1	0.11	0.12
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	0.2 x D	1.5 x D	130 - 170	0.02	0.04	0.08	0.1	0.1	0.1
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	0.2 x D	1.5 x D	130 - 170	0.02	0.04	0.08	0.1	0.1	0.1
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	0.05 x D	1 x D	80 - 110	0.02	0.03	0.06	0.08	0.09	0.1
H	Hardened materials up to 64 HRc		100Cr6	1.2067	0.03-0.05 x D	1 x D	50 - 80	0.015	0.025	0.05	0.06	0.07	0.08

SARA® End milling cutter



254005....

254006....
254007....

- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm							
						2 - 3	4 - 5	6 - 8	10 - 12	14 - 16	18 - 20	22-24	25
P	Machining steel	Up to 700	9 SMn 28	1.0715	80	310 - 505	530 - 620	590 - 615	590	550 - 575	520 - 540	440 - 480	420
P	Unalloyed structural steel	Up to 700	St-52	1.0052	80	310 - 505	530 - 620	590 - 615	590	550 - 575	520 - 540	440 - 480	420
P	Structural steel	700 - 950	Ck45	1.1191	70	280 - 355	370 - 425	420 - 425	420	415	370 - 405	315 - 340	300
P	Cast steel	Up to 950	GS 40	1.0416	70	280 - 355	370 - 425	420 - 425	420	415	370 - 405	315 - 340	300
P	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	70	280 - 355	370 - 425	420 - 425	420	415	370 - 405	315 - 340	300
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	70	280 - 355	370 - 425	420 - 425	420	415	370 - 405	315 - 340	300
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	35 - 45	95 - 105	110 - 120	125	125	110 - 120	90 - 100	70 - 80	70
M	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	40 - 50	100 - 110	115 - 125	130	130	115 - 125	95 - 105	75 - 85	75
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	100	370 - 595	635 - 740	710 - 735	710	655 - 680	620 - 655	520 - 560	500
K	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	90	360 - 585	625 - 730	700 - 725	700	645 - 670	610 - 645	510 - 550	490
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	95	365 - 590	630 - 735	705 - 730	705	650 - 675	615 - 650	515 - 555	495
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	95	365 - 590	630 - 735	705 - 730	705	650 - 675	615 - 650	515 - 555	495
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	25 - 30	60	70 - 75	65-70	60 - 65	45 - 50	35 - 40	30	30
H	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	15-20	40 - 45	40 - 45	35 - 40	30 - 35	20 - 25	19 - 20	16 - 17	15

	ap	ae
Material up to 45 HRc D up to 3 mm D more than 3 mm	 1.5 x D 1.5 x D	 0.05 x D 0.1 x D
Material from 45-60 HRc	1 x D	0.02 x D

SARA® End milling cutter



- Please adjust these guideline values according to clamping operation and machine set-up!

254130....
254131....

ISO	**Roughing** ap: 1.00 x d1 | ae: 1.00 x D1 Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	D1 3 fz	D1 4 fz	D1 5 fz	D1 6 fz	D1 7 fz	D1 8 fz	D1 9 fz	D1 10 fz
P	Machining steel	Up to 700	9 SMn 28	1.0715	141	0.010	0.017	0.029	0.029	0.038	0.038	0.038	0.063
	Unalloyed structural steel	Up to 700	St-52	1.0052	134	0.010	0.017	0.029	0.029	0.038	0.038	0.038	0.063
	Structural steel	700 - 950	Ck45	1.1191	127	0.010	0.017	0.029	0.029	0.038	0.038	0.038	0.063
	Tempering steel	500 - 950	42 CrMo4	1.7225	113	0.008	0.013	0.021	0.021	0.027	0.027	0.027	0.044
	Tempering steel	950 -1300	43CrMo4	1.3563	85	0.005	0.013	0.015	0.015	0.027	0.027	0.027	0.044
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	57 - 120	0.008 - 0.01	0.013 - 0.017	0.021 - 0.029	0.021 - 0.029	0.027 - 0.038	0.027 - 0.038	0.027 - 0.038	0.044 - 0.063
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	57	0.008	0.013	0.021	0.021	0.027	0.027	0.027	0.044
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	141	0.010	0.017	0.029	0.029	0.038	0.038	0.038	0.063
	Ductile iron	Up to 280 HB	GGG 60	0.7060	106	0.010	0.017	0.029	0.029	0.038	0.038	0.038	0.063
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	106	0.010	0.017	0.029	0.029	0.038	0.038	0.038	0.063

ISO	**Roughing** ap: 1.00 x d1 | ae: 1.00 x D1 Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	D1 11 fz	D1 12 fz	D1 13 fz	D1 14 fz	D1 16 fz	D1 18 fz	D1 20 fz	D1 25 fz
P	Machining steel	Up to 700	9 SMn 28	1.0715	141	0.063	0.063	0.063	0.084	0.084	0.101	0.101	0.109
	Unalloyed structural steel	Up to 700	St-52	1.0052	134	0.063	0.063	0.063	0.084	0.084	0.101	0.101	0.109
	Structural steel	700 - 950	Ck45	1.1191	127	0.063	0.063	0.063	0.084	0.084	0.101	0.101	0.109
	Tempering steel	500 - 950	42 CrMo4	1.7225	113	0.044	0.044	0.044	0.059	0.059	0.071	0.071	0.077
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	57 - 120	0.044 - 0.063	0.044 - 0.063	0.044 - 0.063	0.059 - 0.084	0.059 - 0.084	0.071 - 0.101	0.071 - 0.101	0.071 - 0.101
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	57	0.044	0.044	0.044	0.059	0.059	0.071	0.071	0.077
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	141	0.063	0.063	0.063	0.084	0.084	0.101	0.101	0.109
	Ductile iron	Up to 280 HB	GGG 60	0.7060	106	0.063	0.063	0.063	0.084	0.084	0.101	0.101	0.109
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	106	0.063	0.063	0.063	0.084	0.084	0.101	0.101	0.109

ISO	**Finishing / Edge-banding** ap: 1.00 x d1 | ae: 0.50 x D1 Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	D1 3 fz	D1 4 fz	D1 5 fz	D1 6 fz	D1 7 fz	D1 8 fz	D1 9 fz	D1 10 fz
P	Machining steel	Up to 700	9 SMn 28	1.0715	200	0.012	0.02	0.035	0.035	0.045	0.045	0.045	0.075
	Unalloyed structural steel	Up to 700	St-52	1.0052	190	0.012	0.02	0.035	0.035	0.045	0.045	0.045	0.075
	Structural steel	700 - 950	Ck45	1.1191	180	0.012	0.02	0.035	0.035	0.045	0.045	0.045	0.075
	Tempering steel	500 - 950	42 CrMo4	1.7225	160	0.009	0.015	0.025	0.025	0.032	0.032	0.032	0.052
	Tempering steel	950 -1300	43CrMo4	1.3563	120	0.006	0.015	0.018	0.018	0.032	0.032	0.032	0.052
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	80 - 170	0.009 - 0.012	0.015 - 0.02	0.025 - 0.035	0.032 - 0.045	0.032 - 0.045	0.032 - 0.045	0.052 - 0.075	0.052 - 0.075
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	80	0.009	0.015	0.025	0.025	0.032	0.032	0.032	0.052
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	200	0.012	0.02	0.035	0.035	0.045	0.045	0.045	0.075
	Ductile iron	Up to 280 HB	GGG 60	0.7060	150	0.012	0.02	0.035	0.035	0.045	0.045	0.045	0.075
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	150	0.012	0.02	0.035	0.035	0.045	0.045	0.045	0.075

ISO	**Finishing / Edge-banding** ap: 1.00 x d1 | ae: 0.50 x D1 Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	D1 11 fz	D1 12 fz	D1 13 fz	D1 14 fz	D1 16 fz	D1 18 fz	D1 20 fz	D1 25 fz
P	Machining steel	Up to 700	9 SMn 28	1.0715	200	0.075	0.075	0.075	0.1	0.1	0.12	0.12	0.13
	Unalloyed structural steel	Up to 700	St-52	1.0052	190	0.075	0.075	0.075	0.1	0.1	0.12	0.12	0.13
	Structural steel	700 - 950	Ck45	1.1191	180	0.075	0.075	0.075	0.1	0.1	0.12	0.12	0.13
	Tempering steel	500 - 950	42 CrMo4	1.7225	160	0.052	0.052	0.052	0.07	0.07	0.084	0.084	0.091
	Tempering steel	950 -1300	43CrMo4	1.3563	120	0.052	0.052	0.052	0.07	0.07	0.084	0.084	0.091
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	80 - 170	0.052 - 0.075	0.052 - 0.075	0.052 - 0.075	0.07 - 0.1	0.07 - 0.1	0.084 - 0.12	0.084 - 0.12	0.091 - 0.13
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	80	0.052	0.052	0.052	0.07	0.07	0.084	0.084	0.091
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	200	0.075	0.075	0.075	0.1	0.1	0.12	0.12	0.13
	Ductile iron	Up to 280 HB	GGG 60	0.7060	150	0.075	0.075	0.075	0.1	0.1	0.12	0.12	0.13
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	150	0.075	0.075	0.075	0.1	0.1	0.12	0.12	0.13

SARA® End milling cutter



- Please adjust these guideline values according to clamping operation and machine set-up!

254132....
254140....
254139....

ISO	**Roughing** ap: 1.00 x d1 | ae: 1.00 x D1 Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	D1 5 fz	D1 6 fz	D1 8 fz	D1 10 fz	D1 12 fz	D1 14 fz	D1 16 fz	D1 20 fz
P	Machining steel	Up to 700	9 SMn 28	1.0715	113	0.029	0.029	0.038	0.063	0.063	0.084	0.084	0.101
	Unalloyed structural steel	Up to 700	St-52	1.0052	106	0.029	0.029	0.038	0.063	0.063	0.084	0.084	0.101
	Structural steel	700 - 950	Ck45	1.1191	99	0.029	0.029	0.038	0.063	0.063	0.084	0.084	0.101
	Tempering steel	500 - 950	42 CrMo4	1.7225	85	0.021	0.021	0.027	0.044	0.044	0.059	0.059	0.071
	Tempering steel	950 -1300	43CrMo4	1.3563	57	0.021	0.021	0.027	0.044	0.044	0.059	0.059	0.071
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	42 - 92	0.021 - 0.029	0.021 - 0.029	0.027 - -0.038	0.044 - 0.063	0.059 - -0.084	0.059 - 0.084	0.059 - 0.084	0.071 - 0.101
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	64	0.021	0.021	0.027	0.044	0.044	0.059	0.059	0.071
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	120	0.029	0.029	0.038	0.063	0.063	0.084	0.084	0.101
	Ductile iron	Up to 280 HB	GGG 60	0.7060	85	0.029	0.029	0.038	0.063	0.063	0.084	0.084	0.101
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	85	0.029	0.029	0.038	0.063	0.063	0.084	0.084	0.101

ISO	**Finishing / Edge-banding** ap: 1.00 x d1 | ae: 0.50 x D1 Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	D1 5 fz	D1 6 fz	D1 8 fz	D1 10 fz	D1 12 fz	D1 14 fz	D1 16 fz	D1 20 fz
P	Machining steel	Up to 700	9 SMn 28	1.0715	160	0.035	0.035	0.045	0.075	0.075	0.1	0.1	0.12
	Unalloyed structural steel	Up to 700	St-52	1.0052	150	0.035	0.035	0.045	0.075	0.075	0.1	0.1	0.12
	Structural steel	700 - 950	Ck45	1.1191	140	0.035	0.035	0.045	0.075	0.075	0.1	0.1	0.12
	Tempering steel	500 - 950	42 CrMo4	1.7225	120	0.025	0.025	0.032	0.052	0.052	0.07	0.07	0.084
	Tempering steel	950 -1300	43CrMo4	1.3563	80	0.025	0.025	0.032	0.052	0.052	0.07	0.07	0.084
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	60 - 130	0.025 - 0.035	0.025 - 0.035	0.032 - 0.045	0.052 - 0.075	0.052 - 0.075	0.07 - 0.1	0.07 - 0.1	0.084 - 0.12
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	90	0.025	0.025	0.032	0.052	0.052	0.07	0.07	0.084
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	170	0.035	0.035	0.045	0.075	0.075	0.1	0.1	0.12
	Ductile iron	Up to 280 HB	GGG 60	0.7060	120	0.035	0.035	0.045	0.075	0.075	0.1	0.1	0.12
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	120	0.035	0.035	0.045	0.075	0.075	0.1	0.1	0.12



254133....

ISO	**Roughing** ap: 1.00 x d1 | ae: 1.00 x D1 Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	D1 3 fz	D1 4 fz	D1 5 fz	D1 6 fz	D1 7 fz	D1 8 fz	D1 9 fz	D1 10 fz
P	Machining steel	Up to 700	9 SMn 28	1.0715	134	0.010	0.017	0.029	0.029	0.038	0.038	0.038	0.063
	Unalloyed structural steel	Up to 700	St-52	1.0052	127	0.010	0.017	0.029	0.029	0.038	0.038	0.038	0.063
	Structural steel	700 - 950	Ck45	1.1191	120	0.010	0.017	0.029	0.029	0.038	0.038	0.038	0.063
	Tempering steel	500 - 950	42 CrMo4	1.7225	106	0.008	0.013	0.021	0.021	0.027	0.027	0.027	0.044
	Tempering steel	950 -1300	43CrMo4	1.3563	78	0.005	0.013	0.021	0.021	0.027	0.027	0.027	0.044
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	57 - 113	0.008 - 0.01	0.013 - 0.017	0.021	0.021	0.027 - 0.038	0.027 - 0.038	0.044 - 0.063	0.059 - 0.084
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	53	0.008	0.013	0.021	0.021	0.027	0.027	0.027	0.044
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	25	0.008	0.013	0.021	0.021	0.027	0.027	0.027	0.044
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	134	0.010	0.017	0.029	0.029	0.038	0.038	0.038	0.063
	Ductile iron	Up to 280 HB	GGG 60	0.7060	99	0.010	0.017	0.029	0.029	0.038	0.038	0.038	0.063
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	99	0.010	0.017	0.029	0.029	0.038	0.038	0.038	0.063

ISO	**Roughing** ap: 1.00 x d1 | ae: 1.00 x D1 Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	D1 11 fz	D1 12 fz	D1 13 fz	D1 14 fz	D1 16 fz	D1 18 fz	D1 20 fz	D1 25 fz
P	Machining steel	Up to 700	9 SMn 28	1.0715	134	0.063	0.063	0.084	0.084	0.084	0.101	0.101	0.109
	Unalloyed structural steel	Up to 700	St-52	1.0052	127	0.063	0.063	0.084	0.084	0.084	0.101	0.101	0.109
	Structural steel	700 - 950	Ck45	1.1191	120	0.063	0.063	0.084	0.084	0.084	0.101	0.101	0.109
	Tempering steel	500 - 950	42 CrMo4	1.7225	106	0.044	0.044	0.059	0.059	0.059	0.071	0.071	0.077
	Tempering steel	950 -1300	43CrMo4	1.3563	78	0.044	0.044	0.059	0.059	0.059	0.071	0.071	0.077
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	57 - 113	0.044 - 0.063	0.044 - 0.063	0.059 - 0.084	0.059 - 0.084	0.059 - 0.084	0.071 - 0.101	0.071 - 0.101	0.077 - 0.109
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	53	0.044	0.044	0.059	0.059	0.059	0.071	0.071	0.077
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	25	0.044	0.044	0.059	0.059	0.059	0.071	0.071	0.077
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	134	0.063	0.063	0.084	0.084	0.084	0.101	0.101	0.109
	Ductile iron	Up to 280 HB	GGG 60	0.7060	99	0.063	0.063	0.084	0.084	0.084	0.101	0.101	0.109
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	99	0.063	0.063	0.084	0.084	0.084	0.101	0.101	0.109



254133....

ISO	**Finishing / Edge-banding** ap: 1.00 x d1 | ae: 0.50 x D1 Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	D1 3 fz	D1 4 fz	D1 5 fz	D1 6 fz	D1 7 fz	D1 8 fz	D1 9 fz	D1 10 fz
P	Machining steel	Up to 700	9 SMn 28	1.0715	190	0.012	0.02	0.035	0.035	0.045	0.045	0.045	0.075
	Unalloyed structural steel	Up to 700	St-52	1.0052	180	0.012	0.02	0.035	0.035	0.045	0.045	0.045	0.075
	Structural steel	700 - 950	Ck45	1.1191	170	0.012	0.02	0.035	0.035	0.045	0.045	0.045	0.075
	Tempering steel	500 - 950	42 CrMo4	1.7225	150	0.009	0.015	0.025	0.025	0.032	0.032	0.032	0.052
	Tempering steel	950 -1300	43CrMo4	1.3563	110	0.006	0.015	0.025	0.025	0.032	0.032	0.032	0.052
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	80 - 160	0.009 - 0.012	0.015 - 0.02	0.025	0.025	0.032 - 0.045	0.032 - 0.045	0.032 - 0.045	0.052 - 0.075
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	75	0.009	0.015	0.025	0.025	0.032	0.032	0.032	0.052
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	35	0.009	0.015	0.025	0.025	0.032	0.032	0.032	0.052
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	190	0.012	0.02	0.035	0.035	0.045	0.045	0.045	0.075
	Ductile iron	Up to 280 HB	GGG 60	0.7060	140	0.012	0.02	0.035	0.035	0.045	0.045	0.045	0.075
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	140	0.012	0.02	0.035	0.035	0.045	0.045	0.045	0.075

ISO	**Finishing / Edge-banding** ap: 1.00 x d1 | ae: 0.50 x D1 Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	D1 11 fz	D1 12 fz	D1 13 fz	D1 14 fz	D1 16 fz	D1 18 fz	D1 20 fz	D1 25 fz
P	Machining steel	Up to 700	9 SMn 28	1.0715	190	0.075	0.075	0.1	0.1	0.1	0.12	0.12	0.13
	Unalloyed structural steel	Up to 700	St-52	1.0052	180	0.075	0.075	0.1	0.1	0.1	0.12	0.12	0.13
	Structural steel	700 - 950	Ck45	1.1191	170	0.075	0.075	0.1	0.1	0.1	0.12	0.12	0.13
	Tempering steel	500 - 950	42 CrMo4	1.7225	150	0.052	0.052	0.07	0.07	0.07	0.084	0.084	0.091
	Tempering steel	950 -1300	43CrMo4	1.3563	110	0.052	0.052	0.07	0.07	0.07	0.084	0.084	0.091
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	80 - 160	0.052 - 0.075	0.052 - 0.075	0.07 - 0.1	0.07 - 0.1	0.07 - 0.1	0.084 - 0.12	0.084 - 0.12	0.091 - 0.13
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	75	0.052	0.052	0.07	0.07	0.07	0.084	0.084	0.091
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	35	0.052	0.052	0.07	0.07	0.07	0.084	0.084	0.091
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	190	0.075	0.075	0.1	0.1	0.1	0.12	0.12	0.13
	Ductile iron	Up to 280 HB	GGG 60	0.7060	140	0.075	0.075	0.1	0.1	0.1	0.12	0.12	0.13
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	140	0.075	0.075	0.1	0.1	0.1	0.12	0.12	0.13

SARA® Torus milling cutter



254019....

- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm	
						6 - 8	10 - 12
P	Machining steel	Up to 700	9 SMn 28	1.0715	80	590 - 615	590
	Unalloyed structural steel	Up to 700	St-52	1.0052	80	590 - 615	590
	Structural steel	700 - 950	Ck45	1.1191	70	420 - 425	420
	Cast steel	Up to 950	GS 40	1.0416	70	420 - 425	420
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	70	420 - 425	420
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	70	420 - 425	420
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	35 - 45	125	125
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	40 - 50	130	130
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	100	710 - 735	710
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	90	700 - 725	700
	Ductile iron	Up to 280 HB	GGG 60	0.7060	95	705 - 730	705
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	95	705 - 730	705
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	25 - 30	65-70	60 - 65
	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	15-20	35 - 40	30 - 35

	ap	ae
Material up to 45 HRc D up to 3 mm D more than 3 mm	 1.5 x D 1.5 x D	 0.05 x D 0.1 x D
Material from 45-60 HRc	1 x D	0.02 x D

HPMT End milling cutter



- Please adjust these guideline values according to clamping operation and machine set-up!

254121....

ISO	**Roughing** ap: 1.00 x d1 | ae: 1.00 x D1 Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm									
						3	4	5	6	8	10	12	14	16	20
P	Machining steel	Up to 700	9 SMn 28	1.0715	150 - 200	0,011	0,015	0,020	0,025	0,035	0,046	0,057	0,069	0,082	0,110
	Unalloyed structural steel	Up to 700	St-52	1.0052	150 - 200	0,011	0,015	0,020	0,025	0,035	0,046	0,057	0,069	0,082	0,110
	Structural steel	700 - 950	Ck45	1.1191	100 - 120	0,013	0,019	0,024	0,030	0,042	0,054	0,068	0,082	0,097	0,129
	Cast steel	Up to 950	GS 40	1.0416	100 - 120	0,011	0,015	0,020	0,025	0,035	0,046	0,057	0,069	0,082	0,110
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	80 - 120	0,013	0,019	0,024	0,030	0,042	0,054	0,068	0,082	0,097	0,129
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	70 - 90	0,011	0,015	0,020	0,025	0,035	0,046	0,057	0,069	0,082	0,110
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	40 - 70	0,011	0,016	0,022	0,028	0,040	0,053	0,068	0,084	0,101	0,138
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	70 - 100	0,012	0,019	0,026	0,035	0,051	0,070	0,091	0,114	1,140	0,198
	Duplex	700 - 950	x 2 CrNiMoN 22-5-3	1.4462	40 - 70	0,011	0,016	0,022	0,028	0,040	0,053	0,068	0,084	0,101	0,138
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	150 - 200	0,011	0,015	0,020	0,025	0,035	0,046	0,057	0,069	0,082	0,110
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	150 - 200	0,011	0,015	0,020	0,025	0,035	0,046	0,057	0,069	0,082	0,110
	Ductile iron	Up to 280 HB	GGG 60	0.7060	150 - 200	0,009	0,013	0,018	0,024	0,036	0,049	0,063	0,079	0,096	0,136
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	150 - 200	0,009	0,013	0,018	0,024	0,036	0,049	0,063	0,079	0,096	0,136
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	280 - 350	0,025	0,025	0,025	0,025	0,040	0,045	0,050	0,055	0,055	0,060
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	200 - 250	0,025	0,025	0,025	0,025	0,040	0,045	0,050	0,055	0,055	0,060
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	60 - 70	0,031	0,019	0,026	0,034	0,050	0,067	0,080	0,108	0,132	0,184
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	15 - 25	0,031	0,019	0,026	0,034	0,050	0,067	0,080	0,108	0,132	0,184
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	50 - 70	0,031	0,019	0,026	0,034	0,050	0,067	0,080	0,108	0,132	0,184
	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	40 - 60	0,031	0,019	0,026	0,034	0,050	0,067	0,080	0,108	0,132	0,184

ISO	**Finishing / Edge-banding** ap: 1.00 x d1 | ae: 0.50 x D1 Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm									
						3	4	5	6	8	10	12	14	16	20
P	Machining steel	Up to 700	9 SMn 28	1.0715	150 - 200	0,018	0,024	0,032	0,040	0,056	0,074	0,091	0,110	0,131	0,176
	Unalloyed structural steel	Up to 700	St-52	1.0052	150 - 200	0,018	0,024	0,032	0,040	0,056	0,074	0,091	0,110	0,131	0,176
	Structural steel	700 - 950	Ck45	1.1191	100 - 120	0,021	0,030	0,038	0,048	0,067	0,086	0,109	0,131	0,155	0,206
	Cast steel	Up to 950	GS 40	1.0416	100 - 120	0,018	0,024	0,032	0,040	0,056	0,074	0,091	0,110	0,131	0,176
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	80 - 120	0,021	0,030	0,038	0,048	0,067	0,086	0,109	0,131	0,155	0,206
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	70 - 90	0,018	0,024	0,032	0,040	0,056	0,074	0,091	0,110	0,131	0,176
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	40 - 70	0,018	0,026	0,035	0,045	0,064	0,085	0,109	0,134	0,162	0,221
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	40 - 70	0,019	0,030	0,042	0,056	0,082	0,112	0,146	0,182	1,824	0,317
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	150 - 200	0,018	0,024	0,032	0,040	0,056	0,074	0,091	0,110	0,131	0,176
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	150 - 200	0,018	0,024	0,032	0,040	0,056	0,074	0,091	0,110	0,131	0,176
	Ductile iron	Up to 280 HB	GGG 60	0.7060	150 - 200	0,014	0,021	0,029	0,038	0,058	0,078	0,101	0,126	0,154	0,218
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	150 - 200	0,014	0,021	0,029	0,038	0,058	0,078	0,101	0,126	0,154	0,218
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	280 - 350	0,040	0,040	0,040	0,040	0,064	0,072	0,080	0,088	0,088	0,096
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	200 - 250	0,040	0,040	0,040	0,040	0,064	0,072	0,080	0,088	0,088	0,096
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	60 - 70	0,050	0,030	0,042	0,054	0,080	0,107	0,128	0,173	0,211	0,294
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	15 - 25	0,050	0,030	0,042	0,054	0,080	0,107	0,128	0,173	0,211	0,294
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	50 - 70	0,050	0,030	0,042	0,054	0,080	0,107	0,128	0,173	0,211	0,294
	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	40 - 60	0,050	0,030	0,042	0,054	0,080	0,107	0,128	0,173	0,211	0,294





OSG
Catalogue VI
1024 pages
Art.no. 019900 0208

Overview of all free manufacturers' catalogues on page 14/15

SARA® End milling cutter stainless steel



- Please adjust these guideline values according to clamping operation and machine set-up!

254134....
254135....
254136....

ISO	**Roughing** ap: 1.00 x d1 | ae: 1.00 x D1 Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	D1 3 fz	D1 4 fz	D1 5 fz	D1 6 fz	D1 7 fz	D1 8 fz	D1 9 fz	D1 10 fz
P	Machining steel	Up to 700	9 SMn 28	1.0715	163	0.010	0.017	0.029	0.029	0.038	0.038	0.038	0.063
	Unalloyed structural steel	Up to 700	St-52	1.0052	148	0.010	0.017	0.029	0.029	0.038	0.038	0.038	0.063
	Structural steel	700 - 950	Ck45	1.1191	124	0.010	0.017	0.029	0.029	0.038	0.038	0.038	0.063
	Tempering steel	500 - 950	42 CrMo4	1.7225	106	0.008	0.013	0.021	0.021	0.027	0.027	0.027	0.044
	Tempering steel	950 -1300	43CrMo4	1.3563	71	0.005	0.013	0.021	0.021	0.027	0.027	0.027	0.044
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	64 - 113	0.08 - 0.01	0.013 - 0.017	0.021	0.021	0.027 - 0.038	0.027 - 0.038	0.027 - 0.038	0.044 - 0.063
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	62	0.008	0.013	0.021	0.021	0.027	0.027	0.027	0.044
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	34	0.008	0.013	0.021	0.021	0.027	0.027	0.027	0.044
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	134	0.010	0.017	0.029	0.029	0.038	0.038	0.038	0.063
	Ductile iron	Up to 280 HB	GGG 60	0.7060	99	0.010	0.017	0.029	0.029	0.038	0.038	0.038	0.063
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	99	0.010	0.017	0.029	0.029	0.038	0.038	0.038	0.063
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	41	0.008	0.013	0.021	0.021	0.027	0.027	0.027	0.044
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	41	0.008	0.013	0.021	0.021	0.027	0.027	0.027	0.044

ISO	**Roughing** ap: 1.00 x d1 | ae: 1.00 x D1 Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	D1 11 fz	D1 12 fz	D1 13 fz	D1 14 fz	D1 16 fz	D1 18 fz	D1 20 fz	D1 25 fz
P	Machining steel	Up to 700	9 SMn 28	1.0715	163	0.063	0.063	0.084	0.084	0.084	0.101	0.101	0.109
	Unalloyed structural steel	Up to 700	St-52	1.0052	148	0.063	0.063	0.084	0.084	0.084	0.101	0.101	0.109
	Structural steel	700 - 950	Ck45	1.1191	124	0.063	0.063	0.084	0.084	0.084	0.101	0.101	0.109
	Tempering steel	500 - 950	42 CrMo4	1.7225	106	0.044	0.044	0.059	0.059	0.059	0.071	0.071	0.077
	Tempering steel	950 -1300	43CrMo4	1.3563	71	0.044	0.044	0.059	0.059	0.059	0.071	0.071	0.084
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	64 - 113	0.044 - 0.063	0.044 - 0.063	0.059 - 0.084	0.059 - 0.084	0.059 - 0.084	0.071 - 0.101	0.071 - 0.101	0.084 - 0.109
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	62	0.044	0.044	0.059	0.059	0.059	0.071	0.071	0.077
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	34	0.044	0.044	0.059	0.059	0.059	0.071	0.071	0.077
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	134	0.063	0.063	0.084	0.084	0.084	0.101	0.101	0.109
	Ductile iron	Up to 280 HB	GGG 60	0.7060	99	0.063	0.063	0.084	0.084	0.084	0.101	0.101	0.109
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	99	0.063	0.063	0.084	0.084	0.084	0.101	0.101	0.109
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	41	0.044	0.044	0.059	0.059	0.059	0.071	0.071	0.077
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	41	0.044	0.044	0.059	0.059	0.059	0.071	0.071	0.077

ISO	**Finishing / Edge-banding** ap: 1.00 x d1 | ae: 0.50 x D1 Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	D1 3 fz	D1 4 fz	D1 5 fz	D1 6 fz	D1 7 fz	D1 8 fz	D1 9 fz	D1 10 fz
P	Machining steel	Up to 700	9 SMn 28	1.0715	230	0.012	0.02	0.035	0.035	0.045	0.045	0.045	0.075
	Unalloyed structural steel	Up to 700	St-52	1.0052	210	0.012	0.02	0.035	0.035	0.045	0.045	0.045	0.075
	Structural steel	700 - 950	Ck45	1.1191	175	0.012	0.02	0.035	0.035	0.045	0.045	0.045	0.075
	Tempering steel	500 - 950	42 CrMo4	1.7225	150	0.009	0.015	0.025	0.025	0.032	0.032	0.032	0.052
	Tempering steel	950 -1300	43CrMo4	1.3563	100	0.006	0.015	0.025	0.025	0.032	0.032	0.032	0.052
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	90 - 160	0.09 - 0.012	0.015 - 0.02	0.025	0.025	0.032 - 0.045	0.052 - 0.075	0.052 - 0.075	0.052 - 0.075
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	88	0.009	0.015	0.025	0.025	0.032	0.032	0.032	0.052
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	48	0.009	0.015	0.025	0.025	0.032	0.032	0.032	0.052
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	190	0.012	0.02	0.035	0.035	0.045	0.045	0.045	0.075
	Ductile iron	Up to 280 HB	GGG 60	0.7060	140	0.012	0.02	0.035	0.035	0.045	0.045	0.045	0.075
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	140	0.012	0.02	0.035	0.035	0.045	0.045	0.045	0.075
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	58	0.009	0.015	0.025	0.025	0.032	0.032	0.032	0.052
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	58	0.009	0.015	0.025	0.025	0.032	0.032	0.032	0.052

ISO	**Finishing / Edge-banding** ap: 1.00 x d1 | ae: 0.50 x D1 Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	D1 11 fz	D1 12 fz	D1 13 fz	D1 14 fz	D1 16 fz	D1 18 fz	D1 20 fz	D1 25 fz
P	Machining steel	Up to 700	9 SMn 28	1.0715	230	0.075	0.075	0.1	0.1	0.1	0.12	0.12	0.13
	Unalloyed structural steel	Up to 700	St-52	1.0052	210	0.075	0.075	0.1	0.1	0.1	0.12	0.12	0.13
	Structural steel	700 - 950	Ck45	1.1191	175	0.075	0.075	0.1	0.1	0.1	0.12	0.12	0.13
	Tempering steel	500 - 950	42 CrMo4	1.7225	150	0.052	0.052	0.07	0.07	0.07	0.084	0.084	0.091
	Tempering steel	950 -1300	43CrMo4	1.3563	100	0.052	0.052	0.07	0.07	0.07	0.084	0.084	0.1
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	90 - 160	0.052 - 0.075	0.052 - 0.075	0.07 - 0.1	0.07 - 0.1	0.07 - 0.1	0.084 - 0.12	0.084 - 0.12	0.01 - 0.13
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	88	0.052	0.052	0.07	0.07	0.07	0.084	0.084	0.091
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	48	0.052	0.052	0.07	0.07	0.07	0.084	0.084	0.091
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	190	0.075	0.075	0.1	0.1	0.1	0.12	0.12	0.13
	Ductile iron	Up to 280 HB	GGG 60	0.7060	140	0.075	0.075	0.1	0.1	0.1	0.12	0.12	0.13
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	140	0.075	0.075	0.1	0.1	0.1	0.12	0.12	0.13

SARA® Roughing cutter



- Please adjust these guideline values according to clamping operation and machine set-up!

254016....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm					
						6	8	10	12	16	20
P	Machining steel	Up to 700	9 SMn 28	1.0715	150	0.017	0.022	0.026	0.032	0.04	0.047
	Unalloyed structural steel	Up to 700	St-52	1.0052	150	0.017	0.022	0.026	0.032	0.04	0.047
	Structural steel	700 - 950	Ck45	1.1191	130	0.017	0.022	0.026	0.032	0.04	0.047
	Cast steel	Up to 950	GS 40	1.0416	120	0.017	0.022	0.026	0.032	0.04	0.047
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	130	0.017	0.022	0.026	0.032	0.04	0.047
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	120	0.017	0.022	0.026	0.032	0.04	0.047
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	60	0.012	0.015	0.02	0.021	0.027	0.03
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	60	0.012	0.015	0.02	0.021	0.027	0.03
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	120	0.014	0.017	0.021	0.023	0.027	0.03
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	60	0.012	0.015	0.018	0.02	0.025	0.028
	Ductile iron	Up to 280 HB	GGG 60	0.7060	80	0.014	0.017	0.021	0.023	0.027	0.03
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	80	0.014	0.017	0.021	0.023	0.027	0.03
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	80	0.012	0.015	0.02	0.021	0.023	0.025

	Groove milling	Profile milling	
	ap	ap	ae
Steel up to 1300 N/mm²	0.4 x D	1.5 x D	0.4 x D
Steel up to 1300 N/mm² -2000 N/mm²	0.3 x D	1 x D	0.3 x D
Stainless steel	0.3 x D	1 x D	0.3 x D

ATORN® HPC Power end milling cutter 3Z



- Please adjust these guideline values according to clamping operation and machine set-up!

254503 ....

ISO	**Roughing / Grooving** fz for ae = 1.0 x D and ap = 1.0 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm									
	Materials group					4	5	6	8	10	12	14	16	18	20
P	Machining steel	Up to 700	9 SMn 28	1.0715	180	0.040	0.06	0.07	0.09	0.110	0.13	0.180	0.180	0.220	0.220
	Unalloyed structural steel	Up to 700	St-52	1.0052	180	0.040	0.06	0.07	0.09	0.110	0.13	0.180	0.180	0.220	0.220
	Structural steel	700 - 950	Ck45	1.1191	160	0.040	0.050	0.06	0.080	0.1	0.12	0.160	0.160	0.200	0.200
	Cast steel	Up to 950	GS 40	1.0416	105	0.03	0.040	0.050	0.07	0.09	0.1	0.140	0.140	0.170	0.170
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	130	0.040	0.050	0.06	0.080	0.1	0.12	0.160	0.160	0.200	0.200
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	80	0.03	0.040	0.050	0.06	0.07	0.080	0.110	0.110	0.140	0.140
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	80	0.02	0.03	0.03	0.040	0.050	0.06	0.080	0.080	0.1	0.1
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	80	0.02	0.03	0.03	0.040	0.050	0.06	0.080	0.080	0.1	0.1
	Duplex	700 - 950	x 2 CrNiMoN 22-5-3	1.4462	80	0.02	0.03	0.03	0.040	0.050	0.06	0.080	0.080	0.1	0.1
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	145	0.06	0.07	0.080	0.110	0.140	0.170	0.220	0.220	0.280	0.280
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	130	0.050	0.06	0.07	0.1	0.12	0.140	0.190	0.190	0.240	0.240
	Ductile iron	Up to 280 HB	GGG 60	0.7060	120	0.040	0.06	0.07	0.09	0.110	0.13	0.180	0.180	0.220	0.220
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	100	0.040	0.06	0.07	0.09	0.110	0.13	0.180	0.180	0.220	0.220
N	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	240	0.050	0.06	0.080	0.1	0.13	0.150	0.200	0.200	0.250	0.250
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	200	0.040	0.050	0.06	0.080	0.1	0.12	0.160	0.160	0.200	0.200
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	50	0.02	0.03	0.03	0.040	0.050	0.06	0.080	0.080	0.1	0.1
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	25	0.02	0.03	0.03	0.040	0.050	0.06	0.080	0.080	0.1	0.1

ISO	**Finishing / Edge-banding** fz for ae = 0.5 x D and ap = 1.0 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm									
	Materials group					4	5	6	8	10	12	14	16	18	20
P	Machining steel	Up to 700	9 SMn 28	1.0715	230	0.040	0.06	0.07	0.09	0.110	0.13	0.180	0.180	0.220	0.220
	Unalloyed structural steel	Up to 700	St-52	1.0052	230	0.040	0.06	0.07	0.09	0.110	0.13	0.180	0.180	0.220	0.220
	Structural steel	700 - 950	Ck45	1.1191	200	0.040	0.050	0.06	0.080	0.1	0.12	0.160	0.160	0.200	0.200
	Cast steel	Up to 950	GS 40	1.0416	130	0.03	0.040	0.050	0.07	0.09	0.1	0.140	0.140	0.170	0.170
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	160	0.040	0.050	0.06	0.080	0.1	0.12	0.160	0.160	0.200	0.200
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	100	0.03	0.040	0.050	0.06	0.07	0.080	0.110	0.110	0.140	0.140
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	100	0.02	0.03	0.03	0.040	0.050	0.06	0.080	0.080	0.1	0.1
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	100	0.02	0.03	0.03	0.040	0.050	0.06	0.080	0.080	0.1	0.1
	Duplex	700 - 950	x 2 CrNiMoN 22-5-3	1.4462	100	0.02	0.03	0.03	0.040	0.050	0.06	0.080	0.080	0.1	0.1
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	180	0.06	0.07	0.080	0.110	0.140	0.170	0.220	0.220	0.280	0.280
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	160	0.050	0.06	0.07	0.1	0.12	0.140	0.190	0.190	0.240	0.240
	Ductile iron	Up to 280 HB	GGG 60	0.7060	150	0.040	0.06	0.07	0.09	0.110	0.13	0.180	0.180	0.220	0.220
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	120	0.040	0.06	0.07	0.09	0.110	0.13	0.180	0.180	0.220	0.220
N	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	300	0.050	0.06	0.080	0.1	0.13	0.150	0.200	0.200	0.250	0.250
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	250	0.040	0.050	0.06	0.080	0.1	0.12	0.160	0.160	0.200	0.200
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	60	0.02	0.03	0.03	0.040	0.050	0.06	0.080	0.080	0.1	0.1
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	30	0.02	0.03	0.03	0.040	0.050	0.06	0.080	0.080	0.1	0.1

ATORN® HPC Power end milling cutter 4Z steel



- Please adjust these guideline values according to clamping operation and machine set-up!

254511.... **254510....**

ISO	**Roughing / Grooving** fz for ae = 1.0 x D and ap = 1.0 x D Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm									
						4	5	6	8	10	12	14	16	18	20
P	Machining steel	Up to 700	9 SMn 28	1.0715	200	0.040	0.06	0.07	0.09	0.110	0.13	0.180	0.180	0.220	0.220
	Unalloyed structural steel	Up to 700	St-52	1.0052	200	0.040	0.06	0.07	0.09	0.110	0.13	0.180	0.180	0.220	0.220
	Structural steel	700 - 950	Ck45	1.1191	170	0.040	0.050	0.06	0.080	0.1	0.12	0.160	0.160	0.200	0.200
	Cast steel	Up to 950	GS 40	1.0416	110	0.03	0.040	0.050	0.07	0.09	0.1	0.140	0.140	0.170	0.170
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	135	0.040	0.050	0.06	0.080	0.1	0.12	0.160	0.160	0.200	0.200
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	90	0.03	0.040	0.040	0.06	0.07	0.080	0.110	0.110	0.140	0.140
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	150	0.06	0.07	0.080	0.110	0.140	0.170	0.220	0.220	0.280	0.280
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	140	0.050	0.06	0.07	0.1	0.12	0.140	0.190	0.190	0.240	0.240
	Ductile iron	Up to 280 HB	GGG 60	0.7060	130	0.040	0.06	0.07	0.09	0.110	0.13	0.180	0.180	0.220	0.220
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	100	0.040	0.06	0.07	0.09	0.110	0.13	0.180	0.180	0.220	0.220

ISO	**Finishing / Edge-banding** fz for ae = 0.5 x D and ap = 1.0 x D Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm									
						4	5	6	8	10	12	14	16	18	20
P	Machining steel	Up to 700	9 SMn 28	1.0715	230	0.040	0.06	0.07	0.09	0.110	0.13	0.180	0.180	0.220	0.220
	Unalloyed structural steel	Up to 700	St-52	1.0052	230	0.040	0.06	0.07	0.09	0.110	0.13	0.180	0.180	0.220	0.220
	Structural steel	700 - 950	Ck45	1.1191	200	0.040	0.050	0.06	0.080	0.1	0.12	0.160	0.160	0.200	0.200
	Cast steel	Up to 950	GS 40	1.0416	130	0.03	0.040	0.050	0.07	0.09	0.1	0.140	0.140	0.170	0.170
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	160	0.040	0.050	0.06	0.080	0.1	0.12	0.160	0.160	0.200	0.200
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	100	0.03	0.040	0.040	0.06	0.07	0.080	0.110	0.110	0.140	0.140
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	180	0.06	0.07	0.080	0.110	0.140	0.170	0.220	0.220	0.280	0.280
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	160	0.050	0.06	0.07	0.1	0.12	0.140	0.190	0.190	0.240	0.240
	Ductile iron	Up to 280 HB	GGG 60	0.7060	150	0.040	0.06	0.07	0.09	0.110	0.13	0.180	0.180	0.220	0.220
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	120	0.040	0.06	0.07	0.09	0.110	0.13	0.180	0.180	0.220	0.220

ATORN® HPC Power end milling cutter 4Z stainless steel



- Please adjust these guideline values according to clamping operation and machine set-up!

254517.... **254516....**

ISO	**Roughing / Grooving** fz for ae = 1.0 x D and ap = 1.0 x D Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm									
						4	5	6	8	10	12	14	16	18	20
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	90	0.03	0.03	0.03	0.050	0.050	0.050	0.080	0.080	0.080	0.080
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	80	0.040	0.040	0.040	0.07	0.07	0.07	0.110	0.110	0.110	0.110
	Duplex	700 - 950	x 2 CrNiMoN 22-5-3	1.4462	80	0.040	0.040	0.040	0.07	0.07	0.07	0.110	0.110	0.110	0.110
N	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	250	0.06	0.06	0.06	0.12	0.12	0.12	0.190	0.190	0.190	0.190
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	210	0.050	0.050	0.050	0.1	0.1	0.1	0.160	0.160	0.160	0.160
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	50	0.02	0.02	0.02	0.040	0.040	0.040	0.06	0.06	0.06	0.06
	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	25	0.02	0.02	0.02	0.040	0.040	0.040	0.06	0.06	0.06	0.06

ISO	**Finishing / Edge-banding** fz for ae = 0.5 x D and ap = 1.0 x D Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm									
						4	5	6	8	10	12	14	16	18	20
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	90	0.03	0.03	0.03	0.050	0.050	0.050	0.080	0.080	0.080	0.080
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	80	0.040	0.040	0.040	0.07	0.07	0.07	0.110	0.110	0.110	0.110
	Duplex	700 - 950	x 2 CrNiMoN 22-5-3	1.4462	80	0.040	0.040	0.040	0.07	0.07	0.07	0.110	0.110	0.110	0.110
N	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	250	0.06	0.06	0.06	0.12	0.12	0.12	0.190	0.190	0.190	0.190
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	210	0.050	0.050	0.050	0.1	0.1	0.1	0.160	0.160	0.160	0.160
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	50	0.02	0.02	0.02	0.040	0.040	0.040	0.06	0.06	0.06	0.06
	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	25	0.02	0.02	0.02	0.040	0.040	0.040	0.06	0.06	0.06	0.06

SARA® Drilling and plunge milling cutter



- Please adjust these guideline values according to clamping operation and machine set-up!

254144.... **254145....**

ISO	**Ramping** Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter range in mm					
						5.7 - 6.0	7.7 - 8.0	9.7 - 10.0	11.7 - 14.0	15.7 - 16	19.7 - 20
P	Unalloyed structural steel	Up to 700	St-52	1.0052	210	0.025	0.038	0.045	0.05	0.07	0.09
P	Alloyed case-hardened steel	Up to 950	16 MnCr 5	1.7131	175	0.025	0.035	0.04	0.045	0.065	0.075
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	120	0.02	0.03	0.035	0.04	0.055	0.07
M	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	110	0.015	0.023	0.034	0.045	0.05	0.055
M	Stainless steel, sulphurised	500 - 950	X 12 CrMoS 17	1.4104	110	0.015	0.023	0.034	0.045	0.05	0.055
M	Stainless steel, martensitic	500 - 950	X 10 Cr 13	1.4006	90	0.015	0.02	0.03	0.035	0.045	0.05
K	Grey cast iron	100 - 400	GG 25	0.6025	150	0.018	0.025	0.038	0.045	0.06	0.075
K	Ductile iron	400 - 800	GGG 60	0.7060	110	0.018	0.025	0.038	0.045	0.06	0.075
K	Malleable cast iron	350 - 700	GTS 55	0.8155	110	0.018	0.025	0.038	0.045	0.06	0.075
S	Titanium alloy	Up to 950	TiAl6V4	3.7165	70	0.015	0.02	0.03	0.035	0.045	0.05
S	Titanium alloy	900 - 1400	TiAl6Sn 2	3.7174	70	0.015	0.02	0.03	0.035	0.045	0.05
S	Nickel-based alloy	Up to 950	NiCr12Al6MoNb	2.4670	50	0.015	0.02	0.035	0.045	0.05	0.055
S	Nickel-based alloy	900 - 1400	NiCr19Fe19NbMo	Inconel 718	50	0.015	0.02	0.035	0.045	0.05	0.055

Observe maximum plunge angle!

P	Steel	45°
M	Stainless steel, austenitic	10°
M	Stainless steel, sulphurised	10°
M	Stainless steel, martensitic	5 °
K	Malleable cast iron	45°
S	Nickel-based alloy	5 °

ISO	**Drilling** Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter range in mm					
						5.7 - 6.0	7.7 - 8.0	9.7 - 10.0	11.7 - 14.0	15.7 - 16	19.7 - 20
P	Unalloyed structural steel	Up to 700	St-52	1.0052	210	0.018	0.025	0.03	0.035	0.048	0.06
P	Alloyed case-hardened steel	Up to 950	16 MnCr 5	1.7131	175	0.015	0.023	0.028	0.03	0.043	0.05
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	120	0.013	0.02	0.025	0.025	0.038	0.045
K	Grey cast iron	100 - 400	GG 25	0.6025	150	0.013	0.018	0.025	0.03	0.04	0.05
K	Ductile iron	400 - 800	GGG 60	0.7060	110	0.013	0.018	0.025	0.03	0.04	0.05
K	Malleable cast iron	350 - 700	GTS 55	0.8155	110	0.013	0.018	0.025	0.03	0.04	0.05

ISO	**Side milling** Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter range in mm					
						5.7 - 6.0	7.7 - 8.0	9.7 - 10.0	11.7 - 14.0	15.7 - 16	19.7 - 20
P	Unalloyed structural steel	Up to 700	St-52	1.0052	210	0.045	0.06	0.07	0.085	0.115	0.14
P	Alloyed case-hardened steel	Up to 950	16 MnCr 5	1.7131	175	0.04	0.055	0.065	0.08	0.1	0.12
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	120	0.035	0.05	0.06	0.075	0.085	0.1
M	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	110	0.03	0.04	0.055	0.07	0.075	0.085
M	Stainless steel, sulphurised	500 - 950	X 12 CrMoS 17	1.4104	110	0.03	0.04	0.055	0.07	0.075	0.085
M	Stainless steel, martensitic	500 - 950	X 10 Cr 13	1.4006	90	0.03	0.04	0.05	0.055	0.07	0.08
K	Grey cast iron	100 - 400	GG 25	0.6025	150	0.03	0.045	0.06	0.075	0.09	0.11
K	Ductile iron	400 - 800	GGG 60	0.7060	110	0.03	0.045	0.06	0.075	0.09	0.11
K	Malleable cast iron	350 - 700	GTS 55	0.8155	110	0.03	0.045	0.06	0.075	0.09	0.11
S	Titanium alloy	Up to 950	TiAl6V4	3.7165	70	0.03	0.04	0.05	0.055	0.07	0.08
S	Titanium alloy	900 - 1400	TiAl6Sn 2	3.7174	70	0.03	0.04	0.05	0.055	0.07	0.08
S	Nickel-based alloy	Up to 950	NiCr12Al6MoNb	2.4670	50	0.03	0.04	0.055	0.07	0.075	0.085
S	Nickel-based alloy	900 - 1400	NiCr19Fe19NbMo	Inconel 718	50	0.03	0.04	0.055	0.07	0.075	0.085

ISO	**Groove milling** Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter range in mm					
						5.7 - 6.0	7.7 - 8.0	9.7 - 10.0	11.7 - 14.0	15.7 - 16	19.7 - 20
P	Unalloyed structural steel	Up to 700	St-52	1.0052	210	0.035	0.05	0.06	0.07	0.095	0.12
P	Alloyed case-hardened steel	Up to 950	16 MnCr 5	1.7131	175	0.03	0.045	0.055	0.06	0.085	0.1
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	120	0.025	0.04	0.05	0.05	0.075	0.09
M	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	110	0.02	0.03	0.045	0.06	0.065	0.075
M	Stainless steel, sulphurised	500 - 950	X 12 CrMoS 17	1.4104	110	0.02	0.03	0.045	0.06	0.065	0.075
M	Stainless steel, martensitic	500 - 950	X 10 Cr 13	1.4006	90	0.02	0.03	0.04	0.045	0.06	0.07
K	Grey cast iron	100 - 400	GG 25	0.6025	150	0.025	0.035	0.05	0.06	0.08	0.1
K	Ductile iron	400 - 800	GGG 60	0.7060	110	0.025	0.035	0.05	0.06	0.08	0.1
K	Malleable cast iron	350 - 700	GTS 55	0.8155	110	0.025	0.035	0.05	0.06	0.08	0.1
S	Titanium alloy	Up to 950	TiAl6V4	3.7165	70	0.02	0.03	0.04	0.045	0.06	0.07
S	Titanium alloy	900 - 1400	TiAl6Sn 2	3.7174	70	0.02	0.03	0.04	0.045	0.06	0.07
S	Nickel-based alloy	Up to 950	NiCr12Al6MoNb	2.4670	50	0.02	0.03	0.045	0.06	0.065	0.075
S	Nickel-based alloy	900 - 1400	NiCr19Fe19NbMo	Inconel 718	50	0.02	0.03	0.045	0.06	0.065	0.075

VAN HOORN CARBIDE End milling cutter VHVTR Z4



- Please adjust these guideline values according to clamping operation and machine set-up!

255084.... **255087....** **255088....**

ISO	**Roughing / Grooving** ae = 1.0 x D ap = 0.6 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm									
	Materials group					3	4	5	6	8	10	12	16	20	25
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	80 - 150	0.01	0.02	0.02	0.02	0.03	0.04	0.05	0.06	0.08	0.1
M	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	80 - 150	0.01	0.02	0.02	0.02	0.03	0.04	0.05	0.06	0.08	0.1
M	Duplex	700 - 950	x 2 CrNiMoN 22-5-3	1.4462	60 - 120	0.01	0.02	0.02	0.02	0.03	0.04	0.05	0.06	0.08	0.1
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	70 - 100	0.01	0.02	0.02	0.02	0.03	0.04	0.05	0.06	0.08	0.1
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	30 - 50	0.01	0.02	0.02	0.02	0.03	0.04	0.05	0.06	0.08	0.1

ISO	**Finishing / Edge-banding** ae = 0.5 x D ap = 1 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm									
	Materials group					3	4	5	6	8	10	12	16	20	25
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	80 - 150	0.02	0.03	0.03	0.04	0.05	0.07	0.08	0.10	0.12	0.15
M	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	80 - 150	0.02	0.03	0.03	0.04	0.05	0.07	0.08	0.10	0.12	0.15
M	Duplex	700 - 950	x 2 CrNiMoN 22-5-3	1.4462	60 - 120	0.02	0.03	0.03	0.04	0.05	0.07	0.08	0.10	0.12	0.15
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	70 - 100	0.02	0.03	0.03	0.04	0.05	0.07	0.08	0.10	0.12	0.15
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	30 - 50	0.02	0.03	0.03	0.04	0.05	0.07	0.08	0.10	0.12	0.15

VAN HOORN CARBIDE End milling cutter VHVTRW Z5



- Please adjust these guideline values according to clamping operation and machine set-up!

255102 ....

ISO	**Finishing / Edge-banding** fz for ae = 0.5 x D and ap = 1.0 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm										
	Materials group					3	4	5	6	8	10	12	14	16	20	25
P	Machining steel	Up to 700	9 SMn 28	1.0715	225	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.080	0.1	0.125
P	Unalloyed structural steel	Up to 700	St-52	1.0052	225	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.080	0.1	0.125
P	Structural steel	700 - 950	Ck45	1.1191	225	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.080	0.1	0.125
P	Cast steel	Up to 950	GS 40	1.0416	150	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.080	0.1	0.125
P	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	200	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.080	0.1	0.125
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	150	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.080	0.1	0.125
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	110	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.080	0.1	0.125
M	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	120	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.080	0.1	0.125
M	Duplex	700 - 950	x 2 CrNiMoN 22-5-3	1.4462	130	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.080	0.1	0.125
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	200	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.080	0.1	0.125
K	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	180	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.080	0.1	0.125
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	120	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.080	0.1	0.125
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	120	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.080	0.1	0.125
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	60	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.080	0.1	0.125
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	40	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.080	0.1	0.125
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	120	0.02	0.025	0.03	0.035	0.045	0.055	0.065	0.07	0.080	0.1	0.125





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SARA® ATORN® End milling cutter



- Please adjust these guideline values according to clamping operation and machine set-up!
- **Cutting data recommendations for extra-long version:** Please reduce the specified data by 25%.

254109....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm				
						6 - 8	10 - 12	14 - 16	18 - 20	25
P	Machining steel	Up to 700	9 SMn 28	1.0715	160	1,180 - 1,230	1.180	1,100 - 1,150	1,040 - 1,080	840
	Unalloyed structural steel	Up to 700	St-52	1.0052	160	1,180 - 1,230	1.180	1,100 - 1,150	1,040 - 1,080	840
	Structural steel	700 - 950	Ck45	1.1191	140	840 - 850	840	830	740 - 810	600
	Cast steel	Up to 950	GS 40	1.0416	140	840 - 850	840	830	740 - 810	600
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	140	840 - 850	840	830	740 - 810	600
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	140	840 - 850	840	830	740 - 810	600
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	70 - 90	250	250	220 - 240	180 - 200	140
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	80-100	260	260	230 - 250	190 - 210	150
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	200	1,420 - 1,470	1.420	1,310 - 1,360	1,240 - 1,310	1.000
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	180	1,400 - 1,450	1.400	1,290 - 1,340	1,220 - 1,290	980
	Ductile iron	Up to 280 HB	GGG 60	0.7060	190	1,410 - 1,460	1.410	1,300 - 1,350	1,230 - 1,300	990
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	190	1,410 - 1,460	1.410	1,300 - 1,350	1,230 - 1,300	990
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	50 - 60	130 - 140	120 - 130	90 - 100	70 - 80	60
	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	30 - 40	70 - 80	60 - 70	40 - 50	38 - 40	30

	ap	ae
Material up to 45 HRc D up to 3 mm D more than 3 mm	 1.5 x D 1.5 x D	 0.05 x D 0.1 x D
Material from 45-60 HRc	1 x D	0.02 x D

SARA® Roughing cutter



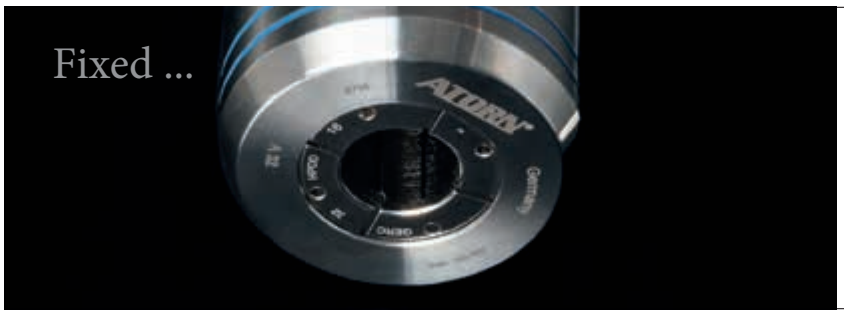
- Please adjust these guideline values according to clamping operation and machine set-up!

254090....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm			
						≤ Ø 8	≤ Ø 12	≤ Ø 16	≤ Ø 20
P	Machining steel	Up to 700	9 SMn 28	1.0715	112 - 160	0.04	0.05	0.06	0.07
	Unalloyed structural steel	Up to 700	St-52	1.0052	96 - 160	0.04 - 0.05	0.05	0.06 - 0.07	0.07 - 0.08
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	90 - 143	0.03 - 0.04	0.04 - 0.05	0.05 - 0.06	0.06 - 0.07
	Tempering steel	950 -1300	43CrMo4	1.3563	83 - 120	0.03	0.04	0.05	0.06
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	83 - 105	0.03	0.04	0.05	0.06
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	91 - 156	0.03 - 0.06	0.04 - 0.07	0.05 - 0.09	0.06 - 0.12
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	104 - 156	0.02 - 0.05	0.03 - 0.05	0.04 - 0.07	0.05 - 0.08
	Ductile iron	Up to 280 HB	GGG 60	0.7060	130 - 156	0.06	0.07	0.09	0.12

Cutting speed and feed correction factors

ae	50%	100%
Factor for Vc	1	0.85
Factor for fz	1	0.80



SARA® Roughing cutter



- Please adjust these guideline values according to clamping operation and machine set-up!

254137.... 254141.... 254142....

ISO	**Roughing** ap: 1.00 x D1 / ae: 1.00 x D1 Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	D1 4 fz	D1 5 fz	D1 6 fz	D1 8 fz	D1 10 fz	D1 12 fz	D1 14 fz	D1 16 fz	D1 20 fz
P	Machining steel	Up to 700	9 SMn 28	1.0715	159	0.017	0.029	0.029	0.038	0.063	0.063	0.084	0.084	0.101
	Unalloyed structural steel	Up to 700	St-52	1.0052	145	0.017	0.029	0.029	0.038	0.063	0.063	0.084	0.084	0.101
	Structural steel	700 - 950	Ck45	1.1191	120	0.017	0.029	0.029	0.038	0.063	0.063	0.084	0.084	0.101
	Tempering steel	500 - 950	42 CrMo4	1.7225	103	0.013	0.021	0.021	0.027	0.044	0.044	0.059	0.059	0.071
	Tempering steel	950 -1300	43CrMo4	1.3563	71	0.013	0.021	0.021	0.027	0.044	0.044	0.059	0.059	0.071
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	46 - 113	0.013 - 0.017	0.021 - 0.029	0.021 - 0.029	0.027 - 0.038	0.044 - 0.063	0.044 - 0.063	0.059 - 0.084	0.059 - 0.084	0.071 - 0.101
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	67	0.013	0.021	0.021	0.027	0.044	0.044	0.059	0.059	0.071
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	47	0.013	0.021	0.021	0.027	0.044	0.044	0.059	0.059	0.071
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	120	0.017	0.029	0.029	0.038	0.067	0.067	0.084	0.084	0.101
	Ductile iron	Up to 280 HB	GGG 60	0.7060	71	0.017	0.029	0.029	0.038	0.067	0.067	0.084	0.084	0.101
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	71	0.017	0.029	0.029	0.038	0.063	0.063	0.084	0.084	0.101

ISO	**Finishing / Edge-banding** ap: 1.00 x D1 / ae: 0.50 x D1 Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	D1 4 fz	D1 5 fz	D1 6 fz	D1 8 fz	D1 10 fz	D1 12 fz	D1 14 fz	D1 16 fz	D1 20 fz
P	Machining steel	Up to 700	9 SMn 28	1.0715	225	0.02	0.035	0.035	0.045	0.075	0.075	0.1	0.1	0.12
	Unalloyed structural steel	Up to 700	St-52	1.0052	205	0.02	0.035	0.035	0.045	0.075	0.075	0.1	0.1	0.12
	Structural steel	700 - 950	Ck45	1.1191	170	0.02	0.035	0.035	0.045	0.075	0.075	0.1	0.1	0.12
	Tempering steel	500 - 950	42 CrMo4	1.7225	145	0.015	0.025	0.025	0.032	0.052	0.052	0.07	0.07	0.084
	Tempering steel	950 -1300	43CrMo4	1.3563	100	0.015	0.025	0.025	0.032	0.052	0.052	0.07	0.07	0.084
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	65 - 160	0.015 - 0.2	0.025 - 0.035	0.025 - 0.035	0.032 - 0.045	0.052 - 0.075	0.052 - 0.075	0.07 - 0.1	0.07 - 0.1	0.084 - 0.12
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	95	0.015	0.025	0.025	0.032	0.052	0.052	0.07	0.07	0.084
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	67	0.015	0.025	0.025	0.032	0.052	0.052	0.07	0.07	0.084
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	170	0.02	0.035	0.035	0.045	0.080	0.080	0.1	0.1	0.12
	Ductile iron	Up to 280 HB	GGG 60	0.7060	100	0.02	0.035	0.035	0.045	0.080	0.080	0.1	0.1	0.12
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	100	0.02	0.035	0.035	0.045	0.075	0.075	0.1	0.1	0.12

SARA® Torus milling cutter



- Please adjust these guideline values according to clamping operation and machine set-up!

254017....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm	
						6 - 8	10 - 12
P	Machining steel	Up to 700	9 SMn 28	1.0715	85	295 - 315	280
	Unalloyed structural steel	Up to 700	St-52	1.0052	85	295 - 315	280
	Structural steel	700 - 950	Ck45	1.1191	85	295 - 315	280
	Cast steel	Up to 950	GS 40	1.0416	70	235	215 - 230
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	70	235	215 - 230
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	70	235	215 - 230
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	45	95	90
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	50	100	95
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	85	295 - 315	280
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	55	125 - 130	110 - 125
	Ductile iron	Up to 280 HB	GGG 60	0.7060	60	130 - 135	115 - 130
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	60	130 - 135	115 - 130
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	30	50 - 55	40 - 50
	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	20	25 - 30	18 - 25

Axial cut depth ap in ISO range P M K	
	ap 0.5 x D
Axial cut depth ap in ISO range H	
Hardness 45-50 HRc	ap 0.5 x D
Hardness 50-60 HRc	ap 0.5 x D

ATORN® Roughing / finishing cutter



- Please adjust these guideline values according to clamping operation and machine set-up!

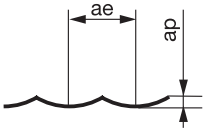
254030....

ISO	**Roughing / Grooving** fz for ae = 1,0 x D and ap = 1,0 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm									
	Materials group					4	5	6	8	10	12	14	16	18	20
P	Machining steel	Up to 700	9 SMn 28	1.0715	160	0,028	0,035	0,042	0,056	0,070	0,084	0,098	0,112	0,126	0,140
	Unalloyed structural steel	Up to 700	St-52	1.0052	160	0,028	0,035	0,042	0,056	0,070	0,084	0,098	0,112	0,126	0,140
	Structural steel	700 - 950	Ck45	1.1191	160	0,028	0,035	0,042	0,056	0,070	0,084	0,098	0,112	0,126	0,140
	Tempering steel	500 - 950	42 CrMo4	1.7225	140	0,024	0,030	0,036	0,048	0,060	0,072	0,084	0,096	0,108	0,120
	Cast steel	Up to 950	GS 40	1.0416	140	0,024	0,030	0,036	0,048	0,060	0,072	0,084	0,096	0,108	0,120
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	140	0,024	0,030	0,036	0,048	0,060	0,072	0,084	0,096	0,108	0,120
	Tempering steel	950 -1300	43CrMo4	1.3563	120	0,020	0,025	0,030	0,040	0,050	0,060	0,070	0,080	0,090	0,100
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	120	0,020	0,025	0,030	0,040	0,050	0,060	0,070	0,080	0,090	0,100
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	120	0,020	0,025	0,030	0,040	0,050	0,060	0,070	0,080	0,090	0,100
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	120	0,016	0,020	0,024	0,032	0,040	0,048	0,056	0,064	0,072	0,080
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	90	0,016	0,020	0,024	0,032	0,040	0,048	0,056	0,064	0,072	0,080
	Duplex	700 - 950	X2 CrNiMoN 22-5-3	1.4462	70	0,012	0,015	0,018	0,024	0,030	0,036	0,042	0,048	0,054	0,060
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	160	0,028	0,035	0,042	0,056	0,070	0,084	0,098	0,112	0,126	0,140
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	160	0,028	0,035	0,042	0,056	0,070	0,084	0,098	0,112	0,126	0,140
	Ductile iron	Up to 280 HB	GGG 60	0.7060	140	0,024	0,030	0,036	0,048	0,060	0,072	0,084	0,096	0,108	0,120
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	100	0,016	0,020	0,024	0,032	0,040	0,048	0,056	0,064	0,072	0,080
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	450	0,036	0,045	0,054	0,072	0,090	0,108	0,126	0,144	0,162	0,180
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	450	0,036	0,045	0,054	0,072	0,090	0,108	0,126	0,144	0,162	0,180
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	150	0,028	0,035	0,042	0,056	0,070	0,084	0,098	0,112	0,126	0,140
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	150	0,028	0,035	0,042	0,056	0,070	0,084	0,098	0,112	0,126	0,140
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	150	0,028	0,035	0,042	0,056	0,070	0,084	0,098	0,112	0,126	0,140
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	150	0,028	0,035	0,042	0,056	0,070	0,084	0,098	0,112	0,126	0,140
	Thermoplastic		PVC		300	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,180	0,200
	Thermoset		Melamin		300	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,180	0,200
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	80	0,020	0,025	0,030	0,040	0,050	0,060	0,070	0,080	0,090	0,100
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	60	0,016	0,020	0,024	0,032	0,040	0,048	0,056	0,064	0,072	0,080
	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	40	0,012	0,015	0,018	0,024	0,030	0,036	0,042	0,048	0,054	0,060

ISO	**Finishing / Edge-banding** fz for ae = 0,4 x D and ap = 1,0 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm									
	Materials group					4	5	6	8	10	12	14	16	18	20
P	Machining steel	Up to 700	9 SMn 28	1.0715	180	0,032	0,040	0,048	0,064	0,080	0,096	0,112	0,128	0,144	0,160
	Unalloyed structural steel	Up to 700	St-52	1.0052	180	0,032	0,040	0,048	0,064	0,080	0,096	0,112	0,128	0,144	0,160
	Structural steel	700 - 950	Ck45	1.1191	180	0,032	0,040	0,048	0,064	0,080	0,096	0,112	0,128	0,144	0,160
	Tempering steel	500 - 950	42 CrMo4	1.7225	160	0,028	0,035	0,042	0,056	0,070	0,084	0,098	0,112	0,126	0,140
	Cast steel	Up to 950	GS 40	1.0416	160	0,028	0,035	0,042	0,056	0,070	0,084	0,098	0,112	0,126	0,140
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	160	0,028	0,035	0,042	0,056	0,070	0,084	0,098	0,112	0,126	0,140
	Tempering steel	950 -1300	43CrMo4	1.3563	140	0,024	0,030	0,036	0,048	0,060	0,072	0,084	0,096	0,108	0,120
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	140	0,024	0,030	0,036	0,048	0,060	0,072	0,084	0,096	0,108	0,120
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	140	0,024	0,030	0,036	0,048	0,060	0,072	0,084	0,096	0,108	0,120
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	120	0,024	0,030	0,036	0,048	0,060	0,072	0,084	0,096	0,108	0,120
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	100	0,020	0,025	0,030	0,040	0,050	0,060	0,070	0,080	0,090	0,100
	Duplex	700 - 950	X2 CrNiMoN 22-5-3	1.4462	70	0,020	0,025	0,030	0,040	0,050	0,060	0,070	0,080	0,090	0,100
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	180	0,032	0,040	0,048	0,064	0,080	0,096	0,112	0,128	0,144	0,160
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	180	0,032	0,040	0,048	0,064	0,080	0,096	0,112	0,128	0,144	0,160
	Ductile iron	Up to 280 HB	GGG 60	0.7060	160	0,028	0,035	0,042	0,056	0,070	0,084	0,098	0,112	0,126	0,140
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	160	0,020	0,025	0,030	0,040	0,050	0,060	0,070	0,080	0,090	0,100
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	550	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,180	0,200
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	550	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,180	0,200
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	170	0,032	0,040	0,048	0,064	0,080	0,096	0,112	0,128	0,144	0,160
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	170	0,032	0,040	0,048	0,064	0,080	0,096	0,112	0,128	0,144	0,160
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	170	0,032	0,040	0,048	0,064	0,080	0,096	0,112	0,128	0,144	0,160
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	170	0,032	0,040	0,048	0,064	0,080	0,096	0,112	0,128	0,144	0,160
	Thermoplastic		PVC		350	0,060	0,075	0,090	0,120	0,150	0,180	0,210	0,240	0,270	0,300
	Thermoset		Melamin		350	0,060	0,075	0,090	0,120	0,150	0,180	0,210	0,240	0,270	0,300
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	90	0,024	0,030	0,036	0,048	0,060	0,072	0,084	0,096	0,108	0,120
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	70	0,020	0,025	0,030	0,040	0,050	0,060	0,070	0,080	0,090	0,100
	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	50	0,016	0,020	0,024	0,032	0,040	0,048	0,056	0,064	0,072	0,080

ATORN® Mini radius milling cutter RockTec 52

- The lower Vc values apply respectively for long clearances and the smaller diameter range; the higher Vc values for short clearance lengths and the larger diameter range. This also applies for the specified ap max. value.
- Please adjust these guideline values according to clamping operation and machine set-up!





257025....



257033....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Diameter range ≤ 0.5 mm		Diameter range 0.6 - 1 mm		Diameter range > 1 mm		Feed fz in mm/tooth in relation to milling cutter diameter in mm		
					Vc m/min	ap max.	Vc m/min	ap max.	Vc m/min	ap max.	0.2 - 0.3	0.4-0.8	0.9 - 1.5
P	Machining steel	Up to 700	9 SMn 28	1.0715	60 - 80	0.007 - 0.03	70 - 90	0.01 - 0.05	80-100	0.04 - 0.15	0.003 - 0.005	0.004 - 0.009	0.005 - 0.012
	Tempering steel	500 - 950	42 CrMo4	1.7225	60 - 80	0.007 - 0.03	70 - 90	0.01 - 0.05	80-100	0.04 - 0.15	0.003 - 0.005	0.004 - 0.009	0.005 - 0.012
	Tempering steel	950 -1300	43CrMo4	1.3563	60 - 80	0.006 - 0.025	70 - 90	0.01 - 0.05	80-100	0.04 - 0.15	0.003 - 0.005	0.004 - 0.009	0.005 - 0.012
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	60 - 80	0.006 - 0.025	70 - 90	0.01 - 0.05	80-100	0.04 - 0.15	0.003 - 0.005	0.004 - 0.009	0.005 - 0.012
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	50 - 70	0.007 - 0.03	60 - 80	0.01 - 0.05	70 - 90	0.04 - 0.15	0.003 - 0.005	0.004 - 0.009	0.005 - 0.012
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	50 - 70	0.007 - 0.03	60 - 80	0.01 - 0.05	70 - 90	0.04 - 0.15	0.003 - 0.005	0.004 - 0.009	0.005 - 0.012
	Ductile iron	Up to 280 HB	GGG 60	0.7060	50 - 70	0.007 - 0.03	60 - 80	0.01 - 0.05	70 - 90	0.04 - 0.15	0.003 - 0.005	0.004 - 0.009	0.005 - 0.012
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	50 - 70	0.007 - 0.03	60 - 80	0.01 - 0.05	70 - 90	0.04 - 0.15	0.003 - 0.005	0.004 - 0.009	0.005 - 0.012
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	50 - 70	0.007 - 0.03	60 - 80	0.01 - 0.05	70 - 90	0.04 - 0.15	0.003 - 0.005	0.004 - 0.009	0.005 - 0.012
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	50 - 70	0.006 - 0.025	60 - 80	0.01 - 0.05	70 - 90	0.04 - 0.15	0.003 - 0.004	0.003 - 0.008	0.004 - 0.01
	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	40 - 60	0.005 - 0.02	50 - 70	0.01 - 0.05	60 - 80	0.04 - 0.15	0.003 - 0.004	0.003 - 0.007	0.004 - 0.009
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	30 - 50	0.003 - 0.015	40 - 60	0.008 - 0.05	50 - 70	0.02 - 0.15	0.002 - 0.004	0.002 - 0.005	0.003 - 0.008

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Diameter range ≤ 0.5 mm		Diameter range 0.6 - 1 mm		Diameter range > 1 mm		Feed fz in mm/tooth in relation to milling cutter diameter in mm	
					Vc m/min	ap max.	Vc m/min	ap max.	Vc m/min	ap max.	1.6 - 2	2.5 - 3
P	Machining steel	Up to 700	9 SMn 28	1.0715	60 - 80	0.007 - 0.03	70 - 90	0.01 - 0.05	80-100	0.04 - 0.15	0.01 - 0.028	0.015 - 0.032
	Tempering steel	500 - 950	42 CrMo4	1.7225	60 - 80	0.007 - 0.03	70 - 90	0.01 - 0.05	80-100	0.04 - 0.15	0.01 - 0.028	0.015 - 0.032
	Tempering steel	950 -1300	43CrMo4	1.3563	60 - 80	0.006 - 0.025	70 - 90	0.01 - 0.05	80-100	0.04 - 0.15	0.01 - 0.028	0.015 - 0.032
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	60 - 80	0.006 - 0.025	70 - 90	0.01 - 0.05	80-100	0.04 - 0.15	0.01 - 0.028	0.015 - 0.032
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	50 - 70	0.007 - 0.03	60 - 80	0.01 - 0.05	70 - 90	0.04 - 0.15	0.01 - 0.028	0.015 - 0.032
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	50 - 70	0.007 - 0.03	60 - 80	0.01 - 0.05	70 - 90	0.04 - 0.15	0.01 - 0.028	0.015 - 0.032
	Ductile iron	Up to 280 HB	GGG 60	0.7060	50 - 70	0.007 - 0.03	60 - 80	0.01 - 0.05	70 - 90	0.04 - 0.15	0.01 - 0.028	0.015 - 0.032
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	50 - 70	0.007 - 0.03	60 - 80	0.01 - 0.05	70 - 90	0.04 - 0.15	0.01 - 0.028	0.015 - 0.032
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	50 - 70	0.007 - 0.03	60 - 80	0.01 - 0.05	70 - 90	0.04 - 0.15	0.01 - 0.028	0.015 - 0.032
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	50 - 70	0.006 - 0.025	60 - 80	0.01 - 0.05	70 - 90	0.04 - 0.15	0.006 - 0.022	0.013 - 0.029
	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	40 - 60	0.005 - 0.02	50 - 70	0.01 - 0.05	60 - 80	0.04 - 0.15	0.006 - 0.016	0.013 - 0.022
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	30 - 50	0.003 - 0.015	40 - 60	0.008 - 0.05	50 - 70	0.02 - 0.15	0.004 - 0.011	0.011 - 0.021

SARA® Radius milling cutter



254011.... 254112.... 254013....

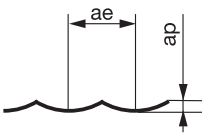
- Please adjust these guideline values according to clamping operation and machine set-up!
- **Cutting data recommendations for extra-long version:** Please reduce the specified data by 25%.

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm						
						1 - 2	3 - 4	5 - 6	8 - 10	12 - 14	16 - 18	20
P	Machining steel	Up to 700	9 SMn 28	1.0715	168	1.071	1.071	1.197	1.407	1.225	1.141	1.001
	Unalloyed structural steel	Up to 700	St-52	1.0052	168	1.071	1.071	1.197	1.407	1.225	1.141	1.001
	Structural steel	700 - 950	Ck45	1.1191	154	1.071	1.071	1.197	1.407	1.225	1.141	1.001
	Cast steel	Up to 950	GS 40	1.0416	140	854	868	903	1.064	952	868	784
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	140	854	868	903	1.064	952	868	784
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	140	868	882	917	1.078	966	882	798
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	98	392	455	525	616	567	525	462
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	98	399	462	532	623	574	532	469
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	217	1,071 - 1,316	1.316	1.470	1.750	1.505	1.435	1.316
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	189	1,029 - 1,274	1.274	1.428	1.708	1.463	1.393	1.274
	Ductile iron	Up to 280 HB	GGG 60	0.7060	203	1,050 - 1,295	1.295	1.449	1.729	1.484	1.414	1.295
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	203	1,050 - 1,295	1.295	1.449	1.729	1.484	1.414	1.295
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	84	294	336	406	462	427	371	322
	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	63	196	224	252	294	273	252	224
	Hardened materials up to 64 HRc		100Cr6	1.2067	56	133	154	168	196	182	168	154

	ap	ae
Material up to 45 HRc	0.1 x D	0.2 x D
Material from 45-60 HRc	0.05 x D	0.1 x D

ATORN® Radius milling cutter RockTec 52

- Please adjust these guideline values according to clamping operation and machine set-up!



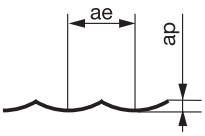


257027....



257035....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	ae max.	ap max.	Vc m/min Diameter range		Feed fz in mm/tooth in relation to milling cutter diameter in mm					
							2 - 3	4 - 20	2 - 3	4 - 5	6 - 8	10 - 12	16	20
P	Machining steel	Up to 700	9 SMn 28	1.0715	0.4 x R	0.1 x R	180-270	270 - 370	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
	Tempering steel	500 - 950	42 CrMo4	1.7225	0.4 x R	0.1 x R	180 - 250	250 - 350	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
	Tempering steel	950 -1300	43CrMo4	1.3563	0.4 x R	0.1 x R	180 - 250	250 - 350	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	0.4 x R	0.1 x R	180 - 250	250 - 350	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	0.4 x R	0.1 x R	180-270	270 - 370	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	0.4 x R	0.1 x R	180 - 250	250 - 350	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
	Ductile iron	Up to 280 HB	GGG 60	0.7060	0.4 x R	0.1 x R	180 - 250	250 - 350	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	0.4 x R	0.1 x R	180 - 250	250 - 350	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	0.4 x R	0.1 x R	180 - 250	250 - 350	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	0.4 x R	0.1 x R	180 - 250	250 - 350	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	0.4 x R	0.1 x R	150 - 210	210-270	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	0.4 x R	0.1 x R	120-180	180 - 240	0.025 - 0.035	0.035 - 0.05	0.045 - 0.07	0.075 - 0.11	0.08 - 0.11	0.08 - 0.11



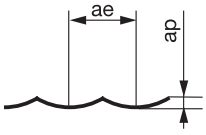


257029....



257037....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	ae Max.	ap Max.	Vc m/min Diameter range		Feed fz in mm/tooth in relation to milling cutter diameter in mm					
							2 - 3	4 - 20	2 - 3	4 - 5	6 - 8	10 - 12	16	20
P	Machining steel	Up to 700	9 SMn 28	1.0715	0.4 x R	0.1 x R	160 - 240	240 - 320	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
	Tempering steel	500 - 950	42 CrMo4	1.7225	0.4 x R	0.1 x R	160 - 220	220 - 300	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
	Tempering steel	950 -1300	43CrMo4	1.3563	0.4 x R	0.1 x R	160 - 220	220 - 300	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	0.4 x R	0.1 x R	160 - 220	220 - 300	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	0.4 x R	0.1 x R	160 - 240	240 - 320	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	0.4 x R	0.1 x R	160 - 220	220 - 300	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
	Ductile iron	Up to 280 HB	GGG 60	0.7060	0.4 x R	0.1 x R	160 - 220	220 - 300	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	0.4 x R	0.1 x R	160 - 220	220 - 300	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	0.4 x R	0.1 x R	160 - 220	220 - 300	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	0.4 x R	0.1 x R	160 - 220	220 - 300	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	0.4 x R	0.1 x R	150 - 190	180 - 260	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	0.4 x R	0.1 x R	110 - 150	140 - 200	0.025 - 0.035	0.035 - 0.05	0.045 - 0.07	0.075 - 0.11	0.08 - 0.11	0.08 - 0.11





257031....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	ae Max.	ap Max.	Vc m/min Diameter range		Feed fz in mm/tooth in relation to milling cutter diameter in mm					
							2 - 3	4 - 20	2 - 3	4 - 5	6 - 8	10 - 12	16	20
P	Machining steel	Up to 700	9 SMn 28	1.0715	0.4 x R	0.1 x R	90 - 170	150 - 190	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
	Tempering steel	500 - 950	42 CrMo4	1.7225	0.4 x R	0.1 x R	90 - 150	130 - 190	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
	Tempering steel	950 -1300	43CrMo4	1.3563	0.4 x R	0.1 x R	90 - 150	130 - 190	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	0.4 x R	0.1 x R	90 - 150	130 - 190	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	0.4 x R	0.1 x R	90 - 170	150 - 190	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	0.4 x R	0.1 x R	90 - 150	130 - 190	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
	Ductile iron	Up to 280 HB	GGG 60	0.7060	0.4 x R	0.1 x R	90 - 150	130 - 190	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	0.4 x R	0.1 x R	90 - 150	130 - 190	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	0.4 x R	0.1 x R	90 - 150	130 - 190	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	0.4 x R	0.1 x R	90 - 150	130 - 190	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	0.4 x R	0.1 x R	70 - 130	110 - 160	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	0.4 x R	0.1 x R	60 - 100	90 - 130	0.025 - 0.035	0.035 - 0.05	0.045 - 0.07	0.075 - 0.11	0.08 - 0.11	0.08 - 0.11

SARA® Radius milling cutter



- Please adjust these guideline values according to clamping operation and machine set-up!

254138....

ISO	Finishing / Edge-banding ap: 0.03 x D1 / ae: 0.30 x D1 Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	D1 3 fz	D1 4 fz	D1 5 fz	D1 6 fz	D1 8 fz	D1 10 fz	D1 12 fz	D1 14 fz	D1 16 fz	D1 20 fz
P	Machining steel	Up to 700	9 SMn 28	1.0715	560	0.011	0.035	0.035	0.045	0.055	0.065	0.065	0.09	0.09	0.12
	Unalloyed structural steel	Up to 700	St-52	1.0052	440	0.011	0.035	0.035	0.045	0.055	0.065	0.065	0.09	0.09	0.12
	Structural steel	700 - 950	Ck45	1.1191	380	0.011	0.035	0.035	0.045	0.055	0.065	0.065	0.09	0.09	0.12
	Tempering steel	500 - 950	42 CrMo4	1.7225	370	0.011	0.035	0.035	0.045	0.055	0.065	0.065	0.09	0.09	0.12
	Tempering steel	950 -1300	43CrMo4	1.3563	260	0.007	0.025	0.025	0.032	0.040	0.045	0.045	0.06	0.06	0.080
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	285	0.009	0.03	0.03	0.04	0.045	0.05	0.055	0.075	0.075	0.1
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	560	0.011	0.035	0.035	0.045	0.055	0.065	0.065	0.09	0.09	0.12
	Ductile iron	Up to 280 HB	GGG 60	0.7060	510	0.011	0.035	0.035	0.045	0.055	0.065	0.065	0.09	0.09	0.12
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	510	0.011	0.035	0.035	0.045	0.055	0.065	0.065	0.09	0.09	0.12
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	140	0.007	0.025	0.025	0.032	0.040	0.045	0.045	0.06	0.06	0.080

SARA® Slotting cutter



- Please adjust these guideline values according to clamping operation and machine set-up!

292004....

ISO	Materials group	Tensile strength / Hardness	Cutting speed Vc m/min	Ø 10.5 fz	Ø 13.5 fz	Ø 16.5 fz	Ø 19.5 fz	Ø 22.5 fz	Ø 25.5 fz	Ø 28.5 fz	Ø 32.5 fz	Ø 38.5 fz	Ø 45.5 fz	Ø 20 fz
P	General structural steels	< 500 N/mm²	120	0.03	0.03	0.03	0.03	0.035	0.035	0.035	0.038	0.038	0.038	0.057
		> 500-800 N/mm²	90	0.03	0.03	0.03	0.03	0.035	0.035	0.035	0.038	0.038	0.038	0.057
	Machining steels	< 850 N/mm²	90	0.028	0.028	0.028	0.028	0.033	0.033	0.033	0.036	0.036	0.036	0.066
	Unalloyed tempered steels	< 700 N/mm²	120	0.03	0.03	0.03	0.03	0.035	0.035	0.035	0.038	0.038	0.038	0.057
		700-850 N/mm²	85	0.028	0.028	0.028	0.028	0.033	0.033	0.033	0.036	0.036	0.036	0.066
		850-1000 N/mm²	80	0.028	0.028	0.028	0.028	0.033	0.033	0.033	0.036	0.036	0.036	0.066
	Alloyed tempered steels	850-1000 N/mm²	70	0.028	0.028	0.028	0.028	0.033	0.033	0.033	0.036	0.036	0.036	0.066
K	Cast iron	< 240 HB	120	0.035	0.035	0.035	0.035	0.04	0.04	0.04	0.045	0.045	0.045	0.073
		< 300 HB	100	0.035	0.035	0.035	0.035	0.04	0.04	0.04	0.045	0.045	0.045	0.073

SARA® T-slot milling cutter



- Please adjust these guideline values according to clamping operation and machine set-up!

292005....

ISO	Materials group	Tensile strength / Hardness	Cutting speed Vc m/min	Ø 12.5 fz	Ø 16 fz	Ø 18 fz	Ø 21 fz	Ø 25 fz	Ø 28 fz	Ø 32 fz	Ø 32.5 fz	Ø 38.5 fz	Ø 45.5 fz	Ø 20 fz
P	General structural steels	< 500 N/mm²	120	0.03	0.03	0.03	0.035	0.035	0.035	0.045	0.038	0.038	0.038	0.057
		> 500-800 N/mm²	90	0.03	0.03	0.03	0.035	0.035	0.035	0.045	0.038	0.038	0.038	0.057
	Machining steels	< 850 N/mm²	90	0.028	0.028	0.028	0.033	0.033	0.033	0.04	0.036	0.036	0.036	0.066
	Unalloyed tempered steels	< 700 N/mm²	120	0.03	0.03	0.03	0.035	0.035	0.035	0.045	0.038	0.038	0.038	0.057
		700-850 N/mm²	85	0.028	0.028	0.028	0.033	0.033	0.033	0.04	0.036	0.036	0.036	0.066
		850-1000 N/mm²	80	0.028	0.028	0.028	0.033	0.033	0.033	0.04	0.036	0.036	0.036	0.066
	Alloyed tempered steels	850-1000 N/mm²	70	0.028	0.028	0.028	0.033	0.033	0.033	0.04	0.036	0.036	0.036	0.066
K	Cast iron	< 240 HB	120	0.035	0.035	0.035	0.04	0.04	0.04	0.05	0.045	0.045	0.045	0.073
		< 300 HB	100	0.035	0.035	0.035	0.04	0.04	0.04	0.05	0.045	0.045	0.045	0.073



292006....

ISO	Materials group	Tensile strength / Hardness	Cutting speed Vc m/min	Ø 12.5 fz	Ø 16 fz	Ø 18 fz	Ø 21 fz	Ø 25 fz	Ø 28 fz	Ø 32 fz	Ø 32.5 fz	Ø 38.5 fz	Ø 45.5 fz	Ø 20 fz
P	General structural steels	< 500 N/mm²	120	0.03	0.03	0.03	0.035	0.035	0.035	0.045	0.038	0.038	0.038	0.057
		> 500-800 N/mm²	90	0.03	0.03	0.03	0.035	0.035	0.035	0.045	0.038	0.038	0.038	0.057
	Machining steels	< 850 N/mm²	90	0.028	0.028	0.028	0.033	0.033	0.033	0.04	0.036	0.036	0.036	0.066
	Unalloyed tempered steels	< 700 N/mm²	120	0.03	0.03	0.03	0.035	0.035	0.035	0.045	0.038	0.038	0.038	0.057
		700-850 N/mm²	85	0.028	0.028	0.028	0.033	0.033	0.033	0.04	0.036	0.036	0.036	0.066
		850-1000 N/mm²	80	0.028	0.028	0.028	0.033	0.033	0.033	0.04	0.036	0.036	0.036	0.066
	Alloyed tempered steels	850-1000 N/mm²	70	0.028	0.028	0.028	0.033	0.033	0.033	0.04	0.036	0.036	0.036	0.066
K	Cast iron	< 240 HB	120	0.035	0.035	0.035	0.04	0.04	0.04	0.05	0.045	0.045	0.045	0.073
		< 300 HB	100	0.035	0.035	0.035	0.04	0.04	0.04	0.05	0.045	0.045	0.045	0.073

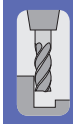
SARA® Radius milling cutter 220°



- Please adjust these guideline values according to clamping operation and machine set-up!

250510....

ISO	**Roughing / Grooving** fz for ae = 0,3 x D and ap = 0,03 x D Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm								
						1	2	3	5	6	8	10	12	16
P	Machining steel	Up to 700	9 SMn 28	1.0715	450	0,007	0,011	0,011	0,035	0,045	0,055	0,065	0,065	0,090
P	Unalloyed structural steel	Up to 700	St-52	1.0052	350	0,007	0,011	0,011	0,035	0,045	0,055	0,065	0,065	0,090
P	Structural steel	700 - 950	Ck45	1.1191	450	0,007	0,011	0,011	0,035	0,045	0,055	0,065	0,065	0,090
P	Tempering steel	500 - 950	42 CrMo4	1.7225	310	0,007	0,011	0,011	0,035	0,045	0,055	0,065	0,065	0,090
P	Cast steel	Up to 950	GS 40	1.0416	310	0,007	0,011	0,011	0,035	0,045	0,055	0,065	0,065	0,090
P	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	250	0,007	0,011	0,011	0,035	0,045	0,055	0,065	0,065	0,090
P	Tempering steel	950 -1300	43CrMo4	1.3563	250	0,007	0,011	0,011	0,035	0,045	0,055	0,065	0,065	0,090
P	Nitriding steel	950 - 1300	31CrMoV9	1.8519	250	0,007	0,011	0,011	0,035	0,045	0,055	0,065	0,065	0,090
P	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	170	0,005	0,007	0,007	0,025	0,032	0,040	0,045	0,045	0,055
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	450	0,007	0,007	0,007	0,025	0,045	0,055	0,065	0,065	0,090
K	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	410	0,007	0,007	0,007	0,025	0,045	0,055	0,065	0,065	0,090
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	430	0,007	0,007	0,007	0,025	0,045	0,055	0,065	0,065	0,090
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	430	0,007	0,007	0,007	0,025	0,045	0,055	0,065	0,065	0,090
H	Hardened materials up to 55 HRC		X40Cr14	1.2083	120	0,005	0,011	0,011	0,035	0,032	0,040	0,045	0,045	0,055
H	Hardened materials up to 60 HRC		X153CrMoV12	1.2379	90	0,005	0,011	0,011	0,035	0,032	0,040	0,045	0,045	0,055
H	Hardened materials up to 64 HRC		100Cr6	1.2067	70	0,005	0,011	0,011	0,035	0,032	0,040	0,045	0,045	0,055



ATORN® Single-blade end milling cutter Ultra-N

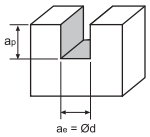


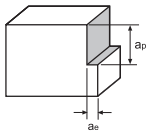
249100....

- **Cooling = emulsion**
- **The specified values apply to ae < 0.5 x D and ap 1 x D.**
  Correction example:
  Correction factor fz for full slot (ae > 0.5 x D) = 0.7
  Correction factor fz for ap < 1 x D = 1.2
- Please adjust these guideline values according to clamping operation and machine set-up!



250001....
249700....





ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Vc min/max m/min	Vc Start m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm				
							0.6-1.5	2	3	4	5
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	350 - 500	400	0.023 - 0.027	0.03 - 0.043	0.045 - 0.07	0.05 - 0.08	0.06 - 0.1
N	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	150 - 250	175	0.023 - 0.027	0.03 - 0.043	0.045 - 0.07	0.05 - 0.08	0.06 - 0.1
N	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	200 - 350	250	0.023 - 0.027	0.03 - 0.043	0.045 - 0.07	0.05 - 0.08	0.06 - 0.1
N	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	150 - 250	175	0.023 - 0.027	0.03 - 0.043	0.045 - 0.07	0.05 - 0.08	0.06 - 0.1
N	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	200 - 350	250	0.023 - 0.027	0.03 - 0.043	0.045 - 0.07	0.05 - 0.08	0.06 - 0.1
N	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	150 - 250	175	0.023 - 0.027	0.03 - 0.043	0.045 - 0.07	0.05 - 0.08	0.06 - 0.1
N	Thermoplastic		PVC		350 - 500	420	0.023 - 0.027	0.03 - 0.043	0.045 - 0.07	0.05 - 0.08	0.06 - 0.1
N	Thermoset		Melamine		250 - 400	320	0.023 - 0.027	0.03 - 0.043	0.045 - 0.07	0.05 - 0.08	0.06 - 0.1
N	Fibre-reinforced plastics		CFRP, GFRP		200 - 350	250	0.023 - 0.027	0.03 - 0.043	0.045 - 0.07	0.05 - 0.08	0.06 - 0.1

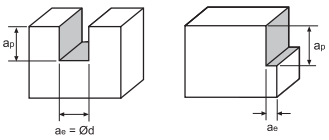
ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Vc min/max m/min	Vc Start m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm				
							6	8	10	12	16
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	350 - 500	400	0.075 - 0.12	0.095 - 0.14	0.11 - 0.15	0.13 - 0.17	0.15 - 0.18
N	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	150 - 250	175	0.075 - 0.12	0.095 - 0.14	0.11 - 0.15	0.13 - 0.17	0.15 - 0.18
N	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	200 - 350	250	0.075 - 0.12	0.095 - 0.14	0.11 - 0.15	0.13 - 0.17	0.15 - 0.18
N	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	150 - 250	175	0.075 - 0.12	0.095 - 0.14	0.11 - 0.15	0.13 - 0.17	0.15 - 0.18
N	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	200 - 350	250	0.075 - 0.12	0.095 - 0.14	0.11 - 0.15	0.13 - 0.17	0.15 - 0.18
N	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	150 - 250	175	0.075 - 0.12	0.095 - 0.14	0.11 - 0.15	0.13 - 0.17	0.15 - 0.18
N	Thermoplastic		PVC		350 - 500	420	0.075 - 0.12	0.095 - 0.14	0.11 - 0.15	0.13 - 0.17	0.15 - 0.18
N	Thermoset		Melamine		250 - 400	320	0.075 - 0.12	0.095 - 0.14	0.11 - 0.15	0.13 - 0.17	0.15 - 0.18
N	Fibre-reinforced plastics		CFRP, GFRP		200 - 350	250	0.075 - 0.12	0.095 - 0.14	0.11 - 0.15	0.13 - 0.17	0.15 - 0.18

ATORN® Mini end milling cutter Ultra-N



249001.... **249002....**

- Cooling = emulsion
- The specified values apply to ae < 0.5 x D.
  Correction example:
  Correction factor fz for projecting length (5-10 x D) = 0.7
  Correction factor fz for projecting length (> 10 x D) = 0.5
  Correction factor fz for full slot (ae > 0.5 x D) = 0.7
  Correction factor fz for copying = 1.3
- Please adjust these guideline values according to clamping operation and machine set-up!



ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Vc min/max m/min	Vc Start m/min	Feed fz min/max in mm/tooth in relation to milling cutter diameter in mm		ap min/max in mm/tooth in relation to milling cutter diameter in mm	
							0.5	1	0.5	1
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	400 - 550	450	0.009 - 0.015	0.016 - 0.025	0.02 - 0.3	0.05 - 0.7
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	180 - 320	220	0.009 - 0.015	0.016 - 0.025	0.02 - 0.3	0.05 - 0.7
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	250 - 420	320	0.009 - 0.015	0.016 - 0.025	0.02 - 0.3	0.05 - 0.7
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	180 - 320	220	0.009 - 0.015	0.016 - 0.025	0.02 - 0.3	0.05 - 0.7
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	250 - 420	320	0.009 - 0.015	0.016 - 0.025	0.02 - 0.3	0.05 - 0.7
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	180 - 320	330	0.009 - 0.015	0.016 - 0.025	0.02 - 0.3	0.05 - 0.7
	Thermoplastic		PVC		400 - 550	450	0.009 - 0.015	0.016 - 0.025	0.02 - 0.3	0.05 - 0.7
	Thermoset		Melamine		300 - 450	360	0.009 - 0.015	0.016 - 0.025	0.02 - 0.3	0.05 - 0.7
	Fibre-reinforced plastics		CFRP, GFRP		250 - 420	320	0.009 - 0.015	0.016 - 0.025	0.02 - 0.3	0.05 - 0.7

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Vc min/max m/min	Vc Start m/min	Feed fz min/max in mm/tooth in relation to milling cutter diameter in mm		ap min/max in mm/tooth in relation to milling cutter diameter in mm	
							1.5	2	1.5	2
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	400 - 550	450	0.03 - 0.035	0.035 - 0.05	0.07 - 1.2	0.1 - 1.5
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	180 - 320	220	0.03 - 0.035	0.035 - 0.05	0.07 - 1.2	0.1 - 1.5
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	250 - 420	320	0.03 - 0.035	0.035 - 0.05	0.07 - 1.2	0.1 - 1.5
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	180 - 320	220	0.03 - 0.035	0.035 - 0.05	0.07 - 1.2	0.1 - 1.5
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	250 - 420	320	0.03 - 0.035	0.035 - 0.05	0.07 - 1.2	0.1 - 1.5
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	180 - 320	330	0.03 - 0.035	0.035 - 0.05	0.07 - 1.2	0.1 - 1.5
	Thermoplastic		PVC		400 - 550	450	0.03 - 0.035	0.035 - 0.05	0.07 - 1.2	0.1 - 1.5
	Thermoset		Melamine		300 - 450	360	0.03 - 0.035	0.035 - 0.05	0.07 - 1.2	0.1 - 1.5
	Fibre-reinforced plastics		CFRP, GFRP		250 - 420	320	0.03 - 0.035	0.035 - 0.05	0.07 - 1.2	0.1 - 1.5

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Vc min/max m/min	Vc Start m/min	Feed fz min/max in mm/tooth in relation to milling cutter diameter in mm	ap min/max in mm/tooth in relation to milling cutter diameter in mm
							2.5	2.5
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	400 - 550	450	0.04 - 0.06	0.12 - 2
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	180 - 320	220	0.04 - 0.06	0.12 - 2
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	250 - 420	320	0.04 - 0.06	0.12 - 2
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	180 - 320	220	0.04 - 0.06	0.12 - 2
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	250 - 420	320	0.04 - 0.06	0.12 - 2
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	180 - 320	330	0.04 - 0.06	0.12 - 2
	Thermoplastic		PVC		400 - 550	450	0.04 - 0.06	0.12 - 2
	Thermoset		Melamine		300 - 450	360	0.04 - 0.06	0.12 - 2
	Fibre-reinforced plastics		CFRP, GFRP		250 - 420	320	0.04 - 0.06	0.12 - 2

ATORN® Radius milling cutter Ultra-MS



256016....

- Please adjust these guideline values according to clamping operation and machine set-up!

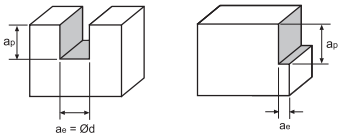
ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Vc m/min Ø < = 0.5 mm	Ø 3 - 4 fz	Ø 5 - 6 fz	Ø 8 - 10 fz	Ø 12 - 16 fz	Ø 16 - 20 fz
P	Machining steel	Up to 700	9 SMn 28	1.0715	130 - 150	0.022 - 0.033	0.034 - 0.042	0.042 - 0.058	0.063 - 0.082	0.072 - 0.11
	Unalloyed structural steel	Up to 700	St-52	1.0052	140 - 160	0.022 - 0.033	0.034 - 0.042	0.043 - 0.057	0.062 - 0.083	0.073 - 0.12
	Structural steel	700 - 950	Ck45	1.1191	140 - 160	0.022 - 0.033	0.034 - 0.042	0.043 - 0.057	0.062 - 0.083	0.073 - 0.12
	Tempering steel	500 - 950	42 CrMo4	1.7225	130 - 150	0.022 - 0.033	0.034 - 0.042	0.042 - 0.058	0.063 - 0.082	0.072 - 0.11
	Cast steel	Up to 950	GS 40	1.0416	130 - 150	0.022 - 0.033	0.034 - 0.042	0.042 - 0.058	0.063 - 0.082	0.072 - 0.11
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	65 - 85	0.016 - 0.025	0.026 - 0.035	0.038 - 0.05	0.052 - 0.073	0.063 - 0.1
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	60 - 80	0.018 - 0.028	0.032 - 0.043	0.048 - 0.064	0.068 - 0.095	0.087 - 0.12
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	60 - 80	0.014 - 0.022	0.024 - 0.032	0.036 - 0.048	0.051 - 0.071	0.065 - 0.087
	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	60 - 80	0.018 - 0.028	0.032 - 0.043	0.048 - 0.064	0.068 - 0.095	0.087 - 0.12

ATORN® Longitudinal slot milling cutter Ultra-N



- Cooling = emulsion
- The specified values apply to ae < 0.5 x D and ap 1 x D.
  Correction example:
  Correction factor fz for full slot (ae > 0.5 x D) = 0.7
  Correction factor fz for ap < 1 x D = 1.2
  Uncoated tools:
  please reduced Vc values by 10%! fz values remain the same.
- Please adjust these guideline values according to clamping operation and machine set-up!

249200.... **249202....**
249201.... **249207....**



ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Vc min/max m/min	Vc Start m/min	Feed fz min/max in mm/tooth in relation to milling cutter diameter in mm				
							3	4	5	6	8
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	350 - 500	400	0.03 - 0.06	0.035 - 0.07	0.04 - 0.08	0.045 - 0.09	0.05 - 0.1
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	150 - 250	175	0.03 - 0.06	0.035 - 0.07	0.04 - 0.08	0.045 - 0.09	0.05 - 0.1
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	200 - 350	250	0.03 - 0.06	0.035 - 0.07	0.04 - 0.08	0.045 - 0.09	0.05 - 0.1
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	150 - 250	175	0.03 - 0.06	0.035 - 0.07	0.04 - 0.08	0.045 - 0.09	0.05 - 0.1
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	200 - 350	250	0.03 - 0.06	0.035 - 0.07	0.04 - 0.08	0.045 - 0.09	0.05 - 0.1
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	150 - 250	175	0.03 - 0.06	0.035 - 0.07	0.04 - 0.08	0.045 - 0.09	0.05 - 0.1
	Thermoplastic		PVC		350 - 500	420	0.03 - 0.06	0.035 - 0.07	0.04 - 0.08	0.045 - 0.09	0.05 - 0.1
	Thermoset		Melamine		250 - 400	320	0.03 - 0.06	0.035 - 0.07	0.04 - 0.08	0.045 - 0.09	0.05 - 0.1
	Fibre-reinforced plastics		CFRP, GFRP		200 - 350	250	0.03 - 0.06	0.035 - 0.07	0.04 - 0.08	0.045 - 0.09	0.05 - 0.1

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Vc min/max m/min	Vc Start m/min	Feed fz min/max in mm/tooth in relation to milling cutter diameter in mm			
							10	12	16	20
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	350 - 500	400	0.06 - 0.11	0.07 - 0.12	0.08 - 0.14	0.1 - 0.15
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	150 - 250	175	0.06 - 0.11	0.07 - 0.12	0.08 - 0.14	0.1 - 0.15
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	200 - 350	250	0.06 - 0.11	0.07 - 0.12	0.08 - 0.14	0.1 - 0.15
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	150 - 250	175	0.06 - 0.11	0.07 - 0.12	0.08 - 0.14	0.1 - 0.15
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	200 - 350	250	0.06 - 0.11	0.07 - 0.12	0.08 - 0.14	0.1 - 0.15
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	150 - 250	175	0.06 - 0.11	0.07 - 0.12	0.08 - 0.14	0.1 - 0.15
	Thermoplastic		PVC		350 - 500	420	0.06 - 0.11	0.07 - 0.12	0.08 - 0.14	0.1 - 0.15
	Thermoset		Melamine		250 - 400	320	0.06 - 0.11	0.07 - 0.12	0.08 - 0.14	0.1 - 0.15
	Fibre-reinforced plastics		CFRP, GFRP		200 - 350	250	0.06 - 0.11	0.07 - 0.12	0.08 - 0.14	0.1 - 0.15

VAN HOORN CARBIDE End milling cutter VHLAW / VHRAW

- Please adjust these guideline values according to clamping operation and machine set-up!



255168....



255169....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm					
						Roughing			Finishing		
						8	12	16	8	12	16
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	500	0.1	0.2	0.3	0.6	0.8	0.12
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	280	0.1	0.2	0.3	0.6	0.8	0.12
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	280	0.1	0.2	0.3	0.5	0.7	0.1
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	300	0.1	0.2	0.3	0.5	0.7	0.1
	Thermoplastic		PVC		300	0.1	0.2	03	0.5	0.1	0.14
	Thermoset		Melamine		300	0.1	0.2	03	0.5	0.1	0.14

Feed correction f2 = 1		
Roughing	ae = 0.1 x D	ap = max. L1
Finishing	ae = 0.1 x D	ap = max. L1
Feed correction f2 = 0.6		
Roughing	ae = 0.1 x D	ap = max. L1
Finishing	ae = 0.3 x D	ap = max. L1

Feed correction	**f2 = 0.3**	**f2 = 0.5**
1 x D bore depth and then longitudinal slot milling	Drilling	Milling

ae = radial cutting depth
ap = axial cutting depth
D = milling cutter diameter
L1 = cutting edge length

The respective feed rate is calculated as follows:
Vf = fz x z x n x f2

ATORN® End milling cutter Ultra-N

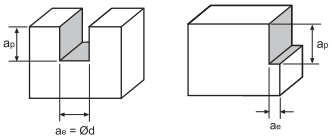


- The specified values apply to ae < 0.5 x D and ap 1 x D.

Cooling = emulsion

249300.... **249305....** **249351....**
249301.... **249307....** **249352....**
249302.... **249308....** **249355....**
249303.... **249309....**
249304.... **249350....**

Correction examples:
Correction factor fz for full slot (ae > 0.5 x D) = 0.7
Correction factor fz for ap < 1 x D = 1.2
Long version: please correct fz values by factor 0.8
Uncoated tools: please reduce Vc values by 10%! fz values remain the same.



- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Vc min/max m/min	Vc Start m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm				
							3	4	5	6	8
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	350 - 500	400	0.015 - 0.035	0.02 - 0.04	0.025 - 0.05	0.03 - 0.06	0.04 - 0.08
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	150 - 250	175	0.015 - 0.035	0.02 - 0.04	0.025 - 0.05	0.03 - 0.06	0.04 - 0.08
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	200 - 350	250	0.015 - 0.035	0.02 - 0.04	0.025 - 0.05	0.03 - 0.06	0.04 - 0.08
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	150 - 250	175	0.015 - 0.035	0.02 - 0.04	0.025 - 0.05	0.03 - 0.06	0.04 - 0.08
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	200 - 350	250	0.015 - 0.035	0.02 - 0.04	0.025 - 0.05	0.03 - 0.06	0.04 - 0.08
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	150 - 250	175	0.015 - 0.035	0.02 - 0.04	0.025 - 0.05	0.03 - 0.06	0.04 - 0.08
	Thermoplastic		PVC		350 - 500	420	0.015 - 0.035	0.02 - 0.04	0.025 - 0.05	0.03 - 0.06	0.04 - 0.08
	Thermoset		Melamine		250 - 400	320	0.015 - 0.035	0.02 - 0.04	0.025 - 0.05	0.03 - 0.06	0.04 - 0.08
	Fibre-reinforced plastics		CFRP, GFRP		200 - 350	250	0.015 - 0.035	0.02 - 0.04	0.025 - 0.05	0.03 - 0.06	0.04 - 0.08

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Vc min/max m/min	Vc Start m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm			
							10	12	16	20
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	350 - 500	400	0.05 - 0.1	0.06 - 0.11	0.065 - 0.13	0.075 - 0.15
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	150 - 250	175	0.05 - 0.1	0.06 - 0.11	0.065 - 0.13	0.075 - 0.15
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	200 - 350	250	0.05 - 0.1	0.06 - 0.11	0.065 - 0.13	0.075 - 0.15
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	150 - 250	175	0.05 - 0.1	0.06 - 0.11	0.065 - 0.13	0.075 - 0.15
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	200 - 350	250	0.05 - 0.1	0.06 - 0.11	0.065 - 0.13	0.075 - 0.15
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	150 - 250	175	0.05 - 0.1	0.06 - 0.11	0.065 - 0.13	0.075 - 0.15
	Thermoplastic		PVC		350 - 500	420	0.05 - 0.1	0.06 - 0.11	0.065 - 0.13	0.075 - 0.15
	Thermoset		Melamine		250 - 400	320	0.05 - 0.1	0.06 - 0.11	0.065 - 0.13	0.075 - 0.15
	Fibre-reinforced plastics		CFRP, GFRP		200 - 350	250	0.05 - 0.1	0.06 - 0.11	0.065 - 0.13	0.075 - 0.15

ATORN® End milling cutter Ultra-N

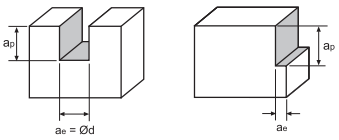


- The specified values apply to ae < 0.5 x D and ap 1 x D.

Cooling = emulsion

249400.... **249450....**
249401.... **249460....**

Correction examples:
Correction factor fz for full slot (ae > 0.5 x D) = 0.7
Correction factor fz for ap < 1 x D = 1.2
Long version: please correct fz values by factor 0.9
Extra-long version: please correct fz values by factor 0.8



- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Vc min/max m/min	Vc Start m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm				
							3	4	5	6	8
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	350 - 500	400	0.02 - 0.04	0.025 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.07
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	150 - 250	175	0.02 - 0.04	0.025 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.07
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	200 - 350	250	0.02 - 0.04	0.025 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.07
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	150 - 250	175	0.02 - 0.04	0.025 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.07
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	200 - 350	250	0.02 - 0.04	0.025 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.07
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	150 - 250	175	0.02 - 0.04	0.025 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.07
	Thermoplastic		PVC		350 - 500	420	0.02 - 0.04	0.025 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.07
	Thermoset		Melamine		250 - 400	320	0.02 - 0.04	0.025 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.07
	Fibre-reinforced plastics		CFRP, GFRP		200 - 350	250	0.02 - 0.04	0.025 - 0.045	0.035 - 0.05	0.04 - 0.055	0.05 - 0.07

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Vc min/max m/min	Vc Start m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm			
							10	12	16	20
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	350 - 500	400	0.06 - 0.09	0.07 - 0.1	0.1 - 0.12	0.14 - 0.22
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	150 - 250	175	0.06 - 0.09	0.07 - 0.1	0.1 - 0.12	0.14 - 0.22
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	200 - 350	250	0.06 - 0.09	0.07 - 0.1	0.1 - 0.12	0.14 - 0.22
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	150 - 250	175	0.06 - 0.09	0.07 - 0.1	0.1 - 0.12	0.14 - 0.22
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	200 - 350	250	0.06 - 0.09	0.07 - 0.1	0.1 - 0.12	0.14 - 0.22
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	150 - 250	175	0.06 - 0.09	0.07 - 0.1	0.1 - 0.12	0.14 - 0.22
	Thermoplastic		PVC		350 - 500	420	0.06 - 0.09	0.07 - 0.1	0.1 - 0.12	0.14 - 0.22
	Thermoset		Melamine		250 - 400	320	0.06 - 0.09	0.07 - 0.1	0.1 - 0.12	0.14 - 0.22
	Fibre-reinforced plastics		CFRP, GFRP		200 - 350	250	0.06 - 0.09	0.07 - 0.1	0.1 - 0.12	0.14 - 0.22

ATORN® End milling cutter Ultra N



- Please adjust these guideline values according to clamping operation and machine set-up!

249601 ....

ISO	**Roughing / Grooving** fz for ae = 1,0 x D and ap = 1,0 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm						
	Materials group					4	5	6	8	10	12	16
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	600	0,025	0,030	0,040	0,050	0,070	0,085	0,150
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	450	0,020	0,025	0,030	0,046	0,060	0,080	0,120
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	150	0,015	0,020	0,025	0,030	0,050	0,060	0,080
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	150	0,015	0,020	0,025	0,030	0,050	0,060	0,080
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	120	0,015	0,020	0,025	0,030	0,050	0,060	0,080
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	120	0,015	0,020	0,025	0,030	0,050	0,060	0,080
	Thermoplastic		PVC		300	0,020	0,025	0,035	0,045	0,060	0,080	0,100

ISO	**Finishing / Edge-banding** fz for ae = 0,3 x D and ap = 1,0 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm						
	Materials group					4	5	6	8	10	12	16
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	1000	0,044	0,055	0,066	0,088	0,110	0,132	0,176
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	750	0,040	0,050	0,060	0,080	0,100	0,120	0,160
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	240	0,028	0,350	0,040	0,480	0,060	0,072	0,100
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	240	0,028	0,350	0,040	0,480	0,060	0,072	0,100
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	220	0,022	0,030	0,035	0,040	0,050	0,065	0,080
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	220	0,022	0,030	0,035	0,040	0,050	0,065	0,080
	Thermoplastic		PVC		350	0,025	0,035	0,040	0,050	0,065	0,085	0,120

ATORN® Roughing cutter Ultra N



- Please adjust these guideline values according to clamping operation and machine set-up!

249603 ....

ISO	**Roughing / Grooving** fz for ae = 1,0 x D and ap = 1,0 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm					
	Materials group					6	8	10	12	16	20
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	650	0,050	0,070	0,090	0,120	0,141	0,180
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	480	0,032	0,048	0,065	0,083	0,128	0,154
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	150	0,030	0,040	0,055	0,060	0,080	0,100
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	150	0,030	0,040	0,055	0,060	0,080	0,100
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	120	0,025	0,035	0,040	0,050	0,065	0,080
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	120	0,025	0,035	0,040	0,050	0,065	0,080
	Thermoplastic		PVC		300	0,035	0,045	0,060	0,080	0,100	0,120

ISO	**Finishing / Edge-banding** fz for ae = 0,4 x D and ap = 1,0 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm					
	Materials group					6	8	10	12	16	20
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	950	0,066	0,088	0,110	0,132	0,176	0,220
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	635	0,060	0,080	0,100	0,120	0,160	0,200
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	200	0,040	0,480	0,060	0,072	0,100	0,120
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	200	0,040	0,480	0,060	0,072	0,100	0,120
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	170	0,035	0,040	0,050	0,065	0,080	0,100
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	170	0,035	0,040	0,050	0,065	0,080	0,100
	Thermoplastic		PVC		380	0,040	0,050	0,065	0,085	0,120	0,178



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- Please adjust these guideline values according to clamping operation and machine set-up!

249605 ....

ISO	**Roughing / Grooving** fz for ae = 1,0 x D and ap = 1,0 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm							
	Materials group					6	8	10	12	14	16	18	20
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	650	0,040	0,050	0,070	0,085	0,112	0,150	0,160	0,180
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	450	0,030	0,046	0,060	0,080	0,098	0,120	0,130	0,145
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	180	0,025	0,030	0,050	0,060	0,070	0,080	0,095	0,120
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	180	0,025	0,030	0,050	0,060	0,070	0,080	0,095	0,120
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	150	0,025	0,030	0,050	0,060	0,070	0,080	0,095	0,120
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	150	0,025	0,030	0,050	0,060	0,070	0,080	0,095	0,120
	Thermoplastic		PVC		300	0,035	0,045	0,060	0,080	0,090	0,100	0,120	0,130

ISO	**Finishing / Edge-banding** fz for ae = 0,4 x D and ap = 1,0 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm							
	Materials group					6	8	10	12	14	16	18	20
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	1000	0,066	0,088	0,110	0,132	0,150	0,176	0,198	0,220
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	750	0,060	0,080	0,100	0,120	0,140	0,160	0,180	0,200
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	240	0,040	0,480	0,060	0,072	0,085	0,100	0,120	0,150
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	240	0,040	0,480	0,060	0,072	0,085	0,100	0,120	0,150
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	220	0,035	0,040	0,050	0,065	0,070	0,080	0,100	0,120
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	220	0,035	0,040	0,050	0,065	0,070	0,080	0,100	0,120
	Thermoplastic		PVC		350	0,040	0,050	0,065	0,085	0,100	0,120	0,135	0,150

ATORN® End milling cutter Ultra N



- Please adjust these guideline values according to clamping operation and machine set-up!

249607 ....

ISO	**Roughing / Grooving** fz for ae = 1,0 x D and ap = 1,0 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm							
	Materials group					6	8	10	12	14	16	18	20
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	650	0,050	0,070	0,090	0,120	0,130	0,141	0,160	0,180
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	480	0,032	0,048	0,065	0,083	0,100	0,128	0,140	0,154
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	150	0,030	0,040	0,055	0,060	0,070	0,080	0,090	0,100
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	150	0,030	0,040	0,055	0,060	0,070	0,080	0,090	0,100
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	120	0,025	0,035	0,040	0,050	0,060	0,065	0,070	0,080
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	120	0,025	0,035	0,040	0,050	0,060	0,065	0,070	0,080
	Thermoplastic		PVC		300	0,035	0,045	0,060	0,080	0,090	0,100	0,110	0,120
	Thermoset		Melamine		250	0,020	0,025	0,035	0,040	0,050	0,065	0,080	0,100

ISO	**Finishing / Edge-banding** fz for ae = 0,4 x D and ap = 1,0 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm							
	Materials group					6	8	10	12	14	16	18	20
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	1000	0,066	0,088	0,110	0,132	0,150	0,176	0,200	0,220
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	635	0,060	0,080	0,100	0,120	0,140	0,160	0,180	0,200
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	200	0,040	0,480	0,060	0,072	0,085	0,100	0,110	0,120
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	200	0,040	0,480	0,060	0,072	0,085	0,100	0,110	0,120
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	170	0,035	0,040	0,050	0,065	0,070	0,080	0,090	0,100
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	170	0,035	0,040	0,050	0,065	0,070	0,080	0,090	0,100
	Thermoplastic		PVC		380	0,040	0,050	0,065	0,085	0,100	0,120	0,150	0,178
	Thermoset		Melamine		300	0,030	0,040	0,050	0,060	0,070	0,080	0,100	0,120



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- Please adjust these guideline values according to clamping operation and machine set-up!

249609 ....

ISO	**Roughing / Grooving** fz for ae = 1,0 x D and ap = 1,0 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm					
	Materials group					10	12	14	16	18	20
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	650	0,070	0,085	0,112	0,150	0,160	0,180
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	450	0,060	0,080	0,098	0,120	0,130	0,145
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	180	0,050	0,060	0,070	0,080	0,095	0,120
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	180	0,050	0,060	0,070	0,080	0,095	0,120
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	150	0,050	0,060	0,070	0,080	0,095	0,120
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	150	0,050	0,060	0,070	0,080	0,095	0,120
	Thermoplastic		PVC		300	0,060	0,080	0,090	0,100	0,120	0,130

ISO	**Finishing / Edge-banding** fz for ae = 0,4 x D and ap = 1,0 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm					
	Materials group					10	12	14	16	18	20
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	650	0,110	0,132	0,150	0,176	0,198	0,220
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	450	0,100	0,120	0,140	0,160	0,180	0,200
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	180	0,060	0,072	0,085	0,100	0,120	0,150
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	180	0,060	0,072	0,085	0,100	0,120	0,150
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	150	0,050	0,065	0,070	0,080	0,100	0,120
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	150	0,050	0,065	0,070	0,080	0,100	0,120
	Thermoplastic		PVC		300	0,065	0,085	0,100	0,120	0,135	0,150

ATORN® Torus milling cutter Ultra N



- Please adjust these guideline values according to clamping operation and machine set-up!

249611 ....

ISO	**Roughing / Grooving** fz for ae = 1,0 x D and ap = 1,0 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm							
	Materials group					6	8	10	12	14	16	18	20
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	650	0,090	0,120	0,130	0,141	0,160	0,180	0,160	0,180
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	480	0,065	0,083	0,100	0,128	0,140	0,154	0,140	0,154
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	150	0,055	0,060	0,070	0,080	0,090	0,100	0,090	0,100
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	150	0,055	0,060	0,070	0,080	0,090	0,100	0,090	0,100
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	120	0,040	0,050	0,060	0,065	0,070	0,080	0,070	0,080
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	120	0,040	0,050	0,060	0,065	0,070	0,080	0,070	0,080
	Thermoplastic		PVC		300	0,060	0,080	0,090	0,100	0,110	0,120	0,110	0,120
	Duroplast		Melamin		250	0,035	0,040	0,050	0,065	0,080	0,100	0,080	0,100

ISO	**Finishing / Edge-banding** fz for ae = 0,4 x D and ap = 1,0 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm							
	Materials group					6	8	10	12	14	16	18	20
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	1000	0,110	0,132	0,150	0,176	0,200	0,220	0,200	0,220
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	635	0,100	0,120	0,140	0,160	0,180	0,200	0,180	0,200
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	200	0,060	0,072	0,085	0,100	0,110	0,120	0,110	0,120
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	200	0,060	0,072	0,085	0,100	0,110	0,120	0,110	0,120
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	170	0,050	0,065	0,070	0,080	0,090	0,100	0,090	0,100
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	170	0,050	0,065	0,070	0,080	0,090	0,100	0,090	0,100
	Thermoplastic		PVC		380	0,065	0,085	0,100	0,120	0,150	0,178	0,150	0,178
	Duroplast		Melamin		300	0,050	0,060	0,070	0,080	0,100	0,120	0,100	0,120



... without shrinkage

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High quality for great performance

ATORN® End milling cutter Ultra-N

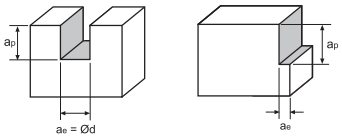


- The specified values apply to ae < 0.5 x D and ap 1 x D.

Cooling = emulsion

249480.... **249490....**

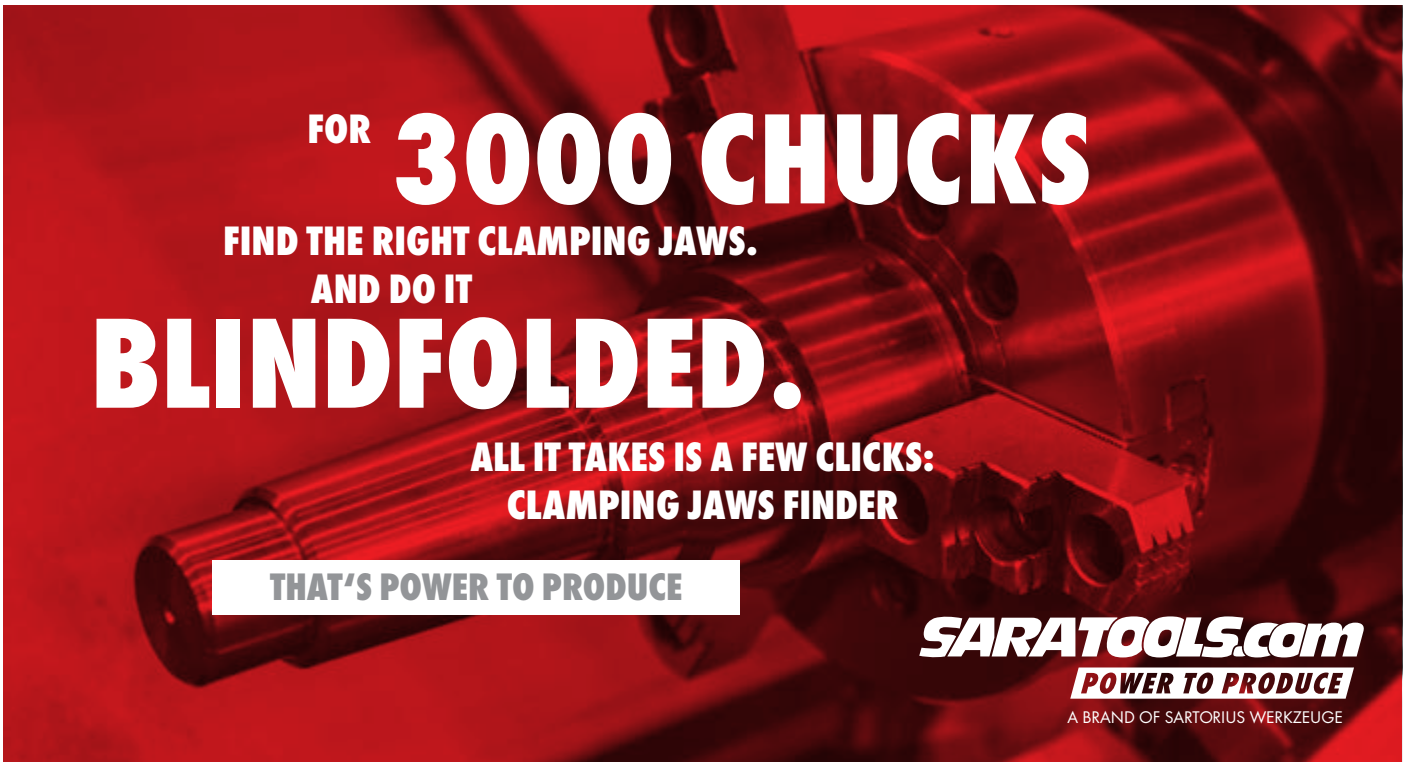
Correction examples:
Correction factor fz for full slot (ae > 0.5 x D) = 0.7
Correction factor fz for ap < 1 x D = 1.2
Long version: please correct fz values by factor 0.9



- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Vc min/max m/min	Vc Start m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm				
							3	4	5	6	8
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	350 - 500	400	0.02 - 0.035	0.025 - 0.04	0.03 - 0.05	0.04 - 0.055	0.05 - 0.07
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	150 - 250	175	0.02 - 0.035	0.025 - 0.04	0.03 - 0.05	0.04 - 0.055	0.05 - 0.07
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	200 - 350	250	0.02 - 0.035	0.025 - 0.04	0.03 - 0.05	0.04 - 0.055	0.05 - 0.07
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	150 - 250	175	0.02 - 0.035	0.025 - 0.04	0.03 - 0.05	0.04 - 0.055	0.05 - 0.07
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	200 - 350	250	0.02 - 0.035	0.025 - 0.04	0.03 - 0.05	0.04 - 0.055	0.05 - 0.07
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	150 - 250	175	0.02 - 0.035	0.025 - 0.04	0.03 - 0.05	0.04 - 0.055	0.05 - 0.07
	Thermoplastic		PVC		350 - 500	420	0.02 - 0.035	0.025 - 0.04	0.03 - 0.05	0.04 - 0.055	0.05 - 0.07
	Thermoset		Melamine		250 - 400	320	0.02 - 0.035	0.025 - 0.04	0.03 - 0.05	0.04 - 0.055	0.05 - 0.07
	Fibre-reinforced plastics		CFRP, GFRP		200 - 350	250	0.02 - 0.035	0.025 - 0.04	0.03 - 0.05	0.04 - 0.055	0.05 - 0.07

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Vc min/max m/min	Vc Start m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm			
							10	12	16	20
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	350 - 500	400	0.06 - 0.09	0.07 - 0.1	0.1 - 0.12	0.14 - 0.22
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	150 - 250	175	0.06 - 0.09	0.07 - 0.1	0.1 - 0.12	0.14 - 0.22
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	200 - 350	250	0.06 - 0.09	0.07 - 0.1	0.1 - 0.12	0.14 - 0.22
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	150 - 250	175	0.06 - 0.09	0.07 - 0.1	0.1 - 0.12	0.14 - 0.22
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	200 - 350	250	0.06 - 0.09	0.07 - 0.1	0.1 - 0.12	0.14 - 0.22
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	150 - 250	175	0.06 - 0.09	0.07 - 0.1	0.1 - 0.12	0.14 - 0.22
	Thermoplastic		PVC		350 - 500	420	0.06 - 0.09	0.07 - 0.1	0.1 - 0.12	0.14 - 0.22
	Thermoset		Melamine		250 - 400	320	0.06 - 0.09	0.07 - 0.1	0.1 - 0.12	0.14 - 0.22
	Fibre-reinforced plastics		CFRP, GFRP		200 - 350	250	0.06 - 0.09	0.07 - 0.1	0.1 - 0.12	0.14 - 0.22



ATORN® Roughing cutter Ultra-N

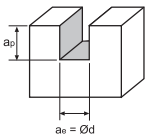


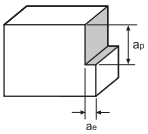
- The specified values apply to ae < 0.5 x D and ap 1 x D.

Cooling = emulsion

249370.... **249371....** **249372....**

Correction examples:
Correction factor fz for full slot (ae > 0.5 x D) = 0.7
Correction factor fz for ap < 1 x D = 1.2





- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Vc min/max m/min	Vc Start m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm					
							6	8	10	12	16	20
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	350 - 500	400	0.05 - 0.06	0.06 - 0.08	0.07 - 0.1	0.08 - 0.11	0.11 - 0.13	0.15 - 0.25
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	150 - 250	175	0.05 - 0.06	0.06 - 0.08	0.07 - 0.1	0.08 - 0.11	0.11 - 0.13	0.15 - 0.25
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	200 - 350	250	0.05 - 0.06	0.06 - 0.08	0.07 - 0.1	0.08 - 0.11	0.11 - 0.13	0.15 - 0.25
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	150 - 250	175	0.05 - 0.06	0.06 - 0.08	0.07 - 0.1	0.08 - 0.11	0.11 - 0.13	0.15 - 0.25
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	200 - 350	250	0.05 - 0.06	0.06 - 0.08	0.07 - 0.1	0.08 - 0.11	0.11 - 0.13	0.15 - 0.25
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	150 -250	175	0.05 - 0.06	0.06 - 0.08	0.07 - 0.1	0.08 - 0.11	0.11 - 0.13	0.15 - 0.25
	Thermoplastic		PVC		350 - 500	420	0.05 - 0.06	0.06 - 0.08	0.07 - 0.1	0.08 - 0.11	0.11 - 0.13	0.15 - 0.25
	Thermoset		Melamine		250 - 400	320	0.05 - 0.06	0.06 - 0.08	0.07 - 0.1	0.08 - 0.11	0.11 - 0.13	0.15 - 0.25
	Fibre-reinforced plastics		CFRP, GFRP		200 - 350	250	0.05 - 0.06	0.06 - 0.08	0.07 - 0.1	0.08 - 0.11	0.11 - 0.13	0.15 - 0.25

ATORN® Torus milling cutter Ultra-N

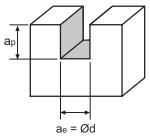


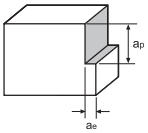
- The specified values apply to ae < 0.5 x D and ap 0.2 x D.

Cooling = emulsion

249211.... **249212....** **249213....**

Correction examples:
Correction factor fz for full slot (ae > 0.5 x D) = 0.7
Long version: please correct fz values by factor 0.9
Extra-long version: please correct fz values by factor 0.8





- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Vc min/max m/min	Vc Start m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm							
							3	4	5	6	8	10	12	16
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	375 - 550	425	0.02 - 0.035	0.025 - 0.04	0.03 - 0.05	0.04 - 0.055	0.05 - 0.07	0.06 - 0.09	0.07 - 0.1	0.1 - 0.12
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	175 - 275	200	0.02 - 0.04	0.025 - 0.04	0.03 - 0.045	0.035 - 0.05	0.05 - 0.07	0.06 - 0.09	0.07 - 0.1	0.08 - 0.14
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	225 - 375	275								
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	175 - 275	200								
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	225 - 375	275								
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	175 - 275	200								
	Thermoplastic		PVC		375 - 550	450								
	Thermoset		Melamine		275 - 450	350								
	Fibre-reinforced plastics		CFRP, GFRP		225 - 375	275								

ATORN® Torus milling cutter Ultra-N

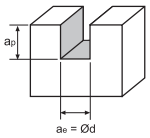


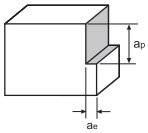
- The specified values apply to ae < 0.5 x D and ap 1 x D.

Cooling = emulsion

249311.... **249312....**

Correction examples:
Correction factor fz for full slot (ae > 0.5 x D) = 0.7
Correction fz for ap < 1 x D = 1.2





- Please adjust these guideline values according to clamping operation and machine set-up!

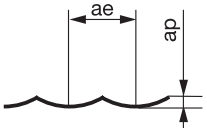
ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Vc min/max m/min	Vc Start m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm						
							5	6	8	10	12	16	20
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	375 - 550	425	0.025 - 0.05	0.03- 0.06	0.04 - 0.08	0.05 - 0.1	0.06 - 0.11	0.065 - 0.13	0.075 - 0.15
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	175 - 275	200	0.025 - 0.05	0.03- 0.06	0.04 - 0.08	0.05 - 0.1	0.06 - 0.11	0.065 - 0.13	0.075 - 0.15
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	225 - 375	275	0.025 - 0.05	0.03- 0.06	0.04 - 0.08	0.05 - 0.1	0.06 - 0.11	0.065 - 0.13	0.075 - 0.15
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	175 - 275	200	0.025 - 0.05	0.03- 0.06	0.04 - 0.08	0.05 - 0.1	0.06 - 0.11	0.065 - 0.13	0.075 - 0.15
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	225 - 375	275	0.025 - 0.05	0.03- 0.06	0.04 - 0.08	0.05 - 0.1	0.06 - 0.11	0.065 - 0.13	0.075 - 0.15
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	175 - 275	200	0.025 - 0.05	0.03- 0.06	0.04 - 0.08	0.05 - 0.1	0.06 - 0.11	0.065 - 0.13	0.075 - 0.15
	Thermoplastic		PVC		375 - 550	450	0.025 - 0.05	0.03- 0.06	0.04 - 0.08	0.05 - 0.1	0.06 - 0.11	0.065 - 0.13	0.075 - 0.15
	Thermoset		Melamine		275 - 450	350	0.025 - 0.05	0.03- 0.06	0.04 - 0.08	0.05 - 0.1	0.06 - 0.11	0.065 - 0.13	0.075 - 0.15
	Fibre-reinforced plastics		CFRP, GFRP		225 - 375	275	0.025 - 0.05	0.03- 0.06	0.04 - 0.08	0.05 - 0.1	0.06 - 0.11	0.065 - 0.13	0.075 - 0.15

ATORN® Mini radius milling cutter Ultra-N



- The specified values apply to ae < 0.5 x D. Cooling = emulsion **249003....**

Correction examples:
Correction factor fz for projecting length (5-10 x D = 0.7
Correction factor fz for projecting length (> 10 x D) = 0.5
Correction factor fz for full slot (ae > 0.5 x D) = 0.7
Correction factor fz for copying = 1.3



- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Vc min/max m/min	Vc Start m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm		ap in mm in relation to the milling cutter diameter in mm	
							0.5	1	0.5	1
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	400 - 550	450	0.01 - 0.017	0.02 - 0.03	0.025 - 0.25	0.1 - 0.5
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	180 - 320	220	0.01 - 0.017	0.02 - 0.03	0.025 - 0.25	0.1 - 0.5
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	250 - 420	320	0.01 - 0.017	0.02 - 0.03	0.025 - 0.25	0.1 - 0.5
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	180 - 320	220	0.01 - 0.017	0.02 - 0.03	0.025 - 0.25	0.1 - 0.5
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	250 - 420	320	0.01 - 0.017	0.02 - 0.03	0.025 - 0.25	0.1 - 0.5
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	180 - 320	230	0.01 - 0.017	0.02 - 0.03	0.025 - 0.25	0.1 - 0.5
	Thermoplastic		PVC		400 - 550	450	0.01 - 0.017	0.02 - 0.03	0.025 - 0.25	0.1 - 0.5
	Thermoset		Melamine		300 - 450	360	0.01 - 0.017	0.02 - 0.03	0.025 - 0.25	0.1 - 0.5
	Fibre-reinforced plastics		CFRP, GFRP		250 - 420	320	0.01 - 0.017	0.02 - 0.03	0.025 - 0.25	0.1 - 0.5

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Vc min/max m/min	Vc Start m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm		ap in mm in relation to the milling cutter diameter in mm	
							1.5	2	1.5	2
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	400 - 550	450	0.03 - 0.045	0.035 - 0.06	0.15-0.75	0.12 - 1
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	180 - 320	220	0.03 - 0.045	0.035 - 0.06	0.15-0.75	0.12 - 1
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	250 - 420	320	0.03 - 0.045	0.035 - 0.06	0.15-0.75	0.12 - 1
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	180 - 320	220	0.03 - 0.045	0.035 - 0.06	0.15-0.75	0.12 - 1
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	250 - 420	320	0.03 - 0.045	0.035 - 0.06	0.15-0.75	0.12 - 1
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	180 - 320	230	0.03 - 0.045	0.035 - 0.06	0.15-0.75	0.12 - 1
	Thermoplastic		PVC		400 - 550	450	0.03 - 0.045	0.035 - 0.06	0.15-0.75	0.12 - 1
	Thermoset		Melamine		300 - 450	360	0.03 - 0.045	0.035 - 0.06	0.15-0.75	0.12 - 1
	Fibre-reinforced plastics		CFRP, GFRP		250 - 420	320	0.03 - 0.045	0.035 - 0.06	0.15-0.75	0.12 - 1

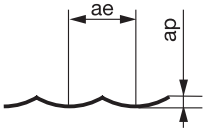
ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Vc min/max m/min	Vc Start m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm	ap in mm in relation to the milling cutter diameter in mm
							2.5	2.5
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	400 - 550	450	0.045 - 0.07	0.25 - 1.25
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	180 - 320	220	0.045 - 0.07	0.25 - 1.25
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	250 - 420	320	0.045 - 0.07	0.25 - 1.25
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	180 - 320	220	0.045 - 0.07	0.25 - 1.25
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	250 - 420	320	0.045 - 0.07	0.25 - 1.25
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	180 - 320	230	0.045 - 0.07	0.25 - 1.25
	Thermoplastic		PVC		400 - 550	450	0.045 - 0.07	0.25 - 1.25
	Thermoset		Melamine		300 - 450	360	0.045 - 0.07	0.25 - 1.25
	Fibre-reinforced plastics		CFRP, GFRP		250 - 420	320	0.045 - 0.07	0.25 - 1.25

ATORN® Radius milling cutter Ultra-N



- The specified values apply to ae < 0.5 x D and ap 0.2 x D. Cooling = emulsion **249240....** **249250....** **249260....**

Correction examples:
Correction factor fz for full slot (ae > 0.5 x D) = 0.7
Correction factor fz for ap < 1 x D = 1.2
Long version: please correct fz values by factor 0.9
Extra-long version: please correct fz values by factor 0.8



- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Vc min/max m/min	Vc Start m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm							
							3	4	5	6	8	10	12	16
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	400 - 550	450	0.02 - 0.04	0.025 - 0.04	0.03 - 0.045	0.035 - 0.05	0.05 - 0.07	0.06 - 0.09	0.07 - 0.1	0.08 - 0.14
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	180 - 320	220								
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	250 - 420	320								
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	180 - 320	220								
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	250 - 420	320								
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	180 - 320	330								
	Thermoplastic		PVC		400 - 550	450								
	Thermoset		Melamine		300 - 450	360								
	Fibre-reinforced plastics		CFRP, GFRP		250 - 420	320								

ATORN® Single-blade milling cutter Ultra-N PRO



- Please adjust these guideline values according to clamping operation and machine set-up!

249005 ....

ISO	**Roughing / Grooving** fz for ae = 1,0 x D and ap = 1,0 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm									
	Materials group					1	1,5	2	3	4	5	6	8	10	12
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	450	0,004	0,004	0,007	0,007	0,015	0,015	0,025	0,034	0,042	0,050
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	400	0,004	0,004	0,007	0,007	0,015	0,015	0,025	0,034	0,042	0,050
	Thermoplastic		PVC		220	0,004	0,004	0,007	0,007	0,015	0,015	0,025	0,034	0,042	0,050
	Fibre-reinforced plastics		CFRP, GFRP		110	0,004	0,004	0,007	0,007	0,015	0,015	0,025	0,034	0,042	0,050

ATORN® Drill groove milling cutter Ultra-N PRO





- Please adjust these guideline values according to clamping operation and machine set-up!

249006 .... **249007....**

ISO	**Roughing / Grooving** fz for ae = 1,0 x D and ap = 1,0 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm								
	Materials group					3	4	5	6	8	10	12	16	20
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	450	0,009	0,015	0,019	0,022	0,031	0,041	0,055	0,074	0,090
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	400	0,009	0,015	0,019	0,022	0,031	0,041	0,055	0,074	0,090
	Thermoplastic		PVC		220	0,009	0,015	0,019	0,022	0,031	0,041	0,055	0,074	0,090
	Fibre-reinforced plastics		CFRP, GFRP		110	0,009	0,015	0,019	0,022	0,031	0,041	0,055	0,074	0,090

ISO	**Finishing / Edge-banding** fz for ae = 0,3 x D and ap = 1,0 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm								
	Materials group					3	4	5	6	8	10	12	16	20
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	800	0,010	0,020	0,025	0,030	0,042	0,055	0,075	0,100	0,120
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	730	0,010	0,020	0,025	0,030	0,042	0,055	0,075	0,100	0,120
	Thermoplastic		PVC		400	0,010	0,020	0,025	0,030	0,042	0,055	0,075	0,100	0,120
	Fibre-reinforced plastics		CFRP, GFRP		200	0,010	0,020	0,025	0,030	0,042	0,055	0,075	0,100	0,120

ATORN® End milling cutter Ultra-N PRO



- Please adjust these guideline values according to clamping operation and machine set-up!

249008 ....

ISO	**Roughing / Grooving** fz for ae = 1,0 x D and ap = 1,0 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm							
	Materials group					4	5	6	8	10	12	16	20
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	300	0,015	0,019	0,022	0,031	0,041	0,055	0,074	0,090
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	280	0,015	0,019	0,022	0,031	0,041	0,055	0,074	0,090
	Thermoplastic		PVC		150	0,015	0,019	0,022	0,031	0,041	0,055	0,074	0,090
	Fibre-reinforced plastics		CFRP, GFRP		80	0,015	0,019	0,022	0,031	0,041	0,055	0,074	0,090

ISO	**Finishing / Edge-banding** fz for ae = 1,0 x D and ap = 1,0 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm							
	Materials group					4	5	6	8	10	12	16	20
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	480	0,020	0,025	0,030	0,042	0,055	0,075	0,100	0,120
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	440	0,020	0,025	0,030	0,042	0,055	0,075	0,100	0,120
	Thermoplastic		PVC		240	0,020	0,025	0,030	0,042	0,055	0,075	0,100	0,120
	Fibre-reinforced plastics		CFRP, GFRP		120	0,020	0,025	0,030	0,042	0,055	0,075	0,100	0,120

ATORN® End milling cutter Ultra-N PRO



- Please adjust these guideline values according to clamping operation and machine set-up!

249009 ....

ISO	**Roughing / Grooving** fz for ae = 1,0 x D and ap = 1,0 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm							
	Materials group					4	5	6	8	10	12	16	20
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	300	0,022	0,031	0,041	0,055	0,074	0,090	0,100	0,120
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	280	0,022	0,031	0,041	0,055	0,074	0,090	0,100	0,120
	Thermoplastic		PVC		150	0,022	0,031	0,041	0,055	0,074	0,090	0,100	0,120
	Fibre-reinforced plastics		CFRP, GFRP		80	0,022	0,031	0,041	0,055	0,074	0,090	0,100	0,120

ISO	**Finishing / Edge-banding** fz for ae = 0,3 x D and ap = 1,0 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm							
	Materials group					4	5	6	8	10	12	16	20
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	480	0,030	0,042	0,055	0,075	0,100	0,120	0,100	0,120
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	440	0,030	0,042	0,055	0,075	0,100	0,120	0,100	0,120
	Thermoplastic		PVC		240	0,030	0,042	0,055	0,075	0,100	0,120	0,100	0,120
	Fibre-reinforced plastics		CFRP, GFRP		120	0,030	0,042	0,055	0,075	0,100	0,120	0,100	0,120

ATORN® End milling cutter Ultra-N PRO



- Please adjust these guideline values according to clamping operation and machine set-up!

249010 ....

ISO	**Roughing / Grooving** fz for ae = 1,0 x D and ap = 1,0 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm										
	Materials group					3	4	5	6	8	10	12	14	16	18	20
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	450	0,009	0,015	0,019	0,022	0,031	0,041	0,055	0,055	0,074	0,074	0,090
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	400	0,009	0,015	0,019	0,022	0,031	0,041	0,055	0,055	0,074	0,074	0,090
	Thermoplastic		PVC		220	0,009	0,015	0,019	0,022	0,031	0,041	0,055	0,055	0,074	0,074	0,090
	Fibre-reinforced plastics		CFRP, GFRP		110	0,009	0,015	0,019	0,022	0,031	0,041	0,055	0,055	0,074	0,074	0,090

ISO	**Finishing / Edge-banding** fz for ae = 0,3 x D and ap = 1,0 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm										
	Materials group					3	4	5	6	8	10	12	14	16	18	20
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	800	0,010	0,020	0,025	0,030	0,042	0,055	0,075	0,075	0,100	0,100	0,120
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	730	0,010	0,020	0,025	0,030	0,042	0,055	0,075	0,075	0,100	0,100	0,120
	Thermoplastic		PVC		400	0,010	0,020	0,025	0,030	0,042	0,055	0,075	0,075	0,100	0,100	0,120
	Fibre-reinforced plastics		CFRP, GFRP		200	0,010	0,020	0,025	0,030	0,042	0,055	0,075	0,075	0,100	0,100	0,120

ATORN® End milling cutter Ultra-N PRO



- Please adjust these guideline values according to clamping operation and machine set-up!

249011 ....

ISO	**Roughing / Grooving** fz for ae = 1,0 x D and ap = 1,0 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm								
	Materials group					3	4	5	6	8	10	12	16	20
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	360	0,027	0,038	0,042	0,051	0,067	0,075	0,084	0,110	0,130
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	380	0,027	0,038	0,042	0,051	0,067	0,075	0,084	0,110	0,130
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	150	0,027	0,038	0,042	0,051	0,067	0,075	0,084	0,110	0,130
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	180	0,027	0,038	0,042	0,051	0,067	0,075	0,084	0,110	0,130
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	240	0,027	0,038	0,042	0,051	0,067	0,075	0,084	0,110	0,130

ISO	**Finishing / Edge-banding** fz for ae = 0,5 x D and ap = 1,0 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm								
	Materials group					3	4	5	6	8	10	12	16	20
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	500	0,032	0,045	0,050	0,060	0,080	0,090	0,100	0,130	0,160
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	520	0,032	0,045	0,050	0,060	0,080	0,090	0,100	0,130	0,160
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	200	0,032	0,045	0,050	0,060	0,080	0,090	0,100	0,130	0,160
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	230	0,032	0,045	0,050	0,060	0,080	0,090	0,100	0,130	0,160
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	320	0,032	0,045	0,050	0,060	0,080	0,090	0,100	0,130	0,160

ATORN® Torus milling cutter Ultra-N PRO



- Please adjust these guideline values according to clamping operation and machine set-up!

249012 ....

ISO	**copy / Finishing** fz for ae = 0,5 x D and ap = 0,05 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm							
	Materials group					3	4	5	6	8	10	12	16
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	220	0,010	0,020	0,020	0,030	0,040	0,050	0,070	0,090
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	180	0,010	0,020	0,020	0,030	0,040	0,050	0,070	0,090
	Thermoplastic		PVC		160	0,010	0,020	0,020	0,030	0,040	0,050	0,070	0,090
	Fibre-reinforced plastics		CFRP, GFRP		120	0,010	0,020	0,020	0,030	0,040	0,050	0,070	0,090

ATORN® Torus milling cutter Ultra-N PRO



- Please adjust these guideline values according to clamping operation and machine set-up!

249013 ....

ISO	**copy / Finishing** fz for ae = 0,5 x D and ap = 0,05 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm							
	Materials group					3	4	5	6	8	10	12	16
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	320	0,010	0,020	0,020	0,030	0,040	0,050	0,070	0,090
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	280	0,010	0,020	0,020	0,030	0,040	0,050	0,070	0,090
	Thermoplastic		PVC		240	0,010	0,020	0,020	0,030	0,040	0,050	0,070	0,090
	Fibre-reinforced plastics		CFRP, GFRP		160	0,010	0,020	0,020	0,030	0,040	0,050	0,070	0,090

ATORN® Torus milling cutter Ultra-N PRO



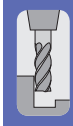
- Please adjust these guideline values according to clamping operation and machine set-up!

249014 ....

ISO	**Trochoidal / Roughing** fz for ae = 0,12 x D and ap = 3,0 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm					
	Materials group					6	8	10	12	16	20
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	280	0,050	0,065	0,080	0,120	0,150	0,200
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	260	0,050	0,065	0,080	0,120	0,150	0,200
	Thermoplastic		PVC		160	0,050	0,065	0,080	0,120	0,150	0,200
	Fibre-reinforced plastics		CFRP, GFRP		120	0,050	0,065	0,080	0,120	0,150	0,200

ATORN® Trochoidal end milling cutter Ultra-N PRO





- Please adjust these guideline values according to clamping operation and machine set-up!

249019....

ISO	**Trochoidal / Roughing** fz for ae = 0,12 x D and ap = 3,0 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm					
	Materials group					6	8	10	12	16	20
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	280	0,050	0,065	0,080	0,120	0,150	0,200
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	470	0,050	0,065	0,080	0,120	0,150	0,200
	Thermoplastic		PVC		385	0,050	0,065	0,080	0,120	0,150	0,200
	Fibre-reinforced plastics		CFRP, GFRP		280	0,050	0,065	0,080	0,120	0,150	0,200

ATORN® Radius milling cutter Ultra-N PRO



- Please adjust these guideline values according to clamping operation and machine set-up!

249015 ....

ISO	**copy / Finishing** fz for ap = 0,03 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm							
	Materials group					3	4	5	6	8	10	12	16
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	800	0,025	0,030	0,050	0,060	0,070	0,085	0,100	0,150
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	600	0,025	0,030	0,050	0,060	0,070	0,085	0,100	0,150
	Thermoplastic		PVC		500	0,025	0,030	0,050	0,060	0,070	0,085	0,100	0,150

ATORN® Radius milling cutter Ultra-N PRO



- Please adjust these guideline values according to clamping operation and machine set-up!

249016 ....

ISO	**copy / Finishing** fz for ap = 0,03 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm							
	Materials group					3	4	5	6	8	10	12	16
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	700	0,025	0,030	0,050	0,060	0,070	0,085	0,100	0,150
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	550	0,025	0,030	0,050	0,060	0,070	0,085	0,100	0,150
	Thermoplastic		PVC		450	0,025	0,030	0,050	0,060	0,070	0,085	0,100	0,150

ATORN® Roughing cutter Ultra-N PRO



- Please adjust these guideline values according to clamping operation and machine set-up!

249017 ....

ISO	**Roughing / Grooving** fz for ae = 1,0 x D and ap = 1,0 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm					
	Materials group					6	8	10	12	16	20
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	370	0,060	0,080	0,110	0,130	0,160	0,200
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	350	0,060	0,080	0,110	0,130	0,160	0,200
	Thermoplastic		PVC		210	0,030	0,035	0,040	0,045	0,055	0,080

ISO	**Finishing / Edge-banding** fz for ae = 0,5 x D and ap = 1,0 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm					
	Materials group					6	8	10	12	16	20
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	520	0,080	0,100	0,130	0,150	0,200	0,250
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	490	0,080	0,100	0,130	0,150	0,200	0,250
	Thermoplastic		PVC		280	0,032	0,040	0,050	0,055	0,063	0,090

ATORN® Roughing cutter Ultra-N PRO



- Please adjust these guideline values according to clamping operation and machine set-up!

249018 ....

ISO	**Roughing / Grooving** fz for ae = 1,0 x D and ap = 1,0 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm					
	Materials group					6	8	10	12	16	20
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	530	0,090	0,120	0,150	0,180	0,230	0,290
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	500	0,090	0,120	0,150	0,180	0,230	0,290
	Thermoplastic		PVC		300	0,038	0,046	0,059	0,063	0,075	0,100

ISO	**Finishing / Edge-banding** fz for ae = 0,5 x D and ap = 1,0 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm					
	Materials group					6	8	10	12	16	20
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	750	0,110	0,140	0,180	0,220	0,280	0,350
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	700	0,110	0,140	0,180	0,220	0,280	0,350
	Thermoplastic		PVC		400	0,045	0,055	0,070	0,075	0,090	0,120

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ATORN® Mini end milling cutter, mini torus milling cutter Ultra-MS



- Please adjust these guideline values according to clamping operation and machine set-up!

256011.... **256012....**

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Vc m/min Ø < = 0.5 mm	Vc m/min Ø < = 1.5 mm	Vc m/min Ø > = 1,5 mm	ap max. Ø < = 0.5 mm	ap max. Ø < = 1.5 mm	ap max. Ø > = 1,5 mm
P	Machining steel	Up to 700	9 SMn 28	1.0715	20 - 50	30 - 60	40 - 60	0.01 - 0.04	0.01 - 0.09	0.05 - 0.5
P	Unalloyed structural steel	Up to 700	St-52	1.0052	25 - 55	40 - 90	70 - 100	0.01 - 0.05	0.02 - 0.1	0.05 - 0.6
P	Structural steel	700 - 950	Ck45	1.1191	25 - 55	40 - 90	70- 100	0.01 - 0.05	0.02 - 0.1	0.05 - 0.6
P	Tempering steel	500 - 950	42 CrMo4	1.7225	20 - 50	30 - 60	40 - 60	0.01 - 0.04	0.01 - 0.09	0.05 - 0.5
P	Cast steel	Up to 950	GS 40	1.0416	85 - 100	20 - 50	30 - 60	0.01 - 0.04	0.01 - 0.09	0.05 - 0.5
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	20 - 35	20 - 40	30 - 40	0.035	0.08	0.5
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	22 - 50	30 - 60	45 - 60	0.04	0.13	0.65
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	22 - 60	40 - 120	90 - 150	0.04	0.13	0.65
S	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	22 - 50	30 - 60	45 - 60	0.04	0.13	0.65

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Ø 0.5 fz	Ø 0.9 fz	Ø 1-1.5 fz	Ø 1.6-2.5 fz	Ø 2.5-4 fz
P	Machining steel	Up to 700	9 SMn 28	1.0715	0.002 - 0.005	0.004 - 0.008	0.005 - 0.014	0.01 - 0.023	0.015 - 0.03
P	Unalloyed structural steel	Up to 700	St-52	1.0052	0.002 - 0.005	0.003 - 0.01	0.006 - 0.015	0.01 - 0.025	0.02 - 0.035
P	Structural steel	700 - 950	Ck45	1.1191	0.002 - 0.005	0.003 - 0.01	0.006 -0.015	0.01 - 0.025	0.02 - 0.035
P	Tempering steel	500 - 950	42 CrMo4	1.7225	0.002 - 0.005	0.004 - 0.008	0.005 - 0.014	0.01 - 0.023	0.015 - 0.03
P	Cast steel	Up to 950	GS 40	1.0416	0.002 - 0.005	0.004 - 0.008	0.005 - 0.014	0.01 - 0.023	0.015 - 0.03
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	0.003 - 0.005	0.004 - 0.008	0.005 - 0.014	0.01 - 0.023	0.015 - 0.035
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	0.002 - 0.007	0.004 - 0.008	0.006 - 0.015	0.01 - 0.023	0.025 - 0.035
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	0.001 - 0.005	0.003 - 0.009	0.006 - 0.021	0.016 - 0.03	0.035 - 0.06
S	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	0.002 - 0.007	0.004 - 0.008	0.006 -0.015	0.01 - 0.023	0.025 - 0.035

ATORN® End milling cutter, torus milling cutter Ultra-MS



- Please adjust these guideline values according to clamping operation and machine set-up!

256007.... **256008....** **256010....**

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Vc m/min Ø < = 0.5 mm	Ø 3 - 4 fz	Ø 5 - 6 fz	Ø 8 - 10 fz	Ø 12 - 16 fz	Ø 16 - 20 fz
P	Machining steel	Up to 700	9 SMn 28	1.0715	120 - 140	0.02 - 0.03	0.03 - 0.04	0.04 - 0.055	0.06 - 0.08	0.07 - 0.1
P	Unalloyed structural steel	Up to 700	St-52	1.0052	130 - 150	0.02 - 0.03	0.03 - 0.04	0.04 - 0.055	0.06 - 0.08	0.07 - 0.1
P	Structural steel	700 - 950	Ck45	1.1191	130 - 150	0.02 - 0.03	0.03 - 0.04	0.04 - 0.055	0.06 - 0.08	0.07 - 0.1
P	Tempering steel	500 - 950	42 CrMo4	1.7225	120 - 140	0.02 - 0.03	0.03 - 0.04	0.04 - 0.055	0.06 - 0.08	0.07 - 0.1
P	Cast steel	Up to 950	GS 40	1.0416	120 - 140	0.02 - 0.03	0.03 - 0.04	0.04 - 0.055	0.06 - 0.08	0.07 - 0.1
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	60 - 80	0.014 - 0.022	0.024 - 0.032	0.036 -0.048	0.05 - 0.07	0.06 - 0.09
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	60 - 80	0.018 - 0.028	0.032 - 0.043	0.048 - 0.064	0.068 - 0.095	0.087 - 0.12
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	60 - 80	0.014 - 0.022	0.024 - 0.032	0.036 - 0.048	0.051 - 0.071	0.065 - 0.087
S	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	60 - 80	0.018 -0.028	0.032 - 0.043	0.048 - 0.064	0.068 - 0.095	0.087 - 0.12

ATORN® Mini radius milling cutter Ultra-MS



- Please adjust these guideline values according to clamping operation and machine set-up!

256013....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Vc m/min Ø < = 1.5 mm	Vc m/min Ø < = 1.5 mm	Vc m/min Ø > = 1,5 mm	Ø 0.2-0.5 fz	Ø 0.6-0.9 fz	Ø 1.0-1.5 fz	Ø 1.6-2.5 fz	Ø 2.5-4.0 fz
P	Machining steel	Up to 700	9 SMn 28	1.0715	20 - 45	40 - 60	40 - 60	0.001 - 0.005	0.005 - 0.008	0.006 - 0.01	0.011 - 0.019	0.019 - 0.035
P	Unalloyed structural steel	Up to 700	St-52	1.0052	25 - 60	50-100	70 - 100	0.002 - 0.004	0.004 - 0.01	0.008 - 0.015	0.01 - 0.02	0.02 - 0.035
P	Structural steel	700 - 950	Ck45	1.1191	25 - 60	50-100	70 - 100	0.002 - 0.004	0.004 - 0.01	0.008 - 0.015	0.01 - 0.02	0.02 - 0.035
P	Tempering steel	500 - 950	42 CrMo4	1.7225	25 - 45	40 - 60	40 -60	0.001 - 0.005	0.005 - 0.008	0.006 - 0.01	0.011 - 0.019	0.019 - 0.035
P	Cast steel	Up to 950	GS 40	1.0416	20 - 45	40 - 60	40 - 60	0.001 - 0.005	0.005 - 0.008	0.006 - 0.01	0.011 - 0.019	0.019 - 0.35
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	20 - 40	28 - 40	28 - 40	0.002 - 0.005	0.005 - 0.008	0.007 - 0.014	0.011 - 0.018	0.019 - 0.035
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	20 - 50	40 - 60	45 - 60	0.001 - 0.005	0.005 - 0.006	0.006 - 0.01	0.011 - 0.019	0.019 - 0.035
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	20 - 60	50 - 150	100 - 150	0.002 - 0.007	0.007 - 0.01	0.01 - 0.028	0.021 - 0.038	0.04 - 0.075
S	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	20 - 50	40 - 60	45 - 60	0.001 - 0.005	0.005 - 0.009	0.006 - 0.01	0.011 - 0.019	0.019 - 0.035

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Vc m/min Ø < = 0.5 mm	Ø 3 - 4 fz	Ø 5 - 6 fz	Ø 8 - 10 fz	Ø 12 - 16 fz	Ø 16 - 20 fz
P	Machining steel	Up to 700	9 SMn 28	1.0715	130 - 150	0.022 - 0.033	0.034 - 0.042	0.042 - 0.058	0.063 - 0.082	0.072 - 0.11
P	Unalloyed structural steel	Up to 700	St-52	1.0052	140 - 160	0.022 - 0.033	0.034 - 0.042	0.043 - 0.057	0.062 - 0.083	0.073 - 0.12
P	Structural steel	700 - 950	Ck45	1.1191	140 - 160	0.022 - 0.033	0.034 - 0.042	0.043 - 0.057	0.062 - 0.083	0.073 - 0.12
P	Tempering steel	500 - 950	42 CrMo4	1.7225	130 - 150	0.022 - 0.033	0.034 - 0.042	0.042 - 0.058	0.063 - 0.082	0.072 - 0.11
P	Cast steel	Up to 950	GS 40	1.0416	130 - 150	0.022 - 0.033	0.034 - 0.042	0.042 - 0.058	0.063 - 0.082	0.072 - 0.11
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	65 - 85	0.016 - 0.025	0.026 - 0.035	0.038 - 0.05	0.052 - 0.073	0.063 - 0.1
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	60 - 80	0.018 - 0.028	0.032 - 0.043	0.048 - 0.064	0.068 - 0.095	0.087 - 0.12
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	60 - 80	0.014 - 0.022	0.024 - 0.032	0.036 - 0.048	0.051 - 0.071	0.065 - 0.087
S	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	60 - 80	0.018 - 0.028	0.032 - 0.043	0.048 - 0.064	0.068 - 0.095	0.087 - 0.12

SARA® Mini torus cutter DIA+



- Please adjust these guideline values according to clamping operation and machine set-up!

258005....

ISO	**Roughing** Materials group	Vc m/min	Ø 0.2 fz	Ø 0.3 0.4 0.5 fz	Ø 0.6 0.7 0.8 fz	Ø 0.9 1.0 1.2 fz	Ø 1.5 fz	Ø 2 fz
N	Graphite, fibre-reinforced plastics	95	0.002	0.003	0.005	0.010	0.012	0.015

ISO	**Roughing** Materials group	Vc m/min	Ø 3 fz	Ø 4 fz	Ø 5.0 6.0 fz	Ø 8 fz	Ø 10 fz	Ø 12 fz
N	Graphite, fibre-reinforced plastics	95	0.02	0.03	0.045	0.06	0.080	0.1

ISO	**Finishing** Materials group	Vc m/min	Ø 0.2 fz	Ø 0.3 0.4 0.5 fz	Ø 0.6 0.7 0.8 fz	Ø 0.9 1.0 1.2 fz	Ø 1.5 fz	Ø 2 fz
N	Graphite, fibre-reinforced plastics	95	0.003	0.004	0.008	0.015	0.02	0.025

ISO	**Finishing** Materials group	Vc m/min	Ø 3 fz	Ø 4 fz	Ø 5.0 6.0 fz	Ø 8 fz	Ø 10 fz	Ø 12 fz
N	Graphite, fibre-reinforced plastics	95	0.03	0.040	0.06	0.080	0.1	0.12

SARA® Mini radius milling cutter DIA+



- Please adjust these guideline values according to clamping operation and machine set-up!

258006....

ISO	**Roughing** Materials group	Vc m/min	Ø 0.2 fz	Ø 0.3 0.4 0.5 fz	Ø 0.6 0.7 0.8 fz	Ø 0.9 1.0 1.2 fz	Ø 1.5 fz	Ø 2 fz
N	Graphite, fibre-reinforced plastics	95	0.002	0.003	0.005	0.010	0.012	0.015

ISO	**Roughing** Materials group	Vc m/min	Ø 3 fz	Ø 4 fz	Ø 5.0 6.0 fz	Ø 8 fz	Ø 10 fz	Ø 12 fz
N	Graphite, fibre-reinforced plastics	95	0.02	0.03	0.045	0.06	0.080	0.1

ISO	**Finishing** Materials group	Vc m/min	Ø 0.2 fz	Ø 0.3 0.4 0.5 fz	Ø 0.6 0.7 0.8 fz	Ø 0.9 1.0 1.2 fz	Ø 1.5 fz	Ø 2 fz
N	Graphite, fibre-reinforced plastics	95	0.003	0.004	0.008	0.015	0.02	0.025

ISO	**Finishing** Materials group	Vc m/min	Ø 3 fz	Ø 4 fz	Ø 5.0 6.0 fz	Ø 8 fz	Ø 10 fz	Ø 12 fz
N	Graphite, fibre-reinforced plastics	95	0.03	0.040	0.06	0.080	0.1	0.12

SARA® Torus milling cutter DIA+



- Please adjust these guideline values according to clamping operation and machine set-up!

258013....

ISO	**Roughing** Materials group	Vc m/min	Ø 0.2 fz	Ø 0.3 0.4 0.5 fz	Ø 0.6 0.7 0.8 fz	Ø 0.9 1.0 1.2 fz	Ø 1.5 fz	Ø 2 fz
N	Graphite, fibre-reinforced plastics	95	0.002	0.003	0.005	0.010	0.012	0.015

ISO	**Roughing** Materials group	Vc m/min	Ø 3 fz	Ø 4 fz	Ø 5.0 6.0 fz	Ø 8 fz	Ø 10 fz	Ø 12 fz
N	Graphite, fibre-reinforced plastics	95	0.02	0.03	0.045	0.06	0.080	0.1

ISO	**Finishing** Materials group	Vc m/min	Ø 0.2 fz	Ø 0.3 0.4 0.5 fz	Ø 0.6 0.7 0.8 fz	Ø 0.9 1.0 1.2 fz	Ø 1.5 fz	Ø 2 fz
N	Graphite, fibre-reinforced plastics	95	0.003	0.004	0.008	0.015	0.02	0.025

ISO	**Finishing** Materials group	Vc m/min	Ø 3 fz	Ø 4 fz	Ø 5.0 6.0 fz	Ø 8 fz	Ø 10 fz	Ø 12 fz
N	Graphite, fibre-reinforced plastics	95	0.03	0.040	0.06	0.080	0.1	0.12

SARA® Torus milling cutter, long DIA+



- Please adjust these guideline values according to clamping operation and machine set-up!

258014....

ISO	**Roughing** Materials group	Vc m/min	Ø 0.2 fz	Ø 0.3 0.4 0.5 fz	Ø 0.6 0.7 0.8 fz	Ø 0.9 1.0 1.2 fz	Ø 1.5 fz	Ø 2 fz
N	Graphite, fibre-reinforced plastics	95	0.002	0.003	0.005	0.010	0.012	0.015

ISO	**Roughing** Materials group	Vc m/min	Ø 3 fz	Ø 4 fz	Ø 5.0 6.0 fz	Ø 8 fz	Ø 10 fz	Ø 12 fz
N	Graphite, fibre-reinforced plastics	95	0.02	0.03	0.045	0.06	0.080	0.1

ISO	**Finishing** Materials group	Vc m/min	Ø 0.2 fz	Ø 0.3 0.4 0.5 fz	Ø 0.6 0.7 0.8 fz	Ø 0.9 1.0 1.2 fz	Ø 1.5 fz	Ø 2 fz
N	Graphite, fibre-reinforced plastics	95	0.002	0.003	0.005	0.010	0.012	0.015

ISO	**Finishing** Materials group	Vc m/min	Ø 3 fz	Ø 4 fz	Ø 5.0 6.0 fz	Ø 8 fz	Ø 10 fz	Ø 12 fz
N	Graphite, fibre-reinforced plastics	95	0.02	0.03	0.045	0.06	0.080	0.1

ATORN® Milling cutter for composite materials



- Please adjust these guideline values according to clamping operation and machine set-up!

250603 .... **250618....**
250604 .... **250619....**

ISO	Materials group	Cutting speed Vc m/min	Application	Feed fz in mm/tooth in relation to milling cutter diameter in mm							
				2	4	6	8	10	12	16	20
N	Thermoset	200 - 300	Roughing	0.024	0.048	0.072	0.096	0.12	0.144	0.192	0.204
	Hardwood	200 - 250	Finishing	0.018	0.036	0.054	0.072	0.09	0.108	0.144	0.18
	Compressed board	200 - 250	Groove milling	0.016	0.032	0.048	0.064	0.08	0.096	0.128	0.16
			Copy-roughing	0.028	0.056	0.084	0.112	0.14	0.168	0.224	0.28
			Copy-finishing	0.024	0.048	0.072	0.096	0.12	0.144	0.192	0.24
	Thermoplastic	250 - 400	Roughing	0.024	0.048	0.072	0.096	0.12	0.144	0.192	0.24
	Polycarbonate	250 - 350	Finishing	0.022	0.044	0.066	0.088	0.11	0.132	0.176	0.22
	Non-ferrous materials	250 - 350	Groove milling	0.017	0.034	0.051	0.068	0.085	0.102	0.163	0.17
	Hard rubber	50 - 150	Copy-roughing	0.037	0.074	0.111	0.148	0.185	0.222	0.296	0.37
			Copy-finishing	0.030	0.060	0.090	0.120	0.15	0.18	0.24	0.3
	Kevlar	90 - 150	All		0.012	0.016	0.022	0.027	0.033	0.043	
	Honeycomb	350	All			0.060	0.060	0.06	0.06	0.07	0.08
	Fibre-reinforced plastics GRRP/CFRP	150 - 250	Roughing	0.026	0.052	0.078	0.104	0.13	0.156	0.028	0.26
			Finishing	0.024	0.048	0.072	0.096	0.12	0.144	0.192	0.24
			Groove milling	0.020	0.040	0.060	0.080	0.1	0.12	0.16	0.2
	Correction factors										
	Corner and contour milling, roughing			ap = 1.0 x D ae = 0.5 x D							
	Corner and contour milling, finishing			ap = 1.0 x D ae = 0.1 x D							
	Groove milling			ap = 0.5 x D ae = 1.0 x D							
	Copy milling, roughing			ap = 0.5 x D ae = 0.5 x D							
	Copy milling, finishing			ap = 0.03 x D ae = 0.02 x D							

250605 .... **250607 ....** **250609 ....** **250611 ....** **250613 ....** **250615 ....** **250617 ....**
250606 .... **250608 ....** **250610 ....** **250612 ....** **250614 ....** **250616 ....**

ISO	Materials group	Cutting speed Vc m/min	Application	Feed f in mm/rev in relation to milling cutter diameter in mm							
				2	4	6	8	10	12	16	20
N	Thermoset	200 - 300	Fine	0.2	0.4	0.6	0.8	1.0	1.2	1.6	2.0
	Hardwood	200 - 250	Medium	0.14	0.28	0.42	0.56	0.7	0.85	1.12	1.4
	Compressed board	200 - 250	Coarse	0.12	0.24	0.36	0.48	0.6	0.72	0.96	1.2
	Thermoplastic	250 - 400	Fine	0.16	0.32	0.48	0.64	0.8	0.96	1.28	1.6
	Polycarbonate	250 - 350	Medium	0.13	0.26	0.39	0.52	0.65	0.78	1.04	1.3
	Non-ferrous materials	250 - 350	Coarse	0.1	0.2	0.3	0.4	0.5	0.6	0.8	1.0
	Fibre-reinforced plastics GRRP/CFRP	150 - 250	Fine contour	0.16	0.32	0.48	0.64	0.8	0.96	1.28	1.6
			Medium contour	0.14	0.28	0.42	0.56	0.7	0.84	1.12	1.4
			Coarse contour	0.12	0.24	0.36	0.48	0.6	0.72	0.96	1.2
			Fine grooves	0.14	0.28	0.42	0.56	0.7	0.84	1.12	1.4
			Medium grooves	0.12	0.24	0.36	0.48	0.6	0.72	0.96	1.2
			Coarse grooves	0.1	0.2	0.3	0.4	0.5	0.6	0.8	1.0
	Correction factors										
	Corner and contour milling, roughing			ap = 1.0 x D ae = 0.1 x D							
	Corner and contour milling, finishing			ap = 0.75 x D ae = 0.03 x D							
	Groove milling			ap = 0.3 x D ae = 1.0 x D							

250600 ....
250601 ....
250602 ....

ISO	Materials group	Cutting speed Vc m/min	Application	Feed f in mm/rev in relation to milling cutter diameter in mm			
				6	8	10	12
N	Fibre-reinforced plastics GRRP/CFRP	70 - 100	Groove milling	0.06	0.1	0.15	0.2
		150 - 200	Contour milling	0.06	0.1	0.15	0.2
	Correction factors						
	Corner and contour milling, roughing			ap = dependent on up and down-cut transition ae = 0.5 x D			

Contour milling cutter for GFRP and CFRP



- Please adjust these guideline values according to clamping operation and machine set-up!

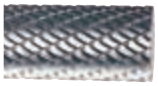
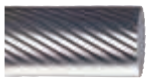
250050.... **250052....**
250051.... **250053....**

Type A: smooth face
Type B: rotary milling cutter face
Type C: end milling cutter face
Type D: drill bit

Ø mm	Rotational speed rpm	Feed mm / min.
1.6	40,000 - 45,000	1,000 - 1,500
2.4	25,000 - 30,000	1,100 - 1,800
3	20,000 - 25,000	1,100 - 1,800
4	20,000 - 24,000	900 - 1,700
6	20,000 - 24,000	900 - 1,700
10	15,000 - 20,000	700 - 1,500
12	10,000 - 15,000	500 - 1,300

Carbide metal rotary burs
Usage recommendations, cut types, comparison tables

INFO


Usage recommendations

Material	Cut 6	Cut 2	Aluminium cut
	universal cross-toothing with high machining performance and smooth running, for use with high-alloy, stainless steels, cast irons and weld seams	standard toothing for machining cast steel, hardened and unhardened steels as well as weld seams	special aluminium teeth with large chip chambers, for machining aluminium, non-ferrous metals, hard rubber, reaction wood, hard wood and plastics
Steel	●	●	
Hardened steel	●	●	
Stainless steel	●	●	
Cast iron	●	●	
Titanium	●	●	
Nickel	●	●	
Copper, copper alloys	●	●	
Aluminium			●
Plastic			●

Comparison of cut type designation

Type of cut	ATORN	BIAX	Pferd	Lukas
Cross cut	**6**	63	3 Plus	7
Standard cut	**2**	3	3	3
Aluminium cut	**ALU**	13	Alu	9

Designations of carbide metal rotary burs

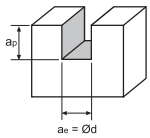
Type	ATORN	DIN (as per 8033)	BIAX	Pferd	Lukas
Cylindrical shape without end cut	**ZYA**	ZYA	TCA	HMA	HFA
Cylindrical shape with end cut	**ZYAS**	ZYA...S	TCB	HMA...ST	HFAS
Ball nosed cylinder shape	**WRC**	WRC	TCC	HMC	HFC
Ball shape	**KUD**	KUD	TCD	HMF	HFD
Oval shape	**TRE**	TRE	TCE	HMO	HFE
Ball nosed tree shape	**RBF**	RBF	TCF	HMH	HFF
Pointed tree shape	**SPG**	SPG	TCG	HMK	HFG
Flame shape	**H**	-	TCH	HMB	HFH
Ball nosed cone shape	**KEL**	KEL	TCK	HML	HFL
Cone shape	**SKM**	SKM	TCI	HMG	HFM
Inverted cone shape	**WKN**	WKN	TCN	HMW	HFN

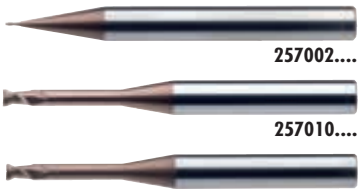
Speed recommendation

		Head diameter				
		3 mm	**6 mm**	**10 mm**	**12 mm**	**16 mm**
Material	**max. speed r/min**	**90.000**	**65.000**	**55.000**	**35.000**	**25.000**
Aluminium Plastic	Speed range	60.000 - 80.000	15.000 - 60.000	10.000 - 50.000	7.000 - 30.000	6.000 - 20.000
	Optimum speed	**65.000**	**40.000**	**25.000**	**20.000**	**15.000**
Brass, copper, copper alloy, cast iron, bronze	Speed range	45.000 - 80.000	22.500 - 60.000	15.000 - 40.000	11.000 - 30.000	9.000 - 20.000
	Optimum speed	**65.000**	**45.000**	**30.000**	**25.000**	**20.000**
Steel	Speed range	60.000 - 80.000	45.000 - 60.000	30.000 - 40.000	22.500 - 30.000	18.000 - 20.000
	Optimum speed	**80.000**	**50.000**	**30.000**	**25.000**	**20.000**
Hardened steel, stainless steel, Titanium, nickel	Speed range	60.000 - 80.000	30.000 - 45.000	19.000 - 30.000	15.000 - 22.500	12.000 - 18.000
	Optimum speed	**80.000**	**40.000**	**25.000**	**20.000**	**15.000**

ATORN® Mini end milling cutter, mini torus milling cutter RockTec 65

- The lower Vc values apply respectively for long clearances and the smaller diameter range; the higher Vc values for short clearance lengths and the larger diameter range. This also applies for the specified ap max. value.
- Please adjust these guideline values according to clamping operation and machine set-up!



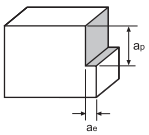


ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Diameter range ≤ 0.5 mm		Diameter range 0.6 - 1 mm		Diameter range > 1 mm	
					Vc m/min	ap max.	Vc m/min	ap max.	Vc m/min	ap max.
P	Nitriding steel	950 - 1300	31CrMoV9	1.8519	60 - 80	0.002 - 0.02	70 - 90	0.003 - 0.045	80-100	0.015 - 0.35
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	60 - 80	0.002 - 0.02	70 - 90	0.003 - 0.045	80-100	0.015 - 0.35
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	15 - 45	0.003 - 0.025	30 - 70	0.004 - 0.05	50 - 80	0.02 - 0.4
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	15 - 45	0.002 - 0.02	30 - 70	0.003 - 0.045	50 - 80	0.015 - 0.35
S	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	13 - 40	0.002 - 0.02	30 - 55	0.003 - 0.04	35 - 65	0.015 - 0.3
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	50 - 70	0.002 - 0.02	60 - 80	0.003 - 0.04	70 - 90	0.015 - 0.15
H	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	50 - 70	0.002 - 0.02	60 - 80	0.003 - 0.04	70 - 90	0.015 - 0.15
H	Hardened materials up to 64 HRc		100Cr6	1.2067	40 - 60	0.001 - 0.01	50 - 70	0.003 - 0.015	60 - 80	0.015 - 0.08

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Feed fz in mm/tooth in relation to milling cutter diameter in mm				
					0.1 - 0.3	0.4-0.8	0.9 - 1.5	1.6 - 2	2.5 - 3
P	Nitriding steel	950 - 1300	31CrMoV9	1.8519	0.003 - 0.007	0.005 - 0.012	0.008 - 0.018	0.014 - 0.025	0.018 - 0.035
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	0.003 - 0.007	0.005 - 0.012	0.008 - 0.018	0.014 - 0.025	0.018 - 0.035
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	0.003 - 0.007	0.005 - 0.012	0.008 - 0.018	0.014 - 0.025	0.018 - 0.035
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	0.003 - 0.007	0.005 - 0.012	0.008 - 0.018	0.014 - 0.025	0.018 - 0.035
S	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	0.002 - 0.005	0.003 - 0.007	0.008 - 0.014	0.012 - 0.023	0.018 - 0.035
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	0.002 - 0.004	0.002 - 0.007	0.006 - 0.012	0.011 - 0.018	0.016 - 0.022
H	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	0.002 - 0.004	0.002 - 0.007	0.006 - 0.012	0.011 - 0.018	0.016 - 0.022
H	Hardened materials up to 64 HRc		100Cr6	1.2067	0.001 - 0.003	0.001 - 0.003	0.003 - 0.009	0.008 - 0.016	0.015 - 0.022

ATORN® End milling cutter, multi-flute milling cutter, torus milling cutter RockTec 65

- Please adjust these guideline values according to clamping operation and machine set-up!

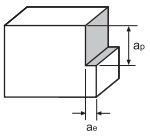




ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	ae Max.	ap Max.	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm					
								3	5	8	12	16	20
P	Nitriding steel	950 - 1300	31CrMoV9	1.8519	0.2 x D	1.5 x D	160 - 200	0.02	0.04	0.08	0.1	0.11	0.12
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	0.2 x D	1.5 x D	160 - 200	0.02	0.04	0.08	0.1	0.11	0.12
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	0.2 x D	1.5 x D	250 - 300	0.02	0.04	0.08	0.1	0.1	0.1
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	0.2 x D	1.5 x D	250 - 300	0.02	0.04	0.08	0.1	0.1	0.1
S	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	0.2 x D	1.5 x D	250 - 300	0.02	0.04	0.08	0.1	0.1	0.1
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	0.05 x D	1 x D	120 - 140	0.02	0.03	0.06	0.08	0.09	0.1
H	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	0.05 x D	1 x D	120 - 140	0.02	0.03	0.06	0.08	0.09	0.1
H	Hardened materials up to 64 HRc		100Cr6	1.2067	0.03-0.05 x D (max. 0.2-0.5 mm)	1 x D	80-120	0.015	0.025	0.05	0.06	0.07	0.08

ATORN® End milling cutter, multi-flute milling cutter, torus milling cutter RockTec 65

- Please adjust these guideline values according to clamping operation and machine set-up!





257006....



257014....

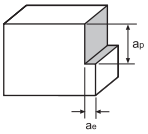


257020....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	ae Max.	ap Max.	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm					
								3	5	8	12	16	20
P	Nitriding steel	950 - 1300	31CrMoV9	1.8519	0.2 x D	1.5 x D	140 - 160	0.02	0.04	0.08	0.1	0.11	0.12
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	0.2 x D	1.5 x D	140 - 160	0.02	0.04	0.08	0.1	0.11	0.12
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	0.2 x D	1.5 x D	200 - 260	0.02	0.04	0.08	0.1	0.1	0.1
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	0.2 x D	1.5 x D	200 - 260	0.02	0.04	0.08	0.1	0.1	0.1
S	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	0.2 x D	1.5 x D	200 - 260	0.02	0.04	0.08	0.1	0.1	0.1
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	0.05 x D	1 x D	100 - 130	0.02	0.03	0.06	0.08	0.09	0.1
H	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	0.05 x D	1 x D	100 - 130	0.02	0.03	0.06	0.08	0.09	0.1
H	Hardened materials up to 64 HRc		100Cr6	1.2067	0.03-0.05 x D (max. 0.2-0.5 mm)	1 x D	70 - 100	0.015	0.025	0.05	0.06	0.07	0.08

ATORN® End milling cutter, torus milling cutter RockTec 65

- Please adjust these guideline values according to clamping operation and machine set-up!





257008....



257022....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	ae Max.	ap Max.	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm					
								3	5	8	12	16	20
P	Nitriding steel	950 - 1300	31CrMoV9	1.8519	0.2 x D	1.5 x D	120 - 140	0.02	0.04	0.08	0.1	0.11	0.12
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	0.2 x D	1.5 x D	120 - 140	0.02	0.04	0.08	0.1	0.11	0.12
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	0.2 x D	1.5 x D	130 - 170	0.02	0.04	0.08	0.1	0.1	0.1
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	0.2 x D	1.5 x D	130 - 170	0.02	0.04	0.08	0.1	0.1	0.1
S	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	0.2 x D	1.5 x D	130 - 170	0.02	0.04	0.08	0.1	0.1	0.1
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	0.05 x D	1 x D	80 - 110	0.02	0.03	0.06	0.08	0.09	0.1
H	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	0.05 x D	1 x D	80 - 110	0.02	0.03	0.06	0.08	0.09	0.1
H	Hardened materials up to 64 HRc		100Cr6	1.2067	0.03-0.05 x D (max. 0.2-0.5 mm)	1 x D	50 - 80	0.015	0.025	0.05	0.06	0.07	0.08

ATORN® Solid carbide high-feed milling cutter RockTec 65



- Please adjust these guideline values according to clamping operation and machine set-up!
- Contour milling or milling in the Z-direction, please mill with an inclination of 1 ° or more, and reduce the feed rate to 60-70%.

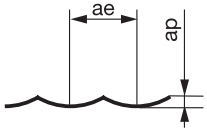
257040...
257045...
257046...

Steel < 1.400 N/mm², hardened steel 45-55 HRc				
Diameter	VC= 160 m/min n (rpm	Feed (mm/min)	ae	ap
4	12.500	5.000	2	0.1
5	10.000	5.200	2.5	0.125
6	8.500	5.440	3	0.15
8	6.300	5.500	4	0.2
10	5.100	5.500	5	0.25
12	4.200	5.300	6	0.3

Hard cast iron < 52 HRc, hardened steel 55-60 HRc				
Diameter	VC= 120 m/min n (rpm)	Feed (mm/min)	ae	ap
4	9.500	2.280	2	0.07
5	7.600	2.400	2.5	0.088
6	6.300	2.500	3	0.105
8	4.700	2.600	4	0.14
10	3.800	2.700	5	0.175
12	3.150	2.600	6	0.21

ATORN® Mini radius milling cutter RockTec 65

- The lower Vc values apply respectively for long clearances and the smaller diameter range; the higher Vc values for short clearance lengths and the larger diameter range. This also applies for the specified ap max. value.
- Please adjust these guideline values according to clamping operation and machine set-up!





257026....



257034....

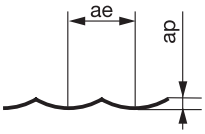
ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Diameter range ≤ 0.5 mm		Diameter range 0.6 - 1 mm		Diameter range > 1 mm	
					Vc m/min	ap max.	Vc m/min	ap max.	Vc m/min	ap max.
P	Nitriding steel	950 - 1300	31CrMoV9	1.8519	60 - 80	0.006 - 0.025	70 - 90	0.01 - 0.05	80-100	0.04 - 0.15
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	60 - 80	0.006 - 0.025	70 - 90	0.01 - 0.05	80-100	0.04 - 0.15
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	30 - 55	0.007 - 0.03	30 - 75	0.01 - 0.05	50 - 100	0.04 - 0.15
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	25 - 45	0.006 - 0.025	30 - 60	0.01 - 0.05	40 - 80	0.04 - 0.15
	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	25 - 45	0.005 - 0.02	30 - 60	0.01 - 0.05	40 - 80	0.04 - 0.15
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	50 - 70	0.004 - 0.015	60 - 80	0.008 - 0.05	70 - 90	0.02 - 0.15
	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	50 - 70	0.003 - 0.015	60 - 80	0.008- 0.05	70 - 90	0.02- 0.15
	Hardened materials up to 64 HRc		100Cr6	1.2067	40 - 60	0.003 - 0.015	50 - 70	0.008 - 0.05	60 - 80	0.02 - 0.15

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Feed fz in mm/tooth in relation to milling cutter diameter in mm				
					0.2 - 0.3	0.4-0.8	0.9 - 1.5	1.6 - 2	2.5 - 3
P	Nitriding steel	950 - 1300	31CrMoV9	1.8519	0.003 - 0.005	0.004 - 0.009	0.005 - 0.012	0.01 - 0.028	0.015 - 0.032
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	0.003 - 0.005	0.004 - 0.009	0.005 - 0.012	0.01 - 0.028	0.015 - 0.032
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	0.003 - 0.005	0.004 - 0.009	0.005 - 0.012	0.01 - 0.028	0.015 - 0.032
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	0.003 - 0.004	0.003 - 0.008	0.004 - 0.01	0.006 - 0.022	0.013 - 0.029
	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	0.003 - 0.004	0.003 - 0.007	0.004 - 0.009	0.006 - 0.016	0.013 - 0.022
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	0.002 - 0.004	0.002 - 0.005	0.003 - 0.008	0.004 - 0.011	0.011 - 0.021
	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	0.002 - 0.004	0.002 - 0.005	0.003 - 0.01	0.004 - 0.011	0.011 - 0.021
	Hardened materials up to 64 HRc		100Cr6	1.2067	0.001 - 0.004	0.001 - 0.005	0.003 - 0.01	0.004 - 0.011	0.011 - 0.021



ATORN® Radius milling cutter RockTec 65

- Please adjust these guideline values according to clamping operation and machine set-up!



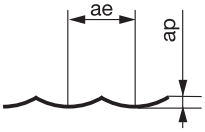


257028....



257036....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	ae Max.	ap Max.	Vc m/min Diameter range		Feed fz in mm/tooth in relation to milling cutter diameter in mm					
							2 - 3 mm	4 - 20 mm	2 - 3	4 - 5	6 - 8	10 - 12	16	20
P	Nitriding steel	950 - 1300	31CrMoV9	1.8519	0.4 x R	0.1 x R	180-270	250 - 370	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	0.4 x R	0.1 x R	180 - 250	250 - 350	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	0.4 x R	0.1 x R	180 - 250	250 - 350	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	0.4 x R	0.1 x R	180 - 250	250 - 350	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	0.4 x R	0.1 x R	150 - 210	210-270	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	0.4 x R	0.1 x R	100 - 160	160 - 220	0.025 - 0.035	0.035 - 0.05	0.045 - 0.07	0.075 - 0.12	0.08 - 0.12	0.08 - 0.12
	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	0.4 x R	0.1 x R	100 - 160	160 - 220	0.025 - 0.035	0.035 - 0.05	0.045 - 0.07	0.075 - 0.12	0.08 - 0.12	0.08 - 0.12
	Hardened materials up to 64 HRc		100Cr6	1.2067	0.4 x R	0.1 x R	50 - 75	60 - 80	0.025 - 0.035	0.035 - 0.05	0.045 - 0.08	0.07 - 0.11	0.08 - 0.11	0.08 - 0.11



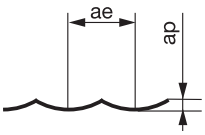


257030....



257038....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	ae Max.	ap Max.	Vc m/min Diameter range		Feed fz in mm/tooth in relation to milling cutter diameter in mm					
							2 - 3 mm	4 - 20 mm	2 - 3	4 - 5	6 - 8	10 - 12	16	20
P	Nitriding steel	950 - 1300	31CrMoV9	1.8519	0.4 x R	0.1 x R	130 - 250	200 - 320	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	0.4 x R	0.1 x R	130 - 230	200 - 300	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	0.4 x R	0.1 x R	130 - 230	200 - 300	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	0.4 x R	0.1 x R	130 - 230	200 - 300	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	0.4 x R	0.1 x R	120 - 200	160 - 260	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	0.4 x R	0.1 x R	100 - 150	130 - 200	0.025 - 0.035	0.035 - 0.05	0.045 - 0.07	0.075 - 0.12	0.08 - 0.12	0.08 - 0.12
	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	0.4 x R	0.1 x R	100 - 150	130 - 200	0.025 - 0.035	0.035 - 0.05	0.045 - 0.07	0.075 - 0.12	0.08 - 0.12	0.08 - 0.12
	Hardened materials up to 64 HRc		100Cr6	1.2067	0.4 x R	0.1 x R	40 - 60	45 - 65	0.025 - 0.035	0.035 - 0.05	0.045 - 0.08	0.07 - 0.11	0.08 - 0.11	0.08 - 0.11





257032....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	ae Max.	ap Max.	Vc m/min Diameter range		Feed fz in mm/tooth in relation to milling cutter diameter in mm					
							2 - 3 mm	4 - 20 mm	2 - 3	4 - 5	6 - 8	10 - 12	16	20
P	Nitriding steel	950 - 1300	31CrMoV9	1.8519	0.4 x R	0.1 x R	80 - 140	130 - 190	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	0.4 x R	0.1 x R	80 - 140	130 - 190	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	0.4 x R	0.1 x R	80 - 140	130 - 190	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	0.4 x R	0.1 x R	80 - 140	130 - 190	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	0.4 x R	0.1 x R	70 - 130	120-180	0.03 - 0.04	0.04 - 0.055	0.05 - 0.08	0.08 - 0.12	0.09 - 0.12	0.09 - 0.12
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	0.4 x R	0.1 x R	60 - 110	90 - 130	0.025 - 0.035	0.035 - 0.05	0.045 - 0.07	0.075 - 0.12	0.08 - 0.12	0.08 - 0.12
	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	0.4 x R	0.1 x R	60 - 110	90 - 130	0.025 - 0.035	0.035 - 0.05	0.045 - 0.07	0.075 - 0.12	0.08 - 0.12	0.08 - 0.12
	Hardened materials up to 64 HRc		100Cr6	1.2067	0.4 x R	0.1 x R	25 - 40	30 - 45	0.025 - 0.035	0.035 - 0.05	0.045 - 0.08	0.07 - 0.11	0.08 - 0.11	0.08 - 0.11

SARA® Quadrant milling cutter



291310....

- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in relation to diameter D1 in mm with ae 0.05 x D and ap 1.5 x D				
						8	10	12	16	20 - 25
P	Machining steel	Up to 700	9 SMn 28	1.0715	60 - 95	0.03 - 0.05	0.04 - 0.06	0.05 - 0.07	0.05 - 0.08	0.06 - 0.09
	Unalloyed structural steel	Up to 700	St-52	1.0052	70 - 100	0.03 - 0.05	0.04 - 0.06	0.05 - 0.07	0.05 - 0.08	0.06 - 0.09
	Structural steel	700 - 950	Ck45	1.1191	60 - 100	0.04 - 0.05	0.05 - 0.06	0.06 - 0.07	0.07 - 0.08	0.08 - 0.09
	Cast steel	Up to 950	GS 40	1.0416	60 - 95	0.02 - 0.03	0.03 - 0.04	0.04 - 0.05	0.04 - 0.05	0.05 - 0.06
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	60 - 95	0.02 - 0.03	0.03 - 0.04	0.04 - 0.05	0.04 - 0.05	0.05 - 0.06
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	35 - 60	0.02 - 0.03	0.03 - 0.04	0.04 - 0.05	0.04 - 0.05	0.05 - 0.06
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	35 - 70	0.02 - 0.03	0.03 - 0.04	0.04 - 0.05	0.04 - 0.05	0.05 - 0.06
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	25 - 60	0.02 - 0.03	0.03 - 0.04	0.04 - 0.05	0.04 - 0.05	0.05 - 0.06
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	70 - 95	0.02 - 0.03	0.03 - 0.04	0.04 - 0.05	0.04 - 0.05	0.05 - 0.06
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	60 - 85	0.02 - 0.03	0.03 - 0.04	0.04 - 0.05	0.04 - 0.05	0.05 - 0.06
	Ductile iron	Up to 280 HB	GGG 60	0.7060	60 - 80	0.02 - 0.03	0.03 - 0.04	0.04 - 0.05	0.04 - 0.05	0.05 - 0.06
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	60 - 80	0.02 - 0.03	0.03 - 0.04	0.04 - 0.05	0.04 - 0.05	0.05 - 0.06
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	140 - 500	0.02 - 0.04	0.03 - 0.05	0.04 - 0.06	0.04 - 0.07	0.05 - 0.08
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	140 - 500	0.02 - 0.04	0.03 - 0.05	0.04 - 0.06	0.04 - 0.07	0.05 - 0.08
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	85 - 180	0.01 - 0.015	0.01 - 0.02	0.02 - 0.03	0.02 - 0.03	0.03 - 0.04
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	95 - 190	0.01 - 0.015	0.01 - 0.02	0.02 - 0.03	0.02 - 0.03	0.03 - 0.04
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	10 - 30	0.01 - 0.015	0.01 - 0.02	0.02 - 0.03	0.02 - 0.03	0.03 - 0.04
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	65 - 90	0.02 - 0.04	0.03 - 0.05	0.04 - 0.06	0.04 - 0.07	0.05 - 0.08
	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	65 - 90	0.02 - 0.04	0.03 - 0.05	0.04 - 0.06	0.04 - 0.07	0.05 - 0.08

SARA® Multifunction tool MULTI-V

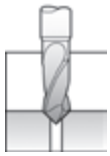


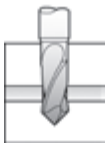
- Please adjust these guideline values according to clamping operation and machine set-up!

251541....

251546....
251549....


Boring
90°, 120 °


Countersinking
60°, 90°, 120 °

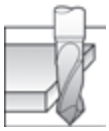

Drilling
90°, 120 °


V-slot milling
60°, 90°, 120 °


Combi-milling
60°, 90°, 120 °


Chamfer milling
60°, 90°, 120 °


Circular cutting
60°, 90°, 120 °


Side milling
60°, 90°, 120 °

ISO	Materials group	Strength/ Hardness N/mm²	Cutting speed Vc m/min	Feed fz in mm/tooth																	
				Boring / Drilling / Countersinking						V-slot milling						Combi-milling / Chamfer milling / Circular cutting / Side milling					
				Ø 3 - 4	Ø 5 - 6	Ø 8 - 10	Ø 12	Ø 16	Ø 20	Ø 3 - 4	Ø 5 - 6	Ø 8 - 10	Ø 12	Ø 16	Ø 20	Ø 3 - 4	Ø 5 - 6	Ø 8 - 10	Ø 12	Ø 16	Ø 20
P	Steel	Up to 500	70 - 75	0.05	0.08	0.14	0.19	0.24	0.28	0.005	0.008	0.014	0.019	0.025	0.03	0.008	0.014	0.025	0.04	0.052	0.065
	Steel	500 - 800	40 - 60	0.05	0.08	0.14	0.2	0.25	0.28	0.005	0.008	0.014	0.019	0.025	0.03	0.008	0.013	0.025	0.04	0.052	0.062
	Steel	800 - 1,000	35 - 40	0.045	0.07	0.12	0.18	0.22	0.28	0.004	0.006	0.012	0.017	0.02	0.027	0.008	0.013	0.025	0.04	0.05	0.062
	Steel	1,000 - 1,300	30 - 35	0.045	0.07	0.12	0.17	0.22	0.26	0.004	0.006	0.012	0.016	0.02	0.027	0.008	0.013	0.025	0.036	0.05	0.06
M	Stainless steel		30 - 35	0.045	0.07	0.12	0.17	0.22	0.26	0.004	0.006	0.012	0.016	0.02	0.027	0.008	0.013	0.025	0.036	0.045	0.07
K	Grey cast iron up to 180 HB		35 - 40	0.045	0.07	0.12	0.18	0.22	0.28	0.004	0.006	0.012	0.017	0.02	0.027	0.008	0.013	0.025	0.04	0.05	0.062
	Grey cast iron over 180 HB		30 - 35	0.045	0.07	0.12	0.17	0.22	0.26	0.004	0.006	0.012	0.016	0.02	0.027	0.008	0.013	0.025	0.04	0.05	0.06
N	Aluminium		150	0.05	0.09	0.15	0.2	0.27	0.35	0.008	0.013	0.023	0.03	0.042	0.05	0.008	0.013	0.03	0.045	0.05	0.065
	Copper alloys		50-120	0.1	0.15	0.25	0.3	0.35	0.45	0.008	0.01	0.017	0.02	0.03	0.04	0.01	0.015	0.03	0.045	0.05	0.065
	Plastics		150	0.05	0.09	0.19	0.2	0.27	0.35	0.01	0.015	0.025	0.033	0.045	0.056	0.012	0.015	0.035	0.05	0.053	0.07
S	Special alloys		20	0.04	0.06	0.11	0.16	0.2	0.25	0.003	0.005	0.01	0.013	0.018	0.025	0.007	0.011	0.025	0.035	0.050	0.06
	Titanium		25-30	0.04	0.06	0.11	0.16	0.2	0.25	0.004	0.006	0.01	0.013	0.018	0.027	0.008	0.013	0.025	0.036	0.045	0.07

ATORN® Solid carbide milling cutter



- Please adjust these guideline values according to clamping operation and machine set-up!

254157.... **254158....**

ISO	Side / Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	3 fz mm/tooth	3 ap max mm	3 ae max mm	4 fz mm/tooth	4 ap max mm	4 ae max mm	5 fz mm/tooth	5 ap max mm	5 ae max mm
M	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	115-165	0.015-0.03	< 9.00	< 0.450	0.025-0.050	< 12.00	< 0.600	0.03-0.06	< 15.00	< 0.750
M	Stainless steel, sulphurised	500 - 950	X 12 CrMoS 17	1.4104	115-165	0.015-0.03	< 9.00	< 0.450	0.025-0.050	< 12.00	< 0.600	0.03-0.06	< 15.00	< 0.750
M	Stainless steel, martensitic	500 - 950	X 10 Cr 13	1.4006	85-125	0.015-0.03	< 9.00	< 0.450	0.025-0.050	< 12.00	< 0.600	0.03-0.06	< 15.00	< 0.750
S	Nickel-based alloy	Up to 950	NiCr12Al6MoNb	2.4670	45-65	0.015-0.03	< 9.00	< 0.450	0.025-0.050	< 12.00	< 0.600	0.03-0.06	< 15.00	< 0.750
S	Nickel-based alloy	900 - 1400	NiCr19Fe19NbMo	Inconel 718	45-65	0.015-0.03	< 9.00	< 0.450	0.025-0.050	< 12.00	< 0.600	0.03-0.06	< 15.00	< 0.750

ISO	Side / Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	6 fz mm/tooth	6 ap max mm	6 ae max mm	8 fz mm/tooth	8 ap max mm	8 ae max mm	10 fz mm/tooth	10 ap max mm	10 ae max mm
M	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	115-165	0.040-0.07	< 18.00	< 0.900	0.050-0.085	< 24.00	< 1.200	0.06-0.1	< 30.00	< 1.500
M	Stainless steel, sulphurised	500 - 950	X 12 CrMoS 17	1.4104	115-165	0.040-0.07	< 18.00	< 0.900	0.050-0.085	< 24.00	< 1.200	0.06-0.1	< 30.00	< 1.500
M	Stainless steel, martensitic	500 - 950	X 10 Cr 13	1.4006	85-125	0.040-0.07	< 18.00	< 0.900	0.050-0.085	< 24.00	< 1.200	0.06-0.1	< 30.00	< 1.500
S	Nickel-based alloy	Up to 950	NiCr12Al6MoNb	2.4670	45-65	0.040-0.07	< 18.00	< 0.900	0.050-0.085	< 24.00	< 1.200	0.06-0.1	< 30.00	< 1.500
S	Nickel-based alloy	900 - 1400	NiCr19Fe19NbMo	Inconel 718	45-65	0.040-0.07	< 18.00	< 0.900	0.050-0.085	< 24.00	< 1.200	0.06-0.1	< 30.00	< 1.500

ISO	Side / Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	12 fz mm/tooth	12 ap max mm	12 ae max mm	16 fz mm/tooth	16 ap max mm	16 ae max mm	20 fz mm/tooth	20 ap max mm	20 ae max mm
M	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	115-165	0.085-0.12	< 36.00	< 1.800	0.1-0.145	< 40.00	< 2.400	0.125-0.175	< 50.00	< 3.000
M	Stainless steel, sulphurised	500 - 950	X 12 CrMoS 17	1.4104	115-165	0.085-0.12	< 36.00	< 1.800	0.1-0.145	< 40.00	< 2.400	0.125-0.175	< 50.00	< 3.000
M	Stainless steel, martensitic	500 - 950	X 10 Cr 13	1.4006	85-125	0.085-0.12	< 36.00	< 1.800	0.1-0.145	< 40.00	< 2.400	0.125-0.175	< 50.00	< 3.000
S	Nickel-based alloy	Up to 950	NiCr12Al6MoNb	2.4670	45-65	0.085-0.12	< 36.00	< 1.800	0.1-0.145	< 40.00	< 2.400	0.125-0.175	< 50.00	< 3.000
S	Nickel-based alloy	900 - 1400	NiCr19Fe19NbMo	Inconel 718	45-65	0.085-0.12	< 36.00	< 1.800	0.1-0.145	< 40.00	< 2.400	0.125-0.175	< 50.00	< 3.000

ATORN® Solid carbide milling cutter



- Please adjust these guideline values according to clamping operation and machine set-up!

254153....

ISO	Side / Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	3 fz mm/tooth	3 ap max mm	3 ae max mm	4 fz mm/tooth	4 ap max mm	4 ae max mm	5 fz mm/tooth	5 ap max mm	5 ae max mm
S	Titanium alloy	Up to 950	TiAl6V4	3.7165	80-120	0.015-0.03	< 9.00	< 0.360	0.025-0.050	< 12.00	< 0.480	0.03-0.06	< 15.00	< 0.600
S	Titanium alloy	900 - 1400	TiAl6Sn 2	3.7174	80-120	0.015-0.03	< 9.00	< 0.360	0.025-0.050	< 12.00	< 0.480	0.03-0.06	< 15.00	< 0.600

ISO	Side / Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	6 fz mm/tooth	6 ap max mm	6 ae max mm	8 fz mm/tooth	8 ap max mm	8 ae max mm	10 fz mm/tooth	10 ap max mm	10 ae max mm
S	Titanium alloy	Up to 950	TiAl6V4	3.7165	80-120	0.040-0.07	< 18.00	< 0.720	0.050-0.085	< 24.00	< 0.960	0.06-0.1	< 30.00	< 1.200
S	Titanium alloy	900 - 1400	TiAl6Sn 2	3.7174	80-120	0.040-0.07	< 18.00	< 0.720	0.050-0.085	< 24.00	< 0.960	0.06-0.1	< 30.00	< 1.200

ISO	Side / Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	12 fz mm/tooth	12 ap max mm	12 ae max mm	16 fz mm/tooth	16 ap max mm	16 ae max mm	20 fz mm/tooth	20 ap max mm	20 ae max mm
S	Titanium alloy	Up to 950	TiAl6V4	3.7165	80-120	0.085-0.12	< 36.00	< 1.440	0.1-0.145	< 40.00	< 1.920	0.125-0.175	< 50.00	< 2.400
S	Titanium alloy	900 - 1400	TiAl6Sn 2	3.7174	80-120	0.085-0.12	< 36.00	< 1.440	0.1-0.145	< 40.00	< 1.920	0.125-0.175	< 50.00	< 2.400

ATORN® Solid carbide milling cutter



- Please adjust these guideline values according to clamping operation and machine set-up!

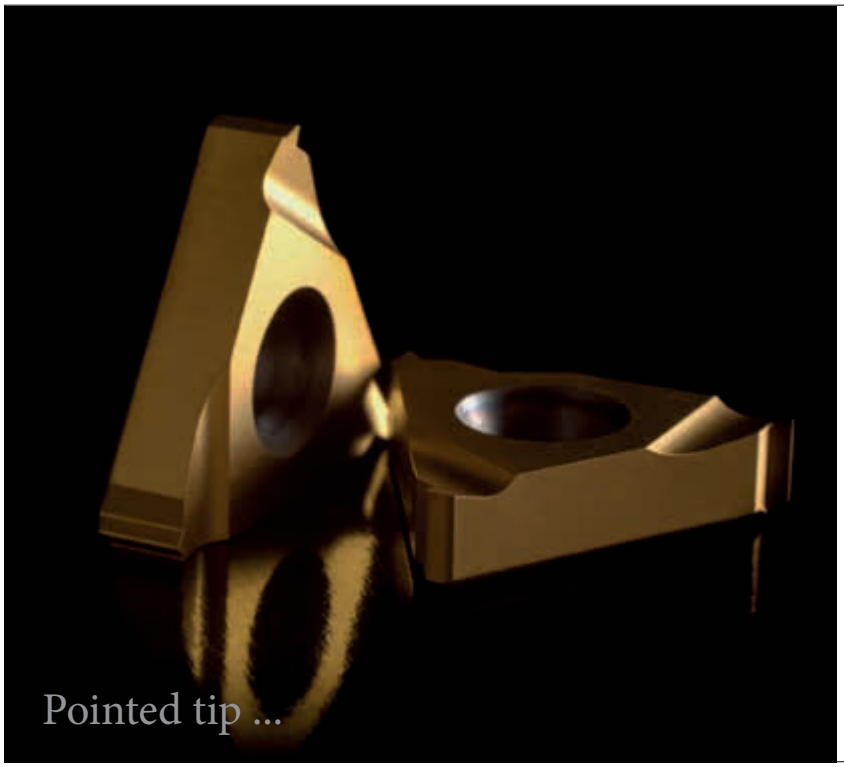
254154....

ISO	Side / Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	2.5			3			4		
						fz mm/tooth	ap max mm	ae max mm	fz mm/tooth	ap max mm	ae max mm	fz mm/tooth	ap max mm	ae max mm
H	Hardened steel	45-50 HRc			100-150	0.015-0.025	< 4.0	< 0.125	0.02-0.035	< 5.0	< 0.150	0.03-0.045	< 11.0	< 0.200
H	Hardened steel	50-60 HRc			110-170	0.015-0.025	< 4.0	< 0.125	0.02-0.035	< 5.0	< 0.150	0.03-0.045	< 11.0	< 0.200

ISO	Side / Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	5			6			8		
						fz mm/tooth	ap max mm	ae max mm	fz mm/tooth	ap max mm	ae max mm	fz mm/tooth	ap max mm	ae max mm
H	Hardened steel	45-50 HRc			100-150	0.035-0.055	< 13.0	< 0.250	0.045-0.065	< 13.0	< 0.300	0.06-0.080	< 20.0	< 0.400
H	Hardened steel	50-60 HRc			110-170	0.035-0.055	< 13.0	< 0.250	0.045-0.065	< 13.0	< 0.300	0.06-0.080	< 20.0	< 0.400

ISO	Side / Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	10			12			14		
						fz mm/tooth	ap max mm	ae max mm	fz mm/tooth	ap max mm	ae max mm	fz mm/tooth	ap max mm	ae max mm
H	Hardened steel	45-50 HRc			100-150	0.07-0.095	< 22.0	< 0.500	0.085-0.110	< 26.0	< 0.600	0.09-0.115	< 26.0	< 0.700
H	Hardened steel	50-60 HRc			110-170	0.07-0.095	< 22.0	< 0.500	0.085-0.110	< 26.0	< 0.600	0.09-0.115	< 26.0	< 0.700

ISO	Side / Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	16			18			20		
						fz mm/tooth	ap max mm	ae max mm	fz mm/tooth	ap max mm	ae max mm	fz mm/tooth	ap max mm	ae max mm
H	Hardened steel	45-50 HRc			100-150	0.095-0.125	< 34.0	< 0.800	0.1-0.13	< 34.0	< 0.900	0.105-0.140	< 41.0	< 1.000
H	Hardened steel	50-60 HRc			110-170	0.095-0.125	< 34.0	< 0.800	0.1-0.13	< 34.0	< 0.900	0.105-0.140	< 41.0	< 1.000



... with reversible option.

ATORN®
Performance demands quality

ATORN® Solid carbide milling cutter



- Please adjust these guideline values according to clamping operation and machine set-up!

254155....

ISO	Side / Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	3			4			5		
						fz mm/tooth	ap max mm	ae max mm	fz mm/tooth	ap max mm	ae max mm	fz mm/tooth	ap max mm	ae max mm
P	Unalloyed structural steel	Up to 700	St-52	1.0052	240-300	0.015-0.035	< 9.00	< 0.600	0.025-0.050	< 12.00	< 0.800	0.03-0.06	< 15.00	< 1.000
P	Machining steel	Up to 700	9 SMn 28	1.0715	240-300	0.015-0.035	< 9.00	< 0.600	0.025-0.050	< 12.00	< 0.800	0.03-0.06	< 15.00	< 1.000
P	Unalloyed tempered steel	500 - 950	Ck45	1.1191	160-240	0.015-0.035	< 9.00	< 0.600	0.025-0.050	< 12.00	< 0.800	0.03-0.06	< 15.00	< 1.000
P	Alloyed case-hardened steel	Up to 950	16 MnCr 5	1.7131	160-240	0.015-0.035	< 9.00	< 0.600	0.025-0.050	< 12.00	< 0.800	0.03-0.06	< 15.00	< 1.000
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	130-200	0.015-0.035	< 9.00	< 0.600	0.025-0.050	< 12.00	< 0.800	0.03-0.06	< 15.00	< 1.000
P	Cast steel	Up to 950	GS 40	1.0416	130-200	0.015-0.035	< 9.00	< 0.600	0.025-0.050	< 12.00	< 0.800	0.03-0.06	< 15.00	< 1.000
K	Alloyed grey cast iron	150-250	GGL-NiCr 35 2	0.6678	125-225	0.015-0.035	< 9.00	< 0.600	0.025-0.050	< 12.00	< 0.800	0.03-0.06	< 15.00	< 1.000

ISO	Side / Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	6			8			10		
						fz mm/tooth	ap max mm	ae max mm	fz mm/tooth	ap max mm	ae max mm	fz mm/tooth	ap max mm	ae max mm
P	Unalloyed structural steel	Up to 700	St-52	1.0052	240-300	0.040-0.07	< 18.00	< 1.200	0.050-0.085	< 24.00	< 1.600	0.06-0.1	< 30.00	< 2.000
P	Machining steel	Up to 700	9 SMn 28	1.0715	240-300	0.040-0.07	< 18.00	< 1.200	0.050-0.085	< 24.00	< 1.600	0.06-0.1	< 30.00	< 2.000
P	Unalloyed tempered steel	500 - 950	Ck45	1.1191	160-240	0.040-0.07	< 18.00	< 1.200	0.050-0.085	< 24.00	< 1.600	0.06-0.1	< 30.00	< 2.000
P	Alloyed case-hardened steel	Up to 950	16 MnCr 5	1.7131	160-240	0.040-0.07	< 18.00	< 1.200	0.050-0.085	< 24.00	< 1.600	0.06-0.1	< 30.00	< 2.000
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	130-200	0.040-0.07	< 18.00	< 1.200	0.050-0.085	< 24.00	< 1.600	0.06-0.1	< 30.00	< 2.000
P	Cast steel	Up to 950	GS 40	1.0416	130-200	0.040-0.07	< 18.00	< 1.200	0.050-0.085	< 24.00	< 1.600	0.06-0.1	< 30.00	< 2.000
K	Alloyed grey cast iron	150-250	GGL-NiCr 35 2	0.6678	125-225	0.040-0.07	< 18.00	< 1.200	0.050-0.085	< 24.00	< 1.600	0.06-0.1	< 30.00	< 2.000

ISO	Side / Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	12			16			20		
						fz mm/tooth	ap max mm	ae max mm	fz mm/tooth	ap max mm	ae max mm	fz mm/tooth	ap max mm	ae max mm
P	Unalloyed structural steel	Up to 700	St-52	1.0052	240-300	0.085-0.12	< 36.00	< 2.400	0.1-0.145	< 40.00	< 3.200	0.125-0.175	< 50.00	< 4.000
P	Machining steel	Up to 700	9 SMn 28	1.0715	240-300	0.085-0.12	< 36.00	< 2.400	0.1-0.145	< 40.00	< 3.200	0.125-0.175	< 50.00	< 4.000
P	Unalloyed tempered steel	500 - 950	Ck45	1.1191	160-240	0.085-0.12	< 36.00	< 2.400	0.1-0.145	< 40.00	< 3.200	0.125-0.175	< 50.00	< 4.000
P	Alloyed case-hardened steel	Up to 950	16 MnCr 5	1.7131	160-240	0.085-0.12	< 36.00	< 2.400	0.1-0.145	< 40.00	< 3.200	0.125-0.175	< 50.00	< 4.000
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	130-200	0.085-0.12	< 36.00	< 2.400	0.1-0.145	< 40.00	< 3.200	0.125-0.175	< 50.00	< 4.000
P	Cast steel	Up to 950	GS 40	1.0416	130-200	0.085-0.12	< 36.00	< 2.400	0.1-0.145	< 40.00	< 3.200	0.125-0.175	< 50.00	< 4.000
K	Alloyed grey cast iron	150-250	GGL-NiCr 35 2	0.6678	125-225	0.085-0.12	< 36.00	< 2.400	0.1-0.145	< 40.00	< 3.200	0.125-0.175	< 50.00	< 4.000

ATORN® Solid carbide milling cutter



- Please adjust these guideline values according to clamping operation and machine set-up!

254159....

ISO	Side / Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	3			4			5		
						fz mm/tooth	ap max mm	ae max mm	fz mm/tooth	ap max mm	ae max mm	fz mm/tooth	ap max mm	ae max mm
N	Al. alloy long-chipping	Up to 550	AlMg 3	3.3535	400-800	0.025-0.055	< 10.0	< 0.900	0.03-0.065	< 13.0	< 1.200	0.040-0.080	< 16.0	< 1.500
N	Al. alloy short-chipping	Up to 400	G-AlSi 12	3.2581	250-600	0.025-0.055	< 10.0	< 0.900	0.03-0.065	< 13.0	< 1.200	0.040-0.080	< 16.0	< 1.500
N	Copper alloy long-chipping	300 - 700	MS 63	2.0320	400-625	0.025-0.055	< 10.0	< 0.900	0.03-0.065	< 13.0	< 1.200	0.040-0.080	< 16.0	< 1.500
N	Copper alloy short-chipping	Up to 500	MS 58	2.0402	400-625	0.025-0.055	< 10.0	< 0.900	0.03-0.065	< 13.0	< 1.200	0.040-0.080	< 16.0	< 1.500

ISO	Side / Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	6			8			10		
						fz mm/tooth	ap max mm	ae max mm	fz mm/tooth	ap max mm	ae max mm	fz mm/tooth	ap max mm	ae max mm
N	Al. alloy long-chipping	Up to 550	AlMg 3	3.3535	400-800	0.055-0.1	< 18.0	< 1.800	0.080-0.12	< 22.0	< 2.400	0.095-0.140	< 25.0	< 3.000
N	Al. alloy short-chipping	Up to 400	G-AlSi 12	3.2581	250-600	0.055-0.1	< 18.0	< 1.800	0.080-0.12	< 22.0	< 2.400	0.095-0.140	< 25.0	< 3.000
N	Copper alloy long-chipping	300 - 700	MS 63	2.0320	400-625	0.055-0.1	< 18.0	< 1.800	0.080-0.12	< 22.0	< 2.400	0.095-0.140	< 25.0	< 3.000
N	Copper alloy short-chipping	Up to 500	MS 58	2.0402	400-625	0.055-0.1	< 18.0	< 1.800	0.080-0.12	< 22.0	< 2.400	0.095-0.140	< 25.0	< 3.000

ISO	Side / Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	12			14			16		
						fz mm/tooth	ap max mm	ae max mm	fz mm/tooth	ap max mm	ae max mm	fz mm/tooth	ap max mm	ae max mm
N	Al. alloy long-chipping	Up to 550	AlMg 3	3.3535	400-800	0.105-0.175	< 28.0	< 3.600	0.12-0.185	< 30.0	< 4.200	0.140-0.200	< 36.0	< 4.800
N	Al. alloy short-chipping	Up to 400	G-AlSi 12	3.2581	250-600	0.105-0.175	< 28.0	< 3.600	0.12-0.185	< 30.0	< 4.200	0.140-0.200	< 36.0	< 4.800
N	Copper alloy long-chipping	300 - 700	MS 63	2.0320	400-625	0.105-0.175	< 28.0	< 3.600	0.12-0.185	< 30.0	< 4.200	0.140-0.200	< 36.0	< 4.800
N	Copper alloy short-chipping	Up to 500	MS 58	2.0402	400-625	0.105-0.175	< 28.0	< 3.600	0.12-0.185	< 30.0	< 4.200	0.140-0.200	< 36.0	< 4.800

ISO	Side / Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	18			20			25		
						fz mm/tooth	ap max mm	ae max mm	fz mm/tooth	ap max mm	ae max mm	fz mm/tooth	ap max mm	ae max mm
N	Al. alloy long-chipping	Up to 550	AlMg 3	3.3535	400-800	0.160-0.255	< 36.0	< 5.400	0.180-0.250	< 42.0	< 6.000	0.220-0.300	< 45.0	< 7.500
N	Al. alloy short-chipping	Up to 400	G-AlSi 12	3.2581	250-600	0.160-0.255	< 36.0	< 5.400	0.180-0.250	< 42.0	< 6.000	0.220-0.300	< 45.0	< 7.500
N	Copper alloy long-chipping	300 - 700	MS 63	2.0320	400-625	0.160-0.255	< 36.0	< 5.400	0.180-0.250	< 42.0	< 6.000	0.220-0.300	< 45.0	< 7.500
N	Copper alloy short-chipping	Up to 500	MS 58	2.0402	400-625	0.160-0.255	< 36.0	< 5.400	0.180-0.250	< 42.0	< 6.000	0.220-0.300	< 45.0	< 7.500

HPMT Trochoidal end milling cutter



- Please adjust these guideline values according to clamping operation and machine set-up!

254235.... **254236 ....**

ISO	**Finishing / Edge-banding** fz for ae = 0,1 - 0,15 x D and ap = 2,5 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm							
	Materials group					4	5	6	8	10	12	16	20
P	Machining steel	Up to 700	9 SMn 28	1.0715	275	0,034	0,042	0,051	0,070	0,085	0,102	0,138	0,172
	Unalloyed structural steel	Up to 700	St-52	1.0052	275	0,034	0,042	0,051	0,070	0,085	0,102	0,138	0,172
	Structural steel	700 - 950	Ck45	1.1191	275	0,034	0,042	0,051	0,070	0,085	0,102	0,138	0,172
	Tempering steel	500 - 950	42 CrMo4	1.7225	245	0,029	0,036	0,043	0,060	0,072	0,087	0,117	0,146
	Cast steel	Up to 950	GS 40	1.0416	245	0,029	0,036	0,043	0,060	0,072	0,087	0,117	0,146
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	240	0,025	0,031	0,038	0,051	0,063	0,078	0,105	0,133
	Tempering steel	950 -1300	43CrMo4	1.3563	240	0,025	0,031	0,038	0,051	0,063	0,078	1,105	1,133
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	220	0,016	0,019	0,023	0,034	0,041	0,052	0,071	0,091
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	220	0,016	0,019	0,023	0,034	0,041	0,052	1,071	1,091
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	90	0,016	0,019	0,023	0,034	0,041	0,052	0,071	0,091
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	75	0,016	0,019	0,023	0,034	0,041	0,052	0,071	0,091
	Duplex	700 - 950	x 2 CrNiMoN 22-5-3	1.4462	60	0,012	0,016	0,019	0,025	0,033	0,042	0,058	0,071
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	220	0,022	0,030	0,036	0,050	0,063	0,074	0,102	0,130
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	175	0,016	0,021	0,025	0,035	0,043	0,051	0,072	0,095
	Ductile iron	Up to 280 HB	GGG 60	0.7060	150	0,016	0,021	0,025	0,035	0,043	0,051	0,072	0,095
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	95	0,013	0,017	0,020	0,028	0,034	0,041	0,058	0,076
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	75	0,014	0,018	0,020	0,028	0,036	0,042	0,059	0,071
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	30	0,012	0,016	0,018	0,025	0,032	0,040	0,053	0,069
	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	50	0,013	0,017	0,019	0,026	0,034	0,041	0,055	0,070

ISO	**Finishing / Edge-banding** fz for ae = 0,1 x D and ap = 3,5 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm							
	Materials group					4	5	6	8	10	12	16	20
P	Machining steel	Up to 700	9 SMn 28	1.0715	200	0,029	0,035	0,042	0,059	0,072	0,088	0,105	0,130
	Unalloyed structural steel	Up to 700	St-52	1.0052	200	0,029	0,035	0,042	0,059	0,072	0,088	0,105	0,130
	Structural steel	700 - 950	Ck45	1.1191	200	0,029	0,035	0,042	0,059	0,072	0,088	0,105	0,130
	Tempering steel	500 - 950	42 CrMo4	1.7225	185	0,025	0,030	0,036	0,050	0,061	0,075	0,089	0,111
	Cast steel	Up to 950	GS 40	1.0416	185	0,025	0,030	0,036	0,050	0,061	0,075	0,089	0,111
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	180	0,025	0,030	0,036	0,050	0,062	0,078	0,100	0,120
	Tempering steel	950 -1300	43CrMo4	1.3563	180	0,025	0,030	0,036	0,050	0,062	0,078	0,100	0,120
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	150	0,020	0,025	0,030	0,040	0,050	0,060	0,080	0,100
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	150	0,020	0,025	0,030	0,040	0,050	0,060	0,080	0,100
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	80	0,014	0,018	0,020	0,028	0,038	0,046	0,060	0,078
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	65	0,014	0,018	0,020	0,028	0,038	0,046	0,060	0,078
	Duplex	700 - 950	x 2 CrNiMoN 22-5-3	1.4462	55	0,014	0,018	0,020	0,028	0,038	0,046	0,060	0,078
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	180	0,027	0,034	0,040	0,056	0,069	0,084	0,104	0,128
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	100	0,014	0,018	0,020	0,028	0,038	0,046	0,060	0,078
	Ductile iron	Up to 280 HB	GGG 60	0.7060	85	0,014	0,018	0,020	0,028	0,038	0,046	0,060	0,078
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	55	0,011	0,014	0,016	0,022	0,030	0,037	0,048	0,062
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	70	0,014	0,018	0,020	0,028	0,036	0,042	0,059	0,071
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	30	0,012	0,016	0,018	0,025	0,032	0,040	0,053	0,069
	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	50	0,013	0,017	0,019	0,026	0,034	0,041	0,055	0,070

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ATORN® Circle segment milling cutter



- Please adjust these guideline values according to clamping operation and machine set-up!

254170.... **254172 ....**

ISO	**copy / Finishing** fz for ap = 0,05 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm		
	Materials group					8	12	16
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	600	0,064	0,096	0,130
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	550	0,064	0,096	0,130
	Thermoplastic		PVC		400	0,064	0,096	0,130

ATORN® Circle segment milling cutter



- Please adjust these guideline values according to clamping operation and machine set-up!

254171.... **254173 ....**

ISO	**Roughing / Grooving** fz for ap = 0,05 x D	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm		
	Materials group					8	12	16
P	Machining steel	Up to 700	9 SMn 28	1.0715	190	0,064	0,096	0,130
	Unalloyed structural steel	Up to 700	St-52	1.0052	190	0,064	0,096	0,130
	Structural steel	700 - 950	Ck45	1.1191	180	0,056	0,084	0,110
	Tempering steel	500 - 950	42 CrMo4	1.7225	180	0,056	0,084	0,110
	Cast steel	Up to 950	GS 40	1.0416	180	0,056	0,084	0,110
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	150	0,048	0,072	0,096
	Tempering steel	950 -1300	43CrMo4	1.3563	150	0,048	0,072	0,096
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	130	0,040	0,060	0,080
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	130	0,040	0,060	0,080
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	80	0,032	0,048	0,064
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	100	0,048	0,072	0,096
	Duplex	700 - 950	X2 CrNiMoN 22-5-3	1.4462	80	0,032	0,048	0,064
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	180	0,056	0,084	0,110
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	120	0,048	0,072	0,096
	Ductile iron	Up to 280 HB	GGG 60	0.7060	135	0,048	0,072	0,096
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	135	0,048	0,072	0,096
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	600	0,064	0,096	0,130
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	550	0,064	0,096	0,130
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	180	0,056	0,084	0,110
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	180	0,056	0,084	0,110
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	170	0,056	0,084	0,110
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	170	0,056	0,084	0,110
	Thermoplastic		PVC		400	0,064	0,096	0,130
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	120	0,032	0,048	0,064

ATORN® Ceramics milling cutter



- Please adjust these guideline values according to clamping operation and machine set-up!

255153 ....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	6			8			10		
						fz mm/Zahn	ap max mm	ae max mm	fz mm/Zahn	ap max mm	ae max mm	fz mm/Zahn	ap max mm	ae max mm
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	550	0,100	0,180	3,600	0,130	0,240	4,800	0,150	0,300	6,000

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	12			16			20		
						fz mm/Zahn	ap max mm	ae max mm	fz mm/Zahn	ap max mm	ae max mm	fz mm/Zahn	ap max mm	ae max mm
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	550	0,180	0,350	7,000	0,220	0,500	10,000	0,260	0,600	12,000

ATORN® Sealing surface milling cutter



- Please adjust these guideline values according to clamping operation and machine set-up!

255151 .... **255152....**

ISO	**Roughing / Grooving** fz for ae = 1,0 x D and ap = 0,05 mm max	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm							
						4	5	6	8	10	12	16	20
P	Machining steel	Up to 700	9 SMn 28	1.0715	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Unalloyed structural steel	Up to 700	St-52	1.0052	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Structural steel	700 - 950	Ck45	1.1191	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Tempering steel	500 - 950	42 CrMo4	1.7225	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Cast steel	Up to 950	GS 40	1.0416	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Tempering steel	950 -1300	43CrMo4	1.3563	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Duplex	700 - 950	X2 CrNiMoN 22-5-3	1.4462	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Ductile iron	Up to 280 HB	GGG 60	0.7060	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Thermoplastic		PVC		3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Thermoset		Melamine		3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Fibre-reinforced plastics		CFRP, GFRP		3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Graphite		C8000		3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	fibre-reinforced plastics		Honeycomp		3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040

ISO	**Finishing / Edge-banding** fz for ae = 1,0 x D and ap = 0,01 mm max	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm							
						4	5	6	8	10	12	16	20
P	Machining steel	Up to 700	9 SMn 28	1.0715	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Unalloyed structural steel	Up to 700	St-52	1.0052	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Structural steel	700 - 950	Ck45	1.1191	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Tempering steel	500 - 950	42 CrMo4	1.7225	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Cast steel	Up to 950	GS 40	1.0416	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Tempering steel	950 -1300	43CrMo4	1.3563	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Duplex	700 - 950	X2 CrNiMoN 22-5-3	1.4462	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Ductile iron	Up to 280 HB	GGG 60	0.7060	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Thermoplastic		PVC		3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Thermoset		Melamin		3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Fibre-reinforced plastics		CFK, GFK		3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Graphite		C8000		3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	fibre-reinforced plastics		Honeycomp		3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040
	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	3000	0,010	0,015	0,018	0,020	0,025	0,030	0,035	0,040

ATORN® Cutting data recommendations

INFO

Detailed cutting data recommendations for the hard-milling range can be found on our website. Simply scan in the QR code.

Cutting data

ATORN® Multi-flute milling cutter 90°



- Please adjust these guideline values according to clamping operation and machine set-up!

257170.... 257175.... 257180....

ISO	Finishing / Roughing fz for ae = x D and ap = x D Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm				
						3	4	5	6	8
P	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	100 - 160	0,020 - 0,028	0,030 - 0,045	0,035 - 0,050	0,040 - 0,055	0,050 - 0,065
H	Hardened materials up to 55 HRC		X40Cr14	1.2083	100 - 180	0,020 - 0,028	0,030 - 0,045	0,035 - 0,050	0,040 - 0,055	0,050 - 0,065
	Hardened materials up to 60 HRC		X153CrMoV12	1.2379	150 - 250	0,020 - 0,028	0,030 - 0,045	0,035 - 0,050	0,040 - 0,055	0,050 - 0,065
	Hardened materials up to 64 HRC		100Cr6	1.2067	150 - 250	0,020 - 0,028	0,030 - 0,045	0,035 - 0,050	0,040 - 0,055	0,050 - 0,065

ISO	Finishing / Roughing fz for ae = x D and ap = x D Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm				
						10	12	14	16	20
P	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	100 - 160	0,055 - 0,080	0,065 - 0,090	0,075 - 0,110	0,085 - 0,150	0,020 - 0,028
H	Hardened materials up to 55 HRC		X40Cr14	1.2083	100 - 180	0,055 - 0,080	0,065 - 0,090	0,075 - 0,110	0,085 - 0,150	0,020 - 0,028
	Hardened materials up to 60 HRC		X153CrMoV12	1.2379	150 - 250	0,055 - 0,080	0,065 - 0,090	0,075 - 0,110	0,085 - 0,150	0,020 - 0,028
	Hardened materials up to 64 HRC		100Cr6	1.2067	150 - 250	0,055 - 0,080	0,065 - 0,090	0,075 - 0,110	0,085 - 0,150	0,020 - 0,028

ATORN® Multi-flute milling cutter with corner radius



- Please adjust these guideline values according to clamping operation and machine set-up!

257155.... 257160.... 257165....

ISO	Finishing / Roughing fz for ae = x D and ap = x D Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm				
						3	4	5	6	8
P	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	100 - 160	0,020 - 0,028	0,030 - 0,045	0,035 - 0,050	0,040 - 0,055	0,050 - 0,065
H	Hardened materials up to 55 HRC		X40Cr14	1.2083	100 - 180	0,020 - 0,028	0,030 - 0,045	0,035 - 0,050	0,040 - 0,055	0,050 - 0,065
	Hardened materials up to 60 HRC		X153CrMoV12	1.2379	150 - 250	0,020 - 0,028	0,030 - 0,045	0,035 - 0,050	0,040 - 0,055	0,050 - 0,065
	Hardened materials up to 64 HRC		100Cr6	1.2067	150 - 250	0,020 - 0,028	0,030 - 0,045	0,035 - 0,050	0,040 - 0,055	0,050 - 0,065

ISO	Finishing / Roughing fz for ae = x D and ap = x D Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm				
						10	12	16	20	
P	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	100 - 160	0,055 - 0,080	0,065 - 0,090	0,075 - 0,110	0,085 - 0,150	
H	Hardened materials up to 55 HRC		X40Cr14	1.2083	100 - 180	0,055 - 0,080	0,065 - 0,090	0,075 - 0,110	0,085 - 0,150	
	Hardened materials up to 60 HRC		X153CrMoV12	1.2379	150 - 250	0,055 - 0,080	0,065 - 0,090	0,075 - 0,110	0,085 - 0,150	
	Hardened materials up to 64 HRC		100Cr6	1.2067	150 - 250	0,055 - 0,080	0,065 - 0,090	0,075 - 0,110	0,085 - 0,150	

ATORN® Torus cutter



- Please adjust these guideline values according to clamping operation and machine set-up!

257145.... 257150....

ISO	Finishing / Roughing fz for ae = x D and ap = x D Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm				
						1	2	3	4	5
P	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	100 - 160	0,008 - 0,015	0,016 - 0,022	0,020 - 0,028	0,030 - 0,045	0,035 - 0,050
H	Hardened materials up to 55 HRC		X40Cr14	1.2083	100 - 180	0,008 - 0,015	0,016 - 0,022	0,020 - 0,028	0,030 - 0,045	0,035 - 0,050
	Hardened materials up to 60 HRC		X153CrMoV12	1.2379	150 - 250	0,008 - 0,015	0,016 - 0,022	0,020 - 0,028	0,030 - 0,045	0,035 - 0,050
	Hardened materials up to 64 HRC		100Cr6	1.2067	150 - 250	0,008 - 0,015	0,016 - 0,022	0,020 - 0,028	0,030 - 0,045	0,035 - 0,050

ISO	Finishing / Roughing fz for ae = x D and ap = x D Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm				
						6	8	10	12	16
P	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	100 - 160	0,040 - 0,055	0,050 - 0,070	0,055 - 0,085	0,065 - 0,090	0,075 - 0,110
H	Hardened materials up to 55 HRC		X40Cr14	1.2083	100 - 180	0,040 - 0,055	0,050 - 0,070	0,055 - 0,085	0,065 - 0,090	0,075 - 0,110
	Hardened materials up to 60 HRC		X153CrMoV12	1.2379	150 - 250	0,040 - 0,055	0,050 - 0,070	0,055 - 0,085	0,065 - 0,090	0,075 - 0,110
	Hardened materials up to 64 HRC		100Cr6	1.2067	150 - 250	0,040 - 0,055	0,050 - 0,070	0,055 - 0,085	0,065 - 0,090	0,075 - 0,110

ATORN® Mini torus cutter



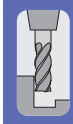
- Please adjust these guideline values according to clamping operation and machine set-up!

257120....

ISO	**Finishing / Roughing** fz for ae = x D and ap = x D Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm			
						0,2	0,3	0,4	0,5
P	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	100 - 160	0,002 - 0,004	0,003 - 0,006	0,004 - 0,010	0,005 - 0,009
H	Hardened materials up to 55 HRC		X40Cr14	1.2083	100 - 180	0,002 - 0,004	0,003 - 0,006	0,004 - 0,010	0,005 - 0,009
	Hardened materials up to 60 HRC		X153CrMoV12	1.2379	150 - 250	0,002 - 0,004	0,003 - 0,006	0,004 - 0,010	0,005 - 0,009
	Hardened materials up to 64 HRC		100Cr6	1.2067	150 - 250	0,002 - 0,004	0,003 - 0,006	0,004 - 0,010	0,005 - 0,009

ATORN® Mini torus cutter





- Please adjust these guideline values according to clamping operation and machine set-up!

257125....

ISO	**Finishing / Roughing** fz for ae = x D and ap = x D Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm					
						0,5	0,6	0,8	1,0	1,2	1,5
P	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	100 - 160	0,005 - 0,009	0,006 - 0,010	0,007 - 0,012	0,008 - 0,015	0,010 - 0,016	0,012 - 0,018
H	Hardened materials up to 55 HRC		X40Cr14	1.2083	100 - 180	0,005 - 0,009	0,006 - 0,010	0,007 - 0,012	0,008 - 0,015	0,010 - 0,016	0,012 - 0,018
	Hardened materials up to 60 HRC		X153CrMoV12	1.2379	150 - 250	0,005 - 0,009	0,006 - 0,010	0,007 - 0,012	0,008 - 0,015	0,010 - 0,016	0,012 - 0,018
	Hardened materials up to 64 HRC		100Cr6	1.2067	150 - 250	0,005 - 0,009	0,006 - 0,010	0,007 - 0,012	0,008 - 0,015	0,010 - 0,016	0,012 - 0,018

ATORN® Mini torus cutter



- Please adjust these guideline values according to clamping operation and machine set-up!

257130....

ISO	**Finishing / Roughing** fz for ae = x D and ap = x D Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm			
						1,0	1,2	1,5	2,0
P	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	100 - 160	0,008 - 0,015	0,010 - 0,016	0,012 - 0,018	0,016 - 0,022
H	Hardened materials up to 55 HRC		X40Cr14	1.2083	100 - 180	0,005 - 0,009	0,006 - 0,010	0,007 - 0,012	0,008 - 0,015
	Hardened materials up to 60 HRC		X153CrMoV12	1.2379	150 - 250	0,005 - 0,009	0,006 - 0,010	0,007 - 0,012	0,008 - 0,015
	Hardened materials up to 64 HRC		100Cr6	1.2067	150 - 250	0,005 - 0,009	0,006 - 0,010	0,007 - 0,012	0,008 - 0,015

ATORN® Mini torus cutter



- Please adjust these guideline values according to clamping operation and machine set-up!

257135 ....

ISO	**Finishing / Roughing** fz for ae = x D and ap = x D Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm			
						1,5	2,0	2,5	3,0
P	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	100 - 160	0,012 - 0,018	0,016 - 0,022	0,018 - 0,025	0,020 - 0,028
H	Hardened materials up to 55 HRC		X40Cr14	1.2083	100 - 180	0,012 - 0,018	0,016 - 0,022	0,018 - 0,025	0,020 - 0,028
	Hardened materials up to 60 HRC		X153CrMoV12	1.2379	150 - 250	0,012 - 0,018	0,016 - 0,022	0,018 - 0,025	0,020 - 0,028
	Hardened materials up to 64 HRC		100Cr6	1.2067	150 - 250	0,012 - 0,018	0,016 - 0,022	0,018 - 0,025	0,020 - 0,028

ATORN® Mini torus cutter



- Please adjust these guideline values according to clamping operation and machine set-up!

257140 ....

ISO	**Finishing / Roughing** fz for ae = x D and ap = x D Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm	
						2,5	3,0
P	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	100 - 160	0,018 - 0,025	0,020 - 0,028
H	Hardened materials up to 55 HRC		X40Cr14	1.2083	100 - 180	0,012 - 0,018	0,016 - 0,022
	Hardened materials up to 60 HRC		X153CrMoV12	1.2379	150 - 250	0,012 - 0,018	0,016 - 0,022
	Hardened materials up to 64 HRC		100Cr6	1.2067	150 - 250	0,012 - 0,018	0,016 - 0,022

ATORN® Cutting data recommendations

INFO

Detailed cutting data recommendations for the hard-milling range can be found on our website. Simply scan in the QR code.

Cutting data

ATORN® Mini Radius milling cutter



- Please adjust these guideline values according to clamping operation and machine set-up!

257100 ....

ISO	**Finishing / Roughing** fz for ae = x D and ap = x D Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm				
						0,1	0,2	0,3	0,4	0,5
P	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	100 - 160	0,001 - 0,003	0,002 - 0,007	0,003 - 0,006	0,004 - 0,008	0,005 - 0,009
H	Hardened materials up to 55 HRC		X40Cr14	1.2083	100 - 180	0,001 - 0,003	0,002 - 0,007	0,003 - 0,006	0,004 - 0,008	0,005 - 0,009
	Hardened materials up to 60 HRC		X153CrMoV12	1.2379	150 - 250	0,001 - 0,003	0,002 - 0,007	0,003 - 0,006	0,004 - 0,008	0,005 - 0,009
	Hardened materials up to 64 HRC		100Cr6	1.2067	150 - 250	0,001 - 0,003	0,002 - 0,007	0,003 - 0,006	0,004 - 0,008	0,005 - 0,009

ISO	**Finishing / Roughing** fz for ae = x D and ap = x D Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm				
						0,6	0,8	1,0	1,2	1,5
P	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	100 - 160	0,006 - 0,010	0,007 - 0,012	0,008 - 0,015	0,010 - 0,016	0,012 - 0,018
H	Hardened materials up to 55 HRC		X40Cr14	1.2083	100 - 180	0,006 - 0,010	0,007 - 0,012	0,008 - 0,015	0,010 - 0,016	0,012 - 0,018
	Hardened materials up to 60 HRC		X153CrMoV12	1.2379	150 - 250	0,006 - 0,010	0,007 - 0,012	0,008 - 0,015	0,010 - 0,016	0,012 - 0,018
	Hardened materials up to 64 HRC		100Cr6	1.2067	150 - 250	0,006 - 0,010	0,007 - 0,012	0,008 - 0,015	0,010 - 0,016	0,012 - 0,018

ISO	**Finishing / Roughing** fz for ae = x D and ap = x D Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm				
						1,6	1,8	2,0	2,5	3,0
P	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	100 - 160	0,012 - 0,018	0,014 - 0,020	0,016 - 0,022	0,018 - 0,025	0,020 - 0,028
H	Hardened materials up to 55 HRC		X40Cr14	1.2083	100 - 180	0,012 - 0,018	0,014 - 0,020	0,016 - 0,022	0,018 - 0,025	0,020 - 0,028
	Hardened materials up to 60 HRC		X153CrMoV12	1.2379	150 - 250	0,012 - 0,018	0,014 - 0,020	0,016 - 0,022	0,018 - 0,025	0,020 - 0,028
	Hardened materials up to 64 HRC		100Cr6	1.2067	150 - 250	0,012 - 0,018	0,014 - 0,020	0,016 - 0,022	0,018 - 0,025	0,020 - 0,028

ATORN® Radius milling cutter



- Please adjust these guideline values according to clamping operation and machine set-up!

257105.... 257110.... 257115....

ISO	**Finishing / Roughing** fz for ae = x D and ap = x D Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm				
						1	1,5	2	2,5	3
P	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	100 - 160	0,008 - 0,015	0,012 - 0,018	0,016 - 0,022	0,018 - 0,025	0,020 - 0,028
H	Hardened materials up to 55 HRC		X40Cr14	1.2083	100 - 180	0,008 - 0,015	0,012 - 0,018	0,016 - 0,022	0,018 - 0,025	0,020 - 0,028
	Hardened materials up to 60 HRC		X153CrMoV12	1.2379	150 - 250	0,008 - 0,015	0,012 - 0,018	0,016 - 0,022	0,018 - 0,025	0,020 - 0,028
	Hardened materials up to 64 HRC		100Cr6	1.2067	150 - 250	0,008 - 0,015	0,012 - 0,018	0,016 - 0,022	0,018 - 0,025	0,020 - 0,028

ISO	**Finishing / Roughing** fz for ae = x D and ap = x D Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm				
						4	5	6	8	10
P	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	100 - 160	0,030 - 0,045	0,035 - 0,050	0,040 - 0,055	0,050 - 0,065	0,055 - 0,080
H	Hardened materials up to 55 HRC		X40Cr14	1.2083	100 - 180	0,030 - 0,045	0,035 - 0,050	0,040 - 0,055	0,050 - 0,065	0,055 - 0,080
	Hardened materials up to 60 HRC		X153CrMoV12	1.2379	150 - 250	0,030 - 0,045	0,035 - 0,050	0,040 - 0,055	0,050 - 0,065	0,055 - 0,080
	Hardened materials up to 64 HRC		100Cr6	1.2067	150 - 250	0,030 - 0,045	0,035 - 0,050	0,040 - 0,055	0,050 - 0,065	0,055 - 0,080

ISO	**Finishing / Roughing** fz for ae = x D and ap = x D Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm				
						12	16	20		
P	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	100 - 160	0,065 - 0,090	0,075 - 0,110	0,085 - 0,150		
H	Hardened materials up to 55 HRC		X40Cr14	1.2083	100 - 180	0,065 - 0,090	0,075 - 0,110	0,085 - 0,150		
	Hardened materials up to 60 HRC		X153CrMoV12	1.2379	150 - 250	0,065 - 0,090	0,075 - 0,110	0,085 - 0,150		
	Hardened materials up to 64 HRC		100Cr6	1.2067	150 - 250	0,065 - 0,090	0,075 - 0,110	0,085 - 0,150		

SARA® ATORN® Thread end milling cutter



- Please adjust these guideline values according to clamping operation and machine set-up!

258002.... **258027....**
258003.... **258028....**

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz mm/tooth								
						Ø4	Ø6	Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø30
P	Machining steel	Up to 700	9 SMn 28	1.0715	100-250	0.04	0.06	0.07	0.08	0.09	0.12	0.15	0.18	0.21
P	Unalloyed structural steel	Up to 700	St-52	1.0052	110 - 180	0.03	0.05	0.06	0.07	0.08	0.1	0.12	0.15	0.18
P	Cast steel	Up to 950	GS 40	1.0416	130 - 170	0.03	0.03	0.04	0.05	0.05	0.07	0.08	0.1	0.11
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	90 - 160	0.03	0.03	0.04	0.05	0.05	0.07	0.08	0.1	0.11
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	110 - 170	0.03	0.03	0.04	0.05	0.05	0.07	0.08	0.1	0.11
K	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	70 - 150	0.04	0.06	0.07	0.08	0.09	0.12	0.15	0.18	0.21
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	160 - 300	0.04	0.06	0.07	0.08	0.09	0.12	0.15	0.18	0.21
N	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	160 - 300	0.04	0.06	0.07	0.08	0.09	0.12	0.15	0.18	0.21
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	20 - 50	0.03	0.03	0.03	0.04	0.05	0.06	0.07	0.08	0.08
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	20 - 50	0.03	0.03	0.03	0.04	0.05	0.06	0.07	0.08	0.08

SARA® ATORN® Thread milling cutter, for small bore holes



- Please adjust these guideline values according to clamping operation and machine set-up!

258010.... **258022....**

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz mm/tooth					
						Ø1.5	Ø2	Ø3	Ø4	Ø5	Ø6
P	Machining steel	Up to 700	9 SMn 28	1.0715	60 - 120	0.05	0.05	0.07	0.09	0.11	0.13
P	Unalloyed structural steel	Up to 700	St-52	1.0052	60 - 90	0.04	0.05	0.06	0.08	0.09	0.1
P	Cast steel	Up to 950	GS 40	1.0416	70 - 90	0.04	0.04	0.05	0.05	0.06	0.07
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	50 - 80	0.04	0.04	0.05	0.05	0.06	0.07
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	60 - 90	0.03	0.03	0.04	0.05	0.06	0.06
K	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	40 - 80	0.05	0.05	0.07	0.09	0.11	0.13
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	50 - 200	0.1	0.11	0.12	0.14	0.16	0.18
N	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	50 - 200	0.1	0.11	0.12	0.14	0.16	0.18
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	20 - 40	0.03	0.03	0.04	0.04	0.05	0.06
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	20 - 40	0.03	0.03	0.04	0.04	0.05	0.06

SARA® ATORN® Thread milling cutter



- Please adjust these guideline values according to clamping operation and machine set-up!
- **Programming code note:** Anticlockwise spindle rotation Code M04

258011.... **258026....**
258025....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz mm/tooth													
						Ø1	Ø1.5	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	Ø9	Ø10	Ø12	Ø14	Ø16
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	60 - 70	0.03	0.04	0.04	0.05	0.05	0.06	0.06	0.07	0.07	0.08	0.08	0.09	0.1	0.11
H	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	50 - 60	0.02	0.03	0.03	0.04	0.04	0.05	0.05	0.06	0.06	0.07	0.07	0.08	0.09	0.1
H	Hardened materials up to 64 HRc		100Cr6	1.2067	40 - 50	0.01	0.02	0.02	0.03	0.03	0.04	0.04	0.05	0.05	0.06	0.06	0.07	0.08	0.09

ATORN® Drilling and thread milling cutter DMT



258100....

- Please adjust these guideline values according to clamping operation and machine set-up!
- **Programming code note:** Anticlockwise spindle rotation Code M04

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm						
						4	5	6	8	9	10	12
P	Machining steel	Up to 700	9 SMn 28	1.0715	60 - 120	0.03	0.05	0.03	0.04	0.05	0.05	0.05
P	Unalloyed structural steel	Up to 700	St-52	1.0052	60 - 90	0.02	0.02	0.03	0.04	0.04	0.04	0.05
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	50 - 80	0.02	0.02	0.02	0.02	0.03	0.03	0.04
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	70 - 100	0.02	0.02	0.02	0.02	0.03	0.03	0.03
M	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	60 - 90	0.02	0.02	0.02	0.02	0.03	0.03	0.03 - 0.04
K	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	40 - 80	0.03	0.03	0.04	0.05	0.05	0.05	0.05
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	40 - 80	0.03	0.03	0.04	0.05	0.05	0.05	0.05
N	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	100 - 200	0.03	0.03	0.04	0.05	0.05	0.05	0.05
N	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	60-140	0.02	0.02	0.02	0.02	0.03	0.03	0.03
N	Thermoset		Melamine		50 - 200	0.04	0.05	0.05	0.06	0.06	0.06	0.06

ATORN® Cutting data recommendations thread milling cutter



- Please adjust these guideline values according to clamping operation and machine set-up!

258050 .... **258052 ....**

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm		
						≤ 4	≤ 9	> 9
P	Structural steel	700 - 950	Ck45	1.1191	50 - 140	0.005 - 0.03	0.01 - 0.05	0.02 - 0.1
	Tempering steel	500 - 950	42 CrMo4	1.7225	60 - 130	0.005 - 0.02	0.01 - 0.04	0.02 - 0.09
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	40 - 120	0.005 - 0.02	0.01 - 0.04	0.02 - 0.09
	Duplex	700 - 950	X2 CrNiMoN 22-5-3	1.4462	70 - 120	0.005 - 0.03	0.01 - 0.05	0.02 - 0.1
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	50-120	0.005 - 0.03	0.01 - 0.05	0.02 - 0.1
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	130 - 250	0.005 - 0.04	0.01 - 0.06	0.02 - 0.13
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	80 - 180	0.005 - 0.04	0.01 - 0.06	0.02 - 0.13
	Thermoset		Melamine		80 - 180	0.005 - 0.04	0.01 - 0.06	0.02 - 0.13
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	20 - 80	0..005 - 0.02	0.01 - 0.04	0.02 - 0.09

1-cut thread milling cutter AT-1



- Please adjust these guideline values according to clamping operation and machine set-up!

294300....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm
	Unalloyed structural steel	Up to 700	St-52	1.0052	80 - 160	0,01 - 0,05
	Structural steel	700 - 950	Ck45	1.1191	80 - 160	0,01 - 0,05
	Tempering steel	500 - 950	42 CrMo4	1.7225	80 - 160	0,01 - 0,05
	Cast steel	Up to 950	GS 40	1.0416	60 - 120	0,01 - 0,05
	Tempering steel	950 -1300	43CrMo4	1.3563	80 - 120	0,01 - 0,05
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	60 - 120	0,01 - 0,05
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	60 - 120	0,01 - 0,05
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	80 - 160	0,01 - 0,05
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	60 - 120	0,01 - 0,05
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	100 - 300	0,03 - 0,1
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	80 - 160	0,03 - 0,1
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	80 - 160	0,03 - 0,1
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	80 - 160	0,03 - 0,1
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	80 - 160	0,03 - 0,1
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	80 - 160	0,03 - 0,1
	Thermoplastic		PVC		80 - 160	0,03 - 0,1

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Machining tools
411 pages
Art.no. 019900 0315

Overview of all free manufacturers' catalogues
on page 14/15

ATORN® Thread milling inserts

259001 ....
259002 ....
259003 ....

ATORN thread milling cutters are specially designed for use on CNC milling machines and machining centres which have 3-axis control with helical interpolation.



Advantages and application

- External and internal threads
- For through-hole and blind bore threads
- Synchronous and up-cut milling and change of the axial feed direction enables production of straight and conical threads and of all standard thread variants
- Thread production with varying tolerances
- Optimal clamping
- Short chips
- Low cutting pressure

Carbide quality AMT7

- TiAlN-coated ultra-fine grain quality
- for universal applications in all materials at medium to high cutting speeds

ISO		Cutting speed Vc m/min	Feed f mm/rev
P	Carbon steel	115 - 280	0.05 - 0.15
P	Alloyed steel	130 - 280	
P	High-alloy steel	105 - 180	
P	Cast steel	150 - 190	
M	Stainless steel	130 - 190	
K	Grey cast iron	80 - 170	
N	Non-ferrous metals, aluminium	180 - 34	

CNC Programming for internal threads

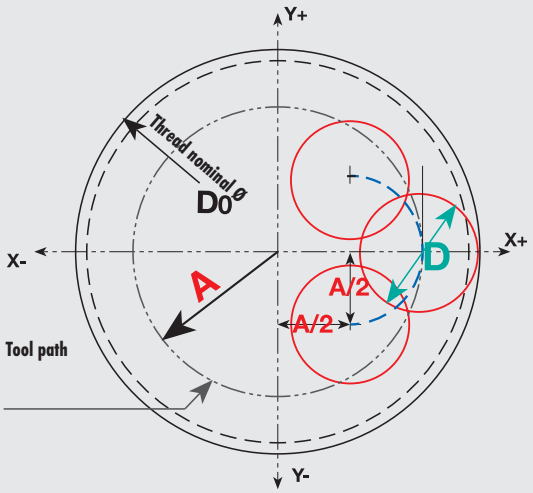
Upwards milling operation
(Programme is for use on CNC machining centres)

A = (D0 - D) / 2

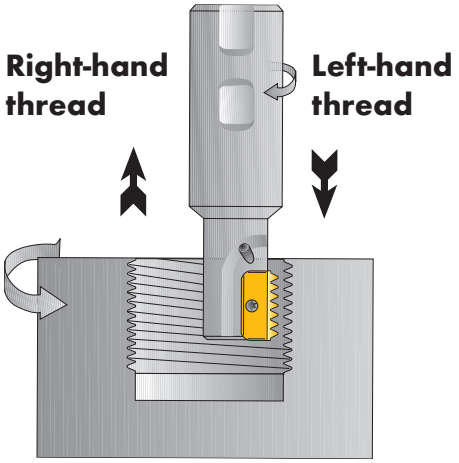
A = radius of the tool path
D0 = thread nominal Ø
D = cutting Ø

Standard Programming
G90 G00 G54 G43 H1X0 Y0 Z10 S–
G00 Z-(thread depth)
G01 G91 G41 D1 X(A/2) Y-(A/2) Z0 F–
G03 X(A/2) Y(A/2) R(A/2) Z(1/8 x pitch)
G03 X0 Y0 I-(A) J0 Z(Steigung)
G03 X-(A/2) Y(A/2) R(A/2) Z(1/8 x pitch)
G01 G40 X-(A/2) Y-(A/2) Z0
G90 X0 Y0 Z0

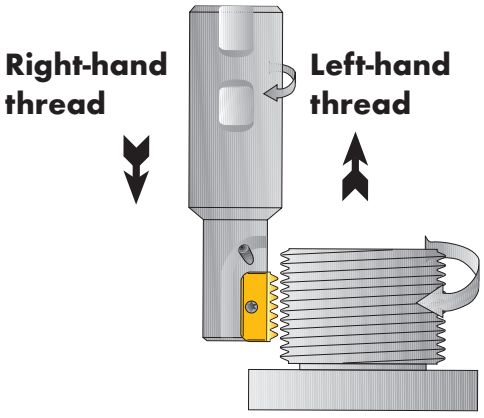
Example
M32 x 2 (thread depth 18 mm)
Tool holder: SR0021 H21
(Cutting Ø 21 mm)
Insert: 21 I 2,0 ISO
A = (32 - 21) / 2 = 5.5
produces the following Programming:
G90 G00 G54 G43 H1X0 Y0 Z10 S2800
G00 Z-18
G01 G91 G41 X2.75 Y2.75 Z0 F85 D1
G03 X2.75 Y2.75 R2.75 Z0.25
G03 X0 Y0 I-5.5 J0 Z2
G03 X-2.75 Y2.75 R2.75 Z0.25
G01 G40 X-2.75 Y-2.75 Z0
G90 G0 X0 Y0 Z0



Internal thread



External thread



ATORN® Exchangeable head milling cutter Z4



255600....

- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Side ae = 0.5 x D ap = 0.6 x D Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm			
						10	12	16	20
P	Unalloyed structural steel	Up to 700	St-52	1.0052	190	0.075	0.075	0.1	0.12
P	Machining steel	Up to 700	9 SMn 28	1.0715	180	0.075	0.075	0.1	0.12
P	Unalloyed tempered steel	500 - 950	Ck45	1.1191	170	0.075	0.075	0.1	0.12
P	Alloyed case-hardened steel	Up to 950	16 MnCr 5	1.7131	160	0.075	0.075	0.1	0.12
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	110	0.052	0.052	0.07	0.084
P	Cast steel	Up to 950	GS 40	1.0416	150	0.052	0.052	0.07	0.084
M	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	75	0.052	0.052	0.07	0.084
K	Grey cast iron	100 - 400	GG 25	0.6025	190	0.075	0.075	0.1	0.12
K	Ductile iron	400 - 800	GGG 60	0.7060	140	0.075	0.075	0.1	0.12
K	Malleable cast iron	350 - 700	GTS 55	0.8155	140	0.075	0.075	0.1	0.12

ATORN® Exchangeable head roughing cutter NRZ



255601....
255602....

- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Side ae = 0.5 x D ap = 0.6 x D Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm			
						10	12	16	20
P	Unalloyed structural steel	Up to 700	St-52	1.0052	190	0.075	0.075	0.1	0.12
P	Machining steel	Up to 700	9 SMn 28	1.0715	180	0.075	0.075	0.1	0.12
P	Unalloyed tempered steel	500 - 950	Ck45	1.1191	170	0.075	0.075	0.1	0.12
P	Alloyed case-hardened steel	Up to 950	16 MnCr 5	1.7131	150	0.052	0.052	0.07	0.084
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	110	0.052	0.052	0.07	0.084
P	Cast steel	Up to 950	GS 40	1.0416	130	0.052	0.052	0.07	0.084
M	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	90	0.075	0.075	0.1	0.12
K	Grey cast iron	100 - 400	GG 25	0.6025	170	0.075	0.075	0.1	0.12
K	Ductile iron	400 - 800	GGG 60	0.7060	120	0.075	0.075	0.1	0.12
K	Malleable cast iron	350 - 700	GTS 55	0.8155	120	0.075	0.075	0.1	0.12

ATORN® Exchangeable head milling cutter Z3 Type W



255603....

- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Side ae = 0.5 x D ap = 0.6 x D Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm			
						10	12	16	20
N	Al. alloy long-chipping	Up to 550	AlMg 3	3.3535	400	0.065	0.065	0.085	0.11
N	Al. alloy short-chipping	Up to 400	G-AlSi 12	3.2581	350	0.065	0.065	0.085	0.11
N	Copper alloy long-chipping	300 - 700	MS 63	2.0320	160	0.05	0.05	0.075	0.09
N	Copper alloy short-chipping	Up to 500	MS 58	2.0402	160	0.05	0.05	0.075	0.09
N	Thermoplastic	40 - 70	PVC, acrylic glass		450	0.065	0.065	0.085	0.11





MITUTOYO
Measuring equipment catalogue
approx. 620 pages
Art.no. 019900 0069

Overview of all free manufacturers' catalogues on page 14/15

ATORN® Exchangeable head milling cutter Z2/Z3/Z4


255604....


255605....


255606....

- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	**Side** ae = 0.1 x D ap = 0.6 x D / Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm			
						10	12	16	20
P	Unalloyed structural steel	Up to 700	St-52	1.0052	220	0.12	0.12	0.16	0.2
P	Machining steel	Up to 700	9 SMn 28	1.0715	200	0.084	0.084	0.11	0.14
P	Unalloyed tempered steel	500 - 950	Ck45	1.1191	195	0.084	0.084	0.11	0.14
P	Alloyed case-hardened steel	Up to 950	16 MnCr 5	1.7131	190	0.084	0.084	0.11	0.14
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	155	0.06	0.06	0.08	0.1
P	Cast steel	Up to 950	GS 40	1.0416	175	0.06	0.06	0.08	0.1
M	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	120	0.084	0.084	0.11	0.14
K	Grey cast iron	100 - 400	GG 25	0.6025	180	0.084	0.084	0.11	0.14
K	Ductile iron	400 - 800	GGG 60	0.7060	140	0.084	0.084	0.11	0.14
K	Malleable cast iron	350 - 700	GTS 55	0.8155	150	0.084	0.084	0.11	0.14
N	Al. alloy long-chipping	Up to 550	AlMg 3	3.3535	250	0.084	0.084	0.11	0.14
N	Al. alloy short-chipping	Up to 400	G-AlSi 12	3.2581	300	0.084	0.084	0.11	0.14
N	Copper alloy long-chipping	300 - 700	MS 63	2.0320	200	0.084	0.084	0.11	0.14
N	Copper alloy short-chipping	Up to 500	MS 58	2.0402	200	0.084	0.084	0.11	0.14
N	Thermoplastic	40 - 70	PVC, acrylic glass		200	0.084	0.084	0.11	0.14

ATORN® Exchangeable head milling cutter, multi-flute


255607....

- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	**Side** ae = 0.3 x D ap = 0.6 x D / Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm			
						10	12	16	20
P	Unalloyed structural steel	Up to 700	St-52	1.0052	220	0.065	0.065	0.075	0.1
P	Machining steel	Up to 700	9 SMn 28	1.0715	180	0.065	0.065	0.075	0.1
P	Unalloyed tempered steel	500 - 950	Ck45	1.1191	180	0.065	0.065	0.075	0.1
P	Alloyed case-hardened steel	Up to 950	16 MnCr 5	1.7131	160	0.065	0.065	0.075	0.1
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	90	0.045	0.045	0.053	0.07
P	Cast steel	Up to 950	GS 40	1.0416	120	0.045	0.045	0.053	0.07
M	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	120	0.045	0.045	0.053	0.07
K	Grey cast iron	100 - 400	GG 25	0.6025	200	0.065	0.065	0.075	0.1
K	Ductile iron	400 - 800	GGG 60	0.7060	170	0.065	0.065	0.075	0.1
K	Malleable cast iron	350 - 700	GTS 55	0.8155	170	0.065	0.065	0.075	0.1
N	Copper alloy long-chipping	300 - 700	MS 63	2.0320	200	0.065	0.065	0.075	0.1
N	Copper alloy short-chipping	Up to 500	MS 58	2.0402	200	0.065	0.065	0.075	0.1

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ATORN® Exchangeable head milling cutter, torus type H

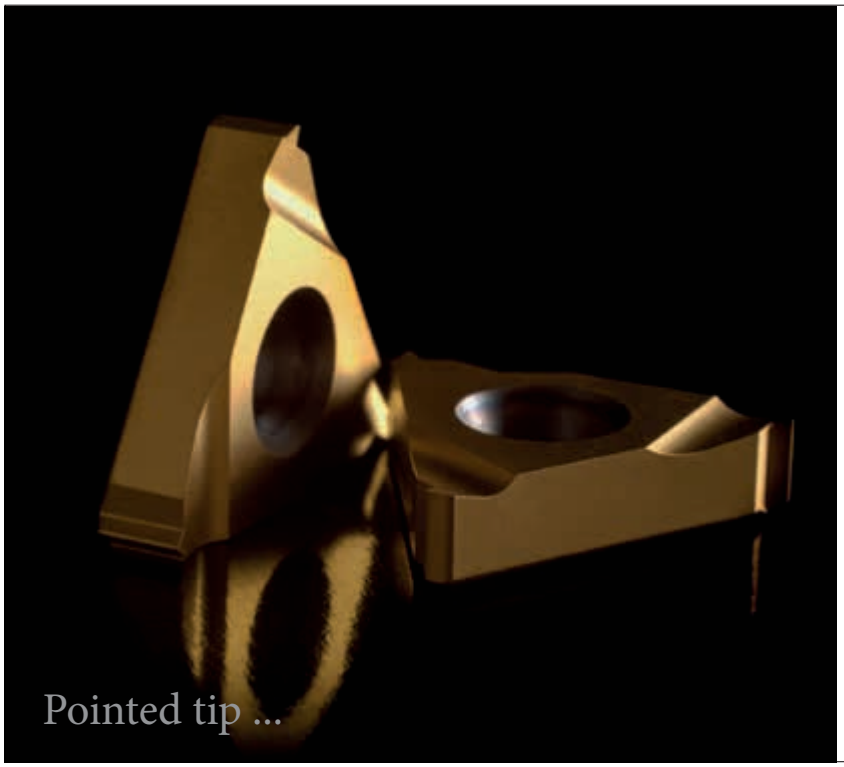


255608....

- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	**Grooving** ae = 0.1 x D ap = 0.6 x D Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm			
						10	12	16	20
P	Unalloyed structural steel	Up to 700	St-52	1.0052	194	0.074	0.074	0.089	0.111
P	Machining steel	Up to 700	9 SMn 28	1.0715	189	0.074	0.074	0.089	0.111
P	Unalloyed tempered steel	500 - 950	Ck45	1.1191	183	0.074	0.074	0.089	0.111
P	Alloyed case-hardened steel	Up to 950	16 MnCr 5	1.7131	181	0.074	0.074	0.089	0.111
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	137	0.074	0.074	0.089	0.111
P	Cast steel	Up to 950	GS 40	1.0416	175	0.074	0.074	0.089	0.111
K	Grey cast iron	100 - 400	GG 25	0.6025	178	0.074	0.074	0.089	0.111
K	Alloyed grey cast iron	150-250	GGL-NiCr 35 2	0.6678	162	0.074	0.074	0.089	0.111
K	Ductile iron	400 - 800	GGG 60	0.7060	162	0.074	0.074	0.089	0.111
H	Hardened steel	45-50 HRc			107	0.074	0.074	0.089	0.111
H	Hardened steel	50-60 HRc			60	0.074	0.074	0.089	0.111
H	Hardened steel	60-70 HRc			52	0.074	0.074	0.089	0.111

ISO	**Side** ae = 0.03 x D ap = 0.6 x D Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm			
						10	12	16	20
P	Unalloyed structural steel	Up to 700	St-52	1.0052	355	0.1	0.1	0.12	0.15
P	Machining steel	Up to 700	9 SMn 28	1.0715	345	0.1	0.1	0.12	0.15
P	Unalloyed tempered steel	500 - 950	Ck45	1.1191	335	0.1	0.1	0.12	0.15
P	Alloyed case-hardened steel	Up to 950	16 MnCr 5	1.7131	330	0.1	0.1	0.12	0.15
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	320	0.1	0.1	0.12	0.15
P	Cast steel	Up to 950	GS 40	1.0416	320	0.1	0.1	0.12	0.15
K	Grey cast iron	100 - 400	GG 25	0.6025	325	0.1	0.1	0.12	0.15
K	Ductile iron	400 - 800	GGG 60	0.7060	295	0.1	0.1	0.12	0.15
K	Malleable cast iron	350 - 700	GTS 55	0.8155	295	0.1	0.1	0.12	0.15
H	Hardened steel	45-50 HRc			195	0.1	0.1	0.12	0.15
H	Hardened steel	50-60 HRc			110	0.1	0.1	0.12	0.15
H	Hardened steel	60-70 HRc			95	0.1	0.1	0.12	0.15



... with reversible option.

ATORN®
Performance demands quality

ATORN® Exchangeable head milling cutter, torus type H-N



255609....

- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	**Side** ae = 1 x D ap = 0.1 x D / Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm			
						10	12	16	20
P	Unalloyed structural steel	Up to 700	St-52	1.0052	200	0.2	0.2	0.25	0.3
	Machining steel	Up to 700	9 SMn 28	1.0715	180	0.2	0.2	0.25	0.3
	Unalloyed tempered steel	500 - 950	Ck45	1.1191	150	0.2	0.2	0.25	0.3
	Alloyed case-hardened steel	Up to 950	16 MnCr 5	1.7131	140	0.2	0.2	0.25	0.3
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	120	0.2	0.2	0.25	0.3
	Cast steel	Up to 950	GS 40	1.0416	130	0.2	0.2	0.25	0.3
K	Grey cast iron	100 - 400	GG 25	0.6025	180	0.2	0.2	0.25	0.3
	Ductile iron	400 - 800	GGG 60	0.7060	150	0.2	0.2	0.25	0.3
	Malleable cast iron	350 - 700	GTS 55	0.8155	150	0.2	0.2	0.25	0.3
H	Hardened steel	45-50 HRc			95	0.15	0.15	0.2	0.25
	Hardened steel	50-60 HRc			70	0.09	0.09	0.12	0.15
	Hardened steel	60-70 HRc			60	0.08	0.08	0.09	0.12

ATORN® Exchangeable head milling cutter, radius Z2



255610....



255611....

- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	**Grooving** ae = 0.3 x D ap = 0.03 x D / Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm			
						10	12	16	20
P	Unalloyed structural steel	Up to 700	St-52	1.0052	570	0.065	0.065	0.09	0.12
	Machining steel	Up to 700	9 SMn 28	1.0715	450	0.065	0.065	0.09	0.12
	Unalloyed tempered steel	500 - 950	Ck45	1.1191	390	0.065	0.065	0.09	0.12
	Alloyed case-hardened steel	Up to 950	16 MnCr 5	1.7131	350	0.065	0.065	0.09	0.12
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	240	0.045	0.045	0.06	0.08
	Cast steel	Up to 950	GS 40	1.0416	300	0.065	0.065	0.09	0.12
K	Grey cast iron	100 - 400	GG 25	0.6025	400	0.065	0.065	0.09	0.12
	Ductile iron	400 - 800	GGG 60	0.7060	380	0.065	0.065	0.09	0.12
	Malleable cast iron	350 - 700	GTS 55	0.8155	380	0.065	0.065	0.09	0.12
H	Hardened steel	45-50 HRc			180	0.045	0.045	0.06	0.08
	Hardened steel	50-60 HRc			160	0.045	0.045	0.06	0.08
	Hardened steel	60-70 HRc			150	0.045	0.045	0.06	0.08





MITUTOYO
Measuring equipment catalogue
approx. 620 pages
Art.no. 019900 0069

Overview of all free manufacturers' catalogues on page 14/15

ATORN® Exchangeable head milling cutter, radius Z2 220°



255612....

- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	**Side** ae = 0.3 x D ap = 0.03 x D / Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm			
						10	12	16	20
P	Unalloyed structural steel	Up to 700	St-52	1.0052	450	0.065	0.065	0.09	0.1
	Machining steel	Up to 700	9 SMn 28	1.0715	350	0.065	0.065	0.09	0.1
	Unalloyed tempered steel	500 - 950	Ck45	1.1191	305	0.065	0.065	0.09	0.1
	Alloyed case-hardened steel	Up to 950	16 MnCr 5	1.7131	310	0.065	0.065	0.09	0.1
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	170	0.045	0.045	0.055	0.65
	Cast steel	Up to 950	GS 40	1.0416	250	0.065	0.065	0.09	0.1
K	Grey cast iron	100 - 400	GG 25	0.6025	450	0.065	0.065	0.09	0.1
	Ductile iron	400 - 800	GGG 60	0.7060	410	0.065	0.065	0.09	0.1
	Malleable cast iron	350 - 700	GTS 55	0.8155	410	0.065	0.065	0.09	0.1
H	Hardened steel	45-50 HRc			120	0.045	0.045	0.055	0.65
	Hardened steel	50-60 HRc			90	0.045	0.045	0.055	0.65
	Hardened steel	60-70 HRc			70	0.045	0.045	0.055	0.65

ATORN® Exchangeable head milling cutter Multimill



255613....

- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	**Side** ae = 0.3 x D ap = 0.5 x D / Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm			
						10	12	16	20
P	Unalloyed structural steel	Up to 700	St-52	1.0052	120	0.045	0.065	0.08	0.09
	Machining steel	Up to 700	9 SMn 28	1.0715	105	0.045	0.065	0.08	0.09
	Unalloyed tempered steel	500 - 950	Ck45	1.1191	95	0.045	0.065	0.08	0.09
	Alloyed case-hardened steel	Up to 950	16 MnCr 5	1.7131	90	0.045	0.065	0.08	0.09
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	65	0.03	0.045	0.06	0.07
	Cast steel	Up to 950	GS 40	1.0416	80	0.045	0.065	0.08	0.09
M	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	80	0.03	0.045	0.06	0.07
K	Grey cast iron	100 - 400	GG 25	0.6025	120	0.045	0.065	0.08	0.09
	Ductile iron	400 - 800	GGG 60	0.7060	90	0.045	0.065	0.08	0.09
	Malleable cast iron	350 - 700	GTS 55	0.8155	60	0.045	0.065	0.08	0.09
N	Al. alloy long-chipping	Up to 550	AlMg 3	3.3535	300	0.045	0.065	0.08	0.09
	Al. alloy short-chipping	Up to 400	G-AlSi 12	3.2581	280	0.045	0.065	0.08	0.09
	Copper alloy long-chipping	300 - 700	MS 63	2.0320	200	0.045	0.065	0.08	0.09
	Copper alloy short-chipping	Up to 500	MS 58	2.0402	200	0.045	0.065	0.08	0.09

ATORN® Exchangeable head deburring milling cutter



255614....

- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	**Side** ae = 0.3 x D ap = 0.5 x D / Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm			
						10	12	16	20
P	Unalloyed structural steel	Up to 700	St-52	1.0052	190	0.085	0.113	0.141	0.169
	Machining steel	Up to 700	9 SMn 28	1.0715	170	0.085	0.113	0.141	0.169
	Unalloyed tempered steel	500 - 950	Ck45	1.1191	170	0.085	0.113	0.141	0.169
	Alloyed case-hardened steel	Up to 950	16 MnCr 5	1.7131	120	0.044	0.05	0.075	0.1
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	160	0.063	0.075	0.1	0.125
	Cast steel	Up to 950	GS 40	1.0416	120	0.044	0.05	0.075	0.1
M	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	110	0.038	0.044	0.063	0.075
	Stainless steel, sulphurised	500 - 950	X 12 CrMoS 17	1.4104	75	0.031	0.038	0.056	0.075
	Stainless steel, martensitic	500 - 950	X 10 Cr 13	1.4006	75	0.031	0.038	0.056	0.075
K	Grey cast iron	100 - 400	GG 25	0.6025	150	0.05	0.056	0.075	0.1
	Ductile iron	400 - 800	GGG 60	0.7060	100	0.07	0.085	0.113	0.144
	Malleable cast iron	350 - 700	GTS 55	0.8155	70	0.07	0.085	0.113	0.144
N	Al. alloy long-chipping	Up to 550	AlMg 3	3.3535	700	0.05	0.063	0.081	0.106
	Al. alloy short-chipping	Up to 400	G-AlSi 12	3.2581	500	0.085	0.113	0.141	0.169
	Copper alloy long-chipping	300 - 700	MS 63	2.0320	300	0.085	0.113	0.141	0.169
	Copper alloy short-chipping	Up to 500	MS 58	2.0402	300	0.085	0.113	0.141	0.169

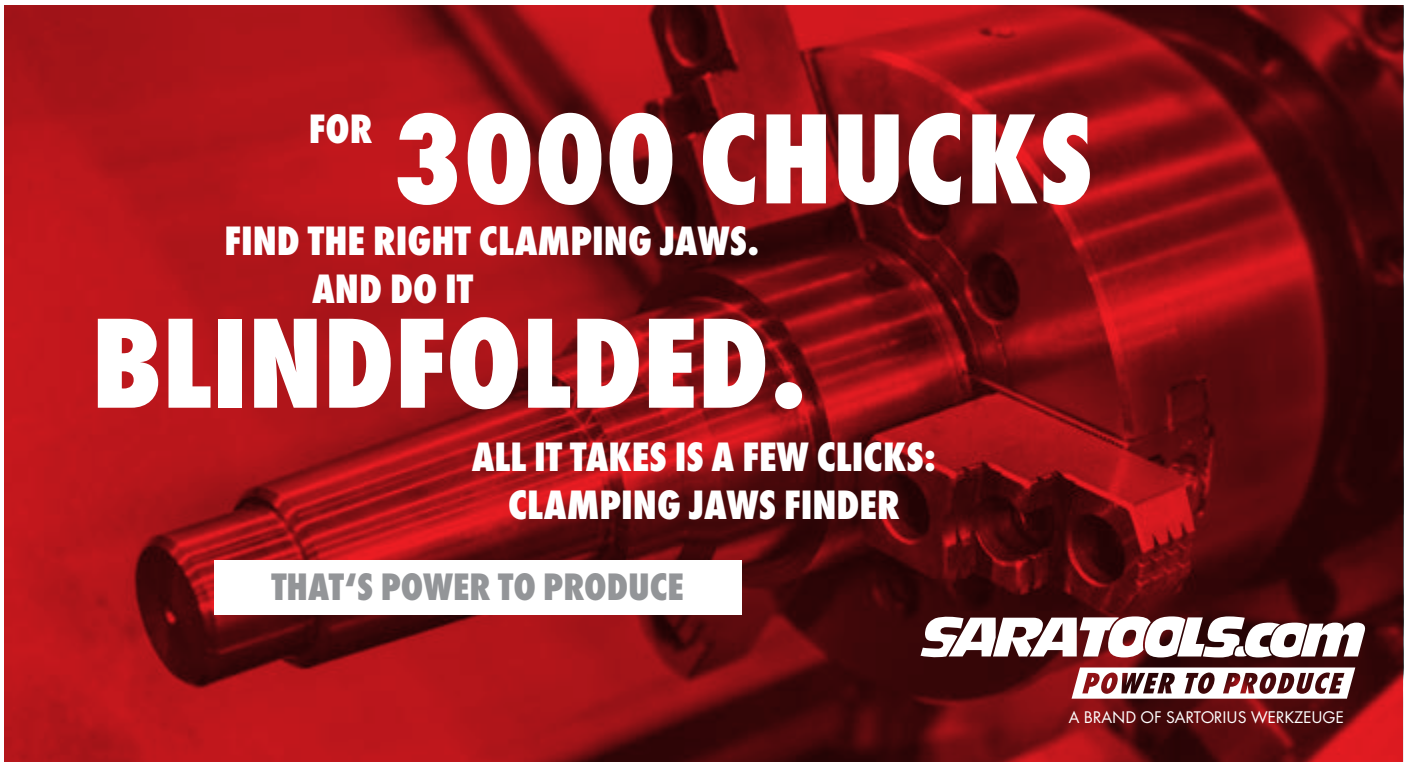
ATORN® Exchangeable head quadrant milling cutter



255615....

- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	**Side** ae = 0.1 x D ap = 0.1 x D Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm			
						10	12	16	20
P	Unalloyed structural steel	Up to 700	St-52	1.0052	190	0.012	0.015	0.025	0.032
	Machining steel	Up to 700	9 SMn 28	1.0715	170	0.012	0.015	0.025	0.032
	Unalloyed tempered steel	500 - 950	Ck45	1.1191	160	0.012	0.015	0.025	0.032
	Alloyed case-hardened steel	Up to 950	16 MnCr 5	1.7131	140	0.012	0.015	0.025	0.032
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	80	0.012	0.015	0.025	0.032
	Cast steel	Up to 950	GS 40	1.0416	100	0.012	0.015	0.025	0.032
M	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	110	0.012	0.015	0.025	0.032
	Stainless steel, sulphurised	500 - 950	X 12 CrMoS 17	1.4104	75	0.012	0.015	0.025	0.032
	Stainless steel, martensitic	500 - 950	X 10 Cr 13	1.4006	75	0.012	0.015	0.025	0.032
K	Grey cast iron	100 - 400	GG 25	0.6025	150	0.012	0.015	0.025	0.032
	Ductile iron	400 - 800	GGG 60	0.7060	100	0.012	0.015	0.025	0.032
	Malleable cast iron	350 - 700	GTS 55	0.8155	70	0.012	0.015	0.025	0.032
N	Al. alloy long-chipping	Up to 550	AlMg 3	3.3535	600	0.012	0.015	0.025	0.032
	Al. alloy short-chipping	Up to 400	G-AlSi 12	3.2581	500	0.012	0.015	0.025	0.032
	Copper alloy long-chipping	300 - 700	MS 63	2.0320	300	0.012	0.015	0.025	0.032
	Copper alloy short-chipping	Up to 500	MS 58	2.0402	300	0.012	0.015	0.025	0.032



ATORN® Tool system for machining drill holes MINI-MILL



263001 - 263111....

- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm	
						Drill cutting	Thread milling
P	Unalloyed structural steel	Up to 700	St-52	1.0052	120 - 200	0.2 - 0.4	0.15 - 0.25
P	Tempering steel	500 - 950	42 CrMo4	1.7225	80 - 160	0.15 - 0.3	0.15 - 0.25
P	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	100 - 180	0.15 - 0.3	0.15 - 0.25
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	120 - 200	0.15 - 0.3	0.15 - 0.25
M	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	80 - 150	0.1 - 0.25	0.15 - 0.25
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	100 - 170	0.2 - 0.4	0.2 - 0.3
K	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	120	0.2 - 0.4	0.2 - 0.3
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	80-120	0.2 - 0.4	0.2 - 0.3
N	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	300 - 500	0.15 - 0.4	0.2 - 0.3
N	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	300 - 500	0.15 - 0.4	0.2 - 0.3
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	80 - 110	0.01 - 0.08	0.01 - 0.08

$$n = \frac{Vc \times 1000}{d \times \pi}$$

$$Ueff = fz \times z \times n$$

Milling - external contour

$$Uprog = \frac{Ueff \times (D + d)}{D}$$

$$Ueff = \frac{D \times Uprog}{(D + d)}$$

Milling - internal contour

$$Uprog = \frac{Ueff \times (D - d)}{D}$$

$$Ueff = \frac{D \times Uprog}{(D - d)}$$

$$hm = \sqrt{\frac{fz}{\frac{d}{ae}}} \qquad fz = hm \times \sqrt{\frac{d}{ae}}$$

Average chip thickness
hm > 0.05 mm/rev sought!

n	=	spindle speed	rpm	hm	=	average chip thickness	mm/rev
Vc	=	cutting speed	m/min.	Uprog	=	programmed feed rate	mm/min.
d	=	milling cutter diameter	mm	fz	=	feed per tooth	mm/min.
D	=	thread diameter	mm	z	=	jaw quantity of the cutter	mm
Ueff	=	effective feed rate (at the contour)	mm/min.	ae	=	radial clamp depth	mm

ATORN® Cutting inserts CMT



266100 - 266109....

- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm			
						Ø 10	Ø 12	Ø 18	Ø 25
P	Machining steel	Up to 700	9 SMn 28	1.0715	60 -120	0.16	0.17	0.2	0.22
P	Unalloyed structural steel	Up to 700	St-52	1.0052	60 - 90	0.14	0.16	0.2	0.22
P	Tempering steel	500 - 950	42 CrMo4	1.7225	50 - 80	0.1	0.12	0.16	0.18
P	Cast steel	Up to 950	GS 40	1.0416	70 - 90	0.1	0.12	0.15	0.18
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	70 - 100	0.1	0.11	0.15	0.17
M	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	60 - 90	0.1	0.11	0.15	0.17
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	40 - 80	0.16	0.17	0.2	0.22
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	40 - 80	0.16	0.17	0.2	0.22
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	40 - 80	0.16	0.17	0.2	0.22
N	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	50 - 200	0.19	0.19	0.22	0.24
N	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	60-140	0.1	0.11	0.16	0.18
N	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	50 - 200	0.19	0.19	0.22	0.24
N	Fibre-reinforced plastics		CFRP, GFRP		50 - 200	0.19	0.19	0.22	0.24
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	20 - 40	0.07	0.07	0.1	0.12
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	20 - 40	0.07	0.07	0.1	0.12
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	50 - 70	0.08 - 0.09	0.08 - 0.09	0.12	0.14

ATORN® Face milling cutter 45°



262555....

- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Indexable insert SN..X 1206 ANN... ap max. 5.0 mm: Cutting speed Vc m/min	Indexable insert SN..X 1206 ANN... ap max. 5.0 mm: Feed per cutting edge fz mm/tooth	Indexable insert SNMU 1260 ANER... ap max. 5.0 mm: Cutting speed Vc m/min	Indexable insert SNMU 1260 ANER... ap max. 5.0 mm: Feed per cutting edge fz mm/tooth	Indexable insert ONMU 1505 ANN... ap max. 0.5-3.0 mm: Cutting speed Vc m/min	Indexable insert ONMU 1505 ANN... ap max. 0.5-3.0 mm: Feed per cutting edge fz mm/tooth	Carbide Type
P	Unalloyed structural steel	Up to 700	St-52	1.0052	150 - 300	0.10 - 0.30	110 - 200	0.05 - 0.25	100 - 170	0.05 - 0.25	HC 4630
	Machining steel	Up to 700	9 SMn 28	1.0715							
	Unalloyed tempered steel	500 – 950	Ck45	1.1191							
	Alloyed case-hardened steel	Up to 950	16 MnCr 5	1.7131							
	Tool steel	950 – 1400	X 38 CrMoV 5 1	1.2343							
	Cast steel	Up to 950	GS 40	1.0416							
M	Stainless steel, austenitic	500 – 950	X 5 CrNi 18 10	1.4301	90 - 160	0.10 - 0.35	90 - 170	0.05 - 0.25	90 - 160	0.05 - 0.25	HC 4535
	Stainless steel, sulphurised	500 – 950	X 12 CrMoS 17	1.4104							
	Stainless steel, martensitic	500 – 950	X 10 Cr 13	1.4006							
K	Grey cast iron	100 – 400	GG 25	0.6025	120-180	0.10 - 0.40	200 - 300	0.05 - 0.25	200 - 300	0.05 - 0.25	HC 4410
	Alloyed grey cast iron	150-250	GGL-NiCr 35 2	0.6678							
	Ductile iron	400 – 800	GGG 60	0.7060							
	Malleable cast iron	350 – 700	GTS 55	0.8155							
N	Al. alloy long-chipping	Up to 550	AlMg 3	3.3535	180 - 350	0.10 - 0.20					HW 4310
	Al. alloy short-chipping	Up to 400	G-AlSi 12	3.2581							
	Copper alloy long-chipping	300 – 700	MS 63	2.0320							
	Copper alloy short-chipping	Up to 500	MS 58	2.0402							

SARA® Smooth-running face milling cutter 45°



262550....

- Indexable cutting insert SEMT 13T3 AGSN-PM, ap max. 6 mm
- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz mm/tooth	Carbide type of the indexable cutting insert used
P	Machining steel	Up to 700	9 SMn 28	1.0715	200 - 300	0.1 - 0.3	JC 5040 (JC 8050)
	Unalloyed structural steel	Up to 700	St-52	1.0052			
	Structural steel	700 - 950	Ck45	1.1191			
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	170 - 250	0.1 - 0.3	JC 5040 (JC 8050)
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	100 - 150	0.1 - 0.3	JC 5040
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	170 - 250	0.1 - 0.3	JC 8050 (JC 8015)
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301			
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	150 - 250	0.1 - 0.3	JC 605W (JC 8015)
	Ductile iron	Up to 280 HB	GGG 60	0.7060	120-180	0.1 - 0.3	JC 8015
H	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	60 - 100	0.1 - 0.2	JC 8015

ATORN® Face milling cutter 45°



260150....

- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Vc m/min	Max. tooth feed rate fz in mm with ae = 0.75 x d1 (d1 = milling cutter diameter) SAHT 1306[2]	Suitable indexable insert
M	Acid-resistant stainless steel, ferritic, martensitic 500-950 N/mm²	140 - 170	0.30	HC4540 HC4640
	Acid-resistant stainless steel, austenitic 500-950 N/mm²	200 - 280	0.25	
		60 - 120[1]		
	Maraging steel 500 – 950 N/mm²	180 - 240	0.25	
		60 - 120[1]		
K	Cast iron with lamellar graphite 100-400 N/mm²	200 - 260	0.40	HC4410
	Alloyed cast iron 150-250 N/mm²	160 - 200	0.30	
	Cast iron with spheroidal graphite 400-800 N/mm²	140 - 180	0.35	
	Alloyed cast iron 350-700 N/mm²	160 - 200	0.35	
N	Aluminium alloys, long-chipping up to 550 N/mm²	300 - 1000	0.40	
	Copper alloys, long-chipping 300-700 N/mm²	250 - 500	0.40	
S	Titanium alloys, medium-strength up to 950 N/mm²	40 - 80[1]	0.15	HC4640
	Titanium alloys, high-strength 900-1400 N/mm²	30 - 40[1]	0.15	

[1] Cutting data for wet chipping
[2] The fz values related to the cutting depths for ap = 3 mm (SAHT 1306)

palbit Face milling cutter 45° PLUS 91245



260211....

- ae = 0,7 x D
- PH5... = Cooling: air or emulsion
- PH7... = Cooling: air
- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Feed fz in mm/tooth	Cutting speed Vc m/min			
						◄ Wear resistance			Toughness ►
						PH5705	PH7920	PH5740	PH7740
						++	±	±	--
P	Unalloyed structural steel	Up to 700	St-52	1.0052	0,15 - 0,4		180 - 320		160 - 240
P	Tempering steel	500 - 950	42 CrMo4	1.7225	0,15 - 0,4		150 - 240		140 - 200
P	Tempering steel	950 -1300	43CrMo4	1.3563	0,15 - 0,4		140 - 200		120 - 170
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	0,1 - 0,3				110 - 160
M	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	0,1 - 0,3				90 - 140
M	Duplex	700 - 950	X2 CrNiMoN 22-5-3	1.4462	0,1 - 0,3				80 - 120
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	0,15 - 0,4	170 - 305		150 - 260	
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	0,14 - 0,4	180 - 350		155 - 290	
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	0,14 - 0,4	130 - 210		115 - 180	
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	0,1 - 0,17				20 - 55
			Usage conditions:		++ = good	± = average	-- = difficult		

palbit Face milling cutter 45° LINEPRO 09945

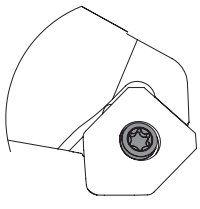


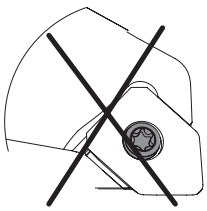
260213....

- ae = 0,7 x D
- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Feed fz in mm/tooth	Cutting speed Vc m/min		
						◄ Wear resistance		Toughness ►
						PH0910	PH6920	PH6740
						++	±	--
P	Unalloyed structural steel	Up to 700	St-52	1.0052	0,1 - 0,3		150 - 230	130 - 160
P	Tempering steel	500 - 950	42 CrMo4	1.7225	0,1 - 0,3		140 - 220	120 - 150
P	Tempering steel	950 -1300	43CrMo4	1.3563	0,1 - 0,3		130 - 180	100 - 130
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	0,1 - 0,2			100 - 120
M	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	0,1 - 0,2			80 - 110
M	Duplex	700 - 950	X2 CrNiMoN 22-5-3	1.4462	0,1 - 0,2			70 - 100
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	0,1 - 0,25		150 - 280	130 - 250
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	0,1 - 0,25		130 - 230	110 - 220
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	0,1 - 0,2		80 - 190	80 - 170
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	3.3535	0,1 - 0,2	350 - 1400		
			Usage conditions:		++ = good	± = average	-- = difficult	

Cutting data Wiper indexable cutting insert
Fw = 1,4 x Fn (Fn = Fz x Z)





ATORN® Face and copy milling cutter, OCKX, XCKX, RCKX 1606 and SAHT 1306



260111....

- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed per cutting edge fz mm/tooth	Carbide Type
P	Machining steel	Up to 700	9 SMn 28	1.0715	135 - 180 120 - 300	0.1 - 0.35	HC 4540 HC 4620
	Unalloyed structural steel	Up to 700	St-52	1.0052			
	Structural steel	700 - 950	Ck45	1.1191			
	Cast steel	Up to 950	GS 40	1.0416			
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131			
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343			
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	180 - 240	0.1 - 0.35	HC 4540
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301			
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	50-120 160 - 300	0.1 - 0.35	HC 4410 HC 4620
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678			
	Ductile iron	Up to 280 HB	GGG 60	0.7060			
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155			

ATORN® Shoulder milling cutter 90°



262547.... 283310....

- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed per cutting edge fz mm/tooth		
						Finishing	Medium machining	Roughing
P	Machining steel	Up to 700	9 SMn 28	1.0715	220 - 250	0.1	0.2	0.3
	Unalloyed structural steel	Up to 700	St-52	1.0052	220 - 250	0.1	0.2	0.3
	Structural steel	700 - 950	Ck45	1.1191	220 - 250	0.1	0.2	0.3
	Cast steel	Up to 950	GS 40	1.0416	220 - 250	0.1	0.2	0.3
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	160 - 200	0.08	0.15	0.2
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	160 - 200	0.08	0.15	0.2
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	130 - 140	0.06	0.12	0.2
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	130 - 140	0.06	0.12	0.2
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	140 - 200	0.12	0.25	0.35
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	140 - 180	0.1	0.2	0.3
	Ductile iron	Up to 280 HB	GGG 60	0.7060	140 - 180	0.1	0.2	0.3
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	140 - 200	0.12	0.25	0.35
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	40 - 60	0.05	0.08	0.12

ae/D	50 - 100%	30%	20%	10%	5%	2%
Factor	1	1.2	1.5	2.1	3	4.8

ATORN® Roughing spiral flute end milling cutter 90°



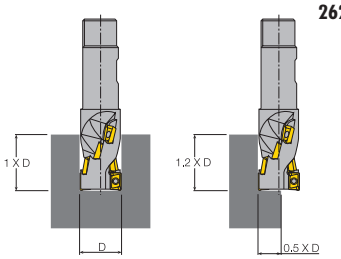
262544....

- Please adjust these guideline values according to clamping operation and machine set-up!

Subsequent cutting conditions must be regarded as guideline values.
Various factors can influence these values:

- Rigidity of the machine
- Workpiece clamping
- Material

A= Groove milling: A_p (axial cutting depth) up to 1 x milling cutter diameter
B= shoulder milling: A_e (radial cutting depth) up to 0.5 x milling cutter diameter and
Ap (axial cutting depth) up to 1.2 x milling cutter diameter



ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Hardness Brinell	Carbide type	Cutting speed Vc m/min	Feed per cutting edge fz mm/tooth			
								Ø 20 + Ø 25		Ø 32 + Ø 40	
								A	B	A	B
P	Machining steel	Up to 700	9 SMn 28	1.0715	150 - 200	DC325M	110 - 200	0.08 - 0.15	0.08 - 0.18	0.1 - 0.2	0.1 - 0.25
						DC735	110 - 175				
	Tempering steel	500 - 950	42 CrMo4	1.7225	125 - 275	DC325M	90 - 135	0.08 - 0.15	0.08 - 0.18	0.1 - 0.2	0.1 - 0.25
						DC735	90 - 125				
	Tempering steel	950 -1300	43CrMo4	1.3563	275 - 325	DCM325M	80-100	0.07 - 0.15	0.07 - 0.18	0.08 - 0.2	0.08 - 0.25
						DC735	80 - 90				
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	175 - 275	DC325M	90 - 150	0.08 - 0.15	0.08 - 0.18	0.1 - 0.2	0.1 - 0.25
						DC735	90 - 160				
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	135 - 175	DC325M	100 - 130	0.08 - 0.15	0.08 - 0.18	0.1 - 0.2	0.1 - 0.25
						DC725	100 - 110				
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	140 - 200	DC210	85 - 105	0.08 - 0.2	0.1 - 0.25	0.1 - 0.25	0.1 - 0.3
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	110 - 250	DC210	55 - 85	0.07 - 0.18	0.08 - 0.2	0.08 - 0.23	0.1 - 0.27
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535		DC210	250 - 450	0.12 - 0.23	0.11 - 0.28	0.13 - 0.28	0.15 - 0.35

ATORN® 4-10 Power / 4-15 Power



262559.... 262560.... 262562.... 262563....

- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed per cutting edge fz mm/tooth	Carbide type	Indexable inserts designation
P	Machining steel	Up to 700	9 SMn 28	1.0715	100 - 300	0.1 - 0.3	HC 4630	LNMX 10../15.. PNR-MM
	Unalloyed structural steel	Up to 700	St-52	1.0052				
	Structural steel	700 - 950	Ck45	1.1191				
	Cast steel	Up to 950	GS 40	1.0416				
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131				
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343				
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	120-180	0.05 - 0.25	HC 4535	LNMX 10../15.. PNR-MM
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301				
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	120 - 300	0.08 - 0.25	HC 4410	LNMX 10../15.. PNR-MM
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678				
	Ductile iron	Up to 280 HB	GGG 60	0.7060				
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155				
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	200 - 300	0.1 - 0.3	HW 4310	LNMX 10../15.. PNR-MA
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581				
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250				
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381				

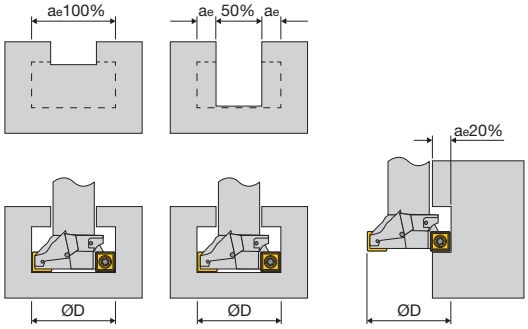
SARA® T-slot milling cutter



263007.... 263008....

- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev in relation to drill bit diameter in mm		
						21 - 25	32 - 40	50
P	Unalloyed structural steel	Up to 700	St-52	1.0052	250	0.1	0.12	0.16
	Structural steel	700 - 950	Ck45	1.1191	200	0.08	0.09	0.1
	Tempering steel	500 - 950	42 CrMo4	1.7225	170	0.08	0.06	0.08
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	170	0.08	0.06	0.08
M	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	200	0.06	0.06	0.06
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	200	0.12	0.16	0.18
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	180	0.1	0.12	0.12
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	200	0.08	0.08	0.1
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	60	0.06	0.06	0.06
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	40	0.06	0.06	0.06
ap max. [mm]						9 - 11	14 - 17	21



ae/D	100%	50%	20%	10%
Vc	100%	90%	80%	70%
X	1	1	1.3	1.5

The cutting speed Vc must be reduced for decreasing contact width ae/D.
The feed per cutting edge fz must be corrected by factor X.

ATORN® High feed-rate milling cutter XDM..



286001..../286002....

- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	ae = 0.75 x D ap = 0.6 mm Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth HC4640		Cutting speed Vc m/min	Feed fz in mm/tooth HC4410	
						XDMW 0903SR	XDMT 0903ER		XDMW 0903SR	XDMT 0903ER
P	Machining steel	Up to 700	9 SMn 28	1.0715	200 - 260	1.7	1.4	260 - 270	1.5	1.3
	Unalloyed structural steel	Up to 700	St-52	1.0052	200 - 260	1.7	1.4	260 - 270	1.5	1.3
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	150-180	1.4	1.2	160 - 190	1.3	1.1
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	160 - 210	1.2	1.0	180 - 220	1.2	1.0
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006	200 - 240		0.9			
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	200 - 240		0.9			
K	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678				180 - 200	1.0	
	Ductile iron	Up to 280 HB	GGG 60	0.7060				200 - 240	1.0	
H	Hardened materials up to 55 HRc		X40Cr14	1.2083				100	1.0	
	Hardened materials up to 60 HRc		X153CrMoV12	1.2379				80	0.7	
	Hardened materials up to 64 HRc		100Cr6	1.2067				70	0.4	

ATORN® High feed-rate milling cutter



- Please adjust these guideline values according to clamping operation and machine set-up!

285001.... 285003.... 285005....
285002.... 285004.... 285006....

ISO	ae = 0.7 x D Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm HC4640					
						XCNT07 SN-TR XCNW07 SN	XCNT09 SN-TR XCNW12 SN	XCNT12 SN-TR XCNW07 SN	XCNT07 EN-TR	XCNT09 EN-TR	XCNT12 EN-TR
P	Unalloyed structural steel	Up to 700	St-52	1.0052	200-260	2.0	2.5	3.0	1.4	1.7	2.0
P	Machining steel	Up to 700	9 SMn 28	1.0715	210-250	2.0	2.5	3.0	1.4	1.7	2.0
P	Alloyed case-hardened steel	Up to 950	16 MnCr 5	1.7131	180-220	2.0	2.5	3.0	1.4	1.7	2.0
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	140-180	2.0	2.5	3.0	1.4	1.7	2.0
M	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	220-260	0.8	1.2	1.5	0.8	1.2	1.5
M	Stainless steel, sulphurised	500 - 950	X 12 CrMoS 17	1.4104	220-260	1.0	1.5	1.8	1.0	1.5	1.8
K	Grey cast iron	100 - 400	GG 25	0.6025	200-260	1.5	2.0	2.5	1.2	1.6	2.0
K	Alloyed grey cast iron	150-250	GGL-NiCr 35 2	0.6678	160-200	1.5	2.0	2.5	1.2	1.6	2.0
K	Ductile iron	400 - 800	GGG 60	0.7060	200-240	1.5	2.0	2.5	1.0	1.4	1.7
K	Malleable cast iron	350 - 700	GTS 55	0.8155	160-200	1.1	1.3	1.5	0.7	0.9	1.0

ISO	ae = 0.7 x D Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	Feed fz in mm/tooth in relation to milling cutter diameter in mm HC4410		
						XCNT07 SN-TR XCNW07 SN	XCNT09 SN-TR XCNw12 SN	XCNT12 SN-TR XCNW07 SN
P	Unalloyed structural steel	Up to 700	St-52	1.0052	240-300	1.6	2.0	2.4
P	Machining steel	Up to 700	9 SMn 28	1.0715	240-300	1.6	2.0	2.4
P	Alloyed case-hardened steel	Up to 950	16 MnCr 5	1.7131	220-280	1.6	2.0	2.4
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	180-240	1.6	2.0	2.4
K	Grey cast iron	100 - 400	GG 25	0.6025	200-260	1.5	2.0	1.2
K	Alloyed grey cast iron	150-250	GGL-NiCr 35 2	0.6678	160-200	1.5	2.0	1.2
K	Ductile iron	400 - 800	GGG 60	0.7060	200-240	1.5	2.0	2.5
K	Malleable cast iron	350 - 700	GTS 55	0.8155	160-200	1.1	1.3	1.5

ATORN® Chamfer and centring milling cutter 45°

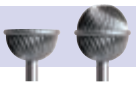


- Please adjust these guideline values according to clamping operation and machine set-up!

260126.... 260127....

Vc = 50-60 m/min. f = 0.03-0.05 mm/rev

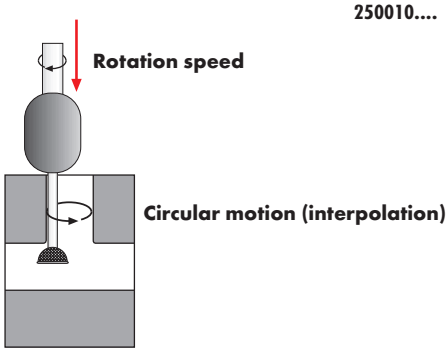
Deburring tool Orbitool® for internal machining



250010.... 250011....

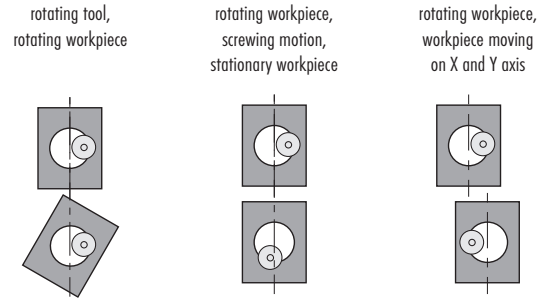
1. Rotational speed rpm
The tool rotates in a clockwise direction. The higher the rotational speed, the more material is removed. Limiting factors include the rotational speed of the machine spindle and the desired surface quality. The recommended rotational speed for ORBITOOL® DEBURRING TOOLS is between 2000 and 8000 rpm.
A lower rotational speed reduces vibrations and produces a better finish.
Harder materials require higher rotational speeds.

2. Feed rate
The feed rate determines the material removal rate and the form of the cutting edges of the intersecting boreholes. For softer materials, e.g. aluminium, smaller feed rates produce chamfers instead of a radius. Feed rates of 0.05 to 0.6 mm per circular motion of the tool are recommended.



3. Rotational speed of the circular motion
There are three options for moving ORBITOOL® DEBURRING TOOLS in the workpiece bore:
Recommended rotational speed range for the circular motion: 20 - 100 min^{-1}

The circular motion diameter calculation is:
D = Dh - Ds
D = diameter of the circular motion
Dh = diameter of the bore
D = ORBITOOL® DEBURRING TOOL end milling cutter diameter



Note
The abrasion capacity of the tool increases with the stiffness of the tool clamping. The flexibility of the tool shank allows almost universal application. However, if the shank lengths of the ORBITOOL® DEBURRING TOOL are too short, particularly with smaller shank diameters, this may cause permanent deformation of the tool shank. For delicate machining processes, sensitive surfaces or insufficient shank lengths, a flexible spacer (optional) can be used to remedy this. Threaded bores can also be easily deburred. The protective disc of the milling tool protects the thread profile from damage.

palbit High feed-rate milling cutter HIFEED 6410

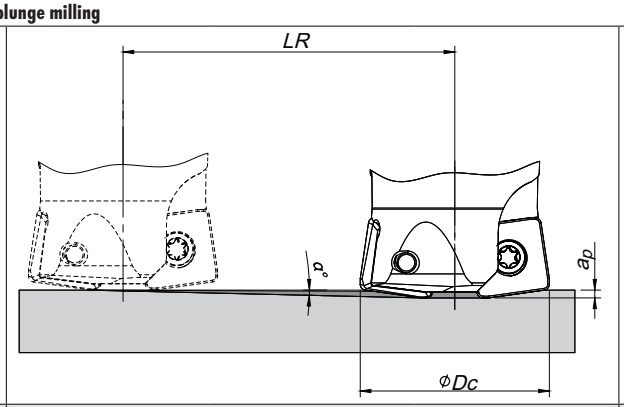


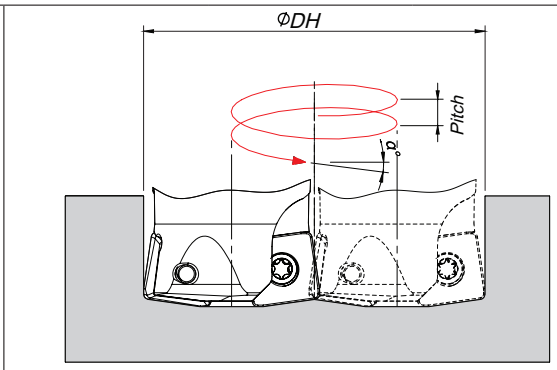
- ae = 0,7 x D
- PH7... = Cooling: air
- Please adjust these guideline values according to clamping operation and machine set-up!

260218....
260219....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Feed fz/tooth	Cutting speed Vc m/min				
						◄ Wear resistance				Toughness ►
						PH7910	PH7920	PH7930	PH7740	PHM740
						++	±	±	--	--
P	Unalloyed structural steel	Up to 700	St-52	1.0052	0,4 - 1,8	160 - 280	150 - 230	140 - 220	100 - 180	
P	Tempering steel	500 - 950	42 CrMo4	1.7225	0,4 - 1,8	150 - 230	140 - 220	130 - 180	90 - 170	
P	Tempering steel	950 -1300	43CrMo4	1.3563	0,3 - 1,5	140 - 190	130 - 180	100 - 170	80 - 140	
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	0,4 - 1,3			130 - 220	100 - 180	100 - 180
M	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	0,4 - 1,3			120 - 180	90 - 150	90 - 150
M	Duplex	700 - 950	X2 CrNiMoN 22-5-3	1.4462	0,1 - 1,0			70 - 140	70 - 120	70 - 120
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	0,5 - 1,8	160 - 350	150 - 310			
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	0,5 - 1,8	150 - 300	140 - 260			
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	0,5 - 1,5	120 - 360	100 - 220			
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	0,4 - 1,0			35 - 65	25 - 60	25 - 60
Usage conditions: ++ = good ± = average -- = difficult										

Ramping and helical plunge milling

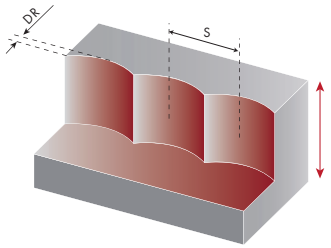




ØDc	Ramping			Helical plunge milling		
	a°	ap max.	LR min.	ØDH min.	ØDH max.	Pitch max. / U
20	15	1	3,2	26,4 -	- 38	6 17
25	9,5	1	6,0	36,4 -	- 48	5 12
32	5,5	1	10,4	50,4 -	- 62	5 9
35	4,5	1	12,7	56,4 -	- 68	5 8
42	3,5	1	16,3	70,4 -	- 82	5 7

Plunging

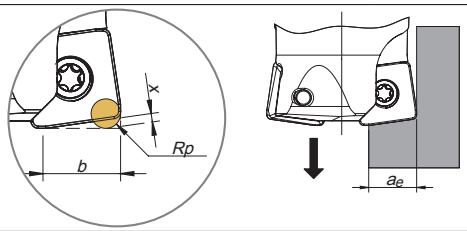
L ≤ 3Dc	L > 3Dc	S max.
fz (mm/z)		
0,08 - 0,15	0,05 - 0,1	S max. = $\sqrt{}$ Dc x DR - DR²



S max. and DR (depending on diameter Dc)

DR	Dc				
	20	25	32	35	42
1	4,4	4,9	5,6	5,8	6,4
2	6,0	6,8	7,7	8,1	8,9
3	7,1	8,1	9,3	9,8	10,8
4	8,0	9,2	10,6	11,1	12,3
5	8,7	10	11,6	12,2	13,6
6	9,2	10,7	12,5	13,2	14,7

Programming



Indexable cutting inserts	Rp	X	b	ae
SO...0803..	2,0	0,8	6,8	6,3

palbit High feed-rate milling cutter HIFEED 06690

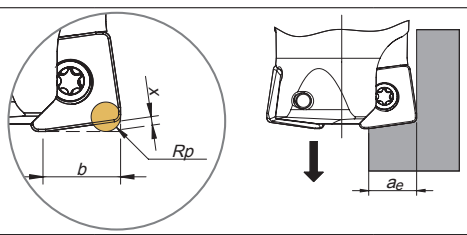


- ae = 0,7 x D
- PH7... = Cooling: air
- Please adjust these guideline values according to clamping operation and machine set-up!

260221....
260220....

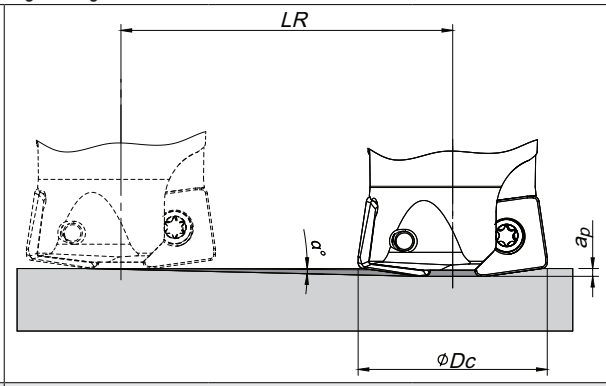
ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Feed fz/tooth	Cutting speed Vc m/min				
						◄ Wear resistance				Toughness ►
						PH7910	PH7920	PH7930	PH7740	PHM740
						++	±	±	--	--
P	Unalloyed structural steel	Up to 700	St-52	1.0052	0,5 - 2,0	160 - 280	150 - 230	140 - 220	100 - 180	
P	Tempering steel	500 - 950	42 CrMo4	1.7225	0,5 - 2,0	150 - 230	140 - 220	130 - 180	90 - 170	
P	Tempering steel	950 -1300	43CrMo4	1.3563	0,5 - 1,8	140 - 190	130 - 180	100 - 170	80 - 140	
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	0,5 - 1,8			130 - 220	100 - 180	100 - 180
M	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	0,5 - 1,8			120 - 180	90 - 150	90 - 150
M	Duplex	700 - 950	X2 CrNiMoN 22-5-3	1.4462	0,5 - 1,8			70 - 140	70 - 120	70 - 120
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	0,5 - 2,0	160 - 350	150 - 310		120 - 240	
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	0,5 - 2,0	150 - 300	140 - 260		100 - 200	
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	0,5 - 1,8	120 - 260	100 - 220		80 - 150	
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	0,4 - 1,3			35 - 65	25 - 60	25 - 60
Usage conditions: ++ = good ± = average -- = difficult										

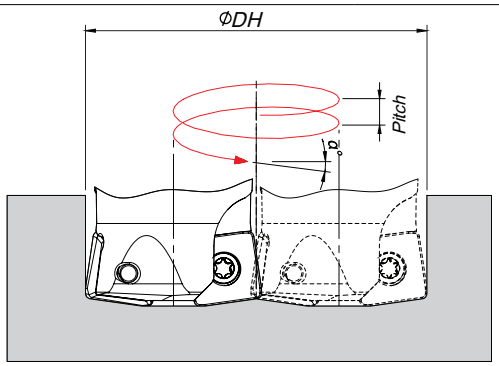
Programming



Indexable cutting inserts	Rp	X	b	ae
SO...13M5..	2,5	1,1	10,5	10,0

Ramping and helical plunge milling

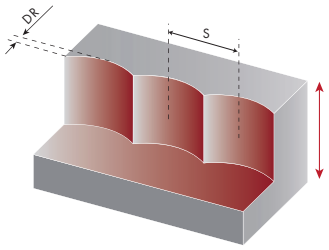




ØDc	Ramping			Helical plunge milling		
	a°	ap max.	LR min.	ØDH min.	ØDH max.	Pitch max. / U
32	10	1,5	6	43 -	- 62	6 16
35	9	1,5	9,5	49 -	- 68	6 16
42	6,4	1,5	13,4	63 -	- 82	7 14
50	4,3	1,5	19,9	79 -	- 98	6 11
52	4	1,5	21,5	83 -	- 102	6 10
63	3	1,5	28,6	105 -	- 124	6 10
66	2,6	1,5	33	111 -	- 130	6 9
80	2	1,5	43	139 -	- 158	6 8

Plunging

L ≤ 3Dc	L > 3Dc	S max.
fz (mm/z)		
0,1 - 0,2	0,07 - 0,14	S max. = $\sqrt{}$ Dc x DR - DR²



S max. and DR (depending on diameter Dc)

DR	Dc							
	32	35	42	50	52	63	66	80
1	5,6	5,8	6,4	7,0	7,1	7,9	8,1	8,9
2	7,7	8,1	8,9	9,8	10,0	11,0	11,3	12,5
3	9,3	9,8	10,8	11,9	12,1	13,4	13,7	15,2
4	10,6	11,1	12,3	13,6	13,9	15,4	15,7	17,4
5	11,6	12,2	13,6	15,0	15,3	17,0	17,5	19,4
6	12,5	13,2	14,7	16,2	16,6	18,5	19,0	21,1
7	13,2	14,0	15,7	17,3	17,7	19,8	20,3	22,6
8	13,9	14,7	16,5	18,3	18,8	21,0	21,5	24,0
9	14,4	15,3	17,2	19,2	19,7	22,0	22,6	25,3
10	14,8	15,8	17,9	20,2	20,5	23,0	23,7	26,5

palbit High feed-rate milling cutter LINEPRO 20090



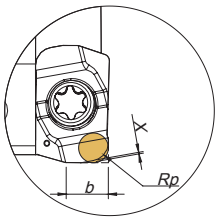
- ae = 0,7 x D
- PH7... = Cooling: air
- Please adjust these guideline values according to clamping operation and machine set-up!

260240....
260239....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Feed fz/tooth			Cutting speed Vc m/min	
								◄ Wear resistance	Toughness ►
								PH7920	PH7930
					XPET 06...LP	XPET 06...HF	XPHW 06...MH	±	--
P	Unalloyed structural steel	Up to 700	St-52	1.0052	0,05 - 0,07	0,4 - 0,8	0,05 - 0,12	180 - 240	160 - 220
P	Tempering steel	500 - 950	42 CrMo4	1.7225	0,05 - 0,07	0,4 - 0,8	0,05 - 0,12	170 - 250	150 - 230
P	Tempering steel	950 -1300	43CrMo4	1.3563	0,05 - 0,07	0,4 - 0,6	0,05 - 0,12	160 - 210	140 - 190
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	0,05 - 0,07	0,4 - 0,8			130 - 220
M	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	0,05 - 0,07	0,4 - 0,6			120 - 180
M	Duplex	700 - 950	X2 CrNiMoN 22-5-3	1.4462	0,05 - 0,07	0,4 - 0,6			70 - 140
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	0,05 - 0,07	0,4 - 0,8		160 - 350	160 - 350
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	0,05 - 0,07	0,4 - 0,8		150 - 320	150 - 300
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	0,05 - 0,07	0,4 - 0,8		130 - 280	120 - 260
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	0,05 - 0,07	0,4 - 0,6			35 - 65
Usage conditions: ++ = good ± = average -- = difficult									

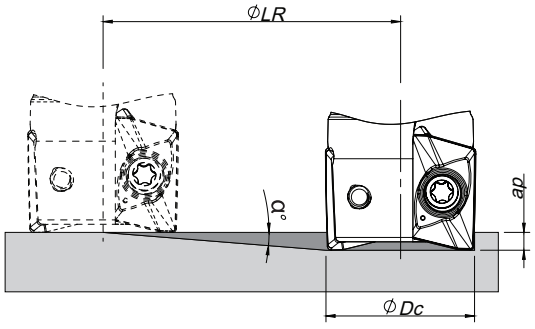
	ae	Vc	fz	ap mm
Grooving	100%	< 20%	< 20%	1 - 3
Side milling	< 50%	> 8%	> 8%	1 - 4
	≤ 25%	> 12%	> 12%	1 - 4

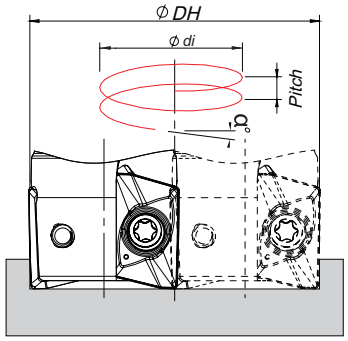
Programming



Indexable cutting inserts	Rp	X	b
XPET 05 HF	1,1	0,84	2,3

Ramping and helical plunge milling





ØDc	Ramping			Helical plunge milling		
	a°	ap max.	LR min.	ØDH min.	ØDH max.	Pitch max. / U
10	5,5	4	41,5	17,2 -	- 18,4	2,2 2,5
12	4,0	4	57,2	21,2 -	- 22,4	2,0 2,3
16	2,5	4	91,6	29,2 -	- 30,4	1,8 2,0
17	2,2	4	104,1	31,2 -	- 32,4	1,7 1,9
20	1,9	4	120,6	37,2 -	- 38,4	1,8 1,9
21	1,6	4	143,2	39,2 -	- 40,4	1,6 1,7
25	1,3	4	171,0	47,2 -	- 48,4	1,6 1,7
32	1,0	4	229,2	61,2 -	- 62,4	1,6 1,7

palbit High feed-rate milling cutter LINEPRO 20190



- ae = 0,7 x D
- PH5... = Cooling: air or emulsion
- PH7... = Cooling: air
- Please adjust these guideline values according to clamping operation and machine set-up!

260243....
260242....
260241....

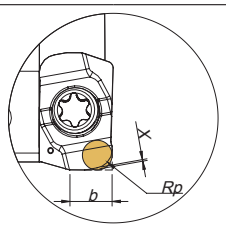
ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min						
					◄ Wear resistance						Toughness ►
					PH7603	PH0910	PH5705	PH7920	PH7930	PH 5740	PHS740
					++	++	++	±	±	--	--
P	Unalloyed structural steel	Up to 700	St-52	1.0052	200 - 260			160 - 220	140 - 200		120 - 150
P	Tempering steel	500 - 950	42 CrMo4	1.7225	190 - 270			150 - 230	130 - 180		110 - 170
P	Tempering steel	950 -1300	43CrMo4	1.3563	180 - 230			140 - 190	100 - 170		100 - 130
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006					130 - 220		
M	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301					120 - 180		
M	Duplex	700 - 950	X2 CrNiMoN 22-5-3	1.4462					70 - 140		
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155			160 - 390	160 - 350	140 - 260	120 - 240	
K	Grey cast iron	Up to 260 HB	GG 25	0.6025			150 - 320	150 - 300	130 - 220	110 - 200	
K	Ductile iron	Up to 280 HB	GGG 60	0.7060			120 - 260	120 - 260	100 - 180	90 - 170	
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535		350 - 1.400					
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718					35 - 65		
H	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	120 - 230						

Usage conditions: ++ = good ± = average -- = difficult

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Feed fz/tooth				
					XPET 10..LP	XPET10..MP	XPET 10..LN	XPET..HF	XPHW 10..MH
P	Unalloyed structural steel	Up to 700	St-52	1.0052	0,08 - 0,2	0,10 - 0,25		0,4 - 0,8	0,1 - 0,25
P	Tempering steel	500 - 950	42 CrMo4	1.7225	0,08 - 0,2	0,10 - 0,2		0,4- 0,8	0,1 - 0,25
P	Tempering steel	950 -1300	43CrMo4	1.3563	0,08 - 0,15	0,10 - 0,2		0,4 - 0,6	0,1 - 0,25
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	0,08 - 0,2	0,10 - 0,2		0,4 - 0,7	
M	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	0,08 - 0,2	0,10 - 0,2		0,4 - 0,7	
M	Duplex	700 - 950	X2 CrNiMoN 22-5-3	1.4462	0,08 - 0,15	0,10 - 0,2		0,4 - 0,6	
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	0,08 - 0,2	0,10 - 0,25		0,5 - 0,8	
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	0,08 - 0,2	0,10 - 0,25		0,5 - 0,8	
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	0,08 - 0,2	0,10 - 0,2		0,5 - 0,6	
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535			0,07 - 0,25		
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	0,05 - 0,07			0,4 - 0,6	
H	Hardened materials up to 60 HRc		X153CrMoV12	1.2379					0,08 - 0,15

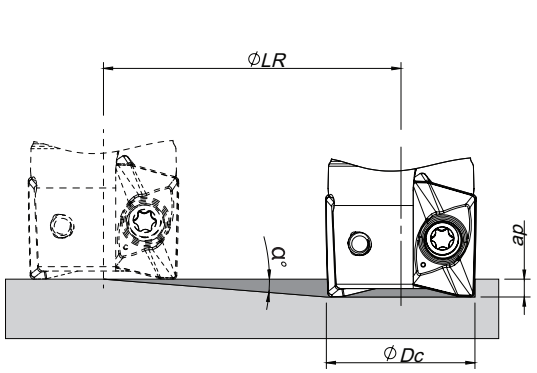
	ae	Vc	fz	ap mm
Grooving	100%	< 20%	< 20%	2 - 4
Side milling	< 50%	> 8%	> 8%	3 - 6
	≤ 25%	> 12%	> 12%	7 - 9

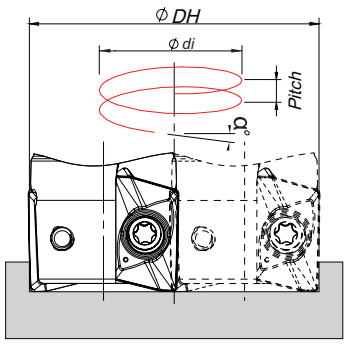
Programming



Indexable cutting inserts	Rp	X	b
XPET 10 HF	1,6	0,33	3,45

Ramping and helical plunge milling





ØDc	Ramping			Helical plunge milling		
	a°	ap max.	LR min.	ØDH min.	ØDH max.	Pitch max. / U
16	7,5	10	76	27,6 -	- 30,4	4,8 6,0
17	7	10	81,4	29,6 -	- 32,4	5,9 5,9
20	5	10	114,3	35,6 -	- 38,4	4,3 5,1
22	4,5	10	127,1	39,6 -	- 42,4	4,3 5,0
25	3,5	10	163,5	45,6 -	- 48,4	4,0 4,5
27	3	10	190,8	49,6 -	- 52,4	3,7 4,2
32	2,5	10	229	59,6 -	- 62,4	3,8 4,2
40	1,7	10	336,9	75,6 -	- 78,4	3,3 3,6
50	1,3	10	440,7	95,6 -	- 98,4	3,2 3,4
63	1	10	572,9	121,6 -	- 124,4	3,2 3,4

palbit High feed-rate milling cutter LINEPRO 20290



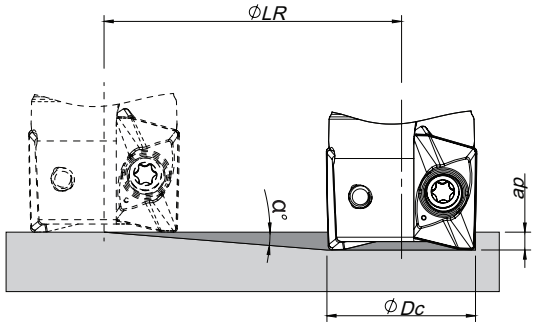


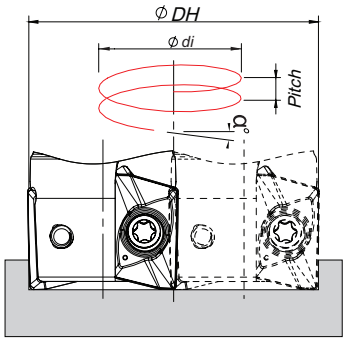
260245....
260244....

- ae = 0,7 x D
- PH5... = Cooling: air or emulsion
- PH7... = Cooling: air
- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Feed fz/tooth	Cutting speed Vc m/min					
						◄ Wear resistance					Toughness ►
						PH0910	PH5705	PH7920	PH5740	PHS740	PH7740
						++	++	±	--	--	--
P	Unalloyed structural steel	Up to 700	St-52	1.0052	0,1 - 0,35			160 - 280		140 - 220	140 - 220
P	Tempering steel	500 - 950	42 CrMo4	1.7225	0,1 - 0,35			150 - 230		130 - 180	130 - 180
P	Tempering steel	950 -1300	43CrMo4	1.3563	0,1 - 0,30			140 - 190		100 - 170	100 - 170
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	0,1 - 0,30						130 - 220
M	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	0,1 - 0,30						120 - 180
M	Duplex	700 - 950	X2 CrNiMoN 22-5-3	1.4462	0,1 - 0,25						70 - 140
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	0,1 - 0,35		160 - 380	160 - 350	150 - 300		140 - 260
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	0,1 - 0,35		150 - 320	150 - 300	140 - 250		130 - 220
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	0,1 - 0,30		120 - 280	120 - 260	120 - 220		100 - 180
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	0,1 - 0,35	350 - 1.400					
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	0,1 - 0,20						30 - 65
Usage conditions: ++ = good ± = average -- = difficult											

Ramping and helical plunge milling





ØDc	Ramping			Helical plunge milling		
	a°	ap max.	LR min.	ØDH min.	ØDH max.	Pitch max. / U
32	3,8	17	255,9	58,8 -	- 62,4	5,6 6,3
40	2,7	17	360,5	74,8 -	- 78,4	5,2 5,7
50	2,0	17	186,8	94,8 -	- 98,4	4,9 5,3
63	1,5	17	649,2	120,8 -	- 124,4	4,8 5,0
80	1,0	17	973,9	154,8 -	- 158,4	4,1 4,3
100	0,8	17	1.217,5	194,8 -	- 198,4	4,2 4,3
125	0,7	17	1.498,4	244,8 -	- 264,4	4,3 4,4

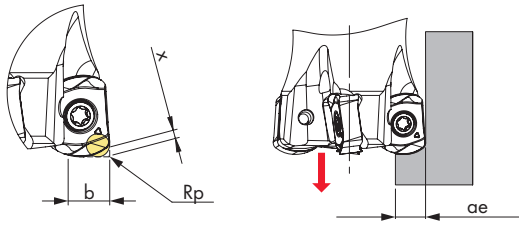
palbit High feed-rate milling cutter TETRAFEED



- ae = 0,7 x D — **260311....**
- PH7... = Cooling: air — **260312....**
- Please adjust these guideline values according to clamping operation and machine set-up! — **260313....**

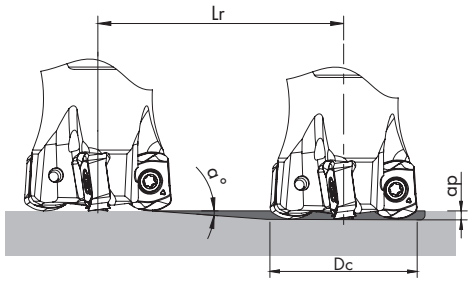
ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Feed fz/tooth	Cutting speed Vc m/min			
						◄ Wear resistance			Toughness ►
						PHP920	PHP930	PHH930	PHS740
					XNKU 06..-MP	±	±	±	--
P	Unalloyed structural steel	Up to 700	St-52	1.0052	0,05 - 1,50	180 - 250	160 - 230		160 - 230
P	Tempering steel	500 - 950	42 CrMo4	1.7225	0,05 - 1,50	170 - 210	150 - 190		150 - 190
P	Tempering steel	950 -1300	43CrMo4	1.3563	0,05 - 1,50	160 - 200	140 - 180		140 - 180
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	0,05 - 1,40			130 - 170	120 - 180
M	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	0,05 - 1,40			100 - 160	100 - 150
M	Duplex	700 - 950	X2 CrNiMoN 22-5-3	1.4462	0,05 - 1,40			80 - 140	70 - 130
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	0,05 - 1,50	180 - 320			160 - 300
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	0,05 - 1,50	170 - 280			150 - 260
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	0,05 - 1,50	100 - 240			80 - 220
S	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	0,05 - 1,30			30 -75	30 - 70
Usage conditions: ++ = good ± = average -- = difficult									

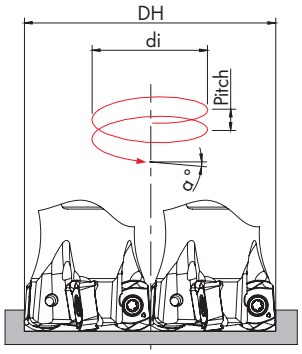
Programming



Indexable cutting inserts	Rp	X	b	a_e
XNKU 06T310-MP	1,8	0,4	3,6	3,4

Ramping and helical plunge milling

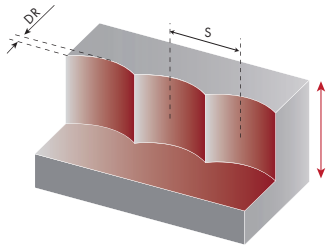




ØDc	Ramping			Helical plunge milling		
	a°	ap max.	LR min.	ØDH min.	ØDH max.	Pitch max. / U
16	0,5	1	114,6	24,8 -	- 30,0	0,2 0,3
20	0,5	1	114,6	32,8 -	- 38,0	0,3 0,4
25	0,8	1	71,6	42,8 -	- 48,0	0,7 1,0
32	0,8	1	71,6	56,8 -	- 62,0	1,0 1,3
35	0,5	1	114,6	62,8 -	- 68,0	0,7 0,9
40	0,4	1	143,2	72,8 -	- 78,0	0,7 0,8
42	0,4	1	143,2	76,8 -	- 82,0	0,7 0,8
50	0,3	1	191,0	92,8 -	- 98,0	0,7 0,7
52	0,3	1	191,0	96,8 -	- 102,0	0,7 0,8
63	0,25	1	229,2	118,8 -	- 124,0	0,7 0,8

Plunging

L ≤ 3Dc	L > 3Dc	S max.
fz (mm/z)		
0,08 - 0,15	0,05 - 0,10	S max. = $\sqrt{}$ Dc x DR - DR^2



S max. and DR (depending on diameter Dc)										
DR mm	Dc mm XNKU 06..									
1	3,9	4,4	4,9	5,6	5,8	6,2	6,4	7,0	7,1	7,9
2	5,3	6,0	6,8	7,7	8,1	8,7	8,9	9,8	10,0	11,0
3	6,2	7,1	8,1	9,3	9,8	10,5	10,8	11,9	12,1	13,4

palbit High feed-rate milling cutter ALUPRO 76090



- ae = 0,7 x D
- Please adjust these guideline values according to clamping operation and machine set-up!

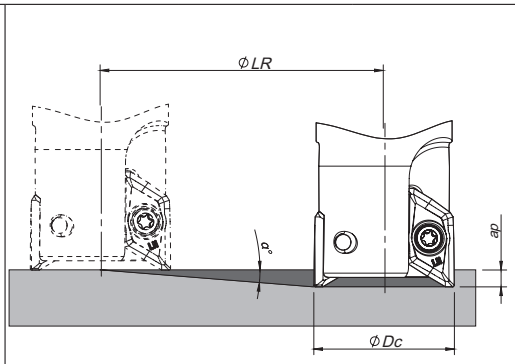
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260253....

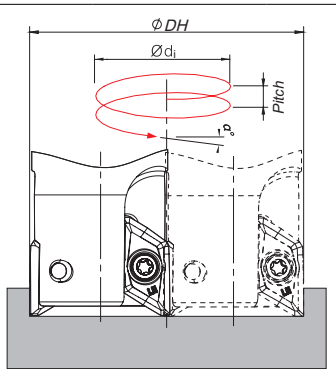
ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Vc m/min PH0910	Cutting width ae mm	Cutting depth ap mm	Feed fz/tooth
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	350 - 3.000	≤ 25% ØDc	≤ 5	0,35 - 0,40
							5 - 10	0,30 - 0,35
							10 - 15	0,25 - 0,30
						≤ 50% ØDc	≤ 5	0,35 - 0,40
							5 - 10	0,30 - 0,35
							10 - 15	0,25 - 0,30
						≤ 75% ØDc	≤ 5	0,30 - 0,35
							5 - 10	0,25 - 0,30
							10 - 15	0,20 - 0,25

Permissible rotational speed

ØDc	Ø20	Ø25	Ø32	Ø4	Ø50	Ø63	Ø80	Ø100
min^{-1}	40.000	38.000	33.000	29.000	24.000	21.000	19.000	16.000

Ramping and helical plunge milling





Indexable cutting inserts - radius	ØDc	Ramping			Helical plunge milling		
		a°	ap max.	LR min.	ØDH min.	ØDH max.	Pitch max. / U
≤ 3,2 mm	20	23	15	35,3	36,2 -	- 38,4	21,6 24,5
	25	21	15	39,1	46,2 -	- 48,4	25,6 28,2
	32	15	15	56,0	60,2 -	- 62,4	23,7 25,6
	40	10	15	85,1	76,2 -	- 78,4	20,0 21,3
	50	8	15	106,7	96,2 -	- 98,4	20,4 21,4
	63	6	15	142,7	122,2 -	- 124,4	19,5 20,3
	80	4	15	214,5	156,2 -	- 158,4	16,7 172
	100	2,5	15	343,6	196,2 -	- 198,4	13,2 13,5
≥ 4,0 mm	20	23	13	37,1	36,2 -	- 38,4	18,5 21,0
	25	21	13	40,3	46,2 -	- 48,4	22,3 24,6
	32	15	13	56,2	60,2 -	- 62,4	21,3 22,9
	40	10	13	90,3	76,2 -	- 78,4	17,0 18,0
	50	8	13	109,9	96,2 -	- 98,4	17,8 18,7
	63	6	13	140,2	122,2 -	- 124,4	17,9 18,6
	80	4	13	220,7	156,2 -	- 158,4	14,6 15,1
	100	2,5	13	309,2	196,2 -	- 198,4	13,2 13,5

ATORN® Plunge milling cutter for non-ferrous metals



260400.... **260402....**
260401.... **260403....**
270104....

- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Vc m/min	
		HC4410	HW4410
N	Aluminium alloys, long-chipping 100-400 N/mm²	1500 - 3000 1000 - 2000	1000 - 2000 800 - 1600
N	Aluminium alloys, short-chipping up to 400 N/mm²	1000	800
N	Copper alloys, long-chipping 150-250 N/mm²	300	250
N	Copper alloys, short-chipping up to 500 N/mm²	500	400
N	Magnesium alloys, long-chipping 160-300 N/mm²	500	400
N	Thermoplastics 350-700 N/mm²	400	300
N	Thermosets 20-40 N/mm²	200	150

ISO	Maximum feed per tooth = fz (mm/z.)	
	VPGT 1604... ap max. = 8 mm	VCGT 2205... ap max. = 9 mm
N	0.35	0.5
N	0.3	0.4

ATORN® High-speed milling cutter range



264001 - 264014

- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	Feed fz/tooth HC4640				Cutting speed Vc m/min	Feed fz/tooth HC4540 / HC4544			Cutting speed Vc m/min	Feed fz/tooth HC4410 / HC4430			
						ADKX 0602	ADKX 0903	ADKX 1204	ADKX 1705		ADKX 0903	ADKX 1204	ADKX 1705		ADKX 0602	ADKX 0903	ADKX 1204	ADKX 1705
P	Unalloyed structural steel	Up to 700	St-52	1.0052	180 - 220	0.08	0.12	0.18	0.30					220 - 240	0.06	0.10	0.14	0.24
P	Machining steel	Up to 700	9 SMn 28	1.0715	180 - 220	0.08	0.12	0.18	0.30					220 - 240	0.06	0.10	0.14	0.24
P	Unalloyed tempered steel	500 - 950	Ck45	1.1191	180 - 220	0.08	0.12	0.18	0.30					220 - 240	0.06	0.10	0.14	0.24
P	Alloyed case-hardened steel	Up to 950	16 MnCr 5	1.7131	180 - 220	0.06	0.10	0.16	0.24					220 - 240	0.05	0.08	0.14	0.20
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	180 - 220	0.05	0.08	0.14	0.20					220 - 240	0.04	0.06	0.11	0.16
P	Cast steel	Up to 950	GS 40	1.0416	180 - 220	0.06	0.10	0.16	0.24					220 - 240	0.05	0.08	0.14	0.20
M	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301	180 - 220	0.05	0.08	0.10	0.16	180 - 240	0.08	0.12	0.18					
M	Stainless steel, sulphurised	500 - 950	X 12 CrMoS 17	1.4104	180 - 220	0.05	0.08	0.10	0.16	180 - 240	0.08	0.12	0.18					
M	Stainless steel, martensitic	500 - 950	X 10 Cr 13	1.4006	180 - 220	0.05	0.08	0.10	0.16	180 - 240	0.08	0.12	0.18					
K	Grey cast iron	100 - 400	GG 25	0.6025										220 - 280	0.12	0.18	0.25	0.35
K	Alloyed grey cast iron	150-250	GGL-NiCr 35 2	0.6678										220 - 280	0.12	0.18	0.25	0.35
K	Ductile iron	400 - 800	GGG 60	0.7060										140 - 180	0.08	0.12	0.20	0.30
K	Malleable cast iron	350 - 700	GTS 55	0.8155										140 - 180	0.08	0.12	0.2	0.30
N	Al. alloy long-chipping	Up to 550	AlMg 3	3.3535										300 - 400	0.10	0.12	0.15	0.20
N	Al. alloy short-chipping	Up to 400	G-AlSi 12	3.2581										300 - 400	0.10	0.12	0.15	0.20
N	Copper alloy long-chipping	300 - 700	MS 63	2.0320										200 - 250	0.10	0.12	0.15	0.20
N	Copper alloy short-chipping	Up to 500	MS 58	2.0402										200 - 250	0.10	0.12	0.15	0.20
N	Thermoplastic	40 - 70	PVC, acrylic glass											250-300	0.12	0.20	0.25	0.35
N	Thermoset	20 - 40	Bakelite											200 - 250	0.12	0.20	0.25	0.35
S	Titanium alloy	Up to 950	TiAl6V4	3.7165						60 - 80	0.08	0.12	0.15	60 - 80	0.05	0.08	0.12	0.15
S	Titanium alloy	900 - 1400	TiAl6Sn 2	3.7174						40 - 60	0.08	0.12	0.15	40 - 60	0.05	0.08	0.12	0.15
S	Nickel-based alloy	Up to 950	NiCr12Al6MoNb	2.4670						40 - 60	0.08	0.12	0.15	40 - 60	0.05	0.08	0.12	0.15
S	Nickel-based alloy	900 - 1400	NiCr19Fe19NbMo	Inconel 718						20 -40	0.08	0.12	0.15	20 - 40	0.05	0.08	0.12	0.15

ISO	Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	Feed fz/tooth HC4410 / HW4410			
						ADHX 0602	ADHX 0903	ADHX 1204	ADHX 1705
P	Unalloyed structural steel	Up to 700	St-52	1.0052					
P	Machining steel	Up to 700	9 SMn 28	1.0715					
P	Unalloyed tempered steel	500 - 950	Ck45	1.1191					
P	Alloyed case-hardened steel	Up to 950	16 MnCr 5	1.7131					
P	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343					
P	Cast steel	Up to 950	GS 40	1.0416					
M	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301					
M	Stainless steel, sulphurised	500 - 950	X 12 CrMoS 17	1.4104					
M	Stainless steel, martensitic	500 - 950	X 10 Cr 13	1.4006					
N	Al. alloy long-chipping	Up to 550	AlMg 3	3.3535	800-1000	0.20	0.25	0.30	0.40
N	Al. alloy short-chipping	Up to 400	G-AlSi 12	3.2581	350-500	0.10	0.12	0.15	0.20
N	Copper alloy long-chipping	300 - 700	MS 63	2.0320	350-500	0.12	0.15	0.20	0.30
N	Copper alloy short-chipping	Up to 500	MS 58	2.0402	250-300	0.10	0.12	0.15	0.20
N	Thermoplastic	40 - 70	PVC, acrylic glass		250-300	0.12	0.20	0.24	0.35
N	Thermoset	20 - 40	Bakelite		200-350	0.12	0.20	0.24	0.35
S	Titanium alloy	Up to 950	TiAl6V4	3.7165					
S	Titanium alloy	900 - 1400	TiAl6Sn 2	3.7174					
S	Nickel-based alloy	Up to 950	NiCr12Al6MoNb	2.4670					
S	Nickel-based alloy	900 - 1400	NiCr19Fe19NbMo	Inconel 718					

Cutting depth ap / mm			
ADHX ..0602	ADHX ..0903	ADHX ..1204	ADHX ..1705
5.5	8.5	12.0	16.5

palbit Tangential shoulder milling cutter 90° TGPLUS 90190



260247....
260248....

- ae = 0,7 x D
- PH7... = Cooling: air
- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Feed fz/tooth (LNXT 13..MP)	Cutting speed Vc m/min ◄ Wear resistance Toughness ►			
						PHS320	PH7920	PHS740	PH7740
						++	±	±	--
P	Unalloyed structural steel	Up to 700	St-52	1.0052	0,10 - 0,35		180 - 250	140 - 170	140 - 170
P	Tempering steel	500 - 950	42 CrMo4	1.7225	0,10 - 0,30		170 - 210	130 - 160	130 - 160
P	Tempering steel	950 -1300	43CrMo4	1.3563	0,10 - 0,20		160 - 200	110 - 140	110 - 140
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	0,10 - 0,30				120 - 180
M	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	0,10 - 0,25				100 - 150
M	Duplex	700 - 950	X2 CrNiMoN 22-5-3	1.4462	0,10 - 0,20				70 - 130
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	0,10 - 0,35	180 - 320	170 - 300		
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	0,10 - 0,30	160 - 270	150 - 250		
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	0,10 - 0,25	100 - 230	90 - 210		
Usage conditions: ++ = good ± = average -- = difficult									

palbit High feed-rate milling cutter TOROMILL 24590 / 25090 / 25190





260281....
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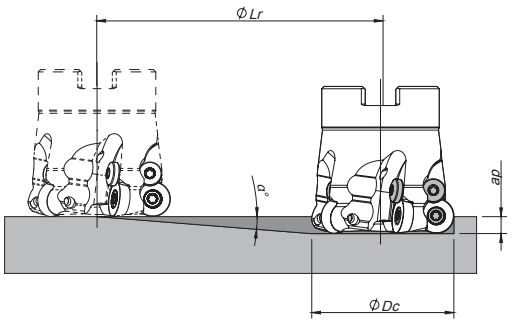
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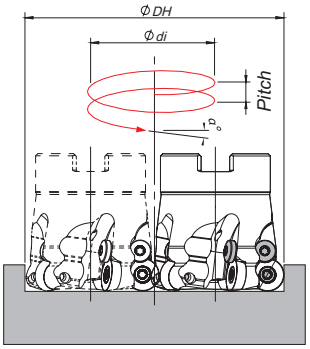
- ae = 0,7 x D
- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min ◄ Wear resistance Toughness ►						
					PH6103	PH6910	PH6920	PH6125	PH6135	PH6740	PDP410
					++	++	±	±	--	--	--
P	Unalloyed structural steel	Up to 700	St-52	1.0052	180 - 300	180 - 250	150 - 230	160 - 190	150 - 180	130 - 160	
P	Tempering steel	500 - 950	42 CrMo4	1.7225	180 - 250	170 - 210	140 - 220	140 - 180	140 - 170	120 - 150	
P	Tempering steel	950 -1300	43CrMo4	1.3563	180 - 230	160 - 200	130 - 180	130 - 160	120 - 150	100 - 130	
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155		170 - 300	150 - 280			130 - 250	
K	Grey cast iron	Up to 260 HB	GG 25	0.6025		150 - 250	130 - 230			110 - 220	
K	Ductile iron	Up to 280 HB	GGG 60	0.7060		90 - 210	80 - 190			80 - 170	
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535							
H	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	120 - 240						
Usage conditions: ++ = good ± = average -- = difficult											

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	RD..07		RD..10		RD..12		RD..16		RD..20	
					fz mm/t	ap mm	fz mm/t	ap mm	fz mm/t	ap mm	fz mm/t	ap mm	fz mm/t	ap mm
P	Unalloyed structural steel	Up to 700	St-52	1.0052	≤ 0,18	≤ 1,5	≤ 0,24	≤ 2,5	≤ 0,27	≤ 2,5	≤ 0,33	≤ 3,5	≤ 0,33	≤ 5
P	Tempering steel	500 - 950	42 CrMo4	1.7225	≤ 0,18	≤ 1,5	≤ 0,24	≤ 2,5	≤ 0,25	≤ 2,5	≤ 0,33	≤ 3,5	≤ 0,33	≤ 5
P	Tempering steel	950 -1300	43CrMo4	1.3563	≤ 0,15	≤ 1,5	≤ 0,21	≤ 2,5	≤ 0,20	≤ 2,5	≤ 0,27	≤ 3,5	≤ 0,27	≤ 5
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	≤ 0,20	≤ 1,5	≤ 0,25	≤ 2,5	≤ 0,24	≤ 2,5	≤ 0,35	≤ 3,5	≤ 0,35	≤ 5
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	≤ 0,20	≤ 1,5	≤ 0,25	≤ 2,5	≤ 0,24	≤ 2,5	≤ 0,35	≤ 3,5	≤ 0,35	≤ 5
K	Ductile iron	Up to 280 HB	GGG 60	0.7060	≤ 0,18	≤ 1,5	≤ 0,22	≤ 2,5	≤ 0,22	≤ 2,5	≤ 0,32	≤ 3,5	≤ 0,32	≤ 5
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	≤ 0,45	≤ 1,5	≤ 0,80	≤ 2,5						
H	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	≤ 0,12	≤ 1,5	≤ 0,18	≤ 2,5	≤ 0,18	≤ 2,5	≤ 0,25	≤ 3,5	≤ 0,20	≤ 5

Ramping and helical plunge milling





Indexable cutting inserts	ØDc	Ramping			Helical plunge milling		
		a°	ap max.	LR min.	ØDH min.	ØDH max.	Pitch max. / U
RD..07	15	9,4	3,5	21,1	23 -	- 30	4 7
	16	8	3,5	24,9	25 -	- 32	3 7
	20	6	3,5	33,3	33 -	- 40	4 6
RD..10	20	25	5	10,7	30 -	- 40	14 29
	25	22	5	12,4	40 -	- 50	19 31
	30	13,5	5	20,8	50 -	- 60	15 22
	35	12	5	23,5	60 -	- 70	16 23
	42	10	5	28,4	74 -	- 84	17 23
	52	7	5	40,7	94 -	- 104	16 20
RD..12	24	17	6	19,6	36 -	- 48	11,1 23
	25	16,2	6	20,7	38 -	- 50	11 22
	35	12	6	28,2	58 -	- 70	15 23
	42	10,3	6	33	72 -	- 84	17 23
	50	64	6	53,5	88 -	- 100	13 17
	52	6	6	57,1	92 -	- 104	13 17
	66	3,5	6	79,8	120 -	- 132	12 15
	80	2,5	6	104,1	148 -	- 160	12 14
RD..16	32	20	8	22	48 -	- 64	18 36
	35	18	8	24,6	54 -	- 70	19 35
	52	113	8	34,7	88 -	- 104	26 37
	66	8,5	8	53,5	116 -	- 132	23 30
	80	6	8	76,1	144 -	- 160	21 26
	125	3,5	8	130,8	234 -	- 250	20 24
	160	2,5	8	183,2	304 -	- 320	19 21
RD..20	80	6	10	76,1	140 -	- 160	19 26
	100	5	10	91,4	180 -	- 200	21 27
	125	4,5	10	101,6	230 -	- 250	25 30
	160	3	10	152,6	300 -	- 320	23 26

ATORN® Milling inserts WNEU 04





262566 ....
262567 ....
262568 ....

295830 ....

- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min		
					HC 4620	HC 4430	HC 4630
P	Structural steel	700 - 950	Ck45	1.1191	160 - 250	150 - 240	100 - 200
	Tempering steel	500 - 950	42 CrMo4	1.7225	130 - 220	130 - 220	
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	110 - 200	110 - 200	
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006			60 - 130
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301			110 - 130
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	120 - 240	120-200	
	Ductile iron	Up to 280 HB	GGG 60	0.7060	120 - 220		

Application	ae / Ø	Feed fz mm / tooth			Vc - Correction factor
Contact width	100%	0.05	0.1	0.15	1
Shoulder milling	25%	0.06	0.12	0.2	1.3
	10%	0.08	0.16	0.3	1.5
	5%	0.11	0.22	0.4	1.6
Centre chip thickness hm		0.06	0.09	0.16	-

ATORN® Milling inserts WNEU 08




262565 ....

295828 ....

- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min		
					HC 4620	HC 4430	HC 4630
P	Structural steel	700 - 950	Ck45	1.1191	175 - 280	150 - 230	100 - 170
	Tempering steel	500 - 950	42 CrMo4	1.7225	145 - 215	130 - 180	
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	130 - 190	110 - 160	
M	Stainless steel, ferr./marten.	500 - 950	X10Cr13	1.4006			80 - 130
	Stainless steel, austenitic	500 - 950	X 5 CrNi 18 10	1.4301		80 - 160	110 - 180
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	140 - 270	120-230	
	Ductile iron	Up to 280 HB	GGG 60	0.7060	100 - 160		

Application	ae / Ø	Feed fz mm / tooth			Vc - Correction factor
Contact width	100%	0.05	0.1	0.15	1
Shoulder milling	25%	0.06	0.12	0.2	1.3
	10%	0.08	0.16	0.3	1.5
	5%	0.11	0.22	0.4	1.6
Centre chip thickness hm		0.06	0.09	0.16	-

palbit High feed-rate milling cutter LINEPRO 40095 / 40595 / 41095



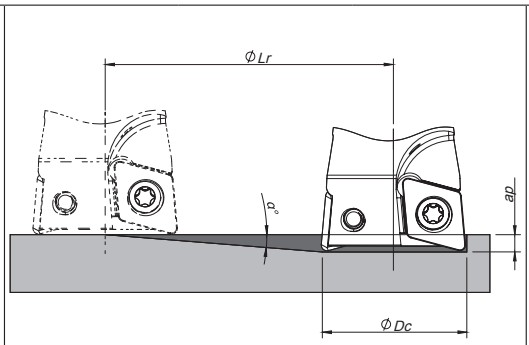

260295....
260293....
260294....

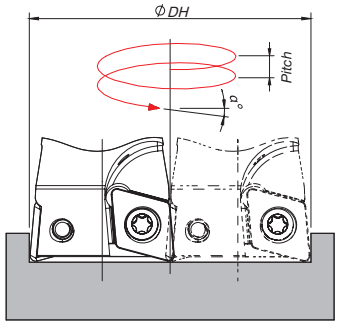
- ae = 0,7 x D
- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min ◄ Wear resistance Toughness ►					PCD	PCBN
					PHD103	PH6103	PH6910	PH6125	PH6135	PDP410	PBH910
					++	++	++	±	--		
P	Unalloyed structural steel	Up to 700	St-52	1.0052		180 - 300	180 - 250	160 - 190	150 - 180		
P	Tempering steel	500 - 950	42 CrMo4	1.7225		180 - 250	170 - 210	140 - 180	140 - 170		
P	Tempering steel	950 -1300	43CrMo4	1.3563		180 - 230	160 - 200	130 - 160	120 - 150		
K	Malleable cast iron	Up to 280 HB	GTS 55	0.8155			170 300	160 - 290			
K	Grey cast iron	Up to 260 HB	GG 25	0.6025			150 - 250	140 - 240			
K	Ductile iron	Up to 280 HB	GGG 60	0.7060			90 - 210	80 - 200			
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	300 - 1.000					800 - 3.000	
H	Hardened materials up to 60 HRc		X153CrMoV12	1.2379		120 - 260					200 - 600
Usage conditions: ++ = good ± = average -- = difficult											

Indexable cutting inserts	fz mm/t		ap Rec.
	ae	Vc	
XD.. 04	0,1 - 0,2	0,1 - 0,15	0,1 - 0,5
XD.. 06	0,15 - 0,3	0,1 - 0,25	0,2 - 0,8
XD.. 10	0,15 - 0,35	0,1 - 0,3	0,2 - 0,8

Ramping and helical plunge milling





Indexable cutting inserts	ØDc	Ramping			Helical plunge milling		
		a°	ap max.	LR min.	ØDH min.	ØDH max.	Pitch max. / U
XDHW 04...	10	7,3	0,8	6,2	18 -	- 20	3,2 4
	12	5,3	0,8	8,6	22 -	- 24	2,9 3,5
XDHW 06...	16	8	1	7,1	30 -	- 32	6,2 7,1
	20	5,7	1	10	38 -	- 40	5,6 6,3
	25	4	1	14,3	48 -	- 50	5,1 5,5
XDHW 10...	25	8,7	1	6,5	48 -	- 50	11,1 12
	35	5,2	1	11	68 -	- 70	9,4 10
	42	4	1	14,3	82 -	- 84	8,8 9,2
	52	3	1	19,1	102 -	- 104	8,2 8,6
	66	2,3	1	24,9	130 -	- 132	8,1 8,3
	80	1,8	1	31,8	158 -	- 160	7,7 7,9

Application recommendations: ball-nose cutter PFB



260530 .... **260532 ....** **260534 ....**
260531 .... **260533 ....**

Recommended qualities for various material groups

Carbide quality	Insert geometry	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H
XP3320	PFB-SP	○	○	○		●	○
XP3225	PFB-SP PFB-Q	●	●		● 1)	○	
XP3310	PFB-SH			●			●
XC4505	PFB-D				● 2)		

1) = best choice for aluminium and copper alloys
2) = best choice for graphite and composite materials

Cutting data recommendations, insert type SP, SH, Q

- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Cutting depth ap / mm	Feed fz in mm/tooth in relation to milling cutter diameter in mm			
							6 - 8	10 - 12	16 - 20	25 - 32
P	Machining steel	Up to 575	9 SMn 28	1.0715	300	0.02 x D	0.1	0.12	0.14	0.18
P	Tempering steel	Up to 900	42 CrMo4	1.7225	300	0.02 x D	0.07	0.1	0.12	0.14
P	Tempering steel	Up to 1100	43CrMo4	1.3563	250	0.02 x D	0.07	0.1	0.12	0.14
M	Stainless steel, ferr./marten.	Up to 800	X10 Cr13	1.4006	250	0.02 x D	0.07	0.12	0.14	0.17
K	Grey cast iron	Up to 300	GG 25	0.6025	400	0.02 x D	0.12	0.14	0.18	0.22
K	Alloyed grey cast iron	Up to 600	GGL-NiCr 35 2	0.6678	300	0.02 x D	0.1	0.12	0.14	0.18
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	500	0.03 x D	0.12	0.14	0.18	0.22
N	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	300	0.03 x D	0.11	0.13	0.17	0.22
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	90	0.02 x D	0.06	0.08	0.11	0.13
S	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	50	0.015 x D	0.04	0.05	0.06	0.06
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	180	0.015 x D	0.05	0.06	0.07	0.07
H	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	200	0.015 x D	0.06	0.07	0.08	0.01
H	Hardened materials up to 64 HRc		100Cr6	1.2067	150	0.01 x D	0.05	0.06	0.07	0.07

Cutting data recommendations, insert type D

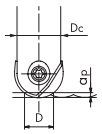
- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Cutting depth ap / mm	Feed fz in mm/tooth in relation to milling cutter diameter in mm			
							6 - 8	10 - 12	16 - 20	25 - 32
N	Fibre-reinforced plastics		CFRP, GFRP	3.3535	300	0.03 x D	0.11	0.13	0.17	0.2
N	Graphite		C8000	2.1016	500	0.03 x D	0.14	0.17	0.21	0.25

Cutting depth and actual cutting diameter

Cutting depth ap / mm		Actual cutting diameter / mm														
Dc	R	0.1	0.2	0.3	0.4	0.5	0.8	1	1.5	2	2.5	3	3.5	4	4.5	5
6	3	1.5	2.2	2.6	3	3.3	4.1									
7	3.5	1.6	2.3	2.8	3.3	3.6	4.5									
8	4	1.8	2.5	3	3.5	3.9	4.8									
10	5	2	2.8	3.4	3.9	4.4	5.4	6	7.1							
12	6	2.2	3.1	3.7	4.3	4.8	6	6.6	7.9	8.9						
16	8	2.5	3.6	4.3	5	5.6	7	7.7	9.3	10.6	11.6					
20	10	2.8	4	4.9	5.6	6.2	7.8	8.7	10.5	12	13.2	14.3	15.2			
25	12.5	3.2	4.5	5.4	6.3	7	8.8	9.8	11.9	13.6	15	16.2	17.3	18.3		
30	15	3.5	4.9	6	6.9	7.7	9.7	10.8	13.1	15	16.6	18	19.3	20.4	21.4	22.4
32	16	3.6	5	6.2	7.1	7.9	10	11.1	13.5	15.5	17.2	18.7	20	21.2	22.2	23.2

Determining the actual cutting diameter D

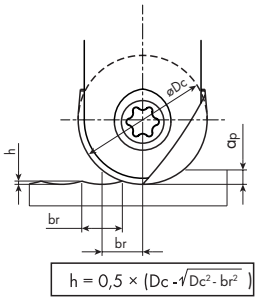


$$D = 2\sqrt{apx(Dc-ap)}$$

Recommended line width / surface quality

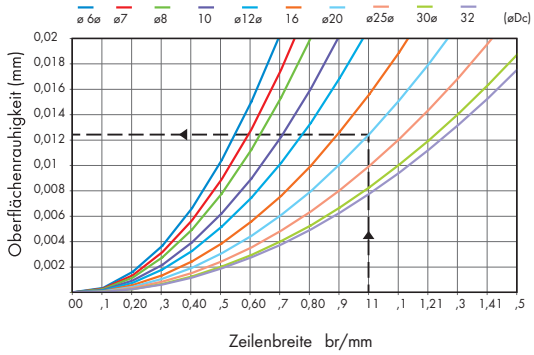
Dc mm	6	7	8	10	12	16	20	25	30	32
Pf mm	0.4	0.45	0.5	0.6	0.7	0.8	1	1.2	1.3	1.4
h mm	0.007	0.007	0.008	0.009	0.01	0.01	0.012	0.014	0.014	0.015

Theoretical milled surface roughness process



$$h = 0{,}5 \times (Dc - \sqrt{Dc^2 - br^2})$$

Dc = 20 mm
br = 1 mm
→h = 0,0125 mm



Usage recommendations for torus milling cutter PFR



260540 .... **260542 ....** **260544 ....**
260541 .... **260543 ....**

Cutting data recommendations, insert type ST, SH

• Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min			Cutting depth ap / mm	Feed fz in mm/tooth in relation to milling cutter diameter in mm		
					2.5 x D	5 x D	8 x D		8 - 10	12 - 16	20 - 32
P	Machining steel	Up to 575	9 SMn 28	1.0715	200	x 0.8	x 0.6	0.05 x D	0.2	0.22	0.25
P	Tempering steel	Up to 900	42 CrMo4	1.7225	180			0.05 x D	0.18	0.22	0.25
P	Tempering steel	Up to 1100	43CrMo4	1.3563	150			0.05 x D	0.15	0.18	0.2
M	Stainless steel, ferr./marten.	Up to 800	X10 Cr13	1.4006	150			0.03 x D	0.12	0.15	0.18
K	Grey cast iron	Up to 300	GG 25	0.6025	200			0.05 x D	0.2	0.25	0.3
K	Alloyed grey cast iron	Up to 600	GGL-NiCr 35 2	0.6678	150			0.05 x D	0.15	0.2	0.25
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	300			0.05 x D	0.25	0.3	0.35
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	50			0.02 x D	0.08	0.1	0.15
S	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	30			0.02 x D	0.05	0.8	0.12
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	80			0.025 x D	0.08	0.1	0.15
H	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	120			0.03 x D	0.1	0.12	0.18
H	Hardened materials up to 64 HRc		100Cr6	1.2067	60			0.02 x D	0.05	0.08	0.1

Cutting data recommendations, insert type D

• Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min			Cutting depth ap / mm	Feed fz in mm/tooth in relation to milling cutter diameter in mm		
					2.5 x D	5 x D	8 x D		8 - 10	12 - 16	20 - 32
N	Fibre-reinforced plastics		CFRP, GFRP	3.3535	200	x 0.8	x 0.6	0.5 x D	0.1	0.15	0.2
N	Graphite		C8000	2.1016	250			0.1 x D	0.4	0.5	0.5

Cutting data recommendations, steel shank, finish milling

• Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Cutting depth ap / mm	Feed fz in mm/tooth in relation to milling cutter diameter in mm			
							8	10 - 12	16 - 20	25 - 32
P	Machining steel	Up to 575	9 SMn 28	1.0715	450	0.02 x D	0.1	0.12	0.14	0.18
P	Tempering steel	Up to 900	42 CrMo4	1.7225	450	0.02 x D	0.07	0.1	0.12	0.14
P	Tempering steel	Up to 1100	43CrMo4	1.3563	375	0.02 x D	0.07	0.1	0.12	0.14
M	Stainless steel, ferr./marten.	Up to 800	X10 Cr13	1.4006	375	0.02 x D	0.07	0.12	0.14	0.17
K	Grey cast iron	Up to 300	GG 25	0.6025	600	0.02 x D	0.12	0.14	0.18	0.22
K	Alloyed grey cast iron	Up to 600	GGL-NiCr 35 2	0.6678	450	0.02 x D	0.1	0.12	0.14	0.18
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	750	0.03 x D	0.12	0.14	0.18	0.22
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	120	0.02 x D	0.06	0.08	0.11	0.13
S	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	70	0.015 x D	0.04	0.05	0.06	0.06
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	270	0.015 x D	0.05	0.06	0.07	0.07
H	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	300	0.015 x D	0.06	0.07	0.08	0.1
H	Hardened materials up to 64 HRc		100Cr6	1.2067	230	0.01 x D	0.05	0.06	0.07	0.07

Cutting data recommendations, solid carbide shank, finish milling

• Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min			Cutting depth ap / mm	Feed fz in mm/tooth in relation to milling cutter diameter in mm			
					Short	Long	Extra-long		8	10 - 12	16 - 20	25 - 32
P	Machining steel	Up to 575	9 SMn 28	1.0715	540	480	360	0.02 x D	0.1	0.12	0.14	0.18
P	Tempering steel	Up to 900	42 CrMo4	1.7225	540	480	360	0.02 x D	0.07	0.1	0.12	0.14
P	Tempering steel	Up to 1100	43CrMo4	1.3563	450	400	300	0.02 x D	0.07	0.1	0.12	0.14
M	Stainless steel, ferr./marten.	Up to 800	X10 Cr13	1.4006	450	400	300	0.02 x D	0.07	0.12	0.14	0.17
K	Grey cast iron	Up to 300	GG 25	0.6025	720	640	480	0.02 x D	0.12	0.14	0.18	0.22
K	Alloyed grey cast iron	Up to 600	GGL-NiCr 35 2	0.6678	540	480	360	0.02 x D	0.1	0.12	0.14	0.18
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	600	800	600	0.03 x D	0.12	0.14	0.18	0.22
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	150	144	110	0.02 x D	0.06	0.08	0.11	0.13
S	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	80	80	60	0.015 x D	0.04	0.05	0.06	0.06
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	290	288	220	0.015 x D	0.05	0.06	0.07	0.07
H	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	340	320	240	0.015 x D	0.06	0.07	0.08	0.1
H	Hardened materials up to 64 HRc		100Cr6	1.2067	260	240	180	0.01 x D	0.05	0.06	0.07	0.07

ATORN® Cutting data recommendations for tangential shoulder milling cutter 90°

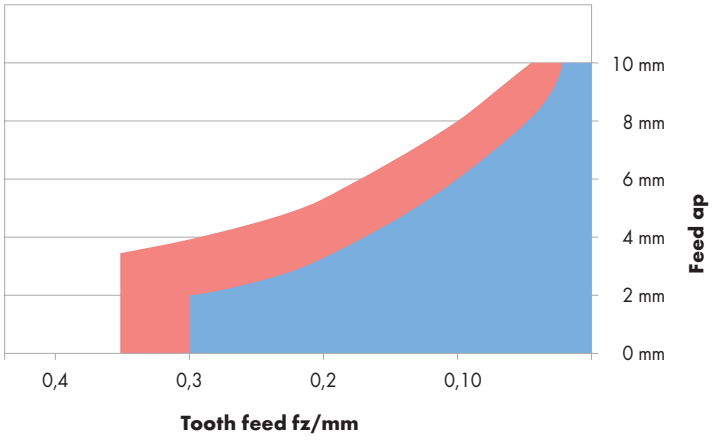
- Please adjust these guideline values according to clamping operation and machine set-up!



262566 ....

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Carbide quality	Cutting speed Vc m/min
P	Machining steel	Up to 700	9 SMn 28	1.0715	HC4640	200 - 220
	Unalloyed structural steel	Up to 700	St-52	1.0052		200 - 220
	Structural steel	700 - 950	Ck45	1.1191		200 - 220
	Tempering steel	500 - 950	42 CrMo4	1.7225		180 - 200
	Cast steel	Up to 950	GS 40	1.0416		140 - 160
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131		140 - 180
	Tempering steel	950 -1300	43CrMo4	1.3563		120 - 160
	Nitriding steel	950 - 1300	31CrMoV9	1.8519		120 - 140
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343		120 - 140
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	HC4420	200 - 240
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678		160 - 200
	Ductile iron	Up to 280 HB	GGG 60	0.7060		140 - 180
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155		160 - 200

Recommended tooth feed fz with a_e = 0.6 x d1



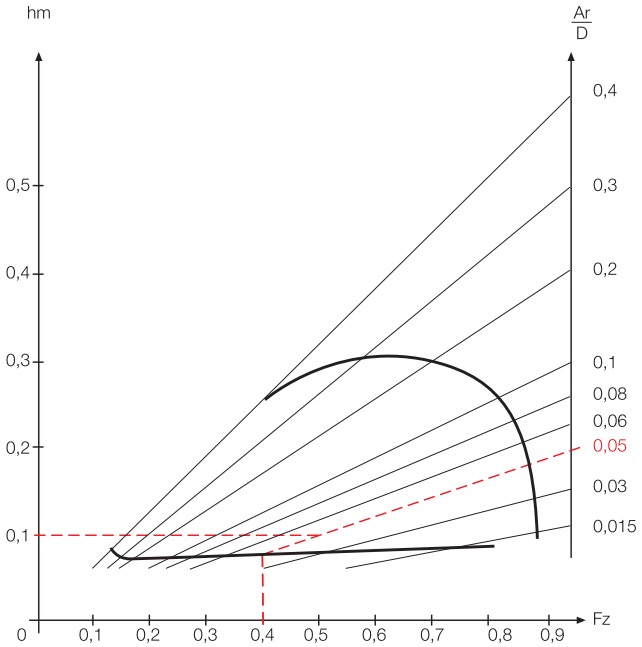
ATORN® Disc milling cutter



262600.... 262610....

- The average **chip thickness hm** should be at least 0.1 mm to prevent the indexable inserts becoming worn quickly. For groove milling the chip thickness is much smaller than the feed per tooth. Thus the ratio between **groove depth Ar** and **milling cutter diameter D** must be observed. The average chip thickness and the corresponding minimum feed rate is illustrated in the following diagram.

Example: milling cutter Ø D 160 mm
Groove depth Ar = 8 mm
Ar / D = 0.05
Result: Feed per tooth fz = 0.4 mm



ISO	Materials group	Type	Cutting speed Vc m/min
P	Carbon steel	HC 4630 TiAlN-coated	200
	Tool steel	HC 4630 TiAlN-coated	150
M	Stainless steel, austenitic	HC 4630 TiAlN-coated	160
K	Grey cast iron	HW 4415	100
		HC 4630 TiAlN-coated	140
N	Al. alloys	HW 4415	350

Turning tools

Indexable cutting inserts

INFO	Overview of indexable cutting insert geometries	813
	ISO indexable cutting inserts negative	814
	ISO indexable cutting inserts positive	845
	ISO indexable cutting inserts, ceramic	870
	ISO indexable cutting inserts CBN and PKD	871

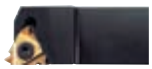
Monoblock carrier tools for internal and external machining

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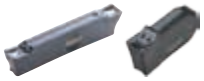
Carbide monoblock turning tools

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Thread turning

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	Threading inserts	936
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	Grooving inserts for thread cutter holders	947

Recess turning systems

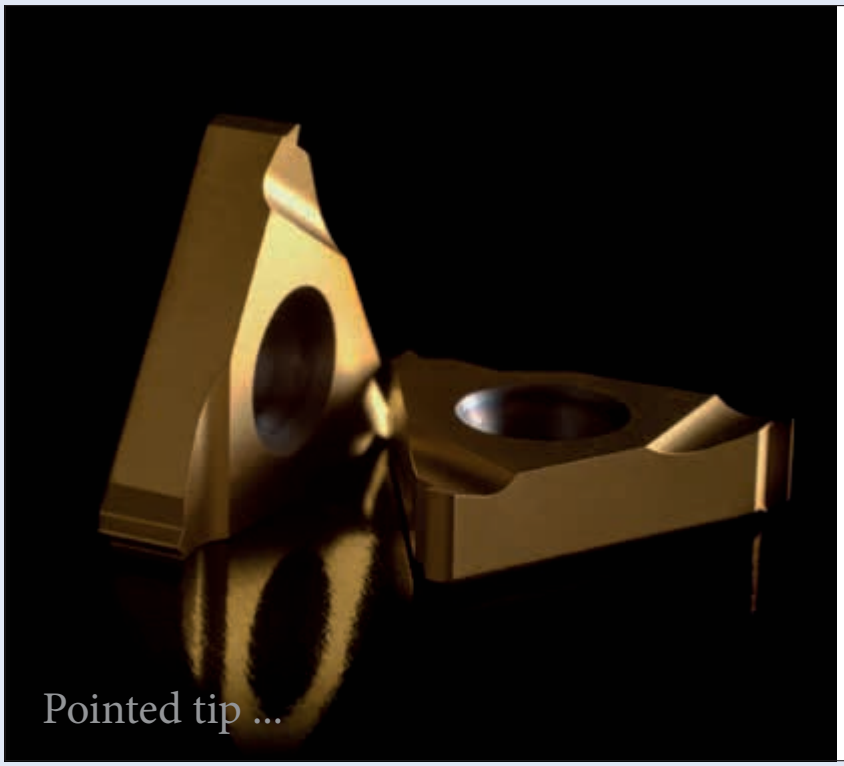
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Summary of icons used for drilling tools

INFO

Cutting material	HM e.g.: carbide metal	CBN e.g.: cubic boron nitride	PKD e.g.: polycrystalline diamond
Coating	TiN Titanium-nitride coating	TiCN Titanium-carbo-nitride coating	TiAlN Titanium-aluminium-nitride coating
Standard	DIN 4951-4965 Complies with DIN 4951 - 4965		
Shank design	Corresponds to straight shank		
Thread	M e.g. metric thread	MF e.g. metric fine thread	BSW e.g. British Standard Whitworth
Thread angle	55° Thread angle is 55°		
Coolant design	With internal coolant supply		
Cutting data	i Vc/fz Further information such as cutting data recommendations is available in the technical appendix		



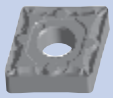
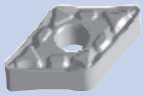
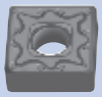
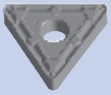
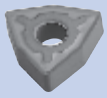
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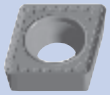
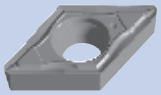
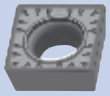
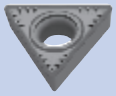
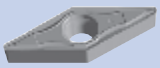
ATORN®
Performance demands quality

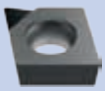
Overview of geometries of indexable cutting inserts

ISO designation codes in the INFO section

INFO

negative		P	M	K	N	S
	CN...	814	817	820	821	821
	DN...	821	825	828	828	829
	KNUX	829				
	SN...	830	832	833		833
	TN...	834	836	837		838
	VN...	838	839			
	WN..	840	842	844		845

positive		P	M	K	N	S
	CC...	845	849	851	851	
	DC...	852	855	857	857	
	RC...	858				
	SC...	858	859	859	860	
	TC...	861		863	863	
	VB...	864	865			
	VC...	866	867		869	
	WC...	869	869			

	Ceramics	870
	CBN	872
	PKD	875



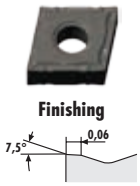
ISO indexable cutting inserts CN.. ISO P

ISO P

- 80° rhombic, negative 0°

Chip breaker FP1 negative

F finishing	M medium	R roughing
●	○	-



Finishing

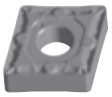
ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
CNMG 090304-FP1	●		○				ACP 15 T	10	**366704** 0015	6,10
CNMG 120404-FP1	●		○				ACP 15 T	10	366704 0115	8,45
	●	○	○				ACP 25 T	10	366704 0225	8,45
CNMG 120408-FP1	●		○				ACP 15 T	10	366704 0315	8,45
	●	○	○				ACP 25 T	10	366704 0425	8,45

ISO	ACP 15 T	ACP 25 T
ISO P steel	Vc = 180 - 400	Vc = 100 - 240
ISO M stainless steel		Vc = 70 - 210
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.07 - 0.25 ap = 0.25 - 2.5	

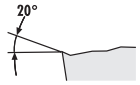
3135

Chip breaker FP negative

F finishing	M medium	R roughing
●	-	-



Finishing



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
CNMG 120404-FP	●		○				HC 7620	10	**311151** 2612	10,35
CNMG 120408-FP	●		○				HC 7620	10	311151 2712	10,35

ISO	HC 7620
ISO P steel	Vc = 150 - 350
ISO K cast iron	Vc = 170 - 290
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.08 - 0.25 ap = 0.2 - 2.0

3108

Chip breaker FP2 negative

F finishing	M medium	R roughing
●	○	-



Finishing

ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
CNMX 120404-FP2	●		○				ACP 15 T	10	**366705** 0115	8,45
CNMX 120408-FP2	●		○				ACP 15 T	10	366705 0215	8,45

ISO	ACP 15 T
ISO P steel	Vc = 180 - 400
ISO K cast iron	Vc = 140 - 520
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.1 - 0.6 ap = 0.5 - 4.0

3135

Chip breaker FFP, CERMET negative design

F finishing	M medium	R roughing
●	○	●



Finishing/medium machining



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
CNMG 120404-FFP	●	○	○				ATU 10 T	10	**366612** 0140	7,65
CNMG 120408-FFP	●	○	○				ATU 10 T	10	366612 0240	7,65

ISO	ATU 10 T
ISO P steel	Vc = 160 - 270
ISO M stainless steel	Vc = 130 - 240
ISO K cast iron	Vc = 220 - 350
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.2 ap = 0.1 - 2.0

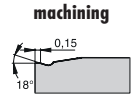
3135

Chip breaker LC negative

F finishing	M medium	R roughing
○	●	-



Finishing/medium machining



palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
CNMG 120404-LC	●						PH 5115	10	**333605** 0122	7,15
	●						PH 5125	10	333605 0123	7,15
CNMG 120408-LC	●						PHG 115	10	333605 0264	8,20
	●						PH 5125	10	333605 0223	7,15
CNMG 120412-LC	●						PH 5115	10	333605 0322	7,15
	●						PH 5125	10	333605 0323	7,15

ISO	PH 5115	PH 5125	PHG 115
ISO P steel	Vc = 110 - 350	Vc = 100 - 295	Vc = 110 - 350
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.07 - 0.50 ap = 0.60 - 3.00		

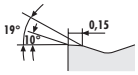
3148

Chip breaker MP5 negative

F finishing	M medium	R roughing
○	●	○



Medium machining



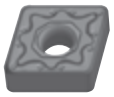
ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
CNMG 120404-MP5	●		○				ACP 15 T	10 **366613** 0115	7,65
	●	○	○				ACP 25 T	10 366613 0225	7,65
CNMG 120408-MP5	●		○				ACP 15 T	10 366613 0315	7,65
	●	○	○				ACP 25 T	10 366613 0425	7,65
	●	○					ACP 35 T	10 366613 0535	7,65
CNMG 120412-MP5	●		○				ACP 15 T	10 366613 0615	7,65
	●	○	○				ACP 25 T	10 366613 0725	7,65
	●	○					ACP 35 T	10 366613 0835	7,65

3135

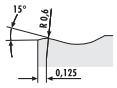
ISO	ACP 15 T	ACP 25 T	ACP 35 T
ISO P steel	Vc = 180 - 400	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel		Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 140 - 520	Vc = 130 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.15 - 0.4 ap = 0.25 - 5.0		

Chip breaker MP negative

F finishing	M medium	R roughing
-	●	-



Medium machining



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
CNMG 120404-MP	●		○				HC 7620	10 **311155** 2612	10,35
	●						HC 7630	10 311155 2613	10,35
CNMG 120408-MP	●		○				HC 7610	10 311155 2711	10,35
	●		○				HC 7620	10 311155 2712	10,35
	●						HC 7630	10 311155 2713	10,35
CNMG 120412-MP	●		○				HC 7610	10 311155 2811	10,35
	●		○				HC 7620	10 311155 2812	10,35
	●						HC 7630	10 311155 2813	10,35
CNMG 160608-MP	●		○				HC 7620	10 311155 4012	16,90
CNMG 160612-MP	●		○				HC 7620	10 311155 4112	16,90

3108

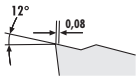
ISO	HC 7610	HC 7620	HC 7630
ISO P steel	Vc = 130 - 290	Vc = 120 - 280	Vc = 80 - 220
ISO K cast iron	Vc = 140 - 240	Vc = 150 - 260	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.15 - 0.25 ap = 0.8 - 3.0	f = 0.18 - 0.4 ap = 0.6 - 6.0	

Chip breaker MP5-HP negative

F finishing	M medium	R roughing
-	●	○



Medium machining



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
CNMG 120408-MP5	●	○	○				ACP 25 T	10 **311672** 0114	10,90
CNMG 120412-MP5	●	○	○				ACP 25 T	10 311672 0214	10,90

3147

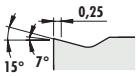
ISO	ACP 25 T
ISO P steel	Vc = 100 - 270
ISO M stainless steel	Vc = 70 - 210
ISO K cast iron	Vc = 120 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.20 - 0.45 ap = 1.0 - 4.0

Chip breaker PM negative

F finishing	M medium	R roughing
○	●	-



Medium machining



palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
CNMG 120404-PM	●		●				PHG 115	10 **333607** 0164	8,20
	●		●				PHG 125	10 333607 0165	8,20
CNMG 120408-PM	●		●				PHG 115	10 333607 0264	8,20
	●		●				PHG 125	10 333607 0265	8,20
CNMG 120412-PM	●		●				PHG 115	10 333607 0364	8,20
	●		●				PHG 125	10 333607 0365	8,20
CNMG 120416-PM	●		●				PHG 115	10 333607 0464	8,20
	●		●				PHG 125	10 333607 0465	8,20

3148

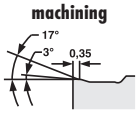
ISO	PHG 115	PHG 125
ISO P steel	Vc = 110 - 270	Vc = 100 - 240
ISO K cast iron	Vc = 110 - 270	Vc = 100 - 240
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.10 - 0.65 ap = 0.40 - 5.50	

Chip breaker RP5 negative

F finishing	M medium	R roughing
-	○	●



Roughing/medium machining



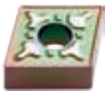
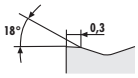
ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
CNMG 120408-RP5	●		●				HC 7810	10 **311520** 1511	10,50
	●		●				HC 7820	10 311520 1512	10,50
	●		●				HC 7830	10 311520 1513	10,50
CNMG 120412-RP5	●		●				HC 7810	10 311520 1611	10,50
	●		●				HC 7820	10 311520 1612	10,50
	●		●				HC 7830	10 311520 1613	10,50

3147

ISO	HC 7810	HC 7820	HC 7830
ISO P steel	Vc = 160 - 320	Vc = 130 - 270	Vc = 110 - 230
ISO K cast iron	Vc = 160 - 520	Vc = 130 - 440	Vc = 110 - 390
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.20 - 0.60 ap = 0.80 - 6.0		

Continued on next page >>>

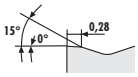
Chip breaker RP1 negative

F finishing -	M medium ○	R roughing ●	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing/medium machining 	CNMG 160608-RP1		●	○					ACP 35 T	10	**366620** 0335	14,25
	CNMG 160612-RP1		●	○	○				ACP 25 T	10	366620 0525	14,25
			●	○					ACP 35 T	10	366620 0635	14,25
	CNMG 160616-RP1		●	○	○				ACP 25 T	10	366620 0625	14,25
			●	○					ACP 35 T	10	366620 0735	14,25
	CNMG 190612-RP1		●	○	○				ACP 25 T	10	366620 0825	19,80
			●	○					ACP 35 T	10	366620 0935	19,80
	CNMG 190616-RP1		●	○	○				ACP 25 T	10	366620 1125	19,80
			●	○					ACP 35 T	10	366620 1235	19,80

3135

ISO	ACP 25 T	ACP 35 T
ISO P steel	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel	Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.7 ap = 0.5 - 7.5	

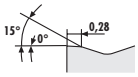
Chip breaker RP2 negative

F finishing -	M medium ○	R roughing ●	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing 	CNMG 120408-RP2		●		○				ACP 15 T	10	**366618** 0115	7,65
			●	○	○				ACP 25 T	10	366618 0225	7,65
	CNMG 120412-RP2		●		○				ACP 15 T	10	366618 0215	7,65
			●	○	○				ACP 25 T	10	366618 0325	7,65
			●	○					ACP 35 T	10	366618 0235	7,65

3135

ISO	ACP 15 T	ACP 25 T	ACP 35 T
ISO P steel	Vc = 180 - 400	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel		Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.5 ap = 0.5 - 6.0		

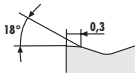
Chip breaker RP3 negative

F finishing -	M medium ○	R roughing ●	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing 	CNMG 120408-RP3		●	○	○				ACP 25 T	10	**311683** 0114	10,90

3147

ISO	ACP 25 T
ISO P steel	Vc = 100 - 270
ISO M stainless steel	Vc = 70 - 210
ISO K cast iron	Vc = 120 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.45 ap = 1.0 - 6.0

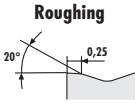
Chip breaker RP6 negative

F finishing -	M medium ○	R roughing ●	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing 	CNMG 190612-RP6		●	○	○				ACP 25 T	10	**311682** 0114	23,80

3147

ISO	
ISO P steel	Vc = 100 - 240
ISO M stainless steel	Vc = 70 - 210
ISO K cast iron	Vc = 130 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.18 - 0.5 ap = 1.0 - 5.0

Chip breaker RP7 negative

F finishing -	M medium ○	R roughing ●	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing 	CNMM 120408-RP7		●		○				ACP 15 T	10	**366703** 0115	7,65
			●	○	○				ACP 25 T	10	366703 0225	7,65
			●	○					ACP 35 T	10	366703 0335	7,65
			○	●			○		APM 25 T	10	366703 0121	7,65
	CNMM 120412-RP7		●		○				ACP 15 T	10	366703 0415	7,65
			●	○	○				ACP 25 T	10	366703 0525	7,65
			●	○					ACP 35 T	10	366703 0635	7,65
			○	●			○		APM 25 T	10	366703 0221	7,65

3135

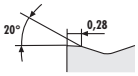
ISO	ACP 15 T	ACP 25 T	ACP 35 T	APM 25 T
ISO P steel	Vc = 180 - 400	Vc = 100 - 240	Vc = 90 - 200	Vc = 60 - 250
ISO M stainless steel		Vc = 70 - 210	Vc = 55 - 200	Vc = 40 - 250
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 250		
ISO S superalloys				Vc = 20 - 80
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.3 - 0.6 ap = 0.8 - 7.0			

Chip breaker RP8 negative up to 16 mm

F finishing	M medium	R roughing
-	○	●



Roughing



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
CNMM 120412-RP8	●		○				ACP 15 T	10	**366619** 0415	7,65
	●	○	○				ACP 25 T	10	366619 0525	7,65
	●	○					ACP 35 T	10	366619 0635	7,65
CNMM 120416-RP8	●	○	○				ACP 25 T	10	366619 0825	7,65
	●	○					ACP 35 T	10	366619 0935	7,65
CNMM 160612-RP8	●		○				ACP 15 T	10	366619 1315	13,45
	●	○	○				ACP 25 T	10	366619 1425	13,45
	●	○					ACP 35 T	10	366619 1535	13,45

3135

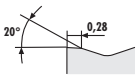
ISO	ACP 15 T	ACP 25 T	ACP 35 T
ISO P steel	Vc = 180 - 400	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel		Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.3 - 0.7 ap = 1.5 - 8.0		

Chip breaker RP8 negative from 19 mm

F finishing	M medium	R roughing
-	-	●



Roughing



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
CNMM 190612-RP8	●		○				ACP 15 T	10	**366621** 0115	19,80
	●	○	○				ACP 25 T	10	366621 0225	19,80
CNMM 190616-RP8	●	○	○				ACP 25 T	10	366621 0525	19,80
CNMM 250924-RP8	●	○	○				ACP 25 T	5	366621 1125	38,50

3135

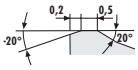
ISO	ACP 15 T	ACP 25 T
ISO P steel	Vc = 180 - 400	Vc = 100 - 240
ISO M stainless steel		Vc = 70 - 210
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.4 - 1.1 ap = 1.2 - 13.0	

Chip breaker RP9 negative from 19 mm

F finishing	M medium	R roughing
-	-	●



Roughing



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
CNMM 190616-RP9	●	○	○				ACP 25 T	10	**366622** 0125	19,80
CNMM 190624-RP9	●	○	○				ACP 25 T	10	366622 0225	19,80
CNMM 250924-RP9	●	○	○				ACP 25 T	5	366622 0325	38,50
CNMM 250932-RP9	●	○	○				ACP 25 T	5	366622 0425	38,50

3135

ISO	ACP 25 T
ISO P steel	Vc = 100 - 240
ISO M stainless steel	Vc = 70 - 210
ISO K cast iron	Vc = 120 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.5 - 1.5 ap = 2.0 - 13.0

ISO indexable cutting inserts CN.. ISO M

ISO M

- **80° rhombic, negative 0°**

Chip breaker FFM2 negative

F finishing	M medium	R roughing
●	-	-



Micro finishing



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
CNGP 120402-FFM2		●	○	○	○		APM 20 T	10	**366609** 0120	13,80
CNGP 120404-FFM2		●	○	○	○		APM 20 T	10	366609 0220	13,80
CNGP 120408-FFM2		●	○	○	○		APM 20 T	10	366609 0320	13,80
CNGP 120412-FFM2		●	○	○	○		APM 20 T	10	366609 0420	13,80

3135

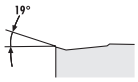
ISO	APM 20 T
ISO M stainless steel	Vc = 60 - 200
ISO K cast iron	Vc = 120 - 220
ISO N Al/non-ferrous	Vc = 100 - 600
ISO S superalloys	Vc = 20 - 50
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.08 - 0.25 ap = 0.2 - 2.5

Chip breaker FM negative

F finishing	M medium	R roughing
●	-	-



Finishing



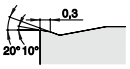
ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
CNMG 120404-FM	○	●			○		HC 7820	10	**311531** 0112	10,35
	○	●					HC 7510	10	310153 2624	10,35
		●			○		HC 7520	10	310153 2625	10,35
CNMG 120408-FM	○	●			○		HC 7820	10	311531 0212	10,35
	○	●					HC 7510	10	310153 2724	10,35
		●			○		HC 7520	10	310153 2725	10,35

3108

ISO	HC 7510	HC 7520	HC 7820
ISO P steel	Vc = 140 - 320		Vc = 140 - 190
ISO M stainless steel	Vc = 175 - 270	Vc = 170 - 260	Vc = 170 - 240
ISO S superalloys		Vc = 30 - 60	Vc = 40 - 60
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.07 - 0.16 ap = 0.4 - 1.5		

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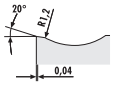
Chip breaker SF negative

F finishing ○	M medium ●	R roughing -	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Finishing/medium machining 	CNMG 120404-SF			●						PHS 215	10	**333604** 0371	9,20
				●						PHS 225	10	333604 0472	9,20
	CNMG 120408-SF			●						PHS 215	10	333604 0771	9,20
				●						PHS 225	10	333604 0872	9,20
	CNMG 120412-SF			●						PHS 215	10	333604 1171	9,20
				●						PHS 225	10	333604 1272	9,20

3148

ISO	PHS 215	PHS 225
ISO M stainless steel	Vc = 80 - 290	Vc = 55 - 240
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.10 - 0.55 ap = 0.60 - 3.0	

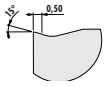
Chip breaker MM negative

F finishing -	M medium ●	R roughing -	ATORN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Medium machining 	CNMG 120404-MM			●				○		HC 7520	10	**310157** 2625	10,35
				●				○		HC 7530	10	310157 2626	10,35
	CNMG 120408-MM			●				○		HC 7520	10	310157 2725	10,35
				●				○		HC 7530	10	310157 2726	10,35
	CNMG 120412-MM			●				○		HC 7520	10	310157 2825	10,35
				●				○		HC 7530	10	310157 2826	10,35

3108

ISO	HC 7520	HC 7530
ISO M stainless steel	Vc = 150 - 240	Vc = 130 - 200
ISO S superalloys	Vc = 30 - 60	Vc = 20 - 50
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.15 - 0.25 ap = 0.8 - 3.0	

Chip breaker GS negative

F finishing ○	M medium ●	R roughing -	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Medium machining 	CNMG 120404-GS			●				●		PHH 920	10	**333577** 0194	8,55
				●				●		PHH 910	10	333577 0195	8,55
	CNMG 120408-GS			●				●		PHH 920	10	333577 0294	8,55
				●				●		PHH 910	10	333577 0295	8,55
	CNMG 120412-GS			●				●		PHH 920	10	333577 0394	8,55
				●				●		PHH 910	10	333577 0395	8,55

3148

ISO	PHH 910	PHH 920
ISO M stainless steel	Vc = 130 - 250	Vc = 110 - 220
ISO S superalloys	Vc = 25 - 70	Vc = 20 - 60
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.10 - 0.50 ap = 0.50 - 4.0	

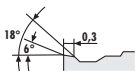
Chip breaker MM5 negative

F finishing -	M medium ●	R roughing ○	ATORN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing/medium machining 	CNMG 090304-MM5			○	●					APM 25 T	10	**366615** 0021	6,15
	CNMG 120408-MM5			○	●					APM 25 T	10	366615 0121	7,65

3135

ISO	APM 25 T
ISO P steel	Vc = 60 - 250
ISO M stainless steel	Vc = 40 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.25 - 0.5 ap = 0.5 - 4.0

Chip breaker RM5 negative

F finishing -	M medium ○	R roughing ●	ATORN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing/medium machining 	CNMG 120408-RM5			○	●					APM 25 T	10	**366616** 0121	7,65
	CNMG 120412-RM5			○	●					APM 25 T	10	366616 0221	7,65
	CNMG 160612-RM5			○	●					APM 25 T	10	366616 0421	14,25

3135

ISO	APM 25 T
ISO P steel	Vc = 80 - 250
ISO M stainless steel	Vc = 40 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.5 ap = 0.5 - 6.0

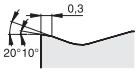
Chip breaker MM5 negative

F finishing -	M medium ●	R roughing ○	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing/medium machining 	CNMG 120404-MM5			○	●					**ACM 20 T**	10	**311677** 0112	10,90
	CNMG 120408-MM5			○	●					**ACM 20 T**	10	311677 0212	10,90

ISO	ACM 20 T
ISO P steel	Vc = 60 - 250
ISO M stainless steel	Vc = 120 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.14 - 0.4 ap = 1.0 - 4.2

3147

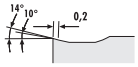
Chip breaker SS negative

F finishing -	M medium ●	R roughing ●	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing/medium machining 	CNMG 090304-SS			●						**PHS 225**	10	**333609** 0172	7,10
	CNMG 090308-SS			●						**PHS 225**	10	333609 0472	7,10
	CNMG 120404-SS			●						**PHS 215**	10	333609 0771	8,20
				●						**PHS 225**	10	333609 0772	8,20
	CNMG 120408-SS			●						**PHS 215**	10	333609 1271	8,20
	CNMG 120412-SS			●						**PHS 215**	10	333609 1771	8,20
	CNMG 160608-SS			●						**PHS 225**	10	333609 2472	17,25
	CNMG 160612-SS			●						**PHS 225**	10	333609 2672	17,25

ISO	PHS 215	PHS 225
ISO M stainless steel	Vc = 55 - 240	Vc = 55 - 240
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.10 - 1.00	f = 0.1 - 1.0
	ap = 0.6 - 8.50	

3148

Chip breaker RM (HC75..) negative

F finishing -	M medium -	R roughing ●	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing 	CNMG 120408-RM			○	●			○		**HC 7530**	10	**310161** 2726	10,35
	CNMG 120412-RM			○	●			○		**HC 7530**	10	310161 2826	10,35

ISO	HC 7530
ISO M stainless steel	Vc = 90 - 160
ISO S superalloys	Vc = 20 - 50
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.22 - 0.40 ap = 1.2 - 4.0

3108



ISO indexable cutting inserts CN.. ISO K

ISO K

- 80° rhombic, negative 0°

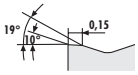
Chip breaker RK smooth negative

F finishing -	M medium ○	R roughing ●	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing/medium machining			CNMA 120408-RK	○		●				ACK 20 T	10	**366610** 0130	7,65

3135

ISO	ACK 20 T
ISO P steel	Vc = 150 - 340
ISO K cast iron	Vc = 150 - 550
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.5 ap = 0.5 - 7.5

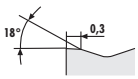
Chip breaker MK negative

F finishing -	M medium ●	R roughing ○	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing/medium machining 			CNMG 120408-MK	○		●				ACK 20 T	10	**366617** 0130	7,65
			CNMG 120412-MK	○		●				ACK 20 T	10	366617 0230	7,65

3135

ISO	ACK 20 T
ISO P steel	Vc = 150 - 340
ISO K cast iron	Vc = 150 - 550
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.5 ap = 0.5 - 5.0

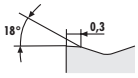
Chip breaker RK2 negative

F finishing -	M medium ○	R roughing ●	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing/medium machining 			CNMG 120408-RK2	○		●				ACK 20 T	10	**366614** 0130	7,65
			CNMG 120412-RK2	○		●				ACK 20 T	10	366614 0230	7,65
			CNMG 160608-RK2	○		●				ACK 20 T	10	366614 0330	14,25
			CNMG 160612-RK2	○		●				ACK 20 T	10	366614 0430	14,25
			CNMG 190612-RK2	○		●				ACK 20 T	10	366614 0530	19,80

3135

ISO	ACK 20 T
ISO P steel	Vc = 150 - 340
ISO K cast iron	Vc = 150 - 550
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.6 ap = 0.5 - 7.5

Chip breaker RK3 negative

F finishing -	M medium ○	R roughing ●	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing 			CNMG 120408-RK3	○		●				ACK 10 T	10	**311680** 0111	10,90
			CNMG 120412-RK3	○		●				ACK 10 T	10	311680 0211	10,90
			CNMG 160612-RK3	○		●				ACK 10 T	10	311680 0311	20,20

3147

ISO	ACK 10 T
ISO P steel	Vc = 170 - 400
ISO K cast iron	Vc = 170 - 450
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.3 - 0.5 ap = 2.0 - 4.8

ISO indexable cutting inserts CN.. ISO N

ISO N

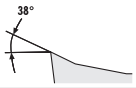
- **80° rhombic, negative 0°**

Chip breaker NS negative

F finishing	M medium	R roughing	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	●	-	CNGG 120404-NS				●			LT 05	10	**340001** 0101	10,60
			CNGG 120408-NS				●			LT 05	10	340001 0201	10,60



Finishing/medium machining



ISO	LT 05
ISO N Al/non-ferrous	Vc = 600 - 1200
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.35 ap = 0.25 - 5.0

3135

ISO indexable cutting inserts CN.. ISO S

ISO S

- **80° rhombic, negative 0°**

Chip breaker MS1 negative

F finishing	M medium	R roughing	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	○	-	CNMG 120404-MS1		○			●		APS 10 T	10	**366611** 0232	7,65
					○			●		APS 15 T	10	366611 0131	7,65
			CNMG 120408-MS1		○			●		APS 10 T	10	366611 0332	7,65
					○			●		APS 15 T	10	366611 0231	7,65



Finishing/medium machining



ISO	APS 10 T	APS 15 T
ISO M stainless steel	Vc = 60 - 230	Vc = 50 - 220
ISO S superalloys	Vc = 30 - 120	Vc = 30 - 120
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.08 - 0.3 ap = 0.25 - 3.0	

3135

Chip breaker SS2 negative

F finishing	M medium	R roughing	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
-	○	●	CNMG 120408-SS2		●			●		APS 40 T	10	**366716** 0140	10,15
			CNMG 120412-SS2		●			●		APS 40 T	10	366716 0240	10,15
			CNMG 160612-SS2		●			●		APS 40 T	10	366716 0540	18,90



Roughing/medium machining



ISO	APS 40 T
ISO M stainless steel	Vc = 80 - 200
ISO S superalloys	Vc = 60 - 160
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.1 - 0.5 ap = 1.0 - 5.0

3135

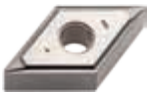
ISO indexable cutting inserts DN.. ISO P

ISO P

- **55° rhombic, negative 0°**

Chip breaker FFP, CERMET negative design

F finishing	M medium	R roughing	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	-	-	DNMG 110404-FFP	●	○	○				ATU 10 T	10	**366635** 0140	8,55
			DNMG 150604-FFP	●	○	○				ATU 10 T	10	366635 0240	12,30



Micro finishing



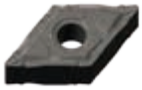
ISO	ATU 10 T
ISO P steel	Vc = 160 - 270
ISO M stainless steel	Vc = 130 - 240
ISO K cast iron	Vc = 220 - 350
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.2 ap = 0.1 - 2.0

Continued on next page >>>

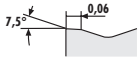
3135

Chip breaker FP1 negative

F finishing	M medium	R roughing
●	○	-



Micro finishing



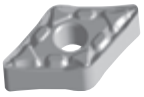
ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
DNMG 110404-FP1	●		○				ACP 15 T	10 **366633** 0115	8,55
	●	○	○				ACP 25 T	10 366633 0225	8,55
DNMG 150604-FP1	●		○				ACP 15 T	10 366633 0315	12,30
DNMG 150608-FP1	●		○				ACP 15 T	10 366633 0415	12,30

3135

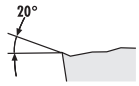
ISO	ACP 15 T	ACP 25 T
ISO P steel	Vc = 180 - 400	Vc = 100 - 240
ISO M stainless steel		Vc = 70 - 210
ISO K cast iron	Vc = 140 - 520	Vc = 140 - 520
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.07 - 0.25 ap = 0.25 - 2.5	

Chip breaker FP negative

F finishing	M medium	R roughing
●	-	-



Finishing



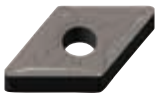
ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
DNMG 110404-FP	●		○				HC 7620	10 **311251** 2312	11,65
DNMG 110408-FP	●		○				HC 7610	10 311251 2411	11,65
	●		○				HC 7620	10 311251 2412	11,65
DNMG 150604-FP	●		○				HC 7610	10 311251 3011	15,20
	●		○				HC 7620	10 311251 3012	15,20
DNMG 150608-FP	●		○				HC 7620	10 311251 3112	15,20

3108

ISO	HC 7610	HC 7620
ISO P steel	Vc = 150 - 350	Vc = 170 - 290
ISO K cast iron	Vc = 140 - 340	Vc = 180 - 290
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.2 ap = 0.1 - 1.5	

Chip breaker FP2 negative

F finishing	M medium	R roughing
●	-	-



Finishing

ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
DNMX 150604-FP2	●		○				ACP 15 T	10 **366706** 0115	13,60
DNMX 150608-FP2	●		○				ACP 15 T	10 366706 0225	13,60

3135

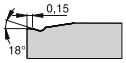
ISO	ACP 15 T
ISO P steel	Vc = 180 - 400
ISO K cast iron	Vc = 140 - 520
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.1 - 0.5 ap = 0.5 - 4.0

Chip breaker LC negative

F finishing	M medium	R roughing
○	●	-



Finishing/medium machining

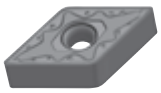
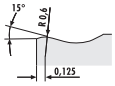


palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
DNMG 150404-LC	●						PH 5115	10 **333619** 0122	9,70
	●						PH 5125	10 333619 0123	9,70
DNMG 150408-LC	●						PH 5115	10 333619 0222	9,70
	●						PHG 125	10 333619 0265	11,25
DNMG 150412-LC	●						PH 5115	10 333619 0322	9,70
	●						PH 5125	10 333619 0323	9,70
DNMG 150604-LC	●						PH 5115	10 333619 0422	10,25
	●						PH 5125	10 333619 0423	10,25
DNMG 150608-LC	●						PH 5115	10 333619 0522	10,25
	●						PH 5125	10 333619 0523	10,25
DNMG 150612-LC	●						PH 5115	10 333619 0622	10,25
	●						PH 5125	10 333619 0623	10,25

3148

ISO	PH 5115	PH 5125	PHG 125
ISO P steel	Vc = 110 - 350	Vc = 100 - 295	Vc = 100 - 295
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.07 - 0.50 ap = 0.60 - 3.00		

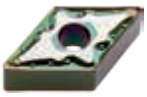
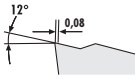
Chip breaker MP negative

F finishing -	M medium ●	R roughing -	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Medium machining 	DNMG 110404-MP	●		○				HC 7620	10	**311255** 2312	11,65
		●						HC 7630	10	311255 2313	11,65
	DNMG 110408-MP	●		○				HC 7610	10	311255 2411	11,65
		●		○				HC 7620	10	311255 2412	11,65
		●						HC 7630	10	311255 2413	11,65
	DNMG 150604-MP	●		○				HC 7610	10	311255 3011	14,35
		●		○				HC 7620	10	311255 3012	14,35
		●						HC 7630	10	311255 3013	14,35
	DNMG 150608-MP	●		○				HC 7610	10	311255 3111	14,35
		●		○				HC 7620	10	311255 3112	14,35
		●						HC 7630	10	311255 3113	14,35

3108

ISO	HC 7610	HC 7620	HC 7630
ISO P steel	Vc = 140 - 340	Vc = 120 - 280	Vc = 80 - 220
ISO K cast iron	Vc = 180 - 290	Vc = 150 - 260	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.18 - 0.35 ap = 0.6 - 4.0		

Chip breaker MP5-HP negative

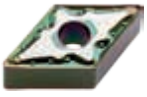
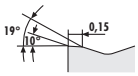
F finishing -	M medium ●	R roughing ○	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Medium machining 	DNMG 150608-MP5	●	○	○				ACP 25 T	10	**311673** 0114	14,90

3147

ISO	ACP 25 T
ISO P steel	Vc = 100 - 270
ISO M stainless steel	Vc = 70 - 210
ISO K cast iron	Vc = 120 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.45 ap = 1.0 - 4.0

Chip breaker MP5 negative

- **Note:** for DNMG 1104.. Reduction of max. feed ap = 3.0 mm, f = 0.1-0.35 mm/rev

F finishing ○	M medium ●	R roughing -	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Medium machining 	DNMG 110404-MP5	●		○				ACP 15 T	10	**366637** 1215	8,55
		●	○	○				ACP 25 T	10	366637 1225	8,55
	DNMG 110408-MP5	●		○				ACP 15 T	10	366637 0115	8,55
		●	○	○				ACP 25 T	10	366637 0225	8,55
		●	○					ACP 35 T	10	366637 0335	8,55
	DNMG 150404-MP5	●	○	○				ACP 25 T	10	366637 1325	12,05
	DNMG 150408-MP5	●	○	○				ACP 25 T	10	366637 1425	12,05
	DNMG 150604-MP5	●		○				ACP 15 T	10	366637 0415	12,30
		●	○	○				ACP 25 T	10	366637 0525	12,30
	DNMG 150608-MP5	●		○				ACP 15 T	10	366637 0615	12,30
		●	○	○				ACP 25 T	10	366637 0725	12,30
		●	○					ACP 35 T	10	366637 0835	12,30
	DNMG 150612-MP5	●		○				ACP 15 T	10	366637 0915	12,30
		●	○	○				ACP 25 T	10	366637 1025	12,30
		●	○					ACP 35 T	10	366637 1135	12,30

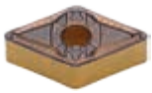
3135

ISO	ACP 15 T	ACP 25 T	ACP 35 T
ISO P steel	Vc = 180 - 400	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel		Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.5 ap = 0.5 - 5.0		

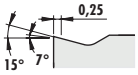
Continued on next page >>>

Chip breaker PM negative

F finishing	M medium	R roughing
○	●	-



Medium machining



palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
DNMG 150404-PM	●		●				**PHG 115**	10 **333621** 0164	11,75
	●		●				**PHG 125**	10 333621 0165	11,75
DNMG 150408-PM	●		●				**PHG 115**	10 333621 0264	11,75
	●		●				**PHG 125**	10 333621 0265	11,75
DNMG 150412-PM	●		●				**PHG 115**	10 333621 0364	11,75
	●		●				**PHG 125**	10 333621 0365	11,75
DNMG 150416-PM	●		●				**PHG 115**	10 333621 0464	11,75
	●		●				**PHG 125**	10 333621 0465	11,75
DNMG 150604-PM	●		●				**PHG 115**	10 333621 0564	12,25
	●		●				**PHG 125**	10 333621 0565	12,25
DNMG 150608-PM	●		●				**PHG 115**	10 333621 0664	12,25
	●		●				**PHG 125**	10 333621 0665	12,25
DNMG 150612-PM	●		●				**PHG 115**	10 333621 0764	12,25
	●		●				**PHG 125**	10 333621 0765	12,25

3148

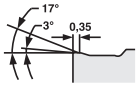
ISO	PHG 115	PHG 125
ISO P steel	Vc = 110 - 270	Vc = 100 - 240
ISO K cast iron	Vc = 110 - 270	Vc = 100 - 240
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.10 - 0.60 ap = 0.40 - 7.00	

Chip breaker RP5 negative

F finishing	M medium	R roughing
-	○	●



Roughing/medium machining



ATORN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
DNMG 150608-RP5	●		●				**HC 7810**	10 **311520** 1711	14,35
	●		●				**HC 7820**	10 311520 1712	14,35
	●		●				**HC 7830**	10 311520 1713	14,35
DNMG 150612-RP5	●		●				**HC 7820**	10 311520 1812	14,35

3147

ISO	HC 7810	HC 7820	HC 7830
ISO P steel	Vc = 200 - 340	Vc = 140 - 290	Vc = 140 - 230
ISO K cast iron	Vc = 250 - 580	Vc = 140 - 490	Vc = 180 - 430
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.15 - 0.35	f = 0.15 - 0.55	f = 0.15 - 0.35
	ap = 0.80 - 5.0		

Chip breaker 02 negative

F finishing	M medium	R roughing
-	●	○



Roughing/medium machining



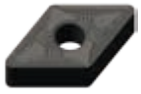
palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
DNMX 150604-L02	●	●					**PH 5125**	10 **333626** 0123	10,25
DNMX 150604-R02	●	●					**PH 5125**	10 333626 0223	10,25
DNMX 150608-L02	●	●					**PH 5125**	10 333626 0323	10,25
DNMX 150608-R02	●	●					**PH 5125**	10 333626 0423	10,25

3148

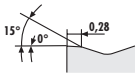
ISO	PH 5125
ISO P steel	Vc = 100 - 295
ISO M stainless steel	Vc = 50 - 240
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.14 - 0.50 ap = 0.70 - 5.00

Chip breaker RP2-HP negative

F finishing	M medium	R roughing
-	○	●



Roughing

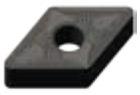
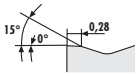


ATORN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
DNMG 150608-RP2	●	○	○				**ACP 25 T**	10 **311681** 0114	14,90

3147

ISO	ACP 25 T
ISO P steel	Vc = 100 - 250
ISO M stainless steel	Vc = 70 - 210
ISO K cast iron	Vc = 120 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.45 ap = 1.0 - 6.0

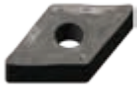
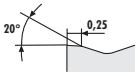
Chip breaker RP2 negative

F finishing -	M medium ○	R roughing ●	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing 	DNMG 150608-RP2		●		○					ACP 15 T	10	**366641** 0115	12,30
			●	○	○					ACP 25 T	10	366641 0225	12,30
			●	○						ACP 35 T	10	366641 0335	12,30
	DNMG 150612-RP2		●		○					ACP 15 T	10	366641 0415	12,30
			●	○	○					ACP 25 T	10	366641 0525	12,30
			●	○						ACP 35 T	10	366641 0635	12,30

3135

ISO	ACP 15 T	ACP 25 T	ACP 35 T
ISO P steel	Vc = 180 - 400	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel		Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.15 - 0.5 ap = 0.5 - 6.0		

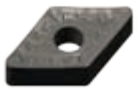
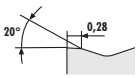
Chip breaker RP7 negative

F finishing -	M medium ○	R roughing ●	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing 	DNMM 150608-RP7		●		○					ACP 15 T	10	**366642** 0115	12,30
			●	○	○					ACP 25 T	10	366642 0225	12,30
			●	○						ACP 35 T	10	366642 0335	12,30

3135

ISO	ACP 15 T	ACP 25 T	ACP 35 T
ISO P steel	Vc = 180 - 400	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel		Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.3 - 0.7 ap = 0.5 - 7.0		

Chip breaker RP8 negative

F finishing -	M medium ○	R roughing ●	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing 	DNMM 150612-RP8		●		○					ACP 15 T	10	**366643** 0115	12,30
			●	○	○					ACP 25 T	10	366643 0225	12,30
			●	○						ACP 35 T	10	366643 0335	12,30

3135

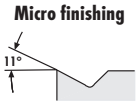
ISO	ACP 15 T	ACP 25 T	ACP 35 T
ISO P steel	Vc = 180 - 400	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel		Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.3 - 0.8 ap = 1.5 - 8.0		

ISO indexable cutting inserts DN.. ISO M

ISO M

- **55° rhombic, negative 0°**

Chip breaker FFM2 negative

F finishing ●	M medium -	R roughing -	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Micro finishing 	DNGP 150602-FFM2			●	○	○	○			APM 20 T	10	**366631** 0220	15,70
	DNGP 150404-FFM2			●	○	○	○			APM 20 T	10	366631 0120	15,30
	DNGP 150604-FFM2			●	○	○	○			APM 20 T	10	366631 0320	15,70
	DNGP 150608-FFM2			●	○	○	○			APM 20 T	10	366631 0420	15,70

3135

ISO	APM 20 T
ISO M stainless steel	Vc = 60 - 200
ISO K cast iron	Vc = 120 - 220
ISO N Al/non-ferrous	Vc = 100 - 600
ISO S superalloys	Vc = 15 - 50
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.08 - 0.2 ap = 0.14 - 2.5

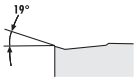
Continued on next page >>>

Chip breaker FM (HC75..) negative

F finishing	M medium	R roughing
●	-	-



Finishing



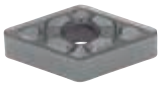
ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
DNMG 110404-FM	○	●			○		**HC 7510**	10 **310253** 2324	11,–
		●			○		**HC 7520**	10 310253 2325	11,–

ISO	HC 7510	HC 7520
ISO P steel	Vc = 140 - 320	
ISO M stainless steel	Vc = 175 - 270	Vc = 170 - 260
ISO S superalloys	Vc = 30 - 60	Vc = 20 - 50
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.12 ap = 0.2 - 1.0	

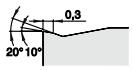
3108

Chip breaker SF negative

F finishing	M medium	R roughing
○	●	-



Finishing/medium machining



palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
DNMG 110404-SF		●					**PHS 215**	10 **333618** 0371	9,20
		●					**PHS 225**	10 333618 0472	9,20
DNMG 110408-SF		●					**PHS 215**	10 333618 0771	9,20
		●					**PHS 225**	10 333618 0872	9,20
DNMG 150404-SF		●					**PHS 215**	10 333618 1171	12,25
		●					**PHS 225**	10 333618 1272	12,25
DNMG 150408-SF		●					**PHS 215**	10 333618 1571	12,25
		●					**PHS 225**	10 333618 1672	12,25
DNMG 150412-SF		●					**PHS 215**	10 333618 1971	12,25
		●					**PHS 225**	10 333618 2072	12,25
DNMG 150604-SF		●					**PHS 215**	10 333618 2371	13,75
		●					**PHS 225**	10 333618 2472	13,75
DNMG 150608-SF		●					**PHS 215**	10 333618 2771	13,75
		●					**PHS 225**	10 333618 2872	13,75
DNMG 150612-SF		●					**PHS 215**	10 333618 3171	13,75
		●					**PHS 225**	10 333618 3272	13,75

ISO	PHS 215	PHS 225
ISO M stainless steel	Vc = 80 - 290	Vc = 55 - 240
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.10 - 0.55 ap = 0.60 - 3.0	

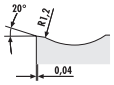
3148

Chip breaker MM (HC75..) negative

F finishing	M medium	R roughing
-	●	-



Medium machining



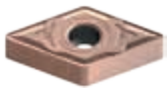
ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
DNMG 110404-MM		●			○		**HC 7530**	10 **310257** 2326	11,–
DNMG 110408-MM		●			○		**HC 7520**	10 310257 2425	11,–
		●			○		**HC 7530**	10 310257 2426	11,–
DNMG 150604-MM		●			○		**HC 7520**	10 310257 3025	14,35
		●			○		**HC 7530**	10 310257 3026	14,35
DNMG 150608-MM		●			○		**HC 7520**	10 310257 3125	14,35

ISO	HC 7520	HC 7530
ISO M stainless steel	Vc = 150 - 240	Vc = 130 - 200
ISO S superalloys	Vc = 30 - 60	Vc = 20 - 50
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.18 - 0.35 ap = 0.6 - 5.0	

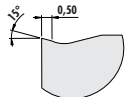
3108

Chip breaker GS negative

F finishing	M medium	R roughing
○	●	-



Medium machining



palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
DNMG 150404-GS		●			●		**PHH 920**	10 **333578** 0194	11,25
		●			●		**PHH 910**	10 333578 0195	11,25
DNMG 150408-GS		●			●		**PHH 920**	10 333578 0294	11,25
		●			●		**PHH 910**	10 333578 0295	11,25
DNMG 150412-GS		●			●		**PHH 920**	10 333578 0394	11,25
		●			●		**PHH 910**	10 333578 0395	11,25

ISO	PHH 910	PHH 920
ISO M stainless steel	Vc = 130 - 250	Vc = 110 - 220
ISO S superalloys	Vc = 25 - 70	Vc = 20 - 60
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.10 - 0.50 ap = 0.50 - 4.0	

3148

Chip breaker MM5 negative

• **Note:** for DNMG 1104.. Reduction of max. feed ap = 3.0 mm, f = 0.1-0.35 mm/rev

F finishing	M medium	R roughing
○	●	-



Medium machining



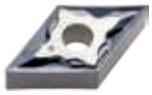
ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
DNMG 110404-MM5	○	●					**APM 25 T**	10 **366634** 0121	8,55
DNMG 110408-MM5	○	●					**APM 25 T**	10 366634 0221	8,55
DNMG 150604-MM5	○	●					**APM 25 T**	10 366634 0321	12,30
DNMG 150608-MM5	○	●					**APM 25 T**	10 366634 0421	12,30

3135

ISO	APM 25 T
ISO P steel	Vc = 60 - 250
ISO M stainless steel	Vc = 40 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.14 - 0.4 ap = 0.25 - 4.0

Chip breaker MM5 negative

F finishing	M medium	R roughing
-	●	○



Roughing/medium machining



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
DNMG 150604-MM5	○	●					**ACM 20 T**	10 **311678** 0112	14,90
DNMG 150608-MM5	○	●					**ACM 20 T**	10 311678 0212	14,90

3147

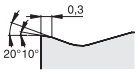
ISO	ACM 20 T
ISO P steel	Vc = 60 - 250
ISO M stainless steel	Vc = 120 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.4 ap = 1.0 - 4.2

Chip breaker SS negative

F finishing	M medium	R roughing
-	●	●



Roughing/medium machining



palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
DNMG 150404-SS		●					**PHS 215**	10 **333623** 0471	11,25
		●					**PHS 225**	10 333623 0472	11,25
DNMG 150408-SS		●					**PHS 215**	10 333623 0971	11,25
		●					**PHS 225**	10 333623 0972	11,25
DNMG 150412-SS		●					**PHS 215**	10 333623 1371	11,25
		●					**PHS 225**	10 333623 1372	11,25
DNMG 150604-SS		●					**PHS 215**	10 333623 1871	12,–
		●					**PHS 225**	10 333623 1872	12,–
DNMG 150608-SS		●					**PHS 215**	10 333623 2371	12,–
		●					**PHS 225**	10 333623 2372	12,–
DNMG 150612-SS		●					**PHS 215**	10 333623 2871	12,–
		●					**PHS 225**	10 333623 2872	12,–

3148

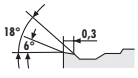
ISO	PHS 215	PHS 225
ISO M stainless steel	Vc = 55 - 240	Vc = 55 - 240
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.1 - 1.0 ap = 0.3 - 6.4	

Chip breaker RM5 negative

F finishing	M medium	R roughing
-	○	●



Roughing



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
DNMG 150608-RM5	○	●					**APM 25 T**	10 **366640** 0121	12,30
DNMG 150612-RM5	○	●					**APM 25 T**	10 366640 0221	12,30

3135

ISO	APM 25 T
ISO P steel	Vc = 60 - 250
ISO M stainless steel	Vc = 40 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.25 - 0.5 ap = 0.5 - 6.0

ISO indexable cutting inserts DN.. ISO K

ISO K

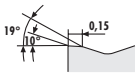
- **55° rhombic, negative 0°**

Chip breaker MK negative

F finishing	M medium	R roughing
○	●	-



Medium machining



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
DNMG 150608-MK	○		●				**ACK 20 T**	10 **366632** 0130	12,30
DNMG 150612-MK	○		●				**ACK 20 T**	10 366632 0230	12,30

3135

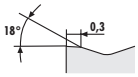
ISO	ACK 20 T
ISO P steel	Vc = 150 - 340
ISO K cast iron	Vc = 150 - 550
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.5 ap = 0.25 - 5.0

Chip breaker RK2 negative

F finishing	M medium	R roughing
-	○	●



Roughing



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
DNMG 150608-RK2	○		●				**ACK 20 T**	10 **366638** 0130	12,30

3135

ISO	ACK 20 T
ISO P steel	Vc = 150 - 340
ISO K cast iron	Vc = 150 - 550
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.18 - 0.5 ap = 1.0 - 6.0

ISO indexable cutting inserts DN.. ISO N

ISO N

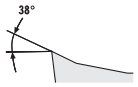
- **55° rhombic, negative 0°**

Chip breaker NS negative

F finishing	M medium	R roughing
●	●	-



Finishing/medium machining



ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
DNGG 110404-NS				●			**LT 05**	10 **340002** 0101	10,60
DNGG 110408-NS				●			**LT 05**	10 340002 0201	10,60

3135

ISO	LT 05
ISO N Al/non-ferrous	Vc = 600 - 1200
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.30 ap = 0.25 - 5.0

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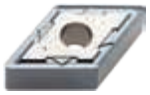
www.saratools.com

ISO indexable cutting inserts DN.. ISO S

ISO S

- **55° rhombic, negative 0°**

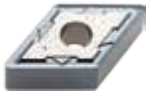
Chip breaker MS1 negative

F finishing ○	M medium ●	R roughing -	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Medium machining 			DNMG 150608-MS1		○			●		APS 10 T	10	**366639** 0132	12,30
					○			●		APS 15 T	10	366639 0231	12,30

ISO	APS 10 T	APS 15 T
ISO M stainless steel	Vc = 60 - 230	Vc = 50 - 220
ISO S superalloys	Vc = 30 - 120	Vc = 30 - 120
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.1 - 0.3 ap = 0.4 - 3.0	

3135

Chip breaker MS1-HP negative

F finishing ○	M medium ●	R roughing -	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Medium machining 			DNMG 150608-MS1		○			●		ACM 20 T	10	**311684** 0114	14,90

ISO	ACM 20 T
ISO M stainless steel	Vc = 100 - 250
ISO S superalloys	Vc = 30 - 120
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.1 - 0.3 ap = 0.4 - 3.0

3147

ISO indexable cutting inserts KNUX ISO P

ISO P

- **55° rhombic, negative 0°**

Chip breaker PR right-hand version

- **Note:**
- **RH** insert = **right-hand** tool holder or **left-hand** boring bar
- **LH** insert = **left-hand** tool holder or **right-hand** boring bar

F finishing ○	M medium ●	R roughing -	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Universal application 			KNUX 160405-PR	●	○	○				ACP 25 T	10	**366645** 0125	11,25
			KNUX 160410-PR	●	○	○				ACP 25 T	10	366645 0225	11,25
			KNUX 160405-PR	●	○					ACU 20 T	10	366645 0350	11,25
				●	○					ACU 40 T	10	366645 0455	11,25

ISO	ACP 25 T	ACU 20 T	ACU 40 T
ISO P steel	Vc = 100 - 240	Vc = 90 - 200	Vc = 90 - 180
ISO M stainless steel	Vc = 70 - 210	Vc = 90 - 180	Vc = 50 - 160
ISO K cast iron	Vc = 130 - 250		
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.6 ap = 0.5 - 4.8		

3135

Chip breaker PL left-hand version

- **Note:**
- **RH** insert = **right-hand** tool holder or **left-hand** boring bar
- **LH** insert = **left-hand** external tool holder or **right-hand** boring bar

F finishing ○	M medium ●	R roughing -	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Universal application 			KNUX 160405-PL	●	○	○				ACP 25 T	10	**366644** 0125	11,25
			KNUX 160410-PL	●	○	○				ACP 25 T	10	366644 0225	11,25
			KNUX 160405-PL	●	○					ACU 20 T	10	366644 0350	11,25
				●	○					ACU 40 T	10	366644 0455	11,25

ISO	ACP 25 T	ACU 20 T	ACU 40 T
ISO P steel	Vc = 100 - 240	Vc = 90 - 200	Vc = 90 - 180
ISO M stainless steel	Vc = 70 - 210	Vc = 90 - 180	Vc = 50 - 160
ISO K cast iron	Vc = 130 - 250		
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.6 ap = 0.5 - 4.8		

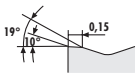
3135

ISO indexable cutting inserts SN.. ISO P

ISO P

- 90° square, negative 0°

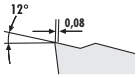
Chip breaker MP5 negative

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
-	●	○											
 Medium machining 	SNMG 120408-MP5			●	○	○				ACP 15 T	10	**366655** 0435	8,90
				●	○	○				ACP 25 T	10	366655 0225	8,90
				●	○					ACP 35 T	10	366655 0235	8,90
	SNMG 120412-MP5			●		○				ACP 15 T	10	366655 0115	8,90
				●	○	○				ACP 25 T	10	366655 0325	8,90
				●	○					ACP 35 T	10	366655 0535	8,90

3135

ISO	ACP 15 T	ACP 25 T	ACP 35 T
ISO P steel	Vc = 180 - 400	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel		Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.18 - 0.4 ap = 0.5 - 5.0		

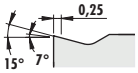
Chip breaker MP5-HP negative

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
-	●	○											
 Medium machining 	SNMG 120408-MP5			●	○	○				ACP 25 T	10	**311674** 0114	10,90

3147

ISO	ACP 25 T
ISO P steel	Vc = 100 - 270
ISO M stainless steel	Vc = 70 - 210
ISO K cast iron	Vc = 120 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.45 ap = 1.0 - 4.0

Chip breaker PM negative

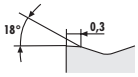
F finishing	M medium	R roughing	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
○	-	-											
 Medium machining 	SNMG 120404-PM			●		●				PHG 115	10	**333683** 0164	8,20
				●		●				PHG 125	10	333683 0165	8,20
	SNMG 120408-PM			●		●				PHG 115	10	333683 0264	8,20
				●		●				PHG 125	10	333683 0265	8,20
	SNMG 120412-PM			●		●				PHG 115	10	333683 0364	8,20
				●		●				PHG 125	10	333683 0365	8,20

3148

ISO	PHG 115	PHG 125
ISO P steel	Vc = 110 - 270	Vc = 100 - 240
ISO K cast iron	Vc = 110 - 270	Vc = 100 - 240
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.1 - 0.6 ap = 0.4 - 6.0	

Chip breaker RP1 negative

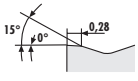
- ap up to 11 mm possible for SNMG 1906..

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
-	○	●											
 Roughing/medium machining 	SNMG 150612-RP1			●	○	○				ACP 25 T	10	**366658** 0125	14,15
				●	○					ACP 35 T	10	366658 0235	14,15
	SNMG 190612-RP1			●	○	○				ACP 25 T	10	366658 0325	19,80
				●	○					ACP 35 T	10	366658 0435	19,80

3135

ISO	ACP 25 T	ACP 35 T
ISO P steel	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel	Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.7 ap = 1.0 - 7.5	

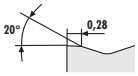
Chip breaker RP2 negative

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
-	○	●											
 Roughing/medium machining 	SNMG 120408-RP2			●	○	○				ACP 25 T	10	**366657** 0125	8,90

3135

ISO	ACP 25 T
ISO P steel	Vc = 100 - 240
ISO M stainless steel	Vc = 70 - 210
ISO K cast iron	Vc = 120 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.5 ap = 0.5 - 6.0

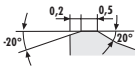
Chip breaker RP8 negative

F finishing -	M medium ○	R roughing ●	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing 	SNMM 190612-RP8			●	○	○				ACP 25 T	10	**366659** 0125	19,50
	SNMM 190616-RP8			●	○	○				ACP 25 T	10	366659 0225	19,50
	SNMM 250724-RP8			●	○	○				ACP 25 T	5	366659 0325	31,80
	SNMM 250924-RP8			●	○	○				ACP 25 T	5	366659 0425	35,80

3135

ISO	ACP 25 T
ISO P steel	Vc = 100 - 240
ISO M stainless steel	Vc = 70 - 210
ISO K cast iron	Vc = 120 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.3 - 0.8 ap = 1.5 - 10.5

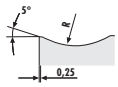
Chip breaker RP9 negative

F finishing -	M medium -	R roughing ●	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing 	SNMM 190616-RP9			●	○	○				ACP 25 T	10	**366660** 0125	19,50
	SNMM 190624-RP9			●	○	○				ACP 25 T	10	366660 0225	19,50
	SNMM 250924-RP9			●	○	○				ACP 25 T	5	366660 0325	35,80
	SNMM 250932-RP9			●	○	○				ACP 25 T	5	366660 0425	35,80

3135

ISO	ACP 25 T
ISO P steel	Vc = 100 - 240
ISO M stainless steel	Vc = 70 - 210
ISO K cast iron	Vc = 120 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.3 - 1.4 ap = 2.5 - 13.0

Chip breaker RP10 negative

F finishing -	M medium -	R roughing ●	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing 	SNMM 190616-RP10			●	○	○				ACP 25 T	10	**366661** 0125	19,50
	SNMM 250924-RP10			●	○	○				ACP 25 T	5	366661 0225	35,80

3135

ISO	ACP 25 T
ISO P steel	Vc = 70 - 210
ISO M stainless steel	Vc = 70 - 210
ISO K cast iron	Vc = 120 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.3 - 1.2 ap = 2.5 - 12.0

ISO Wendeschneidplatten SNMX R 1-4

NEW · NUOVO · NEU · NOUVEAU · NUEVO · NY

Radius indexable turning insert

- **90° square, negative 0°**
- **Note: For use of indexable cutting inserts with radius >3mm, the position of the insert must be modified**
- suitable for clamp mounting PSSN
- **Primary use: ISO P**
- Feed f: 0.1 - 0.2mm/rev
- Cutting speed Vc 50 - 120m/min



ISO designation	r mm	Quality	art.no.	€
SNMX 120408 R1	1.0	SWP 25 T	**311686** 1201	40,10
SNMX 120408 R2	2.0	SWP 25 T	311686 1202	40,10
SNMX 120408 R3	3.0	SWP 25 T	311686 1203	40,10
SNMX 120408 R4	4.0	SWP 25 T	311686 1204	40,10
SNMX 120408 R1-4	1.0-4.0	SWP 25 T	311686 1234	40,10

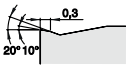
3164

ISO indexable cutting inserts SN.. ISO M

ISO M

- 90° square, negative 0°

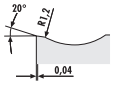
Chip breaker SF negative

F finishing	M medium	R roughing	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
○	●	-											
 Finishing/medium machining 	SNMG 120404-SF			●						PHS 215	10	**333635** 0371	9,20
				●						PHS 225	10	333635 0472	9,20
	SNMG 120408-SF			●						PHS 215	10	333635 0771	9,20
				●						PHS 225	10	333635 0872	9,20
	SNMG 120412-SF			●						PHS 215	10	333635 1171	9,20
				●						PHS 225	10	333635 1272	9,20

3148

ISO	PHS 215	PHS 225
ISO M stainless steel	Vc = 80 - 290	Vc = 55 - 240
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.1 - 0.55 ap = 1.0 - 4.0	

Chip breaker MM negative

F finishing	M medium	R roughing	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
-	●	-											
 Medium machining 	SNMG 120408-MM			●				○		HC 7520	10	**310451** 2725	10,35
	SNMG 120412-MM			●				○		HC 7530	10	310451 2826	10,35

3108

ISO	HC 7520	HC 7530
ISO M stainless steel	Vc = 150 - 240	Vc = 130 - 200
ISO S superalloys	Vc = 30 - 60	Vc = 20 - 50
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.15 - 0.25 ap = 0.8 - 3.0	

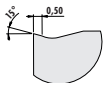
Chip breaker MM5 negative

F finishing	M medium	R roughing	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
-	●	○											
 Medium machining 	SNMG 120408-MM5			○	●					APM 25 T	10	**366656** 0121	8,90

3135

ISO	APM 25 T
ISO P steel	Vc = 60 - 250
ISO M stainless steel	Vc = 40 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.18 - 0.4 ap = 0.5 - 5.0

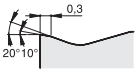
Chip breaker GS negative

F finishing	M medium	R roughing	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
○	●	-											
 Medium machining 	SNMG 120408-GS			●				●		PHH 920	10	**333580** 0194	8,50
				●				●		PHH 910	10	333580 0195	8,50

3148

ISO	PHH 910	PHH 920
ISO M stainless steel	Vc = 130 - 250	Vc = 110 - 220
ISO S superalloys	Vc = 25 - 70	Vc = 20 - 60
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.10 - 0.50 ap = 0.50 - 4.0	

Chip breaker SS negative

F finishing	M medium	R roughing	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
-	●	●											
 Roughing/medium machining 	SNMG 120404-SS			●						PHS 225	10	**333637** 0572	8,20
	SNMG 120408-SS			●						PHS 225	10	333637 0872	8,20
	SNMG 120412-SS			●						PHS 225	10	333637 1172	8,20

3148

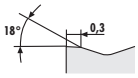
ISO	PHS 225
ISO M stainless steel	Vc = 55 - 240
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.1 - 0.8 ap = 0.5 - 8.0

ISO indexable cutting inserts SN.. ISO K

ISO K

- **90° square, negative 0°**

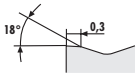
Chip breaker RK2 negative

F finishing -	M medium ○	R roughing ●	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing/medium machining 	SNMG 120408-RK2			○		●				**ACK 20 T**	10	**366653** 0130	8,90

ISO	ACK 20 T
ISO P steel	Vc = 150 - 340
ISO K cast iron	Vc = 150 - 550
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.6 ap = 0.5 - 7.5

3135

Chip breaker RK3 negative

F finishing -	M medium ○	R roughing ●	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing 	SNMG 120412-RK3			○		●				**ACK 10 T**	10	**311680** 0411	10,90

ISO	ACK 10 T
ISO P steel	Vc = 170 - 400
ISO K cast iron	Vc = 170 - 450
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.3 - 0.5 ap = 2.0 - 4.8

3147

Chip breaker RK negative

F finishing -	M medium ○	R roughing ●	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing	SNMA 120408-RK			○		●				**ACK 20 T**	10	**366652** 0130	8,90

ISO	ACK 20 T
ISO P steel	Vc = 150 - 340
ISO K cast iron	Vc = 150 - 550
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.5 ap = 0.5 - 7.0

3135

ISO indexable cutting inserts SN.. ISO S

ISO S

- **90° square, negative 0°**

Chip breaker MS1 negative

F finishing -	M medium ●	R roughing ○	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Medium machining 	SNMG 120408-MS1				○			●		**APS 10 T**	10	**366654** 0132	8,90
					○			●		**APS 15 T**	10	366654 0231	8,90

ISO	APS 10 T	APS 15 T
ISO M stainless steel	Vc = 60 - 230	Vc = 50 - 220
ISO S superalloys	Vc = 30 - 120	Vc = 30 - 120
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.1 - 0.3 ap = 0.5 - 3.0	

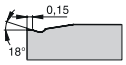
3135

ISO indexable cutting inserts TN.. ISO P

ISO P

- **60° triangular, negative 0°**

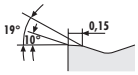
Chip breaker LC negative

F finishing	M medium	R roughing	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	●	-											
 Finishing/medium machining 	TNMG 160404-LC		●							PH 5115	10	**333649** 0122	7,15
			●							PHG 115	10	333649 0164	8,25
			●							PH 5125	10	333649 0123	7,15
	TNMG 160408-LC		●							PH 5115	10	333649 0222	7,15
			●							PH 5125	10	333649 0223	7,15
	TNMG 160412-LC		●							PH 5115	10	333649 0322	7,15
			●							PH 5125	10	333649 0323	7,15
	TNMG 220408-LC		●							PH 5115	10	333649 0422	10,25
			●							PH 5125	10	333649 0423	10,25
	TNMG 220412-LC		●							PH 5115	10	333649 0522	10,25
			●							PH 5125	10	333649 0523	10,25

3148

ISO	PH 5115	PH 5125	PHG 115
ISO P steel	Vc = 110 - 350	Vc = 100 - 295	Vc = 110 - 350
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.07 - 0.50 ap = 0.60 - 3.00		f = 0.07 - 0.5 ap = 0.4 - 3.5

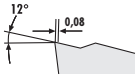
Chip breaker MP5 negative

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
-	●	○											
 Medium machining 	TNMG 160404-MP5		●	○						ACP 15 T	10	**366670** 0115	8,80
			●	○						ACP 25 T	10	366670 0225	8,80
	TNMG 160408-MP5		●		○					ACP 15 T	10	366670 0415	8,80
			●	○	○					ACP 25 T	10	366670 0525	8,80
			●	○						ACP 35 T	10	366670 0635	8,80
	TNMG 160412-MP5		●		○					ACP 15 T	10	366670 0715	8,80
			●	○	○					ACP 25 T	10	366670 0825	8,80
	TNMG 220404-MP5		●	○	○					ACP 25 T	10	366670 0925	12,10
	TNMG 220408-MP5		●	○	○					ACP 25 T	10	366670 1025	12,10

3135

ISO	ACP 15 T	ACP 25 T	ACP 35 T
ISO P steel	Vc = 180 - 400	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel		Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.4 ap = 0.25 - 4.5		

Chip breaker MP5-HP negative

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
-	●	-											
 Medium machining 	TNMG 160408-MP5		●	○	○					ACP 25 T	10	**311675** 0114	10,50

3147

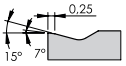
ISO	ACP 25 T
ISO P steel	Vc = 100 - 270
ISO M stainless steel	Vc = 70 - 210
ISO K cast iron	Vc = 120 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.45 ap = 1.0 - 4.0

Chip breaker PM negative

F finishing	M medium	R roughing
-	●	-



Finishing/medium machining



palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
TNMG 160404-PM	●						PHG 115	10 **333651** 0164	8,20
	●						PHG 125	10 333651 0165	8,20
TNMG 160408-PM	●						PHG 115	10 333651 0264	8,20
	●						PHG 125	10 333651 0265	8,20
TNMG 160412-PM	●						PHG 115	10 333651 0364	8,20
	●						PHG 125	10 333651 0365	8,20
TNMG 160416-PM	●						PHG 115	10 333651 0464	8,20
	●						PHG 125	10 333651 0465	8,20
TNMG 220404-PM	●						PHG 115	10 333651 0564	12,25
	●						PHG 125	10 333651 0565	12,25
TNMG 220408-PM	●						PHG 115	10 333651 0664	12,25
	●						PHG 125	10 333651 0665	12,25
TNMG 220412-PM	●						PHG 115	10 333651 0764	12,25
	●						PHG 125	10 333651 0765	12,25
TNMG 220416-PM	●						PHG 115	10 333651 0864	12,25
	●						PHG 125	10 333651 0865	12,25

3148

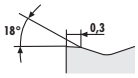
ISO	PHG 115	PHG 125
ISO P steel	Vc = 110 - 350	Vc = 100 - 295
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.10 - 0.60 ap = 0.30 - 9.00	

Chip breaker RP1 negative

F finishing	M medium	R roughing
-	○	●



Roughing



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
TNMG 220412-RP1	●	○	○				ACP 25 T	10 **366676** 0125	12,10

3135

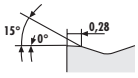
ISO	ACP 25 T
ISO P steel	Vc = 100 - 240
ISO M stainless steel	Vc = 70 - 210
ISO K cast iron	Vc = 130 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.18 - 0.5 ap = 0.5 - 5.0

Chip breaker RP2 negative

F finishing	M medium	R roughing
-	○	●



Roughing



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
TNMG 160408-RP2	●	○	○				ACP 25 T	10 **366674** 0125	8,80
TNMG 160412-RP2	●	○	○				ACP 25 T	10 366674 0325	8,80

3135

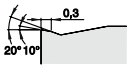
ISO	ACP 25 T
ISO P steel	Vc = 100 - 240
ISO M stainless steel	Vc = 70 - 210
ISO K cast iron	Vc = 120 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.5 ap = 0.5 - 6.0

ISO indexable cutting inserts TN.. ISO M

ISO M

- **60° triangular, negative 0°**

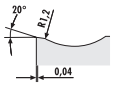
Chip breaker SF negative

F finishing	M medium	R roughing	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
○	●	-											
 Finishing/medium machining 	TNMG 160404-SF			●						PHS 215	10	**333648** 0371	9,20
				●						PHS 225	10	333648 0472	9,20
	TNMG 160408-SF			●						PHS 215	10	333648 0771	9,20
				●						PHS 225	10	333648 0872	9,20
	TNMG 160412-SF			●						PHS 215	10	333648 1171	9,20
				●						PHS 225	10	333648 1272	9,20
	TNMG 220404-SF			●						PHS 215	10	333648 1571	13,75
				●						PHS 225	10	333648 1672	13,75
	TNMG 220408-SF			●						PHS 215	10	333648 1971	13,75
				●						PHS 225	10	333648 2072	13,75
	TNMG 220412-SF			●						PHS 215	10	333648 2371	13,75
				●						PHS 225	10	333648 2472	13,75

3148

ISO	PHS 215	PHS 225
ISO M stainless steel	Vc = 80 - 290	Vc = 55 - 240
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.1 - 0.55 ap = 0.6 - 3.0	

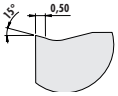
Chip breaker MM (HC75..) negative

F finishing	M medium	R roughing	ATORN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
-	●	-											
 Medium machining 	TNMG 160408-MM			●				○		HC 7520	10	**310557** 3825	9,05
				●				○		HC 7530	10	310557 3826	9,05

3108

ISO	HC 7520	HC 7530
ISO M stainless steel	Vc = 150 - 240	Vc = 130 - 200
ISO S superalloys	Vc = 30 - 60	Vc = 20 - 50
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.18 - 0.35 ap = 0.6 - 4.0	

Chip breaker GS negative

F finishing	M medium	R roughing	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
○	●	-											
 Medium machining 	TNMG 160404-GS			●				●		PHH 920	10	**333581** 0194	8,50
				●				●		PHH 910	10	333581 0195	8,50
	TNMG 160408-GS			●				●		PHH 920	10	333581 0294	8,50
				●				●		PHH 910	10	333581 0295	8,50
	TNMG 160412-GS			●				●		PHH 920	10	333581 0394	8,50
				●				●		PHH 910	10	333581 0395	8,50

3148

ISO	PHH 910	PHH 920
ISO M stainless steel	Vc = 130 - 250	Vc = 110 - 220
ISO S superalloys	Vc = 25 - 70	Vc = 20 - 60
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.10 - 0.50 ap = 0.50 - 4.0	

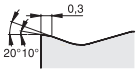
Chip breaker MM5 negative

F finishing	M medium	R roughing	ATORN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
-	●	○											
 Roughing/medium machining 	TNMG 160404-MM5			○	●					APM 25 T	10	**366669** 0121	8,80
	TNMG 160408-MM5			○	●					APM 25 T	10	366669 0221	8,80

3135

ISO	APM 25 T
ISO P steel	Vc = 60 - 250
ISO M stainless steel	Vc = 40 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.18 - 0.4 ap = 0.5 - 5.0

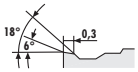
Chip breaker SS negative

F finishing -	M medium ●	R roughing ●	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
 Roughing/medium machining 	TNMG 160404-SS		●						PHS 215	10	**333653** 0171	8,25
			●						PHS 225	10	333653 0172	8,25
	TNMG 160408-SS		●						PHS 215	10	333653 0671	8,25
			●						PHS 225	10	333653 0723	8,25
	TNMG 160412-SS		●						PHS 215	10	333653 1171	8,25
			●						PHS 225	10	333653 1172	8,25
	TNMG 220408-SS		●						PHS 215	10	333653 1671	12,25
			●						PHS 225	10	333653 1672	12,25
	TNMG 220412-SS		●						PHS 225	10	333653 2172	12,25

3148

ISO	PHS 215	PHS 225
ISO M stainless steel	Vc = 55 - 240	Vc = 55 - 240
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.1 - 1.0 ap = 0.3 - 8.5	

Chip breaker RM5 negative

F finishing -	M medium ○	R roughing ●	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
 Roughing/medium machining 	TNMG 160412-RM5		○	●					APM 25 T	10	**366675** 0121	8,80
	TNMG 160408-RM5		○	●					APM 25 T	10	366675 0221	8,80

3135

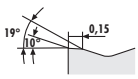
ISO	APM 25 T
ISO P steel	Vc = 60 - 250
ISO M stainless steel	Vc = 40 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.6 ap = 0.5 - 6.0

ISO indexable cutting inserts TN.. ISO K

- **60° triangular, negative 0°**

ISO K

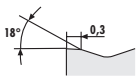
Chip breaker MK negative

F finishing -	M medium ●	R roughing ○	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
 Roughing/medium machining 	TNMG 160408-MK		○		●				ACK 20 T	10	**366673** 0130	8,80
	TNMG 160612-MK		○		●				ACK 20 T	10	366673 0230	8,80
	TNMG 220408-MK		○		●				ACK 20 T	10	366673 0330	12,10

3135

ISO	ACK 20 T
ISO P steel	Vc = 150 - 340
ISO K cast iron	Vc = 150 - 550
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.5 ap = 0.25 - 4.0

Chip breaker RK2 negative

F finishing -	M medium ○	R roughing ●	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
 Roughing/medium machining 	TNMG 160408-RK2		○		●				ACK 20 T	10	**366671** 0130	8,80

3135

ISO	ACK 20 T
ISO P steel	Vc = 150 - 340
ISO K cast iron	Vc = 150 - 550
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.18 - 0.5 ap = 0.5 - 6.0

Continued on next page >>>

Chip breaker RK negative

- **Without chip breaker version**

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
-	○	●	TNMA 160408-RK	○		●				ACK 20 T	10	**366668** 0130	8,80



Roughing

ISO	ACK 20 T
ISO P steel	Vc = 150 - 340
ISO K cast iron	Vc = 150 - 550
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.5 ap = 0.5 - 7.0

3135

ISO indexable cutting inserts TN.. ISO S

ISO S

- **60° triangular, negative 0°**

Chip breaker MS1 negative

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
○	●	-	TNMG 160408-MS1		○			●		APS 10 T	10	**366672** 0132	8,80
					○			●		APS 15 T	10	366672 0231	8,80



Finishing/medium machining



ISO	APS 10 T	APS 15 T
ISO M stainless steel	Vc = 60 - 230	Vc = 50 - 220
ISO S superalloys	Vc = 30 - 120	Vc = 30 - 120
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.1 - 0.3 ap = 0.5 - 3.0	

3135

ISO indexable cutting inserts VN.. ISO P

ISO P

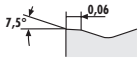
- **35° rhombic, negative 0°**

Chip breaker FP1 negative

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	○	-	VNMG 160404-FP1	●		○				ACP 15 T	10	**366686** 0115	13,65



Finishing



ISO	ACP 15 T
ISO P steel	Vc = 180 - 400
ISO K cast iron	Vc = 140 - 520
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.07 - 0.25 ap = 0.2 - 2.5

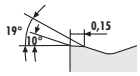
3135

Chip breaker MP5 negative

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
○	●	-	VNMG 160404-MP5	●		○				ACP 15 T	10	**366685** 0115	13,65
				●	○	○				ACP 25 T	10	366685 0225	13,65
			VNMG 160408-MP5	●		○				ACP 15 T	10	366685 0415	13,65
				●	○	○				ACP 25 T	10	366685 0525	13,65



Medium machining



ISO	ACP 15 T	ACP 25 T
ISO P steel	Vc = 180 - 400	Vc = 180 - 400
ISO M stainless steel		Vc = 70 - 210
ISO K cast iron	Vc = 140 - 520	Vc = 130 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.4 ap = 0.25 - 3.5	

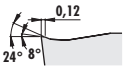
3135

Chip breaker PM negative

F finishing	M medium	R roughing	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
○	●	-	VNMG 160404-PM	●		●				**PHG 115**	10	**333687** 0164	11,50
			VNMG 160404-PM	●		●				**PHG 125**	10	333687 0165	11,50
			VNMG 160408-PM	●		●				**PHG 115**	10	333687 0264	11,50
			VNMG 160408-PM	●		●				**PHG 125**	10	333687 0265	11,50



Medium machining



ISO	PHG 115	PHG 125
ISO P steel	Vc = 110 - 270	Vc = 100 - 240
ISO K cast iron	Vc = 110 - 270	Vc = 100 - 240
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.15 - 0.5 ap = 1.0 - 4.0	

3148

ISO indexable cutting inserts VN.. ISO M

ISO M

- **35° rhombic, negative 0°**

Chip breaker FFM2 negative

F finishing	M medium	R roughing	ATORN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	-	-	VNGP 160402-FFM2		●	○	○	○		**APM 20 T**	10	**366684** 0120	20,90
			VNGP 160404-FFM2		●	○	○	○		**APM 20 T**	10	366684 0220	20,90



Micro finishing



ISO	APM 20 T
ISO M stainless steel	Vc = 60 - 200
ISO K cast iron	Vc = 120 - 220
ISO N Al/non-ferrous	Vc = 100 - 600
ISO S superalloys	Vc = 20 - 50
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.08 - 0.2 ap = 0.14 - 2.5

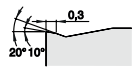
3135

Chip breaker SF negative

F finishing	M medium	R roughing	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
○	●	-	VNMG 160404-SF		●					**PHS 215**	10	**333660** 0371	13,25
					●					**PHS 225**	10	333660 0472	13,25
			VNMG 160408-SF		●					**PHS 215**	10	333660 0771	13,25
					●					**PHS 225**	10	333660 0872	13,25
			VNMG 160412-SF		●					**PHS 215**	10	333660 1171	13,25
					●					**PHS 225**	10	333660 1272	13,25



Finishing/medium machining



ISO	PHS 215	PHS 225
ISO M stainless steel	Vc = 80 - 290	Vc = 55 - 240
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.1 - 0.55 ap = 0.6 - 3.0	

3148

Chip breaker MM5 negative

F finishing	M medium	R roughing	ATORN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
○	●	-	VNMG 160408-MM5	○	●					**APM 25 T**	10	**366688** 0121	13,65



Medium machining



ISO	APM 25 T
ISO P steel	Vc = 60 - 250
ISO M stainless steel	Vc = 40 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.14 - 0.4 ap = 0.25 - 4.0

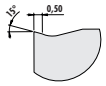
3135

Chip breaker GS negative

F finishing	M medium	R roughing	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
○	●	-	VNMG 160404-GS		●			●		**PHH 910**	10	**333582** 0195	12,–
					●			●		**PHH 920**	10	333582 0194	12,–
			VNMG 160408-GS		●			●		**PHH 910**	10	333582 0295	12,–
					●			●		**PHH 920**	10	333582 0294	12,–
			VNMG 160412-GS		●			●		**PHH 910**	10	333582 0395	12,–
					●			●		**PHH 920**	10	333582 0394	12,–



Medium machining



ISO	PHH 910	PHH 920
ISO M stainless steel	Vc = 130 - 250	Vc = 110 - 220
ISO S superalloys	Vc = 25 - 70	Vc = 20 - 60
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.10 - 0.50 ap = 0.50 - 4.0	

3148

ISO indexable cutting inserts WN.. ISO P

ISO P

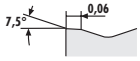
- **80° trigometric, negative 0°**

Chip breaker FP1 negative

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	○	-	WNMG 060404-FP1	●		○				ACP 15 T	10	**366696** 0115	7,90
			WNMG 080404-FP1	●		○				ACP 15 T	10	366696 0215	9,65



Finishing



ISO	ACP 15 T
ISO P steel	Vc = 180 - 400
ISO K cast iron	Vc = 140 - 520
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.08 - 0.25 ap = 0.25 - 2.5

3135

Chip breaker FP2 negative

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	○	-	WNMX 080404-FP2	●		○				ACP 15 T	10	**366707** 0115	9,20
			WNMX 080408-FP2	●		○				ACP 15 T	10	366707 0215	9,20



Finishing

ISO	ACP 15 T
ISO P steel	Vc = 180 - 400
ISO K cast iron	Vc = 140 - 520
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.1 - 0.8 ap = 0.5 - 5.0

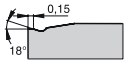
3135

Chip breaker LC negative

F finishing	M medium	R roughing	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	●	-	WNMG 080408-LC	●						PH 5125	10	**333670** 0123	8,20



Finishing/medium machining



ISO	PH 5125
ISO P steel	Vc = 100 - 295
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.07 - 0.50 ap = 0.60 - 3.00

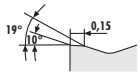
3148

Chip breaker MP5 negative

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
-	●	-	WNMG 060404-MP5	●		○				ACP 15 T	10	**366695** 0115	7,90
				●	○	○				ACP 25 T	10	366695 0225	7,90
			WNMG 060408-MP5	●		○				ACP 15 T	10	366695 0415	7,90
				●	○	○				ACP 25 T	10	366695 0525	7,90
			WNMG 080404-MP5	●		○				ACP 15 T	10	366695 0715	9,65
				●	○	○				ACP 25 T	10	366695 0825	9,65
			WNMG 080408-MP5	●		○				ACP 15 T	10	366695 1015	9,65
				●	○	○				ACP 25 T	10	366695 1125	9,65
				●	○					ACP 35 T	10	366695 1235	9,65
			WNMG 080412-MP5	●		○				ACP 15 T	10	366695 1315	9,65
				●	○	○				ACP 25 T	10	366695 1425	9,65
				●	○					ACP 35 T	10	366695 1535	9,65



Medium machining



ISO	ACP 15 T	ACP 25 T	ACP 35 T
ISO P steel	Vc = 180 - 400	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel		Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.4 ap = 0.25 - 3.5		

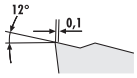
3135

Chip breaker MP negative

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
-	●	-	WNMG 060404-MP	●		○				HC 7620	10	**311755** 0312	9,15
			WNMG 060408-MP	●		○				HC 7620	10	311755 0412	9,15
			WNMG 080404-MP	●		○				HC 7610	10	311755 0811	11,50
				●		○				HC 7620	10	311755 0812	11,50
				●						HC 7630	10	311755 0813	11,50
			WNMG 080408-MP	●		○				HC 7610	10	311755 0911	11,50
				●		○				HC 7620	10	311755 0912	11,50
				●						HC 7630	10	311755 0913	11,50
			WNMG 080412-MP	●		○				HC 7620	10	311755 1012	11,50



Medium machining



ISO	HC 7610	HC 7620	HC 7630
ISO P steel	Vc = 160 - 350	Vc = 120 - 280	Vc = 80 - 220
ISO K cast iron	Vc = 140 - 240	Vc = 170 - 290	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.18 - 0.4 ap = 0.6 - 5.0		

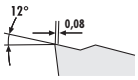
3108

Chip breaker MP5-HP negative

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
-	●	○	WNMG 080408-MP5	●	○	○				ACP 25 T	10	**311676** 0114	10,10
			WNMG 080412-MP5	●	○	○				ACP 25 T	10	311676 0214	10,10



Medium machining



ISO	ACP 25 T
ISO P steel	Vc = 100 - 270
ISO M stainless steel	Vc = 70 - 210
ISO K cast iron	Vc = 120 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.45 ap = 1.0 - 4.0

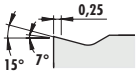
3147

Chip breaker PM negative

F finishing	M medium	R roughing	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
○	●	-	CNMG 060404-PM	●		●				PHG 115	10	**333672** 1064	7,65
				●		●				PHG 125	10	333672 1065	7,65
			WNMG 060408-PM	●		●				PHG 115	10	333672 1164	7,65
				●		●				PHG 125	10	333672 1165	7,65
			WNMG 080404-PM	●		●				PHG 115	10	333672 0164	9,45
				●		●				PHG 125	10	333672 0165	9,45
			WNMG 080408-PM	●		●				PHG 115	10	333672 0264	9,45
				●		●				PHG 125	10	333672 0265	9,45
			WNMG 080412-PM	●		●				PHG 115	10	333672 0364	9,45
				●		●				PHG 125	10	333672 0365	9,45
			WNMG 080416-PM	●		●				PHG 115	10	333672 0464	9,45
				●		●				PHG 125	10	333672 0465	9,45



Medium machining



ISO	PHG 115	PHG 125
ISO P steel	Vc = 110 - 270	Vc = 100 - 240
ISO K cast iron	Vc = 110 - 270	Vc = 100 - 240
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.10 - 0.65 ap = 0.50 - 4.50	

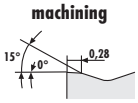
3148

Chip breaker RP2 negative

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
-	○	●	WNMG 080408-RP2	●	○	○				ACP 25 T	10	**366702** 0125	9,65
			WNMG 080412-RP2	●	○	○				ACP 25 T	10	366702 0225	9,65



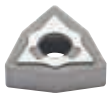
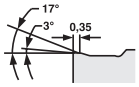
Roughing/medium machining



ISO	ACP 25 T
ISO P steel	Vc = 100 - 240
ISO M stainless steel	Vc = 70 - 210
ISO K cast iron	Vc = 120 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.5 ap = 0.5 - 6.0

3135

Chip breaker RP5 negative

F finishing	M medium	R roughing	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
-	○	●	ATORN®										
 Roughing/medium machining 	WNMG 080408-RP5			●		●				HC 7810	10	**311520** 1911	9,–
				●		●				HC 7820	10	311520 1912	9,–
				●		●				HC 7830	10	311520 1913	9,–
	WNMG 080412-RP5			●		●				HC 7820	10	311520 2012	9,–

3147

ISO	HC 7810	HC 7820	HC 7830
ISO P steel	Vc = 190 - 320	Vc = 160 - 270	Vc = 140 - 230
ISO K cast iron	Vc = 230 - 520	Vc = 190 - 440	Vc = 140 - 390
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.20 - 0.40	f = 0.20 - 0.60	f = 0.20 - 0.40
	ap = 0.80 - 6.0		

ISO indexable cutting inserts WN.. ISO M

ISO M

- **80° trigometric, negative 0°**

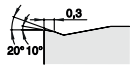
Chip breaker FFM2 negative

F finishing	M medium	R roughing	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	-	-	ATORN®										
 Micro finishing 	WNGP 080404-FFM2			●	○	○	○	○		APM 20 T	10	**366692** 0120	13,35
	WNGP 080408-FFM2			●	○	○	○	○		APM 20 T	10	366692 0220	13,35

3135

ISO	APM 20 T
ISO M stainless steel	Vc = 60 - 200
ISO K cast iron	Vc = 120 - 220
ISO N Al/non-ferrous	Vc = 100 - 600
ISO S superalloys	Vc = 20 - 50
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.08 - 0.2 ap = 0.14 - 2.5

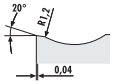
Chip breaker SF negative

F finishing	M medium	R roughing	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
○	●	-	palbit										
 Finishing/medium machining 	WNMG 060404-SF			●						PHS 215	10	**333668** 0371	8,45
				●						PHS 225	10	333668 0472	8,45
	WNMG 060408-SF			●						PHS 215	10	333668 0771	8,45
				●						PHS 225	10	333668 0872	8,45
	WNMG 060412-SF			●						PHS 215	10	333668 1171	8,45
				●						PHS 225	10	333668 1272	8,45
	WNMG 080404-SF			●						PHS 215	10	333668 1571	10,25
				●						PHS 225	10	333668 1672	10,25
	WNMG 080408-SF			●						PHS 215	10	333668 1971	10,25
				●						PHS 225	10	333668 2072	10,25
	WNMG 080412-SF			●						PHS 215	10	333668 2371	10,25
				●						PHS 225	10	333668 2472	10,25

3148

ISO	PHS 215	PHS 225
ISO M stainless steel	Vc = 80 - 290	Vc = 55 - 240
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.1 - 0.55 ap = 0.6 - 3.0	

Chip breaker MM (HC75..) negative

F finishing	M medium	R roughing	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
-	●	-	ATORN®										
 Medium machining 	WNMG 060404-MM			●				○		HC 7530	10	**310757** 0326	8,70
	WNMG 080408-MM			●				○		HC 7520	10	310757 0925	9,20
				●				○		HC 7530	10	310757 0926	9,20

3108

ISO	HC 7520	HC 7530
ISO M stainless steel	Vc = 150 - 240	Vc = 130 - 200
ISO S superalloys	Vc = 30 - 60	Vc = 20 - 50
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.18 - 0.40 ap = 0.5 - 5.0	

Chip breaker MM5 negative

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
-	●	-											
 Medium machining 	WNMG 060404-MM5			○	●					APM 25 T	10	**366694** 0121	7,90
	WNMG 060408-MM5			○	●					APM 25 T	10	366694 0221	7,90
	WNMG 080404-MM5			○	●					APM 25 T	10	366694 0321	9,65
	WNMG 080408-MM5			○	●					APM 25 T	10	366694 0421	9,65
	WNMG 080412-MM5			○	●					APM 25 T	10	366694 0521	9,65

3135

ISO	APM 25 T
ISO P steel	Vc = 60 - 250
ISO M stainless steel	Vc = 40 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.4 ap = 0.25 - 3.5

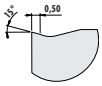
Chip breaker MM5-HP negative

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
-	●	-											
 Roughing/medium machining 	WNMG 080404-MM5			○	●					ACM 20 T	10	**311679** 0112	10,10
	WNMG 080408-MM5			○	●					ACM 20 T	10	311679 0212	10,10

3147

ISO	ACM 20 T
ISO P steel	Vc = 60 - 250
ISO M stainless steel	Vc = 120 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.4 ap = 1.0 - 4.2

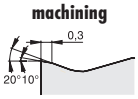
Chip breaker GS negative

F finishing	M medium	R roughing	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
○	●	-											
 Medium machining 	WNMG 080404-GS				●			●		PHH 920	10	**333583** 0194	9,35
					●			●		PHH 910	10	333583 0195	9,35
	WNMG 080408-GS				●			●		PHH 920	10	333583 0294	9,35
					●			●		PHH 910	10	333583 0295	9,35
	WNMG 080412-GS				●			●		PHH 920	10	333583 0394	9,35
					●			●		PHH 910	10	333583 0395	9,35

3148

ISO	PHH 910	PHH 920
ISO M stainless steel	Vc = 130 - 250	Vc = 110 - 220
ISO S superalloys	Vc = 25 - 70	Vc = 20 - 60
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.10 - 0.50 ap = 0.50 - 4.0	

Chip breaker SS negative

F finishing	M medium	R roughing	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
-	●	●											
 Roughing/medium machining 	WNMG 060404-SS				●					PHS 215	10	**333674** 0171	7,65
					●					PHS 225	10	333674 0172	7,65
	WNMG 060408-SS				●					PHS 215	10	333674 0571	7,65
					●					PHS 225	10	333674 0572	7,65
	WNMG 080404-SS				●					PHS 215	10	333674 1071	9,45
					●					PHS 225	10	333674 1072	9,45
	WNMG 080408-SS				●					PHS 215	10	333674 1571	9,45
					●					PHS 225	10	333674 1572	9,45
	WNMG 080412-SS				●					PHS 215	10	333674 2071	9,45
					●					PHS 225	10	333674 2072	9,45

3148

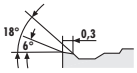
ISO	PHS 215	PHS 225
ISO M stainless steel	Vc = 55 - 240	Vc = 55 - 240
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.6 ap = 0.5 - 4.0	

Chip breaker RM5 negative

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
-	○	●	WNMG 080408-RM5	○	●					**APM 25 T**	10 **366699** 0121	9,65
			WNMG 080412-RM5	○	●					**APM 25 T**	10 366699 0321	9,65



Roughing/medium machining



ISO	APM 25 T
ISO P steel	Vc = 60 - 250
ISO M stainless steel	Vc = 40 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.5 ap = 0.5 - 6.0

3135

ISO indexable cutting inserts WN.. ISO K

ISO K

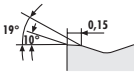
- **80° trigometric, negative 0°**

Chip breaker MK negative

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
○	●	-	WNMG 080408-MK	○		●				**ACK 20 T**	10 **366701** 0130	9,65
			WNMG 080412-MK	○		●				**ACK 20 T**	10 366701 0230	9,65



Medium machining



ISO	ACK 20 T
ISO P steel	Vc = 150 - 340
ISO K cast iron	Vc = 150 - 550
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.5 ap = 0.25 - 5.0

3135

Chip breaker RK negative

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
-	○	●	WNMA 080408-RK	○		●				**ACK 20 T**	10 **366693** 0130	9,20



Roughing/medium machining

ISO	ACK 20 T
ISO P steel	Vc = 150 - 340
ISO K cast iron	Vc = 150 - 550
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.5 ap = 0.25 - 5.5

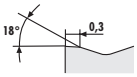
3135

Chip breaker RK2 negative

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
-	○	●	WNMG080408-RK2	○		●				**ACK 20 T**	10 **366697** 0130	9,65



Roughing/medium machining



ISO	ACK 20 T
ISO P steel	Vc = 150 - 340
ISO K cast iron	Vc = 150 - 550
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.6 ap = 0.5 - 5.0

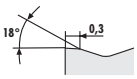
3135

Chip breaker RK3 negative

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
-	○	●	WNMG 080408-RK3	○		●				**ACK 10 T**	10 **311680** 0511	11,60
			WNMG 080412-RK3	○		●				**ACK 10 T**	10 311680 0611	11,60



Roughing



ISO	ACK 10 T
ISO P steel	Vc = 170 - 400
ISO K cast iron	Vc = 170 - 450
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.3 - 0.5 ap = 2.0 - 4.8

3147

ISO indexable cutting inserts WN.. ISO S

ISO S

- **80° trigometric, negative 0°**

Chip breaker MS1 negative

F finishing	M medium	R roughing
○	●	-



Medium machining



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
WNMG 080408-MS1		○			●		**APS 10 T**	10	**366698** 0132	9,65
		○			●		**APS 15 T**	10	366698 0231	9,65

3135

ISO	APS 10 T	APS 15 T
ISO M stainless steel	Vc = 60 - 230	Vc = 60 - 220
ISO S superalloys	Vc = 30 - 120	Vc = 30 - 120
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.08 - 0.3 ap = 0.25 - 3.0	

ISO indexable cutting inserts CC.. ISO P

ISO P

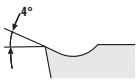
- **80° rhombic, positive 7°**

Chip breaker FFP, CERMET design

F finishing	M medium	R roughing
●	-	-



Micro finishing



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
CCMT 060204-FFP	●	○	○				**ATU 10 T**	10	**366603** 0140	5,95
CCMT 09T304-FFP	●	○	○				**ATU 10 T**	10	366603 0240	6,70

3135

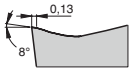
ISO	ATU 10 T
ISO P steel	Vc = 160 - 270
ISO M stainless steel	Vc = 130 - 240
ISO K cast iron	Vc = 220 - 350
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.2 ap = 0.1 - 1.65

Chip breaker FS positive

F finishing	M medium	R roughing
●	-	-



Micro finishing



palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
CCGT 060201-FS	●	●			●		**PH 7910**	10	**333513** 0149	9,45
	●	●			●		**PH 7920**	10	333513 0150	9,45
CCGT 060202-FS	●	●			●		**PH 7910**	10	333513 0249	9,45
	●	●			●		**PH 7920**	10	333513 0250	9,45
CCGT 060204-FS	●	●			●		**PH 7910**	10	333513 0349	9,45
	●	●			●		**PH 7920**	10	333513 0350	9,45
CCGT 09T301-FS	●	●			●		**PH 7910**	10	333513 0449	10,25
	●	●			●		**PH 7920**	10	333513 0450	10,25
CCGT 09T302-FS	●	●			●		**PH 7910**	10	333513 0549	10,25
	●	●			●		**PH 7920**	10	333513 0550	10,25
CCGT 09T304-FS	●	●			●		**PH 7910**	10	333513 0649	10,25
	●	●			●		**PH 7920**	10	333513 0650	10,25

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ISO	PH 7910	PH 7920
ISO P steel	Vc = 115 - 245	Vc = 100 - 230
ISO M stainless steel	Vc = 100 - 230	Vc = 100 - 235
ISO S superalloys	Vc = 33 - 160	Vc = 25 - 145
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.01 - 0.25 ap = 0.10 - 3.00	

Continued on next page >>>

Chip breaker BO positive

F finishing	M medium	R roughing	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	-	-											
 Micro finishing 			CCMT 060202-BO	●	○			○		PH 7910	10	**373510** 1049	7,15
				●	○			○		PH 7920	10	373510 1050	7,15
			CCMT 060204-BO	●	○			○		PH 7910	10	373510 1149	7,15
				●	○			○		PH 7920	10	373510 1150	7,15
			CCMT 060208-BO	●	○			○		PH 7920	10	373510 1250	7,15
			CCMT 09T304-BO	●	○			○		PH 7910	10	373510 1349	7,65
			CCMT 09T302-BO	●	○			○		PH 7920	10	373510 1350	7,65
			CCMT 09T308-BO	●	○			○		PH 7910	10	373510 1449	7,65
			CCMT 09T304-BO	●	○			○		PH 7920	10	373510 1450	7,65
			CCMT 120404-BO	●	○			○		PH 7910	10	373510 1549	8,95
			CCMT 09T308-BO	●	○			○		PH 7920	10	373510 1550	7,65
			CCMT 120408-BO	●	○			○		PH 7910	10	373510 1649	8,95
			CCMT 120404-BO	●	○			○		PH 7920	10	373510 1650	8,95
			CCMT 120408-BO	●	○			○		PH 7920	10	373510 1750	8,95

ISO	PH 7910	PH 7920
ISO P steel	Vc = 115 - 245	Vc = 100 - 230
ISO M stainless steel	Vc = 100 - 230	Vc = 100 - 235
ISO S superalloys	Vc = 33 - 170	Vc = 23 - 150
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.30 ap = 0.30 - 1.50	

1172

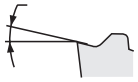
Chip breaker FP positive

F finishing	M medium	R roughing	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	-	-											
 Micro finishing 			CCMT 060204-FP	●						PH 5125	10	**333502** 0223	6,40
				●						PH 7920	10	333502 0250	6,40
			CCMT 09T302-FP	●						PH 5125	10	333502 0323	6,40
			CCMT 09T304-FP	●						PH 5115	10	333502 0422	6,40
				●						PH 5125	10	333502 0423	6,40
				●						PH 7920	10	333502 0450	6,40
			CCMT 09T308-FP	●						PH 7920	10	333502 0550	6,40
			CCMT 120404-FP	●						PH 5115	10	333502 0622	7,95
				●						PH 5125	10	333502 0623	7,95
			CCMT 060202-FP	●						PHG 125	10	333502 0165	7,40
			CCMT 060204-FP	●						PHG 115	10	333502 0164	7,40
				●						PHG 125	10	333502 0265	7,40
			CCMT 09T302-FP	●						PHG 125	10	333502 0365	7,40
			CCMT 09T304-FP	●						PHG 115	10	333502 0464	7,40
				●						PHG 125	10	333502 0465	7,40
			CCMT 09T308-FP	●						PHG 115	10	333502 0564	7,40
				●						PHG 125	10	333502 0565	7,40
			CCMT 120404-FP	●						PHG 115	10	333502 0664	9,20
				●						PHG 125	10	333502 0665	9,20

ISO	PH 5115	PH 5125	PH 7920	PHG 115	PHG 125
ISO P steel	Vc = 110 - 350	Vc = 100 - 295	Vc = 100 - 230	Vc = 110 - 350	Vc = 100 - 295
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.03 - 0.45 ap = 0.06 - 2.40				

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Chip breaker FU1 positive

F finishing	M medium	R roughing	ATORN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	-	-											
 Finishing 			CCGT 060201-FU1	●	●			●		HC 7820	10	**311530** 1312	10,–
			CCGT 060202-FU1	●	●			●		HC 7810	10	311530 1411	10,–
				●	●			●		HC 7820	10	311530 1412	10,–
			CCGT 060204-FU1	●	●			●		HC 7810	10	311530 1511	10,–
				●	●			●		HC 7820	10	311530 1512	10,–
			CCGT 09T301-FU1	●	●			●		HC 7820	10	311530 1612	11,65
			CCGT 09T302-FU1	●	●			●		HC 7810	10	311530 1711	11,65
				●	●			●		HC 7820	10	311530 1712	11,65
			CCGT 09T304-FU1	●	●			●		HC 7810	10	311530 1811	11,65
				●	●			●		HC 7820	10	311530 1812	11,65
			CCGT 09T308-FU1	●	●			●		HC 7810	10	311530 1911	11,65
				●	●			●		HC 7820	10	311530 1912	11,65

ISO	HC 7810	HC 7820
ISO P steel	Vc = 80 - 160	Vc = 50 - 130
ISO M stainless steel	Vc = 130 - 220	Vc = 100 - 210
ISO S superalloys	Vc = 40 - 70	Vc = 40 - 60
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.30 ap = 0.20 - 3.0	f = 0.02 - 0.30 ap = 0.10 - 3.0

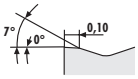
3147

Chip breaker FP1 positive

F finishing	M medium	R roughing
●	○	-



Finishing



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
CCMT 060202-FP1	●	○	○				**ACP 25 T**	10	**366604** 0125	5,95
CCMT 060204-FP1	●		○				**ACP 15 T**	10	366604 0215	5,95
	●	○	○				**ACP 25 T**	10	366604 0325	5,95
CCMT 09T302-FP1	●	○	○				**ACP 25 T**	10	366604 0425	7,45
CCMT 09T304-FP1	●		○				**ACP 15 T**	10	366604 0515	7,45
	●	○	○				**ACP 25 T**	10	366604 0625	7,45
CCMT 09T308-FP1	●		○				**ACP 15 T**	10	366604 0715	7,45
	●	○	○				**ACP 25 T**	10	366604 0825	7,45
	●	○					**ACP 35 T**	10	366604 0915	7,45
CCMT 120404-FP1	●		○				**ACP 15 T**	10	366604 1015	9,90

3135

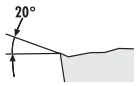
ISO	ACP 15 T	ACP 25 T	ACP 35 T
ISO P steel	Vc = 180 - 400	Vc = 100 - 240	Vc = 90 - 190
ISO M stainless steel		Vc = 70 - 200	Vc = 55 - 180
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.07 - 0.25 ap = 0.1 - 2.5		

Chip breaker FP positive

F finishing	M medium	R roughing
●	-	-



Finishing



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
CCMT 060202-FP		●			●		**HC 7520**	10	**311526** 0125	6,80
	●		○				**HC 7610**	10	311101 0111	6,80
	●		○				**HC 7620**	10	311101 0112	6,80
CCMT 060204-FP		●			●		**HC 7520**	10	311526 0225	6,80
	●		○				**HC 7610**	10	311101 0211	6,80
	●		○				**HC 7620**	10	311101 0212	6,80
CCMT 09T302-FP	●		○				**HC 7610**	10	311101 1111	8,50
	●		○				**HC 7620**	10	311101 1112	8,50
CCMT 09T304-FP		●			●		**HC 7520**	10	311526 0325	8,50
	●		○				**HC 7610**	10	311101 1211	8,50
	●		○				**HC 7620**	10	311101 1212	8,50
CCMT 09T308-FP		●			●		**HC 7520**	10	311526 0425	8,50
	●		○				**HC 7610**	10	311101 1311	8,50
	●		○				**HC 7620**	10	311101 1312	8,50
CCMT 120404-FP	●		○				**HC 7610**	10	311101 2611	12,05
	●		○				**HC 7620**	10	311101 2612	12,05
CCMT 120408-FP	●		○				**HC 7610**	10	311101 2711	12,05
	●		○				**HC 7620**	10	311101 2712	12,05

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ISO	HC 7520	HC 7610	HC 7620
ISO P steel		Vc = 200 - 380	Vc = 140 - 320
ISO M stainless steel	Vc = 150 - 220		
ISO K cast iron		Vc = 180 - 280	Vc = 160 - 260
ISO S superalloys	Vc = 30 - 60		
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.16 ap = 0.1 - 1.5		

Chip breaker FP2 positive

F finishing	M medium	R roughing
●	-	-



Finishing

ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
CCMX 09T304-FP2	●	○	○				**ACP 25 T**	10	**366708** 0125	9,65
	○	●					**APM 35 T**	10	366708 0135	9,65
CCMX 09T308-FP2	●	○	○				**ACP 25 T**	10	366708 0225	9,65
	○	●					**APM 35 T**	10	366708 0235	9,65

3135

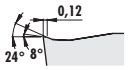
ISO	ACP 25 T	APM 35 T
ISO P steel	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel	Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 130 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.4 ap = 0.3 - 3.0	

Chip breaker MP positive

F finishing	M medium	R roughing
○	●	-



Medium machining



palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
CCMT 060204-MP	●		●				**PHG 115**	10	**333501** 0064	7,40
	●		●				**PHG 125**	10	333508 0165	7,40
CCMT 060208-MP	●		●				**PHG 115**	10	333501 0164	7,40
	●		●				**PHG 125**	10	333501 0165	7,40
CCMT 09T304-MP	●		●				**PHG 115**	10	333501 0264	7,40
	●		●				**PHG 125**	10	333501 0265	7,40
CCMT 09T308-MP	●		●				**PHG 115**	10	333501 0364	7,40
	●		●				**PHG 125**	10	333501 0365	7,40
CCMT 120404-MP	●		●				**PHG 115**	10	333501 0464	9,20
	●		●				**PHG 125**	10	333501 0465	9,20
CCMT 120408-MP	●		●				**PHG 115**	10	333501 0564	9,20
	●		●				**PHG 125**	10	333501 0565	9,20
CCMT 120412-MP	●		●				**PHG 115**	10	333501 0664	9,20

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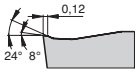
ISO	PHG 115	PHG 125
ISO P steel	Vc = 110 - 270	Vc = 100 - 240
ISO K cast iron	Vc = 110 - 270	Vc = 100 - 240
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.08 - 0.60 ap = 0.20 - 3.60	

Chip breaker MP positive

F finishing	M medium	R roughing
○	●	-



Finishing



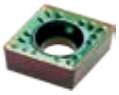
palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
CCMT 060204-MP	●						**PH 5115**	10	**333508** 0122	6,40
	●						**PH 7920**	10	333508 0150	6,40
CCMT 060208-MP	●						**PH 5115**	10	333508 0222	6,40
CCMT 09T304-MP	●						**PH 7920**	10	333508 0350	6,40
CCMT 09T308-MP	●						**PH 5115**	10	333508 0422	6,40
	●						**PH 5125**	10	333508 0423	6,40
	●						**PH 7920**	10	333508 0450	6,40
CCMT 120404-MP	●						**PH 5115**	10	333508 0522	7,95
	●						**PH 5125**	10	333508 0523	7,95
CCMT 120408-MP	●						**PH 5115**	10	333508 0622	7,95
	●						**PH 5125**	10	333508 0623	7,95
	●						**PH 7920**	10	333508 0650	7,95
CCMT 120412-MP	●						**PH 5115**	10	333508 0722	7,95
	●						**PH 5125**	10	333508 0723	7,95

3148

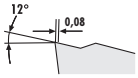
ISO	PH 5115	PH 5125	PH 7920
ISO P steel	Vc = 110 - 350	Vc = 100 - 295	Vc = 100 - 230
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.06 - 0.60 ap = 0.19 - 3.60		

Chip breaker MP5 positive

F finishing	M medium	R roughing
-	●	○



Medium machining



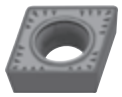
ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
CCMT 060204-MP5	●		○				**ACP 15 T**	10	**366606** 0115	5,95
	●	○	○				**ACP 25 T**	10	366606 0225	5,95
	●	○					**ACP 35 T**	10	366606 0335	5,95
CCMT 060208-MP5	●	○	○				**ACP 15 T**	10	366606 0415	5,95
	●	○	○				**ACP 25 T**	10	366606 0525	5,95
CCMT 09T304-MP5	●		○				**ACP 15 T**	10	366606 0615	7,45
	●	○	○				**ACP 25 T**	10	366606 0725	7,45
	●	○					**ACP 35 T**	10	366606 0835	7,45
CCMT 09T308-MP5	●		○				**ACP 15 T**	10	366606 0915	7,45
	●	○	○				**ACP 25 T**	10	366606 1025	7,45
	●	○					**ACP 35 T**	10	366606 1135	7,45
CCMT 120404-MP5	●	○	○				**ACP 25 T**	10	366606 1225	9,90
CCMT 120408-MP5	●	○	○				**ACP 25 T**	10	366606 1325	9,90
CCMT 120412-MP5	●	○	○				**ACP 25 T**	10	366606 1425	9,90

3135

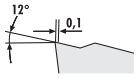
ISO	ACP 15 T	ACP 25 T	ACP 35 T
ISO P steel	Vc = 180 - 400	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel		Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.4 ap = 0.25 - 3.5		

Chip breaker MP positive

F finishing	M medium	R roughing
-	●	-



Medium machining



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
CCMT 060204-MP	●		○				HC 7610	10 **311103** 0211	6,80
	●		○				HC 7620	10 311103 0212	6,80
	●						HC 7630	10 311103 0213	6,80
CCMT 09T304-MP	●		○				HC 7610	10 311103 1211	8,50
	●		○				HC 7620	10 311103 1212	8,50
	●						HC 7630	10 311103 1213	8,50
CCMT 09T308-MP	●		○				HC 7610	10 311103 1311	8,50
	●		○				HC 7620	10 311103 1312	8,50
	●						HC 7630	10 311103 1313	8,50
CCMT 120404-MP	●		○				HC 7610	10 311103 2611	12,05
	●		○				HC 7620	10 311103 2612	12,05
	●						HC 7630	10 311103 2613	12,05
CCMT 120408-MP	●		○				HC 7610	10 311103 2711	12,05
	●		○				HC 7620	10 311103 2712	12,05
	●						HC 7630	10 311103 2713	12,05

ISO	HC 7610	HC 7620	HC 7630
ISO P steel	Vc = 160 - 340	Vc = 110 - 250	Vc = 80 - 220
ISO K cast iron	Vc = 140 - 240	Vc = 140 - 240	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.16 - 0.35 ap = 0.6 - 4.0		

3108

ISO indexable cutting inserts CC.. ISO M

ISO M

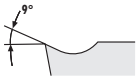
- **80° rhombic, positive 7°**

Chip breaker FFM positive

F finishing	M medium	R roughing
●	-	-



Micro finishing



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
CCGT 060200-FFM		●	○	○	○		APM 20 T	10 **366602** 0120	10,25
CCGT 060201-FFM		●	○	○	○		APM 20 T	10 366602 0220	10,25
CCGT 09T300-FFM		●	○	○	○		APM 20 T	10 366602 0320	10,70
CCGT 09T301-FFM		●	○	○	○		APM 20 T	10 366602 0420	10,70

ISO	APM 20 T
ISO M stainless steel	Vc = 60 - 200
ISO K cast iron	Vc = 120 - 220
ISO N Al/non-ferrous	Vc = 100 - 600
ISO S superalloys	Vc = 20 - 50
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.02 - 0.14 ap = 0.05 - 1.35

3135

Chip breaker FM positive

F finishing	M medium	R roughing
●	-	-



Micro finishing



palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
CCMT 060202-FM		●			●		PH 7920	10 **333504** 0150	6,40
CCMT 060204-FM		●			●		PH 7910	10 333504 0249	6,40
		●			●		PH 7920	10 333504 0250	6,40
		●					PHS 225	10 333504 0272	7,40
CCMT 09T302-FM		●			●		PH 7920	10 333504 0350	6,40
CCMT 09T304-FM		●			●		PH 7910	10 333504 0449	6,40
		●			●		PH 7920	10 333504 0450	6,40
CCMT 09T308-FM		●			●		PH 7910	10 333504 0549	6,40
		●			●		PH 7920	10 333504 0550	6,40
		●					PHS 225	10 333504 0572	7,40
CCMT 120404-FM		●			●		PH 7920	10 333504 0650	7,95
		●					PHS 225	10 333504 0672	9,20

ISO	PH 7910	PH 7920	PHS 225
ISO M stainless steel	Vc = 100 - 230	Vc = 100 - 235	Vc = 90 - 240
ISO S superalloys	Vc = 35 - 170	Vc = 25 - 150	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.03 - 0.45 ap = 0.06 - 2.40		

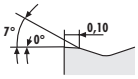
3148

Chip breaker FM1 positive

F finishing	M medium	R roughing
●	○	-



Finishing

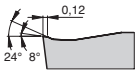


ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
CCMT 060202-FM2	○	●					APM 25 T	10 **366605** 0121	5,95
CCMT 060204-FM2	○	●					APM 25 T	10 366605 0221	5,95
CCMT 09T302-FM2	○	●					APM 25 T	10 366605 0321	7,45
CCMT 09T304-FM2	○	●					APM 25 T	10 366605 0421	7,45
CCMT 09T308-FM2	○	●					APM 25 T	10 366605 0521	7,45

ISO	APM 25 T
ISO P steel	Vc = 60 - 250
ISO M stainless steel	Vc = 60 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.07 - 0.25 ap = 0.2 - 2.5

3135

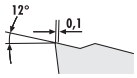
Chip breaker MM positive

F finishing ○	M medium ●	R roughing -	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Medium machining 	CCMT 060204-MM				●					PHS 215	10	**333509** 0171	7,40
					●			●		PH 7910	10	333509 0149	6,40
					●			●		PH 7920	10	333509 0150	6,40
	CCMT 060208-MM				●			●		PH 7920	10	333509 0250	6,40
	CCMT 09T304-MM				●					PHS 215	10	333509 0371	7,40
					●			●		PH 7910	10	333509 0349	6,40
					●			●		PH 7920	10	333509 0350	6,40
	CCMT 09T308-MM				●					PHS 215	10	333509 0471	7,40
					●			●		PH 7910	10	333509 0449	6,40
					●			●		PH 7920	10	333509 0450	6,40
	CCMT 120404-MM				●					PHS 215	10	333509 0571	9,20
					●			●		PH 7920	10	333509 0550	7,95
	CCMT 120408-MM				●					PHS 215	10	333509 0671	9,20
					●			●		PH 7910	10	333509 0649	7,95
					●			●		PH 7920	10	333509 0650	7,95
	CCMT 120412-MM				●					PHS 215	10	333509 0771	9,20

3148

ISO	PH 7910	PH 7920	PHS 215
ISO M stainless steel	Vc = 100 - 230	Vc = 100 - 235	Vc = 80 - 290
ISO S superalloys	Vc = 35 - 170	Vc = 25 - 150	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.06 - 0.60 ap = 0.19 - 3.60		f = 0.06 - 6.00 ap = 0.20 - 3.60

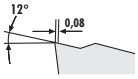
Chip breaker MP stainless steel positive

F finishing -	M medium ●	R roughing -	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Medium machining 	CCMT 060204-MP				●			○		HC 7520	10	**310103** 0225	6,90
					●			○		HC 7530	10	310103 0226	6,90
	CCMT 09T304-MP				●			○		HC 7520	10	310103 1225	8,20
					●			○		HC 7530	10	310103 1226	8,20
	CCMT 09T308-MP				●			○		HC 7520	10	310103 1325	8,20
					●			○		HC 7530	10	310103 1326	8,20

3108

ISO	HC 7520	HC 7530
ISO M stainless steel	Vc = 80 - 210	Vc = 90 - 160
ISO S superalloys	Vc = 30 - 60	Vc = 20 - 50
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.16 - 0.35 ap = 0.6 - 4.0	

Chip breaker MM3 positive

F finishing -	M medium ●	R roughing ○	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Medium machining 	CCMT 060204-MM3			○	●					APM 25 T	10	**366607** 0121	5,95
	CCMT 060208-MM3			○	●					APM 25 T	10	366607 0221	5,95
	CCMT 09T304-MM3			○	●					APM 25 T	10	366607 0321	7,45
				○	●					APM 35 T	10	366607 0422	7,45
	CCMT 09T308-MM3			○	●					APM 25 T	10	366607 0521	7,45
				○	●					APM 35 T	10	366607 0622	7,45
	CCMT 120404-MM3			○	●					APM 25 T	10	366607 0721	9,90
	CCMT 120408-MM3			○	●					APM 25 T	10	366607 0821	9,90
	CCMT 120412-MM3			○	●					APM 25 T	10	366607 0921	9,90

3135

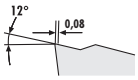
ISO	APM 25 T	APM 35 T
ISO P steel	Vc = 80 - 250	Vc = 90 - 200
ISO M stainless steel	Vc = 40 - 250	Vc = 55 - 200
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.3 ap = 0.25 - 3.5	

ISO indexable cutting inserts CC.. ISO K

ISO K

- **80° rhombic, positive 7°**

Chip breaker MK positive

F finishing -	M medium ●	R roughing ○	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Universal application 			CCMT 060204-MK	○		●				ACK 20 T	10	**366608** 0130	5,95
			CCMT 09T304-MK	○		●				ACK 20 T	10	366608 0230	7,45
			CCMT 09T308-MK	○		●				ACK 20 T	10	366608 0330	7,45
			CCMT 120408-MK	○		●				ACK 20 T	10	366608 0430	9,90

ISO	ACK 20 T
ISO P steel	Vc = 150 - 340
ISO K cast iron	Vc = 150 - 550
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.4 ap = 0.5 - 3.0

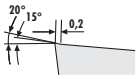
3135

ISO indexable cutting inserts CC.. ISO N

ISO N

- **80° rhombic, positive 7°**

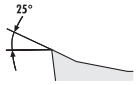
Chip breaker MN5 positive

F finishing ○	M medium ○	R roughing ○	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Universal application 			CCGT 060201-MN5			○	●	○		AWN 15 T	10	**366601** 0116	8,30
			CCGT 060202-MN5			○	●	○		AWN 15 T	10	366601 0216	8,30
			CCGT 060204-MN5			○	●	○		AWN 15 T	10	366601 0316	8,30
			CCGT 060202-MN5		○	○	●	○		APN 15 T	10	366601 0417	10,25
			CCGT 060204-MN5		○	○	●	○		APN 15 T	10	366601 0517	10,25
			CCGT 09T302-MN5			○	●	○		AWN 15 T	10	366601 0616	8,75
					○	○	●	○		APN 15 T	10	366601 0717	10,70
			CCGT 09T304-MN5			○	●	○		AWN 15 T	10	366601 0816	8,75
					○	○	●	○		APN 15 T	10	366601 0917	10,70
			CCGT 09T308-MN5			○	●	○		AWN 15 T	10	366601 1016	8,75
					○	○	●	○		APN 15 T	10	366601 1117	10,70
			CCGT 120404-MN5			○	●	○		AWN 15 T	10	366601 1216	10,25
					○	○	●	○		APN 15 T	10	366601 1317	12,25
			CCGT 120408-MN5			○	●	○		AWN 15 T	10	366601 1416	10,25
					○	○	●	○		APN 15 T	10	366601 1517	12,25

ISO	APN 15 T	AWN 15 T
ISO M stainless steel	Vc = 50 - 140	
ISO K cast iron	Vc = 120 - 200	Vc = 120 - 200
ISO N Al/non-ferrous	Vc = 100 - 3000	Vc = 100 - 2000
ISO S superalloys	Vc = 18 - 45	Vc = 18 - 45
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.1 - 0.5 ap = 0.1 - 4.5	

3135

Chip breaker MN positive

F finishing ●	M medium ●	R roughing -	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Finishing/medium machining 			CCGT 060202-MN		○		●			HC 6310	10	**310901** 0141	11,35
			CCGT 060204-MN		○		●			HC 6310	10	310901 0241	11,35
			CCGT 09T302-MN		○		●			HC 6310	10	310901 1141	12,05
			CCGT 09T304-MN		○		●			HC 6310	10	310901 1241	12,05
			CCGT 09T308-MN		○		●			HC 6310	10	310901 1341	12,05
			CCGT 120402-MN		○		●			HC 6310	10	310901 2541	13,70
			CCGT 120404-MN		○		●			HC 6310	10	310901 2641	13,70
			CCGT 120408-MN		○		●			HC 6310	10	310901 2741	13,70

ISO	HC 6310
ISO M stainless steel	Vc = 120 - 200
ISO N Al/non-ferrous	Vc = 160 - 1000
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.16 ap = 0.3 - 2.0

3108

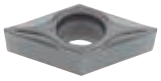
ISO indexable cutting inserts DC.. ISO P

ISO P

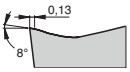
- **55° rhombic, positive 7°**

Chip breaker FS

F finishing	M medium	R roughing
●	-	-



Micro finishing



palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
DCGT 070201-FS	●	●			●		**PH 7910**	10	**333524** 0149	9,45
	●	●			●		**PH 7920**	10	333524 0150	9,45
DCGT 070202-FS	●	●			●		**PH 7910**	10	333524 0249	9,45
	●	●			●		**PH 7920**	10	333524 0250	9,45
DCGT 070204-FS	●	●			●		**PH 7910**	10	333524 0349	9,45
	●	●			●		**PH 7920**	10	333524 0350	9,45
DCGT 11T301-FS	●	●			●		**PH 7910**	10	333524 0449	10,25
	●	●			●		**PH 7920**	10	333524 0450	10,25
DCGT 11T302-FS	●	●			●		**PH 7910**	10	333524 0549	10,25
	●	●			●		**PH 7920**	10	333524 0550	10,25
DCGT 11T304-FS	●	●			●		**PH 7910**	10	333524 0649	10,25
	●	●			●		**PH 7920**	10	333524 0650	10,25

3148

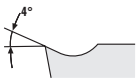
ISO	PH 7910	PH 7920
ISO P steel	Vc = 115 - 245	Vc = 100 - 230
ISO M stainless steel	Vc = 100 - 230	Vc = 100 - 235
ISO S superalloys	Vc = 35 - 170	Vc = 25 - 150
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.01 - 0.25 ap = 0.10 - 3.00	

Chip breaker FFP, CERMET design

F finishing	M medium	R roughing
●	-	-



Micro finishing



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
DCMT 070204-FFP	●	○	○				**ATU 10 T**	10	**366627** 0140	6,30
DCMT 11T304-FFP	●	○	○				**ATU 10 T**	10	366627 0240	8,20

3135

ISO	ATU 10 T
ISO P steel	Vc = 160 - 270
ISO M stainless steel	Vc = 130 - 240
ISO K cast iron	Vc = 220 - 350
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.2 ap = 0.1 - 1.65

Chip breaker FP

F finishing	M medium	R roughing
●	-	-



Micro finishing



palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
DCMT 070202-FP	●						**PHG 125**	10	**333515** 0165	7,40
DCMT 070204-FP	●						**PH 5115**	10	333515 0222	6,40
	●						**PH 5125**	10	333515 0223	6,40
	●						**PHG 115**	10	333515 0264	7,40
	●						**PHG 125**	10	333515 0265	7,40
DCMT 11T302-FP	●						**PH 5125**	10	333515 0323	6,40
	●						**PH 7920**	10	333515 0350	6,40
DCMT 11T304-FP	●						**PH 5115**	10	333515 0422	6,40
	●						**PHG 115**	10	333515 0464	7,40
	●						**PHG 125**	10	333515 0465	7,40
DCMT 11T308-FP	●						**PH 5115**	10	333515 0522	6,40
	●						**PH 5125**	10	333515 0523	6,40
	●						**PHG 115**	10	333515 0564	7,40
	●						**PHG 125**	10	333515 0565	7,40

3148

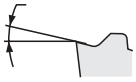
ISO	PH 5115	PH 5125	PH 7920	PHG 115	PHG 125
ISO P steel	Vc = 110 - 350	Vc = 100 - 295	Vc = 100 - 230	Vc = 110 - 350	Vc = 100 - 295
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.03 - 0.45 ap = 0.06 - 2.40			f = 0.03 - 0.30 ap = 0.06 - 2.00	

Chip breaker FU1

F finishing	M medium	R roughing
●	-	-



Finishing



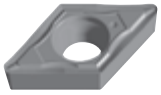
ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
DCGT 070201-FU1	●	●			●		HC 7820	10	**311530** 2012	9,55
DCGT 070202-FU1	●	●			●		HC 7810	10	311530 2111	9,55
	●	●			●		HC 7820	10	311530 2112	9,55
DCGT 070204-FU1	●	●			●		HC 7810	10	311530 2211	9,55
	●	●			●		HC 7820	10	311530 2212	9,55
DCGT 11T301-FU1	●	●			●		HC 7820	10	311530 2312	11,40
DCGT 11T302-FU1	●	●			●		HC 7810	10	311530 2411	11,40
	●	●			●		HC 7820	10	311530 2412	11,40
DCGT 11T304-FU1	●	●			●		HC 7810	10	311530 2511	11,40
	●	●			●		HC 7820	10	311530 2512	11,40
DCGT 11T308-FU1	●	●			●		HC 7810	10	311530 2611	11,40
	●	●			●		HC 7820	10	311530 2612	11,40

3147

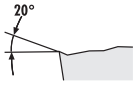
ISO	HC 7810	HC 7820
ISO P steel	Vc = 80 - 160	Vc = 80 - 130
ISO M stainless steel	Vc = 130 - 220	Vc = 100 - 210
ISO S superalloys	Vc = 40 - 70	Vc = 40 - 60
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.30 ap = 0.20 - 3.0	f = 0.02 - 0.30 ap = 0.10 - 3.0

Chip breaker type FP

F finishing	M medium	R roughing
●	-	-



Finishing



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
DCMT 070202-FP		●	○		●		HC 7520	10	**311527** 0125	6,80
	●		○				HC 7610	10	311201 0511	6,80
	●		○				HC 7620	10	311201 0512	6,80
DCMT 070204-FP		●			●		HC 7520	10	311527 0225	6,80
	●		○				HC 7610	10	311201 0611	6,80
	●		○				HC 7620	10	311201 0612	6,80
DCMT 11T302-FP		●			●		HC 7520	10	311527 0325	9,65
	●		○				HC 7610	10	311201 1911	9,65
	●		○				HC 7620	10	311201 1912	9,65
DCMT 11T304-FP		●			●		HC 7520	10	311527 0425	9,65
	●		○				HC 7610	10	311201 2011	9,65
	●		○				HC 7620	10	311201 2012	9,65
DCMT 11T308-FP		●			●		HC 7520	10	311527 0525	9,65
	●		○				HC 7620	10	311201 2112	9,65

3108

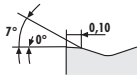
ISO	HC 7520	HC 7610	HC 7620
ISO P steel		Vc = 200 - 380	Vc = 140 - 320
ISO M stainless steel	Vc = 140 - 220		
ISO K cast iron		Vc = 180 - 280	Vc = 160 - 260
ISO S superalloys	Vc = 30 - 60		
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.16 ap = 0.1 - 1.5		

Chip breaker FP1

F finishing	M medium	R roughing
●	○	-



Finishing



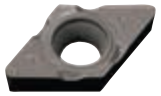
ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
DCMT 070202-FP1	●		○				ACP 15 T	10	**366625** 0015	6,30
	●	○	○				ACP 25 T	10	366625 0125	6,30
DCMT 070204-FP1	●	○	○				ACP 25 T	10	366625 0225	6,30
	●		○				ACP 15 T	10	366625 0415	6,30
DCMT 11T302-FP1	●		○				ACP 15 T	10	366625 0715	8,20
	●	○	○				ACP 25 T	10	366625 0725	8,20
DCMT 11T304-FP1	●		○				ACP 15 T	10	366625 1015	8,20
	●	○	○				ACP 25 T	10	366625 1025	8,20
DCMT 11T308-FP1	●	○	○				ACP 25 T	10	366625 1325	8,20

3135

ISO	ACP 15 T	ACP 25 T
ISO P steel	Vc = 180 - 400	Vc = 100 - 240
ISO M stainless steel		Vc = 70 - 210
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.07 - 0.25 ap = 0.5 - 2.5	

Chip breaker FP2, positive

F finishing	M medium	R roughing
●	-	-



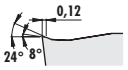
Finishing

ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
DCMX 070204-FP2	●	○	○				ACP 25 T	10	**366709** 0125	7,05
DCMX 11T304-FP2	○	●					APM 35 T	10	366709 0135	9,–
	●	○	○				ACP 25 T	10	366709 0225	9,–
DCMX 11T308-FP2	●	○	○				ACP 25 T	10	366709 0325	9,–

3135

ISO	ACP 25 T	APM 35 T
ISO P steel	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel	Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.1 - 0.5 ap = 0.1 - 3.0	

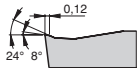
Chip breaker MP

F finishing ○	M medium ●	R roughing -	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Medium machining 	DCMT 070204-MP	●		●						**PHG 115**	10	**333520** 0164	7,40
		●		●						**PHG 125**	10	333520 0165	7,40
	DCMT 070208-MP	●		●						**PHG 125**	10	333520 0265	7,40
		●		●						**PHG 115**	10	333566 0164	7,40
	DCMT 11T304-MP	●		●						**PHG 115**	10	333566 0264	7,40
		●		●						**PHG 125**	10	333566 0265	7,40
	DCMT 11T308-MP	●		●						**PHG 115**	10	333566 0364	7,40
		●		●						**PHG 125**	10	333566 0365	7,40
	DCMT 11T312-MP	●		●						**PHG 115**	10	333566 0464	7,40
		●		●						**PHG 125**	10	333566 0465	7,40

3148

ISO	PHG 115	PHG 125
ISO P steel	Vc = 110 - 270	Vc = 100 - 240
ISO K cast iron	Vc = 110 - 270	Vc = 100 - 240
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.06 - 0.60 ap = 0.20 - 3.00	

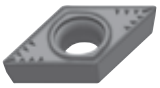
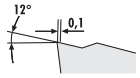
Chip breaker MP

F finishing ○	M medium ●	R roughing -	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Finishing 	DCMT 070204-MP	●								**PH 7920**	10	**333520** 0150	6,40
	DCMT 11T304-MP	●								**PH 7920**	10	333520 0350	6,40
	DCMT 11T308-MP	●								**PH 7920**	10	333520 0450	6,40

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ISO	PH 7920
ISO P steel	Vc = 100 - 230
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.06 - 0.60 ap = 0.19 - 3.60

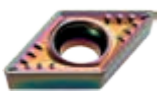
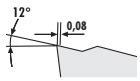
Chip breaker type MP

F finishing -	M medium ●	R roughing -	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Medium machining 	DCMT 070204-MP	●		○						**HC 7610**	10	**311203** 0611	6,80
		●		○						**HC 7620**	10	311203 0612	6,80
		●								**HC 7630**	10	311203 0613	6,80
	DCMT 070208-MP	●		○						**HC 7610**	10	311203 0711	6,80
		●		○						**HC 7620**	10	311203 0712	6,80
		●								**HC 7630**	10	311203 0713	6,80
	DCMT 11T304-MP	●		○						**HC 7620**	10	311203 2012	9,65
		●								**HC 7630**	10	311203 2013	9,65
	DCMT 11T308-MP	●		○						**HC 7620**	10	311203 2112	9,65
		●								**HC 7630**	10	311203 2113	9,65

3108

ISO	HC 7610	HC 7620	HC 7630
ISO P steel	Vc = 160 - 340	Vc = 110 - 250	Vc = 80 - 220
ISO K cast iron	Vc = 140 - 240	Vc = 140 - 240	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.16 - 0.30 ap = 0.6 - 4.0		

Chip breaker MP5

F finishing ○	M medium ●	R roughing -	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Medium machining 	DCMT 070204-MP5	●	○	○						**ACP 25 T**	10	**366630** 0125	6,30
		●	○							**ACP 35 T**	10	366630 0235	6,30
	DCMT 070208-MP5	●	○	○						**ACP 25 T**	10	366630 0325	6,30
		●	○							**ACP 35 T**	10	366630 0435	6,30
	DCMT 11T304-MP5	●		○						**ACP 15 T**	10	366630 0515	8,20
		●	○	○						**ACP 25 T**	10	366630 0625	8,20
		●	○							**ACP 35 T**	10	366630 0735	8,20
	DCMT 11T308-MP5	●		○						**ACP 15 T**	10	366630 0815	8,20
		●	○	○						**ACP 25 T**	10	366630 0925	8,20
		●	○							**ACP 35 T**	10	366630 1035	8,20

3135

ISO	ACP 15 T	ACP 25 T	ACP 35 T
ISO P steel	Vc = 180 - 400	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel		Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.4 ap = 0.25 - 3.5		

ISO indexable cutting inserts DC.. ISO M

ISO M

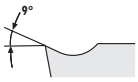
- **55° rhombic, positive 7°**

Chip breaker FFM

F finishing ● | M medium - | R roughing -



Micro finishing



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
DCGT 070200-FFM		●	○	○	○		APM 20 T	10	**366624** 0120	13,45
DCGT 070201-FFM		●	○	○	○		APM 20 T	10	366624 0220	13,45
DCGT 11T300-FFM		●	○	○	○		APM 20 T	10	366624 0320	13,45
DCGT 11T301-FFM		●	○	○	○		APM 20 T	10	366624 0420	13,45

3135

ISO	APM 20 T
ISO M stainless steel	Vc = 60 - 200
ISO K cast iron	Vc = 120 - 220
ISO N Al/non-ferrous	Vc = 100 - 600
ISO S superalloys	Vc = 20 - 50
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.02 - 0.14 ap = 0.05 - 1.35

Chip breaker FM

F finishing ● | M medium - | R roughing -



Micro finishing



palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
DCMT 070202-FM		●			●		PH 7920	10	**333516** 0150	6,40
DCMT 070204-FM		●			●		PH 7920	10	333516 0250	6,40
		●					PHS 225	10	333516 0272	7,40
DCMT 11T304-FM		●			●		PH 7910	10	333516 0349	6,40
		●			●		PH 7920	10	333516 0350	6,40
		●					PHS 225	10	333516 0372	7,40
DCMT 11T308-FM		●			●		PH 7910	10	333516 0449	6,40
		●			●		PH 7920	10	333516 0450	6,40
		●					PHS 225	10	333516 0472	7,40
DCMT 11T302-FM		●			●		PH 7910	10	333516 0549	6,40
		●			●		PH 7920	10	333516 0550	6,40

3148

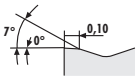
ISO	PH 7910	PH 7920	PHS 225
ISO M stainless steel	Vc = 100 - 235	Vc = 100 - 235	Vc = 90 - 240
ISO S superalloys	Vc = 35 - 170	Vc = 25 - 150	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.03 - 0.45 ap = 0.06 - 2.40		ap = 0.06 - 2.4

Chip breaker FM1

F finishing ● | M medium ○ | R roughing -



Finishing/medium machining



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
DCMT 070202-FM2	○	●					APM 25 T	10	**366626** 0125	6,30
DCMT 070204-FM2	○	●					APM 25 T	10	366626 0225	6,30
DCMT 11T302-FM2	○	●					APM 25 T	10	366626 0325	8,20
DCMT 11T304-FM2	○	●					APM 25 T	10	366626 0425	8,20
DCMT 11T308-FM2	○	●					APM 25 T	10	366626 0525	8,20

3135

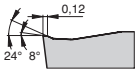
ISO	APM 25 T
ISO P steel	Vc = 60 - 250
ISO M stainless steel	Vc = 40 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.07 - 0.25 ap = 0.2 - 2.5

Chip breaker MM

F finishing ● | M medium - | R roughing -



Medium machining



palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
DCMT 070204-MM		●					PHS 215	10	**333521** 0171	7,40
DCMT 070208-MM		●					PHS 215	10	333521 0271	7,40
DCMT 11T304-MM		●					PHS 215	10	333521 0371	7,20
DCMT 11T308-MM		●					PHS 215	10	333521 0471	7,40
DCMT 11T312-MM		●					PHS 215	10	333521 0571	7,40
DCMT 070204-MM		●			●		PH 7910	10	333521 0149	6,40
		●			●		PH 7920	10	333521 0150	6,40
DCMT 070208-MM		●			●		PH 7920	10	333521 0250	6,40
DCMT 11T304-MM		●			●		PH 7910	10	333521 0349	6,40
		●			●		PH 7920	10	333521 0350	6,40
DCMT 11T308-MM		●			●		PH 7910	10	333521 0449	6,40
		●			●		PH 7920	10	333521 0450	6,40
DCMT 11T312-MM		●			●		PH 7920	10	333521 0550	6,40

3148

ISO	PH 7910	PH 7920	PHS 215
ISO M stainless steel	Vc = 100 - 230	Vc = 100 - 235	Vc = 80 - 290
ISO S superalloys	Vc = 35 - 170	Vc = 25 - 150	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.06 - 0.60 ap = 0.19 - 3.60		ap = 0.19 - 3.00

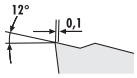
Continued on next page >>>

Chip breaker type MP, stainless steel

F finishing	M medium	R roughing
-	●	-



Medium machining



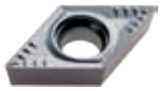
ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
DCMT 070204-MP		●			○		**HC 7530**	10	**310203** 0626	6,90
DCMT 11T304-MP		●			○		**HC 7530**	10	310203 2026	9,65
DCMT 11T308-MP		●			○		**HC 7530**	10	310203 2126	9,65

ISO	HC 7530
ISO M stainless steel	Vc = 90 - 160
ISO S superalloys	Vc = 20 - 50
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.16 - 0.30 ap = 0.6 - 4.0

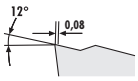
3108

Chip breaker MM3

F finishing	M medium	R roughing
○	●	-



Medium machining



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
DCMT 070204-MM3	○	●					**APM 25 T**	10	**366629** 0121	6,30
DCMT 070208-MM3	○	●					**APM 25 T**	10	366629 0221	6,30
DCMT 11T304-MM3	○	●					**APM 25 T**	10	366629 0321	8,20
DCMT 11T308-MM3	○	●					**APM 25 T**	10	366629 0521	8,20

ISO	APM 25 T
ISO P steel	Vc = 60 - 250
ISO M stainless steel	Vc = 40 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.3 ap = 0.25 - 3.5

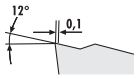
3135

Chip breaker type MS

F finishing	M medium	R roughing
-	●	-



Medium machining



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
DCMT 070208-MS		●			○		**HC 7220**	10	**311203** 0714	7,25
DCMT 11T308-MS		●			○		**HC 7220**	10	311203 2114	10,10

ISO	HC 7220
ISO M stainless steel	Vc = 120 - 190
ISO S superalloys	Vc = 30 - 60
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.16 - 0.3 ap = 0.6 - 4.0

3108



ISO indexable cutting inserts DC.. ISO K

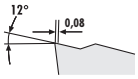
• **55° rhombic, positive 7°**

Chip breaker MK

F finishing	M medium	R roughing
○	●	-



Medium machining



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
DCMT 070204-MK	○		●				**ACK 20 T**	10 **366628** 0130	6,30
DCMT 11T304-MK	○		●				**ACK 20 T**	10 366628 0230	8,20

3135

ISO K

ISO	ACK 20 T
ISO P steel	Vc = 150 - 340
ISO K cast iron	Vc = 150 - 550
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.4 ap = 0.5 - 3.5

ISO indexable cutting inserts DC.. ISO N

ISO N

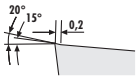
• **55° rhombic, positive 7°**

Chip breaker MN5

F finishing	M medium	R roughing
○	○	○



Universal application



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
DCGT 070201-MN5			○	●	○		**AWN 15 T**	10 **366623** 0116	8,30
DCGT 070202-MN5			○	●	○		**AWN 15 T**	10 366623 0216	8,30
		○	○	●	○		**APN 15 T**	10 366623 0317	9,90
DCGT 070204-MN5			○	●	○		**AWN 15 T**	10 366623 0416	8,30
		○	○	●	○		**APN 15 T**	10 366623 0517	9,90
DCGT 070208-MN5			○	●	○		**AWN 15 T**	10 366623 0616	8,30
DCGT 11T302-MN5			○	●	○		**AWN 15 T**	10 366623 0716	9,90
		○	○	●	○		**APN 15 T**	10 366623 0817	11,20
DCGT 11T304-MN5			○	●	○		**AWN 15 T**	10 366623 0916	9,90
		○	○	●	○		**APN 15 T**	10 366623 1017	11,20
DCGT 11T308-MN5			○	●	○		**AWN 15 T**	10 366623 1116	9,90
		○	○	●	○		**APN 15 T**	10 366623 1217	11,20

3135

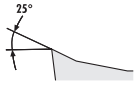
ISO	APN 15 T	AWN 15 T
ISO M stainless steel	Vc = 50 - 140	
ISO K cast iron	Vc = 120 - 200	Vc = 120 - 200
ISO N Al/non-ferrous	Vc = 100 - 3000	Vc = 100 - 2000
ISO S superalloys	Vc = 18 - 120	Vc = 18 - 45
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.1 - 0.5 ap = 0.1 - 4.5	

Chip breaker MN

F finishing	M medium	R roughing
●	●	-



Finishing/medium machining



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
DCGT 070202-MN		○		●			**HC 6310**	10 **310903** 0541	10,65
DCGT 070204-MN		○		●			**HC 6310**	10 310903 0641	10,65
DCGT 11T302-MN		○		●			**HC 6310**	10 310903 1941	12,85
DCGT 11T304-MN		○		●			**HC 6310**	10 310903 2041	12,85
DCGT 11T308-MN		○		●			**HC 6310**	10 310903 2141	12,85

3108

ISO	HC 6310
ISO M stainless steel	Vc = 120 - 200
ISO N Al/non-ferrous	Vc = 160 - 1000
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.16 ap = 0.3 - 3.5

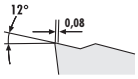
ISO indexable cutting inserts RC.. ISO P

- **360° round, positive 7°**

ISO P

Chip breaker MP5

- For RCMT 08.. ap max. = 4.0 mm
- For RCMT 10.. ap max. = 5.0 mm

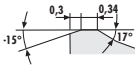
F finishing -	M medium ○	R roughing ○	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing/medium machining 	RCMT 0803MO-MP5	●	○					ACP 35 T	10	**366646** 0135	5,40
	RCMT 1003MO-MP5	●	○					ACP 35 T	10	366646 0235	6,30
	RCMT 1204MO-MP5	●	○					ACP 35 T	10	366646 0335	8,80

3135

ISO	ACP 35 T
ISO P steel	Vc = 90 - 200
ISO M stainless steel	Vc = 55 - 200
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.15 - 0.6 ap = 0.8 - 6.0

Chip breaker RP11

- With RCMT 2006MO.. ap up to 9.5 mm possible

F finishing -	M medium ○	R roughing ●	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Roughing/medium machining 	RCMT 1604MO-RP11	●	○	○				ACP 25 T	10	**366647** 0125	11,80
	RCMT 2006MO-RP11	●	○	○				ACP 25 T	10	366647 0225	16,–
	RCMT 1604MO-RP11	●	○					ACP 35 T	10	366647 0335	11,80
	RCMT 2006MO-RP11	●	○					ACP 35 T	10	366647 0435	16,–

3135

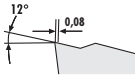
ISO	ACP 25 T	ACP 35 T
ISO P steel	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel	Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 130 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.7 ap = 2.0 - 7.0	

ISO indexable cutting inserts SC.. ISO P

- **90° square, positive 7°**

ISO P

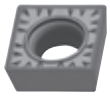
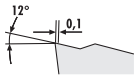
Chip breaker MP5

F finishing -	M medium ●	R roughing ○	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Medium machining 	SCMT 09T304-MP5	●	○	○				ACP 25 T	10	**366649** 0125	8,50
	SCMT 09T308-MP5	●	○	○				ACP 25 T	10	366649 0225	8,50
		●	○					ACP 35 T	10	366649 0335	8,50
	SCMT 120404-MP5	●		○				ACP 15 T	10	366649 0415	10,20
		●	○	○				ACP 25 T	10	366649 0525	10,45
	SCMT 120408-MP5	●	○	○				ACP 25 T	10	366649 0625	10,45
		●	○					ACP 35 T	10	366649 0735	10,20
	SCMT 120412-MP5	●	○	○				ACP 25 T	10	366649 0825	10,20
		●	○					ACP 35 T	10	366649 0935	10,20

3135

ISO	ACP 15 T	ACP 25 T	ACP 35 T
ISO P steel	Vc = 180 - 400	Vc = 100 - 240	Vc = 90 - 190
ISO M stainless steel		Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.4 ap = 0.25 - 4.5		

Chip breaker type MP

F finishing -	M medium ●	R roughing -	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Medium machining 	SCMT 09T304-MP	●		○				HC 7620	10	**311401** 1212	8,50
		●						HC 7630	10	311401 1213	8,50
	SCMT 09T308-MP	●		○				HC 7620	10	311401 1312	8,50
		●						HC 7630	10	311401 1313	8,50
	SCMT 120404-MP	●		○				HC 7620	10	311401 2612	12,05
	SCMT 120408-MP	●		○				HC 7620	10	311401 2712	12,05

3108

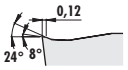
ISO	HC 7620	HC 7630
ISO P steel	Vc = 110 - 250	Vc = 80 - 220
ISO K cast iron	Vc = 140 - 240	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.35 ap = 0.1 - 3.0	

Chip breaker type MP

F finishing	M medium	R roughing
○	●	-



Medium machining



palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
SCMT 09T304-MP	●		●				PHG 115	10 **333567** 0164	7,65
	●		●				PHG 125	10 333567 0165	7,65
SCMT 09T308-MP	●		●				PHG 115	10 333567 0264	7,65
	●		●				PHG 125	10 333567 0265	7,65
SCMT 120404-MP	●		●				PHG 115	10 333567 0364	9,20
	●		●				PHG 125	10 333567 0465	9,20
SCMT 120408-MP	●		●				PHG 115	10 333567 0464	9,20
	●		●				PHG 125	10 333567 0365	9,20
SCMT 120412-MP	●		●				PHG 115	10 333567 0564	9,20
	●		●				PHG 125	10 333567 0565	9,20

ISO	PHG 115	PHG 125
ISO P steel	Vc = 110 - 350	Vc = 100 - 295
ISO K cast iron	Vc = 110 - 350	Vc = 100 - 295
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.08 - 0.60 ap = 0.25 - 3.60	

3148

ISO indexable cutting inserts SC.. ISO M

ISO M

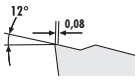
- **90° square, positive 7°**

Chip breaker MM3, especially for stainless steel

F finishing	M medium	R roughing
-	●	○



Medium machining



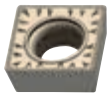
ATORN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
SCMT 09T304-MM3	○	●					APM 25 T	10 **366650** 0121	8,50
SCMT 09T308-MM3	○	●					APM 25 T	10 366650 0221	8,50
SCMT 120404-MM3	○	●					APM 25 T	10 366650 0321	10,45
SCMT 120408-MM3	○	●					APM 25 T	10 366650 0421	10,45
SCMT 120412-MM3	○	●					APM 25 T	10 366650 0521	10,20

ISO	APM 25 T
ISO P steel	Vc = 60 - 250
ISO M stainless steel	Vc = 40 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.4 ap = 0.25 - 3.5

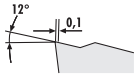
3135

Chip breaker type MP, stainless steel

F finishing	M medium	R roughing
-	●	-



Medium machining



ATORN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
SCMT 09T308-MP		●			○		HC 7520	10 **311401** 1322	8,50
SCMT 120408-MP		●			○		HC 7520	10 311401 2722	12,55

ISO	HC 7520
ISO M stainless steel	Vc = 80 - 220
ISO S superalloys	Vc = 30 - 60
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.32 ap = 0.5 - 2.5

3108

ISO indexable cutting inserts SC.. ISO K

ISO K

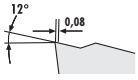
- **90° square, positive 7°**

Chip breaker MK

F finishing	M medium	R roughing
-	●	○



Medium machining



ATORN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
SCMT 09T308-MK	○		●				ACK 20 T	10 **366651** 0130	8,80
SCMT 120408-MK	○		●				ACK 20 T	10 366651 0230	10,20

ISO	ACK 20 T
ISO P steel	Vc = 150 - 340
ISO K cast iron	Vc = 150 - 550
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.15 - 0.5 ap = 0.5 - 5.0

3135

ISO indexable cutting inserts SC.. ISO N

ISO N

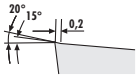
- **90° square, positive 7°**

Chip breaker MN5

F finishing	M medium	R roughing
○	○	○



Universal application



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
SCGT 09T304-MN5			○	●	○		**AWN 15 T**	10	**366648** 0116	9,35
		○	○	●	○		**APN 15 T**	10	366648 0217	11,70
SCGT 09T308-MN5			○	●	○		**AWN 15 T**	10	366648 0316	9,35
		○	○	●	○		**APN 15 T**	10	366648 0417	11,70
SCGT 120408-MN5		○	○	●	○		**APN 15 T**	10	366648 0617	11,70

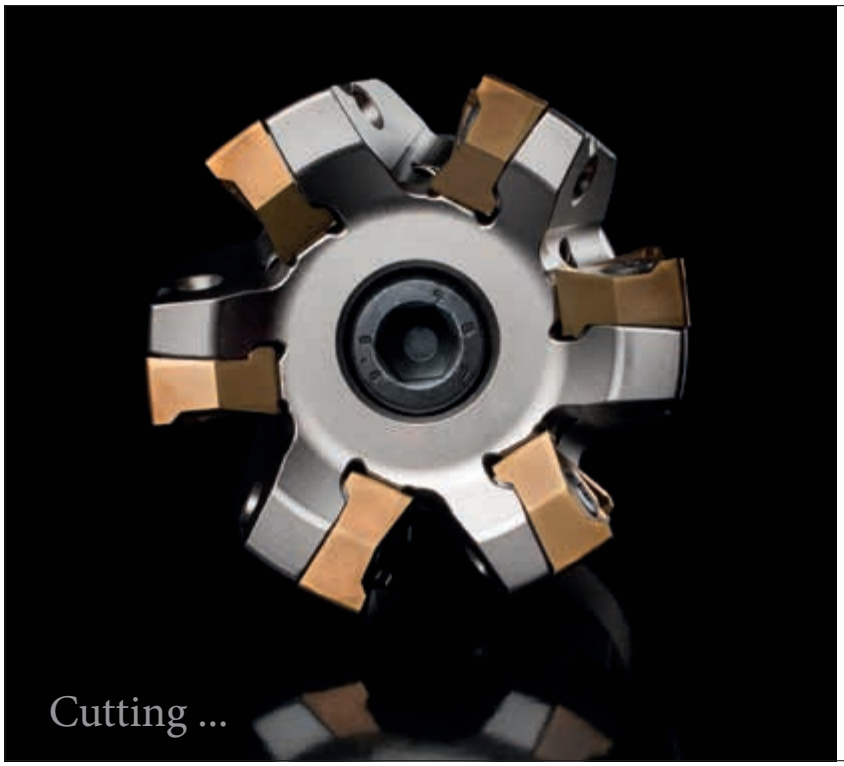
3135

ISO	APN 15 T	AWN 15 T
ISO M stainless steel	Vc = 50 - 140	
ISO K cast iron	Vc = 120 - 200	Vc = 120 - 200
ISO N Al/non-ferrous	Vc = 100 - 2000	Vc = 100 - 2000
ISO S superalloys	Vc = 18 - 120	Vc = 18 - 48
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.1 - 0.5 ap = 0.25 - 6.0	

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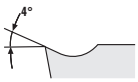
ATORN®
Performance demands quality

ISO indexable cutting inserts TC.. ISO P

ISO P

- **60° triangular, positive 7°**

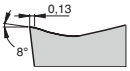
Chip breaker FFP Cermet version

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	-	-											
 Micro finishing 	TCMT 110202-FFP			●	○	○				ATU 10 T	10	**366666** 0140	10,40
	TCMT 110204-FFP			●	○	○				ATU 10 T	10	366666 0240	6,45

ISO	ATU 10 T
ISO P steel	Vc = 160 - 300
ISO M stainless steel	Vc = 130 - 240
ISO K cast iron	Vc = 220 - 350
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.2 ap = 0.1 - 1.65

3135

Chip breaker FS

F finishing	M medium	R roughing	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	-	-											
 Micro finishing 	TCGT 090202-FS			●	●			●		PH 7910	10	**333554** 0149	9,45
				●	●			●		PH 7920	10	333554 0150	9,45
	TCGT 090204-FS			●	●			●		PH 7910	10	333554 0249	9,45
				●	●			●		PH 7920	10	333554 0250	9,45
	TCGT 110201-FS			●	●			●		PH 7910	10	333554 0349	9,70
				●	●			●		PH 7920	10	333554 0350	9,70
	TCGT 110202-FS			●	●			●		PH 7910	10	333554 0449	9,70
				●	●			●		PH 7920	10	333554 0450	9,70
	TCGT 110204-FS			●	●			●		PH 7910	10	333554 0549	9,70
				●	●			●		PH 7920	10	333554 0550	9,70
	TCGT 110301-FS			●	●			●		PH 7910	10	333554 0649	9,70
				●	●			●		PH 7920	10	333554 0650	9,70
	TCGT 110302-FS			●	●			●		PH 7910	10	333554 0749	9,70
				●	●			●		PH 7920	10	333554 0750	9,70
	TCGT 110304-FS			●	●			●		PH 7910	10	333554 0849	9,70
				●	●			●		PH 7920	10	333554 0850	9,70

ISO	PH 7910	PH 7920
ISO P steel	Vc = 115 - 245	Vc = 100 - 230
ISO M stainless steel	Vc = 100 - 230	Vc = 100 - 235
ISO S superalloys	Vc = 35 - 170	Vc = 25 - 150
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.01 - 0.25 ap = 0.10 - 3.00	

3148

Chip breaker FP

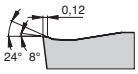
F finishing	M medium	R roughing	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	-	-											
 Micro finishing 	TCMT 06T108-FP			●						PH 5115	10	**333546** 0222	4,85
	TCMT 06T108-FP			●						PH 5125	10	333546 0223	4,85
	TCMT 090202-FP			●						PH 5125	10	333546 0323	6,40
	TCMT 090204-FP			●						PH 5115	10	333546 0422	6,40
	TCMT 090204-FP			●						PH 5125	10	333546 0423	6,40
	TCMT 110202-FP			●						PH 5125	10	333546 0523	6,40
	TCMT 110204-FP			●						PH 5115	10	333546 0622	6,40
	TCMT 110204-FP			●						PH 5125	10	333546 0623	6,40
	TCMT 110208-FP			●						PH 5115	10	333546 0722	6,40
	TCMT 110208-FP			●						PH 5125	10	333546 0723	6,40
	TCMT 110302-FP			●						PH 5125	10	333546 0823	6,40
	TCMT 110304-FP			●						PH 5115	10	333546 0922	6,40
	TCMT 110304-FP			●						PH 5125	10	333546 0923	6,40
	TCMT 110308-FP			●						PH 5115	10	333546 1022	6,40
	TCMT 110308-FP			●						PH 5125	10	333546 1023	6,40
	TCMT 16T304-FP			●						PH 5125	10	333546 1123	6,65

ISO	PH 5115	PH 5125
ISO P steel	Vc = 110 - 350	Vc = 100 - 295
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.03 - 0.45 ap = 0.06 - 2.40	

Continued on next page >>>

3148

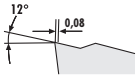
Chip breaker MP

F finishing ○	M medium ●	R roughing -	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Medium machining 	TCMT 090204-MP	●		●						PH 5115	10	**333550** 0122	6,40
		●		●						PHG 115	10	333550 0164	7,05
		●		●						PHG 125	10	333550 0165	7,05
	TCMT 090208-MP	●								PH 5115	10	333550 0222	6,40
		●		●						PHG 115	10	333550 0264	7,05
		●		●						PHG 125	10	333550 0265	7,05
	TCMT 110204-MP	●								PH 5115	10	333550 0322	6,40
		●								PH 5125	10	333550 0323	6,40
		●		●						PHG 115	10	333550 0364	7,40
		●		●						PHG 125	10	333550 0365	7,40
	TCMT 110208-MP	●								PH 5115	10	333550 0422	6,40
		●		●						PHG 115	10	333550 0464	7,40
		●		●						PHG 125	10	333550 0465	7,40
	TCMT 110212-MP	●								PH 5115	10	333550 0522	6,40
		●								PH 5125	10	333550 0523	6,40
		●		●						PHG 115	10	333550 0564	7,40
		●		●						PHG 125	10	333550 0565	7,40
	TCMT 11T304-MP	●								PH 5115	10	333550 0622	6,40
		●								PH 5125	10	333550 0623	6,40
	TCMT 11T308-MP	●								PH 5115	10	333550 0722	6,40
		●								PH 5125	10	333550 0723	6,40
	TCMT 11T312-MP	●								PH 5115	10	333550 0822	6,40
		●								PH 5125	10	333550 0823	6,40
	TCMT 16T304-MP	●								PH 5115	10	333550 0922	6,65
		●								PH 5125	10	333550 0923	6,65
		●		●						PHG 115	10	333550 0964	7,65
		●		●						PHG 125	10	333550 0965	7,65
	TCMT 16T308-MP	●								PH 5115	10	333550 1022	6,65
		●								PH 5125	10	333550 1023	6,65
		●		●						PHG 115	10	333550 1064	7,65
		●		●						PHG 125	10	333550 1065	7,65
	TCMT 16T312-MP	●								PH 5115	10	333550 1122	6,65
		●								PH 5125	10	333550 1123	6,65
		●		●						PHG 115	10	333550 1164	7,65
		●		●						PHG 125	10	333550 1165	7,65
	TCMT 220408-MP	●								PH 5115	10	333550 1222	10,75
		●								PH 5125	10	333550 1223	10,75
		●		●						PHG 115	10	333550 1264	12,50
		●		●						PHG 125	10	333550 1265	12,50

3148

ISO	PH 5115	PH 5125	PHG 115	PHG 125
ISO P steel	Vc = 110 - 350	Vc = 100 - 295	Vc = 110 - 270	Vc = 100 - 240
ISO K cast iron			Vc = 110 - 270	Vc = 100 - 240
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.06 - 0.60 ap = 0.19 - 3.60		f = 0.06 - 0.6 ap = 0.19 - 3.6	f = 0.08 - 0.60

Chip breaker MP5

F finishing -	M medium ●	R roughing ○	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Medium machining 	TCMT 090204-MP5	●	○	○						ACP 25 T	10	**366665** 0025	6,30
	TCMT 110204-MP5	●		○						ACP 15 T	10	366665 0115	6,30
		●	○	○						ACP 25 T	10	366665 0225	6,45
		●	○							ACP 35 T	10	366665 0325	6,45
	TCMT 110208-MP5	●	○	○						ACP 25 T	10	366665 0425	6,30
		●	○							ACP 35 T	10	366665 0535	6,30
	TCMT 16T304-MP5	●	○	○						ACP 25 T	10	366665 0625	8,10
		●	○							ACP 35 T	10	366665 0735	8,10
	TCMT 16T308-MP5	●	○	○						ACP 25 T	10	366665 0825	8,10
		●	○							ACP 35 T	10	366665 0935	8,10
	TCMT 16T312-MP5	●	○	○						ACP 25 T	10	366665 1025	7,90

3135

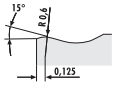
ISO	ACP 15 T	ACP 25 T	ACP 35 T
ISO P steel	Vc = 180 - 400	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel		Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.4 ap = 0.25 - 4.5		

Chip breaker type MP

F finishing	M medium	R roughing
-	●	-



Medium machining



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
TCMT 110204-MP	●		○				**HC 7610**	10	**311501** 1511	6,80
	●		○				**HC 7620**	10	311501 1512	6,80
	●						**HC 7630**	10	311501 1513	6,80
TCMT 16T304-MP	●		○				**HC 7610**	10	311501 3411	9,90
	●		○				**HC 7620**	10	311501 3412	9,90
	●						**HC 7630**	10	311501 3413	9,90
TCMT 16T308-MP	●		○				**HC 7610**	10	311501 3511	9,90
	●		○				**HC 7620**	10	311501 3512	9,90
	●						**HC 7630**	10	311501 3513	9,90

3108

ISO	HC 7610	HC 7620	HC 7630
ISO P steel	Vc = 110 - 250	Vc = 110 - 250	Vc = 110 - 250
ISO K cast iron	Vc = 140 - 240	Vc = 140 - 240	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.25 ap = 0.4 - 3.0		

ISO indexable cutting inserts TC.. ISO K

ISO K

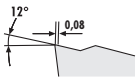
- **60° triangular, positive 7°**

Chip breaker MK

F finishing	M medium	R roughing
-	●	○



Medium machining



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
TCMT 090204-MK	○		●				**ACK 20 T**	10	**366663** 0130	6,30
TCMT 110204-MK	○		●				**ACK 20 T**	10	366663 0230	6,30
TCMT 110208-MK	○		●				**ACK 20 T**	10	366663 0330	6,30
TCMT 16T304-MK	○		●				**ACK 20 T**	10	366663 0430	7,90
TCMT 16T308-MK	○		●				**ACK 20 T**	10	366663 0530	7,90

3135

ISO	ACK 20 T
ISO P steel	Vc = 150 - 350
ISO K cast iron	Vc = 150 - 550
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.18 - 0.5 ap = 0.25 - 4.0

ISO indexable cutting inserts TC.. ISO N

ISO N

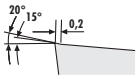
- **60° triangular, positive 7°**

Chip breaker MN5

F finishing	M medium	R roughing
○	○	○



Universal application



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
TCGT 110204-MN5			○	●	○		**AWN 15 T**	10	**366662** 0116	8,75
		○	○	●	○		**APN 15 T**	10	366662 0217	11,45
TCGT 16T304-MN5			○	●	○		**AWN 15 T**	10	366662 0316	10,60
TCGT 16T308-MN5			○	●	○		**AWN 15 T**	10	366662 0416	10,60

3135

ISO	APN 15 T	AWN 15 T
ISO M stainless steel	Vc = 50 - 140	
ISO K cast iron	Vc = 120 - 200	Vc = 120 - 200
ISO N Al/non-ferrous	Vc = 100 - 2000	Vc = 100 - 2000
ISO S superalloys	Vc = 60 - 120	Vc = 18 - 45
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.1 - 0.4 ap = 0.1 - 4.5	

ISO indexable cutting inserts VB.. ISO P

ISO P

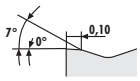
- 35° rhombic, positive 5°

Chip breaker FP1

F finishing	M medium	R roughing
●	○	-



Finishing



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
VBMT 160404-FP1	●		○				ACP 15 T	10	**366711** 0115	12,45
	●	○	○				ACP 25 T	10	366711 0125	12,45
	●	○					ACP 35 T	10	366711 0135	12,45
VBMT 160408-FP1	●		○				ACP 15 T	10	366711 0215	12,45
	●	○	○				ACP 25 T	10	366711 0225	12,45
	●	○					ACP 35 T	10	366711 0235	12,45

3135

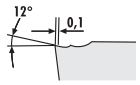
ISO	ACP 15 T	ACP 25 T	ACP 35 T
ISO P steel	Vc = 180 - 400	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel		Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.07 - 0.25 ap = 0.2 - 2.5		

Chip breaker type SP

F finishing	M medium	R roughing
●	●	-



Finishing/medium machining



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
VBMT 160404-SP	●		○				HC 7610	10	**311563** 3711	13,25
	●		○				HC 7620	10	311563 3712	13,25
VBMT 160408-SP	●		○				HC 7610	10	311563 3811	13,25
	●		○				HC 7620	10	311563 3812	13,25
VBMT 160412-SP	●		○				HC 7620	10	311563 3912	13,25

3108

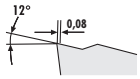
ISO	HC 7610	HC 7620
ISO P steel	Vc = 200 - 380	Vc = 140 - 320
ISO K cast iron	Vc = 180 - 280	Vc = 160 - 260
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.08 - 0.25 ap = 0.3 - 2.0	

Chip breaker MP5

F finishing	M medium	R roughing
-	●	-



Medium machining



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
VBMT 160404-MP5	●		○				ACP 15 T	10	**366712** 0115	12,45
	●	○	○				ACP 25 T	10	366712 0125	12,45
	●	○					ACP 35 T	10	366712 0135	12,45
VBMT 160408-MP5	●		○				ACP 15 T	10	366712 0215	12,45
	●	○	○				ACP 25 T	10	366712 0225	12,45
	●	○					ACP 35 T	10	366712 0235	12,45

3135

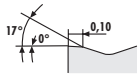
ISO	ACP 15 T	ACP 25 T	ACP 35 T
ISO P steel	Vc = 180 - 400	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel		Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.3 ap = 0.25 - 3.5		

Chip breaker MP2 universal

F finishing	M medium	R roughing
-	●	○



Medium machining



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
VBMT 160404-MP2	●		○				ACP 15 T	10	**366677** 0115	11,60
	●	○	○				ACP 25 T	10	366677 0125	11,60
VBMT 160408-MP2	●		○				ACP 15 T	10	366677 0215	11,60
	●	○	○				ACP 25 T	10	366677 0225	11,60

3135

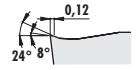
ISO	ACP 15 T	ACP 25 T
ISO P steel	Vc = 180 - 400	Vc = 100 - 240
ISO M stainless steel		Vc = 70 - 210
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.4 ap = 1.0 - 4.0	

Chip breaker MP

F finishing	M medium	R roughing
○	●	-



Medium machining



palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
VBMT 160404-MP	●		●				PHG 115	10	**333563** 0164	14,25
VBMT 160408-MP	●		●				PHG 115	10	333563 0264	14,25
	●		●				PHG 125	10	333563 0265	14,25
VBMT 160412-MP	●		●				PHG 115	10	333563 0364	14,25
	●		●				PHG 125	10	333563 0365	14,25

3148

ISO	PHG 115	PHG 125
ISO P steel	Vc = 110 - 350	Vc = 100 - 295
ISO K cast iron	Vc = 110 - 350	Vc = 100 - 295
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.07 - 0.32 ap = 0.23 - 2.70	

ISO indexable cutting inserts VB.. ISO M

ISO M

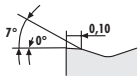
- 35° rhombic, positive 5°

Chip breaker FM1

F finishing	M medium	R roughing
●	○	-



Finishing



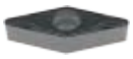
ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
VBMT 160404-FM2	○	●					**APM 25 T**	10	**366714** 0121	12,45
VBMT 160408-FM2	○	●					**APM 25 T**	10	366714 0221	12,45

ISO	APM 25 T
ISO P steel	Vc = 60 - 250
ISO M stainless steel	Vc = 40 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.07 - 0.25 ap = 0.2 - 2.5

3135

Chip breaker FM

F finishing	M medium	R roughing
●	-	-



Finishing



palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
VBMT 110302-FM		●					**PHS 225**	10	**333561** 0172	9,75
		●			●		**PH 7920**	10	333561 0150	8,45
VBMT 110304-FM		●					**PHS 225**	10	333561 0272	9,75
		●			●		**PH 7920**	10	333561 0250	8,45
VBMT 110308-FM		●					**PHS 225**	10	333561 0372	9,75
		●			●		**PH 7920**	10	333561 0350	8,45
VBMT 160402-FM		●					**PHS 225**	10	333561 0472	14,25
		●			●		**PH 7920**	10	333561 0450	12,25
VBMT 160404-FM		●					**PHS 225**	10	333561 0572	14,25
		●			●		**PH 7920**	10	333561 0550	12,25
VBMT 160408-FM		●					**PHS 225**	10	333561 0672	14,25
		●			●		**PH 7920**	10	333561 0650	12,25
VBMT 160412-FM		●					**PHS 225**	10	333561 0772	14,25
		●			●		**PH 7920**	10	333561 0750	12,25

ISO	PH 7920	PHS 225
ISO M stainless steel	Vc = 100 - 235	Vc = 50 - 240
ISO S superalloys	Vc = 23 - 150	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.03 - 0.32 ap = 0.06 - 1.8	

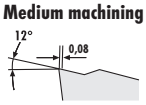
3148

Chip breaker MM3

F finishing	M medium	R roughing
○	●	-



Medium machining



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
VBMT 160404-MM3	○	●					**APM 25 T**	10	**366713** 0121	12,45
VBMT 160408-MM3	○	●					**APM 25 T**	10	366713 0221	12,45

ISO	APM 25 T
ISO P steel	Vc = 60 - 250
ISO M stainless steel	Vc = 40 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.3 ap = 0.25 - 3.5

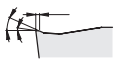
3135

Chip breaker MM

F finishing	M medium	R roughing
○	●	-



Medium machining



palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
VBMT 160404-MM		●			●		**PH 7910**	10	**333564** 0149	12,25
		●			●		**PH 7920**	10	333564 0150	12,25
		●					**PHS 215**	10	333564 0171	14,25
VBMT 160408-MM		●			●		**PH 7910**	10	333564 0249	12,25
		●			●		**PH 7920**	10	333564 0250	12,25
		●					**PHS 215**	10	333564 0271	14,25
VBMT 160412-MM		●			●		**PH 7920**	10	333564 0350	12,25
		●					**PHS 215**	10	333564 0371	14,25

ISO	PH 7910	PH 7920	PHS 215
ISO M stainless steel	Vc = 100 - 230	Vc = 100 - 235	Vc = 80 - 260
ISO S superalloys	Vc = 33 - 170	Vc = 23 - 150	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.06 - 0.6 ap = 0.19 - 3.6		f = 0.07 - 0.32 ap = 0.23 - 2.7

3148

ISO indexable cutting inserts VC.. ISO P

ISO P

- 35° rhombic, positive 7°

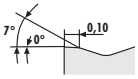
Chip breaker FU1

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	-	-											
 Finishing 	VCGT 110301-FU1		●	●				●		HC 7820	10	**311530** 2712	13,65
	VCGT 110302-FU1		●	●				●		HC 7810	10	311530 2811	13,65
			●	●				●		HC 7820	10	311530 2812	13,65
	VCGT 110304-FU1		●	●				●		HC 7810	10	311530 2911	13,65
			●	●				●		HC 7820	10	311530 2912	13,65
	VCGT 160402-FU1		●	●				●		HC 7810	10	311530 3011	15,20
			●	●				●		HC 7820	10	311530 3012	15,20
	VCGT 160404-FU1		●	●				●		HC 7810	10	311530 3111	15,20
			●	●				●		HC 7820	10	311530 3112	15,20

3147

ISO	HC 7810	HC 7820
ISO P steel	Vc = 80 - 160	Vc = 60 - 130
ISO M stainless steel	Vc = 130 - 220	Vc = 110 - 210
ISO S superalloys	Vc = 40 - 70	Vc = 40 - 60
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.25 ap = 0.20 - 2.5	f = 0.02 - 0.25 ap = 0.10 - 2.50

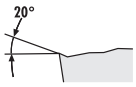
Chip breaker FP1

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	○	-											
 Finishing 	VCMT 110302-FP1		●	○		●				ACP 15 T	10	**366679** 0115	10,15
			●	○		○				ACP 25 T	10	366679 0125	10,15
	VCMT 110304-FP1		●	○		●				ACP 15 T	10	366679 0215	10,15
			●	○		○				ACP 25 T	10	366679 0225	10,15
	VCMT 160404-FP1		●	○		●				ACP 15 T	10	366679 0315	12,70
			●	○		○				ACP 25 T	10	366679 0325	12,70
	VCMT 160408-FP1		●	○		○				ACP 25 T	10	366679 0425	12,70

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ISO	ACP 15 T	ACP 25 T
ISO P steel	Vc = 180 - 400	Vc = 100 - 240
ISO M stainless steel		Vc = 70 - 210
ISO K cast iron	Vc = 140 - 520	Vc = 120 - 520
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.07 - 0.25 ap = 0.2 - 2.5	

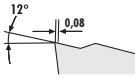
Chip breaker type FP

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
●	-	-											
 Finishing 	VCMT 110302-FP			●		●				HC 7520	10	**311528** 0125	11,50
			●			●				HC 7610	10	311601 1611	11,50
			●			●				HC 7620	10	311601 1612	11,50
	VCMT 110304-FP			●				●		HC 7520	10	311528 0225	11,50
			●			●				HC 7610	10	311601 1711	11,50
			●			●				HC 7620	10	311601 1712	11,50
	VCMT 160402-FP			●				●		HC 7520	10	311528 0325	13,25
			●			●				HC 7610	10	311601 3611	13,25
			●			●				HC 7620	10	311601 3612	13,25
	VCMT 160404-FP			●				●		HC 7520	10	311528 0425	13,25
			●			●				HC 7610	10	311601 3711	13,25
			●			●				HC 7620	10	311601 3712	13,25
	VCMT 160408-FP			●				●		HC 7520	10	311528 0525	13,25

3108

ISO	HC 7520	HC 7610	HC 7620
ISO P steel		Vc = 200 - 380	Vc = 140 - 320
ISO M stainless steel	Vc = 150 - 220		
ISO K cast iron		Vc = 180 - 280	Vc = 160 - 260
ISO S superalloys	Vc = 30 - 60		
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.04 - 0.16 ap = 0.1 - 1.5		

Chip breaker MP5

F finishing	M medium	R roughing	ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
-	●	-											
 Medium machining 	VCMT 110304-MP5		●	○	●					ACP 25 T	10	**366682** 0125	10,15
			●	○						ACP 35 T	10	366682 0235	10,15
	VCMT 110308-MP5		●	○	●					ACP 25 T	10	366682 0325	10,15
			●	○						ACP 35 T	10	366682 0435	10,15
	VCMT 160404-MP5		●	○	●					ACP 25 T	10	366682 0525	12,70
			●	○						ACP 35 T	10	366682 0635	12,70
	VCMT 160408-MP5		●	○	●					ACP 25 T	10	366682 0725	12,70
			●	○						ACP 35 T	10	366682 0835	12,70

3135

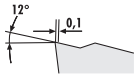
ISO	ACP 25 T	ACP 35 T
ISO P steel	Vc = 100 - 240	Vc = 90 - 200
ISO M stainless steel	Vc = 70 - 210	Vc = 55 - 200
ISO K cast iron	Vc = 120 - 250	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.4 ap = 0.25 - 3.5	

Chip breaker type MP

F finishing	M medium	R roughing
-	●	-



Medium machining



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
VCMT 110304-MP	●		○				HC 7610	10	**311603** 1711	11,50
	●		○				HC 7620	10	311603 1712	11,50
	●						HC 7630	10	311603 1713	11,50
VCMT 110308-MP	●		○				HC 7610	10	311603 1811	11,50
	●		○				HC 7620	10	311603 1812	11,50
	●						HC 7630	10	311603 1813	11,50
VCMT 160404-MP	●		○				HC 7610	10	311603 3711	13,25
	●		○				HC 7620	10	311603 3712	13,25
	●						HC 7630	10	311603 3713	13,25
VCMT 160408-MP	●		○				HC 7610	10	311603 3811	13,25
	●		○				HC 7620	10	311603 3812	13,25
	●						HC 7630	10	311603 3813	13,25

ISO	HC 7610	HC 7620	HC 7630
ISO P steel	Vc = 160 - 340	Vc = 110 - 250	Vc = 80 - 220
ISO K cast iron	Vc = 180 - 280	Vc = 140 - 240	
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.25 ap = 0.4 - 2.5		

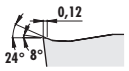
3108

Chip breaker type MP

F finishing	M medium	R roughing
○	●	-



Medium machining



palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
VCMT 110304-MP	●		●				PHG 115	10	**333570** 0164	9,75
	●		●				PHG 125	10	333570 0165	9,75
VCMT 110308-MP	●		●				PHG 115	10	333570 0264	9,75
	●		●				PHG 125	10	333570 0265	9,75
VCMT 160408-MP	●		●				PHG 115	10	333570 0464	12,50
	●		●				PHG 125	10	333570 0465	12,50
VCMT 160412-MP	●		●				PHG 115	10	333570 0564	12,50
	●		●				PHG 125	10	333570 0565	12,50

ISO	PHG 115	PHG 125
ISO P steel	Vc = 110 - 350	Vc = 100 - 295
ISO K cast iron	Vc = 110 - 350	Vc = 100 - 295
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.10 - 0.33 ap = 0.23 - 2.70	

3148

ISO indexable cutting inserts VC.. ISO M

ISO M

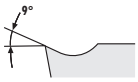
- **35° rhombic, positive 7°**

Chip breaker FFM stainless steel version

F finishing	M medium	R roughing
●	-	-



Micro finishing



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
VCGT 110300-FFM		●	○	○	○		APM 20 T	10	**366678** 0120	13,35
VCGT 110301-FFM		●	○	○	○		APM 20 T	10	366678 0220	13,35
VCGT 160400-FFM		●	○	○	○		APM 20 T	10	366678 0320	16,70
VCGT 160401-FFM		●	○	○	○		APM 20 T	10	366678 0420	16,70

ISO	APM 20 T
ISO M stainless steel	Vc = 60 - 200
ISO K cast iron	Vc = 120 - 220
ISO N Al/non-ferrous	Vc = 100 - 600
ISO S superalloys	Vc = 15 - 50
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.02 - 0.14 ap = 0.05 - 1.35

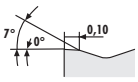
3135

Chip breaker FM1

F finishing	M medium	R roughing
●	○	-



Finishing



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
VCMT 110302-FM2	○	●					APM 25 T	10	**366681** 0121	10,15
VCMT 110304-FM2	○	●					APM 25 T	10	366681 0221	10,15
VCMT 160404-FM2	○	●					APM 25 T	10	366681 0321	12,70

ISO	APM 25 T
ISO P steel	Vc = 60 - 250
ISO M stainless steel	Vc = 40 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.07 - 0.25 ap = 0.2 - 2.5

3135

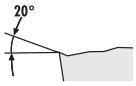
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Chip breaker type FS

F finishing	M medium	R roughing
●	-	-



Finishing



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
VCMT 160404-FS		●			○		**HC 7220**	10 **311601** 3714	13,70

ISO	HC 7220
ISO M stainless steel	Vc = 120 - 190
ISO S superalloys	Vc = 30 - 60
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.16 ap = 0.1 - 1.5

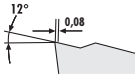
3108

Chip breaker MM3

F finishing	M medium	R roughing
-	●	-



Medium machining



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
VCMT 110304-MM3	○	●					**APM 25 T**	10 **366683** 0121	10,15
	○	●					**APM 35 T**	10 366683 0222	10,15
VCMT 110308-MM3	○	●					**APM 25 T**	10 366683 0321	10,15
	○	●					**APM 35 T**	10 366683 0422	10,15
VCMT 160404-MM3	○	●					**APM 25 T**	10 366683 0521	12,70
VCMT 160408-MM3	○	●					**APM 25 T**	10 366683 0621	12,70

ISO	APM 25 T	APM 35 T
ISO P steel	Vc = 60 - 250	Vc = 90 - 200
ISO M stainless steel	Vc = 40 - 250	Vc = 55 - 200
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.4 ap = 0.25 - 3.5	

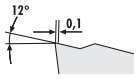
3135

Chip breaker type MP, stainless steel

F finishing	M medium	R roughing
-	●	-



Medium machining



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
VCMT 110304-MP		●			○		**HC 7520**	10 **310603** 1725	11,50
		●			○		**HC 7530**	10 310603 1726	11,50
VCMT 110308-MP		●			○		**HC 7520**	10 310603 1825	11,50
VCMT 160404-MP		●			○		**HC 7520**	10 310603 3725	13,45
		●			○		**HC 7530**	10 310603 3726	13,45
VCMT 160408-MP		●			○		**HC 7520**	10 310603 3825	13,45
		●			○		**HC 7530**	10 310603 3826	13,45

ISO	HC 7520	HC 7530
ISO M stainless steel	Vc = 80 - 210	Vc = 90 - 160
ISO S superalloys	Vc = 30 - 60	Vc = 20 - 50
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.25 ap = 0.4 - 2.5	

3108

Chip breaker type FM

F finishing	M medium	R roughing
●	○	-



Finishing



palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
VCMT 110302-FM		●					**PHS 225**	10 **333568** 0172	9,75
VCMT 110304-FM		●					**PHS 225**	10 333568 0272	9,75
VCMT 160402-FM		●					**PHS 225**	10 333568 0372	12,50
VCMT 160404-FM		●					**PHS 225**	10 333568 0472	12,50
VCMT 160408-FM		●					**PHS 225**	10 333568 0572	12,50
VCMT 160412-FM		●					**PHS 225**	10 333568 0672	12,50

ISO	PHS 225
ISO M stainless steel	Vc = 50 - 240
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.07 - 0.32 ap = 0.07 - 1.80

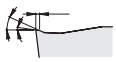
3148

Chip breaker type MM

F finishing	M medium	R roughing
○	●	-



Medium machining



palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
VCMT 110304-MM		●					**PHS 215**	10 **333571** 0171	9,75
VCMT 110308-MM		●					**PHS 215**	10 333571 0271	9,75
VCMT 160404-MM		●					**PHS 215**	10 333571 0371	12,50
VCMT 160408-MM		●					**PHS 215**	10 333571 0471	12,50
VCMT 160412-MM		●					**PHS 215**	10 333571 0571	12,50

ISO	PHS 215
ISO M stainless steel	Vc = 50 - 240
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.06 - 0.6 ap = 0.19 - 3.6

3148

ISO indexable cutting inserts VC.. ISO N

ISO N

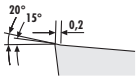
- **35° rhombic, positive 7°**

Chip breaker MN5

F finishing	M medium	R roughing
○	○	○



Universal application



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
VCGT 110302-MN5			○	●	○		AWN 15 T	10	**366680** 0116	11,35
VCGT 110304-MN5			○	●	○		AWN 15 T	10	366680 0216	11,35
VCGT 110302-MN5		○	○	●	○		APN 15 T	10	366680 0317	13,35
VCGT 110304-MN5		○	○	●	○		APN 15 T	10	366680 0417	13,35
VCGT 130304-MN5			○	●	○		AWN 15 T	10	366680 0516	11,70
VCGT 130302-MN5			○	●	○		AWN 15 T	10	366680 0616	11,70
VCGT 160404-MN5			○	●	○		AWN 15 T	10	366680 0717	13,80
		○	○	●	○		APN 15 T	10	366680 0917	15,50
VCGT 160408-MN5			○	●	○		AWN 15 T	10	366680 1017	13,80
		○	○	●	○		APN 15 T	10	366680 1217	15,50
VCGT 160412-MN5		○	○	●	○		APN 15 T	10	366680 1317	15,50
VCGT 220530-MN5		○	○	●	○		APN 15 T	10	366680 1417	18,70

3135

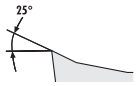
ISO	APN 15 T	AWN 15 T
ISO M stainless steel	Vc = 50 - 140	
ISO K cast iron	Vc = 120 - 200	Vc = 120 - 200
ISO N Al/non-ferrous	Vc = 100 - 3000	Vc = 100 - 2000
ISO S superalloys	Vc = 18 - 120	Vc = 18 - 45
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.1 - 0.5 ap = 0.1 - 4.5	

Chip breaker MN

F finishing	M medium	R roughing
●	●	-



Finishing/medium machining



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
VCGT 110302-MN		○		●			HC 6310	10	**310909** 1641	15,30
VCGT 110304-MN		○		●			HC 6310	10	310909 1741	15,30
VCGT 160404-MN		○		●			HC 6310	10	310909 3741	17,–
VCGT 160408-MN		○		●			HC 6310	10	310909 3841	17,–

3108

ISO	HC 6310
ISO M stainless steel	Vc = 120 - 200
ISO N Al/non-ferrous	Vc = 160 - 1000
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.16 ap = 0.3 - 2.0

ISO indexable cutting inserts WC.. ISO P

ISO P

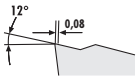
- **80° trigonometric, positive 7°**

Chip breaker MP5

F finishing	M medium	R roughing
-	●	-



Medium machining



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
WCMT 040204-MP5	●	○	○				ACP 25 T	10	**366690** 0125	7,55
WCMT 040208-MP5	●	○	○				ACP 25 T	10	366690 0225	7,55
WCMT 06T304-MP5	●	○	○				ACP 25 T	10	366690 0325	9,05
WCMT 06T308-MP5	●	○	○				ACP 25 T	10	366690 0425	9,05
WCMT 080404-MP5	●	○	○				ACP 25 T	10	366690 0525	10,65
WCMT 080408-MP5	●	○	○				ACP 25 T	10	366690 0625	10,65
WCMT 080412-MP5	●	○	○				ACP 25 T	10	366690 0725	10,65

3135

ISO	ACP 25 T
ISO P steel	Vc = 100 - 240
ISO M stainless steel	Vc = 70 - 210
ISO K cast iron	Vc = 120 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.4 ap = 0.25 - 3.5

ISO indexable cutting inserts WC.. ISO M

ISO M

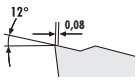
- **80° trigonometric, positive 7°**

Chip breaker MM3

F finishing	M medium	R roughing
-	●	-



Medium machining



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
WCMT 040204-MM3	○	●					APM 25 T	10	**366691** 0121	7,55
WCMT 040208-MM3	○	●					APM 25 T	10	366691 0221	7,55
WCMT 06T304-MM3	○	●					APM 25 T	10	366691 0321	9,05
WCMT 06T308-MM3	○	●					APM 25 T	10	366691 0421	9,05
WCMT 080404-MM3	○	●					APM 25 T	10	366691 0521	10,65
WCMT 080408-MM3	○	●					APM 25 T	10	366691 0621	10,65
WCMT 080412-MM3	○	●					APM 25 T	10	366691 0721	10,65

3135

ISO	APM 25 T
ISO P steel	Vc = 60 - 250
ISO M stainless steel	Vc = 40 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.12 - 0.4 ap = 0.25 - 3.5

ISO indexable cutting inserts ceramic (0°)

Ceramic indexable cutting inserts are manufactured from an inorganic substance.
They are pressed into the mould and sintered using very fine and pure raw material.
The ceramic indexable cutting inserts are completely compacted in this process, thus ensuring:

- **resistance to breakage and wear**
- **longer tool service life thanks to outstanding wear resistance**
- **precise cutting and exceptional surface roughness**
- **greater cutting speed compared with carbide indexable cutting inserts**

Information on edge preparation:
T = chamfer; S = rounded chamfer
Other geometries, edge preparations and coatings are available on request.

Chip breaker E04. negative

F finishing ●	M medium -	R roughing -	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Finishing			CNGA 120404 E040	○		●			●	**AKH 300 T**	10	**368100** 0001	15,10
			CNGA 120408 E040	○		●			●	**AKH 300 T**	10	368100 0002	15,10
			CNGA 120412 E042	○		●			●	**AKH 300 T**	10	368100 0003	15,10

ISO	AKH 300 T
ISO P steel	Vc = 200 - 800
ISO K cast iron	Vc = 50 - 1200
ISO H hard	Vc = 20 - 200
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.50 ap = 0.10 - 0.50

3163

Chip breaker E04. negative

F finishing ●	M medium -	R roughing -	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Finishing			DNGA 150604 E040	○		●			●	**AKH 300 T**	10	**368101** 0001	18,70
			DNGA 150608 E040	○		●			●	**AKH 300 T**	10	368101 0002	18,70
			DNGA 150612 E042	○		●			●	**AKH 300 T**	10	368101 0003	18,70

ISO	AKH 300 T
ISO P steel	Vc = 200 - 800
ISO K cast iron	Vc = 50 - 1200
ISO H hard	Vc = 40 - 200
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.50 ap = 0.10 - 0.50

3163

Chip breaker E04. negative

F finishing ●	M medium -	R roughing -	ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
 Finishing			VNGA 160404 E040	○		●			●	**AKH 300 T**	10	**368102** 0001	21,50
			VNGA 160408 E040	○		●			●	**AKH 300 T**	10	368102 0002	21,50
			VNGA 160412 E042	○		●			●	**AKH 300 T**	10	368102 0003	21,50

ISO	AKH 300 T
ISO P steel	Vc = 200 - 800
ISO K cast iron	Vc = 50 - 1200
ISO H hard	Vc = 40 - 200
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.50 ap = 0.10 - 0.50

3163



Technical Information CBN Indexable Cutting Inserts

INFO

CBN (polycrystalline cubic boron nitride) does not occur naturally. It is a synthetic material that is manufactured through a process of high temperature and pressure. When CBN cutting edges are soldered to a carbide insert, this creates a high-performance cutting tool.
CBN indexable cutting inserts are **brilliant for finishing and semi-finishing hardened steels (with 45 to 68 HRc)**, as well as hard cast iron and heat-resistant superalloys.

Qualities

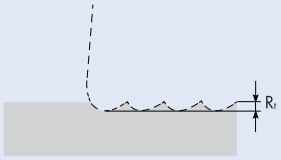
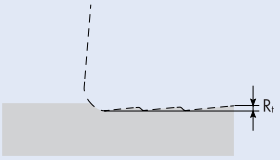
PBY 603	PBY 620
low CBN content with medium grain size and ceramic binding	minimal CBN content with medium grain size and ceramic binding
high wear/abrasion resistance	improved crater/side wear resistance with an exceptionally balanced toughness
for continuous and partially interrupted cutting of hardened steel (H01-H10)	for moderate to severely interrupted cutting of all hardened steels (H10-H20)
finishing of abrasive, high-strength cast iron	
also suitable for machining heat-resistant superalloys (S10)	

Geometry selection

The indexable insert geometry and the edge preparation is extremely important in hard turning, as it has a significant impact on the tool service life and productivity. The PALBIT product range includes standard and WIPER indexable cutting inserts.

The standard indexable insert produces the lowest cutting forces and has the lowest stability requirements, while the WIPER indexable cutting insert creates high productivity and outstanding surface quality.

A large corner radius guarantees greater edge strength and thus ensures a longer service life of the indexable cutting insert. For this reason it is advised to select the greatest permissible corner radius for the respective process requirements.

Standard (r = 0.8 mm)	WIPER (r = 0.8 mm)
	
Surface roughness Ra = 0.81 µm	Surface roughness Ra = 0.42 µm

WIPER indexable cutting inserts provide two options in process improvement:

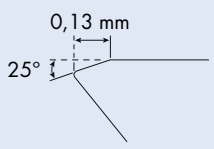
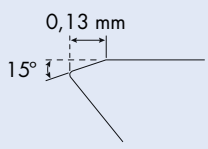
- improved surface quality with standard cutting data
- consistent surface quality with considerably higher feed rate.

Selection of cutting edge preparation

Defining the correct cutting edge preparation is the key criterion for the stability and service life of the cutting edges.
Selection is required to produce the best economic result.

Edge preparation S

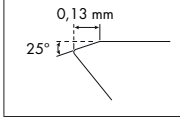
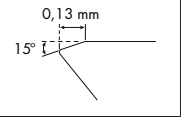
- with chamfer and edge rounding
- first choice for hard turning parts
- stronger cutting edge, with greater resistance to nicks and breaks
- generates a uniform surface quality
- critical for uninterrupted cutting and when using large cutting depths
- The feed rate must be greater than the edge rounding.

S2513	S1513
	
for general machining	for stable continuous machining

palbit CBN ISO indexable cutting inserts

1038

- **ultra-hard cutting material**

S2513	S1513
	

CNGA Z2

ISO designation	Quality		art.no.	€
CNGA 120404 -S2513 Z2	PBY 603	10	**392000** 0188	39,75
CNGA 120404 -S2513 Z2	PBY 620	10	392000 0189	39,75
CNGA 120408 -S2513 Z2	PBY 603	10	392000 0288	39,75
CNGA 120408 -S2513 Z2	PBY 620	10	392000 0289	39,75
CNGA 120412 -S2513 Z2	PBY 603	10	392000 0388	39,75
CNGA 120412 -S2513 Z2	PBY 620	10	392000 0389	39,75

3155



CNGA Z4

ISO designation	Quality		art.no.	€
CNGA 120404-S2513 Z4	PBY 603	10	**392001** 0188	51,–
CNGA 120408-S2513 Z4	PBY 603	10	392001 0288	51,–
CNGA 120412-S2513 Z4	PBY 603	10	392001 0388	51,–

3155



CNGA S1513 WG Z4

ISO designation	Quality		art.no.	€
CNGA 120408-S1513 WG Z4	PBY 603	10	**392002** 0188	114,–
CNGA 120408-S1513 WG Z4	PBY 620	10	392002 0189	114,–

3155



CNGA S2513 WG Z4

ISO designation	Quality		art.no.	€
CNGA 120408-S2513 WG Z4	PBY 603	10	**392003** 0188	114,–
CNGA 120408-S2513 WG Z4	PBY 620	10	392003 0189	114,–

3155



DNGA Z2

ISO designation	Quality		art.no.	€
DNGA 150404-2513 Z2	PBY 620	10	**392004** 0189	38,–
DNGA 150408-2513 Z2	PBY 620	10	392004 0289	38,–
DNGA 150604-2513 Z2	PBY 603	10	392004 0388	39,–
DNGA 150604-2513 Z2	PBY 620	10	392004 0389	39,–
DNGA 150608-2513 Z2	PBY 603	10	392004 0488	39,–
DNGA 150608-2513 Z2	PBY 620	10	392004 0489	39,–
DNGA 150612-2513 Z2	PBY 603	10	392004 0588	39,–
DNGA 150612-2513 Z2	PBY 620	10	392004 0589	39,–

3155



DNGA Z4

ISO designation	Quality		art.no.	€
DNGA 150604-S2513 Z4	PBY 603	10	**392005** 0188	49,50
DNGA 150608-S2513 Z4	PBY 603	10	392005 0288	49,50
DNGA 150612-S2513 Z4	PBY 603	10	392005 0388	49,50

3155



TNGA Z3

ISO designation	Quality		art.no.	€
TNGA 160404-S2513 Z3	PBY 603	10	**392007** 0188	62,25
TNGA 160404-S2513 Z3	PBY 620	10	392007 0189	62,25
TNGA 160408-S2513 Z3	PBY 603	10	392007 0288	62,25
TNGA 160408-S2513 Z3	PBY 620	10	392007 0289	62,25
TNGA 160412-S2513 Z3	PBY 603	10	392007 0388	62,25
TNGA 160412-S2513 Z3	PBY 620	10	392007 0389	62,25

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TNGA Z6

ISO designation	Quality		art.no.	€
TNGA 160404-S2513 Z6	PBY 603	10	**392008** 0188	82,–
TNGA 160408-S2513 Z6	PBY 603	10	392008 0288	82,–
TNGA 160412-S2513 Z6	PBY 603	10	392008 0388	82,–

3155



VNGA Z2

ISO designation	Quality		art.no.	€
VNGA 160404-S2513 Z2	PBY 603	10	**392009** 0188	39,75
VNGA 160404-S2513 Z2	PBY 620	10	392009 0189	39,75
VNGA 160408-S2513 Z2	PBY 603	10	392009 0288	39,75
VNGA 160408-S2513 Z2	PBY 620	10	392009 0289	39,75
VNGA 160412-S2513 Z2	PBY 603	10	392009 0388	39,75
VNGA 160412-S2513 Z2	PBY 620	10	392009 0389	39,75

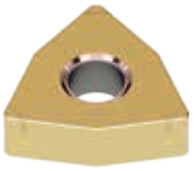
3155



WNGA Z3

ISO designation	Quality		art.no.	€
WNGA 080404-S2513 Z3	PBY 603	10	**392010** 0188	45,–
WNGA 080404-S2513 Z3	PBY 620	10	392010 0189	45,–
WNGA 080408-S2513 Z3	PBY 603	10	392010 0288	45,–
WNGA 080408-S2513 Z3	PBY 620	10	392010 0289	45,–
WNGA 080412-S2513 Z3	PBY 603	10	392010 0388	45,–
WNGA 080412-S2513 Z3	PBY 620	10	392010 0389	45,–

3155



THE COMPLETE
MACHINING
RANGE
palbit



PALBIT
Machining tools
411 pages
Art.no. 019900 0315

Overview of all free manufacturers' catalogues
on page 14/15

Technical Information PKD Indexable Cutting Inserts

INFO

PKD (polycrystalline diamond) is a composite of diamond particles sintered with a metallic binding agent, which form one of the hardest and most wear-resistant materials for cutting tools.
Its development was significant for the **machining of non-ferrous materials such as aluminium with high silicon content, metal matrix composites (MMC) and carbon-fibre reinforced plastics (CFRP)**.

Quality

PDP410	
general applications	graphite and graphite composite
fine finishing	wood composite
<14% aluminium silicon alloy	raw ceramic
automotive industry	copper alloy

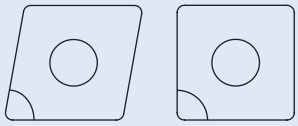
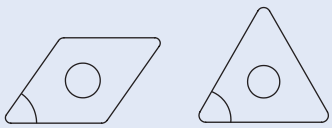
Geometry selection

Insert geometry and corner radius are crucial to service life and productivity in turning work.

The corner radius of the indexable cutting insert is an important performance parameter:

- A smaller corner radius must be selected for good chip breaking: 0.2 – 0.4 mm
- A large corner radius: 0.8 – 1.2 mm produces a greater surface quality and narrower chips, whereby the crater wear in hard turning is reduced.
- Machining with greater corner radius and smaller cutting depth results in lower entry and exit force.

In general, a greater corner radius ensures increased cutting stability and thus an increased service life. For this reason it is advisable to use the largest-possible corner radius according to the specific requirements.

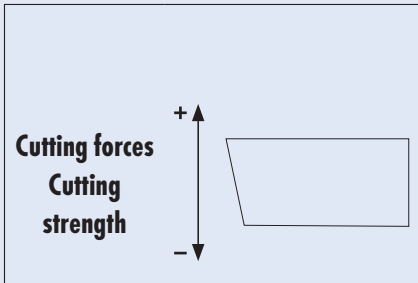
Finishing and Semi-finishing	
Special surface and tolerance requirements apply in these cases.	
Roughing	
The following formula is recommended to calculate the minimum corner radius in relation to the feed for roughing:	
Insert shape	**Formula**
	Radius >1.6 x feed per rev.
	Radius >2.5 x feed per rev.

Selection of cutting edge preparation

Choosing the correct cutting edge preparation is the key criterion for the stability and service life of the cutting edge. It determines the degree of efficiency.

Cutting edge preparation

PKD: Cutting edge preparation F-type:



F-standard preparation without honing – Standard

- sharp cutting edge
- standard/cutting edge preparation for aluminium or other non-ferrous materials.

palbit PKD ISO indexable cutting inserts



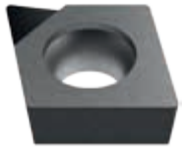
1038



- **Polycrystalline diamond** (composite cutting material) with carbide base, good cutting edge sharpness and low cutting pressure with narrow tolerances. Lower wear resistance with increased toughness.

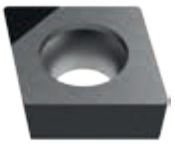
CCGT Z1

ISO designation	Quality		art.no.	€
CCGT 060202 Z1	PDP 410	10	**392600** 0106	36,–
CCGT 09T308 Z1	PDP 410	10	392600 0206	39,75
CCGT 120408 Z1	PDP 410	10	392600 0306	39,75
			2173	



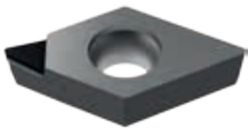
CCGW Z1

ISO designation	Quality		art.no.	€
CCGW 060202 Z1	PDP 410	10	**392601** 0106	36,–
CCGW 060204 Z1	PDP 410	10	392601 0206	36,–
CCGW 09T304 Z1	PDP 410	10	392601 0306	39,75
CCGW 120404 Z1	PDP 410	10	392601 0406	39,75
CCGW 120408 Z1	PDP 410	10	392601 0506	39,75
			2173	



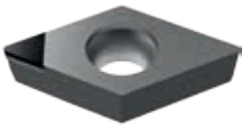
DCGT Z1

ISO designation	Quality		art.no.	€
DCGT 070202 Z1	PDP 410	10	**392602** 0106	36,–
DCGT 11T304 Z1	PDP 410	10	392602 0206	39,75
DCGT 11T308 Z1	PDP 410	10	392602 0306	39,75
DCGT 150408 Z1	PDP 410	10	392602 0406	114,–
			2173	



DCGW Z1

ISO designation	Quality		art.no.	€
DCGW 070202 Z1	PDP 410	10	**392603** 0106	36,–
DCGW 070204 Z1	PDP 410	10	392603 0206	36,–
DCGW 11T302 Z1	PDP 410	10	392603 0306	39,75
DCGW 11T304 Z1	PDP 410	10	392603 0406	39,75
DCGW 11T308 Z1	PDP 410	10	392603 0506	39,75
DCGW 150408 Z1	PDP 410	10	392603 0606	39,75
			2173	



SCGT Z1

ISO designation	Quality		art.no.	€
SCGT 120408 Z1	PDP 410	10	**392604** 0106	39,75
			2173	

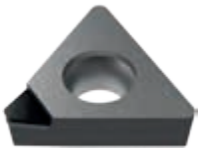


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TCGT Z1

ISO designation	Quality		art.no.	€
TCGT 090202 Z1	PDP 410	10	**392605** 0106	36,–
TCGT 090204 Z1	PDP 410	10	392605 0206	36,–
TCGT 090208 Z1	PDP 410	10	392605 0306	36,–
TCGT 110204 Z1	PDP 410	10	392605 0406	39,75
TCGT 110208 Z1	PDP 410	10	392605 0506	39,75
TCGT 16T308 Z1	PDP 410	10	392605 0606	39,75

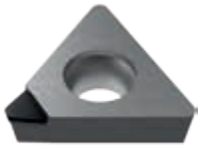
2173



TCGW Z1

ISO designation	Quality		art.no.	€
TCGW 090202 Z1	PDP 410	10	**392606** 0106	36,–
TCGW 090204 Z1	PDP 410	10	392606 0206	36,–
TCGW 110202 Z1	PDP 410	10	392606 0306	39,75
TCGW 110204 Z1	PDP 410	10	392606 0406	39,75
TCGW 110208 Z1	PDP 410	10	392606 0506	39,75
TCGW 16T308 Z1	PDP 410	10	392606 0606	39,75

2173





TPGW Z1

ISO designation	Quality		art.no.	€
TPGW 1103 Z1	PDP 410	10	**392609** 0106	39,75

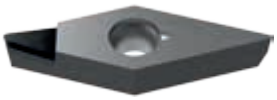
2173



VCGT Z1

ISO designation	Quality		art.no.	€
VCGT 110302 Z1	PDP 410	10	**392607** 0106	38,75
VCGT 110304 Z1	PDP 410	10	392607 0206	38,75
VCGT 160408 Z1	PDP 410	10	392607 0306	42,–

2173



VCGW Z1

ISO designation	Quality		art.no.	€
VCGW 110304 Z1	PDP 410	10	**392608** 0106	38,75
VCGW 160408 Z1	PDP 410	10	392608 0206	42,–

2173



Overview of tool holders and boring bars

ISO designation codes in the INFO section

INFO

Tool holders negative

ISO code	Rotational direction	for ISO indexable cutting inserts	Internal cooling	Page
PCLN R/L 95°		CN..		878
				879
DCLN R/L 95°				879
				880
MCLN R/L 95°				880
PCKN R/L 75°				881
PCBN R/L 75°				881
PDJN R/L 93°		DN..		882
				882
DDJN R/L 93°				883
				883
MDJN R/L 93°				884
PDNNN 63°				884
CKJN R/L 93°		KNUX		885
PSBN R/L 75°		SN..		885
PSKN R/L 75°				886
PSSN R/L 45°				886
				887
PSDNN 45°				887
PTFN R/L 90°		TN..		888
PTGN R/L 90°				888
DVJN R/L 93°		VN..		889
				889
MVJN R/L 93°				890
MVVNN 72,5°				890
PWLN R/L 95°		WN..		890
				891
DWLN R/L 95°				891
				892
MWLN R/L 95°				892

Tool holders positive

ISO code	Rotational direction	for ISO indexable cutting inserts	Internal cooling	Page
SCLC R/L 95°		CC..		893
				893
SCAC R/L 90°				894
SDJC R/L 93°		DC..		894
				895
SDAC R/L 90°				895
SDNCN 62,5°				896

Tool holders positive (Continued)

ISO code	Rotational direction	for ISO indexable cutting inserts	Internal cooling	Page
SRGC R/L 95°		RC..		897
SRDCN 90°				897
SSSC R/L 45°		SC..		898
SVJC R/L 93°				898
				899
SVAC R/L 90°				900
SVVCN 72,5°				900
SVJB R/L 93°		VBM.		901
SVVBN 72,5°				901



Boring bars negative

ISO code	Rotational direction	for ISO indexable cutting inserts	Internal cooling	Page
CKUN R/L 93°		KNUX		902
PCLN R/L 95°		CN..		902
				902
MCLN R/L 95°				903
PDUN R/L 93°		DN..		903
				903
MDUN R/L 93°				904
PTFN R/L 90°		TN..		904
				904
MVUN R/L 93°		VN..		905
PWLN R/L 95°		WN..		906
				906

Boring bars positive

ISO code	Rotational direction	for ISO indexable cutting inserts	Internal cooling	Page
SCLC R/L 95°		CC..		907
SDUC R/L 93°		DC..		909
SDQC R/L 107,5°				911
SDXC R/L 93°				912
STFC R/L 90°		TC..		912
SVUC R/L 93°		VC..		913
SVJC R/L 52°				913
SVUB R/L 93°		VB..		914

ATORN® DLOCK coolant supply and outlet

INFO

Coolant supply

The DLOCK system offers various coolant supply options. Not only are there two inlets on the underside of the holder (1x G1/8 inch and 1x M6 for transition to VDI holder), there is also another on the rear of the square (1x G1/8 inch). The coolant system can thus be connected with the greatest flexibility.

Coolant discharge

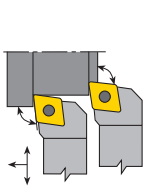
The coolant discharge is targeted at the primary cutting edge, thus guaranteeing optimum cooling without the risk of a thermal shock effect.

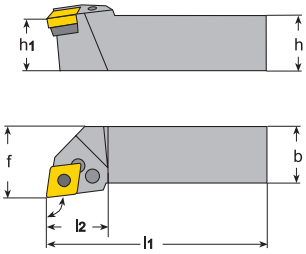


ATORN® Tool holders, negative PCLN

- **PCLN R/L 95°**
- Setting angle 95°, for negative 0° rhombic indexable inserts, 80° point angle
- **Use:** Longitudinal turning and facing







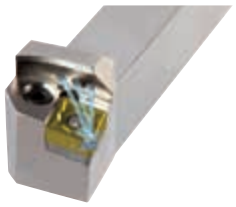
ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts							Right-hand art.no.	€	Left-hand art.no.	€
PCLN..1616 H12	16	16	100	26	20	CN..1204..	A1	B5	C5	D1	E1	F1	**320140** 0001	72,–	**320141** 0001	72,–
PCLN..2020 K12	20	20	125	28	25	CN..1204..	A1	B1	C1	D1	E1	F1	320140 0002	72,–	320141 0002	72,–
PCLN..2525 M12	25	25	150	28	32	CN..1204..	A1	B1	C1	D1	E1	F1	320140 0003	79,–	320141 0003	79,–
PCLN..3225 P12	32	25	170	28	32	CN..1204..	A1	B1	C1	D1	E1	F1	320140 0004	92,–	320141 0004	92,–
PCLN..3232 P12	32	32	170	28	40	CN..1204..	A1	B1	C1	D1	E1	F1	320140 0005	111,50	320141 0005	111,50
PCLN..2525 M16	25	25	150	34	32	CN..1606..	A2	B2	C2	D2	E2	F1	320140 0006	82,50	320141 0006	82,50
PCLN..3225 P16	32	25	170	34	32	CN..1606..	A2	B2	C2	D2	E2	F1	320140 0007	92,–	320141 0007	92,–
PCLN..3232 P16	32	32	170	34	40	CN..1606..	A2	B2	C2	D2	E2	F1	320140 0008	111,50	320141 0008	111,50
PCLN..4040 S16	40	40	250	34	50	CN..1606..	A2	B2	C2	D2	E2	F1	320140 0009	146,–	320141 0009	146,–
PCLN..2525 M19	25	25	150	42	32	CN..1906..	A3	B3	C3	D3	E3	F2	320140 0010	82,50	320141 0010	82,50
PCLN..3225 P19	32	25	170	42	32	CN..1906..	A3	B3	C3	D3	E3	F2	320140 0011	92,–	320141 0011	92,–
PCLN..3232 P19	32	32	170	42	40	CN..1906..	A3	B3	C3	D3	E3	F2	320140 0012	112,50	320141 0012	112,50
PCLN..4040 S19	40	40	250	45	50	CN..1906..	A3	B3	C3	D3	E3	F2	320140 0013	146,–	320141 0013	146,–
PCLN..4040 S25	40	40	250	45	50	CN..2509..	A4	B4	C4	D4	E4	F3	320140 0014	183,–	320141 0014	183,–
PCLN..5050 T25	50	50	300	50	60	CN..2509..	A4	B4	C4	D4	E4	F3	320140 0015	299,–	320141 0015	299,–
													3104		3104	

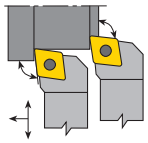
Spare parts

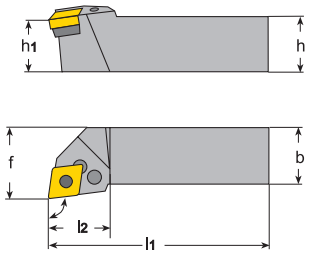
Support plate			Clamping lever			Screw			Hollow pin			Pin			Nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0007	8,70	B1	321601 0102	11,65	C1	321601 0202	3,38	D1	321601 0302	1,13	E1	321601 0402	1,28	F1	703005 0030	0,37
A2	321601 0008	13,20	B2	321601 0103	11,20	C2	321601 0203	3,16	D2	321601 0303	1,13	E2	321601 0403	1,28	F2	703005 0040	0,44
A3	321601 0009	20,60	B3	321601 0104	17,–	C3	321601 0204	3,16	D3	321601 0304	1,54	E3	321601 0404	1,28	F3	703005 0050	0,58
A4	321601 0032	60,–	B4	321601 0105	18,80	C4	321601 0205	4,48	D4	321601 0305	1,54	E4	321601 0405	2,11			
			B5	321601 0108	11,–	C5	321601 0209	3,38									
3106			3106			3106			3106			3106			7111		

ATORN® Clamp mounting, negative PCLN with internal cooling

- **PCLN R/L 95°**
- **connection for internal cooling 1/8“**
- Setting angle 95°, for rhombic indexable inserts negative 0°, 80° point angle
- **Use:** Longitudinal turning and facing







ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts	A1	B1	C1	D1	E1	Right-hand art.no.	€	Left-hand art.no.	€
PCLN. 1616 H12	16	16	100	26.1	20	CN.. 1204..	A1	B1	C1	D1	E1	**320143** 1616	173,50	**320144** 1616	173,50
PCLN. 2020 K12	20	20	125	27.4	25	CN.. 1204..	A1	B1	C1	D1	E1	320143 2020	179,50	320144 2020	179,50
PCLN. 2525 M12	25	25	150	28	32	CN.. 1204..	A1	B1	C1	D1	E1	320143 2525	192,–	320144 2525	192,–
												3162		3162	

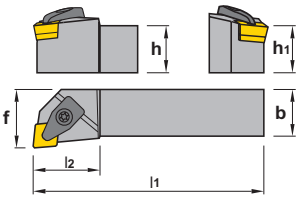
Spare parts

Clamping lever			Support plate			Screw			Hollow pin			Nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0120	30,10	B1	321601 0124	18,10	C1	321601 0125	7,60	D1	321601 0126	4,60	E1	703005 0030	0,37
	3106			3106			3106			3106			7111	

ATORN® DLOCK tool holder with D clamping, DCLN for negative turning inserts

- **DCLN R/L 95°**
- **With 1/8“ GAS internal cooling connection**
- Setting angle 95°, for negative 0° rhombic indexable inserts, 80° point angle
- **Use:** Longitudinal turning and facing
- 1 x blind plug and 1 x connection nipple 1/8“ included
- Fits hose set Art. No. 446312 0200 and 446312 0300





ISO designation	b mm	l1 mm	l2 mm	f mm	h=h1 mm	for indexable inserts	A1	B1	C1	D1	E1	F1	Right-hand art.no.	€	Left-hand art.no.	€
DCLN.. 2020 K12 A	20	125	28	25	20	CN..12	A1	B1	C1	D1	E1	F1	**324003** 0001	142,–	**324004** 0001	142,–
DCLN.. 2525 M12 A	25	150	28	32	25	CN..12	A1	B1	C1	D1	E1	F1	324003 0003	170,–	324004 0003	170,–
DCLN.. 2525 M16 A	25	150	34	32	25	CN..16	A1	B2	C2	D1	E2	F1	324003 0004	170,–	324004 0004	170,–
DCLN.. 3232 P19 A	32	170	42	40	32	CN..19	A1	B3	C3	D1	E3	F1	324003 0005	230,–	324004 0005	230,–
													3133		3133	

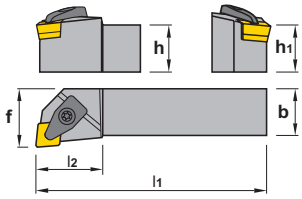
Spare parts

Screw			Screw for spacer			Clamping claw			Spring			Spacer			Nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	324020 0003	1,65	B1	324020 0004	3,81	C1	324020 0008	11,15	D1	324020 0012	0,77	E1	324020 0013	8,05	F1	703005 0040	0,44
			B2	324020 0005	4,94	C2	324020 0009	11,15				E2	324020 0014	8,05			
			B3	324020 0006	5,35	C3	324020 0010	11,60				E3	324020 0018	10,80			
	3106			3106			3106			3106			3106			7111	

ATORN® DLOCK tool holder with D clamping, DCLN for negative turning inserts

- **DCLN R/L 95°**
- Setting angle 95°, for negative 0° rhombic indexable inserts, 80° point angle
- **Use**: Longitudinal turning and facing





ISO designation	b mm	l1 mm	l2 mm	f mm	h=h1 mm	for indexable inserts	A1	B1	C1	D1	E1	F1	Right-hand art.no.	€	Left-hand art.no.	€
DCLN.. 2020 K12	20	125	28	25	20	CN..12	A1	B1	C1	D1	E1	F1	**324001** 0001	84,–	**324002** 0001	84,–
DCLN.. 2525 M12	25	150	28	25	25	CN..12	A1	B1	C1	D1	E1	F1	324001 0002	84,–	324002 0002	84,–
DCLN.. 2525 M16	25	150	34	32	25	CN..16	A1	B2	C2	D1	E2	F1	324001 0003	76,–	324002 0003	76,–
DCLN.. 3232 P19	32	170	42	40	32	CN..19	A1	B3	C3	D1	E3	F1	324001 0004	112,–	324002 0005	112,–
													3132		3132	

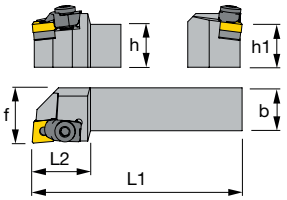
Spare parts

Screw			Screw for spacer			Clamping claw			Spring			Spacer			Nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	324020 0003	1,65	B1	324020 0004	3,81	C1	324020 0008	11,15	D1	324020 0012	0,77	E1	324020 0013	8,05	F1	703005 0040	0,44
			B2	324020 0005	4,94	C2	324020 0009	11,15				E2	324020 0014	8,05			
			B3	324020 0006	5,35	C3	324020 0010	11,60				E3	324020 0018	10,80			
	3106			3106			3106			3106			3106			7111	

ATORN® MCLN tool holders, negative

- **MCLN R/L 95°**
- Setting angle 95°, for rhombic indexable inserts negative 0°, 80° point angle
- **Use:** Longitudinal turning and facing





ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts	A1	B1	C1	D1	E1	Right-hand art.no.	€	Left-hand art.no.	€
MCLN.. 2020 K12	20	20	125	34	25	CN.. 1204..	A1	B1	C1	D1	E1	**320284** 0001	73,50	**320285** 0001	73,50
MCLN.. 2525 M12	25	25	150	34	32	CN.. 1204..	A1	B1	C1	D1	E1	320284 0002	80,–	320285 0002	80,–
												3104		3104	

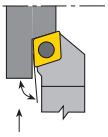
Spare parts

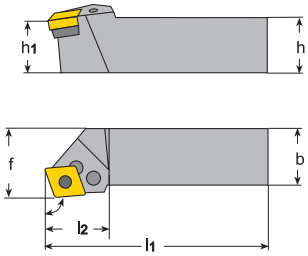
Screw			Clamping claw			Support plate			Clamping pin			Nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0024	1,77	B1	321601 0133	14,90	C1	321601 0134	9,60	D1	321601 0410	3,38	E1	703005 0050	0,58
	3106			3106			3106			3106			7111	

ATORN® Tool holders, negative PCKN

- **PCKN R/L 75°**
- Setting angle 75°, for negative 0° rhombic indexable inserts, 80° point angle
- **Use:** Facing







ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts	A1	B1	C1	D1	E1	F1	Right-hand art.no.	€	Left-hand art.no.	€
PCKN..2020 K12	20	20	125	28	25	CN..1204..	A1	B1	C1	D1	E1	F1	**320135** 0001	81,50	**320136** 0001	81,50
PCKN..2525 M12	25	25	150	28	32	CN..1204..	A1	B1	C1	D1	E1	F1	320135 0002	88,–	320136 0002	88,–
PCKN..3225 P12	32	25	170	28	32	CN..1204..	A1	B1	C1	D1	E1	F1	320135 0003	92,50	320136 0003	92,50
PCKN..3232 P19	32	32	170	34	40	CN.. 1906..	A2	B2	C2	D2	E2	F2	320135 0004	132,50	320136 0004	132,50
PCKN..4040 S19	40	40	250	45	50	CN.. 1906..	A2	B2	C2	D2	E2	F2	320135 0005	158,–	320136 0005	158,–
PCKN..4040 S25	40	40	250	45	50	CN.. 2509..	A3	B3	C3	D3	E3	F3	320135 0006	158,–	320136 0006	158,–
													3104		3104	

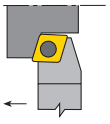
Spare parts

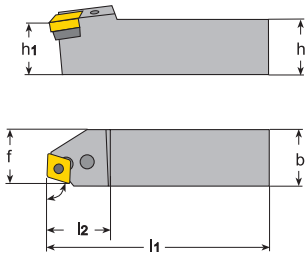
Support plate			Clamping lever			Screw			Hollow pin			Pin			Nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0007	8,70	B1	321601 0102	11,65	C1	321601 0202	3,38	D1	321601 0302	1,13	E1	321601 0402	1,28	F1	703005 0030	0,37
A2	321601 0009	20,60	B2	321601 0104	17,–	C2	321601 0204	3,16	D2	321601 0304	1,54	E2	321601 0404	1,28	F2	703005 0040	0,44
A3	321601 0032	60,–	B3	321601 0105	18,80	C3	321601 0205	4,48	D3	321601 0305	1,54	E3	321601 0405	2,11	F3	703005 0050	0,58
	3106			3106			3106			3106			3106			7111	

ATORN® Tool holders, negative PCBN

- **PCBN R/L 75°**
- Setting angle 75°, for negative 0° rhombic indexable inserts, 80° point angle
- **Use:** Longitudinal turning







ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts	A1	B1	C1	D1	E1	F1	Right-hand art.no.	€	Left-hand art.no.	€
PCBN..2525 M12	25	25	150	28	22	CN..1204..	A1	B1	C1	D1	E1	F1	**320150** 0002	88,–	**320151** 0002	88,–
PCBN..2525 M16	25	25	150	34	22	CN..1606..	A2	B2	C2	D2	E2	F1	320150 0003	98,–	320151 0003	98,–
PCBN..3232 P19	32	32	170	42	27	CN..1906..	A3	B3	C3	D3	E3	F2	320150 0007	132,50	320151 0007	132,50
PCBN..4040 S25	40	40	250	48	41	CN..2509..	A4	B4	C4	D4	E4	F3	320150 0008	183,–	320151 0008	183,–
													3104		3104	

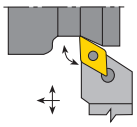
Spare parts

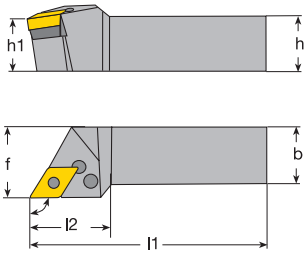
Support plate			Clamping lever			Screw			Hollow pin			Pin			Nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0007	8,70	B1	321601 0102	11,65	C1	321601 0202	3,38	D1	321601 0302	1,13	E1	321601 0402	1,28	F1	703005 0030	0,37
A2	321601 0008	13,20	B2	321601 0103	11,20	C2	321601 0203	3,16	D2	321601 0303	1,13	E2	321601 0403	1,28	F2	703005 0040	0,44
A3	321601 0009	20,60	B3	321601 0104	17,–	C3	321601 0204	3,16	D3	321601 0304	1,54	E3	321601 0404	1,28	F3	703005 0050	0,58
A4	321601 0032	60,–	B4	321601 0105	18,80	C4	321601 0205	4,48	D4	321601 0305	1,54	E4	321601 0405	2,11			
	3106			3106			3106			3106			3106			7111	

ATORN® PDJN tool holders, negative

- **PDJN R/L 93°**
- Setting angle 93°, for negative 0° rhombic indexable inserts, 55° point angle
- **Use:** Copy turning







ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts	A2	B1	C1	D1	E1	F1	Right-hand art.no.	€	Left-hand art.no.	€
PDJN..1616 H11	16	16	100	28	20	DN..1104..	A2	B1	C1	D1	E1	F1	**320155** 0010	88,–	**320156** 0010	88,–
PDJN..2020 K11	20	20	125	28	25	DN..1104..	A2	B1	C1	D1	E1	F1	320155 0011	88,–	320156 0011	88,–
PDJN..2525 M11	25	25	150	28	32	DN..1104..	A2	B1	C1	D1	E1	F1	320155 0012	91,50	320156 0012	91,50
PDJN..2020 K15	20	20	125	34	25	DN..1506..	A1	B2	C2	D2	E2	F2	320155 0001	88,–	320156 0001	88,–
PDJN..2525 M15	25	25	150	34	32	DN..1506..	A1	B2	C2	D2	E2	F2	320155 0002	93,50	320156 0002	93,50
PDJN..3225 P15	32	25	170	34	32	DN..1506..	A1	B2	C2	D2	E2	F2	320155 0003	93,50	320156 0003	93,50
PDJN..3232 P15	32	32	170	34	40	DN..1506..	A1	B2	C2	D2	E2	F2	320155 0004	111,50	320156 0004	111,50
													3104		3104	

Spare parts

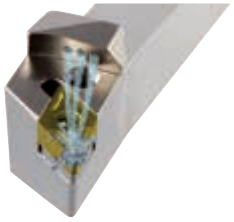
Support plate			Clamping lever			Screw			Hollow pin			Pin			Nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0010	8,50	B1	321601 0101	11,20	C1	321601 0201	3,38	D1	321601 0301	0,87	E1	321601 0401	1,28	F1	703005 0025	0,35
A2	321601 0012	15,–	B2	321601 0107	12,50	C2	321601 0206	3,16	D2	321601 0302	1,13	E2	321601 0402	1,28	F2	703005 0030	0,37
	3106			3106			3106			3106			3106			7111	

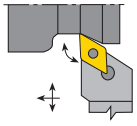
ATORN® Clamp mounting, negative PDJN with internal cooling

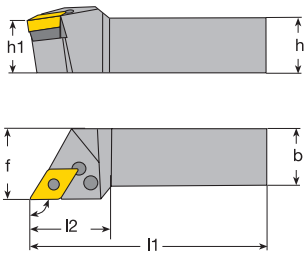




- **PDJN R/L 93°**
- **connection for internal cooling 1/8"**
- Setting angle 93°, for rhombic indexable inserts negative 0°, 55° point angle
- **Use:** Copy turning







ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts	A1	B2	C2	D1	E1	Right-hand art.no.	€	Left-hand art.no.	€
PDJN. 1616 H11	16	16	100	30	20	DN.. 1104..	A1	B2	C2		E1	**320157** 1616	173,50	**320158** 1616	173,50
PDJN. 2020 K15	20	20	125	30	25	DN.. 1506..	A2	B1	C1	D1	E2	320157 2020	179,50	320158 2020	179,50
PDJN. 2525 M15	25	25	150	30	32	DN.. 1506..	A2	B1	C1	D1	E2	320157 2525	192,–	320158 2525	192,–
												3162		3162	

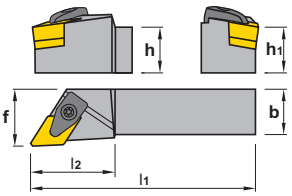
Spare parts

Clamping lever			Screw			Hollow pin			Support plate			Nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0121	30,10	B1	321601 0125	7,60	C1	321601 0126	4,60	D1	321601 0129	19,60	E1	703005 0025	0,35
A2	321601 0122	31,60	B2	321601 0128	7,60	C2	321601 0130	4,60				E2	703005 0030	0,37
	3106			3106			3106			3106			7111	

ATORN® DLOCK tool holder with D clamping, DDJN for negative turning inserts

- **DDJN R/L 93°**
- **With 1/8" GAS internal cooling connection**
- Setting angle 93°, for rhombic indexable inserts negative 0°, 55° point angle
- **Use:** Copy turning
- 1 x blind plug and 1 x connection nipple 1/8" included
- Fits hose set Art. No. 446312 0200 and 446312 0300





ISO designation	b mm	l1 mm	l2 mm	f mm	h=h1 mm	for indexable inserts	A1	B1	C1	D1	E1	F1	Right-hand art.no.	€	Left-hand art.no.	€
DDJN.. 2020 K11 A	20	125	28	25	20	DN..11	A1	B1	C1	D1	E1	F1	**324007** 0001	142,–	**324008** 0001	142,–
DDJN.. 2020 K15 A	20	125	34	25	20	DN..15	A2	B2	C2	D2	E2	F1	324007 0002	142,–	324008 0002	142,–
DDJN.. 2525 M15 A	32	150	42	40	25	DN..15	A2	B2	C2	D2	E2	F1	324007 0003	170,–	324008 0003	170,–
													3133		3133	

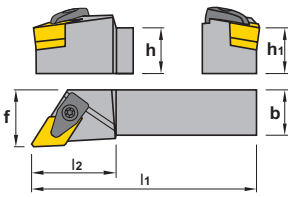
Spare parts

Screw for spacer			Screw			Clamping claw			Spring			Spacer			Nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	324020 0001	3,81	B1	324020 0002	1,65	C1	324020 0007	11,15	D1	324020 0011	0,87	E1	324020 0015	8,05	F1	703005 0040	0,44
A2	324020 0004	3,81	B2	324020 0003	1,65	C2	324020 0008	11,15	D2	324020 0012	0,77	E2	324020 0016	8,05			
	3106			3106			3106			3106			3106			7111	

ATORN® DLOCK tool holder with D clamping, DDJN for negative turning inserts

- **DDJN R/L 93°**
- Setting angle 93°, for negative 0° rhombic indexable inserts, 55° point angle
- **Use:** Copy turning





ISO designation	b mm	l1 mm	l2 mm	f mm	h=h1 mm	for indexable inserts	A1	B1	C1	D1	E1	F1	Right-hand art.no.	€	Left-hand art.no.	€
DDJN.. 2020 K11	20	125	34	25	20	DN..11	A1	B1	C1	D1	E1	F1	**324005** 0001	84,–	**324006** 0001	84,–
DDJN.. 2020 K15	20	125	34	25	20	DN..15	A2	B2	C2	D2	E2	F1	324005 0002	84,–	324006 0002	84,–
DDJN.. 2525 M15	25	150	34	32	25	DN..15	A2	B2	C2	D2	E2	F1	324005 0003	84,–	324006 0003	84,–
													3132		3132	

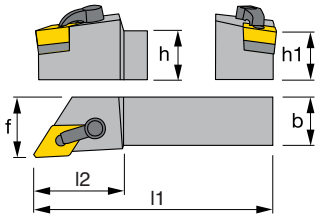
Spare parts

Screw for spacer			Screw			Clamping claw			Spring			Spacer			Nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	324020 0001	3,81	B1	324020 0002	1,65	C1	324020 0007	11,15	D1	324020 0011	0,87	E1	324020 0015	8,05	F1	703005 0040	0,44
A2	324020 0004	3,81	B2	324020 0003	1,65	C2	324020 0008	11,15	D2	324020 0012	0,77	E2	324020 0016	8,05			
	3106			3106			3106			3106			3106			7111	

ATORN® MDJN tool holders, negative

- **MDJN R/L 93°**
- Setting angle 93°, for rhombic indexable inserts negative 0°, 55° point angle
- **Use:** Copy turning





ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts	A1	B1	C1	D1	E2	Right-hand art.no.	€	Left-hand art.no.	€
MDJN.. 2020 K15	20	20	125	42	25	DN.. 1506..	A1	B1	C1	D1	E2	**320286** 0001	73,50	**320287** 0001	73,50
MDJN.. 2525 M15	25	25	150	42	32	DN.. 1506..	A1	B1	C1	D1	E2	320286 0002	80,–	320287 0002	80,–
												3104		3104	

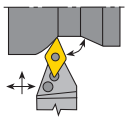
Spare parts

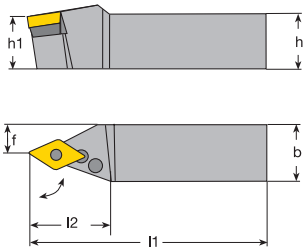
Clamping lever			Clamping pin			Screw			Spacer			Nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0118	12,95	B1	321601 0135	9,20	C1	321601 0212	3,84	D1	324020 0016	8,05	E1	703005 0025	0,35
												E2	703005 0030	0,37
	3106			3106			3106			3106			7111	

ATORN® Tool holders, negative PDNNN

- **PDNNN 63°**
- Setting angle 63°, for negative 0° rhombic indexable inserts, 55° point angle
- **Use:** Longitudinal and copy turning







ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts	A1	B1	C1	D1	E1	F1	neutral art.no.	€
PDNNN 2020 K15	20	20	125	34	10	DN..1506..	A1	B1	C1	D1	E1	F1	**320160** 0001	90,–
PDNNN 2525 M15	25	25	150	34	12.5	DN..1506..	A1	B1	C1	D1	E1	F1	320160 0002	93,50
PDNNN 3232 P15	32	32	170	34	16	DN..1506..	A1	B1	C1	D1	E1	F1	320160 0004	111,50
PDNNN 4025 S15	40	25	250	34	12.5	DN..1506..	A1	B1	C1	D1	E1	F1	320160 0006	146,–
PDNNN 5032 S15	50	32	250	34	16	DN..1506..	A1	B1	C1	D1	E1	F1	320160 0007	230,–
													3104	

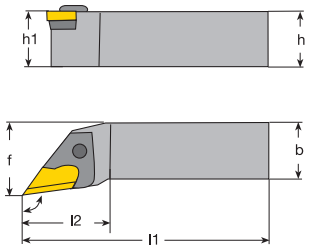
Spare parts

Support plate			Clamping lever			Screw			Hollow pin			Pin			Nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0010	8,50	B1	321601 0107	12,50	C1	321601 0206	3,16	D1	321601 0302	1,13	E1	321601 0402	1,28	F1	703005 0030	0,37
	3106			3106			3106			3106			3106			7111	

ATORN® Tool holders, negative CKJN

- **CKJN R/L 93°**
- Setting angle 93°, for negative 0° KNUX indexable inserts, 55° point angle
- **Use:** Longitudinal and copy turning





ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts	A1	B1	C1	D1	E1	F1	G1	Right-hand art.no.	€	Left-hand art.no.	€
CKJNR 2020 K16	20	20	125	34	30	KNUX1604..	A1	B1	C1	D1	E1	F1	G1	**320179** 0001	95,50		
CKJNL 2020 K16	20	20	125	34	30	KNUX1604..	A2	B2	C1	D1	E1	F1	G1			**320181** 0001	95,50
CKJNR 2525 M16	25	25	150	34	32	KNUX1604..	A1	B1	C1	D1	E1	F2	G1	320179 0002	106,–		
CKJNL 2525 M16	25	25	150	34	32	KNUX1604..	A2	B2	C1	D1	E1	F2	G1			320181 0002	106,–
CKJNR 3225 P16	32	25	170	34	32	KNUX1604..	A1	B1	C1	D1	E1	F2	G1	320179 0003	111,50		
CKJNL 3225 P16	32	25	170	34	32	KNUX1604..	A2	B2	C1	D1	E1	F2	G1			320181 0003	111,50
CKJNR 3232 P16	32	32	170	34	40	KNUX1604..	A1	B1	C1	D1	E1	F2	G1	320179 0004	111,50		
CKJNL 3232 P16	32	32	170	34	40	KNUX1604..	A2	B2	C1	D1	E1	F2	G1			320181 0004	111,50
														3104		3104	

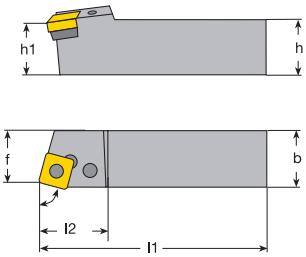
Spare parts

Support plate			Clamping lever			Screw			Pin			Spring			Spring pin			Nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0018	11,45	B1	321601 0114	13,45	C1	321601 0215	3,38	D1	321601 0408	1,35	E1	321601 0901	1,28	F1	321601 0902	2,93	G1	703005 0040	0,44
A2	321601 0019	11,45	B2	321601 0115	13,45										F2	321601 0903	2,93			
3106			3106			3106			3106			3106			3106			7111		

ATORN® Tool holders, negative PSBN

- **PSBN R/L 75°**
- Setting angle 75°, for negative 0° square indexable inserts, 90° point angle
- **Use:** Longitudinal turning





ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts	A1	B1	C1	D1	E1	F1	Right-hand art.no.	€	Left-hand art.no.	€
PSBN..2020 K12	20	20	125	28	17	SN..1204..	A1	B1	C1	D1	E1	F1	**320115** 0001	73,–	**320116** 0001	73,–
PSBN..2525 M12	25	25	150	28	22	SN..1204..	A1	B1	C1	D1	E1	F1	320115 0002	77,50	320116 0002	77,50
PSBN..3225 P12	32	25	170	28	22	SN..1204..	A1	B1	C1	D1	E1	F1	320115 0003	83,–	320116 0003	83,–
PSBN..3232 P19	32	32	170	42	27	SN..1906..	A2	B2	C2	D2	E2	F2	320115 0006	111,50	320116 0006	111,50
PSBN..4040 S25	40	40	250	45	35	SN..2507..	A3	B3	C3	D3	E3	F3	320115 0008	146,–	320116 0008	146,–
													3104		3104	

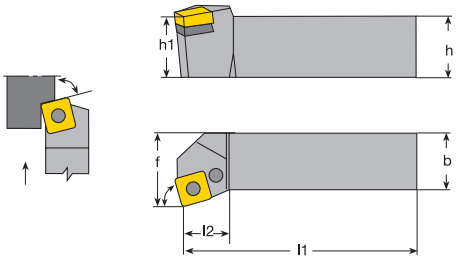
Spare parts

Support plate			Clamping lever			Screw			Hollow pin			Pin			Nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0003	8,90	B1	321601 0102	11,65	C1	321601 0202	3,38	D1	321601 0302	1,13	E1	321601 0402	1,28	F1	703005 0030	0,37
A2	321601 0005	16,80	B2	321601 0104	17,–	C2	321601 0204	3,16	D2	321601 0304	1,54	E2	321601 0404	1,28	F2	703005 0040	0,44
A3	321601 0006	39,90	B3	321601 0105	18,80	C3	321601 0205	4,48	D3	321601 0305	1,54	E3	321601 0405	2,11	F3	703005 0050	0,58
3106			3106			3106			3106			3106			7111		

ATORN® Tool holders, negative PSKN

- **PSKN R/L 75°**
- Setting angle 75°, for negative 0° square indexable inserts, 90° point angle
- **Use:** Facing





ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts							Right-hand art.no.	€
PSKN..2020 K12	20	20	125	28	25	SN..1204..	A1	B1	C1	D1	E1	F1	**320120** 0001	73,–
PSKN..2525 M12	25	25	150	28	32	SN..1204..	A1	B1	C1	D1	E1	F1	320120 0002	77,50
PSKN..3225 P12	32	25	170	28	32	SN..1204..	A1	B1	C1	D1	E1	F1	320120 0003	83,–
PSKN..3232 P19	32	32	170	42	40	SN..1906..	A2	B2	C2	D2	E2	F2	320120 0006	111,50
													3104	

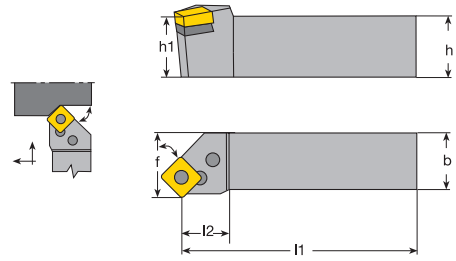
Spare parts

Support plate			Clamping lever			Screw			Hollow pin			Pin			Nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0003	8,90	B1	321601 0102	11,65	C1	321601 0202	3,38	D1	321601 0302	1,13	E1	321601 0402	1,28	F1	703005 0030	0,37
A2	321601 0005	16,80	B2	321601 0104	17,–	C2	321601 0204	3,16	D2	321601 0304	1,54	E2	321601 0404	1,28	F2	703005 0040	0,44
3106			3106			3106			3106			3106			7111		

ATORN® Tool holders, negative PSSN

- **PSSN R/L 45°**
- Setting angle 45°, for negative 0° square indexable inserts, 90° point angle
- **Use:** Longitudinal turning and facing





ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts							Right-hand art.no.	€	Left-hand art.no.	€
PSSN..2020 K12	20	20	125	28	25	SN..1204..	A1	B1	C1	D1	E1	F1	**320125** 0001	73,–	**320126** 0001	73,–
PSSN..2525 M12	25	25	150	28	32	SN..1204..	A1	B1	C1	D1	E1	F1	320125 0002	77,50	320126 0002	77,50
PSSN..3232 P19	32	32	170	42	40	SN..1906..	A2	B2	C2	D2	E2	F2	320125 0006	111,50	320126 0006	111,50
													3104		3104	

Spare parts

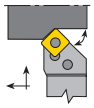
Support plate			Clamping lever			Screw			Hollow pin			Pin			Nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0003	8,90	B1	321601 0102	11,65	C1	321601 0202	3,38	D1	321601 0302	1,13	E1	321601 0402	1,28	F1	703005 0030	0,37
A2	321601 0005	16,80	B2	321601 0104	17,–	C2	321601 0204	3,16	D2	321601 0304	1,54	E2	321601 0404	1,28	F2	703005 0040	0,44
3106			3106			3106			3106			3106			7111		

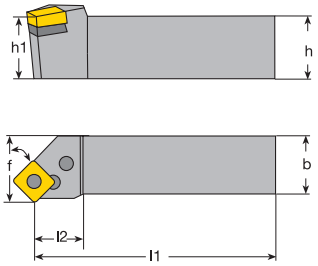
ATORN® Clamp mounting, negative PSSN with internal cooling



- **PSSN R/L 45°**
- **connection for internal cooling 1/8“**
- Setting angle 45°, for square indexable inserts negative 0°, 90° point angle
- **Use:** Longitudinal turning and facing







ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts						Right-hand art.no.	€	Left-hand art.no.	€
PSSN. 2020 K12	20	20	125	29.4	25	SNM. 1204..	A1	B1	C1	D1	E1	**320127** 2020	179,50	**320128** 2020	179,50
PSSN. 2525 M12	25	25	150	29.3	32	SNM. 1204..	A1	B1	C1	D1	E1	320127 2525	192,–	320128 2525	192,–
												3162		3162	

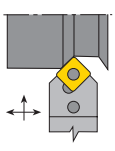
Spare parts

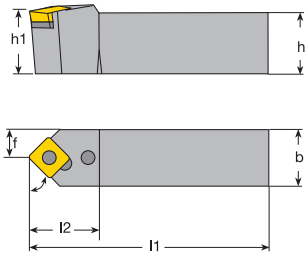
Clamping lever			Screw			Hollow pin			Support plate			Nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0120	30,10	B1	321601 0125	7,60	C1	321601 0126	4,60	D1	321601 0131	15,10	E1	703005 0030	0,37
	3106			3106			3106			3106			7111	

ATORN® Tool holders, negative PSDNN

- **PSDNN 45°**
- Setting angle 45°, for negative 0° square indexable inserts, 90° point angle
- **Use:** Longitudinal turning and chamfering







ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts							neutral art.no.	€
PSDNN 2020 K12	20	20	125	28	10	SN..1204..	A1	B1	C1	D1	E1	F1	**320130** 0001	82,–
PSDNN 2525 M12	25	25	150	28	12.5	SN..1204..	A1	B1	C1	D1	E1	F1	320130 0002	87,–
PSDNN 3232 P12	32	32	170	28	16	SN..1204..	A1	B1	C1	D1	E1	F1	320130 0003	110,–
													3104	

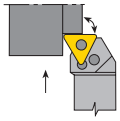
Spare parts

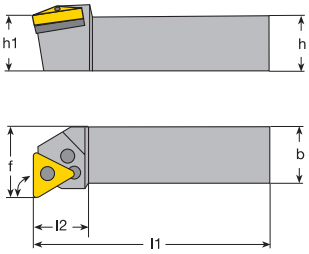
Support plate			Clamping lever			Screw			Hollow pin			Pin			Nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0003	8,90	B1	321601 0102	11,65	C1	321601 0202	3,38	D1	321601 0302	1,13	E1	321601 0402	1,28	F1	703005 0030	0,37
	3106			3106			3106			3106			3106			7111	

ATORN® Tool holders, negative PTFN

- **PTFN R/L 90°**
- Setting angle 90°, for negative 0° triangular indexable inserts, 60° point angle
- **Use:** Facing







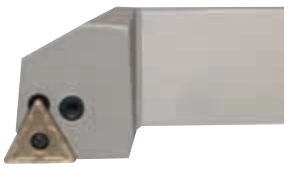
ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts	A1	B1	C1	D1	E1	F1	Right-hand art.no.	€	Left-hand art.no.	€
PTFN..1616 H16	16	16	100	22	20	TN..1604..	A1	B1	C1	D1	E1	F1	**320105** 0001	75,–	**320106** 0001	75,–
PTFN..2020 K16	20	20	125	22	25	TN..1604..	A1	B1	C1	D1	E1	F1	320105 0002	82,–	320106 0002	82,–
PTFN..2525 M16	25	25	150	22	32	TN..1604..	A1	B1	C1	D1	E1	F1	320105 0003	87,–	320106 0003	87,–
PTFN..2525 M22	25	25	150	28	32	TN.. 2204..	A2	B2	C2	D2	E2	F2	320105 0004	98,–	320106 0004	98,–
PTFN..3232 P22	32	32	170	28	40	TN.. 2204..	A2	B2	C2	D2	E2	F2	320105 0005	130,–	320106 0005	130,–
													3104		3104	

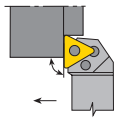
Spare parts

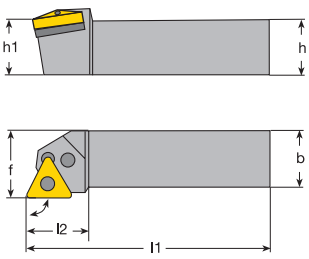
Support plate			Clamping lever			Screw			Hollow pin			Pin			Nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0001	7,65	B1	321601 0101	11,20	C1	321601 0201	3,38	D1	321601 0301	0,87	E1	321601 0401	1,28	F1	703005 0025	0,35
A2	321601 0002	10,35	B2	321601 0102	11,65	C2	321601 0202	3,38	D2	321601 0302	1,13	E2	321601 0402	1,28	F2	703005 0030	0,37
	3106			3106			3106			3106			3106			7111	

ATORN® Tool holders, negative PTGN

- **PTGN R/L 90°**
- Setting angle 90°, for negative 0° triangular indexable inserts, 60° point angle
- **Use:** Longitudinal turning







ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts	A1	B1	C1	D1	E1	F1	Right-hand art.no.	€	Left-hand art.no.	€
PTGN..1616 H16	16	16	100	22	20	TN..1604..	A1	B1	C1	D1	E1	F1	**320101** 0001	75,–	**320102** 0001	75,–
PTGN..2020 K16	20	20	125	22	25	TN..1604..	A1	B1	C1	D1	E1	F1	320101 0002	82,–	320102 0002	82,–
PTGN..2525 M16	25	25	150	22	32	TN..1604..	A1	B1	C1	D1	E1	F1	320101 0003	87,–	320102 0003	87,–
PTGN..2525 M22	25	25	150	28	32	TN..2204..	A2	B2	C2	D2	E2	F2	320101 0005	87,–	320102 0005	87,–
PTGN..3232 P22	32	32	170	28	40	TN..2204..	A2	B2	C2	D2	E2	F2	320101 0007	93,–	320102 0007	93,–
													3104		3104	

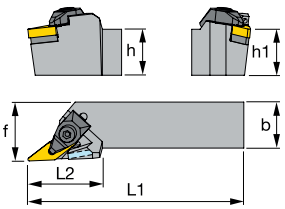
Spare parts

Support plate			Clamping lever			Screw			Hollow pin			Pin			Nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0001	7,65	B1	321601 0101	11,20	C1	321601 0201	3,38	D1	321601 0301	0,87	E1	321601 0401	1,28	F1	703005 0025	0,35
A2	321601 0002	10,35	B2	321601 0102	11,65	C2	321601 0202	3,38	D2	321601 0302	1,13	E2	321601 0402	1,28	F2	703005 0030	0,37
	3106			3106			3106			3106			3106			7111	

ATORN® DLOCK clamp mounting with D-clamp DVJN for negative turning inserts

- **DVJN R/L 93°**
- **connection for internal cooling 1/8" GAS**
- Setting angle 93°, for rhombic indexable inserts negative 0°, 35° point angle
- **Use:** Copy turning
- suitable hose set art. no 446312 0200 and 446312 0300





ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts	A1	B1	C1	D1	E1	F1	Right-hand art.no.	€	Left-hand art.no.	€
DVJN.. 2020 K16-A	20	20	125	44	25	VN.. 1604..	A1	B1	C1	D1	E1	F1	**320280** 0001	194,–	**320281** 0001	194,–
DVJN.. 2525 M16-A	25	25	150	44	32	VN.. 1604..	A1	B1	C1	D1	E1	F1	320280 0002	203,–	320281 0002	203,–
													3104		3104	

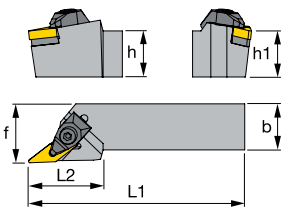
Spare parts

Screw for spacer			Screw			Clamping claw			Spring			Spacer			Nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	324020 0001	3,81	B1	324020 0002	1,65	C1	324020 0007	11,15	D1	324020 0011	0,87	E1	324020 0020	8,95	F1	703005 0040	0,44
	3106			3106			3106			3106			3106			7111	

ATORN® DLOCK clamp mounting with D-clamp DVJN for negative turning inserts

- **DVJN R/L 93°**
- Setting angle 93°, for rhombic indexable inserts negative 0°, 35° point angle
- **Use:**: Copy turning





ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts	A1	B1	C1	D1	E1	F1	Right-hand art.no.	€	Left-hand art.no.	€
DVJN.. 2020 K16	20	20	125	44	25	VN.. 1604..	A1	B1	C1	D1	E1	F1	**320282** 0001	102,–	**320283** 0001	102,–
DVJN.. 2525 M16	25	25	150	44	32	VN.. 1604..	A1	B1	C1	D1	E1	F1	320282 0002	108,–	320283 0002	108,–
													3104		3104	

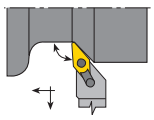
Spare parts

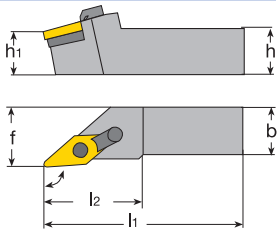
Screw for spacer			Screw			Clamping claw			Spring			Spacer			Nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	324020 0001	3,81	B1	324020 0002	1,65	C1	324020 0007	11,15	D1	324020 0011	0,87	E1	324020 0020	8,95	F1	703005 0040	0,44
	3106			3106			3106			3106			3106			7111	

ATORN® Tool holders, negative MVJN

- **MVJN R/L 93°**
- Setting angle 93°, for negative 0° rhombic indexable inserts, 35° point angle
- **Use:** Longitudinal turning and facing







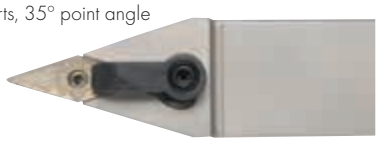
ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts	A1	B1	C1	D1	E1	Right-hand art.no.	€	Left-hand art.no.	€
MVJN..2020 K16	20	20	125	37	25	VN..1604..	A1	B1	C1	D1	E1	**320175** 0020	99,–	**320176** 0020	99,–
MVJN..2525 M16	25	25	150	37	32	VN..1604..	A1	B1	C1	D1	E1	320175 0025	107,–	320176 0025	107,–
MVJN..3225 P16	32	25	170	37	32	VN..1604..	A1	B1	C1	D1	E1	320175 0032	133,50	320176 0032	133,50
												3104		3104	

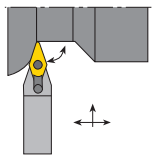
Spare parts

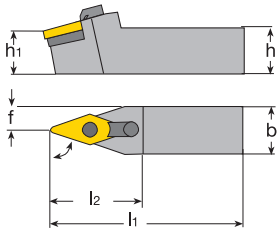
Support plate art.no.	€	Clamping claw art.no.	€	Screw art.no.	€	Clamping pin art.no.	€	Nickel-plated art.no.	€
A1 321601 0017	15,–	B1 321601 0111	12,95	C1 321601 0212	3,84	D1 321601 0407	11,–	E1 703005 0030	0,37
3106		3106		3106		3106		7111	

ATORN® Tool holders, negative MVVNN

- **MVVNN 72.5°**
- Setting angle 72.5°, for negative 0° rhombic indexable inserts, 35° point angle
- **Use:** Longitudinal and copy turning







ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts	A1	B1	C1	D1	E1	neutral art.no.	€
MVVNN 2020 K16	20	20	125	43	10	VN..1604..	A1	B1	C1	D1	E1	**320177** 0001	99,–
MVVNN 2525 M16	25	25	150	43	12.5	VN..1604..	A1	B1	C1	D1	E1	320177 0002	107,–
												3104	

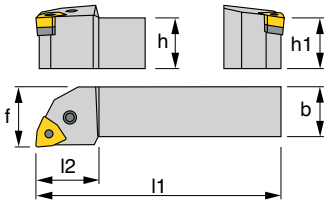
Spare parts

Support plate art.no.	€	Clamping claw art.no.	€	Screw art.no.	€	Clamping pin art.no.	€	Nickel-plated art.no.	€
A1 321601 0017	15,–	B1 321601 0111	12,95	C1 321601 0212	3,84	D1 321601 0407	11,–	E1 703005 0030	0,37
3106		3106		3106		3106		7111	

ATORN® Clamp mounting, negative PWLN

- **PWLN R/L 95°**
- Setting angle 95°, for trigometric indexable inserts negative 0°, 80° point angle
- **Material:** Longitudinal turning and facing





ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts	A2	B2	C1	D1	E1	F1	Right-hand art.no.	€	Left-hand art.no.	€
PWLN. 1616 H06	16	16	100	22	20	WNM..0604..	A2	B2	C1	D1	E1	F1	**320172** 1606	83,–	**320173** 1606	83,–
PWLN. 2020 K06	20	20	125	25	25	WNM..0604..	A2	B2	C1	D1	E1	F1	320172 2006	83,–	320173 2006	83,–
PWLN. 2525 M06	25	25	150	25	32	WNM..0604..	A2	B2	C1	D1	E1	F1	320172 2506	87,–	320173 2506	87,–
PWLN. 2020 K08	20	20	125	28	25	WNM..0804..	A1	B1	C2	D2	E2	F2	320172 2008	83,–	320173 2008	83,–
PWLN. 2525 M08	25	25	150	28	32	WNM..0804..	A1	B1	C2	D2	E2	F2	320172 2508	87,–	320173 2508	87,–
PWLN. 3232 P08	32	32	170	34	40	WNM..0804..	A1	B1	C2	D2	E2	F2	320172 3208	111,50	320173 3208	111,50
													3104		3104	

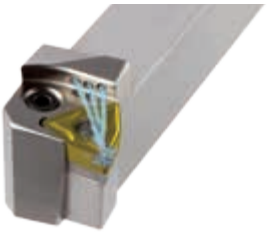
Spare parts

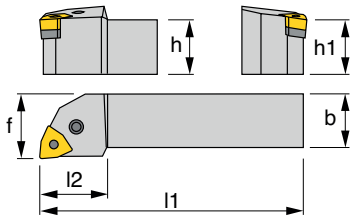
Support plate art.no.	€	Clamping lever art.no.	€	Screw art.no.	€	Hollow pin art.no.	€	Pin art.no.	€	Nickel-plated art.no.	€
A1 321601 0016	9,35	B1 321601 0102	11,65	C1 321601 0201	3,38	D1 321601 0301	0,87	E1 321601 0401	1,28	F1 703005 0025	0,35
A2 321601 0031	9,60	B2 321601 0119	11,20	C2 321601 0202	3,38	D2 321601 0302	1,13	E2 321601 0402	1,28	F2 703005 0030	0,37
3106		3106		3106		3106		3106		7111	

ATORN® Clamp mounting, negative PWLN with internal cooling



- **PWLN R/L 95°**
- **connection for internal cooling 1/8"**
- Setting angle 95°, for trigometric indexable inserts negative 0°, 80° point angle
- **Use:** Longitudinal turning and facing





ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts	A1	B1	C1	D1	E1	Right-hand art.no.	€	Left-hand art.no.	€
PWLN. 2020 K08	20	20	125	25	25	WNM. 0804..	A1	B1	C1	D1	E1	**320131** 2020	179,50	**320132** 2020	179,50
PWLN. 2525 M08	25	25	150	25	32	WNM. 0804..	A1	B1	C1	D1	E1	320131 2525	192,–	320132 2525	192,–
												3162		3162	

Spare parts

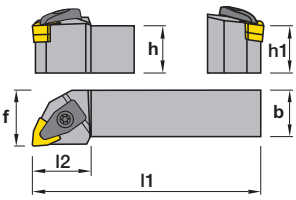
Clamping lever art.no.	€	Screw art.no.	€	Hollow pin art.no.	€	Support plate art.no.	€	Nickel-plated art.no.	€
A1 321601 0120	30,10	B1 321601 0125	7,60	C1 321601 0126	4,60	D1 321601 0132	19,60	E1 703005 0030	0,37
3106		3106		3106		3106		7111	

ATORN® DLOCK tool holder with D clamping, DWLN for negative turning inserts



- **DWLN R/L 95°**
- **With 1/8" GAS internal cooling connection**
- Setting angle 95°, for negative 0° trigonometric indexable inserts, 80° point angle
- **Use:** Longitudinal turning and facing
- 1 x blind plug and 1 x connection nipple 1/8" included
- Fits hose set Art. No. 446312 0200 and 446312 0300





ISO designation	b mm	l1 mm	l2 mm	f mm	h=h1 mm	for indexable inserts	A1	A2	B1	B2	C1	C2	D1	D2	E1	E2	F1	Right-hand art.no.	€	Left-hand art.no.	€
DWLN.. 2020 K06 A	20	125	34	25	20	WN..06	A1		B1		C1		D1		E1		F1	**324011** 0001	142,–	**324012** 0001	142,–
DWLN.. 2020 K08 A	20	125	34	25	20	WN..08		A2		B2		C2		D2		E2	F1	324011 0002	142,–	324012 0002	142,–
DWLN.. 2525 M08 A	25	150	34	32	25	WN..08		A2		B2		C2		D2		E2	F1	324011 0003	170,–	324012 0003	170,–
																		3133		3133	

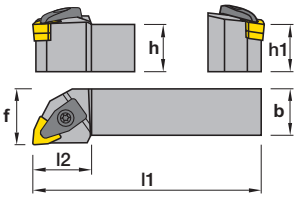
Spare parts

Screw for spacer art.no.	€	Screw art.no.	€	Clamping claw art.no.	€	Spring art.no.	€	Spacer art.no.	€	Nickel-plated art.no.	€
A1 324020 0001	3,81	B1 324020 0002	1,65	C1 324020 0007	11,15	D1 324020 0011	0,87	E1 324020 0021	5,65	F1 703005 0040	0,44
A2 324020 0004	3,81	B2 324020 0003	1,65	C2 324020 0008	11,15	D2 324020 0012	0,77	E2 324020 0022	5,35		
3106		3106		3106		3106		3106		7111	

ATORN® DLOCK tool holder with D clamping, DWLN for negative turning inserts

- **DWLN R/L 95°**
- Setting angle 95°, for negative 0° trigonometric indexable inserts, 80° point angle
- **Use:** Longitudinal turning and facing





ISO designation	b mm	l1 mm	l2 mm	f mm	h=h1 mm	for indexable inserts							Right-hand art.no.	€	Left-hand art.no.	€
DWLN.. 2020 K06	20	125	34	25	20	WN..06	A1	B1	C1	D1	E1	F1	**324009** 0001	72,–	**324010** 0001	72,–
DWLN.. 2020 K08	20	125	34	25	20	WN..08	A2	B2	C2	D2	E2	F1	324009 0002	84,–	324010 0002	84,–
DWLN.. 2525 M08	25	150	34	32	25	WN..08	A2	B2	C2	D2	E2	F1	324009 0003	84,–	324010 0003	84,–
													3132		3132	

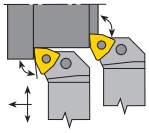
Spare parts

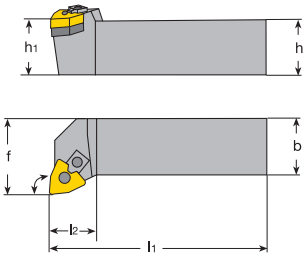
Screw for spacer			Screw			Clamping claw			Spring			Spacer			Nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	324020 0001	3,81	B1	324020 0002	1,65	C1	324020 0007	11,15	D1	324020 0011	0,87	E1	324020 0021	5,65	F1	703005 0040	0,44
A2	324020 0004	3,81	B2	324020 0003	1,65	C2	324020 0008	11,15	D2	324020 0012	0,77	E2	324020 0022	5,35			
	3106			3106			3106			3106			3106			7111	

ATORN® MWLN tool holders, negative

- **MWLN R/L 95°**
- Setting angle 95°, for negative 0° trigonometric indexable inserts, 80° point angle
- **Use:** Longitudinal turning and facing







ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts						Right-hand art.no.	€	Left-hand art.no.	€
MWLN..2020 K06	20	20	125	25	25	WN..0604..	A2	B1	C2	D2	E1	**320170** 0620	81,50	**320171** 0620	81,50
MWLN..2525 M06	25	25	150	25	32	WN..0604..	A2	B1	C2	D2	E1	320170 0625	88,–	320171 0625	88,–
MWLN..2020 K08	20	20	125	34	25	WN..0804..	A1	B2	C1	D1	E2	320170 0001	81,50	320171 0001	81,50
MWLN..2525 M08	25	25	150	34	32	WN..0804..	A1	B2	C1	D1	E2	320170 0002	88,–	320171 0002	88,–
MWLN..3232 P08	32	32	170	34	40	WN..0804..	A1	B2	C1	D1	E2	320170 0003	111,50	320171 0003	111,50
												3104		3104	

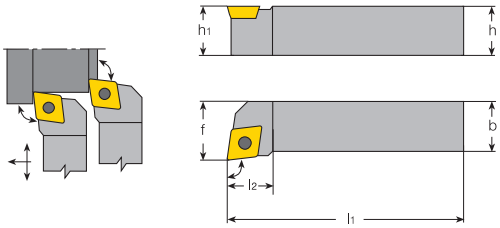
Spare parts

Screw			Support plate			Clamping pin			Clamping claw			Nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0024	1,77	B1	321601 0025	9,60	C1	321601 0410	3,38	D1	321601 0503	14,35	E1	703005 0030	0,37
A2	321601 0026	1,77	B2	324020 0022	5,35	C2	321601 0414	3,57	D2	321601 0504	14,80	E2	703005 0050	0,58
	3106			3106			3106			3106			7111	

ATORN® Tool holders, positive SCLC

- **SCLC R/L 95°**
- Setting angle 95°, for positive 7° rhombic indexable inserts, 80° point angle
- **Use:** Longitudinal turning and facing





ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts					Right-hand art.no.	€	Left-hand art.no.	€
SCLC..1010 E06	10	10	70	9	12	CC..0602..		B1		D1	**320163** 0000	71,–	**320164** 0000	71,–
SCLC..1212 F09	12	12	80	15	16	CC..09T3..		B2		D2	320163 0001	75,–	320164 0001	75,–
SCLC..1616 H09	16	16	100	17	20	CC..09T3..		B2		D2	320163 0002	79,–	320164 0002	79,–
SCLC..2020 K09	20	20	125	17	25	CC..09T3..		B2		D2	320163 0005	79,–	320164 0005	79,–
SCLC..2525 M09	25	25	150	17	32	CC..09T3..		B2		D2	320163 0006	86,–	320164 0006	86,–
SCLC..1616 H12	16	16	100	20	20	CC..1204..	A1	B3	C1	D2	320163 0007	79,–	320164 0007	79,–
SCLC..2020 K12	20	20	125	20	25	CC..1204..	A1	B3	C1	D2	320163 0003	79,–	320164 0003	79,–
SCLC..2525 M12	25	25	150	20	32	CC..1204..	A1	B3	C1	D2	320163 0004	86,–	320164 0004	86,–
											3104		3104	

Spare parts

	Support plate art.no.	€
A1	321601 0029	5,55
	3106	

	Screw art.no.	€
B1	321601 0210	3,16
B2	321601 0216	3,42
B3	321601 0220	3,38
	3106	

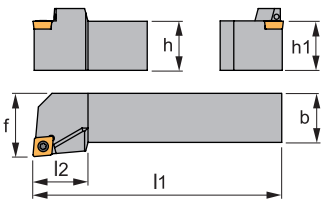
	Screw art.no.	€
C1	321601 0221	7,15
	3106	

	TORX art.no.	€
D1	703053 0070	1,79
D2	703053 0150	1,79
	7114	

ATORN® Clamp mounting, positive SCLC with internal cooling

- **SCLC R/L 95°**
- **With 1/8" GAS** internal cooling connection
- Setting angle 95°, for positive 7° rhombic indexable inserts, 80° point angle
- **Use:** Longitudinal turning and facing
- 1 x blind plug and 1 x connection nipple 1/8" included
- Fits hose set Art. No. 446312 0200 and 446312 0300





ISO designation	b mm	l1 mm	l2 mm	f mm	h=h1 mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
SCLC.. 1616 H09 A	16	100	18	20	16	CC..09	A1	B1	**324013** 0001	135,–	**324014** 0001	135,–
SCLC.. 2020 K09 A	20	125	22	25	20	CC..09	A1	B1	324013 0002	142,–	324014 0002	142,–
SCLC.. 2525 M09 A	25	125	25	25	25	CC..09	A1	B1	324013 0003	170,–	324014 0003	170,–
									3133		3133	

Spare parts

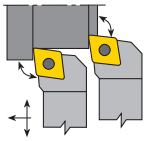
	Screw art.no.	€
A1	321601 0216	3,42
	3106	

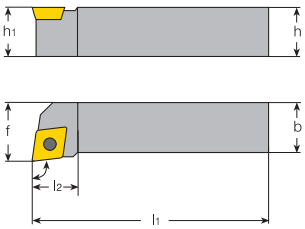
	TORX art.no.	€
B1	703053 0150	1,79
	7114	

ATORN® Tool holders, positive SCAC

- **SCAC R/L 90°**
- Setting angle 90°, for rhombic indexable inserts positive 7°, 80° point angle
- **Use:** for long automatic lathes







ISO designation	h=h1 mm	b mm	l1 mm	f mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
SCAC.. 0808 X06-A	8	8	115	8	CC.. 0602..	A2	B1	**320270** 0001	71,80	**320271** 0001	71,80
SCAC.. 1010 X06-A	10	10	115	10	CC.. 0602..	A2	B1	320270 0002	76,50	320271 0002	76,50
SCAC.. 1212 X06-A	12	12	130	12	CC.. 0602..	A2	B1	320270 0003	80,80	320271 0003	80,80
SCAC.. 1212 X09-A	12	12	130	12	CC.. 09T3..	A1	B2	320270 0004	80,80	320271 0004	80,80
SCAC.. 1616 X09-A	16	16	130	16	CC.. 09T3..	A1	B2	320270 0005	85,10	320271 0005	85,10
								3104		3104	

Spare parts

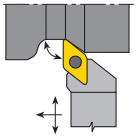
	Screw art.no.	€
A1	320901 2516	9,25
A2	321701 0102	10,35
	3106	

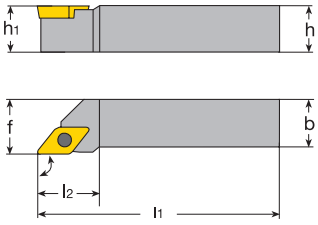
	TORX art.no.	€
B1	703053 0080	1,79
B2	703053 0150	1,79
	7114	

ATORN® Tool holders, positive SDJC

- **SDJC R/L 93°**
- Setting angle 93°, for positive 7° rhombic indexable inserts, 55° point angle
- **Use:** Copy turning







ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts					Right-hand art.no.	€	Left-hand art.no.	€
SDJC..1010 E07	10	10	70	14	12	DC..0702..		B1		D1	**320165** 0001	71,–	**320166** 0001	71,–
SDJC..1212 F07	12	12	80	16	16	DC..0702..		B1		D1	320165 0002	75,–	320166 0002	75,–
SDJC..1616 H07	16	16	100	16	20	DC..0702..		B1		D1	320165 0008	70,50	320166 0008	70,50
SDJC..1212 F11	12	12	80	18	16	DC..11T3..		B2		D2	320165 0006	77,50	320166 0006	75,50
SDJC..1616 H11	16	16	100	18	20	DC..11T3..	A1	B2	C1	D2	320165 0003	79,–	320166 0003	79,–
SDJC..2020 K11	20	20	125	22	25	DC..11T3..	A1	B3	C1	D2	320165 0004	79,–	320166 0004	79,–
SDJC..2525 M11	25	25	150	28	32	DC..11T3..	A1	B3	C1	D2	320165 0005	86,–	320166 0005	86,–
											3104		3104	

Spare parts

	Support plate art.no.	€
A1	321601 0022	15,–
	3106	

	Screw art.no.	€
B1	321601 0210	3,16
B2	321601 0222	3,42
B3	321601 0754	3,38
	3106	

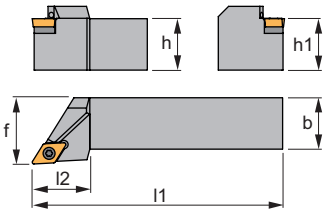
	Screw art.no.	€
C1	321611 0013	11,50
	3106	

	TORX art.no.	€
D1	703053 0070	1,79
D2	703053 0150	1,79
	7114	

ATORN® Clamp mounting, positive SDJC with internal cooling

- **SDJC R/L 93°**
- **With 1/8" GAS internal cooling connection**
- Setting angle 93°, for rhombic indexable inserts positive 7°, 55° point angle
- **Use:** Copy turning
- 1 x blind plug and 1 x connection nipple 1/8" included
- Fits hose set Art. No. 446312 0200 and 446312 0300





ISO designation	b mm	l1 mm	l2 mm	f mm	h=h1 mm	for indexable inserts	A1	B1	C1	D1	Right-hand art.no.	€	Left-hand art.no.	€
SDJC.. 2020 K11 A	20	125	22	25	20	DC..11	A1	B1	C1	D1	**324015** 0001	142,–	**324016** 0001	142,–
SDJC.. 2525 M11 A	25	150	22	32	25	DC..11	A1	B1	C1	D1	324015 0002	170,–	324016 0002	170,–
											3133		3133	

Spare parts

Screw			Support plate			Screw			TORX		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0021	4,85	B1	321601 0022	15,–	C1	321601 0754	3,38	D1	703053 0070	1,79
	3106			3106			3106			7114	

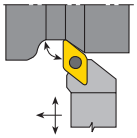
ATORN® Tool holders, positive SDAC

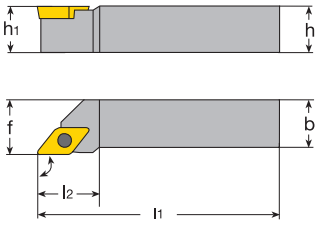
- **SDJC R/L 90°**
- Setting angle 90°, for rhombic indexable inserts positive 7°, 55° point angle
- **Use:** for long automatic lathes



for long automatic lathes







ISO designation	h=h1 mm	b mm	l1 mm	f mm	for indexable inserts	A2	B1	B2	Right-hand art.no.	€	Left-hand art.no.	€
SDAC.. 0808 X07-A	8	8	115	8	DC.. 0702..	A2	B1		**320272** 0001	71,80	**320273** 0001	71,80
SDAC.. 1010 X07-A	10	10	115	10	DC.. 0702..	A2	B1		320272 0002	76,50	320273 0002	76,50
SDAC.. 1212 X07-A	12	12	130	12	DC.. 0702..	A2	B1		320272 0003	80,80	320273 0003	80,80
SDAC.. 1616 X07-A	16	16	130	16	DC.. 0702..	A2	B1		320272 0004	85,10	320273 0004	85,10
SDAC.. 1212 X11-A	12	12	130	12	DC.. 11T3..	A1	B2		320272 0005	80,80	320273 0005	80,80
SDAC.. 1616 X11-A	16	16	130	16	DC.. 11T3..	A1	B2		320272 0006	85,10	320273 0006	85,10
									3104		3104	

Spare parts

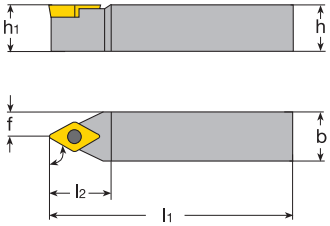
Screw			TORX		
	art.no.	€		art.no.	€
A1	320901 2516	9,25	B1	703053 0080	1,79
A2	321701 0102	10,35	B2	703053 0150	1,79
	3106			7114	

ATORN® Tool holders, positive SDNCN

- **SDNCN 62.5°**
- Setting angle 62.5°, for positive 7° rhombic indexable inserts, 55° point angle
- **Use:** Copy turning







ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts					art.no.	€
SDNCN 0808 D07	8	8	60	9	4	DC..0702..			C1	D1	**320167** 0001	66,50
SDNCN 1010 E07	10	10	70	11	5	DC..0702..			C1	D1	320167 0002	71,–
SDNCN 1212 F07	12	12	80	13	6	DC..0702..			C1	D1	320167 0003	75,–
SDNCN 1616 H11	16	16	100	16	8	DC..11T3..	A1	B1	C2	D2	320167 0004	79,–
SDNCN 2025 K11	20	20	125	20	10	DC..11T3..	A1	B1	C2	D2	320167 0005	82,50
SDNCN 2525 M11	25	25	150	25	12.5	DC..11T3..	A1	B1	C2	D2	320167 0006	86,–

3104

Spare parts

	Screw art.no.	€
A1	321601 0021	4,85

3106

	Support plate art.no.	€
B1	321601 0022	15,–

3106

	Screw art.no.	€
C1	321601 0210	3,16
C2	321601 0754	3,38

3106

	TORX art.no.	€
D1	703053 0070	1,79
D2	703053 0150	1,79

7114

ATORN® Tool holders, positive SDNCN

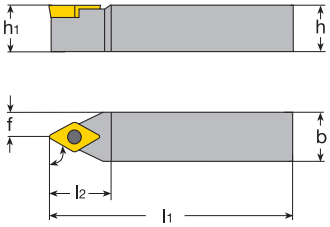
- **SDNCN 62.5°**
- Setting angle 62.5°, for rhombic indexable inserts positive 7°, 55° point angle
- **Use:** for long automatic lathes



for long automatic lathes







ISO designation	h=h1 mm	b mm	l1 mm	f mm	for indexable inserts			art.no.	€
SDNC-N 1010 X07-A	10	10	115	5	DC.. 0702..	A2	B1	**320274** 0001	76,50
SDNC-N 1212 X11-A	12	12	130	6	DC.. 11T3..	A1	B2	320274 0002	80,80
SDNC-N 1616 X11-A	16	16	130	8	DC.. 11T3..	A1	B2	320274 0003	85,10

3104

Spare parts

	Screw art.no.	€
A1	320901 2516	9,25
A2	321701 0102	10,35

3106

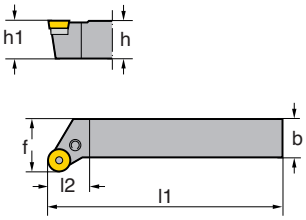
	TORX art.no.	€
B1	703053 0080	1,79
B2	703053 0150	1,79

7114

ATORN® Tool holders, positive SRGC

- **SRGC R/L 95°**
- Setting angle 95°, for round indexable inserts positive 7°
- **Use:** Longitudinal turning, copy turning and facing





ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts					Right-hand art.no.	€	Left-hand art.no.	€
SRGC R/L 1616 H08	16	16	100	14.7	20	RC.T 0803..		B2		D1	**320250** 1608	89,–	**320251** 1608	89,–
SRGC R/L 2020 K08	20	20	125	16.4	25	RC.T 0803..		B2		D1	320250 2008	105,–	320251 2008	105,–
SRGC R/L 2525 M08	25	25	150	19.8	32	RC.T 0803..		B2		D1	320250 2508	115,–	320251 2508	115,–
SRGC R/L 1616 H10	16	16	100	15.5	20	RC.T 1003..	A1	B1	C1	D2	320250 1610	89,–	320251 1610	89,–
SRGC R/L 2020 K10	20	20	125	17.2	25	RC.T 1003..	A1	B1	C1	D2	320250 2010	105,–	320251 2010	105,–
SRGC R/L 2525 M10	25	25	150	20.7	32	RC.T 1003..	A1	B1	C1	D2	320250 2510	115,–	320251 2510	115,–
											3104		3104	

Spare parts

	Support plate art.no.	€
A1	321601 0123	17,30

3106

	Screw art.no.	€
B1	321611 0011	7,55
B2	321701 0112	9,50

3106

	Screw art.no.	€
C1	321611 0013	11,50

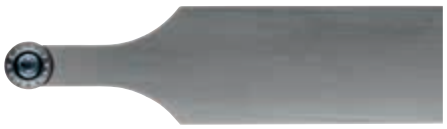
3106

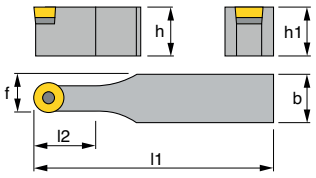
	TORX art.no.	€
D1	703053 0080	1,79
D2	703053 0150	1,79

7114

ATORN® Tool holders, positive SRDCN

- **SRDCN 90°**
- Setting angle 90°, for positive 7° round indexable inserts
- **Use:** Copy turning





ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts			art.no.	€
SRDCN 1616 H08	16	16	100	16.4	8	RC.T 0803..	A1	B1	**320249** 1608	82,50
SRDCN 2020 K08	20	20	125	16.4	10	RC.T 0803..	A1	B1	320249 2008	82,50
SRDCN 2525 M08	25	25	150	16.4	12.5	RC.T 0803..	A1	B1	320249 2508	96,–
SRDCN 1616 H10	16	16	100	20.3	8	RC.T 1003..	A2	B2	320249 1610	82,50
SRDCN 2020 K10	20	20	125	20.3	10	RC.T 1003..	A2	B2	320249 2010	82,50
SRDCN 2525 M10	25	25	150	20.3	12.5	RC.T 1003..	A2	B2	320249 2510	96,–
SRDCN 2020 K12	20	20	125	20.3	10	RC.T 1204..	A2	B2	320249 2012	96,–
SRDCN 2525 M12	25	25	150	20.3	12.5	RC.T 1204..	A2	B2	320249 2512	109,–
									3104	

Spare parts

	Screw art.no.	€
A1	321601 0210	3,16
A2	321611 0011	7,55

3106

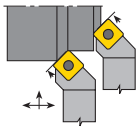
	TORX art.no.	€
B1	703053 0080	1,79
B2	703053 0150	1,79

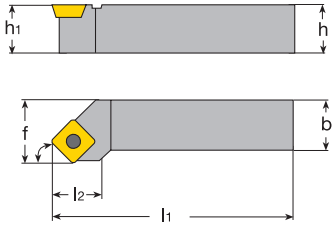
7114

ATORN® Tool holders, positive SSSC

- **SSSC R/L 45°**
- Setting angle 45°, for positive 7° square indexable inserts, 90° point angle
- **Use:** Longitudinal turning and facing, chamfering







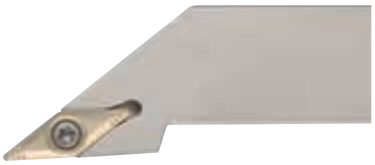
ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts					Right-hand art.no.	€	Left-hand art.no.	€
SSSC..1212 F09	12	12	80	11	16	SC..09T3..		B1		D1	**320184** 0001	75,–	**320185** 0001	75,–
SSSC..1616 H09	16	16	100	22	20	SC..09T3..		B1		D1	320184 0002	79,–	320185 0002	79,–
SSSC..2020 K12	20	20	125	22	25	SC..1204..	A1	B2	C1	D1	320184 0003	79,–	320185 0003	79,–
SSSC..2525 M12	25	25	150	22	32	SC..1204..	A1	B2	C1	D1	320184 0004	86,–	320185 0004	86,–
											3104		3104	

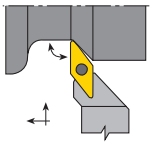
Spare parts

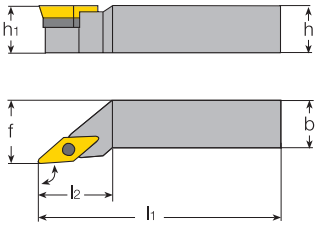
Support plate			Screw			Screw			TORX		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0030	8,70	B1	321601 0216	3,42	C1	321601 0221	7,15	D1	703053 0150	1,79
			B2	321601 0220	3,38						
	3106			3106			3106			7114	

ATORN® Tool holders, positive SVJC

- **SVJC R/L 93°**
- Setting angle 93°, for positive 7° rhombic indexable inserts, 35° point angle
- **Use:** Longitudinal and copy turning







ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts					Right-hand art.no.	€	Left-hand art.no.	€
SVJC..1212 F11	12	12	80	21.5	16	VC..1103..			C1	D1	**320188** 1212	83,–	**320189** 1212	83,–
SVJC..1616 H11	16	16	100	24	20	VC..1103..			C1	D1	320188 1616	91,50	320189 1616	91,50
SVJC..2020 K11	20	20	125	23	25	VC..1103..			C1	D1	320188 2020	100,50	320189 2020	100,50
SVJC..2525 M11	25	25	150	27	32	VC..1103..			C1	D1	320188 2525	114,–	320189 2525	114,–
SVJC..2020 K16	20	20	125	30	25	VC..1604..	A1	B1	C2	D2	320188 0001	100,50	320189 0001	100,50
SVJC..2525 M16	25	25	150	33	32	VC..1604..	A1	B1	C2	D2	320188 0002	114,–	320189 0002	114,–
SVJC..3225 P16	32	25	170	34	32	VC..1604..	A1	B1	C2	D2	320188 0003	149,–	320189 0003	149,–
											3104		3104	

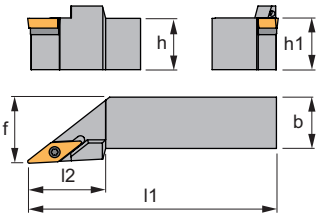
Spare parts

Screw			Support plate			Screw			TORX		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0021	4,85	B1	321601 0027	10,15	C1	321601 0210	3,16	D1	703053 0070	1,79
						C2	321601 0754	3,38	D2	703053 0150	1,79
	3106			3106			3106			7114	

ATORN® Clamp mounting, positive SVJC with internal cooling

- **SVJC R/L 93°**
- **With 1/8" GAS internal cooling connection**
- Setting angle 93°, for positive 7° rhombic indexable inserts, 35° point angle
- **Use:** Longitudinal turning and copy turning
- 1 x blind plug and 1 x connection nipple 1/8" included
- Fits hose set Art. No. 446312 0200 and 446312 0300





ISO designation	b mm	l1 mm	l2 mm	f mm	h=h1 mm	for indexable inserts					Right-hand art.no.	€	Left-hand art.no.	€
SVJC.. 2020 K11 A	20	125	25	25	20	VC..11			C1	D1	**324017** 0001	142,–	**324018** 0001	142,–
SVJC.. 2020 K16 A	20	125	37	25	20	VC..16	A1	B1	C2	D2	324017 0002	142,–	324018 0002	142,–
											3133		3133	

Spare parts

	Screw art.no.	€
A1	321601 0021	4,85
	3106	

	Support plate art.no.	€
B1	321601 0027	10,15
	3106	

	Screw art.no.	€
C1	321601 0210	3,16
C2	321601 0754	3,38
	3106	

	TORX art.no.	€
D1	703053 0070	1,79
D2	703053 0150	1,79
	7114	

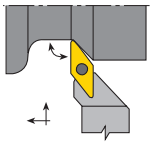
ATORN® Tool holders, positive SVJC

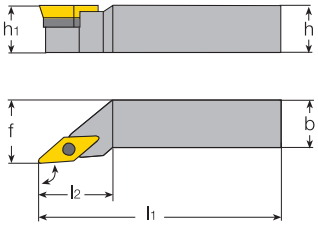
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for long automatic lathes

- **SVJC R/L 93°**
- Setting angle 93°, for rhombic indexable inserts positive 7°, 35° point angle
- **Use:** for long automatic lathes







ISO designation	h=h1 mm	b mm	l1 mm	f mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
SVJC.. 0808 X11-A	8	8	115	8	VC.. 1103..	A2	B1	**320277** 0001	71,80	**320278** 0001	71,80
SVJC.. 1010 X11-A	10	10	115	10	VC.. 1103..	A2	B1	320277 0002	76,50	320278 0002	76,50
SVJC.. 1212 X11-A	12	12	130	12	VC.. 1103..	A2	B1	320277 0003	80,80	320278 0003	80,80
SVJC.. 1616 X11-A	16	16	130	16	VC.. 1103..	A2	B1	320277 0004	85,10	320278 0004	85,10
SVJC.. 1212 X16-A	12	12	130	12	VC.. 1604..	A1	B2	320277 0005	80,80	320278 0005	80,80
SVJC.. 1616 X16-A	16	16	130	16	VC.. 1604..	A1	B2	320277 0006	85,10	320278 0006	85,10
								3104		3104	

Spare parts

	Screw art.no.	€
A1	320901 2516	9,25
A2	321701 0102	10,35
	3106	

	TORX art.no.	€
B1	703053 0080	1,79
B2	703053 0150	1,79
	7114	

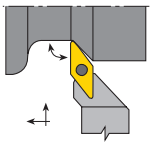
ATORN® Tool holders, positive SVAC

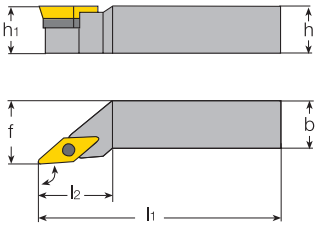
- **SVAC R/L 90°**
- Setting angle 90°, for rhombic indexable inserts positive 7°, 35° point angle
- **Use:** for long automatic lathes



for long automatic lathes







ISO designation	h=h1 mm	b mm	l1 mm	f mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
SVAC.. 0808 X11-A	8	8	115	8	VC.. 1103..	A2	B1	**320275** 0001	71,80	**320276** 0001	71,80
SVAC.. 1010 X11-A	10	10	115	10	VC.. 1103..	A2	B1	320275 0002	76,50	320276 0002	76,50
SVAC.. 1212 X11-A	12	12	130	12	VC.. 1103..	A2	B1	320275 0003	80,80	320276 0003	80,80
SVAC.. 1616 X11-A	16	16	130	16	VC.. 1103..	A2	B1	320275 0004	85,10	320276 0004	85,10
SVAC.. 1212 X16-A	12	12	130	12	VC.. 1604..	A1	B2	320275 0005	80,80	320276 0005	80,80
SVAC.. 1616 X16-A	16	16	130	16	VC.. 1604..	A1	B2	320275 0006	85,10	320276 0006	85,10
								3104		3104	

Spare parts

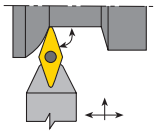
	Screw art.no.	€
A1	320901 2516	9,25
A2	321701 0102	10,35
	3106	

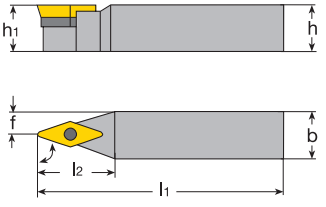
	TORX art.no.	€
B1	703053 0080	1,79
B2	703053 0150	1,79
	7114	

ATORN® Clamp mounting, positive SVVC

- **SVVC 72,5°**
- Setting angle 72.5°, for positive 7° rhombic indexable inserts, 35° point angle
- **Use:** Copy turning







ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts					art.no.	€
SVVCN 2020 K16	20	20	125	37	10.6	VC..1604..	A1	B1	C1	D1	**320192** 0001	100,50
SVVCN 2525 M16	25	25	150	37	13.1	VC..1604..	A1	B1	C1	D1	320192 0002	114,–
											3104	

Spare parts

	Screw art.no.	€
A1	321601 0021	4,85
	3106	

	Support plate art.no.	€
B1	321601 0027	10,15
	3106	

	Screw art.no.	€
C1	321601 0754	3,38
	3106	

	TORX art.no.	€
D1	703053 0150	1,79
	7114	

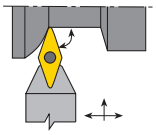
ATORN® Tool holders, positive SVVC

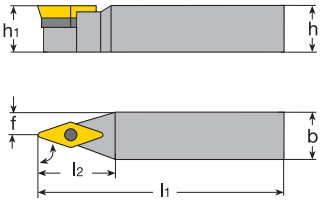
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for long automatic lathes

- **SVVC R/L 72.5°**
- Setting angle 72.5°, for rhombic indexable inserts positive 7°, 35° point angle
- **Use:** for long automatic lathes







ISO designation	h=h1 mm	b mm	l1 mm	f mm	for indexable inserts			art.no.	€
SVVC-N 1010 X11-A	10	10	115	5	VC.. 1103..	A2	B1	**320279** 0001	71,80
SVVC-N 1212 X11-A	12	12	130	6	VC.. 1103..	A2	B1	320279 0002	80,80
SVVC-N 1616 X11-A	16	16	130	8	VC.. 1103..	A2	B1	320279 0003	85,10
SVVC-N 1212 X16-A	12	12	130	6	VC.. 1604..	A1	B2	320279 0004	80,80
SVVC-N 1616 X16-A	16	16	130	8	VC.. 1604..	A1	B2	320279 0005	85,10
								3104	

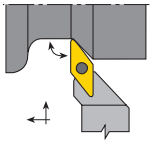
Spare parts

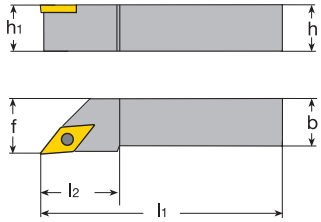
	Screw			TORX	
	art.no.	€		art.no.	€
A1	320901 2516	9,25	B1	703053 0080	1,79
A2	321701 0102	10,35	B2	703053 0150	1,79
	3106			7114	

ATORN® Tool holders, positive SVJB

- **SVJB R/L 93°**
- Setting angle 93°, for positive 5° rhombic indexable inserts, 35° point angle
- **Use:** Longitudinal and copy turning







ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts					Right-hand art.no.	€	Left-hand art.no.	€
SVJB..2020 K16	20	20	125	37	25	VB..1604..	A1	B1	C1	D1	**320190** 1620	100,50	**320191** 1620	100,50
SVJB..2525 M16	25	25	150	37	32	VB..1604..	A1	B1	C1	D1	320190 1625	114,–	320191 1625	114,–
											3104		3104	

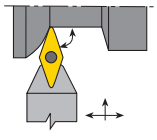
Spare parts

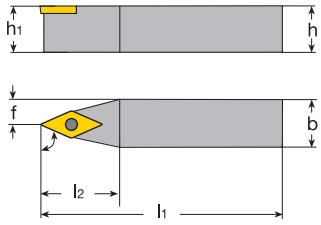
	Screw			Support plate			Screw			TORX	
	art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0021	4,85	B1	321601 0027	10,15	C1	321601 0754	3,38	D1	703053 0150	1,79
	3106			3106			3106			7114	

ATORN® Clamp mounting, positive SVVB

- **SVVB 72,5°**
- Setting angle 72.5°, for positive 5° rhombic indexable inserts, 35° point angle
- **Use:** Longitudinal and copy turning







ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts					art.no.	€
SVVBN 2020 K16	20	20	125	37	10.0	VB..1604..	A1	B1	C1	D1	**320195** 1620	100,50
SVVBN 2525 M16	25	25	150	37	12.5	VB..1604..	A1	B1	C1	D1	320195 1625	114,–
SVVBN 3225 P16	32	25	170	37	13.1	VB..1604..	A1	B1	C1	D1	320195 1632	149,–
											3104	

Spare parts

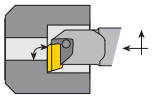
	Screw			Support plate			Screw			TORX	
	art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0021	4,85	B1	321601 0027	10,15	C1	321601 0754	3,38	D1	703053 0150	1,79
	3106			3106			3106			7114	

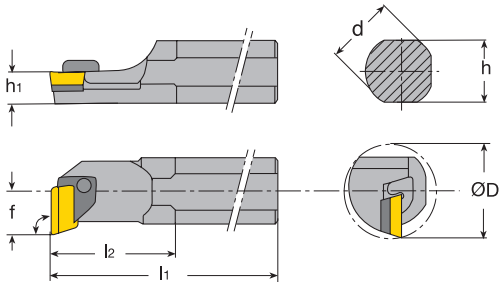
ATORN® Boring bar, negative CKUN

- **CKUN R/L 93°**
- Setting angle 93°, for negative 0° KNUX indexable inserts
- **Use:** Longitudinal turning
- Note: right-hand boring bar = left-hand indexable insert, left-hand boring bar = right-hand indexable insert



Figure shows right-hand boring bar, left-hand boring bar is mirror image





ISO designation	d mm	h mm	h1 mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts								Right-hand art.no.	€	Left-hand art.no.	€
S25T CKUNL 16	25	23	11.5	300	50	20.5	37	KNUX 1604..		B1	C1		E1	F2	G1			**321504** 0025	165,–
S25T CKUNR 16	25	23	11.5	300	50	20.5	37	KNUX 1604..		B2	C1		E1	F2	G1	**321503** 0025	165,–		
S32U CKUNL 16	32	30	15	350	54	22	39	KNUX 1604..	A2	B1	C1	D1	E1	F3	G1			321504 0032	240,–
S32U CKUNR 16	32	30	15	350	54	22	39	KNUX 1604..	A1	B2	C1	D1	E1	F3	G1	321503 0032	240,–		
S40V CKUNR 16	40	37	18.5	400	60	27	48	KNUX 1604..	A1	B2	C1	D1	E1	F1	G1	321503 0040	265,–		
																3105		3105	

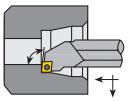
Spare parts

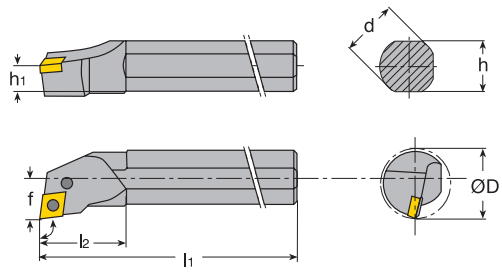
Support plate art.no.	€	Clamping lever art.no.	€	Screw art.no.	€	Pin art.no.	€	Spring art.no.	€	Spring pin art.no.	€	Nickel-plated art.no.	€
A1 321601 0018	11,45	B1 321601 0114	13,45	C1 321601 0215	3,38	D1 321601 0408	1,35	E1 321601 0901	1,28	F1 321601 0903	2,93	G1 703005 0040	0,44
A2 321601 0019	11,45	B2 321601 0115	13,45							F2 321601 0904	2,93		
										F3 321601 0905	2,93		
3106		3106		3106		3106		3106		3106		7111	

ATORN® Boring bar, negative PCLN

- **PCLN R/L 95°**
- Setting angle 95°, for negative 0° rhombic indexable inserts, 80° point angle
- **Use:** Longitudinal turning







ISO designation	d mm	h mm	h1 mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts							Right-hand art.no.	€	Left-hand art.no.	€
S25T PCLN..12	25	23	11.5	300	40	17	31	CN..1204..		B5	C5			F1	**321515** 0025	165,–	**321516** 0025	165,–
S32U PCLN..12	32	30	15	350	50	22	39	CN..1204..	A1	B3	C4	D1	E1	F2	321515 0032	183,–	321516 0032	183,–
S40V PCLN..12	40	37	18.5	400	60	27	48	CN..1204..	A1	B1	C1	D1	E1	F2	321515 0040	275,–	321516 0040	275,–
S40V PCLN..16	40	37	18.5	400	50	27	48	CN..1606..	A2	B2	C2	D2	E2	F2	321515 0001	249,–	321516 0001	249,–
S50W PCLN..16	50	47	23.5	450	65	35	61	CN..1606..	A2	B2	C2	D2	E2	F2	321515 0050	335,–	321516 0050	335,–
S50W PCLN..19	50	47	23.5	450	60	35	61	CN..1906..	A3	B4	C3	D3	E3	F3	321515 0002	360,–	321516 0002	360,–
															3105		3105	

With internal cooling

- one clamping surface from above

ISO designation	d mm	h mm	h1 mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts							Right-hand art.no.	€	Left-hand art.no.	€
A25R PCLN..12	25	23	11.5	200	40	17	32	CN..1204..		B5	C5			F1	**321515** 0125	179,50	**321516** 0125	179,50
A32S PCLN..12	32	30	15	250	50	22	40	CN..1204..	A1	B3	C4	D1	E1	F2	321515 0132	198,50	321516 0132	198,50
															3105		3105	

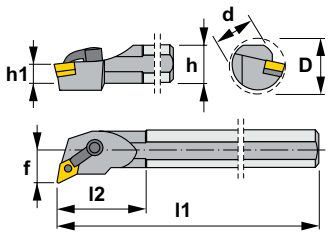
Spare parts

Support plate art.no.	€	Clamping lever art.no.	€	Screw art.no.	€	Hollow pin art.no.	€	Pin art.no.	€	Nickel-plated art.no.	€
A1 321601 0007	8,70	B1 321601 0102	11,65	C1 321601 0202	3,38	D1 321601 0302	1,13	E1 321601 0402	1,28	F1 703005 0025	0,35
A2 321601 0008	13,20	B2 321601 0103	11,20	C2 321601 0203	3,16	D2 321601 0303	1,13	E2 321601 0403	1,28	F2 703005 0030	0,37
A3 321601 0009	20,60	B3 321601 0108	11,–	C3 321601 0204	3,16	D3 321601 0309	1,62	E3 321601 0404	1,28	F3 703005 0040	0,44
		B4 321601 0110	16,40	C4 321601 0209	3,38						
		B5 321601 0112	11,65	C5 321601 0217	3,38						
3106		3106		3106		3106		3106		7111	

ATORN® Boring bar, negative MCLN

- **MCLN R/L 95°**
- Setting angle 95°, for rhombic indexable inserts negative 0°, 80° point angle
- **Use:** Longitudinal turning





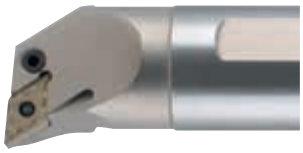
ISO designation	d mm	h mm	h1 mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts								Right-hand art.no.	€	Left-hand art.no.	€
S25T MCLN.. 12-K	25	23	11.5	300	40	17	31	CN.. 1204..		B1		D1	E2	F1	G1	**321570** 0025	189,–	**321571** 0025	189,–
S32U MCLN.. 12-K	32	30	15	350	45	22	39	CN.. 1204..	A1		C1	D1	E1	F1	G1	321570 0032	245,–	321571 0032	245,–
S40V MCLN.. 12-K	40	37	18.5	400	50	27	48	CN.. 1204..	A1		C1	D1	E1	F1	G1	321570 0040	274,–	321571 0040	274,–
																3104		3104	

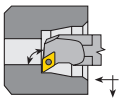
Spare parts

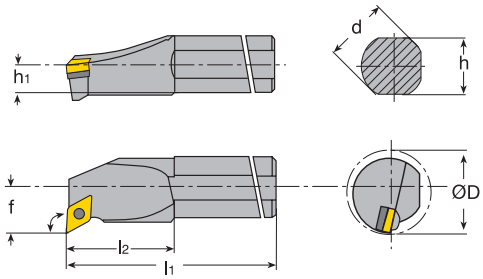
Support plate			Clamping pin			Clamping pin			Clamping claw			Screw			Black, oiled			Nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0134	9,60	B1	321601 0136	4,20	C1	321601 0137	9,20	D1	321601 0138	11,10	E1	321601 0212	3,84	F1	703001 0025	0,26	G1	703005 0030	0,37
												E2	321601 0219	3,84						
	3106			3106			3106			3106			3106			7111			7111	

ATORN® Boring bar, negative PDUN

- **PDUN R/L 93°**
- Setting angle 93°, for negative 0° rhombic indexable inserts, 55° point angle
- **Use:** Longitudinal turning







ISO designation	d mm	h mm	h1 mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts							Right-hand art.no.	€	Left-hand art.no.	€
S20S PDUN..11	20	18	9	250	29	13	25	DN..1104..	A2	B1	C4	D1	E1	F1	**321501** 0020	211,–	**321502** 0020	211,–
S25T PDUN..11	25	23	11.5	300	40	17	32	DN..1104..	A2	B1	C1	D1	E1	F1	321501 0025	223,–	321502 0025	223,–
S32U PDUN..11	32	30	15	350	45	22	39	DN..1104..	A2	B1	C1	D1	E1	F1	321501 0001	320,–	321502 0001	320,–
S32U PDUN..15	32	30	15	350	50	22	39	DN..1506..	A1	B2	C3	D2	E2	F2	321501 0032	259,–	321502 0032	259,–
S40V PDUN..15	40	37	18.5	400	60	27	48	DN..1506..	A1	B2	C2	D2	E2	F2	321501 0040	275,–	321502 0040	275,–
S50W PDUN..15	50	47	23.5	450	65	35	61	DN..1506..	A1	B2	C2	D2	E2	F2	321501 0050	330,–	321502 0050	330,–
															3105		3105	

With internal cooling

- one clamping surface from above

ISO designation	d mm	h mm	h1 mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts							Right-hand art.no.	€	Left-hand art.no.	€
A25R PDUN..11	25	23	11.5	200	40	17	32	DN..1104..	A2	B1	C1	D1	E1	F1	**321501** 0125	203,50	**321502** 0125	203,50
A32S PDUN..15	32	30	15	250	50	22	40	DN..1506..	A1	B2	C3	D2	E2	F2	321501 0132	203,50	321502 0132	203,50
A40T PDUN..15	40	37	18.5	300	60	27	50	DN..1506..	A1	B2	C2	D2	E2	F2	321501 0140	257,–	321502 0140	257,–
															3105		3105	

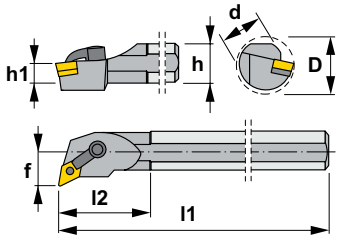
Spare parts

Support plate			Clamping lever			Screw			Hollow pin			Pin			Nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0010	8,50	B1	321601 0101	11,20	C1	321601 0201	3,38	D1	321601 0301	0,87	E1	321601 0401	1,28	F1	703005 0025	0,35
A2	321601 0012	15,–	B2	321601 0107	12,50	C2	321601 0206	3,16	D2	321601 0302	1,13	E2	321601 0402	1,28	F2	703005 0030	0,37
						C3	321601 0209	3,38									
						C4	321601 0213	3,38									
	3106			3106			3106			3106			3106			7111	

ATORN® Boring bar, negative MDUN

- **MDUN R/L 93°**
- Setting angle 93°, for rhombic indexable inserts negative 0°, 55° point angle
- **Use:** Longitudinal turning





ISO designation	d mm	h mm	h1 mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts								Right-hand art.no.	€	Left-hand art.no.	€
S25T MDUN.. 15-K	25	23	11.5	300	40	17	31	DN.. 1506..	A1		C1	D2		F1	G1	**321572** 0025	189,–	**321573** 0025	189,–
S32U MDUN.. 15-K	32	30	15	350	45	22	39	DN.. 1506..	A1	B1		D1	E1	F1	G1	321572 0032	245,–	321573 0032	245,–
S40V MDUN.. 15-K	40	37	18.5	400	50	27	48	DN.. 1506..	A1	B1		D1	E1	F1	G1	321572 0040	274,–	321573 0040	274,–
																3104		3104	

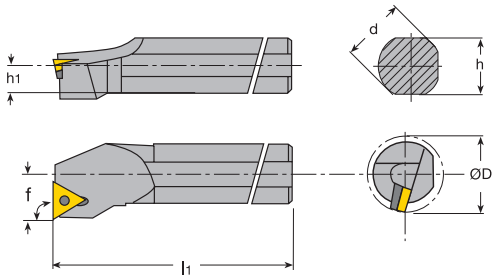
Spare parts

Clamping lever			Clamping pin			Clamping pin			Screw			Spacer			Black, oiled			Nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0118	12,95	B1	321601 0135	9,20	C1	321601 0136	4,20	D1	321601 0212	3,84	E1	324020 0016	8,05	F1	703001 0025	0,26	G1	703005 0030	0,37
									D2	321601 0219	3,84									
	3106			3106			3106			3106			3106			7111			7111	

ATORN® Boring bar, negative PTFN

- **PTFN R/L 90°**
- Setting angle 90°, for negative 0° triangular indexable inserts, 90° point angle
- **Use:** Longitudinal turning





ISO designation	d mm	h mm	h1 mm	l1 mm	f mm	D min. mm	for indexable inserts							Right-hand art.no.	€	Left-hand art.no.	€
S25T PTFN..16	25	23	11.5	300	17	31	TN..1604..		B3	C3			F1	**321510** 0025	172,–	**321511** 0025	172,–
S32U PTFN..16	32	30	15	350	22	39	TN..1604..	A1	B1	C1	D2	E1	F2	321510 0032	240,–	321511 0032	240,–
S40V PTFN..22	40	37	18.5	400	27	48	TN..2204..	A2	B2	C2	D1	E2	F3	321510 0040	270,–	321511 0040	270,–
S50W PTFN..22	50	47	23.5	450	35	61	TN..2204..	A2	B2	C2	D1	E2	F3	321510 0050	330,–	321511 0050	330,–
														3105		3105	

With internal cooling

- one clamping surface from above

ISO designation	d mm	h mm	h1 mm	l1 mm	f mm	D min. mm	for indexable inserts							Right-hand art.no.	€	Left-hand art.no.	€
A25R PTFN..16	25	23	11.5	200	17	32	TN..1604..		B3	C3			F1	**321510** 0125	190,–	**321511** 0125	190,–
A32S PTFN..16	32	30	15	250	22	40	TN..1604..	A1	B1	C1	D2	E1	F2	321510 0132	212,50	321511 0132	212,50
														3105		3105	

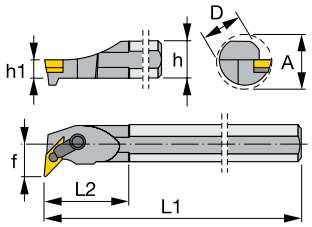
Spare parts

Support plate			Clamping lever			Screw			Hollow pin			Pin			Nickel-plated		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	321601 0001	7,65	B1	321601 0101	11,20	C1	321601 0201	3,38	D1	321601 0302	1,13	E1	321601 0401	1,28	F1	703005 0020	0,33
A2	321601 0002	10,35	B2	321601 0102	11,65	C2	321601 0202	3,38	D2	321601 0308	0,87	E2	321601 0402	1,28	F2	703005 0025	0,35
			B3	321601 0113	11,20	C3	321601 0213	3,38							F3	703005 0030	0,37
	3106			3106			3106			3106			3106			7111	

ATORN® Boring bar, negative MVUN

- **MVUN R/L 93°**
- Setting angle 93°, for negative 0° rhombic indexable inserts, 35° point angle
- **Use:** Longitudinal and copy turning





ISO designation	d mm	h mm	h1 mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts							**Right-hand** art.no.	€	**Left-hand** art.no.	€
S25T MVUN.. 16-K	25	23	11.5	300	40	17	31	VN.. 1604..	A1	B2	C1	D1	E1	F1	**321574** 0025	179,–	**321575** 0025	179,–
S32U MVUN.. 16-K	32	30	15	350	45	22	39	VN.. 1604..	A1	B1	C1	D1	E1	F1	321574 0032	202,50	321575 0032	202,50
S40V MVUN.. 16-K	40	37	18.5	400	50	27	48	VN.. 1604..	A1	B1	C1	D1	E1	F1	321574 0040	276,–	321575 0040	276,–
															3104		3104	

Spare parts

	Clamping lever art.no.	€		Screw art.no.	€		Clamping pin art.no.	€		Spacer art.no.	€		Black, oiled art.no.	€		Nickel-plated art.no.	€
A1	321601 0118	12,95	B1	321601 0212	3,84	C1	321601 0407	11,–	D1	324020 0020	8,95	E1	703001 0025	0,26	F1	703005 0030	0,37
			B2	321601 0219	3,84												
	3106			3106			3106			3106			7111			7111	



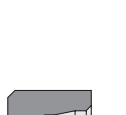
… for special measurement tasks

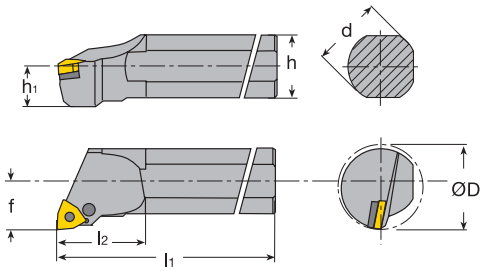
ATORN®
High quality for great performance

ATORN® Boring bar, negative PWLN

- **PWLN R/L 95°**
- Setting angle 95°, for negative 0° trigonometric indexable inserts, 80° point angle
- **Use:** Longitudinal turning

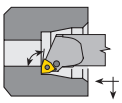


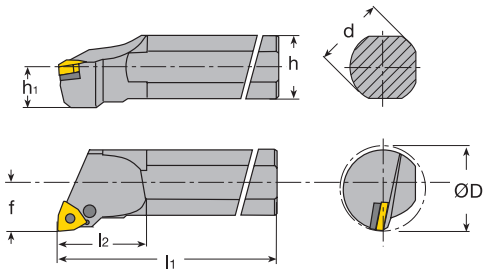




ISO designation	d mm	h mm	h1 mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts							Right-hand art.no.	€	Left-hand art.no.	€
S16R PWLN..06	16	14	7	200	24	11	20	WN..0604..		B4	C4			F1	**321531** 0616	144,–	**321532** 0616	144,–
S20S PWLN..06	20	18	9	250	36	13	27	WN..0604..		B4	C4			F1	321531 0620	150,–	321532 0620	150,–
S25T PWLN..06	25	23	11.5	300	40	17	31	WN..0604..	A2	B1	C1	D1	E1	F1	321531 0625	168,–	321532 0625	168,–
S25T PWLN..08	25	23	11.5	300	40	17	31	WN..0804..		B3	C3			F2	321531 0825	168,–	321532 0825	168,–
S32U PWLN..08	32	30	15	350	50	22	39	WN..0804..	A1	B2	C2	D2	E2	F2	321531 0832	188,–	321532 0832	188,–
S40V PWLN..08	40	37	18.5	400	60	27	48	WN..0804..	A1	B2	C2	D2	E2	F2	321531 0840	260,–	321532 0840	260,–
															3105		3105	







With internal cooling

- With one clamping surface from above

ISO designation	d mm	h mm	h1 mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts							Right-hand art.no.	€	Left-hand art.no.	€
A16M PWLN..06	16	15	7.5	150	30	11	20	WNM.0604..		B4	C4			F1	**321533** 0616	202,–	**321534** 0616	202,–
A20Q PWLN..06	20	18	9.0	180	35	13	27	WNM.0604..		B4	C4			F1	321533 0620	214,–	321534 0620	214,–
A25R PWLN..08	25	23	11.5	200	40	17	31	WNM.0804..		B3	C3			F2	321533 0825	216,–	321534 0825	216,–
A32S PWLN..08	32	30	15	250	45	22	39	WNM.0804..	A1	B2	C2	D2	E2	F2	321533 0832	252,–	321534 0832	252,–
															3105		3105	

Spare parts

	Support plate art.no.	€
A1	321601 0016	9,35
A2	321601 0031	9,60
	3106	

	Clamping lever art.no.	€
B1	321601 0101	11,20
B2	321601 0102	11,65
B3	321601 0108	11,–
B4	321601 0113	11,20
	3106	

	Screw art.no.	€
C1	321601 0201	3,38
C2	321601 0202	3,38
C3	321601 0209	3,38
C4	321601 0213	3,38
	3106	

	Hollow pin art.no.	€
D1	321601 0301	0,87
D2	321601 0302	1,13
	3106	

	Pin art.no.	€
E1	321601 0401	1,28
E2	321601 0402	1,28
	3106	

	Nickel-plated art.no.	€
F1	703005 0025	0,35
F2	703005 0030	0,37
	7111	



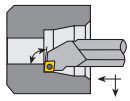
... for daily use.

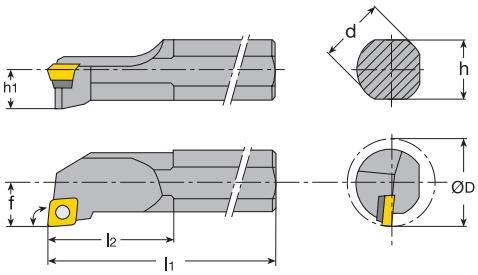
ATORN®
Performance demands quality

ATORN® Boring bar, positive SCLC

- **SCLC R/L 95°**
- Setting angle 95°, for positive 7° rhombic indexable inserts, 80° point angle
- **Use:** Longitudinal turning







Standard version with internal cooling

ISO designation	d mm	h mm	h1 mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts					Right-hand art.no.	€	Left-hand art.no.	€
A08H SCLC..06	8	7	3.5	100	17.8	6	10	CC..0602..	A1			D1	**321001** 0108	91,50	**321002** 0108	91,50
A10K SCLC..06	10	9	4.5	125	17.7	7	12	CC..0602..	A1			D1	321001 0110	91,50	321002 0110	91,50
A12L SCLC..06	12	11	5.5	140	24.2	9	16	CC..0602..	A1			D1	321001 0112	91,50	321002 0112	91,50
A16Q SCLC..09	16	14	7.5	180	26.7	11	20	CC..09T3..	A2			D2	321001 0116	100,–	321002 0116	100,–
A20R SCLC..09	20	18	9.0	200	36.7	13	25	CC..09T3..	A2			D2	321001 0120	106,50	321002 0120	106,50
A25R SCLC..12	25	23	11.5	200	40.5	17	32	CC..1204..	A4	B1	C1	D3	321001 0126	139,–	321002 0126	139,–
A32S SCLC..12	32	30	15.0	250	30	22	40	CC..1204..	A3	B1	C1	D2	321001 0132	178,–	321002 0132	178,–
A40T SCLC..12	40	38	38.5	300	31	27	49	CC..1204..	A3	B1	C1	D2	321001 0140	250,–	321002 0140	250,–
													3134		3134	

Spare parts

	Screw art.no.	€
A1	320901 2513	11,10
A2	320901 2516	9,25
A3	321611 0010	7,55
A4	321701 0108	9,25
	3106	

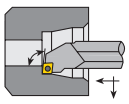
	Support plate art.no.	€
B1	321611 0001	31,10
	3106	

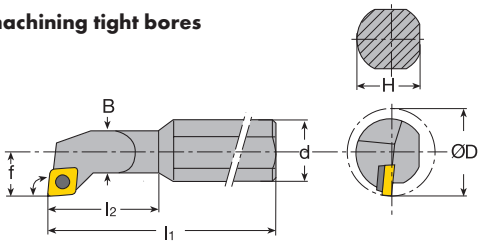
	Screw art.no.	€
C1	321611 0012	11,50
	3106	

	TORX art.no.	€
D1	703053 0080	1,79
D2	703053 0150	1,79
D3	703053 0200	1,79
	7114	

ATORN® Boring bar, positive SCLC

- **SCLC R/L 95°**
- Setting angle 95°, for positive 7° rhombic indexable inserts, 80° point angle
- **With internal cooling**
- **Use:** Longitudinal turning, **very well suited to machining tight bores**







Boring bar, individual

ISO designation	d mm	H mm	l1 mm	l2 mm	f mm	B mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
A0608H SCLC..06	8	7	100	21.5	4.2	6	8	CC.. 0602..	A1	B1	**321003** 0008	69,–	**321004** 0008	69,–
A0810J SCLC..06	10	9	110	27	6	8	11	CC.. 0602..	A1	B1	321003 0010	69,–	321004 0010	69,–
A1012K SCLC..06	12	11	125	32.5	7	10	13	CC.. 0602..	A1	B1	321003 0012	77,50	321004 0012	77,50
A1216M SCLC..06	16	15	150	42	9	12	16	CC.. 0602..	A1	B1	321003 0016	81,50	321004 0016	81,50
											3134		3134	

Set

Contents			Right-hand art.no.	€	Left-hand art.no.	€
1x A0608H SCLCR/L 06 | 1x A0810J SCLCR/L 06 | 1x A1012K SCLCR/L 06 | 1x A1216M SCLCR/L 06	A1	B1	**321003** 1004	225,–	**321004** 1004	225,–
			3134		3134	

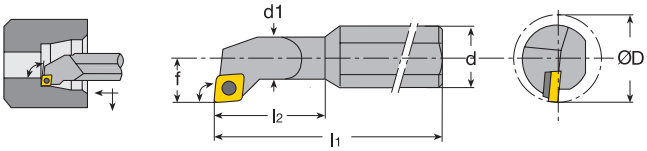
Spare parts

	Screw art.no.	€
A1	320901 2513	11,10
	3106	

	TORX art.no.	€
B1	703053 0080	1,79
	7114	

ATORN® SCLC HSS boring bars

- **SCLC R/L 95°**
- Setting angle 95°, for positive 7° rhombic indexable inserts, 80° point angle
- **With internal cooling**
- **Use:** Longitudinal turning, very well suited to machining tight bores
- Low-vibration boring bars
- Indexable inserts with longer service life
- HSS boring bars with longer service life





Boring bar, individual

ISO designation	d1 mm	d mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
AH0608H SCLC..06	6	8	100	25	4	8.5	CC..0602..	A1	B1	**321103** 0008	106,50	**321104** 0008	106,50
AH0810J SCLC..06	8	10	110	32	6	12	CC..0602..	A1	B1	321103 0010	111,50	321104 0010	111,50
AH1012K SCLC..06	10	12	125	38	7	14	CC..0602..	A1	B1	321103 0012	117,–	321104 0012	117,–
AH1216M SCLC..06	12	16	150	50	9	18	CC..0602..	A1	B1	321103 0016	150,–	321104 0016	150,–
										3134		3134	

Set

Contents			Right-hand art.no.	€	Left-hand art.no.	€
1x AH0608H SCLCR/L 06 | 1x AH0810J SCLCR/L 06 | 1x AH1012K SCLCR/L 06 | 1x AH1216M SCLCR/L 06	A1	B1	**321103** 1004	350,–	**321104** 1004	350,–
			3134		3134	

Spare parts

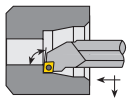
	Screw art.no.	€
A1	320901 2513	11,10
	3106	

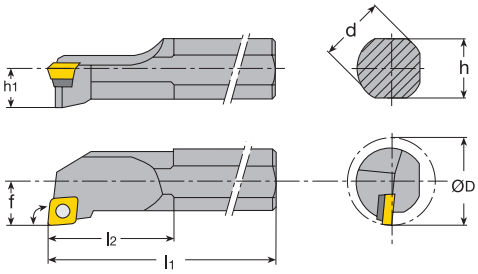
	TORX art.no.	€
B1	703053 0080	1,79
	7114	

ATORN® SCLC solid carbide boring bars

- **SCLC R/L 95°**
- 95° setting angle
- For rhombic indexable inserts, 7° positive, 80° point angle
- **Internal coolant supply**
- Low-vibration
- **Use:** Longitudinal turning







Boring bar, individual

ISO designation	d mm	h mm	h1 mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts					Right-hand art.no.	€	Left-hand art.no.	€
E08K SCLC..06	8	7	3.5	125	10	5	10	CC..0602..	A1			D1	**321101** 0108	188,–	**321102** 0108	188,–
E10K SCLC..06	10	9	4.5	125	10	6	12	CC..0602..	A1			D1	321101 0110	188,–	321102 0110	188,–
E12M SCLC..06	12	11	5.5	150	10	8	14	CC..0602..	A1			D1	321101 0112	218,–	321102 0112	218,–
E16R SCLC..09	16	15	7.0	200	16	10	18	CC..09T3..	A2			D2	321101 0116	365,–	321102 0116	365,–
E20S SCLC..09	20	18	9.0	250	16	12	23	CC..09T3..	A2			D2	321101 0120	649,–	321102 0120	649,–
E25S SCLC..12	25	23	11.5	250	16	15	30	CC..1204..	A3	B1	C1	D3	321101 0125	1.349,–	321102 0125	1.349,–
													3134		3134	

Set

Contents			Right-hand art.no.	€	Left-hand art.no.	€
1x E08K SCLCR/L 06 | 1x E10K SCLCR/L 06 | 1x E12M SCLCR/L 06	A1	D1	**321101** 0003	449,–	**321102** 0003	449,–
			3134		3134	



Spare parts

	Screw art.no.	€
A1	320901 2513	11,10
A2	320901 2516	9,25
A3	321701 0108	9,25
	3106	

	Support plate art.no.	€
B1	321611 0001	31,10
	3106	

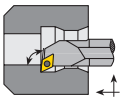
	Screw art.no.	€
C1	321611 0012	11,50
	3106	

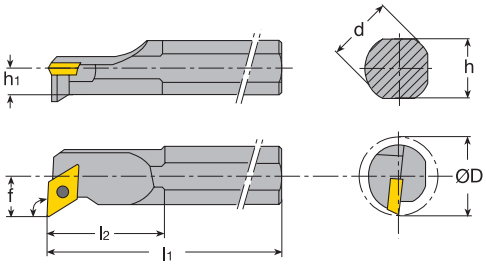
	TORX art.no.	€
D1	703053 0080	1,79
D2	703053 0150	1,79
D3	703053 0200	1,79
	7114	

ATORN® Boring bar, positive SDUC

- **SDUC R/L 93°**
- Setting angle 93°, for positive 7° rhombic indexable inserts, 55° point angle
- **Use:** Longitudinal turning







Standard version with internal cooling

ISO designation	d mm	h mm	h1 mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
A10K SDUC..07	10	9.5	4.5	125	15	7	13.5	DC..0702..	A1	B1	**321008** 0110	94,–	**321009** 0110	94,–
A12L SDUC..07	12	11	5.5	140	20	9	16	DC..0702..	A1	B1	321008 0112	97,50	321009 0112	97,50
A16Q SDUC..07	16	14	7	180	27	11	20	DC..0702..	A1	B1	321008 0116	104,50	321009 0116	104,50
A20R SDUC..11	20	18	9	200	33.8	13	25	DC..11T3..	A2	B2	321008 0120	109,50	321009 0120	109,50
A25R SDUC..11	25	23	11.5	200	35.8	17	32	DC..11T3..	A2	B2	321008 0125	132,–	321009 0125	132,–
											3134		3134	

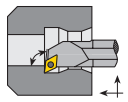
Spare parts

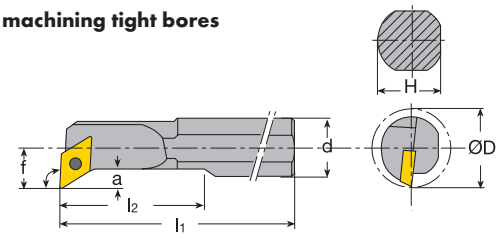
	Screw art.no.	€
A1	320901 2513	11,10
A2	320901 2516	9,25
	3106	

	TORX art.no.	€
B1	703053 0080	1,79
B2	703053 0150	1,79
	7114	

ATORN® Boring bars, positive SDUC

- **SDUC R/L 93°**
- Setting angle 93°, for positive 7° rhombic indexable inserts, 55° point angle
- **With internal cooling**
- **Use:** Longitudinal turning, **very well suited to machining tight bores**







Boring bar, individual

ISO designation	d mm	H mm	l1 mm	l2 mm	f mm	a mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
A0408F SDUC..04	8	7	80	15	3	1.5	5.6	DC.. 04T0..	A2	B1	**321013** 0008	83,50	**321014** 0408	83,50
A0810H SDUC..07	10	9	100	22.5	6.5	4.4	12.5	DC.. 0702..	A1	B2	321013 0010	98,50	321014 0010	98,50
A1012K SDUC..07	12	11	125	27.5	9	5.9	15.5	DC.. 0702..	A1	B2	321013 0012	98,50	321014 0012	98,50
A1216M SDUC..07	16	15	150	40.5	11	4.9	18	DC.. 0702..	A1	B2	321013 0016	98,50	321014 0016	98,50
											3134		3134	

Set

Contents	Right-hand art.no.	€	Left-hand art.no.	€
1x A0810H SDUCR/L 07 | 1x A1012K SDUCR/L 07 | 1x A1216M SDUCR/L 07	**321013** 1003	215,–	**321014** 1003	215,–
	3134		3134	

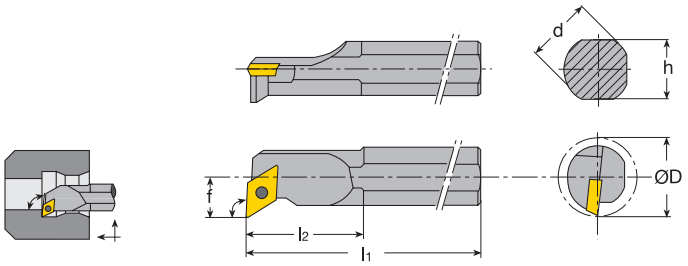
Spare parts

	Screw art.no.	€
A1	320901 2513	11,10
A2	322201 0130	6,80
	3106	

	TORX art.no.	€
B1	703053 0050	1,79
B2	703053 0080	1,79
	7114	

ATORN® SDUC HSS boring bars, positive

- **SDUC R/L 93°**
- Setting angle 93°, for positive 7° rhombic indexable inserts, 55° point angle
- **With internal cooling**
- **Use:** Longitudinal turning, very well suited to machining tight bores
- Low-vibration boring bars
- Indexable inserts with longer service life
- HSS boring bars with longer service life





Boring bar, individual

ISO designation	d1 mm	d mm	h mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
AH0810H SDUC..07	8	10	9	100	22	7	12.5	DC..0702..	A1	B1	**321113** 0010	124,50	**321114** 0010	124,40
AH1012K SDUC..07	10	12	11	125	28	9	15.5	DC..0702..	A1	B1	321113 0012	137,–	321114 0012	137,–
AH1216M SDUC..07	12	16	15	150	36	11	19.5	DC..0702..	A1	B1	321113 0016	155,50	321114 0016	155,50
											3134		3134	

Set

Contents			Right-hand art.no.	€	Left-hand art.no.	€
1x AH0810H SDUCR/L 07 | 1x AH1012K SDUCR/L 07 | 1x AH1216M SDUCR/L 07	A1	B1	**321113** 1003	295,–	**321114** 1003	295,–
			3134		3134	

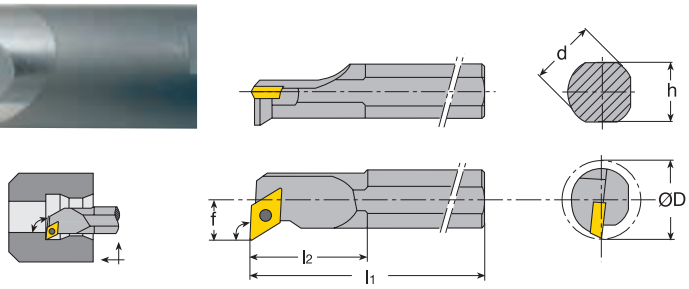
Spare parts

	Screw art.no.	€		TORX art.no.	€
A1	320901 2513	11,10	B1	703053 0080	1,79
	3106			7114	

ATORN® SDUC solid carbide boring bars

- **SDUC R/L 93°**
- 93° setting angle
- For rhombic indexable inserts, 7° positive, 55° point angle
- **Internal coolant supply**
- Low-vibration
- **Use:** Longitudinal turning





Boring bar, individual

ISO designation	d mm	h mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
E08K SDUC..07	8	7	125	10.0	7.5	12.5	DC..0702..	A1	B1	**321108** 0108	185,–	**321109** 0108	185,–
E10K SDUC..07	10	9	125	10.0	7	12.5	DC..0702..	A1	B1	321108 0110	191,–	321109 0110	191,–
E12M SDUC..07	12	11	150	12.5	9	15	DC..0702..	A1	B1	321108 0112	205,–	321109 0112	205,–
E16R SDUC..07	16	15	200	16.5	11	19	DC..0702..	A1	B1	321108 0116	370,–	321109 0116	370,–
E20S SDUC..11	20	18	250	20.5	12.5	23.5	DC..11T3..	A2	B2	321108 0120	769,–	321109 0120	769,–
E25S SDUC..11	25	23	250	26.0	16	32	DC..11T3..	A2	B2	321108 0125	1.109,–	321109 0125	1.109,–
										3134		3134	

Set

Contents			Right-hand art.no.	€	Left-hand art.no.	€
1x E10K SDUCR/L 07 | 1x E12M SDUCR/L 07	A1	B1	**321108** 0002	360,–	**321109** 0002	360,–
			3134		3134	



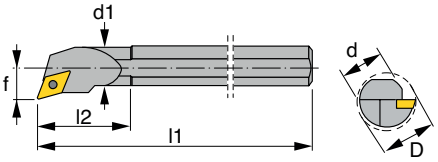
Spare parts

	Screw art.no.	€		TORX art.no.	€
A1	320901 2513	11,10	B1	703053 0080	1,79
A2	320901 2516	9,25	B2	703053 0150	1,79
	3106			7114	

ATORN® Boring bar, positive SDQC

- **SDQC R/L 107.5°**
- Setting angle 107.5°, for rhombic indexable inserts, positive 7°, 55° point angle
- **With internal cooling**
- **Material:** Longitudinal turning





Boring bar, individual, offset with internal cooling

ISO designation	d1 mm	d mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
A0810H SDQC. 07	8	10	100	22.4	6.4	12.5	DC..0702..	A1	D1	**322545** 0810	88,–	**322546** 0810	88,–
A1012K SDQC. 07	10	12	125	27.5	9	15.5	DC..0702..	A1	D1	322545 1012	91,–	322546 1012	91,–
A1216M SDQC. 07	12	16	150	39.5	11	19.5	DC..0702..	A1	D1	322545 1216	91,–	322546 1216	91,–
										3134		3134	



Boring bar, with internal cooling

ISO designation	d mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts					Right-hand art.no.	€	Left-hand art.no.	€
A10K SDQC. 07	10	125	16	7	14	DC..0702..	A1			D1	**322545** 0010	94,–	**322546** 0010	94,–
A12L SDQC. 07	12	140	20	9	17	DC..0702..	A1			D1	322545 0012	97,50	322546 0012	97,50
A16Q SDQC. 07	16	180	25	11	22	DC..0702..	A1			D1	322545 0016	104,50	322546 0016	104,50
A20R SDQC. 11	20	200	32	13	26	DC..11T3..	A2			D2	322545 0020	109,50	322546 0020	109,50
A25R SDQC. 11	25	200	40	17	31.5	DC..11T3..	A2			D2	322545 0025	131,50	322546 0025	131,50
A32S SDQC. 11	32	250	33.5	22	40	DC..11T3..	A3	B1	C1	D2	322545 0032	169,–	322546 0032	169,–
											3134		3134	

Solid carbide boring bar, individual, with internal cooling

ISO designation	d mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
E10K SDQC. 07	10	125	10	7	13	DC..0702..	A1	D1	**322547** 0010	154,–	**322548** 0010	154,–
E12M SDQC. 07	12	150	12.5	8.5	16	DC..0702..	A1	D1	322547 0012	182,50	322548 0012	182,50
E16R SDQC. 07	16	200	16.5	10	20	DC..0702..	A1	D1	322547 0016	355,–	322548 0016	355,–
E20S SDQC. 11	20	250	13	12.5	25	DC..11T3..	A2	D2	322547 0020	639,–	322548 0020	639,–
E25S SDQC. 11	25	250	17	16	32	DC..11T3..	A2	D2	322547 0025	1.379,–	322548 0025	1.379,–
									3134		3134	



Set with internal cooling

Contents			Right-hand art.no.	€	Left-hand art.no.	€
1x A0810H SDQCR/L 07 | 1x A1012K SDQCR/L 07 | 1x A1216M SDQCR/L 07	A1	D1	**322545** 1003	240,–	**322546** 1003	240,–
			3134		3134	

Spare parts

	Screw art.no.	€
A1	320901 2513	11,10
A2	320901 2516	9,25
A3	321611 0011	7,55
	3106	

	Support plate art.no.	€
B1	321611 0003	20,60
	3106	

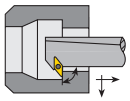
	Screw art.no.	€
C1	321611 0013	11,50
	3106	

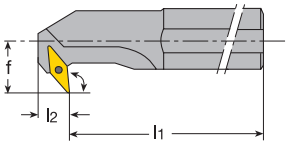
	TORX art.no.	€
D1	703053 0080	1,79
D2	703053 0150	1,79
	7114	

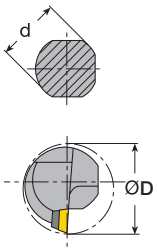
ATORN® Boring bar, positive SDXC

- **SDXC R/L 93°**
- Setting angle 93°, for rhombic indexable inserts, positive 7°, 55° point angle
- **With internal cooling**
- **Material:** Longitudinal turning









ISO designation	d mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
A08F SDXC..04	8	80	15	5	9.2	DC..04T0..	A2	B1	**322549** 0008	131,–	**322550** 0008	131,–
A10H SDXC..04	10	100	22	7	12.5	DC..04T0..	A2	B1	322549 0010	131,–	322550 0010	131,–
A12L SDXC..07	12	140	25	9	17	DC..0702..	A1	B2	322549 0012	116,50	322550 0012	116,50
A16Q SDXC..07	16	180	33	11	21	DC..0702..	A1	B2	322549 0016	120,–	322550 0016	120,–
									3134		3134	

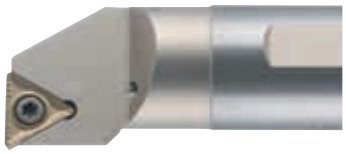
Spare parts

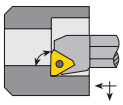
	Screw art.no.	€
A1	320901 2513	11,10
A2	322201 0130	6,80
	3106	

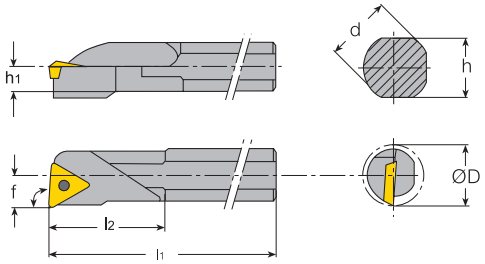
	TORX art.no.	€
B1	703053 0050	1,79
B2	703053 0080	1,79
	7114	

ATORN® Boring bar, positive STFC

- **STFC R/L 90°**
- Setting angle 90°, for positive 7° triangular indexable inserts, 60° point angle
- **Use:** Longitudinal turning







Standard version with internal cooling

ISO designation	d mm	h mm	h1 mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts					Right-hand art.no.	€
A10K STFC..11	10	9	4.5	125	22.8	7	13	TC..1102..	A1			D1	**321005** 0110	84,–
A12L STFC..11	12	11	5.5	140	26.5	9	16	TC..1102..	A1			D1	321005 0112	91,50
A16Q STFC..11	16	14	7	180	26.7	11	20	TC..1102..	A1			D1	321005 0116	101,–
A20R STFC..16	20	18	9	200	36.6	13	25	TC..16T3..	A2			D2	321005 0120	121,50
A25R STFC..16	25	23	11.5	200	41	17	32	TC..16T3..	A2			D2	321005 0125	129,50
A32S STFC..16	32	31	16	250	34.6	22	40	TC..16T3..	A3	B1	C1	D2	321005 0132	169,–
A40T STFC..16	40	38.5	20	300	37.5	27	49	TC..16T3..	A3	B1	C1	D2	321005 0140	241,–
													3134	

Spare parts

	Screw art.no.	€
A1	320901 2513	11,10
A2	320901 2516	9,25
A3	321611 0011	7,55
	3106	

	Support plate art.no.	€
B1	321611 0004	20,60
	3106	

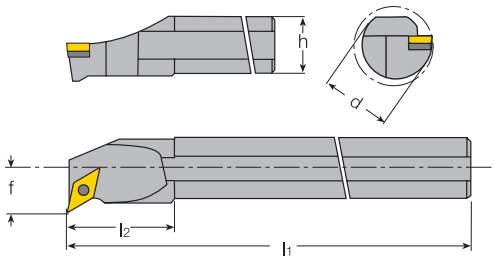
	Screw art.no.	€
C1	321611 0013	11,50
	3106	

	TORX art.no.	€
D1	703053 0080	1,79
D2	703053 0150	1,79
	7114	

ATORN® Boring bar, positive SVUC

- **SVUC R/L 93°**
- Setting angle 93°, for positive 7° rhombic indexable inserts, 35° point angle
- **Internal coolant supply**
- **Use:** Longitudinal and copy turning
- Solid carbide version available on request





ISO designation	d mm	h mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
A20R-SVUC..11	20	19	200	20.5	13	25	VC..1103..	A2	B1	**321527** 0120	163,50	**321528** 0120	163,50
A25R-SVUC..16	25	24	200	25.5	17	32	VC..1604..	A1	B2	321527 0125	181,50	321528 0125	181,50
										3134		3134	

Spare parts

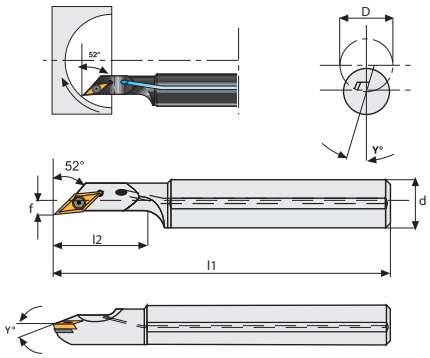
	Screw art.no.	€
A1	320901 2516	9,25
A2	321701 0102	10,35
	3106	

	TORX art.no.	€
B1	703053 0080	1,79
B2	703053 0150	1,79
	7114	

ATORN® Boring bar, positive SVJC

- **SVJC R/L 52°**
- Setting angle 52°, for positive 7° rhombic indexable inserts, 35° point angle
- **Internal coolant supply**
- **Use:** Longitudinal and copy turning, ball turning





ISO designation	d mm	Y mm	l1 mm	l2 mm	f mm	D min. mm	suitable indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
A 16M SVJC..11	16	6	150	30	4.6	22	VC..1103...	A1	B1	**321529** 1116	151,50	**321530** 1116	151,50
A 20Q SVJC..11	20	5	180	38	4.6	25	VC..1103...	A1	B1	321529 1120	159,50	321530 1120	159,50
A 25R SVJC..16	25	4	200	44	4.6	28	VC..1604...	A2	B2	321529 1625	182,50	321530 1625	182,50
										3134		3134	

Spare parts

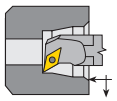
	Screw art.no.	€
A1	320901 2513	11,10
A2	320901 2516	9,25
	3106	

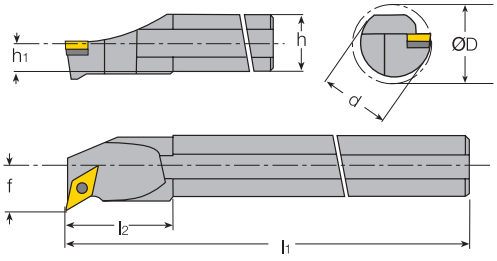
	TORX art.no.	€
B1	703053 0080	1,79
B2	703053 0150	1,79
	7114	

ATORN® Boring bar, positive SVUB

- **SVUB R/L 93°**
- Setting angle 93°, for positive 5° rhombic indexable inserts, 35° point angle
- **Use:** Longitudinal and copy turning







ISO designation	d mm	h mm	h1 mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts	A1	B1	C1	D1	Right-hand art.no.	€	Left-hand art.no.	€
S25T-SVUB..16	25	23	11.5	300	40	17	31	VBM.1604..	A1	B1	C1	D1	**321525** 1625	165,–	**321526** 1625	165,–
S32U-SVUB..16	32	30	15	350	50	22	39	VBM.1604..	A1	B1	C1	D1	321525 1632	220,–	321526 1632	220,–
S40V-SVUB..16	40	37	18.5	400	60	27	48	VBM.1604..	A1	B1	C1	D1	321525 1640	252,–	321526 1640	252,–
													3105		3105	

Spare parts

	Screw art.no.	€		Support plate art.no.	€		Screw art.no.	€		TORX art.no.	€
A1	321601 0021	4,85	B1	321601 0027	10,15	C1	321601 0754	3,38	D1	703053 0150	1,79
	3106			3106			3106			7114	

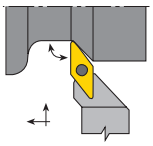


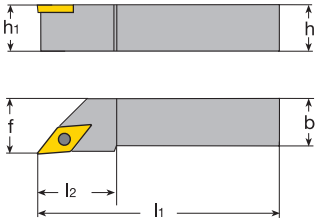
ATORN® Miniature turning range with indexable cutting inserts, positive

Clamp mounting, positive SVGC

- **SVGC R/L 90°**
- Setting angle 90°, for rhombic indexable inserts positive 7°, 35° point angle
- **Material:** Longitudinal turning





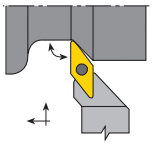


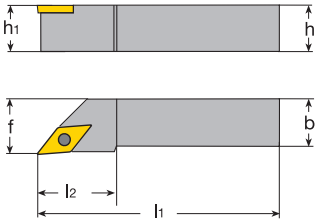
ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
SVGC.. 0808 K07	8	8	125	15	8.5	VC..0702..	A1	D1	**322600** 0808	68,50	**322601** 0808	68,50
SVGC.. 1010 M07	10	10	150	15	10.5	VC..0702..	A1	D1	322600 1010	73,–	322601 1010	73,–
SVGC.. 1212 M07	12	12	150	18	12.5	VC..0702..	A1	D1	322600 1212	77,–	322601 1212	77,–
									3104		3104	

Clamp mounting, positive SVLC

- **SVLC R/L 95°**
- Setting angle 95°, for rhombic indexable inserts positive 7°, 35° point angle
- **Material:** Longitudinal turning and facing





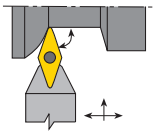


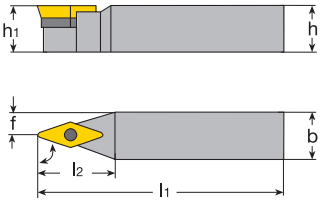
ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
SVLC.. 0808 D07	8	8	60	15	10	VC..0702..	A1	D1	**322602** 0808	68,50	**322603** 0808	68,50
SVLC.. 1010 D07	10	10	70	15	12	VC..0702..	A1	D1	322602 1010	73,–	322603 1010	73,–
SVLC.. 1212 D07	12	12	80	18	16	VC..0702..	A1	D1	322602 1212	77,–	322603 1212	77,–
									3104		3104	

Clamp mounting, positive SVVCN

- **SVVCN 72.5°**
- Setting angle 72.5°, for rhombic indexable inserts positive 7°, 35° point angle
- **Material:** Copy turning





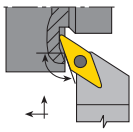


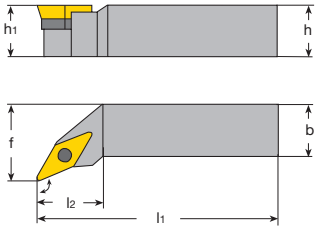
ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts						art.no.	€
SVVCN 0808 K07	8	8	125	15	4.0	VC..0702..	A1				D1	**322606** 0808	68,50
SVVCN 1010 M07	10	10	150	15	5.0	VC..0702..	A1				D1	322606 1010	73,–
SVVCN 1212 M07	12	12	150	18	6.0	VC..0702..	A1				D1	322606 1207	77,–
SVVCN 1212 F11	12	12	80	18.4	6.0	VC..1103..	A2				D2	322606 1211	59,50
SVVCN 1616 H11	16	16	100	24.7	8.0	VC..1103..	A2				D2	322606 1616	76,50
SVVCN 2020 K11	20	20	125	31.3	10.0	VC..1103..	A2				D2	322606 2011	82,–
SVVCN 2020 K16	20	20	125	31.1	10.0	VC..1604..		B1	C1		D3	322606 2016	90,50
SVVCN 2525 M11	25	25	150	39	12.5	VC..1103..	A2				D2	322606 2511	85,–
SVVCN 2525 M16	25	25	150	38.2	12.5	VC..1604..		B1	C1		D3	322606 2516	93,50
												3104	

Clamp mounting, positive SVXC

- **SVXC R/L 113°**
- Setting angle 113°, for rhombic indexable inserts positive 7°, 35° point angle
- **Material:** Longitudinal turning and facing







ISO designation	h=h1 mm	b mm	l1 mm	l2 mm	f mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
SVXC.. 0808 D07	8	8	60	15	10.0	VC..0702..	A1	D1	**322604** 0808	68,50	**322605** 0808	68,50
SVXC.. 1010 E07	10	10	70	15	12.0	VC..0702..	A1	D1	322604 1010	73,–	322605 1010	73,–
SVXC.. 1212 F07	12	12	80	18	16.0	VC..0702..	A1	D1	322604 1212	77,–	322605 1212	77,–
									3104		3104	

Spare parts

	Screw art.no.	€
A1	262551 0020	6,90
A2	321701 0102	10,35
	3106	

	Screw art.no.	€
B1	321611 0013	11,50
	3106	

	Support plate art.no.	€
C1	322201 0210	16,10
	3106	

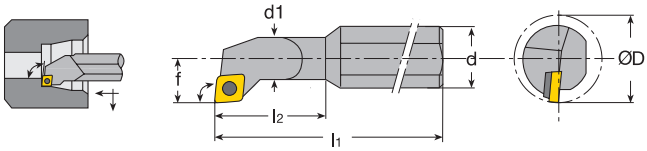
	TORX art.no.	€
D1	703053 0060	1,79
D2	703053 0080	1,79
D3	703053 0150	1,79
	7114	

ATORN® Miniature turning range with indexable cutting inserts, positive

- **Application:** for miniature turning from Ø 4.8 mm with CD.. - CP.. - WC.. - VC.. Indexable cutting inserts
- Wide range of boring bars in various materials: **steel, HSS, solid carbide**
- **ISO ultra-small indexable cutting inserts** of the latest generation

Miniature turning range with indexable cutting inserts





Boring bar, positive SCLD offset

- **SCLD R/L 95°**
- Setting angle 95°, for rhombic indexable inserts positive 7°, 80° point angle
- **Material:** Longitudinal turning

ISO designation	d1 mm	d mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
A0408H SCLD. 04	4	8	100	16	2.4	4.8	CD..0401..	A4	B2	**322501** 0004	67,–	**322502** 0004	67,–
A0508H SCLD. 04	5	8	100	20	2.9	5.8	CD..0401..	A4	B2	322501 0005	67,–	322502 0005	67,–
A0608H SCLD. 04	6	8	100	24	3.4	6.8	CD..0401..	A4	B2	322501 0006	67,–	322502 0006	67,–
										3142		3142	

Boring bar, positive SCLD

- **SCLD R/L 95°**
- Setting angle 95°, for rhombic indexable inserts positive 7°, 80° point angle
- **Material:** Longitudinal turning

ISO designation	d mm	l1 mm	f mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
A04E SCLD.04	4	70	2.4	4.8	CD..0401..	A4	B2	**322519** 0004	70,–	**322520** 0004	70,–
A05E SCLD.04	5	70	2.9	5.8	CD..0401..	A4	B2	322519 0005	70,–	322520 0005	70,–
A06F SCLD.04	6	80	3.4	6.8	CD..0401..	A4	B2	322519 0006	74,–	322520 0006	74,–
								3142		3142	

Solid carbide boring bar, positive SCLD offset

- **SCLD R/L 95°**
- Setting angle 95°, for rhombic indexable inserts positive 7°, 80° point angle
- **Material:** Longitudinal turning

ISO designation	d1 mm	d mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
E0408H SCLD. 04	4	8	100	24	2.4	4.8	CD..0401..	A4	B2	**322503** 0104	154,–	**322504** 0104	154,–
E0508H SCLD. 04	5	8	100	30	2.9	5.8	CD..0401..	A4	B2	322503 0105	154,–	322504 0105	154,–
E0608H SCLD. 04	6	8	100	36	3.4	6.8	CD..0401..	A4	B2	322503 0106	154,–	322504 0106	154,–
										3142		3142	

Solid carbide boring bar, positive SCLD

- **SCLD R/L 95°**
- Setting angle 95°, for rhombic indexable inserts positive 7°, 80° point angle
- **Material:** Longitudinal turning

ISO designation	d mm	l1 mm	f mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
E04F SCLD. 04	4	80	2.4	4.8	CD..0401..	A4	B2	**322521** 0104	123,–	**322522** 0104	123,–
E05F SCLD. 04	5	80	2.9	5.8	CD..0401..	A4	B2	322521 0105	123,–	322522 0105	123,–
E06G SCLD. 04	6	95	3.4	6.8	CD..0401..	A4	B2	322521 0106	123,–	322522 0106	123,–
								3142		3142	



Boring bar, positive SCUP offset

- **SCUP R/L 95°**
- Setting angle 95°, for rhombic indexable inserts positive 7°, 80° point angle
- **Material:** Longitudinal turning

ISO designation	d1 mm	d mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
A0608H SCUP. 05	6	8	100	20	4.5	8	CP..05T1..	A1	B2	**322505** 0006	67,–	**322506** 0006	67,–
A0810J SCUP. 05	8	10	110	26	6.0	11	CP..05T1..	A1	B2	322505 0008	69,–	322506 0008	69,–
A1012K SCUP. 05	10	12	125	32	7.0	13	CP..05T1..	A1	B2	322505 0010	73,–	322506 0010	73,–
A1216M SCUP. 05	12	16	150	40	9.0	16	CP..05T1..	A1	B2	322505 0012	84,–	322506 0012	84,–
										3142		3142	

Solid carbide boring bar, positive SCUP offset

- **SCLD R/L 95°**
- Setting angle 95°, for rhombic indexable inserts positive 7°, 80° point angle
- **Material:** Longitudinal turning

ISO designation	d1 mm	d mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
E0608H SCUP. 05	6	8	100	28	4.5	8	CP..05T1..	A1	B2	**322507** 0106	154,–	**322508** 0106	154,–
E0810J SCUP. 05	8	10	110	36	6.0	11	CP..05T1..	A1	B2	322507 0108	170,–	322508 0108	170,–
E1012K SCUP. 05	10	12	125	44	7.0	13	CP..05T1..	A1	B2	322507 0110	220,–	322508 0110	220,–
E1216M SCUP. 05	12	16	150	55	9.0	16	CP..05T1..	A1	B2	322507 0112	350,–	322508 0112	350,–
										3142		3142	

Boring bar, positive SCXP offset

- **SCXP R/L 95°**
- Setting angle 95°, for rhombic indexable inserts positive 7°, 80° point angle
- **Material:** Longitudinal turning

ISO designation	d1 mm	d mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
A0608H SCXP. 05	6	8	100	20	4.5	8.5	CP..05T1..	A1	B2	**322509** 0006	67,–	**322510** 0006	67,–
A0810J SCXP. 05	8	10	110	26	6.0	11.0	CP..05T1..	A1	B2	322509 0008	69,–	322510 0008	69,–
A1012K SCXP. 05	10	12	125	32	7.0	13.0	CP..05T1..	A1	B2	322509 0010	73,–	322510 0010	73,–
A1216M SCXP. 05	12	16	150	40	9.0	16.0	CP..05T1..	A1	B2	322509 0012	84,–	322510 0012	84,–
										3142		3142	

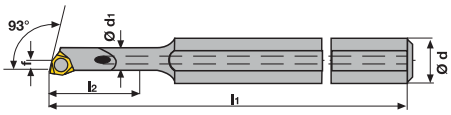
Solid carbide boring bar, positive SCXP offset

- **SCXP R/L 95°**
- Setting angle 95°, for rhombic indexable inserts positive 7°, 80° point angle
- **Material:** Longitudinal turning

ISO designation	d1 mm	d mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
E0608H SCXP. 05	6	8	100	28	4.5	8.5	CP..05T1..	A1	B2	**322511** 0106	154,–	**322512** 0106	154,–
E0810J SCXP. 05	8	10	110	36	6.0	11.0	CP..05T1..	A1	B2	322511 0108	170,–	322512 0108	170,–
E1012K SCXP. 05	10	12	125	44	7.0	13.0	CP..05T1..	A1	B2	322511 0110	220,–	322512 0110	220,–
E1216M SCXP. 05	12	16	150	55	9.0	16.0	CP..05T1..	A1	B2	322511 0112	350,–	322512 0112	350,–
										3142		3142	

Continued on next page >>>





Boring bar, positive SWUC offset

- **SWUC R/L 93°**
- Setting angle 93°, for trigonometric indexable inserts positive 7°, 80° point angle
- **Material:** Longitudinal turning

ISO designation	d mm	l1 mm	l2 mm	f mm	d1 mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
A0508H SWUC. 02	8	100	18	2.9	5	5.8	WC..0201..	A5	B2	**322513** 0005	85,–	**322514** 0005	85,–
A0608H SWUC. 02	8	100	24	3.9	6	7.8	WC..0201..	A5	B2	322513 0006	85,–	322514 0006	85,–
										3142		3142	

HSS boring bar, positive SWUC offset

- **SWUC R/L 93°**
- Setting angle 93°, for trigonometric indexable inserts positive 7°, 80° point angle
- **Material:** Longitudinal turning

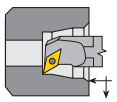
ISO designation	d mm	l1 mm	l2 mm	f mm	d1 mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
AH0508H SWUC. 02	8	100	18	2.9	5	5.8	WC..0201..	A5	B2	**322515** 0005	124,–	**322516** 0005	124,–
AH0608H SWUC. 02	8	100	24	3.9	6	7.8	WC..0201..	A5	B2	322515 0006	124,–	322516 0006	124,–
										3142		3142	

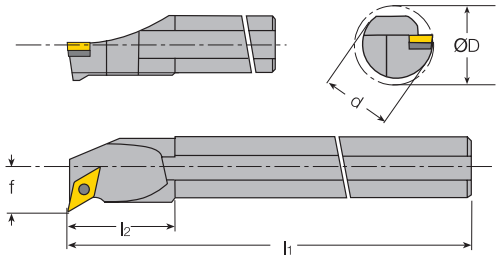
Solid carbide boring bar, positive SWUC offset

- **SWUC R/L 93°**
- Setting angle 93°, for trigonometric indexable inserts positive 7°, 80° point angle
- **Material:** Longitudinal turning

ISO designation	d mm	l1 mm	l2 mm	f mm	d1 mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
E0508H SWUC. 02	8	100	24	2.9	5	5.8	WC..0201..	A5	B2	**322517** 0105	205,–	**322518** 0105	205,–
E0608H SWUC. 02	8	100	32	3.9	6	7.8	WC..0201..	A5	B2	322517 0106	205,–	322518 0106	205,–
										3142		3142	







Boring bar, positive SVLC

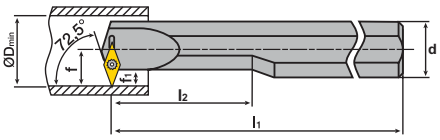
- **SVLC R/L 95°**
- Setting angle 95°, for rhombic indexable inserts positive 7°, 35° point angle
- **Material:** Longitudinal turning

ISO designation	d mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
A08F SVLC. 05	8	80	15	5	9.2	VC..0501..	A6	B1	**322523** 0008	67,–	**322524** 0008	67,–
A10H SVLC. 07	10	100	22	7	12.5	VC..0702..	A2	B2	322523 0010	67,–	322524 0010	67,–
A12K SVLC. 07	12	125	28	9	15.5	VC..0702..	A2	B2	322523 0012	73,–	322524 0012	73,–
A16M SVLC. 07	16	150	36	11	19.5	VC..0702..	A2	B2	322523 0016	84,–	322524 0016	84,–
									3142		3142	

- **SVLC R/L 95°**
- Setting angle 95°, for rhombic indexable inserts positive 7°, 35° point angle
- **Material:** Longitudinal turning

ISO designation	d mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
E08F SVLC. 05	8	80	26	5	9.2	VC..0501..	A6	B1	**322525** 0108	165,–	**322526** 0108	165,–
E10H SVLC. 07	10	100	32	7	12.5	VC..0702..	A2	B2	322525 0110	165,–	322526 0110	165,–
E12K SVLC. 07	12	125	40	9	15.5	VC..0702..	A2	B2	322525 0112	220,–	322526 0112	220,–
E16M SVLC. 07	16	150	55	11	19.5	VC..0702..	A2	B2	322525 0116	365,–	322526 0116	365,–
									3142		3142	





Boring bar, positive SVVC

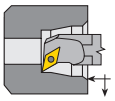
- **SVVC R/L 72.5°**
- Setting angle 72.5°, for rhombic indexable inserts positive 7°, 35° point angle
- **Material:** Longitudinal turning

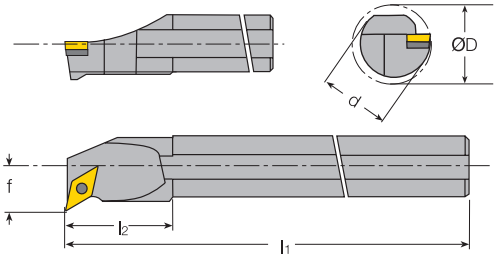
ISO designation	d mm	l1 mm	l2 mm	f mm	f1 mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
A08F SVVC. 05	8	80	15	5.5	3.5	9.7	VC..0501..	A6	B1	**322527** 0008	67,–	**322528** 0008	67,–
A10H SVVC. 07	10	100	28	8	6	13.5	VC..0702..	A2	B2	322527 0010	67,–	322528 0010	67,–
A12K SVVC. 07	12	125	28	9	6	15.5	VC..0702..	A2	B2	322527 0012	73,–	322528 0012	73,–
A16M SVVC. 07	16	150	36	11	6	19.5	VC..0702..	A2	B2	322527 0016	84,–	322528 0016	84,–
A16M SVVC. 11	16	150	40	13.9	9.5	23	VC..1103..	A3	B3	322527 0116	136,–	322528 0116	136,–
										3142		3142	

Solid carbide boring bar, positive SVVC

ISO designation	d mm	l1 mm	l2 mm	f mm	f1 mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
E08F SVVC. 05	8	80	26	5.5	3.5	9.7	VC..0501..	A6	B1	**322529** 0008	165,–	**322530** 0008	165,–
E10H SVVC. 07	10	100	32	8	6	13.5	VC..0702..	A2	B2	322529 0010	165,–	322530 0010	165,–
E12K SVVC. 07	12	125	40	9	6	15.5	VC..0702..	A2	B2	322529 0012	220,–	322530 0012	220,–
E16M SVVC. 07	16	150	55	11	6	19.5	VC..0702..	A2	B2	322529 0016	365,–	322530 0016	365,–
										3142		3142	







Boring bar, positive SVXC

- **SVXC R/L 113°**
- Setting angle 113°, for rhombic indexable inserts positive 7°, 35° point angle
- **Material:** Longitudinal turning

ISO designation	d mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
A08F SVXC. 05	8	80	15	5	9.2	VC..0501..	A6	B1	**322531** 0008	67,–	**322532** 0008	67,–
A10H SVXC. 07	10	100	22	7	12.5	VC..0702..	A2	B2	322531 0010	67,–	322532 0010	67,–
A12K SVXC. 07	12	125	28	9	15.5	VC..0702..	A2	B2	322531 0012	73,–	322532 0012	73,–
A16M SVXC. 07	16	150	36	11	19.5	VC..0702..	A2	B2	322531 0016	84,–	322532 0016	84,–
									3142		3142	

Solid carbide boring bar, positive SVXC

- **SVXC R/L 113°**
- Setting angle 113°, for rhombic indexable inserts positive 7°, 35° point angle
- **Material:** Longitudinal turning

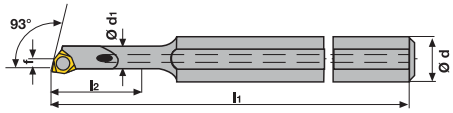
ISO designation	d mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
E08F SVXC. 05	8	80	26	5	9.2	VC..0501..	A6	B1	**322533** 0108	165,–	**322534** 0108	165,–
E10H SVXC. 07	10	100	32	7	12.5	VC..0702..	A2	B2	322533 0110	165,–	322534 0110	165,–
E12K SVXC. 07	12	125	40	9	15.5	VC..0702..	A2	B2	322533 0112	220,–	322534 0112	220,–
E16M SVXC. 07	16	150	50	11	19.5	VC..0702..	A2	B2	322533 0116	365,–	322534 0116	365,–
									3142		3142	

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Solid carbide boring bar, positive SWUC

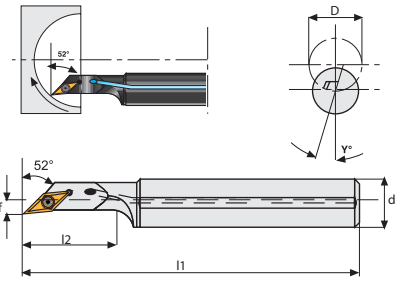
- **SWUC R/L 93°**
- Setting angle 93°, for trigonometric indexable inserts positive 7°, 80° point angle
- **Material:** Longitudinal turning

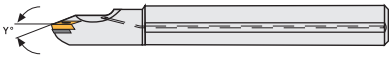




ISO designation	d mm	l1 mm	f mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
E05F SWUC. 02	5	85	2.9	5.8	WC..0201..	A5	B2	**322535** 0105	122,50	**322536** 0105	122,50
E06G SWUC. 02	6	95	3.9	7.8	WC..0201..	A5	B2	322535 0106	122,50	322536 0106	122,50
								3142		3142	







Boring bar, positive SVJC

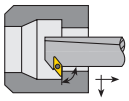
- **SVJC R/L 52°**
- Setting angle 52°, for rhombic indexable inserts positive 7°, 35° point angle
- **Material:** Longitudinal turning and copy turning, sphere turning

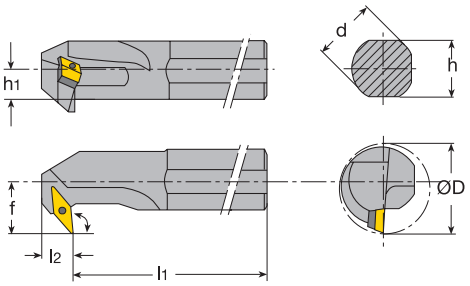
ISO designation	d mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
A08F SVJC. 05	8	80	15	3	8	VC..0501..	A6	B1	**322537** 0008	115,–	**322538** 0008	115,–
A10K SVJC. 07	10	125	18	1.5	13	VC..0702..	A2	B2	322537 0010	119,50	322538 0010	119,50
A12L SVJC. 07	12	140	18	2	13	VC..0702..	A2	B2	322537 0012	124,–	322538 0012	124,–
									3142		3142	

Solid carbide boring bar, positive SVJC

ISO designation	d mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
E08F SVJC. 05	8	80	26	3	8	VC..0501..	A6	B1	**322539** 0108	180,–	**322540** 0108	180,–
E10K SVJC. 07	10	125	18	1.5	10	VC..0702..	A2	B2	322539 0110	185,–	322540 0110	185,–
E12M SVJC. 07	12	150	18	2	12	VC..0702..	A2	B2	322539 0112	240,–	322540 0112	240,–
									3142		3142	







Boring bar, positive SV95C

- **SV95C R/L 95°**
- Setting angle 95°, for rhombic indexable inserts positive 7°, 35° point angle
- **Material:** Longitudinal and copy turning, reverse turning

ISO designation	d mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
A08F SV95C. 05	8	80	15	5	9.2	VC..0501..	A6	B1	**322541** 0008	67,–	**322542** 0008	67,–
A10H SV95C. 07	10	100	22	7	12.5	VC..0702..	A2	B2	322541 0010	67,–	322542 0010	67,–
A12K SV95C. 07	12	125	28	9	15.5	VC..0702..	A2	B2	322541 0012	73,–	322542 0012	73,–
A16M SV95C. 07	16	150	36	11	19.5	VC..0702..	A2	B2	322541 0016	84,–	322542 0016	84,–
									3142		3142	

Solid carbide boring bar, positive SV95C

ISO designation	d mm	l1 mm	l2 mm	f mm	B mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
E08F SV95C. 05	8	80	26	5	-	9.2	VC..0501..	A6	B1	**322543** 0108	165,–	**322544** 0108	165,–
E10H SV95C. 07	10	100	32	7	-	12.5	VC..0702..	A2	B2	322543 0110	165,–	322544 0110	165,–
E12K SV95C. 07	12	125	40	9	-	15.5	VC..0702..	A2	B2	322543 0112	220,–	322544 0112	220,–
E16M SV95C. 07	16	150	55	11	-	19.5	VC..0702..	A2	B2	322543 0116	365,–	322544 0116	365,–
										3142		3142	

Spare parts

	Screw art.no.	€
A1	152599 0001	5,65
A2	262551 0020	6,90
A3	262551 0025	5,20
A4	321701 0115	10,30
A5	322201 0120	9,50
A6	322201 0130	6,80
	3106	

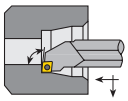
	TORX art.no.	€
B1	703053 0050	1,79
B2	703053 0060	1,79
B3	703053 0080	1,79
	7114	

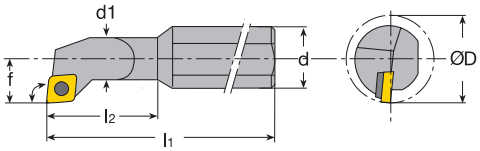
ATORN® Boring bar, positive SCLC



Figure shows right-hand boring bar, left-hand boring bar is mirror image

- **SCLC R/L 95°**
- Setting angle 95°, for positive 7° rhombic indexable inserts, 80° point angle
- Use: longitudinal turning, **very well suited to small bores**
- **With internal cooling, C04 and C05 without internal coolant supply**
- **D min from 5.00 mm**
- Note: right-hand boring bar = left-hand indexable insert, left-hand boring bar = right-hand indexable insert





HSS version, offset

ISO designation	d1 mm	d mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
AH 0410H SCLC..03	4	10	100	24	2.5	5	CCGT 0301..	A1	B1	**321103** 0004	165,–	**321104** 0004	165,–
AH 0610H SCLC..03	6	10	100	24	2.5	7	CCGT 0301..	A1	B1	321103 0006	169,–	321104 0006	169,–
										3134		3134	

Solid carbide version

ISO designation	d mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
E 04G SCLC..03	4	90	10	2.5	5	CCGT 0301..	A1	B1	**321101** 0104	207,50	**321102** 0104	207,50
E 05H SCLC..03	5	100	10	3.0	6	CCGT 0301..	A1	B1	321101 0105	207,50	321102 0105	207,50
E 06J SCLC..03	6	110	10	3.5	7	CCGT 0301..	A1	B1	321101 0106	220,–	321102 0106	220,–
									3134		3134	

Suitable ISO P/K indexable inserts

ISO designation	ISO P K Right-hand			ISO P K Left-hand		
		art.no.	€		art.no.	€
CCGT 030102 L-F HC 4625				10	**321265** 0165	15,40
CCGT 030102 R-F HC 4625	10	**321266** 0165	15,40			
		3110			3110	



Spare parts

	Screw art.no.	€
A1	262551 0016	11,25
	3106	

	TORX art.no.	€
B1	703053 0060	1,79
	7114	

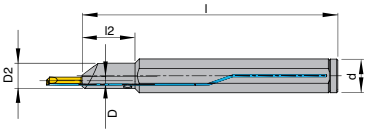
ATORN® Miniature boring bars holder



- Miniature turning from Ø 4.8mm
- for CD.., CP.., DC.., WC.., and VC.. Indexable cutting inserts
- high flexibility thanks to quick-change system
- **internal coolant supply**
- incl. stop/fixing pin

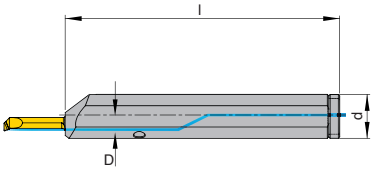


Design A





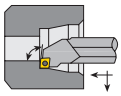
Version B

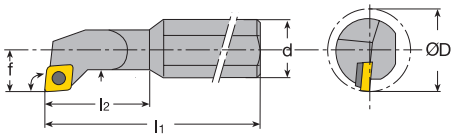


Designation	D mm	d mm	D2 mm	l mm	l2 mm	l1 mm	Design	Right-hand art.no.	€	Left-hand art.no.	€
IK 1604.	4	16	12	120	25	95	A	**322555** 1604	240,–	**322556** 1604	240,–
IK 1606.	6	16	-	120	-	-	B	322555 1606	240,–	322556 1606	240,–
IK 1608.	8	16	-	120	-	-	B	322555 1608	240,–	322556 1608	240,–
								3142		3142	

ATORN® SC miniature boring bars



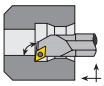


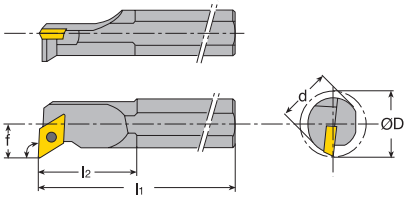


- **SCLD R/L 95°**
- Setting angle 95°, for CD.. indexable inserts positive 7°, 80° point angle
- **Use:** Facing and longitudinal turning

ISO designation	d mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
E04 SCLD-. 04 AX	4	46	24	2.4	4.8	CD.T 0401..	A1	B2	**322560** 0004	189,–	**322561** 0004	189,–
E06 SCLD-. 04 AX	6	65	37	3.4	6.8	CD.T 0401..	A1	B2	322560 0006	189,–	322561 0006	189,–
									3142		3142	



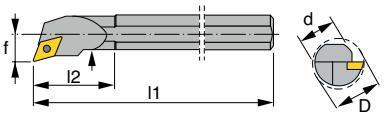




- **SDUC R/L 93°**
- Setting angle 93°, for DC.. indexable inserts positive 7°, 55° point angle
- **Use:** Longitudinal turning and copy turning

ISO designation	d mm	l1 mm	l2 mm	f mm	f1 mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
E0406 SDUC-. 04 AX	6	56	26	3	1.5	5.6	DC.T 04T0..	A3	B1	**322564** 0406	189,–	**322565** 0406	189,–
E0408 SDUC-. 04 AX	8	57	26	3	1.5	5.6	DC.T 04T0..	A3	B1	322564 0408	189,–	322565 0408	189,–
										3142		3142	

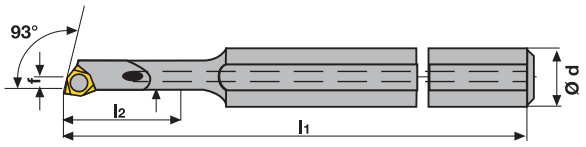




- **SDQC R/L 107.5°**
- Setting angle 93°, for DC.. indexable inserts positive 7°, 107.5° point angle
- **Use:** Longitudinal turning and copy turning

ISO designation	d mm	l1 mm	l2 mm	f mm	f1 mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
E0406 SDQC-. 04 AX	6	56	26	2.6	1.1	5.2	DC.T 04T0..	A3	B1	**322566** 0406	189,–	**322567** 0406	189,–
E0408 SDQC-. 04 AX	8	57	26	2.6	1.1	5.2	DC.T 04T0..	A3	B1	322566 0408	189,–	322567 0408	189,–
										3142		3142	



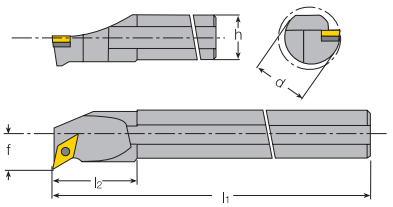


- **SWUC R/L 93°**
- Setting angle 93°, for WC.. indexable inserts positive 7°, 80° point angle
- **Use:** Facing and longitudinal turning

ISO designation	d mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
E06 SWUC-. 02 AX	6	65	37	3.9	7.8	WC.T 0201..	A2	B2	**322562** 0006	189,–	**322563** 0006	189,–
									3142		3142	





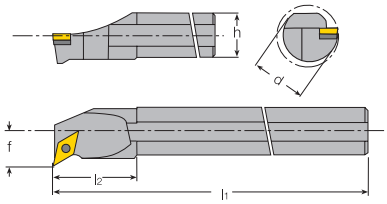


- **SVLC R/L 95°**
- Setting angle 95°, for VC.. indexable inserts positive 7°, 35° point angle
- **Use:** Longitudinal turning and copy turning

ISO designation	d mm	l1 mm	l2 mm	f mm	f1 mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
E0406 SVLC-. 05 AX	6	56	26	6	3	9.2	VC.T 0501..	A3	B1	**322568** 0406	189,–	**322569** 0406	189,–
E0408 SVLC-. 05 AX	8	57	26	5	3	9.2	VC.T 0501..	A3	B1	322568 0408	189,–	322569 0408	189,–
										3142		3142	

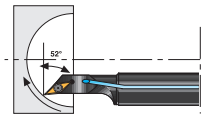


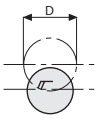




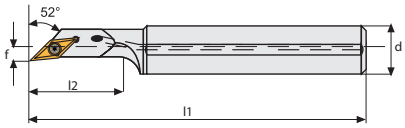
- **SVXC R/L 113°**
- Setting angle 113°, for VC.. indexable inserts positive 7°, 35° point angle
- **Use:** Longitudinal turning and copy turning

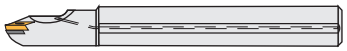
ISO designation	d mm	l1 mm	l2 mm	f mm	f1 mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
E0406 SVXC-. 05 AX	6	56	26	5	3	8.2	VC.T 0501..	A3	B1	**322570** 0406	189,–	**322571** 0406	189,–
E0408 SVXC-. 05 AX	8	57	26	5	3	9.2	VC.T 0501..	A3	B1	322570 0408	189,–	322571 0408	189,–
										3142		3142	







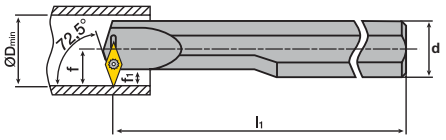




- **SVJC R/L 52°**
- Setting angle 52°, for VC.. indexable inserts positive 7°, 35° point angle
- **Use:** Longitudinal turning and copy turning

ISO designation	d mm	l1 mm	l2 mm	f mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
E0406 SVJC-. 05 AX	6	56	26	2	5.5	VC.T 0501..	A3	B1	**322572** 0406	189,–	**322573** 0406	189,–
E0408 SVJC-. 05 AX	8	57	26	2	5.5	VC.T 0501..	A3	B1	322572 0408	189,–	322573 0408	189,–
									3142		3142	

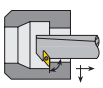


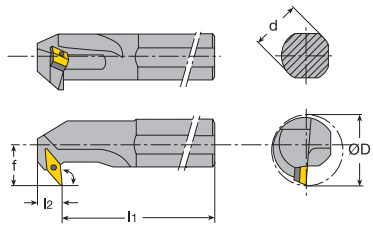


- **SVVC R/L 72.5°**
- Setting angle 72.5°, for VC.. indexable inserts positive 7°, 35° point angle
- **Use:** Longitudinal turning and copy turning

ISO designation	d mm	l1 mm	l2 mm	f mm	f1 mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
E0406 SVVC-. 05 AX	6	56	26	6.5	4.5	10.3	VC.T 0501..	A3	B1	**322574** 0406	189,–	**322575** 0406	189,–
E0408 SVVC-. 05 AX	8	57	26	5.5	3.5	10.2	VC.T 0501..	A3	B1	322574 0408	189,–	322575 0408	189,–
										3142		3142	







- **SV95C R/L 95°**
- Setting angle 95°, for VC.. indexable inserts positive 7°, 35° point angle
- **Use:** Longitudinal and copy turning, reverse turning

ISO designation	d mm	l1 mm	l2 mm	f mm	f1 mm	D min. mm	for indexable inserts			Right-hand art.no.	€	Left-hand art.no.	€
E0406 SV95C-. 05 AX	6	56	26	6	4.5	9.2	VC.T 0501..	A3	B1	**322576** 0406	189,–	**322577** 0406	189,–
E0408 SV95C-. 05 AX	8	57	26	5	3	9.2	VC.T 0501..	A3	B1	322576 0408	189,–	322577 0408	189,–
										3142		3142	

Spare parts

	Screw art.no.	€
A1	321701 0115	10,30
A2	321701 0116	10,30
A3	321701 0117	9,10
	3106	

	TORX art.no.	€
B1	703053 0050	1,79
B2	703053 0060	1,79
	7114	

ISO indexable cutting inserts CDGT

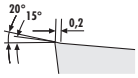
• **80° rhombic, positive 7°**

Chip breaker MN

F finishing	M medium	R roughing
●	○	-



Finishing



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
CDGT 040101-MN				●			**HW 6315**	10 **369601** 0111	15,30
CDGT 040102-MN				●			**HW 6315**	10 369601 0211	15,30
CDGT 040104-MN				●			**HW 6315**	10 369601 0411	15,30

3143

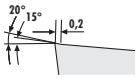
ISO	HW 6315
ISO N Al/non-ferrous	Vc = 160 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.03 - 0.12 ap = 0.1 - 1

Chip breaker FN

F finishing	M medium	R roughing
●	○	-



Finishing/medium machining



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
CDGT 040102 FN	●	○	○				**HC 7625**	10 **369607** 0212	18,–
CDGT 040104 FN	●	○	○				**HC 7625**	10 369607 0412	18,–

3143

ISO	HC 7625
ISO P steel	Vc = 110 - 190
ISO M stainless steel	Vc = 70 - 90
ISO K cast iron	Vc = 120 - 200
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.03 - 0.15 ap = 0.1 - 1

ISO indexable cutting inserts CPMT

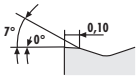
• **80° rhombic, positive 7°**

Chip breaker FP1

F finishing	M medium	R roughing
○	○	-



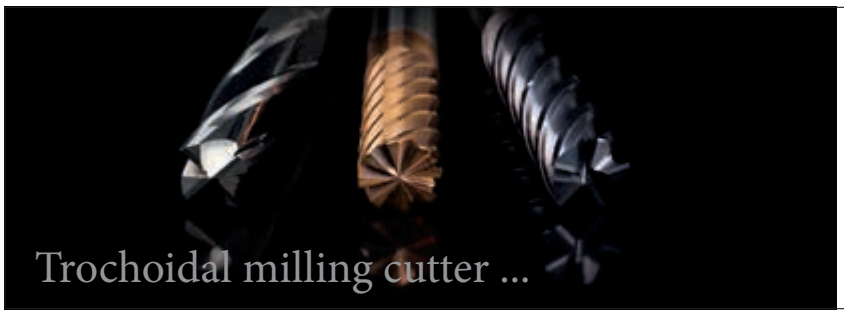
Finishing/medium machining



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
CPMT 05T102-FP1	●	○	○				**HC 7625**	10 **369602** 0211	12,50

3143

ISO	HC 7625
ISO P steel	Vc = 130 - 220
ISO M stainless steel	Vc = 100 - 160
ISO K cast iron	Vc = 120 - 180
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.15 - 0.4 ap = 0.1 - 1.5



... maximum material removal rate

ATORN®
High quality for great performance

ISO indexable cutting inserts DCGT

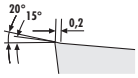
• **55° rhombic, positive 7°**

Chip breaker MN

F finishing	M medium	R roughing
●	○	-



Finishing



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
DCGT 04T002-MN				●			**HW 6315**	10 **369607** 0311	18,80

3143

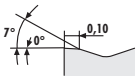
ISO	HW 6315
ISO N Al/non-ferrous	Vc = 160 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.02 - 0.15 ap = 0.1 - 1.5

Chip breaker FP1

F finishing	M medium	R roughing
○	○	-



Finishing/medium machining



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
DCGT 04T002-FP1	●	○	○				**HC 7625**	10 **369608** 0312	20,70

3143

ISO	HC 7625
ISO P steel	Vc = 100 - 190
ISO M stainless steel	Vc = 70 - 90
ISO K cast iron	Vc = 120 - 200
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.20 ap = 0.1 - 1.5

ISO indexable cutting inserts VCGT

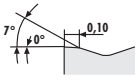
• **35° rhombic, positive 7°**

Chip breaker FP1

F finishing	M medium	R roughing
○	○	-



Finishing



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
VCGT 050102-FP1	●	○	○				**HC 7625**	10 **369608** 0212	21,10

3143

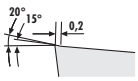
ISO	HC 7625
ISO P steel	Vc = 100 - 190
ISO M stainless steel	Vc = 70 - 90
ISO K cast iron	Vc = 120 - 200
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.2 ap = 0.1 - 1.5

Chip breaker MN

F finishing	M medium	R roughing
●	○	-



Finishing



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	art.no.	€
VCGT 050102-MN				●			**HW 6315**	10 **369603** 0211	19,20
VCGT 070201-MN				●			**HW 6315**	10 369603 1111	16,90
VCGT 070202-MN				●			**HW 6315**	10 369603 1211	16,90
VCGT 070204-MN				●			**HW 6315**	10 369603 1411	16,90

3143

ISO	HW 6315
ISO N Al/non-ferrous	Vc = 160 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.02 - 0.15 ap = 0.1 - 1.5

ISO indexable cutting inserts VCMT

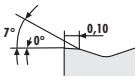
• **35° rhombic, positive 7°**

Chip breaker FP1

F finishing	M medium	R roughing
●	○	-



Finishing



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
VCMT 070202-FP1	●	○	○				**HC 7625**	10	**369604** 0212	12,50
VCMT 070204-FP1	●	○	○				**HC 7625**	10	369604 0412	12,50

3143

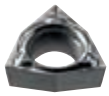
ISO	HC 7625
ISO P steel	Vc = 100 - 190
ISO M stainless steel	Vc = 70 - 90
ISO K cast iron	Vc = 120 - 200
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.2 ap = 0.1 - 1.5

ISO indexable cutting inserts WCGT

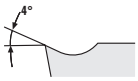
• **80° trigonometric, positive 7°**

Chip breaker MN

F finishing	M medium	R roughing
●	○	-



Finishing



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
WCGT 020101-MN				●			**HW 6315**	10	**369605** 0111	18,–
WCGT 020102-MN				●			**HW 6315**	10	369605 0211	18,–
WCGT 020104-MN				●			**HW 6315**	10	369605 0411	18,–

3143

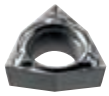
ISO	HW 6315
ISO N Al/non-ferrous	Vc = 160 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.03 - 0.15 ap = 0.1 - 0.8

ISO indexable cutting inserts WCMT

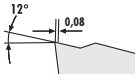
• **80° trigonometric, positive 7°**

Chip breaker MN

F finishing	M medium	R roughing
●	○	-



Finishing



ATORN® ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
WCMT 020102-MN	●	○	○				**HC 7625**	10	**369606** 0212	19,20
WCMT 020104-MN	●	○	○				**HC 7625**	10	369606 0412	19,20

3143

ISO	
ISO P steel	Vc = 100 - 190
ISO M stainless steel	Vc = 70 - 90
ISO K cast iron	Vc = 120 - 200
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.20 ap = 0.1 - 0.8

Toolbits

HSS-E

- **DIN 4964**
- Entire length hardened, tempered and ground true to size on all sides
- **Use:** Turning, boring, grooving etc. and for producing profile steels

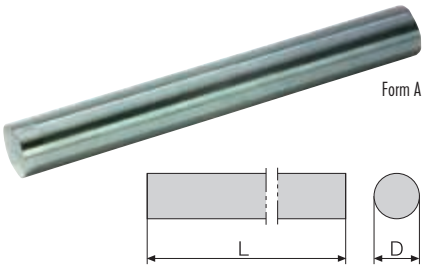
Type A, round, tolerance h8

D mm	L mm	art.no.	€
4	63	**300101** 0001	4,37
4	80	300101 0002	4,84
4	100	300101 0003	5,70
5	63	300101 0004	4,37
5	80	300101 0005	5,50
5	100	300101 0006	6,25
5	125	300101 0007	7,60
6	40	300101 0008	4,75
6	63	300101 0009	5,70
6	80	300101 0010	6,25
6	100	300101 0011	7,20
6	125	300101 0012	8,55
6	160	300101 0013	10,85
8	40	300101 0014	5,70
8	63	300101 0015	6,85
8	80	300101 0016	8,15
8	100	300101 0017	9,35
8	125	300101 0018	11,80
8	160	300101 0019	15,–
8	200	300101 0020	18,20
10	40	300101 0021	7,20

3101

D mm	L mm	art.no.	€
10	63	300101 0022	8,95
10	80	300101 0023	10,45
10	100	300101 0024	12,05
10	125	300101 0025	14,65
10	160	300101 0026	17,70
10	200	300101 0027	22,40
12	63	300101 0028	11,80
12	80	300101 0029	13,70
12	100	300101 0030	16,–
12	125	300101 0031	20,10
12	160	300101 0032	24,50
12	200	300101 0033	29,50
14	160	300101 0034	32,30
16	125	300101 0035	32,10
16	160	300101 0036	40,90
16	200	300101 0037	49,80
18	160	300101 0038	45,40
18	200	300101 0039	57,–
20	125	300101 0040	45,60
20	160	300101 0041	56,–
20	200	300101 0042	70,50

3101



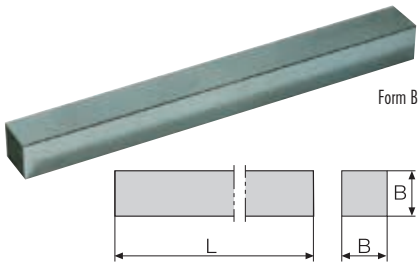
Type B, square, tolerance h13

B mm	L mm	art.no.	€
4	40	**300110** 0001	4,75
4	63	300110 0002	5,90
4	80	300110 0003	6,55
4	100	300110 0004	8,55
5	40	300110 0005	4,75
5	63	300110 0006	5,90
5	100	300110 0007	7,80
6	40	300110 0008	4,57
6	63	300110 0009	5,40
6	80	300110 0010	5,80
6	100	300110 0011	6,55
6	125	300110 0012	9,20
6	160	300110 0013	10,65
8	40	300110 0014	7,80
8	63	300110 0015	8,55
8	80	300110 0016	9,50
8	100	300110 0017	11,10
8	125	300110 0018	12,55
8	160	300110 0019	15,20
8	200	300110 0020	17,70
10	63	300110 0021	11,–
10	80	300110 0022	12,20
10	100	300110 0023	15,20
10	125	300110 0024	16,90

3101

B mm	L mm	art.no.	€
10	160	300110 0025	21,70
10	200	300110 0026	26,60
12	63	300110 0027	14,45
12	80	300110 0028	16,20
12	100	300110 0029	19,–
12	125	300110 0030	23,–
12	160	300110 0031	29,30
12	200	300110 0032	35,20
14	100	300110 0033	23,80
14	125	300110 0034	29,50
14	160	300110 0035	36,10
14	200	300110 0036	42,–
16	100	300110 0037	28,50
16	125	300110 0038	34,40
16	160	300110 0039	42,20
16	200	300110 0040	50,–
18	160	300110 0041	62,50
18	200	300110 0042	79,–
20	200	300110 0043	80,–
20	250	300110 0044	102,–
25	160	300110 0045	105,–
25	200	300110 0046	127,–
25	250	300110 0047	162,–

3101

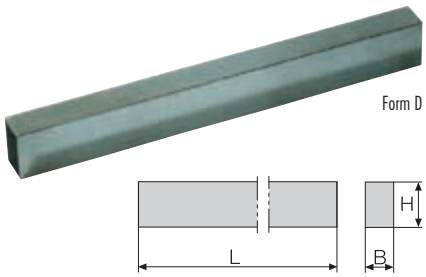


Continued on next page >>>

Type D, rectangular, tolerance h13

B mm	H mm	L mm	art.no.	€
4	16	100	**300120** 0001	15,80
4	16	160	300120 0002	22,40
5	10	100	300120 0003	11,–
5	10	160	300120 0004	17,90
5	10	200	300120 0005	22,–
5	20	100	300120 0006	19,–
5	20	160	300120 0007	27,60
5	20	200	300120 0008	34,20
6	10	100	300120 0009	11,80
6	10	160	300120 0010	18,20
6	10	200	300120 0011	22,80
6	12	100	300120 0012	12,35
6	12	160	300120 0013	18,10
6	25	160	300120 0014	38,20
6	25	200	300120 0015	47,50
8	12	100	300120 0016	13,30
8	12	160	300120 0017	20,90
8	12	200	300120 0018	26,–
8	16	100	300120 0019	22,80
8	16	160	300120 0020	28,50
8	16	200	300120 0021	36,10
8	32	200	300120 0022	69,50
10	16	100	300120 0023	20,90
10	16	160	300120 0024	34,20
10	16	200	300120 0025	41,80
10	20	100	300120 0026	29,60
10	20	160	300120 0027	47,10
10	20	200	300120 0028	59,–
10	40	160	300120 0029	106,–
10	40	200	300120 0030	133,–
12	20	160	300120 0031	54,50
12	20	200	300120 0032	68,50
12	25	200	300120 0033	68,50
12	25	250	300120 0034	94,–
16	25	160	300120 0035	80,–
16	25	200	300120 0036	99,–
16	32	200	300120 0037	103,–

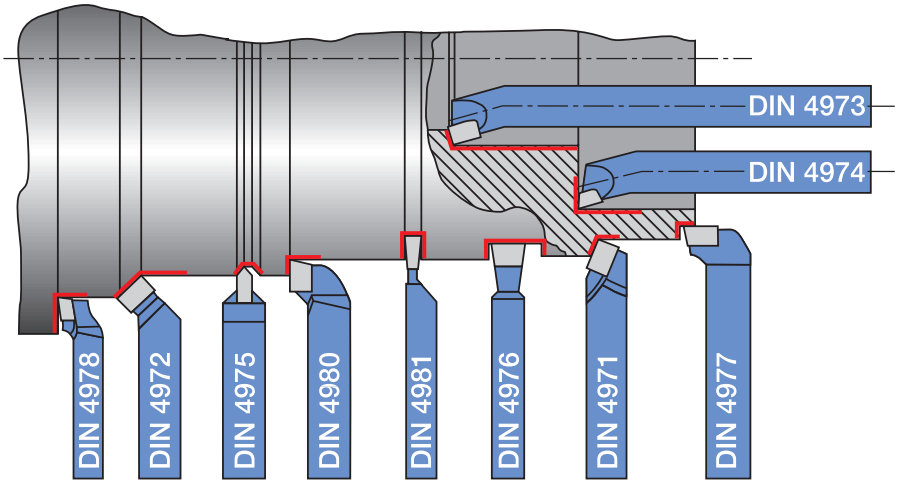
3101 3101



Turning tool

HM

- Shanks made from non-alloy steel (700 - 800 N/mm² in strength)
- Finely ground face and flank surfaces
- Fitted with ISO solid carbide cutting inserts according to DIN 4950
- **P20**
  P25/P30 multi-range quality
  K10/K20 multi-range quality
- Unit prices when purchased in PU
- Other qualities can be found in our webshop



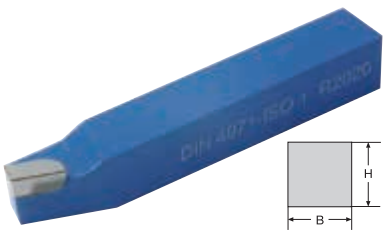
Illustrations show RH version

Straight turning tool, right-hand, DIN 4971 - ISO 1

- Left-hand version available on request

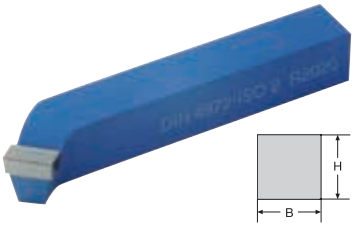
B mm	H mm	L mm	Cutting edge width mm	P20			P25 / P30			K10 / K20		
					art.no.	€		art.no.	€		art.no.	€
10	10	90	8.0	5	**302001** 0202	5,90	5	**302001** 0203	5,90	5	**302001** 0221	5,90
12	12	100	10.0	5	302001 0302	6,90	5	302001 0303	6,90	5	302001 0321	6,90
16	16	110	12.2	5	302001 0402	7,95	5	302001 0403	7,95	5	302001 0421	7,95
20	20	125	16.5	5	302001 0502	10,25	5	302001 0503	10,25	5	302001 0521	10,25
25	25	140	20.6	2	302001 0602	16,60	2	302001 0603	16,60	2	302001 0621	16,60
32	32	170	25.5				2	302001 0703	24,90	2	302001 0721	24,90

3103 3103 3103



Curved turning tool, right-hand, DIN 4972 - ISO 2

B mm	H mm	L mm	Cutting edge width mm		P20 art.no.	€		P25 / P30 art.no.	€		K10 / K20 art.no.	€
10	10	90	7.7	5	**302005** 0202	6,20	5	**302005** 0203	6,20	5	**302005** 0221	6,20
12	12	100	9.9	5	302005 0302	7,20	5	302005 0303	7,20	5	302005 0321	7,20
16	16	110	11.6	5	302005 0402	8,30	5	302005 0403	8,30	5	302005 0421	8,30
20	20	125	15.9	5	302005 0502	10,55	5	302005 0503	10,55	5	302005 0521	10,55
25	25	140	19.7	2	302005 0602	16,70	2	302005 0603	16,70	2	302005 0621	16,70
32	32	170	24.9	2	302005 0702	25,–	2	302005 0703	25,–	2	302005 0721	25,–
					3103			3103			3103	



Curved turning tool, left-hand, DIN 4972 - ISO 2

B mm	H mm	L mm	Cutting edge width mm		P20 art.no.	€		P25 / P30 art.no.	€		K10 / K20 art.no.	€
10	10	90	7.7	5	**302007** 0202	6,20	5	**302007** 0203	6,20	5	**302007** 0221	6,20
12	12	100	9.9	5	302007 0302	7,20	5	302007 0303	7,20	5	302007 0321	7,20
16	16	110	11.6	5	302007 0402	8,30	5	302007 0403	8,30	5	302007 0421	8,30
20	20	125	15.9	5	302007 0502	10,55	5	302007 0503	10,55	5	302007 0521	10,55
25	25	140	19.7	2	302007 0602	16,70	2	302007 0603	16,70	2	302007 0621	16,70
32	32	170	24.9	2	302007 0702	25,–	2	302007 0703	25,–	2	302007 0721	25,–
					3103			3103			3103	



Internal turning tool with square shank, DIN 4973 - ISO 8

- Available with round shank on request

B mm	H mm	L mm	Cutting edge width mm		P20 art.no.	€		P25 / P30 art.no.	€		K10 / K20 art.no.	€
8	8	125	5.0	5	**302010** 0102	6,10	5	**302010** 0103	6,10	5	**302010** 0121	6,10
10	10	150	6.0	5	302010 0202	6,75	5	302010 0203	6,75	5	302010 0221	6,75
12	12	180	8.2	5	302010 0302	8,40	5	302010 0303	8,40	5	302010 0321	8,40
16	16	210	10.3	5	302010 0402	10,25	5	302010 0403	10,25	5	302010 0421	10,25
20	20	250	12.0	5	302010 0502	12,40	5	302010 0503	12,40	5	302010 0521	12,40
25	25	300	15.5	2	302010 0602	19,20	2	302010 0603	19,20	2	302010 0621	19,20
32	32	355	20.0	2	302010 0702	28,80	2	302010 0703	28,80	2	302010 0721	28,80
					3103			3103			3103	



Internal corner turning tool with square shank, DIN 4974 - ISO 9

B mm	H mm	L mm	Cutting edge width mm		P20 art.no.	€		P25 / P30 art.no.	€		K10 / K20 art.no.	€
8	8	125	5.1	5	**302015** 0102	6,10	5	**302015** 0103	6,10	5	**302015** 0121	6,10
10	10	150	6.0	5	302015 0202	6,45	5	302015 0203	6,45	5	302015 0221	6,45
12	12	180	8.7	5	302015 0302	8,40	5	302015 0303	8,40	5	302015 0321	8,40
16	16	210	9.4	5	302015 0402	10,25	5	302015 0403	10,25	5	302015 0421	10,25
20	20	250	11.8	5	302015 0502	12,40	5	302015 0503	12,40	5	302015 0521	12,40
25	25	300	15.0	2	302015 0602	19,20	2	302015 0603	19,20	2	302015 0621	19,20
32	32	355	19.4	2	302015 0702	28,80	2	302015 0703	28,80	2	302015 0721	28,80
					3103			3103			3103	

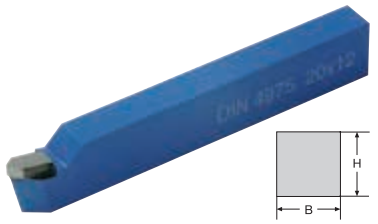


Internal corner turning tool with straight shank, DIN 4974 - ISO 9

D mm	L mm	Cutting edge width mm		P20 art.no.	€		P25 / P30 art.no.	€		K10 / K20 art.no.	€
8	125	5.1	5	**302017** 2202	6,10	5	**302017** 2203	6,10	5	**302017** 2221	6,10
10	150	6.0	5	302017 2302	6,45	5	302017 2303	6,45	5	302017 2321	6,45
12	180	8.7	5	302017 2402	8,05	5	302017 2403	8,05	5	302017 2421	8,05
16	210	9.4	5	302017 2502	10,15	5	302017 2503	10,15	5	302017 2521	10,15
20	250	11.8	5	302017 2602	11,55	5	302017 2603	11,55	5	302017 2621	11,55
25	300	15.0	2	302017 2702	18,10	2	302017 2703	18,10	2	302017 2721	18,10
				3103			3103			3103	

Pointed turning tool, DIN 4975

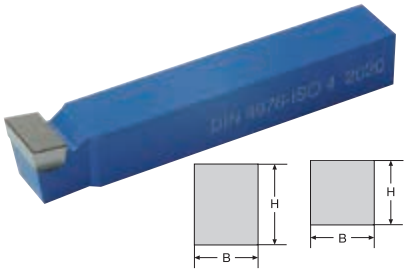
B mm	H mm	L mm		P20 art.no.	€		P25 / P30 art.no.	€		K10 / K20 art.no.	€
10	16	110	5	**302020** 1202	7,10	5	**302020** 1203	7,10	5	**302020** 1221	7,10
12	20	125	5	302020 1302	7,75	5	302020 1303	7,75	5	302020 1321	7,75
16	25	140	2	302020 1402	10,45	2	302020 1403	10,45	2	302020 1421	10,45
20	32	170	2	302020 1502	13,75	2	302020 1503	13,75	2	302020 1521	13,75
				3103			3103			3103	



Continued on next page >>>

Broad turning tool, DIN 4976 - ISO 4

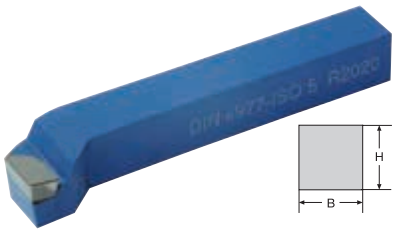
B mm	H mm	L mm	Cutting edge width mm	P20			P25 / P30			K10 / K20		
					art.no.	€		art.no.	€		art.no.	€
10	10	90	10.0	5	**302025** 0202	6,55	5	**302025** 0203	6,55	5	**302025** 0221	6,55
12	12	100	11.6	5	302025 0302	8,50	5	302025 0303	8,50	5	302025 0321	8,50
16	16	110	16.0	5	302025 0402	10,15	5	302025 0403	10,15	5	302025 0421	10,15
20	20	125	20.0	5	302025 0502	13,75	5	302025 0503	13,75	5	302025 0521	13,75
20	32	170	20.0	2	302025 1502	18,60	2	302025 1503	18,60	2	302025 1521	18,60
25	25	140	24.7	2	302025 0602	23,90	2	302025 0603	23,90	2	302025 0621	23,90
32	32	170	31.5	2	302025 0702	41,–	2	302025 0703	41,–	2	302025 0721	41,–
					3103			3103			3103	



Offset face turning tool, right-hand, DIN 4977 - ISO 5

- Left-hand version available on request

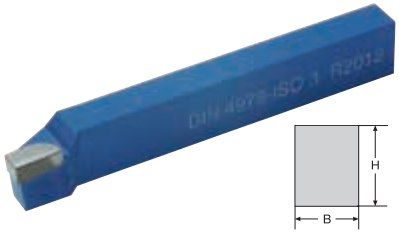
B mm	H mm	L mm	Cutting edge width mm	P20			P25 / P30			K10 / K20		
					art.no.	€		art.no.	€		art.no.	€
16	16	110	7.4	5	**302030** 0402	8,50	5	**302030** 0403	8,50	5	**302030** 0421	8,50
20	20	125	9.7	5	302030 0502	10,90	5	302030 0503	10,90	5	302030 0521	10,90
25	25	140	11.2	2	302030 0602	16,80	2	302030 0603	16,80	2	302030 0621	16,80
					3103			3103			3103	



Offset corner turning tool, right-hand, DIN 4978 - ISO 3

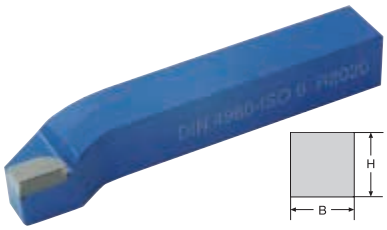
- Left-hand version available on request

B mm	H mm	L mm	Cutting edge width mm	P20			P25 / P30			K10 / K20		
					art.no.	€		art.no.	€		art.no.	€
10	16	110	8.0	5	**302035** 1202	7,55	5	**302035** 1203	7,55	5	**302035** 1221	7,55
12	20	125	10.0	5	302035 1302	8,50	5	302035 1303	8,50	5	302035 1321	8,50
16	25	140	12.2	2	302035 1402	10,45	2	302035 1403	10,45	2	302035 1421	10,45
					3103			3103			3103	



Offset side turning tool, right-hand, DIN 4980 - ISO 6

B mm	H mm	L mm	Cutting edge width mm	P20			P25 / P30			K10 / K20		
					art.no.	€		art.no.	€		art.no.	€
10	10	90	8.7	5	**302040** 0202	6,–	5	**302040** 0203	6,–	5	**302040** 0221	6,–
12	12	100	10.0	5	302040 0302	6,90	5	302040 0303	6,90	5	302040 0321	6,90
16	16	110	12.2	5	302040 0402	8,40	5	302040 0403	8,40	5	302040 0421	8,40
20	20	125	15.8	5	302040 0502	10,45	5	302040 0503	10,45	5	302040 0521	10,45
25	25	140	20.0	2	302040 0602	15,90	2	302040 0603	15,90	2	302040 0621	15,90
32	32	170	25.4	2	302040 0702	24,20	2	302040 0703	24,20	2	302040 0721	24,20
					3103			3103			3103	

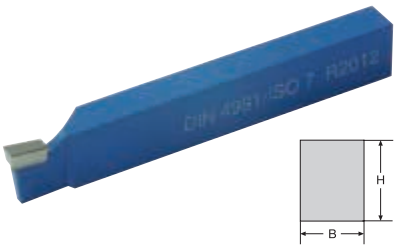


Offset side turning tool, left-hand, DIN 4980 - ISO 6

B mm	H mm	L mm	Cutting edge width mm	P20			P25 / P30			K10 / K20		
					art.no.	€		art.no.	€		art.no.	€
10	10	90	8.7	5	**302042** 0202	6,–	5	**302042** 0203	6,–	5	**302042** 0221	6,–
12	12	100	10.0	5	302042 0302	6,90	5	302042 0303	6,90	5	302042 0321	6,90
16	16	110	12.2	5	302042 0402	8,40	5	302042 0403	8,40	5	302042 0421	8,40
20	20	125	15.8	5	302042 0502	10,45	5	302042 0503	10,45	5	302042 0521	10,45
25	25	140	20.0	2	302042 0602	15,90	2	302042 0603	15,90	2	302042 0621	15,90
32	32	170	25.4	2	302042 0702	24,20	2	302042 0703	24,20	2	302042 0721	24,20
					3103			3103			3103	

Parting-off tool, right-hand, DIN 4981 - ISO 7

B mm	H mm	L mm	Cutting edge width mm	P20			P25 / P30			K10 / K20		
					art.no.	€		art.no.	€		art.no.	€
8	12	100	3.2	5	**302045** 1102	6,20	5	**302045** 1103	6,20	5	**302045** 1121	6,20
10	16	110	4.2	5	302045 1202	6,75	5	302045 1203	6,75	5	302045 1221	6,75
12	20	125	5.0	5	302045 1302	8,15	5	302045 1303	8,15	5	302045 1321	8,15
16	25	140	6.2	2	302045 1402	11,70	2	302045 1403	11,70	2	302045 1421	11,70
20	32	170	8.4	2	302045 1502	16,30	2	302045 1503	16,30	2	302045 1521	16,30
25	40	200	10.4	2	302045 1602	27,60	2	302045 1603	27,60	2	302045 1621	27,60
					3103			3103			3103	



Parting-off tool, left-hand, DIN 4981 - ISO 7

B mm	H mm	L mm	Cutting edge width mm	P20			P25 / P30			K10 / K20		
					art.no.	€		art.no.	€		art.no.	€
8	12	100	3.2	5	**302047** 1102	6,20	5	**302047** 1103	6,20	5	**302047** 1121	6,20
10	16	110	4.2	5	302047 1202	6,75	5	302047 1203	6,75	5	302047 1221	6,75
12	20	125	5.3	5	302047 1302	8,15	5	302047 1303	8,15	5	302047 1321	8,15
16	25	140	6.2	2	302047 1402	11,70	2	302047 1403	11,70	2	302047 1421	11,70
20	32	170	8.4	2	302047 1502	16,30	2	302047 1503	16,30	2	302047 1521	16,30
25	40	200	10.4	2	302047 1602	27,60	2	302047 1603	27,60	2	302047 1621	27,60
					3103			3103			3103	



Hooked turning tool, no. 263

B mm	H mm	L mm	Cutting edge width mm	P20			P25 / P30			K10 / K20		
					art.no.	€		art.no.	€		art.no.	€
10	10	140	3.0	5	**302050** 0202	16,20	5	**302050** 0203	16,20	5	**302050** 0221	16,20
12	12	160	4.0	5	302050 0302	17,80	5	302050 0303	17,80	5	302050 0321	17,80
16	16	180	5.0	5	302050 0402	20,90	5	302050 0403	20,90	5	302050 0421	20,90
20	20	210	6.0	5	302050 0502	23,30	5	302050 0503	23,30	5	302050 0521	23,30
25	25	250	8.0	2	302050 0602	29,60	2	302050 0603	29,60	2	302050 0621	29,60
32	32	300	10.0	2	302050 0702	41,40	2	302050 0703	41,40	2	302050 0721	41,40
					3103			3103			3103	



Internal thread turning tool, no. 283 - 60°

B mm	H mm	L mm	P20			P25 / P30			K10 / K20		
				art.no.	€		art.no.	€		art.no.	€
10	10	140	5	**302060** 0202	16,30	5	**302060** 0203	16,30	5	**302060** 0221	16,30
12	12	160	5	302060 0302	17,80	5	302060 0303	17,80	5	302060 0321	17,80
16	16	180	5	302060 0402	20,90	5	302060 0403	20,90	5	302060 0421	20,90
20	20	210	5	302060 0502	23,30	5	302060 0503	23,30	5	302060 0521	23,30
25	25	250	2	302060 0602	29,60	2	302060 0603	29,60	2	302060 0621	29,60
				3103			3103			3103	

Over 180,000 tools available online!
Register online now!
www.saratools.com



ATORN® Precision thread cutting

INFO

The threading inserts are clamped in the holder using Torx screws; you can use virtually all the tool holders available on the market.

Affordable thread turning for external and internal threads, especially on CNC processing machines.

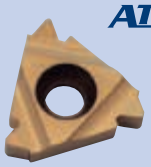


Ground version

ATORN®

Version ground on all sides with **highly accurate profile geometry**

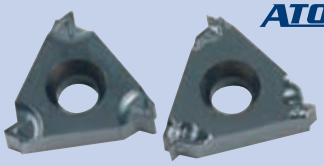
- Guaranteed quality due to complete control
- Maximum precision possible
- Chip breakers ground from solid material



Ground version with sintered chip breaker

ATORN®

- Controlled chip breaking
- Longer service life



Threading inserts product range

	ATORN®
Partial profiles, 60°	●
Partial profiles, 55°	●
ISO metric thread	●
UN full profile thread (Unified)	●
BSW British Standard Whitworth thread	●
NPT American standard taper pipe thread	●
Trapezoidal thread according to DIN 103	●
Round thread according to DIN 405	●
PG (DIN 40430) armoured pipe thread	●
Saw-tooth thread (DIN 513)	●
Type Z inserts, 4.1 mm, for Sandvik holders	●
Mini thread	●

Other threading inserts are available on request:

- ACME American trapezoidal thread
- Oil thread
  - API – round
  - API – V 0.040
  - API – V 0.038 R
  - API – V 0.050
- BSPT British tapered pipe thread
- NPTF
- STUB ACME
- UNJ
- Multiple thread ridge inserts

and thread based on drawings available on request

Multiple thread ridge inserts

available on request



Recess turning inserts

ISO standard thread turning holder can also be used with recess turning inserts for grooving!



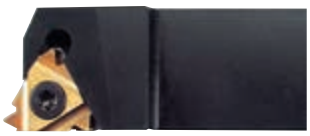
Application areas of the available carbide qualities

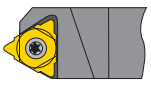
Quality	ISO	Application area
HC 5625 PVD TiN	P15-P35	For non-alloyed and alloyed steel at low to medium cutting speeds
HC 5615 PVD TiN	P10-P25 K10-K20	For machining non-alloyed, alloyed and stainless steels, super alloys, hardened steels, cast iron materials and non-ferrous metals at medium cutting speeds
HC 5630 PVD TiAlN	P20-P40 K20-K30	For machining non-alloyed, alloyed and stainless steels, super alloys, hardened steels and cast iron materials at medium to high cutting speeds
HC 5640 PVD TiN	P30-P50 K25-K40	For non-alloyed and alloyed steels at low cutting speeds, particularly suitable for stainless steels
HC 5620 PVD	M10-M20 K05-K20 N10-N20 S10-S20	For stainless steel, cast iron, titanium, non-ferrous metals and high-temperature alloys
HC 5110 PVD	H01-H20	For hardened steels, cast iron, super alloys up to 62 HRc

0 partial profile, 60° and 55°	Page 936
DIN ISO full profile, metric	Page 937
DIN ISO full profile, metric high-performance coating	Page 941
DIN ISO full profile UN, BSW	Page 941
DIN ISO round, trapezoidal	Page 943
DIN ISO mini thread	Page 944
Recess turning inserts	Page 947

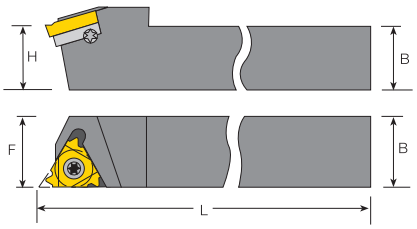
ATORN® Tool holder

- **External thread**
- **Note:** All tool holders are manufactured with a pitch angle of 1.5°. Other pitch angles are specified in the pitch angle table in the technical part of the catalogue.
- * = tool holder without spacers
- ** = available with clamping claw on request





U-type



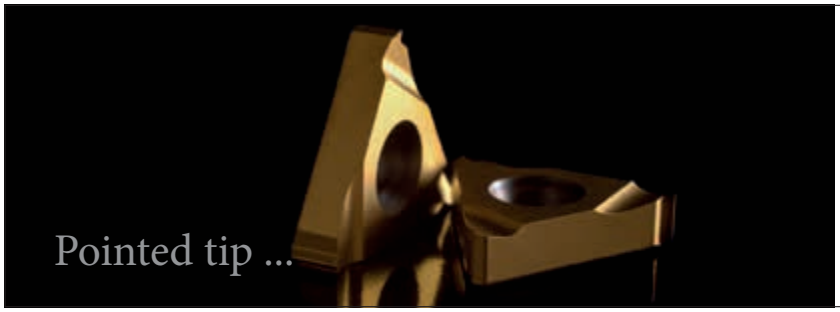
Standard type

External thread

Designation	B mm	L mm	F mm	Cutting edge length mm	H mm						Right-hand art.no.	€	Left-hand art.no.	€
SER 10 10 H11	10	100	11	11*	10	A1				E1	**340101** 0002	85,50		
SEL 10 10 H11	10	100	11	11*	10	A1				E1			**340110** 0002	85,50
SER 12 12 F16	12	80	16	16**	12	A2	B1	C1		E2	340101 0011	85,50		
SEL 12 12 F16	12	80	16	16**	12	A2	B1		D1	E2			340110 0011	85,50
SER 16 16 H16	16	100	16	16**	16	A2	B1	C1		E2	340101 0012	85,50		
SEL 16 16 H16	16	100	16	16**	16	A2	B1		D1	E2			340110 0012	85,50
SER 20 20 K16	20	125	20	16**	20	A2	B1	C1		E2	340101 0013	85,50		
SEL 20 20 K16	20	125	20	16**	20	A2	B1		D1	E2			340110 0013	85,50
SER 25 25 M16	25	150	25	16**	25	A2	B1	C1		E2	340101 0014	90,–		
SEL 25 25 M16	25	150	25	16**	25	A2	B1		D1	E2			340110 0014	90,–
SER 25 25 M22	25	150	25	22	25	A3	B2	C2		E3	340101 0021	97,–		
SEL 25 25 M22	25	150	25	22	25	A3	B2		D2	E3			340110 0021	97,–
SER 32 32 P22	32	170	32	22	32	A3	B2	C2		E3	340101 0022	134,–		
SEL 32 32 P22	32	170	32	22	32	A3	B2		D2	E3			340110 0022	134,–
SER 32 32 P22U	32	170	32	22U	32	A3	B2	C3		E3	340101 0031	139,–		
SEL 32 32 P22U	32	170	32	22U	32	A3	B2		D3	E3			340110 0031	139,–
SER 25 25 M27	25	150	32	27	25	A4	B3	C4		E4	340101 0041	123,–		
SEL 25 25 M27	25	150	32	27	25	A4	B3		D4	E4			340110 0041	123,–
SER 32 32 P27	32	170	32	27	32	A4	B3	C4		E4	340101 0042	163,–		
SEL 32 32 P27	32	170	32	27	32	A4	B3		D4	E4			340110 0042	163,–
SER 32 32 P27U	32	170	32	27U	32	A4	B3	C5		E4	340101 0051	163,–		
SEL 32 32 P27U	32	170	32	27U	32	A4	B3		D5	E4			340110 0051	163,–
											3112		3112	

Spare parts

Screw			Spacer screw			Spacer, external right-hand/internal left-hand			Spacer, external left-hand/internal right-hand			Wrench		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	341401 0001	1,95	B1	341410 0011	1,95	C1	341430 0011	8,35	D1	341430 0012	8,35	E1	705141 0008	5,70
A2	341401 0011	1,58	B2	341410 0021	2,72	C2	341430 0021	13,05	D2	341430 0022	13,05	E2	705141 0010	5,90
A3	341401 0021	2,58	B3	341410 0041	3,61	C3	341430 0031	13,05	D3	341430 0032	13,05	E3	705141 0020	6,35
A4	341401 0041	3,61				C4	341430 0041	21,80	D4	341430 0042	21,80	E4	705141 0025	6,55
						C5	341430 0051	21,80	D5	341430 0052	21,80			
3116			3116			3116			3116			7114		

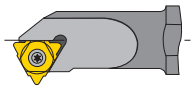


... with reversible option.

ATORN®
Performance demands quality

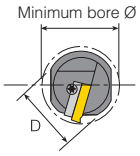
ATORN® Boring bars

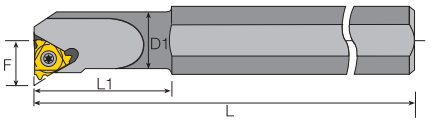
- **Female thread**
- **Note:** All boring bars are manufactured with a pitch angle of 1.5°. Other pitch angles are specified in the pitch angle table in the technical part of the catalogue
- * = boring bar without spacers
- ** = available with clamping claw on request



U-type



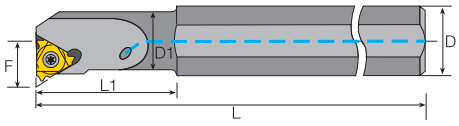




Standard type

Female thread

Designation	Cutting edge length mm	D mm	D1 mm	Min. hole Ø mm	L mm	L1 mm	F mm						Right-hand art.no.	€	Left-hand art.no.	€
SIR 0010H11	11*	10	10	12.0	100	-	7.4	A1				E1	**340301** 0001	87,50		
SIL 0010H11	11*	10	10	12.0	100	-	7.4	A1				E1			**340310** 0001	87,50
SIR 0010 K11	11*	16	10	12.0	125	25	7.4	A1				E1	340301 0002	87,50		
SIL 0010 K11	11*	16	10	12.0	125	25	7.4	A1				E1			340310 0002	87,50
SIR 0013 L11	11*	16	13	15,0	140	32	8.9	A1				E1	340301 0003	87,50		
SIL 0013 L11	11*	16	13	15,0	140	32	8.9	A1				E1			340310 0003	87,50
SIR 0013 M16	16*	16	13	16,0	150	32	10.2	A2				E2	340301 0011	87,50		
SIL 0013 M16	16*	16	13	16,0	150	32	10.2	A2				E2			340310 0011	87,50
SIR 0016 P16	16*	20	16	19,0	170	40	11.7	A2				E2	340301 0012	87,50		
SIL 0016 P16	16*	20	16	19,0	170	40	11.7	A2				E2			340310 0012	87,50
SIR 0020 P16	16**	20	20	24.0	170	-	13.7	A2	B1		D1	E2	340301 0013	99,–		
SIL 0020 P16	16**	20	20	24.0	170	-	13.7	A2	B1	C1		E2			340310 0013	99,–
SIR 0025 R16	16**	25	25	29.0	200	-	16.2	A2	B1		D1	E2	340301 0014	111,–		
SIL 0025 R16	16**	25	25	29.0	200	-	16.2	A2	B1	C1		E2			340310 0014	111,–
SIR 0032 S16	16**	32	32	36.0	250	-	19.7	A2	B1		D1	E2	340301 0015	139,–		
SIL 0032 S16	16**	32	32	36.0	250	-	19.7	A2	B1	C1		E2			340310 0015	139,–
SIR 0040 T16	16**	40	40	44.0	300	-	23.7	A2	B1		D1	E2	340301 0016	186,–		
SIL 0040 T16	16**	40	40	44.0	300	-	23.7	A2	B1	C1		E2			340310 0016	186,–
SIR 0020 P22	22*	20	20	24.0	170	-	15.6	A3				E3	340301 0021	103,–		
SIL 0020 P22	22*	20	20	24.0	170	-	15.6	A3				E3			340310 0021	103,–
SIR 0025 R22	22**	25	25	29.0	200	-	18.1	A3	B2		D2	E3	340301 0022	118,–		
SIL 0025 R22	22**	25	25	29.0	200	-	18.1	A3	B2	C2		E3			340310 0022	118,–
SIR 0032 S22	22	32	32	38.0	250	-	21.6	A3	B2		D2	E3	340301 0023	142,–		
SIL 0032 S22	22	32	32	38.0	250	-	21.6	A3	B2	C2		E3			340310 0023	142,–
SIR 0040 T22	22	40	40	46.0	300	-	25.6	A3	B2		D2	E3	340301 0024	183,–		
SIL 0040 T22	22	40	40	46.0	300	-	25.6	A3	B2	C2		E3			340310 0024	183,–
SIR 0032 S22U	22U	32	32	38.0	250	-	24.4	A3	B2		D3	E3	340301 0031	154,–		
SIL 0032 S22U	22U	32	32	38.0	250	-	24.4	A3	B2	C3		E3			340310 0031	154,–
SIR 0040 T22U	22U	40	40	46.0	300	-	28.1	A3	B2		D3	E3	340301 0032	193,–		
SIL 0040 T22U	22U	40	40	46.0	300	-	28.1	A3	B2	C3		E3			340310 0032	193,–
SIR 0032 S27	27	32	32	40.0	250	-	22.6	A4	B3		D4	E4	340301 0041	182,–		
SIL 0032 S27	27	32	32	40.0	250	-	22.6	A4	B3	C4		E4			340310 0041	182,–
SIR 0050 U27	27	50	50	58.0	350	-	31.6	A4	B3		D4	E4	340301 0043	265,–		
SIL 0050 U27	27	50	50	58.0	350	-	31.6	A4	B3	C4		E4			340310 0043	265,–
SIR 0032 S27U	27U	32	32	40.0	250	-	25.8	A4	B3		D5	E4	340301 0051	140,–		
SIL 0032 S27U	27U	32	32	40.0	250	-	25.8	A4	B3	C5		E4			340310 0051	140,–
SIR 0050 U27U	27U	50	50	58.0	350	-	34.3	A4	B3		D5	E4	340301 0053	270,–		
SIL 0050 U27U	27U	50	50	58.0	350	-	34.3	A4	B3	C5		E4			340310 0053	270,–
													3112		3112	



Boring bars with internal coolant supply

Designation	Cutting edge length mm	D mm	D1 mm	Min. hole Ø mm	L mm	L1 mm	F mm						Right-hand art.no.	€	Left-hand art.no.	€
SIR 0010 K11B	11*	16	10	12.0	125	25	7.4	A1				E1	**340320** 0002	96,50		
SIL 0010 K11B	11*	16	10	12.0	125	25	7.4	A1				E1			**340321** 0002	96,50
SIR 0013 M16B	16*	16	13	16.0	150	32	10.2	A2				E2	340320 0011	96,50		
SIL 0013 M16B	16*	16	13	16.0	150	32	10.2	A2				E2			340321 0011	96,50
SIR 0016 P16B	16*	20	16	19.0	170	40	11.7	A2				E2	340320 0012	96,50		
SIL 0016 P16B	16*	20	16	19.0	170	40	11.7	A2				E2			340321 0012	96,50
SIR 0020 P16B	16	20	20	24.0	170	-	13.7	A2	B1		D1	E2	340320 0013	109,–		
SIL 0020 P16B	16	20	20	24.0	170	-	13.7	A2	B1	C1		E2			340321 0013	109,–
SIR 0025 R16B	16	25	25	29.0	200	-	16.2	A2	B1		D1	E2	340320 0014	122,–		
SIL 0025 R16B	16	25	25	29.0	200	-	16.2	A2	B1	C1		E2			340321 0014	122,–
SIR0025 R22B	22	25	25	29.0	200	-	18.1	A3	B2		D2	E3	340320 0022	130,–		
SIL0025 R 22B	22	25	25	29.0	200	-	18.1	A3	B2	C2		E3			340321 0022	130,–
													3112		3112	

Spare parts

	Screw art.no.	€
A1	341401 0001	1,95
A2	341401 0011	1,58
A3	341401 0021	2,58
A4	341401 0041	3,61
	3116	

	Spacer screw art.no.	€
B1	341410 0011	1,95
B2	341410 0021	2,72
B3	341410 0041	3,61
	3116	

	Spacer, external right-hand/internal left-hand art.no.	€
C1	341430 0011	8,35
C2	341430 0021	13,05
C3	341430 0031	13,05
C4	341430 0041	21,80
C5	341430 0051	21,80
	3116	

	Spacer, external left-hand/internal right-hand art.no.	€
D1	341430 0012	8,35
D2	341430 0022	13,05
D3	341430 0032	13,05
D4	341430 0042	21,80
D5	341430 0052	21,80
	3116	

	Wrench art.no.	€
E1	705141 0008	5,70
E2	705141 0010	5,90
E3	705141 0020	6,35
E4	705141 0025	6,55
	7114	



OSG
Catalogue VI
1024 pages
Art.no. 019900 0208

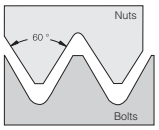
Overview of all free manufacturers' catalogues on page 14/15

ATORN® Thread cutting inserts, partial profile, 60°

Vc/fz 1040

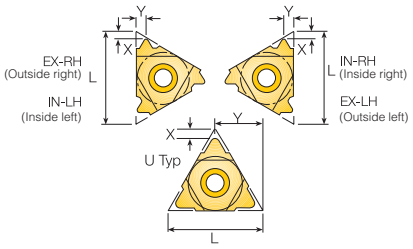
- **Partial profile, 60°**
- **Inserts available in left-hand version on request**





Partial profile, 60° external right-hand, ground

Designation	L mm	Pitch mm	X mm	Y mm		ISO P M K S H HC 5630 art.no.	€		ISO P M K N HC 5615 art.no.	€
11 ER A60	11	0.5-1.5	0.8	0.9	10	**342001** 0127	15,90	10	**342001** 0135	15,90
16 ER A60	16	0.5-1.5	0.8	0.9	10	342001 0227	15,90	10	342001 0235	15,90
16 ER G60	16	1.75-3.0	1.2	1.7	10	342001 0327	17,20	10	342001 0335	17,20
16 ER AG60	16	0.5-3.0	1.2	1.7	10	342001 0427	17,20	10	342001 0435	17,20
22 ER N60	22	3.5-5.0	1.7	2.5	10	342001 0527	27,–	10	342001 0535	27,–
22 UER/L U60	22U	5.5-8.0	0.6	11.0	10	342001 0627	27,–	10	342001 0635	27,–
						3113			3113	



Partial profile, 60º internal right-hand, ground

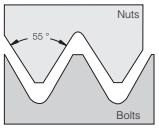
Designation	L mm	Pitch mm	X mm	Y mm		ISO P M K S H HC 5630 art.no.	€		ISO P M K N HC 5615 art.no.	€
11 IR A60	11	0.5-1.5	0.8	0.9	10	**342201** 0127	15,90	10	**342201** 0135	15,90
16 IR A60	16	0.5-1.5	0.8	0.9	10	342201 0227	15,90	10	342201 0235	15,90
16 IR G60	16	1.75-3.0	1.2	1.7	10	342201 0327	17,20	10	342201 0335	17,20
16 IR AG60	16	0.5-3.0	1.2	1.7	10	342201 0427	17,20	10	342201 0435	17,20
22 IR N60	22	3.5-5.0	1.7	2.5	10	342201 0527	27,–	10	342201 0535	27,–
22U IR/L U60	22U	5.5-8.0	0.6	11.0	10	342201 0627	27,–	10	342201 0635	27,–
						3113			3113	

ATORN® Thread cutting inserts, partial profile, 55°

Vc/fz 1040

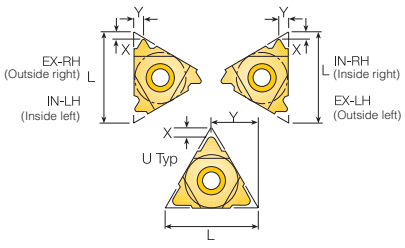
- **Partial profile, 55°**
- **Inserts available in left-hand version on request**





Partial profile, 55° external right-hand, ground

Designation	L mm	Pitch TPI	X mm	Y mm		ISO P M K S H HC 5630 art.no.	€		ISO P M K N HC 5615 art.no.	€
11 ER A55	11	48 - 16	0.8	0.9	10	**342401** 0127	17,50	10	**342401** 0135	17,50
16 ER A55	16	48 - 16	0.8	0.9	10	342401 0227	17,50	10	342401 0235	17,50
16 ER G55	16	14 - 8	1.2	1.7	10	342401 0327	18,80	10	342401 0335	18,80
16 ER AG55	16	48 - 8	1.2	1.7	10	342401 0427	18,80	10	342401 0435	18,80
22 ER N55	22	7 - 5	1.7	2.5	10	342401 0527	29,20	10	342401 0535	29,20
22 UER U55	22U	4.5 - 3.25	0.9	11.0	10	342401 0627	29,20	10	342401 0635	29,20
						3113			3113	



Partial profile, 55° internal right-hand, ground

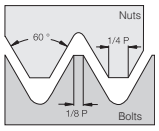
Designation	L mm	Pitch TPI	X mm	Y mm		ISO P M K S H HC 5630 art.no.	€		ISO P M K N HC 5615 art.no.	€
11 IR A55	11	48 - 16	0.8	0.9	10	**342601** 0127	17,50	10	**342601** 0135	17,50
16 IR A55	16	48 - 16	0.8	0.9	10	342601 0227	17,50	10	342601 0235	17,50
16 IR G55	16	14 - 8	1.2	1.7	10	342601 0327	18,80	10	342601 0335	18,80
16 IR AG55	16	48 - 8	1.2	1.7	10	342601 0427	18,80	10	342601 0435	18,80
22 IR N55	22	7 - 5	1.7	2.5	10	342601 0527	29,20	10	342601 0535	29,20
22U IR U55	22U	4.5 - 3.25	0.9	11.0	10	342601 0627	29,20	10	342601 0635	29,20
						3113			3113	

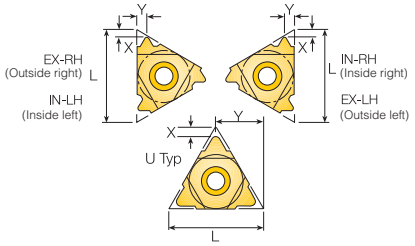
ATORN® Thread cutting inserts, full profile, ISO, ER

1040

- **Metric, full profile, ISO**







Full profile, ISO external right-hand, ground

Designation	L mm	Pitch mm	X mm	Y mm	ISO P M K S H HC 5630			ISO P HC 5625			ISO P M K N HC 5615		
						art.no.	€		art.no.	€		art.no.	€
11 ER 0.35ISO	11	0.35	0.8	0.4				10	**342801** 0130	17,–	10	**342801** 0135	17,–
11 ER 0.4ISO	11	0.4	0.7	0.4				10	342801 0230	17,–	10	342801 0235	17,–
11 ER 0.45ISO	11	0.45	0.7	0.4				10	342801 0330	17,–	10	342801 0335	17,–
11 ER 0.5ISO	11	0.5	0.6	0.6				10	342801 0430	17,–	10	342801 0435	17,–
11 ER 0.6ISO	11	0.6	0.6	0.6				10	342801 0530	17,–	10	342801 0535	17,–
11 ER 0.7ISO	11	0.7	0.6	0.6				10	342801 0630	17,–	10	342801 0635	17,–
11 ER 0.75ISO	11	0.75	0.6	0.6				10	342801 0730	17,–	10	342801 0735	17,–
11 ER 0.8ISO	11	0.8	0.6	0.6				10	342801 0830	17,–	10	342801 0835	17,–
11 ER 1.0ISO	11	1.0	0.7	0.7				10	342801 0930	14,85	10	342801 0935	14,85
11 ER 1.25ISO	11	1.25	0.8	0.9				10	342801 1030	14,85	10	342801 1035	14,85
11 ER 1.5ISO	11	1.5	0.8	1.0				10	342801 1130	14,85	10	342801 1135	14,85
11 ER 1.75ISO	11	1.75	0.8	1.1				10	342801 1230	14,85	10	342801 1235	14,85
16 ER 0.35ISO	16	0.35	0.8	0.4				10	342801 1330	17,–	10	342801 1335	17,–
16 ER 0.4ISO	16	0.4	0.7	0.4	10	**342801** 1427	17,–	10	342801 1430	17,–	10	342801 1435	17,–
16 ER 0.45ISO	16	0.45	0.7	0.4				10	342801 1530	17,–	10	342801 1535	17,–
16 ER 0.5ISO	16	0.5	0.6	0.6	10	342801 1627	17,–	10	342801 1630	17,–	10	342801 1635	17,–
16 ER 0.6ISO	16	0.6	0.6	0.6				10	342801 1730	17,–	10	342801 1735	17,–
16 ER 0.7ISO	16	0.7	0.6	0.6				10	342801 1830	17,–	10	342801 1835	17,–
16 ER 0.75ISO	16	0.75	0.6	0.6	10	342801 1927	17,–	10	342801 1930	17,–	10	342801 1935	17,–
16 ER 0.8ISO	16	0.8	0.6	0.6	10	342801 2027	17,–	10	342801 2030	17,–	10	342801 2035	17,–
16 ER 1.0ISO	16	1.0	0.7	0.7	10	342801 2127	14,85	10	342801 2130	14,85	10	342801 2135	14,85
16 ER 1.25ISO	16	1.25	0.8	0.9	10	342801 2227	14,85	10	342801 2230	14,85	10	342801 2235	14,85
16 ER 1.5ISO	16	1.5	0.8	1.0	10	342801 2327	14,85	10	342801 2330	14,85	10	342801 2335	14,85
16 ER 1.75ISO	16	1.75	0.9	1.2	10	342801 2427	14,85	10	342801 2430	14,85	10	342801 2435	14,85
16 ER 2.0ISO	16	2.0	1.0	1.3	10	342801 2527	14,85	10	342801 2530	14,85	10	342801 2535	14,85
16 ER 2.5ISO	16	2.5	1.1	1.5	10	342801 2627	16,30	10	342801 2630	16,30	10	342801 2635	16,30
16 ER 3.0ISO	16	3.0	1.2	1.6	10	342801 2727	16,30	10	342801 2730	16,30	10	342801 2735	16,30
16 ER 3.5ISO	16	3.5	1.2	1.7							10	342801 3735	16,30
22 ER 3.5ISO	22	3.5	1.6	2.3	10	342801 2827	22,40	10	342801 2830	22,40	10	342801 2835	22,40
22 ER 4.0ISO	22	4.0	1.6	2.3	10	342801 2927	22,40	10	342801 2930	22,40	10	342801 2935	22,40
22 ER 4.5ISO	22	4.5	1.7	2.4	10	342801 3027	22,40	10	342801 3030	22,40	10	342801 3035	22,40
22 ER 5.0ISO	22	5.0	1.7	2.5	10	342801 3127	22,40	10	342801 3130	22,40	10	342801 3135	22,40
22 ER 5.5ISO	22	5.5	1.7	2.6							10	342801 3835	22,40
22 ER 6.0ISO	22	6.0	1.9	2.7							10	342801 3935	22,40
27 ER 5.5ISO	27	5.5	1.9	2.7				5	342801 3230	37,20	5	342801 3235	37,20
27 ER 6.0ISO	27	6.0	2.0	2.9				5	342801 3330	37,20	5	342801 3335	37,20
22U ER/L5.5ISO	22U	5.5	2.3	11.0				10	342801 3430	28,10	10	342801 3435	28,10
22U ER/L6.0ISO	22U	6.0	2.6	11.0				10	342801 3530	28,10	10	342801 3535	28,10
27U ER/L8.0ISO	27U	8.0	2.4	13.7				5	342801 3630	37,20	5	342801 3635	37,20
						3113			3113			3113	

Full profile, ISO external right-hand, with chip breaker type B

Designation	L mm	Pitch mm	X mm	Y mm	ISO P M K S H HC 5630		
						art.no.	€
16 ERB 1.0ISO	16	1.0	0.7	0.7	10	**342802** 2127	14,85
16 ERB 1.25ISO	16	1.25	0.8	0.9	10	342802 2227	14,85
16 ERB 1.5ISO	16	1.5	0.8	1.0	10	342802 2327	14,85
16 ERB 1.75ISO	16	1.75	0.9	1.2	10	342802 2427	14,85
16 ERB 2.0ISO	16	2.0	1.0	1.3	10	342802 2527	14,85
16 ERB 2.5ISO	16	2.5	1.1	1.5	10	342802 2627	16,30
16 ERB 3.0ISO	16	3.0	1.2	1.6	10	342802 2727	16,30
						3113	



Continued on next page >>>

10 pcs set, ground profile, external right

ISO P M K S H

Contents per set	HC 5630 art.no.	€
2 x 16 ER 1.0 ISO 2 x 16 ER 1.25 ISO 2 x 16 ER 1.5 ISO 2 x 16 ER 1.75 ISO 2 x 16 ER 2.0 ISO	**342801** 5016	139,–
	3113	

10 pcs set, ground profile, external right with chip breaker B

ISO P M K S H

Contents	HC 5630 art.no.	€
2 x 16 ER B 1.0 ISO 2 x 16 ER B 1.25 ISO 2 x 16 ER B 1.5 ISO 2 x 16 ER B 1.75 ISO 2 x 16 ER B 2.0 ISO	**342802** 5016	139,–
	3113	

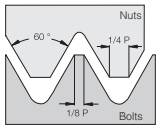


ATORN® Thread cutting inserts, full profile, ISO, EL

i Vc/fz 1040

- **Metric, ISO full profile**
- **Note:** Insert types 22 U and 27 U in pitches of 5.5-8.0 mm are identical to the right-hand version (see full profile ISO, ER)

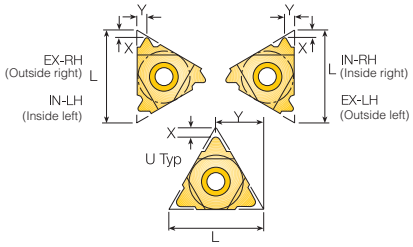




Full profile, ISO external left-hand, ground

ISO P M K N

Designation	L mm	Pitch mm	X mm	Y mm		HC 5615 art.no.	€
11 EL 0.35ISO	11	0.35	0.8	0.4	10	**342810** 0135	17,–
11 EL 0.4ISO	11	0.4	0.7	0.4	10	342810 0235	17,–
11 EL 0.45ISO	11	0.45	0.7	0.4	10	342810 0335	17,–
11 EL 0.5ISO	11	0.5	0.6	0.6	10	342810 0435	17,–
11 EL 0.6ISO	11	0.6	0.6	0.6	10	342810 0535	17,–
11 EL 0.7ISO	11	0.7	0.6	0.6	10	342810 0635	17,–
11 EL 0.75ISO	11	0.75	0.6	0.6	10	342810 0735	17,–
11 EL1.0ISO	11	1.0	0.7	0.7	10	342810 0935	14,85
11 EL 1.25ISO	11	1.25	0.8	0.9	10	342810 1035	14,85
11 EL 1.5ISO	11	1.5	0.8	1.0	10	342810 1135	14,85
11 EL 1.75ISO	11	1.75	0.8	1.1	10	342810 1235	14,85
16 EL 0.35ISO	16	0.35	0.8	0.4	10	342810 1335	17,–
16 EL 0.4ISO	16	0.4	0.7	0.4	10	342810 1435	17,–
16 EL 0.45ISO	16	0.45	0.7	0.4	10	342810 1535	17,–
16 EL 0.5ISO	16	0.5	0.6	0.6	10	342810 1635	17,–
16 EL 0.6ISO	16	0.6	0.6	0.6	10	342810 1735	17,–
16 EL 0.7ISO	16	0.7	0.6	0.6	10	342810 1835	17,–
16 EL 0.75ISO	16	0.75	0.6	0.6	10	342810 1935	17,–
16 EL 0.8ISO	16	0.8	0.6	0.6	10	342810 2035	17,–
16 EL 1.0 ISO	16	1.0	0.7	0.7	10	342810 2135	14,85
16 EL 1.25ISO	16	1.25	0.8	0.9	10	342810 2235	14,85
16 EL 1.5ISO	16	1.5	0.8	1.0	10	342810 2335	14,85
16 EL 1.75ISO	16	1.75	0.9	1.2	10	342810 2435	14,85
16 EL 2.0ISO	16	2.0	1.0	1.3	10	342810 2535	14,85
16 EL 2.5ISO	16	2.5	1.1	1.5	10	342810 2635	16,30
16 EL 3.0ISO	16	3.0	1.2	1.6	10	342810 2735	16,30
16 EL 3.5ISO	16	3.5	1.2	1.7	10	342810 3735	16,30
22 EL 3.5ISO	22	3.5	1.6	2.3	10	342810 2835	22,40
22 EL 4.0ISO	22	4.0	1.6	2.3	10	342810 2935	22,40
22 EL 4.5ISO	22	4.5	1.7	2.4	10	342810 3035	22,40
22 EL 5.0ISO	22	5.0	1.7	2.5	10	342810 3135	22,40
22 EL 5.5ISO	22	5.5	1.7	2.6	10	342810 3835	22,40
22 EL 6.0ISO	22	6.0	1.9	2.7	10	342810 3935	22,40
27 EL 5.5ISO	27	5.5	1.9	2.7	5	342810 3235	37,20
27 EL 6.0ISO	27	6.0	2.0	2.9	5	342810 3335	37,20
						3113	

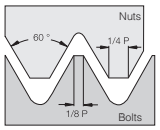


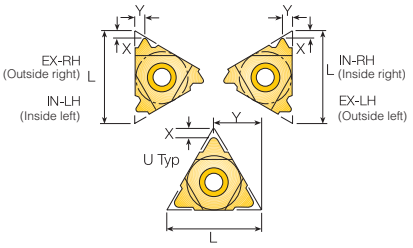
ATORN® Thread cutting inserts, full profile, ISO, IR

1040

- **Metric, full profile, ISO**





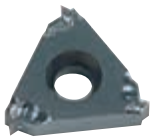


Full profile, ISO internal right-hand, ground

Designation	L mm	Pitch mm	X mm	Y mm	ISO P M K S H HC 5630			ISO P HC 5625			ISO P M K N HC 5615		
						art.no.	€		art.no.	€		art.no.	€
11 IR 0.35ISO	11	0.35	0.8	0.3				10	**343001** 0130	17,–	10	**343001** 0135	17,–
11 IR 0.4ISO	11	0.4	0.8	0.4				10	343001 0230	17,–	10	343001 0235	17,–
11 IR 0.45ISO	11	0.45	0.8	0.4				10	343001 0330	17,–	10	343001 0335	17,–
11 IR 0.5ISO	11	0.5	0.6	0.6	10	**343001** 0427	17,–	10	343001 0430	17,–	10	343001 0435	17,–
11 IR 0.6ISO	11	0.6	0.6	0.6				10	343001 0530	17,–	10	343001 0535	17,–
11 IR 0.7ISO	11	0.7	0.6	0.6				10	343001 0630	17,–	10	343001 0635	17,–
11 IR 0.75ISO	11	0.75	0.6	0.6	10	343001 0727	17,–	10	343001 0730	17,–	10	343001 0735	17,–
11 IR 0.8ISO	11	0.8	0.6	0.6				10	343001 0830	17,–	10	343001 0835	17,–
11 IR 1.0ISO	11	1.0	0.6	0.7	10	343001 0927	14,85	10	343001 0930	14,85	10	343001 0935	14,85
11 IR 1.25ISO	11	1.25	0.8	0.8				10	343001 1030	14,85	10	343001 1035	14,85
11 IR 1.5ISO	11	1.5	0.8	1.0	10	343001 1127	14,85	10	343001 1130	14,85	10	343001 1135	14,85
11 IR 1.75ISO	11	1.75	0.8	1.1				10	343001 1230	14,85	10	343001 1235	14,85
11 IR 2.0ISO	11	2.0	0.8	0.9	10	343001 4127	14,85				10	343001 4135	14,85
16 IR 0.5ISO	16	0.5	0.6	0.6							10	343001 4035	17,–
16 IR 0.6ISO	16	0.6	0.6	0.6				10	343001 1430	17,–	10	343001 1435	17,–
16 IR 0.7ISO	16	0.7	0.6	0.6				10	343001 1530	17,–	10	343001 1535	17,–
16 IR 0.75ISO	16	0.75	0.6	0.6				10	343001 1630	17,–	10	343001 1635	17,–
16 IR 0.8ISO	16	0.8	0.6	0.6				10	343001 1730	17,–	10	343001 1735	17,–
16 IR 1.0ISO	16	1.0	0.6	0.7	10	343001 1827	14,85	10	343001 1830	14,85	10	343001 1835	14,85
16 IR 1.25ISO	16	1.25	0.8	0.9	10	343001 1927	14,85	10	343001 1930	14,85	10	343001 1935	14,85
16 IR 1.5ISO	16	1.5	0.8	1.0	10	343001 2027	14,85	10	343001 2030	14,85	10	343001 2035	14,85
16 IR 1.75ISO	16	1.75	0.9	1.2	10	343001 2127	14,85	10	343001 2130	14,85	10	343001 2135	14,85
16 IR 2.0ISO	16	2.0	1.0	1.3	10	343001 2227	14,85	10	343001 2230	14,85	10	343001 2235	14,85
16 IR 2.5ISO	16	2.5	1.1	1.5	10	343001 2327	16,30	10	343001 2330	16,30	10	343001 2335	16,30
16 IR 3.0ISO	16	3.0	1.1	1.5	10	343001 2427	16,30	10	343001 2430	16,30	10	343001 2435	16,30
16 IR 3.5ISO	16	3.5	1.2	1.7							10	343001 3435	16,30
22 IR 3.5ISO	22	3.5	1.6	2.3	10	343001 2527	22,40	10	343001 2530	22,40	10	343001 2535	22,40
22 IR 4.0ISO	22	4.0	1.6	2.3	10	343001 2627	22,40	10	343001 2630	22,40	10	343001 2635	22,40
22 IR 4.5ISO	22	4.5	1.6	2.4				10	343001 2730	22,40	10	343001 2735	22,40
22 IR 5.0ISO	22	5.0	1.6	2.3				10	343001 2830	22,40	10	343001 2835	22,40
22 IR 5.5ISO	22	5.5	1.6	2.3							10	343001 3535	22,40
22 IR 6.0ISO	22	6.0	1.6	2.4							10	343001 3635	22,40
22U IR/L5.5ISO	22U	5.5	2.4	11.0				10	343001 3130	28,10	10	343001 3135	28,10
22U IR/L6.0ISO	22U	6.0	2.1	11.0				10	343001 3230	28,10	10	343001 3235	28,10
27 IR 5.5ISO	27	5.5	1.6	2.3				5	343001 2930	37,20	5	343001 2935	37,20
27 IR 6.0ISO	27	6.0	1.8	2.5				5	343001 3030	37,20	5	343001 3035	37,20
27U IR/L8.0ISO	27U	8.0	2.4	13.7				5	343001 3330	37,20	5	343001 3335	37,20
						3113			3113			3113	

Full profile, ISO internal right-hand, ground, with chip breaker type B

Designation	L mm	Pitch mm	X mm	Y mm	ISO P M K S H HC 5630		
						art.no.	€
16 IRB 1.0ISO	16	1.0	0.6	0.7	10	**343002** 1827	14,85
16 IRB 1.25ISO	16	1.25	0.8	0.9	10	343002 1927	14,85
16 IRB 1.5ISO	16	1.5	0.8	1.0	10	343002 2027	14,85
16 IRB 1.75ISO	16	1.75	0.9	1.2	10	343002 2127	14,85
16 IRB 2.0ISO	16	2.0	1,0	1,3	10	343002 2227	14,85
16 IRB 2.5ISO	16	2.5	1.1	1.5	10	343002 2327	16,30
16 IRB 3.0ISO	16	3.0	1.1	1.5	10	343002 2427	16,30
						3113	



Continued on next page >>>

10 pcs set, ground profile, internal right

ISO P M K S H

Contents	HC 5630 art.no.	€
2 x 16 IR 1.0 ISO 2 x 16 IR 1.25 ISO 2 x 16 IR 1.5 ISO 2 x 16 IR 1.75 ISO 2 x 16 IR 2.0 ISO	**343001** 5016	139,–
	3113	

10 pcs set, ground profile, internal right with chip breaker B

ISO P M K S H

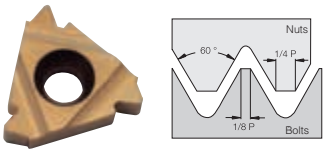
Contents	HC 5630 art.no.	€
2 x 16 IR B 1.0 ISO 2 x 16 IR B 1.25 ISO 2 x 16 IR B 1.5 ISO 2 x 16 IR B 1.75 ISO 2 x 16 IR B 2.0 ISO	**343002** 5016	139,–
	3113	



ATORN® Thread cutting inserts, full profile, ISO, IL

Vc/fz 1040

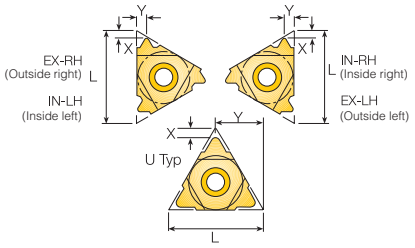
- **Metric, ISO full profile**
- **Note:** Insert types 22 U and 27 U in pitches of 5.5-8.0 mm are identical to the right-hand version (see full profile ISO, IR)



Full profile, ISO internal left-hand, ground

ISO P M K N

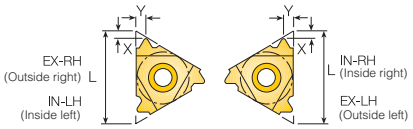
Designation	L mm	Pitch mm	X mm	Y mm		HC 5615 art.no.	€
11 IL 0.35ISO	11	0.35	0.8	0.3	10	**343010** 0135	17,–
11 IL 0.4ISO	11	0.4	0.8	0.4	10	343010 0235	17,–
11 IL 0.5ISO	11	0.5	0.6	0.6	10	343010 0435	17,–
11 IL 0.7ISO	11	0.7	0.6	0.6	10	343010 0635	17,–
11 IL 0.75ISO	11	0.75	0.6	0.6	10	343010 0735	17,–
11 IL 0.8ISO	11	0.8	0.6	0.6	10	343010 0835	17,–
11 IL 1.0ISO	11	1.0	0.6	0.7	10	343010 0935	14,85
11 IL 1.25ISO	11	1.25	0.8	0.8	10	343010 1035	14,85
11 IL 1.5ISO	11	1.5	0.8	1.0	10	343010 1135	14,85
11 IL 1.75ISO	11	1.75	0.8	1.1	10	343010 1235	14,85
11 IL 2.0ISO	11	2.0	0.8	0.9	10	343010 4135	14,85
16 IL 0.35ISO	16	0.35	0.8	0.3	10	343010 1335	17,–
16 IL 0.6ISO	16	0.6	0.6	0.6	10	343010 1435	17,–
16 IL 0.75 ISO	16	0.75	0.6	0.6	10	343010 1635	17,–
16 IL 0.8ISO	16	0.8	0.6	0.6	10	343010 1735	17,–
16 IL 1.0 ISO	16	1.0	0.6	0.7	10	343010 1835	14,85
16 IL 1.25ISO	16	1.25	0.8	0.9	10	343010 1935	14,85
16 IL 1.5ISO	16	1.5	0.8	1.0	10	343010 2035	14,85
16 IL 1.75ISO	16	1.75	0.9	1.2	10	343010 2135	14,85
16 IL 2.0ISO	16	2.0	1.0	1.3	10	343010 2235	14,85
16 IL 2.5ISO	16	2.5	1.1	1.5	10	343010 2335	16,30
16 IL 3.0ISO	16	3.0	1.1	1.5	10	343010 2435	16,30
16 IL 3.5ISO	16	3.5	1.2	1.7	10	343010 3435	16,30
22 IL 3.5ISO	22	3.5	1.6	2.3	10	343010 2535	22,40
22 IL 4.0ISO	22	4.0	1.6	2.3	10	343010 2635	22,40
22 IL 4.5ISO	22	4.5	1.6	2.4	10	343010 2735	22,40
22 IL 5.0ISO	22	5.0	1.6	2.3	10	343010 2835	22,40
22 IL 5.5ISO	22	5.5	1.6	2.3	10	343010 3535	22,40
22 IL 6.0ISO	22	6.0	1.6	2.4	10	343010 3635	22,40
27 IL 5.5ISO	27	5.5	1.6	2.3	5	343010 2935	37,20
27 IL 6.0ISO	27	6.0	1.8	2.5	5	343010 3035	37,20
						3113	



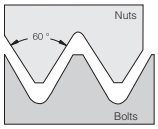
ATORN® High-performance thread cutting inserts

1040

- **New high-performance coating for significantly higher cutting speeds**
- Full profile ISO ER
- Full profile IR available on request







Full profile, 60° external right-hand, ground

ISO P M K N S H

Designation	L mm	Pitch mm	X mm	Y mm		HC 5620 art.no.	€
16 ER 1.0 ISO	16	1.0	0.7	0.7	10	**342164** 2145	16,30
16 ER 1.25 ISO	16	1.25	0.8	0.9	10	342164 2245	16,30
16 ER 1.5 ISO	16	1.5	0.8	1.0	10	342164 2345	16,30
16 ER 1.75 ISO	16	1.75	0.9	1.2	10	342164 2445	16,30
16 ER 2.0 ISO	16	2.0	1.0	1.3	10	342164 2545	16,30
16 ER 3.0 ISO	16	3.0	1.2	1.6	10	342164 2745	17,90

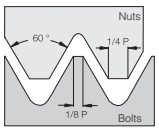
3113

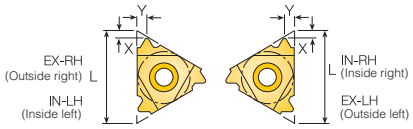
ATORN® Thread cutting inserts, full profile, UN

1040

- **Full profile, UN**
- other insert sizes and pitches available on request, along with left-hand version







Full profile, UN external right-hand, ground

ISO P M K N

Designation	L mm	Pitch TPI	X mm	Y mm		HC 5615 art.no.	€
16 ER 20UN	16	20	0.8	0.9	10	**343201** 2735	18,10
16 ER 18UN	16	18	0.8	1.0	10	343201 2835	18,10
16 ER 16UN	16	16	0.9	1.1	10	343201 2935	18,10
16 ER 12UN	16	12	1.1	1.4	10	343201 3235	18,10

3113

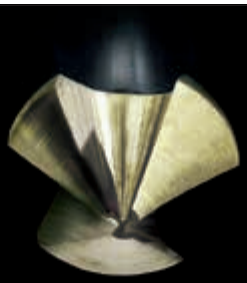
Full profile, UN internal right-hand, ground

ISO P M K N

Designation	L mm	Pitch TPI	X mm	Y mm		HC 5615 art.no.	€
16 IR 14UN	16	14	0.9	1.2	10	**343401** 3035	18,10
16 IR 12UN	16	12	1.1	1.4	10	343401 3235	18,10

3113

An end to the rattle …



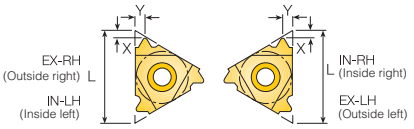
… caused by uneven divisions

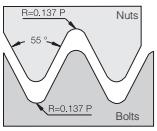
ATORN®
High quality for great performance

ATORN® Thread cutting inserts, full profile, BSW

Vc/fz 1040

- **Full profile, BSW**
- other insert sizes and pitches available on request, along with left-hand version







Full profile, BSW external right-hand, ground

Designation	L mm	Pitch TPI	X mm	Y mm	ISO P M K S H HC 5630			ISO P HC 5625			ISO P M K N HC 5615		
						art.no.	€		art.no.	€		art.no.	€
16 ER 28W	16	28	0.6	0.7				10	**344401** 2430	18,10	10	**344401** 2435	18,10
16 ER 19W	16	19	0.8	1.0	10	**344401** 2927	18,10	10	344401 2930	18,10	10	344401 2935	18,10
16 ER 14W	16	14	1.0	1.2	10	344401 3227	18,10	10	344401 3230	18,10	10	344401 3235	18,10
16 ER 11W	16	11	1.1	1.5	10	344401 3427	18,10	10	344401 3430	18,10	10	344401 3435	18,10
						3113			3113			3113	

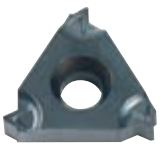


Full profile, BSW internal right-hand, ground

Designation	L mm	Pitch TPI	X mm	Y mm	ISO P M K S H HC 5630			ISO P HC 5625			ISO P M K N HC 5615		
						art.no.	€		art.no.	€		art.no.	€
11 IR 19W	11	19	0.8	1.0	10	**344601** 1327	18,10	10	**344601** 1330	18,10	10	**344601** 1335	18,10
11 IR 14W	11	14	0.9	1.1	10	344601 1627	18,10	10	344601 1630	18,10	10	344601 1635	18,10
16 IR 19W	16	19	0.8	1.0	10	344601 2927	18,10	10	344601 2930	18,10	10	344601 2935	18,10
16 IR 14W	16	14	1.0	1.2	10	344601 3227	18,10	10	344601 3230	18,10	10	344601 3235	18,10
16 IR 11W	16	11	1.1	1.5	10	344601 3427	18,10	10	344601 3430	18,10	10	344601 3435	18,10
						3113			3113			3113	

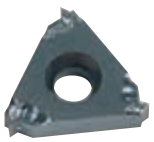
Full profile, BSW external right-hand, ground, with chip breaker type B

Designation	L mm	Pitch TPI	X mm	Y mm	ISO P M K S H HC 5630		
						art.no.	€
16 ERB 19W	16	19	0.8	1.0	10	**344402** 2927	18,10
16 ERB 14W	16	14	1.0	1.2	10	344402 3227	18,10
16 ERB 11W	16	11	1.1	1.5	10	344402 3427	18,10
						3113	



Full profile, BSW internal right-hand, ground, with chip breaker type B

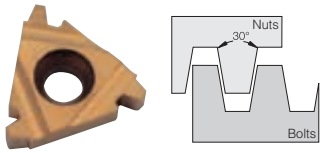
Designation	L mm	Pitch TPI	X mm	Y mm	ISO P M K S H HC 5630		
						art.no.	€
16 IRB 19W	16	19	0.8	1.0	10	**344602** 2927	18,10
16 IRB 14W	16	14	1.0	1.2	10	344602 3227	18,10
16 IRB 11W	16	11	1.1	1.5	10	344602 3427	18,10
						3113	



ATORN® Thread cutting inserts, full profile, trapezoidal

1040

- **Full profile, trapezoidal, DIN 103**
- other insert sizes and pitches available on request, along with left-hand version

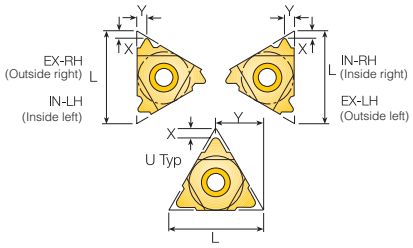


Full profile, trapezoidal external right-hand, ground

ISO P M K N

Designation	L mm	Pitch mm	X mm	Y mm		HC 5615 art.no.	€
16 ER 3TR	16	3	1.3	1.5	10	**343601** 0335	21,70
22 ER 4TR	22	4	1.8	1.9	10	343601 0435	30,10
22 ER 5TR	22	5	2.0	2.4	5	343601 0535	30,10
22 ER 6TR	22	6	2.0	2.4	5	343601 0935	30,10
22 UER/L 6TR	22U	6	2.0	11.0	5	343601 0635	30,10
22 UER/L 8TR	22U	8	2.5	11.0	5	343601 1035	30,10
27 UER/L 8TR	27U	8	2.5	13.7	5	343601 0835	44,80

3113



Full profile, trapezoidal internal right-hand, ground

ISO P M K N

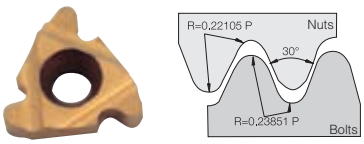
Designation	L mm	Pitch mm	X mm	Y mm		HC 5615 art.no.	€
16 IR 2TR	16	2	1.0	1.3	5	**343801** 0235	21,70
16 IR 3TR	16	3	1.3	1.5	5	343801 0335	21,70
22 IR 4TR	22	4	1.8	1.9	5	343801 0435	30,10
22 IR 5TR	22	5	2.0	2.4	5	343801 0535	30,10
22 IR 6TR	22	6	2.0	2.4	5	343801 1035	30,10
22 UIR/L 6TR	22U	6	2.0	11.0	5	343801 0635	30,10
22 UIR/L 7TR	22U	7	2.3	11.0	5	343801 0735	30,10
22 UIR/L 8TR	22U	8	2.5	11.0	5	343801 1135	30,10

3113

ATORN® Thread cutting inserts, full profile, round thread

1040

- **Full profile, round thread, DIN 405**
- other insert sizes and pitches available on request, along with left-hand version

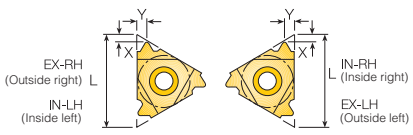


Full profile, external right-hand, ground

ISO P M K N

Designation	L mm	Pitch TPI	X mm	Y mm		HC 5615 art.no.	€
16 ER 8 RD	16	8	1.4	1.3	10	**345601** 0235	21,70
16 ER 6 RD	16	6	1.5	1.7	10	345601 0335	21,70

3113



Full profile, internal right-hand, ground

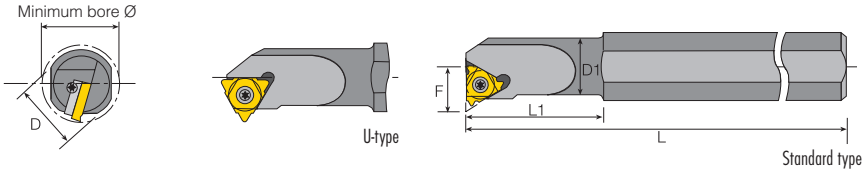
Designation	L mm	Pitch TPI	X mm	Y mm	ISO P K	HC 5625 art.no.	€	ISO P M K N	HC 5615 art.no.	€
16 IR 8 RD	16	8	1.4	1.4	10	**345801** 0230	21,70	10	**345801** 0235	21,70
16 IR 6 RD	16	6	1.4	1.5	10	345801 0330	21,70	10	345801 0335	21,70
22 IR 6 RD	22	6	1.5	1.7	10	345801 0430	30,10	10	345801 0435	30,10
22 IR 4 RD	22	4	2.2	2.3	10	345801 0530	30,10	10	345801 0535	30,10
						3113			3113	

ATORN® MINI boring bar

1040

- **Female thread**
- **Note:** The boring bars are used without spacers.
- Especially suited to preventing vibration in applications with long projections and small bore diameters.





Boring bars

Designation	Cutting edge length mm	D mm	D1 mm	Min. hole Ø mm	L mm	L1 mm	F mm			Right-hand art.no.	€
SIR 0005 H06	6	12	5.1	6.0	100	12	4.3	A1	B1	**340901** 0001	97,–
SIR 0007 K08	8	16	6.6	7.8	125	18	5.3	A2	B2	340901 0002	97,–
SIR 0008 K08U	8U	16	7.3	9.0	125	21	6.6	A2	B2	340901 0003	110,–

3112

Solid carbide boring bars with internal coolant supply

Designation	Cutting edge length mm	D mm	D1 mm	Min. hole Ø mm	L mm	L1 mm	F mm			Right-hand art.no.	€
SIR 0005 H06CB	6	6	5.1	6.0	100	26	4.3	A1	B1	**340901** 0011	220,–
SIR 0007 K08CB	8	8	6.6	7.8	125	31	5.3	A2	B2	340901 0012	250,–
SIR 0008 K08UCB	8U	8	7.3	9.0	125	35	6.6	A2	B2	340901 0013	295,–

3112

Spare parts

	Screw art.no.	€
A1	341401 0051	2,06
A2	341401 0061	2,06

3116

	TORX art.no.	€
B1	703053 0060	1,79
B2	703053 0080	1,79

7114



... solid carbide indexable insert drill.

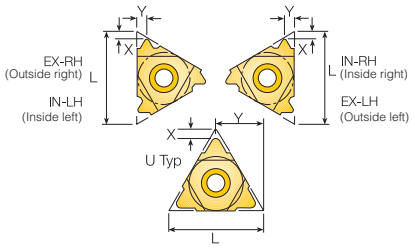
ATORN®
Performance demands quality

ATORN® Thread cutting inserts MINI

1040

- **Female thread for bores from 6 mm in diameter**
- Amazing combination of Mini thread cutting inserts and coatings
- Specially developed for low speeds
- Successfully replace conventional taps
- Left-hand version available on request





Partial profile, 60° and 55° internal right-hand, ground

ISO P M K S

Designation	L mm	Pitch mm	Pitch TPI	X mm	Y mm		HC 5640 art.no.	€
06 IR A60	6	0.5 - 1.25		0.6	0.6	10	**347001** 0125	16,70
08 IR A60	8	0.5 - 1.5		0,6	0.7	10	347001 0225	16,70
08 U IR/L U60	8U	1.75 - 2.0		0.8	4.0	10	347001 0325	20,–
06 IR A55	6		48-20	0.5	0.6	10	347001 1125	16,70
08 IR A55	8		48-16	0.6	0.7	10	347001 1225	16,70
08 U IR/L U55	8U		14-11	0.9	4.0	10	347001 1325	20,–

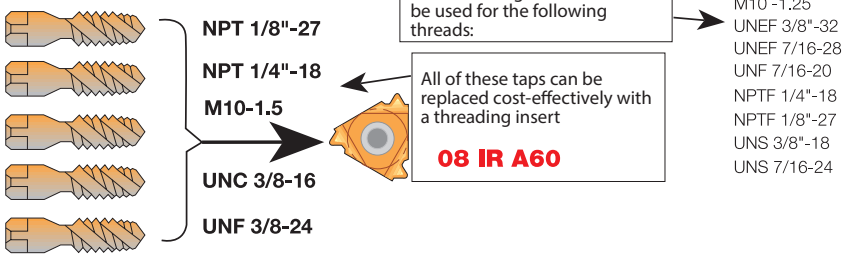
3113

Full profile, ISO metric internal right-hand, ground

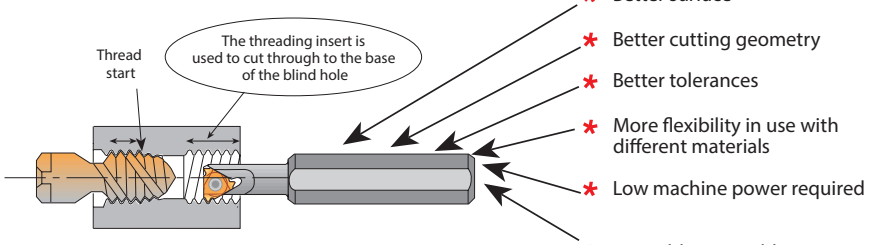
ISO P M K S

Designation	L mm	Pitch mm	X mm	Y mm		HC 5640 art.no.	€
06 IR 0.5ISO	6	0.5	0.9	0.5	10	**347201** 0125	16,70
06 IR 0.75ISO	6	0.75	0.8	0.5	10	347201 0225	16,70
06 IR 1.0ISO	6	1.0	0.7	0.6	10	347201 0325	16,70
06 IR 1.25ISO	6	1.25	0.6	0.6	10	347201 0425	16,70
08 IR 0.5ISO	8	0.5	0.6	0.5	10	347201 0525	16,70
08 IR 0.75ISO	8	0.75	0.6	0.5	10	347201 0625	16,70
08 IR 1.0ISO	8	1.0	0.6	0.6	10	347201 0725	16,70
08 IR 1.25ISO	8	1.25	0.6	0.7	10	347201 0825	16,70
08 IR 1.5ISO	8	1.5	0.6	0.7	10	347201 0925	16,70
08 IR 1.75ISO	8	1.75	0.6	0.8	10	347201 1025	16,70
08 U IR/L 2.0ISO	8U	2.0	0.9	4.0	10	347201 1125	20,–

3113



Advantages:



- Better surface
- Better cutting geometry
- Better tolerances
- More flexibility in use with different materials
- Low machine power required
- No welding possible



ATORN® Thread cutting set

1040

- Common thread cutting inserts plus tool holder or boring bar
- For external/female threads



External

Contents	art.no.	€
Threading insert quality HC 5625 (1 of each): 16ER A60 16ER G60 16ER 0.75 ISO 16ER 1.0 ISO 16ER 1.25 ISO 16ER 1.5 ISO 16ER 1.75 ISO 16ER 2.0 ISO 16ER 2.5 ISO 16ER 3.0 ISO 1 clamp mounting SER 2020 K16 1 TORX wrench 1 screw	**348001** 0130	227,–
	3112	

Internal

Contents	art.no.	€
Threading insert quality HC 5625 (1 of each): 16IR A60 16IR G60 16IR 0.75 ISO 16IR 1.0 ISO 16IR 1.25 ISO 16IR 1.5 ISO 16IR 1.75 ISO 16IR 2.0 ISO 16IR 2.5 ISO 16IR 3.0 ISO 1 boring bar SIR 0020 P 16 1 TORX wrench 1 screw	**348501** 0130	248,–
	3112	

ATORN® Spacer set

- Spacers with different pitch angles
- **Type AE** for use in external RH/internal LH holders
- **Type AI** for use in external LH/internal RH holders



Contents	art.no.	€
AE16: +4.5 / +3.5 / +2.5 / +0.5 / -1.5 AI16: +4.5 / +3.5 / +2.5 /+0.5 / -1.5	**341430** 1600	104,–
AE22: +4.5 / +3.5 / +2.5 / +0.5 / -1.5 AI22: +4.5 / +3.5 / +2.5 /+0.5 / -1.5	341430 2200	170,–
AE22U: +4.5 / +3.5 / +2.5 / +0.5 / -1.5 AI22U: +4.5 / +3.5 / +2.5 /+0.5 / -1.5	341430 2250	170,–
AE27: +4.5 / +2.5 / -1.5 AI27: +4.5 / +2.5 / -1.5	341430 2700	170,–
AE27U: +4.5 / +2.5 / -1.5 AI27U: +4.5 / +2.5 / -1.5	341430 2750	170,–
	3116	

ATORN® Grooving inserts

Vc/fz 1040

- **For use on thread cutting holders**
- Low tool costs, since existing holders can be used
- One tool holder for grooving and thread cutting
- Three cutting edges, precision-ground
- HC 5640 coated
- **Supplied without spacer (spacer set), please order separately!**
- **Boring bars with insert size 16 without spacer cannot be used.**



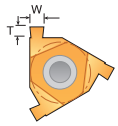
Inserts suitable for holder types SER..16 and SIL..16

ISO P M K N

Designation	W±0.02 mm	T mm	suitable spacer		HC 5640 art.no.	€
16 ER/IL 1.00	1.00	1.4	AE 16-0	5	**349050** 1025	23,60
16 ER/IL 1.20	1.20	1.6	AE 16-0	5	349050 1225	23,60
16 ER/IL 1.40	1.40	1.8	AE 16-0	5	349050 1425	23,60
16 ER/IL 1.70	1.70	2.0	AE 16-0	5	349050 1725	23,60
16 ER/IL 1.95	1.95	2.0	AE 16-0	5	349050 1925	23,60
16 ER/IL 2.25	2.25	2.25	AE 16-0	5	349050 2225	23,60

3113





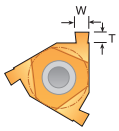
Inserts suitable for holder types SIR..16 and SEL..16

ISO P M K N

Designation	W±0.02 mm	T mm	suitable spacer		HC 5640 art.no.	€
16 IR/EL 1.00	1.00	1.4	Al 16-0	5	**349055** 1025	23,60
16 IR/EL 1.20	1.20	1.6	Al 16-0	5	349055 1225	23,60
16 IR/EL 1.40	1.40	1.8	Al 16-0	5	349055 1425	23,60
16 IR/EL 1.70	1.70	2.0	Al 16-0	5	349055 1725	23,60
16 IR/EL 1.95	1.95	2.0	Al 16-0	5	349055 1925	23,60
16 IR/EL 2.25	2.25	2.25	Al 16-0	5	349055 2225	23,60

3113





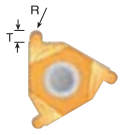
Radius inserts suitable for holder types SER..16 and SIL..16

ISO P M K N

Designation	R±0.04 mm	T mm	suitable spacer		HC 5640 art.no.	€
16 ER/IL R 0.5	0.5	1.4	AE 16-0	5	**349052** 0525	23,60
16 ER/IL R 0.6	0.6	1.6	AE 16-0	5	349052 0625	23,60
16 ER/IL R 0.9	0.9	2.0	AE 16-0	5	349052 0925	23,60
16 ER/IL R 1.0	1.0	2.0	AE 16-0	5	349052 1025	23,60
16 ER/IL R 1.1	1.1	2.15	AE 16-0	5	349052 1125	23,60
16 ER/IL R 1.2	1.2	2.25	AE 16-0	5	349052 1225	23,60

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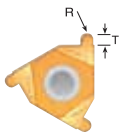
Radius inserts suitable for holder types SIR..16 and SEL..16

ISO P M K N

Designation	R±0.04 mm	T mm	suitable spacer		HC 5640 art.no.	€
16IR/EL R 0.5	0.5	1.4	Al 16-0	5	**349057** 0525	23,60
16IR/EL R 0.6	0.6	1.6	Al 16-0	5	349057 0625	23,60
16IR/EL R 0.9	0.9	2.0	Al 16-0	5	349057 0925	23,60
16IR/EL R 1.0	1.0	2.0	Al 16-0	5	349057 1025	23,60
16IR/EL R 1.1	1.1	2.15	Al 16-0	5	349057 1125	23,60
16IR/EL R 1.2	1.2	2.25	Al 16-0	5	349057 1225	23,60

3113





Continued on next page >>>

Insert sets suitable for holder types SER..16 and SIL..16

ISO P M K N

Contents	W mm	T mm	HC 5640 art.no.	€
16 ER/IL 1.0	1.0	1.4		
16 ER/IL 1.20	1.20	1.6		
16 ER/IL 1.40	1.40	1.8	**349051** 1601	126,–
16 ER/IL 1.70	1.70	2.0		
16 ER/IL 1.95	1.95	2.0		
16 ER/IL 2.25	2.25	2.25		
spacer AE 16-0				

3113





Insert sets suitable for holder types SIR..16 and SEL..16

ISO P M K N

Contents	W mm	T mm	HC 5640 art.no.	€
16 IR/EL 1.0	1.0	1.4		
16 IR/EL 1.20	1.20	1.6		
16 IR/EL 1.40	1.40	1.8	**349056** 1601	126,–
16 IR/EL 1.70	1.70	2.0		
16 IR/EL 1.95	1.95	2.0		
16 IR/EL 2.25	2.25	2.25		
spacer AI 16-0				

3113



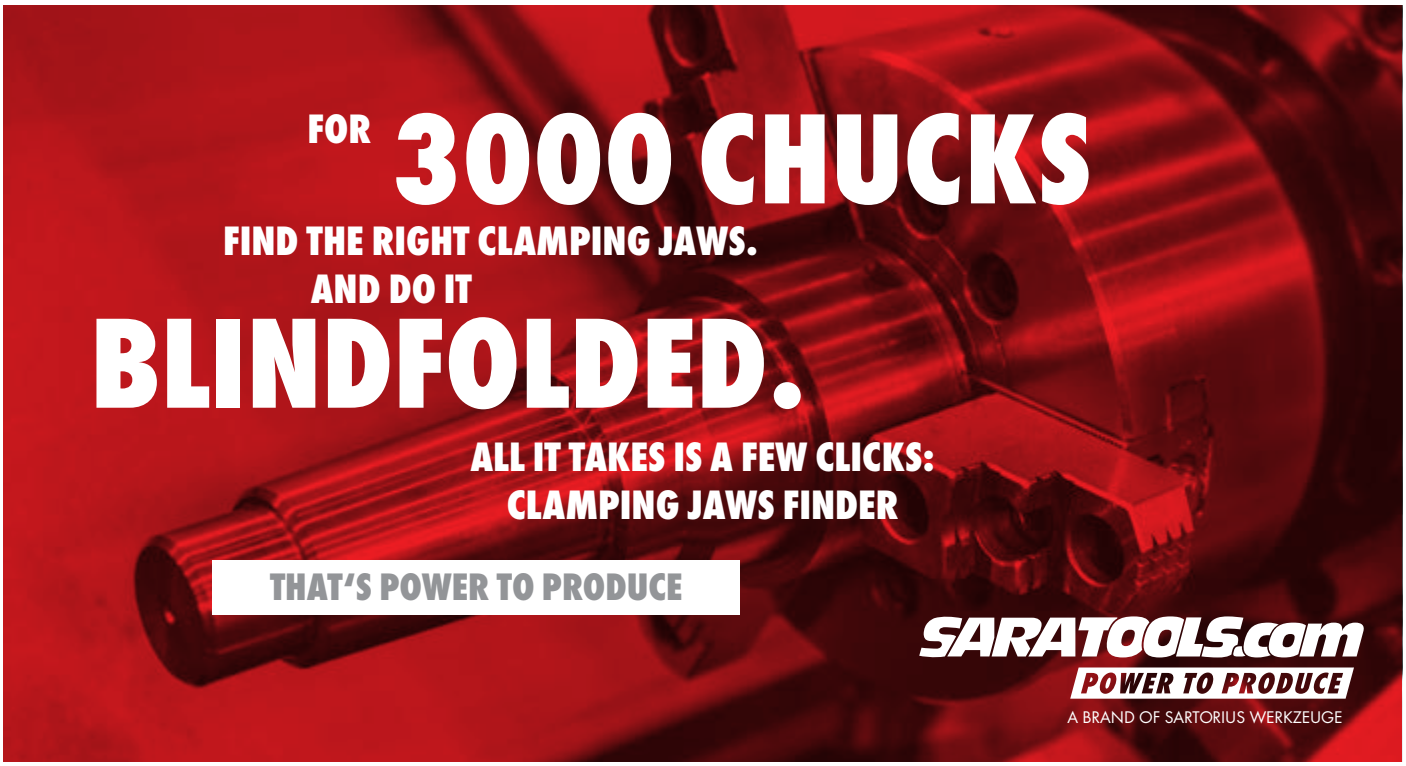
Spacers for grooving inserts

Designation	art.no.	€
AE 16-0	**349060** 1610	9,95
AI 16-0	349060 1620	9,95

3113



349060 1610 349060 1620



Model descriptions GROOVE

INFO

The new range captivates with 4 models for a wide range of uses and applications.

The **APU40G** is an extremely reliable all-rounder for general applications using steel, stainless steel and cast iron. The high edge stability of the substrate is optimally protected by the customised TiAlN-PVD coating. Protection from the temperature influences that inevitably occur during machining.

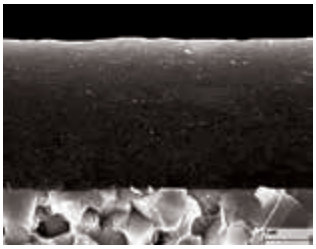
The tougher **APM45G** has the strongest substrate in the range and was specially developed for use with austenitic and stainless steels in unstable conditions. The PVD-TiATaN coating guarantees a high degree of machining reliability with excellent toughness even with materials that are difficult to machine, which is reflected in its process reliability.

The **ACP20G** rounds off the range, for maximum cutting speeds and excellent protection against diffusion wear. The TiCN-Al^2O^3-CVD coating protects this medium-tough variant from the excessive temperature influences that occur during recess turning in particular.

The uncoated **AWN16G** is a special substrate for machining non-ferrous materials and aluminium.

APU40G (universal model)

- HC-P30
  HC-M25
  HC-K30
  HC-S30



Toughness

1	2	3	4	5	6	7	8	9	10

Wear resistance

1	2	3	4	5	6	7	8	9	10

Composition
Co 9%,
Composite carbides 2%,
WC balance

Grain size
0.7 – 1 µm

Hardness
HV_{30} 1590

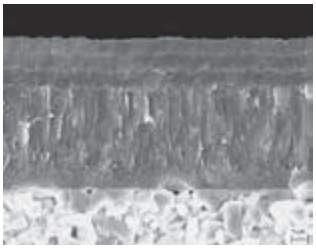
Coating
PVD TiAlN

Recommendation for use
Excellent and universal multi-grade model for use in steel, stainless steel, cast iron and heat-resistant chrome nickel alloys (killed)

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min
P	Machining steel	Up to 700	9 SMn 28	1.0715	80 - 240
	Unalloyed structural steel	Up to 700	St-52	1.0052	80 - 200
	Structural steel	700 - 950	Ck45	1.1191	50 - 180
	Tempering steel	500 - 950	42 CrMo4	1.7225	80 - 220
	Cast steel	Up to 950	GS 40	1.0416	60 - 150
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	80 - 210
	Tempering steel	950 -1300	43CrMo4	1.3563	50 - 120
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	50 - 120
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	50 - 120
M	Stainless steel, ferritic	500 - 950	X10 Cr13	1.4006	50 - 180
	Stainless steel, martens. tempered	Up to 330 HB	X19 CrNi17-2	1.4057	50 - 80
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	50 - 200
	Duplex	700 - 950	X2 CrNiMoN 22-5-3	1.4462	50 - 100
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	100 - 200
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	80 - 150
	Ductile iron	Up to 280 HB	GGG 60	0.7060	100 - 180
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	80 - 160

ACP20G

- HC-P35
  HC-M30
  HC-K35



Toughness

1	2	3	4	5	6	7	8	9	10

Wear resistance

1	2	3	4	5	6	7	8	9	10

Composition
Co 10.5%,
composite carbides 2%,
WC balance

Grain size
1 µm

Hardness
HV_{30} 1400

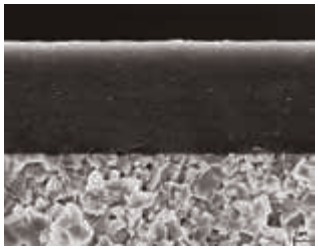
Coating
CVD TiCN-AL_2O_3

Recommendation for use
reliable model for machining steel and cast iron

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min
P	Machining steel	Up to 700	9 SMn 28	1.0715	80 - 240
	Unalloyed structural steel	Up to 700	St-52	1.0052	80 - 200
	Structural steel	700 - 950	Ck45	1.1191	50 - 180
	Tempering steel	500 - 950	42 CrMo4	1.7225	80 - 220
	Cast steel	Up to 950	GS 40	1.0416	60 - 150
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	80 - 210
	Tempering steel	950 -1300	43CrMo4	1.3563	50 - 120
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	50 - 120
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343	50 - 120
M	Stainless steel, ferritic	500 - 950	X10 Cr13	1.4006	50 - 180
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	100 - 200
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678	80 - 150
	Ductile iron	Up to 280 HB	GGG 60	0.7060	100 - 180
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155	80 - 160

APM45G

- HC-P45
  HC-M40
  HC-S40



Toughness

1	2	3	4	5	6	7	8	9	10

Wear resistance

1	2	3	4	5	6	7	8	9	10

Composition
Co 12.5%,
Composite carbides 2%,
WC balance

Grain size
1 - 1.5 µm

Hardness
HV_{30} 1380

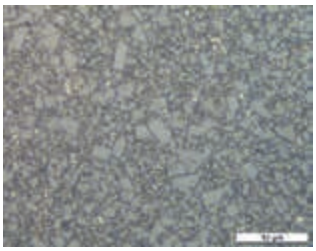
Coating
PVD TiAlTaN

Recommendation for use
first choice for austenitic steels and stainless steel materials under unstable conditions (interrupted cutting)

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min
P	Gen. steels, interrupted cutt.	Up to 700			40 - 120
M	Stainless steel, ferritic	500 - 950	X10 Cr13	1.4006	100 - 180
	Stainless steel, martens. tempered	Up to 330 HB	X19 CrNi17-2	1.4057	60 - 90
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	80 - 150
	Duplex	700 - 950	X2 CrNiMoN 22-5-3	1.4462	70 - 110
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	50 - 120
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	15 - 45
	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	20 - 60

AWN16G

- HW-N15
  HW-K15



Toughness

1	2	3	4	5	6	7	8	9	10

Wear resistance

1	2	3	4	5	6	7	8	9	10

Composition
Co 6%,
WC balance

Grain size
1 µm

Hardness
HV_{30} 1630

Coating
Uncoated

Recommendation for use
first choice for aluminium and non-ferrous metals

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min
N	Al. alloys, long-chipping	Up to 500	AlMg 3	3.3535	400 - 1,500
	Al. alloys, short-chipping	Up to 500	G-AlSi 12	3.2581	200 - 2,000
	Copper alloy (bronze), long-chipping	Up to 1200	CuSn4	2.1016	200 - 600
	Copper alloy (bronze), short-chipping	Up to 850	CuNi12Zn24	2.0730	200 - 600
	Copper alloy (brass), long-chipping	Up to 600	Cu ZN 20	2.0250	200 - 600
	Copper alloy (brass), short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	200 - 600
	Thermoplastic		PVC		200 - 5,000
	Thermoset		Melamine		200 - 5,000
	Fibre-reinforced plastics		CFRP, GFRP		50 - 200

Overview of chip breakers *GROOVE*

INFO

The new **AD** (ATORN Doppelt) chip breakers are designed with dual cutting edges and are suitable for a depth of 24 mm.
The name **AE** (ATORN Einfach) refers to a single cutting edge design and is suitable for punching depths of more than 24 mm.

The **chip breaker M** is suitable for universal use and for all materials. Thanks to the negative edge rounding, it is also suitable for use with high-alloy materials.

The **chip breaker F** was developed to guarantee very soft cutting. This is particularly important for thin-walled materials or pipes. Despite this positive cutting property, it has very strong edges and offers excellent chip control even at low feed rates. Another positive effect of this chip breaker is the low tendency towards built-up edges, which can offer significant advantages particularly for stainless steel materials.

In addition to the chip breaker F the **chip breaker ET** is a further alternative and a problem-solver in steel machining. Thanks to its high processes reliability, it is the first choice even for the toughest materials like titanium and duplex materials in conjunction with the SP45MG.
The **chip breaker TR** was developed for recess turning, grooving and parting-off. Optimum chip control is guaranteed, even with low infeed.

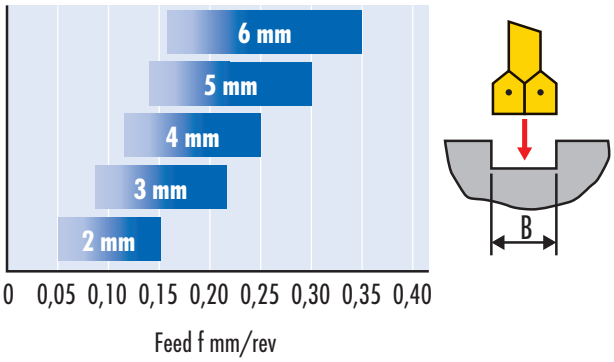
The rotating **chip breaker R** is designed for radius indexable cutting inserts and allows chip control with various materials and also stabilises cutting.

Completing the range is the **chip breaker LC**, which was developed for aluminium.

Chip breaker M-medium, universal

- Recessing insert with slightly negative edge rounding
- Also suitable for high-strength steel
- Suitable for almost all areas of application
- Main application area steel and cast iron

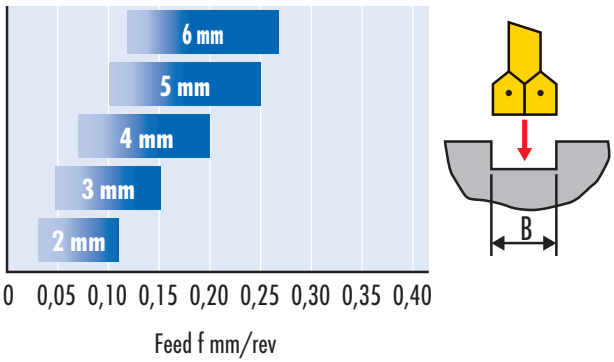




Chip breaker F-fine

- Excellent, very soft cutting geometry with very low cutting forces
- For materials with low minimum tensile strength
- Ideal for thin-walled components
- High cutting edge stability with ideal chip control even at low feed rates
- Low tendency to form built-up edges

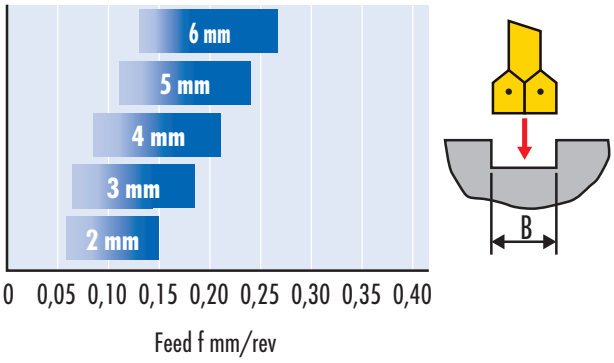




Chip breaker ET-extra

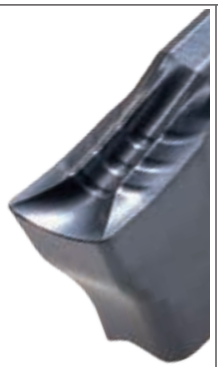
- Specially for stainless materials
- "Problem-solver" for materials that are difficult to machine such as titanium or duplex
- Extremely soft cutting

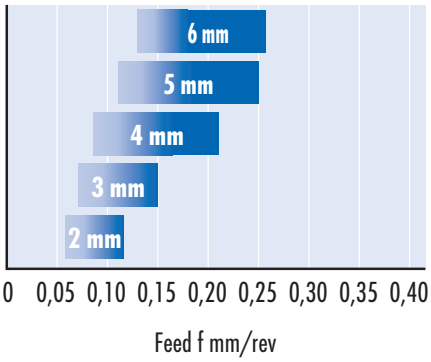


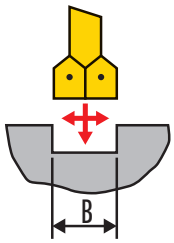


Chip breaker TR-turning

- Special chip breaker for parting-off and recess turning
- Outstanding chip control for longitudinal turning
- For all steel and stainless materials



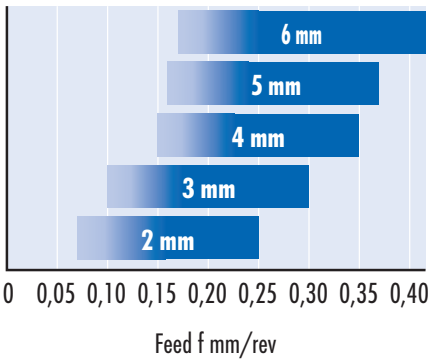


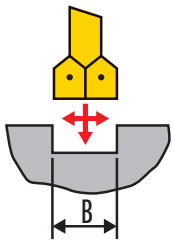


Chip breaker R-round

- Chip breaker for recess turning and ramping
- Rotating chip breaker for optimal chip control
- For all steel and stainless materials





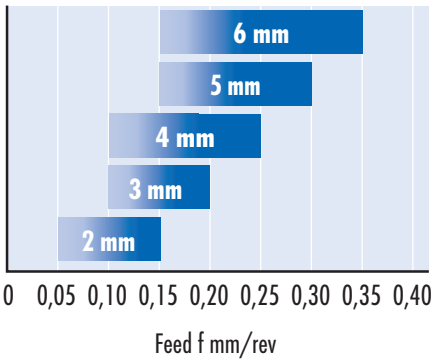


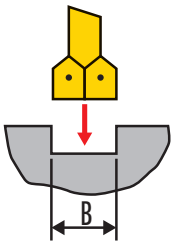
M, MU and MN chip breakers are used in the **ASS** (ATORN Single Small) system. These refer to medium chip breakers, universal medium chip breakers, and chip breakers for medium non-ferrous metals.

Chip breaker M-medium

- Negative protective chamfer
- First choice for steel materials with high tensile strength
- Suitable for steel and grey cast iron
- Suitable for grooving and parting-off, as well as longitudinal turning



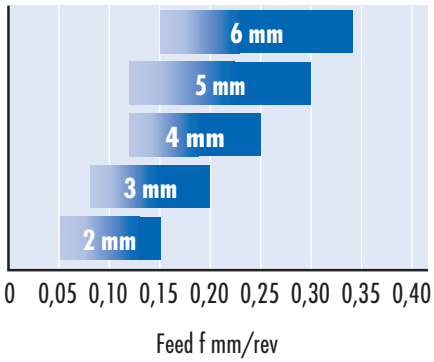


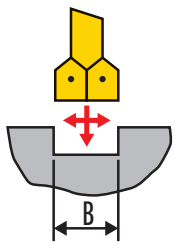


Chip breaker MU medium-universal

- Recessing and recess turning
- Outstanding chip control
- Suitable for steel and cast iron



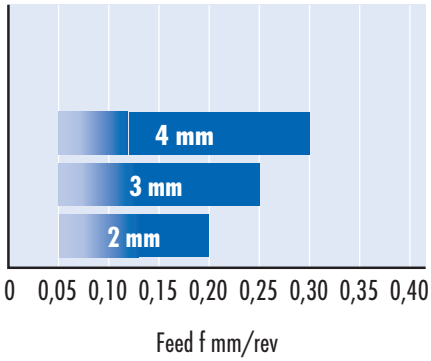


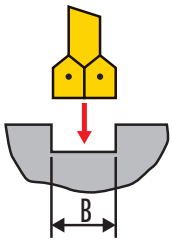


Chip breaker MN, for aluminium machining

- Highly-positive chip breaker with sharp cutting edge finish
- Highly-polished chip breaker surface
- Maximum reduction of edge build-up







ATORN® Range overview GROOVE

INFO

Double-sided recessing inserts AD neutral	from Page 954	Clamp mounting ASS System	Page 972
Double-sided recessing inserts AD 6° right-hand	from Page 957	Recessing blades AD / AE System	Page 965
Double-sided recessing inserts AD 6° left-hand	from Page 959	Recessing blades AD / AE System with internal cooling	Page 965
Double-sided recessing inserts AD radius	Page 956	Clamp mounting AD / AE System	Page 966
Double-sided recessing inserts ADA axial	Page 957	Clamp mounting AD / AE System with internal cooling	Page 966
Single-sided recessing AE neutral	from Page 960	Clamp mounting axial ADA System	Page 967
Single-sided recessing AE 6° right-hand	Page 962	Clamp mounting Modular 0° / 45° / 90° AD / AE System	Page 967
Single-sided recessing SE 6° left-hand	Page 963	Cutter holder Modular radial AD / AE System	Page 968
Recessing inserts ASS	Page 969	Cutter holder Modular axial ADA System	Page 968
Recessing blades ASS System	Page 971	Recessing blade holders	Page 972
Recessing blades ASS System with internal cooling	Page 971		

ATORN® Recessing inserts AD neutral GROOVE

- **The feed rates must be adjusted to the respective cutting edge width**
- Cutting edge accuracy W ± 0.02 mm
- AD = double-edged cutting inAErt **max. 24 mm punching depth**
- AE = single-edged cutting inAErt **punching depth can be extended up to 50 mm depending on blade overhang**

Chip breaker M - medium, universal

- For grooving
- Recessing insert with slightly negative edge rounding
- Suitable for almost all areas of application
- Main application area steel and cast iron



ISO designation	Width mm	r mm	max. depth mm	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
AD 1.50-0.15 N-M	1.50	0.15	24	●	○	●				ACP 20 G	10	**388030** 1520	22,10
	1.50	0.15	24	●	●	●				APU 40 G	10	388030 1540	22,10
	1.50	0.15	24	○	●			●		APM 45 G	10	388030 1545	22,10
AD 2.00-0.2 N-M	2.00	0.2	24	●	○	●				ACP 20 G	10	388000 2035	17,70
	2.00	0.2	24	●	●	●				APU 40 G	10	388000 2040	17,70
	2.00	0.2	24	○	●			●		APM 45 G	10	388000 2045	17,70
AD 3.00-0.2 N-M	3.00	0.2	24	●	○	●				ACP 20 G	10	388000 3035	19,30
	3.00	0.2	24	●	●	●				APU 40 G	10	388000 3040	19,30
	3.00	0.2	24	○	●			●		APM 45 G	10	388000 3045	19,30
AD 4.00-0.3 N-M	4.00	0.3	24	●	○	●				ACP 20 G	10	388000 4035	21,70
	4.00	0.3	24	●	●	●				APU 40 G	10	388000 4040	21,70
	4.00	0.3	24	○	●			●		APM 45 G	10	388000 4045	21,70
AD 5.00-0.4 N-M	5.00	0.4	24	●	○	●				ACP 20 G	10	388000 5035	29,40
	5.00	0.4	24	●	●	●				APU 40 G	10	388000 5040	29,40
	5.00	0.4	24	○	●			●		APM 45 G	10	388000 5045	29,40
AD 6.00-0.4 N-M	6.00	0.4	24	●	○	●				ACP 20 G	10	388000 6035	30,90
	6.00	0.4	24	●	●	●				APU 40 G	10	388000 6040	30,90
	6.00	0.4	24	○	●			●		APM 45 G	10	388000 6045	30,90

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ISO	ACP 20 G	APM 45 G	APU 40 G
ISO P steel	Vc = 50 - 240	Vc = 40 - 120	Vc = 50 - 240
ISO M stainless steel	Vc = 50 - 180	Vc = 60 - 180	Vc = 50 - 200
ISO K cast iron	Vc = 80 - 200		Vc = 80 - 200
ISO S superalloys		Vc = 15 - 120	
Vc = [m/min] f = [mm/U]	f = 0.05 - 0.35		

Chip breaker F - fine

- For grooving
- Excellent, very soft cutting geometry with very low cutting forces
- For materials with low minimum tensile strength
- Ideal for thin-walled components
- High cutting edge stability with ideal chip control even at low feed rates
- Low tendency to form built-up edges



ISO designation	Width mm	r mm	max. depth mm	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
AD 2.00-0.2 N-F	2.00	0.2	24	●	○	●				ACP 20 G	10	**388006** 2020	17,70
	2.00	0.2	24	●	●	●				APU 40 G	10	388006 2040	17,70
	2.00	0.2	24	○	●			●		APM 45 G	10	388006 2045	17,70
AD 3.00-0.2 N-F	3.00	0.2	24	●	○	●				ACP 20 G	10	388006 3020	19,30
	3.00	0.2	24	●	●	●				APU 40 G	10	388006 3040	19,30
	3.00	0.2	24	○	●			●		APM 45 G	10	388006 3045	19,30
AD 4.00-0.3 N-F	4.00	0.3	24	●	○	●				ACP 20 G	10	388006 4035	21,70
	4.00	0.3	24	●	●	●				APU 40 G	10	388006 4040	21,70
	4.00	0.3	24	○	●			●		APM 45 G	10	388006 4045	21,70
AD 5.00-0.4 N-F	5.00	0.4	24	●	●	●				APU 40 G	10	388006 5035	29,40
	5.00	0.4	24	○	●			●		APM 45 G	10	388006 5040	29,40
	5.00	0.4	24	●	○	●				ACP 20 G	10	388006 5045	29,40

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ISO	ACP 20 G	APM 45 G	APU 40 G
ISO P steel	Vc = 50 - 240	Vc = 40 - 120	Vc = 50 - 240
ISO M stainless steel	Vc = 50 - 180	Vc = 60 - 180	Vc = 50 - 200
ISO K cast iron	Vc = 80 - 200		Vc = 80 - 200
ISO S superalloys		Vc = 15 - 120	
Vc = [m/min] f = [mm/U]	f = 0.03 - 0.27		

Chip breaker ET - extra

- For grooving
- Also for non-rusting materials
- "Problem-solver" for materials that are difficult to machine such as titanium or duplex
- Extremely soft cutting

 ISO designation	Width mm	r mm	max. depth mm	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
AD 1.50-0.15 N-ET	1.50	0.15	24	●	○	●				**ACP 20 G**	10	**388031** 1520	22,10
	1.50	0.15	24	●	●	●				**APU 40 G**	10	388031 1540	22,10
	1.50	0.15	24	○	●			●		**APM 45 G**	10	388031 1545	22,10
AD 2.00-0.2 N-ET	2.00	0.2	24	●	○	●				**ACP 20 G**	10	388012 2035	17,70
	2.00	0.2	24	●	●	●				**APU 40 G**	10	388012 2040	17,70
	2.00	0.2	24	○	●			●		**APM 45 G**	10	388012 2045	17,70
AD 3.00-0.2 N-ET	3.00	0.2	24	●	○	●				**ACP 20 G**	10	388012 3035	19,30
	3.00	0.2	24	●	●	●				**APU 40 G**	10	388012 3040	19,30
	3.00	0.2	24	○	●			●		**APM 45 G**	10	388012 3045	19,30
AD 4.00-0.3 N-ET	4.00	0.3	24	●	○	●				**ACP 20 G**	10	388012 4035	21,70
	4.00	0.3	24	●	●	●				**APU 40 G**	10	388012 4040	21,70
	4.00	0.3	24	○	●			●		**APM 45 G**	10	388012 4045	21,70
AD 5.00-0.4 N-ET	5.00	0.4	24	●	○	●				**ACP 20 G**	10	388012 5035	29,40
	5.0	0.4	24	●	●	●				**APU 40 G**	10	388012 5040	29,40
	5.00	0.4	24	○	●			●		**APM 45 G**	10	388012 5045	29,40
AD 6.00-0.4 N-ET	6.00	0.4	24	●	○	●				**ACP 20 G**	10	388012 6035	30,90
	6.00	0.4	24	●	●	●				**APU 40 G**	10	388012 6040	30,90
	6.00	0.4	24	○	●			●		**APM 45 G**	10	388012 6045	30,90

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ISO	ACP 20 G	APM 45 G	APU 40 G
ISO P steel	Vc = 50 - 240	Vc = 40 - 120	Vc = 50 - 240
ISO M stainless steel	Vc = 50 - 180	Vc = 60 - 180	Vc = 50 - 200
ISO K cast iron	Vc = 80 - 200		Vc = 80 - 200
ISO S superalloys		Vc = 15 - 120	
Vc = [m/min] f = [mm/U]	f = 0.06 - 0.27		



Chip breaker TR - turning

- For longitudinal turning and grooving
- Special chip breaker for parting-off and groove turning operations
- Outstanding chip control during longitudinal turning
- For all steel and stainless steel materials

 ISO designation	Width mm	r mm	max. depth mm	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
AD 2.00-0.2 N-TR	2.00	0.2	24	●	○	●				**ACP 20 G**	10	**388024** 2035	17,70
	2.00	0.2	24	●	●	●				**APU 40 G**	10	388024 2040	17,70
	2.00	0.2	24	○	●			●		**APM 45 G**	10	388024 2045	17,70
AD 3.00-0.2 N-TR	3.00	0.2	24	●	○	●				**ACP 20 G**	10	388024 3035	19,30
	3.00	0.2	24	●	●	●				**APU 40 G**	10	388024 3040	19,30
	3.00	0.2	24	○	●			●		**APM 45 G**	10	388024 3045	19,30
AD 4.00-0.3 N-TR	4.00	0.3	24	●	○	●				**ACP 20 G**	10	388024 4035	21,70
	4.00	0.3	24	●	●	●				**APU 40 G**	10	388024 4040	21,70
	4.00	0.3	24	○	●			●		**APM 45 G**	10	388024 4045	21,70
AD 5.00-0.4 N-TR	5.00	0.4	24	●	○	●				**ACP 20 G**	10	388024 5035	29,40
	5.00	0.4	24	●	●	●				**APU 40 G**	10	388024 5040	29,40
	5.00	0.4	24	○	●			●		**APM 45 G**	10	388024 5045	29,40
AD 6.00-0.4 N-TR	6.00	0.4	24	●	○	●				**ACP 20 G**	10	388024 6035	30,90
	6.00	0.4	24	●	●	●				**APU 40 G**	10	388024 6040	30,90
	6.00	0.4	24	○	●			●		**APM 45 G**	10	388024 6045	30,90

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ISO	ACP 20 G	APM 45 G	APU 40 G
ISO P steel	Vc = 50 - 240	Vc = 40 - 120	Vc = 50 - 240
ISO M stainless steel	Vc = 50 - 180	Vc = 60 - 180	Vc = 50 - 200
ISO K cast iron	Vc = 80 - 200		Vc = 80 - 200
ISO S superalloys		Vc = 15 - 120	
Vc = [m/min] f = [mm/U]	f = 0.06 - 0.26		

Continued on next page >>>

Chip breaker LC

- For longitudinal turning and grooving
- Cutting precision W +/- 0.02 mm

 ISO designation	Width mm	r mm	max. depth mm	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
AD 2.00-0.2 N-LC	2.00	0.2	24				●			**AWN 16 G**	10	**388018** 2016	26,10
AD 3.00-0.2 N-LC	3.00	0.2	24				●			**AWN 16 G**	10	388018 3016	28,20
AD 4.00-0.3 N-LC	4.00	0.3	24				●			**AWN 16 G**	10	388018 4016	33,90

ISO	AWN 16 G
ISO N Al/non-ferrous	Vc = 50 - 5000
Vc = [m/min] f = [mm/U]	f = 0.07 - 0.42

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ATORN® Recessing inserts AD Radius GROOVE

- **The feed rates must be adjusted to the respective cutting edge width**
- Cutting edge accuracy W ± 0.02mm
- AD = double-edged cutting insert **max. 24mm punching depth**

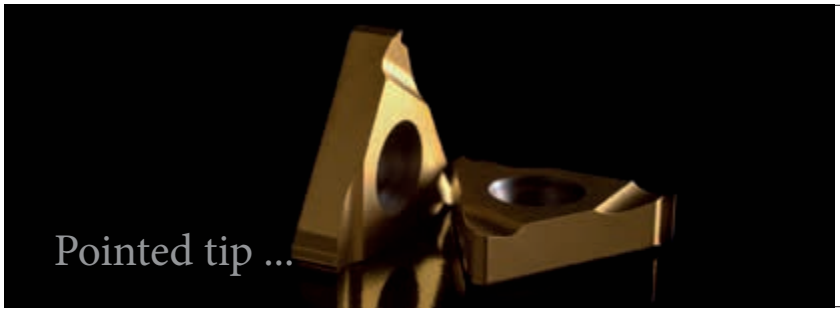
Chip breaker R - round

- For longitudinal turning and grooving
- Chip breaker for recess turning and ramping
- Rotating chip breaker for optimal chip control
- For all steel and stainless steel materials

 ISO designation	Width mm	r mm	max. depth mm	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
AD 2.00-1.0 R	2.00	1.0	24	●	○	●				**ACP 20 G**	10	**388025** 2035	17,70
	2.00	1.0	24	●	●	●				**APU 40 G**	10	388025 2040	17,70
	2.00	1.0	24	○	●			●		**APM 45 G**	10	388025 2045	17,70
AD 3.00-1.5 R	3.00	1.5	24	●	○	●				**ACP 20 G**	10	388025 3035	19,30
	3.00	1.5	24	●	●	●				**APU 40 G**	10	388025 3040	19,30
	3.00	1.5	24	○	●			●		**APM 45 G**	10	388025 3045	19,30
AD 4.00-2.0 R	4.00	2.0	24	●	○	●				**ACP 20 G**	10	388025 4035	25,60
	4.00	2.0	24	●	●	●				**APU 40 G**	10	388025 4040	25,60
	4.00	2.0	24	○	●			●		**APM 45 G**	10	388025 4045	25,60
AD 5.00-2.5 R	5.00	2.5	24	●	○	●				**ACP 20 G**	10	388025 5035	29,40
	5.00	2.5	24	●	●	●				**APU 40 G**	10	388025 5040	29,40
	5.00	2.5	24	○	●			●		**APM 45 G**	10	388025 5045	29,40
AD 6.00-3.0 R	6.00	3.0	24	●	○	●				**ACP 20 G**	10	388025 6035	30,90
	6.00	3.0	24	●	●	●				**APU 40 G**	10	388025 6040	30,90
	6.00	3.0	24	○	●			●		**APM 45 G**	10	388025 6045	30,90

ISO	ACP 20 G	APM 45 G	APU 40 G
ISO P steel	Vc = 50 - 240	Vc = 40 - 120	Vc = 50 - 240
ISO M stainless steel	Vc = 50 - 180	Vc = 60 - 180	Vc = 50 - 200
ISO K cast iron	Vc = 80 - 200		Vc = 80 - 200
ISO S superalloys		Vc = 15 - 120	
Vc = [m/min] f = [mm/U]	f = 0.07 - 0.25	f = 0.15 - 0.35	

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... with reversible option.

ATORN®
Performance demands quality

ATORN® Recessing inserts ADA Axial GROOVE

- **The feed rates must be adjusted to the respective cutting edge width**
- Cutting edge accuracy W ± 0.02mm
- ADA = double-edged cutting insert
- **Punching depth depends on the selected recessing tool**

Chip breaker TR
- For axial grooving
- Rotating chip breaker for optimal chip control
- For all steel and stainless steel materials

 ISO designation	Width mm	max. depth mm	r mm	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
ADA 3.00-0.3 N-TR	3.00	15	0.3	●	○	●				**ACP 20 G**	10	**388040** 3020	22,40
	3.00	15	0.3	●	●	●				**APU 40 G**	10	388040 3040	22,40
	3.00	15	0.3	○	●			●		**APM 45 G**	10	388040 3045	22,40

ISO	ACP 20 G	APM 45 G	APU 40 G
ISO K cast iron	Vc = 80 - 200		Vc = 80 - 200
ISO M stainless steel	Vc = 50 - 180	Vc = 60 - 180	Vc = 50 - 200
ISO P steel	Vc = 50 - 240	Vc = 40 - 120	Vc = 50 - 240
ISO S superalloys		Vc = 15 - 120	
Vc = [m/min] f = [mm/U]	f = 0.06 - 0.15		

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ATORN® Recessing inserts AD right-hand GROOVE

- **The feed rates must be adjusted to the respective cutting edge width**
- Cutting edge accuracy W ± 0.02 mm
- AD = double-edged cutting insert **max. 24 mm punching depth**
- AE = single-edged cutting insert **punching depth can be extended up to 50 mm depending on blade overhang**
- Optional right 6°

Chip breaker M - medium, universal
- For grooving
- Recessing insert with slightly negative edge rounding
- Suitable for almost all areas of application
- Main application area steel and cast iron

 ISO designation	Width mm	r mm	max. depth mm	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
AD 2.00-0.15 R6-M	2.00	0.15	24	●	○	●				**ACP 20 G**	10	**388001** 2035	17,70
	2.00	0.15	24	●	●	●				**APU 40 G**	10	388001 2040	17,70
	2.00	0.15	24	○	●			●		**APM 45 G**	10	388001 2045	17,70
AD 3.00-0.2 R6-M	3.00	0.2	24	●	○	●				**ACP 20 G**	10	388001 3035	19,30
	3.00	0.2	24	●	●	●				**APU 40 G**	10	388001 3040	19,30
	3.00	0.2	24	○	●			●		**APM 45 G**	10	388001 3045	19,30
AD 4.00-0.3 R6-M	4.00	0.3	24	●	○	●				**ACP 20 G**	10	388001 4035	21,70
	4.00	0.3	24	●	●	●				**APU 40 G**	10	388001 4040	21,70
	4.00	0.3	24	○	●			●		**APM 45 G**	10	388001 4045	21,70

ISO	ACP 20 G	APM 45 G	APU 40 G
ISO P steel	Vc = 50 - 240	Vc = 40 - 120	Vc = 50 - 240
ISO M stainless steel	Vc = 50 - 180	Vc = 60 - 180	Vc = 50 - 200
ISO K cast iron	Vc = 80 - 200		Vc = 80 - 200
ISO S superalloys		Vc = 15 - 120	
Vc = [m/min] f = [mm/U]	f = 0.05 - 0.35		

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Chip breaker F - fine

- For grooving
- Excellent, very soft cutting geometry with very low cutting forces
- For materials with low minimum tensile strength
- Ideal for thin-walled components
- High cutting edge stability with ideal chip control even at low feed rates
- Low tendency to form built-up edges

 ISO designation	Width mm	r mm	max. depth mm	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
AD 2.00-0.2 R6-F	2.00	0.2	24	●	○	●				**ACP 20 G**	10	**388007** 2020	17,70
	2.00	0.2	24	●	●	●				**APU 40 G**	10	388007 2040	17,70
	2.00	0.2	24	○	●			●		**APM 45 G**	10	388007 2045	17,70
AD 3.00-0.2 R6-F	3.00	0.2	24	●	○	●				**ACP 20 G**	10	388007 3020	19,30
	3.00	0.2	24	●	●	●				**APU 40 G**	10	388007 3040	19,30
	3.00	0.2	24	○	●			●		**APM 45 G**	10	388007 3045	19,30
AD 4.00-0.3 R6-F	4.00	0.3	24	●	○	●				**ACP 20 G**	10	388007 4020	25,60
	4.00	0.3	24	●	●	●				**APU 40 G**	10	388007 4040	25,60
	4.00	0.3	24	○	●			●		**APM 45 G**	10	388007 4045	25,60

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ISO	ACP 20 G	APM 45 G	APU 40 G
ISO P steel	Vc = 50 - 240	Vc = 40 - 120	Vc = 50 - 240
ISO M stainless steel	Vc = 50 - 180	Vc = 60 - 180	Vc = 50 - 200
ISO K cast iron	Vc = 80 - 200		Vc = 80 - 200
ISO S superalloys		Vc = 15 - 120	
Vc = [m/min] f = [mm/U]	f = 0.03 - 0.27		

Chip breaker ET - extra

- For grooving
- Also for non-rusting materials
- "Problem-solver" for materials that are difficult to machine such as titanium or duplex
- Extremely soft cutting

 ISO designation	Width mm	r mm	max. depth mm	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
AD 2.00-0.2 R6-ET	2.0	0.2	24	●	○	●				**ACP 20 G**	10	**388013** 2035	17,70
	2.0	0.2	24	●	●	●				**APU 40 G**	10	388013 2040	17,70
	2.0	0.2	24	○	●			●		**APM 45 G**	10	388013 2045	17,70
AD 3.00-0.2 R6-ET	3.0	0.2	24	●	○	●				**ACP 20 G**	10	388013 3035	19,30
	3.0	0.2	24	●	●	●				**APU 40 G**	10	388013 3040	19,30
	3.0	0.2	24	○	●			●		**APM 45 G**	10	388013 3045	19,30
AD 4.00-0.3 R6-ET	4.0	0.3	24	●	○	●				**ACP 20 G**	10	388013 4020	25,60
	4.0	0.3	24	●	●	●				**APU 40 G**	10	388013 4040	25,60
	4.0	0.3	24	○	●			●		**APM 45 G**	10	388013 4045	25,60

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ISO	ACP 20 G	APM 45 G	APU 40 G
ISO P steel	Vc = 50 - 240	Vc = 40 - 120	Vc = 50 - 240
ISO M stainless steel	Vc = 50 - 180	Vc = 60 - 180	Vc = 50 - 200
ISO K cast iron	Vc = 80 - 200		Vc = 80 - 200
ISO S superalloys		Vc = 15 - 120	
Vc = [m/min] f = [mm/U]	f = 0.06 - 0.27		

Chip breaker TR - turning

- For longitudinal turning and grooving
- Special chip breaker for parting-off and recess turning
- Outstanding chip control for longitudinal turning
- For all steel and stainless steel materials

 ISO designation	Width mm	r mm	max. depth mm	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
AD 2.00-0.2 R6-TR	2.00	0.2	24	●	○	●				**ACP 20 G**	10	**388067** 2020	18,–
	2.00	0.2	24	●	●	●				**APU 40 G**	10	388067 2040	18,–
	2.00	0.2	24	○	●			●		**APM 45 G**	10	388067 2045	18,–
AD 3.00-0.3 R6-TR	3.00	0.3	24	●	○	●				**ACP 20 G**	10	388067 3020	19,70
	3.00	0.3	24	●	●	●				**APU 40 G**	10	388067 3040	19,70
	3.00	0.3	24	○	●			●		**APM 45 G**	10	388067 3045	19,70

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ISO	ACP 20 G	APM 45 G	APU 40 G
ISO P steel	Vc = 50 - 240	Vc = 40 - 120	Vc = 50 - 240
ISO M stainless steel	Vc = 50 - 180	Vc = 60 - 180	Vc = 50 - 200
ISO K cast iron	Vc = 80 - 200		Vc = 80 - 200
ISO S superalloys		Vc = 15 - 120	
Vc = [m/min] f = [mm/U]	f = 0.06 - 0.26		

ATORN® Recessing inserts AD left-hand GROOVE

- **The feed rates must be adjusted to the respective cutting edge width**
- Cutting edge accuracy W ± 0.02 mm
- AD = double-edged cutting inAErt **max. 24 mm punching depth**
- AE = single-edged cutting inAErt **punching depth can be extended up to 50 mm depending on blade overhang**
- Optional left 6°

Chip breaker M - medium, universal

- For grooving
- Recessing insert with slightly negative edge rounding
- Suitable for almost all areas of application
- Main application area steel and cast iron

 ISO designation	Width mm	r mm	max. depth mm	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
AD 2.00-0.2 L6-M	2.00	0.2	24	●	○	●				ACP 20 G	10	**388002** 2035	17,70
	2.00	0.2	24	●	●	●				APU 40 G	10	388002 2040	17,70
	2.00	0.2	24	○	●			●		APM 45 G	10	388002 2045	17,70
AD 3.00-0.2 L6-M	3.00	0.2	24	●	○	●				ACP 20 G	10	388002 3035	19,30
	3.00	0.2	24	●	●	●				APU 40 G	10	388002 3040	19,30
	3.00	0.2	24	○	●			●		APM 45 G	10	388002 3045	19,30
AD 4.00-0.3 L6-M	4.00	0.3	24	●	○	●				ACP 20 G	10	388002 4035	25,60
	4.00	0.3	24	●	●	●				APU 40 G	10	388002 4040	25,60
	4.00	0.3	24	○	●			●		APM 45 G	10	388002 4045	25,60

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ISO	ACP 20 G	APM 45 G	APU 40 G
ISO P steel	Vc = 50 - 240	Vc = 40 - 120	Vc = 50 - 240
ISO M stainless steel	Vc = 50 - 180	Vc = 60 - 180	Vc = 50 - 200
ISO K cast iron	Vc = 80 - 200		Vc = 80 - 200
ISO S superalloys		Vc = 15 - 120	
Vc = [m/min] f = [mm/U]	f = 0.05 - 0.35		

Chip breaker F - fine

- For grooving
- Excellent, very soft cutting geometry with very low cutting forces
- For materials with low minimum tensile strength
- Ideal for thin-walled components
- High cutting edge stability with ideal chip control even at low feed rates
- Low tendency to form built-up edges

 ISO designation	Width mm	r mm	max. depth mm	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
AD 2.00-0.2 L6-F	2.00	0.2	24	●	○	●				ACP 20 G	10	**388008** 2020	17,70
	2.00	0.2	24	●	●	●				APU 40 G	10	388008 2040	17,70
	2.00	0.2	24	○	●			●		APM 45 G	10	388008 2045	17,70
AD 3.00-0.2 L6-F	3.00	0.2	24	●	○	●				ACP 20 G	10	388008 3020	19,30
	3.00	0.2	24	●	●	●				APU 40 G	10	388008 3040	19,30
	3.00	0.2	24	○	●			●		APM 45 G	10	388008 3045	19,30
AD 4.00-0.3 L6-F	4.00	0.3	24	●	○	●				ACP 20 G	10	388008 4020	25,60
	4.00	0.3	24	●	●	●				APU 40 G	10	388008 4040	25,60
	4.00	0.3	24	○	●			●		APM 45 G	10	388008 4045	25,60

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ISO	ACP 20 G	APM 45 G	APU 40 G
ISO P steel	Vc = 50 - 240	Vc = 40 - 120	Vc = 50 - 240
ISO M stainless steel	Vc = 50 - 180	Vc = 60 - 180	Vc = 50 - 200
ISO K cast iron	Vc = 80 - 200		Vc = 50 - 200
ISO S superalloys		Vc = 15 - 120	
Vc = [m/min] f = [mm/U]	f = 0.03 - 0.27		

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... but digital.

ATORN®
Performance demands quality

Chip breaker ET - extra

- For grooving
- Also for non-rusting materials
- "Problem-solver" for materials that are difficult to machine such as titanium or duplex
- Extremely soft cutting

 ISO designation	Width mm	r mm	max. depth mm	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
AD 2.00-0.2 L6-ET	2.00	0.2	24	●	○	●				ACP 20 G	10	**388014** 2035	17,70
	2.00	0.2	24	●	●	●				APU 40 G	10	388014 2040	17,70
	2.00	0.2	24	○	●			●		APM 45 G	10	388014 2045	17,70
AD 3.00-0.2 L6-ET	3.00	0.2	24	●	○	●				ACP 20 G	10	388014 3035	19,30
	3.00	0.2	24	●	●	●				APU 40 G	10	388014 3040	19,30
	3.00	0.2	24	○	●			●		APM 45 G	10	388014 3045	19,30
AD 4.00-0.3 L6-ET	4.00	0.3	24	●	○	●				ACP 20 G	10	388014 4020	25,60
	4.00	0.3	24	●	●	●				APU 40 G	10	388014 4040	25,60
	4.00	0.3	24	○	●			●		APM 45 G	10	388014 4045	25,60

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ISO	ACP 20 G	APM 45 G	APU 40 G
ISO P steel	Vc = 50 - 240	Vc = 40 - 120	Vc = 50 - 240
ISO M stainless steel	Vc = 50 - 180	Vc = 60 - 180	Vc = 50 - 200
ISO K cast iron	Vc = 80 - 200		Vc = 80 - 200
ISO S superalloys		Vc = 15 - 120	
Vc = [m/min] f = [mm/U]	f = 0.06 - 0.27		

Chip breaker TR - turning

- For longitudinal turning and grooving
- Special chip breaker for parting-off and recess turning
- Outstanding chip control for longitudinal turning
- For all steel and stainless steel materials

 ISO designation	Width mm	r mm	max. depth mm	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
AD 2.00-0.2 L6-TR	2.00	0.2	24	●	○	●				ACP 20 G	10	**388066** 2020	18,–
	2.00	0.2	24	●	●	●				APU 40 G	10	388066 2040	18,–
	2.00	0.2	24	○	●			●		APM 45 G	10	388066 2045	18,–
AD 3.00-0.3 L6-TR	3.00	0.3	24	●	○	●				ACP 20 G	10	388066 3020	19,70
	3.00	0.3	24	●	●	●				APU 40 G	10	388066 3040	19,70
	3.00	0.3	24	○	●			●		APM 45 G	10	388066 3045	19,70

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ISO	ACP 20 G	APM 45 G	APU 40 G
ISO P steel	Vc = 50 - 240	Vc = 40 - 120	Vc = 50 - 240
ISO M stainless steel	Vc = 50 - 180	Vc = 60 - 180	Vc = 50 - 200
ISO K cast iron	Vc = 80 - 200		Vc = 80 - 200
ISO S superalloys		Vc = 15 - 120	
Vc = [m/min] f = [mm/U]	f = 0.06 - 0.26		

ATORN® Recessing inserts AE neutral GROOVE

- **The feed rates must be adjusted to the respective cutting edge width**
- Cutting edge accuracy W ± 0.02 mm
- AD = double-edged cutting insert **max. 24 mm punching depth**
- AE = single-edged cutting insert **punching depth can be extended up to 50 mm depending on blade overhang**

Chip breaker M - medium, universal

- For grooving
- Recessing insert with slightly negative edge rounding
- Suitable for almost all areas of application
- Main application area steel and cast iron

 ISO designation	Width mm	r mm	max. depth mm	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
AE 2.00-0.2 N-M	2.00	0.2	50	●	○	●				ACP 20 G	10	**388003** 2020	15,80
	2.00	0.2	50	●	●	○				APU 40 G	10	388003 2040	15,80
	2.00	0.2	50	○	●			●		APM 45 G	10	388003 2045	16,90
AE 3.00-0.2 N-M	3.00	0.2	50	●	○	●				ACP 20 G	10	388003 3020	17,30
	3.00	0.2	50	●	●	○				APU 40 G	10	388003 3040	17,30
	3.00	0.2	50	○	●			●		APM 45 G	10	388003 3045	17,30
AE 4.00-0.3 N-M	4.00	0.3	50	●	○	●				ACP 20 G	10	388003 4020	19,60
	4.00	0.3	50	●	●	○				APU 40 G	10	388003 4040	19,60
	4.00	0.3	50	○	●			●		APM 45 G	10	388003 4045	19,60

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ISO	ACP 20 G	APM 45 G	APU 40 G
ISO P steel	Vc = 50 - 240	Vc = 40 - 120	Vc = 50 - 240
ISO M stainless steel	Vc = 50 - 180	Vc = 60 - 180	Vc = 50 - 200
ISO K cast iron	Vc = 80 - 200		Vc = 80 - 200
ISO S superalloys		Vc = 15 - 120	
Vc = [m/min] f = [mm/U]	f = 0.08 - 0.3		

Chip breaker F - fine

- For grooving
- Excellent, very soft cutting geometry with very low cutting forces
- For materials with low minimum tensile strength
- Ideal for thin-walled components
- High cutting edge stability with ideal chip control even at low feed rates
- Low tendency to form built-up edges

 ISO designation	Width mm	r mm	max. depth mm	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
AE 2.00-0.2 N-F	2.00	0.2	50	●	○	●				**ACP 20 G**	10	**388009** 2020	16,90
	2.00	0.2	50	●	●	○				**APU 40 G**	10	388009 2040	17,70
	2.00	0.2	50	○	●			●		**APM 45 G**	10	388009 2045	16,90
AE 3.00-0.2 N-F	3.00	0.2	50	●	○	●				**ACP 20 G**	10	388009 3020	17,30
	3.00	0.2	50	●	●	○				**APU 40 G**	10	388009 3040	19,30
	3.00	0.2	50	○	●			●		**APM 45 G**	10	388009 3045	17,30
AE 4.00-0.3 N-F	4.00	0.3	50	●	○	●				**ACP 20 G**	10	388009 4020	19,60
	4.00	0.3	50	●	●	○				**APU 40 G**	10	388009 4040	19,60
	4.00	0.3	50	○	●			●		**APM 45 G**	10	388009 4045	19,60

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ISO	ACP 20 G	APM 45 G	APU 40 G
ISO P steel	Vc = 50 - 240	Vc = 40 - 120	Vc = 50 - 240
ISO M stainless steel	Vc = 50 - 180	Vc = 60 - 180	Vc = 50 - 200
ISO K cast iron	Vc = 80 - 200		Vc = 80 - 200
ISO S superalloys		Vc = 15 - 120	
Vc = [m/min] f = [mm/U]	f = 0.03 - 0.27		

Chip breaker ET - extra

- For grooving
- Also for non-rusting materials
- "Problem-solver" for materials that are difficult to machine such as titanium or duplex
- Extremely soft cutting

 ISO designation	Width mm	r mm	max. depth mm	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
AE 2.00-0.2 N-ET	2.00	0.2	50	●	○	●				**ACP 20 G**	10	**388015** 2020	16,90
	2.00	0.2	50	●	●	●				**APU 40 G**	10	388015 2040	16,90
	2.00	0.2	50	○	●			●		**APM 45 G**	10	388015 2045	16,90
AE 3.00-0.2 N-ET	3.00	0.2	50	●	○	●				**ACP 20 G**	10	388015 3020	17,30
	3.00	0.2	50	●	●	●				**APU 40 G**	10	388015 3040	17,30
	3.00	0.2	50	○	●			●		**APM 45 G**	10	388015 3045	17,20
AE 4.00-0.3 N-ET	4.00	0.3	50	●	○	●				**ACP 20 G**	10	388015 4020	19,60
	4.00	0.3	50	●	●	●				**APU 40 G**	10	388015 4040	19,60
	4.00	0.3	50	○	●			●		**APM 45 G**	10	388015 4045	21,–

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ISO	ACP 20 G	APM 45 G	APU 40 G
ISO P steel	Vc = 50 - 240	Vc = 40 - 120	Vc = 50 - 180
ISO M stainless steel	Vc = 50 - 180	Vc = 60 - 180	Vc = 50 - 200
ISO K cast iron	Vc = 80 - 200		Vc = 80 - 200
ISO S superalloys		Vc = 15 - 120	
Vc = [m/min] f = [mm/U]	f = 0.06 - 0.27		

Chip breaker TR - turning

- For longitudinal turning and grooving
- Special chip breaker for parting-off and groove turning operations
- Outstanding chip control during longitudinal turning
- For all steel and stainless steel materials

 ISO designation	Width mm	r mm	max. depth mm	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
AE 2.00-0.2 N-TR	2.00	0.2	50	●	○	●				**ACP 20 G**	10	**388068** 2020	16,60
	2.00	0.2	50	●	●	●				**APU 40 G**	10	388068 2040	16,60
	2.00	0.2	50	○	●			●		**APM 45 G**	10	388068 2045	16,60
AE 3.00-0.3 N-TR	3.00	0.3	50	●	○	●				**ACP 20 G**	10	388029 3020	17,30
	3.00	0.3	50	●	●	●				**APU 40 G**	10	388029 3040	17,30
	3.00	0.3	50	○	●			●		**APM 45 G**	10	388029 3045	17,30
AE 4.00-0.4 N-TR	4.00	0.4	50	●	○	●				**ACP 20 G**	10	388029 4020	19,60
	4.00	0.4	50	●	●	●				**APU 40 G**	10	388029 4040	19,60
	4.00	0.4	50	○	●			●		**APM 45 G**	10	388029 4045	19,60

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ISO	ACP 20 G	APM 45 G	APU 40 G
ISO P steel	Vc = 50 - 240	Vc = 40 - 120	Vc = 50 - 240
ISO M stainless steel	Vc = 50 - 180	Vc = 60 - 180	Vc = 50 - 200
ISO K cast iron	Vc = 80 - 200		Vc = 80 - 200
ISO S superalloys		Vc = 15 - 120	
Vc = [m/min] f = [mm/U]	f = 0.06 - 0.26		

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Chip breaker LC

- For longitudinal turning and grooving
- Cutting precision W +/- 0.02 mm

ISO designation	Width mm	r mm	max. depth mm	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
AE 2.00-0.2 N-LC	2.00	0.2	50				●			**AWN 16 G**	10	**388021** 2016	21,30
AE 3.00-0.2 N-LC	3.00	0.2	50				●			**AWN 16 G**	10	388021 3016	23,30
AE 4.00-0.3 N-LC	4.00	0.3	50				●			**AWN 16 G**	10	388021 4016	29,30

ISO	AWN 16 G
ISO N Al/non-ferrous	Vc = 50 - 5000
Vc = [m/min] f = [mm/U]	f = 0.05 - 0.30

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ATORN® Recessing inserts AE right-hand GROOVE

- **The feed rates must be adjusted to the respective cutting edge width**
- Cutting edge accuracy W ± 0.02 mm
- AD = double-edged cutting insert **max. 24 mm punching depth**
- AE = single-edged cutting insert **punching depth can be extended up to 50 mm depending on blade overhang**
- Optional right 6°

Chip breaker M - medium, universal

- For grooving
- Recessing insert with slightly negative edge rounding
- Suitable for almost all areas of application
- Main application area steel and cast iron

ISO designation	Width mm	r mm	max. depth mm	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
AE 2.00-0.15 R6-M	2.00	0.15	50	●	○	●				**ACP 20 G**	10	**388004** 2020	16,90
	2.00	0.15	50	●	●	●				**APU 40 G**	10	388004 2040	16,90
	2.00	0.15	50	○	●			●		**APM 45 G**	10	388004 2045	16,90
AE 3.00-0.2 R6-M	3.00	0.2	50	●	○	●				**ACP 20 G**	10	388004 3020	17,20
	3.00	0.2	50	●	●	●				**APU 40 G**	10	388004 3040	17,20
	3.00	0.2	50	○	●			●		**APM 45 G**	10	388004 3045	17,20

ISO	ACP 20 G	APM 45 G	APU 40 G
ISO P steel	Vc = 50 - 240	Vc = 40 - 120	Vc = 50 - 240
ISO M stainless steel	Vc = 50 - 180	Vc = 60 - 180	Vc = 50 - 200
ISO K cast iron	Vc = 80 - 200		Vc = 80 - 200
ISO S superalloys		Vc = 15 - 120	
Vc = [m/min] f = [mm/U]	f = 0.05 - 0.35		

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Chip breaker F - fine

- For grooving
- Excellent, very soft cutting geometry with very low cutting forces
- For materials with low minimum tensile strength
- Ideal for thin-walled components
- High cutting edge stability with ideal chip control even at low feed rates
- Low tendency to form built-up edges

ISO designation	Width mm	r mm	max. depth mm	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
AE 2.00-0.15 R6-F	2.00	0.15	50	●	○	●				**ACP 20 G**	10	**388010** 2020	16,90
	2.00	0.15	50	●	●	●				**APU 40 G**	10	388010 2040	16,90
	2.00	0.15	50	○	●			●		**APM 45 G**	10	388010 2045	16,90
AE 3.00-0.2 R6-F	3.00	0.2	50	●	○	●				**ACP 20 G**	10	388010 3020	17,20
	3.00	0.2	50	●	●	●				**APU 40 G**	10	388010 3040	17,20
	3.00	0.2	50	○	●			●		**APM 45 G**	10	388010 3045	17,20

ISO	ACP 20 G	APM 45 G	APU 40 G
ISO P steel	Vc = 50 - 240	Vc = 40 - 120	Vc = 50 - 240
ISO M stainless steel	Vc = 50 - 180	Vc = 60 - 180	Vc = 50 - 200
ISO K cast iron	Vc = 80 - 200		Vc = 80 - 200
ISO S superalloys		Vc = 15 - 120	
Vc = [m/min] f = [mm/U]	f = 0.03 - 0.27		

3139

Chip breaker ET - extra

- For grooving
- Also for non-rusting materials
- "Problem-solver" for materials that are difficult to machine such as titanium or duplex
- Extremely soft cutting

ISO designation	Width mm	r mm	max. depth mm	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
AE 2.00-0.2 R6-ET	2.00	0.2	50	○	●			●		**APM 45 G**	10	**388016** 2045	16,90
AE 3.00-0.2 R6-ET	3.00	0.2		○	●			●		**APM 45 G**	10	388016 3045	16,90
AE 4.00-0.3 R6-ET	4.00	0.3		○	●			●		**APM 45 G**	10	388016 4045	21,–

ISO	APM 45 G
ISO P steel	Vc = 40 - 120
ISO M stainless steel	Vc = 60 - 180
ISO S superalloys	Vc = 15 - 120
Vc = [m/min] f = [mm/U]	f = 0.06 - 0.27

3139

ATORN® Recessing inserts AE left-hand GROOVE

- **The feed rates must be adjusted to the respective cutting edge width**
- Cutting edge accuracy W ± 0.02 mm
- AD = double-edged cutting inAErt **max. 24 mm punching depth**
- AE = single-edged cutting inAErt **punching depth can be extended up to 50 mm depending on blade overhang**
- Optional left 6°

Chip breaker M - medium, universal

- For grooving
- Recessing insert with slightly negative edge rounding
- Suitable for almost all areas of application
- Main application area steel and cast iron

ISO designation	Width mm	r mm	max. depth mm	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
AE 2.00-0.15 L6-M	2.00	0.15	50	●	○	●				**ACP 20 G**	10	**388005** 2020	16,90
	2.00	0.15	50	●	●	●				**APU 40 G**	10	388005 2040	16,90
	2.00	0.15	50	○	●			●		**APM 45 G**	10	388005 2045	16,90
AE 3.00-0.2 L6-M	3.00	0.2	50	●	○	●				**ACP 20 G**	10	388005 3020	17,20
	3.00	0.2	50	●	●	●				**APU 40 G**	10	388005 3040	17,20
	3.00	0.2	50	○	●			●		**APM 45 G**	10	388005 3045	17,20

ISO	ACP 20 G	APM 45 G	APU 40 G
ISO P steel	Vc = 50 - 240	Vc = 40 - 120	Vc = 50 - 240
ISO M stainless steel	Vc = 50 - 180	Vc = 60 - 180	Vc = 50 - 200
ISO K cast iron	Vc = 80 - 200		Vc = 80 - 200
ISO S superalloys		Vc = 15 - 120	
Vc = [m/min] f = [mm/U]	f = 0.05 - 0.35		

3139

Chip breaker F - fine

- For grooving
- Excellent, very soft cutting geometry with very low cutting forces
- For materials with low minimum tensile strength
- Ideal for thin-walled components
- High cutting edge stability with ideal chip control even at low feed rates
- Low tendency to form built-up edges

ISO designation	Width mm	r mm	max. depth mm	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
AE 2.00-0.15 L6-F	2.00	0.15	50	●	○	●				**ACP 20 G**	10	**388011** 2020	16,90
	2.00	0.15	50	●	●	●				**APU 40 G**	10	388011 2040	16,90
	2.00	0.15	50	○	●			●		**APM 45 G**	10	388011 2045	16,90
AE 3.00-0.2 L6-F	3.00	0.2	50	●	○	●				**ACP 20 G**	10	388011 3020	17,20
	3.00	0.2	50	●	●	●				**APU 40 G**	10	388011 3040	17,20
	3.00	0.2	50	○	●			●		**APM 45 G**	10	388011 3045	17,20

ISO	ACP 20 G	APM 45 G	APU 40 G
ISO P steel	Vc = 50 - 240	Vc = 40 - 120	Vc = 50 - 240
ISO M stainless steel	Vc = 50 - 180	Vc = 60 - 180	Vc = 50 - 200
ISO K cast iron	Vc = 80 - 200		Vc = 80 - 200
ISO S superalloys		Vc = 15 - 120	
Vc = [m/min] f = [mm/U]	f = 0.03 - 0.27		

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Continued on next page >>>

Chip breaker ET - extra

- For grooving
- Also for non-rusting materials
- "Problem-solver" for materials that are difficult to machine such as titanium or duplex
- Extremely soft cutting

 ISO designation	Width mm	r mm	max. depth mm	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
AE 2.00-0.2 L6-ET	2.00	0.2	50	○	●			●		**APM 45 G**	10	**388017** 2045	16,90
AE 3.00-0.2 L6-ET	3.00	0.2	50	○	●			●		**APM 45 G**	10	388017 3045	16,90
AE 4.00-0.3 L6-ET	4.00	0.3	50	○	●			●		**APM 45 G**	10	388017 4045	21,–

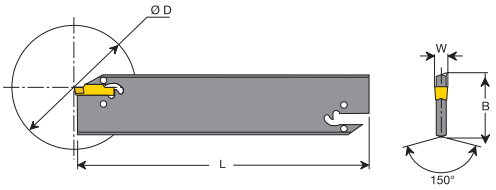
ISO	APM 45 G
ISO P steel	Vc = 40 - 120
ISO M stainless steel	Vc = 60 - 180
ISO S superalloys	Vc = 15 - 120
Vc = [m/min] f = [mm/U]	f = 0.06 - 0.27

3139



ATORN® Recessing blades GROOVE

- **for recessing inserts System AD / AE**
- for parting-off and deep grooving
- Supplied without chuck key





Recessing blade ABE right-hand / left-hand

ISO designation	B mm	L mm	W mm	suitable cutting inserts	D max. mm	suitable wrench	Right-hand art.no.	€	Left-hand art.no.	€
ABE R/L 26-ADE02	26	150	2.00	System AD/AE 2.0	42	3565000030	**356006** 2602	119,–	**356007** 2602	119,–
ABE R/L 32-ADE02	32	150	2.00	System AD/AE 2.0	42	3565000030	356006 3202	119,–	356007 3202	119,–
							3138		3138	



Recessing blade ABE neutral

ISO designation	B mm	L mm	W mm	suitable cutting inserts	D max. mm	suitable wrench	art.no.	€
ABE N 26-ADE02	26	150	2.0	System AD/AE 2.0	50	3565000030	**356005** 2602	114,–
ABE N 26-ADE03	26	150	3.0	System AD/AE 3.0	70	3565000030	356005 2603	98,–
ABE N 26-ADE04	26	150	4.0	System AD/AE 4.0	80	3565000040	356005 2604	107,–
ABE N 32-ADE02	32	150	2.0	System AD/AE 2.0	50	3565000030	356005 3202	115,–
ABE N 32-ADE03	32	150	3.0	System AD/AE 3.0	100	3565000030	356005 3203	98,50
ABE N 32-ADE04	32	150	4.0	System AD/AE 4.0	100	3565000040	356005 3204	108,–
							3138	



Recessing blade ABE with internal cooling

ISO designation	B mm	L mm	W mm	suitable cutting inserts	D max. mm	suitable wrench	art.no.	€
ABE N 26-ADE02-C	26	150	2.0	System AD/AE 2.0	50	3565000030	**356050** 2602	190,–
ABE N 26-ADE03-C	26	150	3.0	System AD/AE 3.0	70	3565000030	356050 2603	182,–
ABE-N 26-ADE04-C	26	150	4.0	System AD/AE 4.0	80	3565000040	356050 2604	215,–
ABE N 32-ADE02-C	32	150	2.0	System AD/AE 2.0	50	3565000030	356050 3202	179,–
ABE N 32-ADE03-C	32	150	3.0	System AD/AE 3.0	100	3565000030	356050 3203	186,–
ABE N 32-ADE04-C	32	150	4.0	System AD/AE 4.0	100	3565000040	356050 3204	210,–
							3138	



Recessing blade ABE R/L with internal cooling

ISO designation	B mm	L mm	W mm	suitable cutting inserts	D max. mm	suitable wrench	Right-hand art.no.	€	Left-hand art.no.	€
ABE-R/L 26-ADE02-C	26	150	2.0	System AD/AE 2.0	50	3565000030	**356008** 2602	215,–	**356009** 2602	215,–
ABE-R/L 32-ADE02-C	32	150	2.0	System AD/AE 2.0	50	3565000030	356008 3202	265,–	356009 3202	265,–
							3138		3138	

Chuck key

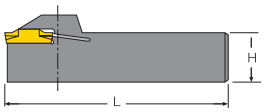
ISO designation	Chuck key art.no.	€
Wrench blade 2-3mm System ASS/ABE/AD/AE	**356500** 0030	39,95
Wrench blade 4-6 mm System ASS/ABE/AD/AE	356500 0040	39,95
	3106	



ATORN® Recess clamp mounting GROOVE

- **for recessing inserts System AD / AE**
- for longitudinal turning and grooving
- Supplied with chuck key



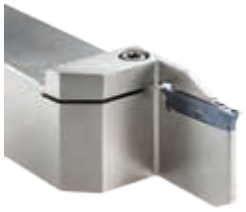




Camp mounting AME 1.5mm R/L

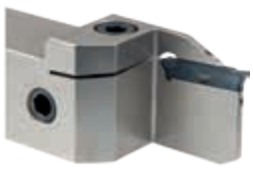
- **for recessing inserts System AD 1.5mm**

ISO designation	H mm	B mm	L mm	W mm	max. depth mm	suitable cutting inserts	Right-hand art.no.	€	Left-hand art.no.	€
AME-R/L 12-ADE1,5-K-T23	12	12	125	1.5	23	System AD/AE 1.5	**356008** 1501	118,–	**356009** 1501	118,–
AME-R/L 16-ADE1,5-K-T23	16	16	125	1.5	23	System AD/AE 1.5	356008 1502	121,–	356009 1502	121,–
							3138		3138	



Clamp mounting AME right-hand / left-hand

ISO designation	H mm	B mm	L mm	W mm	max. depth mm	suitable cutting inserts	Tightening torque max. N-m	Right-hand art.no.	€	Left-hand art.no.	€
AME-R/L 12 ADE02-T13	12	12	125	2.0	13	System AD/AE 2.0	3.2	**356001** 2001	80,50	**356002** 2001	80,50
AME-R/L 12 ADE03-T13	12	12	125	3.0	13	System AD/AE 3.0	3.2	356001 3001	80,50	356002 3001	80,50
AME-R/L 16 ADE02-T13	16	16	125	2.0	13	System AD/AE 2.0	4.0	356001 2002	90,50	356002 2002	90,50
AME-R/L 16 ADE03-T13	16	16	125	3.0	13	System AD/AE 3.0	4.0	356001 3002	90,50	356002 3002	90,50
AME-R/L 16 ADE03-T25	16	16	125	3.0	25	System AD/AE 3.0	4.0	356001 3008	110,–	356002 3008	110,–
AME-R/L 16 ADE04-T25	16	16	125	4.0	25	System AD/AE 4.0	4.0	356001 4001	110,–	356002 4001	110,–
AME-R/L 20 ADE02-T13	20	20	125	2.0	13	System AD/AE 2.0	4.0	356001 2003	103,–	356002 2003	103,–
AME-R/L 20 ADE03-T13	20	20	125	3.0	13	System AD/AE 3.0	4.0	356001 3004	105,–	356002 3004	105,–
AME-R/L 20 ADE03-T25	20	20	125	3.0	25	System AD/AE 3.0	4.0	356001 3005	113,–	356002 3005	113,–
AME-R/L 20 ADE04-T25	20	20	125	4.0	25	System AD/AE 4.0	4.0	356001 4002	112,–	356002 4002	112,–
AME-R/L 20 ADE05-T25	20	20	150	5.0	25	System AD/AE 5.0	4.0	356001 5002	112,–	356002 5002	112,–
AME-R/L 20 ADE06-T25	20	20	150	6.0	25	System AD/AE 6.0	4.0	356001 6001	112,–	356002 6001	112,–
AME-R/L 25 ADE03-T13	25	25	125	3.0	13	System AD/AE 3.0	4.8	356001 3006	110,–	356002 3006	110,–
AME-R/L 25 ADE03-T25	25	25	125	3.0	25	System AD/AE 3.0	4.8	356001 3007	120,–	356002 3007	120,–
AME-R/L 25 ADE04-T25	25	25	125	4.0	25	System AD/AE 4.0	4.8	356001 4003	119,–	356002 4003	119,–
AME-R/L 25 ADE05-T25	25	25	150	5.0	25	System AD/AE 5.0	4.8	356001 5003	119,–	356002 5003	119,–
AME-R/L 25 ADE06-T25	25	25	150	6.0	25	System AD/AE 6.0	4.8	356001 6002	119,–	356002 6002	119,–
								3138		3138	

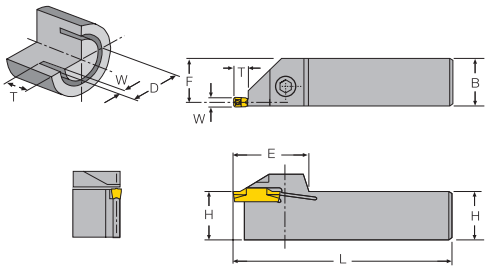


Clamp mounting AME right-hand / left-hand with internal cooling

ISO designation	H mm	B mm	L mm	W mm	t max. mm	suitable cutting inserts	Tightening torque max. N-m	Right-hand art.no.	€	Left-hand art.no.	€
AME-R/L 20-ADE02-K-T13 IK	20	20	125	2.0	13	System AD/AE 2.0	4.0	**356003** 0011	175,–	**356004** 0011	175,–
AME-R/L 16-ADE02-K-T13 IK	16	16	125	2.0	13	System AD/AE 3.0	4.0	356003 0009	165,–	356004 0009	165,–
AME-R/L 16-ADE03-K-T25 IK	16	16	125	3.0	25	System AD/AE 3.0	4.0	356003 0008	174,–	356004 0008	174,–
AME-R/L 20-ADE03-K-T25 IK	20	20	125	3.0	25	System AD/AE 3.0	4.0	356003 0005	185,–	356004 0005	185,–
AME-R/L 25-ADE03-K-T25 IK	25	25	125	3.0	25	System AD/AE 3.0	4.8	356003 0007	200,–	356004 0007	200,–
AME-R/L 16-ADE04-K-T25 IK	16	16	125	4.0	25	System AD/AE 4.0	4.0	356003 0010	174,–	356004 0010	174,–
AME-R/L 20-ADE04-K-T25 IK	20	20	125	4.0	25	System AD/AE 4.0	4.0	356003 0012	185,–	356004 0012	185,–
AME-R/L 25-ADE04-K-T25 IK	25	25	125	4.0	25	System AD/AE 4.0	4.8	356003 0013	200,–	356004 0013	200,–
								3138		3138	

ATORN® Recess clamp mounting GROOVE AXIAL





Clamp mounting AMA Axial R/L

- **for recessing inserts System ADA**
- for axial grooving, Ø 40 - 200mm
- Supplied with chuck key

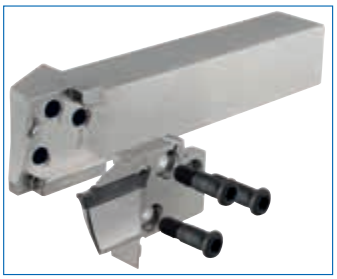
ISO designation	Shank height mm	Shank width mm	L mm	W mm	max. depth mm	D mm	suitable cutting inserts	Right-hand art.no.	€	Left-hand art.no.	€
AMA-. 25-40-3 T13	25	25	150	3.0	13.0	40-50	System ADA 3.0	**356010** 0001	220,–	**356011** 0001	220,–
AMA-. 25-50-3 T13	25	25	150	3.0	13.0	50-60	System ADA 3.0	356010 0002	220,–	356011 0002	220,–
AMA-. 25-60-3 T13	25	25	150	3.0	13.0	60-75	System ADA 3.0	356010 0003	220,–	356011 0003	220,–
AMA-. 25-75-3 T13	25	25	150	3.0	13.0	75-100	System ADA 3.0	356010 0004	220,–	356011 0004	220,–
AMA-. 25-100-3 T13	25	25	150	3.0	13.0	100-140	System ADA 3.0	356010 0005	220,–	356011 0005	220,–
AMA-. 25-140-3 T13	25	25	150	3.0	13.0	140-200	System ADA 3.0	356010 0006	220,–	356011 0006	220,–
								3138		3138	



... it's the tool.

ATORN®
Performance demands quality

ATORN® Recess clamp mounting GROOVE Modular





Version 0°



Version 45°



Version 90°

Clamp mounting AMM Modular R/L
- **for modules AMR.. / AMAE..**
- Supplied with chuck key and assembly screws
- **Note:**
  right-hand tool holder left-hand recessing module
  left-hand tool holder right-hand recessing module

ISO designation	Shank height mm	Shank width mm	Angle °	suitable cutting edge holder	Right-hand art.no.	€	Left-hand art.no.	€
AMM-R/L 2020-00°	20	20	0	AM..-R/L-20	**356020** 2000	210,–	**356021** 2000	210,–
AMM-R/L 2020-45°	20	20	45	AM..-R/L-20	356020 2045	210,–	356021 2045	210,–
AMM-R/L 2020-90°	20	20	90	AM..-R/L-20	356020 2090	210,–	356021 2090	210,–
AMM-R/L 2525-00°	25	25	0	AM..-R/L-25	356020 2500	215,–	356021 2500	215,–
AMM-R/L 2525-45°	25	25	45	AM..-R/L-25	356020 2545	215,–	356021 2545	215,–
AMM-R/L 2525-90°	25	25	90	AM..-R/L-25	356020 2590	215,–	356021 2590	215,–
					3138		3138	

ATORN® Cutting edge holder GROOVE Modular

- Supplied without chuck key
- **Note:**
  right-hand tool holder left-hand recessing module
  left-hand tool holder right-hand recessing module



Cutting edge holder AMR Modular Radial R/L
- **for recessing inserts System AD / AE**
- for parting-off and deep grooving

ISO designation	W mm	max. depth mm	suitable cutting inserts	suitable wrench	suitable tool holder	Right-hand art.no.	€	Left-hand art.no.	€
AMR-R/L 20 ADE02 T25	2.0	25	System AD/AE 2.0	3565000030	AMM-R/L 2020	**356024** 2002	116,–	**356025** 2002	116,–
AMR-R/L 20 ADE03 T25	3.0	25	System AD/AE 3.0	3565000030	AMM-R/L 2020	356024 2003	116,–	356025 2003	116,–
AMR-R/L 20 ADE04 T25	4.0	25	System AD/AE 4.0	3565000040	AMM-R/L 2020	356024 2004	116,–	356025 2004	116,–
AMR-R/L 25 ADE02 T25	2.0	25	System AD/AE 2.0	3565000030	AMM-R/L 2525	356024 2502	117,–	356025 2502	117,–
AMR-R/L 25 ADE03 T25	3.0	25	System AD/AE 3.0	3565000030	AMM-R/L 2525	356024 2503	117,–	356025 2503	117,–
AMR-R/L 25 ADE04 T25	4.0	25	System AD/AE 4.0	3565000040	AMM-R/L 2525	356024 2504	117,–	356025 2504	117,–
						3138		3138	



Cutting edge holder AMAE Modular Axial R/L
- **for recessing inserts System ADA**
- for axial grooving, Ø 40 - 200mm

ISO designation	W mm	max. depth mm	D mm	suitable cutting inserts	suitable wrench	suitable tool holder	Right-hand art.no.	€	Left-hand art.no.	€
AMAE-R/L 25 ADA03 T15 40-50	3.0	15	40-50	System ADA 3.0	3565000030	AMM-R/L 2525	**356026** 0001	137,–	**356027** 0001	137,–
AMAE-R/L 25 ADA03 T15 50-60	3.0	15	50-60	System ADA 3.0	3565000030	AMM-R/L 2525	356026 0002	137,–	356027 0002	137,–
AMAE-R/L 25 ADA03 T15 60-75	3.0	15	60-75	System ADA 3.0	3565000030	AMM-R/L 2525	356026 0003	137,–	356027 0003	137,–
AMAE-R/L 25 ADA03 T15 75-100	3.0	15	75-100	System ADA 3.0	3565000030	AMM-R/L 2525	356026 0004	137,–	356027 0004	137,–
AMAE-R/L 25 ADA03 T15 100-140	3.0	15	100-140	System ADA 3.0	3565000030	AMM-R/L 2525	356026 0005	137,–	356027 0005	137,–
AMAE-R/L 25 ADA03 T15 140-200	3.0	15	140-200	System ADA 3.0	3565000030	AMM-R/L 2525	356026 0006	137,–	356027 0006	137,–
							3138		3138	

ATORN® Recessing inserts ASS GROOVE

- **The feed rates must be adjusted to the respective cutting edge width**
- Cutting edge accuracy W ± 0.02 mm

Chip breaker M - medium

- For grooving
- Negative protective chamfer
- First choice for steels with high tensile strength
- Appropriate for steel and grey cast iron
- Appropriate for grooving, parting-off and longitudinal turning operations

 ISO designation	Width mm	r mm	max. depth mm	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
ASS 2.00-0.2 M	2.00	0.2	8	●		●				ACP 20 G	10	**389000** 2020	13,10
	2.00	0.2	8	●		●				APU 40 G	10	389000 2040	13,10
	2.00	0.2	8	●	●					APM 45 G	10	389000 2045	13,10
ASS 3.00-0.2 M	3.00	0.2	8	●		●				ACP 20 G	10	389000 3120	13,20
	3.00	0.2	8	●		●				APU 40 G	10	389000 3140	13,20
	3.00	0.2	8	●	●					APM 45 G	10	389000 3145	13,20
ASS 4.00-0.3 M	4.00	0.3	8	●		●				ACP 20 G	10	389000 4220	15,20
	4.00	0.3	8	●		●				APU 40 G	10	389000 4240	15,20
	4.00	0.3	8	●	●					APM 45 G	10	389000 4245	15,20
ASS 5.00-0.3 M	5.00	0.3	8	●		●				ACP 20 G	10	389000 5120	17,60
	5.00	0.3	8	●		●				APU 40 G	10	389000 5140	17,60
	5.00	0.3	8	●	●					APM 45 G	10	389000 5145	17,60
ASS 6.00-0.4 M	6.00	0.4	8	●		●				ACP 20 G	10	389000 6120	20,30
	6.00	0.4	8	●		●				APU 40 G	10	389000 6140	20,30
	6.00	0.4	8	●	●					APM 45 G	10	389000 6145	20,30

3145

ISO	ACP 20 G	APM 45 G	APU 40 G
ISO P steel	Vc = 70 - 200	Vc = 60 - 150	Vc = 70 - 200
ISO M stainless steel		Vc = 60 - 180	
ISO K cast iron	Vc = 80 - 180		Vc = 80 - 200
Vc = [m/min] f = [mm/U]	f = 0.05 - 0.15	f = 0.1 - 0.25	f = 0.05 - 0.35



Chip breaker, MU - medium, universal

- Parting-off and grooving
- Engraving and recess turning operations
- Outstanding chip control
- Suitable for steel and cast steel

 ISO designation	Width mm	r mm	max. depth mm	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
ASS 2.00-0.3 MU	2.00	0.2	8	●		●				ACP 20 G	10	**389001** 2020	13,10
	2.00	0.2	8	●		●				APU 40 G	10	389001 2040	13,10
	2.00	0.2	8	●	●					APM 45 G	10	389001 2045	13,10
ASS 3.00-0.3 MU	3.00	0.3	8	●		●				ACP 20 G	10	389001 3120	13,20
	3.00	0.3	8	●		●				APU 40 G	10	389001 3140	13,20
	3.00	0.3	8	●	●					APM 45 G	10	389001 3145	13,20
ASS 4.00-0.4 MU	4.00	0.4	8	●		●				ACP 20 G	10	389001 4220	15,20
	4.00	0.4	8	●		●				APU 40 G	10	389001 4240	15,20
	4.00	0.4	8	●	●					APM 45 G	10	389001 4245	15,20
ASS 5.00-0.4 MU	5.00	0.4	8	●		●				ACP 20 G	10	389001 5120	17,60
	5.00	0.4	8	●		●				APU 40 G	10	389001 5240	17,60
	5.00	0.4	8	●	●					APM 45 G	10	389001 5245	17,60
ASS 6.00-0.5 MU	6.00	0.5	8	●		●				ACP 20 G	10	389001 6120	20,30
	6.00	0.5	8	●		●				APU 40 G	10	389001 6140	20,30
	6.00	0.5	8	●	●					APM 45 G	10	389001 6145	20,30

3145

ISO	ACP 20 G	APM 45 G	APU 40 G
ISO P steel	Vc = 70 - 200	Vc = 60 - 150	Vc = 70 - 200
ISO M stainless steel		Vc = 60 - 180	
ISO K cast iron	Vc = 80 - 180		Vc = 80 - 200
Vc = [m/min] f = [mm/U]	f = 0.05 - 0.35		f = 0.05 - 0.3

Continued on next page >>>

Chip breaker ET - extra

- For grooving
- Specially-designed for stainless-steel workpieces
- A solution for materials that are difficult to machine such as titanium or duplex
- extremely soft cutting

 ISO designation	Width mm	r mm	max. depth mm	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
ASS 2.00-0.2 ET	2.00	0.2	8	●		●				**ACP 20 G**	10	**389004** 2020	13,35
	2.00	0.2	8	●	●					**APU 40 G**	10	389004 2040	13,35
	2.00	0.2	8	○	●			●		**APM 45 G**	10	389004 2045	13,35
ASS 3.00-0.3 ET	3.00	0.3	8	●		●				**ACP 20 G**	10	389004 3020	13,45
	3.00	0.3	8	●	●					**APU 40 G**	10	389004 3040	13,45
	3.00	0.3	8	○	●			●		**APM 45 G**	10	389004 3045	13,45
ASS 4.00-0.4 ET	4.00	0.4	8	●		●				**ACP 20 G**	10	389004 4020	18,30
	4.00	0.4	8	●	●					**APU 40 G**	10	389004 4040	18,30
	4.00	0.4	8	○	●			●		**APM 45 G**	10	389004 4045	18,30
ASS 5.00-0.4 ET	5.00	0.4	8	●		●				**ACP 20 G**	10	389004 5020	21,30
	5.00	0.4	8	●	●					**APU 40 G**	10	389004 5040	21,30
	5.00	0.4	8	○	●			●		**APM 45 G**	10	389004 5045	21,30
ASS 6.00-0.4 ET	6.00	0.4	8	●		●				**ACP 20 G**	10	389004 6020	24,50
	6.00	0.4	8	●	●					**APU 40 G**	10	389004 6040	24,50
	6.00	0.4	8	○	●			●		**APM 45 G**	10	389004 6045	24,50

3145

ISO	ACP 20 G	APM 45 G	APU 40 G
ISO P steel	Vc = 70 - 200	Vc = 60 - 150	Vc = 60 - 150
ISO M stainless steel		Vc = 60 - 180	Vc = 50 - 200
ISO K cast iron	Vc = 80 - 180		
ISO S superalloys		Vc = 15 - 120	
Vc = [m/min] f = [mm/U]	f = 0.05 - 0.15	f = 0.07 - 0.18	f = 0.08 - 0.18

Chip breaker MN - for machining aluminium

- Parting-off and grooving
- Highly positive chip breaker with sharp cutting edge finish
- Highly polished chip breaker surface
- Maximum reduction of built-up edges

 ISO designation	Width mm	r mm	max. depth mm	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
ASS 2.00-0.2 MN	2.00	0.2	8				●			**AWN 16 G**	10	**389002** 2016	16,20
ASS 3.00-0.3 MN	3.00	0.3	8				●			**AWN 16 G**	10	389002 3116	16,30
ASS 4.00-0.4 MN	4.00	0.4	8				●			**AWN 16 G**	10	389002 4216	18,–

3145

ISO	AWN 16 G
ISO N Al/non-ferrous	Vc = 200 - 2000
Vc = [m/min] f = [mm/U]	f = 0.05 - 0.25

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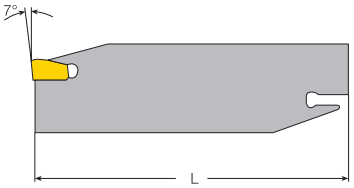


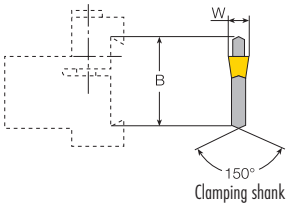
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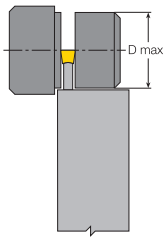
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ATORN® Recessing blades GROOVE

- **for recessing inserts System ASS**
- for parting-off and deep grooving
- Supplied without chuck key









Recessing blade ABE right-hand / left-hand

ISO designation	B mm	L mm	W mm	suitable cutting inserts	D max. mm	suitable wrench	**Right-hand** art.no.	€	**Left-hand** art.no.	€
ABE R/L 26-ASS02	26	150	2.0	System ASS 2.0	50	3565000030	**356810** 2602	79,50	**356820** 2602	79,50
ABE R/L 32-ASS02	32	150	2.0	System ASS 2.0	50	3565000030	356810 3202	79,50	356820 3202	79,50
							3138		3138	



Recessing blade ABE neutral

ISO designation	B mm	L mm	W mm	suitable cutting inserts	D max. mm	suitable wrench	art.no.	€
ABE N 26-ASS03	26	150	3.0	System ASS 3.0	70	3565000030	**356800** 2603	98,50
ABE N 26-ASS04	26	150	4.0	System ASS 4.0	80	3565000040	356800 2604	86,50
ABE N 32-ASS03	32	150	3.0	System ASS 3.0	100	3565000030	356800 3203	79,50
ABE N 32-ASS04	32	150	4.0	System ASS 4.0	100	3565000040	356800 3204	87,–
ABE N 32-ASS05	32	150	5.0	System ASS 5.0	110	3565000040	356800 3205	101,–
ABE N 32-ASS06	32	150	6.0	System ASS 6.0	110	3565000040	356800 3206	101,–
							3138	



Recessing blade ABE right-hand / left-hand with internal cooling

ISO designation	B mm	L mm	W mm	suitable cutting inserts	D max. mm	suitable wrench	**Right-hand** art.no.	€	**Left-hand** art.no.	€
ABE R/L 26-ASS02	26	150	2.0	System ASS 2.0	50	3565000030	**356811** 2602	142,–	**356821** 2602	142,–
ABE R/L 32-ASS02	32	150	2.0	System ASS 2.0	50	3565000030	356811 3202	147,–	356821 3202	147,–
							3138		3138	



Recessing blade SBE Neutral with internal cooling

ISO designation	B mm	L mm	W mm	suitable cutting inserts	D max. mm	suitable wrench	art.no.	€
ABE N 26-ASS03-C	26	150	3.0	System ASS 3.0	70	3565000030	**356801** 2603	145,–
ABE N 26-ASS04-C	26	150	4.0	System ASS 4.0	80	3565000040	356801 2604	145,–
ABE-N 32-ASS03-C	32	150	3.0	System ASS 3.0	100	3565000030	356801 3203	150,–
ABE-N 32-ASS04-C	32	150	4.0	System ASS 4.0	100	3568000040	356801 3204	150,–
							3138	

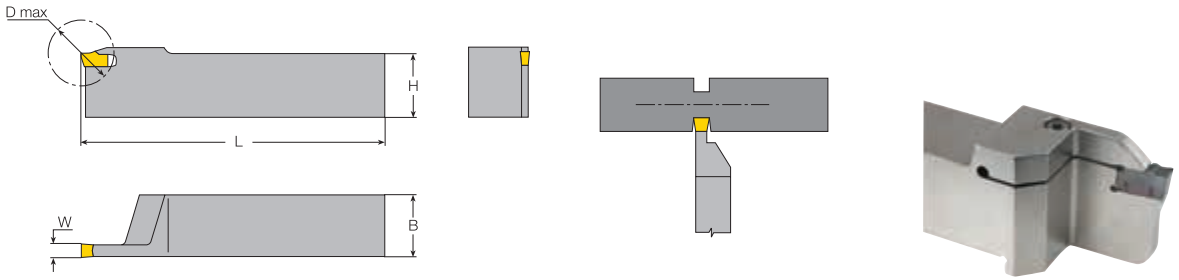
Chuck key

ISO designation	**Chuck key** art.no.	€
Wrench blade 2-3mm System ASS/ABE/AD/AE	**356500** 0030	39,95
Wrench blade 4-6 mm System ASS/ABE/AD/AEWrench blade 2-3mm System ASS/ABE/AD/AE	356500 0040	39,95
	3106	



ATORN® Recess clamp mounting GROOVE

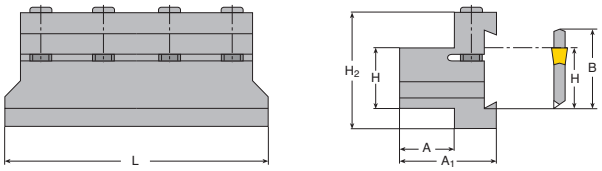
- **for recessing inserts System ASS**
- for longitudinal turning and grooving
- Supplied with chuck key



Clamp mounting AME right-hand / left-hand

ISO designation	H mm	B mm	L mm	W mm	D max. mm	suitable cutting inserts	Tightening torque max. N·m	Right-hand art.no.	€	Left-hand art.no.	€
AME R/L 16-ASS03	16	16	150	3.0	40	System ASS 3.0	4.0	**356801** 0001	104,–	**356802** 0001	104,–
AME R/L 20-ASS03	20	20	150	3.0	40	System ASS 3.0	4.0	356801 0002	107,–	356802 0002	107,–
AME R/L 25-ASS03	25	25	150	3.0	40	System ASS 3.0	4.8	356801 0003	112,–	356802 0003	112,–
AME R/L 25-ASS05	25	25	150	5.0	50	System ASS 5.0	4.8	356801 0005	119,–	356802 0005	119,–
AME R/L 25-ASS06	25	25	150	6.0	64	System ASS 6.0	4.8	356801 0006	127,–	356802 0006	127,–
								3138		3138	

Recessing blade mount AD / AE / ASS GROOVE





Recessing blade holder AEB

- For recessing blade ABE ASS without internal cooling
- For recessing blade ABE AD without internal cooling

ISO designation	H mm	A mm	B mm	L mm	A1 mm	H2 mm	suitable cutting edge holder	art.no.	€
AEB26-2020	20	20	26	90	37	43	Dimension B = 26	**356101** 2620	178,–
AEB32-2525	25	20	32	110	38	49	Dimension B = 32	356101 3225	193,–
								3138	



Recessing blade holder AEB with internal cooling

- For recessing blade ABE AD with internal cooling

ISO designation	H mm	A mm	B mm	L mm	A1 mm	H2 mm	suitable cutting edge holder	art.no.	€
AEB26-2020 IK	20	20	26	82	40	43	Dimension B = 26	**356100** 2620	325,–
AEB32-2525 IK	25	25	32	95	44.5	49	Dimension B = 32	356100 3225	330,–
								3138	

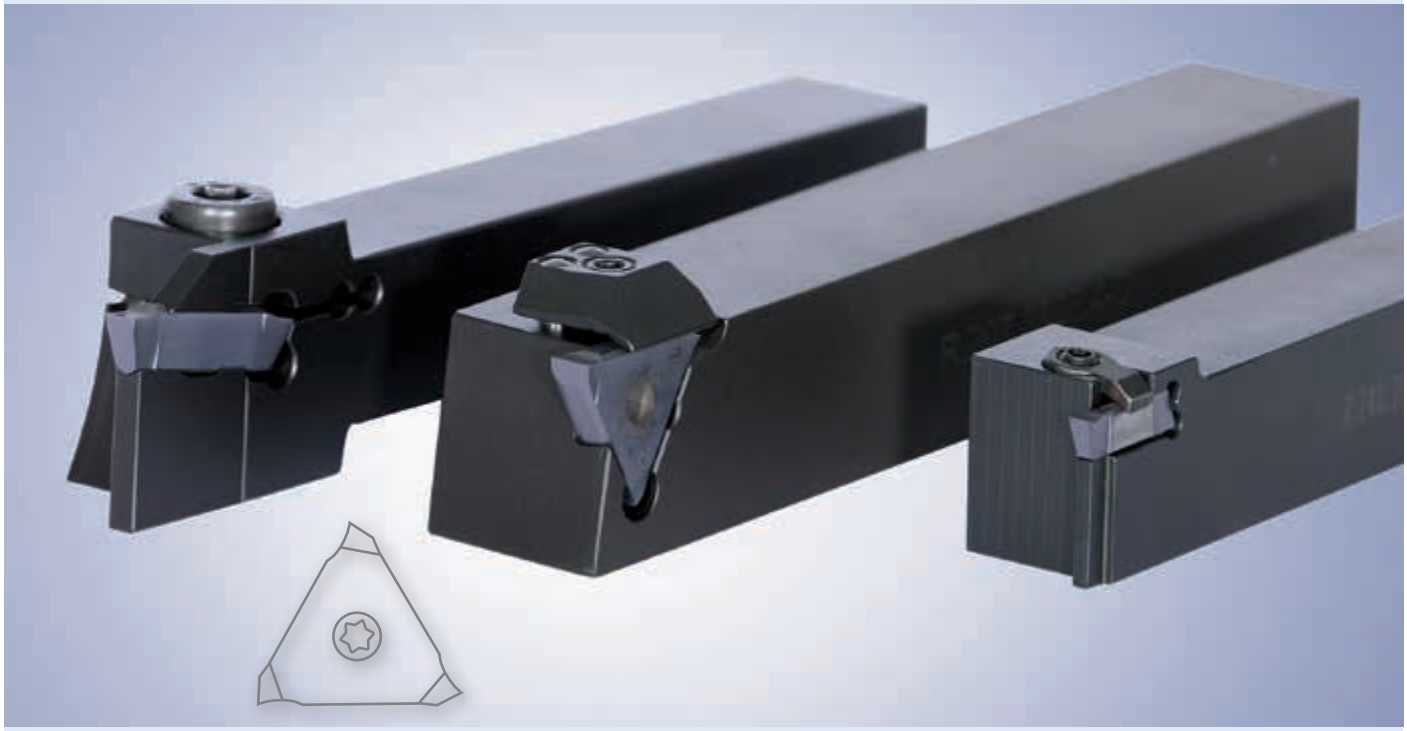
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ATORN® DED grooving system

INFO

Recess turning tools with three-fluted indexable inserts

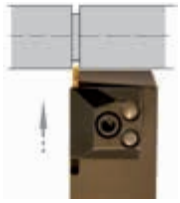


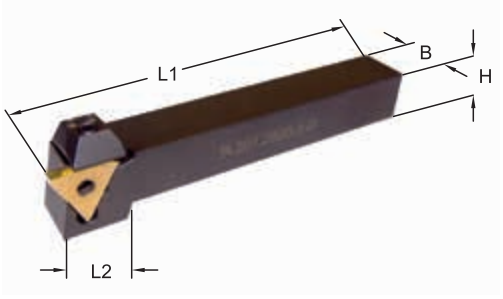
ATORN® DED

- 3-cutting-edge system
- Quick, positionally accurate changing of blades
- For punching depths up to 6 mm depth and 8 mm width
- For grooving and parting-off, for grooves in accordance with DIN 471/472, for axial grooves
- More cost-effective with 3 cutting edges
- Soft cutting with modern coatings and ground chip breakers

ATORN® DED grooving system holder

- **For three-edged recessing inserts**
- Solid tool holder made from 42 CrMo4V, approx. 1,300 N/mm² Hardened and tempered
- Powerful clamping element guided by two cylindrical pins





Holder type R/L..1-D

- Punching depth up to 4 mm
- **Tmax. reduced for workpiece Ø > 40 mm**

Designation	H ± 0.1 mm	B ± 0.1 mm	L1 mm	L2 mm	T max. mm	suitable cutting inserts					Right-hand art.no.	€	Left-hand art.no.	€
R 207,1212,1-D	12	12	100	24	4	DED.00.. DED.01..	A1	B1		D1	**350001** 1212	104,–		
L 207,1616,1-D	16	16	125	22	4	DED.00.. DED.01..		B1	C1	D1			**350005** 1616	92,50
R 207,1616,1-D	16	16	125	22	4	DED.00.. DED.01..	A1	B1		D1	350001 1616	92,50		
L 207,2020,1-D	20	20	125	21	4	DED.00.. DED.01..		B1	C1	D1			350005 2020	72,–
R 207,2020,1-D	20	20	125	21	4	DED.00.. DED.01..	A1	B1		D1	350001 2020	72,–		
L 207,2525,1-D	25	25	150	-	4	DED.00.. DED.01..		B1	C1	D1			350005 2525	75,50
R 207,2525,1-D	25	25	150	-	4	DED.00.. DED.01..	A1	B1		D1	350001 2525	75,50		
											3131		3131	

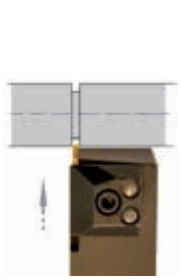
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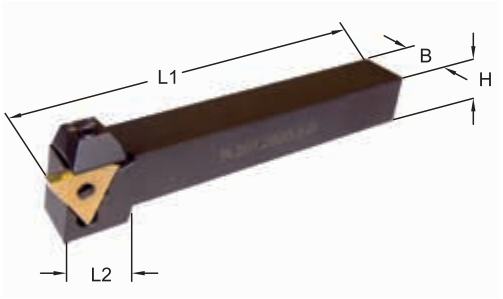
11 pcs set

- **DED grooving system**
- Holder with set of 10 indexable inserts
- **Tmax. reduced for workpiece Ø > 40 mm**

Contents	art.no.	€
1x clamp mounting R.207.2020.1-D 20 x 20 mm, punching depth up to 4 mm (for DED.00../DED.01..) Recessing insert DIN 471/472 (1 of each): DED.0050.00-D 0.5 mm DED.0060.00-D 0.6 mm DED.0070.00-D 0.7 mm DED.0080.00-D 0.8 mm DED.0090.00-D 0.9 mm DED.0100.00-D 1.0 mm DED.0110.00-D 1.1 mm DED.0130.00-D 1.3 mm DED.0160.00-D 1.6 mm DED.0185.00-D 1.85 mm	**350600** 0011	239,–
	3131	







Holder type R/L..2-D

- Punching depth up to 6 mm
- **Tmax. reduced for workpiece Ø > 40 mm**

Designation	H ± 0.1 mm	B ± 0.1 mm	L1 mm	L2 mm	T max. mm	suitable cutting inserts					**Right-hand** art.no.	€	**Left-hand** art.no.	€
L 207,1616,2-D	16	16	125	22	6	DED.02..		B1	C1	D1			**350006** 1616	92,50
R 207,1616,2-D	16	16	125	22	6	DED.02..	A1	B1		D1	**350002** 1616	92,50		
L 207,2020,2-D	20	20	125	21	6	DED.02..		B1	C1	D1			350006 2020	72,–
R 207,2020,2-D	20	20	125	21	6	DED.02..	A1	B1		D1	350002 2020	72,–		
L 207,2525,2-D	25	25	150	-	6	DED.02..		B1	C1	D1			350006 2525	75,50
R 207,2525,2-D	25	25	150	-	6	DED.02..	A1	B1		D1	350002 2525	75,50		
											3131		3131	

Holder type R/L..3-D

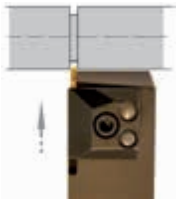
- Punching depth up to 6 mm
- **Tmax. reduced for workpiece Ø > 40 mm**

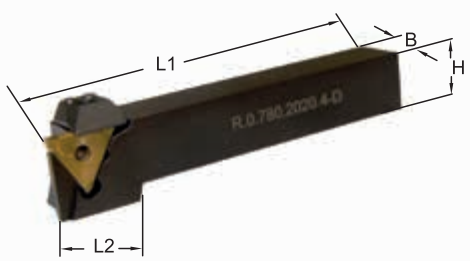
Designation	H ± 0.1 mm	B ± 0.1 mm	L1 mm	L2 mm	T max. mm	suitable cutting inserts					**Right-hand** art.no.	€	**Left-hand** art.no.	€
L 207,1616,3-D	16	16	125	22	6	DED.03..		B1	C1	D1			**350007** 1616	92,50
R 207,1616,3-D	16	16	125	22	6	DED.03..	A1	B1		D1	**350003** 1616	92,50		
L 207,2020,3-D	20	20	125	21	6	DED.03..		B1	C1	D1			350007 2020	72,–
R 207,2020,3-D	20	20	125	21	6	DED.03..	A1	B1		D1	350003 2020	72,–		
L 207,2525,3-D	25	25	150	-	6	DED.03..		B1	C1	D1			350007 2525	75,50
R 207,2525,3-D	25	25	150	-	6	DED.03..	A1	B1		D1	350003 2525	75,50		
											3131		3131	

Holder type R/L..4-D

- Punching depth up to 6 mm
- **Tmax. reduced for workpiece Ø > 40 mm**

Designation	H ± 0.1 mm	B ± 0.1 mm	L1 mm	L2 mm	T max. mm	suitable cutting inserts					**Right-hand** art.no.	€	**Left-hand** art.no.	€
L 207,1616,4-D	16	16	125	21	6	DED.04.. DED.05..		B1	C2	D1			**350008** 1616	92,50
R 207,1616,4-D	16	16	125	21	6	DED.04.. DED.05..	A2	B1		D1	**350004** 1616	92,50		
L 207,2020,4-D	20	20	125	-	6	DED.04.. DED.05..		B1	C2	D1			350008 2020	72,–
R 207,2020,4-D	20	20	125	-	6	DED.04.. DED.05..	A2	B1		D1	350004 2020	72,–		
L 207,2525,4-D	25	25	150	-	6	DED.04.. DED.05..		B1	C2	D1			350008 2525	75,50
R 207,2525,4-D	25	25	150	-	6	DED.04.. DED.05..	A2	B1		D1	350004 2525	75,50		
											3131		3131	





Holder type R/L..2-D

- Punching depth up to 8 mm
- **Tmax. reduced for workpiece Ø > 125 mm**

Designation	H ± 0.1 mm	B ± 0.1 mm	L1 mm	L2 mm	T max. mm	suitable cutting inserts					Right-hand art.no.	€	Left-hand art.no.	€
L 0,780.2020,2D	20	20	125	24	8	DED.02..		B1	C1	D1			**350012** 2020	76,50
R 0,780.2020,2D	20	20	125	24	8	DED.02..	A1	B1		D1	**350009** 2020	76,50		
L 0,780.2525,2D	25	25	150	-	8	DED.02..		B1	C1	D1			350012 2525	80,50
R 0,780.2525,2D	25	25	150	-	8	DED.02..	A1	B1		D1	350009 2525	80,50		
L 0,780.3232,2D	32	32	170	-	8	DED.02..		B1	C1	D1			350012 3232	96,50
R 0,780.3232,2D	32	32	170	-	8	DED.02..	A1	B1		D1	350009 3232	96,50		
											3131		3131	

Holder type R/L..3-D

- Punching depth up to 8 mm
- **Tmax. reduced for workpiece Ø > 125 mm**

Designation	H ± 0.1 mm	B ± 0.1 mm	L1 mm	L2 mm	T max. mm	suitable cutting inserts					Right-hand art.no.	€	Left-hand art.no.	€
L 0,780.2020,3D	20	20	125	24	8	DED.03..		B1	C1	D1			**350013** 2020	76,50
R 0,780.2020,3D	20	20	125	24	8	DED.03..	A1	B1		D1	**350010** 2020	76,50		
L 0,780.2525,3D	25	25	150	-	8	DED.03..		B1	C1	D1			350013 2525	80,50
R 0,780.2525,3D	25	25	150	-	8	DED.03..	A1	B1		D1	350010 2525	80,50		
L 0,780.3232,3D	32	32	170	-	8	DED.03..		B1	C1	D1			350013 3232	96,50
R 0,780.3232,3D	32	32	170	-	8	DED.03..	A1	B1		D1	350010 3232	96,50		
											3131		3131	

Holder type R/L..4-D

- Punching depth up to 8 mm
- **Tmax. reduced for workpiece Ø > 125 mm**

Designation	H ± 0.1 mm	B ± 0.1 mm	L1 mm	L2 mm	T max. mm	suitable cutting inserts					Right-hand art.no.	€	Left-hand art.no.	€
L 0,780.2020,4D	20	20	125	24	8	DED.04.. DED.05..		B1	C2	D1			**350014** 2020	76,50
R 0,780.2020,4D	20	20	125	24	8	DED.04.. DED.05..	A2	B1		D1	**350011** 2020	76,50		
L 0,780.2525,4D	25	25	150	-	8	DED.04.. DED.05..		B1	C2	D1			350014 2525	80,50
R 0,780.2525,4D	25	25	150	-	8	DED.04.. DED.05..	A2	B1		D1	350011 2525	80,50		
L 0,780.3232,4D	32	32	170	-	8	DED.04.. DED.05..		B1	C2	D1			350014 3232	96,50
R 0,780.3232,4D	32	32	170	-	8	DED.04.. DED.05..	A2	B1		D1	350011 3232	96,50		
											3131		3131	

Spare parts

	Clamping claw art.no.	€
A1	370001 0121	20,80
A2	370001 0125	23,10
	3131	

	Clamping screw art.no.	€
B1	370001 0200	4,22
	3131	

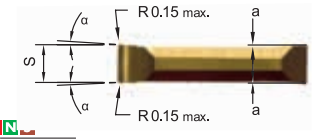
	Clamping claw art.no.	€
C1	370001 0221	20,80
C2	370001 0225	23,10
	3131	

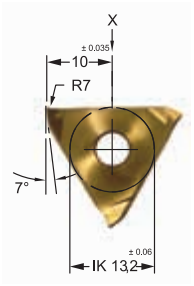
	Guide pin art.no.	€
D1	370001 6325	0,43
	3131	

ATORN® DED grooving system inserts

1046

- **3 cutting edges**
- Sintered version with incircle Ø 13.2 mm
- Positive, ground cutting geometries
- Extremely easy cutting action
- Low cutting forces
- Parting-off insert with chip breaker
- High thermal and chemical stability
- Low friction coefficient
- Can be used under some circumstances for dry machining
- Can be used universally with almost all materials
- Versions for parting-off, grooving, radius recessing, copy turning and precision turning
- **Material: HC 8620 ISO PMKNS fine grain carbide, TiAlN-coated**





For retaining grooves in accordance with DIN 471 / 472

ISO P M K N

Designation	Groove width mm	S -0.05 mm	Clearance angle a below	Clearance angle a above	a ± 0.02 mm	suitable tool holder		art.no.	€
DED.0050,00-D	0.5	0.57	0.5°	1°	0.06	R/L..1-D	5	**360001** 0050	15,80
DED.0060,00-D	0.6	0.67	0.5°	1°	0.07	R/L..1-D	5	360001 0060	15,80
DED.0070,00-D	0.7	0.77	0.5°	1°	0.08	R/L..1-D	5	360001 0070	15,80
DED.0080,00-D	0.8	0.87	0.5°	1°	0.08	R/L..1-D	5	360001 0080	15,80
DED.0090,00-D	0.9	0.97	0.5°	1°	0.08	R/L..1-D	5	360001 0090	15,80
DED.0100,00-D	1.0	1.07	0.5°	1°	0.09	R/L..1-D	5	360001 0100	15,80
DED.0110,00-D	1.1	1.24	3°	3°	0.15	R/L..1-D	5	360001 0110	15,80
DED.0130,00-D	1.3	1.44	3°	3°	0.15	R/L..1-D	5	360001 0130	15,80
DED.0160,00-D	1.6	1.74	3°	3°	0.20	R/L..1-D	5	360001 0160	15,80
DED.0185,00-D	1.85	1.99	3°	3°	0.20	R/L..1-D	5	360001 0185	15,80
DED.0215,00-D	2.15	2.29	3°	3°	0.20	R/L..2-D	5	360001 0215	15,80
DED.0265,00-D	2.65	2.79	3°	3°	0.20	R/L..2-D	5	360001 0265	15,80
DED.0315,00-D	3.15	3.29	3°	3°	0.20	R/L..3-D	5	360001 0315	17,–
DED.0415,00-D	4.15	4.29	3°	3°	0.20	R/L..4-D	5	360001 0415	17,30
DED.0515,00-D	5.15	5.29	3°	3°	0.20	R/L..4-D	5	360001 0515	17,90

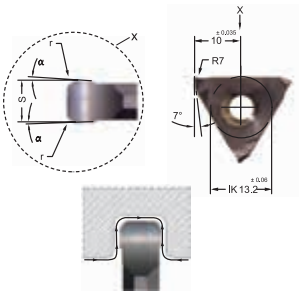
3131

For copy and precision turning

ISO P M K N S

Designation	S -0.05 mm	r mm	Clearance angle a below	Clearance angle a above	suitable tool holder		art.no.	€
DED.0150,02-D	1.5	0.2	4°	3°	R/L..1-D	5	**360002** 0150	19,70
DED.0200,02-D	2.0	0.2	4°	3°	R/L..1-D	5	360002 0202	19,70
DED.0200,04-D	2.0	0.4	4°	3°	R/L..1-D	5	360002 0204	20,30
DED.0300,02-D	3.0	0.2	4°	3°	R/L..2-D	5	360002 0302	20,30
DED.0300,06-D	3.0	0.6	4°	3°	R/L..2-D	5	360002 0306	20,80
DED.0300,08-D	3.0	0.8	4°	3°	R/L..2-D	5	360002 0308	20,80
DED.0400,02-D	4.0	0.2	4°	3°	R/L..3-D	5	360002 0402	20,90
DED.0400,08-D	4.0	0.8	4°	3°	R/L..3-D	5	360002 0408	20,90
DED.0400,12-D	4.0	1.2	4°	3°	R/L..3-D	5	360002 0412	20,90

3131



Full radius for recess turning grooves with widths from 0.5 to 1.6 mm

ISO P M K N S

Designation	S -0.05 mm	r mm	a mm	suitable tool holder		art.no.	€
DED.0002,05-D	0.5	0.25	0.07	R/L..1-D	5	**360004** 0002	21,60
DED.0005,10-D	1.0	0.5	0.09	R/L..1-D	5	360004 0005	21,60
DED.0006,12-D	1.2	0.6	0.20	R/L..1-D	5	360004 0006	21,60
DED.0008,16-D	1.6	0.8	0.25	R/L..1-D	5	360004 0008	21,60

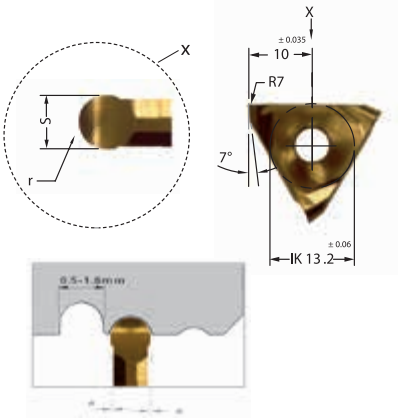
3131

Full radius for recess turning grooves with widths from 2.0 to 5.0 mm

ISO P M K N S

Designation	S -0.05 mm	r mm	suitable tool holder		art.no.	€
DED.0010,20-D	2.0	1.0	R/L..2-D	5	**360003** 0010	24,30
DED.0012,25-D	2.5	1.25	R/L..2-D	5	360003 0012	25,–
DED.0015,30-D	3.0	1.5	R/L..3-D	5	360003 0015	25,70
DED.0020,40-D	4.0	2.0	R/L..4-D	5	360003 0020	25,60
DED.0025,50-D	5.0	2.5	R/L..4-D	5	360003 0025	26,–

3131

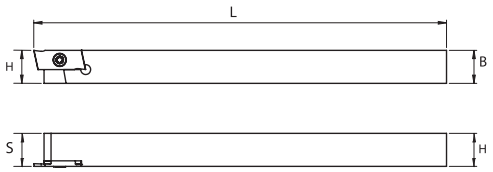


palbit Grooving and parting-off system MINI

- Two cutting edges on each indexable cutting insert for extremely small-scale grooving and parting-off tasks
- Practically the entire spectrum of operations involved in grooving and parting-off work up to 2.0 mm is covered with a minimum of equipment.
- The design of the insert seat in the holder, clamped in place by means of a TORX screw, ensures a high level of repeatability and positioning precision of the cutting edge, and enables all of the indexable cutting inserts listed below to be used.

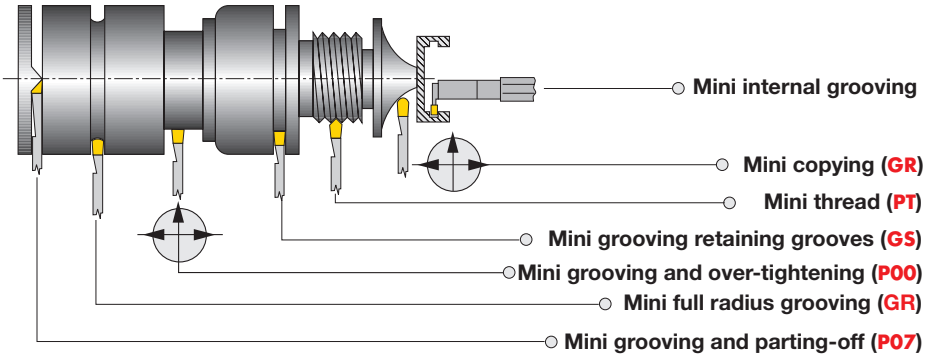
Grooving and parting-off up to 2 mm

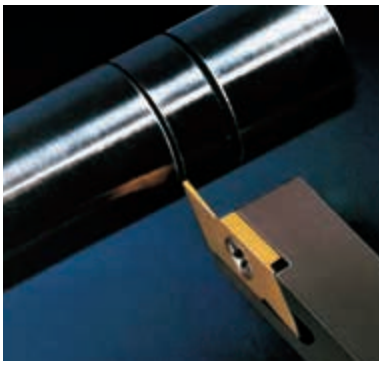




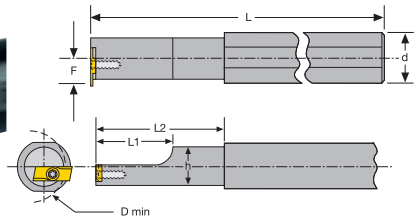
External machining

Designation	B mm	H mm	L mm	S mm			Right-hand art.no.	€	Left-hand art.no.	€
SALHER/L 0808 M07	8	8	150	8	A1	C1	**361003** 0808	78,75	**361004** 0808	78,75
SALHER/L 1010 M07	10	10	150	10	A1	C1	361003 1010	78,75	361004 1010	78,75
SALHER/L 1212 M07	12	12	150	12	A1	C1	361003 1212	78,75	361004 1212	78,75
SALHER/L 1616 M07	16	16	150	16	A1	C1	361003 1616	86,25	361004 1616	86,25
							3158		3158	









Internal machining

- For internal machining, please select right-hand inserts and left-hand holders, or left-hand inserts and right-hand holders.

Designation	D mm	H mm	L mm	L1 mm	L2 mm	F mm	D min. mm			Right-hand art.no.	€	Left-hand art.no.	€
THI -7-20	20.0	19.05	140	25	50	13.34	25.0	A2	B1	**361015** 0720	134,–	**361016** 0720	134,–
THI -7-25	25.0	19.05	150	32	63	13.34	27.0	A2	B1	361015 0725	146,–	361016 0725	146,–
										3123		3123	

Spare parts

	Screw art.no.	€
A1	321099 0344	3,85
A2	361060 0001	3,60
	3160	

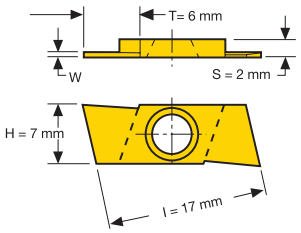
	Steel grey art.no.	€
B1	703038 0080	1,97
	7111	

	TORX art.no.	€
C1	703053 0080	1,79
	7114	

palbit Grooving and parting-off inserts MINI

1052

- All illustrations show RH versions



RN / LN neutral

- RN for right-hand external holder
- LN for left-hand external holder



ISO designation	W+0.02 mm	T mm	ISO P K M S Right-hand PH 7920		art.no.	€	ISO P K M S Left-hand PH 7920		art.no.	€
SAL11P100R/LN-P00	1.00	6.00	10	**361602**	1050	27,25	10	**361603**	1050	27,25
SAL11P150R/LN-P00	1.50	6.00	10	361602	1550	27,25	10	361603	1550	27,25
SAL13P200R/LN-P00	2.00	6.00	10	361602	2050	27,25	10	361603	2050	27,25
					3149				3149	

RR / RL 7°

- RR for right-hand external holder
- RL for left-hand external holder



ISO designation	W+0.02 mm	T mm	ISO P K M S Right-hand PH 7920		art.no.	€	ISO P K M S Left-hand PH 7920		art.no.	€
SAL11P100RR/L-P07	1.00	6.00	10	**361604**	1050	27,25	10	**361605**	1050	27,25
SAL11P150RR/L-P07	1.50	6.00	10	361604	1550	27,25	10	361605	1550	27,25
SAL13P200RR/L-P07	2.00	6.00	10	361604	2050	27,25	10	361605	2050	27,25
					3149				3149	

LR / LL 7°

- LR for right-hand external holder
- LL for left-hand external holder



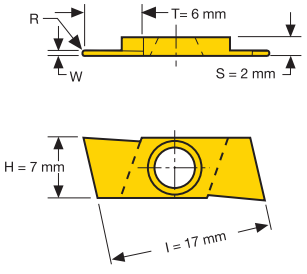
ISO designation	W+0.02 mm	T mm	ISO P K M S Right-hand PH 7920		art.no.	€	ISO P K M S Left-hand PH 7920		art.no.	€
SAL11P100LR/L-P07	1.00	6.00	10	**361614**	1050	27,25	10	**361615**	1050	27,25
SAL11P150LR/L-P07	1.50	6.00	10	361614	1550	27,25	10	361615	1550	27,25
SAL13P200LR/L-P07	2.00	6.00	10	361614	2050	27,25	10	361615	2050	27,25
					3149				3149	

palbit Radius grooving inserts MINI

1052

- All illustrations show RH versions





R / L

- R for right-hand external holder
- L for left-hand external holder

ISO designation	W+0.02 mm	R mm	ISO P K M S Right-hand PH 7920		art.no.	€	ISO P K M S Left-hand PH 7920		art.no.	€
SAL60G100R/L-GR	1.0	0.5	10	**361600**	1050	27,25	10	**361601**	1050	27,25
SAL60G150R/L-GR	1.5	0.75	10	361600	1550	27,25	10	361601	1550	27,25
SAL60G200R/L-GR	2.0	1.0	10	361600	2050	27,25	10	361601	2050	27,25
					3149				3149	

palbit Grooving inserts for retaining grooves MINI



1052

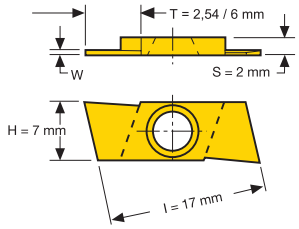
- All illustrations show RH versions



R / L

- R for right-hand external holder
- L for left-hand external holder

ISO designation	W+0.02 mm	T mm	ISO PKMS	Right-hand PH 7920 art.no.	€	ISO PKMS	Left-hand PH 7920 art.no.	€
SAL25G050R/L-GS	0.50	2.50	10	**361606** 0550	27,25	10	**361607** 0550	27,25
SAL25G070R/L-GS	0.70	2.50	10	361606 0750	27,25	10	361607 0750	27,25
SAL25G080R/L-GS	0.80	2.50	10	361606 0850	27,25	10	361607 0850	27,25
SAL25G090R/L-GS	0.90	2.50	10	361606 0950	27,25	10	361607 0950	27,25
SAL25G110R/L-GS	1.10	6.00	10	361606 1050	27,25	10	361607 1050	27,25
SAL25G130R/L-GS	1.30	6.00	10	361606 1350	27,25	10	361607 1350	27,25
SAL25G160R/L-GS	1.60	6.00	10	361606 1650	27,25	10	361607 1650	27,25
SAL25G185R/L-GS	1.85	6.00	10	361606 1850	27,25	10	361607 1850	27,25
				3149			3149	



palbit Grooving inserts for thread MINI



1052

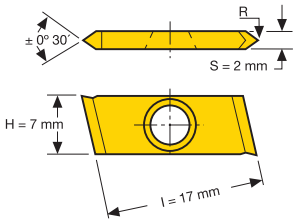
- All illustrations show RH versions



R / L 60°/55°

- R for right-hand external holder
- L for left-hand external holder

ISO designation	Angle °	R mm	ISO PKMS	Right-hand PH 7920 art.no.	€	ISO PKMS	Left-hand PH 7920 art.no.	€
SAL100H012R/L55-PT	55	0.1	10	**361608** 5550	28,25	10	**361609** 5550	28,25
SAL100H012R/L60-PT	60	0.1	10	361608 6050	28,25	10	361609 6050	28,25
				3149			3149	



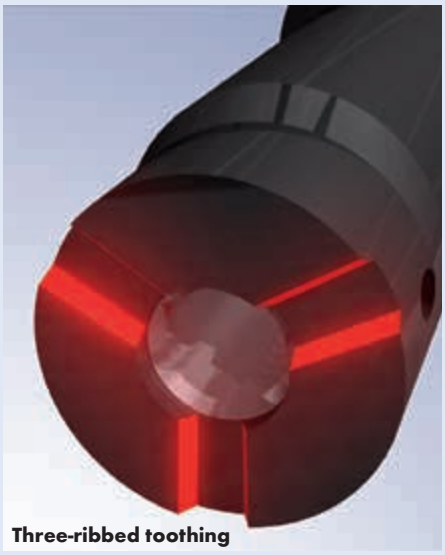
THE COMPLETE
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PALBIT
Machining tools
411 pages
Art.no. 019900 0315

Overview of all free manufacturers' catalogues
on page 14/15



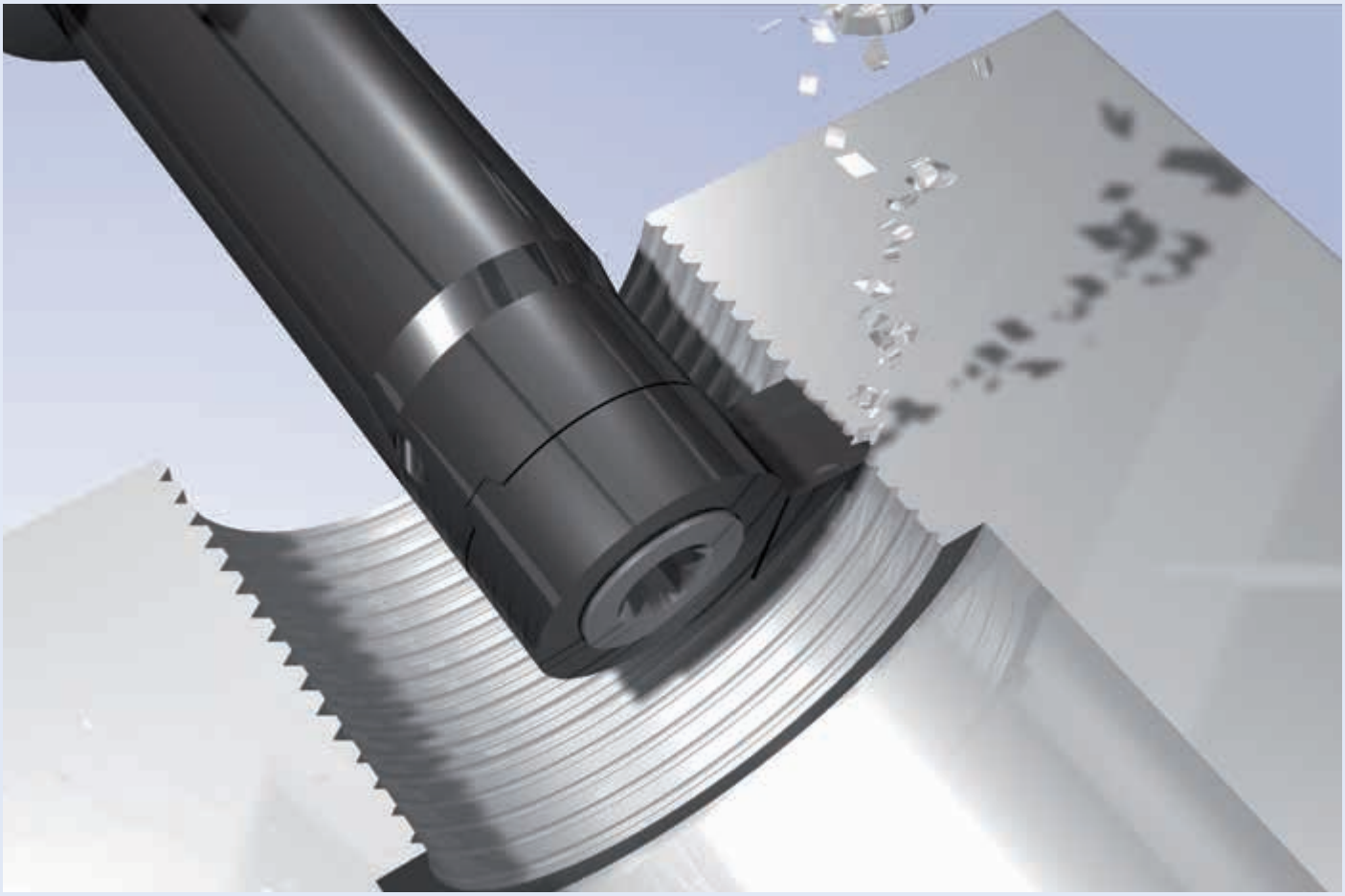


Three-ribbed toothing

ATORN® MINI-CUT

The exchangeable carbide blades are screwed onto the front using the tried and tested three-ribbed toothing.

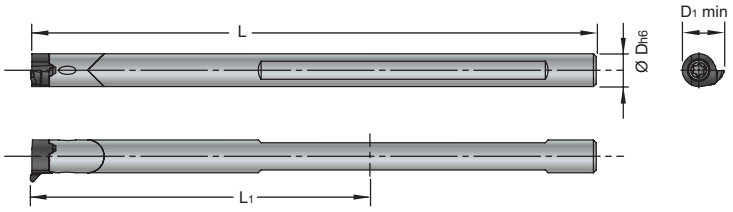
- Best repetition precision with easiest handling
- Best possible absorption of torque forces
- Very precise fixing of position of the blade at the centre of rotation



ATORN® Tool holder MINI-CUT



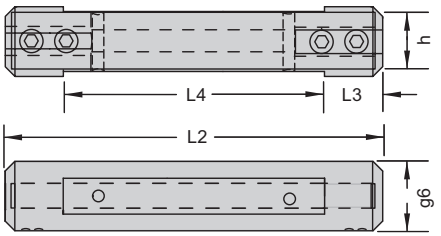
- **With internal cooling**
- For recess turning, internal turning and thread cutting (internal) from Ø 7.8 mm
- Spare clamping screws available on request
- **FLEXO** clamp mounting, variable clamping range from ... to ... mm (see table Clamping Length = „**L**"
- **FLEXO** clamp mounting for HM cutting inserts R/LS 08 and R/LS 11
- Suitable **FLEXO** steel clamp mounting



FLEXO carbide tool holder

Designation	D h6 mm	D1 min. mm	L mm	L1 mm	suitable cutting inserts	art.no.	€
V08,0006,2HM	6.0	8.0	65.0	18-42	R/LS08	**305012** 0081	225,–
V08,0006,4HM	6.0	8.0	103.0	40-80	R/LS08	305012 0082	255,–
V11,0008,2HM	8.0	11.0	79.0	20-55	R/LS11	305012 0111	285,–
V11,0008,4HM	8.0	11.0	129.0	50-105	R/LS11	305012 0112	320,–

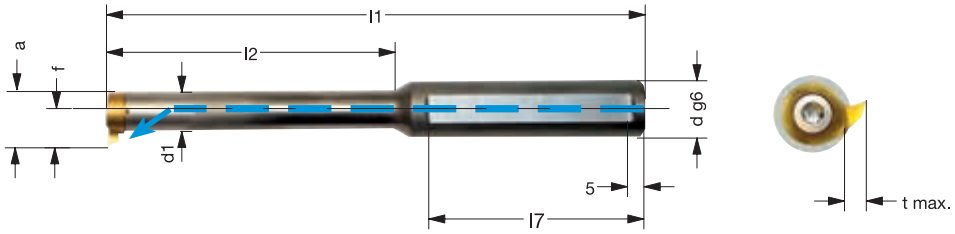
3127



FLEXO steel tool holder

Designation	d g6 mm	L2 mm	L3 mm	L4 mm	h mm	art.no.	€
VG08-16	16	75	10	55	14	**305013** 0081	114,–
VG08-20	20	90	10	70	18	305013 0082	114,–
VG11-16	16	75	10	55	14	305013 0111	114,–
VG11-20	20	90	10	70	18	305013 0112	114,–

3127



Carbide tool holder type 608...

Designation	d g6 mm	l2 mm	l1 mm	l 7 mm	d1 mm	f mm	a mm	suitable cutting inserts	t max. mm	D min. mm	suitable clamping screw		art.no.	€
608,0012,1 HM	12	21	80	48	6	4.8	7.8	R/LS08	1.0	8	M 2.6-MC	A1	**305001** 0001	147,–
608,0012,2 HM	12	30	90	48	6	4.8	7.8	R/LS08	1.0	8	M 2.6-MC	A1	305001 0002	159,–
608,0012,3 HM	12	42	100	48	6	4.8	7.8	R/LS08	1.0	8	M 2.6-MC	A1	305001 0003	186,–
608,0012,4 HM	12	50	115	48	6	4.8	7.8	R/LS08	1.0	8	M 2.6-MC	A1	305001 0004	215,–

3127

Carbide clamp mounting 609...

Designation	d g6 mm	l2 mm	l1 mm	d1 mm	f mm	a mm	suitable cutting inserts	t max. mm	D min. mm	suitable clamping screw		art.no.	€
609,0012,1HM	12	22	90	6.6 x 7.4	5.5	8.8	R/LS09	1.8	9.0	M2.6-MC	A1	**305005** 0001	164,–
609,0012,2HM	12	30	98	6.6 x 7.4	5.5	8.8	R/LS09	1.8	9.0	M2.6-MC	A1	305005 0002	190,–
609,0012,3HM	12	42	110	6.6 x 7.4	5.5	8.8	R/LS09	1.8	9.0	M2.6-MC	A1	305005 0003	215,–
609,0012,4HM	12	56	122	6.6 x 7.4	5.5	8.8	R/LS09	1.8	9.0	M2.6-MC	A1	305005 0004	240,–

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Carbide tool holder type 611...

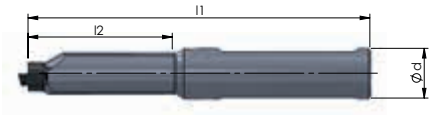
Designation	d g6 mm	l2 mm	l1 mm	l 7 mm	d1 mm	f mm	a mm	suitable cutting inserts	t max. mm	D min. mm	suitable clamping screw		art.no.	€
611,0012,1 HM	12	29	95	60	8	6.7	10.7	R/LS11	2.3	11	M 3.5-MC	A2	**305002** 0001	147,–
611,0012,2 HM	12	42	110	60	8	6.7	10.7	R/LS11	2.3	11	M 3.5-MC	A2	305002 0002	159,–
611,0012,3 HM	12	56	120	60	8	6.7	10.7	R/LS11	2.3	11	M 3.5-MC	A2	305002 0003	186,–
611,0012,4 HM	12	64	130	60	8	6.7	10.7	R/LS11	2.3	11	M 3.5-MC	A2	305002 0004	215,–
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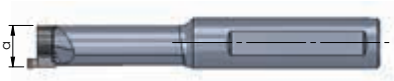
Carbide tool holder type 614...

Designation	l 7 mm	d g6 mm	l2 mm	l1 mm	d1 mm	f mm	a mm	suitable cutting inserts	t max. mm	D min. mm	suitable clamping screw		art.no.	€
614,0012,1 HM	60	12	34	100	9.5 x 11	9	13.8	R/LS14/55/65	4.0/6.5	14/17	M 4-MC	A3	**305003** 0001	173,–
614,0012,2 HM	60	12	45	110	9.5 x 11	9	13.8	R/LS14/55/65	4.0/6.5	14/17	M 4-MC	A3	305003 0002	200,–
614,0012,3 HM	60	12	64	130	9.5 x 11	9	13.8	R/LS14/55/65	4.0/6.5	14/17	M 4-MC	A3	305003 0003	235,–
614,0016,1 HM	60	16	34	100	9.5 x 11	9	13.8	R/LS14/55/65	4.0/6.5	14/17	M 4-MC	A3	305003 0004	210,–
614,0016,2 HM	60	16	45	110	9.5 x 11	9	13.8	R/LS14/55/65	4.0/6.5	14/17	M 4-MC	A3	305003 0005	240,–
614,0016,3 HM	60	16	64	130	9.5 x 11	9	13.8	R/LS14/55/65	4.0/6.5	14/17	M 4-MC	A3	305003 0006	275,–
614,0016,4 HM	60	16	75	145	9.5 x 11	9	13.8	R/LS14/55/65	4.0/6.5	14/17	M 4-MC	A3	305003 0007	295,–
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Carbide tool holder type 616...

Designation	d g6 mm	l2 mm	l1 mm	l 7 mm	d1 mm	f mm	a mm	suitable cutting inserts	t max. mm	D min. mm	suitable clamping screw		art.no.	€
616,0012,1 HM	12	40	130	60	11	10.2	15.7	R/LS16	4.3	16	M 5-MC	A4	**305004** 0001	189,–
616,0012,2 HM	12	56	130	60	11	10.2	15.7	R/LS16	4.3	16	M 5-MC	A4	305004 0002	200,–
616,0012,3 HM	12	80	150	60	11	10.2	15.7	R/LS16	4.3	16	M 5-MC	A4	305004 0003	235,–
616,0016,1 HM	16	40	130	60	11	10.2	15.7	R/LS16	4.3	16	M 5-MC	A4	305004 0004	230,–
616,0016,2 HM	16	56	130	60	11	10.2	15.7	R/LS16	4.3	16	M 5-MC	A4	305004 0005	240,–
616,0016,3 HM	16	80	150	60	11	10.2	15.7	R/LS16	4.3	16	M 5-MC	A4	305004 0006	275,–
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Carbide axial clamp mounting 614...

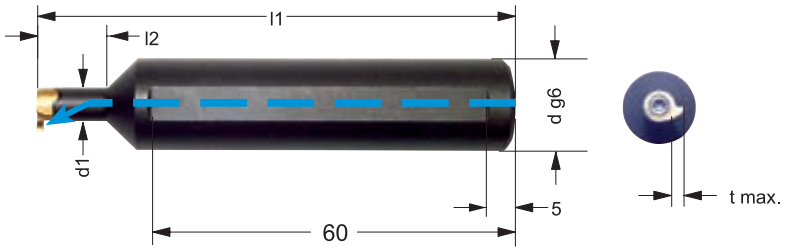
- Right-hand holder - right-hand insert
- Left-hand holder - left-hand insert

Designation	d g6 mm	l2 mm	l1 mm	a mm	suitable cutting inserts	suitable clamping screw		Right-hand art.no.	€	Left-hand art.no.	€
R/L614.A016,3HM	16	60	120	13.5	R/L S014	M4-MC	A3	**305006** 0003	315,–	**305007** 0003	315,–
								3127		3127	

Steel axial clamp mounting 614...

- Right-hand holder - right-hand insert
- Left-hand holder - left-hand insert

Designation	d g6 mm	l2 mm	l1 mm	a mm	suitable cutting inserts	suitable clamping screw		Right-hand art.no.	€	Left-hand art.no.	€
R/L614.A016,3ST	16	25	90	13.5	R/L S014	M4-MC	A3	**305006** 0001	111,–	**305007** 0001	111,–
R/L614.A016E.3ST	16	45	110	13.5	R/L S014	M4-MC	A3	305006 0002	118,–	305007 0002	118,–
								3127		3127	



Steel tool holder, short

Designation	d g6 mm	l2 mm	l1 mm	d1 mm	suitable cutting inserts	t max. mm	D min. mm	suitable clamping screw		art.no.	€
608,0016,1 ST	16	12	80	6	R/LS08	1.0	8	M 2.6-MC	A1	**305010** 0001	84,50
609,0016,1.ST	16	14	95	6.6 x 7.4	R/LS09	1.8	9	M2.6-MC	A1	305010 0005	84,50
611,0016,2 ST	16	16	97	8	R/LS11	2.3	11	M 3.5-MC	A2	305010 0002	84,50
614,0016,3 ST	16	18	100	9.5 x 11	R/LS14/55/65	4.0/6.5	14/17	M 4-MC	A3	305010 0003	97,–
616,0016,3 ST	16	22	100	11	R/LS16	4.3	16	M 5-MC	A4	305010 0004	84,50

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Steel tool holder, long

Designation	d g6 mm	l2 mm	l1 mm	d1 mm	suitable cutting inserts	t max. mm	D min. mm	suitable clamping screw		art.no.	€
608,0016,1E.ST	16	22	90	6 x 7	R/LS08	1.0	8	M 2.6-MC	A1	**305011** 0001	97,–
609,0016,1E.ST	16	25	105	6.6 x 7.4	R/LS09	1.8	9	M2.6-MC	A1	305011 0005	97,–
611,0016,2E.ST	16	29	110	8 x 9.5	R/LS11	2.3	11	M 3.5-MC	A2	305011 0002	97,–
614,0016,3E.ST	16	38	120	9.5 x 11	R/LS14/55/65	4.0/6.5	14/17	M 4-MC	A3	305011 0003	97,–
616,0016,3E.ST	16	42	120	11 x 13.5	R/LS16	4.3	16	M 5-MC	A4	305011 0004	97,–

3127

Spare parts

	Screw	
	art.no.	€
A1	305199 0026	3,35
A2	305199 0035	3,35
A3	305199 0040	3,35
A4	305199 0050	3,35

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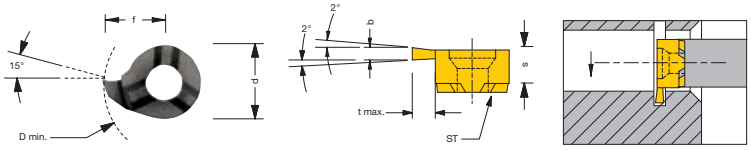


ATORN® Carbide indexable cutting inserts MINI-CUT



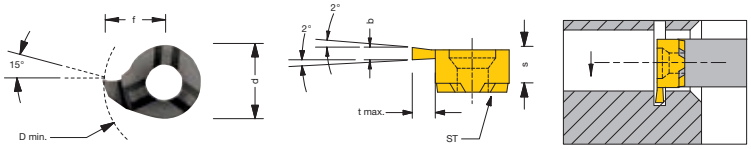
1047

Recess turning (internal)
- **For circlip grooves**
- **Carbide HC8620, TIALN-coated**
- ST = tool holder front face
- R = right-hand, as shown
- L = left-hand, mirror image



model	D min. mm	t max. mm	b +0.03 mm	d mm	f mm	s mm	suitable tool holder		Right-hand art.no.	€		Left-hand art.no.	€
R/LS008,0070	8	1.0	0.73	6.0	4.8	3.3	608	5	**305020** 0001	14,90	5	**306020** 0001	14,90
R/LS008,0080	8	1.0	0.83	6.0	4.8	3.3	608	5	305020 0002	14,90	5	306020 0002	14,90
R/LS008,0090	8	1.0	0.93	6.0	4.8	3.3	608	5	305020 0003	14,90	5	306020 0003	14,90
R/LS008,0110	8	1.0	1.20	6.0	4.8	3.3	608	5	305020 0004	14,90	5	306020 0004	14,90
R/LS008,0130	8	1.0	1.40	6.0	4.8	3.3	608	5	305020 0005	14,90	5	306020 0005	14,90
R/LS008,0160	8	1.0	1.70	6.0	4.8	3.3	608	5	305020 0006	14,90	5	306020 0006	14,90
R/LS009,0070	9	1.2	0.73	6.2	5.5	3.6	609	5	305020 0025	14,90	5	306020 0025	14,90
R/LS009,0080	9	1.3	0.83	6.2	5.5	3.6	609	5	305020 0026	14,90	5	306020 0026	14,90
R/LS009,0090	9	1.5	0.93	6.2	5.5	3.6	609	5	305020 0027	14,90	5	306020 0027	14,90
R/LS009,0110	9	1.8	1.20	6.2	5.5	3.6	609	5	305020 0028	14,90	5	306020 0028	14,90
R/LS009,0130	9	1.8	1.40	6.2	5.5	3.6	609	5	305020 0029	14,90	5	306020 0029	14,90
R/LS009,0160	9	1.8	1.70	6.2	5.5	3.6	609	5	305020 0030	14,90	5	306020 0030	14,90
R/LS011,0070	11	1.2	0.73	8.0	6.7	4.2	611	5	305020 0007	14,90	5	306020 0007	14,90
R/LS011,0080	11	1.3	0.83	8.0	6.7	4.2	611	5	305020 0008	14,90	5	306020 0008	14,90
R/LS011,0090	11	1.5	0.93	8.0	6.7	4.2	611	5	305020 0009	14,90	5	306020 0009	14,90
R/LS011,0110	11	2.3	1.20	8.0	6.7	4.2	611	5	305020 0010	14,90	5	306020 0010	14,90
R/LS011,0130	11	2.3	1.40	8.0	6.7	4.2	611	5	305020 0011	14,90	5	306020 0011	14,90
R/LS011,0160	11	2.3	1.70	8.0	6.7	4.2	611	5	305020 0012	14,90	5	306020 0012	14,90
R/LS014,0070	14	1.2	0.73	9.0	9.0	5.3	614	5	305020 0013	14,90	5	306020 0013	14,90
R/LS014,0080	14	1.3	0.83	9.0	9.0	5.3	614	5	305020 0014	14,90	5	306020 0014	14,90
R/LS014,0090	14	1.5	0.93	9.0	9.0	5.3	614	5	305020 0015	14,90	5	306020 0015	14,90
R/LS014,0110	14	4.0	1.20	9.0	9.0	5.3	614	5	305020 0016	14,90	5	306020 0016	14,90
R/LS014,0130	14	4.0	1.40	9.0	9.0	5.3	614	5	305020 0017	14,90	5	306020 0017	14,90
R/LS014,0160	14	4.0	1.70	9.0	9.0	5.3	614	5	305020 0018	14,90	5	306020 0018	14,90
R/LS016,0070	16	1.2	0.73	11.0	10.2	5.4	616	5	305020 0019	18,20	5	306020 0019	18,20
R/LS016,0080	16	1.3	0.83	11.0	10.2	5.4	616	5	305020 0020	18,20	5	306020 0020	18,20
R/LS016,0090	16	1.5	0.93	11.0	10.2	5.4	616	5	305020 0021	18,20	5	306020 0021	18,20
R/LS016,0110	16	4.3	1.20	11.0	10.2	5.4	616	5	305020 0022	16,40	5	306020 0022	16,40
R/LS016,0130	16	4.3	1.40	11.0	10.2	5.4	616	5	305020 0023	16,40	5	306020 0023	16,40
R/LS016,0160	16	4.3	1.70	11.0	10.2	5.4	616	5	305020 0024	16,40	5	306020 0024	16,40
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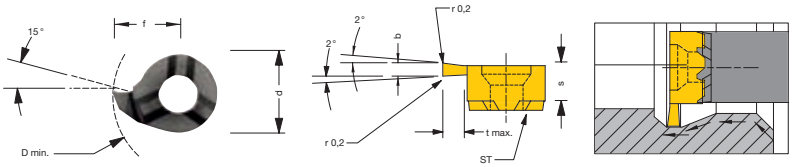
Recess turning (internal)
- **General recess turning**
- **Carbide HC8620, TIALN-coated**
- ST = tool holder front face
- R = right-hand, as shown
- L = left-hand, mirror image



model	D min. mm	t max. mm	b +0.03 mm	d mm	f mm	s mm	suitable tool holder		Right-hand art.no.	€		Left-hand art.no.	€
R/LS008,0100	8	1.0	1.0	6.0	4.8	3.3	608	5	**305021** 0001	14,90	5	**306021** 0001	14,90
R/LS008,0150	8	1.0	1.5	6.0	4.8	3.3	608	5	305021 0002	14,90	5	306021 0002	14,90
R/LS008,0200	8	1.0	2.0	6.0	4.8	3.3	608	5	305021 0003	14,90	5	306021 0003	14,90
R/LS009,0100	9	1.8	1.0	6.2	5.5	3.6	609	5	305021 0019	14,90	5	306021 0019	14,90
R/LS009,0150	9	1.8	1.5	6.2	5.5	3.6	609	5	305021 0020	14,90	5	306021 0020	14,90
R/LS009,0200	9	1.8	2.0	6.2	5.5	3.6	609	5	305021 0021	14,90	5	306021 0021	14,90
R/LS009,0250	9	1.8	2.5	6.2	5.5	3.6	609	5	305021 0022	14,90	5	306021 0022	14,90
R/LS009,0300	9	1.8	3.0	6.2	5.5	3.6	609	5	305021 0023	14,90	5	306021 0023	14,90
R/LS011,0100	11	2.3	1.0	8.0	6.7	4.2	611	5	305021 0004	14,90	5	306021 0004	14,90
R/LS011,0150	11	2.3	1.5	8.0	6.7	4.2	611	5	305021 0005	14,90	5	306021 0005	14,90
R/LS011,0200	11	2.3	2.0	8.0	6.7	4.2	611	5	305021 0006	14,90	5	306021 0006	14,90
R/LS011,0250	11	2.3	2.5	8.0	6.7	4.2	611	5	305021 0007	14,90	5	306021 0007	14,90
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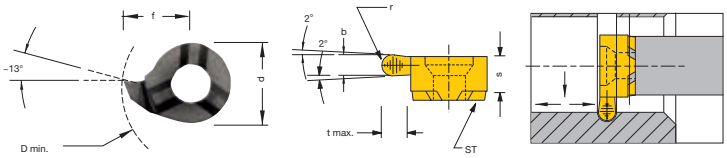
model	D min. mm	t max. mm	b +0.03 mm	d mm	f mm	s mm	suitable tool holder		Right-hand art.no.	€		Left-hand art.no.	€
R/LS011,0300	11	2.3	3.0	8.0	6.7	4.2	611	5	305021 0008	14,90	5	306021 0008	14,90
R/LS014,0150	14	4.0	1.5	9.0	9.0	5.3	614	5	305021 0009	14,90	5	306021 0009	14,90
R/LS014,0200	14	4.0	2.0	9.0	9.0	5.3	614	5	305021 0010	14,90	5	306021 0010	14,90
R/LS014,0250	14	4.0	2.5	9.0	9.0	5.3	614	5	305021 0011	14,90	5	306021 0011	14,90
R/LS014,0300	14	4.0	3.0	9.0	9.0	5.3	614	5	305021 0012	14,90	5	306021 0012	14,90
R/LS016,0150	16	4.3	1.5	11.0	10.2	5.4	616	5	305021 0013	16,40	5	306021 0013	16,40
R/LS016,0200	16	4.3	2.0	11.0	10.2	5.4	616	5	305021 0014	16,40	5	306021 0014	16,40
R/LS016,0250	16	4.3	2.5	11.0	10.2	5.4	616	5	305021 0015	16,40	5	306021 0015	16,40
R/LS016,0300	16	4.3	3.0	11.0	10.2	5.4	616	5	305021 0016	16,40	5	306021 0016	16,40
R/LS016,0350	16	4.3	3.5	11.0	10.2	5.4	616	5	305021 0017	16,40	5	306021 0017	16,40
R/LS016,0400	16	4.3	4.0	11.0	10.2	5.4	616	5	305021 0018	16,40	5	306021 0018	16,40
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NC precision turning (internal)
- **Carbide HC8620, TIALN-coated**
- **Ap max. = 0.2 mm (maximum cutting depth)**
- ST = tool holder front face
- R = right-hand, as shown
- L = left-hand, mirror image



model	D min. mm	t max. mm	b +0.05 mm	d mm	f mm	s mm	suitable tool holder		Right-hand art.no.	€		Left-hand art.no.	€
R/LS08,150.02	8	1.0	1.5	6.0	4.8	3.3	608	5	**305025** 0001	16,70	5	**306025** 0001	16,70
R/LS08,200.02	8	1.0	2.0	6.0	4.8	3.3	608	5	305025 0002	16,70	5	306025 0002	16,70
R/LS09,150.02	9	1.8	1.5	6.2	5.5	3.6	609	5	305025 0009	16,80	5	306025 0008	18,30
R/LS09,150.02,10	10	2.8	1.5	6.2	6.5	3.6	609	5	305025 0010	18,30	5	306025 0010	18,30
R/LS09,200.02	9	1.8	2.0	6.2	5.5	3.6	609	5	305025 0008	18,30	5	306025 0009	16,80
R/LS09,200.02,10	10	2.8	2.0	6.2	6.5	3.6	609	5	305025 0011	16,80	5	306025 0011	16,80
R/LS11,100.02	11	2.3	1.0	8.0	6.7	4.2	611	5	305025 0012	18,30	5	306025 0012	18,30
R/LS11,150.02	11	2.3	1.5	8.0	6.7	4.2	611	5	305025 0003	18,30	5	306025 0003	18,30
R/LS11,200.02	11	2.3	2.0	8.0	6.7	4.2	611	5	305025 0004	16,80	5	306025 0004	16,80
R/LS14,150.02	14	4.0	1.5	9.0	9.0	5.3	614	5	305025 0005	16,80	5	306025 0005	16,80
R/LS14,200.02	14	4.0	2.0	9.0	9.0	5.3	614	5	305025 0006	16,80	5	306025 0006	16,80
R/LS16,200.02	16	4.3	2.0	11.0	10.2	5.4	616	5	305025 0007	18,30	5	306025 0007	18,30
									3127			3127	

Recess turning (internal)
- **Full radius**
- **Carbide HC8620, TIALN-coated**
- ST = tool holder front face
- R = right-hand, as shown
- L = left-hand, mirror image



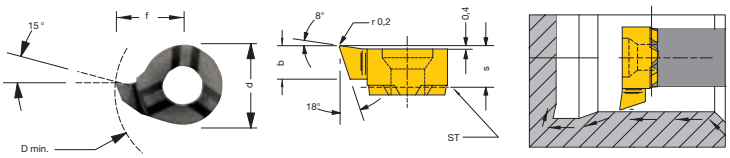
model	D min. mm	t max. mm	b +0.05 mm	R mm	d mm	f mm	s mm	suitable tool holder		Right-hand art.no.	€		Left-hand art.no.	€
R/LS08,008R04	8	1	0.8	0.4	6.0	4.8	3.3	608	5	**305030** 0001	17,70	5	**306030** 0001	17,70
R/LS08,012R06	8	1	1.2	0.6	6.0	4.8	3.3	608	5	305030 0002	17,70	5	306030 0002	17,70
R/LS08,018R09	8	1	1.8	0.9	6.0	4.8	3.3	608	5	305030 0003	17,70	5	306030 0003	17,70
R/LS08,020R10	8	1.0	2.0	1.0	6.0	4.8	3.3	608	5	305030 0018	17,70	5	306030 0018	17,70
R/LS09,008R04	9	1.6	0.8	0.4	6.2	5.5	3.5	609	5	305030 0019	18,30	5	306030 0019	18,30
R/LS09,012R06	9	1.6	1.2	0.6	6.2	5.5	3.5	609	5	305030 0020	18,30	5	306030 0020	18,30
R/LS09,018R09	9	1.6	1.8	0.9	6.2	5.5	3.5	609	5	305030 0021	18,30	5	306030 0021	18,30
R/LS09,020R10	9	1.6	2.0	1.0	6.2	5.5	3.5	609	5	305030 0022	18,30	5	306030 0022	18,30
R/LS11,008R04	11	2.3	0.8	0.4	8.0	6.7	4.2	611	5	305030 0004	18,30	5	306030 0004	18,30
R/LS11,012R06	11	2.3	1.2	0.6	8.0	6.7	4.2	611	5	305030 0005	18,30	5	306030 0005	18,30
R/LS11,018R09	11	2.3	1.8	0.9	8.0	6.7	4.2	611	5	305030 0006	18,30	5	306030 0006	18,30
R/LS11,020R10	11	2.3	2.0	1.0	8.0	6.7	4.2	611	5	305030 0007	18,30	5	306030 0007	18,30
R/LS11,024R12	11	2.3	2.4	1.2	8.0	6.7	4.2	611	5	305030 0023	18,30	5	306030 0023	18,30
R/LS11,030R15	11	2.3	3.0	1.5	8.0	6.7	4.2	611	5	305030 0008	18,30	5	306030 0008	18,30
R/LS14,008R04	14	4.0	0.8	0.4	9.0	9.0	5.3	614	5	305030 0024	19,10	5	306030 0024	19,10
R/LS14,012R06	14	4.0	1.2	0.6	9.0	9.0	5.3	614	5	305030 0009	19,10	5	306030 0009	19,10
R/LS14,018R09	14	4.0	1.8	0.9	9.0	9.0	5.3	614	5	305030 0010	19,10	5	306030 0010	19,10
R/LS14,020R10	14	4.0	2.0	1.0	9.0	9.0	5.3	614	5	305030 0011	19,10	5	306030 0011	19,10
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model	D min. mm	t max. mm	b +0.05 mm	R mm	d mm	f mm	s mm	suitable tool holder		Right-hand art.no.	€		Left-hand art.no.	€
R/LS14,022R11	14	4.0	2.2	1.1	9.0	9.0	5.3	614	5	305030 0012	19,10	5	306030 0012	19,10
R/LS14,030R15	14	4.0	3.0	1.5	9.0	9.0	5.3	614	5	305030 0013	19,10	5	306030 0013	19,10
R/LS16,018R09	16	4.3	1.8	0.9	11.0	10.2	5.4	616	5	305030 0014	19,70	5	306030 0014	19,70
R/LS16,020R10	16	4.3	2.0	1.0	11.0	10.2	5.4	616	5	305030 0026	19,70	5	306030 0026	19,70
R/LS16,022R11	16	4.3	2.2	1.1	11.0	10.2	5.4	616	5	305030 0015	19,70	5	306030 0015	19,70
R/LS16,024R12	16	4.3	2.4	1.2	11.0	10.2	5.4	616	5	305030 0027	19,70	5	306030 0027	19,70
R/LS16,030R15	16	4.3	3.0	1.5	11.0	10.2	5.4	616	5	305030 0016	19,70	5	306030 0016	19,70
R/LS16,032R16	16	4.3	3.2	1.6	11.0	10.2	5.4	616	5	305030 0028	19,70	5	306030 0028	19,70
R/LS16,040R20	16	4.3	4.0	2.0	11.0	10.2	5.4	616	5	305030 0017	19,70	5	306030 0017	19,70
										3127			3127	

Turning and copying (internal)

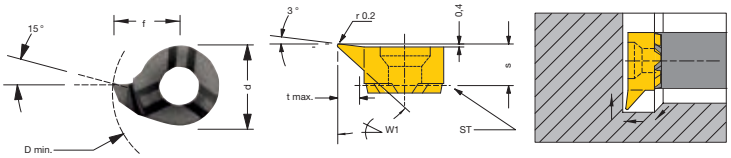
- **Carbide HC8620, TIALN-coated**
- Ap max. = maximum cutting depth
- ST = tool holder front face
- R = right-hand, as shown
- L = left-hand, mirror image



model	D min. mm	ap max. mm	b mm	d mm	f mm	s mm	suitable tool holder		Right-hand art.no.	€		Left-hand art.no.	€
R/LS08,1846,02	7.8	0.6	3.3	6.0	4.65	3.5	608	5	**305035** 0001	16,80	5	**306035** 0001	16,80
R/LS11,1855,02	9.8	1.0	3.9	8.0	5.50	4.2	611	5	305035 0002	16,80	5	306035 0002	16,80
R/LS11,1867,02	11.0	1.0	3.9	8.0	6.70	4.2	611	5	305035 0003	16,30	5	306035 0003	16,30
R/LS14,1867,02	13.8	1.5	5.0	9.0	8.70	5.3	614	5	305035 0004	16,30	5	306035 0004	16,30
R/LS16,1897,02	15.5	1.5	5.0	11.0	9.70	5.4	616	5	305035 0005	17,90	5	306035 0005	17,90
									3127			3127	

Internal turning, internal thread undercuts (DIN 509)

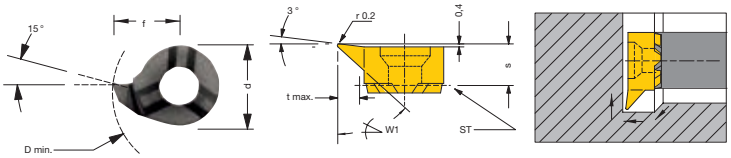
- **Carbide HC8620, TIALN-coated**
- Ap max. = maximum cutting depth
- ST = tool holder front face
- R = right-hand, as shown
- L = left-hand, mirror image
- **Internal turning and internal thread undercuts (DIN 509), angle W1 = 47°**



model	D min. mm	t max. mm	ap max. mm	d mm	f mm	s mm	suitable tool holder		Right-hand art.no.	€		Left-hand art.no.	€
R/LS08,4746,02	7.8	1.2	0.4	6.0	4.65	3.5	608	5	**305040** 0001	16,90	5	**306040** 0001	16,90
R/LS11,4767,02	11.0	2.3	0.6	8.0	6.70	4.2	611	5	305040 0002	16,40	5	306040 0002	16,40
R/LS14,4787,02	13.7	3.0	0.8	9.0	8.70	5.3	614	5	305040 0003	16,90	5	306040 0003	16,90
									3127			3127	

Copying

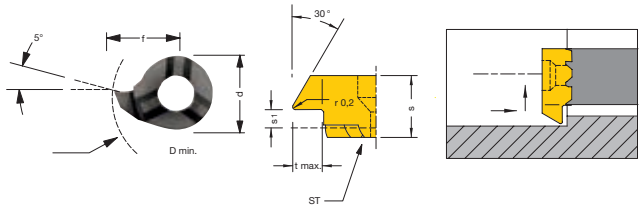
- **Carbide HC8620, TIALN-coated**
- Ap max. = maximum cutting depth
- ST = tool holder front face
- R = right-hand, as shown
- L = left-hand, mirror image
- **Copying, angle W1 = 30°**



model	D min. mm	t max. mm	ap max. mm	d mm	f mm	s mm	suitable tool holder		Right-hand art.no.	€		Left-hand art.no.	€
R/LS08,2555,02	7.8	1.2	0.4	6.0	4.65	3.5	608	5	**305045** 0001	19,50	5	**306045** 0001	19,50
R/LS11,2755,02	11.0	2.3	0.6	8.0	6.70	4.2	611	5	305045 0002	19,–	5	306045 0002	19,–
R/LS14,3555,02	13.7	4.0	0.8	9.0	8.70	5.3	614	5	305045 0003	19,50	5	306045 0003	19,50
R/LS16,4055,02	15.8	4.3	0.8	11.0	10.20	5.4	616	5	305045 0004	21,30	5	306045 0004	21,30
									3127			3127	

Reverse turning (internal)

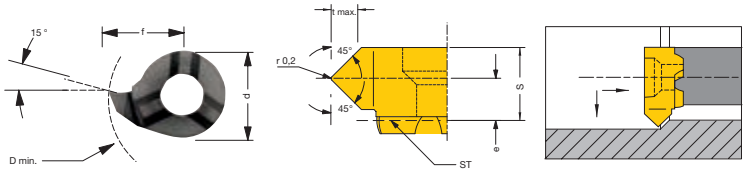
- **Carbide HC8620, TIALN-coated**
- Ap max. = maximum cutting depth
- ST = tool holder front face
- R = right-hand, as shown
- L = left-hand, mirror image



model	D min. mm	t max. mm	ap max. mm	s1 mm	d mm	f mm	s mm	suitable tool holder		Right-hand art.no.	€		Left-hand art.no.	€
R/LS08,3046,02	7.8	1.3	0.6	1.0	6.0	4.65	3.5	608	5	**305050** 0001	19,40	5	**306050** 0001	19,40
R/LS09,3055,02	9.0	1.7	0.8	1.2	6.2	5.50	3.55	609	5	305050 0004	18,70	5	306050 0004	18,70
R/LS09,3065,02	10.0	2.3	0.8	1.2	6.2	6.50	3.55	609	5	305050 0005	18,70	5	306050 0005	18,70
R/LS11,3067,02	11.0	2.3	1.0	1.6	8.0	6.70	4.3	611	5	305050 0002	18,70	5	306050 0002	18,70
R/LS14,3087,02	13.8	3.5	1.5	2.4	9.0	8.70	5.4	614	5	305050 0003	19,40	5	306050 0003	19,40
										3127			3127	

Chamfering and turning (internal)

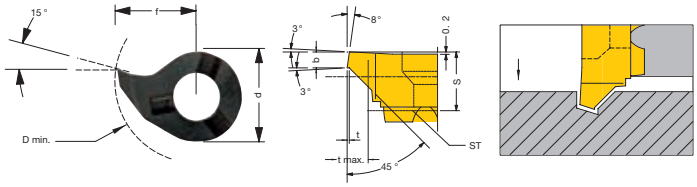
- **Carbide HC8620, TIALN-coated**
- Ap max. = maximum cutting depth
- ST = tool holder front face
- R = right-hand, as shown
- L = left-hand, mirror image



model	D min. mm	t max. mm	ap max. mm	e mm	d mm	f mm	s mm	suitable tool holder		Right-hand art.no.	€		Left-hand art.no.	€
R/LS08,4545,02	8.0	1.4	0.6	1.6	6.0	4.8	3.7	608	5	**305055** 0001	16,–	5	**306055** 0001	16,–
R/LS09,4545,02	9.0	1.3	0.8	1.8	6.2	5.5	3.55	609	5	305055 0004	16,–	5	306055 0004	16,–
R/LS11,4545,02	11.0	1.5	1.0	2.2	8.0	6.7	4.3	611	5	305055 0002	16,–	5	306055 0002	16,–
R/LS14,4545,02	14.0	1.5	1.2	2.7	9.0	9.0	5.35	614	5	305055 0003	17,30	5	306055 0003	17,30
										3127			3127	

Roughing and chamfering (internal)

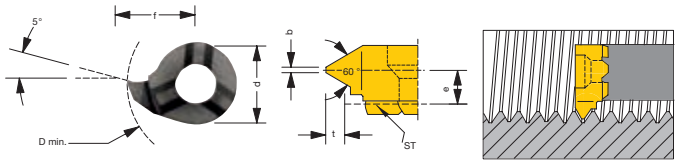
- **Carbide HC8620, TIALN-coated**
- ST = tool holder front face
- R = right-hand, as shown
- L = left-hand, mirror image
- **t = 0.2 mm**



model	D min. mm	t max. mm	b mm	d mm	f mm	s mm	suitable tool holder		Right-hand art.no.	€		Left-hand art.no.	€
R/LS08,0810,45	8.0	1.0	1.0	6.0	4.8	3.3	608	5	**305060** 0001	16,40	5	**306060** 0001	16,40
R/LS09,0810,45	9.0	1.5	1.0	6.2	5.5	3.6	609	5	305055 0005	16,40	5	306055 0005	16,40
R/LS11,0810,45	11.0	1.5	1.0	8.0	6.7	4.2	611	5	305060 0002	16,40	5	306060 0002	16,40
R/LS14,0815,45	14.0	1.5	1.0	9.0	9.0	5.3	614	5	305060 0003	16,40	5	306060 0003	16,40
R/LS16,0815,45	16.0	1.5	1.0	11.0	10.2	5.4	616	5	305060 0004	16,40	5	306060 0004	16,40
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Thread turning (internal), coarse-pitch thread, partial profile

- **Carbide HC8620, TIALN-coated**
- ST = tool holder front face
- R = right-hand, as shown
- L = left-hand, mirror image
- All other thread types are available on request



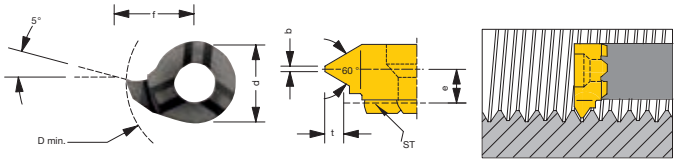
model	D min. mm	Pitch mm	t mm	e mm	b mm	f mm	s mm	suitable tool holder		Right-hand art.no.	€		Left-hand art.no.	€
R/LS08,0205,01	8.0	0.5-0.75	0.43	2.95	0.06	4.8	3.4	608	5	**305065** 0007	19,70	5	**306065** 0007	19,70
R/LS08,0510,01	8.0	1.0-1.25	0.70	2.7	0.12	4.8	3.4	608	5	305065 0008	19,70	5	306065 0008	19,70
R/LS08,0815,01	8.0	1.5-1.75	0.95	2.5	0.18	4.8	3.4	608	5	305065 0001	19,70	5	306065 0001	19,70
R/LS09,0205,01	9.0	0.5-0.75	0.27	3.2	0.06	5.5	3.55	609	5	305065 0009	19,70	5	306065 0009	19,70
R/LS09,0510,01	9.0	1.0-1.25	0.54	3.0	0.12	5.5	3.55	609	5	305065 0010	19,70	5	306065 0010	19,70
R/LS09,0815,01	9.0	1.5-1.75	0.81	2.8	0.18	5.5	3.55	609	5	305065 0011	19,70	5	306065 0011	19,70
R/LS09,0917,01	9.0	1.75-2.0	0.95	2.6	0.20	5.5	3.55	609	5	305065 0012	19,70	5	306065 0012	19,70
R/LS09,1020,01	9.0	2.0-2.5	1.08	2.5	0.25	5.5	3.55	609	5	305065 0013	19,70	5	306065 0013	19,70
R/LS09,1325,01	9.0	2.5-3.0	1.35	2.1	0.31	5.5	3.55	609	5	305065 0014	19,70	5	306065 0014	19,70
R/LS09,1630,01	9.0	3.0-3.5	1.62	1.9	0.37	5.5	3.55	609	5	305065 0015	19,70	5	306065 0015	19,70
R/LS11,0205,01	11.0	0.5-0.75	0.41	3.75	0.06	6.7	4.2	611	5	305065 0016	19,70	5	306065 0016	19,70
R/LS11,0510,01	11.0	1.0-1.25	0.55	3.6	0.12	6.7	4.2	611	5	305065 0017	19,70	5	306065 0017	19,70
R/LS11,0815,01	11.0	1.5-1.75	0.81	3.4	0.18	6.7	4.2	611	5	305065 0018	19,70	5	306065 0018	19,70
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model	D min. mm	Pitch mm	t mm	e mm	b mm	f mm	s mm	suitable tool holder		Right-hand art.no.	€		Left-hand art.no.	€
R/LS11,1020,01	11.0	2.0-2.5	1.08	3.0	0.25	6.7	4.3	611	5	305065 0002	19,70	5	306065 0002	19,70
R/LS11,1325,01	11.0	2.5-3.0	1.35	3.0	0.31	6.7	4.3	611	5	305065 0003	19,70	5	306065 0003	19,70
R/LS14,0510,01	14.0	1.0-1.25	0.55	4.6	0.12	9.0	5.4	614	5	305065 0019	19,70	5	306065 0019	19,70
R/LS14,0815,01	14.0	1.5-1.75	0.81	4.3	0.18	9.0	5.4	614	5	305065 0020	19,70	5	306065 0020	19,70
R/LS14,1020,01	14.0	2.0-2.5	1.08	4.2	0.25	9.0	5.4	614	5	305065 0004	19,70	5	306065 0004	19,70
R/LS14,1325,01	14.0	2.5-3.0	1.35	4.7	0.31	9.0	5.4	614	5	305065 0005	19,70	5	306065 0005	19,70
R/LS16,0510,01	16.0	1.0-1.25	0.55	4.8	0.12	10.2	5.4	616	5	305065 0021	19,70	5	306065 0021	19,70
R/LS16,0815,01	16.0	1.5-1.75	0.81	4.6	0.18	10.2	5.4	616	5	305065 0022	19,70	5	306065 0022	19,70
R/LS16,1020,01	16.0	2.0-2.5	1.08	4.35	0.25	10.2	5.4	616	5	305065 0023	19,70	5	306065 0023	19,70
R/LS16,1325,01	16.0	2.5-3.0	1.35	4.15	0.31	10.2	5.4	616	5	305065 0006	19,70	5	306065 0006	19,70
										3127			3127	

Thread turning (internal), coarse-pitch thread, full profile

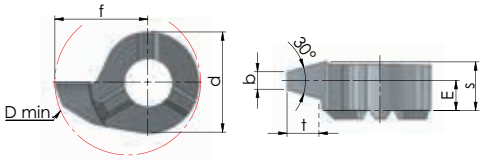
- **Carbide HC8620 TIALN-coated**
- ST = clamp mounting front face
- R = right-hand, as shown
- L = left-hand, mirror image
- All other thread types are available on request



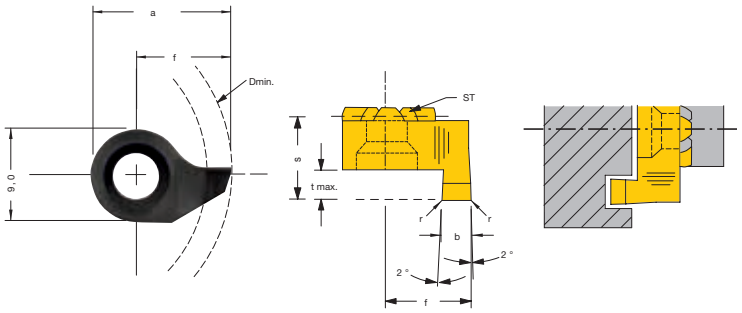
model	D min. mm	n mm	s mm	b mm	f mm	e mm	d mm	suitable tool holder		Right-hand art.no.	€		Left-hand art.no.	€
R/LS09,0205,02	9.0	0.5	3.65	0.06	5.5	3.25	6.2	609	5	**305075** 0010	21,90	5	**306075** 0010	21,90
R/LS09,0510,02	9.0	1.0	3.65	0.12	5.5	3.0	6.2	609	5	305075 0011	21,90	5	306075 0011	21,90
R/LS09,0815,02	9.0	1.5	3.6	0.18	5.5	2.8	6.2	609	5	305075 0012	21,90	5	306075 0012	21,90
R/LS09,0917,02	9.0	1.75	3.6	0.2	5.5	2.7	6.2	609	5	305075 0013	21,90	5	306075 0013	21,90
R/LS09,1020,02	9.0	2.0	3.55	0.25	5.5	2.6	6.2	609	5	305075 0014	21,90	5	306075 0014	21,90
R/LS09,1325,02	9.0	2.5	3.55	0.31	5.5	2.5	6.2	609	5	305075 0015	21,90	5	306075 0015	21,90
R/LS09,1630,02	9.0	3.0	3.55	0.37	5.5	2.5	6.2	609	5	305075 0016	21,90	5	306075 0016	21,90
R/LS11,1020,02	11	2.0	4.3	0.25	6.7	2.9	8.0	611	5	305075 0001	21,90	5	306075 0001	21,90
R/LS11,1325,02	11	2.5	4.3	0.31	6.7	2.95	8.0	611	5	305075 0002	21,90	5	306075 0002	21,90
R/LS11,1630,02	11	3.0	4.3	0.37	6.7	2.9	8.0	611	5	305075 0003	21,90	5	306075 0003	21,90
R/LS14,1020,02	14	2.0	5.4	0.25	9.0	4.2	9.0	614	5	305075 0004	20,10	5	306075 0004	20,10
R/LS14,1325,02	14	2.5	5.4	0.31	9.0	3.65	9.0	614	5	305075 0005	20,10	5	306075 0005	20,10
R/LS16,1325,02	16	2.5	5.5	0.31	10.2	4.2	11.0	616	5	305075 0006	24,40	5	306075 0006	24,40
R/LS16,1630,02	16	3.0	5.5	0.37	10.2	4.0	11.0	616	5	305075 0007	24,40	5	306075 0007	24,40
R/LS16,1835,02	16	3.5	5.5	0.43	10.2	3.9	11.0	616	5	305075 0008	24,40	5	306075 0008	24,40
R/LS16,2140,02	16	4.0	5.5	0.50	10.2	3.6	11.0	616	5	305075 0009	24,40	5	306075 0009	24,40
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Thread turning (internal), trapezoid thread, full profile

- **Carbide HC8620 TIALN-coated**
- ST = clamp mounting front face
- R = right-hand, as shown
- L = left-hand, mirror image



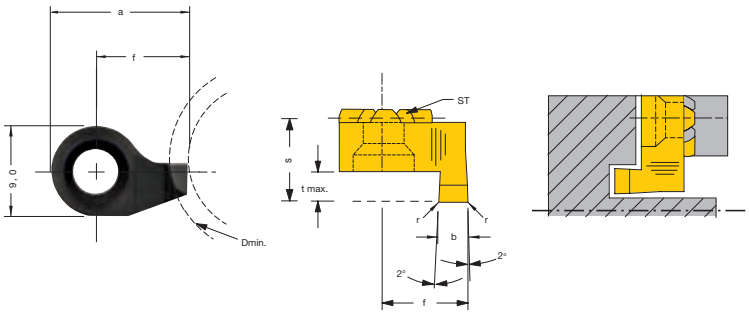
model	D min. mm	n mm	t mm	s mm	b mm	f mm	e mm	d mm	suitable tool holder		Right-hand art.no.	€		Left-hand art.no.	€
R/LS09,1015,01	9	1.5	0.9	3.55	0.47	5.5	3.0	6.2	609	5	**305090** 0013	20,30	5	**306090** 0013	20,30
R/LS09,1220,01	9	2.0	1.25	3.55	0.6	5.5	2.85	6.2	609	5	305090 0014	20,30	5	306090 0014	20,30
R/LS09,1730,01	9	3.0	1.75	3.55	0.96	5.5	2.25	6.2	609	5	305090 0015	20,30	5	306090 0015	20,30
R/LS09,2240,01	10	4.0	2.25	3.55	1.33	6.5	2.25	6.2	609	5	305090 0016	20,30	5	306090 0016	20,30
R/LS11,1015,01	11	1.5	0.9	4.3	0.9	6.7	3.7	8.0	611	5	305090 0001	20,30	5	306090 0001	20,30
R/LS11,1220,01	11	2.0	1.25	4.3	0.6	6.7	3.5	8.0	611	5	305090 0002	20,30	5	306090 0002	20,30
R/LS11,1730,01	11	3.0	1.75	4.3	0.96	6.7	3.2	8.0	611	5	305090 0003	20,30	5	306090 0003	20,30
R/LS11,2240,01	11	4.0	2.25	4.0	1.33	6.7	2.6	8.0	611	5	305090 0004	20,30	5	306090 0004	20,30
R/LS14,1220,01	14	2.0	1.25	5.3	0.6	9.0	4.3	9.0	614	5	305090 0005	20,90	5	306090 0005	20,90
R/LS14,1730,01	14	3.0	1.75	5.3	0.96	9.0	4.0	9.0	614	5	305090 0006	20,90	5	306090 0006	20,90
R/LS14,2240,01	14	4.0	2.25	5.3	1.33	9.0	4.0	9.0	614	5	305090 0007	20,90	5	306090 0007	20,90
R/LS14,2750,01	14	5.0	2.75	5.3	1.69	9.0	3.55	9.0	614	5	305090 0008	20,90	5	306090 0008	20,90
R/LS16,1220,01	16	2.0	1.25	5.5	0.6	9.7	4.5	11	616	5	305090 0009	23,10	5	306090 0009	23,10
R/LS16,1730,01	16	3.0	1.75	5.5	0.96	9.7	4.3	11	616	5	305090 0010	23,10	5	306090 0010	23,10
R/LS16,2240,01	16	4.0	2.25	5.5	1.33	9.7	4.0	11	616	5	305090 0011	23,10	5	306090 0011	23,10
R/LS16,2750,01	16	5.0	2.75	5.5	1.69	10.2	3.6	11	616	5	305090 0012	23,10	5	306090 0012	23,10
										3127			3127	



Axial grooving, right-hand cutting

- **Carbide HC8620, TIALN-coated**
- ST = tool holder front face
- R = right, right-hand cutting insert as shown
- L = left, mirror image left-hand cutting insert

model	D min. mm	t max. mm	b +0.03 mm	a mm	r mm	f mm	s mm	suitable tool holder		Right-hand art.no.	€		Left-hand art.no.	€
R/LS014,1410,00	14.0	1.5	1.0	13.5	0.2	9.0	8.3	614	5	**305100** 0001	15,80	5	**306100** 0001	15,80
R/LS014,1415,02	14.0	2.5	1.5	13.5	0.2	9.0	8.3	614	5	305100 0002	15,80	5	306100 0002	15,80
R/LS014,1420,02	14.0	3.0	2.0	13.5	0.2	9.0	8.3	614	5	305100 0003	15,80	5	306100 0003	15,80
R/LS014,1420,52	14.0	5.0	2.0	13.5	0.2	9.0	10.3	614	5	305100 0006	18,30	5	306100 0006	18,30
R/LS014,1425,02	14.0	3.0	2.5	13.5	0.2	9.0	8.3	614	5	305100 0004	15,80	5	306100 0004	15,80
R/LS014,1425,52	14.0	5.0	2.5	13.5	0.2	9.0	10.3	614	5	305100 0007	18,30	5	306100 0007	18,30
R/LS014,1430,02	14.0	3.0	3.0	13.5	0.2	9.0	8.3	614	5	305100 0005	15,80	5	306100 0005	15,80
R/LS014,1430,52	14.0	5.0	3.0	13.5	0.2	9.0	10.3	614	5	305100 0008	18,30	5	306100 0008	18,30
										3127			3127	



Axial grooving, left-hand cutting past pins

- **Carbide HC8620, TIALN-coated**
- ST = tool holder front face
- R = right, left-hand cutting insert as shown
- L = left, mirror image right-hand cutting insert

model	D min. mm	t max. mm	b +0.03 mm	a mm	r mm	f mm	s mm	suitable tool holder		Right-hand art.no.	€		Left-hand art.no.	€
R/LS014,1210,00	12.0	1.5	1.0	11.5	-	7.0	8.3	614	5	**305095** 0001	16,40	5	**306095** 0001	16,40
R/LS014,1215,02	12.0	2.5	1.5	12.0	0.2	7.5	8.3	614	5	305095 0002	16,80	5	306095 0002	16,80
R/LS014,1220,02	12.0	3.0	2.0	12.5	0.2	8.0	8.3	614	5	305095 0003	16,80	5	306095 0003	16,80
R/LS014,1220,52	12.0	5.0	2.0	12.5	0.2	8.0	10.3	614	5	305095 0006	19,20	5	306095 0006	19,20
R/LS014,1225,02	12.0	3.0	2.5	13.0	0.2	8.5	8.3	614	5	305095 0004	16,80	5	306095 0004	16,80
R/LS014,1225,52	12.0	5.0	2.5	13.0	0.2	8.5	10.3	614	5	305095 0007	19,20	5	306095 0007	19,20
R/LS014,1230,02	12.0	3.0	3.0	13.5	0.2	9.0	8.3	614	5	305095 0005	16,80	5	306095 0005	16,80
R/LS014,1230,52	12.0	5.0	3.0	13.5	0.2	9.0	10.3	614	5	305095 0008	19,20	5	306095 0008	19,20
										3127			3127	

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Dümmel WERKZEUGFABRIK Carbide metal internal turning tools *mini-børe*

INFO

from a diameter of 0.6 mm,
with internal coolant supply

Hollow turning, internal plunge turning, internal turning and chamfering, roughing and internal chamfering for subsequent parting as well as internal threading for small bore diameters continually pose new problems for production – problems that can often be solved only with special tools.

mini-børe has been developed specifically to solve these problems and offers optimum conditions for cost-effective bore machining with diameters starting from 0.6 mm. The favourable cost-breakdown of the cutting inserts means that custom productions are no longer worthwhile.

The cutting inserts, available in right-hand and left-hand designs, are supported by a tool holder that can be used for both designs. The tool holder and cutting inserts are fitted with an internal coolant supply.

Cutting material

K10F uncoated, all-purpose fine-grain carbide metal, suitable for application at low and medium cutting speeds and for machining non-ferrous metals

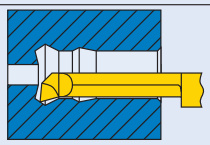
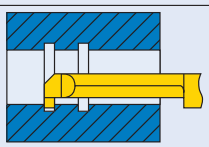
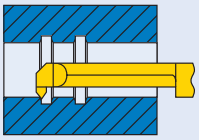
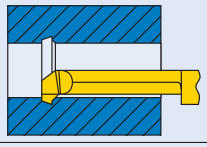
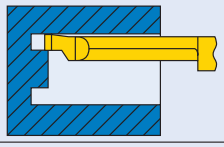
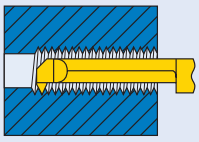
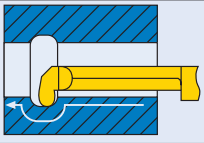
CN45F TiN coated
All-rounder, for medium to high cutting speeds, with restrictions for non-ferrous metals

AL41F TiAlN coated
High temperature resistance at high hardness levels, also very well suited to non-ferrous metals

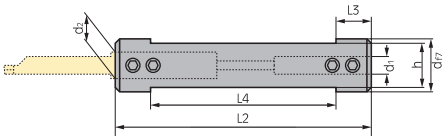
Special designs
If you have internal machining problems that cannot be handled with the cutting insert sizes listed here, we will be pleased to present you with possible solutions.



from Ø 0,6 mm

	**Hollow turning** from diameters of 0.6 mm / up to 7 x D 
	**Internal plunge turning** from diameters of 4 mm / up to 7 x D
	**Hollow turning and chamfering** from diameters of 5 mm
	**Internal roughing and chamfering** for subsequent parting-off from diameters of 5 mm
	**Axial groove turning** from external groove diameters of 15 mm
	**Internal threading** from diameters of 4 mm
	**Internal plunge turning** from diameters of 4 mm, full radius (on request)

Dümmel WERKZEUGFABRIK Tool holder mini-børe



- **With internal coolant supply**
- For holding right-hand and left-hand cutting inserts
- Two different holder Ø measurements (d1 and d2)
- Central coolant supply through the tool holder
- Axial position of the cutting inserts in the tool holder can be precisely reproduced via a built-in depth stop
- Radial position of the cutting edge is guaranteed by tension applied to the lateral clamping surface of the cutting inserts by the clamping screws
- Size 0316 and 0320 for 304450.... and 304455.... and high-pressure applications with central cooling hole

Designation	suitable cutting inserts	d1 mm	d2 mm	d f7 mm	L2 mm	L3 mm	L4 mm	h mm	art.no.	€
645,0012-D	4 / 5	4	5	12.0	75	10	55	10.3	**304001** 0012	91,–
645,0016-D	4 / 5	4	5	16.0	75	10	55	14.0	304001 0016	95,50
645,0020-D	4 / 5	4	5	20.0	90	10	70	18.0	304001 0020	103,–
676,0016-D	6 / 7	6	7	16.0	75	10	55	14.0	304001 0216	95,50
676,0020-D	6 / 7	6	7	20.0	90	10	70	18.0	304001 0220	103,–
687,0016-D	7 / 8	7	8	16.0	75	10	55	14.0	304001 0316	106,–
687,0020-D	7 / 8	7	8	20.0	90	10	70	18.0	304001 0320	113,–
681,0020-D	8 / 10	8	10	20.0	100	10	80	18.0	304001 0420	117,–

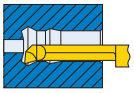
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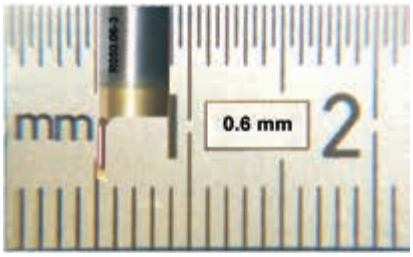
Dümmel WERKZEUGFABRIK Cutting inserts mini-børe

1048

- **With internal coolant supply**
- Straight shank and lateral clamping surface
- Right-hand and left-hand versions
- **Cutting material:**
  K10F finest grain carbide, uncoated,
  CN45F finest grain carbide **TiN coated,**
  AL41F superfine grain carbide **TiAlN**

From Ø 0.6 mm L1 to 7 x D





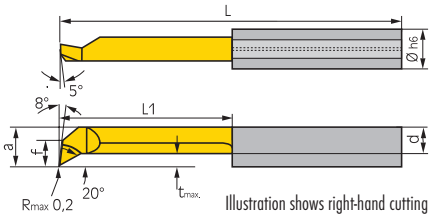


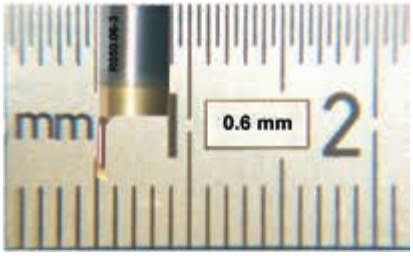
Illustration shows right-hand cutting

Internal turning
- From 2.0 mm bore diameter
- Cutting inserts, uncoated

Designation	D h6 mm	f mm	r mm	d mm	a mm	L mm	L1 mm	t max. mm	D min. mm	suitable tool holder	ISO N K K10F right-hand art.no.	€	ISO N K K10F left-hand art.no.	€
R/L 050,2-5	4.0		0.05	1.5	1.7	19	5	0.1	2.0	645...	**304101** 0101	19,50	**304105** 0101	19,50
R/L 050,2-10	4.0		0.05	1.5	1.7	24	10	0.1	2.0	645...	304101 0102	20,10	304105 0102	20,10
R/L 050,2-15	4.0		0.05	1.5	1.7	29	15	0.1	2.0	645...	304101 0103	21,40	304105 0103	21,40
R/L 050,3-10	4.0	0.6	0.1	2.3	2.6	24	10	0.2	2.8	645...	304101 0001	19,40	304105 0001	19,40
R/L 050,3-16	4.0	0.6	0.1	2.3	2.6	30	16	0.2	2.8	645...	304101 0403	20,70	304105 0403	20,70
R/L 050,3-20	4.0	0.6	0.1	2.3	2.6	34	20	0.2	2.8	645...	304101 0003	25,70	304105 0003	25,70
R/L 050,4-10	4.0	1.5	0.1	3.0	3.5	24	10	0.3	4.0	645...	304101 0010	19,40	304105 0010	19,40
R/L 050,4-16	4.0	1.5	0.1	3.0	3.5	30	16	0.3	4.0	645...	304101 0404	20,70	304105 0404	20,70
R/L 050,4-20	4.0	1.5	0.1	3.0	3.5	34	20	0.3	4.0	645...	304101 0012	24,20	304105 0012	24,20
R/L 050,5-10	5.0	1.9	0.15	3.8	4.4	25	10	0.5	5.0	645...	304101 0020	18,–	304105 0020	18,–
R/L 050,5-15	5.0	1.9	0.15	3.8	4.4	30	15	0.5	5.0	645...	304101 0021	19,40	304105 0021	19,40
R/L 050,5-20	5.0	1.9	0.15	3.8	4.4	35	20	0.5	5.0	645...	304101 0505	22,90	304105 0505	22,90
R/L 050,5-25	5.0	1.9	0.15	3.8	4.4	40	25	0.5	5.0	645...	304101 0023	26,50	304105 0023	26,50
R/L 050,5-30	5.0	1.9	0.15	3.8	4.4	45	30	0.5	5.0	645...	304101 0024	30,40	304105 0024	30,40
R/L 050,6-15	6.0	2.3	0.15	4.5	5.3	30	15	0.5	6.0	676...	304101 0030	19,40	304105 0030	19,40
R/L 050,6-22	6.0	2.3	0.15	4.5	5.3	37	22	0.5	6.0	676...	304101 0606	22,90	304105 0606	22,90
R/L 050,6-25	6.0	2.3	0.15	4.5	5.3	40	25	0.5	6.0	676...	304101 0032	26,50	304105 0032	26,50
R/L 050,6-30	6.0	2.3	0.15	4.5	5.3	45	30	0.5	6.0	676...	304101 0033	30,40	304105 0033	30,40
R/L 050,7-20	7.0	2.8	0.15	5.5	6.3	35	20	0.6	6.8	676...	304101 0040	23,10	304105 0040	23,10
R/L 050,7-25	7.0	2.8	0.15	5.5	6.3	40	25	0.6	6.8	676...	304101 0041	26,90	304105 0041	26,90
R/L 050,7-30	7.0	2.8	0.15	5.5	6.3	45	30	0.6	6.8	676...	304101 0042	30,80	304105 0042	30,80

3125 3125

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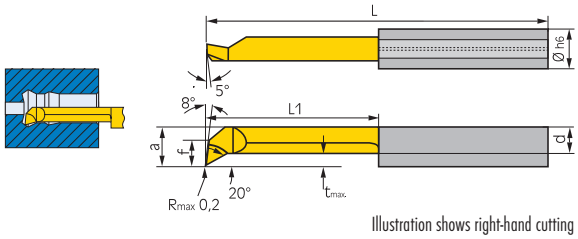
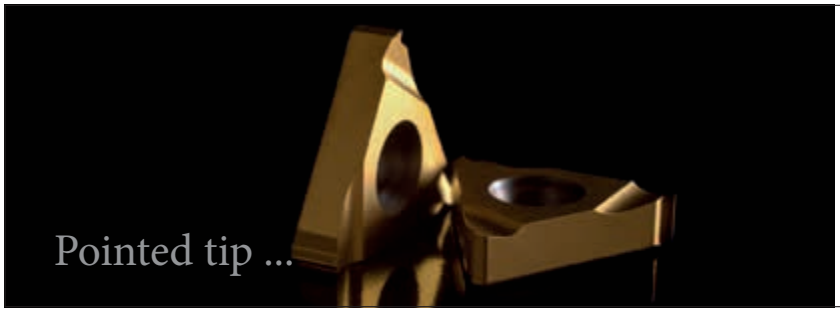


Illustration shows right-hand cutting

Internal turning

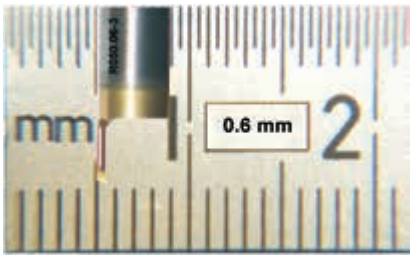
- **Coated cutting inserts CN45F**
- From 0.6 mm bore diameter

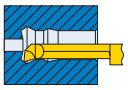
Designation	D h6 mm	f mm	r mm	d mm	a mm	L mm	L1 mm	t max. mm	D min. mm	suitable tool holder	ISO P M K **CN45F TiN right-hand** art.no.	€	ISO P M K **CN45F TiN left-hand** art.no.	€
R/L 050,06-2	4.0		0.04	0.4	0.5	20	2	0.08	0.6	645...	**304110** 0050	28,90	**304115** 0050	28,90
R/L 050,06-3	4.0		0.04	0.4	0.5	20	3	0.08	0.6	645...	304110 0051	29,80	304115 0051	29,80
R/L 050,15-5	4.0		0.05	1.15	1.3	19	5	0.1	1.5	645...	304110 0060	27,50	304115 0060	27,50
R/L 050,15-10	4.0		0.05	1.15	1.3	24	10	0.1	1.5	645...	304110 0061	28,30	304115 0061	28,30
R/L 050,2-5	4.0		0.05	1.5	1.7	19	5	0.1	2.0	645...	304110 0101	23,40	304115 0101	23,40
R/L 050,2-10	4.0		0.05	1.5	1.7	24	10	0.1	2.0	645...	304110 0102	24,–	304115 0102	24,–
R/L 050,2-15	4.0		0.05	1.5	1.7	29	15	0.1	2.0	645...	304110 0103	25,30	304115 0103	25,30
R/L 050,3-10	4.0	0.6	0.1	2.3	2.6	24	10	0.2	2.8	645...	304110 0001	23,30	304115 0001	23,30
R/L 050,3-16	4.0	0.6	0.1	2.3	2.6	30	16	0.2	2.8	645...	304110 0403	24,70	304115 0403	24,70
R/L 050,3-20	4.0	0.6	0.1	2.3	2.6	34	20	0.2	2.8	645...	304110 0003	29,60	304115 0003	29,60
R/L 050,4-10	4.0	1.5	0.1	3.0	3.5	24	10	0.3	4.0	645...	304110 0010	23,30	304115 0010	23,30
R/L 050,4-16	4.0	1.5	0.1	3.0	3.5	30	16	0.3	4.0	645...	304110 0404	24,70	304115 0404	24,70
R/L 050,4-20	4.0	1.5	0.1	3.0	3.5	34	20	0.3	4.0	645...	304110 0012	28,10	304115 0012	28,10
R/L 050,4-24	4.0	1.5	0.1	3.0	3.5	38	24	0.3	4.0	645...	304110 0070	31,20	304115 0070	31,20
R/L 050,4-28	4.0	1.5	0.1	3.0	3.5	42	28	0.3	4.0	645...	304110 0071	34,80	304115 0071	34,80
R/L 050,5-10	5.0	1.9	0.15	3.8	4.4	25	10	0.5	5.0	645...	304110 0020	21,80	304115 0020	21,80
R/L 050,5-15	5.0	1.9	0.15	3.8	4.4	30	15	0.5	5.0	645...	304110 0021	23,30	304115 0021	23,30
R/L 050,5-20	5.0	1.9	0.15	3.8	4.4	35	20	0.5	5.0	645...	304110 0505	26,80	304115 0505	26,80
R/L 050,5-25	5.0	1.9	0.15	3.8	4.4	40	25	0.5	5.0	645...	304110 0023	30,40	304115 0023	30,40
R/L 050,5-30	5.0	1.9	0.15	3.8	4.4	45	30	0.5	5.0	645...	304110 0024	34,20	304115 0024	34,20
R/L 050,5-35	5.0	1.9	0.15	3.8	4.4	50	35	0.5	5.0	645...	304110 0080	38,–	304115 0080	38,–
R/L 050,6-15	6.0	2.3	0.15	4.5	5.3	30	15	0.5	6.0	676...	304110 0030	23,30	304115 0030	23,30
R/L 050,6-22	6.0	2.3	0.15	4.5	5.3	37	22	0.5	6.0	676...	304110 0606	26,80	304115 0606	26,80
R/L 050,6-25	6.0	2.3	0.15	4.5	5.3	40	25	0.5	6.0	676...	304110 0032	30,40	304115 0032	30,40
R/L 050,6-30	6.0	2.3	0.15	4.5	5.3	45	30	0.5	6.0	676...	304110 0033	34,20	304115 0033	34,20
R/L 050,6-35	6.0	2.3	0.15	4.5	5.3	50	35	0.5	6.0	676...	304110 0150	38,–	304115 0150	38,–
R/L 050,6-42	6.0	2.3	0.15	4.5	5.3	57	42	0.5	6.0	676...	304110 0151	42,40	304115 0151	42,40
R/L 050,7-20	7.0	2.8	0.15	5.5	6.3	35	20	0.6	6.8	676...	304110 0040	27,–	304115 0040	27,–
R/L 050,7-25	7.0	2.8	0.15	5.5	6.3	40	25	0.6	6.8	676...	304110 0041	30,80	304115 0041	30,80
R/L 050,7-30	7.0	2.8	0.15	5.5	6.3	45	30	0.6	6.8	676...	304110 0042	34,80	304115 0042	34,80
R/L 050,7-35	7.0	2.8	0.15	5.5	6.3	50	35	0.6	7.0	676...	304110 0160	38,60	304115 0160	38,60
R/L 050,7-40	7.0	2.8	0.15	5.5	6.3	55	40	0.6	7.0	676...	304110 0161	43,10	304115 0161	43,10
R/L 050,7-45	7.0	2.8	0.15	5.5	6.3	60	45	0.6	7.0	676...	304110 0162	45,60	304115 0162	45,60
R/L 050,7-50	7.0	2.8	0.15	5.5	6.3	65	50	0.6	7.0	676...	304110 0163	49,10	304115 0163	49,10
											3125		3125	



... with reversible option.

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Performance demands quality





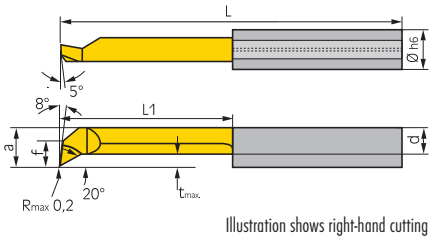


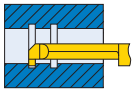
Illustration shows right-hand cutting

- **Coated cutting inserts AL41F**
- From 0.5 mm bore diameter

Designation	D h6 mm	f mm	r mm	a mm	L mm	L1 mm	t max. mm	D min. mm	suitable tool holder	ISO P M K AL41F right-hand art.no.	€	ISO P M K AL41F left-hand art.no.	€
R/L050,05-2	4.0		0.04	0.4	20	2		0.5	645...	**304120** 0166	28,90	**304125** 0166	28,90
R/L050,06-2	4.0		0.04	0.5	20	2	0.05	0.6	645...	304120 0050	28,90	304125 0050	28,90
R/L050,06-3	4.0		0.04	0.5	20	3	0.05	0.6	645...	304120 0051	29,80	304125 0051	29,80
R/L050,08-4	4.0		0.04	0.7	20	4	0.05	0.8	645...	304120 0052	29,80	304125 0052	29,80
R/L050,1-5	4.0		0.05	0.9	20	4.5	0.1	1.0	645...	304120 0053	27,50	304125 0053	27,50
R/L050,1-7	4.0		0.05	0.9	22	6.5	0.1	1.0	645...	304120 0054	28,30	304125 0054	28,30
R/L050,1-8	4.0		0.05	0.9	22	8	0.1	1.0	645...	304120 0055	29,50	304125 0055	29,50
R/L050,15-5	4.0		0.05	1.3	19	5	0.1	1.5	645...	304120 0060	27,50	304125 0060	27,50
R/L050,15-10	4.0		0.05	1.3	24	10	0.1	1.5	645...	304120 0061	28,30	304125 0061	28,30
R/L050,2-5	4.0		0.05	1.7	19	5	0.1	2.0	645...	304120 0101	23,40	304125 0101	23,40
R/L050,2-10	4.0		0.05	1.7	24	10	0.1	2.0	645...	304120 0102	24,–	304125 0102	24,–
R/L050,2-15	4.0		0.05	1.7	29	15	0.1	2.0	645...	304120 0103	25,30	304125 0103	25,30
R/L050,25-5	4.0	0.2	0.05	2.2	19	5	0.15	2.5	645...	304120 0104	23,40	304125 0104	23,40
R/L050,25-10	4.0	0.2	0.05	2.2	24	10	0.15	2.5	645...	304120 0105	24,–	304125 0105	24,–
R/L050,25-16	4.0	0.2	0.05	2.2	30	16	0.15	2.5	645...	304120 0106	25,30	304125 0106	25,30
R/L050,3-10	4.0	0.6	0.1	2.6	24	10	0.2	2.8	645...	304120 0001	23,30	304125 0001	23,30
R/L050,3-16	4.0	0.6	0.1	2.6	30	16	0.2	2.8	645...	304120 0403	24,70	304125 0403	24,70
R/L050,3-20	4.0	0.6	0.1	2.6	34	20	0.2	2.8	645...	304120 0003	29,60	304125 0003	29,60
R/L050,35-10	4.0	1.1	0.1	3.1	24	10	0.25	3.5	645...	304120 0004	23,30	304125 0004	23,30
R/L050,35-16	4.0	1.1	0.1	3.1	30	16	0.25	3.5	645...	304120 0005	24,70	304125 0005	24,70
R/L050,35-20	4.0	1.1	0.1	3.1	34	20	0.25	3.5	645...	304120 0006	29,60	304125 0006	29,60
R/L050,35-24	4.0	1.1	0.1	3.1	38	24	0.25	3.5	645...	304120 0007	32,50	304125 0007	32,50
R/L050,4-10	4.0	1.5	0.1	3.5	24	10	0.3	4.0	645...	304120 0010	23,30	304125 0010	23,30
R/L050,4-16	4.0	1.5	0.1	3.5	30	16	0.3	4.0	645...	304120 0404	24,70	304125 0404	24,70
R/L050,4-20	4.0	1.5	0.1	3.5	34	20	0.3	4.0	645...	304120 0012	28,10	304125 0012	28,10
R/L050,4-24	4.0	1.5	0.1	3.5	38	24	0.3	4.0	645...	304120 0070	31,20	304125 0070	31,20
R/L050,4-28	4.0	1.5	0.1	3.5	42	28	0.3	4.0	645...	304120 0071	34,80	304125 0071	34,80
R/L050,5-10	5.0	1.9	0.15	4.4	25	10	0.5	5.0	645...	304120 0020	21,80	304125 0020	21,80
R/L050,5-15	5.0	1.9	0.15	4.4	30	15	0.5	5.0	645...	304120 0021	23,30	304125 0021	23,30
R/L050,5-20	5.0	1.9	0.15	4.4	35	20	0.5	5.0	645...	304120 0505	26,80	304125 0505	26,80
R/L050,5-25	5.0	1.9	0.15	4.4	40	25	0.5	5.0	645...	304120 0023	30,40	304125 0023	30,40
R/L050,5-30	5.0	1.9	0.15	4.4	45	30	0.5	5.0	645...	304120 0024	34,20	304125 0024	34,20
R/L050,5-35	5.0	1.9	0.15	4.4	50	35	0.5	5.0	645...	304120 0080	38,–	304125 0080	38,–
R/L050,5-40	5.0	1.9	0.15	4.4	55	40	0.5	5.0	645...	304120 0025	42,40	304125 0025	42,40
R/L050,6-15	6.0	2.3	0.15	5.3	30	15	0.5	6.0	676...	304120 0030	23,30	304125 0030	23,30
R/L050,6-22	6.0	2.3	0.15	5.3	37	22	0.5	6.0	676...	304120 0606	26,80	304125 0606	26,80
R/L050,6-25	6.0	2.3	0.15	5.3	40	25	0.5	6.0	676...	304120 0032	30,40	304125 0032	30,40
R/L050,6-30	6.0	2.3	0.15	5.3	45	30	0.5	6.0	676...	304120 0033	34,20	304125 0033	34,20
R/L050,6-35	6.0	2.3	0.15	5.3	50	35	0.5	6.0	676...	304120 0150	38,–	304125 0150	38,–
R/L050,6-42	6.0	2.3	0.15	5.3	57	42	0.5	6.0	676...	304120 0151	42,40	304125 0151	42,40
R/L050,7-20	7.0	2.8	0.15	6.3	35	20	0.6	6.8	676...	304120 0040	27,–	304125 0040	27,–
R/L050,7-25	7.0	2.8	0.15	6.3	40	25	0.6	6.8	676...	304120 0041	30,80	304125 0041	30,80
R/L050,7-30	7.0	2.8	0.15	6.3	45	30	0.6	6.8	676...	304120 0042	34,80	304125 0042	34,80
R/L050,7-35	7.0	2.8	0.15	6.3	50	35	0.6	6.8	676...	304120 0160	38,60	304125 0160	38,60
R/L050,7-40	7.0	2.8	0.15	6.3	55	40	0.6	6.8	676...	304120 0161	43,10	304125 0161	43,10
R/L050,7-45	7.0	2.8	0.15	6.3	60	45	0.6	6.8	676...	304120 0162	45,60	304125 0162	45,60
R/L050,7-50	7.0	2.8	0.15	6.3	65	50	0.6	6.8	676...	304120 0163	49,20	304125 0163	49,20
R/L050,8-50	8.0	3.3	0.2	7.3	70	50	0.7	7.8	681...	304120 0164	55,50	304125 0164	55,50
R/L050,8-60	8.0	3.3	0.2	7.3	80	60	0.7	7.8	681...	304120 0165	55,50	304125 0165	55,50
										3125		3125	

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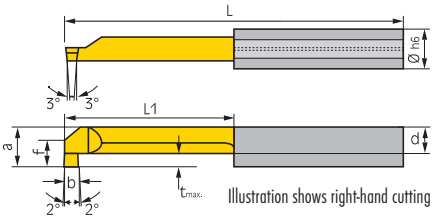
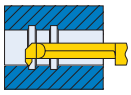


Illustration shows right-hand cutting

- **Internal recess turning, coated CN45F**
- From bore diameter of 4 mm

Designation	D h6 mm	b +0.05 mm	f mm	d mm	a mm	L mm	L1 mm	t max. mm	D min. mm	suitable tool holder		ISO P M K CN45F TiN right-hand art.no.	€		ISO P M K CN45F TiN left-hand art.no.	€
R/L 004,0100-10	4.0	1.0	1.5	2.4	3.5	24	10	0.8	4.0	645...	1	**304210** 0001	24,–	1	**304215** 0001	24,–
R/L 004,0100-16	4.0	1.0	1.5	2.4	3.5	30	16	0.8	4.0	645...	1	304210 0404	27,80	1	304215 0404	27,80
R/L 004,0100-20	4.0	1.0	1.5	2.4	3.5	34	20	0.8	4.0	645...	1	304210 0003	30,80	5	304215 0003	30,80
R/L 005,0100-10	5.0	1.0	1.9	3.3	4.4	25	10	1.0	5.0	645...	1	304210 0010	22,70	5	304215 0010	22,70
R/L 005,0100-15	5.0	1.0	1.9	3.3	4.4	30	15	1.0	5.0	645...	1	304210 0011	26,30	5	304215 0011	26,30
R/L 005,0100-20	5.0	1.0	1.9	3.3	4.4	35	20	1.0	5.0	645...	1	304210 0505	29,50	5	304215 0505	29,50
R/L 005,0100-25	5.0	1.0	1.9	3.3	4.4	40	25	1.0	5.0	645...	1	304210 0013	32,30	5	304215 0013	32,30
R/L 005,0100-30	5.0	1.0	1.9	3.3	4.4	45	30	1.0	5.0	645...	1	304210 0014	36,–	5	304215 0014	36,–
R/L 005,0100-35	5.0	1.0	1.9	3.3	4.4	50	35	1.0	5.0	645...	1	304210 0015	39,90	1	304215 0015	39,90
R/L 005,0150-10	5.0	1.5	1.9	3.3	4.4	25	10	1.0	5.0	645...	1	304210 0020	22,70	1	304215 0020	22,70
R/L 005,0150-15	5.0	1.5	1.9	3.3	4.4	30	15	1.0	5.0	645...	1	304210 0021	26,30	1	304215 0021	26,30
R/L 005,0150-20	5.0	1.5	1.9	3.3	4.4	35	20	1.0	5.0	645...	1	304210 0515	29,50	1	304215 0515	29,50
R/L 005,0150-25	5.0	1.5	1.9	3.3	4.4	40	25	1.0	5.0	645...	1	304210 0023	32,30	1	304215 0023	32,30
R/L 005,0150-30	5.0	1.5	1.9	3.3	4.4	45	30	1.0	5.0	645...	1	304210 0024	36,–	1	304215 0024	36,–
R/L 005,0200-10	5.0	2.0	1.9	3.3	4.4	25	10	1.0	5.0	645...	1	304210 0030	22,70	1	304215 0030	22,70
R/L 005,0200-15	5.0	2.0	1.9	3.3	4.4	30	15	1.0	5.0	645...	1	304210 0031	26,30	1	304215 0031	26,30
R/L 005,0200-20	5.0	2.0	1.9	3.3	4.4	35	20	1.0	5.0	645...	1	304210 0525	29,50	1	304215 0525	29,50
R/L 005,0200-25	5.0	2.0	1.9	3.3	4.4	40	25	1.0	5.0	645...	1	304210 0033	32,30	1	304215 0033	32,30
R/L 005,0200-30	5.0	2.0	1.9	3.3	4.4	45	30	1.0	5.0	645...	1	304210 0034	36,–	1	304215 0034	36,–
R/L 006,0100-10	6.0	1.0	2.3	3.4	5.3	25	10	1.8	6.0	676...	1	304210 0040	22,70	1	304215 0040	22,70
R/L 006,0100-15	6.0	1.0	2.3	3.4	5.3	30	15	1.8	6.0	676...	1	304210 0041	26,30	1	304215 0041	26,30
R/L 006,0100-22	6.0	1.0	2.3	3.4	5.3	37	22	1.8	6.0	676...	1	304210 0606	29,50	1	304215 0606	29,50
R/L 006,0100-25	6.0	1.0	2.3	3.4	5.3	40	25	1.8	6.0	676...	1	304210 0043	32,30	1	304215 0043	32,30
R/L 006,0100-30	6.0	1.0	2.3	3.4	5.3	45	30	1.8	6.0	676...	1	304210 0044	36,–	1	304215 0044	36,–
R/L 006,0100-35	6.0	1.0	2.3	3.4	5.3	50	35	1.8	6.0	676...	1	304210 0045	39,90	1	304215 0045	39,90
R/L 006,0100-42	6.0	1.0	2.3	3.4	5.3	57	42	1.8	6.0	676...	1	304210 0046	43,90	1	304215 0046	43,90
R/L 006,0150-10	6.0	1.5	2.3	3.4	5.3	25	10	1.8	6.0	676...	1	304210 0050	22,70	1	304215 0050	22,70
R/L 006,0150-15	6.0	1.5	2.3	3.4	5.3	30	15	1.8	6.0	676...	1	304210 0051	26,30	1	304215 0051	26,30
R/L 006,0150-22	6.0	1.5	2.3	3.4	5.3	37	22	1.8	6.0	676...	1	304210 0616	29,50	1	304215 0616	29,50
R/L 006,0150-25	6.0	1.5	2.3	3.4	5.3	40	25	1.8	6.0	676...	1	304210 0053	32,30	1	304215 0053	32,30
R/L 006,0150-30	6.0	1.5	2.3	3.4	5.3	45	30	1.8	6.0	676...	1	304210 0054	36,–	1	304215 0054	36,–
R/L 006,0150-35	6.0	1.5	2.3	3.4	5.3	50	35	1.8	6.0	676...	1	304210 0055	39,90	1	304215 0055	39,90
R/L 006,0200-10	6.0	2.0	2.3	3.4	5.3	25	10	1.8	6.0	676...	1	304210 0060	22,70	1	304215 0060	22,70
R/L 006,0200-15	6.0	2.0	2.3	3.4	5.3	30	15	1.8	6.0	676...	1	304210 0061	26,30	1	304215 0061	26,30
R/L 006,0200-22	6.0	2.0	2.3	3.4	5.3	37	22	1.8	6.0	676...	1	304210 0626	29,50	1	304215 0626	29,50
R/L 006,0200-25	6.0	2.0	2.3	3.4	5.3	40	25	1.8	6.0	676...	1	304210 0063	32,30	1	304215 0063	32,30
R/L 006,0200-30	6.0	2.0	2.3	3.4	5.3	45	30	1.8	6.0	676...	1	304210 0064	36,–	1	304215 0064	36,–
R/L 007,0100-10	7.0	1.0	2.8	3.7	6.3	25	10	2.5	6.8	676...	1	304210 0070	22,70	1	304215 0070	22,70
R/L 007,0100-15	7.0	1.0	2.8	3.7	6.3	30	15	2.5	6.8	676...	1	304210 0071	26,30	1	304215 0071	26,30
R/L 007,0100-22	7.0	1.0	2.8	3.7	6.3	37	22	2.5	6.8	676...	1	304210 0072	29,50	1	304215 0072	29,50
R/L 007,0100-25	7.0	1.0	2.8	3.7	6.3	40	25	2.5	6.8	676...	1	304210 0073	32,30	1	304215 0073	32,30
R/L 007,0100-30	7.0	1.0	2.8	3.7	6.3	45	30	2.5	6.8	676...	1	304210 0074	36,20	1	304215 0074	36,20
R/L 007,0100-35	7.0	1.0	2.8	3.7	6.3	50	35	2.5	7.0	676...	1	304210 0075	40,30	1	304215 0075	40,30
R/L 007,0100-40	7.0	1.0	2.8	3.7	6.3	55	40	2.5	7.0	676...	1	304210 0076	44,70	1	304215 0076	44,70
R/L 007,0100-45	7.0	1.0	2.8	3.7	6.3	60	45	2.5	7.0	676...	1	304210 0077	48,50	1	304215 0077	48,50
R/L 007,0100-50	7.0	1.0	2.8	3.7	6.3	65	50	2.5	7.0	676...	1	304210 0078	52,–	1	304215 0078	52,–
R/L 007,0150-10	7.0	1.5	2.8	3.7	6.3	25	10	2.5	6.8	676...	1	304210 0080	22,70	1	304215 0080	22,70
R/L 007,0150-15	7.0	1.5	2.8	3.7	6.3	30	15	2.5	6.8	676...	1	304210 0081	26,30	1	304215 0081	26,30
R/L 007,0150-22	7.0	1.5	2.8	3.7	6.3	37	22	2.5	6.8	676...	1	304210 0082	29,50	1	304215 0082	29,50
R/L 007,0150-25	7.0	1.5	2.8	3.7	6.3	40	25	2.5	6.8	676...	1	304210 0083	32,30	1	304215 0083	32,30
R/L 007,0150-30	7.0	1.5	2.8	3.7	6.3	45	30	2.5	6.8	676...	1	304210 0084	36,20	1	304215 0084	36,20
R/L 007,0150-35	7.0	1.5	2.8	3.7	6.3	50	35	2.5	7.0	676...	1	304210 0085	40,30	1	304215 0085	40,30
												3125			3125	

Designation	D h6 mm	b +0.05 mm	f mm	d mm	a mm	L mm	L1 mm	t max. mm	D min. mm	suitable tool holder		ISO P M K CN45F TiN right-hand art.no.	€		ISO P M K CN45F TiN left-hand art.no.	€
R/L 007,0150-40	7.0	1.5	2.8	3.7	6.3	55	40	2.5	7.0	676...	1	304210 0086	44,70	1	304215 0086	44,70
R/L 007,0200-10	7.0	2.0	2.8	3.7	6.3	25	10	2.5	6.8	676...	1	304210 0090	22,70	1	304215 0090	22,70
R/L 007,0200-15	7.0	2.0	2.8	3.7	6.3	30	15	2.5	6.8	676...	1	304210 0091	26,30	1	304215 0091	26,30
R/L 007,0200-22	7.0	2.0	2.8	3.7	6.3	37	22	2.5	6.8	676...	1	304210 0092	29,50	1	304215 0092	29,50
R/L 007,0200-25	7.0	2.0	2.8	3.7	6.3	40	25	2.5	6.8	676...	1	304210 0093	32,30	1	304215 0093	32,30
R/L 007,0200-30	7.0	2.0	2.8	3.7	6.3	45	30	2.5	6.8	676...	1	304210 0094	36,20	1	304215 0094	36,20
R/L 007,0200-35	7.0	2.0	2.8	3.7	6.3	50	35	2.5	7.0	676...	1	304210 0095	40,30	1	304215 0095	40,30
												3125			3125	



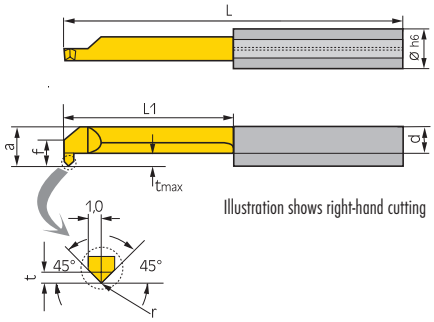
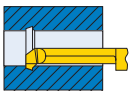


Illustration shows right-hand cutting

Internal turning and chamfering

- From 5 mm bore diameter
- With internal coolant supply

Designation	D h6 mm	r mm	f mm	d mm	a mm	L mm	L1 mm	t max. mm	D min. mm	suitable tool holder	ISO P M K CN45F TiN right-hand art.no.	€	ISO P M K CN45F TiN left-hand art.no.	€
R/L 060,5-15	5.0	0.2	1.9	3.3	4.4	30	15	0.7	5.0	645...	**304310** 0001	24,–	**304315** 0001	24,–
R/L 060,5-20	5.0	0.2	1.9	3.3	4.4	35	20	0.7	5.0	645...	304310 0505	24,70	304315 0505	24,70
R/L 060,7-20	7.0	0.2	2.8	3.7	6.3	35	20	0.7	6.8	676...	304310 0010	28,–	304315 0010	28,–
											3125		3125	



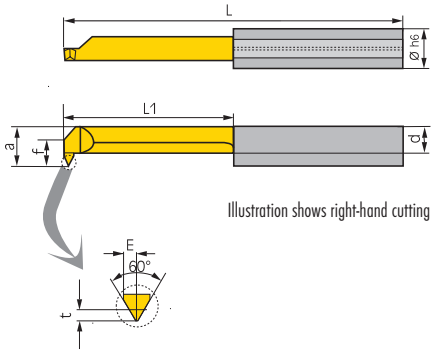


Illustration shows right-hand cutting

Internal thread turning

- **Metric ISO threads** from 4.8 mm bore diameter
- Partial profile, for pitches from 1.0 to 1.5 mm

Designation	P mm	t mm	E mm	f mm	a mm	d mm	L mm	L1 mm	D min. mm	suitable tool holder	ISO P M K CN45F TiN right-hand art.no.	€	ISO P M K CN45F TiN left-hand art.no.	€
R/L 005,0510-15	1.0	0.55	0.55	1.9	4.4	3.3	30	15	4.8	645...	**304501** 0001	27,40	**304505** 0001	27,40
R/L 005,0510-20	1.0	0.55	0.55	1.9	4.4	3.3	35	20	4.8	645...	304501 1005	28,20	304505 1005	28,20
R/L 006,0612-15	1.25	0.68	0.65	2.3	5.3	3.4	30	15	6.0	676...	304501 0010	27,40	304505 0010	27,40
R/L 006,0612-22	1.25	0.68	0.65	2.3	5.3	3.4	37	22	6.0	676...	304501 1256	28,20	304505 1256	28,20
R/L 006,0815-15	1.5	0.81	0.75	2.3	5.3	3.4	30	15	6.0	676...	304501 0012	27,40	304505 0012	28,60
R/L 006,0815-22	1.5	0.81	0.75	2.3	5.3	3.4	37	22	6.0	676...	304501 1506	28,20	304505 1506	28,20
R/L 007,0815-15	1.5	0.81	0.75	2.7	6.3	3.8	30	15	7.0	676...	304501 0020	27,40	304505 0020	27,40
											3125		3125	

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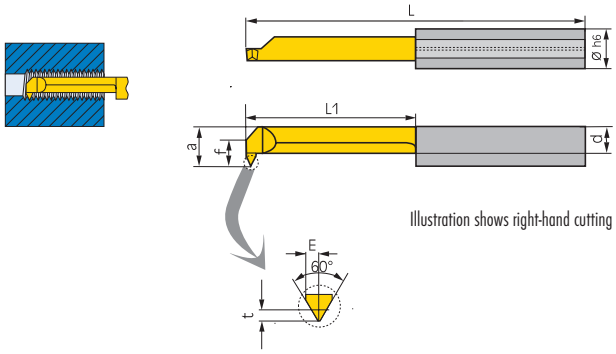


Illustration shows right-hand cutting

Internal fine-pitch thread turning

- **ISO fine-pitch metric thread** from 4 mm bore diameter
- Partial profile, for pitches from 0.5 to 1.0 mm

Designation	P mm	t mm	E mm	f mm	a mm	d mm	L mm	L1 mm	D min. mm	suitable tool holder	ISO P M K CN45F TiN right-hand art.no.	€	ISO P M K CN45F TiN left-hand art.no.	€
R/L 004,0205-15	0.5	0.27	0.35	1.5	3.5	2.4	30	15	4.0	645...	**304510** 0504	28,80	**304515** 0504	28,80
R/L 005,0205-15	0.5	0.27	0.35	1.9	4.4	3.3	30	15	5.0	645...	304510 0003	27,40	304515 0003	27,40
R/L 005,0205-20	0.5	0.27	0.35	1.9	4.4	3.3	35	20	5.0	645...	304510 0505	28,20	304515 0505	28,20
R/L 005,0407-15	0.75	0.4	0.45	1.9	4.4	3.3	30	15	5.0	645...	304510 0005	27,40	304515 0005	27,40
R/L 005,0407-20	0.75	0.4	0.45	1.9	4.4	3.3	35	20	5.0	645...	304510 0755	28,20	304515 0755	28,20
R/L 006,0510-15	1.0	0.55	0.55	2.3	5.3	3.4	30	15	6.0	676...	304510 0010	27,40	304515 0010	27,40
R/L 006,0510-22	1.0	0.55	0.55	2.3	5.3	3.4	37	22	6.0	676...	304510 1006	28,20	304515 1006	28,20
											3125		3125	

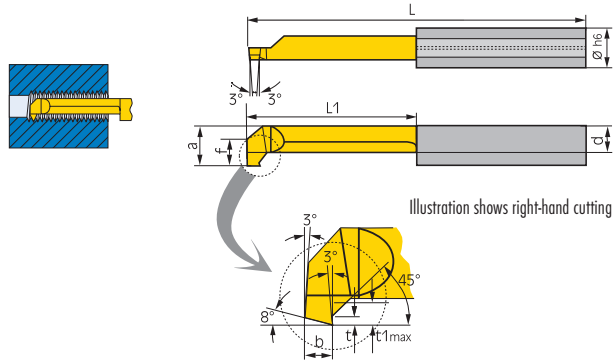


Illustration shows right-hand cutting

Internal roughing and chamfering for subsequent parting-off

- From 5 mm bore diameter

Designation	D h6 mm	b mm	f mm	a mm	L mm	L1 mm	t1 max. mm	D min. mm	suitable tool holder	ISO P M K CN45F TiN right-hand art.no.	€	ISO P M K CN45F TiN left-hand art.no.	€
R/L 070,4-10	4.0	1.0	1.5	3.5	25	10	0.8	4.0	645...	**304410** 0002	23,50	**304415** 0002	23,50
R/L 070,4-16	4.0	1.0	1.5	3.5	30	16	0.8	4.0	645...	304410 0003	24,10	304415 0003	24,10
R/L 070,5-15	5.0	1.0	1.9	4.4	30	15	1.0	5.0	645...	304410 0001	24,10	304415 0001	24,10
R/L 070,5-20	5.0	1.0	1.9	4.4	35	20	1.0	5.0	645...	304410 0505	26,50	304415 0505	26,50
R/L 070,5-30	5.0	1.0	1.9	4.4	45	30	1.0	5.0	645...	304410 0004	32,70	304415 0004	32,70
R/L 070,6-30	6.0	1.0	2.3	5.3	45	30	1.0	6.0	676...	304410 0005	32,70	304415 0005	32,70
R/L 070,6-42	6.0	1.0	2.3	5.3	57	42	1.0	6.0	676...	304410 0006	38,20	304415 0006	38,20
										3125		3125	

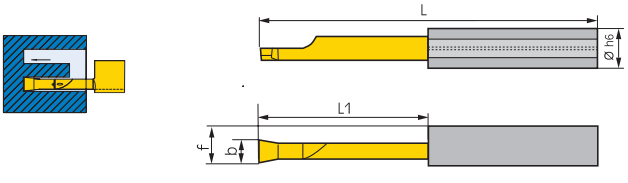


Illustration shows right-hand cutting

Axial grooving from 15 mm groove outer diameter

- Max. groove depth t max. up to 30 mm

Designation	D h6 mm	b +0.05 mm	f mm	L1 mm	L mm	t max. mm	D min. mm	suitable tool holder	ISO P M K CN45F TiN right-hand art.no.	€	ISO P M K CN45F TiN left-hand art.no.	€
R/L015,1515-10	7.0	1.5	5.9	10	26	10	8.0	676...	**304420** 1515	37,80	**304421** 1515	37,80
R/L015,2015-15	7.0	2.0	5.9	15	30	15	8.0	676...	304420 2015	37,80	304421 2015	37,80
R/L015,2015-20	7.0	2.0	5.9	20	35	20	8.0	676...	304420 2020	38,20	304421 2020	38,20
R/L015,2515-20	7.0	2.5	5.9	20	35	20	8.0	676...	304420 2520	38,20	304421 2520	38,20
R/L015,3015-20	7.0	3.0	5.9	20	35	20	8.0	676...	304420 3020	38,20	304421 3020	38,20
R/L015,3015-30	7.0	3.0	5.9	30	45	30	8.0	676...	304420 3030	42,10	304421 3030	42,10
									3125		3125	

Suitable for high pressure cooling up to 100 bar

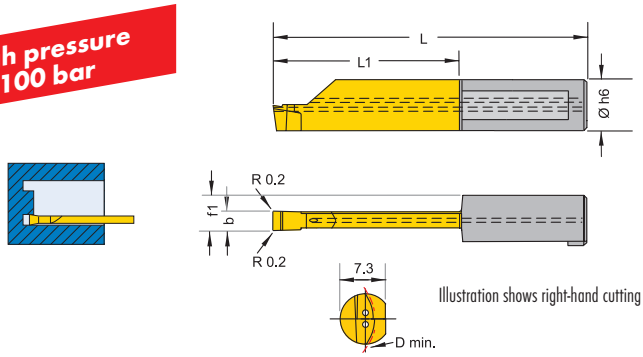


Illustration shows right-hand cutting

Axial grooving with double coolant bore

- From Dmin. Ø 16 mm
- Groove depth tmax. up to 40 mm

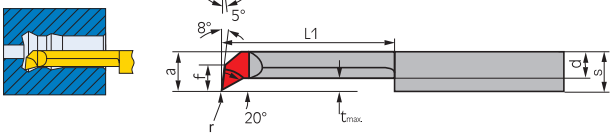
Designation	D h6 mm	b +0.05 mm	f mm	L1 mm	L mm	t max. mm	D min. mm	suitable tool holder	ISO P M K **AL41F TiAlN right-hand** art.no.	€	ISO P M K **AL41F TiAlN left-hand** art.no.	€
R/L012,0200-10	8	2.0	5.0	10	30	10	12	687...	**304450** 0210	46,50	**304455** 0210	46,50
R/L012,0200-15	8	2.0	5.0	15	35	15	12	687...	304450 0215	47,10	304455 0215	47,10
R/L012,0250-10	8	2.5	5.0	10	30	10	12	687...	304400 2510	46,50	304455 2510	46,50
R/L012,0250-20	8	2.5	5.0	20	40	20	12	687...	304400 2520	47,70	304455 2520	47,70
R/L016,0300-10	8	3.0	5.5	10	30	10	16	687...	304450 0310	46,50	304455 0310	46,50
R/L016,0300-20	8	3.0	5.5	20	40	20	16	687...	304450 0320	47,70	304455 0320	47,70
R/L016,0400-10	8	4.0	6.0	10	30	10	16	687...	304450 0410	46,50	304455 0410	46,50
R/L016,0400-20	8	4.0	6.0	20	40	20	16	687...	304450 0420	47,70	304455 0420	47,70
R/L020,0300-25	8	3.0	5.5	25	45	25	20	687...	304450 0325	48,30	304455 0325	48,30
R/L020,0300-30	8	3.0	5.5	30	50	30	20	687...	304450 0330	48,30	304455 0330	48,30
R/L020,0300-35	8	3.0	5.5	35	55	35	20	687...	304450 0335	49,60	304455 0335	49,60
R/L020,0300-40	8	3.0	5.5	40	60	40	20	687...	304450 0340	49,60	304455 0340	49,60
R/L020,0400-25	8	4.0	6.0	25	45	25	20	687...	304450 0425	48,30	304455 0425	48,30
R/L020,0400-30	8	4.0	6.0	30	50	30	20	687...	304450 0430	48,30	304455 0430	48,30
R/L020,0400-35	8	4.0	6.0	35	55	35	20	687...	304450 0435	49,60	304455 0435	49,60
R/L020,0400-40	8	4.0	6.0	40	60	40	20	687...	304450 0440	49,60	304455 0440	49,60
R/L020,0500-20	8	5.0	6.5	20	40	20	20	687...	304450 0520	46,50	304455 0520	46,50
R/L020,0500-25	8	5.0	6.5	25	45	25	20	687...	304450 0525	47,10	304455 0525	47,10
R/L020,0500-30	8	5.0	6.5	30	50	30	20	687...	304450 0530	47,10	304455 0530	47,10
R/L020,0500-35	8	5.0	6.5	35	55	35	20	687...	304450 0535	48,30	304455 0535	48,30
R/L020,0500-40	8	5.0	6.5	40	60	40	20	687...	304450 0540	48,30	304455 0540	48,30
									3125		3125	

Dümmel WERKZEUGFABRIK Cutting inserts mini-børe hardline

1048

For hard materials

- **Bore machining from Ø 2 mm**
- **Internal turning and copying**
- Straight shank and lateral clamping surface
- Right-hand and left-hand versions (other left-hand versions available on request)
- **Material: X2CA superfine grain carbide TiAlN+C**
- **Can be used up to HRc 66**
- **best service life results only when coolant emulsions are used**
- **Advantages over CBN:**
- No problems in machining thin-walled parts
- Few temperature changes inside the workpiece
- Can also be used in HRc 48 - 53 range without difficulty
- Feed 100 % reproducible for the workpiece
- Considerable reduction in tooling and adjustment costs



Internal turning

- From 2 mm bore diameter

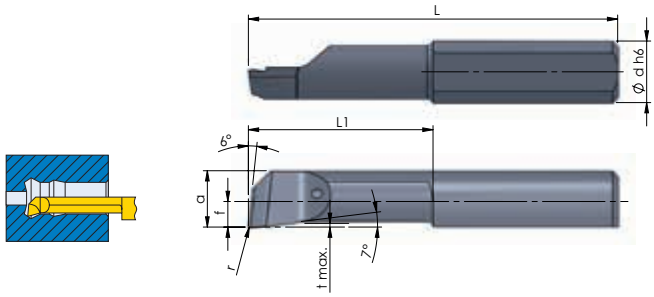
model	r mm	s mm	f mm	d mm	a mm	L mm	L1 mm	t max. mm	D min. mm	D h6 mm	for holder	ISO H X2CA right-hand art.no.	€	ISO H X2CA left-hand art.no.	€
R/L 050,2-5	0.05	3.5		1.5	1.7	19	5	0.1	2.0	4.0	645...	**304550** 0001	32,60		
R/L 050,2-10	0.05	3.5		1.5	1.7	24	10	0.1	2.0	4.0	645...	304550 0002	33,20	**304555** 0002	33,20
R/L 050,3-10	0.1	3.5	0.6	2.3	2.6	24	10	0.2	2.8	4.0	645...	304550 0004	32,50		
R/L 050,3-16	0.1	3.5	0.6	2.3	2.6	30	16	0.2	2.8	4.0	645...	304550 0005	33,80	304555 0005	32,50
R/L 050,4-10	0.1	3.5	1.5	3.0	3.5	24	10	0.3	4.0	4.0	645...	304550 0007	32,50		
R/L 050,4-16	0.1	3.5	1.5	3.0	3.5	30	16	0.3	4.0	4.0	645...	304550 0008	33,80	304555 0008	33,80
R/L 050,4-20	0.1	3.5	1.5	3.0	3.5	34	20	0.3	4.0	4.0	645...	304550 0009	37,30		
R/L 050,5-10	0.15	4.4	1.9	3.8	4.4	25	10	0.5	5.0	5.0	645...	304550 0012	31,50		
R/L 050,5-15	0.15	4.4	1.9	3.8	4.4	30	15	0.5	5.0	5.0	645...	304550 0013	33,–	304555 0013	33,–
R/L 050,5-20	0.15	4.4	1.9	3.8	4.4	35	20	0.5	5.0	5.0	645...	304550 0014	36,40		
R/L 050,5-25	0.15	4.4	1.9	3.8	4.4	40	25	0.5	5.0	5.0	645...	304550 0015	40,10		
R/L 050,6-15	0.15	5.3	2.3	4.5	5.3	30	15	0.5	6.0	6.0	676...	304550 0018	33,50		
R/L 050,6-22	0.15	5.3	2.3	4.5	5.3	37	22	0.5	6.0	6.0	676...	304550 0019	37,–	304555 0019	37,–
R/L 050,6-25	0.15	5.3	2.3	4.5	5.3	40	25	0.5	6.0	6.0	676...	304550 0020	40,60		
R/L 050,6-30	0.15	5.3	2.3	4.5	5.3	45	30	0.5	6.0	6.0	676...	304550 0021	44,40		
R/L 050,7-20	0.15	6.3	2.8	5.5	6.3	35	20	0.6	6.8	7.0	676...	304550 0024	37,40		
R/L 050,7-25	0.15	6.3	2.8	5.5	6.3	40	25	0.6	6.8	7.0	676... 687...	304550 0025	41,20		
R/L 050,7-30	0.15	6.3	2.8	5.5	6.3	45	30	0.6	6.8	7.0	676... 687...	304550 0026	45,20	304555 0026	45,20
R/L 050,7-35	0.15	6.3	2.8	5.5	6.3	50	35	0.6	6.8	7.0	676... 687...	304550 0027	49,–		
R/L 050,7-40	0.15	6.3	2.8	5.5	6.3	55	40	0.6	6.8	7.0	676... 687...	304550 0028	53,50		
												3125		3125	



Cutting inserts mini-børe Xtraline

1048

- **Bore machining from Ø 1 mm**
- **Internal turning and copying**
- Straight shank and lateral clamping surface
- Right-hand and left-hand versions
- Extra stable design
- Cutting edge with chip former



Internal turning

- From 1 mm bore diameter

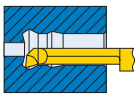
Designation	r mm	f mm	a mm	L mm	L1 mm	t max. mm	D min. mm	D h6 mm	for holder	ISO P M K P18C right-hand art.no.	€	ISO P M K P18C left-hand art.no.	€
R/LX050,1-5R05	0.05	0.45	0.9	20	5	0.03	1.0	4.0	645...	**304562** 0001	30,50	**304563** 0001	30,50
R/LX050,15-7R10	0.1	0.65	1.35	21	7	0.05	1.5	4.0	645...	304562 0002	34,90	304563 0002	34,90
R/LX050,2-5R15	0.15	0.9	1.8	19	5	0.1	2.0	4.0	645...	304562 0003	26,60	304563 0003	26,60
R/LX050,2-10R05	0.05	0.9	1.8	24	10	0.1	2.0	4.0	645...	304562 0004	27,30	304563 0004	27,30
R/LX050,2-10R15	0.15	0.9	1.8	24	10	0.1	2.0	4.0	645...	304562 0005	27,30	304563 0005	27,30
R/LX050,3-10R05	0.05	0.7	2.7	24	10	0.15	3.0	4.0	645...	304562 0006	26,40	304563 0006	26,40
R/LX050,3-10R20	0.2	0.7	2.7	24	10	0.15	3.0	4.0	645...	304562 0007	26,40	304563 0007	26,40
R/LX050,3-16R05	0.05	0.7	2.7	30	16	0.15	3.0	4.0	645...	304562 0008	28,–	304563 0008	28,–
R/LX050,3-16R10	0.1	0.7	2.7	30	16	0.15	3.0	4.0	645...	304562 0009	28,–	304563 0009	28,–
R/LX050,3-16R20	0.2	0.7	2.7	30	16	0.15	3.0	4.0	645...	304562 0010	28,–	304563 0010	28,–
R/LX050,4-10R10	0.1	1.6	3.6	24	10	0.2	4.0	4.0	645...	304562 0011	26,40	304563 0011	26,40
R/LX050,4-10R20	0.2	1.6	3.6	24	10	0.2	4.0	4.0	645...	304562 0012	26,40	304563 0012	26,40
R/LX050,4-16R05	0.05	1.6	3.6	30	16	0.2	4.0	4.0	645...	304562 0013	28,–	304563 0013	28,–
R/LX050,4-16R10	0.1	1.6	3.6	30	16	0.2	4.0	4.0	645...	304562 0014	28,–	304563 0014	28,–
R/LX050,4-16R20	0.2	1.6	3.6	30	16	0.2	4.0	4.0	645...	304562 0015	28,–	304563 0015	28,–
R/LX050,4-16R40	0.4	1.6	3.6	30	16	0.2	4.0	4.0	645...	304562 0016	31,20	304563 0016	31,20
R/LX050,4-24R10	0.1	1.6	3.6	38	24	0.2	4.0	4.0	645...	304562 0017	35,50	304563 0017	35,50
R/LX050,4-24R20	0.2	1.6	3.6	38	24	0.2	4.0	4.0	645...	304562 0018	35,50	304563 0018	35,50
R/LX050,4-24R40	0.4	1.6	3.6	38	24	0.2	4.0	4.0	645...	304562 0019	38,70	304563 0019	38,70
R/LX050,5-15R05	0.05	2.1	4.6	30	15	0.3	5.0	5.0	645...	304562 0020	26,40	304563 0020	26,40
R/LX050,5-15R10	0.1	2.1	4.6	30	15	0.3	5.0	5.0	645...	304562 0021	26,40	304563 0021	26,40
R/LX050,5-15R20	0.2	2.1	4.6	30	15	0.3	5.0	5.0	645...	304562 0022	26,40	304563 0022	26,40
R/LX050,5-15R40	0.4	2.1	4.6	30	15	0.3	5.0	5.0	645...	304562 0023	29,60	304563 0023	29,60
R/LX050,5-25R10	0.1	2.1	4.6	40	25	0.3	5.0	5.0	645...	304562 0024	34,50	304563 0024	34,50
R/LX050,5-25R20	0.2	2.1	4.6	40	25	0.3	5.0	5.0	645...	304562 0025	34,50	304563 0025	34,50
R/LX050,5-30R10	0.1	2.1	4.6	45	30	0.3	5.0	5.0	645...	304562 0026	38,90	304563 0026	38,90
R/LX050,5-30R20	0.2	2.1	4.6	45	30	0.3	5.0	5.0	645...	304562 0027	38,90	304563 0027	38,90
R/LX050,5-30R40	0.4	2.1	4.6	45	30	0.3	5.0	5.0	645...	304562 0028	42,10	304563 0028	42,10
R/LX050,6-15R05	0.05	2.5	5.5	30	15	0.4	6.0	6.0	676...	304562 0029	26,40	304563 0029	26,40
R/LX050,6-15R10	0.1	2.5	5.5	30	15	0.4	6.0	6.0	676...	304562 0030	26,40	304563 0030	26,40
R/LX050,6-15R20	0.2	2.5	5.5	30	15	0.4	6.0	6.0	676...	304562 0031	26,40	304563 0031	26,40
R/LX050,6-15R40	0.4	2.5	5.5	30	15	0.4	6.0	6.0	676...	304562 0032	29,60	304563 0032	29,60
R/LX050,6-22R20	0.2	2.5	5.5	37	22	0.4	6.0	6.0	676...	304562 0033	30,40	304563 0033	30,40
R/LX050,6-30R20	0.2	2.5	5.5	45	30	0.4	6.0	6.0	676...	304562 0034	38,90	304563 0034	38,90
R/LX050,6-30R40	0.4	2.5	5.5	45	30	0.4	6.0	6.0	676...	304562 0035	42,10	304563 0035	42,10
R/LX050,6-35R20	0.2	2.5	5.5	50	35	0.4	6.0	6.0	676...	304562 0036	43,10	304563 0036	43,10
R/LX050,6-42R20	0.2	2.5	5.5	57	42	0.4	6.0	6.0	676...	304562 0037	48,10	304563 0037	48,10
R/LX050,6-50R20	0.2	2.5	5.5	65	50	0.4	6.0	6.0	676...	304562 0038	53,50	304563 0038	53,50
R/LX050,7-25R20	0.2	3	6.5	40	25	0.5	7.0	7.0	676...	304562 0039	35,–	304563 0039	35,–
R/LX050,7-30R20	0.2	3	6.5	45	30	0.5	7.0	7.0	676...	304562 0040	39,50	304563 0040	39,50
R/LX050,7-30R40	0.4	3	6.5	45	30	0.5	7.0	7.0	676...	304562 0041	42,70	304563 0041	42,70
R/LX050,7-35R20	0.2	3	6.5	50	35	0.5	7.0	7.0	676...	304562 0042	43,80	304563 0042	43,80
R/LX050,7-40R20	0.2	3	6.5	55	40	0.5	7.0	7.0	676...	304562 0043	48,80	304563 0043	48,80
R/LX050,7-45R20	0.2	3	6.5	60	45	0.5	7.0	7.0	676...	304562 0044	52,–	304563 0044	52,–
R/LX050,7-50R20	0.2	3	6.5	65	50	0.5	7.0	7.0	676...	304562 0045	56,–	304563 0045	56,–
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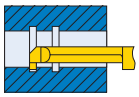
Dümmel WERKZEUGFABRIK Cutting tool sets mini-børe

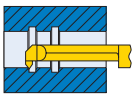
Vc/fz 1048

mini-børe cutting tool set 1

- **Internal turning, recess turning and chamfering**
- Complete set including holder
- Internal machining from 3 mm bore ∅
- Design: **right-hand cutting**
- Cutting inserts: **CN45F, TiN-coated**
- Supplied in a case


Fig. A


Fig. E


Fig. F

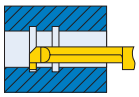


Designation	Bore hole Ø mm	Bore depth mm	Punching depth mm	Punching width mm	Illustration	art.no.	€
676.0016-D 645.0016-D 111.645							
R 050.6-22	6	22	-	-	A		
R 050.5-20	5	20	-	-	A		
R 060.5-20	5	20	-	-	F		
R 050.4-16	4	16	-	-	A	**304601** 0001	435,–
R 050.3-16	3	16	-	-	A		
R 006.0200-22	6	22	1.8	2.0	E		
R 006.0150-22	6	22	1.8	1.5	E		
R 005.0200-20	5	20	1.0	2.0	E		
R 005.0150-20	5	20	1.0	1.5	E		
R 004.0100-16	4	16	0.8	1.0	E		

3125

mini-børe cutting tool set 2

- **Internal recess turning**
- Complete set including holder
- Internal machining from 4 mm bore ∅
- Design: **right-hand cutting**
- Cutting inserts: **CN45F, TiN-coated**
- Supplied in a case


Fig. E

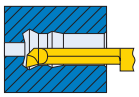


Designation	Bore hole Ø mm	Bore depth mm	Punching depth mm	Punching width mm	Illustration	art.no.	€
676.0016-D 645.0016-D 111.645							
R 006.0200-22	6	22	1.8	2.0	E	**304601** 0002	260,–
R 006.0150-22	6	22	1.8	1.5	E		
R 005.0200-20	5	20	1.0	2.0	E		
R 005.0150-20	5	20	1.0	1.5	E		
R 004.0100-16	4	16	0.8	1.0	E		

3125

mini-børe cutting tool set 3

- **Internal turning**
- Complete set including holder
- Internal machining from 3 mm bore ∅
- Design: **right-hand cutting**
- Cutting inserts: **CN45F, TiN-coated**
- Supplied in a case


Fig. A



Designation	Bore hole Ø mm	Bore depth mm	Punching depth mm	Punching width mm	Illustration	art.no.	€
676.0016-D 645.0016-D 111.645							
R 050.6-22	6	22	-	-	A	**304601** 0003	295,–
R 050.5-20	5	20	-	-	A		
R 050.4-16	4	16	-	-	A		
R 050.3-16	3	16	-	-	A		

3125

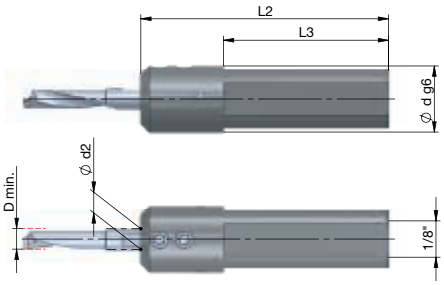
Dümmel WERKZEUGFABRIK Clamp mounting DT-Line

- **Multi-function tool for drilling and turning**
- Clamp mounting with 4 clamping surfaces, 90° offset
- internal coolant supply
- drilling depths up to 4 x D
- bore machining from Dmin. 2.9mm
- cutting edge with internal coolant bore
- AL41F high-performance coating
- large clamping depths possible when turning and solid drilling

NEW · NUOVO · NY · NOUVEAU · NUEVO

Multifunction tool for drilling and turning





Designation	suitable cutting inserts	d g6 mm	L2 mm	L3 mm	art.no.	€
640.DT16	DT.4	16.0	60	40	**304002** 0001	119,–
640.DT20	DT.4	20.0	60	40	304002 0002	124,–
650.DT16	DT.5	16.0	60	40	304002 0003	119,–
650.DT20	DT.5	20.0	60	40	304002 0004	124,–
660.DT16	DT.6	16.0	60	40	304002 0005	119,–
660.DT20	DT.6	20.0	60	40	304002 0006	124,–
670.DT16	DT.7	16.0	60	40	304002 0007	119,–
670.DT20	DT.7	20.0	60	40	304002 0008	124,–
680.DT16	DT.8	16.0	60	40	304002 0009	119,–
680.DT20	DT.8	20.0	60	40	304002 0010	124,–

3125

Dümmel WERKZEUGFABRIK Cutting inserts DT-Line

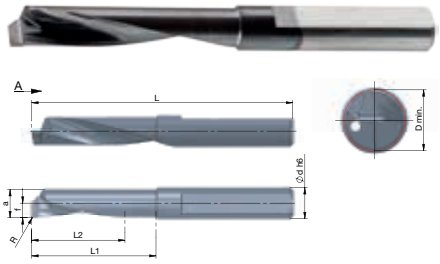


1049

- **Internal coolant supply**
- Clamping surface from above
- right-hand and left-hand versions
- **Cutting material: AL41F** micro-grain carbide **TiAlN**

From Ø 2.9mm

NEW · NUOVO · NY · NOUVEAU · NUEVO



Drilling and internal turning

- from boring diameter 2.9mm
- Coated cutting inserts AL41F
- L1 maximum turning depth
- L2 maximum boring depth

Designation	D h6 mm	f mm	r mm	a mm	L mm	L1 mm	L2 mm	D min. mm	suitable tool holder	ISO P M K	AL41F right-hand art.no.	€	ISO P M K	AL41F left-hand art.no.	€
R/LDT.3-10	4.0	0.9	0.2	2.72	37	10	10	2.9	640.DT..	5	**304564** 0001	62,50	5	**304565** 0001	62,50
R/LDT.3-13	4.0	0.9	0.2	2.72	40	13	13	2.9	640.DT..	5	304564 0002	64,–	5	304565 0002	64,–
R/LDT.4-15	4.0	1.85	0.2	3.55	37	15	10	3.7	640.DT..	5	304564 0003	63,–	5	304565 0003	63,–
R/LDT.4-20	4.0	1.85	0.2	3.55	42	20	16	3.7	640.DT..	5	304564 0004	66,50	5	304565 0004	66,50
R/LDT.5-15	5.0	2.35	0.2	4.55	37	15	10	4.7	650.DT..	5	304564 0005	64,50	5	304565 0005	64,50
R/LDT.5-20	5.0	2.35	0.2	4.55	42	20	15	4.7	650.DT..	5	304564 0006	66,–	5	304565 0006	66,–
R/LDT.5-25	5.0	2.35	0.2	4.55	47	25	20	4.7	650.DT..	5	304564 0007	68,–	5	304565 0007	68,–
R/LDT.6-15	6.0	2.85	0.2	5.55	37	15	10	5.7	660.DT..	5	304564 0008	65,50	5	304565 0008	65,50
R/LDT.6-20	6.0	2.85	0.2	5.55	42	20	15	5.7	660.DT..	5	304564 0009	67,50	5	304565 0009	67,50
R/LDT.6-25	6.0	2.85	0.2	5.55	47	25	20	5.7	660.DT..	5	304564 0010	69,50	5	304565 0010	69,50
R/LDT.6-30	6.0	2.85	0.2	5.55	52	30	25	5.7	660.DT..	5	304564 0011	71,–	5	304565 0011	71,–
R/LDT.7-20	7.0	3.35	0.2	6.55	42	20	15	6.7	670.DT..	5	304564 0012	69,–	5	304565 0012	69,–
R/LDT.7-25	7.0	3.35	0.2	6.55	47	25	20	6.7	670.DT..	5	304564 0013	71,–	5	304565 0013	71,–
R/LDT.7-30	7.0	3.35	0.2	6.55	52	30	25	6.7	670.DT..	5	304564 0014	73,50	5	304565 0014	73,50
R/LDT.7-35	7.0	3.35	0.2	6.55	57	35	30	6.7	670.DT..	5	304564 0015	75,–	5	304565 0015	75,–
R/LDT.8-25	8.0	3.85	0.2	7.55	52	25	20	7.7	680.DT..	5	304564 0016	71,–	5	304565 0016	71,–
R/LDT.8-30	8.0	3.85	0.2	7.55	57	30	25	7.7	680.DT..	5	304564 0017	74,–	5	304565 0017	74,–
R/LDT.8-35	8.0	3.85	0.2	7.55	62	35	30	7.7	680.DT..	5	304564 0018	76,50	5	304565 0018	76,50
R/LDT.8-40	8.0	3.85	0.2	7.55	67	40	35	7.7	680.DT..	5	304564 0019	79,–	5	304565 0019	79,–

3125 3125

Dümmel WERKZEUGFABRIK Drilling and turning set DT-Line

- **Drilling and internal turning**
- complete set including holder
- **L1 maximum turning depth**
- **L2 maximum drilling depth**
- Version: **right-hand cutting**
- Cutting inserts: **AL41F-TiAlN-coated**
- Supplied in a case



RDT-4

- Internal machining from ∅ 3.7mm

Designation	d g6 mm	L1 mm	L2 mm	D min. mm	art.no.	€
640.DT16 , RDT.4-15 , RDT.4-20	16	15 , 20	10 , 16	3.7	**304602** 0001	191,–
					3125	

RDT-5

- Internal machining from ∅ 4.7mm

Designation	d g6 mm	L1 mm	L2 mm	D min. mm	art.no.	€
650.DT16 , RDT.5-15 , RDT.5-25	16	15 , 25	10 , 20	4.7	**304602** 0002	191,–
					3125	

RDT-6

- Internal machining from ∅ 5.7mm

Designation	d g6 mm	L1 mm	L2 mm	D min. mm	art.no.	€
660.DT16 , RDT.6-15 , RDT.6-30	16	15 , 30	10 , 25	5.7	**304602** 0003	191,–
					3125	

RDT-7

- Internal machining from ∅ 6.7mm

Designation	d g6 mm	L1 mm	L2 mm	D min. mm	art.no.	€
670.DT16 , RDT.7-20 , RDT.7-35	16	20 , 35	15 , 30	6.7	**304602** 0004	191,–
					3125	



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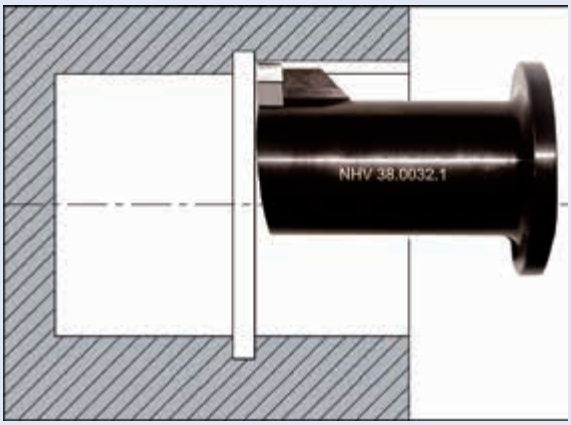
ATORN® Systematic keyway slotting

INFO

The tool system for keyway slotting offers a cost-effective and simple solution in many areas and can be used on practically any CNC lathe, milling machine or machining centre.
Practically any common groove can be created directly on the lathe. The machining of complex and therefore often valuable workpieces or semi-finished products on a lathe is frequently one of the first work processes. The workpiece is either pre-turned or finished.
Grooves must now be applied longitudinally as a carrier or anti-twist protection.
This tool system can now be used to manufacture longitudinal grooves compliant with DIN 138 and DIN 6885 on CNC lathes and reduce costs.



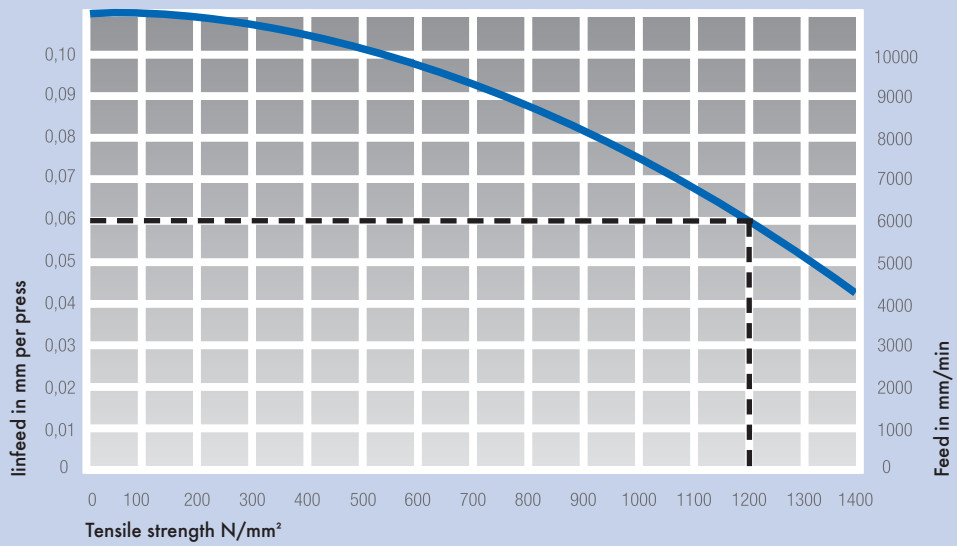




References

- an undercut is necessary at the end of the broached groove for tool run out.
- the insert should not touch the bottom of the groove as the tool retracts.
- setting of the tool is very important. Check accurate the component diameter before taking the first pass.
- using oil or emulsion helps to achieve better surface finish and flush chips out of the component.
- the tool should be set at the 12 o´ clock position to ensure that chips fall away from the groove.
- avoid interrupted cutting

Approximate value for broaching
Example: heat-treated steel for intance 42CroMo4 with1200 N/mm²
- infeed per pass 0,05-0,06 mm
- feed 5500 mm/min





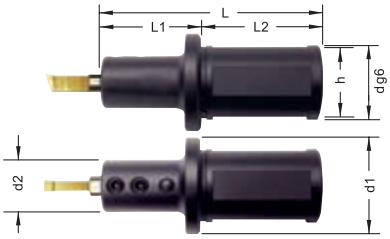
ATORN® Tool holder for keyway slotting

- Keyway slotting on CNC lathes, milling machines and machining centres
- Keyway slotting of longitudinal grooves in accordance with DIN 138 and DIN 6885

Type NHU, bore Ø from 6 mm

model	d g6 mm	d1 mm	d2 mm	L mm	L1 mm	L2 mm	h mm	art.no.	€
NHU.0025,1	25	33	18	73	33	40	23	**307001** 0025	210,–
NHU.0032,1	32	40	20	73	33	40	30	307001 0032	220,–

3130



Type NH10, bore Ø from 10 mm

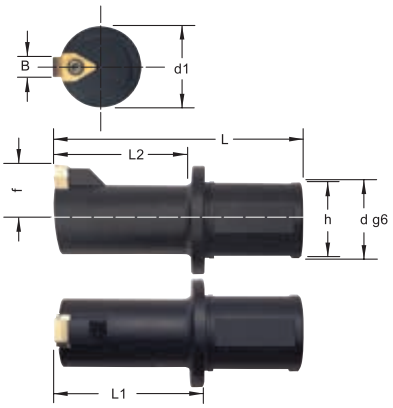
model	d g6 mm	d1 mm	d2 mm	L mm	L1 mm	L2 mm	h mm	art.no.	€
NH10,0025,1	25	33	20	73	33	40	23	**308001** 0025	210,–
NH10,0032,1	32	40	20	73	33	40	30	308001 0032	210,–

3130

Type NHV, bore Ø from 22 mm

model	d g6 mm	d1 mm	f mm	L mm	L1 mm	L2 mm	h mm	D min. mm	art.no.	€
NHV.22,0025,1	25	33	12.0	100	60	50	23	22	**309001** 0022	197,–
NHV.22,0025,2	25	33	12	125	85	75		22	309001 1022	227,–
NHV.22,0025,3	25	33	12.0	175	115	105		22	309001 2022	281,50
NHV.30,0032,1	32	45	16.5	100	60	50	30	30	309001 0030	197,–
NHV.30,0032,2	32	45	16.5	125	85	75	30	30	309001 1030	225,–
NHV.30,0032,3	32	45	16.5	155	115	105		30	309001 2030	262,–
NHV.30,0032,4	32	45	16.5	220	160	150		30	309001 3030	336,–
NHV.38,0032,1	32	45	22.0	100	60	50	30	30	309001 0038	197,–
NHV.38,0032,2	32	45	22.0	125	85	75	30	38	309001 1038	225,–
NHV.38,0032,4	32	45	22.0	235	175	165		38	309001 2038	361,–
NHV.45,0040,1	40	55	24.0	120	60	50		45	309001 0045	276,–
NHV.45,0040,3	40	55	24.0	175	115	105		45	309001 1045	374,–
NHV.45,0040,4	40	55	24.0	225	165	155		45	309001 2045	422,–
NHV.45,0040,5	40	55	24.0	275	215	205		45	309001 3045	514,–

3130



Type NHV with internal coolant supply, bore hole Ø from 10mm

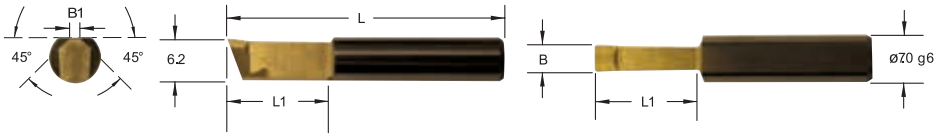
model	d g6 mm	d1 mm	f mm	L mm	L1 mm	L2 mm	D min. mm	art.no.	€
NHV.10.IK25,1	25	33	4.9	70	30	22	10	**309006** 0010	197,50
NHV.10.IK25,2	25	33	4.9	80	40	32	10	309006 1010	214,–
NHV.10.IK25,3	25	33	4.9	90	50	42	10	309006 2010	230,–
NHV.15.IK25,1	25	33	8.4	75	35	25	15	309006 0015	187,–
NHV.15.IK25,2	25	33	8.4	90	50	40	15	309006 1015	205,–
NHV.15.IK25,3	25	33	8.4	110	70	60	15	309006 2015	233,50
NHV.15.IK25,4	25	33	8.4	125	85	75	15	309006 3015	286,–

3130

ATORN® Cutting inserts for keyway slotting

Vc/fz 1048

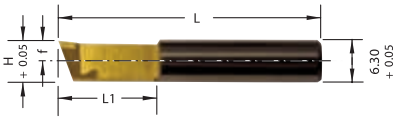
- Keyway slotting of longitudinal grooves in accordance with DIN 138 and DIN 6885
- Tolerance class C11/JS9/P9
- **Type NPU**, bore Ø from 6 mm
- **Type NP10**, bore Ø from 10 mm
- **Type NPV**, bore Ø from 22 mm
- Cutting material: **HC8620, TIALN**-coated



Type NPU, 45°/chamfered

model	B1 mm	B mm	L mm	L1 mm	Groove width mm	suitable for holder	art.no.	€
NPU.4545,1	3.6	6.5	50	25	4 / 5	NHU	**307005** 4545	51,50

3130

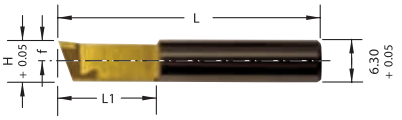




Type NPU, standard, DIN 138, tolerance C11

model	Ø mm	Width mm	Depth mm	Tolerance	B mm	H mm	r mm	f mm	L mm	L1 mm	D min. mm	suitable for holder	art.no.	€
NPU.0210,03.1	6	2	0.9	C11	2.1	5.5	0.35	2.0	38	12.5	6	NHU	**307006** 0210	40,10
NPU.0310,03.1	10	3	1.5	C11	3.1	6.2	0.35	2.7	38	12.5	7	NHU	307006 0310	40,10
NPU.0310,05.1	13	3	1.6	C11	3.1	6.2	0.50	2.7	38	12.5	7	NHU	307006 0311	40,10
NPU.0410,05.1	16	4	1.7	C11	4.1	6.2	0.50	2.7	40	15.0	7	NHU	307006 0410	38,60
NPU.0410,05.2	16	4	1.7	C11	4.1	6.2	0.50	2.7	50	25.0	7	NHU	307006 0411	50,50

3130





Type NPU, loose fit, DIN 6885, tolerance JS9

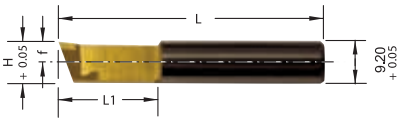
model	Ø mm	Width mm	Depth mm	Tolerance	B mm	H mm	r mm	f mm	L mm	L1 mm	D min. mm	suitable for holder	art.no.	€
NPU.0200,01.1	> 6- 8	2	1.0	JS9	2	5.5	0.1	2.0	38	12.5	6	NHU	**307007** 0200	40,10
NPU.0300,01.1	> 8-10	3	1.4	JS9	3	6.2	0.1	2.7	38	12.5	7	NHU	307007 0300	40,10
NPU.0400,01.1	> 10-12	4	1.8	JS9	4	6.2	0.1	2.7	40	15.0	7	NHU	307007 0400	38,60
NPU.0400,02.1	> 10-12	4	1.8	JS9	4	6.2	0.2	2.7	40	15.0	7	NHU	307007 0401	38,60
NPU.0400,02.2	> 10-12	4	1.8	JS9	4	6.2	0.2	2.7	50	25.0	7	NHU	307007 0402	50,50
NPU.0500,02.2	> 12-17	5	2.3	JS9	5	5.8	0.2	2.3	50	25.0	7	NHU	307007 0500	50,50

3130

Type NPU, tight fit, DIN 6885, tolerance P9

model	Ø mm	Width mm	Depth mm	Tolerance	B mm	H mm	r mm	f mm	L mm	L1 mm	D min. mm	suitable for holder	art.no.	€
NPU.0198,01.1	> 6 - 8	2	1.0	P9	1.98	5.5	0.1	2.0	38	12.5	6	NHU	**307008** 0198	40,10
NPU.0298,01.1	> 8 -10	3	1.4	P9	2.98	6.2	0.1	2.7	38	12.5	7	NHU	307008 0298	40,10
NPU.0398,01.1	> 10 -12	4	1.8	P9	3.98	6.2	0.1	2.7	40	15.0	7	NHU	307008 0398	38,60
NPU.0398,02.2	> 10 -12	4	1.8	P9	3.98	6.2	0.2	2.7	50	25.0	7	NHU	307008 1398	50,50
NPU.0498,02.2	> 12 -17	5	2.3	P9	4.98	5.8	0.2	2.3	50	25.0	7	NHU	307008 0498	50,50

3130





Type NP10, standard, DIN 138 (*non-DIN), tolerance C11

model	Ø mm	Width mm	Depth mm	Tolerance	B mm	H mm	r mm	f mm	L mm	L1 mm	D min. mm	suitable for holder	art.no.	€
NP10,410.05,2	16	4	1.7	C11	4.1	9	0.5	4	50	25	10	NH10	**308002** 0410	56,–
NP10,410.05,3	16	4	1.7	C11	4.1	9	0.5	4	66	41	10	NH10	308002 0411	70,–
NP10,510.05,2*	10	-	-	-	5.1	9	0.5	4	50	25	10	NH10	308002 0510	56,–
NP10,510.05,3*	10	-	-	-	5.1	9	0.5	4	66	41	10	NH10	308002 0511	70,–

3130

Type NP10, loose fit, DIN 6885, tolerance JS9

model	Ø mm	Width mm	Depth mm	Tolerance	B mm	H mm	r mm	f mm	L mm	L1 mm	D min. mm	suitable for holder	art.no.	€
NP10,400.02,2	10	4	1.8	JS9	4	9	0.2	4	50	25	10	NH10	**308003** 0400	56,–
NP10,400.02,3	10	4	1.8	JS9	4	9	0.2	4	66	41	10	NH10	308003 0401	70,–
NP10,500.02,2	12	5	2.3	JS9	5	9	0.2	4	50	25	10	NH10	308003 0500	56,–
NP10,500.02,3	12	5	2.3	JS9	5	9	0.2	4	66	41	10	NH10	308003 0501	70,–

3130

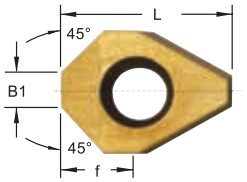
Type NP10, tight fit, DIN 6885, tolerance P9

model	Ø mm	Width mm	Depth mm	Tolerance	B mm	H mm	r mm	f mm	L mm	L1 mm	D min. mm	suitable for holder	art.no.	€
NP10,398.02,2	10	4	1.8	P9	3.98	9	0.2	4	50	25	10	NH10	**308004** 0398	56,–
NP10,398.02,3	10	4	1.8	P9	3.98	9	0.2	4	66	41	10	NH10	308004 1398	70,–
NP10,498.02,2	12	5	2.3	P9	4.98	9	0.2	4	50	25	10	NH10	308004 0498	56,–
NP10,498.02,3	12	5	2.3	P9	4.98	9	0.2	4	66	41	10	NH10	308004 1498	70,–

3130

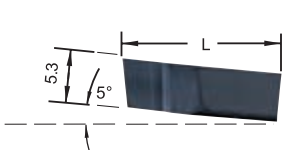
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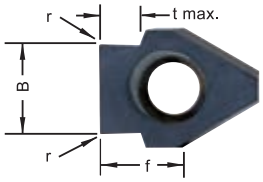
Type NPV, 45°/chamfered



model	B1 mm	L mm	B mm	Groove width mm	suitable for holder	art.no.	€
NPV.3045,1	3.5	17.3	8.0	6 / 7 / 8	NHV22	**309002** 3045	37,10
NPV.6045,1	6.0	20.2	10.9	10	NHV38	309002 6045	34,90

3130





Type NPV, standard, DIN 138, tolerance C11

model	Ø mm	Width mm	Depth mm	Tolerance	B mm	r mm	f mm	L mm	t max. mm	D min. mm	suitable for holder	art.no.	€
NPV.0612,085	22	6	2.1	C11	6.12	0.85	8.0	17.3	2.6	22	NHV22	**309003** 0626	35,60
NPV.0713,085	27	7	2.8	C11	7.13	0.85	8.0	17.3	3.3	22	NHV22	309003 0733	35,60
NPV.0813,105	32	8	2.8	C11	8.13	1.05	8.0	17.3	3.4	22	NHV22 / NHV30	309003 0834	35,60
NPV.1013,105	40	10	3.5	C11	10.13	1.05	10.9	20.1	4.2	40	NHV38	309003 1042	35,60
NPV.1215,135	50	12	3.6	C11	12.15	1.35	10.9	20.1	5.1	40	NHV38	309003 1251	35,60
NPV.1215,175	70	12	5.0	C11	12.15	1.75	10.9	20.1	6.6	40	NHV38	309003 1666	35,60
NPV.1215,225	100	12	7.0	C11	12.15	2.25	10.9	20.1	8.5	40	NHV38	309003 2485	35,60

3130

Type NPV, loose fit, DIN 6885, tolerance JS9

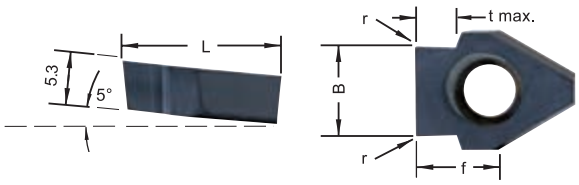
model	Ø mm	Width mm	Depth mm	Tolerance	B mm	r mm	f mm	L mm	t max. mm	D min. mm	suitable for holder	art.no.	€
NPV.0501,02	22	5	2.3	JS9	5.01	0.2	8.0	17.3	2.7	22	NHV22	**309004** 0527	35,60
NPV.0601,02	22	6	2.8	JS9	6.01	0.2	8.0	17.3	3.4	22	NHV22	309004 0634	35,60
NPV.0801,02	> 22-30	8	3.3	JS9	8.01	0.2	8.0	17.3	4.1	22	NHV22 / NHV30	309004 0841	35,60
NPV.1001,03	> 30-38	10	3.3	JS9	10.01	0.3	8.0	17.3	4.2	30	NHV30	309004 1042	35,60
NPV.1202,03	> 38-44	12	3.3	JS9	12.02	0.3	10.9	20.1	5.7	40	NHV38	309004 1257	35,60
NPV.1202,05	> 65-75	12	4.9	JS9	12.02	0.5	10.9	20.1	8.5	40	NHV38	309004 2085	35,60
NPV.1402,03		14		JS9	14.02	0.3		20.1	7.5	45	NHV22 - NHV45	309004 1475	41,10
NPV.1602,03		16		JS9	16.02	0.3		20.1	7.5	45	NHV22 - NHV45	309004 1675	41,10
NPV.1802,05		18		JS9	18.02	0.4		20.1	9.5	45	NHV22 - NHV45	309004 1895	41,10
NPV.2002,05		20		JS9	20.02	0.5		20.1	10	45	NHV22 - NHV45	309004 2010	41,10
NV10,0301,02	10	3		JS9	3.01	0.2		8.2	1.8	10	NHV10	309004 0318	36,10
NV10,0401,02	10	4		JS9	4.01	0.2		8.2	2.3	10	NHV10	309004 0423	36,10
NV10,0501,02	10	5		JS9	5.01	0.2		8.2	2.8	10	NHV10	309004 0528	36,10
NV15,0401,02	15	4		JS9	4.01	0.2		13	2.3	15	NHV15	309004 1423	36,10
NV15,0501,02	15	5		JS9	5.01	0.2		13	2.8	15	NHV15	309004 0523	36,10
NV15,0601,02	15	6		JS9	6.01	0.2		13	3.3	15	NHV15	309004 0623	36,10

3130

Type NPV, tight fit, DIN 6885, tolerance P9

model	Ø mm	Width mm	Depth mm	Tolerance	B mm	r mm	f mm	L mm	t max. mm	D min. mm	suitable for holder	art.no.	€
NPV.0498,02	22	5	2.3	P9	4.98	0.2	8.0	17.3	2.7	22	NHV22	**309005** 0490	35,60
NPV.0598,02	22	6	2.8	P9	5.98	0.2	8.0	17.3	3.4	22	NHV22	309005 0598	35,60
NPV.0798,02	> 22-30	8	3.3	P9	7.98	0.2	8.0	17.3	4.1	22	NHV22 / NHV30	309005 0798	35,60
NPV.0998,03	> 30-38	10	3.3	P9	9.98	0.3	8.0	17.3	4.2	30	NHV30	309005 0998	35,60
NPV.1197,03	> 38-44	12	3.3	P9	11.98	0.3	10.9	20.1	5.7	40	NHV38	309005 1197	35,60
NPV.1397,03		14		P9	13.97	0.3		20.1	7.5	45	NHV22 - NHV45	309005 1397	41,10
NPV.1597,03		16		P9	15.97	0.3		20.1	7.5	45	NHV22 - NHV45	309005 1597	41,10
NPV.1797,05		18		P9	17.97	0.4		20.1	9.5	45	NHV22 - NHV45	309005 1797	41,10
NPV.1997,05		20		P9	19.97	0.5		20.1	10	45	NHV22 - NHV45	309005 1997	41,10
NV10,298.02	10	3		P9	2.98	0.2		8.2	1.8	10	NHV10	309005 0298	36,10
NV10,398.02	10	4		P9	3.98	0.2		8.2	2.3	10	NHV10	309005 0398	36,10
NV10,498.02	10	5		P9	4.98	0.2		8.2	2.8	10	NHV10	309005 0498	36,10
NV15,398.02		4		P9	3.98	0.2		13	2.3	15	NHV15	309005 1398	36,10
NV15,498.02		5		P9	4.98	0.2		13	2.8	15	NHV15	309005 1498	36,10
NV15,598.02		6		P9	5.98	0.2		13	3.3	15	NHV15	309005 1598	36,10

3130



Type NV standard DIN 138 tolerance C11

model	Width mm	Tolerance	B mm	r mm	L mm	t max. mm	D min. mm	suitable for holder	art.no.	€
NV.15,0410,050	4	C11	4.10	0.5	13	2.2	15	NHV15	**309009** 0422	36,10
NV.15,0510,050	5	C11	5.1	0.5	13	2.5	15	NHV15	309009 0525	36,10
NV.15,0612,085	6	C11	6.12	0.85	13	2.6	15	NHV15	309009 0626	36,10

3130

Type NPV standard DIN 6885 tolerance H9

model	Width mm	Tolerance	B mm	r mm	L mm	t max. mm	D min. mm	suitable for holder	art.no.	€
NPV.050H.02	5	H9	5.02	0.2	17.3	2.7	22	NHV22	**309007** 0527	36,10
NPV.060H.02	6	H9	6.02	0.2	17.3	3.4	22	NHV22	309007 0634	36,10
NPV.080H.02	8	H9	8.02	0.2	17.3	4.1	30	NHV22 / NHV30	309007 0841	36,10
NPV.100H.03	10	H9	10.02	0.3	17.3	4.2	38	NHV22 - NHV38	309007 1042	36,10
NPV.120H.03	12	H9	12.03	0.3	20.1	5.7	38	NHV22 - NHV38	309007 1257	36,10

3130

Type NPV standard DIN 6885 tolerance D9

model	Width mm	Tolerance	B mm	r mm	L mm	t max. mm	D min. mm	suitable for holder	art.no.	€
NPV.060D.02	6	D9	6.05	0.2	17.3	3.4	22	NHV22	**309008** 0634	36,10
NPV.080D.02	8	D9	8.06	0.2	17.3	4.1	30	NHV22 / NHV30	309008 0841	36,10
NPV.100D.03	10	D9	10.06	0.3	17.3	4.2	38	NHV22 - NHV38	309008 1042	36,10
NPV.120D.03	12	D9	12.08	0.3	20.1	5.7	38	NHV22 - NHV38	309008 1257	36,10
NPV.140D.03	14	D9	14.08	0.3	20.1	7.5	45	NHV22 - NHV45	309008 1475	41,10
NPV.160D.03	16	D9	16.08	0.3	20.1	7.5	45	NHV22 - NHV45	309008 1675	41,10
NPV.180D.05	18	D9	18.08	0.5	20.1	9.5	45	NHV22 - NHV45	309008 1895	41,10
NPV.200D.05	20	D9	20.1	0.5	20.1	10	45	NHV22 - NHV45	309008 2010	41,10
NV10,030D.02	3	D9	3.05	0.2	8.2	1.8	10	NHV10	309008 0030	36,10
NV10,040D.02	4	D9	4.05	0.2	8.2	2.3	10	NHV10	309008 0040	36,10
NV10,050D.02	5	D9	5.05	0.2	8.2	2.8	10	NHV10	309008 0050	36,10
NV15,040D.02	4	D9	4.05	0.2	13	2.3	15	NHV15	309008 0423	36,10
NV15,050D.02	5	D9	5.05	0.2	13	2.8	15	NHV15	309008 0528	36,10
NV15,060D.02	6	D9	6.05	0.2	13	3.3	15	NHV15	309008 0633	36,10

3130



… with safety

ATORN®
High quality for great performance

Dümmel WERKZEUGFABRIK Tool holder for hexagonal slotting

- Hexagonal slotting on CNC lathes, milling machines and machining centres
- From hexagonal 13 to 32
- Holder with internal cooling



Type NHV holder for hexagonal slotting

model	d g6 mm	d1 mm	f mm	L1 mm	L2 mm	D min. mm	for indexable inserts	L mm	art.no.	€
NHV.15.SW25,2	25	33	6.9	50	40	13	NV15.SW13,20	90	**309010** 0015	205,–
NHV.22.SW25,1	25	33	10	60	50	20	NPV.SW20,32	100	309010 0022	199,–

3130



Cutting insert NV / NPV for hexagonal slotting, wrench width-across flats 13 to 32

model	B mm	B1 mm	R mm	L mm	H mm	Wr. width mm	D min. mm		art.no.	€
NV15.SW13,20	10.4	6.0	0.2	11.5	3.2	SW13 - SW20	13	5	**309011** 1320	38,10
NPV.SW20,32	16.3	9.4	0.3	16.8	6.3	SW20 - SW32	20	5	309011 2032	38,10

3130

ATORN® Keyway slotting sets for longitudinal grooves

- Keyway slotting on CNC lathes, milling machines and machining centres
- Keyway slotting of longitudinal grooves in accordance with DIN 6885
- **Cutting inserts loose fit in accordance with DIN 6885**
- Tolerance class JS9
- Cutting material: AL41F, TiAlN-coated

Economical keyway slotting even in very small production runs!



NPU 5-piece keyway slotting set, bore Ø from 6 mm

Contents	art.no.	€
1x clamp mounting NHU.0025.1 - 3x cutting edge inserts: NPU.0200.01.1 - NPU.0300.01.1 - NPU.0400.01.1 1x hex key - for groove widths 2 / 3 / 4 mm	**307010** 0001	225,–

3130

NP10 4-piece keyway slotting set, bore Ø from 10 mm

Contents	art.no.	€
1x clamp mounting NH10.0025.1 2x cutting edge inserts: NP10.400.02.3, NP10.500.02.3 1x hex key - for groove widths 4 / 5 mm	**308010** 0001	255,–

3130

NPV 5-piece keyway slotting set, bore Ø from 22 mm

Contents	art.no.	€
1x clamp mounting NHV.22.0025.1 3x cutting inserts: NPV.0501.02, NPV.0601.02, NPV.0801.02 1x Torx key TX 15 - for groove widths 5 / 6 / 8 mm	**309010** 0001	215,–

3130

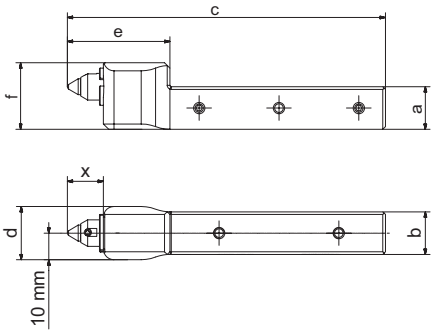
Smoothing tool SET 510 / 520

- The Zeus smoothing tool is an all-rounder in all conventional surface-smoothing operations.
- Whether on straight, conical or concave surfaces
- Planar sides can also be machined.
- Not suitable for interrupted cutting.



Smoothing tool holder SET 510

- **Properties**
  - Fixed tool head
  - **Supplied without smoothing tips**
  - Can be adjusted up to +/- 10° thanks to integrated setting option in the shank
  - For smoothing cylindrical shafts
- **Recommendation**
  - Polishing speed up to 200 m/min
  - Feed up to 0.2 mm/rev
  - Workpiece allowance of 0.01 mm (~RZ 10) and 0.02 mm (~RZ 20)
  - Cooling lubricant is recommended
- Tool holder SET 510-10U including 12x12 mm and 16x16 mm shank adapter
- Tool holder SET 510-16U including 20x20 mm and 25x25 mm shank adapter



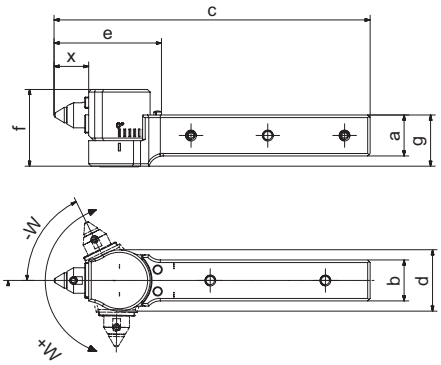
Designation	Contents	a mm	b mm	c mm	d mm	e mm	f mm	x mm	art.no.	€
510-10	SET 510-10U, shank adapter 12x12 mm, 16x16 mm	10	10	110	16	30	18	9	**380200** 0001	679,90
510-16	SET 510-16U, shank adapter 20x20 mm, 25x25 mm	16	16	119.5	20	39	25	13.5	380200 0002	699,90

3161



Smoothing tool holder SET 520

- **Properties**
  - Variably adjustable tool head
  - **Supplied without smoothing tips**
  - Tool for universal applications
  - Swivel range +/- 90°
  - Use up to the collar
  - The adjusting options of the tool head allow the smoothing of planar surfaces, as well as conical, convex and concave geometries.
- **Recommendation**
  - Polishing speed up to 200 m/min
  - Feed up to 0.2 mm/rev
  - Workpiece allowance of 0.01 mm (~RZ 10) and 0.02 mm (~RZ 20)
  - Cooling lubricant is recommended
- Tool holder SET 520-10U including 12x12 mm and 16x16 mm shank adapter
- Tool holder SET 520-16U including 20x20 mm and 25x25 mm shank adapter



Designation	Contents	a mm	b mm	c mm	d mm	e mm	f mm	g mm	x mm	Angle °	art.no.	€
520-10	SET 520-10U, shank adapter 12x12 mm, 16x16 mm	10	10	118.5	20	36	25	17.5	9	+60 to -60	**380200** 0003	749,90
520-16	SET 520-16U, shank adapter 20x20 mm, 25x25 mm	16	16	123.5	24	42	30	20	13.5	+90 to -90	380200 0004	789,90

3161

Diamond smoothing tip



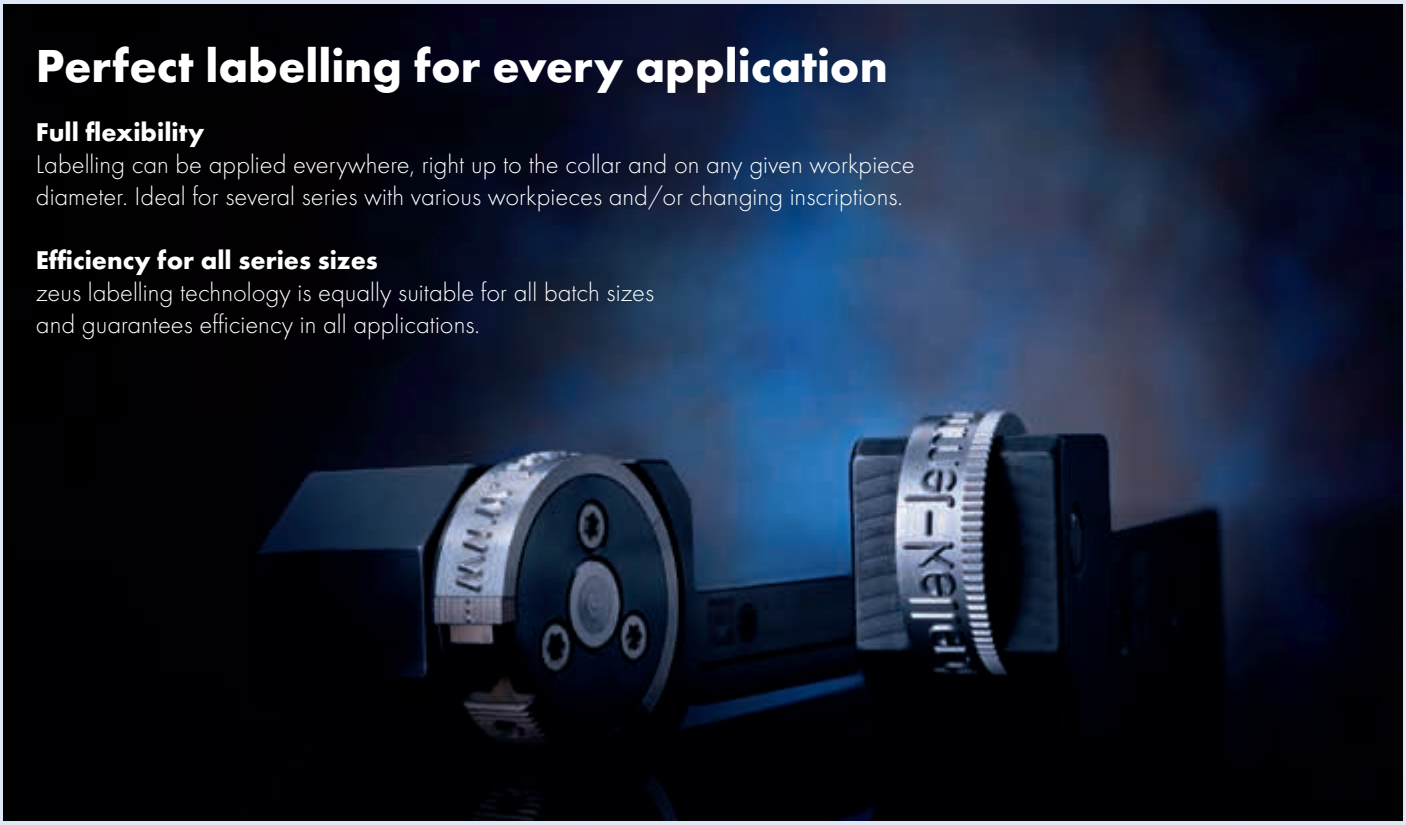
Designation	R mm	art.no.	€
Diamond smoothing tip 0.4	0.4	**380205** 0004	585,40
Diamond smoothing tip 0.6	0.6	380205 0006	585,40
Diamond smoothing tip 0.8	0.8	380205 0008	585,40
Diamond smoothing tip 1.0	1.0	380205 0010	585,40

3161

Perfect labelling for every application

Full flexibility
Labelling can be applied everywhere, right up to the collar and on any given workpiece diameter. Ideal for several series with various workpieces and/or changing inscriptions.

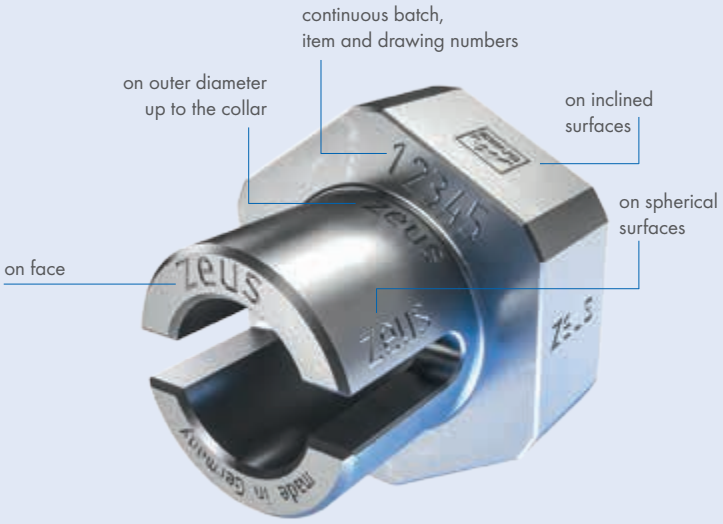
Efficiency for all series sizes
zeus labelling technology is equally suitable for all batch sizes and guarantees efficiency in all applications.



Precise in every position

Where can the workpieces be labelled?

The example shows that you can inscribe practically everywhere. Whether on spherical surfaces, on the collar, on inclined surfaces or on the face - zeus labelling technology meets your requirements.



The right labelling system

We would be happy to determined the right labelling system for your application. Send us your enquiry with your specifications. Don't hesitate to contact us in person.
We offer comprehensive advice and find the optimum solution for you!

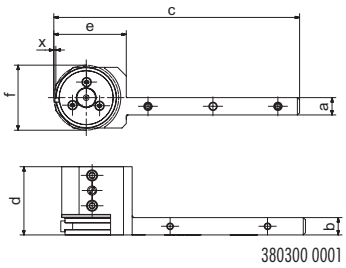


Labelling tool 432

- The Zeus lettering system is versatile, as it is not governed by the workpiece diameter.
- Interchangeable segments allow flexible, fast and low-cost adjustment of the text for various applications.
- For materials up to a tensile strength of 1000 N/mm.
- Available only on request for materials with a greater tensile strength.
- Embossing depth of 0.15 mm in diameter.



380300 0001



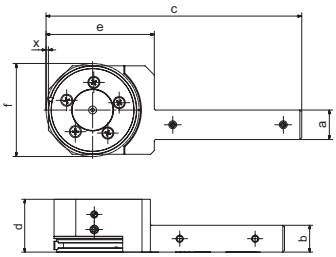
380300 0001

Labelling set 432

- **Sets supplied in high-quality plastic case, without letters, numbers and special characters**
- **Lettering set 4312-08**
  - 1 x basic shank (full shank version) tool 432-08
  - 1 x shank adapter 10x10 mm, 12x12 mm and 16x16 mm
  - 1 x start and end segment
- **Lettering set 4312-16**
  - 1 x basic shank (full shank version) tool 432-16R
  - 1 x shank adapter 20x20 mm and 25x25 mm
  - 1 x start and end segment



380300 0003



380300 0003

Designation	a mm	b mm	c mm	d mm	e mm	f mm	x mm	for Ø mm	Left-hand art.no.	Left-hand €	Right-hand art.no.	Right-hand €
Labelling set R/L 432-08 incl. start and end segment	8	8	113.5	31.5	33.5	30	1	30	**380300** 0001	784,50	**380300** 0002	784,50
Labelling set R/L 432-16 incl. start and end segment	16	16	138.5	31.5	58.5	50	1	50	380300 0003	991,50	380300 0004	991,50
									3126		3126	

Lettering segment set for 432-08 R/L

- **Properties**
  - Lettering segment independent of tool diameter
  - Segments are individually exchangeable
  - Full depth and sharpness of the script is achieved through an embossing process.
- **Application**
  - Exact positioning of the lettering on the workpiece circumference
  - Point height corresponds to the first embossed dot
  - Individually configurable embossing position
  - Lettering right up to the collar is possible
  - Change the reading direction by rotating the T-shaped segments
- **Individual letters and numbers are available on request.**



Description	Typeface height mm	Dimensions	for Ø mm	for holder	art.no.	€
Lettering segment set A-Z	2	30 x 8 x 18 mm	30	432...	**380305** 3002	1.055,60
Lettering segment set 0-9	2	30 x 8 x 18 mm	30	432...	380305 3012	406,–
Lettering segment set A-Z	3	30 x 8 x 18 mm	30	432...	380305 3003	1.055,60
Lettering segment set 0-9	3	30 x 8 x 18 mm	30	432...	380305 3013	406,–
					3126	

Lettering segment set for 432-16 R/L

- **Properties**
  - Lettering segment independent of tool diameter
  - Segments are individually exchangeable
  - Full depth and sharpness of the script is achieved through an embossing process.
- **Application**
  - Exact positioning of the lettering on the workpiece circumference
  - Point height corresponds to the first embossed dot
  - Individually configurable embossing position
  - Lettering right up to the collar is possible
  - Change the reading direction by rotating the T-shaped segments
- **Individual letters and numbers are available on request.**



Description	Typeface height mm	Dimensions	for Ø mm	for holder	art.no.	€
Lettering segment set A-Z	2	50 x 8 x 38 mm	50	432...	**380305** 5002	1.055,60
Lettering segment set 0-9	2	50 x 8 x 38 mm	50	432...	380305 5012	406,–
Lettering segment set A-Z	3	50 x 8 x 38 mm	50	432...	380305 5003	1.055,60
Lettering segment set 0-9	3	50 x 8 x 38 mm	50	432...	380305 5013	406,–
					3126	

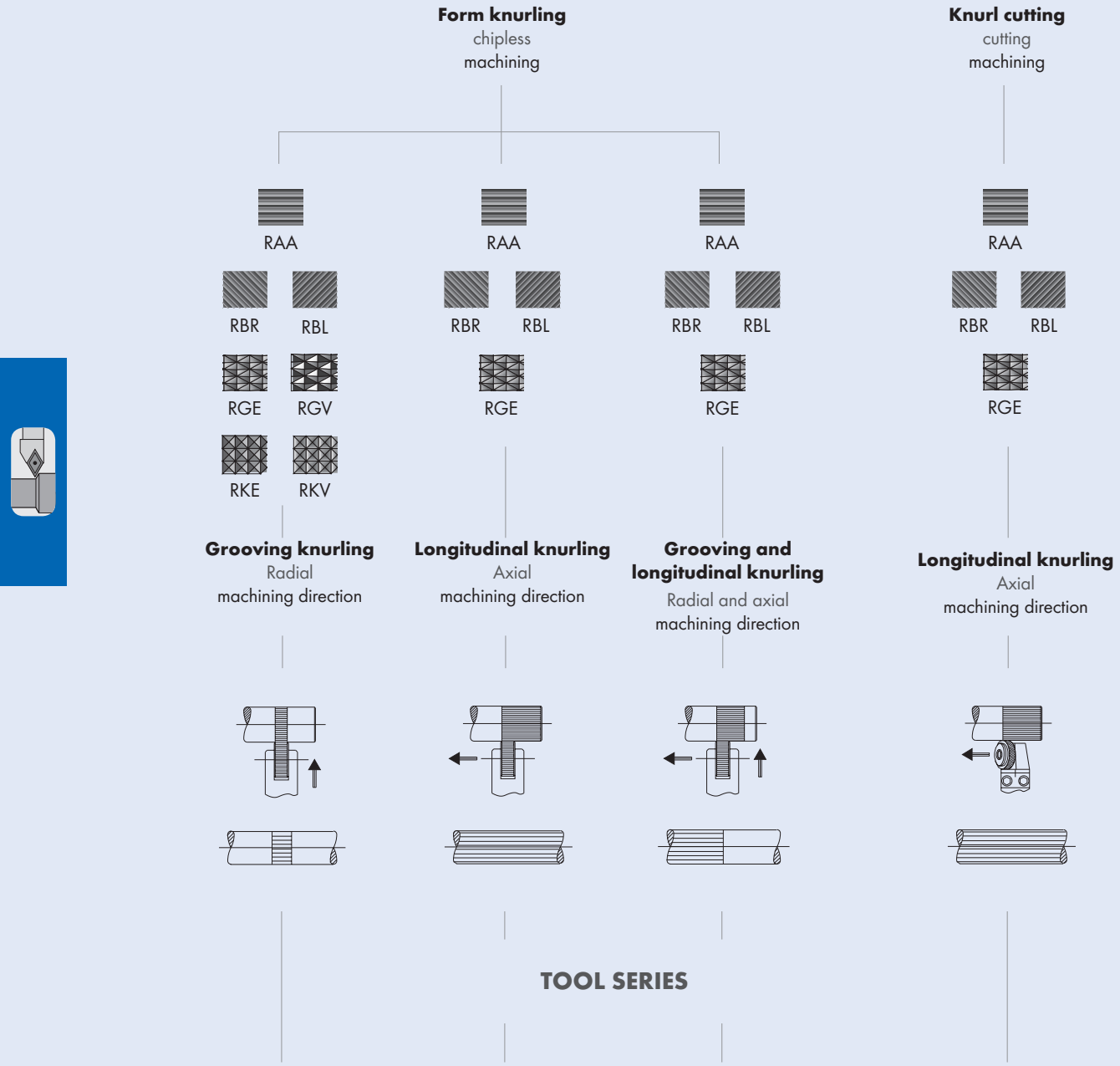
Start and end segment



Description	Dimensions	for Ø mm	for holder	art.no.	€
Start segment Ø30 with 3 drive points	30 x 8 mm	30	432...	**380306** 0001	59,80
End segment Ø30 90° incl. grub screws	30 x 8 mm	30	432...	380306 0002	105,50
End segment Ø50 60° incl. grub screws	50 x 8 mm	50	432...	380306 0004	105,50
Start segment Ø50 with 3 drive points	50 x 8 mm	50	432...	380306 0003	59,80
				3126	

Knurl profiles according to DIN 82 – Overview of suitable tools

INFO



TOOL SERIES

Form knurling

130/131/132
all profiles

Form knurling

130/131/132
- RAA
- RBL
- RBR

141/142/161
- RAA
- RGE
- RBR
- RBL

192
- RAA
- RGE 30°
- RGE 45°

Form knurling

130/131/132
- RAA
- RBL
- RBR

141/142/161
- RAA
- RGE
- RBR
- RBL

Knurl cutting

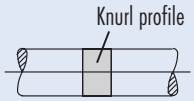
231
- RAA
- RBL
- RBR

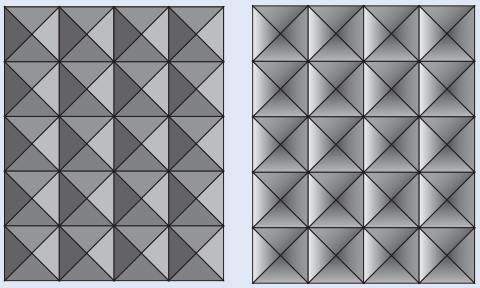
241
- RGE 30°
- RGE 45°

241
- RGE 30°
- RGE 45°

Selection of knurling tools

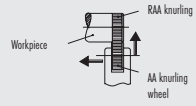
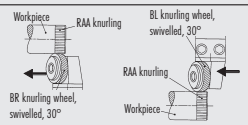
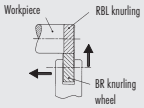
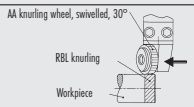
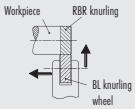
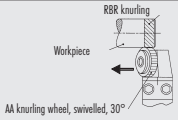
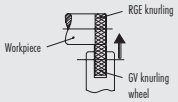
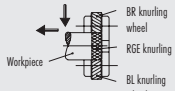
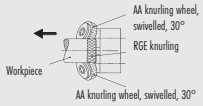
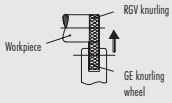
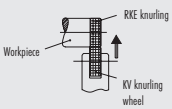
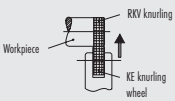
EXAMPLE:





EXPLANATION OF THE ARROWS:

- Knurl can only be produced in a radial direction (grooving knurling)
- Knurl can only be produced in an axial direction (longitudinal knurling)
- Knurl can be produced in an axial and a radial direction

Knurl profile (DIN 82)	Production process	
	Form knurling	Knurl cutting
RAA knurl with axially parallel score marks		
RBL left knurl		
RBR right knurl		
RGE left / right knurl, tips increased, 30°		
		
		
RGV left / right knurl, tips deepened, 30°		
RKE cross knurl, tips increased, 90°		
RKV cross knurl, tips deepened, 90°		

ECO knurling tool for 1 knurling wheel



- Use: Form knurling (chipless forming), all types of knurl pattern, lettering and profiles
- Knurling wheels: all knurl forms can be used
- Machine type: conventional and automated lathes, centre height must be set
- Supplied without knurling wheel



Description	Shank width mm	Shank height mm	Length mm	Working area mm	for knurling wheel mm	Type	**Holder without wheel** art.no.	€
Straight version	8	8	99	3-20	15 x 4 x 4	130	**380101** 1508	23,40
Straight version	16	16	130.5	15 - 200	20 x 8 x 6	130	380101 0001	22,70

3126

Knurling tool for 1 knurling wheel



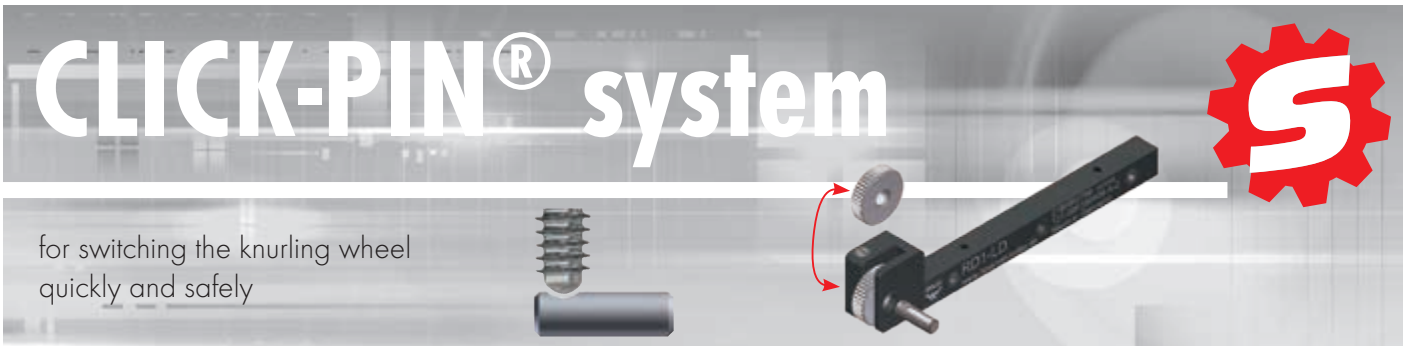
- Application: Knurl forms (chipless forming), all types of knurling patterns, profiles and lettering
- Thumb wheels: all knurl forms can be used
- Machine type: Lathes and automatic lathes (conventional and CNC), point height integrated in the tool holder
- Special surface hardening for increased wear resistance
- Carbide runner pins for higher rotational speeds, faster machining, longer endurance
- **CLICK PIN system**
- Supplied without knurling wheel





Description	Shank width mm	Shank height mm	Length mm	Working area mm	for knurling wheel mm	Type	**Holder without wheel** art.no.	€
Right-hand version	12	12	99	3 - 50	15 x 4 x 4	131	**380102** 1012	106,20
Right-hand version	10	10	99	3 - 50	15 x 4 x 4	131	380102 1510	109,30
Right-hand version	16	16	99	3 - 50	15 x 4 x 4	131	380102 1516	109,30
Universal, right-hand + left-hand	20	20	109.5	8 - 200	20 x 8 x 6	131	380102 0011	151,80
Universal, right-hand + left-hand	20	25	109.5	8 - 200	20 x 8 x 6	131	380102 2025	156,20

3126



Spare parts for knurling tools



Runner pin



Runner pin with flat surface



Runner pin with radius notch



Pressure piece



Spare parts set with greased bush

Description	art.no.	€
Spare parts set: carbide bush, cover disc and right-hand countersunk screw, suitable for 3801502026 / 3801550525	**380110** 9907	79,–
Spare parts set: bush, cover disc and screw, suitable for 3801511212	380110 9906	80,–
Spring-loaded pressure piece M4 x 7 mm for Click Pin system, suitable for 3801020011 from 06/2017	380110 9909	10,70
Runner pin, 6 x 20 mm for Click Pin system, suitable for 3801020011 from 06/2017	380110 9908	15,30
Carbide runner pin, 4 x 12 mm with flat surface, suitable for 3801020103	380110 9902	7,70
Carbide runner pin, 6 x 20 mm with flat surface, suitable for 3801090005	380110 9904	12,20
HSS runner pin, 4 x 12 mm with flat surface, suitable for 3801091001	380110 9903	2,30
HSS runner pin, 6 x 18 mm, suitable for 3801010001	380110 9901	1,20
HSS runner pin, 6 x 20 mm with flat surface, suitable for 3801050001	380110 9905	2,30

3126

ECO knurling tools, for 2 knurling wheels



- Use: Form knurling (chipless forming), workpiece knurl profile in accordance with DIN 82: RAA, RGE 30°
- Knurling wheels: **RAA** = 2x type AA; **RGE 30°** = 1x BL 30°, 1x BR 30°
- Machine type: Lathes and automated lathes (conventional and CNC), centre height integrated in the tool
- Supplied without knurling wheels



With flexible centring

Description	Shank width mm	Shank height mm	Length mm	Working area mm	for knurling wheel mm	Type	Holder w/o wheels art.no.	€
Straight version	20	20	130	10 - 110	20 x 8 x 6	141	**380105** 0001	92,–
							3126	



Running pin with flat surface, secured by screw, quick-change knurling wheels

Description	Shank width mm	Shank height mm	Length mm	Working area mm	for knurling wheel mm	Type	Holder w/o wheels art.no.	€
Right-hand	12	12	101	8 - 15	15 x 4 x 4	851	**380109** 1001	82,70
Right-hand	20	20	130	10 - 80	20 x 8 x 6	851	380109 2020	84,70
							3126	

Knurling tool for 2 knurling wheels





- Use: Form knurling (chipless forming), workpiece knurl profile in accordance with DIN 82: RAA, RGE 30°
- Knurling wheels: **RAA** = 2x type AA; **RGE 30°** = 1x BL 30°, 1x BR 30°
- Machine type: Lathes and automated lathes (conventional and CNC), centre height integrated in the tool holder
- Modular design, knurling tool can be used universally as a right-hand and left-hand version, retooling simply involves turning the knurling head
- Special surface hardening for increased wear resistance
- Carbide runner pins for higher speeds, faster machining, longer service life
- With flexible centring
- Clearance angle correction by means of grub screws in the shank
- Supplied without knurling wheels



Description	Shank width mm	Shank height mm	Length mm	Working area mm	for knurling wheel mm	Type	Holder w/o wheels art.no.	€
Straight version	16	16	119	6 - 60	15 x 4 x 4	141	**380103** 1516	215,–
Straight version	20	20	130	10 - 110	20 x 8 x 6	141	380103 2020	251,50
Straight version	20	25	130	10 - 110	20 x 8 x 6	141	380103 2025	276,50
							3126	

Knurl cutting tool for 1 knurling wheel, 25 x 6 x 8 mm





- Use: Knurl cutting, workpiece knurl profile according to DIN 82: RAA
- Knurling wheels: RAA = 1 x BR 30° for right-hand use, RAA = 1 x BL 30° for left-hand use
- Machine type: conventional and CNC automated lathes, centre height integrated in the tool
- Modular design, tool can be used universally as a right-hand or left-hand version
- Quick retooling by simply removing and turning the knurling head, precise axis position after every reassembly thanks to 3-point support
- With position indicator for optimum initial positioning
- Fine adjustment of the knurling head via threaded spindle with scale
- Precise control for axially parallel knurling thanks to adjustable knurling head
- Clearance angle set using grub screws in the shank
- Special surface hardening for increased wear resistance
- Supplied without knurling wheel



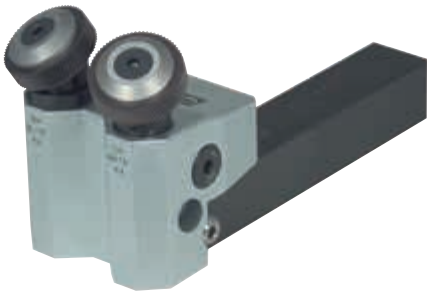


Design	Shank width mm	Shank height mm	Total length mm	Working area mm	for knurling wheel mm	Type	Holder without wheel art.no.	€
Universal R/L	12	12	103.5	3 - 50	15 x 4 x 8	231	**380150** 1212	464,20
Universal R/L	16	16	103.5	3 - 50	15 x 4 x 8	231	380150 1516	464,20
Universal R/L	20	20	130.8	10 - 300	25 x 6 x 8	231	380150 2520	474,80
Universal R/L	25	25	130.8	10 - 300	25 x 6 x 8	231	380150 2525	489,70
							3126	

Knurl cutting tool for 2 knurling wheels



- Use: Knurl cutting, workpiece knurl profile according to DIN 82: RGE30°, RGE45°
- Knurling wheels: RGE30° = 2x type AA, RGE45° = 1x BL 15° and 1x BR 15°
- Machine type: Lathes and automated lathes, conventional and/or CNC
- Modular design: Tool can be used universally as a right-hand or left-hand version
- Fast retooling by simply removing and turning the knurling head,
- Flexible application: vertical height adjustment for use on shank sizes 20 and 25 mm
- Easy to set: setting scale and setting spindle for quickly adjusting the manufacturing diameter
- Fine adjustment of the centre height by means of cutter spindle height adjustment
- Stable construction: toothing between the tool holder and the cutter head
- Special surface hardening for increased wear resistance
- Vertical height adjustment for use on shank sizes 20 and 25 mm
- Supplied without knurling wheel



Design	Shank width mm	Shank height mm	Total length mm	Working area mm	for knurling wheel mm	Type	**Holder w/o wheels** art.no.	€
Universal R/L	20	20	134	10 - 250	25 x 6 x 8	241	**380155** 0525	1.093,50
Universal R/L	12	12	116	3 - 50	15 x 4 x 8	241	380155 1512	695,90
Universal R/L	16	16	116	3 - 50	15 x 4 x 6	241	380155 1516	695,90
Universal R/L	20	25	133.3	10 - 250	25 x 6 x 8	241	380155 2525	1.093,50

3126

ECO knurling tool set

- 2 holders with a total of 11 knurling wheels
- can be used universally as a right-hand and left-hand version
- conventional and CNC automatic lathes
- for knurl profiles RAA and RGE30°
- knurling wheels 20 x 8 x 6
  AA type: 3 x pitch 0.8 and 2 x pitch 1.0
  BL type: 2 x pitch 0.8 and one of each 1 x pitch 1.0 / 1.2
  BR type: one of each 1 x pitch 0.8 / 1.2
- Supplied in a plastic case







Contents	art.no.	€
1 of each holder: 16 x 16 mm shank, (RW 830) shank 20 x 20 mm, (RW851) + knurling wheels 20 x 8 x 6 as per article description	**380157** 0005	295,70

3126

Examples of knurling products

INFO

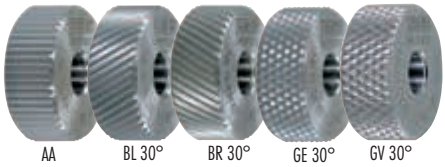


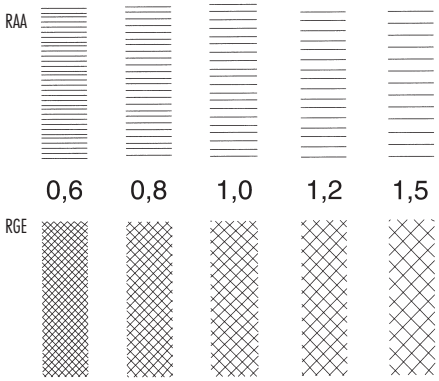
Precision knurling wheels

PM | DIN 403 | Vc/fz | 1051

PM and PM-Tenifer

- Teeth precision-milled to the exact pitch
- Fully hardened knurl, hardness HRc 61+2
- Flat faces and bore are ground
- **Chamfering on both sides for form knurling**
- **Sharp-edged for knurl cutting**
- **Material: PM, PM-Tenifer with surface treatment** to enhance service life

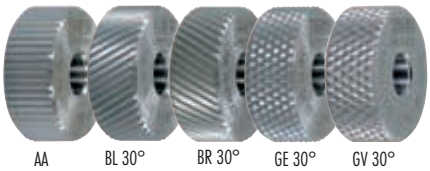




15 x 4 x 4 (Ø x width x bore), with chamfer

Type	Division mm	PM art.no.	€
AA	0.6	**380130** 0106	26,40
AA	0.8	380130 0108	26,40
AA	1.0	380130 0110	26,40
AA	1.2	380130 0112	26,40
AA	1.5	380130 0115	26,40
BL 30°	0.6	380130 0206	26,40
BL 30°	0.8	380130 0208	26,40
BL 30°	1.0	380130 0210	26,40
BL 30°	1.2	380130 0212	26,40
BL 30°	1.5	380130 0215	26,40
BR 30°	0.6	380130 0306	26,40
BR 30°	0.8	380130 0308	26,40
BR 30°	1.0	380130 0310	26,40
BR 30°	1.2	380130 0312	26,40
BR 30°	1.5	380130 0315	26,40
GE 30°	0.6	380130 0406	39,60
GE 30°	0.8	380130 0408	39,60
GE 30°	1.0	380130 0410	39,60
GE 30°	1.2	380130 0412	39,60
GV 30°	0.8	380130 0508	34,–
GV 30°	1.0	380130 0510	34,–

3126



20 x 8 x 6 (Ø x width x bore), with chamfer

Type	Division mm	PM art.no.	€	PM-Tenifer art.no.	€
AA	0.6	**380132** 0106	29,30	**380133** 0106	32,50
AA	0.8	380132 0108	29,30	380133 0108	32,50
AA	1.0	380132 0110	29,30	380133 0110	32,50
AA	1.2	380132 0112	29,30	380133 0112	32,50
AA	1.5	380132 0115	29,30	380133 0115	32,50
BL 30°	0.6	380132 0206	29,30	380133 0206	32,50
BL 30°	0.8	380132 0208	29,30	380133 0208	32,50
BL 30°	1.0	380132 0210	29,30	380133 0210	32,50
BL 30°	1.2	380132 0212	29,30	380133 0212	32,50
BL 30°	1.5	380132 0215	29,30	380133 0215	32,50
BR 30°	0.6	380132 0306	29,30	380133 0306	32,50
BR 30°	0.8	380132 0308	29,30	380133 0308	32,50
BR 30°	1.0	380132 0310	29,30	380133 0310	32,50
BR 30°	1.2	380132 0312	29,30	380133 0312	32,50
BR 30°	1.5	380132 0315	29,30	380133 0315	32,50
GE 30°	0.6	380132 0406	45,80	380133 0406	49,10
GE 30°	0.8	380132 0408	45,80	380133 0408	49,10
GE 30°	1.0	380132 0410	45,80	380133 0410	49,10
GE 30°	1.2	380132 0412	45,80	380133 0412	49,10
GE 30°	1.5	380132 0415	45,80	380133 0415	49,10
GV 30°	0.8	380132 0508	46,40	380133 0508	49,60
GV 30°	1.0	380132 0510	46,40	380133 0510	49,60

3126 3126

Continued on next page >>>



AA BL 15° BR 15° BL 30° BR 30°

15 x 4 x 8 (Ø x width x bore), sharp-edged

Type	Division mm	PM art.no.	€
AA	0.6	**380190** 0106	27,20
AA	0.8	380190 0108	27,20
AA	1.0	380190 0110	27,20
AA	1.2	380190 0112	27,20
BL 15°	0.6	380190 0206	27,20
BL 15°	1.0	380190 0210	27,20
BL 30°	0.6	380190 0406	27,20
BL 30°	0.8	380190 0408	27,20
BL 30°	1.0	380190 0410	27,20
BL 30°	1.2	380190 0412	27,20
BR 15°	0.6	380190 0306	27,20
BR 15°	1.0	380190 0310	27,20
BR 30°	0.6	380190 0506	27,20
BR 30°	0.8	380190 0508	27,20
BR 30°	1.0	380190 0510	27,20
BR 30°	1.2	380190 0512	27,20
		3126	



AA BL 15° BL 30° BR 15° BR 30°

25 x 6 x 8 (Ø x width x bore), sharp-edged

Type	Division mm	PM art.no.	€	PM-Tenifer art.no.	€
AA	0.6	**380192** 0106	36,20	**380193** 0106	39,40
AA	0.8	380192 0108	36,20	380193 0108	39,40
AA	1.0	380192 0110	36,20	380193 0110	39,40
AA	1.2	380192 0112	36,20	380193 0112	39,40
AA	1.5	380192 0115	36,20	380193 0115	39,40
BL 15°	0.6	380192 0206	36,20	380193 0206	39,40
BL 15°	1.0	380192 0210	36,20	380193 0210	39,40
BL 15°	1.2	380192 0212	36,20	380193 0212	39,40
BL 30°	0.6	380192 0406	36,20	380193 0406	39,40
BL 30°	0.8	380192 0408	36,20	380193 0408	39,40
BL 30°	1.0	380192 0410	36,20	380193 0410	39,40
BL 30°	1.2	380192 0412	36,20	380193 0412	39,40
BL 30°	1.5	380192 0415	36,20	380193 0415	39,40
BR 15°	0.6	380192 0306	36,20	380193 0306	39,40
BR 15°	1.0	380192 0310	36,20	380193 0310	39,40
BR 15°	1.2	380192 0312	36,20	380193 0312	39,40
BR 30°	0.6	380192 0506	36,20	380193 0506	39,40
BR 30°	0.8	380192 0508	36,20	380193 0508	39,40
BR 30°	1.0	380192 0510	36,20	380193 0510	39,40
BR 30°	1.2	380192 0512	36,20	380193 0512	39,40
BR 30°	1.5	380192 0515	36,20	380193 0515	39,40
		3126		3126	

palbit Type descriptions

INFO

ISO P

In the ISO-P range, general structural steel and unalloyed steel have up to 110 HB (Brinell hardness) and a carbon content of up to 0.55%. There is also low-alloy steel up to 180 HB and high-alloy steel from 200 HB – 400 HB and materials with a hardness of up to max. 48 HRc (Rockwell hardness).
The new turning grades with multilayer CVD layers are particularly suitable for cutting ISO-P materials.

Quality	ISO	Hardness	Coating	Toughness / Wear resistance	Continuous cut	Slightly interrupted cut	Significantly ninterrupted cut
PHG 115	HC10-P25	HV 1580	CVD-Al_2O_3+TiN	Toughness 1 2 3 4 5 6 7 8 9 10; Wear resistance 1 2 3 4 5 6 7 8 9 10	●	○	–
PHG 125	HC-P20-P35	HV 1520	CVD-Al_2O_3+TiN	Toughness 1 2 3 4 5 6 7 8 9 10; Wear resistance 1 2 3 4 5 6 7 8 9 10	○	●	○
PH 5115	HC-P10-P25 HC-M10-M25	HV 1580	CVD-Al_2O_3	Toughness 1 2 3 4 5 6 7 8 9 10; Wear resistance 1 2 3 4 5 6 7 8 9 10	●	○	–
PH 5125	HC-P20-P35 HC-M15-M30	HV 1520	CVD-$Al_2O_3$3	Toughness 1 2 3 4 5 6 7 8 9 10; Wear resistance 1 2 3 4 5 6 7 8 9 10	○	●	○

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ISO M

Indexable cutting inserts in the ISO-M area are mainly used in machining ferritic and martensitic stainless steel and austenitic stainless, usually acid-resistant steel (Ni content of over 20%). So-called duplex steel has a two-phase structure and consists of ferrite and austenite. Higher-alloyed duplex materials are also called super-duplex or hyper-duplex.

Quality	ISO	Hardness	Coating	Toughness / Wear resistance	Continuous cut	Slightly interrupted cut	Significantly ninterrupted cut
PH 7910	HC-P05-P10 HC-M05-M10 HC-S05-S15	HV 1730	PVD, AlTiN-7	Toughness: 1 2 3 4 5 6 7 8 9 10 Wear resistance: 1 2 3 4 5 6 7 8 9 10	●	○	–
PH 7920	HC-P10-P35 HC-M10-M25 HC-S10-S30	HV 1585	PVD, AlTiN-7	Toughness: 1 2 3 4 5 6 7 8 9 10 Wear resistance: 1 2 3 4 5 6 7 8 9 10	●	○	–
PH 5740	HC-P25-P45 HC-M25-M45 HC-S20-S40	HV 1385	CVD-Al_2O_3	Toughness: 1 2 3 4 5 6 7 8 9 10 Wear resistance: 1 2 3 4 5 6 7 8 9 10	●	○	–
PHS 215	M10-M25	HV 1580	CVD-Al_2O_3+TiC	Toughness: 1 2 3 4 5 6 7 8 9 10 Wear resistance: 1 2 3 4 5 6 7 8 9 10	●	○	–
PHS 225	M15-M30	HV 1520	CVD-Al_2O_3+TiC	Toughness: 1 2 3 4 5 6 7 8 9 10 Wear resistance: 1 2 3 4 5 6 7 8 9 10	●	●	○

ISO K

Indexable cutting inserts for the ISO-K area are mainly used for cast iron that can be forged (GG) and spheroidal graphite iron (GGG), as well as for cast iron with vermicular graphite and bainitic cast iron with spheroidal graphite iron.

Quality	ISO	Hardness	Coating	Toughness / Wear resistance	Continuous cut	Slightly interrupted cut	Significantly ninterrupted cut
PH 5320	HC-P01-P15 HC-K05-K15	HV 1675	CVD-Al_2O_3+TiN	Toughness: 1 2 3 4 5 6 7 8 9 10 Wear resistance: 1 2 3 4 5 6 7 8 9 10	○	●	○

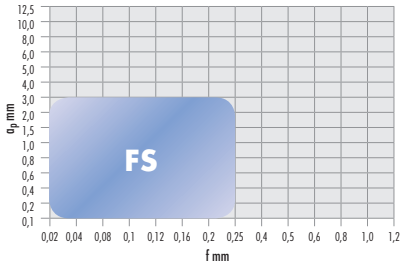
palbit Overview of positive chip breakers

INFO

Chip breaker FS

a_p	f
0,1 – 3,0 mm	0,02 – 0,25 mm/U



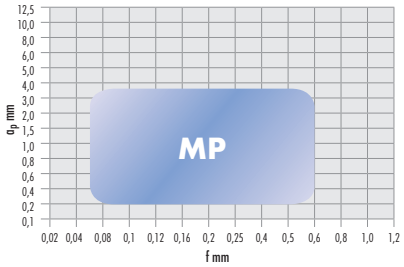


ISO P positive chip breaker / ISO M positive chip breaker		
		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	○	–

Chip breaker MP

a_p	f
0,2 – 3,6 mm	0,06 – 0,6 mm/U



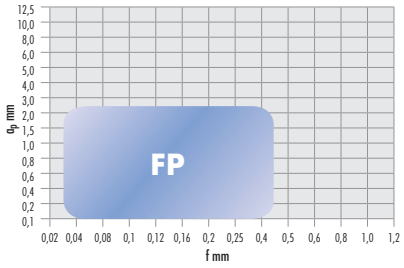


ISO P positive chip breaker		
		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
○	●	○

Chip breaker FP

a_p	f
0,1 – 2,4 mm	0,03 – 0,45 mm/U



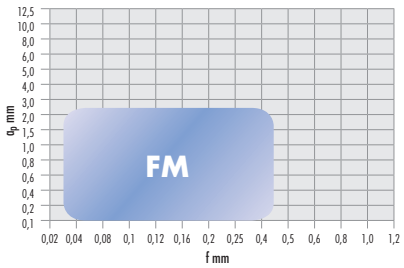


ISO P positive chip breaker		
		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	○	○

Chip breaker FM

a_p	f
0,1 – 2,4 mm	0,03 – 0,45 mm/U



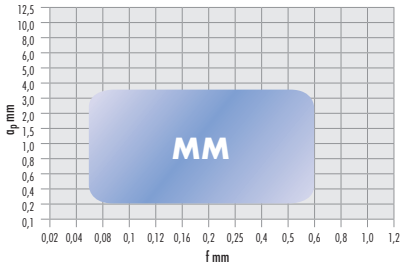


ISO M positive chip breaker		
		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	○	○

Chip breaker MM

a_p	f
0,2 – 3,6 mm	0,06 – 0,6 mm/U





ISO M positive chip breaker		
		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
○	●	○

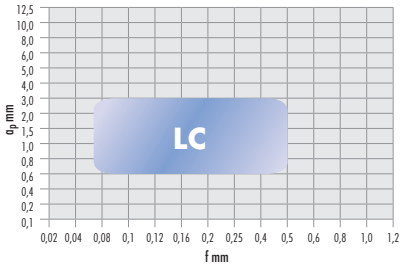
palbit Overview of negative chip breakers

INFO

Chip breaker LC

a_p	f
0,6 - 3,0 mm	0,07 - 0,5 mm/U





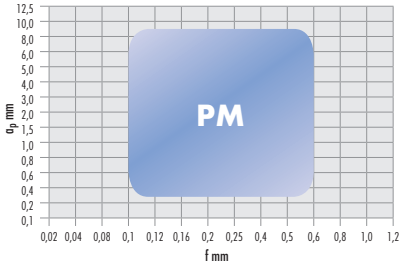
ISO P negative chip breaker

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	○	○

Chip breaker PM

a_p	f
0,3 - 9,0 mm	0,1 - 0,6 mm/U





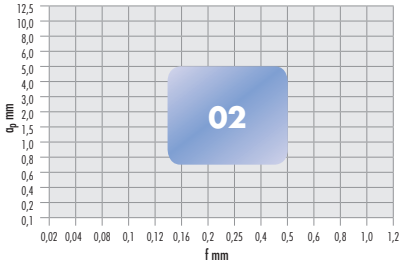
ISO P negative chip breaker

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	○

Chip breaker 02

a_p	f
0,7 - 5,0 mm	0,14 - 0,50 mm/U





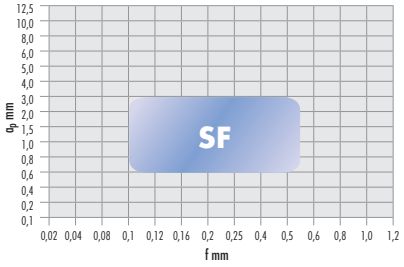
ISO P negative chip breaker

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
○	●	○

Chip breaker SF

a_p	f
0,6 - 3,0 mm	0,10 - 0,55 mm/U





ISO M negative chip breaker

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	○	○

ATORN® Type descriptions

INFO

ISO P

In the ISO-P range, general structural steel and unalloyed steel have up to 110 HB (Brinell hardness) and a carbon content of up to 0.55%. There is also low-alloy steel up to 180 HB and high-alloy steel from 200 HB – 400 HB and materials with a hardness of up to max. 48 HRc (Rockwell hardness).
The new turning grades with multilayer CVD layers are particularly suitable for cutting ISO-P materials.

Sort designation	ISO	Hardness	Coating	Toughness / Wear resistance	Continuous cut ◯	Slightly interrupted cut ◔	Significantly interrupted cut ✣
HC 7610	HC-P10 HC-K20	HV 1550	CVD-TiCN + Al_2O_3 (+ TiCN)	Toughness 1 2 3 4 5 6 7 8 9 10 Wear resistance 1 2 3 4 5 6 7 8 9 10	●	●	–
HC 7620	HC-P20 HC-K30	HV 1500	CVD-TiCN + Al_2O_3 (+ TiCN)	Toughness 1 2 3 4 5 6 7 8 9 10 Wear resistance 1 2 3 4 5 6 7 8 9 10	●	●	–
HC 7630	HC-P30 HC-K40	HV 1320	CVD-TiCN + Al_2O_3 (+ TiCN)	Toughness 1 2 3 4 5 6 7 8 9 10 Wear resistance 1 2 3 4 5 6 7 8 9 10	–	●	●
ACP15T	HC-P15 HC-M10 HC-K25	HV 1550	CVD, Ti(Cn)+Al203 18,5 µm	Toughness 1 2 3 4 5 6 7 8 9 10 Wear resistance 1 2 3 4 5 6 7 8 9 10	●	○	–
ACP25T	HC-P25 HC-K30	HV 1470	CVD-TiCN + Al_2O_3 (+ TiCN)	Toughness 1 2 3 4 5 6 7 8 9 10 Wear resistance 1 2 3 4 5 6 7 8 9 10	●	●	–
ACP35T	HC-P35 HC-M30 HC-K35	HV 1460	CVD, Ti(Cn)+Al203 13 µm	Toughness 1 2 3 4 5 6 7 8 9 10 Wear resistance 1 2 3 4 5 6 7 8 9 10	○	●	●
ACU20T	HC-P20 HC-M20 HC-K30	HV 1450	CVD, Ti(Cn)+Al203 13 µm	Toughness 1 2 3 4 5 6 7 8 9 10 Wear resistance 1 2 3 4 5 6 7 8 9 10	●	○	–
ACU40T	HC-P40 HC-M35	HV 1300	CVD, Ti(Cn)+Al203 13,0 µm	Toughness 1 2 3 4 5 6 7 8 9 10 Wear resistance 1 2 3 4 5 6 7 8 9 10	●	○	○
ATU10T	HT-P15 HT-M10 HT-K10	HV 1620		Toughness 1 2 3 4 5 6 7 8 9 10 Wear resistance 1 2 3 4 5 6 7 8 9 10	●	–	–

ISO M

Indexable cutting inserts in the ISO-M area are mainly used in machining ferritic and martensitic stainless steel and austenitic stainless, usually acid-resistant steel (Ni content of over 20%). So-called duplex steel has a two-phase structure and consists of ferrite and austenite. Higher-alloyed duplex materials are also called super-duplex or hyper-duplex.

Sort designation	ISO	Hardness	Coating	Toughness / Wear resistance	Continuous cut	Slightly interrupted cut	Significantly interrupted cut
HC 7220	HC-M20 HC-S20	HV 1520	PVD-TiAlN + Al_2O_3 (+ ZrCN)	Toughness: 1 2 3 4 5 6 7 8 9 10 Wear resistance: 1 2 3 4 5 6 7 8 9 10	●	○	–
HC 7510	HC-M10 HC-P15	HV 1500	CVD-TiAlN + Al_2O_3 (+ ZrCN)	Toughness: 1 2 3 4 5 6 7 8 9 10 Wear resistance: 1 2 3 4 5 6 7 8 9 10	●	○	–
HC 7520	HC-M20 HC-P25	HV 1450	CVD-TiAlN + Al_2O_3 (+ ZrCN)	Toughness: 1 2 3 4 5 6 7 8 9 10 Wear resistance: 1 2 3 4 5 6 7 8 9 10	●	●	○
HC 7530	HC-M30 HC-P30	HV 1350	CVD-TiAlN + Al_2O_3 (+ ZrCN)	Toughness: 1 2 3 4 5 6 7 8 9 10 Wear resistance: 1 2 3 4 5 6 7 8 9 10	–	●	●
HC 7810	HC-M10 HC-S10	HV 1820	PVD-TiAlN + Al_2O_3 (+ ZrCN)	Toughness: 1 2 3 4 5 6 7 8 9 10 Wear resistance: 1 2 3 4 5 6 7 8 9 10	●	●	–
HC 7820	HC-M20 HC-S20	HV 1520	PVD-TiAlN + Al_2O_3 (+ ZrCN)	Toughness: 1 2 3 4 5 6 7 8 9 10 Wear resistance: 1 2 3 4 5 6 7 8 9 10	●	●	●
ACM20T	HC-M20 HC-P30	HV 1470	CVD-TiCN + Al_2O_3 (+ TiCN)	Toughness: 1 2 3 4 5 6 7 8 9 10 Wear resistance: 1 2 3 4 5 6 7 8 9 10	●	●	–
APM20T	HC-M20 HC-K20	HV 1560	PVD, TiAlN, 2 – 5 µm	Toughness: 1 2 3 4 5 6 7 8 9 10 Wear resistance: 1 2 3 4 5 6 7 8 9 10	●	–	–
APM25T	HC-P35 HC-M25	HV 1460	PVD, TiN / TiAlN, 6 µm	Toughness: 1 2 3 4 5 6 7 8 9 10 Wear resistance: 1 2 3 4 5 6 7 8 9 10	●	○	–
APM35T	HC-P35 HC-M35	HV 1330	PVD, TiN / TiAlN, 6 µm	Toughness: 1 2 3 4 5 6 7 8 9 10 Wear resistance: 1 2 3 4 5 6 7 8 9 10	○	●	●

ISO K

Indexable cutting inserts for the ISO-K area are mainly used for cast iron that can be forged (GG) and spheroidal graphite iron (GGG), as well as for cast iron with vermicular graphite and bainitic cast iron with spheroidal graphite iron.

Sort designation	ISO	Hardness	Coating	Toughness / Wear resistance	Continuous cut	Slightly interrupted cut	Significantly interrupted cut
ACK10T	HC-K10 HC-P05	HV 1810	CVD-TiCN + Al_2O_3	**Toughness** 1 2 3 4 5 6 7 8 9 10 **Wear resistance** 1 2 3 4 5 6 7 8 9 10	○	●	–
ACK20T	HC-P10 HC-K20	HV 1630	CVD, i(C,N)+Al203, 15,5 µm	**Toughness** 1 2 3 4 5 6 7 8 9 10 **Wear resistance** 1 2 3 4 5 6 7 8 9 10	●	●	○



ISO N

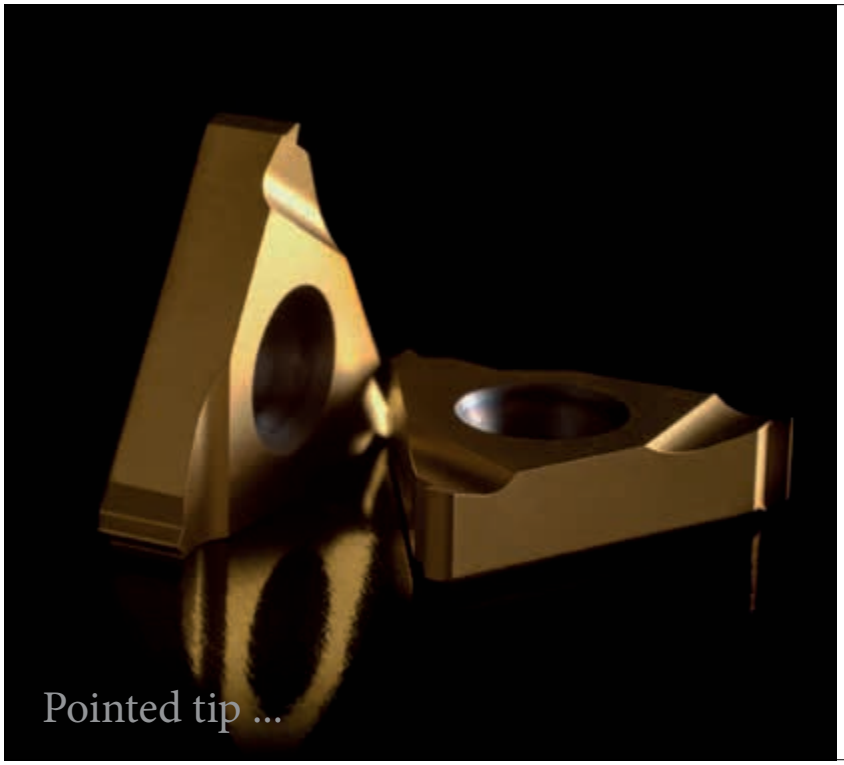
Indexable cutting inserts for the ISO-N area are mainly used in machining aluminium and aluminium alloys (cast and forgeable alloys) with an Si content <13%. Non-metallic materials such as thermosets and fibre-reinforced plastics can also be machined with this turning type.

Sort designation	ISO	Hardness	Coating	Toughness / Wear resistance	Continuous cut	Slightly interrupted cut	Significantly interrupted cut
HC 6310	HC-N10	HV 1750	PVD-TiCN	**Toughness** 1 2 3 4 5 6 7 8 9 10 **Wear resistance** 1 2 3 4 5 6 7 8 9 10	●	○	–
AWN15T	HW-K15	HV 1630		**Toughness** 1 2 3 4 5 6 7 8 9 10 **Wear resistance** 1 2 3 4 5 6 7 8 9 10	●	●	○
APN15T	HW-K15	HV 1630	PVD, TiN/ TiAlN, 6 µm	**Toughness** 1 2 3 4 5 6 7 8 9 10 **Wear resistance** 1 2 3 4 5 6 7 8 9 10	●	●	○

ISO S

Indexable cutting inserts for the ISO-S range are mainly used in machining highly heat-resistant alloys based on nickel-iron and cobalt. Titanium in its pure form or in alpha and beta alloys complete this ISO-S area. These materials which are extremely difficult to machine require a machining strategy adapted to the component which also depends on the machine.

Sort designation	ISO	Hardness	Coating	Toughness / Wear resistance	Continuous cut	Slightly interrupted cut	Significantly interrupted cut
APS10T	HC-M15 HC-S15	HV 1820	PVD (Ti, Al) N, 4 µm	**Toughness** 1 2 3 4 5 6 7 8 9 10 **Wear resistance** 1 2 3 4 5 6 7 8 9 10	●	○	–
APS15T	HC-M15 HC-S15	HV 1820	PVD TiN + (Ti, Al) N + TiN, 4 µm	**Toughness** 1 2 3 4 5 6 7 8 9 10 **Wear resistance** 1 2 3 4 5 6 7 8 9 10	●	○	–
APS40T	HC-M40 HC-S30	HV 1330	CVD TiN-TiB2 Multilayer	**Toughness** 1 2 3 4 5 6 7 8 9 10 **Wear resistance** 1 2 3 4 5 6 7 8 9 10	○	●	●



... with reversible option.

ATORN®
Performance demands quality

ATORN® Overview of positive chip breakers

INFO

The new chip breakers from the range for positive indexable cutting inserts (5° and 7°)

The newly calculated chip breakers for individual use have been adapted to users' needs. The guarantee of optimised chip breaking properties in daily use was the priority here.

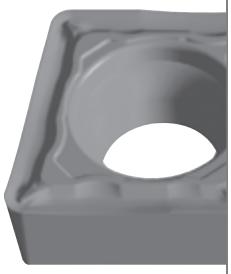
Adapted cutting edge preparation and enhanced surface treatment make the geometries even more efficient and more soft cutting. This is evident both in daily use and in series production as a result of an extended service life and lower machine loads. The latest insights in the development and modern cutting strategies of the individual ISO classes P, M, K, S and N were applied in the development of the chip breaker.

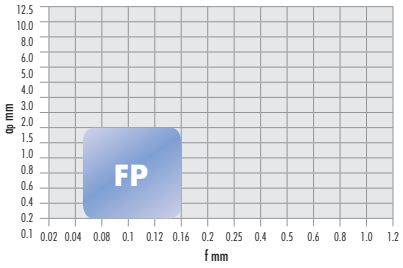
The benefits to the customer in terms of effectiveness, process reliability and material removal rate are the result. Elegant solutions are available for fine and ultra-fine finishing, medium machining and light roughing for positive geometries.
The new TURN provides the best possible chip control even with small cutting depths and feeds, very good chip breaking properties even with exotic materials with a significantly reduced tendency to form burrs, and the best possible surface qualities.

Chip breaker FP

ap	f
0.1 – 1.5 mm	0.05 – 0.16 mm/rev

- Long service life
- Optimised chip breaker prevents crack formation and is temperature-resistant
- Universal application





ISO P chip breaker, positive

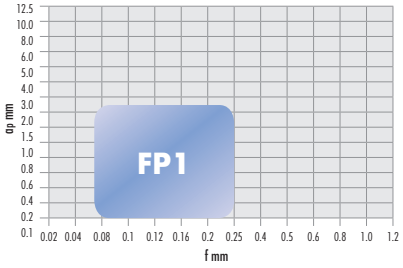
	Continuous cut	Slightly interrupted cut	Significantly interrupted cut
	●	○	–

Chip breaker FP1

ap	f
0.1 – 2.5 mm	0.07 - 0.25 mm/rev

- Long service life
- Optimised chip breaker for best possible chip control
- Soft chipping





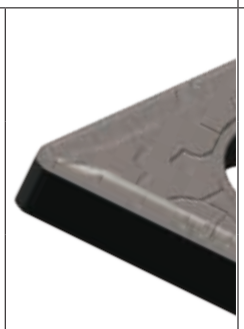
ISO P chip breaker, positive

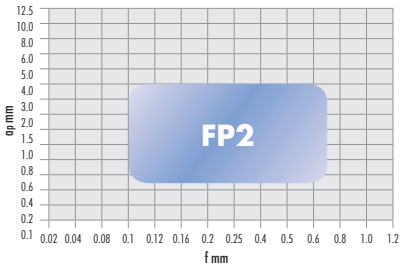
	Continuous cut	Slightly interrupted cut	Significantly interrupted cut
	●	○	–

Chip breaker FP2

ap	f
0.5 – 4.0 mm	0.1 - 0.7 mm/rev

- Maximum surface quality
- Double feed possible with the same Ra
- Soft cutting
- Also for non-rusting materials





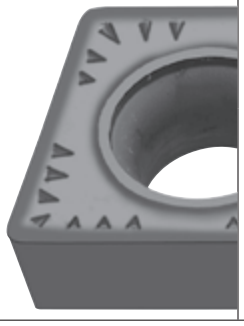
ISO P chip breaker, positive/negative

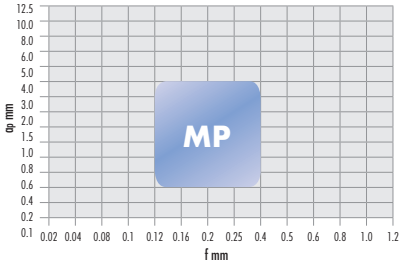
	Continuous cut	Slightly interrupted cut	Significantly interrupted cut
	●	●	–

Chip breaker MP

ap	f
0.4 – 4.0 mm	0.12-0.4 mm/rev

- Long service life
- Optimised chip breaker prevents crack formation and is temperature-resistant
- Universal application





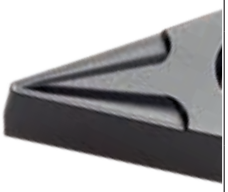
ISO P chip breaker, positive

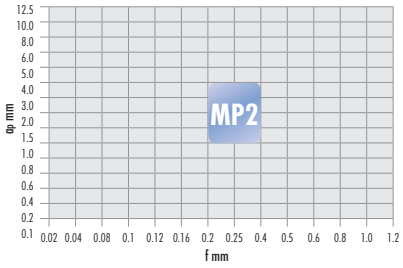
	Continuous cut	Slightly interrupted cut	Significantly interrupted cut
	●	●	○

Chip breaker MP2

ap	f
1.0 – 4.0 mm	0.2 - 0.4 mm/rev

- Long service life
- Optimised chip breaker prevents crack formation and is temperature-resistant
- Universal application





ISO P chip breaker, positive

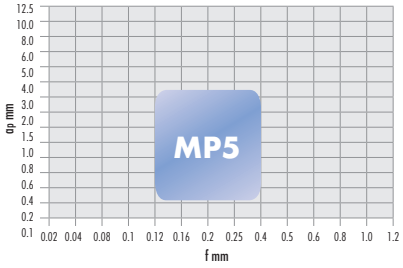
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	–

Chip breaker MP5

ap	f
0.25-3.5 mm	0.12-0.4 mm/rev

- Long service life
- Optimised chip breaker prevents crack formation and is temperature-resistant
- Universal application





ISO P chip breaker, positive

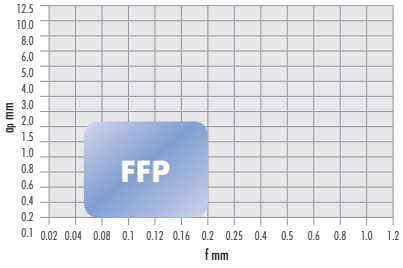
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	○	–

Chip breaker FFP, CERMET version

ap	f
0.1 – 1.65 mm	0.05 – 0.2 mm/rev

- Long service life
- Optimised chip breaker prevents crack formation and is temperature-resistant
- For best surface qualities





ISO P chip breaker, positive
ISO M chip breaker, positive

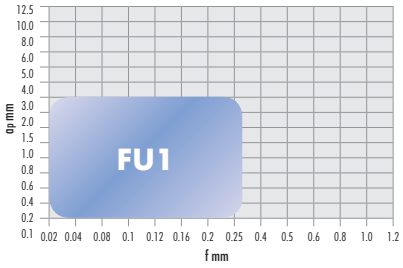
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	–	–

Chip breaker FU1

ap	f
0.1 – 3.0 mm	0.02 – 0.3 mm/rev

- Optimised chip breaker for best possible chip control
- Universal application
- Long service life





ISO P chip breaker, positive
ISO M chip breaker, positive

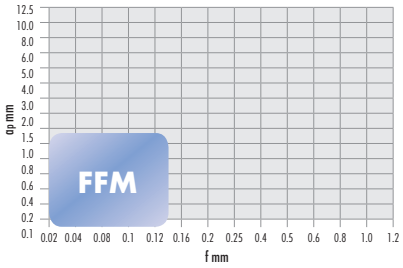
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	○	–

Chip breaker FFM, version for stainless steel

ap	f
0.05 – 1.35 mm	0.02 - 0.14 mm/rev

- Special chip breaker for chrome-nickel steel and titanium machining
- "Sharp" chip breaker
- Soft chipping
- Extremely good chip control





ISO M chip breaker, positive

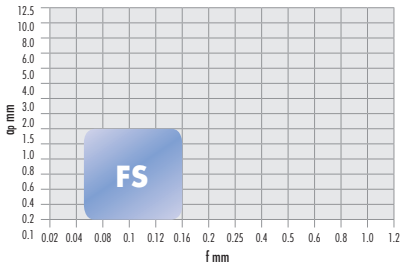
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	–	–

Chip breaker FS

ap	f
0.1 – 1.5 mm	0.05 – 0.16 mm/rev

- Long service life
- Soft chipping
- Universal application





ISO M chip breaker, positive

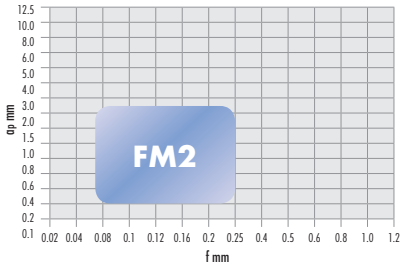
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	○	–

Chip breaker FM2

ap	f
0.2 – 2.5 mm	0.07 - 0.25 mm/rev

- Long service life
- Optimised chip breaker for best possible chip control in stainless steel
- Soft chipping





ISO M chip breaker, positive

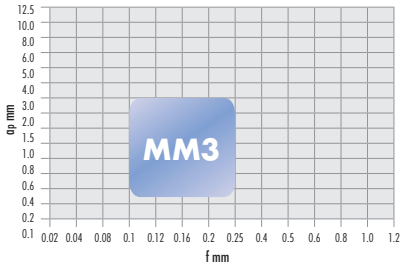
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	–	–

Chip breaker MM3

ap	f
0.3 – 3.0 mm	0.1 - 0.25 mm/rev

- Long service life
- Optimised chip breaker prevents crack formation and is temperature-resistant
- Universal application





ISO M chip breaker, positive

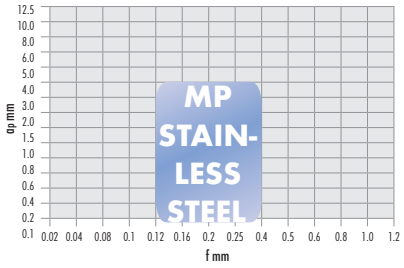
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	○	○

Chip breaker MP stainless steel

ap	f
0.4 – 4.0 mm	0.12-0.4 mm/rev

- Long service life
- Optimised chip breaker prevents crack formation and is temperature-resistant
- Universal application in stainless steel





ISO M chip breaker, positive

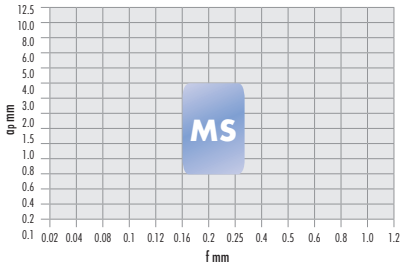
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	○	–

Chip breaker MS

ap	f
0.6 – 4.0 mm	0.16 – 0.3 mm/rev

- Long service life
- Optimised chip breaker prevents crack formation and is temperature-resistant
- Universal application in stainless steel





ISO M chip breaker, positive

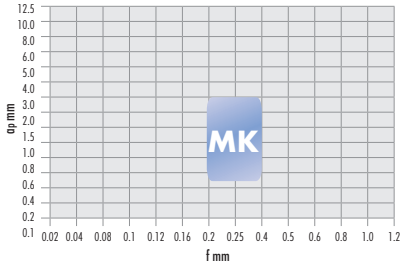
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	○

Chip breaker MK

ap	f
0.5 – 3.0 mm	0.2 - 0.4 mm/rev

- Long service life
- Optimised chip breaker prevents crack formation and is temperature-resistant
- Universal application





ISO K chip breaker, positive

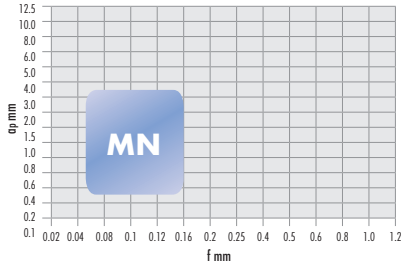
	Continuous cut	Slightly interrupted cut	Significantly interrupted cut
	●	○	○

Chip breaker MN

ap	f
0.3 – 3.5 mm	0.05 – 0.16 mm/rev

- Chip breaker for aluminium machining
- Also suitable for plastics and non-ferrous metals
- High rake angle
- Also suitable for austenitic quenched steel up to a chip depth of 0.4 mm





ISO N chip breaker, positive

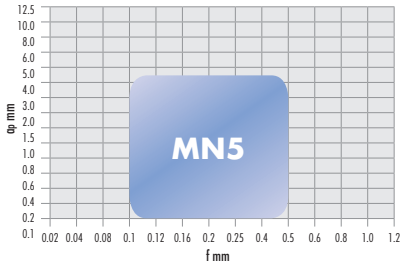
	Continuous cut	Slightly interrupted cut	Significantly interrupted cut
	●	–	–

Chip breaker MN5

ap	f
0.1 – 4.5 mm	0.1 - 0.5 mm/rev

- Chip breaker for aluminium machining
- Also suitable for plastics and non-ferrous metals
- High rake angle
- Also suitable for austenitic quenched steel up to a chip depth of 0.4 mm





ISO N chip breaker, positive

	Continuous cut	Slightly interrupted cut	Significantly interrupted cut
	●	●	●

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ATORN® Overview of negative chip breakers

INFO

The new chip breakers from the range for negative indexable cutting inserts (0°)

The newly calculated chip breakers for individual use have been adapted to users' needs. The guarantee of optimised chip breaking properties in daily use was the priority here.

Adapted cutting edge preparation and enhanced surface treatment make the geometries even more efficient and more soft cutting. This is evident both in daily use and in series production as a result of an extended service life and lower machine loads. The latest insights in the development and modern cutting strategies of the individual ISO classes P, M, K, S and N were applied in the development of the chip breaker.

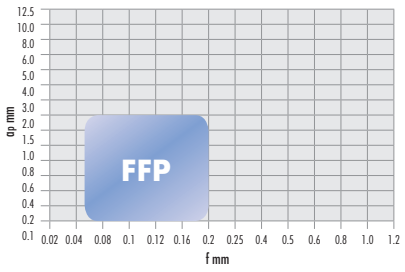
The benefits to the customer in terms of effectiveness, process reliability and material removal rate are the result. Elegant solutions are available for fine and ultra-fine finishing, medium machining and light roughing for negative geometries.
The new TURN provides the best possible chip control even with small cutting depths and feeds, very good chip breaking properties even with exotic materials with a significantly reduced tendency to form burrs, and the best possible surface qualities.

Chip breaker FFP, CERMET version

ap	f
0.1 – 2.0 mm	0.05 – 0.2 mm/rev

- Long service life
- Optimised chip breaker prevents crack formation and is temperature-resistant
- For best surface qualities





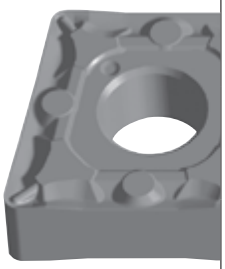
ISO P chip breaker, negative

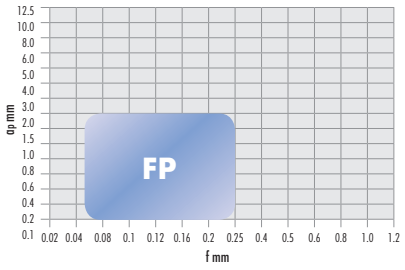
	Slightly interrupted cut	Significantly interrupted cut
Continuous cut		
●	–	–

Chip breaker FP

ap	f
0.1 – 2.0 mm	0.05 – 0.25 mm/rev

- Long service life
- Optimised chip breaker prevents crack formation and is temperature-resistant
- Universal application





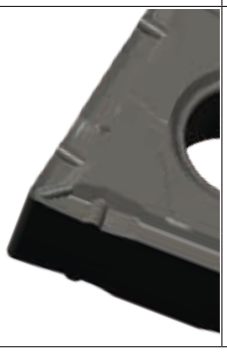
ISO P chip breaker, negative

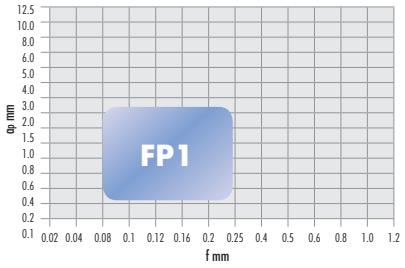
	Slightly interrupted cut	Significantly interrupted cut
Continuous cut		
●	○	–

Chip breaker FP1

ap	f
0.25 – 2.4 mm	0.08 - 0.24 mm/rev

- Long service life
- Optimised chip breaker for best possible chip control
- Soft chipping





ISO P chip breaker, negative

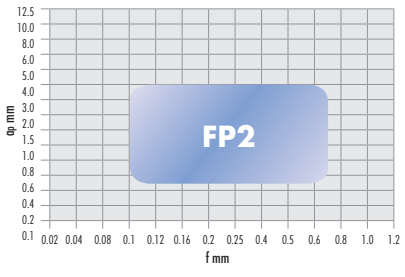
	Slightly interrupted cut	Significantly interrupted cut
Continuous cut		
●	●	–

Chip breaker FP2

ap	f
0.5 – 4.0 mm	0.1 - 0.7 mm/rev

- Maximum surface quality
- Double feed possible with the same Ra
- Soft cutting
- Also for non-rusting materials





ISO P chip breaker, positive/negative

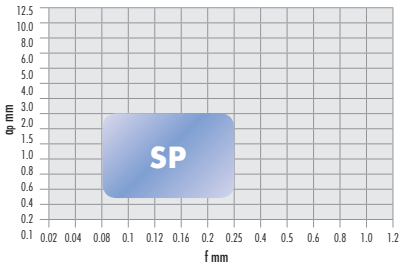
	Slightly interrupted cut	Significantly interrupted cut
Continuous cut		
●	●	–

Chip breaker SP

ap	f
0.3 – 2.0 mm	0.08 – 0.25 mm/rev

- Long service life
- Soft chipping
- Universal application



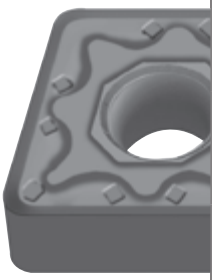


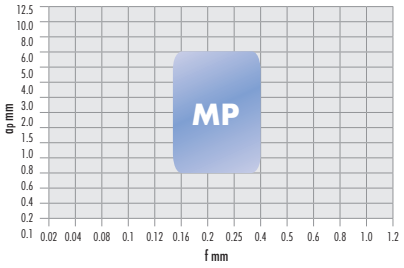
ISO P chip breaker, negative		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	○	–

Chip breaker MP

ap	f
0.6 – 6.0 mm	0.15-0.4 mm/rev

- Long service life
- Optimised chip breaker prevents crack formation and is temperature-resistant
- Universal application





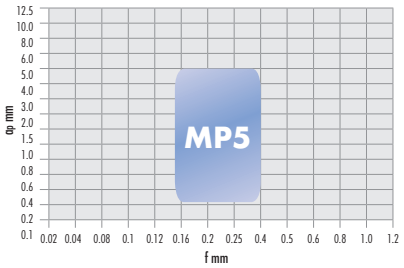
ISO P chip breaker, negative		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	○

Chip breaker MP5

ap	f
0.25-5 mm	0.15-0.4 mm/rev

- Long service life
- Optimised chip breaker prevents crack formation and is temperature-resistant
- Universal application





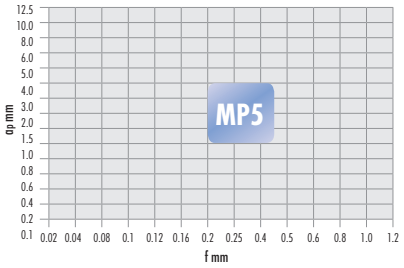
ISO P chip breaker, negative		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	○	–

Chip breaker MP5-HP

ap	f
1.0 – 4.0 mm	0.2 – 0.45 mm/rev

- Long service life
- Optimised chip breaker prevents crack formation and is temperature-resistant
- Universal application





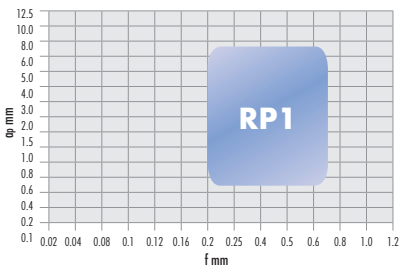
ISO P chip breaker, negative		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	○

Chip breaker RP1

ap	f
0.5 – 7.5 mm	0.2 - 0.7 mm/rev

- Optimised chip breaker prevents crack formation and is temperature-resistant
- Improved cutting edge stability, prevents notching effect and notch impact





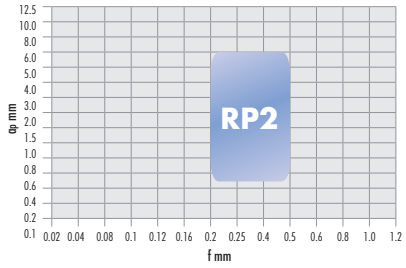
ISO P chip breaker, negative		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	○

Chip breaker RP2

ap	f
0.5 – 6 mm	0.2 - 0.5 mm/rev

- Optimised chip breaker prevents crack formation and is temperature-resistant
- Improved cutting edge stability, prevents notching effect and notch impact
- Stabilised contact surfaces





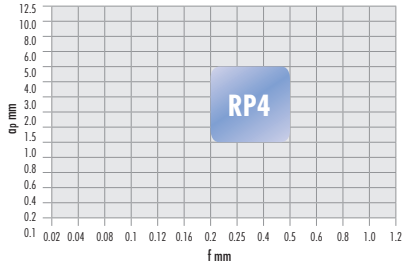
ISO P chip breaker, negative		
		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	○	○

Chip breaker RP4

ap	f
1.0 – 5.0 mm	0.2 – 0.5 mm/rev

- Optimised chip breaker prevents crack formation and is temperature-resistant
- Improved cutting edge stability, prevents notching effect and notch impact





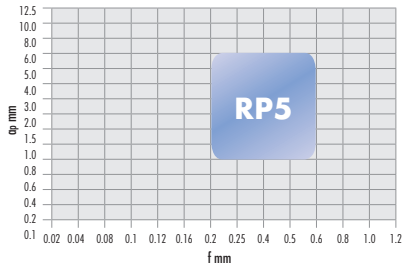
ISO P chip breaker, negative		
		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	○	–

Chip breaker RP5

ap	f
0.8 – 6.0 mm	0.2 – 0.6 mm/rev

- for medium to coarse machining
- Chip breaker for difficult cuts
- For universal applications





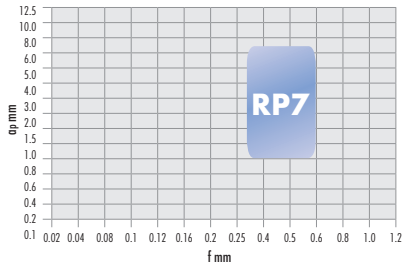
ISO P chip breaker, negative		
		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	●

Chip breaker RP7

ap	f
0.8 – 7.0 mm	0.3 - 0.6 mm/rev

- One-sided chip breaker
- Maximum machining reliability
- Chip breaker for difficult cuts
- Increased cutting force, temperature and vibration tendency





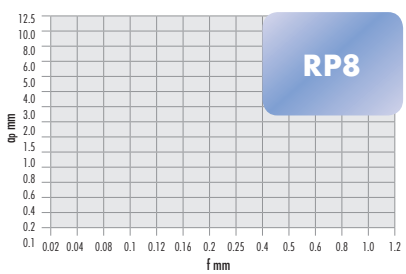
ISO P chip breaker, negative		
		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	●

Chip breaker RP8

ap	f
2.5 – 13 mm	0.4 – 1.3 mm/rev

- One-sided chip breaker
- Maximum machining reliability
- Chip breaker for difficult cuts
- Increased cutting force, temperature and vibration tendency





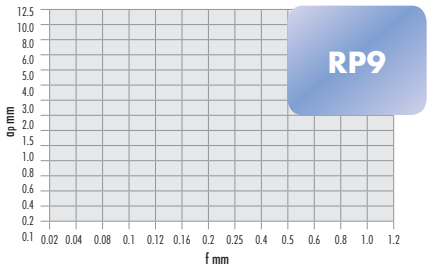
ISO P chip breaker, negative		
		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	●

Chip breaker RP9

ap	f
2.0 – 13 mm	0.5 – 1.5 mm/rev

- One-sided chip breaker
- Maximum machining reliability
- Chip breaker for difficult cuts
- Increased cutting force, temperature and vibration tendency





ISO P chip breaker, negative

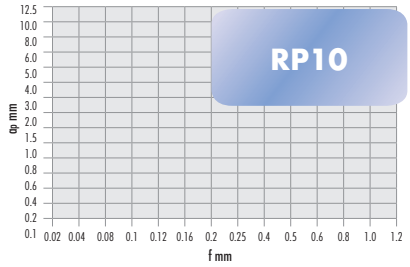
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	●

Chip breaker RP10

ap	f
2.5 – 12 mm	0.2 – 1.3 mm/rev

- One-sided chip breaker
- Maximum machining reliability
- Chip breaker for difficult cuts
- Reduced cutting force, temperature and vibration tendency





ISO P chip breaker, negative

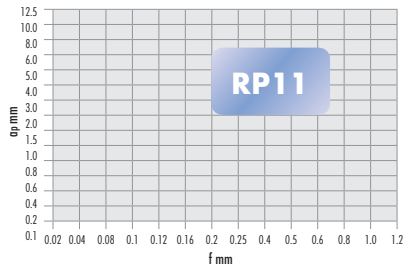
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	●

Chip breaker RP11

ap	f
2.0 – 7.0 mm	0.2 - 0.7 mm/rev

- One-sided chip breaker
- Maximum machining reliability
- Increased cutting force, temperature and vibration tendency





ISO P chip breaker, negative

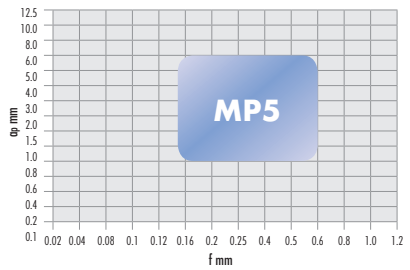
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	●

Chip breaker MP5

ap	f
0.8 – 6 mm	0.15 – 0.6 mm/rev

- Long service life
- Optimised chip breaker prevents crack formation and is temperature-resistant
- Universal application





ISO P chip breaker, negative

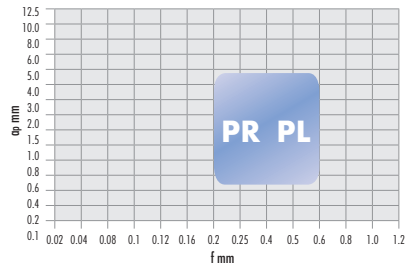
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
○	●	●

Chip breaker PR and PL

ap	f
0.5 – 4.8 mm	0.2 – 0.6 mm/rev

- Soft chipping
- "Sharp" cutting edge
- Universal application
- Established chip level





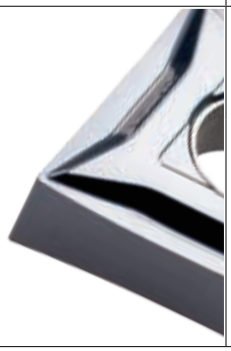
ISO P chip breaker, negative
ISO M chip breaker, negative

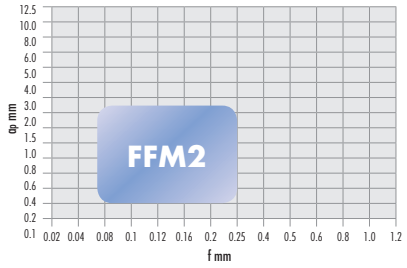
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	–

Chip breaker FFM2

ap	f
0.2 - 2.5 mm	0.07 - 0.25 mm/rev

- Long service life
- Optimised chip breaker prevents crack formation and is temperature-resistant
- For best surface qualities





ISO M chip breaker, negative

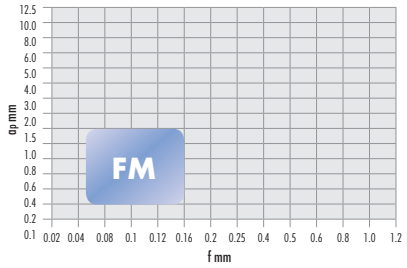
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	–	–

Chip breaker FM

ap	f
0.3 - 9.0 mm	0.1 - 0.6 mm/rev

- Long service life
- For best surface quality





ISO M chip breaker, negative

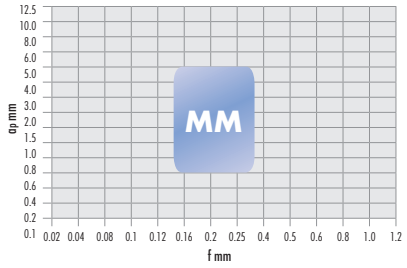
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	○	–

Chip breaker MM

ap	f
0.6 - 5.0 mm	0.15 - 0.35 mm/rev

- Long service life
- Low cutting forces





ISO M chip breaker, negative

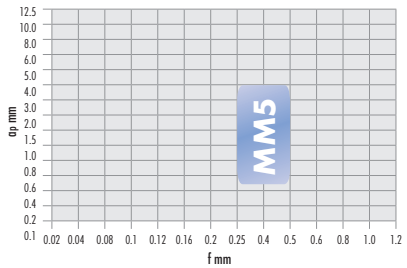
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	○

Chip breaker MM5

ap	f
0.5 - 4.0 mm	0.25 - 0.5 mm/rev

- Specially developed for low cutting forces
- Optimised chip breaker to prevent burr formation
- For best surface qualities





ISO M chip breaker, negative

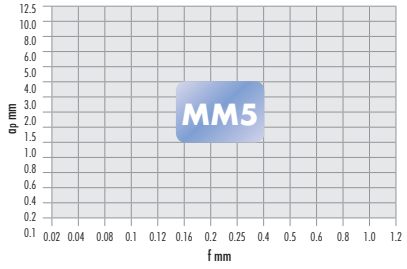
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	–

Chip breaker MM5-HP

ap	f
1.0 - 4.0 mm	0.15-0.4 mm/rev

- Specially developed for low cutting forces
- Optimised chip breaker to prevent burr formation
- For best surface qualities





ISO M chip breaker, negative

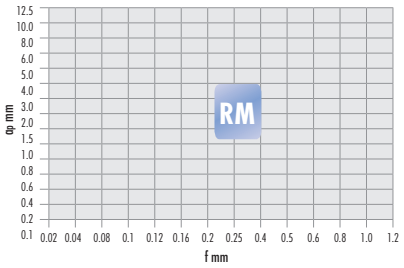
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	○	–

Chip breaker RM

ap	f
1.2 - 4.0 mm	0.22 - 0.4 mm/rev

- for medium to coarse machining
- Chip breaker for difficult cuts





ISO M chip breaker, negative

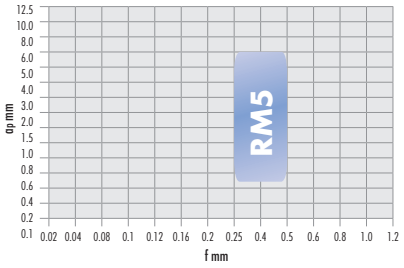
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	●

Chip breaker RM5

ap	f
0.5 - 6.0 mm	0.25 - 0.5 mm/rev

- Specially developed for low cutting forces
- Optimised chip breaker to prevent burr formation
- For best surface qualities
- For light to medium roughing





ISO M chip breaker, negative

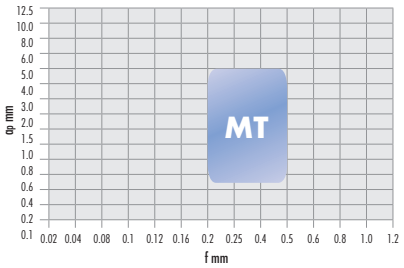
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	–

Chip breaker MK

ap	f
0.5 - 5.0 mm	0.2 - 0.5 mm/rev

- Long service life
- Optimised chip breaker prevents crack formation and is temperature-resistant
- Universal application





ISO K chip breaker, negative

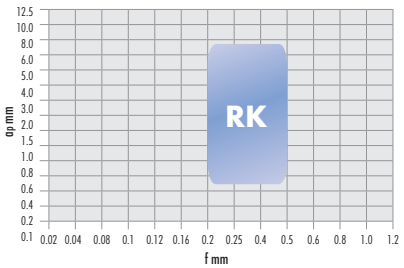
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	○

Chip breaker RK

ap	f
0.5 - 7.5 mm	0.2 - 0.5 mm/rev

- Prevents crack formation and is temperature-resistant
- Universal application





ISO K chip breaker, negative

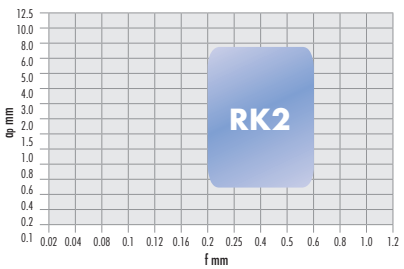
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	●

Chip breaker RK2

ap	f
0.5 - 7.5 mm	0.2 - 0.6 mm/rev

- Long service life
- Optimised chip breaker prevents crack formation and is temperature-resistant
- Light to medium roughing work





ISO K chip breaker, negative

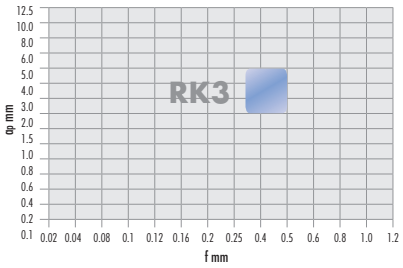
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	○

Chip breaker RK3

ap	f
2.0 – 5.0 mm	0.3 – 0.5 mm/rev

- Long service life
- Optimised chip breaker prevents crack formation and is temperature-resistant
- Light to medium roughing work





ISO K chip breaker, negative

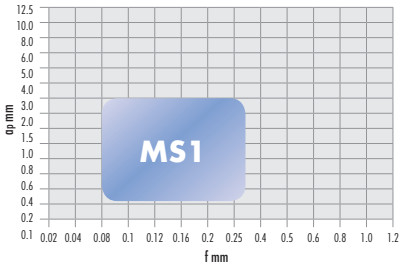
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	–

Chip breaker MS1

ap	f
0.25 – 3.0 mm	0.08 – 0.3 mm/rev

- Especially for chrome-nickel steel
- Soft chipping
- "Sharp" cutting edge





ISO S chip breaker, negative

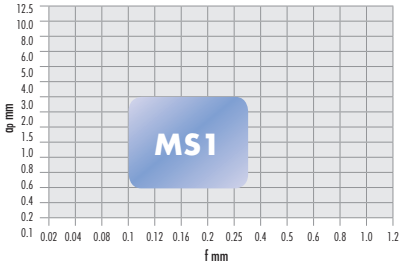
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	–	–

Chip breaker MS1-HP

ap	f
0.4 – 3.0 mm	0.1 – 0.3 mm/rev

- Especially for chrome-nickel steel
- Soft chipping
- Sharp cutting edge





ISO S chip breaker, negative

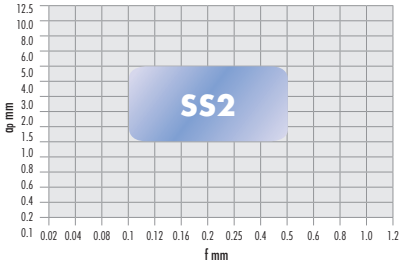
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	○	–

Chip breaker SS2

ap	f
1.0– 5.0 mm	0.1 - 0.5 mm/rev

- Especially for chrome-nickel steel
- Soft chipping
- "Sharp" cutting edge
- for medium to coarse machining





ISO S chip breaker, negative

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	○

ATORN® Technical information ISO indexable cutting inserts

Choice of carbide quality

ISO	Carbide quality	ISO range	Material	Recommended application area
P	HC7610	P01-P20 K15-K25	Steel, grey cast iron and spheroidal graphite iron	Ultra wear-resistant type for small to medium chip cross sections, high cutting speeds under good conditions
P	HC7620	P10-P30 K25-K35	Steel, grey cast iron and spheroidal graphite iron	Wear-resistant type for medium to large chip cross sections, medium to high cutting speeds under good to average conditions
P	HC7630 HC7640	P20-P40 P25-P50	Steel	Very tough type for medium to large chip cross sections, medium cutting speeds under average to poor conditions, interrupted cutting
M	HC7510	M01-M20 P15-P25	Stainless, non-austenitic steel and steel	Ultra wear-resistant type for small to medium chip cross sections, high cutting speeds under good conditions
M	HC7520	M10-M30 S15-S25	Stainless, non-austenitic steel and materials that are difficult to machine	Wear-resistant type for medium to large chip cross sections, medium to high cutting speeds under good to average conditions.
M	HC7530	M20-M40 S25-S35	Stainless, austenitic, superaustenitic and duplex steel, as well as materials that are difficult to machine	Very tough type for medium to large chip cross sections, medium cutting speeds under average and poor conditions
K	HC6410	K05-K15 H25-H35	Grey cast iron and spheroidal graphite iron	Wear-resistant type for medium to large chip cross sections, medium to high cutting speeds under good to average conditions
N	HC6310	N05-N15 M00-M0	Aluminium alloys, copper and copper alloys as well as non-metallic materials and stainless austenitic steel	Wear-resistant type for small to medium chip cross sections, high cutting speeds under good conditions
N	HW6310	N05-N15	Aluminium alloys, copper and copper alloys as well as non-metallic materials	Wear-resistant type for small to medium chip cross sections, high cutting speeds under good conditions
S	HC7220	M10-M30 S10-S30	Stainless, non-austenitic steel and materials that are difficult to machine	Wear-resistant type for medium to large chip cross sections, medium to high cutting speeds under good to average conditions

Choice of geometry

ISO	Material	Machining	Clamp depth mm	Feed mm/rev	Recommended geometry Negative indexable cutting insert	Recommended geometry Positive indexable cutting insert
P	Steel ISO P1 - P13*	Finishing	0.5 - 2	0.1 - 0.3	FP	FP / SP
		Medium machining	1.5 - 5	0.2 - 0.5	MP	FP / SP
		Roughing	5 - 15	0.5-1.5	RP	
M	Stainless steel ISO M14*	Finishing	0.5 - 2	0.1 - 0.3	FM	SM
		Medium machining	1.5 - 5	0.2 - 0.5	MM	MP / SM
		Roughing	5 - 15	0.5-1.5	RM	
K	Cast iron ISO K15 - N20*	Finishing	0.5 - 2	0.1 - 0.3	MP / MT	MP / MT
		Medium machining	1.5 - 5	0.2 - 0.5	RP / MT	MP / MT
		Roughing	5 - 15	0.5-1.5	RP	
N	Non-ferrous metals ISO N21 - N30*	Finishing	0.5 - 2	0.1 - 0.3		MN
		Medium machining	1.5 - 5	0.2 - 0.5		MN
		Roughing	5 - 15	0.5-1.5		
S	Materials that are difficult to machine ISO S31 - S37*	Finishing	0.5 - 2	0.1 - 0.3	FM	SM
		Medium machining	1.5 - 5	0.2 - 0.5	MM	MP / SM
		Roughing	5 - 15	0.5-1.5	RM	
* Machining groups according to VDI Guideline 3323						
Other influences		Interrupted cutting			RP	MP
		Vibration tendency			FP / FM	FP / SP / SM
		Robust machine			FP / FM	FP / SP / SM
		Copying tasks			FP / MP / FM / MM	FP / MP / SP

palbit Cutting data recommendations CBN

- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	f mm/U
S	Superalloys	Up to 1300	X45CrSi 9 3	1.4718	50-300	0,05 - 0,3
H	Hardened materials up to 64 HRC		100Cr6	1.2067	70-180	0,05 - 0,3

palbit Cutting data recommendations PKD

- Please adjust these guideline values according to clamping operation and machine set-up!

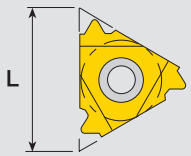
ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	f mm/U
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	800 - 3000	0,05 - 0,3
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	800 - 3000	0,05 - 0,3
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	700 - 1500	0,05 - 0,3
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	700 - 1500	0,05 - 0,3
	Fibre-reinforced plastics		CFK, GFK		300 - 2000	0,05 - 0,3
	Graphite		C8000		300 - 2000	0,05 - 0,3

ATORN® Designation code for threading inserts and tool holders

Threading inserts

16	E	R	B	1.5	ISO	HC5630

Size



6
8
8U
11
16
22
27
22U
27U
16V (vertical)

E = external
I = internal

R = right-hand
L = left-hand

B	= sintered
(not specified)	= ground

Pitch
mm/inch

60	60° profile
55	50° profile
ISO	metric
UN	US Unified Thread
BSW	British Standard Whitworth
NPT	US National Pipe Thread
BSPT	British Standard Pipe Thread
ACME	American Trapezoidal Thread
Trapezoid	Trapezoidal thread according to DIN 103
Round	Round thread according to DIN 405

Carbide quality

HC5110
HC5645
HC5620
HC5625
HC5640
HC5630

Clamp mounting

S	E	R	2020	K	16	C

Clamping method
S = screwed
C = lever

E = external
I = internal

R = right-hand
L = left-hand

External clamp mounting

metric
2020 = 20 x 20 mm

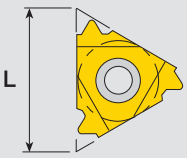
Internal clamp mounting

metric
0020 = Ø 20 mm

Clamp mounting Length mm

D	60
F	80
H	100
K	125
L	140
M	150
P	170
R	200
S	250
T	300
U	350
V	400

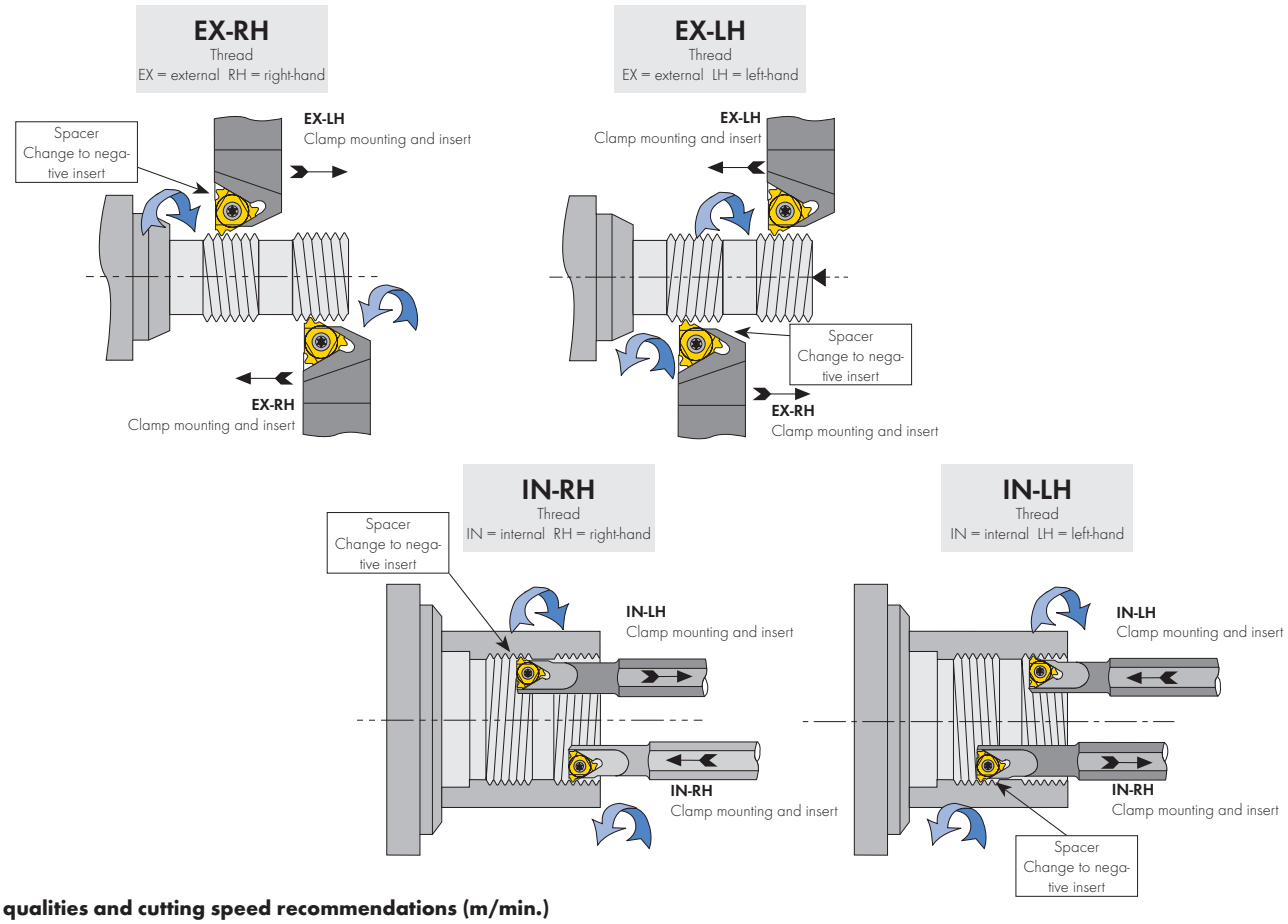
Insert seat



6
8
8U
11
16
22
27
22U
27U

B	Coolant bores
C	Solid carbide
O	Offset
V	Vertical

ATORN® Thread cutter holder applications



Carbide qualities and cutting speed recommendations (m/min.)

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	HC5625 PVD TiN	HC5615 PVD TiN	HC5630 PVD TiN	HC5640 PVD TiN	HC5620 PVD TiN	HC5110 PVD TiN
					Cutting speed Vc m/min					
P	Machining steel	Up to 700	9 SMn 28	1.0715	80 - 160	90 - 160	100 - 180	20 - 100	110 - 210	
	Unalloyed structural steel	Up to 700	St-52	1.0052	80 - 160	90 - 160	100 - 180	20 - 100	110 - 210	
	Structural steel	700 - 950	Ck45	1.1191	80 - 160	90 - 160	100 - 180	20 - 100	110 - 210	
	Tempering steel	500 - 950	42 CrMo4	1.7225	80-120	80 - 150	90 - 160	30 - 80	90 - 140	
	Cast steel	Up to 950	GS 40	1.0416	80 - 140	100 - 140	120 - 160	40 - 80	110 - 210	
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131	80-120	80 - 150	90 - 160	30 - 80	90 - 140	
	Tempering steel	950 -1300	43CrMo4	1.3563	50 - 100	80-120	90 - 120	40 - 90	70 - 90	
	Nitriding steel	950 - 1300	31CrMoV9	1.8519	50 - 100	80-120	90 - 120	40 - 90	70 - 90	
	Tool steel	950 - 1400	X 38 CrMoV 5 1	1.2343	50 - 100	80-120	90 - 120	40 - 90	70 - 90	
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	60 - 90	70 - 120	90 - 130	30 - 90	100 - 160	
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301	60 - 90	70 - 120	90 - 130	30 - 90	100 - 140	
	Duplex	700 - 950	X2 CrNiMoN 22-5-3	1.4462	30 - 60	30 - 70	30 - 90	20 - 40	60 - 100	
K	Grey cast iron	Up to 260 HB	GG 25	0.6025		80 - 130	80 - 150	30 - 90	140 - 150	
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678		60 - 100	80-120	20 - 50	100 - 120	
	Ductile iron	Up to 280 HB	GGG 60	0.7060		80 - 130	80 - 150	30 - 90	140 - 150	
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155		80 - 130	80 - 150	30 - 90	140 - 150	
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535		300 - 600		20 - 200	700 - 1000	
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581		300 - 600		20 - 200	700 - 1000	
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016		300 - 600		20 - 200	700 - 1000	
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730		300 - 600		20 - 200	700 - 1000	
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250		300 - 600		20 - 200	700 - 1000	
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381		300 - 600		20 - 200	700 - 1000	
	Thermoplastic		PVC			300 - 600		20 - 200	700 - 1000	
	Thermoset		Melamine			300 - 600		20 - 200	700 - 1000	
	Fibre-reinforced plastics		CFRP, GFRP			300 - 600		20 - 200	700 - 1000	
	Graphite		C8000			300 - 600		20 - 200	700 - 1000	
	Composite materials		Honeycomb			300 - 600		20 - 200	700 - 1000	
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174			25 - 40		15 - 40	15 - 40
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718			25 - 60		30 - 65	30 - 70
	Superalloys	Up to 1300	X45CrSi 9 3	1.4718			25 - 60		30 - 65	30 - 70
H	Hardened materials up to 55 HRc		X40Cr14	1.2083		20 - 40	20 - 30		30 - 40	20 - 50

Choice of number of cuts

- The number of cuts should be increased for the mini or ultra-mini system, as well as for hard materials.

Pitch	mm TPI	0.5 48	1.0 24	1.5 16	2.0 12	2.5 10	3.0 8	4.0 6	6.0 4
Number of cuts		3 - 6	4 - 9	5 - 11	6 - 13	7 - 15	8 - 17	10 - 20	11 - 22

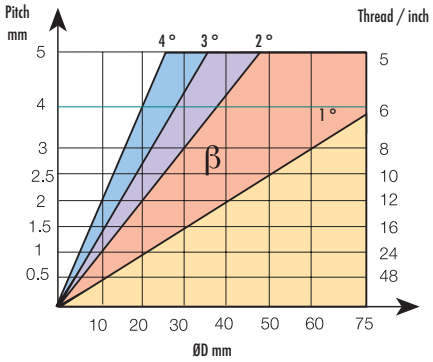
Pitch angle calculation and selection of spacers

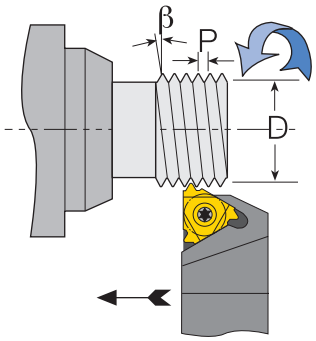
Formula for calculating the pitch angle β

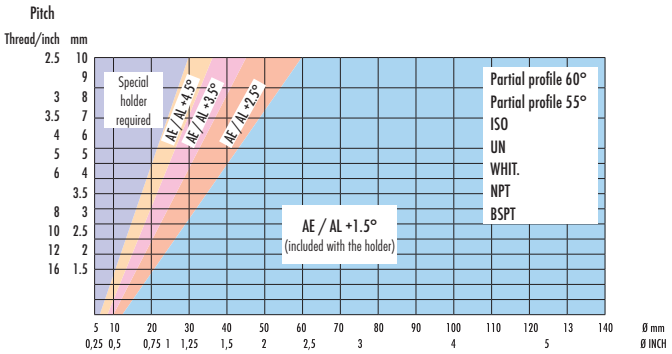
tan β = P (pitch) / ∏ x ØD

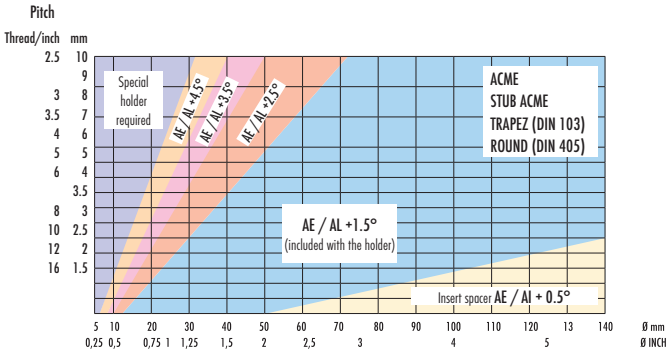
simplified: β = 20 x P / ØD

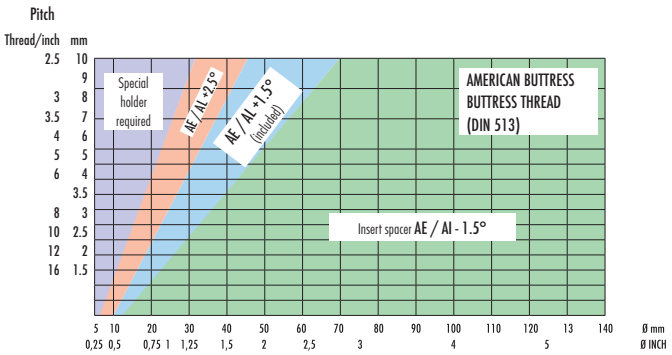
Example:
ØD = 30 mm, P = 1.5 mm:
β = 20 x 1.5 / 30 = 1









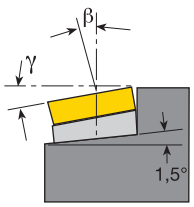


For most applications it is not necessary to change the spacer.
However if a change is necessary, please select:
AE spacers for EX-RH and IN-LH clamp mounting and
AI spacers for IN-RH and EX-LH clamp mounting

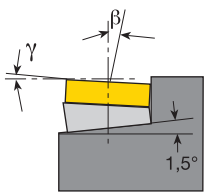
Spacers, positive pitch angle
For turning right-hand thread with right clamp mounting or left-hand thread with left clamp mounting

Spacers, negative pitch angle
For turning right-hand thread with left clamp mounting or left-hand thread with right clamp mounting

Important:
The dimension H remains constant for each spacer combination.



Positive pitch angle



Negative pitch angle

L IC	Pitch angle	4.5 °	3.5 °	2.5 °	1.5 °	0.5°	-0.5°	-1.5°
	Clamp mounting				Standard			
16 (3/8)	EX RH/IN LH EX LH/IN RH	AE16 +4.5 AL16 +4.5	AE16 +3.5 AL16 +3.5	AE16 +2.5 AL16 +2.5	AE16 AL16	AE16 +0.5 AL16 +0.5	AE16 -0.5 AL16 -0.5	AE16 -1.5 AL16 -1.5
22 (1/2)		AE22 +4.5 AL22 +4.5	AE22 +3.5 AL22 +3.5	AE22 +2.5 AL22 +2.5	AE22 AL22	AE22 +0.5 AL22 +0.5	AE22 -0.5 AL22 -0.5	AE22 -1.5 AL22 -1.5
27 (5/8)		AE27 +4.5 AL27 +4.5	AE27 +3.5 AL27 +3.5	AE27 +2.5 AL27 +2.5	AE27 AL27	AE27 +0.5 AL27 +0.5	AE27 -0.5 AL27 -0.5	AE27 -1.5 AL27 -1.5
22U (1/2)		AE22U +4.5 AL22U +4.5	AE22U +3.5 AL22U +3.5	AE22U +2.5 AL22U +2.5	AE22U AL22U	AE22U +0.5 AL22U +0.5	AE22U -0.5 AL22U -0.5	AE22U -1.5 AL22U -1.5
27 U (5/8)		AE27U +4.5 AL27U +4.5	AE27U +3.5 AL27U +3.5	AE27U +2.5 AL27U +2.5	AE27U AL27U	AE27U +0.5 AL27U +0.5	AE27U -0.5 AL27U -0.5	AE27U -1.5 AL27U -1.5

Comparison tables for thread cutting tools

ISO threading inserts of varying brands

Example: 16 mm, 1.5 ISO

	Threading insert **EX RH**	Threading insert **EX LH**	Threading insert **IN RH**	Threading insert **IN LH**
ATORN	16 ER 1.5 ISO	16 EL 1.5 ISO	16 IR 1.5 ISO	16 IL 1.5 ISO
SECO-SNAPTAP	16 ER 1.5 ISO	16 EL 1.5 ISO	16 NR 1.5 ISO	16 NL 1.5 ISO
KENNAMETAL	LT 16 ER	LT 16 EL	LT 16 NR	LT 16 NL
SANDVIK*	R166.0G-16MM01-150	L166.0G-16MM01-150	R166.0L-16MM01-150	L166.0L-16MM01-150
ISCAR	16 ER 1.5 ISO	16 EL 1.5 ISO	16 IR 1.5 ISO	16 IL 1.5 ISO
VARGUS	3 ER 1.5 ISO	3 EL 1.5 ISO	3 IR 1.5 ISO	3 IL 1.5 ISO

* these inserts cannot be used with ATORN or CPT holders

Clamp mounting (with screw) of varying brands

Example: Holder B = H = 25 mm, for insert 16 mm

	Clamp mounting **EX RH**	Clamp mounting **EX LH**	Clamp mounting **IN RH**	Clamp mounting **IN LH**
ATORN	SER 2525 M 16	SEL 2525 M 16	SIR 0025 R 16	SIL 0025 R 16
SECO-SNAPTAP	SER 2525 M 16	SEL 2525 M 16	SNR 0025 R 16	SNL 0025 R 16
KENNAMETAL	LSSR 2525 M 16	LSSR 2525 M 16	S 25 R LSER - 16	S 25 R LSEL - 16
SANDVIK*	R 166.0 F G 2525 - 16	L 166.0 F G 2525 - 16	R 166.0 KF 25 - 16	L 166.0 KF 225 - 16
ISCAR	SER 2525 M 16	SEL 2525 M 16	SIR 0025 R 16	SIL 0025 R 16
VARGUS	AL 25 - 3	AL 25-3 LH	AVR 25D - 3	AVR 25D - 3 LH

* these holders are not suitable for ATORN or CPT

Carbide quality designations of varying brands

ISO CODE	ATORN	CPT	SECO-SNAPTAP	KENNAMETAL	SANDVIK	ISCAR	VARGUS
P 15 - P 30	HC 5625	P 25 C	CP30	KC 710	GC 225	IC 250	VSX
P 10 - P 25 **K 10 - K 20**	HC 5615	MXC	CP50	KC 730	GC 1020	IC 220	VKX
P 25 - P 40 **K 25 - K 40**	HC 5640	BXC	CP20	-	GC 1020	IC 228	-
P 15 - P 30 **K 20 - K 30** **S 10 - S 20** **M 10 - M 20**	HC 5630	BMA	CP500	KC 5025	GC4125	IC 908	VTX
M 10 - M 20 **K 05 - K 20** **N 10 - N 20** **S 10 - S 20**	HC 5620	BMZ/BLU	-	-	-	-	VM7
H 01 - H 20	HC 5110	HBA	-	-	-	-	-

ATORN® Pitch angle and correction inserts

Standard thread

D Ø	P	P <	U-insert
2	0.4	3.64	3.5
2.2	0.45	3.73	3.5
2.5	0.45	3.28	3.5
3	0.5	3.04	3.5
3.5	0.6	3.12	3.5
4	0.7	3.19	3.5
4.5	0.75	3.04	3.5
5	0.8	2.92	2.5
6	1	3.04	3.5
8	1.25	2.85	2.5
10	1.5	2.73	2.5
12	1.75	2.66	2.5
14	2	2.6	2.5
16	2	2.28	2.5
18	2.5	2.53	2.5
20	2.5	2.28	2.5
22	2.5	2.07	2.5
24	3	2.28	2.5
27	3	2.03	2.5
30	3.5	2.13	2.5
33	3.5	1.93	AE/Al
36	4	2.03	2.5
39	4	1.87	AE/Al
42	4.5	1.95	AE/Al
45	4.5	1.82	AE/Al
48	5	1.9	AE/Al
52	5	1.75	AE/Al
56	5.5	1.79	AE/Al
60	5.5	1.67	AE/Al
64	6	1.71	AE/Al
68	6	1.61	AE/Al

Trapezoidal thread DIN 103 T.2

D Ø	P	P <	U-insert
8	1.5	3.42	3.5
9	2	4.05	4.5
10	2	3.64	3.5
11	2	3.31	3.5
12	3	4.55	4.5
14	3	3.9	3.5
16	4	4.55	4.5
18	4	4.05	4.5
20	4	3.64	3.5
22	5	4.14	4.5
24	5	3.79	3.5
28	5	3.25	3.5
30	6	3.64	3.5
36	6	3.04	3.5
38	6	2.88	2.5
40	7	3.19	3.5
42	7	3.04	2.5
44	7	2.9	3.5
46	7	2.77	2.5
48	8	3.04	3.5
50	8	2.92	2.5
54	8	2.7	2.5
55	9	2.98	2.5
60	9	2.73	2.5
65	10	2.8	2.5
80	10	2.28	2.5
85	12	2.57	2.5
105	12	2.08	2.5
110	12	1.99	AE/Al
115	14	2.22	2.5
125	14	2.04	2.5
130	14	1.96	AE/Al
145	14	1.76	AE/Al
150	16	1.94	AE/Al
175	16	1.67	AE/Al
180	18	1.82	AE/Al

Fine thread DIN 13 Bl.1

D Ø	P	P <	U-insert
3.5	0.5	2.6	2.5
4.5	0.5	2.03	2.5
> 5	0.5	1.82	AE/Al
<9	0.5	1.01	AE/Al
> 10	0.5	0.91	0.5
<90	0.5	0.1	0.5

Fine thread DIN 13 Bl.4

D Ø	P	P <	U insert
5	0.75	2.73	+2.5
6	0.75	2.28	+2.5
> 7	0.75	1.95	AE/Al
<13	0.75	1.05	AE/Al
> 14	0.75	0.98	+0.5
<110	0.75	0.12	+0.5

Fine thread DIN 13 Bl.5

D Ø	P	P <	U insert
7.5	1	2.43	+2.5
9	1	2.03	+2.5
> 9.5	1	1.92	AE/Al
<18	1	1.01	AE/Al
> 19	1	0.96	+0.5
<200	1	0.09	+0.5
10	1.25	2.28	+2.5
12	1.25	1.9	AE/Al

Fine thread DIN 13 Bl.6

D Ø	P	P <	U insert
12	1.5	2.28	+2.5
13	1.5	2.10	+2.5
> 14	1.5	1.95	AE/Al
<27	1.5	1.01	AE/Al
> 28	1.5	0.98	+0.5
< 300	1.5	0.09	+0.5

Whitworth thread DIN 11

D Ø	D Ø inch	Gg./inch	P	P <	U insert
6.35	1/4	20	1.27	3.64	+3.5
7.938	5/16	18	1.411	3.24	+3.5
9.525	3/8	16	1.588	3.04	+3.5
11.113	7/16	14	1.814	2.97	+2.5
12.7	1/2	12	2.117	3.04	+3.5
15.876	5/8	11	2.309	2.65	+2.5
19.051	3/4	10	2.54	2.43	+2.5
22.226	7/8	9	2.822	2.31	+2.5
25.401	1	8	3.175	2.28	+2.5
28.576	1 1/8	7	3.629	2.31	+2.5
31.751	1 1/4	7	3.629	2.08	+2.5
34.926	1 3/8	6	4.233	2.21	+2.5
38.101	1 1/2	6	4.233	2.03	+2.5
41.277	1 5/8	5	5.08	2.24	+2.5
44.452	1 3/4	5	5.08	2.08	+2.5
47.627	1 7/8	4.5	5.645	2.16	+2.5
50.802	2	4.5	5.645	2.03	+2.5

Whitworth pipe thread DIN 2999 DIN 228 ISO 7/1

D Ø	D Ø inch	Gg./inch	P	P <	U insert
9.728	R 1/8	28	0.907	1.7	AE/Al
13.157	R 1/4	19	1.337	1.85	AE/Al
16.662	R 3/8	19	1.337	1.46	AE/Al
20.955	R 1/2	14	1.814	1.58	AE/Al
26.441	R 3/4	14	1.814	1.25	AE/Al
33.249	R 1	11	2.309	1.27	AE/Al
41.91	R 1 1/4	11	2.309	1	AE/Al
47.803	R 1 1/2	11	2.309	0.88	+0.5
59.614	R2	11	2.309	0.71	+0.5
75.184	R 2 1/2	11	2.309	0.56	+0.5
87.884	R3	11	2.309	0.48	+0.5
100.33	R 3 1/2	11	2.309	0.42	+0.5
113.03	R 4	11	2.309	0.37	+0.5
138.43	R5	11	2.309	0.3	+0.5
163.83	R6	11	2.309	0.26	+0.5

Fine thread DIN 13 Bl.7

D Ø	P	P <	U insert
17	2	2.14	+2.5
18	2	2.03	+2.5
> 19	2	1.92	AE/Al
<36	2	1.01	AE/Al
> 38	2	0.96	+0.5
< 300	2	0.12	+0.5

Fine thread DIN 13 Bl.8

D Ø	P	P <	U insert
> 28	3	1.95	AE/Al
<52	3	1.05	AE/Al
> 55	3	0.99	+0.5
< 300	3	0.18	+0.5

Fine thread DIN 13 Bl.9

D Ø	P	P <	U insert
> 42	4	1.74	AE/Al
<72	4	1.01	AE/Al
> 75	4	0.97	+0.5
< 300	4	0.24	+0.5

Fine thread DIN 13 Bl.10

D Ø	P	P <	U insert
> 70	6	1.56	AE/Al
<105	6	1.04	AE/Al
110	6	0.99	+0.5

Fine thread DIN 13 Bl.11

D Ø	P	P <	U insert
130	8	1.12	AE/Al
140	8	1.04	AE/Al
> 150	8	0.97	+0.5
<1000	8	0.15	+0.5

UNC thread ASA B1.1

D Ø	D Ø inch	Gg./inch	P	P <	U insert
1.854	No. 1	64	0.397	3.9	+3.5
2.184	No. 2	56	0.454	3.78	+3.5
2.515	No. 3	48	0.529	3.83	+3.5
2.845	No. 4	40	0.635	4.06	+4.5
3.175	No. 5	40	0.635	3.64	+3.5
3.505	No. 6	32	0.794	4.12	+4.5
4.166	No. 8	32	0.794	3.47	+3.5
4.826	No. 10	24	1.058	3.99	+3.5
5.486	No. 12	24	1.058	3.51	+3.5
6.35	1/4	20	1.27	3.64	+3.5
7.938	5 / 16	18	1.411	3.24	+3.5
9.525	3/8	16	1.588	3.04	+3.5
11.112	7/16	14	1.814	2.98	+2.5
12.7	1/2	13	1.954	2.8	+2.5
14.288	9/16	12	2.117	2.7	+2.5
15.875	5/8	11	2.309	2.65	+2.5
19.05	3/4	10	2.54	2.43	+2.5
22.225	7/8	9	2.822	2.31	+2.5
25.4	1	8	3.175	2.28	+2.5
28.575	1 1/8	7	3.629	2.31	+2.5
31.75	1 1/4	7	3.629	2.08	+2.5
34.925	1 3/8	6	4.233	2.21	+2.5
38.1	1 1/2	6	4.233	2.03	+2.5
44.45	1 3/4	5	5.08	2.08	+2.5
50.8	2	4.5	5.644	2.03	+2.5
57.15	2 1/4	4.5	5.644	1.8	AE/Al
63.5	2 1/2	4	6.35	1.82	AE/Al
69.85	2 3/4	4	6.35	1.66	AE/Al
76.2	3	4	6.35	1.52	AE/Al
82.55	3 1/4	4	6.35	1.4	AE/Al
88.9	3 1/2	4	6.35	1.3	AE/Al
95.25	3 3/4	4	6.35	1.22	AE/Al
101.6	4	4	6.35	1.14	AE/Al

UNF thread ASA B1.1

D Ø	D Ø inch	Gg./inch	P	P <	U insert
1.524	No. 0	80	0.318	3.79	+3.5
1.854	No. 1	72	0.353	3.47	+3.5
2.184	No. 2	64	0.397	3.31	+3.5
2.515	No. 3	56	0.454	3.29	+3.5
2.845	No. 4	48	0.529	3.39	+3.5
3.175	No. 5	44	0.577	3.31	+3.5
3.505	No. 6	40	0.635	3.3	+3.5
4.166	No. 8	36	0.706	3.09	+3.5
4.826	No. 10	32	0.794	3	+2.5
5.486	No. 12	28	0.907	3.01	+3.5
6.35	1/4	28	0.907	2.6	+2.5
7.938	5 / 16	24	1.058	2.43	+2.5
9.525	3/8	24	1.058	2.03	+2.5
11.112	7/16	20	1.27	2.08	+2.5
12.7	1/2	20	1.27	1.82	AE/Al
14.288	9/16	18	1.411	1.8	AE/Al
15.875	5/8	18	1.411	1.62	AE/Al
19.05	3/4	16	1.588	1.52	AE/Al
22.225	7/8	14	1.814	1.49	AE/Al
25.4	1	12	2.117	1.52	AE/Al
28.575	1 1/8	12	2.117	1.35	AE/Al
31.75	1 1/4	12	2.117	1.22	AE/Al
34.925	1 3/8	12	2.117	1.11	AE/Al
38.1	1 1/2	12	2.117	1.01	AE/Al

PG DIN 40430

PG	D Ø	Gg./inch	P	P <	U insert
7	12.7	20	1.27	2	AE/Al
9	15.2	18	1.41	1.85	AE/Al
11	18.6	18	1.41	1.51	AE/Al
13.5	20.4	18	1.41	1.38	AE/Al
16	22.5	18	1.41	1.25	AE/Al
21	28.3	16	1.588	1.12	AE/Al
29	37	16	1.588	0.85	+0.5
36	47	16	1.588	0.67	+0.5
42	54	16	1.588	0.58	+0.5
48	59.3	16	1.588	0.53	+0.5

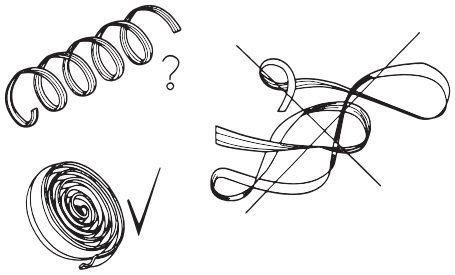


... makes the distinction.

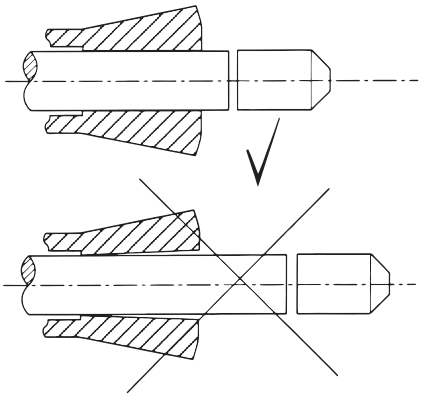
ATORN®
Performance demands quality

ATORN® Technical information

Improved chip control
- Replace worn cutting inserts
- Select more suitable chip control form
- Use neutral cutting insert
- Check perpendicular setting of the cutter holder
- Supply ample coolant
- Increase feed
- Temporarily suspend feed upon contact with the workpiece to allow the chips to pass into the chip guide.

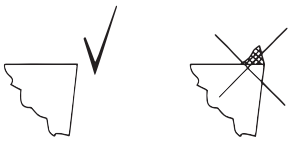


Eliminating rattling
- Part-off as closely as possible to the chuck, minimise cutter holder overhang
- Check clamping and tool structure
- Change rotational speed
- Increase feed
- Block support in conventional lathes



Prevention of bevel breakages
- Select suitable carbide type and cutting insert geometry
- Use cutting insert with larger corner radii
- Prevent rattle
- Avoid feed jerk at the end of the cutting procedure, possibly using a solid jerk limiter
- The fluid in the lathe hydraulic system must be 100% free of air bubbles
- Reduce the formation of built-up edges (to identify built-up edges as a reason for nicks, interrupt cutting and check cutting edge)

Prevention or reduction of built-up edges
- Select suitable carbide type and cutting insert geometry
- Increase cutting speed
- Ensure sufficient cooling, recommendation: oil-based coolant

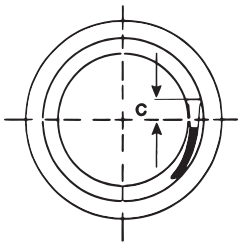


Axial grooving and hollow drilling

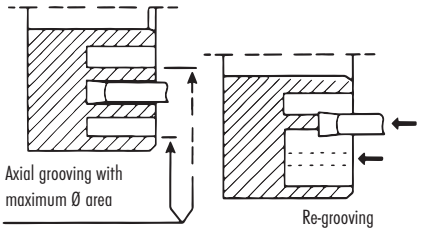
Application

Right cutting inserts should only be used in right-hand tools; left cutting inserts should only be used in left-hand tools. The cutting speed for axial grooving should be just 80% of the cutting speed for parting-off. The feed rate should be reduced to 50%.

Use plenty of coolant, aim coolant spray directly on the kerf.
- For compact holders and for the clamping shank / cutter holder combination, the dimension C described in the adjacent illustration must be integrated into the tool.



Expanding the groove (ramping)
- First make groove in the largest-possible diameter range of the workpiece
- Immediately continue with the overlapping grooving. Thus the smallest machining diameter is dictated by the cutting insert design (see illustration). The maximum diameter is unlimited.
- A cutting insert width of 0.9 x W is recommended for overlapping cuts.
- A clamp depth of no more than 0.1 x cutting insert width is recommended for the face finish-turning of the ramping.

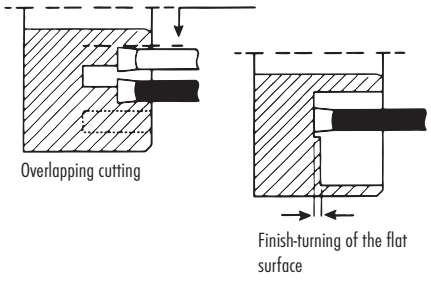


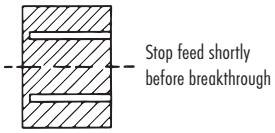
Cutting out
- To prevent tool damage caused by a loose core, stop feed briefly before breakthrough and penetrate the core with a plastic hammer.

Precautionary measures

Carrier tools may not grate on the workpiece.

We recommend the following precautionary measures:
- Please observe the machining diameter of the tools. Grooves should only be made within this area.
- Align tool holder precisely with feed axis.
- For initial grooving with a new structure, stop feed at 1.5 mm punching depth and inspect. If there is friction, check tool height setting.
- Do not use worn or chipped cutting inserts





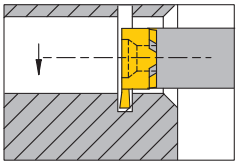
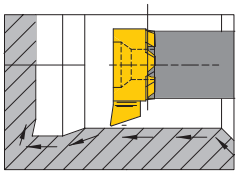
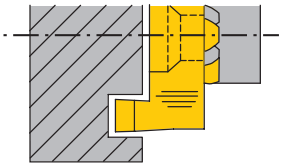
ATORN® Indexable inserts for grooving system DED

- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Strength N/mm² or HB	Cutting speed Vc m/min	Feed rates f mm/rev	Cooling
P	General structural steel	≤ 500	180	0.05 - 0.10	Emulsion
		500 - 800	160	0.5 - 0.10	Emulsion
	Machining steel	≤ 800	210	0.05 - 0.12	Emulsion
		800 - 1000	180	0.05 - 0.12	Emulsion
	Case-hardened steel, unalloyed	≤ 800	250	0.05 - 0.10	Emulsion
	Case-hardened steel, alloyed	800 - 1000	180	0.05 - 0.10	Emulsion
		1000 - 1200	140	0.05 - 0.10	Emulsion
	Nitriding steel	800 - 1000	180	0.05 - 0.10	Emulsion
		1000 - 1200	140	0.05 - 0.10	Emulsion
	Tempering steel, unalloyed	≤ 800	210	0.05 - 0.10	Emulsion
		800 - 1000	180	0.05 - 0.10	Emulsion
	Tempering steel, alloyed	800 - 1000	160	0.05 - 0.07	Emulsion
		1000 - 1200	120	0.05 - 0.07	Emulsion
	Cold-work tool steel		140	0.05 - 0.10	Emulsion
	Hot-work tool steel		120	0.05 - 0.10	Emulsion
	High-speed steel	650 - 1000	80	0.05 - 0.07	Emulsion
	Spring steel	≤ 350 HB	60	0.05 - 0.07	Emulsion
M	Steel and cast steel, stainless steel sulphurised	≤ 850	160	0.03 - 0.08	Emulsion
	Stainless steel, ferritic	≤ 850	120	0.03 - 0.08	Emulsion
	Stainless steel, martensitic	≤ 850	140	0.03 - 0.08	Emulsion
	Stainless steel, austenitic	≤ 850	120	0.03 - 0.08	Emulsion
K	Grey cast iron	≤ 240 HB	110	0.05 - 0.10	Emulsion
		≤ 300 HB	95	0.05 - 0.10	Emulsion
	Spheroidal graphite cast iron	≤ 240 HB	100	0.05 - 0.10	Emulsion
		≤ 300 HB	65	0.05 - 0.10	Emulsion
	Whiteheart malleable cast iron	≤ 240 HB	110	0.05 - 0.10	Emulsion
		≤ 300 HB	60	0.05 - 0.10	Emulsion
	Blackheart malleable cast iron	≤ 240 HB	110	0.05 - 0.10	Emulsion
		≤ 300 HB	60	0.05 - 0.10	Emulsion
N	Pure copper	≤ 400	180	0.05 - 0.12	Petroleum
	Brass short-chipping	≤ 600	180	0.05 - 0.12	Petroleum
	Brass long-chipping	≤ 600	160	0.05 - 0.12	Petroleum
	Bronze short-chipping	≤ 600	180	0.05 - 0.12	Petroleum
		≤ 600-850	160	0.05 - 0.12	Petroleum
	Bronze long-chipping	≤ 850	160	0.05 - 0.12	Petroleum
		800 - 1000	140	0.05 - 0.12	Petroleum
	Red brass		160	0.05 - 0.12	Petroleum
	Magnesium alloys	≤ 850	250	0.05 - 0.12	Emulsion
	Pure aluminium	≤ 400	800	0.05 - 0.12	Emulsion
	Wrought aluminium alloys	≤ 450	600	0.05 - 0.12	Emulsion
	Cast aluminium alloys < 12 Si	≤ 600	500	0.05 - 0.12	Emulsion
		≤ 600	600	0.05 - 0.12	Emulsion
	Thermoplastics		120	0.05 - 0.12	Emulsion
	Thermosets		180	0.05 - 0.12	Emulsion
	Glass/carbon-fibre reinforced		80	0.05 - 0.12	Emulsion
S	Ultra heat-resistant steels	≤ 1200	50	0.03 - 0.08	Emulsion
	Special alloys	≤ 850	40	0.03 - 0.08	Emulsion
	Pure titanium	≤ 850	50	0.03 - 0.08	Emulsion
	Titanium alloys	≤ 850-1200	30	0.03 - 0.08	Emulsion

ATORN® Recess turning and thread cutting with MINI-CUT

- Please adjust these guideline values according to clamping operation and machine set-up!

ISO	Materials group	Material example chemical	Material number	Cutting speed Vc m/min	Feed f in mm/rev
P	Unalloyed structural steel	9 S 20	1.0711	120 - 200	 0.01 - 0.03 mm
		ST 37	1.0037		
		ST 50	1.0050		
	Low-alloy steel	ST 70	1.0070	80 - 190	
		16 MnCr 5	1.7131		
		25 CrMo 4	1.7218		
	High-alloy steel	90 MnCrV 8	1.2842	80 - 160	
		42 CrMoV	1.7225		
		X 40 CrMoS 17	1.2344		
M	Stainless steel, martensitic	X 6 CrA 13	1.4002	80 - 160	 0.03 - 0.10 mm
		X 6 CrTi 17	1.4510		
		X 12 CrMoS 17	1.4104		
	Stainless steel austenitic	20 CrNi 17 2	1.4057	80 - 140	
		X 5 CrNi 18 10	1.4301		
		X 6 CrNiMoTi 17 12 2	1.4571		
K	Grey cast iron	GG 20	0.6020	60 - 180	 0.01 - 0.03 mm
		GG 40	0.6040		
	Grey cast iron with spheroidal graphite	GGG 40	0.7040	60 - 180	
		GGG 70	0.7070		
	Malleable cast iron	GTW 35	0.8035	60 - 180	
		GTS 55	0.8155		
N	Aluminium 0.5 10% Si	MS 58	2.0402	100 - 800	
	Copper	G-MgAl9Zn 1	3.5912	100 - 800	
S	Ultra heat-resistant alloys	TiAl6Sn 2	3.7174	30 - 80	
	Titanium alloys	NiCr12Al6MoNb	2.4670	30 - 80	

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Cutting inserts mini-børe

- Please adjust these guideline values according to clamping operation and machine set-up!

Internal thread turning, cutting material HC 8615 TiN

ISO	Materials group	Strength N/mm²	Cutting speed Vc m/min	Number of cuts				
				Pitch 0.5 mm = 48 thread/inch	Pitch 0.75 mm = 32 thread/inch	Pitch 1 mm = 24 thread/inch	Pitch 1.25 mm = 20 thread/inch	Pitch 1.5 mm = 16 thread/inch
P	Steel material	400 - 550	160	6	8	10	12	15
		500 - 700	140	6	8	10	12	15
		700 - 850	120	7	9	12	14	17
		850 - 1150	90	7	9	12	14	17
		> 1150	70	8	10	12	15	18
M	Stainless steel		90	8	10	12	15	18
K	Grey cast iron		100	7	9	12	14	17
N	Aluminium		300	6	8	10	12	15

Internal recess turning

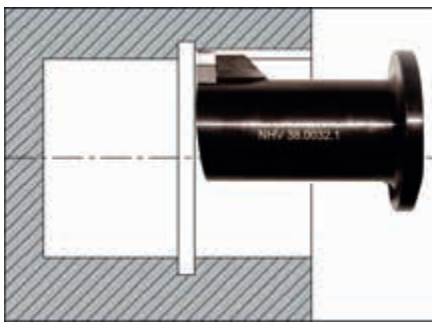
ISO	Materials group	Strength N/mm²	Cutting speed Vc m/min			
			K10F Feed f = 0.01-0.025 mm/rev	**CN45F** Feed f = 0.01-0.025 mm/rev	**AL41F** Feed f = 0.01-0.025 mm/rev	**X2CA** Feed f = 0.02-0.06 mm/rev
P	Carbon steels C = 0.4-0.8%	600 - 1000	30 - 100	40 - 180	80 - 200	
	Cast steel	500 - 900	30 - 110	40 - 180	70 - 180	
	Alloyed steels	500 - 1400	30 - 90	40 - 140	70 - 160	
M	Stainless steel CR = 12-18%	150-250 HB	30 - 90	40 - 140	80 - 160	
	Stainless steel austenitic	600 - 1200	30 - 90	40 - 140	80 - 160	
K	Grey cast iron	250-300 HB	30 - 100	40 - 140	30 - 180	
	Spheroidal graphite iron, ferritic	140-180 HB	30 - 100	40 - 140	30 - 180	
	Spheroidal graphite iron, pearlitic	230-280 HB	30 - 100	40 - 140	30 - 180	
	Malleable cast iron	160-240 HB	30 - 100	40 - 140	30 - 180	
N	Aluminium, Al-Si alloys	50-140 HB	90 - 200		80 - 700	
	Copper, brass, bronze		90 - 200		80 - 700	
	Plastics		90 - 200		80 - 700	
H	Hardened steel	46 - 66HRc				70 - 100

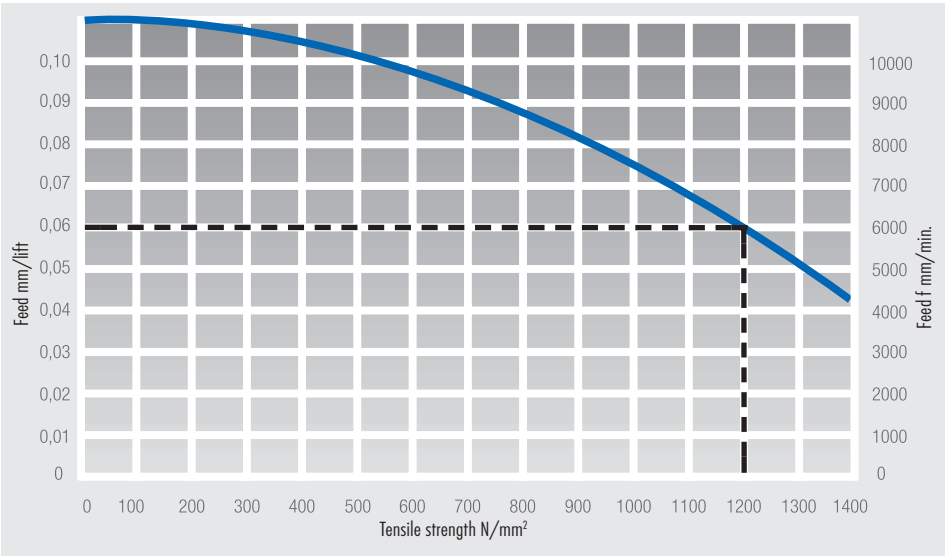
ATORN® Cutting inserts for keyway slotting

- Observe the undercut at the end of the cleared slot to allow free discharge of the tool.
- The cutting edge should not touch the base of the slot while the tool is retracting.
- Adjustment of the tool is not permitted. Therefore carefully check the diameter of the workpiece before you proceed.
- If you use oil or an emulsion, the chips are flushed away from the workpiece; this also helps to produce a perfect surface.
- If the tool is aligned upwards, the chips automatically fall downwards away from the cutting edge.
- Avoid interrupted cutting.

Guide values for slotting

Example:
Tempering steel e.g. 42CrMo4 with 1200 N/mm²
- Feed per lift 0.05-0.06 mm
- Feed f = 5500 mm/min



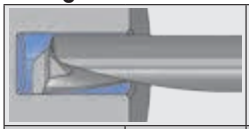


Cutting inserts DT

- Please adjust these guideline values according to clamping operation and machine set-up!
- **Feed values (f) are dependent on the coolant pressure:**
  Coolant pressure 10-30 bar: select lower third of the feed values
  Coolant pressure 30-70 bar: select upper half of the feed values
- the feed values (f) are also dependent on the material

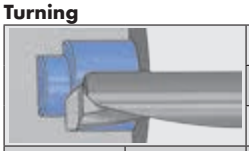
ISO	Materials group	Strength N/mm²	Cutting speed Vc m/min
			AL41F
P	Carbon steels C = 0.4-0.8%	600 - 1000	80 - 200
P	Cast steel	500 - 900	70 - 180
P	Alloyed steels	500 - 1400	70 - 140
M	Stainless steel CR = 12-18%	150 - 250 HB	80 - 160
M	Stainless steel austenitic	600 - 1200	20 - 65
K	Grey cast iron	250 - 300 HB	30 - 180
K	Spheroidal graphite iron, ferritic	140 - 180 HB	30 - 180
K	Spheroidal graphite iron, pearlitic	230 - 280 HB	30 - 180
K	Malleable cast iron	160 - 240 HB	20 - 90
N	Aluminium, Al-Si alloys	50 - 140 HB	80 - 600
N	Copper, brass, bronze		80 - 200

Drilling



		Feed f mm/U
R/L DT,3-	10	0,0025 - 0,0125
	13	0,0025 - 0,010
R/L DT,4-	15	0,005 - 0,030
	20	0,005 - 0,015
R/L DT,5-	15	0,005 - 0,040
	25	0,005 - 0,020
R/L DT,6-	15	0,005 - 0,030
	30	0,005 - 0,020
R/L DT,7-	20	0,005 - 0,035
	35	0,005 - 0,025
R/L DT,8-	25	0,005 - 0,040
	40	0,005 - 0,030

Turning



		Span depth ap in mm								
		0,2	0,5	1,0	1,5	2,0	2,5	3,0	3,5	4,0
		Feed f mm/U								
R/L DT,3-	10	0,02 - 0,07	0,02 - 0,07	0,02 - 0,05	0,005 - 0,01					
	13	0,02 - 0,05	0,02 - 0,05	0,005 - 0,03	0,005 - 0,01					
R/L DT,4-	15	0,04 - 0,1	0,04 - 0,1	0,04 - 0,1	0,03 - 0,07	0,01 - 0,05				
	20	0,04 - 0,1	0,04 - 0,1	0,03 - 0,08	0,01 - 0,05	0,005 - 0,025				
R/L DT,5-	15	0,04 - 0,1	0,04 - 0,1	0,04 - 0,1	0,03 - 0,08	0,02 - 0,06	0,01 - 0,04			
	25	0,04 - 0,1	0,04 - 0,1	0,03 - 0,09	0,02 - 0,06	0,01 - 0,04	0,005 - 0,025			
R/L DT,6-	15	0,04 - 0,1	0,04 - 0,1	0,04 - 0,1	0,04 - 0,1	0,03 - 0,08	0,02 - 0,06	0,01 - 0,04		
	30	0,04 - 0,1	0,04 - 0,1	0,03 - 0,09	0,02 - 0,06	0,01 - 0,04	0,01- 0,03	0,005 - 0,03		
R/L DT,7-	20	0,04 - 0,1	0,04 - 0,1	0,04 - 0,1	0,04 - 0,1	0,04 - 0,1	0,03 - 0,08	0,02 - 0,06	0,01 - 0,04	
	35	0,04 - 0,1	0,04 - 0,1	0,04 - 0,1	0,03 - 0,08	0,02 - 0,06	0,01 - 0,04	0,01 - 0,03	0,01 - 0,02	
R/L DT,8-	25	0,04 - 0,1	0,04 - 0,1	0,04 - 0,1	0,04 - 0,1	0,04 - 0,1	0,04 - 0,1	0,03 - 0,08	0,02 - 0,06	0,01 - 0,04
	40	0,04 - 0,1	0,04 - 0,1	0,04 - 0,1	0,04 - 0,095	0,03 - 0,8	0,02 - 0,06	0,01 - 0,04	0,01 - 0,03	0,01 - 0,02

Material burrs in form knurling – chip-free forming

- Empirical values for enlarging the workpiece diameter
- Deviations are possible depending on material.
- Please adjust these guideline values according to clamping operation and machine set-up!

Knurl profile according to DIN 82: **RAA (knurl profile on the workpiece)**
Knurling wheels according to DIN 403: AA (knurl profile on the knurling wheel)


RAA

ISO	Materials group	Workpiece Ø mm	Enlargement of the workpiece Ø in mm												
			Division 0.3	Division 0.4	Division 0.5	Division 0.6	Division 0.7	Division 0.8	Division 0.9	Division 1.0	Division 1.2	Division 1.5	Division 1.6	Division 1.8	Division 2.0
P	Machining steel	5	0.08	0.14	0.18	0.22	0.27	0.29	0.33	0.35	0.50	-	-	-	-
		15	0.08	0.14	0.18	0.23	0.30	0.40	0.41	0.44	0.50	0.6	0.65	0.67	0.7
		25	0.08	0.15	0.23	0.24	0.28	0.35	0.38	0.44	0.53	0.62	0.7	0.7	0.98
M	Stainless steel	5	0.1	0.15	0.2	0.25	0.28	0.30	0.35	0.42	0.41	-	-	-	-
		15	0.1	0.15	0.19	0.25	0.30	0.34	0.40	0.45	0.51	0.6	-	-	-
		25	0.1	0.14	0.2	0.26	0.31	0.33	0.38	0.43	0.50	0.62	-	-	-
N	Brass	5	0.08	0.12	0.18	0.20	0.21	0.22	0.23	0.25	0.28	-	-	-	-
		15	0.1	0.14	0.2	0.26	0.28	0.29	0.31	0.35	0.41	0.44	0.48	0.5	0.55
		25	0.1	0.15	0.2	0.25	0.28	0.30	0.32	0.36	0.43	0.46	0.50	0.53	0.53
	Aluminium	5	0.09	0.15	0.19	0.23	0.28	0.30	0.34	0.41	0.40	-	-	-	-
		15	0.1	0.15	0.19	0.26	0.29	0.33	0.39	0.45	0.51	0.57	0.65	-	-
		25	0.09	0.15	0.19	0.26	0.29	0.32	0.37	0.45	0.52	0.59	0.65	0.78	0.75

Knurl profile according to DIN 82: **RBL 30°/RBR 30° (knurl profile on the workpiece)**
Knurling wheels according to DIN 403: BR 30°/BL 30° (knurl profile on the knurling wheel)


RBL 30


RBR 30

ISO	Materials group	Workpiece Ø mm	Enlargement of the workpiece Ø in mm												
			Division 0.3	Division 0.4	Division 0.5	Division 0.6	Division 0.7	Division 0.8	Division 0.9	Division 1.0	Division 1.2	Division 1.5	Division 1.6	Division 1.8	Division 2.0
P	Machining steel	5	0.11	0.15	0.20	0.24	0.28	0.34	0.38	0.45	0.55	-	-	-	-
		15	0.11	0.15	0.22	0.26	0.30	0.35	0.42	0.45	0.52	0.67	0.73	0.75	0.85
		25	0.11	0.14	0.23	0.25	0.28	0.36	0.42	0.45	0.56	0.7	0.72	0.78	0.9
M	Stainless steel	5	0.09	0.14	0.19	0.25	0.31	0.34	0.39	0.45	0.52	-	-	-	-
		15	0.12	0.20	0.23	0.31	0.35	0.40	0.45	0.51	0.62	0.66	0.73	0.85	0.97
		25	0.12	0.18	0.24	0.27	0.37	0.39	0.43	0.49	0.59	0.8	0.84	0.93	0.96
N	Brass	5	0.10	0.14	0.20	0.23	0.24	0.28	0.30	0.33	0.37	-	-	-	-
		15	0.10	0.15	0.21	0.23	0.24	0.31	0.36	0.41	0.47	0.53	0.53	0.65	0.63
		25	0.11	0.15	0.22	0.22	0.25	0.30	0.35	0.40	0.45	0.55	0.55	0.62	068
	Aluminium	5	0.12	0.14	0.21	0.24	0.29	0.34	0.39	0.41	0.51	-	-	-	-
		15	0.12	0.18	0.23	0.26	0.36	0.40	0.43	0.50	0.56	0.56	0.56	0.74	0.75
		25	0.12	0.16	0.25	0.28	0.37	0.39	0.46	0.50	0.58	0.77	0.77	0.84	0.96

Knurl profile according to DIN 82: **RGE 30° (knurl profile on the workpiece)**
Knurling wheels according to DIN 403: BR 30° + BL 30° (knurl profile on the knurling wheel)


RGE

ISO	Materials group	Workpiece Ø mm	Enlargement of the workpiece Ø in mm												
			Division 0.3	Division 0.4	Division 0.5	Division 0.6	Division 0.7	Division 0.8	Division 0.9	Division 1.0	Division 1.2	Division 1.5	Division 1.6	Division 1.8	Division 2.0
P	Machining steel	5	"0.12	"0.16	"0.20	"0.25	"0.33	"0.41	"0.45	"0.55	"0.65	-	-	-	-
		15	0.13	0.22	0.30	0.32	0.35	0.41	0.43	0.52	0.62	0.67	0.81	0.86	0.95
		25	0.12"	0.18"	0.28"	0.32"	0.35"	0.38"	0.43"	0.55"	0.67"	0.77	0.87	0.98	0.98
M	Stainless steel	5	"0.11	"0.20	"0.25	"0.30	"0.36	"0.39	"0.41	"0.55	"0.55	-	-	-	-
		15	0.10	0.14	0.21	0.24	0.29	0.34	0.40	0.43	0.53	0.66	0.72	0.70	0.88
		25	0.11"	0.13"	0.20"	0.25"	0.28"	0.32"	0.41"	0.44"	0.52"	0.67	0.7	0.71	0.83
N	Brass	5	"0.12	"0.13	"0.16	"0.20	"0.24	"0.28	"0.30	"0.32	"0.38	-	-	-	-
		15	0.12	0.16	0.18	0.24	0.28	0.30	0.37	0.39	0.40	0.48	0.52	0.55	0.63
		25	0.12"	0.17"	0.22"	0.23"	0.27"	0.30"	0.34"	0.38"	0.41"	0.48	0.5	0.63	0.63
	Aluminium	5	"0.10	"0.15	"0.21	"0.25	"0.33	"0.36	"0.41	"0.50	"0.57	-	-	-	-
		15	0.11	0.14	0.20	0.25	0.28	0.33	0.39	0.43	0.54	0.67	0.71	0.76	0.89
		25	0.11"	0.15"	0.22"	0.25"	0.29"	0.34"	0.40"	0.44"	0.53"	0.68	0.69	0.71	0.88

Knurling tools

- Ensure good cooling / lubrication to prevent chips rolling in and to increase the service life of the knurl
- Please adjust these guideline values according to clamping operation and machine set-up!

Knurling – metal cutting machining

ISO	Materials group	Workpiece Ø mm	Knurling wheel Ø mm	Vc m/min	f mm/rev			
					Radial	Axial		
						Division 0.3 - 0.5	Division 0.5 - 1.0	Division 1.0 - 1.5	Division 1.5 - 2.0
P	Machining steel	< 10	10 / 15	40 - 70	0.04 - 0.08	0.14	0.09	0.06	0.05
		10 - 40	15 / 25	50 - 90	0.05 - 0.1	0.2	0.13	0.1	0.07
		40 - 100	25 / 32 / 42	65 - 110	0.05 - 0.1	0.25	0.18	0.12	0.08
		100-250	25 / 32 / 42	65 - 100	0.05 - 0.1	0.3	0.2	0.13	0.09
		> 250	32 / 42	80-100	0.05 - 0.1	0.32	0.21	0.14	0.1
M	Stainless steel	< 10	10 / 15	22 - 40	0.04 - 0.08	0.12	0.08	0.05	0.04
		10 - 40	15 / 25	30 - 50	0.05 - 0.1	0.17	0.11	0.09	0.06
		40 - 100	25 / 32 / 42	35 - 60	0.05 - 0.1	0.21	0.15	0.1	0.07
		100-250	25 / 32 / 42	35 - 60	0.05 - 0.1	0.26	0.17	0.11	0.08
		> 250	32 / 42	45 - 55	0.05 - 0.1	0.27	0.18	0.12	0.09
N	Brass	< 10	10 / 15	55 - 100	0.04 - 0.08	0.15	0.09	0.06	0.05
		10 - 40	15 / 25	70 - 125	0.05 - 0.1	0.21	0.14	0.11	0.07
		40 - 100	25 / 32 / 42	90 - 155	0.05 - 0.1	0.26	0.19	0.13	0.08
		100-250	25 / 32 / 42	90 - 155	0.05 - 0.1	0.32	0.21	0.14	0.09
		> 250	32 / 42	115 - 140	0.05 - 0.1	0.34	0.22	0.15	0.11
	Aluminium	< 10	10 / 15	70 - 120	0.04 - 0.08	0.18	0.11	0.08	0.06
		10 - 40	15 / 25	80 - 150	0.05 - 0.1	0.25	0.16	0.13	0.09
		40 - 100	25 / 32 / 42	110 - 160	0.05 - 0.1	0.31	0.23	0.15	0.1
		100-250	25 / 32 / 42	110 - 160	0.05 - 0.1	0.38	0.25	0.16	0.11
		> 250	32 / 42	130 - 150	0.05 - 0.1	0.4	0.26	0.18	0.13



Form knurling – chip-free machining

ISO	Materials group	Workpiece Ø mm	Knurling wheel Ø mm	Vc m/min	f mm/rev			
					Radial	Axial		
						Division 0.3 - 0.5	Division 0.5 - 1.0	Division 1.0 - 1.5	Division 1.5 - 2.0
P	Machining steel	< 10	10 / 15	20 - 50	0.04 - 0.08	0.20	0.13	0.08	0.07
		10 - 40	15 / 20	25 - 55	0.05 - 0.1	0.28	0.18	0.14	0.10
		40 - 100	20 / 25	30 - 60	0.05 - 0.1	0.35	0.25	0.17	0.11
		100-250	20 / 25	30 - 60	0.05 - 0.1	0.42	0.28	0.18	0.13
		> 250	25	30 - 60	0.05 - 0.1	0.45	0.29	0.20	0.14
M	Stainless steel	< 10	10 / 15	15 - 40	0.04 - 0.08	0.14	0.09	0.06	0.05
		10 - 40	15 / 20	20 - 50	0.05 - 0.1	0.20	0.13	0.10	0.07
		40 - 100	20 / 25	25 - 50	0.05 - 0.1	0.25	0.18	0.12	0.08
		100-250	20 / 25	25 - 50	0.05 - 0.1	0.29	0.20	0.13	0.09
		> 250	25	25 - 50	0.05 - 0.1	0.31	0.21	0.14	0.10
N	Brass	< 10	10 / 15	30 - 75	0.04 - 0.08	0.22	0.14	0.09	0.08
		10 - 40	15 / 20	40 - 85	0.05 - 0.1	0.31	0.20	0.15	0.11
		40 - 100	20 / 25	45 - 90	0.05 - 0.1	0.39	0.28	0.18	0.12
		100-250	20 / 25	45 - 90	0.05 - 0.1	0.46	0.31	0.20	0.14
		> 250	25	45 - 90	0.05 - 0.1	0.49	0.32	0.22	0.15
	Aluminium	< 10	10 / 15	25 - 60	0.04 - 0.08	0.12	0.08	0.05	0.04
		10 - 40	15 / 20	30 - 65	0.05 - 0.1	0.17	0.11	0.08	0.06
		40 - 100	20 / 25	35 - 70	0.05 - 0.1	0.21	0.15	0.10	0.07
		100-250	20 / 25	35 - 70	0.05 - 0.1	0.25	0.17	0.11	0.08
		> 250	25	35 - 70	0.05 - 0.1	0.27	0.18	0.12	0.08

palbit Grooving and parting-off system MINI

- Please adjust these guideline values according to clamping operation and machine set-up!

External machining: **right-hand** inserts and **right-hand** holders and/or **left-hand** inserts and **left-hand** holders

- Permanent cooling across the entire cutting surface is recommended.
- Particularly appropriate for automatic feed; manual feed can reduce the service life..
- The feed should be reduced by 10-15 % when using inserts with 7° clearance angle.

Cutting speeds for quality PH 7920

ISO	Materials group	Strength/ Hardness N/mm²	Material example chemical	Material number	Cutting speed Vc m/min	Feed f mm	
						GS / GR	P00 / P07
P	Machining steel	Up to 700	9 SMn 28	1.0715	60 - 200	0,02 - 014	0,02 - 0,14
	Unalloyed structural steel	Up to 700	St-52	1.0052			
	Structural steel	700 - 950	Ck45	1.1191			
	Tempering steel	500 - 950	42 CrMo4	1.7225			
	Cast steel	Up to 950	GS 40	1.0416			
	Case-hardened steel	Up to 1200	16 MnCr 5	1.7131			
	Tempering steel	950 -1300	43CrMo4	1.3563			
	Nitriding steel	950 - 1300	31CrMoV9	1.8519			
	Tool steel	950 - 1400	X38 CrMoV 5 1	1.2343			
M	Stainless steel, ferr./marten.	500 - 950	X10 Cr13	1.4006	60 - 180		
	Stainless steel, austenitic	500 - 950	X5 CrNi 18 10	1.4301			
	Duplex	700 - 950	X2 CrNiMoN 22-5-3	1.4462			
K	Grey cast iron	Up to 260 HB	GG 25	0.6025	60 - 150		
	Alloyed grey cast iron	Up to 310 HB	GGL-NiCr 35 2	0.6678			
	Ductile iron	Up to 280 HB	GGG 60	0.7060			
	Malleable cast iron	Up to 280 HB	GTS 55	0.8155			
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	20 - 50		
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718			
	Superalloys	Up to 1300	X45CrSi 9 3	1.4718			




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Clamping equipment

Turning technology

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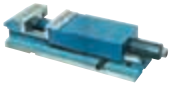
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Magnetic clamping technology

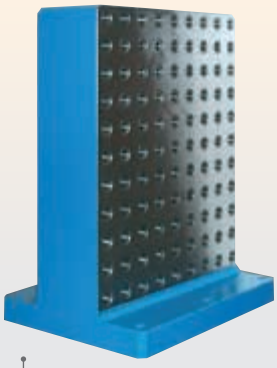
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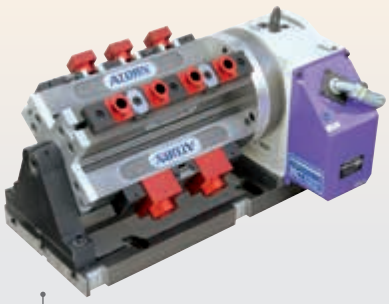
CHUCKS
with box jaws



CLAMPING FORCE MEASURING INSTRUMENTS
for checking the pull-in forces of clamping systems in machining spindles



POWERED TOOLS
for special applications



ROUND TABLES
for an additional fourth and fifth axis

ROHM Fixed centre (centring point)

DIN 806

- **Morse taper, DIN 228**
- 60° point angle
- Ground surfaces
- **Versions:**
  Full centre made from WS steel, fully ground
  Full centre with carbide insert
  Half centre made from WS steel, fully ground
  Half centre with carbide insert

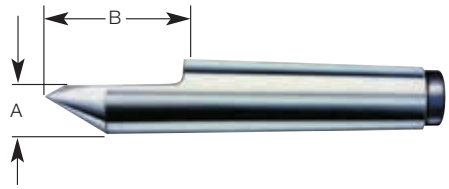
Full centre

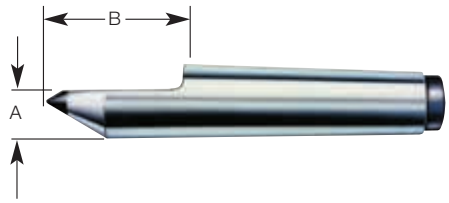
Shank	Ø mm	Length mm	D mm	Weight kg	WS steel art.no.	€	Carbide art.no.	€
MT 1	12.2	80	-	0.06	**401001** 0001	32,70		
MT 2	18	100	-	0.15	401001 0002	32,70		
MT 2	18	100	7	0.155			**401005** 0002	82,30
MT3	24.1	125	-	0.34	401001 0003	43,70		
MT3	24.1	125	11	0.36			401005 0003	110,–
MT 4	31.6	160	-	0.79	401001 0004	60,20		
MT 4	31.6	160	14	0.77			401005 0004	153,–
MT 5	44.7	200	-	1.92	401001 0005	110,–		
MT 5	44.7	200	18	1.95			401005 0005	275,–
					4187		4187	



Half centre

Shank	Ø mm	Length mm	A mm	B mm	WS steel art.no.	€	Carbide art.no.	€
MT 2	18	100	11	30	**401010** 0002	49,10	**401015** 0002	123,–
MT3	24.1	125	15	38	401010 0003	65,80	401015 0003	164,–
MT 4	31.6	160	21	50	401010 0004	91,20	401015 0004	231,–
MT 5	44.7	200	29.4	63	401010 0005	164,–	401015 0005	415,–
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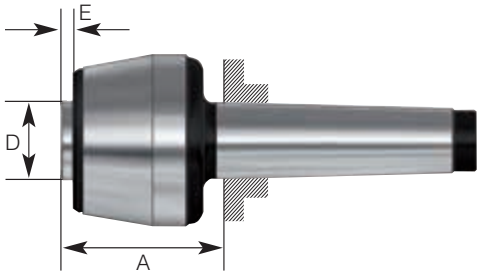
ROHM Live centre

- **With replaceable inserts**

Live centre

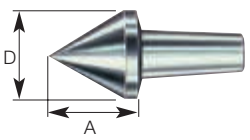
- For replaceable inserts (supplied without inserts)

Shank	Total length mm	A mm	D mm	E mm	Workpiece weight max. kg	True running accuracy mm	art.no.	€
MT 2	109	45	20	4	40	0.01	**401550** 0020	211,–
MT3	128.5	48	22	4.5	130	0.01	401550 0030	220,–
MT3	135.5	55	25	5	150	0.01	401550 0031	257,–
MT 4	169.5	67	32	5	250	0.01	401550 0040	294,–
MT 5	214	85	40	6	650	0.01	401550 0050	426,–
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Replaceable inserts, 60°

suitable for centre punch tip	D mm	A mm	art.no.	€
401550 0020	16	20	**401551** 6020	27,10
401550 0030	20	24	401551 6030	32,70
401550 0031	24	27.5	401551 6031	38,20
401550 0040	28	31.5	401551 6040	43,70
401550 0050	38	43	401551 6050	54,70
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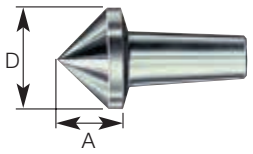


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Replaceable inserts, 90°

suitable for centre punch tip	D mm	A mm	art.no.	€
401550 0020	16	14.5	**401551** 9020	27,10
401550 0030	20	16.5	401551 9030	32,70
401550 0031	24	19	401551 9031	38,20
401550 0040	28	21.5	401551 9040	43,70
401550 0050	38	29	401551 9050	54,70

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Set of 7 replaceable inserts in a wooden box

- **Contents**

  1x centring point; 60°, 90° insert (1 of each); 2 x hollow 60° internal taper; 1x blunt 60° external taper; 1x 60°/30° insert

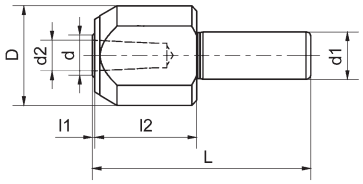
Shank	Workpiece weight max. kg	art.no.	€
MT 2	40	**401552** 0200	527,–
MT3	130	401552 0300	599,–
MT3	150	401552 0301	676,–
MT 4	250	401552 0400	791,–
MT 5	650	401552 0500	1.045,–

4187



Live lathe centres, spring-loaded

- **Replaceable centre inserts, straight shank**
- Spring-loaded version for axial longitudinal displacement when machining
- Fully hardened and ground
- Maintenance-free permanent lubrication
- Shaft sealing ring prevents the ingress of dirt and coolant



Spring stroke 2.4 mm

- Ejecting drift for replacing inserts
- Supplied without insert

Shank Ø mm	D mm	d mm	d1 mm	d2 mm	L mm	l1 mm	l2 mm	max. speed r/min	Workpiece weight max. kg	True running accuracy mm	art.no.	€
3/4"	40	18	19.05	12	90	4	38	4000	200	max. 0.01	**401525** 0001	265,–
19	40	18	19	12	90	4	38	4000	200	max. 0.01	401525 0002	265,–
20	40	18	20	12	90	4	38	4000	200	max. 0.01	401525 0003	265,–

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Spring stroke 3.0 mm

- Inserts are replaced by twisting in opposite directions using two open-end spanners on the flats of the axis and insert (AF size 17)

Shank Ø mm	D mm	d mm	d1 mm	d2 mm	L mm	l1 mm	l2 mm	Rotational speed max. r/min	Workpiece weight max. kg	True running accuracy mm	art.no.	€
1"	44	20	25.4	12	118	10	51	3000	300	max. 0.01	**401525** 0004	270,–
20	44	20	20	12	118	10	51	3000	300	max. 0.01	401525 0005	270,–
25	44	20	25	12	118	10	51	3000	300	max. 0.01	401525 0006	270,–

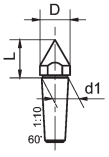
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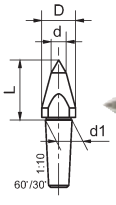
Replaceable inserts

Description	D mm	d mm	d1 mm	L mm	art.no.	€
Pointed centre	14	-	12	20	**401530** 1201	17,50
Copying centre	14	4	12	32	401530 1206	21,–

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401530 1201



401530 1206



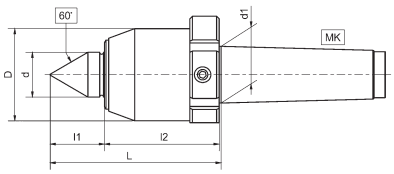
401530 1201



401530 1206

Live precision lathe centres

- High-performance design specially for CNC lathes
- Draw-off nut to company standards
- For high speeds and axial loads
- Excellent true-running accuracy thanks to the high-end bearing
- Fully hardened and ground
- Maintenance-free permanent lubrication
- Shaft sealing ring prevents the ingress of dirt and coolant
- With additional sealing, also suitable for grinding applications

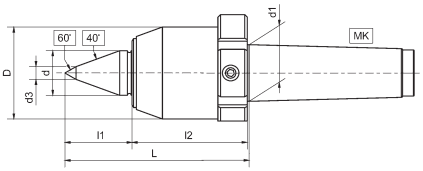


Standard version

Shank	D mm	d mm	d1 mm	L mm	l1 mm	l2 mm	max. speed r/min	Workpiece weight max. kg	True running accuracy mm	art.no.	€
MT3	52	25	23.83	94	30	57	12000	300	max. 0.003	**401520** 0003	565,–
MT 4	60	28	31.27	106	35	63	10000	600	max. 0.003	401520 0004	585,–
MT 5	72	35	44.4	136	43	82	8000	1200	max. 0.003	401520 0005	745,–

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Slim version

Shank	D mm	d mm	d1 mm	L mm	l1 mm	l2 mm	d3 mm	max. speed r/min	Workpiece weight max. kg	True running accuracy mm	art.no.	€
MT3	52	25	23.83	104	40	56	8	12000	200	max. 0.003	**401521** 0003	585,–
MT 4	60	28	31.27	116	45	63	8	10000	300	max. 0.003	401521 0004	595,–
MT 5	72	35	44.4	146	53	82	10	8000	800	max. 0.003	401521 0005	815,–

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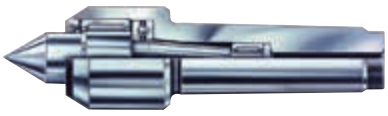
ROHM Live centre

Slim version, 60° point angle

- Body hardened and ground
- Small head diameter prevents any impairment of supports, tool holders or lathe tools

Shank	Projecting length mm	Head Ø mm	Moving point Ø x length mm	True running accuracy mm	Workpiece weight max. kg	max. speed r/min	art.no.	€
MT 2	62	32	15 x 18	0.005	200	7000	**401501** 0002	170,–
MT3	62	34	15 x 18	0.005	400	7000	401501 0003	177,–
MT 4	75.5	42	20 x 25	0.005	800	6300	401501 0004	235,–
MT 5	106	58	30 x 34	0.01	1600	4300	401501 0005	340,–
MT 6	143	80	42 x 49	0.02	3500	3000	401501 0006	680,–

4187



Slim version with extended running point, 60° point angle

- Body hardened and ground

Shank	Projecting length mm	Head Ø mm	Moving point Ø x length mm	True running accuracy mm	Workpiece weight max. kg	max. speed r/min	art.no.	€
MT 2	73	32	15 x 29	0.008	170	7000	**401505** 0002	204,–
MT3	74	34	15 x 30	0.008	340	7000	401505 0003	213,–
MT 4	88.5	42	20 x 38	0.008	700	6300	401505 0004	283,–
MT 5	119	58	30 x 49	0.01	1400	4300	401505 0005	408,–
MT 6	164	80	42 x 70	0.02	3000	3000	401505 0006	818,–

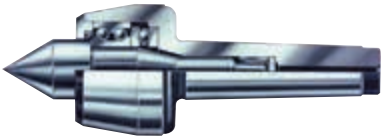
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Standard version, 60° point angle

Shank	Projecting length mm	Head Ø mm	Moving point Ø x length mm	True running accuracy mm	Workpiece weight max. kg	max. speed r/min	art.no.	€
MT 1	60.5	34.5	15 x 17	0.005	100	7000	**401510** 0001	211,–
MT 2	65	43	20 x 24	0.005	200	7000	401510 0002	211,–
MT3	79.5	58.5	25 x 31	0.005	500	5000	401510 0003	257,–
MT 4	102.5	68.5	32 x 41	0.005	800	3800	401510 0004	294,–
MT 5	129	88.5	40 x 50.5	0.005	2000	3000	401510 0005	426,–
MT 6	152	102.5	50 x 57.5	0.01	3500	2600	401510 0006	851,–

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SARA® Live centres

- Excellent true-running accuracy thanks to reliable precision bearings
- Special lubrication for long service life and low maintenance costs
- 60° point angle

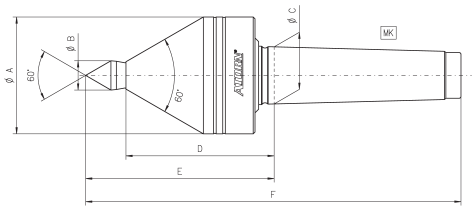
Shank	Projecting length mm	Head Ø mm	Moving point Ø x length mm	True running accuracy mm	Workpiece weight max. kg	max. speed r/min	art.no.	€
MT 2	65	45	20 x 41	0.005	200	4900	**401516** 0002	82,–
MT3	79.5	60	25 x 48.5	0.005	500	3500	401516 0003	98,–
MT 4	102.5	70	32 x 61.5	0.005	800	2700	401516 0004	118,–
MT 5	129	90	40 x 78.5	0.005	2000	2100	401516 0005	199,–

4111



ATORN® Live centre, extended running point

- **60° point angle**
- **Extended running point**
- Perfect all-purpose point for universal use on manual lathes
- Radial run-out: max. 0.005 mm
- Fully hardened and ground tool
- Bearing arrangement for high axial forces
- Shaft sealing ring prevents the ingress of dirt and coolant



Shank	A mm	B mm	C mm	D mm	E mm	F mm	max. speed r/min	Workpiece weight max. kg	art.no.	€
MT 2	54	13	17.78	68.5	86.5	150.5	4200	170	**401503** 0002	285,–
MT3	54	13	23.83	68.5	86.5	167.5	4200	170	401503 0003	310,–
MT3	64	16	23.83	78	100	181	3800	330	401503 0013	335,–
MT 4	64	16	31.27	78	100	202.5	3800	330	401503 0004	360,–
MT 4	86	19	31.27	93.5	121.5	224	3200	550	401503 0014	435,–
MT 5	86	19	44.40	93.5	121.5	251	3200	550	401503 0005	485,–

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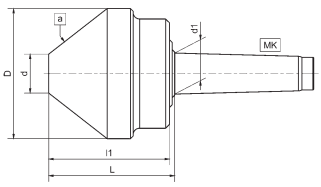

Easy to use for tubes with large diameters


The extended running point guarantees the required clearance angle for turning parts with small diameters.


Ideal for bar stock with large diameters

Live precision centring taper

- For machining tubes and hollow bodies with large bores and centres
- Fully hardened and ground
- Maintenance-free permanent lubrication
- Shaft sealing ring prevents the ingress of dirt and coolant



Shank	D mm	d mm	d1 mm	L mm	l1 mm	a mm	Rotational speed max. r/min	Workpiece weight D max. kg	Workpiece weight d max. kg	True running accuracy mm	art.no.	€
MT3	80	30	23.82	86	78	60°	3500	450	250	max. 0.005	**401531** 0003	207,–
MT 4	100	30	31.26	101	92	75°	3000	650	300	max. 0.005	401531 0004	280,–
MT 5	125	50	44.39	92	82	75°	3000	1800	1400	max. 0.007	401531 0005	345,–
MT 6	150	50	63.34	112	102	75°	2800	2800	2000	max. 0.01	401531 0006	470,–

4110



RÖHM Constant CoE front face driver

- **Front face driver for turning and milling work**
- For efficiently turning workpieces along their entire length with high accuracy and without reclamping
- Simultaneously allows slots or toothing to be milled
- Developed with a modular concept, making the driving discs and corresponding centring points universally replaceable
- One unit consists of a base body, a driving disc and an appropriate centring point
- Technical pressure compensation produces equal clamping force even with uneven workpiece faces
- Spring-mounted centring point acts as a workpiece length stop on the front face
- Workpiece weight max. 100 kg
- Clamping diameter Ø 8 - 80 mm

Complete set CoAE for clockwise rotation
Supplied with:
- 1x base body
- 3x centring point (centring Ø 6, 12, 16 mm)
- 4x driving disc (clamping Ø 12, 20, 32, 50 mm)
  Maximum turning Ø corresponds to double the clamping Ø
  E.g.: clamping Ø 32 mm, max. turning Ø 64 mm

Shank	art.no.	€
MT3	**402564** 0003	1.165,–
MT 4	402564 0004	1.195,–
MT 5	402564 0005	1.250,–

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Carbide driving plates

L mm	H mm	Clockwise and anti-clockwise rotation art.no.	€
6	3.2	**401582** 0060	7,19
9.5	3.2	401582 0095	10,60

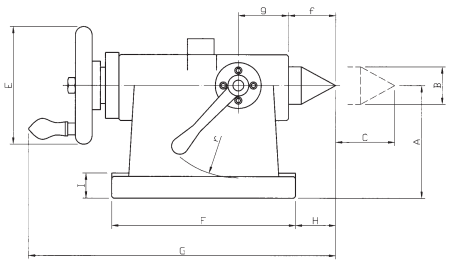
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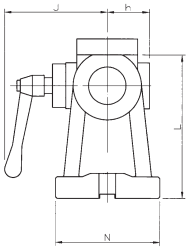


Clockwise and anti-clockwise rotation

Tailstock for dividing attachments and rotary tables

- **With sleeve MT3**
- Ultra-precise design
- No height adjustment
- For mounting MT3 centring points (not supplied)







Tailstock with slot size 18 H7

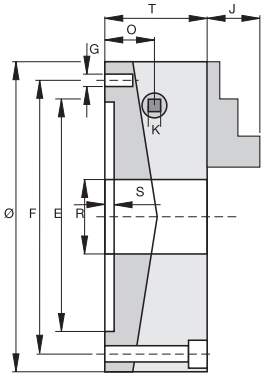
A mm	B mm	C mm	E mm	F mm	G mm	H mm	I mm	J mm	N mm	f mm	g mm	h mm	r mm	Weight kg	art.no.	€
135	Ø14	55	125	215	332	25	25	109	120	40	69	44	80	21	**458053** 0135	670,–
160	Ø18	55	140	230	356	30	30	129	130	45	70	52	95	23	458053 0160	778,–
210	Ø18	55	140	230	356	30	30	129	146	45	70	52	95	29.4	458053 0210	830,–

4166

Universal lathe chuck

DIN 6350A

- **Made from cast iron**
- **CUSHMAN system, centric clamping**
- **With straight centre mount in accordance with DIN 6350**
- Made from fine-pored special cast iron
- For external and internal workpiece clamping
- **Supplied with:**
  Chuck key and attachment screws
  One set of boring jaws (stepped outward)
  One set of turning jaws (stepped inward)
- Additional chuck sizes and chucks with integrated short tapers are available on request

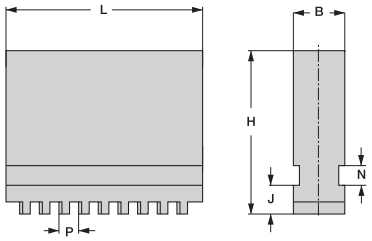




Nominal Ø mm	F mm	E mm	R mm	T mm	J mm	G mm	O mm	S mm	K mm	Rotational speed max. r/min	True running accuracy mm	Three-jaw vers. art.no.	€	Four-jaw vers. art.no.	€
125	108	95 H7	32	58	19	3xM8	22	4	8	5500	0.04	**405001** 0125	269,–	**405003** 0125	330,–
160	140	125 H7	42	62	23	3xM10	22	4	9	4500	0.04	405001 0160	315,–	405003 0160	342,–
200	176	160 H7	55	76	29	3xM10	27.5	4	11	4000	0.06	405001 0200	390,–	405003 0200	439,–
250	224	200 H7	76	82	33	3xM12	29.5	5	12	3500	0.06	405001 0250	579,–	405003 0250	645,–
315	286	260 H7	103	100	40	3xM16	35	5	14	2500	0.08	405001 0315	979,–	405003 0315	1.509,–
400	362	330 H7	136	110	50	3xM16	39	5	17	2000	0.08	405001 0400	1.399,–	405003 0400	1.599,–
												4113		4113	

Block jaws, type MC

- **Sharpened, can be hardened**
- Prices per set



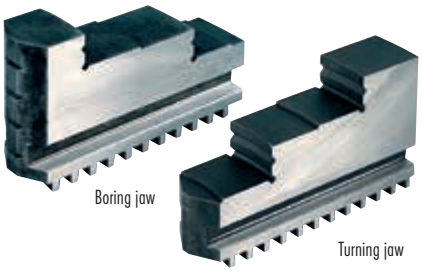


suitable for chuck size	L mm	B mm	H mm	J mm	N mm	P mm	Set of 3 jaws art.no.	€	Set of 4 jaws art.no.	€
100	43.2	14	34.9	5.9	7	6	**420126** 7100	40,70	**420127** 7100	55,30
125	53.2	16	36.9	5.9	7	6	420126 7125	43,50	420127 7125	59,10
160	67.9	18	43.1	7.4	7	6	420126 7160	49,30	420127 7160	66,40
200	75.9	22	55.1	9.9	8	8	420126 7200	84,20	420127 7200	95,50
250	99.4	25	59.1	9.9	8	8	420126 7250	111,–	420127 7250	148,–
315	124	32	72.4	11.9	12	10	420126 7315	120,–	420127 7315	160,–
400	153.5	32	87.4	14.9	12	12	420126 7400	146,–	420127 7400	195,–
							4113		4113	

Spare jaws for 3 and 4-jaw lathe chucks, ground

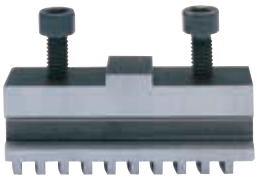
- Prices per set

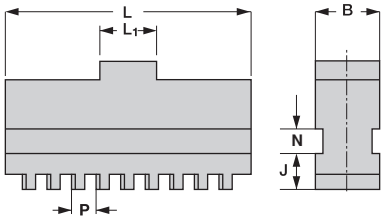
Nominal Ø mm	3 boring jaws art.no.	€	3 turning jaws art.no.	€	4 boring jaws art.no.	€	4 turning jaws art.no.	€
100	**420199** 1100	64,30	**420199** 2100	64,30	**420199** 4100	82,30	**420199** 5100	82,30
125	420199 1125	69,40	420199 2125	69,40	420199 4125	88,60	420199 5125	88,60
160	420199 1160	73,30	420199 2160	73,30	420199 4160	95,20	420199 5160	95,20
200	420199 1200	88,–	420199 2200	88,–	420199 4200	118,50	420199 5200	114,–
250	420199 1250	119,60	420199 2250	119,60	420199 4250	154,–	420199 5250	154,–
315	420199 1315	191,–	420199 2315	191,–	420199 4315	250,–	420199 5315	250,–
400	420199 1400	266,50	420199 2400	266,50	420199 4400	346,–	420199 5400	346,–
	4113		4113		4113		4113	



Base jaws, type GB

- With cross tenon
- **Hardened and ground**
- Supplied with fastening screws
- Prices per set

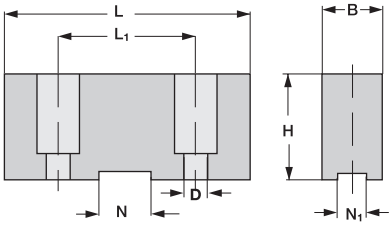




suitable for chuck size	L1 mm	P mm	N mm	J mm	B mm	L mm	Set of 3 jaws art.no.	€	Set of 4 jaws art.no.	€
100	10	6	7	5.9	14	43	**420120** 7100	75,50	**420121** 7100	110,60
125	12	6	7	5.9	16	52	420120 7125	76,60	420121 7125	116,50
160	12	6	7	7.4	18	64	420120 7160	86,20	420121 7160	113,50
200	14	8	8	9.9	22	77	420120 7200	95,80	420121 7200	125,50
250	14	8	8	9.9	25	101	420120 7250	120,20	420121 7250	167,50
315	20	10	12	11.9	32	125	420120 7315	192,–	420121 7315	249,–
400	20	12	12	14.9	32	150	420120 7400	268,–	420121 7400	349,–
							4113		4113	

Top jaws, type PW

- **Version with cross tenon**
- Material C15
- Prices per set





suitable for chuck size	N mm	L mm	L1 mm	D mm	B mm	N1 mm	H mm	Set of 3 jaws art.no.	€	Set of 4 jaws art.no.	€
100	10	50	20	5.3	20	14	20	**420160** 7100	40,20	**420161** 7100	53,20
125	12	65	28	5.3	20	16	25	420160 7125	34,20	420161 7125	45,30
160	12	75	38	6.4	23	18	36	420160 7160	37,90	420161 7160	50,30
200	14	95	48	10.5	28	22	40	420160 7200	45,90	420161 7200	60,80
250	14	120	55	10.5	32	25	40	420160 7250	58,30	420161 7250	77,30
315	20	140	60	13	42	32	52	420160 7315	76,30	420161 7315	101,50
400	20	165	70	13	42	32	70	420160 7400	131,–	420161 7400	174,–
								4113		4113	

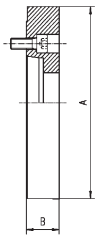


Flange for lathe chucks and face plates

- **DIN 55026 with through-hole for direct connection to the spindle head**
- **DIN 55027 for bayonet-type disc fastening with stay bolts and collar nut**
- **DIN 55029 Camlock version with Camlock bolt**
- Steel design
- Machined on the machine side
- Faced on the chuck side
- Other taper and chuck sizes available on request

DIN 55026

- Short taper holder machined in accordance with DIN 55026 (A2)
- Faced on the chuck side
- Without attachment screws



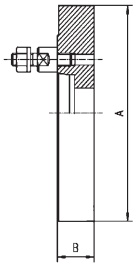


for chuck Ø mm	Taper size	A mm	B mm	Through-hole mm	art.no.	€
160	5	162	23	79.5	**405026** 1605	103,–
200	5	203	23	79.5	405026 2005	147,–
200	6	203	23	103	405026 2006	147,–
250	6	253	28	103	405026 2506	191,–
250	8	253	28	136.2	405026 2508	191,–
315	6	318	35	103	405026 3106	335,–
315	8	318	35	136.2	405026 3108	335,–
400	6	405	35	103	405026 4006	519,–
400	8	405	35	136.2	405026 4008	519,–

4174

DIN 55027

- Short taper holder machined in accordance with DIN 55026
- Faced on the chuck side
- Includes stay bolt and collar nut



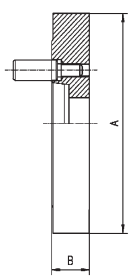


for chuck Ø mm	Taper size	A mm	B mm	Through-hole mm	art.no.	€
125	3	127	20	51.4	**405027** 1203	97,–
125	4	127	20	61	405027 1204	97,–
160	4	162	23	61	405027 1604	103,–
160	5	162	23	79.5	405027 1605	103,–
200	5	203	23	79.5	405027 2005	147,–
200	6	203	23	103	405027 2006	147,–
250	6	253	28	103	405027 2506	191,–
250	8	253	28	136.2	405027 2508	191,–
315	6	318	35	103	405027 3106	335,–
315	8	318	35	136.2	405027 3108	335,–
400	8	405	35	136.2	405027 4008	539,–
400	11	405	35	192.8	405027 4011	539,–

4174

DIN 55029 Camlock

- Short taper holder machined in accordance with DIN 55029 Camlock
- Faced on the chuck side
- Includes Camlock bolt





for chuck Ø mm	Taper size	A mm	B mm	Through-hole mm	art.no.	€
125	3	127	28	51.4	**405029** 1203	97,–
125	4	127	28	61	405029 1204	97,–
160	4	162	29	61	405029 1604	103,–
160	5	162	32	79.5	405029 1605	103,–
200	5	203	32	79.5	405029 2005	147,–
200	6	203	39	103	405029 2006	147,–
250	6	253	39	103	405029 2506	191,–
250	8	253	42	136.2	405029 2508	191,–
315	6	318	42	103	405029 3106	340,–
315	8	318	45	136.2	405029 3108	340,–
400	8	405	45	136.2	405029 4008	589,–
400	11	405	49	192.8	405029 4011	649,–

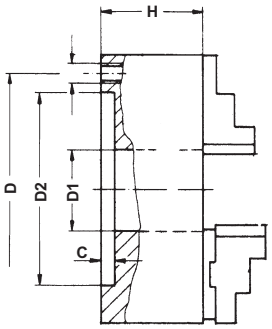
4174

RÖHM Universal lathe chuck ZS



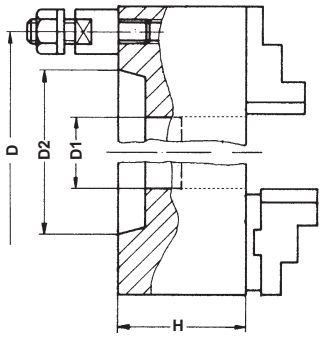
- Die-forged steel body and spiral ring
- High clamping force
- Extra-low design for minimal protruding contours
- Chuck jaws ground-off for smooth running
- Balanced out and hardened
- **Supplied with socket spanner, drilling and turning jaws**
- **Additional versions available on request**

Lathe chuck with straight holding fixture in accordance with DIN 6350



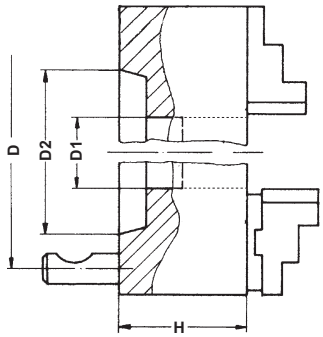
Chuck Ø mm	D mm	D1 mm	D2 mm	H mm	C mm	G mm	Three-jaw chuck art.no.	€	Four-jaw chuck art.no.	€
80	67	19	56	39.5	3	3 x M6	**407102** 0080	368,–		
100	83	20	70	50	3	3 x M8	407102 0100	400,–	**409102** 0100	470,–
125	108	32	95	56	4	3 x M8	407102 0125	500,–	409102 0125	587,–
160	140	42	125	65	4	3 x M10	407102 0160	640,–	409102 0160	751,–
200	176	55	160	73.5	4	3 x M10	407102 0200	840,–	409102 0200	985,–
250	224	76	200	82	5	3 x M12	407102 0250	1.100,–	409102 0250	1.295,–
315	286	103	260	95	5	3 x M16	407102 0315	1.635,–	409102 0315	1.930,–
							4189		4189	

Lathe chuck with stay bolts and collar nut according to DIN 55027



Chuck Ø mm	Taper size	D mm	D1 mm	D2 mm	H mm	Three-jaw chuck art.no.	€	Four-jaw chuck art.no.	€
125	4	85	32	63.5	69	**407105** 4125	525,–	**409105** 4125	617,–
160	4	85	42	63.5	66	407105 4160	672,–	409105 4160	788,–
160	5	104.8	42	82.5	66	407105 5160	672,–	409105 5160	788,–
200	5	104.8	55	82.5	74.5	407105 5200	881,–	409105 5200	1.035,–
200	6	133.4	55	106.4	74.5	407105 6200	881,–	409105 6200	1.035,–
250	6	133.4	76	106.4	83	407105 6250	1.160,–	409105 6250	1.365,–
250	8	171.4	76	139.7	83	407105 8250	1.160,–	409105 8250	1.365,–
315	6	133.4	103	106.4	96	407105 6315	1.720,–	409105 6315	2.020,–
315	8	171.4	103	139.7	96	407105 8315	1.720,–	409105 8315	2.020,–
315	11	235	103	196.9	96	407105 1315	1.720,–	409105 8400	2.020,–
						4189		4189	

Lathe chuck with stay bolts for Camlock according to DIN 55029



Chuck Ø mm	Taper size	D mm	D1 mm	D2 mm	H mm	Three-jaw chuck art.no.	€	Four-jaw chuck art.no.	€
125	4	82.5	32	63.5	69	**407106** 4125	549,–	**409106** 4125	647,–
160	4	82.5	42	63.5	66	407106 4160	704,–	409106 4160	825,–
160	5	104.8	42	82.5	66	407106 5160	704,–	409106 5160	825,–
200	5	104.8	55	82.5	74.5	407106 5200	923,–	409106 5200	1.085,–
200	6	133.4	55	106.4	74.5	407106 6200	923,–	409106 6200	1.085,–
250	6	133.4	76	106.4	83	407106 6250	1.210,–	409106 6250	1.425,–
250	8	171.4	76	139.7	83	407106 8250	1.210,–	409106 8250	1.425,–
315	8	171.4	103	139.7	96	407106 8315	1.805,–	409106 8315	2.120,–
315	11	235	103	196.9	104	407106 1315	1.805,–	409106 1315	2.120,–
						4189		4189	

Continued on next page >>>

Block jaws BL

- **can be hardened**
- **Suitable for Röhm ZS and ZG lathe chucks**
- Material 16MnCr5
- Price per set



for chuck Ø mm	L mm	B mm	H mm	Three-jaw chuck art.no.	€	Four-jaw chuck art.no.	€
80	37	12	26	**421210** 0080	81,80	**421211** 0080	110,–
100	48	14	33.5	421210 0100	81,80	421211 0100	110,–
125	52	18	41.5	421210 0125	81,80	421211 0125	110,–
160	61	18	47.5	421210 0160	89,50	421211 0160	119,–
200	69	20	53.5	421210 0200	107,–	421211 0200	142,–
250	90	24	67.5	421210 0250	123,–	421211 0250	166,–
315	130	34	79.5	421210 0315	186,–	421211 0315	248,–
				4189		4189	

Turning jaws DB

- **hardened**
- **Suitable for Röhm ZS and ZG lathe chucks**
- Material 16MnCr5
- Price per set



for chuck Ø mm	L mm	B mm	H mm	Three-jaw chuck art.no.	€	Four-jaw chuck art.no.	€
80	37	12	26	**421018** 0080	122,–	**421118** 0080	163,–
100	48	14	33.5	421018 0100	122,–	421118 0100	163,–
125	52	18	41.5	421018 0125	122,–	421118 0125	163,–
160	61	18	47.5	421018 0160	135,–	421118 0160	180,–
200	69	20	53.5	421018 0200	159,–	421118 0200	213,–
250	90	24	67.5	421018 0250	186,–	421118 0250	248,–
315	130	34	79.5	421018 0315	279,–	421118 0315	371,–
				4189		4189	

Reversible top jaws UB

- **hardened**
- **Suitable for Röhm ZS and ZG lathe chucks**
- Material 16MnCr5
- Price per set



for chuck Ø mm	L mm	B mm	H mm	Three-jaw chuck art.no.	€	Four-jaw chuck art.no.	€
100	47	22	29.5	**421017** 0100	169,–	**421117** 0100	224,–
125	56	26	37.5	421017 0125	169,–	421117 0125	224,–
160	66.7	28	41.5	421017 0160	169,–	421117 0160	224,–
200	79.5	30	42.5	421017 0200	176,–	421117 0200	234,–
250	95.3	36	52.5	421017 0250	186,–	421117 0250	248,–
315	109.5	42	57.5	421017 0315	279,–	421117 0315	371,–
				4189		4189	

Base jaws GB

- **hardened**
- **Suitable for Röhm ZS and ZG lathe chucks**
- including cylinder screws DIN 912-12.9
- Material 16MnCr5
- Price per set



for chuck Ø mm	L mm	B mm	H mm	Three-jaw chuck art.no.	€	Four-jaw chuck art.no.	€
100	46	14	19.5	**421015** 0100	201,–	**421115** 0100	269,–
125	55	18	24	421015 0125	201,–	421115 0125	269,–
160	65	18	27	421015 0160	201,–	421115 0160	269,–
200	78	20	28	421015 0200	211,–	421115 0200	282,–
250	92	24	35	421015 0250	222,–	421115 0250	296,–
315	108	34	40	421015 0315	334,–	421115 0315	446,–
				4189		4189	

Unstepped top jaws AB

- **can be hardened, with cross tenon**
- **Suitable for Röhm ZS and ZG lathe chucks**
- Material 16MnCr5
- Price per set



for chuck Ø mm	L mm	B mm	H mm	Three-jaw chuck art.no.	€	Four-jaw chuck art.no.	€
100	53	22.5	30	**421016** 0100	61,90	**421116** 0100	82,90
125	62	26.5	38	421016 0125	61,90	421116 0125	82,90
160	74	28.5	42	421016 0160	38,20	421116 0160	50,90
200	87	30.5	43	421016 0200	40,30	421116 0200	54,20
250	103	36.5	53	421016 0250	61,90	421116 0250	82,90
315	120	42.5	58	421016 0315	92,90	421116 0315	123,–
				4189		4189	

Boring jaws BB

- **hardened**
- **Suitable for Röhm ZS and ZG lathe chucks**
- Material 16MnCr5
- Price per set



for chuck Ø mm	L mm	B mm	H mm	Three-jaw chuck art.no.	€	Four-jaw chuck art.no.	€
80	37	12	26	**421019** 0080	122,–	**421119** 0080	163,–
100	48	14	33.5	421019 0100	122,–	421119 0100	163,–
125	52	18	41.5	421019 0125	122,–	421119 0125	163,–
160	61	18	47.5	421019 0160	135,–	421119 0160	180,–
200	69	20	53.5	421019 0200	159,–	421119 0200	213,–
250	90	24	67.5	421019 0250	186,–	421119 0250	248,–
315	130	34	79.5	421019 0315	279,–	421119 0315	371,–
				4189		4189	

RÖHM Wedge bar chuck DURO-T

DIN 6350A DIN 55027

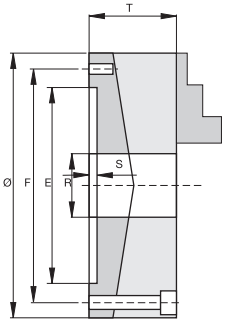


- **With jaw safety mechanism, centric clamping**
- Higher clamping forces
- Stiffer chuck body (guaranteed accuracy at higher loads)
- Chuck body fully surface-hardened
- High jaw change repeatability
- Optimised wearing parts (e.g. safety shut-off valve)
- True running and axial run-out tolerance twice as accurate as specified by DIN accuracy class 1
- Enhanced corrosion protection
- Compatible with base and top jaws from other manufacturers
- **Supplied with safety key (as demanded by EN 1550), set of reversible one-piece jaws or set of base jaws with reversible top jaws**



With straight centre mount, DIN 6350 A

Ø mm	Clamping range mm	R mm	T mm	E H6 mm	S mm	F mm	Weight kg	with reversible jaws art.no.	€	Sliding + top jaws. art.no.	€
160	5 - 161	42	63	145	5	125	9.5	**405012** 0160	1.960,–	**405013** 0160	2.070,–
200	7 - 207	52	81	185	5	160	20	405012 0200	2.110,–	405013 0200	2.225,–
250	8 - 253	62	92	235	6	200	35	405012 0250	2.760,–	405013 0250	2.905,–
315	12 - 323	87	111	300	6	250	64	405012 0315	4.115,–	405013 0315	4.730,–
								4189		4189	



With short taper holding fixture, DIN 55027

Ø mm	Clamping range mm	R mm	T mm	Taper size	Largest taper Ø mm	Weight kg	with reversible jaws art.no.	€	Sliding + top jaws. art.no.	€
160	5 - 161	42	63	5	82.563	9.5	**405014** 1160	2.050,–	**405015** 1160	2.370,–
200	7 - 207	52	81	5	82.563	20	405014 0200	2.225,–	405015 0200	2.555,–
200	7 - 207	52	81	6	106.375	20	405014 1200	2.225,–	405015 1200	2.555,–
250	8 - 253	62	92	6	106.375	35	405014 0250	2.895,–	405015 0250	3.345,–
250	8 - 253	62	92	8	139.719	35	405014 1250	2.895,–	405015 1250	3.345,–
315	12 - 323	87	111	8	139.719	64	405014 1315	4.325,–	405015 1315	4.965,–
							4189		4189	

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One-piece block jaw, unstepped, can be hardened

- Suitable for RÖHM-DURO, FORKARDT-F and SCHUNK-ROTA-S
- Price per 3-piece set

suitable for chuck size	L mm	B mm	H mm	art.no.	€
160	84.4	20	45	**420130** 0160	223,–
200	98.4	22	60	420130 0200	234,–
250	118.7	26	70	420130 0250	247,–
315	136.6	32	79	420130 0315	370,–

4189

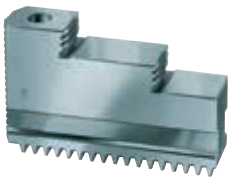


One-piece reversible jaw, hardened

- Suitable for RÖHM-DURO, FORKARDT-F and SCHUNK-ROTA-S
- Price per 3-piece set

suitable for chuck size	L mm	B mm	H mm	Step height mm	Type	art.no.	€
160	77.7	20	45	7.5	Three-level	**420180** 0160	335,–
200	94.7	22	60	10	Three-level	420180 0200	352,–
250	114	26	70	14	Two-level	420180 0250	370,–
315	130	32	79	15	Two-level	420180 0315	556,–

4189



Top jaw, unstepped, can be hardened

- Suitable for RÖHM-DURO, FORKARDT-F and SCHUNK-ROTA-S
- Price per 3-piece set

suitable for chuck size	L mm	B mm	H mm	Hole distance mm	Groove width mm	L1 mm	L2 mm	Weight kg	h1 mm	art.no.	€
160	85	20	40	32	8	25	18	1.2	35.5	**420215** 0160	33,90
200	105	22	51	40	10	34	20	2	47	420215 0200	41,60
250	125	30	55	40	12	36	20	3.6	50	420215 0250	66,50
315	145	40	60	54	12	45	26	5.8	54	420215 0315	92,–

4166



Reversible top jaw, hardened

- Suitable for RÖHM-DURO, FORKARDT-F and SCHUNK-ROTA-S
- Price per 3-piece set

suitable for chuck size	L mm	B mm	H mm	Hole distance mm	Step height mm	Groove width mm	art.no.	€
200	70.5	24.4	38	40	10	10	**420145** 0200	176,–
250	92	34.4	50	40	14	12	420145 0250	186,–
315	107	35.7	56	54	15	12	420145 0315	279,–

4189

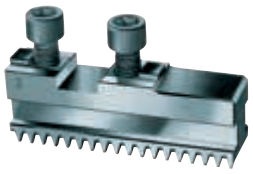


Base jaw, hardened

- Suitable for RÖHM-DURO, FORKARDT-F and SCHUNK-ROTA-S
- Price per 3-piece set

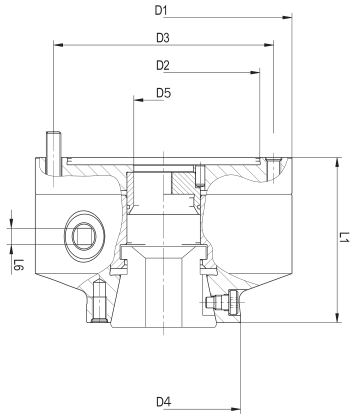
suitable for chuck size	L mm	B mm	H mm	Hole distance mm	Groove width mm	L2 mm	art.no.	€
160	74	20	29.5	32	8	8	**420260** 0160	201,–
200	90	22	35	40	12	10	420260 0200	211,–
250	110	26	40	40	12	12	420260 0250	222,–
315	125	32	46	54	12	12	420260 0315	334,–

4166



RÖHM Manual collet chuck Captis-M

- Suitable for rotary and stationary machining
- Precise concentricity and repetition precision
- Uniform force distribution due to surrounding clamping
- Robust clamping thanks to axial infeed
- Compact design for optimal workpiece accessibility
- For clamping heads with manual changing fixture
- Also suitable for quick-change system ABSIS-C mandrel

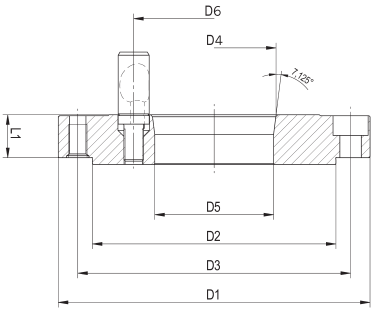




Mechanical design

for type	D1 mm	D2 mm	D3 mm	D4 mm	D5 mm	L1 mm	L6 mm	Rotational speed max. r/min	art.no.	€
SK42	160	125	140	106	42.5	100	10	4500	**407500** 0042	1.785,–
SK52	160	125	140	106	52.5	100	10	4500	407500 0052	1.865,–

4197

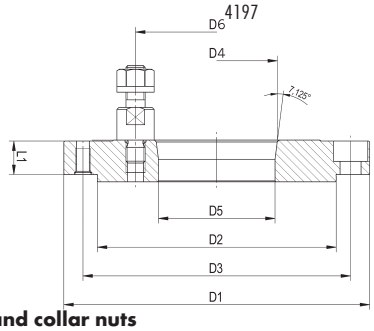




Flange in accordance with DIN55029 Camlock holding fixtures

D1 mm	D2 mm	D3 mm	D4 mm	D5 mm	D6 mm	L1 mm	art.no.	€
160	125	140	63.513	61	82.6	22	**407501** 4204	259,–
160	125	140	82.563	97.6	104.8	25	407501 4205	315,–
181	125	140	106.375	103.2	133.4	35	407501 4206	352,–
225	125	140/200	139.719	136.2	171.4	37	407501 4208	414,–

4197

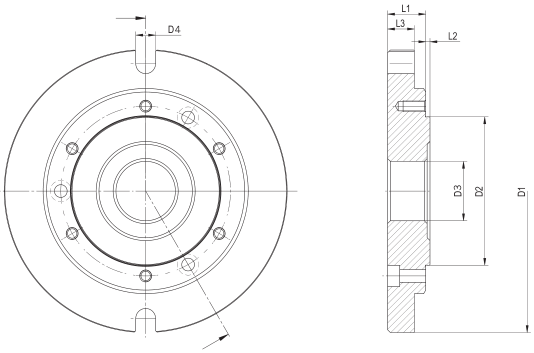




Flange in accordance with DIN 55027 with stay bolts and collar nuts

D1 mm	D2 mm	D3 mm	D4 mm	D5 mm	D6 mm	L1 mm	art.no.	€
160	125	140	63.513	61	82.6	18	**407502** 4204	227,–
160	125	140	82.563	79.6	104.8	18	407502 4205	238,–
170	125	140	106.375	103.2	133.4	20	407502 4206	259,–
220	125	140/195	139.719	100	171.4	32	407502 4208	326,–

4197





Base plate for stationary machining

D1 mm	D2 mm	D3 mm	D4 mm	L1 mm	L2 mm	L3 mm	art.no.	€
240	125	42	14	27	3	16	**407503** 0052	318,–

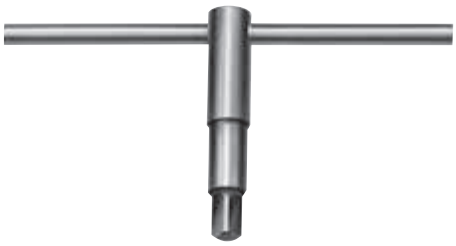
4189



Square pin key

DIN 905

- Special steel
- Shank and cross bar hardened and tempered to a burnished shade
- Pressed-in cross bar



Wr. width mm	Lateral shank length mm	Head Ø mm	Shank length mm	art.no.	€
4	160	12	60	**401574** 0004	17,15
5	160	12	60	401574 0005	16,25
6	160	12	80	401574 0006	16,90
7	160	14.6	80	401574 0007	19,85
8	180	16	80	401574 0008	18,50
9	180	16	80	401574 0009	19,70
10	200	20	100	401574 0010	23,05

4159

Wr. width mm	Lateral shank length mm	Head Ø mm	Shank length mm	art.no.	€
11	200	20	100	401574 0011	23,85
12	250	24	100	401574 0012	25,–
13	250	24	100	401574 0013	27,30
14	320	28	120	401574 0014	30,10
17	400	34	160	401574 0017	47,35
19	400	36	200	401574 0019	56,20

4159

Square ring spanner

DIN 248

- Special steel
- Hardened, tempered to a burnished tone
- Continuous interior quadratic



Wr. width mm	Head Ø mm	L mm	art.no.	€
8	17	160	**401576** 0008	29,85
10	21	195	401576 0010	31,45
12	24	235	401576 0012	33,75
14	27	270	401576 0014	39,05

4159

Wr. width mm	Head Ø mm	L mm	art.no.	€
17	31	315	401576 0017	58,30
19	35	345	401576 0019	63,50
22	39	385	401576 0022	78,80
24	43	415	401576 0024	83,40

4159

Square socket key

DIN 904

- Special steel
- Shank and cross bar hardened and tempered to a burnished shade
- Pressed-in cross bar



Wr. width mm	Lateral shank length mm	Head Ø mm	Shank length mm	art.no.	€
4	160	12	60	**401572** 0004	16,25
5	160	12	60	401572 0005	17,25
6	160	12	80	401572 0006	17,70
7	160	14.6	80	401572 0007	20,85
8	180	16	80	401572 0008	20,75
9	180	18	100	401572 0009	22,75

4159

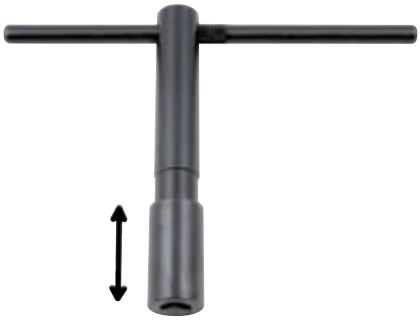
Wr. width mm	Lateral shank length mm	Head Ø mm	Shank length mm	art.no.	€
10	200	20	100	401572 0010	22,75
12	250	24	100	401572 0012	28,95
14	320	28	120	401572 0014	38,05
17	400	34	160	401572 0017	55,10
19	400	36	200	401572 0019	59,70

4159

ROHM Safety square pin key

DIN 905

- Special steel
- Shank and cross bar hardened and tempered to a burnished shade
- Designed to avoid being accidentally left in the lathe chuck



Wr. width mm	Shank length mm	for chuck Ø mm	art.no.	€
6	110	80 - 85	**401571** 0006	43,10
8	130	100 - 110	401571 0008	43,10
9	130	125 - 140	401571 0009	43,10
10	160	160	401571 0010	54,20
11	160	200 - 230	401571 0011	54,20
			4189	

Wr. width mm	Shank length mm	for chuck Ø mm	art.no.	€
12	160	250 - 270	401571 0012	65,30
14	200	315	401571 0014	76,30
17	250	400	401571 0017	110,–
19	250	500 - 630	401571 0019	153,–
			4189	

SARA® Hollow spindle stop

- **Not suitable for NC machines**
- Comprising clamping body, extension and special key
- For lathes
- For limiting lengths during one-off and mass production
- Special key for clamping in and releasing from the machine spindle



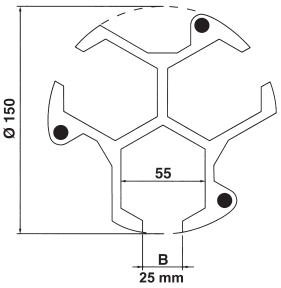
Clamping range mm	art.no.	€
20 - 27	**421302** 2027	110,–
25 - 33	421302 2533	127,–
32 - 41	421302 3241	135,–
40 - 50	421302 4050	158,–
	4166	

Clamping range mm	art.no.	€
48 - 60	421302 4860	179,–
58 - 76	421302 5876	210,–
75 - 96	421302 7596	290,–
94 - 110	421302 9411	355,–
	4166	

Workpiece stop

- **For three-jaw chucks, for clamping short parts**
- Material: Aluminium
- Three magnets for easy attachment to the lathe chuck
- Ground supporting surfaces
- Suitable for three-jaw chucks with jaw widths up to 55 mm, for Ø 15 - 130 mm workpieces
- The dimension W=25mm, must be milled in accordance with the jaw width







Individual

H mm	art.no.	€
15	**421300** 0015	66,50
20	421300 0020	66,50
25	421300 0025	72,50
30	421300 0030	72,50
35	421300 0035	75,–
	4153	



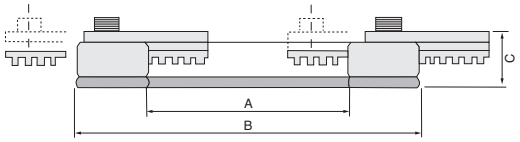
Set in a wooden box

Contents per set	art.no.	€
Workpiece stop H = 15, 20, 25, 30, 35 mm (1 of each)	**421301** 1535	345,–
	4153	

Unscrewing device for 3 jaw chucks

- For internal turning of soft turning jaws
- For regrinding hard turning jaws
- For external and internal workpiece clamping
- Infinitely variable adjusting range
- Quick diameter adjustment

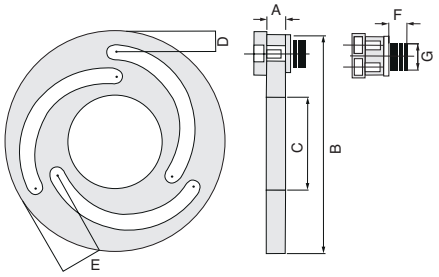




For manual chucks

for chuck Ø mm	A mm	B mm	C mm	Adjustment range mm	max. speed r/min	art.no.	€
125 - 200	100	170	26	56-124 / 134-200	800	**421306** 0006	539,–
160 - 250	125	200	26	85-150 / 170-230	700	421306 0008	579,–
200 - 315	160	248	31	100-190 / 220-300	600	421306 0010	699,–

4114





For power chucks

for chuck Ø mm	A mm	B mm	C mm	D mm	E mm	F mm	G mm	art.no.	€
135	12	140	60	12	28	9	13	**421307** 1005	217,–
170	12	168	80	12	32	9	16.5	421307 1006	239,–
210	12	218	115	15	36	9	18.5	421307 1008	263,–
254	12	258	150	17	40	9	18.5	421307 1010	285,–
300	15	316	188	21	50	9	22.5	421307 1012	440,–
380	20	380	230	23	52	16	31	421307 1015	819,–

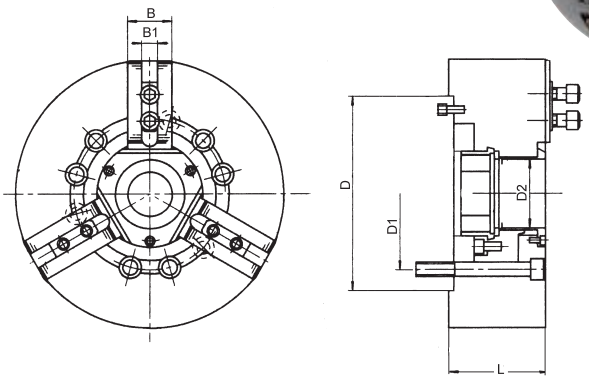
4114

Kitagawa EUROPE Wedge hook power chuck BR



- **Model BR**
- **Increased clearance**
- **Repeatability precision of below 10µm**
  Repeatability of below 10µm can be achieved when used with Go-Nuts slotting nuts and Kitagawa SB jaws. Turned soft jaws for different clamping diameters can thus be exchanged with accuracy. Saves time and money!
- **Patented base jaw: up to 10% increased clamp force at maximum rotational speeds**
- All-steel design
- Hardened and ground guides
- High true running accuracy
- Lubrication fitting in every base jaw
- Centre mount in accordance with DIN 6353
- Supplied without flange, **without top jaws,** with toothed base jaws 1.5mm x 60°, standard T-slot nuts, chuck and jaw fastening screws, non-threaded drawbar nuts, special assembly key
- **Threaded drawbar nuts available on request**





3-jaw version

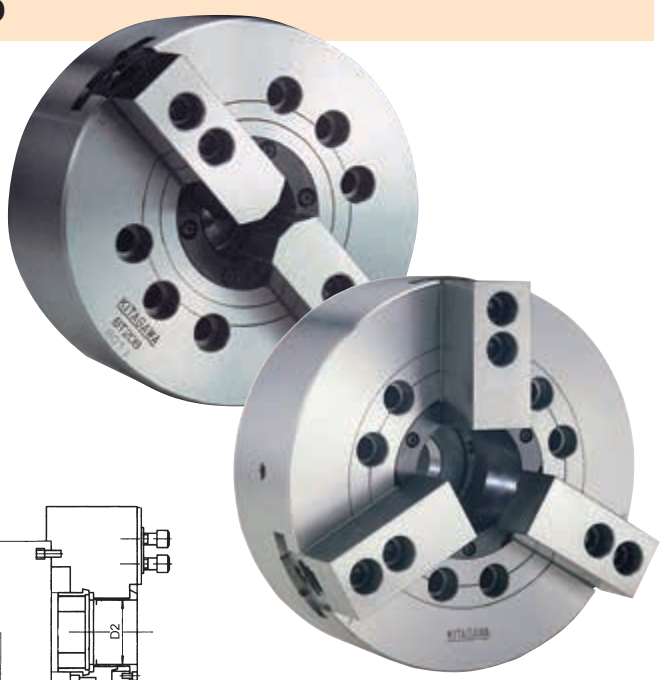
model	Chuck Ø mm	L mm	B mm	B1 H7 mm	D H6 mm	D1 mm	D2 mm	Jaw lift distance mm	Piston stroke mm	max. clamp force kN	max. actuating force kN	max. speed r/min	Clamping range mm	Weight kg	U max.	art.no.	€
BR 06	170	81	31	12	140	104.8	53	5.5 in Ø	12	58.5	23	6000	16 - 170	12.8	M60 x 2	**410102** 1006	2.388,–
BR 08	210	91	35	14	170	133.4	66	7.4 in Ø	16	90	35	5000	22 - 210	22.2	M75 x 2	410102 1008	2.727,–
BR 10	254	100	40	16	220	171.4	81	8.8 in Ø	19	123	49	4500	31 - 254	35.8	M90 x 2	410102 1010	3.092,–

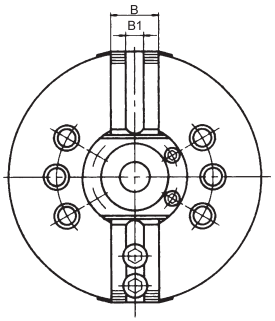
4114

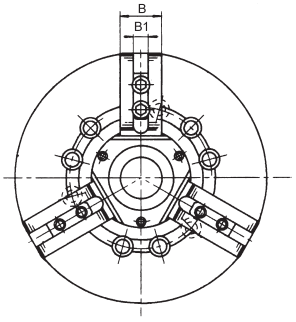
kitagawa EUROPE Wedge hook power chuck B/BT-200

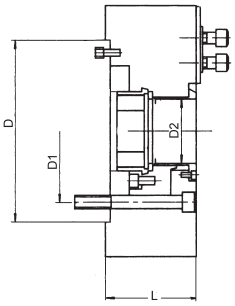
DIN 6353

- **Model B/BT-200**
- **Large through-hole**
- All-steel design
- Hardened and ground guides
- High true-running accuracy
- Lubrication fitting in every base jaw
- Centre mount in accordance with DIN 6353
- Supplied without flange and **without top jaws**; includes 1.5 mm x 60° toothed base jaws, T-slot nuts, chuck and jaw fastening screws, unthreaded drawbar nuts, special assembly key
- Further sizes and models available on request
- **Threaded drawbar nuts available on request**









2-jaw version

model	Chuck Ø mm	L mm	B mm	B1 H7 mm	D H6 mm	D1 mm	D2 mm	Jaw lift distance mm	Piston stroke mm	max. clamp force kN	max. actuating force kN	max. speed r/min	Clamping range mm	Weight kg	U max.	art.no.	€
BT-206	169	81	26	12	140	104.8	45	5.5	12	38	14.5	6000	14 - 169	11.5	M55 x 2	**410110** 0206	2.801,–
BT-208	210	91	35	14	170	133.4	52	7.4	16	57.3	23.2	5000	14 - 210	21.3	M60 x 2	410110 0208	2.665,–
BT-210	254	100	40	16	220	171.4	75	8.8	19	74	28.5	4200	31 - 254	33.5	M85 x 2	410110 0210	2.870,–
BT-212	304	110	50	21	220	171.4	91	106	23	96	36.7	3300	34 - 304	52	M100 x 2	410110 0212	3.770,–

4114

3-jaw version

model	Chuck Ø mm	L mm	B mm	B1 H7 mm	D H6 mm	D1 mm	D2 mm	Jaw lift distance mm	Piston stroke mm	max. clamp force kN	max. actuating force kN	max. speed r/min	Clamping range mm	Weight kg	U max.	art.no.	€
B-204	110	59	23	10	85	70.6	26	5.4	10	28.5	14	8000	7 - 110	4	M32 x 1.5	**410101** 0204	2.097,–
B-205	135	60	23	10	110	82.6	33	5.4	10	36	17.5	7000	12 - 135	6.7	M40 x 1.5	410101 0205	2.155,–
B-206	169	81	26	12	140	104.8	45	5.5	12	57	22	6000	16 - 168	11.9	M55 x 2	410101 0206	1.689,–
B-208	210	91	35	14	170	133.4	52	7.4	16	86	34.8	5000	13 - 210	22.3	M60 x 2	410101 0208	1.773,–
B-210	254	100	40	16	220	171.4	75	8.8	19	111	43	4200	31 - 254	34.5	M85 x 2	410101 0210	2.071,–
B-212	304	110	50	21	220	171.4	91	10.6	23	144	55	3300	34 - 304	55.3	M100 x 2	410101 0212	2.875,–

4114

kitagawa EUROPE Reversible top jaws, 1.5 mm x 60°

- **For chuck types: BT200 / B200 / BR**
- **hardened**
- material 16 MnCr 5
- price per set of 3 units
- **No reversible jaws available for BT204, BT205 and BT212**
- **other sizes can be found via the clamping jaw finder on our website**

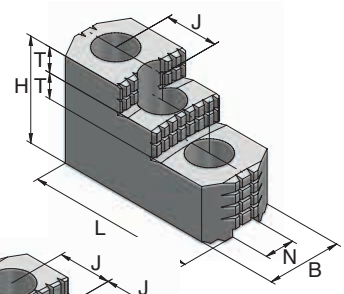


Fig. 1

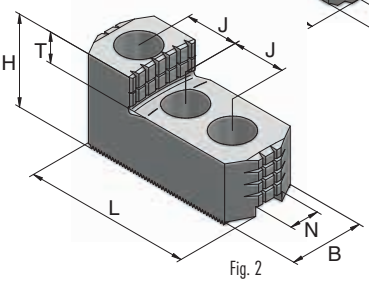


Fig. 2

for chuck Ø mm	B mm	H mm	L mm	T mm	N mm	J mm	Screw	Weight kg	Illustration	art.no.	€
169	31	36	67	12	12	20	M10	1	2	**420240** 0006	245,–
210	35	51	87	12	14	25	M12	2.5	1	420240 0008	365,–
254	40	54	101	13	16	30	M12	3.5	1	420240 0010	405,–
304	50	52	103	17	21	30	M16	4.3	2	420240 0212	370,–

4166

kitagawa EUROPE Top jaws, 1.5 mm x 60°

- **For chuck types: BT200 / B200 / BR**
- material C15
- price per set of 3 units
- **aluminium jaws and other sizes can be found via the clamping jaw finder on our website**

for chuck Ø mm	B mm	H mm	L mm	N mm	K+J mm	Screw	Weight kg	Illustration	art.no.	€
110/135	22	24	52	10	12+14	M8	0.5	2	**420210** 0205	48,50
110/135	24	50	52	10	12+14	M8	1.1	2	420210 2055	45,40
169	30	31	72	12	15+20	M10	1.2	1	420210 0006	40,50
169	30	31	82	12	15+20	M10	1.2	2	420210 0601	53,50
169	30	50	72	12	15+20	M10	2	2	420210 0650	57,50
210	35	37	95	14	24+25	M12	2.2	2	420210 0008	47,50
210	35	37	95	14	24+25	M12	2.2	1	420210 0108	47,90
210	35	37	102	14	20+25	M12	2.9	2	420210 0801	56,–
210	35	79	95	14	24+25	M12	5	2	420210 0810	60,50
254	40	42	110	16	30+30	M12	3.5	2	420210 0010	50,50
254	40	42	125	16	30+30	M12	4.1	2	420210 1001	60,–
254	40	60	90	16	21+30	M12	4.2	1	420210 1010	64,50
254	40	60	110	16	30+30	M12	5.2	2	420210 1060	64,50
254	40	79	110	16	30+30	M12	8.1	1	420210 1080	76,50
304	50	50	129	21	40+30	M16	6	1	420210 0212	66,–
304	50	50	145	21	30+30	M16	6.7	2	420210 2121	90,–
304	50	79	129	21	40+30	M16	9.7	1	420210 2128	124,–

4166

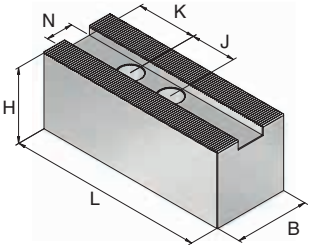


Fig. 1

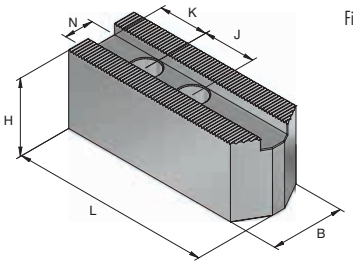
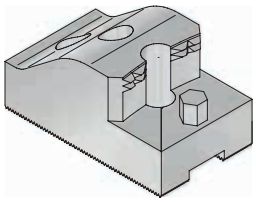


Fig. 2

kitagawa EUROPE Gripper top jaws for external clamping, 1.5 mm x 60°

- **For chuck types: B200 / BB200 / BR**
- **hardened**
- material 16MnCr5
- price per set of 3 units
- **Clamping range for BB200 and other sizes can be found via the clamping jaw finder on our website**



for chuck Ø mm	Clamping range mm	art.no.	€
169	26 - 51	**420370** 0605	304,60
169	41 - 67	420370 0606	304,60
169	57 - 83	420370 0608	304,60
169	71 - 97	420370 0609	304,60
169	87 - 113	420370 0611	304,60
169	113 - 139	420370 0613	304,60
210	34 - 64	420370 0806	319,80
210	61 - 91	420370 0809	319,80
210	91 - 121	420370 0812	319,80
210	121 - 152	420370 0815	319,80
210	143 - 174	420370 0817	319,80

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for chuck Ø mm	Clamping range mm	art.no.	€
210	180 - 211	420370 0821	319,80
254	42 - 82	420370 1008	358,20
254	83 - 124	420370 1012	358,20
254	127 - 168	420370 1016	358,20
254	172 - 213	420370 1021	358,20
254	207 - 248	420370 1025	358,20
304	47 - 110	420370 1211	427,–
304	107 - 170	420370 1217	427,–
304	173 - 237	420370 1224	427,–
304	237 - 301	420370 1230	427,–

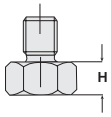
4166

Support bolts

- **Hardened, for gripper jaws**
- AF size: M6 = 10, M8 = 13
- Price per 3-piece set

H mm	Thread M6 art.no.	€	Thread M8 art.no.	€
5	**420175** 0005	16,70	**420176** 0005	16,70
10	420175 0010	16,70	420176 0010	16,70
15	420175 0015	16,70	420176 0015	19,20
20	420175 0020	16,70	420176 0020	20,40

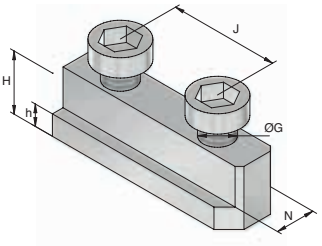
4166 4166





kitagawa EUROPE Slot nuts

- **For chuck types: BT200 / B200 / BR**
- Including cheese-head screws DIN 912-12.9
- Price per 3-piece set



for chuck Ø mm	H mm	h mm	N mm	J mm	G mm	Cyl. Screws DIN 912	art.no.	€
135	15	5.5	10	14	M8	M8 x 20	**420603** 0005	79,50
169	18.5	7.5	12	20	M10	M10 x 25	420603 0020	82,–
210	20.5	8.2	14	25	M12	M12 x 30	420603 0030	88,50
254	21.5	8.5	16	30	M12	M12 x 30	420603 0040	95,50
304	28	11.5	21	30	M16	M16 x 35	420603 0050	121,–
381	45.5	16.5	24/22	43	M20	M20 x 45	420603 0055	210,–

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Lubricant



410199 0010



4101990011

Grease gun

Contents	art.no.	€
200 ml	**410199** 0011	32,50
400 g	410199 0010	67,–

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410199 0013



410199 0012

Chuck grease

Contents	art.no.	€
1 kg	**410199** 0012	85,50
400 g	410199 0013	36,10

4114



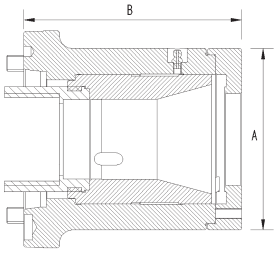
Lubrication fitting

Designation	art.no.	€
For Kitagawa power chucks	**410199** 0002	5,20

4114

kitagawa EUROPE CRL power-operated collet chuck

- All-steel design, hardened and precision-ground
- For multi-range and steel collets in accordance with DIN 6343, 173 E or 185 E
- 2 sizes: up to material Ø 42 mm, or up to material Ø 60 mm
- Other sizes for a maximum material Ø 36 mm, 54 mm and 66 mm are available on request
- Equipped for use with a length stop, but only in combination with multi-range collets.
- For bar work on CNC lathes
- Especially for high speeds and true-running accuracies
- Supplied with chuck fastening screws and thrust collar (unthreaded)
- Without collets
- **Threaded drawbar nuts available on request**







CRL-42 for 173E dead-length collets

model	Holding fixtures	A mm	B mm	U max.	max. actuating force kN	max. clamp force kN	max. speed r/min	Weight kg	Str. mount art.no.	€	Short taper art.no.	€
CRL-42	Straight	110	133	M55 x 1.5	25	55	7100	8.8	**415001** 0001	809,–		
CRL-42/5	Short taper size 5	110	143	M55 x 1.5	25	55	7100	8.4			**415010** 0005	859,–
CRL-42/6	Short taper size 6	110	145	M55 x 1.5	25	55	7100	10			415010 0006	859,–

4114 4114

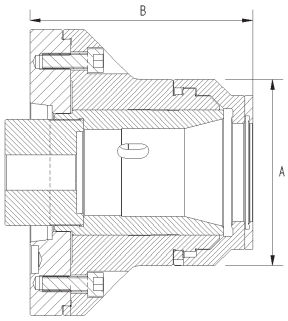
CRL-60 for 185E dead-length collets

model	Holding fixtures	A mm	B mm	U max.	max. actuating force kN	max. clamp force kN	max. speed r/min	Weight kg	Str. mount art.no.	€	Short taper art.no.	€
CRL-60	Straight	138	148	M70 x 1.5	30	60	6300	14.2	**415020** 0001	1.170,–		
CRL-60/6	Short taper size 6	138	160	M70 x 1.5	30	60	6300	14.2			**415030** 0006	1.170,–
CRL-60/8	Short taper size 8	138	156	M70 x 1.5	30	60	6300	17.7			415030 0008	1.170,–

4114 4114

kitagawa EUROPE QCRL / QD-CRL power-operated collet chuck

- **Model QD-CRL comes without a flange - direct short taper holding fixture included**
- **Bayonet fixing allows collets to be changed quickly**
- For Ø 42 mm (173E) up to Ø 60 mm (185E), version up to Ø 80 mm (193E) and
- collet reducer from 185E to 173E available on request
- For bar work on CNC lathes, especially for high speeds and true-running accuracies
- Supplied with chuck fastening screws and thrust collar (unthreaded), without collets
- **Threaded drawbar nuts available on request**







QCRL-42 for 173E dead-length collets

model	Holding fixtures	A mm	B mm	U max.	max. actuating force kN	max. clamp force kN	max. speed r/min	Weight kg	Str. mount art.no.	€	Short taper art.no.	€
QCRL-42	Straight Ø140	113	149	M58 x 1.5	25	55	7100	13.5	**415101** 0001	946,–		
QD-CRL-42/5	Short taper 5	113	143	M58 x 1.5	25	55	7100	13.5			**415110** 1005	922,–
QCRL-42/6	Short taper 6	113	143	M58 x 1.5	25	55	7100	13.5			415110 0006	983,–
									4114		4114	

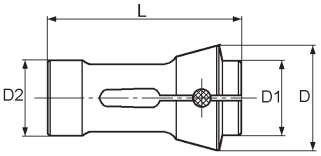
QCRL-60 for 185E dead-length collets

model	Holding fixtures	A mm	B mm	U max.	max. actuating force kN	max. clamp force kN	max. speed r/min	Weight kg	Str. mount art.no.	€	Short taper art.no.	€
QCRL-60	Straight Ø170	143	177	M75 x 1.5	30	60	6300	29	**415120** 0001	1.182,–		
QD-CRL-60/6	Short taper 6	143	171	M75 x 1.5	30	60	6300	29			**415130** 1006	1.232,–
QCRL-60/8	Short taper 8	143	171	M75 x 1.5	30	60	6300	29			415130 0008	1.344,–
									4114		4114	

FAHRION® PRAZISION Dead-length collets

DIN 6343

- Hardened and ground
- True running accuracy:
  Ø 1-10 mm ≤ 20 µm
  Ø 11-30 mm ≤ 30 µm
  Ø 31-60 mm ≤ 40 µm
- Collapse maximum 0.1 mm of nominal diameter
- Smooth bore up to Ø 8 mm, transverse grooves from Ø 9 mm
- Square/hex.: up to 12 mm = smooth bore, from 13 mm = with transverse grooves
- Collets with longitudinal and transverse grooving available on request, as well as multi-range collets in a variety of designs





Clamp Ø mm	173E round D=60 mm D1=50 mm D2=48 mm L=94 mm art.no.	€	173E square D=60 mm D1=50 mm D2=48 mm L=94 mm art.no.	€	173E hexagonal D=60 mm D1=50 mm D2=48 mm L=94 mm art.no.	€	185E round D=84 mm D1=73 mm D2=66 mm L=110 mm art.no.	€	185E square D=84 mm D1=73 mm D2=66 mm L=110 mm art.no.	€	185E hexagonal D=84 mm D1=73 mm D2=66 mm L=110 mm art.no.	€
1	**433035** 0010	108,50										
1.5	433035 0015	72,50										
2	433035 0020	72,50										
2.5	433035 0025	72,50										
3	433035 0030	54,50										
3.5	433035 0035	54,50										
4	433035 0040	54,50					**433041** 0040	115,–				
4.5	433035 0045	54,50										
5	433035 0050	54,50					433041 0050	115,–				
5.5	433035 0055	54,50										
6	433035 0060	54,50	**433037** 0060	95,50	**433039** 0060	95,50	433041 0060	115,–				
6.5	433035 0065	54,50										
7	433035 0070	54,50	433037 0070	79,–	433039 0070	79,–	433041 0070	115,–	**433043** 0070	139,50		
	4119		4119		4119		4119		4119		4119	

Clamp Ø mm	173E round D=60 mm D1=50 mm D2=48 mm L=94 mm		173E square D=60 mm D1=50 mm D2=48 mm L=94 mm		173E hexagonal D=60 mm D1=50 mm D2=48 mm L=94 mm		185E round D=84 mm D1=73 mm D2=66 mm L=110 mm		185E square D=84 mm D1=73 mm D2=66 mm L=110 mm		185E hexagonal D=84 mm D1=73 mm D2=66 mm L=110 mm	
	art.no.	€	art.no.	€	art.no.	€	art.no.	€	art.no.	€	art.no.	€
7.5	433035 0075	54,50										
8	433035 0080	54,50	433037 0080	79,–	433039 0080	79,–	433041 0080	115,–	433043 0080	139,50	**433045** 0080	139,50
9	433035 0090	54,50	433037 0090	79,–	433039 0090	79,–	433041 0090	115,–	433043 0090	139,50	433045 0090	139,50
10	433035 0100	54,50	433037 0100	79,–	433039 0100	79,–	433041 0100	115,–	433043 0100	139,50	433045 0100	139,50
11	433035 0110	54,50	433037 0110	79,–	433039 0110	79,–	433041 0110	115,–	433043 0110	139,50	433045 0110	139,50
12	433035 0120	54,50	433037 0120	79,–	433039 0120	79,–	433041 0120	115,–	433043 0120	139,50	433045 0120	139,50
13	433035 0130	54,50	433037 0130	79,–	433039 0130	79,–	433041 0130	115,–	433043 0130	139,50	433045 0130	139,50
14	433035 0140	54,50	433037 0140	79,–	433039 0140	79,–	433041 0140	115,–	433043 0140	139,50	433045 0140	139,50
15	433035 0150	54,50			433039 0150	79,–	433041 0150	115,–			433045 0150	139,50
16	433035 0160	54,50	433037 0160	79,–	433039 0160	79,–	433041 0160	115,–	433043 0160	139,50	433045 0160	139,50
17	433035 0170	54,50			433039 0170	79,–	433041 0170	115,–			433045 0170	139,50
18	433035 0180	54,50	433037 0180	79,–			433041 0180	115,–	433043 0180	139,50		
19	433035 0190	54,50			433039 0190	79,–	433041 0190	115,–			433045 0190	139,50
20	433035 0200	54,50	433037 0200	100,50			433041 0200	115,–	433043 0200	161,–		
21	433035 0210	54,50					433041 0210	115,–				
22	433035 0220	54,50	433037 0220	100,50	433039 0220	79,–	433041 0220	115,–	433043 0220	161,–	433045 0220	139,50
23	433035 0230	54,50					433041 0230	115,–				
24	433035 0240	54,50			433039 0240	79,–	433041 0240	115,–			433045 0240	139,50
25	433035 0250	54,50	433037 0250	100,50			433041 0250	115,–	433043 0250	161,–		
26	433035 0260	54,50					433041 0260	115,–				
27	433035 0270	54,50			433039 0270	79,–	433041 0270	115,–			433045 0270	139,50
28	433035 0280	54,50	433037 0280	100,50			433041 0280	115,–	433043 0280	161,–		
29	433035 0290	54,50					433041 0290	115,–				
30	433035 0300	54,50			433039 0300	100,50	433041 0300	115,–	433043 0300	187,–	433045 0300	161,–
31	433035 0310	54,50					433041 0310	115,–				
32	433035 0320	54,50			433039 0320	100,50	433041 0320	115,–	433043 0320	187,–	433045 0320	161,–
33	433035 0330	54,50					433041 0330	115,–				
34	433035 0340	54,50					433041 0340	115,–				
35	433035 0350	54,50					433041 0350	115,–				
36	433035 0360	54,50			433039 0360	100,50	433041 0360	115,–	433043 0360	187,–	433045 0360	161,–
37	433035 0370	54,50					433041 0370	115,–				
38	433035 0380	54,50					433041 0380	115,–			433045 0380	187,–
39	433035 0390	54,50					433041 0390	115,–				
40	433035 0400	54,50					433041 0400	115,–	433043 0400	187,–		
41	433035 0410	54,50					433041 0410	115,–			433045 0410	187,–
42	433035 0420	54,50					433041 0420	115,–				
43							433041 0430	115,–				
44							433041 0440	115,–				
45							433041 0450	115,–				
46							433041 0460	115,–			433045 0460	196,–
47							433041 0470	115,–				
48							433041 0480	115,–				
49							433041 0490	115,–				
50							433041 0500	115,–			433045 0500	196,–
51							433041 0510	115,–				
52							433041 0520	115,–				
53							433041 0530	115,–				
54							433041 0540	115,–				
55							433041 0550	115,–				
56							433041 0560	115,–				
57							433041 0570	115,–				
58							433041 0580	115,–				
59							433041 0590	115,–				
60							433041 0600	115,–				
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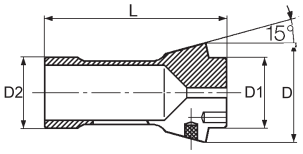


FAHRION® PRAZISION Emergency dead-length collets

DIN 6343

- **For internal turning**
- Hardened and tempered to approx. 45 HRC and fully ground
- Can be clamped in chucks using three removable alignment pins at the front, and can be machine-finished to the required bore diameter or with a stepped hole



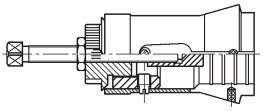


Designation	D mm	D1 mm	D2 mm	L mm	Ø mm	art.no.	€
173 E	60	50	48	94	Pre-drilled to Ø 3	**433047** 0030	67,50
185 E	84	73	66	110	Pre-drilled to Ø 4	433049 0040	139,–

4119

SARA® Internal stop for dead-length collets

- **For dead length collets in accordance with DIN 6343**
- No collet shank deformation or impact on clamping behaviour
- Can also be used as a limit stop for hollow parts
- Can be used with round, hexagonal and square collets





for collets	art.no.	€
173 E	**433052** 0173	140,–
185 E	433052 0185	153,–

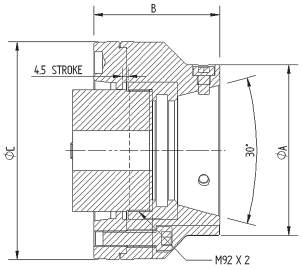
4120

kitagawa EUROPE DHP power-operated collet chuck

- **Model DHP65**
- Compact design
- High accuracy
- Ideal for use in initial machining due to axial tension
- Fully compatible with commercially available 65 mm clamping heads
- Easily adaptable to existing machinery
- DHP65 chucks are lightweight and can be fitted quickly
- Supplied without collets or changing fixtures; includes blank unthreaded drawbar nut
- Additional chucks available on request
- **Threaded drawbar nuts available on request**







Clamping Ø max. 65 mm

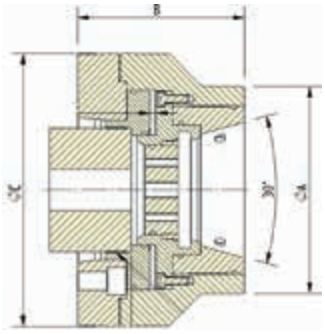
model	Holding fixtures	A mm	B mm	C mm	U max.	art.no.	€
DHP-65/5	Short taper 5	130	95	165	M70 x 2	**415201** 0005	935,–
DHP-65/6	Short taper 6	130	95	165	M85 x 2	415201 0006	935,–
DHP-65/8	Short taper 8	130	95	210	M85 x 2	415201 0008	1.057,–

4114

kitagawa EUROPE Power-operated collet chuck DKF

- **Model DKF65: clamp Ø max. 65 mm**
- Compact design
- High precision
- **Clamping without changing the axial position of the clamping head**
- Ideal for bar stock, secondary machining or inserts on a main or counter spindle
- Fully compatible with commercially available 65 mm clamping heads
- Easily adaptable to existing machinery
- Supplied without collets and switching equipment, includes blank unthreaded drawbar nut
- Threaded drawbar nuts available on request







DKF 65

- For clamping head size 65

model	Holding fixtures	A mm	B mm	C mm	U max.	art.no.	€
DKF65/Z140	Ø140	123	137.5	167	M75 x 2	**415204** 6514	1.787,–
DKF65/A5	Short taper 5	123	137.5	167	M74 x 2	415204 6505	1.724,–
DKF65/A6	Short taper 6	123	137.5	167	M75 x 2	415204 6506	1.758,–
DKF65/A8	Short taper 8	123	161.5	201.5	M75 x 2	415204 6508	1.793,–
						4114	

SARA® Clamping heads SK

- For all common axial clamping systems on lathes and vices
- Tried and tested, exceptionally stable rubber-metallic compound
- High retention forces
- **Version with transverse grooves and for multi-spindle lathes available on request**

Clamping heads with smooth bore
Please indicate clamping head Ø in mm as three-digit figure

- Order example SK42 **Ø 8.5** = 433060 1 **085**
- Order example SK65 **Ø 39.0** = 433060 4 **390**



Clamp Ø mm	**433060.... SK 42** €	**433060.... SK 65** €
4 - 5.5	136,–	
6 - 42	136,–	175,–
42.5 - 65		175,–
	4196	4196

Clamping heads with longitudinal and transverse grooves
Please indicate clamping head Ø in mm as three-digit figure

- Order example SK42 **Ø 11.5** = 433060 3 **115**
- Order example SK65 **Ø 48.0** = 433060 6 **480**



Clamp Ø mm	**433060.... SK 42** €	**433060.... SK 65** €
10	136,–	
11 - 42	136,–	175,–
43 - 65		175,–
	4196	4196

Manual changing fixture



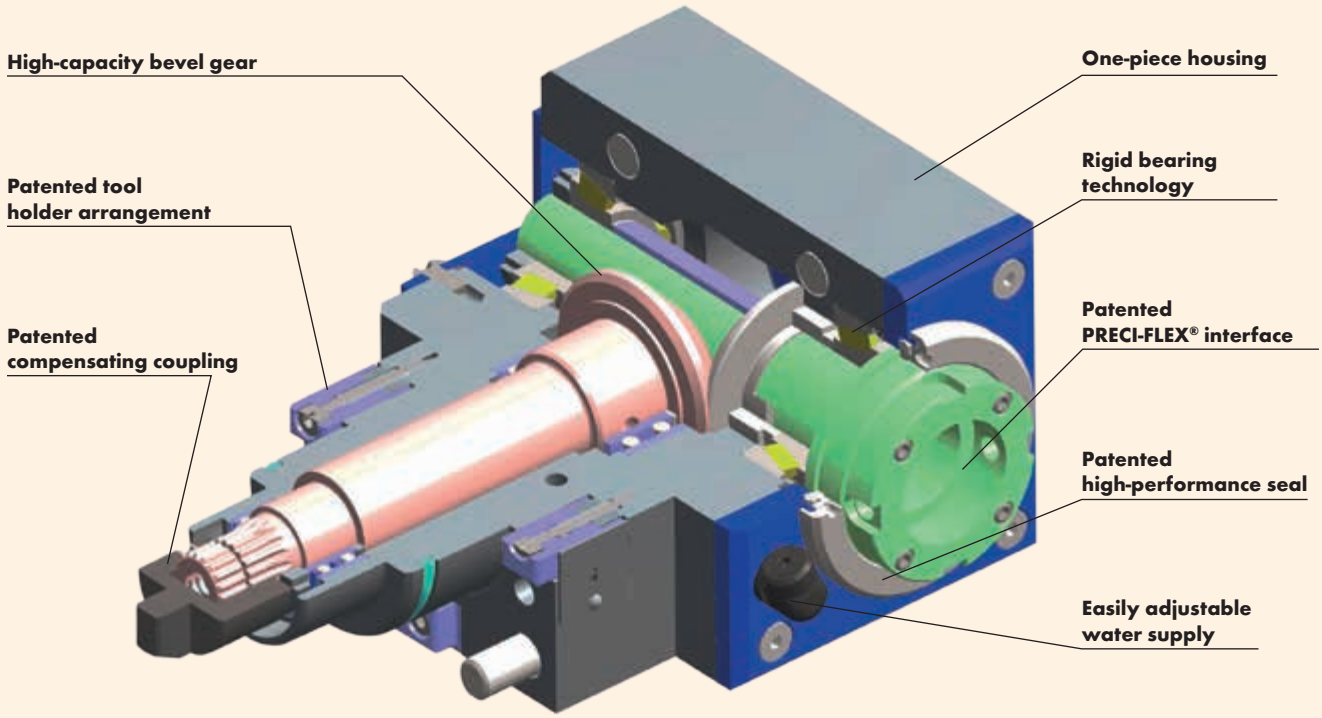
model	art.no.	€
MW 42	**433061** 0042	375,–
MW 65	433061 0065	385,–
	4196	

for CNC lathes
- Tools for complete production on CNC lathes
- Drilling, milling and thread cutting in one clamping operation
- Tools for axial or radial machining with the widest range of tool holders
- German production with in-house repair service

- **Use** with all common CNC lathes that are suitable for powered tools

- No conversion from turning to milling
- The widest variety of tools
- Lower fixture costs since second clamping is not required
- Compliance with the tightest shape and position tolerances as the workpiece is produced in a single clamping

Individual, no-obligation quotes for powered tools are available on request.



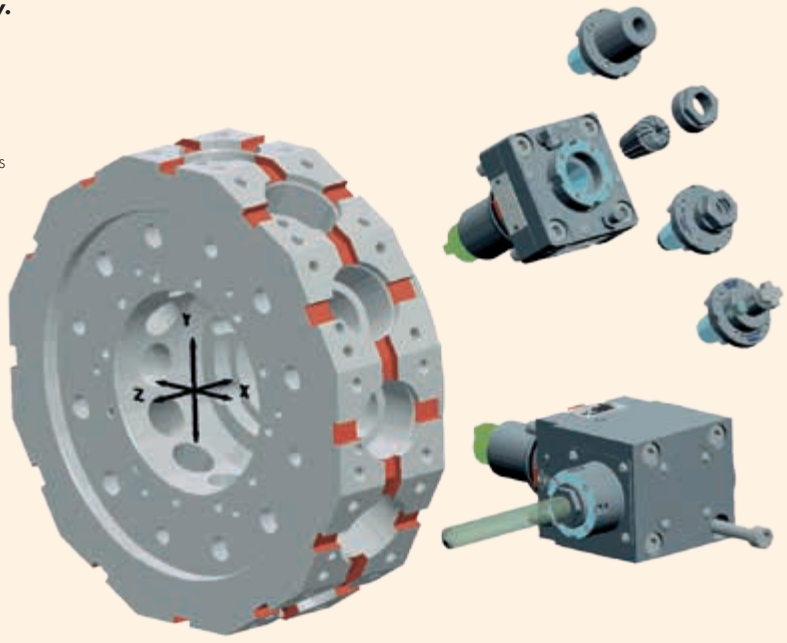
Revolver / tool concept

A very rigid and accurate system. Three important unmatched innovations for increased efficiency and productivity.

4 default slot nuts
- Simple conversion, no adjustment required
- Up to 300% greater repeatability compared with other systems
- Repeatability of the position <0.005 mm
- Alignment with the machine spindle <0.1 mm

Compensating coupling
- Floating drive, minimal clearance
- Vibration and noise reduction
- Simple maintenance, long service life
- Improved torque transfer
  Contact surface enhanced by 60%

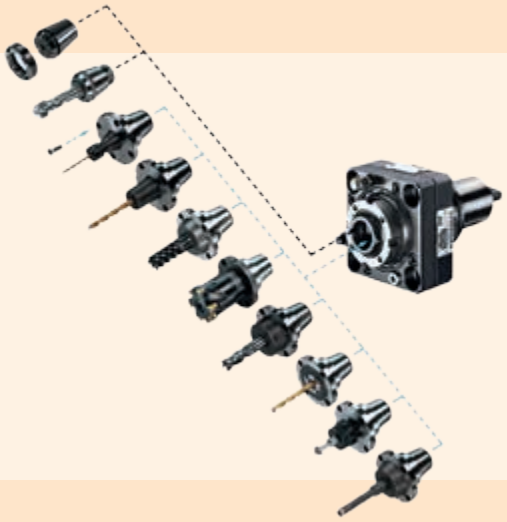
Rigid and flexible tool interface
- Use of standard collets and adapters
- Maximum accuracy
- Optimum rigidity and flexibility for heavy machining
- Greater machine output and lower production costs



EPPINGER SMARTER TOOLING SOLUTIONS PRECI-FLEX®

INFO

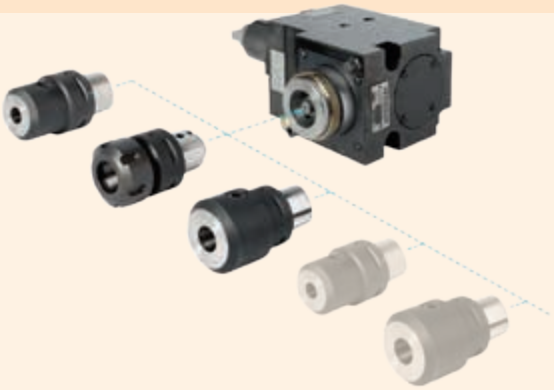
- The ESA Eppinger modular system creates completely new possibilities in precision, flexibility and efficiency.
- Interface based on standard collet mounts
- The benefits speak for themselves
- ER collet mount and PRECI-FLEX adapter in one tool holder
- maximum expansion capability
- taper/planar support, absolute precision
- very compact
- maximum rigidity, thus outstanding cutting performance
- long tool lives
- pre-settable
- quickly re-settable
- optimum efficiency



EPPINGER SMARTER TOOLING SOLUTIONS EPPINGER PSC

INFO

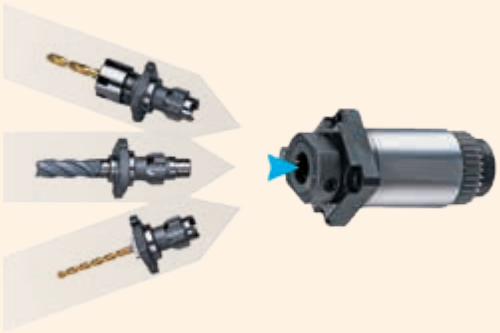
- world's shortest PSC interface
- lots of space – even for large workpieces
- compact design increases system rigidity and thus workpiece accuracy
- comfortable one-hand operation, fast tool changes
- available on request

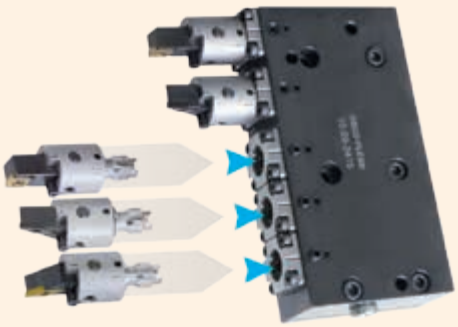


EPPINGER SMARTER TOOLING SOLUTIONS DECOFLEX®

INFO

- Tool holders with minimal dimensions
- particularly suited for use in small-scale lathe-milling machines
- available on request



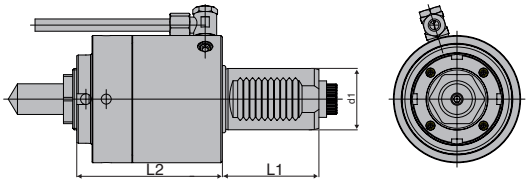


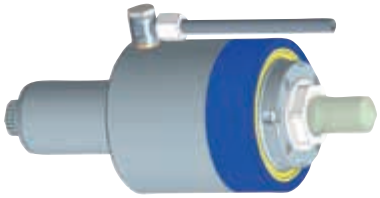
EPPINGER SMARTER TOOLING SOLUTIONS PRECI-FLEX® powered tool holder with VDI shank

- **for CNC lathes with Sauter revolver and drive coupling DIN 5480**
- Each tool holder must be run-in. Thus temperature and noise emissions are monitored, measured and recorded.
- compact design of the single-piece base body
- very rigid bearing above taper roller bearing
- optimal position of the spindle
- patented seals to minimise heat generation
- internal cooling up to max. 70 bar
- all wear parts hardened and ground

Boring/milling head, straight collet mount

- ER collet mount
- Type 1 external cooling
- Type 2 external and internal cooling



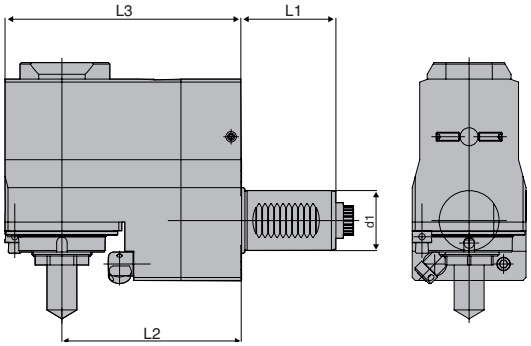


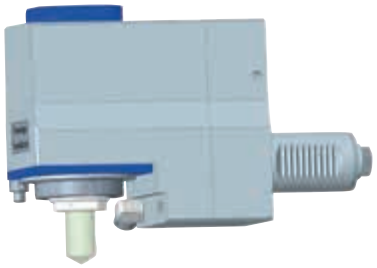
Shank	for collets	Type	L1 mm	L2 mm	d1 mm	d2 mm	art.no.	€
VDI 30	ER25	1	67	79	30	1 - 16	**430510** 3025	887,–
VDI 30	ER25	2	67	79	30	1 - 16	430510 3125	1.057,–
VDI 40	ER32	1	74.8	95	40	2 - 20	430510 4032	963,–
VDI 40	ER32	2	74.8	95	40	2 - 20	430510 4132	1.109,–

4185

Angled boring/milling head, offset

- ER collet mount
- Type 1 external cooling
- Type 2 external and internal cooling



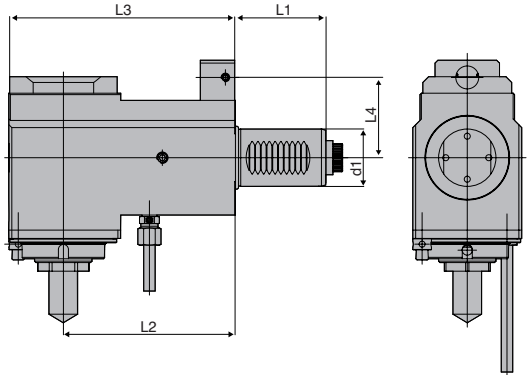


Shank	for collets	Type	L1 mm	L2 mm	L3 mm	d1 mm	art.no.	€
VDI 30	ER25	1	67	85	117.5	30	**430511** 3025	2.088,–
VDI 30	ER25	2	67	85	117.5	30	430511 3125	2.274,–
VDI 40	ER32	1	74.8	85	158	40	430511 4032	2.436,–
VDI 40	ER32	2	74.8	85	158	40	430511 4132	2.685,–

4185

Angled boring/milling head

- ER collet mount
- Type 1 external cooling
- Type 2 external and internal cooling



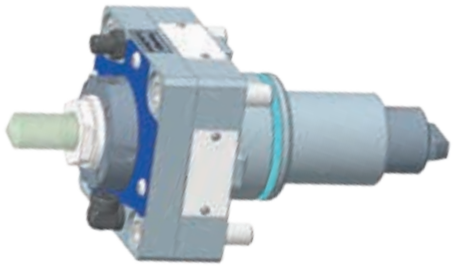


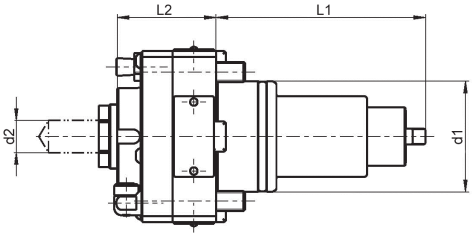
Shank	for collets	Type	L1 mm	L2 mm	L3 mm	L4 mm	d1 mm	art.no.	€
VDI 30	ER25	1	67	100	132.5	48	30	**430512** 3025	1.312,–
VDI 30	ER25	2	67	100	132.5	48	30	430512 3125	2.098,–
VDI 40	ER32	1	74.8	120	158	56	40	430512 4032	2.181,–
VDI 40	ER32	2	74.8	120	158	56	40	430512 4132	2.359,–

4185

EPPINGER SMARTER TOOLING SOLUTIONS PRECI-FLEX® powered tool holder BMT, axial

- **for CNC lathes with BMT interface**
- Each tool holder must be run-in. Thus temperature and noise emissions are monitored, measured and recorded.
- compact design of the single-piece base body
- very rigid bearing above taper roller bearing
- optimal position of the spindle
- patented seals to minimise heat generation
- internal cooling up to max. 70 bar
- all wear parts hardened and ground





BMT 40, for DMG MORi

- ER collet mount
- Type 1 external cooling
- Type 2 external and internal cooling

L1 mm	L2 mm	d1 mm	d2 mm	for collets	Type	art.no.	€
84	44	45	1 - 13	ER20	1	**430532** 0040	970,–
84	44	45	1 - 13	ER20	2	430532 1040	1.260,–

4185

BMT 45, for Doosan, Hardinge, SMEC

- ER collet mount
- Type 1 external cooling
- Type 2 external and internal cooling

L1 mm	L2 mm	d1 mm	d2 mm	for collets	Type	art.no.	€
84	44	45	1 - 13	ER20	1	**430501** 0045	843,–
84	44	45	1 - 13	ER20	2	430501 1045	1.258,–

4185

BMT 55, for Doosan, Hardinge, SMEC, Hwacheon, Hyundai WIA, Victor

- ER collet mount
- Type 1 external cooling
- Type 2 external and internal cooling

L1 mm	L2 mm	d1 mm	d2 mm	for collets	Type	art.no.	€
104	49	55	1 - 16	ER25	1	**430502** 0055	903,–
104	49	55	1 - 16	ER25	2	430502 1055	1.304,–

4185

BMT 55, for Nakamura, CMZ

- ER collet mount
- Type 1 external cooling
- Type 2 external and internal cooling

L1 mm	L2 mm	d1 mm	d2 mm	for collets	Type	art.no.	€
106.5	47	55	1 - 16	ER25	2	**430536** 0055	1.011,–
106.5	47	55	1 - 16	ER25	1	430536 1055	815,–

4185

BMT 60, for DMG MORI

- ER collet mount
- Type 1 external cooling
- Type 2 external and internal cooling

L1 mm	L2 mm	d1 mm	d2 mm	for collets	Type	art.no.	€
91	83.5	60	3 - 26	ER40	1	**430533** 0060	1.231,–
91	83.5	60	3 - 26	ER40	2	430533 1060	1.471,–

4185

BMT 60, for Okuma LB 2000/2500/3000/LU 3000EX M/MY

- ER collet mount
- Type 1 external cooling
- Type 2 external and internal cooling

L1 mm	L2 mm	d1 mm	d2 mm	for collets	Type	art.no.	€
62	65	60	2 - 20	ER32	1	**430534** 0060	1.518,–
62	65	60	2 - 20	ER32	2	430534 1060	1.767,–

4185

Continued on next page >>>

BMT 65, for Doosan, SMEC, Hwacheon, Hyundai WIA, Victor

- ER collet mount
- Type 1 external cooling
- Type 2 external and internal cooling

L1 mm	L2 mm	d1 mm	d2 mm	for collets	Type	art.no.	€
112	58	65	2 - 20	ER25	1	**430503** 0065	1.080,–
112	58	65	2 - 20	ER25	2	430503 1065	1.442,–

4185

BMT 68, for Mazak

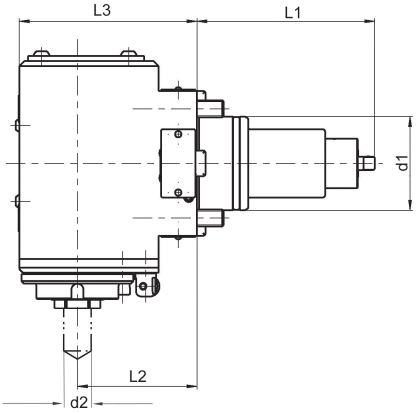
- ER collet mount
- Type 1 external cooling
- Type 2 external and internal cooling

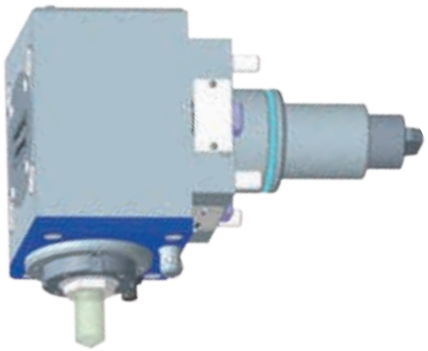
L1 mm	L2 mm	d1 mm	d2 mm	for collets	Type	art.no.	€
90	55.5	68	2 - 20	ER32	1	**430535** 1068	1.015,–
90	55.5	68	2 - 20	ER32	2	430535 0068	1.299,–

4185

EPPINGER SMARTER TOOLING SOLUTIONS PRECI-FLEX® powered tool holder BMT, radial

- **for CNC lathes with BMT interface**
- Each tool holder must be run-in. Thus temperature and noise emissions are monitored, measured and recorded.
- compact design of the single-piece base body
- very rigid bearing above taper roller bearing
- optimal position of the spindle
- patented seals to minimise heat generation
- internal cooling up to max. 70 bar
- all wear parts hardened and ground





BMT 40, for DMG MORI

- ER collet mount
- Type 1 external cooling
- Type 2 external and internal cooling

L1 mm	L2 mm	L3 mm	d1 mm	d2 mm	for collets	Type	art.no.	€
69	85	124	40	1 - 16	ER25	1	**430537** 0040	1.681,–
69	85	124	40	1 - 16	ER25	2	430537 1040	2.063,–

4185

BMT 45, for Doosan, Hardinge, SMEC

- ER collet mount
- Type 1 external cooling
- Type 2 external and internal cooling

L1 mm	L2 mm	L3 mm	d1 mm	d2 mm	for collets	Type	art.no.	€
84	65	93.5	45	1 - 13	ER20	1	**430504** 0045	1.886,–
84	65	93.5	45	1 - 13	ER20	2	430504 1045	2.477,–

4185

BMT 55, for Nakamura, CMZ

- ER collet mount
- Type 1 external cooling
- Type 2 external and internal cooling

L1 mm	L2 mm	L3 mm	d2 mm	for collets	Type	art.no.	€
106.5	55	94	1 - 16	ER25	1	**430541** 1055	1.615,–
106.5	55	94	1 - 16	ER25	2	430541 0055	1.744,–

4185

BMT 60, for DMG MORI

- ER collet mount
- Type 1 external cooling
- Type 2 external and internal cooling

L1 mm	L2 mm	L3 mm	d1 mm	d2 mm	for collets	Type	art.no.	€
91	90	130	40	3 - 26	ER40	1	**430538** 1060	1.903,–
91	90	130	40	3 - 26	ER40	2	430538 0060	2.019,–

4185

BMT 55, for Doosan, Hardinge, SMEC, Hwacheon, Hyundai WIA, Victor

- ER collet mount
- Type 1 external cooling
- Type 2 external and internal cooling

L1 mm	L2 mm	L3 mm	d1 mm	d2 mm	for collets	Type	art.no.	€
104	70	104	55	1 - 16	ER25	1	**430505** 0055	2.035,–
104	70	104	55	1 - 16	ER25	2	430505 1055	2.604,–
104	85	119	55	1 - 16	ER25	1	430505 2055	2.491,–
104	85	119	55	1 - 16	ER25	2	430505 3055	2.778,–

4185

BMT 60, for Okuma LB 2000/2500/3000/LU 3000EX M/MY

- ER collet mount
- Type 1 external cooling
- Type 2 external and internal cooling

L1 mm	L2 mm	L3 mm	d1 mm	d2 mm	for collets	Type	art.no.	€
62	70	108	60	2 - 20	ER32	1	**430539** 1060	2.347,–
62	70	108	60	2 - 20	ER32	2	430539 0060	2.679,–

4185

BMT 65, for Doosan, SMEC, Hwacheon, Hyundai WIA, Victor

- ER collet mount
- Type 1 external cooling
- Type 2 external and internal cooling

L1 mm	L2 mm	L3 mm	d1 mm	d2 mm	for collets	Type	art.no.	€
112	72	110	65	2 - 20	ER32	1	**430506** 0065	2.323,–
112	72	110	65	2 - 20	ER32	2	430506 1065	2.773,–
112	110	138	65	2 - 20	ER32	1	430506 2065	2.359,–
112	110	138	65	2 - 20	ER32	2	430506 3065	2.810,–

4185

BMT 68, for Mazak

- ER collet mount
- Type 1 external cooling
- Type 2 external and internal cooling

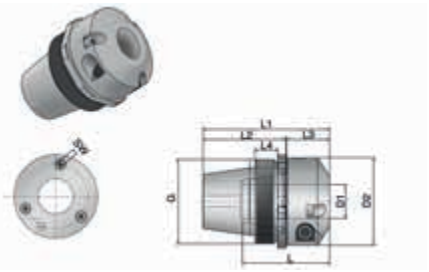
L1 mm	L2 mm	L3 mm	d1 mm	d2 mm	for collets	Type	art.no.	€
90	80	117	68	2 - 20	ER32	1	**430540** 1068	1.937,–
90	80	117	68	2 - 20	ER32	2	430540 0068	2.131,–

4185

SARA® Hydraulic expansion clamping unit ECOGRIP ER

powered by ETP

- renders ER collet systems hydraulic
- Adjustable radial run-out
- installed correctly, a true running accuracy of 0.003mm is achieved. The radial run-out can be further adjusted to the desired accuracy by slightly tightening the setting screws.





for powered tools with ER female thread

Designation	D1 mm	D2 mm	L mm	L1 mm	L2 mm	L3 mm	L4 mm	Thread	Wr. width mm	art.no.	€
ER20	12	16	40	60.5	36	24	10	M32 x 1.5	3	**433814** 2512	279,–
ER25	12	16	46	71	44.5	26	12	M40 x 1.5	3	433814 3212	279,–
ER25	16	16	46	71	44.5	26	12	M40 x 1.5	3	433814 3216	279,–
ER32	20	22	52	75.5	49.5	25.5	13.5	M50 x 1.5	3	433814 4020	316,–

4130

High-speed spindles Toodle Blue and Toodle Green

- **Toodle Blue, driven with coolant**
- **Toodle Green, driven with minimal lubrication**
- Turbine-driven high-speed spindle
- Rotational speeds of up to 75,000 rpm
- Consistent and high true running accuracy thanks to interchangeable bearings and turbine
- Can also be used with upright machine spindle
- Most demanding machine applications with a standard tool holder
- Affordable transformation of existing machine centres with standard spindles into high-speed and ultra-modern machining centres
- **Compatible with any sealed chuck with internal coolant supply**
  Example: SARA collet chucks ER40 Art. No. 4310034026 with sealed collet ER40 - Ø25 Art. No. 4331354025
- **NOT compatible with milling cutter holder DIN 6359 (Weldon holders)**, **cutting edge diameter** must be smaller than **shank diameter**



Toodle Blue high-speed spindle

- **Coolant pressure at the spindle: 10-60 bar**
- Coolant-driven
- Supplied without bearings and turbine



Ø mm	Length mm	art.no.	€
25	40	**430000** 0025	439,–
		4193	

Toodle Blue high-speed spindle 90°

- **Coolant pressure at the spindle: 10-60 bar**
- Coolant-driven
- Supplied without bearings and turbine



Holding fixture Ø mm	art.no.	€
16 mm	**430001** 0090	589,–
	4193	

Toodle Green high-speed spindle

- **Air pressure at the spindle: 3-5 bar**
- Driven by minimum volume lubrication
- Supplied without bearings and turbine



Ø mm	Length mm	art.no.	€
25	40	**430002** 0001	469,–
		4193	

Mounting device



for shank Ø mm	art.no.	€
3	**430200** 0003	67,–
4	430200 0004	67,–
6	430200 0006	67,–
	4193	

Installation set consisting of

- 2 ball bearings
- 1 turbine



for shank Ø mm	art.no.	€
3	**430100** 0003	30,–
4	430100 0004	30,–
6	430100 0006	30,–
	4193	

Press-fit measuring adapter

- **Without** manometer

for tool holder	art.no.	€
Ø 25mm	**430300** 0025 4193	129,–

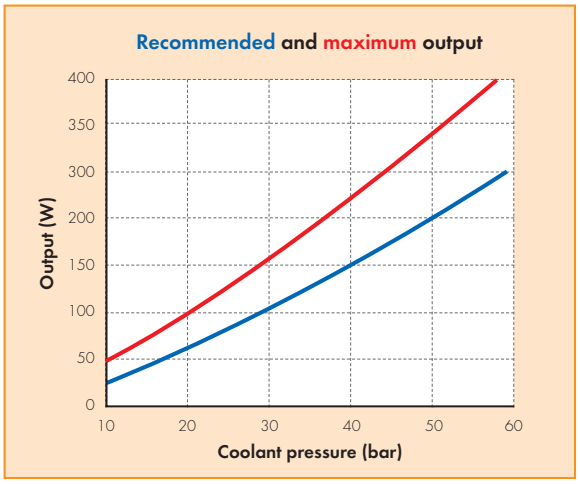


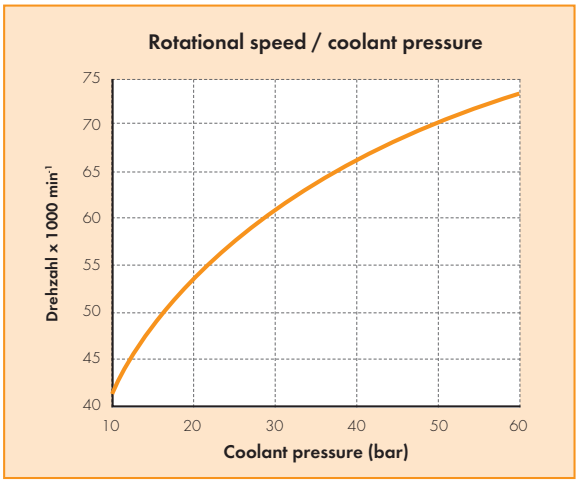
Manometer for press-fit measuring adapter

Ø mm	Connecting thread	art.no.	€
63	1/4"	**442150** 9905 4193	49,90

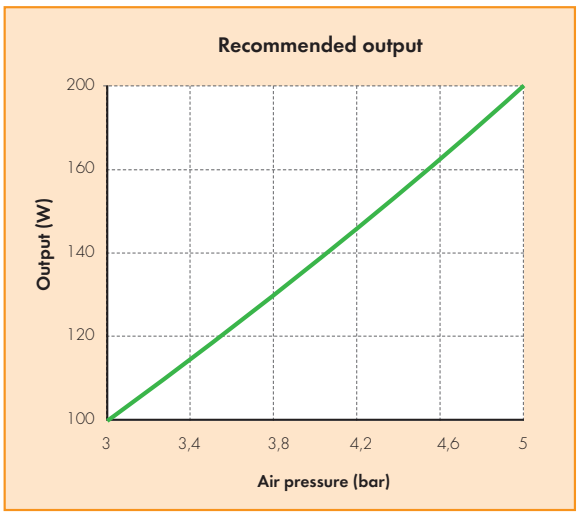


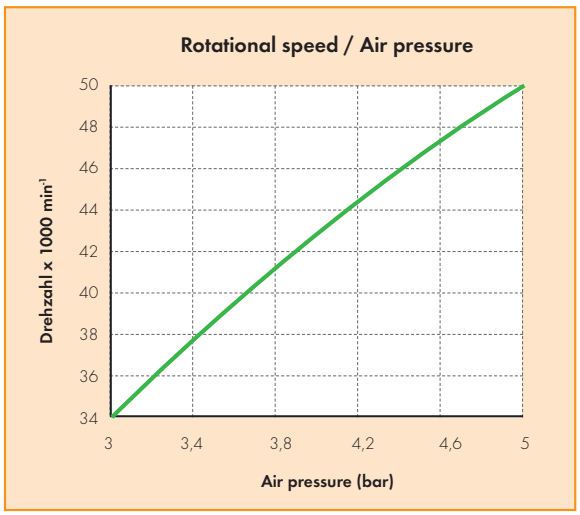
Performance diagram Toodle Blue





Performance diagram Toodle Green





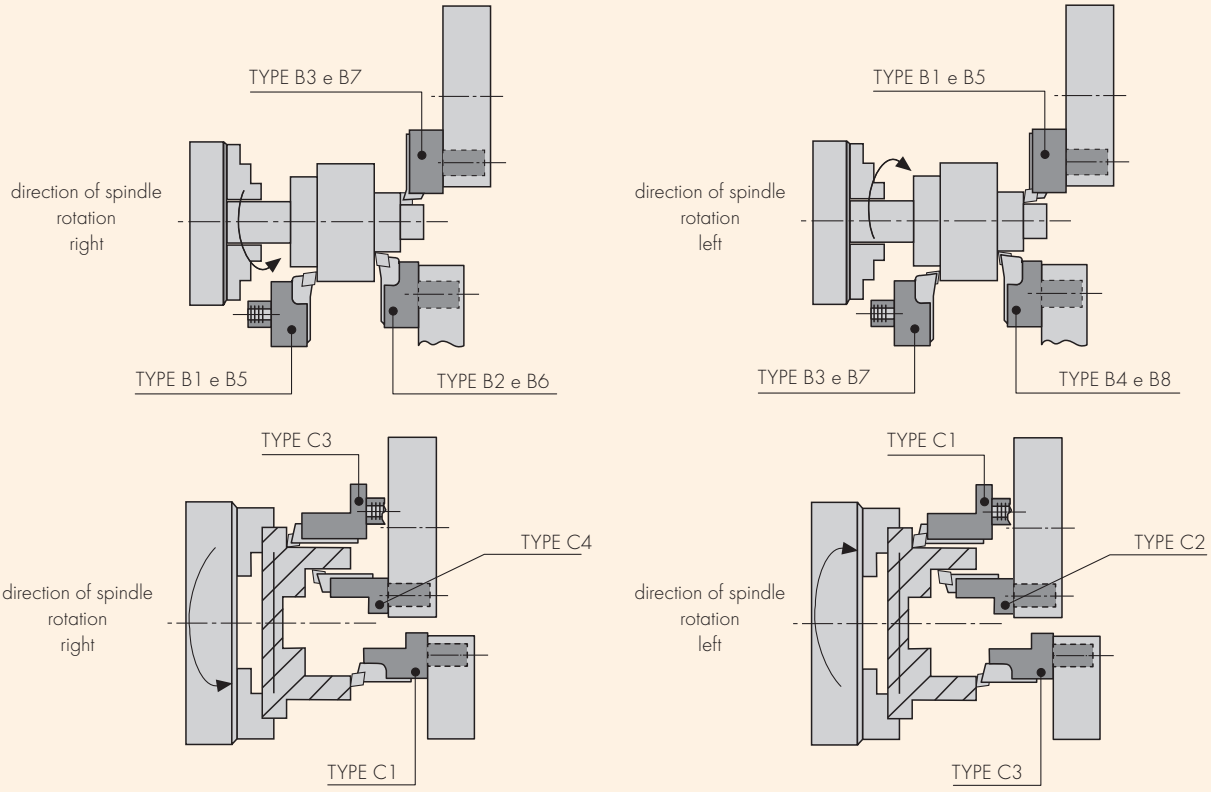
Toodle-Blue-Configurator

The Toodle-Blue-Configurator for determining the operating values is available in the service section of our website: **saratools.com**

Overview and possible uses of DIN 69880-compliant VDI tool holder

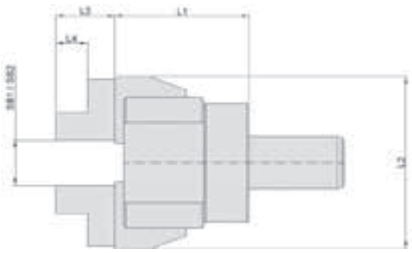
INFO

with straight shank
and internal coolant supply for NC lathes



Bar gripper

- Indexable jaws for several clamping ranges
- Wide clamping range
- Quick and easy setting
- Large range of clamping shanks





DIN 69880 (VDI)

Shank	Clamp width S1 mm	Clamp width S2 mm	L1 mm	L2 mm	L3 mm	L4 mm	art.no.	€
VDI 20	6 - 45	45 - 100	77	99	34	18	**461070** 0020	519,–
VDI 30	6 - 45	45 - 100	77	99	34	18	461070 0030	589,–
VDI 40	6 - 56	56 - 110	79	111	34	18	461070 0040	639,–
VDI 50	6 - 56	56 - 110	79	111	34	18	461070 0050	839,–

4136



With straight shank

Shank	Clamp width S1 mm	Clamp width S2 mm	L1 mm	L2 mm	L3 mm	L4 mm	art.no.	€
Ø 20	6 - 45	45 - 100	77	99	34	18	**461071** 0020	609,–
Ø 25	6 - 45	45 - 100	77	99	34	18	461071 0025	609,–
Ø 32	6 - 45	45 - 100	77	99	34	18	461071 0032	609,–
Ø 40	6 - 56	56 - 110	79	111	34	18	461071 0040	679,–

4136

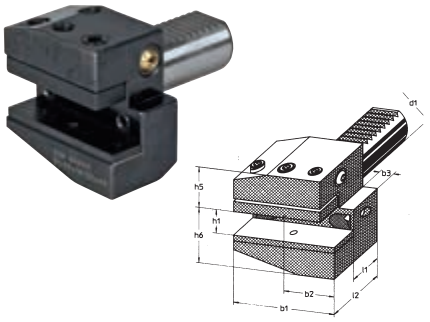
Indexable jaw set

for tool holder	art.no.	€
VDI and cylindrical shank	**461072** 0001	255,–

4136

SARA® Square transverse holding fixture

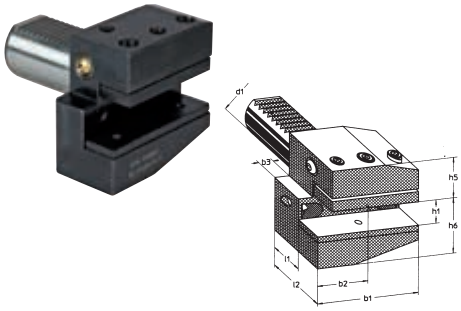
- Surface hardness 58 - 60 HRC
- Core strength HV 950 N/mm2
- Case depth 0.8 mm ± 0.2 mm
- Fully burnished and precision-ground



Type B1, right, short

Shank	d1 mm	b1 mm	b2 mm	h1 mm	b3 mm	h5 mm	h6 mm	l1 mm	l2 mm	art.no.	€
VDI 20	20	55	30	16	7	25	30	30	16	**446005** 0020	56,–
VDI 30	30	70	35	20	10	28	38	40	22	446005 0030	62,–
VDI 40	40	85	42.5	25	12.5	32.5	48	44	22	446005 0040	69,–
VDI 50	50	100	50	32	16	35	60	55	30	446005 0050	91,–

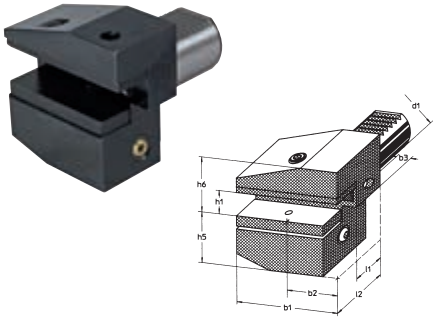
4134



Type B2, left, short

Shank	d1 mm	b1 mm	b2 mm	h1 mm	b3 mm	h5 mm	h6 mm	l1 mm	l2 mm	art.no.	€
VDI 20	20	55	30	16	7	25	30	30	16	**446007** 0020	56,–
VDI 30	30	70	35	20	10	28	38	40	22	446007 0030	62,–
VDI 40	40	85	42.5	25	12.5	32.5	48	44	22	446007 0040	69,–
VDI 50	50	100	50	32	16	35	60	55	30	446007 0050	91,–

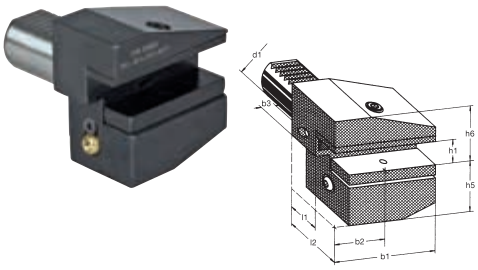
4134



Type B3, overhead right, short

Shank	d1 mm	b1 mm	b2 mm	h1 mm	b3 mm	h5 mm	h6 mm	l1 mm	l2 mm	art.no.	€
VDI 20	20	55	30	16	7	25	30	30	16	**446009** 0020	58,–
VDI 30	30	70	35	20	10	35	38	40	22	446009 0030	64,–
VDI 40	40	85	42.5	25	12.5	42.5	48	44	22	446009 0040	71,–
VDI 50	50	100	50	32	16	50	60	55	30	446009 0050	98,50

4134



Type B4, overhead left, short

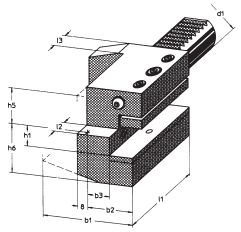
Shank	d1 mm	b1 mm	b2 mm	h1 mm	b3 mm	h5 mm	h6 mm	l1 mm	l2 mm	art.no.	€
VDI 20	20	55	30	16	7	25	30	30	16	**446011** 0020	58,–
VDI 30	30	70	35	20	10	35	38	40	22	446011 0030	64,–
VDI 40	40	85	42.5	25	12.5	42.5	48	44	22	446011 0040	71,–
VDI 50	50	100	50	32	16	50	60	55	30	446011 0050	98,50

4134

SARA® Square longitudinal holding fixture

- Surface hardness 58 - 60 HRC
- Core strength HV 950 N/mm2
- Case depth 0.8 mm ± 0.2 mm
- Fully burnished and precision-ground



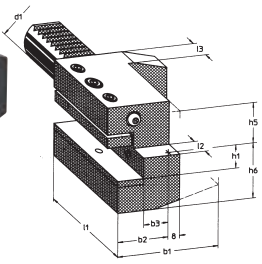


Type C1, right

Shank	d1 mm	b1 mm	b2 mm	h1 mm	b3 mm	h5 mm	h6 mm	l1 mm	l2 mm	art.no.	€
VDI 20	20	52	27	16	13	25	30	7	50	**446021** 0020	69,–
VDI 30	30	70	35	20	17	28	38	10	70	446021 0030	69,–
VDI 40	40	85	42.5	25	21	32.5	48	12.5	85	446021 0040	82,–
VDI 50	50	100	50	32	26	35	60	16	100	446021 0050	105,–

4134



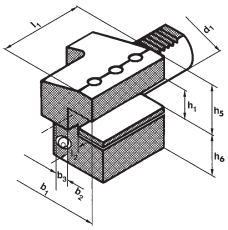


Type C2, left

Shank	d1 mm	b1 mm	b2 mm	h1 mm	b3 mm	h5 mm	h6 mm	l1 mm	l2 mm	art.no.	€
VDI 20	20	65	40	16	26	25	30	7	50	**446023** 0020	69,–
VDI 30	30	76	41	20	23	28	38	10	70	446023 0030	69,–
VDI 40	40	90	47.5	25	25.5	32.5	48	12.5	85	446023 0040	82,–
VDI 50	50	105	55	32	30.5	35	60	16	100	446023 0050	105,–

4134



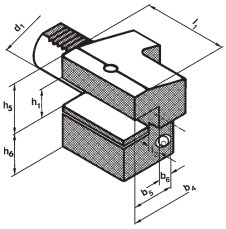


Type C3, overhead right

Shank	d1 mm	b1 mm	b2 mm	h1 mm	b3 mm	h5 mm	h6 mm	l1 mm	l2 mm	art.no.	€
VDI 20	20	52	27	16	13	30	25	7	50	**446025** 0020	71,–
VDI 30	30	70	35	20	17	38	35	10	70	446025 0030	77,–
VDI 40	40	85	42.5	25	21	48	42.5	12.5	85	446025 0040	84,–
VDI 50	50	100	50	32	26	60	50	16	100	446025 0050	107,–

4134





Type C4, overhead left

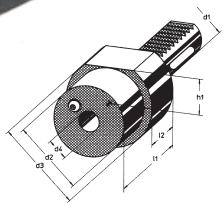
Shank	d1 mm	b4 mm	b5 mm	b6 mm	h1 mm	h5 mm	h6 mm	l1 mm	l2 mm	art.no.	€
VDI 20	20	65	40	26	16	30	25	7	50	**446027** 0020	71,–
VDI 30	30	76	41	23	20	38	35	10	70	446027 0030	77,–
VDI 40	40	90	47.5	25.5	25	48	42.5	12.5	85	446027 0040	84,–
VDI 50	50	105	55	30.5	32	60	50	16	100	446027 0050	107,–

4134

SARA® Morse taper holding fixture

- Surface hardness 58 - 60 HRC
- Core strength HV 950 N/mm2
- Case depth 0.8 mm ± 0.2 mm
- Fully burnished and precision-ground





Type F1, for tools with Morse tapers and tangs

Shank design interior	Shank	d1 mm	d3 mm	d4 mm	d2 mm	h1 mm	l1 mm	l2 mm	art.no.	€
MT 1	VDI 20	20	50	12.075	-	23	23	-	**446029** 0021	69,–
MT 1	VDI 30	30	68	12.07	-	28	27	-	446029 0031	69,–
MT 1	VDI 40	40	83	12.07	55	32.5	36	22	446029 0041	71,–
MT 2	VDI 20	20	50	17.78	40	23	90	30	446029 0022	67,–
MT 2	VDI 30	30	68	17.78	-	28	27	-	446029 0032	67,–
MT 2	VDI 40	40	83	17.78	55	32.5	36	22	446029 0042	69,–
MT 2	VDI 50	50	98	17.78	55	35	36	30	446029 0052	91,–
MT3	VDI 30	30	68	23.83	58	28	66	22	446029 0033	67,–
MT3	VDI 40	40	83	23.83	55	32.5	36	22	446029 0043	69,–
MT3	VDI 50	50	98	23.83	58	35	36	30	446029 0053	91,–
MT 4	VDI 40	40	83	31.27	68	32.5	80	22	446029 0044	69,–
MT 4	VDI 50	50	98	31.27	68	35	50	30	446029 0054	91,–

4134

SARA® Tool holders for drilling tools

- Surface hardness 58 - 60 HRC
- Core strength HV 950 N/mm2
- Case depth 0.8 mm ± 0.2 mm
- Fully burnished and precision-ground



Type E1, for straight shank drilling tools with an internal coolant supply

Shank	d1 mm	d4 mm	d3 mm	h1 mm	l1 mm	l2 mm	d2 mm	l3 mm	art.no.	€
VDI 20	20	20	50	18	67	16	40	49	**446031** 2020	69,–
VDI 20	20	25	50	18	71	16	45	53	446031 2025	69,–
VDI 30	30	20	68	28	67	22	40	45	446031 3020	69,–
VDI 30	30	25	68	28	71	22	45	49	446031 3025	69,–
VDI 30	30	32	68	28	75	22	52	53	446031 3032	69,–
VDI 30	30	40	68	28	95	22	60	73	446031 3040	69,–
VDI 40	40	20	83	32.5	67	22	40	45	446031 4020	75,–
VDI 40	40	25	83	32.5	75	22	45	53	446031 4025	75,–
VDI 40	40	32	83	32.5	75	22	52	53	446031 4032	75,–
VDI 40	40	40	83	32.5	90	22	60	68	446031 4040	75,–
VDI 50	50	25	98	35	80	30	45	50	446031 5025	96,–
VDI 50	50	32	98	35	80	30	52	50	446031 5032	96,–
VDI 50	50	40	98	35	90	30	65	60	446031 5040	96,–
VDI 50	50	50	98	35	100	30	75	70	446031 5050	96,–

4134



Type E2, for straight shank turning tools with an internal and external coolant supply

Shank	d1 mm	d4 mm	d3 mm	h1 mm	l1 mm	l2 mm	d2 mm	l3 mm	art.no.	€
VDI 20	20	8	50	23	18	50	40	32	**446033** 2008	65,–
VDI 20	20	10	50	23	18	50	40	32	446033 2010	65,–
VDI 20	20	12	50	23	18	50	40	32	446033 2012	65,–
VDI 20	20	16	50	23	18	50	40	32	446033 2016	65,–
VDI 20	20	20	50	23	18	50	50	32	446033 2020	65,–
VDI 20	20	25	50	23	18	60	50	42	446033 2025	65,–
VDI 30	30	8	68	28	22	60	55	38	446033 3008	65,–
VDI 30	30	10	68	28	22	60	55	38	446033 3010	65,–
VDI 30	30	12	68	28	22	60	55	38	446033 3012	65,–
VDI 30	30	16	68	28	22	60	55	38	446033 3016	65,–
VDI 30	30	20	68	28	22	60	55	38	446033 3020	65,–
VDI 30	30	25	68	28	22	60	55	38	446033 3025	65,–
VDI 30	30	32	68	28	22	75	68	53	446033 3032	65,–
VDI 30	30	40	68	28	22	90	68	68	446033 3040	65,–
VDI 40	40	8	83	32.5	22	75	55	53	446033 4008	66,–
VDI 40	40	10	83	32.5	22	75	55	53	446033 4010	66,–
VDI 40	40	12	83	32.5	22	75	55	53	446033 4012	66,–
VDI 40	40	16	83	32.5	22	75	55	53	446033 4016	66,–
VDI 40	40	20	83	32.5	22	75	55	53	446033 4020	66,–
VDI 40	40	25	83	32.5	22	75	55	53	446033 4025	66,–
VDI 40	40	32	83	32.5	22	75	83	53	446033 4032	66,–
VDI 40	40	40	83	32.5	22	90	83	68	446033 4040	66,–
VDI 50	50	12	98	35	30	90	68	60	446033 5012	91,–
VDI 50	50	16	98	35	30	90	68	60	446033 5016	91,–
VDI 50	50	20	98	35	30	90	68	60	446033 5020	91,–
VDI 50	50	25	98	35	30	90	68	60	446033 5025	91,–
VDI 50	50	32	98	35	30	90	68	60	446033 5032	91,–
VDI 50	50	40	98	35	30	90	98	60	446033 5040	91,–
VDI 50	50	50	98	35	30	100	98	70	446033 5050	91,–

4134

SARA® Reducing bush for boring bar holders

d1 mm	d2 mm	d3 mm	F mm	K mm	X mm	Y mm	Illustration	art.no.	€
25	8	30	50	-	-	-	1	**446134** 2508	34,–
25	10	30	50	-	-	-	1	446134 2510	34,–
25	12	30	50	-	-	-	1	446134 2512	34,–
25	16	30	50	13	45.5	3.5	2	446134 2516	34,–
25	20	30	50	13	45.5	3.5	2	446134 2520	34,–
32	8	37	59	-	-	-	1	446134 3208	36,–
32	10	37	59	-	-	-	1	446134 3210	36,–
32	12	37	59	-	-	-	1	446134 3212	36,–
32	16	37	59	-	-	-	1	446134 3216	36,–
32	20	37	59	13	51	5	2	446134 3220	38,10
32	25	37	59	13	51	5	2	446134 3225	38,10
40	8	45	69	-	-	-	1	446134 4008	38,10
40	10	45	69	-	-	-	1	446134 4010	38,10
40	12	45	69	-	-	-	1	446134 4012	38,10
40	16	45	69	-	-	-	1	446134 4016	38,10
40	20	45	69	-	-	-	1	446134 4020	38,10
40	25	45	69	-	-	-	1	446134 4025	38,10
40	32	45	69	17	61	5	2	446134 4032	41,30

4194

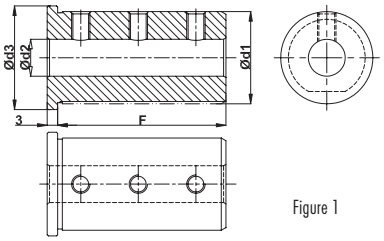


Figure 1

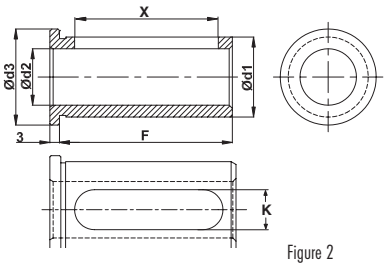


Figure 2

SARA® Hydraulic clamping system HYDRO-FIX

Hydraulic clamping system for boring bars and powered tools

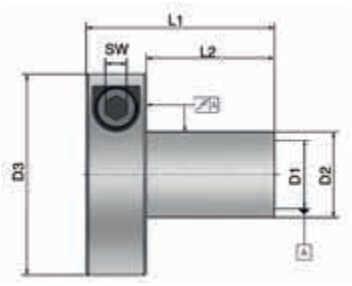
The system is attached and clamped with just one screw. The clamp engages evenly with the workpiece and this increases the tool service life. The hydraulic clamping system absorbs and reduces vibrations, and thus increases the surface quality.

The equal and complete clamping of the shank significantly reduces the vibration amplitude.

HYDRO-FIX clamps simultaneously in both directions, the tool and in the tool holder.

powered by ETP

- Reduced vibrations
- Increased cutting speeds and/or feed rates
- Improved surface quality
- Increased tool life
- Quick and easy to handle
- Recommended shank tolerance h7
- Recommended bore tolerance H7







For boring bars

D1 mm	D2 mm	D3 mm	L1 mm	L2 mm	Wr. width mm	art.no.	€
12	16	43.5	38	24	5	**433805** 1216	369,–
16	20	47	44	30	5	433805 1620	369,–
20	25	52	44	30	5	433805 2025	369,–
25	32	59	48	34	5	433805 2532	395,–
32	40	69.5	53	39	5	433805 3240	421,–

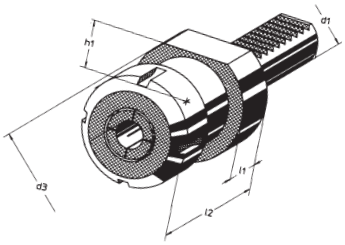
4130

SARA® Collet holder for DIN 6499 collets (ER)

- Surface hardness 58 - 60 HRC
- Core strength HV 950 N/mm2
- Case depth 0.8 mm ± 0.2 mm
- Fully burnished and precision-ground
- Additional versions available on request
- When selecting collets, type B is preferable.



Type E4, straight holding fixture with collet



Shank	Designation	Clamping range mm	d1 mm	h1 mm	l2 mm	l1 mm	d3 mm	art.no.	€
VDI 20	ER16 426E	1 - 10	20	23	40	16	50	**446036** 2016	83,–
VDI 20	ER25 430E	2 - 16	20	23	50	16	50	446036 2025	83,–
VDI 20	ER32 470E	2 - 20	20	23	50	16	50	446036 2032	83,–
VDI 30	ER25 430E	2 - 16	30	28	57	22	68	446036 3025	85,50
VDI 30	ER32 470E	2 - 20	30	28	62	22	68	446036 3032	85,50
VDI 30	ER40 472E	3 - 26	30	28	75	22	68	446036 3040	85,50
VDI 40	ER25 430E	2 - 16	40	32.5	75	22	83	446036 4025	85,50
VDI 40	ER32 470E	2 - 20	40	32.5	62	22	83	446036 4032	85,50
VDI 40	ER40 472E	3 - 26	40	32.5	75	22	83	446036 4040	85,50
VDI 50	ER40 472E	3 - 26	50	35	75	30	98	446036 5040	124,–

4134

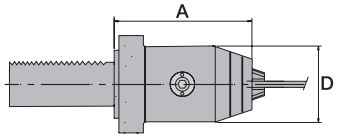
ATORN® Precision drill chuck with spur gear system

- **Clamping via spur gear system**
- **Suitable for clockwise and anti-clockwise rotation**
- Short clamping and retrofitting times
- Very short design
- For CNC lathes, for drilling, reaming, countersinking, thread cutting



VDI tool holding fixture, DIN 69880

- Central coolant supply



Shank	Clamping range mm	A mm	D mm	Tightening torque max. N-m	Retention force N	Wr. width mm	True running accuracy mm	art.no.	€
VDI 30	0.5 - 16	95	57	20	90	6	0.02	**440138** 3016	335,–
VDI 40	0.5 - 16	95	57	20	90	6	0.02	440138 4016	375,–

4101

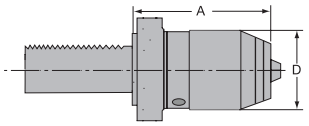
ATORN® Precision drill chuck with worm gear

- **Clamping by means of an integrated worm gear**
- **Suitable for clockwise and anti-clockwise rotation**
- Clamping range 1.0 to 16.0 mm
- Long service life, wearing parts hardened and ground
- Supplied with hexagonal key



DIN 69880 (VDI)

- Internal coolant supply



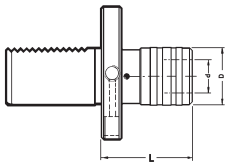
Shank	Clamping range mm	A mm	D mm	Tightening torque max. N-m	Retention force N	Wr. width mm	True running accuracy mm	art.no.	€
VDI 30	1 - 16	87	50	10	90	4	0.03	**441015** 3016	330,–
VDI 40	1 - 16	87	50	10	90	4	0.03	441015 4016	355,–

4101

SARA® Thread cutting quick-change chuck

- Automatically locks inserts in the chuck
- Flexible length compensation under compression and tension





Shank	d mm	D mm	L mm	Length compensation, pressure mm	Length compensation, tension mm	Thread	art.no.	€
VDI 30	19	38	55	7	7	M 3 - M 14	**442009** 3012	239,–
VDI 30	31	54	77	12	12	M 5 - M 22	442009 3024	265,–
VDI 40	19	38	55	7	7	M 3 - M 14	442009 4012	230,–
VDI 40	31	54	77	12	12	M 5 - M 22	442009 4024	265,–

4134

Threading die holder Synchro

- **For threading dies**
- Synchronised thread cutting with threading dies on CNC machines
- Cooling lubricant discharged through the threading die (IC) = optimum lubrication
- Supplied without threading die



Base holders with interchangeable inserts



VDI base holder

- For holding interchangeable threading die inserts

Shank	art.no.	€
VDI 20	**442014** 0020	131,–
VDI 30	442014 0030	131,–
VDI 40	442014 0040	131,–

4135

Threading die interchangeable inserts

- For VDI base holders

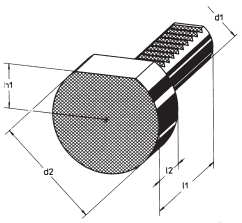


suitable for threading die	External Ø mm	Working length mm	art.no.	€
M1 - M2.5 / Ø16	26	74	**442015** 0102	76,–
M3 - M4 / Ø20	30	74	442015 0304	76,–
M5 - M6 / Ø20	30	74	442015 0506	76,–
M7 - M9 / Ø25	35	74	442015 0709	76,–
M10 / Ø30	40	74	442015 0010	82,–
M12 - M14 / Ø38	48	74	442015 1214	84,–
M16 - M20 / Ø45	55	84	442015 1620	84,–

4135

SARA® Protective plugs

Type Z2, steel



Shank	Design	d1 mm	d2 mm	h1 mm	l1 mm	l2 mm	**Steel** art.no.	€
VDI 20	With additional underside surface area	20	50	23	56	16	**446039** 0020	21,60
VDI 30	With additional underside surface area	30	68	28	75	20	446039 0030	21,60
VDI 40	Standard	40	83	32.5	83	20	446039 0040	24,90
VDI 50	Standard	50	98	35	98	20	446039 0050	31,40

4134

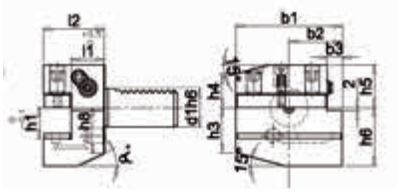


Type Z2, plastic

Shank	d1 mm	d2 mm	h1 mm	l1 mm	l2 mm	**Plastic** art.no.	€
VDI 20	20	50	23	56	16	**446040** 2055	10,80
VDI 30	30	68	28	75	20	446040 3080	13,–
VDI 40	40	83	32.5	83	20	446040 4085	13,–
VDI 50	50	98	35	98	20	446040 5085	26,–

4134

SARA® Square radial holding fixture with internal coolant supply

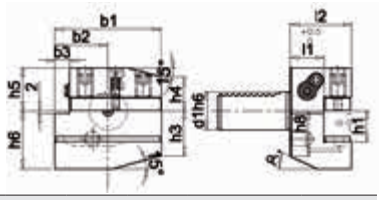


Form B1, right-hand, short version

Shank	b1 mm	b2 mm	b3 mm	l1 mm	l2 mm	h1 mm	h3 mm	h4 mm	h5 mm	h6 mm	h8 mm	art.no.	€
VDI 20	70	35	10	22	40	16	29.5	22	31.5	38.5	30	**446105** 0020	92,50
VDI 30	70	35	10	22	40	20	26	22	28	38	30	446105 0030	92,50
VDI 40	85	42.5	12.5	22	44	25	35	30	32.5	48		446105 0040	105,–
VDI 50	85	42.5	12.5	22	44	25	35	30	32.5	48		446105 0050	160,–

4194



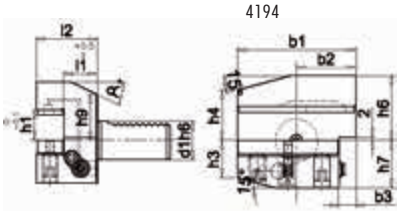


Form B2, left-hand, short version

Shank	b1 mm	b2 mm	b3 mm	l1 mm	l2 mm	h1 mm	h3 mm	h4 mm	h5 mm	h6 mm	h8 mm	art.no.	€
VDI 20	70	35	10	22	40	16	29.5	22	31.5	38.5	30	**446107** 0020	100,–
VDI 30	70	35	10	22	40	20	26	22	28	38	30	446107 0030	105,–
VDI 40	85	42.5	12.5	22	44	25	35	30	32.5	48		446107 0040	109,–
VDI 50	85	42.5	12.5	22	44	25	35	30	32.5	48		446107 0050	160,–

4194



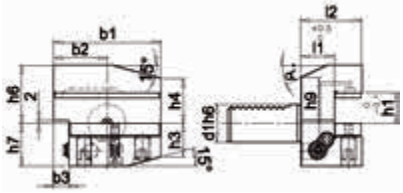


Form B3, overhead right-hand, short version

Shank	b1 mm	b2 mm	b3 mm	l1 mm	l2 mm	h1 mm	h3 mm	h4 mm	h6 mm	h7 mm	h9 mm	art.no.	€
VDI 20	70	35	10	22	40	16	29.5	22	38.5	35	28	**446109** 0020	92,50
VDI 30	70	35	10	22	40	20	26	22	38	35	28	446109 0030	92,50
VDI 40	85	42.5	12.5	22	44	25	35	30	48	42.5		446109 0040	105,–
VDI 50	85	42.5	12.5	22	44	25	35	30	48	42.5		446109 0050	160,–

4194



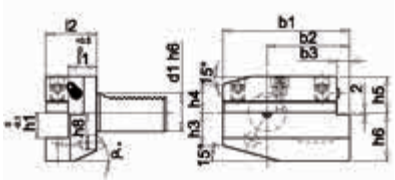


Form B4, overhead left-hand, short version

Shank	b1 mm	b2 mm	b3 mm	l1 mm	l2 mm	h1 mm	h3 mm	h4 mm	h6 mm	h7 mm	h9 mm	art.no.	€
VDI 20	70	35	10	22	40	16	29.5	22	38.5	35	28	**446111** 0020	100,–
VDI 30	70	35	10	22	40	20	26	22	38	35	28	446111 0030	105,–
VDI 40	85	42.5	12.5	22	44	25	35	30	48	42.5		446111 0040	109,–
VDI 50	85	42.5	12.5	22	44	25	35	30	48	42.5		446111 0050	160,–

4194





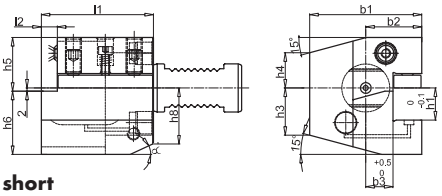
Form B5, right-hand, long version

Shank	b1 mm	b2 mm	b3 mm	l1 mm	l2 mm	h1 mm	h3 mm	h4 mm	h5 mm	h6 mm	art.no.	€
VDI 30	118	75.5	12.5	22	44	25	35	30	32.5	48	**446112** 0030	164,–
VDI 40	130	80	16	30	55	32	42	35	35	60	446112 0040	196,–
VDI 50	145	82.5	16	30	60	32	46	42.5	42.5	62.5	446112 0050	285,–

4194



SARA® Square axial holding fixture, double toothed with internal coolant supply

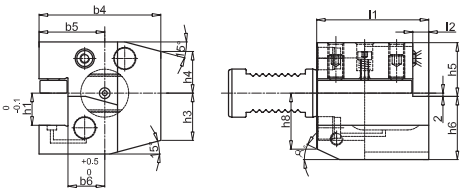




Form C1, right-hand and C4 overhead left-hand, short

Shank	b1 mm	b2 mm	b3 mm	l1 mm	l2 mm	h1 mm	h3 mm	h4 mm	h5 mm	h6 mm	h8 mm	art.no.	€
VDI 20	58	33	15	55	7	20	26	28	30	36	26	**446221** 0020	164,–
VDI 30	70	35	17	70	10	20	26	22	32	38	30	446221 0030	175,–
VDI 40	85	42.5	21	85	12.5	25	35	30	38	48	40	446221 0040	196,–
VDI 50	90.5	48	26	85	12.5	25	42	35	44	48		446221 0050	250,–

4194



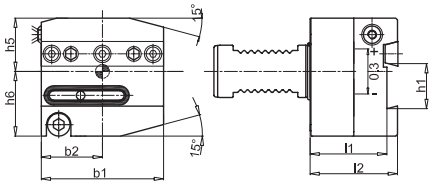


Form C2 left-hand and C3 overhead right-hand, short

Shank	b4 mm	b5 mm	b6 mm	l1 mm	l2 mm	h1 mm	h3 mm	h4 mm	h5 mm	h6 mm	h8 mm	art.no.	€
VDI 20	62	37	19	55	7	20	38	28	30	36	26	**446223** 0020	164,–
VDI 30	76	41	23	70	10	20	26	26	32	38	30	446223 0030	175,–
VDI 40	90	47.5	25.5	85	12.5	25	35	30	38	48	40	446223 0040	196,–
VDI 50	95	52.5	30.5	85	12.5	25	42	37	44	48		446223 0050	250,–

4194

SARA® Cutting tool holder double toothed with internal coolant supply

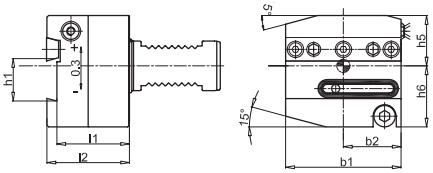




Cutting tool holder AL left-hand and ARU right-hand overhead

Shank	l1 mm	l2 mm	b1 mm	b2 mm	h1 mm	h5 mm	h6 mm	art.no.	€
VDI 30	44	50	70	35	26	32	37	**446310** 3026	350,–
VDI 30	44	50	85	42.5	32	32	40	446310 3032	395,–
VDI 40	44	50	85	42.5	26	43	40	446310 4026	395,–
VDI 40	44	50	85	42.5	32	43	40	446310 4032	395,–
VDI 50	44	50	100	50	32	43	45	446310 5032	415,–

4194





Cutting tool holder AR right-hand and ALU left-hand overhead

Shank	l1 mm	l2 mm	b1 mm	b2 mm	h1 mm	h5 mm	h6 mm	art.no.	€
VDI 30	44	50	70	35	26	32	37	**446311** 3026	350,–
VDI 30	44	50	85	42.5	32	32	40	446311 3032	395,–
VDI 40	44	50	85	42.5	26	43	40	446311 4026	395,–
VDI 40	44	50	85	42.5	32	43	40	446311 4032	395,–
VDI 50	44	50	100	50	32	43	45	446311 5032	415,–

4194

Seal for cutting tool holder with internal coolant supply

Description	art.no.	€
For cutting tool holder 446310 and 446311	**446314** 2632	6,20

4194

SARA® Accessories for VDI holding fixtures with internal coolant supply

Coolant hose set

- Up to 150 bar coolant pressure



Description	Length mm	art.no.	€
Coolant hose with adapter G1/8 inch-M12 x 1.5	200	**446312** 0200	30,–
Coolant hose with adapter G1/8 inch-M12 x 1.5	300	446312 0300	34,20
		4194	

Spacer

- Allows reduction to the next-smallest indexable insert holder without wearing the nut
- Ground version
- Metallic sealing



L mm	B mm	D mm	art.no.	€
69	17	4	**446313** 0030	15,50
84	21	5	446313 0040	16,50
			4194	

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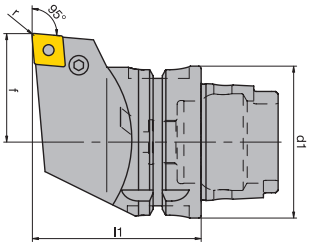




www.spannbackenfinder.de

KINTEK HSK-T rotary holder

- **DIN 69893 Form T (HSK-T)**
- Alloyed case-hardened steel with a core tensile strength of 800-1000N/mm²
- case-hardened to HRC 58 ± 2
- Case depth 0.4-0.5mm
- Finishing of fitting key according to ICTM tolerances



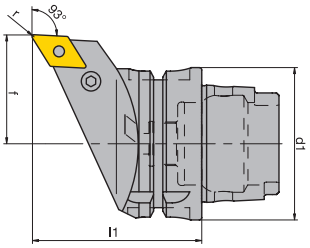
PCLN-R/L rotary holder for CNM. 1204.. and 1604..

- Internal coolant supply
- when machining with internal coolant supply, a coolant transfer pipe art.no. 4310110063.... should be used

Shank	ISO designation	for indexable inserts	d1 mm	l mm	f mm	r mm	art.no.	€
HSK 63	PCLN-L 12	CNM. 1204..	63	70	45	0.8	**435001** 0012	223,–
HSK 63	PCLN-L 16	CNM. 1606..	63	70	45	0.8	435001 0016	223,–
HSK 63	PCLN-R 12	CNM. 1204..	63	70	45	0.8	435001 1012	223,–
HSK 63	PCLN-R 16	CNM. 1606..	63	70	45	0.8	435001 1016	223,–

4194





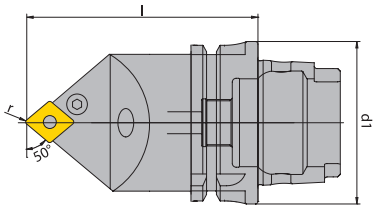
PDJN-R/L rotary holder for DNM. 1506..

- Internal coolant supply
- when machining with internal coolant supply, a coolant transfer pipe art.no. 4310110063.... should be used

Shank	ISO designation	for indexable inserts	d1 mm	l mm	f mm	r mm	art.no.	€
HSK 63	PDJN-L 15	DNM. 1506..	63	70	45	0.8	**435002** 0015	223,–
HSK 63	PDJN-R 15	DNM. 1506..	63	70	45	0.8	435002 1015	223,–

4194





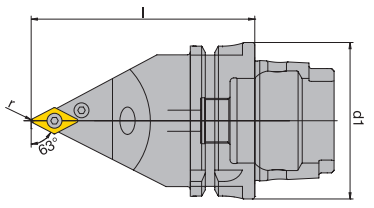
PCMNR rotary holder for CN.. 1204..

- Internal coolant supply
- when machining with internal coolant supply, a coolant transfer pipe art.no. 4310110063.... should be used

Shank	ISO designation	for indexable inserts	d1 mm	l mm	r mm	art.no.	€
HSK 63	PCMNR 12-90	CN.. 1204..	63	90	0.8	**435003** 0090	235,–
HSK 63	PCMNR 12-100	CN.. 1204..	63	100	0.8	435003 0100	261,–
HSK 63	PCMNR 12-145	CN.. 1204..	63	145	0.8	435003 0145	272,–

4194





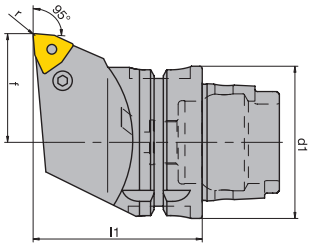
PDNNR rotary holder for DN.. 1506..

- Internal coolant supply
- when machining with internal coolant supply, a coolant transfer pipe art.no. 4310110063.... should be used

Shank	ISO designation	for indexable inserts	d1 mm	l mm	r mm	art.no.	€
HSK 63	PDNNR 15-90	DN.. 1506..	63	90	0.8	**435004** 0090	245,–
HSK 63	PDNNR 15-100	DN.. 1506..	63	100	0.8	435004 0100	261,–
HSK 63	PDNNR 15-145	DN.. 1506..	63	145	0.8	435004 0145	284,–

4194





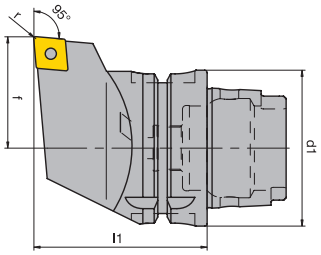


PWLN-R/L rotary holder for WN.. 0804..

- Internal coolant supply
- when machining with internal coolant supply, a coolant transfer pipe art.no. 4310110063.... should be used

Shank	ISO designation	for indexable inserts	d1 mm	l mm	f mm	r mm	art.no.	€
HSK 63	PWLN-L 08	WN.. 0804..	63	70	45	0.8	**435005** 0008	223,–
HSK 63	PWLN-R 08	WN.. 0804..	63	70	45	0.8	435005 1008	223,–

4194



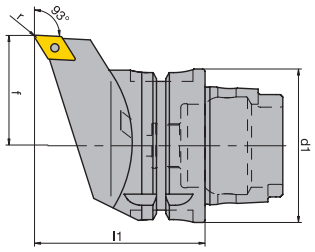


SCLC-R/L rotary holder for CC.. 1204..

- Internal coolant supply
- when machining with internal coolant supply, a coolant transfer pipe art.no. 4310110063.... should be used

Shank	ISO designation	for indexable inserts	d1 mm	l mm	f mm	r mm	art.no.	€
HSK 63	SCLC-L 12	CC.. 1204..	63	70	45	0.8	**435006** 0012	223,–
HSK 63	SCLC-R 12	CC.. 1204..	63	70	45	0.8	435006 1012	223,–

4194



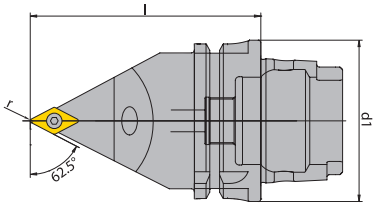


SDJC-R/L rotary holder for DC.. 11T3..

- Internal coolant supply
- when machining with internal coolant supply, a coolant transfer pipe art.no. 4310110063.... should be used

Shank	ISO designation	for indexable inserts	d1 mm	l mm	f mm	r mm	art.no.	€
HSK 63	SDJC-L 11	DC.. 11T3..	63	70	45	0.8	**435007** 0011	223,–
HSK 63	SDJC-R 11	DC.. 11T3..	63	70	45	0.8	435007 1011	223,–

4194





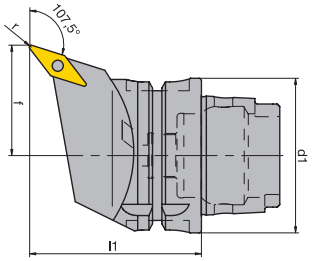
SDNCN rotary holder for DC.. 11T3..

- Internal coolant supply
- when machining with internal coolant supply, a coolant transfer pipe art.no. 4310110063.... should be used

Shank	ISO designation	for indexable inserts	d1 mm	l mm	r mm	art.no.	€
HSK 63	SDNCN 11-145	DC.. 11T3..	63	145	0.8	**435008** 1145	284,–

4194

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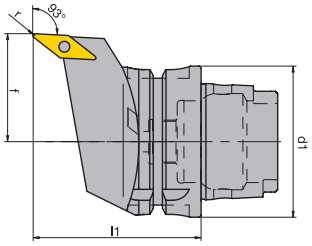


SVHC-R/L rotary holder for VC.. 1604..

- Internal coolant supply
- when machining with internal coolant supply, a coolant transfer pipe art.no. 4310110063.... should be used

Shank	ISO designation	for indexable inserts	d1 mm	l mm	f mm	r mm	art.no.	€
HSK 63	SVHC-L 16	VC.. 1604..	63	70	45	0.8	**435009** 0016	223,–
HSK 63	SVHC-R 16	VC.. 1604..	63	70	45	0.8	435009 1016	223,–

4194



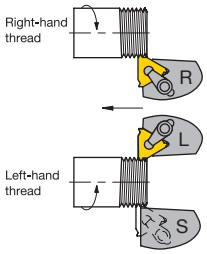


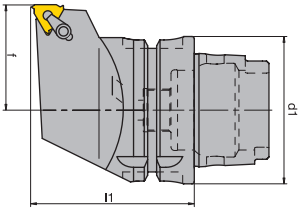
SVJB-R/L rotary holder for VB.. 1604..

- Internal coolant supply
- when machining with internal coolant supply, a coolant transfer pipe art.no. 4310110063.... should be used

Shank	ISO designation	for indexable inserts	d1 mm	l mm	f mm	r mm	art.no.	€
HSK 63	SVJB-L 16	VB.. 1604..	63	75	45	0.8	**435010** 0016	223,–
HSK 63	SVJB-R 16	VB.. 1604..	63	75	45	0.8	435010 1016	223,–

4194







THE-R/L rotary holder for threading inserts

- Internal coolant supply
- when machining with internal coolant supply, a coolant transfer pipe art.no. 4310110063.... should be used

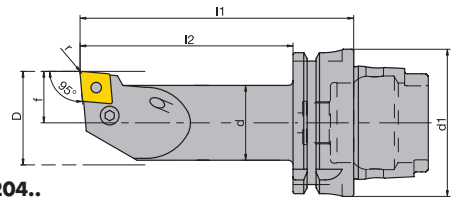
Shank	ISO designation	d1 mm	l mm	f mm	r mm	art.no.	€
HSK 63	THE-L 16	63	70	45	16EL	**435011** 0016	228,–
HSK 63	THE-R 16	63	70	45	16ER	435011 1016	228,–

4194

KINTEK HSK-T boring bar rotary holder



- **DIN 69893 Form T (HSK-T)**
- Alloyed case-hardened steel with a core tensile strength of 800-1000N/mm²
- case-hardened to HRC 58 ± 2
- Case depth 0.4-0.5mm
- Finishing of fitting key according to ICTM tolerances



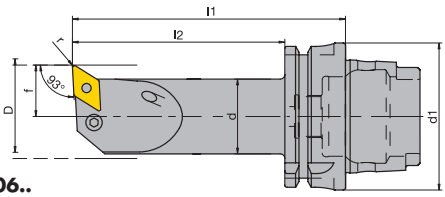
PCLN-R/L boring bar rotary holder for CNM. 1204..

- Internal coolant supply
- when machining with internal coolant supply, a coolant transfer pipe art.no. 4310110063.... should be used

Shank	ISO designation	for indexable inserts	d1 mm	d mm	l mm	l2 mm	f mm	k mm	D mm	r mm	art.no.	€
HSK 63	PCLN-L 12	CNM.1204..	63	25	100	74	17	-12	32	0.8	**435012** 2512	223,–
HSK 63	PCLN-R 12	CNM.1204..	63	25	100	74	17	-12	32	0.8	435012 2513	223,–
HSK 63	PCLN-L 12	CNM.1204..	63	32	120	94	22	-10	40	0.8	435012 3212	233,–
HSK 63	PCLN-R 12	CNM.1204..	63	32	120	94	22	-10	40	0.8	435012 3213	233,–
HSK 63	PCLN-L 12	CNM.1204..	63	40	140	114	27	-10	50	0.8	435012 4012	233,–
HSK 63	PCLN-R 12	CNM.1204..	63	40	140	114	27	-10	50	0.8	435012 4013	233,–

4194





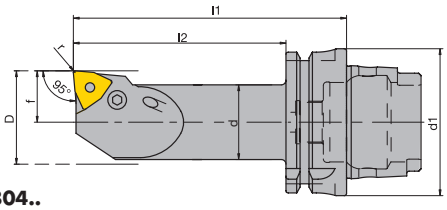


PDUN-R/L boring bar rotary holder for DN.. 1506..

- Internal coolant supply
- when machining with internal coolant supply, a coolant transfer pipe art.no. 4310110063.... should be used

Shank	ISO designation	for indexable inserts	d1 mm	d mm	l mm	l2 mm	f mm	k mm	D mm	r mm	art.no.	€
HSK 63	PDUN-L 15	DN..1506..	63	32	120	94	22	-15	40	0.8	**435013** 3215	233,–
HSK 63	PDUN-R 15	DN..1506..	63	32	120	94	22	-15	40	0.8	435013 3216	233,–
HSK 63	PDUN-L 15	DN..1506..	63	40	140	114	27	-12	50	0.8	435013 4015	223,–
HSK 63	PDUN-R 15	DN..1506..	63	40	140	114	27	-12	50	0.8	435013 4016	223,–

4194



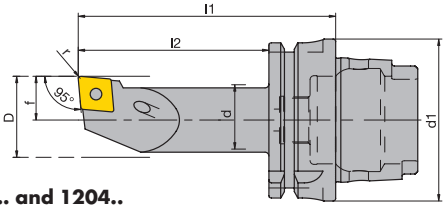


PWLN-R/L boring bar rotary holder for WN.. 0804..

- Internal coolant supply
- when machining with internal coolant supply, a coolant transfer pipe art.no. 4310110063.... should be used

Shank	ISO designation	for indexable inserts	d1 mm	d mm	l mm	l2 mm	f mm	k mm	D mm	r mm	art.no.	€
HSK 63	PWLN-L 08	WN..0804..	63	25	100	74	17	-12	32	0.8	**435014** 2508	223,–
HSK 63	PWLN-R 08	WN..0804..	63	25	100	74	17	-12	32	0.8	435014 2518	223,–
HSK 63	PWLN-L 08	WN..0804..	63	32	120	94	22	-12	40	0.8	435014 3208	233,–
HSK 63	PWLN-R 08	WN..0804..	63	32	120	94	22	-12	40	0.8	435014 3218	233,–
HSK 63	PWLN-L 08	WN..0804..	63	40	140	114	27	-10	50	0.8	435014 4008	233,–
HSK 63	PWLN-R 08	WN..0804..	63	40	140	114	27	-10	50	0.8	435014 4018	233,–

4194





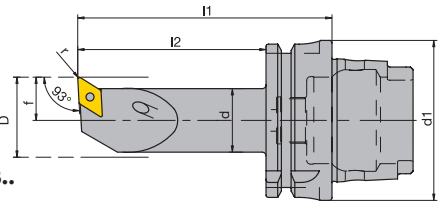
SCLC-R/L boring bar rotary holder for CC.. 09T3.. and 1204..

- Internal coolant supply
- when machining with internal coolant supply, a coolant transfer pipe art.no. 4310110063.... should be used

Shank	ISO designation	for indexable inserts	d1 mm	d mm	l mm	l2 mm	f mm	k mm	D mm	r mm	art.no.	€
HSK 63	SCLC-L 09	CC..09T3..	63	20	85	59	13	-8	25	0.8	**435015** 2009	223,–
HSK 63	SCLC-R 09	CC..09T3..	63	20	85	59	13	-8	25	0.8	435015 2019	223,–
HSK 63	SCLC-L 12	CC..1204..	63	25	100	74	17	-5	32	0.8	435015 2512	223,–
HSK 63	SCLC-R 12	CC..1204..	63	25	100	74	17	-5	32	0.8	435015 2513	223,–

4194

Continued on next page >>>



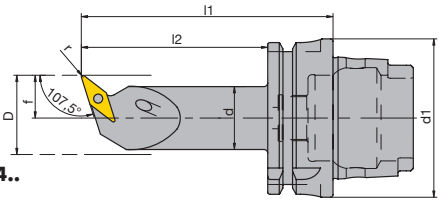


SDUC-R/L boring bar rotary holder for DC.. 11T3..

- Internal coolant supply
- when machining with internal coolant supply, a coolant transfer pipe art.no. 4310110063.... should be used

Shank	ISO designation	for indexable inserts	d1 mm	d mm	l mm	l2 mm	f mm	k mm	D mm	r mm	art.no.	€
HSK 63	SDUC-L 11	DC..11T3..	63	20	85	59	13	-8	25	0.8	**435016** 2011	223,–
HSK 63	SDUC-R 11	DC..11T3..	63	20	85	59	13	-8	25	0.8	435016 2012	223,–
HSK 63	SDUC-L 11	DC..11T3..	63	25	100	74	17	-5	32	0.8	435016 2511	223,–
HSK 63	SDUC-R 11	DC..11T3..	63	25	100	74	17	-5	32	0.8	435016 2512	223,–
HSK 63	SDUC-L 11	DC..11T3..	63	32	120	94	22	-5	40	0.8	435016 3211	233,–
HSK 63	SDUC-R 11	DC..11T3..	63	32	120	94	22	-5	40	0.8	435016 3212	233,–

4194



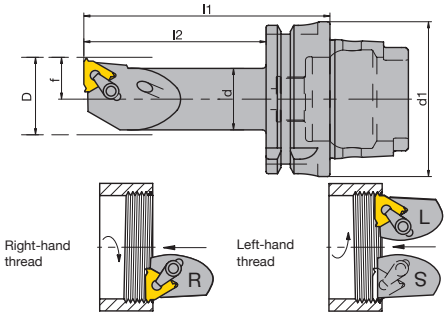


SVQB-R/L boring bar rotary holder for VB.. 1604..

- Internal coolant supply
- when machining with internal coolant supply, a coolant transfer pipe art.no. 4310110063.... should be used

Shank	ISO designation	for indexable inserts	d1 mm	d mm	l mm	l2 mm	f mm	k mm	D mm	r mm	art.no.	€
HSK 63	SVQB-L 16	VB..1604..	63	32	120	94	22	-10	40	0.8	**435017** 3216	233,–
HSK 63	SVQB-R 16	VB..1604..	63	32	120	94	22	-10	40	0.8	435017 3217	233,–
HSK 63	SVQB-L 16	VB..1604..	63	40	140	114	27	-10	50	0.8	435017 4016	233,–
HSK 63	SVQB-R 16	VB..1604..	63	40	140	114	27	-10	50	0.8	435017 4017	233,–

4194





THE-R/L boring bar rotary holder for threading inserts 16IR/L

- Internal coolant supply
- when machining with internal coolant supply, a coolant transfer pipe art.no. 4310110063.... should be used

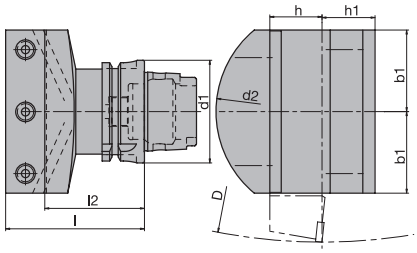
Shank	ISO designation	for indexable inserts	d1 mm	d mm	l mm	l2 mm	f mm	D mm	art.no.	€
HSK 63	THEL 16	16IL	63	20	85	59	14	25	**435018** 2016	278,–
HSK 63	THER 16	16IR	63	20	85	59	14	25	435018 2017	278,–
HSK 63	THEL 16	16IL	63	25	100	74	16.5	32	435018 2516	278,–
HSK 63	THER 16	16IR	63	25	100	74	16.5	32	435018 2517	278,–
HSK 63	THEL16	16IL	63	32	120	94	22	40	435018 3216	278,–
HSK 63	THER 16	16IR	63	32	120	94	22	40	435018 3217	278,–
HSK 63	THEL 16	16IL	63	40	140	114	27	50	435018 4016	300,–
HSK 63	THER 16	16IR	63	40	140	114	27	50	435018 4017	300,–

4194

KINTEK HSK-T tool holder for clamp mounting



- **DIN 69893 Form T (HSK-T)**
- Alloyed case-hardened steel with a core tensile strength of 800-1000N/mm²
- case-hardened to HRC 58 ± 2
- Case depth 0.4-0.5mm
- Finishing of fitting key according to ICTM tolerances

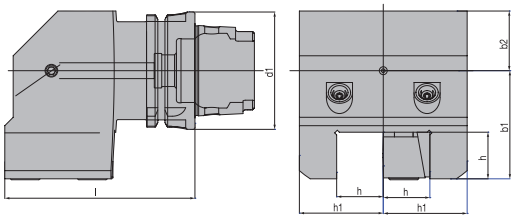


Tool holder, radial

- Internal coolant supply
- when machining with internal coolant supply, a coolant transfer pipe art.no. 4310110063.... should be used

Shank	d1 mm	d2 mm	D mm	b1 mm	h mm	h1 mm	l mm	l2 mm	Holder size	art.no.	€
HSK 63	63	130	340	50	32/25	32.5	85	50	32/35	**435019** 3225	325,–
										4194	



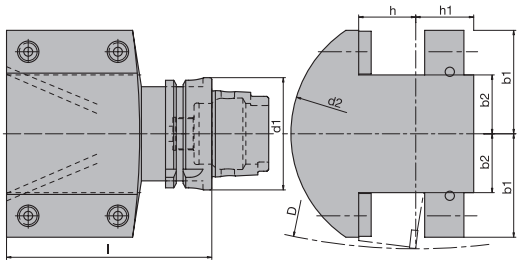


Tool holder, axial

- Internal coolant supply
- when machining with internal coolant supply, a coolant transfer pipe art.no. 4310110063.... should be used

Shank	d1 mm	b1 mm	b2 mm	h mm	h1 mm	l mm	Holder size	art.no.	€
HSK 63	63	58	32	25	45	102	25	**435021** 6325	383,–
								4194	



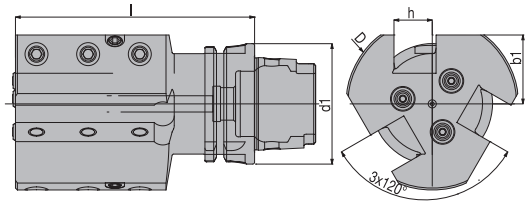


Tool holder, axial, 2-place

- Internal coolant supply
- when machining with internal coolant supply, a coolant transfer pipe art.no. 4310110063.... should be used

Shank	d mm	d2 mm	D mm	b1 mm	b2 mm	h mm	h1 mm	l mm	Holder size	art.no.	€
HSK 63	63	110	305	40	15	32/25	26.5	120	25/32	**435020** 2532	422,–
HSK 63	63	140	340	58	33	32/25	32.5	120	32/25	435020 3225	435,–
										4194	





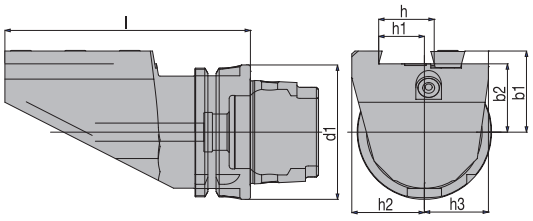
Tool holder, axial, 3-place

- Internal coolant supply
- when machining with internal coolant supply, a coolant transfer pipe art.no. 4310110063.... should be used

Shank	d1 mm	D mm	b1 mm	b2 mm	h mm	l mm	Holder size	art.no.	€
HSK 63	63	90	36	16	20	125	20	**435022** 0020	546,–
								4194	



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Grooving holder, axial

- Internal coolant supply
- when machining with internal coolant supply, a coolant transfer pipe art.no. 4310110063.... should be used

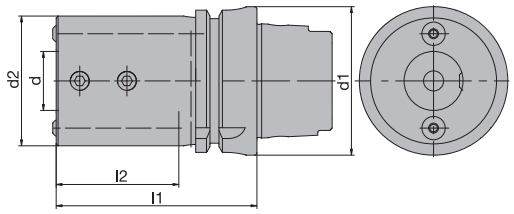
Shank	d1 mm	b1 mm	b2 mm	h mm	h1 mm	h2 mm	h3 mm	l mm	Holder size	art.no.	€
HSK 63	63	38	32	26	21.4	34	30	115	26	**435023** 0026	401,–
HSK 63	63	38	32	32	25	38	33	150	32	435023 0032	401,–

4194

KINTEK HSK-T tool holder for boring bars and indexable insert drills

- **DIN 69893 Form T (HSK-T)**
- Alloyed case-hardened steel with a core tensile strength of 800-1000N/mm²
- case-hardened to HRC 58 ± 2
- Case depth 0.4-0.5mm
- Finishing of fitting key according to ICTM tolerances





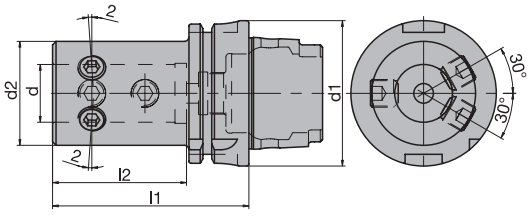
Boring bar holder, axial

- Internal coolant supply
- when machining with internal coolant supply, a coolant transfer pipe art.no. 4310110063.... should be used

Shank	d1 mm	d mm	d2 mm	l1 mm	l2 mm	Holder size	art.no.	€
HSK 63	63	8	32	70	40	E2x08	**435024** 6308	155,–
HSK 63	63	10	38	75	45	E2x10	435024 6310	155,–
HSK 63	63	12	40	75	45	E2x12	435024 6312	155,–
HSK 63	63	16	45	80	50	E2x16	435024 6316	155,–
HSK 63	63	20	50	80	50	E2x20	435024 6320	155,–
HSK 63	63	25	55	85	52	E2x25	435024 6325	155,–
HSK 63	63	32	72	95	58	E2x32	435024 6332	155,–
HSK 63	63	40	80	120	72	E2x40	435024 6340	155,–

4194





Tool holder for indexable insert drills, axial

- Internal coolant supply
- when machining with internal coolant supply, a coolant transfer pipe art.no. 4310110063.... should be used

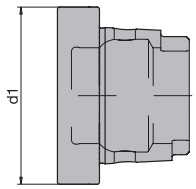
Shank	d1 mm	d mm	d2 mm	l1 mm	l2 mm	Holder size	art.no.	€
HSK 63	63	16	36	80	54	E1x16	**435025** 6316	152,–
HSK 63	63	20	40	80	54	E1x20	435025 6320	152,–
HSK 63	63	25	45	85	59	E1x25	435025 6325	152,–
HSK 63	63	32	52	90	63	E1x32	435025 6332	152,–
HSK 63	63	40	65	105	73	E1x40	435025 6340	152,–

4194



KINTEK HSK-T cover plate

- **DIN 69893 Form T (HSK-T)**
- Alloyed case-hardened steel with a core tensile strength of 800-1000N/mm²
- case-hardened to HRC 58 ± 2
- Case depth 0.4-0.5mm
- Finishing of fitting key according to ICTM tolerances



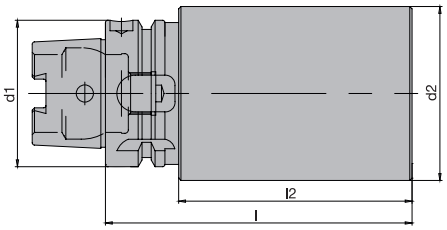


Steel design

Shank	d1 mm	art.no.	€
HSK 63	63	**435026** 6363 4194	48,–

KINTEK HSK-T blank for special tools

- **DIN 69893 Form T (HSK-T)**
- Alloyed case-hardened steel with a core tensile strength of 800-1000N/mm²
- case-hardened to HRC 58 ± 2
- Case depth 0.4-0.5mm
- Finishing of fitting key according to ICTM tolerances





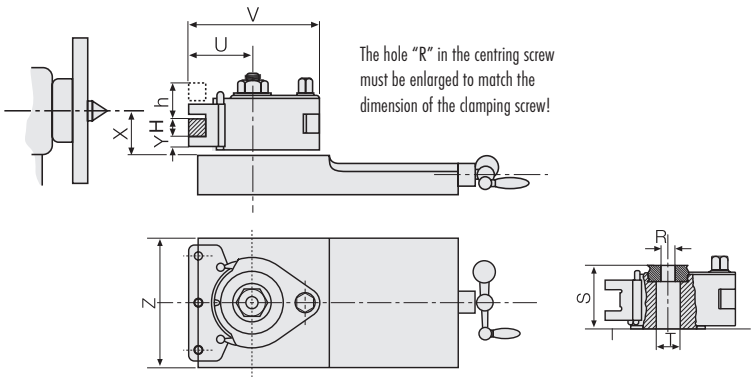
Steel design

Shank	d1 mm	d2 mm	l mm	l2 mm	art.no.	€
HSK 63	63	80	190	158	**435027** 6301	278,–
HSK 63	63	130	95	63	435027 6302 4194	300,–



ATORN® Quick-change tool holders

- Profile-ground, toothed central body attached to the lathe support along with the base body
- The base body can accommodate an unlimited number of interchangeable holders for turning or drilling tools, one after the other.
- 40 different steel holder angle settings possible
- Repeatability ± 0.01 mm



The hole "R" in the centring screw must be enlarged to match the dimension of the clamping screw!

Technical data												
		Aa	A		B		C			D1		
Change-holder size	D	12	16	20	25	32	32	40	45	40	50	63
Drive power max.	kW	1.1	2.2	2.2	6.6	6.6	13.2	13.2	13.2	22	22	22
Slide width max.	Z mm	80	100	100	150	150	180	180	180	200	200	200
Height adjustability	mm	10	14	14	22	14	40	36	32	38	28	24
Steel support	Y mm	6.2	10	10	12	13.5	15	16.5	16.5	20	20	20
Height of the mild steel max.	H mm	12	16	20	25	32	32	40	45	40	50	63
Overall width max.	V mm	70	100	100	150	150	192	202	202	230	234	242
Total height max.	S mm	37	54	54	75	75	105	105	105	122	122	122
Projection max	U mm	30	48	48	71	71	92	102	102	112	116	124
Bore Ø max.	T mm	12	35	35	40	40	55	55	55	65	65	65

Minimum level required X for steel holder D											
	Aa	A		B		C			D1		
Change-holder size D	12	16	20	25	32	32	40	45	40	50	63
Steel holder H mm	X min. mm										
6	12										
8	14	17									
10	16	19	19								
12	18	21	21	24	25						
(14)		23	23	26	27	29					
16		25	25	28	29	31	31	31			
20				32	33	35	35	35			
25				37	38	40	40	40	45		
(30)					45	45	45	45	50	51	52
32						47	47	47	52	52	52
40							55	55	60	60	60
45								60		65	65
50										70	70
63											83



Quick-release tool holder head with eccentric clamp

- Supplied with eccentric lever and square key for the holder
- Additional versions with different bores available on request

Holder size									art.no.	€
AA - D12	A1	B1	C1	D1	E1				**446501** 0012	250,–
A - D16/20	A2	B2	C2	D2	E2	F1	G1	H1	446501 1116	307,–
B - D25/32	A3	B3	C3	D3	E3	F2	G2	H2	446501 2225	453,–
C - D32/40/45	A4	B4	C4	D4	E4	F3	G3	H3	446501 3332	699,–
D1 - D40/50/63	A5	B5	C5	D5	E5	F4	G4	H4	446501 4440	1.239,–
									4137	

Spare parts

Eccentric bolts		
	art.no.	€
A1	446550 0012	50,–
A2	446550 1116	45,–
A3	446550 2225	69,–
A4	446550 3332	76,–
A5	446550 4440	93,50
	4137	

Protective cover with scale		
	art.no.	€
B1	446551 0012	42,50
B2	446551 1116	22,90
B3	446551 2225	30,50
B4	446551 3332	40,90
B5	446551 4440	112,–
	4137	

Centring disc		
	art.no.	€
C1	446552 0012	13,55
C2	446552 1116	12,70
C3	446552 2225	13,55
C4	446552 3332	22,90
C5	446552 4440	33,20
	4137	

Eccentric wrench		
	art.no.	€
D1	446553 0012	48,50
D2	446553 1116	53,80
D3	446553 2225	65,20
D4	446553 3332	65,20
D5	446553 4440	97,50
	4137	

Retaining strap with eccentric bolt		
	art.no.	€
E1	446560 0012	165,–
E2	446560 1116	233,–
E3	446560 2225	350,–
E4	446560 3332	510,–
E5	446560 4440	949,–
	4137	

Plunger		
	art.no.	€
F1	446562 1116	4,62
F2	446562 2225	4,62
F3	446562 3332	4,83
F4	446562 4440	6,15
	4137	

Plunger spring		
	art.no.	€
G1	446563 1116	1,39
G2	446563 2225	1,74
G3	446563 3332	1,74
G4	446563 4440	3,70
	4137	

Pointer		
	art.no.	€
H1	446565 1116	10,35
H2	446565 2225	10,65
H3	446565 3332	13,95
H4	446565 4440	25,10
	4137	



Quick-release boring bar holder, type BS

- With cylindrical bore for Morse taper sleeves and for direct attachment of boring bars
- Supplied with lockable height-adjustment screw and clamping screws
- Tool holder blanks available on request



suitable for holder size	for boring bar Ø mm	Total length mm	A1	B1	C1	D1	E1	F1	art.no.	€
AA	15	50	A1	B1	C1	D1	E1	F1	**446520** 0015	102,–
A	30	80	A2	B2	C2	D2	E2	F2	446520 1130	121,50
B	40	120	A3	B3	C3	D3	E3	F3	446520 2240	184,50
C	40	160	A4	B4	C4	D4	E4	F4	446520 3340	308,–
C	50	160	A4	B4	C4	D4	E4	F4	446520 3350	312,–
D1	63	180	A5	B5	C5	D5	E5	F5	446520 4463	649,–

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Boring bar

- For quick-release holders with straight bores
- Lateral slot, one side straight and one side inclined



suitable for holder size	Ø mm	for quadratic mm	Total length mm	art.no.	€
A	30	12x12	250	**446545** 1112	57,50
B	40	12x12	500	446545 2212	73,90
C	40	12x12	500	446545 3312	73,90
C	50	20x20	500	446545 3320	134,–
D1	63	20x20	600	446545 4420	210,–

4137

Morse taper sleeve, type H

- With jacking screw
- For mounting in BS quick-release boring bar holders, straight outer diameter
- For tools with a Morse taper shank



suitable for holder size	Shank Ø mm	Shank design interior	art.no.	€
A	30	MT 1	**446525** 1101	42,70
A	30	MT 2	446525 1102	45,20
B	40	MT3	446525 2203	55,–
B	40	MT 4	446525 2204	61,80
C	40	MT3	446525 3303	55,–
C	40	MT 4	446525 3304	61,80
C	50	MT3	446525 3313	70,–
C	50	MT 4	446525 3314	74,–
C	50	MT 5	446525 3315	100,–
D1	63	MT 5	446525 4405	144,–

4137

Quick-release boring tool holder type B

- With V-block
- For boring bars and other straight shank tools
- Supplied with lockable height-adjustment screw and clamping screws



suitable for holder size	for boring bar Ø mm	Total length mm	suitable quadratic-head bolt	A1	B1	C1	D1	E1	F1	art.no.	€
AA	12	50	M5 x 0.8 x 18	A1	B1	C1	D1	E1	F1	**446510** 0012	88,50
A	20	85	M7 x 1 x 23	A2	B2	C2	D2	E2	F2	446510 1120	88,50
B	32	130	M11 x 1 x 30	A3	B3	C3	D3	E3	F3	446510 2230	145,–
C	40	160	M14 x 1.5 x 40	A4	B4	C4	D4	E4	F4	446510 3340	249,–
C	50	160	M14 x 1.5 x 40	A4	B4	C4	D4	E4	F4	446510 3350	265,–
D1	63	180	M14 x 1.5 x 40	A5	B5	C5	D5	E5	F5	446510 4463	569,–

4137

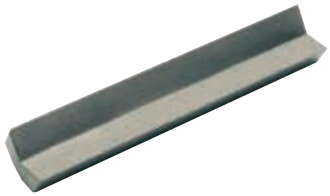
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Insert V-blocks, type P

- For holding small boring bars and boring tools in quick-release boring tool holder B

suitable for holder size	Total length mm	max. Ø mm	art.no.	€
A	85	14	**446515** 1114	19,95
B	130	20	446515 2220	20,40
C	160	25	446515 3325	36,90
C	160	32	446515 3332	44,50
D1	180	40	446515 4440	81,–

4137



Quick-release lathe tool holder, type D

- Flat tool support
- Supplied with lockable height-adjustment screw and clamping screws

suitable for holder size	D mm	Total length mm	suitable quadratic-head bolt							art.no.	€
AA	12	50	M5 x 0.8 x 18	A1	B1	C1	D1	E1	F1	**446505** 0012	83,50
A	16	75	M7 x 1 x 23	A2	B2	C2	D2	E2	F2	446505 1116	83,50
A	16	90	M7 x 1 x 23	A2	B2	C2	D2	E2	F2	446505 1117	83,50
A	20	75	M7 x 1 x 23	A2	B2	C2	D2	E2	F2	446505 1120	85,–
A	20	90	M7 x 1 x 23	A2	B2	C2	D2	E2	F2	446505 1121	85,–
B	25	120	M11 x 1 x 30	A3	B3	C3	D3	E3	F3	446505 2225	130,–
B	25	140	M11 x 1 x 30	A3	B3	C3	D3	E3	F3	446505 2226	130,–
B	32	120	M11 x 1 x 30	A3	B3	C3	D3	E3	F3	446505 2232	133,–
B	32	140	M11 x 1 x 30	A3	B3	C3	D3	E3	F3	446505 2233	133,–
C	32	150	M14 x 1.5 x 40	A4	B4	C4	D4	E4	F4	446505 3332	205,–
C	32	170	M14 x 1.5 x 40	A4	B4	C4	D4	E4	F4	446505 3333	205,–
C	40	150	M14 x 1.5 x 40	A4	B4	C4	D4	E4	F4	446505 3340	224,–
C	40	170	M14 x 1.5 x 40	A4	B4	C4	D4	E4	F4	446505 3341	224,–
C	45	170	M14 x 1.5 x 40	A4	B4	C4	D4	E4	F4	446505 3345	232,–
D1	40	180	M14 x 1.5 x 40	A5	B5	C5	D5	E5	F5	446505 4440	340,–
D1	50	180	M14 x 1.5 x 40	A5	B5	C5	D5	E5	F5	446505 4450	360,–
D1	63	180	M14 x 1.5 x 40	A5	B5	C5	D5	E5	F5	446505 4463	385,–

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Quick-release parting-off tool holder, type AS

- For parting-off tool type TS

suitable for holder size	suitable for							art.no.	€
AA	Parting-off tool TS, 2.5 x 10.0	A1	B1	C1	D1	E1	F1	**446540** 0001	140,–
A	Parting-off tool TS, 2.7 x 10.0	A2	B2	C2	D2	E2	F2	446540 1180	142,–
B	Parting-off tool TS, 4.2 x 15.9	A3	B3	C3	D3	E3	F3	446540 2200	179,–
C	Parting-off tool TS, 5.1 x 18.5	A4	B4	C4	D4	E4	F4	446540 3300	215,–

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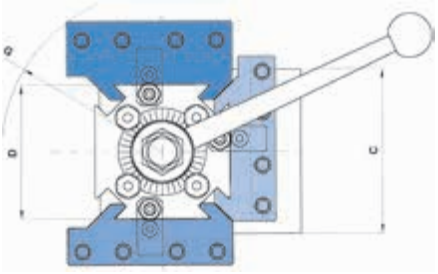
Spare parts

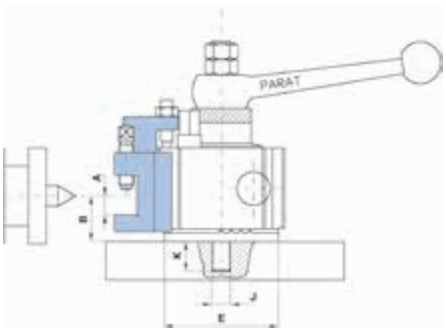
	Square pin key			Console with screws and nuts			Square-head screw			Height-adjustment screw			Height adjustment nut			Attachment screw for console		
	art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€		art.no.	€
A1	446554 0012	23,60	B1	446555 0012	35,10	C1	446557 0012	3,69	D1	446558 0012	5,90	E1	446559 0012	4,30	F1	446561 0012	5,75
A2	446554 1116	27,50	B2	446555 1116	31,80	C2	446557 1116	3,69	D2	446558 1116	2,95	E2	446559 1116	3,40	F2	446561 1116	1,09
A3	446554 2225	37,20	B3	446555 2225	41,10	C3	446557 2225	4,90	D3	446558 2225	3,69	E3	446559 2225	3,69	F3	446561 2225	1,80
A4	446554 3332	54,50	B4	446555 3332	48,30	C4	446557 3332	6,80	D4	446558 3332	6,80	E4	446559 3332	5,80	F4	446561 3332	1,91
A5	446554 4440	54,50	B5	446555 4440	86,50	C5	446557 4440	6,70	D5	446558 4440	9,70	E5	446559 4440	10,70	F5	446561 4440	5,75
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Quick-change tool holder

- For lathes
- Precise manufacture due to high precision and indexing accuracy (0.005 mm)
- Various production options (40 tool positions, 9° spacing possible)
- Quick height adjustment via adjusting screw
- Extremely flexible due to modular design
- Selecting the correct revolver head depends on the following parameters: lathe drive power, tool slide width C, turning tool height A

Assembly service on request







4-place revolver head

- Supplied with cranked box spanner and chuck key

Type	A mm	B mm	C mm	D mm	E mm	G mm	J mm	K mm	Drive power max. kW	Weight per unit kg	art.no.	€
RD1	20	30	90 - 100	84	80	180	M14 x 2	21	6	3	**446601** 0101	1.459,–
RD2	25	40	110 - 150	106	102	240	M16 x 2	25	15	6.5	446601 0201	1.859,–
RD3	40	60	150 - 180	134	133	300	M20 x 2.5	30	25	14	446601 0301	2.699,–
RD4	50	80	200 - 250	154	150	350	M24 x 3	35	45	21	446601 0401	3.549,–

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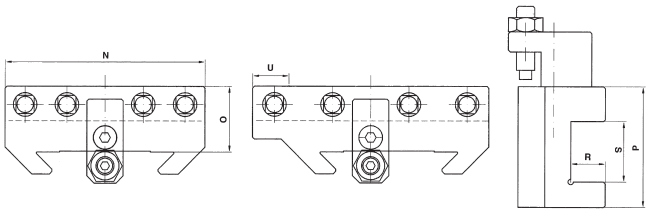


4-place revolver head with internal cooling

- Supplied with cranked box spanner, socket spanner, chuck key, clamping screw with internal bore, cooling hose, connecting piece, winding piece, locking screw

Type	A mm	B mm	C mm	D mm	E mm	G mm	J mm	K mm	Drive power max. kW	Weight per unit kg	art.no.	€
RD1+IC	20	30	90 - 100	84	80	180	M14 x 2	21	6	3	**446601** 0102	1.679,–
RD2+IC	25	40	110 - 150	106	102	240	M16 x 2	25	15	6.5	446601 0202	2.069,–
RD3+IC	40	60	150 - 180	134	133	300	M20 x 2.5	30	25	14	446601 0302	2.789,–
RD4+IC	50	80	200 - 250	154	150	350	M24 x 3	35	45	21	446601 0402	3.699,–

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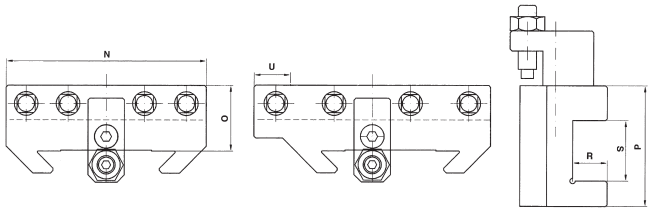
Quick-release holder, type WD

- Internal and external machining

Type	suitable for	N mm	O mm	P mm	R mm	S mm	U mm	Weight kg	art.no.	€
WD 1/12	RD1/RD1+IK/UD1	84	24	47	14	22	-	0.7	**446605** 0112	126,–
WD 1/20	RD1/RD1+IK/UD1	84	33	52	20	22	-	0.8	446605 0120	147,50
WD 2/25	RD2/RD2+IK/UD2	110	36	66	19	33	-	1.9	446605 0225	190,–
WD 3/32	RD3/RD3+IK/UD3	140	44	76	25	33	-	3	446605 0332	296,–
WD 3/40	RD3/RD3+IK/UD3	140	44	76	25	33	-	3.1	446605 0340	296,–
WD 4/40	RD4/RD4+IC	160	53	96	30	44	-	5	446605 0440	453,–
WD 4/50	RD4/RD4+IC	160	63	96	40	54	-	5.5	446605 0450	453,–

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Quick-release holder, type WDL

• Internal machining



Type	suitable for	N mm	O mm	P mm	R mm	S mm	U mm	Weight kg	art.no.	€
WDL 1/12	RD1/RD1+IK/UD1	100	24	47	14	22	16	0.8	**446635** 0112	134,50
WDL 1/20	RD1/RD1+IK/UD1	100	33	52	20	22	16	0.9	446635 0120	158,–
WDL 2/25	RD2/RD2+IK/UD2	130	36	66	19	33	20	2.1	446635 0225	199,–
WDL 3/32	RD3/RD3+IK/UD3	165	44	76	25	33	25	3.4	446635 0332	307,–
WDL 3/40	RD3/RD3+IK/UD3	165	44	76	25	43	25	3.4	446635 0340	307,–
WDL 4/40	RD4/RD4+IC	190	53	96	30	44	30	5.8	446635 0440	502,–
WDL 4/50	RD4/RD4+IC	190	63	96	40	54	30	6	446635 0450	502,–

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Quick-release holder, type WDPL

• For boring bars



Type	suitable for	N mm	O mm	P mm	R mm	S mm	U mm	Weight kg	art.no.	€
WDPL 1/12	RD1/RD1+IK/UD1	100	289	47	16	22	16	0.9	**446610** 0112	147,50
WDPL 2/25	RD2/RD2+IK/UD2	130	50	62	31	33	20	2.3	446610 0225	243,–
WDPL 3/32	RD3/RD3+IK/UD3	165	53	66	31	33	25	3.6	446610 0332	349,–
WDPL 4/40	RD4/RD4+IC	190	63	96	40	52	30	6.5	446610 0440	645,–

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Quick-release holder, type WB

• For clamping sleeves



Type	suitable for	N mm	O mm	P mm	R mm	S mm	U mm	Weight kg	art.no.	€
WB 1/30	RD1/RD1+IK/UD1	84	39	47	30	-	-	0.8	**446620** 0130	147,50
WB 2/40	RD2/RD2+IK/UD2	110	51	62	40	-	-	1.8	446620 0240	243,–
WB 3/40	RD3/RD3+IK/UD3	140	53	66	40	-	-	2.7	446620 0340	349,–
WB 3/50	RD3/RD3+IK/UD3	140	63	76	50	-	-	3.5	446620 0350	382,–
WB 4/60	RD4/RD4+IC	160	77	96	60	-	-	6	446620 0460	645,–

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Clamping sleeves, Morse taper



suitable for	External Ø mm	Shank design interior	art.no.	€
WB 1/30	30	MT 1	**446625** 0101	92,50
WB 1/30	30	MT 2	446625 0102	102,50
WB 2/40, WB 3/40	40	MT3	446625 0203	117,50
WB 2/40, WB 3/40	40	MT 4	446625 0204	121,–
WB 3/50	50	MT3	446625 0303	131,–
WB 3/50	50	MT 4	446625 0304	139,–
WB 4/60	60	MT 4	446625 0404	193,50
WB 4/60	60	MT 5	446625 0405	201,50

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Clamping sleeves, straight, slotted

suitable for	External Ø mm	Interior Ø mm	art.no.	€
WB 1/30	30	8	**446626** 0108	54,–
WB 1/30	30	10	446626 0110	54,–
WB 1/30	30	12	446626 0112	54,–
WB 1/30	30	15	446626 0115	54,–
WB 1/30	30	16	446626 0116	54,–
WB 1/30	30	20	446626 0120	54,–
WB 1/30	30	25	446626 0125	54,–
WB 2/40, WB 3/40	40	10	446626 0210	58,–
WB 2/40, WB 3/40	40	12	446626 0212	58,–
WB 2/40, WB 3/40	40	15	446626 0215	58,–
WB 2/40, WB 3/40	40	16	446626 0216	58,–

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suitable for	External Ø mm	Interior Ø mm	art.no.	€
WB 2/40, WB 3/40	40	20	446626 0220	58,–
WB 2/40, WB 3/40	40	25	446626 0225	58,–
WB 2/40, WB 3/40	40	32	446626 0232	58,–
WB 3/50	50	20	446626 0320	77,50
WB 3/50	50	25	446626 0325	77,50
WB 3/50	50	32	446626 0332	77,50
WB 3/50	50	40	446626 0340	77,50
WB 4/60	60	25	446626 0425	98,50
WB 4/60	60	32	446626 0432	98,50
WB 4/60	60	40	446626 0440	98,50

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Quick-release holder, type WDR

- External machining

Type	suitable for	N mm	O mm	P mm	R mm	S mm	U mm	Weight kg	art.no.	€
WDR 1/12	RD1/RD1+IK/UD1	100	24	47	14	22	16	0.8	**446630** 0112	134,50
WDR 1/20	RD1/RD1+IK/UD1	100	33	52	20	22	16	0.9	446630 0120	158,–
WDR 2/25	RD2/RD2+IK/UD2	130	36	66	19	33	20	2.1	446630 0225	199,–
WDR 3/32	RD3/RD3+IK/UD3	165	44	76	25	33	25	3.4	446630 0332	307,–
WDR 3/40	RD3/RD3+IK/UD3	165	44	76	25	43	25	3.4	446630 0340	307,–
WDR 4/40	RD4/RD4+IC	190	53	96	30	44	30	5.8	446630 0440	502,–
WDR 4/50	RD4/RD4+IC	190	63	96	40	54	30	6	446630 0450	502,–

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Quick-release holder, type WBW

- Blank

Type	suitable for	N mm	O mm	P mm	Weight kg	art.no.	€
WBW 1/30	RD1/RD1+IK/UD1	84	39	47	1.4	**446650** 0130	123,50
WBW 2/40	RD2/RD2+IK/UD2	110	51	62	3.2	446650 0240	195,50
WBW 3/40	RD3/RD3+IK/UD3	140	53	66	4.3	446650 0340	291,–
WBW 3/50	RD3/RD3+IK/UD3	140	63	76	5.7	446650 0350	319,–
WBW 4/60	RD4/RD4+IC	160	77	96	10	446650 0460	555,–

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Overview of tool holding fixtures

Holding fixtures		DIN 69893 A HSK-A	DIN ISO 7388-1 DIN 69871	DIN 7388-2 J MAS-BT	DIN 2080	Str. shank
	Drill chuck holding fixtures		**436103....** 1124	**436107....** 1124	**436101....** 1124	**400185....** 1125
	NC short drill chuck with worm gear ATORN	**440124....** 1126	**440127....** 1126	**440128....** 1126		
	NC short drill chuck with spur gear system ATORN	**440137....** 1126	**440135....** 1126	**440136....** 1126		
	NC short drill chuck with spur gear system SARA		**440243....** 1127	**440241....** 1127	**440242....** 1127	
	NC short drill chuck with spur gear system WTE		**441005....** 1127	**441007....** 1127	**441001....** 1127	
	ATORN precision ER collet chuck	**431236....** 1128	**431235....** 1128			
	CENTRO-P precision ER collet chuck	**431232....** 1129	**431230....** 1129			
	ATORN micro universal chuck					**442401....** 1131
	Micro precision chuck AMC	**441140....** 1132	**442140....** 1132	**443140....** 1132		
	APC precision chuck	**440122....** 1133	**440120....** 1133			
	Power chuck UltraGrip	**440302....** 1134	**440300....** 1134	**440301....** 1134		
	Power chuck UltraJet	**440202....** 1135	**440200....** 1135	**440201....** 1135		
	HG high-precision chuck	**431219....** 1136	**431213....** 1136			
	ATORN hydraulic expansion chuck		**433311....** 1137			
	ATORN high-speed hydraulic expansion chuck	**433409....** 1137	**433411....** 1137			
	Hydraulic expansion chuck HG PENCIL	**433801....** 1138	**433802....** 1138	**433803....** 1139		**433811....** 1139
	Ultra-slim hydraulic expansion chuck	**433341....** 1140	**433340....** 1140	**433342....** 1140		
	Hydraulic expansion chuck HYDRO-Grip HD	**433826....** 1141	**433806....** 1141	**433816....** 1141		
	Transverse slot shell-type milling cutter arbour with planar support		**435403....** 1142	**435407....** 1142		
	ER collet chuck with planar support		**431203....** 1143	**431107....** 1143		

Holding fixtures		 DIN 69893 A HSK-A	 DIN ISO 7388-1 DIN 69871	 DIN 7388-2 J MAS-BT	 DIN 2080	 Str. shank
	OZ collet chuck	**431509....** 1145	**431503....** 1145	**431507....** 1145	**431501....** 1145	
	ER collet chuck	**431009....** 1147	**431003....** 1147	**431007....** 1148	**431001....** 1148	**431016....** 1148
	ER collet chuck extension					**432000....** 1155
	DIN 6359 (WELDON) milling cutter holding fixture	**434509....** 1158	**434503....** 1159	**434507....** 1160	**434501....** 1169	
	Transverse slot shell-type milling cutter arbour	**435309....** 1162	**435303....** 1162	**435307....** 1163	**435301....** 1163	
	Combination shell-type milling cutter arbour	**434909....** 1164	**434903....** 1165	**434907....** 1165	**434901....** 1166	
	Boring bar blanks		**431002....** 1168		**431000....** 1168	
	Adapter sleeves for MT with tangs	**433509....** 1168	**433503....** 1169	**433507....** 1169	**433501....** 1169	
	Adapter sleeves for steep-angle tapers		**433903....** 1171	**433907....** 1171	**433901....** 1171	
	Adapter sleeves for MT with clamping threads		**433703....** 1171	**433707....** 1172		
	Tool holding fixtures for indexable insert drills		**434540....** 1172			
	Tool holding fixtures for screw-in milling cutters	**430236....** 1172	**430235....** 1173			
	Extension for modular milling cutter heads					**430352....** 1174
	ThermoGrip shrink fit holders	**430218....** 1178	**430216....** 1178			
	ThermoGrip JetSleeve2® shrink fit holders	**430231....** 1179	**430230....** 1179			
	Shrink-fit extensions					**430228....** 1180
	ATORN shrink fit holding fixtures 3°	**440431....** 1181	**440430....** 1182			
	ATORN shrink fit holding fixtures for heavy-duty machining 4,5°	**440231....** 1183	**440230....** 1184			
	Thread cutting quick-change chuck		**442003....** 1187	**442007....** 1187	**442001....** 1187	**442008....** 1187
	Thread cutting synchronised chuck ATORN	**442021....** 1189	**442020....** 1188			**442022....** 1189
	Milling cutter mount DIN6359 (Weldon) with planar support		**434603....** 1144	**434607....** 1144		

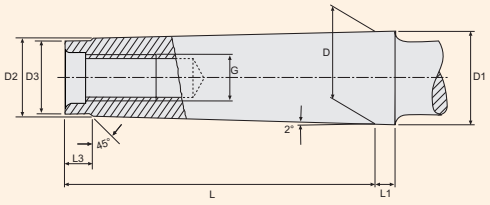
Shank designs

INFO

For milling machines and machining centres

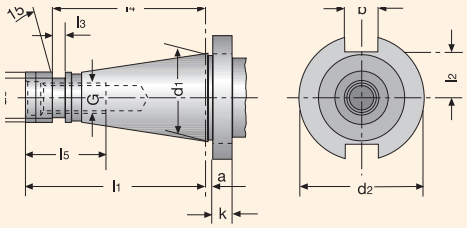
Morse taper
DIN 228 shape A (conical shank with clamping thread)

MK	D	D1	D2	D3	L	L1	L3	G
0	9,045	9,2	6,4	6,0	50,0	3,0	4	-
1	12,065	12,2	9,4	9,0	53,5	3,5	5	M 6
2	17,780	18,0	14,6	14,0	64,0	5,0	5	M10
3	23,825	24,1	19,8	19,0	81,0	5,0	7	M12
4	31,267	31,6	25,9	25,0	102,5	6,5	9	M16
5	44,399	44,7	37,6	35,7	129,5	6,5	10	M20
6	63,348	63,8	53,9	51,0	182,0	8,0	16	M24



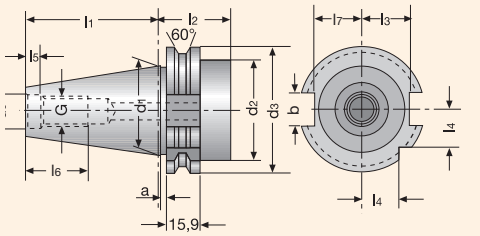
Steep taper shanks, DIN 2080 part 1 shape A

SK	d1	a	b	k	G	d2	d3	d4	l1	l2	l3	l4	l5
30	31,75	1,6	16,1	8	M12	50	-	17,2	68,4	16,2	-	-	24
40	44,45	1,6	16,1	10	M16	63	21,1	25	93,4	22,5	7	82	32
50	69,85	3,2	25,7	12	M24	97,5	-	39,2	126,8	35,3	-	-	47



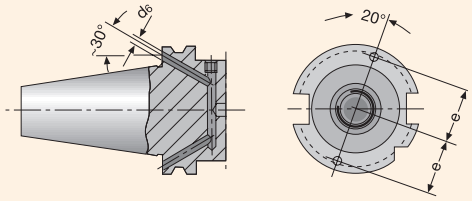
Steep-taper shanks DIN ISO 7388-1 / DIN 69871 part 1 shame A or shape AD with internal coolant supply

SK	G	d1	d2max	d3	d5		l1	l2	l3	l4	l5	l6	l7	a		
30	M12	31,75	45	50,00	13		47,80	35	19,0	15,0	5,5	24	16,4	3,2		
40	M16	44,45	50	63,55	17		68,40	35	25,0	18,5	8,2	32	22,8	3,2		
50	M24	69,85	80	97,50	25		101,75	35	37,7	30,0	11,5	47	35,5	3,2		



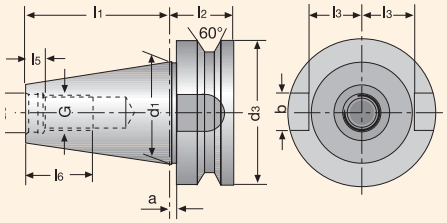
Steep-taper shanks DIN ISO 7388-1 / DIN 69871 part 1 shape B, with coolant supply via the collar

SK	G	d1	d2max	d3	d5	d6	l1	l2	l3	l4	l5	l6	l7	a	e	b
30	M12	31,75	45	50,00	13	4	47,80	35	19,0	15,0	5,5	24	16,4	3,2	21	16,1
40	M16	44,45	50	63,55	17	4	68,40	35	25,0	18,5	8,2	32	22,8	3,2	27	16,1
50	M24	69,85	80	97,5	25	6	101,75	35	37,7	30,0	11,5	47	35,5	3,2	42	25,7



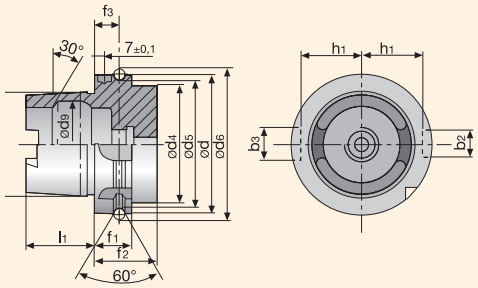
Steep-taper shanks DIN ISO 7388-2 J / MAS 403 BT

SK	G	d1		d3	d5		l1	l2	l3		l5	l6		a		b
30	M12	31,75		46	12,5		48,4	22	16,3		7,0	24		2		16,1
40	M16	44,45		63	17,0		65,4	27	22,5		8,2	32		2		16,1
50	M24	69,85		100	25,0		101,8	38	35,3		11,0	47		3		25,7



Hollow taper shank DIN 69893 shape A (HSK-A) with internal coolant supply

HSK	b2	b3	d2	d4	d5	d6	d9	f1	f2	f3	l1	h1
40	9	11	30	34	43	45	25,5	20	35	16	20	17
50	12	14	38	42	43	59,3	32	26	42	18	25	21
63	16	18	48	53	55	72,3	40	26	42	18	32	26,5



The different forms of hollow-taper shanks DIN 69893 (HSK)

Shape A - Automatic tool switching
- Central coolant supply
- **Additional T**, a slot in the taper is a tighter fit

Shape B - As shape A, but with enlarged collar

Shape C - Central coolant supply
- without gripper groove

Shape D - As shape C, but with additional coolant supply via the collar

Shape E - For HSC machining
- Central coolant supply
- without carrier grooves, with gripper groove

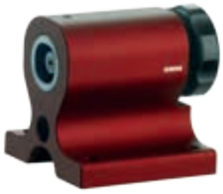
Shape F - As shape E, but with enlarged collar

Depending on the design type, a coolant transfer pipe may be required for some machines with an HSK holding fixture. Please observe the machine manufacturer's information.

SARA® Assembly system

- Aluminium housing
- 4 x 90° swivel-mounted
- Steel modular tool holders
- Quick and easy replacement of holding fixtures
- High flexibility
- Positive-locking fixing of the tools
- No damage to cone tip
- **Interchangeable adapter for polygon shank according to DIN 26623-1 also available**





438180 0001

Assembly system

Designation	art.no.	€
Basic unit, 4 x 90° swivel-mounted for interchangeable adapter	**438180** 0001	175,–

4136

Interchangeable adapter

- For DIN 69893 Form A (HSK-A)

Designation	art.no.	€
Tool holder HSK 40	**438382** 0040	175,–
Tool holder HSK 50	438382 0050	175,–
Tool holder HSK 63	438382 0063	175,–
Tool holder HSK 80	438382 0080	225,–
Tool holder HSK 100	438382 0100	225,–

4136



Interchangeable adapter

- For DIN ISO 7388-1 (DIN 69871) / 7388-2 (JIS B) and DIN 2080

Designation	art.no.	€
Tool holder SK 30	**438181** 0030	172,50
Tool holder SK 40	438181 0040	172,50
Tool holder SK 50	438181 0050	205,–

4136



Interchangeable adapter

- For DIN 69880 (VDI)

Designation	art.no.	€
Tool holder VDI 20	**438383** 0020	175,–
Tool holder VDI 30	438383 0030	175,–
Tool holder VDI 40	438383 0040	202,50
Tool holder VDI 50	438383 0050	202,50

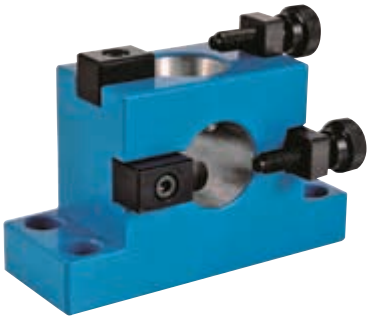
4136



Aluminium assembly aid

Can be used horizontally and vertically

- With steep-angle taper holder
- Aluminium assembly block
- Secured against falling out



Shank	L mm	B mm	H mm	art.no.	€
SK 30	127	47	75	**438049** 0030	132,–
SK 40	160	62	105	438049 0040	132,–
SK 50	180	99	155	438049 0050	205,–

4117

Steel assembly aid, swivel-mounted

Can be used horizontally and vertically, swivel-mounted

- Steel housing
- Support bracket rotatable through two directions at 45° intervals
- Secured against falling out
- Attachment holes in the base plate

also for HSK and VDI



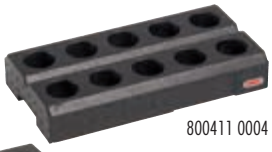
Shank	L mm	B mm	H mm	art.no.	€
SK 30	125	64	121	**438051** 0030	194,–
SK 40	130	64	136	438051 0040	194,–
SK 50	170	72	170	438051 0050	230,–
VDI 20	100	48	97	438051 0120	225,–
VDI 30	130	64	121	438051 0130	225,–
VDI 40	130	64	136	438051 0140	225,–
VDI 50	170	72	170	438051 0150	250,–
HSK 40	100	48	97	438051 0240	225,–
HSK 63	130	64	136	438051 0263	250,–
HSK 100	170	72	170	438051 0210	255,–

4117

SARA® CNC foam stand for tool holders

- For careful, space-saving storage and arrangement of tool holders
- Made from EPP (expanded polypropylene) particle foam
- Oil, acid and coolant resistant, shock and fracture-proof
- Low unladen weight, easy to clean
- Holders can easily be cut to size and customised with a band saw
- Holders can be joined together easily and securely with a glue gun
- Supplied without tools





800411 0004



800411 0002



800411 0003



800411 0005





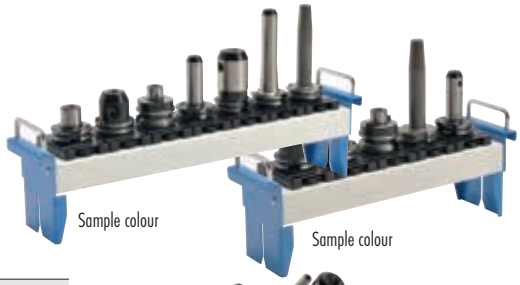
Foam tool holder stand

Holding fixtures	Number of holding fixtures	Width mm	Depth mm	Total height mm	Weight kg	art.no.	€
SK 40	6	595	90	100	0.226	**800411** 0001	17,30
SK 40	12	360	250	200	0.473	800411 0002	48,70
SK 50	6	390	260	145	0.537	800411 0003	54,–
HSK 63	10	360	180	60	0.178	800411 0004	49,20
HSK 63	15	360	245	150	0.356	800411 0005	52,80

8101

bedrunka+hirth CNC stand for tool holders

- For storing and arranging tool holders
- Can be flexibly equipped with various inserts (805030....)
- **Unless otherwise instructed, we supply the colour RAL 7035 (light grey)**
- **Two-colour CNC stands can also be ordered (see illustration)**
- **The standard colours shown below are available at no extra cost**
- **Supplied without inserts and tools**



Tool holder stand

- Our modular system offers you a wide range of options
- 1 box with screw-fixed sides, including handles
- Without tools or inserts

Number inserts	Width mm	Depth mm	Total height mm	model	art.no.	€
7x E1, 5x E2, 3x E3	470	120	180	WAT 500	**800406** 0001	67,–
10x E1, 7x E2, 5x E3	620	120	180	WAT 600	800406 0002	71,–
14x E1, 9x E2, 7x E3	820	120	180	WAT 800	800406 0005	76,–
16x E1, 11x E2, 8x E3	920	120	180	WAT 900	800406 0006	79,–

8101



Table-top stand for tool holders

- 2 or 4 holders with screw-fixed body
- Shelf and handle
- Without tools or inserts

Number inserts	Width mm	Depth mm	Total height mm	model	art.no.	€
14x E1, 10x E2, 6x E3	425	375	300	TAG 2-1	**800406** 0010	157,–
20x E1, 14x E2, 10x E3	575	375	300	TAG 2-2	800406 0030	163,–
28x E1, 20x E2, 12x E3	425	375	525	TAG 4-1	800406 0011	229,–
40x E1, 28x E2, 20x E3	575	375	525	TAG 4-2	800406 0031	240,–

8101

RAL 6011 | RAL 7035 | RAL 7040 | RAL 7016 | RAL 9005 | RAL 1023 | RAL 3003 | RAL 3020 | RAL 5012 | RAL 5013 | RAL 5010

bedrunka+hirth Tool inserts

- The insert is clipped into the system by means of a snap-fit closure (clip), and its spacing can easily be changed in increments of 25 mm at any time, without tools
- **Made from oil-resistant, shock-proof and fracture-proof ABS plastic**
- **Compatible with all Bedrunka+Hirth** CNC storage and transport systems
- Protective mounting and centring of tool holders
- Optimum use of space thanks to individually adjustable plastic inserts
- Functional modular system
- Knobs prevent tool holders from "adhering" to the surface of the inserts
- All tool sizes can be combined

Tool inserts

- made of shock-proof, oil-resistant ABS material

for tool holder	Type	Width mm	Depth mm	art.no.	€
SK 30	E1	49	103	**805030** 0030	5,20
SK 40	E2	74	103	805030 0040	5,70
SK 50	E3	99	103	805030 0050	6,30
VDI 30	E1	49	103	805030 1030	5,20
VDI 40	E2	74	103	805030 1040	5,70
VDI 50	E3	99	103	805030 1050	6,30
MT3	E1	49	103	805030 2003	5,20
MT 4	E1	49	103	805030 2004	5,20
MT 5	E2	74	103	805030 2005	5,70
HSK A32/B40 (3 bores)	E3	99	103	805030 3032	12,40
HSK A40/B50 (2 bores)	E3	99	103	805030 3040	10,20
HSK A50/B63	E2	74	103	805030 3050	7,80
HSK A63/B80	E2	74	103	805030 3063	8,40
HSK A80/B100	E3	99	103	805030 3080	9,–
HSK A100/B125	E3	99	103	805030 3100	9,50
CAPTO C3 (3 bores)	E3	99	103	805030 5030	12,40
CAPTO C4	E1	49	103	805030 5040	5,20
CAPTO C5	E2	74	103	805030 5050	6,20
CAPTO C6	E3	99	103	805030 5060	7,–
CAPTO C8	E3	99	103	805030 5080	9,–
Universal inserts, solid material Ø 80 mm	E3	99	103	805030 4000	9,–

8101


805030 0040


805030 3032


805030 3040


805030 4000


805030 5030

Data holders

- Clear marking of tool holders
- Tidy-looking tool storage
- Made of plastic
- Minimised tooling time
- Tool optimisation through different colours

Systematic labelling



for SK40 / HSK63

Colour	art.no.	€
Blue	**438061** 0002	3,70
Brown	438061 0005	3,70
Yellow	438061 0004	3,70
Grey	438061 0006	3,70
Green	438061 0003	3,70
Red	438061 0001	3,70

4121

for SK50 / HSK100

Colour	art.no.	€
Blue	**438062** 0002	4,50
Brown	438062 0005	4,50
Yellow	438062 0004	4,50
Grey	438062 0006	4,50
Green	438062 0003	4,50
Red	438062 0001	4,50

4121

Taper wiper

- SK and MT wipers with robust wooden body and felt strips
- HSK wipers with robust plastic body and felt strips
- For cleaning the internal taper on machines and sleeves
- Felt strips resistant to oil and emulsions
- High absorption capacity
- Long service life







Hollow taper wiper

for taper support	Total length mm	art.no.	€
HSK 100	199	**400560** 1100	71,50
HSK 32	138	400560 1032	49,70
HSK 40	142	400560 1040	51,50
HSK 50	152	400560 1050	53,50
HSK 63	168	400560 1063	56,50

4109

Steep-angle taper wiper

for taper support	Total length mm	art.no.	€
SK 30	168	**400560** 0030	12,75
SK 40	188	400560 0040	15,70
SK 50	240	400560 0050	27,60

4109

Morse taper wiper

for taper support	Total length mm	art.no.	€
MT 1	157	**400560** 0001	8,35
MT 2	192	400560 0002	10,55
MT3	196	400560 0003	13,15
MT 4	222	400560 0004	16,30
MT 5	258	400560 0005	23,–

4109

Universal workpiece stop Stop-Loc













- **High-strength aluminium design**
- Adjustment range up to 140 mm
- Triangular with 2 setting V-blocks

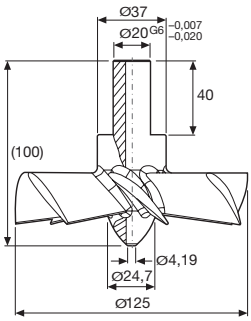


Length mm	art.no.	€
150	**421304** 0001	33,50

4153

ATORN® Chip booster

- Made from high-strength anodised aluminium
- Automatic cleaning of machine tool working area
- Reduced auxiliary processing times
- Low compressed air consumption
- Central coolant supply
- Balanced to G 2.5 / 12,000 rpm





Ø mm	Shank Ø mm	art.no.	€
125	20	**400561** 0125	295,–

4144

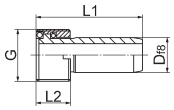
Coolant transfer pipe

- For optimising the central coolant supply
- For DIN 69893-HSK-A hollow shank tapers, with two mounted sealing rings

Shank	L1 mm	L2 mm	D mm	Thread	art.no.	€
PSC 40	25	12	6	M14 x 1	**431011** 0004	27,70
PSC 50	28	14	7	M16 x 1.5	431011 0005	27,70
PSC 63	31	15	8	M20 x 2	431011 0006	27,70
PSC 80	31.5	15	10	M20 x 2	431011 0008	27,70
HSK 32	26	5.5	6	M10 x 1	431011 0032	10,80
HSK 80	40	13	14	M20 x 1.5	431011 0080	10,80
HSK 100	44	15.5	16	M24 x 1.5	431011 0100	10,80
HSK 40	29.5	7.5	8	M12 x 1	431011 0040	10,80
HSK 50	33	9.5	10	M16 x 1	431011 0050	10,80
HSK 63	34.5	11.5	12	M18 x 1	431011 0063	10,80

4117

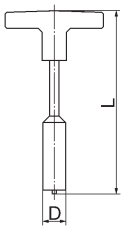




Coolant transfer pipe key

Shank	L mm	D mm	art.no.	€
HSK 32	115	8.5	**431018** 0032	24,20
HSK 40	115	10.5	431018 0040	24,20
HSK 50	115	14.5	431018 0050	24,20
HSK 63	136	16.5	431018 0063	21,50
HSK 80	136	18.5	431018 0080	27,30
HSK 100	136	22	431018 0100	28,30

4117





Socket spanner for pull studs



for DIN ISO 7388-1 and DIN ISO 7388-2

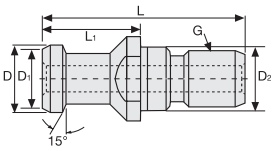
Shank	art.no.	€
SK 40	**431028** 0040	35,–
SK 50	431028 0050	49,–
BT 40	431028 1040	31,–
BT 50	431028 1050	47,–

4197



ATORN® Pull studs

- For tools with a steep-angle taper in accordance with DIN 69871 and JIS B 6339 (MAS-BT)
- All pull studs made from 16MnCr5, case hardened to HRC 58 ± 2
- Soft thread and bore, burnished and ground
- **Pull studs with O-ring = sealed**
- Other versions available on request (machine model must be specified)



DIN ISO 7388-3 AD, with bore

suitable for	D mm	D1 mm	D2 mm	Thread	L mm	L1 mm	Bore hole Ø mm	O-ring	art.no.	€
SK30	13	9	13	M12	44	24	4	Yes	**438501** 0030	9,65
SK40	19	14	17	M16	54	26	7	Yes	438501 0040	9,25
SK50	28	21	25	M24	74	34	11.5	Yes	438501 0050	11,50

4133

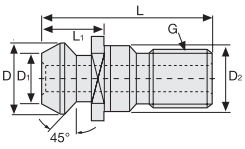


DIN ISO 7388-3 AF, without bore

suitable for	D mm	D1 mm	D2 mm	Thread	L mm	L1 mm	Bore hole Ø mm	O-ring	art.no.	€
SK30	13	9	13	M12	44	24	-	Yes	**438502** 0030	9,90
SK40	19	14	17	M16	54	26	-	Yes	438502 0040	9,65
SK50	28	21	25	M24	74	34	-	Yes	438502 0050	11,95

4133





DIN ISO 7388-3 UD, with bore

suitable for	D mm	D1 mm	D2 mm	Thread	L mm	L1 mm	Bore hole Ø mm	O-ring	art.no.	€
SK40	18.95	12.95	17	M16	44.5	16.25	7	Yes	**438505** 0040	10,40
SK50	29.1	19.6	25	M24	65.5	25.55	11.5	Yes	438505 0050	13,50

4133

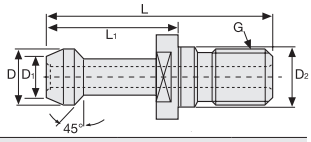


DIN ISO 7388-3 UF, without bore

suitable for	D mm	D1 mm	D2 mm	Thread	L mm	L1 mm	Bore hole Ø mm	O-ring	art.no.	€
SK40	18.95	12.95	17	M16	44.5	16.25	-	Yes	**438506** 0040	9,45
SK50	29.1	19.6	25	M24	65.5	25.55	-	Yes	438506 0050	12,55

4133





DIN ISO 7388-3 JD 45°, with bore

suitable for	D mm	D1 mm	D2 mm	Thread	L mm	L1 mm	Bore hole Ø mm	O-ring	art.no.	€
SK30	11	7	12.5	M12	43	23	2.7	Yes	**438509** 4530	11,75
SK40	15	10	17	M16	60	35	4	Yes	438509 4540	10,20
SK50	23	17	25	M24	85	45	6	Yes	438509 4550	15,10

4133

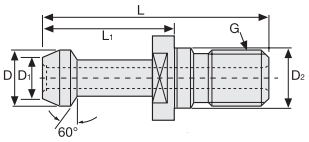


DIN ISO 7388-3 JF 45°, without bore

suitable for	D mm	D1 mm	D2 mm	Thread	L mm	L1 mm	Bore hole Ø mm	O-ring	art.no.	€
SK30	11	7	12.5	M12	43	23	-	No	**438510** 4530	10,20
SK40	15	10	17	M16	60	35	-	Yes	438510 4540	9,65
SK50	23	17	25	M24	85	45	-	Yes	438510 4550	15,20

4133





DIN ISO 7388-3 JD 60°, with bore

suitable for	D mm	D1 mm	D2 mm	Thread	L mm	L1 mm	Bore hole Ø mm	O-ring	art.no.	€
SK30	11	7	12.5	M12	43	23	2.7	No	**438508** 6030	10,30
SK40	15	10	17	M16	60	35	4	Yes	438508 6040	9,65
SK50	23	17	25	M24	85	45	6	Yes	438508 6050	14,80

4133

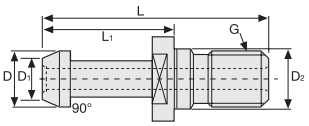


DIN ISO 7388-3 JF 60°, without bore

suitable for	D mm	D1 mm	D2 mm	Thread	L mm	L1 mm	Bore hole Ø mm	O-ring	art.no.	€
SK30	11	7	12.5	M12	43	23	-	No	**438510** 6030	9,55
SK40	15	10	17	M16	60	35	-	Yes	438510 6040	9,45
SK50	23	17	25	M24	85	45	-	Yes	438510 6050	14,70

4133





DIN ISO 7388-3 JD 90°, with bore

suitable for	D mm	D1 mm	D2 mm	Thread	L mm	L1 mm	Bore hole Ø mm	O-ring	art.no.	€
SK40	15	10	17	M16	60	35	4	Yes	**438511** 9040	9,45
SK50	23	17	25	M24	95	45	6	Yes	438511 9050	14,80

4133

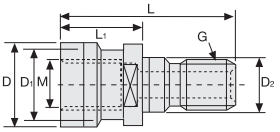


DIN ISO 7388-3 JF 90°, without bore

suitable for	D mm	D1 mm	D2 mm	Thread	L mm	L1 mm	Bore hole Ø mm	O-ring	art.no.	€
SK40	15	10	17	M16	60	35	4	Yes	**438512** 9040	9,45
SK50	23	17	25	M24	95	45	6	Yes	438512 9050	14,70

4133



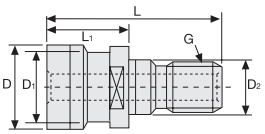


Ott ring groove, 15° with tapped head, for DIN 69871 AD shank

suitable for	D mm	D1 mm	D2 mm	Thread	L mm	L1 mm	Bore hole Ø mm	O-ring	art.no.	€
SK40	25	21.1	17	M16	53	25.1	M16 / 7.5	Yes	**438515** 0040	11,50
SK50	39.6	32	25	M24	65.1	25.1	M24 / 11.5	Yes	438515 0050	15,80

4133





Ott ring groove, 15° with bore, for DIN 69871 AD shank

suitable for	D mm	D1 mm	D2 mm	Thread	L mm	L1 mm	Bore hole Ø mm	O-ring	art.no.	€
SK40	25	21.1	17	M16	53	25.1	7.5	Yes	**438516** 0040	10,70
SK50	39.6	32	25	M24	65.1	25.1	11.5	Yes	438516 0050	14,70

4133

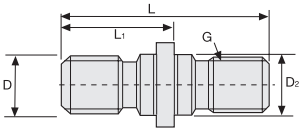


Ott ring groove, 15° without bore, for DIN 69871 AD shank

suitable for	D mm	D1 mm	D2 mm	Thread	L mm	L1 mm	Bore hole Ø mm	O-ring	art.no.	€
SK40	25	21.1	17	M16	53	25.1	-	No	**438517** 0040	10,70
SK50	39.6	32	25	M24	65.1	25.1	-	No	438517 0050	14,30

4133





Saw-tooth thread stud SK40 S20X2 for cover

suitable for	D mm	D1 mm	D2 mm	Thread	L mm	L1 mm	Bore hole Ø mm	O-ring	art.no.	€
SK40	S20 x 2	-	17	S20x2	56.2	28	-	No	**438520** 0041	18,10

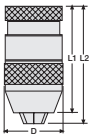
4133



SARA® Precision drill chuck Goldstück

- **With clamp force booster**
- Special design for the highest torques (clamp forces)
- The clamp force booster can be used to double the retention force
- With **DIN 238 internal taper**
- **Suitable for clockwise rotation**
- Supplied with chuck key







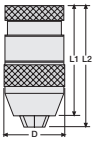
Clamping range mm	Taper support	L2 mm	L1 mm	D mm	art.no.	€
0 - 13	B 16	92	103	51.5	**400101** 0013	146,50
3 - 16	B 16	95	108	56	400101 0016	157,50

4101

ROHM Quick-release drill chuck SPIRO

- **Precision design**
- Self-clamping without key, self-acting re-tensioning
- Particularly suitable for high speeds and precision work
- **For clockwise rotation**
- **Internal taper, DIN 238**
- True-running accuracy 0.05 mm
- Further sizes available on request







Clamping range mm	Taper support	L1 mm	L2 mm	D mm	art.no.	€
0 - 10	B 12	82.5	90.1	43	**400115** 0005	152,–
0 - 10	B 16	82.5	90.1	43	400115 0006	152,–
1 - 13	B 16	94	102.5	50	400115 0007	163,–
3 - 16	B 16	96.5	106.8	55	400115 0008	175,–

4186

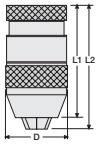
ROHM Keyed drill chuck PRIMA

Internal taper, DIN 238

- Industrial version with key
- Further sizes available on request







Clamping range mm	Taper support	Wrench size	L1 mm	L2 mm	D mm	art.no.	€
0.5 - 8	B 12	S 1	47.5	57.5	29.5	**400125** 0001	29,30
1 - 10	B 16	S 2	63	77	42.8	400125 0002	32,70
1 -16	B 18	S 3	79	98	56.5	400125 0004	76,80
5 - 20	B 22	S 4	92.5	113.5	65	400125 1004	153,–

4186

Spare key

- **DIN 6349**
- For keyed drill chucks



Wrench size	Pin Ø mm	Total height mm	art.no.	€
S 1	4	30	**400140** 0001	2,77
S 2	6	41	400140 0002	2,77
S 3	8	50	400140 0003	3,88
S 4	9	75	400140 0005	4,98

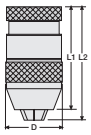
4186

RÖHM Quick-release drill chuck SUPRA

- **Clockwise rotation**
- Without key, self-clamping
- Further sizes and 3/8 inch x 24 female thread available on request







Internal taper in accordance with DIN 238

Clamping range mm	Taper support	L1 mm	L2 mm	D mm	art.no.	€
0 - 6.5	B 10	59.5	65.6	32	**400145** 0001	83,60
0 - 8	B 12	67	73.4	35.8	400145 0003	83,40
0 - 10	B 12	79.5	86.1	40.2	400145 0004	90,20
0 - 10	B 16	82.5	89.1	40.2	400145 0005	90,20
1 - 13	B 12	78.8	86.1	40.2	400145 1006	76,80
1 - 13	B 16	93	101.5	46	400145 0006	96,70
3 - 16	B 16	96.5	106.8	51	400145 0007	103,–
3 - 16	B 18	96.5	106.8	51	400145 0008	103,–

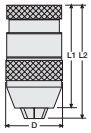
4186

RÖHM Quick-release drill chuck SUPRA SK

- **With clamping force locking mechanism**
- Industrial version
- **Clockwise rotation**
- **Female thread**
- Without key, self-clamping
- **Specifically for hammer drills and machines with high natural frequencies**





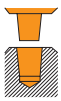


Clamping range mm	Female thread	L1 mm	L2 mm	D mm	art.no.	€
0.5 - 10	3/8'' x 24	66	73.7	40	**400155** 0001	76,80
1.0 - 13	1/2'' x 20	74.2	83.3	42.8	400155 0003	83,60

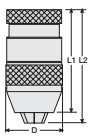
4186

ALBRECHT Precision drill chuck SBF

- Self-clamping allows for simple and quick operation
- Easy to clamp and open by hand (no key required)
- All wearing parts case-hardened, ground and replaceable
- **For clockwise rotation**
- **Internal taper DIN ISO 239-B**
- Further sizes, versions with fastening screw thread UNF and with diamond-coated clamping jaws available on request







DIN 239 B..

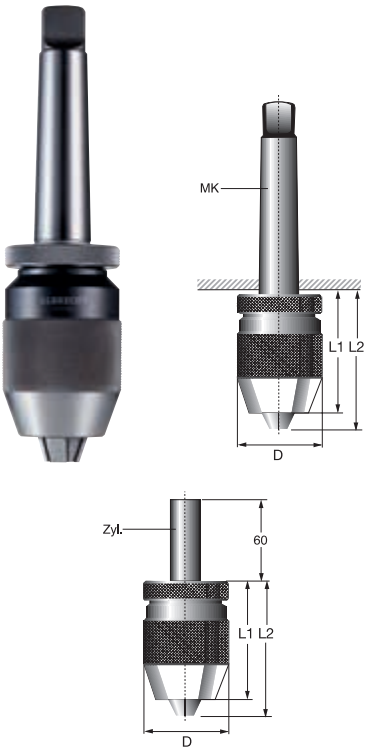
- * = DIN 239 B18 with short taper support

Clamping range mm	Taper support	L1 mm	L2 mm	D mm	art.no.	€
0.2 - 1.5	B 06	35	37	19	**400105** 0000	207,10
0.2 - 3	B 06	44	48	24	400105 0001	172,30
0.5 - 6.5	B 12	62	68	34	400105 0005	167,90
0.5 - 10	B 12	80	92	43	400105 0007	168,10
0.5 - 10	B 16	80	92	43	400105 0008	168,10
1 - 13	B 16	91	103	50	400105 0009	169,60
3 - 16	B 16	96	109	56	400105 0010	193,20
3 - 16	B 18*	96	109	56	400105 0011	193,20

4102

ALBRECHT Precision drill chuck SBF-plus

- **With mounting shank**
- Compact design
- High stability and high true-running accuracy
- **For clockwise rotation**
- **Advantage:** The SBF-plus drill chuck is a total of 21 mm shorter than two-part systems consisting of a taper and drill chuck.
- Version with diamond-coated clamping jaws available on request



Morse taper holding fixture

Clamping range mm	Shank	L1 mm	L2 mm	D mm	art.no.	€
1 - 13	MT 2	85	97	50	**400156** 0213	186,40
1 - 13	MT3	85	97	50	400156 0313	189,80
1 - 13	MT 4	87	99	50	400156 0413	197,30
3 - 16	MT 2	89	103	56	400156 0216	209,40
3 - 16	MT3	89	103	56	400156 0316	212,70
3 - 16	MT 4	90	104	56	400156 0416	220,70
					4102	

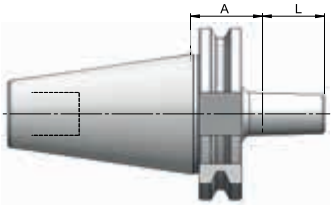
Straight shank

Clamping range mm	Shank Ø mm	L1 mm	L2 mm	D mm	art.no.	€
1 - 13	16 x 60	79	91	50	**400156** 1613	185,80
					4102	

SARA® Drill chuck holding fixtures

DIN 238

- **Without drill chuck**
- Alloyed case-hardened steel with a core tensile strength of min. 800 N/mm2
- Case-hardened to HRC 60 ± 2 (HV 700 ± 50), case depth 0.8 mm ± 0.2 mm, burnished
- Pre-balanced to G 6.3 / 15,000 rpm
- **Accuracy:** Taper angle tolerance quality < AT3 in accordance with DIN 7187 and DIN 2080
- Max. true running accuracy < 0.005 mm
- SK 30 holding fixtures available on request



DIN ISO 7388-1 / DIN 69871 A



Shank	Taper support	A mm	L mm	art.no.	€
SK 40	B 12	25	18.5	**436103** 4012	38,–
SK 40	B 16	25	24	436103 4016	38,–
SK 40	B 18	35	32	436103 4018	38,–
SK 50	B 16	25	24	436103 5016	49,–
SK 50	B 18	25	32	436103 5018	49,–
				4117	

JIS B 6339 (MAS 403 BT) A



Shank	Taper support	A mm	L mm	art.no.	€
BT 40	B 12	32	18.5	**436107** 4012	38,–
BT 40	B 16	32	24	436107 4016	38,–
BT 40	B 18	32	32	436107 4018	38,–
BT 50	B 16	43	24	436107 5016	49,–
BT 50	B 18	43	32	436107 5018	49,–
				4117	

DIN 2080



Shank	Taper support	A mm	L mm	art.no.	€
SK 40	B 12	15	18.5	**436101** 4012	37,–
SK 40	B 16	17	24	436101 4016	37,–
SK 40	B 18	17	32	436101 4018	37,–
SK 50	B 16	20	24	436101 5016	48,–
SK 50	B 18	20	32	436101 5018	48,–
				4117	

SARA® Plug-in shank

- **For drill chucks with internal tapers in accordance with DIN 238-B**
- **With Morse taper shank and tangs**
- Hardened and ground
- Further sizes available on request

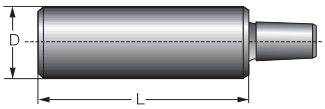


Shank	Taper support	Taper Ø mm	art.no.	€
MT 1	B 10	10.095	**400180** 0110	6,75
MT 1	B 12	12.065	400180 0112	6,75
MT 1	B 16	15.733	400180 0116	6,75
MT 1	B 18	17.78	400180 0118	7,–
MT 2	B 10	10.095	400180 0210	7,65
MT 2	B 12	12.065	400180 0212	7,60
MT 2	B 16	15.733	400180 0216	7,60
MT 2	B 18	17.78	400180 0218	7,60
MT3	B 12	12.065	400180 0312	10,–
MT3	B 16	15.733	400180 0316	10,20
MT3	B 18	17.78	400180 0318	10,45
MT3	B 22	21.793	400180 0322	10,75
MT 4	B 16	15.733	400180 0416	16,85
MT 4	B 18	17.78	400180 0418	17,05
MT 4	B 22	21.793	400180 0422	17,20
MT 5	B 16	15.733	400180 0516	28,50
MT 5	B 18	17.78	400180 0518	29,60
MT 5	B 22	21.793	400180 0522	32,30

4107

ALBRECHT Präzisions-Spannfutter Precision plug-in shank

- **For drill chucks with internal tapers in accordance with DIN 239-B**
- Precision version, hardened and ground
- True-running accuracy 2 µm
- Further sizes available on request





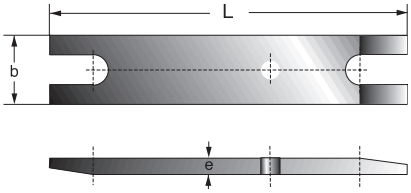
D mm	L mm	Taper support	art.no.	€
6	35	B 06	**400185** 0606	16,60
8	35	B 10	400185 0810	16,60
10	50	B 10	400185 1010	20,70
10	50	B 12	400185 1012	20,70
12	60	B 16	400185 1216	27,90
16	50	B 16	400185 1616	27,90
20	60	B 16	400185 2016	30,30

4102

ALBRECHT Präzisions-Spannfutter Chuck removal tool ADG

- Properly removes drill chucks from the drill chuck holding fixture
- Prevents damage to drill chucks, machine spindles or taper mandrels





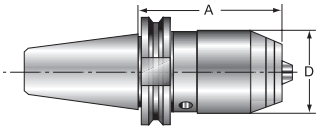
L mm	b mm	e mm	suitable for taper support	art.no.	€
120	20	10	B 06	**400550** 0006	25,10
170	30	10	B 10, B 12	400550 1012	35,40
210	40	12	B 16, B 18	400550 1618	37,40

4102

ATORN® NC short drill chuck with worm gear

- **Clamping by means of an integrated worm gear**
- Clamping range 1.0 to 16.0 mm
- High true running accuracy, max. 0.03 mm
- **Suitable for clockwise and anti-clockwise rotation**
- Long service life, wearing parts hardened and ground
- Balanced up to 7000 rpm With a residual imbalance of max. 40 g/mm
- Supplied with hexagonal key
- Max. permitted rotational speed with balanced tool 35,000 rpm

Clamping range 1.0 to 16.0 mm with internal coolant supply



DIN 69893 A (HSK)

- Internal coolant supply



Shank	Clamping range mm	A mm	D mm	Tightening torque max. N-m	Retention force N	Wr. width mm	True running accuracy mm	art.no.	€
HSK 63	1 - 16	98	50	10	90	4	0.03	**440129** 6316 4101	299,–

DIN ISO 7388-1 / DIN 69871 AD

- Internal coolant supply



Shank	Clamping range mm	A mm	D mm	Tightening torque max. N-m	Retention force N	Wr. width mm	True running accuracy mm	art.no.	€
SK 40	1 - 16	80	50	10	90	4	0.03	**440127** 4016	230,–
SK 50	1 - 16	80	50	10	90	4	0.03	440127 5016 4101	299,–

JIS B 6339 A (MAS BT)

- Internal coolant supply

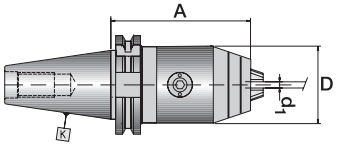


Shank	Clamping range mm	A mm	D mm	Tightening torque max. N-m	Retention force N	Wr. width mm	True running accuracy mm	art.no.	€
BT 40	1 - 16	88	50	10	90	4	0.03	**440128** 4016 4101	230,–

ATORN® NC short drill chuck with spur gear system

- **Clamping by means of a spur gear system**
- **Suitable for clockwise and anticlockwise rotation**
- True-running accuracy 0.02 mm
- Short clamping and retooling times
- Very short design
- For drilling, reaming, countersinking, thread cutting and simple finishing work on machining centres and CNC lathes
- Pre-balanced to G 6.3 at 25,000 rpm
- Max. permitted speed with balanced tool 35,000 rpm
- Max. permitted speed with unbalanced tool 7,000 rpm

Clamping range 0.5 to 16.0 mm



DIN 69893 - HSK type A

- Internal coolant supply



Shank	Clamping range mm	A mm	D mm	Tightening torque max. N-m	Retention force N	Wr. width mm	True running accuracy mm	art.no.	€
HSK-A 63	0.5 - 16	109	57	20	90	6	0.02	**440137** 6316 4101	299,–

DIN ISO 7388-1 AD / DIN 69871 AD/AF

- Internal coolant supply



Shank	Clamping range mm	A mm	D mm	Tightening torque max. N-m	Retention force N	Wr. width mm	True running accuracy mm	art.no.	€
SK 40	0.5 - 16	90	57	20	90	6	0.02	**440139** 4016 4101	230,–

JIS B 6339 A (JIS B 6339)

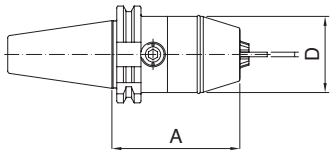
- Internal coolant supply



Shank	Clamping range mm	A mm	D mm	Tightening torque max. N-m	Retention force N	Wr. width mm	True running accuracy mm	art.no.	€
BT 40	0.5 - 16	90	57	20	90	6	0.02	**440136** 4016 4101	230,–

SARA® NC short drill chuck with spur gear system

- **Clamping via spur gear system**
- **Clockwise and anti-clockwise rotation**
- **True running accuracy 0.05 mm**
- Reliable bevel-pinion gear
- Slim design
- Max. permitted rotational speed with unbalanced tool 7,000 rpm





DIN ISO 7388-1 Form A / DIN 69871

Shank	Clamping range mm	D mm	A mm	Tightening torque max. N·m	Retention force N	Wr. width mm	True running accuracy mm	art.no.	€
SK 40	0.5 - 13	50	84	20	40	6	0.05	**440243** 4013	185,–
SK 40	2.5 - 16	57	84	20	40	6	0.05	440243 4016	190,–
								4108	



DIN ISO 7388-2 Form A / (JIS B6339)

Shank	Clamping range mm	D mm	A mm	Tightening torque max. N·m	Retention force N	Wr. width mm	True running accuracy mm	art.no.	€
BT 40	0.5 - 13	50	94	20	40	6	0.05	**440241** 4013	185,–
BT 40	2.5 - 16	57	94	20	40	6	0.05	440241 4016	190,–
								4108	

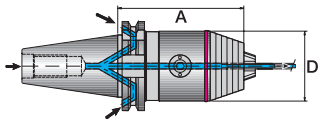


DIN 2080 Form A

Shank	Clamping range mm	D mm	A mm	Tightening torque max. N·m	Retention force N	Wr. width mm	True running accuracy mm	art.no.	€
SK 40	0.5 -13	50	78	20	40	6	0.05	**440242** 4013	185,–
SK 40	2.5 - 16	57	78	20	40	6	0.05	440242 4016	190,–
								4108	

wte NC short drill chuck with spur gear system

- **Clamping via spur gear system**
- True running accuracy 0.02 mm
- High clamping force
- Short clamping and retrofitting times
- Very short design
- **Suitable for clockwise and anti-clockwise rotation**
- Further DIN versions available on request
- Pre-balanced to G 6.3 / 25,000 rpm
- Max. permitted rotational speed with balanced tool 35,000 rpm



DIN ISO 7388-1 / DIN 69871

Shank	Clamping range mm	D mm	A mm	Tightening torque max. N·m	Retention force N	Wr. width mm	True running accuracy mm	Type A art.no.	€	Type AD/B art.no.	€
SK 40	0.5 - 13	50	90	20	80	6	0.02	**441003** 4013	239,–	**441005** 4013	305,–
SK 50	0.5 - 13	50	106	20	80	6	0.02	441003 5013	330,–	441005 5013	370,–
								4108		4108	



MAS 403 BT - type AD/AF

Shank	Clamping range mm	D mm	A mm	Tightening torque max. N·m	Retention force N	Wr. width mm	True running accuracy mm	art.no.	€
BT 40	0.5 - 13	50	98	20	80	6	0.02	**441007** 4013	305,–
BT 50	0.5 - 13	50	110	20	80	6	0.02	441007 5013	370,–
								4108	



DIN 2080

Shank	Clamping range mm	D mm	A mm	Tightening torque max. N·m	Retention force N	Wr. width mm	True running accuracy mm	art.no.	€
SK 40	0.5 - 13	50	83	20	80	6	0.02	**441001** 4013	270,–
SK 50	0.5 - 13	50	100	20	80	6	0.02	441001 5013	330,–
								4108	



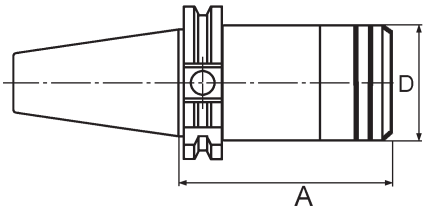
With internal taper in accordance with DIN 238

Shank	Clamping range mm	D mm	A mm	Tightening torque max. N·m	Retention force N	Wr. width mm	art.no.	€
B 16	0.5 - 13	50	102	20	80	6	**441011** 1316	255,–
B 16	2.5 - 16	57	107	20	90	6	441011 1616	260,–
							4108	

ATORN® Precision ER collet chuck

True-running accuracy 3 µm incl. clamping nut

- **30° ground trapezoidal thread with special anti-friction coating**
- Up to twice the holding forces of conventional collet chucks are possible thanks to lower friction when tightening the nut and due to the collet being seated entirely inside the chuck cone.
- Resistant to temperature fluctuations and fully suitable for dry processes and hard milling up to 200 °C.
- Clamping forces are distributed evenly across the entire cylindrical surface, and optimum radial force absorption produces perfect surfaces
- Excellent damping properties
- Increasing the chuck body to the diameter of the clamping nut creates enormous stability without any protruding contours.
- **Extremely high concentricity and precision, 3 µm**
- **Pre-balanced to G 2.5 at 22,000 rpm**
- **Leak-proof up to 80 bar with radially sealed collets**
- **For all GER collets**
- **Supplied with clamping nut**
- **Please order roller chuck key separately**
  Torque wrench recommended





DIN 69893 HSK-A, incl. clamping nut

- Internal coolant supply
- When machining with internal coolant supply, a coolant transfer pipe with art.no. 431011... should be used



Shank	Clamping range mm	for collets	A mm	D mm	art.no.	€
HSK-A 63	1-10	GER16	55	30	**431236** 1606	141,–
HSK-A 63	1-10	GER16	100	30	431236 1610	141,–
HSK-A 63	1-10	GER16	160	30	431236 1616	176,–
HSK-A 63	2-16	GER25	100	40	431236 2510	144,–
HSK-A 63	2-16	GER25	160	40	431236 2516	189,–
HSK-A 63	2-20	GER32	70	50	431236 3207	146,–
HSK-A 63	2-20	GER32	100	50	431236 3210	146,–
HSK-A 63	2-20	GER32	160	50	431236 3216	191,–

4178

DIN ISO 7388-1 / DIN 69871 AD, incl. clamping nut

- Internal coolant supply



Shank	Clamping range mm	for collets	A mm	D mm	art.no.	€
SK 40	1-10	GER16	70	30	**431235** 1607	111,–
SK 40	1-10	GER16	100	30	431235 1610	121,–
SK 40	1-10	GER16	160	30	431235 1616	161,–
SK 40	2-16	GER25	70	40	431235 2507	114,–
SK 40	2-16	GER25	100	40	431235 2510	124,–
SK 40	2-16	GER25	160	40	431235 2516	174,–
SK 40	2-20	GER32	70	50	431235 3207	116,–
SK 40	2-20	GER32	100	50	431235 3210	126,–
SK 40	2-20	GER32	160	50	431235 3216	176,–

4178

Roller chuck key



Designation	for clamping nut	art.no.	€
RO 30	HPC16 / HPC16-DI	**431240** 3016	60,–
RO 40	HPC25 / HPC25-DI	431240 3030	60,–
RO 50	HPC32 / HPC32-DI	431240 5032	60,–

4118

Torque roller chuck key attachment

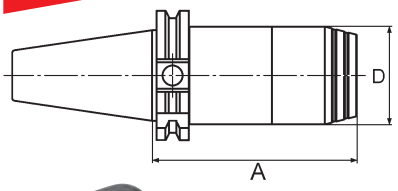


Designation	for clamping nut	for type	art.no.	€
DRO 30	HPC16 / HPC16-DI	7026030002	**431242** 3016	60,–
DRO 40	HPC25 / HPC25-DI	7026030003	431242 4025	60,–
DRO 50	HPC32 / HPC32-DI	7026030003	431242 5032	60,–

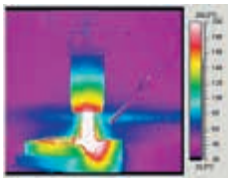
4118

FAHRION® PRAZISION CENTRO|P precision ER collet chuck

True-running accuracy 1 µm



- **30° trapezoidal thread**
- With ground, extra-long double guide compared to 60° V-thread in conventional collet chucks
- Coated clamping nut reduces friction when tightening the nut
- Exact nut centring to minimise imbalance
- **Up to 100 % higher holding forces** compared with conventional collet chucks
- **Pre-balanced to G 2.5 at 25,000 rpm**
- **Entirely suitable** for dry processes and hard milling
- Insensitive to temperature fluctuations up to 200 °C
- **Leak-proof** up to 80 bar, cooling possible along the cutting edge
- **Extremely high system concentricity and precision of 3 µm achieved with a 2 µm GER-HP collet**
- **Supplied without clamping nuts or a chuck key, please order separately!**
- Slim and conical versions available on request





DIN 69893 type A (HSK-A)

- Internal coolant supply
- When machining with internal coolant supply, a coolant transfer pipe with art.no. 431011... should be used

Shank	Clamping range mm	for collets	A mm	D mm	art.no.	€
HSK 63	2 - 20	GER32-HP/-HPD/-HPDD	70	50	**431232** 0750	119,–
HSK 63	1 - 10	GER16-HP/-HPD/-HPDD	100	30	431232 1030	119,–
HSK 63	2 - 16	GER25-HP/-HPD/-HPDD	100	40	431232 1040	119,–
HSK 63	2 - 20	GER32-HP/-HPD/-HPDD	100	50	431232 1050	119,–
HSK 63	1 - 10	GER16-HP/-HPD/-HPDD	160	30	431232 1630	165,–
HSK 63	2 - 20	GER32-HP/-HPD/-HPDD	160	50	431232 1650	175,–

4118

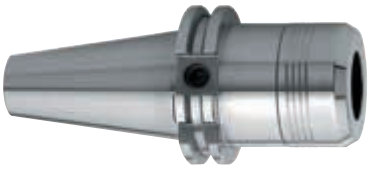


DIN ISO 7388-1 / DIN 69871 AD/AF

- Internal coolant supply

Shank	Clamping range mm	for collets	A mm	D mm	art.no.	€
SK 40	2 - 16	GER25-HP/-HPD/-HPDD	45	40	**431230** 0440	109,–
SK 40	2 - 20	GER32-HP/-HPD/-HPDD	50	50	431230 0550	95,–
SK 40	1 - 10	GER16-HP/-HPD/-HPDD	70	30	431230 0730	90,–
SK 40	2 - 16	GER25-HP/-HPD/-HPDD	70	40	431230 0740	90,–
SK 40	2 - 20	GER32-HP/-HPD/-HPDD	70	50	431230 0750	90,–
SK 40	1 - 10	GER16-HP/-HPD/-HPDD	100	30	431230 1030	100,–
SK 40	2 - 16	GER25-HP/-HPD/-HPDD	100	40	431230 1040	100,–
SK 40	2 - 20	GER32-HP/-HPD/-HPDD	100	50	431230 1050	100,–
SK 40	1 - 10	GER16-HP/-HPD/-HPDD	160	30	431230 1630	155,–
SK 40	2 - 16	GER25-HP/-HPD/-HPDD	160	40	431230 1640	165,–
SK 40	2 - 20	GER32-HP/-HPD/-HPDD	160	50	431230 1650	165,–

4118



Clamping nuts (nuts for HPC...-DI sealing washers)

for collets	D mm	Designation	art.no.	€
GER16-HP/-HPD/-HPDD	30	HPC-16	**431237** 0016	28,–
GER16-HP/-HPD/-HPDD	30	HPC-16-DI	431237 0116	35,–
GER25-HP/-HPD/-HPDD	40	HPC-25	431237 0025	32,–
GER25-HP/-HPD/-HPDD	40	HPC-25-DI	431237 0125	39,–
GER32-HP/-HPD/-HPDD	50	HPC-32	431237 0032	33,–
GER32-HP/-HPD/-HPDD	50	HPC-32-DI	431237 0132	40,–

4118



Roller chuck key

Designation	for clamping nut	art.no.	€
RO 30	HPC16 / HPC16-DI	**431240** 3016	60,–
RO 40	HPC25 / HPC25-DI	431240 3030	60,–
RO 50	HPC32 / HPC32-DI	431240 5032	60,–

4118



Torque roller chuck key attachment

Designation	for clamping nut	for type	art.no.	€
DRO 30	HPC16 / HPC16-DI	7026030002	**431242** 3016	60,–
DRO 40	HPC25 / HPC25-DI	7026030003	431242 4025	60,–
DRO 50	HPC32 / HPC32-DI	7026030003	431242 5032	60,–

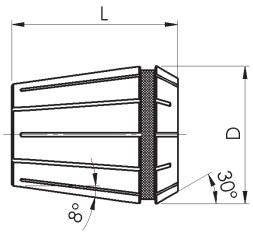
4118

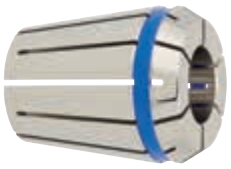


FAHRION® PRAZISION GERC-HP precision collets 2 µm

- **GERC-HP, HPD and HPDD collets 2 µm**
- **For Atorn precision ER collet chuck and Fahrion CENTRO|P**
- Higher contact area ratio
- Increased rigidity and holding forces
- Greater system concentricity
- Optimum concentricity at nominal Ø
- Collapse h10

Fahrion Protect corrosion protection

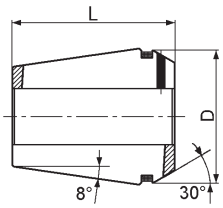




Standard version / type GER-HP

Clamp Ø mm	GERC16 / 426E D = 17 mm L = 27,5 mm art.no.	€	GERC25 / 430E D = 26 mm L = 34 mm art.no.	€	GERC32 / 470E D = 33 mm L = 40 mm art.no.	€
1	**433121** 0010	61,50				
2	433121 0020	46,25	**433122** 0020	47,75	**433123** 0020	49,–
3	433121 0030	39,50	433122 0030	40,50	433123 0030	41,–
4	433121 0040	39,50	433122 0040	40,50	433123 0040	41,–
5	433121 0050	39,50	433122 0050	40,50	433123 0050	41,–
6	433121 0060	39,50	433122 0060	40,50	433123 0060	41,–
7	433121 0070	39,50	433122 0070	40,50	433123 0070	41,–
8	433121 0080	39,50	433122 0080	40,50	433123 0080	41,–
9	433121 0090	39,50	433122 0090	40,50	433123 0090	41,–
10	433121 0100	39,50	433122 0100	40,50	433123 0100	41,–
	4118		4118		4118	

Clamp Ø mm	GERC16 / 426E D = 17 mm L = 27,5 mm art.no.	€	GERC25 / 430E D = 26 mm L = 34 mm art.no.	€	GERC32 / 470E D = 33 mm L = 40 mm art.no.	€
11			433122 0110	40,50	433123 0110	41,–
12			433122 0120	40,50	433123 0120	41,–
13			433122 0130	40,50	433123 0130	41,–
14			433122 0140	40,50	433123 0140	41,–
15			433122 0150	40,50	433123 0150	41,–
16			433122 0160	40,50	433123 0160	41,–
17					433123 0170	41,–
18					433123 0180	41,–
20					433123 0200	41,–
	4118		4118		4118	

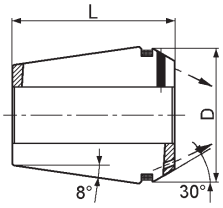


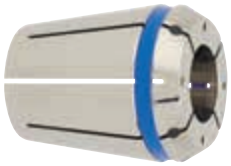


With seal for internal coolant supply / type GER-HPD

Clamp Ø mm	GERC16-HPD / 425E D = 17 mm L = 27,5 mm art.no.	€	GERC25-HPD / 429E D = 25,7 mm L = 34 mm art.no.	€	GERC32-HPD / 469E D = 32,7 mm L = 40 mm art.no.	€
3	**433124** 1603	53,–				
4	433124 1604	53,–	**433126** 2504	56,–	**433127** 3204	58,–
5	433124 1605	58,–	433126 2505	61,–	433127 3205	63,–
6	433124 1606	53,–	433126 2506	56,–	433127 3206	58,–
8	433124 1608	53,–	433126 2508	56,–	433127 3208	58,–
10	433124 1610	53,–	433126 2510	56,–	433127 3210	58,–
	4118		4118		4118	

Clamp Ø mm	GERC16-HPD / 425E D = 17 mm L = 27,5 mm art.no.	€	GERC25-HPD / 429E D = 25,7 mm L = 34 mm art.no.	€	GERC32-HPD / 469E D = 32,7 mm L = 40 mm art.no.	€
12			433126 2512	56,–	433127 3212	58,–
14			433126 2514	56,–	433127 3214	58,–
16			433126 2516	56,–	433127 3216	58,–
18					433127 3218	58,–
20					433127 3220	58,–
	4118		4118		4118	





With seals for internal coolant supply and coolant bore / type GER-HPDD

Clamp Ø mm	GERC25-HPDD / 429E D = 25,7 mm L = 34 mm art.no.	€	GERC32-HPDD / 469E D = 32,7 mm L = 40 mm art.no.	€
4	**433129** 2504	83,–	**433130** 3204	86,–
6	433129 2506	83,–	433130 3206	86,–
8	433129 2508	83,–	433130 3208	86,–
10	433129 2510	83,–	433130 3210	86,–
	4118		4118	

Clamp Ø mm	GERC25-HPDD / 429E D = 25,7 mm L = 34 mm art.no.	€	GERC32-HPDD / 469E D = 32,7 mm L = 40 mm art.no.	€
12	433129 2512	83,–	433130 3212	86,–
14	433129 2514	83,–	433130 3214	86,–
16			433130 3216	86,–
18			433130 3218	86,–
	4118		4118	

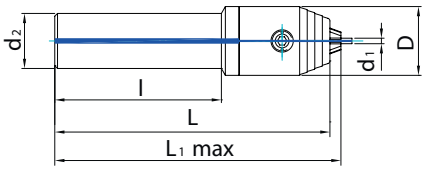
Set in a wooden box, with seals for internal coolant supply / type GER-HPD

Designation	Contents per set	Clamping range mm	art.no.	€
GERC16-HPD / 425E	Ø3-4-5-6-8-10	3 - 10	**433078** 0000	338,–
GERC20-HPD / 427E	Ø3-4-5-6-8-10-12	3 - 12	433078 0001	408,–
GERC25-HPD / 429E	Ø4-6-8-10-12-14-16	4 - 16	433078 0002	412,–
GERC32-HPD / 469E	Ø4-6-8-10-12-14-16-20	4 - 20	433078 0003	485,–
			4118	



ATORN® Micro universal chuck

- Specially developed for micro-machining
- For machining applications in the fields of medical technology, clock and watchmaking, precision engineering and electrical engineering
- **Pre-balanced to G 2.5 / 25,000 rpm**
- True running accuracy 0.005 mm
- Clamping range from 0.2 to 3.4 mm and 0.2 to 6.4 mm



Clamping range 0.2 to 3.4 mm



Shank	D mm	d1 mm	d2 mm	l mm	L mm	L max. mm	Weight kg	art.no.	€
Ø 16	19	0.2-3.4	16	50	80	83	0.13	**442401** 1608	398,–
Ø 16	19	0.2-3.4	16	70	100	103	0.16	442401 1610	421,–
Ø 16	19	0.2-3.4	16	130	160	163	0.26	442401 1616	465,–
Ø 20	19	0.2-3.4	20	52	80	83	0.17	442401 2008	398,–
Ø 20	19	0.2-3.4	20	72	100	103	0.21	442401 2010	421,–
Ø 20	19	0.2-3.4	20	132	160	163	0.36	442401 2016	465,–

4123

Clamping range 0.2 to 6.4 mm



Shank	D mm	d1 mm	d2 mm	l mm	L mm	L max. mm	Weight kg	art.no.	€
Ø 16	25	0.2-6.4	16	60	100	104	0.3	**442402** 1610	421,–
Ø 16	25	0.2-6.4	16	110	150	154	0.5	442402 1615	443,–
Ø 16	25	0.2-6.4	16	160	200	204	0.7	442402 1620	479,–
Ø 20	25	0.2-6.4	20	60	100	104	0.4	442402 2010	421,–
Ø 20	25	0.2-6.4	20	110	150	154	0.6	442402 2015	443,–
Ø 20	25	0.2-6.4	20	160	200	204	0.8	442402 2020	479,–

4123

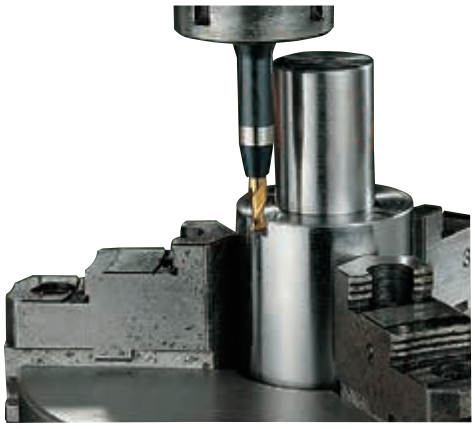
SARA® Milling cutter extension SARAmicro

- For holding tools with a clamping surface in accordance with DIN 1835 B (shank Ø 6 - 20 mm)
- Extremely slim design allows standard tools to be extended without the need for special tools
- Extremely stable due to combination clamping
- True-running accuracy: 5 µm

- **Use:** In standard tool holding fixtures of appropriate diameter (16 / 20 / 25 or 32 mm)

- **Note:** To ensure that the tool is correctly clamped, ensure that the clamp is properly seated in the hole!



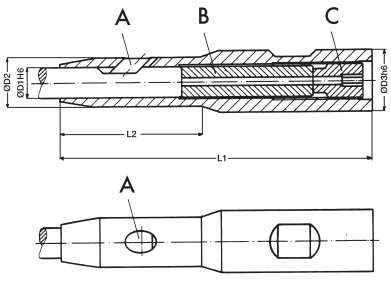


Ø mm	Length mm	D1 mm	D2 mm	D3 mm	L1 mm	L2 mm				art.no.	€
6	100	6	12	16	100	40	A1	B1	C1	**445001** 0006	168,–
8	100	8	14	16	100	45	A2	B2	C2	445001 0008	168,–
10	100	10	17	20	100	43	A3	B3	C3	445001 0010	171,–
12	110	12	20	25	110	39	A4	B4	C4	445001 0012	172,–
14	110	14	22	25	110	46	A5	B5	C5	445001 0014	191,–
16	125	16	25	32	125	45	A6	B6	C6	445001 0016	220,–
18	130	18	27	32	130	54	A7	B7	C7	445001 0018	220,–
20	130	20	30	32	130	62	A8	B8	C8	445001 0020	205,–

4122

Spare parts

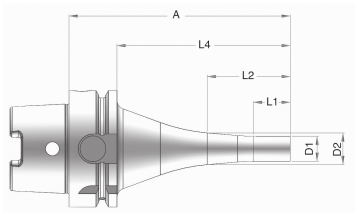
Clamping wedge			Clamping bar			Clamping screw		
	art.no.	€		art.no.	€		art.no.	€
A1	445010 0106	17,30	B1	445010 0206	3,84	C1	445010 0306	5,75
A2	445010 0108	17,30	B2	445010 0208	3,84	C2	445010 0308	5,75
A3	445010 0110	17,30	B3	445010 0210	4,78	C3	445010 0310	6,70
A4	445010 0112	17,30	B4	445010 0212	4,78	C4	445010 0312	6,70
A5	445010 0114	17,30	B5	445010 0214	5,75	C5	445010 0314	7,70
A6	445010 0116	18,20	B6	445010 0216	6,70	C6	445010 0316	8,60
A7	445010 0118	18,20	B7	445010 0218	6,70	C7	445010 0318	8,60
A8	445010 0120	18,20	B8	445010 0220	6,70	C8	445010 0320	8,60
4122			4122			4122		



A = Clamping wedge, B = Clamping bar, C = Clamping screw

ALBRECHT Micro precision chuck AMC

- Ideal for micro-tools
- Clamping range 1.0 to 6.0 mm
- Optional peripheral or central cooling
- Improved damping compared with shrink-fit technology
- Slim protruding contour D1 = 13.5 mm
- Perfect concentricity < 3 µm for 2.5 x D
- **Pre-balanced to G 2.5 / 25,000 rpm**



DIN 69893 HSK-A

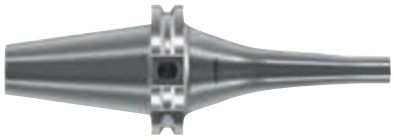
- Internal coolant supply
- When machining with inner coolant supply, a coolant transfer pipe Art. No. 431011.... should be used



Shank	A mm	L1 mm	L2 mm	L4 mm	D1 mm	D2 mm	Weight kg	art.no.	€
HSK-A 63	90	20	30	64	13.5	15.2	0.81	**441140** 6309 4102	273,–

DIN ISO 7388-1 AD (DIN 69871 AD)

- Internal coolant supply



Shank	A mm	L1 mm	L2 mm	L4 mm	D1 mm	D2 mm	Weight kg	art.no.	€
SK 40	90	20	38	71	13.5	16.6	1.02	**442140** 4009 4102	252,40

DIN ISO 7388-2 AD (JIS B 6339)

- Internal coolant supply



Shank	A mm	L1 mm	L2 mm	L4 mm	D1 mm	D2 mm	Weight kg	art.no.	€
BT 40	90	20	30	63	13.5	15.2	1.15	**443140** 4009 4102	252,40

Clamping sleeves, sealed

- Hardened, ground and coated
- For internal coolant supply



Clamp Ø mm	art.no.	€
1	**440151** 0001	166,60
2	440151 0002	108,40
3	440151 0003	90,90
4	440151 0004	90,90
5	440151 0005	90,90
6	440151 0006	90,90

4102

Clamping sleeves

- Hardened, ground and coated



Clamp Ø mm	art.no.	€
1	**440141** 0001	145,50
2	440141 0002	87,50
3	440141 0003	75,90
4	440141 0004	75,90
5	440141 0005	75,90
6	440141 0006	75,90

4102

SARA® Collet holder DC

- No clamping nuts as with traditional collet holding fixtures
- Extremely slim contour
- High true running accuracy



Collet holder DC

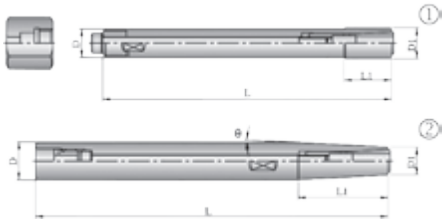


Illustration	D mm	D1 mm	d mm	L mm	L1 mm	Angle °	for collets	art.no.	€
1	10	9	2-4	90	14	-	DC4	**445002** 4090	249,–
2	12	9	2-4	120	38	3	DC4	445002 4120	277,–
1	12	14	2-6	120	40	-	DC6	445002 6120	249,–
2	16	14	2-6	150	35	3	DC6	445002 6150	277,–
2	20	14	2-6	200	70	3	DC6	445002 6200	347,–
2	25	14	2-6	250	115	3	DC6	445002 6250	489,–

4102

Collets DC



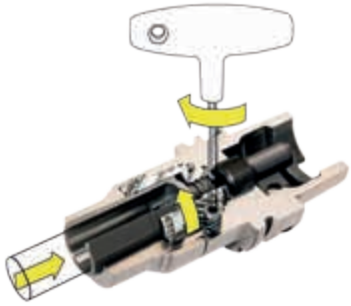
Designation	d mm	D mm	L mm	L1 mm	art.no.	€
DC4	2	7	31	10	**445003** 4002	86,–
DC4	3	7	31	14	445003 4003	75,–
DC4	4	7	31	14	445003 4004	75,–
DC6	3	9.6	36	14	445003 6003	75,–
DC6	4	9.6	36	14	445003 6004	75,–
DC6	6	9.6	36	16	445003 6006	75,–

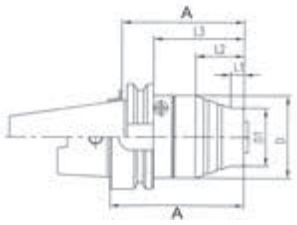
4102

ALBRECHT Precision chuck APC

- **True running accuracy 3 µm (at 2.5xD)**
- Greater clamping force and stability due to the enhanced clamping gear
- Clamping via a coated clamping sleeve and adjustable length stop
- Quick lateral tool changes using a hex key
- **Pre-balanced to G 2.5 at 20,000 rpm**
- Higher rotational speeds and finer balance quality available on request
- Sealed against coolant and dirt
- With precise length adjustment in the clamping sleeve
- Special steel, all parts hardened and ground
- Extremely high vibration dampening
- For heavy machining as well as HSC and HPC machining
- **Supplied without hexagonal key or clamping sleeve**
- **Additional versions available on request**

Including anti-corrosion coating





DIN 69893 HSK-A

- Internal coolant supply
- When machining with internal coolant supply, a coolant transfer pipe with art.no. 431011... should be used



Shank	Type	Clamping range mm	A mm	D mm	D1 mm	L1 mm	L2 mm	L3 mm	art.no.	€
HSK-A 63	APC20	2 - 20	92	53	40	20	31	66	**440122** 6320	343,30
HSK-A 63	APC25	16 - 32	132	63	-	-	-	106	440122 6332	436,20

4195

DIN ISO 7388-1 / DIN 69871 AD

- Internal coolant supply



Shank	Type	Clamping range mm	A mm	D mm	D1 mm	L1 mm	L2 mm	L3 mm	art.no.	€
SK 40	APC20	2 - 20	63	50	40	20	28	43	**440120** 4020	301,60
SK 40	APC25	16 - 32	102	63	-	-	-	83	440120 4032	370,30
SK 50	APC20	2 - 20	62	63	40	18	38	43	440120 5021	371,10
SK 50	APC25	16 - 32	102	70	-	-	-	83	440120 5032	459,–

4195

Clamping sleeves with special coating

- Incl. adjustable length stop
- Sealed up to 100 bar coolant pressure



Clamp Ø mm	for type	Clamping range mm	Standard art.no.	€	Sealed art.no.	€
2	APC20	2 - 20	**440130** 2102	113,60	**440131** 2102	126,30
3	APC20	2 - 20	440130 2103	88,20	440131 2103	100,70
4	APC20	2 - 20	440130 2104	88,20	440131 2104	100,70
5	APC20	2 - 20	440130 2105	88,20	440131 2105	100,70
6	APC20	2 - 20	440130 2106	88,20	440131 2106	100,70
8	APC20	2 - 20	440130 2108	88,20	440131 2108	88,20
10	APC20	2 - 20	440130 2110	88,20	440131 2110	88,20
12	APC20	2 - 20	440130 2112	88,20	440131 2112	88,20
			4195		4195	

Clamp Ø mm	for type	Clamping range mm	Standard art.no.	€	Sealed art.no.	€
14	APC20	2 - 20	440130 2114	88,20	440131 2114	88,20
16	APC20	2 - 20	440130 2116	88,20	440131 2116	88,20
18	APC20	2 - 20	440130 2118	88,20	440131 2118	88,20
20	APC20	2 - 20	440130 2120	88,20	440131 2120	88,20
16	APC25	16 - 32	440130 3216	145,90	440131 3216	145,90
20	APC25	16 - 32	440130 3220	145,90	440131 3220	145,90
25	APC25	16 - 32	440130 3225	145,90	440131 3225	145,90
32	APC25	16 - 32	440130 3232	145,90	440131 3232	145,90
			4195		4195	

Chuck key for APC chucks

- Adjusted to 10 Nm



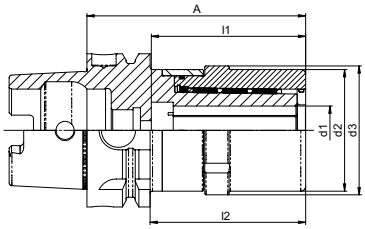
Description	Wr. width mm	art.no.	€
Chuck key for APC chucks	4	**440127** 0005	25,20

4195

diebold Power chuck UltraGrip®

- Optimised radial run-out thanks to single-piece base body
- Maximum clamping force and stability thanks to clamping via rotary clamping nuts and needle bearings, thus clamping force of up to 4000Nm depending on Ø
- High precision and balance quality
- Flexible use thanks to reducing bushes
- Vibration-damping effect thanks to size and multi-part design
- Maximum protection against milling tools being extracted
- Internal coolant supply up to 80 bar suitable
- Maintenance-free technology
- Supplied without chuck key
- **balanced G2.5 / 20,000 rpm**





HSK-A DIN 69893

- Internal coolant supply
- when machining with internal coolant supply, a coolant transfer pipe art.no. 431011.... should be used



Shank	d1 mm	d2 mm	d3 mm	A mm	l1 mm	l2 mm	Rotational speed max. r/min	art.no.	€
HSK-A 63	20	50	53	90	63	64	20,000	**440302** 6320	449,–
HSK-A 63	32	63	66	115	83	89	18,000	440302 6332	490,–
HSK-A 100	20	50	53	105	63	76	16,000	440302 1020	544,–
HSK-A 100	32	63	66	115	83	86	14,000	440302 1032	570,–

4131

DIN ISO 7388-1 / DIN 69871 AD/AF

- Internal coolant supply

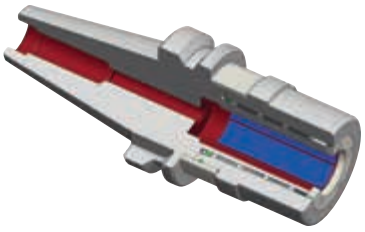


Shank	d1 mm	d2 mm	d3 mm	A mm	l1 mm	l2 mm	Rotational speed max. r/min	art.no.	€
SK 40	20	50	53	80	63	61	18,000	**440300** 4020	364,–
SK 40	32	63	66	105	83	86	16,000	440300 4032	387,–

4131

DIN ISO 7388-2 / MAS BT JIS B 6339

- Internal coolant supply



Shank	d1 mm	d2 mm	d3 mm	A mm	l1 mm	l2 mm	Rotational speed max. r/min	art.no.	€
BT 40	20	50	53	86	63	59	18,000	**440301** 4020	372,–
BT 40	32	63	66	95	83	65	16,000	440301 4032	393,–

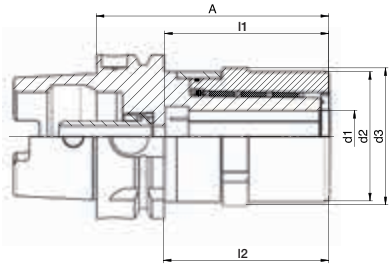
4131



diebold Power chuck UltraJet® 3.0

The **UltraJet® 3.0** power chuck is an innovative combination of the established **JetSleeve®** principle and the **UltraGrip® 3.0** power chuck. When using the **UltraJet® 3.0** it is almost impossible to run through the chips during heavy machining, which results in even higher cutting data and considerably longer tool service lives. The coolant supply is channelled at high pressure through **the UltraJet® 3.0** mount and through the advanced nozzle configuration onto the cutting tool. The Venturi effect keeps the mixture on the tool cutting edge, irrespective of rotational speed.

- Optimised radial run-out thanks to single-piece base body
- Maximum clamping force and stability thanks to clamping via rotary clamping nuts and needle bearings, thus clamping force of up to 4000Nm depending on Ø
- High precision and balance quality
- Flexible use thanks to reducing bushes
- Vibration-damping effect thanks to size and multi-part design
- Maximum protection against milling tools being extracted
- Internal coolant supply up to 80 bar suitable
- Maintenance-free technology
- Supplied without chuck key
- **balanced G2.5 / 20,000 rpm**





HSK-A DIN 69893

- Internal coolant supply
- when machining with internal coolant supply, a coolant transfer pipe art.no. 431011.... should be used

Shank	d1 mm	d2 mm	d3 mm	A mm	l1 mm	l2 mm	Rotational speed max. r/min	art.no.	€
HSK-A 100	20	50	53	105	63	76	16,000	**440202** 1020	645,–
HSK-A 100	32	63	66	115	83	86	14,000	440202 1032	671,–
HSK-A 63	20	50	53	90	63	64	20,000	440202 6320	550,–
HSK-A 63	32	63	66	115	83	89	18,000	440202 6332	591,–

4131



DIN ISO 7388-1 / DIN 69871 AD/AF

- Internal coolant supply

Shank	d1 mm	d2 mm	d3 mm	A mm	l1 mm	l2 mm	Rotational speed max. r/min	art.no.	€
SK 40	20	50	53	80	63	61	18,000	**440200** 4020	465,–
SK 40	32	63	66	105	83	86	16,000	440200 4032	488,–

4131



DIN ISO 7388-2 / MAS BT JIS B 6339

- Internal coolant supply

Shank	d1 mm	d2 mm	d3 mm	A mm	l1 mm	l2 mm	Rotational speed max. r/min	art.no.	€
BT 40	20	50	53	86	63	59	18,000	**440201** 4020	473,–
BT 40	32	63	66	95	83	65	16,000	440201 4032	494,–

4131



diebold Accessories for UltraGrip® and UltraJet®

Chuck key

for bore hole Ø mm	art.no.	€
20 mm	**438032** 0020	16,70
32 mm	438032 0032	16,–

4131



Extending hooks

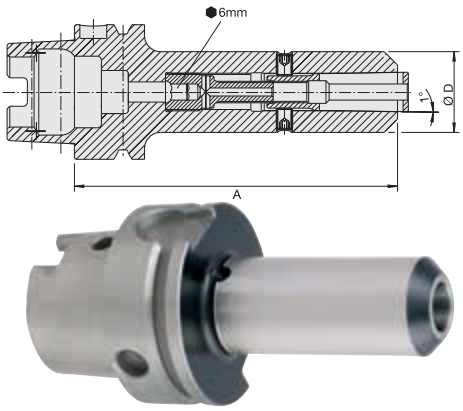
Description	art.no.	€
for reducing bushes 433421.... and 433434....	**438035** 0001	8,40

4131



HAIMER® High-precision chuck HG

- Straight shank tools clamped with a high level precision using HG collets
- Very well suited to high-speed machining
- Taper angle tolerance quality AT3
- Finely balanced to G 2.5 at 25,000 rpm
- **True-running accuracy: 3 µm**
- Supplied with clamping screw and pull-out hook, no collet

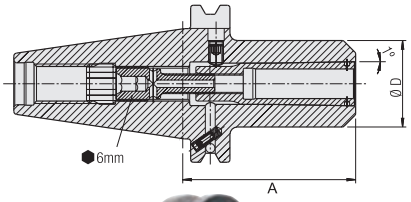


DIN 69893-1 HSK-A

- Internal coolant supply
- When machining with internal coolant supply, a coolant transfer pipe with art.no. 431011... should be used

Shank	Design	D mm	A mm	Designation	Clamp Ø mm	art.no.	€
HSK 63	Short	30	120	1	2 / 3 / 4 / 5 / 6 / 8	**431219** 6301	190,–
HSK 63	Short	35	120	2	10 / 12 / 14	431219 6302	190,–
HSK 63	Short	48	120	3	16 / 18 / 20	431219 6303	190,–
HSK 63	Extra-long	30	160	1	2 / 3 / 4 / 5 / 6 / 8	431219 6311	235,–
HSK 63	Extra-long	35	160	2	10 / 12 / 14	431219 6312	243,–
HSK 63	Extra-long	48	160	3	16 / 18 / 20	431219 6313	249,–

4165

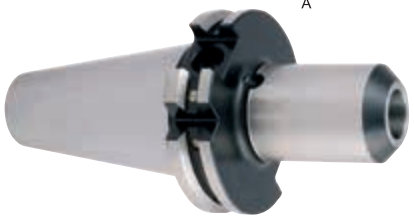


DIN ISO 7388-1 / DIN 69871 AD

- Internal coolant supply

Shank	Design	D mm	A mm	Designation	Clamp Ø mm	art.no.	€
SK 40	Short	30	65	HG 01	2 / 3 / 4 / 5 / 6 / 8	**431213** 4001	130,–
SK 40	Short	35	70	HG 02	10 / 12 / 14	431213 4002	130,–
SK 40	Short	48	75	HG 03	16 / 18 / 20	431213 4003	130,–
SK 40	long	30	100	HG 01	2 / 3 / 4 / 5 / 6 / 8	431213 4101	149,–
SK 40	long	35	100	HG 02	10 / 12 / 14	431213 4102	149,–
SK 40	long	48	100	HG 03	16 / 18 / 20	431213 4103	149,–

4165

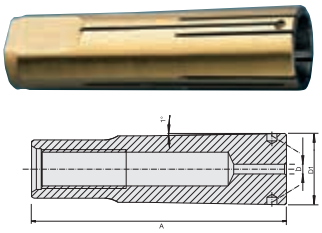


HG collets

- **Clamp straight shank tools in HG chucks with a high level of precision**
- Further sizes available on request

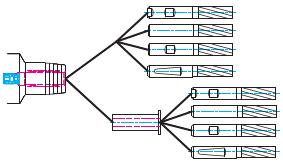
suitable for	D mm	D1 mm	L mm	art.no.	€
HG 01	2	14.7	52.5	**431220** 1020	121,–
HG 01	3	14.7	52.5	431220 1030	121,–
HG 01	4	14.7	52.5	431220 1040	121,–
HG 01	5	14.7	52.5	431220 1050	77,–
HG 01	6	14.7	52.5	431220 1060	77,–
HG 01	8	14.7	52.5	431220 1080	77,–
HG 02	10	17.87	64.2	431220 2100	77,–
HG 02	12	17.87	64.2	431220 2120	77,–
HG 02	14	17.87	64.2	431220 2140	77,–
HG 03	16	26.15	69.7	431220 3160	77,–
HG 03	18	26.15	69.7	431220 3180	77,–
HG 03	20	26.15	69.7	431220 3200	77,–

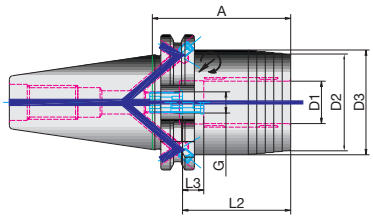
4165



ATORN® Hydraulic expansion chucks

- Flexible thanks to the use of reducing bushes
- True running accuracy, maximum 3 µm
- **Balanced to G 2.5 at 25,000 rpm**
- Optimum operating temperature 20-50°C; not for use above 80°C
- Coolant pressure max. 80 bar
- Adjustment range 10 mm
- **Additional shank designs and AD/AF version available on request**
- Supplied with hexagonal T-key

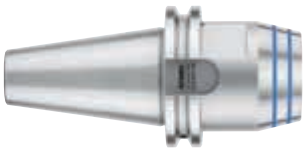




DIN ISO 7388-1 / DIN 69871 AD, short heavy-duty version

- Internal coolant supply

Shank	D1 mm	D3 mm	A mm	L2 mm	L3 mm	Thread	Weight kg	art.no.	€
SK 40	20	49.5	64.5	51	10	M16 x 1	1.3	**433311** 4020	201,–
								4123	



DIN ISO 7388-1 / DIN 69871 AD, ultra-short version

- Internal coolant supply

Shank	D1 mm	D2 mm	D3 mm	A mm	L2 mm	Thread	Weight kg	art.no.	€
SK 40	20	48	49.5	24.5	51	M16 x 1	0.6	**433314** 4020	245,–
								4123	



DIN ISO 7388-1 / DIN 69871 AD, short slim version

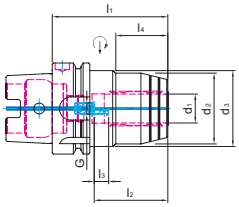
- Internal coolant supply

Shank	D1 mm	D2 mm	D3 mm	A mm	L2 mm	L3 mm	Thread	Weight kg	art.no.	€
SK 40	16	38	49.5	80.5	49	10	M12 x 1	1.4	**433303** 4016	350,–
									4123	



ATORN® High-performance hydraulic expansion chuck

- **Optimum operating temperature 20-100°C**
- Max. true running accuracy < 0.003 mm
- **Pre-balanced to G 2.5 at 25,000 rpm**
- With Balluffchip bore

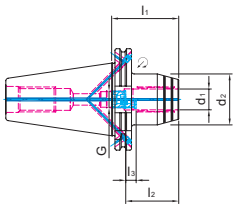


DIN 69893 HSK-A

- Internal coolant supply
- When machining with internal coolant supply, a coolant transfer pipe with art.no. 431011... should be used

Shank	d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm	l4 mm	G mm	Wr. width mm	Weight kg	art.no.	€
HSK-A 63	20	49	52.5	80	51	10	36	M8x1	3 mm	1.3	**433409** 6320	225,–
HSK-A 100	32	70	75	100	61	10	51	M8x1	3 mm	3.8	433409 1032	310,–
											4132	





DIN ISO 7388-1 / DIN 69871 AD/AF

- Internal coolant supply

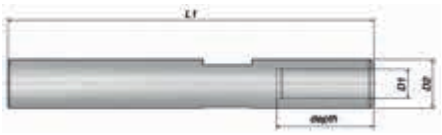
Shank	d1 mm	d2 mm	l1 mm	l2 mm	l3 mm	G mm	Wr. width mm	Weight kg	art.no.	€
SK 40	20	49	64.5	51	10	M16x1	8 mm	1.4	**433411** 4020	209,–
SK 50	32	72	81	61	10	M16x1	8 mm	4.1	433411 5032	295,–
									4132	



SARA® Hydraulic expansion chuck HG PENCIL

powered by ETP

- Extremely slim design
- For boring to finishing
- Allows machining in deep cavities
- True running accuracy < 0.004 mm at 2.5 x D (maximum 50 mm)
- Max. tightening torque 6 Nm
- For tool shanks h6 or h7
- **Pre-balanced to G 2.5 / 25,000 rpm**





Straight shank

- Internal coolant supply

D1 mm	D2 mm	L1 mm	Clamping depth mm	art.no.	€
12	20	150	40	**433811** 2012	485,–

4130

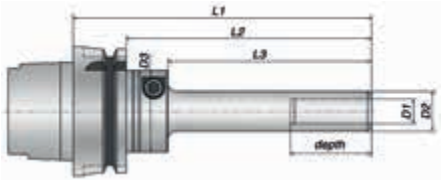


Illustration 1

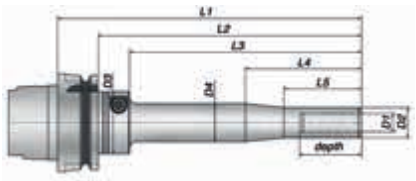


Illustration 2

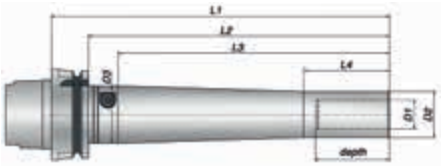


Illustration 3

DIN 69893 Form A - HSK-A

- Internal coolant supply
- When machining with inner coolant supply, a coolant transfer pipe Art. No. 431011.... should be used







Shank	Illustration	D1 mm	D2 mm	D3 mm	D4 mm	L1 mm	L2 mm	L3 mm	L4 mm	L5 mm	Depth mm	art.no.	€
HSK-A 63	1	6	12	40	-	96.5	61	50	-	-	40	**433801** 6006	482,–
HSK-A 63	1	12	19.5	40	-	96.5	61	50	-	-	40	433801 6012	402,–
HSK-A 63	1	12	19.5	40	-	146.5	111	100	-	-	40	433801 6112	434,–
HSK-A 63	2	12	19.5	40	24.5	217	161	150	75	50	40	433801 6212	489,–
HSK-A 63	3	20	32	40	-	156.5	121	110	-	-	52	433801 6020	489,–
HSK-A 63	3	20	32	40	-	257	201	190	-	-	52	433801 6120	568,–
HSK-A 100	1	12	19.5	40	-	96.5	61	50	-	-	40	433801 1012	494,–
HSK-A 100	1	12	19.5	40	-	146.5	111	100	-	-	40	433801 1112	504,–
HSK-A 100	2	12	19.5	40	24.5	217	161	150	75	50	40	433801 1212	566,–
HSK-A 100	3	20	32	40	-	156.5	121	110	-	-	52	433801 1020	566,–
HSK-A 100	3	20	32	40	-	257	201	190	-		52	433801 1120	654,–

4130

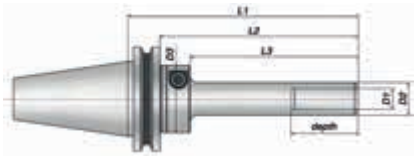


Illustration 1

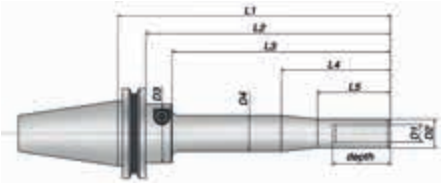


Illustration 2

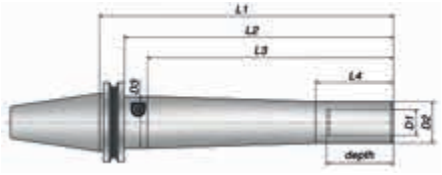


Illustration 3

DIN ISO 7388-1 AD (DIN 69871 AD)

- Internal coolant supply







Shank	Illustration	D1 mm	D2 mm	D3 mm	D4 mm	L1 mm	L2 mm	L3 mm	L4 mm	L5 mm	Depth mm	art.no.	€
SK 40	1	6	12	40	-	87	68	50	-	-	40	**433802** 4006	462,–
SK 40	1	12	19.5	40	-	87	68	50	-	-	40	433802 4012	394,–
SK 40	1	12	19.5	40	-	137	118	100	-	-	40	433802 4112	433,–
SK 40	2	12	19.5	40	24.5	187	168	150	-	50	40	433802 4212	506,–
SK 40	3	20	32	40	-	147	128	110	60	-	52	433802 4020	430,–
SK 40	3	20	32	40	-	227	208	190	60	-	52	433802 4120	521,–
SK 50	1	12	19.5	40	-	87	68	50	-	-	40	433802 5012	467,–
SK 50	1	12	19.5	40	-	137	118	100	-	-	40	433802 5112	512,–
SK 50	2	12	19.5	40	24.5	187	168	150	75	50	40	433802 5212	605,–
SK 50	3	20	32	40	-	147	128	110	-	-	52	433802 5020	519,–
SK 50	3	20	32	40	-	227	208	190	-	-	52	433802 5120	614,–

4130

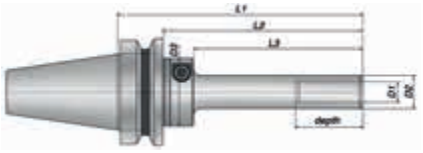


Illustration 1

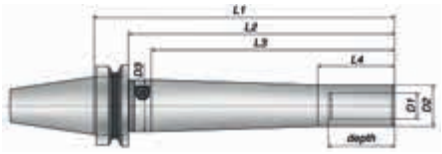


Illustration 3

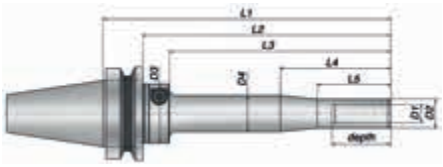


Illustration 2

DIN ISO 7388-2 (JIS B 6339)

- Internal coolant supply

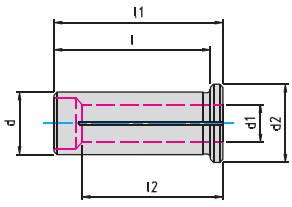
Shank	Illustration	D1 mm	D2 mm	D3 mm	D4 mm	L1 mm	L2 mm	L3 mm	L4 mm	L5 mm	Depth mm	art.no.	€
BT 40	1	6	12	40	-	95	68	50	-	-	40	**433803** 4006	462,–
BT 40	1	12	19.5	40	-	95	68	50	-	-	40	433803 4012	394,–
BT 40	1	12	19.5	40	-	145	118	100	-	-	40	433803 4112	433,–
BT 40	2	12	19.5	40	24.5	195	168	150	75	50	40	433803 4212	506,–
BT 40	3	20	32	40	-	155	128	110	60	-	52	433803 4020	430,–
BT 40	3	20	32	40	-	235	208	190	60	-	52	433803 4120	521,–
BT 50	1	12	19.5	40	-	106	68	50	-	-	40	433803 5012	467,–
BT 50	1	12	19.5	40	-	156	118	100	-	-	40	433803 5112	512,–
BT 50	2	12	19.5	40	24.5	206	168	150	75	50	40	433803 5212	605,–
BT 50	3	20	32	40	-	166	128	110	60	-	52	433803 5020	519,–
BT 50	3	20	32	40	-	246	206.5	190	60	-	52	433803 5120	614,–

4130



Reducing bushes

- **Slotted**
- **Mechanically sealed up to max. 80 bar**
- Suitable for hydraulic expansion chucks and power chucks
- **Seal only suitable for hydraulic expansion chucks**
- Without dirt groove
- For reducing clamping ranges
- For drilling, reaming and milling
- True running accuracy < 3 µm (at 2.5 x d)
- **Version with coolant bores available on request**





For chuck diameter 12 mm

d mm	d1 mm	d2 mm	l mm	l1 mm	l2 mm	art.no.	€
12	3	16	40	44	29	**433413** 0003	103,–
12	4	16	40	44	29	433413 0004	103,–
12	5	16	40	44	29	433413 0005	103,–
12	6	16	40	44	36	433413 0006	103,–
12	8	16	40	44	37	433413 0008	103,–
12	10	16	40	44	40	433413 0010	112,–

4123

For chuck diameter 20 mm

d mm	d1 mm	d2 mm	l mm	l1 mm	l2 mm	art.no.	€
20	3	25	50	54	28	**433421** 0003	96,–
20	4	25	50	54	28	433421 0004	96,–
20	5	25	50	54	28	433421 0005	96,–
20	6	25	50	54	36	433421 0006	73,–
20	8	25	50	54	37	433421 0008	75,–
20	10	25	50	54	40	433421 0010	75,–
20	12	25	50	54	45	433421 0012	75,–
20	14	25	50	54	45	433421 0014	75,–
20	16	25	50	54	48	433421 0016	75,–

4123

For chuck diameter 32 mm

d mm	d1 mm	d2 mm	l mm	l1 mm	l2 mm	art.no.	€
32	6	36	60	64	36	**433434** 0006	96,–
32	8	36	60	64	36	433434 0008	96,–
32	10	36	60	64	40	433434 0010	96,–
32	12	36	60	64	45	433434 0012	96,–
32	14	36	60	64	46	433434 0014	96,–
32	16	36	60	64	48	433434 0016	96,–
32	18	36	60	64	49	433434 0018	96,–
32	20	36	60	64	50	433434 0020	96,–
32	25	36	60	64	56	433434 0025	96,–

4123

ATORN® Hydraulic expansion chuck, ultra-slim







Thanks to an innovative production process, the ultra-slim hydraulic expansion chuck combines the benefits of an expansion chuck and those of a shrink-fit chuck in a single product.

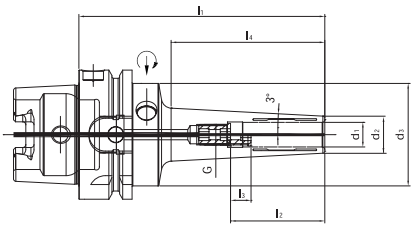
- Exceptionally high clamping forces
- Very high temperature resistance
- **Chuck remains accurate at high temperatures (up to 120 °C)**
- Designed with the slim shape of a shrink-fit chuck – suitable for use with tight protruding contours
- Very good damping
- Max. true running accuracy < 0.003 mm
- Tool changes carried out as with an expansion chuck, no need for additional equipment
- Versatile applications with reducing bushes
- **Pre-balanced to G 2.5 at 25,000 rpm**
- With Balluffchip bore

DIN 69893 HSK-A

- Internal coolant supply
- When machining with internal coolant supply, a coolant transfer pipe with art.no. 431011... should be used

Shank	d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm	l4 mm	G mm	Wr. width mm	Weight kg	art.no.	€
HSK-A 63	3	9	50	120	28	16	73	M3	1.5 mm	0.9	**433341** 0003	429,–
HSK-A 63	4	10	50	120	28	12	73	M3	1.5 mm	1	433341 0004	429,–
HSK-A 63	5	11	50	120	28	8	73	M3	1.5 mm	1	433341 0005	429,–
HSK-A 63	6	12	50	120	37	10	73	M5	2.5 mm	0.9	433341 6306	398,–
HSK-A 63	8	14	50	120	37	10	74	M6	3 mm	0.9	433341 6308	398,–
HSK-A 63	10	16	50	120	41	10	74	M8x1	3 mm	1	433341 6310	398,–
HSK-A 63	12	18	50	120	46	10	75	M10x1	5 mm	1	433341 6312	398,–
HSK-A 63	6	12	50	160	37	10	113	M5	2.5 mm	1	433341 1606	514,–
HSK-A 63	8	14	50	160	37	10	114	M6	3 mm	1	433341 1608	514,–
HSK-A 63	10	16	50	160	41	10	114	M8x1	3 mm	1	433341 1610	514,–
HSK-A 63	12	18	50	160	46	10	115	M10x1	5 mm	1	433341 1612	514,–
HSK-A 63	6	12	50	200	37	10	153	M5	2.5 mm	1.1	433341 2006	679,–
HSK-A 63	8	14	50	200	37	10	154	M6	3 mm	1.1	433341 2008	679,–
HSK-A 63	10	16	50	200	41	10	154	M8x1	3 mm	1.1	433341 2010	679,–
HSK-A 63	12	18	50	200	46	10	155	M10x1	5 mm	1.1	433341 2012	679,–

4123



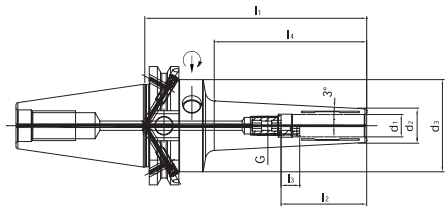


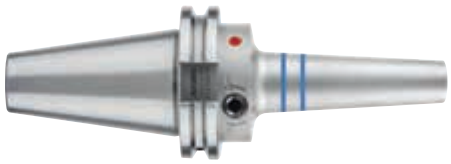
DIN ISO 7388-1 / DIN 69871 AD/AF

- Internal coolant supply

Shank	d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm	l4 mm	G mm	Wr. width mm	Weight kg	art.no.	€
SK 40	3	9	49.5	120	28	16	79.5	M3	1.3 mm	1.1	**433340** 0003	411,–
SK 40	4	10	49.5	120	28	12	79.5	M3	1.3 mm	1.2	433340 0004	411,–
SK 40	5	11	49.5	120	28	8	80	M3	1.3 mm	1.2	433340 0005	411,–
SK 40	6	12	49.5	120	37	10	79.9	M5	2.5 mm	1.2	433340 4006	370,–
SK 40	8	14	49.5	120	37	10	79.9	M6	3 mm	1.2	433340 4008	370,–
SK 40	10	16	49.5	120	41	10	80.9	M8x1	3 mm	1.2	433340 4010	370,–
SK 40	12	18	49.5	120	46	10	81.9	M10x1	5 mm	1.2	433340 4012	370,–
SK 40	6	12	49.5	160	37	10	119.9	M5	2.5 mm	1.4	433340 1606	489,–
SK 40	8	14	49.5	160	37	10	119.9	M6	3 mm	1.6	433340 1608	489,–
SK 40	10	16	49.5	160	41	10	120.9	M8x1	3 mm	1.7	433340 1610	489,–
SK 40	12	18	49.5	160	46	10	121.9	M10x1	5 mm	1.7	433340 1612	489,–
SK 40	6	12	49.5	200	37	10	159.9	M5	2.5 mm	1.9	433340 2006	579,–
SK 40	8	14	49.5	200	37	10	159.9	M6	3 mm	2	433340 2008	579,–
SK 40	10	16	49.5	200	41	10	160.9	M8x1	3 mm	2	433340 2010	579,–
SK 40	12	18	49.5	200	46	10	161.9	M10x1	5 mm	2.1	433340 2012	579,–

4123



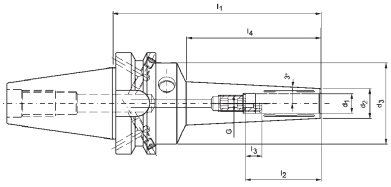


DIN ISO 7388-2 / MAS BT JIS B 6339

- Internal coolant supply

Shank	d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm	l4 mm	G mm	Wr. width mm	Weight kg	art.no.	€
BT 40	3	9	49.5	120	28	16	70.5	M3	1.5	1.3	**433342** 4003	439,–
BT 40	4	10	49.5	120	28	12	70.5	M3	1.5	1.3	433342 4004	439,–
BT 40	5	11	49.5	120	28	8	71	M3	1.5	1.3	433342 4005	439,–
BT 40	6	12	49.5	120	37	10	71.9	M5	2.5	1.3	433342 4006	378,–
BT 40	8	14	49.5	120	37	10	72.4	M6	3	1.3	433342 4008	378,–
BT 40	10	16	49.5	120	41	10	72.9	M8x1	3	1.3	433342 4010	378,–
BT 40	12	18	49.5	120	46	10	73.4	M10x1	5	1.3	433342 4012	378,–

4123

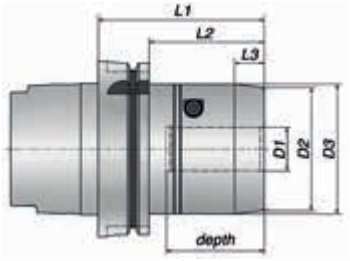




SARA® Hydraulic expansion chuck HYDRO-Grip HD

powered by ETP

- **HSK 63 and ISO 40 pre-balanced to G2.5 / 25,000 rpm**
- **HSK 100 and ISO 50 pre-balanced to G2.5 / 14,000 rpm**
- True running accuracy < 0.004 mm at 2.5 x D
- Tool shank quality h6 or h7
- Also suitable for reducing bushes
- Rigid construction and high clamping force for heavy-duty machining



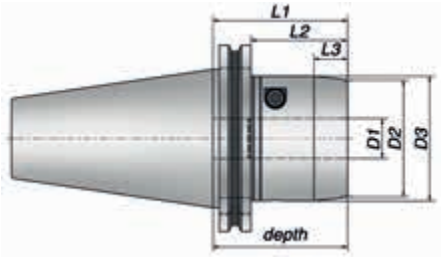


DIN 69893 Form A - HSK-A

- Internal coolant supply
- When machining with inner coolant supply, a coolant transfer pipe Art. No. 431011.... should be used

Shank	D1 mm	D2 mm	D3 mm	L1 mm	L2 mm	L3 mm	Depth mm	art.no.	€
HSK-A 63	20	59	63	96	70	17	52	**433826** 6320	365,–
HSK-A 100	20	59	63	91	62	17	52	433826 1020	487,–
HSK-A 100	25	70	74	95	66	17	56	433826 1025	487,–
HSK-A 100	32	76	80	99	70	17	60	433826 1032	487,–

4130



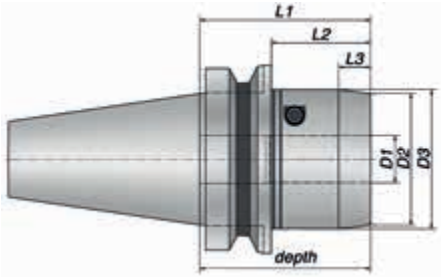


DIN ISO 7388-1 AD (DIN 69871 AD)

- Internal coolant supply

Shank	D1 mm	D2 mm	D3 mm	L1 mm	L2 mm	L3 mm	Depth mm	art.no.	€
SK 40	20	59	63	90	71	17	90	**433806** 4020	322,–
SK 50	20	59	63	68	49	17	68	433806 5020	449,–
SK 50	25	70	74	79	60	17	79	433806 5025	449,–
SK 50	32	76	80	83	64	17	83	433806 5032	449,–

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DIN ISO 7388-2 (JIS B 6339)

Shank	D1 mm	D2 mm	D3 mm	L1 mm	L2 mm	L3 mm	Depth mm	art.no.	€
BT 40	20	59	63	79	60	17	79	**433816** 4020	322,–
BT 50	20	59	63	87	50	17	87	433816 5020	449,–
BT 50	25	70	74	91	53	17	91	433816 5025	449,–
BT 50	32	76	80	95	57	17	95	433816 5032	449,–

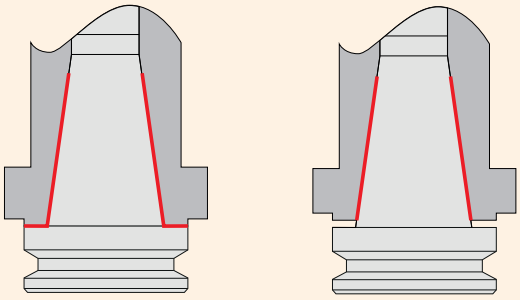
4130

ATORN® Tool mounts with levelling

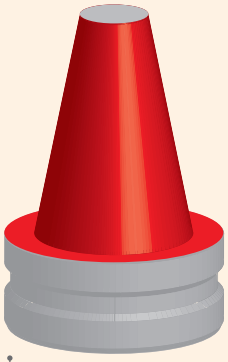
INFO

for use in machine spindles with planar support

- high rigidity due to the planar support between spindle and tool mount above the collar
- planar support ensures axial positioning accuracy
- suitable for high rotational speeds, spindle expansion (through centrifugal forces) have no further influence on the tool mount in axial direction
- considerable decrease in vibration through traction on the taper/planar support
- Increased service life in cutting tools



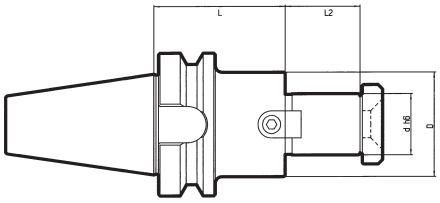
TRACTION THROUGH TAPER/PLANAR SUPPORT
compared with conventional tool mounts



FULL-SERVICE CONTACT
Taper and planar support

ATORN® Transverse slot shell-type milling cutter arbour with planar support

- **Pre-balanced G6.3 / 25,000 rpm**
- Taper angle tolerance quality < AT3 in accordance with DIN 7187
- Max. true running accuracy < 0.005 mm
- Internal coolant supply
- Case hardened to HRC 60 ± 2



DIN ISO 7388-1 AD (DIN 69871 AD)

- Internal coolant supply



Shank	d mm	D mm	L mm	L2 mm	art.no.	€
SK 40	16	38	45	17	**435403** 4016	130,–
SK 40	22	50	45	19	435403 4022	130,–
SK 40	27	60	50	21	435403 4027	130,–
SK 40	32	78	55	24	435403 4032	130,–
SK 50	16	38	45	17	435403 5016	150,–
SK 50	22	50	60	19	435403 5022	150,–
SK 50	27	60	60	21	435403 5027	150,–
SK 50	32	78	50	24	435403 5032	150,–

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DIN ISO 7388-2 (JIS B 6339)

- Internal coolant supply

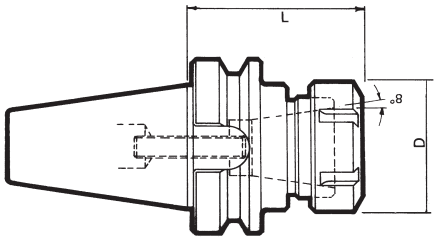


Shank	d mm	D mm	L mm	L2 mm	art.no.	€
BT 30	16	38	35	17	**435407** 3016	108,–
BT 30	22	50	45	19	435407 3022	108,–
BT 30	27	60	45	21	435407 3027	108,–
BT 40	16	38	45	17	435407 4016	130,–
BT 40	22	50	45	19	435407 4022	130,–
BT 40	27	60	45	21	435407 4027	130,–
BT 40	32	78	60	24	435407 4032	130,–
BT 50	16	38	60	17	435407 5016	150,–
BT 50	22	50	60	19	435407 5022	150,–
BT 50	27	60	60	21	435407 5027	150,–
BT 50	32	78	60	24	435407 5032	150,–

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ATORN® ER collet chuck with planar support

- **Pre-balanced G6.3 / 25,000 rpm**
- Taper angle tolerance quality < AT3 in accordance with DIN 7187
- Max. true running accuracy < 0.005 mm
- Internal coolant supply
- Case hardened to HRC 60 ± 2





DIN ISO 7388-1 AD (DIN69871 AD)

- Internal coolant supply

Shank	Clamping range mm	for collets	D mm	L mm	art.no.	€
SK 40	1 - 10	ER16	28	70	**431203** 4016	140,–
SK 40	2 - 16	ER25	42	70	431203 4025	140,–
SK 40	2 - 20	ER32	50	70	431203 4032	140,–
SK 40	3 - 26	ER40	63	70	431203 4040	165,–
SK 40	1 - 10	ER16	28	100	431203 4116	150,–
SK 40	2 - 16	ER25	42	100	431203 4125	150,–
SK 40	2 - 20	ER32	50	100	431203 4132	150,–
SK 40	3 - 26	ER40	63	100	431203 4140	175,–
SK 50	1 - 10	ER16	28	80	431203 5016	190,–
SK 50	2 - 16	ER25	42	80	431203 5025	190,–
SK 50	2 - 20	ER32	50	80	431203 5032	190,–
SK 50	3 - 26	ER40	63	80	431203 5040	215,–
SK 50	1 - 10	ER16	28	100	431203 5116	210,–
SK 50	2 - 16	ER25	42	100	431203 5125	210,–
SK 50	2 - 20	ER32	50	100	431203 5132	210,–
SK 50	3 - 26	ER40	63	100	431203 5140	235,–

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DIN ISO 7388-2 (JIS B 6339)

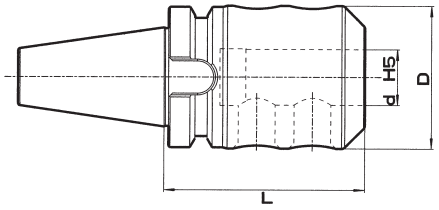
- Internal coolant supply

Shank	Clamping range mm	for collets	D mm	L mm	art.no.	€
BT 30	1 - 10	ER16	28	70	**431107** 3016	111,–
BT 30	2 - 16	ER25	42	70	431107 3025	111,–
BT 30	2 - 20	ER32	50	70	431107 3032	111,–
BT 40	1 - 10	ER16	28	70	431107 4016	140,–
BT 40	2 - 16	ER25	42	70	431107 4025	140,–
BT 40	2 - 20	ER32	50	70	431107 4032	140,–
BT 40	3 - 26	ER40	63	70	431107 4040	165,–
BT 40	1 - 10	ER16	28	100	431107 4116	150,–
BT 40	2 - 16	ER25	42	100	431107 4125	150,–
BT 40	2 - 20	ER32	50	100	431107 4132	150,–
BT 40	3 - 26	ER40	63	100	431107 4140	175,–
BT 50	1 - 10	ER16	28	80	431107 5016	190,–
BT 50	2 - 16	ER25	42	80	431107 5025	190,–
BT 50	2 - 20	ER32	50	80	431107 5032	190,–
BT 50	3 - 26	ER40	63	80	431107 5040	215,–
BT 50	1 - 10	ER16	28	100	431107 5116	210,–
BT 50	2 - 16	ER25	42	100	431107 5125	210,–
BT 50	2 - 20	ER32	50	100	431107 5132	210,–
BT 50	3 - 26	ER40	63	100	431107 5140	235,–

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ATORN® Milling cutter mount DIN6359 (Weldon) with planar support

- **Pre-balanced G6.3 / 25,000 rpm**
- Taper angle tolerance quality < AT3 in accordance with DIN 7187
- Max. true running accuracy < 0.005 mm
- Internal coolant supply
- Case hardened to HRC 60 ± 2



DIN ISO 7388-1 AD (DIN 69871 AD)

- Internal coolant supply



Shank	d mm	D mm	L mm	art.no.	€
SK 40	6	25	50	**434603** 4006	125,–
SK 40	8	28	50	434603 4008	120,–
SK 40	10	35	50	434603 4010	120,–
SK 40	12	42	50	434603 4012	120,–
SK 40	16	48	63	434603 4016	120,–
SK 40	20	52	63	434603 4020	120,–
SK 40	25	64	100	434603 4025	160,–
SK 40	32	72	100	434603 4032	160,–
SK 50	6	25	63	434603 5006	185,–
SK 50	8	28	63	434603 5008	180,–
SK 50	10	35	63	434603 5010	180,–
SK 50	12	42	63	434603 5012	180,–
SK 50	16	48	63	434603 5016	180,–
SK 50	20	52	63	434603 5020	180,–
SK 50	25	64	80	434603 5025	205,–
SK 50	32	72	100	434603 5032	205,–

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DIN ISO 7388-2 (JIS B 6339)

- Internal coolant supply



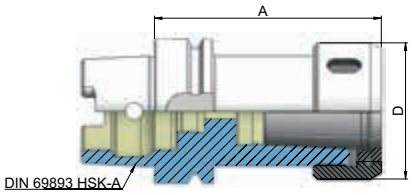
Shank	d mm	D mm	L mm	art.no.	€
BT 30	6	25	60	**434607** 3006	86,–
BT 30	8	28	60	434607 3008	86,–
BT 30	10	35	60	434607 3010	86,–
BT 30	12	42	60	434607 3012	86,–
BT 30	16	48	75	434607 3016	106,–
BT 30	20	52	75	434607 3020	106,–
BT 30	25	64	90	434607 3032	135,–
BT 40	6	25	50	434607 4006	125,–
BT 40	8	28	50	434607 4008	120,–
BT 40	10	35	63	434607 4010	120,–
BT 40	12	42	63	434607 4012	120,–
BT 40	16	48	63	434607 4016	120,–
BT 40	20	52	63	434607 4020	120,–
BT 40	25	64	100	434607 4025	160,–
BT 40	32	72	100	434607 4032	160,–
BT 50	6	25	63	434607 5006	185,–
BT 50	8	28	63	434607 5008	180,–
BT 50	10	35	63	434607 5010	180,–
BT 50	12	42	80	434607 5012	180,–
BT 50	16	48	80	434607 5016	180,–
BT 50	20	52	80	434607 5020	180,–
BT 50	25	64	100	434607 5025	205,–
BT 50	32	72	105	434607 5032	205,–

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ATORN® OZ collet chuck

DIN 6391

- **For DIN 6388 collets**
- **Pre-balanced to G 2.5 / 25,000 rpm**
- Alloyed case-hardened steel with a core tensile strength of min. 950 N/mm²
- case-hardened to HRC 60 ± 2 (HV 700 ± 50), case depth 0.8 mm ± 0.2 mm, burnished
- Taper angle tolerance quality < AT3 in accordance with DIN 7187 and DIN 2080, max. true running accuracy < 0.005 mm
- Supplied with clamping nut
- **Additional shank designs and AD/AF versions available on request**
- **Suitable hook spanner under Article No. 701550....**



DIN 69893 type A (HSK-A)

- Internal coolant supply
- When machining with internal coolant supply, a coolant transfer pipe with art.no. 431011... should be used



Shank	Clamping range mm	for collets	A mm	D mm	art.no.	€
HSK-A 50	2 - 16	410E / 415E	100	43	**431509** 5016	93,50
HSK-A 50	2 - 25	444E / 462E	100	60	431509 5025	93,50
HSK-A 63	2 - 16	410E / 415E	100	43	431509 6316	98,50
HSK-A 63	2 - 25	444E / 462E	100	60	431509 6325	98,50
HSK-A 63	3 - 32	450E / 467E	120	72	431509 6332	104,–
HSK-A 100	2 - 16	410E / 415E	110	43	431509 1016	132,–
HSK-A 100	2 - 25	444E / 462E	120	60	431509 1025	132,–
HSK-A 100	3 - 32	450E / 467E	130	72	431509 1032	142,–

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DIN ISO 7388-1 / DIN 69871 AD

- Internal coolant supply



Shank	Clamping range mm	for collets	A mm	D mm	art.no.	€
SK 40	2 - 16	410E / 415E	70	43	**431503** 4016	58,–
SK 40	2 - 16	410E / 415E	100	43	431503 4116	72,–
SK 40	2 - 25	444E / 462E	70	60	431503 4025	62,–
SK 40	2 - 25	444E / 462E	100	60	431503 4125	75,–
SK 40	3 - 32	450E / 467E	90	72	431503 4032	65,–
SK 50	2 - 25	444E / 462E	70	60	431503 5025	81,–
SK 50	3 - 32	450E / 467E	80	72	431503 5032	85,50
SK 50	3 - 32	450E / 467E	100	72	431503 5132	100,–

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DIN ISO 7388-2 / MAS BT JIS B 6339

- Internal coolant supply



Shank	Clamping range mm	for collets	A mm	D mm	art.no.	€
BT 40	2 - 16	410E / 415E	70	43	**431507** 4016	58,–
BT 40	2 - 25	444E / 462E	70	60	431507 4025	62,–
BT 40	3 - 32	450E / 467E	90	72	431507 4032	65,–
BT 50	2 - 25	444E / 462E	85	60	431507 5025	81,–
BT 50	3 - 32	450E / 467E	90	72	431507 5032	85,50

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DIN 2080



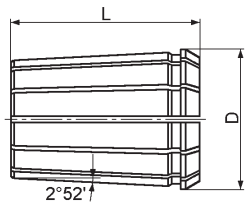
Shank	Clamping range mm	for collets	A mm	D mm	art.no.	€
SK 40	2 - 16	410E / 415E	55	43	**431501** 4016	57,–
SK 40	2 - 25	444E / 462E	66	60	431501 4025	61,–
SK 40	3 - 32	450E / 467E	95	72	431501 4032	65,–
SK 50	2 - 25	444E / 462E	71	60	431501 5025	80,–
SK 50	3 - 32	450E / 467E	73	72	431501 5032	84,–

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FAHRION® PRÄZISION OZ collets

DIN 6388-B

- Exceptionally flexible double-slotted version
- Higher contact area ratio, increased rigidity and holding forces, greater system concentricity
- Collapse 0.5 mm
- For clamping tools and twist drill bits on the chamfer
- True-running accuracy:
  415E: 6 µm
  462E: 6 µm
  467E: 10 µm



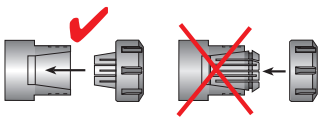


Clamp Ø mm	415E L = 40 mm D = 25,5 mm art.no.	€	462E L = 52 mm D = 35,05 mm art.no.	€	467E L = 60 mm D = 43,7 mm art.no.	€
2	**433015** 0020	31,55	**433016** 0020	35,65		
2.5	433015 0025	36,65	433016 0025	40,70		
3	433015 0030	22,40	433016 0030	26,35		
3.5	433015 0035	28,–	433016 0035	32,–		
4	433015 0040	22,40	433016 0040	26,35	**433017** 0040	48,35
4.5	433015 0045	28,–	433016 0045	32,–	433017 0045	57,80
5	433015 0050	22,40	433016 0050	26,35	433017 0050	34,10
5.5	433015 0055	28,–	433016 0055	32,–	433017 0055	44,20
6	433015 0060	22,40	433016 0060	26,35	433017 0060	34,10
6.5	433015 0065	28,–	433016 0065	32,–	433017 0065	44,20
7	433015 0070	22,40	433016 0070	26,35	433017 0070	34,10
7.5	433015 0075	28,–	433016 0075	32,–	433017 0075	44,20
8	433015 0080	22,40	433016 0080	26,35	433017 0080	34,10
8.5	433015 0085	28,–	433016 0085	32,–	433017 0085	44,20
9	433015 0090	22,40	433016 0090	26,35	433017 0090	34,10
9.5	433015 0095	28,–	433016 0095	32,–	433017 0095	44,20
10	433015 0100	22,40	433016 0100	26,35	433017 0100	34,10
10.5	433015 0105	28,–	433016 0105	32,–	433017 0105	44,20
11	433015 0110	22,40	433016 0110	26,35	433017 0110	34,10
11.5	433015 0115	28,–	433016 0115	32,–	433017 0115	44,20
12	433015 0120	22,40	433016 0120	26,35	433017 0120	34,10
12.5	433015 0125	28,–	433016 0125	32,–	433017 0125	44,20
	4119		4119		4119	

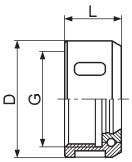
Clamp Ø mm	415E L = 40 mm D = 25,5 mm art.no.	€	462E L = 52 mm D = 35,05 mm art.no.	€	467E L = 60 mm D = 43,7 mm art.no.	€
13	433015 0130	22,40	433016 0130	26,35	433017 0130	34,10
13.5	433015 0135	28,–	433016 0135	32,–	433017 0135	44,20
14	433015 0140	22,40	433016 0140	26,35	433017 0140	34,10
14.5	433015 0145	28,–	433016 0145	32,–	433017 0145	44,20
15	433015 0150	22,40	433016 0150	26,35	433017 0150	34,10
15.5	433015 0155	28,–	433016 0155	32,–	433017 0155	44,20
16	433015 0160	22,40	433016 0160	26,35	433017 0160	34,10
17			433016 0170	26,35	433017 0170	34,10
18			433016 0180	26,35	433017 0180	34,10
20			433016 0200	26,35	433017 0200	34,10
21			433016 0210	26,35	433017 0210	34,10
22			433016 0220	26,35	433017 0220	34,10
23			433016 0230	26,35	433017 0230	34,10
24			433016 0240	26,35	433017 0240	34,10
25			433016 0250	26,35	433017 0250	34,10
26					433017 0260	34,10
27					433017 0270	34,10
28					433017 0280	34,10
29					433017 0290	34,10
30					433017 0300	34,10
31					433017 0310	34,10
32					433017 0320	34,10
	4119		4119		4119	

OZ clamping nuts

- **For collets in accordance with DIN 6388 (OZ)**
- With ball bearing-mounted pressure ring
- For higher holding forces and better concentricity
- **Suitable hook spanner under Article No. 701550....**



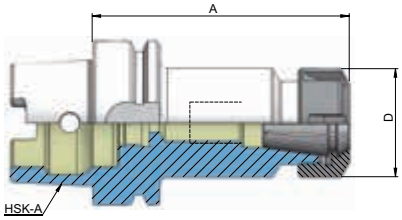
suitable for	Clamping range mm	D mm	L mm	Thread	art.no.	€
410E/415E	2 - 16	43	24	M33 x 1.5	**431014** 0216	36,80
444E/462E	2 - 25	60	30	M48 x 2.0	431014 0225	42,10
450E/467E	3 - 32	72	33.5	M60 x 2.5	431014 0332	49,60
					4120	





ATORN® ER collet chuck

- **For DIN 6499 ER collets**
- **Pre-balanced to G 2.5 / 25,000 rpm**
- Alloyed case-hardened steel with a core tensile strength of min. 950 N/mm², case-hardened to HRC 60 ± 2 (HV 700 ± 50), case depth 0.8 mm ± 0.2 mm, burnished
- Taper angle tolerance quality < AT3 in accordance with DIN 7187 and DIN 2080, max. true running accuracy < 0.005 mm
- Supplied with clamping nut
- **Additional shank designs and AD/AF version available on request**
- **ER16 / 426E* tool holding fixtures supplied with hexagonal nut**





DIN 69893 type A (HSK-A)

- Internal coolant supply
- When machining with internal coolant supply, a coolant transfer pipe with art.no. 431011... should be used

Shank	Clamping range mm	for collets	A mm	D mm	art.no.	€
HSK-A 50	1 - 10	ER16 / 426E *	100	32	**431009** 5010	85,50
HSK-A 50	2 - 16	ER25 / 430E	100	42	431009 5016	85,50
HSK-A 50	2 - 20	ER32 / 470E	100	50	431009 5020	90,50
HSK-A 63	1 - 10	ER16 / 426E *	100	32	431009 6310	85,50
HSK-A 63	1 - 10	ER16 / 426E *	160	32	431009 6410	111,–
HSK-A 63	2 - 16	ER25 / 430E	100	42	431009 6316	82,–
HSK-A 63	2 - 16	ER25 / 430E	160	42	431009 6416	108,–
HSK-A 63	2 - 20	ER32 / 470E	100	50	431009 6320	85,50
HSK-A 63	2 - 20	ER32 / 470E	160	50	431009 6420	111,–
HSK-A 63	3 - 26	ER40 / 472E	120	63	431009 6326	90,50
HSK-A 100	2 - 16	ER25 / 430E	100	42	431009 1016	114,–
HSK-A 100	2 - 20	ER32 / 470E	100	50	431009 1020	114,–
HSK-A 100	3 - 26	ER40 / 472E	120	63	431009 1026	119,–

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DIN ISO 7388-1 / DIN 69871 AD

- Internal coolant supply

Shank	Clamping range mm	for collets	A mm	D mm	art.no.	€
SK 40	1 - 10	ER16 / 426E *	63	32	**431003** 4010	46,–
SK 40	1 - 10	ER16 / 426E *	100	32	431003 4110	53,–
SK 40	1 - 10	ER16 / 426E *	160	32	431003 4210	87,50
SK 40	2 - 16	ER25 / 430E	60	42	431003 4016	46,–
SK 40	2 - 16	ER25 / 430E	100	42	431003 4116	59,–
SK 40	2 - 16	ER25 / 430E	160	42	431003 4216	87,50
SK 40	2 - 20	ER32 / 470E	70	50	431003 4020	49,–
SK 40	2 - 20	ER32 / 470E	100	50	431003 4120	59,–
SK 40	2 - 20	ER32 / 470E	160	50	431003 4220	89,50
SK 40	3 - 26	ER40 / 472E	80	63	431003 4026	52,–
SK 40	3 - 26	ER40 / 472E	100	63	431003 4126	65,–
SK 40	3 - 26	ER40 / 472E	160	63	431003 4226	95,50
SK 50	1 - 10	ER16 / 426E	100	32	431003 5010	87,50
SK 50	1 - 10	ER16 / 426E	160	32	431003 5210	120,–
SK 50	2 - 16	ER25 / 430E	60	42	431003 5016	72,–
SK 50	2 - 16	ER25 / 430E	100	42	431003 5116	87,50
SK 50	2 - 16	ER25 / 430E	160	42	431003 5216	120,–
SK 50	2 - 20	ER32 / 470E	70	50	431003 5020	75,–
SK 50	2 - 20	ER32 / 470E	100	50	431003 5120	104,–
SK 50	2 - 20	ER32 / 470E	160	50	431003 5220	120,–
SK 50	2 - 20	ER32 / 470E	200	50	431003 5230	161,–
SK 50	3 - 26	ER40 / 472E	80	63	431003 5026	75,–
SK 50	3 - 26	ER40 / 472E	100	63	431003 5126	107,–
SK 50	3 - 26	ER40 / 472E	160	63	431003 5226	123,–
SK 50	3 - 26	ER40 / 472E	200	63	431003 5326	167,–

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Continued on next page >>>

DIN ISO 7388-2 / MAS BT JIS B 6339

• Internal coolant supply



Shank	Clamping range mm	for collets	A mm	D mm	art.no.	€
BT 40	1 - 10	ER16 / 426E *	63	32	**431007** 4010	46,–
BT 40	1 - 10	ER16 / 426E *	100	32	431007 4110	53,–
BT 40	2 - 16	ER25 / 430E	60	42	431007 4016	46,–
BT 40	2 - 16	ER25 / 430E	100	42	431007 4116	66,–
BT 40	2 - 20	ER32 / 470E	70	50	431007 4020	49,–
BT 40	2 - 20	ER32 / 470E	100	50	431007 4120	59,–
BT 40	3 - 26	ER40 / 472E	80	63	431007 4026	52,–
BT 40	3 - 26	ER40 / 472E	100	63	431007 4126	65,–
BT 50	2 - 16	ER25 / 230E	70	42	431007 5016	79,–
BT 50	2 - 20	ER32 / 470E	70	50	431007 5020	75,–
BT 50	3 - 26	ER40 / 472E	80	63	431007 5026	75,–

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DIN 2080



Shank	Clamping range mm	for collets	A mm	D mm	art.no.	€
SK 40	1 - 10	ER16 / 426E *	50	32	**431001** 4010	46,–
SK 40	2 - 16	ER25 / 430E	50	42	431001 4016	46,–
SK 40	2 - 20	ER32 / 470E	50	50	431001 4020	48,–
SK 40	3 - 26	ER40 / 472E	80	63	431001 4026	51,–
SK 50	2 - 20	ER32 / 470E	63	50	431001 5020	74,–
SK 50	3 - 26	ER40 / 472E	63	63	431001 5026	74,–

4117

With straight shank

• True running accuracy < 15 µm



D1 mm	Clamping range mm	for collets	L1 mm	L mm	D mm	art.no.	€
20	1.5 - 16	ER25	50	46	42	**431016** 2001	102,–
20	1.5 - 16	ER25	100	46	42	431016 2002	108,–
20	2 - 20	ER32	100	54	50	431016 2003	174,–
25	1 - 16	ER25	50	40	42	431016 2501	108,–
25	1 - 16	ER25	100	40	42	431016 2502	108,–
25	2 - 20	ER32	50	52	50	431016 2503	174,–
32	2 - 20	ER32	50	48	50	431016 3202	143,–
32	2 - 20	ER32	100	48	50	431016 3212	133,–
32	3 - 26	ER40	70	60	63	431016 3203	184,–
40	2 - 20	ER32	80	33	50	431016 4001	184,–

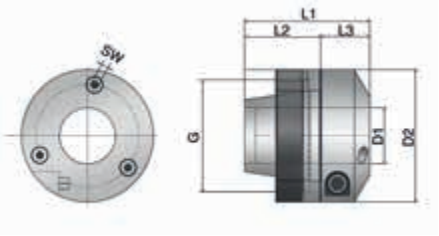
4120



SARA® Hydraulic expansion clamping unit ECOGRIP ER

powered by ETP

- renders ER collet systems hydraulic
- Adjustable radial run-out
- installed correctly, a true running accuracy of 0.003mm is achieved. The radial run-out can be further adjusted to the desired accuracy by slightly tightening the setting screws.

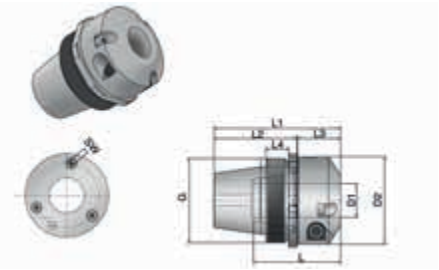


For ER collet systems with external thread



Designation	D1 mm	D2 mm	L1 mm	L2 mm	L3 mm	Thread	Wr. width mm	art.no.	€
ER16	6	34	30	16	14	M22 x 1.5	2.5	**433804** 1006	223,–
ER16 Mini	6	34	30	16	14	M19 x 1	2.5	433804 1106	252,–
ER20	12	43.5	40	16	24	M25 x 1.5	3	433804 2012	188,–
ER20 Mini	12	43.5	40	16	24	M24 x 1	3	433804 2112	217,–
ER25	12	48	46	20	26	M32 x 1.5	3	433804 3012	242,–
ER25	16	48	46	20	26	M32 x 1.5	3	433804 3016	213,–
ER32	20	52	52	26.5	25.5	M40 x 1.5	3	433804 4020	213,–
ER40	25	59	56	34	22	M50 x 1.5	3	433804 5020	237,–

4130

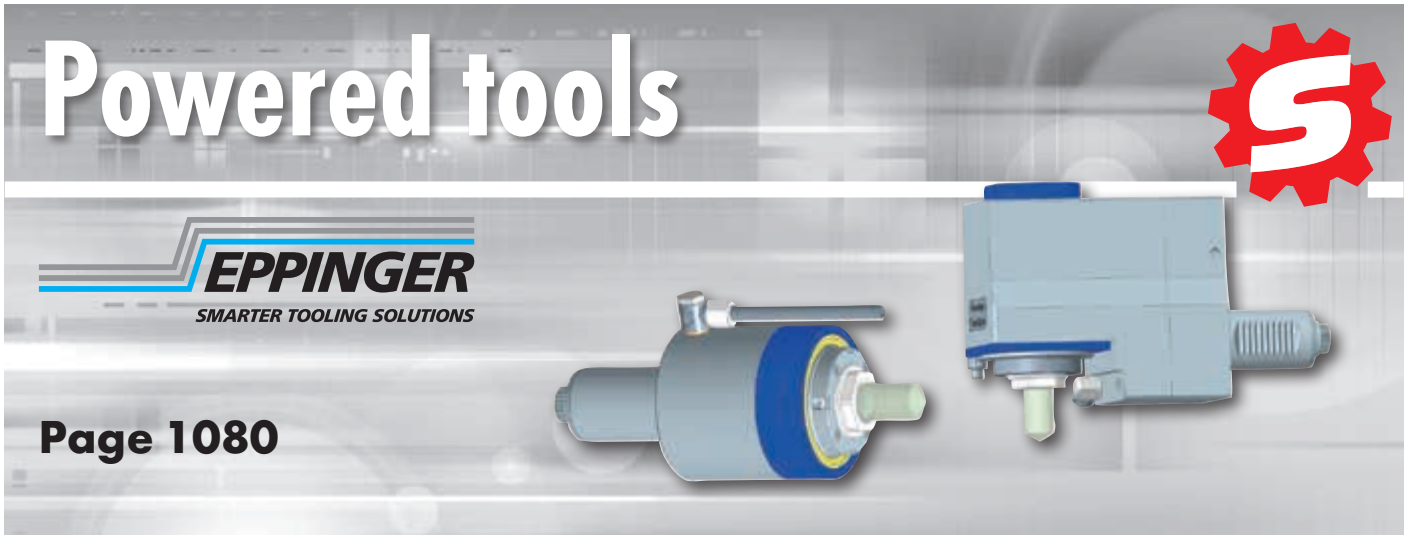


for powered tools with ER female thread



Designation	D1 mm	D2 mm	L mm	L1 mm	L2 mm	L3 mm	L4 mm	Thread	Wr. width mm	art.no.	€
ER20	12	16	40	60.5	36	24	10	M32 x 1.5	3	**433814** 2512	279,–
ER25	12	16	46	71	44.5	26	12	M40 x 1.5	3	433814 3212	279,–
ER25	16	16	46	71	44.5	26	12	M40 x 1.5	3	433814 3216	279,–
ER32	20	22	52	75.5	49.5	25.5	13.5	M50 x 1.5	3	433814 4020	316,–

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ATORN® ER precision collets 2 µm

- True running accuracy 2µm
- for greater system true running accuracy
- Collapse h10
- also suitable for ATORN precision ER collet chuck and Fahrion Centro-P
- **sealed collets for internal coolant supply and collet sets available on request**



Clamp Ø mm	ER16UP/426E D = 17 mm L = 27,5 mm art.no.	€	ER25UP/430E D = 26 mm L = 34 mm art.no.	€	ER32UP/470E D = 33 mm L = 40 mm art.no.	€	ER40UP/472E D = 41 mm L = 46 mm art.no.	€
1	**433621** 0010	51,–	**433622** 0010	43,–				
1.5	433621 0015	51,–	433622 0015	43,–				
2	433621 0020	40,50	433622 0020	42,50	**433623** 0020	43,–		
2.5	433621 0025	40,50	433622 0025	42,50	433623 0025	43,–		
3	433621 0030	35,20	433622 0030	36,–	433623 0030	36,70	**433624** 0030	57,–
3.5	433621 0035	48,–	433622 0035	48,–	433623 0035	48,80	433624 0035	64,80
4	433621 0040	35,20	433622 0040	36,–	433623 0040	36,70	433624 0040	51,20
4.5	433621 0045	48,–	433622 0045	48,–	433623 0045	48,80	433624 0045	64,80
5	433621 0050	35,20	433622 0050	36,–	433623 0050	36,70	433624 0050	51,20
5.5	433621 0055	48,–	433622 0055	48,–	433623 0055	48,80	433624 0055	64,80
6	433621 0060	35,20	433622 0060	36,–	433623 0060	36,70	433624 0060	51,20
6.5	433621 0065	48,–	433622 0065	48,–	433623 0065	48,80	433624 0065	64,80
7	433621 0070	35,20	433622 0070	36,–	433623 0070	36,70	433624 0070	51,20
7.5	433621 0075	48,–	433622 0075	48,–	433623 0075	48,80	433624 0075	64,80
8	433621 0080	35,20	433622 0080	36,–	433623 0080	36,70	433624 0080	51,20
8.5	433621 0085	48,–	433622 0085	48,–	433623 0085	48,80	433624 0085	64,80
9	433621 0090	35,20	433622 0090	36,–	433623 0090	36,70	433624 0090	51,20
9.5	433621 0095	48,–	433622 0095	48,–	433623 0095	48,80	433624 0095	64,80
10	433621 0100	35,20	433622 0100	36,–	433623 0100	36,70	433624 0100	51,20
10.5			433622 0105	48,–	433623 0105	48,80	433624 0105	64,80
11			433622 0110	36,–	433623 0110	36,70	433624 0110	51,20
11.5			433622 0115	48,–	433623 0115	48,80	433624 0115	64,80
12			433622 0120	36,–	433623 0120	36,70	433624 0120	51,20
12.5			433622 0125	48,–	433623 0125	48,80	433624 0125	64,80
13			433622 0130	36,–	433623 0130	36,70	433624 0130	51,20
13.5			433622 0135	48,–	433623 0135	48,80	433624 0135	64,80
14			433622 0140	36,–	433623 0140	36,70	433624 0140	51,20
14.5			433622 0145	48,–	433623 0145	48,80	433624 0145	64,80
15			433622 0150	36,–	433623 0150	36,70	433624 0150	51,20
15.5			433622 0155	48,–	433623 0155	48,80	433624 0155	64,80
16			433622 0160	36,–	433623 0160	36,70	433624 0160	51,20
16.5					433623 0165	48,80	433624 0165	64,80
17					433623 0170	36,70	433624 0170	51,20
17.5					433623 0175	48,80	433624 0175	64,80
18					433623 0180	36,70	433624 0180	51,20
18.5					433623 0185	48,80	433624 0185	64,80
19					433623 0190	36,70	433624 0190	51,20
19.5					433623 0195	48,80	433624 0195	64,80
20					433623 0200	36,70	433624 0200	51,20
20.5							433624 0205	64,80
21							433624 0210	51,20
21.5							433624 0215	64,80
22							433624 0220	51,20
22.5							433624 0225	64,80
23							433624 0230	51,20
23.5							433624 0235	64,80
24							433624 0240	51,20
24.5							433624 0245	64,80
25							433624 0250	51,20
25.5							433624 0255	64,80
26							433624 0260	51,20
	4202		4202		4202		4202	

ATORN® ER precision collets 5 µm

- True running accuracy 5µm
- for greater system true running accuracy
- Collapse 0.5mm
- **sealed collets for internal coolant supply available on request**



Single

Clamp Ø mm	ER16HP/426E D = 17 mm L = 27,5 mm art.no.	€	ER25HP/430E D = 26 mm L = 34 mm art.no.	€	ER32HP/470E D = 33 mm L = 40 mm art.no.	€	ER40HP/472E D = 41 mm L = 46 mm art.no.	€
1	**433221** 0010	21,–	**433222** 0010	23,–				
1.5	433221 0015	21,–	433222 0015	23,–				
2	433221 0020	21,–	433222 0020	23,–	**433223** 0020	24,60		
2.5	433221 0025	21,–	433222 0025	23,–	433223 0025	24,60		
3	433221 0030	17,–	433222 0030	18,–	433223 0030	19,–	**433224** 0030	33,20
3.5	433221 0035	29,50	433222 0035	29,90	433223 0035	30,80	433224 0035	35,20
4	433221 0040	17,–	433222 0040	18,–	433223 0040	19,–	433224 0040	24,50
4.5	433221 0045	29,50	433222 0045	29,90	433223 0045	30,80	433224 0045	35,20
5	433221 0050	17,–	433222 0050	18,–	433223 0050	19,–	433224 0050	24,50
5.5	433221 0055	29,50	433222 0055	29,90	433223 0055	30,80	433224 0055	35,20
6	433221 0060	17,–	433222 0060	18,–	433223 0060	19,–	433224 0060	24,50
6.5	433221 0065	29,50	433222 0065	29,90	433223 0065	30,80	433224 0065	35,20
7	433221 0070	17,–	433222 0070	18,–	433223 0070	19,–	433224 0070	24,50
7.5	433221 0075	29,50	433222 0075	29,90	433223 0075	30,80	433224 0075	35,20
8	433221 0080	17,–	433222 0080	18,–	433223 0080	19,–	433224 0080	24,50
8.5	433221 0085	29,50	433222 0085	29,90	433223 0085	30,80	433224 0085	35,20
9	433221 0090	17,–	433222 0090	18,–	433223 0090	19,–	433224 0090	24,50
9.5	433221 0095	29,50	433222 0095	29,90	433223 0095	30,80	433224 0095	35,20
10	433221 0100	17,–	433222 0100	18,–	433223 0100	19,–	433224 0100	24,50
10.5			433222 0105	29,90	433223 0105	30,80	433224 0105	35,20
11			433222 0110	18,–	433223 0110	19,–	433224 0110	24,50
11.5			433222 0115	29,90	433223 0115	30,80	433224 0115	35,20
12			433222 0120	18,–	433223 0120	19,–	433224 0120	24,50
12.5			433222 0125	29,90	433223 0125	30,80	433224 0125	35,20
13			433222 0130	18,–	433223 0130	19,–	433224 0130	24,50
13.5			433222 0135	29,90	433223 0135	30,80	433224 0135	35,20
14			433222 0140	18,–	433223 0140	19,–	433224 0140	24,50
14.5			433222 0145	29,90	433223 0145	30,80	433224 0145	35,20
15			433222 0150	18,–	433223 0150	19,–	433224 0150	24,50
15.5			433222 0155	29,90	433223 0155	30,80	433224 0155	35,20
16			433222 0160	18,–	433223 0160	19,–	433224 0160	24,50
16.5							433224 0165	35,20
17					433223 0170	19,–	433224 0170	24,50
17.5					433223 0175	30,80	433224 0175	35,20
18					433223 0180	19,–	433224 0180	24,50
18.5					433223 0185	30,80	433224 0185	35,20
19					433223 0190	19,–	433224 0190	24,50
19.5					433223 0195	30,80	433224 0195	35,20
20					433223 0200	19,–	433224 0200	24,50
20.5							433224 0205	35,20
21							433224 0210	24,50
21.5							433224 0215	35,20
22							433224 0220	24,50
22.5							433224 0225	35,20
23							433224 0230	24,50
23.5							433224 0235	35,20
24							433224 0240	24,50
24.5							433224 0245	35,20
25							433224 0250	24,50
25.5							433224 0255	35,20
26							433224 0260	24,50
	4202		4202		4202		4202	

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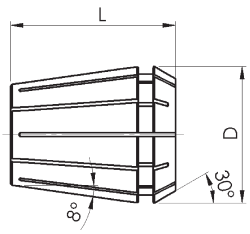
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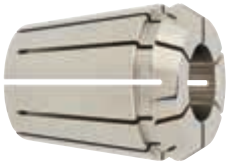
Designation	Contents per set	Clamping range mm	art.no.	€
ER16HP	10-pcs.	Ø1mm - Ø10mm	**433081** 0016	199,–
ER25HP	15-pcs.	Ø2mm - Ø16mm	433081 0025	299,–
ER32HP	18-pcs.	Ø3mm - Ø20mm	433081 0032	379,–
ER40HP	23-pcs.	Ø4mm - Ø26mm	433081 0040	554,–
			4202	

FAHRION® PRAZISION GERC collets 5 µm

- Collapse of 1 mm
  (0.5 mm with clamping diameters of 1 to 2 mm)
- True-running accuracy 5 µm

Fahrion Protect corrosion protection





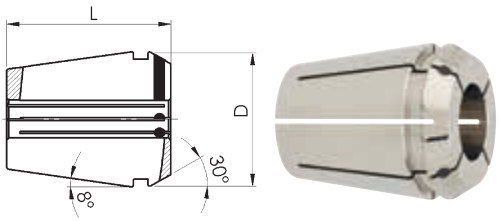
Standard version / type GERC-B

Clamp Ø mm	GERC16 / 426E D = 17 mm L = 27,5 mm art.no.	€	GERC25 430E D = 26 mm L = 34 mm art.no.	€	GERC32 470E D = 33 mm L = 40 mm art.no.	€	GERC40 472E D = 41 mm L = 46 mm art.no.	€
1	**433071** 0010	24,20	**433073** 0010	26,35				
1.5	433071 0015	24,20	433073 0015	26,35				
2	433071 0020	24,20	433073 0020	26,35	**433074** 0020	27,80		
2.5	433071 0025	24,20	433073 0025	26,35	433074 0025	27,80		
3	433071 0030	19,10	433073 0030	20,30	433074 0030	21,60	**433075** 0030	37,50
3.5	433071 0035	32,80	433073 0035	33,90	433074 0035	34,90		
4	433071 0040	19,10	433073 0040	20,30	433074 0040	21,60	433075 0040	27,90
4.5	433071 0045	32,80	433073 0045	33,90	433074 0045	34,90		
5	433071 0050	19,10	433073 0050	20,30	433074 0050	21,60	433075 0050	27,90
5.5	433071 0055	32,80	433073 0055	33,90	433074 0055	34,90		
6	433071 0060	19,10	433073 0060	20,30	433074 0060	21,60	433075 0060	27,90
6.5	433071 0065	32,80	433073 0065	33,90	433074 0065	34,90		
7	433071 0070	19,10	433073 0070	20,30	433074 0070	21,60	433075 0070	27,90
7.5	433071 0075	32,80	433073 0075	33,90	433074 0075	34,90		
8	433071 0080	19,10	433073 0080	20,30	433074 0080	21,60	433075 0080	27,90
8.5	433071 0085	32,80	433073 0085	33,90	433074 0085	34,90	433075 0085	41,80
9	433071 0090	19,10	433073 0090	20,30	433074 0090	21,60	433075 0090	27,90
9.5	433071 0095	32,80	433073 0095	33,90	433074 0095	34,90		
10	433071 0100	19,10	433073 0100	20,30	433074 0100	21,60	433075 0100	27,90
10.5			433073 0105	33,90	433074 0105	34,90	433075 0105	41,80
11			433073 0110	20,30	433074 0110	21,60	433075 0110	27,90
11.5			433073 0115	33,90	433074 0115	34,90		
12			433073 0120	20,30	433074 0120	21,60	433075 0120	27,90
12.5			433073 0125	33,90	433074 0125	34,90		
13			433073 0130	20,30	433074 0130	21,60	433075 0130	27,90
13.5			433073 0135	33,90	433074 0135	34,90		
14			433073 0140	20,30	433074 0140	21,60	433075 0140	27,90
14.5			433073 0145	33,90	433074 0145	34,90		
15			433073 0150	20,30	433074 0150	21,60	433075 0150	27,90
15.5			433073 0155	33,90	433074 0155	34,90		
16			433073 0160	20,30	433074 0160	21,60	433075 0160	27,90
17					433074 0170	21,60	433075 0170	27,90
18					433074 0180	21,60	433075 0180	27,90
19							433075 0190	27,90
20					433074 0200	21,60	433075 0200	27,90
21							433075 0210	27,90
22							433075 0220	27,90
23							433075 0230	27,90
24							433075 0240	27,90
25							433075 0250	27,90
26							433075 0260	27,90
	4119		4119		4119		4119	

Set in a wooden box, standard increasing in increments of 1 mm / type GERC-B

Designation	Contents per set	Clamping range mm	art.no.	€
GERC 16 426E	10-pcs.	1 - 10	**433076** 0000	218,–
GERC 20 428E	12-pcs.	2 - 13	433076 0001	266,–
GERC 25 430E	15-pcs.	2 - 16	433076 0002	336,–
GERC 32 470E	18-pcs.	3 - 20	433076 0003	420,–
GERC 40 472E	23-pcs.	4 - 26	433076 0004	680,–
			4119	





With seal for internal coolant supply / type GERC-BD

Clamp Ø mm	GERC16-BD 425E D = 16,7 mm L = 27,5 mm art.no.	€	GERC25-BD 429E D = 25,7 mm L = 34 mm art.no.	€	GERC32-BD 429E D = 32,7 mm L = 34 mm art.no.	€	GERC40-BD 471E D = 40,7 mm L = 46 mm art.no.	€
3	**433131** 1603	45,50	**433133** 2503	53,–	**433134** 3203	55,–		
4	433131 1604	45,50	433133 2504	47,50	433134 3204	49,50		
5	433131 1605	51,–	433133 2505	53,–	433134 3205	55,–		
6	433131 1606	45,50	433133 2506	47,50	433134 3206	49,50	**433135** 4006	58,–
8	433131 1608	45,50	433133 2508	47,50	433134 3208	49,50	433135 4008	58,–
10	433131 1610	45,50	433133 2510	47,50	433134 3210	49,50	433135 4010	58,–
12			433133 2512	47,50	433134 3212	49,50	433135 4012	58,–
14			433133 2514	47,50	433134 3214	49,50	433135 4014	58,–
16			433133 2516	47,50	433134 3216	49,50	433135 4016	58,–
18					433134 3218	49,50	433135 4018	58,–
20					433134 3220	49,50	433135 4020	58,–
22							433135 4022	64,–
25							433135 4025	58,–
	4118		4118		4118		4118	



Set in a wooden box, with seals for internal coolant supply / type GERC-D

Designation	Contents per set	Clamping range mm	art.no.	€
GERC16-BD / 425E	Ø3-4-5-6-8-10	3 - 10	**433077** 0001	293,–
GERC20-BD / 427E	Ø3-4-5-6-8-10-12	3 - 12	433077 0002	349,–
GERC25-BD / 429E	Ø4-6-8-10-12-14-16	4 - 16	433077 0003	353,–
GERC32-BD / 469E	Ø4-6-8-10-12-14-16-20	4 - 20	433077 0004	417,–
			4118	



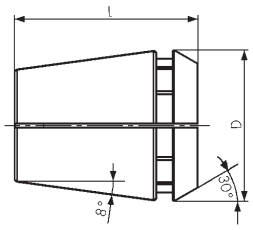
... makes the distinction.

ATORN®
Performance demands quality

SARA® ER collets, 10 µm

DIN 6499-B

- Collapse of 1 mm (for ER11; 0.5 mm for clamping diameters of 1 to 2 mm)
- True running accuracy 10 µm





Individual

Ø mm	ER11 4008E D = 11,5 mm L = 18 mm art.no.	€	ER16 426E D = 17 mm L = 27,5 mm art.no.	€	ER25 430E D = 26 mm L = 34 mm art.no.	€	ER32 470E D = 33 mm L = 40 mm art.no.	€	ER40 472E D = 41 mm L = 46 mm art.no.	€
1	**433210** 0010	16,70	**433211** 0010	16,10						
1.5	433210 0015	16,70								
2	433210 0020	16,70	433211 0020	16,10	**433213** 0020	16,90				
2.5	433210 0025	16,70								
3	433210 0030	16,70	433211 0030	16,10	433213 0030	16,90	**433214** 0030	18,10	**433215** 0030	22,–
3.5	433210 0035	16,70								
4	433210 0040	16,70	433211 0040	16,10	433213 0040	16,90	433214 0040	18,10	433215 0040	22,–
4.5	433210 0045	16,70								
5	433210 0050	16,70	433211 0050	16,10	433213 0050	16,90	433214 0050	18,10	433215 0050	22,–
5.5	433210 0055	16,70								
6	433210 0060	16,70	433211 0060	16,10	433213 0060	16,90	433214 0060	18,10	433215 0060	22,–
6.5	433210 0065	16,70								
7	433210 0070	16,70	433211 0070	16,10	433213 0070	16,90	433214 0070	18,10	433215 0070	22,–
8			433211 0080	16,10	433213 0080	16,90	433214 0080	18,10	433215 0080	22,–
9			433211 0090	16,10	433213 0090	16,90	433214 0090	18,10	433215 0090	22,–
10			433211 0100	16,10	433213 0100	16,90	433214 0100	18,10	433215 0100	22,–
11					433213 0110	16,90	433214 0110	18,10	433215 0110	22,–
12					433213 0120	16,90	433214 0120	18,10	433215 0120	22,–
13					433213 0130	16,90	433214 0130	18,10	433215 0130	22,–
14					433213 0140	16,90	433214 0140	18,10	433215 0140	22,–
15					433213 0150	16,90	433214 0150	18,10	433215 0150	22,–
16					433213 0160	16,90	433214 0160	18,10	433215 0160	22,–
17							433214 0170	18,10		
18							433214 0180	18,10	433215 0180	22,–
19							433214 0190	18,10		
20							433214 0200	18,10	433215 0200	22,–
21									433215 0210	22,–
22									433215 0220	22,–
25									433215 0250	22,–
26									433215 0260	22,–
	4120		4120		4120		4120		4120	

Set on a wooden stand

- ER11 = increasing in increments of 0.5 mm, ER16 - ER40 = increasing in increments of 1 mm

Designation	Contents per set	Clamping range mm	art.no.	€
ER11 4008E	13-pcs.	1 - 7	**433220** 1110	225,–
ER16 426E	10-pcs.	1 - 10	433220 1610	180,–
ER20 428E	12-pcs.	2 - 13	433220 2012	219,–
ER25 430E	15-pcs.	2 - 16	433220 2515	280,–
ER32 470E	18-pcs.	3 - 20	433220 3218	345,–
ER40 472E	24-pcs.	3 - 26	433220 4023	532,–
			4120	



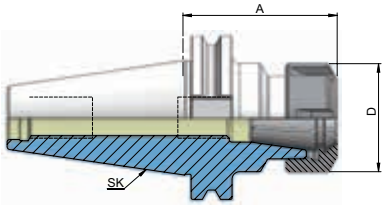
433220 1110

433220 2515

SARA® ER collet chuck set DIN ISO 7388-1 / DIN 69871AD/AF SK40

- **ER collets, DIN 6499, increasing in 1 mm increments, max. true running accuracy < 0.008 mm**
- **ER collet chuck, DIN ISO 7388-1 / DIN 69871AD/AF SK 40, max. true running accuracy < 0.005 mm**
- Alloyed case-hardened steel with a core tensile strength of min. 950 N/mm2 Case-hardened to HRC 60 ± 2 (HV 700 ± 50), case depth 0.8 mm ± 0.2 mm, burnished
- **Pre-balanced to G 6.3 / 15,000 rpm**
- Taper angle tolerance quality < AT3 in accordance with DIN 7187 and DIN 2080
- Supplied in plastic case with clamping key and clamping nut





Contents per set	A mm	D mm	Collet	Clamping range mm	art.no.	€
17-pcs.	70	42	ER25	2 - 16	**431103** 4917	360,–
20-pcs.	70	50	ER32	3 - 20	431103 4920	415,–
					4120	

SARA® Mini ER collet chuck extension

- Hardened (58 - 60 HRC) and precision-ground
- True-running accuracy, straight shank to internal taper, max. 5 µm; taper angle tolerance quality AT3
- Supplied with clamping and removal nuts

Individual



Clamping range mm	for collets	L mm	D mm	art.no.	€
1 - 7	ER11	161	16	**432000** 1110	140,–
1 - 10	ER16	161	20	432000 1610	144,–
1 - 10	ER16	191	20	432000 1615	157,–
1.5 - 13	ER20	164	20	432000 2010	168,–
1.5 - 13	ER20	188	20	432000 2015	174,–
				4120	

Set

- With collet chuck extension, collets, clamping nuts, key



Clamping range mm	Collet	L mm	Number of collets	art.no.	€
0.5 - 7	ER11	149	13	**432100** 1110	360,–
1 - 10	ER16	161	10	432100 1610	305,–
1 - 10	ER16	191	10	432100 1615	315,–
1.5 - 13	ER20	166	12	432100 2010	370,–
1.5 - 13	ER20	236	12	432100 2015	395,–
				4120	



... without shrinkage

ATORN®
High quality for great performance

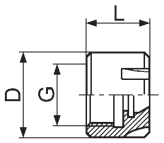
SARA® ER clamping nuts

- **For collets in accordance with DIN 6499 (ER/ESX)**
- Case-hardened and ground, suitable for increased speeds

Mini nuts

- 50-54 HRC, ground on all sides
- Small constructional dimensions



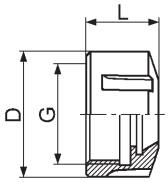


suitable for	Tightening torque max. mm	Rotational speed max. r/min	D mm	L mm	Thread	art.no.	€
ER 11	18	70000	16	12	M13 x 0.75	**431010** 1011	22,10
ER 16	28	60000	22	18	M19 x 1	431010 1016	21,–
ER 20	35	50000	28	19	M24 x 1	431010 1020	21,50
						4120	

Standard

- 56-60 HRC, pre-balanced



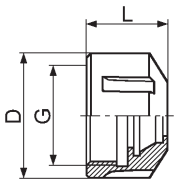


suitable for	Tightening torque max. mm	Rotational speed max. r/min	D mm	L mm	Thread	art.no.	€
ER 16	50	10000	32	17	M22 x 1.5	**431010** 0016	20,20
ER 20	75	10000	35	18.5	M25 x 1.5	431010 0020	20,20
ER 25	85	10000	42	20	M32 x 1.5	431010 0025	20,80
ER 32	105	10000	50	22.5	M40 x 1.5	431010 0032	22,20
ER 40	150	10000	63	25.5	M50 x 1.5	431010 0040	29,30
						4120	

Type HP for sealing washers

- 56-60 HRC, pre-balanced
- For holding HP sealing washers,
- Operating pressure up to 80 bar



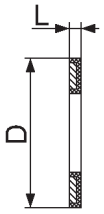


suitable for	Tightening torque max. mm	Rotational speed max. r/min	D mm	L mm	Thread	art.no.	€
ER 16	50	40000	32	22	M22 x 1.5	**431019** 0016	29,80
ER 25	85	35000	42	24.7	M32 x 1.5	431019 0025	34,–
ER 32	105	35000	50	27	M40 x 1.5	431019 0032	36,10
ER 40	150	25000	63	30.7	M50 x 1.5	431019 0040	42,60
						4118	

FAHRION® PRÄZISION Sealing washers for ER collet chucks

- For ER clamping nuts, 431019....
- For Fahrion clamping nuts **CENTRO|P (HPC-DI)** 431237....
- **Please specify shank Ø dimension in mm as four-digit figure**
  (Example HP25 DI **Ø8.5** = 431021 **0085**)





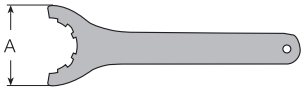
Bridging range -0.1 / +0.4 mm

for shank Ø mm	431020.... HP 16 Di D = 12,6 mm L = 2 mm €	431021.... DI 25 D = 20,2 mm L = 2 mm €	431022.... HP 32 Di D = 26,2 mm L = 2 mm €	431023.... HP 40 DI D = 34,2 mm L = 2 mm €
2 - 2.5	18,20	18,20	18,90	
3 - 10	14,90	14,90	15,50	18,90
10.5 - 16		14,90	15,50	18,90
17 - 20			15,50	18,90
21 - 26				18,90
	4118	4118	4118	4118

Chuck key

- **For DIN 6499 type ER clamping nuts, DIN 1804 slotted nuts and DIN 981 roller bearing nuts**
- Special steel





Standard

for clamping nut	A mm	art.no.	€
ER 16	50	**438030** 0016	11,90
ER 20	60	438030 0028	12,85
ER 25	65	438030 0042	13,65
ER 32	75	438030 0050	19,20
ER 40	90	438030 0063	25,40

4120

Mini





for clamping nut	A mm	art.no.	€
ER 11 MINI	22.3	**438031** 0011	15,40
ER 16 MINI	22.5	438031 0016	16,20
ER 20 MINI	29	438031 0020	17,70

4120

Hook spanner

DIN 1810A DIN 1810B

- Special steel, hardened and burnished
- * not DIN-compliant

With milled nose, for DIN 1804 slotted nuts

- DIN 1810A



Wr. width mm	Total length mm	Thickness mm	art.no.	€
16 - 20	110	3	**701550** 0020	4,92
25 - 28	136	4	701550 0028	5,18
30 - 32	136	4	701550 0032	5,20
34 - 36	170	5	701550 0036	6,18
40 - 42	170	5	701550 0042	6,12
45 - 50	206	6	701550 0050	7,12
52 - 55	206	6	701550 0055	7,28
58 - 62	240	7	701550 0062	10,75
68 - 75	240	7	701550 0075	10,65
80 - 90	280	8	701550 0090	14,40
95 - 100	280	8	701550 0100	14,50
110 - 115	335	10	701550 0115	25,30
120 - 130	335	10	701550 0130	25,30
135 - 145	385	10*	701550 0145	31,25
155 - 165	385	10*	701550 0165	31,25
180 - 195	470	10*	701550 0195	51,20

4159

With pilot tip, for capstan nuts, DIN 1816

- DIN 1810B



Wr. width mm	Pin Ø mm	Pin length mm	Total length mm	Thickness mm	art.no.	€
16 - 18	2.5	2.5	110	3	**701560** 0020	5,54
25 - 28	3.0	3.0	136	4	701560 0028	6,26
30 - 32	4.0	3.0	136	4	701560 0032	6,26
34 - 36	4.0	3.5	170	5	701560 0036	7,36
40 - 42	4.0	3.5	170	5	701560 0042	7,42
45 - 50	5.0	4.0	206	6	701560 0050	9,18
52 - 55	5.0	4.0	206	6	701560 0055	9,24
58 - 62	5.0	5.0	240	7	701560 0062	12,20
68 - 75	6.0	5.0	240	7	701560 0075	12,35
80 - 90	6.0	6.0	280	8	701560 0090	15,25
95 - 100	8.0	6.0	280	8	701560 0100	15,25
110 - 115	8.0	8.0	335	8*	701560 0115	26,35
120 - 130	8.0	8.0	335	8*	701560 0130	26,35
135 - 145	8.0	8.0	380	8*	701560 0145	34,30
180 - 195	10.0	8.0	470	10*	701560 0195	57,90

4159

ATORN® Milling cutter holding fixture, DIN 6359

DIN 6359

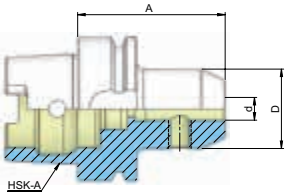
- **For straight shanks, DIN 1835-B (WELDON)**
- **Pre-balanced to G 2.5 / 25,000 rpm**
- Alloyed case-hardened steel with a core tensile strength of min. 950 N/mm2
- Case-hardened to HRC 60 ± 2 (HV 700 ± 50), case depth 0.8 mm ± 0.2 mm
- Taper angle tolerance quality < AT3 in accordance with DIN 7187 and DIN 2080
- Max. true running accuracy < 0.005 mm
- Supplied with clamping screw
- **Additional shank designs and AD/B version available on request**
- **Art. No. 434504, 434508 and 434510 at Ø 6 to Ø 18 with two coolant bores**
- **Art. No. 434504, 434508 and 434510 at Ø 20 to Ø 40 with four coolant bores**

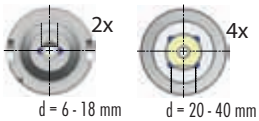
DIN 69893 type A (HSK-A)

- Internal coolant supply
- When machining with internal coolant supply, a coolant transfer pipe with art.no. 431011... should be used

Shank	d mm	A mm	D mm	art.no.	€	With coolant bores art.no.	€	with coolant bores art.no.	€
HSK 50	6	65	25	**434509** 5006	85,50	**434510** 5006	95,50		
HSK 50	8	65	28	434509 5008	85,50	434510 5008	95,50		
HSK 50	10	65	35	434509 5010	85,50	434510 5010	95,50		
HSK 50	12	80	42	434509 5012	85,50	434510 5012	95,50		
HSK 50	14	80	44	434509 5014	85,50	434510 5014	95,50		
HSK 50	16	80	48	434509 5016	85,50	434510 5016	95,50		
HSK 50	18	80	50	434509 5018	85,50	434510 5018	95,50		
HSK 50	20	80	52	434509 5020	85,50	434510 5020	95,50		
HSK 63	6	65	25	434509 6306	85,50	434510 6306	95,50	**434511** 6306	99,–
HSK 63	6	100	25	434509 6406	100,–			434511 6406	115,50
HSK 63	6	160	25	434509 6506	134,–			434511 6506	140,–
HSK 63	8	65	28	434509 6308	85,50	434510 6308	95,50	434511 6308	99,–
HSK 63	8	100	28	434509 6408	100,–			434511 6408	115,50
HSK 63	8	160	28	434509 6508	134,–			434511 6508	140,–
HSK 63	10	65	35	434509 6310	85,50	434510 6310	95,50	434511 6310	99,–
HSK 63	10	100	35	434509 6410	100,–			434511 6410	115,50
HSK 63	10	160	35	434509 6510	134,–			434511 6510	140,–
HSK 63	12	160	42	434509 6412	134,–			434511 6512	140,–
HSK 63	12	80	42	434509 6312	85,50	434510 6312	95,50	434511 6312	99,–
HSK 63	14	80	44	434509 6314	85,50	434510 6314	95,50	434511 6314	99,–
HSK 63	14	160	44	434509 6514	134,–			434511 6514	140,–
HSK 63	16	80	48	434509 6316	85,50	434510 6316	95,50	434511 6316	99,–
HSK 63	16	160	48	434509 6416	134,–			434511 6516	140,–
HSK 63	18	80	50	434509 6318	85,50	434510 6318	95,50	434511 6318	99,–
HSK 63	18	160	50	434509 6518	134,–			434511 6518	140,–
HSK 63	20	80	52	434509 6320	85,50	434510 6320	95,50	434511 6320	99,–
HSK 63	20	160	52	434509 6420	134,–			434511 6520	140,–
HSK 63	25	110	63	434509 6325	94,50	434510 6325	105,–	434511 6325	115,50
HSK 63	32	110	72	434509 6332	99,50	434510 6332	110,–	434511 6332	119,50
HSK 63	40	125	80	434509 6340	114,–	434510 6340	124,–	434511 6340	130,–
HSK 100	6	80	25	434509 1006	119,–	434510 1006	139,–	434511 1006	132,–
HSK 100	8	80	28	434509 1008	119,–	434510 1008	139,–	434511 1008	132,–
HSK 100	10	80	35	434509 1010	119,–	434510 1010	139,–	434511 1010	132,–
HSK 100	12	80	42	434509 1012	119,–	434510 1012	139,–	434511 1012	132,–
HSK 100	14	80	44	434509 1014	119,–	434510 1014	139,–	434511 1014	132,–
HSK 100	16	100	48	434509 1016	119,–	434510 1016	139,–	434511 1016	132,–
HSK 100	18	100	50	434509 1018	119,–	434510 1018	139,–	434511 1018	132,–
HSK 100	20	100	52	434509 1020	119,–	434510 1020	139,–	434511 1020	132,–
HSK 100	25	100	65	434509 1025	138,–	434510 1025	147,–	434511 1025	148,50
HSK 100	32	100	72	434509 1032	144,–	434510 1032	151,–	434511 1032	163,–
HSK 100	40	105	80	434509 1040	156,–	434510 1040	180,–	434511 1040	173,–
				4117		4117		4117	

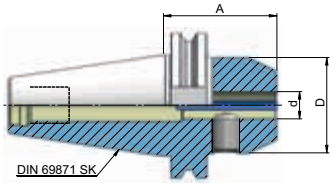




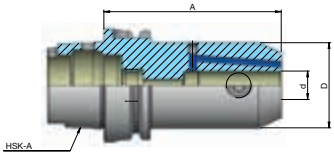


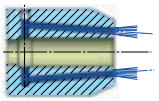
d = 6 - 18 mm

d = 20 - 40 mm



with coolant bores





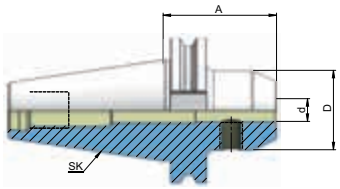
with coolant bores

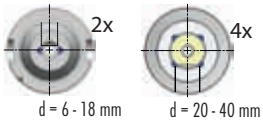
DIN ISO 7388-1 / DIN 69871 AD

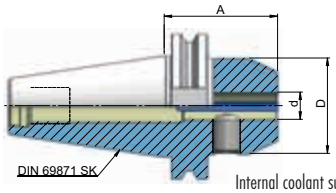
- Internal coolant supply

Shank	d mm	A mm	D mm	art.no.	€	With coolant bores art.no.	€	with coolant bores art.no.	€
SK 40	6	50	25	**434503** 4006	38,–	**434504** 4006	45,–	**434505** 4006	51,50
SK 40	6	100	25	434503 4106	45,–	434504 4106	54,–	434505 4106	57,50
SK 40	6	160	25	434503 4206	95,50			434505 4206	88,50
SK 40	8	50	28	434503 4008	36,–	434504 4008	43,–	434505 4008	49,50
SK 40	8	100	28	434503 4108	42,–	434504 4108	52,–	434505 4108	55,50
SK 40	8	160	28	434503 4208	87,50			434505 4208	86,–
SK 40	10	50	35	434503 4010	36,–	434504 4010	43,–	434505 4010	49,50
SK 40	10	100	35	434503 4110	42,–	434504 4110	52,–	434505 4110	55,50
SK 40	10	160	35	434503 4210	87,50			434505 4210	86,–
SK 40	12	50	42	434503 4012	36,–	434504 4012	43,–	434505 4012	49,50
SK 40	12	100	42	434503 4112	42,–	434504 4112	52,–	434505 4112	55,50
SK 40	12	160	42	434503 4212	87,50			434505 4212	86,–
SK 40	14	50	44	434503 4014	36,–	434504 4014	45,–	434505 4014	49,50
SK 40	14	100	44	434503 4114	42,–	434504 4114	56,–	434505 4114	55,50
SK 40	14	160	44	434503 4214	87,50			434505 4214	86,–
SK 40	16	35	45	434503 4216	41,60			434505 4016	55,50
SK 40	16	63	48	434503 4016	36,–	434504 4016	45,–	434505 4116	49,50
SK 40	16	100	48	434503 4116	42,–	434504 4116	56,–	434505 4216	55,50
SK 40	16	160	48	434503 4316	87,50			434505 4316	86,–
SK 40	18	63	50	434503 4018	36,–	434504 4018	45,–	434505 4018	49,50
SK 40	18	100	50	434503 4118	42,–	434504 4118	56,–	434505 4118	55,50
SK 40	18	160	50	434503 4218	87,50			434505 4218	86,–
SK 40	20	35	45	434503 4220	41,60			434505 4020	55,50
SK 40	20	63	52	434503 4020	36,–	434504 4020	45,–	434505 4120	49,50
SK 40	20	100	52	434503 4120	42,–	434504 4120	56,–	434505 4220	55,50
SK 40	20	160	52	434503 4320	87,50			434505 4320	86,–
SK 40	25	35	50	434503 4225	47,70			434505 4025	62,–
SK 40	25	100	63	434503 4025	42,–	434504 4025	58,–	434505 4125	55,50
SK 40	25	160	63	434503 4325	95,50			434505 4225	91,–
SK 40	32	65	50	434503 4232	56,–			434505 4032	66,–
SK 40	32	100	72	434503 4032	44,–	434504 4032	59,–	434505 4132	57,50
SK 40	32	160	72	434503 4332	99,50			434505 4232	97,–
SK 40	40	120	80	434503 4040	56,–	434504 4040	62,–	434505 4140	71,–
SK 50	6	63	25	434503 5006	54,–	434504 5006	68,–	434505 5006	71,–
SK 50	6	100	25	434503 5106	64,–			434505 5106	81,–
SK 50	6	160	25	434503 5206	130,–			434505 5206	96,–
SK 50	8	63	28	434503 5008	52,–	434504 5008	66,–	434505 5008	69,–
SK 50	8	100	28	434503 5108	62,–			434505 5108	78,–
SK 50	8	160	28	434503 5208	123,–			434505 5208	95,–
SK 50	10	63	35	434503 5010	52,–	434504 5010	66,–	434505 5010	69,–
SK 50	10	100	35	434503 5110	62,–			434505 5110	78,–
SK 50	10	160	35	434503 5210	123,–			434505 5210	95,–
SK 50	12	63	42	434503 5012	52,–	434504 5012	66,–	434505 5012	69,–
SK 50	12	100	42	434503 5112	62,–			434505 5112	78,–
SK 50	12	160	42	434503 5212	123,–			434505 5212	95,–
SK 50	14	63	44	434503 5014	52,–	434504 5014	66,–	434505 5014	69,–
SK 50	14	100	44	434503 5114	62,–			434505 5114	78,–
SK 50	14	160	44	434503 5214	123,–			434505 5214	95,–
SK 50	16	63	48	434503 5016	52,–	434504 5016	66,–	434505 5016	69,–
SK 50	16	100	48	434503 5116	62,–			434505 5116	78,–
SK 50	16	160	48	434503 5216	123,–			434505 5216	95,–
SK 50	18	63	50	434503 5018	52,–	434504 5018	66,–	434505 5018	69,–
SK 50	18	100	50	434503 5118	62,–			434505 5118	78,–
SK 50	18	160	50	434503 5218	123,–			434505 5218	95,–
SK 50	20	63	52	434503 5020	52,–	434504 5020	66,–	434505 5020	69,–
SK 50	20	100	52	434503 5120	62,–			434505 5120	78,–
SK 50	20	160	52	434503 5220	123,–			434505 5220	95,–
SK 50	25	80	65	434503 5025	58,–	434504 5025	72,–	434505 5025	76,–
SK 50	25	120	65	434503 5125	81,–			434505 5125	88,–
				4117		4117		4117	

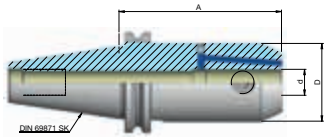


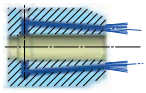






Internal coolant supply with coolant bore





with coolant bores

Continued on next page >>>

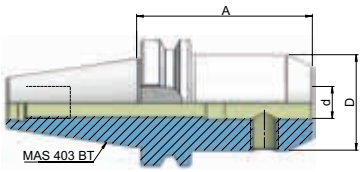
Shank	d mm	A mm	D mm	art.no.	€	With coolant bores art.no.	€	with coolant bores art.no.	€
SK 50	25	160	65	434503 5225	97,50			434505 5225	95,–
SK 50	32	100	72	434503 5032	62,–	434504 5032	73,–	434505 5032	78,–
SK 50	32	160	72	434503 5132	143,–			434505 5132	95,–
SK 50	40	100	80	434503 5040	67,–	434504 5040	76,–	434505 5040	81,–
SK 50	40	160	80	434503 5140	106,–			434505 5140	99,–
				4117		4117		4117	

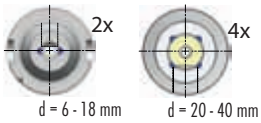
DIN ISO 7388-2 / MAS BT JIS B 6339

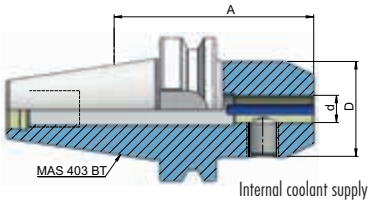
- Internal coolant supply

Shank	d mm	A mm	D mm	art.no.	€	With coolant bores art.no.	€	with coolant bores art.no.	€
BT 40	6	50	25	**434507** 4006	38,–	**434508** 4006	45,–	**434518** 4006	54,–
BT 40	6	100	25	434507 4106	45,–			434518 4106	59,–
BT 40	6	160	25	434507 4306	82,–			434518 4206	91,–
BT 40	8	50	28	434507 4008	36,–	434508 4008	43,–	434518 4008	52,–
BT 40	8	100	28	434507 4108	42,–			434518 4108	58,–
BT 40	8	160	28	434507 4308	79,–			434518 4208	87,–
BT 40	10	63	35	434507 4010	36,–	434508 4010	43,–	434518 4010	52,–
BT 40	10	100	35	434507 4110	42,–			434518 4110	58,–
BT 40	10	160	35	434507 4310	79,–			434518 4210	87,–
BT 40	12	63	42	434507 4012	36,–	434508 4012	43,–	434518 4012	52,–
BT 40	12	100	42	434507 4112	42,–			434518 4112	58,–
BT 40	12	160	42	434507 4312	79,–			434518 4212	87,–
BT 40	14	63	44	434507 4014	36,–	434508 4014	45,–	434518 4014	52,–
BT 40	14	100	44	434507 4114	42,–			434518 4114	58,–
BT 40	16	35	45	434507 4216	42,–				
BT 40	16	63	48	434507 4016	36,–	434508 4016	45,–	434518 4016	52,–
BT 40	16	100	48	434507 4116	42,–			434518 4116	58,–
BT 40	16	160	48	434507 4316	79,–			434518 4216	87,–
BT 40	18	63	50	434507 4018	36,–	434508 4018	45,–	434518 4018	52,–
BT 40	18	100	50	434507 4118	42,–			434518 4118	58,–
BT 40	20	35	45	434507 4220	42,–				
BT 40	20	63	52	434507 4020	36,–	434508 4020	45,–	434518 4020	52,–
BT 40	20	100	52	434507 4120	42,–			434518 4120	58,–
BT 40	20	160	52	434507 4320	79,–			434518 4220	87,–
BT 40	25	35	45	434507 4225	48,–				
BT 40	25	90	63	434507 4025	40,–	434508 4025	58,–	434518 4025	58,–
BT 40	25	160	63	434507 4325	85,50			434518 4325	93,–
BT 40	32	65	62	434507 4232	52,–				
BT 40	32	100	72	434507 4032	44,–	434508 4032	59,–	434518 4032	59,–
BT 40	32	160	72	434507 4332	93,50			434518 4332	99,–
BT 40	40	120	80	434507 4040	56,–	434508 4040	68,–	434518 4040	72,–
BT 50	6	63	25	434507 5006	60,–	434508 5006	68,–		
BT 50	8	63	28	434507 5008	58,–	434508 5008	66,–		
BT 50	10	63	35	434507 5010	58,–	434508 5010	66,–		
BT 50	10	100	35	434507 5110	75,–				
BT 50	12	80	42	434507 5012	58,–	434508 5012	66,–		
BT 50	12	100	42	434507 5112	75,–				
BT 50	14	80	44	434507 5014	58,–	434508 5014	66,–		
BT 50	16	80	48	434507 5016	58,–	434508 5016	66,–		
BT 50	16	100	48	434507 5116	75,–				
BT 50	18	80	50	434507 5018	58,–	434508 5018	66,–		
BT 50	20	80	52	434507 5020	58,–	434508 5020	66,–		
BT 50	20	100	52	434507 5120	75,–				
BT 50	25	100	65	434507 5025	63,–	434508 5025	73,–		
BT 50	25	160	65	434507 5325	143,–				
BT 50	32	105	72	434507 5032	67,–	434508 5032	78,–		
BT 50	32	160	72	434507 5332	121,–				
BT 50	40	110	80	434507 5040	74,–	434508 5040	85,50		
				4117		4117		4117	

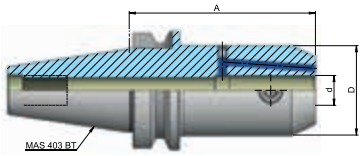


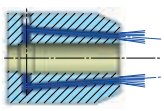






Internal coolant supply with coolant bore





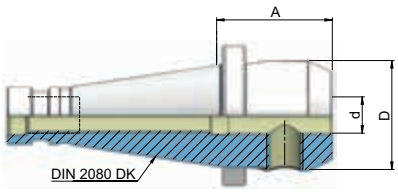
with coolant bores

DIN 2080

Shank	d mm	A mm	D mm	art.no.	€
SK 40	6	50	25	**434501** 4006	37,–
SK 40	8	50	28	434501 4008	35,–
SK 40	10	50	35	434501 4010	35,–
SK 40	12	50	42	434501 4012	35,–
SK 40	14	50	44	434501 4014	35,–
SK 40	16	63	48	434501 4016	35,–
SK 40	18	63	50	434501 4018	35,–
SK 40	20	63	52	434501 4020	35,–
SK 40	25	80	63	434501 4025	39,–
SK 40	32	80	72	434501 4032	44,–
SK 40	40	90	80	434501 4040	55,–
SK 50	6	63	25	434501 5006	53,–
SK 50	8	63	28	434501 5008	51,–
SK 50	10	63	35	434501 5010	51,–
SK 50	12	63	42	434501 5012	51,–
SK 50	14	63	44	434501 5014	51,–
SK 50	16	63	48	434501 5016	51,–
SK 50	18	63	50	434501 5018	51,–
SK 50	20	63	52	434501 5020	51,–
SK 50	25	80	65	434501 5025	57,–
SK 50	32	80	72	434501 5032	61,–
SK 50	40	90	80	434501 5040	67,–

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Clamping screws for milling cutter holding fixtures, DIN 6359

Weldon clamping screws, DIN 1835 B

- For clamping DIN 1835 B straight shanks in DIN 6359/1835 Part 2 - 3 milling cutter arbours (Weldon jaw chuck)
- For standard and long chuck designs
- Clamping screws for short chuck versions (Ø 16 / 20 / 25 A = 35 mm, Ø 32 A = 65 mm) available on request



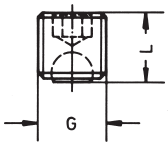
Thread	L mm	for Ø mm	art.no.	€
M10	12	10	**431012** 0010	3,–
M12	16	12	431012 0012	5,–
M14	16	16	431012 0014	5,–
M16	16	20	431012 0016	5,–
M18x2	20	25	431012 0025	12,–
M20x2	20	32+40	431012 0032	12,–
M6	10	6	431012 0006	3,–
M8	10	8	431012 0008	3,–

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Whistle-notch clamping screws, DIN 1835 E

- Ball version
- For clamping DIN 1835 E straight shanks (with suitable clamping surface) in DIN 6359/1835 Part 2 - 3 milling cutter arbours (Weldon jaw chuck)





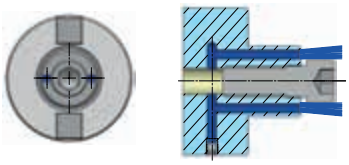
Thread	L mm	for Ø mm	art.no.	€
M 6	10	6	**431013** 0006	8,40
M 8	10	8	431013 0008	9,35
M10	12	10	431013 0010	10,30
M12	16	12 + 14	431013 0012	12,15
M14	16	16 + 18	431013 0014	14,50
M16	16	20	431013 0016	14,95
M18x2	20	25	431013 0018	18,70
M20x2	20	32 + 40	431013 0020	20,60

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ATORN® Shell-type milling cutter arbour with transverse slot

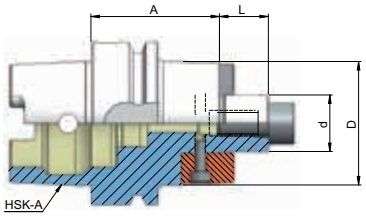
DIN 6357

- **with enlarged collar diameter and coolant mounts**
- **pre-balanced G 2.5 / 25,000 rpm**
- alloyed case-hardened steel, tensile strength at core min. 950N/mm2
- case-hardened to HRC 60 ± 2 (HV 700 ± 50), case depth 0.8mm ± 0.2mm
- Taper angle tolerance quality < AT3 in accordance with DIN 7187 and DIN 2080
- max. True running accuracy < 0.005mm
- Supplied with carrier blocks and milling cutter retaining screw
- **Additional shank designs and AD/AF version available on request**



DIN 69893 type A (HSK-A)

- Internal coolant supply
- When machining with internal coolant supply, a coolant transfer pipe with art.no. 431011... should be used
- *= Also with four DIN 2079-compliant threaded bores for holding cutter heads





Shank		D1 mm	A mm	D mm	L1 mm	art.no.	€
HSK 50		16	50	38	17	**435309** 5016	98,50
HSK 50		22	60	48	19	435309 5022	98,50
HSK 50		27	60	58	21	435309 5027	102,–
HSK 50		32	60	78	24	435309 5032	141,–
HSK 63		16	50	38	17	435309 6316	106,–
HSK 63		16	100	38	17	435309 6416	126,–
HSK 63		16	160	38	17	435309 6516	177,–
HSK 63		22	50	48	19	435309 6322	106,–
HSK 63		22	100	48	19	435309 6422	126,–
HSK 63		22	160	48	19	435309 6522	177,–
HSK 63		27	60	58	21	435309 6327	114,–
HSK 63		27	100	58	21	435309 6427	134,–
HSK 63		27	160	58	21	435309 6527	177,–
HSK 63		32	60	78	24	435309 6332	118,–
HSK 63		32	100	78	24	435309 6432	138,–
HSK 63		32	160	78	24	435309 6532	192,–
HSK 63	*	40	60	88	27	435309 6340	132,–
HSK 63	*	40	100	88	27	435309 6440	141,50
HSK 63	*	40	160	88	27	435309 6540	205,–
HSK 100		16	50	38	17	435309 1016	134,–
HSK 100		16	100	38	17	435309 1116	166,–
HSK 100		16	160	38	17	435309 1216	240,–
HSK 100		22	50	48	19	435309 1022	134,–
HSK 100		22	100	48	19	435309 1122	166,–
HSK 100		22	160	48	19	435309 1222	240,–
HSK 100		27	50	58	21	435309 1027	139,–
HSK 100		27	100	58	21	435309 1127	169,–
HSK 100		27	160	58	21	435309 1227	245,–
HSK 100		32	50	78	24	435309 1032	149,–
HSK 100		32	100	78	24	435309 1132	178,–
HSK 100		32	160	78	24	435309 1232	260,–
HSK 100	*	40	60	88	27	435309 1040	154,–
HSK 100	*	40	100	88	27	435309 1140	193,–

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DIN ISO 7388-1 / DIN 69871 AD

- Internal coolant supply
- *= Also with four DIN 2079-compliant threaded bores for holding cutter heads



Shank		D1 mm	A mm	D mm	L1 mm	art.no.	€
SK 40		16	35	38	17	**435303** 4016	49,–
SK 40		16	100	38	17	435303 4116	60,–
SK 40		16	160	38	17	435303 4216	85,–
SK 40		22	35	48	19	435303 4022	49,–
SK 40		22	100	48	19	435303 4122	60,–
SK 40		22	160	48	19	435303 4222	85,–
SK 40		27	40	58	21	435303 4027	50,–
SK 40		27	100	58	21	435303 4127	61,–

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Shank		D1 mm	A mm	D mm	L1 mm	art.no.	€
SK 40		27	160	58	21	435303 4227	96,–
SK 40		32	50	78	24	435303 4032	53,–
SK 40		32	100	78	24	435303 4132	65,–
SK 40		32	160	78	24	435303 4232	92,50
SK 40	*	40	50	88	27	435303 4040	64,–
SK 40	*	40	160	88	27	435303 4240	119,50
SK 50		16	35	38	17	435303 5016	64,–
SK 50		16	100	38	17	435303 5116	78,–
SK 50		16	160	38	17	435303 5216	110,50
SK 50		22	35	48	19	435303 5022	64,–
SK 50		22	100	48	19	435303 5122	78,–
SK 50		22	160	48	19	435303 5222	110,50
SK 50		27	40	58	21	435303 5027	64,–
SK 50		27	100	58	21	435303 5127	78,–
SK 50		27	160	58	21	435303 5227	110,50
SK 50		32	50	78	24	435303 5032	68,–
SK 50		32	100	78	24	435303 5132	83,–
SK 50		32	160	78	24	435303 5232	117,50
SK 50	*	40	50	88	27	435303 5040	78,–
SK 50	*	40	100	88	27	435303 5140	96,50
SK 50	*	40	160	88	27	435303 5240	110,50

4117

DIN ISO 7388-2 / MAS BT JIS B 6339

- Internal coolant supply
- *= Also with four DIN 2079-compliant threaded bores for holding cutter heads



Shank		D1 mm	A mm	D mm	L1 mm	art.no.	€
BT 40		16	40	38	17	**435307** 4016	49,–
BT 40		16	100	38	17	435307 4116	59,–
BT 40		16	160	38	17	435307 4216	85,–
BT 40		22	40	48	19	435307 4022	49,–
BT 40		22	100	48	19	435307 4122	59,–
BT 40		22	160	48	19	435307 4222	85,–
BT 40		27	40	58	21	435307 4027	50,–
BT 40		27	100	58	21	435307 4127	59,–
BT 40		27	160	58	21	435307 4227	85,–
BT 40		32	50	78	24	435307 4032	53,–
BT 40		32	100	78	24	435307 4132	64,–
BT 40		32	160	78	24	435307 4232	92,50
BT 40	*	40	50	88	27	435307 4040	64,–
BT 40	*	40	100	88	27	435307 4140	76,–
BT 40	*	40	160	88	27	435307 4240	110,50
BT 50		22	55	48	19	435307 5022	71,–
BT 50		27	55	58	21	435307 5027	71,–
BT 50		32	55	78	24	435307 5032	75,–
BT 50	*	40	55	88	27	435307 5040	85,50

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DIN 2080

- *= Also with four DIN 2079-compliant threaded bores for holding cutter heads



Shank		D1 mm	A mm	D mm	L1 mm	art.no.	€
SK 40		16	30	38	17	**435301** 4016	48,–
SK 40		22	30	48	19	435301 4022	48,–
SK 40		27	30	58	21	435301 4027	49,–
SK 40		32	30	78	24	435301 4032	52,–
SK 40	*	40	30	88	27	435301 4040	63,–
SK 50		22	35	48	19	435301 5022	63,–
SK 50		27	35	58	21	435301 5027	63,–
SK 50		32	40	78	24	435301 5032	68,–
SK 50	*	40	33	88	27	435301 5040	77,–

4117

Carrier blocks

- **For shell-type milling cutter arbours with transverse slots**
- With screw



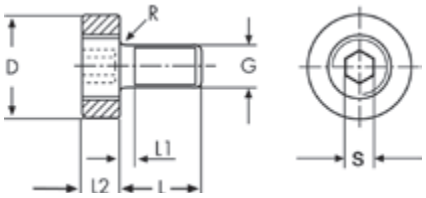
for gauge Ø mm	B mm	H mm	L mm	art.no.	€
16	8	10	10	**438026** 0016	9,85
22	10	11	11	438026 0022	9,85
27	12	13	14	438026 0027	15,50
32	14	14	22	438026 0032	15,50
40	16	16	23	438026 0040	19,70

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Cutter retaining screw for milling cutter arbours

- **For milling cutter arbours, holding fixtures for cutter heads and milling cutters with transverse slots**
- The different pitches of the two threads on the threaded bolt create a strong locking effect. The milling cutter is securely clamped without a major exertion of force, tube extensions or hammer blows.





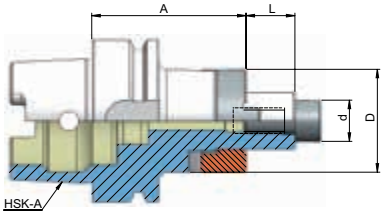
for gauge Ø mm	D mm	L mm	L1 mm	L2 mm	R mm	S mm	Thread	art.no.	€
16	20	16	3	7	1.6	5	M 8	**438010** 0008	8,10
22	28	18	3.6	8	2	6	M10	438010 0010	11,70
27	35	22	4.5	9	2.5	8	M12	438010 0012	14,10
32	42	26	5.5	10	3	10	M16	438010 0016	19,50
40	52	30	6	11	3	12	M20	438010 0020	30,–
50	63	36	7.5	13	4	14	M24	438010 0024	42,–

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ATORN® Combination shell-type milling cutter arbour

DIN 6358

- **For milling cutters with longitudinal or transverse slots**
- **Pre-balanced to G 2.5 / 25,000 rpm**
- Alloyed case-hardened steel, core tensile strength min. 950 N/mm2
- Case-hardened to HRC 60 ± 2 (HV 700 ± 50), case depth 0.8 mm ± 0.2 mm
- Taper angle tolerance quality < AT3 in accordance with DIN 7187 and DIN 2080
- Max. true running accuracy < 0.005 mm
- Delivery incl. fitting key, follower ring and **tightening bolt without coolant bore**
- **Additional shank designs and AD/B versions available on request**



DIN 69893 type A (HSK-A)

- Internal coolant supply
- When machining with internal coolant supply, a coolant transfer pipe with art.no. 431011... should be used



Shank	D1 mm	A mm	D mm	L1 mm	art.no.	€
HSK-A 50	16	50	32	17	**434909** 5016	93,50
HSK-A 50	22	50	40	19	434909 5022	95,50
HSK-A 50	27	65	48	21	434909 5027	99,50
HSK-A 50	32	65	58	24	434909 5032	106,–
HSK-A 63	16	60	32	17	434909 6316	95,50
HSK-A 63	16	100	32	17	434909 6416	104,–
HSK-A 63	22	60	40	19	434909 6322	95,50
HSK-A 63	22	100	40	19	434909 6422	104,–
HSK-A 63	27	60	48	21	434909 6327	104,–
HSK-A 63	27	100	48	21	434909 6427	112,–
HSK-A 63	32	60	58	24	434909 6332	108,–
HSK-A 63	32	100	58	24	434909 6432	116,–
HSK-A 63	40	60	70	27	434909 6340	112,–
HSK-A 63	40	100	70	27	434909 6440	120,–
HSK-A 100	16	60	32	17	434909 1016	127,–
HSK-A 100	22	60	40	19	434909 1022	127,–
HSK-A 100	27	60	48	21	434909 1027	132,–
HSK-A 100	32	60	58	24	434909 1032	142,–
HSK-A 100	40	70	70	27	434909 1040	147,–

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DIN ISO 7388-1 / DIN 69871 AD



- Internal coolant supply
- **A = 160 and 200 mm incl. coolant bores for cutter heads with internal coolant supply**

Shank	D1 mm	A mm	D mm	L1 mm	art.no.	€
SK 40	16	55	32	17	**434903** 4016	44,–
SK 40	16	100	32	17	434903 4116	56,–
SK 40	16	160	32	17	434903 4216	110,–
SK 40	22	55	40	19	434903 4022	45,–
SK 40	22	100	40	19	434903 4122	57,–
SK 40	22	160	40	19	434903 4222	114,–
SK 40	27	55	48	21	434903 4027	45,–
SK 40	27	100	48	21	434903 4127	58,–
SK 40	27	160	48	21	434903 4227	119,–
SK 40	32	60	58	24	434903 4032	50,–
SK 40	32	100	58	24	434903 4132	60,–
SK 40	32	160	58	24	434903 4232	126,–
SK 40	40	60	70	27	434903 4040	57,–
SK 50	16	55	32	17	434903 5016	61,–
SK 50	16	100	32	17	434903 5116	72,–
SK 50	16	160	32	17	434903 5216	135,–
SK 50	16	200	32	17	434903 5316	161,–
SK 50	22	55	40	19	434903 5022	61,–
SK 50	22	100	40	19	434903 5122	72,–
SK 50	22	160	40	19	434903 5222	138,–
SK 50	22	200	40	19	434903 5322	167,–
SK 50	27	55	48	21	434903 5027	62,–
SK 50	27	100	48	21	434903 5127	73,–
SK 50	27	160	48	21	434903 5227	143,–
SK 50	27	200	48	21	434903 5327	173,–
SK 50	32	55	58	24	434903 5032	64,–
SK 50	32	100	58	24	434903 5132	74,–
SK 50	32	160	58	24	434903 5232	152,–
SK 50	32	200	58	24	434903 5332	184,–
SK 50	40	55	70	27	434903 5040	71,–
SK 50	40	100	70	27	434903 5140	80,–
SK 50	40	160	70	27	434903 5240	166,–
SK 50	40	200	70	27	434903 5340	193,–

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DIN ISO 7388-2 / MAS BT JIS B 6339



Shank	D1 mm	A mm	D mm	L1 mm	art.no.	€
BT 40	16	55	32	17	**434907** 4016	44,–
BT 40	16	100	32	17	434907 4116	56,–
BT 40	22	55	40	19	434907 4022	45,–
BT 40	22	100	40	19	434907 4122	57,–
BT 40	27	55	48	21	434907 4027	45,–
BT 40	27	100	48	21	434907 4127	58,–
BT 40	32	60	58	24	434907 4032	50,–
BT 40	32	100	58	24	434907 4132	60,–
BT 40	40	60	70	27	434907 4040	57,–
BT 50	16	70	32	17	434907 5016	61,–
BT 50	22	70	40	19	434907 5022	61,–
BT 50	27	70	48	21	434907 5027	62,–
BT 50	32	70	58	24	434907 5032	64,–
BT 50	40	70	70	27	434907 5040	71,–

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DIN 2080



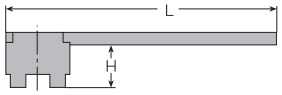
Shank	D1 mm	A mm	D mm	L1 mm	art.no.	€
SK 40	16	52	32	17	**434901** 4016	44,–
SK 40	22	52	40	19	434901 4022	45,–
SK 40	27	52	48	21	434901 4027	45,–
SK 40	32	52	58	24	434901 4032	49,–
SK 40	40	52	70	27	434901 4040	56,–
SK 50	16	55	32	17	434901 5016	60,–
SK 50	22	55	40	19	434901 5022	60,–
SK 50	27	55	48	21	434901 5027	61,–
SK 50	32	55	58	24	434901 5032	63,–
SK 50	40	55	70	27	434901 5040	70,–

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Key for shell-type milling cutter arbours

DIN 6368





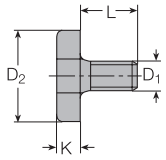
- **For tightening DIN 6367 retaining screws**
- Special steel hardened and tempered to a burnished shade

for gauge Ø mm	Thread	H mm	L mm	art.no.	€
16	M8	20	180	**438005** 0016	14,60
22	M10	25	200	438005 0022	17,95
27	M12	32	225	438005 0027	20,80
32	M16	36	250	438005 0032	27,70
40	M20	40	280	438005 0040	36,40
50	M24	45	315	438005 0050	69,60

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Cutter retaining screw for shell-type milling cutter arbours

DIN 6367





D1 mm	for gauge Ø mm	D2 mm	K mm	L mm	Standard art.no.	€	For internal cooling art.no.	€
M8	16	20	6	16	**438001** 0008	6,10	**438002** 0008	11,85
M10	22	28	7	18	438001 0010	7,50	438002 0010	11,85
M12	27	35	8	22	438001 0012	8,75	438002 0012	13,15
M16	32	42	9	26	438001 0016	12,80	438002 0016	22,40
M20	40	52	10	30	438001 0020	17,10		
M24	50	63	12	36	438001 0024	27,60		

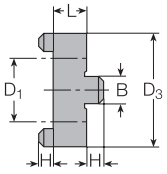
4117 4117

Follower rings

DIN 6366

- **For shell-type milling cutter arbours**



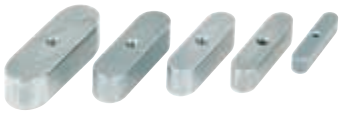


D1 mm	L mm	D3 mm	B mm	H mm	art.no.	€
16	10	32	8	5	**438020** 0016	12,65
22	12	40	10	5.6	438020 0022	15,50
27	12	48	12	6.3	438020 0027	15,50
32	14	58	14	7	438020 0032	19,70
40	14	70	16	8	438020 0040	29,40

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Fitting keys

- For combination shell-type milling cutter arbours



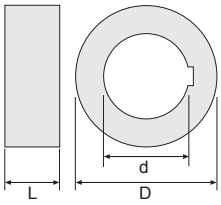
for gauge Ø mm	B mm	H mm	L mm	art.no.	€
16	4	4	20	**438025** 0016	5,65
22	6	6	25	438025 0022	5,65
27	7	7	25	438025 0027	5,65
32	8	7	28	438025 0032	5,65
40	10	8	32	438025 0040	5,65

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SARA® Form B spacing collars

DIN 2084

- Alloyed case-hardened steel, turned and ground, hardened (min. 52 HRC)
- Width parallelism tolerance is IT3 in relation to the bore





d mm	D mm	L mm	art.no.	€
16	27	2	**434922** 2002	7,85
16	27	3	434922 2003	7,85
16	27	4	434922 2004	8,25
16	27	5	434922 2005	8,55
16	27	6	434922 2006	8,75
16	27	10	434922 2010	12,35
16	27	20	434922 2020	15,60
16	27	30	434922 2030	19,40
22	34	2	434922 3002	8,25
22	34	3	434922 3003	8,55
22	34	4	434922 3004	9,05
22	34	5	434922 3005	9,50
22	34	6	434922 3006	10,40
22	34	10	434922 3010	14,20
22	34	20	434922 3020	18,10
22	34	30	434922 3030	23,90
22	34	60	434922 3060	35,70
22	34	100	434922 3100	52,50
27	41	2	434922 4002	8,75
27	41	3	434922 4003	9,05
27	41	4	434922 4004	10,40
27	41	5	434922 4005	11,–
27	41	6	434922 4006	12,05
27	41	10	434922 4010	14,65

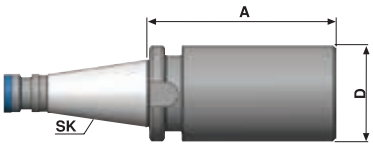
4109

d mm	D mm	L mm	art.no.	€
27	41	20	434922 4020	20,10
27	41	30	434922 4030	28,–
27	41	60	434922 4060	42,80
27	41	100	434922 4100	66,50
32	47	2	434922 5002	9,90
32	47	3	434922 5003	11,55
32	47	4	434922 5004	12,05
32	47	5	434922 5005	12,50
32	47	6	434922 5006	13,40
32	47	10	434922 5010	18,–
32	47	20	434922 5020	25,40
32	47	30	434922 5030	30,70
32	47	60	434922 5060	49,60
32	47	100	434922 5100	77,50
40	55	2	434922 6002	12,85
40	55	3	434922 6003	12,85
40	55	4	434922 6004	15,30
40	55	5	434922 6005	16,10
40	55	6	434922 6006	17,40
40	55	10	434922 6010	22,40
40	55	20	434922 6020	31,20
40	55	30	434922 6030	38,20
40	55	60	434922 6060	62,50
40	55	100	434922 6100	95,50

4109

ATORN® Boring bar blanks

- Steep-angle taper and collar case-hardened to HRC 60 ± 2 (HV 700 ± 50) and ground
- Soft shank for further machining



DIN ISO 7388-1 / DIN 69871 A



Shank	A mm	D mm	art.no.	€
SK 40	250	63	**431002** 4063	87,50
SK 50	315	97	431002 5097	145,–
			4117	

DIN 2080

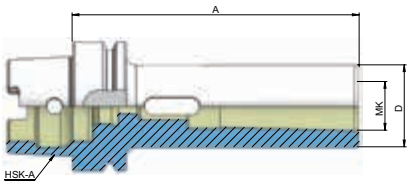


Shank	A mm	D mm	art.no.	€
SK 40	250	63	**431000** 4063	96,–
SK 50	315	97	431000 5097	158,–
			4117	

ATORN® Adapter sleeves for Morse tapers with tangs

DIN 6383

- Alloyed case-hardened steel, core tensile strength min. 950 N/mm2
- **Pre-balanced to G 2.5 / 25,000 rpm**
- Case-hardened to HRC 60 ± 2 (HV 700 ± 50), case depth 0.8 mm ± 0.2 mm, burnished
- Taper angle tolerance quality < AT3 in accordance with DIN 7187 and DIN 2080
- Max. true running accuracy < 0.005 mm
- Additional versions available on request



DIN 69893 type A (HSK-A)

- Internal coolant supply
- When machining with internal coolant supply, a coolant transfer pipe with art.no. 431011... should be used



Shank	Shank design interior	A mm	D mm	art.no.	€
HSK-A 50	MT 1	100	25	**433509** 5001	80,–
HSK-A 50	MT 2	120	32	433509 5002	80,–
HSK-A 50	MT3	140	40	433509 5003	81,–
HSK-A 63	MT 1	100	25	433509 6301	83,–
HSK-A 63	MT 2	120	32	433509 6302	83,–
HSK-A 63	MT3	140	40	433509 6303	85,50
HSK-A 63	MT 4	160	48	433509 6304	87,50
HSK-A 100	MT 1	110	25	433509 1001	111,–
HSK-A 100	MT 2	120	32	433509 1002	111,–
HSK-A 100	MT3	150	40	433509 1003	112,–
HSK-A 100	MT 4	170	48	433509 1004	114,–
HSK-A 100	MT 5	200	63	433509 1005	131,–
				4117	

DIN ISO 7388-1 / DIN 69871 AD

- Internal coolant supply



Shank	Shank design interior	A mm	D mm	art.no.	€
SK 40	MT 1	50	25	**433503** 4001	36,–
SK 40	MT 2	50	32	433503 4002	36,–
SK 40	MT 2	117	32	433503 4102	61,–
SK 40	MT3	70	40	433503 4003	36,–
SK 40	MT3	133	40	433503 4103	61,–
SK 40	MT 4	95	48	433503 4004	39,–
SK 40	MT 4	156	48	433503 4104	68,–
SK 50	MT 1	45	25	433503 5001	50,–
SK 50	MT 2	60	32	433503 5002	50,–
SK 50	MT 2	117	32	433503 5102	116,–
SK 50	MT3	65	40	433503 5003	50,–
SK 50	MT3	137	40	433503 5103	116,–
SK 50	MT 4	95	48	433503 5004	50,–
SK 50	MT 4	167	48	433503 5104	127,–
SK 50	MT 5	105	63	433503 5005	56,–
SK 50	MT 5	197	63	433503 5105	136,–

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DIN ISO 7388-2 / MAS BT JIS B 6339

- Internal coolant supply



Shank	Shank design interior	A mm	D mm	art.no.	€
BT 40	MT 1	50	25	**433507** 4001	36,–
BT 40	MT 2	50	32	433507 4002	36,–
BT 40	MT3	70	40	433507 4003	36,–
BT 40	MT 4	95	48	433507 4004	39,–
BT 50	MT 1	45	25	433507 5001	50,–
BT 50	MT 2	60	32	433507 5002	50,–
BT 50	MT3	65	40	433507 5003	50,–
BT 50	MT 4	95	48	433507 5004	50,–
BT 50	MT 5	105	63	433507 5005	56,–

4117

DIN 2080



Shank	Shank design interior	A mm	D mm	art.no.	€
SK 40	MT 1	50	25	**433501** 4001	35,–
SK 40	MT 2	50	32	433501 4002	35,–
SK 40	MT3	65	40	433501 4003	35,–
SK 40	MT 4	95	48	433501 4004	35,–
SK 50	MT 1	45	25	433501 5001	49,–
SK 50	MT 2	60	32	433501 5002	49,–
SK 50	MT3	65	40	433501 5003	49,–
SK 50	MT 4	70	48	433501 5004	49,–
SK 50	MT 5	105	63	433501 5005	55,–

4117

SARA® Reducing bushes, type H

DIN 2185



- **For tools with a Morse taper**
- Hardened, ground inside and outside

Taper external	Taper internal	Length mm	art.no.	€
MT 1	MT 0	80	**400501** 0100	10,75
MT 2	MT 1	92	400501 0201	9,30
MT3	MT 1	99	400501 0301	11,65
MT3	MT 2	112	400501 0302	11,65
MT 4	MT 1	124	400501 0401	16,50
MT 4	MT 2	124	400501 0402	16,50
MT 4	MT3	140	400501 0403	16,50

4107

Taper external	Taper internal	Length mm	art.no.	€
MT 5	MT 1	156	400501 0501	26,90
MT 5	MT 2	156	400501 0502	26,90
MT 5	MT3	156	400501 0503	26,90
MT 5	MT 4	171	400501 0504	26,90
MT 6	MT3	218	400501 0603	65,20
MT 6	MT 4	218	400501 0604	65,20
MT 6	MT 5	218	400501 0605	65,20

4107

SARA Extension sleeves, type H

DIN 2187

- **For tools with a Morse taper**
- Hardened, ground inside and outside

Extension sleeve

- Inner taper = outer taper



Taper external	Taper internal	External Ø mm	Length mm	art.no.	€
MT 1	MT 1	20	145	**400505** 0101	13,55
MT 2	MT 2	30	175	400505 0202	20,40
MT3	MT3	36	215	400505 0303	26,30
MT 4	MT 4	48	265	400505 0404	44,40
MT 5	MT 5	63	335	400505 0505	89,–

4107

Extended reducing bush

- Inner taper < outer taper



Taper external	Taper internal	External Ø mm	Length mm	art.no.	€
MT 2	MT 1	20	160	**400505** 0201	13,55
MT3	MT 1	20	175	400505 0301	17,25
MT3	MT 2	30	194	400505 0302	20,40
MT 4	MT 1	20	200	400505 0401	26,60
MT 4	MT 2	30	215	400505 0402	26,30
MT 4	MT3	36	240	400505 0403	26,30
MT 5	MT 1	20	232	400505 0501	43,30
MT 5	MT 2	30	247	400505 0502	43,30
MT 5	MT3	36	268	400505 0503	43,30
MT 5	MT 4	48	300	400505 0504	43,30
MT 6	MT 4	48	355	400505 0604	103,–
MT 6	MT 5	63	390	400505 0605	103,–

4107

Expansion sleeve

- Inner taper > outer taper (for easy machining)



Taper external	Taper internal	External Ø mm	Length mm	art.no.	€
MT 1	MT 2	30	160	**400505** 0102	20,40
MT 2	MT3	36	196	400505 0203	26,30
MT3	MT 4	48	240	400505 0304	44,50
MT 4	MT 5	63	300	400505 0405	87,60

4107

AMF Ejector drift

DIN 317

- **For DIN 228 tool tapers**
- Special steel, hardened
- Tempered to a burnished shade

Standard



for Morse tapers	for metr. taper	Total length mm	Cross section mm	art.no.	€
0	4 + 6	90	12 x 3	**400530** 0000	3,43
1 + 2	-	140	20 x 5	400530 0102	4,18
3	-	190	25 x 7	400530 0003	6,56
4	-	225	30 x 10	400530 0004	13,75
5 + 6	-	265	35 x 15	400530 0506	29,50

4159



Semi-automatic

- With plastic-coated handle and finger guard

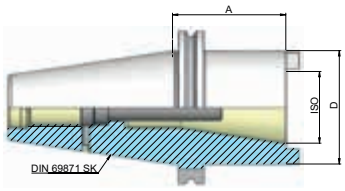


for Morse tapers	Total length mm	art.no.	€
1 - 3	330	**400535** 0103	63,–
4 - 6	380	400535 0406	78,50

4159

ATORN® Adapter sleeves for steep-angle tapers

- **For holding all steep-angle taper systems (DIN 2080, ISO7388-1 / DIN 69871, MAS BT, ANSI-CAT)**
- **Pre-balanced to G 2.5 / 25,000 rpm**
- Alloyed case-hardened steel with a core tensile strength of min. 950 N/mm2
- Case-hardened to HRC 60 ± 2 (HV 700 ± 50), case depth 0.8 mm ± 0.2 mm
- Taper angle tolerance quality < AT3 in accordance with DIN 7187 and DIN 2080, max. true running accuracy < 0.005 mm



DIN ISO 7388-1 / DIN 69871 A



Shank	Shank design interior	A mm	D mm	art.no.	€
SK 40	SK 30	50	50	**433903** 4030	86,50
SK 40	SK 40	100	63	433903 4040	89,50
SK 50	SK 40	70	70	433903 5040	110,–
SK 50	SK 50	120	97	433903 5050	126,–

4117

DIN ISO 7388-2 / MAS BT JIS B 6339



Shank	Shank design interior	A mm	D mm	art.no.	€
BT 40	30	60	50	**433907** 4030	86,50
BT 40	40	100	63	433907 4040	89,50
BT 50	40	70	70	433907 5040	110,–
BT 50	50	120	97	433907 5050	126,–

4117

DIN 2080



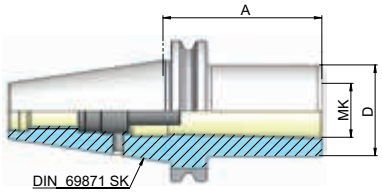
Shank	Shank design interior	A mm	D mm	art.no.	€
SK 40	SK 30	50	50	**433901** 4030	86,50
SK 40	SK 40	100	63	433901 4040	89,50
SK 50	SK 40	50	70	433901 5040	110,–
SK 50	SK 50	125	97	433901 5050	126,–

4117

ATORN® Adapter sleeves for MT with clamping threads

DIN 6364

- Alloyed case-hardened steel, core tensile strength min. 950 N/mm2
- **Pre-balanced to G 2.5 / 25,000 rpm**
- Case-hardened to HRC 60 ± 2 (HV 700 ± 50), case depth 0.8 mm ± 0.2 mm
- Taper angle tolerance quality < AT3 in accordance with DIN 7187 and DIN 2080
- Max. true running accuracy < 0.005 mm
- Additional versions available on request



DIN ISO 7388-1 / DIN 69871 A



Shank	Shank design interior	A mm	D mm	art.no.	€
SK 40	MT 1	50	25	**433703** 4001	58,–
SK 40	MT 2	50	32	433703 4002	58,–
SK 40	MT3	70	40	433703 4003	58,–
SK 40	MT 4	95	48	433703 4004	62,–
SK 50	MT 1	45	25	433703 5001	75,–
SK 50	MT 2	60	32	433703 5002	75,–
SK 50	MT3	65	40	433703 5003	75,–
SK 50	MT 4	70	48	433703 5004	81,–
SK 50	MT 5	100	63	433703 5005	83,–

4117

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DIN ISO 7388-2 / MAS BT JIS B 6339

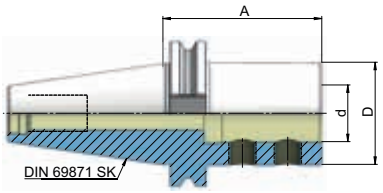


Shank	Shank design interior	A mm	D mm	art.no.	€
BT 40	MT 1	50	25	**433707** 4001	58,–
BT 40	MT 2	50	32	433707 4002	58,–
BT 40	MT3	70	40	433707 4003	58,–
BT 40	MT 4	95	48	433707 4004	62,–
BT 40	MT 4	110	63	433707 4104	68,–
BT 50	MT 1	45	25	433707 5001	75,–
BT 50	MT 2	60	32	433707 5002	75,–
BT 50	MT3	65	40	433707 5003	75,–
BT 50	MT 4	70	48	433707 5004	81,–
BT 50	MT 5	100	63	433707 5005	83,–
BT 50	MT 4	85	63	433707 5104	87,50
BT 50	MT 5	118	78	433707 5105	95,50

4117

ATORN® Tool holding fixture for indexable insert drill bits

- Alloyed case-hardened steel, core tensile strength min. 950 N/mm2
- **Pre-balanced to G 2.5 / 25,000 rpm**
- Case-hardened to HRC 60 ± 2 (HV 700 ± 50), case depth 0.8 mm ± 0.2 mm
- Taper angle tolerance quality < AT3 in accordance with DIN 7187 and DIN 2080
- Max. true running accuracy < 0.005 mm
- Additional versions available on request



DIN ISO 7388-1 / DIN 69871 AD/AF

- Internal coolant supply



Shank	d mm	A mm	D mm	art.no.	€
SK 40	20	65	40	**434540** 4020	58,–
SK 40	25	70	45	434540 4025	52,–
SK 40	32	75	52	434540 4032	52,–
SK 50	20	70	40	434540 5020	82,–
SK 50	25	70	40	434540 5025	82,–
SK 50	32	70	52	434540 5032	82,–
SK 50	40	80	60	434540 5040	82,–
SK 50	50	90	75	434540 5050	92,–

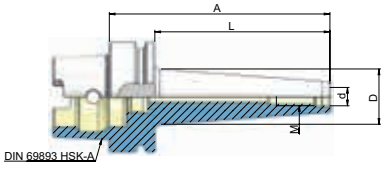
4117

ATORN® Tool holding fixtures for screw-in milling cutters

- Taper angle tolerance AT3
- **Pre-balanced to G 2.5 / 25,000 rpm**
- True running accuracy of steep taper tool holder, DIN 69871: < 0.003 mm, HSK 63 A: < 0.005 mm
- MAS/BT-AD/AF version available on request

DIN69893 Form A (HSK-A)

- Internal coolant supply
- When machining with internal coolant supply, a coolant transfer pipe with art.no. 431011... should be used





Shank	Thread	D mm	d mm	A mm	L mm	art.no.	€
HSK 63	M6	13	10	51	25	**430236** 6061	155,–
HSK 63	M8	23	13	76	50	430236 6082	170,–
HSK 63	M8	23	13	101	75	430236 6083	186,–
HSK 63	M10	20	18	51	25	430236 6101	162,–
HSK 63	M10	23	18	76	50	430236 6102	177,–
HSK 63	M10	32	18	126	100	430236 6104	210,–
HSK 63	M12	24	21	51	25	430236 6121	162,–
HSK 63	M12	24	21	76	50	430236 6122	177,–
HSK 63	M12	31	21	101	75	430236 6123	191,–
HSK 63	M12	33	21	126	100	430236 6124	210,–
HSK 63	M12	40	21	176	150	430236 6126	250,–
HSK 63	M16	29	29	51	25	430236 6161	162,–
HSK 63	M16	34	29	76	50	430236 6162	177,–
HSK 63	M16	34	29	101	75	430236 6163	191,–
HSK 63	M16	36	29	126	100	430236 6164	210,–
HSK 63	M16	43	29	176	150	430236 6166	250,–

4117

DIN ISO 7388-1 / DIN 69871 AD

- Internal coolant supply



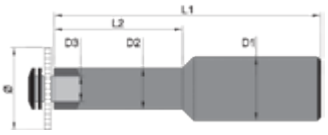
Shank	Thread	D mm	d mm	A mm	L mm	art.no.	€
SK 40	M6	13	10	44	25	**430235** 4061	86,50
SK 40	M6	20	10	69	50	430235 4062	99,–
SK 40	M6	23	10	94	75	430235 4063	108,–
SK 40	M8	15	13	44	25	430235 4081	86,50
SK 40	M8	23	13	69	50	430235 4082	99,–
SK 40	M8	23	13	94	75	430235 4083	108,–
SK 40	M10	20	18	44	25	430235 4101	86,–
SK 40	M10	23	18	69	50	430235 4102	94,–
SK 40	M10	28	18	94	75	430235 4103	108,–
SK 40	M12	24	21	44	25	430235 4121	86,–
SK 40	M12	24	21	69	50	430235 4122	94,–
SK 40	M12	31	21	94	75	430235 4123	108,–
SK 40	M16	29	29	44	25	430235 4161	89,–
SK 40	M16	34	29	69	50	430235 4162	99,–
SK 40	M16	34	29	94	75	430235 4163	108,–

4117

Saw blade holding fixtures

- For holding saw blades from Ø 20 to Ø 100 mm
- Highly hardened and tempered
- Shank design in accordance with DIN 1835 B
- High true-running accuracy
- Supplied without disc milling cutter





Individual

for saw blade size	L1 mm	L2 mm	D1 mm	D2 mm	D3 mm	art.no.	€
20	75	30	10	10	5	**438082** 1020	98,–
20	90	30	20	10	5	438082 2020	89,50
25	88	48	10	13	8	438082 1025	98,–
25	100	42	20	13	8	438082 2025	89,50
32	93	53	10	16	8	438082 1032	98,–
32	105	53	20	16	8	438082 2032	89,50
40	100	60	10	19.5	10	438082 1040	98,–
40	110	60	20	19.5	10	438082 2040	89,50
50	126	78	16	24.5	13	438082 1650	98,–
50	136	78	25	24.5	13	438082 2550	89,50
63	126	78	16	24.5	16	438082 1663	98,–
63	136	78	25	24.5	16	438082 2563	89,50
80	142	92	20	34	22	438082 2080	134,50
80	150	92	25	34	22	438082 2580	123,–
100	142	92	20	39.5	22	438082 2010	134,50
100	150	92	25	39.5	22	438082 2510	123,–

4107



Set

Contents	art.no.	€
6 saw blade mounts for saw blade Ø 20 mm to 63 mm	**438083** 2506	539,–

4107

palbit Extension for modular milling cutter heads

Solid carbide extension

- Straight version
- **With internal coolant supply**

D mm	L mm	Thread	art.no.	€
12	100	M6	**430352** 1210	249,–
12	150	M6	430352 1215	304,–
16	100	M8	430352 1610	290,–
16	150	M8	430352 1615	345,–
20	150	M10	430352 2015	442,–
20	200	M10	430352 2020	552,–
25	150	M12	430352 2515	570,–
25	200	M12	430352 2520	777,–

4201



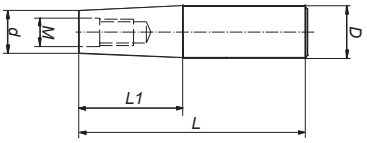
Vibration-dampened

- Offset straight shank
- without internal coolant supply

D mm	d mm	L mm	L1 mm	Thread	art.no.	€
12	9.8	90	40	M6	**430350** 1209	268,–
12	9.8	110	60	M6	430350 1211	313,50
12	9.8	130	80	M6	430350 1213	407,50
12	12.8	95	40	M8	430350 1609	368,–
16	12.8	115	60	M8	430350 1611	379,–
16	12.8	135	80	M8	430350 1613	623,50
16	12.8	155	100	M8	430350 1615	623,50
16	12.8	175	120	M8	430350 1617	623,50
20	15.8	100	40	M10	430350 2010	497,–
20	15.8	120	60	M10	430350 2012	497,–
20	15.8	140	80	M10	430350 2014	617,50
20	17.8	140	80	M10	430350 2015	617,50
20	15.8	160	100	M10	430350 2016	636,50
20	17.8	160	100	M10	430350 2017	636,50
20	15.8	180	120	M10	430350 2018	877,75
20	17.8	180	120	M10	430350 2019	878,–
25	20.8	125	60	M12	430350 2512	892,–
25	20.8	145	80	M12	430350 2514	892,–
25	20.8	165	100	M12	430350 2516	892,–

4201





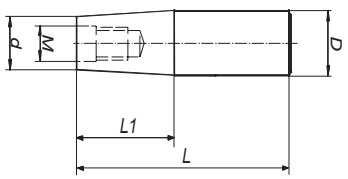
Steel extensions for modular milling cutter heads

- Offset straight shank
- No internal coolant supply

D mm	d mm	L mm	L1 mm	Thread	art.no.	€
12	9.8	65	20	M6	**430351** 1206	92,–
16	12.8	88	40	M8	430351 1608	103,25
20	17.8	95	45	M10	430351 2010	109,25
25	20.8	106	50	M12	430351 2512	114,25
32	28.8	110	50	M16	430351 3216	120,50

4201





diebold Innovations in shrink-fit technology

INFO

New units with innovative temperature control and automatic cooling
Diebold Series US 1100 shrink-fit units are available in both a horizontal and a vertical version. If the units are equipped with **pyrometer control**, the shrinking process runs under controlled temperature. The pyrometer technology in the coil ensures direct temperature monitoring. A world-first solution for more reliable and gentle tool shrinking (in and out).
The temperature is measured directly on the shrink-fit holder and automatically controlled during the shrink-fit process by way of **TempControl**. This is revolutionary, as until now all conventional shrink-fit units have controlled the shrink-fit process indirectly via stored parameters but the actual temperature of the shrink-fit unit was unknown.



Video on YouTube channel

US 1100 with automatic TubeChiller cooling of the tool holder.
With the TubeChiller we offer you a fully-automated solution for the optimal shrinkage and automatic cooling of tools. This technology was developed to combine our US 1100 Series shrink-fit units with the automatic cooling of the TubeChiller.

Advantages of the Diebold shrink-fit technology

1. US 1100 shrink-fit unit with pyrometer control for automatic temperature recognition
2. Horizontal and vertical units cover all applications
3. TubeChiller for automatic "hands-free" cooling
4. Gentle shrinking, which means no overheating of the shrink fit holder, for long service life of your shrink fit holder
5. Finely-tuned parameters for shrinking in all shrinking units
6. High-quality stainless steel shrink fit holder
7. No increase in tolerances through artificial ageing of the material
8. Thus higher quality and longer usability of the high accuracy
9. Production in fully-air-conditioned hall, quality assurance in Grade 2 measurement rooms



Following the shrinking process, the cooling pipe moves upwards from the TubeChiller while the coolant rises in the cooling pipe and flows around the tool in a circle. Through this movement the induction coil is automatically returned to its start position without any additional drive required. Once cooled, the cooling pipe is lowered again, the liquid flows back into the tank in the sub-structure and the tool mount is dried efficiently with compressed air.

diebold Inductive shrink-fit unit ThermoGrip MS502-P

- Gentle and targeted heating thanks to parameterised generator output
- Simple and secure handling
- Also suitable for standard chucks, Ø 3 to 16 mm
- Gentle heating thanks to controllable generator output
- Low heat output, cooling using air cooling unit is sufficient
- Only suitable for carbide shanks
- Supplied with 4 shielding rings and protective gloves, no tool holder



432725 0001

Inductive shrink-fit unit ThermoGrip MS502

Description	for Ø mm	Output kW	Connection	Weight kg	art.no.	€
With cooling unit	3 - 20	3	220V	17	**432725** 0002	4.300,–
Without cooling	3 - 20	3	220V	15	432725 0001	3.600,–

4129



432725 0002

Tool holders for MS502-P

Description	art.no.	€
Tool holder HSK 25	**432745** 0025	385,–
Tool holder HSK 32	432745 0032	397,–
Tool holder HSK 40	432745 0040	408,–
Tool holder HSK 50	432745 0050	408,–
Tool holder HSK 63	432745 0063	432,–
Tool holder SK 30	432745 0130	454,–
Tool holder SK 40	432745 0140	454,–

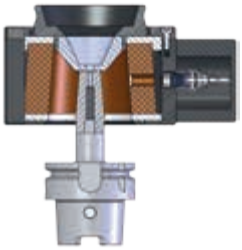
4129



diebold Inductive shrink-fit unit ThermoGrip US1100, with pyrometer coil

The pyrometer coil also permits automatic and direct temperature control of the shrink-fit holder during heating. This prevents burning the shrink-fit holder. The quick and reliable shrinking process requires no prior identification of the shrink-fit holder.

- Shrink length approx. 500mm
- Shrinking of SC shanks measuring Ø3 - 20mm and HSS steel shanks measuring Ø 6 - 32mm
- Manual shrink-fitting possible
- Contour-independent cooling, cleaning and preserving can be carried out when used together with the ATORN cooling station
- **Supplied with 5 ferrite discs, protective gloves and pyrometer coil**





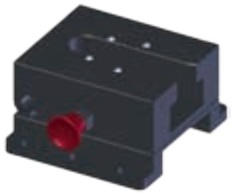
Vertical

Dimensions W x D x H mm	Output kW	Connection	art.no.	€
570 x 420 x 730	11	400 V / 16 A	**432863** 1100	8.295,–
			4129	



Horizontal

Dimensions W x D x H mm	Output kW	Connection	art.no.	€
700 x 470 x 387	11	400 V / 16 A	**432861** 1100	7.880,–
			4129	



Basic set for tool holders with art.no. 432731...

Description	art.no.	€
Base support for article no. 432731....	**432730** 1100	120,–
	4129	



432731 1100

Tool mount for basic set US1100

Description	art.no.	€
Universal clamp for all interfaces	**432731** 1100	1.030,–
Tool holder SK 30	432731 1130	570,–
Tool holder SK 40	432731 1140	570,–
Tool holder SK 50	432731 1150	667,–
Tool holder HSK 32	432731 0032	496,–
Tool holder HSK 40	432731 0040	496,–
Tool holder HSK 50	432731 0050	496,–
Tool holder HSK 63	432731 0063	496,–
Tool holder HSK 80	432731 0080	839,–
Tool holder HSK 100	432731 0100	839,–
	4129	





432752 1001

432752 1002

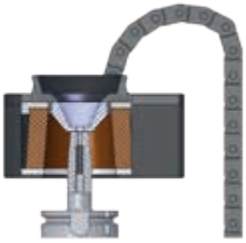
Length adjustment for US1100 horizontal and vertical

Description	art.no.	€
with brass fixed stop	**432752** 1002	1.700,–
With dial indicator	432752 1001	1.850,–
	4129	

ATORN® Inductive shrink-fit unit with induction coil

The ATORN shrink-fit unit has shrinking parameters for standard, slim and reinforced mounts, as well as shrink-fit collets.

- Shrink length approx. 500mm
- Shrinking of SC shanks measuring Ø3 - 20mm and HSS steel shanks measuring Ø 6 - 32mm
- Manual shrink-fitting possible
- Contour-independent cooling, cleaning and preserving can be carried out when used together with the ATORN cooling station
- **Supplied with 5 ferrite discs, protective gloves and basic coil**





Vertical

Dimensions W x D x H mm	Output kW	Connection	art.no.	€
570 x 420 x 730	11	400 V / 16 A	**432851** 0001	5.970,–
			4129	



Horizontal

Dimensions W x D x H mm	Output kW	Connection	art.no.	€
700 x 470 x 387	11	400 V / 16 A	**432850** 0001	5.580,–
			4129	



Universal clamp for shrink-fit unit Horizontal

Description	art.no.	€
Universal clamp including base support	**432852** 0001	1.150,–
	4129	

ATORN® Liquid cooler

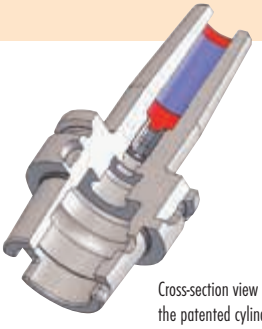
- Electronically controlled liquid cooler for shrink-fit holders
- Contour-independent cooling
- Cools, cleans and preserves holding fixtures in a single operation, automatically at the push of a button
- Cycle time approx. 40 sec.
- Supplied with SK 40 tool holder, 1 litre liquid coolant concentrate
- please order necessary holding fixtures separately! (Hose and blow gun not included)
- No tool holder required for any HSK interfaces
- **pneumatic, 6 bar compressed air**



Dimensions W x D x H mm	Compressed air connection bar	art.no.	€
412 x 462 x 700	6	**432829** 1001	2.270,–
		4129	

diebold ThermoGrip® shrink fit holder

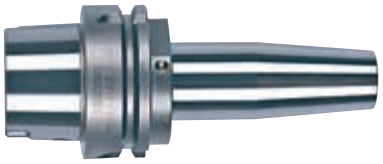
- Straight shank milling tools clamped with a high level of precision
- Tool shanks in accordance with DIN 6335 type HA, HB and HE. Tool shanks in accordance with DIN 1835 type A and B with shank tolerance h6 and Ra < 0.3
- **Patented counterbore from Ø 6 mm for an automatic shrink-fit process**

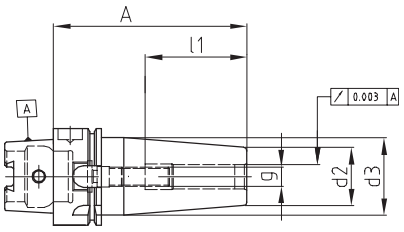


Cross-section view shows the patented cylindrical counterbore (red)

HSK A DIN 69893

- Internal coolant supply
- When machining with internal coolant supply, a coolant transfer pipe with art.no. 431011... should be used
- Balanced at 24,000 rpm



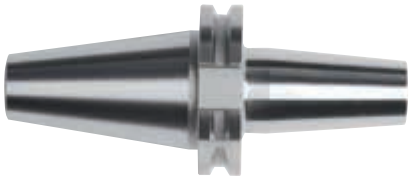


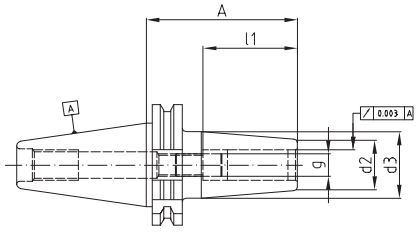
Shank	Clamp Ø mm	d2 mm	d3 mm	l1 mm	A mm	Thread	art.no.	€
HSK-A 63	3	15	20	20	90	M6	**430218** 6303	155,–
HSK-A 63	4	15	20	20	90	M6	430218 6304	155,–
HSK-A 63	5	15	25	25	90	M6	430218 6305	155,–
HSK-A 63	6	20	27	36	80	M5	430218 6306	139,–
HSK-A 63	6	20	27	36	90	M5	430218 6406	139,–
HSK-A 63	6	20	27	36	120	M5	430218 6506	176,–
HSK-A 63	6	20	32	36	160	M5	430218 6606	198,–
HSK-A 63	8	20	27	36	80	M6	430218 6308	139,–
HSK-A 63	8	20	27	36	90	M6	430218 6408	139,–
HSK-A 63	8	20	27	36	120	M6	430218 6508	176,–
HSK-A 63	8	20	32	36	160	M6	430218 6608	198,–
HSK-A 63	10	24	32	42	85	M8x1	430218 6310	139,–
HSK-A 63	10	24	32	42	90	M8x1	430218 6410	139,–
HSK-A 63	10	24	32	42	120	M8x1	430218 6510	176,–
HSK-A 63	10	24	34	42	160	M8x1	430218 6610	198,–
HSK-A 63	12	24	32	47	90	M10x1	430218 6312	139,–
HSK-A 63	12	24	32	47	120	M10x1	430218 6512	176,–
HSK-A 63	12	24	34	47	160	M10x1	430218 6612	198,–
HSK-A 63	14	27	34	47	90	M10x1	430218 6314	139,–
HSK-A 63	14	27	34	47	120	M10x1	430218 6414	176,–
HSK-A 63	14	27	42	47	160	M10x1	430218 6514	198,–
HSK-A 63	16	27	34	50	95	M12x1	430218 6316	139,–
HSK-A 63	16	27	34	50	120	M12x1	430218 6516	176,–
HSK-A 63	16	27	42	50	160	M12x1	430218 6616	198,–
HSK-A 63	18	33	42	50	95	M12x1	430218 6318	139,–
HSK-A 63	18	33	42	50	120	M12x1	430218 6418	176,–
HSK-A 63	18	33	51	50	160	M12x1	430218 6518	198,–
HSK-A 63	20	33	42	52	100	M16x1	430218 6320	139,–
HSK-A 63	20	33	42	52	120	M16x1	430218 6520	176,–
HSK-A 63	20	33	51	52	160	M16x1	430218 6620	198,–
HSK-A 63	25	44	53	58	115	M16x1	430218 6325	139,–
HSK-A 63	25	44	53	58	160	M16x1	430218 6425	198,–
HSK-A 63	32	44	53	62	120	M16x1	430218 6532	176,–
HSK-A 63	32	44	53	62	160	M16x1	430218 6632	198,–

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DIN ISO 7388-1 / DIN 69871 AD/AF

- Internal coolant supply
- Balanced at 18,000 rpm





Shank	Clamp Ø mm	d2 mm	d3 mm	l1 mm	A mm	Thread	V mm	art.no.	€
SK 40	3	15	20	20	80	M6	5	**430216** 4003	146,–
SK 40	4	15	20	20	80	M6	5	430216 4004	146,–
SK 40	5	15	20	25	80	M6	5	430216 4005	146,–
SK 40	6	20	27	36	80	M5	10	430216 4006	113,–
SK 40	6	20	32	36	160	M5	10	430216 4106	153,–
SK 40	8	20	27	36	80	M6	10	430216 4008	113,–
SK 40	8	20	32	36	160	M6	10	430216 4108	153,–
SK 40	10	24	32	42	80	M8x1	10	430216 4010	113,–
SK 40	10	24	34	42	160	M8x1	10	430216 4110	153,–

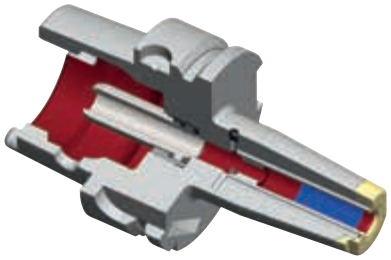
4131

Shank	Clamp Ø mm	d2 mm	d3 mm	l1 mm	A mm	Thread	V mm	art.no.	€
SK 40	12	24	32	47	80	M10x1	10	430216 4012	113,–
SK 40	12	24	34	47	160	M10x1	10	430216 4212	153,–
SK 40	14	27	34	47	80	M10x1	10	430216 4014	113,–
SK 40	14	27	42	47	160	M10x1	10	430216 4114	153,–
SK 40	16	27	34	50	80	M12x1	10	430216 4016	113,–
SK 40	16	27	42	50	160	M12x1	10	430216 4216	153,–
SK 40	18	33	42	50	80	M12x1	10	430216 4018	113,–
SK 40	18	33	50	50	160	M12x1	10	430216 4118	153,–
SK 40	20	33	42	52	80	M16x1	10	430216 4020	113,–
SK 40	20	33	50	52	160	M16x1	10	430216 4220	153,–
SK 40	25	44	50	58	100	M16x1	10	430216 4025	113,–
SK 40	32	44	50	62	100	M16x1	10	430216 4032	113,–

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diebold JetSleeve 2® ThermoGrip® shrink fit holders

- **Revolutionary solution for mould engineering and HSC machining**
- **Standard version suitable for air and cooling lubricant, versions for minimum volume lubrication available on request**
- The coolant is fed via various nozzles directly to the cutting edge. Chips are blown away and not run through.
- Up to 300 % higher endurance
- No surface scratching by chips
- Optimum tool holder cooling right through to the cutting edge
- **Innovation in the JetSleeve 2®**
  Rotating chuck with media duct, the milling machine does not need to be retrofitted .Pressure is built up in the nozzle unit, and the flow effect from the nozzles keeps the coolant jet on the milling cutter shank at all times. JetSleeve chucks can be used on all conventional milling machines with internal coolant supply
- Suitable for all agents: air, minimum volume lubrication, cutting fluid
- Energy-efficient and environmentally friendly
- **Shrinking with screwed-on nozzle cover possible**

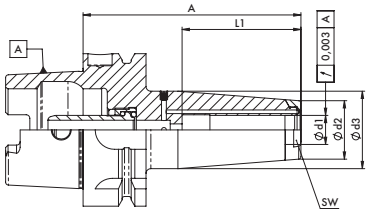




HSK A DIN 69893

- Internal coolant supply
- When machining with internal coolant supply, a coolant transfer pipe with art.no. 431011... should be used





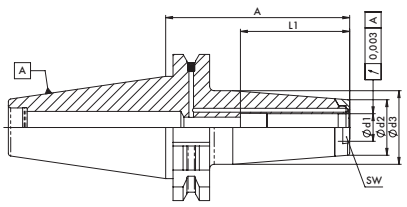
Shank	d1 mm	d2 mm	d3 mm	L1 mm	A mm	Wr. width mm	art.no.	€
HSK-A 63	3	15	20	20	90	13	**430331** 6303	306,–
HSK-A 63	4	15	20	20	90	13	430331 6304	306,–
HSK-A 63	6	21	27	36	80	17	430331 6306	293,–
HSK-A 63	8	21	27	36	80	17	430331 6308	293,–
HSK-A 63	10	24	32	42	85	20	430331 6310	293,–
HSK-A 63	12	24	32	47	90	20	430331 6312	293,–
HSK-A 63	16	33	34	50	95	29	430331 6316	293,–
HSK-A 63	20	44	42	52	100	40	430331 6320	293,–

4129

DIN ISO 7388-1 / DIN 69871 AD

- Internal coolant supply





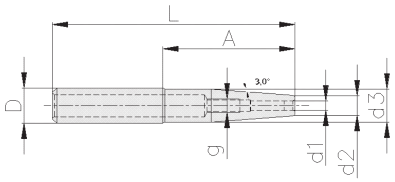
Shank	d1 mm	d2 mm	d3 mm	L1 mm	A mm	Wr. width mm	art.no.	€
SK 40	3	15	20	20	80	13	**430330** 4003	281,–
SK 40	4	15	20	20	80	13	430330 4104	281,–
SK 40	6	21	27	36	80	17	430330 4206	264,–
SK 40	8	21	27	36	80	17	430330 4308	264,–
SK 40	10	24	32	42	80	20	430330 4410	264,–
SK 40	12	24	32	47	80	20	430330 4512	264,–
SK 40	16	33	34	50	80	29	430330 4616	264,–
SK 40	20	44	42	52	80	40	430330 4620	264,–

4129

diebold Shrink-fit extensions

- Extend your shrink-fit chucks on a modular basis, as you need it!
- Maximum slenderness ratio (3° draft)
- Further sizes available on request





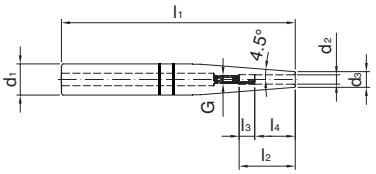
D mm	d1 mm	d2 mm	d3 mm	A mm	L mm	Thread	art.no.	€
12	3	9	11.8	63	110	-	**430229** 1203	112,–
12	4	10	11.8	63	110	-	430229 1204	112,–
12	5	11	11.8	63	110	-	430229 1205	112,–
12	6	12	17	63	110	M5	430229 1206	105,–
12	8	14	19	63	110	M6	430229 1208	105,–
16	3	9	13	60	110	M6	430229 1603	112,–
16	4	10	14	60	110	M6	430229 1604	112,–
16	5	11	15	58	110	M6	430229 1605	112,–
16	6	12	15.8	60	110	M5	430229 1606	105,–
16	8	14	19	60	110	M6	430229 1608	105,–
20	3	9	13	58	110	M6	430229 2003	112,–
20	4	10	14	58	110	M6	430229 2004	112,–
20	5	11	15	58	110	M6	430229 2005	112,–
20	6	12	16	58	110	M5	430229 2006	105,–
20	8	14	19	58	110	M6	430229 2008	105,–

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ATORN® Shrink-fit chuck extension

- For extension and reduction to suit smaller diameters
- Slenderness ratio 4.5°
- For shank tolerance h6
- Tool stop screw with 10 mm adjustment range





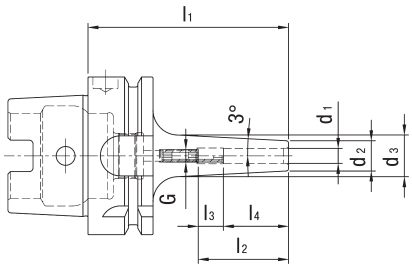
d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm	l4 mm	G mm	Wr. width mm	art.no.	€
12	3	8	150			12			**430228** 1203	99,–
12	4	8	150			16			430228 1204	93,50
12	5	10	150			20			430228 1205	93,50
12	6	10	150	36	10	26	M5	2.5 mm	430228 1206	93,50
16	3	10	150			12			430228 1603	99,–
16	4	10	150			16			430228 1604	93,50
16	5	10	150			20			430228 1605	93,50
16	6	10	150	36	10	26	M5	2.5 mm	430228 1606	89,–
16	8	12	150	36	10	26	M6	3 mm	430228 1608	89,–
20	3	10	150			12			430228 2003	93,50
20	4	10	150			16			430228 2004	93,50
20	5	10	150			20			430228 2005	93,50
20	6	10	150	36	10	26	M5	2.5 mm	430228 2006	89,–
20	8	12	150	36	10	26	M6	3 mm	430228 2008	89,–
20	10	14	150	42	10	32	M8x1	3 mm	430228 2010	89,–
20	12	16	150	47	10	37	M10x1	5 mm	430228 2012	89,–
25	3	10	150			12			430228 2503	99,–
25	4	10	150			16			430228 2504	99,–
25	5	15	150			20			430228 2505	99,–
25	6	20	150	36	10	26	M5	2.5 mm	430228 2506	99,–
25	8	20	150	36	10	26	M6	3 mm	430228 2508	89,–
25	10	20	150	42	10	32	M8x1	3 mm	430228 2510	89,–
25	12	20	150	47	10	37	M10x1	5 mm	430228 2512	89,–
25	14	20	150	47	10	37	M10x1	5 mm	430228 2514	89,–
25	16	22	150	50	10	40	M10x1	5 mm	430228 2516	89,–
32	6	20	150	36	10	26	M5	2.5 mm	430228 3206	89,–
32	8	20	150	36	10	26	M6	3 mm	430228 3208	89,–
32	10	24	150	42	10	32	M8x1	3 mm	430228 3210	89,–
32	12	24	150	47	10	37	M10x1	5 mm	430228 3212	89,–
32	14	27	150	47	10	37	M10x1	5 mm	430228 3214	89,–
32	16	27	150	50	10	40	M10x1	5 mm	430228 3216	89,–
32	18	27	150	50	10	40	M10x1	5 mm	430228 3218	89,–
32	20	27	150	52	10	42	M10x1	5 mm	430228 3220	89,–

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ATORN® Shrink fit holding fixtures 3°, slim version

- High torque transfer
- High true running accuracies 0.003 mm
- 3° range, slim version
- High contour flexibility
- Heat-resistant mild steel
- Further shank designs available on request
- **Balanced to G 2.5 / 25,000 rpm**
- With Balluffchip bore





HSK-A DIN 69893

- Internal coolant supply
- When machining with internal coolant supply, a coolant transfer pipe Article No. 431011.... should be used

Shank	d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm	l4 mm	G mm	Wr. width mm	Weight kg	art.no.	€
HSK 63	3	9	14	80	28	16	12	M6	2 mm	0.7	**440431** 0003	162,–
HSK 63	3	9	16	120			12			0.8	440431 1203	182,–
HSK 63	3	9	19	160			12			0.8	440431 1603	204,–
HSK 63	3	9	19	200			12			0.9	440431 2003	226,–
HSK 63	4	10	15	80	28	12	16	M6	2 mm	0.7	440431 0004	162,–
HSK 63	4	10	17	120			16			0.8	440431 1204	176,–
HSK 63	4	10	20	160			16			0.9	440431 1604	202,–
HSK 63	4	10	20	200			16			0.95	440431 2004	220,–
HSK 63	5	11	16	80	30	10	20	M6	2 mm	0.7	440431 0005	162,–
HSK 63	5	11	18	120			20			0.8	440431 1205	176,–
HSK 63	5	11	21	160			20			0.9	440431 1605	202,–
HSK 63	5	11	21	200			20			1	440431 2005	220,–
HSK 63	6	12	17	80	36	10	26	M5	2.5 mm	0.7	440431 0006	146,–
HSK 63	6	12	21	120	36	10	26	M5	2.5 mm	0.8	440431 1206	158,–
HSK 63	6	12	24	160	36	10	26	M5	2.5 mm	0.9	440431 1606	182,–
HSK 63	6	12	24	200	36	10	26	M5	2.5 mm	1	440431 2006	202,–
HSK 63	8	14	19	80	36	10	26	M6	3 mm	0.7	440431 0008	146,–
HSK 63	8	14	23	120	36	10	26	M6	3 mm	0.8	440431 1208	158,–
HSK 63	8	14	26	160	36	10	26	M6	3 mm	1	440431 1608	182,–
HSK 63	8	14	26	200	36	10	26	M6	3 mm	1.1	440431 2008	202,–
HSK 63	10	16	21	85	41	10	31	M8x1	3 mm	0.8	440431 0010	146,–
HSK 63	10	16	25	120	41	10	31	M8x1	3 mm	0.9	440431 1210	158,–
HSK 63	10	16	28	160	41	10	31	M8x1	3 mm	1	440431 1610	182,–
HSK 63	10	16	28	200	41	10	31	M8x1	3 mm	1.2	440431 2010	202,–
HSK 63	12	18	24	90	47	10	37	M10x1	5 mm	0.8	440431 0012	146,–
HSK 63	12	18	27	120	47	10	37	M10x1	5 mm	0.9	440431 1212	158,–
HSK 63	12	18	30	160	47	10	37	M10x1	5 mm	1.1	440431 1612	182,–
HSK 63	12	18	30	200	47	10	37	M10x1	5 mm	1.3	440431 2012	202,–
HSK 63	14	20	26	90	47	10	37	M10x1	5 mm	0.8	440431 0014	146,–
HSK 63	14	20	29	120	47	10	37	M10x1	5 mm	1	440431 1214	158,–
HSK 63	14	20	32	160	47	10	37	M10x1	5 mm	1.2	440431 1614	182,–
HSK 63	14	20	32	200	47	10	37	M10x1	5 mm	1.4	440431 2014	202,–
HSK 63	16	22	28	95	50	10	40	M12x1	5 mm	0.8	440431 0016	146,–
HSK 63	16	22	31	120	50	10	40	M12x1	5 mm	1	440431 1216	158,–
HSK 63	16	22	34	160	50	10	40	M12x1	5 mm	1.2	440431 1616	182,–
HSK 63	16	22	34	200	50	10	40	M12x1	5 mm	1.5	440431 2016	202,–
HSK 63	18	24	30	95	50	10	40	M12x1	5 mm	0.9	440431 0018	146,–
HSK 63	18	24	33	120	50	10	40	M12x1	5 mm	1	440431 1218	158,–
HSK 63	18	24	36	160	50	10	40	M12x1	5 mm	1.3	440431 1618	182,–
HSK 63	18	24	36	200	50	10	40	M12x1	5 mm	1.6	440431 2018	202,–
HSK 63	20	26	33	100	52	10	42	M16x1	5 mm	0.9	440431 0020	146,–
HSK 63	20	26	35	120	52	10	42	M16x1	5 mm	1.1	440431 1220	158,–
HSK 63	20	26	38	160	52	10	42	M16x1	5 mm	1.4	440431 1620	182,–
HSK 63	20	26	38	200	52	10	42	M16x1	8 mm	1.7	440431 2020	202,–

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Continued on next page >>>

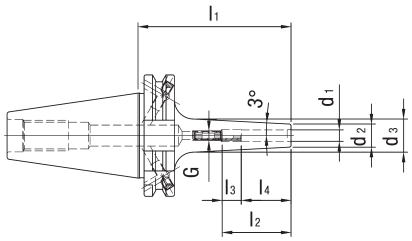
DIN ISO 7388-1 / DIN 69871 AD/AF

- Internal coolant supply

Shank	d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm	l4 mm	G mm	Wr. width mm	Weight kg	art.no.	€
SK 40	3	9	14	80	28	16	12	M6	2 mm	0.9	**440430** 0003	152,–
SK 40	3	9	16	120			12			0.9	440430 1203	178,–
SK 40	3	9	19	160			12			1.1	440430 1603	204,–
SK 40	3	9	19	200			12			1.2	440430 2003	220,–
SK 40	4	10	15	80	28	12	16	M6	2 mm	0.9	440430 0004	146,–
SK 40	4	10	17	120			16			0.9	440430 1204	174,–
SK 40	4	10	20	160			16			1.1	440430 1604	199,–
SK 40	4	10	20	200			16			1.2	440430 2004	216,–
SK 40	5	11	16	80	30	10	20	M6	2 mm	0.9	440430 0005	146,–
SK 40	5	11	18	120			20			1	440430 1205	174,–
SK 40	5	11	21	160			20			1.1	440430 1605	199,–
SK 40	5	11	21	200			20			1.2	440430 2005	216,–
SK 40	6	12	17	80	36	10	26	M5	2.5 mm	0.9	440430 0006	128,–
SK 40	6	12	22	120	36	10	26	M5	2.5 mm	1	440430 1206	156,–
SK 40	6	12	24	160	36	10	26	M5	2.5 mm	1.1	440430 1606	180,–
SK 40	6	12	24	200	36	10	26	M5	2.5 mm	1.4	440430 2006	196,–
SK 40	8	14	19	80	36	10	26	M6	3 mm	0.9	440430 0008	128,–
SK 40	8	14	24	120	36	10	26	M6	3 mm	1	440430 1208	156,–
SK 40	8	14	26	160	36	10	26	M6	3 mm	1.2	440430 1608	180,–
SK 40	8	14	26	200	36	10	26	M6	3 mm	1.4	440430 2008	196,–
SK 40	10	16	21	80	41	10	31	M8x1	3 mm	0.9	440430 0010	128,–
SK 40	10	16	26	120	41	10	31	M8x1	3 mm	1.1	440430 1210	156,–
SK 40	10	16	28	160	41	10	31	M8x1	3 mm	1.2	440430 1610	180,–
SK 40	10	16	28	200	41	10	31	M8x1	3 mm	1.6	440430 2010	196,–
SK 40	12	18	23	80	47	10	37	M10x1	5 mm	0.9	440430 0012	128,–
SK 40	12	18	28	120	47	10	37	M10x1	5 mm	1.1	440430 1212	156,–
SK 40	12	18	30	160	47	10	37	M10x1	5 mm	1.3	440430 1612	180,–
SK 40	12	18	30	200	47	10	37	M10x1	5 mm	1.5	440430 2012	196,–
SK 40	14	20	26	80	47	10	37	M10x1	5 mm	0.9	440430 0014	128,–
SK 40	14	20	30	120	47	10	37	M10x1	5 mm	1.1	440430 1214	156,–
SK 40	14	20	32	160	47	10	37	M10x1	5 mm	1.3	440430 1614	180,–
SK 40	14	20	32	200	47	10	37	M10x1	5 mm	1.6	440430 2014	196,–
SK 40	16	22	28	80	50	10	40	M12x1	5 mm	1	440430 0016	128,–
SK 40	16	22	32	120	50	10	40	M12x1	5 mm	1.2	440430 1216	156,–
SK 40	16	22	34	160	50	10	40	M12x1	5 mm	1.4	440430 1616	180,–
SK 40	16	22	34	200	50	10	40	M12x1	5 mm	2.6	440430 2016	196,–
SK 40	18	24	30	80	50	10	40	M12x1	5 mm	1	440430 0018	128,–
SK 40	18	24	34	120	50	10	40	M12x1	5 mm	1.2	440430 1218	156,–
SK 40	18	24	36	160	50	10	40	M12x1	5 mm	1.5	440430 1618	180,–
SK 40	18	24	36	200	50	10	40	M12x1	5 mm	2.8	440430 2018	196,–
SK 40	20	26	32	80	52	10	42	M16x1	8 mm	1	440430 0020	128,–
SK 40	20	26	36	120	52	10	42	M16x1	5 mm	1.2	440430 1220	156,–
SK 40	20	26	38	160	52	10	42	M16x1	5 mm	1.6	440430 1620	180,–
SK 40	20	26	38	200	52	10	42	M16x1	5 mm	2.9	440430 2020	196,–

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Heavy machining

Shrink-fit mounts with coolant bores for heavy-duty machining available on request!

Size and shape result in a high degree of passive vibration damping.



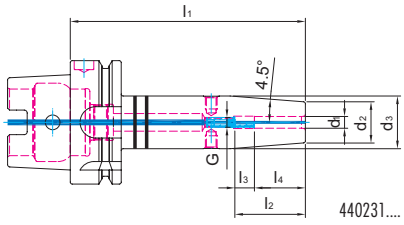
ATORN® Shrink-fit holding fixtures 4.5°

- High true running accuracy of below 0.003 mm
- Highest dimensional accuracy of the workpiece
- High torque transfer
- 4.5° range
- High contour flexibility
- Heat-resistant mild steel
- **Balanced to G 2.5 / 25,000 rpm**
- With Balluffchip bore

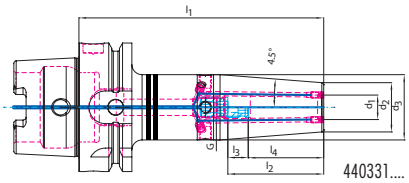


HSK-A DIN 69893

- Internal coolant supply
- When machining with internal coolant supply, a coolant transfer pipe Article No. 431011.... should be used



440231....



440331....

Shank	d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm	l4 mm	G mm	Wr. width mm	Weight kg	Standard art.no.	€	With coolant bores art.no.	€
HSK 63	3	10	15	80	28	16	12	M6	2	0.7	**440231** 0308	161,–	**440331** 0308	178,–
HSK 63	4	15	22	80	28	12	16	M6	2	0.7	440231 0408	161,–	440331 0408	178,–
HSK 63	5	15	22	80	30	10	20	M6	2	0.7	440231 0508	161,–	440331 0508	178,–
HSK 63	6	21	27	80	36	10	26	M5	2.5	0.8	440231 0608	132,–	440331 0608	152,–
HSK 63	8	21	27	80	36	10	26	M6	3	0.8	440231 0808	132,–	440331 0808	152,–
HSK 63	10	24	32	85	41	10	31	M8x1	3	0.9	440231 1008	132,–	440331 1008	152,–
HSK 63	12	24	32	90	47	10	37	M10x1	5	0.9	440231 1209	132,–	440331 1208	152,–
HSK 63	14	27	34	90	47	10	37	M10x1	5	0.9	440231 1409	132,–	440331 1409	152,–
HSK 63	16	27	34	95	50	10	40	M12x1	5	1	440231 1609	132,–	440331 1609	152,–
HSK 63	18	33	42	95	50	10	40	M12x1	5	1.1	440231 1809	132,–	440331 1809	152,–
HSK 63	20	33	42	100	52	10	42	M16x1	5	1.1	440231 2010	132,–	440331 2010	152,–
HSK 63	3	10	20	120	-	-	12	-	-	0.8	440231 0312	210,–	440331 0312	226,–
HSK 63	4	15	22	120	-	-	16	-	-	0.8	440231 0412	210,–	440331 0412	226,–
HSK 63	5	15	22	120	-	-	20	-	-	0.8	440231 0512	210,–	440331 0512	226,–
HSK 63	6	21	27	120	36	10	26	M5	2.5	1	440231 0612	162,–	440331 0612	214,–
HSK 63	8	21	27	120	36	10	26	M6	3	1	440231 0812	162,–	440331 0812	214,–
HSK 63	10	24	32	120	41	10	31	M8x1	3	1	440231 1012	162,–	440331 1012	214,–
HSK 63	12	24	32	120	47	10	37	M10x1	5	1	440231 1212	162,–	440331 1212	214,–
HSK 63	14	27	34	120	47	10	37	M10x1	5	1.1	440231 1412	162,–	440331 1412	214,–
HSK 63	16	27	34	120	50	10	40	M12x1	5	1.1	440231 1612	162,–	440331 1612	214,–
HSK 63	18	33	42	120	50	10	40	M12x1	5	1.3	440231 1812	162,–	440331 1812	214,–
HSK 63	20	33	42	120	52	10	42	M16x1	5	1.3	440231 2012	162,–	440331 2012	214,–
HSK 63	25	44	53	115	58	10	48	M16x1	5	1.6	440231 2512	132,–	440331 2512	152,–
HSK 63	32	44	53	120	62	10	52	M16x1	5	1.6	440231 3212	132,–	440331 3212	152,–
HSK 63	3	10	20	160	-	-	12	-	-	0.8	440231 0316	224,–		
HSK 63	4	15	22	160	-	-	16	-	-	0.9	440231 0416	224,–		
HSK 63	5	15	22	160	-	-	20	-	-	0.9	440231 0516	224,–		
HSK 63	6	21	27	160	36	10	26	M5	2.5	1.1	440231 0616	178,–		
HSK 63	8	21	27	160	36	10	26	M6	3	1.1	440231 0816	178,–		
HSK 63	10	24	32	160	41	10	31	M8x1	3	1.3	440231 1016	178,–		
HSK 63	12	24	32	160	47	10	37	M10x1	5	1.2	440231 1216	178,–		
HSK 63	14	27	34	160	47	10	37	M10x1	5	1.3	440231 1416	178,–		
HSK 63	16	27	34	160	50	10	40	M12x1	5	1.4	440231 1616	178,–		
HSK 63	18	33	42	160	50	10	40	M12x1	5	1.6	440231 1816	178,–		
HSK 63	20	33	42	160	52	10	42	M16x1	5	1.6	440231 2016	178,–		
HSK 63	25	44	53	160	62	10	48	M16x1	5	2	440231 2516	178,–		
HSK 63	32	44	53	160	62	10	52	M16x1	5	1.9	440231 3216	178,–		
HSK 63	3	10	20	200	-	-	12	-	-	1	440231 0320	234,–		
HSK 63	4	15	22	200	-	-	16	-	-	1	440231 0420	234,–		
HSK 63	5	15	22	200	-	-	20	-	-	1.1	440231 0520	234,–		
HSK 63	6	21	27	200	36	10	26	M5	2.5	1.4	440231 0620	208,–		
HSK 63	8	21	27	200	36	10	26	M6	3	1.4	440231 0820	208,–		
HSK 63	10	24	32	200	41	10	31	M8x1	3	1.6	440231 1020	208,–		
HSK 63	12	24	32	200	47	10	37	M10x1	5	1.6	440231 1220	208,–		
HSK 63	14	27	34	200	47	10	37	M10x1	5	1.7	440231 1420	208,–		
HSK 63	16	27	34	200	50	10	40	M12x1	5	1.7	440231 1620	208,–		
HSK 63	18	33	42	200	50	10	40	M12x1	5	2.3	440231 1820	208,–		
HSK 63	20	33	42	200	52	10	42	M16x1	5	2.3	440231 2020	208,–		
HSK 63	25	44	53	200	62	10	48	M16x1	5	3.2	440231 2520	208,–		
HSK 63	32	44	53	200	62	10	52	M16x1	5	3	440231 3220	208,–		
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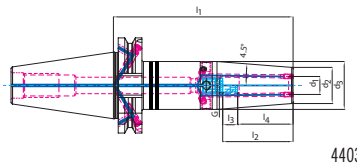
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DIN ISO 7388-1 / DIN 69871 AD/AF

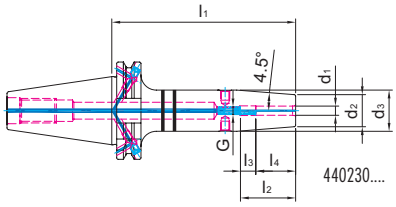
- Internal coolant supply

Shank	d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm	l4 mm	G mm	Wr. width mm	Weight kg	Standard art.no.	€	With coolant bores art.no.	€
SK 40	3	10	17	80	28	16	12	M6	2	0.9	**440230** 0308	139,–	**440330** 0308	174,–
SK 40	4	15	22	80	28	12	16	M6	2	0.9	440230 0408	139,–	440330 0408	174,–
SK 40	5	15	22	80	30	10	20	M6	2	0.9	440230 0508	139,–	440330 0508	174,–
SK 40	6	21	27	80	36	10	26	M5	2.5	1	440230 0608	105,–	440330 0608	128,–
SK 40	8	21	27	80	36	10	26	M6	3	1	440230 0808	105,–	440330 0808	128,–
SK 40	10	24	32	80	41	10	31	M8x1	3	1	440230 1008	105,–	440330 1008	128,–
SK 40	12	24	32	80	47	10	37	M10x1	5	1	440230 1208	105,–	440330 1208	128,–
SK 40	14	27	34	80	47	10	37	M10x1	5	1	440230 1408	105,–	440330 1408	128,–
SK 40	16	27	34	80	50	10	40	M12x1	5	1	440230 1608	105,–	440330 1608	128,–
SK 40	18	33	42	80	50	10	40	M12x1	5	1.1	440230 1808	105,–	440330 1808	128,–
SK 40	20	33	42	80	52	10	42	M16x1	8	1.1	440230 2008	105,–	440330 2008	128,–
SK 40	25	44	53	100	58	10	48	M16x1	8	1.6	440230 2508	105,–	440330 2508	128,–
SK 40	32	44	53	100	62	10	52	M16x1	8	1.4	440230 3208	105,–	440330 3208	128,–
SK 40	3	10	20	120	-	-	12	-	-	0.9	440230 0312	154,–	440330 0312	194,–
SK 40	4	15	22	120	-	-	16	-	-	1	440230 0412	154,–	440330 0412	194,–
SK 40	5	15	22	120	-	-	20	-	-	1	440230 0512	154,–	440330 0512	194,–
SK 40	6	21	27	120	36	10	26	M5	2.5	1.1	440230 0612	134,–	440330 0612	162,–
SK 40	8	21	27	120	36	10	26	M6	3	1.1	440230 0812	134,–	440330 0812	162,–
SK 40	10	24	32	120	41	10	31	M8x1	3	1.2	440230 1012	134,–	440330 1012	162,–
SK 40	12	24	32	120	47	10	37	M10x1	5	1.2	440230 1212	134,–	440330 1212	162,–
SK 40	14	27	34	120	47	10	37	M10x1	5	1.3	440230 1412	134,–	440330 1412	162,–
SK 40	16	27	34	120	50	10	40	M12x1	5	1.3	440230 1612	134,–	440330 1612	162,–
SK 40	18	33	42	120	50	10	40	M12x1	5	1.5	440230 1812	134,–	440330 1812	162,–
SK 40	20	33	42	120	52	10	42	M16x1	8	1.5	440230 2012	134,–	440330 2012	162,–
SK 40	25	44	53	120	58	10	48	M16x1	8	1.8	440230 2512	134,–	440330 2512	162,–
SK 40	32	44	53	120	62	10	52	M16x1	8	1.7	440230 3212	134,–	440330 3212	162,–
SK 40	3	10	20	160	-	-	12	-	-	1	440230 0316	158,–		
SK 40	4	15	22	160	-	-	16	-	-	1.1	440230 0416	158,–		
SK 40	5	15	22	160	-	-	20	-	-	1.1	440230 0516	158,–		
SK 40	6	21	27	160	36	10	26	M5	2.5	1.3	440230 0616	142,–		
SK 40	8	21	27	160	36	10	26	M6	3	1.3	440230 0816	142,–		
SK 40	10	24	32	160	41	10	31	M8x1	3	1.5	440230 1016	142,–		
SK 40	12	24	32	160	47	10	37	M10x1	5	1.5	440230 1216	142,–		
SK 40	14	27	34	160	47	10	37	M10x1	5	1.6	440230 1416	142,–		
SK 40	16	27	34	160	50	10	40	M12x1	5	1.6	440230 1616	142,–		
SK 40	18	33	42	160	50	10	40	M12x1	5	1.7	440230 1816	142,–		
SK 40	20	33	42	160	52	10	42	M16x1	8	1.8	440230 2016	142,–		
SK 40	25	44	53	160	58	10	48	M16x1	8	2.5	440230 2516	142,–		
SK 40	32	44	53	160	62	10	52	M16x1	8	2.4	440230 3216	142,–		
SK 40	3	10	20	200	-	-	12	-	-	1.1	440230 0320	182,–		
SK 40	4	15	22	200	-	-	16	-	-	1.2	440230 0420	182,–		
SK 40	5	15	22	200	-	-	20	-	-	1.2	440230 0520	182,–		
SK 40	6	21	27	200	36	10	26	M5	2.5	1.4	440230 0620	158,–		
SK 40	8	21	27	200	36	10	26	M6	3	1.4	440230 0820	158,–		
SK 40	10	24	32	200	41	10	31	M8x1	3	1.7	440230 1020	158,–		
SK 40	12	24	32	200	47	10	37	M10x1	5	1.7	440230 1220	158,–		
SK 40	14	27	34	200	47	10	37	M10x1	5	1.8	440230 1420	158,–		
SK 40	16	27	34	200	50	10	40	M12x1	5	1.8	440230 1620	158,–		
SK 40	18	33	42	200	50	10	40	M12x1	5	1.9	440230 1820	158,–		
SK 40	20	33	42	200	52	10	42	M16x1	8	2	440230 2020	158,–		
SK 40	25	44	53	200	58	10	48	M16x1	8	2.8	440230 2520	158,–		
SK 40	32	44	53	200	62	10	52	M16x1	8	3.2	440230 3220	158,–		
											4181		4181	





440330....



440230....

diebold ThermoGrip® Shrink fit collets TER

- Optimum concentricity < 3 µm
- Good changeover accuracy
- Maximum holding forces
- Excellent dimensional stability
- **Use in collet chucks**
  Standard ER chucks with standard clamping nuts can be used. The collet is coolant-proof, no dirt in the slots means no soiling to the clamping taper.
  Use in powered tool holders
  Clamped as short as possible, extremely rigid, no unwanted movement of the cutting tool, maximum production accuracy
  Use directly in the machine spindle
  High changeover accuracy, minimal imbalance, very short design



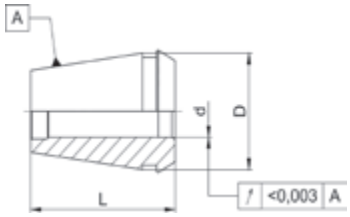
Use e.g. in collet chucks or powered tool holding fixtures

Shrink-fit collets TER in accordance with DIN 6499

Type	d mm	D mm	L mm	art.no.	€
TER16	3	17	31	**430270** 0317	77,–
TER16	4	17	31	430270 0325	77,–
TER16	6	17	31	430270 0417	70,–
TER16	8	17	31	430270 0425	70,–
TER20	6	21	31	430270 0617	73,–
TER20	8	21	31	430270 0620	73,–
TER20	10	21	31	430270 0625	73,–
TER25	3	26	35	430270 0632	84,–
TER25	4	26	35	430270 0817	84,–
TER25	6	26	35	430270 0820	84,–
TER25	8	26	35	430270 0825	84,–
TER25	10	26	35	430270 0832	84,–
TER25	12	26	35	430270 1020	84,–
TER25	14	26	35	430270 1025	84,–
TER25	16	26	35	430270 1032	84,–
TER32	6	33	40	430270 1225	91,–
TER32	8	33	40	430270 1232	91,–
TER32	10	33	40	430270 1425	91,–
TER32	12	33	40	430270 1432	91,–
TER32	14	33	40	430270 1625	91,–
TER32	16	33	40	430270 1632	91,–
TER32	18	33	40	430270 1832	91,–
TER32	20	33	40	430270 2032	91,–

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Inserts for TER collets

- Only for vertical shrinking units
- Available on request for horizontal shrinking units

for type	art.no.	€
TER16	**430290** 0016	73,–
TER20	430290 0020	73,–
TER25	430290 0025	73,–
TER32	430290 0032	73,–

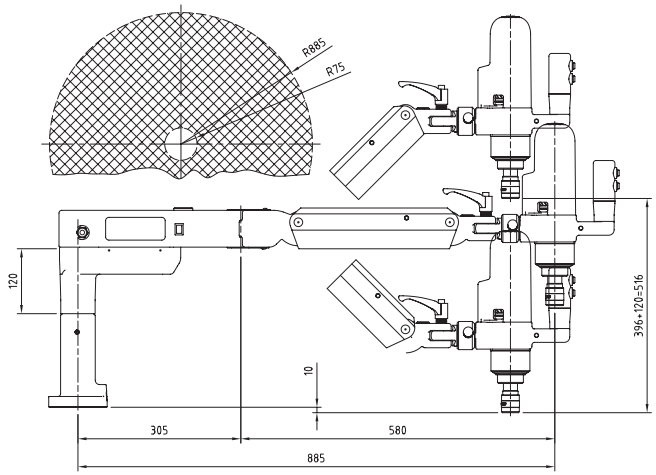
4129



ATORN® Thread cutting machine

- **Electrically powered motor**
- 220 V electrical connection is sufficient
- For M2 - M14 steel threads
- For M2 - M16 aluminium threads
- Vertical and horizontal thread cutting
- Operating range - radius 75 mm to 885 mm
- Operating range - height 565 mm
- For holding quick-release inserts with Ø 19 (e.g. art.no. 44250519..)
- Supplied with a base tool holding fixture, an articulated arm for vertical thread cutting and a tilting adapter for horizontal thread cutting **(please order quick-change chucks or quick-release inserts separately)**
- **Automatic tool lubrication and pneumatic version available on request**







Thread cutting machine

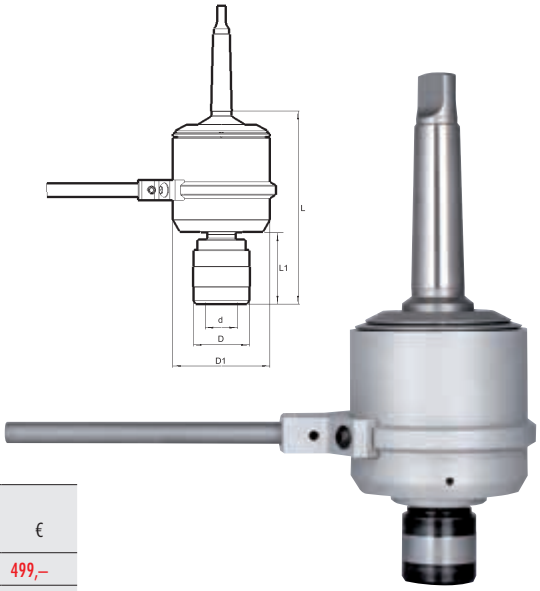
Rotational speed r/min	Torque N-m	Holding fixture Ø mm	Connection	art.no.	€
300/600	34	19	220V	**442180** 0001	4.999,–
				4126	

Accessories

Designation	art.no.	€
Table clamp	**442181** 0001	139,–
	4126	

SARA® Thread cutting device

- Manual thread cutting on hand-fed drills
- Maintenance-free, for use with right-hand and left-hand threads
- No need to reverse the spindle thanks to the integrated indexable thread
- Automatic shut-off by a low-wear ball system when the machine spindle is withdrawn once the thread depth has been reached
- Stopping arm must be secured against twisting before operation
- Supplied without inserts



Shank	d mm	D mm	D1 mm	L mm	L1 mm	Length compensation, pressure mm	Length compensation, tension mm	material	art.no.	€
MT 2	19	33	78	146	40	0	3.5	M3 - M12	**442200** 1202	499,–
MT3	19	33	78	144	40	0	3.5	M3 - M12	442200 1203	499,–
MT3	31	50	83	180	67	0	0	M6 - M20	442200 2003	589,–
MT 4	31	50	83	181	40	0	0	M6 - M20	442200 2004	589,–
									4117	

Tap clamping sleeve



- **Torsion-free design**
- Tap clamping sleeve for machines with a synchronous thread cutting mechanism
- **Use:** In conventional DIN 1835 B (Weldon) chucks,
  Thread cutting in hard-to-reach areas
- Synchronisation between speed and forward thrust, no slip between the sleeve and drill bit
- 100 % cooling at the cutting edge with internal coolant supply

D mm	d mm	Quadratic mm	L mm	art.no.	€
16	3.5	2.7	56	**442016** 1635	33,80
16	4	3	56	442016 1640	33,80
16	4.5	3.4	56	442016 1645	33,80
16	6	4.9	56	442016 1660	33,80
20	4.5	3.4	58	442016 2045	33,80
20	6	4.9	58	442016 2060	33,80
20	7	5.5	58	442016 2070	33,80
20	8	6.2	58	442016 2080	33,80
20	9	7	58	442016 2090	33,80
20	10	8	58	442016 2010	33,80

4117

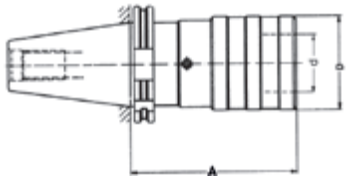
D mm	d mm	Quadratic mm	L mm	art.no.	€
25	4.5	3.4	66	442016 2545	46,40
25	6	4.9	66	442016 2560	46,40
25	7	5.5	66	442016 2570	46,40
25	8	6.2	66	442016 2580	46,40
25	9	7	66	442016 2590	46,40
25	10	8	66	442016 2510	46,40
25	11	9	66	442016 2511	46,40
25	12	9	66	442016 2512	46,40
32	6	4.9	70	442016 3260	50,50
32	7	5.5	70	442016 3270	50,50

4117

D mm	d mm	Quadratic mm	L mm	art.no.	€
32	8	6.2	70	442016 3280	50,50
32	9	7	70	442016 3290	50,50
32	10	8	70	442016 3210	50,50
32	11	9	70	442016 3211	50,50
32	12	9	70	442016 3212	50,50
32	14	11	70	442016 3214	50,50
32	16	12	70	442016 3216	50,50
32	18	14.5	70	442016 3218	50,50

4117

SARA® Thread cutting quick-change chuck



- Automatic insert locking
- **Flexible length compensation under compression and tension**
- For quick-release inserts with adjustable safety coupling
- Minimal residual torque prevents tap breakage
- For thread cutting on mechanical and digitally controlled radial drills as well as drilling and milling machines
- Further sizes are available on request

DIN ISO 7388-1 / DIN 69871 A



Shank	d mm	D mm	A mm	L mm	Length compensation, pressure mm	Length compensation, tension mm	Thread	art.no.	€
SK 40	19	38	60	60	9	9	M 3 - M 12	**442003** 4012	177,–
SK 40	31	55	100	98	15	15	M 6 - M 20	442003 4024	230,–
SK 50	19	38	62	60	9	9	M 3 - M 12	442003 5012	265,–
SK 50	31	55	83	84	15	15	M 6 - M 20	442003 5024	285,–

4117

DIN ISO 7388-2 / MAS BT JIS B 6339



Shank	d mm	D mm	A mm	Length compensation, pressure mm	Length compensation, tension mm	Thread	art.no.	€
BT 40	19	38	68	9	9	M 3 - M 12	**442007** 4012	185,–
BT 40	31	55	93	15	15	M 6 - M 20	442007 4024	240,–
BT 50	31	55	102	15	15	M 6 - M 20	442007 5024	355,–

4117

DIN 2080



Shank	d mm	D mm	A mm	Length compensation, pressure mm	Length compensation, tension mm	Thread	art.no.	€
SK 40	19	38	53	9	9	M 3 - M 12	**442001** 4012	210,–
SK 40	31	55	77	15	15	M 6 - M 20	442001 4024	255,–
SK 50	31	55	79	15	15	M 6 - M 20	442001 5024	330,–

4117

Straight shank similar to DIN 1835 B+E



Shank Ø mm	d mm	D mm	A mm	Length compensation, pressure mm	Length compensation, tension mm	Thread	art.no.	€
25	19	38	41	9	9	M 3 - M 12	**442008** 2519	182,–
25	31	55	63	15	15	M 6 - M 20	442008 2531	225,–

4117

DIN 228

Shank	d mm	D mm	A mm	Length compensation, pressure mm	Length compensation, tension mm	Thread	art.no.	€
MT 2	19	38	46	9	9	M 3 - M 12	**442015** 0212	159,–
MT3	19	38	46	9	9	M 3 - M 12	442015 0312	156,–
MT3	31	55	69	15	15	M 6 - M 20	442015 0324	195,–
MT 4	31	55	70	15	15	M 6 - M 20	442015 0424	195,–

4117



SARA® Quick-release inserts

- Further sizes available on request

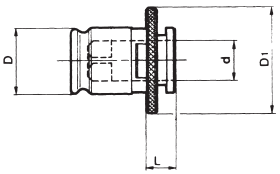
Without coupling

d mm	Quadratic mm	D mm	L mm	D1 mm	Thread	DIN	art.no.	€
2.8	2.1	19	7	30	M 2	371	**442501** 1928	21,70
3.5	2.7	19	7	30	M 3	371	442501 1935	21,70
4	3.0	19	7	30	M 3.5	371	442501 1940	21,70
4.5	3.4	19	7	30	M 4	371	442501 1945	21,70
6	4.9	19	7	30	M 5 / M 6	371	442501 1960	21,70
8	6.2	19	7	30	M 8	371	442501 1980	21,70
10	8	19	7	30	M 10	371	442501 1910	21,70
7	5.5	19	7	30	M 10	376	442501 1970	21,70
9	7	19	7	30	M 12	376	442501 1990	21,70
11	9	19	7	30	M 14	376	442501 1911	21,70
6	4.9	31	11	46	M 5 / M 6	371	442501 3106	28,40
8	6.2	31	11	46	M 8	371	442501 3108	28,40
10	8	31	11	46	M 10	371	442501 3110	28,40
7	5.5	31	11	46	M 10	376	442501 3107	28,40
9	7	31	11	46	M 12	376	442501 3109	28,40
11	9	31	11	46	M 14	376	442501 3111	28,40
12	9	31	11	46	M 16	376	442501 3112	28,40
14	11	31	11	46	M 18	376	442501 3114	28,40
16	12	31	11	46	M 20	376	442501 3116	28,40
18	14.5	31	11	46	M 22	376	442501 3118	28,40

4117



Without coupling



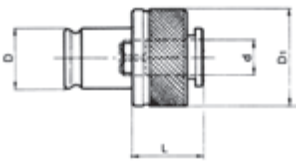
With safety coupling

d mm	Quadratic mm	D mm	L mm	D1 mm	Thread	DIN	With adjustable coupling art.no.	€
2.8	2.1	19	25	32	M 2	371	**442505** 1928	45,90
3.5	2.7	19	25	32	M 3	371	442505 1935	45,90
4	3.0	19	25	32	M 3.5	371	442505 1940	45,90
4.5	3.4	19	25	32	M 4	371	442505 1945	45,90
6	4.9	19	25	32	M 5 / M 6	371	442505 1960	45,90
8	6.2	19	25	32	M 8	371	442505 1980	45,90
10	8	19	25	32	M 10	371	442505 1910	45,90
7	5.5	19	25	32	M 10	376	442505 1970	45,90
9	7	19	25	32	M 12	376	442505 1990	45,90
11	9	19	25	32	M 14	376	442505 1911	45,90
6	4.9	31	34	50	M 5 / M 6	371	442505 3106	67,50
8	6.2	31	34	50	M 8	371	442505 3108	67,50
10	8	31	34	50	M 10	371	442505 3110	67,50
7	5.5	31	34	50	M 10	376	442505 3107	67,50
9	7	31	34	50	M 12	376	442505 3109	67,50
11	9	31	34	50	M 14	376	442505 3111	67,50
12	9	31	34	50	M 16	376	442505 3112	67,50
14	11	31	34	50	M 18	376	442505 3114	67,50
16	12	31	34	50	M 20	376	442505 3116	67,50
18	14.5	31	34	50	M 22	376	442505 3118	67,50

4117



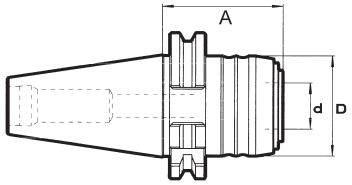
With safety coupling



ATORN® Thread cutting quick-change chuck for synchronous spindles

- **Minimal length compensation** thanks to damping element
- Secure clamping in quick-release inserts for ER collets
- Clamping screws to prevent the clamped tap from twisting
- For use on drilling machines and machining centres with synchronous spindles

Also available for machines with minimum-volume lubrication



DIN 69893 type A (HSK-A)

- Internal coolant supply
- When machining with internal coolant supply, a coolant transfer pipe with art.no. 431011... should be used
- Supplied without quick-release insert



Shank	for collets	d mm	D mm	A mm	Length compensation, pressure mm	Length compensation, tension mm	for thread	art.no.	€
HSK-A 63	ER16	20	43	64	0.2	1	M3 - M12	**442021** 6316	220,–
HSK-A 63	ER25	32	60	97	0.2	1	M6 - M20	442021 6325	280,–

4117

DIN ISO 7388-1 / DIN 69871 AD

- Internal coolant supply
- Supplied without quick-release insert



Shank	for collets	d mm	D mm	A mm	Length compensation, pressure mm	Length compensation, tension mm	for thread	art.no.	€
SK 40	ER16	20	43	53	0.2	1	M3 - M12	**442020** 4016	172,–
SK 40	ER25	32	60	90	0.2	1	M6 - M20	442020 4025	235,–
SK 50	ER16	20	43	53	0.2	1	M3 - M12	442020 5016	191,–
SK 50	ER25	32	60	74	0.2	1	M6 - M20	442020 5025	300,–

4117

Str. shank sim. to DIN 1835 B+E

- Supplied without quick-release insert

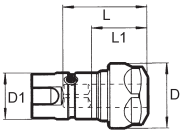


Shank	for collets	d mm	D mm	A mm	Length compensation, pressure mm	Length compensation, tension mm	for thread	art.no.	€
Ø 25	ER16	20	43	34	0.2	1	M3 - M12	**442022** 2516	152,–
Ø 25	ER25	32	60	56	0.2	1	M6 - M20	442022 2525	172,–

4117

Quick-release inserts, one-piece



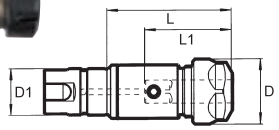


for collets	L mm	L1 mm	D mm	D1 mm	for thread	art.no.	€
ER16	37	24	28	20	M3 - M12	**442025** 2016	97,50
ER25	52	28	42	32	M6 - M20	442025 3225	118,–

4117

Quick-release inserts, two-piece





for collets	L mm	L1 mm	D mm	D1 mm	for thread	art.no.	€
ER16	55	38	28	20	M3 - M12	**442026** 2016	255,–
ER25	86	63	42	32	M6 - M20	442026 3225	275,–

4117

Extension for two-piece quick-release inserts



Illustration shows an extended quick-release insert with two extensions



L mm	D mm	for thread	art.no.	€
25	23	M3 - M12	**442027** 2325	33,10
50	23	M3 - M12	442027 2350	38,80
50	35	M6 - M20	442027 3410	59,–
100	35	M6 - M20	442027 3450	50,50

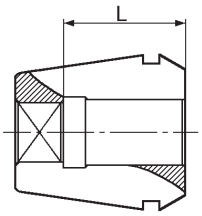
4117

Threading tap collet chucks, type A

DIN 6499-A

- **With square socket**
- For clamping thread cutting tools







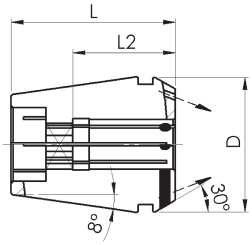
Shank Ø mm	Quadratic mm	L mm	ER16 4031E art.no.	€	ER20 4276E art.no.	€	ER25 4282E art.no.	€	ER32 4537E art.no.	€	ER40 4716E art.no.	€
3.5	2.7	18	**433050** 0035	33,70	**433053** 0035	35,70	**433055** 0035	36,80				
4.5	3.4	18	433050 0045	33,70	433053 0045	35,70	433055 0045	36,80	**433057** 0045	40,50		
5.5	4.3	18					433055 0055	36,80	433057 0055	40,50		
6	4.9	18	433050 0060	33,70	433053 0060	35,70	433055 0060	36,80	433057 0060	40,50	**433059** 0060	46,90
7	5.5	18	433050 0070	33,70	433053 0070	35,70	433055 0070	36,80	433057 0070	40,50	433059 0070	46,90
8	6.2	22	433050 0080	33,70	433053 0080	35,70	433055 0080	36,80	433057 0080	40,50	433059 0080	46,90
9	7	22			433053 0090	35,70	433055 0090	36,80	433057 0090	40,50	433059 0090	46,90
10	8	25			433053 0100	35,70	433055 0100	36,80	433057 0100	40,50	433059 0100	46,90
11	9	25			433053 0110	35,70	433055 0110	36,80	433057 0110	40,50	433059 0110	46,90
12	9	25			433053 0120	35,70	433055 0120	36,80	433057 0120	40,50	433059 0120	46,90
14	11	25					433055 0140	36,80	433057 0140	40,50	433059 0140	46,90
16	12	25					433055 0160	36,80	433057 0160	40,50	433059 0160	46,90
18	14.5	33									433059 0180	46,90
20	16	33									433059 0200	46,90
			4120		4120		4120		4120		4120	

FAHRION® PRAZISION Thread cutting collets sealed with spray nozzles

- **With square socket**
- For clamping thread cutting tools
- With seals for internal coolant supply and spray nozzles

Fahrion Protect - corrosion protection for functional surfaces in the µ area





Shank Ø mm	Quadratic mm	L2 mm	GERC20-GBDD / 4276E D = 20,7 L = 31,5 art.no.	€	GERC25-GBDD / 4282E D = 25,7 L = 34 art.no.	€	GERC32-GBDD / 4537E D = 32,7 L = 40 art.no.	€
4.5	3.55	18	**433161** 0450	73,–	**433162** 0450	76,–	**433163** 0450	82,–
6	5	18	433161 0600	73,–	433162 0600	76,–	433163 0600	82,–
7	5.6	18	433161 0700	73,–	433162 0700	76,–	433163 0700	82,–
8	6.3	22	433161 0800	73,–	433162 0800	76,–	433163 0800	82,–
9	7.1	22	433161 0900	73,–	433162 0900	76,–	433163 0900	82,–
10	8	25	433161 1000	73,–	433162 1000	76,–	433163 1000	82,–
11	9	25			433162 1100	76,–	433163 1100	82,–
12	9	25			433162 1200	76,–	433163 1200	82,–
14	11.2	25			433162 1400	76,–	433163 1400	82,–
16	12.5	25					433163 1600	82,–
18	14.5	30					433163 1800	82,–
			4118		4118		4118	

bilz ER synchro insert STA

The **STA** (**S**ynchro **T**apping **A**daptor) synchro insert was specially developed for ER collet holding fixtures and allows tapping and forming on machines with synchronised spindles.

- For ER collet holding fixtures and powered tools
- Compensation for synchronisation errors
- Minimal length compensation under compression and tension
- Minimal strain on the thread flanks
- Compact design
- Internal coolant supply suitable up to 50 bar
- Suitable for left-hand and right-hand thread
- **Only used standard clamping nuts in accordance with SO15488 (DIN6499)**
- **Not for sealed nuts or mini nuts**







Synchro tool fixture STL

- Base support for STH synchro tool head

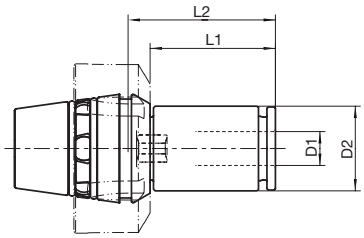
Type	Designation	art.no.	€
2	ER16	**442100** 0016	49,–
3	ER20	442100 0020	49,–
4	ER25	442100 0025	49,–
5	ER32	442100 0032	49,–

4195

Synchro tool head STH

- Use for STL synchro tool fixture
- Length compensation: +0.5 mm / -0.2 mm





for type	D1 mm	Quadratic mm	for tap M	D2 mm	L1 mm	L2 mm	art.no.	€
2	3.5	2.7	M3 M5	12.7	24	26.3	**442110** 1601	49,–
2	4.5	3.4	M4 M6	12.7	24	26.3	442110 1602	49,–
2	5	4	M4 M5	12.7	24	27.3	442110 1603	49,–
3	6	4.9	M5 M6 M8	15.8	35	31	442110 2001	49,–
3	7	5.5	M7 M9 M10	15.8	35	31	442110 2002	49,–
4	6	4.9	M5 M6 M8	19	27	31	442110 2501	49,–
4	7	5.5	M7 M9 M10	19	30	33.5	442110 2502	49,–
4	8	6.2	M8 M11	19	30	34.5	442110 2503	49,–
4	9	7	M9 M12	19	40	33.5	442110 2504	49,–
5	7	5.5	M7 M9 M10	25	19	33.5	442110 3202	49,–
5	8	6.2	M8 M11	25	37	41	442110 3203	49,–
5	9	7	M9 M12	25	37	42	442110 3204	49,–
5	10	8	M10	25	37	43	442110 3205	49,–
5	6	4.9	M5 M6 M8	25	8	31	442110 3201	49,–
5	11	9	M14	25	37	44	442110 3206	49,–
5	12	9	M12 M16	25	37	44	442110 3207	49,–

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SARA® MT clamping sleeve for taps

- For taps with straight shank and square driving pin **according to DIN 6328**
- Ground bore and external taper
- Fully hardened and ground



Morse taper	Interior Ø mm	Length mm	art.no.	€
1	2.5	65.5	**442017** 1025	21,20
1	3.5	65.5	442017 1035	21,20
1	4.0	65.5	442017 1040	21,20
1	4.5	65.5	442017 1045	21,20
1	5	65.5	442017 1050	21,20
1	5.5	65.5	442017 1055	21,20
1	6	65.5	442017 1060	21,20
1	7	65.5	442017 1070	21,20
1	8	65.5	442017 1080	21,20
2	10	78.5	442017 2100	25,10
2	11	78.5	442017 2110	25,10
2	12	78.5	442017 2120	25,10
2	4.5	78.5	442017 2045	25,10

4107

Morse taper	Interior Ø mm	Length mm	art.no.	€
2	6	78.5	442017 2060	25,10
2	7	78.5	442017 2070	25,10
2	8	78.5	442017 2080	25,10
2	9	78.5	442017 2090	25,10
3	10	98	442017 3100	33,70
3	11	98	442017 3110	33,70
3	12	98	442017 3120	33,70
3	14	98	442017 3140	33,70
3	16	98	442017 3160	33,70
3	8	98	442017 3080	33,70
3	9	98	442017 3090	33,70
4	12	123	442017 4120	57,40
4	14	123	442017 4140	57,40

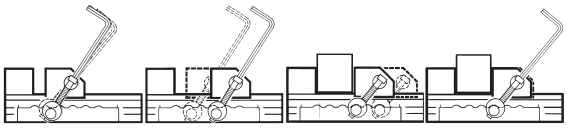
4107

Morse taper	Interior Ø mm	Length mm	art.no.	€
4	16	123	442017 4160	57,40
4	18	123	442017 4180	57,40
4	20	123	442017 4200	59,20
4	22	123	442017 4220	57,40
4	25	123	442017 4250	57,40
5	22	156	442017 5220	101,–
5	25	156	442017 5250	98,–
5	28	156	442017 5280	98,–
5	30	156	442017 5300	98,–
5	32	156	442017 5320	98,–
5	36	156	442017 5360	98,–

4107

ROHM Precision clamp with quick adjustment

- **Quick adjustment**
- Maximum accuracy
- Made from alloyed tool steel, hardened and finely ground on all sides
- Easy to clamp and release with a hex key
- Clamping jaw can be adjusted in steps; engages automatically
- Pull-down effect
- Suitable for grinding, milling and engraving machines, jig boring machines, measuring and inspection work, and any production processes that demand the highest clamping accuracy



Horizontal V-block

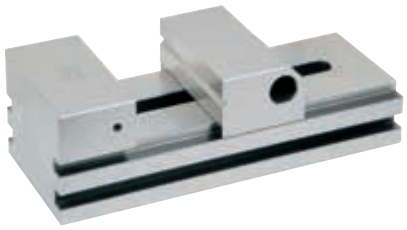


Jaw width mm	Clamp Ø mm	Jaw height mm	Total height mm	Total length mm	Perpendicularity mm	Parallelism µm	art.no.	€
34	25	15	35	75	0.005	0.002	**463004** 0030	128,–
45	50	20	45	110	0.005	0.002	463004 0045	166,–

4190

Horizontal and vertical V-block

- Size 0120 only horizontal V-block



Jaw width mm	Clamp Ø mm	Jaw height mm	Total height mm	Total length mm	Perpendicularity mm	Parallelism µm	art.no.	€
70	80	30	62	160	0.005	0.002	**463006** 0070	260,–
90	120	40	80	210	0.005	0.002	463006 0090	332,–
120	150	40	90	280	0.005	0.002	463006 0120	443,–

4190

ROHM Precision clamp

- Maximum accuracy
- Made from alloyed tool steel, hardened and finely ground on all sides
- Clamping and loosening via threaded spindle
- Horizontal V-block
- Suitable for grinding, milling and engraving machines, jig boring machines, measuring and inspection work, and any production processes that demand the highest clamping accuracy



Jaw width mm	Clamp Ø mm	Jaw height mm	Total height mm	Total length mm	Perpendicularity mm	Parallelism µm	art.no.	€
60	55	25	50	110	0.005	0.002	**463021** 0060	221,–
73	100	30	67	210	0.005	0.002	463021 0070	277,–
88	125	40	80	250	0.005	0.002	463021 0090	332,–

4190

SARA Precision vices

- Pull-down fixture
- One-piece vice bed and fixed jaw
- Angularity and parallelism 0.005 mm / 100 mm, can be used on all sides
- Alloyed case-hardened tool steel, hardened and finely ground, hardness HRC 58 - 62



Jaw width mm	Length mm	Jaw opening mm	Jaw height mm	art.no.	€
50	140	65	25	**463007** 1050	121,–
63	175	85	32	463007 0063	155,–
73	190	100	35	463007 0073	175,–
88	235	125	40	463007 0088	225,–
100	245	125	45	463007 0100	235,–

4152

SARA® Precision grinding and inspection vices

- **With spindle**
- Entirely made from steel, precision-ground on all sides, can be used on all four sides, hardness HRC 58 - 62
- Can be used on grinding machines, jig boring machines and other precision machinery
- Also for measuring and inspection work
- Tolerance 0.005 mm



Jaw width mm	Length mm	Jaw opening mm	Jaw height mm	art.no.	€
50	155	65	25	**463024** 0050	175,–
63	190	85	32	463024 0063	210,–
73	210	100	35	463024 0073	235,–
88	250	125	40	463024 0088	285,–
100	260	125	45	463024 0100	430,–
				4152	

SARA® Precision sinus vice

- Machining and checking of surfaces and angular surfaces
- Angle adjustment in 2 axes via Vernier scale and precision set screw
- Can be rotated horizontally by 360°
- Can be swivelled vertically by 2 x 60°
- Scale reading from Vernier 3'
- Tool steel, through-hardened, fully precision-ground
- Perpendicularity: 0,005/100 mm
- Parallelism: 0,005/100 mm



Jaw width mm	Clamp Ø mm	Jaw height mm	Length mm	Total height mm	Weight kg	art.no.	€
70	80	30	160	137	12	**459026** 0070	1.489,–
						4152	

ATORN® Drilling machine vice

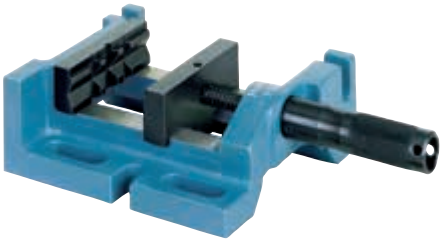
- Clamping jaws offset for clamping flat workpieces
- Horizontal and vertical V-blocks are integrated into the fixed jaw for round material



Jaw width mm	Jaw height mm	Clamp Ø mm	art.no.	€
80	25	65	**451540** 0085	63,–
100	30	90	451540 0100	80,–
120	30	110	451540 0120	101,–
150	40	150	451540 0150	160,–
			4150	

RÖHM Drilling machine vice with three clamping options

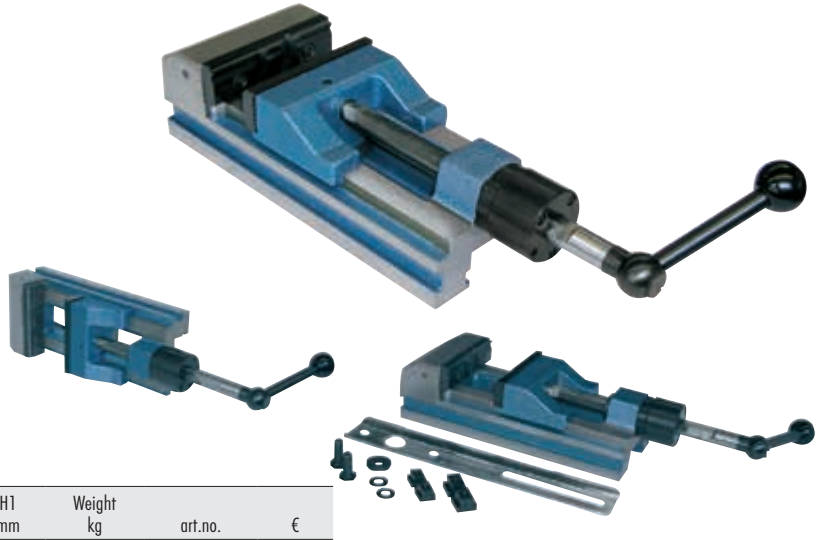
- **Version with two additional, rectangular supporting surfaces**
- Three clamping options (base, right-hand and face)
- Clamping jaws offset for clamping flat workpieces
- Horizontal and vertical V-blocks are integrated into the fixed jaw for round material



Jaw width mm	Clamp Ø mm	art.no.	€
100	93	**451545** 0100	74,60
		4190	

ATORN® Drilling machine vice with quick jaw adjustment

- Narrow version
- For quick and secure clamping, particularly when machining workpieces for mass production
- With guideway, **base clamping and lateral clamping devices,** also suitable for light milling work
- **One-handed operation** – quick jaw adjustment and clamping with just one lever handle
- Flat, robust design
- Max. clamping force 10 kN
- Positive-fit locking
- Large clamping range
- Body made from special cast iron
- Supplied with guideway and fixing materials



Jaw width mm	Clamp Ø mm	max. clamp force kN	L mm	H mm	H1 mm	Weight kg	art.no.	€
110	130	10	280	82	50	12.5	**451560** 0110	495,–
135	160	10	328	90	50	19	451560 0135	589,–

4144

ATORN® Parallel vice, steel

- Forged steel
- Opens to the front
- Concealed spindle
- Anvil and work top ground
- Jaws hardened and milled
- Sliding parts hardened and ground
- Hammer-finish paint, blue

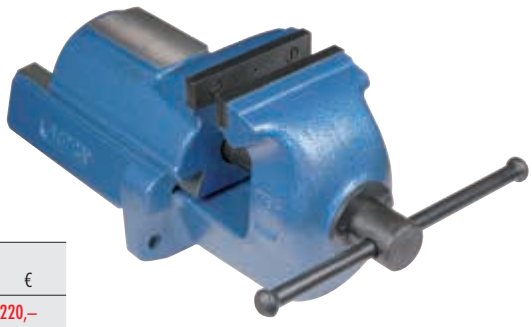


Jaw width mm	Clamping range mm	Clamping depth mm	Weight kg	art.no.	€
100	140	75	7	**450115** 0100	112,–
125	150	80	11	450115 0125	138,–
150	200	120	17	450115 0150	198,–

4142

ATORN® Parallel vice, cast iron

- High-quality grey cast iron
- Opens to the rear
- Trapezoidal thread spindle protected against dirt
- Anvil with ground finish
- Reversible steel jaws, 1 side grooved, 1 side smooth
- Hammer-finish paint, blue (available in green on request)

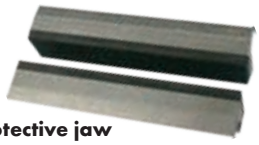


Jaw width mm	Clamping range mm	Clamping depth mm	Weight kg	art.no.	€
100	140	75	13	**450125** 0100	220,–
125	175	80	24	450125 0125	250,–
150	250	90	41	450125 0150	455,–

4141

Magnetic vice jaws

- **Compatible with all vice models**
- With integrated permanent magnets
- Material: Aluminium
- Further jaw widths from 80-200 mm as well as felt types available on request

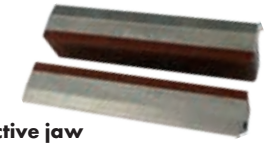


Aluminium protective jaw with rubber coating

- 1 pair

Jaw width mm	art.no.	€
100	**452102** 0100	24,10
125	452102 0125	27,20
150	452102 0150	30,40

4140



Aluminium protective jaw with fibre coating

- Price per pair

Jaw width mm	art.no.	€
100	**452100** 0100	24,10
125	452100 0125	27,20
150	452100 0150	30,40

4140



Aluminium protective jaw, smooth surface

- Price per pair

Jaw width mm	art.no.	€
100	**452103** 0100	17,70
125	452103 0125	21,30
150	452103 0150	24,80

4140



Aluminium protective jaw, horizontal and vertical V-block 12 mm

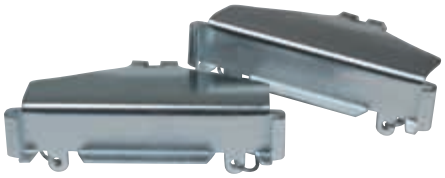
- Price per pair

Jaw width mm	art.no.	€
100	**452105** 0100	25,60
125	452105 0125	29,–
150	452105 0150	32,30

4140

Protective vice jaws

- For parallel vices
- With replaceable inserts
- Made from a variety of materials



Protective jaw holder

- Price per pair

Jaw width mm	art.no.	€
100	**452010** 0100	23,50
125	452010 0125	27,10
135	452010 0135	28,90
150	452010 0150	30,70

4140



Polyamide inserts

- Price per pair

Jaw width mm	art.no.	€
100	**452011** 0100	10,10
125	452011 0125	12,65
135	452011 0135	13,75
150	452011 0150	15,50

4140



Aluminium inserts

- Price per pair

Jaw width mm	art.no.	€
100	**452012** 0100	15,20
125	452012 0125	16,30
135	452012 0135	17,40
150	452012 0150	19,20

4140



Fibre inserts

- Price per pair

Jaw width mm	art.no.	€
100	**452013** 0100	14,45
125	452013 0125	15,50
135	452013 0135	16,30
150	452013 0150	18,10

4140



Polyamide V-block inserts

- Price per pair

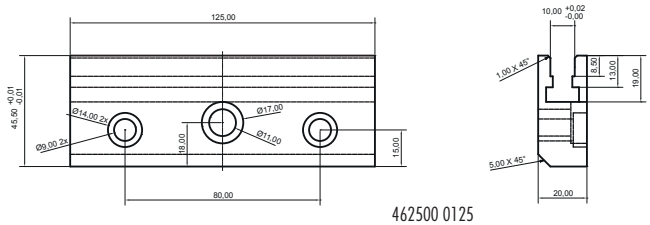
Jaw width mm	art.no.	€
100	**452015** 0100	38,–
125	452015 0125	47,–
135	452015 0135	50,50
150	452015 0150	58,–

4140

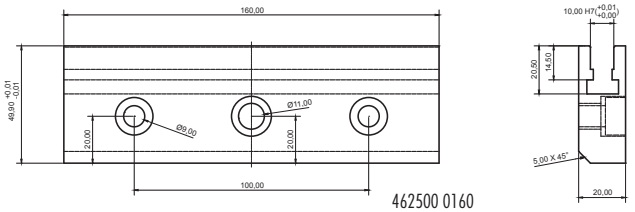
SARA® Adjustable vice jaws

- Universal jaws for different component forms
- For machining unfinished and finished parts
- For clamping round and flat materials
- Simple adjustment of the top jaws

- **Supplied with:**
  2 x base jaw
  4 x combi-jaw, flat
  4 x combi-jaw, round
  (without attachment screws)



462500 0125



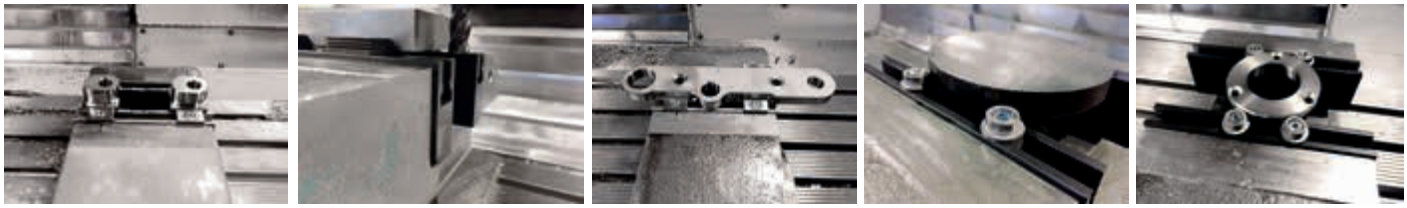
462500 0160

Clamping jaws suitable for various ATORN, Allmatic, Kesel and Röhm models

Jaw width mm	art.no.	€
125	**462500** 0125	460,–
160	462500 0160	480,–

4166





SARA® Gripper jaws with support bar

- Hardened tool steel
- **Variable support height 3 mm and 5 mm** by simply turning the support bar

For ATORN MM-G, Röhm RKG-M, RKD, RKE and Allmatic Basic

- Price per pair

Jaw width mm	art.no.	€
125	**461020** 0125	260,–

4166



For Hilma-NC and EL

- Price per pair

Jaw width mm	art.no.	€
125	**461021** 0125	260,–

4166





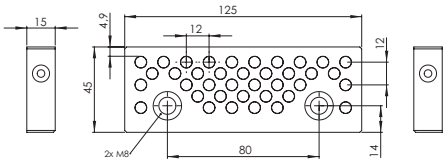
ATORN® Clamping jaws with positioning pins

- Fast and precise machining of various workpieces
- Retooling in seconds for various machining tasks
- Loose underlays are no longer needed, nor is time-consuming cleaning
- Stable and robust lightweight design
- Also suitable for high clamping forces.
- Compressed air flow via vents on both front faces
- Recommended air pressure: 5.5 bar
- Closed on all sides when installed, so very low-maintenance
- Premium tool steel, hardened, ground and treated with a special oxidation process

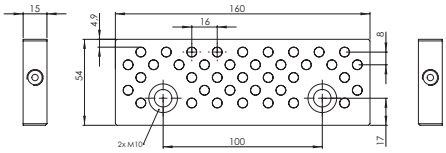








462050 0125



462050 0160

Clamping jaws for Hilma

- **Hima** NC125/160, EL125/160, KNC125/160

Jaw width mm	art.no.	€
125	**462050** 0125	265,–
160	462050 0160	359,–

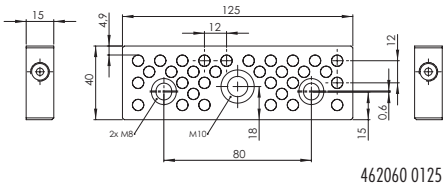
4183

Clamping jaws for ATORN, Allmatic, Röhm, Gressel, Kesel

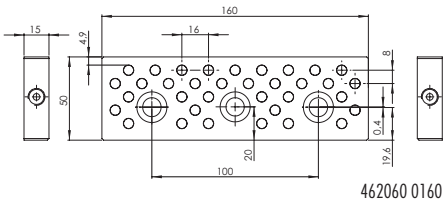
- **ATORN** MM-G 125/160
- **Allmatic** 125/160
- **Arno** 125/160
- **Gressel** Gripos 125/160, Grepos-5X, Grefors, Duogrip, Ecopos, C2
- **Röhm** RKE 125/160, RKG 125/160

Jaw width mm	art.no.	€
125	**462060** 0125	265,–
160	462060 0160	359,–

4183



462060 0125



462060 0160

SARA® Side and pull-down clamping jaws

- High-quality tool steel hardened by a subsequent oxidation process
- Lateral stop via M8 attachment hole
- Greatest precision when clamping by pressing the tool **simultaneously** when clamping on the base and lateral stop.
- Option for rapid switching from pulling left to pulling right
- Side pull to 0.5 mm
- Pull-down to 2.25 mm

- **Note:** use of clamping jaws in pairs is recommended









Clamping jaws for NC vices

- **ATORN** MMG 125
- **Röhm** RKE 125 / RKG 125
- **Gressel** Gripos GPS 125
- **Allmatic** Basic 125 / LC 125 / HD 125

Jaw width mm	Jaw height mm	art.no.	€
125	40	**462100** 0125	325,–

4140

ATORN® Quick-change jaw system

Quick-change system

- **The system can be adapted to all known vices; this level of compatibility makes it extremely flexible.**
- The holding, guiding and locking concept offers maximum reliability in production
- Unprecedented cost-effectiveness and measurable benefits in daily use
- Top jaws are quick to change in less than 30 seconds, leading to significantly reduced tooling costs

Top jaws

- Top jaws made from high-strength aluminium and case-hardened steel are available in various widths.
- The wide variety and numerous combination options can accommodate almost any clamping task
- Milling-off old clamping contours allows the top jaws to be used multiple times.

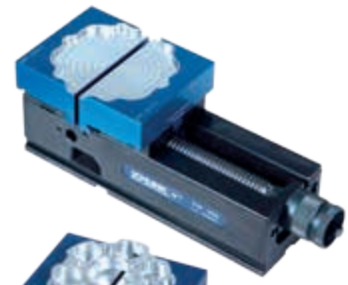


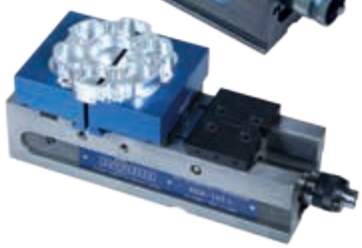
Base jaw set

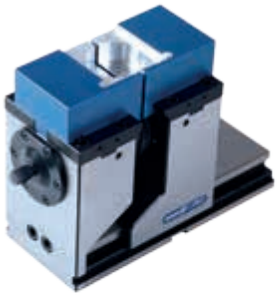
- Price per pair

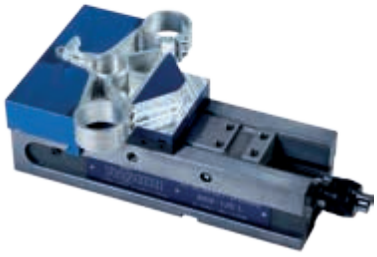
for type	Jaw width mm	for system	art.no.	€
ATORN MM -G	125	3	**461025** 0018	405,–
ATORN 5-axis compact clamp	125	3	461025 0088	405,–
Allmatic Centro Grip	125	3	461025 0001	405,–
Allmatic Duo Plus mech., all mod.	125	3	461025 0003	809,–
Allmatic LC/TC from May 98	125	3	461025 0007	405,–
Allmatic LC/TC up to April 98	125	3	461025 0006	405,–
Allmatic T-Rex (14 mm slot)	125	3	461025 0013	405,–
Allmatic T-Rex (XL)	125	3	461025 0014	405,–
Allmatic Titan	125	3	461025 0015	405,–
Arnold Arno NC Twin	125	3	461025 0017	719,–
Fresmak Arnold MB2	125	3	461025 0019	405,–
Fresmak Arnold Twin	90	2	461025 0021	509,–
Fresmak Arnold Twin	125	3	461025 0022	719,–
Garant NC-LC	125	3	461025 0023	405,–
Garant NC-TC	125	3	461025 0024	405,–
Gressel Centrinos	65	2	461025 0027	235,–
Gressel Centrinos	100	2	461025 0028	345,–
Gressel Duogrip, all types	100	3	461025 0029	519,–
Gressel Duogrip, all types	125	3	461025 0030	609,–
Gressel Grepos 5X	125	3	461025 0031	465,–
Gressel Gripos, all types	100	3	461025 0032	375,–
Gressel Gripos, all types	125	3	461025 0033	435,–
Hilma CS	80	2	461025 0040	275,–
Hilma DCS	80	2	461025 0041	455,–
Hilma DS/TS	100	2	461025 0042	609,–
Hilma DS/TS	125	3	461025 0043	719,–
Hilma KNC	100	3	461025 0045	345,–
Hilma KNC	125	3	461025 0046	405,–
Hilma KNC	160	4	461025 0047	619,–
Hilma SCS	80	2	461025 0048	275,–
Hilma SCS	120	3	461025 0049	405,–
Röhm KZS, all types	80	2	461025 0052	275,–
Röhm KZS, all types	125	3	461025 0053	405,–
Röhm RKD, all types	125	3	461025 0057	609,–
Röhm RKE/RKG, all types	125	3	461025 0058	405,–
Röhm RKE	160	4	461025 0059	619,–
Röhm RKZ, all types	125	3	461025 0061	405,–
SCHUNK KSP-250, KSH-250, all types	125	3	461025 0076	405,–
WNT DSG	125	3	461025 0078	609,–
WNT NCG	125	3	461025 0082	435,–
WNT ZSG	125	3	461025 0085	405,–

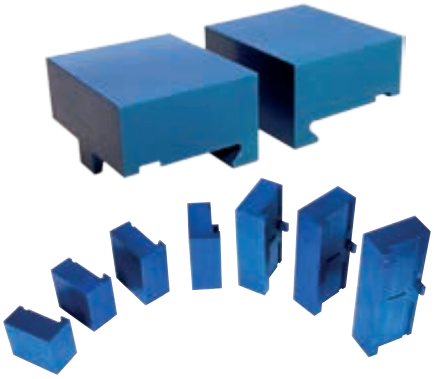
4183

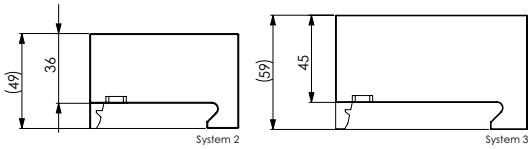




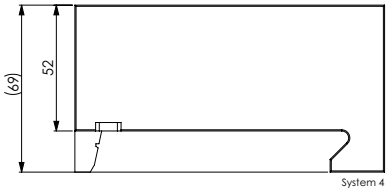












Aluminium top jaws

- Price per unit

Jaw width mm	System	art.no.	€
65	2	**461026** 2065	38,20
70	2	461026 2070	41,90
80	2	461026 2080	46,70
90	2	461026 2090	51,50
100	2	461026 2100	56,50
125	2	461026 2125	68,–
160	2	461026 2160	83,50
180	2	461026 2180	93,–
80	3	461026 3080	64,50
90	3	461026 3090	70,50
100	3	461026 3100	76,50
125	3	461026 3125	91,–
140	3	461026 3140	102,–
160	3	461026 3160	114,–
180	3	461026 3180	126,–
200	3	461026 3200	137,–
225	3	461026 3225	152,–
250	3	461026 3250	166,–
80	4	461026 4080	84,50
100	4	461026 4100	101,–
125	4	461026 4125	121,–
160	4	461026 4160	149,–
200	4	461026 4200	182,–
250	4	461026 4250	220,–
300	4	461026 4300	265,–
400	4	461026 4400	345,–

4183

Steel top jaw

- Price per unit

Jaw width mm	System	art.no.	€
65	2	**461027** 2065	47,30
70	2	461027 2070	52,–
80	2	461027 2080	57,50
90	2	461027 2090	63,50
100	2	461027 2100	69,–
125	2	461027 2125	83,–
160	2	461027 2160	101,–
180	2	461027 2180	113,–
80	3	461027 3080	78,50
90	3	461027 3090	85,50
100	3	461027 3100	92,–
125	3	461027 3125	109,–
140	3	461027 3140	122,–
160	3	461027 3160	136,–
180	3	461027 3180	149,–
200	3	461027 3200	162,–
225	3	461027 3225	179,–
250	3	461027 3250	196,–
80	4	461027 4080	103,–
100	4	461027 4100	121,–
125	4	461027 4125	145,–
160	4	461027 4160	177,–
200	4	461027 4200	215,–
250	4	461027 4250	260,–
300	4	461027 4300	310,–
400	4	461027 4400	400,–

4183

Lifter

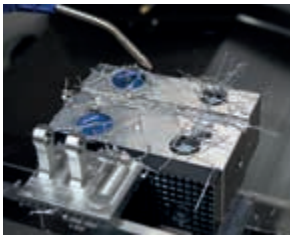
Description	art.no.	€
Suitable for all systems	**461021** 0000	43,–

4183



ATORN® Cover for boreholes and screw heads with hex key

- prevents chips from sticking and cooling lubricants from accumulating in screw head and countersink
- increased occupational safety through working and cleaning with compressed air
- faster set-up due to less cleaning effort
- patented reusable system
- suitable for the clamping systems in the catalogue
- special sizes available on request





Aluminium cover

Description	art.no.	€
10 x cover M10	**438110** 0010	75,–
10 x cover M12	438110 0012	75,–
10 x cover M16	438110 0016	95,–
5 x cover M20	438110 0020	55,–
	4203	

ATORN® Workpiece stop, T-slot

- **Adjustable through five axes**
- For use on drilling and milling machines
- Quick to set, flexible, sturdy
- 12 and 14 mm T-slot nuts with M8 thread





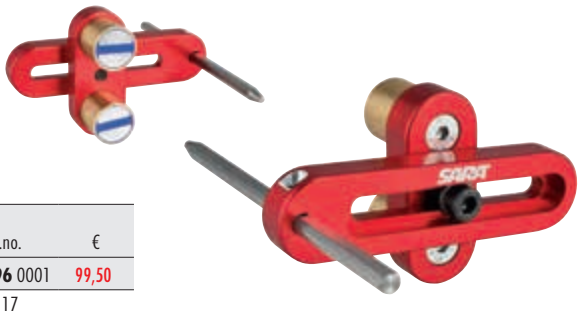
Designation	art.no.	€
Workpiece stop with T-slot nuts 12 and 14 mm	**466597** 0001	182,50
	4139	

T-slot nut for workpiece stop

Designation	art.no.	€
T-slot nut 12 mm	**466594** 0012	2,82
T-slot nut 14 mm	466594 0014	3,10
T-slot nut 16 mm	466594 0016	5,–
T-slot nut 18 mm	466594 0018	6,10
	4158	

SARA® Workpiece stop, magnetic

- Compatible with all vices
- No threaded bores required
- Stop rod length 125 mm
- Adjustable fixing magnets



Total height mm	art.no.	€
100	**466596** 0001	99,50
	4117	

SARA® Parallel underlays sets

- All surfaces are plane-parallel, rectangular and ground in pairs
- Height tolerance ± 0.01 mm
- For height adjustment when clamping workpieces; particularly suitable for seating in machine vices, marking tables or machine tools
- Supplied in a wooden box





Contents	Length mm	Width mm	Total height mm	art.no.	€
8 pairs	120	8	12, 17, 22, 25, 28, 32, 36, 38	**465002** 1208	210,–
8 pairs	160	8	12, 17, 22, 25, 28, 32, 36, 38	465002 1608	260,–
9 pairs	100	4	10, 14, 18, 22, 26, 30, 34, 38, 42	465002 1004	220,–
9 pairs	160	4	10, 14, 18, 22, 26, 30, 34, 38, 42	465002 1604	260,–

4153

ATORN® Parallel supports, magnetic

- Hardened tool steel
- Burnished
- Height tolerance ± 0.01 mm
- 2.5 mm wide, allowing bores to be drilled near vice jaws



Single

Jaw width mm	Total height mm	art.no.	€
125	20	**465006** 1220	68,–
125	25	465006 1225	68,–
125	30	465006 1230	68,–
125	37	465006 1237	68,–
125	39	465006 1239	68,–

4183

Sets

Jaw width mm	Contents per set	art.no.	€
100	Height 20, 27, 29, 31, 32 mm	**465006** 0100	325,–
125	Height 15, 30, 35, 37, 39 mm	465006 0125	340,–
160	Height 22, 30, 37, 42, 47 mm	465006 0160	350,–

4183

Parallel support sets

- **In a wooden stand**
- Aged steel, case-hardened and ground in pairs
- Pair tolerance hight ± 0.01 mm
- Machined to plane-parallel and true-angle finish
- The cross section is stamped into the ground front face
- For use as parallel workpiece mounts in machine vices, marking tables or machine tools for drilling, grinding, milling, planing, marking and measuring; especially suitable for holding in machine vices, marking tables or machine tools

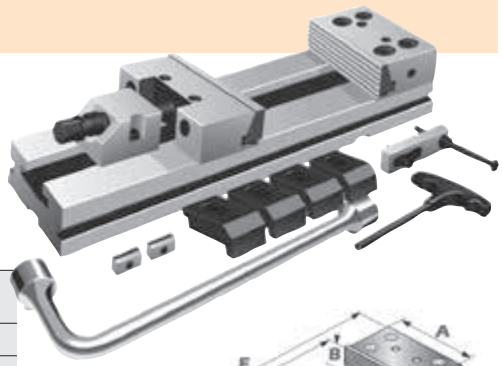


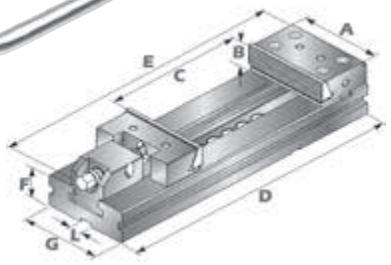
Length mm	Pair/set increasing at intervals of 1 mm	Cross section mm	art.no.	€
125	24 pairs, 8-42 (except 9 mm)	8x11 8x16 8x21 8x26 8x31 8x36 , 10x13 10x18 10x23 10x28 10x33 10x38 , 12x15 12x20 12x25 12x30 12x35 12x40 , 14x17 14x22 14x27 14x32 14x37 14x42	465005 0025	519,–
150	24 pairs, 8-42 (except 9 mm)	8x11 8x16 8x21 8x26 8x31 8x36 , 10x13 10x18 10x23 10x28 10x33 10x38 , 12x15 12x20 12x25 12x30 12x35 12x40 , 14x17 14x22 14x27 14x32 14x37 14x42	465005 0050	539,–

4153

SARA® Mechanical precision machine vice

- Mechanical precision vice
- Accuracy: within 0.02 mm
- Base body made from hardened steel, 60 HRC
- Fixed jaw can be rotated 180°; equipped with a jaw step on the reverse side
- Supplied with stop, clamping claws, 16 x 16 mm slot nuts and chuck key





A mm	B mm	C mm	D mm	E mm	F mm	G mm	L mm	Weight kg	art.no.	€
125	40	150	345	410	40	95	16	12.9	**460200** 0125	659,–
150	50	200	420	500	50	125	16	25.5	460200 2150	719,–
150	50	300	520	600	50	125	16	29	460200 3150	829,–
175	60	200	455	530	58	145	16	37	460200 2175	1.019,–
175	60	300	555	630	58	145	16	42	460200 3175	1.089,–
175	60	400	655	730	58	145	16	47	460200 4175	1.259,–
200	65	300	595	680	70	170	16	69	460200 3200	1.549,–
200	65	400	695	780	70	170	16	74	460200 4200	1.799,–
300	80	300	635	730	78	195	16	130	460200 3300	2.499,–
300	80	400	735	830	78	195	16	140	460200 4300	2.979,–

4170

Swivel base with degree setting



suitable for jaw width mm	Angle precision	art.no.	€
125	1°	**460222** 0125	350,–
150	1°	460222 0150	410,–
175	1°	460222 0175	450,–
200	1°	460222 0200	659,–
300	1°	460222 0300	819,–

4171

Slot nuts

- Price per pair

Groove dimensions device mm	Groove dimensions machine mm	art.no.	€
16	10	**460213** 1610	28,50
16	12	460213 1612	28,50
16	14	460213 1614	28,50
16	16	460213 1616	28,50
16	18	460213 1618	28,50
16	20	460213 1620	28,50
16	22	460213 1622	28,50
16	24	460213 1624	28,50
16	28	460213 1628	28,50
16	36	460213 1636	28,50

4171

V-block jaw

- Price per unit



suitable for jaw width mm	art.no.	€
125	**460217** 0125	119,–
150	460217 0150	169,–
175	460217 0175	255,–
200	460217 0200	335,–
300	460217 0300	599,–

4171

Clamping jaw, extra high

- Price per unit



suitable for jaw width mm	art.no.	€
125	**460224** 0125	205,–
150	460224 0150	235,–
175	460224 0175	330,–
200	460224 0200	460,–
300	460224 0300	719,–

4171

Coordinate V-jaw

- Price per unit

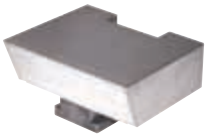


suitable for jaw width mm	art.no.	€
125	**460223** 0125	305,–
150	460223 0150	380,–
175	460223 0175	549,–
200	460223 0200	759,–
300	460223 0300	1.139,–

4171

Pull-down jaw

- Price per unit

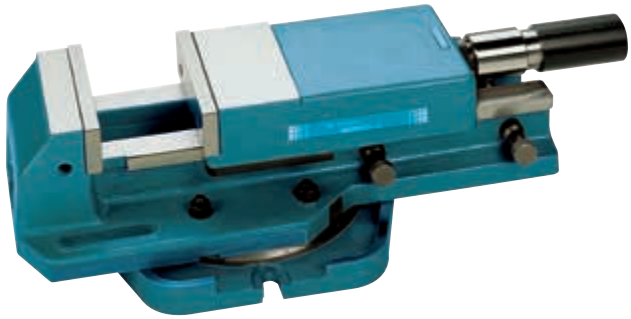


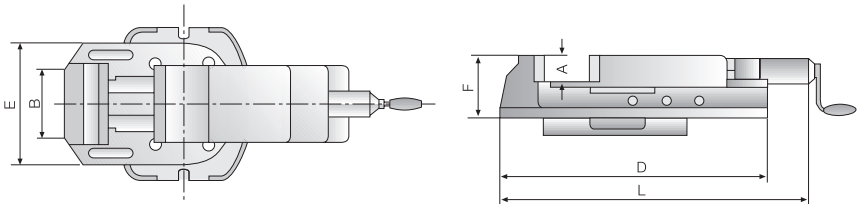
suitable for jaw width mm	art.no.	€
125	**460225** 0125	179,–
150	460225 0150	220,–
175	460225 0175	255,–
200	460225 0200	360,–
300	460225 0300	539,–

4171

fresmak ARNOLD High-pressure machine vice

- **Mechanical/mechanical** or **mechanical/hydraulic**
- Base body and clamping jaw holder made from high-quality ductile iron, GJS 70
- Clamping precision within 0.01 mm at the same clamping pressure
- Both clamping areas can be roughly set in a matter of seconds via bolts (covered clamping areas)
- Aligned on the work table via longitudinal or transverse slots (20H7) in the base surface
- All wearing parts, clamping jaws and guideways hardened and ground (60 HRC)
- Multiple vices of the same height are available with a **pair accuracy of 0.01 mm**
- Spindle can be optionally replaced with a pneumatic/hydraulic version
- Supplied with 1 pair of smooth jaws and 1 hand crank, **without swivel base**





Jaw width mm	Clamp force kN	Clamping range mm	A mm	D mm	E mm	F mm	L mm	Weight kg	mech./hydr. art.no.	€	mech./mech. art.no.	€
125	40	0 - 205	40	425	195	107	480 - 685	26	**458601** 0125	1.599,–	**458603** 0125	1.649,–
160	50	0 - 305	50	570	250	130	565 - 870	51	458601 0160	2.059,–	458603 0160	2.089,–
200	80	0 - 375	63	680	300	160	720 - 1095	94	458601 0200	3.099,–	458603 0200	3.149,–
									4143		4143	

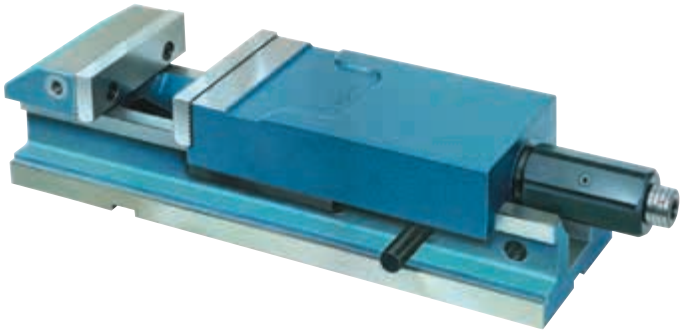
Turning insert

- **Note:** Angular accuracy is only guaranteed when purchased with vice!

Jaw width mm	art.no.	€
125	**458606** 0125	265,–
160	458606 0160	316,–
200	458606 0200	365,–
	4143	

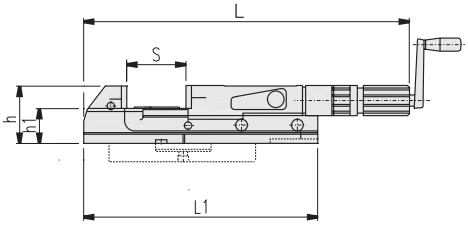
ATORN® High-pressure machine vice

- **Mechanical/hydraulic**
- Steel base body
- Guideways hardened and ground
- Aligned on the work table via longitudinal or transverse slot 20 H7
- Quick adjustment via bolts
- Setting mechanism for quickly pre-selecting the clamping force
- Supplied with 1 set of smooth jaws, 4 clamping claws and a hand crank



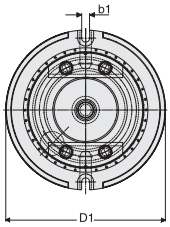
Vice

Jaw width mm	Clamp force kN	L mm	L1 mm	h mm	h1 mm	S mm	art.no.	€
90	25	553	370	99	53	150	**457100** 0090	1.509,–
125	40	681	470	112	70	220	457100 0125	1.779,–
							4144	



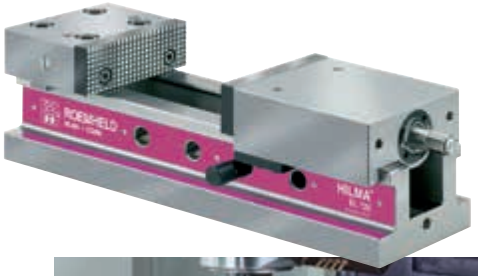
Turning insert

Jaw width mm	D1 mm	b1 mm	art.no.	€
90	242	14	**457101** 0090	360,–
125	280	16	457101 0125	465,–
			4144	

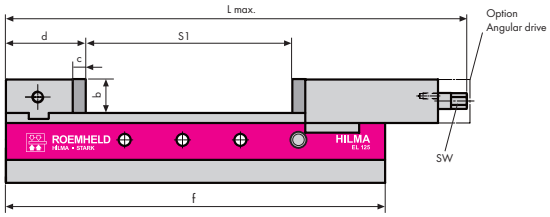


ROEMHELD HILMA • STARK EuroLine NC high-pressure machine vice

- **Type EL, mechanical-hydraulic**
- **Dependable and cost-effective**
- Threaded bores for workpiece stops in both sides of the fixed jaw as standard
- Replaceable, hardened clamping jaws (1st side smooth, 2nd side grooved)
- Guideways hardened and ground
- Desired clamping range can be roughly pre-selected via socket pin
- Spindle and power transmission integrated and protected inside the slide body
- Straightforward maintenance and cleaning: the slide body can be removed in a single action
- For tool and mould making, fixture construction, production



- Supplied with standard smooth/grooved indexable jaws, hand crank, operating manual





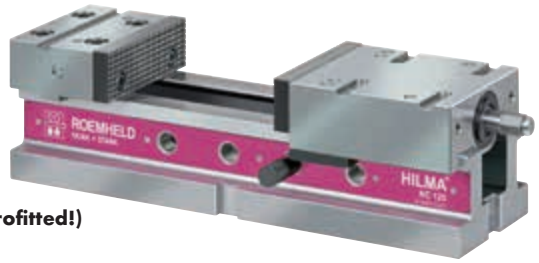
- 457001 2161 = incl. angular drive

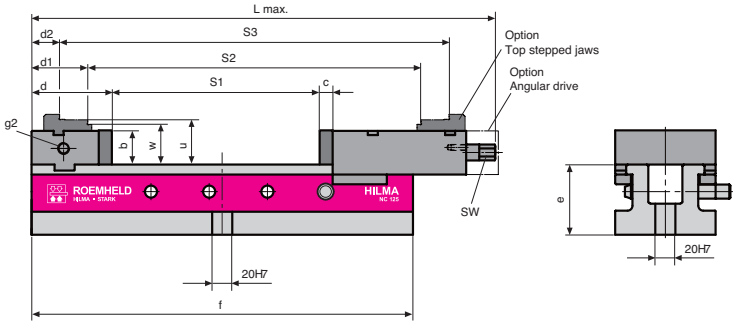
Jaw width mm	Clamp force kN	Crank force N	Clamp width S1 mm	L max. mm	Weight kg	b mm	c mm	d mm	f mm	art.no.	€
100	25	50	205	464	18.5	34	13	80	380	**457001** 2100	1.533,–
125	40	75	225	526	31.5	45	15	100	430	457001 2125	1.572,–
160	50	95	309	684	58.5	54	18	120	550	457001 2160	2.233,–
160	50	95	509	884	75	54	18	120	750	457001 2161	3.458,–

4146

ROEMHELD HILMA • STARK NC NC high-pressure machine vice

- **Type NC, mechanical-hydraulic**
- **Versatile and flexible**
- Longitudinal and transverse slots as standard for quick positioning
- Slots and threaded bores on slide and fixed jaw for holding standard and special large-span jaws
- Threaded bores on both sides for workpiece stops
- Clamping edge for clamping claws
- Guideways hardened and ground
- Desired clamping range can be roughly pre-selected via socket pin
- Resistant to deformation thanks to the new bottom cross section and new fixed jaw
- Mounting hole layout for extra high clamping jaws
- For tool and mould making, fixture construction, production
- Supplied with standard smooth/grooved indexable jaws, hand crank, operating manual
- **Longer versions and clamping force monitoring available on request (cannot be retrofitted!)**







Type NCH, hydraulically operated – available on request

Jaw width mm	Clamp force kN	Crank force N	Crank radius mm	Clamp width S1 mm	Clamp width S2 mm	Clamp width S3 mm	L mm	b mm	c mm	d mm	e mm	d1 mm	d2 mm	u mm	w mm	Weight kg	art.no.	€
100	25	50	80	205	330	386	464	34	13	80	78	56	28	45	40	18.5	**457020** 0100	1.820,–
125	40	75	100	225	363	431	526	45	15	100	82	69	35	58	53	31.5	457020 0125	2.010,–
160	50	95	125	309	503	573	684	54	18	120	95	72	37	70	65	58.5	457020 0160	2.648,–

4146

Top stepped jaws for type NC

- For extremely large clamping widths
- Includes fastening screws
- Unit prices

Jaw width mm	Total height mm	Clamping depth mm	for fixed jaws art.no.	€	for slides art.no.	€
100	16.5	5	**457503** 0100	195,–	**457504** 0100	201,–
125	19	5	457503 0125	202,–	457504 0125	211,–
160	22	5	457503 0160	227,–	457504 0160	246,–

4146 4146



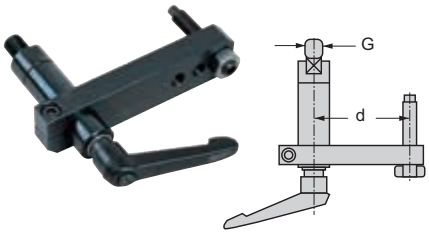
ROEMHELD HILMA ▪ STARK Accessories for Hilma KNC / NC / EL

Precision workpiece stop for type EL, NC, KNC

- Can be swivelled out of the way, features quick-action clamp
- 2 level adjustment

Jaw width mm	d mm	Thread	art.no.	€
100/125	95	M 12	**458515** 1012	93,50
160	124	M 20	458515 1620	123,–

4145



Angular drive for type EL, NC

- For mechanical-hydraulic machine vices and clamping systems
- Used when normal operation is hindered or not possible
- Also ideal for retrofitting

Jaw width mm	a mm	Crank radius mm	Wr. width mm	art.no.	€
100	39	125	10	**458501** 0100	375,–
125	43	125	10	458501 0125	416,–
160	46	125	10	458501 0160	459,–

4145



Clamping claws with screws, for type EL and NC

- Price per set of 4 units

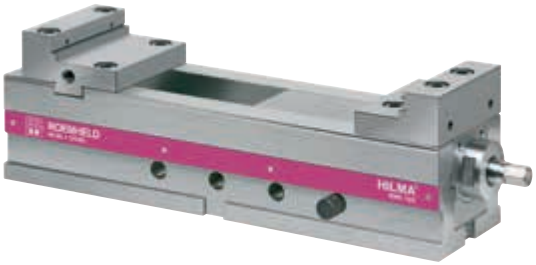
suitable for	Screw	Clamp height mm	art.no.	€
NC 100	M 12 X 45 DIN 912	24	**458520** 1012	97,–
NC 125/160	M 12 X 45 DIN 912	27	458520 1016	98,–
NC 160	M 16 X 50 DIN 912	27	458520 1600	99,–

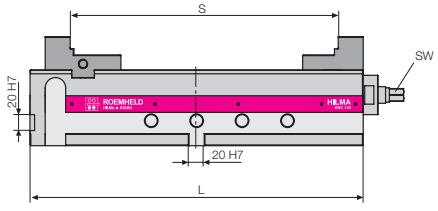
4145

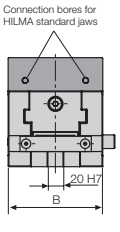


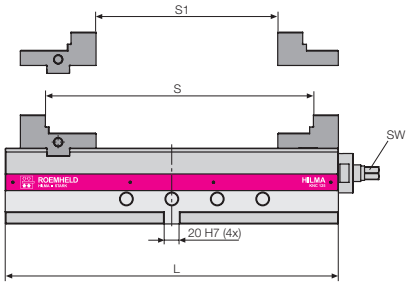
ROEMHELD HILMA ▪ STARK KNC NC high-pressure machine vice

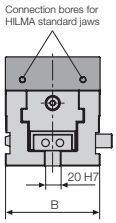
- **KNC type, mechanical-hydraulic**
- **For the toughest requirements**
- Fully encapsulated spindle and power transmission, reliable protection against chips
- With stepped indexable jaws as standard, smooth rear side, with connection bores for almost all HILMA clamping jaw systems
- Desired clamping range can be roughly pre-selected via socket pin
- Locking device for mechanically clamping sensitive workpieces (optional accessories)
- All-steel design with internal slide guide
- 20 H7 cross slots for horizontal clamping





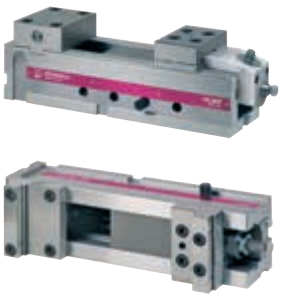






Type	Jaw width mm	Clamp force kN	Crank radius mm	L mm	Clamp Ø mm	Clamp width S1 mm	Weight kg	art.no.	€
Standard	100	25	80	300	230	140	17	**457080** 0100	2.094,–
Standard	125	40	106	440	354	240	35	457080 0125	2.310,–
Standard	160	50	125	540	436	300	72	457080 0160	3.049,–
Universal	100	25	80	300	230	140	17	457080 1100	2.408,–
Universal	125	40	106	440	354	240	35	457080 1125	2.700,–
Universal	160	50	125	540	436	300	72	457080 1160	3.429,–

4146

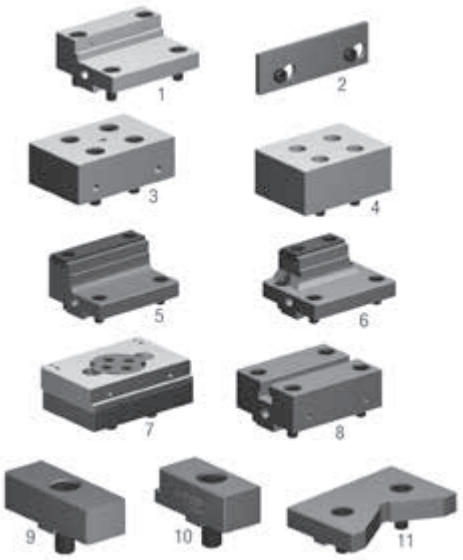




Clamping jaws

• Price per unit

Description	Illustration	Jaw width 100 art.no.	€	Jaw width 125 art.no.	€	Jaw width 160 art.no.	€
Stepped indexable jaw, fixed	1	**457081** 0010	156,–	**457082** 0010	200,–	**457083** 0010	262,–
Stepped indexable jaw, movable	1	457081 0011	145,–	457082 0011	190,–	457083 0011	245,–
Finely stepped strip, standard	2	457081 0020	43,30	457082 0020	45,50	457083 0020	53,–
Finely stepped strip, low	2	457081 0021	43,30	457082 0021	45,50	457083 0021	53,–
Block jaw, hardened, fixed	3	457081 0030	222,–	457082 0030	256,–	457083 0030	352,–
Block jaw, hardened, movable	3	457081 0031	216,–	457082 0031	248,–	457083 0031	339,–
Block jaw, soft, fixed	4	457081 0040	130,–	457082 0040	179,–	457083 0040	243,–
Block jaw, soft, movable	4	457081 0041	114,–	457082 0041	161,–	457083 0041	218,–
Clamping jaw, extra high, fixed	5	457081 0050	272,–	457082 0050	323,–		
Clamping jaw, extra high, movable	5	457081 0051	248,–	457082 0051	284,–		
Clamping jaw, extra high, offset, fixed	6	457081 0060	281,–	457082 0060	332,–		
Clamping jaw, extra high, offset, movable	6	457081 0061	259,–	457082 0061	293,–		
Pendulum jaws	7			457082 0070	476,–	457083 0070	549,–
SlimFlex jaw, fixed	8	457081 0080	266,–	457082 0080	344,–	457083 0080	430,–
SlimFlex jaw, movable	8	457081 0081	240,–	457082 0081	323,–	457083 0081	408,–
SlimFlex insert, soft	9	457081 0082	27,90				
SlimFlex step insert	10	457081 0083	52,–				
SlimFlex V-block insert	11	457081 0084	90,50				
		4146		4146		4146	



Clamping claws with screws for type KNC

• Price per set of 4 units

suitable for jaw width mm	Clamp height mm	Screw	art.no.	€
100 / 125	16	M12 x 30	**457088** 1210	97,–
100 / 125	16	M16 x 40	457088 1610	97,–
160	20	M12 x 35	457088 1212	98,–
160	20	M16 x 40	457088 1216	99,–
			4146	

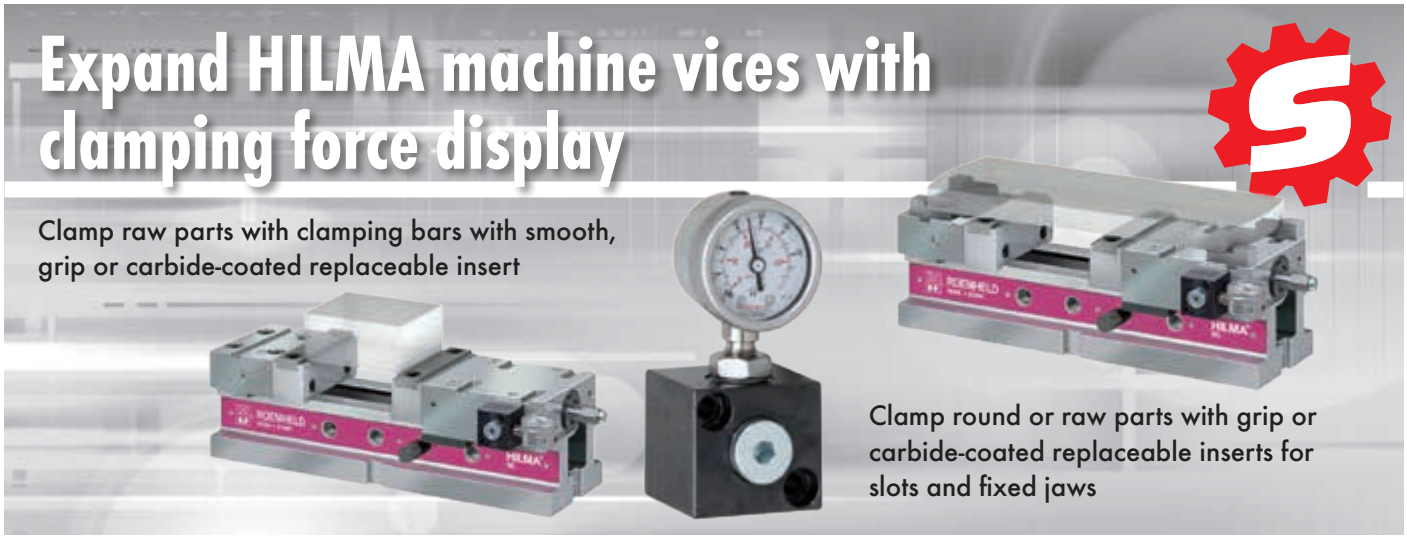


Angular drive for type KNC

• For changing the direction of the hand crank

suitable for jaw width mm	Wr. width mm	art.no.	€
100	14	**457084** 0100	592,–
125 / 160	17	457084 0125	645,–
		4146	



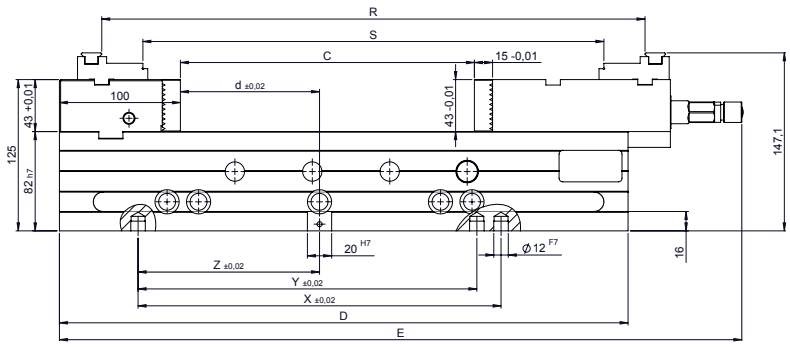


ATORN® NC high-pressure machine vice MH-S 125

- **Mechanical/hydraulic**
- Robust steel base body
- Hardened and ground guideways
- Repetition precision ≤ 0.01 mm
- Versions with fastening bores for lateral clamping available on request, for bed length D = 470 mm, attachment screws for groove spacing 63 mm and 100 mm are pre-mounted
- Locating pin for quick pre-positioning
- Simple cleaning due to removable upper slides
- **Bed lengths up to 1200 mm and hydraulically-controlled versions available on request**
- Supplied with jaws and hand crank



With interchangeable slider



Standard version mech./hydr.

Jaw width mm	D mm	E mm	d mm	X mm	Y mm	Z mm	C mm	R mm	S mm	Weight kg	art.no.	€
125	470	564	115	300	280	150	0 - 239	131 - 445	63 - 377	37.6	**458100** 1125	1.934,–
125	534	628	167	400	-	200	0 - 303	131 - 509	63 - 441	41.7	458100 2125	2.177,–
125	598	692	199	500	480	250	0 - 367	131 - 573	63 - 505	45.1	458100 3125	2.407,–
125	662	756	231	500	480	250	0 - 431	131 - 637	63 - 569	48.5	458100 4125	2.644,–
125	726	820	263	500	480	250	0 - 495	131 - 701	63 - 633	51.9	458100 5125	2.882,–
125	790	884	295	500	480	250	0 - 559	131 - 765	63 - 697	55.3	458100 6125	3.275,–
125	854	984	327	500	480	250	0 - 623	131 - 829	63 - 761	58.7	458100 7125	3.669,–
125	918	1012	359	500	480	250	0 - 687	131 - 893	63 - 825	62.1	458100 8125	4.072,–

4144

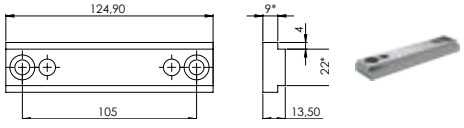


ATORN MH-S with interchangeable slider for multiple clamping

Top stepped jaws for interchangeable slider

Jaw width mm	art.no.	€
124.9	**458112** 0125	142,–

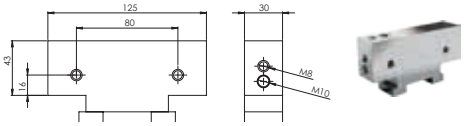
4144



Interchangeable slider

Jaw width mm	art.no.	€
125	**458113** 0125	214,–

4144

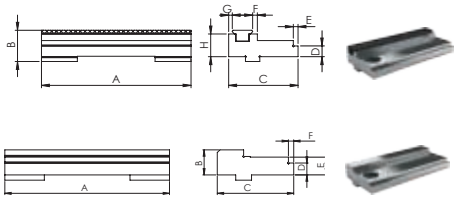


Top stepped jaws

• Price per unit

Type	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	art.no.	€
With grip	125	26.1	58	9	4	4	3	19	**458111** 1125	255,–
Without grip	125	19	58	9	14	4	-	-	458111 0125	186,–

4144

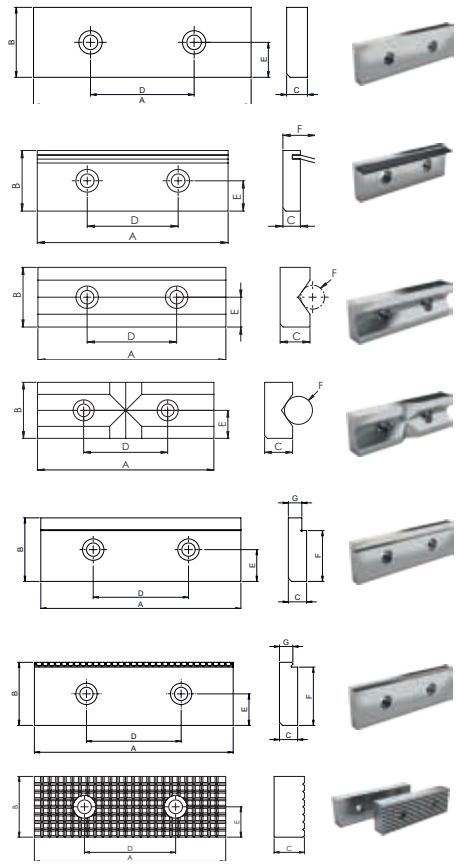


Screw-in jaws

• Price per unit

Type	A mm	B mm	C mm	D mm	E mm	F mm	G mm	art.no.	€
With grinding allowance	125	43.4	15.4	80	16	-	-	**458110** 0125	28,10
Pull-down jaws with spring leaf	125	43	11.5	80	16	21.5	-	458110 6125	88,70
V-block jaws	125	43	20	80	16	8 - 38	-	458110 3125	96,10
V-block jaws horiz. and vert.	125	43	20	80	16	8 - 38	-	458110 4125	136,–
Stepped jaws	125	43	11.5	80	16	35	8.5	458110 1125	82,10
Stepped jaws with grip	125	43	11.5	80	16	40	8.5	458110 2125	163,–
Indexable jaws	125	43	15	80	16	-	-	458110 5125	47,80

4144

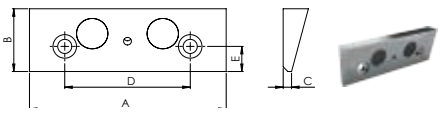


Base jaw with magnet for quick-change jaw system

• Price per unit

A mm	B mm	C mm	D mm	E mm	art.no.	€
125	43	6	80	16	**458114** 0125	169,–

4144

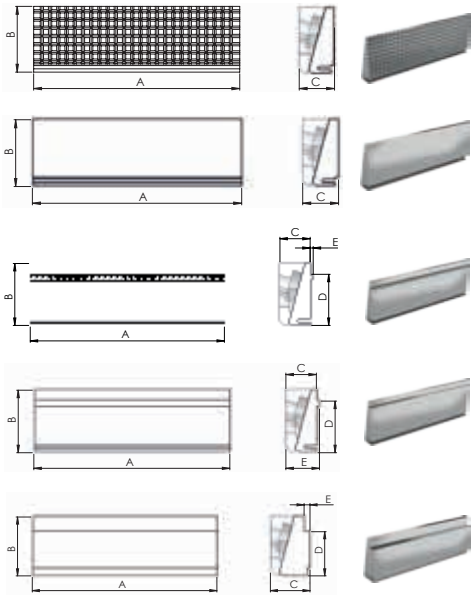


Interchangeable jaws for quick-change jaw system

• Price per unit

Type	A mm	C mm	B mm	D mm	E mm	art.no.	€
grooved	125	21.5	43	-	-	**458115** 1125	161,–
smooth	125	21.5	43	-	-	458115 0125	161,–
Grooved line	125	21.5	43	40	2	458115 3125	177,–
Smooth line	125	21.5	43	37	2	458115 2125	161,–
With step	125	26.9	43	33	4	458115 4125	178,–

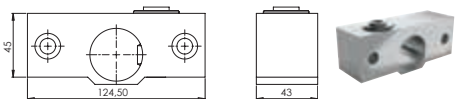
4144



Angle drive

for type	art.no.	€
MH-S 125	**458117** 0125	427,–

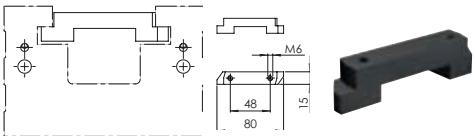
4144



Rhombic T-slot nut

for type	art.no.	€
MH-S 125	**458116** 0125	38,20

4144



Clamp set for MH-S 125

• Price per set = 4 pieces

Designation	art.no.	€
Clamp set for bench groove 14 mm	**458118** 0014	95,10
Clamp set for bench groove 16 mm	458118 0016	104,–
Clamp set for bench groove 18 mm	458118 0018	96,90
Clamp set for bench groove 20 mm	458118 0020	99,60
Clamp set for bench groove 22 mm	458118 0022	101,–

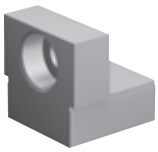
4144



Positioning slot nut for MH-S 125

Designation	art.no.	€
Positioning slot nut for bench groove 14	**458119** 2014	26,80
Positioning slot nut for bench groove 16	458119 2016	40,40
Positioning slot nut for bench groove 18	458119 2018	26,70
Positioning slot nut for bench groove 20	458119 2020	40,–
Positioning slot nut for bench groove 22	458119 2022	40,–

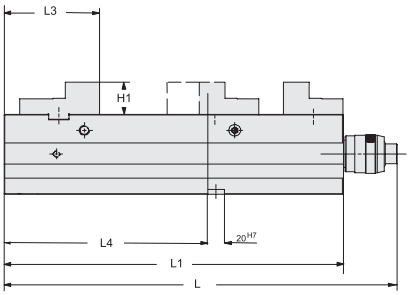
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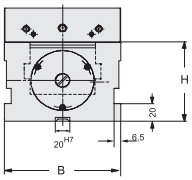


ATORN® MM-G NC high-pressure machine vice

- **Mechanical/mechanical**
- Base body made from spheroidal graphite iron
- Base clamping
- Pull-down jaws and other accessories available on request
- Stepped jaws, reversible, hardened and ground
- Long clamping slide assembly including a transverse slot drive spindle with pre-set clamping force
- M12 mounting thread for workpiece stop
- Clamping surfaces for clamping claws
- Rugged chip guard prevents chip ingress into the body
- **Incl. clamping fitting bore (pitch 200 mm) for ATORN zero-point clamping system**





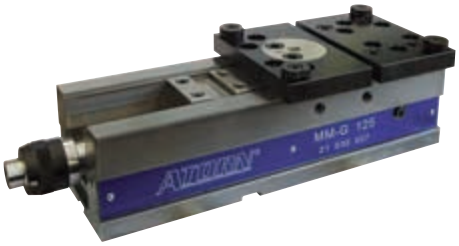


Compact clamp

- Incl. stepped jaws and regulator

Jaw width mm	Clamp force kN	L mm	L1 mm	L2 mm	L3 mm	L4 mm	H mm	H1 mm	Clamping range mm	Weight kg	art.no.	€
125	40	463	400	56.5	112.5	240	100	40	0 - 312	41	**458800** 0125	1.769,–
160	60	618	530	64	130	200	115	50	0 - 451	79	458800 0160	3.139,–

4144



With pendulum jaws and collar inserts

Type	Jaw width mm	Jaw height mm	art.no.	€
mm -G 125	160	20	**458801** 0125	2.199,–
mm -G 160	200	25	458801 0160	3.689,–

4144

Clamping claw

- With screw and T-slot nut
- Price per unit

T-slot size mm	Thread	art.no.	€
12	M10 x 50	**458805** 1210	33,20
14	M12 x 55	458805 1412	35,50
16	M12 x 60	458805 1612	35,50
18	M16 x 60	458805 1816	39,80
20	M16 x 65	458805 2016	39,80
22	M16 x 65	458805 2216	39,80

4144



Standard top jaws

- Price per 1-set pack

Width mm	Total height mm	art.no.	€
125	40	**458810** 0125	689,–
160	50	458810 0160	869,–

4144



Stepped jaws

- Price per 1-set pack

Width mm	Total height mm	art.no.	€
125	40	**458811** 0125	759,–
160	50	458811 0160	939,–

4144



Base jaw set for grip attachments

- Price per 1-set pack

Width mm	Total height mm	art.no.	€
125	20	**458814** 0125	829,–

4144



Grip attachments

- Price per unit

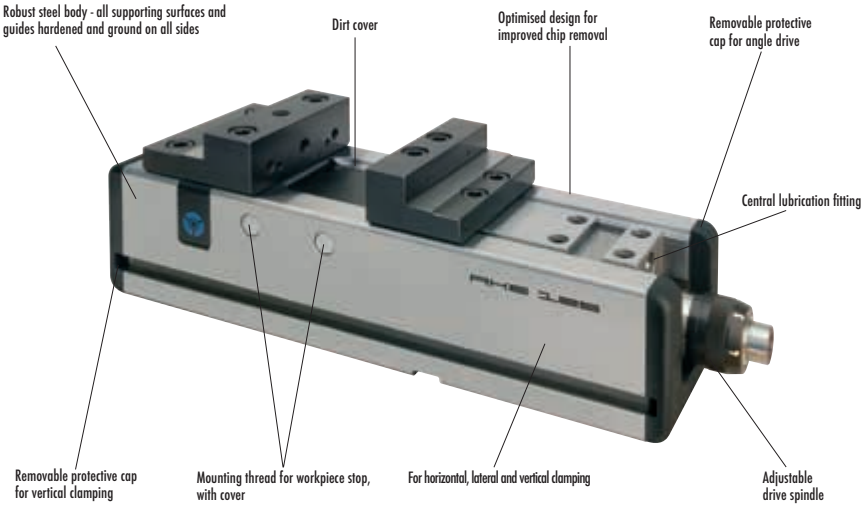
Jaw width mm	Total height mm	art.no.	€
92 and 125	28	**458815** 0125	40,90

4144



RÖHM RKE NC high-pressure machine vice

- Particularly suitable for use on machining centres
- Horizontal, lateral, or vertical clamping with a base plate, for example as a DUO clamping tower (back to back)
- **Size 92**
  Mechanical-hydraulic clamping system with power transmission, manually operated.
- **Size 125, 160**
  Mechanical-mechanical clamping system with power transmission, manually operated
- Base body and all guides are hardened and ground on all sides
- Long clamping slide with transverse slots, hardened on all sides, functional surfaces ground
- Drive spindle with pre-set clamping force
- Clamping surface for clamping claws
- Central lubrication fitting for easy guide and spindle thread lubrication
- Stable chip guard prevents chips from entering into the body
- Threaded bores for holding all RÖHM flat clamping jaws with jaw widths of 125 / 160 mm
- Angle drive connecting thread



NC compact clamp

Jaw width mm	Total height mm	Jaw height mm	Total length mm	Clamping range mm	Groove dimensions device mm	Clamp force kN	Weight kg	art.no.	€
92	80	32	346	0-208	20H7	25	15	**458200** 0092	2.175,–
125	100	40	479	0-312	20H7	40	41	458200 0125	2.490,–
160	115	50	634	0-451	20H7	60	79	458200 0160	3.865,–

4190

Universal jaws

- V-block jaw and normal jaw, unhardened and burnished, with workpiece support
- Price per set

Jaw width mm	Total height mm	art.no.	€
125	39.6	**458822** 0125	81,30
160	49.6	458822 0160	107,–

4190



Standard jaws, cross-grooved

- Price per unit

Jaw width mm	Total height mm	art.no.	€
90	31.6	**458819** 0092	55,30
125	39.6	458819 1125	69,20
160	49.6	458819 0160	96,70

4190



Claw jaws with 3 x 2.5 steps

- Price per set

Jaw width mm	Total height mm	art.no.	€
92	32	**458816** 0092	375,–
125	40	458816 0125	464,–
160	50	458816 0160	652,–

4190



V-block jaw

- Price per unit

Jaw width mm	Total height mm	art.no.	€
92	31.6	**458820** 0092	77,30
125	39.6	458820 0125	107,–
160	49.6	458820 0160	136,–

4190



Claw jaws without steps

- Price per set

Jaw width mm	Total height mm	art.no.	€
92	32	**458817** 0092	309,–
125	40	458817 0125	388,–
160	50	458817 0160	542,–

4190

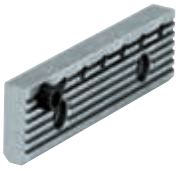


Standard jaws with adjustable stop

- Price per unit

Jaw width mm	Total height mm	art.no.	€
92	31.6	**458821** 0092	74,60
125	39.6	458821 0125	91,20
160	49.6	458821 0160	133,–

4190



Standard jaws

- Price per set

Jaw width mm	Total height mm	art.no.	€
92	31.6	**458818** 0092	44,30
125	39.6	458818 0125	111,–
160	49.6	458818 0160	77,30

4190



Grip attachments

- Price per unit

Jaw width mm	Total height mm	art.no.	€
160	30	**458815** 1160	43,10

4190



Supporting jaw set with pendulum jaws

- Supplied without grip attachments
- Price per set



for type	Jaw width mm	Total height mm	art.no.	€
RKE 92	115	20	**458812** 0092	498,–
RKE 125	160	20	458812 0125	829,–
RKE 160	200	25	458812 0160	1.330,–

4190

RÖHM RKZ-M NC compact centric clamp

- **Steel base frame**
- **All guides are hardened and ground on all sides**
- Mechanical, manually-actuated clamping system without power intensifier
- Central clamping with two mobile jaws
- Optimised for 5-axis machining
- Short, compact design
- Large clamping range
- Middle clamping accuracy: ±0.02 mm
- Precision 0.01 mm
- **Supplied with:** 1 pair of hard stepped jaws and crank



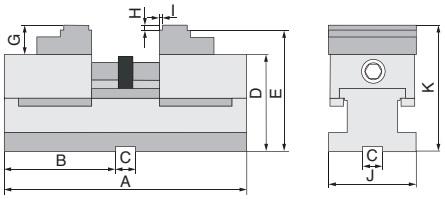
Base body with staggered top jaws

Jaw width mm	Total height mm	Total height mm	Jaw height mm	Total length mm	Clamping range mm	Groove dimensions device mm	Clamp force kN	Weight kg	art.no.	€
50	75	55	20	167	0 - 111	20 H7	10	3.5	**458300** 0050	1.175,–
70	95	70	25	219	0 - 153	20 H7	15	7	458300 0070	1.385,–
92	117	85	32	295	0 - 208	20 H7	20	18	458300 0092	2.025,–
125	145	105	40	366	0 - 269	20 H7	25	32.5	458300 0125	2.560,–

4189

fresmak ARNOLD SC mechanical centring vice

- Self-centring high-precision clamp
- Repetition precision 0.01mm
- Centring accuracy 0.02mm
- Compact design with external guide
- **Supplied with lever-reversible ratchet and clamping claws**
- **suitable torque wrench art.no. 7026020004**





Base body with smooth jaws incl. support bars

A mm	B mm	C mm	D mm	E mm	G mm	H mm	I mm	J mm	K mm	Weight kg	Clamping range mm	Clamp force kN	Wr. width mm	art.no.	€
250	115	20H7	100	125	30	5	6	90	130	14.3	12 - 245	20	12	**458662** 0090	1.648,–
350	165	20H7	103	128	30	5	7	125	133	30	14 - 342	40	16	458662 0125	2.068,–

4143

Claw jaws for hard jaws

- Price per unit

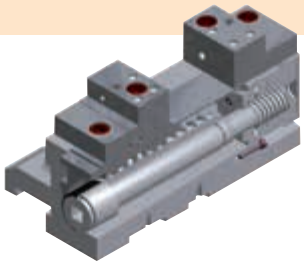


Jaw width mm	Total height mm	Depth mm	Clamping depth mm	art.no.	€
90	30	11/14	2.5	**458755** 0090	225,–
125	30	13/16	2.5	458755 0125	259,–

4143

ATORN® 5-axis compact clamp

- Body made from ductile iron, GJS 600
- Guideways hardened and ground
- Clamping force 40 kN at 110 Nm
- Patented quick adjustment of the clamping width
- Enclosed spindle
- Secure holding forces due to re-tensioning spring package
- Supplied without crank or torque wrench
- **Suitable torque wrench: article no. 702602 0004 (to be used without sockets)**







Base body incl. clamping claws

Length mm	Width mm	Total height mm	Clamp force kN	Weight kg	art.no.	€
250	126	100	40	23	**459500** 0125	1.448,–

4172



Stepped jaws

Jaw width mm	Description	Clamp Ø mm	art.no.	€
125	Fixed	0 - 178	**459501** 0001	235,–
125	Movable	0 - 178	459501 0002	215,–

4172



Multi-clamping jaws

- Supplied with 2 grip inserts and 2 support elements

Jaw width mm	Description	Clamp Ø mm	art.no.	€
160	Fixed	10 - 202	**459501** 0003	340,–
160	Movable	10 - 202	459501 0004	310,–

4172



Pendulum jaws

- Supplied with 2x carbide grip inserts

Jaw width mm	Clamp Ø mm	art.no.	€
156	6 - 168	**459501** 0005	216,–

4172



459501 0006



459501 0007

Screw-on jaws

- Price per PU

Jaw width mm	Description	Clamp Ø mm		art.no.	€
60	Narrow	7 - 168	2	**459501** 0006	210,–
125	Wide	77 - 240	2	459501 0007	248,–

4172



459502 0015



459502 0035

Grip bars

- Price per PU

Jaw width mm	Total height mm	Clamp Ø mm		art.no.	€
125	15	5 - 82	2	**459502** 0015	141,–
125	35	75 - 172	2	459502 0035	141,–

4172



Clip-on support bars

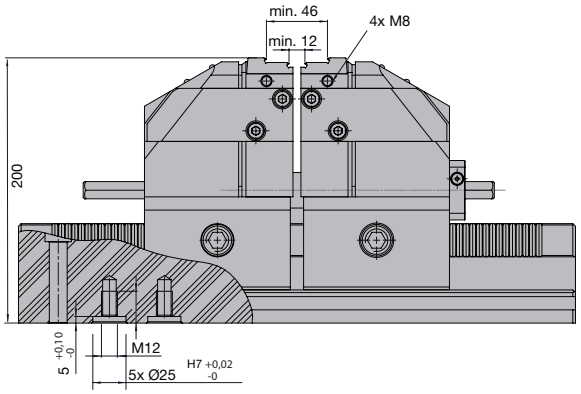
- Price per PU

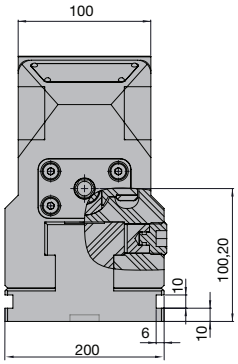
Jaw width mm	Total height mm		art.no.	€
125	15	2	**459503** 0015	116,–
125	35	2	459503 0035	116,–

4172

ATORN® 5-axis combination clamp AZS-100

- **Centring vice and fixed jaw clamp in one**
- quick and easy spindle retooling
- mechanical clamping system
- high clamp force with low tightening torque
- very high basic rigidity, allows low-vibration machining
- all guide surfaces hardened and ground
- integrated boreholes for zero-point clamping systems
  Adapter available on request
- Clamp force data and scaling for guidance on basic body
- extensive jaw range
- **Supplied with 1 x grip jaw set 3.5mm, 1 short shaft and 4 clamping jaws**







Combination clamp AZS-100

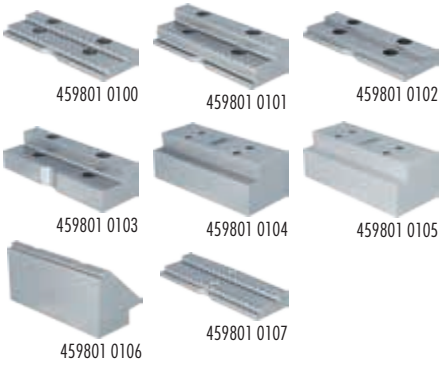
Total length mm	Clamping range mm	Weight kg	art.no.	€
420	12 - 256	40	**459800** 0100	3.595,–

4144

Top jaws for AZS-100

Description	art.no.	€
Jaw set, smooth 100 mm wide, with 10 mm step - hardened	**459801** 0103	375,–
Jaw set, smooth 100 mm wide, with 3.5 mm step - hardened	459801 0102	315,–
Jaw set, soft 100 mm wide, aluminium	459801 0105	205,–
Jaw set, soft 100 mm wide, steel	459801 0104	187,–
Grip jaw 100 mm wide, with pendulum and 3.5 mm step	459801 0107	336,–
Grip jaw set 100 mm wide, with 10 mm step	459801 0101	529,–
Grip jaw set 100 mm wide, with 3.5 mm step	459801 0100	465,–
Grip jaw set 70 mm wide, with 3.5 mm step	459801 0106	936,–

4144



Grip jaw for carbide inserts

Designation	art.no.	€
Grip jaw set 100 mm wide, for carbide inserts	**459803** 0100	599,–
AL carbide insert for aluminium (8 pieces)	459803 0101	276,–
NL carbide insert for tempered steels and cast iron (8 pieces)	459803 0102	276,–
HL carbide insert for high-alloy steels (8 pieces)	459803 0103	276,–

4144



Workpiece stop

Description	art.no.	€
Mechanical	**459804** 0100	50,–

4144



Alignment pin for AZS-100

for T-slot mm	art.no.	€
12 mm	**459805** 0012	173,50
14 mm	459805 0014	173,50
16 mm	459805 0016	173,50
18 mm	459805 0018	173,50
20 mm	459805 0020	173,50
	4144	



Clamping claws

- Price per set (4 units)

Description	art.no.	€
with slit width 17 mm	**459806** 0017	100,–
	4144	



Slot nut and screw for T-slot

- Price per set (4 units)

for T-slot mm	art.no.	€
12 mm	**459807** 0012	115,50
14 mm	459807 0014	115,50
16 mm	459807 0016	115,50
18 mm	459807 0018	115,50
20 mm	459807 0020	115,50
	4144	



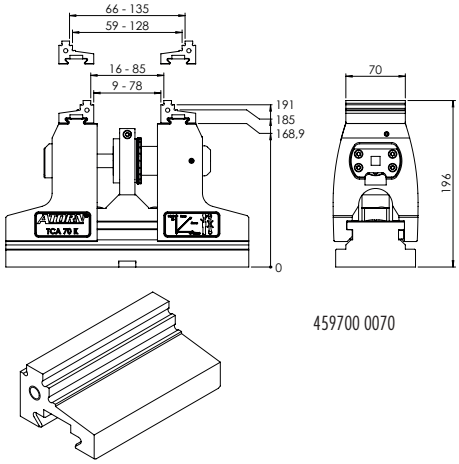
ATORN® 5-axis clamping system TCA70

With central clamp for 5-sided machining. Thanks to the design and central telescopic spindles, the protruding contours remain unchanged regardless of the clamp width. Excellent accessibility of all sides is guaranteed. The series-standard quick-change jaw system reduces tooling times and increases flexibility.

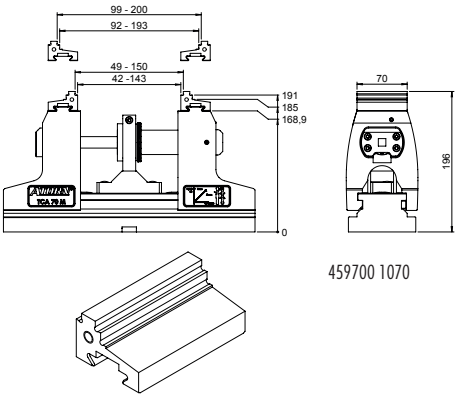
- Ideal for use on 5-axis machining centres
- Conventional clamping and grip clamping possible
- Telescopic spindle, protruding contour remains unchanged
- Central, simple programming without zero offset
- Material allowance is distributed symmetrically
- Repetition precision 0.01 mm
- Centring accuracy 0.02 mm
- Workpiece accessibility irrespective of the clamp width
- Symmetrical design = workpiece remains central and parallel
- Workpiece support height = 192 mm
- Quick-change jaw system, tool-free jaw changing thanks to quick-release lock
- Reversible jaws: for min. / max. clamp width with one pair of jaws
- Constant clamp force thanks to low-maintenance telescopic spindle
- Supplied as standard with locating bores for zero-point clamping system, pitch 200 mm
- Work table attachment also with through-bolts / fitting screws
- In 50 / 63 mm grid or clamping claws
- Integrated scale ring for fine adjustment of the central position
- Clamp force 30 kN at 45 Nm linear
- Operation with torque wrenches
- **Supplied with**
  1 ATORN TCA70 without jaws
  1 support plate for transportation
  1 hand crank for pre-setting
  Please order clamping jaws separately



459700 0070



459700 0070



459700 1070

Length mm	Clamp force kN	Weight kg	art.no.	€
286	30	17.5	**459700** 0070	2.979,–
351	30	19.5	459700 1070	3.189,–
			4172	

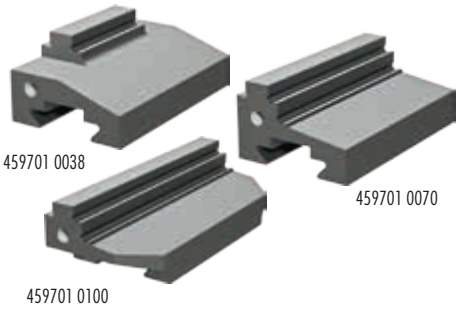
ATORN® Accessories for 5-axis clamping system TCA70

Stepped jaws, carbide-coated

- For clamping workpieces to be machined in parallel
- Clamping surfaces (step) with additional carbide coating to guarantee secure clamping
- **Clamp width**
  Type 70K 9-135 mm
  Type 70M 42-200 mm

Jaw width mm	Weight kg	art.no.	€
38	0.3	**459701** 0038	285,–
70	0.3	459701 0070	300,–
100	0.4	459701 0100	330,–

4172

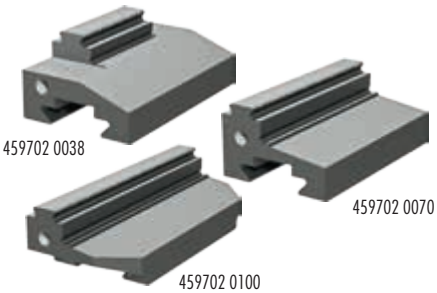


Grip jaws

- Minimal lost clamping edge of 4 mm
- Positive form fitting through the penetration of the pointed tips into the material without pre-shaping
- Integrated grip row, thus rigid vibration-resistant construction particularly in upright parts
- Additional clamping surfaces, ground on both sides
- Suitable for material strength up to 1000 N/mm²
- Price per unit
- **Clamp width**
  Type 70K 9-134 mm
  Type 70M 42-199 mm

Jaw width mm	Weight kg	art.no.	€
38	0.3	**459702** 0038	235,–
70	0.3	459702 0070	225,–
100	0.4	459702 0100	335,–

4172



V-block jaws

- For the horizontal and vertical clamping of round and flat workpieces
- Price per unit
- **Clamp width**
  Type 70K horizontal Ø 10 mm - Ø 40 mm; vertical Ø 16 mm - Ø 80 mm
  Type 70M horizontal Ø 10 mm - Ø 40 mm; vertical Ø 47 mm - Ø 110 mm

Jaw width mm	Weight kg	art.no.	€
70	0.6	**459703** 0070	360,–

4172



Zero jaw

- Clamping of parallel, pre-machined workpieces
- Clamp width 0 - 69mm
- Cylindrical pins as support surface; setting at heights of 176mm and 191mm possible
- minimal clamping edge: 20mm for height 176mm, 5mm for height 191mm
- Material: case-hardened steel
- includes 4 cylindrical pins 4x10 DIN EN ISO 8734

Jaw width mm	Weight kg	art.no.	€
70	0.6	**459705** 0070	341,–

4172

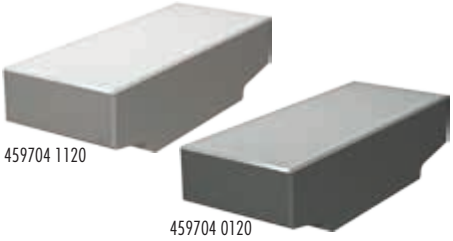


Soft jaws

- Material: case-hardened steel or aluminium
- For self-assembly of special jaws
- Maximum machining depth: 15 mm
- Price per unit
- **Clamp width**
  Type 70K 0 mm - 70 mm
  Type 70M 34 mm - 135 mm

Jaw width mm	Design	Weight kg	art.no.	€
120	Steel 21MnCr5G - 1.2162	1.2	**459704** 0120	168,–
120	Aluminium AlZn5.5MgCu	0.4	459704 1120	168,–

4172



Supporting jaw for grip inserts

- Clamping of raw parts, misshapen and round workpieces
- suitable for mounting various grip inserts (pointed/smooth)
- Material: case-hardened steel

Jaw width mm	Weight kg	art.no.	€
120	0.5	**459706** 0120	263,–
		4172	



Grip insert for supporting jaw

- for clamping raw parts
- also firmly holds soft materials with lower clamp force
- linear impression in the material ensures less deformation in soft materials
- lost clamping edge: adjustable from 3.7 to 5.2mm
- Grip height: adjustable from 2.6 to 4.1mm
- for tools with ≤ 0.2mm / 100mm parallelism
- grip inserts suitable for materials up to approx. 1000N/mm² strength

Ø mm	Total height mm	art.no.	€
16	8	**459716** 0001	47,–
		4172	



Workpiece stop

Design	art.no.	€
magnetic	**459713** 0002	49,–
mechanical	459713 0001	42,–
	4172	



459713 0001



459713 0002

Alignment and fastening set for bottom section

- For alignment (positioning) and attachment of the clamp lower section to pallet and work table
- Price per set = 2 pieces

for T-slot mm	Thread	art.no.	€
14	M12	**459720** 1412	90,–
16	M12	459720 1612	122,–
18	M12	459720 1812	89,–
		4172	



Alignment and fastening set for T-slot

- For attachment to pallet and work table with clamping claws

for T-slot mm	Thread	art.no.	€
12	M10	**459710** 1210	136,–
14	M12	459710 1412	119,–
16	M14	459710 1614	160,–
18	M16	459710 1816	125,–
22	M16	459710 2216	215,–
		4172	



Clamping claws

- For attaching the clamp to the work table
- Price per set = 2 pieces

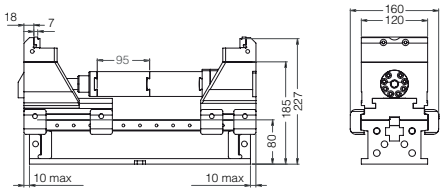
for thread	art.no.	€
M12 to M16	**459711** 0001	41,–
	4172	



ATORN® 5-axis slide rail set 120 mm

- For stable, low-vibration machining
- 40 kN clamp force at 85 Nm tightening torque
- Positive-fit jaw mounting
- Coated spindle and spindle nut
- Spindle can be extended without tools
- Extendable to all required lengths
- Retooling in seconds
- Extensive range of accessories and jaws

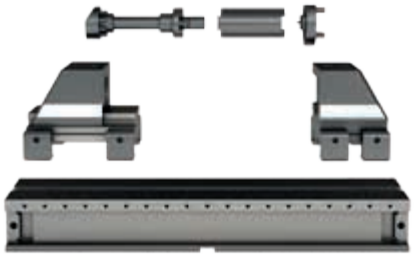




Slide rail set 120 mm, without jaws

Length mm	Width mm	Clamp Ø mm	Extensions mm	art.no.	€
300	120	0 - 270	1	**464100** 1230	1.989,–
400	120	0 - 370	2	464100 1240	2.109,–
500	120	0 - 470	3	464100 1250	2.409,–
600	120	0 - 570	4	464100 1260	2.809,–

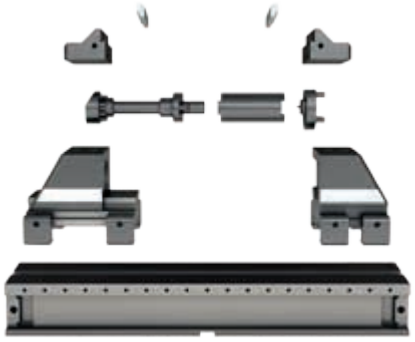
4197

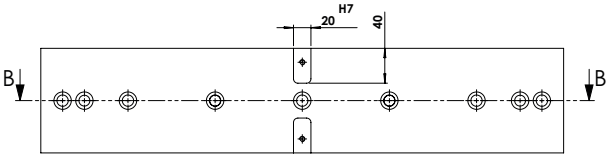


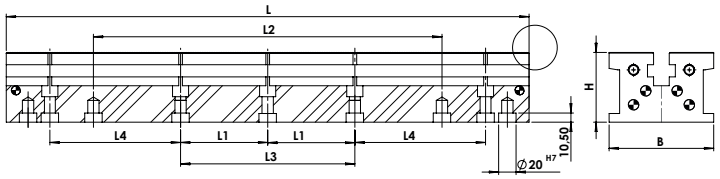
Slide rail set 120 mm, with jaws

Length mm	Width mm	Clamp Ø mm	Extensions mm	art.no.	€
300	120	0 - 270	1	**464101** 1230	2.579,–
400	120	0 - 370	2	464101 1240	2.689,–
500	120	0 - 470	3	464101 1250	2.989,–
600	120	0 - 570	4	464101 1260	3.389,–

4197







Slide rail 120 mm wide 80 mm high without body

Length mm	Width mm	Total height mm	L1 mm	L2 mm	L3 mm	L4 mm	for screws	art.no.	€
200	120	80	-	-	100	-	M16 - DIN912	**464102** 1220	679,–
300	120	80	100	-	-	-	M16 - DIN912	464102 1230	769,–
400	120	80	150	-	-	-	M16 - DIN912	464102 1240	889,–
500	120	80	200	-	-	-	M16 - DIN912	464102 1250	1.189,–
600	120	80	-	400	250	400	M16 - DIN912	464102 1260	1.449,–

4197





464103 1201



464103 1202



464103 1203



464103 1204



464103 1205

Accessories for 5-axis body

Designation	art.no.	€
5-axis body for slide rails, complete	**464103** 1201	1.299,–
Fixed base block	464103 1202	439,–
Base block clamping unit (moving jaws)	464103 1203	599,–
Spindle, complete	464103 1204	265,–
Spindle extension	464103 1205	77,50

4197

Clamping jaws for 5-axis body

• Price per unit

Designation	art.no.	€
Standard jaws 120 mm wide for clamping width 120 mm	**464104** 1201	210,–
Standard jaws 120 mm wide for clamping width 60 mm	464104 1202	225,–
Jaws 120 mm wide for clamping large workpieces	464104 1203	275,–
Standard jaws (soft) 120 mm wide for clamping width 120 mm	464104 1204	149,–
Smooth jaws, clamping width 120 mm for parallel supports, Article No. 464107 12..	464104 1205	195,–
Smooth jaws, clamping width 60 mm for parallel supports, Article No. 464107 06..	464104 1206	215,–

4197


464104 1205


464104 1203


464104 1204


464104 1202


464104 1201


464104 1206

Parallel supports, ground

• Price per unit

Length mm	Width mm	Total height mm	art.no.	€
60	8	12	**464107** 0612	45,50
60	8	17	464107 0617	45,50
60	8	25	464107 0625	45,50
60	8	30	464107 0630	45,50
60	8	35	464107 0635	45,50
60	8	44	464107 0644	39,90
120	8	12	464107 1212	48,–
120	8	17	464107 1217	48,–
120	8	25	464107 1225	48,–
120	8	30	464107 1230	48,–
120	8	35	464107 1235	48,–
120	8	44	464107 1244	42,50

4197



Pendulum jaws with accessories for 5-axis body

• Price per unit

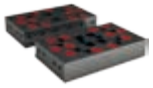
Designation	Length mm	Width mm	Total height mm	Ø mm	art.no.	€
Base jaws set with rotary plate for Flex clamping jaws	150	90	30	-	**464105** 1501	889,–
Flex clamping jaw, smooth	-	-	-	18	464105 1502	36,20
Flex clamping jaw with claws	-	-	-	18	464105 1503	47,–
Flex clamping jaw with carbide gripper	-	-	-	18	464105 1504	52,50
Standard swivel jaws with rotary table	120	68	44.4	-	464105 1202	375,–
Swivel jaws with rotary plate for large workpieces	120	68	44.4	-	464105 1201	375,–

4197


464105 1502


464105 1503


464105 1504


464105 1501


464105 1201


464105 1202

Screw-in jaws for clamping jaws

• Price per unit

Designation	art.no.	€
Soft screw-in jaws 120 mm	**464106** 0001	48,–
Soft screw-in jaws 60 mm	464106 0002	44,20
Screw-in jaws with claw and steps 3 mm and 5 mm 120 x 19 x 11	464106 0003	112,–
Screw-in jaws with claw and steps 3 mm and 5 mm 60 x 19 x 11	464106 0004	107,–
Screw-in jaws with steps 3 mm and 5 mm 120 x 19 x 11	464106 0005	97,–
Screw-in jaws with steps 3 mm and 5 mm 60 x 19 x 11	464106 0006	93,–
Combi screw-in jaws 120 mm (step 1 smooth with claws, step 2 smooth)	464106 0007	113,–
Combi screw-in jaws 60 mm (step 1 smooth with claws, step 2 smooth)	464106 0008	105,–

4197


464106 0001


464106 0002


464106 0003


464106 0004


464106 0005


464106 0006


464106 0007


464106 0008

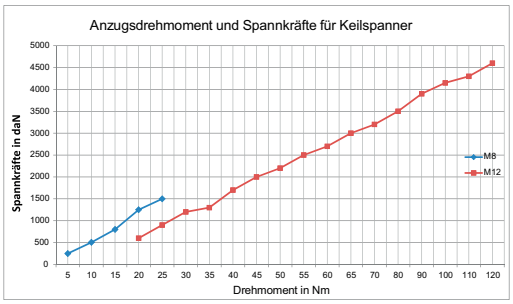
ATORN® Modular multi-clamping fixture

- Quick and precise workpiece clamping on vertical and horizontal machining centres, milling and grinding machines
- Standard clamping device for different workpieces
- Wedge clamps of various sizes can be used
- Allows different workpieces to be clamped in extremely confined spaces
- Multiple slide rails combined by means of a connection system, optimum length adjustment to the work table
- **Tombstones available on request**
- **60° toothing**



Particular benefits:

- Perform numerous clamping tasks with one clamping system
- Can also be used on ATORN zero-point clamping systems
- All system components are compatible
- Easy-to-install stop system
- Cost-effective clamping system



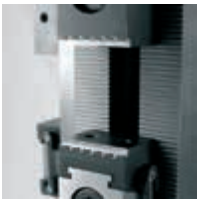


Multi-clamping slide rail sets

- Rail-mounted clamping elements
- Other combinations available on request

Contents per set	Dimensions	art.no.	€
1x slide rail 2x smooth fixed jaws 1x smooth wedge clamp	200 x 50 x 80	**464001** 2050	969,–
1x slide rail 2x smooth fixed jaws 1x smooth wedge clamp	200 x 80 x 80	464001 2080	1.119,–
1x slide rail 3x smooth fixed jaws 2x smooth wedge clamps	300 x 50 x 80	464001 3050	1.249,–
1x slide rail 3x smooth fixed jaws 2x smooth wedge clamps	300 x 80 x 80	464001 3080	1.529,–
1x slide rail 3x smooth fixed jaws 2x smooth wedge clamps	400 x 50 x 80	464001 4050	1.319,–
1x slide rail 3x smooth fixed jaws 2x smooth wedge clamps	400 x 80 x 80	464001 4080	1.589,–
1x slide rail 3x smooth fixed jaws 2x smooth wedge clamps	500 x 50 x 80	464001 5050	1.579,–
1x slide rail 3x smooth fixed jaws 2x smooth wedge clamps	500 x 80 x 80	464001 5080	1.729,–

4172

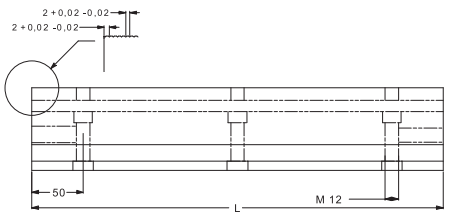


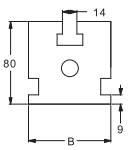


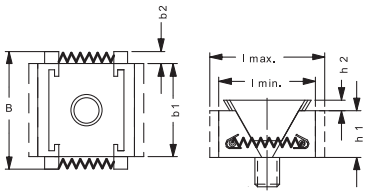
Multi-clamping slide rails, individual

L mm	B mm	H mm	Number of holes	art.no.	€
200	50	80	2	**464002** 2050	569,–
200	80	80	2	464002 2080	619,–
300	50	80	3	464002 3050	619,–
300	80	80	3	464002 3080	679,–
400	50	80	3	464002 4050	679,–
400	80	80	3	464002 4080	769,–
500	50	80	3	464002 5050	929,–
500	80	80	3	464002 5080	979,–

4172









Wedge clamp

- Includes slot nut and screw
- 464008.... with allowance = approx. 4 mm per side

B mm	l min. mm	l max. mm	h1 mm	h2 mm	b1 mm	b2 mm	Screw	Clamp force kN	smooth art.no.	€	grooved art.no.	€	With allowance art.no.	€	With claws art.no.	€
30	27	31	15	5	22	4	M8	3000	**464006** 3015	81,–	**464007** 3015	88,–	**464008** 3015	88,–	**464009** 3015	105,–
40	27	31	15	5	32	4	M8	3000	464006 4015	96,–	464007 4015	102,–	464008 4015	102,–	464009 4015	119,–
50	27	31	15	5	42	4	M8	3000	464006 5015	115,–	464007 5015	119,–	464008 5015	119,–	464009 5015	136,–
40	39	45	22	7	30	5	M12	3000	464006 4022	124,–	464007 4022	132,–	464008 4022	132,–	464009 4022	147,–
50	39	45	22	7	40	5	M12	1500	464006 5022	134,–	464007 5022	141,–	464008 5022	141,–	464009 5022	157,–
60	39	45	22	7	42	5	M12	1500	464006 6022	153,–	464007 6022	157,–	464008 6022	157,–	464009 6022	178,–
54	48	58	29	11	50	6	M12	1500	464006 5429	156,–	464007 5429	168,–	464008 5429	168,–	464009 5429	191,–
69	48	58	29	11	57	6	M12	3000	464006 6929	176,–	464007 6929	183,–	464008 6929	183,–	464009 6929	210,–
84	48	58	29	11	72	6	M12	3000	464006 8429	225,–	464007 8429	235,–	464008 8429	230,–	464009 8429	250,–
									4172		4172		4172		4172	



464010 0001



464010 0002



464010 0003



464010 0004



464010 0006

Accessories

- Price per pack

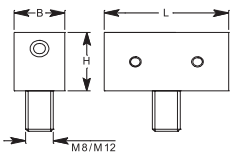
Description	art.no.	€
Adapter set	**464010** 0001	67,–
2 x adjustable limit stop	464010 0002	44,30
Fixed limit stop	464010 0003	21,40
Clamping claws	464010 0004	72,50
Positioning socket 20 x 14 mm	464010 0005	23,80
Positioning bush 20 x 18 mm	464010 0006	23,80
	4172	

Fixed jaws

- Includes slot nut and screw

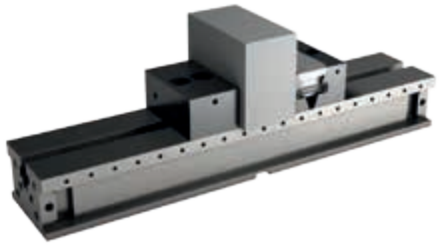
L mm	B mm	H mm	Screw	smooth art.no.	€	grooved art.no.	€	With claws art.no.	€
22	22	15	M8	**464003** 2215	43,50	**464004** 2215	66,–	**464005** 2215	62,–
32	22	15	M8	464003 3215	44,50	464004 3215	67,–	464005 3022	109,–
42	22	15	M8	464003 4215	46,20	464004 4215	68,–	464005 3215	63,–
30	42	22	M12	464003 3022	89,–	464004 3022	119,–	464005 4022	111,–
40	42	22	M12	464003 4022	90,–	464004 4022	122,–	464005 4215	64,–
42	42	22	M12	464003 4229	101,–	464004 4229	134,–	464005 4229	124,–
50	42	29	M12	464003 5022	91,–	464004 5022	122,–	464005 5022	113,–
57	42	29	M12	464003 5729	103,–	464004 5729	136,–	464005 5729	128,–
72	42	29	M12	464003 7229	105,–	464004 7229	140,–	464005 7229	130,–
				4172		4172		4172	





ATORN® Modular multi-clamping fixture 120 mm

- Extremely high basic rigidity
- Clamp force 40 kN
- Compatible with 50 mm and 80 mm slide rails
- All standard wedge clamps and jaws suitable
- Extendable to all required lengths



With smooth clamping surface

- Supplied with: 1x slide rail, 1x fixed jaw, 1x wedge clamp with fixed jaws

Length mm	Width mm	Total height mm	art.no.	€
200	120	80	**464108** 1220	1.079,–
300	120	80	464108 1230	1.169,–
400	120	80	464108 1240	1.279,–
500	120	80	464108 1250	1.579,–
600	120	80	464108 1260	1.829,–

4197

With 3 mm step and claw

- Supplied with: 1x slide rail, 1x fixed jaw, 1x wedge clamp with fixed jaws

Length mm	Width mm	Total height mm	art.no.	€
200	120	80	**464109** 1220	1.179,–
300	120	80	464109 1230	1.269,–
400	120	80	464109 1240	1.369,–
500	120	80	464109 1250	1.679,–
600	120	80	464109 1260	1.919,–

4197

Grooved design

- Supplied with: 1x slide rail, 1x fixed jaw, 1x wedge clamp with fixed jaws

Length mm	Width mm	Total height mm	art.no.	€
200	120	80	**464110** 1220	1.169,–
300	120	80	464110 1230	1.259,–
400	120	80	464110 1240	1.369,–
500	120	80	464110 1250	1.659,–
600	120	80	464110 1260	1.915,–

4197

Wedge clamp 120 mm

- For use with 50 mm and 80 mm slide rails, a slot nut art.no. 4640100009, a screw bushing art.no. 4640100012 and a screw M12 must be used

Type	Jaw width mm	Total height mm	H1 mm	l min. mm	l max. mm	Screw	Clamp force kN	art.no.	€
Smooth	120	8	11	59.5	46.5	M16 - DIN912	4000	**464111** 1201	290,–
3 mm step and claw	120	6	11	59.5	46.5	M16 - DIN912	4000	464111 1202	335,–
Smooth with carbide gripper	120	8	11	59.5	46.5	M16 - DIN912	4000	464111 1203	365,–
Squared	120	8	11	59.5	46.5	M16 - DIN912	4000	464111 1204	330,–

4197


464111 1201


464111 1202


464111 1203


464111 1204

Wedge clamp with fixed jaw 120 mm

- For use with 50 mm and 80 mm slide rails, 2x slot nut art.no. 4640100009, 2x screw bushing art.no. 4640100012 and 2x screw M12 must be used

Type	Jaw width mm	Total height mm	H1 mm	l min. mm	l max. mm	Screw	Clamp force kN	art.no.	€
Smooth	120	11	8	85	97	M16 - DIN912	4000	**464112** 1201	290,–
With 3 mm step and claw	120	11	6	85	97	M16 - DIN912	4000	464112 1202	335,–
With carbide gripper	120	11	8	85	97	M16 - DIN912	4000	464112 1203	365,–
Squared	120	11	8	85	97	M16 - DIN912	4000	464112 1204	330,–

4197


464112 1204


464112 1202


464112 1203


464112 1201

Fixed jaw 120 mm

- For use with 50 mm and 80 mm slide rails, 2x slot nut art.no. 4640100009, 2x screw bushing art.no. 4640100012 and 2x screw M12 must be used

Type	Jaw width mm	Total height mm	Length mm	Screw	art.no.	€
Smooth	120	54	72	M16 - DIN912	**464113** 1201	163,–
With 3 mm step and claw	120	54	72	M16 - DIN912	464113 1202	181,–
With carbide gripper	120	54	72	M16 - DIN912	464113 1203	190,–
Squared	120	54	72	M16 - DIN912	464113 1204	185,–

4197



Accessories for clamping rail 120 mm

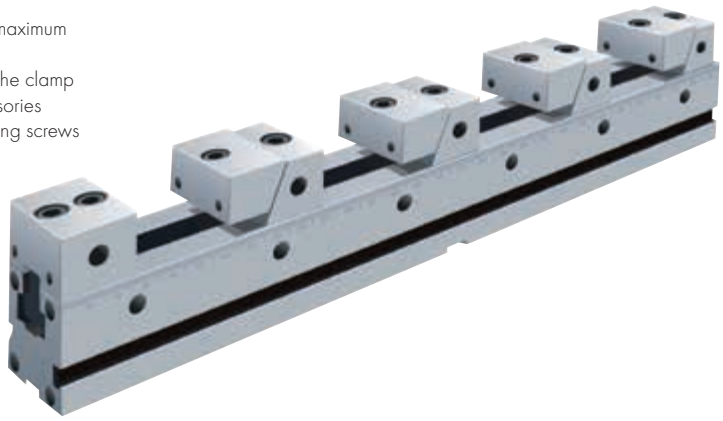
Designation	art.no.	€
Clamping claw set 40 mm for screws M16 (1 PK = 4 pcs.)	**464010** 0007	71,50
Slot nut, short M8	464010 0008	6,15
Slot nut, short M12	464010 0009	6,15
Slot nut, long M8	464010 0010	6,50
Slot nut, long M12	464010 0011	6,50
Screw bushing reduction from M16 to M12	464010 0012	10,15
Adapter set for slide rails extension	464010 0013	150,–

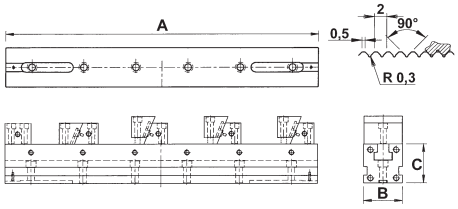
4197



SARA® Modular multi-clamping fixture

- Mechanical clamping fixture with a modular design
- Accuracy: within 0.02 mm
- Base body made from hardened steel, 60 HRC
- Fully equipped for clamping four workpieces; can be optionally extended to a maximum of 9 clamping positions (see table below)
- Clamping jaws are 1 mm narrower than the base body, allowing lateral use of the clamp
- Also available with stepped jaws on request; prismatic jaws available as accessories
- **Supplied with** four tool stops, clamping claws, slot nuts, alignment blocks, lifting screws and a chuck key, one fixed jaw and four intermediate jaws





Slide rail, width 50 mm

A mm	B mm	C mm	art.no.	€
300	50	50	**460250** 0300	1.009,–
400	50	50	460250 0400	1.089,–
500	50	50	460250 0500	1.189,–
600	50	50	460250 0600	1.299,–

4148

Slide rail, width 75 mm

A mm	B mm	C mm	art.no.	€
400	75	75	**460275** 0400	1.309,–
500	75	75	460275 0500	1.409,–
700	75	75	460275 0700	1.629,–

4148

Continued on next page >>>

Movable jaw - grooved

Width mm	Length mm	Total height mm	art.no.	€
49	54/58	25	**460282** 0050	130,–
74	70/75	40	460282 0075	151,–

4148



Fixed jaw

Width mm	Length mm	Total height mm	art.no.	€
49	38	25	**460281** 0050	76,50
74	50	40	460281 0075	90,–

4148



Movable jaw - smooth

Width mm	Length mm	Total height mm	art.no.	€
49	54/58	25	**460280** 0050	128,–
74	70/75	40	460280 0075	146,–

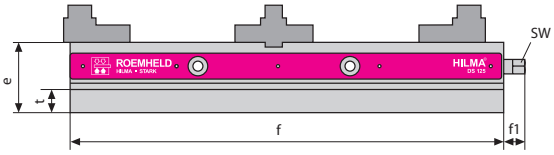
4148

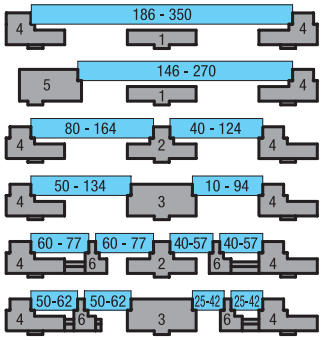


ROEMHELD HILMA ▪ STARK Double clamping system DS

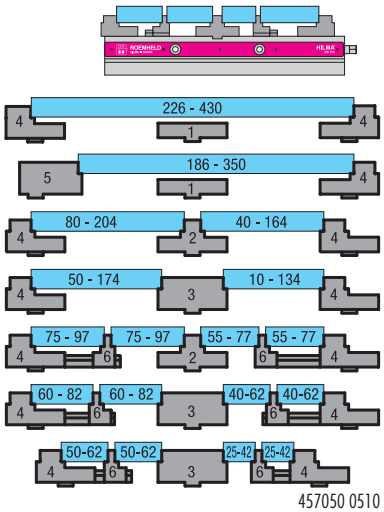
- **Type DS, mechanically operated**
- **Efficient and cost-effective**
- Clamps multiple workpieces of the same or different sizes
- 3rd hand function
- Fully enclosed spindle chamber
- Zero-play linear guide guarantees the utmost precision
- Can be mounted on the work table using slides
- Clamping force can be preselected using a torque wrench (optional)
- Tool and mould making, manufacturing and mass production
- **Supplied without jaws or crank**
- **Caution: Spindle cannot be used without mounted jaws!**







457050 0430



457050 0510



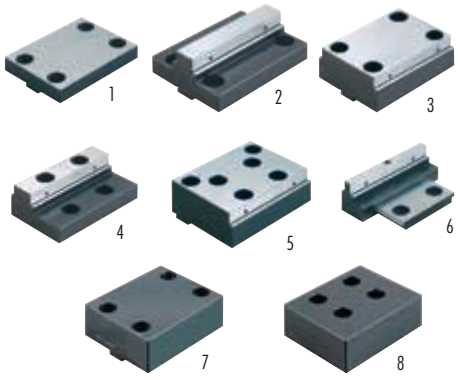
Jaw width mm	Clamp force kN	Lift mm	e mm	f mm	f1 mm	Wr. width mm	t mm	art.no.	€
125	40	44	82	430	25	17	27	**457050** 0430	2.399,–
125	40	44	82	510	25	17	27	457050 0510	2.850,–

4146

Clamping jaws

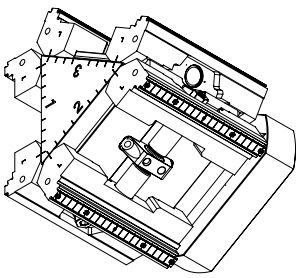
Description	Illustration	Jaw width 125 mm art.no.	€
Guide plate	1	**457062** 0010	199,–
Stepped centre jaw	2	457062 0020	205,–
Stepped centre jaw	3	457062 0030	202,–
Stepped indexable jaw	4	457062 0040	200,–
Stepped jaw, fixed	5	457062 0050	234,–
Floating jaw for multi-clamping (total length 430 mm)	6	457062 0060	413,–
Floating jaw for multi-clamping (total length 510 mm)	6	457062 0061	415,–
Centre jaw, soft, material C45	7	457062 0070	142,–
Indexable jaw, soft, material C45	8	457062 0080	123,–

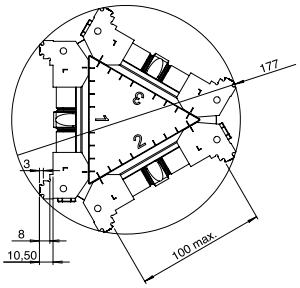
4146

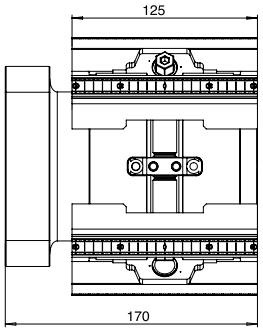


Ring Spannsysteme 3-way clamping tower RS-T

- ultra-efficient, compact and space-saving
- high productivity thanks to considerably higher machine productivity during unmanned shifts
- fewer tool changes thanks to multiple set-ups
- max. parts size 100 x 100mm x variable length with a displacement circle of 350mm
- high efficiency
- prepared for ATORN ZPS K20 and Lang Quick Point 52
- **clamping jaws also suitable for embossing systems**
- **other adaptations for your machine tables available on request**



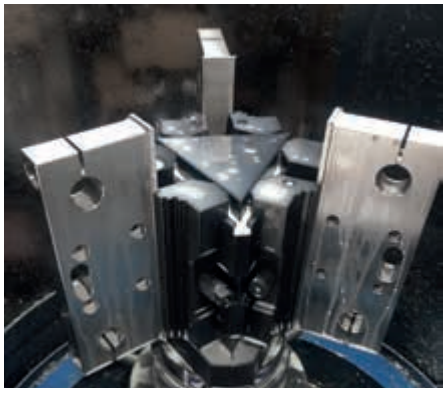


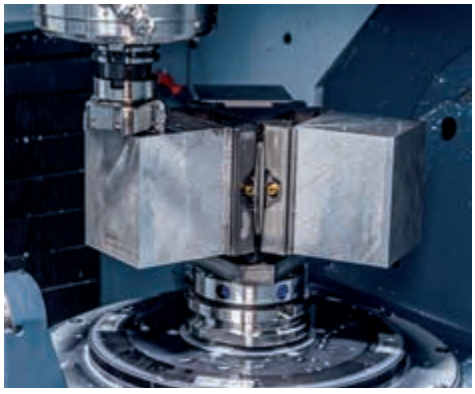


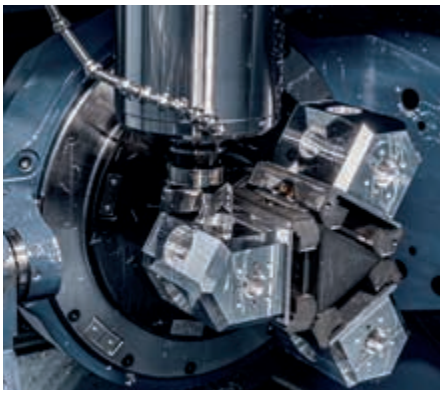


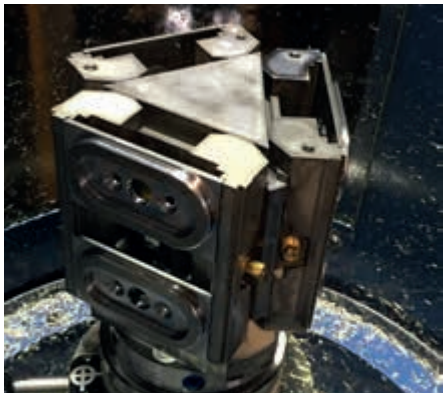
for ATORN ZPS K20 and Lang Quick Point 52

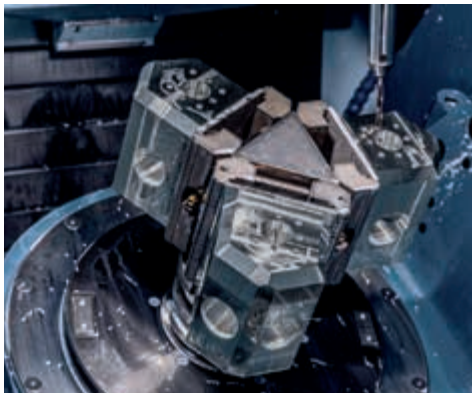
Jaw width mm	Clamping depth mm	Clamping range mm	Total height mm	art.no.	€
125	3 + 5	0 - 100	170	**469100** 0125	2.990,–
				4185	

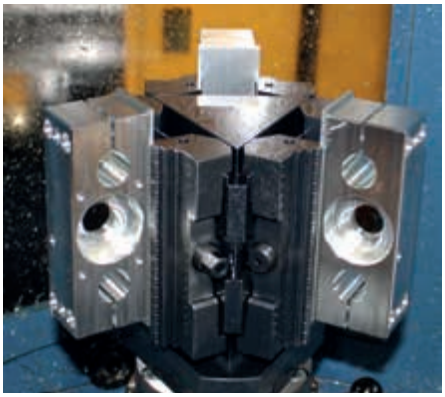






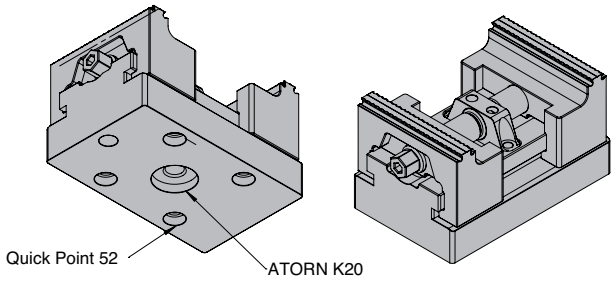






Ring Spannsysteme Centric clamping vice RS-Z

- **with patented pull-down system, for use with RS embossing station**
- clamping jaws also suitable for embossing systems
- firm clamping for high cutting output
- prepared for ATORN ZPS K20 and Lang Quick Point 52
- other adaptations for your machine tables available on request
- **RS embossing station and RS embossing jaws for Lang embossing station available on request**



Jaw width 75mm

Jaw width mm	Clamping range mm	A mm	H mm	art.no.	€
75	0 - 100	125	68	**459110** 0125	495,–
75	0 - 125	150	68	459110 0150	510,–
75	0 - 150	175	68	459110 0175	565,–
75	0 - 175	200	68	459110 0200	615,–

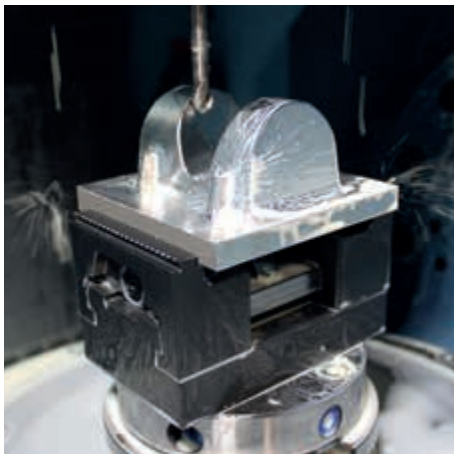
4185

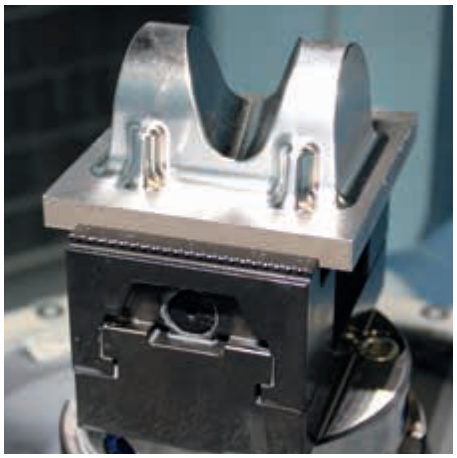


Jaw width 125 mm

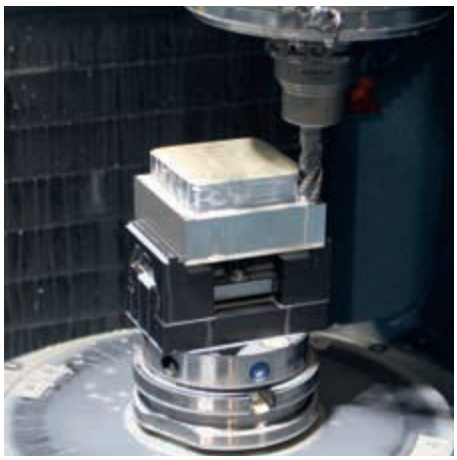
Jaw width mm	Clamping range mm	A mm	H mm	art.no.	€
125	0 - 150	180	92	**459111** 0180	665,–
125	0 - 200	230	92	459111 0230	695,–
125	0 - 250	280	92	459111 0280	835,–
125	0 - 300	330	92	459111 0330	995,–

4185





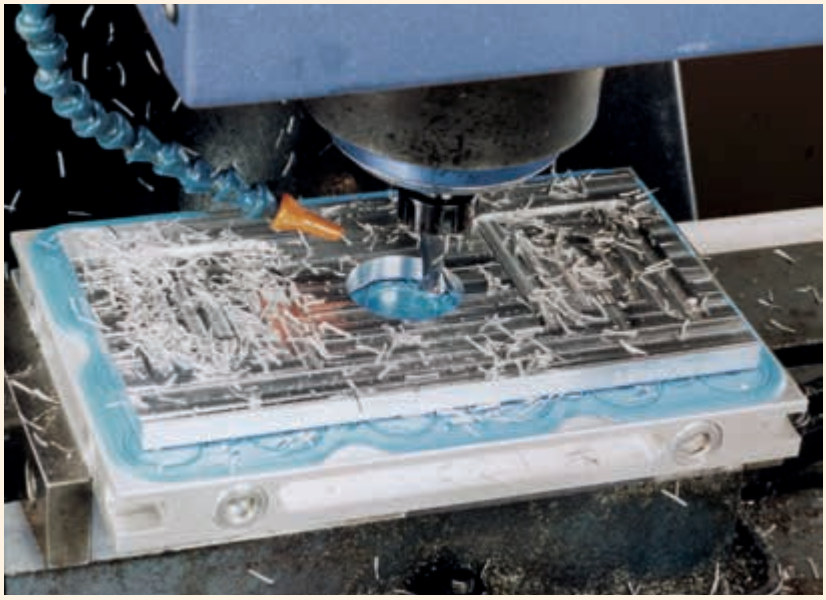






Clamping with a vacuum

Innovative ATORN vacuum clamping technology



When the focus lies on tooling time and safety

Vacuum clamping technology is particularly suitable for minimized setup time and process-safe clamping of flat workpieces with level undersides that are to be clamped and machined non-destructively.
For this we offer innovative and sophisticated solutions with many accessories – for optimum and individual clamping.
When it comes to precision and you want to handle workpieces made of aluminium, non-ferrous metals, graphite, plastics, glass, wood, ceramic, titanium and steel, the ATORN clamping plate sets lay down an excellent foundation for the work. These sets allow firm and precise clamping of your workpieces, delivering in turn good results from milling or drilling.
Vacuum systems hold the workpiece fast through suction and provide an excellent grip. Using a Venturi tube or a vacuum pump has proven very useful here.

Why you will achieve more with the ATORN vacuum clamping technology

One set, two options. This is what makes the new ATORN vacuum clamping system stand out.
The new low-cost entry into the vacuum clamping technology for short-term wins out through its use of the Venturi principle. The vacuum is created through a direct connection to the compressed air supply without a vacuum pump unit. For energy-saving continuous use in series production, a vacuum pump unit is advisable.
You can clamp indirectly by means of sandwich adapter mats or directly on a grid plate. The use of adapter plates or rubber adapter mats offers two important advantages:

- Producing break-outs in the workpiece machining
- Marked reduction of the clamping times, since, in comparison with fastening directly to the grid plate, no packing cords are needed

Variants:

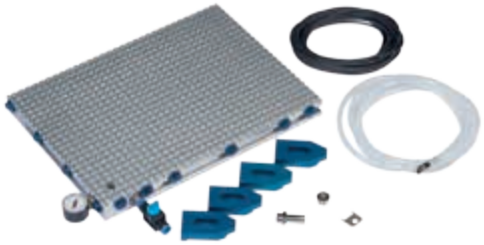
- ATORN slot plate for clamping micro-components and workpieces with the most widely varied contours
- ATORN grid plates for clamping simple workpieces for heavy machining
- ATORN adapter mats for workpieces with and without break-outs



ATORN® Vacuum clamping technology

Grid vacuum plate sets with Venturi nozzles

- **Can be extended with conventional vacuum pumps, making it suitable for wet machining**
- For workpieces with simple geometric shapes
- Good seal: also suitable for rough (e.g. sawn) surfaces
- High holding forces
- Minor irregularities and concavities are sealed and compensated by flexible sealing cords
- **Each set comprises:**
- 1x vacuum grid plate with 12.5 mm pattern, incl. integrated Venturi nozzle
- Height-adjustable stop discs
- 4x clamping claws with slot width = 14 mm
- 3 m plastic hose with hose connection and quick-action coupling
- 10 m vacuum sealing cord, Ø 4 mm black
- Incl. silencer and shut-off valve
- 1x hose connection for conventional vacuum pumps



Type	Dimensions L x W x H mm	art.no.	€
RV1	300x200x32.5	**475081** 3020	1.259,–
RV2	400x300x32.5	475081 4030	2.119,–
RV3	600x400x32.5	475081 6040	2.659,–

4182

Slotted vacuum plates

- For clamping workpieces on adapter mats and rubber holding mats
- For machining complicated workpiece shapes
- Very small workpieces can be clamped
- Workpiece positioning by height-adjustable eccentric stops
- **Supplied with** vacuum hose connector piece, connection element, assembly tool, aluminium clamping claws, rubber adapter mat (brown), 1 m vacuum hose with wire helix and quick-coupling plug

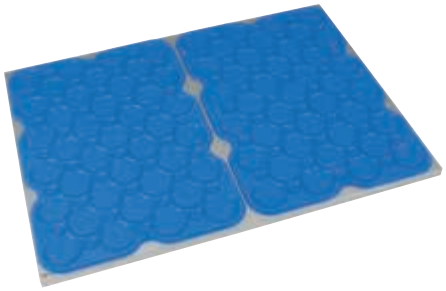


Type	Dimensions L x W x H mm	art.no.	€
MS1	300x200x48	**475089** 2030	1.379,–
MS2	400x300x48	475089 3040	1.739,–
MS3	600x400x48	475089 4060	2.970,–

4182

Adapter plates for slotted vacuum plates

- For adapter mats with Article No. 475085....
- **Supplied with** 10x adapter mat (blue), 2 m sealing cord

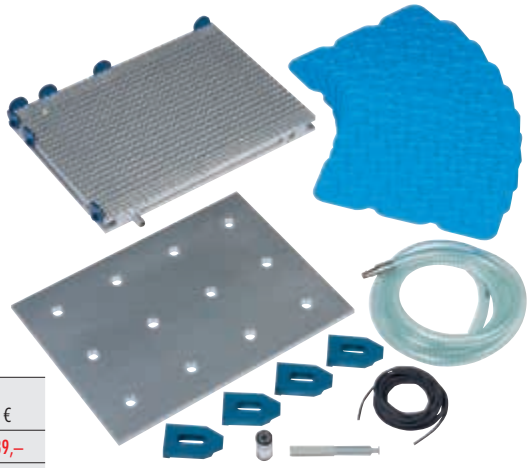


Designation	Dimensions L x W x H mm	art.no.	€
for MS1	300x200x10	**475090** 2030	365,–
for MS2	400x300x10	475090 3040	559,–
for MS3	600x400x10	475090 4060	749,–

4182

Vacuum clamping system with adapter mats

- **For wet and dry machining, with vacuum pump, no Venturi nozzle**
- **For workpieces with openings**
  Construction with sealing cord, aluminium adapter plate and adapter mats
- **For workpieces without openings**
  Construction with sealing cord only, directly on the grid plate
- The modular construction allows multiple vacuum plates to be connected with overlapping grids. The operating vacuum is supplied to the individual plates via the connection elements.
- **Each set comprises:**
  1x modular grid plate with 12.5 mm grid
  1x aluminium adapter plate with 12.5 mm grid
  Set VM1: 10 blue adapter mats
  Set VM2: 9 blue adapter mats, 1 black
  Set VM3: 8 blue adapter mats, 2 black
  4x clamping claws with slot width = 14 mm
  1x assembly tool for replacing blind plugs
  3 m vacuum hose with wire helix
  10 m vacuum sealing cord, Ø 4 mm, black



Type	Dimensions L x W x H mm	art.no.	€
VM1	300x200x32.5	**475083** 3021	1.289,–
VM2	400x300x32.5	475083 4031	2.249,–
VM3	600x400x32.5	475083 6041	2.879,–

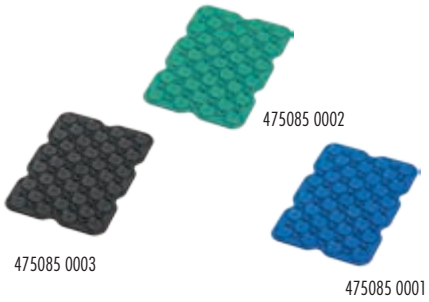
4182

Adapter mats

- For vacuum clamping systems with adapter mats

Designation	Dimensions L x W x H mm	Colour	art.no.	€
For workpieces up to 25 kg	300x200x2.5	Blau	**475085** 0001	8,–
For workpieces over 25 kg	300x200x2.5	Grün	475085 0002	8,–
For leak-free coverage	300x200x2.5	Schwarz	475085 0003	8,–

4182



Rubber fixing mats

- For slotted vacuum plates with and without Venturi nozzles
- Material may be removed during milling
- Black mats suitable for plane milling
- Blue mat for use with slotted vacuum plates

Designation	Dimensions L x W x H mm	Colour	art.no.	€
Standard	300x200x3	Braun	**475086** 0001	16,50
Standard	400x300x3	Braun	475086 0006	18,90
Standard	600x400x3	Braun	475086 0004	39,–
Millable	300x200x3	Schwarz	475086 0002	16,50
Millable	400x300x3	Schwarz	475086 0003	29,–
Millable	600x400x3	Schwarz	475086 0005	39,–
Thin version	2000x400x1	Blau	475086 1001	97,–

4182



Accessories

- For vacuum clamping systems with adapter mats

Designation	Length m	art.no.	€
Sealing cord	50	**475084** 0001	76,–
Vacuum suction hose with wire helix	10	475084 0002	54,–

4182



Vacuum pumps

- Defoamer Art.-No. 742036 0001 is recommended for the liquid ring vacuum pump

Designation	Absorption capacity l/min	Dimensions	Noise level dB	Clamping surface	Weight kg	Nominal output	art.no.	€
Modular vacuum pump unit	16 m³/h	Ø 320 x 690 mm	60	< 0.5 m²	31	400 V / 0.55 kW	**475087** 0002	2.999,–
Liquid ring vacuum pump	25 m³/h	463 x 432 x 602 mm	50	< 1 m²	38	400 V / 0.88 kW	475087 0003	3.429,–
Modular vacuum pump unit	21 m³/h	Ø 320 x 690 mm	62	< 1 m²	34	400 V / 0.75 kW	475087 0005	3.599,–

4182



Technology to get excited

The new ATORN zero-point clamping system fares well in any comparison

Experience the ATORN zero-point clamping system, which presents the advantages of its innovative and trend-setting characteristics in use.

Advantages that lift the ATORN zero-point clamping system well above the competition

- **Use of different clamping fittings for maximum positioning precision:**
  - Zero-point fitting: Positions at the absolute zero reference point
  - Strut fitting: Fixes the remaining free axis in place
  - Undersize fitting: Is used exclusively for clamping and restraint
- **Two ways of setting different zero points**
  - Classic: The zero point is defined via the zero point fitting in combination with the strut fitting
  - Based on temperature effects: The zero point is defined via the centre axis by solely using strut fittings
- **System requires no maintenance**
  - Completely sealed system made of stainless steel to eliminate the need to maintenance when working
- **Advantages in use**
  - Absolute simplicity in use thanks to the large catchment tolerance and the non-jamming feed-in facility
- **Process safety thanks to advanced technology**
  - The characteristics of the ‚three-cycle principle, form fit and a large ball diameter' further enhance the process safety. These characteristics optimally distribute the force, losing no effect in the process

Advantages in use

Large catchment tolerance

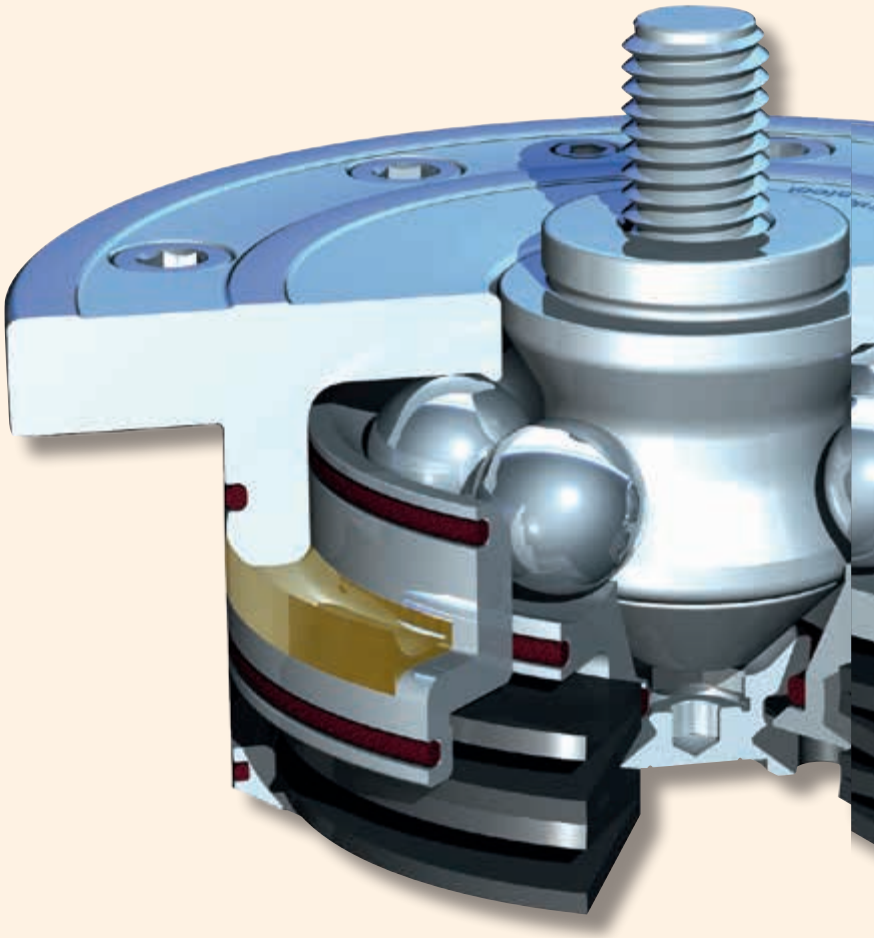


For the purpose of retracting a pallet into the clamping module, a pre-positioning of 6.5 mm or 12 mm is sufficient.

Non-jamming



Non-jamming extension and retraction thanks to the ideal form of the clamp fitting



Advantages in the technology

Large retention, catchment and sealing forces



Size	Retention force (kN)	FCatchment/sealing force (kN)
		hydr.
K 10.2	25	10
K 20	55	20

Three-cycle principle



Force is distributed by way of a three-cycle principle. This avoids exert shear loads on the balls.

Form fit

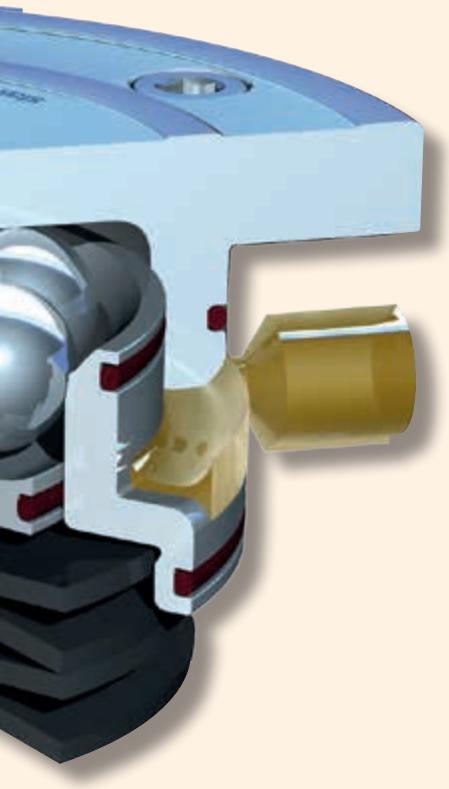


The balls are encompassed from three sides in a form-fit fashion. The forces are exerted evenly over the balls and are optimally spread out.

Large ball diameter



Better distribution of forces thanks to larger ball diameter.



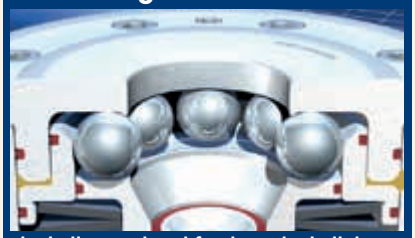
Advantages in maintenance

Rust-free – Robust – Suitable for industrial use



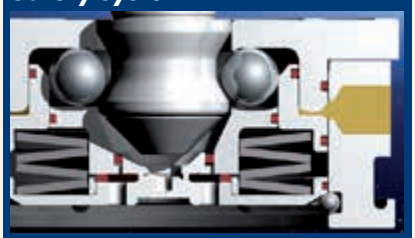
High-alloy, hardened tool steel. – This prevents corrosion. Robust, suitable for industrial use and with a long service life.

No ball cage



The balls are placed freely in the ball duct and continuously reposition themselves. As the balls are not in a cage, it is a quite simple process to blow out dirt using air.

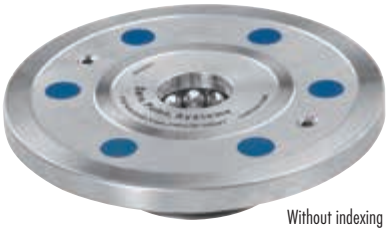
Safety system



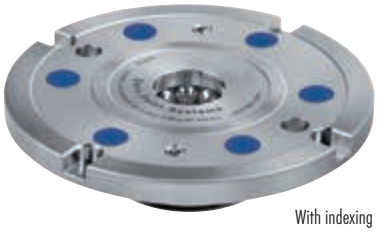
The system is absolutely process-safe. The clamping module can be opened at any time.

ATORN® K10.2 and K20 installation clamping modules

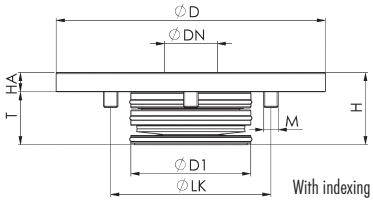
- Hydraulic unlocking
- Hardened cover and piston
- Precision < 0.005 mm
- **Use:** Zero-point clamping system for optimised tooling times when clamping; for all areas of chip-forming and chip-free machining as well as the food, pharmaceutical and chemical industries.
- **Note:** Installation clamping modules boast high holding, pull-in and locking forces despite their extremely small dimensions. Hydraulic pressure is only required for releasing (min. 50 bar / max. 60 bar). The modules are mechanically locked when clamped. The advantage to this is the lack of inconvenient lines and of any risk of leaks.
- Available on request:
  - Installation drawings
  - Automation solutions
  - Also available as an individual flange version



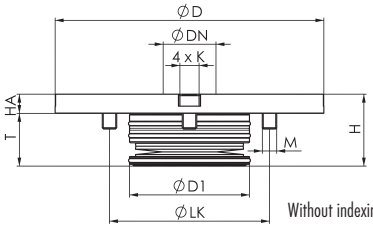
Without indexing



With indexing



With indexing



Without indexing

K10.2 with and without indexing

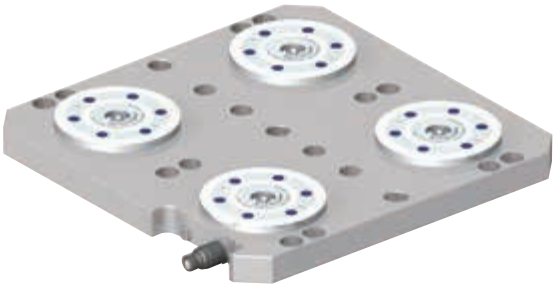
model	Retention force N	Entrance/sealing force kN	D mm	DN mm	D1 mm	H mm	HA mm	LK mm	M mm	K mm	T mm	Weight kg	art.no.	€
ohne Indexierung	25	10 kN	112	22	50	30	8	77	M6	-	22	0.6	**459051** 1010	466,–
mit Indexierung	25	10 kN	112	22	50	30	8	77	M6	8	22	0.6	459051 2010	579,–
													4195	

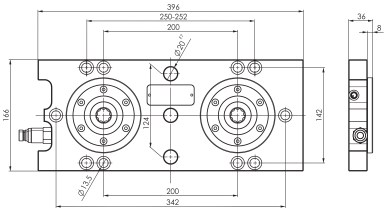
K20 with and without indexing

model	Retention force N	Entrance/sealing force kN	D mm	DN mm	D1 mm	H mm	HA mm	LK mm	M mm	K mm	T mm	Weight kg	art.no.	€
ohne Indexierung	55	20 kN	112	32	78	44	10	88	M6	-	34	1.4	**459051** 0020	795,–
mit Indexierung	55	20 kN	112	32	78	44	10	88	M6	8	34	1.4	459051 1020	865,–
													4195	

ATORN® K10.2 multi-clamping stations

- Hydraulic unlocking
- Precision < 0.005 mm
- Steel, unhardened
- The clamping systems are pre-equipped with attachment holes (for common table slot sizes 63, 100 and 125 mm) and positioning aids. The clamping stations are ready for immediate operation. Connections are pre-screwed.
- The clamping station with blow-out has 2 connections: 1 x hydr. opening, 1 x pneum. blow-out
- Installation drawings, further sizes and customised clamping stations for your machine are available on request.
- **Advantage:** Low overall height of just 36 mm

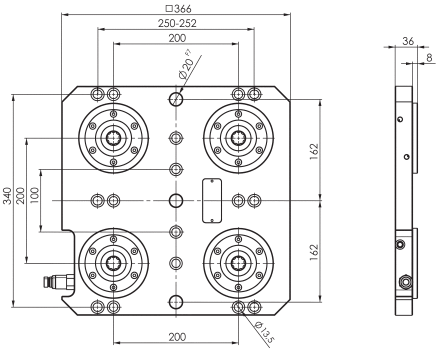




Double clamping station

- For common table slot sizes 63, 100 and 125 mm

Entrance/sealing force kN	Retention force N	Weight kg	art.no.	€
2 x 10 kN	25	14	**459071** 1002	1.899,–
			4195	



4-place clamping station

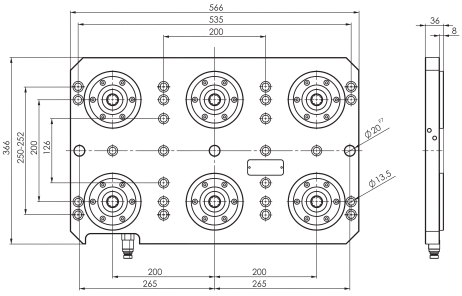
- For common table slot sizes 63, 100 and 125 mm

Entrance/sealing force kN	Retention force N	Weight kg	art.no.	€
4 x 10 kN	25	30	**459073** 1002	3.349,–
			4195	

6-place clamping station

- For common table slot sizes 63, 100 and 125 mm

Entrance/sealing force kN	Retention force N	Weight kg	art.no.	€
6 x 10 kN	25	46	**459075** 1002	4.749,–
			4195	



ATORN® K20 multi-clamping stations

- Hydraulic unlocking
- Precision < 0.005 mm
- Steel, unhardened
- Attachment holes in the base plate can be provided to your specifications on request.
- The clamping station has 1 connection: 1 x hydr. opening
- Installation drawings, further sizes as well as customised clamping stations for your machine available on request.
- **Benefit:** Low overall height of just 46 mm



Double clamping station

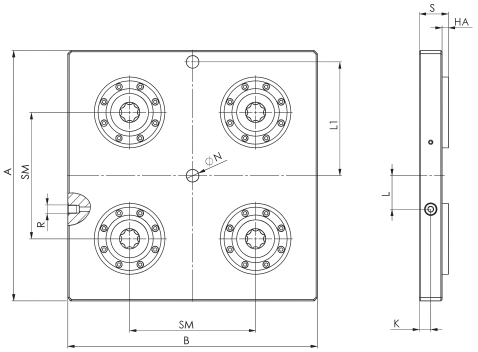
Entrance/sealing force kN	Retention force N	A mm	B mm	HA mm	K mm	L mm	L1 mm	N mm	R mm	S mm	SM mm	Weight kg	art.no.	€
2 x 20 kN	55	196	396	10	19	45	180	20	G1/4	46	200	21.9	**459071** 2002	2.880,–
													4195	

4-place clamping station

Entrance/sealing force kN	Retention force N	A mm	B mm	HA mm	K mm	L mm	L1 mm	N mm	R mm	S mm	SM mm	Weight kg	art.no.	€
4 x 20 kN	55	396	396	10	19	50	180	20	G1/4	46	200	44	**459073** 2002	4.249,–
													4195	

6-place clamping station

Entrance/sealing force kN	Retention force N	A mm	B mm	HA mm	K mm	L mm	L1 mm	N mm	R mm	S mm	SM mm	Weight kg	art.no.	€
6 x 20 kN	55	396	596	10	20	50	200	20	G1/4	46	200	75	**459075** 2002	7.879,–
													4195	

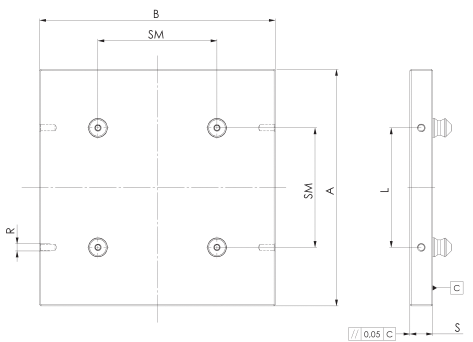


ATORN® Interchangeable pallets for K10.2 and K20

- High-strength aluminium
- Including clamping nipple and catch screw
- **Note:** attachment holes can be provided in interchangeable pallets on request.
- Other dimensions, pitch variation and clamping nipple quantities are available on request.



for clamping station	A mm	B mm	L mm	R	S mm	SM mm	Weight kg	art.no.	€
K10.2 / 2-place	166	396	90	M12	30	200	6	**459070** 1002	449,–
K10.2 / 4-place	366	366	200	M12	30	200	10	459070 1004	689,–
K10.2 / 6-place	366	566	200	M12	30	200	16	459070 1006	939,–
K20 / 2-place	196	396	120	M12	40	200	6	459070 2002	449,–
K20 / 4-place	396	396	200	M12	40	200	16	459070 2004	759,–
K20 / 6-place	396	596	200	M12	40	200	25	459070 2006	1.055,–
								4195	



ATORN® Clamping fittings and catch screws

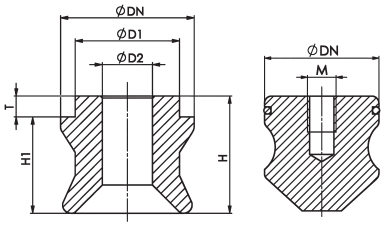


Clamping fitting

- Hardened, for hydraulic clamping modules

Type	DN mm	D1 mm	D2 mm	H mm	H1 mm	M mm	T mm	art.no.	€
Nullpunkt-Nippel K10,2	22.0	15	8	19	16	-	3	**459061** 1001	40,80
Schwert-Nippel K10,2	22.0	15	8	19	16	-	3	459061 1002	40,80
Untermaß-Nippel K10,2	21.8	15	8	19	16	-	3	459061 1003	40,80
Schutz-Nippel K10,2	21.8	-	-	-	-	M8	-	459061 1004	40,80
Nullpunkt-Nippel K20	32.0	25	12	28	23	-	5	459061 2001	78,–
Schwert-Nippel K20	32.0	25	12	28	23	-	5	459061 2002	78,–
Untermaß-Nippel K20	31.8	25	12	28	23	-	5	459061 2003	78,–
Schutz-Nippel K20	31.8	-	-	-	-	M8	-	459061 2004	78,–

4167

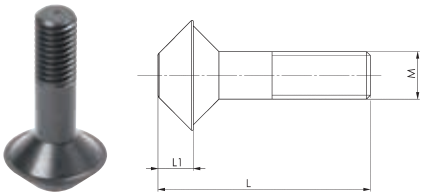


Catch screws

- Strength class 12.9
- Versions in other lengths and materials (e.g. stainless steel) available on request

for type	M mm	L mm	L1 mm	art.no.	€
K10,2	M8	37	6	**459062** 1001	15,30
K20	M12	54	9	459062 2001	17,80

4167



ATORN® Air hydraulic pump and connection set

- For opening hydraulic clamping modules or clamping stations.
- Compact, pneumatically operated hydraulic pump for single-acting circuits
- Integrated safety valve for regulating the hydraulic output pressure (factory-set to a maximum operating pressure of 60 bar)
- The expansion body in the oil tank enables the pump to be used horizontally and vertically.
- Connecting thread, air: G1/4
- Connecting thread, oil: G1/4
- **Note**: the pump is filled with a standard commercial hydraulic oil (HLP32) ready for use

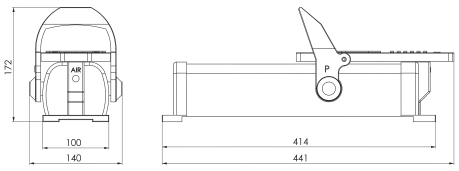


1. Air intake,
2. Hydraulic outlet

Air hydraulic pump

Air pressure min. bar	Air pressure max. bar	Usable oil vol. cm³	Transport vol. max. cm³/min	Weight kg	art.no.	€
4	6	1000	750	5.9	**459078** 0001	675,–

4195





Connection set

- For connecting the clamping station and air hydraulic pump

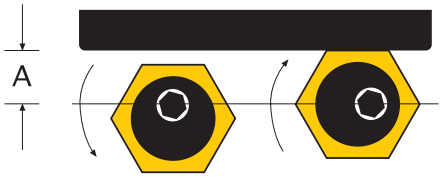
Description	art.no.	€
Connection set incl. manometer	**459078** 0007	179,–

4195

Eccentric clamps

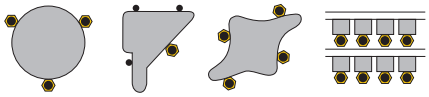
- For fixture plates
- Eccentric head causes the clamping motion and clamping force (up to 27 kN)
- The hexagonal brass washer acts as a clamp
- Any workpiece shape can be clamped with positioning pins and one or two clamping screws
- Low height allows workpiece surfaces to be machined easily
- No need to consider the position of clamping claws in CNC programming
- Space-saving multi-clamping due to low height







It is easy and cost-effective to clamp parts of all shapes:



Eccentric anchor clamps

Clamp force kN	Interior hexagon mm	Thread	Thread length mm	Wr. width mm	Wr. width height mm	Eccentric travel mm	Contents	art.no.	€
0.9	3	M4	10	8	2.8	0.8	10 units	**475001** 0003	60,50
3.4	4	M6	12	16	4.8	1.3	10 units	475001 0004	65,50
3.6	5	M8	16	20	4.8	1	12 units	475001 0005	81,–
3.63	5	M8/V2A	16	20	6.4	1	4 units	475001 0015	103,–
9	7	M10	20	20	6.4	1.6	10 units	475001 0007	73,50
18	8	M12	25	25	9.5	2	8 units	475001 0008	81,–
27	12	M16	30	30	12.7	2.5	4 units	475001 0012	61,–

4156



Spare hexagonal washers

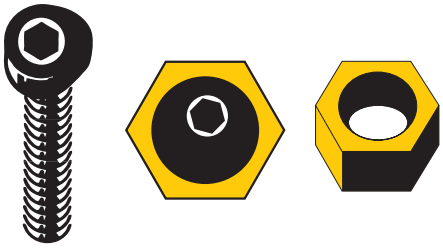
Thread	Contents	art.no.	€
M4	10 units	**475005** 0004	35,10
M6	10 units	475005 0006	37,40
M8 V2A	8 units	475005 0080	77,50
M8	8 units	475005 0008	31,60
M10	4 units	475005 0010	16,60
M12	4 units	475005 0012	22,–
M16	4 units	475005 0016	29,10

4156

Spare screws

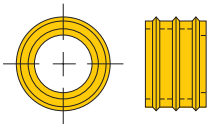
Thread	Contents	art.no.	€
M4	10 units	**475003** 0004	50,50
M6	10 units	475003 0006	55,–
M8 V2A	8 units	475003 0080	153,–
M8	8 units	475003 0008	44,40
M10	4 units	475003 0010	22,90
M12	4 units	475003 0012	31,60
M16	4 units	475003 0016	53,–

4156



Fastening disc

- Suitable for clamping raw and cast parts as well as untreated surfaces
- Made from case-hardened steel
- Each pack contains fastening discs and eccentric screws





Clamp force kN	Interior hexagon mm	Thread	Thread length mm	Total height mm	Ø mm	Contents	Eccentric travel mm	art.no.	€
9	7	M10	20	6.4	20.6	8 units	1.6	**475007** 0010	184,–
18	8	M12	22.5	9.6	25.4	8 units	2	475007 0012	159,–
27	12	M16	26.8	12.7	30.1	4 units	2.5	475007 0016	104,–

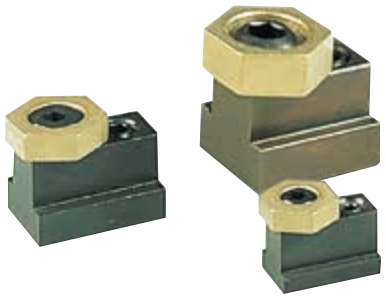
4156



Eccentric clamping screws

- **For T-slots**
- Connecting the normal clamping elements to slot nuts using eccentric screws (with brass hexagonal washers or fastening discs) allows workpieces to be clamped cost-effectively on work tables or clamping plates with T-slots.
- A screw secures the T-slot nut in the T-slot
- Low height; surfaces of flat parts can also be machined
- Rapid adjustment to various workpiece sizes and parts of any shape, no rectangular lateral surfaces required
- Clamping force up to 27 kN
- Supplied with brass washer and slot nut





Clamp force kN	Interior hexagon mm	Thread	Thread length mm	Wr. width mm	Wr. width height mm	Eccentric travel mm	for T-slot mm	Contents	art.no.	€
3.4	4	M 6	12	16	4.8	1	8	2 units	**475012** 0408	56,–
3.4	4	M 6	12	16	4.8	1	10	2 units	475012 0410	57,50
3.6	5	M 8	16	21	4.8	1	12	2 units	475012 0512	59,50
9	7	M10	20	21	6.4	1.6	14	2 units	475012 0714	60,–
18	8	M12	25	25	9.5	2	16	2 units	475012 0816	61,50
18	8	M12	25	25	9.5	2	18	2 units	475012 0818	64,50
27	12	M16	30	30	12.7	2.5	20	2 units	475012 1220	64,50
27	12	M16	30	30	12.7	2.5	22	2 units	475012 1222	113,–

4156



Set

- 6 x eccentric clamping screws (with brass washers)
- 4 x slot nuts
- 2x hex keys

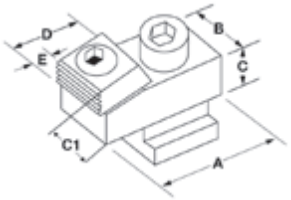
T-slot size mm	art.no.	€
8	**475014** 0008	133,–
10	475014 0010	134,–
12	475014 0012	134,–
14	475014 0014	138,–
16	475014 0016	143,–
18	475014 0018	151,–
20	475014 0020	210,–
22	475014 0022	280,–

4156



Pull-down clamping claw

- Pull-down effect
- For 14 mm, 16 mm and 18 mm T-slots, and for mounting directly on the fixture plate or work table
- M12 eccentric clamping screw for clamping force of 18 kN
- Body and clamping washer case-hardened
- Clamping washer with toothed edge for raw parts and smooth edge for machined parts
- The clamping washer adapts to the angular position of the workpiece, i.e. the workpiece does not have to be rectangular





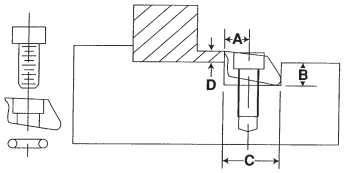
A mm	B mm	C mm	C front side mm	D mm	Eccentric travel mm	T-slot size mm	art.no.	€
50	28.5	16	12.7	25.5	2	14	**475050** 0014	73,–
50	28.5	16	12.7	25.5	2	16	475050 0016	73,–
50	28.5	16	12.7	25.5	2	18	475050 0018	79,50
50	28.5	16	12.7	25.5	2	Without T-slot nut	475050 0000	63,50

4156



Pitbull anchor clamps

- Pull-down effect with clamping forces up to 50 kN
- Sharp-edged for raw parts (cast iron, forged, cut parts) or with a blunt edge to avoid clamping marks
- Space-saving
- Low height
- Compact design
- High clamping force
- Strong pull-down
- No protruding edges to interfere with tools
- Multi-sided machining
- Ideal for multi-clamping
- **Note:** Dimensions B and D are guideline values






Brass


Hard. steel, blunt

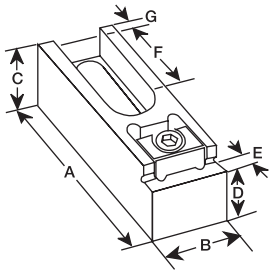

Hard. steel, sharp

Type of clamping edge	Substance	A mm	B mm	C mm	D mm	Thread	Clamping width mm	Clamping force N·m	Tightening torque N·m	Clamping route mm		art.no.	€
Sharp	Hard. steel	3.8	3.6	9.5	1.9	M 2.5	9.5	2800	1.8	0.15	1	**475036** 0250	183,–
Blunt	Hard. steel	3.8	3.6	9.5	1.9	M 2.5	9.5	2800	1.8	0.15	1	475036 0251	182,–
Blunt	Brass	3.8	3.6	9.5	1.9	M 2.5	9.5	900	0.6	0.15	1	475036 0252	184,–
Sharp	Hard. steel	5.1	4.8	12.7	2.6	M 4	12.7	6600	5.6	0.4	1	475036 0400	190,–
Blunt	Hard. steel	5.1	4.8	12.7	2.6	M 4	12.7	6600	5.6	0.4	1	475036 0401	187,–
Blunt	Brass	5.1	4.8	12.7	2.6	M 4	12.7	1800	2.8	0.4	1	475036 0402	191,–
Sharp	Hard. steel	7.6	7.2	19.05	3.8	M 6	19.1	16000	22.5	0.6	1	475036 0600	183,–
Blunt	Hard. steel	7.6	7.2	19.05	3.8	M 6	19.1	16000	22.5	0.6	1	475036 0601	182,–
Blunt	Brass	7.6	7.2	19.05	3.8	M 6	19.1	4200	5.6	0.6	1	475036 0602	184,–
Sharp	Hard. steel	10.2	11.4	25.4	6.3	M 10	25.4	26000	40	1.7	1	475036 1000	183,–
Blunt	Hard. steel	10.2	11.4	25.4	6.3	M 10	25.4	26000	40	1.7	4	475036 1001	183,–
Sharp	Hard. steel	15.2	16.3	38.1	9.5	M 12	38.1	50000	145	1.9	2	475036 1200	167,–
Blunt	Hard. steel	15.2	16.3	38.1	9.5	M 12	38.1	50000	145	1.9	2	475036 1201	167,–

4156

Pitbull universal anchor clamps

- **For T-slots**
- Can be used on fixture plates, T-slot work tables, grid plates, clamping cubes, etc.
- Base body hardened, supporting surfaces ground
- Supplied without fastening screw or T-slot nut





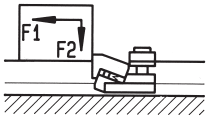
A mm	B mm	C mm	D h6 mm	E mm	F mm	G mm	H mm	Clamping force N·m	Screw	for T-slot mm	Clamping width mm	art.no.	€
104	31.7	25	18.54	9.1	43.2	12.7	0.6	1600	M 12	14, 16, 18	19.1	**475038** 0120	125,–
107	38.1	41	35	9.1	38.6	10.9	1.25	2600	M 16	22, 24	25.4	475038 0160	335,–

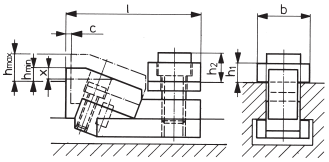
4156

Mini-Bulle flat clamp

- Hardened and tempered to a burnished shade
- h1 = at maximum T-slot depth in accordance with DIN 650
- To obtain low clamping heights with minimum slot depths, the clamp can be ground down by x mm
- Allows particularly flat workpieces to be clamped
- Clamping jaws have a wedge effect that ensures the workpiece is securely fixed to the work table
- Horizontal forces are absorbed by a screw corresponding to the slot size; this holds the clamp securely in position without damaging the table
- **Supplied in pairs**, boxed, complete with fastening screws (DIN 912, 8.8 / ISO 4762) and a hexagonal screwdriver (ISO 2936)
- Prices per pair







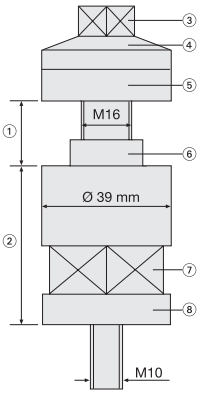
Groove width mm	c mm	h min. mm	h max. mm	x mm	l max. mm	b mm	h1 mm	h2 mm	F1 kN	F2 kN	art.no.	€
12	1.8	2.5	13.5	5	52	18	7	11	5	0.6	**466102** 0012	87,50
14	1.8	1.5	13.5	5	55	22	8	11	5.5	0.7	466102 0014	101,50
16	2.5	2.5	17	6	68	25	9	15	8	0.9	466102 0016	113,50
18	2.5	1.5	16	6	71	28	10	15	9	1	466102 0018	117,–
22	3	4.5	21.5	9	89	35	14	20	16	1.9	466102 0022	179,50

4157

Clamping bolts

- Secure, safe, precise and powerful clamping for practically any workpiece shape
- Also suitable as a clamping support
- Length tolerance class js6, ensures that clamping is parallel to the table
- Standard clamping range 8 - 40 mm, can be extended to a maximum of 87 mm using clamping screws
- Description:

1. Clamping range
2. Length (js6)
3. Wrench size 18
4. Clamping screw
5. Clamping ring
6. Diameter 22 mm
7. Wrench size 36 mm
8. Spacer washer





Clamping bolts

- Supplied with M10 threaded bolts, spacer washer, clamping screw, clamping ring

Description	Length mm	Clamping range mm	art.no.	€
With fixed thread M10	50	8 - 40	**476001** 0050	109,–
With replaceable threaded bolts M10	100	8 - 40	476001 0100	117,–
With replaceable threaded bolts M10	150	8 - 40	476001 0150	164,–

4140

Clamping screws

Clamping range mm	art.no.	€
8 - 40	**476002** 0840	33,20
40 - 67	476002 4067	60,–
65 - 87	476002 6587	73,–

4140



Clamping ring

Designation	art.no.	€
Clamping ring	**476003** 0001	26,–

4140

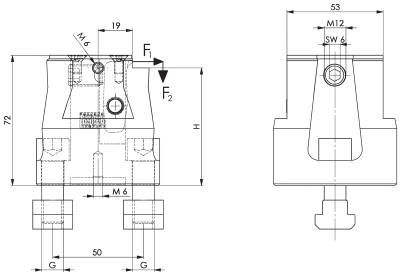
Threaded bolts

Thread	art.no.	€
M10	**476004** 0010	27,90
M12	476004 0012	27,90
M14	476004 0014	27,90
M16	476004 0016	27,90

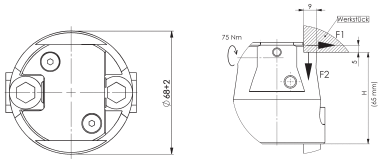
4140

Side clamp

- M12 x 14, complete with slot nut
- Base body made from case-hardened steel, nitrided
- Tensioning hook made from case-hardened steel
- Tightening torque 75 Nm
- Attachment with screws, strength class 10.9
- Compact design
- Pull-down effect ensures that workpieces are securely and safely attached
- Increased plate tension for adding bores and slots
- Clamps plates laterally, allowing the full surface to be machined without any protruding contours
- Lateral thread allows a stop to be attached
- Can be used horizontally and vertically
- Reduced tooling costs
- Diverse and variable applications
- Can be used as a clamping element and as a fixed stop
- Moving the adjustment screw causes tensioning hooks to clamp the workpiece. At the same time, a pull-down effect is created on the supporting surface.
- Attaching a lateral stop enables the workpiece to be clamped repeatedly in the same position.





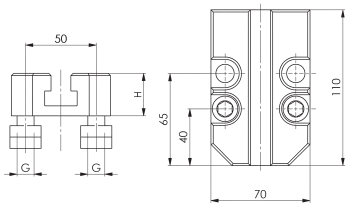




Groove width mm	Thread	H mm	F1 kN	F2 kN	art.no.	€
14	M12	65 ± 0.1	12	7	**467040** 1214 4157	250,–

Base plate, transverse

- For clamping at right angles to the table slot
- Base body made from tempering steel, hardened and burnished
- Attachment with screws, strength class 10.9
- M12 x 14, complete with slot nut

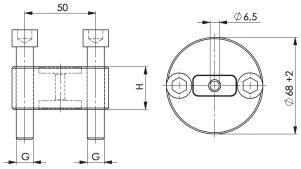




Groove width mm	Thread	H mm	art.no.	€
14	M12	30 ± 0.1	**467041** 1214 4157	128,50

Base plate

- Precise side clamp movement by means of an alignment block on the work table
- Workpiece support increased by 30 mm
- Base body made from tempering steel, hardened and burnished
- Attachment with screws, strength class 10.9

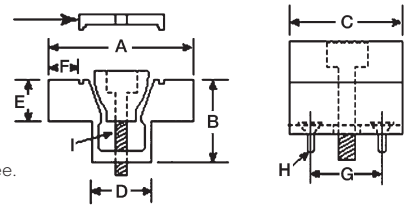




Groove width mm	Thread	H mm	art.no.	€
14	M12	30 ± 0.1	**467042** 1214 4157	88,–

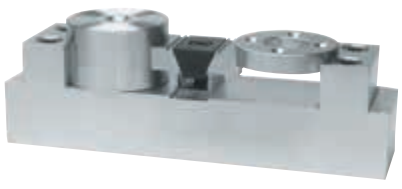
Form-fit double wedge clamp

- Extra wide jaws, can be milled to fit the shape of the workpiece
- For securely clamping difficult parts
- Clamps unstable parts without distortion
- Space-saving
- Allows two workpieces to be clamped simultaneously
- Higher productivity due to reduced auxiliary processing times
- Ideal for machining centres as well as milling and drilling machines
- **Note:** A locking plate is used during form milling to ensure that the jaws remain in a stable position and vibration-free.
- Supplied with wedge clamp and screw



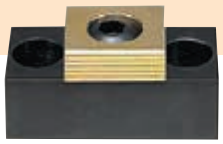


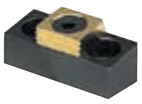
Clamp force kN	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	Locking plate	art.no.	€
2.2	28.6	12.7	15.7	10.6	6.3	4.6	10.2	M 2.5	M 4	Yes	**475035** 0040	38,70
2.2	28.6	12.7	15.7	10.6	6.3	4.6	10.2	M 2.5	M 4	No	475035 0041	35,70
6.8	38.1	19	23.9	16.1	9.4	6.6	15.9	M 4	M 6	Yes	475035 0060	40,20
6.8	38.1	19	23.9	16.1	9.4	6.6	15.9	M 4	M 6	No	475035 0061	37,90
9	50.8	25.4	31.8	20.8	12.7	9.9	20.6	M 4	M 8	Yes	475035 0080	56,–
9	50.8	25.4	31.8	20.8	12.7	9.9	20.6	M 4	M 8	No	475035 0081	53,–
16	76.2	38.1	47.5	30.9	19.1	15.7	30.5	M 5	M 12	Yes	475035 0120	154,–
16	76.2	38.1	47.5	30.9	19.1	15.7	30.5	M 5	M 12	No	475035 0121	149,–
27	101.6	50.8	63.5	41.3	25.4	20.3	41	M 6	M 16	Yes	475035 0160	255,–
27	101.6	50.8	63.5	41.3	25.4	20.3	41	M 6	M 16	No	475035 0161 4156	245,–

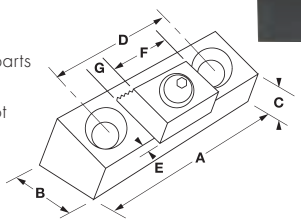


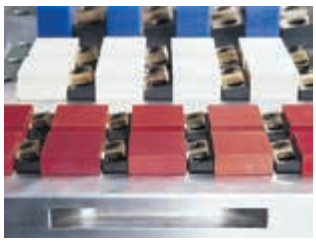
Combination pull-down claw

- The pull-down effect ensures that the workpiece is secured to the support
- The front side is used for clamping, the rear side can be used as a stop
- Space-saving multi-clamping
- Clamping washer with toothed surface for raw parts and smooth surface for machined parts
- Preferably for mounting in a slot of width B (+0.05 mm)
- The engagement height of the clamping washer can be changed by the depth of the slot
- Body and clamping washer are case-hardened
- Supplied with fastening screws









A mm	B mm	C mm	D mm	E mm	F mm	G mm	Eccentric screw	Eccentric travel mm	Attachment screw	art.no.	€
43.2	19	12.7	25.4	2.3	19	6.4	M10 x 1.5	1.6	M8 x 16	**475051** 0008	64,50
54	25.4	11.4	33.5	2.8	25.4	9.7	M12 x 1.75	2	M10 x 20	475051 0010	76,–
75	38.1	25.2	50.8	3.3	38.1	12.7	M16 x 2	2.5	M12 x 30	475051 0012	159,–

4156

Clamping film

- For clamping workpieces that cannot otherwise be clamped due to their instability, shape or lack of magnetic properties
- The workpiece and film are heated to 85 - 95 °C (furnace, heating plate, hot air etc.)
- After cooling, the holding force is approx. 30 - 200 N/cm² depending on the type or supporting surface
- Allows machining on thin or difficult-to-clamp parts
- Can also be used to reinforce thin workpieces during machining
- Film can be used with steel, non-ferrous metals, glass, wood, most plastics and many other materials
- Contains no harmful chemicals



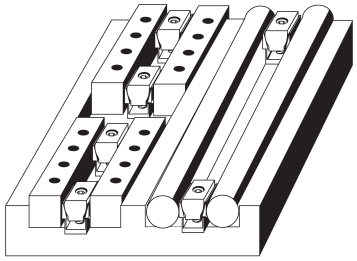


Description	art.no.	€
Clamping film, roll 250 mm x 7600 mm	**475100** 3076	220,–
Clamping film, roll 300 mm x 1500 mm	475100 3015	57,–

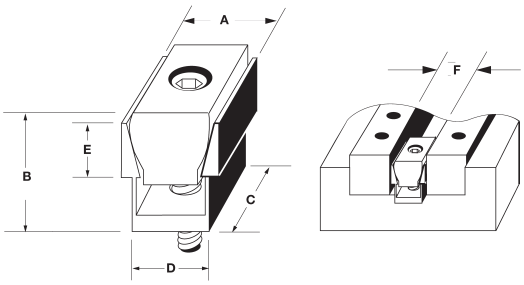
4156

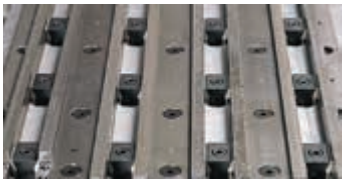
Double wedge clamp

- One clamping element simultaneously clamps two workpieces
- Space-saving multi-clamping reduces auxiliary processing times and therefore unit costs
- Cost-effective clamping fixture
- For round and rectangular parts
- Clamping force up to 27 kN
- The use of a support and clamping bar further simplifies the process of constructing clamping fixtures









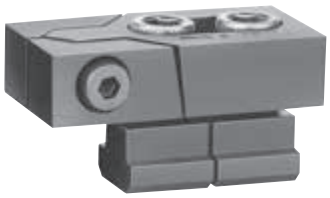
Clamp force kN	Spread mm	Interior hexagon mm	Thread	A mm	B mm	D mm	C mm	E mm	F mm	Contents	art.no.	€
0.9	0.2	1.5	M2	6.1	6.9	5.3	8.1	3.6	6.3	6 units	**475034** 0002	108,–
1.4	0.5	2	M2.5	9.1	9.7	7.9	11.9	4.7	9.5	6 units	475034 0025	108,–
2.2	1.4	3	M4	12.3	14.5	10.4	15.9	5.6	12.7	8 units	475034 0004	106,–
6.8	1.8	5	M6	18.6	19	16.1	23.8	9.5	19	6 units	475034 0006	110,–
8.9	2.4	6	M8	24.8	25.9	20.8	31.7	12.7	25.4	4 units	475034 0008	87,50
15.6	3.1	10	M12	37.3	38.6	30.8	47.6	19	38.1	2 units	475034 0012	192,–
26.7	3.8	14	M16	49.7	51.5	41.2	63.4	25.3	50.8	2 units	475034 0016	290,–

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Bulle deep clamping jaws

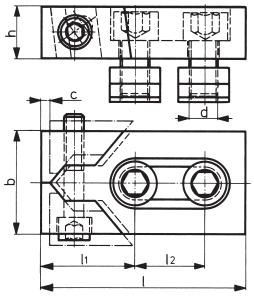
- Hardened and tempered to a burnished shade
- **Supplied in pairs**, boxed, complete with fastening screws (DIN 912, 10.9 / ISO 4762), T-slot nuts (DIN 508) and a hexagonal screwdriver (ISO 2936)
- Prices per pair





Groove width mm	c mm	h mm	b mm	l mm	l1 mm	l2 mm	d mm	F1 kN	F2 kN	art.no.	€
12	3	20	40	80	26	39	M10	16	0.6	**466103** 0012	97,50
14	3	20	40	80	26	39	M12	22	0.9	466103 0014	106,–
16	3	20	40	80	26	39	M12	22	0.9	466103 0016	113,–
16	4	25	50	100	34	46	M14	32	1.2	466103 1016	133,–
18	4	25	50	100	34	46	M16	36	1.4	466103 0018	138,50
20	4	25	50	100	34	46	M16	36	1.4	466103 0020	147,50
22	5	30	78	140	50	65	M20	36	1.4	466103 0022	247,50
24	5	30	78	140	50	65	M20	36	1.4	466103 0024	264,–
28	5	30	78	140	50	65	M24	40	1.6	466103 0028	316,–
30	5	30	78	140	50	65	M24	40	1.6	466103 0030	356,–

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Correcting wedge HERKULES

- **Height wedge**
- Centring hole Ø 12 mm
- Ductile iron and steel hardened and tempered to a burnished shade, incl. ball attachment 466019 0001
- Correcting wedge can still be adjusted slightly at a load equal to one third of the maximum load capacity
- Precision-machined wedge surfaces enable smooth, sensitive adjustments (< 1/10 mm) using either a knurled-head screw or hexagonal screwdriver
- Double wedge effect, produces considerable lift and precise vertical movement without lateral displacement
- Height wedge tried and tested with heavy cast iron or forged parts on large machine tools



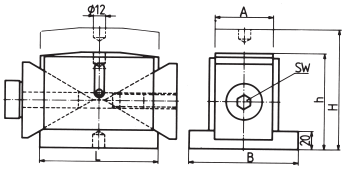
466050 0063



466050 0125

h - H mm	A mm	B mm	L mm	Wr. width mm	H mm/rev	Load capacity kN	art.no.	€
50 - 63	40	40	63	13	0.86	40	**466050** 0063	273,–
100 - 125	60	115	125	24	1.16	100	466050 0125	587,–
170 - 190	80	145	175	36	2.02	250	466050 0190	1.535,–

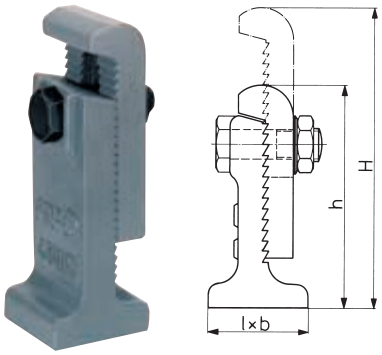
4157



Clamping supports, toothed

- **(Serrated jacks)**
- Malleable cast iron, painted
- Step height 5.2 mm
- Plane-milled standing surface





model	h - H mm	l mm	b mm	Load capacity kN	art.no.	€
3	155 - 223	60	60	60	**466049** 0003	97,–
4	220 - 340	80	80	90	466049 0004	175,–

4157

Screw jack

- **With flat support**
- Tempering steel, painted
- Spindle: Trapezoidal thread, self-locking, with end stop body



Centre hole Ø mm	Head Ø mm	Load capacity kN	Base body Ø mm	Support surface height mm	art.no.	€
12	31	25	31	38 - 50	**466015** 3150	26,20
12	50	100	50	42 - 52	466015 5052	34,80
12	50	100	50	50 - 70	466015 5070	37,20
12	50	100	50	70 - 100	466015 5010	42,40
12	68	120	68	100 - 140	466015 7014	75,–
12	80	170	70	140 - 210	466015 7021	135,50
12	100	350	80	190 - 300	466015 8010	246,–

4157

Aluminium screw jack

- **With chip guard**
- Wiper protects the vice thread against the ingress of swarf
- Centring hole Ø 12 mm
- Spindle made from tempering steel, burnished
- Trapezoidal thread, self-locking, with end stop body

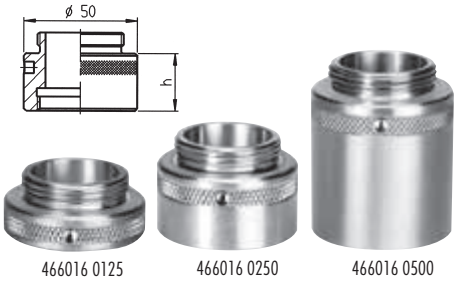


Description	Head Ø mm	Base body Ø mm	Load capacity kN	Support surface height mm	art.no.	€
Screw jack with aluminium foot	50	50	30	75 - 88	**466016** 0001	99,50
Screw jack with magnetic foot	50	50	30	75 - 88	466016 0002	124,–

4157

Aluminium spacer rings

- For subsequent height extension



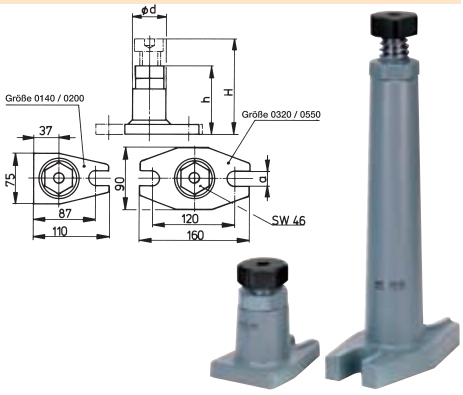
466016 0125 466016 0250 466016 0500

h mm	art.no.	€
12.5	**466016** 0125	12,50
25	466016 0250	17,10
50	466016 0500	30,30

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Screw jack ATLAS

- **With locking nut**
- Centring hole Ø 12 mm
- Spindle, complete Tempering steel, with trapezoidal thread
- Spindle head, burnished
- Grey cast iron base body, painted

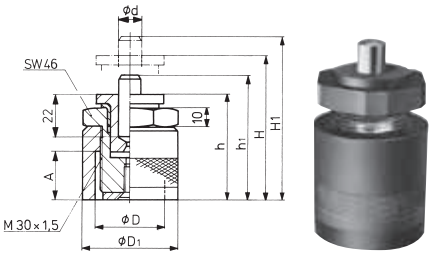


h - H mm	a mm	Load capacity kN	d mm	art.no.	€
100 - 140	18	60	46	**466017** 0140	80,50
140 - 200	18	60	46	466017 0200	101,–
200 - 320	22	40	46	466017 0320	140,50
320 - 550	22	25	46	466017 0550	164,–

4157

Height-adjustable threaded pedestal

- With DIN 6325 cylindrical pins, 12 x 50 and 12 x 80 (1 of each)
- Centring hole Ø 12 mm
- Tempering steel, burnished
- Spindle: metric fine thread, M30 x 1.5, with end stop body
- Sliding insert runs on pressed-in plain bearing bush

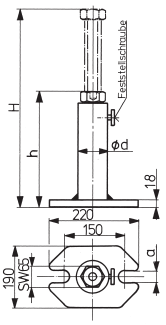


h - H mm	with straight shank 12 x 50 mm	with straight shank 12 x 80 mm	d mm	D1 mm	D mm	Load capacity kN	A mm	art.no.	€
55 - 75	83 - 103	113 - 133	12	50	36	30	25	**466050** 0075	113,–
75 - 115	103 - 143	133 - 173	12	50	36	30	45	466050 0115	117,50

4157

Screw jack, heavy-duty

- **Heavy-duty design, with brass locking screw**
- Centring hole Ø 12 mm
- Spindle, complete Tempering steel, with trapezoidal thread
- Spindle head, burnished
- Base body made from tempering steel, painted



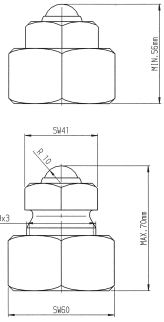


h - H mm	a mm	d mm	Load capacity kN	art.no.	€
200 - 300	26	65	80	**466018** 0300	264,–
290 - 470	26	65	60	466018 0460	318,–
430 - 750	26	65	50	466018 0750	404,–
710 - 1250	26	65	40	466018 1250	532,–

4157

Threaded pedestal

- **With rotatable ball**
- Steel hardened and tempered to a burnished shade
- Hardened ball
- Punctiform support, particularly suitable for supporting and aligning free-formed surfaces such as cast iron and forged workpieces
- Calibration accuracy approx. 0.1 mm





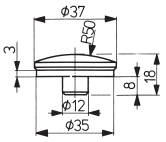
h - H mm	Load capacity kN	art.no.	€
56 - 70	30	**466050** 0070	47,60

4157

Attachments

- **For alignment and support elements**
- Steel hardened and tempered to a burnished shade

Ball attachment

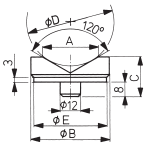


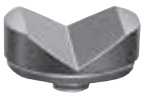


Ø mm	art.no.	€
37	**466019** 0001	8,30

4157

V-block attachment

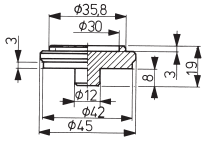




A mm	B mm	C mm	D min. mm	E mm	max. Ø mm	art.no.	€
32	45	23	10	42	50	**466019** 0010	20,40
56	65	38	22	62	100	466019 0011	41,10

4157

Centring plate



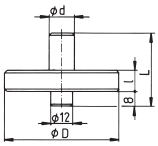


Description	art.no.	€
For mounting Ø 50 mm screw jacks	**466019** 0020	12,60

4157

Fixing attachment

- For forked clamps



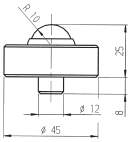


D mm	d mm	L mm	l mm	art.no.	€
63	14	40	12	**466019** 0030	31,80
78	25	53	15	466019 0031	37,60

4157

Attachment with rotatable ball

- Hardened ball





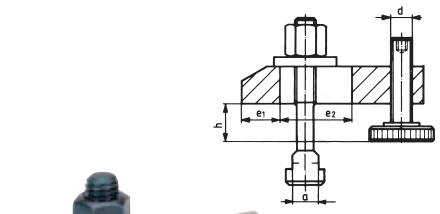
Load capacity kN	art.no.	€
30	**466019** 0040	31,70

4157

Clamp sets

DIN 6314V DIN 6316V

- **With adjustable support screw**
- Tempering steel, painted
- Complete with DIN 787 T-slot screws, nuts and washers
- Supplied without notched clamping lever, please order separately

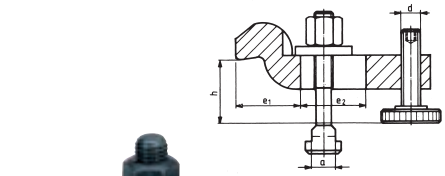




Bevelled, DIN 6314 V

T-groove dimension a mm	T-groove screw DIN 787	Clamp height mm	d mm	e1 mm	e2 mm	art.no.	€
10	M10 x 80	8 - 32	M10	15	30	**466005** 0010	26,40
12	M12 x100	10 - 40	M12	21	40	466005 0012	30,50
14	M12 x100	10 - 38	M12	21	40	466005 0014	30,50
16	M16 x125	13 - 48	M16	26	45	466005 0016	41,90
18	M16 x125	13 - 46	M16	26	45	466005 0018	43,70
20	M20 x160	16 - 65	M20	30	60	466005 0020	68,50
22	M20 x160	16 - 65	M20	30	60	466005 0022	69,–

4157





Offset, DIN 6316 V

T-groove dimension a mm	T-groove screw DIN 787	Clamp height mm	d mm	e1 mm	e2 mm	art.no.	€
10	M10 x 80	22 - 46	M10	36	32	**466010** 0010	35,50
12	M12 x100	28 - 58	M12	44	40	466010 0012	40,90
14	M12 x100	28 - 56	M12	44	40	466010 0014	41,10
16	M16 x125	36 - 71	M16	51.5	50	466010 0016	55,50
18	M16 x125	36 - 69	M16	51.5	50	466010 0018	56,–
20	M20 x160	43 - 92	M20	59	70	466010 0020	88,–
22	M20 x160	43 - 92	M20	59	70	466010 0022	88,50

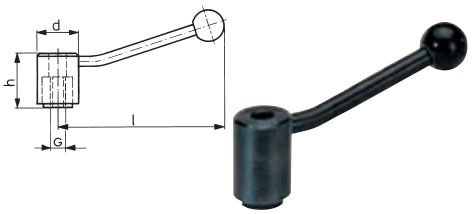
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Notched clamping lever

- Steel, burnished

Thread	l mm	d mm	h mm	suitable for	art.no.	€
M12	135	33	48	4660050012 4660050014 4660100012 4660100014	**466011** 0012	58,50
M16	158	40	64	4660050016 4660050018 4660100016 4660100018	466011 0016	67,–

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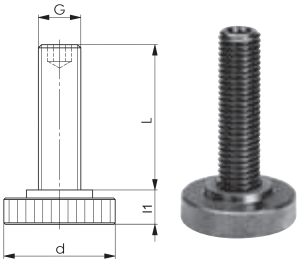


Support screw, DIN 6314 S

- Hardened and tempered
- Strength class 8.8

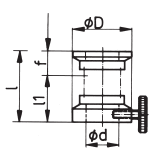
Thread	d mm	l1 mm	l mm	art.no.	€
10	30	8	39	**466012** 0010	10,90
12	36	10	49	466012 0012	11,40
12	36	10	94	466012 0112	16,30
16	42	13	55	466012 0016	14,30
16	42	13	90	466012 0116	19,40
20	50	16	69	466012 0020	21,30
20	50	16	109	466012 0120	24,70

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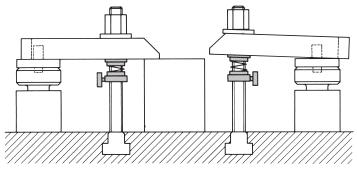
Clamp holder

- **Spring-loaded, with brass locking screw**
- The clamp holder supports the clamp when positioning and removing the workpiece. This makes unclamping both quick and safe.





f = spring deflection



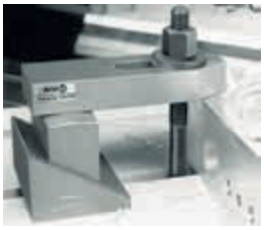
model	D mm	d mm	l mm	l1 mm	Spring deflection mm	suitable for screws	art.no.	€
1	22	10.5	30	22	8	M8 - M10	**466055** 0001	19,60
2	26	14.5	32	22	10	M12 - M14	466055 0002	21,10
3	32	18.5	38	26	12	M16 - M18	466055 0003	22,30
4	38	22.5	40	28	12	M20 - M22	466055 0004	24,90
5	45	27.5	44	32	12	M24 - M27	466055 0005	30,30

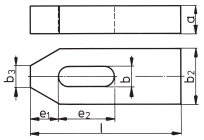
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Clamps

DIN 6314 | DIN 6315B | DIN 6316

- Tempering steel, painted





Standard version, DIN 6314

Slit width mm	l mm	a mm	b2 mm	b3 mm	e1 mm	e2 mm	for screws	art.no.	€
6.6	50	10	20	8	10	20	M6	**466020** 0007	5,65
9	60	12	25	10	13	22	M8	466020 0009	6,95
11	80	15	30	12	15	30	M10	466020 0011	8,30
14	100	20	40	14	21	40	M12 M14	466020 0014	8,60
18	125	25	50	18	26	45	M16 M18	466020 0018	11,60
22	160	30	60	22	30	60	M20 M22	466020 0022	22,40
26	200	30	70	26	35	80	M24	466020 0026	32,–
33	250	40	80	34	45	100	M30	466020 0033	83,50

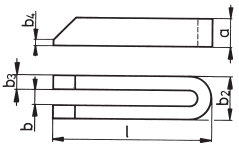
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Forked clamp, bevelled, DIN 6315 B

Slit width mm	l mm	a mm	b2 mm	b3 mm	b4 mm	for screws	art.no.	€
6.6	60	12	19	6	3	M6	**466025** 0007	7,35
9	80	15	25	8	4	M8	466025 0009	7,45
11	100	20	31	10	5	M10	466025 0011	8,70
14	125	25	38	12	6	M12 M14	466025 0014	9,95
18	160	30	48	15	8	M16 M18	466025 0018	14,10
22	200	40	52	15	10	M20 M22	466025 0022	21,40
26	200	40	66	20	10	M24	466025 0026	26,50
33	250	50	74	20	12	M30	466025 0034	45,70

4157



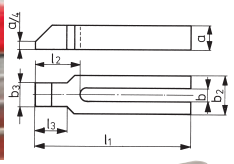


Forked clamp with nose

Slit width mm	l1 mm	a mm	b2 mm	b3 mm	l2 mm	l3 mm	for screws	art.no.	€
9	100	15	30	16	32	18	M8	**466030** 0009	19,60
11	125	20	30	20	38	24	M10	466030 0011	27,10
14	160	25	40	24	47	30	M12 M14	466030 0014	22,70
18	200	30	50	28	57	36	M16 M18	466030 0018	31,–
22	250	40	60	35	68	45	M20 M22	466030 0022	57,–
26	315	40	70	43	83	56	M24	466030 0026	70,–
33	400	50	80	50	88	56	M30	466030 0034	137,50

4157





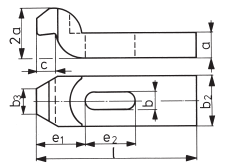


Standard, offset, DIN 6316

Slit width mm	l mm	a mm	b2 mm	b3 mm	c mm	e1 mm	e2 mm	for screws	art.no.	€
6.6	60	10	20	10	8	22	20	M6	**466040** 0007	11,–
9	80	12	25	12	9	27.5	25	M8	466040 0009	12,40
11	100	15	30	15	12	36	32	M10	466040 0011	13,30
14	125	20	40	20	16	44	40	M12 M14	466040 0014	13,60
18	160	25	50	25	20	51.5	50	M16 M18	466040 0018	22,–
22	200	30	60	30	24	59	70	M20 M22	466040 0022	35,90
26	250	35*	70	35	25	76.5	80	M24	466040 0026	61,50
33	315	50	80	40	40	96	100	M30	466040 0033	155,–

4157





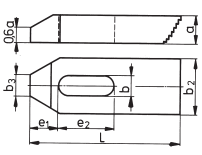


With stepped teeth

- Compatible with universal clamping supports 466047 0001-0002-0003
- The long version is designed for large spans due to wide slot spacing or greater workpiece clamping depths, e.g. on engraving machines.

Slit width mm	l mm	a mm	b2 mm	b3 mm	e1 mm	e2 mm	for screws	art.no.	€
6.6	50	10	20	8	10	20	M6	**466046** 0007	9,70
9	60	12	25	10	13	22	M8	466046 0009	11,90
11	80	15	30	12	15	30	M10	466046 0011	15,–
14	100	20	40	14	21	40	M12 M14	466046 0014	15,10
18	125	25	50	18	26	45	M16 M18	466046 0018	21,70
22	160	30	60	22	30	60	M20 M22	466046 0022	34,70
26	200	30	70	26	35	80	M24	466046 0026	55,–

4157

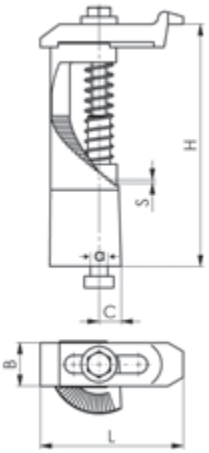




Helical clamp

- Special cast iron
- Screw and threaded sleeve strength class 8.8
- Quick to use as a clamping unit
- Finely graded steps allow rapid adjustment for any workpiece height up to approx. 320 mm
- Requires little space on the work table thanks to the compact design





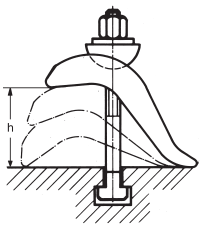
model	a mm	H mm	S mm	C mm	L mm	B mm	art.no.	€
0	12	0 - 45	0.75	14	140	34	**466044** 1200	113,50
1	12	15 - 45	0.75	14	110	34	466044 1201	115,50
2	12	30 - 75	1.25	15	112	34	466044 1202	134,50
3	12	60 - 135	2.5	16	112	34	466044 1203	171,50
4	12	120 - 195	2.5	18	112	34	466044 1204	227,50
5	12	180 - 255	2.5	19	112	34	466044 1205	261,–
0	14	0 - 45	0.75	14	140	34	466044 1400	116,50
1	14	15 - 45	0.75	14	112	34	466044 1401	117,–
2	14	30 - 75	1.25	15	112	34	466044 1402	138,50
3	14	60 - 135	2.5	16	112	34	466044 1403	176,–
4	14	120 - 195	2.5	18	112	34	466044 1404	235,50
5	14	180 - 255	2.5	19	112	34	466044 1405	265,–
0	16	0 - 70	1.25	20	160	50	466044 1600	184,50
1	16	25 - 70	1.25	20	125	50	466044 1601	185,50
2	16	50 - 120	2.5	21	125	50	466044 1602	225,–
3	16	100 - 220	3.75	21	125	50	466044 1603	297,–
4	16	200 - 320	3.75	24	125	50	466044 1604	392,–
0	18	0 - 70	1.25	20	160	50	466044 1800	195,–
1	18	25 - 70	1.25	20	125	50	466044 1801	196,–
2	18	50 - 120	2.5	21	125	50	466044 1802	239,50
3	18	100 - 220	3.75	21	125	50	466044 1803	310,–
4	18	200 - 320	3.75	24	125	50	466044 1804	412,–

4157

Clamping claw

- **Infinitely variable**
- Forged steel, hardened and tempered, galvanised
- Complete with DIN 787 T-slot screws, nuts and washers
- For quickly bridging various clamping heights with no additional supports
- Requires little space on the work table
- Designed for maximum loads
- Particularly suitable as a clamping device for cutting and stamping tools





T-groove dimension DIN 787	Clamp height mm	T-groove screw DIN 787	Clamps L x W mm	art.no.	€
12	0 - 50	12 M12 x 125	140 x 50	**466001** 0012	47,70
14	0 - 50	14 M12 x 125	140 x 50	466001 0014	48,60
16	0 - 75	16 M16 x 160	140 x 50	466001 0016	52,50
18	0 - 75	18 M16 x 160	140 x 50	466001 0018	52,50
20	0 - 85	20 M20 x 200	175 x 60	466001 0020	71,50
22	0 - 85	22 M20 x 200	175 x 60	466001 0022	73,–

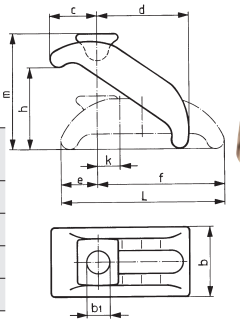
4157



ATORN®
Performance demands quality

Clamping claw, short

- **Without clamping screw; with U-section**
- Infinitely variable
- Hardened and tempered, galvanised and blue passivated
- Supplied without T-slot screws or nuts





T-groove dimension DIN 787	T-groove screw DIN 787	L mm	b mm	b1 mm	c mm	d mm	e mm	f mm	h mm	k mm	m mm	art.no.	€
12/14	M12	88	38	13	28	48	23	68	0 - 35	14	30-55	**466002** 0012	26,50
16/18	M16	130	56	18	38	74	29	101	0 - 55	18	42-84	466002 0016	32,80
20/22	M20	140	66	22	46	80	32	112	0 - 65	20	50-100	466002 0020	42,50
24/28	M24	174	76	26	52	100	39	135	0 - 75	24	54-111	466002 0024	60,50

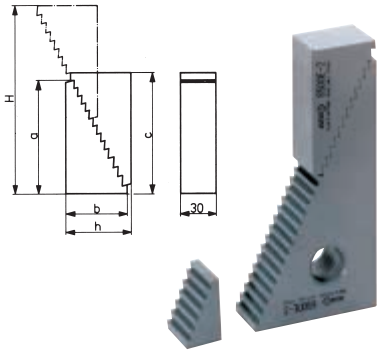
4157

Universal clamping supports

- **Individual and as a set**
- Tempering steel, painted
- Can be used in pairs with all clamps and individually with the toothed clamps
- Vertical step height 4.65 mm, horizontal step height 2.3 mm



466047 0020



model	h - H mm	a mm	b mm	c mm	art.no.	€
1	23 - 51	33	19	33	**466047** 0001	4,16
2	39 - 107	66	35.5	66	466047 0002	7,55
3	71 - 208	131	68	131	466047 0003	18,70
Set consisting of 8x Model 1, 8x Model 2, 4x Model 3	22 - 208				466047 0020	176,–

4157

Compact clamp

- Compact design
- Clamping force up to 16 kN
- Special polyamide seal protects the inside from dirt
- Ideal access when machining
- Clamps workpieces quickly
- Supplied without chuck key or clamping screw

Casing and lever arm made from tempering steel

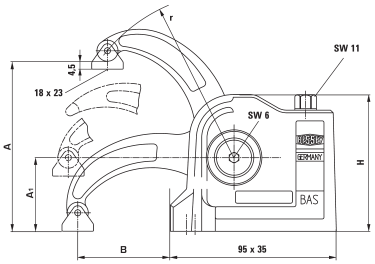




Figure 1

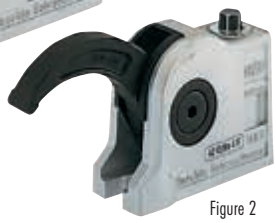
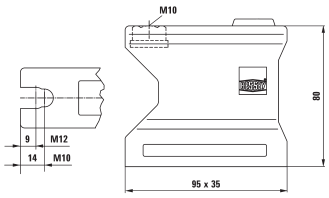


Figure 2

Compact clamp

A mm	A1 mm	B mm	r mm	H mm	Cyl. Screws DIN 912	Clamp force kN	Illustration	art.no.	€
88	42	40	75	78	M10 / M12	16	1	**468010** 0088	254,20
97	42	60	94	78	M10 / M12	12	1	468010 0097	263,30
97	42	60	94	78	M10 / M12	12	2	468010 0197	262,50

4192





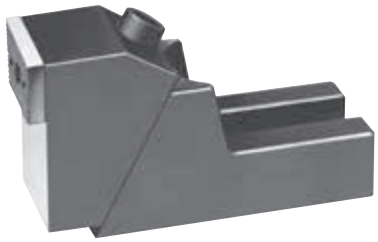
Clamp base

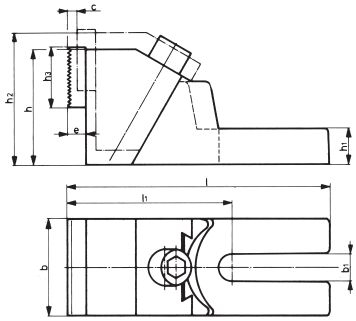
Clamp height mm	Cyl. Screws DIN 912	art.no.	€
80	M10 / M12	**468011** 0010	80,20

4192

Heavy-duty clamping jaws

- **Reversible clamping jaws**
- High design with precise V-shaped guide
- Base body: Malleable cast iron
- Clamping jaws: Case-hardened steel
- Reversible clamping jaws with smooth side for machined workpieces and grooved side for raw clamping surfaces
- Robust clamping jaws with large clamping surfaces, ideal for laterally clamping high workpieces
- We recommend using two clamping screws to secure the heavy-duty clamping jaws to the work table! DIN 787 T-slot screws must be ordered separately for use as fastening screws (two per clamping jaw), depending on the slot width.





Groove width mm	b1 mm	c mm	h mm	h1 mm	h2 mm	h3 mm	b mm	l mm	l1 mm	e mm	art.no.	€
12 - 18	19	8	85	38	99	40	65	179	112.5	12	**466105** 0019	270,–
20 - 30	26	11	100	45	118	40	75	230	138.5	12	466105 0026	367,–
32 - 42	38	15	120	56	145	40	90	265	158	12	466105 0038	535,–

4157

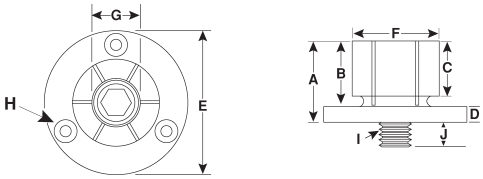
Mandrels

- Almost every workpiece has at least one bore. These are suitable for clamping the workpiece (turning, milling, drilling part) to allow machining on the second side.
- 5-sided machining
- Space saving design for multi-clamping
- Mandrel can be easily turned and milled to the desired diameter
- Easy to use

For through-holes

- Fastening flange diameter is concentric to the clamping diameter
- Clamping screw, hardened and coated
- Supplied with 3 fastening screws (H)





A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	J mm	art.no.	€
10.7	7.6	6.1	3	20 h9	7.4	4.1	M2 on PC Ø 13.7	M 2	4.1	**475041** 0020	73,50
21.8	16	15	5.9	29.72 h9	12.4	7.2	M3 on PC Ø 21	M 4	8	475041 0040	74,–
24.9	19	15	5.9	31.5 h9	14.2	12.2	M3 on PC Ø 23.1	M 6	12	475041 0060	78,–
24.9	19	15	5.9	37.5 h9	20	13.5	M3 on PC Ø 29	M 8	14	475041 0080	82,–
28.6	22.2	17.5	6.4	50 h8	27	18	M4 on PC Ø 39.4	M 10	17	475041 0100	106,–
31.8	25.4	20.6	6.4	56 h8	35.3	25.4	M4 on PC Ø 45.5	M 12	21	475041 0120	131,–
39.6	31.8	27	7.9	69.5 h8	42	30	M5 on PC Ø 55.9	M 16	22	475041 0160	168,–
39.6	31.8	27	7.9	75.5 h8	51	30	M5 on PC Ø 63.9	M 16	22	475041 0161	181,–
45.5	37.6	32.3	7.9	107.5 h8	77	30	M6 on PC Ø 92.5	M 16	20	475041 0162	315,–
45.5	38	32	8	132.9 h9	103	30	M6 on PC Ø 118	M 16	20	475041 0163	405,–

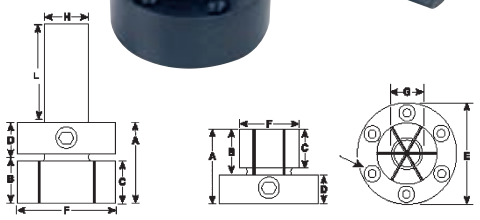
4156



For blind bores

- Available in various sizes, although turned or milled by the user to the specific diameter of the workpiece
- Supplied with lock ring





suitable for	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	L mm	Interior hexagon mm	Clamp force kN	art.no.	€
Lathe	44.4	25	21	19	53.3	53.3	18	25	45	6	20	**475042** 0444	275,–
Milling machine	41.0	22	17.5	19	50	28.7	17.8	M 4	39.4	6	20	475042 0410	187,–

4156

Boxed clamping tool set

- Designed for machine tools with T-slot tables
- All the necessary elements for quickly clamping tools, fixtures or workpieces
- All parts are replaceable and extensible
- Tempering steel in accordance with DIN or company standards
- Screw parts strength class 8 or 10
- Wooden box with removable hinged lid



M10 x 10 set with deep clamping jaws, slot width 10 mm

Description	art.no.	€
4 universal clamping supports Model 1 4 universal clamping supports Model 2 2 universal clamping supports Model 3 4 clamps with stepped teeth 11 x 80 2 DIN 787 T-slot screws M10 x 40 4 DIN 787 T-slot screws M10 x 63 4 DIN 787 T-slot screws M10 x 100 4 DIN 6379 studs M10 x 80 6 DIN 6330 B hexagonal nuts M10 6 DIN 6319 G conical washers M10 4 extension nuts M10 4 "Bulle" deep clamping jaws slot width 12 1 No. 3113 A combination spanner 16 x 16 1 screw paste 75 ml	**466590** 1010	485,–
	4158	

M12 x 12 set with deep clamping jaws, slot width 12 mm

Description	art.no.	€
4 universal clamping supports Model 2 4 universal clamping supports Model 3 4 clamps with stepped teeth 14 x 100 2 DIN 787 T-slot screws M12 x 50 4 DIN 787 T-slot screws M12 x 100 4 DIN 787 T-slot screws M12 x 125 4 DIN 6379 studs M12 x 100 6 DIN 6330 B hexagonal nuts M12 6 DIN 6319 G conical washers M12 4 extension nuts M12 4 "Bulle" deep clamping jaws slot width 12 1 No. 3113 A combination spanner 18 x 18 1 screw paste 75 ml	**466590** 1212	552,–
	4158	

M12 x 14 set with deep clamping jaws, slot width 14 mm

Description	art.no.	€
4 universal clamping supports Model 2 4 universal clamping supports Model 3 4 clamps with stepped teeth 14 x 100 2 DIN 787 T-slot screws M12 x 50 4 DIN 787 T-slot screws M12 x 80 4 DIN 787 T-slot screws M12 x 125 4 DIN 6379 studs M12 x 100 6 DIN 6330 B hexagonal nuts M12 6 DIN 6319 G conical washers M12 4 extension nuts M12 4 "Bulle" deep clamping jaws slot width 14 1 slot scraper for slot widths 14-20 1 No. 3113 A combination spanner 18 x 18 1 screw paste 75 ml	**466590** 1214	576,–
	4158	

M16 x 16 set with deep clamping jaws, slot width 16 mm

Description	art.no.	€
4 universal clamping supports Model 2 4 universal clamping supports Model 3 4 clamps with stepped teeth 18 x 125 2 DIN 787 T-slot screws M16 x 63 4 DIN 787 T-slot screws M16 x 100 4 DIN 787 T-slot screws M16 x 160 4 DIN 6379 studs M16 x 125 6 DIN 6330 B hexagonal nuts M16 6 DIN 6319 G conical washers M16 4 extension nuts M16 4 "Bulle" deep clamping jaws slot width 16 1 slot scraper for slot widths 14-20 1 No. 3113 A combination spanner 24 x 24 1 screw paste 75 ml	**466590** 1616	747,–
	4158	

M16 x 18 set with deep clamping jaws, slot width 18 mm

Description	art.no.	€
4 universal clamping supports Model 2 4 universal clamping supports Model 3 4 clamps with stepped teeth 18 x 125 2 DIN 787 T-slot screws M16 x 63 4 DIN 787 T-slot screws M16 x 100 4 DIN 787 T-slot screws M16 x 160 4 DIN 6379 studs M16 x 125 6 DIN 6330 B hexagonal nuts M16 6 DIN 6319 G conical washers M16 4 extension nuts M16 4 "Bulle" deep clamping jaws slot width 18 1 slot scraper for slot widths 14-20 1x No. 3113 A combination spanner 24 x 24 1 screw paste 75 ml	**466590** 1618	758,–
	4158	

M20 x 20 set with spring type clamp holder, slot width 20 mm

Description	art.no.	€
4 universal clamping supports Model 2 4 universal clamping supports Model 3 4 clamps with stepped teeth 22 x 160 4 DIN 787 T-slot screws M20 x 125 4 DIN 787 T-slot screws M20 x 200 4 DIN 6379 studs M20 x 125 6 DIN 6330 B hexagonal nuts M20 6 DIN 6319 G conical washers M20 4 extension nuts M20 1 slot scraper for slot widths 14-20 1 No. 3113 A combination spanner 30 x 30 4 DIN 6342 spring-type clamp holders Ø 38 1 screw paste 75 ml	**466590** 2020	737,–
	4158	

M20 x 22 set with spring type clamp holder, slot width 22 mm

Description	art.no.	€
4 universal clamping supports Model 2 4 universal clamping supports Model 3 4 clamps with stepped teeth 22 x 160 4 DIN 787 T-slot screws M20 x 125 4 DIN 787 T-slot screws M20 x 200 4 DIN 6379 studs M20 x 125 6 DIN 6330 B hexagonal nuts M20 6 DIN 6319 G conical washers M20 4 extension nuts M20 1 slot scraper for slot widths 22-32 1x No. 3113 A combination spanner 30 x 30 4 DIN 6342 spring-type clamp holders Ø 38 1 screw paste 75 ml	**466590** 2022	747,–
	4158	

M20 x 24 set with spring type clamp holder, slot width 24 mm

Description	art.no.	€
4 universal clamping supports Model 2 4 universal clamping supports Model 3 4 clamps with stepped teeth 22 x 160 8 DIN 787 T-slot screws M20 x 125 4 DIN 787 T-slot screws M20 x 200 8 DIN 508 T-slot nuts M20 x 24 6 DIN 6330 B hexagonal nuts M20 6 DIN 6319 G conical washers M20 4 extension nuts M20 1 slot scraper for slot widths 22-32 1 No. 3113 A combination spanner 30 x 30 4 DIN 6342 spring-type clamp holders Ø 38 1 screw paste 75 ml	**466590** 2024	750,–
	4158	

Clamping screw set

- **For T-slots**
- All parts hardened and tempered, strength classes 8 or 10
- Wooden box with hinged lid



466591 1214

M10 x 10 set, slot width 10 mm

Description	art.no.	€
2 DIN 787 T-slot screws M10 x 40 4 DIN 787 T-slot screws M10 x 80 4 DIN 787 T-slot screws M10 x 100 4 DIN 6379 studs M10 x 50 4 DIN 6379 studs M10 x 80 4 DIN 6379 studs M10 x 200 4 DIN 6330 B hexagonal nuts M10 4 extension nuts M10 4 DIN 6319 C spherical washers 4 DIN 6319 G conical washers 4 DIN 6340 washers	**466591** 1010	156,–

4158

M12 x 12 set, slot width 12 mm

Description	art.no.	€
2 DIN 787 T-slot screws M12 x 50 4 DIN 787 T-slot screws M12 x 80 4 DIN 787 T-slot screws M12 x 125 4 DIN 6379 studs M12 x 63 4 DIN 6379 studs M12 x 100 4 DIN 6379 studs M12 x 200 4 DIN 6330 B hexagonal nuts M12 4 extension nuts M12 4 DIN 6319 C spherical washers 4 DIN 6319 G conical washers 4 DIN 6340 washers	**466591** 1212	175,–

4158

M12 x 14 set, slot width 14 mm

Description	art.no.	€
2 DIN 787 T-slot screws M12 x 50 4 DIN 787 T-slot screws M12 x 80 4 DIN 6379 studs M12 x 63 4 DIN 6379 studs M12 x 100 4 DIN 6379 studs M12 x 125 4 DIN 6379 studs M12 x 200 4 DIN 508 T-slot nuts M12 x 14 4 DIN 6330 B hexagonal nuts M12 4x extension nuts M12 4 DIN 6319 C spherical washers 4 DIN 6319 G conical washers 4 DIN 6340 washers	**466591** 1214	176,–

4158

M14 x 16 set, slot width 16 mm

Description	art.no.	€
2 DIN 787 T-slot screws M14 x 63 4 DIN 787 T-slot screws M14 x 100 4 DIN 6379 studs M14 x 63 4 DIN 6379 studs M14 x 100 4 DIN 6379 studs M14 x 160 4 DIN 6379 studs M14 x 250 4 DIN 508 T-slot nuts M14 x 16 4 DIN 6330 B hexagonal nuts M14 4 extension nuts M14 4 DIN 6319 C spherical washers 4 DIN 6319 G conical washers 4 DIN 6340 washers	**466591** 1416	211,50

4158

M16 x 16 set, slot width 16 mm

Description	art.no.	€
2 DIN 787 T-slot screws M16 x 63 4 DIN 787 T-slot screws M16 x 100 2 DIN 787 T-slot screws M16 x 160 4 DIN 6379 studs M16 x 80 4 DIN 6379 studs M16 x 125 4 DIN 6379 studs M16 x 250 4 DIN 6330 B hexagonal nuts M16 4 extension nuts M16 4 DIN 6319 C spherical washers 4 DIN 6319 G conical washers 4 DIN 6340 washers	**466591** 1616	240,50

4158

M16 x 18 set, slot width 18 mm

Description	art.no.	€
2 DIN 787 T-slot screws M16 x 63 4 DIN 787 T-slot screws M16 x 100 DIN 6379 stud M16 x 80 DIN 6379 stud M16 x 125 DIN 6379 stud M16 x 160 DIN 6379 stud M16 x 250 4 DIN 508 T-slot nuts M16 x 18 4 DIN 6330 B hexagonal nuts M16 4 extension nuts M16 4 DIN 6319 C spherical washers 4 DIN 6319 G conical washers 4 DIN 6340 washers	**466591** 1618	241,–

4158

M18 x 20 set, slot width 20 mm

Description	art.no.	€
6 DIN 6379 studs M18 x 80 8 DIN 6379 studs M18 x 125 4 DIN 6379 studs M18 x 200 4 DIN 6379 studs M18 x 315 4 DIN 508 T-slot nuts M18 x 20 4 DIN 6330 B hexagonal nuts M18 4 extension nuts M18 4 DIN 6340 washers	**466591** 1820	325,–

4158

M20 x 22 set, slot width 22 mm

Description	art.no.	€
2 DIN 787 T-slot screws M20 x 80 4 DIN 787 T-slot screws M20 x 125 4 DIN 6379 studs M20 x 80 4 DIN 6379 studs M20 x 125 4 DIN 6379 studs M20 x 200 4 DIN 6379 studs M20 x 315 4 DIN 508 T-slot nuts M20 x 22 4 DIN 6330 B hexagonal nuts M20 4 extension nuts M20 4 DIN 6319 C spherical washers 4 DIN 6319 G conical washers 4 DIN 6340 washers	**466591** 2022	364,–

4158

M24 x 28 set, slot width 28 mm

Description	art.no.	€
2 DIN 787 T-slot screws M24 x 100 4 DIN 787 T-slot screws M24 x 160 4 DIN 6379 studs M24 x 100 4 DIN 6379 studs M24 x 160 4 DIN 6379 studs M24 x 250 4 DIN 6379 studs M24 x 400 4 DIN 508 T-slot nuts M24 x 28 4 DIN 6330 B hexagonal nuts M24 4 extension nuts M24 4 DIN 6319 C spherical washers 4 DIN 6319 G conical washers 4 DIN 6340 washers	**466591** 2428	593,–

4158

Basic range

- All parts are made from tempering steel, T-slot screws hardened and tempered
- Rolled thread
- Ideal for tool making, production and use in training facilities

M12 x 14 set, slot width 14 mm

- Clamping force 20 kN
- Clamping heights 165 mm (2 clamping positions), 70 mm (4 clamping positions)

Description	art.no.	€
2 clamps with stepped teeth 14 x 100 2 clamps with stepped teeth 14 x 160 4 universal clamping supports Model 2 4 universal clamping supports Model 3 2 DIN 787 T-slot screws M12 x 50 4 DIN 787 T-slot screws M12 x 80 4 DIN 787 T-slot screws M12 x 125 2 DIN 6379 studs M12 x 100 6 DIN 6330 B hexagonal nuts M12 2 extension nuts M12 6 DIN 6340 washers M12	**466592** 1214	271,–
	4158	



466592 1214

M14 x 16 set, slot width 16 mm

- Clamping force 28 kN
- Clamping heights 195 mm (2 clamping positions), 100 mm (4 clamping positions)

Description	art.no.	€
2 clamps with stepped teeth 14 x 100 2 clamps with stepped teeth 14 x 160 4 universal clamping supports Model 2 universal clamping suppor Model 3 2 DIN 787 T-slot screws M14 x 63 4 DIN 787 T-slot screws M14 x 100 4 DIN 787 T-slot screws M14 x 160 2 DIN 6379 studs M14 x 100 2 DIN 6379 studs M14 x 160 6 DIN 6330 B hexagonal nuts M14 2 extension nuts M14 6 DIN 6340 washers M14	**466592** 1416	309,–
	4158	

M16 x 18 set, slot width 18 mm

- Clamping force 40 kN
- Clamping heights 205 mm (2 clamping positions), 130 mm (4 clamping positions)

Description	art.no.	€
2 clamps with stepped teeth 18 x 125 2 clamps with stepped teeth 18 x 200 4 universal clamping support Model 2 universal clamping support Model 3 2 DIN 787 T-slot screws M16 x 63 4 DIN 787 T-slot screws M16 x 100 4 DIN 787 T-slot screws M16 x 160 4 DIN 6379 studs M16 x 160 2 DIN 6379 studs M16 x 200 6 DIN 6330 B hexagonal nuts M16 4 extension nuts M16 6 DIN 6340 washers M16	**466592** 1618	359,–
	4158	

Screw paste

- Mineral grease-based
- Synergistic combination of highly effective white solid lubricants
- Heat-resistant and non-washable
  (Water resistance tested in accordance with DIN 51807, P.2; grease loss after 1 hr. at 37.8 °C = 1.4%)
- Particularly when aggressive cooling lubricants are used

Contents	Usable temperature range °C	art.no.	€
75 ml	-25 to +125	**466593** 0075	9,20
		4158	



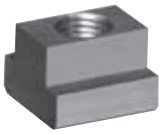
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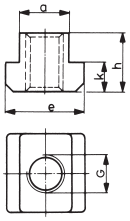


T-slot nuts

- Hardened and tempered, strength class 10
- The full load capacity for T-slot nuts can only be achieved if the screw connection uses the entire thread length

Standard version, DIN 508





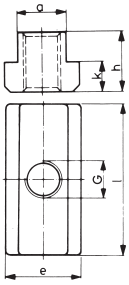
T-slot nominal dimension mm	Thread	a mm	e mm	h mm	k mm	art.no.	€
6	M5	5.7	10	8	4	**466545** 0006	2,24
8	M6	7.7	13	10	6	466545 0008	1,78
10	M8	9.7	15	12	6	466545 0010	1,88
12	M8	11.7	18	14	7	466545 1208	2,82
12	M10	11.7	18	14	7	466545 0012	1,88
14	M10	13.7	22	16	8	466545 1410	3,10
14	M12	13.7	22	16	8	466545 0014	2,24
16	M10	15.7	25	18	9	466545 1610	4,52
16	M12	15.7	25	18	9	466545 1612	3,72
16	M14	15.7	25	18	9	466545 0016	2,92
18	M12	17.7	28	20	10	466545 1812	4,80
18	M14	17.7	28	20	10	466545 1814	4,08
18	M16	17.7	28	20	10	466545 0018	3,50
20	M16	19.7	32	24	12	466545 2016	5,65
20	M18	19.7	32	24	12	466545 0020	5,30
22	M18	21.7	35	28	14	466545 2218	7,75
22	M20	21.7	35	28	14	466545 0022	5,85
24	M20	23.7	40	32	16	466545 2420	10,90
24	M22	23.7	40	32	16	466545 0024	10,30
28	M20	27.7	44	36	18	466545 2820	14,90
28	M22	27.7	44	36	18	466545 2822	18,20
28	M24	27.7	44	36	18	466545 0028	10,90
30	M24	29.7	48	38	19	466545 3024	26,70
32	M27	31.6	50	40	20	466545 0032	27,10
36	M24	35.6	54	44	22	466545 3624	24,30
36	M30	35.6	54	44	22	466545 0036	23,10
42	M30	41.6	65	52	26	466545 4230	48,60
42	M36	41.6	65	52	26	466545 0042	47,50
48	M42	47.6	75	60	30	466545 0048	92,–

4158

Long

- Protects the table slots on precision machinery





T-slot nominal dimension mm	Thread	a mm	e mm	l mm	h mm	k mm	art.no.	€
6	M5	5.7	10	20	8	4	**466547** 0006	4,08
8	M6	7.7	13	26	10	6	466547 0008	4,12
10	M8	9.7	15	30	12	6	466547 0010	4,14
12	M10	11.7	18	36	14	7	466547 0012	4,32
14	M12	13.7	22	44	16	8	466547 0014	4,80
16	M14	15.7	25	50	18	9	466547 0016	6,10
18	M16	17.7	28	56	20	10	466547 0018	7,55
20	M18	19.7	32	64	24	12	466547 0020	10,90
22	M20	21.7	35	70	28	14	466547 0022	13,30
28	M24	27.7	44	88	36	18	466547 0028	24,80

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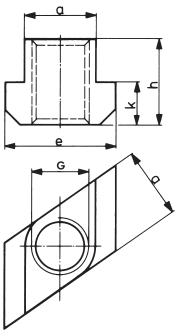
Rhombus T-slot nuts

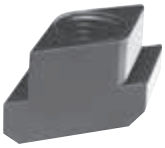
- Hardened and tempered
- Lower load capacity than comparable DIN 508 sizes due to reduced contact surface in the T-slot

T-slot nominal dimension mm	Thread	Strength class	a mm	e mm	h mm	k mm	art.no.	€
12	M10	8	11.7	18	14	7	**466548** 0012	5,05
14	M10	8	13.7	22	16	8	466548 1410	6,15
14	M12	8	13.7	22	16	8	466548 0014	6,15
16	M14	6	15.7	25	18	9	466548 0016	6,90
18	M16	6	17.7	28	20	10	466548 0018	7,10
20	M16	8	19.7	32	24	12	466548 2016	8,95
20	M18	6	19.7	32	24	12	466548 0020	9,45
22	M20	6	21.7	35	28	14	466548 0022	11,10
28	M20	8	27.7	44	36	18	466548 2820	18,60
28	M24	6	27.7	44	36	18	466548 0028	18,60
36	M30	6	35.6	54	44	22	466548 0036	35,90
42	M36	6	41.6	65	52	26	466548 4236	71,–

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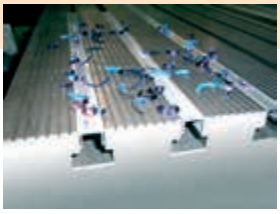


T-slot cover strip

- Made from aluminium profile
- Can easily be shortened to the desired length with a fine sawblade

suitable for T-slots mm	Dimensions	art.no.	€
12	12 x 1000	**466549** 0120	24,10
14	14 x 1000	466549 0140	25,70
16	16 x 1000	466549 0160	27,50
18	18 x 1000	466549 0180	28,60
20	20 x 1000	466549 0200	30,60
22	22 x 1000	466549 0220	31,70
24	24 x 1000	466549 0240	34,80
28	28 x 1000	466549 0280	38,–
36	36 x 1000	466549 0360	44,60

4157




Slot scraper

suitable for T-slots mm	art.no.	€
14 - 20	**466548** 1420	4,12
22 - 32	466548 2232	8,05

4157





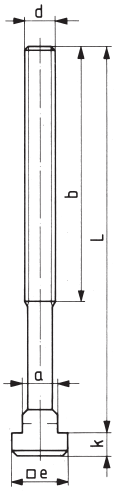
... with precision.

ATORN®
Performance demands quality

Screws for T-slots

DIN 787

- **Complete with nut and washer**
- Forged, with milled T-slot guide and rolled thread
- M6 - M12 hardened and tempered to strength class 10.9
- M14 - M42 hardened and tempered to strength class 8.8
- Further sizes available on request





Groove width mm	d mm	L mm	b mm	a mm	e mm	k mm	art.no.	€
6	M6	25	15	5.7	10	4	**466501** 0601	7,45
6	M6	40	28	5.7	10	4	466501 0602	7,60
6	M6	63	40	5.7	10	4	466501 0603	8,20
8	M8	32	22	7.7	13	6	466501 0801	8,20
8	M8	50	35	7.7	13	6	466501 0802	8,50
8	M8	80	50	7.7	13	6	466501 0803	8,80
10	M10	40	30	9.7	15	6	466501 1001	8,45
10	M10	63	45	9.7	15	6	466501 1002	7,95
10	M10	80	50	9.7	15	6	466501 1012	8,15
10	M10	100	60	9.7	15	6	466501 1003	8,35
12	M12	50	35	11.7	18	7	466501 1201	8,50
12	M12	63	40	11.7	18	7	466501 1202	8,65
12	M12	80	55	11.7	18	7	466501 1203	8,90
12	M12	100	65	11.7	18	7	466501 1223	9,40
12	M12	125	75	11.7	18	7	466501 1204	9,65
12	M12	160	100	11.7	18	7	466501 1224	11,60
12	M12	200	120	11.7	18	7	466501 1205	11,60
14	M12	50	35	13.7	22	8	466501 1210	8,50
14	M12	63	45	13.7	22	8	466501 1211	8,75
14	M12	80	55	13.7	22	8	466501 1212	8,95
14	M12	100	65	13.7	22	8	466501 1222	9,60
14	M12	125	75	13.7	22	8	466501 1213	10,10
14	M12	160	100	13.7	22	8	466501 1233	11,10
14	M12	200	120	13.7	22	8	466501 1214	11,20
16	M14	63	45	15.7	25	9	466501 1401	10,10
16	M14	80	55	15.7	25	9	466501 1411	11,–
16	M14	100	65	15.7	25	9	466501 1402	11,40
16	M14	125	75	15.7	25	9	466501 1412	11,80
16	M14	160	100	15.7	25	9	466501 1403	12,30
16	M14	250	120	15.7	25	9	466501 1404	16,10
16	M16	63	45	15.7	25	9	466501 1601	11,30
16	M16	80	55	15.7	25	9	466501 1602	11,90
16	M16	100	65	15.7	25	9	466501 1603	12,20
16	M16	125	85	15.7	25	9	466501 1623	13,50
16	M16	160	100	15.7	25	9	466501 1604	14,10
16	M16	200	125	15.7	25	9	466501 1605	15,–

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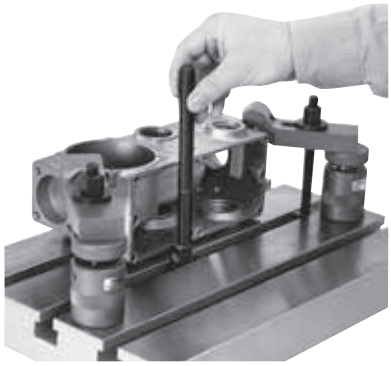
Groove width mm	d mm	L mm	b mm	a mm	e mm	k mm	art.no.	€
16	M16	250	150	15.7	25	9	466501 1606	17,–
18	M16	63	45	17.7	28	10	466501 1610	11,70
18	M16	80	55	17.7	28	10	466501 1611	12,10
18	M16	100	65	17.7	28	10	466501 1612	12,40
18	M16	125	85	17.7	28	10	466501 1622	13,50
18	M16	160	100	17.7	28	10	466501 1613	14,30
18	M16	200	125	17.7	28	10	466501 1614	15,40
18	M16	250	150	17.7	28	10	466501 1615	17,40
20	M20	80	55	19.7	32	12	466501 2001	17,40
20	M20	100	65	19.7	32	12	466501 2021	17,90
20	M20	125	85	19.7	32	12	466501 2002	18,70
20	M20	160	110	19.7	32	12	466501 2003	19,60
20	M20	200	125	19.7	32	12	466501 2004	22,–
20	M20	250	150	19.7	32	12	466501 2006	24,90
20	M20	315	190	19.7	32	12	466501 2005	27,50
22	M20	80	55	21.7	35	14	466501 2010	17,50
22	M20	100	65	21.7	35	14	466501 2011	18,50
22	M20	125	85	21.7	35	14	466501 2012	19,–
22	M20	160	110	21.7	35	14	466501 2013	20,10
22	M20	200	125	21.7	35	14	466501 2014	22,30
22	M20	250	150	21.7	35	14	466501 2015	24,90
22	M20	315	190	21.7	35	14	466501 2016	27,90
24	M24	100	70	23.7	40	16	466501 2401	27,20
24	M24	125	85	23.7	40	16	466501 2402	28,10
24	M24	160	110	23.7	40	16	466501 2403	29,30
24	M24	200	125	23.7	40	16	466501 2404	31,40
24	M24	250	150	23.7	40	16	466501 2405	34,20
24	M24	315	190	23.7	40	16	466501 2425	42,10
24	M24	400	240	23.7	40	16	466501 2406	48,–
28	M24	100	70	27.7	44	18	466501 2410	27,30
28	M24	125	85	27.7	44	18	466501 2411	28,50
28	M24	160	110	27.7	44	18	466501 2412	30,30
28	M24	200	125	27.7	44	18	466501 2413	32,–
28	M24	250	150	27.7	44	18	466501 2414	35,60
28	M24	315	190	27.7	44	18	466501 2424	42,60
28	M24	400	240	27.7	44	18	466501 2415	48,20

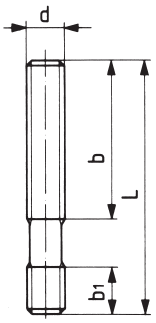
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Studs

DIN 6379

- Rolled thread
- M6 - M12 hardened and tempered to strength class 10.9
- M14 - M42 hardened and tempered to strength class 8.8
- Further sizes available on request







d mm	L mm	b mm	b1 mm	art.no.	€
M6	32	16	9	**466505** 0632	0,70
M6	40	20	9	466505 0640	0,84
M6	50	30	9	466505 0650	0,88
M6	63	40	9	466505 0663	0,99
M6	80	50	9	466505 0680	1,04
M8	40	20	11	466505 0840	1,18
M8	63	40	11	466505 0863	1,32
M8	80	50	11	466505 0880	1,52
M8	100	63	11	466505 0810	1,60
M8	125	75	11	466505 0812	4,28
M8	160	100	11	466505 0816	4,48
M10	50	25	13	466505 1050	1,46
M10	80	50	13	466505 1080	1,80
M10	100	75	13	466505 1010	1,94
M10	125	75	13	466505 1012	2,22
M10	160	100	13	466505 1016	2,62
M10	200	122	13	466505 1020	3,02
M12	50	25	15	466505 1250	1,62
M12	63	32	15	466505 1263	1,82
M12	80	50	15	466505 1280	1,86
M12	100	63	15	466505 1210	2,02
M12	125	75	15	466505 1212	2,52
M12	160	100	15	466505 1216	2,86
M12	200	122	15	466505 1220	3,06
M14	63	32	17	466505 1463	2,10
M14	80	50	17	466505 1480	2,66
M14	100	63	17	466505 1410	2,70
M14	125	75	17	466505 1412	3,06
M14	160	100	17	466505 1416	3,28
M14	200	122	17	466505 1420	4,10
M14	250	160	17	466505 1425	5,10
M16	63	32	19	466505 1663	2,76
M16	80	50	19	466505 1680	2,86
M16	100	63	19	466505 1610	2,96
M16	125	75	19	466505 1612	3,30
M16	160	100	19	466505 1616	4,24
M16	200	122	19	466505 1620	5,20

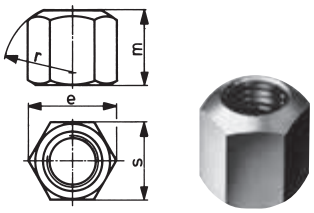
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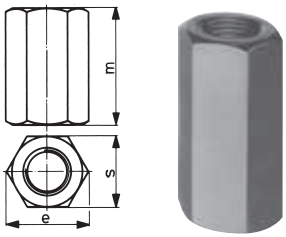
d mm	L mm	b mm	b1 mm	art.no.	€
M16	250	160	19	466505 1625	5,85
M16	315	180	19	466505 1631	7,50
M16	500	315	19	466505 1650	13,30
M18	80	50	23	466505 1880	4,80
M18	125	75	23	466505 1812	6,–
M18	160	100	23	466505 1816	6,25
M18	200	122	23	466505 1820	7,95
M18	250	150	23	466505 1825	10,20
M18	315	180	23	466505 1831	12,30
M20	80	32	27	466505 2080	4,46
M20	125	70	27	466505 2012	5,70
M20	160	100	27	466505 2016	6,90
M20	200	122	27	466505 2020	7,95
M20	250	160	27	466505 2025	9,55
M20	315	200	27	466505 2031	11,70
M20	400	250	27	466505 2040	15,40
M20	500	315	27	466505 2050	17,50
M22	100	45	31	466505 2210	9,20
M22	160	100	31	466505 2216	9,25
M22	200	122	31	466505 2220	11,20
M22	250	160	31	466505 2225	13,80
M22	315	180	31	466505 2231	17,80
M22	400	250	31	466505 2240	17,90
M24	100	45	35	466505 2410	7,60
M24	125	70	35	466505 2412	8,05
M24	160	100	35	466505 2416	8,85
M24	200	122	35	466505 2420	10,70
M24	250	160	35	466505 2425	12,70
M24	315	200	35	466505 2431	15,20
M24	400	250	35	466505 2440	18,90
M24	500	315	35	466505 2450	24,90
M24	630	315	35	466505 2463	32,80
M27	125	56	39	466505 2712	21,60
M27	200	122	39	466505 2720	21,90
M27	315	200	39	466505 2731	24,80
M27	400	250	39	466505 2740	31,40
M27	500	315	39	466505 2750	38,40

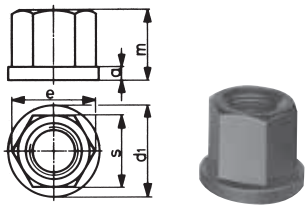
4158

Hexagonal nuts

DIN 6330B | DIN 6334 | DIN 6331







1.5 x D high, DIN6330B

- Hardened and tempered, strength class 10
- With spherical end, can be used directly with DIN 6319D or G conical washers
- With flat end, can be used with DIN 6340 hardened washers

Thread	Wr. width mm	e mm	m mm	r mm	art.no.	€
M6	10	11.05	9	9	**466510** 0006	0,45
M8	13	14.4	12	12	466510 0008	0,45
M10	16	17.8	15	15	466510 0110	0,62
M10	17	18.9	15	15	466510 0010	0,62
M12	18	20.03	18	17	466510 0112	0,73
M12	19	21.1	18	17	466510 0012	0,73
M14	21	23.4	21	20	466510 0114	1,42
M14	22	24.5	21	20	466510 0014	1,48
M16	24	26.8	24	22	466510 0016	1,36
M18	27	30.1	27	24	466510 0018	2,58
M20	30	33.5	30	27	466510 0020	2,38
M22	34	37.7	33	30	466510 0122	3,94
M22	32	35.7	33	30	466510 0022	4,46
M24	36	40	36	32	466510 0024	3,86
M27	41	45.6	40	36	466510 0027	6,55
M30	46	51.3	45	41	466510 0030	9,70
M36	55	61.3	54	50	466510 0036	18,70

4158

3 x D high, DIN6334

- Hardened and tempered, strength class 10
- Connecting element between DIN 787 (T-slot screw) and DIN 6379 (stud)
- **Not a screw-through version**
- Minimum screw-in length = 1xD

Thread	Wr. width mm	e mm	m mm	art.no.	€
M6	10	11.05	18	**466515** 0006	1,54
M8	13	14.4	24	466515 0008	1,56
M10	16	17.8	30	466515 0110	1,82
M10	17	18.9	30	466515 0010	1,82
M12	18	20.03	36	466515 0112	2,–
M12	19	21.1	36	466515 0012	2,–
M14	21	23.4	42	466515 0114	3,08
M14	22	24.5	42	466515 0014	3,08
M16	24	26.8	48	466515 0016	3,44
M18	27	30.1	54	466515 0018	4,80
M20	30	33.5	60	466515 0020	6,30
M22	34	37.7	66	466515 0122	9,20
M22	32	35.7	66	466515 0022	9,20
M24	36	40	72	466515 0024	10,30
M27	41	45.6	81	466515 0027	15,80
M30	46	51.3	90	466515 0030	20,70
M36	55	61.3	108	466515 0036	40,80

4158

1.5 x D high, DIN 6331 with collar

- Hardened and tempered, strength class 10
- Turned and milled

Thread	Wr. width mm	e mm	m mm	a mm	d1 mm	art.no.	€
M6	10	11.05	9	3	14	**466520** 0006	2,50
M8	13	14.4	12	3.5	18	466520 0008	2,52
M10	16	17.8	15	4	22	466520 0110	2,62
M10	17	18.9	15	4	22	466520 0010	2,62
M12	18	20.03	18	4	25	466520 0112	2,70
M12	19	21.1	18	4	25	466520 0012	2,70
M14	21	23.4	21	4.5	28	466520 0114	3,20
M14	22	24.5	21	4.5	28	466520 0014	3,20
M16	24	26.8	24	5	31	466520 0016	4,10
M18	27	30.1	27	5	34	466520 0018	5,55
M20	30	33.5	30	6	37	466520 0020	5,75
M22	34	37.7	33	6	40	466520 0122	8,35
M22	32	35.7	33	6	40	466520 0022	8,35
M24	36	40	36	6	45	466520 0024	9,60
M27	41	45.6	40	8	50	466520 0027	21,20
M30	46	51.3	45	8	58	466520 0030	24,–
M36	55	61.3	54	10	68	466520 0036	35,50

4158

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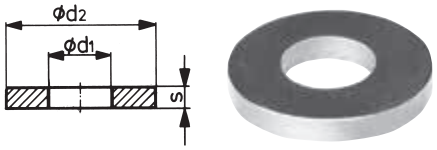


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Washers

DIN 6340 | DIN 6319D | DIN 6319C | DIN 6319G

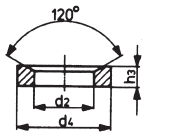


Standard version, DIN 6340

- Hardened and tempered (350 + 80 Hv 30)
- * = DIN-compliant dimensions, but stamped and pressed flat

for thread	d1 mm	d2 mm	s mm	art.no.	€
M6	6.4	17	3	**466525** 0006	0,63
M8	8.4	23	4	466525 0008	0,67
M10	10.5	28	4	466525 0010	0,71
M12	13	35	5	466525 0012	0,84
M14*	15	40	5	466525 0014	0,96
M16	17	45	6	466525 0016	1,16
M18*	19	45	6	466525 0018	1,50
				4158	

for thread	d1 mm	d2 mm	s mm	art.no.	€
M20	21	50	6	466525 0020	1,86
M22*	23	50	8	466525 0022	2,26
M24	25	60	8	466525 0024	2,82
M27*	28	68	10	466525 0027	4,78
M30	31	68	10	466525 0030	4,82
M36*	38	80	10	466525 0036	8,15
				4158	



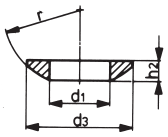


Spherical washer, DIN 6319 D

- Case-hardened and phosphate-treated, suitable for screw strengths equivalent to class 8.8
- For use only **with flat closed ring surfaces**
- (not permissible for longitudinal slots - for this purpose, we recommend DIN 6319G)

for thread	max. transferable static bolt force kN	d2 mm	d4 mm	h3 mm	art.no.	€
M6	9	7.1	12	2.8	**466530** 0006	0,54
M8	17	9.6	17	3.5	466530 0008	0,56
M10	26	12	21	4.2	466530 0010	0,73
M12	38	14.2	24	5	466530 0012	0,83
M14	53	16.5	28	5.6	466530 0014	1,50
					4158	

for thread	max. transferable static bolt force kN	d2 mm	d4 mm	h3 mm	art.no.	€
M16	73	19	30	6.2	466530 0016	1,60
M20	117	23.2	36	7.5	466530 0020	2,44
M24	168	28	44	9.5	466530 0024	4,04
M30	269	35	56	12	466530 0030	7,20
M36	394	42	68	15	466530 0036	16,10
					4158	



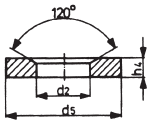


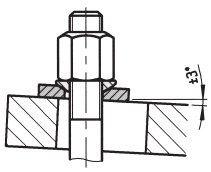
Spherical washer, DIN 6319 C

- Case-hardened and phosphate-treated

for thread	d1 mm	d3 mm	h2 mm	r mm	art.no.	€
M6	6.4	12	2.3	9	**466535** 0006	0,47
M8	8.4	17	3.2	12	466535 0008	0,54
M10	10.5	21	4	15	466535 0010	0,73
M12	13	24	4.6	17	466535 0012	0,84
M14	15	28	5	22	466535 0014	1,30
					4158	

for thread	d1 mm	d3 mm	h2 mm	r mm	art.no.	€
M16	17	30	5.3	22	466535 0016	1,42
M20	21	36	6.3	27	466535 0020	2,02
M24	25	44	8.2	32	466535 0024	3,26
M30	31	56	11.2	41	466535 0030	6,30
M36	37	68	14	50	466535 0036	15,10
					4158	







Spherical washer, DIN 6319 G

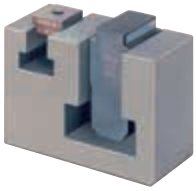
- Stamped, pressed, hardened and tempered
- Particularly suitable for use with clamp slots
- Enables the respective clamping bolt to swivel out by 3°
- * = deviates from DIN

for thread	d2 mm	d5 mm	h4 mm	art.no.	€
M6	7.1	17	4	**466540** 0006	1,32
M8	9.6	24	5	466540 0008	1,32
M10	12	30	5	466540 0010	1,32
M12	14.2	36*	6	466540 0012	1,56
M14	16.5	40	6	466540 0014	2,36
				4158	

for thread	d2 mm	d5 mm	h4 mm	art.no.	€
M16	19	44*	7	466540 0016	2,36
M20	23.2	50	8	466540 0020	3,32
M24	28	60	10	466540 0024	5,65
M30	35	68	10*	466540 0030	9,20
M36	42	80	12	466540 0036	19,40
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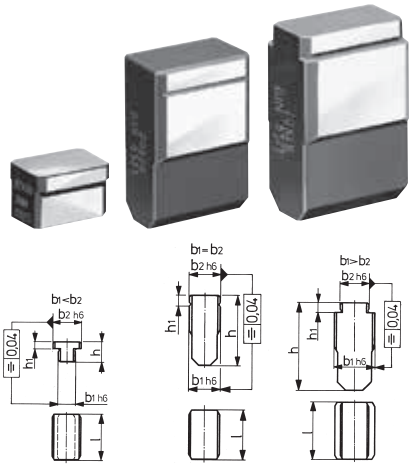
Precision slot nuts

- For quickly aligning fixtures, machine vices and dividers
- Precisely ground to a high level of tolerance all round
- C15 case-hardened and ground



Loose slot nuts, DIN 6323

- For calibration
- No slot nuts protruding from below when the fixture is moved

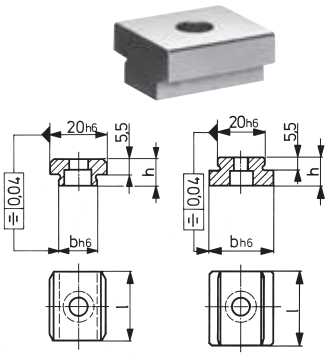


Groove dimensions machine mm	Groove dimensions device mm	h mm	h1 mm	l mm	art.no.	€
10	12	12	3.6	20	**466550** 1012	21,20
12	12	28.6	5.5	20	466550 1212	17,90
12	20	14	5.5	32	466550 1220	30,90
14	20	14	5.5	32	466550 1420	31,30
16	20	14	5.5	32	466550 1620	31,30
18	20	14	5.5	32	466550 1820	31,30
20	20	45.5	7	32	466550 2020	28,20
22	20	50.5	7	40	466550 2220	44,60
24	20	55.5	7	40	466550 2420	48,80
28	20	61.5	7	40	466550 2820	53,50
36	20	76.5	7	50	466550 3620	69,50

4157

Fixed slot nuts (previously DIN 6322)

- Screw-in
- Changing slot nuts makes it possible to work on machines with different slot widths

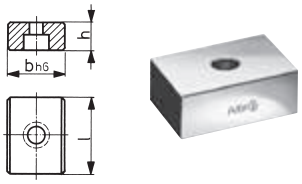


Groove dimensions machine mm	Groove dimensions device mm	h mm	l mm	for DIN 84 or DIN 912 screws	art.no.	€
10	20	10	22	M6 x 10	**466551** 1020	25,–
12	20	10	22	M6 x 10	466551 1220	25,–
14	20	10	25	M6 x 16	466551 1420	25,–
16	20	10	25	M6 x 16	466551 1620	25,–
18	20	10	25	M6 x 16	466551 1820	25,–
22	20	12	32	M6 x 16	466551 2220	28,80
24	20	12	32	M6 x 16	466551 2420	32,50
28	20	12	32	M6 x 16	466551 2820	33,30
36	20	12	32	M6 x 16	466551 3620	35,80

4157

Flat slot nuts

- Screw-in
- Effective and economical if a fixture will always be used on the same machine



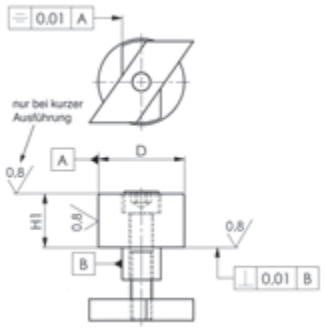
b mm	h mm	l mm	art.no.	€
10	8	20	**466552** 0010	7,30
12	8	20	466552 0012	7,30
14	10	22	466552 0014	7,85
16	10	22	466552 0016	7,85
18	10	22	466552 0018	8,25
20	10	22	466552 0020	8,50
22	12	32	466552 0022	11,60
24	12	32	466552 0024	11,60

4157

Stop

- Case-hardened and ground
- Short model, ground to ± 0.01 mm height tolerance
- Can also be used as a support



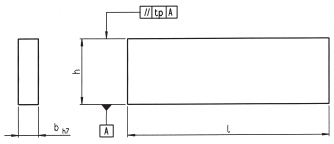


for T-slot mm	D mm	H1 mm	Screw	art.no.	€
12	20	15±0.01	M6 x 25	**465015** 1215	63,–
12	20	25±0.2	M6 x 35	465015 1220	67,50
14	32	25±0.01	M8 x 35	465015 1425	79,–
14	32	50±0.2	M8 x 60	465015 1450	83,50
16	32	25±0.01	M8 x 45	465015 1625	83,50
16	32	50±0.2	M8 x 70	465015 1650	86,50
18	40	25±0.01	M10 x 50	465015 1825	112,–
18	40	50±0.2	M10 x 75	465015 1850	117,–
20	40	25±0.01	M10 x 55	465015 2225	112,–
20	40	50±0.2	M10 x 80	465015 2250	117,–

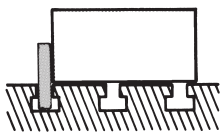
4157

Parallel stop pair

- **For machine slots**
- Case-hardened and height ground in pairs to pair tolerance IT5
- Can also be used as parallel supports
- Height pair tolerance IT5
- Nominal dimension tolerance to the extent of DIN ISO 2768m
- Nominal dimension tolerance, width: h7
- Remaining dimensions in accordance with DIN ISO 2768m
- Prices per pair







b mm	h mm	Pair tolerance tp mm	Nominal dimension tolerance DIN 7168 m (mm)	Tolerance h7 mm	l mm	art.no.	€
8	25	0.009	±0.2	-0.02	100	**465010** 0008	109,–
10	32	0.011	±0.3	-0.02	100	465010 0010	116,50
12	40	0.011	±0.3	-0.02	100	465010 0012	135,–
14	50	0.011	±0.3	-0.02	100	465010 0014	146,50
16	50	0.011	±0.3	-0.02	160	465010 0016	162,–
18	63	0.013	±0.3	-0.02	160	465010 0018	191,–
20	63	0.013	±0.3	-0.02	160	465010 0020	216,50
22	80	0.013	±0.3	-0.02	160	465010 0022	299,–
24	80	0.013	±0.3	-0.02	160	465010 0024	317,–
28	100	0.015	±0.3	-0.02	160	465010 0028	361,–

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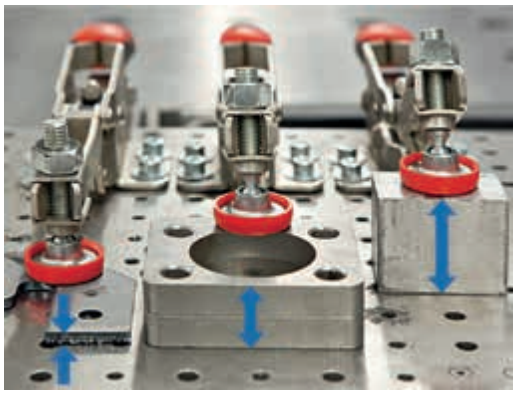


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  Push-rod clamp 0 to 25 mm
  Almost unchanged clamp force
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- **Large ergonomic handle**
  2 component plastic handle with soft inlay and large handgrip







Horizontal clamp with horizontal base plate

Clamp Ø mm	Clamp force kN	art.no.	€
0-20	1.1	**467051** 0020	23,90
0-40	2.5	467051 0040	26,10
0-60	2.5	467051 0060	26,80
		4192	



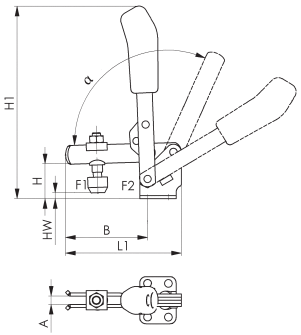
Push-rod clamp with horizontal base plate

Clamp Ø mm	Clamp force kN	art.no.	€
0-10	1.1	**467054** 0010	24,50
0-16	2.5	467054 0016	27,50
		4192	



Vertical clamp

- Quick-action clamp with toggle mechanism
- Wide and quick clamp opening, complete workpiece exposure
- High final transmission with low force application, large clamping forces
- Self-locking mechanism prevents the clamp from opening due to machining forces
- **Use:** Drilling, welding, bending, grinding, testing and assembling
- Galvanised and passivated, case-hardened with greased bearing bushes
- Rivet made of stainless steel
- Complete with hardened, tempered and galvanised clamping screw
- Stainless steel version available on request

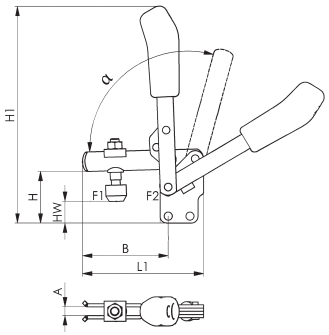




With open supporting arm and horizontal base

model	F1 kN	F2 kN	H mm	H1 mm	HW mm	A mm	B mm	L1 mm	Screw	art.no.	€
0	0.5	0.7	18	81	1.5 to 3.5	4	31	49	M4 x 25	**467001** 0000	17,80
1	0.6	1.1	19	98.5	-4 to 2	5	39	61	M5 x 30	467001 0001	19,40
2	0.8	1.2	23	139.5	-3 to 4.5	6	52	78	M6 x 35	467001 0002	24,70
3	1.2	2.5	33	186	2 to 11	8	79	112	M8 x 45	467001 0003	29,80
4	1.7	3	42.5	221	-6 to 22.5	10	101	141	M8 x 65	467001 0004	39,10
5	3	5	55.8	281	-3 to 27.5	14	140	195	M12 x 80	467001 0005	63,–
6	3.4	5.5	81	333	-2.5 to 55	14	165.5	231	M12 x110	467001 0006	82,–

4157

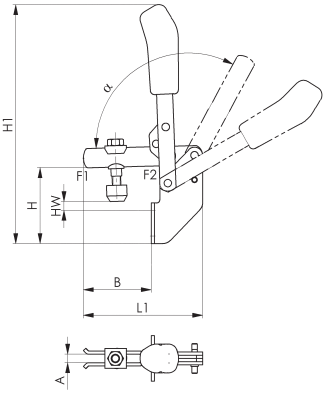




With open supporting arm and vertical base

model	F1 kN	F2 kN	H mm	H1 mm	HW mm	A mm	B mm	L1 mm	Screw	art.no.	€
1	0.6	1.1	29	109	6 to 12.5	5	39	61	M5 x 30	**467005** 0001	19,40
2	0.8	1.2	38	144.5	11.5 to 19.5	6	52	78	M6 x 35	467005 0002	24,70
3	1.2	2.5	48	200	16.5 to 25	8	79	112	M8 x 45	467005 0003	29,80
4	1.7	3	65	244	16.5 to 45.5	10	101	141	M8 x 65	467005 0004	39,10
5	3	5	77	301	18 to 49	14	140	195	M12 x 80	467005 0005	63,–
6	3.4	5.5	117	369	33 to 90.5	14	165	231	M12 x110	467005 0006	82,–

4157





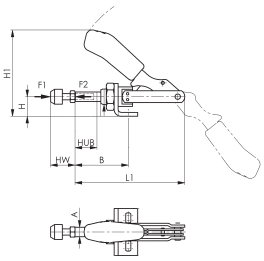
With open supporting arm and angled base

model	F1 kN	F2 kN	H mm	H1 mm	HW mm	A mm	B mm	L1 mm	Screw	art.no.	€
1	0.8	1.1	45	125	-1.5 to 5.5	5	35	61	M 5 x 30	**467010** 0001	21,70
2	1	1.2	60	167	7.5 to 15.5	6	41	77	M 6 x 35	467010 0002	27,10
3	1.4	2.5	71	223	9 to 17.5	8	63	111	M 8 x 45	467010 0003	29,80
4	2	3	102	280	11 to 40	10	84	141	M 8 x 65	467010 0004	39,10

4157

Push-rod clamp

- Galvanised and passivated
- Case-hardened, with greased bearing bushes
- Stainless steel rivet
- Complete with hardened, tempered and galvanised clamping screw
- Stainless steel version available on request

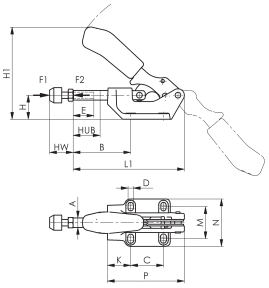




With small angled base

model	F1 kN	F2 kN	H mm	H1 mm	HW mm	A mm	B mm	L1 mm	Screw	art.no.	€
0	0.8	0.8	12	49.3	12 to 20	6.5	17	66.5	M 4 x 20	**467025** 0000	32,40
1	1	1	15	60.5	12 to 20	8	24.5	91	M 4 x 20	467025 0001	33,40
2	2	2	20	85.5	17 to 25	10	32.5	114	M 6 x 25	467025 0002	36,70
3	2.5	2.5	25	108	22 to 35	12	37	140	M 8 x 35	467025 0003	41,70
5	4.5	4.5	30	129.5	30 to 50	16	41.5	171.5	M 12 x 50	467025 0005	65,–

4157





Heavy-duty version

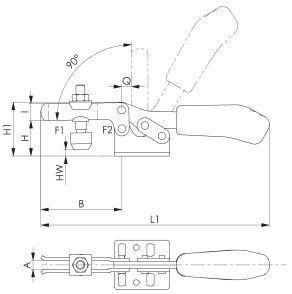
- Base body made from cast steel, lever parts and push rod made from tempering steel

model	F1 kN	F2 kN	H mm	H1 mm	HW mm	A mm	B mm	L1 mm	Screw	art.no.	€
3	4	4	30	116	22 to 35	12	40 - 72	139	M 8 x 35	**467027** 0003	52,50
5	10	10	38	137.5	30 to 50	16	58 - 98	174	M12 x 50	467027 0005	77,50
7	25	25	55	179	30 to 50	22	59 - 105	218	M12 x 50	467027 0007	159,–

4157

Horizontal clamp

- Quick-action clamp with toggle mechanism
- Wide and quick clamp opening, complete workpiece exposure
- High final transmission with low force application, large clamping forces
- Self-locking mechanism prevents the clamp from opening due to machining forces
- **Use:** Drilling, welding, bending, grinding, testing and assembling
- Galvanised and passivated, case-hardened with greased bearing bushes
- Rivet made of stainless steel
- Complete with hardened, tempered and galvanised clamping screw
- Stainless steel version available on request



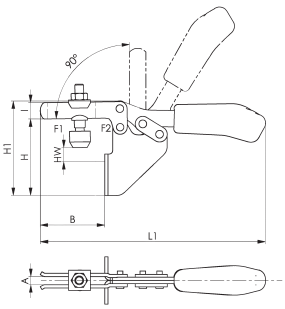


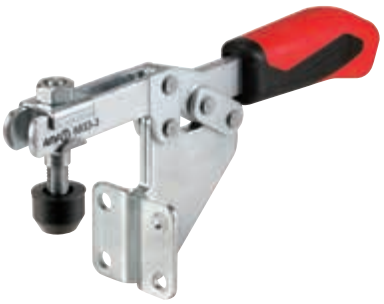
With open supporting arm and horizontal base

model	F1 kN	F2 kN	H mm	H1 mm	HW mm	A mm	B mm	L1 mm	Screw	art.no.	€
0	0.25	0.4	14.5	23	-5.5 to 0	4	28	79	M 4 x 25	**467015** 0000	15,30
1	0.8	1.1	19	30	-3 to 2.5	5	42	120	M 5 x 30	467015 0001	22,20
2	1	1.2	24	45	-1.5 to 5	6	64	162	M 6 x 35	467015 0002	24,10
3	1.8	2.5	32	48.5	-2 to 9	8	73	206	M 8 x 45	467015 0003	30,50
4	2	3	45	75	-4 to 24	10	113	287	M 8 x 65	467015 0004	37,70
5	3	5	46	73	1.7 to 25	10	123	321	M 8 x 65	467015 0005	60,–

4157

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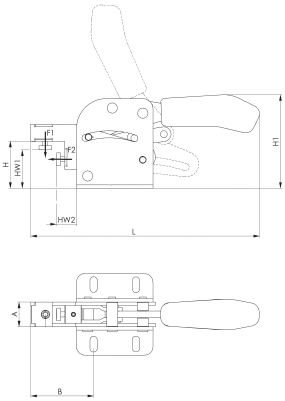
With open supporting arm and angled base

model	F1 kN	F2 kN	H mm	H1 mm	HW mm	A mm	B mm	L1 mm	Screw	art.no.	€
1	0.8	1.1	57	68	14 to 20	5	32	120	M 5 x 30	**467020** 0001	22,20
2	1	1.2	73	94	22 to 29.5	6.2	52	162	M 6 x 35	467020 0002	26,20
3	1.8	2.5	70	86.5	5 to 16	8	59	206	M 8 x 45	467020 0003	32,10
4	2	3	102	133	11 to 40	10	93	282	M 8 x 65	467020 0004	37,70

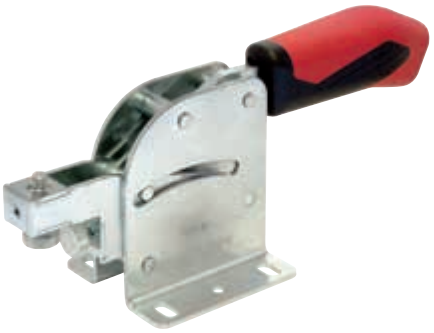
4157

Combination clamp

- Positioning and clamping in a single operation
- Robust and stable construction
- Fully retracted clamping arm allows for easy workpiece removal
- Galvanised and passivated
- Case-hardened, with greased bushes
- Stainless steel rivet
- Oil-resistant handle with a large handgrip surface and soft component







model	F1 kN	F2 kN	H mm	H1 mm	HW1 mm	HW2 mm	B mm	L mm	A mm	art.no.	€
2	2.0	2.0	46.0	94	30 to 40	14 to 24	56	219	19.5	**467030** 0002	83,50
3	3.0	3.0	55.5	110	40 to 50	20 to 30	74	270	29.0	467030 0003	102,–

4157

Protective caps

- **For quick-action clamps**
- Made from oil-resistant neoprene to protect delicate workpieces
- Protective cap sizes correspond to the size of the clamping screws



suitable for model	Width mm	Total height mm	Screw		art.no.	€
0	11	8.5	M 4	10	**467050** 0000	1,04
1	12.5	10	M 5	10	467050 0001	1,08
2	15	12	M 6	10	467050 0002	1,14
3+4	19	15	M 8	10	467050 0034	1,26
6	26	20	M12	10	467050 0006	1,76

4157

Magnetic clamp (Orga-Magnet)

- White with red printing
- Interior raw magnet
- Price per PU = 4 pcs.



With gear-S

Ø mm	Total height mm	Retention force N	art.no.	€
36	8.5	9.5	**471021** 0035	4,95

4161

Flat pot magnets with neoprene protective sheath

- Optimal hold on thin sheet metal
- Neoprene protective sheath for sensitive surfaces
- High lateral frictional force
- Maximum operating temperature 60°C

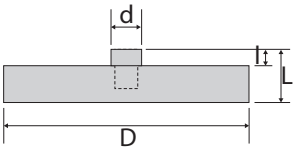




Flat, threaded bore

D mm	H mm	Thread	Minimum retention force N	Weight g	art.no.	€
18	6	M4	50	15	**471105** 0018	3,40
31	6	M5	75	21	471105 0031	4,90
43	6	M4	85	29	471105 0043	5,10
66	8.5	M6	180	100	471105 0066	8,60
88	8.5	M6	550	186	471105 0088	16,60

4161

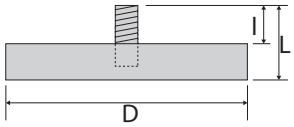




Flat, internally threaded pin

D mm	l mm	L mm	d mm	Female thread	Minimum retention force N	Weight g	art.no.	€
12	7	14.8	8	M4	10	6	**471110** 0012	2,60
18	6	11.5	8	M4	37	9	471110 0018	3,50
22	6	11.5	8	M4	58	13	471110 0022	3,90
31	6	11.5	8	M4	75	22	471110 0031	4,90
43	6	10.5	8	M4	85	30	471110 0043	5,–
66	8.2	15	10	M5	180	105	471110 0066	8,50
88	8.2	17	12	M8	420	192	471110 0088	16,60

4161





Flat, externally threaded pin

D mm	l mm	L mm	Thread	Minimum retention force N	Weight g	art.no.	€
12	7	15.5	M4	13	4.5	**470250** 0012	2,20
18	6	12	M4	37	7.6	470250 0018	3,50
31	6	17	M6	89	24	470250 0031	4,90
43	6	21	M6	85	32	470250 0043	5,40
66	8.2	23.5	M8	180	107	470250 0066	8,70
88	8.2	23.5	M8	420	193	470250 0088	16,60

4161



... maximum material removal rate

ATORN®
High quality for great performance

Flat pot magnets

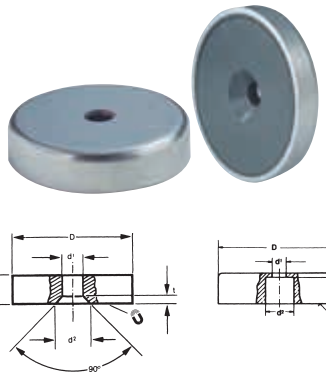
- Galvanised surfaces, shielded system
- Operating temperature up to 200 °C
- **Note:** Hairline cracks on the holding surface of the built-in magnetic material are unavoidable for production reasons. These do not impair the function of the holding magnets in any way.
- Other dimensions available on request

Flat with bore

- Bore with countersink

D mm	d1 mm	d2 mm	l mm	h mm	t mm	Minimum retention force N	Weight g	art.no.	€
16	3.3	7	4.5	Countersink 90º	1.6	14	4	**471005** 0016	1,56
20	4.2	9	6	Countersink 90º	2.1	27	9	471005 0020	1,67
25	5.5	11	7	Countersink 90º	2.5	36	16	471005 0025	1,78
32	5.5	11	7	Countersink 90º	2.5	72	27	471005 0032	1,92
40	5.5	11	8	Countersink 90º	2.5	90	53	471005 0040	2,52
50	8.5	22	10	3		180	90	471005 0050	3,17
63	6.5	24	14	3		290	195	471005 0063	5,65
80	6.5	11.5	18	3		540	480	471005 0080	11,10
100	10.5	34	22	3		680	820	471005 0100	29,50

4161

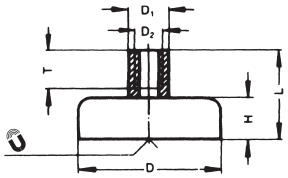


Flat with internally threaded pin

D±0.2 mm	d1 mm	d2 mm	t mm	l mm	h±0.2 mm	Minimum retention force N	Weight g	art.no.	€
10	6	M 3	7	11.5	4.5	4	3	**471010** 0010	1,46
13	6	M 3	7	11.5	4.5	10	5	471010 0013	1,56
16	6	M 3	7	11.5	4.5	18	6	471010 0016	1,71
20	6	M 3	7	13	6	30	11	471010 0020	1,85
25	8	M 4	8	15	7	40	22	471010 0025	1,96
32	8	M 4	8	15	7	80	32	471010 0032	2,13
40	10	M 5	10	18	8	125	60	471010 0040	2,84
50	12	M 6	12	22	10	220	110	471010 0050	4,01
63	15	M 8	16	30	14	350	240	471010 0063	6,75
80	20	M10	16	34	18	600	500	471010 0080	12,25
100	22	M12	21	43	22	900	960	471010 0100	30,40
125	25	M14	20	50	26	1300	1700	471010 0125	89,50

4161



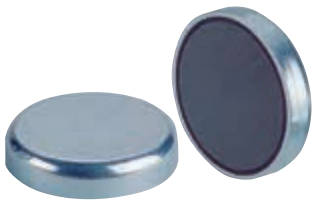


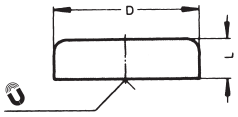
Flat

- For pressing or gluing in the mounting hole

D mm	L mm	Minimum retention force N	Weight g	art.no.	€
10	4.5	4	2	**471020** 0010	1,10
13	4.5	10	3	471020 0013	1,28
16	4.5	20	5	471020 0016	1,46
20	6	30	10	471020 0020	1,56
25	7	40	19	471020 0025	1,71
32	7	80	30	471020 0032	1,85
40	8	110	55	471020 0040	2,52
50	10	200	100	471020 0050	3,13
63	14	320	230	471020 0063	5,75
80	18	600	470	471020 0080	11,10
100	22	900	915	471020 0100	29,–
125	26	1300	1680	471020 0125	86,–

4161





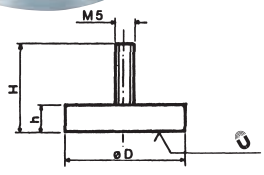
Flat with externally threaded pin

- Plane-ground holding surface

D mm	H mm	h mm	Thread	Minimum retention force N	Weight g	art.no.	€
16	11.5	4.5	M 3	18	6	**470150** 0016	1,88
20	12	6	M 3	30	11	470150 0020	2,–
25	22	7	M 5	40	23	470150 0025	2,67
47	17	9	M 6	180	90	470150 0047	5,10
57	18.5	10.5	M 6	280	142	470150 0057	8,65
63	29	14	M 6	350	235	470150 0063	10,–

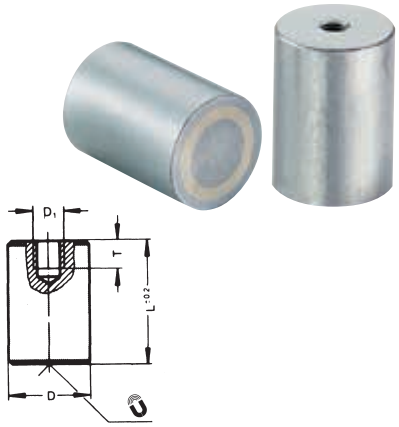
4161





Pot magnets

- Smooth bar gripper, no fit tolerance
- Galvanised surface, shielded system, operating temperature up to 450 °C
- When changing the holding surface, no more than 2 mm may be removed or the holding power will decrease significantly.



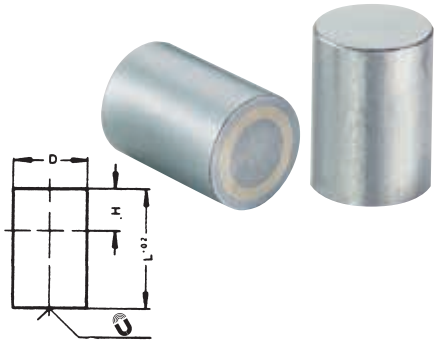
Round (bar gripper with female thread)

D±0.2 mm	L±0.2 mm	D1 mm	T mm	Minimum retention force N	Weight g	art.no.	€
6	20	M3	5	1.7	3	**471025** 0006	3,65
8	20	M3	5	4	6	471025 0008	3,87
10	20	M4	7	8.5	10	471025 0010	4,33
16	20	M4	5	20	25	471025 0016	6,40
20	25	M6	7	45	55	471025 0020	7,25
25	35	M6	9	100	135	471025 0025	11,85
32	40	M8	9	190	230	471025 0032	23,50

4161

Round (bar gripper)

- Dimension H of bar grippers can be shortened without any loss in holding power.

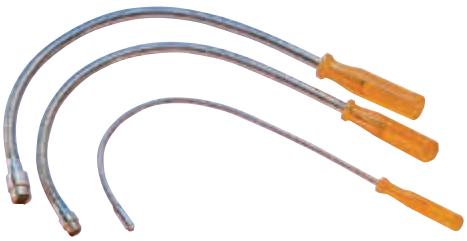


D±0.2 mm	L±0.2 mm	H mm	Minimum retention force N	Weight g	art.no.	€
6	20	12	1.7	4	**471045** 0006	3,06
8	20	11	4	7	471045 0008	3,29
10	20	10	8.5	11	471045 0010	3,63
13	20	8	12	19	471045 0013	3,98
16	20	6	20	29	471045 0016	4,85
20	25	5	45	61	471045 0020	6,30
25	35	13	100	140	471045 0025	10,75
32	40	9	190	240	471045 0032	22,30

4161

Magnetic pick-up tool

- Polished, flexible brass tubing
- Strong holding magnet at the end



Traction N	L mm	Magnet Ø mm	Largest Ø mm	art.no.	€
5	450	6	8	**471015** 0006	11,90
10	450	10	12	471015 0010	12,90
18	520	13	15	471015 0013	18,50
30	520	17	19	471015 0017	27,80

4161

Blind hole magnets

- Magnet head consisting of a chrome-plated metal sleeve
- Inset permanent magnet



Magnet Ø mm	Head length mm	Total length mm	art.no.	€
5	40	150	**471060** 0050	29,–
8	40	175	471060 0080	31,20

4161

Set in a wooden box

Magnet Ø mm	art.no.	€
1.6 - 3 - 5 - 8 - 11	**471060** 1000	193,–

4161

Permanent magnet block

- Sturdy, pressure-resistant block with inset holding magnets
- For use at temperatures up to 100 °C
- Attachment method: Press-in or glue-in
- Type B with M6 thread at the rear

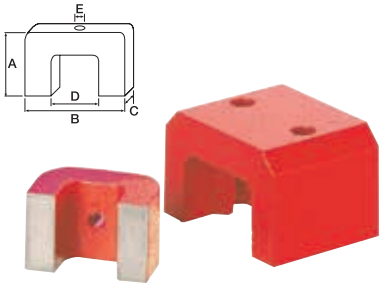


Type	Dimensions L x W x H mm	Minimum retention force N	Weight g	art.no.	€
A	26 x 26 x 25	100	110	**471055** 0001	13,65
B	60 x 26 x 25	200	250	471055 0002	19,40

4161

Strong magnet

- Bridge shape
- With strong magnetic force
- Through-hole



A mm	B mm	C mm	D mm	E mm	Minimum retention force N	Weight kg	art.no.	€
20.3	30.4	20.3	15	5	40	0.063	**471071** 0811	9,05
25.4	38.1	25.4	19.1	5	90	0.133	471071 0812	19,30
29.5	44.4	28.6	22.2	5.8	120	0.197	471071 0813	30,90
35	58	44	28	8	230	0.5	471071 0814	56,60

4161

Bar magnet

- Round or rectangular cross section
- Notches to mark corresponding poles
- Price per pair



Rectangular

Length mm	Width mm	Total height mm	Weight per pair g	art.no.	€
20	10	5	5	**471076** 0844	7,30
40	12.5	5	30	471076 0845	8,15

4161

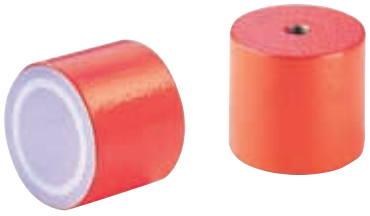
Round

Length mm	Ø mm	Weight per pair g	art.no.	€
20	6	3	**471077** 0805	2,28
24	8	7	471077 0806	3,41
30	10	18	471077 0807	5,65

4161

Pot magnet

- Particularly powerful magnet, embedded in an aluminium casing
- Mounting thread on the upper side of the magnet
- Supplied with protection plate

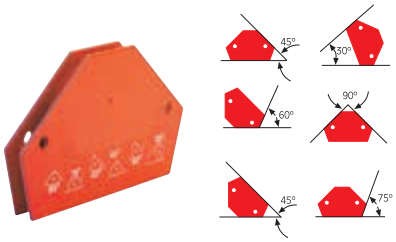


Ø mm	Total height mm	Thread	Minimum retention force N	Weight g	art.no.	€
17	16	M6	20	16	**471003** 0831	2,99
21	19	M6	28	50	471003 0832	4,29
27	25.4	M6	68	110	471003 0833	7,90
35	30	M6	150	220	471003 0834	13,90
65	43	M12	400	1080	471003 0835	70,–

4161

Multi-angle magnet

- Welding and assembly aid
- With 30°, 45°, 60°, 75°, 90° and 180° angles

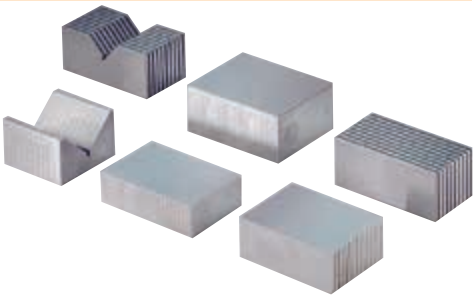


Dimensions	Bore hole Ø mm	Minimum retention force N	Weight kg	art.no.	€
100 x 64 x 12	2 x 5	100	0.26	**471558** 0951	18,40

4161

Lamellar pole blocks

- Various different versions with longitudinal or transverse pole pitch
- Pole pitch: 3 mm steel, 1 mm brass
- For machining geometric and irregular workpieces
- Used with magnetic clamping plates

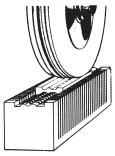


Dimensions L x W x H mm	Pole pitch	art.no.	€
100 x 70 x 48	Lengthwise	**471540** 0002	133,50
72 x 45 x 22	Transverse	471540 0004	91,50
100 x 70 x 41	Transverse	471540 0005	137,–
65 x 60 x 40 (with V-block)	Transverse	471540 0006	130,–
100 x 50 x 40 (with V-block)	Lengthwise	471540 0007	143,50
80 x 50 x 80	Transverse	471540 0010	173,50

4191

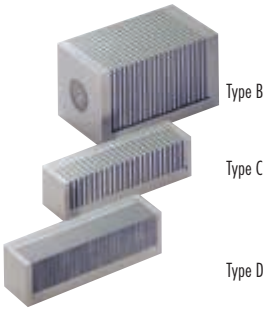
Permanent magnetic clamping block

- **Not switchable**
- Clamping blocks A to C consist of a permanent magnet system with a narrow pole pitch that is effective on 2 to 3 surfaces (polishing: 4 mm)
- For clamping extremely thin steel workpieces = version D with a fine pole pitch of 1.3 mm
- Unlimited magnet life under normal industrial production conditions
- Clamping blocks can be ground and honed to half their height without significantly impairing the holding power





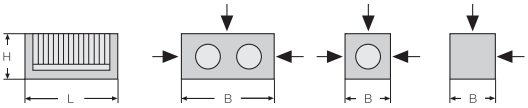
Type A



Type B

Type C

Type D



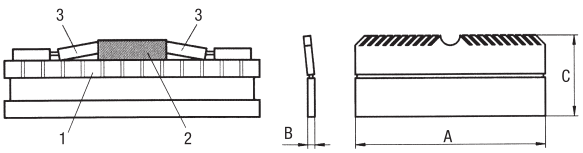
Type	L±0.15 mm	B±0.15 mm	H±0.15 mm	Max. angle deviation °	Pole pitch	Adhesive surfaces mm	Weight kg	art.no.	€
A	100	100	50	5´	4	1 surface 100x100 - 2 surfaces 100x50	3.6	**471550** 0001	415,–
B	100	50	50	5´	4	3 surfaces 100x50	1.7	471550 0002	280,–
C	100	25	25	5´	4	2 surfaces 100x25	0.5	471550 0003	179,–
D	100	25	25	5´	1.3	2 surfaces 100x25	0.5	471550 0004	330,–

4191

Clamping bars

- For clamping non-magnetic materials
- Ferro-magnetic metal
- Longitudinal side with spring-loaded bar (pull-down effect)
- Price per pair

1. Magnetic plate
2. Workpiece
3. Clamping bar





A mm	B mm	C mm	art.no.	€
100	4	45	**471565** 1040	164,50
150	1	40	471565 1510	227,–
150	1.6	43	471565 1516	218,–
150	2.8	43	471565 1528	218,–
250	3.7	52	471565 2537	413,–

4191

ATORN® NEODIMIO sine table with permanent magnetic clamping plate

- For precise angle grinding and EDM work
- Can be swivelled from 0 to 45° along the longitudinal axis
- For small and large workpieces
- Base plate precision-ground and hardened to 60 HRC
- Parallelism tolerance 0.01/100 mm
- Sealed against dirt and coolant
- Supplied with 2 stop bars and a chuck key



Length mm	Width mm	Total height mm	Weight kg	art.no.	€
140	70	68	5.5	**472104** 0140	1.559,–
175	100	77	10	472104 0175	1.659,–
250	150	79	20.5	472104 0250	1.879,–
350	150	87	35	472104 0350	2.379,–
450	150	87	44	472104 0450	3.099,–

4124

ATORN® NEODIMIO permanent magnetic clamping plates

- For precise grinding and erosion work
- Particularly narrow transverse pole pitch
- Universal clamping of small, thin and large workpieces
- Nominal adhesive force 80 N/cm²
- A special switching system prevents deformation during the switching process
- Protection type IP65
- Possible wear-down of the pole plate 8 mm
- Supplied with 2 stopper bars, 2 clamping claws and hexagon key
- Further sizes available on request



Length mm	Width mm	Total height mm	Weight kg	art.no.	€
150	150	51	9	**472105** 0150	529,–
175	100	49	7	472105 0175	500,–
200	100	49	8	472105 0200	460,–
250	150	51	15	472105 0250	485,–
350	150	51	22	472105 0350	709,–
400	200	51	35	472105 0400	1.029,–

4124

Demagnetisers

Table-top demagnetiser

- Low power consumption
- Field strength increases depending on workpiece volume
- Further sizes available on request



Connection	Length mm	Width mm	Total height mm	Frequency Hz	art.no.	€
230 V	250	180	87	50	**472034** 0250	589,–

4191

Hand-held demagnetiser

- For bulky parts, effective surface up to 150 x 75 mm
- Lightweight plastic housing
- Further sizes available on request



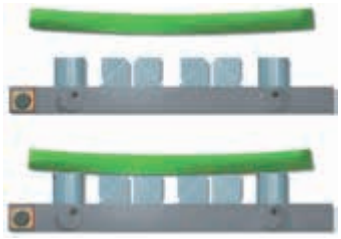
Connection	Length mm	Width mm	Frequency Hz	art.no.	€
230 V	115	80	50 - 60	**472035** 0105	609,–

4191

UniPower electrical permanent magnet clamping plate

All the advantages of QX technology are now also available in the new HE "High Efficiency" design – with a more efficient pole design to focus the maximum magnetic flow towards the workpiece, regardless of position.

- Reduced height and weight of the magnetic clamping plate
- Full clamping force from 17 mm tool thickness
- Reliable quick coupling
- Maximum flexibility of use
- Optimised contact face
- Absolute reliability
- **Supplied with control unit**









Model QX...UP

- Force/pole without air gap 615 daN
- Up to 16 kg/cm² in active magnetic field
- Over 75 t/m² across contact area
- Minimum workpiece thickness for maximum magnetic short circuit: 17 mm

model	Length mm	Width mm	Total height mm	Number of terminals	Retention force N	Weight kg	art.no.	€
QX 406 UP	600	400	51	24	15000	90	**473350** 0406	3.729,–
QX 408 UP	790	400	51	32	20000	115	473350 0408	4.499,–
QX 508 UP	790	480	51	40	25000	150	473350 0508	5.489,–

4175

Pole extensions

model	Ø mm	Length mm	Width mm	Total height mm	art.no.	€
PFR 60 fixed	60			41	**473051** 6041	9,90
PMQ 60 movable		60	60	41	473051 6042	28,60

4175



473051 6041

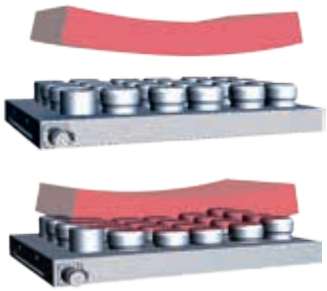


473051 6042

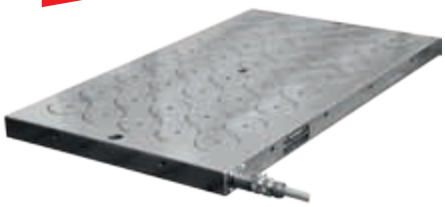
MillTecBasic electrical permanent magnet clamping plate

- Patented monolith construction
- 100 % solid steel surface
- Full clamping force from 17 mm tool thickness
- Reduced height and weight of the magnetic clamping plates
- **Supplied with control unit**

MillTec grip available on request









MillTec Basic

- Force/pole without air gap 615 daN
- Up to 16 kg/cm² in active magnetic field
- Over 75 t/m² across contact area
- Minimum workpiece thickness for maximum magnetic short circuit: 17 mm

model	Length mm	Width mm	Total height mm	Number of terminals	Retention force N	Weight kg	art.no.	€
MTB 406	600	405	51	24	15000	75	**473450** 0406	3.989,–
MTB 408	800	405	51	32	20000	95	473450 0408	4.769,–
MTB 508	900	485	51	40	25000	115	473450 0508	5.769,–

4175



473071 7020



473071 7045

Pole extensions

model	Ø mm	Total height mm	art.no.	€
PFR 70/20 fixed	70	20	**473071** 7020	13,–
PFR 70/45 fixed	70	45	473071 7045	15,–
RMP 70/45 movable	76	45	473071 7645	50,–

4175





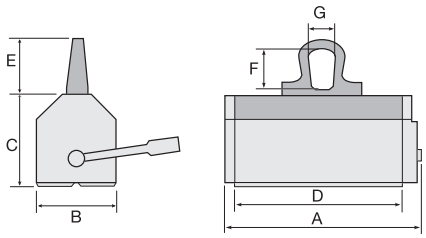
473071 7645

TECNOMAGNETE Permanent lifting magnet MaxX

- Extremely compact lifting magnets
- Lightweight and powerful
- Can lift 20 to 50 times its own weight
- The „neutral crown" prevents magnetic flux dispersion, guaranteeing optimum performance even with a large air gap
- Switchable via hand lever, **with safety lock**
- Loads are handled carefully and not damaged







model	Length mm	Width mm	Total height mm	Lifting capacity kg	Weight kg	art.no.	€
MaxX 125	121	79	145	125	3.7	**472520** 0125	369,–
MaxX 250	181	79	145	250	5	472520 0250	469,–
MaxX 500	242	106	190	500	15	472520 0500	699,–
MaxX 1000	339	133	230	1000	35	472520 1000	1.209,–
MaxX 1500	416	166	295	1500	70	472520 1500	1.579,–
MaxX 2000	441	186	315	2000	95	472520 2000	2.129,–

4164

[SAV] just experts Permanent lifting magnet

- Two-pole design
- Neodymium high-energy magnets for enormous lifting capacity
- High load-bearing capacity even with an air gap
- Suitable for round and flat materials
- Smooth on/off switch **with safety lock**
- Extremely compact, lightweight
- Robust and low maintenance
- For lifting panels, profiles, plates, round material and bar stock, e.g. for loading and unloading machines
- Supplied with individual test certificate



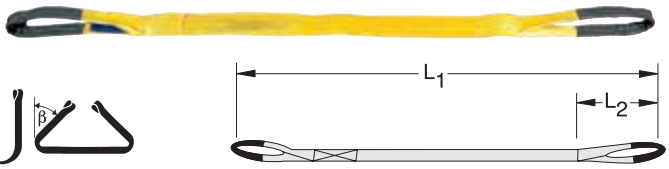


model	Length mm	Width mm	Total height mm	Lifting capacity kg	Weight kg	art.no.	€
NEO 150	93	60	110	150	3	**472530** 0125	399,–
NEO 300	152	100	164	300	10	472530 0250	589,–
NEO 600	246	120	164	600	19	472530 0500	879,–
NEO 1000	306	146	216	1000	36	472530 1000	1.469,–

4164

Lifting belt

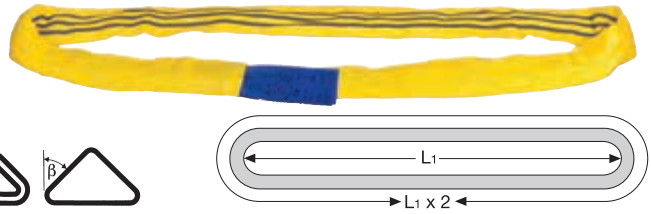
- **Compliant with EN 1492-1**
- Made from polyester, double layer stitched design
- With two reinforced end loops (loop width approx. 0.5 x belt width)
- Further sizes available on request



L1 mm	Width mm	L2 mm	Colour	Load bearing capacity direct kg	Load bearing capacity corded kg	Load bearing capacity single sling up to 7° kg	Load bearing capacity single sling 7°-45° kg	Load bearing capacity single sling 45°-60° kg	art.no.	€
1000	30	300	Violet	1000	800	2000	1400	1000	**477001** 1010	11,15
2000	30	300	Violet	1000	800	2000	1400	1000	477001 1020	15,30
2000	60	350	Green	2000	1600	4000	2800	2000	477001 2020	22,90
3000	90	400	Yellow	3000	2400	6000	4200	3000	477001 3030	47,30
4000	150	550	Red	5000	4000	10000	7000	5000	477001 5040	105,–
									4138	

Round sling

- **Compliant with EN 1492-2**
- Made from polyester, double shell
- With woven tonnage stripes
- Further sizes available on request



L1 mm	Width mm	Colour	Load bearing capacity direct kg	Load bearing capacity corded kg	Load bearing capacity single sling up to 7° kg	Load bearing capacity single sling 7°-45° kg	Load bearing capacity single sling 45°-60° kg	art.no.	€
1000	52	Violet	1000	800	2000	700	500	**477005** 1010	5,60
2000	52	Violet	1000	800	2000	700	500	477005 1020	10,35
1000	57	Green	2000	1600	4000	1400	1000	477005 2010	7,30
2000	57	Green	2000	1600	4000	1400	1000	477005 2020	14,35
1000	71	Yellow	3000	2400	6000	2100	1500	477005 3010	10,15
2000	71	Yellow	3000	2400	6000	2100	1500	477005 3020	19,50
3000	71	Yellow	3000	2400	6000	2100	1500	477005 3030	29,30
								4138	

Edge protection bracket

- Made from cut-resistant polyurethane
- With slots for easy fitting and attachment to a round sling
- WLL = max. load that can be lifted by the gear with a direct in-line pull



model	Ø mm	Length mm	WLL kg	art.no.	€
30	30	80	3000	**478001** 0030	18,20
50	50	125	5000	478001 0050	58,50
				4138	

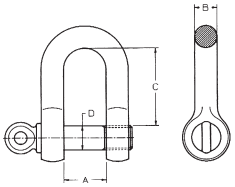
Shackle

- High-strength design with threaded bolts
- WLL = max. load that can be lifted by the gear with a direct in-line pull

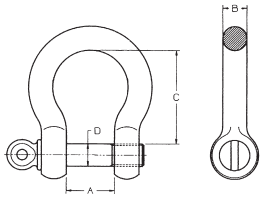


Straight type

WLL kg	A mm	B mm	C mm	D mm	Weight kg	art.no.	€
750	13.5	9	27	10	0.11	**478040** 0075	0,98
1000	17	10	31	11	0.15	478040 0100	1,52
1500	18.5	11	37	12	0.21	478040 0150	1,66
2000	22	13.5	43	16	0.37	478040 0200	2,22
3250	27	16	51	19	0.65	478040 0325	3,48
4750	31	19	59	22	1.06	478040 0475	5,75
						4138	







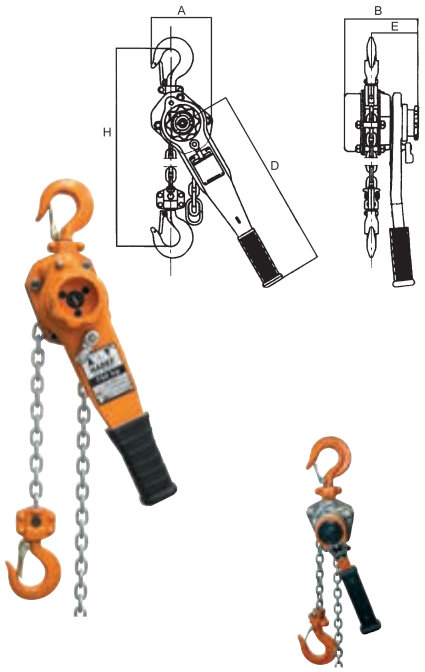
Curved type

WLL kg	A mm	B mm	C mm	D mm	Weight kg	art.no.	€
750	13.5	9	32	10	0.13	**478041** 0075	1,05
1000	17	10	37	11	0.17	478041 0100	1,45
1500	18.5	11	43	12	0.25	478041 0150	1,63
2000	22	13.5	51	16	0.44	478041 0200	2,25
3250	27	16	64	19	0.79	478041 0325	3,66
4750	31	19	76	22	1.26	478041 0475	6,30
6500	36	22	83	25	1.88	478041 0650	9,70

4138

HADEF® Lever hoists

- **Highly versatile; for lifting, pulling and clamping**
- Minimal net weight
- Free-wheeling mechanism for quickly feeding out the chain when unloaded
- Self-acting, fully enclosed load brake
- High-quality precision gearing
- 1.5 m lifting height, can be extended by the metre on request



Standard lever hoists

Load bearing capacity kg	Chain strands	Load chain thickness mm	Leverage force approx. daN	Weight kg	A mm	B mm	D mm	E mm	H mm	art.no.	€
750	1	5.6	29	6.2	122	140	266	88	280	**472557** 0750	205,–
1500	1	7.1	29	9.6	142	167	414	107	350	472557 1500	255,–
3000	1	10	35	15.5	185	188	414	113	420	472557 3000	400,–
6000	2	10	36	27	139	188	414	113	570	472557 6000	689,–

Mini lever hoist

Load bearing capacity kg	Chain strands	Load chain thickness mm	Leverage force approx. daN	Weight kg	art.no.	€
250	1	4	25	2	**472558** 0250	129,–

4168

Slewing cranes

HADEF®

Wall-mounted slewing crane with 180° slewing range
Pillar slewing crane with 270° slewing range

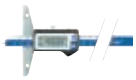
- **With spur gear hoist or electric chain hoist**
- Slewing range 180°
- Designed in accordance with DIN 15018 H2/B2

We would be happy to create a quote for you



Measuring equipment

Hand-held measuring equipment

INFO	Vernier callipers	1277
	Vernier callipers	1278
	Digital vernier callipers Digital vernier callipers IP67	1284
	Digital vernier callipers with integrated radio	1284
	Digital special-purpose vernier callipers	1286
	Workshop vernier callipers	1291
	Depth callipers	1298
	Digital depth callipers with integrated radio	1301
INFO	Outside micrometers	1305
	Outside micrometers	1307
	Digital outside micrometers Digital outside micrometer IP65	1311
	Digital outside micrometers with integrated radio	1311
	Adjustable gap gauges	1323
	Depth gauges	1323
	Micrometer heads	1325
	Inside micrometers	1326
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	Inside micrometer with three-point contact	1331
	Internal precision instruments	1336
	Bore gauge	1338

Special measuring instruments

	Universal measuring instrument UNICHECK	1339
	IFM chamfer gauge	1342

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INFO	Dial indicators	1343
	Dial indicators	1345
	Digital dial indicator with integrated radio	1348
	Fast display callipers, inside/outside	1356
	Digital fast display callipers Digital fast display callipers, 3-point	1358
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	Lever dial indicators	1360

Height meters and marking-out instruments

	Height meters and marking-out instruments	1363

Data transfer

	Signal cables and interfaces	1367
	Wireless data transmission U-Wave Bluetooth	1371
	i-Stick receiver for integrate wireless radio system	1371

	Mini processor	1371
	Height meter	1372
	Test mandrels	1375

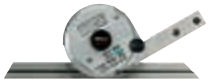
Tool pre-setting

	Tool pre-setting devices	1376

Gauge blocks and gauges

INFO	Gauge blocks	1378
	Gauge blocks	1379
	Plain and thread gauges	1385

Angle and angle gauge

	Goniometer	1394
	Angle	1396

Aid

	Marking-out instruments, Scribing calliper	1397
	Line gauges	1400
	Tape measures	1402
	Grinding and feeler gauges	1405
	Stands	1409
	Measuring tables	1413
	Measuring and inspection plates	1415
	Concentricity gauges	1418
	Double V-block pair	1419

	Clamping systems	1421
	Mini precision vices	1421
	Inclinometers	1423
	3D probes, edge finders, centring devices	1425

Optics

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	USB hand-held microscope	1433
	Stereoscopic zoom microscope binocular	1433
	Digital microscope inspector	1434
	Profile projectors	1436

Roughness, linear scales

	Roughness meters	1439
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	Linear scales	1445

Layer, hardness, temperature, force, mass

	Layer thickness measuring instruments	1447
	Ultrasound wall thickness measuring instrument	1448
	Hardness testers	1449
	Force measuring instruments	1450
INFO	Scales quick finder	1451
	Scales	1453
	Crane scale HFD	1452

Summary of icons used for measuring technology

INFO

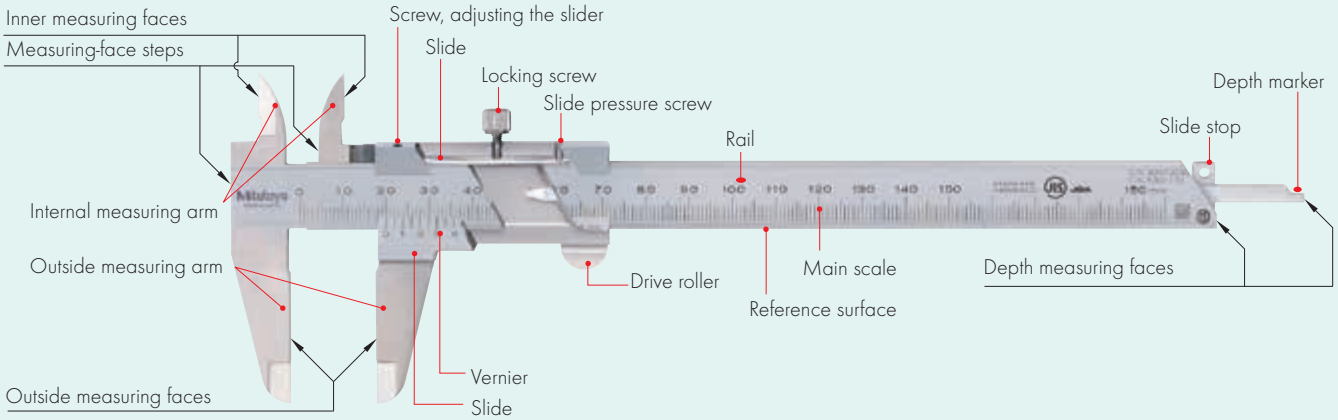
Thread angle	55° 60°		
IP protection class	IP55 IP64 IP67		
DIN standard constructional dimensions	Werks-norm: Accuracy and execution in accordance with company standard	DIN 13: Accuracy and execution according to DIN	ähnl. DIN 2250 C: Accuracy and execution similar to DIN
Gauge block standard	DIN EN ISO 3650: Accuracy and execution according to DIN		
Tolerance standard	DIN 13 6g H7 DIN 874		
Depth gauge	Ø 1,5 mm: Depth gauge round Ø 1.5 mm	Standard depth gauge	
Material property	INOX: Stainless steel	All parts hardened	
	Carbide-tipped measuring faces (Micrometers)	Carbide-tipped measuring faces (Sliding callipers)	
Spindle pitch	0,5 mm 1 mm 2 mm		
Function	Run-out measurement		
Reading	0,0001 mm 0,001 mm 0,01 mm		
Unit	inch / mm		
Measuring system	ABSO-LUTE KEEP-TRONIC		
Packing, scope of delivery	Stable box	Plastic case	Test certificate included
Data output format	Digi-matic RS232C USB		



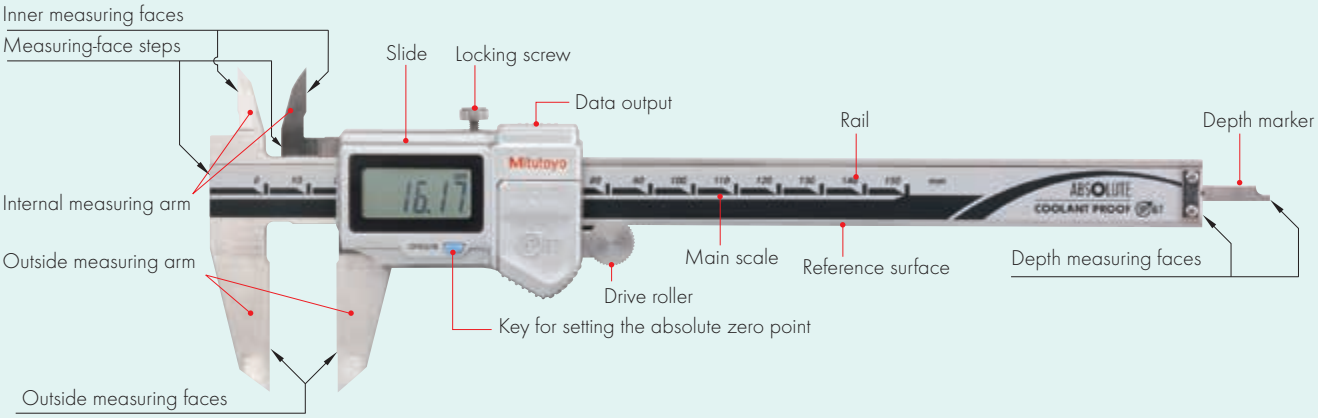
... but digital.

ATORN®
Performance demands quality

Analog Vernier calipers

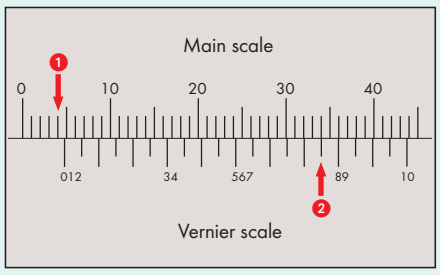


Absolute Digimatic caliper



Reading off the scale

Vernier caliper

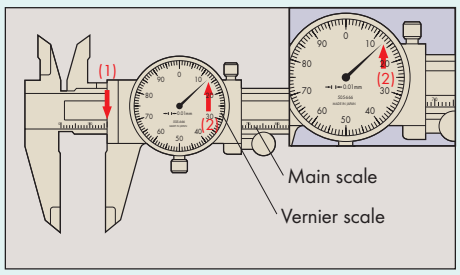


Graduation 0.05 mm

(1)	Reading off main scale	4 mm
(2)	Reading off Vernier scale	0.75 mm
	Reading	4.75 mm

Reading off the scale

Dial calliper



Graduation 0.01 mm

(1)	Reading off main scale	16 mm
(2)	Reading off Vernier scale	0.13 mm
	Reading	16.13 mm

Note: Above left, 0.75 mm (2) is read at the position at which a graduation stripe of the main scale is aligned with a graduation of the Vernier scale.

Application examples

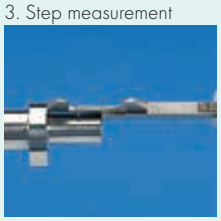
1. Outside measurement



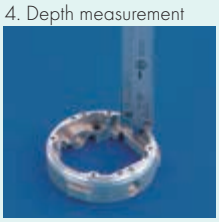
2. Inside measurement



3. Step measurement



4. Depth measurement



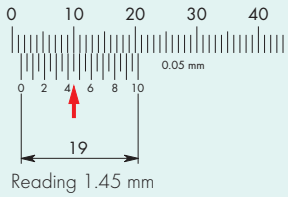
Types of Vernier scales

The Vernier scale is attached to the caliper's slider, and each graduation of the scale is 0.05 mm smaller than one main scale division of 1 mm. This means that as the calliper jaws are adjusted by 0.05 mm the subsequent Vernier scale line aligns with a main scale line and so indicates the number of 0.05 mm units to be counted (although for the sake of simplicity the scale is numbered in fractions of a mm).

Alternatively, one can choose a Vernier graduation 0.05 mm shorter than two graduations of the main scale, to obtain a long Vernier scale. The scale is thus easier to read, while the principle of measurement, and the graduation, remain unchanged.

Standard Vernier scale

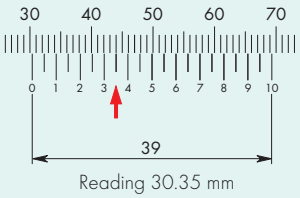
Graduation 0.05 mm



Reading 1.45 mm

Long Vernier scale

Graduation 0.05 mm

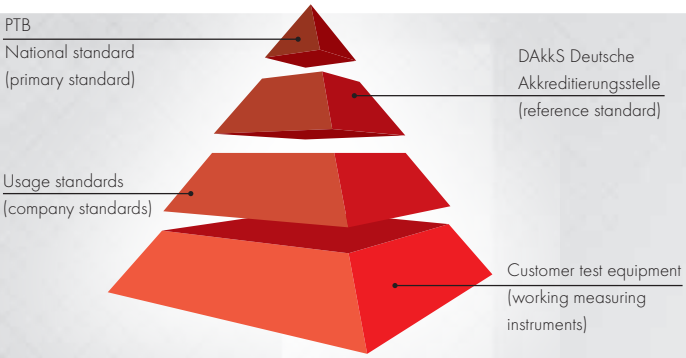


Reading 30.35 mm

Test equipment monitoring service

ISO 9000 ff

- DAkkS calibration laboratory according to DIN EN ISO/IEC 17025:2005
- Advice on setting up monitoring and management processes for your test equipment
- Short-term calibration of both new test equipment and test equipment which is already in use
- Modular software for monitoring and managing test equipment with target data generation
- Full service: management and calibration of your entire fleet of test equipment with data transfer
- Calibrated test equipment available from stock in the short term
- As calibrations are considered to be services, the calibration prices are to be understood as strictly net and are to be added to the tool's respective net sales price.



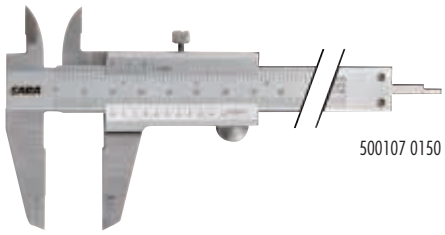
SARA® Sliding callipers

DIN 862 | INOX

- Reading parts matt chrome-plated
- Raised guideways
- Vernier scale 0.05 mm extended to 39 mm

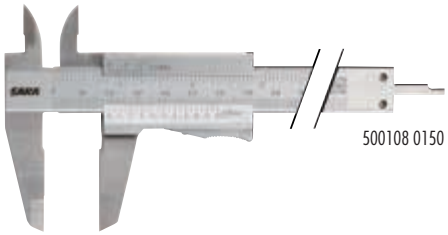
Locking screw on top

Measurement range mm	Jaw length mm	Vernier mm/inch	art.no.	€	Calibration art.no.	Calibration €
150	40	0.05 / 1/128"	**500107** 0150	22,40	070101 0001	8,80
			5108			


500107 0150

Thumb lock

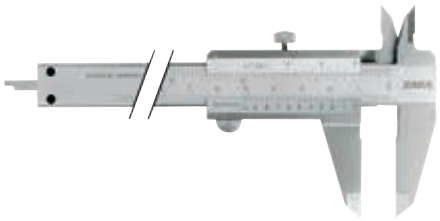
Measurement range mm	Jaw length mm	Vernier mm/inch	art.no.	€	Calibration art.no.	Calibration €
150	40	0.05 / 1/128"	**500108** 0150	27,10	070101 0001	8,80
			5108			


500108 0150

SARA® Sliding calliper for left-handed users

DIN 862 | INOX

- Reading parts matt chrome-plated
- Raised guideways
- Vernier scale 0.05 mm extended to 39 mm



Measurement range mm	Jaw length mm	Vernier mm/inch	art.no.	€	Calibration art.no.	Calibration €
150	40	0.05 x 1/128"	**500905** 0150	51,50	070101 0001	8,80
			5108			

ATORN® Vernier callipers

DIN 862 | Ø 1,5 mm | INOX

- Reading parts matt chrome-plated
- Raised guide edges
- Overlapping measuring areas
- Vernier scale 0.05 mm extended to 39 mm
- Thread table on the back





500101 0101

Locking screw on top

- 500101 0100 Vernier scale 0.05 mm to 19 mm

Measurement range mm	Jaw length mm	Vernier mm/inch	art.no.	€	Calibration art.no.	€
100	30	0.05	**500101** 0101	23,–	070101 0001	8,80
150	40	0.05 x 1/128"	500102 0151	27,50	070101 0001	8,80

5190



Ø 1,5 mm

500102 0151

Torque adjustment

- Vernier scale 0.05 mm extended to 39 mm

Measurement range mm	Jaw length mm	Vernier mm/inch	art.no.	€	Calibration art.no.	€
150	40	0.05x1/128"	**500104** 0151	27,50	070101 0001	8,80

5190

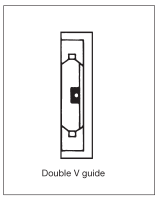


Ø 1,5 mm

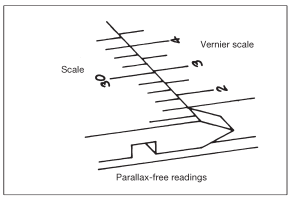
ATORN® Sliding calliper with double V guide

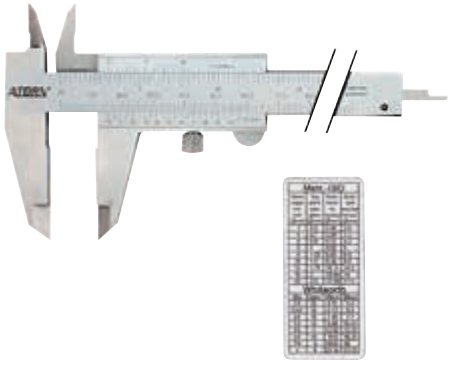
DIN 862 | INOX

- For parallax-free readings
- Lapped measuring faces
- Locking screw on bottom
- Thread table on the back
- Vernier scale 0.05 mm extended to 39 mm



Double V guide





Measurement range mm	Jaw length mm	Vernier mm/inch	art.no.	€	Calibration art.no.	€
150	40	0.05 x 1/128"	**500250** 0150	75,–	070101 0001	8,80

5190



… 3 µm

ATORN®
High quality for great performance

Mitutoyo Sliding callipers



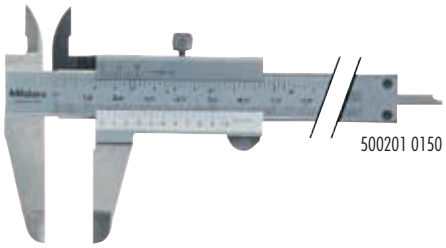
- Reading parts matt chrome-plated
- Raised guide edges
- Vernier scale 0.05 mm extended to 39 mm

Locking screw on top

- 500201 0152 *with round depth gauge, Ø 1.9 mm

Measurement range mm	Jaw length mm	Vernier mm/inch		art.no.	€	Calibration art.no.	€
150	40	0.05/-		**500201** 0151	30,–	070101 0001	8,80
150	40	0.05/-	*	500201 0152	48,–	070101 0001	8,80
150	40	0.05 x 1/128″		500201 0150	30,–	070101 0001	8,80
200	50	0.05 x 1/128″		500201 0200	77,–	070101 0001	8,80
300	64	0.05 x 1/128″		500201 0300	188,–	070101 0002	16,70
150	40	0.02 x 1/1000″		500203 0150	57,–	070101 0001	8,80
200	50	0.02 x 1/1000″		500203 0200	84,–	070101 0001	8,80
300	64	0.02 x 1/1000″		500203 0300	206,–	070101 0002	16,70
150	40	0.02/-		500204 0150	36,–	070101 0001	8,80
200	50	0.02/-		500204 0200	60,–	070101 0001	8,80

5102


500201 0150

Locking screw on bottom

Measurement range mm	Jaw length mm	Vernier mm/inch	art.no.	€	Calibration art.no.	€
150	40	0.05 x 1/128″	**500207** 0150	53,–	070101 0001	8,80

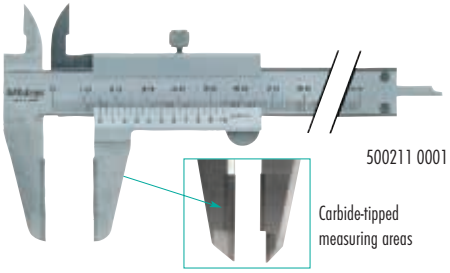
5102


500207 0150

Locking screw on top, carbide-tipped external measuring faces

Measurement range mm	Jaw length mm	Vernier mm	art.no.	€	Calibration art.no.	€
150	40	0.05	**500211** 0001	121,–	070101 0001	8,80
200	50	0.05	500211 0002	155,–	070101 0001	8,80
300	64	0.05	500211 0003	336,–	070101 0002	16,70

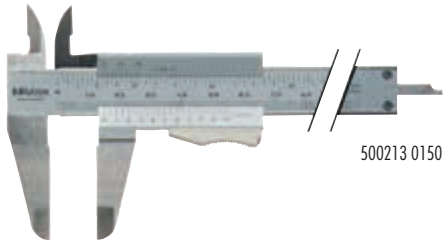
5102



Thumb lock

Measurement range mm	Jaw length mm	Vernier mm/inch	art.no.	€	Calibration art.no.	€
150	40	0.05	**500213** 0151	44,–	070101 0001	8,80
150	40	0.05 x 1/128″	500213 0150	37,–	070101 0001	8,80
200	50	0.05 x 1/128″	500213 0200	91,–	070101 0001	8,80
300	64	0.05 x 1/128″	500213 0300	205,–	070101 0002	16,70

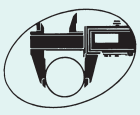
5102


500213 0150

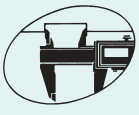
Mitutoyo Caliper, "QUADRI" version

The MITUTOYO "QUADRI" caliper can be used for four different measuring applications:

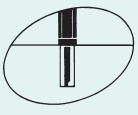
1. External measurements



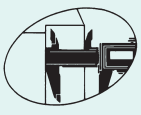
2. Internal measurements

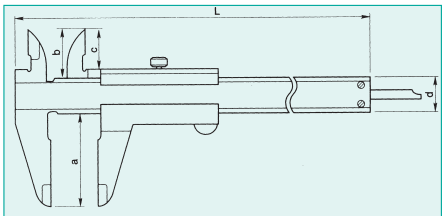


3. Depth measurements



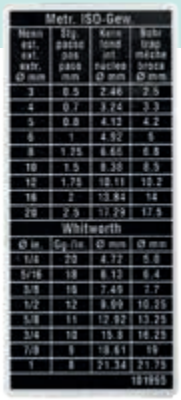
4. Pitch (height) measurements or marking-out work





Measurement range	L	a	b	c	d
0-150	231	40	21.0	16.5	16
0-200	288	50	24.5	20.0	16
0-300	403	64	27.5	22.0	20

Thread table



- Self-adhesive film, 23 x 51 mm
- With details of the core hole diameter and respective drill bit for the most common metric threads from Ø 3 to 20 and Whitworth threads from Ø 1/4 to 1 inch

Designation	art.no.	€
Thread table	**500540** 0001	4,–

5102

SARA® Test and adjustment gauge for Vernier calliper



- for quick testing and adjustment of measuring jaws, cross-tips and depth markers
- hardened, ground and lapped
- the depth marker is tested through the centre hole

External Ø mm	Interior Ø mm	Total height mm	art.no.	€	**Calibration** art.no.	€
30 ± 0.002	10 ± 0.002	10 ± 0.010	**540201** 3010	109,–	076530 0001	33,95

5129

Case for pocket sliding calliper

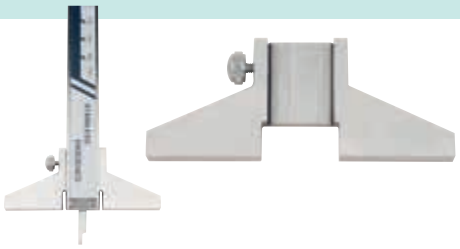


- For 150 mm sliding calliper with Vernier readings

Designation	art.no.	€
Vernier calliper wallet	**500541** 0150	3,90

5108

SARA® Depth gauge bridge

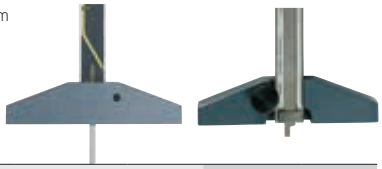


- For retrofitting sliding callipers with a measuring range from 150 mm to 200 mm

Base size mm	art.no.	€	**Calibration** art.no.	€
74 x 6.5	**500501** 7565	30,50	076001 0001	13,–

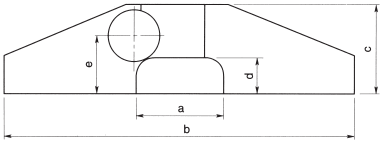
5108

Mitutoyo Depth gauge bridge





- Sizes 1075 / 1100 for sliding callipers up to a measuring range of 200 mm
- Size 1250 for sliding callipers with a measuring range of 300 mm



Base size mm	a mm	b mm	c mm	d mm	e mm	art.no.	€	**Calibration** art.no.	€
75x12	25	75	24.5	9	16	**500501** 1075	49,–	076001 0001	13,–
100x12	25	100	24.5	9	16	500501 1100	55,–	076001 0001	13,–
125x14	30	125	28.5	11.5	20	500501 1250	62,–	076001 0001	13,–

5102

SARA® Dial callipers

DIN 862 | INOX

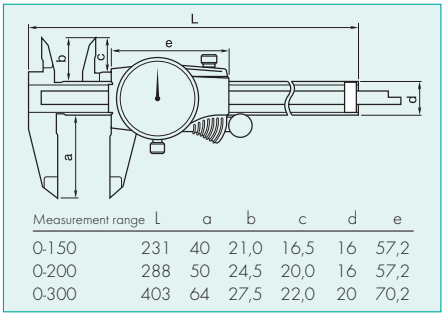


- Matt chrome-plated scale
- Locking screw on top
- Fine adjustment via thumbwheel
- One pointer rotation represents 1 mm
- Dial clamp, simple zeroing
- Dirt-resistant rack

Measurement range mm	Jaw length mm	Reading mm	art.no.	€	Calibration art.no.	€
150	40	0.01	**500110** 0151	63,50	070101 0001	8,80
			5108			

Mitutoyo Dial callipers

DIN 862 | INOX



Measurement range	L	a	b	c	d	e
0-150	231	40	21,0	16,5	16	57,2
0-200	288	50	24,5	20,0	16	57,2
0-300	403	64	27,5	22,0	20	70,2

- Matt chrome-plated scale
- Impact-resistant dial indicator
- Jewel bearing
- Yellow dial face
- Locking screw on top
- Fine adjustment via thumbwheel, rapid adjustment possible with one hand
- Impact-resistant rack

Scale division 0.01 mm



Measurement range mm	Jaw length mm	Error limit mm	art.no.	€	Calibration art.no.	€
150	40	0.03	**500410** 0150	114,–	070101 0001	8,80
200	50	0.03	500410 0200	221,–	070101 0001	8,80
			5102			

Scale division 0.02 mm



Measurement range mm	Jaw length mm	Error limit mm	art.no.	€	Calibration art.no.	€
150	43	0.03	**500440** 0150	101,–	070101 0001	8,80
200	50	0.03	500440 0200	205,–	070101 0001	8,80
300	63	0.04	500440 0300	309,–	070101 0002	16,70
			5102			



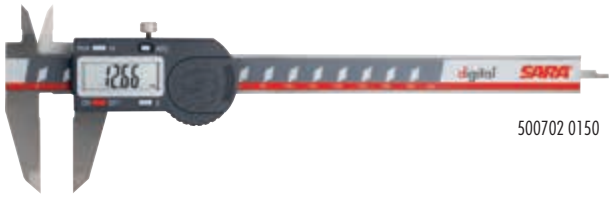
MITUTOYO
Measuring equipment catalogue
approx. 620 pages
Art.no. 019900 0069

Overview of all free manufacturers' catalogues on page 14/15

SARA® Digital sliding calliper

DIN 862 | INOX | 0,01 mm | inch / mm

- Locking screw on top
- High-contrast, easily readable LCD display
- External, internal, depth and step measurements
- Thread table on the back
- Functions: ON/OFF, ZERO, mm/inch
- Supplied with CR2032 battery, no. 548079 6032



500702 0150

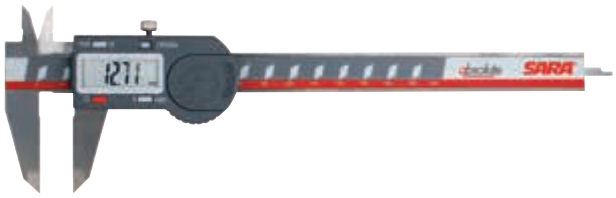
Measurement range mm/inch	Jaw length mm	Error limit mm	art.no.	€	Calibration art.no.	Calibration €
100/4"	30	0.03	**500702** 0100	36,90	070101 0001	8,80
150/6"	40	0.03	500702 0150	56,50	070101 0001	8,80
200/8"	50	0.03	500702 0200	89,–	070101 0001	8,80
300/12"	60	0.04	500702 0300	183,–	070101 0002	16,70

5108

SARA® Absolute digital sliding calliper

DIN 862 | INOX | 0,01 mm | inch / mm

- With absolute scale, zeroing not required
- Locking screw on top
- External, internal, depth and step measurements
- High-contrast, easily readable LCD display
- Thread table on the back
- Functions: ON/OFF, ZERO, mm/inch
- Supplied with CR2032 battery, no. 548079 6032



Measurement range mm/inch	Jaw length mm	Error limit mm	art.no.	€	Calibration art.no.	Calibration €
150/6"	40	0.03	**500702** 1150	72,50	070101 0001	8,80

5108

SARA® Digital sliding calliper for left-handed users

DIN 862 | INOX | 0,01 mm | inch / mm

- Large high-contrast digital display
- Locking screw on top
- Precision-lapped measuring faces
- **Functions:** ON/OFF, ZERO, mm/inch
- Supplied with SR44 battery, no. 500534 0001



Measurement range mm/inch	Jaw length mm	Error limit mm	art.no.	€	Calibration art.no.	Calibration €
150/6"	40	0.03	**500700** 1150	89,50	070101 0001	8,80

5108

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Register online now!
www.saratools.com



ATORN® Digital sliding calliper

DIN 862 | Ø 1,5 mm | INOX | 0,01 mm | inch mm | KEEP-TRONIC | RS232C | Digi-matic | USB

- **KEEPTRONIC** electronics store the 0-point, operating keys lock to prevent accidental alteration of the 0-point, battery life approx. 3 years
- Digit height 10mm
- Data output **multiCOM** can be used as USB, Digimatic or RS232
- **Functions:** ON/OFF, user-defined zeroing (RESET), mm/inch, PRESET user-defined values (for version with data output)
- Supplied with battery CR 2032, No. 548079 6032
- **Special accessories:** Data cable Types P-RS 232 / P-Digimatic / P-USB, No. 512521....

Data output multiCOM



500506 4150

Measurement range mm	Jaw length mm	Depth bar	Data output	art.no.	€	Calibration art.no.	Calibration €
150	40	Ø 1.5 mm	No	**500506** 4150	107,–	070101 0001	8,80
150	40	Flat	No	500506 4151	107,–	070101 0001	8,80
150	40	Ø 1.5 mm	Yes	500506 3150	126,50	070101 0001	8,80
150	40	Flat	Yes	500506 3151	126,50	070101 0001	8,80
300	64	No	Yes	500506 2300	228,–	070101 0002	16,70

5194

ATORN® IP67 digital sliding calliper

IP67 | DIN 862 | Ø 1,5 mm | INOX | 0,01 mm | inch mm | KEEP-TRONIC

- **KEEPTRONIC** electronics store the 0-point, operating keys lock to prevent accidental alteration of the 0-point, battery life approx. 3 years
- Digit height 10mm
- Inductive, waterproof FPS measuring system (Fluid Protected Measuring System)
- **Functions:** ON/OFF, user-defined zeroing, mm/inch
- Supplied with CR 2032 battery, No. 548079 6032



500525 2150

Measurement range mm	Jaw length mm	Depth bar	art.no.	€	Calibration art.no.	Calibration €
150	40	Ø 1.5 mm	**500525** 2150	158,–	070101 0001	8,80
150	40	Flat	500525 2151	158,–	070101 0001	8,80

5194

ATORN® Digital Vernier callipers IP67 wireless

IP67 | DIN 862 | Ø 1,5 mm | INOX | 0,01 mm | inch mm | KEEP-TRONIC

- **KEEPTRONIC** electronics store the 0-point, operating keys lock to prevent accidental alteration of the 0-point, battery life approx. 3 years
- Digit height 10mm
- Inductive, waterproof FPS measuring system (Fluid Protected Measuring System)
- Integrated radio system **ATORN-Integrated-Wireless** for maximum freedom of movement (radio range 6m)
- **Functions:** ON/OFF, user-defined zeroing, mm/inch
- Supplied with CR 2032 battery, No. 548079 6032

integrated radio



500527 0150

Measurement range mm	Jaw length mm	Depth bar	art.no.	€	Calibration art.no.	Calibration €
150	40	Ø 1.5 mm	**500527** 0150	213,–	070101 0001	8,80
150	40	Flat	500527 0151	213,–	070101 0001	8,80

5194

Protection classes as per DIN EN 60529

INFO

Identifier 1:

Protection against foreign objects and dust	Foreign objects > 50.0 mm	**IP 1.**
	Foreign objects > 12,0 mm	**IP 2.**
	Foreign objects > 2.5 mm	**IP 3.**
	foreign objects > 1.0 mm	**IP 4.**
	Protection against dust	**IP 5.**
	Dust-tight	**IP 6.**

+

Identifier 2:

Protection against water	Vertically dripping water	**IP .1**
	Water dripping at an angle	**IP .2**
	Spray water	**IP .3**
	Splash water	**IP .4**
	Water jets	**IP .5**
	High-intensity water jets	**IP .6**
	Brief submersion	**IP .7**
	Sustained submersion (depth in m)	**IP .8**

Example: IP67

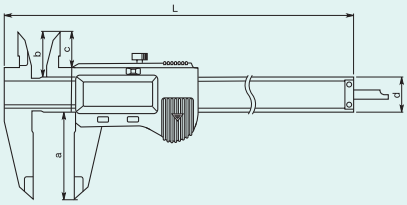
Dust-tight = IP 6.
Brief submersion = IP .7
Protection class DIN 40050: = IP 67

Mitutoyo Digital sliding calliper ABSOLUTE! AOS!

DIN 862 | Ø 1,9 mm | INOX | 0,01 mm | ABSO-LUTE | Digi-matic | USB

ABSOLUTE®

- Particularly suitable for use in rough work conditions due to the electromagnetic inductive **AOS** measuring process (**A**dvanced **O**nsite **S**ensor), which is not sensitive to dirt or moisture on the scale
- **"ABSOLUTE" scale** for one-time zeroing
- **Digit height 9 mm (11 mm for MB 300 mm)**
- Battery life approx. 18,000 hours
- **Functions:** ON/OFF, zero point at battery change (ORIGIN), user-defined zeroing (ZERO/ABS), battery check
- Supplied with SR44 battery (No. 500534 0001) and factory certificate
- **Special accessories:** Digimatic cable Type C, No. 563100 0021 (1 m), No. 563100 0022 (2 m), USB cable Type C-USB, No. 563110 0003



Measurement range	L	a	b	c	d
100	180	40	21,0	16,5	16
150	231	40	21,0	16,5	16
200	288	50	24,5	20,0	16
300	404	64	27,5	21,8	20

Without thumbwheel

Measurement range mm	Jaw length mm	Depth bar	Data output	art.no.	€	Calibration art.no.	Calibration €
100	40	Ø 1.9 mm	No	**500560** 2100	205,–	070101 0001	8,80
100	40	Ø 1.9 mm	Yes	500560 3100	217,–	070101 0001	8,80
150	40	Ø 1.9 mm	No	500560 2150	112,–	070101 0001	8,80
150	40	Ø 1.9 mm	Yes	500560 3150	161,–	070101 0001	8,80
150	40	Flat	No	500560 0150	112,–	070101 0001	8,80
150	40	Flat	Yes	500560 1150	139,–	070101 0001	8,80
200	50	Flat	No	500560 0200	177,–	070101 0001	8,80
200	50	Flat	Yes	500560 1200	198,–	070101 0001	8,80
300	64	Flat	Yes	500560 1300	289,–	070101 0002	16,70

5102



With thumbwheel

Measurement range mm	Jaw length mm	Depth bar	Data output	art.no.	€	Calibration art.no.	Calibration €
100	40	Ø 1.9 mm	Yes	**500562** 3100	237,–	070101 0001	8,80
150	40	Ø 1.9 mm	Yes	500562 3150	163,–	070101 0001	8,80
150	40	Flat	Yes	500562 1150	164,–	070101 0001	8,80
200	50	Flat	Yes	500562 1200	233,–	070101 0001	8,80
300	64	Flat	Yes	500562 1300	324,–	070101 0002	16,70

5102



With carbide measuring faces for external measurements

Measurement range mm	Jaw length mm	Depth bar	Data output	Thumb roller	art.no.	€	Calibration art.no.	Calibration €
150	40	Flat	Yes	Yes	**500566** 1150	284,–	070101 0001	8,80
150	40	Flat	Yes	No	500566 0150	252,–	070101 0001	8,80
200	50	Flat	Yes	Yes	500566 1200	329,–	070101 0001	8,80

5102



With carbide measuring faces for external and internal measurements, no thumbwheel

Measurement range mm	Jaw length mm	Depth bar	Data output	art.no.	€	Calibration art.no.	Calibration €
150	40	Flat	Yes	**500564** 0150	485,–	070101 0001	8,80
200	50	Flat	Yes	500564 0200	540,–	070101 0001	8,80

5102

Mitutoyo Digital sliding calliper

DIN 862 | INOX | 0,01 mm | ABSO-LUTE

ABSOLUTE®

- **ABSOLUTE scale** for one-time zeroing
- Perfect slider movement
- Capacitive measuring system with dirt wiper in the slider
- **LCD display with 7.5 mm high digits and improved contrast**
- **Functions:** Zero point (ORIGIN)



Solar version

Measurement range mm	Jaw length mm	Thumb roller	art.no.	€	Calibration art.no.	Calibration €
150	40	No	**500520** 0150	149,–	070101 0001	8,80
200	50	No	500520 0200	199,–	070101 0001	8,80

5102

Mitutoyo IP67 digital sliding calliper

IP67 | DIN 862 | Ø 1,9 mm | INOX | 0,01 mm | ABSO-LUTE | Digi-matic | USB

ABSOLUTE®

TÜVRheinland® ZERTIFIZIERT — Sicherheit Staub- und wassergeschützt — www.tuv.com ID 0000006683

- **ABSOLUTE scale**
- Inductive functional principle
- Switches off automatically after 20 minutes of inactivity
- New, high-contrast display
- Digit height 9 mm (11 mm for MB 300 mm)
- Battery life approx. 5 years
- Battery change possible without a screwdriver
- **Functions:** ZERO/ORIGIN, automatic ON/OFF, battery check
- Supplied with SR 44 battery, No. 500534 0001
- **Special accessories:** Digimatic cable Type A, No. 563100 0001 (1 m), No. 563100 0002 (2 m), USB cable Type A-USB, No. 563110 0001

Measurement range mm	Jaw length mm	Depth bar	Data output	art.no.	€	Calibration art.no.	€
150	40	Flat	No	**500514** 7150	166,–	070101 0001	8,80
200	50	Flat	No	500514 7200	232,–	070101 0001	8,80
150	40	Ø 1.9 mm	No	500515 7150	165,–	070101 0001	8,80
150	40	Flat	Yes	500516 7150	214,–	070101 0001	8,80
200	50	Flat	Yes	500516 7200	272,–	070101 0001	8,80
300	64	Flat	Yes	500516 7300	360,–	070101 0002	16,70

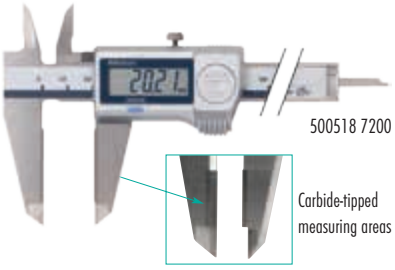
5102



With carbide measuring faces for external and internal measurements

Measurement range mm	Jaw length mm	Depth bar	Data output	art.no.	€	Calibration art.no.	€
150	40	Flat	Yes	**500518** 7150	426,–	070101 0001	8,80
200	50	Flat	Yes	500518 7200	485,–	070101 0001	8,80

5102



Solar version

- Light intensity 60 Lux
- Shock-resistant design
- Digit height 7.5 mm
- Reserve power supply for lighting below 60 Lux

Measurement range mm	Jaw length mm	Depth bar	Thumb roller	Data output	art.no.	€	Calibration art.no.	€
150	40	Flat	No	No	**500520** 1150	222,–	070101 0001	8,80
150	40	Ø 1.9 mm	No	No	500520 1151	222,–	070101 0001	8,80

5102



Protection classes as per DIN EN 60529

INFO

Identifier 1:

Protection against foreign objects and dust	Foreign objects > 50.0 mm	**IP 1.**
	Foreign objects > 12,0 mm	**IP 2.**
	Foreign objects > 2.5 mm	**IP 3.**
	foreign objects > 1.0 mm	**IP 4.**
	Protection against dust	**IP 5.**
	Dust-tight	**IP 6.**

+

Identifier 2:

Protection against water	Vertically dripping water	**IP .1**
	Water dripping at an angle	**IP .2**
	Spray water	**IP .3**
	Splash water	**IP .4**
	Water jets	**IP .5**
	High-intensity water jets	**IP .6**
	Brief submersion	**IP .7**
	Sustained submersion (depth in m)	**IP .8**

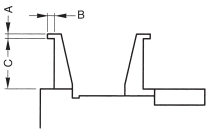
Example: IP67

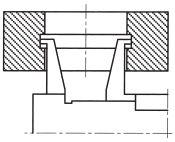
Dust-tight = IP 6.
Brief submersion = IP .7
Protection class DIN 40050: = IP 67

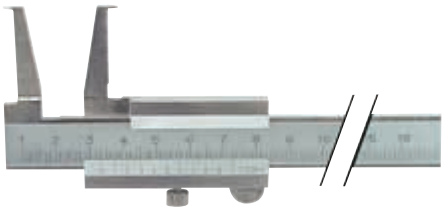
SARA® Groove calliper

INOX

- For measuring the diameter of internal grooves
- Reading parts matt chrome-plated
- Error margin 0.1 mm







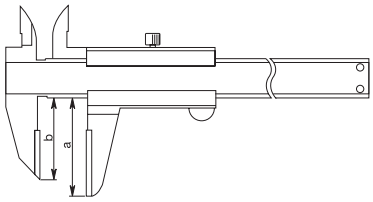
Measurement range mm	Vernier mm	A mm	B mm	C mm	art.no.	€	Calibration art.no.	Calibration €
10-160	0.05	2	3	26	**500805** 0160	149,–	070101 0001	8,80

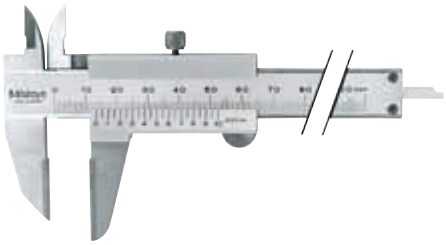
5108

Mitutoyo Special-purpose sliding callipers

INOX

- Reading parts matt chrome-plated
- Raised guideways
- Vernier scale 0.05 mm extended to 39 mm





Scribing calliper with carbide measuring faces and depth gauge

Measurement range mm	a mm	b mm	Error limit mm	art.no.	€	Calibration art.no.	Calibration €
150	40	33	0.05	**500903** 0001	143,–	070101 0001	8,80
200	50	43	0.05	500903 0002	172,–	070101 0001	8,80
300	64	54	0.08	500903 0003	365,–	070101 0002	16,70

5102

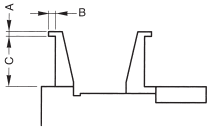
ATORN® Digital internal groove calliper

Data output multiCOM

INOX | 0,01 mm | inch mm | KEEP-TRONIC | Digi-matic | RS232C | USB

- For measuring the diameter of internal grooves
- **KEEPTRONIC** electronics store the zero point, operating keys lock to prevent accidental alteration of the zero point. Battery life approx. 3 years
- **multiCOM**data output, can be used as USB, Digimatic or RS-232
- Hardened measuring and guide surfaces
- **Functions:** ON/OFF, user-defined zeroing (RESET), mm/inch
- Supplied with CR 2032 battery, No. 548079 6032
- **Optional accessories:** Data cables, type P-RS 232 / P-Digimatic / P-USB, no. 512521....





Measurement range mm	A mm	B mm	C mm	Error limit mm	art.no.	€	Calibration art.no.	Calibration €
10-160	0.9	3	25	0.06	**500643** 1160	445,–	070101 0001	8,80
20-160	2	5	40	0.06	500643 0160	509,–	070101 0001	8,80

5194



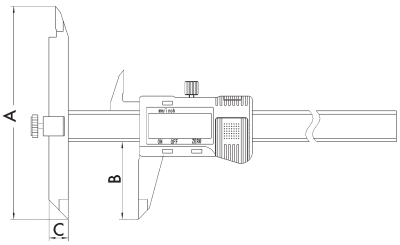
... but digital.

ATORN®
Performance demands quality

SARA® Digital special-purpose sliding calliper

INOX | 0,01 mm | inch / mm

- Locking screw on top
- Measuring jaws for different special applications
- **Functions:** ON/OFF, ZERO, mm/inch
- Supplied with CR2032 battery, No. 548079 6032





With adjustable measuring jaw

Measurement range mm	A mm	B mm	C mm	art.no.	€	Calibration art.no.	Calibration €
150	110	40	10	**500701** 2000	157,–	070101 0001	8,80

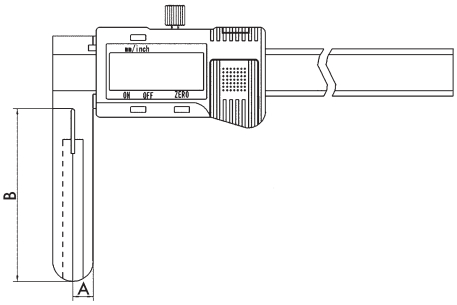
5108



Pointed sliding calliper

Measurement range mm	Edge length mm	art.no.	€	Calibration art.no.	Calibration €
150	40	**500701** 2010	147,–	070101 0001	8,80

5108

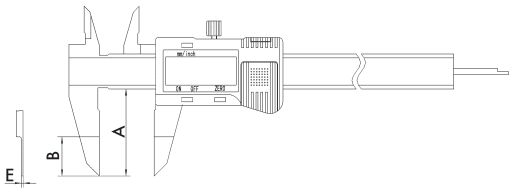




With long, slender measuring jaws for internal measurements

Measurement range mm	A mm	B mm	art.no.	€	Calibration art.no.	Calibration €
10-150	7	60	**500701** 2030	210,–	070101 0001	8,80

5108



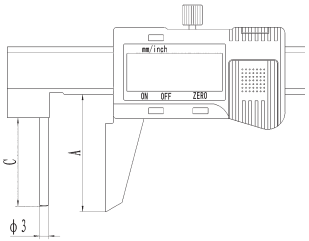


Shaft key groove gauge

- With flat measuring faces

Measurement range mm	A mm	B mm	E mm	art.no.	€	Calibration art.no.	Calibration €
0-150	40	18	0.75	**500701** 2040	147,–	070101 0001	8,80

5108





Wall thickness sliding calliper

Measurement range mm	A mm	C mm	art.no.	€	Calibration art.no.	Calibration €
150	40	30	**500701** 2020	115,–	070101 0001	8,80

5108

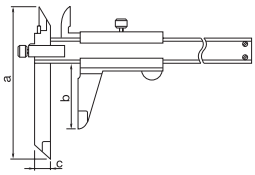
Mitutoyo Digital special-purpose sliding calliper IP67

IP67 | INOX | 0,01 mm | ABSO-LUTE | Digi-matic | USB

ABSOLUTE®

TÜVRheinland ZERTIFIZIERT — Sicherheit Staub- und wassergeschützt — www.tuv.com ID 2011207400

- **ABSOLUTE scale**
- Inductive functional principle
- Switches off automatically after 20 minutes of inactivity
- New, high-contrast display
- Digit height 9 mm
- Battery life approx. 5 years
- Battery change possible without a screwdriver
- **Functions:** ZERO/ORIGIN, automatic ON/OFF, battery check
- Supplied with SR44 battery, No. 500534 0001
- **Special accessories**: Digimatic cable type A No. 563100 0001 (1 m), No. 563100 0002 (2 m), USB cable type A-USB No. 563110 0001



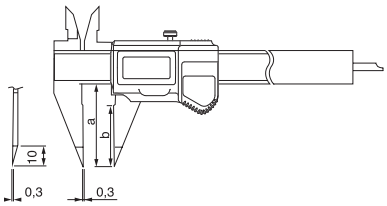


With adjustable measuring jaws and depth bar

- 500730 0003 with digit height 10.2 mm, screwed battery cover and 5000-hour battery life

Measurement range mm	a mm	b mm	c mm	Error limit mm	Thumb roller	art.no.	€	Calibration art.no.	Calibration €
150	95	40	10	0.03	No	**500730** 0150	552,–	070101 0001	8,80
200	95	50	10	0.03	No	500730 0200	616,–	070101 0001	8,80
300	135	64	15	0.04	No	500730 0003	770,–	070101 0002	16,70

5102







Pointed sliding calliper with depth bar

Measurement range mm	a mm	b mm	Error limit mm	art.no.	€	Calibration art.no.	Calibration €
150	40	0.3	0.03	**500731** 0150	433,–	070101 0001	8,80

5102

Digital groove symmetry sliding calliper

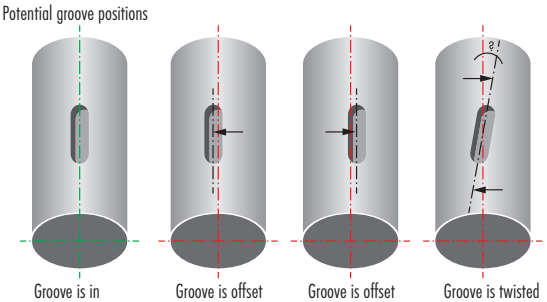
0,01 mm | inch mm

- For checking the symmetry and position of, e.g. fitting key grooves quickly and easily
- Long measuring jaws for checking symmetry
- Duplicate cross points on one side for better support in the groove
- Travel of long measuring jaw, 70 mm
  Travel of cross points, 40 mm
- Supplied with 2x SR44 batteries, no. 500534 0001





Potential groove positions



Groove is in the centre | Groove is offset | Groove is offset | Groove is twisted



Measurement range Ø mm	Error limit mm	art.no.	€
100	0.05	**500701** 0100	420,–

5169

ATORN® Digital universal pocket sliding gauge set IP67

IP67 | INOX | 0,01 mm | inch mm | KEEP-TRONIC | USB | RS232C | Digi-matic



- Measuring jaws with M2.5 mm threads for attaching special-purpose dial gauge contact points
- For internal and external measurements
- Jaw width 5 mm
- **KEEPTRONIC** electronics store the zero point, operating keys lock to prevent accidental alteration of the zero point. Battery life approx. 3 years
- Inductive, waterproof FPS measuring system (Fluid Protected Measuring System)
- **multiCOM** data output, can be used as USB, Digimatic or RS-232
- **Functions:** ON/OFF, user-defined zeroing (RESET), mm/inch
- Supplied with 2x Ø 5 mm ball measuring inserts and Ø 4.8 mm flat surface, 50 mm setting piece, CR2032 battery, no. 548079 6032
- **Optional accessories:** Data cables, type P-RS 232 / P-Digimatic / P-USB, no. 512521....



Measurement range mm	Edge length mm	Error limit mm	art.no.	€	Calibration art.no.	€
150	40	0.05	**500627** 0150	430,–	070101 0001	8,80

5194

ATORN® Digital universal workshop calliper set IP65

IP65 | INOX | 0,01 mm | inch mm | KEEP-TRONIC | USB | RS232C | Digi-matic

Data output multiCOM



- Measuring jaws with M 2.5 mm threads for attaching dial gauge special probe tips
- For internal and external measurements
- Side width: 300 mm = 12 mm, 500 mm = 16 mm
- **KEEPTRONIC** electronics store the 0-position, operating keys lock to prevent accidental alteration of the 0-position, battery life approx. 3 years
- LCD with 8.5 mm high digits for measurement range of 300 mm; 12 mm high for measurement range of 500 mm
- **multiCOM** data output, can be used as USB, Digimatic or RS232
- **Functions:** mm/inch, ON/OFF / 0 / HOLD for power on/off / user-defined zeroing / hold value, measurement value preset
- Supplied in a wooden case **with 2 of each measuring insert:** pointed tip, steel, No. 5170301017; flat tip/HM, Ø 4.8 mm, No. 5170301025; ball tip, steel, Ø 3 mm No. 5170301020; cylindrical tip, flat, steel, length 11 mm, No. 5170301011
- **Special accessories**: Data cables, type P-RS 232 / P-Digimatic / P-USB, No. 512521....

Measuring inserts for external measurement, adjustable

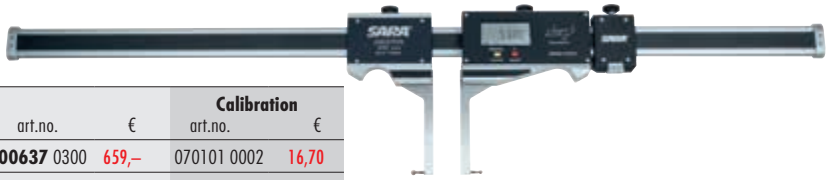
Measurement range outside/inside mm	Edge length mm	Error limit mm	art.no.	€	Calibration art.no.	€
0-300 / 40-300	90	0.06	**500627** 0301	769,–	070101 0002	16,70
0-500 / 50-500	100	0.06	500627 0501	979,–	070101 0003	26,–

5194

SARA® Digital workshop sliding calliper set in lightweight design

Werks-norm | 0,01 mm | inch mm

- Measuring jaws with M 2.5 mm threads for attaching dial gauge special probe tips
- For internal and external measurements
- Both measuring jaws are adjustable
- Internal double V-guide for optimal guide properties and slider movement
- Aluminium rail with oxide coating
- All measurement ranges with Sylvac electronics
- Measurement ranges up to 3000 mm on request
- Functions: On/off, mm/inch, user-defined zeroing, pre-set user-defined values (PRESET)
- Supplied with 2x special probe tip, taper Ø 5 mm and CR2032 battery, No. 548079 6032

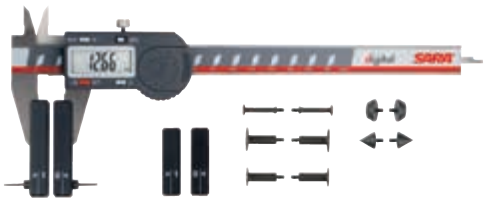


Measurement range mm	Edge length mm	Error limit mm	Weight kg	art.no.	€	Calibration art.no.	€
300	100	0.04	1.00	**500637** 0300	659,–	070101 0002	16,70
500	100	0.05	1.30	500637 0500	859,–	070101 0003	26,–
800	100	0.06	1.50	500637 0800	1.059,–	070101 0004	53,–
1000	100	0.06	1.70	500637 1000	1.159,–	070101 0004	53,–

5108

SARA® Universal accessory set for digital sliding callipers

0,01 mm



- Accessory set suitable for all digital pocket callipers with a measuring jaw thickness of max. 4.5 mm
- Supplied with:
  1 pair of measuring holders in each size, short and long
  1 pair of disc probes in each size, Ø 12.5 / 10 / 6 mm
  1 pair of 60° tapered probes in each size, Ø 12 / 9 mm
  1 pair of cylindrical probes in each size, Ø 1.5 x 9 mm
  1 spring system for constant measuring force
  1 hex key



Designation	art.no.	€
Universal accessory set for Vernier callipers up to jaw thickness 3.5 mm	**500190** 0008	183,–
Universal accessory set for Vernier callipers up to jaw thickness 4.5 mm	500190 0009	209,–

5108

- Supplied with additional depth gauge bridge and digital sliding calliper, measurement range 150 mm, for technical data please see No. 500702 0150



Designation	art.no.	€	Calibration art.no.	€
Universal accessory set with digital vernier calliper	**500190** 0010	230,–	070101 0001	8,80

5108

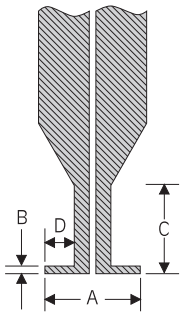
Groove measuring attachments



Shown with vernier calliper

- For measuring external and internal groove diameters, O-ring recesses and undercuts
- Attachments are fixed to the sliding calliper measuring jaws in pairs using clamping screws
- Hard chrome-plated
- Suitable for all sliding callipers with max. measuring jaw thickness of 3.5 mm
- Set of 5 pairs of attachments
  1 pair for external recesses
  4 pairs for internal recesses of various diameters
- Supplied without sliding calliper

Mode of measuring	B mm	A mm	D mm	C mm
external	0,65	-	9,5	-
internal	0,4	5,0	1,3	10
internal	0,4	7,5	1,75	16
internal	0,65	15,0	5,0	25
internal	1,0	18,0	6,5	32



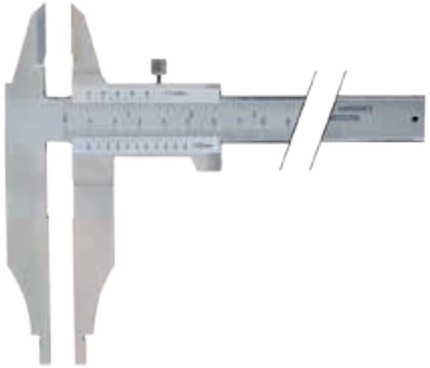


Designation	art.no.	€
Measuring attachment set	**500190** 0001	459,–

5108

SARA® Workshop sliding calliper

DIN 862 INOX



- With bevelled blade tips
- Offset jaw ends for internal measurements

Measurement range mm	Jaw length mm	Inside measurement from mm	Vernier mm/inch	art.no.	€	Calibration art.no.	€
300	90	10	0.05/1/128"	**500612** 0300	122,–	070101 0002	16,70
500	150	20	0.05/1/128"	500612 0500	330,–	070101 0003	26,–
800	150	20	0.05/1/128"	500612 0800	499,–	070101 0004	53,–

5108

ATORN® Workshop sliding calliper

DIN 862 | INOX

- For external and internal measurements
- Error limit: factory standard
- High-precision laser scale
- Reading parts matt chrome-plated
- Ultra-fine ground and lapped measuring surfaces
- Measuring jaw ends offset for internal measurements
- Locking screw on top

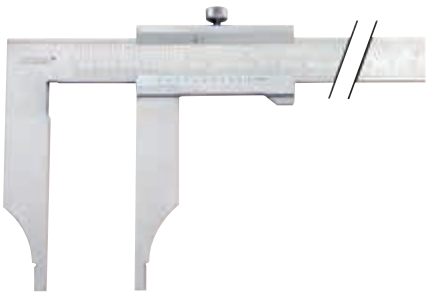


Rounded measuring areas for internal measurement

Without blade tips

Measurement range mm	Jaw length mm	Vernier mm/inch	Inside measurement from mm	Error limit mm	art.no.	€	Calibration art.no.	€
300	90	0.05 / 1/128"	10	0.05	**500619** 0300	180,–	070101 0002	16,70
500	150	0.05 / -	20	0.07	500619 0500	490,–	070101 0003	26,–
800	150	0.05 / -	20	0.10	500619 0800	619,–	070101 0004	53,–

5190

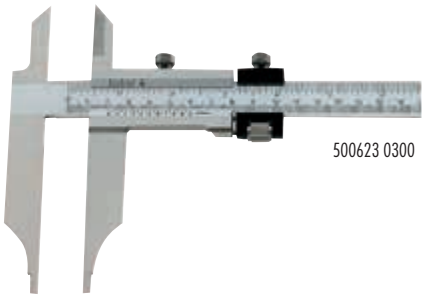


With fine adjustment

- Bevelled blade tips

Measurement range mm	Jaw length mm	Vernier mm/inch	Inside measurement from mm	Error limit mm	art.no.	€	Calibration art.no.	€
300	90	0.05/1/128"	10	0.05	**500623** 0300	230,–	070101 0002	16,70
500	150	0.05/-	20	0.07	500623 0500	649,–	070101 0003	26,–
800	150	0.05/-	20	0.10	500623 0800	839,–	070101 0004	53,–
1000	150	0.05/-	20	0.12	500623 1000	1.019,–	070101 0004	53,–
1500	200	0.05/-	30	0.18	500623 1500	1.979,–	070101 0005	75,90

5190



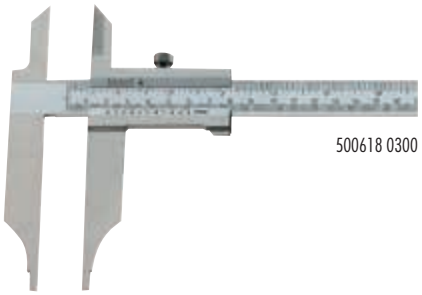
500623 0300

Without fine adjustment

- Bevelled blade tips

Measurement range mm	Jaw length mm	Vernier mm/inch	Inside measurement from mm	Error limit mm	art.no.	€	Calibration art.no.	€
300	90	0.05/1/128"	10	0.05	**500618** 0300	199,–	070101 0002	16,70
500	150	0.05/-	20	0.07	500618 0500	589,–	070101 0003	26,–
800	150	0.05/-	20	0.10	500618 0800	769,–	070101 0004	53,–
1000	150	0.05/-	20	0.12	500618 1000	919,–	070101 0004	53,–

5190



500618 0300

Wooden case for calliper

suitable for measurement range mm	art.no.	€
300	**500624** 0300	18,50
500	500624 0500	54,–
800	500624 0800	70,–
1000	500624 1000	96,–
1500	500624 1500	135,–

5190



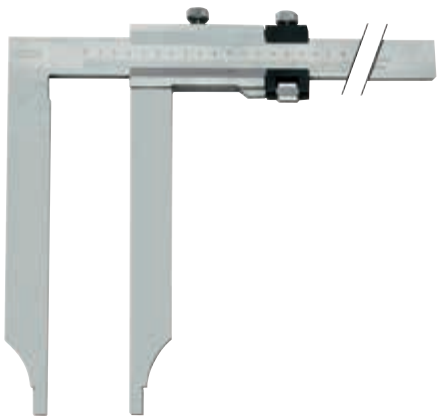
HELIOS·PREISSER Workshop calliper with long measuring jaws

Werks-norm | INOX

- For measuring large workpieces and workpiece diameters
- High-precision laser scale
- Vernier scale 0.05 mm, matt chrome-plated
- Offset jaw ends for internal measurements
- Locking screw on top
- Fine adjustment



Rounded measuring areas for internal measurement



Measurement range mm	Jaw length mm	Inside measurement from mm	Error limit mm	art.no.	€	Calibration art.no.	Calibration €
500	250	20	0.14	**500622** 0500	610,–	070101 0003	26,–
800	400	20	0.20	500622 0800	1.062,–	070101 0004	53,–
1000	200	20	0.24	500622 1000	890,–	070101 0004	53,–
1000	500	20	0.24	500622 1050	1.450,–	070101 0004	53,–

5186

Mitutoyo Workshop sliding calliper

Werks-norm | INOX

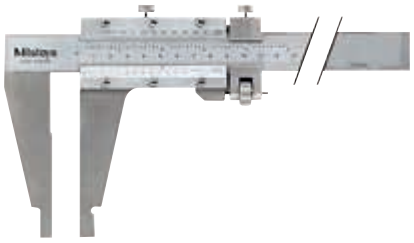
- Reading parts matt chrome-plated
- Measuring jaw ends offset for internal measurements
- Direct measurement readings due to offset metric scales for external and internal measurements, no need to add on the measuring jaw thickness



Rounded measuring areas for internal measurement

With fine adjustment

- Vernier scale 0.02 mm
- ...0300 with rounded Vernier scale for parallax-free readings



Measurement range mm	Jaw length mm	Inside measurement from mm	Error limit mm	art.no.	€	Calibration art.no.	Calibration €
300	75	10	0.04	**500603** 0300	347,–	070101 0002	16,70
450	100	20	0.05	500603 0450	552,–	070101 0003	26,–
600	100	20	0.05	500603 0600	629,–	070101 0004	53,–
1000	140	20	0.07	500603 1000	1.158,–	070101 0004	53,–
1500	180	20	0.09	500603 1500	2.368,–	070101 0005	75,90
2000	180	20	0.12	500603 2000	3.360,–	070101 0005	75,90

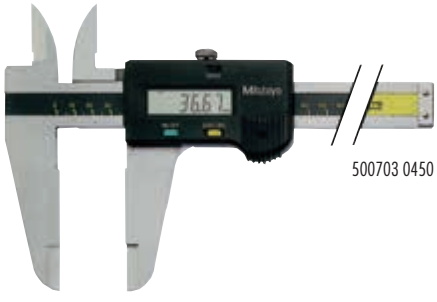
5102

Mitutoyo Digital sliding calliper for large measurement ranges

INOX | 0,01 mm | ABSO-LUTE | Digi-matic | USB

ABSOLUTE®

- Robust design
- **ABSOLUTE scale**
- With cross points
- Capacitive measuring system with dirt wipers in the slider
- Battery life approx. 20,000 hours
- **Functions:** On/off, ORIGIN, ZERO/ABS, battery check
- Supplied with SR44 battery, no. 500534 0001
- **Optional accessories:** Digimatic cable type C, no. 563100 0021 (1 m), no. 563100 0022 (2 m), USB cable type C-USB, no. 563110 0003



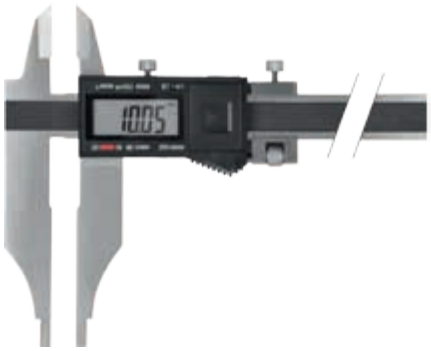
500703 0450

Measurement range mm	Jaw length mm	Error limit mm	art.no.	€	Calibration art.no.	Calibration €
450	90	0.05	**500703** 0450	841,–	070101 0003	26,–
600	90	0.05	500703 0600	912,–	070101 0004	53,–
1000	130	0.07	500703 1000	1.584,–	070101 0004	53,–

5102

SARA® Digital workshop calliper

INOX | 0,01 mm | inch mm



- With blade tips
- With fine adjustment
- Offset jaw ends for internal measurements
- Bevelled blade tips
- Supplied with CR2032 battery, No. 548079 6032

Measurement range mm/inch	Jaw length mm	Inside measurement from mm	Error limit mm	art.no.	€	Calibration art.no.	Calibration €
300	90	10	0.03	**500628** 0300	199,–	070101 0002	16,70
500	150	20	0.05	500628 0500	359,–	070101 0003	26,–
800	150	20	0.06	500628 0800	539,–	070101 0004	53,–
1000	150	20	0.06	500528 1000	739,–	070101 0004	53,–

5108

HELIOS·PREISSER Digital workshop calliper IP65

IP65 | DIN 862 | INOX | 0,01 mm | inch mm | Digi-matic | RS232C | USB

- **QuickLock** electronics store the zero point, operating keys lock to prevent accidental alteration of the zero point
- Data output can be used as USB, Digimatic or RS-232
- Digit height 12.5 mm (measurement range 300 mm = 10 mm)
- **Functions:** ON/OFF, user-defined zeroing (RESET), mm/inch, PRESET for pre-setting internal measurement values
- Supplied with CR 2032 battery, No. 548079 6032
- **Optional accessories:** data cables, type P-RS 232 / P-Digimatic / P-USB, no. 512521....



With blade tips

Measurement range mm	Jaw length mm	Inside measurement from mm	art.no.	€	Calibration art.no.	Calibration €
300	90	10	**500531** 0300	431,–	070101 0002	16,70
500	125	20	500531 0500	822,–	070101 0003	26,–
800	150	20	500531 0800	1.110,–	070101 0004	53,–
1000	150	20	500531 1000	1.365,–	070101 0004	53,–

5186



Without blade tips

Measurement range mm	Jaw length mm	Inside measurement from mm	art.no.	€	Calibration art.no.	Calibration €
300	90	10	**500533** 0300	396,–	070101 0002	16,70
500	125	20	500533 0500	731,–	070101 0003	26,–
800	150	20	500533 0800	1.012,–	070101 0004	53,–
1000	150	20	500533 1000	1.259,–	070101 0004	53,–

5186

ATORN® Digital workshop caliper

DIN 862 | INOX | 0,01 mm | inch / mm | KEEP-TRONIC | RS232C | Digi-matic | USB

Data output multiCOM

- **KEEPTRONIC** electronics store the zero point, operating keys lock to prevent accidental alteration of the zero point. Battery life approx. 3 years
- Data output **multiCOM** Can be used as USB, Digimatic or RS-232
- Digit height 12 mm (measurement range 300 mm = 10 mm)
- **Functions:** ON/OFF, user-defined zeroing (RESET), mm/inch, PRESET for pre-setting internal measurement values
- Supplied with CR 2032 battery, No. 548079 6032
- **Optional accessories:** data cables, type P-RS 232 / P-Digimatic / P-USB, no. 512521....









With blade tips, no fine adjustment

Measurement range mm	Jaw length mm	Inside measurement from mm	Weight kg	art.no.	€	Calibration art.no.	Calibration €
300	90	10	1.20	**500521** 0301	485,–	070101 0002	16,70
500	125	20	2.50	500521 0501	719,–	070101 0003	26,–
800	150	20	4.50	500521 0801	1.179,–	070101 0004	53,–
1000	150	20	4.75	500521 1001	1.349,–	070101 0004	53,–

5194

With blade tips and fine adjustment

Measurement range mm	Jaw length mm	Inside measurement from mm	Weight kg	art.no.	€	Calibration art.no.	Calibration €
300	90	10	1.20	**500523** 0301	519,–	070101 0002	16,70
500	125	20	2.50	500523 0501	799,–	070101 0003	26,–
800	150	20	4.50	500523 0801	1.249,–	070101 0004	53,–
1000	150	20	4.75	500523 1001	1.429,–	070101 0004	53,–

5194

Without blade tips, with fine adjustment

Measurement range mm	Jaw length mm	Inside measurement from mm	Weight kg	art.no.	€	Calibration art.no.	Calibration €
300	90	10	1.20	**500526** 0301	500,–	070101 0002	16,70
500	125	20	2.50	500526 0501	689,–	070101 0003	26,–
800	150	20	4.50	500526 0801	1.169,–	070101 0004	53,–
1000	150	20	4.75	500526 1001	1.359,–	070101 0004	53,–

5194

Wooden case for calliper

suitable for measurement range mm	art.no.	€
300	**500624** 0300	18,50
500	500624 0500	54,–
800	500624 0800	70,–
1000	500624 1000	96,–

5190

Mitutoyo Digital workshop caliper

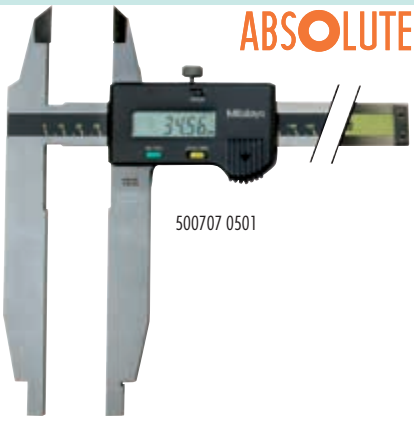
Werks-norm | INOX | 0,01 mm | ABSO-LUTE | Digi-matic | USB

- ABSOLUTE scale
- Measuring jaw ends offset for internal measurements
- Capacitive measuring system with dirt wipers in the slider
- Battery life approx. 20,000 hours
- **Functions:** ON/OFF, ORIGIN, ZERO/ABS, battery check
- Supplied with SR44 battery, no. 500534 0001
- **Optional accessories:** Digimatic cable type C, no. 563100 0021 (1 m), no. 563100 0002 (2 m), USB cable type C-USB, no. 563110 0003



Rounded measuring areas for internal measurement

ABSOLUTE®



500707 0501



500705 0451

With blade tips

Measurement range mm	Jaw length mm	Inside measurement from mm	Error limit mm	art.no.	€	Calibration art.no.	Calibration €
500	150	20	0.06	**500707** 0501	789,–	070101 0003	26,–
750	150	20	0.06	500707 0751	1.088,–	070101 0004	53,–
1000	150	20	0.07	500707 1001	1.318,–	070101 0004	53,–

5102

Without blade tips

Measurement range mm	Jaw length mm	Inside measurement from mm	Error limit mm	art.no.	€	Calibration art.no.	Calibration €
450	100	20	0.05	**500705** 0451	627,–	070101 0003	26,–
600	100	20	0.05	500705 0601	709,–	070101 0004	53,–
1000	140	20	0.07	500705 1001	1.209,–	070101 0004	53,–

5102

Mitutoyo Digital workshop calliper IP67

IP67 | Werks-norm | INOX | 0,01 mm | ABSO-LUTE | Digi-matic | USB

ABSOLUTE®

TÜVRheinland® ZERTIFIZIERT — Sicherheit Staub- und wassergeschützt — www.tuv.com ID 2011207400

- **ABSOLUTE scale**
- Inductive functional principle
- Switches off automatically after 20 minutes of inactivity
- New, high-contrast display
- Digit height 9 mm (measurement range 300 mm = 10.2 mm)
- Battery life approx. 5 years (300 mm = 5000 hours)
- Battery can be changed without a screwdriver for measurement range 200 mm (Battery cover screwed for 300 mm)
- **Functions:** ZERO/ORIGIN, automatic ON/OFF, battery check
- Supplied with SR44 battery, No. 500534 0001
- **Special accessories**: Digimatic cable type A No. 563100 0001 (1 m), No. 563100 0002 (2 m), USB cable type A-USB No. 563110 0001



With blade tips

Measurement range mm	Jaw length mm	Inside measurement from mm	Error limit mm	art.no.	€	Calibration art.no.	Calibration €
200	60	10	0.03	**500708** 0201	380,–	070101 0001	8,80
300	90	10	0.04	500708 0300	422,–	070101 0002	16,70

5102



Without blade tips

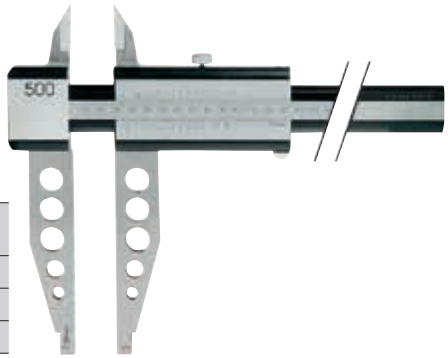
Measurement range mm	Jaw length mm	Inside measurement from mm	Error limit mm	art.no.	€	Calibration art.no.	Calibration €
200	60	10	0.03	**500706** 0201	354,–	070101 0001	8,80
300	75	10	0.04	500706 0300	423,–	070101 0002	16,70

5102

SARA® Lightweight workshop sliding calliper

Werks-norm | 0,01 mm | inch / mm

- With blade tips
- Aluminium bar and slider
- 1,100 HV wear-resistant and scratch-proof surface
- Double V-guide with perfect slider movement



With parallax-free readings

- Offset scale for internal and external measurements, eliminating the need to add on the measuring jaw thickness

Measurement range mm	Jaw length mm	Vernier mm	Inside measurement from mm	Error limit mm	Weight kg	art.no.	€	Calibration art.no.	Calibration €
500	150	0.02	20	0.03	1.200	**500625** 0500	509,–	070101 0003	26,–
800	150	0.02	20	0.1	1.500	500625 0800	689,–	070101 0004	53,–
1000	150	0.02	20	0.1	1.650	500625 1000	809,–	070101 0004	53,–

5108



With digital display, 0.01 mm readings

- Functions: mm/inch, ON/OFF
- Supplied with CR 2032 battery, No. 548079 6032

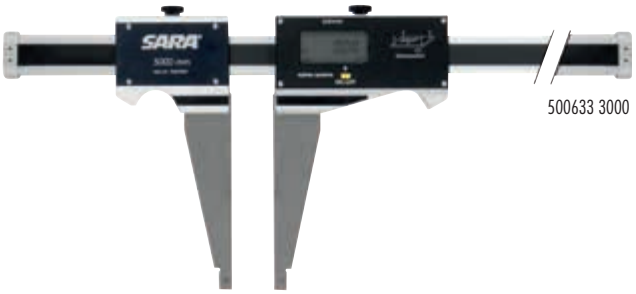
Measurement range mm	Jaw length mm	Inside measurement from mm	Error limit mm	Weight kg	art.no.	€	Calibration art.no.	Calibration €
500	150	20	0.03	1.200	**500630** 0500	699,–	070101 0003	26,–
800	150	20	0.08	1.500	500630 0800	909,–	070101 0004	53,–
1000	150	20	0.08	1.650	500630 1000	1.039,–	070101 0004	53,–

5108

SARA® Lightweight digital workshop calliper

Werks-norm | 0,01 mm | inch mm

- Stainless steel measuring jaws, hardened and finely ground
- Both measuring jaws are adjustable
- Internal double V-guide for optimum guide properties and slider movement
- Aluminium rail with oxide coating
- Measurement ranges from 1,000 to 3,000 mm with Sylvac electronics
- Functions: On/off, mm/inch, user-defined zeroing
- Longer measuring jaws available on request
- Supplied with plastic case up to 1000 mm, in carry case from 1500 mm including battery:
  500632.... SR44 battery, no. 500534 0001
  500633.... CR2032 battery, no. 548079 6032



500633 3000



500632 0500

Measurement range mm	Jaw length mm	Inside measurement from mm	Error limit mm	Weight kg	art.no.	€	Calibration art.no.	Calibration €
300	90	10	0.04	0.50	**500632** 0300	236,–	070101 0002	16,70
500	90	10	0.05	0.60	500632 0500	398,–	070101 0003	26,–
800	90	10	0.06	0.73	500632 0800	555,–	070101 0004	53,–
1000	150	20	0.06	1.70	500633 1000	989,–	070101 0004	53,–
1500	150	20	0.10	2.00	500633 1500	1.475,–	070101 0005	75,90
2000	150	20	0.13	2.40	500633 2000	1.819,–	070101 0005	75,90
3000	150	20	0.25	3.40	500633 3000	3.059,–	070101 0006	138,–

5108

Wooden case for calliper

suitable for measurement range mm	art.no.	€
1500	**500636** 1500	300,–
2000	500636 2000	300,–
2500	500636 2500	350,–
3000	500636 3000	350,–

5108

Mitutoyo Lightweight digital workshop calliper

IP66 | Werks-norm | 0,01 mm | ABSO-LUTE | Digi-matic | USB

ABSOLUTE®

TÜVRheinland® ZERTIFIZIERT — Sicherheit Staub- und wassergeschützt — www.tuv.com ID 0000022582

- Lightweight carbon design, up to 50% lighter than conventional workshop callipers
- Inductive measuring system housed in the measuring bar for added protection
- Easy to read thanks to 10 mm high digits
- **ABSOLUTE scale**
- Drive slide for constant measuring force
- Adjustable fixed measuring jaw
- Battery life approx. 5,000 hours
- **Functions:**
  OFFSET for switching between internal and external measurements
  PRESET/ORIGIN for pre-setting/zero point
  ZERO/ABS/HOLD
- Supplied with SR44 battery, no. 500534 0001
- **Optional accessories:** Digimatic cable type A, no. 563100 0001 (1 m), no. 563100 0002 (2 m); USB cable type A-USB, no. 563110 0001
- Version with long measuring jaws (200 mm) available on request



Rounded measuring areas for internal measurement



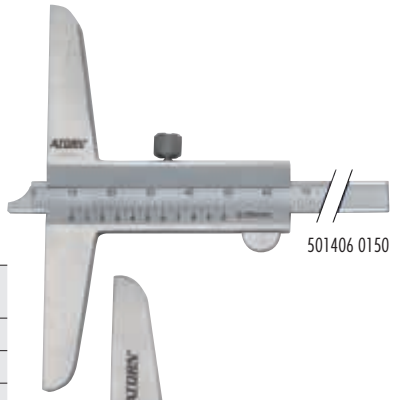
Measurement range mm	Jaw length mm	Inside measurement from mm	Error limit mm	Weight kg	art.no.	€	Calibration art.no.	Calibration €
450	100	20	0.05	0.715	**500712** 0450	983,–	070101 0003	26,–
600	100	20	0.05	0.790	500712 0600	1.087,–	070101 0004	53,–
1000	150	20	0.06	1.760	500712 1000	1.589,–	070101 0004	53,–
1500	150	20	0.10	2.160	500712 1500	2.022,–	070101 0005	75,90
2000	150	20	0.13	2.560	500712 2000	2.583,–	070101 0005	75,90

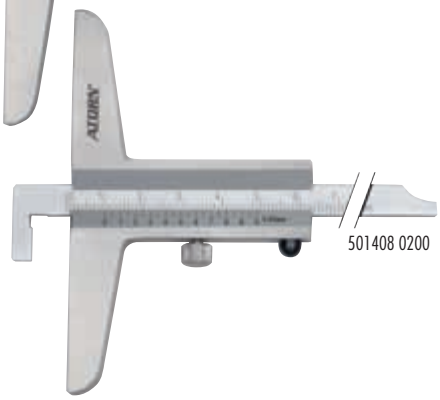
5102

ATORN® Sliding depth gauges

DIN 862 | INOX

- **With and without hook**
- Open slider machined from solid material
- Scale end with step
- **501408.... Rail can be repositioned, engraved on both sides**
- Vernier: 0.05 mm extended to 39 mm





Measurement range mm	Base length mm	Scale cross-section mm	Without hook art.no.	€	With hook art.no.	€	Calibration art.no.	€
150	100	8x3	**501406** 0150	95,–	**501408** 0150	118,–	070101 0001	8,80
200	100	8x3	501406 0200	98,–	501408 0200	122,–	070101 0001	8,80
250	130	12x4	501406 0250	113,–	501408 0250	141,–	070101 0002	16,70
300	150	12x4	501406 0300	133,–	501408 0300	145,–	070101 0002	16,70
500	150	12x4	501406 0500	194,–	501408 0500	235,–	070101 0003	26,–
500	250	20x5	501406 0550	290,–	501408 0550	480,–	070101 0003	26,–
			5195		5195			

Wooden case for calliper

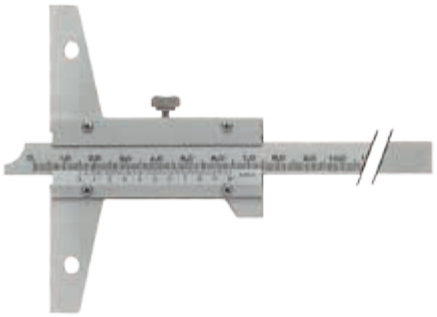


suitable for measurement range mm	art.no.	€
150 and 200	**500624** 0200	10,40
250	500624 0250	12,95
300	500624 0300	18,50
500	500624 0500	54,–
	5190	

Mitutoyo Sliding depth gauges

DIN 862 | INOX

- Reading parts matt chrome-plated
- Slider can be re-adjusted in the guide
- Precision-lapped measuring faces
- Measuring bridge for measurement ranges up to 300 mm, with bores for attaching larger additional bridges (no. 501701....)



Without fine adjustment

- Vernier scale 0.05 mm extended to 39 mm

Measurement range mm	Base length mm	Additional base possible	art.no.	€	Calibration art.no.	€
150	100	Yes	**501501** 0150	116,–	070101 0001	8,80
200	100	Yes	501501 0200	127,–	070101 0001	8,80
300	100	Yes	501501 0300	171,–	070101 0002	16,70
600	250	No	501501 0600	694,–	070101 0004	53,–
1000	250	No	501501 1000	749,–	070101 0004	53,–
			5102			

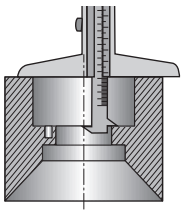
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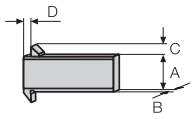


SARA® Digital sliding depth gauge with offset double hook

INOX

- **Convertible measuring bar**
- Scales on both sides
- Precision-ground measuring faces
- Vernier scale and reading parts matt chrome-plated
- Error margin in accordance with DIN 862
- Vernier scale 0.05 mm







Measurement range mm	Base length mm	A mm	B mm	C mm	D mm	art.no.	€	Calibration art.no.	Calibration €
200	100	8	3	6	4	**501442** 0200	114,50	070101 0001	8,80
300	100	8	3	6	4	501442 0300	149,–	070101 0002	16,70

5114

ATORN® Sliding depth gauge with steel pin

DIN 862 INOX

- For measuring small bores
- Steel pin Ø 1.5 mm
- High-precision laser scale
- Reading parts matt chrome-plated
- Convertible measuring bar, scales on both sides (except 501441 0080)
- Vernier scale 0.05 mm



Measurement range mm	Base length mm	Scale cross-section mm	art.no.	€	Calibration art.no.	Calibration €
80	50	8 x 3	**501441** 0080	93,50	070101 0001	8,80
150	100	8 x 3	501441 0150	129,–	070101 0001	8,80
200	100	8 x 3	501441 0200	131,–	070101 0001	8,80
250	130	12 x 4	501441 0250	149,–	070101 0002	16,70
300	150	12 x 4	501441 0300	177,–	070101 0002	16,70

5195

SARA® Digital sliding depth gauge

DIN 862 INOX 0,01 mm inch mm

- Locking screw on top
- **Functions:** ON/OFF, ZERO, inch/mm
- Supplied with SR44 battery, no. 500534 0001



Measurement range mm/inch	Base length mm	art.no.	€	Calibration art.no.	Calibration €
150/6"	100	**501440** 0150	149,–	070101 0001	8,80
300/12"	100	501440 0300	195,–	070101 0002	16,70

5108

ATORN® IP67 digital sliding depth gauge

IP67 | DIN 862 | INOX | 0,01 mm | inch mm | KEEP-TRONIC | USB | RS232C | Digi-matic

- With and without measuring hook
- Precision-ground measuring faces
- **KEEPTRONIC** electronics store the zero point, operating keys lock to prevent accidental alteration of the zero point. Battery life approx. 3 years
- Inductive, waterproof FPS measuring system (Fluid Protected Measuring System)
- **multiCOM**data output, can be used as USB, Digimatic or RS-232
- **Functions:** 0/ON/Off, mm/inch, PRESET for pre-setting user-defined values
- Supplied with CR 2032 battery, No. 548079 6032
- **Optional accessories:** Data cables, type P-RS 232 / P-Digimatic / P-USB, no. 512521....



501610 1301

Measurement range mm	Base length mm	Measuring hook	art.no.	€	Calibration art.no.	€
200	100	No	**501610** 0201	399,–	070101 0001	8,80
300	150	No	501610 0301	460,–	070101 0002	16,70
300	150	Yes	501610 1301	519,–	070101 0002	16,70
500	150	No	501610 0501	559,–	070101 0003	26,–

5196

Mitutoyo ABSOLUTE! digital sliding depth gauge AOS!

DIN 862 | INOX | 0,01 mm | ABSO-LUTE | Digi-matic | USB

- Particularly suitable for use in rough work conditions due to the electromagnetic inductive **AOS** measuring process (**A**dvanced **O**nsite **S**ensor), which is not sensitive to dirt or moisture on the scale
- **ABSOLUTE** scale for one-time zeroing
- **High-contrast LCD with 9 mm high digits**
- Battery life approx. 18,000 hours
- **Functions:** ON/OFF, zero point at battery change (ORIGIN), user-defined zeroing (ZERO/ABS), battery check
- Supplied with SR44 battery, No. 500534 0001
- **Special accessories**: Digimatic cable type C No. 563100 0021 (1 m), No. 563100 0022 (2 m), USB cable type C USB No. 563110 0003



501602 0150

Measurement range mm	Base length mm	Additional base possible	Error limit mm	art.no.	€	Calibration art.no.	€
150	100	Yes	0.03	**501602** 0150	336,–	070101 0001	8,80
200	100	Yes	0.03	501602 0200	403,–	070101 0001	8,80

5102

Mitutoyo Digital sliding depth gauge

DIN 862 | INOX | 0,01 mm | ABSO-LUTE | Digi-matic | USB

- **ABSOLUTE scale**
- Capacitive measuring system with dirt wiper in the slider
- LCD display with 9 mm high digits
- Battery life: 20,000 hrs.
- Up to size 0300: Measuring bridge with bores for attaching larger additional bridges
- **Functions:** ON/OFF, zero point at battery change (ORIGIN), (ZERO/ABS), battery check
- Supplied with SR44 battery, no. 500534 0001
- **Optional accessories:** Digimatic cable type C, no. 563100 0021 (1 m), no. 563100 0022 (2 m), USB cable type C-USB, no. 563110 0003



501601 0300

Measurement range mm	Base length mm	Additional base possible	Error limit mm	art.no.	€	Calibration art.no.	€
300	100	Yes	0.04	**501601** 0300	439,–	070101 0002	16,70
450	250	No	0.05	501601 0450	846,–	070101 0003	26,–
600	250	No	0.05	501601 0600	899,–	070101 0004	53,–
750	250	No	0.06	501601 0750	969,–	070101 0004	53,–
1000	250	No	0.07	501601 1000	1.068,–	070101 0004	53,–

5102

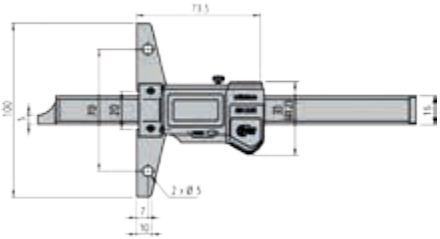
Mitutoyo IP67 digital sliding depth gauge

IP67 | DIN 862 | INOX | 0,01 mm | ABSO-LUTE | Digi-matic | USB

ABSOLUTE®

TÜVRheinland ZERTIFIZIERT — Sicherheit Staub- und wassergeschützt — www.tuv.com ID 2011207400

- **ABSOLUTE scale**
- Inductive functional principle
- Switches off automatically after 20 minutes of inactivity
- New, high-contrast display
- Digit height 9 mm
- Battery life approx. 5 years
- Battery change possible without a screwdriver
- **Functions:** ZERO/ORIGIN, automatic ON/OFF, battery check
- Supplied with SR44 battery, No. 500534 0001
- **Special accessories**: Digimatic cable type A No. 563100 0001 (1 m), No. 563100 0002 (2 m), USB cable type A-USB No. 563110 0001



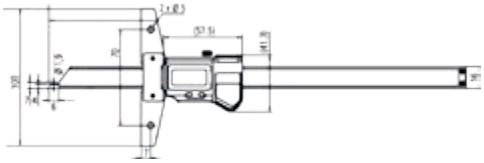


Standard version

- 5016050300 battery service life 5000 hours, display 10.2 mm, screwed battery cover

Measurement range mm	Base length mm	Additional base possible	Error limit mm	art.no.	€	Calibration art.no.	Calibration €
150	100	Yes	0.03	**501605** 0151	387,–	070101 0001	8,80
200	100	Yes	0.03	501605 0201	449,–	070101 0001	8,80
300	100	Yes	0.04	501605 0300	501,–	070101 0002	16,70

5102





With steel measuring pin, Ø 1.9 mm

Measurement range mm	Base length mm	Additional base possible	Error limit mm	art.no.	€	Calibration art.no.	Calibration €
150	100	Yes	0.03	**501607** 0151	460,–	070101 0001	8,80
200	100	Yes	0.03	501607 0201	518,–	070101 0001	8,80

5102

HELIOS·PREISSER Digital sliding depth gauge IP67 with steel measuring pin, wireless

IP67 | INOX | 0,01 mm | inch mm

NEW · NUOVO · NY · NOUVEAU · NUEVO

integrated radio

- Pin gauge Ø 1.5mm
- inductive measurement system
- Digit height 11mm
- compatible with the radio system **ATORN-Integrated-Wireless**
- **Function:** On/Off, mm/inch, PRESET (user-defined values), button lock, integrated radio transmitter



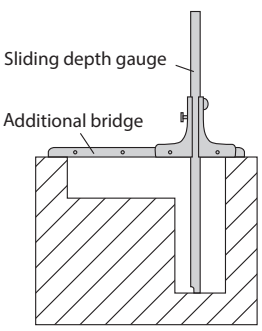
Measurement range mm	Base length mm	Error limit mm	art.no.	€	Calibration art.no.	Calibration €
150	100	0.03	**501715** 0150	432,–	070101 0001	8,80
200	100	0.03	501715 0200	459,–	070101 0001	8,80

5186

Mitutoyo Additional bridges for sliding depth gauges

- Screwing additional bridges onto the rear side of a standard measuring bridge allows the support length to be extended by 320 mm.
- Asymmetric assembly possible
- Should be adjusted on a measuring plate.
- Suitable for MITUTOYO sliding depth gauges up to a bridge length of 100 mm
- Supplied with fastening screws





Length mm	art.no.	€	Calibration art.no.	Calibration €
180	**501701** 0180	57,–	076001 0001	13,–
260	501701 0260	78,–	076001 0002	22,–
320	501701 0320	89,–	076001 0002	22,–

5102

SARA® Digital small sliding depth gauge

0,01 mm | inch/mm

- Compact, handy depth gauge for measurements such as blind bores, tyre profiles or brake lining thicknesses
- Effortless to read thanks to a large display
- Supplied with CR 2032 battery, No. 548079 6032



Measurement range mm	Measuring bar Ø mm	Base length mm	art.no.	€	Calibration art.no.	€
25	1.5	50	**501604** 0025	53,50	070101 0001	8,80

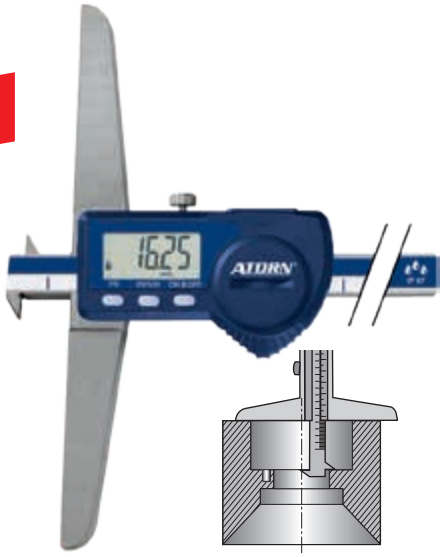
5108

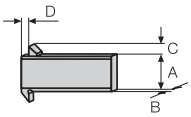
ATORN® IP67 digital sliding depth gauge with offset double hook

IP67 | INOX | 0,01 mm | inch/mm | KEEP-TRONIC | USB | RS232C | Digi-matic

- **KEEPTRONIC** electronics store the 0-point, operating keys lock to prevent accidental alteration of the 0-point, battery life approx. 3 years
- Inductive, waterproof FPS measuring system (Fluid Protected Measuring System)
- **multiCOM** data output, can be used as USB, Digimatic or RS232
- Error margin in accordance with factory standard
- **Function:** 0 / ON/OFF, mm / inch
- Supplied with battery CR 2032, No. 548079 6032
- **Special accessories:** Data cables, type P-RS 232 / P-Digimatic / P-USB, No. 512521....

Data output multiCOM





Measurement range mm	Base length mm	A mm	B mm	C mm	D mm	art.no.	€	Calibration art.no.	€
300	150	12	4	6	4	**501451** 1301	629,–	070101 0002	16,70

5196

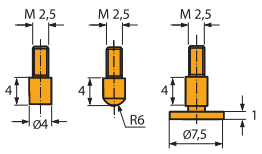
ATORN® IP67 digital sliding depth gauge with measuring inserts

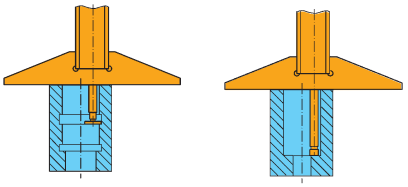
IP67 | INOX | 0,01 mm | inch/mm | KEEP-TRONIC | USB | RS232C | Digi-matic

- Particularly suitable for measuring recesses in bore holes
  With replaceable M2.5 inserts
- **KEEPTRONIC** electronics store the zero point, operating keys lock to prevent accidental alteration of the zero point. Battery life approx. 3 years
- Inductive, waterproof FPS measuring system (Fluid Protected Measuring System)
- **multiCOM**data output, can be used as USB, Digimatic or RS-232
- Functions: mm/inch, ON/OFF/0/PRESET for pre-setting measurement values
- Supplied with 3 measuring inserts
  1x measuring disc, Ø 7.5 x 1 mm
  1x carbide insert, Ø 4 mm, flat
  1x carbide insert, R 6 mm
  CR2032 battery (no. 548079 6032) included
- **Optional accessories:** Data cables, type P-RS 232 C / P-Digimatic / P-USB, no. 512521....

Data output multiCOM







Measurement range mm	Base length mm	art.no.	€	Calibration art.no.	€
100	85	**501500** 0101	579,–	070101 0001	8,80

5196

SARA® Lightweight digital sliding depth gauge with measuring inserts

Werks-norm | 0,01 mm

- Particularly suitable for measuring recesses and shoulders in bore holes
- With replaceable measuring inserts, M2.5 mm
- Internal double V-guide for optimum guide properties and slider movement
- Aluminium rail with oxide coating
- Supplied with 150 / 350 mm measuring bridges, 550 / 750 / 950 mm measuring bridges available on request
- Supplied with ball / disc measuring inserts, 150 / 350 mm measuring bridges and SR44 battery, no. 500534 0001



501498 0200

Measurement range mm	Base length mm	Measuring bar Ø mm	Plate measurement face Ø mm	Error limit mm	art.no.	€	Calibration art.no.	Calibration €
100	150/350	4	10	0.03	**501498** 0100	349,–	070101 0001	8,80
200	150/350	4	10	0.03	501498 0200	379,–	070101 0001	8,80
300	150/350	4	10	0.04	501498 0300	505,–	070101 0002	16,70
500	150/350	6	20	0.05	501498 0500	632,–	070101 0003	26,–
800	150/350	6	20	0.06	501498 0800	805,–	070101 0004	53,–
950	150/350	6	20	0.06	501498 0950	1.129,–	070101 0004	53,–

5108

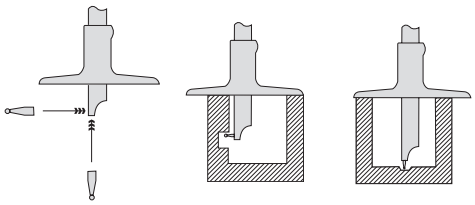


501498 0200

SARA® Lightweight digital universal depth gauge

Werks-norm | 0,01 mm

- Flexible depth gauges for a variety of measurement tasks
- Replaceable measuring inserts (M 2.5) can also be screwed in at a 90° offset angle
- With 3 replaceable measuring bridges, 150 / 300 / 450 mm, hard-anodised aluminium
- Easy-to-change measuring bridges
- Internal double V-guide for optimum guide properties and slider movement
- Supplied with standard measuring head with ball measuring insert, 3 measuring bridges and SR44 battery, No. 500534 0001





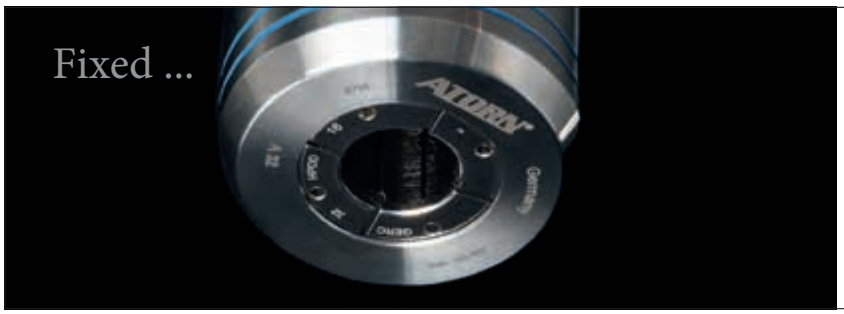
501475 0300



501475 0300

Measurement range mm	Error limit mm	art.no.	€	Calibration art.no.	Calibration €
300	0.04	**501475** 0300	339,–	070101 0002	16,70
500	0.05	501475 0500	452,–	070101 0003	26,–
800	0.06	501475 0800	565,–	070101 0004	53,–

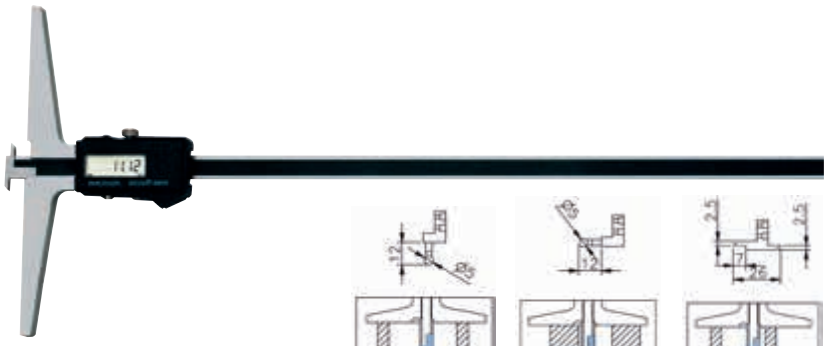
5108



SARA® Digital universal sliding depth gauge

IP67 | INOX | 0,01 mm | inch / mm | RS232C

- Versatile depth gauge thanks to replaceable measuring inserts for a variety of different tasks such as measuring bore depths, width and distance measurements, recesses, etc.
- Standard measuring insert with offset measuring faces
- Error margins in accordance with DIN 862
- **Functions:** 0/ON/Off, mm/inch
- Supplied with CR 2032 battery, No. 548079 6032
- **Optional accessories:** Data cable type K, no. 500700 9950



Type C

Type B

Type A

Measurement range mm	Base length mm	art.no.	€	Calibration art.no.	Calibration €
300	150	**501470** 0300	625,–	070101 0002	16,70
500	150	501470 0500	869,–	070101 0003	26,–

5186

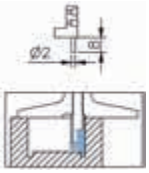

501471 0003

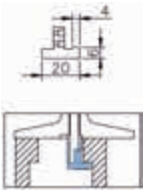

501471 0002

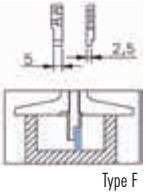

501471 0001

Accessories

- Replaceable measuring inserts
- Hardened special steel
- * = Standard measuring insert included with depth gauge


Type D


Type E


Type F

Type	art.no.	€
A*	**501471** 0001	133,50
B	501471 0002	133,50
C	501471 0003	133,50
D	501471 0004	133,50
E	501471 0005	133,50
F	501471 0006	133,50

5186


501471 0004


501471 0005


501471 0006

SARA® Measuring tool sets, analogue

- **3 pcs. set**, in a plastic case, contents:
  1 outside micrometer, 0 - 25 mm, 0.01 mm readings
  1 sliding calliper, 150 mm, Vernier 0.05mm / 1/128 inch
  1 bevel edge, 100 x 70 mm, stainless steel, DIN 875/00
- **7 pcs. set**, in a plastic case, contents:
  1 outside micrometer, 0 - 25 mm, 0.01 mm readings
  1 sliding calliper, 150 mm, Vernier 0.05mm / 1/128 inch
  1 straightedge 100 mm, stainless steel, DIN 874
  1 bevel edge, 100 x 70 mm, stainless steel, DIN 875/00
  1 spring-loaded divider, 125 mm
  1 flexible steel ruler, 200 mm, stainless steel
  1 carbide scriber, 150 mm, with fixed tip

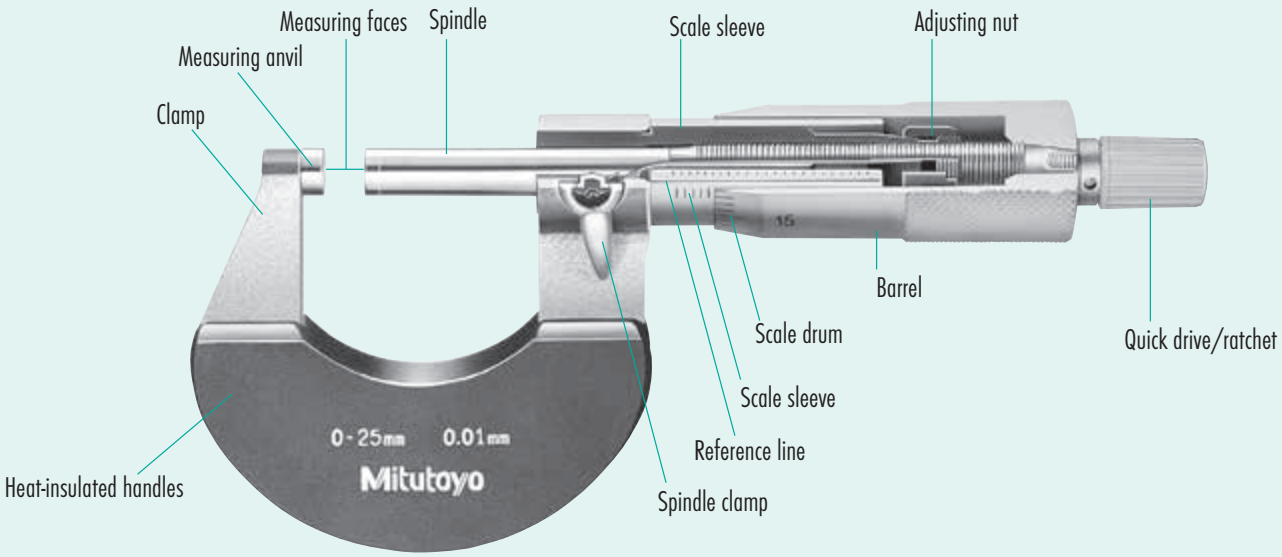

502101 0103


502101 0107

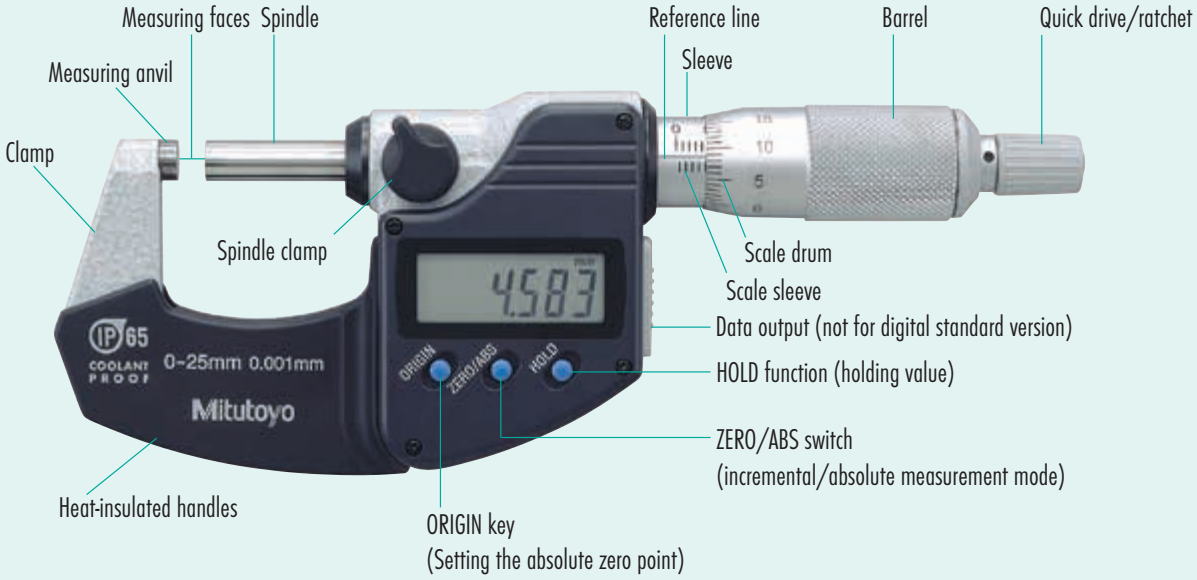
Description	art.no.	€	Calibration art.no.	Calibration €
3-pcs. set	**502101** 0103	95,–	070517 0002	45,30
7-pcs. set	502101 0107	158,–	070517 0003	57,80

5114

Analog outside micrometer

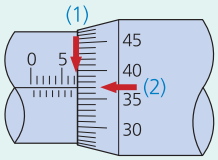


Digimatic outside micrometer



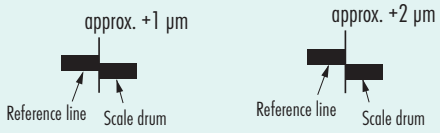
Reading off the scale

Outside micrometer with scale division 0.01 mm



(1) Reading off the scale sleeve 7.00 mm
(2) Reading off the scale drum + 0.37 mm
Total reading 7.37 mm

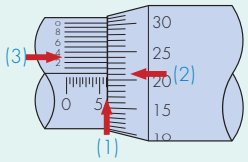
Note: 0.37 mm (2) is read on the position at which the reference line of the sleeve is aligned with the scale divisions of the drum.



The graduation of the drum can be read directly at intervals of 0.01 mm, as listed above. However, it can also be estimated at intervals of 0.001 mm, if the lines lie closely above each other, as the thickness of the lines is one-fifth of the distance between the said lines.

Outside micrometer with Vernier scale (scale division of 0.001 mm)

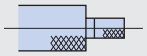
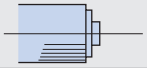
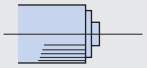
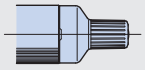
The Vernier scale lying above the reference line of the sleeve allows a direct reading in values to 0.001 mm.



(1) Reading off the scale sleeve 6.000 mm
(2) Reading off the scale drum 0.210 mm
(3) Read off the markings of the Vernier scale and the graduation lines of the drum + 0.003 mm
Total reading 6.213 mm

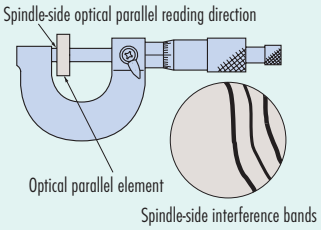
Note: 0.21 mm (2) is read off at the position at which the reference line lies between two graduation marks (21 and 22 in this case). The 0.003 mm reading (3) is taken at the position at which one of the Vernier graduation marks is in line with one of the drum graduations.

Measuring force limitation

	Audible	Single-handed operation	Note!
Ratchet stop 	yes	unsuitable	audible clicking causes micro-vibrations
Friction thimble (F type) 	no	suitable	noiseless and vibration-free operation due to friction clutch
Ratchet barrel (T type) 	yes	suitable	the constant measuring force is achieved through the acoustic feedback of the ratchet function.
Ratchet barrel 	yes	suitable	The constant measuring force is achieved through the acoustic feedback of the ratchet function.

The parallelism check of the measuring faces

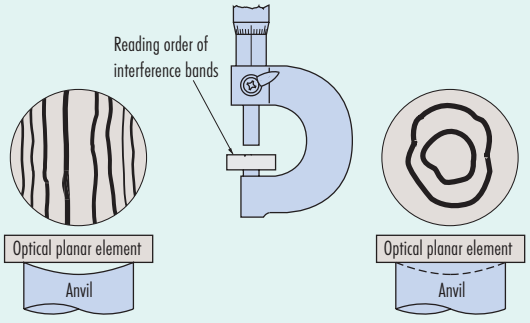
The parallelism can be checked with a plane-parallel test glass held between the measuring faces. First, the test tube is attached to the measuring face of the anvil. The test tube is then clamped by closing the spindle with normal measuring force and the number of red interference rings or stripes that are visible under white light on the measuring face of the spindle are counted. Each interference ring/stripe is equivalent to a half-wavelength difference (0.32 µm for red stripes). In the above picture a parallelism of approximately 1µm is achieved, from 0.32 µm x 3 = 0.96 µm.





Flatness check of the measuring faces

The flatness can be estimated by holding an optical flat against the measuring face. A visible number of red interference rings or stripes can then be counted on the measuring face under white light. Each interference ring/stripe represents a half-wavelength difference in height (0.32 µm).



The measuring face is curved by about 1.3 µm. (0.32 µm x 4 paired red stripes.)

The measuring face is deeply concave (or convex) by about 0.6 µm. (0.32 µm x 2 continuous stripes)

SARA® Outside micrometer



- Precision design with ratchet
- Frame with hand protection
- Spindle fixed by means of a locking lever
- Reading parts matt chrome-plated
- Scale barrel Ø: 17 mm
- Spindle Ø: 6.35 mm
- Calibration includes setting gauge
- Supplied with adjustment key, versions over 25 mm include setting gauge



502505 0025

Individual

Measurement range mm	art.no.	€	Calibration art.no.	€
0-25	**502505** 0025	19,90	070501 0001	15,70
25-50	502505 0050	26,30	070501 2102	27,30
50-75	502505 0075	35,50	070501 2102	27,30
75-100	502505 0100	42,90	070501 2102	27,30
100-125	502505 0125	71,–	070501 2103	33,50
125-150	502505 0150	85,–	070501 2103	33,50

5116



502506 0075

Sets

Measurement range mm	Contents	art.no.	€	Calibration art.no.	€
0-75	3 outside micrometers and 2 setting gauges	**502506** 0075	89,50	070501 0301	72,90
0-100	4 outside micrometers and 3 setting gauges	502506 0100	121,50	070501 0302	100,20
0-150	6 outside micrometers and 5 setting gauges	502506 0150	265,–	070501 0303	164,60

5116

502506 0150

ATORN® Outside micrometer

DIN 863/1 | 0,5 mm | 0,01 mm

- Precision design with advanced friction coupling (ratchet stop)
- Steel clamp
- Spindle fixed by means of a locking lever
- Reading parts matt chrome-plated
- Spindle Ø: 6.5 mm
- Calibration includes setting gauge
- Versions over 25 mm supplied with setting gauge





Individual

Measurement range mm	art.no.	€	Calibration art.no.	€
0-25	**502510** 0025	39,60	070501 0001	15,70
25-50	502510 0050	60,–	070501 2102	27,30
50-75	502510 0075	70,50	070501 2102	27,30
75-100	502510 0100	82,–	070501 2102	27,30

5191

Set

Measurement range mm	Contents	art.no.	€	Calibration art.no.	€
0-100	4 outside micrometers and 3 setting gauges	**502511** 0100	240,–	070501 0302	100,20

5191

Mitutoyo Outside micrometer

DIN 863/1 | 0,5 mm | 0,01 mm

With factory certificate for measurement ranges up to 50 mm!

- Sturdy, with ratchet
- Steel frame with hand protection
- Spindle fixed by means of a locking lever
- Reading parts matt chrome-plated
- Spindle Ø: 6.35 mm
- Measuring force: 5 - 10 N
- Calibration includes setting gauges
- Supplied with adjustment key; versions with measurement range over 25 mm also include setting gauge; versions up to 50 mm include factory certificate



502903 0025

Individual

- Scale barrel Ø 17 mm

Measurement range mm	art.no.	€	Calibration art.no.	€
0-25	**502903** 0025	53,–	070501 0001	15,70
25-50	502903 0050	78,–	070501 2102	27,30
50-75	502903 1075	101,–	070501 2102	27,30
75-100	502903 0110	119,–	070501 2102	27,30

5102





Individual, with ratchet barrel

- A new and exceptionally smooth-running ratchet mechanism provides a constant measuring force that enables quick and safe one-handed operation due to the ratchet design of both the measuring barrel and quick adjustment
- Scale barrel Ø 19 mm

Measurement range mm	Reading mm	Error limit µm	art.no.	€	Calibration art.no.	€
0-25	0.01	3	**502908** 0025	58,–	070501 0001	15,70
0-25	0.001	3	502908 1025	80,–	070501 0001	15,70
25-50	0.01	3	502908 0050	88,–	070501 2102	27,30
25-50	0.001	3	502908 1050	130,–	070501 2102	27,30

5102



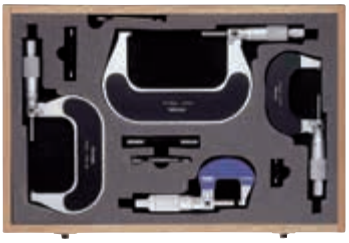
502908 1025

Set

- 1 each of 5029080025 (with ratchet barrel), 5029030050, 5029031075 and 5029030110

Measurement range mm	Reading mm	art.no.	€	Calibration art.no.	€
0-100	0.01	**502921** 1100	339,–	070501 0401	94,10

5102



Mitutoyo Outside micrometer designed for workshop use



- Lightweight workshop version with ratchet
- Painted steel frame (with bores to reduce weight for larger measurement ranges)
- Spindle fixed by means of a locking lever
- Reading parts matt chrome-plated
- Scale barrel Ø up to 300 mm = 18 mm, above 300 mm = 21 mm
- Spindle Ø up to 300 mm = 6.35 mm, above 300 mm = 8 mm
- Calibration includes setting gauges
- Supplied with adjustment key, versions with measurement ranges over 25 mm include setting gauge and versions up to 50 mm include factory certificate

With factory certificate for measurement ranges up to 50 mm!



502911 0025

Individual

Measurement range mm	Error limit µm	Measuring force N	art.no.	€	Calibration art.no.	€
0-25	2	5-10	**502911** 0025	47,–	070501 0001	15,70
25-50	2	5-10	502911 0050	67,–	070501 2102	27,30
50-75	2	5-10	502911 0075	89,–	070501 2102	27,30
75-100	3	5-10	502911 0100	97,–	070501 2102	27,30
100-125	3	5-15	502911 0125	151,–	070501 2103	33,50
125-150	3	5-15	502911 0150	168,–	070501 2103	33,50
150-175	4	5-15	502911 0175	187,–	070501 2103	33,50
175-200	4	5-15	502911 0200	204,–	070501 2103	33,50
200-225	4	5-15	502911 0225	228,–	070501 2104	45,20
225-250	5	5-15	502911 0250	253,–	070501 2104	45,20
250-275	5	5-15	502911 0275	266,–	070501 2104	45,20
275-300	5	5-15	502911 0300	284,–	070501 2104	45,20
300-325	6	5-15	502911 0325	361,–	070501 2105	55,–
325-350	6	5-15	502911 0350	390,–	070501 2105	55,–
350-375	6	5-15	502911 0375	422,–	070501 2105	55,–
375-400	7	5-15	502911 0400	453,–	070501 2105	55,–
400-425	7	5-15	502911 0425	486,–	070501 2106	87,–
425-450	7	5-15	502911 0450	520,–	070501 2106	87,–
450-475	8	5-15	502911 0475	552,–	070501 2106	87,–
475-500	8	5-15	502911 0500	596,–	070501 2106	87,–
500-525	8	5-15	502911 0525	667,–	070501 2106	87,–
525-550	8	5-15	502911 0550	695,–	070501 2106	87,–
550-575	9	5-15	502911 0575	735,–	070501 2106	87,–
575-600	9	5-15	502911 0600	766,–	070501 2106	87,–

5102

Sets

Measurement range mm	Contents	art.no.	€	Calibration art.no.	€
0-75	3 outside micrometers and 2 setting gauges	**502923** 0075	241,–	070501 0301	72,90
0-150	6 outside micrometers and 5 setting gauges	502923 0150	488,–	070501 0303	164,60
0-300	12 outside micrometers and 11 setting gauges	502923 0300	1.910,–	070501 0304	412,40
150-300	6 outside micrometers and 6 setting gauges	502923 1300	1.233,–	070501 0305	247,80

5102



502923 0150

Over 180,000 tools available online!
Register online now!
www.saratools.com



SARA® Outside micrometer, robust design

DIN 863/1 | 1 mm | 0,01 mm



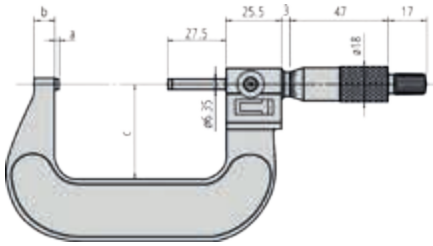
- Large scale barrel with 100th divisions, Ø 28 mm
- With ratchet stop
- Spindle Ø 8 mm
- Spindle fixed by means of a locking lever
- Steel frame with hand protection
- Reading parts matt chrome-plated
- Measuring force 5 - 10 N
- Calibration includes setting gauges
- Supplied with adjustment key, versions over 25 mm include setting gauge

Measurement range mm	art.no.	€	Calibration art.no.	€
0-25	**503504** 0025	84,–	070501 0001	15,70
25-50	503504 0050	109,50	070501 2102	27,30
50-75	503504 0075	126,–	070501 2102	27,30
75-100	503504 0100	140,–	070501 2102	27,30

5116

Mitutoyo Outside micrometer with counting mechanism

DIN 863/1 | 0,5 mm | 0,01 mm





- Painted steel frame with hand protection
- Spindle fixed by means of a locking screw
- Scale barrel and scale sleeve matt chrome-plated
- Scale barrel Ø 18 mm
- Spindle Ø 6.35 mm
- Calibration includes setting gauge
- Supplied with adjustment key, versions with measurement ranges over 25 mm include setting gauge

Measurement range mm	a mm	b mm	c mm	Error limit µm	art.no.	€	Calibration art.no.	€
0-25	2.5	5	26	3	**503101** 0025	125,–	070501 0001	15,70
25-50	2	8	32	3	503101 0050	189,–	070501 2102	27,30
50-75	2	9	45	3	503101 0075	237,–	070501 2102	27,30
75-100	2	9	57	4	503101 0100	260,–	070501 2102	27,30

5102

SARA® Digital outside micrometer

DIN 863/1 | 0,5 mm | 0,001 mm

NEW · NUOVO · NY · NOUVEAU · NUEVO



- robust with ratchet
- painted steel frame with hand guard
- spindle fixed by means of a locking lever
- spindle Ø 6.5mm
- calibration including setting gauges
- Supplied with CR2032 battery No. 548079 6032, adjustment key, over 25mm with setting gauge

Measurement range mm	art.no.	€	Calibration art.no.	€
0-25	**503490** 0025	59,–	070501 0001	15,70
25-50	503490 0050	79,–	070501 0102	26,–
50-75	503490 0075	97,–	070501 0102	26,–
75-100	503490 0100	113,–	070501 0102	26,–

5116

SARA® Digital outside micrometer IP65

IP65 | DIN 863/1 | 0,5 mm | 0,001 mm

- robust with ratchet
- painted steel frame with hand guard
- spindle fixed by means of a locking lever
- spindle Ø 6.5mm
- calibration including setting gauges
- Supplied with CR2032 battery No. 548079 6032, adjustment key, over 25mm with setting gauge



Measurement range mm	art.no.	€	Calibration art.no.	€
0-25	**503491** 0025	98,–	070501 0001	15,70
25-50	503491 0050	112,–	070501 0102	26,–
50-75	503491 0075	127,–	070501 0102	26,–
75-100	503491 0100	140,–	070501 0102	26,–

5116

HELIOS·PREISSER Digital outside micrometer IP65 wireless

IP65 | Werks-norm | INOX | 0,5 mm | 0,001 mm | inch mm

- robust frame, painted with thermal protection
- readings via 10mm-high digits
- compatible with **ATORN-Integrated-Wireless**
- advanced friction coupling
- spindle Ø 6.5mm
- **Function:** On/Off, mm/inch, ORIGIN (store starting value), Hold, TOL (tolerance input), key lock, integrated radio transmitter
- Supplied with CR2032 battery and setting gauge over 25mm measurement range

integrated radio



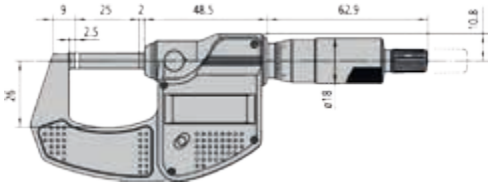
Measurement range mm	Error limit mm	art.no.	€	Calibration art.no.	€
0-25	0.002	**503380** 0025	259,–	070501 0001	15,70
25-50	0.002	503380 0050	319,–	070501 0102	26,–
50-75	0.003	503380 0075	389,–	070501 0102	26,–
75-100	0.003	503380 0100	435,–	070501 0102	26,–

5186

Mitutoyo Digital outside micrometer

DIN 863/1 | 0,5 mm | 0,001 mm

- Robust special cast iron frame, painted, with hand protection
- Scale barrel and scale sleeve matt chrome-plated
- Readings via large LCD display with 7.5 mm high digits
- Automatic switch-off after 20 minutes
- Front cover made from oil-resistant plastic
- Scale barrel Ø 18 mm
- Spindle Ø 6.35 mm
- **Functions:** Zero point at battery change (ORIGIN), battery check
- Supplied in a case with factory certificate, adjustment key and SR44 battery, no. 500534 0001





Measurement range mm	Error limit µm	art.no.	€	Calibration art.no.	€
0-25	3	**503320** 2025	152,–	070501 0001	15,70

5102

Mitutoyo Digital outside micrometer IP65

IP65 | DIN 863/1 | 0,5 mm | 0,001 mm | Digi-matic | USB

Staub- und Wasserdicht IP65
TÜVRheinland ZERTIFIZIERT
www.tuv.com ID 4011207400

- Precision design with ratchet
- Shock-proof design
- Robust frame made from special cast iron, painted, with hand protection
- Spindle fixed by means of a lever button
- Matt chrome-plated scale sleeve and scale barrel
- Readings via large LCD display with 7.5 mm high digits
- Automatic switch-off if left idle
- "Function Lock" for saving original values up to a measurement range of 100 mm
- Scale barrel Ø 18 mm
- Spindle Ø 6.35 mm
- Calibration includes setting gauge
- Accuracy exceeds DIN 863 requirements
- **Functions:** Initial value (ORIGIN), zeroing/absolute (ZERO/ABS), hold value (HOLD), automatic switch-off, battery check
- Supplied with adjustment key and SR44 battery, no. 500534 0001; versions with measurement ranges over 25 mm include setting gauge and versions up to 50 mm include factory certificate
- **Optional accessories:** Digimatic cable type B, no. 563100 0011 (1 m), no. 563100 0012 (2 m); USB cable type B-USB, no. 563110 0002

With factory certificate for measurement ranges up to 50 mm!

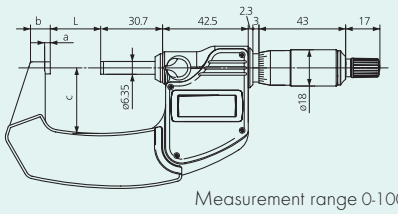


503316 0025

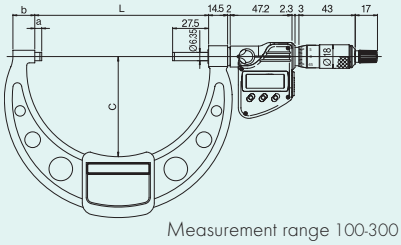
Individual, without data output

Measurement range mm	Error limit µm	art.no.	€	Calibration art.no.	Calibration €
0-25	2	**503316** 0025	199,–	070501 0001	15,70
25-50	2	503316 0050	279,–	070501 2102	27,30
50-75	2	503316 0075	337,–	070501 2102	27,30
75-100	3	503316 0100	384,–	070501 2102	27,30

5102



Measurement range 0-100



Measurement range 100-300

Measurement range	L	a	b	c
0-25	-	2,8	9,0	25,0
25-50	25,0	2,8	9,8	32,0
50-75	50,0	2,8	12,6	47,0
75-100	75,0	2,8	14,0	60,0
100-125	132,8	5,3	16,7	76,5
125-150	158,2	5,7	18,8	91,0
150-175	183,6	6,1	19,1	103,1
175-200	208,8	6,3	18,2	115,3
200-225	234,2	6,7	16,8	126,8
225-250	258,0	5,5	18,0	139,8
250-275	284,0	6,5	18,0	152,3
275-300	309,0	6,5	18,0	166,0

Individual, with data output

Measurement range mm	Error limit µm	art.no.	€	Calibration art.no.	Calibration €
0-25	2	**503307** 0025	257,–	070501 0001	15,70
25-50	2	503307 0050	303,–	070501 2102	27,30
50-75	2	503307 0075	400,–	070501 2102	27,30
75-100	3	503307 0100	442,–	070501 2102	27,30
100-125	3	503302 0125	588,–	070501 2103	33,50
125-150	3	503302 0150	605,–	070501 2103	33,50
150-175	4	503302 0175	622,–	070501 2103	33,50
175-200	4	503302 0200	634,–	070501 2103	33,50
200-225	4	503302 0225	645,–	070501 2104	45,20
225-250	5	503302 0250	656,–	070501 2104	45,20
250-275	5	503302 0275	667,–	070501 2104	45,20
275-300	5	503302 0300	710,–	070501 2104	45,20

5102

Set

- **Digital outside micrometers with data output**
- Supplied in a case with adjustment key, battery and necessary setting gauges

Measurement range mm	Contents	art.no.	€	Calibration art.no.	Calibration €
0-75	3 outside micrometers, 2 setting gauges	**503314** 0075	1.048,–	070501 0301	72,90
0-100	4 outside micrometers, 3 setting gauges	503314 0100	1.483,–	070501 0302	100,20

5102



503314 0100

Mitutoyo Digital outside micrometer QuantuMike

IP65 | 2 mm | 0,001 mm | Digi-matic | USB

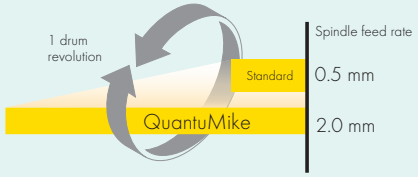
- The world's first outside micrometer with **2 mm spindle pitch**
- Particularly suitable for one-handed measurements and for use on a stand
- Barrel and quick adjustment with ratchet design
- LCD display with 7.5 mm high digits
- "Function Lock" for saving original values
- Switches off automatically after 20 minutes of inactivity
- Accuracy exceeds DIN 863 requirements
- Calibration includes setting gauge
- **Functions:** Initial value (ORIGIN), hold value and data transfer (HOLD/DATA), ON/OFF
- Supplied with SR44 battery (no. 500534 0001) and adjustment key; versions over 25 mm with setting gauge and factory certificate for measurement ranges up to 50 mm
- **Optional accessories:** Digimatic cable type B, no. 563100 0011 (1 m), no. 563100 0012 (2 m), USB cable type B-USB, no. 563110 0002

With factory certificate for measurement ranges up to 50 mm!

TÜVRheinland ZERTIFIZIERT – Staub- und Wasserdicht IP65 – www.tuv.com ID 4011207400



Spindle feed rate 2 mm/rev
approx. 50 % time saved in measuring



Without data output

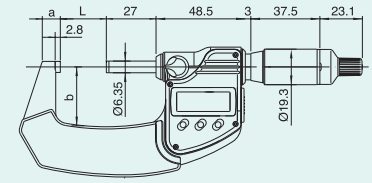
Measurement range mm	Error limit µm	art.no.	€	Calibration art.no.	Calibration €
0-25	2	**503301** 0025	219,–	070501 0001	15,70
25-50	2	503301 0050	302,–	070501 2102	27,30
50-75	2	503301 0075	362,–	070501 2102	27,30
75-100	3	503301 0100	411,–	070501 2102	27,30

5102

With data output

Measurement range mm	Error limit µm	art.no.	€	Calibration art.no.	Calibration €
0-25	2	**503301** 1025	310,–	070501 0001	15,70
25-50	2	503301 1050	383,–	070501 2102	27,30
50-75	2	503301 1075	465,–	070501 2102	27,30
75-100	3	503301 1100	525,–	070501 2102	27,30

5102



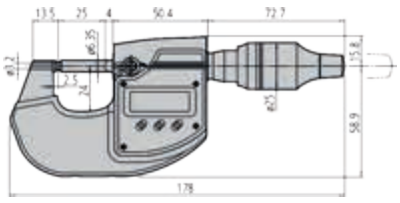
Measurement range	L	a	b
0-25	0	9.0	25
25-50	25	9.8	32
50-75	50	12.6	47
75-100	75	14.0	60

Mitutoyo Digital high-precision outside micrometer

Werks-norm | 0,5 mm | 0,0001 mm | ABSO-LUTE | Digi-matic | USB

ABSOLUTE®

- High-precision outside micrometer for testing workpieces with particularly tight tolerances, e.g. ground parts
- Reinforced structure with particularly stable clamp
- Special heat-insulated recessed handles to prevent thermal expansion resulting from hand warmth
- Measuring barrel with ratchet design, measuring force 7-9 N
- **ABSOLUTE rotary encoder**
- Digimatic2 version
- Measuring areas Ø 3.2 mm
- Weight 400 g
- Supplied with additional heat-insulated recessed handle, screwdriver, adjustment key and battery CR2032 No. 548079 6032
- **Special accessories:** Digimatic cable Type B No. 563100 0011 (1 m), No. 563100 0012 (2 m), USB cable Type B-USB No. 563110 0002







Additional thermal protection for freehand measurements



Measurement range mm	Error limit µm	art.no.	€
0-25	0.6	**503317** 2025	1.644,–

5102

Mitutoyo Digital outside micrometers QuickMike

IP65 | 0,001 mm | ABSO-LUTE | Digi-matic | USB

ABSOLUTE®

30 mm measurement range with 3 rotations!

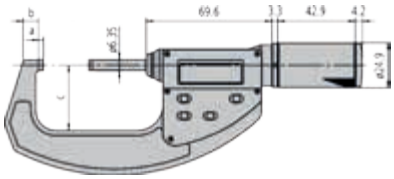
- For rapid, highly accurate measurement of different diameters and precise measurements on sensitive surfaces
- Steel frame, with ratchet barrel
- Spindle feed 10 mm/rev, non-rotating spindle
- LCD display with 10 mm high digits
- Unrestricted traverse speed
- Battery life 5 years
- Scale barrel Ø: 25 mm, spindle Ø: 6.35 mm
- Calibration including setting gauge
- **Function:** Initial value (ORIGIN), ZERO/ABS, hold value (HOLD), ON/OFF, battery check
- Supplied with SR44 battery, No. 500534 0001; versions over 25 mm include setting gauge
- **Special accessories:** Digimatic cable Type B No. 563100 0011 (1 m),
- No. 563100 0012 (2 m), USB cable Type B-USB No. 563110 0002



Standard version

Measurement range mm	a mm	b mm	c mm	Error limit µm	art.no.	€	Calibration art.no.	Calibration €
0-30	2.0	7.0	25	2	**503315** 2030	480,–	070501 0011	18,30
25-55	2.8	8.5	36	3	503315 2055	565,–	070501 2102	27,30
50-80	2.8	10.3	47	3	503315 2080	605,–	070501 2102	27,30
75-105	2.8	10.7	60	3	503315 2105	628,–	070501 2103	33,50

5102



Blade-type measuring areas

Measurement range mm	Error limit µm	A mm	B mm	art.no.	€	Calibration art.no.	Calibration €
0-30	3	0.75	6.5	**503617** 2007	841,–	070501 0011	18,30

5102



SARA® Special-purpose outside micrometers

DIN 863/3 | 0,5 mm | 0,01 mm

- Precision design with ratchet
- Frame with hand protection
- Reading parts matt chrome-plated
- Scale barrel Ø: 17 mm
- Spindle Ø: 6.5 mm
- Calibration includes setting gauge
- Supplied with adjustment key, versions over 25 mm include setting gauge

With Ø 20 mm disc measuring faces

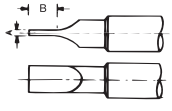
- For tooth width measurement

Measurement range mm	Plate measurement face Ø mm	art.no.	€	Calibration art.no.	Calibration €
0-25	20	**503524** 0025	165,–	070501 0001	15,70
25-50	20	503524 0050	189,50	070501 2102	27,30
50-75	20	503524 0075	215,–	070501 2102	27,30
75-100	20	503524 0100	253,–	070501 2102	27,30

5116



With blade-type measuring faces



- For measuring narrow grooves and recesses
- Non-rotating spindle
- With friction ratchet

Measurement range mm	A mm	B mm	art.no.	€	Calibration art.no.	Calibration €
0-25	0.75	6.5	**503525** 0025	189,–	070501 0001	15,70
25-50	0.75	6.5	503525 0050	220,–	070501 2102	27,30

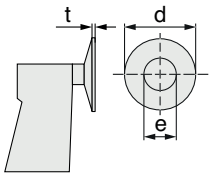
5116



Mitutoyo Special-purpose outside micrometers

DIN 863/3 | 0,5 mm | 0,01 mm

- Sturdy, with ratchet
- Painted steel clamp
- Reading parts matt chrome-plated
- Scale barrel Ø 18 mm, spindle Ø 6.35 mm
- Supplied with a case, including adjustment key and setting gauge
- Calibration incl. setting gauge



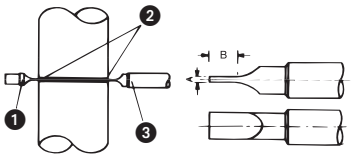
Type D7, with Ø 20 x 0.7 mm disc measuring faces

- For tooth width measurement, module 0.5 to 6

Measurement range mm	Parallelism µm	Error limit µm	d1 mm	e mm	t mm	art.no.	€	Calibration art.no.	Calibration €
0-25	4	4	20	8	0.7	**503511** 0025	224,–	070501 0001	15,70
25-50	4	4	20	8	0.7	503511 0050	251,–	070501 2102	27,30
50-75	6	6	20	8	0.7	503511 0075	276,–	070501 2102	27,30
75-100	6	6	20	8	0.7	503511 0100	321,–	070501 2102	27,30
100-125	7	7	30	12	1.0	503511 0125	338,–	070501 2103	33,50
125-150	7	7	30	12	1.0	503511 0150	357,–	070501 2103	33,50
150-175	8	7	30	12	1.0	503511 0175	382,–	070501 2103	33,50
175-200	8	8	30	12	1.0	503511 0200	414,–	070501 2103	33,50

5102


503511 0025



1 Anvil
2 Measuring area strength 0.75 / 0.4 mm
3 Spindle

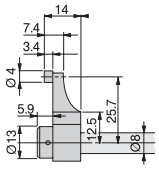
Type D4, with blade-type measuring faces

- For measuring narrow grooves and recesses
- Sizes 0005 and 0006: Carbide-tipped measuring faces

Measurement range mm	A mm	B mm	art.no.	€	Calibration art.no.	Calibration €
0-25	0.75	6.5	**503517** 0001	268,–	070501 0001	15,70
25-50	0.75	6.5	503517 0002	324,–	070501 2102	27,30
50-75	0.75	6.5	503517 0003	347,–	070501 2102	27,30
75-100	0.75	6.5	503517 0004	377,–	070501 2102	27,30
100-125	0.75	6.5	503517 0007	492,–	070501 2103	33,50
125-150	0.75	6.5	503517 0008	531,–	070501 2103	33,50
150-175	0.75	6.5	503517 0009	581,–	070501 2103	33,50
175-200	0.75	6.5	503517 0010	640,–	070501 2103	33,50
0-25	0.4	4	503517 0005	314,–	070501 0001	15,70
25-50	0.4	4	503517 0006	389,–	070501 2102	27,30

5102


503517 0001



With measuring jaws

- For measuring in areas that are difficult to access, such as flanges, recesses or bores

Measurement range mm	Error limit µm	art.no.	€	Calibration art.no.	Calibration €
0-25	5	**503535** 0025	325,–	070501 0001	15,70
25-50	6	503535 0050	344,–	070501 2102	27,30
50-75	7	503535 0075	410,–	070501 2102	27,30
75-100	8	503535 0100	432,–	070501 2102	27,30

5102



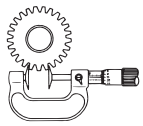
Mitutoyo Special-purpose digital outside micrometers IP65

IP65 | DIN 863/3 | 0,5 mm | 0,001 mm | Digi-matic | USB

TÜVRheinland ZERTIFIZIERT — Staub- und Wasserdicht IP65 — www.tuv.com ID 4011207400

- Steel clamp, with ratchet and lock lever
- LCD display with 7.5 mm high digits
- Scale barrel Ø: 18 mm
- Spindle Ø: 6.35 mm
- **Functions:** Initial value (ORIGIN), zeroing/absolute (ZERO/ABS), hold value (HOLD)
- Supplied in a case with adjustment key and SR44 battery (no. 500534 0001); versions over 25 mm include setting gauge
- **Optional accessories:** Digimatic cable type B, no. 563100 0011 (1 m), no. 563100 0012 (2 m), USB cable type B-USB, no. 563110 0002

Type D7



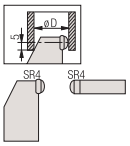
- For tooth width measurement, module 0.5 to 6
- Disc measuring faces Ø 20 x 0.7 mm
- Calibration includes setting gauge

Measurement range mm	Parallelism µm	Error limit µm	art.no.	€	Calibration art.no.	Calibration €
0-25	4	4	**503611** 0025	697,–	070501 0001	15,70
25-50	4	4	503611 1050	777,–	070501 2102	27,30
50-75	6	6	503611 1075	828,–	070501 2102	27,30
75-100	6	6	503611 1100	859,–	070501 2102	27,30

5102



Type D1, curved measuring faces, R4



- e.g. for measuring wall thicknesses

Measurement range mm	Error limit µm	Measuring force N	D min. mm	art.no.	€	Calibration art.no.	Calibration €
0-25	2	5-10	15	**503609** 0005	557,–	070501 0001	15,70

5102

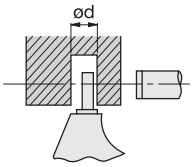




503609 0009



503609 0012



Similar to type D12 with steel pin

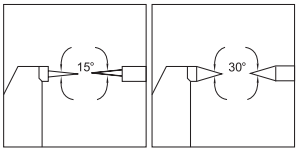


- For measuring wall thickness

Measurement range mm	Error limit µm	Measuring force N	D min. mm	art.no.	€	Calibration art.no.	Calibration €
0-25	3	3-8	2	**503609** 0009	557,–	070501 0001	15,70
0-25	3	3-8	8.2	503609 0012	557,–	070501 0001	15,70

5102





Measuring faces as 15° or 30° tips

Measurement range mm	Error limit µm	15° art.no.	15° €	30° art.no.	30° €	Calibration art.no.	Calibration €
0-25	2	**503603** 0025	629,–	**503605** 0025	629,–	070501 0001	15,70

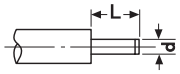
5102 5102







Type D3, offset measuring faces



- For measuring grooves, spline shafts, recesses and fittings

Measurement range mm	L mm	d mm	art.no.	€	Calibration art.no.	€
0-25	5	2	**503601** 0005	665,–	070501 0001	15,70

5102

Mitutoyo Special-purpose digital outside micrometers

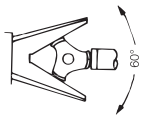
DIN 863/3 | 0,5 mm | 0,001 mm | Digi-matic | USB

- Sturdy, with ratchet
- Painted steel frame with hand protection
- Spindle fixed by means of a lever button
- Readings via large LCD display with 7.5 mm high digits
- Scale barrel Ø: 18 mm
- Spindle Ø: 6.35 mm
- Calibration includes setting gauge
- **Functions:** Pre-set (PRESET), zeroing/absolute (ZERO/ABS), hold value (HOLD), automatic switch-off, battery check
- Supplied with adjustment key, SR44 battery (no. 500534 0001) and setting gauge
- **Optional accessories:** Digimatic cable type B, no. 563100 0011 (1 m), no. 563100 0012 (2 m); USB cable type B-USB, no. 563110 0002





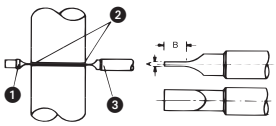
Type D10-3 for measuring three-fluted machining tools



- Precision-lapped measuring face and V-block
- Spindle pitch 0.75 mm

Measurement range mm	Prism angle	art.no.	€	Calibration art.no.	€
1-15	60°	**503607** 0011	844,–	070501 0101	24,70
10-25	60°	503607 0012	882,–	070501 0101	24,70
25-40	60°	503607 0013	904,–	070501 2102	27,30

5102



1 Anvil
2 Measuring area strength 0.75 / 0.4 mm
3 Spindle

Type D4 for measuring narrow grooves and recesses

- Blade-type measuring faces, non-rotating spindle
- Spindle pitch 0.5 mm

Measurement range mm	A mm	B mm	art.no.	€	Calibration art.no.	€
0-25	0.75	6.5	**503617** 0001	956,–	070501 0001	15,70
25-50	0.75	6.5	503617 0002	1.038,–	070501 2102	27,30
50-75	0.75	6.5	503617 0003	1.081,–	070501 2102	27,30
75-100	0.75	6.5	503617 1004	1.118,–	070501 2102	27,30
0-25	0.4	3.0	503617 0005	973,–	070501 0001	15,70
25-50	0.4	3.0	503617 1006	1.058,–	070501 2102	27,30

5102





Mitutoyo Outside micrometer with replaceable anvil

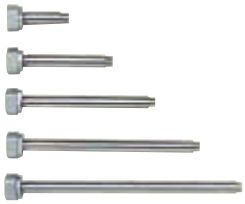
DIN 863/3 | 0,5 mm | 0,01 mm

- **Form D16**
- The replaceable measuring anvils permit a variable measurement range. Adjustments are performed using the setting gauge provided.
- Painted steel frame with bores to reduce weight
- Spindle fixed by means of a locking lever
- Reading parts matt chrome-plated
- Scale barrel Ø: up to 300 mm = 18 mm, above 300 mm = 21 mm
- Spindle Ø up to 300 mm = 6.35 mm, above 300 mm = 8 mm
- Error margin: up to 500 mm = DIN, from 500 mm = ± (4 + L/75) µm
- Measuring faces: Carbide-tipped spindle
- Inserts: special steel, hardened
- Calibration including setting gauges
- Supplied with adjustment key, replaceable inserts and setting gauges



502931 0150

Measurement range mm	Inserts	Setting gauges	art.no.	€	Calibration art.no.	€
0-100	4	3	**502931** 0100	404,–	070501 0401	94,10
0-150	6	5	502931 0150	589,–	070501 0402	142,70
100-200	4	4	502931 0200	514,–	070501 0403	109,30
150-300	6	6	502931 0300	749,–	070501 0404	185,–
200-300	4	4	502931 0301	557,–	070501 0414	142,60
300-400	4	4	502931 0400	715,–	070501 0415	169,80
400-500	4	4	502931 0500	788,–	070501 0416	182,80
500-600	4	4	502931 0600	1.123,–	070501 0417	258,80
600-700	4	4	502931 0700	1.251,–	070501 0418	285,80
700-800	4	4	502931 0800	1.355,–	070501 0418	285,80
800-900	4	4	502931 0900	1.514,–	070501 0418	285,80
900-1000	4	4	502931 1000	1.630,–	070501 0418	285,80



5102

Mitutoyo Digital outside micrometer with replaceable anvil

IP65 | DIN 863/3 | 0,5 mm | 0,001 mm | Digi-matic | USB

TÜVRheinland ZERTIFIZIERT — Staub- und Wasserdicht IP65 — www.tuv.com ID 4011207400

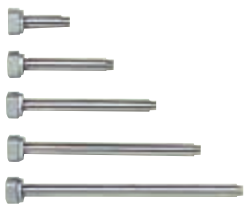
- **Type D16**
- Replaceable measuring anvils permit a variable measurement range. Adjustments are performed using the setting gauge provided.
- Painted steel frame with bores to reduce weight
- Spindle fixed by means of a lever button
- Readings via large LCD display with 7.5 mm high digits
- **With IP65 protection rating (size 0150 and 0300)**
- Scale barrel Ø: up to 300 mm = 18 mm, above 300 mm = 21 mm
- Spindle Ø up to 300 mm = 6.35 mm, above 300 mm = 8 mm
- Error margin: up to 500 mm = DIN
- Measuring faces: Carbide-tipped spindle, inserts made from hardened special steel
- **Functions:** Pre-set (PRESET), zeroing/absolute (ZERO/ABS), hold value (HOLD), automatic switch-off, battery check
- Calibration includes setting gauges
- Supplied with adjustment key, SR44 battery (no. 500534 0001), replaceable inserts and setting gauges
- **Optional accessories:**
  - for size 0150 and 0300: Digimatic cable type B, no. 563100 0011 (1 m), no. 563100 0012 (2 m), USB cable type B-USB, no. 563110 0002
  - for size 0401 and 0501: Digimatic cable type C, no. 563100 0021 (1 m), no. 563100 0022 (2 m), USB cable type C-USB, no. 563110 0003



503321 0150



5033210401 and 5033210501



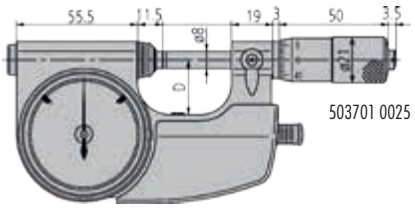
Measurement range mm	Inserts	Setting gauges	Protection type	art.no.	€	Calibration art.no.	€
0-150	6	5	IP 65	**503321** 0150	893,–	070501 0402	142,70
150-300	6	6	IP 65	503321 0300	1.110,–	070501 0404	185,–
300-400	4	4	-	503321 0401	1.158,–	070501 0415	169,80
400-500	4	4	-	503321 0501	1.201,–	070501 0416	182,80

5102

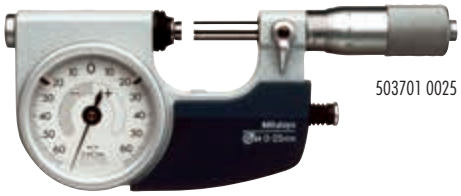
Mitutoyo Indicating calliper micrometer

IP 54 | DIN 863/3 | 0,5 mm | 0,001 mm

- **Type D13**
- For series testing
- Large easy-to-read scale
- Measuring faces carbide-tipped, ground and finely lapped
- Screw for carrying out zeroing adjustments
- Adjustable tolerance marks for go and no-go measurements
- Conveniently located return motion lever on the right or left side
- Matt chrome-plated scale barrel and scale sleeve, Ø 21 mm
- Measuring spindle Ø 8 mm
- Display range ± 0.06 mm
- Error margin for micrometer: 0.002 mm
- Error margin for display: 0.001 mm
- Planarity 0.3 µm
- Measuring force 5 - 10 N
- Calibration includes setting gauge
- Supplied with adjustment key, versions over 25 mm include setting gauge



503701 0025


503701 0025


503701 1025

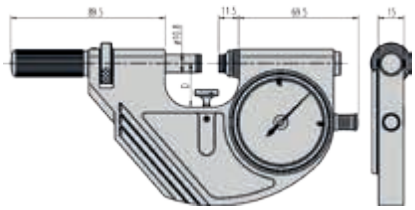
Measurement range mm	Retraction lever	Parallelism µm	D mm	Weight kg	art.no.	€	Calibration art.no.	Calibration €
0-25	Right-hand	0.6	25	0.520	**503701** 0025	703,–	070565 0001	37,–
0-25	Left-hand	0.6	25	0.520	503701 1025	705,–	070565 0001	37,–
25-50	Left-hand	0.6	38	0.670	503701 0050	794,–	070565 0101	49,–
50-75	Left-hand	1.0	50	0.820	503701 0075	964,–	070565 0101	49,–
75-100	Left-hand	1.0	63	0.970	503701 0100	1.025,–	070565 0101	49,–

5102

Mitutoyo Passameter

IP 54 | DIN 863/3 | 0,001 mm

- For series testing
- With built-in indicating calliper
- Conveniently located return motion lever
- Workpiece support
- Measuring faces Ø 10.8 mm
- Planarity 0.3 µm
- Measuring force 5 - 10 N
- Large easy-to-read scale
- Adjustable tolerance marks for go and no-go measurements
- Display range ± 0.06 mm
- Error margin for indicating calliper: 0.001 mm


503705 0025


503705 0025

Measurement range mm	Parallelism µm	D mm	L mm	Weight kg	art.no.	€	Calibration art.no.	Calibration €
0-25	0.6	25	31	0.740	**503705** 0025	583,–	070565 0001	37,–
25-50	0.6	35	56	0.840	503705 0050	671,–	070565 0002	40,–
50-75	1.0	47.5	81	0.950	503705 0075	738,–	070565 0002	40,–
75-100	1.0	60	106	1.080	503705 0100	816,–	070565 0002	40,–

5102

THE BENCHMARK STANDARD
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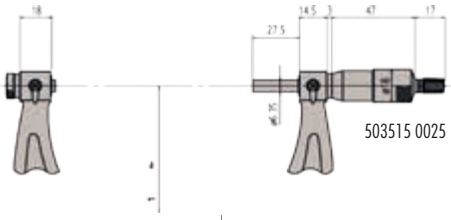


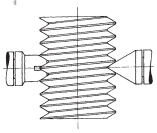
MITUTOYO
Measuring equipment catalogue
approx. 620 pages
Art.no. 019900 0069
Overview of all free manufacturers' catalogues on page 14/15

Mitutoyo Special-purpose outside micrometers for testing external threads

55° 60° IP65 DIN 863/3 0,5 mm 0,001 mm Digi-matic USB

- **Type D18**, with locating bores for optional thread inserts
- For measuring pitch diameters on external threads
- Painted steel frame with hand protection, spindle fixed by means of a locking lever
- Scale barrel Ø: 18 mm
- Spindle Ø: 6.35 mm
- Calibration includes setting gauge
- Measuring inserts not included


503515 0025



Analogue

- Reading parts matt chrome-plated
- 0.01 mm readings
- Supplied with adjustment key, versions over 25 mm include 60° setting gauge

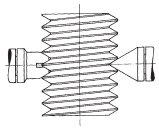
Measurement range mm	a mm	art.no.	€	Calibration art.no.	€
0-25	25	**503515** 0025	309,–	070501 0001	15,70
25-50	32	503515 0050	370,–	070501 0201	51,30
50-75	45	503515 0075	412,–	070501 0201	51,30
75-100	65	503515 0100	436,–	070501 0201	51,30
100-125	79	503515 0125	452,–	070501 0202	64,10
125-150	93	503515 0150	546,–	070501 0202	64,10
150-175	105	503515 0175	600,–	070501 0202	64,10
175-200	120	503515 0200	641,–	070501 0202	64,10

5102


503515 0025

Digital

- LCD display with 7.5 mm high digits
- 0.001 mm readings
- Automatic switch-off, battery check
- Supplied with SR44 battery (no. 500534 0001) and adjustment key, versions over 25 mm include 60° setting gauge
- **Optional accessories:** Digimatic cable type B, no. 563100 0011 (1 m), no. 563100 0012 (2 m); USB cable type B-USB, no. 563110 0002



Measurement range mm	a mm	art.no.	€	Calibration art.no.	€
0-25	25	**503615** 1025	717,–	070501 0001	15,70
25-50	32	503615 1050	898,–	070501 0201	51,30
50-75	45	503615 1075	921,–	070501 0201	51,30
75-100	65.5	503615 1100	969,–	070501 0201	51,30

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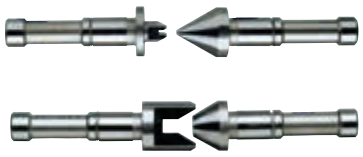

IP65

Individual measuring inserts, 60°, for metric and UNF threads

- Hardened, with precision-finished V-block, taper and clamping shank

Pitch metr. mm	UNF TPI	art.no.	€	Calibration art.no.	€
0.4 - 0.5	64 - 48	**504009** 0001	64,–	074030 0001	28,–
0.6 - 0.9	44 - 28	504009 0002	64,–	074030 0001	28,–
1.0 - 1.75	24 - 14	504009 0003	64,–	074030 0001	28,–
2.0 - 3.0	13 - 9	504009 0004	64,–	074030 0001	28,–
3.5 - 5.0	8 - 5	504009 0005	64,–	074030 0001	28,–
5.5 - 7.0	4.5 - 3.5	504009 0006	64,–	074030 0001	28,–

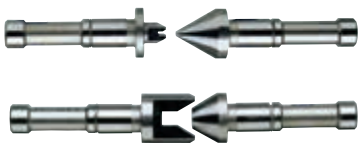
5102



Individual measuring inserts, 55°, for Whitworth threads

Whitworth TPI	art.no.	€	Calibration art.no.	€
60 - 48	**504011** 0001	64,–	074030 0001	28,–
48 - 40	504011 0002	64,–	074030 0001	28,–
40 - 32	504011 0003	64,–	074030 0001	28,–
32 - 24	504011 0004	64,–	074030 0001	28,–
24 - 18	504011 0005	64,–	074030 0001	28,–
18 - 14	504011 0006	64,–	074030 0001	28,–
14 - 10	504011 0007	64,–	074030 0001	28,–
10 - 7	504011 0008	64,–	074030 0001	28,–
7 - 4.5	504011 0009	64,–	074030 0001	28,–
4.5 - 3.5	504011 0010	64,–	074030 0001	28,–

5102



Measuring insert sets, 55° and 60°

- 504009.... 60° thread angle
- 504011.... 55° thread angle

Contents	art.no.	€	Calibration art.no.	€
5040090001 to 5040090006	**504009** 0020	344,–	074030 0101	168,–
5040110001 to 5040110010	504011 0011	563,–	074030 0102	280,–
	5102			

Setting gauges, 55° and 60°

- Hardened and precision-finished
- With hand protection
- 504005.... 55° thread angle
- 504007.... 60° thread angle



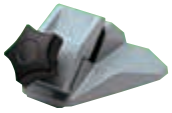
504007 0050

Nominal dimension mm	55° art.no.	€	60° art.no.	€	Calibration art.no.	€
25	**504005** 0025	56,–	**504007** 0025	56,–	070510 0001	33,–
50	504005 0050	62,–	504007 0050	62,–	070510 0001	33,–
75	504005 0075	75,–	504007 0075	75,–	070510 0001	33,–
100	504005 0100	86,–	504007 0100	86,–	070510 0001	33,–
125	504005 0125	96,–	504007 0125	96,–	070510 0002	39,60
	5102		5102			

Mitutoyo Holder for outside micrometers

- 5040010001: Cast iron design with large standing surface for holding outside micrometers with measurement ranges up to 100 mm; ideal reading position can be set by means of a swivel-mounted clamping jaw
- 5040010002: Cast-iron design especially for holding digital outside micrometers with measurement ranges up to 50 mm, clamping range 4 to 12 mm


504001 0001


504001 0002

Description	art.no.	€
For outside micrometers up to 100 mm	**504001** 0001	57,–
For digital outside micrometers up to 50 mm	504001 0002	47,–
	5102	

SARA® Holder for outside micrometers

- Cast iron design
- With a large standing surface for holding outside micrometers with measurement ranges up to 100 mm
- Ideal reading position can be adjusted by means of a swivel-mounted clamping jaw



Description	art.no.	€
For outside micrometers up to 300 mm	**504002** 0001	34,90
	5116	



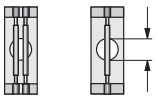
... in chrome vanadium.
ATORN®
Performance demands quality

Mitutoyo Thread measuring wires

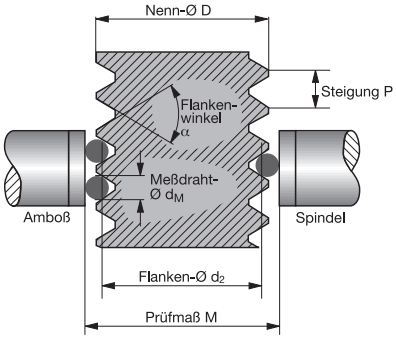
- For mounting on micrometers
- For determining the pitch diameter of outside threads based on the three-wire method
- hardened, precision-lapped
- Error margin 0.001mm
- with locating bore Ø 6.35mm
- other versions available on request
- Free software for check gauge calculation is available on our homepage



Check gauge M for metric thread DIN 13 Sheet 1
M3 = 3.113mm / M10 = 10.414mm / M22 = 23.163mm
M4 = 4.305mm / M12 = 12.650mm / M24 = 25.606mm
M5 = 5.153mm / M14 = 15.021mm / M27 = 28.605mm
M6 = 6.346mm / M16 = 17.021mm / M30 = 30.848mm
M8 = 8.282mm / M20 = 21.163mm / M33 = 33.848mm



Locating bore



Thread	Pitch metr. mm	Whitworth TPI	UNC, UNF TPI	Pilot wire Ø mm	Holding fixture Ø 6.35 mm art.no.	€	Calibration art.no.	€
M3	0.50	-	56	0.290	**504019** 0290	116,–	070511 0001	10,–
M4-M5	0.70-0.80	-	32	0.455	504019 0455	116,–	070511 0001	10,–
M6-M7	1.00	26.24	24	0.620	504019 0620	116,–	070511 0001	10,–
M8-M9	1.25	22.20.19	20	0.725	504019 0725	116,–	070511 0001	10,–
M10-M11	1.50	18.16	18, 16	0.895	504019 0895	116,–	070511 0001	10,–
M12	1.75	14	14, 13	1.100	504019 1100	116,–	070511 0001	10,–
M14-M16	2.00	12.11	12, 11	1.350	504019 1350	116,–	070511 0001	10,–
M20-M22	2.50	10.9	10, 9	1.650	504019 1650	116,–	070511 0001	10,–
M24-M33	3.00-3.50	8.7	8, 7	2.050	504019 2050	116,–	070511 0001	10,–

5103

Mitutoyo Setting gauges for outside micrometers

- For testing and adjusting outside micrometers
- Hardened
- With hand protection
- Finely lapped measuring faces
- With actual dimension details
- Error margin: ± (1 + L/50) µm
- Planarity: 0.3 µm
- Setting gauges up to 2,000 mm available on request



504003 0075 504003 0150 504003 0200

Nominal dimension mm	art.no.	€	Calibration art.no.	€
25	**504003** 0025	26,–	070505 0001	9,–
50	504003 0050	29,–	070505 0001	9,–
75	504003 0075	30,–	070505 0001	9,–
100	504003 0100	31,–	070505 0001	9,–
125	504003 0125	33,–	070505 0001	9,–
150	504003 0150	35,–	070505 0001	9,–
175	504003 0175	37,–	070505 0001	9,–
200	504003 0200	42,–	070505 0001	9,–
225	504003 0225	47,–	070505 0002	22,–
250	504003 0250	51,–	070505 0002	22,–
275	504003 0275	57,–	070505 0002	22,–
300	504003 0300	62,–	070505 0002	22,–
325	504003 0325	67,–	070505 0002	22,–
350	504003 0350	78,–	070505 0002	22,–
375	504003 0375	86,–	070505 0002	22,–
400	504003 0400	96,–	070505 0002	22,–
425	504003 0425	101,–	070505 0002	22,–
450	504003 0450	111,–	070505 0002	22,–
475	504003 0475	127,–	070505 0002	22,–
500	504003 0500	134,–	070505 0002	22,–

5102

Mitutoyo Adjustable gap gauge

- Quick and reliable measurement of outside diameters up to 300 mm
- Check gauge adjusted with the aid of a corresponding gauge block
- Sturdy cast iron frame with Ø 8 mm collet for attaching a dial indicator
- Finely lapped carbide measuring faces
- Frame with insulation protection
- Lower measuring surface can be adjusted by 25 mm and is fixed by a locking ring
- Adjustable depth stop
- Measuring force 15 ± 3 N
- Measuring face parallelism: 0.005 mm
- Calibration plus testing costs for the indicating measuring instrument
- Supplied without dial indicator in moulded packaging



Application example with digital dial indicator and holder



529001 0025

Measurement range mm	Total length mm	art.no.	€	Calibration art.no.	€
0-25	277	**529001** 0025	424,–	070560 0001	40,–
25-50	302	529001 0050	439,–	070560 0001	40,–
50-75	328	529001 0075	455,–	070560 0001	40,–
75-100	353	529001 0100	465,–	070560 0001	40,–
100-125	379	529001 0125	487,–	070560 0001	40,–
125-150	404	529001 0150	514,–	070560 0001	40,–
150-175	429	529001 0175	538,–	070560 0001	40,–
175-200	455	529001 0200	563,–	070560 0001	40,–
200-225	480	529001 0225	587,–	070560 0001	40,–
225-250	506	529001 0250	612,–	070560 0001	40,–
250-275	531	529001 0275	636,–	070560 0001	40,–
275-300	556	529001 0300	661,–	070560 0001	40,–

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Mitutoyo Depth micrometer

DIN 863/2 | 0,5 mm | 0,01 mm

- With ratchet
- Bridge made from hardened and lapped tool steel
- Reading parts matt chrome-plated
- Spindle travel 25 mm, spindle Ø 4 mm
- Scale barrel Ø 18 mm
- Hardened and precision-machined inserts
- 504503 / 504505.... with replaceable measuring inserts
- Calibration includes inserts
- Supplied with adjustment key

Measuring bridge 63.5 x 16 mm

Measurement range mm	Base size mm	Inserts	art.no.	€	Calibration art.no.	€
0-25	63.5x16	-	**504501** 0025	144,–	070530 0001	23,–
0-50	63.5x16	2	504503 0050	168,–	070530 0101	58,–
0-75	63.5x16	3	504503 0075	178,–	070530 0102	75,50
0-100	63.5x16	4	504503 0100	222,–	070530 0103	93,–
0-150	63.5x16	6	504503 0150	307,–	070530 0104	128,–
0-300	63.5x16	12	504503 0300	466,–	070530 0105	267,–

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Measuring bridge 101.6 x 16 mm

Measurement range mm	Base size mm	Inserts	art.no.	€	Calibration art.no.	€
0-25	101.6x16	-	**504501** 1025	179,–	070530 0001	23,–
0-50	101.6x16	2	504505 0050	197,–	070530 0101	58,–
0-75	101.6x16	3	504505 0075	210,–	070530 0102	75,50
0-100	101.6x16	4	504505 0100	244,–	070530 0103	93,–
0-150	101.6x16	6	504505 0150	319,–	070530 0104	128,–
0-300	101.6x16	12	504505 0300	488,–	070530 0105	267,–

5102



504501 0025

Mitutoyo Digital depth micrometer

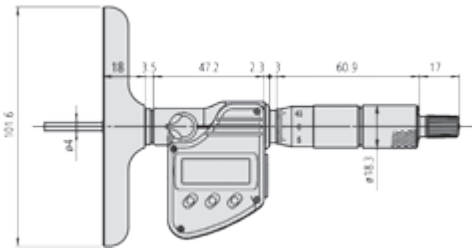








- With ratchet
- Bridge made of tool steel, hardened and lapped
- Extremely easy to read thanks to 6.6 mm high LCD digits
- **With replaceable measuring inserts**
- Spindle travel 25 mm, spindle Ø 4 mm
- Scale barrel Ø 18 mm
- **Functions:** Pre-set (PRESET), zeroing/absolute (ZERO/ABS), hold value (HOLD), automatic switch-off and battery check
- Dimension A = measurement range
- Calibration includes inserts
- Supplied with adjustment key, battery SR 44 No. 500534 0001 and replaceable measuring inserts
- **Special accessories:** Digimatic cable Type B No. 563100 0011 (1 m), No. 563100 0012 (2 m), USB cable Type B-USB No. 563110 0002





Measurement range mm	Base size mm	Inserts	art.no.	€	Calibration art.no.	Calibration €
0-150	101.6x16	6	**504601** 1150	769,–	070530 0104	128,–
0-300	101.6x16	12	504601 1300	1.003,–	070530 0105	267,–

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Mitutoyo Depth gauge with dial indicator readings





- **With replaceable extensions**
- Bridge made from hardened and lapped tool steel
- Anticlockwise dial indicator
- Measurement depth adjusted by changing the dial indicator extensions
- Diameter of extension: 5 mm
- Dial indicator accuracy: fe = 12 µm
- Calibration includes measuring bridge
- Supplied with extensions



504801 0200

Measurement range mm	Display area mm	Base size mm	Extensions mm	art.no.	€	Calibration art.no.	Calibration €
0-200	10	63.5x16	10, 20, 30, 30, 100	**504801** 0200	205,–	070536 0001	26,–
0-200	10	101.6x16	10, 20, 30, 30, 100	504801 1200	221,–	070536 0001	26,–

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THE BENCHMARK STANDARD
Mitutoyo



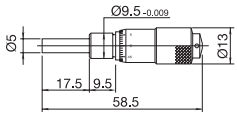
MITUTOYO
Measuring equipment catalogue
approx. 620 pages
Art.no. 019900 0069
Overview of all free manufacturers' catalogues on page 14/15

Mitutoyo Built-in micrometers



- For integration into fixtures and machinery, allowing moving parts to be precisely positioned
- Spindle fully hardened and ground
- Reading parts matt chrome-plated
- Straight clamping shank

Mini version



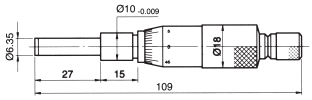


505111 0002

Measurement range mm	Clamping shank Ø mm	Error limit µm	art.no.	€	Calibration art.no.	Calibration €
0-13		2	**505111** 0002	58,–	070550 0001	22,–

Standard version

- With rotating spindle





505120 0004

Measurement range mm	Clamping shank Ø mm	Error limit µm	art.no.	€	Calibration art.no.	Calibration €
0-25	10	2	**505120** 0004	60,–	070550 0001	22,–

5102

Mitutoyo Digital built-in micrometer



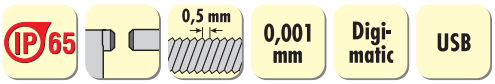
- Specially for use with coordinate measuring tables on measuring microscopes and measuring projectors
- Display component can be rotated through 330°
- Extremely easy to read with 7.5 mm high digits
- Automatic switch-off after 20 minutes
- Display and control buttons made from oil-resistant materials
- Straight clamping shank, Ø 18 mm
- Ø 49 mm adjustment barrel with crank for quick adjustment
- Spindle hardened and ground
- **Functions:** ON/ZERO/ABS, reverse counting direction, PRESET
- Supplied in moulded packaging with two SR44 batteries, no. 500534 0001
- **Optional accessories:** Digimatic cable type C, no. 563100 0021 (1 m), no. 563100 0022 (2 m), USB cable type C-USB, no. 563110 0003



Measurement range mm	Error limit µm	art.no.	€	Calibration art.no.	Calibration €
0-50	3	**505404** 0001	792,–	070550 0002	39,–

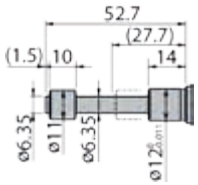
5102

Mitutoyo Digital built-in micrometer IP65





- Base body made from special cast iron, painted
- Spindle fixed by means of a clamping screw
- Extremely easy to read with 6.6 mm high digits
- Activates automatically when spindle moves
- Straight clamping shank, Ø 12 mm
- Spindle Ø 6.35 mm
- **Functions:** Pre-set (PRESET), zeroing/absolute (ZERO/ABS), hold value (HOLD) automatic switch-off, battery check
- Supplied in moulded packaging with adjustment key and SR44 battery, no. 500534 0001
- **Optional accessories:** Digimatic cable type B, no. 563100 0011 (1 m), no. 563100 0012 (2 m), USB cable type B-USB, no. 563110 0002





505402 0005



505402 0006

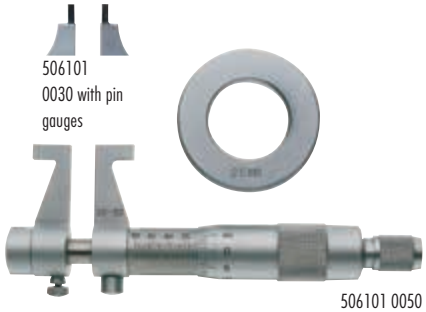
Measurement range mm	Error limit µm	Line bore end	art.no.	€	Calibration art.no.	Calibration €
0-25	2	Non-rotating measuring face	**505402** 0005	465,–	070550 0001	22,–
0-25	2	Carbide-tipped	505402 0006	431,–	070550 0001	22,–

5102

Inside micrometer with measuring jaws

Werks-norm | 0,5 mm | 0,01 mm

- Workshop version with matt chrome-plating
- With ratchet
- Carbide-tipped measuring faces, precision machined
- Spindle fixed via a clamping screw
- Reading parts matt chrome-plated
- Scale barrel Ø: 17 mm
- Calibration includes ring gauges, reduced testing
- Supplied with adjustment key and ring gauge for measurement ranges 5 - 30 and 25 - 50 mm

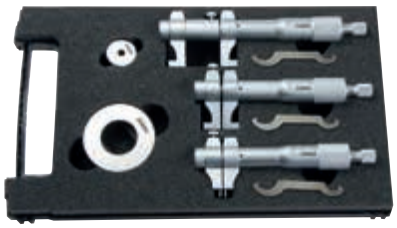


506101 0050

Individual

Measurement range mm	Error limit µm	art.no.	€	Calibration art.no.	€
5-30	10	**506101** 0030	166,–	070520 0101	44,50
25-50	12	506101 0050	181,–	070520 0102	44,50
50-75	14	506101 0075	210,–	070520 0001	27,–
75-100	16	506101 0100	245,–	070520 0001	27,–

5116



Set

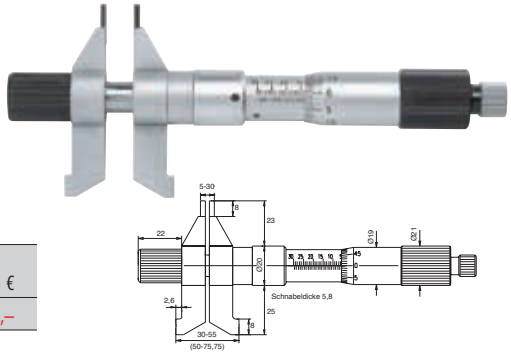
Measurement range mm	Contents	art.no.	€	Calibration art.no.	€
5-75	3x inside micrometers, 2x ring gauges: 5 and 25 mm	**506103** 0075	495,–	070520 0103	116,–

5116

ATORN® Inside micrometer with double jaws

Werks-norm | 0,5 mm | 0,01 mm

- Hardened and ground measuring spindle with ball bearing
- With robust, cylindrical **carbide measuring jaws**
- Two separate, individually adjustable inner scale sleeves for easy, direct readings and adjustment
- Measuring barrel Ø 21 mm
- Precision: 2 µm
- Constant measuring pressure due to advanced friction coupling



Measurement range mm	Error limit µm	art.no.	€	Calibration art.no.	€
5-55	2.5	**506101** 0555	845,–	070520 0111	54,–

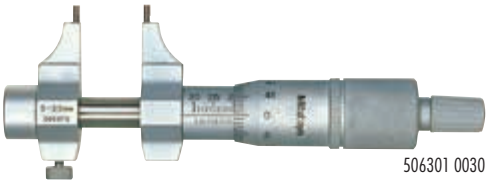
5181

Mitutoyo Inside micrometer with measuring jaws

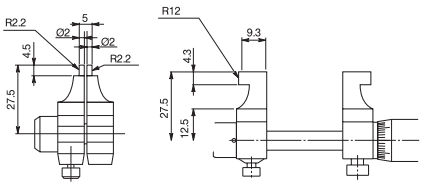
Werks-norm | 0,5 mm | 0,01 mm

- Precision design, matt chrome-plated
- With ratchet
- Carbide-tipped measuring faces, precision machined
- Reading parts matt chrome-plated
- Scale barrel Ø: 17 mm
- Supplied with adjustment key





506301 0030

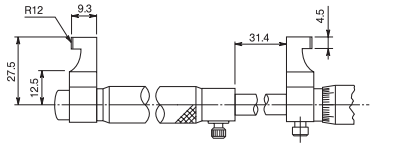


Measurement range 5-30 mm

Measurement range 25-50 mm

Measurement range mm	Error limit µm	art.no.	€	Calibration art.no.	€
5-30	5	**506301** 0030	243,–	070520 0001	27,–
25-50	6	506301 0050	282,–	070520 0001	27,–
50-75	7	506301 0075	294,–	070520 0001	27,–
75-100	8	506301 0100	336,–	070520 0001	27,–
100-125	9	506301 0125	453,–	070520 0001	27,–
125-150	9	506301 0150	511,–	070520 0001	27,–

5102



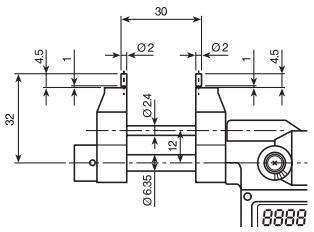
Measurement range > 50 mm

Mitutoyo Digital inside micrometer with jaws

Werks-norm | 0,5 mm | 0,001 mm | Digi-matic | USB



- Precision design with ratchet
- Spindle fixed via a clamping screw
- Carbide-tipped measuring faces, precision machined
- Extremely easy to read via LCD display with 6.6 mm high digits
- Activates automatically when spindle moves
- Scale barrel Ø: 18 mm
- **Functions:** Pre-set (PRESET), zeroing/absolute (ZERO/ABS), hold value (HOLD) Automatic switch-off, battery check
- Supplied with adjustment key and SR44 battery, no. 500534 0001
- **Optional accessories:** Digimatic cable type B, no. 563100 0011 (1 m), no. 563100 0012 (2 m); USB cable type B-USB, no. 563110 0002



Measurement range mm	Error limit µm	art.no.	€	Calibration art.no.	€
5-30	5	**506402** 0030	766,–	070520 0001	27,–

5102

Mitutoyo Inside micrometer, fixed version

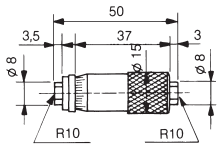
DIN 863/4 | 0,5 mm | 0,01 mm



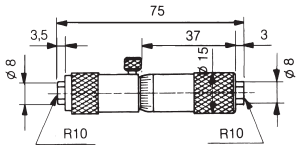
- Lightweight design featuring tubular construction
- Reading parts matt chrome-plated
- Rounded measuring faces carbide-tipped and lapped
- For measurement ranges from 75 mm, spindle is fixed by means of a clamping screw
- Measurement ranges above 100 mm include hand protection
- Scale barrel Ø: up to 100 mm = 15 mm, above 100 mm = 18 mm
- Supplied with adjustment key



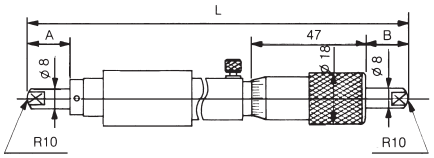
506501 0125



Size 0075



Size 0100



Single units

Measurement range mm	L mm	A mm	B mm	art.no.	€	Calibration art.no.	€
50-75	50	3.5	3	**506501** 0075	130,–	070520 0001	27,–
75-100	75	3.5	3	506501 0100	136,–	070520 0001	27,–
100-125	100	5.0	3	506501 0125	142,–	070520 0001	27,–
125-150	125	5.0	3	506501 0150	146,–	070520 0001	27,–
150-175	150	18.0	15	506501 0175	150,–	070520 0001	27,–
175-200	175	18.0	15	506501 0200	162,–	070520 0001	27,–
200-225	200	18.0	15	506501 0225	170,–	070520 0011	41,60
225-250	225	18.0	15	506501 0250	175,–	070520 0011	41,60
250-275	250	18.0	15	506501 0275	183,–	070520 0011	41,60
275-300	275	18.0	15	506501 0300	198,–	070520 0011	41,60

5102

Over 180,000 tools available online!
Register online now!
www.saratools.com



Mitutoyo Inside micrometer set

DIN 863/4 | 0,5 mm | 0,01 mm

- Modular design
- Screwing on the graduated extensions makes it possible to measure all dimensions within the specified ranges
- Calibration includes extensions
- Supplied with adjustment key



506701 0300

Hardened measuring faces

- Extensions with ground internal rod serving as the material measure
- Micrometer measurement range 13 mm
- Micrometer fixed by means of clamping screws
- Reading parts chrome-plated
- Scale barrel Ø: 15 mm
- Tubular Ø of extensions: 12.5 mm
- Error margin: (3+V+L/50) µm, L in mm, V = number of extensions

Messbereich mm	Verlängerungen mm	art.no.	€	Calibration art.no.	€
50-150	13, 25, 50	**506701** 0150	228,–	070520 0201	79,50
50-300	13, 25, 50, 50,100	506701 0300	325,–	070520 0202	114,50
50-500	13, 25, 50, 50, 100, 200	506701 0500	445,–	070520 0203	132,–
50-1000	13, 25, 50, 50, 100, 200, 200, 300	506701 1000	589,–	070520 0204	175,50
50-1500	13, 25, 50, 50, 100, 200, 200, 200, 200, 300, 300	506701 1500	773,–	070520 0205	219,–

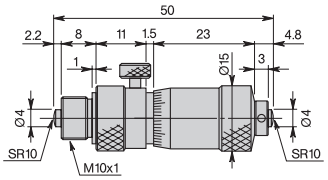
5102

Carbide-tipped measuring faces

Measurement range mm	Extensions mm	art.no.	€	Calibration art.no.	€
50-150	13, 25, 50	**506701** 0151	294,–	070520 0201	79,50
50-300	13, 25, 50, 50, 100	506701 0301	416,–	070520 0202	114,50
50-500	13, 25, 50, 50, 100, 200	506701 0501	571,–	070520 0203	132,–
50-1000	13, 25, 50, 50, 100, 200, 200, 300	506701 1001	715,–	070520 0204	175,50
50-1500	13, 25, 50, 50, 100, 200, 200, 200, 300, 300	506701 1501	908,–	070520 0205	219,–

5102

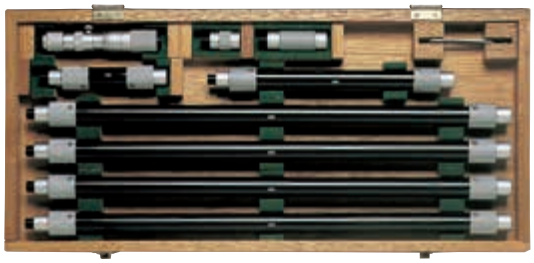




Spare micrometer heads for micrometer sets, 506701....

Measurement range mm	Measuring area	art.no.	€	Calibration art.no.	€
0-13	Hardened	**506701** 0001	147,–	070520 0001	27,–
0-13	Carbide-tipped	506701 0002	185,–	070520 0001	27,–

5102



Carbide-tipped measuring faces

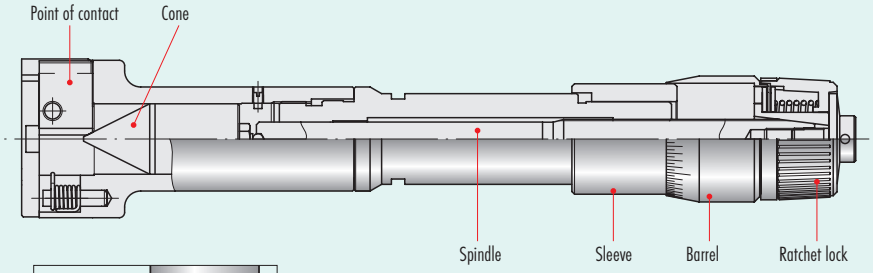
- Tubular extensions can be used individually as material measures
- Micrometer measurement range 25 mm
- Micrometer fixed by means of clamping screws
- Reading parts chrome-plated
- Scale barrel Ø: 18 mm
- Tubular Ø of extensions: 17 mm
- Error margin: (3+V+L/50) µm, L in mm, V = number of extensions

Measurement range mm	Extensions mm	art.no.	€	Calibration art.no.	€
100-500	25, 50, 100, 200	**506703** 0500	635,–	070520 0301	97,–
100-900	25, 50, 100, 200, 400	506703 0900	761,–	070520 0302	123,–
100-1300	25, 50, 100, 200, 400, 400	506703 1300	912,–	070520 0303	149,–
100-1700	25, 50, 100, 200, 400, 400, 400	506703 1700	1.069,–	070520 0304	175,–
100-2100	25, 50, 100, 200, 400, 400, 400, 400	506703 2100	1.189,–	070520 0305	201,–

5102

Inside micrometers

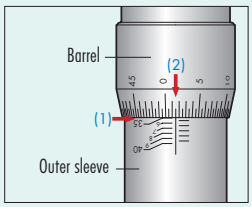
INFO



Reading off the scale

Scale division 0.005 mm

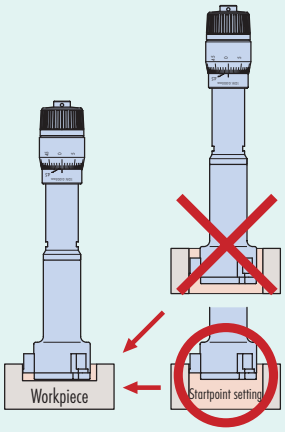
(1) external sleeve	35.000 mm
(2) barrel	0.015 mm
Reading	35.015 mm



Changing the measured values through a different measuring position

When using the Holtest Series, the measurement values when measuring with fully adjacent measuring faces and when measuring just with the points of the measuring face vary, due to the mechanical properties of the micrometer. Before measuring, set the reference value under the same conditions.

If only the points of the measuring faces are used for the measurement, then adjust the reference value correspondingly. The set-up must be as careful as the measurement!



Alignment error

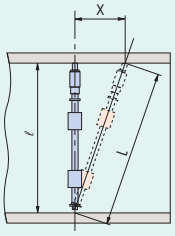


Fig. 1
ℓ: The inner diameter to be measured
L: Length measured with axial offset X
X: Offset in axial direction
Δ: ℓ Error in measurement
Δℓ: $L-\ell=\sqrt{\ell^2+X^2}-\ell$

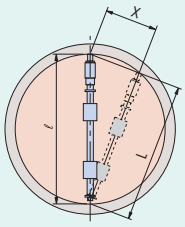
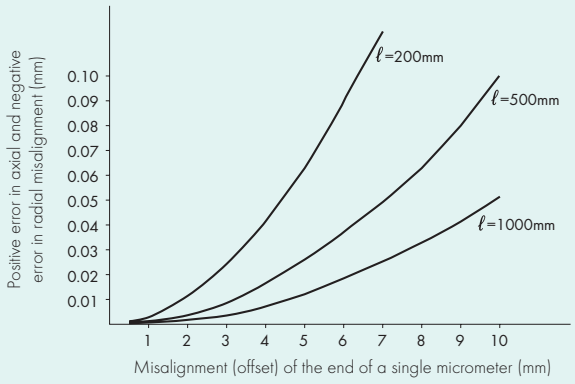


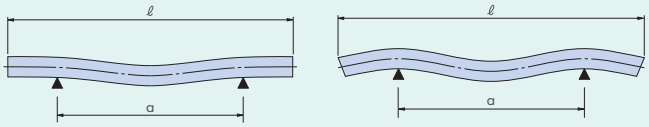
Fig. 2
ℓ: The inner diameter to be measured
L: Length measured with radial offset X
X: Offset in radial direction
Δℓ: Error in measurement
Δℓ: $L-\ell=\sqrt{\ell^2-X^2}-\ell$

When carrying out a measurement with the inside micrometer in an axial or radial direction, attention must be paid to the correct orientation of the inside micrometer. Misalignment during the measurement leads to the offset X (Figure 1 and Figure 2), and thus to an incorrect measurement. An axial offset X suggests a larger and a radial offset X a smaller than expected measurement.



Airy points and Bessel points

When a normal or an inside micrometer is positioned horizontally, supported at two points, it undergoes some bowing under load due to its own weight; the shape of this deformation depends on the distance between the support points. As the following figure shows, there are two distances between the supporting positions, which control this deformation in useful ways.



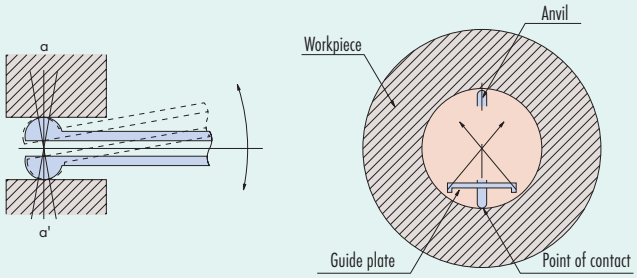
The ends of a standard (or inside) micrometer can be positioned precisely horizontally by spacing the two support positions symmetrically (see above figure).These points are referred to as 'Airy points' and are often used to ensure that the ends of a length-measuring instrument are parallel to each other, allowing the length to be determined accurately. The change in length of a standard (or inside) micrometer due to bowing under load can be reduced to a minimum by spacing the two positions of the supports symmetrically (see above figure). These points are called Bessel points and may be useful when using long inside micrometers.

Measurement errors due to temperature fluctuations of the inside micrometer

The heat transfer from the operator to the inside micrometer should be minimised to avoid significant measurement errors due to the temperature difference between the workpiece and the bore gauge. If the bore gauge is held directly in the hand, gloves should be worn or it should be gripped via a heat insulator (if available).

Inside measuring instruments

Mitutoyo internal measuring instruments for small holes have contact elements with a large curvature, allowing these to be easily positioned when measuring the diameter of the actual hole (in the direction a-a). The true diameter is the minimum value displayed on the dial indicator, while the internal measuring instrument is moved back and forth as shown by the arrow.



The spring-loaded centring bridge on a Mitutoyo two-point inside measuring device allows an automatic radial alignment, thus requiring only an axial rocking movement to find the minimum reading (true diameter).

SARA® Inside micrometers with three-point contacts

DIN 863/4 | 0,5 mm



- For measuring through-holes and blind holes
- Large measurement depths due to extension
- Reading and operating parts matt chrome-plated
- Measuring spindle fully hardened and ground
- Ratchet coupling for repeatable measuring force
- Self-centring measuring head with three laterally extending measuring probes
- Carbide-tipped from a measurement range of 12 mm
- Clearance a for 6 – 12 mm = 1.4 mm, 12 – 100 mm = 0.5 mm
- Scale division up to size 0012 = 0.001 mm, from size 0016 = 0.005 mm
- Calibration including ring gauges, reduced testing
- Supplied in a sturdy transport case including ring gauge and extension



507703 0040

507703 0088

Individual

Measurement range mm	Error limit µm	Ring gauges mm	Measurement depth without extension mm	Measurement depth with extension mm	art.no.	€	Calibration art.no.	Calibration €
6-8	4	6	55	155	**507703** 0008	263,–	070525 0101	37,10
8-10	4	8	55	155	507703 0010	263,–	070525 0101	37,10
10-12	4	10	55	155	507703 0012	263,–	070525 0101	37,10
12-16	4	16	81	231	507703 0016	240,–	070525 0101	37,10
16-20	4	16	81	231	507703 0020	240,–	070525 0101	37,10
20-25	4	25	91	241	507703 0025	266,–	070525 0101	37,10
25-30	4	25	91	241	507703 0030	266,–	070525 0101	37,10
30-40	4	40	101	251	507703 0040	296,–	070525 0101	37,10
40-50	5	40	101	251	507703 0050	322,–	070525 0101	37,10
50-63	5	62	101	251	507703 0063	356,–	070525 0102	49,50
62-75	5	62	115	265	507703 0075	367,–	070525 0102	49,50
75-88	5	87	115	265	507703 0088	379,–	070525 0102	49,50
87-100	5	87	115	265	507703 0100	413,–	070525 0102	49,50

5120



507704 0050

Sets

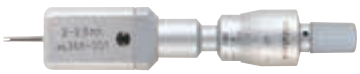
- Scale division for size 0012 = 0.001 mm, from size 0020 = 0.005 mm

Measurement range mm	Single units mm	Ring gauges mm	Extensions mm	art.no.	€	Calibration art.no.	Calibration €
6-12	6-8, 8-10, 10-12	6, 8, 10	100	**507704** 0012	695,–	070525 0307	111,30
12-20	12-16, 16-20	16	150	507704 0020	429,–	070525 0303	56,70
20-50	20-25, 25-30, 30-40, 40-50	25, 40	2 x 150	507704 0050	995,–	070525 0304	113,40
50-100	50-63, 62-75, 75-88, 87-100	62, 87	150	507704 0100	1.449,–	070525 0305	155,–

5120

Mitutoyo Internal precision instruments MINI-HOLTEST

0,5 mm | 0,001 mm



Measurement range 2-2.5 mm



507505 0003

- For fast, direct bore measurements from Ø 2 mm
- Scale barrel and scale sleeve matt chrome-plated
- Carbide-tipped measuring faces
- Measuring force 5 - 10 N
- Error margin 2 µm

Measurement range mm	Single units mm	Ring gauges mm	art.no.	€	Calibration art.no.	Calibration €
2-3	2-2.5 / 2.5-3	2.5	**507505** 0003	1.923,–	070525 0303	56,70
3-6	3-4 / 4-5 / 5-6	4 / 5	507505 0006	2.080,–	070525 0301	93,80

5102

ATORN® Inside micrometer with three-point contact

DIN 863/4 | 0,5 mm

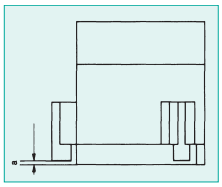
- For measuring through-holes, blind bores (from Ø 12 mm, dimension a = 0 mm) and short centring shoulders
- Self-centring design
- Carbide-tipped measuring faces from Ø 12 mm
- Measuring heads from Ø 40 mm with lightweight anodised aluminium construction
- Measuring spindle hardened and ground
- Matt chrome-plated reading parts with an anti-glare finish
- Quick drive with integrated coupling

Blind hole version!



Measurement range mm	Error limit µm	a mm	Reading mm	Measurement depth without extension mm	art.no.	€	Calibration art.no.	€
6-8	4	1.5	0.001	58	**507801** 0008	360,–	070525 0001	19,60
8-10	4	1.8	0.001	58	507801 0010	360,–	070525 0001	19,60
10-12	4	1.8	0.001	58	507801 0012	370,–	070525 0001	19,60
12-16	4	0	0.001	64	507801 0016	370,–	070525 0001	19,60
16-20	4	0	0.001	64	507801 0020	385,–	070525 0001	19,60
20-25	4	0	0.005	68	507801 0025	395,–	070525 0001	19,60
25-30	4	0	0.005	68	507801 0030	400,–	070525 0001	19,60
30-40	4	0	0.005	76	507801 0040	445,–	070525 0001	19,60
40-50	4	0	0.005	76	507801 0050	445,–	070525 0001	19,60
50-60	5	0	0.005	79	507801 0060	509,–	070525 0002	28,–
60-70	5	0	0.005	79	507801 0070	529,–	070525 0002	28,–
70-85	5	0	0.005	97	507801 0085	559,–	070525 0002	28,–
85-100	5	0	0.005	97	507801 0100	569,–	070525 0002	28,–
100-125	6	0	0.005	132	507801 0125	789,–	070525 0003	33,–
125-150	6	0	0.005	132	507801 0150	939,–	070525 0003	33,–
150-175	7	0	0.005	132	507801 0175	1.009,–	070525 0004	37,50
175-200	7	0	0.005	132	507801 0200	1.049,–	070525 0004	37,50

5176



From Ø 12-16 mm measurements to borehole bottom possible

Sets

Measurement range mm	Reading mm	Single units mm	Ring gauges mm	art.no.	€	Calibration art.no.	€
6-12	0.001	6-8 / 8-10 / 10-12	8 / 10	**507802** 0012	1.029,–	070525 0301	93,80
12-20	0.001	12-16 / 16-20	16	507802 0020	799,–	070525 0303	56,70
20-50	0.005	20-25 / 25-30 / 30-40 / 40-50	25 / 40	507802 0050	1.809,–	070525 0301	93,80
50-100	0.005	50-60 / 60-70 / 70-85 / 85-100	60 / 85	507802 0100	2.139,–	070525 0305	155,–

5176



Mitutoyo ATORN® Extensions

- For extending the measurement depth
- Assembled by screwing in between the measuring head and display component
- 508701.... suitable for inside micrometers with three-point contacts **HOLTEST** and **BOREMATIC**
  507803.... suitable for **ATORN** inside micrometers with three-point contacts
- **Caution:** After fitting or removing the extension, the inside micrometer with three-point contact must be checked and re-adjusted if necessary.



508701....

Mitutoyo

Extensions mm	for measurement range mm	art.no.	€
100	6-12	**508701** 0001	99,–
150	12-20	508701 0002	99,–
150	20-50	508701 0003	109,–
150	50-300	508701 0004	189,–

5102

ATORN®

Extensions mm	for measurement range mm	art.no.	€
75	6-12	**507803** 0012	87,50
75	12-20	507803 0020	93,50
150	20-30	507803 0030	97,50
150	30-200	507803 0200	118,–

5176

Mitutoyo HOLTEST inside micrometer with three-point contact

DIN 863/4 | 0,5 mm

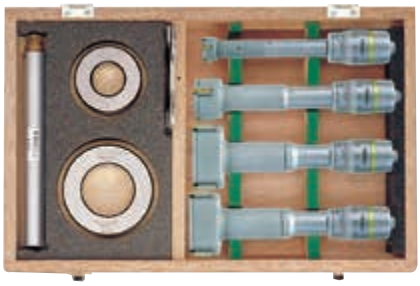
- With ratchet
- Reading parts matt chrome-plated
- Measuring faces offset 120°
- **Type A** 508102/508106: Measuring faces and taper made from hardened steel, contact point: Carbide
- **Type B** 508104/508108: Measuring faces: up to size 0012, titanium-coated carbide; from size 0016, titanium-coated measuring pins made from hardened steel. Contact point and taper: Carbide
- Scale barrel Ø: up to 12 mm measurement range = 17 mm, above 12 mm measurement range = 23 mm
- Readings: up to 12 mm measurement range = 0.001 mm, above 12 mm measuring range = 0.005 mm
- Supplied in a case with screwdriver and key for extension assembly
- **Accessories**: Ring gauges no. 540135...., extensions no. 508701....


508104 0062

508102 0050

Individual

Measurement range mm	Error limit µm	Measurement depth without extension mm	Type A art.no.	€	Type B art.no.	€	Calibration art.no.	€
6-8	4	59			**508104** 0008	340,–	070525 0001	19,60
8-10	4	59			508104 0010	340,–	070525 0001	19,60
10-12	4	59			508104 0012	340,–	070525 0001	19,60
12-16	4	80	**508102** 0016	329,–	508104 0016	401,–	070525 0001	19,60
16-20	4	80	508102 0020	333,–	508104 0020	412,–	070525 0001	19,60
20-25	4	90	508102 0025	336,–	508104 0025	422,–	070525 0001	19,60
25-30	4	90	508102 0030	359,–	508104 0030	432,–	070525 0001	19,60
30-40	4	98	508102 0040	397,–	508104 0040	442,–	070525 0001	19,60
40-50	4	98	508102 0050	404,–	508104 0050	455,–	070525 0001	19,60
50-63	5	105	508102 0062	447,–	508104 0062	512,–	070525 0002	28,–
62-75	5	105	508102 0075	459,–	508104 0075	535,–	070525 0002	28,–
75-87	5	105	508102 0087	470,–	508104 0087	546,–	070525 0002	28,–
87-100	5	105	508102 0100	497,–	508104 0100	557,–	070525 0002	28,–
100-125	6	158	508102 0125	771,–	508104 0125	834,–	070525 0003	33,–
125-150	6	158	508102 0150	828,–	508104 0150	888,–	070525 0003	33,–
150-175	7	158	508102 0175	910,–	508104 0175	947,–	070525 0004	37,50
175-200	7	158	508102 0200	921,–	508104 0200	980,–	070525 0004	37,50
200-225	8	158	508102 0225	969,–	508104 0225	1.031,–	070525 0005	47,–
225-250	8	158	508102 0250	981,–	508104 0250	1.058,–	070525 0005	47,–
250-275	9	158	508102 0275	1.031,–	508104 0275	1.102,–	070525 0006	43,–
275-300	9	158	508102 0300	1.161,–	508104 0300	1.215,–	070525 0006	43,–
			5102		5102			


508108 0050

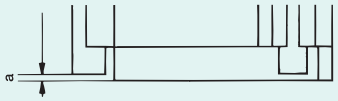
Sets

- With ring gauges, extension, key and wrench, with factory certificate for the three-point inside micrometers, in a wooden box
- Calibration including ring gauges, reduced testing

Measurement range mm	Single units mm	Ring gauges mm	Extensions mm	Type A art.no.	€	Type B art.no.	€	Calibration art.no.	€
6-12	6-8 / 8-10 / 10-12	8 / 10	100			**508108** 0012	901,–	070525 0301	93,80
12-20	12-16 / 16-20	16	100	**508106** 0020	720,–	508108 0020	779,–	070525 0303	56,70
20-50	20-25 / 25-30 / 30-40 / 40-50	25 / 40	150	508106 0050	1.664,–	508108 0050	1.787,–	070525 0304	113,40
50-100	50-62 / 62-75 / 75-87 / 87-100	62 / 87	150	508106 0100	2.022,–	508108 0100	2.101,–	070525 0305	155,–
100-200	100-125 / 125-150 / 150-175 / 175-200	125 / 175	150	508106 0200	4.053,–	508108 0200	4.925,–	070525 0306	185,60
				5102		5102			

Note regarding Mitutoyo digital inside micrometers with three-point contacts

The hole diameter can be measured almost all the way to the base of the hole.



The following distances from the base of the hole cannot be measured:

Measuring range mm	Clearance a mm	
	508102....	**508104....**
6 - 12	-	2.0
12 - 20	2.6	0.3
20 - 100	3.4	0.3
100 - 300	19.6	12.4

Mitutoyo Digital inside micrometers with three-point contacts HOLTEST

IP65 | DIN 863/4 | 0,5 mm | 0,001 mm | Digi-matic | USB

Staub- und Wasserdicht IP65
TÜVRheinland ZERTIFIZIERT
www.tuv.com ID 0000021605

- With ratchet
- Readings via LCD display with 7.5 mm high digits
- Casing particularly resistant to oils and chemicals
- Activates automatically when spindle moves
- Measuring faces: up to size 0012, titanium-coated carbide; from size 0016, titanium-coated measuring pins made from hardened steel. Contact point and taper: Carbide
- **Functions:** Pre-set for two values (PRESET), zeroing/absolute (ZERO/ABS), hold value (HOLD), automatic switch-off, battery check
- Supplied in a case with SR44 battery (no. 500534 0001), key and factory certificate
- **Optional accessories:** Digimatic cable type B, no. 563100 0011 (1 m), no. 563100 0012 (2 m), USB cable type B-USB, no. 563110 0002; ring gauges, no. 540135....; extensions, no. 508701....



Individual

Measurement range mm	Error limit µm	Measurement depth without extension mm	art.no.	€	Calibration art.no.	Calibration €
6-8	4	54.5	**508312** 0008	1.059,–	070525 0001	19,60
8-10	4	54.5	508312 0010	1.062,–	070525 0001	19,60
10-12	4	54.5	508312 0012	1.060,–	070525 0001	19,60
12-16	4	78.1	508312 0016	1.184,–	070525 0001	19,60
16-20	4	78.1	508312 0020	1.186,–	070525 0001	19,60
20-25	4	88	508312 0025	1.220,–	070525 0001	19,60
25-30	4	88	508312 0030	1.220,–	070525 0001	19,60
30-40	4	102	508312 0040	1.211,–	070525 0001	19,60
40-50	4	102	508312 0050	1.223,–	070525 0001	19,60
50-63	5	105	508312 0063	1.339,–	070525 0002	28,–
62-75	5	105	508312 0075	1.350,–	070525 0002	28,–
75-88	5	105	508312 0088	1.361,–	070525 0002	28,–
87-100	5	105	508312 0100	1.377,–	070525 0002	28,–
100-125	6	105	508312 0125	1.796,–	070525 0003	33,–
125-150	6	151	508312 0150	1.872,–	070525 0003	33,–
150-175	7	151	508312 0175	1.959,–	070525 0004	37,50
175-200	7	151	508312 0200	2.068,–	070525 0004	37,50
200-225	8	151	508312 0225	2.187,–	070525 0005	47,–
225-250	8	151	508312 0250	2.252,–	070525 0005	47,–
250-275	9	151	508312 0275	2.318,–	070525 0006	43,–
275-300	9	151	508312 0300	2.433,–	070525 0006	43,–

5102

Sets

- With ring gauges, batteries and wrench in wooden box with factory certificate for the three-point inside micrometers
- Calibration including ring gauges, reduced testing



Measurement range mm	Single units mm	Ring gauges mm	art.no.	€	Calibration art.no.	Calibration €
6-12	6-8 / 8-10 / 10-12	8 / 10	**508314** 0012	2.769,–	070525 0301	93,80
12-25	12-16 / 16-20 / 20-25	16 / 20	508314 0025	3.077,–	070525 0301	93,80
25-50	25-30 / 30-40 / 40-50	30 / 40	508314 0050	3.242,–	070525 0301	93,80
50-75	50-63 / 63-75	62	508314 0075	2.550,–	070525 0302	77,50
75-100	75-88 / 87-100	87	508314 0100	3.090,–	070525 0302	77,50

5102

Sets with replaceable measuring heads

- With ring gauges, extension, batteries and wrench
- In wooden box with factory certificate for the three-point measuring heads
- Calibration including ring gauges, reduced testing



Measurement range mm	Measuring heads mm	Extensions mm	Ring gauges mm	art.no.	€	Calibration art.no.	Calibration €
6-12	6-8 / 8-10 / 10-12	100	8 / 10	**508316** 0012	1.951,–	070525 0301	93,80
12-20	12-16 / 16-20	150	16	508316 0020	1.599,–	070525 0303	56,70
20-50	20-25, 25-30 / 30-40 / 40-50	150	25 / 40	508316 0050	2.550,–	070525 0304	113,40
50-100	50-63, 62-75 / 75-88 / 87-100	150	62 / 87	508316 0100	3.647,–	070525 0305	155,–
100-200	100-125 / 125-150 / 150-175 / 175-200	150	125 / 175	508316 0200	5.537,–	070525 0306	185,60

5102

Mitutoyo Inside micrometers with three-point contacts BOREMATIC

0,001 mm | ABSO-LUTE | Digi-matic | USB

ABSOLUTE®

- For fast and precise series measurements
- Base body with operating handle for quick adjustment
- Extremely easy to read with 11 mm high digits
- Display component can be rotated through 330°
- Allows two pre-set values to be input
- Measuring faces: up to size 0012, titanium-coated carbide; from size 0016, titanium-coated measuring pins made from hardened steel. Contact point and taper: Carbide
- Error margin: Measuring range 6 - 20 mm, Ø = 0.005 mm; measuring range 20 - 125 mm Ø = 0.006 mm
- **Functions:** MODE to switch between tolerance, factor and pre-set modes
  SET to confirm input
  DATA/ON/OFF
  Battery check
- Supplied with SR44 battery (no. 500534 0001), key and factory certificate
- **Optional accessories:** Digimatic cable type F, no. 563100 0051 (1 m), no. 563100 0052 (2 m); USB cable type F-USB, no. 563110 0006; ring gauge, no. 540135....; extensions, no. 508701....



Individual

Measurement range mm	Measurement depth without extension mm	art.no.	€	Calibration art.no.	Calibration €
6-8	83	**508507** 0008	1.205,–	070525 0001	19,60
8-10	83	508507 0010	1.205,–	070525 0001	19,60
10-12	83	508507 0012	1.205,–	070525 0001	19,60
12-16	52.6	508507 0016	1.230,–	070525 0001	19,60
16-20	52.6	508507 0020	1.230,–	070525 0001	19,60
20-25	58.2	508507 0025	1.311,–	070525 0001	19,60
25-30	58.2	508507 0030	1.311,–	070525 0001	19,60
30-40	67.3	508507 0040	1.423,–	070525 0001	19,60
40-50	67.3	508507 0050	1.423,–	070525 0002	28,–
50-63	74.8	508507 0063	1.487,–	070525 0002	28,–
62-75	74.8	508507 0075	1.518,–	070525 0002	28,–
75-88	74.8	508507 0088	1.567,–	070525 0002	28,–
87-100	74.8	508507 0100	1.567,–	070525 0002	28,–
100-113	74.8	508507 0113	1.659,–	070525 0003	33,–
112-125	74.8	508507 0125	1.685,–	070525 0003	33,–

5102





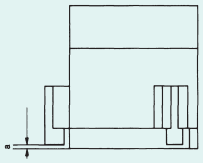
Sets with replaceable measuring heads

- With adapters, measuring inserts and ring gauges, in wooden box, including battery and wrench, with factory certificate for the Borematic measuring heads
- Calibration including ring gauges, reduced testing

Measurement range mm	Measuring heads mm	Adapter	Ring gauges mm	art.no.	€	Calibration art.no.	Calibration €
6-12	6-8 / 8-10 / 10-12	1	8 / 10	**508508** 0012	1.739,–	070525 0301	93,80
12-25	12-16 / 16-20 / 20-25	2	16 / 20	508508 0025	1.867,–	070525 0301	93,80
25-50	25-30 / 30-35 / 40-50	1	30 / 40	508508 0050	2.197,–	070525 0301	93,80
50-100	50-63 / 62-75 / 75-88 / 87-100	1	62 / 87	508508 0100	3.733,–	070525 0305	155,–

5102

The hole diameter can be measured almost all the way to the base of the hole.



The following distances from the base of the hole cannot be measured:

Measuring range mm	Clearance a mm
6 - 12	2.0
12 - 125	0.3

Replaceable measuring heads for BOREMATIC

- For extending the measurement range of standard measuring instruments
- Can only be used in combination with a suitable adapter (508506....)

Measurement range mm	suitable adapter	art.no.	€
6-8	5085060012	**508504** 0008	286,–
8-10	5085060012	508504 0010	286,–
10-12	5085060012	508504 0012	286,–
12-16	5085060020	508504 0016	255,–
16-20	5085060020	508504 0020	255,–
20-25	5085060050	508504 0025	276,–
25-30	5085060050	508504 0030	276,–
30-40	5085060050	508504 0040	299,–
40-50	5085060050	508504 0050	299,–
50-63	5085060125	508504 0063	342,–
62-75	5085060125	508504 0051	354,–
75-88	5085060125	508504 0088	364,–
87-100	5085060125	508504 0100	397,–

5102



508504 0025

508504 0050

Adapter

- A suitable adapter for the measurement range of the replaceable measuring head must be selected

suitable for measurement range mm	art.no.	€
6-12	**508506** 0012	134,–
12-20	508506 0020	33,–
20-50	508506 0050	33,–
50-125	508506 0125	33,–

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Mitutoyo Internal precision instrument

Werks-norm



- Comparative measurement with reference to a pre-set reference dimension
- Set by means of outside micrometers, ring gauges or adjustable reference gauges with gauge blocks.
- With analogue dial indicator, can be replaced with a digital dial indicator (optional accessory)
- With movable stylus, carbide-tipped, measuring span 1.6 mm
- Replaceable carbide-tipped measuring bolts, sizes 0010 and 0018 hardened
- **Size 0150** with additional 50 mm extension for Ø range 100 - 150 mm
- Accuracy without an indicating measuring instrument
- Calibration includes dial indicator
- Supplied with base unit, set of measuring inserts with shims, analogue dial indicator with plastic protector

526502 0160



Measurement range mm	Reading mm	Accuracy mm	Number of measurement spindles	Measurement depth mm	art.no.	€	Calibration art.no.	Calibration €
6-10	0.01	0.005	9	47	**526502** 0010	439,–	071015 0101	39,–
10-18	0.01	0.005	9	100	526502 0018	423,–	071015 0101	39,–
18-35	0.01	0.002	9	100	526502 0035	257,–	071015 0101	39,–
35-60	0.01	0.002	6	150	526502 0060	260,–	071015 0101	39,–
50-150	0.01	0.002	11	150	526502 0150	269,–	071015 0102	49,50
100-160	0.01	0.002	13	150	526502 0160	431,–	071015 0102	49,50
160-250	0.01	0.002	6	250	526502 0250	527,–	071015 0103	52,–
250-400	0.01	0.002	5	250	526502 0400	634,–	071015 0104	54,–
6-10	0.001	0.005	9	47	526504 0010	492,–	071015 0101	39,–
10-18	0.001	0.005	9	100	526504 0018	490,–	071015 0101	39,–
18-35	0.001	0.002	9	100	526504 0035	311,–	071015 0101	39,–
35-60	0.001	0.002	6	150	526504 0060	317,–	071015 0101	39,–
50-150	0.001	0.002	11	150	526504 0150	327,–	071015 0102	49,50
100-160	0.001	0.002	13	150	526504 0160	495,–	071015 0102	49,50
160-250	0.001	0.002	6	250	526504 0250	597,–	071015 0103	52,–
250-400	0.001	0.002	5	250	526504 0400	703,–	071015 0104	54,–

5102



Sets with analogue dial indicator

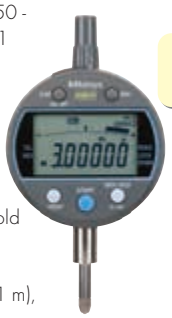
- 3 base units with measurement ranges of 18 - 35 mm, 35 - 60 mm and 50 - 150 mm, all measuring bolts with shims

Measurement range mm	Reading mm	Accuracy mm	art.no.	€	Calibration art.no.	Calibration €
18-150	0.01	0.002	**526553** 0150	450,–	071015 0201	115,50
18-150	0.001	0.002	526555 0150	515,–	071015 0201	115,50

5102

Set with digital dial indicator

- 3 base units with measurement ranges of 18 - 35 mm, 35 - 60 mm and 50 - 150 mm, all measuring bolts with shims, SR44 battery no. 500534 0001
- **Dial indicator functions:**
- Display component can be rotated through 330°
- ON/OFF
- START for initiating reversal point search
- TOL for inputting tolerance values
- PRESET user-defined values in the display
- DATA/HOLD data transfer key if signal cable is connected, otherwise hold key for locking the display
- MENU for accessing and changing the three stored target values
- **Optional accessories:** Digimatic cable type F, no. 563100 0051 (1 m), no. 563100 0052 (2 m); USB cable type F-USB, no. 563110 0006



USB

Digi-matic



Measurement range mm	Reading mm	Accuracy mm	art.no.	€	Calibration art.no.	Calibration €
18-150	0.001	0.002	**526554** 0150	859,–	071015 0202	119,50

5102



Extensions for larger measurement depths

Extensions mm	suitable for measurement range mm	art.no.	€
125	18-35	**527520** 0001	194,–
250	18-35	527520 0002	216,–
500	18-35	527520 0003	336,–
125	35-160	527520 1001	211,–
250	35-160	527520 1002	231,–

5102

Extensions mm	suitable for measurement range mm	art.no.	€
500	35-160	527520 1003	415,–
750	35-160	527520 1004	552,–
1000	35-160	527520 1005	766,–
125	160-400	527520 2001	216,–
250	160-400	527520 2002	221,–

5102

Extensions mm	suitable for measurement range mm	art.no.	€
500	160-400	527520 2003	524,–
750	160-400	527520 2004	689,–
1000	160-400	527520 2005	904,–

5102

Schwenk Adjustment device ESU

- For exact adjustment of all internal precision instruments by means of the corresponding gauge block to the desired target dimension
- Can be used both horizontally and vertically
- Measuring jaws made from solid carbide, gauge block grade
- With lock lever for quickly securing the gauge block combination
- * = without taking into account gauge block quality





Adjustment range mm	Adjustment uncertainty mm	art.no.	€
4.5-160	0.002*	**528010** 0160	911,30
18-290	0.002*	528010 0290	897,90

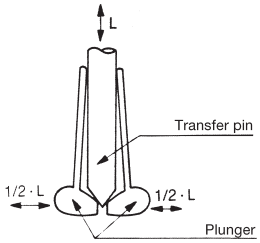
5124

Mitutoyo Internal precision instrument

Werks-norm



- For tasks such as measuring extremely small bores (from Ø 0.95 mm)
- Comparative measurement with reference to a pre-set reference dimension
- With dial indicator and expansion measuring heads
- Measuring heads from Ø 0.95 to 7.0 mm with a hard chrome-plated finish, and Ø 7.0 to 18 mm made from hardened gauge steel similar to measuring needles
- Dial indicator can be replaced with a digital dial indicator including a data output (optional accessory)
- * = Measurement depth: Measurement range 1.5 - 2.25 mm = 17.5 mm, measurement range 2.25 - 4.00 mm = 22.5 mm
- Calibration includes dial indicator
- Supplied in a case with base unit, set of measuring heads, measuring needle, analogue dial indicator including plastic protector, and assembly key





Measurement range mm	Reading mm	Number of measurement heads	Measurement depth mm	art.no.	€	Calibration art.no.	Calibration €
0.95-1.55	0.001	5	11.5	**526001** 0001	931,–	071015 0101	39,–
1.50-4.00	0.001	9	17.5/22.5*	526001 0002	1.116,–	071015 0101	39,–
3.70-7.30	0.001	7	32	526001 0003	876,–	071015 0101	39,–
7.00-10.00	0.001	6	56	526001 0004	366,–	071015 0101	39,–
10.00-18.00	0.001	8	62	526001 0005	394,–	071015 0101	39,–

5102

Bore gauge OD

- Robust and easy-to-use two-point comparative measuring instrument
- For series inspections of Ø 3.1 to 110mm bores
- High-precision measuring sleeve ensures optimum centring inside the bore
- Repeat precision 1µm
- Measuring span 0.2mm (Ø 3.1 to 6.0 = 0.15mm)
- Measuring force 1 - 2N
- Carbide measuring probes, other materials available on request
- Suitable for measuring with indicating callipers, dial indicators or electric probes
- Connecting thread holder/gauge M11 x 0.75
- * = nominal dimension range up to Ø 4mm H = 26mm, from Ø 4.01 up to 6mm H = 10mm
- **The following is required for a complete bore gauge OD: Bore gauge (526557.../526558...) + holder (526559...) + indicating measuring instrument + suitable ring gauge**
- Greater diameter, indicating measuring instrument and suitable ring gauges available on request
- Supplied without indicating measuring instrument and ring gauges

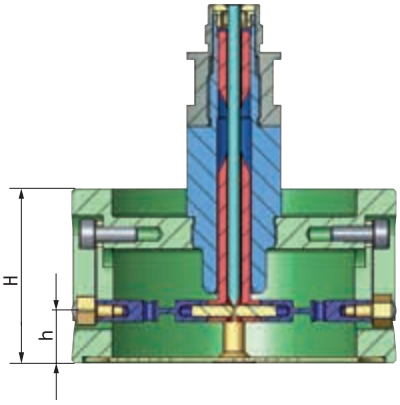


Standard bore gauge OD

- **Caution:** Please specify the nominal dimension and tolerance of the bore when placing your order!
  Examples: No. 526557 0006 / 4 +0.02 / -0.01
  No. 526557 0020 / 18H7

Nominal dimension range mm	h mm	H mm	art.no.	€	Calibration art.no.	Calibration €
3.1-6.0	1.5	26/10*	**526557** 0006	282,80	071015 0011	39,–
6.1-12.0	2.5	15	526557 0012	203,30	071015 0011	39,–
12.1-20.0	2.5	15	526557 0020	206,20	071015 0011	39,–
20.1-30.0	3.5	20	526557 0030	246,60	071015 0011	39,–
30.1-40.0	3.5	20	526557 0040	324,60	071015 0011	39,–
40.1-60.0	3.5	28	526557 0060	378,–	071015 0011	39,–
60.1-80.0	4.0	33	526557 0080	408,40	071015 0011	39,–
80.1-100.0	4.0	33	526557 0100	437,90	071015 0011	39,–
100.1-110.0	4.0	33	526557 0110	470,80	071015 0011	39,–

5126



Bore gauge OD For blind holes

- **Caution:** Please specify the nominal dimension and tolerance of the bore when placing your order!
  Examples: No. 526558 0006 / 4 +0.02 / -0.01
  No. 526558 0020 / 18H7

Nominal dimension range mm	h mm	H mm	art.no.	€	Calibration art.no.	Calibration €
3.1-6.0	1.0	26/10*	**526558** 0006	384,70	071015 0011	39,–
6.1-12.0	1.0	15	526558 0012	308,40	071015 0011	39,–
12.1-20.0	1.0	15	526558 0020	312,20	071015 0011	39,–
20.1-30.0	1.2	20	526558 0030	352,50	071015 0011	39,–
30.1-40.0	1.2	20	526558 0040	481,90	071015 0011	39,–
40.1-60.0	1.2	28	526558 0060	585,50	071015 0011	39,–
60.1-80.0	1.2	33	526558 0080	597,90	071015 0011	39,–
80.1-100.0	1.2	33	526558 0100	645,30	071015 0011	39,–
100.1-110.0	1.2	33	526558 0110	682,10	071015 0011	39,–

5126

OD Device holder

- M11 x 0.75 connection thread suitable for all OD bore gauges
- Size 0004 and 0005 reinforced with Ø 18 mm tubing, recommended for OD bore gauges > 60 mm
- Size 0006 with retractor, recommended for blind hole bore gauges

Length mm	Pipe Ø mm	art.no.	€
50	12	**526559** 0001	60,50
105	12	526559 0002	123,30
235	12	526559 0003	142,40
145	18	526559 0004	151,80
235	18	526559 0005	171,80
70	12	526559 0006	198,90

5126



OD bore gauges, special design and accessories

You require

- **Bore gauges for through-holes**
- **Bore gauges in special forms**
- **Measuring probe jewelled or hard-chrome plated for surfaces sensitive to scratching**
- **Depth stoppers**
- **Angle pieces**
- **Measurement depth extensions**

Solutions not provided in our catalogue are also available on request. Please contact us, our technicians will be glad to advise you.



ATORN® Universal measuring instrument UNICHECK

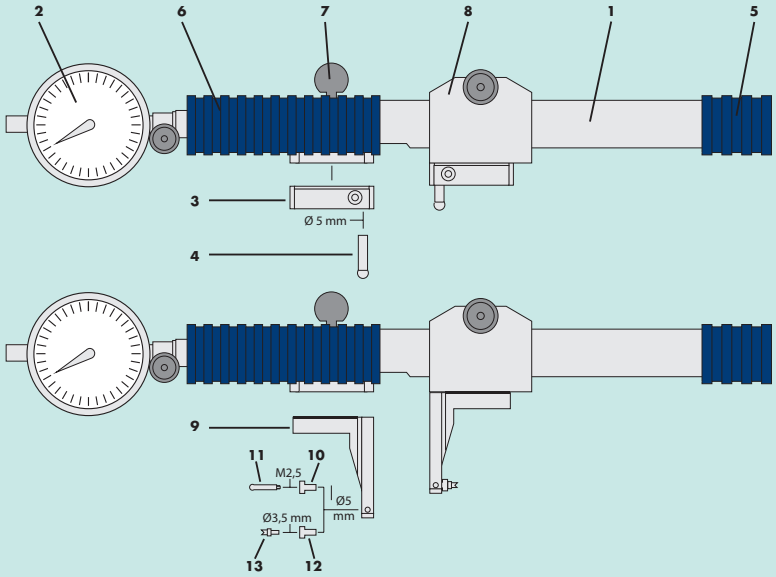
INFO

The comparative measuring instrument UNICHECK, for external and internal measurements, is a versatile precision measuring instrument for efficient use in production and measuring rooms.
The wide range of measuring probes and measuring inserts gives the UNICHECK enormous versatility in the most diverse measurement tasks. The UNICHECK is used to both test workpieces and adjust machines.
Internal and external dimensions on shafts and parallel surfaces, recesses, grooves, dovetail guides and toothing are all tested. Internal and external threads can also be measured.
The measuring direction required for external or internal measuring can be quickly and easily adjusted at a touch.

Dial indicator, precision dial or electronic displacement transducer with a clamping shank Ø 8 h6 can be used to display measured values, where necessary and required.



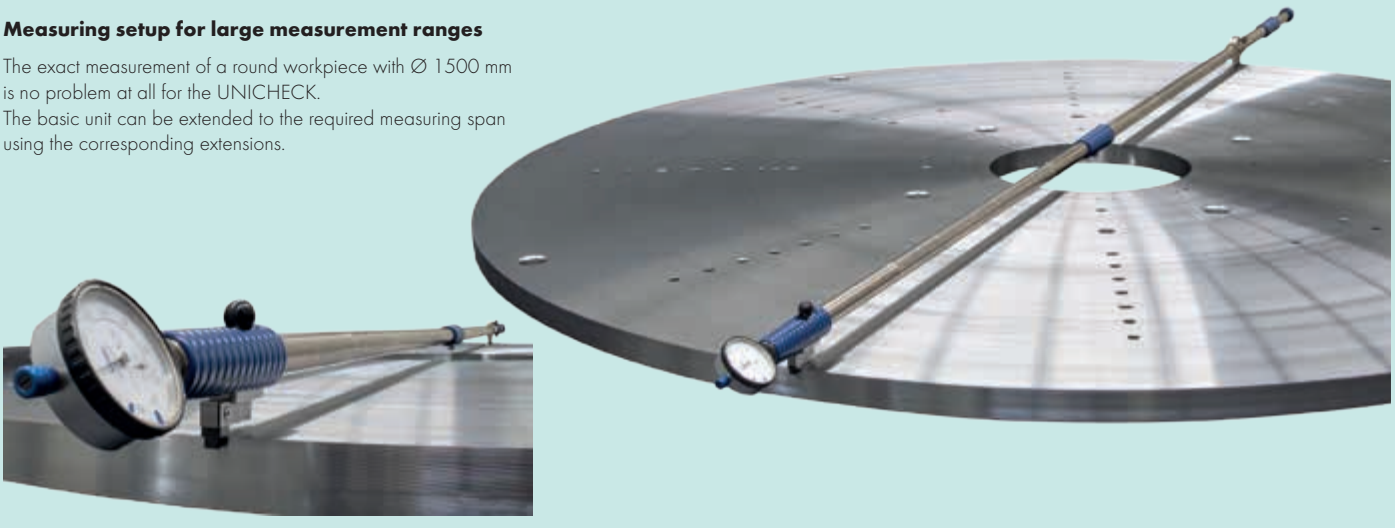
Device setup



1. Basic unit
2. Display unit (dial indicator, precision dial or electronic displacement transducer)
3. Measuring probe mount, locating bore Ø 5 mm
4. Measuring probe shank Ø 5 mm
5. Protective cap
6. Heat protection handle
7. Control lever
8. Slider with mount for fixed probe
9. Measuring arm for horizontal measurements, locating bore Ø 5 mm
10. Adapter Ø 5 mm, with connecting thread M2.5
11. Special-purpose contact point M2.5
12. Adapter Ø 5 mm, with locating bore Ø 3.5 mm
13. Thread measuring insert, shank Ø 3.5 mm

Measuring setup for large measurement ranges

The exact measurement of a round workpiece with Ø 1500 mm is no problem at all for the UNICHECK.
The basic unit can be extended to the required measuring span using the corresponding extensions.

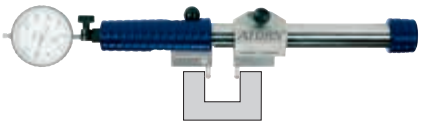




The zero setting can be performed using a gauge block combination and a gauge block holder.

ATORN® Universal measuring instrument UNICHECK

- For carrying out a wide range of measuring tasks such as external and internal measurements, external and internal threads, external and internal toothing
- Adjustments are performed using an adjustment device, master, gauge block combination, ring gauge or outside micrometer
- Rugged tubular design
- Adjustable fixed measuring jaw
- Movable arm for internal and external measurements, reversible measuring direction, measuring range 15 mm
- Universal application by attaching a wide variety of measuring arms and probe tips (optional accessories)
- Measurement range extendable to 2000 mm using extensions (optional accessories)
- Choice of display via analogue or digital dial indicator (optional accessories)
- Supplied in a wooden case (without probe holding fixtures, probes or dial indicator)



Application example: with dial indicator, measuring probe holding fixture, ball tip measuring probe Ø 6 mm



Sample set configuration



Measurement range outside/inside mm	Measuring force outside / inside N	Weight kg	art.no.	€
5 - 220 / 15 - 230	4 / 6	2.7	**500807** 0001	1.999,–
			5180	

Extensions



500808 1500



500808 1200

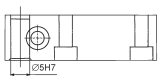


500808 1100

Designation	art.no.	€
Measurement range extension 100 mm	**500808** 1100	280,–
Measurement range extension 200 mm	500808 1200	295,–
Measurement range extension 500 mm	500808 1500	450,–
	5180	



Compatible with measuring probe mount 500808 1001



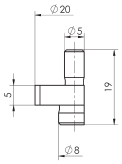


Probe holder for vertical installation (pair)

Designation	art.no.	€
Measuring probe mount	**500808** 1001	188,–
	5180	

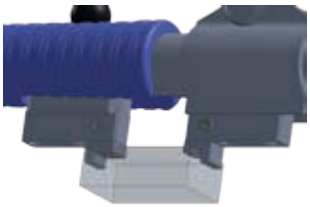


Shoulder gauge slides, internal measurement (pair)

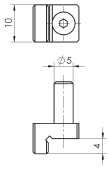




Designation	Shank Ø mm	art.no.	€
Measuring probe for short shoulders, internal	5	**500808** 1007	184,–
		5180	

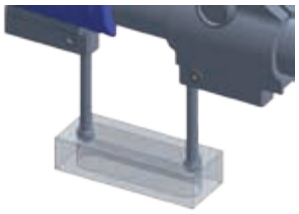


Shoulder gauge slides, external measurement (pair)





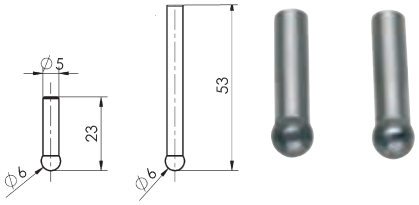
Designation	Shank Ø mm	art.no.	€
Measuring probe for short shoulders, external	5	**500808** 1008	220,–
		5180	

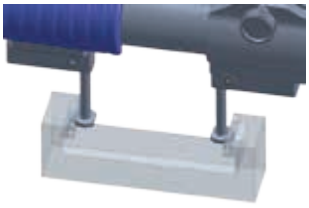


Measuring probe, ball, Ø 6 mm (pair)

Designation	Length mm	Shank Ø mm	art.no.	€
Measuring probe, ball, Ø 6 mm, short	23	5	**500808** 1005	124,–
Measuring probe, ball, Ø 6 mm, long	53	5	500808 1006	124,–

5180

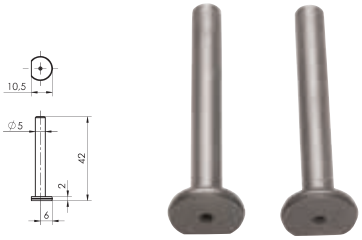


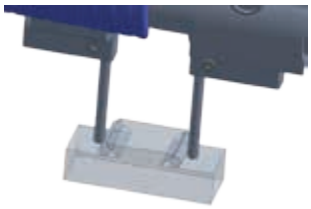


Disc probes (pair)

Designation	Length mm	Shank Ø mm	art.no.	€
Measuring probe, disc	42	5	**500808** 1009	124,–

5180

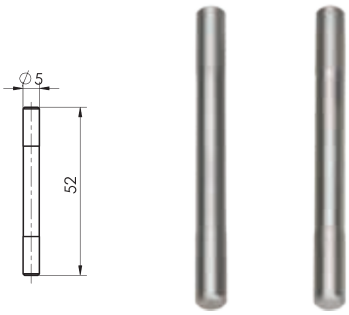


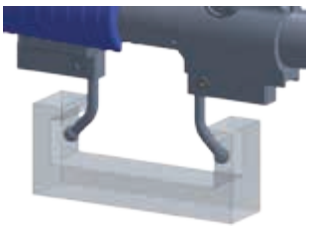


Straight probe (pair)

Designation	Length mm	Shank Ø mm	art.no.	€
Straight measuring inserts, Ø 5 mm, L = 52 mm	52	5	**500808** 2001	124,–

5180

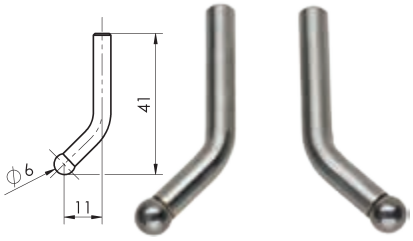




Measuring probe, ball, Ø 6 mm, offset (pair)

Designation	Projection mm	Shank Ø mm	art.no.	€
Measuring inserts offset with rounded sensor surfaces Ø 6 mm	11	5	**500808** 2002	205,–

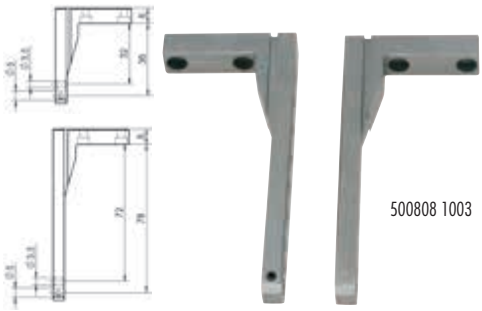
5180



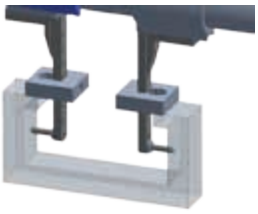
Measurement arms (pair) for external and internal measurements

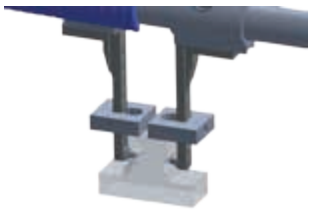
Designation	Length mm	Holding fixture Ø mm	art.no.	€
Measuring arms, short	40	5	**500808** 1002	290,–
Measuring arms, long	80	5	500808 1003	345,–

5180



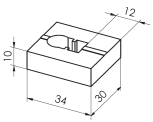
500808 1003





Depth stops (pair)

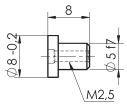
Designation	Dimensions	suitable for	art.no.	€
Depth stop	34x30	5008081002 / 5008081003	**500808** 1004	270,–
			5180	





Adapter M2.5 (pair) for attaching dial gauge special probe tips with connecting thread M2.5 x 0.45

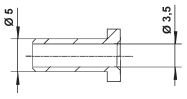
Designation	Shank Ø mm	art.no.	€
Adapter	5	**500808** 1012	96,–
		5180	





Adapter Ø 3.5 mm (pair) for attaching thread measurement inserts

Designation	Shank Ø mm	art.no.	€
Adapter	5	**500808** 1011	167,–
		5180	

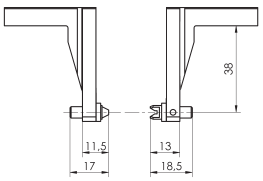


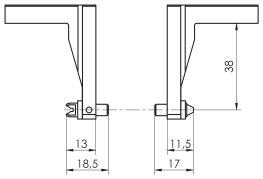


Thread measuring inserts for metric thread

- Holding shank Ø 3.5 mm
- Supplied in pairs

n mm	For internal thread art.no.	€	For external thread art.no.	€
1.0-1.25	**500808** 3004	245,–	**500808** 4005	121,–
1.5-1.75	500808 3005	245,–	500808 4006	121,–
2.0-2.5	500808 3006	245,–	500808 4007	121,–
3.0-3.5	500808 3007	245,–	500808 4008	121,–
4.0-5.0	500808 3008	245,–	500808 4009	121,–
5.5-6.0	500808 3009	245,–	500808 4010	121,–
	5180		5180	

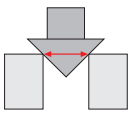


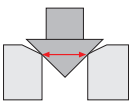


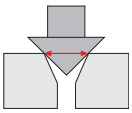
Schwenk IFM chamfer IFM

0,01 mm

- For determining the largest diameter of internal chamfers or tapers
- Direct readings (no conversion) from the special dial indicator
- 90° measuring taper


Boreholes with sharp edges


Internal taper > 90°


Internal taper < 90°

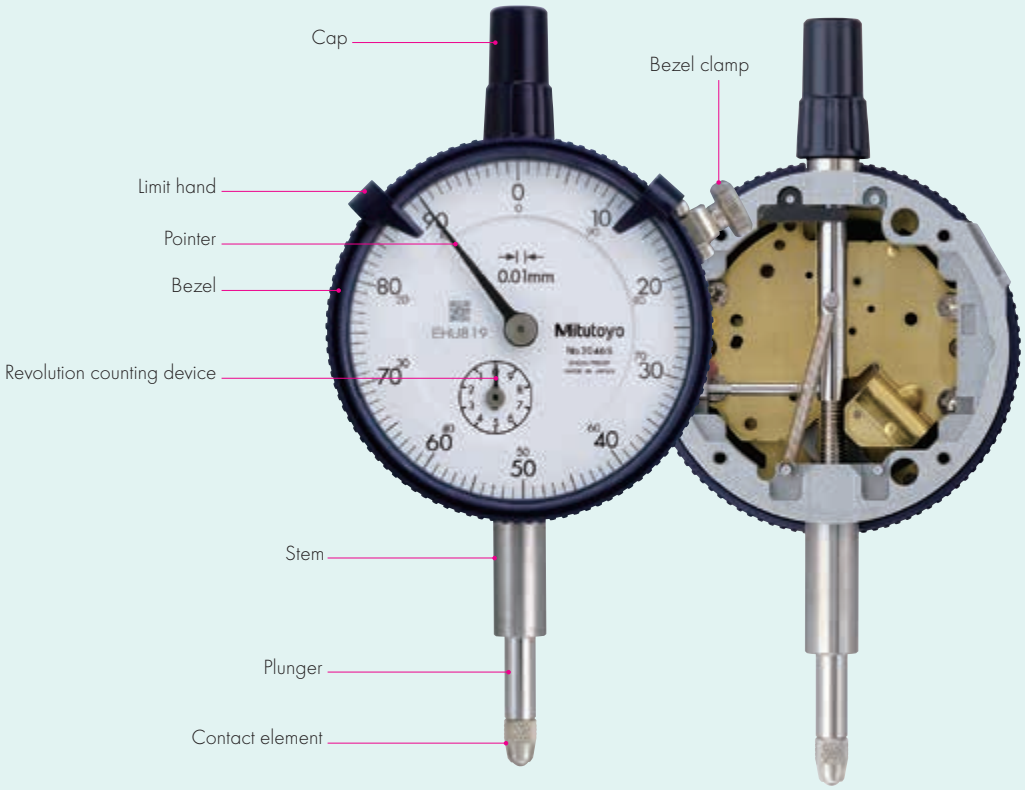

Suitable for 512017



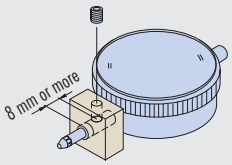
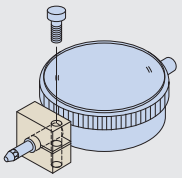
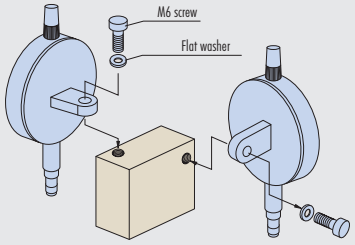
Measurement range mm	art.no.	€
0.5-20	**512019** 1020	371,60
20-40	512019 1040	533,80
	5126	

Dial indicators

INFO

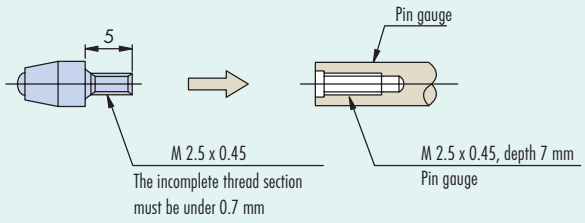


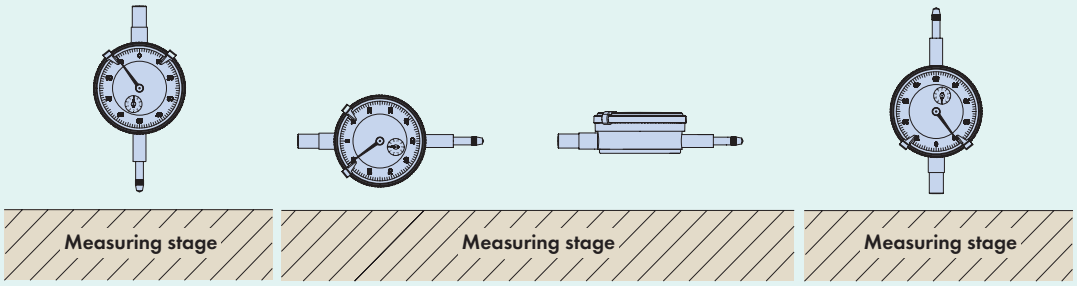
Assembly

Stem Assembly	Method	Clamp the stem with a clamping screw 	Clamping the stem by split-clamp fastening 
	Note	• Mounting hole tolerance: Ø8G7 (+0.005 to 0.02) • Clamping screw M4 to M6 • Clamping position: 8 mm or more from the lower side of the stem • Maximum torque: 150N-cm when clamping with a single M5 screw • Note that excessive clamping torque may adversely affect the spindle movement.	• Mounting hole tolerance: Ø8G7 (+0.005 to 0.02)
Fixing with a mounting lug	Method		
	Note	• Depending on the application, the mounting lugs can be changed in orientation by 90 degrees. (Setting of lug on delivery: horizontal) • The mounting lugs of the models of series 1 (No. 1911, 1913-10&1003) cannot, however, be adjusted horizontally. • To prevent cosine-effect error, ensure that the measuring spindle is positioned at right angles to the surface to be measured (with the spindle itself in line with the measuring direction).	

Contact element

- Standardised screw thread M 2.5 x 0.45 (length: 5 mm).
- When producing a contact point, the incomplete thread section at the root of the screw must be less than 0.7 mm.





Contact point down (normal position)

Plunger horizontal (measuring direction lateral)

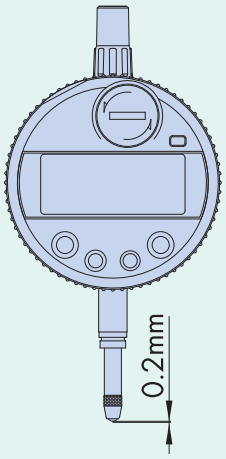
Contact point up (contrary to standard-measurement direction)

Effect of alignment on the measuring force

- In measurements with a horizontal or upwards measuring direction, the measuring force is low compared to the standard measuring direction (downwards). In these cases, the repeatability must be verified.

Setting the zero point on a digital dial indicator

The range of 0.2 mm at the end of the spindle stroke is not specified. Make sure that the spindle is raised by at least 0.2 mm when setting the zero point.



Caring for the spindle

- The spindle must not be lubricated. Otherwise dust may stick to it and cause errors.
- If the spindle is stiff, wipe it with a dry cloth or a cloth soaked in alcohol. If this leads to no improvement, consult Mitutoyo for repairs.
- Before you perform a measurement or calibration, ensure that the spindle can easily move up and down, and check the zero point for stability.

SARA® Dial indicator

DIN 878 | 0,01 mm

- Matt chrome-plated metal housing
- Rotatable outer ring for zeroing
- Two adjustable inner tolerance marks
- Probe tip thread: M2.5
- Clamping shank Ø: 8 mm
- Optional ring clamp, self-locking or with clamping screw
- Supplied in moulded packaging



Measurement range mm	Division mm	External ring Ø mm	Ring clamping	art.no.	€	Calibration art.no.	€
10	0.01	58	No	**510101** 1002	21,30	070140 0001	13,–
10	0.01	58	Yes	510101 1005	21,30	070140 0001	13,–

5121

Compact dial indicator

Measurement range mm	Division mm	External ring Ø mm	Ring clamping	art.no.	€	Calibration art.no.	€
8	0.01	42	Yes	**510102** 0008	28,95	070140 0001	13,–

5121

ATORN® Dial indicators with ceramic probe balls, shock-resistant

DIN 878 | 0,01 mm

- Measuring force max. 1.3 N
- Non-magnetic and non-conductive measuring insert
- Dimensions in accordance with DIN EN ISO 463 Issue 6/2006
- Metal housing
- With shock protection
- Rotatable metal outer ring for zeroing
- Two adjustable inner tolerance marks
- Probe tip thread: M2.5
- Clamping shank Ø: 8 mm
- Supplied in a case



Standard version

Measurement range mm	Division mm	External ring Ø mm	Measurement route per rotation of indicator mm	Number of rotation counters	art.no.	€	Calibration art.no.	€
10	0.01	58	1	Round	**511006** 0010	42,50	070140 0001	13,–
10	0.01	58	1	Concentric	511006 1010	60,–	070140 0001	13,–
25	0.01	58	1	Concentric	511006 1025	98,–	070140 0004	20,50

5192

Compact dial indicator

- 511007 1005 without shock proofing

Measurement range mm	Division mm	External ring Ø mm	Measurement route per rotation of indicator mm	Number of rotation counters	art.no.	€	Calibration art.no.	€
5	0.01	40	0.5	Round	**511007** 0005	52,–	070140 0001	13,–
10	0.01	40	1.0	Concentric	511007 1005	77,–	070140 0001	13,–

5192



Käfer Dial indicator, oil and water-tight, shock-proof

IP67 | DIN 878 | 0,01 mm

- Dimensions in accordance with DIN EN ISO 463 Issue 6/2006 (except L2 = 39.5 mm)
- **Oil and water-tight / IP67 protection rating**
- **With shock proofing**
- Outer ring can be rotated through 360°
- Two adjustable tolerance marks
- Probe tip thread M2.5
- Clamping shank Ø 8 mm



Standard version

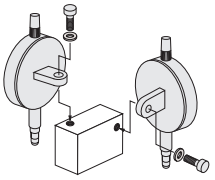
Measurement range mm	Division mm	External ring Ø mm	Measurement route per rotation of indicator mm	Measuring force max. N	art.no.	€	Calibration art.no.	€
10	0.01	61.5	1	1.6	**511008** 0010	103,55	070140 0001	13,–

5102

Mitutoyo Dial indicators

Werks-norm | 0,01 mm | 0,001 mm

- **0.01 mm or 0.001 mm readings**
- Casing made from oil-resistant plastic
- Completely free of through-holes for improved dirt protection
- Back cover: flat or with mounting lug
- Rotatable outer ring for zeroing, fixed by means of a clamping screw
- Two adjustable tolerance marks
- Surface-hardened watch glass
- Damped end point
- Robust spindle, Ø 4.8 mm
- New clamping shank easily secures the entire length
- Contact point thread M2.5
- Clamping shank Ø 8 mm
- Supplied in moulded packaging



Application example, rear side attachment eye



511001 0003



511001 0004

IP63

Compact dial indicator, 0.01 mm, outer ring Ø 40 mm

- Movement range 1 mm per pointer rotation

Measurement range mm	Division mm	Attachment eye	Accuracy fe µm	Measuring force max. N	Protection type	art.no.	€	Calibration art.no.	€
5	0.01	No	12	1.4	No protection rating	**511001** 0003	54,–	070140 0001	13,–
5	0.01	No	12	2.0	IP 63	511001 0004	105,–	070140 0001	13,–
5	0.01	Rear side	12	1.4	No protection rating	511001 0012	57,–	070140 0001	13,–

5102

Compact dial indicator 0.001 mm, outer ring Ø 40 mm

- Jewel bearing

Measurement range mm	Division mm	Attachment eye	Measurement route per rotation of indicator mm	Accuracy fe µm	Measuring force max. N	art.no.	€	Calibration art.no.	€
1	0.001	Rear side	0.2	4	1.5	**511002** 0001	163,–	070140 0001	13,–
1	0.001	-	0.2	4	1.5	511002 0002	163,–	070140 0001	13,–

5102



511002 0001

Standard dial indicator, 0.01 mm, outer ring Ø 57 mm

- Movement range 1 mm per pointer rotation

Measurement range mm	Division mm	Attachment eye	Accuracy fe µm	Measuring force max. N	Shock-proof	art.no.	€	Calibration art.no.	€
10	0.01	No	15	1.4	Yes	**511010** 0012	60,–	070140 0001	13,–
10	0.01	No	12	1.4	No	511010 0014	35,–	070140 0001	13,–
20	0.01	No	25	2.0	Yes	511010 0016	91,–	070140 0004	20,50
30	0.01	No	30	2.5	Yes	511010 0017	116,–	070140 0004	20,50
10	0.01	Rear side	12	1.4	No	511010 0101	35,–	070140 0001	13,–

5102

Standard dial indicator 0.01 / 0.001 mm, outer ring Ø 57 mm, IP64 protection rating

Measurement range mm	Division mm	Measurement route per rotation of indicator mm	Accuracy fe µm	Measuring force max. N	Shock-proof	Protection type	art.no.	€	Calibration art.no.	€
1	0.001	0.1	3	2.0	Yes	IP 64	**511015** 0001	158,–	070140 0001	13,–
10	0.01	1	12	2.5	No	IP 64	511015 0003	122,–	070140 0001	13,–

5102



511015 0003

IP64

Precision dial indicator 0.001 mm, outer ring Ø 57 mm

- Jewel bearing
- Shock-resistant

Measurement range mm	Reading mm	Measurement route per rotation of indicator mm	Accuracy fe µm	Measuring force max. N	art.no.	€	Calibration art.no.	€
1	0-100-0	0.2	3	1.5	**511010** 0001	91,–	070140 0001	13,–
1	0-100 (100-0)	0.1	3	1.5	511010 0002	118,–	070140 0001	13,–
2	0-100-0	0.3	5	1.5	511010 0003	127,–	070140 0001	13,–

5102



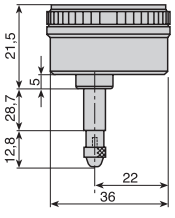
511010 0001

Dial indicator, 0.01 mm, outer ring Ø 39 mm

- Rear spindle

Measurement range mm	Division mm	Measurement route per rotation of indicator mm	Accuracy fe µm	Measuring force max. N	art.no.	€	Calibration art.no.	€
5	0.01	1	15	1.4	**511501** 0050	119,–	070140 0001	13,–

5102





Mitutoyo Safety dial indicator, shock-resistant

Werks-norm | 0,01 mm | 0,001 mm

- Single-revolution pointer avoids measurement errors by eliminating the need to take note of a second scale for pointer rotations
- Two adjustable tolerance marks
- Outer ring can be rotated to facilitate zeroing
- Shock-resistant
- Probe tip thread: M2.5
- Clamping shank Ø 8 mm
- Supplied in moulded packaging


511501 0100


511501 1200


511020 0002


511020 0001

IP64

Scale division 0.01 mm

- Spindle stroke 3.5 mm

Measurement range mm	Division mm	External ring Ø mm	Protection type	Accuracy fe µm	Measuring force max. N	art.no.	€	Calibration art.no.	Calibration €
± 0.25	0.01	57	IP 52	8	1.4	**511501** 0100	76,–	070140 0001	13,–
± 0.5	0.01	57	IP 52	10	1.4	511501 1200	66,–	070140 0001	13,–

5102

Scale division 0.001 mm

- Jewel bearing
- Spindle stroke 4.5 mm

Measurement range mm	Division mm	External ring Ø mm	Protection type	Accuracy fe µm	Measuring force max. N	art.no.	€	Calibration art.no.	Calibration €
± 0.04	0.001	57	IP 64	3	2.0	**511020** 0001	163,–	070140 0001	13,–
± 0.04	0.001	57	No protection rating	3	1.4	511020 0002	153,–	070140 0001	13,–

5102

Mitutoyo Dial indicator with large measurement range

0,01 mm

- Jewel bearing
- Rotatable outer ring for zeroing
- Ring fixed by means of a clamping screw
- Two adjustable tolerance marks
- Probe tip thread: M2.5
- Clamping shank Ø 8 mm
- **Shock proofing** (511025 0004 damped end point)
- Supplied in moulded packaging


511025 0007


511025 0004

Measurement range mm	Division mm	External ring Ø mm	Accuracy fe µm	Measuring force max. N	art.no.	€	Calibration art.no.	Calibration €
20	0.01	78	25	2.0	**511025** 0004	170,–	070140 0004	20,50
30	0.01	78	30	2.5	511025 0005	177,–	070140 0004	20,50
50	0.01	78	50	3.0	511025 0006	199,–	070140 0005	26,60
80	0.01	78	50	3.0	511025 0007	284,–	070140 0007	39,–
100	0.01	78	60	3.2	511025 0008	426,–	070140 0007	39,–

5102

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www.saratools.com



ATORN® Indicating callipers

DIN 879-1

- Compact design
- Measuring bolts hardened and precision-guided
- Measuring mechanism with ruby bearing, shock-proof
- With adjustment button for fine adjustment across the entire measurement range
- Protective sleeve to prevent accidental fine adjustment changes
- Red adjustable tolerance marks
- Contact point thread M2.5
- Clamping shank Ø 8 mm
- Supplied in moulded packaging



Measurement range mm	Division mm	Free lift mm	Measuring force N	Protection type	art.no.	€	Calibration art.no.	Calibration €
± 0.05	0.001	3.0	1	No protection rating	**513107** 0001	177,–	070125 0001	17,80
± 0.05	0.001	3.0	1	IP 53	513107 0010	180,–	070125 0001	17,80

5192

SARA® Digital dial indicator

Werks-norm | 0,01 mm | inch / mm



- Extremely easy to read with large LCD display
- Outer ring Ø 58 mm
- Clamping shank Ø 8 mm
- Probe tip thread M2.5
- **Functions:** mm/inch, ON/OFF, ZERO
- Supplied with CR 2032 battery, No. 548079 6032

Measurement range mm/inch	Reading mm/inch	Error limit mm	art.no.	€	Calibration art.no.	Calibration €
12,57/.5	0,01/.0005	0.03	**512015** 1201	98,50	070140 0002	17,–

5121

HELIOS·PREISSER Digital dial indicator wireless

Werks-norm | inch / mm | USB | RS232C | Digi-matic

NEW · NUOVO · NEU · NOUVEAU · NUEVO

integrated radio



- Excellent legibility thanks to 11mm-high digits
- Aluminium housing
- 280° rotating display field
- clamping shank Ø 8mm
- Outer ring Ø 60mm
- compatible with the radio system **ATORN-Integrated-Wireless**
- Data output via cable such as RS232, USB or Digimatic
- **Functions**: On/Off, mm/inch, TOL (tolerance value input), PRESET (user-defined values), factor input, key lock, integrated radio transmitter
- Supplied with battery CR 2450 # 548079 6450

Measurement range mm/inch	Reading mm/inch	Error limit mm	Measuring force N	art.no.	€	Calibration art.no.	Calibration €
12.5 / 0.5	0.0005 / 0.00002	0.004	0.65-0.9	**512045** 1201	391,–	070140 0002	17,–

5186

ATORN® Digital dial indicator KEEPTRONIC

IP52 | Werks-norm | inch mm | KEEP-TRONIC | USB | RS232C | Digi-matic

Data output multiCOM



- **KEEPTRONIC**electronics store the zero point, operating keys lock to prevent accidental alteration of the zero point. Battery life approx. 3 years
- Data output **multiCOM** Can be used as USB, Digimatic or RS-232
- High-contrast LCD display with 12 mm high digits
- Casing Ø: 60 mm
- Clamping shank Ø 8 mm
- Contact point thread M2.5
- **Functions:** On/off/zeroing, toggle mm/inch and reverse measuring direction, pre-set user-defined values in the display
- Supplied with CR2032 battery, no. 548079 6032
- Optional accessories: Data cables, type P-RS 232 C / P-Digimatic / P-USB, no. 512521....

Measurement range mm/inch	Reading mm/inch	Error limit mm	Measuring force N	art.no.	€	Calibration art.no.	€
12.7 / 0.5	0,01 / .0005	20	0.5 - 1	**512042** 1210	153,–	070140 0002	17,–
12.7 / 0.5	0,001 / .00005	5	0.5 - 1	512042 1201	305,–	070140 0002	17,–

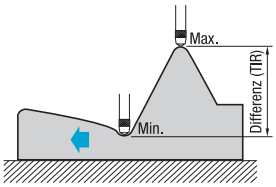
5181

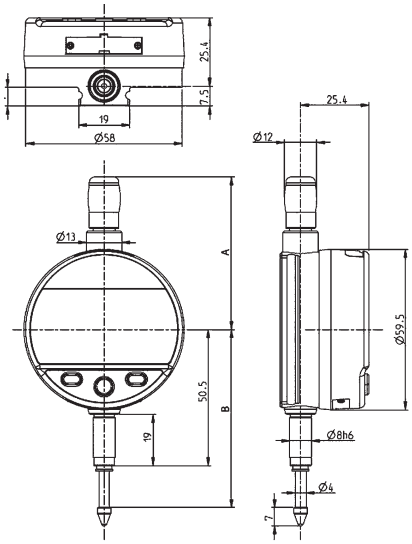
ATORN® Digital dial indicator for run-out measurements

IP51 | Werks-norm | inch mm | ABSO-LUTE | RS232C | USB



- Inductive measuring system
- Aluminium casing with plastic front plate, Ø 60 mm, coolant-proof
- Easily readable LCD display with 11 mm high digits
- Front plate can be rotated through 270°
- Energy save mode and automatic reactivation
- Coloured LEDs for tolerance evaluation
- Max. / min. / max-min for run-out measurements
- 0.001 mm version, can be switched to 0.01 mm
- PROXIMITY data output
- Clamping shank Ø 8 mm
- Contact point thread M2.5
- **Functions:**
  mm/inch toggle option
  Preset (user-defined values)
  Reverse counting direction
  Switch between ref. 1 and ref. 2 (ABS/INC)
  Hold
- Supplied with CR2032 battery, no. 548079 6032
- **Optional accessories:** Data cable: PROXIMITY-USB, no. 500700 9966 or PROXIMITY-RS, no. 500700 9965





Measurement range mm	Reading mm	Error limit mm	A mm	B mm	Measuring force N	art.no.	€	Calibration art.no.	€
12.5	0.01	10	66	54	0.65 - 0.9	**512064** 0125	355,–	070140 0002	17,–
25	0.01	10	82.5	64	0.65 - 1.15	512064 0025	399,–	070140 0004	20,50
50	0.01	20	142.5	121	1.4 - 2.9	512064 0050	869,–	070140 0005	26,60
100	0.01	20	244.5	172	1.8 - 3.8	512064 0100	1.029,–	070140 0007	39,–
12.5	0.001	3	66	54	0.65 - 0.9	512063 0125	440,–	070140 0002	17,–
25	0.001	4	82.5	64	0.65 - 1.15	512063 0025	499,–	070140 0004	20,50
50	0.001	5	142.5	121	1.4 - 2.9	512063 0050	969,–	070140 0005	26,60
100	0.001	6	244.5	172	1.8 - 3.8	512063 0100	1.099,–	070140 0007	39,–

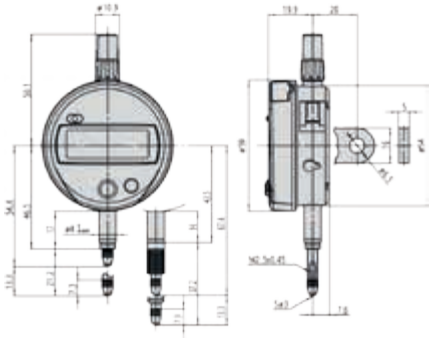
5181

Mitutoyo Digital ABSOLUTE dial indicator IDS

Werks-norm | ABSO-LUTE | Digi-matic | USB

ABSOLUTE®

- Effortless to read thanks to large 9 mm LCD digits
- Die-cast aluminium casing
- **ABSOLUTE** scale
- Carbide contact point with M2.5 thread
- Clamping shank Ø 8 mm
- Unrestricted travel speed
- **Functions:** On/off, zeroing (ORIGIN), reverse measuring direction (+/-)
- **Optional accessories:** Digimatic cable type F, no. 563100 0051 (1 m), no. 563100 0052 (2 m); USB cable type F-USB, no. 563110 0006





Standard version

- Battery life: 20,000 hrs.
- Supplied in moulded packaging with SR44 battery, no. 500534 0001

Measurement range mm	Reading mm	Error limit mm	External ring Ø mm	Measuring force N	art.no.	€	Calibration art.no.	€
12.7	0.01	0.02	59	1.5	**512029** 1201	149,–	070140 0002	17,–
12.7	0.001	0.003	59	1.5	512029 1210	306,–	070140 0002	17,–

5102

Solar

- First ABSOLUTE dial indicator with solar technology
- New modern solar cell allows operation from a light intensity of 40 Lux
- When the light level is over 40 Lux, the capacitor builds up a voltage reserve (120 min. charge = 240 min. voltage reserve)
- The set zero point or setting gauge is retained even during long periods of darkness
- Supplied in moulded packaging



Measurement range mm	Reading mm	Error limit mm	External ring Ø mm	Measuring force max. N	art.no.	€	Calibration art.no.	€
12, 7	0.01	0.020	59	1.5	**512028** 1201	152,–	070140 0002	17,–
12.7	0.001	0.003	59	1.5	512028 1210	310,–	070140 0002	17,–

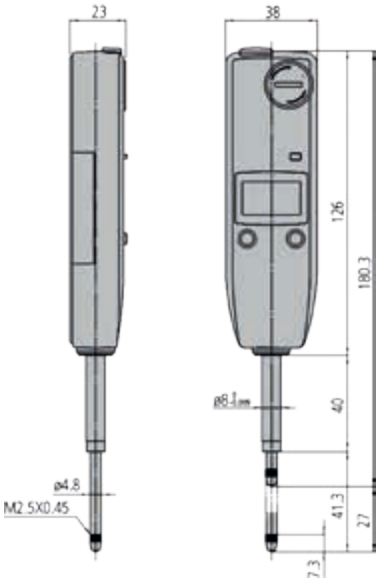
5102

Mitutoyo Digital ABSOLUTE dial indicator IDU

Werks-norm | 0,01 mm | ABSO-LUTE | Digi-matic | USB

ABSOLUTE®

- **ABSOLUTE scale**
- Casing size: 38 x 126 x 23 mm
- Clamping shank Ø 8 mm
- Contact point: Carbide with M2.5 thread
- Battery life approx. 20,000 hours
- **Functions:** On/off, zero point (ORIGIN), reverse counting direction (+/-)
- Supplied in moulded packaging with SR44 battery (no. 500534 0001) and lifting lever
- **Optional accessories:** Digimatic cable type F, no. 563100 0051 (1 m), no. 563100 0052 (2 m); USB cable type F-USB, no. 563110 0006





Measurement range mm	Reading mm	Error limit mm	Measuring force max. N	art.no.	€	Calibration art.no.	€
25	0.01	0.020	1.8	**512030** 0101	209,–	070140 0004	20,50

5102

Mitutoyo Digital ABSOLUTE dial indicator IDC

Werks-norm | ABSO-LUTE | Digi-matic | USB

ABSOLUTE®

- **ABSOLUTE scale**
- Unrestricted travel speed
- Extremely easy to read with 11 mm high digits
- Display component can be rotated through 330° for better readability
- **Function Lock** for locking keys to avoid operating errors
- Programmable Ax factor (x = spindle travel)
- Plunger can be lifted from above by means of an optional lifting knob
- Battery life approx. 7,000 hrs.
- **Functions:** MODE for switching between tolerance, factor and pre-set modes; SET for confirming inputs; DATA/ON/OFF for data transfer and power on/off
- Supplied in moulded packaging with SR44 battery, no. 500534 0001
- **Optional accessories:** Digimatic cable type F, no. 563100 0051 (1 m), no. 563100 0052 (2m); USB cable type F-USB, no. 563110 0006



512018 1201

512018 2501

Standard version

Measurement range mm	Reading mm	External ring Ø mm	Error limit mm	Measuring force max. N	art.no.	€	Calibration art.no.	Calibration €
12.7	0.01	59	0.020	0.9	**512018** 1211	266,–	070140 0002	17,–
25.4	0.01	59	0.020	1.8	512018 2511	372,–	070140 0004	20,50
50.8	0.01	59	0.040	2.3	512018 5011	578,–	070140 0005	26,60
12.7	0.001/0.01	59	0.003	1.5	512018 1201	351,–	070140 0002	17,–
25.4	0.001/0.01	59	0.003	1.8	512018 2501	422,–	070140 0004	20,50
50.8	0.001/0.01	59	0.005	2.3	512018 5001	636,–	070140 0005	26,60

5102

With low measuring force, vertical use only

Measurement range mm	Reading mm	External ring Ø mm	Error limit mm	Measuring force max. N	art.no.	€	Calibration art.no.	Calibration €
12.7	0.01	59	0.020	0.2-0.5	**512018** 1212	325,–	070140 0002	17,–
12.7	0.001	59	0.003	0.4-0.7	512018 1202	439,–	070140 0002	17,–

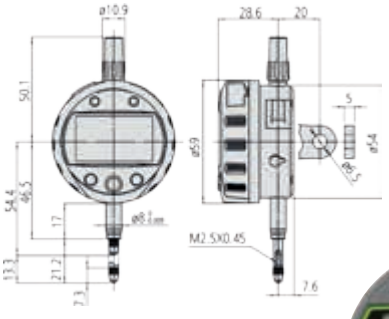
5102

Mitutoyo IDC digital ABSOLUTE dial indicator for run-out measurements

Werks-norm | ABSO-LUTE | Digi-matic | USB

ABSOLUTE®

- Dial indicator for run-out measurement; allows max., min. and difference values (TIR) to be retrieved
- ABSOLUTE scale
- Combined digital and analogue display
- Display component can be rotated through 330° for better readability
- Programmable Ax factor (x = spindle
- Adjustable resolution 0.01 mm / 0.001 mm
- 3 memory slots for pre-set and tolerance values
- Configurable via PC (special interface optional)
- Contact point M2.5,
- Clamping shank Ø 8 mm
- **Functions:** ON/OFF, MENU for switching between max. / min. / TIR modes, PRESET/SET for pre-setting values / inputting tolerances, START/ZERO/ABS for user-defined zeroing / incremental mode, view selection in tolerance mode, +/- to reverse measuring direction
- Supplied in moulded packaging with CR 2032 battery no. 548079 6032
- **Optional accessories:** Digimatic cable type F, no. 563100 0051 (1 m), no. 563100 0052 (2 m); USB cable type F-USB, no. 563110 0006





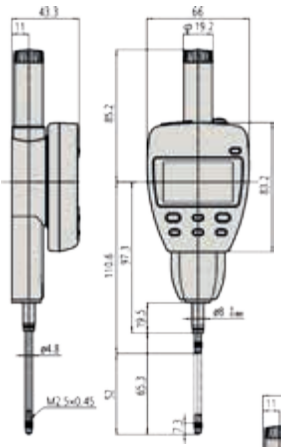
Measurement range mm	Reading mm	Error limit mm	External ring Ø mm	art.no.	€	Calibration art.no.	Calibration €
12.7	0.001 / 0.01	0.003	60.5	**512026** 1211	439,–	070140 0002	17,–

5102

Mitutoyo Digital ABSOLUTE dial indicator IDF

Werks-norm | ABSO-LUTE | 230 V | Digi-matic | USB

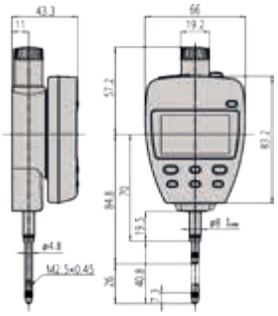
- Power supply via mains adapter
- **ABSOLUTE scale**
- Backlit LCD display
- Combined digital and analogue display, which switches colour from green to red if the pre-set tolerance limits are exceeded
- Clamping shank Ø 8 mm
- Unrestricted travel speed
- Max., min. or difference values (TIR) can be selected for run-out measurements
- **Functions:** (ON/OFF) for power on/off; (MODE) for switching between: normal measurement, tolerance input, max. hold value, min. hold value, run-out measurement (max-min difference); (RANGE/Adj) for switching the analogue display range, centring the zero point of the analogue display pointer; (PRESET/SET) for determining the absolute starting point, pre-setting user-defined values, inputting tolerance values, confirming mode selection; (ZERO/ABS) for user-defined zeroing, switching between absolute/comparative measurement systems; (RES) for switching between 0.001 mm and 0.01 mm; (+/-) sign selection, function lock
- Supplied in moulded packaging, with mains adapter and lifting lever
- **Optional accessories:** Digimatic cable type D, no. 563100 0031 (1 m), no. 563100 0032 (2 m), USB cable type D-USB, no. 563110 0004



512022 0050

ABSOLUTE®





512022 0025



Display outside tolerance

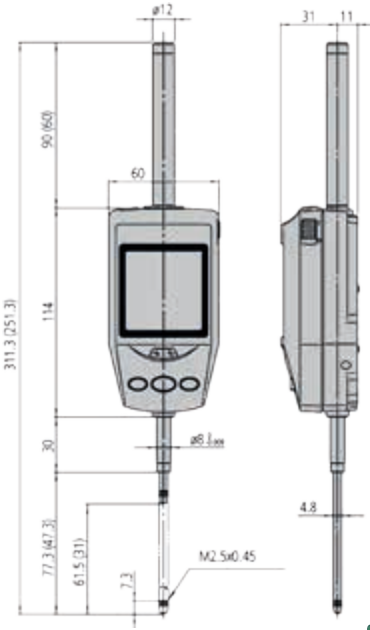
Measurement range mm	Reading mm	Error limit mm	Measuring force max. N	art.no.	€	Calibration art.no.	Calibration €
25	0.01 / 0.001	0.003	1.8	**512022** 0025	622,–	070140 0004	20,50
50	0.01 / 0.001	0.006	2.3	512022 0050	676,–	070140 0005	26,60
50	0.01 / 0.001	0.003	2.3	512022 0051	834,–	070140 0005	26,60

5102

Mitutoyo Digital dial indicator IDH

Werks-norm | 230 V | Digi-matic | USB

- **Can be remote controlled**
- **Power supply via mains adapter**
- Photoelectric backlit glass scale
- Max. travel speed 1,000 mm/sec.
- Backlit LCD display
- Combined digital and analogue display
- Max., min. or difference values (TIR) can be selected for run-out measurements
- Optional remote control available
- Combined Digimatic / RS-232 C interface data output, can be used in both directions
- Clamping shank Ø 8 mm
- **Functions:** ON/OFF, MODE for switching from normal mode to tolerance evaluation, resolution for digital and analogue display, setup menu, MAX, MIN and TIR, toggle between 0.001 mm and 0.01 mm, (+/-) sign selection, SET/ZERO for confirming inputs and the display zero point, DATA/fn for data transfer and keypad lock
- Supplied in moulded packaging with mains adapter and factory certificate
- **Optional accessories:** Digimatic cable type D, no. 563100 0031 (1 m), no. 563100 0032 (2 m), USB cable type D-USB, no. 563110 0004

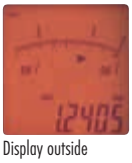




512035 0030



Display within tolerance



Display outside tolerance

Dial indicator

Measurement range mm	Reading mm	Error limit mm	Measuring force max. N	art.no.	€	Calibration art.no.	Calibration €
30	0.001 / 0.0005	0.002	2.0	**512035** 0030	648,–	070140 0004	20,50
60	0.001 / 0.0005	0.003	2.5	512035 0060	703,–	070140 0007	39,–

5102

Accessories

Designation	art.no.	€
Remote control	**512036** 0003	82,–
Signal cable, RS-232 C, 1 m	512036 0001	182,–
Signal cable, RS-232 C, 2 m	512036 0002	205,–

5102



512036 0003

Mitutoyo Digital ABSOLUTE dial indicators IDN / IDB

IP66 | Werks-norm | ABSO-LUTE | Digi-matic | USB

ABSOLUTE®

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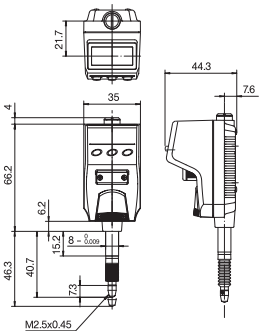
- Small and slim digital dial indicators for installation in fixtures with limited space
- **ABSOLUTE scale**
- Battery life approx. 7,000 hours
- Unrestricted travel speed
- Easy to read thanks to large display
- Type B readings from above, Type N readings from the front
- **IP66 protection rating**, oil-resistant casing
- Small casing dimensions, w = 35 mm / h = 60 mm
- **Display can be flipped 180° depending on installation position**
- Dial indicators with 0.001 mm resolution, can be switched to 0.01 mm
- Can be controlled remotely via special cable (optional accessory)
- **Functions:** On/off/DATA for transmitting measurement values, SET for confirming inputs, MODE for selecting tolerances, zeroing, counting direction, display switching
- Supplied in moulded packaging with SR44 battery, no. 500534 0001
- **Optional accessories:** Digimatic cable type G, no. 563100 0061 (1 m), no. 563100 0062 (2 m); USB cable type G-USB, no. 563110 0007

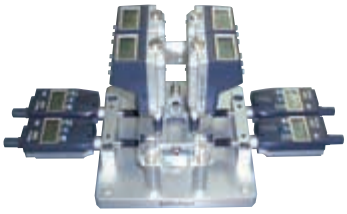


Display can be rotated through 180°



Type B



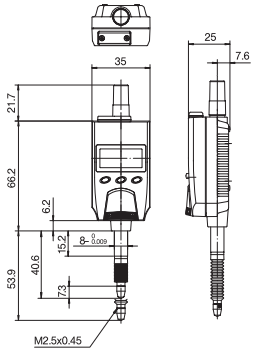


Slim design! Perfect for use in fixtures





Type N



Measurement range mm	Reading mm	Type	Error limit mm	Measuring force max. N	art.no.	€	Calibration art.no.	€
5.0	0.01	IDB	0.03	2.0	**512031** 0005	261,–	070140 0001	13,–
5.0	0.001/0.01	IDB	0.004/0.02	2.0	512031 0105	350,–	070140 0001	13,–
12.7	0.01	IDN	0.03	2.5	512031 0012	234,–	070140 0002	17,–
12.7	0.001/0.01	IDN	0.004/0.02	2.5	512031 0112	321,–	070140 0002	17,–

5102

Accessories

Designation	for type	art.no.	€
Cover plate with lug	IDB / IDN	**512032** 0003	18,–
Control cable, 1 m (external zero / PRESET)	IDB / IDN	512032 0001	160,–
Control cable, 2 m (external zero / PRESET)	IDB / IDN	512032 0002	182,–

5102

Mitutoyo IDC digital ABSOLUTE dial indicator with calculation function

IP42 | Werks-norm | ABSO-LUTE | Digi-matic | USB

ABSOLUTE®

- **ABSOLUTE scale**
- Suitable for use with chamfer gauges or measuring bridges for determining diameters
- Freely programmable calculation formula Ax + B + Cx-1
- Combined digital/analogue display
- Resolution can be selected in 12 steps, 0.0002 mm to 1 mm
- Display part can be rotated through 330° for better reading
- 3 memory slots for pre-set and tolerance values
- Configurable via PC (special interface optional)
- Clamping shank Ø 8 mm
- Probe tip thread M2.5
- **Functions:** Zeroing (ORIGIN), input tolerance values (TOL), input user-defined values (PRESET), confirm set formula, data transfer (DATA), hold value (HOLD), input calculation function (MODE), on/off
- Supplied in moulded packaging with battery CR 2032 No. 548079 6032
- **Special accessories:** Digimatic cable type F, No. 563100 0051 (1 m), No. 563100 0052 (2 m), USB cable type F-USB, no. 563110 0006



Suitable for 512019



Measurement range mm	Error limit mm	art.no.	€	Calibration art.no.	€
12.7	0.003	**512017** 1201	541,–	070140 0002	17,–

5102

Mitutoyo Dial indicator accessories

Coloured tolerance markings

- Transparent
- For dial indicators with outer ring Ø 57 mm (size 55.6 mm)
- Pack of 10

Designation	Colour	art.no.	€
Red tolerance marking	Red	**517010** 0001	12,–
Green tolerance marking	Green	517010 0002	12,–

5102


517010 0002


517010 0001

Cover plate

- With magnet
- Suitable for analogue dial indicators (no. 511010.... / 511015....) and IDC / IDF digital dial indicators

Designation	art.no.	€
Cover plate with magnet	**517015** 0020	48,–

5102


517015 0020

Lifting knob

suitable for	art.no.	€
Digital dial indicators with measurement range 12.7 mm	**512037** 0004	30,–
IDC dial indicators with measurement range 25.4 mm	512037 0001	62,–
IDC dial indicators with measurement range 50.8 mm	512037 0003	74,–

5102



Lifting lever and wire release

- Lifting levers and wire releases are screwed onto or into the respective dial indicator and are used to lift the measuring bolt when changing workpieces
- Wire releases have approx. 12 mm of travel (for IDS, IDC, IDF, IDU), 30 mm for IDH dial indicators

Designation	suitable for dial indicator	art.no.	€
Lifting lever for operating the plunger	Analogue, 511010.... (10 mm), 511015....	**512025** 0149	7,–
Lifting lever for operating the plunger	Analogue, 511001...., 511002....	512025 0206	11,–
Lifting lever for operating the plunger	IDS, IDC (12.7 mm)	512025 0101	10,–
Lifting lever for operating the plunger	IDF, IDH, IDU	512020 0300	2,–
Wire remover	IDS, IDC, IDF IDH, IDU	512505 0001	30,–

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512025 0149


512020 0300


512505 0001

Measuring bridge

- For depth measurements
- Made from hardened and lapped tool steel
- **Holding fixture for dial indicators with shank diameter 8 mm**
- Matt chrome-plated
- Supplied in a wooden case with recess for Ø 58 mm dial indicator

Base size mm	art.no.	€	Calibration art.no.	€
101 x 17	**504902** 0002	74,50	076001 0001	13,–
63 x 17	504902 0001	68,50	076001 0001	13,–

5121


504902 0001


504902 0002

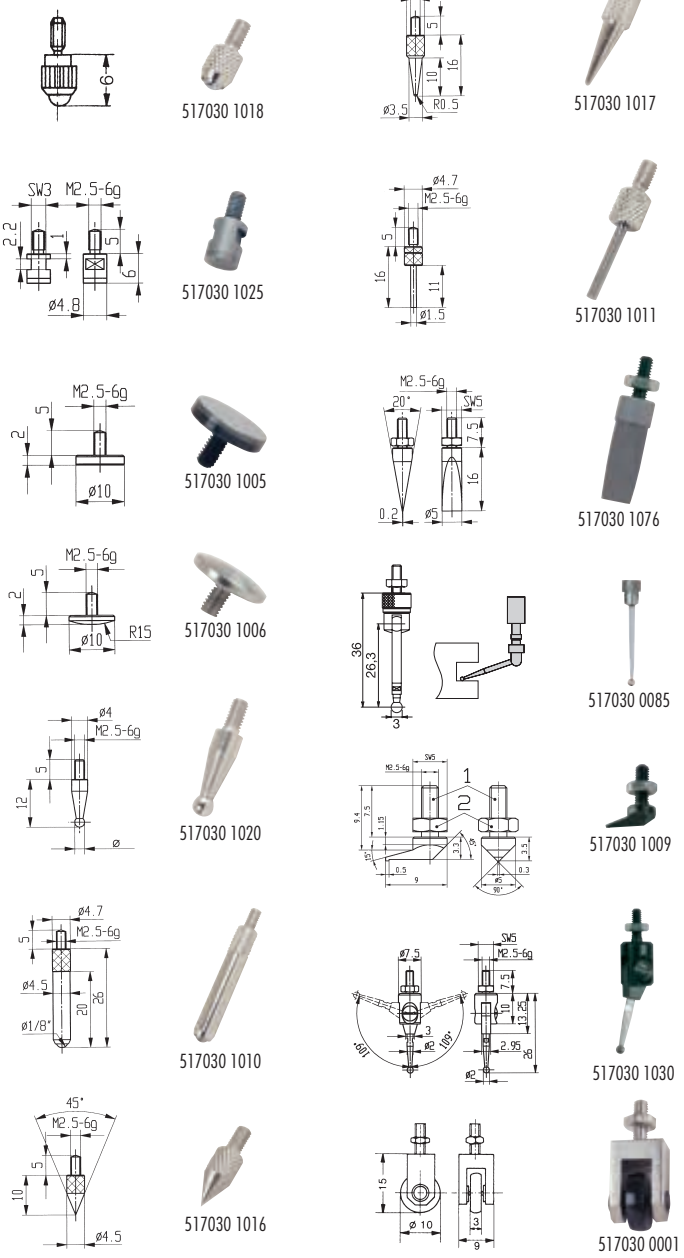
Accessories for dial indicators and indicating callipers

- Contact points in alternative designs or with ruby/sapphire tips available on request
- Connection thread M2.5 x 0.45 mm

Special-purpose contact points

Probe point design	Material probe point	Ø mm	L mm	art.no.	€
Ball (standard measurement end)	Steel	3	-	**517030** 1018	0,93
Ball (standard measurement end)	Carbide	3	-	517030 1029	4,59
Ball (standard measurement end)	Ruby	3	-	517030 1060	8,45
Flat	Steel	4.8	-	517030 1002	4,19
Flat	Carbide	4.8	-	517030 1025	26,70
Flat	Steel	10	-	517030 1005	4,65
Flat	Steel	20	-	517030 1007	18,30
Flat	Steel	30	-	517030 1012	18,30
Flat	Carbide	10	-	517030 1027	46,10
Spherical	Steel	10	-	517030 1006	5,90
Ball	Steel	1	-	517030 1051	7,10
Ball	Steel	2	-	517030 1052	7,10
Ball	Steel	3	-	517030 1020	7,05
Ball	Steel	4	-	517030 1054	7,10
Ball	Steel	5	-	517030 1055	7,10
Ball	Steel	6	-	517030 1056	7,10
Ball	Carbide	1	-	517030 1081	22,30
Ball	Carbide	2	-	517030 1082	22,30
Ball	Carbide	3	-	517030 1080	22,30
Ball	Carbide	4	-	517030 1084	22,30
Ball	Carbide	5	-	517030 1085	22,30
Ball	Carbide	6	-	517030 1086	22,30
Ball	Steel	3	26	517030 1010	3,51
Ball	Carbide	3	26	517030 1040	11,95
Tapered	Steel	-	-	517030 1016	5,55
Pointed tip	Steel	-	-	517030 1017	5,25
Cylindrical	Steel	-	40	517030 1008	10,20
Cylindrical	Steel	-	11	517030 1011	7,40
Cylindrical	Carbide	-	11	517030 1070	27,30
Blade	Carbide	-	-	517030 1076	60,–
Roller	Steel	-	-	517030 0001	57,–
Offset	Steel	-	-	517030 1009	44,60
Swivel-mounted	Steel	-	26	517030 1030	66,50
Swivel-mounted	Steel	-	36	517030 0085	26,–

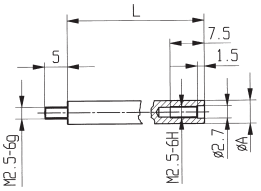
5102



Replaceable extensions

- Connection thread M2.5 x 0.45 mm
- Probe bolt diameter 5 mm





L mm	art.no.	€
10	**517035** 0010	3,–
15	517035 0015	6,–
20	517035 0020	6,–
30	517035 0030	7,–
40	517035 0040	9,–
50	517035 0050	10,–

5102

L mm	art.no.	€
60	517035 0060	14,–
70	517035 0070	16,–
80	517035 0080	17,–
90	517035 0090	19,–
100	517035 0100	19,–

5102

Kroeplin Längenmesstechnik Analogue fast display callipers IP65

IP65 Werks-norm

- 1 fixed and 1 moving probe arm
- Measurement result can be read directly and easily from the clearly laid out dial indicator
- with tolerance markers



520051 0004

External fast display callipers

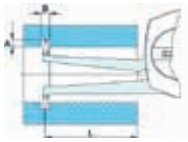
- For quickly measuring walls, metal sheets, foils etc.

Measurement range mm	Measurement depth mm	Measuring probe length mm	Error limit mm	Reading mm	Measuring probe mm	art.no.	€	Calibration art.no.	Calibration €
0-20	85	24.6	0.03	0.01	Carbide ball 1.5	**520051** 0004	368,–	071001 0001	26,–
0-50	167	30	0.05	0.05	Carbide ball, 3.0	521014 0030	423,60	071001 0001	26,–

5123



520065 0003



Internal fast display calliper

- For quickly measuring internal grooves, recesses and bores

Measurement range mm	Measurement depth mm	Groove depth A max. mm	Groove width B min. mm	Error limit mm	Reading mm	Measuring probe mm	art.no.	€	Calibration art.no.	Calibration €
2.5-12.5	12	0.7	0.4	0.015	0.005	Cutting edge R0.1	**520065** 0001	368,–	071001 0001	26,–
5-15	35	2.3	0.8	0.015	0.005	Carbide ball 0.6	520065 0002	368,–	071001 0001	26,–
10-30	85	5.2	1.2	0.03	0.01	Carbide ball, 1.0	520065 0003	368,–	071001 0001	26,–
20-40	85	7.0	1.2	0.03	0.01	Carbide ball, 1.0	520065 0004	368,–	071001 0001	26,–
30-50	85	7.0	1.2	0.03	0.01	Carbide ball, 1.0	520065 0005	368,–	071001 0001	26,–
40-60	85	8.3	1.2	0.03	0.01	Carbide ball, 1.0	520065 0006	368,–	071001 0001	26,–
50-70	85	8.3	1.2	0.03	0.01	Carbide ball, 1.0	520065 0007	368,–	071001 0001	26,–
60-80	85	8.3	1.2	0.03	0.01	Carbide ball, 1.0	520065 0008	368,–	071001 0001	26,–
70-90	85	8.3	1.2	0.03	0.01	Carbide ball, 1.0	520065 0009	368,–	071001 0001	26,–
80-100	85	8.3	1.2	0.03	0.01	Carbide ball, 1.0	520065 0010	368,–	071001 0001	26,–
15-65	188	5.5	2.0	0.05	0.05	Carbide ball 1.5	521015 0065	423,60	071001 0001	26,–
40-90	192	8.3	2.5	0.05	0.05	Carbide ball, 2.0	521015 0090	423,60	071001 0001	26,–
70-120	192	8.3	2.5	0.05	0.05	Carbide ball, 2.0	521015 0120	488,–	071001 0001	26,–

5123

Kroeplin Längenmesstechnik Digital fast display callipers IP67 with digital display

IP67 | Werks-norm | inch mm | USB | Digi-matic

NEW · NUOVO · NY · NOUVEAU · NUEVO



- handy fast display callipers for internal and external measurements
- Adjustable increments: 0.001/ 0.002/ 0.005/ 0.01/ 0.02/ 0.05mm
- improved analogue display with a display range of 250°
- optional Bluetooth interface (up to 8 devices simultaneously)
- optional USB and DIGIMATIC interface
- Storage for 100 measurement values
- **Functions**: Control lever, measurement program selection, start menu and functions, data transfer, ON/OFF / 0-PRESET
- Supplied with 2 batteries AA # 548079 4006
- **Special accessories**: Digimatic interface adapter No. 524002 0005 plus Digimatic cable Type E, No. 563100 0041 (1m), No. 563100 0042 (2m), USB cable Type E-USB No. 5631100005

External fast display calliper

- For quickly measuring walls, metal sheets, foils etc.

Measurement range mm	Measuring probe Hf/Hb length mm	Measurement depth mm	Reading mm	Error limit mm	art.no.	€	Calibration art.no.	Calibration €
0-10	19.1/18.6	35	0.005	0.015	**521019** 0013	384,90	071001 0001	26,–
0-20	24.6	85	0.005	0.015	521019 0012	384,90	071001 0001	26,–

5123

Internal fast display calliper

- For quickly measuring internal grooves, recesses and bores

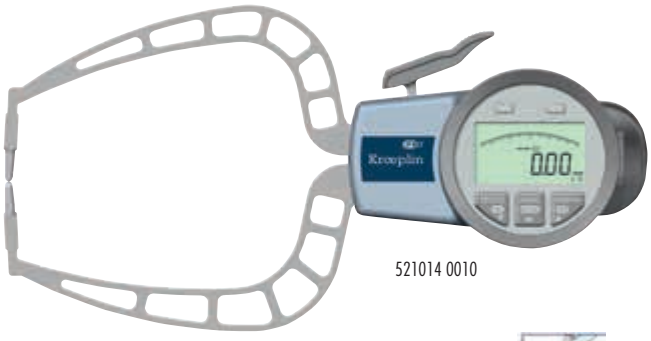


Measurement range mm	Measurement depth mm	Groove depth A max. mm	Groove width B min. mm	Error limit mm	Reading mm	art.no.	€	Calibration art.no.	Calibration €
10-30	85	5.2	1.2	0.03	0.01	**521012** 0022	384,90	071001 0001	26,–
2.5-12.5	12	0.7	0.4	0.015	0.005	521012 0020	384,90	071001 0001	26,–
20-40	85	7.0	1.2	0.03	0.01	521012 0023	384,90	071001 0001	26,–
30-50	85	7.0	1.2	0.03	0.01	521012 0024	384,90	071001 0001	26,–
40-60	85	8.3	1.2	0.03	0.01	521012 0025	384,90	071001 0001	26,–
50-70	85	8.3	1.2	0.03	0.01	521012 0026	384,90	071001 0001	26,–
5-15	35	2.3	0.8	0.015	0.005	521012 0021	384,90	071001 0001	26,–
60-80	85	8.3	1.2	0.03	0.01	521012 0027	384,90	071001 0001	26,–
70-90	85	8.3	1.2	0.03	0.01	521012 0028	384,90	071001 0001	26,–
80-100	85	8.3	1.2	0.03	0.01	521012 0029	384,90	071001 0001	26,–

5123

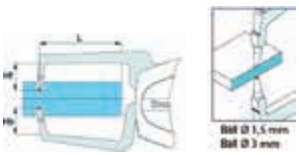
Kroeplin Längenmesstechnik Digital external fast display calliper IP67

IP67 | Werks-norm | inch mm | USB | Digi-matic



521014 0010

- **Analogue/digital display**
- handy dial calliper gauge
- with absolute/relative measurement programs
- application-specific measurement programs
- red/green display for tolerance measurements
- **Functions**: Control lever, measurement program selection, start menu and functions, data transfer, ON/OFF, 0-PRESET
- Supplied with 2 batteries LR03 No. 548079 4003
- **Special accessories**: Interface adapter Type N, No. 5240020005 plus Digimatic cable Type E, No. 563100 0041 (1m), No. 563100 0042 (2m), USB cable Type E-USB, No. 5631100005

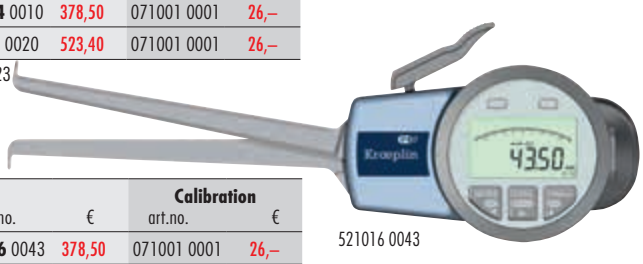


External fast display calliper

- For quickly measuring walls, metal sheets, foils etc.

Measurement range mm	Measuring probe Hf/ Hb length mm	Measurement depth mm	Reading mm	Error limit mm	Measuring probe mm	art.no.	€	Calibration art.no.	Calibration €
0-30	30	115	0.02	0.04	Carbide ball, 3.0	**521014** 0010	378,50	071001 0001	26,–
0-50	30	167	0.02	0.06	Carbide ball, 3.0	521014 0020	523,40	071001 0001	26,–

5123



521016 0043

Internal fast display calliper

- For quickly measuring internal grooves, recesses and bores

Measurement range mm	Measurement depth mm	Groove depth A max. mm	Groove width B min. mm	Error limit mm	Reading mm	art.no.	€	Calibration art.no.	Calibration €
13-43	127	5.5	1.8	0.04	0.02	**521016** 0043	378,50	071001 0001	26,–
15-65	188	5.5	2.0	0.06	0.04	521016 0065	523,40	071001 0001	26,–
30-60	132	6.5	2.0	0.04	0.02	521016 0060	378,50	071001 0001	26,–
50-80	132	8.5	2.3	0.04	0.02	521016 0080	378,50	071001 0001	26,–

5123

Kroeplin Längenmesstechnik Digital fast display callipers IP67

IP67 | Werks-norm | inch / mm | USB | Digi-matic



- Extra-small design, therefore very handy fast display calliper for indoor and outdoor measurements
- Adjustable increments: 0.001 / 0.002 / 0.005 / 0.01 mm
- Enhanced analogue display with a display area of 250°
- Li-ion battery with inductive charging, no battery replacement required
- Optional Bluetooth interface (up to 8 devices at once)
- Optional USB and Digimatic interface
- Memory can store up to 100 measurement values
- **Functions**: Control lever, measurement program selection, start menu and functions, data transfer, ON/OFF, 0-PRESET
- Supplied with charging cradle and Bluetooth dongle (Bluetooth interface adapter optional)
- **Special accessories**: Digimatic interface adapter No. 5240020006 plus Digimatic cable type E, No. 563100 0041 (1 m), No. 563100 0042 (2 m); USB cable type E-USB, No. 5631100005

External fast display calliper

Measurement range mm	Measuring probe Hf/ Hb length mm	Measurement depth mm	Reading mm	Error limit mm	Measuring probe mm	art.no.	€	Calibration art.no.	€
0-15	17	45	0.001	0.010	Carbide ball 1.5 mm	**521018** 0001	430,80	071001 0001	26,–
0-15	12	45	0.001	0.015	Cutting edge R0.4 mm	521018 0002	430,80	071001 0001	26,–

5123



521018 0001

Internal fast display calliper

Measurement range mm	Measurement depth mm	Groove depth A max. mm	Groove width B min. mm	Error limit mm	Reading mm	Measuring probe mm	art.no.	€	Calibration art.no.	€
10-25	46	4.0	1.5	0.01	0.001	Carbide ball, 1.0	**521018** 0103	430,80	071001 0001	26,–
2.5-12.5	12	0.7	0.6	0.01	0.001	Cutting edge R0.12	521018 0101	430,80	071001 0001	26,–
5-20	44	2.2	0.8	0.01	0.001	Carbide ball 0.6	521018 0102	430,80	071001 0001	26,–

5123



521018 0102

Accessories

- Can only be used with fast display callipers # 521018....

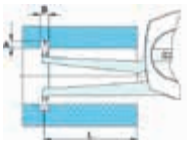
Designation	art.no.	€
Interface adapter for Bluetooth applications	**524002** 0010	90,10
Interface adapter	524002 0006	90,10

Kroeplin Längenmesstechnik Digital internal fast display calliper with 3-point contact IP67

IP67 | Werks-norm | inch / mm | Digi-matic | USB



- 3-point contact improves centring for a faster measurement process, reliable measurement and accurate results
- Adjustable increments: 0.001/ 0.002/ 0.005/ 0.01/ 0.02/ 0.05mm
- improved analogue display with a display range of 250°
- optional Bluetooth interface (up to 8 devices simultaneously)
- optional USB and DIGIMATIC interface
- Storage for 100 measurement values
- **Functions**: Control lever, measurement program selection, start menu and functions, data transfer, ON/OFF / 0-PRESET
- Supplied with 2 batteries AA # 548079 4006
- **Special accessories**: Digimatic interface adapter No. 524002 0005 plus Digimatic cable Type E, No. 563100 0041 (1m), No. 563100 0042 (2m), USB cable Type E-USB No. 5631100005





Measurement range mm	Measurement depth mm	Groove depth A max. mm	Groove width mm	Error limit mm	Reading mm	Measuring probe mm	art.no.	€	Calibration art.no.	€
7-14	34	2.2	0.8	0.01	0.002	Carbide ball 0.6	**521017** 1014	462,60	071001 0001	26,–
10-20	75	3.5	1.6	0.02	0.005	Carbide ball, 1.0	521017 1020	462,60	071001 0001	26,–
15-30	77	5.0	1.5	0.02	0.005	Carbide ball, 1.0	521017 1030	462,60	071001 0001	26,–
25-45	85	7.0	1.6	0.02	0.005	Carbide ball, 1.0	521017 1045	462,60	071001 0001	26,–
40-60	84	8.0	1.6	0.02	0.005	Carbide ball, 1.0	521017 1060	462,60	071001 0001	26,–
55-75	84	8.0	1.6	0.02	0.005	Carbide ball, 1.0	521017 1075	462,60	071001 0001	26,–
70-90	84	8.5	1.6	0.02	0.005	Carbide ball, 1.0	521017 1090	462,60	071001 0001	26,–
85-105	84	9.0	1.6	0.02	0.005	Carbide ball, 1.0	521017 1105	462,60	071001 0001	26,–

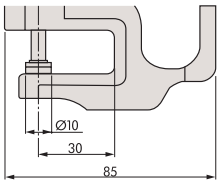
5123

Mitutoyo Quick-acting thickness gauge

0,01 mm



- With analogue dial indicator
- Easy zero point adjustment
- Ceramic measuring faces



Planarity: 5 µm



520101 0005

Measurement range mm	Reading mm	Error limit mm	Projection mm	art.no.	€	Calibration art.no.	Calibration €
0-10	0.01	0.020	30	**520101** 0005	121,–	071010 0101	30,–

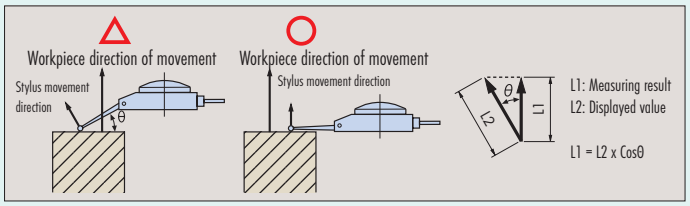
5102

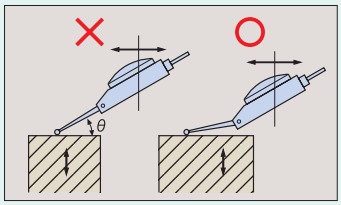
Lever dial indicators

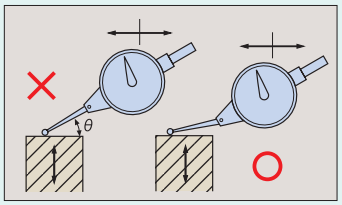
INFO

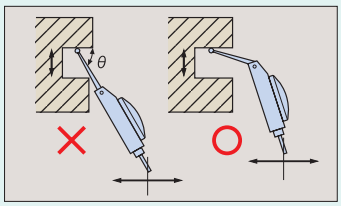
Angle error

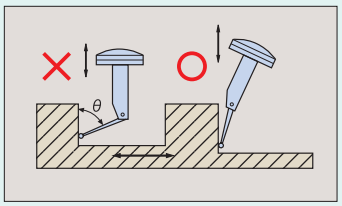
- Always minimise the angle between movement directions of the workpiece.
- The dial test indicator display value will differ from the true value if the workpiece and the direction of movement deviate by any angle. The measuring probe can be aligned through the pivot point of the measuring device such that the angle is minimised. θ If necessary, the display and thus the measured value can be corrected to the actual value of the angle θ by using the following table.
- Result of measurement = displayed value x correction factor











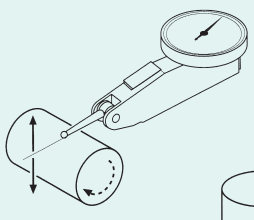
Correction for a non-zero angle

Angle	Correction value
10°	0.98
20°	0.94
30°	0.86
40°	0.76
50°	0.64
60°	0.50

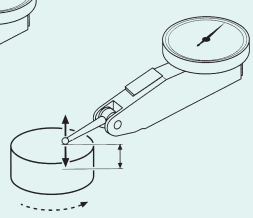
Examples
If the dial test indicator at various values of the angle shows = 0.200 mm, the measurement results are as follows:
For = 10°, 0.200mm × 0.98 = 0.196mm
For = 10°, 0.200 mm × 0.94 = 0.188 mm
For = 30°, 0.200mm × 0.86 = 0.172mm

Note:
A special contact point of involute form can be used for automatic correction; this allows measurements without manual correction for any angle between 0° and 30°.

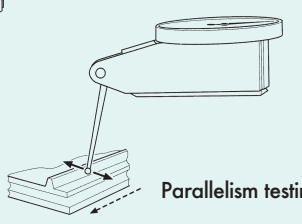
Lever dial indicator usage examples



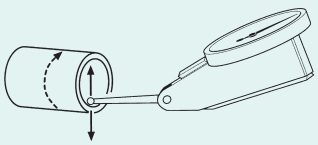
Concentricity of a shaft



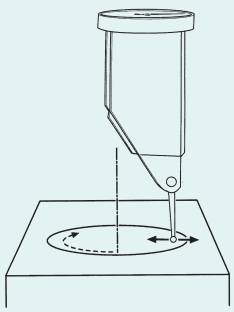
Alignment of a surface



Parallelism testing



Concentricity of a sleeve



Centring a drill hole

SARA® Dial test indicator

DIN 2270

- Ideal for measuring deviations in shape and position, true running and axial run-out as well as alignment work
- Matt chrome-plated metal casing
- Casing and dovetail mounting V-blocks made in one piece for exceptionally rigid clamping
- Supplied with Ø 6 and 8 mm clamping shank



Measurement range mm	Reading mm	Scale	Accuracy fe µm	External ring Ø mm	Sensor tip length mm	art.no.	€	Calibration art.no.	€
0.8	0.01	0-40-0	10	29	13.5	**525031** 0029	63,–	070130 0001	17,80
0.8	0.01	0-40-0	10	40	13.5	525031 0040	65,–	070130 0001	17,80

5121

ATORN® Dial test indicator

DIN 2270

- Dovetail attachment
- **Size 0040 with dial face seal and waterproof scale casing**
- **Size 0058 extremely easy to read thanks to 58 mm scale diameter**
- Supplied with Ø 8 mm clamping shank



Measurement range mm	Reading mm	Scale	Accuracy fe µm	External ring Ø mm	Sensor tip length mm	art.no.	€	Calibration art.no.	€
1.0	0.01	0-50-0	10	32	16.6	**525051** 1032	90,–	070130 0001	17,80
1.0	0.01	0-50-0	10	40	16.6	525051 1040	100,–	070130 0001	17,80
0.5	0.01	0-25-0	10	32	35.7	525051 0532	119,–	070130 0001	17,80
0.5	0.01	0-25-0	10	40	35.7	525051 0540	133,–	070130 0001	17,80
0.2	0.002	0-100-0	3	32	12.8	525051 0232	102,–	070130 0001	17,80
0.2	0.002	0-100-0	3	40	12.8	525051 0240	115,–	070130 0001	17,80
0.2	0.001	0-100-0	3	40	12.8	525051 0040	133,–	070130 0001	17,80
0.2	0.001	0-100-0	3	58	12.8	525051 0058	154,–	070130 0001	17,80

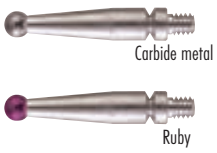
5192

Contact points for ATORN analogue dial test indicators

- Choice of carbide or ruby balls
- Ø 2 mm
- **Caution! Changing the standard contact point length will lead to incorrect measurements!**

Length mm	Carbide metal	Ruby	art.no.	€
12.8	x	-	**525018** 0001	13,30
12.8	-	x	525018 0002	25,–
16.6	x	-	525018 0003	13,30
16.6	-	x	525018 0004	25,–
35.7	x	-	525018 0005	20,60
35.7	-	x	525018 0006	31,10

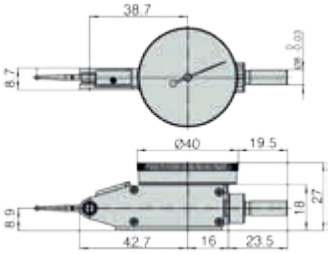
5192



Mitutoyo Dial test indicators

DIN 2270

- Rotating outer ring for zero adjustment
- Precision jewel bearing for smooth contact point adjustment
- Standard probe tip printed on scale
- Dovetail attachment on three sides of the metal casing is possible by means of a Ø 8 mm clamping shank with clamping nut



Carbide measurement end

- Ø 2 mm

Measurement range mm	Reading mm	Scale	Accuracy fe µm	External ring Ø mm	Sensor tip length mm	art.no.	€	Calibration art.no.	Calibration €
0.14	0.001	0-70-0	3	39	11.2	**525001** 0101	153,–	070130 0001	17,80
0.2	0.002	0-100-0	3	39	15.2	525001 0103	112,–	070130 0001	17,80
0.6	0.002	0-100-0	6	39	15.2	525001 0104	153,–	070130 0001	17,80
0.5	0.01	0-25-0	10	39	33.9	525001 0107	143,–	070130 0001	17,80
0.8	0.01	0-40-0	8	28	17.4	525001 0108	140,–	070130 0001	17,80
0.8	0.01	0-40-0	8	39	17.4	525001 0109	86,–	070130 0001	17,80
1.0	0.01	0-50-0	10	39	41.0	525001 0110	142,–	070130 0001	17,80
1.5	0.01	0-250-0	8	39	18.7	525001 0111	147,–	070130 0001	17,80

5102



Measurement end with ruby ball

- Ø 2 mm
- Non-magnetic, non-conductive
- High wear-resistance

Measurement range mm	Reading mm	Scale	Accuracy fe µm	External ring Ø mm	Sensor tip length mm	art.no.	€	Calibration art.no.	Calibration €
0.8	0.01	0-40-0	8	39	17.4	**525501** 0111	106,–	070130 0001	17,80

5102





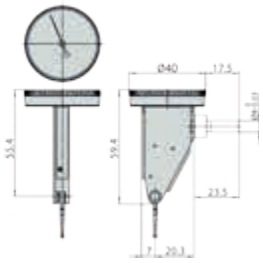
Set

- Dial test indicator,
  3x HM probe tips, Ø 1, 2 and 3 mm; 2x clamping shanks, Ø 4 and 8 mm;
  1x clamping nut; 1x universal holder; 1x holding fixture, 9 x 9 x 100 mm

Measurement range mm	Reading mm	Scale	Accuracy fe µm	External ring Ø mm	Sensor tip length mm	art.no.	€	Calibration art.no.	Calibration €
0.8	0.01	0-40-0	8	40	17.4	**525010** 0101	119,–	070130 0001	17,80

5102





Lever dial indicator with offset dial plate configuration

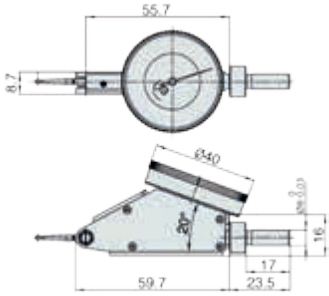
- Vertical or parallel readings

Measurement range mm	Reading mm	Scale	Accuracy fe µm	External ring Ø mm	Sensor tip length mm	Dial plate	art.no.	€	Calibration art.no.	Calibration €
0.8	0.01	0-40-0	8	40	17.4	Vertical	**525020** 0103	106,–	070130 0001	17,80
0.8	0.01	0-40-0	8	40	17.4	Parallel	525020 0104	123,–	070130 0001	17,80

5102



525020 0103



Lever dial indicator with angled dial plate

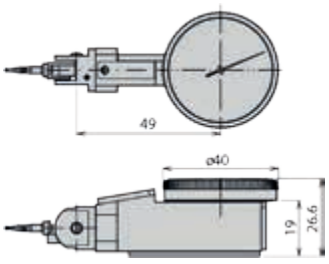
Measurement range mm	Reading mm	Scale	Accuracy fe µm	External ring Ø mm	Sensor tip length mm	art.no.	€	Calibration art.no.	Calibration €
0.4	0.002	0-100-0	5	39	15.2	**525001** 0113	169,–	070130 0001	17,80
1.6	0.01	0-40-0	10	39	17.4	525001 0112	150,–	070130 0001	17,80

5102



525001 0112

Continued on next page >>>

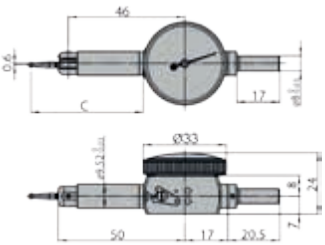




Universal version

- Contact point holding fixture can be rotated through 360°

Measurement range mm	Reading mm	Scale	Accuracy fe µm	External ring Ø mm	Sensor tip length mm	art.no.	€	Calibration art.no.	€
0.8	0.01	0-40-0	8	36	24.1	**525020** 0009	398,–	070130 0001	17,80
						5102			





525501 0008

Miniature version

- With switching lever to change the measuring direction

Measurement range mm	Reading mm	Scale	Accuracy fe µm	External ring Ø mm	Sensor tip length mm	art.no.	€	Calibration art.no.	€
0.5	0.01	0-25-0	10	33	36.8	**525501** 0008	155,–	070130 0001	17,80
						5102			

Contact points

- Choice of carbide or ruby balls
- **Caution! Changing the standard contact point length will lead to incorrect measurements!**



Ruby



Carbide metal

Length mm	Sensor ball Ø mm	Carbide metal art.no.	€	Ruby art.no.	€
11.2	2	**525920** 0147	16,–	**525925** 0147	26,–
15.2	2	525920 0152	16,–	525925 0152	20,–
17.4	2	525920 0209	16,–	525925 0209	26,–
18.7	2	525920 0223	16,–		
33.9	2	525920 0339	8,–		
33.9	2	525920 0368	15,–		
41.0	2	525920 0445	13,–	525925 0445	26,–
		5102		5102	

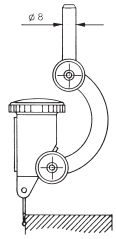


525050 0012

525050 0025

Accessories

- **Universal holder with dovetail mount**, shank ∅ 8mm
- **Universal holder**
- **9 x 9 x 100 mm holding fixture** for attaching dial test indicators to height meters and marking-out instruments
- **Centring holder** for using a dial test indicator as an edge finder, or for aligning bores and shafts with the centre of the spindle



525050 0021 dovetail or Ø 4 mm mount



525050 0015

Description	art.no.	€
Universal holder with dovetail mount, shank Ø 8 mm	**525050** 0012	35,–
Universal holder	525050 0015	29,–
Mount 9 x 9 x 100 mm	525050 0025	20,–
Centring holder	525050 0021	118,–
	5102	

SARA® Height gauge and marking-out instrument

Werks-norm

- With large stand
- Matt-chromed scale
- Raised guide edges
- Slider with matt-chromed Vernier scale
- Scriber offset and carbide-tipped


530101 1310

Measurement range mm	Error limit mm	art.no.	€	Calibration art.no.	Calibration €
300	0.04	**530101** 1310	105,–	070110 0001	34,30
500	0.06	530101 1510	169,–	070110 0002	50,–

5116

Accessories

Description	art.no.	€
Scriber for measurement range 300 mm	**532010** 0040	25,80
Scriber for measurement range 500 mm	532010 0050	28,90

5116

SARA® Height meter and marking-out instrument

Werks-norm

- Sturdy design with large stand
- Matt chrome-plated, adjustable scale
- Raised guide edges
- Slider with matt chrome-plated Vernier scale
- Reading magnifier
- Fine adjustment and clamping mechanism
- Scriber offset and carbide-tipped
- Supplied in moulded packaging





Measurement range mm	Vernier mm	Error limit mm	Measuring column mm	art.no.	€	Calibration art.no.	Calibration €
0-300	0.02	0.06	28 x 9	**530101** 1300	148,–	070110 0001	34,30

5116

Accessories

Designation	art.no.	€
Spare scriber	**532010** 0030	25,80

5116

SARA® Digital height gauge and marking-out instrument

Werks-norm | 0,01 mm | inch / mm

- Sturdy design with large stand
- Easy to read thanks to high-contrast LCD
- Slider with fine adjustment and clamping mechanism
- Scriber offset and carbide-tipped
- **Functions:** ON/OFF, zero-setting, preset, hold, mm/inch
- Supplied with CR 2032 battery, No. 548079 6032


530500 0310

Measurement range mm	Error limit mm	art.no.	€	Calibration art.no.	Calibration €
300	0.04	**530500** 0310	370,–	070110 0001	34,30
500	0.06	530500 0510	589,–	070110 0002	50,–

5116

Accessories

Designation	art.no.	€
Spare scriber	**530010** 0060	29,50

5116

ATORN® Digital height meter and marking-out instrument

Werks-norm | 0,01 mm | inch / mm | RS232C | USB

- Gauging cylinder made from special stainless steel
- LCD display, digit height 11 mm
- Steel base with dirt groove
- Measurement possible from base surface
- Carbide-tipped scriber
- **Functions: On/automatic switch-off, user-defined zeroing, mm/inch toggle option**
- Supplied in moulded packaging



- With fine adjustment

Measurement range mm	Reading mm	Measuring column mm	art.no.	€	Calibration art.no.	€
300	0.01	30x12	**530310** 0300	609,–	070110 0001	34,30
600	0.01	30x12	530310 0600	879,–	070110 0002	50,–
1000	0.01	30x12	530310 1000	1.259,–	070110 0003	66,–

5197

Spare scribers

Length mm	art.no.	€
75	**530320** 0075	132,–
150	530320 0100	146,–

5197

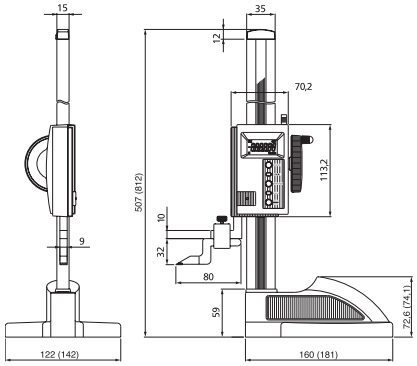
Mitutoyo Digital height meter and marking-out instrument

Werks-norm | 0,01 mm | Digi-matic | USB

ABSOLUTE®

- Sturdy design with large stand
- LCD display with 10 mm high digits
- Hand wheel for movement, user-defined travel speed
- Locking mechanism
- Scriber offset and carbide-tipped
- **Functions:** ON/OFF, ORIGIN initial value, ZERO/ABS, DATA/HOLD
- Supplied with SR44 battery, no. 500534 0001
- **Optional accessories:** Digimatic cable type F, no. 563100 0051 (1 m), no. 563100 0052 (2 m), USB cable type F-USB, no. 563110 0006





Values in brackets for measurement range 600



Measurement range mm	Reading mm	Error limit mm	Measuring column mm	art.no.	€	Calibration art.no.	€
0-300	0.01	0.04	35 x 15	**530502** 0300	604,–	070110 0001	34,30
0-600	0.01	0.06	35 x 15	530502 0600	1.055,–	070110 0002	50,–

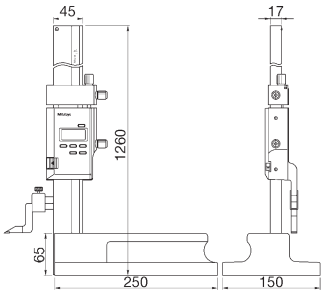
5102

Mitutoyo Digital height meter and marking-out instrument

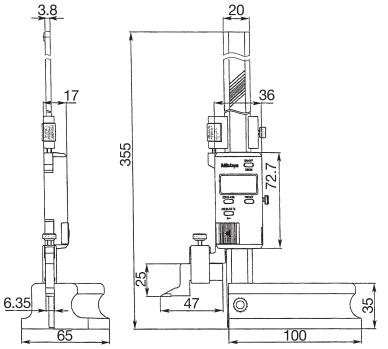
Werks-norm | 0,01 mm | Digi-matic | USB

ABSOLUTE®

- Sturdy design with large stand
- Easy to read thanks to high-contrast LCD display with large digits
- Slider with fine adjustment and clamping mechanism
- Scriber offset and carbide-tipped
- **Functions:** ON/OFF, ZERO/ABS, DATA, HOLD, PRESET for pre-setting user-defined values, reverse counting direction (+/-), battery check
- Supplied with SR44 battery, no. 500534 0001
- **Optional accessories:** Digimatic cable type C, no. 563100 0021 (1 m), no. 563100 0022 (2 m), USB cable type C-USB, no. 563110 0003



530501 1002



530501 0202



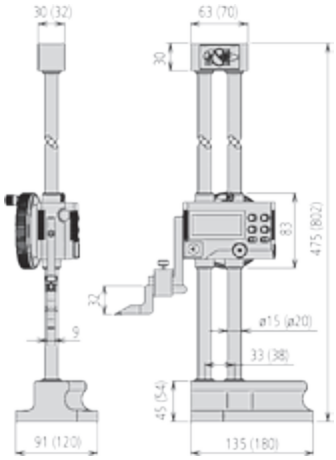
Measurement range mm	Error limit mm	art.no.	€	Calibration art.no.	€
0-200	0.04	**530501** 0202	650,–	070110 0001	34,30
0-1000	0.08	530501 1002	2.821,–	070110 0003	66,–

5102

Mitutoyo Digital height meter and marking-out instrument with two columns

Werks-norm | Digi-matic | USB

- Sturdy design with large stand
- All key parts hardened
- Rear-mounted hand wheel for quick adjustment, angled by 10° to allow easier operation
- Easy to read thanks to high-contrast LCD
- Scriber offset and carbide-tipped
- **Readings: 0.005 mm, can be switched to 0.01 mm**
- With integrated fine adjustment
- Can store 2 reference values
- Battery life approx. 5,000 hours
- **Functions:** ON/OFF, ZERO/ABS, PRESET for storing 2 reference values, HOLD/DATA, reverse measuring direction (+/-)
- Supplied in moulded packaging with SR44 battery, no. 500534 0001
- **Optional accessories:** Digimatic cable type F, no. 563100 0051 (1 m), no. 563100 0052 (2 m); USB cable type F-USB, no. 563110 0006





Standard version

Measurement range mm	Column Ø mm	Error limit mm	art.no.	€	Calibration art.no.	€
0-300	15	0.03	**530505** 0302	890,–	070110 0001	34,30
0-600	20	0.06	530505 0602	1.221,–	070110 0002	50,–
0-1000	20	0.08	530505 1002	2.309,–	070110 0003	66,–

5102

With facility to connect electronic probes (accessories)

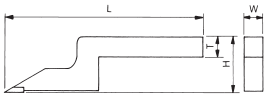
Designation	Measurement range mm	Column Ø mm	Error limit mm	art.no.	€	Calibration art.no.	€
Height meter	0-300	20	0.03	**530510** 0302	1.186,–	070110 0001	34,30
Height meter	0-600	20	0.05	530510 0602	1.515,–	070110 0002	50,–
Height meter	0-1000	20	0.06	530510 1002	2.633,–	070110 0003	66,–
Electronic sensor	Suitable for all sizes			530510 0101	519,–		

5102





Mitutoyo Accessories for height meters and marking-out instruments



Scribers

suitable for height meter and marking-out instrument	L mm	H mm	W mm	T mm	art.no.	€
5305010202	47	25	6.35	12.7	**532010** 0005	73,–
5305020300, 5305020600, 5305050302, 5305050602	80	32	9	9	532010 0001	56,–
5305051002, 5305011002, 5305100302, 5305100602, 5305101002	150	42	9	9	532010 0020	142,–
					5102	



Holder for scribers

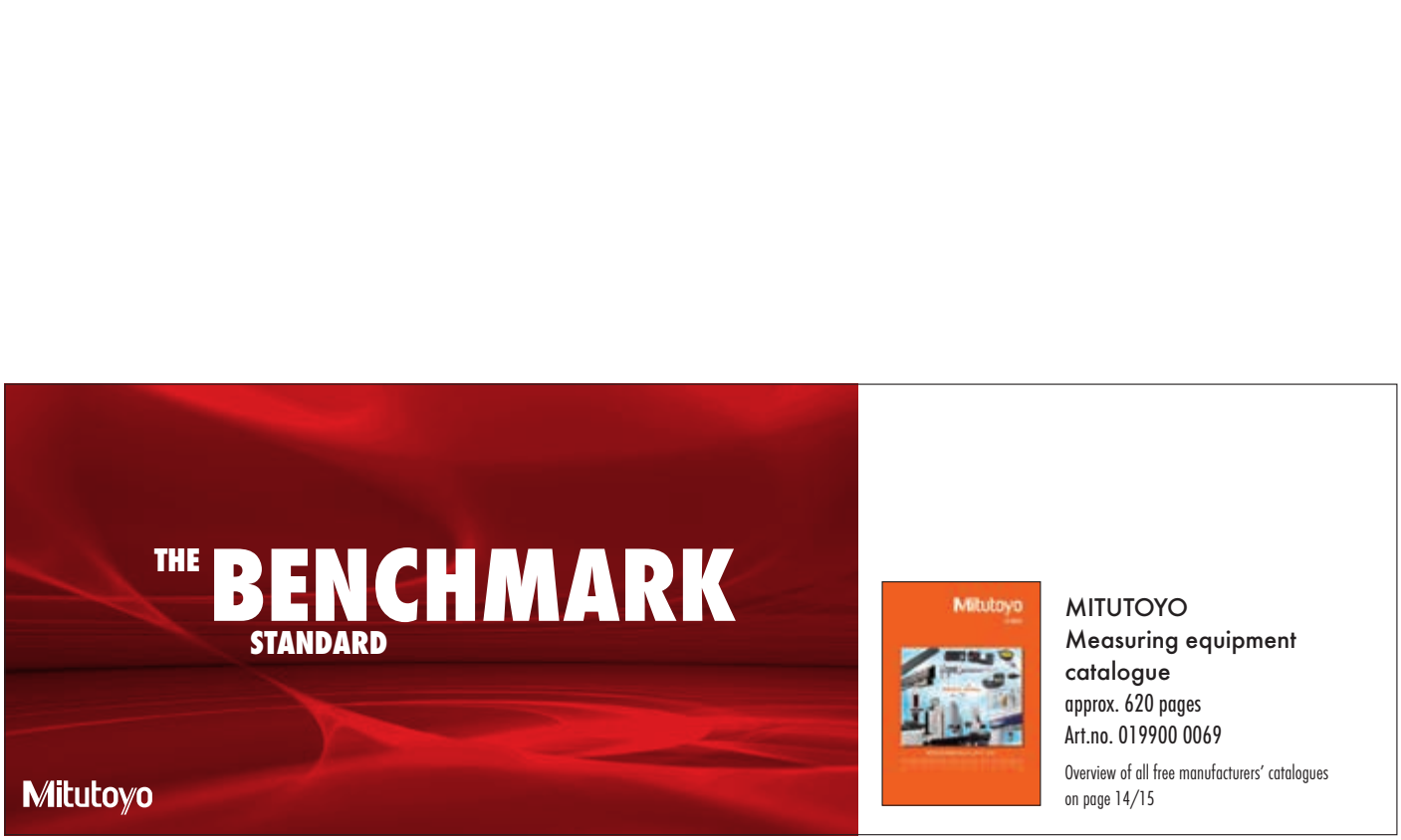
Substance	suitable for height meter and marking-out instrument	art.no.	€
Metal clamp	5305020600, 5305050302, 5305050602, 5305051002	**532011** 0001	38,–
Plastic	5305011002, 5305100302, 5305100602, 5305101002	532011 0002	16,–
		5102	



532011 0001



532011 0002



MITUTOYO
Measuring equipment catalogue
approx. 620 pages
Art.no. 019900 0069

Overview of all free manufacturers' catalogues on page 14/15

The *multiCOM* System

- **The perfect interface between ATORN handheld measuring equipment and a PC**
- Three-fold compatibility: **RS 232 C** und **Digimatic** and **USB**
- For multiple measuring points, can be expanded to over 100 measuring instruments using low-cost USB hubs
- Data transfer can be triggered from the measuring instrument, via a USB foot switch or using the PC keyboard



- Measurement value transfer via USB data cable in conjunction with **USB-Com** software or the full version **USB-Com Professional**
- **USB-Com** for connecting **a** measuring instrument, include in the standard scope of supply of the USB data cable

ATORN® Signal cable multiCOM

- **For connecting ATORN measuring instruments with a multiCOM** interface to a PC or laptop
- USB cable including USB-COM driver software for transferring measurement values e.g. to Microsoft Excel



Type	Data output	Cable length m	art.no.	€
P-RS 232 C	RS 232 C	2	**512521** 0001	55,–
P-Digimatic	Digimatic	2	512521 0002	70,50
P-USB	USB	2	512521 0003	77,–

5182

ATORN® Signal cable

- Signal cables allow the displayed measurement values to be transferred ONLINE to mini processors, interfaces or directly to a computer.
- POWER-RS and POWER-USB for data transfer and power supply



Type	Cable length m	art.no.	€
Power-RS	2.0	**500700** 9962	113,–
Power-USB	2.0	500700 9964	179,–
Proximity-RS	2.0	500700 9965	113,–
Proximity-USB	2.0	500700 9966	113,–

5108

Kroeplin Längenmesstechnik Signal connector

- Interface adapter for installation on probe arm dial indicators
- 524002 0005 suitable for fast display callipers # 521012...., 521014...., 521016...., 521017.... and 521019....
  524002 0006 suitable for quick display callipers # 521018....
- suitable MITUTOYO signal cable Type E # 563100 0042, E-USB # 563110 0005 and U-Wave Type C # 567504 0005



524002 0005

Description	art.no.	€
Interface adapter	**524002** 0005	55,50

5123

Kroeplin Längenmesstechnik Bluetooth interface adapter

- Bluetooth interface adapter for installation on probe arm dial indicators



Designation	suitable for	art.no.	€
Interface adapter for Bluetooth applications	521012.... / 521017.... / 521019....	**524002** 0010	90,10
Interface adapter for Bluetooth applications	521018....	524002 0015	95,60

5123

Mitutoyo Signal cable Digimatic and USB

- For connecting Mitutoyo „Digimatic" measuring instruments to a PC via corresponding interfaces or to Mitutoyo data processing devices

Signal cable Type A

- Signal cable for IP-protected vernier callipers with DATA button
- Suitable for IP67 vernier calliper, IP67 workshop vernier calliper, IP67 built-in vernier calliper, IP67 depth bars






Cable length m	Digimatic art.no.	€	USB art.no.	€
1	**563100** 0001	88,–		
2	563100 0002	92,–	**563110** 0001	122,–
	5102		5102	

Signal cable Type B

- Signal cable for IP-protected micrometers with DATA button
- Suitable for outside micrometers with and without IP, QuantuMike, IP micrometer heads, Holtest






Cable length m	Digimatic art.no.	€	USB art.no.	€
1	**563100** 0011	91,–		
2	563100 0012	92,–	**563110** 0002	122,–
	5102		5102	

Signal cable Type C

- Signal cable with DATA key
- Suitable for AOS vernier calliper, vernier callipers, workshop vernier calliper, AOS built-in vernier calliper, built-in vernier callipers, micrometer heads, ID-S dial indicator






Cable length m	Digimatic art.no.	€	USB art.no.	€
1	**563100** 0021	42,–		
2	563100 0022	49,–	**563110** 0003	107,–
	5102		5102	

Signal cable Type D

- Signal cable with 10-pin rectangular plug
- Suitable for dial indicators ID-H / ID-F, surface roughness tester SJ, height meter QM-Height






Cable length m	Digimatic art.no.	€	USB art.no.	€
1	**563100** 0031	49,–		
2	563100 0032	63,–	**563110** 0004	107,–
	5102		5102	

Signal cable Type E

- Signal cable for 6-pin round plug
- Suitable for quick-micrometer






Cable length m	Digimatic art.no.	€	USB art.no.	€
1	**563100** 0041	52,–		
2	563100 0042	63,–	**563110** 0005	107,–
	5102		5102	

Signal cable Type F

- Signal cable, straight version
- Suitable for dial indicators ID-S / ID-U, Borematic






Cable length m	Digimatic art.no.	€	USB art.no.	€
1	**563100** 0051	32,–		
2	563100 0052	38,–	**563110** 0006	107,–
	5102		5102	

Signal cable Type G

- Signal cable IP-protected
- Suitable for dial indicators ID-B / ID-N






Cable length m	Digimatic art.no.	€	USB art.no.	€
1	**563100** 0061	57,–		
2	563100 0062	67,–	**563110** 0007	107,–
	5102		5102	

Advantage of the new Digimatic USB connectors:

Task	Required accessories	USB-ITPAK software	Data format
Read measurement values into any desired software that expects keyboard entry	One USB signal cable per measuring instrument	Software or special driver is not required	Measurement value as keyboard format (HID=Human Interface Device)
Measurement values in ordinary statistics software such as Mitutoyo MeasurLink	One USB signal cable and USB-ITPAK software per measuring instrument	For each cable (measuring instrument), generates a unique, fixed assigned COM port (VCP)	Mux-10 specification with fixed COM assignment
Read measurement values into any desired software that expects keyboard entry	One USB signal cable and USB-ITPAK software per measuring instrument, or an ordinary USB hub	Measuring instrument and foot switch are selected and assigned, stores a process as a sub-program	Transfer of a measurement value test in text format
Measurement values in Excel		Measuring instrument and foot switch are selected and assigned, assumes the entire organisation of an Excel table, meaning that transferred values are written to pre-defined target cells	Measurement log in Excel format with max. 31 characters

Mitutoyo Software USB-ITPAK



- **For managing multiple connected measuring equipment units and foot switches**
- For transferring measurement values in text format (when used as VCP)
- For easily creating logs in Excel
- Starts Excel automatically, offers the option to store accumulated measurement values in Excel
- Organises the Excel table in full with specified columns and rows, including the measurement task start and end
- Option to select the connected measuring instruments and foot switches
- Stores the individual parts of a measurement task as a repeatable program sequence
- Sequences can be repeated several times automatically
- Function keys F1 to F8 can be selected for assignment to data transfer, deletion or skipping
- Compatible with Windows 2000 / XP / Vista / Windows 7 / Windows 8 / Windows 10

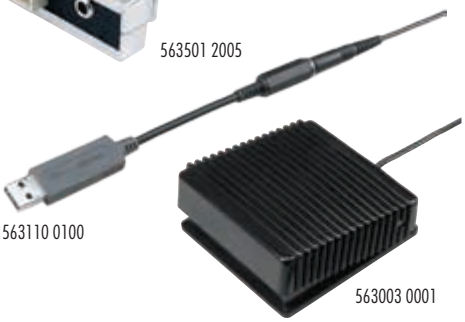
Designation	suitable for	art.no.	€
Software for data transfer	MITUTOYO measuring instruments with USB cables	**563120** 0001	253,–
		5102	

Mitutoyo Interface system DMX 1

- For transferring measurements to a PC from measuring equipment with a data output
- Managed by microcontroller
- 1 measuring instrument can be connected
- RS-232 interface to computer
- Foot switch connection
- **Interface parameters**:
  9600 Baud transmission rate
  8 data bits
  1 stop bit
  No parity



563501 2005



563110 0100

563003 0001

model	Input	Outlet	art.no.	€
DMX 1	1x Mitutoyo	Direct, 9-pin	**563501** 2005	95,–
			5106	

Accessories

Designation	art.no.	€
Foot switch	**563003** 0001	47,–
USB foot switch adapter	563110 0100	110,–
	5102	

Mitutoyo Digimatic USB interface

- For connecting a Mitutoyo Digimatic measuring instrument to a PC USB interface
- Depending on the model, interfaces are recognised by the PC as a keypad or serial interface
- Integrated foot switch socket



563501 0011



563501 0020



563501 0030



563501 0010

model	Input	Mode	art.no.	€
USB input tool	1x Mitutoyo	Keypad	**563501** 0010	219,–
DMX 1 USB	1 x Mitutoyo	COM interface	563501 0011	109,–
DMX 2 USB	2 x Mitutoyo	Keypad / COM interface	563501 0020	398,–
DMX 3 USB	3 x Mitutoyo	COM interface	563501 0030	483,–
			5102	

Mitutoyo Wireless data transmission U-WAVE



- Quick and reliable method of data transfer without cumbersome signal cables
- Transmits in the 2.4 GHz frequency band with a choice of 15 channels
- Up to 100 transmitters can be connected via one receiver
- Range 20 m
- Receiver is connected and powered via USB
- Slim transmitter design
- Battery life approx. 400,000 data transmissions
- Correct data transfer confirmed on the transmitter by LED and buzzer or LED only (IP67 transmitter model)
- **Transmitter can be used universally by exchanging the connection cable**

Receiver

- Supplied with USB connection cable, driver software and operating manual

Designation	art.no.	€
Receiver, 2.4 GHz	**567502** 0001	324,–
	5102	



Transmitter U-Wave FIT

- Specially adapted to casings of vernier callipers and/or outside micrometers and QuantuMike

model	Protection type	Warning sound	suitable for	art.no.	€
U-WAVE-TC	IP 67	No	Vernier callipers with/without IP67 up to 300 mm	**567503** 0012	163,–
U-WAVE-TC	No protection rating	Yes	Vernier callipers with/without IP67 up to 300 mm	567503 0013	163,–
U-WAVE-TM	IP 65	No	Outside micrometers with/without IP65	567503 0014	163,–
U-WAVE-TM	No protection rating	Yes	Outside micrometers with/without IP65	567503 0015	163,–
				5102	



Connection unit with transmitter outside micrometer

Connection unit for U-Wave FIT and U-Wave Bluetooth

- firm connection between U-Wave Fit and U-Wave Bluetooth transmitters and measurement devices

Designation	suitable for	art.no.	€
Connection unit, standard	Vernier callipers AOS ABSOLUTE	**567504** 0011	92,–
Connection unit, waterproof	Vernier callipers IP67 / outside micrometers IP65	567504 0010	97,–
		5102	



Vernier callipers transmitter with connection unit



Transmitter with device-mounted connection unit

Transmitter

- Digimatic2 compatible
- Supplied with battery CR2032 No. 548079 6032

model	Protection type	Warning sound	art.no.	€
1	IP 67	No	**567503** 0010	163,–
2	No protection rating	Yes	567503 0011	163,–
			5102	



Connection cable

Type	suitable for	art.no.	€
IPM	Vernier calliper IP 66 / 67, depth gauge IP 67, inside vernier calliper IP 67	**567504** 0001	97,–
IPB	Outside micrometer IP 65, depth micrometer, special micrometers, Holtest IP 65	567504 0002	97,–
B	Standard vernier calliper, standard slide gauge, standard inside vernier calliper	567504 0003	92,–
D	IDH / IDF dial indicators	567504 0004	87,–
C	Quick micrometer, micrometer head 505401....	567504 0005	87,–
A	IDC / IDS / IDU dial indicators, height measurement and marking-out instruments, Boremetic, goniometers	567504 0006	87,–
IPN	IDB / IDN dial indicators	567504 0007	92,–
		5102	



567504 0003

Mitutoyo Wireless data transmission U-Wave Bluetooth

- Fast and secure data transfer without additional receiver on the end device
- Compatible with smartphones, tablets and Windows
- Bluetooth standard V. 4.2
- Transmitter adapted to the casing of Vernier callipers and outside micrometers
- Range 10m
- 1-year battery life
- Correct data transfer is confirmed on the transmitter by LED and buzzer and/or by LED only (IP67 transmitter model
- **Attention!** For data transfer you require an app (ISO/Android) and/or software (Windows) on the end device. For IOS and Android devices, please download U-WAVEPAK-BM from your corresponding app store, for Windows applications download the software U-WAVE-BW from www.sartorius-werkzeuge.de



Transmitter U-Wave Bluetooth

required accessories

- 567504 0011 standard connection unit for MITUTOYO Vernier callipers AOS ABSOLUTE
- 567504 0010 waterproof connection unit for MITUTOYO Vernier callipers IP67 / outside micrometers IP65



567503 0120



567503 0122

model	Protection type	Warning sound	suitable for	art.no.	€
U-Wave-TCB	IP 67	No	Vernier callipers with/without IP67 up to 300 mm	**567503** 0120	163,–
U-Wave-TCB	No protection rating	Yes	Vernier callipers with/without IP67 up to 300 mm	567503 0121	163,–
U-Wave-TMB	IP 65	No	Outside micrometers with/without IP65	567503 0122	163,–
U-Wave-TMB	No protection rating	Yes	Outside micrometers with/without IP65	567503 0123	163,–

5102

ATORN® Radio receiver i-Stick

- USB radio receiver for ATORN integrated wireless
- suitable for ATORN measuring instruments with integrated radio module and corresponding compatible devices
- Range 6m
- Manages up to 8 measuring devices
- up to 4 i-Sticks can be connected to one PC
- Frequency band 2400 MHz



Designation	art.no.	€
Radio receiver i-Stick	**567512** 0001	95,–

5186

Mitutoyo Mini processor DP-1 VA

- Statistics calculator, printer and data logger in one device
- Documentation of measured values and statistical values by integrated printer
- All Mitutoyo Digimatic measuring instruments can be connected
- Integrated thermal printer, quick and quiet
- Stored data is documented with date and time information
- Logger function (data storage) 1000 measured values with date and time.
- Battery and mains operation
- Foot switch connection socket
- RS-232C interface for data output

Printable data and calculations

- Measurement values (max. 9999)
- OK/NOK values
- Data volume. max./min. values
- X-bar mean value
- Standard deviation s
- Clamping width r
- Rejects in number and per cent
- Process capability index cp and cpk
- Histogram
- X-bar and r control chart
- Control limits
- Date and time
- Basic unit supplied with printer, power adapter and operating manual, in moulded packaging



563001 0011

Designation	art.no.	€
DP1-VA	**563001** 0011	477,–
Recording paper, 5 rolls	563003 0021	30,–
Signal cable RS-232C (1 metre) for DP-1 VA for connection to PC	563003 0023	331,–

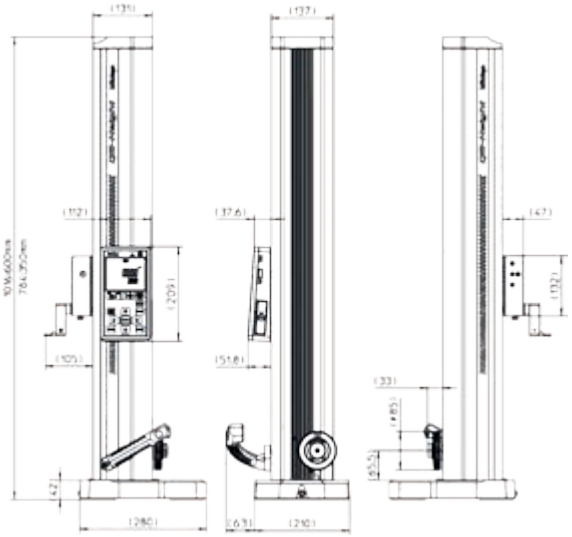
5102

Mitutoyo Digital height meter QM-Height

ABSO-LUTE | Digi-matic | USB

ABSOLUTE®

- Measuring heights, steps, groove widths, inner and outer diameters and their distances
- Designed for workshop use
- Available with or without air cushion support
- High accuracy due to electromagnetic inductive measurement principle
- Large LCD with large, easy-to-read digits
- Clearly laid out keypad with symbols for the individual measurement functions
- Multiple zero points programmable
- Optical and acoustic tolerance monitoring
- Choice of mains or (rechargeable) battery power supply
- Wide range of probes for various measurement tasks available as optional accessories



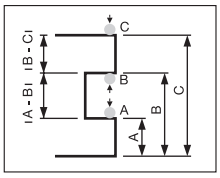
- **Technical data**
  Measuring span (stroke): 0 - 465 mm (350 mm) for QM-H350 and 0 - 715 mm (600 mm) for QM-H600
  Resolution: 0.001 mm, can be switched to 0.005 mm
  Display: LCD
  Error margin: ± (2.4 + 2.1L/600) µm L = measurement length in mm
  Surface repeatability: 1.8 µm (2 ó)
  Perpendicularity: 8 µm QM-H350 / 13 µm QM-H600
  Measurement system: electromagnetic inductive scale
  Measuring force: 1.5 +/- 0.5 N
  Weight: 22 kg QM-H350 and 27 kg QM-H600



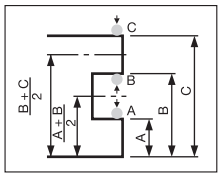
- Supplied with measuring probe and Ø 5 mm carbide ball, reference block, 4x LR6 batteries (No. 548079 4006), protective cover, operating manual, factory certificate
- **Special accessories:** Digimatic cable Type D No. 563100 0031 (1 m), No. 563100 0032 (2 m) USB cable Type D-USB No. 563110 0004

Description	Measurement range mm	art.no.	€
QM-H 350 without air support	350	**533005** 0351	3.485,–
QM-H 350 with air support	350	533005 1351	3.849,–
QM-H 600 without air support	600	533005 0601	4.276,–
QM-H 600 with air support	600	533005 1601	4.640,–

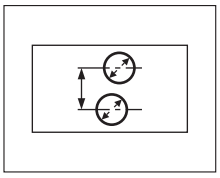
5105

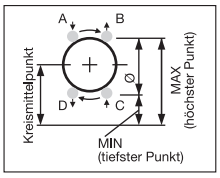


Measurement of distances



Example of a centre point measurement


Distance measurement from centre point to centre point



Measurement of circle, bore and shaft

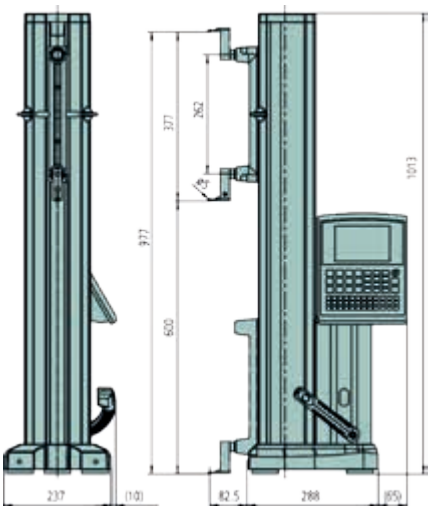
Accessories

Designation	art.no.	€
Mains adapter	**533010** 0150	70,–

5102

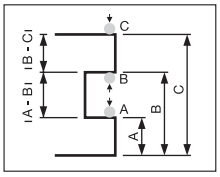
Mitutoyo Linear height meter Linear Height LH 600E

- Measuring heights, steps, groove widths, inner and outer diameters, their distances and two-dimensional measurements such as reference circle calculation
- Robust and highly accurate height meter for workshop and laboratory use
- Accuracy of (1.1 + 0.6 L/600) µm, surface precision (2s) of 0.4 µm
- Increments adjustable from 0.0001 mm to 0.1 mm
- Pneumatic moving mechanism (floating/semi-floating)
- Direct interaction via the bright, easy-to-read **colour LCD display** (backlit)
- Single-key operation
- Large memory capacity for 50 measurement programs and 60,000 individual measurement records
- Independent adjustment options for travel and measuring speed, rapid positioning (up to 40 mm/s) and gentle contact
- Direct GO/NO-GO confirmation for each measurement
- Rechargeable batteries and an independent compressed air supply (integrated compressor) ensure operation as a stand-alone device
- Languages: German, English, French, Spanish, Italian and Japanese can be selected
- **Measurement functions:**
  1D and 2D measurements
  Height measurement (top/bottom surface)
  Diameter (bore/shaft)
  Calculating an angle
  2D: Element calculation, distance calculation, pitch circle calculation
- 2D coordinate system setup
  Polar coordinate system support
  Perpendicularity, straightness, incline and planarity detection
- **Probe insert:**
  Adjustment options for probe type
  Measurement and storage of probe ball diameter
  Alteration of probe position
- **Statistical processing:**
  Execution of simple statistical processes
  Histogram creation
- **Technical data:**
  Measurement range (travel) 0 - 972 mm (600 mm)
  Length measurement tolerance (1.1 + 0.6 L/600) µm,
  L = measurement length in mm
  Precision (2s): surface 0.4 µm; bore: 0.9 µm; perpendicularity 5 µm
  Straightness 4 µm
  Measuring force 1 N
  Interface: Digimatic input / RS-232 C output, facility to connect a USB data stick
  Power supply: AC adapter/rechargeable battery (Ni-MH), operating time approx. 5 hours
  Weight 24 kg
- **Supplied** in transport packaging with 1x Ø 5 mm ball probe, adjustment gauge, battery pack, mains adapter, factory certificate and operating manual

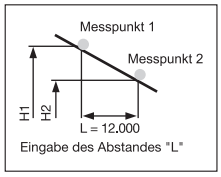


533002 0610

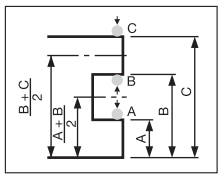

533003 0610



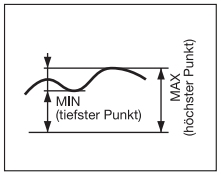
Measurement of distances



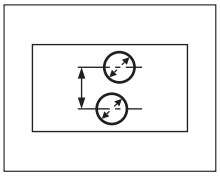
Example of an angle measurement

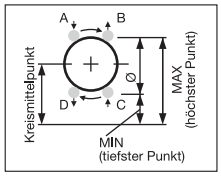


Example of a centre point measurement

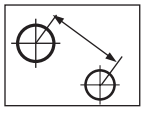


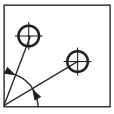
Determining the lowest and highest measurement point

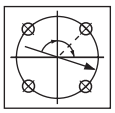

Distance measurement from centre point to centre point



Measurement of circle, bore and shaft


Centre point to centre point measurement


Angle calculation


Pitch circle calculation



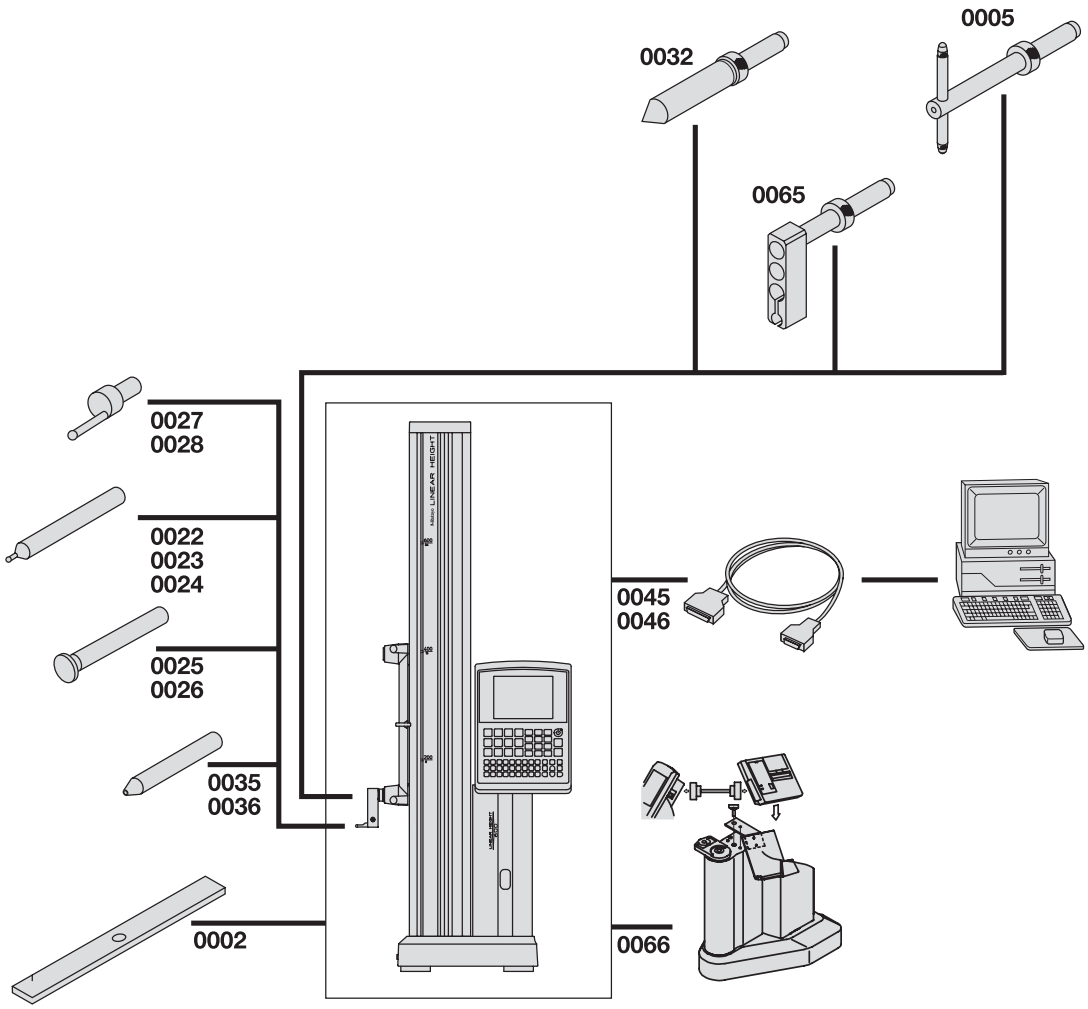
533002 0610

Type	Description	art.no.	€	Calibration art.no.	€
Linear height meter LH 600E	Without handle	**533002** 0610	6.068,–	070115 0002	353,–
Linear height meter LH 600EG	With handle	533003 0610	6.388,–	070115 0002	353,–

5105

Mitutoyo Accessories for height meters

- For height meters "Linear Height 600E" and "QM-Height"

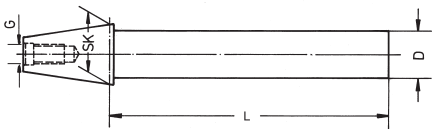


Designation	suitable for LH 600E	suitable for QM height	art.no.	€
Ball probe, Ø 2 mm	Yes	Yes	**533010** 0022	96,–
Ball probe, Ø 3 mm	Yes	Yes	533010 0023	101,–
Ball probe, Ø 4 mm	Yes	Yes	533010 0024	111,–
Ball probe, Ø 5 mm (standard probe)	Yes	Yes	533010 0029	123,–
Ball offset probe, Ø 4 mm	Yes	Yes	533010 0027	67,–
Ball offset probe, Ø 6 mm	Yes	Yes	533010 0028	73,–
Disc probe, Ø 14 mm	Yes	Yes	533010 0025	199,–
Disc probe, Ø 20 mm	Yes	Yes	533010 0026	250,–
Straight probe, Ø 10 mm	Yes	Yes	533010 0031	249,–
Tapered probe, Ø 20 mm	Yes	No	533010 0032	136,–
Adapter for Renishaw probes with M2 thread	Yes	Yes	533010 0035	46,–
Adapter for Renishaw probes with M3 thread	Yes	Yes	533010 0036	46,–
Depth probe	Yes	Yes	533010 0005	172,–
Counterbalance weights	Yes	No	533010 0002	30,–
Holder for Digimatic dial indicators	Yes	No	533010 0065	113,–
Thermo graph paper (10 rolls)	Yes	No	533010 0067	94,–
Signal cable RS-232C 2 m	Yes	Yes	533010 0045	61,–
Signal cable RS-232C 5 m	Yes	Yes	533010 0046	72,–

5106

diebold Test mandrels

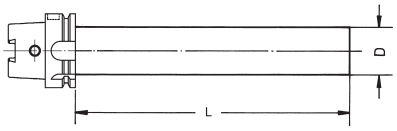
- **Stepped hollow bore**
- Forged, case-hardened (HRC 58+2)
- Precision-ground diameter and flat surface
- Taper tolerance AT3, radial run-out < 0.003 mm
- Supplied in wooden box for vertical storage with test certificate





DIN ISO 7388-1 / DIN 69871 A

Shank	D mm	L mm	Thread	art.no.	€
SK 30	32	204	M 12	**436313** 3032	359,–
SK 40	40	320	M 16	436313 4040	343,–
SK 50	40	320	M 24	436313 5040	430,–
				4127	





DIN 69893 type A (HSK-A)

- With 4 slots at the tapered end
- For measuring at 0°, 90°, 180° and 270°

Shank	D mm	L mm	art.no.	€
HSK-A 40	24	180	**436319** 4024	382,–
HSK-A 50	32	236	436319 5032	393,–
HSK-A 63	40	346	436319 6340	417,–
HSK-A 80	40	346	436319 8040	464,–
HSK-A 100	40	349	436319 1040	470,–
			4127	

Tool length pre-setting device

- For determining the length and pre-setting when using an optional depth gauge (see below)
- hardened
- Taper and collar ground and black-oxidised
- Height approx. 100mm
- Diameter: SK 40 = approx. 80mm, SK 50 = approx. 105mm
- Mounting slot for depth gauge 16 x 4.5mm
- **Advantage:** Tool lengths can be measured directly beside the machine.
- simple handling
- low space requirement
- Supplied in the box, without depth gauge



Designation	art.no.	€
Tool length pre-setting device, SK 40	**531201** 0040	240,–
Tool length pre-setting device, SK 50	531201 0050	280,–
	5163	

ATORN® IP67 digital sliding depth gauge

IP67 | DIN 862 | INOX | 0,01 mm | inch mm | KEEP-TRONIC | USB | RS232C | Digi-matic

- With and without measuring hook
- Precision-ground measuring faces
- **KEEPTRONIC** electronics store the zero point, operating keys lock to prevent accidental alteration of the zero point. Battery life approx. 3 years
- Inductive, waterproof FPS measuring system (Fluid Protected Measuring System)
- **multiCOM**data output, can be used as USB, Digimatic or RS-232
- **Functions:**
  0/ON/Off, mm/inch, PRESET for pre-setting user-defined values
- Supplied with CR 2032 battery, No. 548079 6032
- **Optional accessories:** Data cables, type P-RS 232 / P-Digimatic / P-USB, no. 512521....



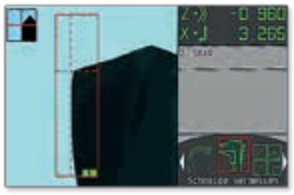
Measurement range mm	Base length mm	Measuring hook	art.no.	€	Calibration art.no.	Calibration €
300	150	No	501610 0301	460,–	070101 0002	16,70
			5196			

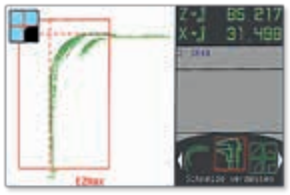
ATORN® Tool pre-setting devices 350/420/600 with ImageController

- Robust tool pre-setting devices for workshop use
- Quick measuring, setting and testing tools
- SK50 high accuracy spindle with integrated calibration edge
- Pneumatic spindle clamping unit
- Simple setup of different zero points (max. 99)
- Different measuring programs e.g. to carry out concentricity and axial run-out measurements on the tool cutting edge
- CCD camera with telecentric lens
- Dynamic crosshair for automatic measurements
- EZmax software function for calculating and measuring the tool contour
- Supplied ex works, excluding packaging

Base support and reduction with integrated calibration edge







ImageController Basic

- 7" TFT colour screen with 12x enlargement and dial/push-button operation
- The simple software allows for fast training at minimal training expense
- ATORN 420 and 600 with gap gauge 100 mm

model	Measurement range mm	Total height mm	Weight kg	Enlargement	art.no.	€
ATORN 350 ImageControllerbasic	350x320	870	80	12x	**520090** 0350	6.350,–
ATORN 420 ImageControllerbasic	420x420	1060	100	12x	520090 0420	6.850,–
ATORN 600 ImageControllerbasic	600x420	1260	120	12x	520090 0601	8.350,–

5165



520090 0350









ImageController 1

In addition to ImageController Basic:

- 13.3" TFT touchscreen monitor with 20x magnification
- Stable undertable with adapter tray
- Spindle brake and 4x90° spindle indexing
- Label printing system
- Illuminated cutting edge inspection
- Tool management, projector function
- Turning centre measurement (optional)
- Network-compatible (optional)
- Communication with machine tool (optional)

model	Measurement range mm	Enlargement	Total height mm	Weight kg	art.no.	€
ATORN 350 ImageController1	350x320	20x	1600	180	**520090** 1350	9.350,–
ATORN 420 ImageController1	420x420	20x	1750	274	520090 1420	9.850,–
ATORN 600x420 ImageController1	600x420	20x	1950	289	520090 1601	11.350,–
ATORN 600x570 ImageController1	600x570	20x	1950	289	520090 1657	12.850,–

5165



520090 1350





520090 2420

ImageController 2
- **Screen size 13.3“**
- Touchscreen display (magnification 20x)
- additional options for ImageController 1:
  - Creation of tooling sheets (optional)
  - Autofocus spindle (optional)

model	Measurement range mm	Display (diagonal) in	Total height mm	Weight kg	art.no.	€
ATORN 350 ImageController2	350x320	13.3”	1600	180	**520090** 2350	10.650,–
ATORN 420 ImageController2	420x420	13.3”	1750	274	520090 2420	11.150,–
ATORN 600x420 ImageController2	600x420	13.3”	1950	289	520090 2601	12.650,–
ATORN 600x570 ImageController2	600x570	13.3”	1950	289	520090 2657	14.150,–

5165

ImageController 2
- **Screen size 24“**
- Panel PC (magnification 38x)
- additional options for ImageController 1:
  - Creation of tooling sheets (optional)
  - Autofocus spindle (optional)

model	Measurement range mm	Display (diagonal) in	Total height mm	Weight kg	art.no.	€
ATORN 350 ImageController2	350x320	24”	1600	180	**520090** 2324	11.550,–
ATORN 420 ImageController2	420x420	24”	1750	274	520090 2424	12.050,–
ATORN 600x420 ImageController2	600x420	24”	1950	289	520090 2624	13.550,–
ATORN 600x570 ImageController2	600x570	24”	1950	289	520090 2524	15.050,–

5165

Accessories
- All adapters come with integrated calibration edge
- The barcode print software option allows the printing of QR Code labels
- Measured tool data can be read directly into the machine memory via the tool identification „zidcode” and the associated scanner. Typos are a thing of the past
- Additional special accessories e.g. vacuum spindle, other adapters available on request

Designation	suitable for model	art.no.	€
Spindle brake for tool pre-setting device with ImageControllerbasic	IC Basic	**520091** 0001	330,–
Spindle positioning 4x90° for tool pre-setting device with ImageControllerbasic	IC Basic	520091 0002	290,–
Cutting edge inspection for tool pre-setting device with ImageControllerbasic	IC Basic	520091 0003	200,–
Thermo printer incl. Ezprint licence for tool pre-setting device with ImageControllerbasic	IC Basic	520091 0011	325,–
Labels for TSC printer 25x75 mm / matt white / 950 pcs.	IC Basic / 1 / 2 / 3	520091 0012	50,–
Adapter SK50 / SK40	IC Basic / 1 / 2 / 3	520092 0001	380,–
Adapter SK50 / HSK32 A/C/E/T-HSK40 B/D/F without tool clamping	IC Basic / 1 / 2 / 3	520092 0017	545,–
Adapter SK50 / HSK40 A/C/E/T-HSK50 B/D/F without tool clamping	IC Basic / 1 / 2 / 3	520092 0018	545,–
Adapter SK50 / HSK50 A/C/E/T-HSK63 B/D/F without tool clamping	IC Basic / 1 / 2 / 3	520092 0019	545,–
Adapter SK50 / HSK63 A/C/E/T-HSK80 B/D/F without tool clamping	IC Basic / 1 / 2 / 3	520092 0020	545,–
Adapter SK50 / VDI20	IC Basic / 1 / 2 / 3	520092 0031	795,–
Adapter SK50 / VDI30	IC Basic / 1 / 2 / 3	520092 0033	795,–
Adapter SK50 / VDI40	IC Basic / 1 / 2 / 3	520092 0034	795,–
Adapter SK50 / VDI50	IC Basic / 1 / 2 / 3	520092 0035	795,–
Software option barcode printer	IC2 / 3	520091 0110	270,–
Tool identification zidcode with fixed scanner	IC2 / 3	520091 0111	1.615,–
Tool identification zidcode with removable scanner	IC2 / 3	520091 0112	1.615,–
Cleaning agent “BLUE-TACK”	IC Basic / 1 / 2 / 3	520091 1210	10,–

5165


520092 0035


520092 0001


520091 0112


520091 0111

Gauge blocks

INFO

At operational level, gauge blocks are the most important tool for connecting to the metre unit of length. They embody a certain length with a very high level of accuracy, hence the term **material measure**.

Gauge blocks are offered in different tolerance classes (formerly known as **degrees of accuracy**), which differ as follows:

Tolerance class K used in our measuring laboratory for checking gauge blocks

Tolerance class 0 for all exact length measurements, for checking gauge blocks used in operation, for adjusting highly precise measuring instruments

Tolerance class 1 for checking gauges and adjusting measuring instruments

Tolerance class 2 as a working and setting gauge in production



Nominal dimension range in mm above	to	Tolerance class 0 Deviation from the nominal dimension in µm	Tolerance class 1 Deviation from the nominal dimension in µm	Tolerance class 2 Deviation from the nominal dimension in µm
-	10	0.12	0.20	0.45
10	25	0.14	0.30	0.60
25	50	0.20	0.40	0.80
50	75	0.25	0.50	1.00
75	100	0.30	0.60	1.20
100	150	0.40	0.80	1.60
150	200	0.50	1.00	2.00
200	250	0.60	1.20	2.40
250	300	0.70	1.40	2.80
300	400	0.90	1.80	3.60
400	500	1.10	2.20	4.40
500	600	1.30	2.60	5.00
600	700	1.50	3.00	6.00
700	800	1.70	3.40	6.50
800	900	1.90	3.80	7.50
900	1000	2.00	4.20	8.00



	Ceramic (ZrO_2)	Steel (Fe)
Vickers hardness (HV)	1350	800
Longitudinal expansion coefficient (10^{-6}/K)	9.3 +/- 0.5	10.8 +/- 0.5

Advantages of ceramic gauge blocks

Corrosion-resistant — **Ceramic gauge blocks cannot corrode and consequently require no corrosion protection treatment**

Non-magnetic — **No magnetic dirt, such as chips, will stick to ceramic**

Abrasion-resistant — **Mitutoyo ceramic gauge blocks have up to ten-times higher abrasion resistance than steel gauge blocks**

Dimensional accuracy — **Ceramic gauge blocks are wholly unaffected by time-related dimensional changes**

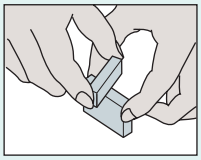
Expansion coefficient — **Similar to that of steel**



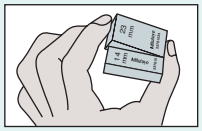
Perfect wringing of gauge blocks

- The wringing should always be performed in a clean place on a soft surface – if a gauge block falls from the hand, it will not be damaged.
- Wipe the preservation substance from the gauge blocks using a soft cloth and petroleum ether.
- Do not use alcohol or ordinary white gas for cleaning purposes for the cleaning; normal white gas for cleaning purposes contains too many impurities, while alcohol always contains aqueous components that can cause corrosion.
- Microfibre cloths are best suited for wiping off the gauge block.
- Check the cleaned gauge block for rust and cratches.
- Burrs on the measuring face are removed with a special Ceraston (ceramic deburring stone) for gauge blocks. Move the gauge block over the Ceraston using very light pressure.

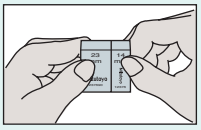
Wringing long gauge blocks



Cross the gauge blocks at about 90 ° to each other in the middle of the measuring faces.

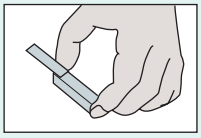


Pressing lightly, rotate the gauge block. You will develop a sense of the wringing while sliding the blocks.

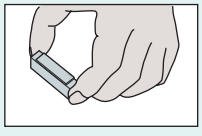


Align the measuring faces with each other.

Wringing one thick and one thin gauge block

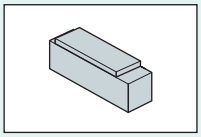


Overlap one side of a thin gauge block on one side of a thick gauge block.

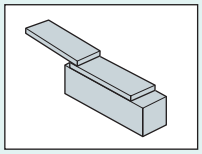


While pressing the entire overlapped area, move the thinner gauge block to align the measuring faces with each other.

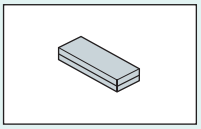
Wringing thin gauge blocks



To avoid bending the thin gauge, first wring the smaller gauge block onto the long gauge block.



Then slide the other thin gauge block onto the first thin gauge block.



Finally, remove the long gauge block from the stack.

SARA® Steel gauge block sets

DIN EN ISO 3650 | Werks-norm



- Made of carefully selected, high-quality, alloyed special steel, aged, hardened and hand-lapped
- Edges slightly blunted
- Each gauge block is engraved with an individual identification number
- Supplied in a wooden case with individually labelled compartments
- The accompanying factory test certificate lists all gauge blocks with their nominal dimensions and deviations from the nominal dimensions. It documents the test conditions and traceability to national standards.
- Calibration: Test B = 5-point measurement, Test C = 1-point measurement

535001 1087

32-piece set

Anzahl	Maß mm	Stufung mm
1	1,005	-
9	1,01-1,09	0,01
9	1,1-1,9	0,1
9	1-9	1,0
3	10-30	10
1	50	-

47-piece set

Anzahl	Maß mm	Stufung mm
1	1,005	-
21	1,00-1,20	0,01
8	1,3-2,0	0,1
8	3-10	1
9	20-100	10

87-piece set

Anzahl	Maß mm	Stufung mm
9	1,001-1,009	0,001
49	1,01-1,49	0,01
19	0,5-9,5	0,5
10	10-100	10

103-piece set

Anzahl	Maß mm	Stufung mm
1	1,005	-
49	1,01-1,49	0,01
49	0,5-24,5	0,5
4	25-100	25

Tolerance class	Contents			Test B		Test C	
		art.no.	€	art.no.	€	art.no.	€
0	32	**535001** 0032	450,–	073045 0001	186,80	073050 0001	149,–
1	32	535001 1032	295,–	073045 0001	186,80	073050 0001	149,–
2	32	535001 2032	185,50	073045 0001	186,80	073050 0001	149,–
0	47	535001 0047	679,–	073045 0002	267,–	073050 0002	214,–
1	47	535001 1047	425,–	073045 0002	267,–	073050 0002	214,–
2	47	535001 2047	263,–	073045 0002	267,–	073050 0002	214,–
0	87	535001 0087	1.029,–	073045 0003	475,–	073050 0003	384,–
1	87	535001 1087	665,–	073045 0003	475,–	073050 0003	384,–
2	87	535001 2087	398,–	073045 0003	475,–	073050 0003	384,–
0	103	535001 0103	1.359,–	073045 0004	533,–	073050 0004	428,–
1	103	535001 1103	799,–	073045 0004	533,–	073050 0004	428,–
2	103	535001 2103	469,–	073045 0004	533,–	073050 0004	428,–

5129

SARA® Steel gauge block set, long

DIN EN ISO 3650



- For adjusting larger measuring instruments
- With locating bores for gauge block connector, no. 5360060010
- Made from carefully selected, high-quality alloyed special steel
- Aged, hardened and hand-lapped
- Each gauge block is engraved with an individual identification number
- The works inspection certificate provided lists all the end gauges with the nominal dimensions and the deviation from the nominal dimensions. It documents traceability to national standards and the test conditions.
- Calibration: Test B = 5-point measurement, Test C = 1-point measurement

Tolerance class	Contents	Dimension mm			Test B		Test C	
			art.no.	€	art.no.	€	art.no.	€
1	8	125 150 175 200 250 300 400 500	**535001** 0008	1.309,–	073012 0001	268,–	073013 0001	255,–

5129

Gauge block connector

- Connects long gauge blocks to locating bores quickly and securely
- Dimensions 72 x 30 x 29 mm



Designation	art.no.	€
Gauge block connector	**536006** 0010	125,–

5129

Mitutoyo Steel gauge block sets

DIN EN ISO 3650

- Made from carefully selected, high-quality alloyed special steel
- Aged, hardened and hand-lapped
- Edges slightly blunted
- Each gauge block is engraved with an individual identification number
- Supplied in a wooden case with individually labelled compartments, incl. MITUTOYO test certificate confirming the centre deviation for each gauge block
- Calibration: Test B = 5-point measurement, Test C = 1-point measurement



536001 0031

32-piece set		
Anzahl	Maß mm	Stufung mm
1	1,005	-
9	1,01-1,09	0,01
9	1,1-1,9	0,1
9	1-9	1,0
3	10-30	10
1	50	-

47-piece set		
Anzahl	Maß mm	Stufung mm
1	1,005	-
21	1,00-1,20	0,01
8	1,3-2,0	0,1
8	3-10	1
9	20-100	10

87-piece set		
Anzahl	Maß mm	Stufung mm
9	1,001-1,009	0,001
49	1,01-1,49	0,01
19	0,5-9,5	0,5
10	10-100	10

103-piece set		
Anzahl	Maß mm	Stufung mm
1	1,005	-
49	1,01-1,49	0,01
49	0,5-24,5	0,5
4	25-100	25

Tolerance class	Contents			Test B		Test C	
		art.no.	€	art.no.	€	art.no.	€
0	32	**536001** 0040	1.089,–	073045 0001	186,80	073050 0001	149,–
1	32	536001 0041	839,–	073045 0001	186,80	073050 0001	149,–
2	32	536001 0042	713,–	073045 0001	186,80	073050 0001	149,–
0	47	536001 0030	1.858,–	073045 0002	267,–	073050 0002	214,–
1	47	536001 0031	1.429,–	073045 0002	267,–	073050 0002	214,–
2	47	536001 0032	1.218,–	073045 0002	267,–	073050 0002	214,–
0	87	536001 0021	2.862,–	073045 0003	475,–	073050 0003	384,–
1	87	536001 0022	2.202,–	073045 0003	475,–	073050 0003	384,–
2	87	536001 0023	1.875,–	073045 0003	475,–	073050 0003	384,–
0	103	536001 0011	3.630,–	073045 0004	533,–	073050 0004	428,–
1	103	536001 0012	2.786,–	073045 0004	533,–	073050 0004	428,–
2	103	536001 0013	2.367,–	073045 0004	533,–	073050 0004	428,–

5102

Mitutoyo Ceramic gauge block sets

DIN EN ISO 3650

- Accuracies and possible uses as described in 536001....
- Made from zirconium ceramic
- Each gauge block is engraved with an individual identification number
- Supplied in a wooden case with individually labelled compartments
- For information on set composition and dimension steps, please see no. 536001....
- Calibration: Test B = 5-point measurement, Test C = 1-point measurement



536020 0103

32-piece set		
Anzahl	Maß mm	Stufung mm
1	1,005	-
9	1,01-1,09	0,01
9	1,1-1,9	0,1
9	1-9	1,0
3	10-30	10
1	50	-

47-piece set		
Anzahl	Maß mm	Stufung mm
1	1,005	-
21	1,00-1,20	0,01
8	1,3-2,0	0,1
8	3-10	1
9	20-100	10

87-piece set		
Anzahl	Maß mm	Stufung mm
9	1,001-1,009	0,001
49	1,01-1,49	0,01
19	0,5-9,5	0,5
10	10-100	10

103-piece set		
Anzahl	Maß mm	Stufung mm
1	1,005	-
49	1,01-1,49	0,01
49	0,5-24,5	0,5
4	25-100	25

Tolerance class	Contents			Test B		Test C	
		art.no.	€	art.no.	€	art.no.	€
0	32	**536020** 0032	1.509,–	073045 0001	186,80	073050 0001	149,–
1	32	536020 1032	1.162,–	073045 0001	186,80	073050 0001	149,–
0	47	536020 0047	3.060,–	073045 0002	267,–	073050 0002	214,–
1	47	536020 1047	2.660,–	073045 0002	267,–	073050 0002	214,–
0	87	536020 0087	5.082,–	073045 0003	475,–	073050 0003	384,–
1	87	536020 1087	3.927,–	073045 0003	475,–	073050 0003	384,–
0	103	536020 0103	6.105,–	073045 0004	533,–	073050 0004	428,–
1	103	536020 1103	4.686,–	073045 0004	533,–	073050 0004	428,–

5102

Mitutoyo SARA® Individual gauge blocks, steel and ceramic

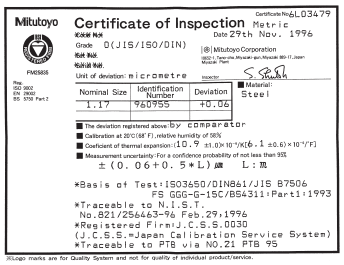
DIN EN ISO 3650



- Cross-section of steel and ceramic individual gauge blocks: from 0.1 to 10.1 mm: 30 x 9 mm, above 10.1 to 1,000 mm: 35 x 9 mm
- Individual gauge blocks are available at a degree of accuracy of 0 and 1 for steel or 0 for ceramic
- **Each gauge block is engraved with an individual identification number**
- **Every Mitutoyo gauge block is supplied with a free MITUTOYO test certificate documenting the centre deviation and degree of accuracy, as well as traceability to the PTB standard**
- Mitutoyo gauge blocks: Supplied individually in moulded packaging with a MITUTOYO test certificate
- Calibration costs for all individual gauge blocks up to 100 mm:
  Test B: EUR 7.50 (5-point measurement)
  Test C: EUR 5.30 (1-point measurement)



536050 0115


Mitutoyo

Certificate of Inspection Metric

Date 29th Nov. 1996

Grade 0(JIS/ISO/DIN)

Mitutoyo Corporation

Unit of deviation: micrometre

Nominal Size	Identification Number	Deviation
1.17	960955	+0.06

Material: Steel

The deviation registered above: by comparator

Calibration at 20°C(68°F), relative humidity of 58%

Coefficient of thermal expansion: (10.9 ±1.0)×10⁻⁶/K(6.1 ±0.6)×10⁻⁶/°F)

Measurement uncertainty: For a confidence probability of not less than 95%

±(0.06+0.5*L)μm L: m

*Basis of Test: ISO3650/DIN861/JIS B7506
FS GGG-G-15C/BS4311:Part1:1993

*Traceable to N.I.S.T.
No.821/256463-96 Feb.29,1996

*Registered Firm/J.C.S.S.0030
(J.C.S.S.=Japan Calibration Service System)

*Traceable to PTB via NO.21 PTB 95

Short	Mitutoyo		Mitutoyo		SARA®		SARA®	
Nominal dimension mm	Steel, accuracy 0 art.no.	€	Steel, accuracy 1 art.no.	€	Steel, accuracy 1 art.no.	€	Ceramics, accuracy 0 art.no.	€
0.5	**536050** 0001	40,–	**536052** 0001	33,50	**536053** 0001	25,90	**536056** 0001	56,–
1.0	536050 0002	26,40	536052 0002	22,40	536053 0002	17,95	536056 0002	40,30
1.001	536050 0003	26,40	536052 0003	22,40	536053 0003	20,50	536056 0003	44,30
1.002	536050 0004	26,40	536052 0004	22,40	536053 0004	20,50	536056 0004	44,30
1.003	536050 0005	26,40	536052 0005	22,40	536053 0005	20,50	536056 0005	44,30
1.004	536050 0006	26,40	536052 0006	22,40	536053 0006	20,50	536056 0006	44,30
1.005	536050 0007	26,40	536052 0007	22,40	536053 0007	20,50	536056 0007	44,30
1.006	536050 0008	26,40	536052 0008	22,40	536053 0008	20,50	536056 0008	44,30
1.007	536050 0009	26,40	536052 0009	22,40	536053 0009	20,50	536056 0009	44,30
1.008	536050 0010	26,40	536052 0010	22,40	536053 0010	20,50	536056 0010	44,30
1.009	536050 0011	26,40	536052 0011	22,40	536053 0011	20,50	536056 0011	44,30
1.01	536050 0012	26,40	536052 0012	22,40	536053 0012	20,50	536056 0012	43,–
1.02	536050 0013	26,40	536052 0013	22,40	536053 0013	20,50	536056 0013	43,–
1.03	536050 0014	26,40	536052 0014	22,40	536053 0014	20,50	536056 0014	43,–
1.04	536050 0015	26,40	536052 0015	22,40	536053 0015	20,50	536056 0015	43,–
1.05	536050 0016	26,40	536052 0016	22,40	536053 0016	20,50	536056 0016	43,–
1.06	536050 0017	26,40	536052 0017	22,40	536053 0017	20,50	536056 0017	43,–
1.07	536050 0018	26,40	536052 0018	22,40	536053 0018	20,50	536056 0018	43,–
1.08	536050 0019	26,40	536052 0019	22,40	536053 0019	20,50	536056 0019	43,–
1.09	536050 0020	26,40	536052 0020	22,40	536053 0020	20,50	536056 0020	43,–
1.10	536050 0021	26,40	536052 0021	22,40	536053 0021	20,50	536056 0021	43,–
1.11	536050 0022	26,40	536052 0022	22,40	536053 0022	20,50	536056 0022	43,–
1.12	536050 0023	26,40	536052 0023	22,40	536053 0023	20,50	536056 0023	43,–
1.13	536050 0024	26,40	536052 0024	22,40	536053 0024	20,50	536056 0024	43,–
1.14	536050 0025	26,40	536052 0025	22,40	536053 0025	20,50	536056 0025	43,–
1.15	536050 0026	26,40	536052 0026	22,40	536053 0026	20,50	536056 0026	43,–
1.16	536050 0027	26,40	536052 0027	22,40	536053 0027	20,50	536056 0027	43,–
1.17	536050 0028	26,40	536052 0028	22,40	536053 0028	20,50	536056 0028	43,–
1.18	536050 0029	26,40	536052 0029	22,40	536053 0029	20,50	536056 0029	43,–
1.19	536050 0030	26,40	536052 0030	22,40	536053 0030	20,50	536056 0030	43,–
1.20	536050 0031	26,40	536052 0031	22,40	536053 0031	20,50	536056 0031	43,–
1.21	536050 0032	26,40	536052 0032	22,40	536053 0032	20,50	536056 0032	43,–
1.22	536050 0033	26,40	536052 0033	22,40	536053 0033	20,50	536056 0033	43,–
1.23	536050 0034	26,40	536052 0034	22,40	536053 0034	20,50	536056 0034	43,–
1.24	536050 0035	26,40	536052 0035	22,40	536053 0035	20,50	536056 0035	43,–
1.25	536050 0036	26,40	536052 0036	22,40	536053 0036	20,50	536056 0036	43,–
1.26	536050 0037	26,40	536052 0037	22,40	536053 0037	20,50	536056 0037	43,–
1.27	536050 0038	26,40	536052 0038	22,40	536053 0038	20,50	536056 0038	43,–
1.28	536050 0039	26,40	536052 0039	22,40	536053 0039	20,50	536056 0039	43,–
1.29	536050 0040	26,40	536052 0040	22,40	536053 0040	20,50	536056 0040	43,–
1.30	536050 0041	26,40	536052 0041	22,40	536053 0041	20,50	536056 0041	43,–
1.31	536050 0042	26,40	536052 0042	22,40	536053 0042	20,50	536056 0042	43,–
	5102		5102		5129		5129	

Nominal dimension mm	Mitutoyo Steel, accuracy 0 art.no.	€	Mitutoyo Steel, accuracy 1 art.no.	€	SARA Steel, accuracy 1 art.no.	€	SARA Ceramics, accuracy 0 art.no.	€
1.32	536050 0043	26,40	536052 0043	22,40	536053 0043	20,50	536056 0043	43,–
1.33	536050 0044	26,40	536052 0044	22,40	536053 0044	20,50	536056 0044	43,–
1.34	536050 0045	26,40	536052 0045	22,40	536053 0045	20,50	536056 0045	43,–
1.35	536050 0046	26,40	536052 0046	22,40	536053 0046	20,50	536056 0046	43,–
1.36	536050 0047	26,40	536052 0047	22,40	536053 0047	20,50	536056 0047	43,–
1.37	536050 0048	26,40	536052 0048	22,40	536053 0048	20,50	536056 0048	43,–
1.38	536050 0049	26,40	536052 0049	22,40	536053 0049	20,50	536056 0049	43,–
1.39	536050 0050	26,40	536052 0050	22,40	536053 0050	20,50	536056 0050	43,–
1.40	536050 0051	26,40	536052 0051	22,40	536053 0051	20,50	536056 0051	43,–
1.41	536050 0052	26,40	536052 0052	22,40	536053 0052	20,50	536056 0052	43,–
1.42	536050 0053	26,40	536052 0053	22,40	536053 0053	20,50	536056 0053	43,–
1.43	536050 0054	26,40	536052 0054	22,40	536053 0054	20,50	536056 0054	43,–
1.44	536050 0055	26,40	536052 0055	22,40	536053 0055	20,50	536056 0055	43,–
1.45	536050 0056	26,40	536052 0056	22,40	536053 0056	20,50	536056 0056	43,–
1.46	536050 0057	26,40	536052 0057	22,40	536053 0057	20,50	536056 0057	43,–
1.47	536050 0058	26,40	536052 0058	22,40	536053 0058	20,50	536056 0058	43,–
1.48	536050 0059	26,40	536052 0059	22,40	536053 0059	20,50	536056 0059	43,–
1.49	536050 0060	26,40	536052 0060	22,40	536053 0060	20,50	536056 0060	43,–
1.5	536050 0061	26,60	536052 0061	22,30	536053 0061	20,50	536056 0061	43,–
1.6	536050 0062	26,60	536052 0062	22,30	536053 0062	20,50	536056 0062	43,–
1.7	536050 0063	26,60	536052 0063	22,30	536053 0063	20,50	536056 0063	43,–
1.8	536050 0064	26,60	536052 0064	22,30	536053 0064	20,50	536056 0064	43,–
1.9	536050 0065	26,60	536052 0065	22,30	536053 0065	20,50	536056 0065	43,–
2	536050 0066	26,60	536052 0066	22,30	536053 0066	21,50	536056 0066	43,–
2.5	536050 0067	28,50	536052 0067	23,70	536053 0067	21,50	536056 0067	43,–
3	536050 0068	28,50	536052 0068	23,70	536053 0068	21,50	536056 0068	43,–
3.5	536050 0069	29,–	536052 0069	24,20	536053 0069	21,50	536056 0069	43,–
4	536050 0070	29,–	536052 0070	24,20	536053 0070	21,50	536056 0070	43,–
4.5	536050 0071	29,–	536052 0071	24,20	536053 0071	21,50	536056 0071	43,–
5	536050 0072	29,–	536052 0072	24,20	536053 0072	21,50	536056 0072	43,–
5.5	536050 0073	34,80	536052 0073	29,20	536053 0073	21,50	536056 0073	46,90
6	536050 0074	35,60	536052 0074	29,60	536053 0074	21,50	536056 0074	46,90
6.5	536050 0075	35,60	536052 0075	29,60	536053 0075	21,50	536056 0075	46,90
7	536050 0076	35,60	536052 0076	29,60	536053 0076	21,50	536056 0076	46,90
7.5	536050 0077	36,40	536052 0077	30,30	536053 0077	21,50	536056 0077	46,90
8	536050 0078	36,40	536052 0078	30,30	536053 0078	21,50	536056 0078	46,90
8.5	536050 0079	36,40	536052 0079	30,30	536053 0079	21,50	536056 0079	46,90
9	536050 0080	37,–	536052 0080	30,90	536053 0080	21,50	536056 0080	46,90
9.5	536050 0081	37,–	536052 0081	30,90	536053 0081	21,50	536056 0081	46,90
10	536050 0082	37,–	536052 0082	30,90	536053 0082	21,50	536056 0082	61,–
10.5	536050 0083	37,50	536052 0083	31,40	536053 0083	26,80	536056 0083	61,–
11	536050 0084	43,60	536052 0084	36,40	536053 0084	26,80	536056 0084	61,–
11.5	536050 0085	44,20	536052 0085	36,80	536053 0085	26,80	536056 0085	61,–
12	536050 0086	44,20	536052 0086	36,80	536053 0086	26,80	536056 0086	61,–
12.5	536050 0087	44,80	536052 0087	37,30	536053 0087	26,80	536056 0087	61,–
13	536050 0088	44,80	536052 0088	37,30	536053 0088	26,80	536056 0088	61,–
13.5	536050 0089	44,80	536052 0089	37,30	536053 0089	26,80	536056 0089	61,–
14	536050 0090	45,20	536052 0090	37,80	536053 0090	26,80	536056 0090	61,–
14.5	536050 0091	45,20	536052 0091	37,80	536053 0091	26,80	536056 0091	61,–
15	536050 0092	45,20	536052 0092	37,80	536053 0092	26,80	536056 0092	61,–
15.5	536050 0093	46,–	536052 0093	38,30	536053 0093	26,80	536056 0093	80,–
16	536050 0094	47,20	536052 0094	39,40	536053 0094	26,80	536056 0094	80,–
16.5	536050 0095	47,90	536052 0095	39,90	536053 0095	26,80	536056 0095	80,–
17	536050 0096	47,90	536052 0096	39,90	536053 0096	26,80	536056 0096	80,–
17.5	536050 0097	48,20	536052 0097	40,40	536053 0097	26,80	536056 0097	80,–
18	536050 0098	48,20	536052 0098	40,40	536053 0098	26,80	536056 0098	80,–
18.5	536050 0099	48,20	536052 0099	40,40	536053 0099	26,80	536056 0099	80,–
19	536050 0100	48,80	536052 0100	40,70	536053 0100	26,80	536056 0100	80,–
19.5	536050 0101	48,80	536052 0101	40,70	536053 0101	26,80	536056 0101	80,–
20	536050 0102	48,80	536052 0102	40,70	536053 0102	26,80	536056 0102	80,–
	5102		5102		5129		5129	



Nominal dimension mm	Mitutoyo Steel, accuracy 0 art.no.	€	Mitutoyo Steel, accuracy 1 art.no.	€	SARA Steel, accuracy 1 art.no.	€	SARA Ceramics, accuracy 0 art.no.	€
20.5	536050 0103	49,50	536052 0103	41,20	536053 0103	26,80	536056 0103	109,–
21	536050 0104	51,40	536052 0104	42,90	536053 0104	26,80	536056 0104	109,–
21.5	536050 0105	51,40	536052 0105	42,90	536053 0105	26,80	536056 0105	109,–
22	536050 0106	51,90	536052 0106	43,40	536053 0106	26,80	536056 0106	109,–
22.5	536050 0107	51,90	536052 0107	43,40	536053 0107	26,80	536056 0107	109,–
23	536050 0108	51,90	536052 0108	43,40	536053 0108	26,80	536056 0108	109,–
23.5	536050 0109	51,90	536052 0109	43,40	536053 0109	26,80	536056 0109	109,–
24	536050 0110	51,90	536052 0110	43,40	536053 0110	26,80	536056 0110	109,–
24.5	536050 0111	52,50	536052 0111	43,90	536053 0111	26,80	536056 0111	109,–
25	536050 0112	52,50	536052 0112	43,90	536053 0112	26,80	536056 0112	109,–
30	536050 0113	59,60	536052 0113	49,80	536053 0113	26,80	536056 0113	134,–
40	536050 0114	65,80	536052 0114	55,10	536053 0114	26,80	536056 0114	151,–
50	536050 0115	74,40	536052 0115	62,10	536053 0115	26,80	536056 0115	162,–
60	536050 0116	85,80	536052 0116	71,60	536053 0116	35,30	536056 0116	194,–
70	536050 0117	94,–	536052 0117	78,30	536053 0117	35,30	536056 0117	205,–
75	536050 0118	96,–	536052 0118	80,20	536053 0118	35,30	536056 0118	205,–
80	536050 0119	104,–	536052 0119	86,60	536053 0119	35,30	536056 0119	240,–
90	536050 0120	109,–	536052 0120	90,30	536053 0120	35,30	536056 0120	275,–
100	536050 0121	115,–	536052 0121	95,70	536053 0121	35,30	536056 0121	315,–
	5102		5102		5129		5129	

Long

Nominal dimension mm	SARA Steel, accuracy 1 art.no.	€
41.3	**536053** 0413	50,50
125	536053 0125	89,50
131.4	536053 1314	149,–
150	536053 0150	125,–
175	536053 0175	137,–
200	536053 0200	156,–
243.5	536053 2435	305,–
250	536053 0250	179,–
281.2	536053 2812	330,–
	5129	

Nominal dimension mm	SARA Steel, accuracy 1 art.no.	€
300	536053 0300	205,–
400	536053 0400	315,–
500	536053 0500	390,–
600	536053 0600	729,–
700	536053 0700	819,–
800	536053 0800	859,–
900	536053 0900	1.049,–
1000	536053 1000	1.239,–
	5129	





Application example with gauge block connector

SARA Gauge block set for monitoring testing equipment

DIN EN ISO 3650

- Made from steel
- For monitoring test equipment
- **Tolerance class 1**
- Calibration: Test B = 5-point measurement, Test C = 1-point measurement

For testing outside micrometers of up to 100 mm

- Test equipment directive VDI/VDE/DGQ 2618, Part 10.1
- Steel gauge blocks for external measurements
- Supplied in a wooden case with individually labelled compartments

for measurement range mm	Individual dimensions	art.no.	€	Test B art.no.	€	Test C art.no.	€
0 - 25	5.1/ 10.3/ 15/ 20.2/ 25	**535010** 0005	162,–	073012 0003	45,–	073013 0003	31,25
0 - 100	5.1/ 10.3/ 15/ 20.2/ 25/ 50/ 75/ 100	535010 0008	255,–	073012 0004	72,–	073013 0004	50,–
0 - 25	2.5/ 5.1/ 7.7/ 10.3/ 12.9/ 15/ 17.6/ 20.2/ 22.8/ 25	535010 1010	275,–	073012 0005	90,–	073013 0005	62,50
		5129					



535010 1010

For testing sliding callipers of up to 300 mm

- Test equipment directive VDI/VDE/DGQ 2618, Part 9.1
- Steel gauge blocks for external measurements
- Ring gauges for internal measurements
- Supplied in a wooden case with individually labelled compartments

Individual dimensions	Ring gauges mm	for measurement ranges up to mm	art.no.	€	Test B art.no.	€	Test C art.no.	€
30.0 / 41.3 / 131.4	Ø 4 / 25	200	**535011** 0105	395,–	073012 0006	77,–	073013 0006	68,50
41.3 / 131.4 / 243.5	Ø 4 / 25	300	535011 0205	485,–	073012 0007	102,–	073013 0007	89,25
			5129					



535011 0105

ATORN® Precision test pin sets

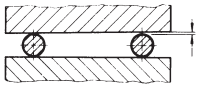
ähnl. DIN 2269



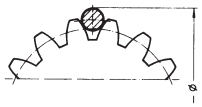
- For directly measuring bore tolerances, measuring distances between two bores, testing the eccentricity of bushes, testing angles and profiles
- Setting masters for length measurement devices, also for checking bore positions
- For parallelism tests, thread and toothing tests
- Gauge steel hardened to 58 - 62 HRC, single-aged, ground and lapped
- Ø tolerance:
Degree of accuracy 1 = ± 0.001 mm
Degree of accuracy 2 = ± 0.002 mm
- Total length: Ø 0.30 - 0.99 = 40 mm / Ø 1.00 - 20.0 = 70 mm
- From Ø 1.50 mm, marked with dimensions
- Wooden box with drilled and labelled inserts
- Other set configurations available on request



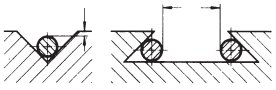
538005 0091



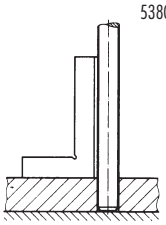
Are two levels parallel to one another?



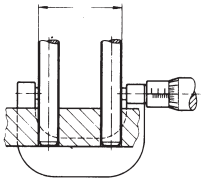
Gear, thread, rack measurement



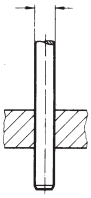
Angle and profile inspections



What is the position of the bore?



Monitoring the spacing tolerances of two bores



Direct measurement of bore tolerances

Accuracy 1

Number	Ø mm	Pitch metr. mm	art.no.	€	Calibration art.no.	€
101	1.00 - 2.00	0.01	**538001** 0100	1.059,–	074010 0106	363,–
100	2.01 - 3.00	0.01	538001 0201	1.049,–	074010 0105	359,–
100	3.01 - 4.00	0.01	538001 0301	1.299,–	074010 0105	359,–
100	4.01 - 5.00	0.01	538001 0401	1.299,–	074010 0105	359,–
100	5.01 - 6.00	0.01	538001 0501	1.299,–	074010 0105	359,–
100	6.01 - 7.00	0.01	538001 0601	1.599,–	074010 0105	359,–
100	7.01 - 8.00	0.01	538001 0701	1.599,–	074010 0105	359,–
100	8.01 - 9.00	0.01	538001 0801	1.599,–	074010 0105	359,–
100	9.01 - 10.00	0.01	538001 0901	1.599,–	074010 0105	359,–
81	1.00 - 5.00	0.05	538001 1081	959,–	074010 0103	295,–
100	5.05 - 10.00	0.05	538001 1100	1.509,–	074010 0105	359,–
41	1.00 - 5.00	0.1	538001 0041	549,–	074010 0101	150,–
50	5.10 - 10.00	0.1	538001 0050	799,–	074010 0102	180,–
91	1.00 - 10.00	0.1	538001 0091	1.189,–	074010 0104	339,–

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Accuracy 2

Number	Ø mm	Pitch metr. mm	art.no.	€	Calibration art.no.	€
101	1.00 - 2.00	0.01	**538005** 0100	839,–	074010 0206	331,50
100	2.01 - 3.00	0.01	538005 0201	829,–	074010 0205	327,50
100	3.01 - 4.00	0.01	538005 0301	1.049,–	074010 0205	327,50
100	4.01 - 5.00	0.01	538005 0401	1.049,–	074010 0205	327,50
100	5.01 - 6.00	0.01	538005 0501	1.049,–	074010 0205	327,50
100	6.01 - 7.00	0.01	538005 0601	1.229,–	074010 0205	327,50
100	7.01 - 8.00	0.01	538005 0701	1.229,–	074010 0205	327,50
100	8.01 - 9.00	0.01	538005 0801	1.229,–	074010 0205	327,50
100	9.01 - 10.00	0.01	538005 0901	1.239,–	074010 0205	327,50
81	1.00 - 5.00	0.05	538005 1081	769,–	074010 0203	270,–
100	5.05 - 10.00	0.05	538005 1100	1.169,–	074010 0205	327,50
41	1.00 - 5.00	0.1	538005 0041	399,–	074010 0201	137,50
50	5.10 - 10.00	0.1	538005 0050	629,–	074010 0202	165,–
91	1.00 - 10.00	0.1	538005 0091	879,–	074010 0204	310,–

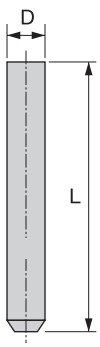
5131

Precision test pins, individual

ähnl. DIN 2269

- Description and use as outlined above
- From Ø 0.30 to 0.99 mm without bevel
- From Ø 1.00 to 20.00 mm with single bevel
- Stainless steel test pin or magnetic test pin available on request

Please specify nominal Ø dimension in mm to four digits
Examples:
- Test pin, Ø 0.53 mm, accuracy 1 = order no. 538020 0053
- Test pin, Ø 16.78 mm, accuracy 2 = order no. 538025 1678





Accuracy 1

D mm	Pitch metr. mm	L mm	538020.... €	Calibration art.no.	€
0.30 - 0.49	0.01	40	28,20	074010 0002	6,50
0.50 - 0.99	0.01	40	14,75	074010 0002	6,50
1.00 - 2.99	0.01	70	12,60	074010 0002	6,50
3.00 - 5.99	0.01	70	15,80	074010 0002	6,50
6.00 - 9.99	0.01	70	21,–	074010 0002	6,50
10.00 - 11.99	0.01	70	28,20	074010 0002	6,50
12.00 - 13.99	0.01	70	34,30	074010 0002	6,50
14.00 - 15.99	0.01	70	45,30	074010 0002	6,50
16.00 - 18.99	0.01	70	56,50	074010 0002	6,50
19.00 - 20.00	0.01	70	67,–	074010 0002	6,50

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Accuracy 2

D mm	Pitch metr. mm	L mm	538025.... €	Calibration art.no.	€
0.30 - 0.49	0.01	40	27,80	074010 0003	5,–
0.50 - 0.99	0.01	40	12,50	074010 0003	5,–
1.00 - 2.99	0.01	70	9,95	074010 0003	5,–
3.00 - 5.99	0.01	70	13,60	074010 0003	5,–
6.00 - 9.99	0.01	70	16,60	074010 0003	5,–
10.00 - 11.99	0.01	70	21,70	074010 0003	5,–
12.00 - 13.99	0.01	70	26,40	074010 0003	5,–
14.00 - 15.99	0.01	70	33,30	074010 0003	5,–
16.00 - 18.99	0.01	70	39,20	074010 0003	5,–
19.00 - 20.00	0.01	70	45,20	074010 0003	5,–

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Test pin holder

- Holding fixture for two test pins within a tolerance zone (e.g. go and no-go dimensions)
- Test pins easier to handle, particularly with small diameters



for test pins Ø mm	Length mm	art.no.	€
1.00 to 1.99	59	**538050** 0002	10,70
2.00 to 4.50	67	538050 0004	12,15
4.51 to 6.99	75	538050 0006	21,90
7.00 to 9.50	83	538050 0008	28,90
9.51 to 12.00	91	538050 0010	32,10
		5131	

SARA® Limit plug gauges

DIN 7150/2 | DIN EN ISO 1938-1 | DIN 7164



540101 0020

- Go/no-go bore testing
- Tolerances and deviations in accordance with DIN EN ISO 1938-1 and DIN 7164
- Go ends for limit plug gauges are supplied with additional wear allowances in accordance with DIN EN ISO 1938-1
- Test pieces ground and lapped
- Up to Ø 70 mm = go/no-go ends on a single handle; 2-part version above Ø 70 mm
- Material: 540101.... to 540115....: Go/no-go made from wear-resistant gauge steel, hardened and aged 540120.....: Go end hard chrome-plated, no-go end gauge steel
- Intermediate dimensions, other tolerance classes, numerical tolerances, carbide limit plug gauges or flat limit hole gauges are available on request!

Tolerance class H7

Nominal Ø mm	Steel H7 art.no.	€	Hard chrome, H7 art.no.	€	Calibration art.no.	€
2	**540101** 0002	21,70	**540120** 0002	74,–	075501 0010	11,–
3	540101 0003	19,40	540120 0003	64,–	075501 0010	11,–
4	540101 0004	19,70	540120 0004	58,–	075501 0010	11,–
5	540101 0005	17,30	540120 0005	54,–	075501 0010	11,–
6	540101 0006	17,40	540120 0006	54,–	075501 0010	11,–
7	540101 0007	17,40	540120 0007	56,–	075501 0010	11,–
8	540101 0008	17,40	540120 0008	58,–	075501 0010	11,–
9	540101 0009	17,40	540120 0009	60,–	075501 0010	11,–
10	540101 0010	17,40	540120 0010	62,50	075501 0010	11,–
11	540101 0011	19,60	540120 0011	64,–	075501 0010	11,–
12	540101 0012	19,60	540120 0012	66,–	075501 0010	11,–
13	540101 0013	19,60	540120 0013	68,–	075501 0010	11,–
14	540101 0014	19,60	540120 0014	70,–	075501 0010	11,–
15	540101 0015	21,80	540120 0015	72,–	075501 0010	11,–
16	540101 0016	21,80	540120 0016	74,–	075501 0010	11,–
17	540101 0017	21,80	540120 0017	76,–	075501 0010	11,–
18	540101 0018	21,80	540120 0018	78,–	075501 0010	11,–
19	540101 0019	25,–	540120 0019	80,50	075501 0010	11,–
20	540101 0020	25,–	540120 0020	80,50	075501 0010	11,–
21	540101 0021	25,–	540120 0021	84,50	075501 0011	13,70
22	540101 0022	25,–	540120 0022	86,–	075501 0011	13,70
23	540101 0023	25,–	540120 0023	88,–	075501 0011	13,70
24	540101 0024	25,–	540120 0024	90,–	075501 0011	13,70
25	540101 0025	27,20	540120 0025	92,–	075501 0011	13,70
26	540101 0026	27,20	540120 0026	94,–	075501 0011	13,70
27	540101 0027	27,50	540120 0027	96,–	075501 0011	13,70
28	540101 0028	27,90	540120 0028	98,50	075501 0011	13,70
30	540101 0030	29,10	540120 0030	100,–	075501 0011	13,70
	5132		5198			

Nominal Ø mm	Steel H7 art.no.	€	Hard chrome, H7 art.no.	€	Calibration art.no.	€
32	540101 0032	39,10	540120 0032	108,–	075501 0011	13,70
34	540101 0034	41,40	540120 0034	114,–	075501 0011	13,70
35	540101 0035	41,80	540120 0035	116,–	075501 0011	13,70
36	540101 0036	42,60	540120 0036	118,–	075501 0011	13,70
37	540101 0037	43,10	540120 0037	120,–	075501 0011	13,70
38	540101 0038	44,–	540120 0038	124,–	075501 0011	13,70
40	540101 0040	46,50	540120 0040	128,–	075501 0011	13,70
42	540101 0042	50,50	540120 0042	132,–	075501 0011	13,70
44	540101 0044	53,–	540120 0044	140,–	075501 0011	13,70
45	540101 0045	53,50	540120 0045	144,–	075501 0011	13,70
46	540101 0046	52,50	540120 0046	148,–	075501 0011	13,70
47	540101 0047	53,–	540120 0047	152,–	075501 0011	13,70
48	540101 0048	54,–	540120 0048	156,–	075501 0011	13,70
50	540101 0050	56,–	540120 0050	160,–	075501 0011	13,70
52	540101 0052	71,50	540120 0052	168,–	075501 0011	13,70
55	540101 0055	73,50	540120 0055	176,–	075501 0011	13,70
60	540101 0060	78,50	540120 0060	196,–	075501 0011	13,70
62	540101 0062	80,50	540120 0062	205,–	075501 0002	19,20
65	540101 0065	85,–	540120 0065	210,–	075501 0002	19,20
68	540101 0068	85,–	540120 0068	225,–	075501 0002	19,20
70	540101 0070	91,50	540120 0070	230,–	075510 0100	31,–
72	540101 0072	100,–	540120 0072	240,–	075510 0100	31,–
75	540101 0075	100,–	540120 0075	250,–	075510 0100	31,–
80	540101 0080	106,50	540120 0080	265,–	075510 0100	31,–
85	540101 0085	112,–	540120 0085	280,–	075510 0100	31,–
90	540101 0090	120,–	540120 0090	300,–	075510 0100	31,–
95	540101 0095	137,–	540120 0095	315,–	075510 0100	31,–
100	540101 0100	134,–	540120 0100	335,–	075510 0100	31,–
	5132		5198			

Other tolerance classes

Nominal Ø mm	Steel, H6 art.no.	€	Steel, H8 art.no.	€	Steel, H9 art.no.	€	Steel, F7 art.no.	€	Steel, K6 art.no.	€	Calibration art.no.	€
2	**540103** 0002	49,20	**540105** 0002	49,20	**540107** 0002	49,20	**540111** 0002	49,20	**540115** 0002	49,20	075501 0010	11,–
3	540103 0003	42,70	540105 0003	42,70	540107 0003	42,70	540111 0003	42,70	540115 0003	42,70	075501 0010	11,–
4	540103 0004	38,50	540105 0004	38,50	540107 0004	38,50	540111 0004	38,50	540115 0004	38,50	075501 0010	11,–
5	540103 0005	36,–	540105 0005	36,–	540107 0005	36,–	540111 0005	36,–	540115 0005	36,–	075501 0010	11,–
6	540103 0006	36,–	540105 0006	36,–	540107 0006	36,–	540111 0006	36,–	540115 0006	36,–	075501 0010	11,–
7	540103 0007	37,30	540105 0007	37,30	540107 0007	37,30	540111 0007	37,30	540115 0007	37,30	075501 0010	11,–
8	540103 0008	38,50	540105 0008	38,50	540107 0008	38,50	540111 0008	38,50	540115 0008	38,50	075501 0010	11,–
9	540103 0009	39,80	540105 0009	39,80	540107 0009	39,80	540111 0009	39,80	540115 0009	39,80	075501 0010	11,–
10	540103 0010	41,40	540105 0010	41,40	540107 0010	41,40	540111 0010	41,40	540115 0010	41,40	075501 0010	11,–
11	540103 0011	42,70	540105 0011	42,70	540107 0011	42,70	540111 0011	42,70	540115 0011	42,70	075501 0010	11,–
12	540103 0012	44,–	540105 0012	44,–	540107 0012	44,–	540111 0012	44,–	540115 0012	44,–	075501 0010	11,–
13	540103 0013	45,30	540105 0013	45,30	540107 0013	45,30	540111 0013	45,30	540115 0013	45,30	075501 0010	11,–
14	540103 0014	46,60	540105 0014	46,60	540107 0014	46,60	540111 0014	46,60	540115 0014	46,60	075501 0010	11,–
15	540103 0015	47,90	540105 0015	47,90	540107 0015	47,90	540111 0015	47,90	540115 0015	47,90	075501 0010	11,–
16	540103 0016	49,20	540105 0016	49,20	540107 0016	49,20	540111 0016	49,20	540115 0016	49,20	075501 0010	11,–
17	540103 0017	50,50	540105 0017	50,50	540107 0017	50,50	540111 0017	50,50	540115 0017	50,50	075501 0010	11,–
18	540103 0018	52,–	540105 0018	52,–	540107 0018	52,–	540111 0018	52,–	540115 0018	52,–	075501 0010	11,–
19	540103 0019	53,50	540105 0019	53,50	540107 0019	53,50	540111 0019	53,50	540115 0019	53,50	075501 0010	11,–
20	540103 0020	53,50	540105 0020	53,50	540107 0020	53,50	540111 0020	53,50	540115 0020	53,50	075501 0010	11,–
21	540103 0021	56,–	540105 0021	56,–	540107 0021	56,–	540111 0021	56,–	540115 0021	56,–	075501 0011	13,70
22	540103 0022	57,–	540105 0022	57,–	540107 0022	57,–	540111 0022	57,–	540115 0022	57,–	075501 0011	13,70
23	540103 0023	58,50	540105 0023	58,50	540107 0023	58,50	540111 0023	58,50	540115 0023	58,50	075501 0011	13,70
24	540103 0024	60,–	540105 0024	60,–	540107 0024	60,–	540111 0024	60,–	540115 0024	60,–	075501 0011	13,70
25	540103 0025	61,–	540105 0025	61,–	540107 0025	61,–	540111 0025	61,–	540115 0025	61,–	075501 0011	13,70
26	540103 0026	62,50	540105 0026	62,50	540107 0026	62,50	540111 0026	62,50	540115 0026	62,50	075501 0011	13,70
27	540103 0027	64,–	540105 0027	64,–	540107 0027	64,–	540111 0027	64,–	540115 0027	64,–	075501 0011	13,70
28	540103 0028	65,50	540105 0028	65,50	540107 0028	65,50	540111 0028	65,50	540115 0028	65,50	075501 0011	13,70
30	540103 0030	66,50	540105 0030	66,50	540107 0030	66,50	540111 0030	66,50	540115 0030	66,50	075501 0011	13,70
32	540103 0032	72,–	540105 0032	72,–	540107 0032	72,–	540111 0032	72,–	540115 0032	72,–	075501 0011	13,70
34	540103 0034	76,–	540105 0034	76,–	540107 0034	76,–	540111 0034	76,–	540115 0034	76,–	075501 0011	13,70
35	540103 0035	77,50	540105 0035	77,50	540107 0035	77,50	540111 0035	77,50	540115 0035	77,50	075501 0011	13,70
36	540103 0036	78,50	540105 0036	78,50	540107 0036	78,50	540111 0036	78,50	540115 0036	78,50	075501 0011	13,70
37	540103 0037	80,–	540105 0037	80,–	540107 0037	80,–	540111 0037	80,–	540115 0037	80,–	075501 0011	13,70
38	540103 0038	82,50	540105 0038	82,50	540107 0038	82,50	540111 0038	82,50	540115 0038	82,50	075501 0011	13,70
40	540103 0040	85,–	540105 0040	85,–	540107 0040	85,–	540111 0040	85,–	540115 0040	85,–	075501 0011	13,70
42	540103 0042	88,–	540105 0042	88,–	540107 0042	88,–	540111 0042	88,–	540115 0042	88,–	075501 0011	13,70
44	540103 0044	93,–	540105 0044	93,–	540107 0044	93,–	540111 0044	93,–	540115 0044	93,–	075501 0011	13,70
45	540103 0045	95,50	540105 0045	95,50	540107 0045	95,50	540111 0045	95,50	540115 0045	95,50	075501 0011	13,70
46	540103 0046	98,50	540105 0046	98,50	540107 0046	98,50	540111 0046	98,50	540115 0046	98,50	075501 0011	13,70
47	540103 0047	101,–	540105 0047	101,–	540107 0047	101,–	540111 0047	101,–	540115 0047	101,–	075501 0011	13,70
48	540103 0048	104,–	540105 0048	104,–	540107 0048	104,–	540111 0048	104,–	540115 0048	104,–	075501 0011	13,70
50	540103 0050	106,–	540105 0050	106,–	540107 0050	106,–	540111 0050	106,–	540115 0050	106,–	075501 0011	13,70
52	540103 0052	112,–	540105 0052	112,–	540107 0052	112,–	540111 0052	112,–	540115 0052	112,–	075501 0011	13,70
55	540103 0055	117,–	540105 0055	117,–	540107 0055	117,–	540111 0055	117,–	540115 0055	117,–	075501 0011	13,70
60	540103 0060	130,–	540105 0060	130,–	540107 0060	130,–	540111 0060	130,–	540115 0060	130,–	075501 0011	13,70
62	540103 0062	136,–	540105 0062	136,–	540107 0062	136,–	540111 0062	136,–	540115 0062	136,–	075501 0002	19,20
65	540103 0065	140,–	540105 0065	140,–	540107 0065	140,–	540111 0065	140,–	540115 0065	140,–	075501 0002	19,20
68	540103 0068	149,–	540105 0068	149,–	540107 0068	149,–	540111 0068	149,–	540115 0068	149,–	075501 0002	19,20
70	540103 0070	152,–	540105 0070	152,–	540107 0070	152,–	540111 0070	152,–	540115 0070	152,–	075510 0100	31,–
72	540103 0072	158,–	540105 0072	158,–	540107 0072	158,–	540111 0072	158,–	540115 0072	158,–	075510 0100	31,–
75	540103 0075	165,–	540105 0075	165,–	540107 0075	165,–	540111 0075	165,–	540115 0075	165,–	075510 0100	31,–
80	540103 0080	176,–	540105 0080	176,–	540107 0080	176,–	540111 0080	176,–	540115 0080	176,–	075510 0100	31,–
85	540103 0085	186,–	540105 0085	186,–	540107 0085	186,–	540111 0085	186,–	540115 0085	186,–	075510 0100	31,–
90	540103 0090	200,–	540105 0090	200,–	540107 0090	200,–	540111 0090	200,–	540115 0090	200,–	075510 0100	31,–
95	540103 0095	210,–	540105 0095	210,–	540107 0095	210,–	540111 0095	210,–	540115 0095	210,–	075510 0100	31,–
100	540103 0100	225,–	540105 0100	225,–	540107 0100	225,–	540111 0100	225,–	540115 0100	225,–	075510 0100	31,–
	5198		5198		5198		5198		5198			



SARA® Limit plug gauge set

DIN 7150/2 | DIN 7164 | DIN EN ISO 1938-1

- Tolerance class H7
- 1 of each limit plug gauge: 3, 4, 5, 6, 8, 10, 12 mm



Description	art.no.	€	Calibration art.no.	€
Limit plug gauge set	**540101** 1000	134,–	075501 0101	69,65

5132

SARA® Limit gap gauge

DIN 7150/2 | DIN 7163 | DIN EN ISO 1938-1

- For go/no-go shaft testing
- **double-ended**
- Tolerances and deviations in accordance with DIN EN ISO 1938-1 and DIN 7163,
- Go ends of the limit gap gauges are manufactured with additional wear allowances in accordance with DIN EN ISO 1938-1
- Wear-resistant gauge steel, forged blank
- Aged and hardened, test faces ground and lapped
- **ISO tolerance class: h6**



540130 0022

- Intermediate dimensions, other tolerance classes – including numerical tolerances – and other versions, e.g. hard chrome-plated or carbide measuring faces and single-sided limit gap gauges, are available on request
- If required, all round-fit, taper and thread gauges can be supplied with a calibration certificate in accordance with VDI/VDE/DGQ 2618 guidelines

Nominal Ø mm	art.no.	€	Calibration art.no.	€
6	**540130** 0006	115,–	075540 0001	17,–
7	540130 0007	104,–	075540 0001	17,–
8	540130 0008	104,–	075540 0001	17,–
9	540130 0009	104,–	075540 0001	17,–
10	540130 0010	104,–	075540 0001	17,–
11	540130 0011	111,–	075540 0001	17,–
12	540130 0012	111,–	075540 0001	17,–
13	540130 0013	111,–	075540 0001	17,–
14	540130 0014	111,–	075540 0001	17,–
15	540130 0015	118,–	075540 0001	17,–
16	540130 0016	118,–	075540 0001	17,–
17	540130 0017	118,–	075540 0001	17,–
18	540130 0018	118,–	075540 0001	17,–
19	540130 0019	129,–	075540 0001	17,–
20	540130 0020	129,–	075540 0001	17,–
21	540130 0021	129,–	075540 0001	17,–
22	540130 0022	129,–	075540 0001	17,–
23	540130 0023	131,–	075540 0001	17,–
24	540130 0024	131,–	075540 0001	17,–
25	540130 0025	131,–	075540 0001	17,–
26	540130 0026	131,–	075540 0001	17,–
27	540130 0027	131,–	075540 0001	17,–
28	540130 0028	132,–	075540 0001	17,–
30	540130 0030	132,–	075540 0001	17,–
32	540130 0032	132,–	075540 0001	17,–
33	540130 0033	139,–	075540 0001	17,–
34	540130 0034	139,–	075540 0001	17,–
35	540130 0035	139,–	075540 0001	17,–
36	540130 0036	139,–	075540 0001	17,–
37	540130 0037	139,–	075540 0001	17,–

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Nominal Ø mm	art.no.	€	Calibration art.no.	€
38	540130 0038	139,–	075540 0001	17,–
40	540130 0040	146,–	075540 0001	17,–
42	540130 0042	146,–	075540 0001	17,–
44	540130 0044	158,–	075540 0001	17,–
45	540130 0045	158,–	075540 0001	17,–
46	540130 0046	158,–	075540 0001	17,–
47	540130 0047	158,–	075540 0001	17,–
48	540130 0048	158,–	075540 0001	17,–
50	540130 0050	168,–	075540 0001	17,–
52	540130 0052	168,–	075540 0002	19,60
55	540130 0055	168,–	075540 0002	19,60
58	540130 0058	182,–	075540 0002	19,60
60	540130 0060	182,–	075540 0002	19,60
62	540130 0062	182,–	075540 0002	19,60
65	540130 0065	199,–	075540 0002	19,60
68	540130 0068	199,–	075540 0002	19,60
70	540130 0070	199,–	075540 0002	19,60
72	540130 0072	215,–	075540 0002	19,60
75	540130 0075	215,–	075540 0002	19,60
78	540130 0078	235,–	075540 0002	19,60
80	540130 0080	235,–	075540 0002	19,60
82	540130 0082	235,–	075540 0002	19,60
85	540130 0085	245,–	075540 0002	19,60
88	540130 0088	245,–	075540 0002	19,60
90	540130 0090	245,–	075540 0002	19,60
92	540130 0092	245,–	075540 0002	19,60
95	540130 0095	255,–	075540 0002	19,60
98	540130 0098	255,–	075540 0002	19,60
100	540130 0100	255,–	075540 0002	19,60

5134

SARA® Ring gauge

DIN 2250C

- For setting and testing measuring instruments
- Wear-resistant gauge steel, aged and hardened, ground with lapped bore
- Labelled with actual dimension to three decimal places
- If ordering with calibration (....K), please specify if normal testing with shape deviation or simplified testing (diameter only) is required



540135 0055

Nominal Ø mm	art.no.	€	Calibration art.no.	€	Enhanced calibration art.no.	€
4	**540135** 0004	50,–	074001 0002	17,50	074005 0001	32,–
5	540135 0005	47,10	074001 0002	17,50	074005 0001	32,–
6	540135 0006	40,–	074001 0002	17,50	074005 0001	32,–
7	540135 0007	40,–	074001 0002	17,50	074005 0001	32,–
8	540135 0008	40,–	074001 0002	17,50	074005 0001	32,–
9	540135 0009	40,–	074001 0002	17,50	074005 0001	32,–
10	540135 0010	39,90	074001 0002	17,50	074005 0001	32,–
11	540135 0011	43,60	074001 0002	17,50	074005 0001	32,–
12	540135 0012	44,30	074001 0002	17,50	074005 0001	32,–
13	540135 0013	45,30	074001 0002	17,50	074005 0001	32,–
14	540135 0014	45,30	074001 0002	17,50	074005 0001	32,–
15	540135 0015	46,80	074001 0002	17,50	074005 0001	32,–
16	540135 0016	45,90	074001 0002	17,50	074005 0001	32,–
17	540135 0017	46,50	074001 0002	17,50	074005 0001	32,–
18	540135 0018	46,50	074001 0002	17,50	074005 0001	32,–
19	540135 0019	47,20	074001 0002	17,50	074005 0001	32,–
20	540135 0020	48,30	074001 0002	17,50	074005 0001	32,–
21	540135 0021	48,20	074001 0002	17,50	074005 0001	32,–
22	540135 0022	48,80	074001 0002	17,50	074005 0001	32,–
23	540135 0023	49,50	074001 0002	17,50	074005 0001	32,–
24	540135 0024	49,80	074001 0002	17,50	074005 0001	32,–
25	540135 0025	51,–	074001 0002	17,50	074005 0001	32,–
26	540135 0026	50,50	074001 0002	17,50	074005 0001	32,–
27	540135 0027	51,50	074001 0002	17,50	074005 0001	32,–
28	540135 0028	51,50	074001 0002	17,50	074005 0001	32,–
30	540135 0030	53,–	074001 0002	17,50	074005 0001	32,–
32	540135 0032	53,–	074001 0002	17,50	074005 0001	32,–
33	540135 0033	55,–	074001 0002	17,50	074005 0001	32,–
34	540135 0034	55,–	074001 0002	17,50	074005 0001	32,–
35	540135 0035	55,–	074001 0002	17,50	074005 0001	32,–
36	540135 0036	56,50	074001 0002	17,50	074005 0001	32,–
37	540135 0037	58,50	074001 0002	17,50	074005 0001	32,–

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Nominal Ø mm	art.no.	€	Calibration art.no.	€	Enhanced calibration art.no.	€
38	540135 0038	58,50	074001 0002	17,50	074005 0001	32,–
40	540135 0040	60,–	074001 0002	17,50	074005 0001	32,–
42	540135 0042	67,–	074001 0002	17,50	074005 0001	32,–
44	540135 0044	68,50	074001 0002	17,50	074005 0001	32,–
45	540135 0045	69,50	074001 0002	17,50	074005 0001	32,–
46	540135 0046	71,–	074001 0002	17,50	074005 0001	32,–
47	540135 0047	74,–	074001 0002	17,50	074005 0001	32,–
48	540135 0048	74,–	074001 0002	17,50	074005 0001	32,–
50	540135 0050	77,–	074001 0002	17,50	074005 0001	32,–
52	540135 0052	86,–	074001 0003	21,50	074005 0002	40,–
55	540135 0055	86,–	074001 0003	21,50	074005 0002	40,–
58	540135 0058	94,50	074001 0003	21,50	074005 0002	40,–
60	540135 0060	93,50	074001 0003	21,50	074005 0002	40,–
62	540135 0062	104,–	074001 0003	21,50	074005 0002	40,–
65	540135 0065	104,–	074001 0003	21,50	074005 0002	40,–
68	540135 0068	110,–	074001 0003	21,50	074005 0002	40,–
70	540135 0070	110,–	074001 0003	21,50	074005 0002	40,–
72	540135 0072	124,–	074001 0003	21,50	074005 0002	40,–
75	540135 0075	124,–	074001 0003	21,50	074005 0002	40,–
78	540135 0078	148,–	074001 0003	21,50	074005 0002	40,–
80	540135 0080	134,–	074001 0003	21,50	074005 0002	40,–
82	540135 0082	156,–	074001 0003	21,50	074005 0002	40,–
85	540135 0085	156,–	074001 0003	21,50	074005 0002	40,–
88	540135 0088	164,–	074001 0003	21,50	074005 0002	40,–
90	540135 0090	164,–	074001 0003	21,50	074005 0002	40,–
92	540135 0092	178,–	074001 0003	21,50	074005 0002	40,–
95	540135 0095	178,–	074001 0003	21,50	074005 0002	40,–
98	540135 0098	197,–	074001 0003	21,50	074005 0002	40,–
100	540135 0100	197,–	074001 0003	21,50	074005 0002	40,–
125	540135 0125	240,–	074001 0004	22,30	074005 0003	54,–
175	540135 0175	460,–	074001 0005	22,30	074005 0004	61,–

5135

SARA® Morse taper gauges

DIN 229

- Testing of conical shanks and drill holes on tools and machine tools
- Wear-resistant gauge steel, aged and hardened
- Ground, with lapped taper surfaces
- 540501.... Taper plug gauge without tang DIN 229
  540505.... Taper sleeve gauge without tang DIN 229

- **The following plug gauges and gauge sleeves and/or ring gauges are available on request**:
  Taper gauges for steep-angle taper DIN 2079 and 2080
  Metric taper gauges according to DIN 234 and 235
  Drill chuck taper gauges according to DIN 2221 and 2222
  Serration gauges according to DIN 5481
  Gauges for splined shafts and splined profile hubs according to DIN 5462, 5463, 5464, 5465, 5471, 5472 and 5641
  Special-purpose gauges to your specifications



Morse taper plug gauge

Morse taper	art.no.	€	Calibration art.no.	€
0	**540501** 0000	68,50	075570 0001	27,70
1	540501 0001	72,–	075570 0001	27,70
2	540501 0002	80,50	075570 0001	27,70
3	540501 0003	96,50	075570 0001	27,70
4	540501 0004	122,–	075570 0002	32,80
5	540501 0005	180,–	075570 0002	32,80
6	540501 0006	245,–	075570 0003	36,90

5136



Morse taper sleeve gauge

Morse taper	art.no.	€	Calibration art.no.	€
0	**540505** 0000	172,–	075575 0001	32,80
1	540505 0001	168,–	075575 0001	32,80
2	540505 0002	163,–	075575 0001	32,80
3	540505 0003	198,–	075575 0001	32,80
4	540505 0004	245,–	075575 0002	37,90
5	540505 0005	325,–	075575 0002	37,90
6	540505 0006	529,–	075575 0003	45,10

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SARA® Thread plug gauges

DIN 13 | DIN ISO 1502



- For Go/No-Go inspection of nut threads
- The Go/No-Go side is made of wear-resistant gauge steel, aged, hardened and fine-ground
- Tolerances and dimensions in accordance with DIN ISO 1502
- Go ends for thread limit plug gauges are manufactured with additional wear allowances in accordance with DIN ISO 1502
- **Tolerance class 6H (* = tolerance class 5H)**

For right-hand ISO metric thread, DIN 13

Thread		art.no.	€	Calibration art.no.	€
M 1	*	**541001** 0010	70,50	075015 0001	17,–
M 1.4	*	541001 0014	59,50	075015 0001	17,–
M 1.6		541001 0016	56,50	075015 0001	17,–
M 2		541001 0020	59,–	075015 0001	17,–
M 2.5		541001 0025	67,50	075015 0001	17,–
M 3		541001 0030	53,50	075015 0001	17,–
M 3.5		541001 0035	61,50	075015 0001	17,–
M 4		541001 0040	53,50	075015 0001	17,–
M 5		541001 0050	53,50	075015 0001	17,–
M 6		541001 0060	53,50	075015 0001	17,–
M 8		541001 0080	53,50	075015 0001	17,–
M 10		541001 0100	57,–	075015 0001	17,–
M 12		541001 0120	57,50	075015 0001	17,–
M 14		541001 0140	59,–	075015 0001	17,–
M 16		541001 0160	59,50	075015 0001	17,–

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Thread	art.no.	€	Calibration art.no.	€
M 18	541001 0180	73,50	075015 0001	17,–
M 20	541001 0200	77,50	075015 0001	17,–
M 22	541001 0220	80,50	075015 0002	21,50
M 24	541001 0240	81,–	075015 0002	21,50
M 27	541001 0270	81,–	075015 0002	21,50
M 30	541001 0300	105,–	075015 0002	21,50
M 33	541001 0330	114,–	075015 0002	21,50
M 36	541001 0360	124,–	075015 0002	21,50
M 39	541001 0390	133,–	075015 0002	21,50
M 42	541001 0420	170,–	075015 0002	21,50
M 45	541001 0450	185,–	075015 0002	21,50
M 48	541001 0480	196,–	075015 0002	21,50
M 52	541001 0520	210,–	075015 0002	21,50
M 56	541001 0560	225,–	075015 0002	21,50
M 60	541001 0600	230,–	075015 0002	21,50

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Set for right-hand ISO metric thread, DIN 13

Contents	art.no.	€	Calibration art.no.	€
1 x thread limit plug gauge M 3, 4, 5, 6, 8, 10 and 12	**541010** 0001	349,–	075015 0101	119,–

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For right-hand ISO fine-pitch metric thread, DIN 13

Thread	art.no.	€	Calibration art.no.	€
M 8 x 0.5	**541002** 0805	69,–	075015 0001	17,–
M 8 x 0.75	541002 0807	67,–	075015 0001	17,–
M 8 x 1.0	541002 0810	53,50	075015 0001	17,–
M 9 x 1.0	541002 0910	63,–	075015 0001	17,–
M 10 x 0.75	541002 1007	69,–	075015 0001	17,–
M 10 x 1.0	541002 1010	57,50	075015 0001	17,–
M 10 x 1.25	541002 1012	51,–	075015 0001	17,–
M 11 x 1.0	541002 1110	63,50	075015 0001	17,–
M 12 x 1.0	541002 1210	57,50	075015 0001	17,–
M 12 x 1.25	541002 1212	57,–	075015 0001	17,–
M 12 x 1.5	541002 1215	57,50	075015 0001	17,–
M 14 x 1.0	541002 1410	59,–	075015 0001	17,–
M 14 x 1.25	541002 1412	73,–	075015 0001	17,–
M 14 x 1.5	541002 1415	59,–	075015 0001	17,–
M 16 x 1.0	541002 1610	59,50	075015 0001	17,–
M 16 x 1.5	541002 1615	59,50	075015 0001	17,–
M 18 x 1.0	541002 1810	67,50	075015 0001	17,–
M 18 x 1.5	541002 1815	67,50	075015 0001	17,–
M 20 x 1.0	541002 2010	67,50	075015 0001	17,–
M 20 x 1.5	541002 2015	67,50	075015 0001	17,–
M 20 x 2.0	541002 2020	67,50	075015 0001	17,–
M 22 x 1.5	541002 2215	67,50	075015 0002	21,50
M 24 x 1.0	541002 2410	69,–	075015 0002	21,50
M 24 x 1.5	541002 2415	67,50	075015 0002	21,50

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Thread	art.no.	€	Calibration art.no.	€
M 24 x 2.0	541002 2420	67,50	075015 0002	21,50
M 25 x 1.5	541002 2515	81,–	075015 0002	21,50
M 26 x 1.5	541002 2615	81,–	075015 0002	21,50
M 27 x 1.5	541002 2715	81,–	075015 0002	21,50
M 27 x 2.0	541002 2720	81,–	075015 0002	21,50
M 28 x 1.5	541002 2815	81,–	075015 0002	21,50
M 30 x 1.0	541002 3010	113,–	075015 0002	21,50
M 30 x 1.5	541002 3015	93,–	075015 0002	21,50
M 30 x 2.0	541002 3020	93,–	075015 0002	21,50
M 32 x 1.5	541002 3215	94,–	075015 0002	21,50
M 33 x 1.5	541002 3315	94,50	075015 0002	21,50
M 33 x 2.0	541002 3320	94,50	075015 0002	21,50
M 35 x 1.5	541002 3515	94,50	075015 0002	21,50
M 36 x 1.5	541002 3615	94,50	075015 0002	21,50
M 36 x 2.0	541002 3620	94,50	075015 0002	21,50
M 38 x 1.5	541002 3815	94,50	075015 0002	21,50
M 40 x 1.5	541002 4015	94,50	075015 0002	21,50
M 40 x 2.0	541002 4020	108,–	075015 0002	21,50
M 42 x 1.5	541002 4215	113,–	075015 0002	21,50
M 42 x 2.0	541002 4220	115,–	075015 0002	21,50
M 45 x 1.5	541002 4515	117,–	075015 0002	21,50
M 45 x 2.0	541002 4520	121,–	075015 0002	21,50
M 48 x 1.5	541002 4815	123,–	075015 0002	21,50
M 48 x 2.0	541002 4820	123,–	075015 0002	21,50

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Thread			Calibration	
	art.no.	€	art.no.	€
M 50 x 1.5	541002 5015	125,–	075015 0002	21,50
M 50 x 2.0	541002 5020	125,–	075015 0002	21,50
M 52 x 1.5	541002 5215	137,–	075015 0002	21,50
M 52 x 2.0	541002 5220	146,–	075015 0002	21,50
M 55 x 1.5	541002 5515	141,–	075015 0002	21,50
M 55 x 2.0	541002 5520	146,–	075015 0002	21,50
	5198			

Thread			Calibration	
	art.no.	€	art.no.	€
M 56 x 1.5	541002 5615	143,–	075015 0002	21,50
M 56 x 2.0	541002 5620	146,–	075015 0002	21,50
M 58 x 1.5	541002 5815	146,–	075015 0002	21,50
M 58 x 2.0	541002 5820	146,–	075015 0002	21,50
M 60 x 1.5	541002 6015	150,–	075015 0002	21,50
M 60 x 2.0	541002 6020	153,–	075015 0002	21,50
	5198			

SARA® Thread ring gauges

DIN 13 | DIN ISO 1502

- For testing bolt threads
- Wear-resistant gauge steel, aged and hardened
- Outer diameter milled
- Precision-ground thread
- Tolerances and dimensions in accordance with DIN ISO 1502
- **Tolerance class 6 g**
- **No-Go rings marked in red**
- Threaded gauges for other thread types e.g. trapezoid, pipe, BSF, UN, UNC, UNF, UNEF, NPTF, Pg, Edison screw thread and left-hand thread, as well as other dimensions and tolerance classes are available on request
- If required, all thread gauges can be supplied with a calibration certificate or DKD calibration certificate in accordance with the test equipment monitoring guidelines set out in VDI/VDE/DGQ 2618



541051 0240



541050 0240

For right-hand metric ISO thread, DIN 13

Thread	Good		Reject		Calibration	
	art.no.	€	art.no.	€	art.no.	€
M 2	**541050** 0020	71,–	**541051** 0020	71,–	075020 0001	24,–
M 2.5	541050 0025	78,50	541051 0025	78,50	075020 0001	24,–
M 3	541050 0030	60,50	541051 0030	60,50	075020 0002	16,70
M 3.5	541050 0035	59,50	541051 0035	59,50	075020 0002	16,70
M 4	541050 0040	58,–	541051 0040	58,–	075020 0002	16,70
M 5	541050 0050	58,–	541051 0050	58,–	075020 0002	16,70
M 6	541050 0060	58,–	541051 0060	58,–	075020 0002	16,70
M 8	541050 0080	59,50	541051 0080	59,50	075020 0002	16,70
M 10	541050 0100	64,50	541051 0100	64,50	075020 0002	16,70
M 12	541050 0120	64,50	541051 0120	64,50	075020 0002	16,70
M 14	541050 0140	67,–	541051 0140	67,–	075020 0002	16,70
M 16	541050 0160	67,–	541051 0160	67,–	075020 0002	16,70
M 18	541050 0180	92,–	541051 0180	92,–	075020 0002	16,70
M 20	541050 0200	92,–	541051 0200	92,–	075020 0002	16,70
	5198		5198			

Thread	Good		Reject		Calibration	
	art.no.	€	art.no.	€	art.no.	€
M 22	541050 0220	92,–	541051 0220	92,–	075020 0003	20,80
M 24	541050 0240	92,–	541051 0240	92,–	075020 0003	20,80
M 27	541050 0270	101,–	541051 0270	101,–	075020 0003	20,80
M 30	541050 0300	137,–	541051 0300	137,–	075020 0003	20,80
M 33	541050 0330	148,–	541051 0330	148,–	075020 0003	20,80
M 36	541050 0360	154,–	541051 0360	154,–	075020 0003	20,80
M 39	541050 0390	154,–	541051 0390	154,–	075020 0003	20,80
M 42	541050 0420	173,–	541051 0420	173,–	075020 0003	20,80
M 45	541050 0450	173,–	541051 0450	173,–	075020 0003	20,80
M 48	541050 0480	199,–	541051 0480	199,–	075020 0003	20,80
M 52	541050 0520	215,–	541051 0520	215,–	075020 0003	20,80
M 56	541050 0560	240,–	541051 0560	240,–	075020 0003	20,80
M 60	541050 0600	215,–	541051 0600	215,–	075020 0003	20,80
	5198		5198			

For right-hand ISO fine-pitch metric thread, DIN 13

Thread	Good		Reject		Calibration	
	art.no.	€	art.no.	€	art.no.	€
M 8 x 0.5	**541052** 0805	81,–	**541053** 0805	81,–	075020 0002	16,70
M 8 x 0.75	541052 0807	69,–	541053 0807	69,–	075020 0002	16,70
M 8 x 1.0	541052 0810	60,50	541053 0810	60,50	075020 0002	16,70
M 9 x 1.0	541052 0910	64,50	541053 0910	64,50	075020 0002	16,70
M 10 x 0.75	541052 1007	73,50	541053 1007	73,50	075020 0002	16,70
M 10 x 1.0	541052 1010	64,50	541053 1010	64,50	075020 0002	16,70
M 10 x 1.25	541052 1012	64,50	541053 1012	64,50	075020 0002	16,70
M 11 x 1.0	541052 1110	64,50	541053 1110	64,50	075020 0002	16,70
M 12 x 1.0	541052 1210	64,50	541053 1210	64,50	075020 0002	16,70
M 12 x 1.25	541052 1212	64,50	541053 1212	64,50	075020 0002	16,70
M 12 x 1.5	541052 1215	64,50	541053 1215	64,50	075020 0002	16,70
M 14 x 1.0	541052 1410	67,–	541053 1410	67,–	075020 0002	16,70
M 14 x 1.25	541052 1412	67,–	541053 1412	67,–	075020 0002	16,70
M 14 x 1.5	541052 1415	67,–	541053 1415	67,–	075020 0002	16,70
M 16 x 1.0	541052 1610	67,–	541053 1610	67,–	075020 0002	16,70
M 16 x 1.5	541052 1615	67,–	541053 1615	67,–	075020 0002	16,70
M 18 x 1.0	541052 1810	81,–	541053 1810	81,–	075020 0002	16,70
	5198		5198			

Thread	Good		Reject		Calibration	
	art.no.	€	art.no.	€	art.no.	€
M 18 x 1.5	541052 1815	81,–	541053 1815	81,–	075020 0002	16,70
M 20 x 1.0	541052 2010	81,–	541053 2010	81,–	075020 0002	16,70
M 20 x 1.5	541052 2015	81,–	541053 2015	81,–	075020 0002	16,70
M 20 x 2.0	541052 2020	81,–	541053 2020	81,–	075020 0002	16,70
M 22 x 1.5	541052 2215	81,–	541053 2215	81,–	075020 0003	20,80
M 24 x 1.0	541052 2410	92,–	541053 2410	92,–	075020 0003	20,80
M 24 x 1.5	541052 2415	82,50	541053 2415	82,50	075020 0003	20,80
M 24 x 2.0	541052 2420	87,–	541053 2420	87,–	075020 0003	20,80
M 25 x 1.5	541052 2515	92,–	541053 2515	92,–	075020 0003	20,80
M 26 x 1.5	541052 2615	92,–	541053 2615	92,–	075020 0003	20,80
M 27 x 1.5	541052 2715	92,–	541053 2715	92,–	075020 0003	20,80
M 27 x 2.0	541052 2720	92,–	541053 2720	92,–	075020 0003	20,80
M 28 x 1.5	541052 2815	92,–	541053 2815	92,–	075020 0003	20,80
M 30 x 1.0	541052 3010	124,–	541053 3010	124,–	075020 0003	20,80
M 30 x 1.5	541052 3015	109,–	541053 3015	109,–	075020 0003	20,80
M 30 x 2.0	541052 3020	109,–	541053 3020	109,–	075020 0003	20,80
M 32 x 1.5	541052 3215	109,–	541053 3215	109,–	075020 0003	20,80
	5198		5198			

Thread	Good art.no.	€	Reject art.no.	€	Calibration art.no.	€
M 33 x 1.5	541052 3315	109,–	541053 3315	109,–	075020 0003	20,80
M 33 x 2.0	541052 3320	109,–	541053 3320	109,–	075020 0003	20,80
M 35 x 1.5	541052 3515	109,–	541053 3515	109,–	075020 0003	20,80
M 36 x 1.5	541052 3615	109,–	541053 3615	109,–	075020 0003	20,80
M 36 x 2.0	541052 3620	109,–	541053 3620	109,–	075020 0003	20,80
M 38 x 1.5	541052 3815	109,–	541053 3815	109,–	075020 0003	20,80
M 40 x 1.5	541052 4015	124,–	541053 4015	124,–	075020 0003	20,80
M 40 x 2.0	541052 4020	124,–	541053 4020	124,–	075020 0003	20,80
M 42 x 1.5	541052 4215	126,–	541053 4215	126,–	075020 0003	20,80
M 42 x 2.0	541052 4220	126,–	541053 4220	126,–	075020 0003	20,80
M 45 x 1.5	541052 4515	126,–	541053 4515	126,–	075020 0003	20,80
M 45 x 2.0	541052 4520	126,–	541053 4520	126,–	075020 0003	20,80
M 48 x 1.5	541052 4815	126,–	541053 4815	126,–	075020 0003	20,80
	5198		5198			

Thread	Good art.no.	€	Reject art.no.	€	Calibration art.no.	€
M 48 x 2.0	541052 4820	126,–	541053 4820	126,–	075020 0003	20,80
M 50 x 1.5	541052 5015	154,–	541053 5015	154,–	075020 0003	20,80
M 50 x 2.0	541052 5020	154,–	541053 5020	154,–	075020 0003	20,80
M 52 x 1.5	541052 5215	167,–	541053 5215	167,–	075020 0003	20,80
M 52 x 2.0	541052 5220	173,–	541053 5220	173,–	075020 0003	20,80
M 55 x 1.5	541052 5515	167,–	541053 5515	167,–	075020 0003	20,80
M 55 x 2.0	541052 5520	174,–	541053 5520	174,–	075020 0003	20,80
M 56 x 1.5	541052 5615	167,–	541053 5615	167,–	075020 0003	20,80
M 56 x 2.0	541052 5620	174,–	541053 5620	174,–	075020 0003	20,80
M 58 x 1.5	541052 5815	167,–	541053 5815	167,–	075020 0003	20,80
M 58 x 2.0	541052 5820	174,–	541053 5820	174,–	075020 0003	20,80
M 60 x 1.5	541052 6015	167,–	541053 6015	167,–	075020 0003	20,80
M 60 x 2.0	541052 6020	174,–	541053 6020	174,–	075020 0003	20,80
	5198		5198			

SARA® Sets for right-hand ISO metric thread, DIN 13

DIN 13 | DIN ISO 1502



Sets for right-hand ISO metric thread, DIN 13

Contents	Good art.no.	€	Reject art.no.	€	Calibration art.no.	€
M3, 4, 5, 6, 8, 10 and 12	**541060** 0001	349,–	**541061** 0001	349,–	075020 0101	116,90
	5198		5198			

JBO Thread gauges MultiCheck with depth measurement

DIN 13 | DIN ISO 1502

- Simultaneous testing of the thread gauge accuracy and the thread depth, time savings of up to 50%
- Direct reading of the thread depth using the scale on the sliding sleeve
- Thread depth measurements up to 4xD
- Go and no-go ends made of wear-resistant gauge steel, aged, hardened and precision-ground
- Tolerances and dimensions in accordance with DIN ISO 1502
- Easy replacement of test pieces by user
- Replacement test piece, test piece for thread types, thread gauges with reading 0.01, analogue or digital on request



Thread	n mm	Reading mm	art.no.	€	Calibration art.no.	€
M3	0.5	0.5	**541015** 0003	277,–	075015 0010	43,–
M4	0.7	0.5	541015 0004	275,–	075015 0010	43,–
M5	0.8	0.5	541015 0005	285,–	075015 0010	43,–
M6	1.0	0.5	541015 0006	250,–	075015 0010	43,–
M8	1.25	0.5	541015 0008	313,–	075015 0010	43,–
M10	1.5	0.5	541015 0010	316,–	075015 0010	43,–
M12	1.75	0.5	541015 0012	338,–	075015 0010	43,–
			5137			

ATORN® Thread gauges for metric thread, TiN

DIN 13 | TiN

- Wear-resistant steel, optionally TiN-coated, surface hardness approx. 2500 HV, meaning:
  Improved corrosion resistance
  Up to 10x greater wear resistance
  Extendable calibration intervals
- Precision-ground thread
- Tolerances and deviations in accordance with DIN ISO 1502

Thread limit plug gauges for right-hand ISO metric thread, DIN 13

- For Go/No-Go inspection of nut threads
- Go end coated
- Tolerance class 6H



541004 0120

Thread			Calibration	
	art.no.	€	art.no.	€
M 3	**541004** 0030	91,50	075015 0001	17,–
M 4	541004 0040	87,–	075015 0001	17,–
M 5	541004 0050	83,–	075015 0001	17,–
M 6	541004 0060	82,–	075015 0001	17,–
M 8	541004 0080	86,50	075015 0001	17,–
M 10	541004 0100	94,50	075015 0001	17,–
M 12	541004 0120	105,–	075015 0001	17,–
M 14	541004 0140	116,–	075015 0001	17,–
M 16	541004 0160	124,–	075015 0001	17,–
M 18	541004 0180	143,–	075015 0001	17,–
M 20	541004 0200	145,–	075015 0001	17,–

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Set of thread limit plug gauges for right-hand ISO metric thread, DIN 13



Contents			Calibration	
	art.no.	€	art.no.	€
1 x thread limit plug gauge M 3, 4, 5, 6, 8, 10 and 12	**541040** 0001	439,–	075015 0101	119,–

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SARA® Thread gauges for Whitworth pipe threads

DIN EN ISO 228




541054 0013


541055 0013

Thread plug gauge

Thread			Calibration	
	art.no.	€	art.no.	€
G 1/8''	**541003** 0001	61,50	075015 0001	17,–
G 1/4''	541003 0003	66,–	075015 0001	17,–
G 3/8''	541003 0005	75,50	075015 0001	17,–
G 1/2''	541003 0007	87,–	075015 0002	21,50
G 3/4''	541003 0011	101,–	075015 0002	21,50
G 1''	541003 0013	124,–	075015 0002	21,50
G 1 1/4''	541003 0015	175,–	075015 0002	21,50
G 1 1/2''	541003 0017	195,–	075015 0002	21,50
G 2''	541003 0019	250,–	075015 0002	21,50

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Thread ring gauge

Thread	Good		Reject		Calibration	
	art.no.	€	art.no.	€	art.no.	€
G 1/8''	**541054** 0001	61,–	**541055** 0001	61,–	075020 0002	16,70
G 1/4''	541054 0003	73,–	541055 0003	73,–	075020 0002	16,70
G 3/8''	541054 0005	80,–	541055 0005	80,–	075020 0002	16,70
G 1/2''	541054 0007	90,–	541055 0007	90,–	075020 0003	20,80
G 3/4''	541054 0011	109,–	541055 0011	109,–	075020 0003	20,80
G 1''	541054 0013	133,–	541055 0013	133,–	075020 0003	20,80
G 1 1/4''	541054 0015	158,–	541055 0015	159,–	075020 0003	20,80
G 1 1/2''	541054 0017	171,–	541055 0017	171,–	075020 0003	20,80
G 2''	541054 0019	225,–	541055 0019	225,–	075020 0003	20,80

5138 5138

SARA® Thread gauges for tapered American NPT pipe threads

- In accordance with ANSI / ASME B.1.20.1





NPT limit plug gauge

Thread nominal Ø mm	art.no.	€	Calibration art.no.	€
1/16"-27	**541005** 0001	174,–	075050 0001	33,80
1/8"-27	541005 0002	179,–	075050 0001	33,80
1/4"-18	541005 0003	190,–	075050 0001	33,80
3/8"-18	541005 0004	205,–	075050 0001	33,80
1/2"-14	541005 0005	220,–	075050 0002	42,–
3/4"-14	541005 0006	250,–	075050 0002	42,–
1"-11.5	541005 0007	290,–	075050 0002	42,–
1 1/4"-11.5	541005 0008	340,–	075050 0003	47,20
1 1/2"-11.5	541005 0009	385,–	075050 0003	47,20
2"-11.5	541005 0010	480,–	075050 0004	53,50
2 1/2"-8	541005 0011	569,–	075050 0005	60,50
3"-8	541005 0012	699,–	075050 0005	60,50

5137

NPT limit ring gauge

Thread nominal Ø mm	art.no.	€	Calibration art.no.	€
1/16"-27	**541057** 0001	250,–	075060 0001	46,10
1/8"-27	541057 0002	255,–	075060 0001	46,10
1/4"-18	541057 0003	265,–	075060 0001	46,10
3/8"-18	541057 0004	280,–	075060 0001	46,10
1/2"-14	541057 0005	300,–	075060 0002	50,–
3/4"-14	541057 0006	335,–	075060 0002	50,–
1"-11.5	541057 0007	380,–	075060 0002	50,–
1 1/4"-11.5	541057 0008	509,–	075060 0003	53,50
1 1/2"-11.5	541057 0009	569,–	075060 0003	53,50
2"-11.5	541057 0010	709,–	075060 0004	57,50
2 1/2"-8	541057 0011	799,–	075060 0005	61,50
3"-8	541057 0012	1.019,–	075060 0005	61,50

5138



… with safety

ATORN®
High quality for great performance

SARA® Protractor

- Open graduated semicircle made of normal steel
- Scale 0 to 180°, reading 1°, locking screw
- Laser-etched scale, high-contrast, easy-readable, white millimetre division
- Hard-coded aluminium (HRC63)
- Non-scratch, black anodised surface

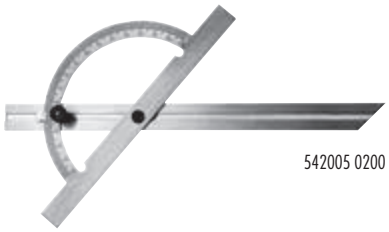

542002 0080

Protractor mm	Rail length mm	art.no.	€	Calibration art.no.	€
80	120	**542002** 0080	21,50	071501 0001	36,–
120	150	542002 0120	23,50	071501 0001	36,–
150	200	542002 0150	30,60	071501 0001	36,–
200	300	542002 0200	36,80	071501 0001	36,–
300	500	542002 0300	69,50	071501 0002	20,50

5139

Graduator, adjustable

- Open graduated semicircle made from normal steel
- Matt chrome-plated scale with an anti-glare finish
- Scale 10 to 170° with 1° readings
- Bar can be adjusted lengthwise using a locking screw, bar side bevelled 45°


542005 0200

Protractor mm	Rail length mm	art.no.	€	Calibration art.no.	€
100	150	**542005** 0100	42,60	071501 0001	36,–
150	300	542005 0150	51,30	071501 0001	36,–
200	400	542005 0200	61,50	071501 0001	36,–
300	600	542005 0300	106,–	071501 0001	36,–

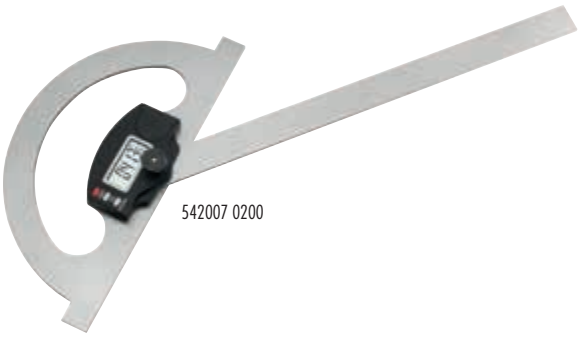
5139

SARA® Digital graduator

- Adjustment and zeroing possible on any level surface
- Measuring bar can be fixed in any position using the knurled-head screw
- Stainless steel, measuring edges precision-ground
- Measurement range: 180°
- Readings: 0.05°
- Accuracy: +/- 0.3°
- Functions: user-defined zeroing, hold value, rotate display for overhead measurement
- Supplied in a synthetic leather pouch with 1x CR2032 battery, no. 548079 6032


542007 0120


542007 0150

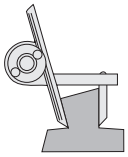

542007 0200

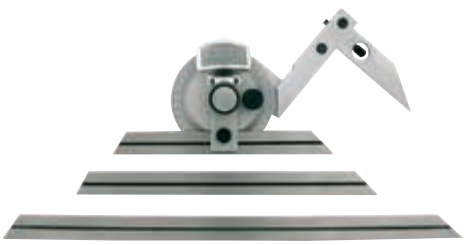
Protractor mm	Rail length mm	art.no.	€	Calibration art.no.	€
120	150	**542007** 0120	106,–	071501 0001	36,–
150	200	542007 0150	140,–	071501 0001	36,–
200	300	542007 0200	177,–	071501 0001	36,–

5139

SARA® Universal goniometer with magnifier and fine adjustment

- Reading parts matt chrome-plated
- Parallax-free reading with magnifier
- Scaling 4 x 90°, reading 1/12° = 5 min.
- 3 rails, 150, 200 and 300 mm, can be repositioned and locked
- 1 additional angle


Application example with additional angle



Rail length mm	art.no.	€	Calibration art.no.	€
150, 200, 300	**542025** 0001	129,50	071505 0001	36,–

5139

SARA® Digital universal goniometer

Werks-norm



- Digital display with simultaneous display of values in degrees, minutes and seconds, and decimal
- Automatic switch-off
- Simple adjustment using fixed reference points
- Fully movable and lockable measuring bar
- 150 and 300 mm rail length
- Fine adjustment for precisely calibrating angles
- **Functions:** ON/OFF, ZERO for user-defined zeroing, reverse counting direction
- Supplied with 2x rails, additional angle, 60 x 50 mm framing square and CR2032 batteries, no. 548079 6032

Measurement range °	Reading	Error limit mm	art.no.	€	Calibration art.no.	€
4x90/2x180/360°	0.005°/10"	+/- 5 min	**542500** 0360	475,–	071505 0001	36,–

5139

Mitutoyo Universal goniometer DIGIMATIC

Werks-norm | Digi-matic | USB



- Digital display in degrees or minutes, zeroing in any position
- Hardened stainless steel measuring bar and measuring edges
- Automatic switch-off after 10 minutes of inactivity
- Simple adjustment using fixed reference points
- Fully movable and lockable measuring bar
- Fine adjustment for precisely calibrating angles
- Ability to pre-set angles
- Can be combined with height meters using the holder provided
- Battery life up to 2,000 hours
- **Functions:** ON/OFF, PRESET for pre-setting user-defined angles, DATA/HOLD, switch from decimal to degrees and minutes, ZERO for user-defined zeroing, reverse counting direction
- Supplied with height meter holder and CR2032 battery, no. 548079 6032
- **Optional accessories:** Digimatic cable type F, no. 563100 0051 (1 m), no. 563100 0052 (2 m); USB cable type F-USB, no. 563110 0006

Measurement range	Error limit	Repetition precision	Rail length mm	art.no.	€	Calibration art.no.	€
-360° to +360°	± 2 min.	1 min.	150 mm	**543001** 0150	809,–	071505 0001	36,–
-360° to +360°	± 2 min.	1 min.	300 mm	543001 0301	838,–	071505 0001	36,–

5106

SARA® Measuring tool set for toolmakers



- Particularly suitable for working on tools and mould construction
- Contents, 1 unit each:
  Straightedge DIN 874, 100 mm with protective insulation
  Bevel edge square DIN 875/00, 75 x 55 mm / 40 x 28 mm / 25 x 20 mm
  Gauge block scriber 9 x 9 x 9 x 60 mm

Description	art.no.	€	Calibration art.no.	€
Measuring tool set	**544050** 0001	138,50	076502 0001	74,90

5140

ATORN® Stock square and try square

DIN 875/0 | DIN 875/1 | DIN 875/2 | INOX



- **Accuracy 0, 1 and 2**
- Made from high-strength normal or stainless steel
- Upright edges and flat sides finely ground
- Supplied in moulded packaging up to size 300 x 200 mm

Accuracy 0 (DIN 875/0), normal steel

Edge length mm	Cross section mm	Framing square art.no.	€	Try square art.no.	€	Calibration art.no.	€
75 x 50	15 x 5	**545001** 0002	14,20	**545010** 0002	24,70	076510 0001	21,50
100 x 70	20 x 5	545001 0003	17,–	545010 0003	27,50	076510 0001	21,50
150 x 100	25 x 5	545001 0004	20,60	545010 0004	42,10	076510 0001	21,50
200 x 130	30 x 6	545001 0005	29,20	545010 0005	53,–	076510 0001	21,50
250 x 165	35 x 7	545001 0006	41,30	545010 0006	81,–	076510 0002	34,–
300 x 200	40 x 8	545001 0007	49,50	545010 0007	106,–	076510 0002	34,–
		5193		5193			

Accuracy 0 (DIN 875/0), stainless steel

Edge length mm	Cross section mm	Framing square art.no.	€	Try square art.no.	€	Calibration art.no.	€
75 x 50	15 x 5	**545007** 0002	39,70	**545017** 0002	47,–	076510 0001	21,50
100 x 70	20 x 5	545007 0003	47,60	545017 0003	57,50	076510 0001	21,50
150 x 100	25 x 5	545007 0004	63,50	545017 0004	78,–	076510 0001	21,50
200 x 130	30 x 6	545007 0005	76,50	545017 0005	93,–	076510 0001	21,50
		5193		5193			

Accuracy 1 (DIN 875/1), normal steel

Edge length mm	Cross section mm	Framing square art.no.	€	Try square art.no.	€	Calibration art.no.	€
75 x 50	15 x 5	**545020** 0002	9,20	**545025** 0002	12,05	076510 0001	21,50
100 x 70	20 x 5	545020 0003	10,70	545025 0003	14,20	076510 0001	21,50
150 x 100	25 x 5	545020 0004	14,20	545025 0004	20,80	076510 0001	21,50
200 x 130	30 x 6	545020 0005	18,–	545025 0005	24,50	076510 0001	21,50
250 x 160	35 x 7	545020 0006	24,90	545025 0006	32,60	076510 0002	34,–
300 x 200	40 x 8	545020 0007	34,40	545025 0007	43,60	076510 0002	34,–
500 x 330	50 x 10	545020 0009	158,–	545025 0009	184,–	076510 0002	34,–
1000 x 660	70 x 15	545020 0012	519,–	545025 0012	799,–	076510 0003	48,50
		5193		5193			

Accuracy 1 (DIN 875/1), stainless steel

Edge length mm	Cross section mm	Framing square art.no.	€	Try square art.no.	€	Calibration art.no.	€
75 x 50	15 x 5	**545021** 0002	9,85	**545026** 0002	15,–	076510 0001	21,50
100 x 70	20 x 5	545021 0003	11,65	545026 0003	17,80	076510 0001	21,50
150 x 100	25 x 5	545021 0004	15,10	545026 0004	27,–	076510 0001	21,50
200 x 130	30 x 6	545021 0005	23,80	545026 0005	34,50	076510 0001	21,50
250 x 160	35 x 7	545021 0006	29,70	545026 0006	45,30	076510 0002	34,–
300 x 200	40 x 8	545021 0007	37,40	545026 0007	65,–	076510 0002	34,–
500 x 330	50 x 10	545021 0009	290,–	545026 0009	335,–	076510 0002	34,–
1000 x 660	70 x 15	545021 0012	1.029,–	545026 0012	1.699,–	076510 0003	48,50
		5193		5193			

Accuracy 2 (DIN 875/2), normal steel

Edge length mm	Cross section mm	Framing square art.no.	€	Try square art.no.	€	Calibration art.no.	€
75 x 50	15 x 5	**545030** 0002	9,–	**545035** 0002	11,85	076510 0001	21,50
100 x 70	20 x 5	545030 0003	10,30	545035 0003	13,95	076510 0001	21,50
150 x 100	25 x 5	545030 0004	13,75	545035 0004	20,60	076510 0001	21,50
200 x 130	30 x 6	545030 0005	17,40	545035 0005	24,30	076510 0001	21,50
250 x 160	35 x 7	545030 0006	24,70	545035 0006	32,10	076510 0002	34,–
300 x 175	35 x 7	545030 0007	33,90	545035 0007	42,10	076510 0002	34,–
500 x 250	40 x 8	545030 0009	67,–	545035 0009	92,–	076510 0002	34,–
600 x 300	40 x 8	545030 0010	88,–	545035 0010	113,–	076510 0003	48,50
750 x 375	45 x 10	545030 0011	117,–	545035 0011	144,–	076510 0003	48,50
1000 x 500	50 x 10	545030 0012	184,–	545035 0012	205,–	076510 0003	48,50
		5193		5193			

ATORN® Bevel edge square

DIN 875/00 | INOX

- **Accuracy 00**
- Bevelled measuring edges ground and lapped
- Flat sides ground

Edge length mm	Cross section mm	art.no.	€	Calibration art.no.	€
50 x 40	13 x 4	**544005** 0003	36,90	076501 0001	20,80
75 x 50	15 x 4.5	544005 0004	41,90	076501 0001	20,80
100 x 70	19 x 6	544005 0005	53,50	076501 0001	20,80
150 x 100	25 x 7	544005 0006	70,–	076501 0001	20,80
200 x 130	32 x 7	544005 0007	98,–	076501 0001	20,80
300 x 200	40 x 8	544005 0009	210,–	076501 0002	33,–

5193



544005 0004

Metalworker's framing and try square

- For simple alignment and marking-out work in metalwork shops
- Galvanised surface
- Made from high-strength normal steel
- Upright edges and flat sides finished
- Accuracy in accordance with company standards **(cannot be calibrated)**

Edge length mm	Cross section mm	Framing square art.no.	€	Try square art.no.	€
150 x 100	20 x 5	**546001** 0001	6,45	**546005** 0001	9,65
200 x 130	22 x 5	546001 0002	6,85	546005 0002	12,25
250 x 160	25 x 5	546001 0003	8,20	546005 0003	14,40
300 x 180	25 x 5	546001 0004	10,10	546005 0004	18,40
400 x 230	30 x 5	546001 0005	12,25	546005 0005	21,70
500 x 280	30 x 5	546001 0006	14,40	546005 0006	29,60
600 x 330	30 x 5	546001 0007	18,10	546005 0007	44,–
750 x 375	30 x 5	546001 0008	21,10	546005 0008	47,10
1000 x 500	30 x 5	546001 0009	28,20	546005 0009	71,–
		5140		5140	



ATORN® Acute angle with stop

DIN 875/2

- **45°**
- Made from normal steel
- Upright edges and flat sides finely ground

Edge length mm	Cross section mm	art.no.	€	Calibration art.no.	€
120 x 80	20 x 5	**546025** 0120	38,30	076510 0001	21,50
150 x 100	20 x 5	546025 0150	41,50	076510 0001	21,50
200 x 130	25 x 5	546025 0200	51,–	076510 0001	21,50

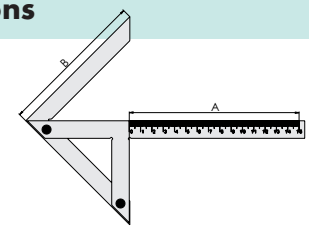
5193



546025 0120

SARA® Centring square with millimetre divisions

- **Accuracy in accordance with DIN 875/1**
- Hard-coded aluminium (HRC63)
- Non-scratch, black anodised surface
- Laser-etched scale
- Upright edges and flat sides finely ground
- Rail with high-contrast, easy-readable, white millimetre division



A mm	B mm	for shafts with max. Ø mm	art.no.	€	Calibration art.no.	€
100	70	90	**546011** 0100	37,90	076550 0001	26,–
150	130	190	546011 0150	40,80	076550 0001	26,–
200	150	220	546011 0200	45,–	076550 0001	26,–
300	180	280	546011 0300	82,–	076550 0001	26,–
400	250	380	546011 0400	183,–	076550 0001	26,–
500	330	530	546011 0500	215,–	076550 0001	26,–

5139



Scribers

Fixed scribers

- **scriber, straight**
  CrV steel, hardened, one-piece design with straight tip and milled handle
- **Pointed scriber**, 165 mm
  CrV steel, hardened, one-piece design with straight and angled tips, milled handle
- **Pointed scriber**, 250 mm
  CrV steel, hardened, fitted with one straight and one angled screw-in needle, milled handle length 80 mm

Description	Length mm	art.no.	€
Straight	180	**547001** 0180	3,70
Angled	165	547001 0165	5,–
Angled	250	547001 0250	2,99

5142



Scribers with replaceable carbide needles

- **ATORN special carbide scriber** with push-on clip
  Replaceable and re-grindable needle, robust collet, plastic shank, for materials up to approx. 60° HRC
- **ATORN special carbide scriber** with push-on clip, retractable pencil system
  Replaceable needle, robust collet, metal shank, for materials up to approx. 60 HRC
- **TICOM ErgoPlus**-Carbide scriber with push-on clip
  Replaceable and re-grindable needle, robust collet, metal shank, for materials up to approx. 60° HRC
- **Scriber with hexagonal shank,** anodised, screw-off head, 20 replaceable needles, protective case

Description	Length mm	art.no.	€
ATORN scriber with push-on clip	150	**547005** 0001	14,90
ATORN scriber with push-on clip, retractable pencil system	146	547005 0002	16,–
TICOM Reißnadel mit Ansteckclip	150	547005 0003	19,20
Scriber, 150 mm with carbide-pointed tip, hexagonal push-on clip, chrome-plated	150	547005 0004	5,40
Spare needles in a brass sleeve, Ø 2 for 547005 0001 + 547005 0003	32	547005 0010	6,10
Scriber with hexagonal shank, incl. 20 needles	135	547005 0005	13,90
Spare needles, 100 units	15	547005 0050	12,35

5142



Scribing calliper

INOX

- For quick and simple marking out
- Reading parts matt chrome-plated
- Raised guide edges
- Inch/mm scale divisions
- Vernier scale 0.10 mm / 1/128 inch



Designation	Measurement range mm	art.no.	€	Calibration art.no.	Calibration €
Scribing calliper	200	**500810** 0102	45,–	070101 0001	8,80
Scribing calliper	400	500810 0201	97,50	070101 0003	26,–
Spare scriber		500810 0401	3,70		

5108

TICOM® Marker pen

- **MetalMarker**
- Highlights in white with a super-fine stroke width of approx. 0.8 mm
- Indelible, light-resistant, quick-drying
- Easily removed with organic solvents such as petroleum ether



547005 0100

Length mm	Ø mm	art.no.	€
133	11	**547005** 0100	9,90

5142

SARA® Marking gauge

- Hardened aluminium (HRC63)
- Non-scratch, black anodised surface
- Laser-etched scale
- Flat rail
- Vernier scale 0.05 mm



Measurement range mm	art.no.	€	Calibration art.no.	€
200	**547401** 0200	27,10	070101 0001	8,80
300	547401 0300	31,20	070101 0002	16,70
	5108			

Divider

DIN 6486

- Strong shape with angular arms
- Made from finely ground forged steel
- Milled joint with rivet hinge
- Hardened tips and measuring faces
- With or without wing

Length mm	Without wing art.no.	€	With wing art.no.	€
150	**547010** 0150	9,90	**547015** 0150	13,60
200	547010 0200	12,05	547015 0200	16,60
250			547015 0250	20,70
300	547010 0300	20,10	547015 0300	27,20
	5142		5142	


547010 0200


547015 0200

Precision spring-loaded divider

- Strong square design
- Made from ground and polished steel
- Hardened tips and measuring faces
- Quick and fine adjustment by means of a spindle with locking nut
- Annular springs ensure constant spring tension
- With fixed or replaceable tips

Length mm	Fixed pointed tips art.no.	€	Replaceable pointed tips art.no.	€
140	**547020** 0140	11,30	**547025** 0140	12,50
190	547020 0190	13,90	547025 0190	14,50
290	547020 0290	16,70	547025 0290	17,50
Spare pointed tip			547025 0002	1,90
	5142		5142	


547025 0140


547020 0140

Inside and outside spring callipers

DIN 6487

- With angular steel arms
- Tips and measuring faces hardened and ground
- Quick and fine adjustment by means of a spindle with locking nut
- Annular springs ensure constant spring tension

Length mm	Inside spring calliper art.no.	€	Outside spring calliper art.no.	€
150	**547040** 0151	8,70	**547045** 0151	8,25
200	547040 0201	10,30	547045 0201	10,45
300	547040 0301	13,60	547045 0301	13,90
	5142		5142	

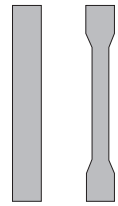

547040 0151


547045 0151

Precision flat ruler

DIN 874

- Alloyed special steel, ground on all sides
- Test surface in accordance with DIN 874
- Form A: rectangular cross-section
  Form B: I-shaped cross-section with two handling slots
- Accuracy 0: for precision testing work
  Accuracy 1: for inspection work
  Accuracy 2: for general workshop use
- With etched test result
- Other lengths and stainless steel version available on request
- Versions from 1500 mm upwards supplied ex works, excluding packaging


Form A Form B



Accuracy 0

Length mm	Cross section mm	Planarity of the test faces µm	Form	Weight kg	Special steel art.no.	€	Calibration art.no.	€
500	50 x 10	7	A	1.90	**547618** 0500	75,50	076001 0002	22,–
1000	60 x 12	12	A	5.65	547618 1000	188,–	076001 0003	39,–
1500	70 x 15	17	A	12.30	547618 1500	345,–	076001 0004	58,–
2000	80 x 15	22	B	18.4	547618 2000	579,–	076001 0004	58,–

5143

Accuracy 1

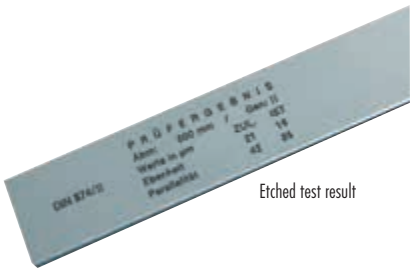
Length mm	Cross section mm	Planarity of the test faces µm	Form	Weight kg	art.no.	€	Calibration art.no.	€
500	40 x 8	12	A	1.25	**547620** 0500	39,80	076001 0002	22,–
1000	50 x 10	21	A	3.80	547620 1000	75,–	076001 0003	39,–
1500	60 x 12	29	A	8.00	547620 1500	180,–	076001 0004	58,–
2000	70 x 15	37	B	11.90	547620 2000	455,–	076001 0004	58,–

5143

Accuracy 2

Length mm	Cross section mm	Planarity of the test faces µm	Form	Weight kg	art.no.	€	Calibration art.no.	€
500	30 x 6	21	A	0.70	**547622** 0500	26,40	076001 0002	22,–
1000	40 x 8	33	A	2.50	547622 1000	54,–	076001 0003	39,–
1500	50 x 10	46	A	6.00	547622 1500	125,–	076001 0004	58,–
2000	60 x 12	58	A	11.00	547622 2000	179,50	076001 0004	58,–

5143


Etched test result

Steel workshop ruler

- Uprights ground and precisely adjusted
- One side with precise mm-division
- Tolerance class in accordance with DIN 2268
- Form A: 10 mm protective ends on both sides, DIN 866/A
  Form B: 10 mm protective end on right-hand side, DIN 866/B
- Other lengths and stainless steel version available on request
- Versions from 2000 mm upwards supplied ex works, excluding packaging

DIN 866/A

Length mm	Cross section mm	Weight kg	art.no.	€	Calibration art.no.	€
500	30 x 6	0.70	**548106** 0500	31,60	074505 0001	27,–
1000	40 x 8	2.50	548106 1000	76,90	074505 0002	57,–
2000	50 x 10	7.90	548106 2000	195,–	074505 0003	88,–

5143



DIN 866/B

Length mm	Cross section mm	Weight kg	art.no.	€	Calibration art.no.	€
500	25 x 5	0.50	**548109** 0500	18,80	074505 0001	27,–
1000	30 x 6	1.40	548109 1000	36,–	074505 0002	57,–
2000	40 x 8	5.00	548109 2000	92,50	074505 0003	88,–

5143



ATORN® Straightedge

DIN 874 | INOX

- Wedge-shaped cross-section
- Hardened and burnished special steel, or hardened and matt chrome-plated stainless steel with an anti-glare finish
- Bevelled measuring edge, precision-lapped
- With plastic insulated handle

Length mm	Hardened art.no.	€	Stainless steel, hardened art.no.	€	Calibration art.no.	€
75	**547501** 0075	12,75	**547505** 0075	17,90	076005 0001	12,50
100	547501 0100	14,50	547505 0100	19,60	076005 0001	12,50
125	547501 0125	17,10	547505 0125	23,10	076005 0001	12,50
150	547501 0150	19,40	547505 0150	29,20	076005 0001	12,50
200	547501 0200	24,40	547505 0200	32,60	076005 0001	12,50
300	547501 0300	45,80	547505 0300	64,–	076005 0001	12,50
400	547501 0400	79,–	547505 0400	110,–	076005 0002	20,–
500	547501 0500	115,–	547505 0500	151,–	076005 0002	20,–
	5193		5193			



547501 0100

Steel scale

INOX

- Spring band steel
- Matt-finished surface, divisions and digits etched in black
- Scale accuracy: DIN 7168 m



548001 0300

Length mm	Cross section mm	art.no.	€
200	13 x 0.5	**548001** 0200	2,06
300	15 x 0.5	548001 0300	2,59
500	20 x 0.5	548001 0500	4,98
1000	20 x 0.5	548001 1000	17,20
2000	30 x 1.0	548001 2000	43,50
		5143	

Schwenk Tape measure Circometer CJU

- For measuring outer circumference and diameter
- Spring band steel with millimetre division, laser-scaled
- Vernier scale 0.1 mm
- Error margins in accordance with DIN 866
- Tape width 16 mm
- **Normal steel, or V2A version made from stainless spring steel**



548050 0700

Measurement range Ø mm	Measurement range scope mm	Normal steel art.no.	€	Stainless steel art.no.	€
20-300	60-950	**548050** 0300	70,50	**548055** 0300	85,50
300-700	940-2200	548050 0700	85,–	548055 0700	110,50
700-1100	2190-3460	548050 1100	104,–	548055 1100	149,50
1100-1500	3450-4720	548050 1500	128,–	548055 1500	187,50
1500-1900	4710-5980	548050 1900	154,50	548055 1900	225,50
1900-2300	5960-7230	548050 2300	173,50	548055 2300	262,50
		5145		5145	



ATORN® Spring tape measures

- Accuracy to EC Class II
- White steel strip
- Millimetre divisions on one side
- EC-tested

Max. measurement tolerance under EC standards ± mm			
Length m	Class I	Class II	Class III
2	0,30	0,70	1,40
3	0,40	0,90	1,80
5	0,60	1,30	2,60
8	0,90	1,90	3,80

With sliding end hook

Length m	Belt width mm	art.no.	€
3	16	**548032** 0003	6,60
5	19	548032 0005	10,–
8	25	548032 0008	16,40

5144



With magnetic end hook

Length m	Belt width mm	art.no.	€	Calibration art.no.	Calibration €
5	19	**548032** 1005	14,80	076003 0005	15,40

5144

SOLA Spring tape measures

EC Class I accuracy

- Shock-proof ABS plastic casing, chrome-plated with belt clip
- Curved steel strip, painted yellow
- 2-part brake for pinpoint-accurate engagement
- Shock absorber system ensures gentle tape rewind
- For external and internal measurements



Length m	Belt width mm	Error limit mm	art.no.	€	Calibration art.no.	Calibration €
3	13	0.4	**548041** 0003	17,50	076003 0003	13,35
5	19	0.6	548041 0005	29,–	076003 0005	15,40

5144

EC Class II accuracy

- Sturdy, durable design
- High-strength plastic casing with belt clip
- Curved steel strip, painted yellow
- Automatic tape rewind and rewind lock
- Sliding end hook



Length m	Belt width mm	Error limit mm	art.no.	€	Calibration art.no.	Calibration €
2	16	0.7	**548030** 0002	10,40	076003 0002	8,20
3	16	0.9	548030 0003	12,45	076003 0003	13,35
5	16	1.3	548030 0005	18,40	076003 0005	15,40

5144

With viewing window, EC Class II accuracy

- Viewing window allows inside dimensions to be read easily
- High-strength plastic casing
- Automatic tape rewind and rewind lock
- Painted yellow
- Sliding end hook



Length m	Belt width mm	Error limit mm	art.no.	€	Calibration art.no.	Calibration €
3	13	0.9	**548040** 0003	14,95	076003 0003	13,35

5144

With magnetic end hook, EC Class II accuracy

- Shock-proof ABS plastic casing, chrome-plated with belt clip
- Curved steel strip, painted yellow
- Exact band brake for precise internal measurements
- For external and internal measurements



Length m	Belt width mm	Error limit mm	art.no.	€	Calibration art.no.	Calibration €
5	19	1.3	**548030** 1005	17,30	076003 0005	15,40
8	25	1.9	548030 1008	24,20	076003 0010	16,40

5144

KOMELON® Spring tape measures

- Carbon steel
- Deburred edges
- Extremely precise and easy-to-read print
- With tape measure lock
- End hook and tape protector made of stainless steel
- For external and internal measurements
- Sliding end hook
- EC Class II accuracy



SelfLock

- **Self-locking mechanism** for smooth tape rewind
- Easy-to-operate thumb button
- Ergonomic design for right-handed and left-handed users
- Long-lasting thanks to nylon coating
- Curved profile for improved stability and reduced sheen



Length m	Belt width mm	art.no.	€	Calibration art.no.	Calibration €
3	16	**548046** 0030	12,40	076003 0003	13,35
5	19	548046 0050	17,40	076003 0005	15,40
8	25	548046 0080	30,90	076003 0010	16,40

5144



MagGrip Dublx

- **Tape printed on both sides** for easy reading
- **Magnetic tip**
- Fluted end hook
- Long-lasting thanks to nylon coating
- Curved profile for improved stability and reduced sheen



Length m	Belt width mm	art.no.	€	Calibration art.no.	Calibration €
5	19	**548047** 0050	19,10	076003 0005	15,40
8	25	548047 0080	30,30	076003 0010	16,40

5144



INOX Rubber

- **Stainless steel** for improved rust resistance
- Nylon-coated silver tape for maximum service life
- Curved profile for improved stability and reduced sheen
- Shock-resistant housing



Length m	Belt width mm	art.no.	€	Calibration art.no.	Calibration €
3	16	**548048** 0030	16,70	076003 0003	13,35
5	19	548048 0050	23,60	076003 0005	15,40
8	25	548048 0080	41,80	076003 0010	16,40

5144



Powerblade II

- Wide tape measure with special curve for very high stability
- Hi-vis two-colour paint for easier reading
- Long-lasting thanks to nylon coating
- Patented magnet dual-end hook
- New compact casing with rubber protection

Length m	Belt width mm	art.no.	€	Calibration art.no.	Calibration €
5	27	**548042** 0050	26,60	076003 0005	15,40
8	27	548042 0080	35,40	076003 0010	16,40

5144



FastBack

- Fluted end hook
- Compact and ergonomic casing
- Long-lasting thanks to nylon coating
- FastBack model: with time-saving rapid reel action

Length m	Belt width mm	art.no.	€	Calibration art.no.	Calibration €
20	10	**548036** 1020	32,80	076003 0025	22,–
30	10	548036 1030	41,60	076003 0030	32,80

5144

ATORN® Wooden folding ruler

- Initial segment with identical scales on both sides, contrasting colours, particularly well-suited to marking out and transferring dimensions
- White segments with black scale, blue initial segment with white scale
- Robust design, with brass cap
- Scaled angle divisions
- Sturdy joint
- EC Class III accuracy





Length m	Width mm	Number of sections	art.no.	€
2	16	10	**548022** 0002 5143	5,80

Wooden folding ruler

- Selected wood
- Special UV paint guarantees resistance to moisture and dirt
- Easy-to-read black and red millimetre divisions, both sides, top and bottom
- EC Class III accuracy





548020 0002

Conjuction	Length m	Width mm	Number of sections	art.no.	€
Open rivets	2	16	10	**548020** 0002 5143	3,49

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Thread pitch gauge

- For determining the pitch of external and internal threads
- Steel design with locking screw
- Stamped thread ridges
- Cannot be calibrated



548501 0024

Number of sheets	Design	Pitch metric 60° mm	Pitch Whitworth 55° TPI	art.no.	€
24	Metric 60°	0.25-6.0	-	**548501** 0024	4,39
52	Combined metric 60° and Whitworth 55°	0.25-6.0	62-4	548501 0052	6,50
				5147	

Radius gauge

- Concave and convex gauges for testing internal and external curves that form part of a circle
- Steel design with milled individual leaves
- Clamping screw for securing the leaves
- Cannot be calibrated



548505 0015

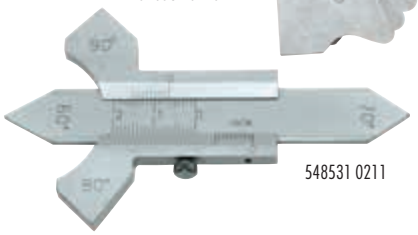
Radii mm	n mm	art.no.	€
1.0- 7.0	1.0 to 3.0 = 0.25, from 3.0 = 0.5	**548505** 0017	14,–
7.5-15.0	7.5 to 15.0 = 0.5	548505 0016	15,20
15.5-25.0	15.5 to 20.0 = 0.5, from 20.0 = 1.0	548505 0015	13,30
		5147	

Weld gauges

- 548531 0210 for testing perpendicular weld seams
  12 leaf design (3 / 3.5 / 4 / 4.5 / 5 / 5.5 / 6 / 6.5 / 7 / 8 / 9 / 10 / 12 mm)
- 548531 0211 for measuring flat weld seams and corner weld seams
  Slider design, 20 mm measurement range, 0.1 mm readings
- Cannot be calibrated



548531 0210



548531 0211

Design	art.no.	€
12 blades	**548531** 0210	21,90
With slider	548531 0211	38,90
	5147	

Twist drill bit grinding gauge

- For testing chisel edge centricity
- Steel
- 118° angle with scale
- Cannot be calibrated



Area	art.no.	€
For twist drill bits up to Ø 50 mm	**548510** 0001	2,19
	5147	

Threading tool and universal grinding gauge

- Steel
- With labelled recesses for the various angles and pitches
- Cannot be calibrated
- 5485150001 steel thread gauge for metric threads 60°
  5485150002 steel thread gauge for Whitworth threads 55°
  5485150003 trapezoidal threading tool gauge, 30°, for trapezoidal threads in accordance with DIN 103, pitch 2 - 12 mm
  5485150004 universal threading tool for all common tapered and flat threads



548515 0002



548515 0003

Area	art.no.	€
Steel thread gauge, 60°	**548515** 0001	4,03
Steel thread gauge, 55°	548515 0002	4,03
Trapezoidal steel thread gauge, 30°	548515 0003	4,22
Universal threading tool gauge	548515 0004	4,22
	5147	

Combined lathe tool and threading tool gauge

- With recesses for:
  Trapezoidal thread, DIN 103, pitch 2 - 12 mm / cutting angle 40° - 80°
  V thread, 55° and 60°
- Dimensions 90 x 40 x 2 mm
- Cannot be calibrated

Dimensions L x W x H mm	art.no.	€
90 x 40 x 2	**548531** 0010	9,30
	5147	

- Design as 548531 0011 but with riveted pointer for testing clearance angles

Dimensions L x W x H mm	art.no.	€
90 x 40 x 2	**548531** 0011	12,80
	5147	



Measuring wedges

- For quick, reliable reading of measurement values for gap measurements
- Reading 0.1mm
- not calibratable



Measurement range mm	Substance	art.no.	€
0.5 - 7	Steel	**548300** 5007	53,50
0.5 - 11	Steel	548300 5011	61,50
0.5 - 11	Plastic	548300 5010	65,50
		5145	

Feeler gauge sets

- For measuring slots, gaps or play in bearing guides, bearings, pistons etc.
- Steel leaves can be used individually or combined
- Each leaf is labelled with its individual thickness measurement
- Cannot be calibrated

Steel in a metal sleeve

- Spring-hardened steel leaves, 100 mm long, tapered
- With clamping screw

Number of sheets	Sheet thickness mm	n mm	art.no.	€
13	0.05-1.0	0.05-0.3 = 0.05 / from 0.3 = 0.1	**548520** 0013	2,91
20	0.05-1.0	0.05-1.0=0.05	548520 0020	4,78
			5147	



548520 0020

Steel, ring-mounted

- Spring-hardened steel leaves, 200 mm long, constant width

Number of sheets	Sheet thickness mm	n mm	art.no.	€
13	0.05-1.0	0.05-0.3 = 0.05 / from 0.3 = 0.1	**548600** 0013	11,55
20	0.05-1.0	0.05-1.0=0.05	548600 0020	13,85
			5147	



548600 0013

Brass

- Non-magnetic

Number of sheets	Sheet thickness mm	n mm	art.no.	€
20	0.05-1.0	0.05-1.0=0.5	**548521** 0020	21,95
			5147	



SARA® Feeler gauge strip rolls, 13 mm x 5 m

- For testing and adjusting valve play and electrode spacing, for measuring bearing play or for use as assembly supports
- Spring-hardened steel strip
- Length 5 m, width 12.7 mm
- Slotted dispenser box
- From 0.08 mm tape thickness, printed with nominal dimension every 120 mm

Normal steel

Thickness mm	Normal steel art.no.	€
0.01	**548525** 0001	55,–
0.02	548525 0002	37,90
0.03	548525 0003	11,65
0.04	548525 0004	10,55
0.05	548525 0005	10,05
0.06	548525 0006	10,10
0.07	548525 0007	10,10
0.08	548525 0008	10,10
0.09	548525 0009	10,10
0.10	548525 0010	9,50
0.12	548525 0012	9,50
0.15	548525 0015	9,50
0.18	548525 0018	9,45
0.20	548525 0020	9,50
0.25	548525 0025	9,50

5147

Thickness mm	Normal steel art.no.	€
0.30	548525 0030	10,80
0.35	548525 0035	10,80
0.40	548525 0040	10,80
0.45	548525 0045	13,20
0.50	548525 0050	13,20
0.55	548525 0055	14,70
0.60	548525 0060	14,70
0.65	548525 0065	14,70
0.70	548525 0070	14,70
0.75	548525 0075	14,70
0.80	548525 0080	15,40
0.85	548525 0085	15,40
0.90	548525 0090	15,40
0.95	548525 0095	15,40
1.00	548525 0100	15,40

5147



548525 0030

Stainless steel

Thickness mm	Stainless steel art.no.	€
0.01	**548524** 0001	60,50
0.02	548524 0002	40,50
0.03	548524 0003	15,30
0.04	548524 0004	15,30
0.05	548524 0005	15,30
0.06	548524 0006	13,50
0.07	548524 0007	13,50
0.08	548524 0008	13,50

5147

Thickness mm	Stainless steel art.no.	€
0.09	548524 0009	13,50
0.10	548524 0010	13,50
0.12	548524 0012	13,50
0.15	548524 0015	13,50
0.18	548524 0018	13,50
0.20	548524 0020	13,50
0.25	548524 0025	13,50

5147





Set

- 15 feeler gauge strips
- In a wall bracket with feeler gauge strip holder for dispensing strip sections

Description	Normal steel art.no.	€	Stainless steel art.no.	€
Feeler gauge strip set 0.01 to 0.25 mm 0.01 / 0.02 / 0.03 / 0.04 / 0.05 / 0.06 / 0.07 / 0.08 / 0.09 / 0.10 / 0.12 / 0.15 / 0.18 / 0.20 / 0.25 mm	**548525** 1000	210,–	**548524** 1000	260,–
Feeler gauge strip set 0.30 to 1.00 mm 0.30 / 0.35 / 0.40 / 0.45 / 0.50 / 0.55 / 0.60 / 0.65 / 0.70 / 0.75 / 0.80 / 0.85 / 0.90 / 0.95 / 1.00 mm	548525 2000	235,–		
	5147		5147	

Accessories

- Feeler gauge strip holder with clip for strips up to 13 mm in width
- Size 125 x 17

Designation	art.no.	€
Feeler gauge strip holder	**548526** 0001	3,77
	5147	



Foil strips (precision gauge strip)

- For setting up tools and moulds
- Adjusting equipment and apparatus
- Aligning machinery and altering bearing play
- In plastic boxes, easy to roll out
- Roll 150 mm wide x 2,500 mm long
- **Materials:**
  548530....: Brass (CuZn 37/Ms 63)
  548535....: Unalloyed steel (SM band steel)
  548540....: Stainless steel (18 Cr 9 Ni)





Film thickness mm	Speaker size mm	Brass art.no.	€	Steel art.no.	€	Stainless steel art.no.	€
0.025	80 x 80 x 170	**548530** 0025	22,60	**548535** 0025	25,40	**548540** 0025	43,10
0.050	80 x 80 x 170	548530 0050	22,50	548535 0050	19,10	548540 0050	34,40
0.075	80 x 80 x 170	548530 0075	25,70	548535 0075	17,40	548540 0075	33,40
0.100	80 x 80 x 170	548530 0100	28,10	548535 0100	16,30	548540 0100	35,10
0.150	80 x 80 x 170	548530 0150	33,70	548535 0150	16,50	548540 0150	40,80
0.200	80 x 80 x 170	548530 0200	40,80	548535 0200	17,30	548540 0200	47,80
0.250	80 x 80 x 170	548530 0250	45,90	548535 0250	19,–	548540 0250	51,50
0.300	115 x 115 x 170	548530 0300	57,–	548535 0300	23,30	548540 0300	52,50
0.400	115 x 115 x 170	548530 0400	63,50	548535 0400	26,20	548540 0400	60,–
0.500	115 x 115 x 170	548530 0501	71,50	548535 0501	28,90	548540 0501	66,50
		5147		5147		5147	

H+S Präzisions-Folien GmbH Feeler gauge strips in rolls

- For setting up tools and moulds; adjusting equipment and apparatus; compensating for tolerances; supporting equipment; aligning machinery; adjusting bearing play etc.
- **Materials:**
  548527... / 548528.... C-steel, hardened spring band steel with material no. 1.1274, magnetic
  548529.... rust-free, hardened spring band stainless steel with material no. 1.4310, weak magnetism



Thickness mm	C-steel 25 mm x 5 m art.no.	€	C-steel 50 mm x 5 m art.no.	€	Stainless steel 100 mm x 5 m art.no.	€
0.01	**548527** 0001	58,50	**548528** 0001	83,–	**548529** 0001	114,–
0.02	548527 0002	32,40	548528 0002	46,20	548529 0002	73,50
0.03	548527 0003	23,30	548528 0003	33,80		
0.04	548527 0004	23,10	548528 0004	33,80		
0.05	548527 0005	19,90	548528 0005	31,10	548529 0005	49,90
0.06	548527 0006	15,80	548528 0006	23,30		
0.07	548527 0007	15,80	548528 0007	23,30		
0.08	548527 0008	15,80	548528 0008	23,30		
0.09	548527 0009	15,80	548528 0009	23,30		
0.10	548527 0010	15,80	548528 0010	22,60	548529 0010	47,20
0.12			548528 0012	23,80		
0.15	548527 0015	16,30	548528 0015	23,80	548529 0015	47,20
0.18			548528 0018	24,10		
0.20	548527 0020	16,30	548528 0020	23,40	548529 0020	58,50
0.25	548527 0025	16,60	548528 0025	24,10	548529 0025	61,–
0.30	548527 0030	16,40	548528 0030	23,80	548529 0030	58,50
0.35			548528 0035	26,40		
0.40	548527 0040	18,20	548528 0040	26,40	548529 0040	67,50
0.45			548528 0045	26,40		
0.50	548527 0050	19,10	548528 0050	26,40	548529 0050	78,–
0.60	548527 0060	26,10	548528 0060	42,–	548529 0060	103,–
0.70	548527 0070	28,20	548528 0070	42,–	548529 0070	117,–
0.80	548527 0080	29,–	548528 0080	42,30	548529 0080	125,–
0.90	548527 0090	29,–	548528 0090	42,30	548529 0090	127,–
1.00	548527 0100	28,70	548528 0100	42,30	548529 0100	130,–
	5147		5147		5147	

h+s Präzisions-Folien GmbH Underlay foil (precision design)

- For setting up tools and moulds, adjusting equipment and apparatus, compensating for tolerances, supporting equipment, aligning machinery, adjusting bearing play etc.
- **Materials:**
  548550.... C-steel, hardened spring band steel with material no. 1.1274, magnetic
  548551.... /548552.... rust-free, hardened spring band stainless steel with material no. 1.4310, weak magnetism
- Supplied in sturdy sliding box
  548550.... 10 sheets per box
  548551.... / 558552.... 5 sheets per box



Thickness mm	C-steel 50 mm x 300 mm art.no.	€	Stainless steel 100 mm x 500 mm art.no.	€	Stainless steel 150 mm x 500 mm art.no.	€
0.01	**548550** 0001	56,–	**548551** 0001	67,–		
0.02	548550 0002	32,–	548551 0002	38,10		
0.05	548550 0005	19,80	548551 0005	26,60	**548552** 0005	40,90
0.10	548550 0010	15,70	548551 0010	25,20	548552 0010	38,50
0.15	548550 0015	16,40	548551 0015	25,20	548552 0015	39,40
0.20	548550 0020	16,10	548551 0020	31,50	548552 0020	48,60
0.25	548550 0025	16,60	548551 0025	33,80	548552 0025	50,50
0.30	548550 0030	16,60	548551 0030	31,50	548552 0030	48,60
0.40	548550 0040	18,20	548551 0040	36,40	548552 0040	55,–
0.50	548550 0050	18,20	548551 0050	42,–	548552 0050	63,50
0.60	548550 0060	29,20	548551 0060	59,–	548552 0060	86,50
0.70	548550 0070	29,60	548551 0070	66,50	548552 0070	97,–
0.80	548550 0080	29,70	548551 0080	69,–	548552 0080	106,–
0.90	548550 0090	29,90	548551 0090	69,50	548552 0090	111,–
1.00	548550 0100	29,60	548551 0100	71,–	548552 0100	114,–
	5147		5147		5147	

NOGA Magnetic measuring stands PH

- For quick and precise positioning of dial indicators
- Improved fine adjustment on the magnetic base
- Strong, switchable magnetic base
- Universal holding fixture for common dial indicators
- Robust arm mechanism with three-point system
- Measuring instrument holding fixture: Ø 8 mm, 6 mm, 3/8 inch and dovetail



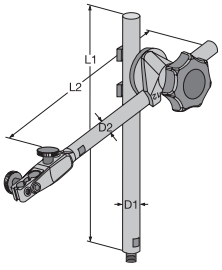
Fine adjustment holding fixture



Fine adjustment of magnetic base



Arm mechanism





550110 6400



550110 2040

Fine adjustment on the measuring instrument holding fixture

model	L1 mm	D1 mm	L2 mm	D2 mm	Magnetic foot L x W x H mm	Retention force N	Magnetic foot thread	art.no.	€
PH 6400	203	14	185	12	60 x 50 x 55	800	M 8	**550110** 6400	82,–
PH 6600	260	16	225	16	75 x 50 x 55	1000	M 8	550110 6600	133,50
PH 6800	350	18	225	16	120 x 50 x 55	1300	M 10 x 1.25	550110 6800	160,50
								5149	

Fine adjustment on magnetic base

model	L1 mm	D1 mm	L2 mm	D2 mm	Magnetic foot L x W x H mm	Retention force N	Magnetic foot thread	art.no.	€
PH 3100	120	10	110	8	40 x 30 x 35	320	M 5	**550110** 3100	53,40
PH 2040	203	14	185	12	60 x 50 x 55	800	M 8	550110 2040	82,50
PH 4016	260	16	225	16	75 x 50 x 55	1000	M 8	550110 4016	133,50
								5149	

NOGA Magnetic measuring stands

- For quick and precise positioning of dial indicators
- **With mechanical central clamping mechanism**
- Improved fine adjustment on the magnetic base
- Strong, switchable magnetic base
- Universal holding fixture for common dial indicators
- Robust arm system with central clamping mechanism



Arm mechanism



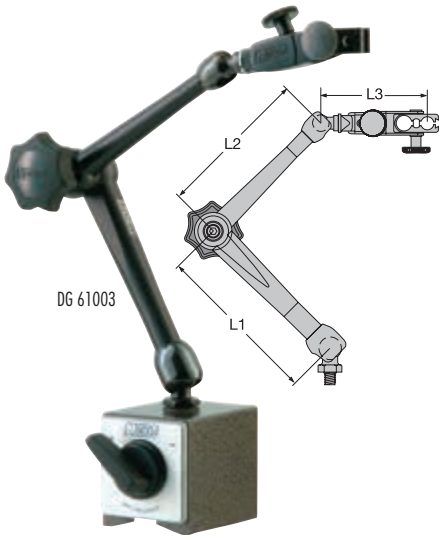




Fine adjustment holding fixture



Fine adjustment magnetic foot



Complete stand with fine adjustment on the measuring instrument holding fixture

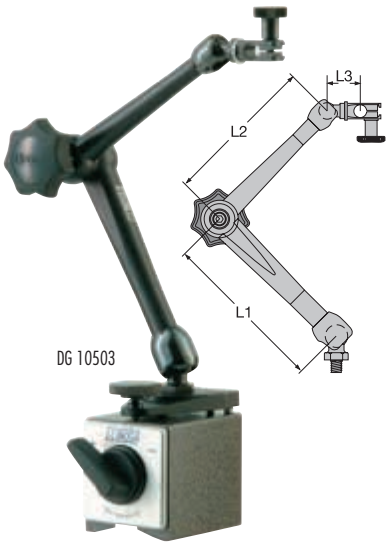
- Measuring instrument holding fixture: ∅ 8 mm, 6 mm, 3/8 inch and dovetail

model	L1 mm	L2 mm	L3 mm	Magnetic foot L x W x H mm	Retention force N	Magnetic foot thread	art.no.	€
NF 61003	56	51	71	40 x 30 x 35	320	M 5	**550501** 1001	128,–
DG 61003	110	101	71	60 x 50 x 55	800	M 8	550501 2001	178,–
MG 61003	133	113	71	60 x 50 x 55	800	M 8	550501 3001	200,–
MA 61003	287	223	71	120 x 50 x 55	1300	M 10 x 1.25	550501 4001	395,–

5149



Fine adjustment magnetic foot



Complete stand with fine adjustment on magnetic foot

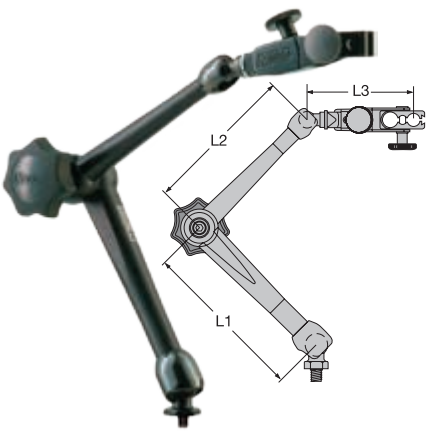
- ∅ 8 mm and dovetail holding fixture for measuring instruments

model	L1 mm	L2 mm	L3 mm	Magnetic foot L x W x H mm	Retention force N	Magnetic foot thread	art.no.	€
NF 10403	56	51	21.5	40 x 30 x 35	320	M 5	**550501** 1101	104,50
DG 10503	110	101	21.5	60 x 50 x 55	800	M 8	550501 2101	135,50
MG 10503	133	113	21.5	60 x 50 x 55	800	M 8	550501 3101	157,50

5149



Fine adjustment holding fixture



Articulated stand without base, fine adjustment to the measuring instrument holding fixture

- Measuring instrument holding fixture: ∅ 8 mm, 6 mm, 3/8 inch and dovetail

model	L1 mm	L2 mm	L3 mm	Magnetic foot thread	art.no.	€
NF 60103	56	51	71	M 5	**550501** 1010	117,–
DG 60103	110	101	71	M 8	550501 2010	149,–
MG 60103	133	113	71	M 8	550501 3110	186,–
MA 60103	287	223	71	M 10 x 1.25	550501 4010	360,–

5149

NOGA Feet for measuring stands

- Magnetic feet with high holding force on the V-shaped base and flat rear side
- All contact faces finely ground.
- DG 0040 vacuum base
- Sturdy lightweight metal design with integrated membrane for suction clamping on any level, non-porous and grease-free surface (e.g. granite plates).


NF 0037


DG 0036


DG 0038


DG 0039


DG 1003


DG 0040


Switchable magnetic foot


Switchable magnetic foot with fine adjustment

model	Description	Dimensions L x W x H mm	Retention force N	Connecting thread	art.no.	€
NF 0037	Switchable magnetic foot	40 x 30 x 35	320	M 5	**550505** 0037	27,10
NF 3778	Switchable magnetic foot with fine adjustment	40 x 30 x 35	320	M 5	550505 0031	31,20
DG 0036	Switchable magnetic foot	60 x 50 x 55	800	M 8	550505 0010	30,70
DG 3678	Switchable magnetic foot with fine adjustment	60 x 50 x 55	800	M 8	550505 0011	34,30
DG 0038	Switchable magnetic foot	75 x 50 x 55	1000	M 8	550505 0012	46,30
DG 0118	Switchable magnetic foot with fine adjustment	75 x 50 x 55	1000	M 8	550505 0118	84,50
DG 0039	Switchable magnetic foot	120 x 50 x 55	1300	M 10 x 1.25	550505 0020	70,–
DG 1003	Switchable magnetic foot	75 x 50 x 67	1000	M 6 / 8 / 10 / 10x1.25 / 12	550505 1003	71,20
DG 0040	Vacuum foot	Ø 92 x 22	350	M 8	550505 0040	64,–

5149

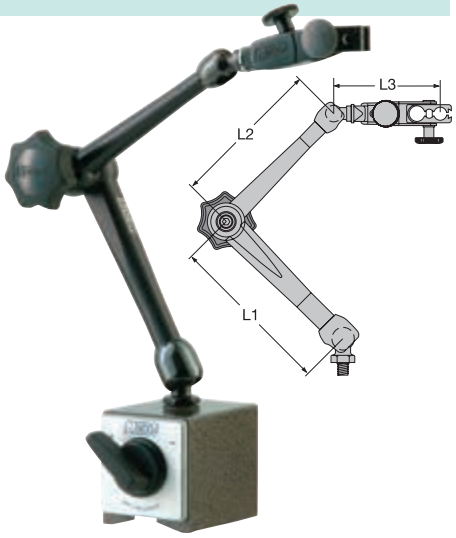
NOGA Magnetic measuring stand set



- Measuring stand with dial indicator and magnetic base
- Dial indicator:
  10 mm measurement range
  0.01 mm resolution
  Accuracy DIN 878







L1 mm	L2 mm	L3 mm	Magnetic foot L x W x H mm	Retention force N	art.no.	€
133	113	71	60 x 50 x 55	800	**550505** 0005	232,50

5149

ATORN® 3D articulated measurement stand

- For quick and precise positioning of dial indicators
- Maintenance-free mechanical central clamping mechanism
- Strong, switchable magnetic base with V-shaped underside, holds firm in any position!
- Combined dial indicator holding fixture with fine adjustment for dial indicators with a Ø 8 mm shank and for dial test indicators with a dovetail mount





Total height mm	Action radius mm	Magnetic foot L x W x H mm	Retention force N	art.no.	€
210	130	34 x 30 x 35	300	**550520** 0210	190,–
305	200	60 x 50 x 55	750	550520 0305	215,–
385	280	60 x 50 x 55	750	550520 0385	262,–

5189

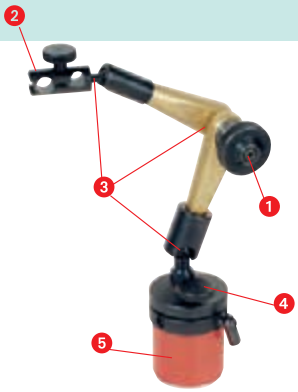
ATORN® Magnetic stand with flexible column (gooseneck)



- Particularly suitable for measuring in areas that are difficult to access
- Eccentric lever as a central clamping mechanism
- Tension cable can be retightened
- 6 sleeves, each Ø 17 mm
- Holding magnet with smooth and V-shaped underside
- Combined dial indicator holding fixture with fine adjustment for dial indicators with a Ø 8 mm shank and for dial test indicators with a dovetail mount

Total height mm	Magnetic foot L x W x H mm	Retention force N	art.no.	€
380	70 x 46 x 65	500	**550521** 0380	181,–
			5189	

Small hydraulic stand with magnetic base



- Particularly suitable for use with dial test indicators
- Ideal in confined spaces
- Extra-powerful pot magnet, non-switchable
- With protection plate
- Dial indicator holding fixture, Ø 8 mm and dovetail
- **Design:**
  1 Hydraulic clamp
  2 Dial indicator holding fixture, Ø 8 mm and dovetail
  3 Joints, fully movable
  4 Fine adjustment on base
  5 extra-strong permanent magnet
- Central hydraulic clamping
- Supplied in cardboard packaging

Magnetic foot Ø x H mm	Projection mm	art.no.	€
35 x 30	150	**550505** 2000	112,50
		5150	

Hydraulic magnetic measuring stand



- Central hydraulic clamping mechanism
- Fine adjustment
- Clamping force infinitely variable up to the maximum
- Articulated arms can rotate through 360° and swivel through 180°
- Dial indicator holding fixture, Ø 8 mm or dovetail
- **Design:** hydraulic clamp, central joint, ball joints, switchable magnetic base with V-shaped underside
- Supplied in cardboard packaging, with or without magnetic base

Designation	Action radius mm	Magnetic foot L x W x H mm	Retention force N	Magnetic foot thread	art.no.	€
Hydraulic measuring stand with magnetic foot	220	60 x 50 x 55	800	M8	**551001** 0220	136,50
Hydraulic measuring stand without magnetic foot	220	-	-	-	551001 0221	112,50
Hydraulic measuring stand with magnetic foot	260	60 x 50 x 55	800	M 8	551001 0260	143,–
Hydraulic measuring stand without magnetic foot	260	-	-	-	551001 0261	117,50
Hydraulic measuring stand with magnetic foot	300	60 x 50 x 55	800	M 8	551001 0300	166,–
Hydraulic measuring stand without magnetic foot	300	-	-	-	551001 0301	144,50
Hydraulic measuring stand with magnetic foot	400	80 x 50 x 55	1000	M 10	551001 0400	253,–
Hydraulic measuring stand without magnetic foot	400	-	-	-	551001 0401	199,–
Hydraulic measuring stand with magnetic foot	550	80 x 50 x 55	1000	M10	551001 0550	359,–
Hydraulic measuring stand without magnetic foot	550	-	-	-	551001 0551	307,–
					5150	

Mitutoyo Magnetic stand with dial test indicator

0,01 mm



- Powerful pot magnet
- Holding fixture for magnetic stand
- Dial test indicator measurement range 0.8 mm
- Readings: 0.01 mm
- Contact point length 20.9 mm
- Supplied in plastic packaging



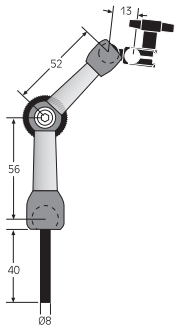
Description	art.no.	€	Calibration art.no.	Calibration €
Magnetic stand with lever dial indicator	**525501** 0112	137,–	070130 0001	17,80

5102

NOGA Articulated stand for dial test indicators

- For precisely positioning and aligning workpieces
- Centring bores
- The stand is clamped directly into the machine chuck by means of a straight clamping shank
- All joints are movable
- All joints fixed by means of a central clamping screw
- Dial indicator holding fixture, Ø 8 mm, with V-block clamp for dial test indicators
- Cylindrical clamping shank (Ø 8 mm, length = 40 mm)







Description	art.no.	€
Articulated stand	**550510** 0013	85,90
Articulated stand with dial test indicator, measurement range 0.8 mm, 0.01 mm readings, sensor tip length 20.9 mm	550510 5000	180,–

5149

SARA® Measuring table

- Special cast iron base
- Stable measuring column, Ø 22 mm
- Hardened measuring faces
- DIN 876/0



552506 5050



552506 5070

Measuring height mm	Measuring table mm	Projection mm	Weight kg	art.no.	€
100	Ø 50	50	2.0	**552506** 5050	200,–
100	70 x 60	75	3.5	552506 5070	260,–

5151

Mitutoyo Measuring table

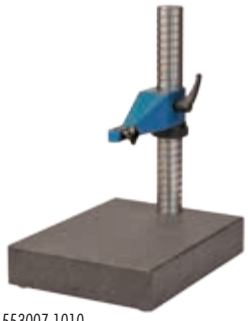
- Robust cast iron base
- Dial indicator locating bore ∅ 8 mm
- Fine adjustment of dial indicator holding fixture: 1 mm
- Column hardened and precision-ground, ∅ 40 mm
- Total height 389 mm
- Measuring table ground and lapped



Measuring height mm	Measuring table mm	Projection of lateral arm mm	Weight kg	art.no.	€
200	110 x 110	75	12.5	**552510** 0200	557,–
				5102	

ATORN® Precision measuring table with granite base

- Measuring table base made of black natural granite
- Precision-lapped measuring area
- Stable column
- Height adjustment with and without helical thread with adjusting ring
- Dial indicator locating bore ∅ 8 mm



553007 1010



553007 1001

Fixed measuring arm

Measuring area mm	Measuring height mm	Projection mm	Column Ø mm	Design	art.no.	€
200x100	180	60	22	Smooth column	**553007** 1001	242,–
250x200	210	120	35	Smooth column	553007 1002	340,–
250x200	210	120	35	Column with helical thread	553007 1010	472,–
					5153	

Adjustable measuring arm

Measuring area mm	Measuring height mm	Projection mm	Column Ø mm	Design	art.no.	€
250x200	230	200	35	Smooth column	**553008** 1001	420,–
250x200	230	200	35	Column with helical thread	553008 1010	465,–
					5153	



553008 1010

ATORN® Universal measuring table with 3D articulated stand

DIN 876/0

- Black natural granite measuring table
- Measuring area diamond-lapped to a precision finish
- Articulated stand for quick and precise positioning of dial indicators
- Robust arm system with **mechanical central clamping mechanism**
- Universal dial indicator holding fixture with fine adjustment for all common dial indicators



553020 0001

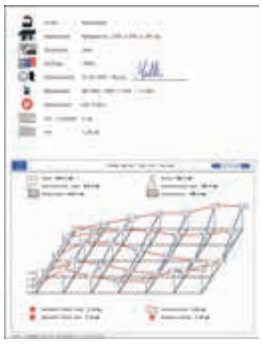
Measuring area mm	Action radius mm	art.no.	€
400x250	285	**553020** 0001	305,–
400x400	375	553020 0002	510,–
		5153	

ATORN® Measuring and inspection plates

Manufacturer's test certificate included

All prices are ex works and include packaging!

- **Accuracy in accordance with DIN 876/0**
- Completely non-warping, tension-free, non-corrosive and acid-resistant
- Non-magnetic and non-conductive, with no temperature sensitivity due to a low thermal expansion coefficient
- Hard and wear-resistant: Hardness grade 6 - 7 on the Mohs scale.
- Homogenous fine-pored material structure results in consistent hardness, which prolongs service life and maintains accuracy
- Maintenance-free; only dirt removal is required to prevent measurement accuracy from becoming impaired
- High contact area ratio due to diamond-lapped measuring faces
- All measuring and inspection plates are supplied with a manufacturer's test certificate
- DKD certificate available on request
- Prices ex works, including packaging





Measuring and inspection plates

- Without steel ball inserts

L mm	B mm	H mm	Weight kg	Planarity µm	art.no.	€
400	400	50	25	6	**554011** 0400	365,–
630	400	70	50	7	554011 0630	529,–

5153



Measuring and inspection plates with underframes

- Underframe made of profile tubing, with bearing fitting
- Designed for working height approx. 900 mm (plate upper edge)

L mm	B mm	H mm	Weight kg	Planarity µm	art.no.	€
1000	630	100	203	8	**554012** 1000	1.709,–
1200	800	160	495	9	554012 1200	2.109,–

5153



Measuring and inspection plates with base cabinets

- Sheet steel base cabinet (sturdy construction)
- 3 fully opening drawers, lockable
- Drawer height 120, 150 and 240 mm
- Load capacity per drawer: 100 kg
- Working height approx. 900 mm
- Measuring plate can be aligned by means of adjustable bearing fittings

L mm	B mm	H mm	Weight kg	Planarity µm	art.no.	€
1000	630	100	330	8	**554015** 1000	2.440,–
1200	800	160	640	9	554015 1200	2.880,–

5153

Granite cleaning products

- **Cleaning spray**
  - For the simple cleaning of granite parts
- **Care spray**
  - Specially formulated for maintaining granite components
  - Perfect cleaning and long-lasting seal
  - Protects surfaces against oxidation and wear
  - Allows accessories to be easily moved on the granite surface



554010 0505

Description	Contents	art.no.	€
Cleaning spray	500 ml	**554010** 0501	42,90
Cleaning spray	500 ml	554010 0505	18,90

5152

Measuring and inspection plates

- Accuracy in accordance with DIN 876
- Completely non-warping, tension-free, non-corrosive and acid-resistant
- Non-magnetic and non-conductive, with no temperature sensitivity due to a low thermal expansion coefficient
- Hard and wear-resistant: Hardness grade 6 - 7 on the Mohs scale.
- High contact area ratio due to diamond-lapped measuring face
- Plates are supported at structurally predetermined points by steel ball inserts that are fixed to the underside of the plate
- Supplied with steel ball inserts (250 x 250 mm plate without steel ball inserts) and manufacturer's test certificate
- Prices ex works, excluding packaging

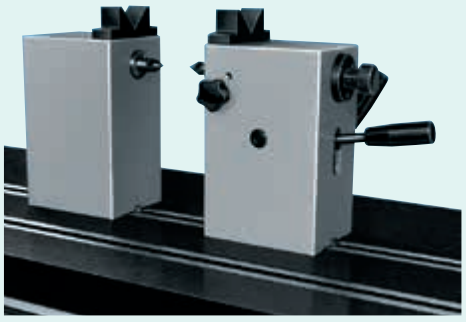
Manufacturer's test certificate included



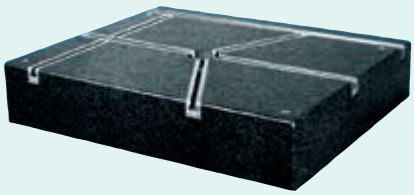
L mm	B mm	H mm	Weight kg	Planarity DIN 876/0 µm	Planarity DIN 876/1 µm	DIN 876/0 art.no.	€	DIN 876/1 art.no.	€
250	250	50	10	5	13	**554002** 0001	126,–	**554006** 0001	113,50
400	250	50	15	6	14	554002 0002	230,–	554006 0002	210,–
400	400	50	25	6	14	554002 0003	285,–	554006 0003	255,–
500	400	90	55	6	15	554002 0004	365,–	554006 0004	335,–
600	500	100	90	6	16	554002 0005	505,–	554006 0005	459,–
630	400	70	50	7	17	554002 0006	455,–	554006 0006	409,–
630	630	70	80	7	17	554002 0007	545,–	554006 0007	495,–
800	600	120	175	7	18	554002 0008	749,–	554006 0008	679,–
1000	630	100	175	8	20	554002 0009	849,–	554006 0009	769,–
1000	630	140	250	8	20	554002 0010	959,–	554006 0010	859,–
1000	800	140	320	8	20	554002 0011	1.189,–	554006 0011	1.069,–
1000	1000	100	280	8	20	554002 0012	1.319,–	554006 0012	1.189,–
1000	1000	160	480	8	20	554002 0013	1.449,–	554006 0013	1.319,–
1200	800	160	450	9	22	554002 0014	1.449,–	554006 0014	1.319,–
1200	1000	160	530	9	22	554002 0015	1.949,–	554006 0015	1.759,–
1500	1000	190	855	10	25	554002 0016	2.579,–	554006 0016	2.319,–
1600	1000	160	720	11	26	554002 0017	2.579,–	554006 0017	2.319,–
2000	1000	220	1320	12	30	554002 0018	3.199,–	554006 0018	2.889,–
						5152		5152	

Base units for measuring and inspection plates

Additional accessories for measuring and inspection plates (e.g. individual supports, clamping T-slots or pairs of tailstocks) are available on request



Tailstock pair on plate with steel T-slot rail design B



Granite base with 5 T-slot rails (special version)



Profiled tube underframe

- Robust welded structure of profiled tubing designed for a working height of approx. 900 mm (plate upper edge)
- Supplied with bearing fittings, shipped in disposable packaging
- Prices ex works, excluding packaging



for plate size mm	Weight kg	art.no.	€
400 x 400 x 50	23	**554025** 0003	255,–
500 x 400 x 90	24	554025 0004	260,–
600 x 500 x 100	26	554025 0005	265,–
630 x 400 x 70	25	554025 0006	265,–
630 x 630 x 70	26	554025 0007	265,–
800 x 600 x 120	30	554025 0008	290,–
1000 x 630 x 100	35	554025 0009	300,–
1000 x 630 x 140	35	554025 0010	300,–
		5152	

for plate size mm	Weight kg	art.no.	€
1000 x 800 x 140	37	554025 0011	315,–
1000 x 1000 x 100	45	554025 0012	389,–
1000 x 1000 x 160	45	554025 0013	389,–
1200 x 800 x 160	45	554025 0014	389,–
1200 x 1000 x 160	50	554025 0015	400,–
1500 x 1000 x 190	55	554025 0016	410,–
1600 x 1000 x 160	56	554025 0017	410,–
2000 x 1000 x 220	60	554025 0018	455,–
		5152	

Tool cabinet

- Made from iron angle brackets clad with steel sheeting, painted silver grey
- Working height approx. 900 mm (plate upper edge)
- Drawers mounted on roller bearings
- Removable shelf
- Lockable doors
- Shipped in disposable packaging
- Prices ex works, excluding packaging



for plate size mm	Design	Weight kg	art.no.	€
630 x 400 x 70	1 door, 1 shelf	40	**554030** 0006	509,–
630 x 630 x 70	1 door, 1 shelf	42	554030 0007	539,–
800 x 600 x 120	1 door, 1 shelf	53	554030 0008	539,–
1000 x 630 x 100	2 doors, 1 drawer, 1 shelf	60	554030 0009	639,–
1000 x 630 x 140	2 doors, 1 drawer, 1 shelf	60	554030 0010	639,–
1000 x 800 x 140	2 doors, 1 drawer, 1 shelf	63	554030 0011	639,–
1000 x 1000 x 100	2 doors, 1 drawer, 1 shelf	85	554030 0012	665,–
1000 x 1000 x 160	2 doors, 1 drawer, 1 shelf	85	554030 0013	665,–
1200 x 800 x 160	2 doors, 1 drawer, 1 shelf	85	554030 0014	709,–
1200 x 1000 x 160	2 doors, 1 drawer, 1 shelf	95	554030 0015	709,–
1500 x 1000 x 190	2 doors, 1 drawer, 1 shelf	103	554030 0016	819,–
1600 x 1000 x 160	2 doors, 1 drawer, 1 shelf	105	554030 0017	819,–
2000 x 1000 x 220	3 doors, 2 drawers, 1 shelf	120	554030 0018	899,–

5152

ATORN® Measuring angle

Packaging costs included

- **90°**
- Triangular shape, made from the finest black natural granite
- Hard and wear-resistant
- Precisely finished on both sides
- With weight-reducing bores from size 0600
- Surface accuracy of both angled faces in accordance with DIN 876
- Perpendicularity in accordance with DIN 875, accuracy 00
- Shipped in disposable packaging
- Prices ex works, including packaging



555501 0600

Edge length mm	Width mm	Perpendicularity mm	Weight kg	art.no.	€
200 x 150	50	0.002	2	**555501** 0200	295,–
300 x 200	50	0.002	5	555501 0300	450,–
400 x 250	50	0.003	8	555501 0400	799,–
500 x 300	60	0.004	15	555501 0500	999,–
600 x 400	70	0.005	30	555501 0600	1.519,–
800 x 500	80	0.006	55	555501 0800	2.449,–

5153



… for special measurement tasks

ATORN®
High quality for great performance

Concentricity gauge

HELIOS·PREISSER

- For testing the radial and axial run-out accuracy of rotating parts
- Size 0350 tailstocks with V-block attachments

Base plate design:
- Special cast iron
- Finely ground supporting surface
- With 2 T-slots, for holding tailstocks and measuring stand
- Slot width 10 mm (12 mm*)
- Distance between T-slots 58 mm (100 mm*)
- Planarity in accordance with DIN 876/2

Tailstock design:
- Adjustable
- Left-hand tailstock with fixed tip, right-hand tailstock with movable tip
- Quill Ø 16 mm (22 mm*)
- Movable tip travel approx. 10 mm
- Hardened steel quill and centre, precision-ground

Measuring stand design:
- With fine adjustment
- Locating bore 8H7
- Column Ø and height: 16 x 200 mm (22 x 240 mm*)
- Cross-arm Ø and length: 16 x 60 mm (16 x 125 mm*)
- Base plate supplied with tailstocks and measuring stand

* Values in brackets are for concentricity gauge no. 5547600450



554760 0200

Base plate L x W mm	Point width mm	Point height mm	Weight kg	art.no.	€
350 x 110	200	50	8	**554760** 0200	605,–
500 x 110	350	75	12	554760 0350	788,–
700 x 180	450	100	35	554760 0450	1.984,–

5154



554761 0001



554761 0003



554761 0011

Accessories

Designation	Diameter range mm	suitable for	art.no.	€
V-block inserts	3-15	554760 0200 / 0350	**554761** 0001	88,–
V-block jacks	5-25	554760 0200 / 0350	554761 0002	162,–
Roller jacks	3-30	554760 0200 / 0350	554761 0003	193,–
V-block inserts	8-45	554760 0450	554761 0010	133,–
V-block jacks	5-50	554760 0450	554761 0011	231,–
Roller jacks	4-60	554760 0450	554761 0012	261,–

5154

Special measuring jobs

INFO

Please contact us!





V-block pair



- With clamp
- Hardened
- Ground outer edges
- V-block accuracy: 0.005 mm to the standing surface
- Prices per pair

Length mm	Width mm	Total height mm	max. clamp Ø mm	art.no.	€
45	40	35	25	**556002** 0040	73,–
70	45	41	40	556002 0045	105,–

5155

ATORN® Double V-block pair



- Indent 90° with clamp
- Hardened
- V-block and clamping surfaces level, machined in parallel, finely ground and adjusted
- V-block accuracy: 0.004 mm to the base surface
- Stainless steel version available on request

Length mm	Width mm	Total height mm	Clamp Ø mm	art.no.	€
50	40	40	5-30	**556006** 0031	143,–
75	55	55	5-50	556006 0051	215,–
100	75	75	7-70	556006 0071	330,–

5189

Individual parts

Designation	art.no.	€
V-block, Ø 5-30, individual with clamp	**556008** 0031	76,–
V-block, Ø 5-50, individual with clamp	556008 0051	112,–
V-block, Ø 7-70, individual with clamp	556008 0071	172,–
Clamp, Ø 5-30, individual	556008 1031	28,50
Clamp, Ø 5-50, individual	556008 1051	29,80
Clamp, Ø 7-70, individual	556008 1071	35,60

5189

ATORN® Magnetic measuring and clamping V-block



- Steel
- 90° recess
- Level, parallel and perpendicular finish
- Magnetic force can be switched on/off
- Magnetic holding surface on the side opposite the switch
- Planarity and parallelism tolerance 0.004 mm, Perpendicularity tolerance 0.01 mm
- Supplied in a case

Length mm	Width mm	Total height mm	Clamp Ø mm	Retention force round N	Retention force surface N	art.no.	€
80	67	96	6-66	400	900	**556018** 0080	360,–
100	70	96	6-70	400	1800	556018 0100	509,–

5189

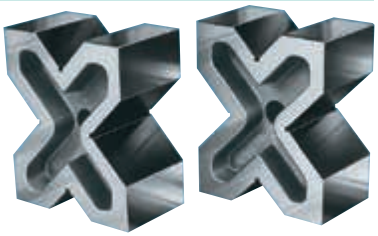
Hardened finish

Length mm	Width mm	Total height mm	Clamp Ø mm	Retention force round N	Retention force surface N	art.no.	€
70	45	70	2-40	300	600	**556019** 0070	365,–
80	67	96	6-66	400	900	556019 0080	430,–
100	70	96	6-70	400	1800	556019 0100	619,–

5189

Parallels

- **Pair, with four 90° V-recesses**
- Made from high-density special cast iron with high wear-resistance; all four supporting surfaces and V-recesses finished in pairs to the same height; supporting surfaces and V-recesses precision ground; lateral faces planed
- **Grade 1**: V-recesses in the base surface, accuracy: 0.016 mm
- Supplied in pairs, in disposable packaging

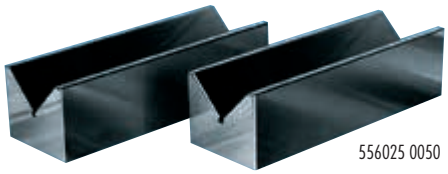


556010 0120

Length mm	Width mm	Total height mm	Weight kg	Shaft Ø mm	art.no.	€
60	100	120	7	8-90	**556010** 0090	305,–
75	130	150	13	10-120	556010 0120	440,–
90	170	200	24	12-180	556010 0180	699,–
					5155	

V-block pair with 90° recess

- Made from high-density special cast iron with high wear-resistance, V-recesses finished in pairs to the same height, lateral faces planed
- **Grade 3**:
  Supporting surfaces and V-recesses finely planed, parallelism between support and V-block, accuracy: 0.06 mm
  Grade 1:
  Supporting surfaces and V-recesses finely planed, parallelism between support and V-block, accuracy: 0.016 mm



556025 0050

Length mm	Width mm	Shaft Ø mm	**Grade 3** art.no.	€	**Grade 1** art.no.	€
100	40	6-40	**556020** 0040	66,–	**556025** 0040	97,–
150	50	8-50	556020 0050	105,50	556025 0050	148,–
200	70	8-70	556020 0070	180,–	556025 0070	235,–
250	85	12-85	556020 0085	330,–	556025 0085	475,–
300	100	12-100	556020 0100	440,–	556025 0100	649,–
			5155		5155	

Angle plate

- With clamping slots, precisely machined on both sides
- Angle precision in accordance with DIN 875 (clamping surface support)
- Made of high-density special casting with high wear-resistance, supporting surface and clamping surface machined at angles to one another, planed lateral faces, cast clamping slots,
- **Quality 3**: Bearing and clamping surface finish planed, planarity according to DIN 876/3
  Quality 1: Bearing and clamping surface ground, planarity according to DIN 876/2
  Quality 0: Supporting and clamping surface precision-ground, planarity in accordance with DIN 876/1



556035 0004

Grade 3

Dimensions L x W x H mm	Slit width mm	Weight kg	Angularity mm	art.no.	€
150 x 75 x 100	16	4	0.030	**556030** 0001	130,–
200 x 100 x 150	16	8	0.030	556030 0002	176,–
275 x 150 x 200	20	20	0.040	556030 0003	330,–
400 x 225 x 300	24	45	0.050	556030 0004	569,–
500 x 300 x 400	24	85	0.060	556030 0005	909,–
				5155	

Grade 1

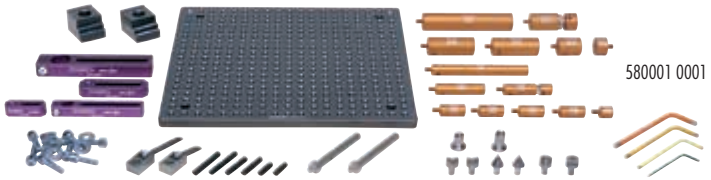
Dimensions L x W x H mm	Slit width mm	Weight kg	Angularity mm	art.no.	€
150 x 75 x 100	16	4	0.015	**556035** 0001	200,–
200 x 100 x 150	16	8	0.015	556035 0002	315,–
275 x 150 x 200	20	20	0.020	556035 0003	490,–
400 x 225 x 300	24	45	0.025	556035 0004	949,–
500 x 300 x 400	24	85	0.030	556035 0005	1.429,–
				5155	

Grade 0

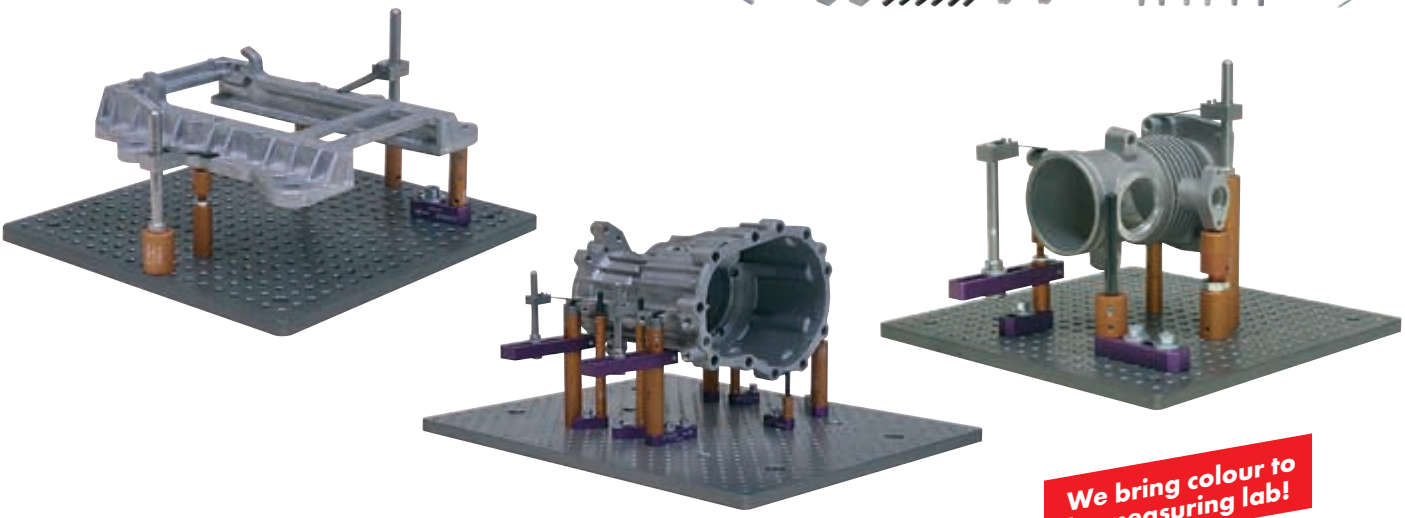
Dimensions L x W x H mm	Slit width mm	Weight kg	Angularity mm	art.no.	€
150 x 75 x 100	16	4	0.007	**556037** 0001	305,–
200 x 100 x 150	16	8	0.007	556037 0002	425,–
275 x 150 x 200	20	20	0.009	556037 0003	679,–
400 x 225 x 300	24	45	0.011	556037 0004	1.489,–
500 x 300 x 400	24	85	0.013	556037 0005	2.379,–
				5155	

Mitutoyo Clamping system for coordinate metrology ECO-FIX

- Assembly kits for immediate use
- Cost-effective
- Extremely easy to handle
- No fasteners required
- Quick assembly
- Compatible with leading manufacturers' products, no adapter required
- We will be happy to provide a list of the set contents on request



580001 0001



We bring colour to the measuring lab!

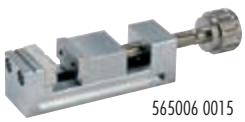
Description	Hole distance mm	art.no.	€
ECO-FIX assembly kit S, 60-piece, base plate 250 x 250 mm	12.5	**580001** 0001	940,–
ECO-FIX assembly kit L, 99-piece, base plate 500 x 400 mm	25.0	580001 0005	1.752,–

5107

ATORN® Mini precision vices

- For mounting and positioning small parts on projectors, measuring microscopes or during roughness measurements
- Replaceable clamping jaws with ground horizontal and vertical V-blocks
- Angle precision 0.01 mm
- Parallelism 0.01 mm

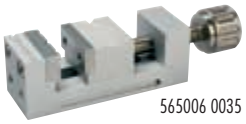
Ideal for use with measuring microscopes and measuring projectors



565006 0015



565006 0025



565006 0035

Type	Jaw width mm	Dimensions L x W x H mm	Clamp Ø mm	Clamp depth mm	Material	art.no.	€
Size 1	15	50x15x15	14	8	MS	**565006** 0015	118,–
Size 2	25	75x25x25	23	15	ALU	565006 0025	149,–
Size 3	35	100x35x35	35	35	ALU	565006 0035	189,–

5192

Complete set

- One vice in each size (Size 1/2/3), including 1 base jaw and 1 V-block jaw
- 1 pair of plastic jaws each (15 / 25 / 35 mm jaw width)
- 1 pair of stepped jaws each (15 / 25 / 35 mm jaw width)
- 1 pair of prism jaws with positioning pin (15 / 25 / 35 mm jaw width)
- 1 Midi divider (Ø 1.2-6.0 mm) and 1 Mini divider (Ø 0.4-3.5 mm)
- 2 bench vice stands
- 3 holding plates including screws
- 1 pair of double V blocks with clamp, 25 x 20 x 20 mm, clamping range 2-15 mm
- 4 pin wrenches
- Supplied in a sturdy carry case



Description	art.no.	€
Size 1 to Size 3 and accessories	**565006** 1005	1.320,–

5192

ATORN® Light metal spirit level

- **With and without magnet**
- Strong aluminium rectangular profile
- Non-slip contact due to silicon pads on rear
- Rubber end caps act as shock absorbers
- Laser-marked round horizontal vial
- Precision readings due to additional markers for the zero position and 2% gradients
- Magnifying effect for improved readability
- 270° vial viewing angle without protruding edges
- Vials made from high-strength, unbreakable polycarbonate
- Measurement accuracy in normal position: 0.5 mm/m
- 556508.... Lengths 800 to 1200 mm with additional scale on the upper measuring face and 2 adjustable measuring and scribing attachments
  556509.... with magnetic sole

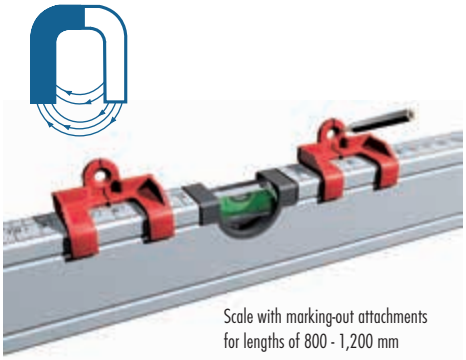




Non-slip silicon pads



Precision readings



Scale with marking-out attachments for lengths of 800 - 1,200 mm

Length mm	art.no.	€	With magnet art.no.	€
200	**556508** 0200	23,40		
300	556508 0300	24,80		
400	556508 0400	28,70	**556509** 0400	44,50
500	556508 0500	30,30		
600	556508 0600	32,–	556509 0600	49,50
800	556508 0800	37,30	556509 0800	63,50
1000	556508 1000	41,80	556509 1000	71,50
1200	556508 1200	46,30		
1500	556508 1500	59,–		
1800	556508 1800	73,50		
2000	556508 2000	75,–		
	5179		5179	

SOLA ENW angle spirit level with digital display

- **With electronic inclinometer**
- Aluminium tube profile, gold anodised
- Profile cross-section 59 x 26 mm
- Vials made from unbreakable block acrylic glass, horizontal vial with magnifying lens and luminous backing
- Incline display in degrees and percent
- Inverted measurement possible
- Hold function
- Switchable acoustic function
- Automatic switch-off
- Measurement accuracy: 0.017° = 0.3 mm/m in normal position, 0.043° = 0.75 mm/m for inverted measurements, Solartronic module 0.05° at 0° and 90°, 0.2° between 1° and 89°
- **Functions:** ON/OFF, acoustics, zeroing, incline display ° / % / mm / m, HOLD/COPY
- Supplied with 6LR61 battery, no. 548079 4022



556507 0600

Length mm	art.no.	€
600	**556507** 0600	195,–
1200	556507 1200	215,–
	5158	

ATORN® Electronic inclinometer

- Made from thick-walled four-chamber hollow aluminium profile, cross-section 60 x 26 mm, with two milled measuring faces
- Impact-resistant protective ends
- Display can be switched between degrees, percent or millimetres/metre
- HOLD function (measurement value memory)
- Switchable acoustic signal for 0° or 90° position
- Easy to read thanks to high-contrast 16 mm high LCD display
- Arrows in the display indicate the direction in which the device should be moved to reach the 0° or 90° position
- Display flips automatically for overhead readings
- Error margins:
  at 0° to 90° = 0.05°
  at 1° to 89° = 0.2°
- Extremely easy horizontal and vertical adjustment using the integrated measurement computer
- Battery life approx. 300 hours
- Supplied in sturdy plastic tubing with 6LR61 battery, no. 548079 4022



Total length mm	Length of the test face mm	Measurement range	Numerical intervals/ sensitivity	art.no.	€	Calibration art.no.	Calibration €
256	230	4x90°	0.1° / 0.1% / 1 mm/m	**556540** 2001	225,–	071515 0002	25,30

5158

Inclinometer

- For measuring planarity, perpendicularity and angularity
- **Digital display**
- Precision supporting surface in an aluminium frame with V on one side
- Display flips automatically when rotated through 180°
- Accuracy: Factory standard
  Power supply: 9 V battery
  Operating temperature: -5°C to 50°C
  Dimensions: 153 x 49 x 31 mm
  Weight: 300 g
- Supplied in a case with 6LR61 battery, no. 548079 4022



556535 2001

model	Measurement range	Numerical intervals/sensitivity	Error limit	Repetition precision	art.no.	€	Calibration art.no.	Calibration €
Pro 360	360° (4 x 90°)	0.1°	0.1° horizontal, 0.2° vertical	±0.1°	**556535** 2001	359,–	071515 0002	25,30
Pro 3600	360° (4 x 90°)	0.01° (0° to 9.99°) 0.1° (10° to 90°)	0.05° (0° to 10°) 0.2° (10° to 80°) 0.1° (80° to 90°)	±0.05°	556535 2002	599,–	071515 0002	25,30

5158

SARA® Digital inclinometer

- Robust metal casing
- With 2 magnets on the bottom and side surfaces
- rotating display
- Supplied with 6LR61 battery, no. 548079 4022



Measurement range °	Numerical intervals/sensitivity	Dimensions L x W x H mm	art.no.	€
360° (4 x 90°)	0.05°	57 x 57 x 31	**556550** 0001	52,50

5158

Precision spirit level

DIN 877



- For aligning horizontal and vertical surfaces and shafts
- Base body made from high-quality special cast iron
- Flat and 150° V-shaped underside, finely ground
- Finely ground supporting surface and front faces
- Longitudinal and transverse vials made from acrylic glass
- No recalibration necessary due to tension-free vial installation
- Fully insulated against heat from hands and breath
- Recesses in the housing permit side view of the vial
- Supplied in a plastic case



556524 0160

Length mm	0,3 mm/m art.no.	€	Calibration art.no.	€
160	**556521** 0160	145,–	071515 0004	25,30
200	556521 0200	168,–	071515 0004	25,30
250	556521 0250	189,–	071515 0004	25,30
300	556521 0300	203,–	071515 0004	25,30
	5157			

Length mm	0,1 mm/m art.no.	€	Calibration art.no.	€
160	**556522** 0160	157,–	071515 0003	25,30
200	556522 0200	185,–	071515 0003	25,30
250	556522 0250	202,–	071515 0003	25,30
300	556522 0300	225,–	071515 0003	25,30
	5157			

Length mm	0,04 mm/m art.no.	€	Calibration art.no.	€
160	**556523** 0160	214,–	071515 0002	25,30
200	556523 0200	250,–	071515 0002	25,30
250	556523 0250	292,–	071515 0002	25,30
300	556523 0300	322,–	071515 0002	25,30
	5157			

Length mm	0,02 mm/m art.no.	€	Calibration art.no.	€
160	**556524** 0160	258,–	071515 0001	25,30
200	556524 0200	306,–	071515 0001	25,30
250	556524 0250	337,–	071515 0001	25,30
300	556524 0300	362,–	071515 0001	25,30
	5157			

Precision frame spirit level

DIN 877



- For aligning horizontal and vertical surfaces and shafts
- Base body made from high-quality special cast iron
- 3 sides V-shaped, 1 side flat, finely ground
- Longitudinal and transverse vials made from acrylic glass
- No recalibration necessary due to tension-free vial installation
- Fully insulated against heat from hands and breath
- Recesses in the casing allow vials to be viewed from the side
- Supplied in a wooden case



556534 0200

Length mm	0,3 mm/m art.no.	€	Calibration art.no.	€
100	**556531** 0100	243,–	071520 0004	48,–
150	556531 0150	289,–	071520 0004	48,–
200	556531 0200	346,–	071520 0004	48,–
	5157			

Length mm	0,1 mm/m art.no.	€	Calibration art.no.	€
100	**556532** 0100	300,–	071520 0003	62,–
150	556532 0150	341,–	071520 0003	62,–
200	556532 0200	418,–	071520 0003	62,–
	5157			

Length mm	0,04 mm/m art.no.	€	Calibration art.no.	€
100	**556533** 0100	372,–	071520 0002	59,–
150	556533 0150	455,–	071520 0002	59,–
200	556533 0200	545,–	071520 0002	59,–
	5157			

Length mm	0,02 mm/m art.no.	€	Calibration art.no.	€
150	**556534** 0150	500,–	071520 0001	85,–
200	556534 0200	609,–	071520 0001	85,–
	5157			

TSCHORN 3D probe

IP67

- New and improved model
- Minimised guide play and more stable positioning
- Optimised button mechanism
- For determining the spindle centre when aligning workpieces on X, Y, and Z axes
- To protect the measuring unit, large over-travel allowances have been incorporated into the probe unit
- Probe insert with predetermined break point at the far top
- Probes can be replaced by the user
- Supplied with standard probe insert





Size comparison: standard probe / slim-line probe



Shank Ø mm	Length mm	Width mm	art.no.	€	Calibration art.no.	Calibration €
12	132.5	44.5	**558002** 0002	315,50	077330 0001	97,50
			5160			

Accessories

- Suitable for 558002 0002 and 558002 0010

Designation	Ø mm	Length mm	art.no.	€
Probe insert, standard	3	27	**558003** 0001	28,20
Probe insert, long	6	62	558003 0002	46,20
			5160	



SARA 3D probe SAVEplus

- Slim and attractive design
- For determining the spindle centre when aligning workpieces on X, Y, and Z axes
- Adjustable scale
- Probe insert with predetermined break point at the far top
- Probes can be replaced by the user
- Supplied with standard probe insert





Shank Ø mm	Length mm	art.no.	€	Calibration art.no.	Calibration €
12	128	**558002** 0010	219,50	077330 0001	97,50
		5160			

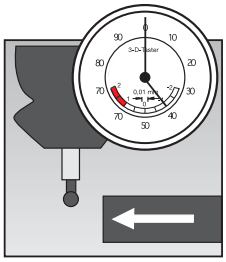
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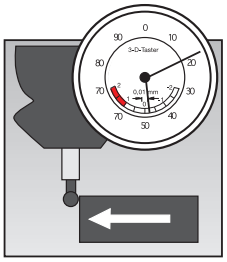
ATORN® Universal 3D probe

IP67

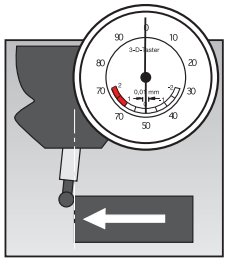
- For determining the spindle centre when aligning workpieces on X, Y, and Z axes
- Easily readable dial indicator
- True-running accuracy can be calibrated via 4 adjustment screws in the casing
- Robust metal casing
- No plus/minus sign problems, as actual value readings are independent of the direction
- Automatic probe radius compensation
- Ceramic predetermined break point prevents damage to the mechanism if maximum probe displacement is exceeded
- Probes can be replaced by the user
- For use on all machine tools including EDM equipment due to insulation between the probe insert and the holding fixture
- Dial indicator diameter: 57 mm
  Casing width: 65 mm
  Clamping shank: 20 mm Ø x 50 mm, similar to DIN 1835B or DIN 69871A, SK 40
  Probe ball diameter: 4 mm
- Supplied in moulded packaging, including operating manual



Move towards the workpiece edge



When contact is made with the edge, the display will change



If the small and large pointers are at "zero", the spindle axis and contact edge are exactly in line. The machine control system is zeroed.



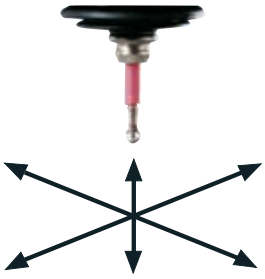
558001 0040



558001 0001

Designation	art.no.	€	Calibration art.no.	€
Universal 3D probe, shank Ø 20 mm	**558001** 0001	300,–	077330 0001	97,50
Universal 3D probe, shank DIN 69871A, SK 40	558001 0040	409,–	077330 0001	97,50

5159





558005 0001 558005 0005

Accessories

Designation	art.no.	€
Spare contact point 4 mm Ø x 33 mm long	**558005** 0001	39,95
Long contact point 8 mm Ø x 75 mm long	558005 0005	53,50

5183

Universal 3D probe, digital

IP67

- **Digital display,** otherwise design as order no. 558001....,
- Clamping shank: 20 mm Ø x 50 mm, similar to DIN 1835B or DIN 69871A, SK 40
  Reading: 0.001 mm, mm/inch selection
  Probe ball diameter: 4 mm
  Measurement accuracy: 0.005 mm
- Supplied in moulded packaging, with CR2032 battery (no. 548079 6032) and operating manual



Designation	art.no.	€	Calibration art.no.	€
Universal 3D probe, digital, shank Ø 20 mm	**558001** 0005	649,–	077330 0001	97,50

5160

Accessories

Designation	art.no.	€
Spare contact point 4 mm Ø x 33 mm long	**558005** 0001	39,95
Long contact point 8 mm Ø x 75 mm long	558005 0005	53,50

5183

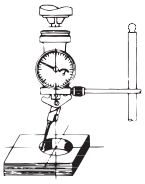


558005 0001 558005 0005

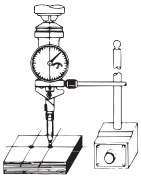
Precision centring device CO-AX



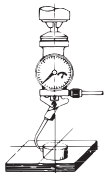
- For aligning workpieces on machine tools with vertically or horizontally rotating spindles
- Non-rotating, easily readable dial indicator
- Robust metal casing
- Wide display range
- Straight clamping shank Ø 10 mm
- With stanchion to hold the dial indicator in the desired position
- Replacement of the probe tips facilitates large working range inside and outside
- Dial indicator diameter Ø 40 mm with tolerance marks
- Functional range Ø 4-300 mm, inside and outside
- Optimum speed 150^{rpm}
- Supplied with stanchion 160 mm,
  3 inner probes (50/100/150 mm),
  3 outer probes (50/100/150 mm),
  Centre probe,
  Wooden storage boxes



Internal diameter



Centring



Outside diameter

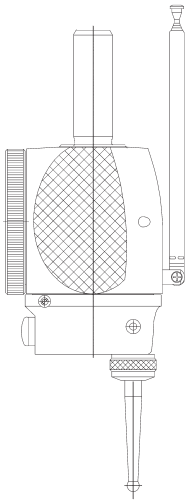


Display area mm	Reading mm	art.no.	€	Calibration art.no.	€
5	0.01	**530010** 0070	289,–	077320 0002	45,–

5161

HAIMER® Precision centring device Centro

- For aligning workpieces on machine tools with vertically or horizontally rotating spindles
- Non-rotating, easily readable dial indicator
- Robust metal casing
- Large display range
- Straight clamping shank, Ø 16 mm
- With stanchion to hold the dial indicator in the desired position
- Centring accuracy: 0.003 mm
  Casing Ø: 80 mm
  Clamping shank: Ø 16 mm x 48 mm
  Dial indicator Ø: 60 mm
  Length (without clamping shank): 92 mm
  Max. Speed: 150 rpm
  Bore measurement range: Ø 6 - 125 mm
  Shaft measurement range: Ø 0 - 125 mm with bent probe tip
- Base unit supplied with Ø 5 mm straight probe insert and telescopic rod featuring an articulated base, in moulded packaging







Curved probe insert (optional)

Designation	art.no.	€	Calibration art.no.	€
Centring device, shank Ø 16 mm	**558012** 0001	345,–	077320 0001	46,10

5185

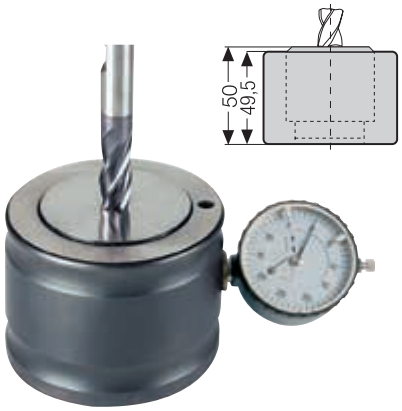
Accessories

Designation	art.no.	€
Probe insert, straight with ball, Ø 5 mm	**558014** 0001	24,–
Probe insert, straight with ball, Ø 2 mm	558014 0002	26,–
Probe insert, curved with ball, Ø 5 mm	558014 0003	31,–

5185

Zero adjuster, height 50 mm

- For setting machine reference points
- The adjustment device is placed on the workpiece and the tool (e.g. milling cutter) moved towards the spring-mounted contact surface until both pointers on the dial indicator are at zero. The lower edge of the tool is now positioned at exactly 50 mm ± 0.01 mm. The reference dimension of 50 mm is entered into the machine control system.
Caution: Process may only be performed while the tool is stationary.
- Base body and probe insert are case-hardened (60 HRC) and finely ground
- Two guide diameters for optimum handling of the contact surface
- 558020 0005: six magnets in the base, plane-ground
- Supplied in a wooden case with dial indicator, operating manual and measurement log



Enclosure Ø mm	Sensor surface Ø mm	Spring deflection mm	Reading mm	Magnetic foot	art.no.	€
64.5	47	50.5 - 49.5	0.01	No	**558020** 0001	209,–
64.5	47	50.5 - 49.5	0.01	Yes	558020 0005	259,–

5163

Zero adjuster, height 100 mm

- Height adjustment dial for determining the position of the workpiece surface on the Z axis
- Can also be used horizontally
- Height tolerance ± 0.01 mm
- Especially suitable for micro-drills





Total height mm	Dimensions mm	Sensor surface Ø mm	art.no.	€
100	90 x 48 x 25	10	**558021** 0001	146,50

5163

Height adjustment device

- For quickly and easily determining the axial reference point for the machine spindle without damaging the workpiece.
- Can only be used on electrically conductive materials.
- **With illuminated display,** LED indicators with good all-round visibility
- Height tolerance ± 0.01 mm
- Over-travel margin 3 mm
- Hardened probe insert, functional faces ground and lapped
- **With three magnets for better grip**
- Supplied with 2x SR44 batteries, no. 500534 0001


Red lighting all the way around upon contact

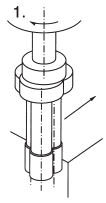

558030 0001

Total height mm	Support surface Ø mm	Sensor surface Ø mm	art.no.	€
50	55	14.0	**558030** 0001	260,–

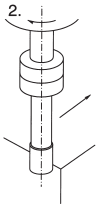
5162

Edge probe for rotary applications

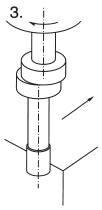
- For determining tool reference faces and edges
- **Recommended speed: approx. 600 rpm**
- All parts hardened and burnished
- Ground clamping and contact diameters
- Surfaces between holding fixture and probe head lapped
- Probe head is connected to the clamping shank via an extension spring
- Alignment accuracy 0.01 mm
- Supplied in a case



Approach, probe does not rotate smoothly



Probe touches the workpiece and runs quietly



Probe moves sideways with a jerk = reference point


558040 0002

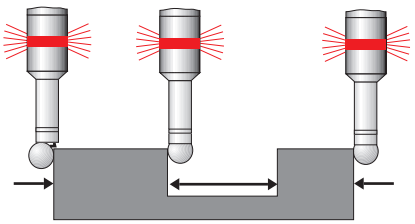
558040 0001

Clamping Ø mm	Contact Ø mm	Total length mm	art.no.	€
10	10 and 4	90	**558040** 0001	45,50
10	10	84	558040 0002	45,50
6	6	50	558040 0003	45,50
			5162	

Edge finder with illuminated display

- For positioning reference points on metallic workpieces
- Two-axis and three-axis measurements available
- Can also be used to determine the centre or diameter of a bore
- The distance from the spindle centre to the contact surface is 5.00 mm
- Can only be used on electrically conductive materials
- True-running accuracy ± 0.01 mm
- Hardened steel body with ground functional surfaces
- LED indicator lamps with good all-round visibility
- Supplied with batteries







Safety spring range 2 mm

Straight shank, 2D and 3D

- Incl. 1x 23A battery, no. 548079 4223

Clamping shank mm	Total length mm	Sensor ball Ø mm	2D version art.no.	€	3D version art.no.	€
16	99	10	**558062** 1016	126,–		
20	94	10	558062 1020	126,–		
20	118	10			**558063** 3020	165,–
			5162		5162	


558062 1016

558063 3020

Morse taper shank, 2D

- Incl. 2x 10GA batteries, no. 548079 4706

Clamping shank	Total length mm	Sensor ball Ø mm	2D version art.no.	€
MT 2	133	10	**558060** 2002	165,–
			5162	


558060 2002

Straight shank, 2D and 3D, with signal tone

- Incl. 1x 23A battery, no. 548079 4223

Clamping shank mm	Total length mm	Sensor ball Ø mm	2D version art.no.	€	3D version art.no.	€
20	119	10	**558064** 1020	192,–		
20	131	10			**558065** 1020	255,–
			5162		5162	

558064 1020 with signal tone


558064 1020

SCHWEIZER Hand-held magnifier Tech-Line

- Aplanatic lens system made from scratch-resistant silicate glass
- Large depth of field and high-contrast view
- Low-reflection black lens frame
- Metal or plastic handle with two-component paint, resistant to virtually all chemicals and solvents

Enlargement	Lens Ø mm	Handle	art.no.	€
2x/4x	90/20	Plastic	**560220** 0204	70,60
4x	65	Plastic	560220 0004	53,–
8x	28	Metal	560220 0008	36,60
10x	28	Metal	560220 0010	38,70

5164



SCHWEIZER Hand-held reading glass

- Chrome-plated brass magnifier head
- High-quality black plastic handle
- Size 0035 high-quality reading glass with bi-convex silicate glass lenses
  Size 0255 high-quality bifocus reading lens with 2 different magnifications

Enlargement	Lens Ø mm	art.no.	€
3.5x	65	**560124** 0035	26,30
2.5x / 5x	75 / 20	560124 0255	35,90

5164



SCHWEIZER Stand magnifiers and pocket microscope Tech-Line

Stand magnifiers

- Ideal for all planar tests, as a single stand magnifier or as a measuring magnifier with duo scale
- Fixed focus or vario-focus versions
- Aplanatic silicate glass lens, scratch-proof
- Large depth of field and high-contrast view
- Casing made from shock-proof, transparent plastic
- Insertion guide for effortlessly retrofitting with duo scales

Designation	Enlargement	Lens Ø mm	art.no.	€
Fix-Focus	8x	30	**560106** 0008	27,60
Fix-Focus	10x	30	560106 0010	33,80
Vario-Focus	8x	22.8	560106 1008	40,30
Vario-Focus	10x	22.8	560106 1010	47,10

5164

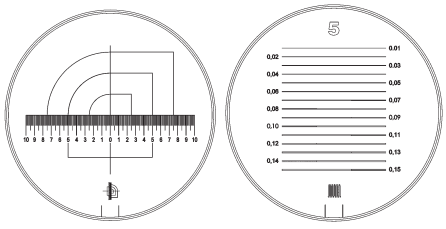


Duo scales

- Can be used with fixed-focus and vario-focus stand magnifiers, and the pocket microscope in conjunction with a stand adapter
- Two scales (Duo-Scale) on one plate: Ø 25 mm for stand magnifiers 8x and 10x, Ø 2.5 for pocket microscope 40x, 50x and 60x
- Scratch-resistant glass
- Hard chrome scale on the underside to prevent parallax errors

Designation	Display	art.no.	€
Scale 1	Measurement scale 20 mm	**560106** 5001	34,30
Scale 2	Polar grid, angle, radius	560106 5002	38,70
Scale 3	Angle	560106 5003	38,70
Scale 4	Polar grid	560106 5004	38,70
Scale 5	Thickness	560106 5005	38,70

5164



Set

- 8x vario-focus stand magnifier plus scales, supplied in an aluminium box

Contents	art.no.	€
Vario-Focus 8x plus scale	**560106** 5101	75,–
Vario-Focus 8x plus scales 1 to 5	560106 5102	220,–

5164



LED light unit

- For Fix and Vario-Focus stand magnifiers
- Scratch-resistant casing, resistant to virtually all chemicals and solvents
- Light colour 4500K - neutral white
- Supplied with three LR6 batteries, no. 548079 4006

Designation	art.no.	€
Light unit for Fix and Vario-Focus stand magnifiers	**560106** 0006	37,90

5164



SCHWEIZER Precision thread counter Tech-Line

- With aplanatic precision silicate lens
- Glass measurement scale: 10 mm, division 0.1 mm
- Brass frame, matt chrome-plated



Enlargement	Lens Ø mm	art.no.	€
8x	16.3	**560123** 0018	63,–

5164

SCHWEIZER Precision folding magnifier Tech-Line

- Innovative single-handed operation
- Aplanatic lens consisting of two plano-convex silicate lenses
- Black plastic frame
- Plastic casing with solvent-resistant painted finish



560125 0010

Enlargement	Lens Ø mm	art.no.	€
6x	22.8	**560125** 0006	22,80
8x	22.8	560125 0008	26,20
10x	22.8	560125 0010	28,10
15x	22.8	560125 0015	32,20
20x	16.8	560125 0020	34,90

5164

SCHWEIZER Bi-convex folding magnifier Tech-Line

- Bi-convex silicate lenses
- High-gloss polished stainless steel casing



560128 0309



560128 0305

Enlargement	Lens Ø mm	art.no.	€
3x + 3x + 3x = 9x	30	**560128** 0309	38,70
3x + 5x = 8x	38	560128 0305	37,–

5164

SCHWEIZER Watchmaker's loupes

Standard version
- Lens ground from silicate glass
- Biconvex, 10x with plano-convex ancillary lens
- Shock-resistant plastic frame with air vent

Version Tech-Line
- Aplanatic optics
- Plastic housing, with solvent-resistant painted finish



560116 0010



Enlargement	Lens Ø mm	Design	art.no.	€
3x	25	Standard	**560115** 0003	8,45
5x	25	Standard	560115 0005	8,45
7x	25	Standard	560115 0007	10,10
10x	22.8	Tech-Line	560116 0010	14,95
15x	16.3	Tech-Line	560116 0015	18,90

5164

SCHWEIZER LED hand-held illuminated magnifier Tech-Line CLASSIC

- Mobile hand-held illuminated magnifier with state-of-the-art light technology and ergonomic shape
- 2-level boost switch to optimise the lighting, with acoustic feedback and haptic guidance
- High-contrast and homogeneous light thanks to optimal adjustment and light intensity
- Light colour 4500K - neutral white
- Low energy consumption thanks to modern SMD LEDs
- Ergonomic design, non-slip soft-touch handle zone and pleasant haptics
- Supplied with 3x LR-3 battery



560127 0010

Enlargement	Lens type	Lens Ø mm	art.no.	€
10x	Aplanatic	22.8	**560127** 0010	64,90
15x	Aplanatic	16.3	560127 0015	64,90
2x/4x	Bifocal/biconvex	70/20	560127 0002	68,90
4x	Aspherical	55	560127 0004	72,90
8x	Aplanatic	30	560127 0008	66,90

5164

SCHWEIZER Headband magnifier Tech-Line BINO LED

- Very robust metal construction, painted in low-sheen black
- Swivel-mounted LED unit for adjusting the lighting
- Light colour 6000 K
- The headband magnifier can be worn under glasses



Designation	art.no.	€
Headband magnifier with LED lighting	**560130** 0001	81,50
	5164	

Interchangeable lenses

- Fold-up interchangeable lens case for various enlargements: 2x to 3.5x
- Interchangeable lenses are scratch-resistant and resistant to virtually all chemicals and solvents
- Metal-enclosed silicate glass interchangeable lenses
- Outstanding depth of field



Designation	art.no.	€
Interchangeable lens 2.5x	**560135** 1025	20,70
Interchangeable lens 2x	560135 1020	20,20
Interchangeable lens 3.5x	560135 1035	25,90
Interchangeable lens 3x	560135 1030	22,30
	5164	

ATORN® LED magnifier lamp

- Even, largely anti-glare lighting provided by 90 LEDs (colour temperature 6,500 K)
- Extremely long-life LEDs, no risk of breakage
- High-quality glass lenses with 1.75x or 2.25x magnification
- Metal arm with plastic covering, no risk of pinching
- Particularly slim magnifier casing with replaceable magnifier cover
- Extremely low power consumption (only around 9 W!)
- Table clamp



Enlargement	Lens Ø mm	Projection mm	art.no.	€
1.75-fach	125	1060	**560160** 0175	179,–
2.25-fach	125	1060	560160 0225	182,50
			5164	

SCHWEIZER Cleaning set

- High-end cleaning solution for all glass and plastic lenses and magnifiers
- Anti-static effect
- High-quality microfibre cleaning cloth included



Designation	art.no.	€
Cleaning set	**560131** 0001	10,20
	5164	

Stereoscopic zoom microscope, trinocular

- Version with 3rd lens barrel to adapt e.g. a camera
- sturdy, robust microscope
- cordless battery-powered operation (optional)
- Magnification 7x to 45x
- Eyepiece pair 10x, with dioptric adjustment
- Working distance 100mm
- Integrated handle for easy transportation
- Equipped with long-life LED direct/backlight, colour temperature 6300 K
- Supplied with eyepiece pair 10x and power supply



Designation	art.no.	€
Stereo microscope	**561052** 0001	499,–
	5169	

USB ocular camera for microscope

- Low-cost introduction to image/video transmission and visual measurement
- USB camera with EDGE technology for enhanced image reproduction
- Compatible with virtually all stereo and measuring microscopes using an adapter
- Adapter for Ø 23 mm, 30 mm/30.5 mm eyepieces and C-mount supplied
- USB 2.0 interface
- Images can be saved in all standard formats
- Optional reticle
- Simple measuring options for circles, angles, spacing
- Calibration function through supplied calibration standard
- Supplied with USB eyepiece camera with DinoCapture software and calibration standard







Designation	Resolution mm	art.no.	€
USB retrofit camera	1.3 MP	561058 0005	379,–
		5169	

USB digital hand-held microscope

- For industrial inspection, quality control, assembly, repair, material defect analysis
- Low-cost introduction to image/video transmission and visual measurement
- CMOS Color Sensor
- Cameras available with EDGE technology for improved image reproduction
- Micro touch snapshot function for saving live images/videos directly
- Transfer of images to smartphone or tablet through optional WiFi adapter
- USB 2.0 interface
- Casing: Ø 32 x 105 mm
- DinoCapture software: 2D image measurement (lines, radius, diameter, circumference, polygon, angle) input of texts, output of measuring data in Excel at the click of a mouse
- Supplied with: USB hand microscope with USB cable L=1.8 m, DinoCapture software on CD

- 5610570.... Plastic casing, sensor resolution 1.3 MP, image resolution 1280,x,1024 pixels
- 5610571.... Metal casing, sensor resolution 5 MP, image resolution 2592 x 1944 pixels



561057 0001

model	Resolution mm	Enlargement	Working distance mm	Design	art.no.	€
AM4113ZT	1.3 MP	10x-50x / 200x	0.5 - 60	-	**561057** 0001	339,–
AM4115ZT	1.3 MP	20x-200x	0.5 - 60	EDGE	561057 0004	549,–
AM7515MZT	5 MP	20x-200x	0.5 - 60	EDGE	561057 1002	859,–
					5169	

Stands

- Column stands
- With focussing option



561057 3005



561057 3006

Height adjustable mm	Projection of lateral arm mm	art.no.	€
145	-	**561057** 3005	49,–
200	150	561057 3006	199,–
		5169	

ATORN® Digital microscope Inspector

- digital microscope system for visual inspection and for simple baseline measurements
- quick display of live image in full HD resolution (1080p)
- simple operation and control through integrated software
- outstanding representation of the workpiece thanks to image-enhancing functions
- no time-consuming recalibration for zoom alterations
- programmable buttons for quick and easy operation
- network-compatible for documenting and archiving images
- available with LED incident light or with LED direct/backlight
- 2.2x to 122x magnification, even with standard lenses
- Supplied with 5x lens, keypad, mouse, power supply, HDMI cable, Mini-USB cable, USB memory stick
- HD-Ready or FULL-HD monitor available as optional accessories





Description	art.no.	€
Digital microscope with LED reflected/transmitted light	**561070** 0002	5.600,–
Digital microscope with LED reflected light	561070 0001	5.250,–

5169

Accessories

Designation	Lens Ø mm	Enlargement	art.no.	€
10x lens, planar	58	optical 122x / digital 266x	**561071** 0004	600,–
25x lens	58	optical 258x / digital 660x	561071 0002	1.000,–
360° gyration viewer	-	-	561071 0007	1.500,–
50x lens	58	optical 662x / digital 1324x	561071 0003	1.000,–
5x lens (standard accessory)	58	optical 66x / digital 122x	561071 0001	200,–
diffused LED dome light	-	-	561071 0006	1.000,–
Case for Inspector digital microscope	-	-	561071 0009	400,–
PC module for live image capture	-	-	561071 0008	500,–
polarised ring lamp with analyser	-	-	561071 0005	600,–

5169



561071 0005



561071 0004



561071 0009



561071 0006



... solid carbide indexable insert drill.

ATORN®
Performance demands quality

Mitutoyo Workshop measuring microscope

- Compact and robust base body made from special cast iron
- Coordinate measuring table
- Dovetail guide with rack and pinion drive for adjusting the microscope head to alter focus
- Standard magnification 30x (lens 2x, eyepiece 15x)
- Test item displayed without inversion
- Backlighting, incident lighting and ring lamp
- Replaceable crosshair graticule built into the eyepiece
- Additional graticules (e.g. for determining radii or for thread measurement) are available on request
- Angle measuring device, can be rotated through 360°, Vernier scale 6 minutes
- Supplied with 2x lens, 15x eyepiece, graticule with crosshair, measuring table **with digital built-in micrometer no. 505404 0001**, LED backlighting and LED incident lighting, LED ring lamp with holding fixture adapter, 2 spare bulbs (24 V), spare fuse (0.5 A), covering hood, power supply for connection to 230 V / 50 Hz, Operating manual, shipped in disposable packaging



QM-DATA can be connected

Set

- Contains 7 pcs.: TM 505/510 microscope, lens with 2x magnification, eyepiece with 15x magnification, crosshair graticule, 2 digital built-in micrometers, ring lamp with holding fixture adapter

model	Travel mm	art.no.	€
TM 505B	50 x 50	**561501** 1012	6.411,–
TM 1005B	100 x 50	561501 1013	7.791,–

5105



Supplied with ring light

Eyepieces and lenses

- Sizes 0115 and 0202 are already included in the all-in-one device

Designation	art.no.	€
10x eyepiece	**561510** 0110	197,–
15x eyepiece	561510 0115	197,–
20x eyepiece	561510 0120	217,–
2x lens	561510 0202	236,–
5x lens	561510 0205	313,–
10x lens	561510 0210	313,–

5105

Total enlargements with ocular lens combinations:

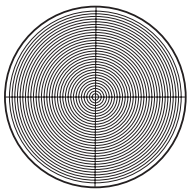
Lens	Ocular 10x	15x	20 x
2x	**20x** (6.5 mm)	**30x** (6.5 mm)	**40x** (5 mm)
5x	**50x** (2.6 mm)	**75x** (2.6 mm)	**100x** (2 mm)
10x	**100x** (1.3 mm)	**150x** (1.3 mm)	**200x** (1 mm)

The data provided in brackets specifies the image diameter.

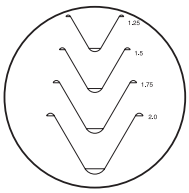
Replaceable eyepiece graticules

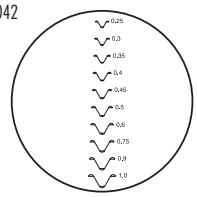
Designation	art.no.	€
Graticule, circle, Ø 0.05-4.0 mm	**561510** 0042	106,–

5105



561510 0042

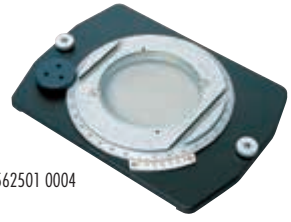




Holding fixture for test items

Designation	art.no.	€
Rotatable table for No. 5615010001	**562501** 0003	796,–
Rotatable table for No. 5615010002	562501 0004	976,–

5105



562501 0004

Mitutoyo Measuring projector PJ-A3000





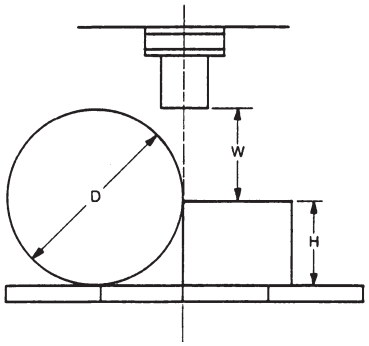
QM-DATA can be connected

- Compact, easy-to-operate table projector for diverse inspection tasks
- Clear image across the entire screen Ø of 315 mm
- 360° rotatable screen with crosshairs
- 10x lens with separate semi-opaque incident mirror included
- Integrated condenser lenses for 10x, 20x, 50x and 100x magnifications
- Halogen backlighting and incident lighting
- Built-in digital display for reading the angle of the rotatable screen
  Switch between 1 arc minute or 0.01 degree, with 0.001 mm resolution for the X and Y axis
- RS-232 C interface for X and Y axes
- Magnification uncertainty: 0.1 % backlighting, 0.15 % incident light
- **562001 0105** with 150 x 50 mm coordinate measuring table, fine and quick adjustment across the entire movement range, integrated glass scales, max. workpiece weight: 10 kg
- **562001 0111** with 200 x 100 mm coordinate measuring table, fine and quick adjustment across the entire movement range, built-in glass scales. Supporting surface of the table can be swivelled ± 5° to provide better workpiece alignment, max. workpiece weight: 15 kg
- Supplied complete with a 230 V / 50 Hz power cable; covering hood; two 24 V / 150 W halogen bulbs; a spare 5 A fuse and operating manual; shipped in disposable packaging
- **Calibration on request**

Designation	Travel mm	art.no.	€
Model PJ-A3005F-150	150 x 50	**562001** 0105	11.330,–
Model PJ-A3010F-200	200 x 100	562001 0111	12.880,–
		5107	

	PJ-A3005F-150				PJ-A3010F-200			
	10x	**20x**	**50x**	**100x**	**10x**	**20x**	**50x**	**100x**
Field of view Ø mm	31,5	15,7	6,3	3,1	31,5	15,7	6,3	3,1
W mm	66 (20)	32,5 (2)	12,6 (12,6)	5 (5)	66 (20)	32,5 (2)	12,6 (12,6)	5 (5)
H mm	103,5	103,5	103,5	103,5	92,5	92,5	92,5	92,5
D mm	207	87	27	10	185	87	27	10

()= with incident lighting



Accessories

Designation	art.no.	€
10x lens with semi-opaque incident mirror (standard accessory)	**562030** 0001	775,–
20x lens with semi-opaque incident mirror	562030 0002	775,–
50x lens with integrated incident mirror	562030 0003	1.014,–
100x lens with integrated incident mirror	562030 0004	1.014,–
Semi-opaque incident mirror (standard with lens)	562030 0008	79,–
Special incident mirror with 10x lens	562030 0010	101,–
Special incident mirror with 20x lens	562030 0011	80,–
	5105	

THE BENCHMARK STANDARD
Mitutoyo



MITUTOYO
Measuring equipment catalogue
approx. 620 pages
Art.no. 019900 0069

Overview of all free manufacturers' catalogues on page 14/15

Mitutoyo Measuring projector PV-5110

- Robust, easy-to-operate stand projector
- Clear image across the entire screen area, Ø 508 mm
- 360° rotatable screen, with crosshairs, locking, fine adjustment
- Built-in digital angle reading, can be switched from 1 arc minute to 0.01 degree
- Halogen backlighting and incident lighting
- 10x lens included
- 200 x 100 mm coordinate measuring table, fine adjustment across the entire movement range and quick adjustment along both axes, built-in glass scales, supporting surface of the table can be swivelled ± 5° for better workpiece alignment, max. workpiece weight: 5 kg
- Magnification uncertainty: 0.1 % backlighting, 0.15 % incident light
- Hand wheel on the side of the casing for adjusting the measuring table height to alter focus
- Supplied complete with two individually adjustable halogen incident lights; holding fixture for optional digital display unit; 230 V / 50 Hz power cable; 10x lens set; operating manual; shipped in disposable packaging
- **Calibration on request**



QM-DATA can be connected



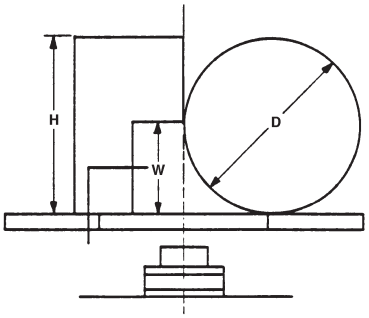
5620500005 with 5627010012

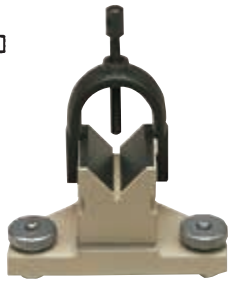
Designation	art.no.	€
Model PV-5110 without display	**562050** 0005	15.450,–

5107

	PV-5110				
	5x	**10x**	**20x**	**50x**	**100x**
Field of view Ø mm	100	50	25	10	5
W mm	60 (27)	60 (60)	60 (60)	32,4	22,5
H mm	125	181	206	87	87
D mm	120	120	120	64,8	45

()= with incident lighting





562501 0006

Accessories

Designation	art.no.	€
Lens attachment 5x	**562070** 0001	6.589,–
Lens attachment 10x (standard accessory)	562070 0002	2.153,–
Lens attachment 20x lens	562070 0003	1.730,–
Lens attachment 50x	562070 0004	1.780,–
Lens attachment 100x	562070 0005	1.982,–
Tiltable centring support	562501 0002	824,–
Tool holder	562501 0005	266,–
V-block with clamp for Ø 5-25 mm	562501 0006	313,–
Colour filter, green	562501 0020	85,–
Halogen bulb, 24 V/150 W	562501 0021	13,–

5105



562501 0002

Mitutoyo QM-Data 200 measurement computer

- For connection to profile projectors and measuring microscopes
- Measuring complex geometric elements
- Robust design for workshop use
- Large, high-contrast **colour LCD display**
- Function keys for frequently measured elements e.g. point, line, circle, etc.
- Computerised workpiece alignment
- Teach-in process allows part programs to be created for frequently recurring parts
- Automatic element recognition via the Mitutoyo AI function (AI = artificial intelligence)
- Macro-functions and part program development provide a quick and user-friendly measuring procedure both for single and series measurements.
- Integrated USB interfaces and printer interface
- Weight: 2.9 kg
- **Measurement functions:**
  Point, line, circle, angle, ellipse, perpendicularity, parallelism, Cartesian/polar coordinate systems, min./max., shape, intersection points, incremental/absolute, statistical calculations, date/time



562701 0021

Designation	art.no.	€
QM Data 200, table version	**562701** 0021	3.049,–
QM Data 200 with device holder	562701 0022	3.049,–

5107

Mitutoyo Digital display unit LINEAR SCALE model KA200

- Compact design
- Easily readable 15 mm high LED digits
- For connecting model AT 103, AT 116, AT 112F and AT 715 scales on two or three axes
  For connection to turning and milling machines (adjustable mode)
- Adjustable resolution: 0.001 mm and 0.005 mm resolution (for AT1xx scales)
- Display: 8 digits, (-) sign, zero point
  Connection: 230 V / 50 Hz
  Power consumption: 30 VA
- Supplied with mains power cable and operating manual, shipped in disposable packaging



Connectable axes	Dimensions L x W x H mm	Weight kg	art.no.	€
2	300 x 70 x 167	1.25	**574021** 2004	586,–
3	300 x 70 x 167	1.30	574021 2005	705,–
			5105	

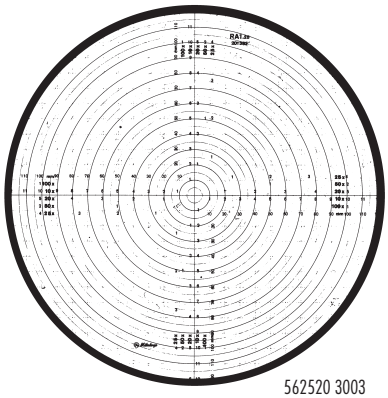
Accessories

- Interface plug-in card with a variety of possible uses
- Page 1 with RS-232C interface
- Page 2 with USB output, DIGIMATIC input and foot switch connection socket

Designation	art.no.	€
Interface plug-in card	**574021** 1200	240,–
	5105	

Mitutoyo Standard target

- For comparing screen displays on measuring projectors
- Standard targets are reference drawings on which specific geometric shapes, e.g. circles, are drawn as fixed dimensions for the different magnifications.
- **With radii**
- Made from low-warp, transparent plastic, coated with a protective layer
- Geometric shapes printed on the underside
- Line widths: 0.05, 0.08, 0.10 and 0.12 mm, different for even millimetre and intermediate dimensions.
  Linear division line accuracy: 0.05 mm over 300 mm. Thermal expansion: 0.08 mm per 10° C
- Standard targets in other versions (e.g. for threads) available on request



562520 3003

Designation	Measuring plate Ø mm	art.no.	€
Standard target, type RA (radii)	300	**562520** 3003	549,–
Standard target, type RA (radii)	500	562520 5003	1.129,–
		5105	

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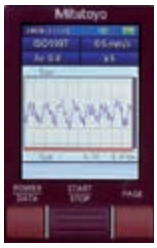
Mitutoyo Surftest SJ-210 surface roughness tester

Digi-matic USB

- Handy mobile test device, designed for use in production environments
- Compact design
- Easy to handle
- Suitable for measuring surface roughness directly on the clamped workpiece during production or stationary inspections
- Large, easy-to-read 6 cm (2.4") colour LCD display, can be rotated electronically
- Profiles displayed in real time
- Integrated memory for 10 measurement conditions
- Memory can be expanded with a micro SD card up to max. 2 GB: e.g. 500 measurement conditions + 10,000 measurement values or 500 measurement conditions + 500 profiles, analysis software on request
- With RS232C, Digimatic and USB interfaces
- Foot switch connector
- Colour-based tolerance evaluation
- Allocation of access rights
- Choice of 16 languages
- Switchable mains or battery operation
- Feed unit can either be integrated in the device or used separately with a connection cable
- Motorised feed with up to 3 user-selectable measuring speeds
- Probe system skid radius 40 mm, skid pressure force < 400 mN
- Probe tip geometry in accordance with DIN EN ISO 3274, radius 2 µm, point angle 60°
- Double skid system for measuring sheet metal in accordance with DIN EN ISO 10049 available on request, comprehensive optional accessories on the following pages
- **Technical data**
  Profiles: Roughness profile (R), DF profile, R motif
  Standards: DIN EN ISO, VDA, ANSI, JIS, user-defined conditions
  Measurement range: 360 µm
  Evaluation parameters: Ra, Rq, Rz, Ry, Rp, Rv, Rt, R3z, Rsk, Rku, Rc, RPc, RSm, Rmax, Rz1max, S, HSC, RzJIS, Rppi, RΔa, RΔq, Rlr, Rmr, Rmr(c), RδC, Rk, Rpk, Rvk, Mr1, Mr2, A1, A2, Vo, Rpm, tp, Htp, R, Rx, AR
  Cut-off lengths: λc: 0.08, 0.25, 0.8 and 2.5 mm
  Digital filters: Gaussian, 2CR75, PC75
  Number of individual measurement sections: 1 to 10
  Limit wavelength λs: Set to specification
  Measuring force: 0.75 mN
  Power supply: Mains adapter 230 V, 50 Hz and fitted battery
- Supplied with roughness standard, mains adapter, protective film for the display, carry bag and operating manual



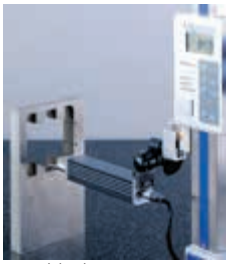




Real-time profile display during the measurement

Designation	art.no.	€	Device calibration art.no.	€	Calibration roughness standard art.no.	€
SURFTEST SJ-210 surface roughness tester	**570521** 0010	2.215,–	072001 0001	123,–	072005 0001	85,–
SURFTEST SJ-210 R surface roughness tester with automatic probe head lifting and lowering	570521 0020	2.575,–	072001 0002	155,–	072005 0001	85,–
SURFTEST SJ-210 S surface roughness tester with transverse measurement feed	570521 0030	4.100,–	072001 0001	123,–	072005 0001	85,–

5105



Use with height meter 5305020300 via adapter 5705310016



Transverse measurement, S version

Mitutoyo Roughness standard

- For adjusting surface roughness meters (standard accessory with SJ-210 / SJ-310 / SJ-410)
- Approx. Ra 3.0 µm / Rmax (Ry) 9.4 µm
- Standard size 32 x 22 mm
- In shock-proof, anti-slip plastic casing, approx. 55 x 46 mm



Description	art.no.	€	Calibration roughness standard art.no.	€
Roughness standard Ra approx. 3.0 µm / Rmax (Ry) 9.4 µm	**570530** 0101	100,–	072005 0001	85,–

5105

Mitutoyo Surftest SJ-210 surface roughness tester

Digi-matic USB



570526 0001

- Portable mains-independent skid system for determining surface roughness
- Separate feed allows measurements in hard-to-reach places, as well as overhead measurements
- Dust-protected, touch-sensitive control panel and integrated printer
- Extremely easy-to-use and intuitive menu navigation
- Measurement results / profiles shown clearly on a 14.5 cm (5.7") colour display
- 16 languages
- Storage of up to 10 measurement conditions
- Statistics function and colour-coded tolerance analysis
- Customisable password protection
- Storage of measurement data on an optional SD card
- Automated calibration function / can be calibrated based on the average of up to 12 measurements
- Choice of mains or battery operation
- Profile method with single skid system
- Measurement range: X-axis feed = 16 mm, S feed = 5.6 mm
- 60° contact point with 2 µm radius / measuring force 0.75 mN
- Measuring speed: 0.25 mm/s, 0.5 mm/s, 0.75 mm/s
- Analysis parameters: Ra, Rq, Rz, Ry, Rp, Rv, Rt, R3z, Rsk, Rku, Rc, RPc, RSm, Rmax, Rz1max , S, HSC, RzJIS, Rppi, RΔa, RΔq, Rlr, Rmr, Rmr(c), Rδc, Rk, Rpk, Rvk, Mr1, Mr2, A1, A2, Vo, λa, λq, Lo, Rpm, tp, Htp, R, RX, AR, W, AW, Wx, Wte
- Cut-off length: 0.08mm / 0.25 mm / 0.8 mm / 2.5 mm / 8 mm
- Number of individual measurement sections: 1x, 2x, 3x, 4x, 5x, 6x, 7x, 8x, 9x, 10x, unset length
- Digital filter: 2CR75 / PC75 / Gaussian
- Parameters in accordance with DIN EN ISO, VDA, JIS, ANSI and MOTIF
- Data communication: Digimatic, RS-232, SD memory card
- Supplied with roughness standard, mains adapter and 5 rolls of spare paper



Use with height meter 5305020300 via adapter 5705310016



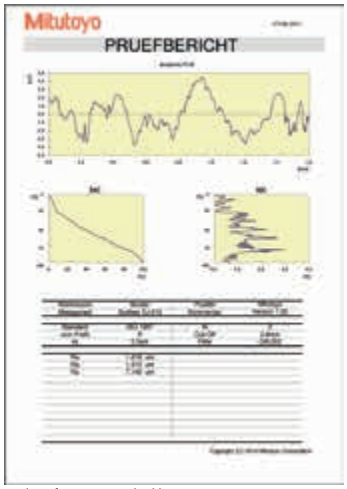
Transverse measurement, S version

Designation	art.no.	€	Device calibration art.no.	€	Calibration roughness standard art.no.	€
Surface roughness meter SURFTEST SJ-310	**570526** 0001	4.450,–	072001 0001	123,–	072005 0001	85,–
Surface roughness meter SURFTEST SJ-310 R with automatic probe head lifting and lowering	570526 0002	4.800,–	072001 0001	123,–	072005 0001	85,–
Surface roughness meter SURFTEST SJ-310 S with transverse measurement feed	570526 0003	6.300,–	072001 0001	123,–	072005 0001	85,–

5105

Mitutoyo Software SJ Communication Tool

- **Simple analysis software for roughness meters SJ-210 / SJ-310 / SJ-411 / SJ-412**
- **Two measurement and analysis options**
  1. The instruments are connected directly to a PC using a connection cable (accessories), and all relevant settings are entered via the PC.
  Measurement is started from the PC and then analysed using a measured value table and profile curve.
  2. The instruments store the measurements on an optional memory card from the accessories range. The instruments are then connected to a PC, and the measurements are read by the software and measured using a measured value table and profile curve.
- System requirements: Windows XP or higher



Analysis for SJ-210 with Abbott curve

suitable for	art.no.	€
SJ-210 / SJ-310 /SJ-410 / SJ-411	**570535** 0005	52,50

5105

Accessories

Designation	art.no.	€
USB connection cable for SJ-210	**570530** 0065	6,–

5105

Mitutoyo Surftest SJ-411 / 412 surface roughness tester

Digi-matic | USB | RS232C



570528 0025

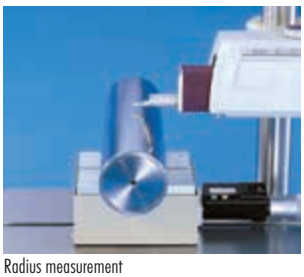
- Portable mains-independent reference level system for determining the primary profile P, surface roughness R and ripple W
- Dust-protected, touch-sensitive control panel and integrated printer
- Extremely easy-to-use and intuitive menu navigation
- Measurement results / profiles shown on a 14.5 cm (5.7") colour display.
- Radius and incline compensation
- 16 languages
- D.A.T. function (Digital Adjustment Tilting)
- 5 probes can be calibrated independently of one another
- Storage of up to 10 measurement conditions
- Statistics function and colour-coded tolerance analysis
- Customisable password protection
- Storage of measurement data on an optional SD card
- Automated calibration function / can be calibrated based on the average of up to 12 measurements
- Choice of mains or battery operation
- Measurement procedure = reference level measuring system
- Measurement ranges: Z-axis: adjustable 800 (up to 2,400 µm) / 80 / 8 µm X axis SJ-411 = 25 mm / SJ-412 = 50 mm
- 60° contact point with 2 µm radius / measuring force 0.75 mN
- Measuring speed: 0.05 mm/s, 0.1 mm/s, 0.2 mm/s, 0.5 mm/s, 1 mm/s
- Analysis parameters: Ra, Rq, Rz, Ry, Rp, Rv, Rt, R3z, Sk, Rku, Rc, RPc, RSm, Rmax, Rz1max, S, HSC, RzJIS, Rppi, RΔa, RΔq, Rlr, Rmr, Rmr(C), RδC, Rk, Rpk, Rvk, Mr1, Mr2, A1, A2, Vo, λa, λq, Lo, Rpm, tp, Htp, R, Rx, AR, W, AW, Wx, Wte
- Analysis profiles: P-profile (P), R-profile (R), filtered ripple profile (W), R-motif, W-motif
- Parameters in accordance with DIN EN ISO, VDA, JIS, ANSI and MOTIF
- Cut-off length: 0.08mm / 0.25 mm / 0.8 mm / 2.5 mm / 8 mm
- Number of individual measurement sections: 1x, 2x, 3x, 4x, 5x to 20x, unset length
- Digital filter: 2CR75 / PC75 / Gaussian
- Data communication: Digimatic, RS-232, SD memory card
- Supplied with roughness standard, mains adapter and 5 rolls of spare paper



Overhead measurement



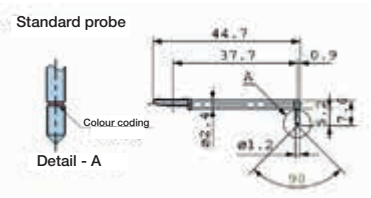
Slot measurement



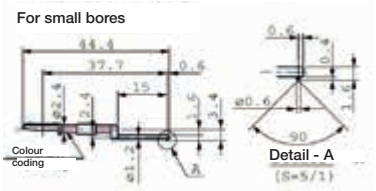
Radius measurement

model	Measurement range X mm	Straightness µm	art.no.	€	Device calibration art.no.	€	Calibration roughness standard art.no.	€
SJ-411	25	0.3	**570528** 0025	8.430,–	072001 0001	123,–	072005 0001	85,–
SJ-412	50	0.5	570528 0050	9.900,–	072001 0001	123,–	072005 0001	85,–

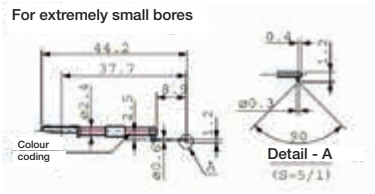
5175



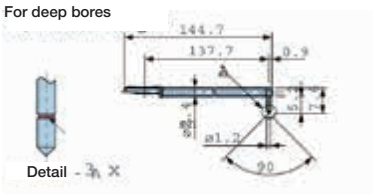
570531 0101



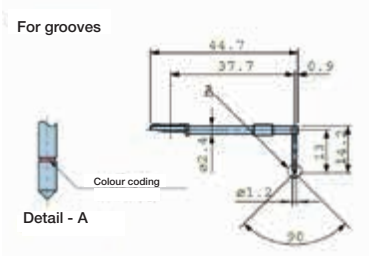
570531 0102



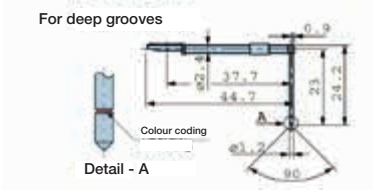
570531 0103



570531 0104



570531 0105



570531 0106

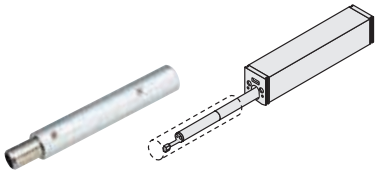
Accessories

Designation	art.no.	€
Standard probe (probe head R 2 µm)	**570531** 0101	180,–
Probe for small holes	570531 0102	220,–
Probe for very small holes	570531 0103	290,–
Probe for deep holes	570531 0104	320,–
Probe for grooves (10 mm)	570531 0105	200,–
Probe for deep grooves (20 mm)	570531 0106	200,–

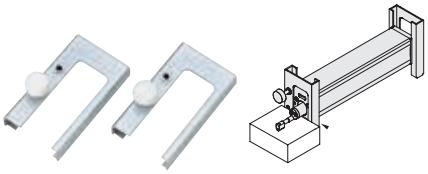
5104

Mitutoyo Accessories

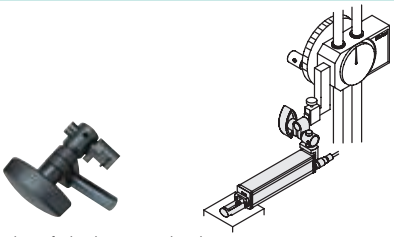
- For Surftest SJ-210 / SJ-310 surface roughness testers



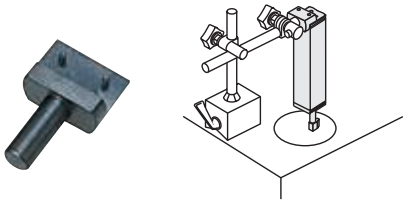
Extension 570531 0010



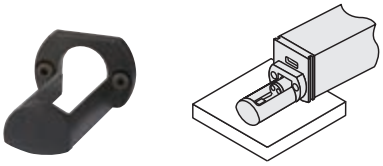
Supporting feet 570531 0015



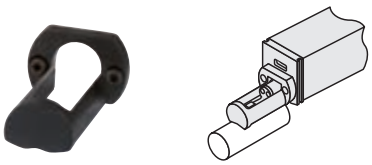
Adapter for height meters and marking-out instruments 570531 0016



Adapter for magnetic stands 570531 0017



Skid for flat parts 570531 0020



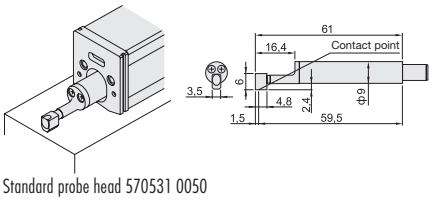
Skid for straight parts 570531 0021

Probe heads, adapters, skids

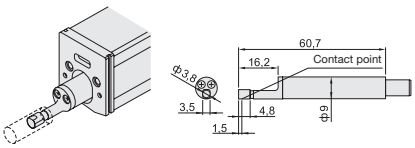
- Probe heads with 2 µm tip radius, 60° point angle and 0.75 mN measuring force
- Size 0001 with 5 µm tip radius, 90° point angle and 4 mN measuring force
- Size 0050 comes as standard with SJ-210 / SJ-310
- Sizes 0015 / 0020 / 0021 come as standard with SJ-310

Designation	art.no.	€
Standard probe head, bores from Ø 7 mm	**570531** 0050	594,–
Probe head, bores from Ø 4 mm	570531 0051	721,–
Probe head, bores from Ø 2.8 mm	570531 0052	721,–
Probe head for narrow grooves	570531 0053	721,–
Probe head for tooth flank measurements	570531 0054	1.230,–
Probe head for transverse feed (standard with S-version)	570531 0055	637,–
Probe head for bores from Ø 7 mm (5 µm 90° / 4 mN)	570531 0001	478,–
Probe head extension, 50 mm	570531 0010	220,–
1 pair of feet to adjust the height of the feed unit (standard accessory SJ-310)	570531 0015	133,–
Adapter for height meters and marking-out instruments	570531 0016	90,–
Adapter for surface roughness testers SJ-210 / SJ-310	570531 0017	45,–
Skid for flat workpieces (standard accessory SJ-310)	570531 0020	90,–
Skid for straight workpieces, 160° V-block (standard accessory SJ-310)	570531 0021	90,–
Spare connection cable, display feed unit SJ-210	570531 0022	75,–
Battery pack for Surftest SJ-301	570531 0700	130,–
Battery pack for Surftest SJ-201	570531 0702	55,–

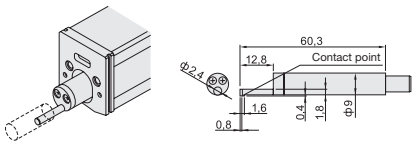
5105



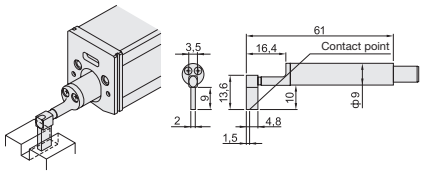
Standard probe head 570531 0050



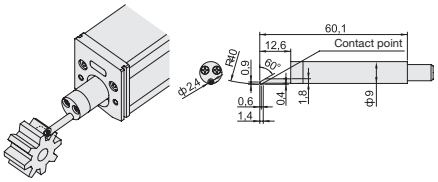
Probe head for bores from Ø 4 mm 570531 0051



Probe head for bores from Ø 2.8 mm 570531 0052



Probe head for narrow grooves 570531 0053



Probe head for tooth flank measurement 570531 0054

Consumables for Surftest SJ-310 and SJ-410

Designation	art.no.	€
Packet with 5 rolls of graph paper	**563030** 0101	29,–

5103

Mitutoyo Measuring stand

- For surface roughness testers SJ-210, SJ-310, SJ-411 and SJ-412
- Granite measuring table, 400 x 250 mm, with a clamping T-slot
- Total height: approx. 555 mm
  Height adjustment: 250 mm
- 570531 0116 requires adapter no. 570531 0017 for holding roughness meters



SURFTEST SJ-210 not included

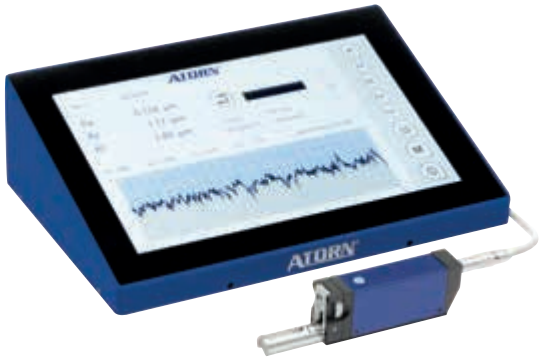
Surface roughness testing equipment not included in scope of delivery

Designation	art.no.	€
Measuring stand for surface roughness testers SJ-411 and SJ-412	**570531** 0107	732,–
Measuring stand for surface roughness testers SJ-210 and SJ-310	570531 0116	738,–

5103

ATORN® Surface roughness tester easyRoughness

- Highly accurate roughness meter for workshop and laboratory use
- Compatible with skids and free probes
- Wide range of special measuring probes
- Measuring probes can be extended up to 500 mm
- Automatic calibration
- Measurement lengths configurable from 0.5 to 15 mm
- Configurable measuring speeds
- Calibration of up to 8 measuring probes
- Storage of measurement conditions with images
- Configurable languages: German, English, French, Italian, Spanish, Polish, Chinese
- **Technical data**
  Measured values:
  DIN/ISO: Ra, Rz (DIN), Rmax, R3z, Rt, Rq (RMS), Rk, Rq, Rv, Rpk, Rvk, MR1, MR2, Rpc, C1; C2, contact ratio Rmr, C0, Cz, V0 Rdg, RL0
  JIS: Ra (Jis), Rz (JIS)
  ISO 12085: R, AR, Rx
  Measurement ranges: Ra, Rq 0 - 20.00 µm Rest 0 - 350 µm
  Measurement range in Z: approx. 450 µm
  Contact point: Diamond tip 5 µm 90° (standard) or 2 µm 60° (optional)
  Measuring force diamond: < 0.5 mN
  Probe system: analogue hall effect technology with high-linear output
- Supplied with standard probe SKT/5, standard roughness 3.0 µm, boxed



Designation	art.no.	€	Device calibration art.no.	€	Calibration roughness standard art.no.	€
Surface roughness tester easyRoughness	**570532** 0001	6.750,–	072001 0001	123,–	072005 0001	85,–

5169

Measuring probe

- Other versions available on request

Designation	art.no.	€
Standard probe SKT/5 (standard probe)	**570533** 0001	890,–
Standard probe SKT/2	570533 0002	1.065,–
Non-grooved probe NFH-15/5	570533 0033	1.335,–

5169



570533 0033

570533 0001

Standard roughness

- Other roughness standards available on request

Designation	art.no.	€	Calibration roughness standard art.no.	€
Standard roughness, metal Ra 1.0 µm	**570533** 0201	295,–	072005 0001	85,–
Standard roughness, metal Ra 3.0 µm	570533 0202	295,–	072005 0001	85,–

5169



570533 0202

Measuring stand

- Column height 500 mm

Designation	art.no.	€
Granite measuring table 400x250x50 mm	**570533** 0102	1.100,–

5169



570533 0102



... for daily use.

ATORN®
Performance demands quality

Mitutoyo Linear scales

INFO

Digital length measurement system

The DRO system (**D**igital **R**ead **O**ut) newly developed by Mitutoyo includes the linear scales of the AT 100 series and the display units (counters) of the K series. Linear scales and counters offer maximum precision in reading axial adjustments of machine tools and measuring instruments.
The DRO system can be assembled to optimally fulfil specific tasks such as use on turning, milling or grinding machines.
The linear scales are supplied in a attachable state and are easy to install. The performance of machines and facilities is increase, read errors are eliminated. Backlash in guides or adjustment backlash is apparent because the dimension of every movement of the slide or a guide piece is read. Linear errors in an axis of travel can be compensated for on the display unit. Fitting must take place parallel to the axis (within 0.2 mm on scale length), or else deviations may arise.

The linear scale systems are offered with three cross sections:

AT 116 Standard profile (cross section 22 x 35 mm) up to 1500 mm with permanently attached connection cable

AT 715 Standard profile with ABSOLUTE scale (cross-section 22 x 36.5 mm) up to 1800 mm with permanently attached connection cable

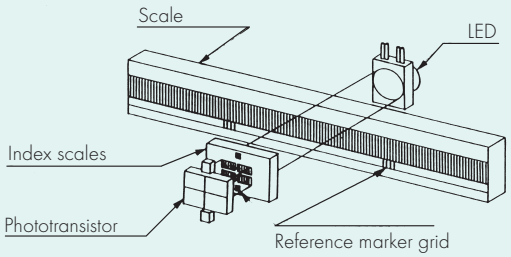


AT 116



AT 715

The aluminium housing of the linear scale is fitted with an oil-resistant plastic lip on the encoder side. The connection cable are housed in steel and shielded. If the standard length of the connection cable is not sufficient, extension cables (special accessories) are available.
The easy-to-use display units of the K series are available in different models for a wide variety of tasks.



Functional principle AT 112F / AT 116

Caution!
When selecting suitable scales, please always take into account the effective travel of your machine that can be adjusted by hand. Please also bear in mind that a mini-profile AT 112F is available for use in confined installation surroundings.

	KA counter
Zero position	•
ABS origin only AT 715	•
Adjustment of resolution	•
Switchable counting direction	•
mm/inch switching	•
Preselection/zero position	•
Halving of displayed value	•
ABS/INC coordinate switching	•
Zero approximation (INC coordinate)	•
Signal sensor	optional
Hole circle machining	•
Hole row machining	•
Scale reference points* only AT 112 / 115	•
Tool specifications	10
Addition of the values of two axes*	•
RS-232C output	optional
Linear error compensation	•
Stabilisation of last position on display	•
• = Standard accessories * = This function is not available in the two-axes version	

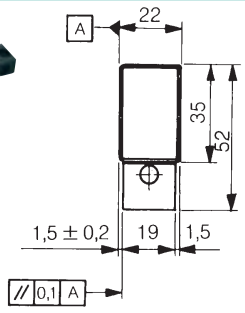


Mitutoyo LINEAR SCALE AT 116 digital length measurement system

- **Standard profile**
- Installation-ready glass scale with aluminium profile casing
- Fasteners included
- Profile cross-section 22 x 35 mm (without encoder unit)
- **Accuracy**: (5 + 5L/1000) µm at 20 °C
- Supplied with operating manual and factory certificate, shipped in disposable packaging
- **Caution:** When selecting suitable scales, please always take into account the effective manually adjusted travel for your machine. Please also bear in mind that a mini profile AT 112F is available for use in tight installation spaces.

With factory certificate!





Cross section dimensions

Measurement range mm	max. encoder route mm	Total length mm	Cable length m	art.no.	€
100	120	276	3.5	**573012** 0100	457,–
150	170	326	3.5	573012 0150	464,–
200	220	376	3.5	573012 0200	469,–
250	270	426	3.5	573012 0250	477,–
300	330	486	3.5	573012 0300	482,–
350	380	536	3.5	573012 0350	487,–
400	430	586	3.5	573012 0400	530,–
450	480	636	3.5	573012 0450	540,–
500	540	696	3.5	573012 0500	552,–
600	640	796	3.5	573012 0600	563,–

5105

Measurement range mm	max. encoder route mm	Total length mm	Cable length m	art.no.	€
700	740	896	3.5	573012 0700	575,–
750	780	936	3.5	573012 0750	587,–
800	840	996	3.5	573012 0800	599,–
900	940	1096	3.5	573012 0900	611,–
1000	1040	1196	5.0	573012 1000	640,–
1100	1140	1296	5.0	573012 1100	669,–
1200	1240	1396	5.0	573012 1200	705,–
1300	1340	1496	5.0	573012 1300	752,–
1400	1440	1596	5.0	573012 1400	797,–
1500	1540	1696	5.0	573012 1500	845,–

5105

Mitutoyo Digital length measurement system LINEAR SCALE AT 715

IP67

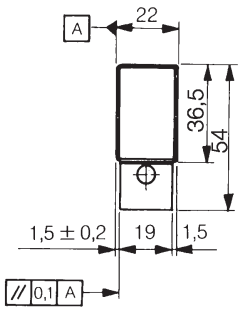
- **ABSOLUTE scale**
- Linear scale ready for direct mounting with aluminium profile casing
- Includes fasteners
- Profile cross-section 22 x 35 mm (without encoder unit)
- **Connection only to KA-COUNTER** (574021....)
- Error margin:
  100-500 mm = 5 µm
  600-1800 mm = 7 µm
  2000-3000 mm = 10 µm
- Supplied with operating manual, shipped in disposable packaging
- **Attention:** When selecting suitable scales, please always take into account the effective manually adjusted travel for your machine. Please also bear in mind that a mini-profile AT 112F is available for use in confined installation surroundings.

With factory certificate!

ABSOLUTE®



TÜVRheinland® ZERTIFIZIERT
Sicherheit
Staub- und wasserge-schützt
www.tuv.com
ID 0000007295



Cross section dimensions

Measurement range mm	max. encoder route mm	Total length mm	Cable length m	art.no.	€
100	120	278	3.5	**573030** 0100	322,–
150	170	328	3.5	573030 0150	322,–
200	220	378	3.5	573030 0200	322,–
250	270	428	3.5	573030 0250	322,–
300	330	488	3.5	573030 0300	325,–
350	380	538	3.5	573030 0350	328,–
400	430	588	3.5	573030 0400	331,–
450	480	638	3.5	573030 0450	333,–
500	540	698	3.5	573030 0500	342,–
600	640	798	3.5	573030 0600	345,–
700	740	898	3.5	573030 0700	351,–
750	780	938	3.5	573030 0750	354,–
800	840	998	3.5	573030 0800	363,–
900	940	1098	3.5	573030 0900	386,–
1000	1040	1198	5.0	573030 1000	407,–

5105

Measurement range mm	max. encoder route mm	Total length mm	Cable length m	art.no.	€
1100	1140	1298	5.0	573030 1100	422,–
1200	1240	1398	5.0	573030 1200	437,–
1300	1340	1498	5.0	573030 1300	466,–
1400	1440	1598	5.0	573030 1400	487,–
1500	1540	1698	5.0	573030 1500	519,–
1600	1640	1798	5.0	573030 1600	554,–
1700	1740	1898	5.0	573030 1700	581,–
1800	1840	1998	5.0	573030 1800	613,–
2000	2040	2198	5.0	573030 2000	926,–
2200	2240	2398	5.0	573030 2200	996,–
2400	2440	2598	7.0	573030 2400	1.182,–
2500	2540	2698	7.0	573030 2500	1.217,–
2600	2640	2798	7.0	573030 2600	1.256,–
2800	2840	2998	7.0	573030 2800	1.338,–
3000	3040	3198	7.0	573030 3000	1.486,–

5105

Mitutoyo Digital display unit LINEAR SCALE model KA200

- Compact design
- Easily readable 15 mm high LED digits
- For connecting model AT 103, AT 116, AT 112F and AT 715 scales on two or three axes
  For connection to turning and milling machines (adjustable mode)
- Adjustable resolution: 0.001 mm and 0.005 mm resolution (for AT1xx scales)
- Display: 8 digits, (-) sign, zero point
  Connection: 230 V / 50 Hz
  Power consumption: 30 VA
- Supplied with mains power cable and operating manual, shipped in disposable packaging



Connectable axes	Dimensions L x W x H mm	Weight kg	art.no.	€
2	300 x 70 x 167	1.25	**574021** 2004	586,–
3	300 x 70 x 167	1.30	574021 2005	705,–
			5105	

Accessories

- Interface plug-in card with a variety of possible uses
- Page 1 with RS-232C interface
- Page 2 with USB output, DIGIMATIC input and foot switch connection socket

Designation	art.no.	€
Interface plug-in card	**574021** 1200	240,–
	5105	

Mitutoyo Extension cable

- For **LINEAR SCALE** Length measurement systems
- Ready-made, steel-covered and shielded extension cable including connector
- **Caution:** Only one extension cable may be connected at any time, otherwise electronic data transfer may be impaired.
  If you require longer cables, please contact us.



Cable length m	AT 116 art.no.	€	AT 715 art.no.	€
2	**573045** 0002	177,–	**573046** 0002	189,–
5	573045 0005	257,–	573046 0005	267,–
7	573045 0007	307,–	573046 0007	324,–
	5105		5105	





MITUTOYO
Measuring equipment catalogue
approx. 620 pages
Art.no. 019900 0069

Overview of all free manufacturers' catalogues on page 14/15

SAUTER TC layer thickness measuring instrument

- For quick and non-destructive layer thickness measurement of coatings on ferro-magnetic base materials and non-ferrous metals
- With external (TE) probe
- Small, handy device
- Easily readable LCD display
- RS 232 C interface
- Measurement principle
  Model TE-F for measuring non-magnetic layers on a ferro-magnetic base material (steel/iron)
  Model TE-N for measuring non-conductive layers (anodic oxide layer, painted surface protection etc.) on non-ferrous metals
  Model TE-FN combination of both aforementioned measurement principles
- Measurement range 0 to 1250 µm
  Resolution < 100 µm = 0.1 µm / > 100 µm = 1 µm
  Minimum strength of base material 0.3 mm
  Smallest measuring area Ø 6 mm
  Smallest curve radius: F = 1.5 mm convex, F = 25 mm concave, N = 3 mm convex, N = 50 mm concave
  Accuracy ± 4% of measured value (standard)
  ± 1% of measured value (two-point calibr.)
  Power supply 4 x LR3 Micro, AAA
  Weight 81 g
  Dimensions L x W x H, 131 x 65 x 28 mm
- Supplied in transport box with zero point plate, spacer foils, 4 batteries LR3 No. 5480794003 and operating manual



577004 0001

With external probe

Designation	ferromagnetic base material	Non-ferrous metal	art.no.	€	Calibration art.no.	Calibration €
TE-F	Yes	No	**577004** 0001	360,–	072106 0004	120,–
TE-N	No	Yes	577004 0002	400,–	072106 0004	120,–
TE-FN	Yes	Yes	577004 0003	460,–	072106 0004	120,–

5171

ATORN® Layer thickness measuring instruments

Coating thickness measuring instrument professionalCOATING

- Non-destructive measurement of the layer thicknesses of non-magnetic coatings on steel/iron and electric non-conductive coatings on non-ferrous metals
- Robust, dust-sealed and splash-proof housing, IP65
- Intuitive menu guidance allows simple handling, even by untrained personnel
- Single-handed operation
- Three-point support enables precise measurement in every situation
- Data transfer via Bluetooth, WiFi, USB-C
- Storage space for 100,000 measured values
- Battery life approx. 8 hours in use
- **Applications**
  Measurement of layers of paint, varnish, rubber or plastic, chrome or copper, as well as galvanised and hot-dip galvanised coatings on steel and cast iron (ISO FE, ISO NF FE)
  Measurement of layers of paint, varnish or plastic on aluminium, copper or brass (ISO NF)
- **Technical data**
  Measurement standards:
  SSPCPA 2 with Level 1-5, IMO PSPC, ISO 19840, Australian AS 3894.3 B, Swedish IS 18 41 60 etc.
  Measurement ranges:
  0-2500 µm on FE
  0-2000 µm on NF
  Accuracy:
  0-100 µm ≤ 1.0 µm
  100-1000 µm ≤ 1.5 %
  1000-2500 µm: ≤ 3.0 %
- Supplied with: Equipment includes probe, operating manual, base material FE base and NF base, calibration foils, interface cable, carrying loop, 2 x LR6 AA battery, manufacturer's certificate



Designation	art.no.	€	Calibration art.no.	Calibration €
Coating thickness gauge professionalCOATING	**577008** 0010	860,–	077301 0001	81,–

5169

SAUTER Ultrasound wall thickness measuring instrument

- Non-destructive material thickness measurements (e.g. wall thickness) on homogeneous, sound-conducting materials, e.g. metals, ceramics, plastics, glass
- Large, easily readable display
- Test head Ø 10 mm, test frequency 5 MHz, sonic speed 1,000 - 9,999 m/s
- 1.2 - 230 mm measurement range, 0.1 mm increments
- Individual measurements or scan mode (10 measurements per second)
- Memory for 20 files (100 measurements per file)
- Battery life approx. 150 hours
- Weight 245 g
- Supplied in a plastic case with a 5 MHz test head, 2x LR6 batteries (no. 5480794006), connection agent (70 ml), operating manual





Designation	Measurement range mm	art.no.	€
TN 230-0,1 US	1.2 - 230	**577005** 0001 5171	560,–

Accessories

Designation	Measurement range mm	art.no.	€
Small measuring head, Ø 6 mm, 7 MHz, height 25 mm	0.75 - 80	**577005** 1000 5171	110,–

Surface comparison standard

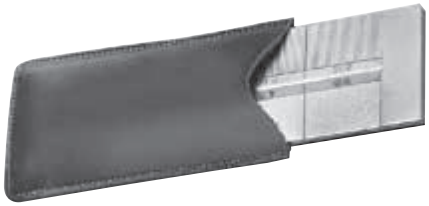
- **For visual and tactile comparison**
- Wear-resistant and stainless
- Cannot be calibrated
- Supplied in a synthetic leather case



- 30 reference samples for the entire spectrum of machining processes, approx. 120 x 90 mm: Horizontal milling, reaming, face milling, lapping, longitudinal turning, flat grinding

Comparison range Ra µm	ISO roughness classes	art.no.	€
0.05 - 12.5	N2 - N10	**570601** 0010 5169	300,–

- Separate plate for every machining process
- Enclosed table with Rp, Rt and Rz values



Processing method	Number of samples	Comparison range Ra µm	ISO roughness classes	art.no.	€
Metal blasting	8	3.2 - 25	-	**570602** 0002	290,–
Hand polishing	5	0.0125 - 0.2	N0 - N4	570602 0004	375,–
Turning	8	0.4 - 50	N5 - N12	570602 0006	175,–
Face milling	8	0.4 - 50	N5 - N12	570602 0007	175,–
Surface grinding	8	0.025 - 3.2	N1 - N8	570602 0008	175,–
Cylindrical grinding	8	0.025 - 3.2	N1 - N8	570602 0009	175,–
Electrical discharge machining	8	0.4 - 50	N5 - N12	570602 0010 5169	175,–

SAUTER HMM rebound hardness tester

- For testing the hardness of large, solid workpieces
- Minimum wall thickness 8 mm, minimum workpiece weight 3 kg
- Workpiece surface Ra < 10 µm
- Integrated data storage for up to 9 measurement groups
- Basis of LEEB hardness test and calculation
- Conversion of measured hardness values into tensile strength
- Switchable backlighting, battery operation
- Dimensions, length x width x height: 150 x 80 x 30 mm
- Direct display of HRC, HRB, HV, HB, HS and HL parameters
- **Technical data:**
  Hardness scale ranges
  HRC 19.8 - 68.5
  HRB 13.5 - 101.7
  HV 80 - 976
  HB 30 - 655



Wireless infra-red printer included



Designation	Measurement range HL	Error limit %	art.no.	€	Calibration art.no.	Calibration €
HMM	170 - 960	1.5	**576103** 0001	1.090,–	077340 0001	97,50
HMM without printer	170-960	1.5	576103 0010	870,–	077340 0001	97,50

5171

Mitutoyo Stationary Rockwell hardness testers

- Robust hardness testing instruments for workshops and testing rooms
- Rockwell (HR-110MR / HR-320MS) and Super Rockwell (HR-320MS) analysis
- For testing steel and other metals
- **HR-110MR**
  Rockwell parameters HRA / HRC / HRB / HRD / HRF / HRG
  Manual switching of testing force by means of weights
  Application of total testing force: via hand lever
  Measurement values displayed via dual scale dial indicator (Ø 86 mm) with drag indicator
  0.5 HR readings
  Testing pre-load 98.07N / testing loads 588.4N / 980.7N / 1471N
- **HR-320MS**
  Rockwell parameters HRA / HRC / HRB / HRD / HRF / HRG
  Super Rockwell parameters HRN / HRT
  Manual switching of testing force by means of weights
  Application of total testing force: by motor
  Digital display for displaying hardness values, adjusting load application durations, conversion to other parameters, tolerance comparisons
  0.1 HR readings
  Digimatic data outputs and RS-232C
  Testing pre-loads 98.07N / 29.42N, testing loads 147.1N / 294.2N / 441.3N / 588.4N / 980.7N / 1471N

- **Technical data:**
  Workpiece height max. 180 mm / reach 165 mm
- Supplied with planar measuring table Ø 64 mm, V-anvil Ø 40 x 30 mm, diamond indenters taper, ball Ø 1/16 inch, hardness reference blocks HRC 30-35 / 60-65 HRB 90-95 (additionally with HR-320MS: 64-69 HR30N / 70-79 HR30T), dust protection cover, operating manual



576025 0001

model	Reading mm	Weight kg	art.no.	€
HR-110MR	Analogue	48.7	**576020** 0001	4.010,–
HR-320MS	Digital	46.3	576025 0001	6.817,–

5175

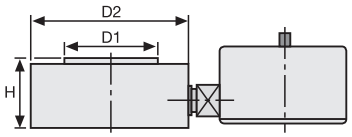


576020 0001

Load cell

- For measuring pressure forces; low height and versatile; for occasional inspection measurements e.g. during adjustment and service work,
- **Hydraulic design**
- Drag indicator
- Supplied in a carry case with calibration certificate





Measurement range	Reading	Load cell Ø D2 mm	Measuring area Ø D1 mm	Pressure gauge Ø mm	H mm	art.no.	€
0-250 N	5 N	75	34	63	30	**576610** 0001	475,–
0-400 N	10 N	75	34	63	30	576610 0002	475,–
0-630 N	10 N	75	34	63	30	576610 0003	475,–
0-1 kN	10 N	75	34	63	30	576610 0004	475,–
0-1.6 kN	50 N	75	34	63	30	576610 0005	475,–
0-2.5 kN	50 N	75	34	63	30	576610 0006	475,–
0-4 kN	100 N	75	34	63	30	576610 0007	475,–
0-6.3 kN	100 N	75	34	63	30	576610 0008	475,–
0-10 kN	200 N	75	34	63	30	576610 0009	475,–
0-16 kN	500 N	75	34	63	30	576610 0010	475,–
0-25 kN	500 N	75	34	63	30	576610 0011	475,–
0-40 kN	1 kN	75	34	63	30	576610 0012	475,–
0-63 kN	1 kN	90	55	63	32	576610 0013	529,–
0-100 kN	1 kN	90	55	63	32	576610 0014	529,–
0-160 kN	5 kN	145	112	63	38	576610 0015	709,–
0-250 kN	5 kN	145	112	63	38	576610 0016	709,–
0-400 kN	10 kN	145	112	63	38	576610 0017	709,–
0-630 kN	10 kN	145	112	63	38	576610 0018	709,–

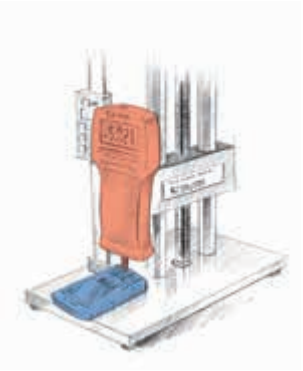
5171

SAUTER Digital force measuring devices

Model FK

- Robust device for measuring tensile and compressive force
- Reliable operation thanks to ergonomic casing
- Attachment for all SAUTER test stands on the back
- Display switches automatically depending on direction of use
- Peak-hold function for recording peak values
- Track function for continuous measurement
- Measuring frequency 1,000 Hz
- Measurement uncertainty 0.5% (of max. value)
- Overload protection 200 %
- Automatic switch-off
- Battery operation
- Selectable units: N, kg, lb, oz
- Dimensions: Length 195 x width 84 x height 35 mm, weight: 600 g
- Supplied with batteries, mains adapter, one of each attachment: Hooked, pointed, V-shaped, blade and flat, and one 90 mm extension bar
- Measurement ranges of 10, 25 and 50 N available on request







Measurement range N	Resolution N	art.no.	€
100	0.05	**576631** 0100	250,–
250	0.10	576631 0250	250,–
500	0.20	576631 0500	250,–
1000	0.50	576631 1000	250,–

5171

Scales quick finder

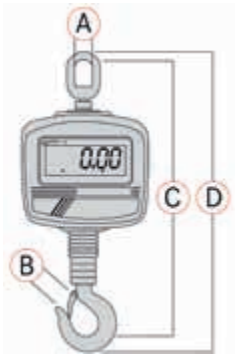
INFO

Reading g	Weighing range max. kg	Design	Article no.	Page	PCS		230 V	RS232C	IP65
0,001	0,1	Precision scales	578031 0100	1433	•		•	•	
0,001	0,25	Precision scales	578031 0250	1433	•		•	•	
0,01	0,2	Precision scales	578031 0200	1433	•		•	•	
0,01	0,2	Compact scales	578026 0001	1432					
0,01	2,5	Precision scales	578031 2500	1433	•		•	•	
0,1	1	Precision scales	578031 1000	1433	•		•	•	
0,1	1,2	Compact scales	578026 1200	1432					
0,1	2	Precision scales	578031 2000	1433	•		•	•	
0,1	6	Precision scales	578031 6001	1433	•		•	•	
0,1	6	Compact scales	578026 6000	1432					
0,1	6	Counting scales	578057 0002	1433	•	optional	•	•	
0,1	30	Counting system	578058 0030	1433	•		•	•	
0,1	60	Counting system	578058 0060	1433	•		•	•	
0,1	60	Counting system	578058 0061	1433	•		•	•	
0,1	150	Counting system	578058 0150	1433	•		•	•	
0,1	150	Counting system	578058 0151	1433	•		•	•	
0,1	300	Counting system	578058 0300	1433	•		•	•	
0,2	15	Counting scales	578057 0003	1433	•	optional	•	•	
0,5	30	Counting scales	578057 0004	1433	•	optional	•	•	
1	2,2	Compact scales	578026 0003	1432					
1	6	Precision scales	578031 6000	1433	•		•	•	
1/2	3/6	Platform scales	578052 0060	1434	•		•	•	IP 65
2/5	6/15	Platform scales	578052 0150	1434	•		•	•	IP 65
5	5,2	Compact scales	578026 0004	1432					
5	15	Platform scales	578042 0012	1434			•		
5/10	15/35	Platform scales	578052 0350	1434	•		•	•	IP 65
10	35	Platform scales	578042 0001	1434			•		
10/20	30/60	Platform scales	578052 0600	1434	•		•	•	IP 65
20	60	Platform scales	578042 0002	1434			•		
20/50	60/150	Platform scales	578052 1500	1434	•		•	•	IP 65
20	60	Hanging scales	578034 2060	1432		•			
50	150	Platform scales	578042 0003	1434			•		
50/100	150/300	Platform scales	578052 3000	1434	•		•	•	IP 65
100	300	Platform scales	578042 0004	1434			•		
50	150	Hanging scales	578034 2150	1432		•			
100	300	Hanging scales	578034 2300	1432		•			
50	600	Crane scales	578034 0006	1432		•	•		
100	1.500	Crane scales	578036 0015	1432		•	•		
200	3.000	Crane scales	578036 0030	1432		•	•		
500	6.000	Crane scales	578036 0060	1432		•	•		
1.000	12.000	Crane scales	578036 0120	1452		•	•		

KERN Hanging scales HCD

UNIT

- high-resolution suspension scales
- Rotating hooks with safety lock
- Functions conveniently accessed via radio remote control, range approx. 20m
- Data Hold function: if the scales are left idle, the displayed weight will automatically freeze until the hold button is pressed
- Tare: Resets the display to "0" while a load is on the scales so that any loads removed or added are displayed directly
- **Technical data:**
  - Backlit LCD display with 28mm-high digits
  - Battery operation, 4 x 1.5 V LR6 AA approx. 100 hours
  - Casing dimensions 65 x 24 x 100mm
  - Operating temperature 5-35°C
- Calibration according to DKD
- Supplied with remote control





model	Reading g	Weighing range max. kg	A mm	B mm	C mm	D mm	Weight kg	art.no.	€	Calibration art.no.	Calibration €
HCD	20	60	26	23.5	246.5	276.5	0.85	**576034** 2060	195,–	079401 0012	105,–
HCD	50	150	26	23.5	246.5	276.5	0.85	576034 2150	195,–	079401 0012	105,–
HCD	100	300	26	23.5	246.5	276.5	0.85	576034 2300	195,–	079401 0012	105,–

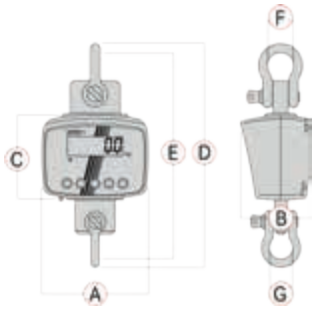
5174

KERN Crane scale HFD

UNIT



- high-resolution crane scales up to 12 tons
- robust design
- supports SOLAS-compliant weighing of freight
- Data Hold function: if the scales are left idle, the displayed weight will automatically freeze until the hold button is pressed
- Functions conveniently accessed via radio remote control, range approx. 20m
- Reading switches automatically as loads get heavier
- Internal battery, 70-hour operating time (without backlight)
- Housing dimensions 194 x 129 x 145mm
- Operating temperature -10 to 40°C
- Supplied with remote control without safety hooks





Weighing range max. kg	Reading mm	D mm	E mm	F mm	G mm	Weight kg	art.no.	€	Calibration art.no.	Calibration €
600	50/100/200	421	383	50.8	50.8	9	**578036** 0006	370,–	079401 0013	165,–
1500	100/200/500	421	383	50.8	50.8	9	578036 0015	380,–	079401 0013	165,–
3000	200/500/1000	421	383	50.8	50.8	10	578036 0030	590,–	079401 0015	500,–
6000	500/1000/2000	477	426	68.3	68.3	15	578036 0060	640,–	079401 0015	500,–
12000	1000/2000/5000	573	510	82.5	82.5	20	578036 0120	760,–	079401 0017	700,–

5174

Hook with safety lock for crane scale HFD

Designation	suitable for	art.no.	€
Hook with safety lock	Crane scale HDF 600/1500 kg	**578036** 5001	45,–
Hook with safety lock	Crane scale HDF 3000 kg	578036 5002	60,–
Hook with safety lock	Crane scale HDF 6000/12000 kg	578036 5003	95,–

5174



Bluetooth data interface

- allows wireless data transfer to PC or tablet
- **WARNING! Cannot be retrofitted!**

Designation	art.no.	€
Bluetooth data interface	**567515** 0001	210,–

5174

KERN Compact electronic scales EMB



- 2-key operation
- Large LCD display, digit height 15 mm
- **Tare**: Additive or subtractive weighing
- Dimensions 240 x 170 x 39 mm
- Universal power supply available on request
- DKD calibration
- Supplied with 2x LR6 batteries, no. 548079 4006

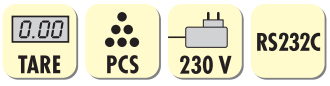


578026 6000

Reading g	Weighing range max. kg	Weighing plate Ø mm	Weight kg	art.no.	€	Calibration art.no.	€
0.01	0.2	105	0.5	**578026** 0001	125,–	079401 0010	72,–
0.1	1.2	150	0.5	578026 1200	78,–	079401 0010	72,–
1	2.2	150	0.5	578026 0003	57,–	079401 0010	72,–
5	5.2	150	0.5	578026 0004	55,–	079401 0011	88,–
0.1	6.0	150	0.5	578026 6000	160,–	079401 0011	88,–

5174

KERN Counting scales CPB



- Professional counting and weighing
- 3 displays: Unit weight, total weight and total unit quantity
- Large LCD display, digit height 20 mm
- Battery and mains operation
- Battery charge status indicator
- 225 x 294 mm stainless steel weighing platform
- Dimensions, width x depth x height = 320 x 350 x 125 mm
- Weight 3.9 kg
- DKD calibration
- Supplied with mains adapter, no battery

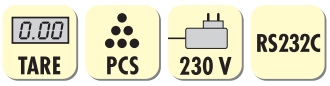


578057 0002

Reading g	Weighing range max. kg	Unit weight (counted) min. g	art.no.	€	Calibration art.no.	€
0.1	6	0.10	**578057** 0002	225,–	079401 0011	88,–
0.2	15	0.25	578057 0003	225,–	079401 0011	88,–
0.5	30	0.50	578057 0004	225,–	079401 0011	88,–

5174

KERN Counting system CCS



- Comprising quantity scales (platform scales) and reference scales
- Stainless steel weighing plates
- Quantity scales with IP65 weighing cells
- Reference scales can also be used separately as counting scales
- Large, backlit LCD display with 20 mm high digits
- Precise counting by means of automated reference optimisation, which gradually improves the average value of the part weight
- DKD calibration
- Supplied with mains adapter



model	Weighing range max. kg	Reading g	Unit weight (counted) min. g	Weighing plate mm	art.no.	€	Calibration art.no.	€
CCS 30K0,1	30	10	0.1	400 x 300 x 128	**578058** 0030	490,–	079401 0020	175,–
CCS 60K0,1	60	20	0.1	400 x 300 x 128	578058 0060	495,–	079401 0021	175,–
CCS 60K0,1L	60	20	0.1	500 x 400 x 137	578058 0061	570,–	079401 0021	175,–
CCS 150K0,1	150	50	0.1	500 x 400 x 137	578058 0150	540,–	079401 0021	175,–
CCS 150K0,1L	150	50	0.1	650 x 500 x 142	578058 0151	820,–	079401 0021	175,–
CCS 300K0,1	300	100	0.1	650 x 500 x 142	578058 0300	780,–	079401 0021	175,–

5174

KERN Precision scales PCB

UNIT | TARE | PCS | 230 V | RS232C

- Simple, self-explanatory 5-key operation
- Option to switch between mains/battery operation
- Backlit LCD display with 15 mm high digits
- Settling time 3 sec.
- **Calibration program (CAL):** for accuracy adjustment, optional external calibration weight required
- **Unit counting**: 5, 10, 25 and 50 unit reference counts available
- Display can be switched between units and weight
- **Formulation**: separate memory for the weight of the tare container and formulation components (net total)
- Battery operation (optional): 6LR61, with automatic switch-off
- Dimensions: 163 x 245 x 79 mm
- DKD calibration
- Supplied with power supply, no battery



578031 6001

Weighing range max. g	Reading g	Unit weight (counted) min. g	Weighing plate mm	art.no.	€	Calibration art.no.	€
100	0.001	0.002	Ø 81	**578031** 0100	265,–	079401 0010	72,–
200	0.01	0.02	Ø 105	578031 0200	230,–	079401 0010	72,–
250	0.001	0.002	Ø 81	578031 0250	290,–	079401 0010	72,–
1000	0.1	0.2	130 x 130	578031 1000	185,–	079401 0010	72,–
2000	0.1	0.2	130 x 130	578031 2000	215,–	079401 0010	72,–
2500	0.01	0.02	130 x 130	578031 2500	290,–	079401 0010	72,–
6000	0.1	0.2	170 x 150	578031 6001	240,–	079401 0011	88,–
6000	1	2	170 x 150	578031 6000	130,–	079401 0011	88,–

5174

KERN Platform scales EOB

UNIT | TARE | 230 V

- Package scales for shipping
- Easy to operate, with four buttons
- Large LCD display, 25 mm high digits
- Display unit can be freely positioned, flexible 1.8 m cable
- Mains power and optional battery operation (6x LR6/AA) available
- Battery operation: with automatic switch-off (after 3 min.)
- DKD calibration
- Supplied with power supply, no battery
- Versions with larger weighing platforms available on request



578042 0004

Reading g	Weighing range max. kg	Weighing plate WxDxH mm	Display unit W x D x H mm	art.no.	€	Calibration art.no.	€
5	15	315 x 305 x 65	210 x 110 x 45	**578042** 0012	152,–	079401 0011	88,–
10	35	315 x 305 x 65	210 x 110 x 45	578042 0001	152,–	079401 0011	88,–
20	60	315 x 305 x 65	210 x 110 x 45	578042 0002	152,–	079401 0012	105,–
50	150	315 x 305 x 65	210 x 110 x 45	578042 0003	152,–	079401 0012	105,–
100	300	315 x 305 x 65	210 x 110 x 45	578042 0004	152,–	079401 0012	105,–

5174

KERN Platform scales DE-D

IP65 | UNIT | TARE | PCS | 230 V | RS232C

- Package, industrial and counting scales in one instrument
- Dual-range scales, resolution automatically adapted to the weighing range
- Large LCD display, digit height 25 mm
- Display unit (225 x 110 x 45 mm) with approx. 1.4 m connection cable
- Wall bracket for display unit optional
- Optional stand also available for raising the display unit
- Option to switch between mains/battery operation
- Settling time 2 - 3 sec.
- **Unit counting**: 5, 10, 25 and 50 unit reference counts available
- Display can be switched between units and weight
- **Formulation**: Separate memory for the weight of the tare container and formulation components (net total)
- DKD calibration
- Supplied with power supply, no battery



578052 3000

Reading g	Weighing range max. kg	Unit weight (counted) min. g	Weighing plate mm	H x W x D mm	Weight kg	art.no.	€	Calibration art.no.	Calibration €
1 / 2	3 / 6	4	318 x 308 x75	45 x 225 x 110	4	**578052** 0060	185,–	079401 0012	105,–
2 / 5	6 / 15	10	318 x 308 x75	45 x 225 x 110	4	578052 0150	185,–	079401 0011	88,–
5 / 10	15 / 35	10	318 x 308 x75	45 x 225 x 110	4	578052 0350	185,–	079401 0011	88,–
10 / 20	30 / 60	20	318 x 308 x75	45 x 225 x 110	4	578052 0600	185,–	079401 0011	88,–
20 / 50	60 / 150	40	318 x 308 x75	45 x 225 x 110	4	578052 1500	195,–	079401 0012	105,–
50 / 100	150 / 300	10	522 x 403 x 90	45 x 225 x 110	16	578052 3000	315,–	079401 0012	105,–

5174



Shown with column

Accessories

Description	art.no.	€
Device holder	**578053** 0001	35,–
Column, height approx. 450 mm	578053 0003	100,–
Wall bracket	578053 0002	30,–

5174



Workshop supplies

Screw tools

	Single open-end spanner	1548
	Double open-ended spanner, ring spanner	1548
	Face spanner Tyre lever	1462
	Hexagonal Offset screwdriver	1463
	Offset screwdriver colour-coded	1464
	Offset screwdriver 100°	1464
	TORX- Offset screwdriver	1465
	Screwdriver with flag handle	1466
	Screwdriver with T-handle	1467
	Screwdrivers	1468
	Screwdriver in hand-held fold-out holder	1469
	Bit holders and inserts	1470
	Sockets and inserts	1474

Torque tools

	Torque screwdrivers	1479
	Torque wrenches	1480

Cutting and striking tools

	Knives and cutters	1481
	Pliers and VDE pliers	1482
	Snap-ring and electronics pliers	1486
	Centre punches, pin punches and wad punches	1488
	Hammers	1490

Mobile tool storage

	Tool trolleys	1491

Labelling devices

	Steel types and hand punches	1492
	Metal lettering device	1494
	Screw clamps	1494

Chemical products and cleaning

	Cooling lubricant concentrate, cutting oil and thread cutting paste	1495
	Hand-lever pressure grease gun	1496
	PIG repair putty	1496
	Paper tissue rolls and cleaning cloths	1497

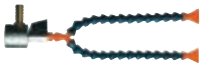
Deburring tools

	Deburring tools and scrapers	1498
	Deburring tool sets	1504
	Round brushes	1507

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	Batteries	1508
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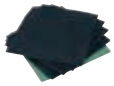
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Gloves

	Assembly gloves	1528
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Single open-end spanner

DIN 894

- Jaw position 15°, robust handle, die-forged
- Up to size 75 mm = black
  Size 80 mm upwards = steel grey



Wr. width mm	L mm	art.no.	€
6	75	**700160** 0006	1,32
7	80	700160 0007	1,36
8	95	700160 0008	1,36
9	100	700160 0009	1,46
10	105	700160 0010	1,40
12	125	700160 0012	1,69
13	135	700160 0013	1,69
14	140	700160 0014	1,69
15	147	700160 0015	1,91
17	151	700160 0017	1,62
19	170	700160 0019	2,–
22	195	700160 0022	2,51

7101

Wr. width mm	L mm	art.no.	€
24	215	700160 0024	3,22
25	230	700160 0025	4,72
27	240	700160 0027	3,69
30	260	700160 0030	4,55
32	275	700160 0032	4,91
36	305	700160 0036	6,40
41	340	700160 0041	8,05
46	380	700160 0046	9,40
50	410	700160 0050	12,45
55	440	700160 0055	14,20
60	477	700160 0060	25,40
65	510	700160 0065	30,50

7101

ATORN® Double open-end spanner

DIN 3110



- **new surface**
- Ultra-resistant to contact corrosion
- **15-times greater corrosion protection against temperature, de-icing salt and climate loads compared with conventional coated keys**
- up to 720 hours in the salt spray test in compliance with DIN EN ISO 9227
- environmentally-friendly chromium-free coating process
- Chrome vanadium steel, die-forged and hardened



Single

Wr. width mm	L mm	art.no.	€
5.5 x 7 mm	124	**700140** 5507	3,32
6 x 7 mm	125	700140 0607	2,75
8 x 9 mm	140	700140 0809	2,96
8 x 10 mm	144	700140 0810	3,42
10 x 11 mm	159	700140 1011	3,11
10 x 13 mm	173	700140 1013	4,13
11 x 13 mm	173	700140 1113	4,39
12 x 13 mm	173	700140 1213	3,67
12 x 14 mm	178	700140 1214	4,39
13 x 14 mm	186	700140 1314	4,49
13 x 15 mm	188	700140 1315	4,54

7102

Wr. width mm	L mm	art.no.	€
13 x 17 mm	191	700140 1317	4,85
14 x 15 mm	191	700140 1415	4,03
14 x 17 mm	192	700140 1417	4,95
16 x 17 mm	201	700140 1617	4,28
16 x 18 mm	201	700140 1618	5,50
17 x 19 mm	204	700140 1719	5,30
18 x 19 mm	220	700140 1819	5,10
19 x 22 mm	236	700140 1922	6,30
19 x 24 mm	236	700140 1924	7,15
20 x 22 mm	237	700140 2022	5,90
21 x 23 mm	239	700140 2123	6,75

7102

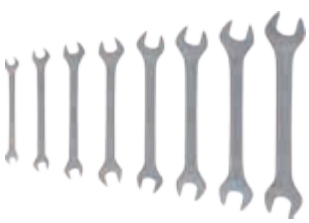
Wr. width mm	L mm	art.no.	€
22 x 24 mm	248	700140 2224	7,15
24 x 26 mm	247	700140 2426	8,35
24 x 27 mm	263	700140 2427	7,95
25 x 28 mm	280	700140 2528	10,60
27 x 30 mm	280	700140 2730	11,65
27 x 32 mm	292	700140 2732	11,65
30 x 32 mm	295	700140 3032	11,–
32 x 36 mm	310	700140 3236	19,40
34 x 36 mm	332	700140 3436	25,10
36 x 41 mm	352	700140 3641	25,50
41 x 46 mm	421	700140 4146	34,50

7102

Sets, boxed

Contents	Wr. width mm	art.no.	€
8-pcs.	6 x 7 mm | 8 x 9 mm | 10 x 11 mm | 12 x 13 mm | 14 x 15 mm | 16 x 17 mm | 18 x 19 mm | 20 x 22 mm	**700145** 1008	31,40
10-pcs.	6 x 7 mm | 8 x 9 mm | 10 x 11 mm | 12 x 13 mm | 14 x 15 mm | 16 x 17 mm | 18 x 19 mm | 20 x 22 mm | 24 x 27 mm | 30 x 32 mm	700145 1010	46,70
12-pcs.	6 x 7 mm | 8 x 9 mm | 10 x 11 mm | 12 x 13 mm | 14 x 15 mm | 16 x 17 mm | 18 x 19 mm | 20 x 22 mm | 21 x 23 mm | 24 x 27 mm | 25 x 28 mm | 30 x 32 mm	700145 1012	66,50

7102



ATORN® Combination spanner (15° angled ring end)

DIN 3113A ISO 3318

- 12-point **energy profile** ring head
- 15° angled ring end
- **new surface**
- Ultra-resistant to contact corrosion
- **15-times greater corrosion protection against temperature, de-icing salt and climate loads compared with conventional coated keys**
- up to 720 hours in the salt spray test in compliance with DIN EN ISO 9227
- environmentally-friendly chromium-free coating process
- Chrome vanadium steel, die-forged and hardened



Single

Wr. width mm	L mm	art.no.	€
5 mm	90	**700510** 0005	4,64
5.5 mm	92	700510 0055	4,64
6 mm	100	700510 0006	4,34
7 mm	110	700510 0007	4,28
8 mm	120	700510 0008	4,23
9 mm	130	700510 0009	4,79
10 mm	140	700510 0010	4,79
11 mm	150	700510 0011	5,30
12 mm	160	700510 0012	5,50
13 mm	170	700510 0013	5,90
14 mm	180	700510 0014	5,90

7102

Wr. width mm	L mm	art.no.	€
15 mm	190	700510 0015	7,15
16 mm	190	700510 0016	7,75
17 mm	210	700510 0017	7,75
18 mm	210	700510 0018	8,75
19 mm	230	700510 0019	8,75
20 mm	230	700510 0020	10,80
21 mm	260	700510 0021	11,20
22 mm	260	700510 0022	11,20
23 mm	270	700510 0023	13,05
24 mm	280	700510 0024	12,65
25 mm	280	700510 0025	15,30

7102

Wr. width mm	L mm	art.no.	€
26 mm	290	700510 0026	15,50
27 mm	310	700510 0027	15,70
28 mm	310	700510 0028	18,–
30 mm	340	700510 0030	18,60
32 mm	360	700510 0032	20,60
34 mm	420	700510 0034	24,90
36 mm	460	700510 0036	35,70
41 mm	480	700510 0041	80,50
46 mm	500	700510 0046	108,–

7102

Sets, boxed

Contents	Wr. width mm	art.no.	€
9-pcs	8 mm | 10 mm | 13 mm | 14 mm | 15 mm | 16 mm | 17 mm | 18 mm | 19 mm	**700511** 0009	53,–
12-pcs.	6 mm | 7 mm | 8 mm | 9 mm | 10 mm | 11 mm | 12 mm | 13 mm | 14 mm | 15 mm | 16 mm | 17 mm	700511 0012	84,50
12-pcs.	10 mm | 11 mm | 12 mm | 13 mm | 14 mm | 17 mm | 19 mm | 22 mm | 24 mm | 27 mm | 30 mm | 32 mm	700511 1012	126,–
18-pcs.	6 mm | 7 mm | 8 mm | 9 mm | 10 mm | 11 mm | 12 mm | 13 mm | 14 mm | 15 mm | 16 mm | 17 mm | 18 mm | 19 mm | 20 mm | 21 mm | 22 mm | 24 mm	700511 0018	126,–

7102



ATORN® Combination spanner (offset ring end)

DIN 3113B ISO 3318

- 12-point **energy profile** ring head
- offset ring end
- **new surface**
- Ultra-resistant to contact corrosion
- **15-times greater corrosion protection against temperature, de-icing salt and climate loads compared with conventional coated keys**
- up to 720 hours in the salt spray test in compliance with DIN EN ISO 9227
- environmentally-friendly chromium-free coating process
- Chrome vanadium steel, die-forged and hardened



Single

Wr. width mm	L mm	art.no.	€
5 mm	95	**700517** 0005	6,10
5.5 mm	100	700517 0055	6,10
6 mm	100	700517 0006	5,70
7 mm	115	700517 0007	5,70
8 mm	125	700517 0008	5,70
9 mm	140	700517 0009	6,30
10 mm	145	700517 0010	6,30
11 mm	160	700517 0011	6,95

7102

Wr. width mm	L mm	art.no.	€
12 mm	165	700517 0012	7,15
13 mm	180	700517 0013	7,75
14 mm	190	700517 0014	7,75
15 mm	190	700517 0015	9,20
16 mm	220	700517 0016	10,–
17 mm	230	700517 0017	10,20
18 mm	245	700517 0018	11,40
19 mm	260	700517 0019	12,05

7102

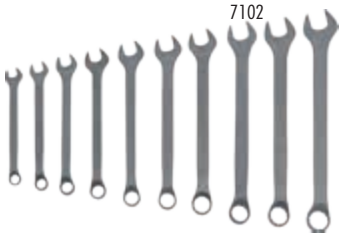
Wr. width mm	L mm	art.no.	€
20 mm	270	700517 0020	14,10
21 mm	280	700517 0021	14,70
22 mm	290	700517 0022	14,70
24 mm	320	700517 0024	16,30
27 mm	350	700517 0027	20,40
30 mm	390	700517 0030	24,30
32 mm	410	700517 0032	26,70
36 mm	430	700517 0036	44,50

7102

Sets, boxed

Contents	Wr. width mm	art.no.	€
10-pcs.	8 mm | 9 mm | 10 mm | 11 mm | 12 mm | 13 mm | 14 mm | 15 mm | 16 mm | 17 mm	**700518** 0010	76,50
12-pcs.	10 mm | 11 mm | 12 mm | 13 mm | 14 mm | 17 mm | 19 mm | 22 mm | 24 mm | 27 mm | 30 mm | 32 mm	700518 0012	165,–
18-pcs.	6 mm | 7 mm | 8 mm | 9 mm | 10 mm | 11 mm | 12 mm | 13 mm | 14 mm | 15 mm | 16 mm | 17 mm | 18 mm | 19 mm | 20 mm | 21 mm | 22 mm | 24 mm	700518 0018	163,–

7102



ATORN® Double-end ring spanner

DIN 838

- **new surface**
- Ultra-resistant to contact corrosion
- **15-times greater corrosion protection against temperature, de-icing salt and climate loads compared with conventional coated keys**
- up to 720 hours in the salt spray test in compliance with DIN EN ISO 9227
- environmentally-friendly chromium-free coating process
- Chrome vanadium steel, die-forged and hardened
- **ENERGY profile**



Single

Wr. width mm	L mm	art.no.	€
6 x 7 mm	178	**700155** 0607	5,70
8 x 9 mm	195	700155 0809	5,70
8 x 10 mm	195	700155 0810	7,35
10 x 11 mm	200	700155 1011	6,30
10 x 13 mm	220	700155 1013	7,75
12 x 13 mm	220	700155 1213	6,75
12 x 14 mm	220	700155 1214	7,75
13 x 14 mm	220	700155 1314	7,75
13 x 15 mm	225	700155 1315	8,15
13 x 17 mm	250	700155 1317	9,–

7102

Wr. width mm	L mm	art.no.	€
14 x 15 mm	235	700155 1415	7,15
14 x 17 mm	250	700155 1417	8,55
16 x 17 mm	250	700155 1617	7,95
16 x 18 mm	250	700155 1618	9,60
17 x 19 mm	285	700155 1719	9,40
18 x 19 mm	285	700155 1819	9,20
19 x 22 mm	300	700155 1922	11,65
19 x 24 mm	300	700155 1924	15,70
20 x 22 mm	300	700155 2022	10,60
21 x 23 mm	300	700155 2123	13,25

7102

Wr. width mm	L mm	art.no.	€
22 x 24 mm	320	700155 2224	14,50
24 x 26 mm	330	700155 2426	15,90
24 x 27 mm	330	700155 2427	13,85
25 x 28 mm	345	700155 2528	18,40
27 x 32 mm	360	700155 2732	18,80
30 x 32 mm	360	700155 3032	18,20
32 x 36 mm	400	700155 3236	21,80
36 x 41 mm	440	700155 3641	44,90

7102

Sets, boxed

Contents	Wr. width mm	art.no.	€
8-pcs.	6 x 7 mm | 8 x 9 mm | 10 x 11 mm | 12 x 13 mm | 14 x 15 mm | 16 x 17 mm | 18 x 19 mm | 20 x 22 mm	**700150** 0008	59,–
12-pcs.	6 x 7 mm | 8 x 9 mm | 10 x 11 mm | 10 x 13 mm | 12 x 13 mm | 14 x 15 mm | 16 x 17 mm | 18 x 19 mm | 20 x 22 mm | 21 x 23 mm | 24 x 27 mm | 25 x 28 mm | 30 x 32 mm	700150 0012	118,–

7102







STAHLWILLE
Hand tools
401 pages
Art.no. 019900 5633

Overview of all free manufacturers' catalogues on page 14/15

ATORN® Ratcheting combination spanner

- Ratchet with 72 teeth, 5° start angle
- Material: Chrome vanadium, chrome-plated
- **Caution: Do not use ring end for tightening**

Straight version, individual

Wr. width mm	art.no.	€
6 mm	**700110** 0006	9,40
7 mm	700110 0007	9,40
8 mm	700110 0008	10,50
9 mm	700110 0009	10,50
10 mm	700110 0010	10,70
11 mm	700110 0011	10,90
12 mm	700110 0012	11,35
13 mm	700110 0013	11,75

7102

Wr. width mm	art.no.	€
14 mm	700110 0014	13,10
15 mm	700110 0015	13,60
16 mm	700110 0016	14,20
17 mm	700110 0017	15,10
18 mm	700110 0018	15,80
19 mm	700110 0019	16,50
21 mm	700110 0021	21,60
22 mm	700110 0022	22,20

7102

Wr. width mm	art.no.	€
24 mm	700110 0024	27,20
27 mm	700110 0027	31,20
30 mm	700110 0030	36,90
32 mm	700110 0032	41,10
34 mm	700110 0034	66,–
36 mm	700110 0036	80,–
38 mm	700110 0038	93,–
41 mm	700110 0041	149,–

7102



Straight, set

Description	Contents	Wr. width mm	art.no.	€
In a roll-up case	5-pcs.	8 mm | 10 mm | 13 mm | 17 mm | 19 mm	**700110** 1005	63,–

7102

Reversible, 15° angled ring end, individual

Wr. width mm	art.no.	€
6 mm	**700111** 0006	13,80
7 mm	700111 0007	13,80
8 mm	700111 0008	15,–
9 mm	700111 0009	15,20
10 mm	700111 0010	15,90
11 mm	700111 0011	16,50
12 mm	700111 0012	17,40

7102

Wr. width mm	art.no.	€
13 mm	700111 0013	17,60
14 mm	700111 0014	19,70
15 mm	700111 0015	20,50
16 mm	700111 0016	21,50
17 mm	700111 0017	22,60
18 mm	700111 0018	24,60
19 mm	700111 0019	25,–

7102

Wr. width mm	art.no.	€
21 mm	700111 0021	34,60
22 mm	700111 0022	34,60
24 mm	700111 0024	40,–
27 mm	700111 0027	56,–
30 mm	700111 0030	70,–
32 mm	700111 0032	71,–
36 mm	700111 0036	114,–

7102



Reversible, 15° angled ring end, set

Description	Contents	Wr. width mm	art.no.	€
In a roll-up case	5-pcs.	8 mm | 10 mm | 13 mm | 17 mm | 19 mm	**700111** 1005	95,50

7102

With articulated head, individual

Wr. width mm	art.no.	€
8 mm	**700112** 0008	17,10
9 mm	700112 0009	17,30
10 mm	700112 0010	17,80
11 mm	700112 0011	18,50

7102

Wr. width mm	art.no.	€
12 mm	700112 0012	19,10
13 mm	700112 0013	19,50
14 mm	700112 0014	20,50
15 mm	700112 0015	21,40

7102

Wr. width mm	art.no.	€
16 mm	700112 0016	23,50
17 mm	700112 0017	24,–
18 mm	700112 0018	25,20
19 mm	700112 0019	26,40

7102



With articulated head, set

Description	Contents	Wr. width mm	art.no.	€
In a roll-up case	5-pcs.	8 mm | 10 mm | 13 mm | 17 mm | 19 mm	**700112** 1005	112,–

7102

Dual-sided ratchet function, individual

Wr. width mm	art.no.	€
8 mm	**700115** 0108	13,80
10 mm	700115 0110	14,20
13 mm	700115 0113	16,30

7102

Wr. width mm	art.no.	€
17 mm	700115 0117	20,50
19 mm	700115 0119	21,80

7102



Dual-sided ratchet function, set

Description	Contents	Wr. width mm	art.no.	€
In a pouch	5-pcs.	8 mm | 10 mm | 13 mm | 17 mm | 19 mm	**700115** 0205	94,–

7102

ATORN® Adapter for ratcheting combination spanners

- Suitable for straight versions and articulated head versions

Adapter	suitable for wr. width mm	art.no.	€
1/4 inch hexagonal bits	10	**700113** 0001	8,90
1/4 inch square nuts	10	700113 0002	2,61
3/8 inch square nuts	13	700113 0003	10,70
1/2 inch square nuts	19	700113 0004	12,–

7102



AMF Face spanner

- **Adjustable face wrench with electrically welded pins**
- Special steel, tempered to a burnished shade

Individual

Pin Ø mm	Adjusting range pin removal mm	Pin length mm	Total length mm	art.no.	€
3	11 - 60	4	160	**701570** 0003	9,36
4	11 - 60	5	160	701570 0004	9,36
5	14 - 100	6	215	701570 0005	13,55
6	14 - 100	7	215	701570 0006	13,55
8	14 - 100	8	215	701570 0008	14,15

4159



Set with replaceable pins (two sets per size)

- Special steel, hardened and galvanised
- Replaces five individual spanner sizes (Ø 1.5 / 2 / 2.5 / 3 / 4 mm)
- Supplied in a robust two-component box

Wr. width mm	Weight g	art.no.	€
8 - 100	335	**701571** 0001	38,80

4159



Tyre lever

- Profiled, die-forged
- Chrome vanadium steel, chrome-plated



Straight

Length mm	art.no.	€
300	**701535** 0300	7,75
400	701535 0400	11,75
500	701535 0500	15,20
600	701535 0600	23,20

7101



Offset version

Length mm	art.no.	€
400	**701536** 0400	29,70
500	701536 0500	31,–
600	701536 0600	40,10

7101



... in chrome vanadium.

ATORN®
Performance demands quality

ATORN® Hexagonal offset screwdriver

ISO 2936 ISO 2936L

- For hexagonal socket head screws
- Hardness and torque in accordance with ISO 2936 or ISO 2936L
- Chamfered key ends
- **Material:** high-quality chrome vanadium steel (59CrMoV4), black oiled or nickel-plated



Short version, ISO 2936

Wr. width mm	Edge length mm	Black, oiled art.no.	€	Nickel-plated art.no.	€
0.7 mm	33 x 7	**703001** 0007	0,50		
0.9 mm	33 x 11	703001 0009	0,44		
1.3 mm	41 x 13			**703005** 0013	0,27
1.5	46.5 x 15.5	703001 0015	0,24	703005 0015	0,33
2.0	52 x 18	703001 0020	0,24	703005 0020	0,33
2.5	58.5 x 20.5	703001 0025	0,26	703005 0025	0,35
3.0	66 x 23	703001 0030	0,32	703005 0030	0,37
3.5	69.5 x 25.5	703001 0035	0,35	703005 0035	0,44
4.0	74 x 29	703001 0040	0,39	703005 0040	0,44
4.5	80 x 30.5	703001 0045	0,55	703005 0045	0,63
5.0	85 x 33	703001 0050	0,55	703005 0050	0,58
5.5	90.5 x 35.5	703001 0055	0,71	703005 0055	0,88
6.0	96 x 38	703001 0060	0,69	703005 0060	0,71
7.0	102 x 41	703001 0070	0,92	703005 0070	0,96
		7111		7111	

Wr. width mm	Edge length mm	Black, oiled art.no.	€	Nickel-plated art.no.	€
8.0	108 x 44	703001 0080	1,11	703005 0080	1,20
9.0	114 x 47	703001 0090	1,72	703005 0090	1,77
10.0	122 x 50	703001 0100	1,75	703005 0100	1,77
11.0	129 x 53	703001 0110	1,92	703005 0110	2,06
12.0	137 x 57	703001 0120	2,15	703005 0120	2,29
14.0	154 x 70	703001 0140	3,60	703005 0140	3,84
17.0	177 x 80	703001 0170	6,45	703005 0170	6,65
19.0	199 x 89	703001 0190	8,75	703005 0190	9,20
22.0	222 x 102	703001 0220	12,35	703005 0220	13,–
24.0	248 x 114	703001 0240	18,40	703005 0240	19,20
27.0	277 x 127	703001 0270	29,20	703005 0270	30,70
30 mm	315 x 142			703005 0300	42,60
32 mm	347 x 157			703005 0320	55,–
36 mm	391 x 176			703005 0360	79,50
		7111		7111	



Extra-long, ISO 2936 L

Wr. width mm	Edge length mm	Black, oiled art.no.	€	Nickel-plated art.no.	€
2.0	102 x 18	**703010** 0020	0,51	**703015** 0020	0,55
2.5	114.5 x 20.5	703010 0025	0,63	703015 0025	0,66
3.0	129 x 23	703010 0030	0,67	703015 0030	0,71
4.0	144 x 29	703010 0040	0,93	703015 0040	0,96
5.0	165 x 33	703010 0050	1,12	703015 0050	1,10
6.0	186 x 38	703010 0060	1,51	703015 0060	1,43
		7111		7111	

Wr. width mm	Edge length mm	Black, oiled art.no.	€	Nickel-plated art.no.	€
8.0	208 x 44	703010 0080	2,45	703015 0080	1,95
10.0	234 x 50	703010 0100	4,32	703015 0100	2,80
12.0	262 x 57	703010 0120	5,85	703015 0120	3,49
14.0	294 x 70	703010 0140	9,25	703015 0140	5,30
17.0	337 x 80	703010 0170	14,80	703015 0170	10,10
19.0	379 x 89	703010 0190	21,60	703015 0190	13,–
		7111		7111	



703020 3017



703020 2017



703020 1009



703020 0008

Sets

ISO design	Wr. width mm	Design	Black, oiled art.no.	€	Nickel-plated art.no.	€
2936	2 / 2.5 / 3 / 4 / 5 / 6 / 8 / 10	Ring-mounted	**703020** 0008	8,45	**703025** 0008	6,45
2936	2 / 2.5 / 3 / 4 / 5 / 6 / 8 / 10	Plastic box	703020 1008	9,20	703025 1008	8,35
2936-long	2 / 2.5 / 3 / 4 / 5 / 6 / 8 / 10	Plastic box	703020 2008	17,20	703025 2008	14,10
2936	2.5 / 3 / 4 / 5 / 6 / 8 / 10 / 12 / 14	Workshop stands	703020 0009	27,90	703025 0009	23,90
2936-long	2.5 / 3 / 4 / 5 / 6 / 8 / 10 / 12 / 14	Workshop stands	703020 1009	37,40	703025 1009	27,80
2936	1.5 / 2 / 2.5 / 3 / 4 / 5 / 6	Hand-held fold-out holder, metal	703020 2007	6,65		
2936	2.5 / 3 / 4 / 5 / 6 / 8	Hand-held fold-out holder, metal	703020 2009	10,55	703025 2009	11,75
2936	2.5 / 3 / 4 / 5 / 6 / 8 / 10	Hand-held fold-out holder, metal	703020 2017	10,90		
2936	1.5 / 2 / 2.5 / 3 / 4 / 5 / 6	Hand-held fold-out holder, plastic	703020 3007	11,05		
2936	2.5 / 3 / 4 / 5 / 6 / 8 / 10	Hand-held fold-out holder, plastic	703020 3017	15,40		
			7111		7111	

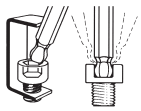


703025 1008



703025 2008

ATORN® Hexagonal offset ball-head screwdriver



- **with ball head**
- for hexagonal socket head screws
- Chamfered key ends, can be used for screwing at angles up to 30°
- **Material**: high-quality chrome vanadium steel (59CrMoV4), steel grey or nickel-plated
- **Version: colour-coded:** The colour coding system assigns a colour to each wrench width so the right tool can be grabbed quickly.

Short



Wr. width mm	Edge length mm	Steel grey art.no.	€	Nickel-plated art.no.	€
2.0	52 x 18	**703030** 0020	1,04	**703031** 0020	1,06
2.5	58.5 x 20.5	703030 0025	1,11	703031 0025	1,16
3.0	66 x 23	703030 0030	1,17	703031 0030	1,21
4.0	74 x 29	703030 0040	1,58	703031 0040	1,62
5.0	85 x 33	703030 0050	1,74	703031 0050	1,79
6.0	96 x 38	703030 0060	2,26	703031 0060	2,36
7.0	102 x 41	703030 0070	3,49	703031 0070	3,60
8.0	108 x 44	703030 0080	3,86	703031 0080	4,06
10.0	122 x 50	703030 0100	5,25	703031 0100	5,65
		7111		7111	

Extra-long



Wr. width mm	Edge length mm	Steel grey art.no.	€	Nickel-plated art.no.	€	colour-coded art.no.	€
1.5	91.5 x 15.5	**703033** 0015	0,75	**703034** 0015	1,01	**703012** 0015	2,35
2.0	102 x 18	703033 0020	0,75	703034 0020	1,01	703012 0020	2,15
2.5	114.5 x 20.5	703033 0025	0,75	703034 0025	1,08	703012 0025	2,15
3.0	129 x 23	703033 0030	0,82	703034 0030	1,10	703012 0030	2,05
4.0	144 x 29	703033 0040	1,02	703034 0040	1,61	703012 0040	2,35
5.0	165 x 33	703033 0050	1,27	703034 0050	1,72	703012 0050	2,80
6.0	186 x 38	703033 0060	1,60	703034 0060	2,24	703012 0060	3,65
7.0	197 x 41	703033 0070	4,95	703034 0070	4,47		
8.0	208 x 44	703033 0080	3,01	703034 0080	3,43	703012 0080	4,75
10.0	234 x 50	703033 0100	4,82	703034 0100	4,86	703012 0100	6,20
12.0	262 x 57	703033 0120	8,40	703034 0120	6,90		
		7111		7111		7111	

Angled 100°, extra long

- CV steel, chrome-plated



Wr. width mm	Edge length mm	Chrome-plated art.no.	€
1.5 mm	90 x 7.5	**703011** 0015	2,30
2 mm	100 x 8	703011 0020	2,10
2.5 mm	112 x 10.5	703011 0025	2,05
3 mm	127 x 13	703011 0030	2,–
4 mm	144 x 15	703011 0040	2,30
5 mm	165 x 18	703011 0050	2,70
6 mm	185 x 22	703011 0060	3,55
8 mm	208 x 27	703011 0080	4,50
10 mm	232 x 32	703011 0100	6,–
		7111	



7030440009



703036 1008



703036 0008



703036 3009

Sets

Design	Wr. width mm	Packaging	Steel grey art.no.	€	Nickel-plated art.no.	€	colour-coded art.no.	€	100°, chrome-plated art.no.	€
Normal, 8-pcs.	2 / 2.5 / 3 / 4 / 5 / 6 / 8 / 10	Plastic box	**703035** 0008	17,40	**703036** 0008	19,10				
Long, 8-pcs.	2 / 2.5 / 3 / 4 / 5 / 6 / 8 / 10	Plastic box	703035 1008	22,10	703036 1008	24,40				
Long, 9-pcs.	1.5 / 2 / 2.5 / 3 / 4 / 5 / 6 / 8 / 10	Plastic clip	703035 3009	15,70	703036 3009	17,60	**703044** 0009	24,50	**703011** 0009	22,80
			7111		7111		7111		7111	

ATORN® Hexagonal offset pilot-tip screwdriver (pin wrench)

DIN 6911

- **With pilot tip**
- For hexagonal socket head screws, DIN 6912
- Chamfered key ends
- **Material**: high-quality chrome vanadium steel (59CrMoV4), nickel-plated



Individual

Wr. width mm	Edge length mm	Nickel-plated art.no.	€
3	66 x 23	**703037** 0003	0,46
4	74 x 29	703037 0004	0,53
5	85 x 33	703037 0005	0,69
6	96 x 38	703037 0006	0,93
8	108 x 44	703037 0008	1,37
		7111	

Wr. width mm	Edge length mm	Nickel-plated art.no.	€
10	122 x 50	703037 0010	2,26
12	137 x 57	703037 0012	3,42
14	154 x 70	703037 0014	5,10
17	177 x 80	703037 0017	8,20
		7111	



Set

Design	Wr. width mm	Nickel-plated art.no.	€
5-pcs. in a plastic pouch	3 / 4 / 5 / 6 / 8	**703039** 1005	7,15
		7111	

ATORN® TORX® offset screwdrivers

- Strength as stipulated by the license issuer: RUIA global fasteners
- **Material**: high-quality chrome vanadium steel (59CrMoV4), steel grey



Individual

TORX	Edge length mm	Steel grey art.no.	€
T6	44.5 x 18.5	**703038** 0060	1,97
T7	50.5 x 18.5	703038 0070	1,97
T8	51 x 19	703038 0080	1,97
T9	51 x 19	703038 0090	1,75
T10	54 x 20	703038 0100	1,75
T15	57.5 x 21.5	703038 0150	1,79
T20	61 x 23	703038 0200	1,79
T25	64.5 x 24.5	703038 0250	1,79
		7111	

TORX	Edge length mm	Steel grey art.no.	€
T27	69.5 x 26.5	703038 0270	1,79
T30	76 x 30	703038 0300	1,92
T40	83 x 33	703038 0400	2,12
T45	91 x 37	703038 0450	2,80
T50	104 x 41	703038 0500	3,51
T55	120 x 47	703038 0550	4,83
T60	134 x 52	703038 0600	6,75
		7111	



Extra-long

TORX	Edge length mm	Steel grey art.no.	€
T5	72 x 13	**703013** 0005	2,50
T6	80 x 15	703013 0006	2,75
T7	88 x 18	703013 0007	2,75
T8	101 x 20	703013 0008	2,75
T9	111 x 21	703013 0009	2,75
T10	121 x 23	703013 0010	3,–
T15	136 x 27	703013 0015	3,10
		7111	

TORX	Edge length mm	Steel grey art.no.	€
T20	148 x 29	703013 0020	3,20
T25	163 x 33	703013 0025	3,40
T27	170 x 36	703013 0027	3,80
T30	178 x 38	703013 0030	4,10
T40	188 x 43	703013 0040	5,40
T50	200 x 50	703013 0050	7,40
		7111	



703045 0008



703045 1008

Sets

Design	TORX	Steel grey art.no.	€
8-pcs. on ring in hang-up bag	T9 / T10 / T15 / T20 / T25 / T27 / T30 / T40	**703045** 0008	29,90
8-pcs. plastic box	T9 / T10 / T15 / T20 / T25 / T27 / T30 / T40	703045 1008	17,95
8-pcs. hand-held fold-out holder	T9 / T10 / T15 / T20 / T25 / T27 / T30 / T40	703045 2008	18,50
		7111	



703045 2008

ATORN® TORX® offset ball-head screwdrivers

- **With ball head**
- Strength as stipulated by the license issuer: RUIA global fasteners
- **Material**: high-quality chrome vanadium steel (59CrMoV4), steel grey



Set

Design	TORX	Steel grey art.no.	€
8-pcs. plastic clip	T9 / T10 / T15 / T20 / T25 / T27 / T30 / T40	**703047** 1008	25,10
		7111	

ATORN® TORX® offset screwdriver, colour-coded

- TORX® ball head on the long end, with wear-resistant powder coating
- Chrome vanadium steel, hardened
- The colour coding system assigns a colour to each wrench width so the right tool can be grabbed quickly.

Extra-long



TORX	Edge length mm	colour-coded art.no.	€
T9	59 x 19	**703056** 0009	3,70
T10	65 x 20	703056 0010	3,75
T15	75.5 x 20	703056 0015	3,85
T20	84 x 21	703056 0020	3,90
T25	100.5 x 22.5	703056 0025	4,20
T27	111.5 x 25.5	703056 0027	4,40
T30	125 x 30	703056 0030	4,50
T40	139 x 33	703056 0040	4,95
		7111	

Set

- In practical plastic holder, key easy to remove



Design	TORX	colour-coded art.no.	€
8-pcs. plastic clip	T9 / T10 / T15 / T20 / T25 / T27 / T30 / T40	**703056** 0008	29,–
		7111	

ATORN® TORX® and TORX PLUS® flag-handle screwdrivers

- **Material:** high-quality molybdenum vanadium steel

TORX®

Wr. width mm	Total length mm	Blade length mm	art.no.	€
T5	67	19	**703053** 0050	1,79
T6	67	19	703053 0060	1,79
T7	67	19	703053 0070	1,79
T8	67	19	703053 0080	1,79
			7114	

Wr. width mm	Total length mm	Blade length mm	art.no.	€
T9	74	24	703053 0090	1,79
T10	74	24	703053 0100	1,79
T15	80	28	703053 0150	1,79
T20	80	28	703053 0200	1,79
			7114	



TORX® Set, 7 pcs. in a small workbench stand



Contents	art.no.	€
T6 / T7 / T8 / T9 / T10 / T15 / T20	**703053** 0001	12,90
	7114	

TORX PLUS®

Wr. width mm	Total length mm	Blade length mm	TORX PLUS art.no.	€
5IP	67	19	**703054** 0050	2,10
6IP	67	19	703054 0060	2,10
7IP	67	19	703054 0070	2,10
8IP	67	19	703054 0080	2,10

7114

Wr. width mm	Total length mm	Blade length mm	TORX PLUS art.no.	€
9IP	74	24	703054 0090	2,10
10IP	74	24	703054 0100	2,10
15IP	80	28	703054 0150	2,10
20IP	80	28	703054 0200	2,10

7114





TORX PLUS® Set, 7 pcs. in a small workbench stand

Contents	art.no.	€
6IP / 7IP / 8IP / 9IP / 10IP / 15IP / 20IP	**703054** 0001	14,90

7114

ATORN® T-handle screwdrivers

T-handle hexagonal screwdriver

- Straight, with ergonomic T-handle
- Through-hardened blade
- Front edges rounded, gloss nickel-plated
- **Material**: high-quality chrome vanadium steel

Wr. width mm	Blade length mm	art.no.	€
2 mm	100	**703060** 0020	2,65
2.5 mm	100	703060 0025	2,65
3 mm	100	703060 0030	2,45
3 mm	150	703060 0130	2,65
3 mm	200	703060 0230	2,96
4 mm	100	703060 0040	2,55
4 mm	150	703060 0140	2,75
4 mm	200	703060 0240	3,06
5 mm	100	703060 0050	2,86
5 mm	150	703060 0150	3,06

7111

Wr. width mm	Blade length mm	art.no.	€
5 mm	200	703060 0250	3,57
6 mm	100	703060 0060	3,37
6 mm	150	703060 0160	3,47
6 mm	200	703060 0260	3,77
8 mm	100	703060 0080	3,88
8 mm	150	703060 0180	4,19
8 mm	200	703060 0280	4,39
10 mm	100	703060 0100	6,55
10 mm	200	703060 2100	8,15

7111



TORX® T-handle screwdrivers

- Handle made from shock-proof ABS terpolymer
- Chrome-plated blade with black tip
- Strength as stipulated by the license issuer: RUIA global fasteners
- **Material:** high-quality chrome vanadium steel (59CrMoV4)

TORX	Total length mm	Blade length mm	art.no.	€
T8	125	100	**703040** 0080	4,60
T9	125	100	703040 0090	4,80
T10	125	100	703040 0100	4,80
T15	125	100	703040 0150	4,80
T15	225	200	703040 1150	6,35
T20	132	100	703040 0200	5,70
T20	232	200	703040 1200	7,–
T25	132	100	703040 0250	5,70
T25	232	200	703040 1250	7,45
T27	132	100	703040 0270	5,70

7111

TORX	Total length mm	Blade length mm	art.no.	€
T27	232	200	703040 1270	8,20
T30	132	100	703040 0300	5,90
T30	232	200	703040 1300	8,60
T40	132	100	703040 0400	6,10
T40	232	200	703040 1400	9,40
T45	189	150	703040 0450	9,20
T45	289	250	703040 1450	12,15
T50	189	150	703040 0500	10,80
T50	289	250	703040 1500	14,20

7111





7 pcs. set

Contents	art.no.	€
2 x 100 mm - 2.5 x 100 mm - 3 x 100 mm - 4 x 150 mm - 5 x 150 mm - 6 x 200 mm - 8 x 200 mm	**703061** 0007	21,60

7111

ATORN® Screwdrivers

DIN 5265 D | DIN 5262 D

- With 2-component heavy-duty handle, steel blue and black, with extra-large soft zone
- Blade made from through-hardened chrome vanadium molybdenum steel, matt chrome-plated finish
- With black tip

Slot

- DIN 5265 D
- Hexagonal bolster for models over 5.5 mm



Cutting edge width mm	Blade length mm	art.no.	€
3.5	75	**705138** 0035	3,96
4.5	90	705138 0045	4,63
5.5	100	705138 0055	6,10
6.5	125	705138 0065	7,25
8.0	150	705138 0080	9,20
10.0	175	705138 0100	10,75
12.0	200	705138 0120	13,60

7114

PH Phillips recess

- DIN 5262 D



PH	Blade length mm	art.no.	€
PH1	80	**705139** 0001	5,15
PH2	100	705139 0002	6,35
PH3	150	705139 0003	8,55

7114

PZ Pozidriv-Supadriv

- DIN 5262 D



PZ	Blade length mm	art.no.	€
PZ1	80	**705140** 0001	5,40
PZ2	100	705140 0002	6,60
PZ3	150	705140 0003	9,20

7114

Security TORX®

- Security version from T10



TORX	Blade length mm	Wrench art.no.	€
T6	60	**705141** 0006	5,25
T7	60	705141 0007	5,40
T8	60	705141 0008	5,70
T9	60	705141 0009	5,90
TR10	80	705141 0010	5,90
TR15	80	705141 0015	6,10
TR20	100	705141 0020	6,35
TR25	100	705141 0025	6,55
TR27	115	705141 0027	6,75
TR30	115	705141 0030	7,25
TR40	130	705141 0040	7,40

7114

Sets



705143 0005

Contents	Slot mm	PH	PZ	TORX	Six-edged mm	art.no.	€
6-pcs.	3.5 / 4.5 / 5.5 / 6.5 / 8.0 / 10.0	-	-	-	-	**705143** 0001	36,30
3-pcs.	-	PH1 / PH2 / PH3	-	-	-	705143 0002	19,80
3-pcs.	-	-	PZ1 / PZ2 / PZ3	-	-	705143 0003	20,60
6-pcs.	4.5 / 5.5 / 6.5 / 8.0	PH1 / PH2	-	-	-	705143 0004	33,90
8-pcs.	5.5 / 6.5 / 8.0	PH1 / PH2 / PH3	PZ1 / PZ2	-	-	705143 0005	46,10
3-pcs.	-	-	-	TR10 / TR15 / TR20	-	705143 0006	18,60
5-pcs.	-	-	-	T6 / T7 / T8 / T9 / TR10	-	705143 0007	27,30
5-pcs.	-	-	-	TR10 / TR15 / TR20 / TR25 / TR30	-	705143 0008	32,–
7-pcs.	-	-	-	T8 / T9 / TR10 / TR15 / TR20 / TR25 / TR30	-	705143 0009	42,40

7114

ATORN® VDE screwdriver

DIN 7437 DIN 7438

- With 2-component heavy-duty handle, red and yellow
- Blade made from hardened and burnished chrome vanadium molybdenum steel
- Protective insulation sprayed directly onto the blade

Slot

- DIN 7437

Cutting edge width mm	Blade length mm	art.no.	€
2.5	75	**705170** 0025	3,62
3	100	705170 0030	3,67
3.5	100	705170 0035	3,94
4	100	705170 0040	4,95
5.5	125	705170 0055	6,60
6.5	150	705170 0065	7,05
8	175	705170 0080	8,60
10	200	705170 0100	10,60

7114



PH Phillips

- DIN 7438

PH	Blade length mm	art.no.	€
0	60	**705171** 0000	4,65
1	80	705171 0001	5,35
2	100	705171 0002	6,80
3	150	705171 0003	8,55

7114



PZ Pozidriv-Supadriv

- DIN 7438

PZ	Blade length mm	art.no.	€
0	60	**705172** 0000	5,20
1	80	705172 0001	6,10
2	100	705172 0002	7,45
3	150	705172 0003	9,85

7114



Set

Contents	Slot mm	PH	PZ	art.no.	€
3-pcs.	-	PH1 - PH2 - PH3	-	**705173** 0001	16,80
3-pcs.	-	-	PZ1 - PZ2 - PZ3	705173 0002	22,30
5-pcs.	2.5 - 4.0 - 5.5 - 6.5 - 8.0	-	-	705173 0003	26,80
6-pcs.	2.5 - 3.5 - 4.0 - 5.5	PH1 - PH2	-	705173 0004	27,90
7-pcs. incl. voltage tester	2.5 - 4.0 - 5.5 - 6.5	PH1 - PH2	-	705173 0005	33,30

7114

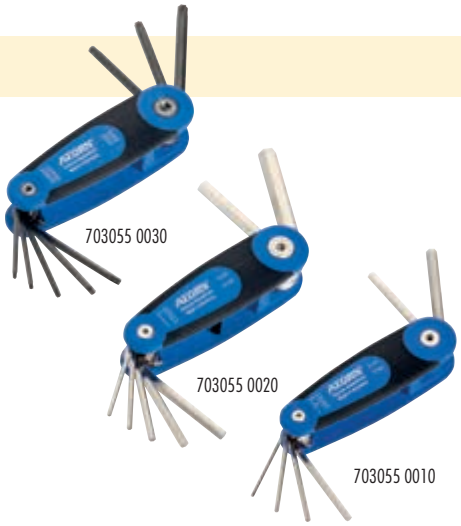


ATORN® Screwdrivers in a hand-held fold-out holder

- 2-component hand-held fold-out holder with lifting device
- Keys made from hardened chrome vanadium steel

Contents	Six-edged mm	TORX	TORX	art.no.	€
7-pcs., nickel-plated	1.5 - 2 - 2.5 - 3 - 4 - 5 - 6	-		**703055** 0010	13,80
7-pcs., nickel-plated	2.5 - 3 - 4 - 5 - 6 - 8 - 10	-		703055 0020	14,20
8-pcs., steel grey	-	T9 - T10 - T15 - T20 - T25 - T27 - T30 - T40		703055 0030	20,40

7111



ATORN® Screwdriver inserts / bits C 6.3

- **Form C 6.3** hexagonal connector, 6.35 mm (1/4")
- Tough design
- Unit prices when purchased in PU

Slot

Slot mm	Total length mm		art.no.	€
0.6 x 4.5	25	10	**702401** 0006	0,59
0.8 x 5.5	25	10	702401 0008	0,59
1.0 x 5.5	25	10	702401 0010	0,59
1.2 x 6.5	25	10	702401 0012	0,59
1.6 x 8.0	25	10	702401 0016	0,59
			7105	



Cross head (PHILLIPS), short

PH	Total length mm		Standard bit art.no.	€		Torsion bit art.no.	€
PH 0	25	10	**702402** 0000	0,37			
PH 1	25	10	702402 0001	0,37	10	**702415** 0001	0,79
PH 2	25	10	702402 0002	0,37	10	702415 0002	0,79
PH 3	25	10	702402 0003	0,37	10	702415 0003	0,79
			7105			7105	



POZIDRIV, short

PZ	Total length mm		Standard bit art.no.	€		Torsion bit art.no.	€
PZ 0	25	10	**702403** 0000	0,37			
PZ 1	25	10	702403 0001	0,37	10	**702416** 0001	0,99
PZ 2	25	10	702403 0002	0,37	10	702416 0002	0,79
PZ 3	25	10	702403 0003	0,37	10	702416 0003	0,79
			7105			7105	



TORX®

TORX	Total length mm		Standard bit art.no.	€		Torsion bit art.no.	€
TX 3	25	10	**702404** 0003	1,50			
TX 4	25	10	702404 0004	1,50			
TX 5	25	10	702404 0005	0,82			
TX 6	25	10	702404 0006	0,82			
TX 7	25	10	702404 0007	0,82			
TX 8	25	10	702404 0008	0,82			
TX 9	25	10	702404 0009	0,82			
TX 10	25	10	702404 0010	0,78	10	**702417** 0010	0,79
TX 15	25	10	702404 0015	0,78	10	702417 0015	0,99
TX 20	25	10	702404 0020	0,78	10	702417 0020	0,99
TX 25	25	10	702404 0025	0,78	10	702417 0025	0,99
TX 27	25	10	702404 0027	0,78	10	702417 0027	0,99
TX 30	25	10	702404 0030	0,78	10	702417 0030	0,99
TX 40	25	10	702404 0040	0,78	10	702417 0040	0,99
			7105			7105	



TORX® with bore

TORX	Total length mm		art.no.	€
TX 10	25	10	**702405** 0010	2,10
TX 15	25	10	702405 0015	2,10
TX 20	25	10	702405 0020	2,10
TX 25	25	10	702405 0025	2,10
TX 27	25	10	702405 0027	2,10
TX 30	25	10	702405 0030	2,10
TX 40	25	10	702405 0040	2,10
			7105	



TORX PLUS®

TORX plus	Total length mm		art.no.	€
6 IP	25	10	**702406** 0006	2,35
7 IP	25	10	702406 0007	2,35
8 IP	25	10	702406 0008	2,35
9 IP	25	10	702406 0009	2,35
10 IP	25	10	702406 0010	2,35
15 IP	25	10	702406 0015	2,35
20 IP	25	10	702406 0020	2,35
25 IP	25	10	702406 0025	2,35
27 IP	25	10	702406 0027	2,35
30 IP	25	10	702406 0030	2,35
40 IP	25	10	702406 0040	2,35
			7105	



Hex

Interior hexagon mm	Total length mm		art.no.	€
1.5	25	10	**702407** 0015	1,35
2.0	25	10	702407 0020	1,35
2.5	25	10	702407 0025	1,35
3.0	25	10	702407 0030	1,35
4.0	25	10	702407 0040	1,35
5.0	25	10	702407 0050	1,35
6.0	25	10	702407 0060	1,35
7.0	25	10	702407 0070	1,35
8.0	25	10	702407 0080	1,35
10.0	25	10	702407 0100	1,35
			7105	



EVERYTHING
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WIHA
Hand tools
361 pages
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Overview of all free manufacturers' catalogues
on page 14/15

ATORN® Screwdriver inserts / bits E 6.3

- **Form E 6.3** hexagonal connector 6.35 mm (1/4")
- Tough design
- Unit prices when purchased in PU

Slot



Slot mm	Total length mm		art.no.	€
0.5 x 3.0	70	10	**702418** 0005	3,10
0.6 x 3.5	70	10	702418 0006	3,10
0.8 x 4.0	70	10	702418 0008	3,10
1.0 x 5.5	70	10	702418 0010	3,10
1.2 x 6.5	70	10	702418 0012	3,10
			7105	

Cross head (PHILLIPS)



PH	50 mm			70 mm			90 mm			152 mm		
		art.no.	€		art.no.	€		art.no.	€		art.no.	€
PH 1	10	**702419** 0001	1,30	10	**702425** 0001	3,10	10	**702428** 0001	3,35	10	**702431** 0001	4,95
PH 2	10	702419 0002	1,30	10	702425 0002	3,10	10	702428 0002	3,35	10	702431 0002	4,95
PH 3	10	702419 0003	1,30	10	702425 0003	3,10	10	702428 0003	3,35	10	702431 0003	4,95
		7105			7105			7105			7105	

POZIDRIV



PZ	50 mm			70 mm			90 mm			152 mm		
		art.no.	€		art.no.	€		art.no.	€		art.no.	€
PZ 1	10	**702420** 0001	2,45	10	**702426** 0001	3,25	10	**702429** 0001	4,25	10	**702432** 0001	5,95
PZ 2	10	702420 0002	2,45	10	702426 0002	3,25	10	702429 0002	4,25	10	702432 0002	5,95
PZ 3	10	702420 0003	1,30	10	702426 0003	3,10	10	702429 0003	3,35	10	702432 0003	4,95
		7105			7105			7105			7105	

TORX®



TORX	50 mm			70 mm			90 mm			152 mm		
		art.no.	€		art.no.	€		art.no.	€		art.no.	€
TX 8	10	**702421** 0008	1,30	10	**702427** 0008	3,10	10	**702430** 0008	3,35	10	**702433** 0008	4,95
TX 10	10	702421 0010	1,30	10	702427 0010	3,10	10	702430 0010	3,35	10	702433 0010	4,95
TX 15	10	702421 0015	2,40	10	702427 0015	3,25	10	702430 0015	4,25	10	702433 0015	5,95
TX 20	10	702421 0020	2,40	10	702427 0020	3,25	10	702430 0020	4,25	10	702433 0020	5,95
TX 25	10	702421 0025	2,40	10	702427 0025	3,25	10	702430 0025	4,25	10	702433 0025	5,95
TX 27	10	702421 0027	2,40	10	702427 0027	3,25	10	702430 0027	4,25	10	702433 0027	5,95
TX 30	10	702421 0030	2,40	10	702427 0030	3,25	10	702430 0030	4,25	10	702433 0030	5,95
TX 40	10	702421 0040	2,40	10	702427 0040	3,25	10	702430 0040	4,25	10	702433 0040	5,95
		7105			7105			7105			7105	

TORX® with bore



TORX	Total length mm		art.no.	€
TX 7	50	10	**702422** 0007	4,15
TX 8	50	10	702422 0008	4,15
TX 9	50	10	702422 0009	4,15
TX 10	50	10	702422 0010	4,15
TX 15	50	10	702422 0015	4,15
TX 20	50	10	702422 0020	4,15
			7105	

Hex



Interior hexagon mm	Total length mm		art.no.	€
2.5	50	10	**702423** 0025	2,80
3.0	50	10	702423 0030	2,80
4.0	50	10	702423 0040	2,80
5.0	50	10	702423 0050	2,80
6.0	50	10	702423 0060	2,80
8.0	50	10	702423 0080	3,20
10.0	50	10	702423 0100	6,80
			7105	

ATORN® Bit boxes

Bit box with premium bit holder and handle

Contents	Interior hexagon mm	Slot mm	PH	PZ	TORX	TORX	art.no.	€
32-pcs. 1 x handle with holding fixture 1/4 inch 1 x premium bit holder CentroFix	1x4.0 1x5.0 1x6.0	1x4.5 1x5.5 1x6.5	1x PH1 5x PH3	2x PZ1 5x PZ2 2x PZ3	1xT10 1xT15 1xT20 1xT25 1xT30 1xT40		**702565** 0032	44,50
32-pcs. 1 x handle with holding fixture 1/4 inch 1 x premium bit holder CentroFix	-	-	2xPH1 5xPH2 2x-PH3	2xPZ1 5xPZ2 2xPZ3	2xT10 2xT15 2xT20 2xT25 2xT30 2xT40		702565 1032	44,50

7114



Bit box with premium bit holder

Contents	Interior hexagon mm	Slot mm	PH	PZ	TORX	TORX	art.no.	€
61-pcs. 1 x premium bit holder CentroFix	2x3.0 2x4.0 2x5.0 2x6.0	1x4.5 1x5.5 1x6.5 1x8.0	4xPH1 10xPH2 4xPH3	4xPZ1 10xPZ2 4xPZ3	2xT10 2xT15 2xT20 2xT25 2xT30 2xT40		**702566** 0061	62,–

7114



Bit box with bit holder

Contents	Interior hexagon mm	Slot mm	PH	PZ	TORX	TORX	art.no.	€
17-pcs. 1 x bit holder	1x3.0 1x4.0 1x5.0	1x4.5 1x6.5	1xPH1 1xPH2 1xPH3	1xPZ1 1xPZ2 1xPZ3	1xT10 1xT15 1xT20 1xT25 1xT30		**702567** 0017	19,50
17-pcs. 1 x bit holder			1xPH1 2xPH2 1xPH3	1xPZ1 2xPZ2 1xPZ3	1xT10 1xT15 2xT20 2xT25 1xT30 1xT40		702567 1017	18,20

7114



Bit holder

Description	art.no.	€
Bit holder CentroFix 1/4 inch x 60 mm for drive C and E 6.3	**702568** 0001	16,60
Quick release holder 1/4 inch x 60 mm for drive C 6.3	702568 0002	5,20
Bit holder screwdriver 1/4 inch x 125 mm, magnetic for drive C 6.3	702568 0003	13,70
Bit holder screwdriver 1/4 inch mount for interchangeable holder	702568 0004	9,95

7114





... with precision.

ATORN®
Performance demands quality

ATORN® Sockets

1/4"

- **Chrome vanadium steel, chrome-plated, with a pin hole**
- Hexagonal version with special profile for higher torques
- Optimum force transmission and screw protection

Hexagonal socket, 1/4 inch, DIN 3124



Wr. width mm	Length mm	art.no.	€
4 mm	25	**702108** 0040	3,49
4.5 mm	25	702108 0045	3,49
5 mm	25	702108 0050	3,62
5.5 mm	25	702108 0055	3,62
6 mm	25	702108 0060	3,62
7 mm	25	702108 0070	3,62
8 mm	25	702108 0080	3,62
9 mm	25	702108 0090	3,77
10 mm	25	702108 0100	3,77
11 mm	25	702108 0110	3,77
12 mm	25	702108 0120	3,98
13 mm	25	702108 0130	3,98
14 mm	25	702108 0140	4,20

7102

Hexagonal socket, 1/4 inch, long



Wr. width mm	Length mm	art.no.	€
4 mm	50	**702109** 0040	9,20
4.5 mm	50	702109 0045	9,40
5 mm	50	702109 0050	9,40
5.5 mm	50	702109 0055	9,40
6 mm	50	702109 0060	9,40
7 mm	50	702109 0070	9,40
8 mm	50	702109 0080	9,40
9 mm	50	702109 0090	9,80
10 mm	50	702109 0100	9,40
11 mm	50	702109 0110	9,80
12 mm	50	702109 0120	9,80
13 mm	50	702109 0130	10,40
14 mm	50	702109 0140	11,20

7102

Hex bit, 1/4 inch



Wr. width mm	Length mm	art.no.	€
3 mm	28	**702110** 0030	5,90
4 mm	28	702110 0040	5,90
5 mm	28	702110 0050	5,90
6 mm	28	702110 0060	5,90
8 mm	28	702110 0080	6,75

7102

TORX bit, 1/4 inch



TORX	Length mm	art.no.	€
T10	37	**702111** 0100	6,75
T15	37	702111 0150	6,75
T20	37	702111 0200	6,75
T25	37	702111 0250	6,75
T27	37	702111 0270	6,75
T30	37	702111 0300	6,75
T40	37	702111 0400	7,75
T8	37	702111 0080	6,75
T9	37	702111 0090	6,75

7102

TORX socket, 1/4 inch



TORX	Length mm	art.no.	€
E 4	25	**702112** 0040	5,70
E 5	25	702112 0050	5,70
E 6	25	702112 0060	5,70
E 7	25	702112 0070	5,70
E 8	25	702112 0080	5,70
E 10	25	702112 0100	5,90

7102

Flat head, 1/4 inch



Slot mm	Length mm	art.no.	€
0.8 x 4.0	37	**702113** 0040	5,70
1.0 x 5.5	37	702113 0055	5,70
1.2 x 6.5	37	702113 0065	5,70

7102

Cross head (Phillips), 1/4 inch



PH	Length mm	art.no.	€
PH 1	37	**702114** 0010	5,70
PH 2	37	702114 0020	5,70
PH 3	37	702114 0030	5,70

7102

Pozidriv, 1/4 inch



PZ	Length mm	art.no.	€
PZ 1	37	**702115** 0010	6,75
PZ 2	37	702115 0020	6,75
PZ 3	37	702115 0030	6,75

7102

ATORN® Drives and connectors

1/4"

Designation	Length mm	art.no.	€
Lever-reversible ratchet	150	**702010** 0014	40,50
Handle with slide block	115	702010 0006	8,35
Adapter 1/4 inch internal x 3/8 inch external	26	702010 0007	7,35
Cardan joint	40	702010 0004	18,–
Extension	50	702010 0002	5,90
Extension	105	702010 0003	5,90
Extension	150	702010 0035	6,75

7102



702010 0014



702010 0007



702010 0002



702010 0006



702010 0004

ATORN® Sockets

3/8″

- **Chrome vanadium steel, chrome-plated, with a pin hole**
- Hexagonal version with special profile for higher torques
- Optimum force transmission and screw protection



Hexagonal socket, 3/8 inch

Wr. width mm	Length mm	art.no.	€
6 mm	24	**702128** 0006	5,50
7 mm	24	702128 0007	5,50
8 mm	24	702128 0008	5,50
9 mm	24	702128 0009	5,50
10 mm	25	702128 0010	4,95
11 mm	26	702128 0011	5,50
12 mm	27	702128 0012	5,50
13 mm	28	702128 0013	4,95
14 mm	28	702128 0014	5,70
15 mm	30	702128 0015	5,70
16 mm	30	702128 0016	5,70
17 mm	30	702128 0017	5,70
18 mm	30	702128 0018	5,70
19 mm	30	702128 0019	5,70
20 mm	32	702128 0020	6,30
21 mm	32	702128 0021	6,30
22 mm	34	702128 0022	6,30

7102



Hex bit, 3/8 inch

Wr. width mm	Length mm	art.no.	€
3 mm	47	**702130** 0030	6,10
4 mm	47	702130 0040	6,10
5 mm	47	702130 0050	6,10
6 mm	47	702130 0060	6,10
7 mm	47	702130 0070	6,10
8 mm	49	702130 0080	6,10
9 mm	50	702130 0090	6,10
10 mm	50	702130 0100	6,10
12 mm	50	702130 0120	11,85

7102



TORX bit, 3/8 inch

TORX	Length mm	art.no.	€
T20	43.5	**702131** 0200	8,15
T25	43.5	702131 0250	8,15
T27	43.5	702131 0270	8,15
T30	43.5	702131 0300	8,15
T40	43.5	702131 0400	8,15
T45	43.5	702131 0450	8,15
T50	44.5	702131 0500	8,15

7102



TORX socket, 3/8 inch

TORX	Length mm	art.no.	€
EX 5	27	**702132** 0050	7,95
EX 6	27	702132 0060	7,95
EX 7	27	702132 0070	7,95
EX 8	27	702132 0080	7,95
EX10	27	702132 0100	7,95
EX11	27	702132 0110	7,95
EX12	27	702132 0120	7,95
EX14	27	702132 0140	7,95

7102



Flat head, 3/8 inch

Slot mm	Length mm	art.no.	€
1.0 x 5.5	49	**702133** 0055	8,05
1.2 x 8.0	49	702133 0080	8,05
1.6 x 10.0	49	702133 0100	9,55

7102



Cross head (Phillips), 3/8 inch

PH	Length mm	art.no.	€
PH 1	49	**702134** 0010	8,05
PH 2	49	702134 0020	8,05
PH 3	49	702134 0030	8,05

7102

ATORN® Drives and connectors

3/8″

Designation	Length mm	art.no.	€
Lever-reversible ratchet	190	**702030** 0038	52,–
Handle with slide block	163	702030 0010	10,80
Adapter 3/8 inch internal x 1/4 inch external	29	702030 0007	7,75
Adapter 3/8 inch internal x 1/2 inch external	36	702030 0008	7,75
Cardan joint	46	702030 0006	21,50
Extension	50	702030 0009	8,80
Extension	75	702030 0002	7,75
Extension	125	702030 0003	8,75
Extension	150	702030 0004	10,80
Extension	250	702030 0005	12,50

7102



702030 0038



702030 0010



702030 0002



702030 0007



702030 0006

ATORN® Sockets

1/2"

- **Chrome vanadium steel, chrome-plated, with a pin hole**
- Hexagonal version with special profile for higher torques
- Optimum force transmission and screw protection



Hexagonal socket, 1/2 inch, DIN 3124

Wr. width mm	Length mm	art.no.	€
8 mm	38	**702148** 0008	5,90
9 mm	38	702148 0009	5,90
10 mm	38	702148 0010	4,95
11 mm	38	702148 0011	5,30
12 mm	38	702148 0012	5,30
13 mm	38	702148 0013	4,95
14 mm	38	702148 0014	5,50
15 mm	38	702148 0015	5,50
16 mm	38	702148 0016	5,50
17 mm	38	702148 0017	5,90
18 mm	38	702148 0018	6,30
19 mm	38	702148 0019	5,90
20 mm	38	702148 0020	6,75
21 mm	38	702148 0021	7,75
22 mm	42	702148 0022	6,75
23 mm	42	702148 0023	7,75
24 mm	42	702148 0024	7,75
26 mm	42	702148 0026	7,95
27 mm	45	702148 0027	8,95
28 mm	45	702148 0028	10,–
30 mm	45	702148 0030	10,–
32 mm	47	702148 0032	10,–

7102



12-point socket, 1/2 inch, long

Wr. width mm	Length mm	art.no.	€
10 mm	77	**702149** 0010	13,10
11 mm	77	702149 0011	13,10
12 mm	77	702149 0012	13,10
13 mm	77	702149 0013	13,10
14 mm	77	702149 0014	13,70
15 mm	77	702149 0015	14,90
16 mm	77	702149 0016	14,90
17 mm	77	702149 0017	14,90
18 mm	82	702149 0018	15,30
19 mm	82	702149 0019	14,90
20 mm	82	702149 0020	15,30
21 mm	82	702149 0021	15,30
22 mm	82	702149 0022	15,90
23	75	702149 0023	16,60
24 mm	82	702149 0024	15,90
26 mm	82	702149 0026	15,90
27 mm	82	702149 0027	18,–
30 mm	82	702149 0030	18,20
32 mm	82	702149 0032	19,40

7102



Hex bit, 1/2 inch

Wr. width mm	Length mm	art.no.	€
4 mm	55	**702150** 0040	6,35
5 mm	55	702150 0050	6,35
6 mm	55	702150 0060	6,35
7 mm	55	702150 0070	6,35
8 mm	55	702150 0080	6,35
10 mm	55	702150 0100	7,35
12 mm	55	702150 0120	7,35
14 mm	55	702150 0140	9,–
17 mm	55	702150 0170	9,80
19 mm	55	702150 0190	10,60

7102



TORX bit, 1/2 inch

TORX	Length mm	art.no.	€
T20	55	**702151** 0200	9,40
T25	55	702151 0250	9,40
T27	55	702151 0270	9,40
T30	55	702151 0300	9,40
T40	55	702151 0400	10,60
T45	55	702151 0450	10,60
T50	55	702151 0500	10,60
T55	55	702151 0550	13,70
T60	55	702151 0600	13,70

7102



TORX bit, 1/2 inch, long

TORX	Length mm	art.no.	€
T20	110	**702156** 0200	11,–
T25	110	702156 0250	11,–
T27	110	702156 0270	11,–
T30	110	702156 0300	11,–
T40	110	702156 0400	12,60
T45	110	702156 0450	12,60
T50	110	702156 0500	12,60
T55	110	702156 0550	15,70
T60	110	702156 0600	15,70

7102



TORX socket, 1/2 inch

TORX	Length mm	art.no.	€
EX 10	38	**702152** 0100	8,15
EX 11	38	702152 0110	8,15
EX 12	38	702152 0120	8,15
EX 14	38	702152 0140	9,–
EX 16	38	702152 0160	9,–
EX 18	38	702152 0180	9,80
EX 20	38	702152 0200	9,80
EX 22	38	702152 0220	10,20
EX 24	41	702152 0240	13,10

7102



Flat head, 1/2 inch

Slot mm	Length mm	art.no.	€
1.2 x 8.0	60	**702153** 0080	10,80
1.6 x 10.0	60	702153 0100	10,80
2.0 x 12.0	60	702153 0120	10,80
2.5 x 14.0	60	702153 0140	12,05

7102



Cross head (PH Phillips), 1/2 inch

PH	Length mm	art.no.	€
PH 2	60	**702154** 0020	10,–
PH 3	60	702154 0030	10,20
PH 4	60	702154 0040	10,80

7102



Cross head (PZ Pozidriv), 1/2 inch

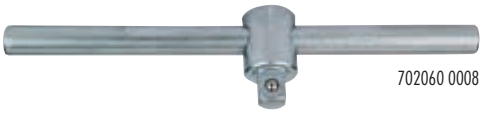
PZ	Length mm	art.no.	€
PZ 2	60	**702155** 0020	10,–
PZ 3	60	702155 0030	10,20
PZ 4	60	702155 0040	10,80

7102

ATORN® Drives and connectors

1/2"


702060 0013


702060 0008


702060 0005


702060 0009


702060 0002


702060 0011

Designation	Length mm	art.no.	€
Lever-reversible ratchet	255	**702060** 0013	56,–
Handle with slide block	300	702060 0008	11,85
Adapter 1/2 inch internal x 3/8 inch external	38	702060 0009	7,75
Adapter 1/2 inch internal x 3/4 inch external	49	702060 0010	9,80
Cardan joint	75	702060 0005	21,50
Spark plug insert	16	702060 0011	8,35
Spark plug insert	21	702060 0012	9,95
Extension	75	702060 0002	8,35
Extension	125	702060 0025	8,75
Extension	250	702060 0035	11,65

7102

ATORN® Socket sets

1/4"

6-kant Spezial Profil

- Sheet steel box, powder-coated
- With two-colour foam inlay and removable trays
- Hexagonal with special profile for higher torques
- Optimum force transmission and screw protection


702205 1428


702205 1418


702205 1442

Contents	Six-edged mm	Interior hexagon mm	Slot mm	PH	PZ	TORX	Dimensions W x D x H mm	Weight g	art.no.	€
18-pcs. 1 reversible ratchet 150 mm 1 Cardan joint 40 mm 2 extensions 50/105 mm 1 handle with slide block	4 / 4.5 / 5 / 5.5 / 6 / 7 / 8 / 9 / 10 / 11 / 12 / 13 / 14	-	-	-	-	-	225x130x37	approx. 1030	**702205** 1418	124,–
28-pcs. 1 reversible ratchet 150 mm 1 Cardan joint 40 mm 1 extension 50 mm 1 handle with slide block	4 / 4.5 / 5 / 5.5 / 6 / 7 / 8 / 9 / 10 / 11 / 12 / 13	3 4 5 6 8	4 5.5 6.5	PH1 PH2	PZ1 PZ2	-	225x130x37	approx. 1140	702205 1428	145,–
42-pcs. 1 reversible ratchet 150 mm 1 Cardan joint 40 mm 2 extensions, 50/105 mm 1 handle with slide block	4 / 4.5 / 5 / 5.5 / 6 / 7 / 8 / 9 / 10 / 11 / 12 / 13 / 14 / long: 8 / 10 / 11 / 13	3 4 5 6 8	4 5.5 6.5	PH1 PH2 PH3	PZ1 PZ2 PZ3	T10 T15 T20 T25 T30 T40	320x130x47	approx. 1760	702205 1442	194,–

7102

ATORN® Socket set

3/8″

- Sheet steel box, powder-coated
- With two-colour foam inlay and removable trays
- Hexagonal with special profile for higher torques
- Optimum force transmission and screw protection



Contents	Six-edged mm	Dimensions W x D x H mm	Weight g	art.no.	€
22-pcs. 1 reversible ratchet 190 mm 1 Cardan joint 55 mm 3 extensions 50/75/150 mm... 1 adapter 1/2 inch x 3/8 inch	6 / 7 / 8 / 9 / 10 / 11 / 12 / 13 / 14 / 15 / 16 / 17 / 18 / 19 / 20 / 21 / 22	320x130x47	2,080	**702209** 3823	188,–

7102

ATORN® Socket sets

1/2″

- Sheet steel box, powder-coated
- With two-colour foam inlay and removable trays
- Hexagonal with special profile for higher torques
- Optimum force transmission and screw protection



702214 1219



702214 1222



702214 1235

Contents	Weight g	Six-edged mm	Interior hexagon mm	PH	Dimensions W x D x H mm	TORX	art.no.	€
19-pcs. 1 reversible ratchet 255 mm 1 Cardan joint 75 mm 2 extensions 125/250 mm 1 handle with slide block	approx. 4420	10 / 11 / 12 / 13 / 14 / 15 / 16 / 17 / 19 / 22 / 24 / 27 / 30 / 32	-	-	455x180x51	-	**702214** 1219	206,–
22-pcs. spark plug inserts 16/21 mm 1 reversible ratchet 255 mm 1 Cardan joint 75 mm 2 extensions 125/250 mm 1 adapter 1/2 inch x 3/8 inch	approx. 4352	10 / 11 / 12 / 13 / 14 / 15 / 16 / 17 / 18 / 19 / 22 / 24 / 27 / 30 / 32	-	-	455x180x51	-	702214 1222	216,–
35-pcs. 1 reversible ratchet 255 mm 1 Cardan joint 75 mm 2 extensions 125/250 mm 1 adapter 1/2 inch x 3/8 inch	approx. 5234	10 / 11 / 12 / 13 / 14 / 15 / 16 / 17 / 18 / 19 / 20 / 21 / 22 / 23 / 24 / 27 / 30 / 32	7 8 10 12 14	PH3 PH4	455x180x51	T30 T40 T45 T55 T60	702214 1235	288,–

7102



… for special measurement tasks

ATORN®
High quality for great performance

ATORN® Torque screwdriver with replaceable blades

- Simple and precise torque adjustment
- Precise release when the set torque is reached, clearly audible and tangible
- Blades made of chrome molybdenum vanadium alloy
- Ergonomic 2-component handle
- Replaceable blades for maximum flexibility in all application areas
- Other set configurations and individual blades available on request





Torque handle

- Including adjustment key, user manual and calibration certificate

Torque N-m	art.no.	€
0.6 - 1.5	**703732** 0615	53,–
1.5 - 3.0	703732 1530	53,–
3.0 - 5.4	703732 3054	53,–

7109

Replaceable blades

- Black tip for a precise fit

Description	Length mm	Hexagonal support in	art.no.	€
Torx T6	170	1/4	**702733** 0060	4,70
Torx T7	170	1/4	702733 0070	4,70
Torx T8	170	1/4	702733 0080	4,70
Torx T9	170	1/4	702733 0090	4,70
Torx T10	170	1/4	702733 0100	4,70
Torx T15	170	1/4	702733 0150	4,70
Torx T20	170	1/4	702733 0200	4,70
Torx T25	170	1/4	702733 0250	4,70
Torxplus 6IP	170	1/4	702733 1060	4,70
Torxplus 7IP	170	1/4	702733 1070	4,70
Torxplus 8IP	170	1/4	702733 1080	4,70
Torxplus 9IP	170	1/4	702733 1090	4,70
Torxplus 10IP	170	1/4	702733 1100	4,70
Torxplus 15IP	170	1/4	702733 1150	4,70
Torxplus 20IP	170	1/4	702733 1200	4,70
Torxplus 25IP	170	1/4	702733 1250	4,70

7109



Description	Length mm	Hexagonal support in	art.no.	€
Flat head 3.0 x 0.5 mm	170	1/4	702733 2030	4,70
Flat head 3.5 x 0.6 mm	170	1/4	702733 2035	4,70
Flat head 4.0 x 0.8 mm	170	1/4	702733 2040	4,70
Phillips PH 0	170	1/4	702733 3000	4,70
Phillips PH 1	170	1/4	702733 3010	4,70
Phillips PH 2	170	1/4	702733 3020	4,70
Pozidriv PZ 0	170	1/4	702733 4000	4,70
Pozidriv PZ 1	170	1/4	702733 4010	4,70
Pozidriv PZ 2	170	1/4	702733 4020	4,70
Hex wr. width 2.0	170	1/4	702733 5020	4,70
Hex wr. width 2.5	170	1/4	702733 5025	4,70
Hex wr. width 3.0	170	1/4	702733 5030	4,70
Hex wr. width 4.0	170	1/4	702733 5040	4,70

7109

Accessories

Description	art.no.	€
Adjustment key	**702734** 0001	3,50
Locking seal	702734 0002	3,85
Bit holder blade, 1/4 inch bit mount	702734 0003	7,–

7109



702734 0002



702734 0001



702734 0003

Torque screwdriver set, 0.6 - 3.0 Nm

Contents	Torque N-m	art.no.	€
2 handles, bit holder blade, bits in sizes PH1 and 2, PZ1 and 2, hex 2.5 and 3 mm, TORX 10, 15, 20, 25, adjustment key, certificate and user instructions, shock-proof plastic box with soft foam inlay	0.6-1.5 and 1.5-3.0	**702736** 0630	123,50

7109



ATORN® Torque wrenches

- Haptic and acoustic adjustment aid
- User-friendly thanks to an ergonomically shaped handle with a structured comfort-grip surface
- Clearly audible and tangible short-path release when the set torque is reached
- Quickly secured and released via locking ring
- Dual scale with N·m and lbf-ft.
- Viewing window protects the scale against damage
- High-quality permanent laser marking
- Shipped in protective tube packaging incl. a hanging fixture
- Made in Germany



Lever-reversible ratchet

- Accuracy ± 3 % of scale value, ± 4 % with 1 - 6 Nm torque wrench
- ½ inch ratchet with 32 teeth, 3/8 inch ratchet with 30 teeth, ¼ inch ratchet with 20 teeth
- DIN EN ISO 6789:2003 (D) square in accordance with DIN 3120, ISO 1174-1

Torque N·m	New until...	Scale division N·m	Length mm	art.no.	€	Calibration art.no.	Calibration €
1-6	1/4"	0.1	234	**702602** 0001	194,–	079310 0001	31,50
2.5-25	1/4"	0.25	274	702602 0002	190,–	079310 0001	31,50
10-60	3/8"	0.5	355	702602 0003	194,–	079310 0001	31,50
20-120	1/2"	1.0	456	702602 0004	183,50	079310 0001	31,50
40-200	1/2"	1.0	551	702602 0005	194,–	079310 0001	31,50
60-320	1/2"	2.0	621	702602 0006	220,–	079310 0001	31,50

7109












For snap-in tools

- Accuracy ± 3 % of scale value
- Including serial number and certificate
- DIN EN ISO 6789:2003 (D)



For snap-in tools, please visit the online shop

Torque N·m	Quadratic mm	Scale division N·m	Length mm	art.no.	€	Calibration art.no.	Calibration €
2.5-25	9x12	0.25	258	**702603** 0001	138,50	079310 0001	31,50
10-60	9x12	0.5	312	702603 0002	145,–	079310 0001	31,50
20-120	14x18	1.0	393	702603 0003	149,–	079310 0001	31,50
40-200	14x18	1.0	488	702603 0004	163,–	079310 0001	31,50
60-320	14x18	2.0	558	702603 0005	186,–	079310 0001	31,50

7109




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Hand tools
401 pages
Art.no. 019900 5633

Overview of all free manufacturers' catalogues on page 14/15

ATORN® Knife

Description	art.no.	€
Stainless steel blade with serrated edge, non-slip, blade locking button	**711001** 0115	13,40
Stainless steel blade with 2 notches, non-slip, locking blade	711001 0116	14,40
	7129	



711001 0115



711001 0116

ATORN® Utility knife

- Extremely robust and smooth
- Ergonomically shaped full metal casing with stainless steel blade guide

Description	art.no.	€
Utility knife, auto-lock mechanism, 9 mm blade	**711032** 0009	10,20
Utility knife, locking cog, 18 mm blade	711032 0018	15,40
	7129	


711032 0009


711032 0018



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ATORN® Pliers

DIN ISO 5745 | DIN ISO 5749 | DIN ISO 5746 | DIN ISO 5748 | DIN ISO 8976

- Chrome vanadium steel
- Handle PVC-coated, joint polished or with 2-component (2K) covering, high-gloss polished, chrome-plated

Flat-nose pliers with short jaws

- DIN ISO 5745



Total length mm	PVC dipped handle art.no.	€	2K handle art.no.	€
140	**710498** 0140	10,05		
160	710498 0160	10,45	**710499** 0160	12,85
	7130		7130	

Flat-nose pliers with long jaws

- DIN ISO 5745



Total length mm	PVC dipped handle art.no.	€	2K handle art.no.	€
140	**710501** 0140	11,70		
160	710501 0160	12,30	**710505** 0160	15,10
	7130		7130	

Radio or telephone pliers (needle-nose pliers) with cutting edge

- DIN ISO 5745



Total length mm	PVC dipped handle art.no.	€	2K handle art.no.	€
140	**710520** 0140	11,70		
160	710520 0170	11,90	**710525** 0170	16,60
200	710520 0200	14,90	710525 0200	19,20
	7130		7130	

Radio or telephone pliers (needle-nose pliers) with long handles

- DIN ISO 5745



Total length mm	PVC dipped handle art.no.	€
280	**710526** 0280	18,70
	7130	

Radio or telephone pliers (needle-nose pliers) with cutting edge

- DIN ISO 5749
- 45° angled tip



Total length mm	PVC dipped handle art.no.	€	2K handle art.no.	€
200	**710530** 0200	17,60	**710535** 0200	21,70
	7130		7130	

Radio or telephone pliers (needle-nose pliers) with long handles

- DIN ISO 5745
- 45° angled tip



Total length mm	PVC dipped handle art.no.	€
280	**710536** 0280	20,80
	7130	

Diagonal cutting pliers

- DIN ISO 5749



Total length mm	Design	PVC dipped handle art.no.	€	2K handle art.no.	€
145	Hardened cutting edges for hardened steel wire (piano wire)	**710145** 0145	12,10		
160	Special steel for hardened steel wire (piano wire)	710145 0161	12,10	**710150** 0161	17,20
		7130		7130	

Heavy-duty diagonal cutting pliers

- DIN ISO 5749
- Special steel for hardened steel wire (piano wire)



Total length mm	PVC dipped handle art.no.	€	2K handle art.no.	€
160	**710155** 0160	15,10	**710160** 0160	21,90
180	710155 0180	16,20	710160 0180	24,30
200	710155 0200	18,30	710160 0200	25,70
	7130		7130	

Combination pliers

- DIN ISO 5746

Total length mm	Design	PVC dipped handle art.no.	€	2K handle art.no.	€
160	With bevels	**710135** 0165	9,80	**710140** 0165	13,40
180	With bevels	710135 0180	10,20	710140 0180	14,70
200	With bevels	710135 0200	12,10	710140 0200	17,20
		7130		7130	



Heavy-duty end cutting pliers

- DIN ISO 5748
- Made from special steel, for hardened steel wire (piano wire)

Total length mm	PVC dipped handle art.no.	€	2K handle art.no.	€
160	**710185** 0155	20,10	**710190** 0155	22,90
200	710185 0200	22,20		
	7130		7130	



Three-way pliers

- Flat-nose pliers
- Wire-stripping pliers
- Crimping pliers







Total length mm	2K handle art.no.	€
160	**710134** 0160	19,–
	7130	



Water pump pliers GRIPSTAR

- DIN ISO 8976
- One-handed operation, with box joint, 10 fine adjustment settings
- Chrome vanadium

Total length mm	PVC dipped handle art.no.	€
250	**710131** 0250	22,40
	7130	



Water pump pliers, chrome vanadium

- DIN ISO 8976
- With integrated groove joint and pinch guard
- Chrome vanadium

Total length mm	2K handle art.no.	€
250	**710130** 0245	21,20
	7130	



Pliers set

- 4 pcs. in a plastic case

Contents	art.no.	€
Combination pliers 180 mm 2K handle (710140 0180), radio or telephone pliers 160 mm 2K handle (710525 0170), diagonal cutting pliers 160 mm 2K handle (710150 0161), water pump pliers GRIPSTAR 250 mm PVC dipped handle (710131 0250)	**710551** 0004	63,–
	7130	



ATORN® Water pump pliers

DIN ISO 8976

- Chrome vanadium steel
- With slip box joint and safety pinch guard
- Self-clamping on the workpiece, saving effort and providing a non-slip grip



Total length mm	art.no.	€
175	**710110** 0180	12,45
240	710110 0240	13,45
300	710110 0300	19,90
	7130	

ATORN® Corner pipe wrench

DIN 5234

- Chrome vanadium steel, forged and powder-coated
- Double T-profile wrench lever
- Induction-hardened jaws
- Teeth offset against the direction of rotation
- Reinforced clamp
- Adjusting nut locking mechanism

45° angled jaw



for pipe Ø in	Total length mm	Jaw aperture mm	art.no.	€
1"	320	0 - 42	**712001** 0010	31,20
1 1/2"	430	0 - 60	712001 0015	44,–
2"	570	0 - 70	712001 0020	63,50
			7130	

90° angled jaw



for pipe Ø in	Total length mm	Jaw aperture mm	art.no.	€
1"	310	0 - 42	**712002** 0010	28,10
1 1/2"	420	0 - 60	712002 0015	40,90
2"	560	0 - 70	712002 0020	60,50
			7130	

S-jaw head



for pipe Ø in	Total length mm	Jaw aperture mm	art.no.	€
1"	315	0 - 42	**712011** 0010	28,80
1 1/2"	420	0 - 60	712011 0015	38,80
2"	530	0 - 70	712011 0020	65,–
			7130	

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ATORN® VDE pliers

DIN ISO 5745 | DIN ISO 5749 | DIN ISO 5746

- **Specially tailored to the strict safety guidelines of IEC 900, DIN EN 60900 and VDE 0680/Part 2**
- Chrome vanadium steel
- High-gloss polished, chrome-plated
- Directly sprayed 1,000 V insulating handles

VDE flat-nose pliers with long jaws

- DIN ISO 5745

Total length mm	art.no.	€
160	**711036** 0160	18,80

7130



VDE round-nose pliers with long jaws

- DIN ISO 5745

Total length mm	art.no.	€
160	**711038** 0160	19,80

7130



VDE radio or telephone pliers (needle-nose pliers)

- DIN ISO 5745
- With cutting edge

Total length mm	art.no.	€
160	**711050** 0170	18,–
200	711050 0200	21,60

7130



VDE radio or telephone pliers (needle-nose pliers)

- DIN ISO 5745
- With cutting edge
- 45° angled tip

Total length mm	art.no.	€
200	**711055** 0200	24,70

7130



VDE diagonal cutting pliers

- DIN ISO 5749

Total length mm	art.no.	€
140	**711045** 0140	18,80
160	711045 0160	19,40

7130



VDE heavy-duty diagonal cutting pliers, made from special steel

- DIN ISO 5749

Total length mm	art.no.	€
200	**711039** 0200	29,80

7130



VDE combination pliers

- DIN ISO 5746

Total length mm	art.no.	€
160	**711040** 0160	16,50
180	711040 0180	17,50
200	711040 0200	19,80

7130



VDE wire-stripping pliers

- With grub screw and opening spring, for cables and stranded wires up to Ø 5 mm

Total length mm	art.no.	€
160	**711060** 0160	19,60

7130



VDE pliers set in a plastic case

- 4 pcs.

Contents	art.no.	€
VDE combination pliers 180 mm (711040 0180), VDE radio or telephone pliers 200 mm (711050 0200), VDE diagonal cutting pliers 160 mm (711045 0160), VDE wire-stripping pliers 160 mm (711060 0160)	**711061** 0004	75,–

7130



ATORN® Circlip pliers

DIN 5254 B | DIN 5256 C | DIN 5256 D | DIN 5254 A

- Chrome vanadium steel, polished joint
- PVC-coated handle

External pliers, tips angled 90°, type B

- DIN 5254 B

Type	for external fixture Ø mm	Total length mm	art.no.	€
A 01	3 - 10	139	**711555** 1001	11,40
A 11	10 - 25	140	711555 1011	11,–
A 21	19 - 60	180	711555 1021	11,80
A 31	40 - 100	225	711555 1031	13,30
A 41	85 - 140	310	711555 1041	23,20

7130



Internal pliers, straight tips, type C

- DIN 5256 C

Type	for interior securing Ø mm	Total length mm	art.no.	€
J 0	8 - 13	139	**711560** 2000	9,30
J 1	12 - 25	140	711560 2001	9,30
J 2	19 - 60	180	711560 2002	9,70
J 3	40 - 100	225	711560 2003	11,80
J 4	85 - 140	310	711560 2004	19,80

7130



Internal pliers, tips angled 90°, type D

- DIN 5256 D

Type	for interior securing Ø mm	Total length mm	art.no.	€
J 01	8 - 13	139	**711565** 3010	10,15
J 11	12 - 25	140	711565 3011	10,15
J 21	19 - 60	180	711565 3021	10,55
J 31	40 - 100	225	711565 3031	12,50
J 41	85 - 140	310	711565 3041	21,60

7130



External pliers, straight tips, type A

- DIN 5254 A

Type	for external fixture Ø mm	Total length mm	art.no.	€
A 0	3 - 10	139	**711550** 0000	10,55
A 1	10 - 25	140	711550 0001	9,70
A 2	19 - 60	180	711550 0002	10,80
A 3	40 - 100	225	711550 0003	12,70
A 4	85 - 140	310	711550 0004	22,–

7130



Circlip pliers sets

- DIN 5254A/5256C
- For internal and external circlips

Description	Contents	art.no.	€
8-pcs. in box	J1, J2, J11, J21, A1, A2, A11, A21	**710490** 1008	83,50
8-pcs. in a roll-up case	J1, J2, J11, J21, A1, A2, A11, A21	710490 2008	92,–

7130



ATORN® Electronic pliers

DIN ISO 9655 DIN ISO 9654

- Chrome vanadium steel
- Joint surfaces polished and phosphate-treated
- 2-component shell (2K)

Needle-nose electronics pliers, 30° angled tip

- DIN ISO 9655



Total length mm	art.no.	€
125	**711506** 0125	20,40
	7130	

Needle-nose electronics pliers, straight

- DIN ISO 9655



Total length mm	art.no.	€
125	**711510** 2130	18,60
	7130	

Diagonal cutting electronics pliers, made from special steel

- DIN ISO 9654


Without blade bevel


With blade bevel



Total length mm	Design	art.no.	€
112	For hardened steel wire (piano wire)	**711515** 3110	18,60
112	Without blade bevel, for copper wire, diameter 0.5-2.0 mm	711515 3111	19,60
112	With retaining spring, for hardened steel wire (piano wire)	711515 3112	22,–
112	With retaining spring, without blade bevel, for copper wire, diameter 0.5-2.0 mm	711515 3113	23,20
		7130	

Tool sets

- 6-piece sets
- Shank with baked enamel finish
- **Material:** Chrome vanadium air-hardened steel



720135 0006



720135 1006

Packaging	Contents	art.no.	€
6-pcs. plastic stand	1x flat chisel 125 x 10 x 12 mm 1x flat chisel 150 x 12 x 16 mm 1x cross-cut chisel 125 x 10 mm 1x centre punch 120 x 10 mm 1x drift punch 120 x 10 x 3 mm 1x drift punch 120 x 10 x 4 mm	**720135** 0006	19,–
6-pcs. metal cartridge	1x flat chisel 125 x 10 x 12 mm 1x flat chisel 150 x 12 x 16 mm 1x cross-cut chisel 125 x 10 mm 1x centre punch 120 x 10 mm 1x drift punch 120 x 10 x 3 mm 1x drift punch 120 x 10 x 4 mm	720135 1006	24,30

7134

Centre punch

DIN 7250

- Octagonal
- Impact-resistant head, shank with baked enamel finish
- **Material:** Chrome vanadium air-hardened steel



Length mm	Shank Ø mm	art.no.	€
100	8	**720110** 1008	1,47
120	10	720110 1209	1,61
120	12	720110 1210	1,78
150	12	720110 1211	1,98

7134

ATORN® Wad punches

DIN 7200 A

- Conical relief, head ground and polished, baked enamel finish
- **Material:** Die-forged special steel



Individual

Ø mm	art.no.	€
2	**720112** 0002	3,80
3	720112 0003	3,80
4	720112 0004	3,80
5	720112 0005	3,80
6	720112 0006	3,80
7	720112 0007	3,80
8	720112 0008	4,05
9	720112 0009	4,20
10	720112 0010	4,45
11	720112 0011	5,45
12	720112 0012	5,95
13	720112 0013	6,45
14	720112 0014	6,85
15	720112 0015	7,35
16	720112 0016	8,–

7134

Ø mm	art.no.	€
17	720112 0017	8,50
18	720112 0018	9,–
19	720112 0019	9,35
20	720112 0020	10,40
21	720112 0021	11,15
22	720112 0022	11,60
23	720112 0023	11,95
24	720112 0024	12,45
25	720112 0025	14,45
26	720112 0026	14,85
27	720112 0027	15,65
28	720112 0028	17,80
29	720112 0029	18,40
30	720112 0030	18,50
31	720112 0031	19,60

7134

Ø mm	art.no.	€
32	720112 0032	20,20
33	720112 0033	21,95
34	720112 0034	22,70
35	720112 0035	22,70
40	720112 0040	29,60
42	720112 0042	39,30
44	720112 0044	40,20
46	720112 0046	41,30
48	720112 0048	43,30
50	720112 0050	45,20
55	720112 0055	73,70
60	720112 0060	97,90
65	720112 0065	108,–
70	720112 0070	147,–

7134

Sets

Packaging	Contents	art.no.	€
9-pcs. roll-up case	3, 5, 7, 9, 11, 13, 15, 17, 19 mm (1 of each)	**720113** 0119	52,10
15-pcs. roll-up case	2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30 mm (1 of each)	720113 0109	135,–
19-pcs. roll-up case	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20 mm (1 of each)	720113 0115	112,–

7134



720113 0115

Drift

DIN 6458

- Octagonal
- Impact-resistant head, shank with baked enamel finish
- **Material:** Chrome vanadium air-hardened steel



Single

Length mm	Shank Ø mm	Point Ø mm	art.no.	€
120	10	1	**720125** 0001	1,60
120	10	2	720125 0002	1,60
120	10	3	720125 0003	1,60
120	10	4	720125 0004	1,60
120	10	5	720125 0005	1,60
120	10	6	720125 0006	1,60
120	12	7	720125 0007	1,60
120	12	8	720125 0008	1,61
120	12	10	720125 0010	1,98

7134

Sets

- DIN 7255

Packaging	Contents	art.no.	€
6-pcs. plastic stand	Drift punches (1 of each): 120 x 10 x 1, 2, 3, 4, 5 mm 1 centre punch 120 x 10 x 4 mm	**720130** 0006	10,70
6-pcs. metal cartridge	Drift punches (1 of each): 120 x 10 x 1, 2, 3, 4, 5 mm 1 centre punch 120 x 10 x 4 mm	720130 1006	18,80

7134



720130 0006



720130 1006

Pin punch

DIN 6450C

- Octagonal
- Impact-resistant head, shank with baked enamel finish, driving surface blank ground
- **Material:** Chrome vanadium air-hardened steel



Single

Length mm	Shank Ø mm	Point Ø mm	art.no.	€
150	10	2	**720115** 0002	2,27
150	10	2.5	720115 0025	2,25
150	10	3	720115 0003	2,10
150	10	3.5	720115 0035	2,25
150	10	4	720115 0004	2,10
150	10	4.5	720115 0045	2,25
150	10	5	720115 0005	2,10
150	10	6	720115 0006	2,10
150	12	7	720115 0007	2,45
150	12	8	720115 0008	2,45
150	12	10	720115 0010	2,45
150	14	12	720115 0012	3,45

7134

Sets

Shank Ø mm	Packaging	Contents	art.no.	€
10	6-pcs. plastic stand	3, 4, 5, 6, 8, 10 mm (1 of each)	**720120** 0006	13,50
10	6-pcs. metal cartridge	3, 4, 5, 6, 8, 10 mm (1 of each)	720120 1006	20,30

7134



720120 0006



720120 1006

ATORN® Soft face hammer

- Inserts: Cellulose acetate, blue, both sides
- Tough / oil and grease-resistant
- Base body made from high-quality die-cast zinc with impact-resistant handle
- Wooden handle made from seasoned ash
- Ergonomically shaped and painted



Soft face hammer

Head Ø mm	Head length mm	Length mm	Weight g	art.no.	€
25	86	270	240	**720567** 0025	12,20
30	95	280	370	720567 0030	17,40
40	107	325	630	720567 0040	21,50
50	115	340	950	720567 0050	30,20
				7116	



Inserts

Head Ø mm	art.no.	€
25	**720568** 0025	2,95
30	720568 0030	3,50
40	720568 0040	6,75
50	720568 0050	9,90
	7116	

ATORN® Soft face hammer, non-rebound

- Replaceable striking heads made from shatter-proof polyurethane
- Shaft made from precision steel tubing, powder-coated
- Ergonomically designed rubber handle
- Hammer body filled with cast iron balls for rebound-free work
- Full impact on metal while protecting joints and muscles by preventing rebound



Soft face hammer

Head Ø mm	Head length mm	Length mm	Weight g	art.no.	€
30	116	351	460	**720565** 0030	27,50
40	126	376	580	720565 0040	31,30
50	136	386	760	720565 0050	41,50
				7116	

Inserts

Head Ø mm	art.no.	€
30	**720566** 0030	2,95
40	720566 0040	4,25
50	720566 0050	5,60
	7116	

ATORN® 3K engineering hammer

- With unbreakable 3-component handle (aluminium core, polyamide and rubber components)
- Forged protective shaft collar and additional protective shaft sleeve
- Vibration-free and joint-friendly hammering
- Ergonomic and non-slip handling



Weight g	art.no.	€
300	**720506** 0300	18,80
500	720506 0500	21,50
1,000	720506 1000	30,40
1,500	720506 1500	33,80
2,000	720506 2000	42,70
	7116	

ATORN® Tool trolley

- Robust sheet steel design
- Plastic tabletop with 2 storage compartments
- Sidewalls made of perforated sheet metal for attaching tools or add-on parts
- Central locking mechanism with cylinder lock including 2 keys
- Full extension drawers (100 %) with roller guides and individual locks
- Drawer inner dimensions 527 x 348 mm
- Colour RAL 7035/5010 (light grey/gentian blue)
- **Free kerbside delivery within Germany, incl. packaging**



800301 0085

Equipment
- Drawer load capacity 20 kg
- Total load capacity 300 kg
- 4 rubber-tyred wheels, 100 mm: 2 fixed castors, 2 swivel castors - 1 with wheel stop
- Width 705 mm without handle

Width mm	Depth mm	Total height mm	No. drawers	Panel height mm	Weight kg	art.no.	€
778	496	915	6	4x80, 2x165	63	**800301** 0080	639,–
778	496	915	7	6x80, 1x165	65	800301 0085	679,–

8103

Equipment
- Drawer load capacity 20 kg
- Total load capacity 300 kg
- 4 rubber-tyred wheels, 125 mm: 2 fixed castors, 2 swivel castors (1 with wheel stop)
- Drawers with label space for pictogram stickers
- Vertical edge protection

- **Supplied with hard foam inserts and tool:**
  - Double ring spanner set, 8-pcs.
  - Double open-end spanner, 11-pcs.
  - Screwdriver set, 17-pcs.- Torx screwdriver, 11-pcs.
  - 1/4" and 1/2" socket set, 35-pcs.
  - Pliers set, 5-pcs.
  - Hexagonal T screwdriver, 8-pcs.
  - Open-end spanner set, 17-pcs.

Including hard foam inserts for careful storage of your tools





Width mm	Depth mm	Total height mm	No. drawers	Panel height mm	Weight kg	art.no.	€
778	496	913	6	4 x 80, 2 x 165	63	**800320** 0080	1.499,–
778	496	913	7	6 x 80, 1 x 165	65	800320 0085	1.529,–

8103

Equipment
- Drawer load capacity 25 kg
- Total load capacity 440 kg
- 4 rubber-tyred wheels, 125 mm: 2 fixed castors, 2 swivel castors - 1 with wheel stop
- Drawers with label space for pictogram stickers
- Vertical edge protection

Width mm	Depth mm	Total height mm	No. drawers	Panel height mm	Weight kg	art.no.	€
817	502	1,040	6	3x75, 3x160	82	**800301** 0090	859,–

8103



800301 0090

Accessories
- Compatible with tool trolleys 800301 0080, 800301 0085 and 800301 0090

Description	art.no.	€
Centre compartment rails 60x347 mm for panel height 75/80 mm (1 set = 5 units)	**800302** 0001	19,40
Centre compartment rails 120x347 mm for panel height 160/165 mm (1 set = 5 units)	800302 0002	26,60
Document holder for work documents DIN A4	800302 0003	18,20
Can holder for 3 cans incl. mounting kit	800302 0004	21,60
Storage box	800302 0005	28,20
Waste paper basket incl. mounting kit	800302 0006	68,–

8103


800302 0003


800302 0004


800302 0005


800302 0006

PRYOR Interchangeable steel type



- Special steel with precision design
- Suitable for marking steel up to 1,300 N/mm² in strength
- Set consists of 1 hand-held holder and 100 individual steel type pieces
- Several pieces of steel type can be inserted side by side in the holder.
- The precise design of the holder and the steel type produces clean, clear lettering with uniform spacing.
- For labelling name or rating plates as well as tools, machine parts etc.
- **Normal type:** the punched marking is directly legible

A	A	A	B	B	C	C	D	D	E	E	E	F	F	G	G	H	H	I
I	I	J	J	K	K	L	L	L	M	M	N	N	N	O	O	O	P	P	Q
R	R	R	S	S	S	T	T	U	U	U	V	W	W	X	X	Y	Z	&	/
/	–	–	.	.	,	,	1	1	1	1	2	2	2	2	3	3	3	4	4
4	4	5	5	5	6	6	6	7	7	7	8	8	8	9	9	9	0	0	0

Set composition (complete sets)

Complete sets with hand-held holders

Typeface height mm	max. support capacity of holder	art.no.	€
1.5	12	**731001** 0015	395,–
2.5	12	731001 0025	395,–
3.0	9	731001 0030	395,–
5.0	8	731001 0050	444,–
6.0	6	731001 0060	809,–
		7140	

Hand-held holder, individual

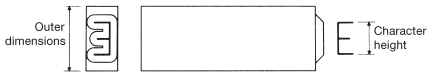
Type	for font height mm	art.no.	€
H3,2-20	1.0 / 1.5	**731010** 1015	96,–
H6,35-29	2.5 / 3.0	731010 2530	106,–
H8,0-39	5.0	731010 0050	116,–
H9,6-40	6.0	731010 0060	275,–
		7140	

Steel type sets

- Prices per set

Typeface height mm	Numbers 0-9 art.no.	€	Letters A-Z art.no.	€
1.5	**731030** 0200	61,–	**731040** 0200	159,–
2.5	731030 0300	61,–	731040 0300	159,–
3.0	731030 0400	61,–	731040 0400	159,–
5.0	731030 0500	71,–	731040 0500	183,–
6.0	731030 0600	105,–	731040 0600	275,–
	7140		7140	

Font size measurement



1.0mm	234ABC
1.5mm	234ABC
2.0mm	234ABC
2.5mm	234ABC
3.0mm	234ABC
4.0mm	234ABC
5.0mm	234AB
6.0mm	234A
10.0mm	234

Typeface and font size

10 identical steel type pieces

- Unit prices when purchased in PU

Engraving		1,5 mm art.no.	€		2,5 mm art.no.	€		3,0 mm art.no.	€		5,0 mm art.no.	€		6,0 mm art.no.	€
0	10	**731050** 0200	8,75	10	**731050** 0300	8,75	10	**731050** 0400	8,75	10	**731050** 0500	9,85	10	**731050** 0600	14,25
1	10	731050 0201	8,75	10	731050 0301	8,75	10	731050 0401	8,75	10	731050 0501	9,85	10	731050 0601	14,25
2	10	731050 0202	8,75	10	731050 0302	8,75	10	731050 0402	8,75	10	731050 0502	9,85	10	731050 0602	14,25
3	10	731050 0203	8,75	10	731050 0303	8,75	10	731050 0403	8,75	10	731050 0503	9,85	10	731050 0603	14,25
4	10	731050 0204	8,75	10	731050 0304	8,75	10	731050 0404	8,75	10	731050 0504	9,85	10	731050 0604	14,25
5	10	731050 0205	8,75	10	731050 0305	8,75	10	731050 0405	8,75	10	731050 0505	9,85	10	731050 0605	14,25
6	10	731050 0206	8,75	10	731050 0306	8,75	10	731050 0406	8,75	10	731050 0506	9,85	10	731050 0606	14,25
7	10	731050 0207	8,75	10	731050 0307	8,75	10	731050 0407	8,75	10	731050 0507	9,85	10	731050 0607	14,25
8	10	731050 0208	8,75	10	731050 0308	8,75	10	731050 0408	8,75	10	731050 0508	9,85	10	731050 0608	14,25
9	10	731050 0209	8,75	10	731050 0309	8,75	10	731050 0409	8,75	10	731050 0509	9,85	10	731050 0609	14,25
A	10	731050 0220	8,75	10	731050 0320	8,75	10	731050 0420	8,75	10	731050 0520	9,85	10	731050 0620	14,25
B	10	731050 0221	8,75	10	731050 0321	8,75	10	731050 0421	8,75	10	731050 0521	9,85	10	731050 0621	14,25
C	10	731050 0222	8,75	10	731050 0322	8,75	10	731050 0422	8,75	10	731050 0522	9,85	10	731050 0622	14,25
D	10	731050 0223	8,75	10	731050 0323	8,75	10	731050 0423	8,75	10	731050 0523	9,85	10	731050 0623	14,25
E	10	731050 0224	8,75	10	731050 0324	8,75	10	731050 0424	8,75	10	731050 0524	9,85	10	731050 0624	14,25
F	10	731050 0225	8,75	10	731050 0325	8,75	10	731050 0425	8,75	10	731050 0525	9,85	10	731050 0625	14,25
G	10	731050 0226	8,75	10	731050 0326	8,75	10	731050 0426	8,75	10	731050 0526	9,85	10	731050 0626	14,25
H	10	731050 0227	8,75	10	731050 0327	8,75	10	731050 0427	8,75	10	731050 0527	9,85	10	731050 0627	14,25
I	10	731050 0228	8,75	10	731050 0328	8,75	10	731050 0428	8,75	10	731050 0528	9,85	10	731050 0628	14,25
J	10	731050 0229	8,75	10	731050 0329	8,75	10	731050 0429	8,75	10	731050 0529	9,85	10	731050 0629	14,25
K	10	731050 0230	8,75	10	731050 0330	8,75	10	731050 0430	8,75	10	731050 0530	9,85	10	731050 0630	14,25
		7140			7140			7140			7140			7140	

Engraving		1,5 mm art.no.	€		2,5 mm art.no.	€		3,0 mm art.no.	€		5,0 mm art.no.	€		6,0 mm art.no.	€
L	10	731050 0231	8,75	10	731050 0331	8,75	10	731050 0431	8,75	10	731050 0531	9,85	10	731050 0631	14,25
M	10	731050 0232	8,75	10	731050 0332	8,75	10	731050 0432	8,75	10	731050 0532	9,85	10	731050 0632	14,25
N	10	731050 0233	8,75	10	731050 0333	8,75	10	731050 0433	8,75	10	731050 0533	9,85	10	731050 0633	14,25
O	10	731050 0234	8,75	10	731050 0334	8,75	10	731050 0434	8,75	10	731050 0534	9,85	10	731050 0634	14,25
P	10	731050 0235	8,75	10	731050 0335	8,75	10	731050 0435	8,75	10	731050 0535	9,85	10	731050 0635	14,25
Q	10	731050 0236	8,75	10	731050 0336	8,75	10	731050 0436	8,75	10	731050 0536	9,85	10	731050 0636	14,25
R	10	731050 0237	8,75	10	731050 0337	8,75	10	731050 0437	8,75	10	731050 0537	9,85	10	731050 0637	14,25
S	10	731050 0238	8,75	10	731050 0338	8,75	10	731050 0438	8,75	10	731050 0538	9,85	10	731050 0638	14,25
T	10	731050 0239	8,75	10	731050 0339	8,75	10	731050 0439	8,75	10	731050 0539	9,85	10	731050 0639	14,25
U	10	731050 0240	8,75	10	731050 0340	8,75	10	731050 0440	8,75	10	731050 0540	9,85	10	731050 0640	14,25
V	10	731050 0241	8,75	10	731050 0341	8,75	10	731050 0441	8,75	10	731050 0541	9,85	10	731050 0641	14,25
W	10	731050 0242	8,75	10	731050 0342	8,75	10	731050 0442	8,75	10	731050 0542	9,85	10	731050 0642	14,25
X	10	731050 0243	8,75	10	731050 0343	8,75	10	731050 0443	8,75	10	731050 0543	9,85	10	731050 0643	14,25
Y	10	731050 0244	8,75	10	731050 0344	8,75	10	731050 0444	8,75	10	731050 0544	9,85	10	731050 0644	14,25
Z	10	731050 0245	8,75	10	731050 0345	8,75	10	731050 0445	8,75	10	731050 0545	9,85	10	731050 0645	14,25
/	10	731050 0247	8,75	10	731050 0347	8,75	10	731050 0447	8,75	10	731050 0547	9,85	10	731050 0647	14,25
-	10	731050 0248	8,75	10	731050 0348	8,75	10	731050 0448	8,75	10	731050 0548	9,85	10	731050 0648	14,25
.	10	731050 0249	8,75	10	731050 0349	8,75	10	731050 0449	8,75	10	731050 0549	9,85	10	731050 0649	14,25
,	10	731050 0250	8,75	10	731050 0350	8,75	10	731050 0450	8,75	10	731050 0510	9,85	10	731050 0650	14,25
‘	10	731050 0252	8,75	10	731050 0352	8,75	10	731050 0452	8,75	10	731050 0552	9,85	10	731050 0652	14,25
&	10	731050 0246	8,75	10	731050 0346	8,75	10	731050 0446	8,75	10	731050 0546	9,85	10	731050 0646	14,25
Spaces	10	731060 0200	3,71	10	731060 0300	3,71	10	731060 0400	3,71	10	731060 0500	3,71	10	731060 0600	4,38
		7140			7140			7140			7140			7140	

PRYOR Precision hand punch



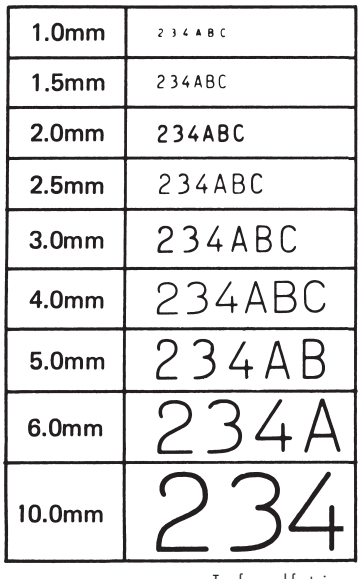
- Special steel numeral and letter stamps
- Forged blanks with perfectly centred precision engraving
- Stamp hardness 59 - 61 HRC
- Can be used with materials up to 1300 N/mm2 in strength
- **Normal type:** the punched marking is directly legible
- **Mirrored type:** the punched marking appears on the workpiece as a mirror image
- Numeral sets = 10 pieces, 0-9
Letter sets = 27 pieces, A-Z and &
- Plastic box
- Individual punch stamps available on request!

Sets in normal type

Typeface height mm	Shank quadratic x shank length mm	Numbers 0-9 art.no.	€	Letters A - Z, & art.no.	€
1.0	6.3 x 63	**730101** 0010	17,55	**730110** 0010	52,–
1.5	6.3 x 63	730101 0015	24,70	730110 0015	59,–
2.0	6.3 x 63	730101 0020	14,85	730110 0020	46,60
2.5	6.3 x 63	730101 0025	15,15	730110 0025	48,30
3.0	6.3 x 63	730101 0030	15,15	730110 0030	48,30
4.0	9.5 x 70	730101 0040	16,10	730110 0040	51,40
5.0	9.5 x 70	730101 0050	17,55	730110 0050	55,60
6.0	9.5 x 70	730101 0060	21,90	730110 0060	61,60
8.0	12.7 x 90	730101 0080	35,20	730110 0080	89,20
10.0	14.3 x 90	730101 0100	46,20	730110 0100	120,50
		7140		7140	

Mirrored type sets

Typeface height mm	Shank quadratic x shank length mm	Numbers 0-9 art.no.	€	Letters A-Z, & art.no.	€
2.0	6.3 x 63	**730120** 0020	25,–	**730130** 0020	70,–
3.0	6.3 x 63	730120 0030	26,–	730130 0030	71,60
4.0	9.5 x 70	730120 0040	27,60	730130 0040	77,60
5.0	9.5 x 70	730120 0050	30,40	730130 0050	82,60
6.0	9.5 x 70	730120 0060	33,20	730130 0060	92,40
		7140		7140	



Typeface and font size

Hand-protecting holder

- Ergonomic, allows a comfortable and more secure grip
- More precise work without the risk of finger injury
- Numeral / letter stamp can be attached using the nylon fabric band

Description	art.no.	€
Hand-protection holder GRIP0004	**730100** 1004	29,90
	7140	



SARA® Metal lettering device

- **Permanent lettering on conductive metallic objects**
- With time control and temperature limiter
- For professional black engraving with article designations, symbols and trademarks
- Supplied as a set in a plastic case: Engraving stamp, set of wax templates for self-created labels, contact plate, electrolyte container, engraving device with timer, cable for engraving stamp, bottle of electrolyte for general purposes, bottle of neutralyte, contact plate cable with alligator clip
- **Not suitable for marking digital measuring instruments!**



Description	Output kW	Input	Outlet	art.no.	€
Metal lettering device with timer	30	220 V~ 50/60 Hz	12 V~/AC	**730002** 0001	470,–
				7135	

Accessories

Description	art.no.	€
Electrolyte for general purposes, 500 ml	**730002** 0002	42,50
Electrolyte for stainless steel materials, 500 ml	730002 0003	42,50
Electrolyte for brass, copper and bronze, 500 ml	730002 0004	42,50
Electrolyte for aluminium, 500 ml	730002 0005	42,50
Electrolyte for galvanic surfaces, 500 ml	730002 0006	42,50
Electrolyte for chrome vanadium steels, 500 ml	730002 0007	42,50
Electrolyte for carbides, 500 ml	730002 0008	42,50
Neutralyte, 500 ml	730002 0009	24,80
Set of wax templates for self-labelling	730002 0010	37,50
	7135	



ATORN® Screw clamps

Torque screw clamp

- Bright-drawn profile rail with grooves on both sides
- Sliding and fixed brackets made from high-quality malleable cast iron
- Movable pressure plate with plastic protective cap





Clamp Ø mm	Projection mm	art.no.	€
120	65	**740101** 0120	11,10
160	80	740101 0160	13,10
200	100	740101 0200	18,10
250	120	740101 0250	22,10
300	120	740101 0300	27,40
400	120	740101 0400	33,50
500	120	740101 0500	34,20
600	120	740101 0600	36,20
800	120	740101 0800	40,60
1,000	120	740101 1000	45,50
1,500	120	740101 1500	54,50
2,000	120	740101 2000	67,–
		7120	

All-steel clamp

- Fixed clamp made from hardened and tempered profile steel
- Sliding clamp made from hardened, tempered and galvanised die-forged steel
- Movable pressure plate





Clamp Ø mm	Projection mm	art.no.	€
120	60	**740110** 0120	13,40
160	80	740110 0160	16,10
200	100	740110 0200	21,60
250	120	740110 0250	26,20
300	140	740110 0300	32,90
400	120	740110 0400	37,90
500	120	740110 0500	41,20
600	120	740110 0600	43,40
		7120	

ARIANA High-performance cutting fluid concentrate

- Water-miscible, **chlorine-free**
- Universal applications, with high additivation
- High level of corrosion protection even at residual concentration
- Particularly suitable for NC and CNC centres
- Application concentration 3 - 7 %
- pH value at 5 % concentration approx. 9.4
- Refractive index 1.1 (scale value = concentration)



Description	Contents l	art.no.	€
Canister	10	**742036** 1000	105,–
Canister	25	742036 2000	240,–
Tight-head drum	60	742036 6000	629,–
Tight-head drum	185	742036 1850	1.959,–
		7138	

ARIANA High-performance cutting oil

- **Chlorine and silicone-free**, a non-water-soluble heavy-duty cutting oil
- Universal cutting oil for all materials
- Massive increase in tool endurance
- Ideal for high-alloy steel grades, optimum workpiece surfaces
- Also for turning, milling, reaming, thread cutting, broaching, sawing, etc.
- Gentle on the skin and environmentally friendly, low volatility
- Applied with a squeeze bottle, sprayer or lubricating device
- Can also be used for minimum-volume lubrication



742037 0300 742037 0500 742037 5000

Description	Contents l	art.no.	€
Atomiser	0.3	**742037** 0300	10,35
Wash bottle	0.5	742037 0500	18,20
Canister	5.0	742037 5000	107,–
		7138	

ARIANA Thread cutting agent

- Water/soap-based paste
- Ideally suited to thread cutting, thread drilling, centring, broaching and milling
- Latest generation multi-purpose lubricant, applied directly from the squeeze bottle onto the metal surface to be treated, significantly increases tool life
- Semi-paste grease
- Ideal for all metals, including stainless steel
- **Free from petroleum, chlorine and sulphur**
- Light blue, odour-free, flash point > 225 °C, melting point 32 °C



742043 0250 742043 0500 742043 1000 742043 5000

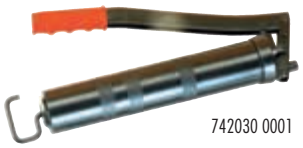
Contents ml	art.no.	€
250	**742043** 0250	10,95
500	742043 0500	20,40
1,000	742043 1000	30,50
5,000	742043 5000	127,–
	7138	



ATORN®
Performance demands quality

Hand lever-operated grease gun

- Made of steel
- Safety handle
- Connection thread M10x1
- With TÜV/GS certification in accordance with DIN 1283



742030 0001



742030 1000

Description	art.no.	€
Hand-lever operated pressure grease gun without grease cartridge	**742030** 0001	17,–
Case set incl. lever press, reinforced rubber hose, angled nozzle pipe, 2x straight nozzle pipe, universal mouthpiece, tip mouthpiece	742030 1000	129,–

7125

Accessories

Description	art.no.	€
Nozzle pipe 150 mm, straight	**742035** 0150	2,06
High-pressure reinforced hose 10x300 mm (burst pressure 1000 bar)	742035 0300	8,35
Hydraulic mouthpiece	742035 1000	3,39
Grease cartridge 400 g	742035 2400	5,70

7125



742035 0150

742035 0300



742035 1000



742035 2400

PIG® Repair putty

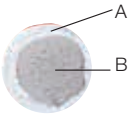
- **Bonds like a two-part epoxy resin putty, without oiliness**
- PIG® Repair Putty cements everything – iron, glass, brickwork and most plastics
- **Part A** and **Part B** of the prepared epoxy system are in the same tube – simply knead the putty and apply
- Solid in 20 minutes, harder than cement after one hour
- Solvent-free, contains no VOC
- Can be stored unopened for at least two years (at 20 - 25°C, protect against direct sunlight)
- **Unit prices (graduated)**

Can be used everywhere for quick, effortless repairs:

- Sealing leaks in steel drums
- Repairing holes and cracks in pipes
- Mending leaks on steel and fibreglass tanks
- Restoring or re-cutting threads
- Sealing cracks in casings
- Filling and smoothing holes and hollows in floors
- Repairing steam conduits and radiators
- Sealing leaky connections
- Filling nail holes in walls
- Repairing faulty toilets
- Closing multiple cavities during injection moulding
- Reinforcing cast steel moulds
- Sealing holes in castings during production
- Making temporary repairs to heating ducts
- Repairing transformers, porcelain bushings and re-closers
- Patching aluminium containers during the production process
- Creating models, holding devices and prototypes
- Carrying out preliminary tube repairs to large vacuum cleaning systems, and much more.







Length mm	art.no.		€		€
180	**742070** 0001	1	12,90	12	8,80
	9204	9204			

Paper tissue rolls and cleaning cloths

- Unit prices when purchased in PU

Even more handy and absorbent

Paper tissue rolls Multiclean®

- Suitable for industry and trade use (e.g. machine maintenance)

Description	Dimensions	Length m	Contents	D mm		art.no.	€
2-ply	36 x 36cm	360	Approx. 1000 sheets per roll	290	2	**720596** 0004	26,90
3-ply	38 x 22cm	380	Approx. 1000 sheets per roll	370	1	720596 0003	28,30
3-ply	36 x 36cm	360	Approx. 1000 sheets per roll	375	1	720596 0005	37,90

7138



Paper tissue rolls Multiclean® plus

- Very good grip, high-volume and even more absorbent

Description	Dimensions	Length m	Contents	D mm		art.no.	€
3-ply	36 x 36cm	180	Approx. 500 sheets per roll	275	2	**720592** 0004	24,–

7138



Floor stand with refuse sack holder (supplied without paper tissue roll)

- Suitable for paper tissue rolls up to 42 cm wide

Description	art.no.	€
Without paper tissue roll and refuse bag	**720593** 0002	83,50
with paper tissue roll 36 x 36 cm (360 m, 3-ply) and 120 l refuse sack	720593 0010	119,–

7138



Wall-mounted holder with refuse sack holder (supplied without paper tissue roll)

- Suitable for paper tissue rolls up to 42 cm wide

Description	art.no.	€
Without paper tissue roll and refuse bag	**720594** 0002	55,50

7138



Refuse sack

Volumes l	Contents	Colour	art.no.	€
120	1 roll of 15 bags	Blue	**720598** 0001	6,45

7138

Cleaning cloths WiperBowl® Polytex®

- High cloth quality for individual use; double-sided, soft and abrasive
- Lifts dirt deposits including heavy grease, lubricant, adhesive, oil, tar and carbon.
- Suitable for almost all materials and surfaces in industrial and trade fields, for vehicle care as well as cleaning machine controls, computer keyboards, telephone receivers and even sensitive surfaces
- Particularly skin-friendly thanks to gentle cleaning substances with a pleasant, fresh orange scent
- Perforated sheets make cloths easy to remove

Description	Contents	Dimensions	art.no.	€
Cleaning cloths in dispenser bucket	72 sheets	25 x 25 cm	**720597** 0001	20,60

7138



NOGA Deburring tools

Deburring tools, model S blades

model	Description	suitable blades	art.no.	€
E01000	Aluminium hexagonal handle with non-replaceable S 10 blade	-	**750101** 0008	5,50
EO 2000	Plastic hexagonal handle with 1x S 10 blade, blade mount 3.2 mm diameter	All blades Model S (3.2 mm)	750101 0009	3,80
RB 1000	Aluminium hexagonal handle with 1 blade S 10 blade mount 3.2 mm diameter	All blades Model S (3.2 mm)	750101 0012	8,70
NG 1003	Plastic handle NG-1 with blade S 10, S 20, S 35 (1 of each)	All blades Model S (3.2 mm)	750110 1003	13,10
NG 1005	Plastic handle NG-1 with blade S10, S20, S35, S101, S202 (1 of each)	All blades Model S (3.2 mm)	750110 1005	16,40
NG 3003	Plastic handle NG-3 with telescopic shank, 1 holder S with telescopic shank with blade S100, S20, S30 (1 of each)	All blades Model S (3.2 mm)	750110 3003	17,10

7143



Deburring tools, model N blades

model	Description	suitable blades	art.no.	€
TB 1000	Aluminium hexagonal handle with 1 blade N1 blade mount 2.6 mm diameter	All blades Model N (2.6 mm)	**750101** 1020	7,10
NG 2002	Plastic handle NG-2 with N1 and N2 blades (1 of each)	All blades Model N (2.6 mm)	750101 2002	11,10
NG 2004	Plastic handle N G-2 with N1, N2, N3, N6 blades (1 of each)	All blades Model N (2.6 mm)	750101 2004	14,95
NG 3002	Plastic handle NG-3, 1 x blade holder N with N1 and N2 blades (1 of each)	All blades Model N (2.6 mm)	750101 3002	15,–

7143



Deburring tools, model N and S blades

model	Description	suitable blades	art.no.	€
LB 1000	Uni plastic grip, extendible twin-blade holder SN 20-110 mm (N) or 20-94 mm (S), holding fixtures 2.6 mm and 3.2 mm, blades N1, N2 (1 of each)	All blades Model N (2.6 mm) and Model S (3.2 mm)	**750101** 1010	15,50

7143



Rear-side deburring tools and countersinks

model	Description	suitable blades	art.no.	€
RC 1000	Reverse deburring tool, aluminium handle with blade R1, range 3-5.5 mm, can be used for forwards and reverse work	R1	**750120** 1000	38,10
RC 2000	Rear-side deburring tool, aluminium handle with blade R2, range 5-10 mm, can be used for front and rear-side work	R2	750120 2000	39,60
RC 2200	Rear-side deburring tool, aluminium handle with blade R3, range 10-22 mm, can be used for front and rear-side work	R3	750120 2200	45,40
NG 3100	Plastic handle NG-3, 1x blade holder C, 1x countersink C20	All countersinks Model C	750101 3100	33,50

7143



Reverse deburring tool set

model	Description	suitable blades	art.no.	€
RC 3300	Reverse deburring tool set, aluminium handle comprising RC 1000, RC 2000, RC 2200	R1, R2, R3	**750505** 3300	117,50

7145





Deburring tools, ceramic blades

model	Description	suitable blades	art.no.	€
CR2000	Handle CERA-Cut CR2100 with blade CR2200, convex ceramic blade with very long service life, ideal for plastics and other soft materials	CR2200, CR2500	**750105** 2000	32,–
CR2300	Handle CERA-Cut CR2100 with blade CR2500, concave ceramic blade with very long service life, ideal for plastics and other soft materials	CR2200, CR2500	750105 2300	32,50
CR1100	Soft-grip handle with non-replaceable ceramic blade with extremely long service life, ideal for plastics and other soft materials		750105 1100	40,–
CR1500	Soft-grip handle with ceramic blade CR1550 with extremely long service life, ideal for plastics and other metals	CR1550	750105 1500	28,30
CR4100	Plastic handle for mini ceramic scraper blades (ceramic blade CR4500)	CR4500	750105 4101	34,30

7143





Deburring tools, scraper blades

model	Description	suitable blades	art.no.	€
SC1000	Uni handle with blade T 120, extendible blade can be locked in any position	T 120	**750105** 1005	20,20
NG3700	Handle NG-3, holder D with blade D 50	All D blades	750105 3700	20,20
NG3710	Handle NG-3, holder D with blade D 66 for deburring the rear side of crosswise boreholes with diameters from 4 mm	All D blades	750105 3710	18,10
SC8000	Aluminium hexagonal handle SC with blade T 80	T 80	750105 0001	16,20
SC1500	Aluminium hexagonal handle SC with blade T 120	T 120	750505 1500	32,–

7143



Special deburring tools

model	Description	suitable blades	art.no.	€
NG3200	Handle NG-3, holder L with blade L3 for range 1-8 mm	L3, L4, L5, L6, L7	**750107** 3200	17,70
DB 1000	Plastic handle with hand protection with 2 blades N 80	N 80, N 80 M42	750115 1001	19,50

7143



NOGA Scraper set YT2000

- Set consists of one D75 scraper, one T80 scraper and the new YT1000 handle
- Quick-release tool replacement
- Flexible clamping handle, fits any hand



model	Contents	art.no.	€
YT200	Handle YT 1000 and blades 1x D75, 1x T80	**750505** 4000	19,80

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NOGA Handle YT1000

- **For needle-point files, diamond files and scraper blades**
- Quick-release tool replacement
- Flexible clamping handle, fits any hand
- Supplied without blades

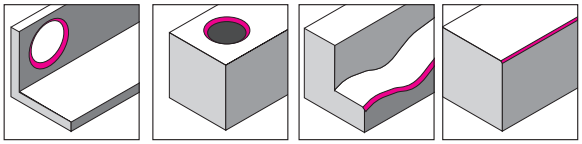


model	Clamp Ø mm	Length mm	art.no.	€
YT 1000	2.2 to 4.5	90	**750501** 4000	5,80

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NOGA Deburring blades

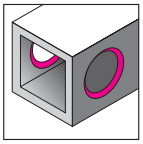
- 2.6 mm and 3.2 mm rotary blades
- Extensive range for quick and easy deburring
- **extra blades for left-handed users on request**



N-blades, universal

model	appropriate for	Angle °	Material	Hardness	Holding fixture Ø mm	Design		art.no.	€
N1	Steel, aluminium, plastics	40	HSS M2	63Rc	2.6	Right-hand cutting edge	10	**751001** 0001	1,50
N1 TiN	Abrasive plastics	40	HSS M2 TiN	63Rc	2.6	Right-hand cutting edge	10	751001 1001	2,89
N1 (left-hand)	Steel, aluminium, plastics	40	HSS M2	63Rc	2.6	Left-hand cutting edge	10	751001 0010	2,75
N1C	Hardened steel, special plastic	50	Solid carbide	1400-1700HV	2.6	Right-hand cutting edge	1	751001 3001	7,15
N1D	Glass, ceramics	-	Diamond	1400-1700HV	2.6	Right-hand cutting edge	1	751001 2001	13,90
N10	Plastic, harder materials	45	HSS M35	65Rc	2.6	Right-hand cutting edge	10	751001 0070	2,37
N2	Brass, cast iron	80	HSS M2	63Rc	2.6	Left-hand cutting edge	10	751001 0020	1,50
N2 TiN	Stainless steel	80	HSS M2 TiN	63Rc	2.6	Left-hand cutting edge	10	751001 1020	2,89
N2C	Hardened steel, special plastic	80	Solid carbide	1400-1700HV	2.6	Right-hand/left-hand cutting edge	1	751001 3020	7,15

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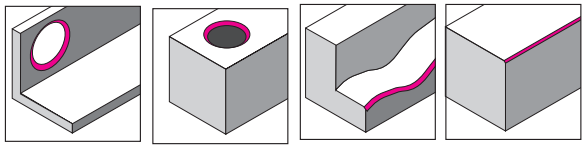
N-blades, reverse deburring tool

model	appropriate for	Angle °	Material	Hardness	Holding fixture Ø mm	Design		art.no.	€
N3	Internal and external deburring, steel, aluminium	50	HSS M2	63Rc	2.6	Right-hand cutting edge	10	**751001** 0030	1,86
N6	Rear side of workpieces, steel, aluminium	40	HSS M2	63Rc	2.6	Right-hand cutting edge	10	751001 0060	5,45

7144



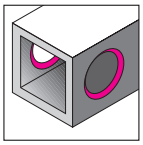




S-blades, universal

model	appropriate for	Holding fixture Ø mm	Angle °	Material	Hardness	Design		art.no.	€
S10	Steel, aluminium, plastics	3.2	40	HSS M2	63Rc	Right-hand cutting edge	10	**751005** 0001	1,75
S10 TiN	Abrasive plastics	3.2	40	HSS M2 TiN	63Rc	Right-hand cutting edge	10	751005 1001	3,35
S10 (left-hand)	Steel, aluminium, plastics	3.2	40	HSS M2	63Rc	Left-hand cutting edge	10	751005 0010	2,99
S10C	Hardened steel, special plastic	3.2	50	Solid carbide	1400-1700HV	Right-hand cutting edge	1	751005 0005	7,–
S10D	Glass, ceramics	3.2	-	Diamond	1400-1700HV	Right-hand cutting edge	1	751005 2001	17,10
BS9110	Steel, aluminium, plastics	3.2	40	HSS	63Rc	Right-hand blade, with plastic cap	10	751005 9110	8,70
S100	Plastic, harder materials	3.2	78	HSS M35	65Rc	Right-hand cutting edge	10	751005 0100	1,75
S100 TiN	Plastic, harder materials	3.2	78	HSS M35 TiN	65Rc	Right-hand cutting edge	10	751005 1100	4,18
S20	Brass, grey cast iron	3.2	60	HSS M2	63Rc	Left-hand cutting edge	10	751005 0020	1,75
S20 TiN	Stainless steel	3.2	60	HSS M2 TiN	63Rc	Left-hand cutting edge	10	751005 1020	4,18
S20C	Hardened steel, special plastic	3.2	80	Solid carbide	1400-1700HV	Right-hand/left-hand cutting edge	1	751005 0025	7,–
S35	Straight edges, all materials	3.2	55	HSS M2	63Rc	Right-hand/left-hand cutting edge	10	751005 0035	1,75
S101	Fine edges, all materials	3.2	40	HSS M2	63Rc	Right-hand cutting edge	10	751005 0101	1,75
S101 TiN	Fine edges, all materials	3.2	40	HSS M2 TiN	63Rc	Right-hand cutting edge	10	751005 1010	3,35
S101 (left-hand)	Fine edges, all materials	3.2	40	HSS M2	63Rc	Left-hand cutting edge	10	751005 0110	2,99
S150	Bores < Ø 1.5 mm	3.2	45	HSS M2	63Rc	Right-hand cutting edge	10	751005 0150	1,75
S150 TiN	Bores < Ø 1.5 mm	3.2	45	HSS M2 TiN	63Rc	Right-hand cutting edge	10	751005 1050	4,18
S202	Brass, grey cast iron	3.2	55	HSS M2	63Rc	Left-hand cutting edge	10	751005 0202	1,75
S202 TiN	Brass, grey cast iron	3.2	55	HSS M2 TiN	63Rc	Left-hand cutting edge	10	751005 1202	4,18

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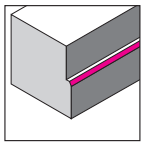


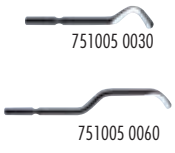


S-blades, reverse deburring tool

model	appropriate for	Angle °	Material	Hardness	Holding fixture Ø mm	Design		art.no.	€
S30	Internal and external deburring, steel, aluminium	40	HSS M2	63Rc	3.2	Right-hand cutting edge	10	**751005** 0030	1,75
S60	Rear side of workpieces, steel, aluminium	40	HSS M2	63Rc	3.2	Right-hand cutting edge	10	751005 0060	6,–

7144





S-blades, step deburring tool

model	appropriate for	Angle °	Material	Hardness	Holding fixture Ø mm	Design		art.no.	€
S80	Shallow steps	35	HSS M2	63Rc	3.2	Right-hand cutting edge	10	**751005** 0080	2,89
S80 TiN	Shallow steps	35	HSS M2 TiN	63Rc	3.2	Right-hand cutting edge	10	751005 1080	5,20

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Blade set

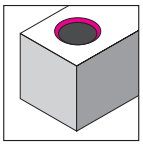
appropriate for	Description	model	art.no.	€
For steel, aluminium, plastics, brass and cast iron	S10, S20, S30, S35, S60, S70, S100C, S101, S150, S202 blade (1 of each)	BS9999	**750505** 9999	27,20

7145



NOGA Countersinking bits

- **HSS**
- 90° countersink angle



Deburring heads

model	Holding fixture Ø mm	Diameter range mm	Material	Hardness	art.no.	€
C12	M7	1 - 12	HSS M2	63Rc	**751020** 0012	18,10
C20	M7	1 - 20	HSS M2	63Rc	751020 0020	25,30
C30	M7	1 - 30	HSS M2	63Rc	751020 0030	37,50
RD3,2	3.2	0 - 3	HSS M2	63Rc	751020 0032	12,90
RD6,3	3.2	1 - 6.3	HSS M2	63Rc	751020 1063	16,50
RD8,3	3.2	1 - 8.3	HSS M2	63Rc	751020 1083	16,70
RD10,4	3.2	1 - 10.4	HSS M2	63Rc	751020 1105	17,–
RD16,5	3.2	1 - 16.5	HSS M2	63Rc	751020 1650	22,–
RD20	3.2	1 - 20	HSS M2	63Rc	751020 2201	32,70

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751020 0012


751020 1063


751020 0020

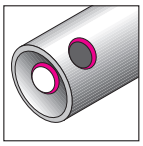

751020 1083


751020 0030


751020 1105


751020 0032


751020 1650



Blades for internal and external hole machining

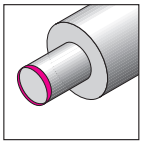
model	Holding fixture Ø mm	Diameter range mm	Material	Hardness	art.no.	€
R1	-	3 - 5.5	HSS M2	63Rc	**751025** 0001	11,30
R2	-	5 - 10	HSS M2	63Rc	751025 0002	13,–
R3	-	10 - 22	HSS M2	63Rc	751025 0003	21,10

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751025 0001


751025 0002


751025 0003



Exterior deburring

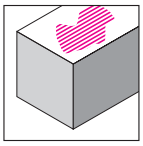
model	Holding fixture Ø mm	Diameter range mm	Material	Hardness	art.no.	€
RDE18	3.2	4 - 18	HSS M2	63Rc	**751020** 0100	15,60

7144


751020 0100

NOGA Scraper blades

- Wide range of applications
- Quick and easy to use



Scraper blades for surfaces

model	Holding fixture Ø mm	Ø mm	Length mm	Angle °	Material	Hardness	art.no.	€
D50	3.2	2.5	50	60	HSS M2	63Rc	**751015** 0050	8,15
D55	3.2	2.5	50	60	Solid carbide	1400-1700HV	751015 0055	21,20
D75	3.2	2.5	75	60	HSS M2	63Rc	751015 0075	9,20
T80	-	4.2	80	60	115 Cr V3	63Rc	751015 0080	8,95
T120	-	7.4	120	60	115 Cr V3	63Rc	751015 0120	17,25
D50TIN	3.2	2.5	50	60	HSS M2	63Rc	751015 5012	13,50

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751015 0050

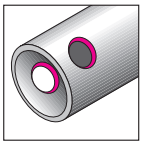

751015 0080


751015 0055


751015 0120


751015 0075


751015 5012



Scraper blades for reverse deburring

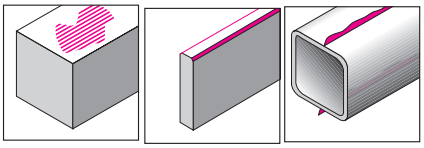
model	Holding fixture Ø mm	Ø mm	Length mm	Angle °	Material	Hardness	art.no.	€
D66	3.2	2.7	50	50	HSS M2	63Rc	**751015** 0066	6,35
D77	3.2	2.7	75	50	HSS M2	63Rc	751015 0077	9,20

7144


751015 0066


751015 0077

Scraper blades for surfaces, flanks, weld seams



model	Holding fixture Ø mm	Ø mm	Length mm	Angle °	Material	Hardness	art.no.	€
CR2200	-	-	-	90	Ceramics	1400-1700HV	**751015** 2200	22,90
CR2500	-	-	-	90	Ceramics	1400-1700HV	751015 2500	25,40
S70	3.2	3.2	57	45	HSS M2	63Rc	751005 0070	6,25

7144


751005 0070

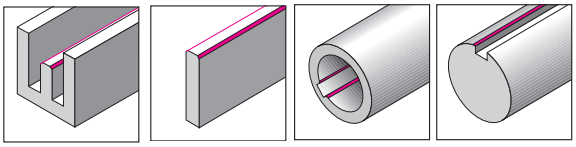

751015 2200


751015 2500

NOGA Double-edge cutting blades

- **HSS**
- Deburring on both sides in one stroke

Double-edge cutting blades for flanks



model	Working area mm	Angle °	Material	Hardness	suitable for holder		art.no.	€
L3	1- 8	50	HSS M2	65Rc	Holder L	1	**751015** 0003	4,35
L4	0 - 0.25	50	HSS M2	65Rc	Holder L	1	751015 0004	4,35
N80 (for use in pairs)	0 - 12	55	HSS M2	65Rc	Holder N	10	751010 0080	4,39
N80 M42 (for use in pairs)	0 - 12	55	HSS M42	67Rc	Holder N	10	751010 0180	7,20

7144

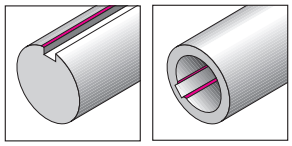

751015 0003


751010 0080


751015 0004


751010 0180

Double-edge cutting blades for grooving



model	Working area mm	Angle °	Material	Hardness	suitable for holder		art.no.	€
N70K	1.2 - 8	55	HSS M2	65Rc	Holder K	1	**751010** 0070	6,95
N80K	2.4 - 11	55	HSS M2	65Rc	Holder K	10	751010 0085	5,30
N80KM42	2.4 - 11	55	HSS M42	67Rc	Holder K	10	751010 0185	7,20
N90K	3 - 15	55	HSS M2	65Rc	Holder K	1	751010 0090	7,75

7144

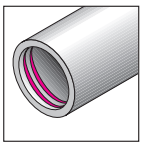

751010 0070


751010 0185


751010 0085


751010 0090

Double-edge cutting blades for thread flanks



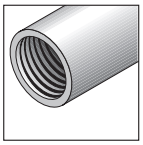
model	Working area mm	Angle °	Material	Hardness	suitable for holder	art.no.	€
OR	1 - 3	40	HSS M2	65Rc	Holder SN, S-holder NG1-handle	**751005** 0310	7,65

7144


751005 0310

NOGA Thread deburring blades

- **HSS**
- 3.2 mm rotary blade
- For cleaning internal threads



model	Holding fixture Ø mm	Working area mm	Angle °	Material	Hardness		art.no.	€
TC	3.2	1 - 9	90	HSS M2	58Rc	10	**751005** 0300	5,45

7144


751005 0300

NOGA Blade holder

model	Description	Length mm	suitable blades	art.no.	€
EL02003	Holder S, extendible 30-115 mm, suitable for handle NG-3	131	All blades Model S (Ø 3.2 mm)	**750501** 2002	9,20
EL01033	Holder N, extendible 25-115 mm, suitable for handle NG-3	131	All blades Model N (Ø 2.6 mm)	750501 2003	9,20
CH3000	Holder C, with external thread M7 for holding countersinks, suitable for handle NG-3	131	Countersink C12, C20, C30	750501 2004	7,40
EL06023	Holder T, suitable for handle NG-3	131	Scrapers T 50, T 70	750501 2005	7,40
EL05003	Holder D, with clamping screw M3 and clamping key, suitable for handle NG-3	131	Scrapers D 50, D 66	750501 2006	6,25
EL04003	Holder K, with clamping screw M3, suitable for handle NG-3	135	All blades Model K	750501 2007	7,85
EL07013	Holder L, with square mount 3 mm and clamping screw 4 mm, suitable for handle NG-3	131	All blades Model L	750501 2008	7,85
SN1000	Holder SN with double-ended extendible blade mount 2.6 and 3.2 mm, suitable for UNI handle	145 x Ø 7	All blades Model S and N	750501 2001	10,40

7143



NOGA Handles

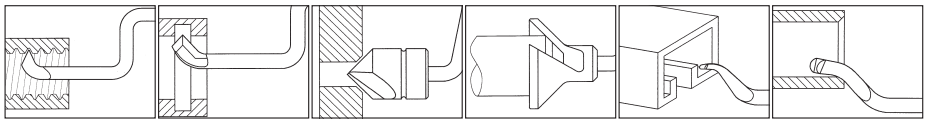
model	Description	Dimensions	suitable blades	art.no.	€
NG 1000	Handle NG-1 with spare compartment in cap	-	All blades Model S (Ø 3.2 mm)	**750501** 3010	8,25
NG 2000	Handle NG-2 with spare compartment in cap	-	All blades Model N (Ø 2.6 mm)	750501 3020	8,25
NG 3000	Handle NG-3 with spare compartment in cap	-	All holders (not SN 1000)	750501 3030	8,25
UH1000	UNI handle, universal plastic handle	130 x 26	Holder SN, as well as blades T120	750501 1010	7,85
RB1600	RG-handle, hexagonal, aluminium	130 x 12	S-blades, Ø 3.2 mm	750501 1600	9,40
SC1300	SC-handle	120 x 12	Scraping tools D50, D55, D66, D75, D77, T80	750501 1300	12,40
PV1000	Solid aluminium handle with 3-jaw chuck	-	All tools, blades and holders 0.8-8 mm	750501 1020	28,50

7143



NOGA 007 universal deburring tool set

- Set for deburring and countersinking work
- Thread cleaning and deburring for female threads from Ø 9 mm
- Deburring O-ring recesses from Ø 3 mm
- Countersinking up to Ø 16.5 mm
- External deburring from Ø 4 mm to Ø 18 mm
- Deburring small profiles and bores from Ø 1.5 mm
- Deburring particularly hard materials



model	Description	art.no.	€
SP1007	RB handle, aluminium, blade OR, RD 16, 5, RDE18, TC, S100, S150 (1 of each)	**750505** 0007	51,40

7145



NOGA Deburring tool set in a hand-held fold-out holder

- 4 in 1 system
- Ideally suitable for steel, aluminium and plastics



Description	art.no.	€
1 S10 deburring tool, 1 D50 scraper, 1 N2 deburring tool, 1 90° countersink for 1-10.4 mm	**750510** 1000	65,–
	7143	

NOGA Mini hand-held deburring tool set

- Ideal for tool and mould makers
- For very fine work
- Blades are **not** replaceable



Set

model	Contents	art.no.	€
FT3000	1 mini deburring tool, 1 mini scraper, 1 mini countersink	**750506** 3000	32,90
		7144	

Spare blades

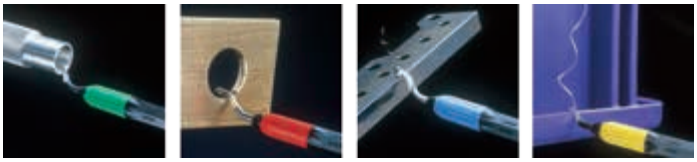
Description	art.no.	€
Mini deburring tool	**750506** 1000	7,20
Mini scraper	750506 1100	14,40
Mini countersink	750506 1200	11,60
	7144	



NOGA Universal hand-held deburring tool set

- **4 pcs.**
- Hand-held deburring tools, colour-coded and fitted with different blades
- For machining **steel, brass, aluminium, plastic**



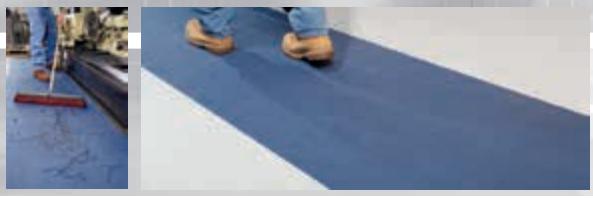


model	Description	art.no.	€
EO 2100	4 EO handles, black, colour-coded, blade S10, S20, S100, S150 (1 of each)	**750505** 0004	18,10
		7145	

Grippy Mat absorbent mat

- Adhesive underside
- Stitched surface

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NOGA Hand-held deburring tool sets

In a blister pack

model	Description	appropriate for	art.no.	€
NG8000	NG-2 handle, 10 blades N1	For steel, aluminium and plastics	**750505** 8000	20,20
NG8050	NG-2 handle, 20 blades N1	For steel, aluminium and plastics	750505 8050	32,–
NG8100	NG-2 handle, 20 blades N10	For plastics and hard materials	750505 8100	28,90
NG8150	NG-1 handle, 10 blades S10	For steel, aluminium and plastics	750505 8150	19,20
NG8200	NG-1 handle, 20 blades S10	For steel, aluminium and plastics	750505 8200	29,70
NG8250	NG-1 handle, 20 blades S100	For plastics and hard materials	750505 8250	40,50
NG8300	NG-3 handle, 1 holder N, 5 blades N1 5 blades N2	For steel, aluminium, plastics, brass and cast iron	750505 8300	23,40
NG8350	NG-3 handle, 1 holder S, 5 blades S10, 5 blades S20	For steel, aluminium, plastics, brass and cast iron	750505 8350	24,80

7145



Hand-held deburring tool sets

model	Dimensions	Description	Contents	art.no.	€
NG9200	251 x 120 x 40	Deburring tool range “Bronze”, 13-pcs.	1 NG-3-handle 1 holder N, 1 holder S 1 holder C, 1 countersink insert C20 1 holder D, 1 scraper-blade D50 1 of each blade N1, N2, S10, S20, S30, S150	**751510** 9200	73,–
NG9300	251 x 120 x 40	Deburring tool range “Silver”, 11-pcs.	1 NG-3 handle 1 holder S 1 reverse deburring tool RC 2000 1 plastic six-sided grip holder diameter 3.2 mm per 1 RotoDrive RD 3.2 mm, 10.4 mm, 16.5 mm 1 external RotoDrive 18.0 mm 1 of each blade S10, S20, S30	751510 9300	105,–
NG9400	270 x 230 x 50	Deburring tool range “Gold”, 20-pcs.	1 NG-3 handle 1 aluminium hexagonal handle SC 1300 1 plastic hexagonal handle, mount diameter 3.2 mm 1 of each holder S, 1 holder N, 1 holder C, 1 countersink insert C20 1 holder D, 1 scraper blade D50 1 holder K, 1 blade N80K 1 of each blade N1, N2, S10, S20, S30, S150, D66, RD10,4 1 hexagonal offset screwdriver 1.5 mm	751510 9400	115,–
NG9500	270 x 230 x 50	Platinum deburring tool set, 25-pcs.	1 hand-held deburring tool DB 1000 1NG-1 handle, 1 NG-3-handle 1 aluminium hexagonal handle TB 1000 1 holder S, 1 holder N, 1 holder K, 1 blade N80K, 1 holder D, 1 scraper blade D66, 1 holder C, 1 countersink insert C20 1 holder T, 1 scraper blade T70 1 RotoDrive RD 10.4 mm 1 External RotoDrive 18.0 mm 1 of each blade N1, N2, S10, S20, S30, S150 1 hexagonal offset screwdriver 1.5 mm	751510 9500	184,–
SP7700	270 x 230 x 50	Deburring tool set “TOP7”, 7-pcs.	1 NG3100, 1 NG3700, 1 NG3200, 1 SC8000, 1 NG3300, 1 NG3710, 1 NG3003	751510 7700	129,90

7145

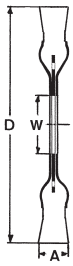






ATORN® Steel wire circular brushes

- For direct attachment to angle grinders
- Made of knotted steel wire with diameter 0.5 mm
- For cleaning, deburring, paint-stripping, removing rust, slag and scale





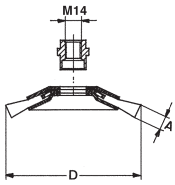


Round brush, straight

- For extreme use at high peripheral speeds

D mm	A mm	Number of cables	W mm	Rotational speed max. r/min		art.no.	€
115	12	20	22.23	12500	5	**622002** 0115	9,05
178	13	32	22.23	12000	5	622002 0178	17,50

6121





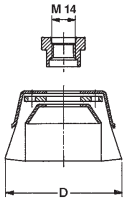


Round brush, tapered

- For heavy-duty cleaning jobs
- Tapered shape for difficult-to-access areas

D mm	A mm	Number of cables	Thread	Rotational speed max. r/min		art.no.	€
100	10	18	M14	12500	5	**623001** 0100	8,45

6121





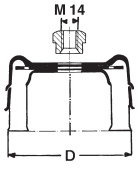


Cup brush, tapered

- For heavy-duty cleaning jobs on smooth surfaces

D mm	Thread	Rotational speed max. r/min		art.no.	€
65	M14	12500	5	**624001** 0065	6,45

6121



Extended service life thanks to removable support ring



Cup brush, straight

- For heavy-duty cleaning jobs and large surfaces
- The removable support ring prevents the bristle material from being pressed to the side

D mm	Thread	Rotational speed max. r/min		art.no.	€
80	M14	8500	5	**624002** 0080	13,55
100	M14	8500	1	624002 0100	15,40

6121

OPTIMAL SOLUTIONS FOR
GRINDING
AND
CUTTING
PFERD



PFERD
Grinding and cutting
763 pages
Art.no. 019900 0216

Overview of all free manufacturers' catalogues on page 14/15

VARTA Batteries

- High-quality branded long-life alkaline batteries
- Price per pack

Batteries

Designation	Tension V	Type	Contents	art.no.	€
LR03, Micro, AAA	1,5	Alkaline / High Energy	PU=4 units	**548079** 4003	6,49
LR6, Mignon, AA	1,5	Alkaline / High Energy	PU=4 units	548079 4006	6,49
LR14, Baby	1,5	Alkaline / High Energy	PU=2 units	548079 4014	6,49
LR20, Mono, D	1,5	Alkaline / High Energy	PU=2 units	548079 4020	6,49
6LR61, 9 V block	9,0	Alkaline / High Energy	PU=1 unit	548079 4022	6,49
				5125	



Longlife / Power rechargeable batteries

Designation	Tension V	Type	Contents	art.no.	€
LR3, Micro battery, AAA	1.2	Longlife battery	PU=2 units	**548079** 7001	7,69
LR6, Mignon battery, AA	1.2	Longlife battery	PU=2 units	548079 7002	7,69
LR14, Baby battery, C	1.2	Power battery	PU=2 units	548079 7103	15,39
LR20, Mono battery, D	1.2	Power battery	PU=2 units	548079 7104	15,39
6LR61, 9 V block battery, E	8.4	Power battery	PU=1 unit	548079 7105	13,29
				5125	



Button batteries / special batteries

Designation	Tension V	Type	Contents	art.no.	€
Button battery 13ZL	1.4	Zinc-air	PU=6 units	**548079** 4606	8,49
Button battery 10GA	1.5	Alkaline / High Energy	PU=1 unit	548079 4706	3,39
Button battery CR2032	3.0	Lithium	PU=1 unit	548079 6032	4,99
Button battery CR2450	3.0	Lithium	PU=1 unit	548079 6450	4,99
Button battery SR 44, 357	1.55	Silver oxide	PU=1 unit	500534 0001	4,25
23A	12	Alkaline / Electronic	PU=1 unit	548079 4223	4,99
LR1,Lady	1.5	Alkaline / Electronic	PU=1 unit	548079 4001	2,22
CR123A	3.0	Lithium	PU=1 unit	548079 6205	7,80
				5125	



ATORN® Professional fold-out light

- Latest LED technology
- Robust and splash-proof plastic housing with rubber-coated gripping surface
- With residual capacity and charge control display
- Various lighting modes
- Main light 280 lumen and additional light 180 lumen
- **Accessories:** incl. micro USB charging cable 1.5 m and USB AC charging adapter

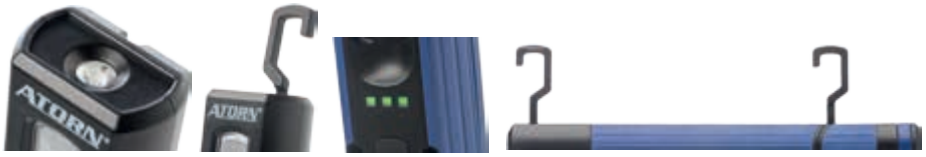




Length mm	Weight kg	art.no.	€
131	183	**774003** 0013	50,–
		7150	

ATORN® Professional workshop light

- Latest LED technology
- Robust and splash-proof plastic housing with rubber-coated gripping surface
- Attachment hooks can be removed and rotated 360°
- Belt clip and magnetic holder on the underside
- Various lighting modes
- Main light 105 lumen
- **Accessories:** incl. micro USB charging cable 1.5 m and USB AC charging adapter





Length mm	Weight kg	art.no.	€
266	340	**774003** 0012	59,–
		7150	

ATORN® LED workplace light

LED workplace light

- The light is completely water-proof and in combination with the flexible swan neck allows accurate working at any given place. Even inside machinery and in hard-to-reach spots, work surfaces can be perfectly illuminated.
- Lamp head and housing constructed from robust anodised aluminium, flexible light holder hose constructed from metal with rubber sheathing
- **Protection class IP67**
- Resistant to water, oil, coolant and cutting fluid, as well as cleaning agents
- Colour temperature approx. 5,500K (cool white)
- Beam angle approx. 38°
- **Energy Efficiency Class A+**
- **Connection types:** Direct connection to the machine (24V) or all conventional supply voltages (110V-240V)
- **Supplied with:** complete with branded high-performance LED, screw clamp and screws for direct attachment to machine, table or wall



Arm length mm	Output W	Tension V	Luminous flux lm	art.no.	€
420	10	230	ca. 1000	**774008** 0001	304,–
420	10	24	ca. 1000	774008 0002	300,–
				7175	

ATORN® LED light strips

LED light strip

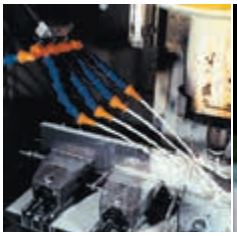
- Additional lighting on or in machinery, on work benches, in cupboards, on shelves or simply on the wall.
- Light housing manufactured from anodised aluminium
- **Protection class IP67**
- Resistant to water, oil, coolant and cutting fluid, as well as cleaning agents
- Colour temperature approx. 5500K (cool white)
- Beam angle approx. 140°
- **Energy Efficiency Class A+**
- **Connection types:** direct connection to the machine (24V) or with power supply (230V)



Length mm	Output W	Tension V	Luminous flux lm	art.no.	€
330	14.4	230	1900	**774009** 0001	304,–
330	14.4	24	1900	774009 0002	291,–
630	28.8	230	3800	774009 0003	420,–
630	28.8	24	3800	774009 0004	388,–
				7175	

KÜMI coolant supply system

- Adjustable coolant hose, comprising individual plastic elements
- For use on all machine tools
- Replacement for conventional systems, plastic elements can be flexibly adjusted which allows coolant to reach any desired position
- Non-conducting and resistant to most chemicals and solvents
- Also suitable for blowing out workpieces, clamping equipment and machine tables
- Complete systems with magnetic anchoring bases and individual elements allow for a large number of possible combinations
- Operating pressure max. 6 bar
- **Operating pressure up to max. 60 bar is possible by attaching band clamps 7630104001 or 7630204001**
- Compatible with the following systems: FLEXOLINE, OSSMANN, LOC-LINE, HYDRA, SNAPLOC, LUBE-COOL, VARIO, MAXIFLEXI
- Systems benefit from closer-fitting modules. This improves their ability to withstand higher pressures and ensures that the fluid stream remains directionally stable.





1/4“ sets

Contents	art.no.	€
Articulated hose (16 modules), round nozzle ID 6.4 mm, threaded connector 1/4 inch, metal ball valve IT-ET 1/4 inch, round magnetic foot 2 IT 90°, threaded nozzle 1/4 inch for 13 mm fabric hose	**763010** 0000	93,–
Articulated hose (2 x 13 modules), 2 flat nozzles, 24 mm Y-distributor, threaded connector 1/4 inch, metal ball valve IT-ET 1/4 inch, round magnetic foot 2 IT 90°, threaded nozzle 1/4 inch for 13 mm fabric hose	763010 1000	119,–
Articulated hose set 1/4 inch, articulated hose (2 x 10 modules), 3 round nozzles ID 1.6 / 3.2 / 6.4 mm, 2 threaded connectors 1/4 inch + 1/8 inch NPT	763010 0001	11,55
Articulated hose (2 x 10 modules), approx. 31 cm long	763010 0002	9,75
	7147	


763010 0000


763010 1000


763010 0001


763010 0002

1/4“ nozzles

Contents	art.no.	€
4 round nozzles, ID = 1.6 mm	**763010** 1001	8,25
4 round nozzles, ID = 3.2 mm	763010 1002	8,25
4 round nozzles, ID = 6.4 mm	763010 1003	8,25
2 flat nozzles, 24 mm wide	763010 1021	8,25
2 flat nozzles, 30 mm wide	763010 1022	14,–
	7147	


763010 1001


763010 1002


763010 1003


763010 1021

1/4“ other accessories

Contents	art.no.	€
4 threaded connectors, 1/8 inch NPT	**763010** 1011	8,25
4 threaded connectors, 1/4 inch NPT	763010 1012	8,25
2 Y-distributors	763010 1031	8,25
2 elbow connectors, 90°	763010 1051	8,25
2 T-distributors	763010 1061	12,20
2 shut-off valves, for articulated hose	763010 1071	15,50
2 shut-off valves for articulated hose 1/4 inch	763010 1081	15,50
2 shut-off valves, external thread 1/4 inch NPT	763010 1091	15,50
1 triple holder for T-distributor 1/4 inch	763010 2003	12,20
1 magnetic foot with ball valve (internal thread 1/4 inch) and threaded nozzle for 13 mm fabric hose	763010 2004	34,60
1 monoblock distributor 4 outlets 1/4 inch and IT 3/8 inch	763010 2005	46,50
2 band clamps 1/4 inch for retroactive fixing up to 60 bar	763010 4001	5,40
	7147	


763010 1011


763010 1031

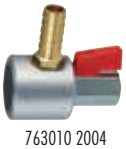

763010 1061


763010 1071


763010 1081


763010 1091


763010 2003


763010 2004


763010 2005

1/4“ assembly pliers

Contents	art.no.	€
1 pair of assembly pliers for attaching and releasing joint components 1/4 inch	**763010** 3014	28,–
	7147	



1/2" sets

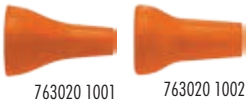
Contents	art.no.	€
Articulated hose (2 x 5 modules), 2 round nozzles ID 9.5 / 12.7 mm, 2 threaded connectors 3/8 inch+1/2 inch NPT	**763020** 0001	17,80
Articulated hose (2 x 5 modules) approx. 29 cm long	763020 0002	13,25
	7147	

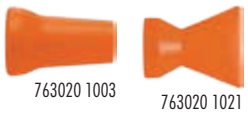

763020 0001


763020 0002

1/2" nozzles

Contents	art.no.	€
4 round nozzles, ID = 6.4 mm	**763020** 1001	10,55
4 round nozzles, ID = 9.5 mm	763020 1002	10,55
4 round nozzles, ID = 12.7 mm	763020 1003	10,55
2 flat nozzles, 32 mm wide	763020 1021	10,55
2 flat nozzles, 50 mm wide	763020 1022	17,60
	7147	


763020 1001 763020 1002


763020 1003 763020 1021

1/2" other accessories

Contents	art.no.	€
4 threaded connectors, 1/2 inch NPT	**763020** 1011	10,55
4 threaded connectors, 3/8 inch NPT	763020 1012	10,55
2 Y-distributors	763020 1031	10,55
2 reducers, 1/2 inch to 1/4 inch	763020 1041	10,55
2 Y-reducers, 1/2 inch to 2x 1/4 inch	763020 1042	10,55
2 elbow connectors, 90°	763020 1051	10,55
2 T-distributors	763020 1061	10,55
2 shut-off valves, internal thread 1/2 inch	763020 1071	24,90
2 shut-off valves for articulated hose 1/2 inch	763020 1081	24,90
2 shut-off valves, external thread 1/2 inch NPT	763020 1091	24,90
1 triple holder for T-distributor 1/2 inch	763020 2003	10,55
1 monoblock distributor 4 outlets 1/2 inch and IT 3/8 inch	763020 2005	61,50
2 band clamps 1/2 inch for retroactive fixing up to 60 bar	763020 4001	6,20
	7147	


763020 1011 763020 1031 763020 1041


763020 1042 763020 1051 763020 1061


763020 1071 763020 1081 763020 1091


763020 2003 763020 2005 763020 4001

1/2" assembly pliers

Contents	art.no.	€
1 pair of assembly pliers for attaching and releasing joint components 1/2 inch	**763020** 3012	28,–
	7147	



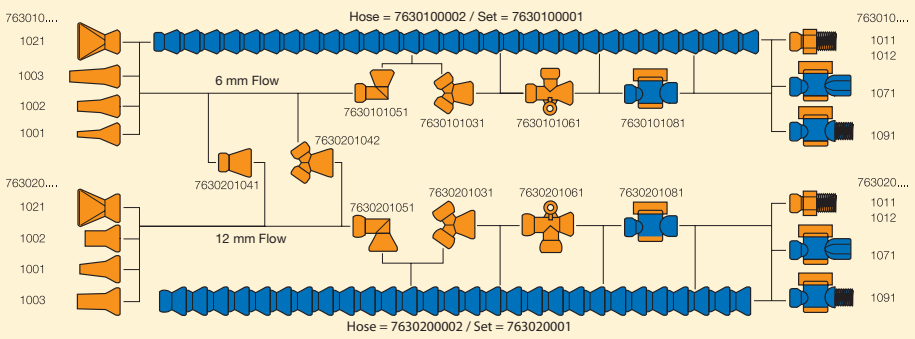
Sets

- 18-pcs.
- 1/4" or 1/2"
- Case with foam inlay

Contents	art.no.	€
6 hose modules, 1 pair of assembly pliers, 1 Y-distributor, 1 shut-off valve, 3 flat nozzles: 16-hole / 32 mm / 27 mm, 3 round nozzles: Ø 1.6 / 3.2 / 6.4 mm, 2 threaded connectors 1/4 inch and 1/8 inch, 1 non-return valve 1/4 inch	**763025** 1814	126,–
6 hose modules, 1 pair of assembly pliers, 1 Y-distributor, 1 shut-off valve, 3 flat nozzles: 8-hole / 50 mm / 35 mm, 3 round nozzles: Ø 6.4 / 9.5 / 12.7 mm, 2 threaded connectors 3/8 inch and 1/2 inch, 1 non-return valve 1/2 inch	763025 1812	136,–
	7147	


763025 1812

763025 1814



SARA® Coolant high-pressure nozzles

- Compact high-pressure nozzles for up to 90 bar coolant pressure
- Nozzles can be installed in each assembly, saving space
- Nozzle setting angle of 60° to 110°
- Nozzle can be rotated 360°
- Casing made of high-quality plastic granulate
- Additional versions available on request





1/4“

Ø mm	Length of spray pipe mm	art.no.	€
2	1	**764002** 3005	29,70
2	6	764002 3006	29,70
2	12.5	764002 3007	29,70
2	31	764002 3008	29,70

7160

1/8“

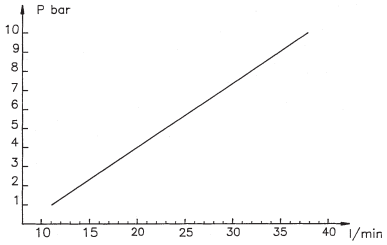
Ø mm	Length of spray pipe mm	art.no.	€
2	1	**764002** 3001	28,60
2	6	764002 3002	28,60
2	12.5	764002 3003	28,60
2	31	764002 3004	28,60

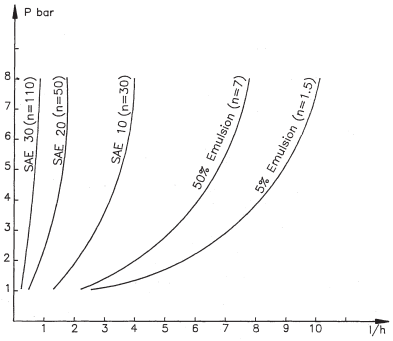
7160

NOGA Coolant spray system MINI-COOL

- For optimum and economical coolant distribution
- Pinpoint-accurate coolant supply for greater endurance
- Strong magnetic base
- Separate on/off switch
- Non-rusting nozzles and connection siphons
- Articulated arm = KÜMI hose







Set

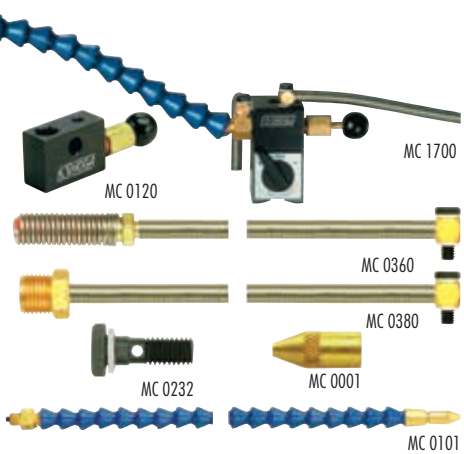
model	Description	art.no.	€
MC 1700	Complete system (264 mm) with magnetic foot, on/off switch for air and coolant, air supply hose (1 m), coolant supply hoses (1 m)	**764001** 0001	156,–
MC 1800	Complete system (334 mm) with magnetic foot, on/off switch for air and coolant, air supply hose (1 m), coolant supply hoses (1 m)	764001 0002	160,–
MC 2000	Complete system (479 mm) with magnetic foot, on/off switch for air and coolant, air supply hose (1 m), coolant supply hoses (1 m)	764001 0003	165,–
MC 3200	Complete system (2x479 mm) with magnetic foot, on/off switch for air and coolant, air supply hose (1 m), coolant supply hoses (1 m)	764001 0006	275,–

7146

Accessories

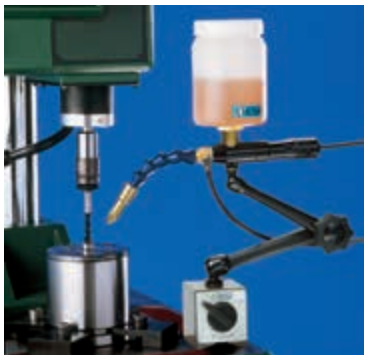
model	Description	art.no.	€
MC 0120	Adjustment nozzle	**764001** 0010	36,70
MC 0360	Siphon hose, 1 m	764001 0011	20,–
MC 0311	Siphon hose, 2 m	764001 0012	26,90
MC 0380	Air hose, 1 m	764001 0013	20,–
MC 0302	Air hose, 2 m	764001 0014	26,90
MC 0232	Banjo screw incl. ring gasket	764001 9902	11,–
MC 0001	Nozzle	764001 0017	6,30
MC 0101	Articulated hose, 14 elements with nozzle and connection	764001 0018	36,–
MC 0102	Articulated hose, 19 elements with nozzle and connection	764001 0019	35,70
MC 0103	Articulated hose, 29 elements with nozzle and connection	764001 0020	42,90

7146



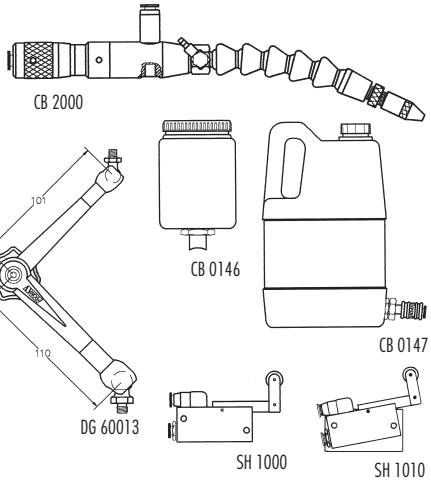
NOGA COBRA 2000 coolant spray system

- For optimum and economical drop or spray delivery of coolants and emulsions
- Drop or spray supply can be either manual or automatic
- Straightforward connection to compressed air supply (3 - 9 bar)



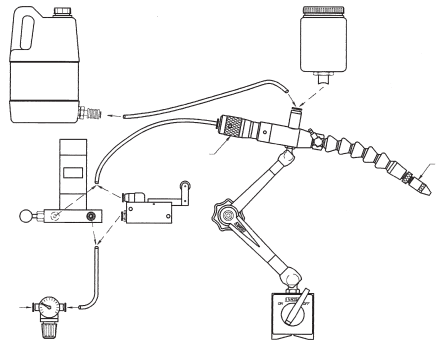
Set

model	Description	art.no.	€
CB 2100	Standard set: base unit CB 2000, articulated arm DG 61003 with magnetic foot SH 1000, plastic container 0.35 litres CB 0146	**765001** 0002	619,–
		7146	

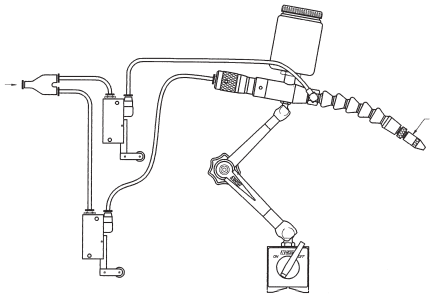


Accessories

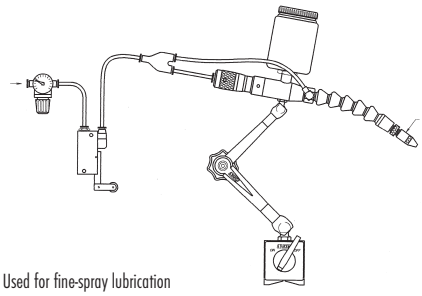
model	Description	art.no.	€
CB 2000	Spray unit	**765001** 0001	200,–
CB 0146	Plastic container, 0.35 litres	765003 0001	36,–
CB 0147	Plastic container, 3.5 litres	765003 0002	60,–
SH 1000	Pump, mechanical	765003 0003	118,–
SH 1010	Mechanical valve	765003 0004	210,–
DG 60013	Articulated arm	765003 0010	110,–
		7146	



Use with mechanical pump or automatic pulse generator for drop lubrication



Used for constant drop or fine-spray lubrication

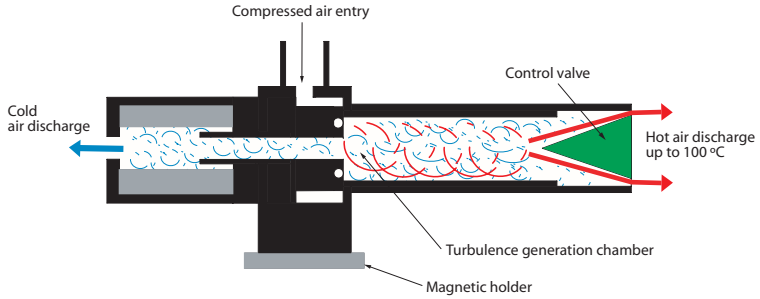


Used for fine-spray lubrication

SARA Pneumatic cold air nozzle

- Localised cooling for machine tools
- Dual function: both hot and cold air
- Ideal for use when no lubricating or coolant fluids are desired
- Simple compressed air connection (3 - 8 bar)
- **Operates based on the principle of a vortex tube in which two counter-rotating air flows are created**
- Cold air outlet in the blue component (down to -48 °C)
- Hot air outlet in the red component (up to 100 °C)
- Air consumption at 7 - 8 bar approx. 270 l/min
- Supplied with magnetic base, spherical valve, connection for 3/8 inch quick-action pneumatic coupling, silencer, 1/2 inch articulated hose with round nozzle





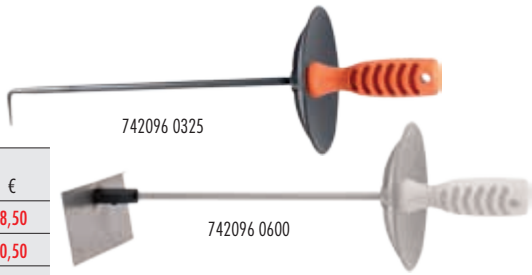




Hose connector Ø in	Compressed air connection in	art.no.	€
1/2"	3/8"	**763030** 0001	409,–
		7123	

SARA® Chip hooks

- The affordable alternative
- Robust chip protection shield
- Optional chip scraper



Description	Contents	art.no.	€
Chip hook 325 mm	1 unit	**742096** 0325	18,50
Chip hook 525 mm	1 unit	742096 0525	20,50
Chip scraper width 120 mm, height 65 mm	2 units	742096 0600	14,40
		7123	

SARA® Chip collector

Magnetic chip collector

- For the removal of magnetic chips and small parts
- Integrated permanent magnet
- Remove chips by pulling the handle out of the permanent magnet
- Shield at handle end to prevent injuries
- Automatic material separation
- Low weight: 554 g
- Magnet traction: 19.3 kg





D mm	Length mm	art.no.	€
25	360 - 675	**742095** 0001	39,90
		7123	

COLLECT
SHIP AND
STORE
BAUER



BAUER
Lift truck attachments
and warehouse equipment
176 pages
Art.no. 019900 5634

Overview of all free manufacturers' catalogues
on page 14/15

sunnex Machine shoes OSM

Compensation/vibration damping

- For loads of up to 5,500 kg per machine shoe
- Outstanding compensation properties
- Efficient vibration damping
- Reduction in disturbing direct noise
- Pressure plate with fine-pitch thread, adjusted using integrated compensation screws
- Steel casing, rubber damping element, resistant to most types of grease, acid, oil and coolant
- Particularly suitable for machine tools, presses, stamping and embossing machines, injection moulding machines



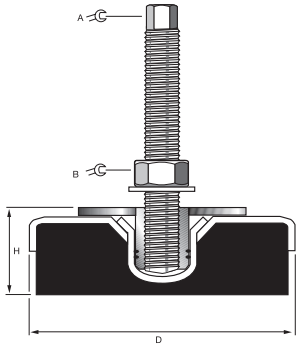
775010 0080



775010 0120



775010 0160



model	Load area daN	Injection moulding mach. <100 cycles/ hr. daN	Presses, up to 125 strikes/min. daN	Presses, 125-160 strikes/min. daN	Presses, 160-200 strikes/min. daN	A wr. width mm	B wr. Width mm	D mm	H mm	Adjustment screw mm	**Galvanised** art.no.	€
OSM 1	50 - 500	50 - 200	70 - 200	60 - 140	50 - 120	9	19	80	38 - 50	M12 x 1.25 x 120	**775010** 0080	29,70
OSM 2	400 - 1,000	200 - 400	200 - 400	120 - 350	100 - 250	12	24	120	46 - 59	M16 x 1.5 x 120	775010 0120	51,–
OSM 3	800 - 2,000	400 - 1,000	400 - 1,400	350 - 1,100	250 - 725	15	30	160	53 - 68	M20 x 1.5 x 170	775010 0160	68,50
OSM 4	1,500 - 4,000	1,500 - 2,500	1,700 - 2,800	1,000 - 2,100	800 - 1,400	15	30	160	54 - 69	M20 x 1.5 x 170	775010 1030	114,–
OSM 5	3,000 - 5,500	2,000 - 3,800	3,000 - 4,000	2,000 - 3,500	1,400 - 2,400	15	30	200	56 - 71	M20 x 1.5 x 170	775010 1040	170,–

7153

Accessories and spare parts

Designation	suitable for model	art.no.	€
Standard screw, M12 x 1.25 x 120	OSM 1	**775020** 0001	8,95
Standard screw, M16 x 1.5 x 120	OSM 2	775020 0002	4,99
Standard screw, M20 x 1.5 x 170	OSM 3, 4, 5	775020 0003	11,60
Extended screw, M12 x 1.25 x 210	OSM 1	775020 1001	11,85
Extended screw, M16 x 1.5 x 210	OSM 2	775020 1002	14,50
Extended screw, M20 x 1.5 x 210	OSM 3, 4, 5	775020 1003	18,60
Washer	OSM 1	775020 2001	1,–
Washer	OSM 2	775020 2002	0,92
Washer	OSM 3, 4, 5	775020 2003	0,81
Nut M12 x 1.25	OSM 1	775020 3001	1,70
Nut M16 x 1.5	OSM 2	775020 3002	1,53
Nut M20 x 1.5	OSM 3, 4, 5	775020 3003	2,56

7153



Machine shoes

sunnex

Suitable for setting up tool, printing, plastic, textile and many other machines in all industries.
90% of all set-up problems with machines and related power units can be resolved with SUNNEX machine shoes.
Eliminates up to 85% of vibrations, impacts and noise.

Advantages:

- Low cost
- No need to create foundations
- Production can commence immediately after delivery and fitting
- Retrofitting your machine fleet can be done quickly

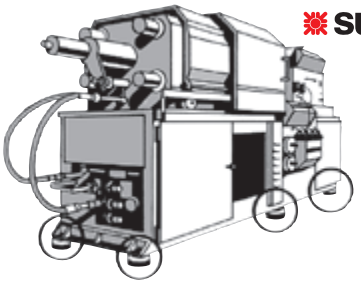
Selection of machine shoes:
In order to select the correct SUNNEX machine shoe sizes, certain Information is needed:

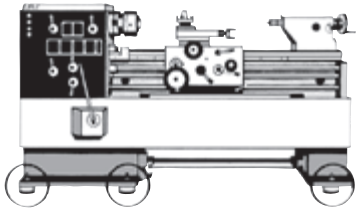
- Machine weight
- Number of supported surfaces for the machine shoes
- Supported load per machine shoe

Calculation:

$$\frac{\text{Machine weight}}{\text{Number of supported surfaces}} = \text{Size of the machine shoes}$$

(within the threshold range, the smaller of the possible sizes must be used!)



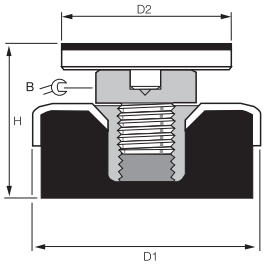


sunnex Machine shoes FSM

Compensation/vibration damping

- For loads of up to 1,000 kg per machine shoe
- For applications where screw holes are not available or are difficult to access
- Efficient vibration damping
- Reduction in disturbing direct noise
- Specially for free-standing applications
- Coated pressure plate, compensation screw in steel housing, damping element made from rubber, resistant to most types of grease, acid, oil and coolant
- Particularly suitable for machine tools, workshop machinery, stamping and embossing machines



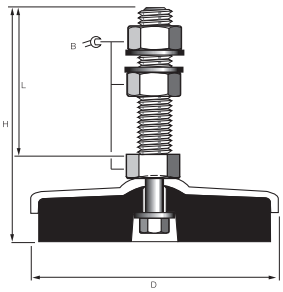


model	Load area kg	D1 mm	D2 mm	H mm	B wr. Width mm	art.no.	€
FSM 11	50 - 500	80	60	55 - 65	30	**775030** 0011	50,–
FSM 12	400 - 1000	120	80	68 - 77	36	775030 0012	93,50
						7154	

sunnex Machine shoes AM

- **Compensation/vibration damping**
- For loads of up to 2,000 kg per machine shoe
- Stainless steel version also available for particularly demanding applications
- Articulated screw for inclined contact surfaces
- For damping light and medium-heavy machines
- Stainless steel version particularly suitable for humid, wet or corrosive environments with particularly high hygiene requirements
- Galvanised version for less challenging environments
- Integrated compensation screw
- Pitch adjustable by seven degrees
- Particularly suitable for the foodstuffs industry, process engineering, conveyor tracks, smaller workshop machines



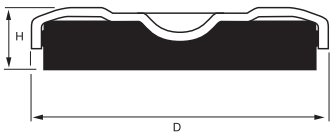


model	Load area kg	D mm	L mm	H mm	Adjustment screw mm	B mm	Stainless steel art.no.	Stainless steel €	Galvanised art.no.	Galvanised €
AM 21	50 - 150	68	100	125	M10 x 1.5	17	**775040** 0001	42,50	**775050** 0001	24,60
AM 21	50 - 150	68	120	146	M12 x 1.75	19	775040 1001	46,10	775050 1001	26,90
AM 21	50 - 150	68	120	148	M16 x 2.0	24	775040 2001	55,–	775050 2001	29,10
AM 21	50 - 150	68	120	151	M20 x 2.5	30	775040 3001	71,50	775050 3001	33,90
AM 22	100 - 250	68	100	125	M10 x 1.5	17	775040 0002	45,10	775050 0002	26,90
AM 22	100 - 250	68	120	146	M12 x 1.75	19	775040 1002	46,10	775050 1002	25,60
AM 22	100 - 250	68	120	148	M16 x 2.0	24	775040 2002	56,50	775050 2002	32,–
AM 22	100 - 250	68	120	151	M20 x 2.5	30	775040 3002	74,–	775050 3002	35,80
AM 31	50 - 500	98	120	158	M12 x 1.75	19	775040 4001	60,50	775050 4001	40,90
AM 31	50 - 500	98	120	158	M16 x 2.0	24	775040 5001	68,50	775050 5001	43,20
AM 31	50 - 500	98	120	158	M20 x 2.5	30	775040 6001	81,50	775050 6001	47,–
AM 31	50 - 500	98	150	191	M24 x 3.0	36	775040 7001	115,–	775050 7001	61,–
AM 32	450 - 1,000	98	120	158	M12 x 1.75	19	775040 4002	61,50	775050 4002	43,20
AM 32	450 - 1,000	98	120	158	M16 x 2.0	24	775040 5002	71,–	775050 5002	46,10
AM 32	450 - 1,000	98	120	158	M20 x 2.5	30	775040 6002	84,–	775050 6002	49,30
AM 32	450 - 1,000	98	150	191	M24 x 3.0	36	775040 7002	115,–	775050 7002	63,–
AM 41	900 - 1,500	140	120	169	M12 x 1.75	19	775040 0003	93,–	775050 0003	57,50
AM 41	900 - 1,500	140	120	169	M16 x 2.0	24	775040 1003	100,–	775050 1003	60,50
AM 41	900 - 1,500	140	120	169	M20 x 2.5	30	775040 2003	113,–	775050 2003	63,50
AM 41	900 - 1,500	140	150	202	M24 x 3.0	36			775050 3003	76,–
AM 42	1,400 - 2,000	140	120	169	M12 x 1.75	19	775040 0004	96,–	775050 0004	60,50
AM 42	1,400 - 2,000	140	120	169	M16 x 2.0	24	775040 1004	104,–	775050 1004	62,50
AM 42	1,400 - 2,000	140	120	169	M20 x 2.5	30	775040 2004	116,–	775050 2004	66,–
AM 42	1,400 - 2,000	140	150	202	M24 x 3.0	36	775040 3004	143,–	775050 3004	78,50
							7154		7154	

sunnex Machine shoes CM

- **Vibration damping**
- For loads of up to 2,000 kg per machine shoe
- For machines with integrated adjustment screws
- Very low height
- Stainless steel version also available on request
- Pressure plate made from galvanised sheet steel, base element made from high-strength rubber
- Very low height
- Extremely cost-effective
- Particularly suitable for workshop machinery, scales, slim machines and equipment





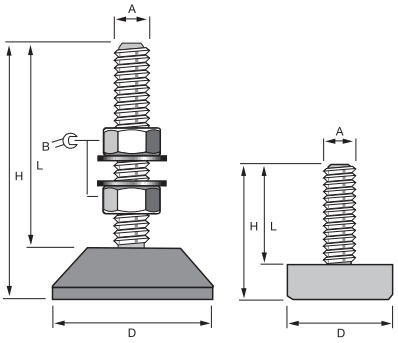
model	Load area kg	D mm	H mm	art.no.	€
CM 80	50 - 500	80	20	**775060** 0080	14,70
CM 120	400 - 1000	120	24	775060 0120	32,30
CM 160	800 - 2000	160	29	775060 0160	49,30

7154

sunnex Machine shoes LLM

- **Compensation**
- For loads of up to 75 kg per machine shoe
- Galvanised and stainless compensation screws with vulcanised rubber bases
- Specially for lighter equipment such as woodworking machines, compressors, smaller industrial machines and office/domestic appliances
- Compensation screws with various types of vulcanised rubber bases
- Can be fitted in internal and external bores in the frame or casing
- Particularly suitable for small workshop machines, compressors and office/domestic appliances



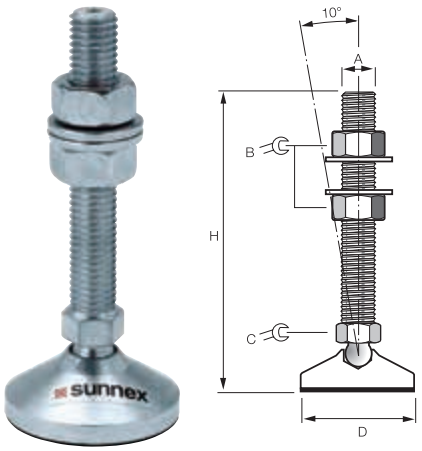


model	Load area kg	D mm	A mm	B mm	H mm	L mm	art.no.	€
LLM 19	75	46	M 10	17	53	38	**775070** 0046	9,25
LLM 259	30	30	M 6	-	38	28	775070 0030	4,48

7154

sunnex Machine shoes LL

- **Compensation**
- For loads of up to 2,000 kg per machine shoe
- Joint screw allows up to 10° inclination with respect to the supporting surface
- Anti-slip feet to ensure a stable setup
- Version in galvanised steel
- Provides stable compensation specifically for lighter equipment such as small workshop machines, instrument cabinets and office/domestic appliances
- Galvanised adjustment screw with articulated base
- Thin friction mat made of specially treated nitrile rubber, coated
- Particularly suitable for small workshop machines, instrument cabinets, office and domestic appliances



model	Load area kg	D mm	H mm	h mm	B mm	C mm	A mm	art.no.	€
LL 10	1,000	32	105	75	19	14	M 12	**775075** 0010	23,–
LL 12	1,200	45	105	75	19	14	M 12	775075 0012	24,30
LL 20	2,000	60	110	80	22	16	M 14	775075 0020	26,60

7154

sunnex Damping mat SP

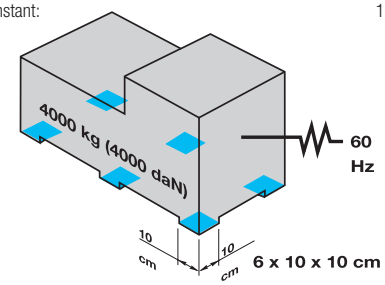
- Five different damping classes
- Efficient impact/vibration damping
- Reduces the transmission of machine noise
- Reduces the tendency of machines to "wander"
- For a wide range of industrial applications
- Five different versions with varying hardness, natural frequencies and load bearing capacities
- Specially developed nitrile rubber, resistant to most types of grease, acid, oil and coolant
- Can be cut to size



Calculation

Example:

Machine weight:	4,000 kg
Interference frequency:	60 Hz
Circulation:	10 x 10 cm / SP unit
Number of surfaces:	6
Constant:	1.5

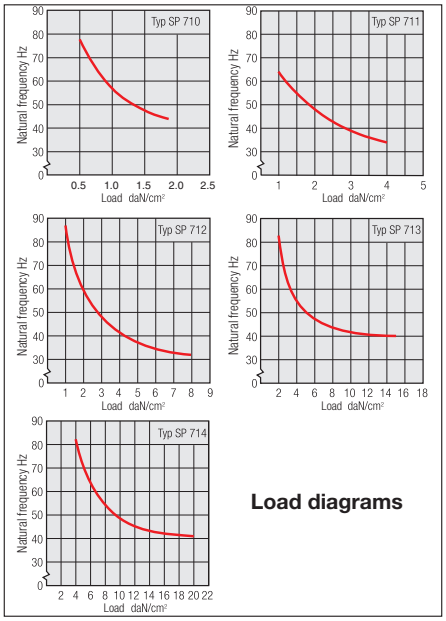


Surface load / plate:

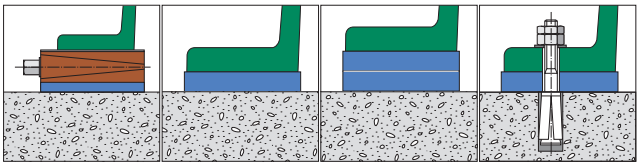
$$\frac{\text{Weight}}{\text{Total surface}} = \frac{4000}{6x10x10} = 6.67\ \text{daN/cm}^2$$

Max. natural frequency of the MP unit:

$$\frac{\text{Interference frequency}}{1.5} = \frac{60}{1.5} = 40\ \text{Hz}$$



Load diagrams

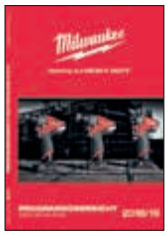




model	Load area	Colour	Dimensions L x W x H mm	art.no.	€
SP 710	0.5 - 1.75	Black	450 x 450 x 8	**775501** 0710	89,–
SP 711	1.0 - 4.0	Black	450 x 450 x 8	775501 0711	89,–
SP 712	1.0 - 8.0	Black	450 x 450 x 8	775501 0712	89,–
SP 713	2.0 - 15.0	Black	450 x 450 x 13	775501 0713	118,–
SP 714	8.0 - 20.0	Green	450 x 450 x 13	775501 0714	115,–

7154

POWER
TOOLS
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Milwaukee



MILWAUKEE
Power tools
148 pages
Art.no. 019900 5477

Overview of all free manufacturers' catalogues on page 14/15

ATORN® Metal saw bow

- Solid cast aluminium
- Ergonomic form
- Comfortable use with soft rubber grip and front handle
- Quick-clamping in handle
- Blade held by non-detachable pin
- **Supplied** without saw blade



Sheet length mm	Weight kg	art.no.	€
300	0.65	**725126** 0300	23,95
		7163	

ATORN® Handsaw blades

- **HSS:** single-sided, non-bending, flexibly part-hardened blade made from medium-high-alloy high-speed steel
- **HSS bi-metal:** single-sided, teeth made from hardened HSS; back made from spring steel, extremely flexible
- Unit prices when purchased in PU



725150 3024

HSS

Length mm	Total height mm	Width mm	Tooth per inch		art.no.	€
300	13	0.65	24	10	**725130** 3024	1,35
					7163	

HSS bi-metal

Length mm	Total height mm	Width mm	Tooth per inch		art.no.	€
300	13	0.63	18	10	**725150** 3018	1,25
300	13	0.63	24	10	725150 3024	1,25
300	13	0.63	32	10	725150 3032	1,25
					7163	





PFERD
Grinding and cutting
763 pages
Art.no. 019900 0216

Overview of all free manufacturers' catalogues
on page 14/15

SARA® Pneumatic engraver

- Suitable for engraving work on steel and non-ferrous metals
- For marking or for reworking older engravings
- With flexible 1.4 m supply hose for unrestricted work
- Mini engraver function allows needle to be used with precision
- Robust stainless steel casing fits comfortably in the hand and prevents fatigue
- Supplied with 1/4 inch BSPT air connection and plug nipple
- Also suitable for humid environments



Pneumatic engraver

Length mm	Total height mm	blows	Working pressure bar	Air consumption l/min	Holding fixture Ø mm	Lift mm	Weight kg	Noise level dB	art.no.	€
160	16	34,000	6.2	4	3.2	0.05	0.2	61.5	**777025** 0001	180,–
									7160	

Engraving needle

Description	art.no.	€
Ø 0.05 - 0.10 mm	**777025** 0510	44,90
Ø 0.10 - 0.20 mm	777025 1020	44,90
Ø 0.20 - 0.30 mm	777025 2030	44,90
	7160	

SARA® Pneumatic precision die grinder

- Extremely high speed of 54,000 rpm, ideal for industrial applications or for finishing engines/carburettors (fine-tuning)
- Switched on and off by rotary switch.
- Air supply and exhaust hose reduces exhaust air noise and directs exhaust air away from the body
- Air connection, 1/4 inch IT
- Supplied with 3 mm collet and spanners for disassembly



Pneumatic precision mini die grinder

Length mm	Total height mm	max. speed r/min	Output W	Working pressure bar	Air consumption l/min	Collet Ø mm	Weight kg	Noise level dB	art.no.	€
134	15	54000	155	6.2	135	3.0	0.2	74	**777001** 0001	255,–
									7160	

Accessories

Description	art.no.	€
Collet Ø 3 mm	**777002** 0030	28,60
	7160	



SARA® Die grinder with catch button

- Infinitely variable rotational speed control
- Catch button for fast tool change
- Housing made of steel, aluminium alloys and composite materials for reduced weight
- High-quality angular gear and robust motor
- Cold insulation on the handle
- Safety lever to prevent accidental switch-on



Die grinder with catch button

max. speed r/min	Output W	Working pressure bar	Air consumption l/min	Collet Ø mm	Weight kg	Noise level dB	art.no.	€
20000	400	6.2	225	6	0.8	81	**777027** 0010	255,–
20000	600	6.2	225	6	0.9	81	777027 0011	310,–
25000	400	6.2	225	6	0.7	83	777027 0020	235,–
20000	600	6.2	225	6	0.8	81	777027 0021	360,–
							7160	



777027 0011



777027 0020

SARA® One-handed pneumatic die grinder

- Small design for universal use in confined spaces
- Suitable for car and commercial vehicle repairs, mechanical engineering, body construction and metalwork
- Infinitely variable speed control
- Air consumption far below average due to the use of modern pneumatic motors
- Safety lever to prevent accidental switch-on
- Cold insulation on the handle
- Supplied with 1/4 inch BSPT air connection and plug nipple
- Exhaust air can be directed away from users via a 360° rotatable exhaust air cover on the side.
- Supplied with Ø 6 mm collet



777026 0001



777026 0002



777026 0003



777026 0004



777026 0005

One-handed pneumatic die grinder

Length mm	Total height mm	max. speed r/min	Output W	Working pressure bar	Air consumption l/min	Collet Ø mm	Weight kg	Noise level dB	art.no.	€
150	55	25000	300	6.2	310	6.0	0.4	79.6	**777026** 0001	126,–
180	65	22000	400	6.2	395	6.0	0.5	72.2	777026 0002	113,–
260	60	22000	400	6.2	465	6.0	1.0	73.2	777026 0003	180,–
160	75	22000	300	6.2	225	6.0	0.4	79.8	777026 0004	155,–
180	80	21000	400	6.2	310	6.0	0.7	72.5	777026 0005	165,–

7160

Accessories

Description	art.no.	€
Collet Ø 3 mm	**777026** 0103	27,90
Collet Ø 6 mm	777026 0106	21,30

7160



SARA® Pneumatic belt grinder

- Very compact design for working in narrow spaces
- Easy replacement of abrasive belts thanks to integrated quick-clamp mechanism
- Handle can be angled individually by users to set the desired working position
- Cold protection due to insulated handle
- Exhaust air is directed away from users via an exhaust air cover
- Infinitely variable speed control via an easy to operate power control button
- Supplied with 1/4 inch BSPT air connection and plug nipple



777127 0001



777127 0002

Length mm	Total height mm	max. speed r/min	Working pressure bar	Air consumption l/min	Belt width mm	Weight kg	Noise level dB	art.no.	€
315	55	18500	6.2	310	10	0.9	82.4	**777127** 0001	240,–
390	66	16000	6.2	310	20	1.4	82.4	777127 0002	405,–

7160

Abrasive belts, 10 units per pack



Width mm	Length mm	Grain	art.no.	€
10	330	40	**777128** 0001	33,70
10	330	80	777128 0002	29,–
10	330	120	777128 0003	37,–
10	330	180	777128 0004	37,–
10	330	240	777128 0005	106,–
20	520	80	777228 0001	53,–
20	520	120	777228 0002	55,–
20	520	180	777228 0003	55,–
20	520	240	777228 0004	53,–

7160

SARA® Pneumatic power drill

- **Lightweight design, high-speed with Ø 1 - 10 mm quick-release drill chuck**
- With spring balancer attachment on the casing
- High-quality planetary gearing and durable motor
- The top-mounted forward/reverse collar is suitable for right-handed and left-handed users
- Exhaust air can be directed away from users via a 360° rotatable exhaust air cover on the side
- Very low exhaust air noise
- Supplied with 1/4 inch BSPT air connection and plug nipple
- Easy-to-operate switch to select clockwise/anticlockwise rotation



Length mm	Total height mm	max. speed r/min	Output W	Working pressure bar	Air consumption l/min	Chuck Ø mm	Weight kg	Noise level dB	art.no.	€
170	155	1600	200	6.2	200	1-10	0.7	70.5	**777027** 0001	250,–

7160

SARA® Spring balancer

- Rugged casing made from aluminium alloy
- Steel wire Ø 2.0 mm
- Infinitely variable load settings
- Working length easy to adjust
- Two-point mounting for maximum safety



Load capacity kg	Length mm	Weight kg	art.no.	€
0.4 - 1.0	1600	0.63	**777036** 0410	66,–
			7160	

SARA® Pneumatic hammer screwdriver, 1/2 inch

- Double ring hammer mechanism
- Modern appliance with low power/weight ratio
- Made from composite material, with high-alloy components for the hammer mechanism
- Robust and smooth motor
- Optimally adjusted 3-level control for clockwise rotation

Pneumatic hammer screwdriver

Length mm	Total height mm	max. speed r/min	Torque N-m	Working pressure bar	Air consumption l/min	Weight kg	Noise level dB	art.no.	€
160	170	11000	650-700	6.2	165	1.3	88.5	**777028** 0001	280,–
190	185	8600	1150-1350	6.2	195	2.1	83.5	777028 0002	290,–
								7160	



777028 0001

777028 0002

Socket sets

Description	Contents	art.no.	€
Long, with protective coating, 1/2 inch	SW 17/19/21	**777029** 0003	32,70
Short, 1/2 inch	SW 9/10/11/13/14/17/19/21/24/27	777029 0010	60,50
		7160	

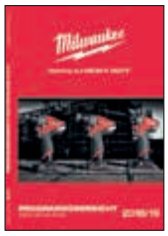


777029 0003



777029 0010

POWER
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MILWAUKEE
Power tools
148 pages
Art.no. 019900 5477

Overview of all free manufacturers' catalogues on page 14/15

ATORN® Pneumatic aluminium blow guns

- Aluminium, anodised and silver coloured; for cleaning workpieces, machine parts and similar items.
- Air flow can be roughly regulated via a control lever
- Valve head made from special oil-resistant rubber
- Replaceable blowing nozzle, Ø 1.5 mm



With standard nozzle

Connection	for interior Ø mm	Connecting thread	art.no.	€
Plug nipple	-	M 12 x 1.25	**742086** 0001	19,–
Hose connector	6	M 12 x 1.25	742086 0006	14,20
Hose connector	9	M 12 x 1.25	742086 0009	14,20
Hose connector	13	M 12 x 1.25	742086 0013	14,20

7123



With air jacket nozzle

- Eye protection with eight nozzle holes opening to the side

Connection	for interior Ø mm	Connecting thread	art.no.	€
Hose connector	6	M 12 x 1.25	**742088** 0006	18,–
Hose connector	9	M 12 x 1.25	742088 0009	18,–

7123



With safety nozzle

- Noise reduction by approx. 15 dB(A)
- Meets the following safety regulations and guidelines:
- - Swiss Accident Insurance Association (Schweizerische Unfallversicherungsanstalt - SUVA)
- - EU Directive 2003/10/EC (Noise)
- - EU Machinery Directive 2006/42/EC, EN12100
- - Noise and Vibration Protection Ordinance (TRLV-Lärm)
- - OSHA Regulations

Connection	for interior Ø mm	Connecting thread	art.no.	€
Hose connector	6	M 12 x 1.25	**742089** 0006	31,60
Hose connector	9	M 12 x 1.25	742089 0009	31,60
Hose connector	13	M 12 x 1.25	742089 0013	31,60

7123

SARA® Plastic blow guns

- Precise dosing of compressed air due to infinitely variable trigger
- Comfortable working even in cold temperatures due to the all-plastic housing



Modular pistol grip

- Compressed air connection G1/4 inch internal thread
- Nozzle connection, M12 x 1.25

Design	art.no.	€
Base body	**742100** 0101	12,20

7123



Plastic pistol with extension nozzle and protective cap

- For working with scratch-prone components

Design	art.no.	€
With extension nozzle	**742100** 0001	16,30

7123



Plastic pistol with SafetyStar nozzle

- With curved, star-shaped safety nozzle in the form of an extension nozzle
- Improved working conditions thanks to noise reduction below 80 dB (A)

Design	art.no.	€
With safety nozzle	**742100** 0002	19,40

7123



Plastic pistol with BlowStar nozzle

- Combined safety and sound-insulating nozzle
- Noise reduction to as low as 74 dB (A)

Design	art.no.	€
With safety extension nozzle	**742100** 0003	32,10

7123

Air-saving nozzle

- Regulation of air quantity and reduction of pressure in conjunction with blow-out gun, max. operating pressure: 10 bar
- Aluminium base body, other parts plastic
- Volume flow at 6 bar: 10 to 95 l/min.
- **Advantages:** The energy-saving nozzle is controllable. Among other things, downward regulation prevents sharp, pointed chips or harmful liquids such as emulsions from flying around. This helps to avoid injuries.
- Controlled by turning the operating sleeve to 7 locked-in positions, labelled with +/-, total 125°

model	Connecting thread	art.no.	€
Air-saving nozzle	M 12 x 1.25	**742092** 0006	18,70
		7123	



ATORN® Accessories: blow guns

Extensions for pneumatic blow guns

- For improved access to particularly difficult and/or awkward areas
- Robust extensions suitable for all **ATORN** and **SARA** blowguns
- Extensions can be equipped with all nozzles
- All extensions can be combined for an even larger length selection
- Material: Anodised aluminium

Length mm	Straight art.no.	€	Angled art.no.	€
150	**742101** 0150	14,75	**742102** 0150	15,80
300	742101 0300	15,80	742102 0300	18,30
450	742101 0450	20,30	742102 0450	22,30
800	742101 0800	27,40	742102 0800	29,50
	7123		7123	





Extension nozzles

- In straight or curved form
- Pipe diameter 5 mm

Description	Length mm	art.no.	€
Straight	115	**742100** 0201	9,45
Straight	165	742100 0202	9,95
Straight	265	742100 0203	10,20
Straight	415	742100 0204	14,45
Angled	110	742100 0211	9,95
Angled	160	742100 0212	10,45
Angled	260	742100 0213	12,45
		7123	

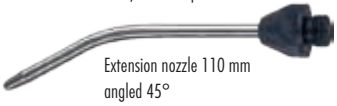


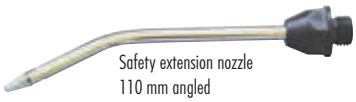
Spare nozzles

model	Connecting thread	art.no.	€
Regular nozzle	M 12 x 1.25	**742092** 0001	2,05
Air jacket nozzle	M 12 x 1.25	742092 0002	5,20
Safety nozzle	M 12 x 1.25	742092 0003	18,40
Noise control nozzle	M 12 x 1.25	742092 0007	4,10
Safety flat jet nozzle	M 12 x 1.25	742092 0004	21,90
Extension nozzle 110 mm angled 45°, nickel-plated steel	M 12 x 1.25	742092 0100	4,85
Extension nozzle 110 mm angled 45°, nickel-plated steel, rubber cap	M 12 x 1.25	742092 0101	7,05
Full jet nozzle	M 12 x 1.25	742092 0059	13,15
Extension nozzle, 110 mm, angled, low-noise	M 12 x 1.25	742092 0019	8,–
Rubber cap		742092 0102	1,68
		7123	









SARA® Accessories for pneumatic tools

Spiral hose

- Tubes on both sides fully-integrated with rotating connecting threads (galvanised brass), as well as coupling and connector
- Connections with sealing ring
- Without narrowed cross-section
- Kink-resistant thanks to anti-kink protection
- Extremely flexible
- Lower wear than with polyamide hoses thanks to soft surfaces, whereby the risk of scratching sensitive surfaces is considerably reduced

SARA®

Length m	Hose interior Ø mm	Connecting thread	Working pressure bar	External Ø mm	art.no.	€
3	5	1/4″	18	8	**777038** 0803	33,70
6	5	1/4″	18	8	777038 0806	35,70
7.5	5	1/4″	18	8	777038 0807	37,70
3.5	8	3/8″	16	12	777038 1203	45,90
6	8	3/8″	16	12	777038 1206	54,–
7.5	8	3/8″	16	12	777038 1207	63,–
10	8	3/8″	16	12	777038 1210	71,50

7123



Signal compressed air hose

- Working pressure max. 24 bar
- Bursting pressure 96 bar

SARA®

Length m	Interior Ø mm	External Ø mm	Description	art.no.	€
10	10	16	Polyurethane with Euro coupling and plug nipple	**777039** 0001	46,30
10	10	16	Polyurethane with 1/4 inch threaded connectors	777039 0002	43,70
50	10	16	Polyurethane roll material	777039 0003	129,–

7160



777039 0001



777039 0002



777039 0003

Hose winder

- Coupling and nipple pre-connected

SARA®

Length m	Connection	Interior Ø mm	External Ø mm	Operating pressure max. bar	Dimensions W x D x H mm	Weight kg	art.no.	€
15	1/4 inch ET	8	12	15	400x175x330	8.5	**777030** 0001	250,–

7160



Compressed air couplings

- One-hand quick coupling with barrel locking
- Non-return valve in the coupling
- Sliding sleeve up to 8 bar can be easily operated with one hand

SARA®

Connection	L mm	i mm	Wr. width mm	art.no.	€
1/4″ AG	41	9	21	**742080** 0214	3,79
3/8″ AG	41	9	21	742080 0238	3,79
1/2″ AG	42.5	10.5	21	742080 0212	3,79
1/4″ IG	41	8	21	742080 0314	3,79
3/8″ IG	41	9	21	742080 0338	3,79
1/2″ IG	43	10	24	742080 0312	3,79
DN6	57	25	21	742082 0106	4,05
DN9	57	25	21	742082 0109	4,05
DN13	57	25	21	742082 0113	4,35

7123



742082 0106



742080 0338



742080 0238

Continued on next page >>>

Safety couplings

- Safety coupling pursuant to ISO 4414, DIN EN 983 with push-button operation prevents 'whip effect' when uncoupling
- Wear parts made entirely of galvanised steel and housing made of aluminium, thus particularly sturdy and durable
- Threads and hose connections can be rotated under pressure
- Increased user comfort thanks to integrated moulded handle
- Sliding sleeve up to 8 bar can be easily operated with one hand
- REACH and RoHS-compliant
- **Steel plugs should be used as counterparts**

- **Operation**
  Step 1 Press the button once to vent the coupling; the plug should remain secure in the sleeve.
  Step 2 Press the button a second time to unlock the plug, which can then be safely removed.


742080 0009


742080 0038


742080 0114

Connection	L mm	i mm	Wr. width mm	art.no.	€
1/4" AG	70.5	8	21	**742080** 0014	24,–
3/8" AG	70.5	8	21	742080 0038	24,–
1/2" AG	74.5	10	24	742080 0012	24,–
1/4" IG	68	8	21	742080 0114	24,–
3/8" IG	68	8	21	742080 0138	24,–
1/2" IG	71	10	24	742080 0112	24,–
DN6	86.5	25	19	742080 0006	24,–
DN9	86.5	25	19	742080 0009	24,–
DN13	86.5	25	19	742080 0013	24,–

7123

Plug nipple

- Plug without non-return valve
- **Steel coupling nipples are characterised by high durability compared with brass nipples**


742081 0214


742081 0038


742081 0314


742081 0138


742083 0106


742081 0206

Connection	L mm	i mm	Wr. width mm	Brass art.no.	Brass €	Steel art.no.	Steel €
1/4" AG	33	9	17	**742081** 0214	1,67	**742081** 0014	3,59
3/8" AG	33	9	19	742081 0238	1,79	742081 0038	4,17
1/2" AG	33	10	24	742081 0212	3,72	742081 0012	5,70
1/4" IG	33	10	17	742081 0314	1,71	742081 0114	3,59
3/8" IG	33	10	19	742081 0338	1,79	742081 0138	4,17
1/2" IG	33	10	24	742081 0312	3,72	742081 0112	5,70
DN6	45	25	-	742083 0106	1,19	742081 0206	3,25
DN9	45	25	-	742083 0109	1,21	742081 0209	3,59
DN13	45	25	-	742083 0113	1,75	742081 0213	5,70
				7123		7123	

Compressed air special lubricant

- Compressed air special lubricant for mist lubricators and maintenance units pursuant to DIN 51 524-2 with viscosity class VG32 (viscosity at 40 °C -32 mm²/s, 32 cSt)
- Oil contains surface-active substances which offer corrosion protection across a wide temperature range
- Absorbs condensate (demulsifying)
- Temperature range: -20 °C to +80 °C


777033 0010


777033 0050

Description	Contents	art.no.	€
Special air lubricator	1 litre	**777033** 0010	18,30
Special air lubricator	5 litres	777033 0050	81,–
		7123	

Portable device oiler


777032 0001


777032 0002

Input	Outlet	Oil capacity ml	art.no.	€
1/4" IG	1/4" AG	4	**777032** 0001	24,30
3/8" IG	3/8" AG	28	777032 0002	59,–
			7160	

Magnetic plate

Description	art.no.	€
Magnetic plate Ø 150 mm	**777035** 0001	13,65
Magnetic plate 240x140 mm	777035 0002	26,20
	7160	



777035 0002



777035 0001

Magnetic rods

Description	art.no.	€
0.5 kg supported load	**777037** 0001	13,80
1.3 kg supported load	777037 0002	15,40
	7160	



777037 0001



777037 0002

Maintenance unit



Maintenance unit
- Modular principle, various extensions possible
- Plastic container
- Mineral oil with viscosity of 22 to 32 cSt should be used to protect the container
- Oil additives, anti-freeze or synthetic oils can corrode the plastic container

Connection	Air consumption l/min	Operating pressure max. bar	art.no.	€
1/4"	1500	16	**777034** 0100	112,–
1/2"	3400	16	777034 0101	173,–
			7123	

Spray pistols



Safety spray pistol
- High-pressure spray gun for use with water pumps and for cooling lubricants
- With adjusting wheel and lever operation for increased safety
- Spray can be adjusted from full spray to jet spray
- Ideal for machining centres
- Material: Anodised aluminium, non-coloured

Connecting thread	art.no.	€
DN13 (1/2")	**742090** 0001	93,50
DN19 (3/4")	742090 0002	93,50
	7123	





UVEX
Occupational safety
587 pages
Art.no. 019900 5470

Overview of all free manufacturers' catalogues on page 14/15

ATORN® Assembly gloves

Safety gloves A-Mech 1

- extremely light, thin and sensitive nylon knitted gloves with black soft PU coating on the palm and fingertips, extended knitted cuff
- breathable
- **Uses:** precision work, assembly and maintenance work in dry or moderately oily conditions, automotive industry



Description	Shade	art.no.	€
Size 7	EN 388:2016 LEVEL 3131X KAT. II	**796121** 0007	2,20
Size 8	EN 388:2016 LEVEL 3131X KAT. II	796121 0008	2,20
Size 9	EN 388:2016 LEVEL 3131X KAT. II	796121 0009	2,20
Size 10	EN 388:2016 LEVEL 3131X KAT. II	796121 0010	2,20
Size 11	EN 388:2016 LEVEL 3131X KAT. II	796121 0011	2,20

7176

Safety gloves A-Mech 2

- thin, sensitive nylon knitted gloves with Spandex, black micro nitrile foam coating on the palm and fingertips,extended knitted cuff
- breathable
- **Uses:** Assembly and maintenance works in dry, damp or oily conditions with high demands in tactility and comfort, precision work, automotive industry, logistics

flexible multi-talent



Description	Shade	art.no.	€
Size 7	EN 388:2016 LEVEL 4131X KAT. II	**796122** 0007	3,45
Size 8	EN 388:2016 LEVEL 4131X KAT. II	796122 0008	3,45
Size 9	EN 388:2016 LEVEL 4131X KAT. II	796122 0009	3,45
Size 10	EN 388:2016 LEVEL 4131X KAT. II	796122 0010	3,45
Size 11	EN 388:2016 LEVEL 4131X KAT. II	796122 0011	3,45

7176

Safety gloves A-Mech 22

- thin, sensitive nylon knitted gloves with Spandex, black micro nitrile foam coating and nitrile nubbing on the palm and fingertips, extended knitted cuff
- breathable
- **Uses:** Assembly and maintenance works in dry, damp or oily conditions with high demands in tactility, comfort and firm grip, precision work, logistics.

for maximum grip



Description	Shade	art.no.	€
Size 7	EN 388:2016 LEVEL 4131X KAT. II	**796123** 0007	3,60
Size 8	EN 388:2016 LEVEL 4131X KAT. II	796123 0008	3,60
Size 9	EN 388:2016 LEVEL 4131X KAT. II	796123 0009	3,60
Size 10	EN 388:2016 LEVEL 4131X KAT. II	796123 0010	3,60
Size 11	EN 388:2016 LEVEL 4131X KAT. II	796123 0011	3,60

7176

Safety gloves A-Mech 3

- extremely thin and sensitive nylon knitted gloves with black micro nitrile foam coating on the palm and fingertips, extended knitted cuff
- breathable
- **Uses:** Ideal for all tasks with high demands in tactility, automotive industry, precision work, transport and sorting works







Description	Shade	art.no.	€
Size 7	EN 388:2016 LEVEL 3121X KAT. II	**796124** 0007	3,75
Size 8	EN 388:2016 LEVEL 3121X KAT. II	796124 0008	3,75
Size 9	EN 388:2016 LEVEL 3121X KAT. II	796124 0009	3,75
Size 10	EN 388:2016 LEVEL 3121X KAT. II	796124 0010	3,75
Size 11	EN 388:2016 LEVEL 3121X KAT. II	796124 0011	3,75

7176

Safety gloves A-Mech 4



- thin, sensitive nylon/carbon knitted gloves with black micro nitrile foam coating on the palm and fingertips, extended knitted cuff
- breathable
- touchscreen-compatible
- **Uses:** ESD sector, fine assembly work, automotive industry, precision work

touchscreen-compatible



Description	Shade	art.no.	€
Size 7	EN 388:2016 LEVEL 4131X KAT. II	**796125** 0007	5,80
Size 8	EN 388:2016 LEVEL 4131X KAT. II	796125 0008	5,80
Size 9	EN 388:2016 LEVEL 4131X KAT. II	796125 0009	5,80
Size 10	EN 388:2016 LEVEL 4131X KAT. II	796125 0010	5,80
Size 11	EN 388:2016 LEVEL 4131X KAT. II	796125 0011	5,80

7176

ATORN® Cut-resistant gloves

NEW · NUOVO · NY · NOUVEAU · NUEVO

Cut-resistant gloves A-Shield 1

- extremely thin and sensitive HPPE special fibre knitted gloves with black micro nitrile foam coating on the palm and fingertips, extended knitted cuff
- breathable
- **Uses:** precision work with moderate demands for cutting protection, metal and plastics processing, fine assembly work, automotive industry

Lightweight



Description	Shade	art.no.	€
Size 7	EN 388:2016 LEVEL 4X418 KAT. II	**796131** 0007	7,20
Size 8	EN 388:2016 LEVEL 4X418 KAT. II	796131 0008	7,20
Size 9	EN 388:2016 LEVEL 4X418 KAT. II	796131 0009	7,20
Size 10	EN 388:2016 LEVEL 4X418 KAT. II	796131 0010	7,20
Size 11	EN 388:2016 LEVEL 4X418 KAT. II	796131 0011	7,20

7176

Cut-resistant gloves A-Shield 2

- extremely thin and sensitive HPPE special fibre knitted gloves with black micro nitrile foam coating on the palm and fingertips, additional nitrile reinforcement around the thumb, extended knitted cuff
- **Uses:** precision work with high demands for cutting protection, metal and plastics processing, paper and glass industry, automotive industry



Description	Shade	art.no.	€
Size 7	EN 388:2016 LEVEL 4X43C KAT. II	**796132** 0007	9,–
Size 8	EN 388:2016 LEVEL 4X43C KAT. II	796132 0008	9,–
Size 9	EN 388:2016 LEVEL 4X43C KAT. II	796132 0009	9,–
Size 10	EN 388:2016 LEVEL 4X43C KAT. II	796132 0010	9,–
Size 11	EN 388:2016 LEVEL 4X43C KAT. II	796132 0011	9,–

7176

Cut-resistant gloves A-Shield 3

- thin, sensitive nylon knitted gloves made of HPPE special/basalt fibre with Spandex, black micro nitrile foam coating on the palm and fingertips, additional nitrile reinforcement around the thumb, extended knitted cuff
- **Uses:** precision work with very high demands for cutting protection, metal and plastics processing, paper and glass industry, automotive industry



Description	Shade	art.no.	€
Size 7	EN 388:2016 LEVEL 4X43D KAT. II	**796133** 0007	11,40
Size 8	EN 388:2016 LEVEL 4X43D KAT. II	796133 0008	11,40
Size 9	EN 388:2016 LEVEL 4X43D KAT. II	796133 0009	11,40
Size 10	EN 388:2016 LEVEL 4X43D KAT. II	796133 0010	11,40
Size11	EN 388:2016 LEVEL 4X43D KAT. II	796133 0011	11,40

7176

Cut-resistant gloves A-Shield 4

- Knitted gloves made of HPPE special/basalt/steel fibre with Spandex, sanded nitrile foam coating on the palm and fingertips, additional nitrile reinforcement around the thumb, extended knitted cuff
- **Uses:** Tasks with extremely high demands in cutting protection, sheet metal processing and metal machining, maintenance and assembly

ultimate protection



Description	Shade	art.no.	€
Size 7	EN 388:2016 LEVEL 4X43F KAT. II	**796134** 0007	15,20
Size 8	EN 388:2016 LEVEL 4X43F KAT. II	796134 0008	15,20
Size 9	EN 388:2016 LEVEL 4X43F KAT. II	796134 0009	15,20
Size 10	EN 388:2016 LEVEL 4X43F KAT. II	796134 0010	15,20
Size 11	EN 388:2016 LEVEL 4X43F KAT. II	796134 0011	15,20

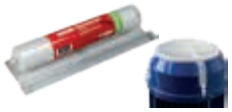
7176

Safety and Environment

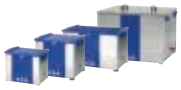
Aerosol filters

	Centrifugal separator	1533
	Monitoring system F-Monitor	1533
	Emulsion mist separator Ultra-Cleaner	1537
	Emulsion mist separator Ultra-Eco compact	1538
	Emulsion mist separator Ultra Jet	1539
	Electrostatic oil mist separator	1540
	Modular separator with spray system	1540
	Mobile emulsion mist separator	1541
	Mobile smoke filter	1541
	Dust filter systems	1543
	Installation accessories for filter systems	1544
	Suction hose Flexi 75	1545

Filter fleece

	Filter fleece for switch cabinets, compressors and motors	1546

Parts cleaning

	Ultrasonic cleaning equipment	1547
	Ultrasonic cleaning equipment with heating system Elmasonic EASY	1547
	Absorber cabinet	1549

Cooling lubricant maintenance

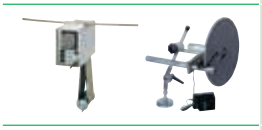
	Chip and emulsion vacuum cleaner	1550
	Compressed air chip and wet vacuum cleaner	1550
	Compressed air industrial vacuum cleaner	1551
	Barrel pumps	1553
	Mixers	1553
	Cooling lubricant aerator	1554



Emulsion treatment station
Emulsion treatment cart 1555



Magnetic filters 1556



Skimmer systems 1557



Emulsion testing 1558

Leak repair and protection



Mats 1560



Grippy mat
with safety edge 1562



Absorbent socks 1566



Emergency kits 1567



Drain cover 1567

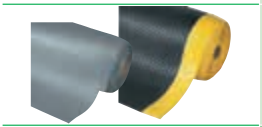


Spreading grit 1568

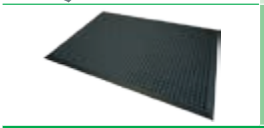
Foot grilles and floor mats



Wooden foot grating 1569



Workplace mats 1570



Flame-retardant
workplace mat 1572

Chip tipper
Conveying equipment accessories



Chip tippers, chip containers,
tipping troughs 1573



Load hooks 1578



Collection trays 1578

FILTERMIST Centrifugal separator

INFO

- Oil mist is harmful to health.
- Oil mist causes slippery floors and can cause damage to electrical switchgears.
- Oil mist can lead to deposits in ventilation pipes. This is a fire hazard.
- Laws and regulations are becoming more and more stringent.
- The recirculation of purified air reduces energy and heating costs.

▸ Centrifugal separators create cleaner, safer and more productive workplaces!

Function

1. Oil mist is eliminated at the source.
2. Oil mist is removed from the air using centrifugal force.
3. The separated oil is returned to the machine.
4. Clean air is released back into the workshop.
5. A special secondary filter allows for the removal of smoke and steam and increases the degree of separation.

A perforated drum with specially designed blades rotates at high speed. Oil mist is sucked into the device and bounces off the blades. Filter mats aid the process in which small droplets form larger ones and filter out swirling solid particles. Centrifugal force presses the oil into the housing wall of the device. From here it is fed back into the machine or collecting container.
What is left is cleaner air, which is returned to the factory floor.



Mounting options



FILTERMIST Centrifugal separator S series and XCEL2

- A perforated steel drum is driven centrically and directly by an electric motor. Four blades inside the drum suck the oil and emulsion mist into the drum. This process spins the mist against the blades at a speed of over 50 m/sec. The small oil mist particles are condensed back into liquid form before they are forced against the inner wall of the filter housing by the centrifugal force. In this process, the coarse dirt particles are retained by filter mats. The oil concentrate is returned via a hose to the coolant container and the purified air remains in the production hall.
- All versions comply with CE regulations.
- **Energy-efficient IE3 motors for models FX4002 - FX7002**
- **Test certificate available for IFA-tested smoke filter on request**
- Use: for turning, milling and wet grinding
- Standard colour RAL 7035 (light grey), other RAL colours available on request
- Models subject to change without notice
- **Stainless steel version:** For the removal of smoke and vapour when washing parts (parts washing machine / partswasher)
- **Supplied with:** Oil return hose (S series 2 m, FX series 4 m), assembly and operating instructions, no appliance switch
- **Pricing:** ex works, including packaging



Single units

model	Air quantity m³/h	Motor output kW	Connection 380V Hz	Connection 400V Hz	Connection 440V Hz	Connection 460V Hz	Connection 480V Hz	Connection 575V Hz	Weight kg	Inlet Ø mm	Noise level dB	D mm	H mm	art.no.	€	Stainless steel art.no.	Stainless steel €
S 200	180	0.18	50	50	60	60	60		9	75	62	260	302	**902010** 0200	1.929,–	**902020** 0200	3.089,–
S 400	425	0.55	50	50	60	60	60		14	150	65	325	381	902010 0400	2.189,–	902020 0400	3.499,–
S 800	800	0.55	50	50	60	60	60		15	150	67	325	435	902010 0800	2.789,–	902020 0800	4.469,–
FX 4002	1250	1.1	50	50	60	60	60	60	25.8	150	70	357	544	902010 4002	3.209,–	902020 4002	5.139,–
FX 5002	1675	1.5	50	50	60	60	60	60	31.8	200	71	357	634.5	902010 5002	3.359,–	902020 5002	5.379,–
FX 6002	2000	2.2	50	50	60	60	60	60	36.8	200	73	438	638.5	902010 6002	3.679,–	902020 6002	5.889,–
FX 7002	2750	2.2	50	50					36.8	200	73	438	638.5	902010 7002	4.829,–	902020 7002	7.729,–
														9101		9101	

Superfine particle filter

- **compact and low-cost method to remove ultra-file oil mist particles from the workshop air**
- **ideal for chip removal processes with pure oil cooling and high-pressure pumps**
- synthetic high-tech filter material with a drainage effect
- allows the recirculation of filtered oil through a patented Venturi suction system – extends the service life of the filter and lowers operating costs.
- Certified in accordance with EPA Class E10



Designation	suitable for model	art.no.	€
Post-filter S-Fusion	S200, S400, S800	**902070** 0200	1.249,–
Post-filter FX-Fusion	FX4002, FX5002	902070 4002	1.289,–
Adapter for S200		902070 0210	179,–
		9101	

Smoke filter

- filters out smoke particulate that can occur during heavy machining
- for particle sizes < 1µm
- from S400 filter class H13 available on request

Description	S series / X-CEL2	X-CEL	F series model 6 to 8	art.no.	€
Smoke filter EN 779 2002 filter class F8	S200	-	-	**902070** 0002	449,–
Smoke filter EN 779 2002 filter class F8	S400, S800	FX2000	F7	902070 0011	459,–
Smoke filter EN 779 2002 filter class F8	FX4002, FX5002	FX3000, FX4000, FX5000, FX6000	-	902070 0004	469,–
Smoke filter EN 779 2002 filter class F8	FX6002, FX7002	FX7000	F13 to F34	902070 0001	479,–
				9102	



Smoke filter with test certificate

Monitoring system F-Monitor

- **measures the air flow and run time of the filter system**
- **F Monitor 2+ also measures the motor temperature and vibrations**
- An LED traffic-light system warns the machine operator or indicates when a service is required.
- App control via **Bluetooth interface**
- The optional sensor monitors the vibrations and the temperature (already included with F-Monitor 2+)





902011 0002



902011 0001

model	Description	art.no.	€
F-Monitor 2 incl. accessories, no sensor	measures air flow and time	**902011** 0001	489,–
F-Monitor 2+ incl. accessories, with sensor	measures air flow, time, vibration and temperature	902011 0002	599,–
		9102	

Sensor

Description	suitable for model	art.no.	€
Sensor	F-Monitor 2	**902011** 0010	119,–
		9102	



Continued on next page >>>

Assembly kits

Contents	suitable for model	art.no.	€
Flange connection Ø 75 mm, 3 m hose Ø 75 mm, 2 hose clamps Ø 75 mm, F-Monitor 2	S200	**902070** 0067	549,–
Flange connection Ø 100 mm, 3 m hose Ø 100 mm, 2 hose clamps Ø 100 mm, F-Monitor 2	S400, S800, S400, S800, FX4002 with reducer	902070 0068	549,–
Flange connection Ø 150 mm, 3 m hose Ø 150 mm, 2 hose clamps Ø 150 mm, F-Monitor 2	S400, S800, FX4002	902070 0069	569,–
Flange connection Ø 200 mm, 3 m hose Ø 200 mm, 2 hose clamps Ø 200 mm, F-Monitor 2	FX5002, FX6002, FX7002	902070 0070	599,–

9102



Silencer

- Reduces the noise level by 5 to 10 dB
- Cannot be used in conjunction with the smoke filter

Description	suitable for model	art.no.	€
Silencer	FX4002, FX5002	**902050** 1079	519,–
Silencer	FX6002, FX7002	902050 0070	519,–

9102



Silencer

Spare parts, consumables

- **Please note the serial number of the filter system!**

Description	S series / X-CEL2	X-CEL	F series model 6 to 8	art.no.	€
Discharge filter	S200	-	-	**902070** 0058	57,50
	S400, S800	-	-	902070 0059	57,50
	FX2002, FX3002	FX2000	F7 all series	902070 0021	47,20
	FX4002, FX5002	FX3000 to FX6000	-	902070 0025	109,–
	FX6002, FX7002	FX7000	F13, to F34 Series 7 and 8	902070 0020	87,–
Cover seal	S200	-	-	902070 0057	14,05
	-	-	F7	902070 0031	18,50
	S400, S800, FX2002, FX3002	FX2000	-	902070 0027	15,70
	FX4002, FX5002	FX3000 to FX6000	-	902070 0026	20,10
	FX6002, FX7002	FX7000	F13 to F34 Series 7 and 8	902070 0043	15,70
Filter inserts set	S200	-	-	902070 0054	31,20
	S400, FX2002	FX2000	F7 all series	902070 0055	35,30
	S800, FX3002		-	902070 0056	54,50
	FX4002	FX3000, FX4000	-	902070 0023	55,–
	FX5002	FX5000, FX6000	-	902070 0022	60,50
	FX6002, FX7002	FX7000	F28 Series 6 and 7, F34	902070 0010	54,–
	-	-	F13, F21 Series 6 and 7	902070 0014	45,–
	-	-	F14, F21 from Series 8	902070 0013	43,90
	-	-	F28 from Series 8	902070 0012	54,–
Motor 0.18 kW	S200	-	-	902070 0101	455,–
Motor 0.55 kW	S400, S800	FX2000	F7	902070 0100	495,–
Motor 1.1 kW	FX4002	FX3000	F13, F14, F21	902070 0105	799,–
Motor 1.50 kW	FX4002	FX4000 to FX6000	F14 to F28	902070 0102	799,–
Motor 2.20 kW	FX5002 to FX7002	FX7000	F34	902070 0103	869,–
Barrel incl. filter mats	S200	-	-	902070 0006	415,–
	S400	-	-	902070 0007	415,–
	S800	-	-	902070 0008	679,–
	FX2002	FX2000	F7	902070 0035	415,–
	FX3002	-	-	902070 0046	549,–
	FX4002	FX3000, FX4000	-	902070 0034	699,–
	FX5002	FX5000	-	902070 0033	729,–
	FX6002	-	F34	902070 0048	759,–
	FX7002	FX7000	-	902070 0044	999,–
	-	FX6000	-	902070 0032	729,–
	-	-	F13, F14, F21	902070 0111	729,–
	-	-	F28 all series	902070 0112	799,–
Vibration damper for motor fitting	S400, S800	FX2000	F7	902070 0037	69,50
	FX4002 to FX7002	FX3000 to FX7000	F13 to F34	902070 0036	101,–
Maintenance kit: filter mats, discharge filters, cover seals, vibration dampers	S200	-	-	902070 0060	100,–
	S400	-	-	902070 0061	172,–
	S800	-	-	902070 0062	185,–
	2002	FX2000	-	902070 0041	140,–
	FX3002	-	-	902070 0042	155,–
	FX4002	FX3000, FX4000	-	902070 0040	250,–
	FX5002	FX5000, FX6000	-	902070 0039	250,–
	FX6002, FX7002	FX7000	-	902070 0047	250,–
	-	-	F7	902070 0053	172,–
	-	-	F14, F21 Series 8	902070 0051	250,–
	-	-	F28 Series 7, F34 Series 7 and 8	902070 0049	250,–
	-	-	F28 Series 8	902070 0050	250,–

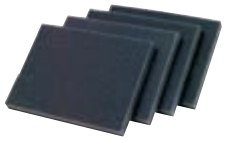
9102



Discharge filter



Cover seal



Filter inserts



Motor



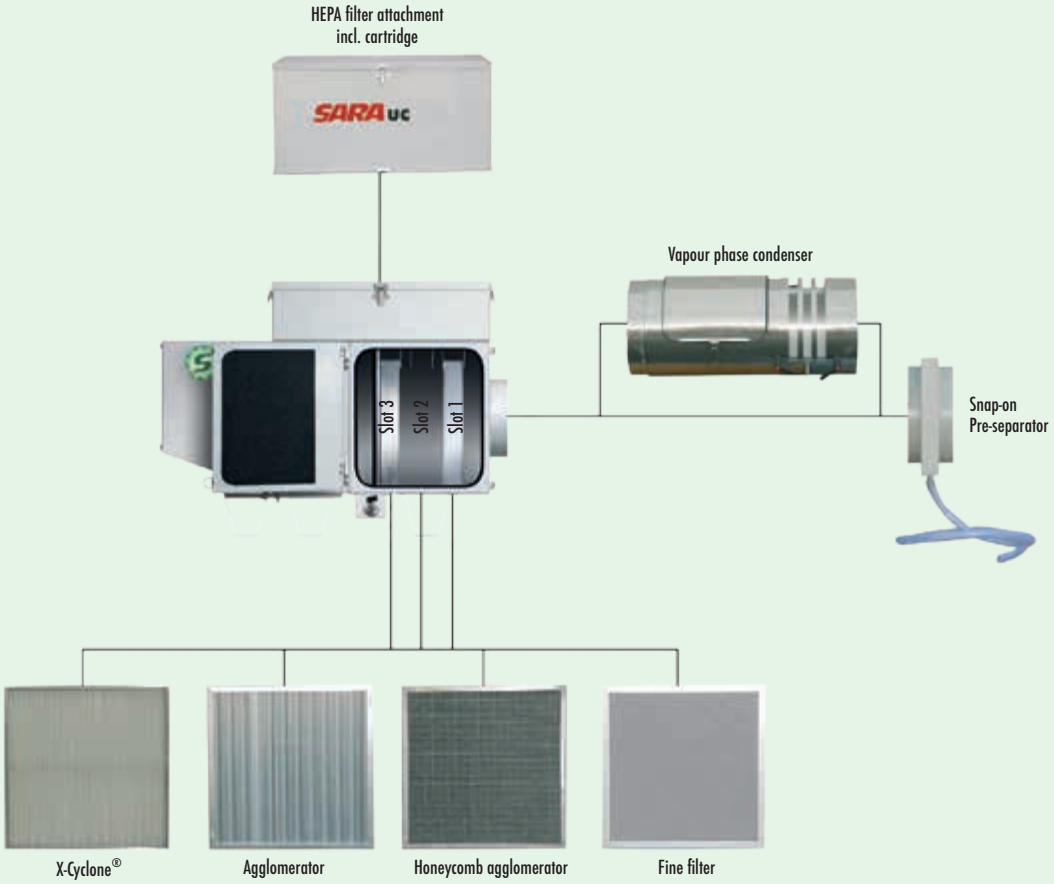
Vibration damper



Maintenance kit

SARA® Modular emulsion mist separator Ultra Cleaner

INFO





UC2-SDIII with HEPA filter attachment, mounting on the machine



UC2-SDIII with HEPA filter attachment, side extraction



UC2-SDIII mounting on the machine

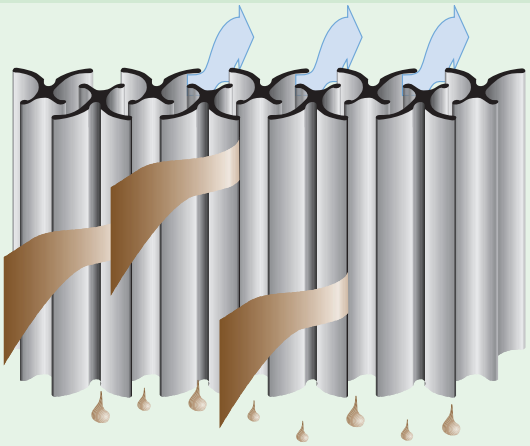
X-Cyclone® Separator

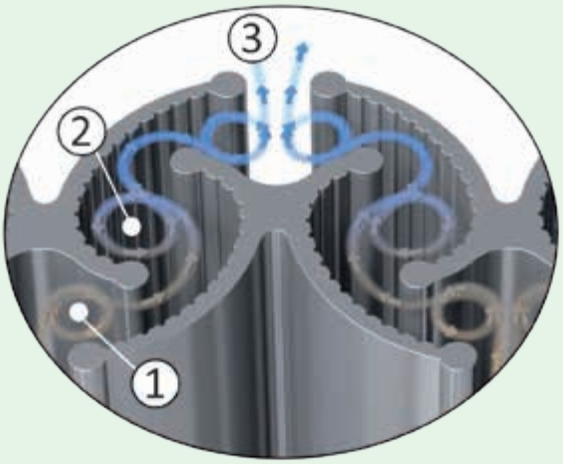
INFO

- Effective mechanical separation of oils, emulsions and other liquid mists (aerosols)
- Patented special profiles arranged into 2 separable panel planes
- Self-cleaning effect due to the special profile formation, smooth surfaces and arrangement

All basic elements can be cleaned and reused, no disposable filters! Flame resistance protection DIN EN 16282

The use of an upstream **X-Cyclone®** system means that up to **96% of particles in the 3.0-5.0 µm** range can be separated. The maintenance intervals of electrostatic industrial filters can consequently be extended by at least 100 %. There is no need to use any other mechanical filter media (no disposal costs).





Technology and operating principle

Stage 1 Pre-separation due to turbulence and swirling in the chamber (1)

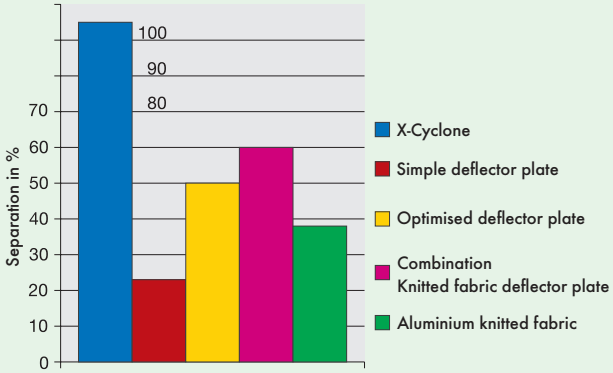
Stage 2 Cyclone effect in the chamber (2) with an extremely high medium tension, relief and tension again. Expulsion of the smallest particle mass.

Stage 3 An **X-Cyclone®** separation element features **X-Cyclone®**, which is always arranged such that the air escaping from two cyclones comes together in a single chamber (3). A certain degree of agglomeration (merging) and turbulence with swirling causes extremely small particles to be separated further.

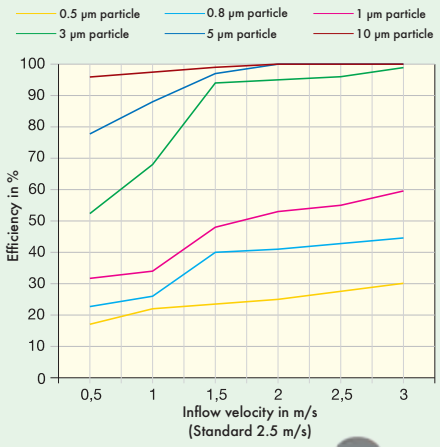
Flame exposure test according to DIN EN 16282

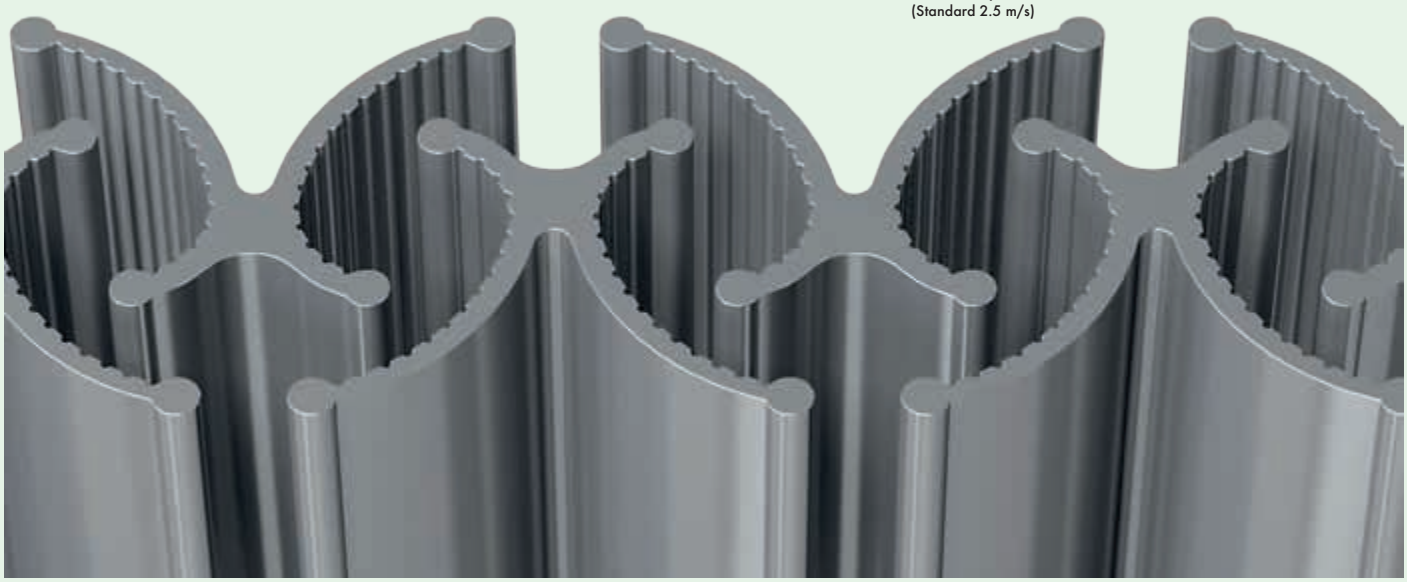
Air can flood the **X-Cyclone®** basic element, but the flames are blocked. Even in the event of an explosion in the workspace, the **X-Cyclone®** prevents any penetration of the flames and blast. Downstream equipment or drainage systems are thus protected.

Effectiveness of various pre-separators by comparison



Separation efficiency of various particle sizes





SARA® Ultra-Cleaner modular emulsion mist separator

- **Mechanical, with patented X-Cyclone®agglomerator system**
- **Thanks to European ErP directives, energy savings of several thousand euros are possible compared to conventional air purifiers.**
- **Works without disposable filters – no subsequent costs!**
- Effective separation of oils, emulsions, other fluids and solid particles
- Complete unit as a recirculating device with an integrated ventilator
- Robust and torsion-free housing made of powder-coated stainless steel (RAL 7035, light grey), smooth internal surface and with service opening
- Bottom section formed as an oil and water-tight collection tray
- Collecting tray fitted with drain cock for emptying, optional siphon available
- Thanks to the diverse installation and assembly possibilities of the Ultra-Cleaner system, most extraction problems arising in connection with various machining processes and the use of different coolant lubricants and oils can be solved with a single appliance.
- Developed, designed and manufactured in conformity with the relevant EU directives
- Ultra-Cleaners are tested for flame resistance in accordance with DIN EN 16282
- Separation efficiencies tested and confirmed by the Fraunhofer Institute for Toxicology and Experimental Medicine
- Permissible ambient temperature for all models 0°C to 50°C
- **Supplied with:** Ultra-Cleaner with frequency converter and motor cover, agglomerator and X-Cyclone® filter insert
- **Pricing:** ex works, including packaging

Self-regulating separator

NEW · NUOVO · NY · NOUVEAU · NUEVO



Single units

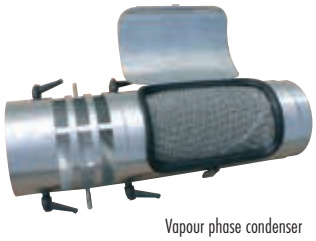
- **Filter system automatically regulates the motor output according to the degree of contamination of the separator. This guarantees that the volume flow, inflow velocity and separation efficiency remain the same until complete contamination (red status indicator).**
- Digital wear indicator

model	Volume flow min. m³/h	Volume flow max. m³/h	Dimensions L x W x H mm	Connection Ø mm	Weight kg	Noise level dB	Motor output kW	I(A)	Tension V	Right-hand art.no.	€	Left-hand art.no.	€
UCS-Mini	0	500	360 x 355 x 565	150	20	50	0.157	1.1	230	**909100** 0001	2.259,–	**909105** 0001	2.259,–
UC1SD	200	1000	865 x 360 x 640	200	44	67	0.75	1.6	400	909100 0010	3.629,–	909105 0010	3.629,–
UC2SD	400	2000	900 x 440 x 720	200	62	69	1.5	3.2	400	909100 0020	5.059,–	909105 0020	5.059,–
UC3SD	600	3000	945 x 520 x 800	300	93	69	2.2	4.3	400	909100 0030	7.249,–	909105 0030	7.249,–
										9103		9103	

Vapour phase condenser

- Increases the extraction efficiency of the filter
- For enlarging particles upstream of the filter system
- For machining with coolant pressures > 20 bar

Description	suitable for	art.no.	€
Vapour condenser 200 mm, L = 400 mm	UC1SD/UC2SD	**909005** 0037	809,–
Vapour condenser 300 mm, L = 400 mm	UC3SD	909005 0038	1.079,–
Stainless steel insert for vapour phase condenser	UC1SD/UC2SD	909005 0040	235,–
Stainless steel insert for vapour phase condenser	UC3SD	909005 0041	280,–
		9104	

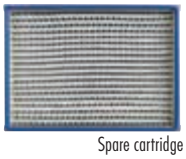


Vapour phase condenser

HEPA filter attachment

- Filters out smoke particulate that can be generated during heavy machining
- For particle sizes < 1 µm

suitable for	Description	art.no.	€
UCS-Mini	HEPA filter attachment incl. cartridge	**909005** 0053	519,–
UC1SD	HEPA filter attachment incl. cartridge	909005 0030	719,–
UC2SD	HEPA filter attachment incl. cartridge	909005 0031	769,–
UC3SD	HEPA filter attachment incl. cartridge	909005 0032	769,–
UCS-Mini	Replacement cartridge DIN EN 60335-2-69:2008 H	984901 3335	305,–
UC1SD	Replacement cartridge DIN EN 60335-2-69:2008 H	909005 0007	440,–
UC2SD	Replacement cartridge DIN EN 60335-2-69:2008 H	909005 0017	475,–
UC3SD	Replacement cartridge DIN EN 60335-2-69:2008 H	909005 0008	509,–
		9104	



Spare cartridge



UC2SD with HEPA filter attachment

Continued on next page >>>

Honeycomb agglomerator

- For agglomerating very fine emulsion particles
- Honeycomb structure for an extremely large surface area
- Washable

Description	suitable for	art.no.	€
Honeycomb agglomerator 330 x 330 x 50	UCS-Mini / UC1SD	**909005** 0110	579,–
Honeycomb agglomerator 410 x 410 x 50	UC2SD	909005 0112	699,–
Honeycomb agglomerator 490 x 490 x 50	UC3SD	909005 0111	959,–

9104


Honeycomb agglomerator

Fine filter

- Extracts small smoke particulate and fine oil particles up to 1 µm
- For thin, resin-free oils
- Coated, partly washable

Description	suitable for	art.no.	€
Fine filter insert	UCS-Mini / UC1SD	**984901** 3333	205,–
Fine filter insert	UC2SD	984901 4141	280,–
Fine filter insert	UC3SD	984901 4949	340,–

9104


Fine filter, coated

Spare parts

Description	suitable for	art.no.	€
X-Cyclone 330 x 330 x 50	UCS-Mini / UC1SD	**984900** 3333	430,–
Agglomerator 330 x 330 x 30	UCS-Mini	909005 0013	385,–
Agglomerator 330 x 330 x 50	UC1SD	909005 0010	445,–
Silencer insert 530 x 320 x 65	UC1SD	909005 0026	83,–

9104


Agglomerator


X-Cyclone


Silencer insert

SARA® Emulsion mist separator Ultra-Eco compact

- **CFD-optimised high-performance separation system with a separation rate of up to 99.9999%**.
- **Thanks to European ErP directives, energy savings of several thousand euros are possible compared to conventional air purifiers**.
- **for processing machines up to approx. 2m³ workspace volume**
- effective separation of liquid-based aerosols
- compact design, direct assembly on the machine
- robust and torsion-free housing made of powder-coated stainless steel
- integrated long-term HEPA filter
- designed, constructed and produced in Germany
- **Supplied with:** Emulsion mist separator Ultra-Eco compact, HEPA filter
- **Pricing:** ex works, including packaging

Compact and energy-efficient



Single unit

model	Volume flow min. m³/h	Volume flow max. m³/h	Dimensions L x W x H mm	Connection Ø mm	Weight kg	Noise level dB	Motor output kW	I(A)	Tension V	art.no.	€
UEC-1000	200	1000	345 x 345 x 595	200	27	67	0.168	1.4	230	**909090** 0010	2.049,–

9111

Spare parts, consumables

Description	art.no.	€
Long-term HEPA filter	**909090** 0100	249,–
Silencer mat	909090 0120	125,–
Motor 220 VAC, 50/60 Hz	909090 0110	529,–

9104


909090 0120


909090 0100

SARA® Ultra-Jet emulsion mist separator

- **Mechanical, with patented X-Cyclone® agglomerator system**
- **Thanks to European ErP directives, energy savings of several thousand euros are possible compared to conventional air purifiers.**
- **No speed regulation**
- **No disposable filters**
- Depending on size, suitable for processing machines of approx. 1-3 m^3 Suitable for internal chamber volume and light-duty chip-removal processes
- Compact design, direct mounting on the machine
- Up to four filter stages, can be retrofitted with a HEPA filter
- Dynamic-static combined filter system
- Dynamically balanced high-performance fan integrated into the filter unit
- Service opening with quick-release clamps
- ULTRA-JET is tested for flame resistance in accordance with DIN EN 16282
- Stainless steel housing powder-coated in RAL 7035 (light grey), high-performance X-Cyclone® separator profiles made of aluminium
- **Supplied with:** Ø 160/150 mm reducer with chip pre-filter insert, 3 m oil return hose
- **Pricing:** ex works, including packaging







Single units

model	Volume flow max. m^3/h	Dimensions L x W x H mm	Connection Ø mm	Weight kg	Motor output kW	I(A)	Tension V	Noise level dB	art.no.	€
Ultra-Jet 1	1000	410 x 410 x 480	150	20	0.25	0.74	400	69	**909016** 0010	2.349,–
Ultra-Jet 2	1400	410 x 410 x 480	150	22	0.5	1.3	400	73	909016 0020	2.939,–

9103

HEPA filter attachment

- Filters out smoke particulate that can occur during heavy machining
- For particle sizes < 1 µm

Description	suitable for	art.no.	€
HEPA filter attachment incl. cartridge	Ultra-Jet 1 & 2	**984901** 3337	729,–
Replacement cartridge DIN EN 60335-2-69:2008 H	Ultra-Jet 1 & 2	984901 3338	310,–

9103

Accessories

Description	suitable for model	art.no.	€
1 set of assembly feet (4 pcs.) 300 mm	Ultra-Jet 1 & 2	**909015** 0004	215,–
Fine filter attachment incl. cartridge	Ultra-Jet 1 & 2	984902 0010	490,–
Silencer mat	Ultra-Jet 1 & 2	984901 0010	115,–
Stand 2 m for Ultra-Jet	Ultra Jet 1 & 2	909015 0005	420,–

9103


984901 0010


984901 3338

SARA® Electrostatic oil mist separator

- **Thanks to European ErP directives, energy savings of several thousand euros are possible compared to conventional air purifiers.**
- Developed for extracting pure oil mists on cutting machines
- Pre-filtering of aerosols and liquid particles by the patented X-Cyclone® and agglomerator system
- Aerosols and particles measuring less than 1µm are separated in the electrostatic collector.
- **All filter elements can be cleaned and reused – no disposable filters.**
- The base of the housing is an oil and water-tight collection tray.
- TÜV-tested fire screen in accordance with DIN EN 16282
- Appliances comply with an ozone limit of 0.2mg/m3
- Permissible ambient temperature 0°C to 40°C
- Stainless steel housing, powder-coated in RAL 7035 (light grey)
- other RAL colours available on request
- Supplied ready to plug in (Harting HAN 10) with integrated fan
- **Supplied with:** Electrostat, glass fibre agglomerator and X-Cyclone® filter insert
- **Pricing:** ex works, including packaging

Self-regulating separator



Single unit

- **Filter system automatically regulates the motor output according to the degree of contamination of the separator. This guarantees that the volume flow, inflow velocity and separation efficiency remain the same until complete contamination (red status indicator).**
- Digital wear indicator

model	Air quantity m³/h	Dimensions L x W x H mm	Connection Ø mm	Weight kg	Noise level dB	Number of collector cells	Motor output kW	I(A)	Tension V	Right-hand art.no.	€	Left-hand art.no.	€
SEF 1000	1000	1325 x 560 x 810	200	117	63	1	0.32	0.95	400	**909120** 1001	6.579,–	**909125** 1001	6.579,–
SEF 1000 D	1000	1540 x 560 x 810	200	143	63	2	0.32	0.95	400	909120 1002	7.789,–	909125 1002	7.789,–
SEF 1000 T	1000	1755 x 560 x 810	200	169	63	3	0.32	0.95	400	909120 1003	9.239,–	909125 1003	9.239,–
SEF 1700	1700	1375 x 525 x 900	200	121	65	1	0.59	1.53	400	909120 1701	8.999,–	909125 1701	8.999,–
SEF 1700 D	1700	1590 x 525 x 900	200	148	65	2	0.59	1.53	400	909120 1702	10.189,–	909125 1702	10.189,–
SEF 1700 T	1700	1800 x 525 x 900	200	175	65	3	0.59	1.53	400	909120 1703	10.799,–	909125 1703	10.799,–
SEF 2500	2500	1375 x 650 x 900	300	185	67	1	1.29	2.86	400	909120 2501	11.169,–	909125 2501	11.169,–
SEF 2500 D	2500	1590 x 650 x 900	300	190	67	2	1.29	2.86	400	909120 2502	14.549,–	909125 2502	14.549,–
SEF 2500 T	2500	1800 x 650 x 900	300	219	67	3	1.29	2.86	400	909120 2503	16.889,–	909125 2503	16.889,–
										9103		9103	

SARA® Modular separator with spray system

- **Thanks to European ErP directives, energy savings of several thousand euros are possible compared to conventional air purifiers.**
- **Specially developed for use when machining dry cast iron, graphite and plastics, and for machining processes which generate extensive vapour and smoke.**
- **Water wall formed inside the appliance for pre-filtering**
- Aerosols, solid particles such as dust created by cast iron machining, and hazardous gas molecules are bound and washed out
- The filter system must be connected to the existing cooling circuit on the machine or alternatively to a separate tank and pump supplied by the customer.
- 1" hose connection for inlet and 2" thread for outlet
- Flow-optimised air duct inside the appliance ensures that the entire filter surface is sprayed while reducing water circulation volume.
- The service life of the recirculated coolant is extended as a result of oxygenation
- Separation of aerosols and liquid particles by the patented X-Cyclone® and agglomerator system
- Permissible ambient temperature 0°C to 50°C
- Stainless steel housing, powder-coated in RAL 7035 (light grey),
- other RAL colours available on request
- **Supplied with:** Spray mist separator with nozzles, agglomerator and X-Cyclone® filter insert
- **Pricing:** ex works, including packaging

Self-regulating separator



909140 2500

Single units

- **Filter system automatically regulates the motor output according to the degree of contamination of the separator. This guarantees that the volume flow, inflow velocity and separation efficiency remain the same until complete contamination (red status indicator).**
- Digital wear indicator

model	Air quantity m³/h	Dimensions L x W x H mm	Connection Ø mm	Weight kg	Noise level dB	Motor output kW	I(A)	Tension V	Right-hand art.no.	€	Left-hand art.no.	€
UCSD 800	800	1050 x 370 x 765	150	52	63	0.25	0.74	400	**909140** 0800	4.569,–	**909145** 0800	4.569,–
UCSD 1200	1200	1200 x 370 x 765	200	60	65	0.5	1.3	400	909140 1200	7.519,–	909145 1200	7.519,–
UCSD 2500	2500	1280 x 550 x 925	300	116	67	1.17	2.6	400	909140 2500	10.149,–	909145 2500	10.149,–
UCSD 4000	4000	1300 x 655 x 1045	300	158	72	1.6	3.55	400	909140 4000	14.999,–	909145 4000	14.999,–
									9103		9103	

Accessories

Description	art.no.	€
Connection kit incl. magnetic valves, Siemens controller, installation material, without pump	**909041** 0010	2.889,–
	9104	

SARA® Mobile emulsion mist separator

- **With patented X-Cyclone® agglomerator system**
- **Thanks to European ErP directives, energy savings of several thousand euros are possible compared to conventional air purifiers.**
- Effective separation of liquid-based aerosols and solid particles
- Robust and torsion-free housing made of powder-coated stainless steel (RAL 7035 - light grey)
- Fan impeller and electric motor in separate, flow-optimised pressure casing
- The medium pressure fan is enclosed in a flow-optimised, cast aluminium housing. There are no exposed electric or motor components.
- HEPA filter with 30 m² filter surface
- Suction arm with integrated stainless steel mechanics
- An intelligent monitoring system with electronic flow sensors guarantees the continuous function monitoring of the suction.
- Basic elements with spark and flame-arrest protection tested in accordance with UL 1046, ULC-S 649, JFEA, DIN 18869-5 and DIN EN 16282
- Efficiency and function of the air purifier certified by CFD flow analysis
- The air flows indicated in the product description are achieved throughout the entire operating life.
- Designed, constructed and produced in Germany
- **Supplied with:** Mobile emulsion mist separator with one or two suction arms, X-Cyclone® filter insert, HEPA filter
- **Pricing:** ex works, including packaging

Ideal solution for open machining centres



909110 0010

909110 0020

Single units

model	Volume flow max. m³/h	Suction arm	Dimensions L x W x H mm	Suction arm Ø mm	Suction arm length m	Weight kg	Noise level dB	Output W	I(A)	Tension V	art.no.	€
SMEA-1	2000	1	750 x 750 x1760	200	2	259	75	2000	4.4	400	**909110** 0010	13.999,–
SMEA-2	2000	2	750 x 750 x1760	160	2	268	75	2000	4.4	400	909110 0020	14.359,–

9103

Spare parts, consumables

Description	suitable for	art.no.	€
Long-term HEPA filter	SMEA-1 & 2	**909150** 0010	656,–
Motor 2.2 kW	SMEA-1 & 2	909150 0020	2.699,–
Suction arm Ø 200 mm	SMEA-1 & 2	909150 0030	659,–
Suction arm Ø 160 mm	SMEA-1 & 2	909150 0040	621,–

9103



909150 0010

SARA® Mobile smoke filter 3D

- **Removal of smoke, vapour, odour and gas from exhaust air**.
- The fan is designed for energy-efficiency.
- Thorough air purification and air conditioning using gas filter for odour reduction, HEPA H13 high-performance particle and dust filter.
- Robust and torsion-free housing made of powder-coated stainless steel (RAL 7035 - light grey).
- The HEPA filter is equipped with a high-quality glass-fibre medium and has a large filtering surface.
- Suction arm with integrated stainless steel mechanics
- An intelligent monitoring system with electronic flow sensors guarantees the continuous function monitoring of the suction.
- The air flows indicated in the product description are achieved throughout the entire operating life.
- Designed, constructed and produced in Germany
- **Applications:** 3D printing, laser engraving, laser marking, laser cutting, wafer processing, eroding and soldering
- **Supplied with:** 3D smoke filter with two suction arms, gas filter, HEPA H13 high-performance particle filter, coarse particle filter
- **Pricing:** ex works, including packaging

Ideal for 3D printing



Single unit

model	Volume flow max. m³/h	Suction arm	Dimensions L x W x H mm	Suction arm Ø mm	Weight kg	Noise level dB	Output W	I(A)	Tension V	art.no.	€
SMR-3D	500	2	400 x 400 x 622	70	33	≤ 50	168	1.4	230	**909111** 0010	3.499,–

9103

Spare parts, consumables

Description	suitable for	art.no.	€
Active carbon gas filter	SMR-3D	**909151** 0010	389,–
HEPA H13 high-performance HEPA filter	SMR-3D	909151 0020	405,–
Coarse particle filter	SMR-3D	909151 0030	219,–
Suction arm Ø 70 mm	SMR-3D	909151 0040	231,–
Motor 0.157 kW	SMR-3D	909151 0050	1.449,–

9103



909151 0030



909151 0020



909151 0010

SARA® Welding fume extraction

- **With patented X-Cyclone® agglomerator system**
- **Thanks to European ErP directives, energy savings of several thousand euros are possible compared to conventional air purifiers**.
- Purifying the exhaust air of welding systems. Also suitable for separating, marking and welding operations with laser systems.
- Robust and torsion-free housing made of powder-coated stainless steel (RAL 7035 - light grey).
- Fan impeller and electric motor in separate, flow-optimised pressure casing
- The medium pressure fan is enclosed in a flow-optimised, cast aluminium housing. There are no exposed electric or motor components.
- HEPA filter with 30 m² filter surface
- Suction arm with internal mechanics and suction nozzle
- An intelligent monitoring system with electronic flow sensors guarantees the continuous function monitoring of the suction.
- Basic elements with spark and flame-arrest protection tested in accordance with UL 1046, ULC-S 649, JFEA, DIN 18869-5 and DIN EN 16282.
- Efficiency and function of the air purifier certified by CFD flow analysis.
- The air flows indicated in the product description are achieved throughout the entire operating life.
- Designed, constructed and produced in Germany
- **Supplied with:** Welding fume extractor with one or two suction arms, X-Cyclone® filter insert, HEPA filter
- **Pricing:** ex works, including packaging



909112 0010

909112 0020

Single units

model	Volume flow max. m³/h	Suction arm	Dimensions L x W x H mm	Suction arm Ø mm	Suction arm length m	Weight kg	Noise level dB	Output W	I(A)	Tension V	art.no.	€
SMSA-1	2000	1	720 x 700 x 1360	200	2000	187	75	2000	4.4	400	**909112** 0010	13.999,–
SMSA-2	2000	2	720 x 700 x 1360	160	2000	197	75	2000	4.4	400	909112 0020	14.359,–

9103

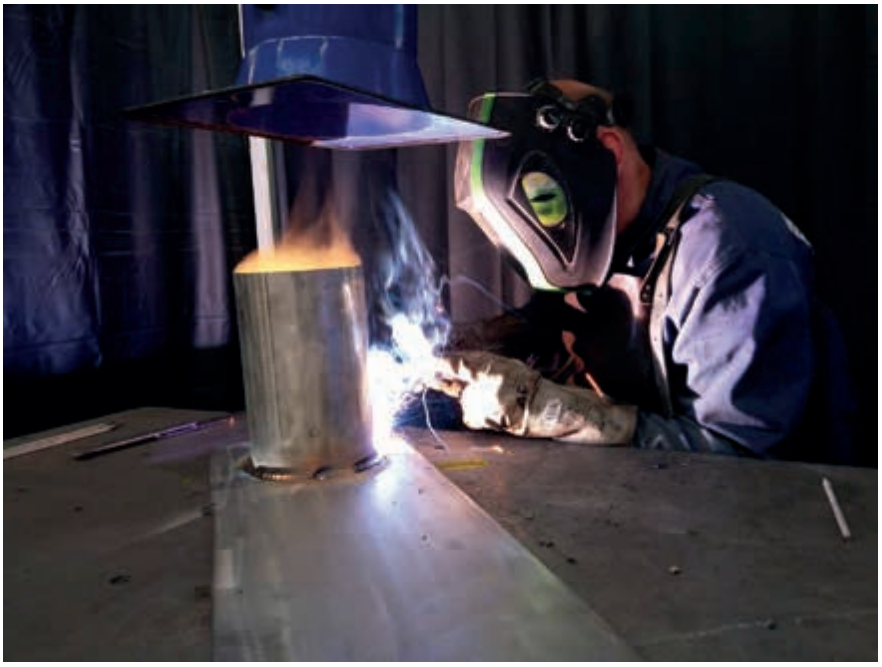
Spare parts, consumables

Description	suitable for	art.no.	€
Long-term HEPA filter	SMSA-1 & 2	**909152** 0010	656,–
Motor 2 kW	SMSA-1 & 2	909152 0020	2.699,–
Suction arm Ø 200 mm	SMSA-1 & 2	909152 0030	659,–
Suction arm Ø 160 mm	SMSA-1 & 2	909152 0040	621,–

9104



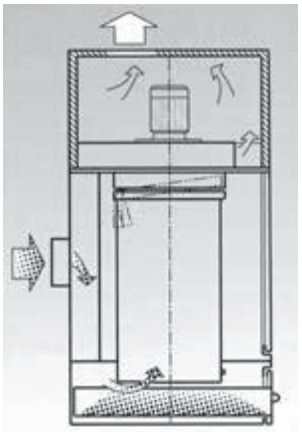
909152 0010

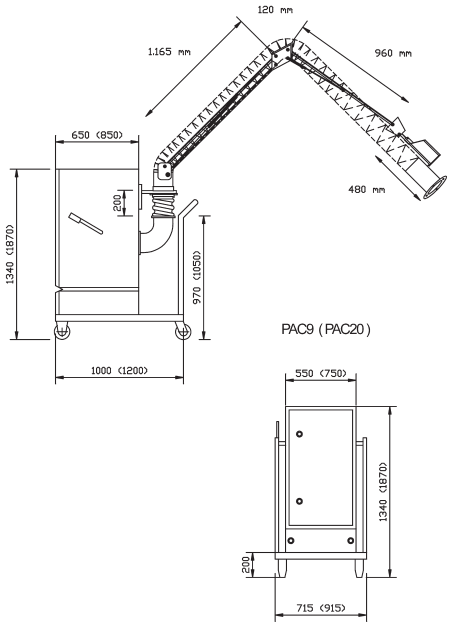


SARA® SARA-PAC Power-Air-Cleaner dry dust filter system

- Separation system with air flow of 900 m³/h or 2000 m³/h
- For virtually all typical application problems in industrial and artisan manufacturing relating to the extraction of dry dust
- The basic unit is a pocket filtration device with polyester needle felt filter bags, which can be cleaned using either a vibrating roller or a pneumatic vibrator.
- Typical areas of application include the extraction of dust generated by polishing, cutting, sawing, milling as well as de-burring when machining metal, stone, wood and plastic
- Standard colour RAL 5007 (brilliant blue), other RAL colours available on request
- **Pricing:** ex works, including packaging

CE







Ill. shows SARA-PAC 20 with dust container and secondary filter

Complete unit for stationary connection

Description	Volume flow max. m³/h	Width mm	Depth mm	Total height mm	Connection Ø mm	Noise level dB	Weight kg	Motor output kW	Connection V	Current A	Contents, dust drawer l	art.no.	€
SARA-PAC 9 with dust drawer	900	550	650	1200	125	72	90	0.75	230/400	3.1 / 1.8	45	**988102** 0009	2.949,–
SARA-PAC 9 with dust container	900	550	650	2000	125	72	90	0.75	230/400	3.1 / 1.8	45	988102 1009	3.129,–
SARA-PAC 20 with dust drawer	2000	750	850	1650	200	75	220	2.2	230/400	8.1 / 4.7	120	988102 0020	3.859,–
SARA-PAC 20 with dust container	2000	750	850	2400	200	75	220	2.2	230/400	8.1 / 4.7	120	988102 1020	4.269,–
												9108	

Accessories and consumables

Description	For SARA-PAC 9 art.no.	€	For SARA-PAC 20 art.no.	€
Chassis	**988106** 0001	370,–	**988107** 0001	549,–
Suction arm, DN 125 mm, or DN 200 mm length 3 m	988106 0002	1.379,–	988107 0002	1.569,–
Pneumatic filter cleaning	988106 0003	2.289,–	988107 0003	2.529,–
Secondary filter unit EU 12	988106 0004	1.579,–	988107 0004	2.619,–
Secondary filter unit, active carbon	988106 0005	1.579,–	988107 0005	2.619,–
Spare filter insert EU 12	988106 0006	699,–	988107 0006	1.399,–
Spare filter insert, active carbon	988106 0007	889,–	988107 0007	1.769,–
Spare filter bag, standard	988106 0008	250,–	988107 0008	400,–
Spare filter bag, anti-static	988106 0009	265,–	988107 0009	420,–
Spare filter bag, coated	988106 0010	345,–	988107 0010	450,–
Water pre-separator	988106 0011	2.619,–	988107 0011	4.809,–
	9108		9108	



Installation accessories for filter systems

Pre-filter for liquids and rough particles

Description	Connection Ø mm	art.no.	€
Pre-filter	150	**902050** 1150	325,–
Pre-filter	200	902050 1200	325,–
Pre-filter	300	902050 1300	609,–
Pre-filter filter insert 150/200 mm		902051 1520	9,70
Pre-filter filter insert 300 mm		902051 0300	18,50
Filter insert, coarse, 150/200 mm, black		902052 1520	9,70
Filter insert, coarse, 300 mm, black		902052 0300	18,50

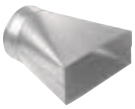
9102




Damper


Reducer


Return hose


Fish-mouth nozzle


Hose connector


Inlet gasket


Hose clamp


Pipe bend 90°


Suction hose


Y-connector


Flange joint


Stand for direct mounting


Stand, extendible


Stands

Miscellaneous installation accessories

Description	suitable for	art.no.	€
Reducer to 75 mm	Connection Ø 150 mm	**902050** 0050	54,–
Reducer to 75 mm	Connection Ø 200 mm	902050 0051	78,50
Reducer to 75 mm	Connection Ø 300 mm	902050 0052	179,–
Reducer to 100 mm	Connection Ø 125 mm	902050 0015	54,–
Reducer to 100 mm	Connection Ø 150 mm	902050 0014	54,–
Reducer to 100 mm	Connection Ø 200 mm	902050 0017	78,50
Reducer to 150 mm	Connection Ø 200 mm	900150 0013	78,50
Reducer to 200 mm	Connection Ø 300 mm	902050 0016	179,–
Hose per meter	Nominal width 75 mm	900150 0118	61,50
Hose per meter	Nominal width 100 mm	902050 0001	32,50
Hose per meter	Nominal width 125 mm	900150 0006	45,20
Hose per meter	Nominal width 150 mm	900150 0002	52,50
Hose per metre	Nominal width 200 mm	900150 0001	67,–
Hose per metre	Nominal width 300 mm	900150 0014	95,50
Hose clamp 70-90 mm	Nominal width 75 mm	900160 0001	3,60
Hose clamp 100-120 mm	Nominal width 100 mm	900160 0002	4,15
Hose clamp 120-140 mm	Nominal width 125 mm	900160 0003	4,45
Hose clamp 150-170 mm	Nominal width 150 mm	900160 0004	5,20
Hose clamp 200-220 mm	Nominal width 200 mm	900160 0005	6,40
Hose clamp 300-320 mm	Nominal width 300 mm	900160 0006	8,55
Flange joint	Connection Ø 100 mm	902050 0013	59,50
Flange joint	Connection Ø 150 mm	900150 0012	65,50
Flange joint	Connection Ø 200 mm	900150 0011	76,–
Flange joint	Connection Ø 300 mm	900150 0015	165,–
Y-connector 2 x 100 mm	Connection Ø 100 mm	902050 0012	109,–
Y-connector 2 x 100 mm	Connection Ø 150 mm	902050 0011	149,–
Y-connector 2 x 150 mm	Connection Ø 150 mm	902050 0010	159,–
Y-connector 2 x 150 mm	Connection Ø 200 mm	900150 0010	209,–
Y-connector 2 x 200 mm	Connection Ø 300 mm	902050 0008	399,–

9102

Description	suitable for	art.no.	€
Fish-mouth nozzle	Connection Ø 100 mm	902050 0020	169,–
Fish-mouth nozzle	Connection Ø 125 mm	900150 0019	169,–
Fish-mouth nozzle	Connection Ø 150 mm	900150 0021	169,–
Fish-mouth nozzle	Connection Ø 200 mm	900150 0020	169,–
Damper	Connection Ø 100 mm	902050 0022	60,50
Damper	Connection Ø 150 mm	900150 0023	74,–
Damper	Connection Ø 200 mm	900150 0022	81,–
Pipe bend 90°	Connection Ø 100 mm	900150 0018	220,–
Pipe bend 90°	Connection Ø 150 mm	900150 0017	220,–
Pipe bend 90°	Connection Ø 200 mm	900150 0016	220,–
Gasket 75 mm for inlet opening	S 200	902050 0062	37,60
Gasket 150 mm for inlet opening	S 400, S 800	902050 0063	47,80
Gasket 150 mm for inlet opening	FX4002	902050 0061	47,80
Gasket 200 mm for inlet opening	FX5002, FX6002, FX7002	902050 0060	47,80
Stand, extendible 1525-2740 mm	S400, S800	902050 0028	689,–
Stand, extendible 1525-2740 mm	FX4002, FX5002	902050 0023	689,–
Stand, extendible 1525-2740 mm	FX6002, FX7002	902050 0030	689,–
Stands 2000 mm	Ultra-Cleaner filter systems	909005 0009	589,–
Stand for mounting directly on the machine	FX4002, FX5002	902050 0025	549,–
Stand for mounting directly on the machine	FX6002, FX7002	902050 0039	739,–
Upper stand section with rod	S400, S800	902050 0046	340,–
Upper stand section with rod	FX4002, FX5002	902050 0034	340,–
Upper stand section with rod	FX6002, FX7002	902050 0045	340,–
Wall bracket	S200, S400, S800	902050 0032	260,–
Wall bracket	FX4002, FX5002	902050 0036	260,–
Wall bracket	FX6002, FX7002	902050 0040	260,–
Siphon	SARA filter systems	909005 0002	182,–
Connection for oil return hose	SARA filter systems	909005 0004	46,10
Oil return hose, per metre	All filter systems	902050 0005	9,–

9102

Suction hose Flexi 75

- Flexible, pliable segment hose made of acetal copolymer
- Specially developed to extract chips, smoke, vapour, gas, lubricant mist and other media.
- **Outer diameter 75 mm**
- Individual hose segments can be joined to any desired length and combined with any nozzles and accessories.
- Can be accurately set-up with just one hand.

Precision extraction



Individual components

Description	art.no.	€
Square nozzle 150 x 90 mm	**900170** 0150	8,30
Adapter for metal pipe	900170 0200	6,65
Slider valve	900170 0250	23,–
300 mm segment hose	900170 0300	23,60
Two 300 mm segment hoses	900170 0600	44,10
	9104	



Sets

- Each set contains segment hoses, adapter for metal pipe, slider valve and square nozzle 150 x 90 mm

Length mm	art.no.	€
1000	**900170** 1000	92,50
2200	900170 2000	171,–
3100	900170 3000	230,–
	9104	



SARA® Filter fleece

INFO



Save 30% on maintenance costs | No downtime | 2 years' protection with one roll | No opening the switch cabinets | Replace in just 5 seconds | Protect valuable installations for just 5 cents | Prevent the spread of harmful particles | Visual check: filter is replaced in good time

SARA® Filter fleece

- Filter fleece to protect electrical and electronic equipment for industrial manufacturing plants and electric motors against oil mist and dust.
- Heavily contaminated filters can reduce the airflow and cause the device to overheat.
- The inspection for replacing the filter fleece is visual. If the filter is covered in impurities, it must be replaced.

Up to 30 % savings in maintenance costs!



Filter fleece for switch cabinets

- Each roll contains 110 sheets
- Sheet length 200mm
- Magnetic holder
- **Suitable for machine tools, cooling systems, control cabinets, robots, CNC machines**



Width mm	art.no.	€
200	**991001** 2012	42,–
300	991001 3012	74,–
400	991001 4006	85,–
500	991001 5006	97,–
600	991001 6006	108,–

9112



Filter fleece for compressors

- Each roll contains 60 sheets
- Sheet length 200mm
- **Other lengths up to 1500mm available on request**
- Magnetic holder
- **Suitable for compressors, heat exchangers, air-conditioning units**



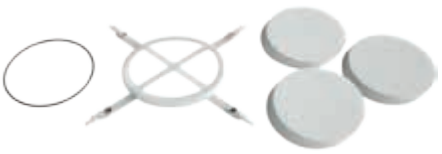
Width mm	art.no.	€
200	**991003** 2012	44,–
300	991003 3012	77,50
400	991003 4006	89,50
500	991003 5006	102,–
600	991003 6006	113,–

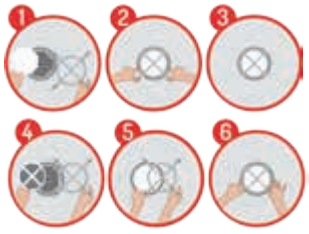
9112



Filter fleece for electric motors

- Suitable for electric motors
- **Supplied with:** 12 filter fleeces, 10 clamping rings, 1 plastic fastening system with magnet





Ø mm	art.no.	€
100	**991005** 1036	47,50
120	991005 1236	50,–
150	991005 1518	57,50
175	991005 1718	62,50
200	991005 2008	67,50
230	991005 2308	77,50
260	991005 2605	85,–
300	991005 3005	92,50

9112

Cleaning with ultrasonics

INFO

Ultrasonics
Tiny imploding vacuum bubbles have an intense yet gentle cleaning effect.

Temperature
In most cases, the cleaning effect is greatly enhanced by heat.



Chemistry
The right cleaning chemistry reduces surface tension and loosens and binds particles of dirt.

Time
The use of coordinated chemistry during ultrasonic cleaning significantly shortens the cleaning time.

The Sinner's Circle – the four influencing factors in the ultrasonic cleaning process

Classic fields of application
Surface technology, optics, laboratory, mechanical and plant engineering, watch and jewellery technology, medicine, dental, hygiene, medical engineering, aviation, electronics, automobile industry, textile industry, food processing industry and much more besides

Ultrasonic cleaning – one of the best procedures around today
Ecological, economical, intense and gentle at the same time.

Ultrasonics shorten the cleaning time

"Ultrasonics" is used to refer to vibrations above the range audible to the human ear (> 20 kHz). Vibrations of between 20 and 130 kHz are used for cleaning. Using vibrating elements attached to the tray shelf of a cleaning tray, underpressure and overpressure waves ripple through the liquid. From a particular vibration power



density, the liquid compound ruptures and tiny, nanometre-sized vacuum bubbles are created. These tiny bubbles implode near the surface of the cleaning agent and create a pressure jet directed at the surface. This process is known as cavitation. It ensures intense yet gentle removal of particles of dirt. This happens in all places covered with liquid – in the narrowest of joints and blind holes too. Parts and inner areas which are particularly complicated from a geometric



standpoint – including areas where spray jets or manual cleaning methods fall short – are thoroughly cleaned.

Ultrasonic cleaning equipment with heating system Elmasonic EASY

- contemporary design, with robust cleaning trays made of wear-resistant stainless steel
- Noise-reducing plastic cover with additional function as a drip tray (model S 900/H with stainless steel cover, no drip collector function)
- Nine different sizes with tray volume 0.8 to 28 litres
- Permanent **integrated sweep function** with 100% ultrasonic function at a frequency of 37 kHz
- **Switchable pulse function** to remove tough, mineral-based contaminants and polishing compounds. The ultrasonic effect is boosted up to 20% and the impurities can be removed quickly and easily.
- Warning when the individually adjustable temperature limit is reached to prevent albuminous contaminants hardening or sensitive parts becoming damaged.
- **Supplied with:** with cover and without basket
- **Pricing:** ex works, includes packaging



Basic unit without cover and without basket

Type	Dimensions W x D x H mm	Weight kg	Head output kW	Basket load kg	Basket interior dimensions mm	Basket meshes mm	Total power consumption W	Discharge diameter mm	Handles	Tray content l	art.no.	€
EASY 10/H	206 x 133 x 182	2.0	0/0.06	1	177 x 73 x 30	7x1	30	-	-	0.8	**986011** 1080	325,–
EASY 20/H	176 x 189 x 218	2.1	0/0.12	1	112 x 103 x 49	7x1	35	-	2	1.75	986011 0175	375,–
EASY 30/H	301 x 189 x 218	3.3	0/0.02	1	198 x 106 x 49	7x1	80	-	2	2.75	986011 0275	405,–
EASY 40/H	301 x 189 x 268	4.0	0/0.2	3	190 x 105 x 74	7x1	140	-	2	4.25	986011 1425	590,–
EASY 60/H	362 x 201 x 269	5.1	0/0.4	5	255 x 115 x 74	9x1	150	3/8	2	5.75	986011 1575	695,–
EASY 100/H	363 x 289 x 272	5.9	0/0.4	6	255 x 200 x 73	9x1	150	3/8	2	9.5	986011 1950	830,–
EASY 120/H	363 x 289 x 272	7.5	0/0.8	6	250 x 190 x 113	9x1	200	3/8	2	12.75	986011 1275	1.070,–
EASY 180/H	393 x 352 x 322	8.5	0/0.8	8	280 x 250 x 113	9x1	200	3/8	2	18	986011 1800	1.170,–
EASY 300/H	566 x 352 x 322	11.0	0/1.2	10	455 x 250 x 112	9x1	300	3/8	2	28	986011 2800	1.470,–

9136

Ultrasonic cleaning equipment with heating system Elmasonic S

- Contemporary design, with robust cleaning trays made of wear-resistant stainless steel
- Noise-reducing plastic cover with additional function as a drip tray (model S 900/H with stainless steel cover, no drip collector function)
- Eight different sizes with tray volume 0.8 to 90 litres
- All appliances with ultrasonic frequency 37 kHz, sweep and degas function
- Heating systems with temperature-controlled function (control range 30 °C - 80 °C, i.e. the cleaning process can be started manually immediately or when the specified temperature is reached
- **Supplied** without cover or basket (S 10/H with cover)
- **Pricing:** ex works, including packaging





Basic unit without cover and basket

Type	Dimensions W x D x H mm	Weight kg	Head output kW	Basket load kg	Basket interior dimensions mm	Basket meshes mm	Total power consumption W	Discharge diameter in	Handles	Ultrasound point performance W	Tray content l	art.no.	€
S 10/H with cover	206 x 133 x 182	2.0	0/0.06	1	177 x 73 x 30	7x1	30/90	-	-	240	0.8	**986012** 1080	340,–
S 30/H	300 x 179 x 214	3.3	0/0.2	1	198 x 106 x 50	7x1	80/280	3/8	2	320	2.75	986012 0275	625,–
S 40/H	300 x 179 x 264	4.0	0/0.2	3	190 x 105 x 75	7x1	140/340	3/8	2	500	4.25	986012 1425	935,–
S 60/H	365 x 186 x 264	5.1	0/0.4	5	255 x 115 x 75	9x1	150/550	3/8	2	600	5.75	986012 1575	1.100,–
S 100/H	365 x 287 x 264	5.9	0/0.4	6	255 x 200 x 75	9x1	150/550	3/8	2	600	9.5	986012 1950	1.310,–
S 180/H	390 x 340 x 321	8.5	0/0.8	8	280 x 250 x 115	9x1	200/1000	3/8	2	800	18	986012 1800	1.845,–
S 300/H	568 x 340 x 321	11.0	0/1.2	10	455 x 250 x 115	9x1	300/1500	3/8	2	1200	28	986012 2800	2.300,–
S 900/H	715 x 570 x 467	40	2	30	545 x 450 x 250	16x1.2	2800	1/2	4	3200	90	986012 9000	4.660,–

9136

Ultrasonic cleaning agent tec clean

- Highly efficient concentrates for preparation with water
- Application dose 1 - 10 % depending on cleaning agent

Description	Contents	art.no.	€
tec clean A3	2.5	**986010** 0325	29,–
tec clean A3	10	986010 0310	78,–
tec clean A4	2.5	986010 0425	29,–
tec clean A4	10	986010 0410	78,–
tec clean A5 powder	0.85	986010 0585	22,–
tec clean S1	2.5	986010 0125	29,–
tec clean S1	10	986010 0110	79,–
tec clean S2	2.5	986010 0225	39,–
tec clean S2	10	986010 0210	105,–

9136



	Main contaminant	Haupt-Main surfaces	Properties	pH value	Amount
tec clean A3 Iron & high-grade steel cleaner	cutting oils, drawing grease, soot, cinders Check grinding, polishes, not for aluminium or light metals!	high-grade steel, steel and other iron-based materials, titanium and precious metals, cast iron, non-ferrous metal, brass, glass and quartz! alkaline	liquid, emulsifying contains silicates and phosphates,	12.0	3 - 6 %
tec clean A4 All-purpose cleaner	Oils, grease, soot, coking cinders, dust, fingerprints	high-grade steel, steel, iron, cast iron, aluminium and light metals nickel, zinc, plastic, ceramic, glass, quartz, rubber	liquid, usually de-emulsifying contains silicates and phosphates, alkaline	13.4	1 - 5 %
tec clean A5 power cleaner for iron and light metals	scaled and resinified oils and greases grinding and polishing agent, paint residues, wax	high-grade steel, steel, iron, cast iron, aluminium and light metals nickel, high-grade steel, steel, zinc	powdered, emulsifying contains silicates and phosphates, alkaline	11.5	1 - 4 %
tec clean S1 weakly acidic cleaning agent	rust, limescale, oxidation layers (e.g. copper rust), greases, oils	non-ferrous metal, high-grade steel, aluminium and light metals, brass remove steel, plastic, glass, steel immediately after rust removal from bath and rinse with anti-corrosive agent!	liquid, emulsifying acidic	1.6	1 - 5 %
tec clean S2 highly acidic cleaning agent	mineral contaminants such as limescale, rust and other oxides, strippable coverings	high-grade steel, steel, iron, cast iron, carbide, brass, nickel, non-ferrous and high-grade metals, remove steel, iron, cast iron immediately after rust removal	liquid, emulsifying acidic	< 1.0	1 - 10 %

Elma Accessories for ultrasonic cleaning equipment

Cover



suitable for	art.no.	€
Type EASY 10/H, S 10/H	**986013** 1080	13,50
Type EASY 20/H	986013 0175	18,50
Type EASY 30/H, S 30/H	986013 0275	21,–
Type EASY 40/H, S 40/H	986013 1425	21,–
Type EASY 60/H, S 60/H	986013 1575	26,–
Type EASY 100/H, S 100/H	986013 1950	34,–
Type EASY 120/H, S 120/H	986013 1275	34,–
Type EASY 180/H, S 180/H	986013 1800	36,–
Type EASY 300/H, S 300/H	986013 2800	42,–
Type S 900/H	986013 9000	140,–
	9136	

Basket inserts



suitable for	art.no.	€
Type EASY 10/H, S 10/H	**986014** 1080	36,–
Type EASY 20/H	986014 0175	40,–
Type EASY 30/H, S 30/H	986014 0275	46,–
Type EASY 40/H, S 40/H	986014 1425	52,–
Type EASY 60/H, S 60/H	986014 1575	65,–
Type EASY 100/H, S 100/H	986014 1950	140,–
Type EASY 120/H, S 120/H	986014 1275	140,–
Type EASY 180/H, S 180/H	986014 1800	160,–
Type EASY 300/H, S 300/H	986014 2800	180,–
Type S 900/H	986014 9000	375,–
	9136	

SARA® Venturi cleaner table

- **Mobile cleaning table for parts and machinery**
- The pneumatic blow gun is continuously supplied with compressed air independently of the foot pedal so that the gun can also be used to clean the machine cabin.
- **Filterless operation, completely maintenance-free**
- **Stainless steel housing** with integrated transport castors
- Equipped with patented X-Cyclone® filter element to prevent aerosol discharge
- Quick connection to the existing pneumatic system
- Negative pressure nozzle for extracting solid particles and liquid mists
- Developed, designed and manufactured in conformity with the relevant EU directives
- Also available with integrated washing table on request
- **Supplied with:** Supplied ready for connection to quick-action pneumatic couplings, including pneumatic blow gun, Y connector, safety screen and operating manual
- **Pricing:** ex works, including packaging



Working height mm	H mm	B mm	T mm	Compressed air connection bar	Weight kg	Noise level dB	art.no.	€
900	1300	300	300	5 - 10	26	64 - 70	**908500** 0300	1.599,–
900	1300	400	500	5 - 10	40	64 - 70	908500 0400	1.999,–
900	1300	500	500	5 - 10	45	64 - 70	908500 0500	2.049,–
900	1300	1000	500	5 - 10	82	64 - 70	908500 1000	3.479,–
							9111	

SARA® Chip and emulsion vacuum cleaner



- **Mobile vacuum cleaner for removing coarse particles from liquids as well as clearing up spills and wet chips**
- **A fully automatic bypass process is used to treat the liquid, with no staff intervention involved (simultaneous suction and drainage possible)**
- Quick and easy disposal of foreign matter thanks to removable basket (Ø 3mm perforated sheet)
- Permanent fill level monitoring by means of a viewing tube on the container
- Mechanical float device
- Safety filter cloth with ring – hydrophobic & oleophobic properties
- Fluid drained by an integrated immersion pump
- Colour: RAL 7035 (light grey)
- **Supplied with:** 3m suction hose, 2-pcs. hand tube, floor nozzle with rubber edges, crevice nozzle, PEM pump hose with 1" ball valve, aluminium hose holder and utensil box
- **Pricing:** ex works, includes packaging

Standard version

- Max. intake air: 360m³/h

Storage capacity l	Air quantity m³/h	Negative pressure mbar	Motor output kW	Tension V	Dimensions L x W x H mm	Weight kg	art.no.	€
80	360	220	2 x 1.1 kW	230	970 x 580 x 1300	55	**908040** 0001	3.359,–

9113

Spare parts, consumables

Description	Illustration	art.no.	€
PEM suction hose, light	1	**908050** 0010	51,–
Aluminium Storz coupling Type C hose connector		908050 0020	45,30
Hose clamp 32-50 mm		908050 0030	9,70
PEM hose end piece NW38		908050 0040	37,40
Crevice nozzle NW38, vacuum opening 60 x10mm, chrome-plated	4	908050 0070	116,–
PP float Ø 63mm x 130mm		908050 0090	89,50
Safety chain for PP float Ø 60 x 100 mm		908050 0100	20,–
Hand-held tube, 2-pcs, chrome-plated steel	2	908050 0250	93,50
Floor nozzle with rubber lips	3	908050 0260	138,–
Filter cloth Ø 360 x 150mm with plastic ring	5	908050 0280	93,–
Chip basket 30-litre, Ø 3mm mesh and float guide	6	908050 0290	649,–
Vacuum unit 2 x 1.1 kW, 230 V, 50 Hz		908050 0300	1.169,–

9114



SARA® Compressed air chip and wet vacuum cleaner



- **mobile vacuum cleaner for removing coarse particles from liquids, as well as clearing up spills and wet chips**
- quick and easy disposal of foreign matter thanks to removable basket (Ø 3mm perforated sheet)
- permanent fill level monitoring by means of a viewing tube on the container
- mechanical float device
- filter system with integrated stainless steel wire mesh Ø 200mm x 100mm as droplet separator
- integrated collector as cyclone pre-separator to protect the filter device
- suspended silencer Size 4 with protective cover
- chassis with robust release device for raising and lowering the collector below the filter tank
- Colour: RAL 7035 (light grey)
- **Supplied with:** 3m suction hose, 3-pcs. hand tube, aluminium floor nozzle, crevice nozzle, aluminium hose holder and utensil box
- **Pricing:** ex works, includes packaging

Standard version

- Max. intake air: 280m³/h
- Air requirement: 1.33m³/h
- Air consumption: 80Nm³/h

Storage capacity l	Air quantity m³/h	Negative pressure mbar	Operating pressure bar	Compressed air connection bar	Dimensions L x W x H mm	Weight kg	art.no.	€
80	280	340	6	1/2"	880 x 800 x 1500	75	**908020** 0001	4.399,–

9113

Spare parts, consumables

Description	Illustration	art.no.	€
PEM suction hose, light	1	**908050** 0010	51,–
Aluminium Storz coupling Type C hose connector		908050 0020	45,30
Hose clamp 32-50 mm		908050 0030	9,70
PEM hose end piece NW38		908050 0040	37,40
Hand-held tube 3-pcs, chrome-plated steel, approx. 1200mm long	2	908050 0050	112,–
Aluminium floor nozzle with rubber lips, oil-resistant, 360 mm	3	908050 0060	164,–
Crevice nozzle NW38, vacuum opening 60 x10mm, chrome-plated	4	908050 0070	116,–
Silencer insert size 4	7	908050 0080	189,–
PP float Ø 63mm x 130mm		908050 0090	89,50
Safety chain for PP float Ø 60 x 100 mm		908050 0100	20,–
Chip basket 40-ltr, Ø 3mm mesh and float guide	5	908050 0110	799,–
Wire mesh (Type 600) Ø 200 x 100mm made of 1.4301 stainless steel	6	908050 0120	689,–

9114



SARA® Compressed air industrial vacuum cleaner

NEW · NUOVO · NY · NOUVEAU · NUEVO

for ATEX Zone 21 and 22

- **mobile compressed air vacuum cleaner for removing dry and non-flammable media such as dust, sand, chips, stops, granulate, grains, etc.**
- Corresponds to ATEX Product Guideline 2014/34/EU: Equipment Group II / Category 3 for Zone 22/2
- Filter tank with nine filter elements (total filter surface: 2m²) made of polyester needle felt with IFA Test Certificate for dust class M in accordance with DIN EN60335-2-69-Anh. AA.
- Filter elements are spread apart with earthed supporting bodies and are therefore self-cleaning during the suction operation
- Filter attachment with vacuum meter and auxiliary air flap
- The auxiliary air flap can generate a counter-air flow that exhausts the filter hose from the inside out. This efficient cleaning guarantees extremely long filter service-life, even with fine dust
- 2.2m² HEPA - safety filter cartridge with test certificate for dust class H in accordance with DIN EN 60335-2-69 Anh. AA.
- integrated collector as cyclone pre-separator to protect the filter device
- Suspended silencer Size 4 with protective cover
- chassis with robust release device for raising and lowering the collector below the filter tank
- rollers and filter are electrostatically-conductive
- Colour: all steel parts plastic-coated in accordance with 681TA 70355 C00 DURA pol / black / micro-structure
- **Supplied with:** 3m suction hose, stainless steel hand tube, aluminium floor nozzle, wide rubber nozzle, round brush, PE-EL round-bottom bag, earthing cable, earthing clamp, aluminium hose holder and utensil box
- **Pricing:** ex works, includes packaging



Standard version

- Max. intake air: 440m³/h
- Air requirement: 2.0m³/h
- Air consumption: 120Nm³/h

Storage capacity l	Air quantity m³/h	Negative pressure mbar	Operating pressure bar	Compressed air connection bar	Dimensions L x W x H mm	Weight kg	art.no.	€
60	440	300	6	1/2"	880 x 800 x 1700	85	**908030** 0001	5.599,–

9113

Spare parts, consumables

Description	Illustration	art.no.	€
Silencer insert size 4	7	**908050** 0080	189,–
PEM suction hose, light, anti-static	1	908050 0130	52,–
Hose coupling stainless steel NW50/50		908050 0140	185,–
Seal-form hose clamp		908050 0150	15,90
PEM hose end piece NW50		908050 0160	37,30
Hand-held tube, stainless steel, curved on both sides	2	908050 0170	355,–
EL wide rubber nozzle, oil-resistant incl. stainless steel hose joints	4	908050 0190	149,–
EL round brush with PES+MS brushes incl. stainless steel hose joints	5	908050 0200	149,–
PE-EL round-bottom bag (10 pieces)	6	908050 0210	133,–
Hepa filter 2.2qm	8	908050 0220	285,–
EL filter container w/ polyester needle felt filter elements (filt. surface 2m²)	9	908050 0230	1.089,–
Hose filter EL Ø 100 x 500mm	10	908050 0240	78,50

9113



Freddy Chip and emulsion vacuum cleaner Freddy

- **Mobile vacuum cleaner for removing ultra-fine particles (max. 10 µm) from liquids**
- Within a few minutes, the coolant container of a machine tool is drained and the coolant fluid cleaned of solid particles and pumped back into the machine, all simply at the push of a selector lever
- Eliminates the need for laborious and time-consuming cleaning work
- Machine downtimes are reduced
- Durable and robust steel design with oil-resistant wheels
- Automatic level control by means of cut-off
- Compact design, simple handling, extremely manoeuvrable
- **Pricing:** ex works, including packaging

For removing ultra-fine particles up to 10 µm





Freddy Ecominor

- 100 l capacity
- **Supplied** pre-fitted with hoses and accessories, standard filter 200 µm

Tank contents l	Absorption capacity mm H2O	Air quantity l/min	Suction power l/min	Power output l/min	Motor output kW	Tension V	Dimensions L x W x H mm	Weight kg	art.no.	€
100	2000	2800	190	60	2	240	1260 x 600 x 1200	80	**980100** 0100	3.999,–

9125



Freddy Superminor

- 100 l capacity
- **Boost function for even more suction**
- **Supplied** pre-fitted with hoses and accessories for floor and liquid cleaning, standard filter 200 µm

Tank contents l	Absorption capacity mm H2O	Air quantity l/min	Suction power l/min	Power output l/min	Motor output kW	Tension V	Dimensions L x W x H mm	Weight kg	art.no.	€
100	3800	2900	330	140	3	240	1350 x 690 x 1250	110	**980101** 0001	4.999,–

9125

Accessories

Description	Colour	Illustration	art.no.	€
Adapter	Silver	1	**983099** 0100	81,50
Floor nozzle	Black/silver	2	983099 0026	182,–
Extension 1 m	White	3	983099 0209	53,50
Grooved nozzle	Grey	4	983099 0207	35,50
Flexible tube	Orange	5	983099 0022	146,–
Intake pipe 500 mm	Grey	6	983099 0023	39,90

9126



3



5



6



2



1



4

Spare filter

Description	art.no.	€
Disposable filter 10 µm	**982501** 0001	22,20
Reusable filter 200 µm	982501 0002	106,–
Reusable filter 100 µm	982501 0005	176,–

9126



Spare filter



Vacuuming up dirty emulsion, chips and grinding sludge

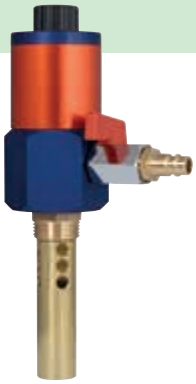


Easy emptying of the filter insert



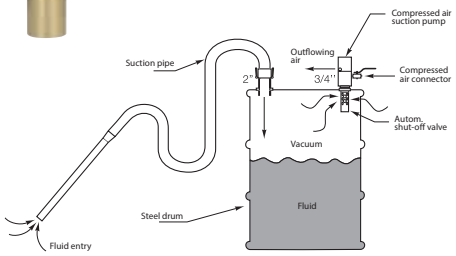
Returns the cleaned emulsion into the cooling lubricant container

SARA® Pneumatic drum pump





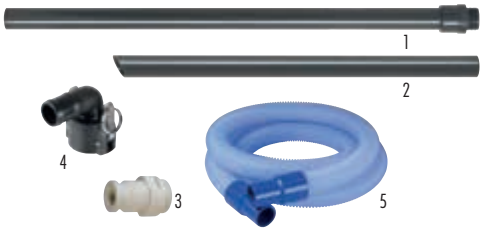
- Pneumatic dual-function suction and pressure pump
- For filling and emptying lubricant and coolant containers
- Used coolant, sludge and small metallic residue is sucked into a steel drum by vacuum
- Simply rotating the knob creates overpressure and the drum can be emptied
- Simply screw the pump into the bung hole (3/4") and the suction hose into the second bung hole (2") of a standard steel drum
- Required pressure approx. 6 – 8 bar
- Filling and emptying of approx. 60 l/min
- Automatic closing valve prevents overflowing
- **Caution:** Do not use the pneumatic pump for highly inflammable or explosive liquids. The steel drum must be undamaged and airtight.
- **Supplied with** approx. 3 m suction hose, coupling, inlet pipe and adapter



Description	art.no.	€
Compressed air drum pump, stainless steel, 3/4 inch	**931004** 0001	419,–
	9110	

Spare parts

Description	Colour	Illustration	art.no.	€
Riser 815 mm	Grey	1	**931005** 0005	23,90
Intake pipe	Grey	2	931005 0003	23,90
Adapter	Grey	3	931005 0004	101,–
Coupling	Black	4	931005 0001	101,–
Hose, 3 m	Blue	5	931005 0002	51,–
			9110	



Multi-purpose pump



- Handy pump for diesel, heating oil, hydraulic oil and motor oil
- For 200 l barrels
- 1 m plastic hose with outlet nozzle
- Intake pipe
- Flow rate 0.4 l/stroke

Description	art.no.	€
Multi-purpose pump (lever-operated cylinder pump), 0.4 l/stroke	**742004** 0001	110,–
	7125	

ARIANA Filling level display





- For commercially available 60 and 210 l containers
- For non-corrosive fluids such as cutting fluid concentrates, emulsions, oils, antifreeze, heating oil etc. as well as liquid media
- Permanent volume display
- Fitted on 3/4 inch opening, leaving 2" bung opening free

Description	art.no.	€
Filling level display	**742039** 0001	59,90
	7138	

SARA® Canister and barrel mixer



- Mixer for all container sizes
- Easy to handle
- Precise metering ensures economical use of emulsions
- An appropriate mixture ratio can be adjusted precisely using the needle valve
- The concentration should be checked using a hand-held refractometer
- The device operates on the Venturi principle
- All water-soluble concentrates can be mixed
- Can be attached without difficulty to 5, 10, 25, 60 and 200 l containers
- **Delivery includes:** 3 inlet pipes, adapter set for drums and canisters, and two connection hoses

Description	art.no.	€
Canister and barrel mixer	**907056** 0001	419,–
	9122	

SARA® Cutting fluid aerator to reduce bacterial growth

- **Reduces bacterial growth in the cutting fluid**
- Prevents a cohesive tramp oil slick
- Increases the service life of cutting fluids
- Tramp oil should then be removed using an emulsion treatment cart (9030020001) or skimmer system
- Removing tramp oil extends the service life and ensures an even bio balance in the cutting fluid
- Low-maintenance stainless steel housing for easy cleaning
- For direct mounting on the machine
- Can be set with daily or weekly timer
- **Supplied** with timer, aeration plates and connection hoses


Floating foreign oil


Aerating lubricant


Result: no cohesive oil slick



model	Dimensions L x W x H mm	No. ventilation plates	Max. tank capacity l	Tension V	Output W	Weight kg	art.no.	€
350	400 x 90 x 75	1	350	240	5	3	**906010** 0350	340,–
500	400 x 90 x 75	2	500	240	5	3.4	906010 0500	385,–
1000	400 x 90 x 75	4	1000	240	10	4.6	906010 1000	599,–

9120

SARA® Overflow protection sirens

- **To monitor the maximum or minimum fill level**
- Acoustic fill level control on your machine tool
- No excess hall cleaning due to container overflowing
- Easy attachment thanks to magnetic plate
- **Delivery includes:** Siren with magnetic foot and 1x 9 volt monoblock battery



Description	art.no.	€
Overflow protection sirens	**906011** 0001	108,–

9120

SARA® Emulsion maintenance station

- **Stationary/mobile maintenance station for removing foreign oils from the cooling lubricant**
- **Emulsion maintenance without staff intervention and no machine downtime (bypass procedure)**
- **Filters out up to 97 % of foreign oils**
- Separation of emulsion and foreign oils by purely physical means
- Reduced costs due to longer service life of coolant lubricant
- Robust, fully-welded stainless steel housing with oil-resistant outside coating
- Examples of use include machine tools, parts washers
- **Supplied with:** EPS, suction and return hose,
- **Pricing:** ex works, including packaging





model	Transport quantity l/h	Dimensions L x W x H mm	Weight kg	art.no.	€
EPS 350	80 - 350	270 x 152 x 440	15	**903001** 0001	1.949,–
				9115	

SARA® Emulsion maintenance cart

No personnel required for tramp oil removal – bypass process

- **Mobile cart for removing large volumes of tramp oil**
- **Emulsion maintenance without staff intervention and no machine downtime (bypass procedure)**
- Filters out solid particles down to 5 µm as well as 98.5 % of all tramp oil
- Coarse particle removal through integrated pre-filter (standard filter 100 µm)
- Emulsion and tramp oil separated by purely physical means
- Reduced costs due to longer emulsion service life
- Reduced risk of allergic reactions, skin disorders and unpleasant smells
- Liquid temperature max. 50 °C
- Overfill protection for safe automatic operation
- Long-life high-performance eccentric spiral pump
- Maintenance-free AC motor, 0.37 kW, 230 V connection
- Robust, fully welded stainless steel housing with oil-resistant outside coating
- For use on machine tools, parts washers or central supplies
- **Delivery includes:** maintenance cart, float, suction and return hose, 100 µm filter insert
- **Pricing:** ex works, including packaging



903002 0001



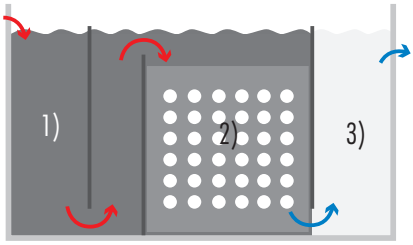
View from above



Tramp oil is drained into a tank with a level switch (overflow protection)



Control unit with pre-filter to protect the pump



model	Transport quantity l/h	Dimensions L x W x H mm	Weight kg	art.no.	€
EPW 550	550	1200 x 470 x 860	86	**903002** 0001	4.999,–
				9115	

Spare parts

Description	suitable for	art.no.	€
Floater 150x150 mm	EPW 550	**903050** 2005	167,–
Fine filter insert 50 µm	EPW 550	903050 1050	20,50
Fine filter insert 100 µm	EPW 550	903050 1100	20,50
		9116	



903050 1050



903050 2005



903050 1100

Repair kits

Description	suitable for	art.no.	€
Pump repair kit	Serial number EPW 550/001 to EPW 550/105	**903050** 1200	439,–
Pump repair kit	Serial number from EPW 550/106	903050 1300	449,–
		9116	



903050 1200



903050 1300

SARA® Magnetic filter SMF

- Affordable extraction without consumables **SARA** Magnetic filters Particles and impurities from all types of process fluids e.g. cooling lubricant, washing water, cooling water, fuel and much more.
- Thanks to the extremely high field strength, dirt particles are extracted from iron, steel and partially stainless steel, carbide and corundum, and adhere to the exterior of the magnets.
- Separation of tiny particles as small as 1 µm
- Guaranteed flux density of at least 10,000 gauss
- Improved surface quality thanks to cleaner cooling lubricant
- Reduced wear to machinery and tools
- **No disposal costs, filtered material can be recycled**
- **No additional auxiliary energy required**

Considerably reduces operating costs



905010 3103

Single units

model	max. discharge rate l/min	Operating pressure max. bar	Connecting thread	Dirt adhesion capacity kg	Number of magnetic filter rods	Weight kg	Total height mm	Foot size mm	art.no.	€
SMF 240/1	Emulsion: 70, oil: 35	15	3/4" BSP	0.6	1	4.5	306	110x110	**905010** 2401	595,–
SMF 310/1	Emulsion: 100, oil: 50	15	1" BSP	0.8	1	5.0	391	110x110	905010 3101	820,–
SMF 310/3	Emulsion: 150, oil: 75	15	1 1/2" BSP	2.4	3	12.0	396	170x170	905010 3103	1.495,–

9109

Spare parts

Description	suitable for model	art.no.	€
Gasket	SMF 240/1	**905011** 2401	17,20
Gasket	SMF 310/1	905011 3101	17,20
Gasket	SMF 310/3	905011 3103	43,–

9109

SARA® Magnetic filters

INFO



Magnetic filters have the ability to remove ferrous particles from process fluids such as cooling water, emulsions, grinding oil, washing water, etc. Due to the force of the magnetic field, ferrous particles such as iron, steel, carbide, etc. are drawn from the process fluids and adhere to the magnetic filter rods. Thus the particles are extracted and can be disposed of quickly, easily and by type; meanwhile the clean process fluid can be reused.

Function

In a filter housing, the contaminated water flows turbulently around the magnetic filter rods. The ferrous particles are drawn to the magnetic filter rods and adhere to the surface of the magnetic filter rods. The filter performance depends on several factors. These include the material and the size of the particles, the viscosity of the fluid to be purified, the magnetic flux density of the magnetic filter rods, the dwell time of the fluid in the magnetic field, as well as the distance between the particles and the magnetic filter rods. **Optimum separation rates** are achieved thanks to the use of ultra-efficient magnetic materials with very high magnetic forces and the flow-optimised design of SARA magnetic filters.

SARA magnetic filters are characterised, in particular, by the optimisation of these factors. The use of ultra-efficient magnetic filter rods with a magnetic flux density of at least 10,000 gauss guarantees the best filtration results, even filtering out particles measuring less than 1 µm. The optimised flow guidance in the magnetic filter also improves the effect of the magnetic filter rods.

SARA magnetic filters are used in a wide range of production processes

- Filtration of cooling lubricants during grinding or honing work
- Purification of cooling water or washing water
- Removal of particles from cutting oils
- Removal of superfine particles from drawing oils

Using magnetic filters can enhance the manufacturing quality in production processes due to fewer particles, and thus significantly increase the service life of process fluids. SARA magnetic filters work without additional auxiliary power, are manufactured from high-quality, durable stainless steel, and are equipped with Viton seals.

SARA® Belt skimmer

CE

Oil skimmer systems: Contaminations in coolant emulsions from leaked oil floating on the surface, such as hydraulic oil, peripheral lubrication or contact surface oil cause problems with the production process. Oil leakages reduce oxygen absorption, thus encouraging bacterial growth. They also cause deposits to develop on machines and workpieces, increase the formation of oil mist and reduce cooling performance. The consequences are: skin diseases, unpleasant odours, higher disposal costs, corrosion, bacterial contamination, poor cooling performance and problematic chipping behaviour. The following oil skimmer systems provide assistance in this regard.

- Special oil-carrying belt
- Tramp oil removal from the emulsion surface
- Installed above the emulsion container, requires little space
- Immersion depth: 225 mm





S series

- **For continuous or time-controlled operation (timer switch included)**
- Colour: RAL 7035 (light grey)
- **Delivery:** includes timer switch, skimmer belt (800 mm) and oil return hose

model	Output l/h	Belt dimensions L x W mm	Connection V/Hz	Dimensions L x W x H mm	Weight kg	art.no.	€
S-40	4	800 x 40	230 / 50	190 x 105 x 160	4	**904001** 0040	599,–
S-100	8	800 x 100	230 / 50	250 x 105 x 160	6	904001 0100	899,–

9117



M series

- Colour: RAL 3000 (flame red)
- **Supplied with:** Base unit with 800 mm skimmer band, oil return hose, no timer

model	Output l/h	Belt dimensions L x W mm	Connection	Dimensions L x W x H mm	Weight kg	art.no.	€
M-40	4	800 x 40	230 / 50	105 x 75 x 80	1.2	**904010** 0040	459,–
M-100	8	800 x 100	230 / 50	175 x 75 x 80	2.9	904010 0100	559,–

9117



F-series

- **High-quality aluminium casing**
- **Supplied with:** Base unit with 800 mm skimmer band, oil return hose, no timer

model	Output l/h	Belt dimensions L x W mm	Connection	Dimensions L x W x H mm	Weight kg	art.no.	€
F-40	4	800 x 40	230 / 50	155 x 85 x 148	1.8	**904020** 0040	429,–

9117

Spare skimmer belts

- Heat-resistant to 60 °C
- **Alternative version with higher heat or chemical resistance available on request**

suitable for	Belt dimensions L x W mm	art.no.	€
S-40, M-40	800 x 40	**904050** 8040	60,–
S-40, M-40	900 x 40	904050 9040	62,50
S- 40, M-40	1000 x 40	904050 1040	68,–
S-40, M-40	1200 x 40	904050 1240	70,50

9118

suitable for	Belt dimensions L x W mm	art.no.	€
S-100, M-100	800 x 100	904050 8010	70,–
S-100, M-100	900 x 100	904050 9010	73,50
S-100, M-100	1000 x 100	904050 1010	76,50
S-100, M-100	1200 x 100	904050 1210	83,–

9118



SARA® Disc skimmer

- Installed with a magnetic base on the side of the coolant container or directly on the container cover
- Universal adjustment possible by means of two joints
- Optimum skimmer disc immersion depth approx. 20 - 40 mm
- 6-step speed regulation via power supply
- **Supplied** with disc, magnetic base, 2 joints, wiper blade, oil drain connection and power supply





model	Output l/h	Ø mm	Connection V/Hz	Tension V	Weight kg	art.no.	€
SK 300	Up to 6	300	230 / 50	3 - 12	3	**906001** 0300 9119	529,–

Hand-held refractometer

- **Measurement range 0 - 32 %**
- The hand-held refractometer enables the cutting fluid concentration to be checked quickly. As a result, it is possible to use these fluids at the optimum concentration.
- Better utilisation of machine tools
- Longer tool service life
- Avoids rust caused by excessively diluted emulsions
- Allows the emulsion concentration to be varied during operation according to requirements (complies with TRGS 611)
- Reduced costs
- The scale of the hand-held refractometer is in percent and is easy to read
- **Supplied** with protective bag and pipette





Description	art.no.	€
Hand-held refractometer, analogue	**907050** 0001 9122	99,95

Digital hand-held refractometer

- **Measurement range 0 - 70 %**
- **Ideal for users who wear glasses**
- For checking the emulsions in cutting fluids
- Solution 0.1 % (Brix)
- Accuracy +0.2 % (Brix)
- Digital temperature range 0 - 95 °C
- Automatic temperature correction
- Battery operation
- Auto-off function
- **Supplied** with battery, pipette, operating manual, plastic case



L mm	B mm	H mm	art.no.	€
105	55	30	**907062** 0001 9122	409,–

Emulsion treatment case

- **For all measurements in accordance with TRGS 611**
- Thermometer for determining the specimen temperature
- Plastic beaker for specimen collection
- Empty bottles for sample collection, 3 units
- Nitrite test strips, 100 units, nitrate test strips, 100 units, total hardness test strips, 100 units, pH test strips, 100 units
- **Delivery includes:** Supplied with instructions on cutting fluid maintenance, TRGS 611 requirements, cutting fluid maintenance plan, and plastic case with recess for storing a hand-held refractometer



Description	art.no.	€
Emulsion treatment case	**907020** 0001 9122	195,–

Replacement parts

Description	art.no.	€
Set of pH, nitrite, nitrate and total hardness test strips, 100 of each	**907021** 0001	105,–
pH test strips 100 units	907021 0002	21,50
Nitrite test strips 100 units	907021 0003	35,90
Nitrate test strips 100 units	907021 0004	35,90
Total hardness test strips 100 units	907021 0005	35,90



Absorbent

INFO

- Optimum absorption results for oil, coolants, solvents, water
- Saves costs
- Safe, prevents slipping

For leaking liquids on your premises!



Selection criteria for PIG® mats

Absorbed liquids		PIG® mat	Particularly well-suited for	Page
All-purpose Absorbs and stores oils, coolants, solvents and water For liquids such as: • Hydraulic oil • Plant oil • Petrol • Paraffin • Anti-freeze • Propylene glycol • Acetone • Toluene • Xylene • MEK (Butanone, methyl ethyl ketone)	Hard-wearing	**PIG BLUE™ mat**	Maintenance work that requires a high level of absorption	1564
		PIG® all-purpose mat	Absorption of leaks and dripping in the course of daily maintenance	1560
		PIG® all-purpose drum lid mat	Dripping pumps and cleaning of drum lids	1564
	Ultra-hard-wearing	**4 IN 1® mat**	General cleaning with an all-purpose product	1561
		FAT MAT® all-purpose mat MAT 2101/2102	Cleans up large leaks	1560
		HAM-O® all-purpose mat	Covering absorbing liquids for a clean workplace	1564
	Very hard-wearing	**PIG® elephant mat**	Passageways and walkways in highly visited areas	1563
		TRAFFIC MAT® rug	Passageways and walkways in areas with forklift traffic	1563
Oil-Only Absorbs and stores oils and oily liquids without absorbing water • Motor oil • Hydraulic oil • Petrol • Diesel fuel • Paraffin	Hard-wearing	**PIG® brown oil-only mat**	Absorption of oil-based liquids, blends in with the surrounding environment, can also be used in outdoor areas	1565
		PIG® white oil-only mat	Absorption of oil-based liquids with good visibility of liquids, can also be used in outdoor areas	1565
	Ultra-hard-wearing	**4 IN 1® oil-only mat**	General oily cleaning applications with a single product	1565
		FAT MAT™ oil-only mat	Cleans up large leaks	1565



Selection criteria for PIG® absorbent linings

Absorbed liquids	absorbent lining	Absorption	Filling	Formability	Special characteristics	Page
All-purpose Absorbs and stores oils, coolants, solvents and water	**PIG® original**	Up to 1.9 l	Grits	Extreme	Extremely flexible and cheap, can be laid out closely around machines	1566
	PIG® blue	Up to 14 l	Granulate	super	Unbeaten ground adhesion, for use on dripping machines and for eliminating leaks	1566
	PIG® super	Up to 7.6 l	Cellulose	Normal	Extremely absorbent, ideal when maximum absorption performance is required	1566

Many PIG® products are manufactured partly or fully from recycled materials.
The percentage of recycled materials is always specified.

25 % 75 % 100 %

Suction mat roll holder

- PIG roll holder for fast removal of mats as required
- For clean and safe storage of PIG mats



910101 0072



910101 0072



910110 0015

model	Description	art.no.	€
GEN 249	Mat stands with rolls for PIG mats up to 91 cm wide	**910110** 0015	209,–
MAT 293	Wall bracket for PIG rolls up to 91 cm wide and 51 cm diameter	910101 0072	83,–

9208

Universal mat

- **High absorbency ensures a clean and safe workplace**
- Simply place the mat over the spill
- Rapid absorption and high strength, even with fully saturated mats
- Saves on disposal costs due to the reduced volume
- Perforation enables mats to be laid as needed
- For absorbing oil, coolants, solvents and water
- Ideal for wiping off machinery, laying out tool boxes and covering work areas
- The exceptionally hard-wearing 4-in-1® mats (MAT284 and MAT235) can be used as an underlay, roll, wipe and absorbent sock
- **Price per pack**

25%



Mats

Type	Dimensions	Thickness	Contents	Absorption capacity	art.no.	€
MAT 231	38 x 51 cm	Double thickness	50 pcs. per box	42 l	**910101** 0001	67,–
MAT 203	38 x 51 cm	Double thickness	100 units in box	84 l	910101 0020	129,–
MAT 204	38 x 51 cm	Single thickness	200 units in box	84 l	910101 0021	129,–
MAT 2101	41 x 51 cm	Quadruple thickness	50 units in dispenser box	84 l	910101 0042	120,–
MAT 240	38 x 51cm	Double thickness	100 units in dispenser box	84 l	910101 0025	135,–

9201



MAT 231

Roll material, perforated every 25.5 cm

Type	Dimensions	Thickness	Contents	Absorption capacity	art.no.	€
MAT 137	76 cm x 46 m	Single thickness	1 roll	76 l	**910101** 0032	109,–
MAT 220	38 cm x 46 m	Double thickness	2 rolls	76 l	910110 0030	213,–
MAT 202-01	61 cm x 46 m	Double thickness	1 roll	123 l	910110 0035	171,–
MAT 230	76 cm x 46 m	Double thickness	1 roll	152 l	910110 0010	213,–
MAT 2102	81 cm x 23 m	Quadruple thickness	1 roll	152 l	910110 0033	200,–

9201



MAT 230

MAT 202-01

Roll material, 4-in-1®, perforated every 25.5 cm, extremely hard-wearing

Type	Dimensions	Contents	Absorption capacity	art.no.	€
MAT 284	41 cm x 24 m	1 roll	35 l	**910110** 0060	96,–
MAT 235	41 cm x 46 m	1 roll	66 l	910110 0061	171,–

9201



MAT 284

Roll material, continuous, for use in narrow areas

Type	Dimensions	Thickness	Contents	Absorption capacity	art.no.	€
MAT 229	25 cm x 46 m	Double thickness	3 rolls	51 l	**910110** 0025	213,–

9201


MAT 229

Roll material, longitudinal perforations every 25.5 cm and lateral perforations every 9.5 cm for ideal adjustment

Type	Dimensions	Contents	Absorption capacity	art.no.	€
MAT 242	38 cm x 18 m in dispenser box	1 roll	30 l	**910110** 0001	72,–
MAT 243	38 cm x 46 m	1 roll	74 l	910110 0002	121,–

9201



MAT 242






pig Economy mat

- **The cost-effective mat with a high absorption capacity**
- For small spills, leaking and dripping points
- For light-duty applications in walkway areas
- Ideal as an underlay for tools and workpieces
- **Price per pack**


25%


MAT 411

Roll material

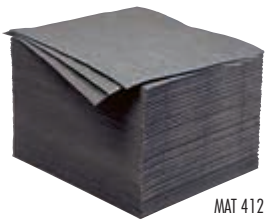
Type	Dimensions	Contents	Absorption capacity	art.no.	€
MAT 411	76 cm x 61 m	1 roll	161 l	**910110** 0045	213,–

9201

Mats

Type	Dimensions	Contents	Absorption capacity	art.no.	€
MAT 412	38 x 51 cm	125 pcs. in box	82 l	**910101** 0030	129,–

9201


MAT 412

Grippy mat

- Absorbent mat with strong grip thanks to anti-slip underside
- Prevents slipping and tripping
- Grips the floor without adhesive tape
- Floor coverings can be removed without leaving residue
- Fluids cannot trickle out onto the floor
- Durable surface, suitable for pedestrian and forklift traffic
- **Price per pack**







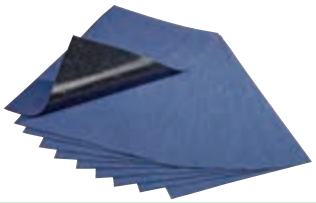


Roll material

Type	Dimensions	Contents	Absorption capacity	art.no.	€
MAT 1625	41 cm x 7.6 m	1 roll	7.5 l	**910105** 1625	42,–
MAT 3250	81 cm x 15 m	1 roll	30.3 l	910105 3250	153,–
MAT 32100	81 cm x 30 m	1 roll	60.6 l	910105 3210	289,–
				9201	

Mats

Type	Dimensions	Contents	Absorption capacity	art.no.	€
MAT 3200	41 cm x 61 cm	10 pcs. in bag	7.5 l	**910105** 3200	42,–
				9201	



Grippy mat with safety edge

- **Black/yellow signal pattern on the edges of the roll mat warns of hazards and guarantees increased safety**
- Absorbent mat with strong grip thanks to adhesive backing
- Prevents slipping and tripping
- Grips the floor without adhesive tape
- Floor coverings can be removed without leaving residue
- Fluids cannot trickle out onto the floor
- Durable surface, suitable for pedestrian and forklift traffic
- **Easy to clean:** You can sweep, wipe, vacuum or go over the mat with your wet vacuum or floor cleaner (cleaning makes the signal edge visible again)
- **Easy adjustment:** You can trim the mat to indicate the safest route, even around corners
- **Price per pack**

91% more environmentally friendly than leased floor mats






Type	Dimensions	Contents	Absorption capacity	art.no.	€
GRPSB36200	91 cm x 30 m	1 Rolle	30 l	**910105** 6200	430,–
GRPSB36201	91 cm x 15.3 m	1 Rolle	15 l	910105 6201	233,–
				9201	

Grippy Traffic MAT® mat

- Very durable absorbent mat
- The material is heat-fused and needle-punched, creating a high level of durability
- The underside provides the mat with a strong grip, which reduces the risk of slipping and tripping
- **Price per pack**





Roll material

Type	Dimensions	Contents	Absorption capacity	art.no.	€
GRP36201	91 cm x 15 m	1 roll	15 l	**910105** 3621	159,–
GRP36200	91 cm x 30 m	1 roll	50 l	910105 3620	293,–

9201

Accessories: Grippy Mat



910110 0020



910110 0021



910110 0022

Accessories: Grippy Mat

Type	Description	art.no.	€
GRP001	Cutting template	**910110** 0020	42,–
GRP012	Safety knife	910110 0022	18,–
GRP011	Spare blades	910110 0021	18,–

9208



910110 0020



910110 0020

Elephant mat

- **Durable mat, roll material**
- High wear and tear resistance
- Keeps walkways and standing areas clean and safe
- Absorbs oil, coolants and solvents, water
- **Price per pack**



25%



MAT 234

Roll material

Type	Dimensions	Contents	Absorption capacity	art.no.	€
MAT 234	84 cm x 46 m	1 roll	87 l	**910110** 0006	239,–

9201

Traffic mat

- **Hard-wearing mat for enhanced safety on smooth floors, roll material**
- Extremely hard-wearing
- MAT223 with PE lining on the underside
- Prevents liquids from leaking through
- **Price per pack**





MAT 223

Roll material

Type	Dimensions	Contents	Absorption capacity	art.no.	€
MAT 223	91 cm x 30 m	1 roll	49 l	**910110** 0055	226,–
MAT 218	91 cm x 91 m	1 roll	148 l	910110 0050	342,–

9201

Ham-O mat

- **Liquid disappears in seconds**
- Unique pattern hides leaks and drops
- Absorbs oil, water and coolant (not recommended for solvents, which could dissolve the embossed pattern)
- Extremely hard-wearing
- Practical perforation
- **Price per pack**


225 ml oil is poured onto the HAM-O...


... and completely absorbed in a matter of seconds.

25%

910101 0081



MAT 267

Roll material, perforated every 25.5 cm

Type	Dimensions	Contents	Absorption capacity	Colour	art.no.	€
MAT 267	41 cm x 46 m	1 roll in dispenser box	89 l	Green	**910101** 0081	164,–
MAT 269	81 cm x 46 m	1 roll	180 l	Green	910110 0269	293,–
MAT 116	81 cm x 46 m	1 roll	179.5 l	Grey	910101 0022	293,–

9201


910101 0022


MAT 116

Drum lid mats

- **Keep drum lids clean and dry**
- Absorbs oil, cooling solvents, water
- Pre-cut, fits perfectly onto a 210 litre drum
- **Price per pack**



25%


MAT 208

Type	Ø cm	Thickness	Contents	Absorption capacity	art.no.	€
MAT 208	56	Double thickness	25 units in box	26 l	**910101** 0041	89,–

9201

Blue mat

- Made of 75 % recycled material
- **High absorption capacity**
- Absorbs oils, coolants, solvents and water
- Good floor adhesion, highly resistant even when saturated
- **Price per pack**



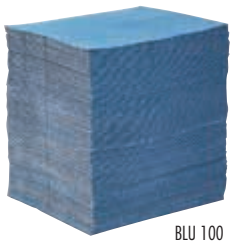


75%

Mats in a dispenser box

Type	Dimensions	Thickness	Contents	Absorption capacity	art.no.	€
BLU107	38 x 48 cm	Single thickness	50 units in box	45.5 l	**910200** 0107	55,–
BLU106	38 x 48 cm	Double thickness	50 units in box	64.5 l	910200 0106	65,–
BLU100	38 x 48 cm	Single thickness	100 units in box	90 l	910200 0100	107,–
BLU101	38 x 48 cm	Double thickness	100 units in box	129 l	910200 0101	124,–

9201


BLU 100

Roll material, perforated every 25.5 cm

Type	Dimensions	Thickness	Contents	Absorption capacity	art.no.	€
BLU105	38 cm x 46 m	Single thickness	1 roll	78 l	**910201** 0105	90,–
BLU103	38 cm x 46 m	Double thickness	1 roll	121 l	910201 0103	104,–
BLU104	76 cm x 46 m	Single thickness	1 roll	155 l	910201 0104	173,–
BLU102	76 cm x 46 m	Double thickness	1 roll	242.5 l	910201 0102	202,–

9201


BLU 104

Drum lid mats

Type	Ø cm	Thickness	Contents	Absorption capacity	art.no.	€
BLU255	56	Single thickness	25 units in box	45.4 l	**910202** 0255	76,–

9201


BLU 0255

Oil-Only mat (brown)

- **Absorbs oil, not water**
- Absorbs mineral oil, hydrocarbons and other oil-based liquids, without absorbing a drop of water!
- No liquid remains, even if the mat is saturated
- Medium-heavy and heavy versions with different absorption capacities
- **Price per pack**





MAT 502

MAT 540

Mats

Type	Dimensions	Thickness	Contents	Absorption capacity	art.no.	€
MAT 502	38 x 51 cm	Medium	125 units in box	82 l	**911060** 0502	118,–
MAT 540	38 x 51 cm	Double thickness	100 units in box	84 l	911060 0540	124,–

9201

Roll material

Type	Dimensions	Thickness	Contents	Absorption capacity	art.no.	€
MAT 501	76 cm x 61 m	Medium	1 roll	161 l	**911060** 0501	200,–
MAT 530	76 cm x 46 m	Double thickness	1 roll	152 l	911060 0539	200,–

9201



MAT 530

MAT 501

Roll material, perforated, in a dispenser box

Type	Dimensions	Thickness	Contents	Absorption capacity	art.no.	€
MAT 542	38 cm x 18 m	Double thickness	1 roll	30 l	**911060** 0542	66,–

9201



MAT542

Oil-Only mat (white)

- **The special white mat absorbs oil only, no water**
- Made of polypropylene, absorbs oil drops and leaks
- Water-resistant, which means it is also suitable for outdoor use. Absorption capacity is not affected by rain
- The exceptionally hard-wearing 4-in-1® Mats (MAT484 and MAT435) can be used as an underlay, roll, wipe and absorbent sock.
- **Price per pack**







MAT 401

Mats

Type	Dimensions	Thickness	Contents	Absorption capacity	art.no.	€
MAT 415	38 x 51 cm	Double thickness	50 units in box	42 l	**911001** 0010	53,–
MAT 4101	41 x 51 cm	Quadruple thickness	50 units in box	84 l	911001 0013	110,–
MAT 403	38 x 51 cm	Double thickness	100 units in box	84 l	911001 0011	102,–
MAT 423	38 x 51 cm	Single thickness	200 units in box	84 l	911001 0001	102,–

9201



MAT 484

Roll material

Type	Dimensions	Thickness	Contents	Absorption capacity	art.no.	€
MAT 401	76 cm x 46 m	Double thickness	1 roll	152 l	**911010** 0012	174,–
MAT 4102	81 cm x 23 m	Quadruple thickness	1 roll	152 l	911010 0013	184,–

9201

Roll material, 4-in-1®, perforated every 25.5 cm, extremely hard-wearing

Type	Dimensions	Contents	Absorption capacity	art.no.	€
MAT 484	41 cm x 24 m in dispenser box	1 roll	35 l	**910101** 0048	90,–
MAT 435	41 cm x 46 m	1 roll	66 l	910101 0043	155,–

9201



MAT 435

HAZ-MAT mat

- **Specially for absorbing acids and aggressive liquids**
- Simply place the mat over the spill
- Rapid absorption and high strength, even with fully saturated mats
- Saves on disposal costs due to the reduced volume
- Perforation enables mats to be laid as needed
- Resistance list available on request
- **Price per pack**





Mats

Type	Dimensions	Thickness mm	Contents	Absorption capacity	art.no.	€
MAT 301	38 x 51 cm	Double thickness	100 units	84 l	**912001** 0002	135,–
					9201	





Roll material

Type	Dimensions	Thickness mm	Contents	Absorption capacity	art.no.	€
MAT 309	76 cm x 46 m	Double thickness	1 roll	152 l	**912010** 0001	235,–
					9201	

Absorbent sock

- **For absorbing drops and leaks in all parts of your machinery**
- **For a clean and safe workplace**
- Cost savings thanks to low disposal volumes
- Absorbs oil, water, coolants and solvents
- Exceptionally supple, for surrounding heavily leaking machinery or for containing leaks
- Sock forms a tight seal with the floor
- **Price per pack**





Original

- Cost-effective
- For daily use

Type	Dimensions	Contents	Absorption capacity	art.no.	€
204	Ø 8 x 107 cm	20 units	38 l	**910120** 0001	60,50
404	Ø 8 x 107 cm	40 units	76 l	910120 0002	103,50
				9201	



BLUE

- Effective for all-purpose application

Type	Dimensions	Contents	Absorption capacity	art.no.	€
PIG 203	Ø 8 x 600 cm	4 units	56 l	**910120** 0014	104,–
PIG 202	Ø 8 x 300 cm	8 units	56 l	910120 0013	99,–
2048	Ø 8 x 122 cm	20 units	56 l	910120 0010	75,50
PIG 201	Ø 8 x 61 cm	55 units	77 l	910120 0012	123,–
4048	Ø 8 x 122 cm	40 units	112 l	910120 0011	138,–
				9201	



SUPER

- Maximum absorption capacity to meet the toughest requirements

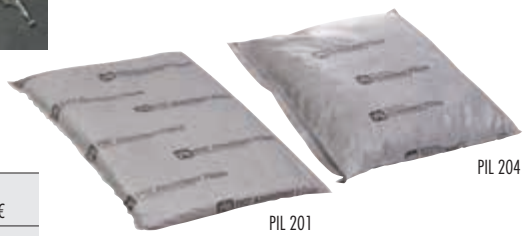
Type	Dimensions	Contents	Absorption capacity	art.no.	€
PIG 214	Ø 8.25 x 213 cm	12 units	91 l	**910120** 0042	109,–
PIG 210	Ø 8.25 x 107 cm	24 units	91 l	910120 0040	101,–
PIG 211	Ø 8.25 x 53 cm	48 units	91 l	910120 0041	111,–
				9201	



Absorbent pillow

- Absorbs oil, coolant, water and all non-aggressive liquids
- Robust, tear-proof polypropylene cover
- Also for use in confined spaces, under hydraulic lines and in the tightest corners
- **Price per pack**





PIL 204

PIL 201

Absorbent pillow

Type	Dimensions	Contents	Absorption capacity	art.no.	€
PIL 201	53 x 43 x 5 cm	16 units	121 l	**910101** 0055	113,–
PIL 204	25 x 25 x 5 cm	40 units	76 l	910101 0060	103,–

9201

Emergency kits

- Kits are equipped with PIG absorbents for different types of leaks
- Standard version is designed to absorb cooling lubricants, oils, water and chemicals
- The range includes portable assembled boxes, trolleys and secure barrels
- **Kits are packed in the order of use to ensure fast and effective treatment**
- **Emergency kits can also be ordered for chemicals or pure oil**



911011 0211



911011 0211



911011 0244



911011 0244



911011 0211

Emergency kits

Type	Dimensions	Contents	Absorption capacity	art.no.	€
KIT211	Ø57 x 48 cm	5 absorbent socks, 15 absorbent mats, 2 cushions, 5 bags for provisional disposal incl. cords and 6 tamper-proof labels	46 l	**911011** 0211	168,–
KIT244	41 x 51 x 92 cm	5 absorbent socks, 1 absorbent mat, 4 cushions, 5 bags for provisional disposal incl. cords	51.5 l	911011 0244	367,–

9203

Refill sets

Type	Absorption capacity	suitable for	art.no.	€
KITR211	46 l	Safety drum KIT211	**911011** 0212	72,–
RFL244-999	51.5 l	Spill Caddy KIT244	911011 0245	100,–

9203



DRAINBLOCKER®

- **Drain covers**
- Special shape creates a secure seal over the drain opening
- Made of flexible polyurethane for protection against water, oil and most chemicals
- Easy to clean and therefore re-usable
- Cover must overlap the drain by at least 8 cm on all sides



Type	Dimensions	Contents	art.no.	€
PLRE 241	46 x 46 x 1.1 cm	1 unit	**913020** 0001	126,–
PLRE244	61 x 61 x 1.1 cm	1 unit	913020 0055	226,–
PLRE 242	91 x 91 x 1.1 cm	1 unit	913020 0002	431,–
PLRE 243	122 x 122 x 1.1 cm	1 unit	913020 0003	625,–

9203

SPILLBLOCKER®

- **Containing leaks**
- Made of non-absorbent polyurethane; resistant to water, oil and most chemicals
- Flexible down to -20 °C – adheres to smooth floors, forms a dam that can be curved as necessary
- Containing liquids
- Diverting liquids
- Protects sites from approaching liquid flows
- Due to the high weight and flexibility of the polyurethane, SPILLBLOCKER® forms a tight seal with the floor with even minor surface irregularities sealed
- Connecting sections for joining together and corner sections for rectangular layouts available



Rectangular barriers are formed using corner sections PLR206.



For greater leaks, two or more barriers are jointed with connectors PLR205.

Type	Dimensions	Contents	art.no.	€
PLR 204 barrier	5.7 x 10 x 300 cm	1 unit	**913001** 0001	495,–
PLR 205 connector	5.7 x 10 cm	1 unit	913001 0005	20,–
PLR 206 corner piece	5.7 x 10 cm	1 unit	913001 0006	47,–
			9203	

LITE-DRI absorbent

- **Absorbs up to 30 litres per bag, three times more than binding granulate**
- Absorption capacity: 1 kg = approx. 3 l
- Rapid absorption
- No silicate dust formation
- Does not scratch floors or machinery (cellulose-based)
- Leaves ash residue of less than 5 % when incinerated.
- **Pricing:** ex works, including packaging





Contents	art.no.	€
10 kg	**911001** 0300	22,–
	9203	

SARA® Special granules SARA-Sorb V2000

- 1 kg granulate is sufficient for approx. 30 - 45 m^2
- Absorption capacity: 1 kg = 0.724 litre
- Up to three times higher absorption than conventional granulates
- Absorbs virtually all liquids during operation, e.g. leaking oil, fuel, chemicals, acids, alkalis and solutions
- Fine-grained, Class III R natural material that has been calcinated several times for ecological and cost-saving use on smooth or porous surfaces
- Dust and asbestos-free, chemically neutral, non-combustible, non-toxic, crush-resistant, does not stain and leaves no residues
- Retains its strength even in a saturated state (no sludge formation)
- **Note:** All used oil binders must be disposed of in accordance with the waste code number and the medium that was absorbed.
- **For orders of 1 pallet (65 buckets or 56 bags of 10 kg), we offer a 20 % volume discount**
- **Pricing ex works, including packaging**



920101 0010

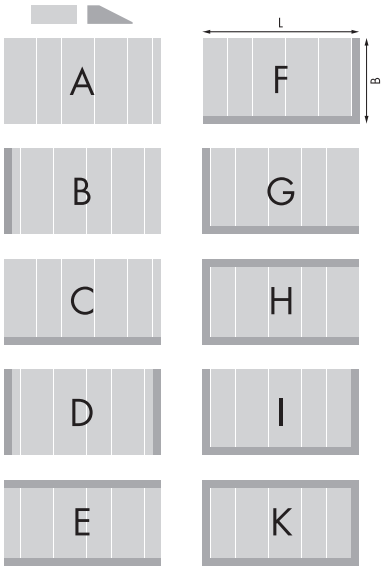


920101 0100

Contents	art.no.	€
10 kg bucket	**920101** 0010	18,–
10 kg bag	920101 0100	13,20
	9128	

SARA® Foot grilles

- **The safe machine base**
- Made of dried beech
- Can be rolled up – practical for cleaning
- Elastic, relieves strain on the vertebrae
- Robust, can also withstand hard use on machines
- Maintenance-free, no wear at connecting elements
- Supported by oil-resistant, fibre-reinforced rubber belts
- Profiled batten surface, height 3.5 cm
- Available grille widths 60 - 150 cm
- Grille length as required, prices per running metre
- 970111.... Standard version without access ramp
  970112.... Additional charge for version with access ramp along one width (for version with access ramps along both widths, please order 2x)
  970113.... Additional charge for version with access ramp along length
  970114.... Additional charge for impregnation
- Corundum coating for maximum skid resistance also available on request
- Price per running metre
- **For orders with access ramp on one side, please specify which side (see example)**
- **Delivery:** free kerbside delivery within Germany, excluding platforms and custom designs



Platforms and custom designs available on request



Width mm	Number of cover rows	Walk grating art.no.	€	Ramp edge along width art.no.	€	Ramp edge along length art.no.	€	Impregnation art.no.	€
600	2	**970111** 0602	89,50	**970112** 0602	16,20	**970113** 0602	18,50	**970114** 0602	17,70
700	2	970111 0702	113,–	970112 0702	16,20	970113 0702	18,50	970114 0702	20,60
800	2	970111 0802	129,–	970112 0802	16,20	970113 0802	18,50	970114 0802	23,60
800	3	970111 0803	162,–	970112 0803	16,20	970113 0803	18,50	970114 0803	23,60
900	3	970111 0903	182,–	970112 0903	16,20	970113 0903	18,50	970114 0903	26,50
1000	3	970111 1003	189,–	970112 1003	16,20	970113 1003	18,50	970114 1003	29,50
1100	3	970111 1103	210,–	970112 1103	16,20	970113 1103	18,50	970114 1103	32,40
1200	3	970111 1203	225,–	970112 1203	16,20	970113 1203	18,50	970114 1203	35,40
1300	3	970111 1303	240,–	970112 1303	16,20	970113 1303	18,50	970114 1303	38,30
1400	3	970111 1403	255,–	970112 1403	16,20	970113 1403	18,50	970114 1403	41,30
1500	3	970111 1503	280,–	970112 1503	16,20	970113 1503	18,50	970114 1503	44,20
		9130		9130		9130		9130	







Corundum coating for maximum skid resistance also available on request



Platforms and custom designs available on request

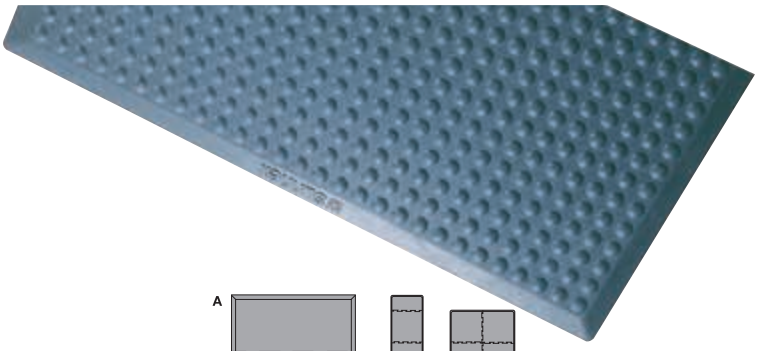


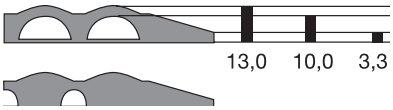


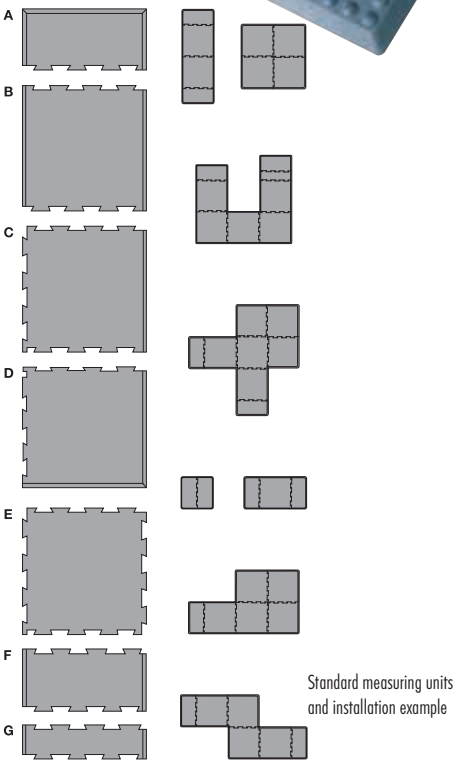


sunnex Mat system

- **For damp and oily areas**
- Thickness: 13 mm
- A significant factor influencing the health and productivity of staff
- Reduces fatigue and joint pain in the feet, legs and back
- Non-slip, noise and heat insulating
- Sealed surface, easy to clean
- Tapered edge, no trip hazard, can be driven over
- Individual parts can be fitted together like jigsaw pieces
- Dovetail profile for simple, tool-free connection
- Nitrile rubber – exceptionally resistant to wear, cleaning agents, cutting oils, hot chips, falling tools
- **ESD version available on request**



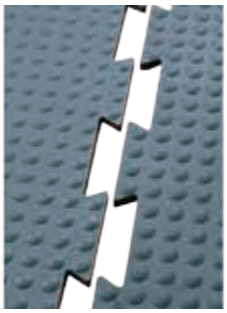




Standard measuring units and installation example

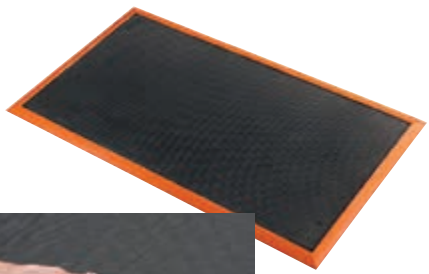
Description	Length cm	Width cm	Type	art.no.	€
Base set	150	75	A+B+A	**975001** 1575	245,–
Corner	37.5	75	A	975003 0001	75,50
Centre	75	75	B	975003 0005	105,–
Edge	75	75	C	975003 0010	105,–
Corner	75	75	D	975003 0015	105,–
Centre	75	75	E	975003 0020	105,–
Extension	37.5	75	F	975003 0025	75,50
Extension	17.5	75	G	975003 0030	52,50
				9129	




NOTRAX pig Anti-fatigue mat Sorb-Stance

- **For damp and oily areas**
- Thickness: 19 mm
- Made of high-quality nitrile rubber
- Special profiles on the underside ensure excellent cushioning
- Combines the advantages of an anti-fatigue mat with an absorbent mat
- Can be combined with PIG absorbent mats, article numbers 910101 0106 and 910101 0107


Anti-fatigue mat, without absorbent mat

Length cm	Width cm	Weight kg	art.no.	€
163	91	18	**970148** 1016	285,–
316	91	33	970148 1031	529,–
			9131	

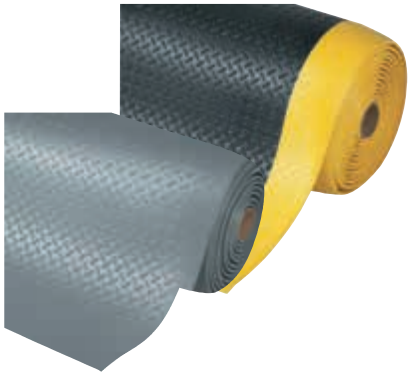
PIG® All-in-1 mat

- Suitable for insertion in anti-fatigue mats

Type	Length cm	Width cm	Contents	Absorption capacity	art.no.	€
RFLE906	150	81	10 units	58.5 l/VPE	**910101** 0106	134,–
RFLE907	300	81	10 units	117.1 l/PU	910101 0107	234,–
					9201	

NOTRAX® Ergonomic workplace floor covering DIAMOND SOF-TRED

- **For dry areas**
- Thickness: 12.7 mm
- Weight: approx. 6 kg/m²
- Floor covering for walking and standing in safety
- Non-slip surface
- Extra strong vinyl foam ensures enhanced ergonomic benefits
- Prevents premature symptoms of fatigue and protects the user from cold concrete floors, protects the floor and reduces the risk of breaking tools
- Dyna-Shield™ hard-wearing surface increases durability by 50 % in comparison to conventional vinyl floor coverings
- Four tapered edges eliminate tripping hazards



Mats

Length cm	Width cm	Grey art.no.	€	Black/yellow art.no.	€
91	60	**970149** 6009	41,30	**970150** 6009	44,90
150	91	970149 9015	103,–	970150 9015	112,–
300	91	970149 9030	225,–	970150 9030	245,–
600	91	970149 9060	455,–	970150 9060	495,–
		9131		9131	



Rolled product (max. 18.3 m length)

- Price per running metre

Width cm	Grey art.no.	€	Black/yellow art.no.	€
60	**970153** 0060	50,50	**970154** 0060	54,50
91	970153 0091	75,50	970154 0091	82,50
122	970153 0122	101,–	970154 0122	110,–
	9131		9131	

NOTRAX® Rubber floor mats

Made-to-measure on request

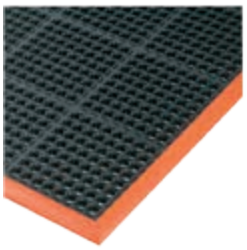
- **For damp and oily areas**
- Non-slip surface and secure grip of the floor surface
- Extremely durable and versatile for industrial use
- **100% nitrile rubber makes it resistant to numerous oils and chemicals**
- Practically indestructible, designed for harsh working environments where safety and durability are essential
- Outstanding protection against fatigue when working in a standing position
- Orange safety edges made of nitrile rubber on three sides
- **Also available with red edge strips on request**



Safety Stance™

- Thickness: 22 mm
- Perforated surface

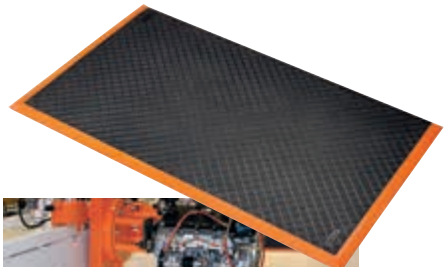
Description	Length cm	Width cm	art.no.	€
Black, 3 orange safety edges	102	66	**970156** 6610	150,–
Black, 3 orange safety edges	163	97	970156 9716	240,–
Black, 3 orange safety edges	315	97	970156 9731	509,–
			9131	





Modular system for customised configurations

Description	Dimensions cm	art.no.	€
Standard module	91 x 152	**970155** 9115	176,–
Connector	30	970155 0030	9,75
Edge strip, orange	91	970155 0091	19,60
Edge strip, orange	152	970155 0152	32,50
		9131	



Safety Stance Solid™

- Thickness: 20 mm
- Sealed surface

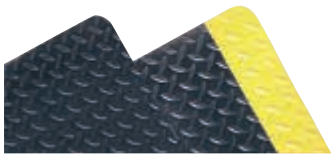
Description	Length cm	Width cm	art.no.	€
Black, 3 orange safety edges	102	66	**970158** 6610	210,–
Black, 3 orange safety edges	163	97	970158 9716	360,–
Black, 3 orange safety edges	315	97	970158 9731	779,–
			9131	

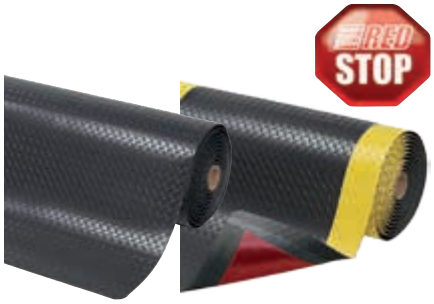


NOTRAX® Industrial workplace mat Cushion Trax™

- **For dry areas**
- Thickness: 14 mm
- Weight: 6.5 kg/m²
- For demanding industrial applications in dry work areas
- Very rugged design offering a high level of standing comfort
- All-round tapered edges remove any trip hazard
- Stable, laminated surface over damping vinyl foam
- Tested with RedStop anti-slip backing (R 10)
- Meets fire protection class Bfl-S1
- Colours: black or black with yellow safety stripes
- Made-to-measure in 3 different standard widths
- **Rolled product (max. 22.8 m length)**
- **Price per running metre**







Colour	Width cm	art.no.	€
Black	60	**970157** 0060	97,–
Black	91	970157 0091	145,–
Black	122	970157 0122	194,–
Black	152	970157 0153	240,–
Black/yellow	60	970157 1060	105,–
Black/yellow	91	970157 1091	158,–
Black/yellow	122	970157 1122	210,–
Black/yellow	152	970157 1152	295,–
		9131	



ATORN® Flame-retardant workplace mat

- **for dry (coin tread) and damp (studded tread) areas**
- Thickness: 13mm
- Weight: 2.9kg
- Material: polyurethane foam
- pursuant to EN13501-1 /floor covering test flame-retardant and therefore also suitable for use in public buildings
- in accordance with fire protection class Bfl-S1
- heat-resistant against short-term sparking and welding beads
- hardness 25-30 Shore A





Dimensions cm	Washer profile art.no.	€	Hemispherical art.no.	€
96 x 66	**970200** 0010	120,–	**970200** 0030	120,–
120 x 90	970200 0020	230,–	970200 0040	230,–
	8108		8108	





UVEX
Occupational safety
587 pages
Art.no. 019900 5470

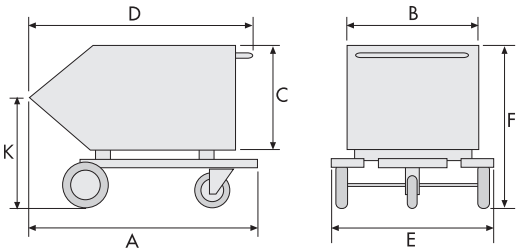
Overview of all free manufacturers' catalogues on page 14/15

Steel sheet box cart

- **Manual tipper with level-ground discharge facility**
- **For all types of bulk material**
- **Load bearing capacity 300 kg**
- Welded oil and water-tight
- Strong sheet steel design with edge reinforcement
- Base frame made of profile steel
- Spring-loaded anti-tip lock
- Forklift pockets designed to prevent accidental slipping and tipping off
- Painted RAL 5012 (light blue) or RAL 7005 (mouse grey)
- **Other RAL colours available on request**
- **Custom designs available on request**
- **Supplied with:** two wheels plus one swivel castor (from 0.6 m³ 2 wheels & 2 swivel castors) made of solid rubber, including one swivel castor with wheel stop, push handle
- **Pricing: free kerbside delivery within Germany**



RAL 5012





RAL 7005

Standard version

Contents m³	A mm	B mm	C mm	D mm	E mm	F mm	H mm	I mm	J mm	K mm	Roller quantity	Weight kg	RAL 5012 art.no.	€	RAL 7005 art.no.	€
0.25	1115	560	610	1120	820	990	465	55	170	690	3	80	**955004** 0250	559,–	**955004** 0251	559,–
0.40	1320	660	710	1330	900	1090	465	55	170	740	3	96	955004 0400	619,–	955004 0401	619,–
0.60	1395	830	780	1400	1070	1220	465	55	170	830	4	140	955004 0600	779,–	955004 0602	779,–
1.00	1420	1100	850	1430	1340	1290	465	55	170	870	4	168	955004 1000	959,–	955004 1001	959,–
													9107		9107	



RAL 5012





RAL 7005

Sheet steel box tipper for collecting and separating liquids and solids

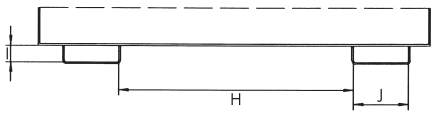
- Screen plate for chip collection, hole Ø 3 mm, division 6 mm
- Drain cock 1" for draining the liquids

Contents m³	A mm	B mm	C mm	D mm	E mm	F mm	H mm	I mm	J mm	K mm	Roller quantity	Weight kg	RAL 5012 art.no.	€	RAL 7005 art.no.	€
0.25	1115	560	610	1120	820	990	465	55	170	690	3	85	**955007** 0250	609,–	**955007** 0252	609,–
0.40	1320	660	710	1330	900	1090	465	55	170	740	3	101	955007 0400	659,–	955007 0401	659,–
0.60	1395	830	780	1400	1070	1220	465	55	170	830	4	145	955007 0600	869,–	955007 0601	869,–
1.00	1420	1100	850	1430	1340	1290	465	55	170	870	4	173	955007 1000	1.049,–	955007 1001	1.049,–
													9107		9107	

Mini chip containers

Ideal chip containers for low chip conveyors

- **Tipping at any height by means of cable control from the forklift seat**
- Welded oil and water-tight
- Robust base frame with forklift pockets
- Tank plate with circumferential edge profile
- Designed to prevent accidental slipping and tipping off
- Favourable centre of gravity
- **Custom designs available on request**
- **Other RAL colours available on request**
- **Supplied with:** Mini tipping trough without castors, safety chain
- **Pricing:** free kerbside delivery within Germany







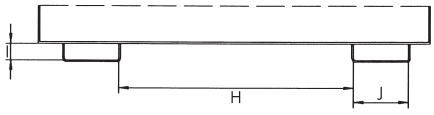

RAL 5012


RAL 7005

Extremely low-height chip container with roll-off mechanism

- Screen plate and drain cock 1" for separating liquids from solids

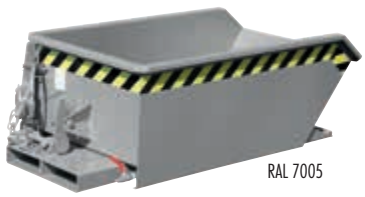
Contents m³	Dimensions L x W x H mm	Pouring edge height mm	Load bearing capacity kg	Weight kg	H mm	I mm	J mm	RAL 5012 art.no.	€	RAL 7005 art.no.	€
0.150	960 x 640 x 540	455	750	72	170	80	200	**955032** 0150	809,–	**955033** 0150	809,–
0.225	960 x 925 x 540	455	750	84	170	80	200	955032 0225	869,–	955033 0225	869,–
0.275	960 x 1210 x 540	455	750	92	170	80	200	955032 0275	899,–	955033 0275	899,–
								9107		9107	








RAL 5012


RAL 7005

Extremely low-height chip container

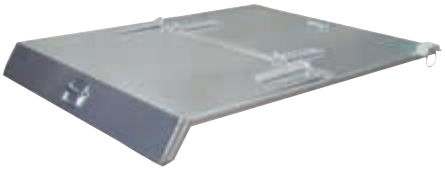
- Screen plate and drain cock 1" for separating liquids from solids

Contents m³	Dimensions L x W x H mm	Pouring edge height mm	Load bearing capacity kg	Weight kg	H mm	I mm	J mm	RAL 5012 art.no.	€	RAL 7005 art.no.	€
0.23	1385 x 680 x 450	350	750	85	10	60	200	**955034** 0230	759,–	**955035** 0230	759,–
0.27	1385 x 780 x 450	350	1000	97	150	60	200	955034 0270	819,–	955035 0270	819,–
0.46	1385 x 1280 x 450	350	1000	121	495	60	200	955034 0460	1.039,–	955035 0460	1.039,–
0.61	1385 x 1680 x 450	350	1000	139	495	60	200	955034 0610	1.149,–	955035 0610	1.149,–
								9107		9107	

Cover for mini chip containers, low height

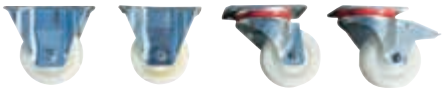
- **Prevents inadvertent extraction of the product**
- Hinged lid for mini chip container, can be opened on 2 sides
- Galvanised

suitable for	art.no.	€
Mini chip container 0.150 m³	**955032** 0010	191,–
Mini chip container 0.225 m³	955032 0020	191,–
Mini chip container 0.275 m³	955032 0030	191,–
Mini chip container 0.230 m³	955034 0010	143,–
Mini chip container 0.270 m³	955034 0020	143,–
Mini chip container 0.460 m³	955034 0030	184,–
Mini chip container 0.610 m³	955034 0040	197,–
	9107	



Swivel and fixed castors for mini chip containers

- **Height 125 mm**
- Made of polyamide
- Swivel castor with wheel stop



Description	D mm	art.no.	€
2 swivel and 2 fixed castors	100	**955032** 0040	169,–
		9107	

Chip containers

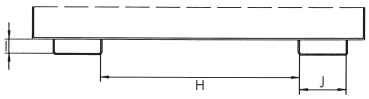
- **Tipping at any height by means of cable control from the forklift seat**
- **For all types of bulk material**
- **Load bearing capacity up to 1500 kg**
- Welded oil and water-tight
- Low height
- Tank plate with circumferential edge profile
- Robust base frame with forklift pockets
- Designed to prevent accidental slipping and tipping off
- Painted RAL 5012 (light blue) or RAL 7005 (mouse grey)
- **Other RAL colours available on request**
- **Custom designs available on request**
- **Supplied with:** Tipper without castors (castors available on request)
- **Pricing:** free kerbside delivery within Germany



Equipped with optional castors, RAL5012



RAL 7005







Version for collecting and separating liquids and solids
- Screwed perforated sheet for chip collection, hole Ø 3 mm, division 6 mm
- Drain cock 1" for draining the liquids

Contents m³	Dimensions L x W x H mm	Load bearing capacity kg	Weight kg	H mm	I mm	J mm	RAL 5012 art.no.	RAL 5012 €	RAL 7005 art.no.	RAL 7005 €
0.30	1440 x 680 x 580	750	112	10	60	200	**955011** 0300	999,–	**955011** 0302	999,–
0.50	1440 x 780 x 680	1000	130	150	60	200	955011 0500	1.229,–	955011 0510	1.229,–
0.75	1440 x 1280 x 680	1000	169	495	60	200	955011 0750	1.389,–	955011 0751	1.389,–
1.00	1640 x 1280 x 780	1500	220	495	60	200	955011 1000	1.669,–	955011 1002	1.669,–
1.50	1640 x 1280 x 1090	1500	250	495	60	200	955011 1500	1.879,–	955011 1501	1.879,–
							9107		9107	



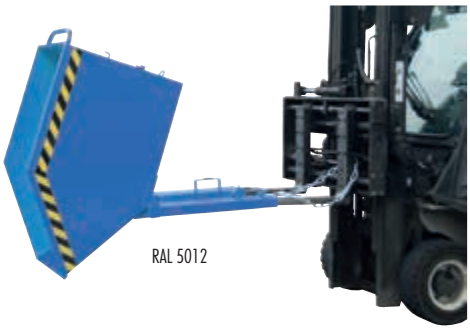


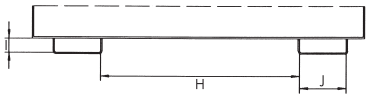
BAUER
Lift truck attachments
and warehouse equipment
176 pages
Art.no. 019900 5634

Overview of all free manufacturers' catalogues
on page 14/15

Tipping troughs

- For collecting and disposing of bulk goods and industrial waste
- Strong sheet steel design with edge reinforcement
- Tippable trough with handle
- Base frame with profile steel forklift pockets, easy to move with a forklift
- Welded oil and water-tight
- Designed to prevent accidental slipping and tipping off
- Can be fitted with castors
- **Custom designs available on request**
- **Other RAL colours available on request**
- **Supplied with:** Tipping trough without castors, safety chain
- **Pricing:** free kerbside delivery within Germany


RAL 5012





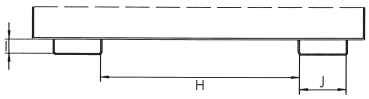



RAL 7005

Box-shaped trough

- For collecting and separating liquids and solids
- Perforated plate insert for collecting chips
- Drain cock 1" for draining the liquids

Contents m³	Dimensions L x W x H mm	Pouring edge height mm	Load bearing capacity kg	Weight kg	H mm	I mm	J mm	RAL 5012 art.no.	€	RAL 7005 art.no.	€
0.25	1115 x 590 x 740	430	300	61	205	55	170	**955017** 0250	549,–	**955036** 0250	549,–
0.40	1320 x 670 x 840	485	300	75	285	55	170	955017 0400	619,–	955036 0400	619,–
0.60	1390 x 840 x 910	520	300	116	455	55	170	955017 0600	839,–	955036 0600	839,–
0.80	1420 x 910 x 975	560	300	127	525	55	170	955017 0800	899,–	955036 0800	899,–
1.00	1420 x 1110 x 975	560	300	140	725	55	170	955017 1000	959,–	955036 1000	959,–
								9107		9107	




RAL 5012






RAL 7005

Low trough

- For collecting and separating liquids and solids
- Perforated plate insert for collecting chips
- Drain cock 1" for draining the liquids

Contents m³	Dimensions L x W x H mm	Pouring edge height mm	Load bearing capacity kg	Weight kg	H mm	I mm	J mm	RAL 5012 art.no.	€	RAL 7005 art.no.	€
0.25	1320 x 670 x 535	530	300	70	205	55	170	**955019** 0250	529,–	**955038** 0250	549,–
0.40	1390 x 840 x 610	605	300	77	455	55	170	955019 0400	619,–	955038 0400	619,–
								9107		9107	

Cover for chip trough tipper

suitable for	art.no.	€
Chip tipping trough 0.25 m³	**955036** 0010	138,–
Chip tipping trough 0.40 m³	955036 0020	157,–
Chip tipping trough 0.60 m³	955036 0030	176,–
Chip tipping trough 0.80 m³	955036 0040	183,–
Chip tipping trough 1.00 m³	955036 0050	197,–
Chip tipping trough 0.40 m³, low trough	955038 0020	157,–
Chip tipping trough 0.25 m³, low trough	955038 0010	138,–
	9107	



Swivel and fixed castors for tipping troughs

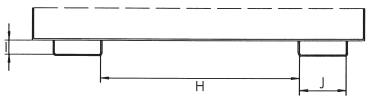
- Swivel castor with wheel stop



Description	D mm	art.no.	€
2 swivel and 2 fixed castors made of polyamide, height 225 mm	180	**955036** 0060	157,–
		9107	

Tipper with roller system

- **Compact tipper with roller system, good centre of gravity**
- **Tipping at any height by means of cable control from the forklift seat**
- **For all types of bulk material**
- **Load bearing capacity up to 1500 kg**
- Robust sheet steel design with circumferential edge profile
- Robust base frame with forklift pockets
- Designed to prevent accidental slipping and tipping off
- Painted RAL 5012 (light blue) or RAL 7005 (mouse grey)
- **Other RAL colours available on request**
- **Custom designs available on request**
- **Supplied with:** Tipper without castors (castors available on request)
- **Pricing:** free kerbside delivery within Germany





Equipped with optional castors, RAL 5012



RAL 7005

Standard version

Contents m³	Dimensions L x W x H mm	Load bearing capacity kg	Weight kg	H mm	I mm	J mm	RAL 5012 art.no.	€	RAL 7005 art.no.	€
0.15	960 x 640 x 540	750	70	170	80	200	**955001** 0150	679,–	**955001** 0152	679,–
0.30	1260 x 770 x 835	750	112	300	80	200	955001 0300	699,–	955001 0301	699,–
0.60	1260 x 1070 x 835	1000	131	600	80	200	955001 0600	809,–	955001 0602	809,–
0.90	1260 x 1570 x 835	1000	165	600	80	200	955001 0900	899,–	955001 0901	899,–
1.20	1720 x 1070 x 1095	1500	200	600	80	200	955001 1200	979,–	955001 1202	979,–
1.70	1720 x 1570 x 1095	1500	240	600	80	200	955001 1700	1.389,–	955001 1701	1.389,–
2.10	1720 x 1870 x 1095	1500	265	600	80	200	955001 2100	1.529,–	955001 2102	1.529,–
							9107		9107	

Optional additional equipment

Description	suitable for	art.no.	€
2 swivel and 2 fixed castors, 180 mm, load bearing capacity: 450 kg/castor	All	**955003** 0010	210,–
Welded oil and water-tight	Size 0.15 0.30 0.60 0.90 m³	955003 0020	78,50
Welded oil and water-tight	Size 1.20 1.70 2.10 m³	955003 0030	102,–
		9107	

Forklift load hook

- Holding fixture with 1 or 2 fork arms
- Safety mechanism to prevent slipping off
- With rotating load hook
- Surface painted in RAL 2000 (yellow orange) or hot-dip galvanised
- **Free kerbside delivery within Germany**





For lifting with 1 fork arm
- With eyelet for lifting by crane
- Forklift pocket inner dimensions A / B / C (mm): - / 168 / 68

Dimensions L x W x H mm	Load bearing capacity kg	Weight kg	Galvanised art.no.	€
300 x 180 x 395	1000	10	**958002** 1000	225,–

9107



For lifting with 2 fork arms
- Also suitable for lifting trucks
- Forklift pocket inner dimensions A / B / C (mm): 160 / 220 / 80

Dimensions L x W x H mm	Load bearing capacity kg	Weight kg	Galvanised art.no.	€
170 x 750 x 385	1500	23	**958002** 1500	380,–
170 x 750 x 425	2500	24	958002 2500	519,–
180 x 750 x 490	5000	34	958002 5000	819,–
180 x 750 x 555	7500	38	958002 7500	959,–

9107

Drum collection trays

- For storing drums and small containers
- Conformity declaration (ÜHP) in accordance with StawaR, approved for ignitable liquids of GHS categories 1-3 and aquatic pollutants of GHS categories 1-4
- Construction of 3 mm sheet steel, hot-galvanised
- **With galvanised grating (load bearing capacity 1000 kg/m²)**
- Ground clearance 100 mm
- **Pricing:** free kerbside delivery within Germany





956004 0005



956004 0004

For 200 l drums

Length cm	Width cm	Total height cm	Weight kg	Collecting volumes l	Number of drums max.	art.no.	€
120	80	36	72	215	2	**956004** 0002	355,–
120	120	29	91	216	4	956004 0004	410,–
240	80	25	132	222	4	956004 0005	649,–

9107

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ATORN® Thread milling cutter options

ISO internal thread

Thread	Core dimension	Required tool	Required indexable insert
M4x0.7 R	3.33	MTB 06031 C7 0.7 ISO*	-
M5x0.8 R	4.23	MTB 06038 C9 0.8 ISO*	-
M6x0.75	5.38	MTB 06045 C10 0.75 ISO*	-
M6x1.0 R	5.04	MTB 06046 C10 1.0 ISO*	-
M8x1.0	7.04	MTB 06046 C10 1.0 ISO*	-
M8x1.25 R	6.78	MTB 0606 C14 1.25 ISO*	-
M9x1.0	8.15	MTB 0606 C12 1.0 ISO*	-
M10x1.0	9.04	MTB 0808 D16 1.0 ISO*	-
M10x1.5	8.53	MTB 08078 C17 1.5 ISO*	-
M12x0.5	11.53	SR0009H12	12 I 0.5 ISO
M12x0.75	11.28	SR0009H12	12 I 0.75 ISO
M12x1.0	11.04	SR0009H12	12 I 1.0 ISO
M12x1.25	10.76	SR0009H12	12 I 1.25 ISO
M12x1.5	10.37	MTB 08078 C17 1.5 ISO*	-
M12x1.75 R	10.27	MTB 1009 C20 1.75 ISO*	-
M14x0.5	13.53	SR0012F14	14 I 0.5 ISO
M14x0.75	13.28	SR0012F14	14 I 0.75 ISO
M14x1.0	13.04	SR0009H12	12 I 1.0 ISO
M14x1.5	12.53	SR0009H12	12 I 1.5 ISO
M14x2.0 R	12.02	MTB1010C27 2.0 ISO*	-
M16x0.5	15.53	SR0012F14	14 I 0.5 ISO
M16x0.75	15.28	SR0012F14	14 I 0.75 ISO
M16x1.0	15.04	SR0012F14	14 I 1.0 ISO
M16x1.5	14.53	SR0012F14	14 I 1.5 ISO
M16x2.0 R	14.02	SR0012F14	14 I 2.0 ISO
M18x0.5	17.53	SR0012F14	14 I 0.5 ISO
M18x0.75	17.28	SR0012F14	14 I 0.75 ISO
M18x1.0	17.04	SR0012F14	14 I 1.0 ISO
M18x1.5	16.53	SR0012F14	14 I 1.5 ISO
M18x2.0	16.02	SR0012F14	14 I 2.0 ISO
M18x2.5 R	15.52	SR0012F14	14 I 2.5 ISO
M20x0.5	19.53	SR0014H14	14 I 0.5 ISO
M20x0.75	19.28	SR0014H14	14 I 0.75 ISO
M20x1.0	19.04	SR0014H14	14 I 1.0 ISO
M20x1.5	18.53	SR0014H14	14 I 1.5 ISO
M20x2.0	18.02	SR0014H14	14 I 2.0 ISO
M20x2.5 R	17.52	SR0014H14	14 I 2.5 ISO
M22x0.5	21.53	SR0017H14	14 I 0.5 ISO
M22x0.75	21.28	SR0017H14	14 I 0.75 ISO
M22x1.0	21.04	SR0017H14	14 I 1.0 ISO
M22x1.5	20.53	SR0017H14	14 I 1.5 ISO
M22x2.0	20.02	SR0017H14	14 I 2.0 ISO
M22x2.5 R	19.52	SR0017H14	14 I 2.5 ISO
M24x0.5	23.53	SR0017H14	14 I 0.5 ISO
M24x0.75	23.28	SR0017H14	14 I 0.75 ISO
M24x1.0	23.04	SR0018H21	21 I 1.0 ISO
M24x1.5	22.53	SR0018H21	21 I 1.5 ISO
M24x2.0	22.02	SR0018H21	21 I 2.0 ISO
M24x3.0 R	21.00	SR0018H21	21 I 3.0 ISO
M27x0.5	26.53	SR0017H14	14 I 0.5 ISO
M27x0.75	26.28	SR0017H14	14 I 0.75 ISO
M27x1.0	26.04	SR0021H21	21 I 1.0 ISO
M27x1.5	25.53	SR0021H21	21 I 1.5 ISO
M27x2.0	25.02	SR0021H21	21 I 2.0 ISO
M27x3.0 R	24.00	SR0021H21	21 I 3.0 ISO
M30x0.5	29.53	SR0017H14	14 I 0.5 ISO
M30x0.75	29.28	SR0017H14	14 I 0.75 ISO
M30x1.0	29.04	SR0021H21	21 I 1.0 ISO
M30x1.5	28.53	SR0021H21	21 I 1.5 ISO
M30x2.0	28.02	SR0021H21	21 I 2.0 ISO
M30x3.0	27.00	SR0021H21	21 I 3.0 ISO
M30x3.5 R	26.49	SR0021H21	21 I 3.5 ISO
M33x0.5	32.53	SR0017H14	14 I 0.5 ISO
M33x0.75	32.28	SR0017H14	14 I 0.75 ISO
M33x1.0	32.04	SR0021H21	21 I 1.0 ISO
M33x1.5	31.53	SR0021H21	21 I 1.5 ISO
M33x2.0	31.02	SR0021H21	21 I 2.0 ISO
M33x3.0	30.00	SR0021H21	21 I 3.0 ISO
M33x3.5 R	29.49	SR0021H21	21 I 3.5 ISO
M36x0.5	35.53	SR0017H14	14 I 0.5 ISO
M36x0.75	35.28	SR0017H14	14 I 0.75 ISO
M36x1.0	35.04	SR0021H21	21 I 1.0 ISO
M36x1.5	34.53	SR0029J30	30 I 1.5 ISO
M36x2.0	34.02	SR0029J30	30 I 2.0 ISO
M36x3.0	33.00	SR0029J30	30 I 3.0 ISO
M36x4.0	31.97	SR0029J30	30 I 4.0 ISO
M39x0.5	38.53	SR0017H14	14 I 0.5 ISO
M39x0.75	38.28	SR0017H14	14 I 0.75 ISO
M39x1.0	38.04	SR0021H21	21 I 1.0 ISO
M39x1.5	37.53	SR0029J30	30 I 1.5 ISO
M39x2.0	37.02	SR0029J30	30 I 2.0 ISO
M39x3.0	36.00	SR0029J30	30 I 3.0 ISO
M39x4.0 R	34.97	SR0029J30	30 I 4.0 ISO
M42x0.5	41.53	SR0017H14	14 I 0.5 ISO
M42x0.75	41.28	SR0017H14	14 I 0.75 ISO
M42x1.0	41.04	SR0021H21	21 I 1.0 ISO
M42x1.5	40.53	SR0029J30	30 I 1.5 ISO
M42x2.0	40.02	SR0029J30	30 I 2.0 ISO
M42x3.0	39.00	SR0029J30	30 I 3.0 ISO
M42x4.0	37.97	SR0029J30	30 I 4.0 ISO
M42x4.5 R	37.46	SR0029J30	30 I 4.5 ISO
M45x0.5	44.53	SR0017H14	14 I 0.5 ISO
M45x0.75	44.28	SR0017H14	14 I 0.75 ISO
M45x1.0	44.04	SR0021H21	21 I 1.0 ISO
M45x1.5	43.53	SR0029J30	30 I 1.5 ISO
M45x2.0	43.02	SR0029J30	30 I 2.0 ISO
M45x3.0	42.00	SR0029J30	30 I 3.0 ISO
M45x4.0	40.97	SR0029J30	30 I 4.0 ISO
M45x4.5 R	40.46	SR0029J30	30 I 4.5 ISO
M48x0.5	47.52	SR0017H14	14 I 0.5 ISO
M48x0.75	47.28	SR0017H14	14 I 0.75 ISO
M48x1.0	47.04	SR0021H21	21 I 1.0 ISO
M48x1.5	46.53	SR0029J30	30 I 1.5 ISO
M48x2.0	46.02	SR0029J30	30 I 2.0 ISO
M48x3.0	45.00	SR0029J30	30 I 3.0 ISO
M48x4.0	43.97	SR0029J30	30 I 4.0 ISO
M52x0.5	51.52	SR0017H14	14 I 0.5 ISO
M52x0.75	51.28	SR0017H14	14 I 0.75 ISO
M52x1.0	51.04	SR0021H21	21 I 1.0 ISO
M52x1.5	50.53	SR0029J30	30 I 1.5 ISO
M52x2.0	50.02	SR0029J30	30 I 2.0 ISO
M52x3.0	49.00	SR0029J30	30 I 3.0 ISO
M52x4.0	47.97	SR0029J30	30 I 4.0 ISO
M56x0.5	55.52	SR0017H14	14 I 0.5 ISO
M56x0.75	55.28	SR0017H14	14 I 0.75 ISO
M56x1.0	55.04	SR0021H21	21 I 1.0 ISO
M56x1.5	54.53	SR0048M40	40 I 1.5 ISO
M56x2.0	54.02	SR0048M40	40 I 2.0 ISO
M56x3.0	53.00	SR0048M40	40 I 3.0 ISO
M56x4.0	51.97	SR0048M40	40 I 4.0 ISO
M60x0.5	59.52	SR0017H14	14 I 0.5 ISO
M60x0.75	59.28	SR0017H14	14 I 0.75 ISO
M60x1.0	59.04	SR0021H21	21 I 1.0 ISO
M60x1.5	58.53	SR0048M40	40 I 1.5 ISO
M60x2.0	58.02	SR0048M40	40 I 2.0 ISO
M60x3.0	57.00	SR0048M40	40 I 3.0 ISO
M60x4.0	55.97	SR0048M40	40 I 4.0 ISO
M64x0.5	63.52	SR0017H14	14 I 0.5 ISO
M64x0.75	63.28	SR0017H14	14 I 0.75 ISO
M64x1.0	63.04	SR0021H21	21 I 1.0 ISO
M64x1.5	62.53	SR0048M40	40 I 1.5 ISO
M64x2.0	62.02	SR0048M40	40 I 2.0 ISO
M64x3.0	61.00	SR0048M40	40 I 3.0 ISO
M64x4.0	59.97	SR0048M40	40 I 4.0 ISO
M64x6.0 R	57.90	SR0048M40	40 I 6.0 ISO
M68x0.5	67.52	SR0017H14	14 I 0.5 ISO
M68x0.75	67.28	SR0017H14	14 I 0.75 ISO
M68x1.0	67.04	SR0021H21	21 I 1.0 ISO
M68x1.5	66.53	SR0048M40	40 I 1.5 ISO
M68x2.0	66.02	SR0048M40	40 I 2.0 ISO
M68x3.0	65.00	SR0048M40	40 I 3.0 ISO
M68x4.0	63.97	SR0048M40	40 I 4.0 ISO
M68x6.0 R	61.91	SR0048M40	40 I 6.0 ISO
M70x0.5	69.52	SR0017H14	14 I 0.5 ISO
M70x0.75	69.28	SR0017H14	14 I 0.75 ISO
M70x1.0	69.04	SR0021H21	21 I 1.0 ISO
M70x1.5	68.53	SR0048M40	40 I 1.5 ISO
M70x2.0	68.02	SR0048M40	40 I 2.0 ISO
M70x3.0	67.00	SR0048M40	40 I 3.0 ISO
M70x4.0	65.97	SR0048M40	40 I 4.0 ISO
M70x6.0	63.91	SR0048M40	40 I 6.0 ISO

R = Standard thread
* = Solid carbide milling cutter

UN internal thread

Thread	Core dimension	Required tool	Required indexable insert
1/4x20UNC	5.12	MTB 06047 C12 20 UN*	-
1/4x28UNF	5.47	MTB 0605 C11 28 UN*	-
5/16x18UNC	6.57	MTB 06056 C14 18 UN*	-
5/16x20UN	6.71	MTB 06047 C12 20 UN*	-
5/16x24UNF	6.91	MTB 08066 C14 24 UN*	-
5/16x28UN	7.06	MTB 0606 C14 28 UN*	-
3/8x16UNC	7.98	MTB 08067 C16 16 UN*	-
3/8x18UNC	8.17	MTB 06056 C14 18 UN*	-
3/8x20UN	8.29	MTB 06047 C12 20 UN*	-
3/8x24UNF	8.51	MTB 0808 D21 24 UN*	-
3/8x28UN	8.65	MTB 0606 C14 28 UN*	-
7/16x14UNC	9.35	MTB 08077 C20 14 UN*	-
7/16x16UN	9.58	MTB 08067 C16 16 UN*	-
7/16x18UNS	9.74	MTB 06056 C14 18 UN*	-
7/16x20UNF	9.88	MTB 0808 C21 20 UN*	-
7/16x24UNS	10.08	MTB 0808 D21 24 UN*	-
7/16x28UNEF	10.24	MTB 0606 C14 28 UN*	-
1/2x13UNC	10.81	MTB 10092 C22 13 UN*	-
1/2x14UNS	10.93	MTB 08077 C20 14 UN*	-
1/2x20UNF	11.47	SR0009H12	12 I 20 UN
1/2x24UNS	11.68	SR0009H12	12 I 24 UN
1/2x28UNEF	11.82	SR0009H12	12 I 28 UN
9/16x12UNC	12.22	MTB 12105 C26 12 UN*	-
9/16x14UNS	12.52	MTB 08077 C20 14 UN*	-
9/16x16UN	12.75	SR0009H12	12 I 16 UN
9/16x18UNF	12.92	SR0009H12	12 I 18 UN
9/16x20UN	13.06	SR0009H12	12 I 20 UN
9/16x24UNEF	13.26	SR0009H12	12 I 24 UN
9/16x28UN	13.41	SR0009H12	12 I 28 UN
5/8x11UNC	13.63	MTB 12114 C28 11 UN*	-
5/8x12UN	13.82	SR0012F14	14 I 12 UN
5/8x14UNS	14.12	SR0012F14	14 I 14 UN
5/8x16UN	14.33	SR0012F14	14 I 16 UN
5/8xUNF	14.52	SR0012F14	14 I 18 UN
5/8x20UN	14.64	SR0012F14	14 I 20 UN
5/8x24UNEF	14.86	SR0012F14	14 I 24 UN
5/828UN	15.00	SR0012F14	14 I 28 UN
5/8x32UN	15.11	SR0012F14	14 I 32 UN
11/16x12UN	15.39	SR0012F14	14 I 12 UN
11/16x16UN	15.93	SR0012F14	14 I 16 UN
11/16x20UN	16.23	SR0012F14	14 I 20 UN
11/16x24UNEF	16.43	SR0012F14	14 I 24 UN
11/16x28UN	16.59	SR0012F14	14 I 28 UN
11/16x32UN	16.70	SR0012F14	14 I 32 UN
3/4x10UNC	16.57	MTB 16144 D34 10 UN*	-
3/4x12UN	16.99	SR0012F14	14 I 12 UN
3/4x14UNS	17.28	SR0012F14	14 I 14 UN
3/4x16UNF	17.50	SR0012F14	14 I 16 UN
3/4x18UNS	17.69	SR0012F14	14 I 18 UN
3/4x20UNEF	17.82	SR0012F14	14 I 20 UN
3/4x24UNS	18.03	SR0012F14	14 I 24 UN
3/428UN	18.17	SR0014H14	14 I 28 UN
3/4x32UN	18.29	SR0014H14	14 I 32 UN
13/16x12UN	18.57	SR0014H14	14 I 12 UN
13/16x16UN	19.10	SR0014H14	14 I 16 UN
13/16x20UNEF	19.41	SR0014H14	14 I 20 UN
13/16x28UN	19.76	SR0014H14	14 I 28 UN
13/16x32UN	19.88	SR0014H14	14 I 32 UN
7/8x9UNC	19.47	MTB 1616 C38 9 UN*	
7/8x10UNS	19.75	MTB 16144 D34 10 UN*	
7/8x12UN	20.17	SR0014H14	14 I 12 UN
7/8x14UNF	20.47	SR0014H14	14 I 14 UN
7/8x16UN	20.68	SR0014H14	14 I 16 UN
7/8x18UNS	20.87	SR0014H14	14 I 18 UN
7/8x20UNEF	20.99	SR0014H14	14 I 20 UN
7/8x24UNS	21.21	SR0017H14	14 I 24 UN
7/8x28UN	21.35	SR0017H14	14 I 28 UN
7/8x32UN	21.46	SR0017H14	14 I 32 UN
15/16x12UN	21.74	SR0017H14	14 I 12 UN
15/16x16UN	22.28	SR0017H14	14 I 16 UN
15/16x20UNEF	22.58	SR0017H14	14 I 20 UN
15/16x28UN	22.94	SR0017H14	14 I 28 UN
15/16x32UN	23.05	SR0017H14	14 I 32 UN
1x8UNC	22.29	MTB 20195 D42 8 UN*	-
1x10UNS	22.29	MTB 16144 D34 10 UN*	-
1x12UNF	23.34	SR0017H14	14 I 12 UN
1x14UNS	23.63	SR0017H14	14 I 14 UN
1x16UN	23.85	SR0017H14	14 I 16 UN
1x18UNS	24.04	SR0017H14	14 I 18 UN
1x20UNEF	24.17	SR0017H14	14 I 20 UN
1x24UNS	24.38	SR0017H14	14 I 24 UN
1x28UN	24.52	SR0017H14	14 I 28 UN
1x32UN	24.64	SR0017H14	14 I 32 UN
1 1/16x12UN	24.92	SR0017H14	14 I 12 UN
1 1/16x16UN	25.45	SR0021H21	21 I 16 UN
1 1/16x18UNEF	25.62	SR0021H21	21 I 18 UN
1 1/16x20UN	25.76	SR0021H21	21 I 20 UN
1 1/16x28UN	26.11	SR0017H14	14 I 28 UN
1 1/8x10UNS	26.10	SR0021H21	21 I 10 UN
1 1/8x12UNF	26.52	SR0021H21	21 I 12 UN
1 1/8x14UNS	26.82	SR0021H21	21 I 14 UN
1 1/8x16UN	27.03	SR0021H21	21 I 16 UN
1 1/8xUNEF	27.22	SR0021H21	21 I 18 UN
1 1/8x20UN	27.34	SR0021H21	21 I 20 UN
1 1/8x24UNS	27.56	SR0021H21	21 I 24 UN
1 1/8x28UN	27.70	SR0017H14	14 I 28 UN
1 3/16x12UN	28.09	SR0021H21	21 I 12 UN
1 3/16x16UN	28.63	SR0021H21	21 I 16 UN
1 3/16x18UNEF	28.79	SR0021H21	21 I 18 UN
1 3/16x20UN	28.93	SR0021H21	21 I 20 UN
1 3/16x28UN	29.29	SR0017H14	14 I 28 UN
1 1/4x10UNS	29.27	SR0021H21	21 I 10 UN
1 1/4x12UNF	29.69	SR0021H21	21 I 12 UN
1 1/4x14UNS	29.98	SR0021H21	21 I 14 UN
1 1/4x16UN	30.20	SR0021H21	21 I 16 UN
1 1/4x18UNEF	30.39	SR0021H21	21 I 18 UN
1 1/4x20UN	30.52	SR0021H21	21 I 20 UN
1 1/4x24UNS	30.73	SR0021H21	21 I 24 UN
1 1/4x28UN	30.87	SR0017H14	14 I 28 UN
1 5/16x12UN	31.27	SR0021H21	21 I 12 UN
1 5/16x16UN	31.80	SR0021H21	21 I 16 UN
1 5/16x18UNEF	31.97	SR0021H21	21 I 18 UN
1 5/16x20UN	32.11	SR0021H21	21 I 20 UN
1 5/16x28UN	32.46	SR0017H14	14 I 28 UN
1 3/8x10UNS	32.45	SR0021H21	21 I 10 UN
1 3/8x12UNF	32.87	SR0021H21	21 I 12 UN
1 3/8x14UNS	33.17	SR0021H21	21 I 14 UN
1 3/8x16UN	33.38	SR0029J30	30 I 16 UN
1 3/8x18UNEF	33.57	SR0029J30	30 I 18 UN
1 3/8x20UN	33.69	SR0029J30	30 I 20 UN
1 3/8x24UNS	33.91	SR0029J30	30 I 24 UN
1 3/8x28UN	34.05	SR0017H14	14 I 28 UN
1 7/16x8UN	33.39	SR0029J30	30 I 8 UN
1 7/16x12UN	34.44	SR0029J30	30 I 12 UN
1 7/16x16UN	34.98	SR0029J30	30 I 16 UN
1 7/16x18UNEF	35.14	SR0029J30	30 I 18 UN
1 7/16x20UN	35.28	SR0029J30	30 I 20 UN
1 7/16x28UN	35.64	SR0017H14	14 I 28 UN
1 1/2x8UN	34.99	SR0029J30	30 I 8 UN
1 1/2x10UNS	35.62	SR0029J30	30 I 10 UN
1 1/2x12UNF	36.04	SR0029J30	30 I 12 UN
1 1/2x14UNS	36.33	SR0029J30	30 I 14 UN
1 1/2x16UN	36.55	SR0029J30	30 I 16 UN
1 1/2x18UNEF	36.73	SR0029J30	30 I 18 UN
1 1/2x20UN	36.87	SR0029J30	30 I 20 UN
1 1/2x24UNS	37.08	SR0021H21	21 I 24 UN
1 1/2x28UN	37.22	SR0017H14	14 I 28 UN
1 9/16x6UN	35.50	SR0029J30	30 I 6 UN
1 9/16x12UN	37.62	SR0029J30	30 I 12 UN
1 9/16x16UN	38.15	SR0029J30	30 I 16 UN
1 9/16x18UNEF	38.32	SR0029J30	30 I 18 UN
1 9/16x20UN	38.46	SR0029J30	30 I 20 UN
1 5/8x8UN	38.16	SR0029J30	30 I 8 UN
1 5/8x10UNS	38.80	SR0029J30	30 I 10 UN
1 5/8x12UN	39.22	SR0029J30	30 I 12 UN
1 5/8x14UNS	39.52	SR0029J30	30 I 14 UN
1 5/8x16UN	39.73	SR0029J30	30 I 16 UN
1 5/8x18UNEF	39.92	SR0029J30	30 I 18 UN
1 5/8x20UN	40.04	SR0029J30	30 I 20 UN
1 5/8x24UNS	40.26	SR0021H21	21 I 24 UN
1 11/16x6UN	38.67	SR0029J30	30 I 6 UN
1 11/16x8UN	39.74	SR0029J30	30 I 8 UN
1 11/16x12UN	40.79	SR0029J30	30 I 12 UN
1 11/16x16UN	41.33	SR0029J30	30 I 16 UN
1 11/16x18UNEF	41.49	SR0029J30	30 I 18 UN
1 11/16x20UN	41.63	SR0029J30	30 I 20 UN
1 3/4x6UN	40.26	SR0029J30	30 I 6 UN
1 3/4x8UN	41.34	SR0029J30	30 I 8 UN
1 3/4x10UNS	41.97	SR0029J30	30 I 10 UN
1 3/4x12UN	42.39	SR0029J30	30 I 12 UN
1 3/4x14UNS	42.68	SR0029J30	30 I 14 UN
1 3/4x16UN	42.90	SR0029J30	30 I 16 UN
1 3/4x18UNS	43.09	SR0029J30	30 I 18 UN
1 3/4x20UN	43.22	SR0029J30	30 I 20 UN
1 13/16x6UN	41.85	SR0029J30	30 I 6 UN
1 13/16x8UN	42.91	SR0029J30	30 I 8 UN
1 13/16x12UN	43.97	SR0029J30	30 I 12 UN
1 13/16x16UN	44.50	SR0029J30	30 I 16 UN

UN internal thread (continued)

Thread	Core dimension	Required tool	Required indexable insert
1 13/16x20UN	44.81	SR0029J30	30 I 20 UN
1 7/8x6UN	43.43	SR0029J30	30 I 6 UN
1 7/8x8UN	44.51	SR0029J30	30 I 8 UN
1 7/8x10UNS	45.15	SR0029J30	30 I 10 UN
1 7/8x12UN	45.57	SR0029J30	30 I 12 UN
1 7/8x14UNS	45.87	SR0029J30	30 I 14 UN
1 7/8x16UN	46.08	SR0029J30	30 I 16 UN
1 7/8x18UNS	46.27	SR0029J30	30 I 18 UN
1 7/8x20UN	46.39	SR0029J30	30 I 20 UN
1 15/16x6UN	45.02	SR0029J30	30 I 6 UN
1 15/16x8UN	46.09	SR0029J30	30 I 8 UN
1 15/16x12UN	47.14	SR0029J30	30 I 12 UN
1 15/16x16UN	47.68	SR0029J30	30 I 16 UN
1 15/16x20UN	47.98	SR0029J30	30 I 20 UN
2x6UN	46.61	SR0029J30	30 I 6 UN
2x8UN	47.69	SR0029J30	30 I 8 UN
2x10UNS	48.32	SR0029J30	30 I 10 UN
2x12UN	48.74	SR0029J30	30 I 12 UN
2x14UNS	49.03	SR0029J30	30 I 14 UN
2x16UN	49.25	SR0029J30	30 I 16 UN
2x18UNS	49.44	SR0029J30	30 I 18 UN
2x20UN	49.57	SR0029J30	30 I 20 UN
2 1/16x16 UNS	50.85	SR0029J30	30 I 16 UN
2 1/8x6UN	49.78	SR0029J30	30 I 6 UN
2 1/8x8UN	50.86	SR0029J30	30 I 8 UN
2 1/8x12UN	51.92	SR0029J30	30 I 12 UN
2 1/8x16UN	52.43	SR0029J30	30 I 16 UN
2 1/8x20UN	52.74	SR0029J30	30 I 20 UN
2 3/16x16UNS	54.03	SR0029J30	30 I 16 UN
2 1/4x6UN	52.96	SR0048M40	40 I 6 UN
2 1/4x8UN	54.04	SR0048M40	40 I 8 UN
2 1/4x10UNS	54.67	SR0048M40	40 I 10 UN
2 1/4x12UN	55.09	SR0048M40	40 I 12 UN
2 1/4x14 UNS	55.38	SR0048M40	40 I 14 UN
2 1/4x16UN	55.60	SR0029J30	30 I 16 UN
2 1/4x18UNS	55.79	SR0029J30	30 I 18 UN
2 1/4x20UN	55.92	SR0029J30	30 I 20 UN
2 5/16x16UN	57.20	SR0029J30	30 I 16 UN
2 3/8x6UN	56.15	SR0048M40	40 I 6 UN
2 3/8x8UN	57.21	SR0048M40	40 I 8 UN

NPTF internal thread

Thread	Core dimension	Required tool	Required indexable insert
1/8x27NPT	8.33	MTB 08076 C10 27NPT*	——
1/4x18NPT	10.74	SR0009H12	12-18 NPT
3/8x18NPT	14.27	SR0012F14	14-18 NPT
1/2x14NPT	17.50	SR0014H14	14-14NPT
3/4x14NPT	22.81	SR0017H14	14-14NPT
1x11.5NPT	28.65	SR0021H21	21-11.5 NPT
1 1/4x11.5NPT	37.39	SR0029J30	30-11.5 NPT
1 1/2x11.5NPT	43.46	SR0029J30	30-11.5 NPT
2x11.5NPT	55.25	SR0029J30	30-11.5 NPT
2 1/2x8NPT	65.96	SR0048M40	40-8 NPT
3x8NPT	81.74	SR0048M40	40-8 NPT
3 1/2x8NPT	94.36	SR0048M40	40-8 NPT
4x8NPT	106.96	SR0048M40	40-8 NPT

* = Solid carbide milling cutter

NPTF fine internal thread

Thread	Core dimension	Required tool	Required indexable insert
1/8x27NPTF	8.33	MTB 08076 C10 27 NPTF*	——
1/4x18NPTF	10.74	SR0009H12	12-18 NPTF
3/8x18NPTF	14.27	SR0012F14	14-18 NPTF
1/2x14NPTF	17.50	SR0014H14	14-14NPTF
3/4x14NPTF	22.81	SR0017H14	14-14NPTF
1x11.5NPTF	28.65	SR0021H21	21-11.5 NPTF
1 1/4x11.5NPTF	37.39	SR0029J30	30-11.5 NPTF
1 1/2x11.5NPTF	43.46	SR0029J30	30-11.5 NPTF
2x11.5NPTF	55.25	SR0029J30	30-11.5 NPTF
2 1/2x8NPTF	65.96	SR0048M40	40-8 NPTF
3x8NPTF	81.74	SR0048M40	40-8 NPTF
3 1/2x8NPTF	94.36	SR0048M40	40-8 NPTF
4x8NPTF	106.96	SR0048M40	40-8 NPTF

* = Solid carbide milling cutter

Whitworth pipe thread, straight internal thread BSP

Thread	Core dimension	Required tool	Required indexable insert
1/8x28BSP	8.60	MTB 08078 C14 28W*	-
1/4x19BSP	11.50	SR0009H12	12-19W
3/8x19BSP	15.10	SR0012F14	14-19W
1/2x14BSP	18.80	SR0014H14	14-14W
3/4x14BSP	24.20	SR0017H14	14-14W
1x11BSP	30.50	SR0021H21	21-11W
1 1/4x11BSP	39.10	SR0029J30	30-11W
1 1/2x11BSP	45.00	SR0029J30	30-11W
2x11BSP	56.80	SR0029J30	30-11W
2 1/2x11BSP	72.40	SR0048M40	40-11W
3x11BSP	85.10	SR0048M40	40-11W
3 1/2x11BSP	97.50	SR0048M40	40-11W
4x11BSP	110.20	SR0048M40	40-11W
5x11BSP	135.60	SR0048M40	40-11W
6x11BSP	161.00	SR0048M40	40-11W

* = Solid carbide milling cutter

PG internal thread DIN 40430

Thread	Core dimension	Required tool	Required indexable insert
PG 9	13.86	SR0012F14	14-18 PG
PG 11	17.26	SR0014H14	14-18 PG
PG 13.5	19.06	SR0014H14	14-18 PG
PG 16	21.16	SR0017H14	14-18 PG
PG 21	26.78	SR0021H21	21-16 PG
PG 29	35.48	SR0021H21	21-16 PG
PG 36	45.48	SR0021H21	21-16 PG
PG 42	52.48	SR0021H21	21-16 PG
PG 48	57.78	SR0021H21	21-16 PG

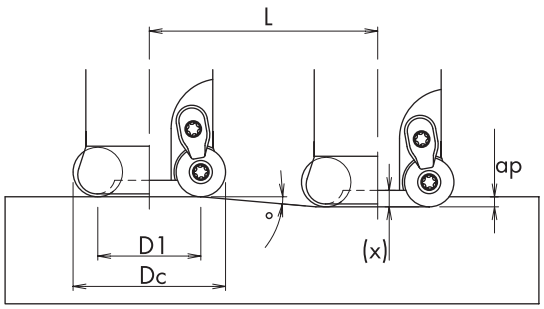
Whitworth pipe thread, conical internal thread BSPT

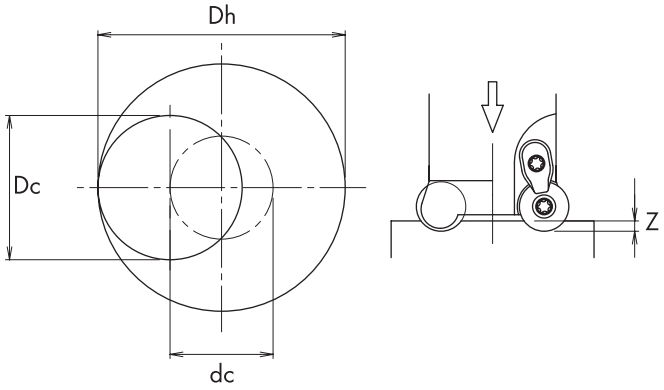
Thread	Core dimension	Required tool	Required indexable insert
1/8x28BSPT	8.60	MTB 08078 C14 28BSPT*	——
1/4x19BSPT	11.50	SR0009H12	12-19BSPT
3/8x19BSPT	15.10	SR0012F14	14-19BSPT
1/2x14BSPT	18.80	SR0014H14	14-14BSPT
3/4x14BSPT	24.20	SR0017H14	14-14BSPT
1x11BSPT	30.50	SR0021H21	21-11BSPT
1 1/4x11BSPT	39.10	SR0029J30	30-11BSPT
1 1/2x11BSPT	45.00	SR0029J30	30-11BSPT
2x11BSPT	56.80	SR0029J30	30-11BSPT
2 1/2x11BSPT	72.40	SR0048M40	40-11BSPT
3x11BSPT	85.10	SR0048M40	40-11BSPT
3 1/2x11BSPT	97.50	SR0048M40	40-11BSPT
4x11BSPT	110.20	SR0048M40	40-11BSPT
5x11BSPT	135.60	SR0048M40	40-11BSPT
6x11BSPT	161.00	SR0048M40	40-11BSPT

* = Solid carbide milling cutter

Programming note for profile milling

INFO





Calculating the tool Ø for reaming an existing bore

Ødc = ØDh - ØDc

Ø area = bore Ø - tool Ø

- The max. depth during radial run-out should not exceed the max. clamp depth ap.
- Work anti-clockwise for downward milling.
- Reduce the cutting data by min. 70% for ramping and circular cutting.
- Reduce the feed by 50% when drilling along the Z-axis.
- Please ensure sufficient safety, particularly with long boring chips.

Tool Ø Dc mm	Cutting edge Ø mm	Tool Ø D1 eff. mm	Bore Ø Dh min. mm	Bore Ø Dh max. mm	Ramping angle max. mm	Clamp depth max. ap mm	Cutting length at max. ap mm	Drilling depth Z max. mm	Depth up to holder X mm
20	7	13	30	38	5°30′	3.5	36.3	1.5	2.5
22	7	15	34	42	4°35′	3.5	43.6	1.5	2.5
25	7	18	40	48	3°40′	3.5	54.6	1.5	2.5
25	10	15	34	48	10°45′	5.0	26.3	2.5	3.5
28	10	18	40	54	8°20′	5.0	34.1	2.5	3.5
30	10	20	44	58	7°15′	5.0	39.3	2.5	3.5
32	10	22	48	62	6°25′	5.0	44.4	2.5	3.5
32	12	20	44	62	7°35′	6.0	45.1	2.5	3.5
35	10	25	54	68	5°30′	5.0	51.9	2.2	3.5
35	12	23	50	68	6°15′	6.0	54.7	2.5	3.5
40	12	28	60	78	4°55′	6.0	69.7	2.5	3.5
42	10	32	68	82	4°05′	5.0	70.0	2.5	3.5
50	12	38	80	98	5°15′	6.0	65.2	3.5	4.5
50	16	34	75	98	7°25′	8.0	61.4	4.0	5.0
52	12	40	84	102	4°55′	6.0	69.7	3.5	4.5
52	16	36	79	102	6°55′	8.0	65.9	4.0	5.0
63	12	51	106	124	3°45′	6.0	91.5	3.5	4.5
63	16	47	101	124	5°00′	8.0	91.4	4.0	5.0
66	12	54	112	130	3°30′	6.0	98.1	3.5	4.5
66	16	50	107	130	4°40′	8.0	98.0	4.0	5.0

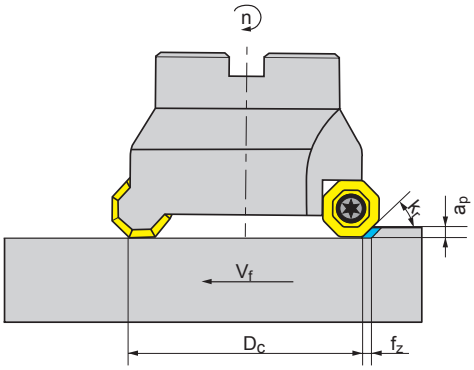
Designations and formulae (milling)

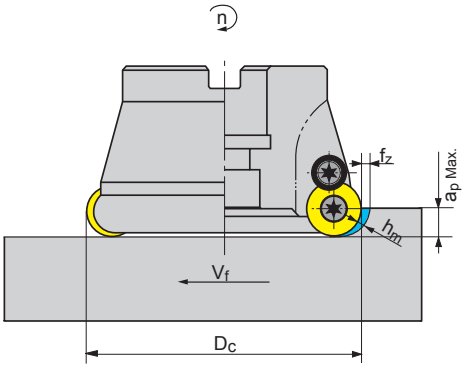
Dc	Cutting diameter	mm
ae	Radial cutting width	mm
ap	Axial cutting depth	mm
f	Feed per revolution	mm/rev
fz	Feed per tooth	mm/rev
De	Effective cutting diameter	mm
Vc	Cutting speed	m/min.
Q	Material removal rate	cm^3/min.
l	Working length	mm
Vf	Feed rate	m/min.
Dap	Max. cutting diameter for specified cutting depth	mm
zn	Number of cutting corners in the tool	

zc	Effective number of cutting edges	
hex	Maximum chip thickness	mm
hm	Average chip thickness	mm
kc1	Specific cutting force (hex = 1 mm)	N/mm^2
Pa	Drive power	kW
kr	Tool cutting edge angle	° (degree)
Vco	Cutting speed (constant)	
Cvc	Cutting speed correction factor	
n	Rotational speed	rpm
ηmt	Efficiency	%
mc	Increasing the specific cutting force through the chip thickness	

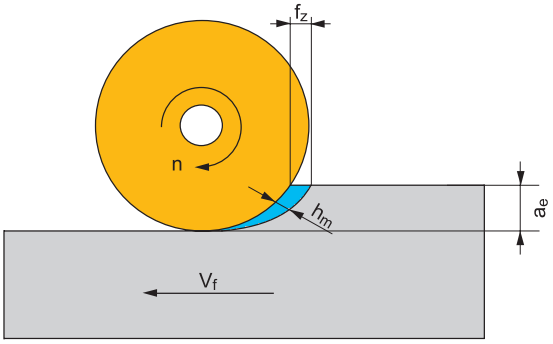
Cutting speed	$V_c = \frac{\pi \times D_c \times n}{1000} = m/min.$
Feed	$V_f = f_z \times n \times z_n = mm/min.$
Feed per revolution	$f_n = \frac{V_f}{n} = mm/U$
Specif. cutting force	$k_c = k_{c1} \times h_{nm}^{-mc} = N/mm^2$
Average chip thickness (face and shoulder milling) ae / Dc ≤ 0.1	$h_m = f_z \sqrt{\frac{a_e}{D_c}} = mm$
Average chip thickness ae / Dc ≥ 0.1	$h_m = \frac{\sin k_r \times 180 \times a_e \times f_z}{\pi \times D_c \times \arcsin\left(\frac{a_e}{D_c}\right)} = mm$

Rotational speed	$n = \frac{V_c \times 1000}{\pi \times D_c} = U/min.$
Feed per tooth	$f_z = \frac{V_f}{n \times z_n} = mm/U$
Material removal rate	$Q = \frac{a_p \times a_e \times V_f}{1000} = cm^3/min.$
Effective cutting edge diameter	$D_e = 2 \times \sqrt{a_p \times (D_c - a_p)} = mm$
Drive power	$P_a = \frac{a_p \times a_e \times V_f \times k_c}{60 \times 10^6 \times \eta_{mt}} = kW$
Machining time	$T_c = \frac{l}{V_f} = min.$

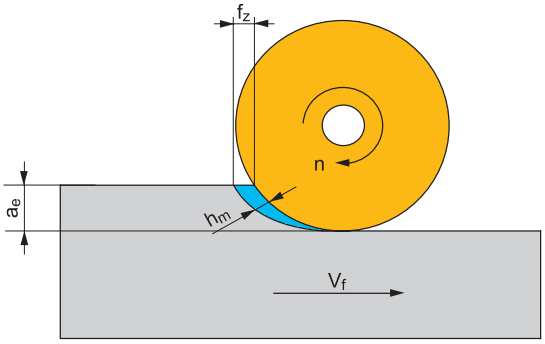




Synchronous rotation and counter-rotation

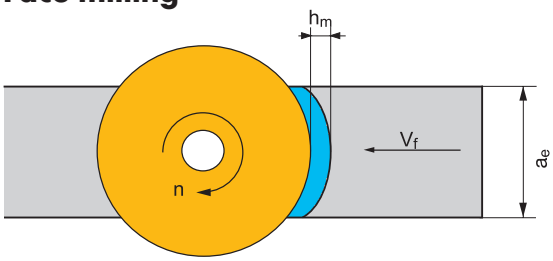


Synchronous rotation
- Rotational direction of the milling cutter and the feed direction
  are the same.
- Greatest chip thickness upon entry of the milling cutter.
- Counter-rotation is preferable in stable machines.



Counter-rotation
- In counter-rotation the rotational direction of the milling cutter opposes the feed direction.
- Counter-rotation milling is used for labile milling machines and hard materials.

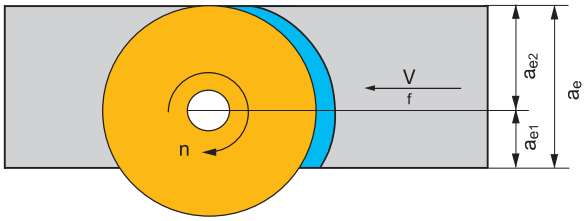
Face milling



$$h_m = \frac{\sin(k_r) \times 180 \times a_e \times f_z}{\pi \times d_c \times \arcsin\left(\frac{a_e}{d_c}\right)}$$

$$f_z = \frac{h_m \times \pi \times \arcsin\left(\frac{a_e}{d_c}\right)}{\sin(k_r) \times 180 \times a_e}$$

Offset milling

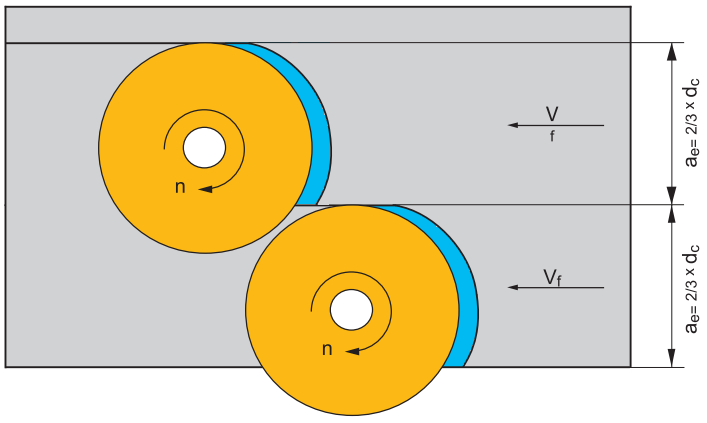


$$h_m = \frac{\sin(k_r) \times 360 \times a_e \times f_z}{\pi \times d_c \times \left[\arcsin\left(\frac{2 \times a_{e1}}{d_c}\right) + \arcsin\left(\frac{2 \times a_{e2}}{d_c}\right)\right]}$$

$$f_z = \frac{h_m \times \pi \times d_c \times \left[\arcsin\left(\frac{2 \times a_{e1}}{d_c}\right) + \arcsin\left(\frac{2 \times a_{e2}}{d_c}\right)\right]}{\sin(k_r) \times 360 \times a_e}$$

Recommended milling operation

Max. 2/3 x milling cutter diameter
In synchronous or
counter-rotation



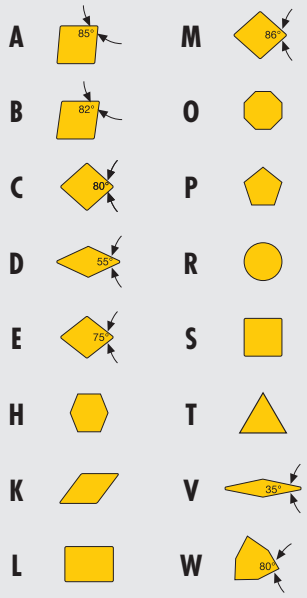
ISO designation system for indexable cutting inserts according to ISO 1832

INFO

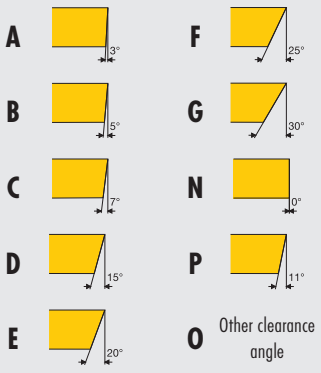
Example of indexable milling inserts

S	E	K	N	12	03	AF	T	N	...
1	2	3	4	5	6	7	8	9	10

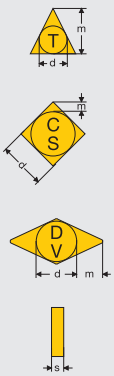
1 Insert form



2 Clearance angle



3 Tolerances



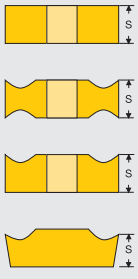
	d	m	s
A	± 0.025	± 0.005	± 0.025
C	± 0.025	± 0.013	± 0.025
E	± 0.025	± 0.025	± 0.025
F	± 0.013	± 0.005	± 0.025
G	± 0.025	± 0.025	± 0.05-0.13
H	± 0.013	± 0.013	± 0.025
J[1]	± 0.05-0.15[2]	± 0.005	± 0.025
K[1]	± 0.05-0.15[2]	± 0.013	± 0.025
L[1]	± 0.05-0.15[2]	± 0.013	± 0.025[1]
M	± 0.05-0.15[2]	± 0.08-0.20[2]	± 0.013
M	± 0.05-0.15[2]	± 0.08-0.20[2]	± 0.025
N	± 0.05-0.25[2]	± 0.13-0.38[2]	± 0.05-0.13

[1] Inserts with ground face-edge cutters

[2] Each according to insert size (see ISO standard 1832)

The tolerances m and d are not dependent on the insert form.

6 Insert thickness



	s (mm)
01	1.59
T1	1.98
02	2.38
T2	2.78
03	3.18
T3	3.97
04	4.76
05	5.56
06	6.35
07	7.94
09	9.52

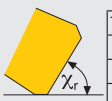
7 Corner rounding



	r (mm)
02	0.2
04	0.4
08	0.8
12	1.2
16	1.6
24	2.4

R

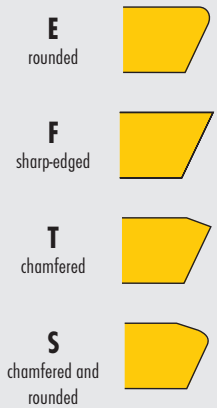
00	for diameter in inches converted into mm
M0	for diameter in metric dimensions



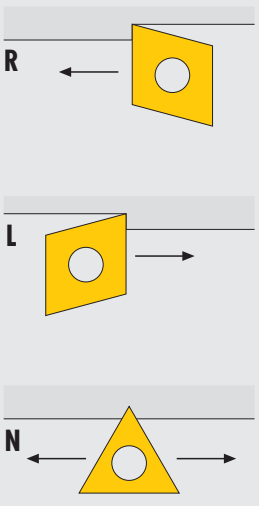
Tool cutting edge angle	
A	45°
D	60°
E	75°
F	85 °
P	90°
Z	Other

Clearance angle on the face plate	
A	3 °
B	5 °
C	7°
D	15 °
E	20 °
F	25°
G	30 °
N	0 °
P	11 °
Z	Other

8 Cutting edge formation



9 Cutting direction



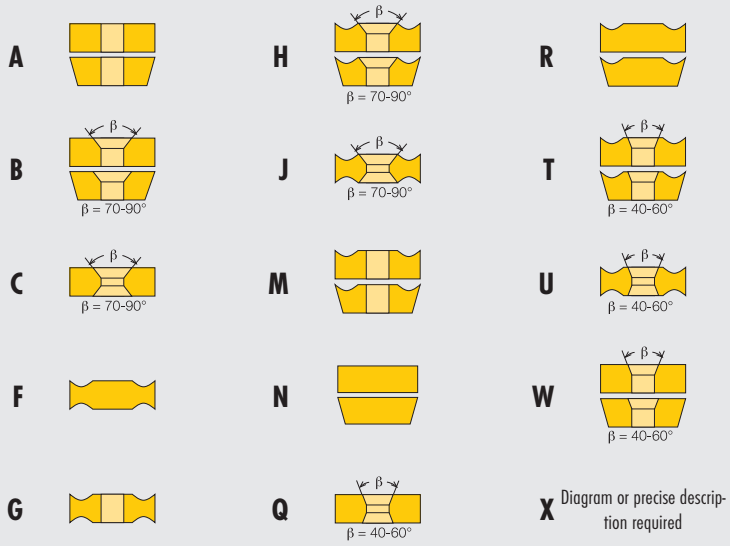
ISO designation system for indexable cutting inserts according to ISO 1832

INFO

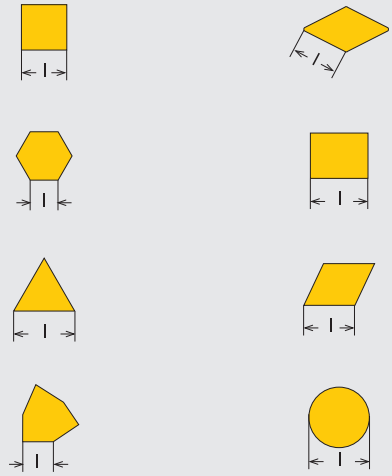
Example of indexable turning inserts



4 Cutting and fixing qualities



5 Cutting edge length



10 Manufacturer information

The ISO code comprises 9 symbols, whereby symbols 8 and/or 9 are used only where necessary.
The manufacturer can affix further symbols to the ISO code with a hyphen
e.g. to indicate the chip breaker form).

ISO designation system for clamp mounting and boring bars according to ISO

INFO

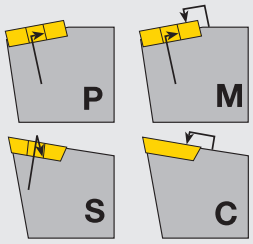
Clamp mounting

P	C	L	N	R	25	25	M	12
1	2	3	4	5	6	7	8	9

Boring bars

S	25	T	P	C	L	N	R	12
10	11	12	1	2	3	4	5	9

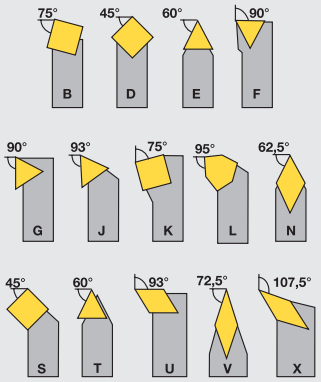
1 Clamping



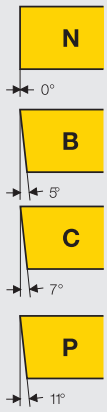
2 Insert form

C	Rhombic 80°
D	Rhombic 55°
K	Parallelogram-shaped 55°
R	Round
S	Square
T	Triangular
V	Rhombic 35°
W	Hexagonal 80°

3 Holder type



4 Clearance angle of the indexable insert



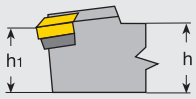
5 Cutting direction

R	Right-hand cutting
L	Left-hand cutting
N	Right-hand and left-hand cutting

6 Shank height

12	= 12 mm
25	= 25 mm
40	= 40 mm

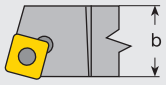
etc.



7 Shank width

12	= 12 mm
25	= 25 mm
32	= 32 mm

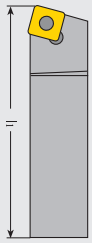
etc.



8 Clamp mounting length

	L (mm)
A	32
B	40
C	50
D	60
E	70
F	80
G	90
H	100
J	110
K	125
L	140
M	150

	L (mm)
N	160
P	170
Q	180
R	200
S	250
T	300
U	350
V	400
W	450
Y	500
X	Special



9 Cutting edges

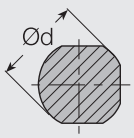
09	= 9.52 mm
12	= 12.7 mm
25	= 25.4 mm

etc.

10 Design

S	Steel shank
A	Cooling through the shank
C	Solid carbide
E	Solid carbide, cooling through the shank

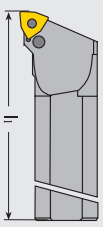
11 Shank Ø



12 Boring bar length

	L (mm)
A	32
B	40
C	50
D	60
E	70
F	80
G	90
H	100
J	110
K	125
L	140
M	150

	L (mm)
N	160
P	170
Q	180
R	200
S	250
T	300
U	350
V	400
W	450
Y	500
X	Special



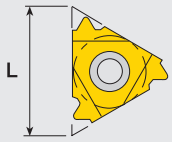
Designation system for threading inserts and holders

INFO

Example for threading inserts

16	E	R	B	15	ISO	HC5630
1	2	3	4	5	6	7

1 Size



6
8
8U
11
16
22
22U
27
27U
16V (vertical)

2 Application

E External
I Internal

3 Application

R Right-hand
L Left-hand

4 Design

B Sintered
(not specified) Ground

5 Pitch

mm/inch

6 Thread type

60	60° profile
55	55° profile
ISO	metric
UN	US Unified Thread
BSW	British Standard Whitworth
NPT	US National Pipe Thread
BSPT	British Standard Pipe Thread
ACME	American trapezoidal thread
Trape-zoid	Trapezoidal according to DIN 103
Round	Round according to DIN 405

7 Cutting material quality

HC 5615
HC 5625
HC 5640
HC 5630

Example of thread clamp mounting

S	E	R	2020	K	16	C
1	2	3	4	5	6	7

1 Clamping method

S Screwed
C Lever

2 Application

E External
I Internal

3 Application

R Right-hand
L Left-hand

4 Dimensions



Clamp mounting (external)
metric 2020
= 20 x 20 mm

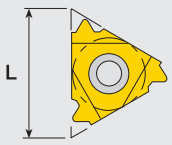


Boring bar (internal)
metric 0020
= Ø 20 mm

5 Length / mm

D	60
F	80
H	100
K	125
L	140
M	150
P	170
R	200
S	250
T	300
U	350
V	400

6 Insert seat



6
8
8U
11
16
22
22U
27
27U
16V (vertical)

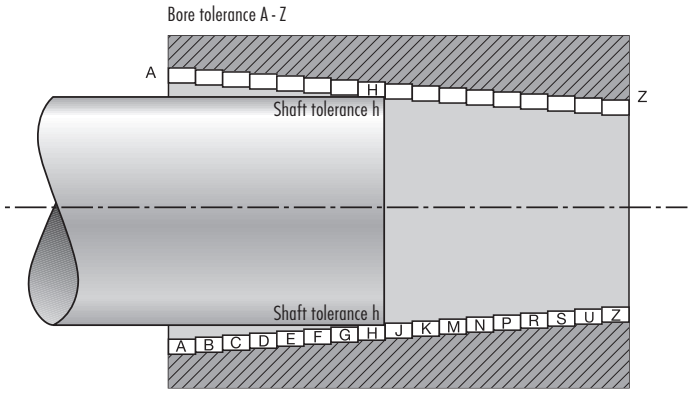
7 Design

B Coolant bore
C Solid carbide
O Offset
V Vertical

ISO standard shaft system fits

INFO

- (Excerpt from DIN 7155)
- **Nominal dimensions in µm (= 0.001 mm)**
- Maintain all shaft h-tolerances for system standard shaft. The maximum shaft dimension therefore goes up to the zero line and is equal to the nominal dimension. The smallest shaft dimension is smaller than its nominal value by the tolerance.
- All information is supplied without guarantee



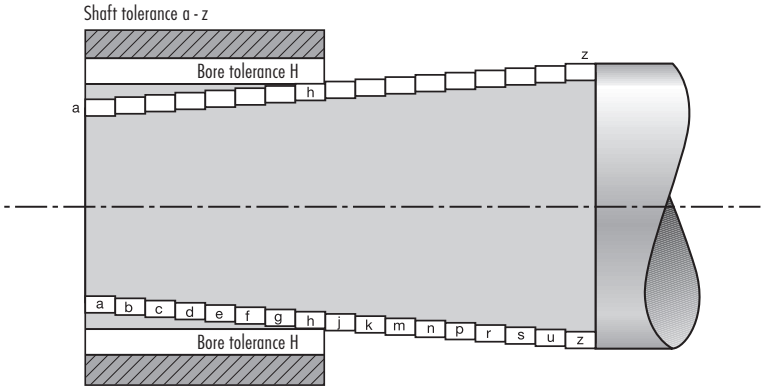
- Fitting type preferably according to DIN 7157
- (S = clearance fit)

Bores	Fitting type	Nominal dimension from ... to ... mm																		
		1 – 3	3 – 6	6 – 10	10 – 14	14 – 18	18 – 24	24 – 30	30 – 40	40 – 50	50 – 65	65 – 80	80 – 100	100 – 120	120 – 140	140 - 160	160 – 180	180 – 200	200 – 225	225 – 250
Shaft **h5**		0 -4	0 -5	0 -6	0 -8		0 -9		0 -11		0 -13		0 -15		0 -18			0 -20		
P 6		-6 -12	-9 -17	-12 -21	-15 -26		-18 -31		-21 -37		-26 -45		-30 -52		-36 -61			-40 -70		
N 6		-4 -10	-5 -13	-7 -16	-9 -20		-11 -24		-12 -28		-14 -33		-16 -38		-20 -45			-22 -45		
M 6		-2 -8	-1 -9	-3 -12	-4 -15		-4 -17		-4 -20		-5 -24		-6 -28		-8 -33			-8 -37		
J 6		+3 -4	+5 -3	+5 -4	+6 -5		+8 -5		+10 -6		+13 -6		+16 -6		+18 -7			+22 -7		
H 6		+6 0	+8 0	+9 0	+11 0		+13 0		+16 0		+19 0		+22 0		+25 0			+29 0		
Shaft **h6**		0 -6	0 -8	0 -9	0 -11		0 -13		0 -16		0 -19		0 -22		0 -25			0 -29		
S 7		-14 -24	-15 -25	-17 -32	-21 -39		-27 -48		-34 -59		-42 -72	-48 -78	-59 -93	-66 -101	-77 -117	-85 -125	-93 -133	-105 -151	-113 -159	-123 -169
R 7		-10 -20	-11 -23	-13 -28	-16 -34		-20 -41		-25 -50		-30 -60	-32 -62	-38 -73	-41 -76	-48 -88	-50 -90	-53- 93	-60 -106	-63 -109	-67 -113
N 7		-4 -14	-4 -16	-4 -19	-5 -23		-7 -28		-8 -33		-9 -39		-10 -45		-12 -52			-14 -60		
M 7		-2 -12	0 -12	0 -15	0 -18		0 -21		0 -25		0 -30		0 -35		0 -40			0 -46		
K 7		+3 -6	+3 -9	+5 -10	+6 -12		+6 -15		+7 -18		+9 -21		+10 -25		+12 -28			+13 -33		
J 7		+3 -6	+6 -6	+8 -7	+10 -8		+12 -9		+14 -11		+18 -12		+22 -13		+26 -14			+30 -16		
H 7	**S**	+9 0	+12 0	+15 0	+18 0		+21 0		+25 0		+30 0		+35 0		+40 0			+46 0		
G 7	**S**	+12 +2	+16 4	+20 +5	+24 +6		+28 +7		+34 +9		+40 +10		+47 +12		+54 +14			+61 +15		
F 7		+16 +6	+22 +10	+28 +13	+34 +16		+41 +20		+50 +25		+60 +30		+71 +36		+83 +43			+96 +50		
Shaft **h9**		0 –25	0 -30	0 -36	0 -43		0 -52		0 -62		0 -74		0 -87		0 -100			0 -115		
H 8	**S**	+14 0	+18 0	+22 0	+27 0		+33 0		+39 0		+46 0		+54 0		+63 0			+72 0		
H 11	**S**	+60 0	+75 0	+90 0	+110 0		+130 0		+160 0		+190 0		+220 0		+250 0			+290 0		
F 8	**S**	+20 +6	+28 +10	+35 +13	+43 +16		+53 +20		+64 +25		+76 +30		+90 +36		+106 +43			+122 +50		
E 9	**S**	+39 +14	+50 +20	+61 +25	+75 +32		+92 +40		+112 +50		+134 +60		+159 +72		+185 +85			+215 +100		
D 10	**S**	+60 +20	+78 +30	+98 +40	+120 +50		+149 +65		+180 +80		+220 +100		+260 +120		+305 +145			+355 +170		
C 11	**S**	+120 +60	+145 +70	+170 +80	+205 +95		+240 +110		+280 +120	+290 +130	+330 +140	+340 +150	+390 +170	+400 +180	+450 +200	460 +210	+480 +230	+530 +240	+550 +260	+570 +280
Shaft **h11**		0 -60	0 -75	0 -90	0 -110		0 -130		0 -160		0 -160		0 -220		0 -250			- -290		
H 11	**S**	+60 0	+75 0	+90 0	+110 0		+130 0		+160 0		+190 0		+220 0		+250 0			+290 0		
D 11	**S**	+80 +20	+105 +30	+130 +40	+160 +50		+195 +65		+240 +80		+290 +100		+340 +120		+395 +145			+460 +170		
C 11	**S**	+120 +60	+145 +70	+170 +80	+205 +95		+240 +110		+280 +120	+290 +130	+330 +140	+340 +150	+390 +170	+400 +180	+450 +200	+460 +210	+480 +230	+530 +240	+550 +260	+570 +280
A 11	**S**	+330 +270	+345 +270	+370 +280	+400 +290		+430 +300		+470 +310	+480 +320	+530 +340	+550 +360	+600 +380	+630 +410	+710 +460	+770 +520	+830 +580	+950 +660	+1030 +740	+1110 +820

ISO standard bore system fits

INFO

- (Excerpt from DIN 7154)
- **Nominal dimension in µm (= 0.001 mm)**
- In this system all bores are manufactured uniformly with an H-tolerance. The minimum bore dimension therefore goes precisely up to the zero line and is equal to the nominal dimension. The maximum dimension exceeds the zero line by the tolerance.
- All information is supplied without guarantee



- Fitting type preferably according to DIN 7157
- P = press fit
  S = clearance fit
  Ü = transition fit)

Shafts	Fitting type	Nominal dimension from ... to ... mm																		
		1 – 3	3 – 6	6 – 10	10 – 14	14 – 18	18 – 24	24 – 30	30 – 40	40 – 50	50 – 65	65 – 80	80 – 100	100 – 120	120 – 140	140 – 160	160 – 180	180 – 200	200 – 225	225 – 250
Bore **H5**		+6 0	+8 0	+9 0	+11 0		+13 0		+16 0		+19 0		+22 0		+25 0			+29 0		
p 5		+10 +6	+17 +12	+21 +15	+26 +18		+31 +22		+37 +26		+45 +32		+52 +37		+61 +43			+70 +50		
n 5		+8 +4	+13 +18	+16 +10	+20 +12		+24 +15		+28 +17		+33 +20		+38 +23		+45 +27			+51 +31		
k 6		+6 0	+9 -1	+10 +1	+12 +1		+15 +2		+18 +2		+21 +2		+25 +3		+28 +3			+33 +4		
j 6		+4 -2	+6 -2	+7 -2	+8 -3		+9 -4		+11 -5		+12 -7		+13 -9		+14 -11			+16 -13		
h 5		0 -4	0 -5	0 -6	0 -8		0 -9		0 -11		0 -13		0 -15		0 -18			0 -20		
Bore **H6**		+10 0	+12 0	+15 0	+18 0		+21 0		+25 0		+30 0		+35 0		+40 0			+46 0		
s 6	**P**	+20 +14	+27 +19	+32 +23	+39 +28		+48 +35		+59 +43		+72 +35	+78 +59	+93 +71	+101 +79	+117 +92	+125 +100	+133 +108	+151 +122	+159 +130	+169 +140
r 6	**P**	+16 +10	+23 +15	+28 +19	+34 +23		+41 +28		+50 +34		+60 +41	+62 +43	+73 +51	+76 +54	+88 +63	+90 +65	+93 +68	+106 +77	+109 +80	+113 +84
n 6	**Ü**	+10 +4	+16 +8	+19 +10	+23 +12		+28 +15		+33 +17		+39 +20		+45 +23		+52 +27			+60 +31		
m 6		+8 +2	+12 +4	+15 +6	+18 +7		+21 +8		+25 +9		+30 +11		+35 +13		+40 +15			+46 +17		
k 6	**Ü**	+6 0	+9 -1	+10 +1	+12 +1		+15 +2		+18 +2		+21 +2		+25 +3		+28 +3			+33 +4		
j 6	**Ü**	+4 -2	+6 -2	+7 -2	+8 -3		+9 -4		+11 -5		+12 -7		+13 -9		+14 -11			+16 -13		
h 6	**S**	0 -6	0 -8	0 -9	0 -11		0 -13		0 -16		0 -19		0 -22		0 -25			0 -29		
g 6	**S**	-2 -8	-4 -12	-5 -14	-6 -17		-7 -20		-9 -25		-10 -29		-12 -34		-14 -39			-15 -44		
f 7	**S**	-6 -16	-10 -22	-13 -28	-16 -34		-20 -41		-25 -50		-30 -60		-36 -71		-43 -83			-50 -96		
Bore **H9**		+14 0	+18 0	+22 0	+27 0		+33 0		+39 0		+46 0		+54 0		+63 0			+72 0		
x 8	**P**	+34 +20	+46 +28	+56 +34	+67 +40	+72 +45	+87 +54	+97 +64	+119 +80	+136 +97	+168 +122	+192 +146	+232 +178	+264 +210	+311 +248	+343 +280	+373 +310	+422 +350	+457 +385	+497 +425
x 8	**P**	-	-	-	-		-	+81 +48	+99 +60	+109 +70	+133 +87	+148 +102	+178 +124	+198 +144	+233 +170	+253 +190	+273 +210	+308 +236	+330 +258	+356 +284
h 9	**S**	0 -25	0 -30	0 -36	0 -43		0 -52		0 -62		0 -74		0 -87		0 -100			0 -115		
f 7	**S**	-6 -16	-10 -22	-13 -28	-16 -34		-20 -41		-25 -50		-30 -60		-36 -71		-43 -83			-50 -96		
d 9	**S**	-20 -45	-30 -60	-40 -76	-50 -93		-65 -117		-80 -142		-100 -174		-120 -207		-145 -245			-170 -285		
Bore **H11**		+60 0	+75 0	+90 0	+110 0		+130 0		+160 0		+190 0		+220 0		+250 0			+290 0		
h 9	**S**	0 -25	0 -30	0 -36	0 -43		0 -52		0 -62		0 -74		0 -87		0 -100			0 -115		
h 11	**S**	0 -60	0 -75	0 -90	0 -110		0 -130		0 -160		0 -190		0 -220		0 -250			0 -290		
d 9	**S**	-20 -45	-30 -60	-40 -76	-50 -93		-65 -117		-80 -142		-100 -174		-120 -207		-145 -245			-170 -285		
d 9	**S**	-60 -120	-70 -145	-80 -170	-95 -205		-110 -240		-120 -280	-130 -290	-140 -330	-150 -340	-170 -390	-180 -400	-200 -450	-210 -460	-230 -480	-245 -530	-260 -550	-280 -570
c 11	**S**	-270 -330	-270 -345	-280 -370	-290 -400		-300 -430		-310 -470	-320 -480	-340 -530	-360 -550	-380 -600	-410 -630	-460 -710	-520 -770	-580 -830	-660 -950	-740 -1030	-870 -1110

Supplement to ISO standard bore system fits

INFO

- (Excerpt from DIN 7154)
- **Nominal dimension in µm (= 0.001 mm)**

	Shafts	Nominal dimension from ... to ... mm									
		1 – 3	3 – 6	6 – 10	10 – 18	18 – 30	30 – 50	50 – 80	80 – 120	120 – 180	180 – 250
External dimensions	d 11	-20 -80	-30 -105	-40 -130	-50 -160	-65 -195	-80 -240	-100 -290	-120 -340	-145 -395	-170 -460
	e 8	-14 -28	-20 -38	-25 -47	-32 -59	-40 -73	-50 -89	-60 -106	-72 -126	-85 -148	-100 -172
	f 9	-6 -31	-10 -40	-13 -49	-16 -59	-20 -72	-25 -87	-30 -104	-36 -123	-43 -143	-50 -165
	h 7	0 -10	0 -12	0 -15	0 -18	0 -21	0 -25	0 -30	0 -35	0 -40	0 -46
	h 8	0 -14	0 -18	0 -22	0 -27	0 -33	0 -39	0 -46	0 -54	0 -63	0 -72
	h 10	0 -40	0 -48	0 -58	0 -70	0 -84	0 -100	0 -120	0 -140	0 -160	0 -185
	h 12	0 -100	0 -120	0 -150	0 -180	0 -210	0 -250	0 -300	0 -350	0 -400	0 -460
	js 11	+30 -30	+38 -37	+45 -45	+55 -55	+65 -65	+80 -80	+95 -95	+110 -110	+125 -125	+145 -145
	js 14	+125 -125	+150 -150	+180 -180	+215 -215	+260 -260	+310 -310	+370 -370	+435 -435	+500 -500	+575 -575
	js 16	+300 -300	+375 -375	+450 -450	+550 -550	+650 -650	+800 -800	+950 -950	+1100 -1100	+1250 -1250	+1450 -1450
	k 10	+40 0	+48 0	+58 0	+70 0	+84 0	+100 0	+120 0	+140 0	+160 0	+185 0
	k 11	+60 0	+75 0	+90 0	+110 0	+130 0	+160 0	+190 0	-220 0	+250 0	+290 0
	k 12	+90 0	+120 0	+150 0	+180 0	+210 0	+250 0	+300 0	+350 0	+400 0	+460 0
	k 16	+600 0	+750 0	+900 0	+1100 0	+1300 0	+1600 0	+1900 0	+2200 0	+2500 0	2900 0

Guideline values for surface qualities

INFO

Roughness depth range Rz µm	Rt specification µm	complies with Ra value	ISO roughness classes	ISO 1302	Corner radius r (mm) and feed f (mm)			
					r = 0.4	r = 0.8	r = 1.2	r = 1.6
63 - 100	Rt 100	12.5 - 25	N 11	25.0	-	0.51	0.69	0.88
40 - 63	Rt 63	6.3-25	N 10	12.5	0.27	0.43	0.56	0.68
31.5 - 40	Rt 40	4.9 - 6.3	N 9	6.3	0.25	0.37	0.49	0.57
25 - 31.5	Rt 31.5	4.0 - 4.9	N 9	6.3	0.22	0.32	0.41	0.47
16 - 25	Rt 25	2.5 - 4.0	N 8	3.2	0.20	0.28	0.36	0.39
10 - 16	Rt 16	1.6 - 2.5	N 8	3.2	0.15	0.22	0.29	0.31
6.3 - 10	Rt 10	1.0 - 1.6	N 7	1.6	0.10	0.13	0.18	0.20

Calculation formula (theoretical value):

$$Rt = \frac{f^2}{8 \times r} \times 1000\ \mu m$$

Rt = surface quality µm
f = feed mm/rev
r = corner radius mm

Feed calculation

$$f = \sqrt{\frac{Rt \times 8 \times r}{1000}}\ mm$$

Hardness and tensile strength comparison

INFO

- All hardness values calculated using different hardness testing methods on various materials are only roughly comparable.
- 2) = The Rockwell values specified to one decimal place are merely for interpolation and must be rounded to whole numbers in the end result.

Vickers hardness HV 30	Brinell hardness HB 30	Rockwell hardness[2)]		Tensile strength N/mm²
		HRB	HRC	
80	80	36.4	-	270
85	85	42.4	-	290
90	90	47.5	-	310
95	95	52.0	-	320
100	100	56.4	-	340
105	105	60.0	-	360
110	110	63.4	-	380
115	115	66.4	-	390
120	120	69.4	-	410
125	125	72.0	-	420
130	130	74.4	-	440
135	135	76.4	-	460
140	140	78.4	-	470
145	145	80.4	-	490
150	150	82.2	-	500
155	155	83.8	-	520
160	160	85.4	-	540
165	165	86.8	-	550
170	170	88.2	-	570
175	175	89.6	-	590
180	180	90.8	-	600
185	185	91.8	-	620
190	190	93.0	-	640
195	195	94.0	-	660
200	200	95.0	-	670
205	205	95.8	-	680
210	210	96.6	-	710
215	215	97.6	-	720
220	220	98.2	-	730
225	225	99.0	-	750
230	230	-	19.2	760
235	235	-	20.2	780
240	240	-	21.2	800
245	245	-	22.1	820
250	250	-	23.0	830
260	260	-	24.6	870
265	265	-	25.4	880
270	270	-	26.2	900
275	275	-	26.9	920
280	280	-	27.6	940
285	285	-	28.3	950
290	290	-	29.0	970
295	295	-	29.6	990
300	300	-	30.3	1010
310	310	-	31.5	1040
320	320	-	32.7	1080
330	330	-	33.8	1110
340	340	-	34.9	1140

Vickers hardness HV 30	Brinell hardness HB 30	Rockwell hardness[2)]		Tensile strength N/mm²
		HRB	HRC	
350	350	-	36.0	1170
360	359	-	37.0	1200
370	368	-	38.0	1230
380	376	-	38.9	1260
390	385	-	39.8	1290
400	392	-	40.7	1320
410	400	-	41.5	1350
420	408	-	42.4	1380
430	415	-	43.2	1410
440	423	-	44.0	1430
450	430	-	44.8	1460
460	-	-	45.6	-
470	-	-	46.3	-
480	-	-	47.0	-
490	-	-	47.7	-
500	-	-	48.3	-
510	-	-	49.1	-
520	-	-	49.7	-
530	-	-	50.4	-
540	-	-	51.0	-
550	-	-	51.6	-
560	-	-	52.2	-
570	-	-	52.8	-
580	-	-	53.3	-
590	-	-	53.9	-
600	-	-	54.4	-
610	-	-	55.0	-
620	-	-	55.5	-
630	-	-	56.0	-
640	-	-	56.5	-
650	-	-	57.0	-
660	-	-	57.5	-
670	-	-	58.0	-
680	-	-	58.5	-
690	-	-	59.0	-
700	-	-	59.5	-
720	-	-	60.4	-
740	-	-	61.2	-
760	-	-	62.0	-
780	-	-	62.8	-
800	-	-	63.6	-
820	-	-	64.3	-
840	-	-	65.0	-
860	-	-	65.7	-
880	-	-	66.3	-
900	-	-	66.9	-
920	-	-	67.5	-
940	-	-	68.0	-

Clamping forces and tightening torques for metric screws

INFO

The appropriate tool for the form is required. A torque wrench must be used for some connections. Testing equipment that calculates the open and close torque is frequently used in industry or laboratories. The applications in force measurement technology are very varied, allowing for example the torque of screws, components, switches and drive shafts to be measured. Testing equipment to calculate the torque is not required for domestic use. Below you can find tables showing the screw standards and associated tightening torques.

Clamping forces and tightening torques for steel shaft screws.
Tightening torques for aluminium, VA steel and titanium screws:
Aluminium screws equivalent to strength class 5.6
V2A screws equivalent to strength class 6.8
Titanium screws equivalent to strength class 8.8

Tightening torques for DIN 912 screws according to strength class for standard thread

Standard thread												
Dimensions	Clamping force (kN)						Tightening torque (Nm)					
Strength class	4.6	5.6	6.8	8.8	10.9	12.9	4.6	5.6	6.8	8.8	10.9	12.9
M 2x0.40	0.338	0.422	0.675	0.901	1.267	1.52	0.13	0.163	0.261	0.348	0.489	0.587
M 3x0.50	0.845	1.056	1.689	2.253	3.168	3.801	0.48	0.6	0.961	1.281	1.801	2.161
M 4x0.70	1.463	1.829	2.927	3.902	5.487	6.585	1.115	1.393	2.229	2.972	4.18	5.016
M 5x0.80	2.395	2.994	4.79	6.387	8.982	10.778	2.261	2.827	4.523	6.03	8.48	10.176
M 6x1.00	3.379	4.224	6.758	9.011	12.671	15.205	3.843	4.803	7.685	10.247	14.41	17.292
M 8x1.25	6.202	7.753	12.404	16.539	23.258	27.909	9.349	11.686	18.698	24.931	35.059	42.07
M 10x1.50	9.876	12.345	19.752	26.336	37.034	44.441	18.54	23.18	37.09	49.45	69.54	83.44
M 12x1.75	14.4	18	28.801	38.401	54.001	64.801	32.37	40.46	64.74	86.32	121.38	145.66
M 14x2.00	19.775	24.719	39.551	52.734	74.158	88.989	51.77	64.71	103.54	138.06	194.14	232.97
M 16x2.00	27.221	34.027	54.443	72.591	102.08	122.497	80.62	100.77	161.24	214.98	302.32	362.78
M 18x2.50	33.078	41.347	66.155	88.207	124.041	148.85	111.09	138.86	222.17	296.23	416.58	499.89
M 20x2.50	42.534	53.167	85.067	113.423	159.501	191.401	157.46	196.82	314.91	419.88	590.46	708.55
M 22x2.50	53.175	66.469	106.35	141.8	199.406	239.288	215.1	268.9	430.2	573.7	806.7	968
M 24x3.00	61.248	76.56	122.497	163.329	229.681	275.617	272.1	340.1	544.2	725.6	1020.3	1224.4
M 27x3.00	80.67	100.837	161.339	215.119	302.512	363.014	399.9	499.9	799.9	1066.5	1499.7	1799.7
M 30x3.50	98.027	122.533	196.054	261.405	367.6	441.12	541.7	677.2	1083.4	1444.6	2031.5	2437.7
M 33x3.50	122.241	152.801	244.482	325.976	458.404	550.084	738.5	923.2	1477.1	1969.4	2769.5	3323.4
M 36x4.00	143.413	179.266	286.826	382.434	537.798	645.358	948	1185	1896	2528	3555	4265.9
M 39x4.00	172.42	215.525	344.839	459.786	646.574	775.888	1229	1536	2457	3276	4607	5529
M 42x4.50	197.407	246.758	394.813	526.417	740.275	888.329	1519	1899	3038	4050	5696	6835
M 45x4.50	231.206	289.007	462.412	616.549	867.022	1040.426	1898	2373	3796	5062	7118	8541
M 48x5.00	280.008	325.01	520.015	693.354	975.029	1170.035	2282	2853	4565	6086	8559	10271
M 52x5.00	312.056	390.07	624.112	832.149	1170.209	1404.251	2954	3692	5907	7876	11076	13292
M 56x5.50	359.843	449.804	719.689	959.581	1349.411	1619.293	3672	4591	7345	9793	13772	16526
M 60x5.50	420.651	525.813	841.301	1121.735	1577.44	1892.928	4582	5728	9164	12219	17183	20619
M 64x6.00	475.86	594.825	951.72	1268.96	1784.476	2141.371	5536	6920	11071	14762	20759	24911
M 68x6.00	545.427	681.784	1090.855	1454.473	2045.353	2454.423	6720	8400	13440	17919	25199	30239

Tightening torques for DIN 912 screws according to strength class for fine thread

Standard thread												
Dimensions	Clamping force (kN)						Tightening torque (Nm)					
Strength class	4.6	5.6	6.8	8.8	10.9	12.9	4.6	5.6	6.8	8.8	10.9	12.9
M 8x1.00	6.805	8.507	13.611	18.148	25.52	30.624	10.08	12.6	20.15	26.87	37.79	45.35
M 10x1.25	11.418	14.272	22.835	30.447	42.816	51.379	20.83	26.04	41.66	55.55	78.11	93.73
M 12x1.50	15.312	19.14	30.624	40.832	57.42	68.904	34.01	42.51	68.02	90.69	127.54	153.05
M 14x1.50	21.934	27.418	43.868	58.491	82.253	98.703	56.25	70.32	112.51	150.01	210.96	253.15
M 16x1.50	29.741	37.177	59.483	79.31	111.53	133.836	86.5	108.12	172.99	230.66	324.36	389.23
M 18x1.50	38.733	48.417	77.467	103.289	145.25	174.3	125.95	157.44	251.91	335.88	472.33	566.8
M 20x1.50	48.91	61.138	97.82	130.427	183.413	220.096	175.9	219.8	351.7	468.9	659.4	791.3
M 22x1.50	60.272	75.34	120.543	160.724	226.019	271.223	237.4	296.8	474.8	633.1	890.3	890.3
M 24x2.00	72.818	91.022	145.635	194.18	273.066	327.68	311.8	389.8	623.7	831.6	1169.4	1403.3

SI units – International Measurement Units

INFO

- SI-Système International d'Unités = International System of Units

The key prefix symbols and their application

Mega	M	1,000,000 = 10^6	1 MW = 1,000,000 W
Kilo	k	1,000 = 10^3	1 kW = 1,000 W
Hecto	h	100 = 10^2	1 hl = 100 l
Deca	da	10	1 daN = 10 N
Deci	d	0.1 = 10^{-1}	1 dm = 0.1 m
Centi	c	0.01 = 10^{-2}	1 cm = 0.01 m
Milli	m	0.001 = 10^{-3}	1 mm = 0.001 m
Micro	µ	0.000001 = 10^{-6}	1 µm = 0.000001 m

Previous names and unit symbols that remain unchanged

Volume	Litre	l	1 = 1 dm^3 = 0.001 m^3
Mass	Tonne	t	1 t = 1 Mg = 1000 kg
Pressure	Bar	bar	1 bar = 105 Pa
Area	Ar	a	1 a = 102 m^2
Angle	Degree	°	1° = 17.45 mrad
	Minute	′	1°/60 = 0.291 mrad
	Seconds	″	1./60 = 4.85 rad
Time	Minute	min	1 min = 60 s
	Hours	h	1 h = 3600 s
Velocity		km/h	1 km/h = 1/3.6 m/s
		m/s	1 m/s = 3.6 km/h

The SI system allows a clear distinction between force and mass (weight) and eliminates the confusion between the terms kp and kg.
The unit of force is Newton (N). The unit of mass (weight) is kilogramme (kg). The difference is generated by the gravitational acceleration of 9.81 m/s^2.

The key conversions between the previous and new SI units

1 N	= 0.102 kp
1 Nm	= 0.102 kpm (= 1 joule)
1 W	= 0.102 kpm/s (= 1 J/s)
1 kW	= 1.36 PS
1 KW	= 860 kcal/h
1 J	= 0.102 kpm
1 J	= 0.239 cal
1 Pa	= (1 N/m^2) = 0.102 kp/m^2
K	= °C + 273.15
1 kp	= 9.81 N
1 kpm	= 9.81 N
1 kpm/s	= 9.81 W
1 PS	= 0.736 kW
1 kcal/h	= 1.16,10-3 kW = 0.00116 kW
1 kpm	= 9.81 J
1 cal	= 4.19 J
1 kp/m^2	= 9.81 Pa = 9.81 N/m^2
1 kpm/s	= 9.81 W
1 PS	= 0.736 kW
1 kcal/h	= 1.16,10-3 kW = 0.00116 kW
1 kpm	= 9.81 J
1 cal	= 4.19 J
1 kp/m^2	= 9.81 Pa = 9.81 N/m^2

The table also illustrates that 1 kp = 9.81 N and/or 1 N = 0.102 kp.
With an error rate of only 2 percent, the difference between kp and N is a factor of 10.
Therefore in practice the following values are assumed:
1 kp = 10 N
1 N = 0.1 kp

The key SI units

Length	Metre	m
Mass	Kilogramme	kg
Time	Seconds	s
Electr. current	Ampere	A
Force	Newton	N
Torque	Newton metre	Nm
Output	Watt	W
Energy (work)	Joule	J
Pressure	Pascal	Pa
Temperature	Kelvin	K

Energy/work (joule)

The energy unit has 3 equal designations:

Newton metre	Nm	Mechanical energy form
Watt seconds	Ws	Electrical energy form
Joule	J	Calorific energy form

The corresponding designation should be selected to express whether the energy form is mechanical, electrical or calorific:
1 J = 1 N = 1 W (in relation to the absolute size)

Conversion of mechanical tension

Measuring unit	N/mm^2	PA	kp/mm^
1 N/mm^2	1	106	0.102
1 PA	10^6	1	0.102 - 10^{-6}
1 kp/mm^2	9.81	9.81 - 106	1

Also calculated as follows with sufficient accuracy (2% deviation):
1 N/mm^2 = 0.1 kp/mm^2
1 kp/mm^2 = 10 N/mm^2

The kelvin scale begins with the absolute zero point = 273.15 °C

The following should clarify the correlation between °C and K:

	Kelvin	°C
Absolute zero point	0 K	-273.15 °C
Ice melting point	273.15 K	0 °C
Water boiling point	373.15 K	+100 °C

In practice e.g. the statement that water is 20 °C warm remains unchanged. This must only be indicated in kelvin (K) for temperature differences. Here 1 °C corresponds precisely to 1 K.
For example: The difference between the temperature on the external window frame and internal window frame is 15 K. The symbol ° for degree is omitted for temperature values in kelvin.

Wrench width-across-flats for screws and nuts

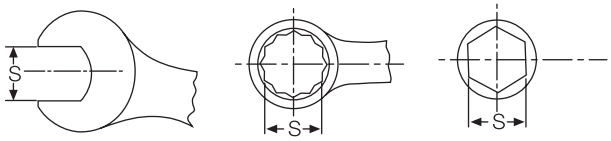
INFO

Standard		Hexagonal, small		Hexagonal, large		Wood screws	
DIN601, 931 960, 7990 / DIN 558 933, 961 / DIN 609 610, 7968		DIN 561 / DIN 564		DIN 6914		DIN 571	
DIN 439, 555, 934, 980, 982.985 / DIN 917, 1587.986 / DIN 979.935				DIN 6915			
Thread	**Wrench width-across-flats**	**Thread**	**Wrench width-across-flats**	**Thread**	**Wrench width-across-flats**	**Ø**	**Wrench width-across-flats**
M 1.6	3.2						
M 2	4						
M 2.5	5						
M 3	5.5						
M4	7					**4**	7
M 5	8					**5**	8
M 6	10	**M 6**	8			**6**	10
M 8	13	**M 8**	10			**8**	13
M 10	16 (17)	**M 10**	13			**10**	16 (17)
M 12	18 (19)	**M 12**	17	**M 12**	22	**12**	18 (19)
M 14	21 (22)						
M 16	24	**M 16**	19	**M 16**	27	**16**	24
M 18	27						
M 20	30	**M 20**	24	**M 20**	32	**20**	30
M 22	34 (32)			**M 22**	36		
M 24	36	**M 24**	30	**M 24**	41		
M 27	41			**M 27**	46		
M 30	46	**M 30**	36	**M 30**	50		
M 33	50						
M 36	55	**M 36**	46	**M 36**	60		
M 39	60						
M 42	65	**M 42**	55				
M 45	70						
M 48	75	**M 48**	65				
M 52	80						

Wrench width-across-flats tolerances

INFO

- Excerpt from DIN 475 Part 2
- * = wrench widths-across-flats correspond to international standards
- Wrench widths-across-flats 6, 9, 12, 14, 17, 19, 20, 22, 23, 25, 26, 28 and 32 are in brackets in ISO/DIS 691 and referred to as transition values.



S		
Nominal dimension	**min.**	**max.**
3,2*	3.22	3.28
3.5	3.52	3.60
4*	4.02	4.12
4.5	4.52	4.62
5*	5.02	5.12
5,5*	5.52	5.62
6*	6.03	6.15
7*	7.03	7.15
8*	8.03	8.15
9*	9.03	9.15
10*	10.04	10.19
11*	11.04	11.19
12*	12.04	12.24
13*	13.04	13.24
14*	14.05	14.27
15*	15.05	15.27
16*	16.05	16.27

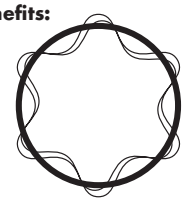
S		
Nominal dimension	**min.**	**max.**
17*	17.05	17.30
18*	18.05	18.30
19*	19.06	19.36
20*	20.06	20.36
21*	21.06	21.36
22*	22.06	22.36
23*	23.06	23.36
24*	24.06	24.36
25*	25.06	25.36
26*	26.08	26.48
27*	27.08	27.48
28*	28.08	28.48
30*	30.08	30.48
32*	32.08	32.48
34*	34.10	34.60
36*	36.10	36.60
41*	41.10	41.60

S		
Nominal dimension	**min.**	**max.**
46*	46.10	46.60
50*	50.10	50.60
55*	55.12	55.72
60*	60.12	60.72
65*	65.12	65.72
70*	70.12	70.72
75*	75.15	75.85
80*	80.15	80.85
85*	85.15	85.85
90*	90.15	90.85
95*	95.15	95.85
100*	100.15	100.85
105*	105.20	106.00
110*	110.20	111.00
115*	115.20	116.00
120*	120.20	121.00

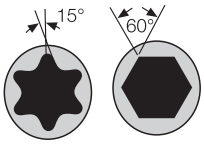
TORX® screw tools

INFO

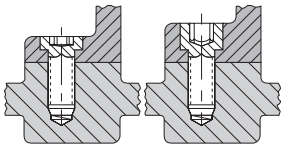
The use of TORX® screws with TORX® screw tools offers considerable benefits:



The force transmission across surfaces (instead of selectively) guarantees greater torque.



The hexagonal TORX® profile with rounded edges prevents tension points in the screw head and in the tool.
Optimum fit prevents slippage and damage to the screw head and thus guarantees greater durability and longer service life of the tools



Ideal conditions, even in the most challenging spatial constraints, thanks to small dimensions of the screws and tools.





TORX® internal drive

Wrench dimension	A mm	metric Screws
T 5	1.42	Up to M 1.8
T 6	1.67	M 2
T 7	1.99	M 2
T 8	2.31	M 2.5
T 9	2.50	M 3
T 10	2.74	M 3 - M 3.5
T 15	3.27	M 3.5 - M 4
T 20	3.86	M 4 - M 5
T 25	4.43	M 4.5 - M 5
T 27	4.99	M 4.5 - M 5 - M 6
T 30	5.52	M 6 - M 7
T 40	6.65	M 7 - M 8
T 45	7.82	M 8 - M 10
T 50	8.83	M 10
T 55	11.22	M 12
T 60	13.25	M 14



TORX® external drive

Wrench dimension	A mm	metric Screws
E 4	3.86	M 3
E 5	4.75	M 4
E 6	5.74	M 4, M5
E 7	6.20	M 6
E 8	7.52	M 5, M6
E 10	9.42	M 6, M 8
E 12	11.70	M 8, M 10
E 14	12.90	M 10, M 12
E 16	14.46	M 12
E 18	16.70	M 12, M 14
E 20	18.39	M 14, M 16

Wrench widths-across-flats for hexagonal socket screws

INFO

Wrench dimension mm	DIN 912	DIN 913 DIN 915	DIN 7991
0.7		M 1.4 M 1.6 M 1.8	
0.9		M 2	
1.3	M 1.4	M 2.5	
1.5	M 1.6 M 2	M 3	
2	M 2.5	M 4	M 3
2.5	M 3	M 5	M 4
3	M 4	M 6	M 5

Wrench dimension mm	DIN 912	DIN 913 DIN 915	DIN 7991
4	M 5	M 8	M 6
5	M 6	M 10	M 8
6	M 8	M 12 M14	M 10
8	M 10	M 16	M 12
10	M 12	M 18 M 20	M 14 M 16
12	M 14	M 22 M 24	M 18 M 20
14	M 16 M 18		M 22 M 24

Wrench dimension mm	DIN 912	DIN 913 DIN 915	DIN 7991
17	M 20 M 22		
19	M 24 M 27		
22	M 30		
24	M 33		
27	M 36		
32	M 42		
36	M 48		