CERATIZIT GROUP

The tool selection for Sliding head machines

TEAM CUTTING TOOLS

CUTTING SOLUTIONS BY CERATIZIT · KOMET · WNT · KLENK

CERATIZIT is a high-technology engineering group specialised in cutting tools and hard material solutions.

Tooling the Future

www.ceratizit.com

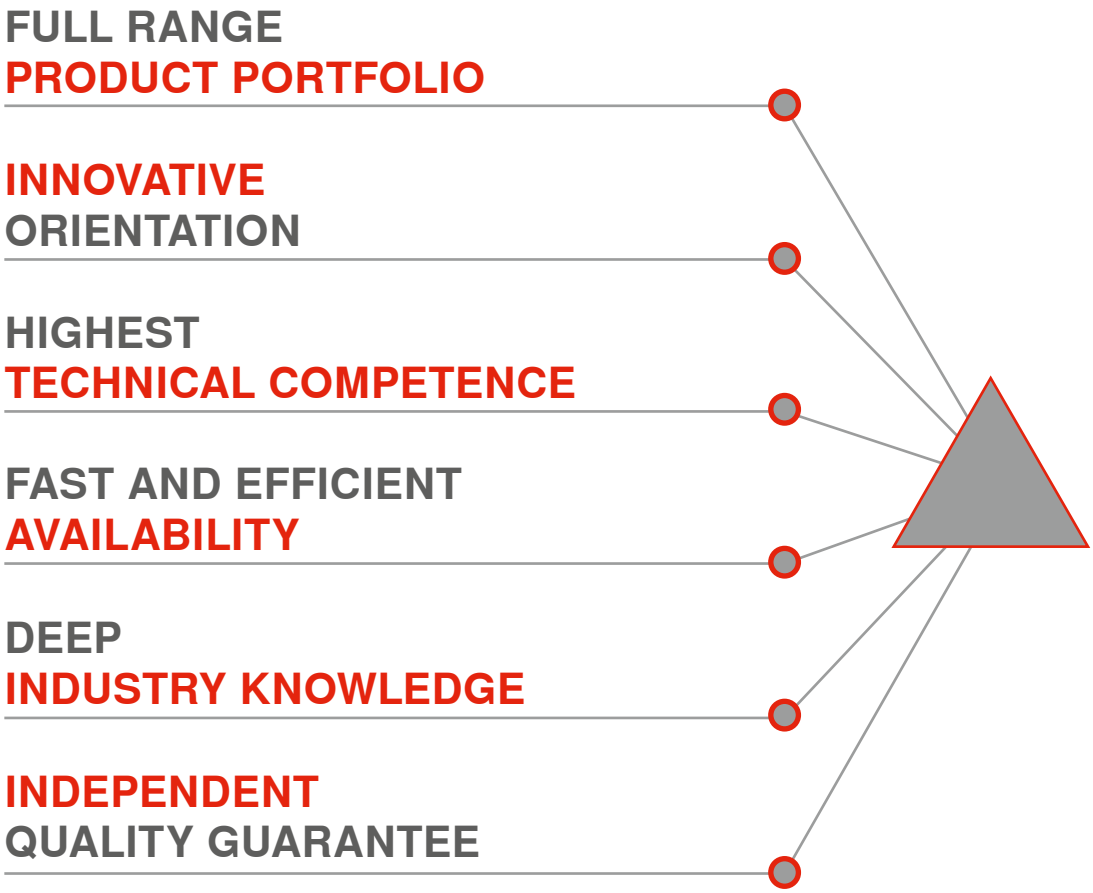
WE PROVIDE YOU WITH THE PERFECT MACHINING SOLUTION

Team Cutting Tools of the CERATIZIT Group

The machining industry today is extremely diverse and is becoming increasingly complex. Trends and innovations are moving quickly, and the possibilities and offerings seem virtually unlimited. For this reason it is all the more important to have a reliable and competent partner on board!

The Team Cutting Tools is not just a tool supplier; the experts on the team are also available to advise you with extensive industry knowledge and decades of experience in machining, in order to find you the perfect machining solution.

The Cutting Tool Solution is



Contact us

It couldn't be easier

Ordering via the Online Shop

http://cuttingtools.ceratizit.com

Manufacturing consulting and process optimization on site

Your personal application engineer

Your customer number

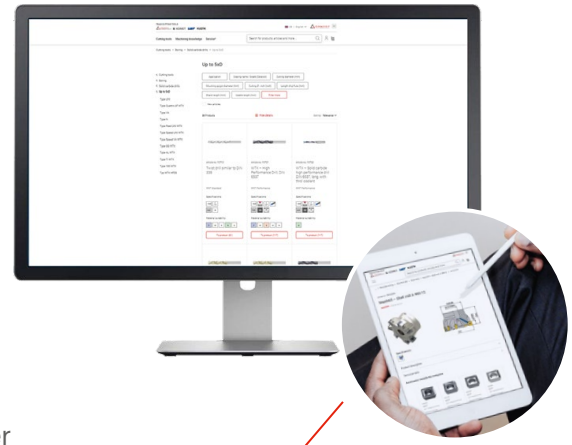
E-COMMERCE SOLUTIONS

Benefit from more product data and machining knowledge online, accelerate and optimize your tool procurement processes or create a direct connection to your ERP system.

Instantly and accurately find the right tool from over 65,000 products from the brands CERATIZIT, WNT, KOMET and KLENK and order it conveniently. At cuttingtools.ceratizit.com, you now have access to one of the largest ranges of machining tools and can order products even quicker and easier thanks to countless new functions and options!

REGISTER NOW UNDER:

cuttingtools.ceratizit.com



SIMPLE TOOL AND ARTICLE SEARCH FUNCTION

- Simple article search function using the article number or product name
- Ideal filter options for quick tool search
- Recommendation of suitable accessories on the article page
- Access the latest article data at any time

FAST ORDERING

- Online processes save time and money during the ordering process
- Add items to your basket quickly and easily
- High availability including a check in the basket
- Order 24 hours a day
- Quick delivery with tracking

EXCLUSIVE ONLINE DISCOUNTS

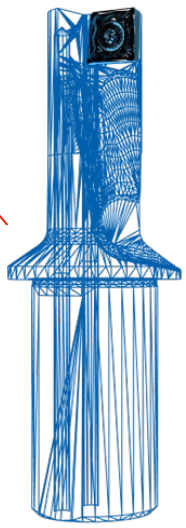
- Save money as well as time when ordering online

CONNECT TO ERP SYSTEMS

- All key data in your ERP system
- Optimise your internal procurement processes
- Avoid copy/paste errors with direct data transfer

FIRST-RATE SERVICE & ADVICE

- Free download of CAD and cutting data
- Download of forms, brochures and catalogs



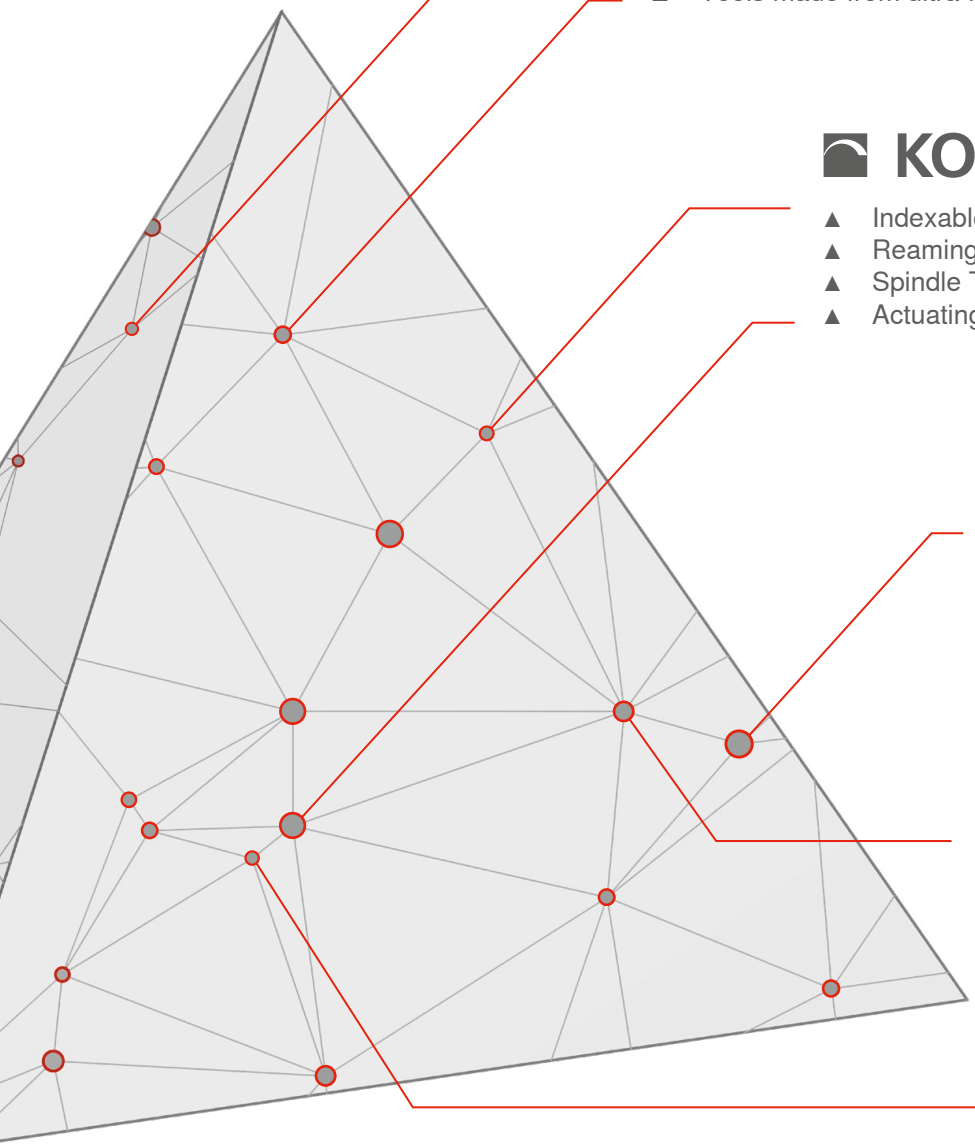
PERSONALISED CUSTOMER ACCOUNT

- Retrieve prices with your personal customer discounts
- Set up several accounts with personalised order authorisations
- Save items for later
- View and print orders and invoices

Questions about how to use the online shop and frequently asked questions can be found at: cuttingtools.ceratizit.com/int/en/faq

FULL RANGE
PRODUCT PORTFOLIO

Everything for machining from the spindle to machine table



CUTTING SOLUTIONS BY CERATIZIT

- Turning Tools
- Multifunction Tools
- Grooving Tools
- Milling Tools with indexable Inserts
- Tools made from ultra-hard cutting materials

KOMET

- Indexable Insert Drilling
- Reaming and Countersinking
- Spindle Tooling
- Actuating Tools

WNT

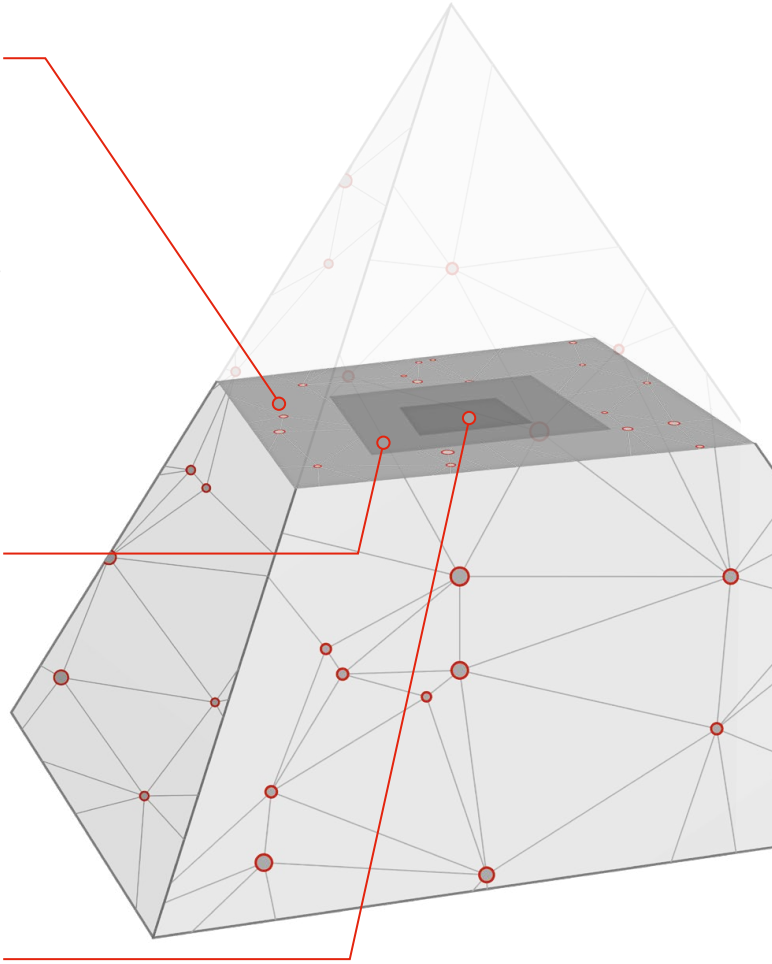
- HSS Drilling
- Solid Carbide Drilling
- Taps and Thread Formers
- Circular and Thread Milling
- Thread Turning
- Miniature Turning Tools
- HSS Milling Cutters
- Solid Carbide Milling Cutters
- Tool Clamping
- Workpiece Clamping

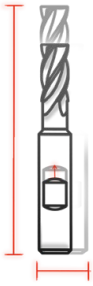
KLENK

- Solid Carbide Drilling and Milling for Aerospace Frame Assembly Industry

COMPREHENSIVE RANGE OF STANDARD-TOOLS

With a selection of cutting tools exclusively for machining applications, CERATIZIT has the most comprehensive product range on the market. Be it turning, drilling, milling, grooving, boring or clamping, we offer a broad selection of innovative, state-of-the-art products for every application – with 99% ex-stock availability.





CUSTOM ADAPTATIONS TO THE STANDARD TOOL RANGE

The semi standard tool programm enables you to adapt your own standard tools in a wide variety of dimensions across many product areas – quickly and individually.

SPECIAL CUSTOM TOOLS & INDUSTRY-SPECIFIC TOOLS

As one of the leading tool manufacturers and innovative pulse generator in machining, we develop optimal tool concepts for you and develop special tools that are based on the most important success factors such as efficiency, time and quality.

INNOVATIVE ORIENTATION

Machining at the highest technological level:

The Team Cutting Tools relies on future technologies such as the high-performance coating Dragonskin for best wear protection and up to 80 percent increased performance. Intelligent and customer-oriented digitization as well as sensor, monitoring and assistance systems make valuable contributions to constant, reliable process optimization.

TOOLSCOPE

Tool solutions with digital and sensory intelligence

FREETURN

The revolution in the turning process –
High Dynamic Turning with FreeTurn tools

ACTUATING TOOLS

The U-Axis system KOMtronic – efficient machining of turning contours on non-rotationally symmetrical parts

ADDITIVE MANUFACTURING

3D printing compliments machining

DRAGONSKIN

The almost indestructible surface coating

TOOL-O-MAT

Tool „at the push of a button“ with the innovative vending system

HIGHEST
TECHNICAL COMPETENCE

Always up to date with market requirements thanks to individual technological support

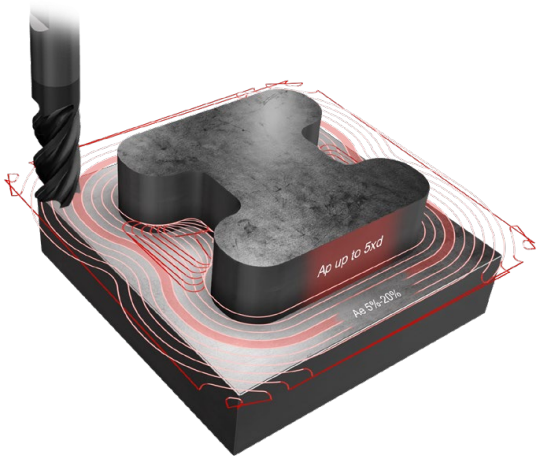
Application technicians and industry experts from the Team Cutting Tools are not just at your side when it comes to tool instruction. In further training courses at our Technical Centres, we are happy to pass on our practical knowledge to you so that you are always up to date with the latest technology. Thanks to our regrinding, recycling and digital services as well as the CAD models, you can also produce more efficiently, easily, flexibly and in an environmentally friendly manner.

PERSONAL APPLICATION ENGINEER

Manufacturing consulting and process optimization on site

TOOL DATA

Cutting data and CAD models to assist you with your tool management or for simulating an operation



TECHNICAL TRAINING

Our engineers are provided with constant training to keep them up to speed on all technical matters. We will gladly share this knowledge with you. Use our Service for the further education of your metal cutting technicians in our Technical Centres.

SUSTAINABILITY

Solutions for forward thinking and economical metal cutting – e.g. Regrinding and Recycling

FAST AND EFFICIENT AVAILABILITY

The new portfolio: simple ways to new tools and service

With the most modern logistics center in Europe we ensure the shortest delivery times, with our Tool Supply 24/7 service for digitally simplified orders. The Tool-O-Mat, which can hold up to 840 different products, ensures that tools are ready when they are needed as a removal system on site. Payment is only made when withdrawn.

LOGISTICS AT THE HIGHEST LEVEL

A logistic center that can meet all requirements, 99 % delivery capacity with next day delivery, no minimum order quantity, custom logistic solutions for major customers.

E-COMMERCE SOLUTIONS

Benefit from more product data and machining knowledge online, accelerate and optimize your tool procurement processes or create a direct connection to your ERP system.

3 WEEKS ON SPECIAL TOOLS

No time to lose? We deliver special tools within 3 weeks.

TOOL SUPPLY 24/7

We take over the complete procurement and storage process!

THE CATALOG FOR MACHINING

Extensive material from the main catalog to industry catalogs and special promotions.

DEEP
INDUSTRY KNOWLEDGE

Equipped for every industry sector: our experts deliver comprehensive solutions!

Proven experts from numerous industrial sectors work in the Team Cutting Tools. Whether automotive and engines, aerospace, energy technology or heavy machining. We know from many years of experience all the challenges that every branch of industry brings – and we deliver the tailor-made solutions.

PROJECT ENGINEERING

Smart solution concepts for efficient machining processes

EXPERT KNOWLEDGE

More than 100 years engineering and manufacturing high performance cutting tools and developing the most optimal machining operations and processes for our customers.

INDUSTRY SPECIFIC TOOLS

Specific tools designed under the most demanding challenges of every industrial sector to increase the competitiveness of our customers.

INDIVIDUAL SPECIAL TOOLS

In partnership with the customer

INDEPENDENT
QUALITY GUARANTEE

The CERATIZIT Group: everything from a single source, from the raw material to the finished tool

As part of the CERATIZIT group, we have exclusive raw material sourcing, enormous resources and master the entire process chain: From the mine to powder production and shaping to sintering, finalization and surface finishing to recycling, we ensure our customers the highest quality.

Also with the innovative strength (e.g. in the development of new powder types), the sales network and the consulting expertise, you benefit from our large network and our character as a „one-stop shop“ for cutting tools.

More options for sliding head turning

with our new catalogue for sliding head tooling.

This catalogue gives you a good overview of the entire range of our tool portfolio especially for sliding head turning, perfectly tailored to specific needs, matched and tailored to the market.

In addition to the extensive selection of quality tools as a customer, you benefit from the high availability of these tools as well as the fast delivery. Also, our machining experts are at your disposal both in person and by phone for everyone, with technical expertise available to help your production process optimisation.

The catalogue for cutting tools

Additional tools for machining you can find in our online shop cuttingtools.ceratizit.com and in our main and clamping technology catalogue.

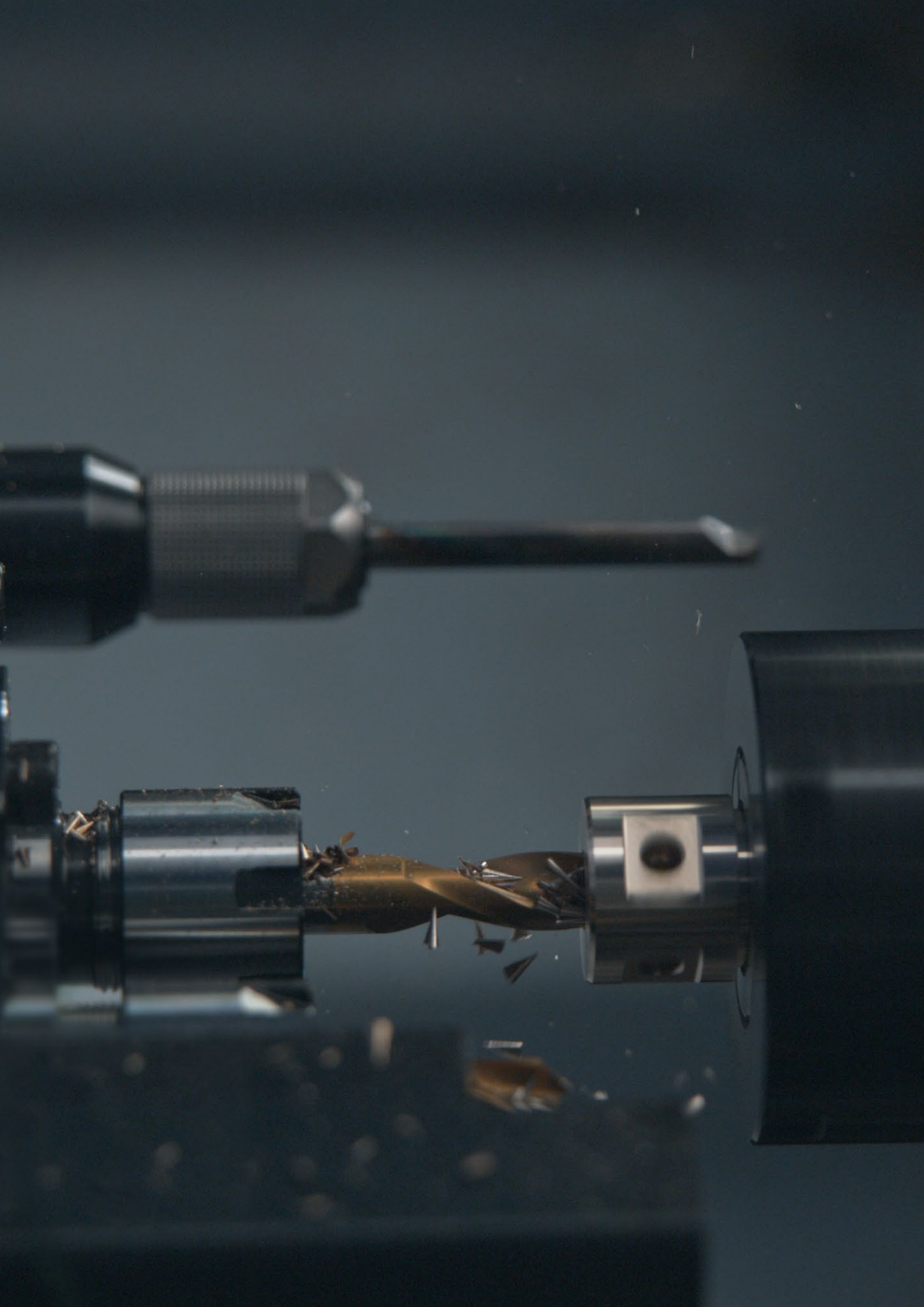


Table of contents

Overview

HSS Drilling

- Drill for universal application up to 10xD

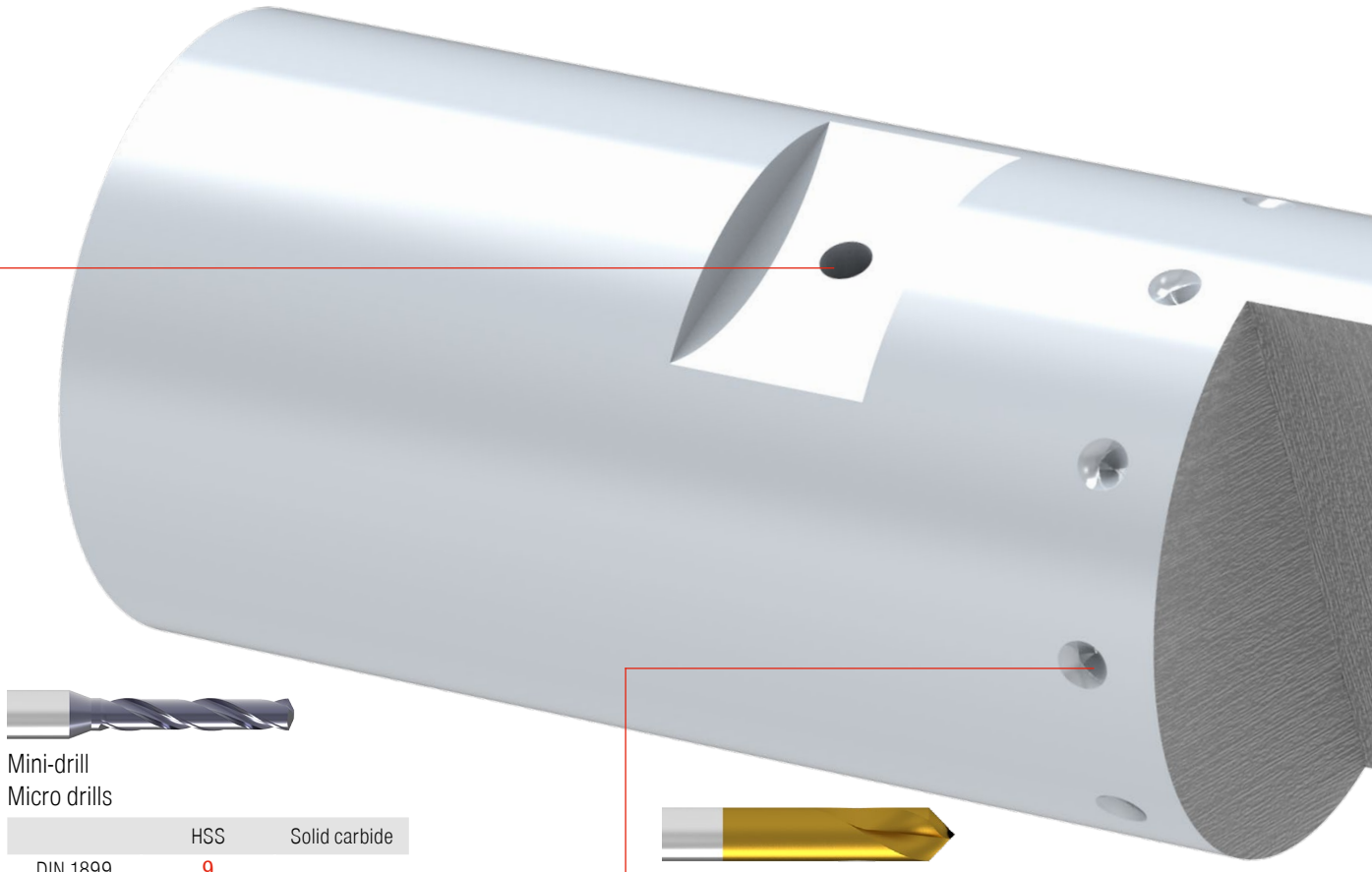
Solid Carbide Drilling

- Selection of solid carbide drills and WTX drills
- High performance for universal application

Reamers

- HSS and solid carbide reaming from Ø 0.59 – 12 mm

Toolfinder



Mini-drill
Micro drills

	HSS	Solid carbide
DIN 1899	9	
5xD		29+30
8xD		30
12xD		31

NC Spot Drill

	HSS	Solid carbide
90°	9	32
120°	9	32

WNT \ Performance

Premium quality tools for high performance.

The premium quality tools from the **WNT Performance** product line have been designed for specific applications and are distinguished by their outstanding performance. If you make high demands on the performance of your production and want to achieve the very best results, we recommend the Premium tools in this product line.

KOMET \ Performance

Premium quality tools for high performance.

The premium quality tools from the **KOMET Performance** product line have been designed for specific applications and are distinguished by their outstanding performance. If you make high demands on the performance of your production and want to achieve the very best results, we recommend the Premium tools in this product line.

WNT \ Standard

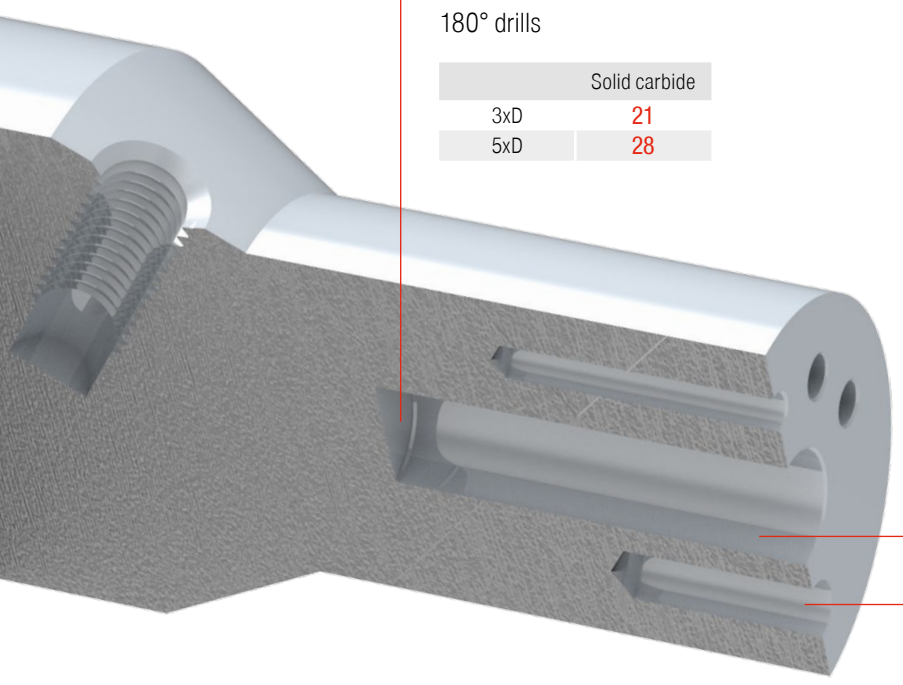
Quality tools for standard applications.

The quality tools of the **WNT Standard** product line are high quality, powerful and reliable and enjoy the highest trust of our customers worldwide. Tools from this product line are the first choice for many standard applications and guarantee optimal results.

KOMET \ Standard

Quality tools for standard applications.

The quality tools of the **KOMET Standard** product line are high quality, high performance, reliable and enjoy the highest level of trust among our customers worldwide. Tools from this product line are the first choice for many standard applications and guarantee optimal results.



Reamers

	HSS	Solid carbide
0,95–12,00	65–69	
0,59–12,05		48–64

180° drills

	Solid carbide
3xD	21
5xD	28

Standard drills

	HSS	Solid carbide
3xD	6	16–20
5xD	7	22–27
10xD	8	

Symbol explanation

HSS drilling

Functional length

≤ 10xD

Shank

DIN 1835 A

Point angle

130°

● = **Main Application**
○ = Extended application

Solid carbide drilling

Functional length

≤ 8xD

Shank

DIN 6535 HA

Version

Int. coolant supply

self-centering

Pilot hole necessary

Point angle

140°

● = **Main Application**
○ = Extended application

Reamers

Shank

DIN 1835 A

DIN 6535 HA

Version

central internal coolant

lateral internal coolant

ZEFP = Number of flutes

● = **Main Application**
○ = Extended application

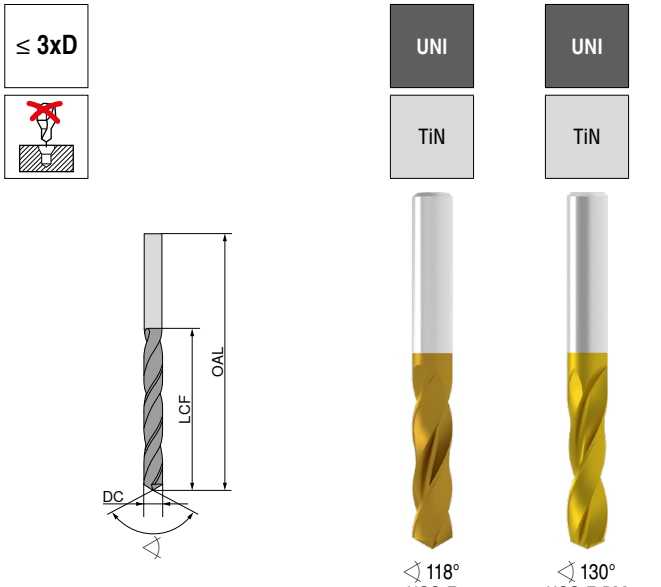
HSS Drills Overview

	Tool type	Material | Coating	Point angle	Diameter in mm DC	Steel P / Stainless steel M / Cast iron K / Non-ferrous metals N / Heat-resistant S / Tempered steel H / Non metal materials O	coated ■ / uncoated □	WNT \ Performance
3xD without thro' coolant							
	UNI	HSS-E TiN	**118°**	1–12	● ● ● ○ ○ ○ A	■	6
	UNI	HSS-E-PM TiN	**130°**	1–12	● ● ○ ○ ○ ○ A	■	6
5xD without thro' coolant							
	UNI	HSS-E TiN	**118°**	0,9–12	● ● ● ○ ○ ○ A	■	7
	UNI	HSS-E-PM TiN	**130°**	1–12	● ● ○ ○ ○ ○ A	■	7
up to 10xD without thro' coolant							
	UNI	HSS-E TiN	**118°**	1–12	● ● ● ○ ○ ○ A	■	8
Mini-drill							
	N	HSS-E-PM	**118°**	0,15–1,45	● ○ ● ● ○ ○ A	□	9
NC Spot Drill							
	NC-A	HSS TiN	**90°**	3–12	● ○ ● ○ A ~B	■	9
	NC-A	HSS TiN	**120°**	3–12	● ○ ● ○ A ~B	■	9

Further dimensions and drills can be found in our → **main catalogue in Chapter 1 HSS drills**

High-performance twist drills similar to DIN 1897, extra-short

≤ 3xD



DC h8 mm	DC inch	OAL mm	LCF mm	10 107 ...	10 113 ...
1,00		26	6	010 1)	010 1)
1,10		28	7	011 1)	011 1)
1,20		30	8	012 1)	012 1)
1,30		30	8	013 1)	013 1)
1,40		32	9	014 1)	014 1)
1,50		32	9	015 1)	015 1)
1,60		34	10	016 1)	016 1)
1,70		34	10	017 1)	017 1)
1,80		36	11	018 1)	018 1)
1,90		36	11	019 1)	019 1)
2,00		38	12	020 1)	020 1)
2,10		38	12	021 1)	021 1)
2,20		40	13	022 1)	022 1)
2,30		40	13	023 1)	023 1)
2,38	3/32	43	14	238 1)	238 1)
2,40		43	14	024 1)	024 1)
2,50		43	14	025 1)	025 1)
2,60		43	14	026 1)	026 1)
2,70		46	16	027 1)	027 1)
2,78	7/64	46	16	278 1)	278 1)
2,80		46	16	028 1)	028 1)
2,90		46	16	029 1)	029 1)
3,00		46	16	030 1)	030 1)
3,10		49	18	031 1)	031 1)
3,17	1/8	49	18	317 1)	317 1)
3,20		49	18	032 1)	032 1)
3,30		49	18	033 1)	033 1)
3,40		52	20	034 1)	034 1)
3,50		52	20	035 1)	035 1)
3,57	9/64	52	20	357 1)	357 1)
3,60		52	20	036 1)	036 1)
3,70		52	20	037 1)	037 1)
3,80		55	22	038 1)	038 1)
3,90		55	22	039 1)	039 1)
3,97	5/32	55	22	397 1)	397 1)
4,00		55	22	040 1)	040 1)
4,10		55	22	041 1)	041 1)
4,20		55	22	042 1)	042 1)
4,30		58	24	043 1)	043 1)
4,37	11/64	58	24	437 1)	437 1)
4,40		58	24	044 1)	044 1)
4,50		58	24	045 1)	045 1)
4,60		58	24	046 1)	046 1)
4,70		58	24	047 1)	047 1)
4,76	3/16	62	26	476 1)	476 1)
4,80		62	26	048 1)	048 1)
4,90		62	26	049 1)	049 1)
5,00		62	26	050 1)	050 1)
5,10		62	26	051 1)	051 1)
5,16	13/64	62	26	516 1)	516 1)
5,20		62	26	052 1)	052 1)
5,30		62	26	053 1)	053 1)
5,40		66	28	054 1)	054 1)
5,50		66	28	055 1)	055 1)
5,56	7/32	66	28	556 1)	556 1)
5,60		66	28	056 1)	056 1)
5,70		66	28	057 1)	057 1)
5,80		66	28	058 1)	058 1)
5,90		66	28	059 1)	059 1)
5,95	15/64	66	28	595 1)	595 1)
6,00		66	28	060 1)	060 1)
6,10		70	31	061 1)	061 1)
6,20		70	31	062 1)	062 1)
6,30		70	31	063 1)	063 1)
6,35	1/4	70	31	635 1)	635 1)
6,40		70	31	064 1)	064 1)
6,50		70	31	065 1)	065 1)
6,60		70	31	066 1)	066 1)
6,70		70	31	067 1)	067 1)
6,75		74	34	675 1)	675 1)
6,80		74	34	068 1)	068 1)
6,90		74	34	069 1)	069 1)
7,00		74	34	070 1)	070 1)
7,10		74	34	071 1)	071 1)
7,14	9/32	74	34	714 1)	714 1)
7,20		74	34	072 1)	072 1)
7,30		74	34	073 1)	073 1)
7,40		74	34	074 1)	074 1)
7,50		74	34	075 1)	075 1)
7,60		79	37	076 1)	076 1)
7,70		79	37	077 1)	077 1)
7,80		79	37	078 1)	078 1)
7,90		79	37	079 1)	079 1)
7,94	5/16	79	37	794 1)	794 1)
8,00		79	37	080 1)	080 1)
8,10		79	37	081 1)	081 1)
8,20		79	37	082 1)	082 1)
8,30		79	37	083 1)	083 1)
8,40		79	37	084 1)	084 1)
8,50		79	37	085 1)	085 1)
8,60		84	40	086 1)	
8,70		84	40	087 1)	
8,73	11/32	84	40	873 1)	873 1)
8,80		84	40	088 1)	088 1)
8,90		84	40	089 1)	
9,00		84	40	090 1)	090 1)
9,10		84	40	091 1)	
9,20		84	40	092 1)	
9,30		84	40	093 1)	093 1)
9,40		84	40	094 1)	
9,50		84	40	095 1)	095 1)
9,60		89	43	096 1)	
9,70		89	43	097 1)	
9,80		89	43	098 1)	098 1)
9,90		89	43	099 1)	
10,00		89	43	100 1)	100 1)
10,10		89	43	101 1)	
10,20		89	43	102 1)	102 1)
10,30		89	43	103 1)	
10,40		89	43	104 1)	
10,50		89	43	105 1)	105 1)
11,00		95	47	110 1)	110 1)
11,11	7/16	95	47	111 1)	111 1)
11,50		95	47	115 1)	115 1)
12,00		102	51	120 1)	120 1)
P				●	●
M				●	
K				●	●
N				○	○
S				○	○
H					○
O				○	○

1) self-centering

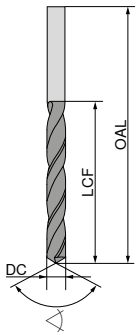
→ v_c Page 11

Twist drill to DIN 338, short

≤ 5xD

UNI

TiN



118°
HSS-E

130°
HSS-E-PM

DC h8 mm	DC inch	OAL mm	LCF mm	10 171 ...	10 173 ...
0,90		32	11	009 1)	
1,00		34	12	010 1)	010 1)
1,10		36	14	011 1)	011 1)
1,20		38	16	012 1)	012 1)
1,25		38	16	125 1)	
1,30		38	16	013 1)	013 1)
1,40		40	18	014 1)	014 1)
1,45		40	18	145 1)	
1,50		40	18	015 1)	015 1)
1,55		43	20	155 1)	
1,60		43	20	016 1)	016 1)
1,65		43	20	165 1)	
1,70		43	20	017 1)	017 1)
1,80		46	22	018 1)	018 1)
1,90		46	22	019 1)	019 1)
2,00		49	24	020 1)	020 1)
2,10		49	24	021 1)	021 1)
2,20		53	27	022 1)	022 1)
2,30		53	27	023 1)	023 1)
2,38	3/32	57	30	238 1)	238 1)
2,40		57	30	024 1)	024 1)
2,50		57	30	025 1)	025 1)
2,55		57	30	255 1)	
2,60		57	30	026 1)	026 1)
2,70		61	33	027 1)	027 1)
2,78	7/64	61	33	278 1)	278 1)
2,80		61	33	028 1)	028 1)
2,90		61	33	029 1)	029 1)
3,00		61	33	030 1)	030 1)
3,10		65	36	031 1)	031 1)
3,17	1/8	65	36	317 1)	317 1)
3,20		65	36	032 1)	032 1)
3,25		65	36	325 1)	
3,30		65	36	033 1)	033 1)
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3,57	9/64	70	39	357 1)	357 1)
3,60		70	39	036 1)	036 1)
3,70		70	39	037 1)	037 1)
3,80		75	43	038 1)	038 1)
3,90		75	43	039 1)	039 1)
3,97	5/32	75	43	397 1)	397 1)
4,00		75	43	040 1)	040 1)
4,10		75	43	041 1)	041 1)
4,20		75	43	042 1)	042 1)
4,25		75	43	425 1)	
4,30		80	47	043 1)	043 1)
4,37	11/64	80	47	437 1)	437 1)
4,40		80	47	044 1)	044 1)
4,50		80	47	045 1)	045 1)
4,60		80	47	046 1)	046 1)
4,65		80	47	465 1)	
4,70		80	47	047 1)	047 1)
4,76	3/16	86	52	476 1)	476 1)
4,80		86	52	048 1)	048 1)
4,90		86	52	049 1)	049 1)
4,95		86	52	495 1)	
5,00		86	52	050 1)	050 1)
5,05		86	52	505 1)	
5,10		86	52	051 1)	051 1)
5,16	13/64	86	52	516 1)	516 1)
5,20		86	52	052 1)	052 1)
5,30		86	52	053 1)	053 1)
5,40		93	57	054 1)	054 1)
5,50		93	57	055 1)	055 1)
5,55		93	57	555 1)	
5,56	7/32	93	57	556 1)	556 1)
5,60		93	57	056 1)	056 1)
5,70		93	57	057 1)	057 1)
5,75		93	57	575 1)	
5,80		93	57	058 1)	058 1)
5,90		93	57	059 1)	059 1)
5,95	15/64	93	57	595 1)	595 1)
6,00		93	57	060 1)	060 1)
6,10		101	63	061 1)	061 1)
6,20		101	63	062 1)	062 1)
6,30		101	63	063 1)	063 1)
6,35	1/4	101	63	635 1)	635 1)
6,40		101	63	064 1)	064 1)
6,50		101	63	065 1)	065 1)
6,60		101	63	066 1)	066 1)
6,70		101	63	067 1)	067 1)
6,75		109	69	675 1)	675 1)
6,80		109	69	068 1)	068 1)
6,90		109	69	069 1)	069 1)
7,00		109	69	070 1)	070 1)
7,10		109	69	071 1)	071 1)
7,14	9/32	109	69	714 1)	714 1)
7,20		109	69	072 1)	072 1)
7,30		109	69	073 1)	073 1)
7,40		109	69	074 1)	074 1)
7,45		109	69	745 1)	
7,50		109	69	075 1)	075 1)
7,60		117	75	076 1)	076 1)
7,70		117	75	077 1)	077 1)
7,80		117	75	078 1)	078 1)
7,90		117	75	079 1)	079 1)
7,94	5/16	117	75	794 1)	794 1)
8,00		117	75	080 1)	080 1)
8,10		117	75	081 1)	081 1)
8,20		117	75	082 1)	082 1)
8,30		117	75	083 1)	083 1)
8,40		117	75	084 1)	084 1)
8,50		117	75	085 1)	085 1)
8,60		125	81	086 1)	
8,70		125	81	087 1)	
8,73	11/32	125	81	873 1)	873 1)
8,80		125	81	088 1)	088 1)
8,90		125	81	089 1)	
9,00		125	81	090 1)	090 1)
9,10		125	81	091 1)	
9,20		125	81	092 1)	
9,30		125	81	093 1)	093 1)
9,35		125	81	935 1)	
9,40		125	81	094 1)	
9,50		125	81	095 1)	095 1)
9,60		133	87	096 1)	
9,70		133	87	097 1)	
9,80		133	87	098 1)	098 1)
9,90		133	87	099 1)	
10,00		133	87	100 1)	100 1)
10,10		133	87	101 1)	
10,20		133	87	102 1)	102 1)
10,30		133	87	103 1)	
10,40		133	87	104 1)	
10,50		133	87	105 1)	105 1)
10,55		133	87	955 1)	
11,00		142	94	110 1)	110 1)
11,11	7/16	142	94	111 1)	111 1)
11,20		142	94	112 1)	
11,30		142	94	113 1)	
11,40		142	94	114 1)	
11,50		142	94	115 1)	115 1)
11,60		142	94	116 1)	
12,00		151	101	120 1)	120 1)
P				●	●
M				●	
K				●	●
N				○	○
S				○	○
H					○
O				○	○

1) self-centering

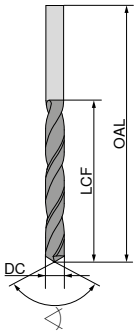
→ v_c Page 11

Twist drills, DIN 340, long

≤ 10xD

UNI

TiN



118°
HSS-E

DC h8 mm	OAL mm	LCF mm	10 270 ...
1,0	56	33	010
1,1	60	37	011
1,2	65	41	012
1,3	65	41	013
1,4	70	45	014
1,5	70	45	015
1,6	76	50	016
1,7	76	50	017
1,8	80	53	018
1,9	80	53	019
2,0	85	56	020
2,1	85	56	021
2,2	90	59	022
2,3	90	59	023
2,4	95	62	024
2,5	95	62	025
2,6	95	62	026
2,7	100	66	027
2,8	100	66	028
2,9	100	66	029
3,0	100	66	030
3,1	106	69	031
3,2	106	69	032
3,3	106	69	033
3,4	112	73	034
3,5	112	73	035
3,6	112	73	036
3,7	112	73	037
3,8	119	78	038
3,9	119	78	039
4,0	119	78	040
4,1	119	78	041
4,2	119	78	042
4,3	126	82	043
4,4	126	82	044
4,5	126	82	045
4,6	126	82	046
4,7	126	82	047
4,8	132	87	048
4,9	132	87	049
5,0	132	87	050
5,1	132	87	051
5,2	132	87	052
5,3	132	87	053
5,4	139	91	054
5,5	139	91	055
5,6	139	91	056
5,7	139	91	057
5,8	139	91	058
5,9	139	91	059
6,0	139	91	060
6,1	148	97	061
6,2	148	97	062
6,3	148	97	063
6,4	148	97	064
6,5	148	97	065
6,6	148	97	066
6,7	148	97	067
6,8	156	102	068
6,9	156	102	069
7,0	156	102	070
7,1	156	102	071

DC h8 mm	OAL mm	LCF mm	10 270 ...
7,2	156	102	072
7,3	156	102	073
7,4	156	102	074
7,5	156	102	075
7,6	165	109	076
7,7	165	109	077
7,8	165	109	078
7,9	165	109	079
8,0	165	109	080
8,1	165	109	081
8,2	165	109	082
8,3	165	109	083
8,4	165	109	084
8,5	165	109	085
8,6	175	115	086
8,7	175	115	087
8,8	175	115	088
8,9	175	115	089
9,0	175	115	090
9,1	175	115	091
9,2	175	115	092
9,3	175	115	093
9,4	175	115	094
9,5	175	115	095
9,6	184	121	096
9,7	184	121	097
9,8	184	121	098
9,9	184	121	099
10,0	184	121	100
10,1	184	121	101
10,2	184	121	102
10,3	184	121	103
10,4	184	121	104
10,5	184	121	105
11,0	195	128	110
11,5	195	128	115
12,0	205	134	120

	10 270 ...
P	●
M	●
K	●
N	○
S	○
H	
O	○

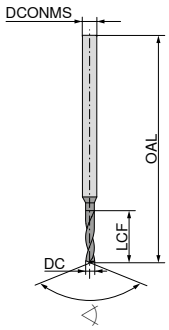
→ v_c Page 11

Twist drills, DIN 1899

▲ 4 facet
▲ with reinforced shank

Scope of supply:

▲ Pack quantity 5 pieces
▲ price per piece



N

118°
HSS-E-PM

10 103 ...

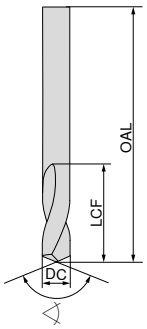
DC $_{-0,004}$ mm	OAL mm	LCF mm	DCONMS $_{h8}$ mm	
0,15	25	0,8	1,0	**00150**
0,20	25	1,5	1,0	**00200**
0,25	25	1,9	1,0	**00250**
0,30	25	1,9	1,0	**00300**
0,35	25	2,4	1,0	**00350**
0,40	25	3,0	1,0	**00400**
0,45	25	3,0	1,0	**00450**
0,50	25	3,4	1,0	**00500**
0,55	25	3,9	1,0	**00550**
0,60	25	3,9	1,0	**00600**
0,65	25	4,2	1,0	**00650**
0,70	25	4,8	1,0	**00700**
0,75	25	4,8	1,0	**00750**
0,80	25	5,3	1,5	**00800**
0,85	25	5,3	1,5	**00850**
0,90	25	6,0	1,5	**00900**
0,95	25	6,0	1,5	**00950**
1,00	25	6,8	1,5	**01000**
1,05	25	6,8	1,5	**01050**
1,10	25	7,6	1,5	**01100**
1,15	25	7,6	1,5	**01150**
1,20	25	8,5	1,5	**01200**
1,25	25	8,5	1,5	**01250**
1,30	25	8,5	1,5	**01300**
1,35	25	9,5	1,5	**01350**
1,40	25	9,5	1,5	**01400**
1,45	25	9,5	1,5	**01450**

P	●
M	○
K	●
N	●
S	○
H	
O	○

→ v_c Page 12

NC spot drills, factory standard

▲ helical flutes



NC-A
TiN

Right-hand
90°
HSS

10 522 ...

NC-A
TiN

Left-hand
120°
HSS

10 512 ...

DC $_{h6}$ mm	OAL mm	LCF mm		
3	46	12	**030**	**030**
4	55	12	**040**	**040**
5	62	14	**050**	**050**
6	66	16	**060**	**060**
8	79	21	**080**	**080**
10	89	25	**100**	**100**
12	102	30	**120**	**120**

P	**25-55**	**25-55**
M	20	20
K	**30-55**	**30-55**
N	65-85	65-85
S		
H		
O		

Material examples for cutting data tables

	Material sub-group	Index	Composition / Structure / Heat treatment		Tensile strength N/mm²* / HB / HRC	Material number	Material designation	Material number	Material designation
P	Unalloyed steel	P.1.1	< 0,15 % C	Annealed	420 N/mm² / 125 HB	1.0401	C15	1.1141	Ck15
		P.1.2	< 0,45 % C	Annealed	640 N/mm² / 190 HB	1.1191	C45E	1.0718	9SMnPb28
		P.1.3		Tempered	840 N/mm² / 250 HB	1.1191	C45E	1.0535	C55
		P.1.4	< 0,75 % C	Annealed	910 N/mm² / 270 HB	1.1223	C60R	1.0535	C55
		P.1.5		Tempered	1010 N/mm² / 300 HB	1.1223	C60R	1.0727	45S20
	Low-alloy steel	P.2.1		Annealed	610 N/mm² / 180 HB	1.7131	16MnCr5	1.6587	17CrNiMo6
		P.2.2		Tempered	930 N/mm² / 275 HB	1.7131	16MnCr5	1.6587	17CrNiMo6
		P.2.3		Tempered	1010 N/mm² / 300 HB	1.7225	42CrMo4	1.3505	100Cr6
		P.2.4		Tempered	1200 N/mm² / 375 HB	1.7225	42CrMo4	1.3505	100Cr6
	High-alloy steel and high-alloy tool steel	P.3.1		Annealed	680 N/mm² / 200 HB	1.4021	X20Cr13	1.4034	X46Cr13
		P.3.2		Hardened and tempered	1100 N/mm² / 300 HB	1.2343	X38CrMoV5-1	1.4034	X46Cr13
		P.3.3		Hardened and tempered	1300 N/mm² / 400 HB	1.2343	X38CrMoV5-1	1.4034	X46Cr13
	Stainless steel	P.4.1	Ferritic / martensitic	Annealed	680 N/mm² / 200 HB	1.4016	X6Cr17	1.2316	X36CrMo16
		P.4.2	Martensitic	Tempered	1010 N/mm² / 300 HB	1.4112	X90CrMoV18	1.2316	X36CrMo16
M	Stainless steel	M.1.1	Austenitic / austenitic-ferritic	Quenched	610 N/mm² / 180 HB	1.4301	X5CrNi18-10	1.4571	X6CrNiMoTi17-12-2
		M.2.1	Austenitic	Tempered	300 HB	1.4841	X15CrNiSi25-21	1.4539	X1NiCrMoCu25-20-5
		M.3.1	Austenitic / ferritic (Duplex)		780 N/mm² / 230 HB	1.4462	X2CrNiMoN22-5-3	1.4501	X2CrNiMoCuWN25-7-4
K	Grey cast iron	K.1.1	Pearlitic / ferritic		350 N/mm² / 180 HB	0.6010	GG-10	0.6025	GG-25
		K.1.2	Pearlitic (martensitic)		500 N/mm² / 260 HB	0.6030	GG-30	0.6045	GG-45
	Spherulitic graphite cast iron	K.2.1	Ferritic		540 N/mm² / 160 HB	0.7040	GGG-40	0.7060	GGG-60
		K.2.2	Pearlitic		845 N/mm² / 250 HB	0.7070	GGG-70	0.7080	GGG-80
	Malleable iron	K.3.1	Ferritic		440 N/mm² / 130 HB	0.8035	GTW-35-04	0.8045	GTW-45
		K.3.2	Pearlitic		780 N/mm² / 230 HB	0.8165	GTS-65-02	0.8170	GTS-70-02
N	Aluminium wrought alloy	N.1.1	Non-hardenable		60 HB	3.0255	Al99,5	3.3315	AlMg1
		N.1.2	Hardenable	Age-hardened	340 N/mm² / 100 HB	3.1355	AlCuMg2	3.2315	AlMgSi1
	Cast aluminium alloy	N.2.1	≤ 12 % Si, non-hardenable		250 N/mm² / 75 HB	3.2581	G-AlSi12	3.2163	G-AlSi9Cu3
		N.2.2	≤ 12 % Si, hardenable	Age-hardened	300 N/mm² / 90 HB	3.2134	G-AlSi5Cu1Mg	3.2373	G-AlSi9Mg
		N.2.3	> 12 % Si, non-hardenable		440 N/mm² / 130 HB		G-AlSi17Cu4Mg		G-AlSi18CuNiMg
	Copper and copper alloys (bronze/brass)	N.3.1	Free-machining alloys, PB > 1 %		375 N/mm² / 110 HB	2.0380	CuZn39Pb2 (Ms58)	2.0410	CuZn44Pb2
		N.3.2	CuZn, CuSnZn		300 N/mm² / 90 HB	2.0331	CuZn15	2.4070	CuZn28Sn1As
		N.3.3	CuSn, lead-free copper and electrolytic copper		340 N/mm² / 100 HB	2.0060	E-Cu57	2.0590	CuZn40Fe
	Magnesium alloys	N.4.1	Magnesium and magnesium alloys		70 HB	3.5612	MgAl6Zn	3.5312	MgAl3Zn
S	Heat-resistant alloys	S.1.1	Fe - basis	Annealed	680 N/mm² / 200 HB	1.4864	X12NiCrSi 36-16	1.4865	G-X40NiCrSi38-18
		S.1.2		Age-hardened	950 N/mm² / 280 HB	1.4980	X6NiCrTiMoVB25-15-2	1.4876	X10NiCrAlTi32-20
		S.2.1	Ni or Co basis	Annealed	840 N/mm² / 250 HB	2.4631	NiCr20TiAl (Nimonic80A)	3.4856	NiCr22Mo9Nb
		S.2.2		Age-hardened	1180 N/mm² / 350 HB	2.4668	NiCr19Nb5Mo3 (Inconel 718)	2.4955	NiFe25Cr20NbTi
		S.2.3		Cast	1080 N/mm² / 320 HB	2.4765	CoCr20W15Ni	1.3401	G-X120Mn12
	Titanium alloys	S.3.1	Pure titanium		400 N/mm²	3.7025	Ti99,8	3.7034	Ti99,7
		S.3.2	Alpha + beta alloys	Age-hardened	1050 N/mm² / 320 HB	3.7165	TiAl6V4	Ti-6246	Ti-6Al-2Sn-4Zr-6Mo
		S.3.3	Beta alloys		1400 N/mm² / 410 HB	Ti555.3	Ti-5Al-5V-5Mo-3Cr	R56410	Ti-10V-2Fe-3Al
H	Hardened steel	H.1.1		Hardened and tempered	46–55 HRC				
		H.1.2		Hardened and tempered	56–60 HRC				
		H.1.3		Hardened and tempered	61–65 HRC				
		H.1.4		Hardened and tempered	66–70 HRC				
	Chilled iron	H.2.1		Cast	400 HB				
	Hardened cast iron	H.3.1		Hardened and tempered	55 HRC				
O	Non-metal materials	O.1.1	Plastics, duroplastic		≤ 150 N/mm²				
		O.1.2	Plastics, thermoplastic		≤ 100 N/mm²				
		O.2.1	Aramid fibre-reinforced		≤ 1000 N/mm²				
		O.2.2	Glass/carbon-fibre reinforced		≤ 1000 N/mm²				
		O.3.1	Graphite						

*** Tensile strength**

Cutting data standard values

	Drilling depth 3xD				Drilling depth 5xD				Hole depth 10xD	
	Type UNI-TiN 10 107 ...		Type UNI-PM-TiN 10 113 ...		Type UNI-TiN 10 171 ...		Type UNI-PM-TiN 10 173 ...		Type UNI-TiN 10 270 ...	
Index	v_c in m/min	F	v_c in m/min	F	v_c in m/min	F	v_c in m/min	F	v_c in m/min	F
P.1.1	**46**	6	**44**	6	**46**	6	**44**	6	**41**	6
P.1.2	**39**	5	**37**	5	**39**	5	**37**	5	**35**	5
P.1.3	**35**	5	**33**	5	**35**	5	**33**	5	**31**	5
P.1.4	**32**	5	**31**	5	**32**	5	**31**	5	**29**	5
P.1.5	**28**	5	**26**	5	**28**	5	**26**	5	**25**	5
P.2.1	**35**	5	**32**	6	**35**	5	**32**	6	**31**	5
P.2.2	**24**	4	**23**	5	**24**	4	**23**	5	**22**	4
P.2.3	**21**	4	**19**	5	**21**	4	**19**	5	**19**	4
P.2.4	**19**	3	**18**	4	**19**	3	**18**	4	**17**	3
P.3.1	**17**	4	**21**	4	**17**	4	**21**	4	**16**	4
P.3.2	**13**	3	**16**	3	**13**	3	**16**	3	**12**	3
P.3.3	**12**	3	**15**	3	**12**	3	**15**	3	**10**	2
P.4.1	**18**	4	**14**	3	**18**	4	**14**	3	**16**	4
P.4.2	**17**	3	**14**	2	**17**	3	**14**	2	**15**	3
M.1.1	**15**	4			**15**	4			**13**	4
M.2.1	**12**	3			**14**	4			**8**	3
M.3.1	**10**	3			**10**	3			**9**	3
K.1.1	**41**	6	**46**	6	**41**	6	**46**	6	**37**	6
K.1.2	**33**	6	**37**	6	**33**	6	**37**	6	**30**	6
K.2.1	**35**	6	**39**	6	**35**	6	**39**	6	**32**	6
K.2.2	**27**	5	**30**	5	**27**	5	**30**	5	**24**	5
K.3.1	**35**	6	**39**	6	**35**	6	**39**	6	**32**	6
K.3.2	**27**	5	**30**	5	**27**	5	**30**	5	**24**	5
N.1.1										
N.1.2										
N.2.1	75	6	69	6	75	6	69	6	67	6
N.2.2	60	5	55	5	60	5	55	5	54	5
N.2.3	52	5	48	5	52	5	48	5	47	5
N.3.1	69	5	64	5	69	5	64	5	62	5
N.3.2	41	4	39	4	41	4	39	4	37	4
N.3.3	55	4	52	4	55	4	52	4	50	4
N.4.1	70	5	60	5	70	6	65	6	50	6
S.1.1			7	2			7	2		
S.1.2			6	1			6	1		
S.2.1			6	2			6	2		
S.2.2										
S.2.3										
S.3.1	9	2			9	2			8	2
S.3.2	6	1			6	1			5	1
S.3.3										
H.1.1			6	1			6	1		
H.1.2										
H.1.3										
H.1.4										
H.2.1			10	3			10	3		
H.3.1										
O.1.1	29	4	23	4	29	4	23	4	26	4
O.1.2	29	4			29	4			26	4
O.2.1	29	4	23	4	29	4	23	4	26	4
O.2.2	29	4	23	4	29	4	23	4	26	4
O.3.1										

The cutting data depends extremely on the external conditions, e.g. stability of the tool and tool clamping, material and machine type. The indicated values are possible cutting data which have to be increased or reduced according to the application conditions.

When drilling tough materials which tend to jam, chips should be removed at drilling depth ≥ 4xD and the cutting speed v_c should be reduced as follows: at drilling depths > 4xD by 10 %, at drilling depths > 6xD by 15–20 %. It is also recommended to use an emulsion for cooling.

Cutting data standard values – micro drills 10 103 ...

		Nominal Ø in mm						
		Ø 0,15	Ø 0,20–0,25	Ø 0,30–0,35	Ø 0,40–0,55	Ø 0,60–0,75	Ø 0,80–0,95	Ø 1,00–1,45
Index	v_c in m/min	f mm/rev.	f mm/rev.	f mm/rev.	f mm/rev.	f mm/rev.	f mm/rev.	f mm/rev.
P.1.1	33	0,0090	0,0110	0,0150	0,0190	0,0260	0,0310	0,0500
P.1.2	28	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
P.1.3	25	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
P.1.4	23	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
P.1.5	20	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
P.2.1	20	0,0050	0,0070	0,0090	0,0110	0,0150	0,0200	0,0350
P.2.2	14	0,0040	0,0050	0,0070	0,0080	0,0120	0,0160	0,0290
P.2.3	12	0,0040	0,0050	0,0070	0,0080	0,0120	0,0160	0,0290
P.2.4	11	0,0030	0,0040	0,0050	0,0070	0,0090	0,0130	0,0240
P.3.1	15	0,0050	0,0070	0,0090	0,0110	0,0150	0,0200	0,0350
P.3.2	11	0,0040	0,0050	0,0070	0,0080	0,0120	0,0160	0,0290
P.3.3	10	0,0040	0,0050	0,0070	0,0080	0,0120	0,0160	0,0290
P.4.1	11	0,0040	0,0050	0,0070	0,0080	0,0120	0,0160	0,0290
P.4.2	10	0,0030	0,0040	0,0050	0,0070	0,0090	0,0130	0,0240
M.1.1	9	0,0040	0,0050	0,0070	0,0080	0,0120	0,0160	0,0290
M.2.1	8	0,0040	0,0050	0,0070	0,0080	0,0120	0,0160	0,0290
M.3.1								
K.1.1	35	0,0090	0,0110	0,0150	0,0190	0,0260	0,0310	0,0500
K.1.2	28	0,0090	0,0110	0,0150	0,0190	0,0260	0,0310	0,0500
K.2.1	30	0,0090	0,0110	0,0150	0,0190	0,0260	0,0310	0,0500
K.2.2	23	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
K.3.1	30	0,0090	0,0110	0,0150	0,0190	0,0260	0,0310	0,0500
K.3.2	23	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
N.1.1	70	0,0120	0,0140	0,0190	0,0240	0,0340	0,0380	0,0600
N.1.2	70	0,0120	0,0140	0,0190	0,0240	0,0340	0,0380	0,0600
N.2.1	59	0,0090	0,0110	0,0150	0,0190	0,0260	0,0310	0,0500
N.2.2	47	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
N.2.3	41	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
N.3.1	70	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
N.3.2	42	0,0050	0,0070	0,0090	0,0110	0,0150	0,0200	0,0350
N.3.3	56	0,0050	0,0070	0,0090	0,0110	0,0150	0,0200	0,0350
N.4.1	42	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
S.1.1	7	0,0030	0,0040	0,0050	0,0070	0,0090	0,0130	0,0240
S.1.2	6	0,0020	0,0030	0,0040	0,0050	0,0070	0,0100	0,0200
S.2.1	6	0,0030	0,0040	0,0050	0,0070	0,0090	0,0130	0,0240
S.2.2	4	0,0020	0,0030	0,0040	0,0050	0,0070	0,0100	0,0200
S.2.3	4	0,0020	0,0030	0,0040	0,0050	0,0070	0,0100	0,0200
S.3.1	6	0,0030	0,0040	0,0050	0,0070	0,0090	0,0130	0,0240
S.3.2	4	0,0020	0,0030	0,0040	0,0050	0,0070	0,0100	0,0200
S.3.3								
H.1.1								
H.1.2								
H.1.3								
H.1.4								
H.2.1								
H.3.1								
O.1.1	23	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
O.1.2	23	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
O.2.1	23	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
O.2.2	23	0,0070	0,0090	0,0110	0,0140	0,0200	0,0240	0,0410
O.3.1								

The cutting data depends extremely on the external conditions, e.g. stability of the tool and tool clamping, material and machine type.
The indicated values are possible cutting data which have to be increased or reduced according to the application conditions.

Feed rate guide values for HSS twist drills

Factor F	Drill diameter in mm															
	0,5	1	2	3	4	5	6	8	10	12	14	16	18	20	26	30
	Feed rate f in mm/rev.															
1	0,004	0,006	0,02	0,03	0,04	0,04	0,05	0,06	0,08	0,08	0,09	0,1	0,12	0,15	0,18	0,19
2	0,006	0,008	0,02	0,03	0,05	0,05	0,05	0,08	0,1	0,1	0,1	0,12	0,12	0,2	0,2	0,2
3	0,007	0,012	0,03	0,05	0,06	0,069	0,08	0,1	0,12	0,13	0,13	0,16	0,16	0,25	0,25	0,25
4	0,008	0,014	0,04	0,06	0,08	0,09	0,1	0,14	0,16	0,16	0,16	0,2	0,2	0,3	0,3	0,3
5	0,01	0,016	0,06	0,08	0,1	0,12	0,13	0,16	0,2	0,2	0,22	0,25	0,25	0,4	0,4	0,4
6	0,012	0,018	0,06	0,1	0,12	0,14	0,16	0,2	0,25	0,25	0,25	0,3	0,3	0,5	0,5	0,5
7	0,014	0,02	0,08	0,13	0,16	0,18	0,2	0,25	0,35	0,35	0,35	0,4	0,4	0,6	0,6	0,6
8	0,016	0,023	0,1	0,16	0,2	0,2	0,25	0,35	0,4	0,4	0,4	0,4	0,5	0,6	0,7	0,8
9	0,019	0,025	0,13	0,17	0,2	0,23	0,32	0,4	0,4	0,5	0,5	0,5	0,6	0,8	0,9	0,9

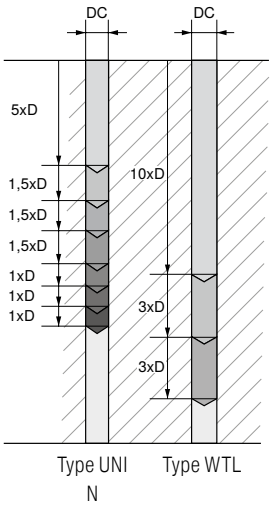
All the indicated data are guide values only and represent average values.

Speed for HSS drills

v_c m/min	Drill diameter in mm															
	2,0	2,5	3,15	4,0	5,0	6,3	8,0	10,0	12,5	16,0	20,0	25,0	31,5	40,0	50,0	63,0	80,0
	Speed in U/min																
80	12500	10000	8000	6300	5000	4000	3200	2500	2000	1600	1250	1000	800	630	500	400	320
63	10000	8000	6300	5000	4000	3200	2500	2000	1600	1250	1000	800	630	500	400	320	250
50	8000	6300	5000	4000	3200	2500	2000	1600	1250	1000	800	630	500	400	320	250	200
40	6300	5000	4000	3200	2500	2000	1600	1250	1000	800	630	500	400	320	250	200	160
32	5000	4000	3200	2500	2000	1600	1250	1000	800	630	500	400	320	250	200	160	125
25	4000	3200	2500	2000	1600	1250	1000	800	630	500	400	320	250	200	160	125	100
20	3200	2500	2000	1600	1250	1000	800	630	500	400	320	250	200	160	125	100	80
16	2500	2000	1600	1250	1000	800	630	500	400	320	250	200	160	125	100	80	63
12	2000	1600	1250	1000	800	630	500	400	320	250	200	160	125	100	80	63	50
10	1600	1250	1000	800	630	500	400	320	250	200	160	125	100	80	63	50	40
8	1250	1000	800	630	500	400	320	250	200	160	125	100	80	63	50	40	32
6	1000	800	630	500	400	320	250	200	160	125	100	80	63	50	40	32	25
5	800	630	500	400	320	250	200	160	125	100	80	63	50	40	32	25	20
4	630	500	400	320	250	200	160	125	100	80	63	50	40	32	25	20	16
3	500	400	320	250	200	160	125	100	80	63	50	40	32	25	20	16	12

Peck frequency for deep drilling

- Drill must be sufficiently cooled
- By use of a drill with flat chip gullet profile (type WTL) chip transport is substantially improved
- For extremely deep drilling or when machining horizontally through coolant drills with internal coolant supply are recommended



Solid carbide drills overview

	Product name	Tool type	Length	Diameter in mm Ø DC	Steel P	Stainless steel M	Cast iron K	Non-ferrous metals N	Heat-resistant S	Tempered steel H	Non metal materials O	coated ■	uncoated □	WNT \ Performance	WNT \ Standard
3xD without thro' coolant															
	WTX	UNI	≤ 3xD	3–12	●		●				○	■		16	
	WPC	UNI	≤ 3xD	1–12	●		●					■			17
3xD with thro' coolant															
	WTX	UNI	≤ 3xD	3–12	●		●				○	■		18	
	WTX	Ti	≤ 3xD	3–12	○	●			●			■		19	
	WPC	UNI	≤ 3xD	1–12	●		●					■			20
	WTX	180	≤ 3xD	3–12	●	●	●					■		21	
5xD without thro' coolant															
	WTX	UNI	≤ 5xD	3–12	●		●				○	■		22	
	WPC	UNI	≤ 5xD	3–12	●		●					■			23
5xD with thro' coolant															
	WTX	UNI	≤ 5xD	3–12	●		●				○	■		24	
	WTX	Ti	≤ 5xD	3–12	○	●			●			■		25	
	WTX	AL	≤ 5xD	2,5–12				●				■		26	
	WPC	UNI	≤ 5xD	1–12	●		●					■			27
	WTX	180	≤ 5xD	3–12	●	●	●					■		28	

Further dimensions and drills can be found in our → **main catalogue in Chapter 2 Solid carbide drills**

1

Solid carbide drills overview

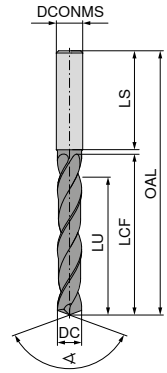
Product name	Tool type	Length	Diameter in mm Ø DC	Steel P	Stainless steel M	Cast iron K	Non-ferrous metals N	Heat-resistant S	Tempered steel H	Non metal materials O	coated ■	uncoated □	WNT \ Performance	WNT \ Standard
5xD micro drill without thro' coolant														
	WTX	MINI	≤ 5xD	0,1–2,9	○		●	●	○			■	29	
					HA									
5xD micro drill with thro' coolant														
	WTX	MICRO	≤ 5xD	0,8–2,9	●	●	●		○			■	30	
					HA									
8xD micro drill with thro' coolant														
	WTX	MICRO	≤ 8xD	0,8–2,9	●	●	●		○			■	30	
					HA									
12xD micro drill with thro‘ coolant														
	WTX	MICRO	≤ 12xD	0,8–2,9	●	●	●		○			■	31	
					HA									
NC Spot Drill														
	NC–A	◁ 90° ◁ 120°	2–12	○		●	●					□		32
				HA										

Further dimensions and drills can be found in our → **main catalogue in Chapter 2 Solid carbide drills**

WTX – High Performance Drill, DIN 6537

≤ 3xD

NOF = 2



UNI

DPX74S

DRAGONSKIN

Solid carbide

11 777 ...

DC m7 mm	DCONMS h6 mm	OAL mm	LCF mm	LU mm	LS mm	11 777 ...
3,00	6	62	20	14	36	03000
3,10	6	62	20	14	36	03100
3,15	6	62	20	14	36	03150
3,20	6	62	20	14	36	03200
3,22	6	62	20	14	36	03220
3,25	6	62	20	14	36	03250
3,30	6	62	20	14	36	03300
3,40	6	62	20	14	36	03400
3,50	6	62	20	14	36	03500
3,60	6	62	20	14	36	03600
3,70	6	62	20	14	36	03700
3,80	6	66	24	17	36	03800
3,85	6	66	24	17	36	03850
3,90	6	66	24	17	36	03900
4,00	6	66	24	17	36	04000
4,10	6	66	24	17	36	04100
4,20	6	66	24	17	36	04200
4,25	6	66	24	17	36	04250
4,30	6	66	24	17	36	04300
4,35	6	66	24	17	36	04350
4,40	6	66	24	17	36	04400
4,45	6	66	24	17	36	04450
4,50	6	66	24	17	36	04500
4,60	6	66	24	17	36	04600
4,65	6	66	24	17	36	04650
4,70	6	66	24	17	36	04700
4,80	6	66	28	20	36	04800
4,90	6	66	28	20	36	04900
4,95	6	66	28	20	36	04950
5,00	6	66	28	20	36	05000
5,05	6	66	28	20	36	05050
5,10	6	66	28	20	36	05100
5,20	6	66	28	20	36	05200
5,30	6	66	28	20	36	05300
5,40	6	66	28	20	36	05400
5,50	6	66	28	20	36	05500
5,55	6	66	28	20	36	05550
5,60	6	66	28	20	36	05600
5,70	6	66	28	20	36	05700
5,75	6	66	28	20	36	05750
5,80	6	66	28	20	36	05800
5,90	6	66	28	20	36	05900
5,95	6	66	28	20	36	05950
6,00	6	66	28	20	36	06000
6,10	8	79	34	24	36	06100
6,20	8	79	34	24	36	06200
6,30	8	79	34	24	36	06300
6,40	8	79	34	24	36	06400
6,50	8	79	34	24	36	06500
6,60	8	79	34	24	36	06600
6,70	8	79	34	24	36	06700

11 777 ...

DC m7 mm	DCONMS h6 mm	OAL mm	LCF mm	LU mm	LS mm	11 777 ...
6,80	8	79	34	24	36	06800
6,90	8	79	34	24	36	06900
7,00	8	79	34	24	36	07000
7,10	8	79	41	29	36	07100
7,20	8	79	41	29	36	07200
7,30	8	79	41	29	36	07300
7,40	8	79	41	29	36	07400
7,45	8	79	41	29	36	07450
7,50	8	79	41	29	36	07500
7,60	8	79	41	29	36	07600
7,70	8	79	41	29	36	07700
7,80	8	79	41	29	36	07800
7,90	8	79	41	29	36	07900
8,00	8	79	41	29	36	08000
8,10	10	89	47	35	40	08100
8,20	10	89	47	35	40	08200
8,30	10	89	47	35	40	08300
8,40	10	89	47	35	40	08400
8,50	10	89	47	35	40	08500
8,60	10	89	47	35	40	08600
8,70	10	89	47	35	40	08700
8,80	10	89	47	35	40	08800
8,90	10	89	47	35	40	08900
9,00	10	89	47	35	40	09000
9,10	10	89	47	35	40	09100
9,20	10	89	47	35	40	09200
9,30	10	89	47	35	40	09300
9,35	10	89	47	35	40	09350
9,40	10	89	47	35	40	09400
9,45	10	89	47	35	40	09450
9,50	10	89	47	35	40	09500
9,60	10	89	47	35	40	09600
9,70	10	89	47	35	40	09700
9,80	10	89	47	35	40	09800
9,90	10	89	47	35	40	09900
10,00	10	89	47	35	40	10000
10,10	12	102	55	40	45	10100
10,20	12	102	55	40	45	10200
10,30	12	102	55	40	45	10300
10,40	12	102	55	40	45	10400
10,50	12	102	55	40	45	10500
10,55	12	102	55	40	45	10550
10,60	12	102	55	40	45	10600
10,70	12	102	55	40	45	10700
10,75	12	102	55	40	45	10750
10,80	12	102	55	40	45	10800
10,90	12	102	55	40	45	10900
11,00	12	102	55	40	45	11000
11,10	12	102	55	40	45	11100
11,20	12	102	55	40	45	11200
11,25	12	102	55	40	45	11250
11,30	12	102	55	40	45	11300
11,35	12	102	55	40	45	11350
11,40	12	102	55	40	45	11400
11,45	12	102	55	40	45	11450
11,50	12	102	55	40	45	11500
11,60	12	102	55	40	45	11600
11,70	12	102	55	40	45	11700
11,80	12	102	55	40	45	11800
11,90	12	102	55	40	45	11900
12,00	12	102	55	40	45	12000

P	●
M	
K	●
N	
S	
H	○
O	

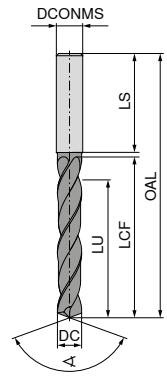
→ v_c Page 34

Further dimensions and drills can be found in our
→ **main catalogue in Chapter 2 Solid carbide drills**

WPC – High Performance Drill, DIN 6537

≤ 3xD

NOF = 2



UNI

TiAlN

HA

140°

Solid carbide

11 600 ...

DC m7 mm	DCONMS h6 mm	OAL mm	LCF mm	LU mm	LS mm	
1,00	4	45	5,0	4,5	32,0	010
1,10	4	45	5,5	5,0	31,5	011
1,20	4	45	6,0	5,4	31,0	012
1,30	4	45	6,5	5,9	31,5	013
1,40	4	45	7,0	6,3	30,0	014
1,50	4	50	7,5	6,8	35,0	015
1,60	4	50	8,0	7,2	34,5	016
1,70	4	50	8,5	7,7	34,0	017
1,80	4	50	9,0	8,1	33,5	018
1,90	4	50	9,5	8,6	33,0	019
2,00	6	58	14,0	11,0	36,0	020
2,10	6	58	14,0	11,0	36,0	021
2,20	6	58	14,0	11,0	36,0	022
2,30	6	58	14,0	11,0	36,0	023
2,40	6	58	14,0	11,0	36,0	024
2,50	6	58	14,0	11,0	36,0	025
2,60	6	58	14,0	11,0	36,0	026
2,70	6	58	14,0	11,0	36,0	027
2,80	6	58	14,0	11,0	36,0	028
2,90	6	58	14,0	11,0	36,0	029
3,00	6	62	20,0	14,0	36,0	030
3,10	6	62	20,0	14,0	36,0	031
3,20	6	62	20,0	14,0	36,0	032
3,30	6	62	20,0	14,0	36,0	033
3,40	6	62	20,0	14,0	36,0	034
3,50	6	62	20,0	14,0	36,0	035
3,60	6	62	20,0	14,0	36,0	036
3,70	6	62	20,0	14,0	36,0	037
3,80	6	66	24,0	17,0	36,0	038
3,90	6	66	24,0	17,0	36,0	039
4,00	6	66	24,0	17,0	36,0	040
4,10	6	66	24,0	17,0	36,0	041
4,20	6	66	24,0	17,0	36,0	042
4,30	6	66	24,0	17,0	36,0	043
4,40	6	66	24,0	17,0	36,0	044
4,50	6	66	24,0	17,0	36,0	045
4,60	6	66	24,0	17,0	36,0	046
4,65	6	66	24,0	17,0	36,0	900
4,70	6	66	24,0	17,0	36,0	047
4,80	6	66	28,0	20,0	36,0	048
4,90	6	66	28,0	20,0	36,0	049
5,00	6	66	28,0	20,0	36,0	050
5,10	6	66	28,0	20,0	36,0	051
5,20	6	66	28,0	20,0	36,0	052
5,30	6	66	28,0	20,0	36,0	053
5,40	6	66	28,0	20,0	36,0	054
5,50	6	66	28,0	20,0	36,0	055
5,55	6	66	28,0	20,0	36,0	902
5,60	6	66	28,0	20,0	36,0	056
5,70	6	66	28,0	20,0	36,0	057
5,80	6	66	28,0	20,0	36,0	058
5,90	6	66	28,0	20,0	36,0	059
6,00	6	66	28,0	20,0	36,0	060
6,10	8	79	34,0	24,0	36,0	061

11 600 ...

DC m7 mm	DCONMS h6 mm	OAL mm	LCF mm	LU mm	LS mm	
6,20	8	79	34,0	24,0	36,0	062
6,30	8	79	34,0	24,0	36,0	063
6,40	8	79	34,0	24,0	36,0	064
6,50	8	79	34,0	24,0	36,0	065
6,60	8	79	34,0	24,0	36,0	066
6,70	8	79	34,0	24,0	36,0	067
6,80	8	79	34,0	24,0	36,0	068
6,90	8	79	34,0	24,0	36,0	069
7,00	8	79	34,0	24,0	36,0	070
7,10	8	79	41,0	29,0	36,0	071
7,20	8	79	41,0	29,0	36,0	072
7,30	8	79	41,0	29,0	36,0	073
7,40	8	79	41,0	29,0	36,0	074
7,50	8	79	41,0	29,0	36,0	075
7,55	8	79	41,0	29,0	36,0	975
7,60	8	79	41,0	29,0	36,0	076
7,70	8	79	41,0	29,0	36,0	077
7,80	8	79	41,0	29,0	36,0	078
7,90	8	79	41,0	29,0	36,0	079
8,00	8	79	41,0	29,0	36,0	080
8,10	10	89	47,0	35,0	40,0	081
8,20	10	89	47,0	35,0	40,0	082
8,30	10	89	47,0	35,0	40,0	083
8,40	10	89	47,0	35,0	40,0	084
8,50	10	89	47,0	35,0	40,0	085
8,60	10	89	47,0	35,0	40,0	086
8,70	10	89	47,0	35,0	40,0	087
8,80	10	89	47,0	35,0	40,0	088
8,90	10	89	47,0	35,0	40,0	089
9,00	10	89	47,0	35,0	40,0	090
9,10	10	89	47,0	35,0	40,0	091
9,20	10	89	47,0	35,0	40,0	092
9,25	10	89	47,0	35,0	40,0	925
9,30	10	89	47,0	35,0	40,0	093
9,40	10	89	47,0	35,0	40,0	094
9,50	10	89	47,0	35,0	40,0	095
9,60	10	89	47,0	35,0	40,0	096
9,70	10	89	47,0	35,0	40,0	097
9,80	10	89	47,0	35,0	40,0	098
9,90	10	89	47,0	35,0	40,0	099
10,00	10	89	47,0	35,0	40,0	100
10,10	12	102	55,0	40,0	45,0	101
10,20	12	102	55,0	40,0	45,0	102
10,30	12	102	55,0	40,0	45,0	103
10,40	12	102	55,0	40,0	45,0	104
10,50	12	102	55,0	40,0	45,0	105
10,60	12	102	55,0	40,0	45,0	106
10,70	12	102	55,0	40,0	45,0	107
10,80	12	102	55,0	40,0	45,0	108
10,90	12	102	55,0	40,0	45,0	109
11,00	12	102	55,0	40,0	45,0	110
11,10	12	102	55,0	40,0	45,0	111
11,20	12	102	55,0	40,0	45,0	112
11,30	12	102	55,0	40,0	45,0	113
11,40	12	102	55,0	40,0	45,0	114
11,50	12	102	55,0	40,0	45,0	115
11,60	12	102	55,0	40,0	45,0	116
11,70	12	102	55,0	40,0	45,0	117
11,80	12	102	55,0	40,0	45,0	118
11,90	12	102	55,0	40,0	45,0	119
12,00	12	102	55,0	40,0	45,0	120

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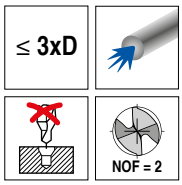
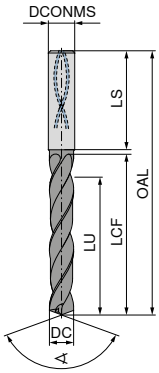
→ v_c Page 40

Further dimensions and drills can be found in our
→ **main catalogue in Chapter 2 Solid carbide drills**

WTX – High Performance Drill, DIN 6537





UNI

DPX74S

DRAGONSKIN

Solid carbide

11 780 ...

DC m7 mm	DCONMS h6 mm	OAL mm	LCF mm	LU mm	LS mm	
3,00	6	62	20	14	36	03000
3,10	6	62	20	14	36	03100
3,15	6	62	20	14	36	03150
3,20	6	62	20	14	36	03200
3,22	6	62	20	14	36	03220
3,25	6	62	20	14	36	03250
3,30	6	62	20	14	36	03300
3,40	6	62	20	14	36	03400
3,50	6	62	20	14	36	03500
3,60	6	62	20	14	36	03600
3,70	6	62	20	14	36	03700
3,80	6	66	24	17	36	03800
3,85	6	66	24	17	36	03850
3,90	6	66	24	17	36	03900
4,00	6	66	24	17	36	04000
4,10	6	66	24	17	36	04100
4,20	6	66	24	17	36	04200
4,25	6	66	24	17	36	04250
4,30	6	66	24	17	36	04300
4,35	6	66	24	17	36	04350
4,40	6	66	24	17	36	04400
4,45	6	66	24	17	36	04450
4,50	6	66	24	17	36	04500
4,60	6	66	24	17	36	04600
4,65	6	66	24	17	36	04650
4,70	6	66	24	17	36	04700
4,80	6	66	28	20	36	04800
4,90	6	66	28	20	36	04900
4,95	6	66	28	20	36	04950
5,00	6	66	28	20	36	05000
5,05	6	66	28	20	36	05050
5,10	6	66	28	20	36	05100
5,20	6	66	28	20	36	05200
5,30	6	66	28	20	36	05300
5,40	6	66	28	20	36	05400
5,50	6	66	28	20	36	05500
5,55	6	66	28	20	36	05550
5,60	6	66	28	20	36	05600
5,70	6	66	28	20	36	05700
5,75	6	66	28	20	36	05750
5,80	6	66	28	20	36	05800
5,90	6	66	28	20	36	05900
5,95	6	66	28	20	36	05950
6,00	6	66	28	20	36	06000
6,10	8	79	34	24	36	06100
6,20	8	79	34	24	36	06200
6,30	8	79	34	24	36	06300
6,40	8	79	34	24	36	06400
6,50	8	79	34	24	36	06500
6,60	8	79	34	24	36	06600
6,70	8	79	34	24	36	06700

11 780 ...

DC m7 mm	DCONMS h6 mm	OAL mm	LCF mm	LU mm	LS mm	
6,80	8	79	34	24	36	06800
6,90	8	79	34	24	36	06900
7,00	8	79	34	24	36	07000
7,10	8	79	41	29	36	07100
7,20	8	79	41	29	36	07200
7,30	8	79	41	29	36	07300
7,40	8	79	41	29	36	07400
7,45	8	79	41	29	36	07450
7,50	8	79	41	29	36	07500
7,60	8	79	41	29	36	07600
7,70	8	79	41	29	36	07700
7,80	8	79	41	29	36	07800
7,90	8	79	41	29	36	07900
8,00	8	79	41	29	36	08000
8,10	10	89	47	35	40	08100
8,20	10	89	47	35	40	08200
8,30	10	89	47	35	40	08300
8,40	10	89	47	35	40	08400
8,50	10	89	47	35	40	08500
8,60	10	89	47	35	40	08600
8,70	10	89	47	35	40	08700
8,80	10	89	47	35	40	08800
8,90	10	89	47	35	40	08900
9,00	10	89	47	35	40	09000
9,10	10	89	47	35	40	09100
9,20	10	89	47	35	40	09200
9,30	10	89	47	35	40	09300
9,35	10	89	47	35	40	09350
9,40	10	89	47	35	40	09400
9,45	10	89	47	35	40	09450
9,50	10	89	47	35	40	09500
9,60	10	89	47	35	40	09600
9,70	10	89	47	35	40	09700
9,80	10	89	47	35	40	09800
9,90	10	89	47	35	40	09900
10,00	10	89	47	35	40	10000
10,10	12	102	55	40	45	10100
10,20	12	102	55	40	45	10200
10,30	12	102	55	40	45	10300
10,40	12	102	55	40	45	10400
10,50	12	102	55	40	45	10500
10,55	12	102	55	40	45	10550
10,60	12	102	55	40	45	10600
10,70	12	102	55	40	45	10700
10,75	12	102	55	40	45	10750
10,80	12	102	55	40	45	10800
10,90	12	102	55	40	45	10900
11,00	12	102	55	40	45	11000
11,10	12	102	55	40	45	11100
11,20	12	102	55	40	45	11200
11,25	12	102	55	40	45	11250
11,30	12	102	55	40	45	11300
11,35	12	102	55	40	45	11350
11,40	12	102	55	40	45	11400
11,45	12	102	55	40	45	11450
11,50	12	102	55	40	45	11500
11,60	12	102	55	40	45	11600
11,70	12	102	55	40	45	11700
11,80	12	102	55	40	45	11800
11,90	12	102	55	40	45	11900
12,00	12	102	55	40	45	12000

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→ v_c Page 34

Further dimensions and drills can be found in our
→ **main catalogue in Chapter 2 Solid carbide drills**

WTX – High-performance drill, DIN 6537

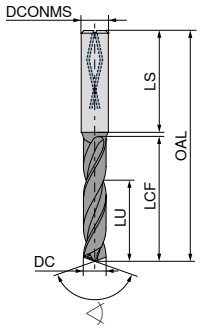
≤ 3xD

NOF = 2

Ti

DPA54

DRAGONSKIN



140°

Solid carbide

10 786 ...

DC m7 mm	DCONMS h6 mm	OAL mm	LCF mm	LU mm	LS mm	
3,00	6	62	20	14	36	030
3,10	6	62	20	14	36	031
3,20	6	62	20	14	36	032
3,30	6	62	20	14	36	033
3,40	6	62	20	14	36	034
3,50	6	62	20	14	36	035
3,60	6	62	20	14	36	036
3,70	6	62	20	14	36	037
3,80	6	66	24	17	36	038
3,90	6	66	24	17	36	039
3,97	6	66	24	17	36	900
4,00	6	66	24	17	36	040
4,10	6	66	24	17	36	041
4,20	6	66	24	17	36	042
4,23	6	66	24	17	36	901
4,30	6	66	24	17	36	043
4,40	6	66	24	17	36	044
4,50	6	66	24	17	36	045
4,60	6	66	24	17	36	046
4,70	6	66	24	17	36	047
4,80	6	66	28	20	36	048
4,90	6	66	28	20	36	049
5,00	6	66	28	20	36	050
5,10	6	66	28	20	36	051
5,20	6	66	28	20	36	052
5,30	6	66	28	20	36	053
5,40	6	66	28	20	36	054
5,50	6	66	28	20	36	055
5,56	6	66	28	20	36	902
5,60	6	66	28	20	36	056
5,70	6	66	28	20	36	057
5,80	6	66	28	20	36	058
5,90	6	66	28	20	36	059
6,00	6	66	28	20	36	060
6,10	8	79	34	24	36	061
6,20	8	79	34	24	36	062
6,30	8	79	34	24	36	063
6,35	8	79	34	24	36	903
6,40	8	79	34	24	36	064
6,50	8	79	34	24	36	065
6,60	8	79	34	24	36	066
6,70	8	79	34	24	36	067
6,80	8	79	34	24	36	068
6,90	8	79	34	24	36	069
7,00	8	79	34	24	36	070
7,10	8	79	41	29	36	071
7,20	8	79	41	29	36	072
7,30	8	79	41	29	36	073
7,40	8	79	41	29	36	074
7,50	8	79	41	29	36	075
7,60	8	79	41	29	36	076

10 786 ...

DC m7 mm	DCONMS h6 mm	OAL mm	LCF mm	LU mm	LS mm	
7,70	8	79	41	29	36	077
7,80	8	79	41	29	36	078
7,90	8	79	41	29	36	079
7,94	8	79	41	29	36	904
8,00	8	79	41	29	36	080
8,10	10	89	47	35	40	081
8,20	10	89	47	35	40	082
8,30	10	89	47	35	40	083
8,40	10	89	47	35	40	084
8,50	10	89	47	35	40	085
8,60	10	89	47	35	40	086
8,70	10	89	47	35	40	087
8,80	10	89	47	35	40	088
8,90	10	89	47	35	40	089
9,00	10	89	47	35	40	090
9,10	10	89	47	35	40	091
9,20	10	89	47	35	40	092
9,30	10	89	47	35	40	093
9,40	10	89	47	35	40	094
9,50	10	89	47	35	40	095
9,53	10	89	47	35	40	905
9,60	10	89	47	35	40	096
9,70	10	89	47	35	40	097
9,80	10	89	47	35	40	098
9,90	10	89	47	35	40	099
10,00	10	89	47	35	40	100
10,10	12	102	55	40	45	101
10,20	12	102	55	40	45	102
10,30	12	102	55	40	45	103
10,40	12	102	55	40	45	104
10,50	12	102	55	40	45	105
10,60	12	102	55	40	45	106
10,70	12	102	55	40	45	107
10,80	12	102	55	40	45	108
10,90	12	102	55	40	45	109
11,00	12	102	55	40	45	110
11,10	12	102	55	40	45	111
11,11	12	102	55	40	45	906
11,20	12	102	55	40	45	112
11,30	12	102	55	40	45	113
11,40	12	102	55	40	45	114
11,50	12	102	55	40	45	115
11,60	12	102	55	40	45	116
11,70	12	102	55	40	45	117
11,80	12	102	55	40	45	118
11,90	12	102	55	40	45	119
12,00	12	102	55	40	45	120

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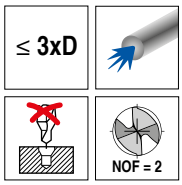
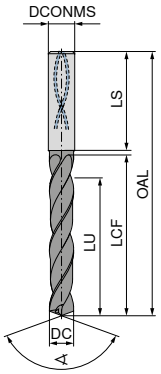
→ v_c Page 35

Further dimensions and drills can be found in our
→ **main catalogue in Chapter 2 Solid carbide drills**

WPC – High Performance Drill, DIN 6537





UNI

TiAlN

140°
Solid carbide

11 603 ...

DC m7 mm	DCONMS h6 mm	OAL mm	LCF mm	LU mm	LS mm	
1,00	4	45	6,0	4,5	32,0	010
1,10	4	45	6,6	5,0	31,5	011
1,20	4	45	7,2	5,4	31,0	012
1,30	4	45	7,8	5,9	31,5	013
1,40	4	45	8,4	6,3	30,0	014
1,50	4	50	9,0	6,8	35,0	015
1,60	4	50	9,6	7,2	34,5	016
1,70	4	50	10,2	7,7	34,0	017
1,80	4	50	10,8	8,1	33,5	018
1,90	4	50	11,4	8,6	33,0	019
2,00	4	50	12,0	9,0	33,0	020
2,10	4	55	12,6	9,5	37,5	021
2,20	4	55	13,2	9,9	37,0	022
2,30	4	55	13,8	10,4	36,5	023
2,40	4	55	14,4	10,8	36,0	024
2,50	4	55	15,0	11,3	35,5	025
2,60	4	55	15,6	11,7	35,5	026
2,70	4	55	16,2	12,2	35,0	027
2,80	4	55	16,8	12,6	34,0	028
2,90	4	55	17,4	13,1	34,0	029
3,00	6	62	20,0	14,0	36,0	030
3,10	6	62	20,0	14,0	36,0	031
3,20	6	62	20,0	14,0	36,0	032
3,25	6	62	20,0	14,0	36,0	890
3,30	6	62	20,0	14,0	36,0	033
3,40	6	62	20,0	14,0	36,0	034
3,50	6	62	20,0	14,0	36,0	035
3,60	6	62	20,0	14,0	36,0	036
3,70	6	62	20,0	14,0	36,0	037
3,80	6	66	24,0	17,0	36,0	038
3,90	6	66	24,0	17,0	36,0	039
4,00	6	66	24,0	17,0	36,0	040
4,10	6	66	24,0	17,0	36,0	041
4,20	6	66	24,0	17,0	36,0	042
4,30	6	66	24,0	17,0	36,0	043
4,40	6	66	24,0	17,0	36,0	044
4,50	6	66	24,0	17,0	36,0	045
4,60	6	66	24,0	17,0	36,0	046
4,65	6	66	24,0	17,0	36,0	900
4,70	6	66	24,0	17,0	36,0	047
4,80	6	66	28,0	20,0	36,0	048
4,90	6	66	28,0	20,0	36,0	049
5,00	6	66	28,0	20,0	36,0	050
5,10	6	66	28,0	20,0	36,0	051
5,20	6	66	28,0	20,0	36,0	052
5,30	6	66	28,0	20,0	36,0	053
5,40	6	66	28,0	20,0	36,0	054
5,50	6	66	28,0	20,0	36,0	055
5,55	6	66	28,0	20,0	36,0	902
5,60	6	66	28,0	20,0	36,0	056
5,70	6	66	28,0	20,0	36,0	057
5,80	6	66	28,0	20,0	36,0	058
5,90	6	66	28,0	20,0	36,0	059
6,00	6	66	28,0	20,0	36,0	060
6,10	8	79	34,0	24,0	36,0	061
6,20	8	79	34,0	24,0	36,0	062

11 603 ...

DC m7 mm	DCONMS h6 mm	OAL mm	LCF mm	LU mm	LS mm	
6,30	8	79	34,0	24,0	36,0	063
6,40	8	79	34,0	24,0	36,0	064
6,50	8	79	34,0	24,0	36,0	065
6,60	8	79	34,0	24,0	36,0	066
6,70	8	79	34,0	24,0	36,0	067
6,80	8	79	34,0	24,0	36,0	068
6,90	8	79	34,0	24,0	36,0	069
7,00	8	79	34,0	24,0	36,0	070
7,10	8	79	41,0	29,0	36,0	071
7,20	8	79	41,0	29,0	36,0	072
7,30	8	79	41,0	29,0	36,0	073
7,40	8	79	41,0	29,0	36,0	074
7,45	8	79	41,0	29,0	36,0	924
7,50	8	79	41,0	29,0	36,0	075
7,55	8	79	41,0	29,0	36,0	975
7,60	8	79	41,0	29,0	36,0	076
7,70	8	79	41,0	29,0	36,0	077
7,80	8	79	41,0	29,0	36,0	078
7,90	8	79	41,0	29,0	36,0	079
8,00	8	79	41,0	29,0	36,0	080
8,10	10	89	47,0	35,0	40,0	081
8,20	10	89	47,0	35,0	40,0	082
8,30	10	89	47,0	35,0	40,0	083
8,40	10	89	47,0	35,0	40,0	084
8,50	10	89	47,0	35,0	40,0	085
8,60	10	89	47,0	35,0	40,0	086
8,70	10	89	47,0	35,0	40,0	087
8,80	10	89	47,0	35,0	40,0	088
8,90	10	89	47,0	35,0	40,0	089
9,00	10	89	47,0	35,0	40,0	090
9,10	10	89	47,0	35,0	40,0	091
9,20	10	89	47,0	35,0	40,0	092
9,25	10	89	47,0	35,0	40,0	925
9,30	10	89	47,0	35,0	40,0	093
9,35	10	89	47,0	35,0	40,0	930
9,40	10	89	47,0	35,0	40,0	094
9,50	10	89	47,0	35,0	40,0	095
9,60	10	89	47,0	35,0	40,0	096
9,70	10	89	47,0	35,0	40,0	097
9,80	10	89	47,0	35,0	40,0	098
9,90	10	89	47,0	35,0	40,0	099
10,00	10	89	47,0	35,0	40,0	100
10,10	12	102	55,0	40,0	45,0	101
10,20	12	102	55,0	40,0	45,0	102
10,30	12	102	55,0	40,0	45,0	103
10,40	12	102	55,0	40,0	45,0	104
10,50	12	102	55,0	40,0	45,0	105
10,60	12	102	55,0	40,0	45,0	106
10,70	12	102	55,0	40,0	45,0	107
10,75	12	102	55,0	40,0	45,0	904
10,80	12	102	55,0	40,0	45,0	108
10,90	12	102	55,0	40,0	45,0	109
11,00	12	102	55,0	40,0	45,0	110
11,10	12	102	55,0	40,0	45,0	111
11,20	12	102	55,0	40,0	45,0	112
11,25	12	102	55,0	40,0	45,0	912
11,30	12	102	55,0	40,0	45,0	113
11,40	12	102	55,0	40,0	45,0	114
11,50	12	102	55,0	40,0	45,0	115
11,60	12	102	55,0	40,0	45,0	116
11,70	12	102	55,0	40,0	45,0	117
11,80	12	102	55,0	40,0	45,0	118
11,90	12	102	55,0	40,0	45,0	119
12,00	12	102	55,0	40,0	45,0	120

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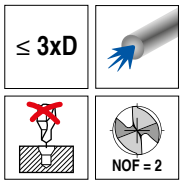
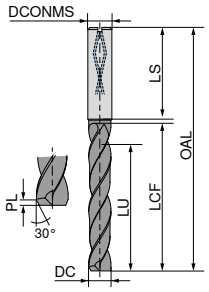
→ v_c Page 40

Further dimensions and drills can be found in our
→ **main catalogue in Chapter 2 Solid carbide drills**

WTX – High Performance Drill, DIN 6537

- ▲ universal application
- ▲ four guidance lands
- ▲ polished chip flutes
- ▲ Type ALU 3xD on request
- ▲ PL = corner chamfers





180

Ti800

180°
Solid carbide

10 720 ...

DC m7 mm	DCONMS h6 mm	OAL mm	LCF mm	LU mm	LS mm	PL mm	
3,00	6	62	20	14	36	0,15	030
3,10	6	62	20	14	36	0,16	031
3,20	6	62	20	14	36	0,16	032
3,30	6	62	20	14	36	0,17	033
3,40	6	62	20	14	36	0,17	034
3,50	6	62	20	14	36	0,18	035
3,60	6	62	20	14	36	0,18	036
3,70	6	62	20	14	36	0,19	037
3,80	6	66	24	17	36	0,19	038
3,90	6	66	24	17	36	0,20	039
4,00	6	66	24	17	36	0,20	040
4,10	6	66	24	17	36	0,21	041
4,20	6	66	24	17	36	0,21	042
4,30	6	66	24	17	36	0,22	043
4,40	6	66	24	17	36	0,22	044
4,50	6	66	24	17	36	0,23	045
4,60	6	66	24	17	36	0,23	046
4,65	6	66	24	17	36	0,23	900
4,70	6	66	24	17	36	0,24	047
4,80	6	66	28	20	36	0,24	048
4,90	6	66	28	20	36	0,25	049
5,00	6	66	28	20	36	0,25	050
5,10	6	66	28	20	36	0,26	051
5,20	6	66	28	20	36	0,26	052
5,30	6	66	28	20	36	0,27	053
5,40	6	66	28	20	36	0,27	054
5,50	6	66	28	20	36	0,28	055
5,55	6	66	28	20	36	0,28	902
5,60	6	66	28	20	36	0,28	056
5,70	6	66	28	20	36	0,29	057
5,80	6	66	28	20	36	0,29	058
5,90	6	66	28	20	36	0,30	059
6,00	6	66	28	20	36	0,30	060
6,10	8	79	34	24	36	0,31	061
6,20	8	79	34	24	36	0,31	062
6,30	8	79	34	24	36	0,32	063
6,40	8	79	34	24	36	0,32	064
6,50	8	79	34	24	36	0,33	065
6,60	8	79	34	24	36	0,33	066
6,70	8	79	34	24	36	0,34	067
6,80	8	79	34	24	36	0,34	068
6,90	8	79	34	24	36	0,35	069
7,00	8	79	34	24	36	0,35	070
7,10	8	79	41	29	36	0,36	071
7,20	8	79	41	29	36	0,36	072
7,30	8	79	41	29	36	0,37	073
7,40	8	79	41	29	36	0,37	074
7,50	8	79	41	29	36	0,38	075
7,60	8	79	41	29	36	0,38	076
7,70	8	79	41	29	36	0,39	077
7,80	8	79	41	29	36	0,39	078
7,90	8	79	41	29	36	0,40	079
8,00	8	79	41	29	36	0,40	080
8,10	10	89	47	35	40	0,41	081

10 720 ...

DC m7 mm	DCONMS h6 mm	OAL mm	LCF mm	LU mm	LS mm	PL mm	
8,20	10	89	47	35	40	0,41	082
8,30	10	89	47	35	40	0,42	083
8,40	10	89	47	35	40	0,42	084
8,50	10	89	47	35	40	0,43	085
8,60	10	89	47	35	40	0,43	086
8,70	10	89	47	35	40	0,44	087
8,80	10	89	47	35	40	0,44	088
8,90	10	89	47	35	40	0,45	089
9,00	10	89	47	35	40	0,45	090
9,10	10	89	47	35	40	0,46	091
9,20	10	89	47	35	40	0,46	092
9,30	10	89	47	35	40	0,47	093
9,40	10	89	47	35	40	0,47	094
9,50	10	89	47	35	40	0,48	095
9,60	10	89	47	35	40	0,48	096
9,70	10	89	47	35	40	0,49	097
9,80	10	89	47	35	40	0,49	098
9,90	10	89	47	35	40	0,50	099
10,00	10	89	47	35	40	0,50	100
10,10	12	100	53	38	45	0,51	101
10,20	12	100	53	38	45	0,51	102
10,30	12	100	53	38	45	0,52	103
10,40	12	100	53	38	45	0,52	104
10,50	12	100	53	38	45	0,53	105
10,60	12	100	53	38	45	0,53	106
10,70	12	100	53	38	45	0,54	107
10,80	12	100	53	38	45	0,54	108
10,90	12	100	53	38	45	0,55	109
11,00	12	100	53	38	45	0,55	110
11,10	12	100	53	38	45	0,56	111
11,20	12	100	53	38	45	0,56	112
11,30	12	100	53	38	45	0,57	113
11,40	12	100	53	38	45	0,57	114
11,50	12	100	53	38	45	0,58	115
11,60	12	100	53	38	45	0,58	116
11,70	12	100	53	38	45	0,59	117
11,80	12	100	53	38	45	0,59	118
11,90	12	100	53	38	45	0,60	119
12,00	12	100	53	38	45	0,60	120

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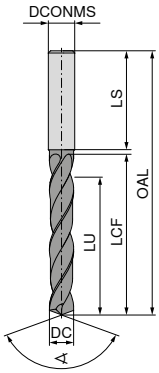
→ v_c Page 38

Further dimensions and drills can be found in our
→ **main catalogue in Chapter 2 Solid carbide drills**

WTX – High Performance Drill, DIN 6537

≤ 5xD

NOF = 2



UNI

DPX74S

DRAGONSKIN

HA

140°

Solid carbide

11 783 ...

DC m7 mm	DCONMS h6 mm	OAL mm	LCF mm	LU mm	LS mm	
3,00	6	66	28	23	36	03000
3,10	6	66	28	23	36	03100
3,15	6	66	28	23	36	03150
3,20	6	66	28	23	36	03200
3,22	6	66	28	23	36	03220
3,25	6	66	28	23	36	03250
3,30	6	66	28	23	36	03300
3,40	6	66	28	23	36	03400
3,50	6	66	28	23	36	03500
3,60	6	66	28	23	36	03600
3,70	6	66	28	23	36	03700
3,80	6	74	36	29	36	03800
3,85	6	74	36	29	36	03850
3,90	6	74	36	29	36	03900
4,00	6	74	36	29	36	04000
4,10	6	74	36	29	36	04100
4,20	6	74	36	29	36	04200
4,25	6	74	36	29	36	04250
4,30	6	74	36	29	36	04300
4,35	6	74	36	29	36	04350
4,40	6	74	36	29	36	04400
4,45	6	74	36	29	36	04450
4,50	6	74	36	29	36	04500
4,60	6	74	36	29	36	04600
4,65	6	74	36	29	36	04650
4,70	6	74	36	29	36	04700
4,80	6	82	44	35	36	04800
4,90	6	82	44	35	36	04900
4,95	6	82	44	35	36	04950
5,00	6	82	44	35	36	05000
5,05	6	82	44	35	36	05050
5,10	6	82	44	35	36	05100
5,20	6	82	44	35	36	05200
5,30	6	82	44	35	36	05300
5,40	6	82	44	35	36	05400
5,50	6	82	44	35	36	05500
5,55	6	82	44	35	36	05550
5,60	6	82	44	35	36	05600
5,70	6	82	44	35	36	05700
5,75	6	82	44	35	36	05750
5,80	6	82	44	35	36	05800
5,90	6	82	44	35	36	05900
5,95	6	82	44	35	36	05950
6,00	6	82	44	35	36	06000
6,10	8	91	53	43	36	06100
6,20	8	91	53	43	36	06200
6,30	8	91	53	43	36	06300
6,40	8	91	53	43	36	06400
6,50	8	91	53	43	36	06500
6,60	8	91	53	43	36	06600
6,70	8	91	53	43	36	06700

11 783 ...

DC m7 mm	DCONMS h6 mm	OAL mm	LCF mm	LU mm	LS mm	
6,80	8	91	53	43	36	06800
6,90	8	91	53	43	36	06900
7,00	8	91	53	43	36	07000
7,10	8	91	53	43	36	07100
7,20	8	91	53	43	36	07200
7,30	8	91	53	43	36	07300
7,40	8	91	53	43	36	07400
7,45	8	91	53	43	36	07450
7,50	8	91	53	43	36	07500
7,60	8	91	53	43	36	07600
7,70	8	91	53	43	36	07700
7,80	8	91	53	43	36	07800
7,90	8	91	53	43	36	07900
8,00	8	91	53	43	36	08000
8,10	10	103	61	49	40	08100
8,20	10	103	61	49	40	08200
8,30	10	103	61	49	40	08300
8,40	10	103	61	49	40	08400
8,50	10	103	61	49	40	08500
8,60	10	103	61	49	40	08600
8,70	10	103	61	49	40	08700
8,80	10	103	61	49	40	08800
8,90	10	103	61	49	40	08900
9,00	10	103	61	49	40	09000
9,10	10	103	61	49	40	09100
9,20	10	103	61	49	40	09200
9,30	10	103	61	49	40	09300
9,35	10	103	61	49	40	09350
9,40	10	103	61	49	40	09400
9,45	10	103	61	49	40	09450
9,50	10	103	61	49	40	09500
9,60	10	103	61	49	40	09600
9,70	10	103	61	49	40	09700
9,80	10	103	61	49	40	09800
9,90	10	103	61	49	40	09900
10,00	10	103	61	49	40	10000
10,10	12	118	71	56	45	10100
10,20	12	118	71	56	45	10200
10,30	12	118	71	56	45	10300
10,40	12	118	71	56	45	10400
10,50	12	118	71	56	45	10500
10,55	12	118	71	56	45	10550
10,60	12	118	71	56	45	10600
10,70	12	118	71	56	45	10700
10,75	12	118	71	56	45	10750
10,80	12	118	71	56	45	10800
10,90	12	118	71	56	45	10900
11,00	12	118	71	56	45	11000
11,10	12	118	71	56	45	11100
11,20	12	118	71	56	45	11200
11,25	12	118	71	56	45	11250
11,30	12	118	71	56	45	11300
11,35	12	118	71	56	45	11350
11,40	12	118	71	56	45	11400
11,45	12	118	71	56	45	11450
11,50	12	118	71	56	45	11500
11,60	12	118	71	56	45	11600
11,70	12	118	71	56	45	11700
11,80	12	118	71	56	45	11800
11,90	12	118	71	56	45	11900
12,00	12	118	71	56	45	12000

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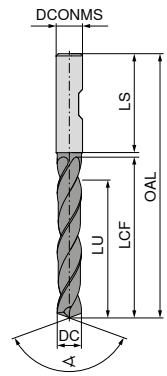
→ v_c Page 34

Further dimensions and drills can be found in our
→ **main catalogue in Chapter 2 Solid carbide drills**

WPC – High Performance Drill, DIN 6537

≤ 5xD

NOF = 2



UNI

TiAlN

140°

Solid carbide

11 606 ...

DC m7 mm	DCONMS h6 mm	OAL mm	LCF mm	LU mm	LS mm	
3,00	6	66	28	23	36	030
3,10	6	66	28	23	36	031
3,20	6	66	28	23	36	032
3,30	6	66	28	23	36	033
3,40	6	66	28	23	36	034
3,50	6	66	28	23	36	035
3,60	6	66	28	23	36	036
3,70	6	66	28	23	36	037
3,80	6	74	36	29	36	038
3,90	6	74	36	29	36	039
4,00	6	74	36	29	36	040
4,10	6	74	36	29	36	041
4,20	6	74	36	29	36	042
4,30	6	74	36	29	36	043
4,40	6	74	36	29	36	044
4,50	6	74	36	29	36	045
4,60	6	74	36	29	36	046
4,65	6	74	36	29	36	900
4,70	6	74	36	29	36	047
4,80	6	82	44	35	36	048
4,90	6	82	44	35	36	049
5,00	6	82	44	35	36	050
5,10	6	82	44	35	36	051
5,20	6	82	44	35	36	052
5,30	6	82	44	35	36	053
5,40	6	82	44	35	36	054
5,50	6	82	44	35	36	055
5,55	6	82	44	35	36	902
5,60	6	82	44	35	36	056
5,70	6	82	44	35	36	057
5,80	6	82	44	35	36	058
5,90	6	82	44	35	36	059
6,00	6	82	44	35	36	060
6,10	8	91	53	43	36	061
6,20	8	91	53	43	36	062
6,30	8	91	53	43	36	063
6,40	8	91	53	43	36	064
6,50	8	91	53	43	36	065
6,60	8	91	53	43	36	066
6,70	8	91	53	43	36	067
6,80	8	91	53	43	36	068
6,90	8	91	53	43	36	069
7,00	8	91	53	43	36	070
7,10	8	91	53	43	36	071
7,20	8	91	53	43	36	072
7,30	8	91	53	43	36	073
7,40	8	91	53	43	36	074
7,50	8	91	53	43	36	075
7,55	8	91	53	43	36	975
7,60	8	91	53	43	36	076
7,70	8	91	53	43	36	077
7,80	8	91	53	43	36	078
7,90	8	91	53	43	36	079

11 606 ...

DC m7 mm	DCONMS h6 mm	OAL mm	LCF mm	LU mm	LS mm	
8,00	8	91	53	43	36	080
8,10	10	103	61	49	40	081
8,20	10	103	61	49	40	082
8,30	10	103	61	49	40	083
8,40	10	103	61	49	40	084
8,50	10	103	61	49	40	085
8,60	10	103	61	49	40	086
8,70	10	103	61	49	40	087
8,80	10	103	61	49	40	088
8,90	10	103	61	49	40	089
9,00	10	103	61	49	40	090
9,10	10	103	61	49	40	091
9,20	10	103	61	49	40	092
9,25	10	103	61	49	40	925
9,30	10	103	61	49	40	093
9,40	10	103	61	49	40	094
9,50	10	103	61	49	40	095
9,60	10	103	61	49	40	096
9,70	10	103	61	49	40	097
9,80	10	103	61	49	40	098
9,90	10	103	61	49	40	099
10,00	10	103	61	49	40	100
10,10	12	118	71	56	45	101
10,20	12	118	71	56	45	102
10,30	12	118	71	56	45	103
10,40	12	118	71	56	45	104
10,50	12	118	71	56	45	105
10,60	12	118	71	56	45	106
10,70	12	118	71	56	45	107
10,80	12	118	71	56	45	108
10,90	12	118	71	56	45	109
11,00	12	118	71	56	45	110
11,10	12	118	71	56	45	111
11,20	12	118	71	56	45	112
11,30	12	118	71	56	45	113
11,40	12	118	71	56	45	114
11,50	12	118	71	56	45	115
11,60	12	118	71	56	45	116
11,70	12	118	71	56	45	117
11,80	12	118	71	56	45	118
11,90	12	118	71	56	45	119
12,00	12	118	71	56	45	120

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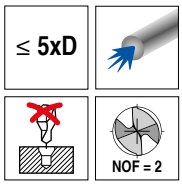
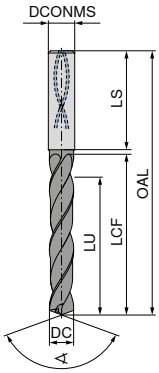
→ v_c Page 41

Further dimensions and drills can be found in our
→ **main catalogue in Chapter 2 Solid carbide drills**

WTX – High Performance Drill, DIN 6537





UNI

DPX74S

DRAGONSKIN

Solid carbide

11 786 ...

DC m7 mm	DCONMS h6 mm	OAL mm	LCF mm	LU mm	LS mm	
3,00	6	66	28	23	36	03000
3,10	6	66	28	23	36	03100
3,15	6	66	28	23	36	03150
3,20	6	66	28	23	36	03200
3,22	6	66	28	23	36	03220
3,25	6	66	28	23	36	03250
3,30	6	66	28	23	36	03300
3,40	6	66	28	23	36	03400
3,50	6	66	28	23	36	03500
3,60	6	66	28	23	36	03600
3,70	6	66	28	23	36	03700
3,80	6	74	36	29	36	03800
3,85	6	74	36	29	36	03850
3,90	6	74	36	29	36	03900
4,00	6	74	36	29	36	04000
4,10	6	74	36	29	36	04100
4,20	6	74	36	29	36	04200
4,25	6	74	36	29	36	04250
4,30	6	74	36	29	36	04300
4,35	6	74	36	29	36	04350
4,40	6	74	36	29	36	04400
4,45	6	74	36	29	36	04450
4,50	6	74	36	29	36	04500
4,60	6	74	36	29	36	04600
4,65	6	74	36	29	36	04650
4,70	6	74	36	29	36	04700
4,80	6	82	44	35	36	04800
4,90	6	82	44	35	36	04900
4,95	6	82	44	35	36	04950
5,00	6	82	44	35	36	05000
5,05	6	82	44	35	36	05050
5,10	6	82	44	35	36	05100
5,20	6	82	44	35	36	05200
5,30	6	82	44	35	36	05300
5,40	6	82	44	35	36	05400
5,50	6	82	44	35	36	05500
5,55	6	82	44	35	36	05550
5,60	6	82	44	35	36	05600
5,70	6	82	44	35	36	05700
5,75	6	82	44	35	36	05750
5,80	6	82	44	35	36	05800
5,90	6	82	44	35	36	05900
5,95	6	82	44	35	36	05950
6,00	6	82	44	35	36	06000
6,10	8	91	53	43	36	06100
6,20	8	91	53	43	36	06200
6,30	8	91	53	43	36	06300
6,40	8	91	53	43	36	06400
6,50	8	91	53	43	36	06500
6,60	8	91	53	43	36	06600
6,70	8	91	53	43	36	06700

11 786 ...

DC m7 mm	DCONMS h6 mm	OAL mm	LCF mm	LU mm	LS mm	
6,80	8	91	53	43	36	06800
6,90	8	91	53	43	36	06900
7,00	8	91	53	43	36	07000
7,10	8	91	53	43	36	07100
7,20	8	91	53	43	36	07200
7,30	8	91	53	43	36	07300
7,40	8	91	53	43	36	07400
7,45	8	91	53	43	36	07450
7,50	8	91	53	43	36	07500
7,60	8	91	53	43	36	07600
7,70	8	91	53	43	36	07700
7,80	8	91	53	43	36	07800
7,90	8	91	53	43	36	07900
8,00	8	91	53	43	36	08000
8,10	10	103	61	49	40	08100
8,20	10	103	61	49	40	08200
8,30	10	103	61	49	40	08300
8,40	10	103	61	49	40	08400
8,50	10	103	61	49	40	08500
8,60	10	103	61	49	40	08600
8,70	10	103	61	49	40	08700
8,80	10	103	61	49	40	08800
8,90	10	103	61	49	40	08900
9,00	10	103	61	49	40	09000
9,10	10	103	61	49	40	09100
9,20	10	103	61	49	40	09200
9,30	10	103	61	49	40	09300
9,35	10	103	61	49	40	09350
9,40	10	103	61	49	40	09400
9,45	10	103	61	49	40	09450
9,50	10	103	61	49	40	09500
9,60	10	103	61	49	40	09600
9,70	10	103	61	49	40	09700
9,80	10	103	61	49	40	09800
9,90	10	103	61	49	40	09900
10,00	10	103	61	49	40	10000
10,10	12	118	71	56	45	10100
10,20	12	118	71	56	45	10200
10,30	12	118	71	56	45	10300
10,40	12	118	71	56	45	10400
10,50	12	118	71	56	45	10500
10,55	12	118	71	56	45	10550
10,60	12	118	71	56	45	10600
10,70	12	118	71	56	45	10700
10,75	12	118	71	56	45	10750
10,80	12	118	71	56	45	10800
10,90	12	118	71	56	45	10900
11,00	12	118	71	56	45	11000
11,10	12	118	71	56	45	11100
11,20	12	118	71	56	45	11200
11,25	12	118	71	56	45	11250
11,30	12	118	71	56	45	11300
11,35	12	118	71	56	45	11350
11,40	12	118	71	56	45	11400
11,45	12	118	71	56	45	11450
11,50	12	118	71	56	45	11500
11,60	12	118	71	56	45	11600
11,70	12	118	71	56	45	11700
11,80	12	118	71	56	45	11800
11,90	12	118	71	56	45	11900
12,00	12	118	71	56	45	12000

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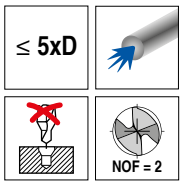
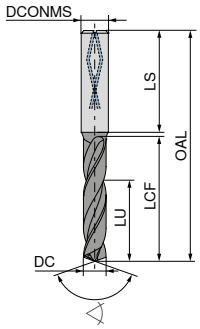
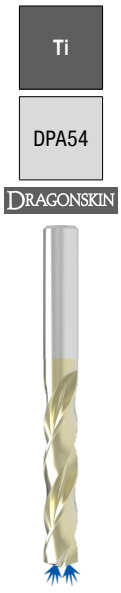
→ v_c Page 34

Further dimensions and drills can be found in our
→ **main catalogue in Chapter 2 Solid carbide drills**

WTX – High-performance drill, DIN 6537







10 787 ...

DC m7 mm	DCONMS h6 mm	OAL mm	LCF mm	LU mm	LS mm	
3,00	6	66	28	23	36	030
3,10	6	66	28	23	36	031
3,20	6	66	28	23	36	032
3,30	6	66	28	23	36	033
3,40	6	66	28	23	36	034
3,50	6	66	28	23	36	035
3,60	6	66	28	23	36	036
3,70	6	66	28	23	36	037
3,80	6	74	36	29	36	038
3,90	6	74	36	29	36	039
3,97	6	74	36	29	36	900
4,00	6	74	36	29	36	040
4,10	6	74	36	29	36	041
4,20	6	74	36	29	36	042
4,23	6	74	36	29	36	901
4,30	6	74	36	29	36	043
4,40	6	74	36	29	36	044
4,50	6	74	36	29	36	045
4,60	6	74	36	29	36	046
4,70	6	74	36	29	36	047
4,80	6	82	44	35	36	048
4,90	6	82	44	35	36	049
5,00	6	82	44	35	36	050
5,10	6	82	44	35	36	051
5,20	6	82	44	35	36	052
5,30	6	82	44	35	36	053
5,40	6	82	44	35	36	054
5,50	6	82	44	35	36	055
5,56	6	82	44	35	36	902
5,60	6	82	44	35	36	056
5,70	6	82	44	35	36	057
5,80	6	82	44	35	36	058
5,90	6	82	44	35	36	059
6,00	6	82	44	35	36	060
6,10	8	91	53	43	36	061
6,20	8	91	53	43	36	062
6,30	8	91	53	43	36	063
6,35	8	91	53	43	36	903
6,40	8	91	53	43	36	064
6,50	8	91	53	43	36	065
6,60	8	91	53	43	36	066
6,70	8	91	53	43	36	067
6,80	8	91	53	43	36	068
6,90	8	91	53	43	36	069
7,00	8	91	53	43	36	070
7,10	8	91	53	43	36	071
7,20	8	91	53	43	36	072
7,30	8	91	53	43	36	073
7,40	8	91	53	43	36	074
7,50	8	91	53	43	36	075
7,60	8	91	53	43	36	076

10 787 ...

DC m7 mm	DCONMS h6 mm	OAL mm	LCF mm	LU mm	LS mm	
7,70	8	91	53	43	36	077
7,80	8	91	53	43	36	078
7,90	8	91	53	43	36	079
7,94	8	91	53	43	36	904
8,00	8	91	53	43	36	080
8,10	10	103	61	49	40	081
8,20	10	103	61	49	40	082
8,30	10	103	61	49	40	083
8,40	10	103	61	49	40	084
8,50	10	103	61	49	40	085
8,60	10	103	61	49	40	086
8,70	10	103	61	49	40	087
8,80	10	103	61	49	40	088
8,90	10	103	61	49	40	089
9,00	10	103	61	49	40	090
9,10	10	103	61	49	40	091
9,20	10	103	61	49	40	092
9,30	10	103	61	49	40	093
9,40	10	103	61	49	40	094
9,50	10	103	61	49	40	095
9,53	10	103	61	49	40	905
9,60	10	103	61	49	40	096
9,70	10	103	61	49	40	097
9,80	10	103	61	49	40	098
9,90	10	103	61	49	40	099
10,00	10	103	61	49	40	100
10,10	12	118	71	54	45	101
10,20	12	118	71	54	45	102
10,30	12	118	71	54	45	103
10,40	12	118	71	54	45	104
10,50	12	118	71	54	45	105
10,60	12	118	71	54	45	106
10,70	12	118	71	54	45	107
10,80	12	118	71	54	45	108
10,90	12	118	71	54	45	109
11,00	12	118	71	54	45	110
11,10	12	118	71	54	45	111
11,11	12	118	71	54	45	906
11,20	12	118	71	54	45	112
11,30	12	118	71	54	45	113
11,40	12	118	71	54	45	114
11,50	12	118	71	54	45	115
11,60	12	118	71	54	45	116
11,70	12	118	71	54	45	117
11,80	12	118	71	54	45	118
11,90	12	118	71	54	45	119
12,00	12	118	71	54	45	120

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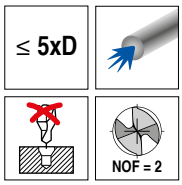
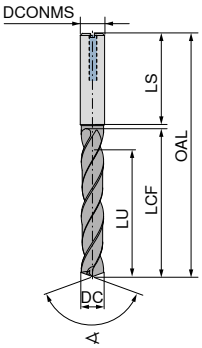
→ v_c Page 35

Further dimensions and drills can be found in our
→ **main catalogue in Chapter 2 Solid carbide drills**

WTX – High Performance Drill, DIN 6537





AL

DLC

DRAGONSKIN

Solid carbide

10 791 ...

DC h7 mm	DCONMS h6 mm	OAL mm	LCF mm	LU mm	LS mm	
2,5	4	57	21	17	28	02500
2,6	4	57	21	17	28	02600
2,7	4	57	21	17	28	02700
2,8	4	57	21	17	28	02800
2,9	4	57	21	17	28	02900
3,0	6	66	28	23	36	03000
3,1	6	66	28	23	36	03100
3,2	6	66	28	23	36	03200
3,3	6	66	28	23	36	03300
3,4	6	66	28	23	36	03400
3,5	6	66	28	23	36	03500
3,6	6	66	28	23	36	03600
3,7	6	66	28	23	36	03700
3,8	6	74	36	29	36	03800
3,9	6	74	36	29	36	03900
4,0	6	74	36	29	36	04000
4,1	6	74	36	29	36	04100
4,2	6	74	36	29	36	04200
4,3	6	74	36	29	36	04300
4,4	6	74	36	29	36	04400
4,5	6	74	36	29	36	04500
4,6	6	74	36	29	36	04600
4,7	6	74	36	29	36	04700
4,8	6	82	44	35	36	04800
4,9	6	82	44	35	36	04900
5,0	6	82	44	35	36	05000
5,1	6	82	44	35	36	05100
5,2	6	82	44	35	36	05200
5,3	6	82	44	35	36	05300
5,4	6	82	44	35	36	05400
5,5	6	82	44	35	36	05500
5,6	6	82	44	35	36	05600
5,7	6	82	44	35	36	05700
5,8	6	82	44	35	36	05800
5,9	6	82	44	35	36	05900
6,0	6	82	44	35	36	06000
6,1	8	91	53	43	36	06100
6,2	8	91	53	43	36	06200
6,3	8	91	53	43	36	06300
6,4	8	91	53	43	36	06400
6,5	8	91	53	43	36	06500
6,6	8	91	53	43	36	06600
6,7	8	91	53	43	36	06700
6,8	8	91	53	43	36	06800
6,9	8	91	53	43	36	06900
7,0	8	91	53	43	36	07000
7,1	8	91	53	43	36	07100
7,2	8	91	53	43	36	07200
7,3	8	91	53	43	36	07300
7,4	8	91	53	43	36	07400
7,5	8	91	53	43	36	07500

10 791 ...

DC h7 mm	DCONMS h6 mm	OAL mm	LCF mm	LU mm	LS mm	
7,6	8	91	53	43	36	07600
7,7	8	91	53	43	36	07700
7,8	8	91	53	43	36	07800
7,9	8	91	53	43	36	07900
8,0	8	91	53	43	36	08000
8,1	10	103	61	49	40	08100
8,2	10	103	61	49	40	08200
8,3	10	103	61	49	40	08300
8,4	10	103	61	49	40	08400
8,5	10	103	61	49	40	08500
8,6	10	103	61	49	40	08600
8,7	10	103	61	49	40	08700
8,8	10	103	61	49	40	08800
8,9	10	103	61	49	40	08900
9,0	10	103	61	49	40	09000
9,1	10	103	61	49	40	09100
9,2	10	103	61	49	40	09200
9,3	10	103	61	49	40	09300
9,4	10	103	61	49	40	09400
9,5	10	103	61	49	40	09500
9,6	10	103	61	49	40	09600
9,7	10	103	61	49	40	09700
9,8	10	103	61	49	40	09800
9,9	10	103	61	49	40	09900
10,0	10	103	61	49	40	10000
10,1	12	118	71	56	45	10100
10,2	12	118	71	56	45	10200
10,3	12	118	71	56	45	10300
10,4	12	118	71	56	45	10400
10,5	12	118	71	56	45	10500
10,6	12	118	71	56	45	10600
10,7	12	118	71	56	45	10700
10,8	12	118	71	56	45	10800
11,0	12	118	71	56	45	11000
11,1	12	118	71	56	45	11100
11,2	12	118	71	56	45	11200
11,3	12	118	71	56	45	11300
11,4	12	118	71	56	45	11400
11,5	12	118	71	56	45	11500
11,7	12	118	71	56	45	11700
11,8	12	118	71	56	45	11800
12,0	12	118	71	56	45	12000

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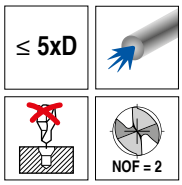
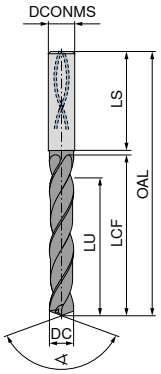
→ v_c Page 35

Further dimensions and drills can be found in our
→ **main catalogue in Chapter 2 Solid carbide drills**

WPC – High Performance Drill, DIN 6537





UNI

TiAlN

140°
Solid carbide

11 609 ...

DC m7 mm	DCONMS h6 mm	OAL mm	LCF mm	LU mm	LS mm	
1,00	4	45	8,0	6,5	30,0	010
1,10	4	45	8,8	7,2	29,0	011
1,20	4	45	9,6	7,8	29,0	012
1,30	4	45	10,4	8,5	28,5	013
1,40	4	45	11,2	9,1	28,0	014
1,50	4	50	12,0	9,8	32,0	015
1,60	4	50	12,8	10,4	31,0	016
1,70	4	50	13,6	11,1	30,5	017
1,80	4	50	14,4	11,7	30,0	018
1,90	4	50	15,2	12,4	29,5	019
2,00	4	50	16,0	13,0	29,0	020
2,10	4	55	16,8	13,7	33,0	021
2,20	4	55	17,6	14,3	32,5	022
2,30	4	55	18,4	15,0	32,0	023
2,40	4	55	19,2	15,6	31,5	024
2,50	4	55	20,0	16,3	30,5	025
2,60	4	55	20,8	16,9	30,0	026
2,70	4	55	21,6	17,6	29,0	027
2,80	4	55	22,4	18,2	29,0	028
2,90	4	55	23,2	18,9	28,5	029
3,00	6	66	28,0	23,0	36,0	030
3,10	6	66	28,0	23,0	36,0	031
3,20	6	66	28,0	23,0	36,0	032
3,25	6	66	28,0	23,0	36,0	890
3,30	6	66	28,0	23,0	36,0	033
3,40	6	66	28,0	23,0	36,0	034
3,50	6	66	28,0	23,0	36,0	035
3,60	6	66	28,0	23,0	36,0	036
3,70	6	66	28,0	23,0	36,0	037
3,80	6	74	36,0	29,0	36,0	038
3,90	6	74	36,0	29,0	36,0	039
4,00	6	74	36,0	29,0	36,0	040
4,10	6	74	36,0	29,0	36,0	041
4,20	6	74	36,0	29,0	36,0	042
4,30	6	74	36,0	29,0	36,0	043
4,40	6	74	36,0	29,0	36,0	044
4,50	6	74	36,0	29,0	36,0	045
4,60	6	74	36,0	29,0	36,0	046
4,65	6	74	36,0	29,0	36,0	900
4,70	6	74	36,0	29,0	36,0	047
4,80	6	82	44,0	35,0	36,0	048
4,90	6	82	44,0	35,0	36,0	049
5,00	6	82	44,0	35,0	36,0	050
5,10	6	82	44,0	35,0	36,0	051
5,20	6	82	44,0	35,0	36,0	052
5,30	6	82	44,0	35,0	36,0	053
5,40	6	82	44,0	35,0	36,0	054
5,50	6	82	44,0	35,0	36,0	055
5,55	6	82	44,0	35,0	36,0	902
5,60	6	82	44,0	35,0	36,0	056
5,70	6	82	44,0	35,0	36,0	057
5,80	6	82	44,0	35,0	36,0	058
5,90	6	82	44,0	35,0	36,0	059
6,00	6	82	44,0	35,0	36,0	060
6,10	8	91	53,0	43,0	36,0	061
6,20	8	91	53,0	43,0	36,0	062

11 609 ...

DC m7 mm	DCONMS h6 mm	OAL mm	LCF mm	LU mm	LS mm	
6,30	8	91	53,0	43,0	36,0	063
6,40	8	91	53,0	43,0	36,0	064
6,50	8	91	53,0	43,0	36,0	065
6,60	8	91	53,0	43,0	36,0	066
6,70	8	91	53,0	43,0	36,0	067
6,80	8	91	53,0	43,0	36,0	068
6,90	8	91	53,0	43,0	36,0	069
7,00	8	91	53,0	43,0	36,0	070
7,10	8	91	53,0	43,0	36,0	071
7,20	8	91	53,0	43,0	36,0	072
7,30	8	91	53,0	43,0	36,0	073
7,40	8	91	53,0	43,0	36,0	074
7,45	8	91	53,0	43,0	36,0	924
7,50	8	91	53,0	43,0	36,0	075
7,55	8	91	53,0	43,0	36,0	975
7,60	8	91	53,0	43,0	36,0	076
7,70	8	91	53,0	43,0	36,0	077
7,80	8	91	53,0	43,0	36,0	078
7,90	8	91	53,0	43,0	36,0	079
8,00	8	91	53,0	43,0	36,0	080
8,10	10	103	61,0	49,0	40,0	081
8,20	10	103	61,0	49,0	40,0	082
8,30	10	103	61,0	49,0	40,0	083
8,40	10	103	61,0	49,0	40,0	084
8,50	10	103	61,0	49,0	40,0	085
8,60	10	103	61,0	49,0	40,0	086
8,70	10	103	61,0	49,0	40,0	087
8,80	10	103	61,0	49,0	40,0	088
8,90	10	103	61,0	49,0	40,0	089
9,00	10	103	61,0	49,0	40,0	090
9,10	10	103	61,0	49,0	40,0	091
9,20	10	103	61,0	49,0	40,0	092
9,25	10	103	61,0	49,0	40,0	925
9,30	10	103	61,0	49,0	40,0	093
9,35	10	103	61,0	49,0	40,0	930
9,40	10	103	61,0	49,0	40,0	094
9,50	10	103	61,0	49,0	40,0	095
9,60	10	103	61,0	49,0	40,0	096
9,70	10	103	61,0	49,0	40,0	097
9,80	10	103	61,0	49,0	40,0	098
9,90	10	103	61,0	49,0	40,0	099
10,00	10	103	61,0	49,0	40,0	100
10,10	12	118	71,0	56,0	45,0	101
10,20	12	118	71,0	56,0	45,0	102
10,30	12	118	71,0	56,0	45,0	103
10,40	12	118	71,0	56,0	45,0	104
10,50	12	118	71,0	56,0	45,0	105
10,60	12	118	71,0	56,0	45,0	106
10,70	12	118	71,0	56,0	45,0	107
10,75	12	118	71,0	56,0	45,0	904
10,80	12	118	71,0	56,0	45,0	108
10,90	12	118	71,0	56,0	45,0	109
11,00	12	118	71,0	56,0	45,0	110
11,10	12	118	71,0	56,0	45,0	111
11,20	12	118	71,0	56,0	45,0	112
11,25	12	118	71,0	56,0	45,0	912
11,30	12	118	71,0	56,0	45,0	113
11,40	12	118	71,0	56,0	45,0	114
11,50	12	118	71,0	56,0	45,0	115
11,60	12	118	71,0	56,0	45,0	116
11,70	12	118	71,0	56,0	45,0	117
11,80	12	118	71,0	56,0	45,0	118
11,90	12	118	71,0	56,0	45,0	119
12,00	12	118	71,0	56,0	45,0	120

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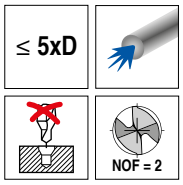
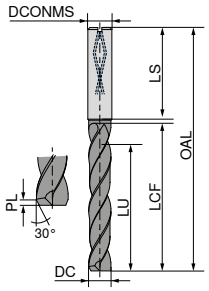
→ v_c Page 41

Further dimensions and drills can be found in our
→ **main catalogue in Chapter 2 Solid carbide drills**

WTX – High Performance Drill, DIN 6537

- ▲ universal application
- ▲ four guidance lands
- ▲ polished chip flutes
- ▲ Type ALU 5xD on request
- ▲ PL = corner chamfers





180

Ti800

180°
Solid carbide

10 721 ...

DC m7 mm	DCONMS h6 mm	OAL mm	LCF mm	LU mm	LS mm	PL mm	
3,00	6	66	28	23	36	0,15	030
3,10	6	66	28	23	36	0,16	031
3,20	6	66	28	23	36	0,16	032
3,30	6	66	28	23	36	0,17	033
3,40	6	66	28	23	36	0,17	034
3,50	6	66	28	23	36	0,18	035
3,60	6	66	28	23	36	0,18	036
3,70	6	66	28	23	36	0,19	037
3,80	6	74	36	29	36	0,19	038
3,90	6	74	36	29	36	0,20	039
4,00	6	74	36	29	36	0,20	040
4,10	6	74	36	29	36	0,21	041
4,20	6	74	36	29	36	0,21	042
4,30	6	74	36	29	36	0,22	043
4,40	6	74	36	29	36	0,22	044
4,50	6	74	36	29	36	0,23	045
4,60	6	74	36	29	36	0,23	046
4,65	6	74	36	29	36	0,23	900
4,70	6	74	36	29	36	0,24	047
4,80	6	82	44	35	36	0,24	048
4,90	6	82	44	35	36	0,25	049
5,00	6	82	44	35	36	0,25	050
5,10	6	82	44	35	36	0,26	051
5,20	6	82	44	35	36	0,26	052
5,30	6	82	44	35	36	0,27	053
5,40	6	82	44	35	36	0,27	054
5,50	6	82	44	35	36	0,28	055
5,55	6	82	44	35	36	0,28	902
5,60	6	82	44	35	36	0,28	056
5,70	6	82	44	35	36	0,29	057
5,80	6	82	44	35	36	0,29	058
5,90	6	82	44	35	36	0,30	059
6,00	6	82	44	35	36	0,30	060
6,10	8	91	53	43	36	0,31	061
6,20	8	91	53	43	36	0,31	062
6,30	8	91	53	43	36	0,32	063
6,40	8	91	53	43	36	0,32	064
6,50	8	91	53	43	36	0,33	065
6,60	8	91	53	43	36	0,33	066
6,70	8	91	53	43	36	0,34	067
6,80	8	91	53	43	36	0,34	068
6,90	8	91	53	43	36	0,35	069
7,00	8	91	53	43	36	0,35	070
7,10	8	91	53	43	36	0,36	071
7,20	8	91	53	43	36	0,36	072
7,30	8	91	53	43	36	0,37	073
7,40	8	91	53	43	36	0,37	074
7,50	8	91	53	43	36	0,38	075
7,60	8	91	53	43	36	0,38	076
7,70	8	91	53	43	36	0,39	077
7,80	8	91	53	43	36	0,39	078
7,90	8	91	53	43	36	0,40	079
8,00	8	91	53	43	36	0,40	080
8,10	10	103	61	49	40	0,41	081

10 721 ...

DC m7 mm	DCONMS h6 mm	OAL mm	LCF mm	LU mm	LS mm	PL mm	
8,20	10	103	61	49	40	0,41	082
8,30	10	103	61	49	40	0,42	083
8,40	10	103	61	49	40	0,42	084
8,50	10	103	61	49	40	0,43	085
8,60	10	103	61	49	40	0,43	086
8,70	10	103	61	49	40	0,44	087
8,80	10	103	61	49	40	0,44	088
8,90	10	103	61	49	40	0,45	089
9,00	10	103	61	49	40	0,45	090
9,10	10	103	61	49	40	0,46	091
9,20	10	103	61	49	40	0,46	092
9,30	10	103	61	49	40	0,47	093
9,40	10	103	61	49	40	0,47	094
9,50	10	103	61	49	40	0,48	095
9,60	10	103	61	49	40	0,48	096
9,70	10	103	61	49	40	0,49	097
9,80	10	103	61	49	40	0,49	098
9,90	10	103	61	49	40	0,50	099
10,00	10	103	61	49	40	0,50	100
10,10	12	116	69	54	45	0,51	101
10,20	12	116	69	54	45	0,51	102
10,30	12	116	69	54	45	0,52	103
10,40	12	116	69	54	45	0,52	104
10,50	12	116	69	54	45	0,53	105
10,60	12	116	69	54	45	0,53	106
10,70	12	116	69	54	45	0,54	107
10,80	12	116	69	54	45	0,54	108
10,90	12	116	69	54	45	0,55	109
11,00	12	116	69	54	45	0,55	110
11,10	12	116	69	54	45	0,56	111
11,20	12	116	69	54	45	0,56	112
11,30	12	116	69	54	45	0,57	113
11,40	12	116	69	54	45	0,57	114
11,50	12	116	69	54	45	0,58	115
11,60	12	116	69	54	45	0,58	116
11,70	12	116	69	54	45	0,59	117
11,80	12	116	69	54	45	0,59	118
11,90	12	116	69	54	45	0,60	119
12,00	12	116	69	54	45	0,60	120

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→ v_c Page 39

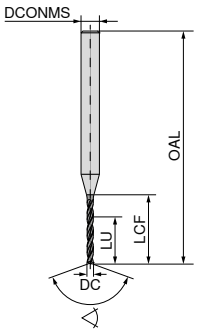
Further dimensions and drills can be found in our
→ **main catalogue in Chapter 2 Solid carbide drills**

WTX – High Performance Drills

▲ standard shank Ø 3 mm h6 for use in heat shrink adapters

≤ 5xD

NOF = 2



MINI

TiAlN

Solid carbide

11 770 ...

DC +0,004 mm	DCONMS h6 mm	OAL mm	LCF mm	LU mm	
0,10	3	38	1,2	1,0	00100
0,15	3	38	2,0	1,7	00150
0,20	3	38	3,5	3,0	00200
0,25	3	38	3,5	3,0	00250
0,30	3	38	5,5	5,0	00300
0,35	3	38	5,5	5,0	00350
0,40	3	38	7,0	6,0	00400
0,45	3	38	7,0	6,0	00450
0,50	3	38	7,0	6,0	00500
0,55	3	38	7,0	6,0	00550
0,60	3	38	7,0	6,0	00600
0,65	3	38	7,0	6,0	00650
0,70	3	38	10,5	8,0	00700
0,75	3	38	10,5	8,0	00750
0,80	3	38	10,5	8,0	00800
0,85	3	38	10,5	8,0	00850
0,90	3	38	10,5	8,0	00900
0,95	3	38	10,5	8,0	00950
0,97	3	38	10,5	8,0	00970
0,98	3	38	10,5	8,0	00980
0,99	3	38	10,5	8,0	00990
1,00	3	38	10,5	8,0	01000
1,01	3	38	10,5	8,0	01010
1,02	3	38	10,5	8,0	01020
1,03	3	38	10,5	8,0	01030
1,05	3	38	10,5	8,0	01050
1,10	3	38	10,5	8,0	01100
1,15	3	38	10,5	8,0	01150
1,20	3	38	10,5	8,0	01200
1,25	3	38	10,5	8,0	01250
1,30	3	38	10,5	8,0	01300
1,35	3	38	10,5	8,0	01350
1,40	3	38	10,5	8,0	01400
1,45	3	38	10,5	8,0	01450
1,47	3	38	10,5	8,0	01470
1,48	3	38	10,5	8,0	01480
1,49	3	38	10,5	8,0	01490
1,50	3	38	10,5	8,0	01500
1,51	3	38	10,5	8,0	01510
1,52	3	38	10,5	8,0	01520
1,53	3	38	10,5	8,0	01530
1,55	3	38	10,5	8,0	01550
1,60	3	38	10,5	8,0	01600
1,65	3	38	10,5	8,0	01650
1,70	3	38	10,5	8,0	01700
1,75	3	38	10,5	8,0	01750

11 770 ...

DC +0,004 mm	DCONMS h6 mm	OAL mm	LCF mm	LU mm	
1,80	3	38	10,5	8,0	01800
1,85	3	38	12,0	8,0	01850
1,90	3	38	12,0	8,0	01900
1,95	3	38	12,0	8,0	01950
1,97	3	38	12,0	8,0	01970
1,98	3	38	12,0	8,0	01980
1,99	3	38	12,0	8,0	01990
2,00	3	42	13,0	9,0	02000
2,01	3	42	13,0	9,0	02010
2,02	3	42	13,0	9,0	02020
2,03	3	42	13,0	9,0	02030
2,05	3	42	13,0	9,0	02050
2,10	3	42	13,0	9,0	02100
2,15	3	42	13,0	9,0	02150
2,20	3	46	15,0	10,0	02200
2,25	3	46	15,0	10,0	02250
2,30	3	46	15,0	10,0	02300
2,35	3	46	15,0	10,0	02350
2,40	3	46	15,0	10,0	02400
2,45	3	46	15,0	10,0	02450
2,47	3	46	15,0	10,0	02470
2,48	3	46	15,0	10,0	02480
2,49	3	46	15,0	10,0	02490
2,50	3	46	15,0	10,0	02500
2,51	3	46	15,0	10,0	02510
2,52	3	46	15,0	10,0	02520
2,53	3	46	15,0	10,0	02530
2,60	3	46	15,0	10,0	02600
2,70	3	46	15,0	10,0	02700
2,80	3	46	15,0	10,0	02800
2,90	3	46	15,0	10,0	02900

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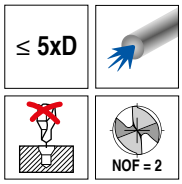
→ v_c Page 36

WTX – High Performance Drills

- Specialised micro drill
- Universal application
- Extremely high process security
- Pilot drill for WTX Micro – high-performance deep hole drill

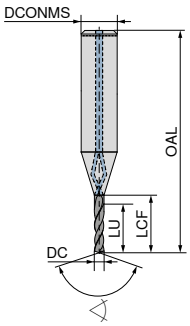


NEW

MICRO

DPX74M

DRAGONSKIN



135°

Solid carbide

10 693 ...

DC m6 mm	DCONMS h6 mm	OAL mm	LCF mm	LU mm	
0,8	3	39	5,6	4,0	00800
0,9	3	39	6,3	4,5	00900
1,0	3	40	7,0	5,0	01000
1,1	3	41	7,7	5,5	01100
1,2	3	41	8,4	6,0	01200
1,3	3	42	9,1	6,5	01300
1,4	3	42	9,8	7,0	01400
1,5	3	43	10,5	7,5	01500
1,6	3	44	11,2	8,0	01600
1,7	3	44	11,9	8,5	01700
1,8	3	45	12,6	9,0	01800
1,9	3	45	13,3	9,5	01900
2,0	3	46	14,0	10,0	02000
2,1	3	47	14,7	10,5	02100
2,2	3	47	15,4	11,0	02200
2,3	3	48	16,1	11,5	02300
2,4	3	48	16,8	12,0	02400
2,5	3	49	17,5	12,5	02500
2,6	3	50	18,2	13,0	02600
2,7	3	50	18,9	13,5	02700
2,8	3	51	19,6	14,0	02800
2,9	3	51	20,3	14,5	02900

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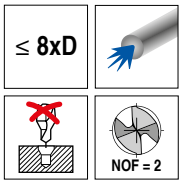
→ v_c Page 36

Minimum coolant pressure: 30 bar

WTX – High Performance Drills

- Specialised micro drill
- Universal application
- Extremely high process security

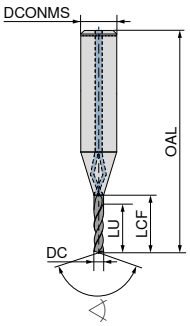


NEW

MICRO

DPX74M

DRAGONSKIN



128°

Solid carbide

10 694 ...

DC h6 mm	DCONMS h6 mm	OAL mm	LCF mm	LU mm	
0,8	3	41	8	6,4	00800
0,9	3	42	9	7,2	00900
1,0	3	43	10	8,0	01000
1,1	3	44	11	8,8	01100
1,2	3	45	12	9,6	01200
1,3	3	46	13	10,4	01300
1,4	3	47	14	11,2	01400
1,5	3	47	15	12,0	01500
1,6	3	48	16	12,8	01600
1,7	3	49	17	13,6	01700
1,8	3	50	18	14,4	01800
1,9	3	51	19	15,2	01900
2,0	3	52	20	16,0	02000
2,1	3	53	21	16,8	02100
2,2	3	54	22	17,6	02200
2,3	3	55	23	18,4	02300
2,4	3	56	24	19,2	02400
2,5	3	56	25	20,0	02500
2,6	3	57	26	20,8	02600
2,7	3	58	27	21,6	02700
2,8	3	59	28	22,4	02800
2,9	3	60	29	23,2	02900

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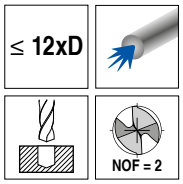
→ v_c Page 37

Minimum coolant pressure: 30 bar

WTX – High Performance Drills

- Specialised micro drill
- Universal application
- Extremely high process security
- Pilot drill: 5xD WTX – Micro – high-performance drill

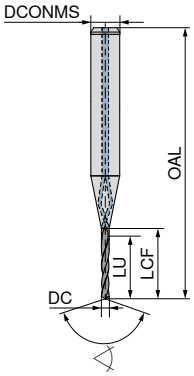


NEW

MICRO

DPX74M

DRAGONSKIN



Solid carbide

10 695 ...

DC h6 mm	DCONMS h6 mm	OAL mm	LCF mm	LU mm	
0,8	3	44	11,2	9,6	**00800**
0,9	3	46	12,6	10,8	**00900**
1,0	3	47	14,0	12,0	**01000**
1,1	3	48	15,4	13,2	**01100**
1,2	3	50	16,8	14,4	**01200**
1,3	3	51	18,2	15,6	**01300**
1,4	3	52	19,6	16,8	**01400**
1,5	3	53	21,0	18,0	**01500**
1,6	3	55	22,4	19,2	**01600**
1,7	3	56	23,8	20,4	**01700**
1,8	3	57	25,2	21,6	**01800**
1,9	3	59	26,6	22,8	**01900**
2,0	3	60	28,0	24,0	**02000**
2,1	3	61	29,4	25,2	**02100**
2,2	3	63	30,8	26,4	**02200**
2,3	3	64	32,2	27,6	**02300**
2,4	3	65	33,6	28,8	**02400**
2,5	3	67	35,0	30,0	**02500**
2,6	3	68	36,4	31,2	**02600**
2,7	3	69	37,8	32,4	**02700**
2,8	3	70	39,2	33,6	**02800**
2,9	3	72	40,6	34,8	**02900**

P	●
M	●
K	●
N	
S	○
H	
O	

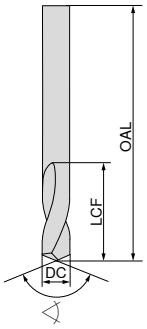
→ v_c Page 37

Minimum coolant pressure: 30 bar

NC Spot Drill, factory standard

▲ Spiral flutes

NC-A



HA

120°

Solid carbide

10 703 ...

DC $_{h5}$ mm	OAL mm	LCF mm	
2	32	6	**002**
3	32	8	**003**
4	40	10	**004**
5	50	13	**005**
6	50	13	**006**
8	60	23	**008**
10	70	24	**010**
12	70	24	**012**

P	○
M	
K	●
N	●
S	
H	
O	

→ v_c Page 42

Material examples for cutting data tables

	Material sub-group	Index	Composition / Structure / Heat treatment		Tensile strength N/mm²* / HB / HRC	Material number	Material designation	Material number	Material designation
P	Unalloyed steel	P.1.1	< 0,15 % C	Annealed	420 N/mm² / 125 HB	1.0401	C15	1.1141	Ck15
		P.1.2	< 0,45 % C	Annealed	640 N/mm² / 190 HB	1.1191	C45E	1.0718	9SMnPb28
		P.1.3		Tempered	840 N/mm² / 250 HB	1.1191	C45E	1.0535	C55
		P.1.4	< 0,75 % C	Annealed	910 N/mm² / 270 HB	1.1223	C60R	1.0535	C55
		P.1.5		Tempered	1010 N/mm² / 300 HB	1.1223	C60R	1.0727	45S20
	Low-alloy steel	P.2.1		Annealed	610 N/mm² / 180 HB	1.7131	16MnCr5	1.6587	17CrNiMo6
		P.2.2		Tempered	930 N/mm² / 275 HB	1.7131	16MnCr5	1.6587	17CrNiMo6
		P.2.3		Tempered	1010 N/mm² / 300 HB	1.7225	42CrMo4	1.3505	100Cr6
		P.2.4		Tempered	1200 N/mm² / 375 HB	1.7225	42CrMo4	1.3505	100Cr6
	High-alloy steel and high-alloy tool steel	P.3.1		Annealed	680 N/mm² / 200 HB	1.4021	X20Cr13	1.4034	X46Cr13
		P.3.2		Hardened and tempered	1100 N/mm² / 300 HB	1.2343	X38CrMoV5-1	1.4034	X46Cr13
		P.3.3		Hardened and tempered	1300 N/mm² / 400 HB	1.2343	X38CrMoV5-1	1.4034	X46Cr13
	Stainless steel	P.4.1	Ferritic / martensitic	Annealed	680 N/mm² / 200 HB	1.4016	X6Cr17	1.2316	X36CrMo16
		P.4.2	Martensitic	Tempered	1010 N/mm² / 300 HB	1.4112	X90CrMoV18	1.2316	X36CrMo16
M	Stainless steel	M.1.1	Austenitic / austenitic-ferritic	Quenched	610 N/mm² / 180 HB	1.4301	X5CrNi18-10	1.4571	X6CrNiMoTi17-12-2
		M.2.1	Austenitic	Tempered	300 HB	1.4841	X15CrNiSi25-21	1.4539	X1NiCrMoCu25-20-5
		M.3.1	Austenitic / ferritic (Duplex)		780 N/mm² / 230 HB	1.4462	X2CrNiMoN22-5-3	1.4501	X2CrNiMoCuWN25-7-4
K	Grey cast iron	K.1.1	Pearlitic / ferritic		350 N/mm² / 180 HB	0.6010	GG-10	0.6025	GG-25
		K.1.2	Pearlitic (martensitic)		500 N/mm² / 260 HB	0.6030	GG-30	0.6045	GG-45
	Spherulitic graphite cast iron	K.2.1	Ferritic		540 N/mm² / 160 HB	0.7040	GGG-40	0.7060	GGG-60
		K.2.2	Pearlitic		845 N/mm² / 250 HB	0.7070	GGG-70	0.7080	GGG-80
	Malleable iron	K.3.1	Ferritic		440 N/mm² / 130 HB	0.8035	GTW-35-04	0.8045	GTW-45
		K.3.2	Pearlitic		780 N/mm² / 230 HB	0.8165	GTS-65-02	0.8170	GTS-70-02
N	Aluminium wrought alloy	N.1.1	Non-hardenable		60 HB	3.0255	Al99,5	3.3315	AlMg1
		N.1.2	Hardenable	Age-hardened	340 N/mm² / 100 HB	3.1355	AlCuMg2	3.2315	AlMgSi1
	Cast aluminium alloy	N.2.1	≤ 12 % Si, non-hardenable		250 N/mm² / 75 HB	3.2581	G-AlSi12	3.2163	G-AlSi9Cu3
		N.2.2	≤ 12 % Si, hardenable	Age-hardened	300 N/mm² / 90 HB	3.2134	G-AlSi5Cu1Mg	3.2373	G-AlSi9Mg
		N.2.3	> 12 % Si, non-hardenable		440 N/mm² / 130 HB		G-AlSi17Cu4Mg		G-AlSi18CuNiMg
	Copper and copper alloys (bronze/brass)	N.3.1	Free-machining alloys, PB > 1 %		375 N/mm² / 110 HB	2.0380	CuZn39Pb2 (Ms58)	2.0410	CuZn44Pb2
		N.3.2	CuZn, CuSnZn		300 N/mm² / 90 HB	2.0331	CuZn15	2.4070	CuZn28Sn1As
		N.3.3	CuSn, lead-free copper and electrolytic copper		340 N/mm² / 100 HB	2.0060	E-Cu57	2.0590	CuZn40Fe
	Magnesium alloys	N.4.1	Magnesium and magnesium alloys		70 HB	3.5612	MgAl6Zn	3.5312	MgAl3Zn
S	Heat-resistant alloys	S.1.1	Fe - basis	Annealed	680 N/mm² / 200 HB	1.4864	X12NiCrSi 36-16	1.4865	G-X40NiCrSi38-18
		S.1.2		Age-hardened	950 N/mm² / 280 HB	1.4980	X6NiCrTiMoVB25-15-2	1.4876	X10NiCrAlTi32-20
		S.2.1	Ni or Co basis	Annealed	840 N/mm² / 250 HB	2.4631	NiCr20TiAl (Nimonic80A)	3.4856	NiCr22Mo9Nb
		S.2.2		Age-hardened	1180 N/mm² / 350 HB	2.4668	NiCr19Nb5Mo3 (Inconel 718)	2.4955	NiFe25Cr20NbTi
		S.2.3		Cast	1080 N/mm² / 320 HB	2.4765	CoCr20W15Ni	1.3401	G-X120Mn12
	Titanium alloys	S.3.1	Pure titanium		400 N/mm²	3.7025	Ti99,8	3.7034	Ti99,7
		S.3.2	Alpha + beta alloys	Age-hardened	1050 N/mm² / 320 HB	3.7165	TiAl6V4	Ti-6246	Ti-6Al-2Sn-4Zr-6Mo
		S.3.3	Beta alloys		1400 N/mm² / 410 HB	Ti555.3	Ti-5Al-5V-5Mo-3Cr	R56410	Ti-10V-2Fe-3Al
H	Hardened steel	H.1.1		Hardened and tempered	46–55 HRC				
		H.1.2		Hardened and tempered	56–60 HRC				
		H.1.3		Hardened and tempered	61–65 HRC				
		H.1.4		Hardened and tempered	66–70 HRC				
	Chilled iron	H.2.1		Cast	400 HB				
	Hardened cast iron	H.3.1		Hardened and tempered	55 HRC				
O	Non-metal materials	O.1.1	Plastics, duroplastic		≤ 150 N/mm²				
		O.1.2	Plastics, thermoplastic		≤ 100 N/mm²				
		O.2.1	Aramid fibre-reinforced		≤ 1000 N/mm²				
		O.2.2	Glass/carbon-fibre reinforced		≤ 1000 N/mm²				
		O.3.1	Graphite						

*** Tensile strength**

Cutting data standard values – WTX – UNI

Index	Drilling depth 3xD UNI 11 777 ..., 11 780 ...					Drilling depth 5xD UNI 11 783 ..., 11 786 ...				
	v_c m/min without through coolant	v_c m/min with through coolant	Ø 3–5 mm/rev.	Ø 5–8 mm/rev.	Ø 8–12 mm/rev.	v_c m/min without through coolant	v_c m/min with through coolant	Ø 3–5 mm/rev.	Ø 5–8 mm/rev.	Ø 8–12 mm/rev.
P.1.1	**110**	**120**	0,13	0,18	0,25	**110**	**120**	0,13	0,18	0,25
P.1.2	**105**	**115**	0,12	0,18	0,24	**105**	**115**	0,12	0,18	0,24
P.1.3	**100**	**110**	0,12	0,17	0,23	**100**	**110**	0,12	0,17	0,23
P.1.4	**95**	**105**	0,11	0,16	0,21	**95**	**105**	0,11	0,16	0,21
P.1.5	**90**	**100**	0,11	0,15	0,20	**90**	**100**	0,11	0,15	0,20
P.2.1	**105**	**120**	0,15	0,22	0,29	**105**	**120**	0,15	0,22	0,29
P.2.2	**95**	**110**	0,14	0,20	0,27	**95**	**110**	0,14	0,20	0,27
P.2.3	**85**	**100**	0,13	0,18	0,24	**85**	**100**	0,13	0,18	0,24
P.2.4	**65**	**75**	0,12	0,16	0,21	**65**	**75**	0,12	0,16	0,21
P.3.1	**70**	**85**	0,12	0,18	0,24	**70**	**85**	0,12	0,18	0,24
P.3.2	**60**	**65**	0,11	0,15	0,20	**60**	**65**	0,11	0,15	0,20
P.3.3	**50**	**65**	0,09	0,12	0,15	**50**	**65**	0,09	0,12	0,15
P.4.1	**50**	**65**	0,08	0,12	0,16	**50**	**65**	0,08	0,12	0,16
P.4.2	**50**	**65**	0,08	0,12	0,16	**50**	**65**	0,08	0,12	0,16
M.1.1										
M.2.1										
M.3.1										
K.1.1	**85**	**120**	0,17	0,26	0,36	**85**	**120**	0,17	0,26	0,36
K.1.2	**75**	**100**	0,15	0,22	0,29	**75**	**100**	0,15	0,22	0,29
K.2.1	**100**	**160**	0,17	0,25	0,34	**100**	**160**	0,17	0,25	0,34
K.2.2	**75**	**100**	0,15	0,22	0,29	**75**	**100**	0,15	0,22	0,29
K.3.1	**80**	**90**	0,16	0,23	0,32	**80**	**90**	0,16	0,23	0,32
K.3.2	**70**	**80**	0,14	0,19	0,25	**70**	**80**	0,14	0,19	0,25
N.1.1										
N.1.2										
N.2.1										
N.2.2										
N.2.3										
N.3.1										
N.3.2										
N.3.3										
N.4.1										
S.1.1										
S.1.2										
S.2.1										
S.2.2										
S.2.3										
S.3.1										
S.3.2										
S.3.3										
H.1.1	25	25	0,06	0,08	0,11	25	25	0,06	0,08	0,11
H.1.2										
H.1.3										
H.1.4										
H.2.1	35	35	0,08	0,11	0,14	35	35	0,08	0,11	0,14
H.3.1										
O.1.1										
O.1.2										
O.2.1										
O.2.2										
O.3.1										

The cutting data depends extremely on the external conditions, the material and machine type.
The indicated values are possible values which have to be increased or reduced according to the application conditions.

1

Cutting data standard values – WTX – Ti / AL

Index	Hole depth 3xD / 5xD Ti 10 786 ..., 10 787 ...							Drilling depth 5xD AL 10 791 ...							
	v_c m/min with through coolant	Ø 3–4 f mm/rev.	Ø 4–5 f mm/rev.	Ø 5–6 f mm/rev.	Ø 6–8 f mm/rev.	Ø 8–10 f mm/rev.	Ø 10–12 f mm/rev.	v_c m/min with through coolant	Ø 2–3 f mm/rev.	Ø 3–4 f mm/rev.	Ø 4–5 f mm/rev.	Ø 5–6 f mm/rev.	Ø 6–8 f mm/rev.	Ø 8–10 f mm/rev.	Ø 10–12 f mm/rev.
P.1.1															
P.1.2															
P.1.3															
P.1.4															
P.1.5															
P.2.1															
P.2.2															
P.2.3															
P.2.4															
P.3.1															
P.3.2															
P.3.3															
P.4.1	75	0,03	0,04	0,05	0,06	0,08	0,10								
P.4.2	65	0,03	0,04	0,05	0,06	0,08	0,10								
M.1.1	**70**	0,03	0,04	0,05	0,06	0,08	0,10								
M.2.1	**70**	0,03	0,04	0,05	0,06	0,08	0,10								
M.3.1	**70**	0,03	0,04	0,05	0,06	0,08	0,10								
K.1.1															
K.1.2															
K.2.1															
K.2.2															
K.3.1															
K.3.2															
N.1.1								**360**	0,15	0,20	0,23	0,25	0,29	0,32	0,35
N.1.2								**400**	0,15	0,20	0,23	0,25	0,29	0,32	0,35
N.2.1								**360**	0,20	0,23	0,25	0,28	0,32	0,35	0,38
N.2.2								**400**	0,20	0,23	0,25	0,28	0,32	0,35	0,38
N.2.3								**350**	0,15	0,20	0,23	0,25	0,29	0,32	0,35
N.3.1								**200**	0,08	0,11	0,13	0,15	0,19	0,23	0,26
N.3.2								**200**	0,08	0,11	0,13	0,15	0,19	0,23	0,26
N.3.3								**160**	0,08	0,11	0,13	0,15	0,19	0,23	0,26
N.4.1															
S.1.1	**45**	0,02	0,02	0,02	0,04	0,05	0,07								
S.1.2	**45**	0,02	0,02	0,02	0,04	0,05	0,07								
S.2.1	**40**	0,02	0,02	0,02	0,04	0,05	0,07								
S.2.2	**40**	0,02	0,02	0,02	0,04	0,05	0,07								
S.2.3															
S.3.1	**55**	0,02	0,02	0,02	0,04	0,05	0,07								
S.3.2	**45**	0,02	0,02	0,02	0,04	0,05	0,07								
S.3.3															
H.1.1															
H.1.2															
H.1.3															
H.1.4															
H.2.1															
H.3.1															
O.1.1															
O.1.2															
O.2.1															
O.2.2															
O.3.1															

The cutting data depends extremely on the external conditions, the material and machine type.
The indicated values are possible values which have to be increased or reduced according to the application conditions.

Cutting data standard values – WTX – MINI / MICRO

Index	Drilling depth 5xD Mini 11 770 ...					Drilling depth 5xD Micro 10 693 ...							
	v_c m/min without through coolant	< Ø 1,0 f mm/rev.	> Ø 1,0–1,5 f mm/rev.	> Ø 1,5–2,0 f mm/rev.	> Ø 2,0–2,9 f mm/rev.	v_c m/min with through coolant	v_c m/min MMS	< Ø 1,0 f mm/rev.	> Ø 1,0–1,25 f mm/rev.	> Ø 1,25–1,5 f mm/rev.	> Ø 1,5–2,0 f mm/rev.	> Ø 2,0–2,5 f mm/rev.	> Ø 2,5–3,0 f mm/rev.
P.1.1	75	0,01	0,01	0,0125	0,015	**60**	**50**	0,024	0,028	0,034	0,05	0,07	0,095
P.1.2	65	0,02	0,02	0,025	0,03	**50**	**45**	0,024	0,028	0,034	0,05	0,07	0,095
P.1.3	65	0,01	0,01	0,0125	0,015	**50**	**45**	0,024	0,028	0,034	0,05	0,07	0,095
P.1.4	65	0,01	0,01	0,0125	0,015	**50**	**45**	0,024	0,028	0,034	0,05	0,07	0,095
P.1.5	70	0,01	0,01	0,0125	0,015	**50**	**45**	0,024	0,028	0,034	0,05	0,07	0,095
P.2.1	70	0,01	0,01	0,0125	0,015	**60**	**50**	0,024	0,028	0,034	0,05	0,07	0,095
P.2.2	65	0,01	0,01	0,0125	0,015	**50**	**45**	0,024	0,028	0,034	0,05	0,07	0,095
P.2.3	65	0,02	0,02	0,025	0,03	**50**	**45**	0,024	0,028	0,034	0,05	0,07	0,095
P.2.4	65	0,01	0,01	0,0125	0,015								
P.3.1						**50**	**45**	0,024	0,028	0,034	0,05	0,07	0,095
P.3.2						**40**	**35**	0,024	0,028	0,034	0,05	0,07	0,095
P.3.3													
P.4.1						**40**		0,012	0,015	0,018	0,028	0,04	0,06
P.4.2						**25**		0,012	0,015	0,018	0,028	0,04	0,06
M.1.1						**30**		0,012	0,015	0,018	0,028	0,04	0,06
M.2.1						**30**		0,012	0,015	0,018	0,028	0,04	0,06
M.3.1						**30**		0,012	0,015	0,018	0,028	0,04	0,06
K.1.1	**70**	0,01	0,01	0,0125	0,015	**60**	**50**	0,024	0,028	0,034	0,05	0,07	0,095
K.1.2	**70**	0,01	0,01	0,0125	0,015	**60**	**50**	0,024	0,028	0,034	0,05	0,07	0,095
K.2.1	**70**	0,01	0,01	0,0125	0,015	**60**	**50**	0,024	0,028	0,034	0,05	0,07	0,095
K.2.2	**70**	0,01	0,01	0,0125	0,015	**60**	**50**	0,024	0,028	0,034	0,05	0,07	0,095
K.3.1	**70**	0,01	0,01	0,0125	0,015	**60**	**50**	0,024	0,028	0,034	0,05	0,07	0,095
K.3.2	**70**	0,01	0,01	0,0125	0,015	**60**	**50**	0,024	0,028	0,034	0,05	0,07	0,095
N.1.1	**200**	0,01	0,01	0,0125	0,015								
N.1.2	**200**	0,01	0,01	0,0125	0,015								
N.2.1	**160**	0,01	0,01	0,0125	0,015								
N.2.2	**180**	0,01	0,01	0,0125	0,015								
N.2.3	**130**	0,01	0,01	0,0125	0,015								
N.3.1	**160**	0,01	0,01	0,0125	0,015								
N.3.2	**160**	0,01	0,01	0,0125	0,015								
N.3.3	**100**	0,01	0,01	0,0125	0,015								
N.4.1	**200**	0,01	0,01	0,0125	0,015								
S.1.1						15		0,012	0,015	0,018	0,028	0,04	0,06
S.1.2						15		0,012	0,015	0,018	0,028	0,04	0,06
S.2.1						10		0,012	0,015	0,018	0,028	0,04	0,06
S.2.2						10		0,012	0,015	0,018	0,028	0,04	0,06
S.2.3													
S.3.1	30	0,01	0,01	0,0125	0,015	20		0,012	0,015	0,018	0,028	0,04	0,06
S.3.2	20	0,01	0,01	0,0125	0,015	10		0,012	0,015	0,018	0,028	0,04	0,06
S.3.3													
H.1.1													
H.1.2													
H.1.3													
H.1.4													
H.2.1													
H.3.1													
O.1.1													
O.1.2													
O.2.1													
O.2.2													
O.3.1													

The cutting data depends extremely on the external conditions, the material and machine type.
The indicated values are possible values which have to be increased or reduced according to the application conditions.

			Hole depth 8xD / 12xD Micro 10 694 ..., 10 695 ...					
Index	v_c m/min with through coolant	v_c m/min MMS	< Ø 1,0	> Ø 1,0–1,25	> Ø 1,25–1,5	> Ø 1,5–2,0	> Ø 2,0–2,5	> Ø 2,5–3,0
			f mm/rev.	f mm/rev.	f mm/rev.	f mm/rev.	f mm/rev.	f mm/rev.
P.1.1	**60**	**50**	0,024	0,028	0,034	0,05	0,07	0,095
P.1.2	**50**	**45**	0,024	0,028	0,034	0,05	0,07	0,095
P.1.3	**50**	**45**	0,024	0,028	0,034	0,05	0,07	0,095
P.1.4	**50**	**45**	0,024	0,028	0,034	0,05	0,07	0,095
P.1.5	**50**	**45**	0,024	0,028	0,034	0,05	0,07	0,095
P.2.1	**60**	**50**	0,024	0,028	0,034	0,05	0,07	0,095
P.2.2	**50**	**45**	0,024	0,028	0,034	0,05	0,07	0,095
P.2.3	**50**	**45**	0,024	0,028	0,034	0,05	0,07	0,095
P.2.4								
P.3.1	**50**	**45**	0,024	0,028	0,034	0,05	0,07	0,095
P.3.2	**40**	**35**	0,024	0,028	0,034	0,05	0,07	0,095
P.3.3								
P.4.1	**40**		0,012	0,015	0,018	0,028	0,04	0,06
P.4.2	**25**		0,012	0,015	0,018	0,028	0,04	0,06
M.1.1	**30**		0,012	0,015	0,018	0,028	0,04	0,06
M.2.1	**30**		0,012	0,015	0,018	0,028	0,04	0,06
M.3.1	**30**		0,012	0,015	0,018	0,028	0,04	0,06
K.1.1	**60**	**50**	0,024	0,028	0,034	0,05	0,07	0,095
K.1.2	**60**	**50**	0,024	0,028	0,034	0,05	0,07	0,095
K.2.1	**60**	**05**	0,024	0,028	0,034	0,05	0,07	0,095
K.2.2	**60**	**50**	0,024	0,028	0,034	0,05	0,07	0,095
K.3.1	**60**	**50**	0,024	0,028	0,034	0,05	0,07	0,095
K.3.2	**60**	**50**	0,024	0,028	0,034	0,05	0,07	0,095
N.1.1								
N.1.2								
N.2.1								
N.2.2								
N.2.3								
N.3.1								
N.3.2								
N.3.3								
N.4.1								
S.1.1	15		0,012	0,015	0,018	0,028	0,04	0,06
S.1.2	15		0,012	0,015	0,018	0,028	0,04	0,06
S.2.1	10		0,012	0,015	0,018	0,028	0,04	0,06
S.2.2	10		0,012	0,015	0,018	0,028	0,04	0,06
S.2.3								
S.3.1	20		0,012	0,015	0,018	0,028	0,04	0,06
S.3.2	10		0,012	0,015	0,018	0,028	0,04	0,06
S.3.3								
H.1.1								
H.1.2								
H.1.3								
H.1.4								
H.2.1								
H.3.1								
O.1.1								
O.1.2								
O.2.1								
O.2.2								
O.3.1								

Cutting data standard values – WTX – 180

	Drilling depth 3xD Type 180 10 720 ...			
Index	v_c m/min with through coolant	Ø 3–5 f mm/rev.	Ø 5–8 f mm/rev.	Ø 8–12 f mm/rev.
P.1.1	90	0,09	0,13	0,18
P.1.2	85	0,09	0,13	0,17
P.1.3	80	0,09	0,12	0,16
P.1.4	75	0,08	0,12	0,16
P.1.5	70	0,08	0,11	0,15
P.2.1	90	0,11	0,16	0,21
P.2.2	80	0,10	0,14	0,19
P.2.3	70	0,09	0,13	0,17
P.2.4	55	0,09	0,12	0,16
P.3.1	60	0,09	0,13	0,17
P.3.2	50	0,08	0,11	0,14
P.3.3	50	0,06	0,09	0,11
P.4.1	50	0,06	0,09	0,11
P.4.2	50	0,06	0,09	0,11
M.1.1	45	0,06	0,09	0,11
M.2.1	40	0,05	0,07	0,10
M.3.1	40	0,05	0,07	0,10
K.1.1	95	0,12	0,19	0,26
K.1.2	80	0,11	0,16	0,21
K.2.1	130	0,12	0,18	0,25
K.2.2	80	0,11	0,16	0,21
K.3.1	70	0,12	0,17	0,23
K.3.2	65	0,10	0,14	0,18
N.1.1				
N.1.2				
N.2.1				
N.2.2				
N.2.3				
N.3.1				
N.3.2				
N.3.3				
N.4.1				
S.1.1				
S.1.2				
S.2.1				
S.2.2				
S.2.3				
S.3.1				
S.3.2				
S.3.3				
H.1.1				
H.1.2				
H.1.3				
H.1.4				
H.2.1				
H.3.1				
O.1.1				
O.1.2				
O.2.1				
O.2.2				
O.3.1				

Cutting data standard values – WTX – 180

Index	v_c m/min with through coolant	Drilling depth 5xD Type 180 10 721 … Ø 3–5 f mm/rev.	Ø 5–8 f mm/rev.	Ø 8–12 f mm/rev.
P.1.1	90	0,09	0,13	0,18
P.1.2	85	0,09	0,13	0,17
P.1.3	80	0,09	0,12	0,16
P.1.4	75	0,08	0,12	0,16
P.1.5	70	0,08	0,11	0,15
P.2.1	90	0,11	0,16	0,21
P.2.2	80	0,10	0,14	0,19
P.2.3	70	0,09	0,13	0,17
P.2.4	55	0,09	0,12	0,16
P.3.1	60	0,09	0,13	0,17
P.3.2	50	0,08	0,11	0,14
P.3.3	50	0,06	0,09	0,11
P.4.1	50	0,06	0,09	0,11
P.4.2	50	0,06	0,09	0,11
M.1.1	45	0,06	0,09	0,11
M.2.1	40	0,05	0,07	0,10
M.3.1	40	0,05	0,07	0,10
K.1.1	95	0,12	0,19	0,26
K.1.2	80	0,11	0,16	0,21
K.2.1	130	0,12	0,18	0,25
K.2.2	80	0,11	0,16	0,21
K.3.1	70	0,12	0,17	0,23
K.3.2	65	0,10	0,14	0,18
N.1.1				
N.1.2				
N.2.1				
N.2.2				
N.2.3				
N.3.1				
N.3.2				
N.3.3				
N.4.1				
S.1.1				
S.1.2				
S.2.1				
S.2.2				
S.2.3				
S.3.1				
S.3.2				
S.3.3				
H.1.1				
H.1.2				
H.1.3				
H.1.4				
H.2.1				
H.3.1				
O.1.1				
O.1.2				
O.2.1				
O.2.2				
O.3.1				

Application Note:

Spot drilling with reduced feedrate

1. Feedrate f [mm/U] should be multiplied by correction factor A_k
2. Drill with reduced feed rate until tool is fully engaged in workpiece by approximately 0.25 x D
3. Retract from the hole at double the feed rate f in mm/U – only with inclined surfaces

   This operation is necessary in order to achieve maximum performance of the drill!
4. Drill the hole with feed rate f [mm/U] without pecking for chip evacuation

Correction factor A_k for f [mm/U] when spot drilling		
Inclination workpiece surface	A_k to 3xD (10 720 …)	A_k to 5xD (10 721 …)
15°	0,5	0,25
30°	0,4	not recommended
45°	0,25	not recommended

For drilling on flat surfaces (inclination 0 °) with the WTX – 180 5xD, we recommend the use of a pilot drill. (WTX – UNI 3xD)

Cutting data standard values – WPC – UNI

Index	v_c m/min without through coolant	v_c m/min with through coolant	Drilling depth 3xD UNI 11 600 ..., 11 603 ... Ø 1–1,5 f mm/rev.	Ø 1,5–2 f mm/rev.	Ø 2–3 f mm/rev.	Ø 3–5 f mm/rev.	Ø 5–8 f mm/rev.	Ø 8–12 f mm/rev.
P.1.1	75	85	0,05	0,06	0,08	0,11	0,15	0,20
P.1.2	70	80	0,05	0,05	0,07	0,10	0,14	0,19
P.1.3	70	75	0,05	0,05	0,07	0,10	0,14	0,18
P.1.4	65	70	0,04	0,05	0,07	0,09	0,13	0,18
P.1.5	60	70	0,04	0,05	0,06	0,09	0,12	0,17
P.2.1	70	85	0,06	0,07	0,09	0,13	0,18	0,24
P.2.2	65	75	0,05	0,06	0,08	0,11	0,16	0,22
P.2.3	55	70	0,05	0,06	0,07	0,10	0,15	0,20
P.2.4	45	55	0,05	0,06	0,07	0,10	0,13	0,17
P.3.1	50	55	0,05	0,05	0,07	0,10	0,15	0,20
P.3.2	40	45	0,04	0,05	0,06	0,09	0,12	0,16
P.3.3	35	45	0,04	0,04	0,06	0,07	0,10	0,13
P.4.1	35	45	0,03	0,04	0,05	0,07	0,10	0,13
P.4.2	35	45	0,03	0,04	0,05	0,07	0,10	0,13
M.1.1								
M.2.1								
M.3.1								
K.1.1	60	80	0,04	0,06	0,09	0,14	0,21	0,30
K.1.2	50	70	0,05	0,06	0,09	0,12	0,18	0,24
K.2.1	70	110	0,05	0,07	0,09	0,14	0,20	0,28
K.2.2	50	70	0,05	0,06	0,09	0,12	0,18	0,24
K.3.1	55	60	0,06	0,07	0,09	0,13	0,19	0,26
K.3.2	50	55	0,05	0,06	0,08	0,11	0,16	0,21
N.1.1								
N.1.2								
N.2.1								
N.2.2								
N.2.3								
N.3.1								
N.3.2								
N.3.3								
N.4.1								
S.1.1								
S.1.2								
S.2.1								
S.2.2								
S.2.3								
S.3.1								
S.3.2								
S.3.3								
H.1.1								
H.1.2								
H.1.3								
H.1.4								
H.2.1								
H.3.1								
O.1.1								
O.1.2								
O.2.1								
O.2.2								
O.3.1								

The cutting data depends extremely on the external conditions, the material and machine type.
The indicated values are possible values which have to be increased or reduced according to the application conditions.

Cutting data standard values – WPC – UNI

Index	v_c m/min without through coolant	v_c m/min with through coolant	Drilling depth 5xD UNI 11 606 ..., 11 609 ... Ø 1–1,5 f mm/rev.	Ø 1,5–2 f mm/rev.	Ø 2–3 f mm/rev.	Ø 3–5 f mm/rev.	Ø 5–8 f mm/rev.	Ø 8–12 f mm/rev.
P.1.1	75	85	0,05	0,06	0,08	0,11	0,15	0,20
P.1.2	70	80	0,05	0,05	0,07	0,10	0,14	0,19
P.1.3	70	75	0,05	0,05	0,07	0,10	0,14	0,18
P.1.4	65	70	0,04	0,05	0,07	0,09	0,13	0,18
P.1.5	60	70	0,04	0,05	0,06	0,09	0,12	0,17
P.2.1	70	85	0,06	0,07	0,09	0,13	0,18	0,24
P.2.2	65	75	0,05	0,06	0,08	0,11	0,16	0,22
P.2.3	55	70	0,05	0,06	0,07	0,10	0,15	0,20
P.2.4	45	55	0,05	0,06	0,07	0,10	0,13	0,17
P.3.1	50	55	0,05	0,05	0,07	0,10	0,15	0,20
P.3.2	40	45	0,04	0,05	0,06	0,09	0,12	0,16
P.3.3	35	45	0,04	0,04	0,06	0,07	0,10	0,13
P.4.1	35	45	0,03	0,04	0,05	0,07	0,10	0,13
P.4.2	35	45	0,03	0,04	0,05	0,07	0,10	0,13
M.1.1								
M.2.1								
M.3.1								
K.1.1	60	80	0,04	0,06	0,09	0,14	0,21	0,30
K.1.2	50	70	0,05	0,06	0,09	0,12	0,18	0,24
K.2.1	70	110	0,05	0,07	0,09	0,14	0,20	0,28
K.2.2	50	70	0,05	0,06	0,09	0,12	0,18	0,24
K.3.1	55	60	0,06	0,07	0,09	0,13	0,19	0,26
K.3.2	50	55	0,05	0,06	0,08	0,11	0,16	0,21
N.1.1								
N.1.2								
N.2.1								
N.2.2								
N.2.3								
N.3.1								
N.3.2								
N.3.3								
N.4.1								
S.1.1								
S.1.2								
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S.2.2								
S.2.3								
S.3.1								
S.3.2								
S.3.3								
H.1.1								
H.1.2								
H.1.3								
H.1.4								
H.2.1								
H.3.1								
O.1.1								
O.1.2								
O.2.1								
O.2.2								
O.3.1								

The cutting data depends extremely on the external conditions, the material and machine type.
The indicated values are possible values which have to be increased or reduced according to the application conditions.

Cutting data standard values – solid carbide NC spot drills

Index	NC Spot Drill NC-A 10 702 ..., 10 703 ...							
	v_c m/min without through coolant	Ø 2–3	Ø 3–4	Ø 4–5	Ø 5–6	Ø 6–8	Ø 8–10	Ø 10–12
		f mm/rev.	f mm/rev.	f mm/rev.	f mm/rev.	f mm/rev.	f mm/rev.	f mm/rev.
P.1.1	75	0,05	0,07	0,08	0,10	0,12	0,14	0,16
P.1.2	65	0,05	0,07	0,08	0,10	0,12	0,14	0,16
P.1.3	65	0,04	0,05	0,06	0,08	0,10	0,11	0,13
P.1.4	65	0,04	0,05	0,06	0,08	0,10	0,11	0,13
P.1.5	70	0,04	0,05	0,06	0,08	0,10	0,11	0,13
P.2.1	70	0,05	0,07	0,08	0,10	0,12	0,14	0,16
P.2.2	65	0,04	0,05	0,06	0,08	0,10	0,11	0,13
P.2.3	65	0,05	0,07	0,08	0,10	0,12	0,14	0,16
P.2.4	65	0,04	0,05	0,06	0,08	0,10	0,11	0,13
P.3.1								
P.3.2								
P.3.3								
P.4.1								
P.4.2								
M.1.1								
M.2.1								
M.3.1								
K.1.1	**70**	0,04	0,05	0,06	0,08	0,10	0,13	0,15
K.1.2	**70**	0,04	0,05	0,06	0,08	0,10	0,11	0,13
K.2.1	**70**	0,04	0,05	0,06	0,08	0,10	0,11	0,13
K.2.2	**70**	0,04	0,05	0,06	0,08	0,10	0,11	0,13
K.3.1	**70**	0,04	0,05	0,06	0,08	0,10	0,11	0,13
K.3.2	**70**	0,04	0,05	0,06	0,08	0,10	0,11	0,13
N.1.1	**200**	0,01	0,01	0,02	0,02	0,03	0,04	0,05
N.1.2	**200**	0,01	0,01	0,02	0,02	0,03	0,04	0,05
N.2.1	**160**	0,01	0,01	0,02	0,02	0,03	0,04	0,05
N.2.2	**180**	0,01	0,01	0,02	0,02	0,03	0,04	0,05
N.2.3	**130**	0,01	0,01	0,02	0,02	0,03	0,04	0,05
N.3.1	**160**	0,01	0,01	0,01	0,01	0,02	0,03	0,04
N.3.2	**160**	0,01	0,01	0,01	0,01	0,02	0,03	0,04
N.3.3	**100**	0,01	0,01	0,01	0,01	0,02	0,03	0,04
N.4.1								
S.1.1								
S.1.2								
S.2.1								
S.2.2								
S.2.3								
S.3.1								
S.3.2								
S.3.3								
H.1.1								
H.1.2								
H.1.3								
H.1.4								
H.2.1								
H.3.1								
O.1.1								
O.1.2								
O.2.1								
O.2.2								
O.3.1								

The cutting data depends extremely on the external conditions, the material and machine type.
The indicated values are possible values which have to be increased or reduced according to the application conditions.

Important application criteria for WTX drills

Axial offset
The axial run-out of the axis between a rotating work piece and a stationary tool must not exceed 0.04 mm. A larger run-out reduces tool life and drilling quality and can lead to tool breakage.

Run-out
The concentricity error when the tool is rotating should not exceed 0.015 mm.

Cooling lubricant
With internally cooled tools the coolant pressure should be min. 20 bar.
High-quality semi-synthetic or emulsion coolants with min. 10 % oil content and EP additives are recommended. This allows better life, and achieves higher tolerance accuracy and better surface quality. A fine filter system is recommended to prevent possible clogging of the coolant channels.

Drilling into solid
Due to the geometric design of the solid carbide drills, they are suitable for drilling into solid material.
With solid carbide drills ≤ 12xD drilling can be carried out in solid material without the need for centering and spot drilling operations.

Flute run-out
When using WTX drills a safety margin of at least 1 to 1.5xD must be maintained between the work piece and the flute outlet groove of the drill to ensure optimum chip evacuation and prevent chip clogging and tool fracture.

Peck drilling
Pecking should be avoided as there is a very high risk of fracture caused by chips left behind or flushed into the hole.

Secondary tools
If a smaller diameter WTX drill is used as a following tool in the same hole, it should have a smaller drill point angle to ensure that it centres properly.

Interrupted Cuts
Reduce the feedrate on entry to and from cross holes

Drill exit
To avoid severe burr formation, reduce v_c and f.

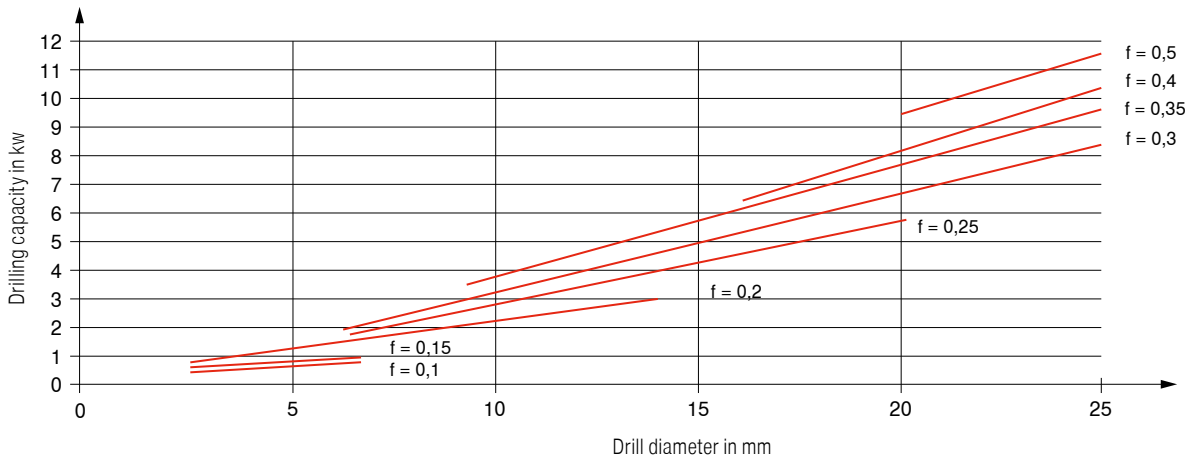
Workpiece clamping
To avoid tool breakages, care must be taken to ensure a proper workpiece clamping without vibration or workpiece deflection.

Tool holding
With optimum clamping high alignment accuracy and tolerances (IT7-8) are possible.
Due to the high surface quality reaming operations can often be dispensed with.

Machine Requirements
Please note the performance diagram

Cutting data table
To control the chip length (comma chip) the feed rates should be no lower than the lower limits quoted in the cutting data table.

Feed rate f in mm/rev.
Drilling capacity relative to the diameter: v_c = 80 m/min.
Tensile strength of the material = 600 N/mm²

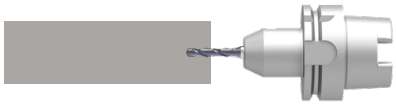


WTX – Micro – recommended application

General references

- During vertical machining, a pilot hole is not required for regular and straight surfaces from Ø 1.0 mm up to a length of 12xD due to the excellent self-centring. During horizontal drilling, a pilot drill must be used for irregular and angled surfaces.
  The WTX Micro 5xD is recommended as a pilot drill.
- To guarantee problem-free insertion of the deep hole twist drill in the pilot hole, during horizontal machining 90° countersinking with suitable NC countersink is recommended.
- During vertical machining, drills from Ø 1.0 mm up to a length of 12xD can also be operated outside the pilot hole without a reduction in speed.
- For through holes, the feed per revolution must be reduced by 50% before exiting the hole.
- For long-chipping materials, pecking may be required every 3xD from a hole depth of 10xD. Peck drilling (retraction) should occur at the pilot hole depth.
- Due to the small thro' coolant Ø during micro drilling, effective filtration of the cooling medium is of the utmost importance.
  Drill < Ø 2.0 mm Filter ≤ 0.010 mm
  Drill < Ø 3.0 mm Filter ≤ 0.020 mm
- The longer the coolant is in the machine, suspended particles and particulate matter in the cooling medium prevent effective coolant flow. Regular replacement of the coolant is therefore recommended.
- A suitable clamping device with maximum radial run-out accuracy and balance quality is required for process-secure production.
  Radial run-out accuracy ≤ 0.003 mm
  Suitable for high-speed areas
- To guarantee a process-secure drilling process, a minimum pressure of 30 bar must be present.

1 Producing the pilot hole

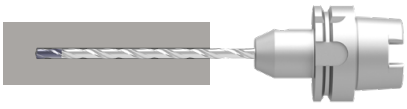


- Pilot hole depth: min. 3xD
- It must be ensured that the prepared pilot hole is free from chips to avoid blocking of the micro deep hole twist drill cutting edges

2 Entering the pilot hole with a deep hole twist drill

- Speed 300 rpm (reverse rotation sometimes possible)
- Entry speed approx. 1000 mm/min
- Switch on cooling
- Increase parameters 0.5–1.0 mm before reaching the bottom of the pilot hole

3 Deep hole drilling

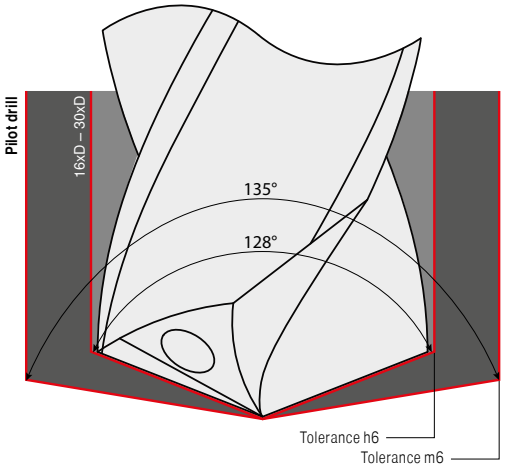


- At hole depth without pecking

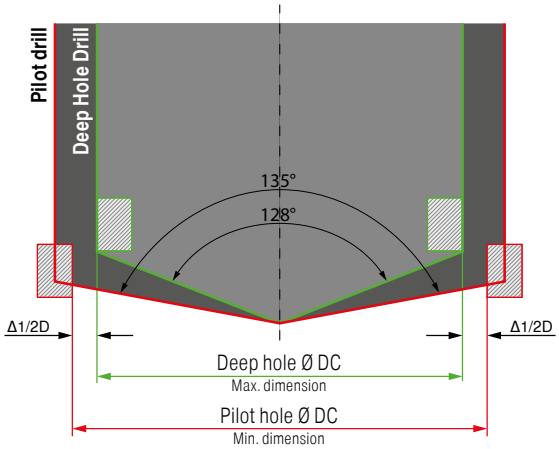
4 Retracting the drill

- Retract drill approx. 1xD
- Reduce speed to 300 rpm
- Exit speed approx. 1000 mm/min
- Switch off emulsion before exiting the hole

Tolerances and angles



The following must apply to use the pilot and deep hole twist drill consecutively and without collisions:
ΔD = ØD (pilot hole) – ØD (deep hole) > 0



Recommendations for solid carbide drilling operations

Reasons for ...	Solutions ...
... Built-up edge	
v_c too low	Increase v_c
Too much material taken off at main cutting edge	Reduce cut
Uncoated cutting edge	Coating
... Corners broken off	
Unstable conditions	Change clamping
Run out too high	Optimize radial run-out
Interrupted cut	Reduce feed rate
... Heavy flank wear	
v_c too low	Reduce v_c
Feed rate too low	Increase feed rate
Clearance angle too small	Increase clearance angle
... Scoring on the tool flanks	
Unstable conditions	Change clamping
Run out too high	Correct radial run-out
Interrupted cut	Reduce feed rate
Abrasive materials	Thicker emulsion or oil
... Round chamfer wear	
Unstable conditions	More stable clamping
Run out too high	Check radial run-out
Back taper too small	Increase back taper
Wrong emulsion or too thin emulsion	Thicker emulsion or oil
... Material broken off at main cutting edge	
Unstable conditions	More stable clamping
Interrupted cut	Reduce feed rate
Wrong type of tool	Optimize tool
Max. tool life has been exceeded	Change tool earlier
... Heavy wear at chisel edge	
v_c too low	Increase v_c
Feed rate too high	Reduce feed rate
Too much material taken off at main cutting edge	Optimize cutting edge
... Material broken off at intersections, drill point and main cutting edge	
Clearance angle too small	Increase clearance angle
Too much material taken off at main cutting edge	Optimize cutting edge
Wrong tool	Other tool
... Plastic deformation of cutting corner	
v_c too high	Reduce v_c
Insufficient emulsion	Increase amount of coolant
Wrong or no corner chamfer	Correct corner chamfer
... Poor surface quality	
Run out too high	Check radial run-out
Insufficient cooling	More emulsion
Unstable conditions	Change toolholding
... Heavy burring on hole exit	
Feed too high	Reduce feed rate
Excessive honing of main cutting edge	Reduce cutting edge

Type overview – WTX High performance drilling tools

- good self-centring
- optimum swarf control
- precise radial run-out
- excellent alignment precision
- high-quality surface finish
- close drilling tolerances
- limited hardening of peripheral zones of the material
- good chip evacuation even with large drilling depths

For all products that are marked with the video icon, a relevant product video can be viewed at **cutting.tools/int/en/type-overview-wtx**

UNI		▲ high-performance solid carbide drill for universal application, for all materials up to 1200 N/mm²	DRAGONSKIN	▶
Ti		▲ specialist for cost effective machining of titanium, titanium alloys and heat resistant alloys	DRAGONSKIN	
AL		▲ solid carbide high performance drill specailly for the machining of aluminium, copper and brass ▲ 6 facet geometry for excellent hole quality	DRAGONSKIN	
180		▲ for inclined surfaces up to 45° and flat bottom holes		
MINI		▲ solid carbide micro drill for the precise manufacture of very small holes from Ø 0.1 to 2.9 mm		
MICRO		▲ Universal high-performance micro drill ▲ Specialised geometry and coating ▲ Pilot drill for WTX Micro deep hole twist drill	DRAGONSKIN	▶

Coatings

DPX74S (DRAGONSKIN)
- ▲ Special TiAlN nanolayer coating
- ▲ Maximum application temperature: 1000 °C

DPX74M (DRAGONSKIN)
- ▲ Universal AlCrN-based monolayer coating developed for micro tools
- ▲ High oxidation, heat and wear resistance
- ▲ Maximum application temperature 1100 °C

DPA54 (DRAGONSKIN)
- ▲ Special multilayer coating
- ▲ High hardness and heat resistance
- ▲ Maximum application temperature: 800 °C

Ti800
- ▲ AlTiN nanolayer coating
- ▲ Maximum application temperature: 1100 °C

TiAlN
- ▲ TiAlN multilayer coating
- ▲ Maximum application temperature: 900 °C

DLC (DRAGONSKIN)
- ▲ Diamond-like carbon coating
- ▲ Specially for machining non-ferrous metals
- ▲ Maximum application temperature: 400 °C

Reamers overview

	Length	Diameter in mm Ø DC	Standard Tolerance	Steel P	Stainless steel M	Cast iron K	Non-ferrous metals N	Heat-resistant S	Tempered steel H	Non metal materials O	Through hole	Blind hole	Int. coolant supply	coated ■	uncoated □	KOMET \ Performance	KOMET \ Standard
Monomax																	
▲ adjustable monoblock reamer in 3xD and 5xD ▲ regrinding and re-tipping on the base body ▲ all common materials																	
	short	5,60–12,00	H7 1/100	●	●	●	●			○	✓	✓	✓	■		48–50	
Fullmax																	
▲ High-speed reamer in shorter and longer version ▲ Reamers for machining steel, stainless and acid-resistant steels, cast materials, aluminium and hardened materials up to 63 HRC ▲ Extremely irregular pitch ▲ Standard shank ~ DIN 6535 HA																	
	short	4,00–12,00 2,96–12,03	H7 1/100	●	●		○	○			✓	✓	✓	■		51–56	
	long	4,00–12,00 2,96–12,03	H7 1/100	●	●		●	○		○	✓	✓	✓	■		57–62	
Solid Carbide Reamers																	
▲ universal solid carbide reamer without thro' coolant ▲ extremely irregular pitch ▲ DIN 6535 HA shank																	
		0,59–12,05	1/100	●		○	●			●	✓				□	63	
		0,59–12,05	1/100	●	○	●		○	○		✓			■		64	
HSS Reamers																	
▲ HSS-E NC machine reamer ▲ DIN 1835 A shank																	
		0,95–12,00	1/100	●		●	●			●	✓				□	65	
▲ HSS-E machine reamer																	
		0,95–12,00	1/100	●	○	●	●	○		●	✓				□		66+67
▲ HSS-E automatic machine reamer DIN 8089																	
		4,00–12,00	H7	●	○	●	●	○		●	✓				□	68	
		3,76–12,00	1/100	●	○	●	●	○		●	✓				□	69	

For further dimensions and drills, please refer to our → **Main catalogue, Chapter 4 Reamers and countersinkers**

Monomax – Selection guide

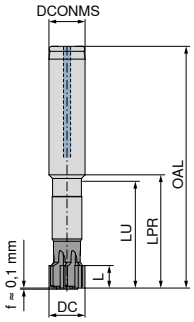
Ø			5,60 – 25,89 mm							
KOMET no. (3xD)			56J.93	56J.93	56J.65	56J.17	56J.71	56H.65	56H.65	56H.17
Lead angle			ASG4000	ASG3000	ASG0106	ASG0706	ASG3000	ASG3000	ASG0106	ASG0706
Lead angle			25°	45°	45°	45°/8°	45°	45°	45°	45°/8°
Grade / coating			DST	DST	DBG-P	DBC	TIN	DBG-P	DBG-P	DBC
Article no. (3xD)			40 635	40 625	40 652	40 648	40 605	40 657	40 644	40 640
Preferred type available			✓	✓	✓		✓			
Application					Through hole			Blind hole		
Material sub-group		Index								
P	Non alloyed steel	P.1.1	●	●			○	●		
		P.1.2								
		P.1.3								
		P.1.4								
		P.1.5								
	Low alloyed steel	P.2.1								
		P.2.2								
		P.2.3								
		P.2.4			●					
	High-alloy steel and high-alloy tool steel	P.3.1							●	
		P.3.2								
		P.3.3								
	Stainless steel	P.4.1								
		P.4.2								
M	Stainless steel	M.1.1			●				●	
		M.2.1								
		M.3.1								
K	Grey cast iron	K.1.1					○	●		
		K.1.2								
	Spherulitic graphite cast iron	K.2.1	○	●				●		
		K.2.2								
	Malleable iron	K.3.1	○	●				●		
		K.3.2								
N	Aluminum alloys	N.1.1								
		N.1.2								
	Cast aluminium alloys	N.2.1				●				●
		N.2.2								
		N.2.3								
	Copper and copper alloys (Bronze, Brass)	N.3.1		○						
		N.3.2					●			
		N.3.3								
	Magnesium alloys	N.4.1								
O	Non-metal materials	O.1.1								
		O.1.2								
		O.2.1								
		O.2.2								
		O.3.1				○				○

* for drilling with interrupted cut use coated HM-reamers

Applications:	
	Main application ●
	Additional range of application ○

Monomax – High-speed reamers, short

- adjustable for smallest bore tolerances
- wear compensation within the tolerance zone
- retraction from the hole at 3–4 times the cutting feed rate
- up to tolerance class IT 5 with absolute process security, from the first hole



	DST	DST	DBG-P	TiN	DBC
					
	56J.93 ≤ 3xD ◁ 45° ASG3000 CERMET Through hole	56J.93 ≤ 3xD ◁ 25° ASG4000 CERMET Through hole	56J.65 ≤ 3xD ◁ 45° ASG0106 HM Through hole	56J.71 ≤ 3xD ◁ 45° ASG3000 HM Through hole	56J.17 ≤ 3xD ◁ 45/8° ASG0706 HM Through hole
	40 625 ...	**40 635 ...**	**40 652 ...**	**40 605 ...**	**40 648 ...**

DC $_{H7}$ mm	OAL mm	L mm	LU mm	LPR mm	DCONMS $_{h6}$ mm	ZEFP									
5,60 - 5,99	85	9,5	35	40	12	4	**xxxx** [2]		**xxxx** [2]		**xxxx** [1]		**xxxx** [1]		**xxxx** [1]
6,00	85	9,5	35	40	12	4	**060**		**060**		**06000**		**060**		**06000** [1]
6,01 - 7,99	85	9,5	35	40	12	4	**xxxx** [2]		**xxxx** [2]		**xxxx** [1]		**xxxx** [1]		**xxxx** [1]
8,00	85	9,5	35	40	12	4	**080**		**080**		**08000**		**080**		**08000** [1]
8,01 - 8,89	85	9,5	35	40	12	4	**xxxx** [2]		**xxxx** [2]		**xxxx** [1]		**xxxx** [1]		**xxxx** [1]
8,90 - 9,89	95	9,5	45	50	12	6	**xxxx** [2]		**xxxx** [2]		**xxxx** [1]		**xxxx** [1]		**xxxx** [1]
9,90 - 9,99	95	9,5	45	50	12	6	**xxxx** [2]		**xxxx** [2]		**xxxx** [1]		**xxxx** [1]		**xxxx** [1]
10,00	95	9,5	45	50	12	6	**100**		**100**		**10000**		**100**		**10000** [1]
10,01 - 11,99	95	9,5	45	50	12	6	**xxxx** [2]		**xxxx** [2]		**xxxx** [1]		**xxxx** [1]		**xxxx** [1]
12,00	95	9,5	45	50	12	6	**120**		**120**		**12000**		**120**		**12000** [1]
P							●		●		●		○		
M											●				
K							●		○				○		
N							○						●		●
S															
H															
O															○

1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 25 working days / Minimum order 2 pieces
2) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 20 working days / Minimum order 2 pieces

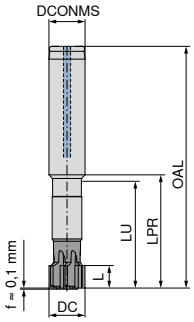
→ v_c Page 71–74

Do not heat shrink tools !

For xxxx please indicate requested Ø in H7 in the order (e.g. 15.89 H7 → article no. 40 635 1589)!
All other diameters and tolerance classes are also possible on request (e.g. 18.5 $^{+0.025}$ or 18 N7).

Monomax – High-speed reamers, short

- adjustable for smallest bore tolerances
- wear compensation within the tolerance zone
- retraction from the hole at 3–4 times the cutting feed rate
- up to tolerance class IT 5 with absolute process security, from the first hole



	DBG-P	DBG-P	DBC
			
	56H.65 ≤ 3xD ◁ 45° ASG0106 HM Blind hole	56H.65 ≤ 3xD ◁ 45° ASG3000 HM Blind hole	56H.17 ≤ 3xD ◁ 45/8° ASG0706 HM Blind hole
	40 644 ...	**40 657 ...**	**40 640 ...**

DC $_{H7}$ mm	OAL mm	L mm	LU mm	LPR mm	DCONMS $_{h6}$ mm	ZEFP					
5,60 - 5,99	85	9,5	35	40	12	4	**xxxx** [1]		**xxxx** [1]		**xxxx** [1]
6,00	85	9,5	35	40	12	4	**06000** [1]		**06000** [1]		**06000** [1]
6,01 - 7,99	85	9,5	35	40	12	4	**xxxx** [1]		**xxxx** [1]		**xxxx** [1]
8,00	85	9,5	35	40	12	4	**08000** [1]		**08000** [1]		**08000** [1]
8,01 - 8,89	85	9,5	35	40	12	4	**xxxx** [1]		**xxxx** [1]		**xxxx** [1]
8,90 - 9,89	95	9,5	45	50	12	6	**xxxx** [1]		**xxxx** [1]		**xxxx** [1]
9,90 - 9,99	95	9,5	45	50	12	6	**xxxx** [1]		**xxxx** [1]		**xxxx** [1]
10,00	95	9,5	45	50	12	6	**10000** [1]		**10000** [1]		**10000** [1]
10,01 - 11,99	95	9,5	45	50	12	6	**xxxx** [1]		**xxxx** [1]		**xxxx** [1]
12,00	95	9,5	45	50	12	6	**12000** [1]		**12000** [1]		**12000** [1]
P							●		●		
M							●				
K									●		
N											●
S											
H											
O											○

1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 25 working days / Minimum order 2 pieces

→ v_c Page 71–74

Do not heat shrink tools !

For xxxx please indicate requested Ø in H7 in the order (e.g. 15.89 H7 → article no. 40 644 1589)!
All other diameters and tolerance classes are also possible on request (e.g. 18.5 $^{+0.025}$ or 18 N7).

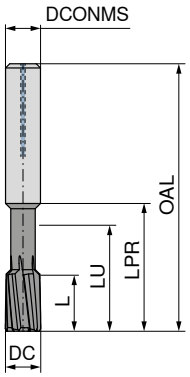
Fullmax – High-performance machine reamers, short

- ▲ extremely irregular pitch
- ▲ designed for high-speed machining
- ▲ specialised geometries and coatings

UNI

NEW

DBG-U



51P.57
HA
Left Hand Helix
30°
ASG2210
Solid carbide
Through hole

40 483 ...

DC $_{H7}$ mm	OAL mm	L mm	LU mm	LPR mm	DCONMS $_{h6}$ mm	ZEFP	
4	50	12	24	28	4	4	**04000**
5	64	12	31	36	6	4	**05000**
6	64	12	31	36	6	4	**06000**
7	70	16	31	36	8	6	**07000**
8	70	16	31	36	8	6	**08000**
9	80	16	35	40	10	6	**09000**
10	80	16	35	40	10	6	**10000**
11	90	20	40	45	12	6	**11000**
12	90	20	40	45	12	6	**12000**

P	●
M	●
K	●
N	○
S	○
H	○
O	

→ v_c Page 75

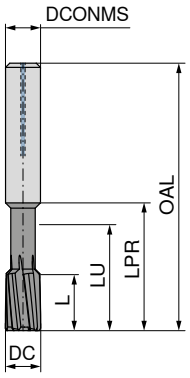
Fullmax – High-performance machine reamers, short

- ▲ extremely irregular pitch
- ▲ designed for high-speed machining
- ▲ specialised geometries and coatings
- ▲ tolerance: Ø 2,96 – 5,96 mm = +0,004 mm
- ▲ tolerance: Ø 5,97 – 20,05 mm = +0,005 mm

UNI

NEW

DBG-U



51P.57
HA
Left Hand Helix
30°
ASG2210
Solid carbide
Through hole

40 489 ...

DC +0,004/+0,005 mm	OAL mm	L mm	LU mm	LPR mm	DCONMS h6 mm	ZEFP	
2,96 - 3,96	50	12	24	28	4	4	**xxxxx** [1]
3,97	50	12	24	28	4	4	**03970**
3,98	50	12	24	28	4	4	**03980**
3,99	50	12	24	28	4	4	**03990**
4,00	50	12	24	28	4	4	**04000**
4,01	50	12	24	28	4	4	**04010**
4,02	50	12	24	28	4	4	**04020**
4,03	50	12	24	28	4	4	**04030**
4,04 - 4,05	50	12	24	28	4	4	**xxxxx** [1]
4,06 - 4,96	64	12	31	36	6	4	**xxxxx** [1]
4,97	64	12	31	36	6	4	**04970**
4,98	64	12	31	36	6	4	**04980**
4,99	64	12	31	36	6	4	**04990**
5,00	64	12	31	36	6	4	**05000**
5,01	64	12	31	36	6	4	**05010**
5,02	64	12	31	36	6	4	**05020**
5,03	64	12	31	36	6	4	**05030**
5,04 - 5,96	64	12	31	36	6	4	**xxxxx** [1]
5,97	64	12	31	36	6	4	**05970**
5,98	64	12	31	36	6	4	**05980**
5,99	64	12	31	36	6	4	**05990**
6,00	64	12	31	36	6	4	**06000**
6,01	64	12	31	36	6	4	**06010**
6,02	64	12	31	36	6	4	**06020**
6,03	64	12	31	36	6	4	**06030**
6,04 - 6,05	64	12	31	36	6	4	**xxxxx** [1]
6,06 - 7,96	70	16	31	36	8	6	**xxxxx** [1]
7,97	70	16	31	36	8	6	**07970**
7,98	70	16	31	36	8	6	**07980**
7,99	70	16	31	36	8	6	**07990**

P	●
M	●
K	●
N	○
S	○
H	○
O	

1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 25 working days

→ v_c Page 75

This tool concept permits numerous tolerances. For sizes covered please refer to the table on → **page 80**.
For xxxxx please indicate required Ø in the order (e.g. Ø 8.82 mm → Article No. 40 489 08820)!

Continued on next page

Fullmax – High-performance machine reamers, short

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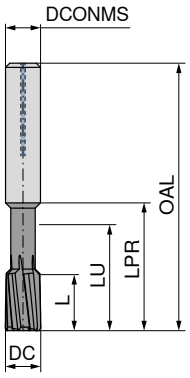
- ▲ specialised geometries and coatings
- ▲ tolerance: Ø 2,96 – 5,96 mm = +0,004 mm
- ▲ tolerance: Ø 5,97 – 20,05 mm = +0,005 mm

UNI

NEW

DBG-U



51P.57
HA
Left Hand Helix
30°
ASG2210
Solid carbide
Through hole

40 489 ...

DC +0,004/+0,005 mm	OAL mm	L mm	LU mm	LPR mm	DCONMS h6 mm	ZEFP	
8,00	70	16	31	36	8	6	**08000**
8,01	70	16	31	36	8	6	**08010**
8,02	70	16	31	36	8	6	**08020**
8,03	70	16	31	36	8	6	**08030**
8,04 - 8,05	70	16	31	36	8	6	**xxxxx** [1]
8,06 - 9,96	80	16	35	40	10	6	**xxxxx** [1]
9,97	80	16	35	40	10	6	**09970**
9,98	80	16	35	40	10	6	**09980**
9,99	80	16	35	40	10	6	**09990**
10,00	80	16	35	40	10	6	**10000**
10,01	80	16	35	40	10	6	**10010**
10,02	80	16	35	40	10	6	**10020**
10,03	80	16	35	40	10	6	**10030**
10,04 - 10,05	80	16	35	40	10	6	**xxxxx** [1]
10,06 - 11,96	90	20	40	45	12	6	**xxxxx** [1]
11,97	90	20	40	45	12	6	**11970**
11,98	90	20	40	45	12	6	**11980**
11,99	90	20	40	45	12	6	**11990**
12,00	90	20	40	45	12	6	**12000**
12,01	90	20	40	45	12	6	**12010**
12,02	90	20	40	45	12	6	**12020**
12,03	90	20	40	45	12	6	**12030**

P	●
M	●
K	●
N	○
S	○
H	○
O	

1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 25 working days

→ v_c Page 75

This tool concept permits numerous tolerances. For sizes covered please refer to the table on → **page 80**.
For xxxxx please indicate required Ø in the order (e.g. Ø 8.82 mm → Article No. 40 489 08820)!

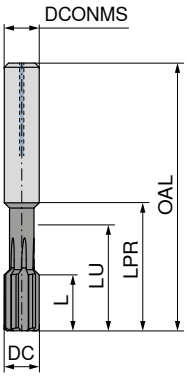
Fullmax – High-performance machine reamers, short

- ▲ extremely irregular pitch
- ▲ designed for high-speed machining
- ▲ specialised geometries and coatings

UNI

NEW

DBG-U



51M.57
HA
straight flute
60°
ASG2110
Solid carbide
Blind hole

40 481 ...

DC H7 mm	OAL mm	L mm	LU mm	LPR mm	DCONMS h6 mm	ZEFP	
4	50	12	24	28	4	4	**04000**
5	64	12	31	36	6	4	**05000**
6	64	12	31	36	6	4	**06000**
7	70	16	31	36	8	6	**07000**
8	70	16	31	36	8	6	**08000**
9	80	16	35	40	10	6	**09000**
10	80	16	35	40	10	6	**10000**
11	90	20	40	45	12	6	**11000**
12	90	20	40	45	12	6	**12000**

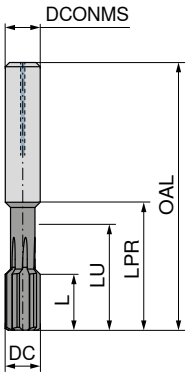
P	●
M	●
K	●
N	○
S	○
H	○
O	

→ v_c Page 75

Fullmax – High-performance machine reamers, short

- extremely irregular pitch
- designed for high-speed machining
- specialised geometries and coatings
- tolerance: Ø 2,96 – 5,96 mm = +0,004 mm
- tolerance: Ø 5,97 – 20,05 mm = +0,005 mm

UNI



NEW

DBG-U

51M.57
HA
straight flute
60°
ASG2110
Solid carbide
Blind hole

40 488 ...

DC +0,004/+0,005 mm	OAL mm	L mm	LU mm	LPR mm	DCONMS h6 mm	ZEFP	
2,96 - 3,96	50	12	24	28	4	4	**xxxxx** [1]
3,97	50	12	24	28	4	4	**03970**
3,98	50	12	24	28	4	4	**03980**
3,99	50	12	24	28	4	4	**03990**
4,00	50	12	24	28	4	4	**04000**
4,01	50	12	24	28	4	4	**04010**
4,02	50	12	24	28	4	4	**04020**
4,03	50	12	24	28	4	4	**04030**
4,04 - 4,05	50	12	24	28	4	4	**xxxxx** [1]
4,06 - 4,96	64	12	31	36	6	4	**xxxxx** [1]
4,97	64	12	31	36	6	4	**04970**
4,98	64	12	31	36	6	4	**04980**
4,99	64	12	31	36	6	4	**04990**
5,00	64	12	31	36	6	4	**05000**
5,01	64	12	31	36	6	4	**05010**
5,02	64	12	31	36	6	4	**05020**
5,03	64	12	31	36	6	4	**05030**
5,04 - 5,96	64	12	31	36	6	4	**xxxxx** [1]
5,97	64	12	31	36	6	4	**05970**
5,98	64	12	31	36	6	4	**05980**
5,99	64	12	31	36	6	4	**05990**
6,00	64	12	31	36	6	4	**06000**
6,01	64	12	31	36	6	4	**06010**
6,02	64	12	31	36	6	4	**06020**
6,03	64	12	31	36	6	4	**06030**
6,04 - 6,05	64	12	31	36	6	4	**xxxxx** [1]
6,06 - 7,96	70	16	31	36	8	6	**xxxxx** [1]
7,97	70	16	31	36	8	6	**07970**
7,98	70	16	31	36	8	6	**07980**
7,99	70	16	31	36	8	6	**07990**

P	●
M	●
K	●
N	○
S	○
H	○
O	

1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 25 working days

→ v_c Page 75

This tool concept permits numerous tolerances. For sizes covered please refer to the table on → **page 80**.
For xxxxx please indicate required Ø in the order (e.g. Ø 8.82 mm → Article No. 40 488 08820)!

Continued on next page

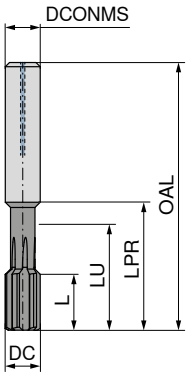
Fullmax – High-performance machine reamers, short

- ▲ extremely irregular pitch
- ▲ designed for high-speed machining
- ▲ specialised geometries and coatings
- ▲ tolerance: Ø 2,96 – 5,96 mm = +0,004 mm
- ▲ tolerance: Ø 5,97 – 20,05 mm = +0,005 mm

UNI

NEW

DBG-U



51M.57
HA
straight flute
60°
ASG2110
Solid carbide
Blind hole

40 488 ...

DC +0,004/+0,005 mm	OAL mm	L mm	LU mm	LPR mm	DCONMS h6 mm	ZEFP	
8,00	70	16	31	36	8	6	**08000**
8,01	70	16	31	36	8	6	**08010**
8,02	70	16	31	36	8	6	**08020**
8,03	70	16	31	36	8	6	**08030**
8,04 - 8,05	70	16	31	36	8	6	**xxxxx** [1]
8,06 - 9,96	80	16	35	40	10	6	**xxxxx** [1]
9,97	80	16	35	40	10	6	**09970**
9,98	80	16	35	40	10	6	**09980**
9,99	80	16	35	40	10	6	**09990**
10,00	80	16	35	40	10	6	**10000**
10,01	80	16	35	40	10	6	**10010**
10,02	80	16	35	40	10	6	**10020**
10,03	80	16	35	40	10	6	**10030**
10,04 - 10,05	80	16	35	40	10	6	**xxxxx** [1]
10,06 - 11,96	90	20	40	45	12	6	**xxxxx** [1]
11,97	90	20	40	45	12	6	**11970**
11,98	90	20	40	45	12	6	**11980**
11,99	90	20	40	45	12	6	**11990**
12,00	90	20	40	45	12	6	**12000**
12,01	90	20	40	45	12	6	**12010**
12,02	90	20	40	45	12	6	**12020**
12,03	90	20	40	45	12	6	**12030**

P	●
M	●
K	●
N	○
S	○
H	○
O	

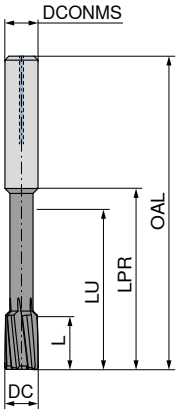
1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 25 working days

→ v_c Page 75

This tool concept permits numerous tolerances. For sizes covered please refer to the table on → **page 80**.
For xxxxx please indicate required Ø in the order (e.g. Ø 8.82 mm → Article No. 40 488 08820)!

Fullmax – High-performance machine reamers, long

- extremely irregular pitch
- designed for high-speed machining
- specialised geometries and coatings



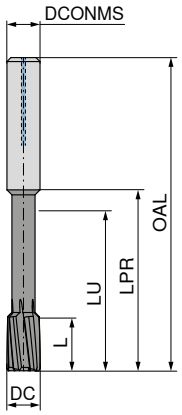
	UNI	VA	ALU
	DBG-U	DBQ	DBC-N
			
	52P.57	52S.44	52N.17
	HA	HA	HA
	Left Hand Helix	Left Hand Helix	straight flute
	◁ 30°	◁ 30°	◁ 30°
	ASG2210	ASG2231	ASG2270
	Solid carbide	Solid carbide	Solid carbide
	Through hole	Through hole	Through hole
	40 484 ...	**40 401 ...**	**40 471 ...**

DC $_{H7}$ mm	OAL mm	L mm	LU mm	LPR mm	DCONMS $_{h6}$ mm	ZEFP			
4	60	12	28	32	4	4	**04000**	**04000**	**04000**
5	76	12	35	40	6	4	**05000**	**05000**	**05000**
6	76	12	35	40	6	4	**06000**	**06000**	**06000**
7	101	16	60	65	8	6	**07000**	**07000**	**07000**
8	101	16	60	65	8	6	**08000**	**08000**	**08000**
9	108	16	63	68	10	6	**09000**	**09000**	**09000**
10	108	16	63	68	10	6	**10000**	**10000**	**10000**
11	130	20	80	85	12	6	**11000**	**11000**	**11000**
12	130	20	80	85	12	6	**12000**	**12000**	**12000**
P							●	●	
M							●	●	
K							●		
N							○		●
S							○		
H							○		
O									○

→ v_c Page 76+77

Fullmax – High-performance machine reamers, long

- ▲ extremely irregular pitch
- ▲ designed for high-speed machining
- ▲ specialised geometries and coatings
- ▲ tolerance: Ø 2,96 – 5,96 mm = +0,004 mm
- ▲ tolerance: Ø 5,97 – 20,05 mm = +0,005 mm



UNI	VA	ALU
DBG-U	DBQ	DBC-N

52P.57
HA
Left Hand Helix
◁ 30°
ASG2210
Solid carbide
Through hole

52S.44
HA
Left Hand Helix
◁ 30°
ASG2231
Solid carbide
Through hole

52N.17
HA
straight flute
◁ 30°
ASG2270
Solid carbide
Through hole

DC +0,004/+0,005 mm	OAL mm	L mm	LU mm	LPR mm	DCONMS h6 mm	ZEFP	40 486 ...	40 403 ...	40 473 ...
2,96 - 3,96	60	12	28	32	4	4	xxxxx[1]	xxxxx[2]	xxxxx[1]
3,97	60	12	28	32	4	4	03970	03970	03970[1]
3,98	60	12	28	32	4	4	03980	03980	03980[1]
3,99	60	12	28	32	4	4	03990	03990	03990[1]
4,00	60	12	28	32	4	4	04000	04000	04000[1]
4,01	60	12	28	32	4	4	04010	04010	04010[1]
4,02	60	12	28	32	4	4	04020	04020	04020[1]
4,03	60	12	28	32	4	4	04030	04030	04030[1]
4,04 - 4,05	60	12	28	32	4	4	xxxxx[1]	xxxxx[2]	xxxxx[1]
4,06 - 4,96	76	12	35	40	6	4	xxxxx[1]	xxxxx[2]	xxxxx[1]
4,97	76	12	35	40	6	4	04970	04970	04970[1]
4,98	76	12	35	40	6	4	04980	04980	04980[1]
4,99	76	12	35	40	6	4	04990	04990	04990[1]
5,00	76	12	35	40	6	4	05000	05000	05000[1]
5,01	76	12	35	40	6	4	05010	05010	05010[1]
5,02	76	12	35	40	6	4	05020	05020	05020[1]
5,03	76	12	35	40	6	4	05030	05030	05030[1]
5,04 - 5,96	76	12	35	40	6	4	xxxxx[1]	xxxxx[2]	xxxxx[1]
5,97	76	12	35	40	6	4	05970	05970	05970[1]
5,98	76	12	35	40	6	4	05980	05980	05980[1]
5,99	76	12	35	40	6	4	05990	05990	05990[1]
6,00	76	12	35	40	6	4	06000	06000	06000[1]
6,01	76	12	35	40	6	4	06010	06010	06010[1]
6,02	76	12	35	40	6	4	06020	06020	06020[1]
6,03	76	12	35	40	6	4	06030	06030	06030[1]
6,04 - 6,05	76	12	35	40	6	4	xxxxx[1]	xxxxx[2]	xxxxx[1]
6,06 - 7,96	101	16	60	65	8	6	xxxxx[1]	xxxxx[2]	xxxxx[1]
7,97	101	16	60	65	8	6	07970	07970	07970[1]
7,98	101	16	60	65	8	6	07980	07980	07980[1]
P							●	●	
M							●	●	
K							●		
N							○		●
S							○		
H							○		
O									○

1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 25 working days
2) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 32 working days

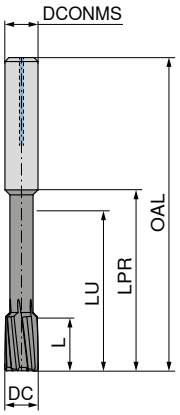
→ v_c Page 76+77

This tool concept permits numerous tolerances. For sizes covered please refer to the table on → **page 80**.
For xxxxx please indicate required Ø in the order (e.g. Ø 8.82 mm → Article No. 40 486 08820)!

Continued on next page

Fullmax – High-performance machine reamers, long

- ▲ extremely irregular pitch
- ▲ designed for high-speed machining
- ▲ specialised geometries and coatings
- ▲ tolerance: Ø 2,96 – 5,96 mm = +0,004 mm
- ▲ tolerance: Ø 5,97 – 20,05 mm = +0,005 mm



UNI	VA	ALU
DBG-U	DBQ	DBC-N



52P.57	52S.44	52N.17
HA	HA	HA
Left Hand Helix	Left Hand Helix	straight flute
◁ 30°	◁ 30°	◁ 30°
ASG2210	ASG2231	ASG2270
Solid carbide	Solid carbide	Solid carbide
Through hole	Through hole	Through hole
40 486 ...	**40 403 ...**	**40 473 ...**

DC +0,004/+0,005 mm	OAL mm	L mm	LU mm	LPR mm	DCONMS h6 mm	ZEFP			
7,99	101	16	60	65	8	6	**07990**	**07990**	**07990** [1]
8,00	101	16	60	65	8	6	**08000**	**08000**	**08000** [1]
8,01	101	16	60	65	8	6	**08010**	**08010**	**08010** [1]
8,02	101	16	60	65	8	6	**08020**	**08020**	**08020** [1]
8,03	101	16	60	65	8	6	**08030**	**08030**	**08030** [1]
8,04 - 8,05	101	16	60	65	8	6	**xxxxx** [1]	**xxxxx** [2]	**xxxxx** [1]
8,06 - 9,96	108	16	63	68	10	6	**xxxxx** [1]	**xxxxx** [2]	**xxxxx** [1]
9,97	108	16	63	68	10	6	**09970**	**09970**	**09970** [1]
9,98	108	16	63	68	10	6	**09980**	**09980**	**09980** [1]
9,99	108	16	63	68	10	6	**09990**	**09990**	**09990** [1]
10,00	108	16	63	68	10	6	**10000**	**10000**	**10000** [1]
10,01	108	16	63	68	10	6	**10010**	**10010**	**10010** [1]
10,02	108	16	63	68	10	6	**10020**	**10020**	**10020** [1]
10,03	108	16	63	68	10	6	**10030**	**10030**	**10030** [1]
10,04 - 10,05	108	16	63	68	10	6	**xxxxx** [1]	**xxxxx** [2]	**xxxxx** [1]
10,06 - 11,96	130	20	80	85	12	6	**xxxxx** [1]	**xxxxx** [2]	**xxxxx** [1]
11,97	130	20	80	85	12	6	**11970**	**11970**	**11970** [1]
11,98	130	20	80	85	12	6	**11980**	**11980**	**11980** [1]
11,99	130	20	80	85	12	6	**11990**	**11990**	**11990** [1]
12,00	130	20	80	85	12	6	**12000**	**12000**	**12000** [1]
12,01	130	20	80	85	12	6	**12010**	**12010**	**12010** [1]
12,02	130	20	80	85	12	6	**12020**	**12020**	**12020** [1]
12,03	130	20	80	85	12	6	**12030**	**12030**	**12030** [1]
P							●	●	
M							●	●	
K							●		
N							○		●
S							○		
H							○		
O									○

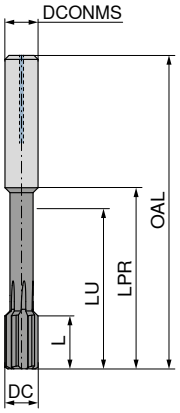
1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 25 working days
2) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 32 working days

→ v_c Page 76+77

This tool concept permits numerous tolerances. For sizes covered please refer to the table on → **page 80**.
For xxxxx please indicate required Ø in the order (e.g. Ø 8.82 mm → Article No. 40 486 08820)!

Fullmax – High-performance machine reamers, long

- ▲ extremely irregular pitch
- ▲ designed for high-speed machining
- ▲ specialised geometries and coatings



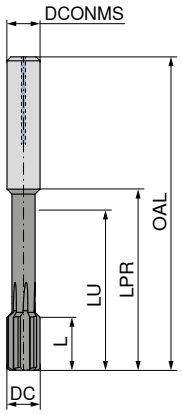
	UNI	VA	ALU
	DBG-U	DBQ	DBC-N
			
	52M.57	52T.45	52Q.17
	HA	HA	HA
	straight flute	straight flute	straight flute
	◁ 60°	◁ 45°	◁ 60°
	ASG2110	ASG2131	ASG2170
	Solid carbide	Solid carbide	Solid carbide
	Blind hole	Blind hole	Blind hole
	40 485 ...	**40 402 ...**	**40 472 ...**

DC $_{H7}$ mm	OAL mm	L mm	LU mm	LPR mm	DCONMS $_{h6}$ mm	ZEFP			
4	60	12	28	32	4	4	**04000**	**04000**	**04000**
5	76	12	35	40	6	4	**05000**	**05000**	**05000**
6	76	12	35	40	6	4	**06000**	**06000**	**06000**
7	101	16	60	65	8	6	**07000**	**07000**	**07000**
8	101	16	60	65	8	6	**08000**	**08000**	**08000**
9	108	16	63	68	10	6	**09000**	**09000**	**09000**
10	108	16	63	68	10	6	**10000**	**10000**	**10000**
11	130	20	80	85	12	6	**11000**	**11000**	**11000**
12	130	20	80	85	12	6	**12000**	**12000**	**12000**
P							●	●	
M							●	●	
K							●		
N							○		●
S							○		
H							○		
O									○

→ v_c Page 76+77

Fullmax – High-performance machine reamers, long

- ▲ extremely irregular pitch
- ▲ designed for high-speed machining
- ▲ specialised geometries and coatings
- ▲ tolerance: Ø 2,96 – 5,96 mm = +0,004 mm
- ▲ tolerance: Ø 5,97 – 20,05 mm = +0,005 mm



UNI	VA	ALU
DBG-U	DBQ	DBC-N
		
52M.57	52T.45	52Q.17
HA 	HA 	HA 
straight flute	straight flute	straight flute
◁ 60°	◁ 45°	◁ 60°
ASG2110	ASG2131	ASG2170
Solid carbide	Solid carbide	Solid carbide
Blind hole	Blind hole	Blind hole
40 487 ...	**40 404 ...**	**40 474 ...**

DC +0,004/+0,005 mm	OAL mm	L mm	LU mm	LPR mm	DCONMS h6 mm	ZEFP			
2,96 - 3,96	60	12	28	32	4	4	**xxxxx**[1]	**xxxxx**[2]	**xxxxx**[1]
3,97	60	12	28	32	4	4	**03970**	**03970**	**03970**[1]
3,98	60	12	28	32	4	4	**03980**	**03980**	**03980**[1]
3,99	60	12	28	32	4	4	**03990**	**03990**	**03990**[1]
4,00	60	12	28	32	4	4	**04000**	**04000**	**04000**[1]
4,01	60	12	28	32	4	4	**04010**	**04010**	**04010**[1]
4,02	60	12	28	32	4	4	**04020**	**04020**	**04020**[1]
4,03	60	12	28	32	4	4	**04030**	**04030**	**04030**[1]
4,04 - 4,05	60	12	28	32	4	4	**xxxxx**[1]	**xxxxx**[2]	**xxxxx**[1]
4,06 - 4,96	76	12	35	40	6	4	**xxxxx**[1]	**xxxxx**[2]	**xxxxx**[1]
4,97	76	12	35	40	6	4	**04970**	**04970**	**04970**[1]
4,98	76	12	35	40	6	4	**04980**	**04980**	**04980**[1]
4,99	76	12	35	40	6	4	**04990**	**04990**	**04990**[1]
5,00	76	12	35	40	6	4	**05000**	**05000**	**05000**[1]
5,01	76	12	35	40	6	4	**05010**	**05010**	**05010**[1]
5,02	76	12	35	40	6	4	**05020**	**05020**	**05020**[1]
5,03	76	12	35	40	6	4	**05030**	**05030**	**05030**[1]
5,04 - 5,96	76	12	35	40	6	4	**xxxxx**[1]	**xxxxx**[2]	**xxxxx**[1]
5,97	76	12	35	40	6	4	**05970**	**05970**	**05970**[1]
5,98	76	12	35	40	6	4	**05980**	**05980**	**05980**[1]
5,99	76	12	35	40	6	4	**05990**	**05990**	**05990**[1]
6,00	76	12	35	40	6	4	**06000**	**06000**	**06000**[1]
6,01	76	12	35	40	6	4	**06010**	**06010**	**06010**[1]
6,02	76	12	35	40	6	4	**06020**	**06020**	**06020**[1]
6,03	76	12	35	40	6	4	**06030**	**06030**	**06030**[1]
6,04 - 6,05	76	12	35	40	6	4	**xxxxx**[1]	**xxxxx**[2]	**xxxxx**[1]
6,06 - 7,96	101	16	60	65	8	6	**xxxxx**[1]	**xxxxx**[2]	**xxxxx**[1]
7,97	101	16	60	65	8	6	**07970**	**07970**	**07970**[1]
7,98	101	16	60	65	8	6	**07980**	**07980**	**07980**[1]
P							●	●	
M							●	●	
K							●		
N							○		●
S							○		
H							○		
O									○

1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 25 working days

2) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 32 working days

→ v_c Page 76+77

This tool concept permits numerous tolerances. For sizes covered please refer to the table on → **page 80**.
For xxxxx please indicate required Ø in the order (e.g. Ø 8.82 mm → Article no. 40 487 08820)!

Continued on next page

Fullmax – High-performance machine reamers, long

- ▲ extremely irregular pitch
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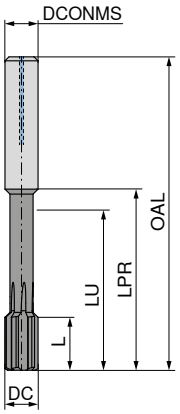
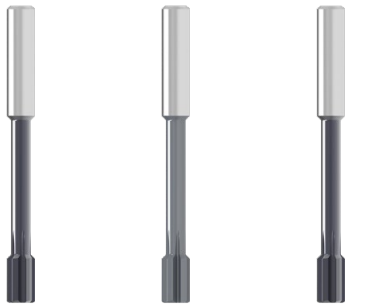
- ▲ specialised geometries and coatings
- ▲ tolerance: Ø 2,96 – 5,96 mm = +0,004 mm
- ▲ tolerance: Ø 5,97 – 20,05 mm = +0,005 mm



UNI	VA	ALU
DBG-U	DBQ	DBC-N



52M.57
HA
straight flute
60°
ASG2110
Solid carbide
Blind hole

52T.45
HA
straight flute
45°
ASG2131
Solid carbide
Blind hole

52Q.17
HA
straight flute
60°
ASG2170
Solid carbide
Blind hole

DC $_{+0,004/+0,005}$ mm	OAL mm	L mm	LU mm	LPR mm	DCONMS $_{h6}$ mm	ZEFP	40 487 ...	40 404 ...	40 474 ...
7,99	101	16	60	65	8	6	**07990**	**07990**	**07990** [1]
8,00	101	16	60	65	8	6	**08000**	**08000**	**08000** [1]
8,01	101	16	60	65	8	6	**08010**	**08010**	**08010** [1]
8,02	101	16	60	65	8	6	**08020**	**08020**	**08020** [1]
8,03	101	16	60	65	8	6	**08030**	**08030**	**08030** [1]
8,04 - 8,05	101	16	60	65	8	6	**xxxxx** [1]	**xxxxx** [2]	**xxxxx** [1]
8,06 - 9,96	108	16	63	68	10	6	**xxxxx** [1]	**xxxxx** [2]	**xxxxx** [1]
9,97	108	16	63	68	10	6	**09970**	**09970**	**09970** [1]
9,98	108	16	63	68	10	6	**09980**	**09980**	**09980** [1]
9,99	108	16	63	68	10	6	**09990**	**09990**	**09990** [1]
10,00	108	16	63	68	10	6	**10000**	**10000**	**10000** [1]
10,01	108	16	63	68	10	6	**10010**	**10010**	**10010** [1]
10,02	108	16	63	68	10	6	**10020**	**10020**	**10020** [1]
10,03	108	16	63	68	10	6	**10030**	**10030**	**10030** [1]
10,04 - 10,05	108	16	63	68	10	6	**xxxxx** [1]	**xxxxx** [2]	**xxxxx** [1]
10,06 - 11,96	130	20	80	85	12	6	**xxxxx** [1]	**xxxxx** [2]	**xxxxx** [1]
11,97	130	20	80	85	12	6	**11970**	**11970**	**11970** [1]
11,98	130	20	80	85	12	6	**11980**	**11980**	**11980** [1]
11,99	130	20	80	85	12	6	**11990**	**11990**	**11990** [1]
12,00	130	20	80	85	12	6	**12000**	**12000**	**12000** [1]
12,01	130	20	80	85	12	6	**12010**	**12010**	**12010** [1]
12,02	130	20	80	85	12	6	**12020**	**12020**	**12020** [1]
12,03	130	20	80	85	12	6	**12030**	**12030**	**12030** [1]

P	●	●	
M	●	●	
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N	○		●
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H	○		
O			○

1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 25 working days
2) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 32 working days

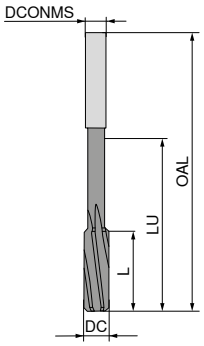
→ v_c Page 76+77

This tool concept permits numerous tolerances. For sizes covered please refer to the table on → **page 80**.
For xxxxx please indicate required Ø in the order (e.g. Ø 8.82 mm → Article no. 40 487 08820)!

NC machine reamers, DIN 8093-2B

- ▲ 0.01 mm steps
- ▲ extremely irregular pitch
- ▲ Ø 0.6–0.94 mm similar to DIN 8093-B
- ▲ Ø 0.95–3.75 mm with centres both ends
- ▲ Ø 3.76–12.05 mm with protected centres

NC 100



~HA

Left Hand Helix
Solid carbide

40 430 ...

DC +0,004 mm	OAL mm	L mm	LU mm	DCONMS h6 mm	ZEFP	
0,59 - 0,64	45	5	7,5	3	4	xxxxx 1)
0,65 - 0,74	45	5	7,5	3	4	xxxxx 1)
0,75 - 0,84	45	6	8,0	3	4	xxxxx 1)
0,85 - 0,95	45	6	8,0	3	4	xxxxx 1)
0,96	50	6	17,5	3	3	00960 1)
0,97	50	6	17,5	3	3	00970 1)
0,98	50	6	17,5	3	3	00980 2)
0,99	50	6	17,5	3	3	00990 2)
1,00	50	6	17,5	3	3	01000 2)
1,01	50	6	17,5	3	3	01010 2)
1,02	50	6	17,5	3	3	01020 2)
1,03	50	6	17,5	3	3	01030 2)
1,04 - 1,06	50	6	17,5	3	3	xxxxx 2)
1,07 - 1,18	50	9	17,5	3	3	xxxxx 2)
1,19 - 1,32	50	9	17,5	3	3	xxxxx 2)
1,33 - 1,50	50	9	18,0	3	3	xxxxx 2)
1,51 - 1,70	50	10	18,0	3	3	xxxxx 2)
1,71 - 1,90	50	11	18,5	3	4	xxxxx 2)
1,91 - 1,97	50	12	18,5	3	4	xxxxx 2)
1,98	50	12	18,5	3	4	01980
1,99	50	12	18,5	3	4	01990
2,00	50	12	18,5	3	4	02000
2,01	50	12	18,5	3	4	02010
2,02	50	12	18,5	3	4	02020
2,03	50	12	18,5	3	4	02030
2,04 - 2,12	50	12	18,5	3	4	xxxxx 2)
2,13 - 2,36	50	12	18,5	3	4	xxxxx 2)
2,37 - 2,47	60	16	29,0	3	4	xxxxx 2)
2,48	60	16	29,0	3	4	02480
2,49	60	16	29,0	3	4	02490
2,50	60	16	29,0	3	4	02500
2,51	60	16	29,0	3	4	02510
2,52	60	16	29,0	3	4	02520
2,53	60	16	29,0	3	4	02530
2,54 - 2,65	60	16	29,0	3	4	xxxxx 2)
2,66 - 2,80	65	17	33,0	4	6	xxxxx 2)
2,81 - 2,96	65	17	33,0	4	6	xxxxx 2)
2,97	65	17	33,0	4	6	02970
2,98	65	17	33,0	4	6	02980
2,99	65	17	33,0	4	6	02990
3,00	65	17	33,0	4	6	03000
3,01	65	17	33,0	4	6	03010
3,02	65	17	33,0	4	6	03020
3,03	65	17	33,0	4	6	03030
3,04 - 3,35	65	18	33,0	4	6	xxxxx 2)
3,36 - 3,75	75	18	43,0	4	6	xxxxx 2)
3,76 - 3,96	75	19	43,0	4	6	xxxxx 2)
3,97	75	19	43,0	4	6	03970
3,98	75	19	43,0	4	6	03980
3,99	75	19	43,0	4	6	03990
4,00	75	19	43,0	4	6	04000
4,01	75	19	43,0	4	6	04010
4,02	75	19	43,0	4	6	04020
4,03	75	19	43,0	4	6	04030
4,04 - 4,25	75	19	43,0	4	6	xxxxx 2)
4,26 - 4,75	80	21	39,0	6	6	xxxxx 2)
4,76 - 4,96	93	23	52,0	6	6	xxxxx 2)
4,97	93	23	52,0	6	6	04970
4,98	93	23	52,0	6	6	04980
4,99	93	23	52,0	6	6	04990

40 430 ...

DC +0,004 mm	OAL mm	L mm	LU mm	DCONMS h6 mm	ZEFP	
5,00	93	23	52,0	6	6	05000
5,01	93	23	52,0	6	6	05010
5,02	93	23	52,0	6	6	05020
5,03	93	23	52,0	6	6	05030
5,04 - 5,30	93	23	52,0	6	6	xxxxx 2)
5,31 - 5,96	93	26	53,0	6	6	xxxxx 2)
5,97	93	26	53,0	6	6	05970
5,98	93	26	53,0	6	6	05980
5,99	93	26	53,0	6	6	05990
6,00	93	26	53,0	6	6	06000
6,01	93	26	53,0	6	6	06010
6,02	93	26	53,0	6	6	06020
6,03	93	26	53,0	6	6	06030
6,04 - 6,70	101	28	61,0	6	6	xxxxx 2)
6,71 - 7,50	109	31	68,0	8	6	xxxxx 2)
7,51 - 7,96	117	33	77,0	8	6	xxxxx 2)
7,97	117	33	77,0	8	6	07970
7,98	117	33	77,0	8	6	07980
7,99	117	33	77,0	8	6	07990
8,00	117	33	77,0	8	6	08000
8,01	117	33	77,0	8	6	08010
8,02	117	33	77,0	8	6	08020
8,03	117	33	77,0	8	6	08030
8,04	117	33	77,0	8	6	08040
8,05 - 8,50	117	33	77,0	8	6	xxxxx 2)
8,51 - 9,04	125	36	80,0	10	6	xxxxx 2)
9,05 - 9,50	125	36	80,0	10	6	xxxxx 2)
9,51 - 9,96	133	38	88,0	10	6	xxxxx 2)
9,97	133	38	88,0	10	6	09970
9,98	133	38	88,0	10	6	09980
9,99	133	38	88,0	10	6	09990
10,00	133	38	88,0	10	6	10000
10,01	133	38	88,0	10	6	10010
10,02	133	38	88,0	10	6	10020
10,03	133	38	88,0	10	6	10030
10,04	133	38	88,0	10	6	10040
10,05	133	38	88,0	10	6	10050
10,06 - 10,60	133	38	88,0	10	6	xxxxx 2)
10,61 - 11,80	142	41	97,0	10	6	xxxxx 2)
11,81 - 11,96	151	44	100,0	12	6	xxxxx 2)
11,97	151	44	100,0	12	6	11970
11,98	151	44	100,0	12	6	11980
11,99	151	44	100,0	12	6	11990
12,00	151	44	100,0	12	6	12000
12,01	151	44	100,0	12	6	12010
12,02	151	44	100,0	12	6	12020
12,03	151	44	100,0	12	6	12030
12,04	151	44	100,0	12	6	12040
12,05	151	44	100,0	12	6	12050

P	●
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→ v_c Page 78

1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 12 working days / Minimum order 3 pieces

2) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 12 working days

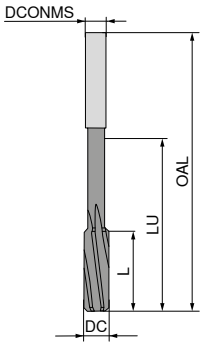
This tool concept permits numerous tolerances.
Please refer to the table on → **page 80** for tolerances covered.
For xxxxx please indicate required Ø in the order
(e.g. Ø 8.05 mm → Article no. 40 430 08050)!

NC machine reamers, DIN 8093-2B

- ▲ 0.01 mm steps
- ▲ extremely irregular pitch
- ▲ Ø 0.6–0.94 mm similar to DIN 8093-B
- ▲ Ø 0.95–3.75 mm with centres both ends
- ▲ Ø 3.76–12.05 mm with protected centres

NC 100

TiAlN



Left Hand Helix
Solid carbide

40 431 ...

DC +0,004 mm	OAL mm	L mm	LU mm	DCONMS h6 mm	ZEFP	
1,00	50	6	17,5	3	3	01000 1)
1,01	50	6	17,5	3	3	01010 1)
1,02	50	6	17,5	3	3	01020 1)
1,03	50	6	17,5	3	3	01030 1)
1,04 - 1,06	50	6	17,5	3	3	xxxxx 1)
1,07 - 1,18	50	9	17,5	3	3	xxxxx 1)
1,19 - 1,32	50	9	17,5	3	3	xxxxx 1)
1,33 - 1,50	50	9	18,0	3	3	xxxxx 1)
1,51 - 1,70	50	10	18,0	3	3	xxxxx 1)
1,71 - 1,90	50	11	18,5	3	4	xxxxx 1)
1,91 - 1,97	50	12	18,5	3	4	xxxxx 1)
1,98	50	12	18,5	3	4	01980
1,99	50	12	18,5	3	4	01990
2,00	50	12	18,5	3	4	02000
2,01	50	12	18,5	3	4	02010
2,02	50	12	18,5	3	4	02020
2,03	50	12	18,5	3	4	02030
2,04 - 2,12	50	12	18,5	3	4	xxxxx 1)
2,13 - 2,36	50	12	18,5	3	4	xxxxx 1)
2,37 - 2,47	60	16	29,0	3	4	xxxxx 1)
2,48	60	16	29,0	3	4	02480
2,49	60	16	29,0	3	4	02490
2,50	60	16	29,0	3	4	02500
2,51	60	16	29,0	3	4	02510
2,52	60	16	29,0	3	4	02520
2,53	60	16	29,0	3	4	02530
2,54 - 2,65	60	16	29,0	3	4	xxxxx 1)
2,66 - 2,80	65	17	33,0	4	6	xxxxx 1)
2,81 - 2,96	65	17	33,0	4	6	xxxxx 1)
2,97	65	17	33,0	4	6	02970
2,98	65	17	33,0	4	6	02980
2,99	65	17	33,0	4	6	02990
3,00	65	17	33,0	4	6	03000
3,01	65	17	33,0	4	6	03010
3,02	65	17	33,0	4	6	03020
3,03	65	17	33,0	4	6	03030
3,04 - 3,35	65	18	33,0	4	6	xxxxx 1)
3,36 - 3,75	75	18	43,0	4	6	xxxxx 1)
3,76 - 3,96	75	19	43,0	4	6	xxxxx 1)
3,97	75	19	43,0	4	6	03970
3,98	75	19	43,0	4	6	03980
3,99	75	19	43,0	4	6	03990
4,00	75	19	43,0	4	6	04000
4,01	75	19	43,0	4	6	04010
4,02	75	19	43,0	4	6	04020
4,03	75	19	43,0	4	6	04030
4,04 - 4,25	75	19	43,0	4	6	xxxxx 1)
4,26 - 4,75	80	21	39,0	6	6	xxxxx 1)
4,76 - 4,96	93	23	52,0	6	6	xxxxx 1)
4,97	93	23	52,0	6	6	04970
4,98	93	23	52,0	6	6	04980
4,99	93	23	52,0	6	6	04990
5,00	93	23	52,0	6	6	05000
5,01	93	23	52,0	6	6	05010
5,02	93	23	52,0	6	6	05020
5,03	93	23	52,0	6	6	05030
5,04 - 5,30	93	23	52,0	6	6	xxxxx 1)
5,31 - 5,96	93	26	53,0	6	6	xxxxx 1)
5,97	93	26	53,0	6	6	05970
5,98	93	26	53,0	6	6	05980

40 431 ...

DC +0,004 mm	OAL mm	L mm	LU mm	DCONMS h6 mm	ZEFP	
5,99	93	26	53,0	6	6	05990
6,00	93	26	53,0	6	6	06000
6,01	93	26	53,0	6	6	06010
6,02	93	26	53,0	6	6	06020
6,03	93	26	53,0	6	6	06030
6,04 - 6,70	101	28	61,0	6	6	xxxxx 1)
6,71 - 7,50	109	31	68,0	8	6	xxxxx 1)
7,51 - 7,96	117	33	77,0	8	6	xxxxx 1)
7,97	117	33	77,0	8	6	07970
7,98	117	33	77,0	8	6	07980
7,99	117	33	77,0	8	6	07990
8,00	117	33	77,0	8	6	08000
8,01	117	33	77,0	8	6	08010
8,02	117	33	77,0	8	6	08020
8,03	117	33	77,0	8	6	08030
8,04	117	33	77,0	8	6	08040
8,05 - 8,50	117	33	77,0	8	6	xxxxx 1)
8,51 - 9,04	125	36	80,0	10	6	xxxxx 1)
9,05 - 9,50	125	36	80,0	10	6	xxxxx 1)
9,51 - 9,96	133	38	88,0	10	6	xxxxx 1)
9,97	133	38	88,0	10	6	09970
9,98	133	38	88,0	10	6	09980
9,99	133	38	88,0	10	6	09990
10,00	133	38	88,0	10	6	10000
10,01	133	38	88,0	10	6	10010
10,02	133	38	88,0	10	6	10020
10,03	133	38	88,0	10	6	10030
10,04	133	38	88,0	10	6	10040
10,05	133	38	88,0	10	6	10050
10,06 - 10,60	133	38	88,0	10	6	xxxxx 1)
10,61 - 11,80	142	41	97,0	10	6	xxxxx 1)
11,81 - 11,96	151	44	100,0	12	6	xxxxx 1)
11,97	151	44	100,0	12	6	11970
11,98	151	44	100,0	12	6	11980
11,99	151	44	100,0	12	6	11990
12,00	151	44	100,0	12	6	12000
12,01	151	44	100,0	12	6	12010
12,02	151	44	100,0	12	6	12020
12,03	151	44	100,0	12	6	12030
12,04	151	44	100,0	12	6	12040
12,05	151	44	100,0	12	6	12050

P	●
M	○
K	●
N	
S	○
H	○
O	

→ v_c Page 78

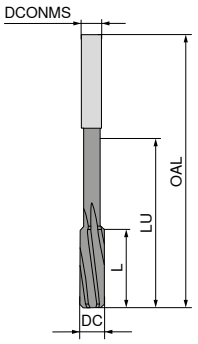
1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 12 working days

This tool concept permits numerous tolerances.
Please refer to the table on → **page 80** for tolerances covered.
For xxxxx please indicate required Ø in the order
(e.g. Ø 8.05 mm → Article no. 40 431 08050)!

NC machine reamers, DIN 212-3-B

- 0.01 mm steps
- tolerance: Ø 1.00 – Ø 5.50 mm = +0.004 mm
- tolerance: Ø 5.51 – Ø 12.00 mm = +0.005 mm

NC 100



Left Hand Helix
HSS-E

40 115 ...

DC mm	OAL mm	L mm	LU mm	DCONMS h6 mm	ZEFP	
0,95 - 0,99	34	5,5	12,5	1	3	xxxxx[1]
1,00	34	5,5	12,5	1	3	01000
1,01	34	5,5	12,5	1	3	01010
1,02	34	5,5	12,5	1	3	01020
1,03 - 1,06	34	5,5	12,5	1	3	xxxxx[1]
1,07 - 1,18	36	6,5	13,0	1	3	xxxxx[1]
1,19 - 1,32	38	7,5	14,0	2	3	xxxxx[1]
1,33 - 1,41	40	8,0	15,5	2	3	xxxxx[1]
1,42 - 1,49	40	8,0	15,5	2	3	xxxxx[1]
1,50	40	8,0	15,5	2	3	01500
1,51	43	9,0	16,0	2	3	01510
1,52	43	9,0	16,0	2	3	01520
1,53 - 1,70	43	9,0	16,0	2	3	xxxxx[1]
1,71 - 1,90	46	10,0	19,0	2	4	xxxxx[1]
1,91 - 1,96	49	11,0	21,0	2	4	xxxxx[1]
1,97	49	11,0	21,0	2	4	01970
1,98	49	11,0	21,0	2	4	01980
1,99	49	11,0	21,0	2	4	01990
2,00	49	11,0	21,0	2	4	02000
2,01	49	11,0	21,0	2	4	02010
2,02	49	11,0	21,0	2	4	02020
2,03 - 2,12	49	11,0	21,0	2	4	xxxxx[1]
2,13 - 2,36	53	12,0	22,0	3	4	xxxxx[1]
2,37 - 2,47	57	14,0	26,0	3	4	xxxxx[1]
2,48	57	14,0	26,0	3	4	02480
2,49	57	14,0	26,0	3	4	02490
2,50	57	14,0	26,0	3	4	02500
2,51	57	14,0	26,0	3	4	02510
2,52	57	14,0	26,0	3	4	02520
2,53 - 2,65	57	14,0	26,0	3	4	xxxxx[1]
2,66 - 2,96	61	15,0	30,0	3	6	xxxxx[1]
2,97	61	15,0	30,0	3	6	02970
2,98	61	15,0	30,0	3	6	02980
2,99	61	15,0	30,0	3	6	02990
3,00	61	15,0	30,0	3	6	03000
3,01	61	15,0	30,0	3	6	03010
3,02	61	15,0	30,0	3	6	03020
3,03	61	15,0	30,0	3	6	03030[1]
3,04 - 3,35	65	16,0	34,0	4	6	xxxxx[1]
3,36 - 3,75	70	18,0	39,0	4	6	xxxxx[1]
3,76 - 3,96	75	19,0	44,0	4	6	xxxxx[1]
3,97	75	19,0	44,0	4	6	03970
3,98	75	19,0	44,0	4	6	03980
3,99	75	19,0	44,0	4	6	03990
4,00	75	19,0	44,0	4	6	04000
4,01	75	19,0	44,0	4	6	04010
4,02	75	19,0	44,0	4	6	04020
4,03 - 4,25	75	19,0	44,0	4	6	xxxxx[1]
4,26 - 4,75	80	21,0	48,0	5	6	xxxxx[1]
4,76 - 4,96	86	23,0	54,0	5	6	xxxxx[1]
4,97	86	23,0	54,0	5	6	04970
4,98	86	23,0	54,0	5	6	04980
4,99	86	23,0	54,0	5	6	04990
5,00	86	23,0	54,0	5	6	05000
5,01	86	23,0	54,0	5	6	05010
5,02	86	23,0	54,0	5	6	05020

40 115 ...

DC mm	OAL mm	L mm	LU mm	DCONMS h6 mm	ZEFP	
5,03 - 5,30	86	23,0	54,0	5	6	xxxxx[1]
5,31 - 5,60	93	26,0	53,0	6	6	xxxxx[1]
5,61 - 5,96	93	26,0	53,0	6	6	xxxxx[1]
5,97	93	26,0	53,0	6	6	05970
5,98	93	26,0	53,0	6	6	05980
5,99	93	26,0	53,0	6	6	05990
6,00	93	26,0	53,0	6	6	06000
6,01	93	26,0	53,0	6	6	06010
6,02	93	26,0	53,0	6	6	06020
6,03	93	26,0	53,0	6	6	06030[1]
6,04 - 6,70	101	28,0	61,0	6	6	xxxxx[1]
6,71 - 7,20	109	31,0	69,0	8	6	xxxxx[1]
7,21 - 7,50	109	31,0	69,0	8	6	xxxxx[1]
7,51 - 7,96	117	33,0	77,0	8	6	xxxxx[1]
7,97	117	33,0	77,0	8	6	07970
7,98	117	33,0	77,0	8	6	07980
7,99	117	33,0	77,0	8	6	07990
8,00	117	33,0	77,0	8	6	08000
8,01	117	33,0	77,0	8	6	08010
8,02	117	33,0	77,0	8	6	08020
8,03 - 8,20	117	33,0	77,0	8	6	xxxxx[1]
8,21 - 8,50	117	33,0	77,0	8	6	xxxxx[1]
8,51 - 8,99	125	36,0	81,0	10	6	xxxxx[1]
9,00	125	36,0	81,0	10	6	09000
9,01	125	36,0	81,0	10	6	09010
9,02	125	36,0	81,0	10	6	09020
9,03 - 9,20	125	36,0	81,0	10	6	xxxxx[1]
9,21 - 9,50	125	36,0	81,0	10	6	xxxxx[1]
9,51 - 9,96	133	38,0	89,0	10	6	xxxxx[1]
9,97	133	38,0	89,0	10	6	09970
9,98	133	38,0	89,0	10	6	09980
9,99	133	38,0	89,0	10	6	09990
10,00	133	38,0	89,0	10	6	10000
10,01	133	38,0	89,0	10	6	10010
10,02	133	38,0	89,0	10	6	10020
10,03 - 10,20	133	38,0	89,0	10	6	xxxxx[1]
10,21 - 10,60	133	38,0	89,0	10	6	xxxxx[1]
10,61 - 11,20	142	41,0	98,0	10	6	xxxxx[1]
11,21 - 11,80	142	41,0	98,0	10	6	xxxxx[1]
11,81 - 11,96	151	44,0	106,0	10	6	xxxxx[1]
11,97	151	44,0	106,0	10	6	11970
11,98	151	44,0	106,0	10	6	11980
11,99	151	44,0	106,0	10	6	11990
12,00	151	44,0	106,0	10	6	12000

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→ v_c Page 79

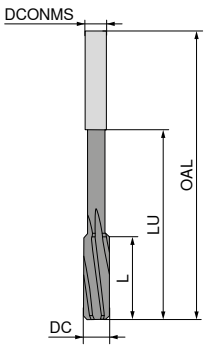
1) Not available ex stock, articles are non-returnable and cannot be exchanged / Minimum order 5 pieces

This tool concept permits numerous tolerances.
Please refer to the table on → **page 80** for tolerances covered.
For xxxxx please indicate required Ø in the order
(e.g. Ø 8.03 mm → Article no. 40 115 08030)!

Machine reamers, DIN 212-B

- ▲ 0.01 mm steps
- ▲ tolerance: Ø 0.95 – 5.50 mm = +0.004 mm
- ▲ tolerance: Ø 5.51 – 12.00 mm = +0.005 mm

N 100



Left Hand Helix
HSS-E

40 140 ...

DC mm	OAL mm	L mm	LU mm	DCONMS h9 mm	ZEFP	
0,95 - 1,06	34	5,5	13	1,0	3	xxxxx 1)
1,07 - 1,18	36	6,5	14	1,1	3	xxxxx 1)
1,19 - 1,32	38	7,5	15	1,2	3	xxxxx 1)
1,33 - 1,39	40	8,0	16	1,4	3	xxxxx 1)
1,40 - 1,47	40	8,0	16	1,4	3	xxxxx 1)
1,48	40	8,0	16	1,4	3	01480
1,49	40	8,0	16	1,4	3	01490
1,50	40	8,0	16	1,4	3	01500
1,51 - 1,70	43	9,0	18	1,6	3	xxxxx 1)
1,71 - 1,90	46	10,0	20	1,8	4	xxxxx 1)
1,91 - 1,97	49	11,0	22	2,0	4	xxxxx 1)
1,98	49	11,0	22	2,0	4	01980
1,99	49	11,0	22	2,0	4	01990
2,00	49	11,0	22	2,0	4	02000
2,01	49	11,0	22	2,0	4	02010
2,02	49	11,0	22	2,0	4	02020
2,03	49	11,0	22	2,0	4	02030
2,04	49	11,0	22	2,0	4	02040
2,05	49	11,0	22	2,0	4	02050
2,06 - 2,09	49	11,0	22	2,0	4	xxxxx 1)
2,10 - 2,12	49	11,0	22	2,0	4	xxxxx 1)
2,13 - 2,36	53	12,0	24	2,2	4	xxxxx 1)
2,37 - 2,49	57	14,0	26	2,5	4	xxxxx 1)
2,50 - 2,59	57	14,0	26	2,5	4	xxxxx 1)
2,60 - 2,65	57	14,0	26	2,5	4	xxxxx 1)
2,66 - 2,80	61	15,0	30	2,8	6	xxxxx 1)
2,81 - 2,94	61	15,0	29	3,0	6	xxxxx 1)
2,95	61	15,0	29	3,0	6	02950
2,96	61	15,0	29	3,0	6	02960
2,97	61	15,0	29	3,0	6	02970
2,98	61	15,0	29	3,0	6	02980
2,99	61	15,0	29	3,0	6	02990
3,00	61	15,0	29	3,0	6	03000
3,01	65	16,0	33	3,2	6	03010
3,02	65	16,0	33	3,2	6	03020
3,03	65	16,0	33	3,2	6	03030
3,04	65	16,0	33	3,2	6	03040
3,05	65	16,0	33	3,2	6	03050
3,06	65	16,0	33	3,2	6	03060
3,07	65	16,0	33	3,2	6	03070
3,08 - 3,09	65	16,0	33	3,2	6	xxxxx 1)
3,10 - 3,35	65	16,0	33	3,2	6	xxxxx 1)
3,36 - 3,49	70	18,0	38	3,5	6	xxxxx 1)
3,50 - 3,59	70	18,0	38	3,5	6	xxxxx 1)
3,60 - 3,75	70	18,0	38	3,5	6	xxxxx 1)
3,76 - 3,81	75	19,0	46	4,0	6	xxxxx 1)
3,82 - 3,94	75	19,0	46	4,0	6	xxxxx 1)
3,95	75	19,0	46	4,0	6	03950
3,96	75	19,0	46	4,0	6	03960
3,97	75	19,0	46	4,0	6	03970
3,98	75	19,0	46	4,0	6	03980
3,99	75	19,0	46	4,0	6	03990

40 140 ...

DC mm	OAL mm	L mm	LU mm	DCONMS h9 mm	ZEFP	
4,00	75	19,0	46	4,0	6	04000
4,01	75	19,0	46	4,0	6	04010
4,02	75	19,0	46	4,0	6	04020
4,03	75	19,0	46	4,0	6	04030
4,04	75	19,0	46	4,0	6	04040
4,05	75	19,0	46	4,0	6	04050
4,06	75	19,0	46	4,0	6	04060
4,07	75	19,0	46	4,0	6	04070
4,08	75	19,0	46	4,0	6	04080
4,09 - 4,20	75	19,0	46	4,0	6	xxxxx 1)
4,21 - 4,25	75	19,0	46	4,0	6	xxxxx 1)
4,26 - 4,75	80	21,0	51	4,5	5	xxxxx 1)
4,76 - 4,95	86	23,0	57	5,0	6	xxxxx 1)
4,96	86	23,0	57	5,0	6	04960
4,97	86	23,0	57	5,0	6	04970
4,98	86	23,0	57	5,0	6	04980
4,99	86	23,0	57	5,0	6	04990
5,00	86	23,0	57	5,0	6	05000
5,01	86	23,0	57	5,0	6	05010
5,02	86	23,0	57	5,0	6	05020
5,03	86	23,0	57	5,0	6	05030
5,04	86	23,0	57	5,0	6	05040
5,05	86	23,0	57	5,0	6	05050
5,06	86	23,0	57	5,0	6	05060
5,07	86	23,0	57	5,0	6	05070
5,08 - 5,20	86	23,0	57	5,0	6	xxxxx 1)
5,21 - 5,30	86	23,0	57	5,0	6	xxxxx 1)
5,31 - 5,94	93	26,0	56	5,6	6	xxxxx 1)
5,95	93	26,0	56	5,6	6	05950
5,96	93	26,0	56	5,6	6	05960
5,97	93	26,0	56	5,6	6	05970
5,98	93	26,0	56	5,6	6	05980
5,99	93	26,0	56	5,6	6	05990

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→ v_c Page 79

1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 14 working days

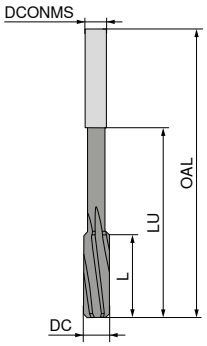
This tool concept permits numerous tolerances.
For achievable tolerances covered, please see the table on → **page 80**.
For xxxxx please indicate required Ø in the order
(e.g. Ø 10.06 mm → Article no. 40 140 10060)!

Continued on next page

Machine reamers, DIN 212-B

- 0.01 mm steps
- tolerance: Ø 0.95 – 5.50 mm = +0.004 mm
- tolerance: Ø 5.51 – 12.00 mm = +0.005 mm

N 100



Left Hand Helix
HSS-E

40 140 ...

DC mm	OAL mm	L mm	LU mm	DCONMS h9 mm	ZEFP	
6,00	93	26	56	5,6	6	06000
6,01	101	28	72	6,3	6	06010
6,02	101	28	72	6,3	6	06020
6,03	101	28	72	6,3	6	06030
6,04	101	28	72	6,3	6	06040
6,05	101	28	72	6,3	6	06050
6,06 - 6,11	101	28	72	6,3	6	xxxxx 1)
6,12 - 6,34	101	28	72	6,3	6	xxxxx 1)
6,35	101	28	72	6,3	6	06350
6,36	101	28	72	6,3	6	06360 1)
6,71 - 6,94	109	31	80	7,1	6	xxxxx 1)
6,95	109	31	80	7,1	6	06950
6,96	109	31	80	7,1	6	06960
6,97	109	31	80	7,1	6	06970
6,98	109	31	80	7,1	6	06980
6,99	109	31	80	7,1	6	06990
7,00	109	31	80	7,1	6	07000
7,01	109	31	80	7,1	6	07010
7,02	109	31	80	7,1	6	07020
7,03	109	31	80	7,1	6	07030
7,04 - 7,50	109	31	80	7,1	6	xxxxx 1)
7,51 - 7,63	117	33	80	7,1	6	xxxxx 1)
7,64 - 7,94	117	33	80	8,0	6	xxxxx 1)
7,95	117	33	84	8,0	6	07950
7,96	117	33	84	8,0	6	07960
7,97	117	33	84	8,0	6	07970
7,98	117	33	84	8,0	6	07980
7,99	117	33	84	8,0	6	07990
8,00	117	33	84	8,0	6	08000
8,01	117	33	84	8,0	6	08010
8,02	117	33	84	8,0	6	08020
8,03	117	33	84	8,0	6	08030
8,04	117	33	84	8,0	6	08040
8,05	117	33	84	8,0	6	08050
8,06 - 8,20	117	33	84	8,0	6	xxxxx 1)
8,21 - 8,50	117	33	84	8,0	6	xxxxx 1)
8,51 - 8,63	125	36	84	8,0	6	xxxxx 1)
8,64 - 8,95	125	36	84	9,0	6	xxxxx 1)
8,96	125	36	92	9,0	6	08960
8,97	125	36	92	9,0	6	08970
8,98	125	36	92	9,0	6	08980
8,99	125	36	92	9,0	6	08990
9,00	125	36	92	9,0	6	09000
9,01	125	36	92	9,0	6	09010
9,02	125	36	92	9,0	6	09020
9,03 - 9,50	125	36	92	9,0	6	xxxxx 1)
9,51 - 9,63	133	38	92	9,0	6	xxxxx 1)
9,64 - 9,95	133	38	92	10,0	6	xxxxx 1)
9,96	133	38	101	10,0	6	09960
9,97	133	38	101	10,0	6	09970
9,98	133	38	101	10,0	6	09980
9,99	133	38	101	10,0	6	09990

40 140 ...

DC mm	OAL mm	L mm	LU mm	DCONMS h9 mm	ZEFP	
10,00	133	38	101	10,0	6	10000
10,01	133	38	101	10,0	6	10010
10,02	133	38	101	10,0	6	10020
10,03	133	38	101	10,0	6	10030
10,04	133	38	101	10,0	6	10040
10,05	133	38	101	10,0	6	10050
10,06 - 10,09	133	38	101	10,0	6	xxxxx 1)
10,10	133	38	101	10,0	6	10100
10,11 - 10,19	133	38	101	10,0	6	xxxxx 1)
10,20	133	38	101	10,0	6	10200
10,21 - 10,69	133	38	101	10,0	6	xxxxx 1)
10,70 - 11,20	142	41	101	10,0	6	xxxxx 1)
11,21 - 11,80	142	41	101	10,0	6	xxxxx 1)
11,81 - 11,95	151	44	110	10,0	6	xxxxx 1)
11,96	151	44	110	10,0	6	11960
11,97	151	44	110	10,0	6	11970
11,98	151	44	110	10,0	6	11980
11,99	151	44	110	10,0	6	11990
12,00	151	44	110	10,0	6	12000

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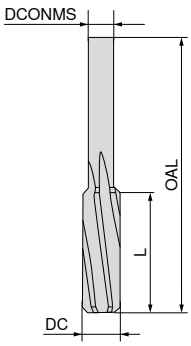
→ v_c Page 79

1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 14 working days

This tool concept permits numerous tolerances.
For achievable tolerances covered, please see the table on → **page 80**.
For xxxxx please indicate required Ø in the order
(e.g. Ø 10.06 mm → Article no. 40 140 10060)!

Stub reamers, DIN 8089-B

AR



Left Hand Helix
HSS-E
Through hole

40 145 ...

DC $_{H7}$ mm	OAL mm	L mm	DCONMS $_{h8}$ mm	ZEFP	
4,0	56	20	3,55	6	**040**
4,5	63	22	4,00	6	**045**
5,0	63	22	4,00	6	**050**
5,5	63	22	5,00	6	**055**
6,0	63	22	5,00	6	**060**
6,5	63	22	5,00	6	**065**
7,0	71	25	6,30	6	**070**
8,0	71	25	6,30	6	**080**
9,0	71	25	8,00	6	**090**
10,0	71	25	8,00	6	**100**
11,0	80	28	10,00	6	**110**
12,0	80	28	10,00	6	**120**

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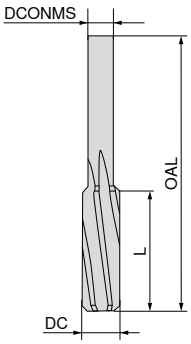
→ v_c Page 79

Stub reamers, DIN 8089-B

- 0.01 mm steps
- tolerance: Ø 3.76 – 5.50 mm = +0.004 mm
- tolerance: Ø 5.51 – 12.00 mm = +0.005 mm

AR 100



HSS-E
Left Hand Helix

40 139 ...

DC mm	OAL mm	L mm	DCONMS h8 mm	ZEFP	
3,76 - 3,81	56	20	3,55	6	xxxxx 1)
3,82 - 3,94	56	20	3,55	6	xxxxx 1)
3,95	56	20	3,55	6	03950
3,96	56	20	3,55	6	03960
3,97	56	20	3,55	6	03970
3,98	56	20	3,55	6	03980
3,99	56	20	3,55	6	03990
4,00	56	20	3,55	6	04000
4,01	56	20	3,55	6	04010
4,02	56	20	3,55	6	04020
4,03 - 4,20	56	20	3,55	6	xxxxx 1)
4,21 - 4,25	56	20	3,55	6	xxxxx 1)
4,26 - 4,75	63	22	4,00	6	xxxxx 1)
4,76 - 4,94	63	22	4,00	6	xxxxx 1)
4,95	63	22	4,00	6	04950
4,96	63	22	4,00	6	04960
4,97	63	22	4,00	6	04970
4,98	63	22	4,00	6	04980
4,99	63	22	4,00	6	04990
5,00	63	22	4,00	6	05000
5,01	63	22	4,00	6	05010
5,02	63	22	4,00	6	05020
5,03	63	22	4,00	6	05030
5,04	63	22	4,00	6	05040
5,05	63	22	4,00	6	05050
5,06 - 5,20	63	22	4,00	6	xxxxx 1)
5,21 - 5,30	63	22	4,00	6	xxxxx 1)
5,31 - 5,70	63	22	5,00	6	xxxxx 1)
5,71 - 5,94	63	22	5,00	6	xxxxx 1)
5,95	63	22	5,00	6	05950
5,96	63	22	5,00	6	05960
5,97	63	22	5,00	6	05970
5,98	63	22	5,00	6	05980
5,99	63	22	5,00	6	05990
6,00	63	22	5,00	6	06000
6,01	63	22	5,00	6	06010
6,02	63	22	5,00	6	06020
6,03 - 6,11	63	22	5,00	6	xxxxx 1)
6,12 - 6,70	63	22	5,00	6	xxxxx 1)
6,71 - 6,94	71	25	6,30	6	xxxxx 1)
6,95	71	25	6,30	6	06950
6,96	71	25	6,30	6	06960
6,97	71	25	6,30	6	06970
6,98	71	25	6,30	6	06980
6,99	71	25	6,30	6	06990
7,00	71	25	6,30	6	07000
7,01	71	25	6,30	6	07010
7,02	71	25	6,30	6	07020
7,03 - 7,25	71	25	6,30	6	xxxxx 1)
7,26 - 7,94	71	25	6,30	6	xxxxx 1)
7,95	71	25	6,30	6	07950
7,96	71	25	6,30	6	07960

40 139 ...

DC mm	OAL mm	L mm	DCONMS h8 mm	ZEFP	
7,97	71	25	6,30	6	07970
7,98	71	25	6,30	6	07980
7,99	71	25	6,30	6	07990
8,00	71	25	6,30	6	08000
8,01	71	25	6,30	6	08010
8,02	71	25	6,30	6	08020
8,03	71	25	6,30	6	08030
8,04	71	25	6,30	6	08040
8,05 - 8,20	71	25	6,30	6	xxxxx 1)
8,21 - 8,50	71	25	6,30	6	xxxxx 1)
8,51 - 8,94	71	25	8,00	6	xxxxx 1)
8,95	71	25	8,00	6	08950
8,96	71	25	8,00	6	08960
8,97	71	25	8,00	6	08970
8,98	71	25	8,00	6	08980
8,99	71	25	8,00	6	08990
9,00	71	25	8,00	6	09000
9,01	71	25	8,00	6	09010 1)
9,02	71	25	8,00	6	09020
9,03 - 9,25	71	25	8,00	6	xxxxx
9,26 - 9,94	71	25	8,00	6	xxxxx 1)
9,95	71	25	8,00	6	09950
9,96	71	25	8,00	6	09960
9,97	71	25	8,00	6	09970
9,98	71	25	8,00	6	09980
9,99	71	25	8,00	6	09990
10,00	71	25	8,00	6	10000
10,01	71	25	8,00	6	10010
10,02	71	25	8,00	6	10020
10,03 - 10,20	71	25	8,00	6	xxxxx 1)
10,21 - 10,60	71	25	8,00	6	xxxxx 1)
10,61 - 11,20	80	28	10,00	6	xxxxx 1)
11,21 - 11,25	80	28	10,00	6	xxxxx 1)
11,26 - 11,94	80	28	10,00	6	xxxxx 1)
11,95	80	28	10,00	6	11950
11,96	80	28	10,00	6	11960
11,97	80	28	10,00	6	11970
11,98	80	28	10,00	6	11980
11,99	80	28	10,00	6	11990
12,00	80	28	10,00	6	12000

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→ v_c Page 79

1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 14 working days

This tool concept permits numerous tolerances.
For achievable tolerances covered, please see the table on → **page 80**.
For xxxxx please indicate required Ø in the order
(e.g. Ø 10.06 mm → Article no. 40 139 10060)!

Material examples for cutting data tables

	Material sub-group	Index	Composition / Structure / Heat treatment		Tensile strength N/mm²* / HB / HRC	Material number	Material designation	Material number	Material designation
P	Unalloyed steel	P.1.1	< 0,15 % C	Annealed	420 N/mm² / 125 HB	1.0401	C15	1.1141	Ck15
		P.1.2	< 0,45 % C	Annealed	640 N/mm² / 190 HB	1.1191	C45E	1.0718	9SMnPb28
		P.1.3		Tempered	840 N/mm² / 250 HB	1.1191	C45E	1.0535	C55
		P.1.4	< 0,75 % C	Annealed	910 N/mm² / 270 HB	1.1223	C60R	1.0535	C55
		P.1.5		Tempered	1010 N/mm² / 300 HB	1.1223	C60R	1.0727	45S20
	Low-alloy steel	P.2.1		Annealed	610 N/mm² / 180 HB	1.7131	16MnCr5	1.6587	17CrNiMo6
		P.2.2		Tempered	930 N/mm² / 275 HB	1.7131	16MnCr5	1.6587	17CrNiMo6
		P.2.3		Tempered	1010 N/mm² / 300 HB	1.7225	42CrMo4	1.3505	100Cr6
		P.2.4		Tempered	1200 N/mm² / 375 HB	1.7225	42CrMo4	1.3505	100Cr6
	High-alloy steel and high-alloy tool steel	P.3.1		Annealed	680 N/mm² / 200 HB	1.4021	X20Cr13	1.4034	X46Cr13
		P.3.2		Hardened and tempered	1100 N/mm² / 300 HB	1.2343	X38CrMoV5-1	1.4034	X46Cr13
		P.3.3		Hardened and tempered	1300 N/mm² / 400 HB	1.2343	X38CrMoV5-1	1.4034	X46Cr13
	Stainless steel	P.4.1	Ferritic / martensitic	Annealed	680 N/mm² / 200 HB	1.4016	X6Cr17	1.2316	X36CrMo16
		P.4.2	Martensitic	Tempered	1010 N/mm² / 300 HB	1.4112	X90CrMoV18	1.2316	X36CrMo16
M	Stainless steel	M.1.1	Austenitic / austenitic-ferritic	Quenched	610 N/mm² / 180 HB	1.4301	X5CrNi18-10	1.4571	X6CrNiMoTi17-12-2
		M.2.1	Austenitic	Tempered	300 HB	1.4841	X15CrNiSi25-21	1.4539	X1NiCrMoCu25-20-5
		M.3.1	Austenitic / ferritic (Duplex)		780 N/mm² / 230 HB	1.4462	X2CrNiMoN22-5-3	1.4501	X2CrNiMoCuWN25-7-4
K	Grey cast iron	K.1.1	Pearlitic / ferritic		350 N/mm² / 180 HB	0.6010	GG-10	0.6025	GG-25
		K.1.2	Pearlitic (martensitic)		500 N/mm² / 260 HB	0.6030	GG-30	0.6045	GG-45
	Spherulitic graphite cast iron	K.2.1	Ferritic		540 N/mm² / 160 HB	0.7040	GGG-40	0.7060	GGG-60
		K.2.2	Pearlitic		845 N/mm² / 250 HB	0.7070	GGG-70	0.7080	GGG-80
	Malleable iron	K.3.1	Ferritic		440 N/mm² / 130 HB	0.8035	GTW-35-04	0.8045	GTW-45
		K.3.2	Pearlitic		780 N/mm² / 230 HB	0.8165	GTS-65-02	0.8170	GTS-70-02
N	Aluminium wrought alloy	N.1.1	Non-hardenable		60 HB	3.0255	Al99,5	3.3315	AlMg1
		N.1.2	Hardenable	Age-hardened	340 N/mm² / 100 HB	3.1355	AlCuMg2	3.2315	AlMgSi1
	Cast aluminium alloy	N.2.1	≤ 12 % Si, non-hardenable		250 N/mm² / 75 HB	3.2581	G-AlSi12	3.2163	G-AlSi9Cu3
		N.2.2	≤ 12 % Si, hardenable	Age-hardened	300 N/mm² / 90 HB	3.2134	G-AlSi5Cu1Mg	3.2373	G-AlSi9Mg
		N.2.3	> 12 % Si, non-hardenable		440 N/mm² / 130 HB		G-AlSi17Cu4Mg		G-AlSi18CuNiMg
	Copper and copper alloys (bronze/brass)	N.3.1	Free-machining alloys, PB > 1 %		375 N/mm² / 110 HB	2.0380	CuZn39Pb2 (Ms58)	2.0410	CuZn44Pb2
		N.3.2	CuZn, CuSnZn		300 N/mm² / 90 HB	2.0331	CuZn15	2.4070	CuZn28Sn1As
		N.3.3	CuSn, lead-free copper and electrolytic copper		340 N/mm² / 100 HB	2.0060	E-Cu57	2.0590	CuZn40Fe
	Magnesium alloys	N.4.1	Magnesium and magnesium alloys		70 HB	3.5612	MgAl6Zn	3.5312	MgAl3Zn
S	Heat-resistant alloys	S.1.1	Fe - basis	Annealed	680 N/mm² / 200 HB	1.4864	X12NiCrSi 36-16	1.4865	G-X40NiCrSi38-18
		S.1.2		Age-hardened	950 N/mm² / 280 HB	1.4980	X6NiCrTiMoVB25-15-2	1.4876	X10NiCrAlTi32-20
		S.2.1	Ni or Co basis	Annealed	840 N/mm² / 250 HB	2.4631	NiCr20TiAl (Nimonic80A)	3.4856	NiCr22Mo9Nb
		S.2.2		Age-hardened	1180 N/mm² / 350 HB	2.4668	NiCr19Nb5Mo3 (Inconel 718)	2.4955	NiFe25Cr20NbTi
		S.2.3		Cast	1080 N/mm² / 320 HB	2.4765	CoCr20W15Ni	1.3401	G-X120Mn12
	Titanium alloys	S.3.1	Pure titanium		400 N/mm²	3.7025	Ti99,8	3.7034	Ti99,7
		S.3.2	Alpha + beta alloys	Age-hardened	1050 N/mm² / 320 HB	3.7165	TiAl6V4	Ti-6246	Ti-6Al-2Sn-4Zr-6Mo
		S.3.3	Beta alloys		1400 N/mm² / 410 HB	Ti555.3	Ti-5Al-5V-5Mo-3Cr	R56410	Ti-10V-2Fe-3Al
H	Hardened steel	H.1.1		Hardened and tempered	46–55 HRC				
		H.1.2		Hardened and tempered	56–60 HRC				
		H.1.3		Hardened and tempered	61–65 HRC				
		H.1.4		Hardened and tempered	66–70 HRC				
	Chilled iron	H.2.1		Cast	400 HB				
	Hardened cast iron	H.3.1		Hardened and tempered	55 HRC				
O	Non-metal materials	O.1.1	Plastics, duroplastic		≤ 150 N/mm²				
		O.1.2	Plastics, thermoplastic		≤ 100 N/mm²				
		O.2.1	Aramid fibre-reinforced		≤ 1000 N/mm²				
		O.2.2	Glass/carbon-fibre reinforced		≤ 1000 N/mm²				
		O.3.1	Graphite						

*** Tensile strength**

Cutting data standard values for Monomax

	Grade / coating	DBC			DBC	
	Article no. / type	40 648 ... / 56J.17 – ASG0706			40 640... / 56H.17 – ASG0706	
	Nominal Ø in mm	5,6–8,899	8,9–12,00	5,6–8,899	8,9–12,00	
	Reaming Allowance Ø	0,10–0,20	0,10–0,30	0,10–0,20	0,10–0,30	
	Number of flutes	4	6	4	6	
Index	v_c m/min	f mm/rev.	f mm/rev.	v_c m/min	f mm/rev.	f mm/rev.
P.1.1						
P.1.2						
P.1.3						
P.1.4						
P.1.5						
P.2.1						
P.2.2						
P.2.3						
P.2.4						
P.3.1						
P.3.2						
P.3.3						
P.4.1						
P.4.2						
M.1.1						
M.2.1						
M.3.1						
K.1.1						
K.1.2						
K.2.1						
K.2.2						
K.3.1						
K.3.2						
N.1.1	**150** (130–300)	0,40–0,60	0,40–0,60	**150** (130–300)	0,40–0,60	0,40–0,60
N.1.2	**150** (130–300)	0,40–0,60	0,40–0,60	**150** (130–300)	0,40–0,60	0,40–0,60
N.2.1	**200** (180–300)	0,40–0,60	0,40–0,60	**200** (180–300)	0,40–0,60	0,40–0,60
N.2.2	**200** (180–300)	0,40–0,60	0,40–0,60	**200** (180–300)	0,40–0,60	0,40–0,60
N.2.3	**200** (180–300)	0,40–0,60	0,40–0,60	**200** (180–300)	0,40–0,60	0,40–0,60
N.3.1						
N.3.2						
N.3.3						
N.4.1						
S.1.1						
S.1.2						
S.2.1						
S.2.2						
S.2.3						
S.3.1						
S.3.2						
S.3.3						
H.1.1						
H.1.2						
H.1.3						
H.1.4						
H.2.1						
H.3.1						
O.1.1						
O.1.2						
O.2.1						
O.2.2						
O.3.1	250 (220–270)	0,40–0,60	0,40–0,60	250 (220–270)	0,40–0,60	0,40–0,60

The cutting data depend extremely on the external conditions, the material and machine type.
The indicated values are possible values which have to be increased or reduced, inside the bracket, according to the application conditions.

Cutting data standard values for Monomax

	Grade / coating	HM-DBG-P			HM-DBG-P	
	Article no. / type	40 657 ... / 56H.65 – ASG3000			40 652 ... / 56J.65 – ASG0106	
	Nominal Ø in mm	5,6–8,899	8,9–12,00		5,6–8,899	8,9–12,00
	Reaming allowance Ø	0,10–0,20	0,10–0,30		0,10–0,20	0,10–0,30
	Number of flutes	4	6		4	6
Index	v_c m/min	f mm/rev.	f mm/rev.	v_c m/min	f mm/rev.	f mm/rev.
P.1.1	**150** (130–200)	0,30–0,50	0,50–0,70			
P.1.2	**150** (130–200)	0,30–0,50	0,50–0,70			
P.1.3	**150** (130–200)	0,30–0,50	0,50–0,70			
P.1.4	**150** (130–200)	0,30–0,50	0,50–0,70			
P.1.5	**150** (130–200)	0,30–0,50	0,50–0,70			
P.2.1	**150** (130–200)	0,30–0,50	0,50–0,70			
P.2.2	**150** (130–200)	0,30–0,50	0,50–0,70			
P.2.3	**150** (130–200)	0,30–0,50	0,50–0,70			
P.2.4	**60** (50–100)	0,20–0,30	0,40–0,50	**60** (50–100)	0,20–0,30	0,40–0,50
P.3.1				**40** (35–60)	0,20–0,30	0,40–0,50
P.3.2				**40** (35–60)	0,20–0,30	0,40–0,50
P.3.3				**30** (25–50)	0,30–0,40	0,40–0,60
P.4.1				**45** (35–60)	0,30–0,40	0,40–0,60
P.4.2				**45** (35–60)	0,30–0,40	0,40–0,60
M.1.1				**30** (25–50)	0,30–0,40	0,40–0,60
M.2.1				**30** (25–50)	0,30–0,40	0,40–0,60
M.3.1				**30** (25–50)	0,30–0,40	0,40–0,60
K.1.1	**150** (130–220)	0,40–0,60	0,70–0,90			
K.1.2	**150** (130–220)	0,40–0,60	0,70–0,90			
K.2.1	**175** (150–300)	0,40–0,60	0,70–0,90			
K.2.2	**120** (100–180)	0,30–0,50	0,50–0,70			
K.3.1	**150** (130–250)	0,40–0,60	0,70–0,90			
K.3.2	**120** (100–180)	0,30–0,50	0,50–0,70			
N.1.1						
N.1.2						
N.2.1						
N.2.2						
N.2.3						
N.3.1						
N.3.2						
N.3.3						
N.4.1						
S.1.1						
S.1.2						
S.2.1						
S.2.2						
S.2.3						
S.3.1						
S.3.2						
S.3.3						
H.1.1						
H.1.2						
H.1.3						
H.1.4						
H.2.1						
H.3.1						
O.1.1						
O.1.2						
O.2.1						
O.2.2						
O.3.1						

The cutting data depend extremely on the external conditions, the material and machine type.
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Cutting data standard values for Monomax

	Grade / coating	DST			DST	
	Article no. / type	40 625 ... / 56J.93 – ASG3000			40 635 ... / 56J.93 – ASG4000	
	Nominal Ø in mm	5,6–8,899	8,9–12,00		5,6–8,899	8,9–12,00
	Reaming allowance Ø	0,10–0,20	0,10–0,30		0,10–0,20	0,10–0,30
	Number of flutes	4	6		4	6
Index	v_c m/min	f mm/rev.	f mm/rev.	v_c m/min	f mm/rev.	f mm/rev.
P.1.1	**150** (130–200)	0,30–0,50	0,50–0,70	**150** (130–200)	0,40–0,60	0,70–0,90
P.1.2	**150** (130–200)	0,30–0,50	0,50–0,70	**150** (130–200)	0,40–0,60	0,70–0,90
P.1.3	**150** (130–200)	0,30–0,50	0,50–0,70	**150** (130–200)	0,40–0,60	0,70–0,90
P.1.4	**150** (130–200)	0,30–0,50	0,50–0,70	**150** (130–200)	0,40–0,60	0,70–0,90
P.1.5	**150** (130–200)	0,30–0,50	0,50–0,70	**150** (130–200)	0,40–0,60	0,70–0,90
P.2.1	**150** (130–200)	0,30–0,50	0,50–0,70	**150** (130–200)	0,40–0,60	0,70–0,90
P.2.2	**150** (130–200)	0,30–0,50	0,50–0,70	**150** (130–200)	0,40–0,60	0,70–0,90
P.2.3	**150** (130–200)	0,30–0,50	0,50–0,70	**150** (130–200)	0,40–0,60	0,70–0,90
P.2.4						
P.3.1						
P.3.2						
P.3.3						
P.4.1						
P.4.2						
M.1.1						
M.2.1						
M.3.1						
K.1.1						
K.1.2						
K.2.1	**175** (150–300)	0,40–0,60	0,70–0,90	175 (150–300)	0,40–0,60	0,70–0,90
K.2.2	**120** (100–150)	0,30–0,50	0,50–0,70	120 (100–180)	0,30–0,50	0,50–0,70
K.3.1	**150** (130–250)	0,40–0,60	0,70–0,90	120 (100–180)	0,30–0,50	0,50–0,70
K.3.2	**120** (100–180)	0,30–0,50	0,50–0,70	120 (100–180)	0,30–0,50	0,50–0,70
N.1.1						
N.1.2						
N.2.1						
N.2.2						
N.2.3						
N.3.1	150 (130–300)	0,40–0,60	0,60–0,90			
N.3.2	150 (130–300)	0,40–0,60	0,60–0,90			
N.3.3						
N.4.1						
S.1.1						
S.1.2						
S.2.1						
S.2.2						
S.2.3						
S.3.1						
S.3.2						
S.3.3						
H.1.1						
H.1.2						
H.1.3						
H.1.4						
H.2.1						
H.3.1						
O.1.1						
O.1.2						
O.2.1						
O.2.2						
O.3.1						

The cutting data depend extremely on the external conditions, the material and machine type.
The indicated values are possible values which have to be increased or reduced, inside the bracket, according to the application conditions.

Cutting data standard values for Monomax

	Grade / coating	HM-DBG-P			HM-TiN	
	Article no. / type	40 644 ... / 56H.65 – ASG0106		40 605 ... / 56J.71 – ASG3000		
	Nominal Ø in mm	5,6–8,899	8,9–12,00	5,6–8,899	8,9–12,00	
	Reaming allowance Ø	0,10–0,20	0,10–0,30	0,10–0,20	0,10–0,30	
	Number of flutes	4	6	4	6	
Index	v_c m/min	f mm/rev.	f mm/rev.	v_c m/min	f mm/rev.	f mm/rev.
P.1.1				100 (80–140)	0,30–0,50	0,50–0,70
P.1.2				100 (80–140)	0,30–0,50	0,50–0,70
P.1.3				100 (80–140)	0,30–0,50	0,50–0,70
P.1.4				100 (80–140)	0,30–0,50	0,50–0,70
P.1.5				100 (80–140)	0,30–0,50	0,50–0,70
P.2.1				100 (80–140)	0,30–0,50	0,50–0,70
P.2.2				100 (80–140)	0,30–0,50	0,50–0,70
P.2.3				100 (80–140)	0,30–0,50	0,50–0,70
P.2.4				100 (80–140)	0,30–0,50	0,50–0,70
P.3.1	**30** (25–50)	0,30–0,40	0,40–0,60			
P.3.2	**30** (25–50)	0,30–0,40	0,40–0,60			
P.3.3	**30** (25–50)	0,30–0,40	0,40–0,60			
P.4.1	**45** (35–60)	0,30–0,40	0,40–0,60			
P.4.2	**45** (35–60)	0,30–0,40	0,40–0,60			
M.1.1	**45** (35–60)	0,30–0,40	0,40–0,60			
M.2.1	**45** (35–60)	0,30–0,40	0,40–0,60			
M.3.1	**30** (25–50)	0,30–0,40	0,40–0,60			
K.1.1				80 (60–130)	0,40–0,60	0,70–0,90
K.1.2				80 (60–130)	0,40–0,60	0,70–0,90
K.2.1						
K.2.2						
K.3.1						
K.3.2						
N.1.1						
N.1.2						
N.2.1						
N.2.2						
N.2.3						
N.3.1				**120** (–200)	0,40–0,60	0,60–0,90
N.3.2				**120** (–200)	0,40–0,60	0,60–0,90
N.3.3				**80** (–150)	0,40–0,60	0,60–0,90
N.4.1						
S.1.1						
S.1.2						
S.2.1						
S.2.2						
S.2.3						
S.3.1						
S.3.2						
S.3.3						
H.1.1						
H.1.2						
H.1.3						
H.1.4						
H.2.1						
H.3.1						
O.1.1						
O.1.2						
O.2.1						
O.2.2						
O.3.1						

The cutting data depend extremely on the external conditions, the material and machine type.
The indicated values are possible values which have to be increased or reduced, inside the bracket, according to the application conditions.

Cutting data standard values for Fullmax, short

Type UNI		40 481 ... / 40 483 ... / 40 488 ... / 40 489 ...							
		Ø 2,97 – 4,05		Ø 4,06 – 6,05		Ø 6,06 – 7,55		Ø 7,56 – 12,05	
Number of flutes		4		4		6		6	
Index	v_c m/min	f mm/rev.	Reaming allowance Ø mm	f mm/rev.	Reaming allowance Ø mm	f mm/rev.	Reaming allowance Ø mm	f mm/rev.	Reaming allowance Ø mm
P.1.1	**200** (180–250)	0,65–0,80	0,10–0,20	0,75–0,90	0,10–0,20	1,40–1,60	0,20	1,65–1,80	0,20
P.1.2	**200** (180–250)	0,65–0,80	0,10–0,20	0,75–0,90	0,10–0,20	1,40–1,60	0,20	1,65–1,80	0,20
P.1.3	**200** (180–250)	0,65–0,80	0,10–0,20	0,75–0,90	0,10–0,20	1,40–1,60	0,20	1,65–1,80	0,20
P.1.4	**200** (180–250)	0,65–0,80	0,10–0,20	0,75–0,90	0,10–0,20	1,40–1,60	0,20	1,65–1,80	0,20
P.1.5	**200** (180–250)	0,65–0,80	0,10–0,20	0,75–0,90	0,10–0,20	1,40–1,60	0,20	1,65–1,80	0,20
P.2.1	**200** (180–250)	0,65–0,80	0,10–0,20	0,75–0,90	0,10–0,20	1,40–1,60	0,20	1,65–1,80	0,20
P.2.2	**200** (180–250)	0,65–0,80	0,10–0,20	0,75–0,90	0,10–0,20	1,40–1,60	0,20	1,65–1,80	0,20
P.2.3	**200** (180–250)	0,65–0,80	0,10–0,20	0,75–0,90	0,10–0,20	1,40–1,60	0,20	1,65–1,80	0,20
P.2.4	**65** (55–110)	0,45–0,50	0,10–0,20	0,45–0,60	0,10–0,20	1,00–1,10	0,20	1,20–1,30	0,20
P.3.1	**40** (30–80)	0,40–0,60	0,10–0,20	0,50–0,70	0,10–0,20	1,00–1,30	0,20	1,10–1,40	0,20
P.3.2	**40** (30–80)	0,40–0,60	0,10–0,20	0,50–0,70	0,10–0,20	1,00–1,30	0,20	1,10–1,40	0,20
P.3.3	**40** (30–80)	0,40–0,60	0,10–0,20	0,50–0,70	0,10–0,20	1,00–1,30	0,20	1,10–1,40	0,20
P.4.1	**45** (40–65)	0,45–0,50	0,10–0,20	0,45–0,60	0,10–0,20	1,00–1,10	0,20	1,20–1,30	0,20
P.4.2	**45** (40–65)	0,45–0,50	0,10–0,20	0,45–0,60	0,10–0,20	1,00–1,10	0,20	1,20–1,30	0,20
M.1.1	**40** (35–60)	0,40–0,60	0,10–0,20	0,50–0,70	0,10–0,20	1,00–1,30	0,20	1,10–1,40	0,20
M.2.1	**40** (35–60)	0,40–0,60	0,10–0,20	0,50–0,70	0,10–0,20	1,00–1,30	0,20	1,10–1,40	0,20
M.3.1	**40** (35–60)	0,40–0,60	0,10–0,20	0,50–0,70	0,10–0,20	1,00–1,30	0,20	1,10–1,40	0,20
K.1.1	**200** (180–250)	0,80–1,00	0,10–0,20	0,90–1,20	0,10–0,20	1,50–1,90	0,20	1,50–1,90	0,20
K.1.2	**200** (180–250)	0,80–1,00	0,10–0,20	0,90–1,20	0,10–0,20	1,50–1,90	0,20	1,50–1,90	0,20
K.2.1	**225** (200–300)	0,80–1,00	0,10–0,20	0,90–1,20	0,10–0,20	1,50–1,90	0,20	1,50–1,90	0,20
K.2.2	**120** (100–150)	0,60–0,90	0,10–0,20	0,70–1,00	0,10–0,20	1,20–1,60	0,20	1,20–1,60	0,20
K.3.1	**225** (200–300)	0,80–1,00	0,10–0,20	0,90–1,20	0,10–0,20	1,50–1,90	0,20	1,50–1,90	0,20
K.3.2	**120** (100–150)	0,60–0,90	0,10–0,20	0,70–1,00	0,10–0,20	1,20–1,60	0,20	1,20–1,60	0,20
N.1.1									
N.1.2									
N.2.1									
N.2.2									
N.2.3									
N.3.1	150 (120–250)	0,50–0,80	0,10–0,20	0,70–0,90	0,10–0,20	1,30–1,40	0,20	1,40–1,70	0,20
N.3.2	100 (80–150)	0,40–0,60	0,10–0,20	0,60–0,80	0,10–0,20	1,00–1,30	0,20	1,20–1,40	0,20
N.3.3									
N.4.1									
S.1.1									
S.1.2									
S.2.1	40 (30–60)	0,30–0,40	0,10–0,20	0,40–0,50	0,10–0,20	0,70–0,90	0,20	0,80–1,10	0,20
S.2.2	40 (30–60)	0,30–0,40	0,10–0,20	0,40–0,50	0,10–0,20	0,70–0,90	0,20	0,80–1,10	0,20
S.2.3									
S.3.1	30 (25–60)	0,30–0,40	0,10–0,20	0,40–0,50	0,10–0,20	0,70–0,90	0,20	0,80–1,10	0,20
S.3.2	30 (25–60)	0,30–0,40	0,10–0,20	0,40–0,50	0,10–0,20	0,70–0,90	0,20	0,80–1,10	0,20
S.3.3									
H.1.1	40 (35–60)	0,20–0,30	0,10–0,20	0,20–0,30	0,10–0,20	0,40–0,60	0,20	0,50–0,60	0,20
H.1.2	30 (25–50)	0,20–0,30	0,10–0,20	0,20–0,30	0,10–0,20	0,40–0,60	0,20	0,50–0,60	0,20
H.1.3	30 (25–50)	0,20–0,30	0,10–0,20	0,20–0,30	0,10–0,20	0,40–0,60	0,20	0,50–0,60	0,20
H.1.4									
H.2.1	40 (35–60)	0,50–0,60	0,10–0,20	0,60–0,90	0,10–0,20	1,10–1,60	0,20	1,20–1,60	0,20
H.3.1	40 (35–60)	0,50–0,60	0,10–0,20	0,60–0,90	0,10–0,20	1,10–1,60	0,20	1,20–1,60	0,20
O.1.1									
O.1.2									
O.2.1									
O.2.2									
O.3.1									

The cutting data depend extremely on the external conditions, the material and machine type.
The indicated values are possible values which have to be increased or reduced, inside the bracket, according to the application conditions.

Cutting data standard values for Fullmax, long

Type UNI		40 484 ... / 40 485 ... / 40 486 ... / 40 487 ...							
		Ø 2,97 – 4,05		Ø 4,06 – 6,05		Ø 6,06 – 7,55		Ø 7,56 – 12,05	
Number of flutes		4		4		6		6	
Index	v_c m/min	f mm/rev.	Reaming allowance Ø mm	f mm/rev.	Reaming allowance Ø mm	f mm/rev.	Reaming allowance Ø mm	f mm/rev.	Reaming allowance Ø mm
P.1.1	**180** (160–250)	0,60–0,80	0,10–0,20	0,70–0,90	0,10–0,20	1,30–1,60	0,20	1,40–1,80	0,20
P.1.2	**180** (160–250)	0,60–0,80	0,10–0,20	0,70–0,90	0,10–0,20	1,30–1,60	0,20	1,40–1,80	0,20
P.1.3	**180** (160–250)	0,60–0,80	0,10–0,20	0,70–0,90	0,10–0,20	1,30–1,60	0,20	1,40–1,80	0,20
P.1.4	**180** (160–250)	0,60–0,80	0,10–0,20	0,70–0,90	0,10–0,20	1,30–1,60	0,20	1,40–1,80	0,20
P.1.5	**180** (160–250)	0,60–0,80	0,10–0,20	0,70–0,90	0,10–0,20	1,30–1,60	0,20	1,40–1,80	0,20
P.2.1	**180** (160–250)	0,60–0,80	0,10–0,20	0,70–0,90	0,10–0,20	1,30–1,60	0,20	1,40–1,80	0,20
P.2.2	**180** (160–250)	0,60–0,80	0,10–0,20	0,70–0,90	0,10–0,20	1,30–1,60	0,20	1,40–1,80	0,20
P.2.3	**180** (160–250)	0,60–0,80	0,10–0,20	0,70–0,90	0,10–0,20	1,30–1,60	0,20	1,40–1,80	0,20
P.2.4	**80** (70–120)	0,40–0,50	0,10–0,20	0,40–0,60	0,10–0,20	0,90–1,10	0,20	1,00–1,20	0,20
P.3.1	**20** (15–40)	0,32–0,50	0,10–0,20	0,32–0,50	0,10–0,20	0,48–0,60	0,20	0,48–0,60	0,20
P.3.2	**20** (15–40)	0,32–0,50	0,10–0,20	0,32–0,50	0,10–0,20	0,48–0,60	0,20	0,48–0,60	0,20
P.3.3	**20** (15–40)	0,32–0,50	0,10–0,20	0,32–0,50	0,10–0,20	0,48–0,60	0,20	0,48–0,60	0,20
P.4.1	**20** (15–40)	0,32–0,50	0,10–0,20	0,32–0,50	0,10–0,20	0,48–0,60	0,20	0,48–0,60	0,20
P.4.2	**20** (15–40)	0,32–0,50	0,10–0,20	0,32–0,50	0,10–0,20	0,48–0,60	0,20	0,48–0,60	0,20
M.1.1	**20** (15–40)	0,32–0,50	0,10–0,20	0,32–0,50	0,10–0,20	0,48–0,60	0,20	0,48–0,60	0,20
M.2.1	**20** (15–40)	0,32–0,50	0,10–0,20	0,32–0,50	0,10–0,20	0,48–0,60	0,20	0,48–0,60	0,20
M.3.1	**15** (10–30)	0,32–0,50	0,10–0,20	0,32–0,50	0,10–0,20	0,48–0,60	0,20	0,48–0,60	0,20
K.1.1	**120** (100–180)	0,60–0,80	0,10–0,20	0,70–0,90	0,10–0,20	1,30–1,60	0,20	1,30–1,60	0,20
K.1.2	**120** (100–180)	0,60–0,80	0,10–0,20	0,70–0,90	0,10–0,20	1,30–1,60	0,20	1,30–1,60	0,20
K.2.1	**200** (180–250)	0,60–0,80	0,10–0,20	0,70–0,90	0,10–0,20	1,30–1,60	0,20	1,30–1,60	0,20
K.2.2	**120** (100–150)	0,50–0,60	0,10–0,20	0,50–0,70	0,10–0,20	1,00–1,30	0,20	1,00–1,30	0,20
K.3.1	**200** (180–250)	0,60–0,80	0,10–0,20	0,70–0,90	0,10–0,20	1,30–1,60	0,20	1,30–1,60	0,20
K.3.2	**120** (100–150)	0,50–0,60	0,10–0,20	0,50–0,70	0,10–0,20	1,00–1,30	0,20	1,00–1,30	0,20
N.1.1									
N.1.2									
N.2.1									
N.2.2									
N.2.3									
N.3.1	150 (130–250)	0,50–0,80	0,10–0,20	0,70–0,90	0,10–0,20	1,30–1,40	0,20	1,40–1,70	0,20
N.3.2	100 (80–150)	0,40–0,60	0,10–0,20	0,60–0,80	0,10–0,20	1,00–1,30	0,20	1,20–1,40	0,20
N.3.3									
N.4.1									
S.1.1									
S.1.2									
S.2.1	40 (30–60)	0,30–0,40	0,10–0,20	0,40–0,50	0,10–0,20	0,70–0,90	0,20	0,80–1,10	0,20
S.2.2	40 (30–60)	0,30–0,40	0,10–0,20	0,40–0,50	0,10–0,20	0,70–0,90	0,20	0,80–1,10	0,20
S.2.3									
S.3.1	30 (25–60)	0,30–0,40	0,10–0,20	0,40–0,50	0,10–0,20	0,70–0,90	0,20	0,80–1,10	0,20
S.3.2	30 (25–60)	0,30–0,40	0,10–0,20	0,40–0,50	0,10–0,20	0,70–0,90	0,20	0,80–1,10	0,20
S.3.3									
H.1.1	40 (35–60)	0,50–0,60	0,10–0,20	0,60–0,90	0,10–0,20	1,10–1,60	0,20	1,20–1,60	0,20
H.1.2	40 (35–60)	0,50–0,60	0,10–0,20	0,60–0,90	0,10–0,20	1,10–1,60	0,20	1,20–1,60	0,20
H.1.3	30 (25–50)	0,50–0,70	0,10–0,20	0,70–1,00	0,10–0,20	1,20–1,70	0,20	1,30–1,70	0,20
H.1.4									
H.2.1	40 (35–60)	0,50–0,60	0,10–0,20	0,60–0,90	0,10–0,20	1,10–1,60	0,20	1,20–1,60	0,20
H.3.1	40 (35–60)	0,50–0,60	0,10–0,20	0,60–0,90	0,10–0,20	1,10–1,60	0,20	1,20–1,60	0,20
O.1.1									
O.1.2									
O.2.1									
O.2.2									
O.3.1									

The cutting data depend extremely on the external conditions, the material and machine type.
The indicated values are possible values which have to be increased or reduced, inside the bracket, according to the application conditions.

Cutting data standard values for Fullmax, long

Type VA		40 401 ... / 40 402 ... / 40 403 ... / 40 404 ...							
		Ø 2,97 – 4,05		Ø 4,06 – 6,05		Ø 6,06 – 7,55		Ø 7,56 – 12,05	
Number of flutes		4		4		6		6	
Index	v_c m/min	f mm/rev.	Reaming allowance Ø mm	f mm/rev.	Reaming allowance Ø mm	f mm/rev.	Reaming allowance Ø mm	f mm/rev.	Reaming allowance Ø mm
P.1.1									
P.1.2									
P.1.3									
P.1.4									
P.1.5									
P.2.1									
P.2.2									
P.2.3									
P.2.4									
P.3.1	20 (15–40)	0,32–0,50	0,10–0,20	0,32–0,50	0,10–0,20	0,48–0,60	0,20	0,48–0,60	0,20
P.3.2	20 (15–40)	0,32–0,50	0,10–0,20	0,32–0,50	0,10–0,20	0,48–0,60	0,20	0,48–0,60	0,20
P.3.3	20 (15–40)	0,32–0,50	0,10–0,20	0,32–0,50	0,10–0,20	0,48–0,60	0,20	0,48–0,60	0,20
P.4.1	**20** (15–40)	0,32–0,50	0,10–0,20	0,32–0,50	0,10–0,20	0,48–0,60	0,20	0,48–0,60	0,20
P.4.2	**20** (15–40)	0,32–0,50	0,10–0,20	0,32–0,50	0,10–0,20	0,48–0,60	0,20	0,48–0,60	0,20
M.1.1	**20** (15–40)	0,32–0,50	0,10–0,20	0,32–0,50	0,10–0,20	0,48–0,60	0,20	0,48–0,60	0,20
M.2.1	**15** (10–30)	0,32–0,50	0,10–0,20	0,32–0,50	0,10–0,20	0,48–0,60	0,20	0,48–0,60	0,20
M.3.1	**15** (10–30)	0,32–0,50	0,10–0,20	0,32–0,50	0,10–0,20	0,48–0,60	0,20	0,48–0,60	0,20

Type ALU		40 471 ... / 40 472 ... / 40 473 ... / 40 474 ...							
		Ø 2,97 – 4,05		Ø 4,06 – 6,05		Ø 6,06 – 7,55		Ø 7,56 – 12,05	
Number of flutes		4		4		6		6	
Index	v_c m/min	f mm/rev.	Reaming allowance Ø mm	f mm/rev.	Reaming allowance Ø mm	f mm/rev.	Reaming allowance Ø mm	f mm/rev.	Reaming allowance Ø mm
N.1.1	**200** (180–300)	0,50–0,60	0,10–0,20	0,60–0,90	0,10–0,20	1,10–1,60	0,20	1,20–1,60	0,20
N.1.2	**200** (180–300)	0,50–0,60	0,10–0,20	0,60–0,90	0,10–0,20	1,10–1,60	0,20	1,20–1,60	0,20
N.2.1	**200** (180–250)	0,50–0,70	0,10–0,20	0,70–1,00	0,10–0,20	1,20–1,70	0,20	1,30–1,70	0,20
N.2.2	**200** (180–300)	0,50–0,70	0,10–0,20	0,70–1,00	0,10–0,20	1,20–1,70	0,20	1,30–1,70	0,20
N.2.3	**200** (180–250)	0,50–0,70	0,10–0,20	0,70–1,00	0,10–0,20	1,20–1,70	0,20	1,30–1,70	0,20
N.3.1									
N.3.2									
N.3.3									
N.4.1									
O.3.1	250 (220–270)	0,50–0,70	0,10–0,20	0,70–1,00	0,10–0,20	1,20–1,70	0,20	1,30–1,70	0,20

The cutting data depend extremely on the external conditions, the material and machine type.
The indicated values are possible values which have to be increased or reduced, inside the bracket, according to the application conditions.

Cutting data standard values for solid carbide reamers

	40 430 ...			40 430 ... / 40 431 ...									
	uncoated	to Ø 0.94 mm		uncoated	TiAlN	to Ø 5 mm		to Ø 8 mm		to Ø 10 mm		to Ø 12 mm	
Index	v_c m/min	f mm/rev.	Reaming allowance Ø mm	v_c m/min	v_c m/min	f mm/rev.	Reaming allowance Ø mm	f mm/rev.	Reaming allowance Ø mm	f mm/rev.	Reaming allowance Ø mm	f mm/rev.	Reaming allowance Ø mm
P.1.1	20	0,10	0,10	20	30	0,10	0,10	0,15	0,15	0,20	0,20	0,20	0,20
P.1.2	20	0,10	0,10	20	30	0,10	0,10	0,15	0,15	0,20	0,20	0,20	0,20
P.1.3	12	0,10	0,10	12	15	0,10	0,10	0,15	0,15	0,20	0,20	0,20	0,20
P.1.4	12	0,10	0,10	12	15	0,10	0,10	0,15	0,15	0,20	0,20	0,20	0,20
P.1.5	12	0,10	0,10	12	15	0,10	0,10	0,15	0,15	0,20	0,20	0,20	0,20
P.2.1	15	0,10	0,10	15	25	0,10	0,10	0,15	0,15	0,20	0,20	0,20	0,20
P.2.2	12	0,10	0,10	12	15	0,10	0,10	0,15	0,15	0,20	0,20	0,20	0,20
P.2.3	12	0,10	0,10	12	15	0,10	0,10	0,15	0,15	0,20	0,20	0,20	0,20
P.2.4	12	0,10	0,10	12	15	0,10	0,10	0,15	0,15	0,20	0,20	0,20	0,20
P.3.1	15	0,10	0,10	15	25	0,10	0,10	0,15	0,15	0,20	0,20	0,20	0,20
P.3.2	12	0,10	0,10	12	15	0,10	0,10	0,15	0,15	0,20	0,20	0,20	0,20
P.3.3	12	0,10	0,10	12	15	0,10	0,10	0,15	0,15	0,20	0,20	0,20	0,20
P.4.1													
P.4.2													
M.1.1					15	0,08	0,08	0,10	0,10	0,15	0,10	0,15	0,10
M.2.1					15	0,08	0,08	0,10	0,10	0,15	0,10	0,15	0,10
M.3.1					10	0,08	0,08	0,10	0,10	0,15	0,10	0,15	0,10
K.1.1	18	0,10	0,10	18	30	0,10	0,10	0,20	0,15	0,30	0,20	0,30	0,20
K.1.2	18	0,10	0,10	18	30	0,10	0,10	0,20	0,15	0,30	0,20	0,30	0,20
K.2.1	15	0,10	0,10	15	25	0,10	0,10	0,20	0,15	0,30	0,20	0,30	0,20
K.2.2	10	0,10	0,10	10	20	0,10	0,10	0,20	0,15	0,30	0,20	0,30	0,20
K.3.1	15	0,10	0,10	15	25	0,10	0,10	0,20	0,15	0,30	0,20	0,30	0,20
K.3.2	10	0,10	0,10	10	20	0,10	0,10	0,20	0,15	0,30	0,20	0,30	0,20
N.1.1	40	0,15	0,10	40		0,15	0,10	0,20	0,15	0,25	0,20	0,25	0,20
N.1.2	40	0,15	0,10	40		0,15	0,10	0,20	0,15	0,25	0,20	0,25	0,20
N.2.1	25	0,15	0,10	20		0,15	0,10	0,20	0,15	0,25	0,20	0,25	0,20
N.2.2	25	0,15	0,10	20		0,15	0,10	0,20	0,15	0,25	0,20	0,25	0,20
N.2.3													
N.3.1	30	0,15	0,10	30		0,15	0,10	0,20	0,15	0,25	0,20	0,25	0,20
N.3.2	30	0,15	0,10	30		0,15	0,10	0,20	0,15	0,25	0,20	0,25	0,20
N.3.3	30	0,15	0,10	30		0,15	0,10	0,20	0,15	0,25	0,20	0,25	0,20
N.4.1													
S.1.1					10	0,06	0,05	0,10	0,10	0,12	0,10	0,12	0,10
S.1.2					10	0,06	0,05	0,10	0,10	0,12	0,10	0,12	0,10
S.2.1					10	0,06	0,05	0,10	0,10	0,12	0,10	0,12	0,10
S.2.2					10	0,06	0,05	0,10	0,10	0,12	0,10	0,12	0,10
S.2.3					10	0,06	0,05	0,10	0,10	0,12	0,10	0,12	0,10
S.3.1					10	0,06	0,05	0,10	0,10	0,12	0,10	0,12	0,10
S.3.2					10	0,06	0,05	0,10	0,10	0,12	0,10	0,12	0,10
S.3.3					10	0,06	0,05	0,10	0,10	0,12	0,10	0,12	0,10
H.1.1					8	0,05	0,05	0,08	0,05	0,10	0,10	0,10	0,10
H.1.2					8	0,05	0,05	0,08	0,05	0,10	0,10	0,10	0,10
H.1.3													
H.1.4													
H.2.1					8	0,05	0,05	0,08	0,05	0,10	0,10	0,10	0,10
H.3.1													
O.1.1	40	0,15	0,10	40		0,15	0,10	0,20	0,15	0,25	0,20	0,25	0,20
O.1.2	40	0,15	0,10	40		0,15	0,10	0,20	0,15	0,25	0,20	0,25	0,20
O.2.1													
O.2.2													
O.3.1													

The cutting data is strongly influenced by external conditions, such as the stability of the tool and workpiece clamping, material and type of machine.
The specified values represent guideline cutting data that can be adjusted by approx. **±20%** according to the usage conditions.

Cutting data for HSS-E reamers

		40 115 ...							40 140 ... / 40 145 ... / 40 139 ...					
		to Ø 5 mm		to Ø 8 mm		to Ø 12 mm			to Ø 5 mm		to Ø 8 mm		to Ø 12 mm	
Index	v_c m/min	f mm/rev.	Reaming allowance Ø mm	f mm/rev.	Reaming allowance Ø mm	f mm/rev.	Reaming allowance Ø mm	v_c m/min	f mm/rev.	Reaming allowance Ø mm	f mm/rev.	Reaming allowance Ø mm	f mm/rev.	Reaming allowance Ø mm
P.1.1	**12**	0,10	0,10	0,15	0,15	0,20	0,20	**15**	0,10	0,10–0,15	0,20	0,15–0,20	0,25	0,20
P.1.2	**12**	0,10	0,10	0,15	0,15	0,20	0,20	**12**	0,10	0,10–0,15	0,20	0,15–0,20	0,25	0,20
P.1.3	**10**	0,10	0,10	0,15	0,15	0,20	0,20	**10**	0,10	0,10–0,15	0,20	0,15–0,20	0,25	0,20
P.1.4	**10**	0,10	0,10	0,15	0,15	0,20	0,20	**10**	0,08	0,10–0,15	0,15	0,15–0,20	0,20	0,20
P.1.5	**10**	0,10	0,10	0,15	0,15	0,20	0,20	**8**	0,08	0,10–0,15	0,15	0,15–0,20	0,20	0,20
P.2.1	**12**	0,10	0,10	0,15	0,15	0,20	0,20	**10**	0,10	0,10–0,15	0,20	0,15–0,20	0,25	0,20
P.2.2	**12**	0,10	0,10	0,15	0,15	0,20	0,20	**8**	0,08	0,10–0,15	0,15	0,15–0,20	0,20	0,20
P.2.3	**10**	0,10	0,10	0,15	0,15	0,20	0,20	**8**	0,08	0,10–0,15	0,15	0,15–0,20	0,20	0,20
P.2.4	**10**	0,10	0,10	0,15	0,15	0,20	0,20	**8**	0,08	0,10–0,15	0,15	0,15–0,20	0,20	0,20
P.3.1	**12**	0,10	0,10	0,15	0,15	0,20	0,20	**8**	0,08	0,10–0,15	0,12	0,15–0,20	0,20	0,20
P.3.2	**10**	0,10	0,10	0,15	0,15	0,20	0,20	**6**	0,08	0,10–0,15	0,12	0,15–0,20	0,20	0,20
P.3.3	**10**	0,10	0,10	0,15	0,15	0,20	0,20	**6**	0,08	0,10–0,15	0,12	0,15–0,20	0,20	0,20
P.4.1								**6**	0,08	0,10–0,15	0,12	0,15–0,20	0,20	0,20
P.4.2								**6**	0,08	0,10–0,15	0,12	0,15–0,20	0,20	0,20
M.1.1								6	0,08	0,10	0,12	0,15	0,20	0,20
M.2.1								4	0,08	0,10	0,12	0,15	0,20	0,20
M.3.1								4	0,08	0,10	0,12	0,15	0,20	0,20
K.1.1	**12**	0,15	0,10	0,20	0,15	0,25	0,20	**14**	0,10	0,10–0,15	0,16	0,20	0,24	0,20
K.1.2	**12**	0,15	0,10	0,20	0,15	0,25	0,20	**12**	0,10	0,10–0,15	0,16	0,20	0,24	0,20
K.2.1	**10**	0,15	0,10	0,20	0,15	0,25	0,20	**12**	0,10	0,10–0,15	0,16	0,15–0,20	0,20	0,20
K.2.2	**10**	0,15	0,10	0,20	0,15	0,25	0,20	**10**	0,10	0,10–0,15	0,16	0,15–0,20	0,20	0,20
K.3.1	**10**	0,15	0,10	0,20	0,15	0,25	0,20	**12**	0,10	0,10–0,15	0,16	0,20	0,24	0,20
K.3.2	**10**	0,15	0,10	0,20	0,15	0,25	0,20	**10**	0,10	0,10–0,15	0,16	0,15–0,20	0,20	0,20
N.1.1	**15**	0,15	0,10	0,20	0,15	0,20	0,20	**20**	0,10	0,15	0,20	0,20	0,25	0,20
N.1.2	**15**	0,15	0,10	0,20	0,15	0,20	0,20	**20**	0,10	0,15	0,20	0,20	0,25	0,20
N.2.1								**18**	0,10	0,15	0,20	0,20	0,25	0,20
N.2.2								**18**	0,10	0,15	0,20	0,20	0,25	0,20
N.2.3														
N.3.1	**20**	0,15	0,10	0,20	0,15	0,20	0,20	**18**	0,10	0,15	0,18	0,30	0,20	0,30
N.3.2	**20**	0,15	0,10	0,20	0,15	0,20	0,20	**15**	0,10	0,15	0,18	0,30	0,20	0,30
N.3.3	**20**	0,15	0,10	0,20	0,15	0,20	0,20	**15**	0,10	0,15	0,18	0,30	0,20	0,30
N.4.1								**18**	0,10	0,15	0,18	0,30	0,20	0,30
S.1.1														
S.1.2														
S.2.1								4	0,08	0,10	0,12	0,15	0,16	0,20
S.2.2								4	0,08	0,10	0,12	0,15	0,16	0,20
S.2.3														
S.3.1								6	0,08	0,10	0,12	0,15	0,16	0,20
S.3.2								4	0,08	0,10	0,10	0,15	0,125	0,20
S.3.3														
H.1.1														
H.1.2														
H.1.3														
H.1.4														
H.2.1														
H.3.1														
O.1.1	**25**	0,15	0,10	0,20	0,15	0,20	0,20	**15**	0,15	0,15	0,20	0,20	0,25	0,20
O.1.2	**25**	0,15	0,10	0,20	0,15	0,20	0,20	**12**	0,12	0,15	0,16	0,20	0,20	0,20
O.2.1														
O.2.2														
O.3.1														

The cutting data is strongly influenced by external conditions, such as the stability of the tool and workpiece clamping, material and type of machine.
The specified values represent guideline cutting data that can be adjusted by approx. **±20%** according to the usage conditions.

Tolerance classes covered with 1/100 reamer

The most common tolerance is H7, so most reamers configured for an H7 fit tolerance.
With the 1/100 reamers, increments of 0.01 mm can be covered, but are also suitable for various other dimensions.
For example, a 1/100 reamer diameter 8.02 mm can be used for a 8.0 fit F7.
Other fit sizes shown in the table.

Tolerance	Nominal Ø in mm											
zone	1,0	2,0	3,0	4,0	5,0	6,0	7,0	8,0	9,0	10,0	11,0	12,0
A9				4,29	5,29	6,29	7,30	8,30	9,30	10,30	11,32	12,32
A11	1,31	2,31	3,31	4,32	5,32	6,32	7,35	8,35	9,35	10,35	11,37	12,37
B8				4,15	5,15	6,15	7,16	8,16	9,16	10,16		
B9				4,16	5,16	6,16	7,17	8,17	9,17	10,17	11,18	12,18
B10	1,17	2,17	3,17	4,17	5,17	6,17	7,19	8,19	9,19	10,19	11,20	12,20
B11	1,18	2,18	3,18	4,19	5,19	6,19	7,22	8,22	9,22	10,22	11,23	12,23
C8				4,08	5,08	6,08	7,09	8,09	9,09	10,09	11,11	12,11
C9	1,07	2,07	3,07	4,09	5,09	6,09	7,10	8,10	9,10	10,10	11,12	12,12
C10	1,09	2,09	3,09	4,10	5,10	6,10	7,12	8,12	9,12	10,12	11,14	12,14
C11	1,10	2,10	3,10	4,12	5,12	6,12	7,15	8,15	9,15	10,15	11,18	12,18
D7											11,06	12,06
D8				4,04	5,04	6,04	7,05	8,05	9,05	10,05	11,06	12,06
D9				4,05	5,05	6,05	7,06	8,06	9,06	10,06	11,08	12,08
D10	1,05	2,05	3,05	4,06	5,06	6,06	7,08	8,08	9,08	10,08	11,10	12,10
D11	1,06	2,06	3,06	4,08	5,08	6,08	7,10	8,10	9,10	10,10	11,13	12,13
E7							7,03	8,03	9,03	10,03	11,04	12,04
E8	1,02	2,02	3,02	4,03	5,03	6,03	7,04	8,04	9,04	10,04	11,05	12,05
E9	1,03	2,03	3,03	4,04	5,04	6,04	7,05	8,05	9,05	10,05	11,06	12,06
F7	1,01	2,01	3,01				7,02	8,02	9,02	10,02	11,02	12,02
F8	1,01	2,01	3,01	4,02	5,02	6,02	7,02	8,02	9,02	10,02	11,03	12,03
F9	1,02	2,02	3,02	4,03	5,03	6,03	7,03	8,03	9,03	10,03	11,04	12,04
F10				4,04	5,04	6,04	7,05	8,05	9,05	10,05	11,07	12,07
G7				4,01	5,01	6,01	7,01	8,01	9,01	10,01		
H7										10,01	11,01	12,01
H8				4,01	5,01	6,01	7,01	8,01	9,01	10,01	11,02	12,02
H9	1,01	2,01	3,01	4,02	5,02	6,02	7,02	8,02	9,02	10,02	11,03	12,03
H10	1,03	2,03	3,03	4,03	5,03	6,03	7,04	8,04	9,04	10,04	11,05	12,05
H11	1,04	2,04	3,04	4,05	5,05	6,05	7,06	8,06	9,06	10,06	11,08	12,08
H12	1,07	2,07	3,07	4,08	5,08	6,08	7,10	8,10	9,10	10,10	11,13	12,13
H13	1,11	2,11	3,11	4,14	5,14	6,14	7,18	8,18	9,18	10,18	11,22	12,22
J6				4,00	5,00	6,00	7,00	8,00	9,00	10,00	11,00	12,00
J7				4,00	5,00	6,00	7,00	8,00	9,00	10,00	11,00	12,00
J8	1,00	2,00	3,00	4,00	5,00	6,00	7,00	8,00	9,00	10,00	11,00	12,00
JS7				4,00	5,00	6,00	7,00	8,00	9,00	10,00	11,00	12,00
JS8	1,00	2,00	3,00	4,00	5,00	6,00	7,00	8,00	9,00	10,00	11,00	12,00
JS9	1,00	2,00	3,00	4,00	5,00	6,00	7,00	8,00	9,00	10,00	11,01	12,01
K8	0,99	1,99	2,99				6,99	7,99	8,99	9,99	10,99	11,99
M6							6,99	7,99	8,99	9,99	10,99	11,99
M7							6,99	7,99	8,99	9,99	10,99	11,99
M8	0,99	1,99	2,99	3,99	4,99	5,99	6,99	7,99	8,99	9,99	10,99	11,99
N6				3,99	4,99	5,99						
N7	0,99	1,99	2,99	3,99	4,99	5,99	6,99	7,99	8,99	9,99	10,99	11,99
N8	0,99	1,99	2,99	3,99	4,99	5,99	6,99	7,99	8,99	9,99	10,98	11,98
N9	0,98	1,98	2,98	3,99	4,99	5,99	6,99	7,99	8,99	9,99	10,98	11,98
N10	0,98	1,98	2,98	3,98	4,94	5,98	6,98	7,98	8,98	9,98	10,98	11,98
N11	0,98	1,98	2,98	3,98	4,94	5,98	6,98	7,98	8,98	9,98	10,97	11,97
P6	0,99	1,99	2,99								10,98	11,98
P7	0,99	1,99	2,99				6,98	7,98	8,98	9,98	10,98	11,98
P8	0,99	1,99	2,99	3,98	4,98	5,98					10,97	11,97
R6							6,98	7,98	8,98	9,98		
R7				3,98	4,98	5,98	6,98	7,98	8,98	9,98	10,97	11,97
S6				3,98	4,98	5,98					10,97	11,97
S7	0,98	1,98	2,98	3,98	4,98	5,98	6,97	7,97	8,97	9,97	10,97	11,97
U6							6,97	7,97	8,97	9,97		
U7				3,97	4,97	5,97	6,97	7,97	8,97	9,97		
X7				3,97	4,97	5,97						
X8	0,97	1,97	2,97				6,96	7,96	8,96	9,96	10,95	11,95
X9	0,97	1,97	2,97	3,96	4,96	5,96	6,95	7,95	8,95	9,95		
Z7	0,97	1,97	2,97	3,96	4,96	5,96	6,96	7,96	8,96	9,96	10,95	11,95
Z8	0,97	1,97	2,97	3,96	4,96	5,96	6,95	7,95	8,95	9,95	10,94	11,94
Z9				3,95	4,95	5,95						
Z10	0,96	1,96	2,96	3,95	4,95	5,95	6,94	7,94	8,94	9,94	10,93	11,93
ZA7	0,96	1,96	2,96	3,95	4,95	5,95	6,94	7,94	8,94	9,94		
ZA8							6,94	7,94	8,94	9,94	10,93	11,93
ZB8	0,95	1,95	2,95	3,94	4,94	5,94					10,90	11,90
ZB9	0,95	1,95	2,95	3,94	4,94	5,94	6,92	7,92	8,92	9,92	10,90	11,90

Coatings

HSS drilling

TiN

- TiN coating
- Maximum application temperature: 450 °C

Solid carbide drilling

DPX74S DRAGONSKIN

- Special TiAlN nanolayer coating
- Maximum application temperature: 1000 °C

DPX74M DRAGONSKIN

- Universal AlCrN-based monolayer coating developed for micro tools
- High oxidation, heat and wear resistance
- Maximum application temperature 1100 °C

DPA54 DRAGONSKIN

- Special multilayer coating
- High hardness and heat resistance
- Maximum application temperature: 800 °C

Ti800

- AlTiN nanolayer coating
- Maximum application temperature: 1100 °C

TiAlN

- TiAlN multilayer coating
- Maximum application temperature: 900 °C

DLC DRAGONSKIN

- Diamond-like carbon coating
- Specially for machining non-ferrous metals
- Maximum application temperature: 400 °C

Reamers

DST

- Cermet, uncoated
- ISO | **P15** | **M10** | K10
- The uncoated cermet grade for finish machining stainless and hardened steel
- Particularly wear resistant thanks to high heat resistance

DBF-A

- AlCrN Multilayer coating
- specially developed for the machining of tempered materials < 62 HRC
- maximum application temperature: > 1100 °C

DBC

- Diamond-like carbon coating
- Specially for machining non-ferrous metals
- Maximum application temperature: 400 °C

DBG-U

- AlTiN Multilayer coating
- Especially for universal use in a variety of materials as well as for the machining of tempered materials < 62 HRC
- For high cutting speeds and suitable for MMS application
- Maximum application temperature: 1000 °C

TiAlN

- TiAlN multilayer coating
- Maximum application temperature: 900 °C

DBG-P

- AlTiN Multilayer coating
- Especially for universal use in a variety of materials at high cutting speeds
- Suitable for MMS application
- Maximum application temperature: 1000 °C

DBC-N

- Diamond-like ta-C-Multilayer-carbon coating
- Particularly hard and smooth coating and therefore especially for machining non-ferrous metals
- Maximum application temperature: 500 °C

DBQ

- AlCrN-Multilayer-Beschichtung
- Particularly suitable for machining stainless steels and titanium
- Low formation of built-up edges
- Maximum application temperature: > 1000 °C

TiN

- TiN multilayer coating
- Maximum application temperature: 400 °C

Table of contents

WNT \ Performance

Premium quality tools for high performance.

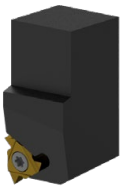
The premium quality tools from the **WNT Performance** product line have been designed for specific applications and are distinguished by their outstanding performance. If you make high demands on the performance of your production and want to achieve the very best results, we recommend the Premium tools in this product line.

WNT \ Standard

Quality tools for standard applications.

The quality tools of the **WNT Standard** product line are high quality, powerful and reliable and enjoy the highest trust of our customers worldwide. Tools from this product line are the first choice for many standard applications and guarantee optimal results.

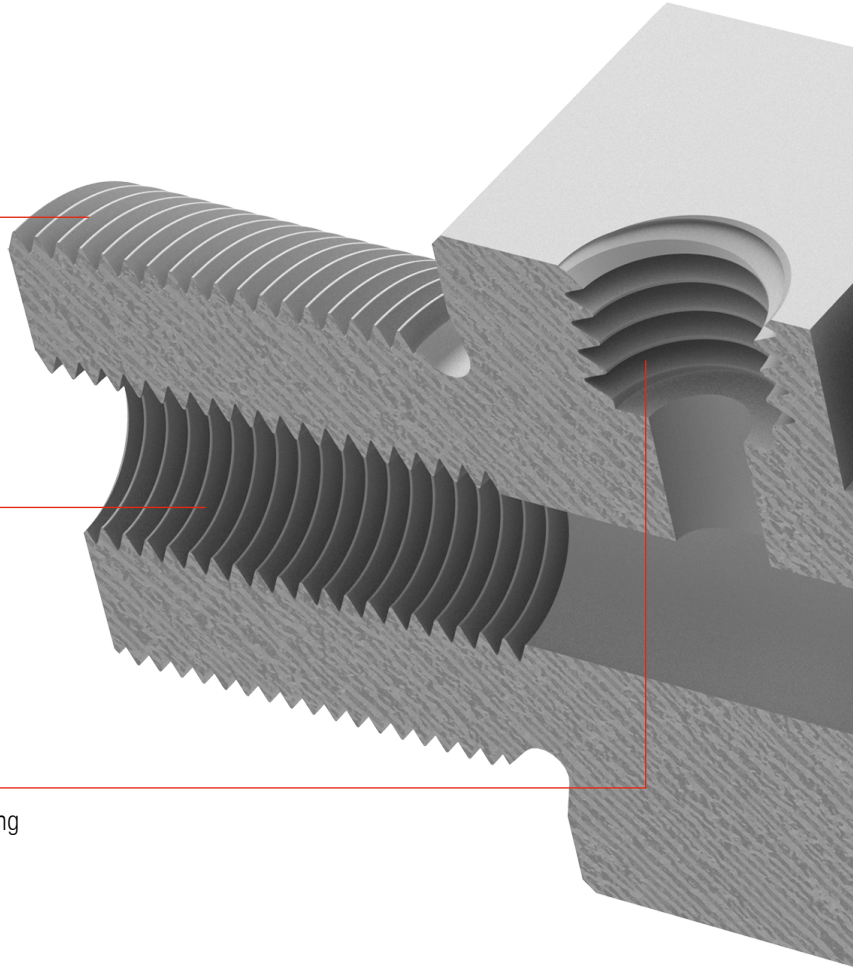
Toolfinder



External thread turning
43–63

Internal thread turning
64–69

Thread milling
24–28



Overview

Tapping

- For through holes and blind holes
- All common thread types
- Universal application
- Static application
- Rotating application

8–18

Thread milling

- Excellent surface qualities
- For through holes and blind holes
- Universal application
- Various diameters with the same pitch

24–28

Circular Milling

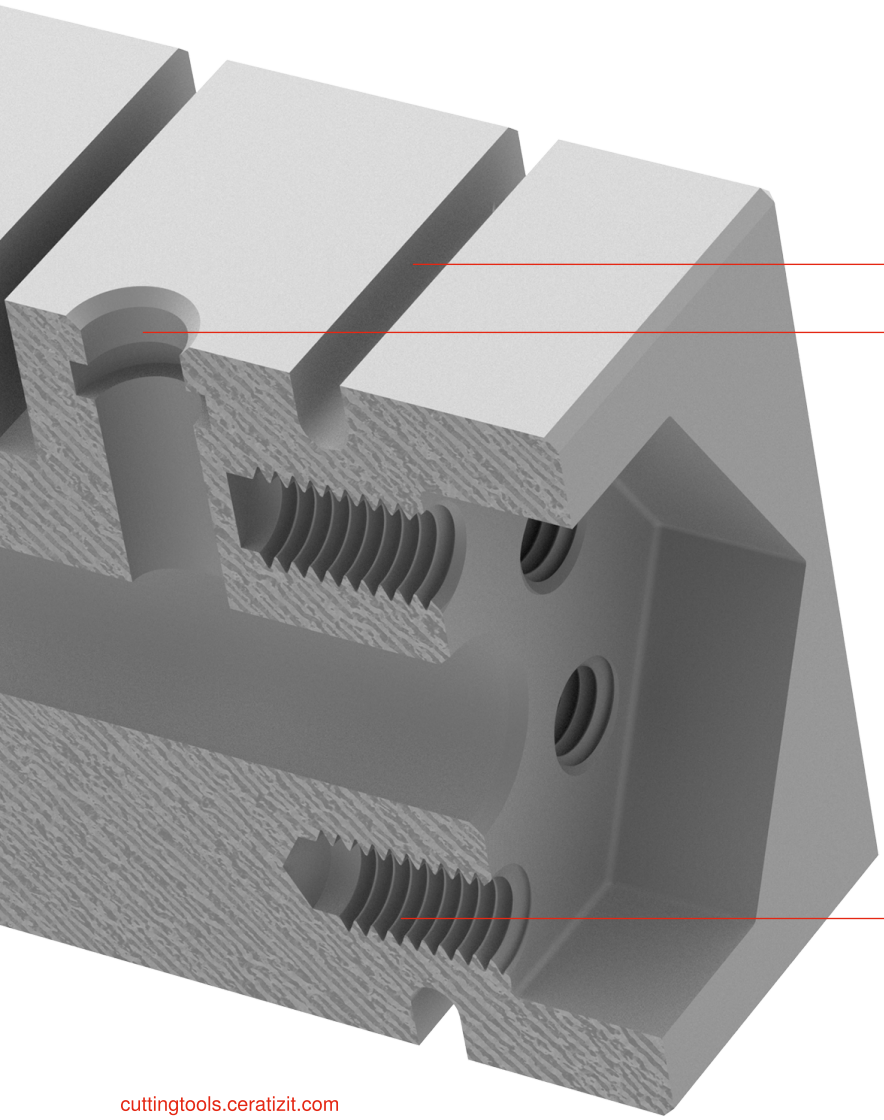
- Circular milling
- Slot milling
- Multipurpose milling
- Universal application

30–36

Thread turning

- Size 06 insert
- Size 08 insert
- Size 11 insert
- Size 16 insert
- Internal and external thread
- Shank cross-section = 8 – 25 mm
- Universal application

43–70



Circular and slot milling
30–36

Tapping
8–18

Thread types

M	ISO metric coarse thread DIN 13
MF	ISO Metric fine thread DIN 13
MJ	Metric thread for the aviation industry
G	Whitworth pipe thread DIN-EN-ISO 228
UNC	Unified coarse thread ASME – B1.1
UNF	Unified fine thread ASME – B1.1
UNJC	Unified Coarse Thread ASME – B1.15 and ISO 3161
UNJF	Unified fine thread ASME – B1.15 and ISO 3161
BSW	Whitworth thread BS84
BSF	Whitworth fine thread
UN	Unified thread
UNEF	American Unified Thread (Extra Fine)

Tap types

Tool type

Stabil	for through holes to 4xD
Salo-Rex	for blind holes up to 3xD, high helix angle for secure chip evacuation
SL	for blind holes up to 2xD, 15°, 25° or 30° helix angle

Application range

UNI	for universal application

Circular and thread milling cutter types

Tool type

Micro Mill	Solid Carbide Circular End Milling Cutter
Mini Mill	Circular milling cutter with solid carbide insert
SGF	Thread milling cutter

Profile Type Description

Full profile

- Core diameter does not have to be machined to the finished core diameter
- A minimum infeed of 0.07 mm is required
- Insert can only be used for one pitch

Partial profile

- Core diameter must be premachined to the final dimension
- A minimum infeed of 0.07 mm is required
- One threading insert can be used to machine several pitches
- The threading insert can therefore be used for any application

Mini Thread Turning Insert

- From a min. core hole diameter of Ø 6 mm or Ø 8 mm

Explanation of symbols – Taps

Chamfer form

B 4–5	Form B (with spiral point, 4 - 5 threads per chamfer)
C 2–3	Form C (without spiral point, 2 - 3 threads per chamfer)
D 4–5	Form D (without spiral point, 4 - 5 threads per chamfer)
E 1,5–2	Form E (without spiral point, 1.5 - 2 threads per chamfer)

Helix angle

42°	Example: helix angle 42°

Tensile strength

≤ 1100 N/mm²	Example up to 1100 N/mm²

Tolerances

ISO 2 6H	Explanation of the tolerances can be found on → **Page 21**

Coloured rings

WNT \ Performance

An explanation of the coloured rings can be found on → **Page 20**

Thread types

M	Explanation of the thread types can be found on → **Page 4**

Tool Material

HSS-E	High-performance high speed steel

Hole type

	Through hole
	Blind hole

Explanation of symbols – Circular and thread milling cutters

Version

	central internal coolant
	lateral internal coolant
VHM	Solid carbide

Thread / Flank angle

M	Explanation of the thread types can be found on → **Page 4**
60°	Flank angle 60°

Shank

DIN 6535 HA HB	

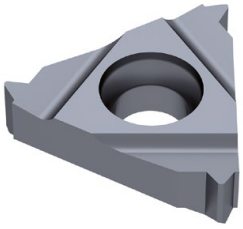
Applications

	Full radius slot milling
	Slot milling
	Multipurpose milling
	Chamfering and Deburring
	Gear milling
IR/IL	IR = internal right, IL = internal left

Explanation of symbols – Thread turning

Flank angle

55°	Flank angle 55°
60°	Flank angle 60°



Thread types

M	Explanation of the thread types can be found on → **Page 4**

● = **Main Application**

○ = Extended application

Highlights

Through hole – machine taps right-hand, type Stabil HR

M

- Specialist for thread production in high-strength steels
- New optimised hard material/carbon coating delivers the very best results
- 4xD

Blind hole – machine taps right-hand, type SL HR

M

- Specialist for thread production in high-strength steels
- New optimised hard material/carbon coating delivers the very best results
- 2xD

Taps Overview

	Thread type	Application	Tolerance zone	Dimension Ø DC	Steel P	Stainless steel M	Cast iron K	Non-ferrous metals N	Heat-resistant S	Tempered steel H	Non metal materials O	Shank	Coating	Page No.
	M		ISO 2 6H	M1 – M12	●	●	●					**DIN 371** with reinforced shank	nitr. + vap.	8
	M		ISO 2 6H	M2 – M10	●	●	●	●				**DIN 371** with reinforced shank	TiN	8
	M		ISO 2X 6HX	M2 – M10	●	●		●	●			**DIN 371** with reinforced shank	AlTiN-HD	8
	M		ISO 2 6H	M2 – M12	●	●	●					**DIN 371** with reinforced shank	vap.	9
	M		ISO 2 6H	M2 – M12	●	●	●	●				**DIN 371** with reinforced shank	TiN	9
	M		ISO 2 6H	M3 – M12	●	●		●	●			**DIN 371** with reinforced shank	AlTiN-HD	10
	MF		ISO 2 6H	M4x0,5 – M10x1	●	●	●					**DIN 371** with reinforced shank	nitr. + vap.	11
	MF		ISO 2 6H	M4x0,5 – M10x1	●	●	●	●				**DIN 371** with reinforced shank	TiN	11
	MF		ISO 2 6H	M4x0,5 – M6x0,5	●	●	●					**DIN 371** with reinforced shank	vap.	12
	MF		ISO 2 6H	M6x0,75 – M12x1,5	●	●	●					**DIN 374** with reduced shank	vap.	12

Taps Overview

	Thread type	Application	Tolerance zone	Dimension Ø DC	Steel P	Stainless steel M	Cast iron K	Non-ferrous metals N	Heat-resistant S	Tempered steel H	Non metal materials O	Shank	Coating	Page No.
	G		ISO 228	1/8–28 – 1/2–14	●	●	●	●				**DIN 5156** with reduced shank	TiN	13
	G		ISO 228	1/8–28 – 1/2–14	●	●	●					**DIN 5156** with reduced shank	vap.	14
	G		ISO 228	1/8–28 – 1/2–14	●	●	●					**DIN 5156** with reduced shank	vap.	14
	UNC		2B	Nr. 2–56 – 3/8–16	●	●	●					**DIN 371** with reinforced shank	nitr. + vap.	15
	UNC		2B	Nr. 2–56 – 3/8–16	●	●	●					**DIN 371** with reinforced shank	vap.	16
	UNF		2B	Nr. 4–48 – 5/16–24	●	●	●					**DIN 371** with reinforced shank	nitr. + vap.	17
	UNF		2B	Nr. 4–48 – 5/16–24	●	●	●					**DIN 371** with reinforced shank	vap.	18
	UNJF		3BX	Nr. 4–48 – 3/8–24	●	●		●	●			**DIN 371** with reinforced shank	TiCN	
	UNJF		3BX	Nr. 4–48 – 3/8–24	●	●		●	●			**DIN 371** with reinforced shank	TiCN	
	BSW		med.	1/8–40 – 3/8–16	●	●	●					**DIN 371** with reinforced shank	nitr. + vap.	
	BSW		med.	1/8–40 – 3/8–16	●	●	●					**DIN 371** with reinforced shank	vap.	

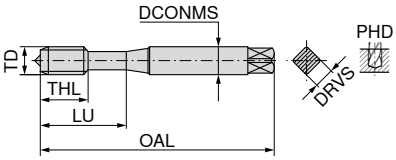
 Further dimensions and taps can be found in our → **main catalogue in Chapter 6 Taps**

 The cutting data is highly dependent on external conditions, such as stability of the tool and workpiece clamping, material and machine type!
The values indicated represent possible cutting data which may need to be corrected depending on operating conditions !

 This article can be found in our online shop at cuttingtools.ceratizit.com

Through hole – Machine taps, right hand

M | Stabil



DIN 371 with reinforced shank

		NEW
UNI	UNI	HR
B 4–5	B 4–5	B 4–5
ISO 2 6H	ISO 2 6H	ISO 2X 6HX
nitr. + vap.	TiN	AlTiN-HD
		
HSS-E	HSS-E	HSS-PM
0° ≤ 1100 N/mm² ≤ 4xD	0° ≤ 1100 N/mm² ≤ 4xD	0° ≤ 1400 N/mm² ≤ 4xD
22 501 ...	**22 503 ...**	**22 468 ...**

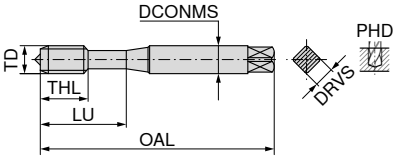
TD mm	TP mm	OAL mm	DCONMS mm	DRVS mm	PHD mm	THL mm	LU mm	Flutes			
M1	0,25	40	2,5	2,1	0,75	5	5	2	**010** [1]		
M1,2	0,25	40	2,5	2,1	0,95	5	5	2	**012** [1]		
M1,4	0,30	40	2,5	2,1	1,10	7	7	3	**014** [1]		
M1,6	0,35	40	2,5	2,1	1,25	8	11	3	**016**		
M1,7	0,35	40	2,5	2,1	1,35	6	11	2	**017**		
M1,8	0,35	40	2,5	2,1	1,45	6	11	2	**018**		
M2	0,40	45	2,8	2,1	1,60	7	12	2		**020**	**02000**
M2	0,40	45	2,8	2,1	1,60	7	12	3	**020**		
M2,2	0,45	45	2,8	2,1	1,75	7	12	2	**022**		
M2,5	0,45	50	2,8	2,1	2,05	9	14	2	**025**		**02500**
M3	0,50	56	3,5	2,7	2,50	11	18	2			**03000**
M3	0,50	56	3,5	2,7	2,50	11	18	3	**030**	**030**	
M3,5	0,60	56	4,0	3,0	2,90	12	20	3	**035**		
M4	0,70	63	4,5	3,4	3,30	13	21	2			**04000**
M4	0,70	63	4,5	3,4	3,30	13	21	3	**040**	**040**	
M5	0,80	70	6,0	4,9	4,20	15	25	2			**05000**
M5	0,80	70	6,0	4,9	4,20	15	25	3	**050**	**050**	
M6	1,00	80	6,0	4,9	5,00	17	30	3	**060**	**060**	**06000**
M7	1,00	80	7,0	5,5	6,00	17	30	3	**070**		
M8	1,25	90	8,0	6,2	6,80	20	35	3	**080**	**080**	**08000**
M10	1,50	100	10,0	8,0	8,50	22	39	3	**100**	**100**	**10000**
M12	1,75	110	12,0	9,0	10,20	24	44	3	**120**		

P	**12**	**15**	**8**
M	**7**	**9**	**8**
K	**12**	**18**	
N		**12**	**10**
S			**4**
H			
O			

1) Tol. ISO 1 4H ≤ M1.4

Blind hole – Machine taps, right hand

M | Salo-Rex



DIN 371 with reinforced shank

	UNI	UNI
	C 2–3	C 2–3
	ISO 2 6H	ISO 2 6H
	vap.	TiN
		
	HSS-E ◁ 42° ≤ 1100 N/mm² ≤ 3xD	HSS-E ◁ 42° ≤ 1100 N/mm² ≤ 3xD
	22 518 ...	**22 520 ...**

TD mm	TP mm	OAL mm	DCONMS mm	DRVS mm	PHD mm	THL mm	LU mm	Flutes			
M2	0,40	45	2,8	2,1	1,60	4,0	12	2	**020**		**020**
M2,2	0,45	45	2,8	2,1	1,75	4,5	12	2	**022**		
M2,3	0,40	45	2,8	2,1	1,90	4,5	12	2	**023**		
M2,5	0,45	50	2,8	2,1	2,05	5,0	15	2	**025**		
M2,6	0,45	50	2,8	2,1	2,15	5,0	15	2	**026**		
M3	0,50	56	3,5	2,7	2,50	6,0	18	3	**030**		**030**
M3,5	0,60	56	4,0	3,0	2,90	7,0	20	3	**035**		
M4	0,70	63	4,5	3,4	3,30	7,0	21	3	**040**		**040**
M5	0,80	70	6,0	4,9	4,20	8,0	25	3	**050**		**050**
M6	1,00	80	6,0	4,9	5,00	10,0	30	3	**060**		**060**
M7	1,00	80	7,0	5,5	6,00	10,0	30	3	**070**		
M8	1,25	90	8,0	6,2	6,80	14,0	35	3	**080**		**080**
M10	1,50	100	10,0	8,0	8,50	16,0	39	3	**100**		**100**
M12	1,75	110	12,0	9,0	10,20	18,0	44	3	**120**		**120**
P									**12**		**15**
M									**7**		**9**
K									**12**		**18**
N											**12**
S											
H											
O											

Blind hole – Machine taps, right hand

M | SL

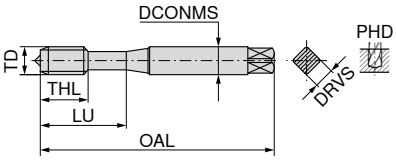
NEW

HR

C 2–3

ISO 2 6H

AlTiN-HD



DIN 371 with reinforced shank

HSS-PM

25°
≤ 1400 N/mm²
≤ 2xD

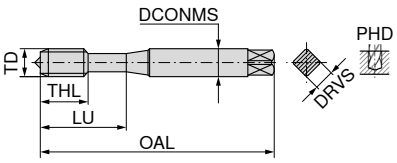
22 469 ...

TD mm	TP mm	OAL mm	DCONMS mm	DRVS mm	PHD mm	THL mm	LU mm	Flutes	
M3	0,50	56	3,5	2,7	2,5	11	18	3	**03000**
M4	0,70	63	4,5	3,4	3,3	13	21	3	**04000**
M5	0,80	70	6,0	4,9	4,2	15	25	3	**05000**
M6	1,00	80	6,0	4,9	5,0	17	30	3	**06000**
M8	1,25	90	8,0	6,2	6,8	20	35	3	**08000**
M10	1,50	100	10,0	8,0	8,5	22	39	3	**10000**
M12	1,75	110	12,0	9,0	10,2	24	44	3	**12000**

P	**8**
M	**8**
K	
N	**10**
S	**4**
H	
O	

Through hole – Machine taps, right hand

MF | Stabil



DIN 371 with reinforced shank

	UNI	UNI
	B 4–5	B 4–5
	ISO 2 6H	ISO 2 6H
	nitr. + vap.	TiN
		
	HSS-E	HSS-E
	0° ≤ 1100 N/mm² ≤ 4xD	0° ≤ 1100 N/mm² ≤ 4xD
	22 590 ...	**22 550 ...**

TD mm	TP mm	OAL mm	DCONMS mm	DRVS mm	PHD mm	THL mm	LU mm	Flutes		
M4x0,5	0,50	63	4,5	3,4	3,5	10	21	3	**040**	**040**
M6x0,75	0,75	80	6,0	4,9	5,2	13	30	3	**062**	**062**
M5x0,5	0,50	70	6,0	4,9	4,5	11	25	3	**050**	**050**
M6x0,5	0,50	80	6,0	4,9	5,5	13	30	3	**060**	**060**
M8x1	1,00	90	8,0	6,2	7,0	17	35	3	**084**	**080**
M10x1	1,00	90	10,0	8,0	9,0	18	35	4	**102**	**100**

P	**12**	**15**
M	**7**	**9**
K	**12**	**18**
N		**12**
S		
H		
O		

Blind hole – Machine taps, right hand

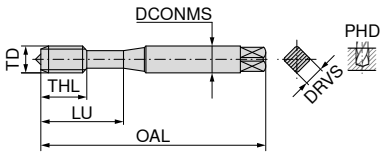
MF | Salo-Rex

UNI

C
2–3

ISO 2
6H

vap.

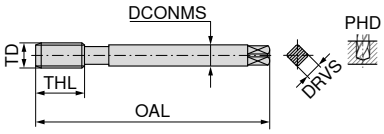


DIN 371 with reinforced shank

HSS-E
42°
≤ 1100 N/mm²
≤ 3xD

22 202 ...

TD mm	TP mm	OAL mm	DCONMS mm	DRVS mm	PHD mm	THL mm	LU mm	Flutes	
M4x0,5	0,50	63	4,5	3,4	3,5	5	21	3	**040**
M5x0,5	0,50	70	6,0	4,9	4,5	5	25	3	**050**
M6x0,75	0,75	80	6,0	4,9	5,2	8	30	3	**062**
M6x0,5	0,50	80	6,0	4,9	5,5	5	30	3	**060**



DIN 374 with reduced shank

22 553 ...

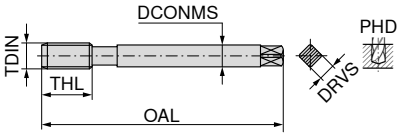
TD mm	TP mm	OAL mm	DCONMS mm	DRVS mm	PHD mm	THL mm	Flutes	
M6x0,75	0,75	80	4,5	3,4	5,2	8	3	**062**
M8x0,75	0,75	80	6,0	4,9	7,2	8	3	**080**
M8x1	1,00	90	6,0	4,9	7,0	10	3	**082**
M10x0,75	0,75	90	7,0	5,5	9,2	10	4	**101**
M10x1	1,00	90	7,0	5,5	9,0	10	3	**100**
M10x1,25	1,25	100	7,0	5,5	8,8	16	3	**102**
M12x1	1,00	100	9,0	7,0	11,0	11	4	**120**
M12x1,25	1,25	100	9,0	7,0	10,8	15	4	**122**
M12x1,5	1,50	100	9,0	7,0	10,5	15	4	**124**

P	**12**
M	**7**
K	**12**
N	
S	
H	
O	

Through hole – Machine taps, right hand

G | Stabil

UNI | B 4–5 | ISO 228 | TiN



DIN 5156 with reduced shank

HSS-E
0°
≤ 1100 N/mm²
≤ 4xD

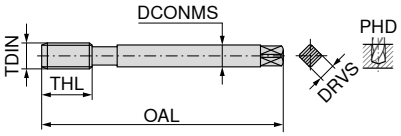
22 630 ...

TDIN	TP mm	OAL mm	DCONMS mm	DRVS mm	PHD mm	THL mm	Flutes	
1/8-28	0,907	90	7	5,5	8,80	18	3	**012**
1/4-19	1,337	100	11	9,0	11,80	22	3	**025**
3/8-19	1,337	100	12	9,0	15,25	22	3	**037**
1/2-14	1,814	125	16	12,0	19,00	25	4	**050**

P	**15**
M	**9**
K	**18**
N	**12**
S	
H	
O	

Blind hole – Machine taps, right hand

G | Salo-Rex



DIN 5156 with reduced shank

UNI | C | 2–3 | ISO 228 | vap.

HSS-E
◁ 42°
≤ 1100 N/mm²
≤ 3xD

22 633 ...

UNI | E | 1,5–2 | ISO 228 | vap.

HSS-E
◁ 42°
≤ 1100 N/mm²
≤ 3xD

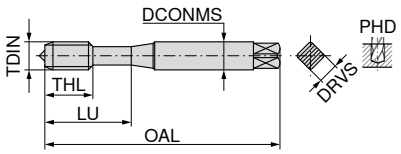
22 635 ...

TDIN	TP mm	OAL mm	DCONMS mm	DRVS mm	PHD mm	THL mm	Flutes	22 633 ...	22 635 ...
1/8-28	0,907	90	7	5,5	8,80	10	3	**012**	
1/8-28	0,907	90	7	5,5	8,80	10	4		**012**
1/4-19	1,337	100	11	9,0	11,80	15	4	**025**	
1/4-19	1,337	100	11	9,0	11,80	15	5		**025**
3/8-19	1,337	100	12	9,0	15,25	15	4	**037**	
3/8-19	1,337	100	12	9,0	15,25	15	5		**037**
1/2-14	1,814	125	16	12,0	19,00	17	4	**050**	
1/2-14	1,814	125	16	12,0	19,00	17	5		**050**
P								**12**	**12**
M								**7**	**7**
K								**12**	**12**
N									
S									
H									
O									

Through hole – Machine taps, right hand

UNC | Stabil

UNI | B 4–5 | 2B | nitr. + vap.



DIN 371 with reinforced shank

HSS-E
0°
≤ 1100 N/mm²
≤ 4xD

22 572 ...

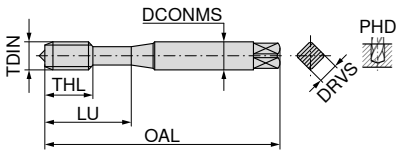
TDIN	TP mm	OAL mm	DCONMS mm	DRVS mm	PHD mm	THL mm	LU mm	Flutes	
Nr. 2-56	0,454	45	2,8	2,1	1,85	7	12	2	**002**
Nr. 4-40	0,635	56	3,5	2,7	2,35	11	18	2	**004**
Nr. 6-32	0,794	56	4,0	3,0	2,85	12	20	3	**006**
Nr. 8-32	0,794	63	4,5	3,4	3,50	13	21	3	**008**
Nr. 10-24	1,058	70	6,0	4,9	3,90	15	25	3	**010**
Nr. 12-24	1,058	80	6,0	4,9	4,50	16	30	3	**012**
1/4-20	1,270	80	7,0	5,5	5,10	17	30	3	**025**
5/16-18	1,411	90	8,0	6,2	6,60	20	35	3	**031**
3/8-16	1,588	100	10,0	8,0	8,00	22	39	3	**037**

P	**12**
M	**7**
K	**12**
N	
S	
H	
O	

Blind hole – Machine taps, right hand

UNC | Salo-Rex

UNI | C 2–3 | 2B | vap.



DIN 371 with reinforced shank

HSS-E
42°
≤ 1100 N/mm²
≤ 3xD

22 582 ...

TDIN	TP mm	OAL mm	DCONMS mm	DRVS mm	PHD mm	THL mm	LU mm	Flutes	
Nr. 2-56	0,454	45	2,8	2,1	1,85	4,5	12	2	**002**
Nr. 4-40	0,635	56	3,5	2,7	2,35	6,0	18	2	**004**
Nr. 6-32	0,794	56	4,0	3,0	2,85	7,0	20	3	**006**
Nr. 8-32	0,794	63	4,5	3,4	3,50	8,0	21	3	**008**
Nr. 10-24	1,058	70	6,0	4,9	3,90	10,0	25	3	**010**
1/4-20	1,270	80	7,0	5,5	5,10	13,0	30	3	**025**
5/16-18	1,411	90	8,0	6,2	6,60	14,0	35	3	**031**
3/8-16	1,588	100	10,0	8,0	8,00	16,0	39	3	**037**

P	**12**
M	**7**
K	**12**
N	
S	
H	
O	

Through hole – Machine taps, right hand

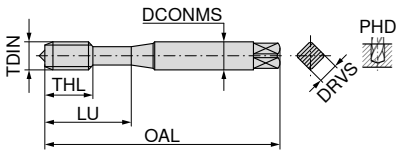
UNF | Stabil

UNI

B
4–5

2B

nitr. + vap.



DIN 371 with reinforced shank

HSS-E
0°
≤ 1100 N/mm²
≤ 4xD

22 602 ...

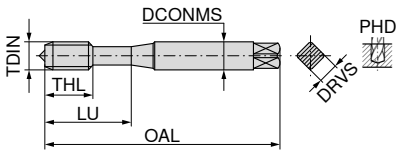
TDIN	TP mm	OAL mm	DCONMS mm	DRVS mm	PHD mm	THL mm	LU mm	Flutes	
Nr. 4-48	0,529	56	3,5	2,7	2,40	11	18	2	**004**
Nr. 6-40	0,635	56	4,0	3,0	2,95	12	20	3	**006**
Nr. 8-36	0,706	63	4,5	3,4	3,50	13	21	3	**008**
Nr. 10-32	0,794	70	6,0	4,9	4,10	15	25	3	**010**
1/4-28	0,907	80	7,0	5,5	5,50	17	30	3	**025**
5/16-24	1,058	90	8,0	6,2	6,90	17	35	3	**031**

P	**12**
M	**7**
K	**12**
N	
S	
H	
O	

Blind hole – Machine taps, right hand

UNF | Salo-Rex

UNI | C 2–3 | 2B | vap.



DIN 371 with reinforced shank

HSS-E
◁ 42°
≤ 1100 N/mm²
≤ 3xD

22 606 ...

TDIN	TP mm	OAL mm	DCONMS mm	DRVS mm	PHD mm	THL mm	LU mm	Flutes	
Nr. 4-48	0,529	56	3,5	2,7	2,40	6	18	2	**004**
Nr. 6-40	0,635	56	4,0	3,0	2,95	7	20	3	**006**
Nr. 8-36	0,706	63	4,5	3,4	3,50	8	21	3	**008**
Nr. 10-32	0,794	70	6,0	4,9	4,10	10	25	3	**010**
1/4-28	0,907	80	7,0	5,5	5,50	10	30	3	**025**
5/16-24	1,058	90	8,0	6,2	6,90	10	35	3	**031**

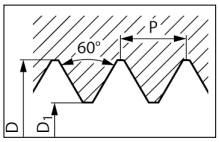
P	**12**
M	**7**
K	**12**
N	
S	
H	
O	

Tapped hole pilot diameter

M ISO metric coarse threads 6H to DIN 13 and DIN ISO 965-1 (M1-M1,4 = 5H)

Thread nominal Ø		Ø D_1		Core hole
D	P	min.	max.	
M1	0,25	0,729	0,785	0,75
M1,1	0,25	0,829	0,885	0,85
M1,2	0,25	0,929	0,985	0,95
M1,4	0,3	1,075	1,142	1,1
M1,6	0,35	1,221	1,321	1,25
M1,8	0,35	1,421	1,521	1,45
M2	0,4	1,567	1,679	1,6
M2,2	0,45	1,713	1,838	1,75
M2,5	0,45	2,013	2,138	2,05
M3	0,5	2,459	2,599	2,5
M3,5	0,6	2,850	3,010	2,9
M4	0,7	3,242	3,422	3,3
M4,5	0,75	3,688	3,878	3,7
M5	0,8	4,134	4,334	4,2
M6	1,0	4,917	5,153	5
M7	1,0	5,917	6,153	6
M8	1,25	6,647	6,912	6,8
M9	1,25	7,647	7,912	7,8
M10	1,5	8,376	8,676	8,5
M11	1,5	9,376	9,676	9,5

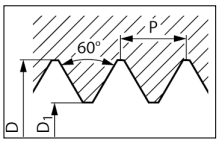
Thread nominal Ø		Ø D_1		Core hole
D	P	min.	max.	
M12	1,75	10,106	10,441	10,2
M14	2,0	11,835	12,210	12
M16	2,0	13,835	14,210	14
M18	2,5	15,294	15,744	15,5
M20	2,5	17,294	17,744	17,5
M22	2,5	19,294	19,744	19,5
M24	3,0	20,752	21,252	21
M27	3,0	23,752	24,252	24
M30	3,5	26,211	26,771	26,5
M33	3,5	29,211	29,771	29,5
M36	4,0	31,670	32,270	32
M39	4,0	34,670	35,270	35
M42	4,5	37,129	37,799	37,5
M45	4,5	40,129	40,799	40,5
M48	5,0	42,587	43,297	43
M52	5,0	46,587	47,297	47
M56	5,5	50,046	50,796	50,5
M60	5,5	54,046	54,796	54,5
M64	6,0	57,505	58,305	58
M68	6,0	61,505	62,305	62



MF ISO metric fine threads 6H to DIN 13 and DIN ISO 965-1

Thread nominal Ø			Ø D_1		Core hole
D	x	P	min.	max.	
M2	x	0,25	1,729	1,774	1,75
M2,2	x	0,25	1,929	1,974	1,95
M2,5	x	0,35	2,121	2,221	2,15
M3	x	0,35	2,621	2,721	2,65
M3,5	x	0,35	3,121	3,221	3,15
M4	x	0,35	3,621	3,721	3,65
M4	x	0,5	3,459	3,599	3,5
M4,5	x	0,5	3,959	4,099	4
M5	x	0,5	4,459	4,599	4,5
M6	x	0,5	5,459	5,599	5,5
M6	x	0,75	5,188	5,378	5,2
M8	x	0,75	7,188	7,378	7,2
M8	x	1,0	6,917	7,153	7
M10	x	0,75	9,188	9,378	9,2
M10	x	1,0	8,917	9,153	9
M10	x	1,25	8,647	8,912	8,8
M12	x	1,0	10,917	11,153	11
M12	x	1,5	10,376	10,676	10,5
M14	x	1,25	12,647	12,912	12,8
M16	x	1,0	14,917	15,153	15
M16	x	1,5	14,376	14,676	14,5

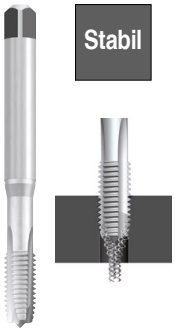
Thread nominal Ø			Ø D_1		Core hole
D	x	P	min.	max.	
M20	x	1,0	18,917	19,153	19
M20	x	1,5	18,376	18,676	18,5
M20	x	2,0	17,835	18,210	18
M24	x	1,5	22,376	22,676	22,5
M30	x	2,0	27,835	28,210	28
M36	x	1,5	34,376	34,676	34,5
M36	x	3,0	32,752	33,252	33
M42	x	2,0	39,835	40,210	40
M48	x	1,5	46,376	46,676	46,5
M48	x	3,0	44,752	45,252	45
M48	x	4,0	43,670	44,270	44
M56	x	1,5	54,376	54,676	54,5
M56	x	2,0	53,835	54,210	54
M56	x	3,0	52,752	53,252	53
M56	x	4,0	51,670	52,270	52
M64	x	3,0	60,752	61,252	61
M64	x	4,0	59,670	60,270	60
M72	x	4,0	67,670	68,270	68
M80	x	6,0	73,505	74,305	74
M95	x	6,0	88,505	89,305	89
M110	x	6,0	103,505	104,305	104



Dimensions in mm; P=Pitch

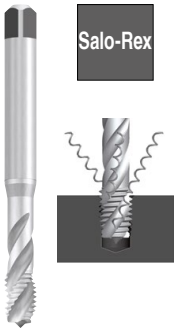
Tap Type Explanation

Through hole tap type Stabil



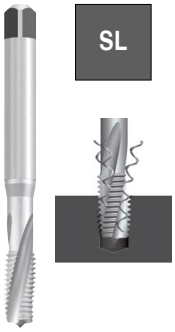
- For through holes up to 4xD
- Lead Form B: 3.5–5 cutting leads, with spiral point
- Straight Flutes
- Also suitable for synchronised machining, with Wedlon flat and with extra long version
- Due to the special geometry of the flutes, the chips are removed in the direction of cut

Blind hole tap type Salo-Rex



- For blind holes up to 3xD
- Lead Form C: 2–3 cutting leads, without spiral point
- Lead Form E: 1.5–2 cutting leads, without spiral point
- (35°, 42°, 45°, 50°) right hand helix
- Also suitable for syncronised machining, with Weldon flat, with extra long version and through coolant
- The high helix angle ensures chips are discharged effectively against the direction of cut

Blind hole tap type SL



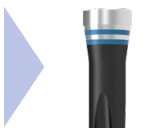
- For blind holes up to 2xD
- Lead Form C: 2–3 cutting leads, without spiral point
- Lead Form E: 1.5–2 cutting leads, without spiral point
- (15°, 25°, 30°) slow right hand helix
- For steel, titanium alloys and Inconel 718
- Also suitable for synchronised machining, with extra long version and through coolant
- Also suitable for difficult operating conditions such as cross holes

Coloured rings – overview

WNT \ Performance

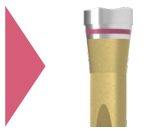
for heat resistant alloys

Type Ti, Ni and AMPCO for heat-resistant steel, titanium and Inconel



for steel up to 1400 N/mm^2

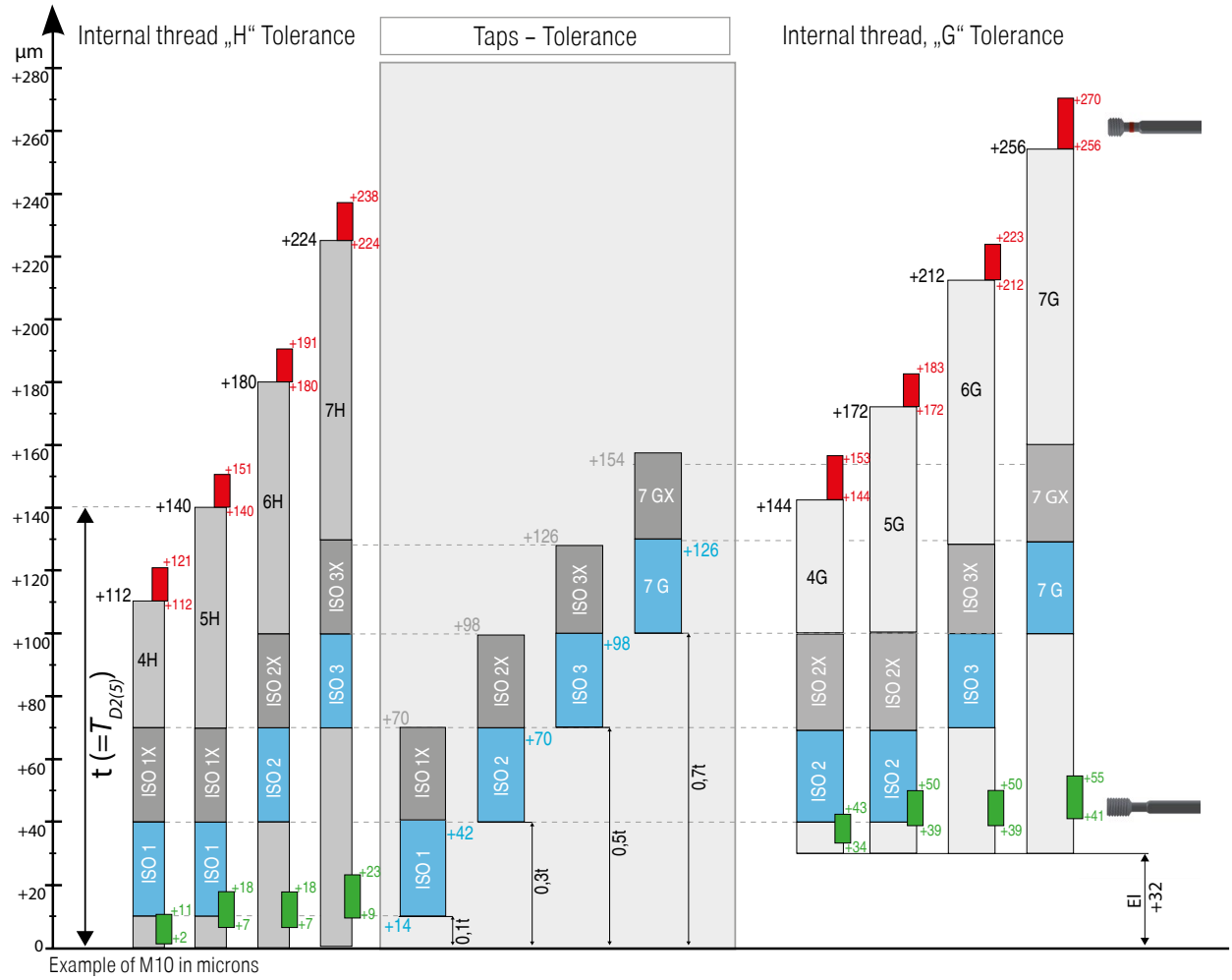
Type HR for steel up to 1400 N/mm^2 tensile strength



for universal application up to 1100 N/mm^2

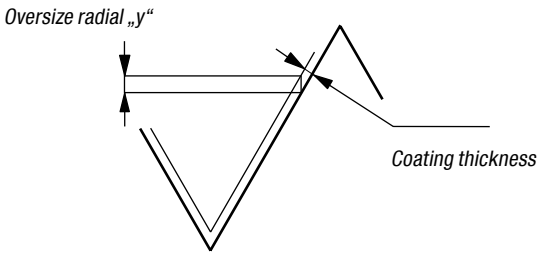
Type UNI for the all-purpose use

Thread tolerances and recommended manufacturing tolerances



Workpieces to be plated require oversize taps.
The interference depends on the coating thickness and the flank angle.

at	60° Flank angle	Oversize ≙ 4 x coating thickness
	55° Flank angle	Oversize ≙ 4.331 x coating thickness
	30° Flank angle	Oversize ≙ 7.727 x coating thickness



Application class of the tap Designation according to		Tolerance class of the internal thread to be cut				
DIN	ISO					
4H	ISO1	4H	5H	–	–	–
6H	ISO2	4G	5G	6H	–	–
6G	ISO3	–	(4E)	6G	7H	8H
7G	–	–	–	(6E)	7G	8G

For special applications, e.g. abrasive cast iron materials or plastics other dimensions have to be chosen which are determined on previous experience. In such cases an „X“ is added to the short designation of the tolerance, e.g. ISO 2X, however the tolerance zone assignment may be limited (6HX for tolerance zone 6H and 5G). In addition it should be taken into account that the dimensions of the internal thread do not only depend on the dimensions of the tap but on the material to be machined and all production conditions.
For first taps and intermediate taps no thread dimensions are determined.

Troubleshooting

Poor tool life

Cause

- Overload fractures of the cutting edge on the lead
- Hardness or tool material not suitable for the application
- Core hole too small, or work hardened
- Insufficient lubrication or incorrect application parameters

Remedy

- A longer lead or more flutes for the same lead length, giving a greater number of cutting teeth
- In reground tools the hardness can be reduced, apply correct parameters for regrinding
- Increase frequency of changes or regrinding of the drill
- Use the correct operating parameters for drilling
- Select the correct lubricant and ensure adequate supply

Axial thread error

Cause

- Selected geometry is not suitable
- Spindle speed is wrong compared with feed (synchronisation error)
- Blind hole taps are used with high feed pressure
- Through hole taps are used with low feed pressure

Remedy

- Check programming and pitch control or machine synchronisation
- Use tapping chuck with length compensation
- Increase retraction feed pessure
- Increase feed pessure

Oversize thread

Cause

- Thread tolerances of tool and thread gauge do not match
- Burred tool edges after regrinding
- Cold pressure welding

Remedy

- Check the correct tolerances for tool and thread gauge
- Carefully deburr
- Use appropriate (positive) geometry
- Reduce cutting speed
- Use different surface treatment or coating
- Use tapping chuck with length compensation
- Use appropriate lubricant

Broken tool

Cause

- Tool is worn
- Tool has hit the bottom of the hole
- Weld deposits
- Core hole too small
- Chip trapping
- Incorrect cutting speed
- Chip trapping in the flute
- Insufficient cooling / lubrication

Remedy

- Employ set taps
- Use a tool with lower helix
- Use tools with a shorter / longer lead
- Check the pre-drilling depth and the thread depth
- Drill core hole deeper
- Correct cutting speed
- Use a different coating or surface treatment
- Use tool holder with length compensation
- Use suitable lubricant
- Use correct core hole
- Change geometry and / or flute type
- Note chip shape and chip formation

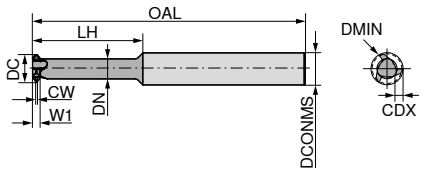
Thread milling cutters overview

	Thread type	Application	Angle	Diameter in mm Ø DC	Steel P / Stainless steel M / Cast iron K / Non-ferrous metals N / Heat-resistant S / Tempered steel H / Non metal materials O	Pitch/thread	Profile type	Coating	WNT \ Performance	WNT \ Standard
	M	IR/IL	60°	5,8 – 7,8	● ● ● ● ● ● ● HA	0,5 – 2,0	Partial profile	CWX 500	24	
	M	IR/IL	60°	1,18 – 4,10	● ● ● ● ● ● ● HA	M1,6 – M6	Full profile	CWX 500	24	
	M	IR/IL	60°	2,4 – 11,6	● ● ● ● ● ● ● HB	M3 – M14	Full profile	Ti 500		25
	MF	IR/IL	60°	4,0 – 11,6	● ● ● ● ● ● ● HB	M5x0,5 – M14x1,5	Full profile	Ti 500		25
	G	IR/IL	55°	8,0 – 16,0	● ● ● ● ● ● ● HB	G 1/8 - 28 – G 1/2 - 14	Full profile	Ti 500		25
	BSW	IR/IL	55°	6,0 – 9,9	● ● ● ● ● ● ● HB	BSW 5/16 - 18 – BSW 5/8 - 11	Full profile	Ti 500		26
	BSF	IR/IL	55°	6,0 – 9,9	● ● ● ● ● ● ● HB	BSF 3/8 - 20 – BSF 5/8 - 14	Full profile	Ti 500		26
	UNC	IR/IL	60°	4,8 – 9,9	● ● ● ● ● ● ● HB	UNC 1/4 - 20 – UNC 1/2 - 13	Full profile	Ti 500		26
	UNF	IR/IL	60°	4,8 – 9,9	● ● ● ● ● ● ● HB	UNF 1/4 - 28 – UNF 1/2 - 20	Full profile	Ti 500		27
	M	IR/IL	60°	8,0 – 16,0	● ● ● ● ● ● ● HB	0,5 - 3,0	Partial profile	Ti 500		28

Further dimensions and thread milling cutters can be found in our → **main catalogue in Chapter 7 Circular- and Thread milling cutters**

MicroMill – Solid Carbide Circular Thread Milling Cutter – Partial profile

Micro Mill | IR/IL | 60°



CWX500

HA

Solid carbide

53 053 ...

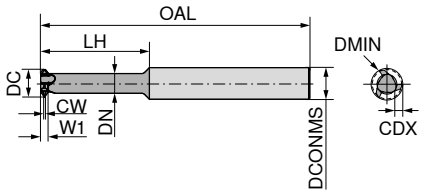
DC mm	TP mm	W1 mm	CW mm	CDX mm	LH mm	OAL mm	DN mm	DCONMS h6 mm	ZEFP	DMIN mm	
5,8	0,5 - 1,5	2	0,06	0,91	15,2	58	3,5	6	3	6	**010**
7,8	0,5 - 1,5	2	0,06	0,91	25,4	68	5,5	8	3	8	**110**
7,8	1,0 - 2,0	2	0,12	1,19	25,4	68	5,0	8	3	8	**120**

P	●
M	●
K	●
N	●
S	●
H	●
O	●

→ v_c/f_z Page 39

MicroMill – Solid Carbide Circular Thread Milling Cutter – Full profile

Micro Mill | IR/IL | 60° | M



CWX500

HA

Solid carbide

53 052 ...

DC mm	Thread	TP mm	W1 mm	CW mm	CDX mm	LH mm	OAL mm	DN mm	DCONMS h6 mm	ZEFP	DMIN mm	
1,18	M1,6	0,35	0,40	0,04	0,19	4,0	32	0,64	3	3	1,38	**160**
1,38	M1,8	0,35	0,50	0,04	0,19	5,0	32	0,70	3	3	1,58	**180**
1,50	M2	0,40	0,56	0,05	0,22	5,0	32	0,90	3	4	1,70	**200**
1,95	M2,5	0,45	0,60	0,06	0,25	6,0	32	1,15	3	4	2,15	**250**
2,40	M3	0,50	0,60	0,06	0,27	7,0	32	1,60	3	4	2,60	**300**
2,80	M3,5	0,60	0,74	0,08	0,33	8,0	32	1,80	3	4	3,00	**350**
3,10	M4	0,70	0,82	0,09	0,38	9,0	44	1,98	5	4	3,30	**400**
3,60	M5	0,80	0,98	0,10	0,43	10,0	44	2,20	5	4	3,80	**500**
4,10	M6	1,00	0,98	0,13	0,54	12,2	44	2,70	5	4	4,30	**600**

P	●
M	●
K	●
N	●
S	●
H	●
O	●

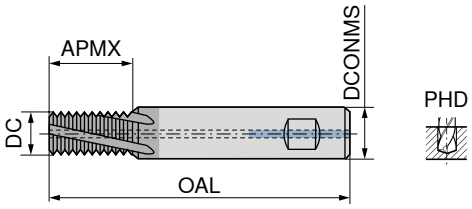
→ v_c/f_z Page 39

When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 40+41.**

Thread milling cutter

▲ Profile corrected
▲ Hard machining to Ø DC = 4 mm possible

SGF | IR/IL | ≤ 2xD | 60° | M



Ti500

Solid carbide

54 800 ...

DC mm	Thread	TP mm	APMX mm	DCONMS $_{h6}$ mm	OAL mm	ZEFP	PHD mm	
2,40	M3	0,50	6,5	4	42	2	2,50	**030** 1)
3,15	M4	0,70	9,0	6	55	3	3,30	**040** 2)
4,00	M5	0,80	11,0	6	55	3	4,20	**050** 2)
4,80	M6	1,00	13,0	6	55	3	5,00	**060** 2)
6,00	M8	1,25	18,0	6	60	3	6,75	**080**
8,00	M10	1,50	21,0	8	70	3	8,50	**100**
9,90	M12	1,75	26,0	10	75	4	10,25	**120**
11,60	M14	2,00	30,0	12	85	4	12,00	**140**

1) DIN 6535 HA Shank / Without Through Coolant
2) Without Through Coolant

60° | MF

54 802 ...

DC mm	Thread	TP mm	APMX mm	DCONMS $_{h6}$ mm	OAL mm	ZEFP	PHD mm	
4,0	M5	0,50	11	6	55	3	4,50	**050** 1)
4,8	M6	0,75	13	6	55	3	5,25	**060** 1)
6,0	M8	1,00	18	6	60	3	7,00	**080**
8,0	M10	1,25	21	8	70	3	8,75	**100**
9,9	M12	1,00	26	10	75	4	11,00	**120**
9,9	M12	1,25	26	10	75	4	10,75	**121**
9,9	M12	1,50	26	10	75	4	10,50	**122**
11,6	M14	1,00	30	12	85	4	13,00	**140**
11,6	M14	1,50	30	12	85	4	12,50	**141**

1) DIN 6535 HA Shank / Without Through Coolant

55° | G

54 804 ...

DC mm	Thread	TP mm	APMX mm	DCONMS $_{h6}$ mm	OAL mm	ZEFP	PHD mm	
8,0	G 1/8-28	0,907	21	8	70	3	8,80	**018**
9,9	G 1/4-19	1,337	26	10	75	4	11,80	**014**
14,0	G 3/8-19	1,337	40	14	90	4	15,25	**038**
16,0	G 1/2-14	1,814	42	16	90	4	19,00	**012**

P	●
M	●
K	●
N	●
S	●
H	●
O	●

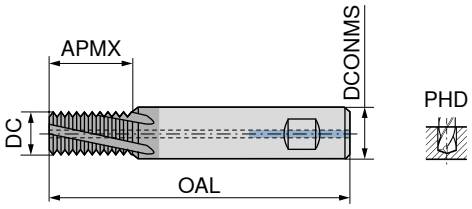
→ v_c/f_z Page 38

When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 40+41.**

Thread milling cutter

▲ Profile corrected

SGF | IR/IL | ≤ 2xD | 55° | BSW



Ti500

HB

Solid carbide

54 806 ...

DC mm	Thread	TP mm	APMX mm	DCONMS $_{h6}$ mm	OAL mm	ZEFP	PHD mm	
6,0	BSW 5/16 - 18	1,411	18	6	60	3	6,50	**516**
6,0	BSW 3/8 - 16	1,588	18	6	60	3	7,90	**038**
8,0	BSW 7/16 - 14	1,814	21	8	70	3	9,25	**716**
8,0	BSW 1/2 - 12	2,117	21	8	70	3	10,50	**012**
9,9	BSW 5/8 - 11	2,309	26	10	75	4	13,50	**058**

55° | BSF

54 808 ...

DC mm	Thread	TP mm	APMX mm	DCONMS $_{h6}$ mm	OAL mm	ZEFP	PHD mm	
6,0	BSF 3/8 - 20	1,270	18	6	60	3	8,3	**038**
6,0	BSF 5/16 - 22	1,155	18	6	60	3	6,8	**516**
8,0	BSF 1/2 - 16	1,588	21	8	70	3	11,1	**012**
8,0	BSF 7/16 - 18	1,411	21	8	70	3	9,7	**716**
9,9	BSF 5/8 - 14	1,814	26	10	75	4	14,0	**058**

60° | UNC

54 810 ...

DC mm	Thread	TP mm	APMX mm	DCONMS $_{h6}$ mm	OAL mm	ZEFP	PHD mm	
4,80	UNC 1/4-20	1,270	13	6	55	3	5,1	**014** [1]
6,00	UNC 5/16-18	1,411	18	6	60	3	6,6	**516**
7,95	UNC 3/8-16	1,588	21	8	70	3	8,0	**038**
7,95	UNC 7/16-14	1,814	21	8	70	3	9,4	**716**
9,90	UNC 1/2-13	1,954	26	10	75	4	10,8	**012**

P	●
M	●
K	●
N	●
S	●
H	●
O	●

1) DIN 6535 HA Shank / Without Through Coolant

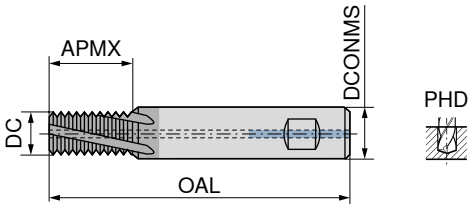
→ v_c/f_z Page 38

When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 40+41.**

Thread milling cutter

▲ Profile corrected

SGF | IR/IL | ≤ 2xD | 60° | UNF



Ti500

HB

Solid carbide

54 812 ...

DC mm	Thread	TP mm	APMX mm	DCONMS $_{h6}$ mm	OAL mm	ZEFP	PHD mm	
4,8	UNF 1/4-28	0,907	13	6	55	3	5,5	**014** [1]
6,0	UNF 5/16-24	1,058	18	6	60	3	6,9	**516**
8,0	UNF 3/8-24	1,058	21	8	70	3	8,5	**038**
8,0	UNF 7/16-20	1,270	21	8	70	3	9,9	**716**
9,9	UNF 1/2-20	1,270	26	10	75	4	11,5	**012**

P	●
M	●
K	●
N	●
S	●
H	●
O	●

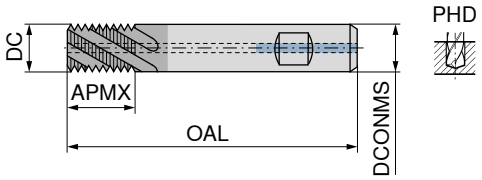
1) Without Through Coolant

→ v_c/f_z Page 38

When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 40+41.**

Thread milling cutter

SGF | IR/IL | ≤ 2xD | 60° | M



Ti500

HB

Solid carbide

54 832 ...

DC mm	TP mm	APMX mm	DCONMS $_{h6}$ mm	OAL mm	ZEFP	PHD mm	
8	0,75	12	8	70	3	11	**080**
8	0,50	12	8	70	3	10	**008**
10	1,00	16	10	75	4	14	**100**
10	1,50	16	10	75	4	14	**101**
12	1,50	20	12	85	4	16	**121**
12	1,00	20	12	85	4	16	**120**
12	2,00	20	12	85	4	18	**122**
16	2,00	25	16	90	5	22	**162**
16	1,00	25	16	90	5	22	**160**
16	1,50	25	16	90	5	22	**161**
16	3,00	25	16	90	5	24	**164**

P	●
M	●
K	●
N	●
S	●
H	●
O	●

→ v_c/f_z Page 38

When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 40+41.**

Circular milling cutters overview

	Application	Special feature	Width	Diameter in mm Ø DC	Steel P	Stainless steel M	Cast iron K	Non-ferrous metals N	Heat-resistant S	Tempered steel H	Non metal materials O	Coating	Page No.
			0,7 – 2,0	5,8 – 7,8	●	●	●	●	●	●	●	CWX 500	30
			2,0	5,8 – 7,8	●	●	●	●	●	●	●	CWX 500	30
		Cross-pitched	1,5 – 6,0	12 – 37	●	●	●	●	○	○	●	CWX 500	31
			1,0 – 6,0	10 – 22	●	●	●	●	○		●	CWX 500	32
			1,0 – 5,0	12 – 22	●	●	●	●	○		●	CWX 500	33
		15 – 45°	0,2 – 3,0	10 – 22	●	●	●	●	○		●	CWX 500	34
		PDPT = 12 mm	0,5 – 1,5	37	●	●	●	●	○		●	CWX 500	35
		extra short											36
		short											36

Further dimensions and thread milling cutters can be found in our → **main catalogue in Chapter 7 Circular- and Thread milling cutters**

MicroMill – Solid Carbide Circular End Milling Cutter

Micro Mill

CWX500

Solid carbide

53 050 ...

DC mm	CW ±0,02 mm	CDX mm	LH mm	OAL mm	DN mm	DCONMS h6 mm	ZEFP	DMIN mm	
5,8	0,7	0,8	15,2	58	3,8	6	3	6	070
	0,8	0,8	15,2	58	3,8	6	3	6	080
	0,9	0,8	15,2	58	3,8	6	3	6	090
	1,0	0,8	15,2	58	3,8	6	3	6	100
	1,5	0,8	15,2	58	3,8	6	3	6	150
7,8	0,7	1,2	25,4	68	5,0	8	3	8	170
	0,8	1,2	25,4	68	5,0	8	3	8	180
	0,9	1,2	25,4	68	5,0	8	3	8	190
	1,0	1,2	25,4	68	5,0	8	3	8	200
	1,5	1,2	25,4	68	5,0	8	3	8	250
	2,0	1,2	25,4	68	5,0	8	3	8	300

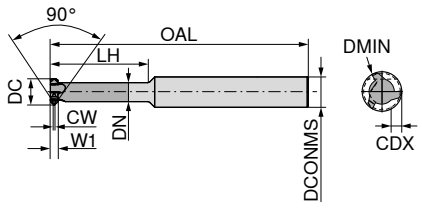
P	●
M	●
K	●
N	●
S	●
H	●
O	●

→ v_c/f_z Page 39

MicroMill – Solid Carbide Circular End Milling Cutter

Micro Mill

CWX500



Solid carbide

53 051 ...

DC mm	W1 mm	CW mm	CDX mm	LH mm	OAL mm	DN mm	DCONMS h6 mm	ZEFP	DMIN mm	
5,8	2	0,2	0,8	15	58	4,2	6	3	6	010
	2	0,2	0,8	25	68	4,2	6	3	6	020
7,8	2	0,2	1,2	25	68	5,0	8	3	8	110
	2	0,2	1,2	35	78	5,0	8	3	8	120

P	●
M	●
K	●
N	●
S	●
H	●
O	●

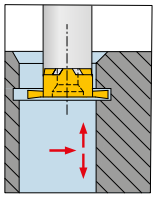
→ v_c/f_z Page 39

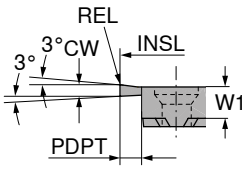
When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 40+41.**

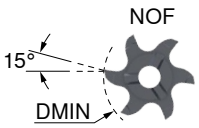
MiniMill – Milling insert for groove milling, cross-pitched

Mini Mill | ≥ Ø 12 mm

CWX500







53 015 ...

Size	DMIN mm	INSL mm	CW +0,02 mm	PDPT mm	W1 mm	REL mm	NOF	
10	12	11,7	1,5	2,0	3,5	0,2	6	**114**
	12	11,7	2,0	2,0	3,5	0,2	6	**119**
14	16	15,7	1,5	2,5	4,5	0,2	6	**314**
	16	15,7	2,0	2,5	4,5	0,2	6	**319**
	16	15,7	2,5	2,5	4,5	0,2	6	**324**
18	18	17,7	2,0	4,0	5,8	0,2	6	**419**
	18	17,7	2,5	4,0	5,8	0,2	6	**424**
	18	17,7	3,0	4,0	5,8	0,2	6	**429**
	20	19,7	2,0	5,0	5,8	0,2	6	**469**
	20	19,7	2,5	5,0	5,8	0,2	6	**474**
	20	19,7	3,0	5,0	5,8	0,2	6	**479**
22	22	21,7	2,0	4,5	6,2	0,2	6	**820**
	22	21,7	2,5	4,5	6,2	0,2	6	**825**
	22	21,7	3,0	4,5	6,2	0,2	6	**830**
	22	21,7	4,0	4,5	6,2	0,2	6	**840**
	37	36,7	1,5	12,0	6,2	0,1	6	**865**
	37	36,7	2,0	12,0	6,2	0,2	6	**870**

P	●
M	●
K	●
N	●
S	o
H	
O	●

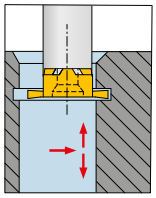
→ v_c/f_z Page 39

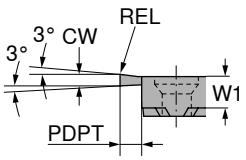
When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 40+41.**

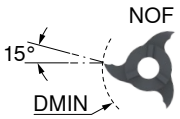
2

MiniMill – Milling insert for groove milling

Mini Mill | ≥ Ø 12 mm | CWX500







53 007 ...

Size	DMIN mm	CW $_{0.02}$ mm	PDPT mm	W1 mm	REL mm	NOF	
10	10	1,0	1,5	3,50	0,1	3	010
	10	1,5	1,5	3,50	0,2	3	015
	10	2,0	1,5	3,50	0,2	3	020
	10	2,5	1,5	3,50	0,2	3	025
	12	1,5	2,0	3,50	0,2	6	114
	12	1,5	2,5	3,50	0,2	3	115
	12	2,0	2,0	3,50	0,2	6	119
	12	2,0	2,5	3,50	0,2	3	120
	12	2,5	2,5	3,50	0,2	3	125
14	14	1,0	2,5	4,50		3	210
	14	1,5	2,5	4,50	0,2	3	215
	14	2,0	2,5	4,50	0,2	3	220
	14	2,5	2,5	4,50	0,2	3	225
	16	1,5	3,5	4,50	0,2	3	315
	16	2,0	3,5	4,50	0,2	3	320
	16	2,5	3,5	4,50	0,2	3	325
18	18	1,5	3,5	5,75	0,1	6	414
	18	1,5	3,5	5,75	0,2	3	415
	18	2,0	3,5	5,75	0,2	6	419
	18	2,0	3,5	5,75	0,2	3	420
	18	2,5	3,5	5,75	0,2	3	425
	18	2,5	3,5	5,75	0,2	6	424
	18	3,0	3,5	5,75	0,2	6	429
	18	3,0	3,5	5,75	0,2	3	430
	18	4,0	3,5	5,75	0,2	3	440
22	22	1,0	4,5	6,20	0,1	6	810
	22	1,5	4,5	6,20	0,1	6	815
	22	1,5	4,5	5,70	0,2	3	515
	22	2,0	4,5	5,70	0,2	3	520
	22	2,0	4,5	6,20	0,2	6	820
	22	2,5	4,5	6,20	0,2	6	825
	22	2,5	4,5	5,70	0,2	3	525
	22	3,0	4,5	5,70	0,2	3	530
	22	3,0	4,5	6,20	0,2	6	830
	22	3,5	4,5	5,70	0,2	3	535
	22	4,0	4,5	5,70	0,2	3	540
	22	4,0	4,5	6,20	0,2	6	840

P	●
M	●
K	●
N	●
S	○
H	
O	●

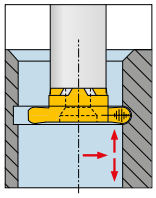
→ v_c/f_z Page 39

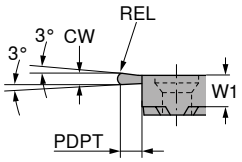
When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 40+41.**

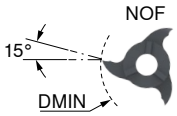
MiniMill – Milling insert for groove milling with full radius

Mini Mill | ≥ Ø 12 mm

CWX500







53 008 ...

Size	DMIN mm	CW +0,03 mm	PDPT mm	W1 mm	REL mm	NOF	
10	12	2,2	2,5	3,50	1,1	3	011
14	16	2,2	3,5	4,60	1,1	3	111
18	18	2,2	3,5	5,75	1,1	3	211
22	22	1,0	4,5	5,75	0,5	3	305
	22	1,6	4,5	5,75	0,8	3	308
	22	2,0	4,5	5,75	1,0	3	310
	22	2,4	4,5	5,75	1,2	3	312
	22	2,8	4,5	5,75	1,4	3	314
	22	3,0	4,5	5,75	1,5	3	315
	22	4,0	4,5	5,75	2,0	3	320
	22	4,4	4,5	5,75	2,2	3	322
	22	5,0	4,5	5,75	2,5	3	325

P	●
M	●
K	●
N	●
S	○
H	
O	●

→ v_c/f_z Page 39

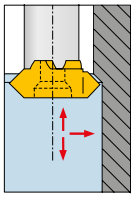
When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 40+41.**

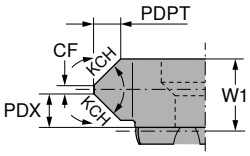
2

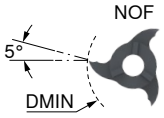
MiniMill – Milling insert for groove milling and chamfering

Mini Mill | ≥ Ø 12 mm

CWX500







53 009 ...

Size	DMIN mm	CF +0,03 mm	PDPT mm	W1 mm	KCH °	PDX mm	NOF	
10	10	0,2	0,35	3,60	15	1,80	6	015
	10	0,2	0,45	3,60	20	1,80	6	020
	10	0,2	0,70	3,60	30	1,80	6	030
	10	0,2	1,20	3,60	45	1,80	6	045
	12	1,2	0,80	3,50	45	1,20	3	035
14	16	1,4	1,20	4,50	45	1,60	3	145
18	18	2,5	1,40	5,85	45	1,70	3	258
	18	0,2	2,20	5,75	45	3,00	6	259
22	22	2,0	1,70	5,85	45	2,00	3	358
	22	0,2	2,50	6,40	45	3,90	6	463
	22	3,0	3,00	9,40	45	3,25	3	394 1)

P	●
M	●
K	●
N	●
S	○
H	
O	●

1) Use clamping screw 73 082 006

→ v_c/f_z Page 39

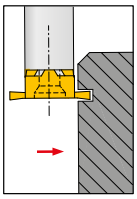
When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 40+41.**

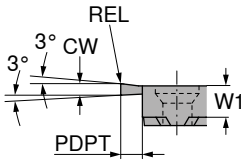
MiniMill – Milling insert for part-off

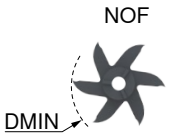
▲ PDPT = 12,0 mm in combination with holder 53 003 624
▲ reduce feed rate by 50 %

Mini Mill | ≥ Ø 37 mm

CWX500







53 013 ...

Size	DMIN mm	CW +0,02 mm	PDPT mm	W1 mm	REL mm	NOF	
22	37	0,5	12	5,6		6	705 [1]
	37	0,6	12	5,7		6	706 [1]
	37	0,8	12	6,0		6	708 [1]
	37	1,0	12	6,2	0,1	6	710
	37	1,5	12	6,2	0,1	6	715

P	●
M	●
K	●
N	●
S	○
H	
O	●

1) The end face is not ground free to the center

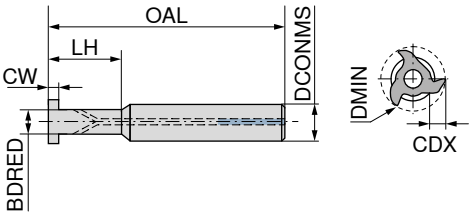
→ v_c/f_z Page 39

When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 40+41.**

MiniMill – Circular milling cutter, extra short

▲ Steel Version

Mini Mill



A

Steel

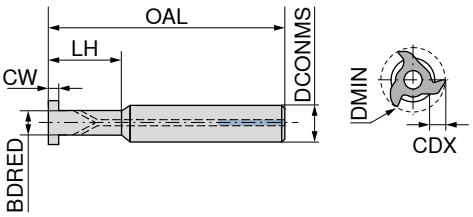
53 004 ...

Size	DCONMS h6 mm	BDRED mm	OAL mm	LH mm	DMIN mm	CW mm	CDX mm	torque moment Nm	
10	10	6,0	60	15,2	9,7 / 11,7	≤3,35	1,4 / 2,5	2,0	015
14	10	8,0	60	17,7	13,7 / 15,7	≤4,35	2,5 / 3,5	3,5	217
	13	8,0	70	25,7	13,7 / 15,7	≤4,35	2,5 / 3,5	3,5	225
18	10	9,0	60	17,0	17,7	≤5,6	3,5	4,5	417
	13	9,0	70	25,0	17,7	≤5,6	3,5	4,5	425
22	10	11,3	60	10,7	21,7	≤9,15	4,5	7,0	610
	13	11,3	70	25,7	21,7	≤9,15	4	7,0	625

MiniMill – Circular milling cutter, short

▲ Steel Version

Mini Mill



B

Steel

53 003 ...

Size	DCONMS h6 mm	BDRED mm	OAL mm	LH mm	DMIN mm	CW mm	CDX mm	torque moment Nm	
22	16	12	80	24	21,7	≤9,15	4,5	7,0	624

When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 40+41.**

Key D

Clamping screw

Clamping screw

Spare parts Size						
	80 950 ...		**73 082 ...**		**73 082 ...**	
10	T08	110			M2,6	002
14	T10	112			M3,5	003
18	T15	113			M4	004
22			M5	006		

Clamping screw 73 082 006 only for insert 53 009 394

Material examples for cutting data tables

	Material sub-group	Index	Composition / Structure / Heat treatment		Tensile strength N/mm²* / HB / HRC	Material number	Material designation	Material number	Material designation
P	Unalloyed steel	P.1.1	< 0,15 % C	Annealed	420 N/mm² / 125 HB	1.0401	C15	1.1141	Ck15
		P.1.2	< 0,45 % C	Annealed	640 N/mm² / 190 HB	1.1191	C45E	1.0718	9SMnPb28
		P.1.3		Tempered	840 N/mm² / 250 HB	1.1191	C45E	1.0535	C55
		P.1.4	< 0,75 % C	Annealed	910 N/mm² / 270 HB	1.1223	C60R	1.0535	C55
		P.1.5		Tempered	1010 N/mm² / 300 HB	1.1223	C60R	1.0727	45S20
	Low-alloy steel	P.2.1		Annealed	610 N/mm² / 180 HB	1.7131	16MnCr5	1.6587	17CrNiMo6
		P.2.2		Tempered	930 N/mm² / 275 HB	1.7131	16MnCr5	1.6587	17CrNiMo6
		P.2.3		Tempered	1010 N/mm² / 300 HB	1.7225	42CrMo4	1.3505	100Cr6
		P.2.4		Tempered	1200 N/mm² / 375 HB	1.7225	42CrMo4	1.3505	100Cr6
	High-alloy steel and high-alloy tool steel	P.3.1		Annealed	680 N/mm² / 200 HB	1.4021	X20Cr13	1.4034	X46Cr13
		P.3.2		Hardened and tempered	1100 N/mm² / 300 HB	1.2343	X38CrMoV5-1	1.4034	X46Cr13
		P.3.3		Hardened and tempered	1300 N/mm² / 400 HB	1.2343	X38CrMoV5-1	1.4034	X46Cr13
	Stainless steel	P.4.1	Ferritic / martensitic	Annealed	680 N/mm² / 200 HB	1.4016	X6Cr17	1.2316	X36CrMo16
		P.4.2	Martensitic	Tempered	1010 N/mm² / 300 HB	1.4112	X90CrMoV18	1.2316	X36CrMo16
M	Stainless steel	M.1.1	Austenitic / austenitic-ferritic	Quenched	610 N/mm² / 180 HB	1.4301	X5CrNi18-10	1.4571	X6CrNiMoTi17-12-2
		M.2.1	Austenitic	Tempered	300 HB	1.4841	X15CrNiSi25-21	1.4539	X1NiCrMoCu25-20-5
		M.3.1	Austenitic / ferritic (Duplex)		780 N/mm² / 230 HB	1.4462	X2CrNiMoN22-5-3	1.4501	X2CrNiMoCuWN25-7-4
K	Grey cast iron	K.1.1	Pearlitic / ferritic		350 N/mm² / 180 HB	0.6010	GG-10	0.6025	GG-25
		K.1.2	Pearlitic (martensitic)		500 N/mm² / 260 HB	0.6030	GG-30	0.6045	GG-45
	Spherulitic graphite cast iron	K.2.1	Ferritic		540 N/mm² / 160 HB	0.7040	GGG-40	0.7060	GGG-60
		K.2.2	Pearlitic		845 N/mm² / 250 HB	0.7070	GGG-70	0.7080	GGG-80
	Malleable iron	K.3.1	Ferritic		440 N/mm² / 130 HB	0.8035	GTW-35-04	0.8045	GTW-45
		K.3.2	Pearlitic		780 N/mm² / 230 HB	0.8165	GTS-65-02	0.8170	GTS-70-02
N	Aluminium wrought alloy	N.1.1	Non-hardenable		60 HB	3.0255	Al99,5	3.3315	AlMg1
		N.1.2	Hardenable	Age-hardened	340 N/mm² / 100 HB	3.1355	AlCuMg2	3.2315	AlMgSi1
	Cast aluminium alloy	N.2.1	≤ 12 % Si, non-hardenable		250 N/mm² / 75 HB	3.2581	G-AlSi12	3.2163	G-AlSi9Cu3
		N.2.2	≤ 12 % Si, hardenable	Age-hardened	300 N/mm² / 90 HB	3.2134	G-AlSi5Cu1Mg	3.2373	G-AlSi9Mg
		N.2.3	> 12 % Si, non-hardenable		440 N/mm² / 130 HB		G-AlSi17Cu4Mg		G-AlSi18CuNiMg
	Copper and copper alloys (bronze/brass)	N.3.1	Free-machining alloys, PB > 1 %		375 N/mm² / 110 HB	2.0380	CuZn39Pb2 (Ms58)	2.0410	CuZn44Pb2
		N.3.2	CuZn, CuSnZn		300 N/mm² / 90 HB	2.0331	CuZn15	2.4070	CuZn28Sn1As
		N.3.3	CuSn, lead-free copper and electrolytic copper		340 N/mm² / 100 HB	2.0060	E-Cu57	2.0590	CuZn40Fe
	Magnesium alloys	N.4.1	Magnesium and magnesium alloys		70 HB	3.5612	MgAl6Zn	3.5312	MgAl3Zn
S	Heat-resistant alloys	S.1.1	Fe - basis	Annealed	680 N/mm² / 200 HB	1.4864	X12NiCrSi 36-16	1.4865	G-X40NiCrSi38-18
		S.1.2		Age-hardened	950 N/mm² / 280 HB	1.4980	X6NiCrTiMoVB25-15-2	1.4876	X10NiCrAlTi32-20
		S.2.1	Ni or Co basis	Annealed	840 N/mm² / 250 HB	2.4631	NiCr20TiAl (Nimonic80A)	3.4856	NiCr22Mo9Nb
		S.2.2		Age-hardened	1180 N/mm² / 350 HB	2.4668	NiCr19Nb5Mo3 (Inconel 718)	2.4955	NiFe25Cr20NbTi
		S.2.3		Cast	1080 N/mm² / 320 HB	2.4765	CoCr20W15Ni	1.3401	G-X120Mn12
	Titanium alloys	S.3.1	Pure titanium		400 N/mm²	3.7025	Ti99,8	3.7034	Ti99,7
		S.3.2	Alpha + beta alloys	Age-hardened	1050 N/mm² / 320 HB	3.7165	TiAl6V4	Ti-6246	Ti-6Al-2Sn-4Zr-6Mo
		S.3.3	Beta alloys		1400 N/mm² / 410 HB	Ti555.3	Ti-5Al-5V-5Mo-3Cr	R56410	Ti-10V-2Fe-3Al
H	Hardened steel	H.1.1		Hardened and tempered	46–55 HRC				
		H.1.2		Hardened and tempered	56–60 HRC				
		H.1.3		Hardened and tempered	61–65 HRC				
		H.1.4		Hardened and tempered	66–70 HRC				
	Chilled iron	H.2.1		Cast	400 HB				
	Hardened cast iron	H.3.1		Hardened and tempered	55 HRC				
O	Non-metal materials	O.1.1	Plastics, duroplastic		≤ 150 N/mm²				
		O.1.2	Plastics, thermoplastic		≤ 100 N/mm²				
		O.2.1	Aramid fibre-reinforced		≤ 1000 N/mm²				
		O.2.2	Glass/carbon-fibre reinforced		≤ 1000 N/mm²				
		O.3.1	Graphite						

*** Tensile strength**

2

Cutting data standard values

	SFG VHM Ti 500 54 832 ...			SFG VHM Ti 500 54 800 ..., 54 802 ..., 54 804 ..., 54 806 ..., 54 808 ..., 54 810 ..., 54 812 ...			
Index	v_c m/min	8 mm f_z [mm/tooth]	10–16 mm f_z [mm/tooth]	v_c m/min	Ø 2,4–3,15 f_z [mm/tooth]	Ø 4 f_z [mm/tooth]	Ø 4,8–16 f_z [mm/tooth]
P.1.1	**150**	0,03–0,07	0,05–0,15	**150**	0,03–0,04	0,03–0,06	0,05–0,15
P.1.2	**150**	0,03–0,07	0,05–0,15	**150**	0,03–0,04	0,03–0,06	0,05–0,15
P.1.3	**120**	0,03–0,07	0,05–0,10	**120**	0,02–0,03	0,02–0,06	0,05–0,10
P.1.4	**120**	0,03–0,06	0,04–0,06	**120**	0,01–0,02	0,03–0,05	0,04–0,06
P.1.5	**120**	0,03–0,06	0,04–0,06	**120**	0,01–0,02	0,03–0,05	0,04–0,06
P.2.1	**120**	0,03–0,06	0,04–0,06	**120**	0,01–0,02	0,03–0,05	0,04–0,06
P.2.2	**120**	0,03–0,06	0,04–0,06	**120**	0,01–0,02	0,03–0,05	0,04–0,06
P.2.3	**80**	0,03–0,06	0,04–0,06	**80**	0,01–0,02	0,03–0,05	0,04–0,06
P.2.4	**70**	0,03–0,06	0,04–0,06	**70**	0,01–0,02	0,03–0,05	0,04–0,06
P.3.1	**80**	0,03–0,06	0,04–0,06	**80**	0,01–0,02	0,03–0,05	0,04–0,06
P.3.2	**70**	0,03–0,06	0,04–0,06	**70**	0,01–0,02	0,03–0,05	0,04–0,06
P.3.3	**60**	0,03–0,06	0,04–0,06	**60**	0,01–0,02	0,03–0,05	0,04–0,06
P.4.1	**50**	0,03–0,06	0,04–0,06	**50**	0,01–0,02	0,03–0,05	0,04–0,06
P.4.2	**50**	0,03–0,06	0,04–0,06	**50**	0,01–0,02	0,03–0,05	0,04–0,06
M.1.1	**120**	0,04–0,07	0,05–0,12	**120**	0,03–0,04	0,03–0,04	0,05–0,12
M.2.1	**120**	0,04–0,07	0,05–0,12	**120**	0,03–0,04	0,03–0,04	0,05–0,12
M.3.1	**120**	0,04–0,07	0,05–0,12	**120**	0,03–0,04	0,03–0,04	0,05–0,12
K.1.1	**140**	0,04–0,07	0,07–0,15	**140**	0,03–0,07	0,03–0,07	0,07–0,12
K.1.2	**100**	0,04–0,07	0,07–0,15	**100**	0,03–0,07	0,03–0,07	0,07–0,12
K.2.1	**140**	0,04–0,07	0,07–0,15	**140**	0,03–0,07	0,03–0,07	0,07–0,12
K.2.2	**120**	0,04–0,07	0,07–0,15	**120**	0,03–0,07	0,03–0,07	0,07–0,10
K.3.1	**140**	0,04–0,07	0,07–0,15	**140**	0,03–0,07	0,03–0,07	0,07–0,10
K.3.2	**100**	0,04–0,07	0,07–0,15	**100**	0,03–0,07	0,03–0,07	0,07–0,10
N.1.1	**400**	0,05–0,08	0,07–0,15	**400**	0,05–0,07	0,05–0,07	0,07–0,15
N.1.2	**350**	0,05–0,08	0,07–0,15	**350**	0,05–0,07	0,05–0,07	0,07–0,15
N.2.1	**350**	0,05–0,08	0,07–0,15	**350**	0,05–0,07	0,05–0,07	0,07–0,15
N.2.2	**250**	0,05–0,08	0,07–0,15	**250**	0,05–0,07	0,05–0,07	0,07–0,15
N.2.3	**200**	0,05–0,08	0,07–0,15	**200**	0,05–0,07	0,05–0,07	0,07–0,15
N.3.1	**160**	0,05–0,08	0,07–0,15	**160**	0,05–0,07	0,05–0,07	0,07–0,15
N.3.2	**160**	0,05–0,08	0,07–0,15	**160**	0,05–0,07	0,05–0,07	0,07–0,15
N.3.3	**160**	0,05–0,08	0,07–0,15	**160**	0,05–0,07	0,05–0,07	0,07–0,15
N.4.1	**160**	0,05–0,08	0,07–0,15	**160**	0,05–0,07	0,05–0,07	0,07–0,15
S.1.1	**100**	0,02–0,04	0,04–0,10	**100**	0,02–0,04	0,02–0,04	0,04–0,10
S.1.2	**80**	0,02–0,04	0,04–0,10	**80**	0,02–0,04	0,02–0,04	0,04–0,10
S.2.1	**60**	0,03–0,05	0,04–0,06	**60**	0,01–0,02	0,03–0,05	0,04–0,06
S.2.2	**40**	0,03–0,05	0,04–0,06	**40**	0,01–0,02	0,03–0,05	0,04–0,06
S.2.3	**40**	0,03–0,05	0,04–0,06	**40**	0,01–0,02	0,03–0,05	0,04–0,06
S.3.1	**100**	0,02–0,04	0,04–0,10	**100**	0,02–0,04	0,02–0,04	0,04–0,10
S.3.2	**80**	0,03–0,05	0,04–0,06	**80**	0,01–0,02	0,03–0,05	0,04–0,06
S.3.3	**60**	0,03–0,05	0,04–0,06	**60**	0,01–0,02	0,03–0,05	0,04–0,06
H.1.1	**60**	0,01–0,02	0,03–0,05	**60**		0,01–0,02	0,03–0,05
H.1.2	**50**	0,01–0,02	0,03–0,05	**50**		0,01–0,02	0,03–0,05
H.1.3	**40**	0,01–0,02	0,03–0,05	**40**		0,01–0,02	0,03–0,05
H.1.4	**30**	0,01–0,02	0,03–0,05	**30**		0,01–0,02	0,03–0,05
H.2.1	**60**	0,01–0,02	0,03–0,05	**60**		0,01–0,02	0,03–0,05
H.3.1	**50**	0,01–0,02	0,03–0,05	**50**		0,01–0,02	0,03–0,05
O.1.1	**180**	0,05–0,10	0,07–0,25	**180**	0,01–0,05	0,05–0,10	0,07–0,25
O.1.2	**220**	0,05–0,10	0,07–0,25	**220**	0,01–0,05	0,05–0,10	0,07–0,25
O.2.1	**120**	0,05–0,10	0,07–0,25	**120**	0,01–0,05	0,05–0,10	0,07–0,25
O.2.2	**120**	0,05–0,10	0,07–0,25	**120**	0,01–0,05	0,05–0,10	0,07–0,25
O.3.1	**400**	0,05–0,10	0,07–0,25	**400**	0,01–0,05	0,05–0,10	0,07–0,25

The cutting data is strongly influenced by external conditions, such as the stability of the tool and workpiece clamping, material and type of machine.
The specified values represent guideline cutting data that can be adjusted by approx. **±20%** according to the usage conditions.

Cutting data standard values

	MiniMill 53 007 ..., 53 008 ..., 53 009 ..., 53 013 ..., 53 015 ...			MicroMill 53 050 ..., 53 051 ..., 53 052 ..., 53 053 ...	
Index	v_c m/min	f_z (drilling) [mm/tooth]	f_z (Threading) [mm/tooth]	v_c m/min	f_z [mm/tooth]
P.1.1	**120** (80–200)	0,03–0,10	0,05–0,20	**70** (40–120)	0,01–0,05
P.1.2	**110** (70–190)	0,03–0,10	0,05–0,20	**60** (40–110)	0,01–0,05
P.1.3	**90** (60–150)	0,03–0,10	0,05–0,20	**50** (30–80)	0,01–0,05
P.1.4	**90** (60–150)	0,03–0,08	0,05–0,18	**50** (30–80)	0,01–0,05
P.1.5	**70** (50–120)	0,03–0,08	0,05–0,18	**40** (30–70)	0,01–0,05
P.2.1	**90** (60–150)	0,03–0,10	0,05–0,20	**50** (30–80)	0,01–0,05
P.2.2	**70** (50–120)	0,03–0,08	0,05–0,18	**40** (30–70)	0,01–0,05
P.2.3	**60** (40–110)	0,02–0,07	0,05–0,16	**40** (20–70)	0,01–0,05
P.2.4	**60** (40–100)	0,03–0,07	0,05–0,16	**30** (20–60)	0,01–0,04
P.3.1	**60** (40–100)	0,03–0,10	0,05–0,20	**30** (20–60)	0,01–0,05
P.3.2	**50** (30–80)	0,02–0,07	0,05–0,16	**30** (20–50)	0,01–0,04
P.3.3	**30** (20–60)	0,02–0,07	0,05–0,16	**20** (10–40)	0,005–0,03
P.4.1	**80** (50–130)	0,03–0,08	0,05–0,18	**40** (30–70)	0,01–0,05
P.4.2	**60** (40–110)	0,02–0,07	0,05–0,16	**40** (20–70)	0,01–0,05
M.1.1	**90** (60–150)	0,02–0,07	0,05–0,16	**50** (30–80)	0,01–0,03
M.2.1	**60** (40–110)	0,02–0,07	0,05–0,16	**40** (20–70)	0,01–0,03
M.3.1	**50** (30–90)	0,02–0,07	0,05–0,16	**30** (20–50)	0,01–0,03
K.1.1	**110** (70–190)	0,03–0,10	0,05–0,20	**60** (40–110)	0,008–0,06
K.1.2	**80** (50–140)	0,03–0,10	0,05–0,20	**50** (30–80)	0,008–0,06
K.2.1	**70** (50–120)	0,03–0,10	0,05–0,20	**40** (30–70)	0,008–0,06
K.2.2	**60** (40–100)	0,03–0,10	0,05–0,20	**30** (20–60)	0,008–0,06
K.3.1	**110** (70–190)	0,03–0,10	0,05–0,20	**60** (40–110)	0,008–0,06
K.3.2	**90** (60–160)	0,03–0,10	0,05–0,20	**50** (30–90)	0,008–0,06
N.1.1	**230** (150–390)	0,04–0,15	0,06–0,25	**150** (90–260)	0,01–0,06
N.1.2	**220** (140–370)	0,04–0,15	0,06–0,25	**140** (90–240)	0,01–0,06
N.2.1	**190** (120–320)	0,04–0,15	0,06–0,25	**120** (70–210)	0,01–0,06
N.2.2	**160** (110–270)	0,04–0,15	0,06–0,25	**100** (60–180)	0,01–0,06
N.2.3	**90** (60–160)	0,04–0,15	0,06–0,25	**60** (40–110)	0,01–0,06
N.3.1	**170** (110–280)	0,04–0,15	0,06–0,25	**110** (70–180)	0,01–0,06
N.3.2	**140** (90–240)	0,04–0,15	0,06–0,25	**80** (50–150)	0,01–0,06
N.3.3	**120** (80–210)	0,04–0,15	0,06–0,25	**80** (50–140)	0,01–0,06
N.4.1	**170** (110–280)	0,04–0,15	0,06–0,25	**70** (40–120)	0,01–0,06
S.1.1	60 (40–100)	0,04–0,15	0,06–0,25	**30** (20–50)	0,01–0,06
S.1.2	40 (30–70)	0,04–0,15	0,06–0,25	**20** (10–30)	0,01–0,06
S.2.1	60 (40–100)	0,04–0,15	0,06–0,25	**30** (20–50)	0,01–0,06
S.2.2	50 (30–80)	0,04–0,15	0,06–0,25	**20** (10–40)	0,01–0,06
S.2.3	30 (20–60)	0,04–0,15	0,06–0,25	**20** (10–30)	0,01–0,06
S.3.1	60 (40–100)	0,04–0,15	0,06–0,25	**20** (10–40)	0,01–0,06
S.3.2	30 (20–60)	0,04–0,15	0,06–0,25	**20** (10–30)	0,01–0,06
S.3.3	30 (20–50)	0,04–0,15	0,06–0,25	**10** (10–20)	0,01–0,06
H.1.1	50 (30–90)	0,02–0,06	0,04–0,14	**20** (10–40)	0,005–0,03
H.1.2					
H.1.3					
H.1.4					
H.2.1					
H.3.1	40 (30–70)	0,02–0,10		**20** (10–40)	0,005–0,03
O.1.1	**180** (120–310)	0,04–0,15	0,06–0,25	**80** (50–130)	0,02–0,09
O.1.2	**170** (110–280)	0,04–0,15	0,06–0,25	**70** (40–120)	0,02–0,09
O.2.1	**140** (90–230)	0,04–0,15	0,06–0,25	**50** (30–100)	0,02–0,09
O.2.2	**100** (70–170)	0,04–0,15	0,06–0,25	**40** (30–70)	0,02–0,09
O.3.1	**140** (90–230)	0,005–0,05	0,06–0,25	**60** (40–110)	0,02–0,09

The cutting data is strongly influenced by external conditions, such as the stability of the tool and workpiece clamping, material and type of machine. The specified values represent guideline cutting data that can be adjusted by approx. **±20%** according to the usage conditions.

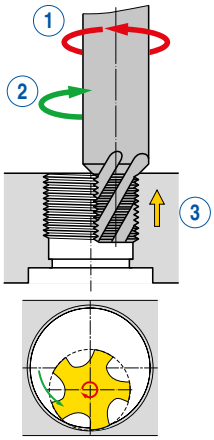
Milling Procedures

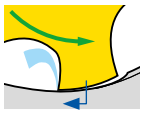
Climb milling

Characteristics:

1. Tool rotation direction „right“
2. Toolpath counter clockwise
3. Feed direction „outwards“

Right hand thread





h = 0

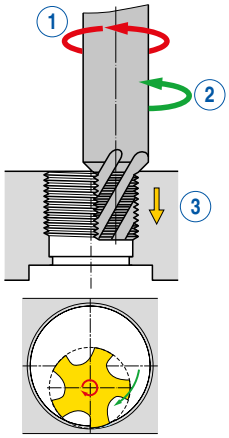
When climb milling, the chip thickness at the end of cut is always 0 (h=0)

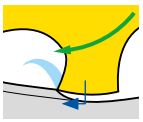
Conventional milling

Characteristics:

1. Tool rotation direction „right“
2. Toolpath clockwise
3. Feed direction „inwards“

Right hand thread

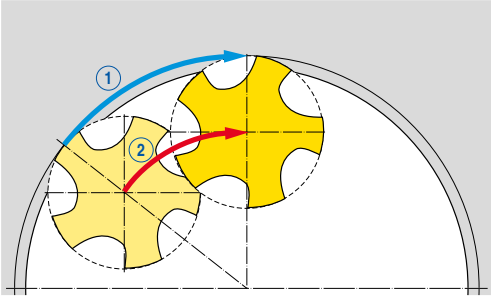




h = max

When conventional milling, the chip thickness at the end of cut is always at maximum (h=max)

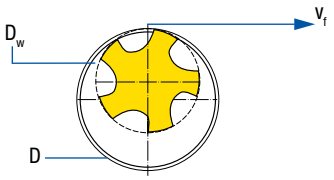
Feed rate calculation



1. Peripheral feedrate v_f
2. Centerline feedrate v_{fm}

Peripheral feedrate v_f

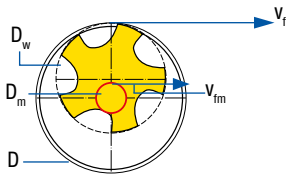
$$v_f = n \times f_z \times z \quad \text{mm/min.}$$



D_w = Effective diameter in mm
n = RPM in min^{-1}
f_z = Feed per tooth in mm

Centerline feedrate v_{fm}

$$v_{fm} = \frac{v_f \times (D - D_w)}{D} \quad \text{mm/min.}$$



z = Number of cutting edges (radial)
D = Nominal thread diameter = external profile diameter in mm
D_m = Centre path diameter ($D-D_W$) in mm

Tips for the User

With thread milling there are two different programme possibilities with the feed motion of the tool.

On the one hand the machine controls the feed at the diameter of the tool, on the other hand the feed control is the tool center line.
In order to ascertain which method the machine control uses, the following method should be employed:

- Enter the thread milling routine into the control.
- Enter a safety margin into the program, so that the tool runs in air.
- Run the program through and check the operating time.
- Compare the actual time with the calculated theoretical time.

If the time is longer than the calculated time the feed is controlling the tool center line.
If the time is shorter than the calculated time the feed is controlling the diameter of the tool.

Numeric calculation of cutting data for thread milling

$$n = \frac{v_c \cdot 1000}{d \cdot \pi}$$

$$v_c = \frac{d \cdot \pi \cdot n}{1000}$$

$$v_f = f_z \cdot z \cdot n$$

$$n = \frac{v_f}{f_z \cdot z}$$

$$f_z = \frac{v_f}{z \cdot n}$$

Milling – external contour

$$v_{fm} = \frac{v_f \cdot (D + d)}{D}$$

$$v_f = \frac{D \cdot v_{fm}}{(D + d)}$$

Milling – internal contour

$$v_{fm} = \frac{v_f \cdot (D - d)}{D}$$

$$v_f = \frac{D \cdot v_{fm}}{(D - d)}$$

Helical plunging

$$U_{arc} = 0{,}25 \cdot v_{fm}$$

Ramping in the arc

$$U_{arc} = v_{fm}$$

n	=	rpm	rev./min.
v_c	=	Cutting speed	m/min
d	=	Tool diameter	mm
D	=	Nominal thread-Ø	mm
v_f	=	Feed rate at the diameter	mm/min.
v_{fm}	=	Feed rate at the centre	mm/min.
U_{arc}	=	programmed ramping feed rate	mm/min.
f_z	=	Feed per tooth	mm
z	=	number of cutting edges of the cutter	

Correction values for the internal thread milling

The cutting edge diameter of the thread milling cutter which is entered into the machine control, can be calculated as follows:

half the cutter Ø – 0.05 x pitch p

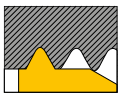
Example: M30x3
Cutter-Ø: 20 mm

$$Ø \frac{20}{2} - (0{,}05 \cdot 3) = \underline{9{,}85 \text{ mm}}$$

9,85 mm is the cutting radius to be entered into the machine control

Thread turning tools overview

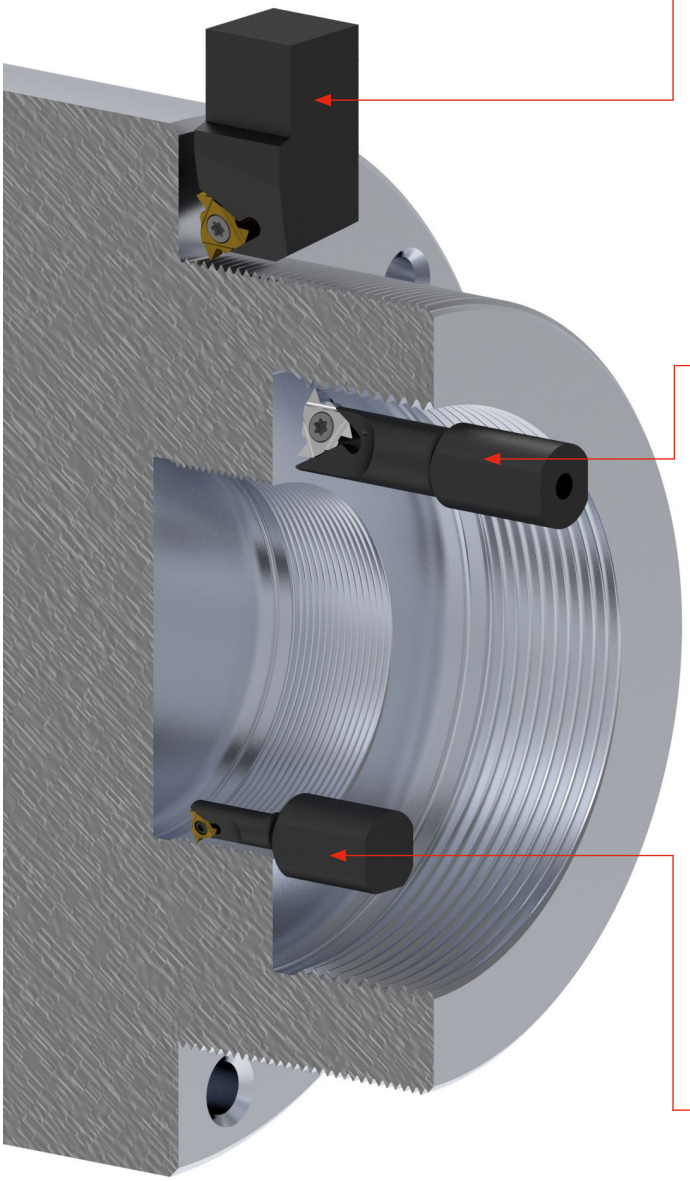
Full profile



- Improved quality of thread
- No burr formation
- No secondary operations
- Longer service lives

Partial profile

- One insert can be used for several pitches
- Reduced stock requirements



Standard external thread turning

Full profile

M	MJ	BSW	UN	UNC	UNF	UNEF
43+44	47	49+50	53+54	53+54	53+54	53+54

Partial profile

60°	55°
57	59

suitable holder

61

Standard internal thread turning

Full profile

M	MJ	BSW	UN	UNC	UNF	UNEF
45+46	48	51+52	55+56	55+56	55+56	55+56

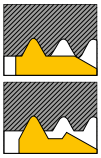
Partial profile

60°	55°
58	60

suitable holder

62+63

Full profile / partial profile
Mini size 06 / 08



- Special inserts for low cutting speeds
- for diameters from 6 mm to 8 mm

Mini 06

Full profile

M	BSW
64	64

Partial profile

60°	55°
65	65

Mini 08

Full profile

M
66

Partial profile

60°	55°
66+67	67+68

suitable holder

69

Other thread turning tools

VertiClamp

→ **Chapter Turning – Turning tools**

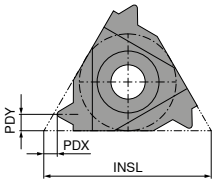
UltraMini

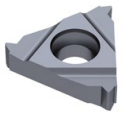
M	MF	G	Tr
Full profile Partial profile	Full profile Partial profile	Partial profile	Partial profile

→ **Chapter Turning – Miniature turning tools**

Right hand external thread turning insert

▲ Full profile





2

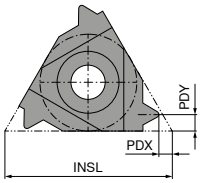
Designation	TP mm	INSL mm	PDX mm	PDY mm	ER 71 220 ...	ER 71 220 ...
11 ER 0,35	0,35	11	0,8	0,4	**204**	**604**
11 ER 0,4	0,40	11	0,7	0,4	**206**	**606**
11 ER 0,45	0,45	11	0,7	0,4	**208**	**608**
11 ER 0,5	0,50	11	0,6	0,6	**209**	**609**
11 ER 0,6	0,60	11	0,6	0,6	**210**	**610**
11 ER 0,7	0,70	11	0,6	0,6	**211**	**611**
11 ER 0,75	0,75	11	0,6	0,6	**212**	**612**
11 ER 0,8	0,80	11	0,6	0,6	**213**	**613**
11 ER 1,0	1,00	11	0,7	0,7	**214**	**614**
11 ER 1,25	1,25	11	0,8	0,9	**216**	**616**
11 ER 1,5	1,50	11	0,8	1,0	**218**	**618**
11 ER 1,75	1,75	11	0,8	1,1	**220**	**620**
16 ER 0,35	0,35	16	0,8	0,4	**234**	**634**
16 ER 0,4	0,40	16	0,7	0,4	**236**	**636**
16 ER 0,45	0,45	16	0,7	0,4	**238**	**638**
16 ER 0,5	0,50	16	0,6	0,6	**240**	**640**
16 ER 0,7	0,70	16	0,6	0,6	**241**	**641**
16 ER 0,75	0,75	16	0,6	0,6	**242**	**642**
16 ER 0,8	0,80	16	0,6	0,6	**243**	**643**
16 ER 1,0	1,00	16	0,7	0,7	**244**	**644**
16 ER 1,25	1,25	16	0,8	0,9	**246**	**646**
16 ER 1,5	1,50	16	0,8	1,0	**248**	**648**
16 ER 1,75	1,75	16	0,9	1,2	**250**	**650**
16 ER 2,0	2,00	16	1,0	1,3	**252**	**652**
16 ER 2,5	2,50	16	1,1	1,5	**254**	**654**
16 ER 3,0	3,00	16	1,2	1,6	**256**	**656**
P					●	
M					●	○
K					●	●
N						●
S					○	○
H					○	
O						

→ v_c Page 72

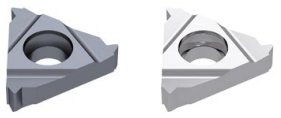
Left hand external thread turning insert

▲ Full profile

M | MF | 60°



CCN20 | CWK20



Designation	TP mm	INSL mm	PDX mm	PDY mm	EL 71 222 ...	EL 71 222 ...
11 EL 0,35	0,35	11	0,8	0,4	**204**	**604**
11 EL 0,4	0,40	11	0,7	0,4	**206**	**606**
11 EL 0,45	0,45	11	0,7	0,4	**208**	**608**
11 EL 0,5	0,50	11	0,6	0,6	**209**	**609**
11 EL 0,6	0,60	11	0,6	0,6	**210**	**610**
11 EL 0,7	0,70	11	0,6	0,6	**211**	**611**
11 EL 0,75	0,75	11	0,6	0,6	**212**	**612**
11 EL 0,8	0,80	11	0,6	0,6	**213**	**613**
11 EL 1,0	1,00	11	0,7	0,7	**214**	**614**
11 EL 1,25	1,25	11	0,8	0,9	**216**	**616**
11 EL 1,5	1,50	11	0,8	1,0	**218**	**618**
11 EL 1,75	1,75	11	0,8	1,1	**220**	**620**
16 EL 0,35	0,35	16	0,8	0,4	**234**	**634**
16 EL 0,4	0,40	16	0,7	0,4	**236**	**636**
16 EL 0,45	0,45	16	0,7	0,4	**238**	**638**
16 EL 0,5	0,50	16	0,6	0,6	**240**	**640**
16 EL 0,7	0,70	16	0,6	0,6	**241**	**641**
16 EL 0,75	0,75	16	0,6	0,6	**242**	**642**
16 EL 0,8	0,80	16	0,6	0,6	**243**	**643**
16 EL 1,0	1,00	16	0,7	0,7	**244**	**644**
16 EL 1,25	1,25	16	0,8	0,9	**246**	**646**
16 EL 1,5	1,50	16	0,8	1,0	**248**	**648**
16 EL 1,75	1,75	16	0,9	1,2	**250**	**650**
16 EL 2,0	2,00	16	1,0	1,3	**252**	**652**
16 EL 2,5	2,50	16	1,1	1,5	**254**	**654**
16 EL 3,0	3,00	16	1,2	1,6	**256**	**656**
P					●	
M					●	○
K					●	●
N						●
S					○	○
H					○	
O						

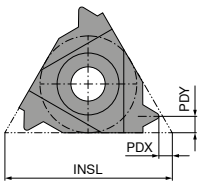
→ v_c Page 72

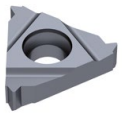
Right hand internal thread turning insert

▲ Full profile

M | MF | 60°

CCN20 | CWK20





2

Designation	TP mm	INSL mm	PDX mm	PDY mm	IR 71 224 ...		IR 71 224 ...	
11 IR 0,35	0,35	11	0,8	0,3	**204**			**604**
11 IR 0,4	0,40	11	0,8	0,4	**206**			**606**
11 IR 0,45	0,45	11	0,8	0,4	**208**			**608**
11 IR 0,5	0,50	11	0,6	0,6	**210**			**610**
11 IR 0,7	0,70	11	0,6	0,6	**211**			**611**
11 IR 0,75	0,75	11	0,6	0,6	**212**			**612**
11 IR 0,8	0,80	11	0,6	0,6	**213**			**613**
11 IR 1,0	1,00	11	0,6	0,7	**214**			**614**
11 IR 1,25	1,25	11	0,8	0,9	**216**			**616**
11 IR 1,5	1,50	11	0,8	1,0	**218**			**618**
11 IR 1,75	1,75	11	0,9	1,1	**220**			**620**
11 IR 2,0	2,00	11	0,9	1,1	**222**			**622**
11 IR 2,5	2,50	11	0,9	1,1	**224**			**624**
16 IR 0,35	0,35	16	0,8	0,4	**234**			**634**
16 IR 0,4	0,40	16	0,7	0,4	**236**			**636**
16 IR 0,45	0,45	16	0,7	0,4	**238**			**638**
16 IR 0,5	0,50	16	0,6	0,6	**240**			**640**
16 IR 0,7	0,70	16	0,6	0,6	**241**			**641**
16 IR 0,75	0,75	16	0,6	0,6	**242**			**642**
16 IR 0,8	0,80	16	0,6	0,6	**243**			**643**
16 IR 1,0	1,00	16	0,7	0,7	**244**			**644**
16 IR 1,25	1,25	16	0,8	0,9	**246**			**646**
16 IR 1,5	1,50	16	0,8	1,0	**248**			**648**
16 IR 1,75	1,75	16	0,9	1,2	**250**			**650**
16 IR 2,0	2,00	16	1,0	1,3	**252**			**652**
16 IR 2,5	2,50	16	1,1	1,5	**254**			**654**
16 IR 3,0	3,00	16	1,1	1,5	**256**			**656**

P	●	
M	●	○
K	●	●
N		●
S	○	○
H	○	
O		

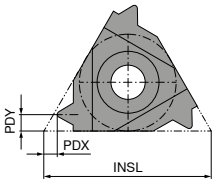
→ v_c Page 72

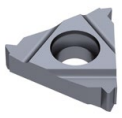
Left hand internal thread turning insert

▲ Full profile

M | MF | 60°

CCN20 | CWK20





Designation	TP mm	INSL mm	PDX mm	PDY mm	IL 71 226 ...		IL 71 226 ...	
11 IL 0,35	0,35	11	0,8	0,3		**204**		**604**
11 IL 0,4	0,40	11	0,8	0,4		**206**		**606**
11 IL 0,45	0,45	11	0,8	0,4		**208**		**608**
11 IL 0,5	0,50	11	0,6	0,6		**210**		**610**
11 IL 0,7	0,70	11	0,6	0,6		**211**		**611**
11 IL 0,75	0,75	11	0,6	0,6		**212**		**612**
11 IL 0,8	0,80	11	0,6	0,6		**213**		**613**
11 IL 1,0	1,00	11	0,6	0,7		**214**		**614**
11 IL 1,25	1,25	11	0,8	0,9		**216**		**616**
11 IL 1,5	1,50	11	0,8	1,0		**218**		**618**
11 IL 1,75	1,75	11	0,9	1,1		**220**		**620**
11 IL 2,0	2,00	11	0,9	1,1		**222**		**622**
11 IL 2,5	2,50	11	0,9	1,1		**224**		**624**
16 IL 0,35	0,35	16	0,8	0,4		**234**		**634**
16 IL 0,4	0,40	16	0,7	0,4		**236**		**636**
16 IL 0,45	0,45	16	0,7	0,4		**238**		**638**
16 IL 0,5	0,50	16	0,6	0,6		**240**		**640**
16 IL 0,7	0,70	16	0,6	0,6		**241**		**641**
16 IL 0,75	0,75	16	0,6	0,6		**242**		**642**
16 IL 0,8	0,80	16	0,6	0,6		**243**		**643**
16 IL 1,0	1,00	16	0,7	0,7		**244**		**644**
16 IL 1,25	1,25	16	0,8	0,9		**246**		**646**
16 IL 1,5	1,50	16	0,8	1,0		**248**		**648**
16 IL 1,75	1,75	16	0,9	1,2		**250**		**650**
16 IL 2,0	2,00	16	1,0	1,3		**252**		**652**
16 IL 2,5	2,50	16	1,1	1,5		**254**		**654**
16 IL 3,0	3,00	16	1,2	1,6		**256**		**656**

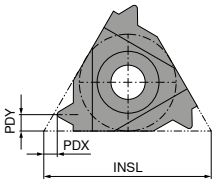
P	●	
M	●	○
K	●	●
N		●
S	○	○
H	○	
O		

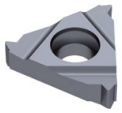
→ v_c Page 72

Right hand external thread turning insert

▲ Full profile

MJ 60°





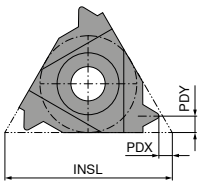
Designation	TP mm	INSL mm	PDX mm	PDY mm	ER 71 286 ...		ER 71 286 ...	
11 ER 1,0	1,00	11	0,7	0,8		**214**		**614**
11 ER 1,25	1,25	11	0,8	0,9		**216**		**616**
11 ER 1,5	1,50	11	0,8	1,0		**218**		**618**
11 ER 2,0	2,00	11	0,9	1,0		**222**		**622**
16 ER 1,0	1,00	16	0,7	0,8		**244**		**644**
16 ER 1,25	1,25	16	0,8	0,9		**246**		**646**
16 ER 1,5	1,50	16	0,8	1,0		**248**		**648**
16 ER 2,0	2,00	16	1,0	1,3		**252**		**652**
P						●		
M						●		○
K						●		●
N								●
S						○		○
H						○		
O								

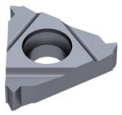
→ v_c Page 72

Left hand external thread turning insert

▲ Full profile

MJ 60°





Designation	TP mm	INSL mm	PDX mm	PDY mm	EL 71 287 ...		EL 71 287 ...	
11 EL 1,0	1,00	11	0,7	0,8		**214**		**614**
11 EL 1,25	1,25	11	0,8	0,9		**216**		**616**
11 EL 1,5	1,50	11	0,8	1,0		**218**		**618**
11 EL 2,0	2,00	11	0,9	1,0		**222**		**622**
16 EL 1,0	1,00	16	0,7	0,8		**244**		**644**
16 EL 1,25	1,25	16	0,8	0,9		**246**		**646**
16 EL 1,5	1,50	16	0,8	1,0		**248**		**648**
16 EL 2,0	2,00	16	1,0	1,3		**252**		**652**
P						●		
M						●		○
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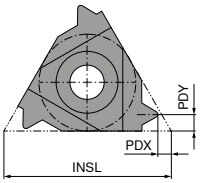
S						○		○
H						○		
O								

→ v_c Page 72

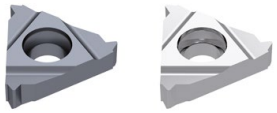
Right hand internal thread turning insert

▲ Full profile

MJ 60°



CCN20 CWK20



Designation	TP mm	INSL mm	PDX mm	PDY mm	IR 71 284 ... CCN20	IR 71 284 ... CWK20
11 IR 1,0	1,00	11	0,7	0,8	**214**	**614**
11 IR 1,25	1,25	11	0,8	0,9	**216**	**616**
11 IR 1,5	1,50	11	0,8	1,0	**218**	**618**
11 IR 2,0	2,00	11	0,9	1,0	**222**	**622**
16 IR 1,0	1,00	16	0,7	0,8	**244**	**644**
16 IR 1,25	1,25	16	0,8	0,9	**246**	**646**
16 IR 1,5	1,50	16	0,8	1,0	**248**	**648**
16 IR 2,0	2,00	16	1,0	1,3	**252**	**652**
P					●	
M					●	○
K					●	●
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S					○	○
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Left hand internal thread turning insert

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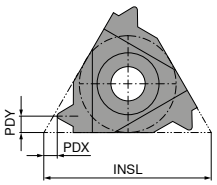
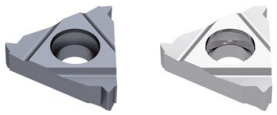
MJ 60°



CCN20 CWK20



Designation	TP mm	INSL mm	PDX mm	PDY mm	IL 71 285 ... CCN20	IL 71 285 ... CWK20
11 IL 1,0	1,00	11	0,7	0,8	**214**	**614**
11 IL 1,25	1,25	11	0,8	0,9	**216**	**616**
11 IL 1,5	1,50	11	0,8	1,0	**218**	**618**
11 IL 2,0	2,00	11	0,9	1,0	**222**	**622**
16 IL 1,0	1,00	16	0,7	0,8	**244**	**644**
16 IL 1,25	1,25	16	0,8	0,9	**246**	**646**
16 IL 1,5	1,50	16	0,8	1,0	**248**	**648**
16 IL 2,0	2,00	16	1,0	1,3	**252**	**652**
P					●	
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K					●	●
N						●
S					○	○
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Right hand external thread turning insert

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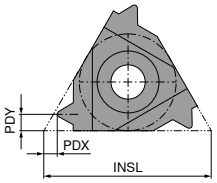
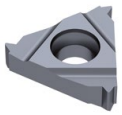


CCN20



CWK20

2

Designation	TPI 1/"	INSL mm	PDX mm	PDY mm	ER 71 228 ...		ER 71 228 ...	
11 ER 72	72	11	0,7	0,4	**202**			**602**
11 ER 60	60	11	0,7	0,4	**204**			**604**
11 ER 56	56	11	0,7	0,4	**206**			**606**
11 ER 48	48	11	0,6	0,6	**208**			**608**
11 ER 40	40	11	0,6	0,6	**210**			**610**
11 ER 36	36	11	0,6	0,6	**212**			**612**
11 ER 32	32	11	0,6	0,6	**214**			**614**
11 ER 28	28	11	0,6	0,7	**216**			**616**
11 ER 26	26	11	0,7	0,8	**218**			**618**
11 ER 24	24	11	0,7	0,8	**220**			**620**
11 ER 22	22	11	0,8	0,9	**222**			**622**
11 ER 20	20	11	0,8	0,9	**224**			**624**
11 ER 19	19	11	0,8	1,0	**226**			**626**
11 ER 18	18	11	0,8	1,0	**228**			**628**
11 ER 16	16	11	0,9	1,1	**230**			**630**
11 ER 14	14	11	0,9	1,1	**232**			**632**
16 ER 40	40	16	0,6	0,6	**240**			**640**
16 ER 36	36	16	0,6	0,6	**242**			**642**
16 ER 32	32	16	0,6	0,6	**244**			**644**
16 ER 28	28	16	0,6	0,7	**246**			**646**
16 ER 26	26	16	0,7	0,8	**248**			**648**
16 ER 24	24	16	0,7	0,8	**250**			**650**
16 ER 22	22	16	0,8	0,9	**252**			**652**
16 ER 20	20	16	0,8	0,9	**254**			**654**
16 ER 19	19	16	0,8	1,0	**256**			**656**
16 ER 18	18	16	0,8	1,0	**258**			**658**
16 ER 16	16	16	0,9	1,1	**260**			**660**
16 ER 14	14	16	1,0	1,2	**262**			**662**
16 ER 12	12	16	1,1	1,4	**264**			**664**
16 ER 11	11	16	1,1	1,5	**266**			**666**
16 ER 10	10	16	1,1	1,5	**268**			**668**
16 ER 9	9	16	1,2	1,7	**270**			**670**
16 ER 8	8	16	1,2	1,5	**272**			**672**
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Left hand external thread turning insert

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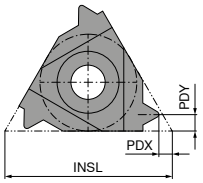
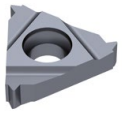
BSW



CCN20



CWK20

Designation	TPI 1/"	INSL mm	PDX mm	PDY mm	EL 71 229 ...		EL 71 229 ...	
11 EL 72	72	11	0,7	0,4	**202**			**602**
11 EL 60	60	11	0,7	0,4	**204**			**604**
11 EL 56	56	11	0,7	0,4	**206**			**606**
11 EL 48	48	11	0,6	0,6	**208**			**608**
11 EL 40	40	11	0,6	0,6	**210**			**610**
11 EL 36	36	11	0,6	0,6	**212**			**612**
11 EL 32	32	11	0,6	0,6	**214**			**614**
11 EL 28	28	11	0,6	0,7	**216**			**616**
11 EL 26	26	11	0,7	0,8	**218**			**618**
11 EL 24	24	11	0,7	0,8	**220**			**620**
11 EL 22	22	11	0,8	0,9	**222**			**622**
11 EL 20	20	11	0,8	0,9	**224**			**624**
11 EL 19	19	11	0,8	1,0	**226**			**626**
11 EL 18	18	11	0,8	1,0	**228**			**628**
11 EL 16	16	11	0,9	1,1	**230**			**630**
11 EL 14	14	11	0,9	1,1	**232**			**632**
16 EL 40	40	16	0,6	0,6	**240**			**640**
16 EL 36	36	16	0,6	0,6	**242**			**642**
16 EL 32	32	16	0,6	0,6	**244**			**644**
16 EL 28	28	16	0,6	0,7	**246**			**646**
16 EL 26	26	16	0,7	0,8	**248**			**648**
16 EL 24	24	16	0,7	0,8	**250**			**650**
16 EL 22	22	16	0,8	0,9	**252**			**652**
16 EL 20	20	16	0,8	0,9	**254**			**654**
16 EL 19	19	16	0,8	1,0	**256**			**656**
16 EL 18	18	16	0,8	1,0	**258**			**658**
16 EL 16	16	16	0,9	1,1	**260**			**660**
16 EL 14	14	16	1,0	1,2	**262**			**662**
16 EL 12	12	16	1,1	1,4	**264**			**664**
16 EL 11	11	16	1,1	1,5	**266**			**666**
16 EL 10	10	16	1,1	1,5	**268**			**668**
16 EL 9	9	16	1,2	1,7	**270**			**670**
16 EL 8	8	16	1,2	1,5	**272**			**672**
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Right hand internal thread turning insert

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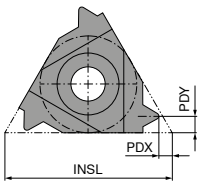
BSW



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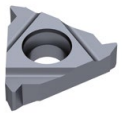

CWK20

2

Designation	TPI 1/"	INSL mm	PDX mm	PDY mm	IR 71 230 ...		IR 71 230 ...	
11 IR 48	48	11	0,6	0,6		**206**		**606**
11 IR 40	40	11	0,6	0,6		**208**		**608**
11 IR 36	36	11	0,6	0,6		**210**		**610**
11 IR 32	32	11	0,6	0,6		**212**		**612**
11 IR 28	28	11	0,6	0,7		**214**		**614**
11 IR 26	26	11	0,7	0,8		**216**		**616**
11 IR 24	24	11	0,7	0,8		**218**		**618**
11 IR 22	22	11	0,8	0,9		**220**		**620**
11 IR 20	20	11	0,8	0,9		**222**		**622**
11 IR 19	19	11	0,8	1,0		**224**		**624**
11 IR 18	18	11	0,8	1,0		**226**		**626**
11 IR 16	16	11	0,9	1,1		**228**		**628**
11 IR 14	14	11	0,9	1,1		**230**		**630**
16 IR 40	40	16	0,6	0,6		**240**		**640**
16 IR 36	36	16	0,6	0,6		**242**		**642**
16 IR 32	32	16	0,6	0,6		**244**		**644**
16 IR 28	28	16	0,6	0,7		**246**		**646**
16 IR 26	26	16	0,7	0,8		**248**		**648**
16 IR 24	24	16	0,7	0,8		**250**		**650**
16 IR 22	22	16	0,8	0,9		**252**		**652**
16 IR 20	20	16	0,8	0,9		**254**		**654**
16 IR 19	19	16	0,8	1,0		**256**		**656**
16 IR 18	18	16	0,8	1,0		**258**		**658**
16 IR 16	16	16	0,9	1,1		**260**		**660**
16 IR 14	14	16	1,0	1,2		**262**		**662**
16 IR 12	12	16	1,1	1,4		**264**		**664**
16 IR 11	11	16	1,1	1,5		**266**		**666**
16 IR 10	10	16	1,1	1,5		**268**		**668**
16 IR 9	9	16	1,2	1,7		**270**		**670**
16 IR 8	8	16	1,2	1,5		**272**		**672**
P						●		
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→ v_c Page 72

Left hand internal thread turning insert

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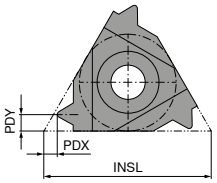
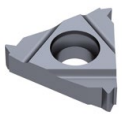
BSW



CCN20



CWK20

Designation	TPI 1/"	INSL mm	PDX mm	PDY mm	IL 71 231 ...		IL 71 231 ...	
11 IL 48	48	11	0,6	0,6		**206**		**606**
11 IL 40	40	11	0,6	0,6		**208**		**608**
11 IL 36	36	11	0,6	0,6		**210**		**610**
11 IL 32	32	11	0,6	0,6		**212**		**612**
11 IL 28	28	11	0,6	0,7		**214**		**614**
11 IL 26	26	11	0,7	0,8		**216**		**616**
11 IL 24	24	11	0,7	0,8		**218**		**618**
11 IL 22	22	11	0,8	0,9		**220**		**620**
11 IL 20	20	11	0,8	0,9		**222**		**622**
11 IL 19	19	11	0,8	1,0		**224**		**624**
11 IL 18	18	11	0,8	1,0		**226**		**626**
11 IL 16	16	11	0,9	1,1		**228**		**628**
11 IL 14	14	11	0,9	1,1		**230**		**630**
16 IL 40	40	16	0,6	0,6		**240**		**640**
16 IL 36	36	16	0,6	0,6		**242**		**642**
16 IL 32	32	16	0,6	0,6		**244**		**644**
16 IL 28	28	16	0,6	0,7		**246**		**646**
16 IL 26	26	16	0,7	0,8		**248**		**648**
16 IL 24	24	16	0,7	0,8		**250**		**650**
16 IL 22	22	16	0,8	0,9		**252**		**652**
16 IL 20	20	16	0,8	0,9		**254**		**654**
16 IL 19	19	16	0,8	1,0		**256**		**656**
16 IL 18	18	16	0,8	1,0		**258**		**658**
16 IL 16	16	16	0,9	1,1		**260**		**660**
16 IL 14	14	16	1,0	1,2		**262**		**662**
16 IL 12	12	16	1,1	1,4		**264**		**664**
16 IL 11	11	16	1,1	1,5		**266**		**666**
16 IL 10	10	16	1,1	1,5		**268**		**668**
16 IL 9	9	16	1,2	1,7		**270**		**670**
16 IL 8	8	16	1,2	1,5		**272**		**672**
P						●		
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→ v_c Page 72

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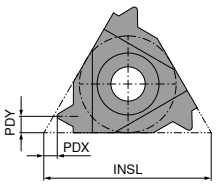
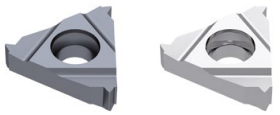
UN | UNC | UNF | UNEF | 60°

CCN20 | CWK20





Designation	TPI 1/"	INSL mm	PDX mm	PDY mm	ER 71 264 ...		ER 71 264 ...	
11 ER 72	72,0	11	0,8	0,4	202			602
11 ER 64	64,0	11	0,8	0,4	204			604
11 ER 56	56,0	11	0,7	0,4	206			606
11 ER 48	48,0	11	0,6	0,6	208			608
11 ER 44	44,0	11	0,6	0,6	210			610
11 ER 40	40,0	11	0,6	0,6	212			612
11 ER 36	36,0	11	0,6	0,6	214			614
11 ER 32	32,0	11	0,6	0,6	216			616
11 ER 28	28,0	11	0,6	0,7	218			618
11 ER 27	27,0	11	0,7	0,8	220			620
11 ER 24	24,0	11	0,7	0,8	222			622
11 ER 20	20,0	11	0,8	0,9	224			624
11 ER 18	18,0	11	0,8	1,0	226			626
11 ER 16	16,0	11	0,9	1,1	228			628
11 ER 14	14,0	11	0,9	1,1	230			630
16 ER 72	72,0	16	0,8	0,4	232			632
16 ER 64	64,0	16	0,8	0,4	234			634
16 ER 56	56,0	16	0,7	0,4	236			636
16 ER 48	48,0	16	0,6	0,6	238			638
16 ER 44	44,0	16	0,6	0,6	240			640
16 ER 40	40,0	16	0,6	0,6	242			642
16 ER 36	36,0	16	0,6	0,6	244			644
16 ER 32	32,0	16	0,6	0,6	246			646
16 ER 28	28,0	16	0,6	0,7	248			648
16 ER 27	27,0	16	0,7	0,8	250			650
16 ER 24	24,0	16	0,7	0,8	252			652
16 ER 20	20,0	16	0,8	0,9	254			654
16 ER 18	18,0	16	0,8	1,0	256			656
16 ER 16	16,0	16	0,9	1,1	258			658
16 ER 14	14,0	16	1,0	1,2	260			660
16 ER 13	13,0	16	1,0	1,3	262			662
16 ER 12	12,0	16	1,1	1,4	264			664
16 ER 11,5	11,5	16	1,1	1,5	266			666
16 ER 11	11,0	16	1,1	1,5	268			668
16 ER 10	10,0	16	1,1	1,5	270			670
16 ER 9	9,0	16	1,2	1,7	272			672
16 ER 8	8,0	16	1,2	1,6	274			674
P					●			
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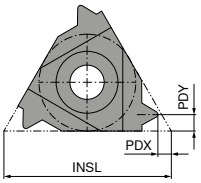
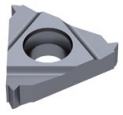
UN | UNC | UNF | UNEF | 60°

CCN20 | CWK20





Designation	TPI 1/"	INSL mm	PDX mm	PDY mm	EL 71 266 ...		EL 71 266 ...	
11 EL 72	72,0	11	0,8	0,4		**202**		**602**
11 EL 64	64,0	11	0,8	0,4		**204**		**604**
11 EL 56	56,0	11	0,7	0,4		**206**		**606**
11 EL 48	48,0	11	0,6	0,6		**208**		**608**
11 EL 44	44,0	11	0,6	0,6		**210**		**610**
11 EL 40	40,0	11	0,6	0,6		**212**		**612**
11 EL 36	36,0	11	0,6	0,6		**214**		**614**
11 EL 32	32,0	11	0,6	0,6		**216**		**616**
11 EL 28	28,0	11	0,6	0,7		**218**		**618**
11 EL 27	27,0	11	0,7	0,8		**220**		**620**
11 EL 24	24,0	11	0,7	0,8		**222**		**622**
11 EL 20	20,0	11	0,8	0,9		**224**		**624**
11 EL 18	18,0	11	0,8	1,0		**226**		**626**
11 EL 16	16,0	11	0,9	1,1		**228**		**628**
11 EL 14	14,0	11	0,9	1,1		**230**		**630**
16 EL 72	72,0	16	0,8	0,4		**232**		**632**
16 EL 64	64,0	16	0,8	0,4		**234**		**634**
16 EL 56	56,0	16	0,7	0,4		**236**		**636**
16 EL 48	48,0	16	0,6	0,6		**238**		**638**
16 EL 44	44,0	16	0,6	0,6		**240**		**640**
16 EL 40	40,0	16	0,6	0,6		**242**		**642**
16 EL 36	36,0	16	0,6	0,6		**244**		**644**
16 EL 32	32,0	16	0,6	0,6		**246**		**646**
16 EL 28	28,0	16	0,6	0,7		**248**		**648**
16 EL 27	27,0	16	0,7	0,8		**250**		**650**
16 EL 24	24,0	16	0,7	0,8		**252**		**652**
16 EL 20	20,0	16	0,8	0,9		**254**		**654**
16 EL 18	18,0	16	0,8	1,0		**256**		**656**
16 EL 16	16,0	16	0,9	1,1		**258**		**658**
16 EL 14	14,0	16	1,0	1,2		**260**		**660**
16 EL 13	13,0	16	1,0	1,3		**262**		**662**
16 EL 12	12,0	16	1,1	1,4		**264**		**664**
16 EL 11,5	11,5	16	1,1	1,5		**266**		**666**
16 EL 11	11,0	16	1,1	1,5		**268**		**668**
16 EL 10	10,0	16	1,1	1,5		**270**		**670**
16 EL 9	9,0	16	1,2	1,7		**272**		**672**
16 EL 8	8,0	16	1,2	1,6		**274**		**674**

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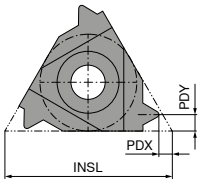
→ v_c Page 72

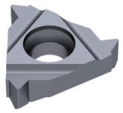
Right hand internal thread turning insert

▲ Full profile

UN | UNC | UNF | UNEF | 60°

CCN20 | CWK20





Designation	TPI 1/"	INSL mm	PDX mm	PDY mm	IR 71 268 ...		IR 71 268 ...	
11 IR 72	72,0	11	0,8	0,3	202			602
11 IR 64	64,0	11	0,8	0,4	204			604
11 IR 56	56,0	11	0,7	0,4	206			606
11 IR 48	48,0	11	0,6	0,6	208			608
11 IR 44	44,0	11	0,6	0,6	210			610
11 IR 40	40,0	11	0,6	0,6	212			612
11 IR 36	36,0	11	0,6	0,6	214			614
11 IR 32	32,0	11	0,6	0,6	216			616
11 IR 28	28,0	11	0,6	0,7	218			618
11 IR 27	27,0	11	0,7	0,8	220			620
11 IR 24	24,0	11	0,7	0,8	222			622
11 IR 20	20,0	11	0,8	0,9	224			624
11 IR 18	18,0	11	0,8	1,0	226			626
11 IR 16	16,0	11	0,9	1,1	228			628
11 IR 14	14,0	11	1,0	1,1	230			630
16 IR 72	72,0	16	0,8	0,3	232			632
16 IR 64	64,0	16	0,8	0,4	234			634
16 IR 56	56,0	16	0,7	0,4	236			636
16 IR 48	48,0	16	0,6	0,6	238			638
16 IR 44	44,0	16	0,6	0,6	240			640
16 IR 40	40,0	16	0,6	0,6	242			642
16 IR 36	36,0	16	0,6	0,6	244			644
16 IR 32	32,0	16	0,6	0,6	246			646
16 IR 28	28,0	16	0,6	0,7	248			648
16 IR 27	27,0	16	0,7	0,8	250			650
16 IR 24	24,0	16	0,7	0,8	252			652
16 IR 20	20,0	16	0,8	0,9	254			654
16 IR 18	18,0	16	0,8	1,0	256			656
16 IR 16	16,0	16	0,9	1,1	258			658
16 IR 14	14,0	16	1,0	1,2	260			660
16 IR 13	13,0	16	1,0	1,3	262			662
16 IR 12	12,0	16	1,1	1,4	264			664
16 IR 11,5	11,5	16	1,1	1,5	266			666
16 IR 11	11,0	16	1,1	1,5	268			668
16 IR 10	10,0	16	1,1	1,5	270			670
16 IR 9	9,0	16	1,2	1,7	272			672
16 IR 8	8,0	16	1,2	1,6	274			674

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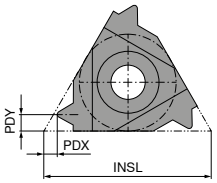
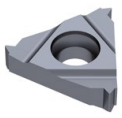
Left hand internal thread turning insert

▲ Full profile

UN | UNC | UNF | UNEF | 60°

CCN20 | CWK20





Designation	TPI 1/"	INSL mm	PDX mm	PDY mm	IL 71 270 ...	IL 71 270 ...
11 IL 72	72,0	11	0,8	0,3	**202**	**602**
11 IL 64	64,0	11	0,8	0,4	**204**	**604**
11 IL 56	56,0	11	0,7	0,4	**206**	**606**
11 IL 48	48,0	11	0,6	0,6	**208**	**608**
11 IL 44	44,0	11	0,6	0,6	**210**	**610**
11 IL 40	40,0	11	0,6	0,6	**212**	**612**
11 IL 36	36,0	11	0,6	0,6	**214**	**614**
11 IL 32	32,0	11	0,6	0,6	**216**	**616**
11 IL 28	28,0	11	0,6	0,7	**218**	**618**
11 IL 27	27,0	11	0,7	0,8	**220**	**620**
11 IL 24	24,0	11	0,7	0,8	**222**	**622**
11 IL 20	20,0	11	0,8	0,9	**224**	**624**
11 IL 18	18,0	11	0,8	1,0	**226**	**626**
11 IL 16	16,0	11	0,9	1,1	**228**	**628**
11 IL 14	14,0	11	0,9	1,1	**230**	**630**
16 IL 72	72,0	16	0,8	0,3	**232**	**632**
16 IL 64	64,0	16	0,8	0,4	**234**	**634**
16 IL 56	56,0	16	0,7	0,4	**236**	**636**
16 IL 48	48,0	16	0,6	0,6	**238**	**638**
16 IL 44	44,0	16	0,6	0,6	**240**	**640**
16 IL 40	40,0	16	0,6	0,6	**242**	**642**
16 IL 36	36,0	16	0,6	0,6	**244**	**644**
16 IL 32	32,0	16	0,6	0,6	**246**	**646**
16 IL 28	28,0	16	0,6	0,7	**248**	**648**
16 IL 27	27,0	16	0,7	0,8	**250**	**650**
16 IL 24	24,0	16	0,7	0,8	**252**	**652**
16 IL 20	20,0	16	0,8	0,9	**254**	**654**
16 IL 18	18,0	16	0,8	1,0	**256**	**656**
16 IL 16	16,0	16	0,9	1,1	**258**	**658**
16 IL 14	14,0	16	1,0	1,2	**260**	**660**
16 IL 13	13,0	16	1,0	1,3	**262**	**662**
16 IL 12	12,0	16	1,1	1,4	**264**	**664**
16 IL 11,5	11,5	16	1,1	1,5	**266**	**666**
16 IL 11	11,0	16	1,1	1,5	**268**	**668**
16 IL 10	10,0	16	1,1	1,5	**270**	**670**
16 IL 9	9,0	16	1,2	1,7	**272**	**672**
16 IL 8	8,0	16	1,2	1,6	**274**	**674**

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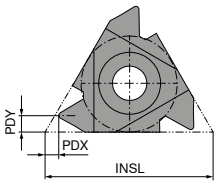
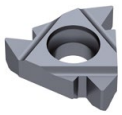
→ v_c Page 72

Right hand external thread turning insert

▲ Partial profile



CCN20 | CWK20



Designation	TP mm	INSL mm	PDX mm	PDY mm	ER 71 206 ...	ER 71 206 ...
16 ER A60	0,5 - 1,5	16	0,8	0,9	**240**	**640**
16 ER G60	1,75 - 3	16	1,2	1,7	**242**	**642**
16 ER AG60	0,5 - 3	16	1,2	1,7	**244**	**644**
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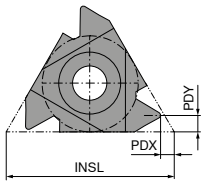
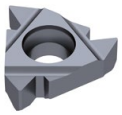
→ v_c Page 72

Left hand external thread turning insert

▲ Partial profile



CCN20 | CWK20



Designation	TP mm	INSL mm	PDX mm	PDY mm	EL 71 208 ...	EL 71 208 ...
16 EL A60	0,5 - 1,5	16	0,8	0,9	**240**	**640**
16 EL G60	1,75 - 3	16	1,2	1,7	**242**	**642**
16 EL AG60	0,5 - 3	16	1,2	1,7	**244**	**644**
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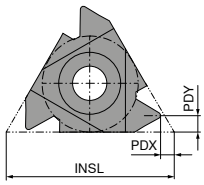
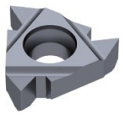
→ v_c Page 72

Right hand internal thread turning insert

▲ Partial profile

CCN20 CWK20





Designation	TP mm	INSL mm	PDX mm	PDY mm	IR 71 210 ...	IR 71 210 ...
11 IR A60	0,5 - 1,5	11	0,8	0,9	**210**	**610**
16 IR A60	0,5 - 1,5	16	0,8	0,9	**240**	**640**
16 IR G60	1,75 - 3	16	1,2	1,7	**242**	**642**
16 IR AG60	0,5 - 3	16	1,2	1,7	**244**	**644**
P					●	
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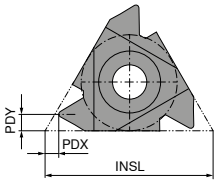
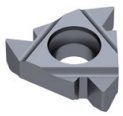
→ v_c Page 72

Left hand internal thread turning insert

▲ Partial profile

CCN20 CWK20





Designation	TP mm	INSL mm	PDX mm	PDY mm	IL 71 212 ...	IL 71 212 ...
11 IL A60	0,5 - 1,5	11	0,8	0,9	**210**	**610**
16 IL A60	0,5 - 1,5	16	0,8	0,9	**240**	**640**
16 IL G60	1,75 - 3	16	1,2	1,7	**242**	**642**
16 IL AG60	0,5 - 3	16	1,2	1,7	**244**	**644**
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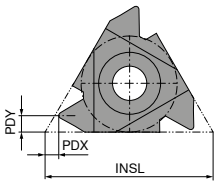
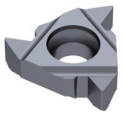
→ v_c Page 72

Right hand external thread turning insert

▲ Partial profile



CCN20 | CWK20



Designation	TPI 1/"	INSL mm	PDX mm	PDY mm	ER 71 200 ...	ER 71 200 ...
16 ER A55	48 - 16	16	0,8	0,9	**240**	**640**
16 ER G55	14 - 8	16	1,2	1,7	**242**	**642**
16 ER AG55	48 - 8	16	1,2	1,7	**244**	**644**
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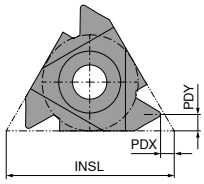
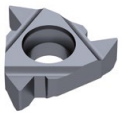
→ v_c Page 72

Left hand external thread turning insert

▲ Partial profile



CCN20 | CWK20



Designation	TPI 1/"	INSL mm	PDX mm	PDY mm	EL 71 202 ...	EL 71 202 ...
16 EL A55	48 - 16	16	0,8	0,9	**240**	**640**
16 EL AG55	48 - 8	16	1,2	1,7	**244**	**644**
16 EL G55	14 - 8	16	1,2	1,7	**242**	**642**
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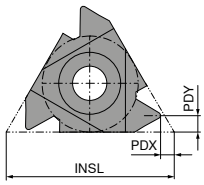
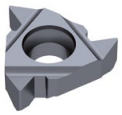
→ v_c Page 72

Right hand internal thread turning insert

▲ Partial profile



CCN20 CWK20



Designation	TPI 1/"	INSL mm	PDX mm	PDY mm	IR 71 204 ...	IR 71 204 ...
11 IR A55	48 - 16	11	0,8	0,9	**210**	**610**
16 IR A55	48 - 16	16	0,8	0,9	**240**	**640**
16 IR AG55	48 - 8	16	1,2	1,7	**244**	**644**
16 IR G55	14 - 8	16	1,2	1,7	**242**	**642**
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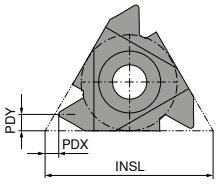
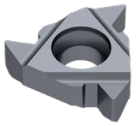
→ v_c Page 72

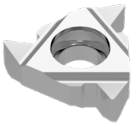
Left hand internal thread turning insert

▲ Partial profile



CCN20 CWK20





Designation	TPI 1/"	INSL mm	PDX mm	PDY mm	IL 71 203 ...	IL 71 203 ...
11 IL A55	48 - 16	11	0,8	0,9	**210**	**610**
16 IL A55	48 - 16	16	0,8	0,9	**240**	**640**
16 IL AG55	48 - 8	16	1,2	1,7	**244**	**644**
16 IL G55	14 - 8	16	1,2	1,7	**242**	**642**
P					●	
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K					●	●
N						●
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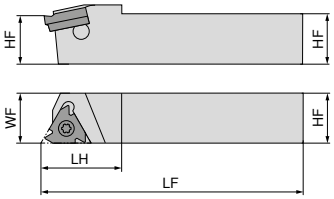
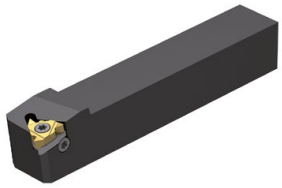
Standard External Thread Turning Holder

▲ Tool Holder with Approach Angle ß = 1,5°





Illustrations show right-hand versions

Designation	HF mm	WF mm	LF mm	LH mm	Insert	torque moment Nm	Left-hand 71 281 ...	Right-hand 71 280 ...
SE R/L 08 08 H11	8	11	100	16	11 ..	1,3	**908** [1]	**908** [1]
SE R/L 10 10 H11	10	12	100	18	11 ..	1,3	**910** [1]	**910** [1]
SE R/L 12 12 K11	12	12	125	20	11 ..	1,3	**912** [1]	**912** [1]
SE R/L 12 12 F16	12	16	80	22	16 ..	3,5	**012**	**012**
SE R/L 16 16 H16	16	16	100	25	16 ..	3,5	**016**	**016**
SE R/L 20 20 K16	20	20	125	30	16 ..	3,5	**020**	**020**
SE R/L 25 25 M16	25	25	150	30	16 ..	3,5	**025**	**025**
SE R/L 32 32 P16	32	32	170	30	16 ..	3,5	**032**	**032**

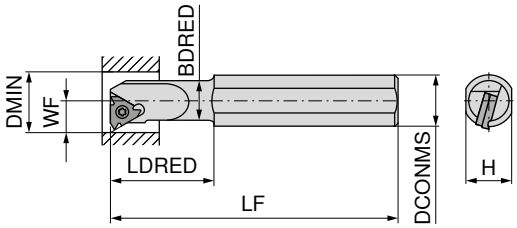
1) without shim

Spare parts for Article no.		Shim 71 950 ...	Screw-U 71 950 ...	Key D 80 950 ...	Clamping screw 71 950 ...
71 280 908 / 71 281 908				T08	**110**	**230**
71 280 910 / 71 281 910				T08	**110**	**230**
71 280 912 / 71 281 912				T08	**110**	**230**
71 280 012	ER 16 / IL 16	**121**	**234**	T10	**112**	**231**
71 281 012	EL 16 / IR 16	**129**	**234**	T10	**112**	**231**
71 280 016	ER 16 / IL 16	**121**	**234**	T10	**112**	**231**
71 281 016	EL 16 / IR 16	**129**	**234**	T10	**112**	**231**
71 280 020	ER 16 / IL 16	**121**	**234**	T10	**112**	**231**
71 281 020	EL 16 / IR 16	**129**	**234**	T10	**112**	**231**
71 280 025	ER 16 / IL 16	**121**	**234**	T10	**112**	**231**
71 281 025	EL 16 / IR 16	**129**	**234**	T10	**112**	**231**
71 280 032	ER 16 / IL 16	**121**	**234**	T10	**112**	**231**
71 281 032	EL 16 / IR 16	**129**	**234**	T10	**112**	**231**

Shims for correction of helix angle see page → **Page 70.**

Standard Internal Thread Turning Holder

▲ Tool Holder with Approach Angle ß = 1,5°



Illustrations show right-hand versions

Designation	H mm	LF mm	LDRED mm	DCONMS mm	BDRED mm	WF mm	DMIN mm	Insert	torque moment Nm	Left-hand 71 283 ...	Right-hand 71 282 ...
SI R 0010 H11	9,0	100	25	10	9,5	7,4	12	11 ..	1,3		**011** [1]
SI R/L 0010 K11	14,0	125	25	16	10,0	7,4	12	11 ..	1,3	**010** [1]	**010** [1]
SI R 0013 L11	14,0	140	32	16	12,0	8,9	15	11 ..	1,3		**013** [1]
SI R/L 0013 M16	14,0	150	32	16	13,0	10,2	16	16 ..	3,5	**015** [1]	**015** [1]
SI R/L 0016 P16	18,0	170	40	20	15,0	11,7	19	16 ..	3,5	**016** [1]	**016** [1]
SI R/L 0020 P16	18,0	170	40	20	19,5	13,7	24	16 ..	3,5	**020**	**020**
SI R 0025 R16	22,6	200	40	25	24,5	16,2	29	16 ..	3,5		**026**
SI R/L 0032 S16	28,8	250	50	32	31,5	19,7	36	16 ..	3,5	**032**	**032**
SI R 0040 T16	36,0	300	50	40	39,5	23,7	44	16 ..	3,5		**040**

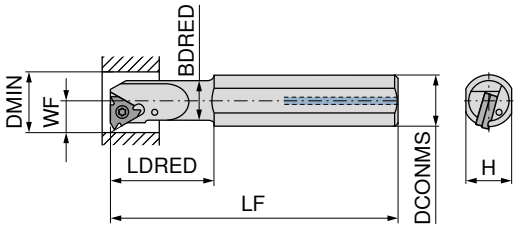
1) without shim

Spare parts for Article no.		Shim 71 950 ...	Screw-U 71 950 ...	Key D 80 950 ...	Clamping screw 71 950 ...
71 282 011				T08 **110**	**230**
71 282 010 / 71 283 010				T08 **110**	**230**
71 282 013				T08 **110**	**230**
71 282 015 / 71 283 015				T10 **112**	**236**
71 282 016 / 71 283 016				T10 **112**	**236**
71 282 020	EL 16 / IR 16	**129**	**234**	T10 **112**	**231**
71 283 020	ER 16 / IL 16	**121**	**234**	T10 **112**	**231**
71 282 026	EL 16 / IR 16	**129**	**234**	T10 **112**	**231**
71 282 032	EL 16 / IR 16	**129**	**234**	T10 **112**	**231**
71 283 032	ER 16 / IL 16	**121**	**234**	T10 **112**	**231**
71 282 040	EL 16 / IR 16	**129**	**234**	T10 **112**	**231**

Shims for correction of helix angle see page → **Page 70.**

Standard Internal Thread Turning Holder with thro' coolant

▲ Tool Holder with Approach Angle ß = 1,5°



Illustrations show right-hand versions

Designation	H mm	LF mm	LDRED mm	DCONMS mm	BDRED mm	WF mm	DMIN mm	Insert	torque moment Nm	Left-hand 71 283 ...	Right-hand 71 282 ...
SI R 0010 M11CB	9,0	150	25	10	9,5	7,4	12	11 ..	1,3		510 2)
SI R 0012 P11CB	11,0	170	30	12	11,5	8,4	15	11 ..	1,3		512 2)
SI R/L 0010 K11B	14,0	125	25	16	10,0	7,4	12	11 ..	1,3	310	310
SI R/L 0013 M16B	14,0	150	32	16	13,0	10,2	16	16 ..	3,5	315	315
SI R 0016 P16B	18,0	170	40	20	16,0	11,7	19	16 ..	3,5		316
SI R 0020 P16B	18,0	170	40	20	19,5	13,7	24	16 ..	3,5		320 1)
SI R/L 0032 S16B	28,8	250	50	32	31,5	19,7	36	16 ..	3,5	332 1)	332 1)

1) with shim seat
2) Carbide version

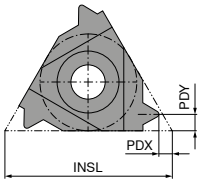
Spare parts for Article no.		Shim 71 950 ...	Screw-U 71 950 ...		Key D 80 950 ...	Clamping screw 71 950 ...
71 282 510				T08	110	230
71 282 512				T08	110	230
71 282 310 / 71 283 310				T08	110	230
71 282 315 / 71 283 315				T10	112	236
71 282 316				T10	112	236
71 282 320	EL 16 / IR 16	129	234	T10	112	231
71 282 332	EL 16 / IR 16	129	234	T10	112	231
71 283 332	ER 16 / IL 16	121	234	T10	112	231

Shims for correction of helix angle see page → **Page 70.**

Right hand internal thread turning insert – Mini size 06

▲ Full profile
▲ Thread production from diameter 6 mm

M | 60°



NEW

CCN1525 | CCN2520

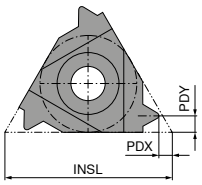
Designation	TP mm	PDX mm	PDY mm	INSL mm	IR 71 271 ...	IR 71 224 ...
06 IR 0,5	0,50	0,9	0,5	6	**110**	**35700**
06 IR 0,75	0,75	0,8	0,5	6	**112**	**36100**
06 IR 1,0	1,00	0,7	0,6	6	**114**	**36500**
06 IR 1,25	1,25	0,6	0,6	6	**116**	**36700**
P					●	○
M					●	●
K					●	○
N					○	
S						●
H						○
O					○	

→ v_c Page 72

Right hand internal thread turning insert – Mini size 06

▲ Full profile
▲ Thread production from diameter 6 mm

BSW | 55°



NEW

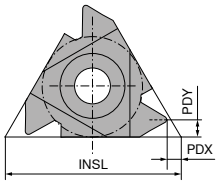
CCN1525 | CCN2520

Designation	TPI 1/"	PDX mm	PDY mm	INSL mm	IR 71 230 ...	IR 71 230 ...
06 IR 26	26	0,7	0,6	6	**13500**	**33500**
06 IR 22	22	0,6	0,6	6	**13100**	**33100**
06 IR 20	20	0,6	0,7	6	**12900**	**32900**
06 IR 18	18	0,6	0,7	6	**12500**	**32500**
P					●	○
M					●	●
K					●	○
N					○	
S						●
H						○
O					○	

→ v_c Page 72

Right hand internal thread turning insert – Mini size 06

▲ Partial profile
▲ Thread production from diameter 6 mm



NEW

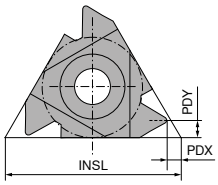
CCN1525 | CCN2520

Designation	TP mm	INSL mm	PDX mm	PDY mm	IR 71 274 ... 210	IR 71 272 ... 30000
06 IR A60	0,5 - 1,25	6	0,6	0,6		
P					●	○
M					●	●
K					●	○
N					○	
S						●
H						○
O					○	

→ v_c Page 72

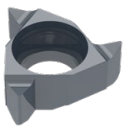
Right hand internal thread turning insert – Mini size 06

▲ Partial profile
▲ Thread production from diameter 6 mm



NEW

CCN1525 | CCN2520

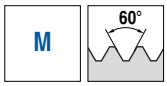


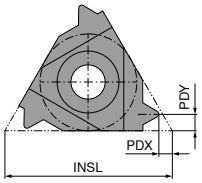
Designation	TPI 1/"	INSL mm	PDX mm	PDY mm	IR 71 272 ... 10100	IR 71 272 ... 30100
06 IR A55	48 - 20	6	0,5	0,6		
P					●	○
M					●	●
K					●	○
N					○	
S						●
H						○
O					○	

→ v_c Page 72

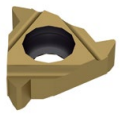
Right hand internal thread turning insert – Mini size 08

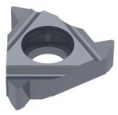
▲ Full profile
▲ Thread production from diameter 8 mm





NEW CCN1525 | NEW CCN2520





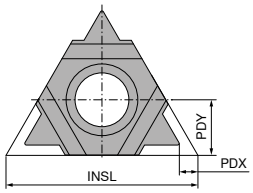
Designation	TP mm	PDX mm	PDY mm	INSL mm	IR 71 224 ...	IR 71 224 ...
08 IR 0,5	0,50	0,6	0,5	8	**14300**	**34300**
08 IR 0,75	0,75	0,6	0,5	8	**13700**	**33700**
08 IR 1,0	1,00	0,6	0,6	8	**13300**	**33300**
08 IR 1,25	1,25	0,6	0,7	8	**13100**	**33100**
08 IR 1,5	1,50	0,6	0,7	8	**12900**	**32900**
08 IR 1,75	1,75	0,6	0,8	8	**12700**	**32700**
08 IN 2,0	2,00	0,9	4,0	8	**12500** [1]	**32500** [1]
P					●	○
M					●	●
K					●	○
N					○	
S						●
H						○
O					○	

1) Neutral version (N)

→ v_c Page 72

Right hand internal thread turning insert – Mini size 08

▲ Partial profile
▲ Thread production from diameter 8 mm



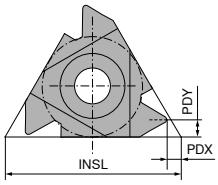
NEW CCN1525 | NEW CCN2520

Designation	TP mm	INSL mm	PDX mm	PDY mm	IN 71 273 ...	IN 71 273 ...
08 IN M60	1,75 - 2,0	8	0,8	4	**10800**	**30800**
P					●	○
M					●	●
K					●	○
N					○	
S						●
H						○
O					○	

→ v_c Page 72

Right hand internal thread turning insert – Mini size 08

▲ Partial profile
▲ Thread production from diameter 8 mm



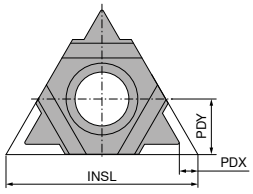
NEW CCN1525 | NEW CCN2520

Designation	TP mm	PDX mm	PDY mm	INSL mm	IR 71 272 ...	IR 71 272 ...
08 IR A60	0,5 - 1,25	0,6	0,6	8	**10600**	
08 IR A60	0,5 - 1,5	0,6	0,7	8		**30600**
P					●	○
M					●	●
K					●	○
N					○	
S						●
H						○
O					○	

→ v_c Page 72

Right hand internal thread turning insert – Mini size 08

▲ Partial profile
▲ Thread production from diameter 8 mm



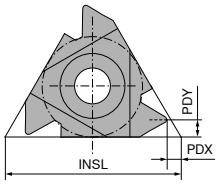
NEW CCN1525 | NEW CCN2520

Designation	TPI 1/"	INSL mm	PDX mm	PDY mm	IN 71 273 ...	IN 71 273 ...
08 IN M55	14 - 11	8	0,9	4	**10900**	
P					●	○
M					●	●
K					●	○
N					○	
S						●
H						○
O					○	

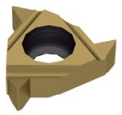
→ v_c Page 72

Right hand internal thread turning insert – Mini size 08

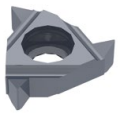
▲ Partial profile
▲ Thread production from diameter 8 mm



NEW
CCN1525



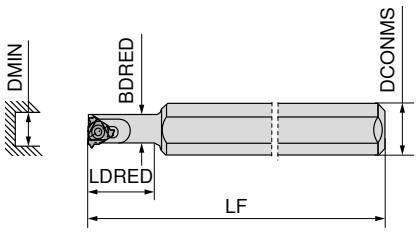
NEW
CCN2520



Designation	TPI 1/"	INSL mm	PDX mm	PDY mm	IR 71 272 ... 10700	IR 71 272 ... 30700
08 IR A55	48 - 16	8	0,6	0,7		
P					●	○
M					●	●
K					●	○
N					○	
S						●
H						○
O					○	

→ v_c Page 72

Right Hand Internal Thread Holder – Mini size 06



NEW

Right-hand

71 282 ...

Designation	LF mm	LDRED mm	DCONMS mm	BDRED mm	DMIN mm	Insert	torque moment Nm	
SI R 0005 H06	100	12	12	5,1	6	06 ..	0,6	**00500**
SI R 0005 H06 C	100	26	6	5,1	6	06 ..	0,6	**10500**[1]

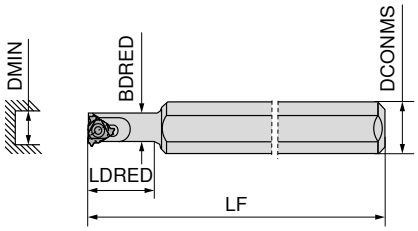
1) Solid Carbide Shank with Thro' Coolant


Key D


Clamping screw

Spare parts for Article no.		**80 950 ...**	**71 950 ...**
71 282 00500	T06	**108**	**23800**
71 282 10500	T06	**108**	**23800**

Right Hand Internal Thread Holder – Mini size 08



NEW

Right-hand

71 282 ...

Designation	LF mm	LDRED mm	DCONMS mm	BDRED mm	DMIN mm	Insert	torque moment Nm	
SI R 0007 K08	125	18	16	6,6	7,8	08 ..	0,6	**00700**
SI R 0007 K08C	125	30	8	6,6	7,8	08 ..	0,6	**10700**[2]
SI R 0007 K08U	125	31	16	7,3	9,0	08 .N	0,6	**00800**[1]

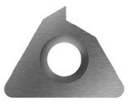
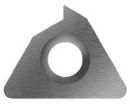
1) Neutral insert indicated by marking (N)
2) Solid Carbide Shank with Thro' Coolant

Key D


Clamping screw

Spare parts for Article no.		**80 950 ...**	**71 950 ...**
71 282 00700	T06	**108**	**23900**
71 282 10700	T06	**108**	**23900**
71 282 00800	T06	**108**	**23900**

Shims for Standard Threading Inserts

Pitch-angle β	AE 16 ER 16 / IL 16 71 950 ...		AI 16 EL 16 / IR 16 71 950 ...	
+ 4,5°		118		126
+ 3,5°		119		127
+ 2,5°		120		128
+ 1,5°		121		129
+ 0,5°		122		130
0°		123		131
- 0,5°		124		132
- 1,5°		125		133

Material examples for cutting data tables

	Material sub-group	Index	Composition / Structure / Heat treatment		Tensile strength N/mm²* / HB / HRC	Material number	Material designation	Material number	Material designation
P	Unalloyed steel	P.1.1	< 0,15 % C	Annealed	420 N/mm² / 125 HB	1.0401	C15	1.1141	Ck15
		P.1.2	< 0,45 % C	Annealed	640 N/mm² / 190 HB	1.1191	C45E	1.0718	9SMnPb28
		P.1.3		Tempered	840 N/mm² / 250 HB	1.1191	C45E	1.0535	C55
		P.1.4	< 0,75 % C	Annealed	910 N/mm² / 270 HB	1.1223	C60R	1.0535	C55
		P.1.5		Tempered	1010 N/mm² / 300 HB	1.1223	C60R	1.0727	45S20
	Low-alloy steel	P.2.1		Annealed	610 N/mm² / 180 HB	1.7131	16MnCr5	1.6587	17CrNiMo6
		P.2.2		Tempered	930 N/mm² / 275 HB	1.7131	16MnCr5	1.6587	17CrNiMo6
		P.2.3		Tempered	1010 N/mm² / 300 HB	1.7225	42CrMo4	1.3505	100Cr6
		P.2.4		Tempered	1200 N/mm² / 375 HB	1.7225	42CrMo4	1.3505	100Cr6
	High-alloy steel and high-alloy tool steel	P.3.1		Annealed	680 N/mm² / 200 HB	1.4021	X20Cr13	1.4034	X46Cr13
		P.3.2		Hardened and tempered	1100 N/mm² / 300 HB	1.2343	X38CrMoV5-1	1.4034	X46Cr13
		P.3.3		Hardened and tempered	1300 N/mm² / 400 HB	1.2343	X38CrMoV5-1	1.4034	X46Cr13
	Stainless steel	P.4.1	Ferritic / martensitic	Annealed	680 N/mm² / 200 HB	1.4016	X6Cr17	1.2316	X36CrMo16
		P.4.2	Martensitic	Tempered	1010 N/mm² / 300 HB	1.4112	X90CrMoV18	1.2316	X36CrMo16
M	Stainless steel	M.1.1	Austenitic / austenitic-ferritic	Quenched	610 N/mm² / 180 HB	1.4301	X5CrNi18-10	1.4571	X6CrNiMoTi17-12-2
		M.2.1	Austenitic	Tempered	300 HB	1.4841	X15CrNiSi25-21	1.4539	X1NiCrMoCu25-20-5
		M.3.1	Austenitic / ferritic (Duplex)		780 N/mm² / 230 HB	1.4462	X2CrNiMoN22-5-3	1.4501	X2CrNiMoCuWN25-7-4
K	Grey cast iron	K.1.1	Pearlitic / ferritic		350 N/mm² / 180 HB	0.6010	GG-10	0.6025	GG-25
		K.1.2	Pearlitic (martensitic)		500 N/mm² / 260 HB	0.6030	GG-30	0.6045	GG-45
	Spherulitic graphite cast iron	K.2.1	Ferritic		540 N/mm² / 160 HB	0.7040	GGG-40	0.7060	GGG-60
		K.2.2	Pearlitic		845 N/mm² / 250 HB	0.7070	GGG-70	0.7080	GGG-80
	Malleable iron	K.3.1	Ferritic		440 N/mm² / 130 HB	0.8035	GTW-35-04	0.8045	GTW-45
		K.3.2	Pearlitic		780 N/mm² / 230 HB	0.8165	GTS-65-02	0.8170	GTS-70-02
N	Aluminium wrought alloy	N.1.1	Non-hardenable		60 HB	3.0255	Al99,5	3.3315	AlMg1
		N.1.2	Hardenable	Age-hardened	340 N/mm² / 100 HB	3.1355	AlCuMg2	3.2315	AlMgSi1
	Cast aluminium alloy	N.2.1	≤ 12 % Si, non-hardenable		250 N/mm² / 75 HB	3.2581	G-AlSi12	3.2163	G-AlSi9Cu3
		N.2.2	≤ 12 % Si, hardenable	Age-hardened	300 N/mm² / 90 HB	3.2134	G-AlSi5Cu1Mg	3.2373	G-AlSi9Mg
		N.2.3	> 12 % Si, non-hardenable		440 N/mm² / 130 HB		G-AlSi17Cu4Mg		G-AlSi18CuNiMg
	Copper and copper alloys (bronze/brass)	N.3.1	Free-machining alloys, PB > 1 %		375 N/mm² / 110 HB	2.0380	CuZn39Pb2 (Ms58)	2.0410	CuZn44Pb2
		N.3.2	CuZn, CuSnZn		300 N/mm² / 90 HB	2.0331	CuZn15	2.4070	CuZn28Sn1As
		N.3.3	CuSn, lead-free copper and electrolytic copper		340 N/mm² / 100 HB	2.0060	E-Cu57	2.0590	CuZn40Fe
	Magnesium alloys	N.4.1	Magnesium and magnesium alloys		70 HB	3.5612	MgAl6Zn	3.5312	MgAl3Zn
S	Heat-resistant alloys	S.1.1	Fe - basis	Annealed	680 N/mm² / 200 HB	1.4864	X12NiCrSi 36-16	1.4865	G-X40NiCrSi38-18
		S.1.2		Age-hardened	950 N/mm² / 280 HB	1.4980	X6NiCrTiMoVB25-15-2	1.4876	X10NiCrAlTi32-20
		S.2.1	Ni or Co basis	Annealed	840 N/mm² / 250 HB	2.4631	NiCr20TiAl (Nimonic80A)	3.4856	NiCr22Mo9Nb
		S.2.2		Age-hardened	1180 N/mm² / 350 HB	2.4668	NiCr19Nb5Mo3 (Inconel 718)	2.4955	NiFe25Cr20NbTi
		S.2.3		Cast	1080 N/mm² / 320 HB	2.4765	CoCr20W15Ni	1.3401	G-X120Mn12
	Titanium alloys	S.3.1	Pure titanium		400 N/mm²	3.7025	Ti99,8	3.7034	Ti99,7
		S.3.2	Alpha + beta alloys	Age-hardened	1050 N/mm² / 320 HB	3.7165	TiAl6V4	Ti-6246	Ti-6Al-2Sn-4Zr-6Mo
		S.3.3	Beta alloys		1400 N/mm² / 410 HB	Ti555.3	Ti-5Al-5V-5Mo-3Cr	R56410	Ti-10V-2Fe-3Al
H	Hardened steel	H.1.1		Hardened and tempered	46–55 HRC				
		H.1.2		Hardened and tempered	56–60 HRC				
		H.1.3		Hardened and tempered	61–65 HRC				
		H.1.4		Hardened and tempered	66–70 HRC				
	Chilled iron	H.2.1		Cast	400 HB				
	Hardened cast iron	H.3.1		Hardened and tempered	55 HRC				
O	Non-metal materials	O.1.1	Plastics, duroplastic		≤ 150 N/mm²				
		O.1.2	Plastics, thermoplastic		≤ 100 N/mm²				
		O.2.1	Aramid fibre-reinforced		≤ 1000 N/mm²				
		O.2.2	Glass/carbon-fibre reinforced		≤ 1000 N/mm²				
		O.3.1	Graphite						

*** Tensile strength**

2

Cutting data standard values

	Mini CCN1525	Mini CCN2520	CCN20	CWK20
Index	v_c in m/min			
P.1.1	**80**	120	**120**	
P.1.2	**80**	120	**120**	
P.1.3	**80**	120	**120**	
P.1.4	**80**	80	**80**	
P.1.5	**70**	80	**80**	
P.2.1	**50**	80	**80**	
P.2.2	**50**	80	**80**	
P.2.3	**50**	80	**80**	
P.2.4	**50**	80	**80**	
P.3.1	**50**	50	**50**	
P.3.2	**50**	50	**50**	
P.3.3	**50**	50	**50**	
P.4.1	**50**	50	**50**	
P.4.2	**50**	50	**50**	
M.1.1	**40**	**90**	**60**	40
M.2.1	**40**	**90**	**60**	40
M.3.1	**40**	**90**	**60**	40
K.1.1	**60**	120	**120**	**80**
K.1.2	**60**	120	**120**	**80**
K.2.1	**60**	100	**100**	**70**
K.2.2	**60**	100	**100**	**70**
K.3.1	**50**	100	**100**	**70**
K.3.2	**50**	100	**100**	**70**
N.1.1	500			**150**
N.1.2	300			**150**
N.2.1	120			**120**
N.2.2	120			**120**
N.2.3	120			**120**
N.3.1	110			**100**
N.3.2	150			**100**
N.3.3	150			**100**
N.4.1	300			**150**
S.1.1		**25**	20	20
S.1.2		**25**	20	20
S.2.1		**25**	20	20
S.2.2		**25**	20	20
S.2.3		**25**	20	20
S.3.1		**35**	30	30
S.3.2		**35**	30	30
S.3.3		**35**	30	30
H.1.1		35	30	
H.1.2		35	30	
H.1.3		35	30	
H.1.4		35	30	
H.2.1		25	20	
H.3.1		25	20	
O.1.1	150			
O.1.2	150			
O.2.1	150			
O.2.2	150			
O.3.1	150			

The cutting data depends extremely on the external conditions, the material and machine type.
The indicated values are possible values which have to be increased or reduced according to the application conditions.

Pitch angle

Important Information about Standard Shims

- the pitch angle should be determined through calculation or by using the chart below.
- the standard threading holder is supplied with a 1.5 ° inclined insert seat and a shim without angular correction.
  Hence the Tool holders are delivered with an angle of inclination β of 1.5 °.

Without the appropriate correction of the helix angle, the following may occur

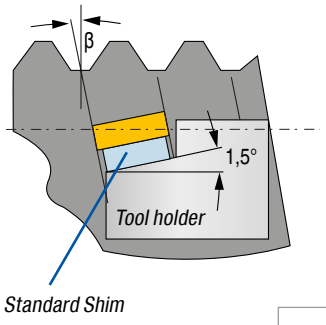
- the profile will be distorted.
- insufficient clearance angle.
- the tool life of the insert is greatly reduced.

Method 1: Calculation

Calculating the helix angle β:

$$\beta = \frac{20 \times TP}{DMIN}$$

20 = constant
β = Helix angle (°)
TP = Pitch (mm)
DMIN = Nominal diameter (mm)



Example calculation

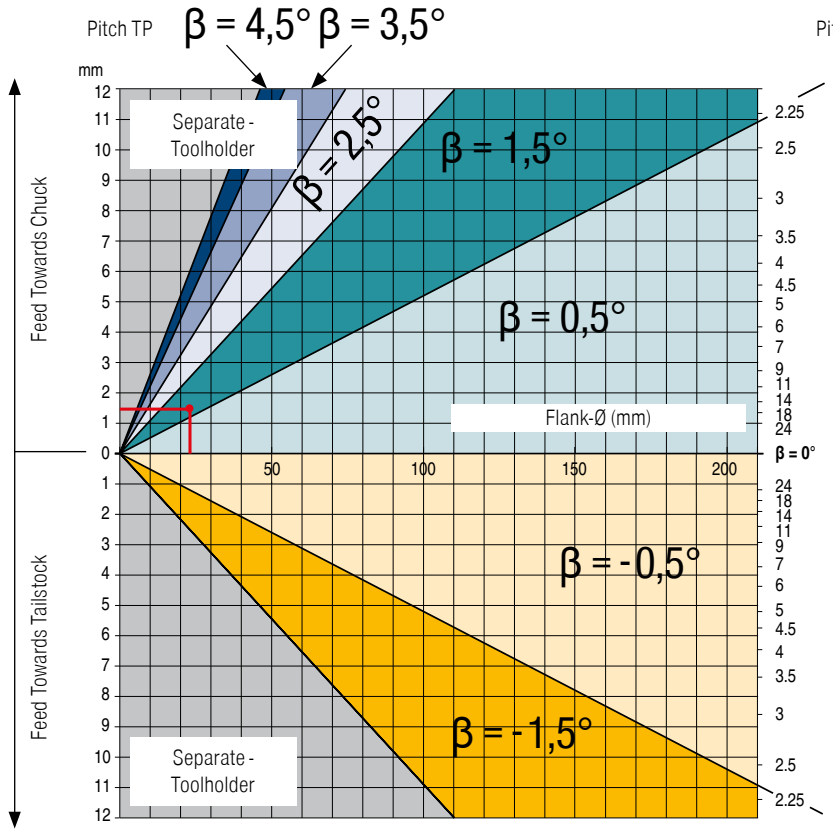
External thread M24 x 1.5
Feed towards chuck
DMIN = Nominal Ø: M24 = 24 mm
TP = Pitch: 1.5 mm

$$\beta = \frac{20 \times 1{,}5 \text{ mm}}{24 \text{ mm}}$$

β = 1,25°

Method 2: Diagram

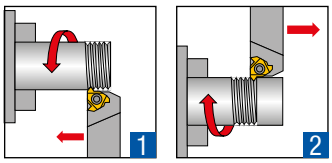
From the flank Ø in the diagram, a line is drawn vertically upwards until it intersects with the line of the pitch of the thread to be produced. In the color-coded region in which it is now, a horizontal line to the edge of the chart indicates the appropriate factor.



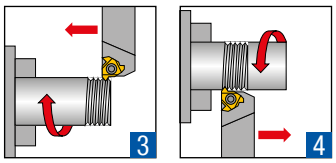
calculated pitch angle β value	Shim
0,0°–0,99°	0,5°
1,0°–1,99°	1,5°
2,0°–2,99°	2,5°
3,0°–3,99°	3,5°
4,0°–4,99°	4,5°
0,0°–(-0,99°)	-0,5°
-1,0°–(-1,99°)	-1,5°

Thread turning methods

External right-hand thread

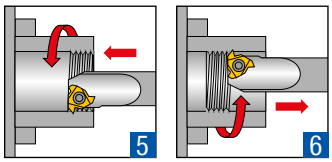


External left-hand thread

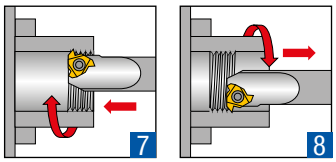


The machining examples 2, 4, 6 and 8 require negative shims!
These shims can be found on → **Page 70.**

Internal right-hand thread

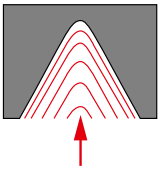


Internal left-hand thread



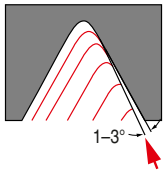
Thread infeed methods

Radial Infeed



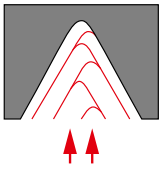
- for pitches less than 1.5 mm
- for short chipping materials
- for machining hardened materials
- simple and quick method

Flank infeed



- for pitches larger than 1.5 mm
- with radial penetration the effective cutting edge length is too large, which may lead to chattering
- with trapezoidal and ACME threads, chip flow on three sides can be problematic

Alternating infeed



- with large pitches
- for long chipping materials
- uniform wear of the cutting edges
- complicated programming process

Recommended number of cuts and cutting depths

Standard Threading Inserts

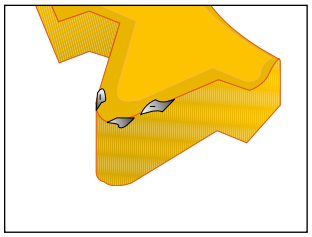
Pitch (TP/TPI)	mm	0,50	0,75	1,00	1,25	1,50	1,75	2,00	2,50	3,00	3,50	4,00	4,50	5,00	5,50	6,00	8,00
	TPI	48	32	24	20	16	14	12	10	8	7	6	5.5	5	4.5	4	3
Number of passes		4–6	4–7	4–8	5–9	6–10	7–12	7–12	8–14	9–16	10–18	11–18	11–19	12–20	12–20	12–20	15–24
Number of passes	**(CCN7525)**	3–4	3–4	3–5	4–6	5–6	6–8	6–8	8–10								
Number of passes	**Mini Inserts**	6–9	6–11	6–12	8–14	9–15	11–18	11–18									

Multi edge thread turning insert

Standard	Insert	Insert size		Pitch (TP)	Number of flutes (NT)	Designation	Passes	Cutting depth per pass		
		IC	L mm					1	2	3
ISO external	M	3/8"	16	1,0 mm	3	3 ER 1.0 ISO 3M	2	0,38	0,25	
ISO external	M	3/8"	16	1,5 mm	2	3 ER 1.5 ISO 2M	3	0,42	0,30	0,20

Troubleshooting

Edge chipping



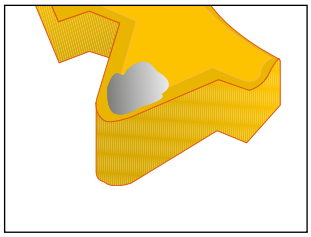
Cause

- Common in stainless materials
- Incorrect grade

Remedy

- Minimize tool overhang length
- Check that the insert is clamped
- Minimize vibration
- Use a tougher grade

Cratering



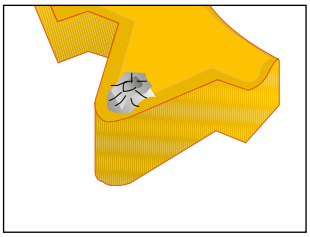
Cause

- Common in stainless materials
- Cutting speed too high
- Incorrect grade

Remedy

- Apply coolant
- Reduce depth of cut
- Use a harder grade

Built-up edge



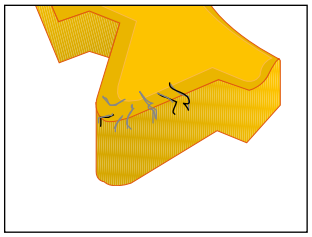
Cause

- Cutting speed too low
- Incorrect grade

Remedy

- Apply coolant
- Increase cutting speed
- Use a tougher grade

Thermal cracking



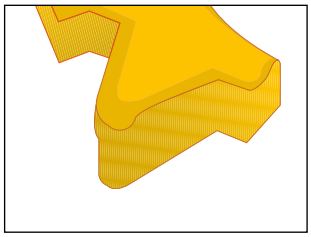
Cause

- Insufficient coolant
- Cutting speed too high
- Incorrect grade

Remedy

- Apply coolant
- Reduce cutting speed
- Use a tougher grade

Plastic deformation



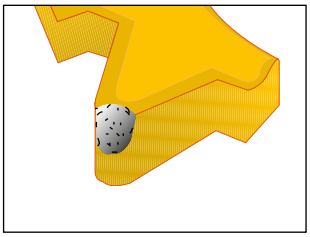
Cause

- Infeed too large
- Insufficient coolant
- Cutting speed too high
- Incorrect grade

Remedy

- Apply coolant
- Reduce depth of cut
- Reduce cutting speed
- Use a harder grade

Breakage



Cause

- Infeed too large
- Insufficient coolant
- Plastic deformation
- Instability
- Helix angle not appropriate
- Incorrect grade

Remedy

- Reduce depth of cut
- Check machine and tool stability
- Reduce cutting speed
- Check helix angle
- Use a tougher grade

Designation Key

Inserts

16	E	R	AG 60	
Insert size	Insert	Cutting design	Pitch (TP/TPI)	Number of flutes (NT)

Insert size

L	**I.C.**
06	5/32"
08	3/16"
11	1/4"
16	3/8"
22	1/2"

Insert

E	External
I	Internal

Cutting design

R	Right-hand
L	Left-hand
N	neutral

Pitch (TP/TPI)

Full profile

	mm	**G/Z**
	0,35	72–4

Partial profile

	mm	**G/Z**
A	0,5–1,5	48–16
AG	0,5–3,0	48–8
M	1,7–2,0	14–11
G	1,75–3,0	14–8
N	3,5–5,0	7–5
U	5,5–8,0	4,5–3,5

Flank angle
55°
60°

Number of flutes (NT)

2M	Multi-tooth insert with 2 teeth
3M	Multi-tooth insert with 3 teeth

Example

16 ER AG 60
ER16 right hand – external insert with a pitch of 0.5-3.0 mm

Tool holder

SE	R	1212	F	16	
Tool holder	Cutting design	Shank cross-section	Overall length	Insert size	Properties

Tool holder

SE	External
SI	Internal

Cutting design

R	Right-hand
L	Left-hand

Shank cross-section

Example	
External holder square shank	1212 = 12 mm x 12 mm
Internal boring bar	0020 = 20 mm Diameter

Overall length

	mm
F	80
H	100
K	125
L	140
M	150
P	170
R	200
S	250
T	300

Insert size

L	**I.C.**
06	5/32"
08	3/16"
11	1/4"
16	3/8"
22	1/2"

Properties

B	with thro' coolant
C	with carbide shank
U	neutral holder

Example

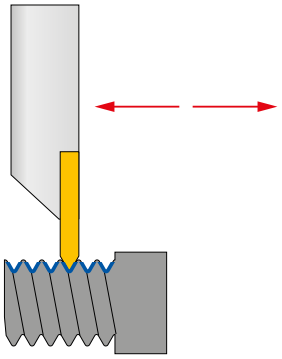
SE R 1212 F 16
Right hand holder with 12 x 12 mm square shank, overall length of 80 mm, only suitable for an ER16 threading insert

Overview Thread Turning Types

Further thread turning options can be found in the chapters below.

Thread turning for automatic lathes

TiAlN coated carbide insert for external threading on automatic lathes.



Carbide indexable inserts with a pitch of 0.25 mm–2.0 with appropriate tool holders can be found in chapter → **Turning**.

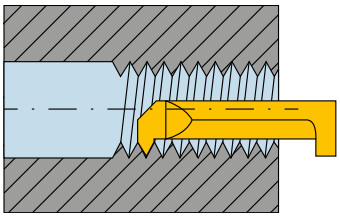
TC Threading System

Mono and Modular Systems for Internal and External Thread Turning.

TC thread inserts with appropriate tool holders can be found in chapter → **Grooving**.

UltraMini

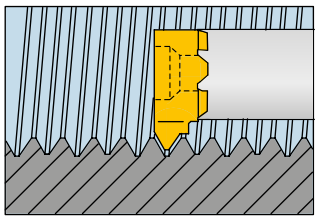
TiN and TiAlN coated carbide cutting inserts for internal threading from $D_{min.}$ Ø 2.4 mm.



Cutting inserts for thread turning and other applications with the appropriate tool holders can be found in chapter → **Miniature turning**.

MiniCut

TiALN carbide inserts for internal threading from $D_{min.}$ Ø 8 mm.



Cutting inserts for thread turning and other applications with the appropriate tool holders can be found in chapter → **Miniature turning**.

Coatings and Grades

HSS taps

vap.
- Vaporised
- Vaporisation (vapour-deposition) prevents cold welds from forming on the tool and increases the surface hardness and thus the wear resistance

vap. + nitr.
- Vaporized + Nitrated
- Combination of increased surface hardness and lubricant carrier

AlTiNHD
- AlTiN-based nanolayer hard material coating
- Maximum application temperature 500 °C

TiCN
- TiCN multilayer coating
- Maximum application temperature: 450 °C

TiN
- TiN coating
- Maximum application temperature: 450 °C

Thread milling cutters

CWX500
- Carbide, TiAlN-coated
- The universal carbide grade for almost all materials

Ti500
- TiAlN-coating
- Maximum application temperature: 500 °C

Circular milling cutters

CWX500
- Carbide, TiAlN-coated
- The universal carbide grade for almost all materials

Thread turning

CWK20
- Carbide, uncoated
- ISO | M10 | **K10** | **N10** | S10
- The wear-resistant carbide grade for machining aluminium and other non-ferrous metals

CCN1525
- Carbide, TiN-coated
- ISO | **P25** | **M25** | **K25** | N25 | O25
- The coated carbide grade for machining steels and stainless steels at low cutting speeds

CCN20
- Carbide, TiAlN-coated
- ISO | **P20** | **M20** | **K20** | S20 | H20
- The all-round carbide grade for machining steels at low cutting speeds

CCN2520
- Carbide, TiAlN-coated
- ISO | P25 | **M25** | K25 | **S25** | H25
- The coated carbide grade for the machining of stainless steels at medium to high cutting speeds

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Smart solutions for efficient machining processes

Benefit from our innovative tool concepts, many years of experience and professional advice to increase your productivity. You can rely on us to implement your project successfully!

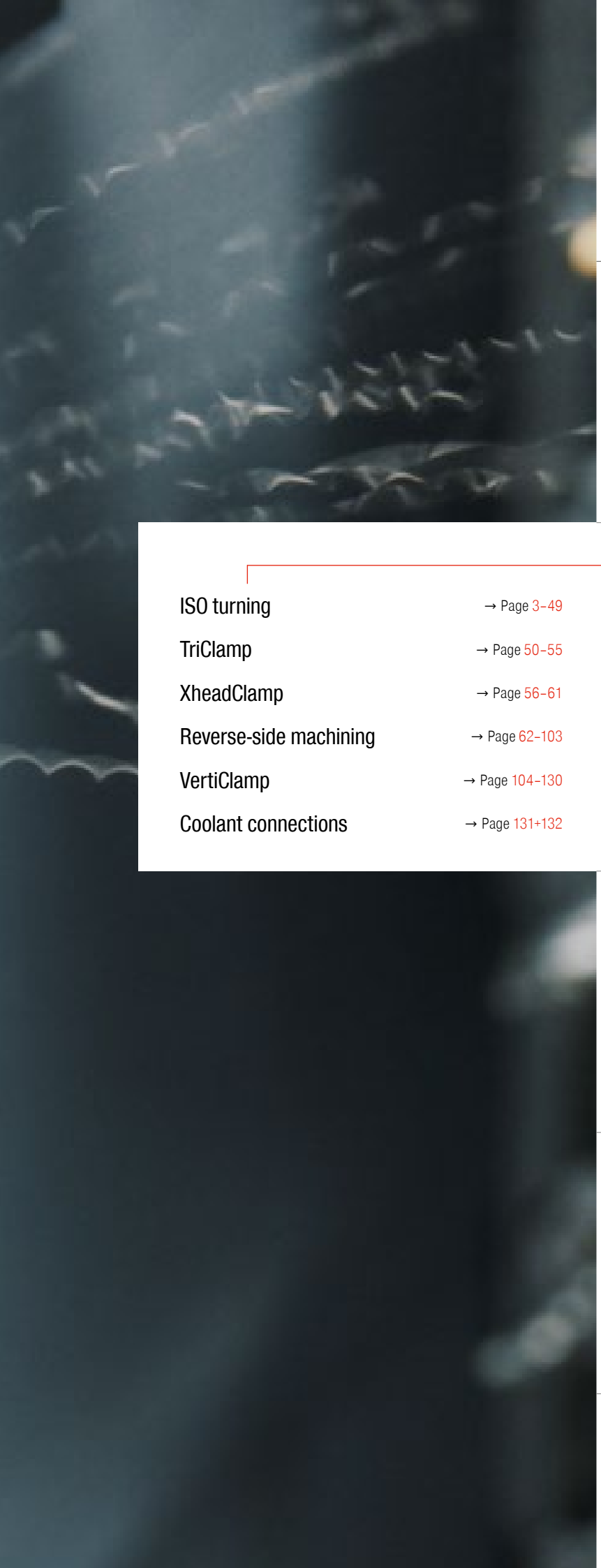


Table of contents

CERATIZIT \ Performance

Premium quality tools for high performance.

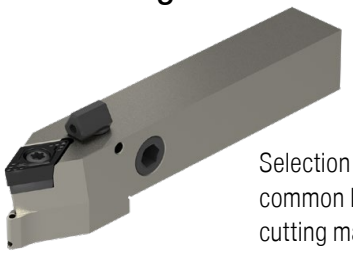
The premium quality tools from the **CERATIZIT Performance** product line have been designed for specific applications and are distinguished by their outstanding performance. If you make high demands on the performance of your production and want to achieve the very best results, we recommend the Premium tools in this product line.

WNT \ Performance

Premium quality tools for high performance.

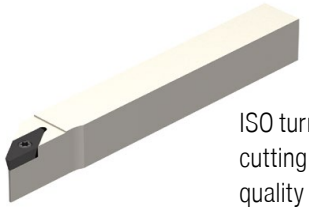
The premium quality tools from the **WNT Performance** product line have been designed for specific applications and are distinguished by their outstanding performance. If you make high demands on the performance of your production and want to achieve the very best results, we recommend the Premium tools in this product line.

ISO turning



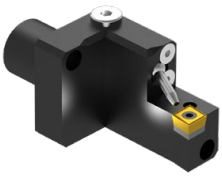
Selection of turning inserts with common ISO geometries in various cutting material grades.

TriClamp



ISO turning inserts with optimised cutting edge for improving the surface quality or increasing the feed rate.

Reverse-side machining

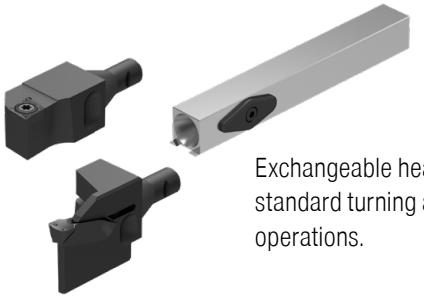


Flexible tool holder system for machining on the second spindle. There are modular, as well as monoblock tool holders available for turning, grooving, boring and threading on the back of the part.

VertiClamp

Specialised systems for use on sliding head lathes with vertically positioned indexable inserts.

XheadClamp



Exchangeable head system for standard turning and grooving operations.

Coding of the chip breakers

-M50

Inserts – Basic Type	Application range	Material		Chip breaker width
	F = Fine	1 = Steel	5 = Heat Resistant alloys	1 = Narrow
0 | N = Negative Inserts	M = Medium	2 = Stainless steel	6 = Hard	
5 | P = Positive Inserts	R = Rough	3 = Cast Iron	7 = Universal	
		4 = Non Ferrous Metals		9 = Wide

Detailed information on the chip breakers can be found in the technical appendix → **pages 149–151**

Symbol explanation

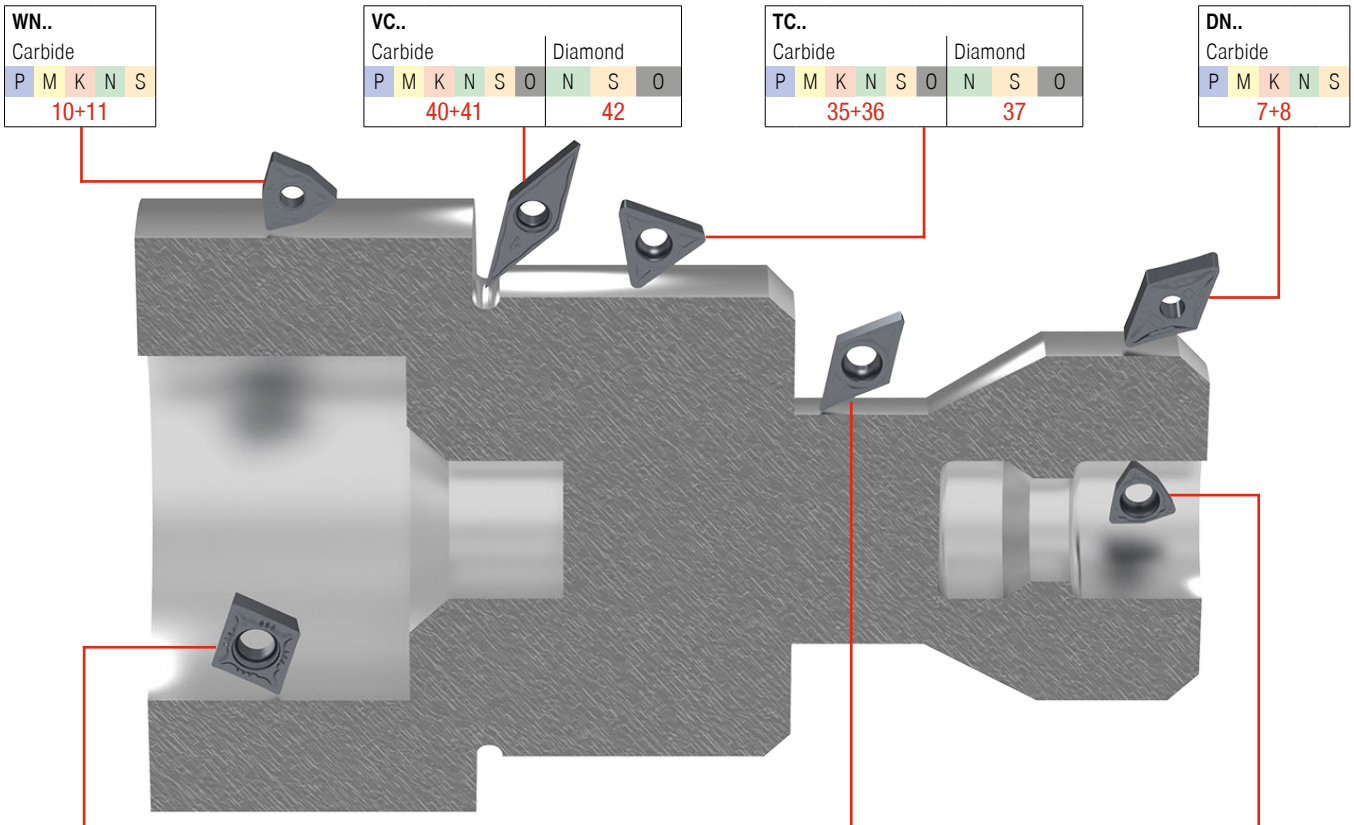
CTCP125-P *Carbide Grade*

F	Fine Machining
M	Medium Machining
R	Rough Machining

	Smooth cut
	Irregular cutting depth
	Interrupted cut

A detailed overview of grades can be found in the technical appendix on → **page 168**

Toolfinder – ISO turning – application



Toolfinder – negative inserts

				Steel	Stainless steel	Cast iron	Non-ferrous metals	Heat-resistant	Tempered steel	Non-metal materials	DN..	WN..
				P	M	K	N	S	H	O		
Sharp	Fine	-F50		●	○	○					7	10
	Medium	-M50		●	○	○					7	10
stable		-M70		●	○	○					7	10
Sharp	Fine	-F30		○	●			○			8	11
	Medium	-M30		○	●			○			8	11
stable		-M60		○	●			○				11

This article can be found in our online shop at cuttingtools.ceratizit.com

Toolfinder – positive inserts

			Steel	Stainless steel	Cast iron	Non-ferrous metals	Heat-resistant	Tempered steel	Non-metal materials	Geometry				
			P	M	K	N	S	H	O	CC..	DC..	TC..	VC..	WC..
Sharp	Fine	-SF	●	○	○					13	23	35	40	48
	Medium	-SMF	●	○	○					13+14	23	35	40	
		-SM	●	○	○					13+14	24	35		
stable		-SMQ	●		○						24			
Sharp	Medium	-M25	○	●			●			14	24	35		
stable		-M55	○	●			●			14	24	35		
Sharp	Fine	-23P			○	●			○	14	25			
	Medium	-25P	●	●	○	●	●		○	14	25		40	
		-25Q	●	●	○	●	●		○	14	25		40	
		-27	●	●	○	●	●		○	15	25+26	26	40	
		-29			○	●			○	15	25+26			
stable		-M81		●		○				15	25+26			
	Fine	-F05	●	●		●	●			15	25+26		36	
Sharp	Diamond					●			●	41	16	27	37	48
		-CB1				●			●	41	16	27	37	
		-CB2				●			●	41	16		37	
stable		-CB3				●			●	41	16		37	

This article can be found in our online shop at cuttingtools.ceratizit.com

Toolfinder – holders

Toolholders and boring bars for negative inserts

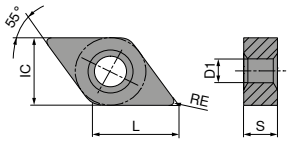
Geometry	Tool holder
 DN..	9
 WN..	12

Toolholders and boring bars for positive inserts

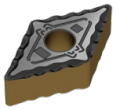
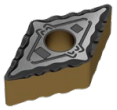
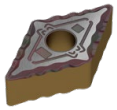
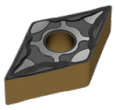
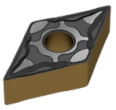
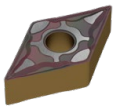
Geometry	Tool holder	Tool holder DirectCooling	Boring bars
 CC..	17–20	18+19	21+22
 DC..	28–31	30+31	33
 TC..	38	45	39
 VC..	43		46+47
 WC..			49

DNMG / DNGU

Designation	L mm	S mm	D1 mm	IC mm
DN.. 1104..	11,6	4,76	3,81	9,52



DNMG

		NEW	NEW	NEW	NEW	NEW	NEW
		-F50 CTCP115-P	-F50 CTCP125-P	-F50 CTCP135-P	-M50 CTCP115-P	-M50 CTCP125-P	-M50 CTCP135-P
		DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN
							
		F	F	F	M	M	M
		DNMG	DNMG	DNMG	DNMG	DNMG	DNMG
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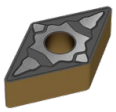
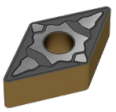
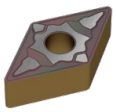
ISO	RE mm						
110402EN	0,2	30201	50201	70201			
110404EN	0,4	30401	50401	70401	30401	50401	70401
110408EN	0,8	30601	50601	70601	30601	50601	70601
P		●	●	●	●	●	●
M				○			○
K		○	○		○	○	
N							
S							
H							
O							

DNMG

		NEW	NEW	NEW
		-M70 CTCP115-P	-M70 CTCP125-P	-M70 CTCP135-P
		DRAGONSKIN	DRAGONSKIN	DRAGONSKIN
				
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		DNMG	DNMG	DNMG
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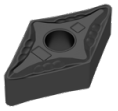
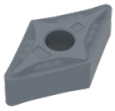
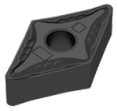
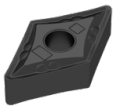
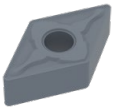
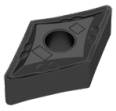
ISO	RE mm			
110408EN	0,8	30601	50601	70601
110412EN	1,2	30801	50801	70801
P		●	●	●
M				○
K		○	○	
N				
S				
H				
O				

3

DNMG

		NEW		NEW	NEW		NEW
		-F30 CTCM120	-F30 CTPM125	-F30 CTCM130	-M30 CTCM120	-M30 CTPM125	-M30 CTCM130
		DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN
							
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		DNMG	DNMG	DNMG	DNMG	DNMG	DNMG
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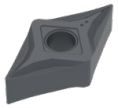
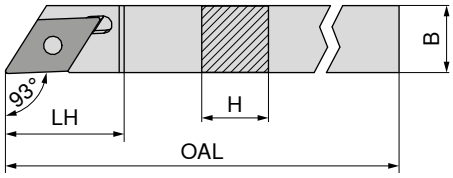
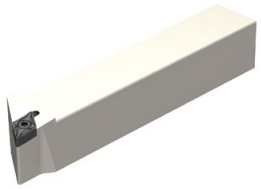
ISO	RE mm						
110404EN	0,4	10400	204	30400			
110408EN	0,8	10600	206	30600	10600	206	30600
110412EN	1,2				10800	208	30800
P		○	○	○	○	○	○
M		●	●	●	●	●	●
K							
N							
S				○			○
H							
O							

DNGU

		-F32 WPU7620	-F32 WUU7620
			
		F	F
		DNGU	DNGU
		72 494 ...	72 401 ...
ISO	RE mm		
1104008FN	0,08	50800	33800
1104015FN	0,15	51500	34500
P		●	●
M		○	
K		●	
N		○	○
S		○	○
H			
O		○	○

MaxiLock-S – SDJN 93° – Toolholder with screw clamping



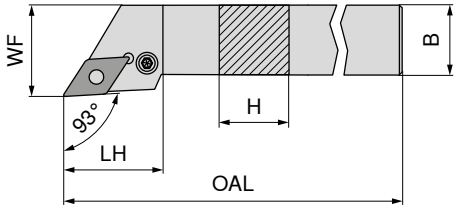


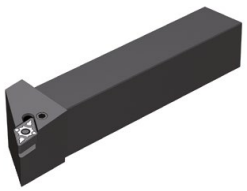
Illustrations show right-hand versions

ISO designation	H mm	B mm	OAL mm	LH mm	WF mm	torque moment Nm	Insert	Left-hand 70 699 ...	Right-hand 70 698 ...
SDJN R/L 1012 H11	10	12	100	21,3	12	3,2	DNGU 1104	**010**	**010**
SDJN R/L 1212 H11	12	12	100	21,3	12	3,2	DNGU 1104	**012**	**012**
SDJN R/L 1616 K11	16	16	125	21,3	16	3,2	DNGU 1104	**016**	**016**
SDJN R/L 2020 K11	20	20	125	21,3	20	3,2	DNGU 1104	**020**	**020**
SDJN R/L 2525 M11	25	25	150	21,3	25	3,2	DNGU 1104	**025**	**025**

Spare parts for Article no.	 Key D **80 950 ...**	 Clamping screw **72 950 ...**
70 698 010 / 70 699 010	**128**	**007**
70 698 012 / 70 699 012	**128**	**007**
70 698 016 / 70 699 016	**128**	**007**
70 698 020 / 70 699 020	**128**	**007**
70 698 025 / 70 699 025	**128**	**007**

MaxiLock-N – PDJN 93° – Toolholder with lever clamping





Illustrations show right-hand versions

ISO designation	H mm	B mm	OAL mm	LH mm	WF mm	torque moment Nm	Insert	Left-hand 70 541 ...	Right-hand 70 540 ...
PDJN R/L 1616 H11	16	16	100	30	20	3	DN.. 1104	**116**	**116**
PDJN R/L 2020 K11	20	20	125	30	25	3	DN.. 1104	**12000** [1]	**12000** [1]
PDJN R/L 2525 M11	25	25	150	30	32	3	DN.. 1104	**12500** [1]	**12500** [1]

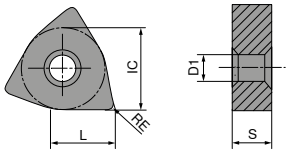
1) nickel-plated

for Article no.	 Key I **70 950 ...**	 Shim **70 950 ...**	 Assembly pin **70 950 ...**	 Lever **70 950 ...**	 Clamping screw **70 950 ...**	 Solid Carbide Seat D **70 950 ...**
70 540 116 / 70 541 116	**175**	**122**	**191**	**121**	**208**	**120**
70 540 12000 / 70 541 12000	**175**	**122**	**191**	**121**	**208**	**120**
70 540 12500 / 70 541 12500	**175**	**122**	**191**	**121**	**208**	**120**

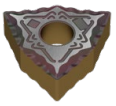
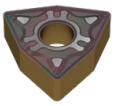
3

WNMG

Designation	L mm	S mm	D1 mm	IC mm
WNMG 0604..	6,5	4,76	3,81	9,52



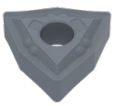
WNMG

		NEW	NEW	NEW	NEW	NEW	NEW
		-F50 CTCP115-P	-F50 CTCP125-P	-F50 CTCP135-P	-M50 CTCP115-P	-M50 CTCP125-P	-M50 CTCP135-P
		DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN
							
		F WNMG	F WNMG	F WNMG	M WNMG	M WNMG	M WNMG
		76 157 ...	76 157 ...	76 157 ...	76 139 ...	76 139 ...	76 139 ...
ISO	RE mm						
060404EN	0,4	30401	50401	70401	30401	50401	70401
060408EN	0,8	30601	50601	70601	30601	50601	70601
P		●	●	●	●	●	●
M				○			○
K		○	○		○	○	
N							
S							
H							
O							

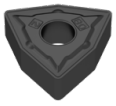
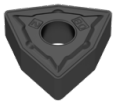
WNMG

		NEW	NEW	NEW
		-M70 CTCP115-P	-M70 CTCP125-P	-M70 CTCP135-P
		DRAGONSKIN	DRAGONSKIN	DRAGONSKIN
				
		M WNMG	M WNMG	M WNMG
		76 273 ...	76 273 ...	76 273 ...
ISO	RE mm			
060408EN	0,8	30601	50601	70601
060412EN	1,2	30801	50801	70801
P		●	●	●
M				○
K		○	○	
N				
S				
H				
O				

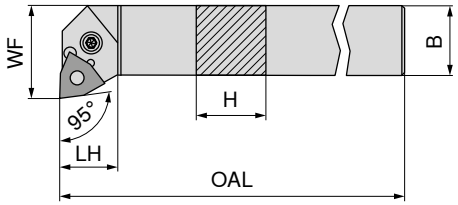
WNMG

		NEW		NEW	NEW		NEW
		-F30 CTCM120	-F30 CTPM125	-F30 CTCM130	-M30 CTCM120	-M30 CTPM125	-M30 CTCM130
		DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN
							
		F	F	F	M	M	M
		WNMG	WNMG	WNMG	WNMG	WNMG	WNMG
		75 024 ...	75 024 ...	75 024 ...	75 025 ...	75 025 ...	75 025 ...
ISO	RE mm						
060404EN	0,4	10400	204	30400			
060408EN	0,8	10600	206	30600	10600	206	30600
060412EN	1,2		208		10800		30800
P		○	○	○	○	○	○
M		●	●	●	●	●	●
K							
N							
S				○			○
H							
O							

WNMG

		NEW		NEW
		-M60 CTCM120	-M60 CTPM125	-M60 CTCM130
		DRAGONSKIN	DRAGONSKIN	DRAGONSKIN
				
		M	M	M
		WNMG	WNMG	WNMG
		75 026 ...	75 026 ...	75 026 ...
ISO	RE mm			
060408EN	0,8	10600	206	30600
060412EN	1,2	10800		30800
P		○	○	○
M		●	●	●
K				
N				
S				○
H				
O				

MaxiLock-N – PWLN 95° – Toolholder with lever clamping



Illustrations show right-hand versions

ISO designation	H mm	B mm	OAL mm	LH mm	WF mm	torque moment Nm	Insert	Left-hand 70 543 ...	Right-hand 70 542 ...
PWLN R/L 1616 H06	16	16	100	20	22,5	3	WNMG 0604	**116**	**11600**[1]
PWLN R/L 2020 K06	20	20	125	26	25,0	3	WNMG 0604	**12000**[1]	**12000**[1]
PWLN R/L 2525 M06	25	25	150	19	32,0	3	WNMG 0604	**125**	**12500**[1]

1) nickel-plated


Key I


Shim


Assembly pin


Lever

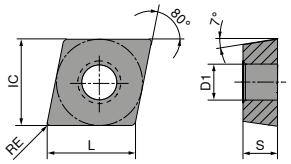

Clamping screw


Solid Carbide Seat W

Spare parts for Article no.		Key I 70 950 ...	Shim 70 950 ...	Assembly pin 70 950 ...	Lever 70 950 ...	Clamping screw 70 950 ...	Solid Carbide Seat W 70 950 ...
70 542 11600 / 70 543 116	SW2,5	**175**	**122**	**191**	**185**	**208**	**127**
70 542 12000 / 70 543 12000	SW2,5	**175**	**122**	**191**	**185**	**208**	**127**
70 542 12500 / 70 543 125	SW2,5	**175**	**122**	**191**	**185**	**208**	**127**

CCMT / CCGT / CCET

Designation	L mm	S mm	D1 mm	IC mm
CC.T 0602..	6,4	2,38	2,8	6,35
CC.T 09T3..	9,7	3,97	4,4	9,52



CCMT / CCGT

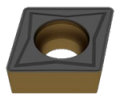
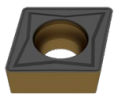
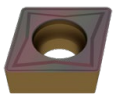
		NEW	NEW	NEW	NEW	NEW
		-SF CTCP115-P	-SF CTCP125-P	-SF CTCP125-P	-SF CTCP135-P	-SF CTCP135-P
		DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN
		F CCMT 76 253 ...	F CCGT 76 251 ...	F CCMT 76 253 ...	F CCGT 76 251 ...	F CCMT 76 253 ...
ISO	RE mm					
060202EN	0,2		50201		70201	
060204EN	0,4	30401		50401		70401
09T304EN	0,4	31601		51601		71601
09T308EN	0,8	31801		51801		
P		●	●	●	●	●
M					○	○
K		○	○	○		
N						
S						
H						
O						

CCMT / CCGT

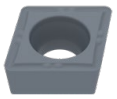
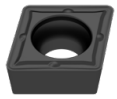
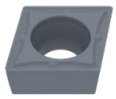
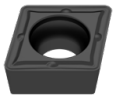
		NEW	NEW	NEW	NEW	NEW
		-SMF CTCP115-P	-SMF CTCP125-P	-SMF CTCP135-P	-SM CTCP125-P	-SM CTCP135-P
		DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN
		F CCMT 76 249 ...	F CCMT 76 249 ...	F CCMT 76 249 ...	M CCGT 76 250 ...	M CCGT 76 250 ...
ISO	RE mm					
060202EN	0,2				50201	70201
060204EN	0,4		50401	70401		
060208EN	0,8		50601			
09T304EN	0,4	31601	51601	71601		
09T308EN	0,8	31801	51801			
P		●	●	●	●	●
M				○		○
K		○	○		○	
N						
S						
H						
O						

3

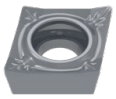
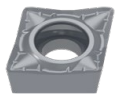
CCMT

		NEW	NEW	NEW
		-SM CTCP115-P	-SM CTCP125-P	-SM CTCP135-P
		DRAGONSKIN	DRAGONSKIN	DRAGONSKIN
				
		M CCMT 76 252 ...	M CCMT 76 252 ...	M CCMT 76 252 ...
ISO	RE mm			
060204EN	0,4	30401	50401	70401
060208EN	0,8	30601		70601
09T304EN	0,4	31601	51601	71601
09T308EN	0,8	31801	51801	71801
P		●	●	●
M				○
K		○	○	
N				
S				
H				
O				

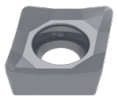
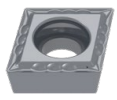
CCMT

		NEW		NEW	NEW		NEW
		-M25 CTCM120	-M25 CTPM125	-M25 CTCM130	-M55 CTCM120	-M55 CTPM125	-M55 CTCM130
		DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN
							
		F CCMT 75 210 ...	F CCMT 75 210 ...	F CCMT 75 210 ...	M CCMT 75 211 ...	M CCMT 75 211 ...	M CCMT 75 211 ...
ISO	RE mm						
060204EN	0,4	10400	204	30400	10400	204	
09T304EN	0,4	11600	216	31600	11600	216	31600
09T308EN	0,8	11800	218	31800	11800	218	31800
P		○	○	○	○	○	○
M		●	●	●	●	●	●
K							
N							
S				○			○
H							
O							

CCGT

		-23P H216T	-25P H216T	NEW -25P CTPX710 DRAGONSKIN	-25Q H210T	NEW -25Q CTPX710 DRAGONSKIN
						
		F CCGT	F CCGT	M CCGT	M CCGT	M CCGT
		70 255 ...	70 248 ...	70 248 ...	70 248 ...	70 248 ...
ISO	RE mm					
060202FN	0,2	652	636	70200		
060204FN	0,4	654	638	70400	678	75400
09T302FN	0,2		639	71400		
09T304FN	0,4	656	640	71600	680	76600
09T308FN	0,8	658	641	71800	681	76800
P				●		●
M				●		●
K		○	○		○	
N		●	●	●	●	●
S			○	●	○	●
H						
O		○	○		○	

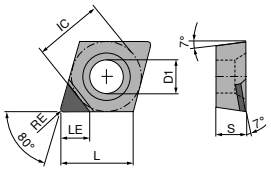
CCXT / CCGT / CCMT / CCET

		-M81 CWN2120	-27 H10T	-27 CWN15	NEW -27 CTPX715 DRAGONSKIN	NEW -29 H216T	NEW -29 CTPX715 DRAGONSKIN	NEW -F05 CTPX710 DRAGONSKIN
								
		M CCXT	M CCGT	M CCGT	M CCGT	M CCMT	M CCMT	F CCET
		70 254 ...	70 254 ...	70 254 ...	70 254 ...	70 245 ...	70 245 ...	76 243 ...
ISO	RE mm							
060201FN	0,1							10100
060202FN	0,2	100	600	300	80200			10200
060204EN	0,4					60400	70400	
060204FN	0,4	102	602	302	80400			10400
09T302FN	0,2	104	604	304	81400			
09T304EN	0,4					61600	71600	
09T304FN	0,4	106	606	306	81600			
09T308EN	0,8					61800	71800	
09T308FN	0,8	108	608	308	81800			
P					●		●	●
M		●		○	●		●	●
K			○		○	○	○	
N		○	●	●	●	●	●	●
S					●		●	●
H								
O			○		○	○	○	

3

CCGT

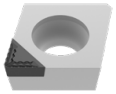
Designation	L mm	S mm	D1 mm	IC mm
CCGT 0602..	6,4	2,38	2,8	6,35
CCGT 09T3..	9,7	3,97	4,4	9,52



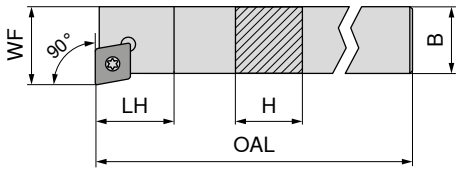
CCGT A

CCGT

▲ TCE(NOI) = Design and number of equipped cutting edge corners

				-CB1 CTDPD20	-CB1 CTDPD20	-Q-CB2 CTDPS30	-CB3 CTDPU20	-CB1 CTDCD10	-CB2 CTDCD10
									
				F DIAMOND CCGT	F DIAMOND CCGT	M DIAMOND CCGT	R DIAMOND CCGT	F DIAMOND CCGT	M DIAMOND CCGT
				71 300 ...	71 305 ...	71 306 ...	71 302 ...	71 300 ...	71 301 ...
ISO	RE mm	TCE (NOI)	LE mm						
060202FN	0,2	A (1)	2,4					302	30200
060202FN	0,2	A (1)	3,3			202			
060202FN	0,2	A (1)	3,4	102					
060204FN	0,4	A (1)	2,2					304	304
060204FN	0,4	A (1)	3,1		104	204			
060204FN	0,4	A (1)	3,2	104			204		
060208FN	0,8	A (1)	2,0					30600	
060208FN	0,8	A (1)	3,0	10600					
09T302FN	0,2	A (1)	2,4						31200
09T302FN	0,2	A (1)	4,4			212			
09T302FN	0,2	A (1)	4,5	112					
09T304FN	0,4	A (1)	2,2					314	314
09T304FN	0,4	A (1)	4,2		114	214			
09T304FN	0,4	A (1)	4,3	114			214		
09T308FN	0,8	A (1)	2,0						31600
09T308FN	0,8	A (1)	4,1	118			218		
P									
M									
K									
N				●	●	●	●	●	●
S									
H									
O				●	●	●	●	●	●

MaxiLock-S – SCFC 90° – Toolholder with screw clamping



Illustrations show right-hand versions

ISO designation	H mm	B mm	OAL mm	LH mm	WF mm	torque moment Nm	Insert	Left-hand 70 761 ...	Right-hand 70 760 ...
SCFC R 0808 D06	8	8	60	10	10	1,2	CC.. 0602		**008**
SCFC R/L 1010 E06	10	10	70	10	12	1,2	CC.. 0602	**010**	**010**
SCFC R/L 1212 F09	12	12	80	13	16	3,2	CC.. 09T3	**012**	**012**
SCFC R/L 1616 H09	16	16	100	13	20	3,2	CC.. 09T3	**016**	**016**


Key D
80 950 ...


Combination Key
70 950 ...


Clamping screw
70 950 ...

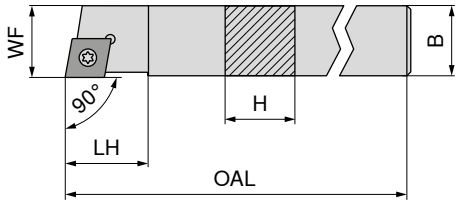

Carbide type C
70 950 ...


Threaded sleeve
70 950 ...

Spare parts for Article no.						
70 760 008	**110**			**112**		
70 760 010 / 70 761 010	**110**			**112**		
70 760 012 / 70 761 012	**113**			**113**		
70 760 016 / 70 761 016		**398**		**113**	**165**	**171**

MaxiLock-S – SCAC 90° – Toolholder with screw clamping

▲ for sliding head lathes



Illustrations show right-hand versions

ISO designation	H mm	B mm	OAL mm	LH mm	WF mm	torque moment Nm	Insert	Left-hand 70 757 ...	Right-hand 70 756 ...
SCAC R/L 0808 D06	8	8	60	9	8	1,2	CC.. 0602	**008**	**008**
SCAC R/L 1010 E06	10	10	70	9	10	1,2	CC.. 0602	**010**	**010**
SCAC R/L 0808 K06	8	8	125	9	8	1,2	CC.. 0602	**108**	**108**
SCAC R/L 1010 M06	10	10	150	9	10	1,2	CC.. 0602	**110**	**110**
SCAC R/L 1212 F09	12	12	80	13	12	3,2	CC.. 09T3	**012**	**012**
SCAC R/L 1616 H09	16	16	100	13	16	3,2	CC.. 09T3	**116**	**116**
SCAC R/L 1212 M09	12	12	150	13	12	3,2	CC.. 09T3	**112**	**112**
SCAC R/L 1414 M09	14	14	150	13	14	3,2	CC.. 09T3	**114**	**114**


Key D
80 950 ...


Combination Key
70 950 ...


Clamping screw
70 950 ...

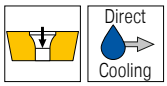

Carbide type C
70 950 ...

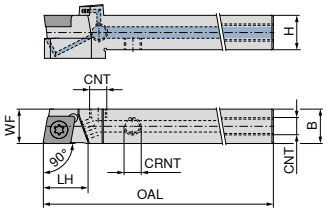

Threaded sleeve
70 950 ...

Spare parts for Article no.						
70 756 108 / 70 757 108	**110**			**112**		
70 756 008 / 70 757 008	**110**			**112**		
70 756 110 / 70 757 110	**110**			**112**		
70 756 010 / 70 757 010	**110**			**112**		
70 756 112 / 70 757 112	**113**			**113**		
70 756 012 / 70 757 012	**113**			**113**		
70 756 114 / 70 757 114	**113**			**113**		
70 756 116 / 70 757 116		**398**		**113**	**165**	**171**

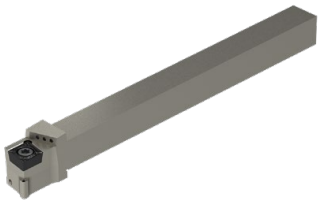
MaxiLock-S – SCAC 90° DC – Tool holder with screw clamping

▲ for sliding head lathes





Illustrations show right-hand versions

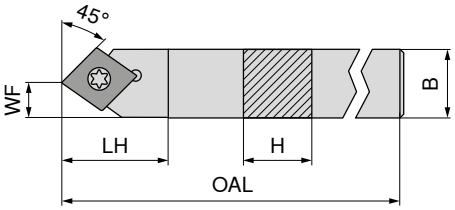


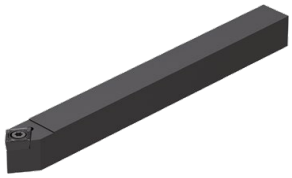
ISO designation	H mm	B mm	OAL mm	LH mm	WF mm	CNT	CRNT	torque moment Nm	Insert	NEW Left-hand 70 766 ...	NEW Right-hand 70 766 ...
SCAC R/L 1212 F09 DC	12	12	80	13	12	M6	M6	3,2	CC.. 09T3	**01201**	**01200**
SCAC R/L 1212 M09 DC	12	12	150	13	12	M6	M6	3,2	CC.. 09T3	**11201**	**11200**
SCAC R/L 1616 H09 DC	16	16	100	13	16	G1/8"	M6	3,2	CC.. 09T3	**01601**	**01600**

Spare parts for Article no.	 Clamping screw 70 950 ...	 Carbide type C 70 950 ...	 Grubscrew 70 950 ...	 Grubscrew 70 950 ...	 Threaded sleeve 70 950 ...
70 766 01200 / 70 766 01201	**859**			**86700**	
70 766 11200 / 70 766 11201	**859**			**86700**	
70 766 01600 / 70 766 01601	**87900**	**165**	**88000**	**86700**	**171**

Spare parts for Article no.	 Sealing plugs DC 70 950 ...	 Key D 80 950 ...	 O-Ring 70 950 ...	 Coolant nozzle DC 70 950 ...	 Coolant screw plug 70 950 ...
70 766 01200 / 70 766 01201		**120**			
70 766 11200 / 70 766 11201		**120**			
70 766 01600 / 70 766 01601	**87600**	**120**	**88100**	**87700**	**294**

MaxiLock-S – SCDC 45° – Toolholder with screw clamping





Neutral

ISO designation	H mm	B mm	OAL mm	LH mm	WF mm	torque moment Nm	Insert	70 752 ...
SCDC L 0808 K06	8	8	125	13	4	1,2	CC.. 0602	008
SCDC L 1010 M06	10	10	150	13	5	1,2	CC.. 0602	010
SCDC L 1212 M09	12	12	150	18	6	3,2	CC.. 09T3	012
SCDC L 1414 M09	14	14	150	18	7	3,2	CC.. 09T3	014


Key D

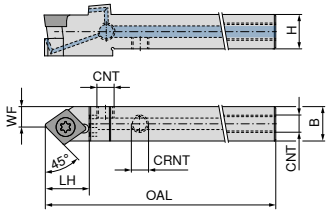

Clamping screw

Spare parts for Article no.	80 950 ...		70 950 ...	
70 752 008	T08	110	M2,5x6	112
70 752 010	T08	110	M2,5x6	112
70 752 012	T15	113	M3,5x11	113
70 752 014	T15	113	M3,5x11	113

3

MaxiLock-S – SCDC 45° DC – Tool holder with screw clamping

Direct Cooling



NEW

Neutral

ISO designation	H mm	B mm	OAL mm	LH mm	WF mm	CNT	CRNT	torque moment Nm	Insert	70 767 ...
SCDC L 0808 K06 DC	8	8	125	13	4	M5	M5	1,2	CC.. 0602	00801
SCDC L 1010 M06 DC	10	10	150	13	5	M6	M6	1,2	CC.. 0602	01001
SCDC L 1212 M09 DC	12	12	150	18	6	M6	M6	3,2	CC.. 09T3	01201
SCDC L 1414 M09 DC	14	14	150	18	7	G1/8"	M6	3,2	CC.. 09T3	01401


Cylindrical screw


Key D


Coolant screw plug

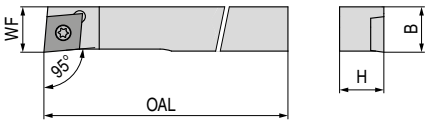

Clamping screw

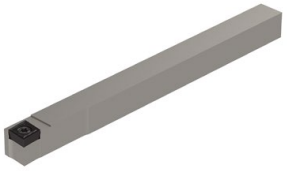

Grubscrew

Spare parts for Article no.	83 950 ...		80 950 ...		70 950 ...		70 950 ...		70 950 ...	
70 767 00801		157		039				112		
70 767 01001				039				112		86700
70 767 01201				120				113		86700
70 767 01401				120		294		113		86700

IsoClamp – SCLC 95° – Toolholder with screw clamping

▲ for sliding head lathes





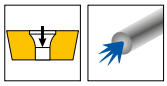
Illustrations show right-hand versions

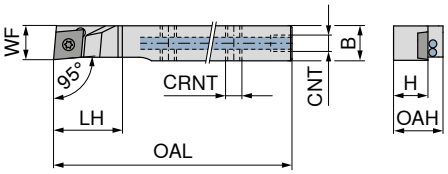
ISO designation	H mm	B mm	OAL mm	WF mm	Insert	Left-hand 72 353 ...	Right-hand 72 352 ...
SCLC R/L 0808 H06	8	8	100	8	CC.. 0602	**008**	**008**
SCLC R/L 1010 H06	10	10	100	10	CC.. 0602	**010**	**010**
SCLC R/L 1212 H09	12	12	100	12	CC.. 09T3	**012**	**012**

Spare parts for Article no.	Key D 80 950 ...		Clamping screw 70 950 ...	
72 352 008 / 72 353 008	T08	**110**	M2,5x6	**112**
72 352 010 / 72 353 010	T08	**110**	M2,5x6	**112**
72 352 012 / 72 353 012	T15	**113**	M3,5x11	**113**

IsoClamp – SCLC 95° – Tool holder with thro' coolant

▲ for sliding head lathes





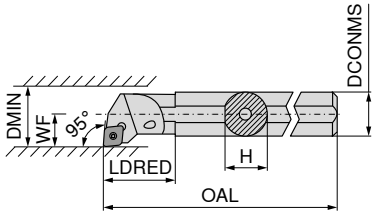
Illustrations show right-hand versions

ISO designation	H mm	B mm	OAL mm	LH mm	WF mm	CNT	CRNT	Insert	Left-hand 72 351 ...	Right-hand 72 350 ...
SCLC R/L 0808 H06 IC	8	8	100	16	8	M5	M5	CC.. 0602	**008**	**008**
SCLC R/L 1010 H06 IC	10	10	100	16	10	M5	M5	CC.. 0602	**010**	**010**
SCLC R/L 1212 H09 IC	12	12	100	19	12	M5	M5	CC.. 09T3	**012**	**012**
SCLC R/L 1616 K09 IC	16	16	125	19	16	M5	M5	CC.. 09T3	**016**	**016**

Spare parts for Article no.	Cylindrical screw 72 950 ...		Key D 80 950 ...		Clamping screw 70 950 ...	
72 350 008 / 72 351 008	**011**		**110**		**112**	
72 350 010 / 72 351 010	**011**		**110**		**112**	
72 350 012 / 72 351 012	**011**		**113**		**113**	
72 350 016 / 72 351 016	**011**		**113**		**113**	

MaxiLock-S – SCLC 95° – Boring bar with screw clamping

▲ A... = with thro' coolant
▲ S... = without thro' coolant



Illustrations show right-hand versions

ISO designation	DCONMS mm	H mm	OAL mm	LDRED mm	WF mm	DMIN mm	torque moment Nm	Insert	Left-hand 70 717 ...	Right-hand 70 716 ...
A08F SCLC R/L 06	8	7,6	80	17	5	11	1,2	CC.. 0602	**208**	**208**
S08H SCLC R/L 06	8	7,2	100		5	11	1,2	CC.. 0602	**008**	**008**
A10H SCLC R/L 06	10	9,5	100	19	7	13	1,2	CC.. 0602	**210**	**210**
S10K SCLC R/L 06	10	9,0	125		7	13	1,2	CC.. 0602	**010**	**010**
A12K SCLC R/L 06	12	11,5	125	22	9	16	1,2	CC.. 0602	**212**	**212**
S12Q SCLC R/L 06	12	11,0	180		9	16	1,2	CC.. 0602	**012**	**012**
A16M SCLC R/L 06	16	14,0	150	50	9	18	1,2	CC.. 0602	**116**	**116**
A16M SCLC R/L 09	16	15,0	150	29	11	20	3,2	CC.. 09T3	**216**	**216**
S16R SCLC R/L 09	16	14,5	200		11	20	3,2	CC.. 09T3	**016**	**016**
A20Q SCLC R/L 09	20	18,5	180	32	13	25	3,2	CC.. 09T3	**220**	**220**
S20S SCLC R/L 09	20	18,0	250		13	25	3,2	CC.. 09T3	**020**	**020**
A25R SCLC R/L 09	25	23,0	200	36	17	32	3,2	CC.. 09T3	**225**	**225**
S25T SCLC R/L 09	25	23,0	300		17	32	3,2	CC.. 09T3	**025**	**025**

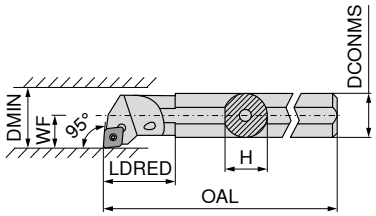
Key D

Clamping screw

Spare parts for Article no.	80 950 ...	70 950 ...
70 716 008 / 70 717 008	**110**	**116**
70 716 208 / 70 717 208	**110**	**116**
70 716 010 / 70 717 010	**110**	**116**
70 716 210 / 70 717 210	**110**	**116**
70 716 012 / 70 717 012	**110**	**116**
70 716 212 / 70 717 212	**110**	**116**
70 716 116 / 70 717 116	**110**	**116**
70 716 016 / 70 717 016	**113**	**110**
70 716 216 / 70 717 216	**113**	**110**
70 716 020 / 70 717 020	**113**	**110**
70 716 220 / 70 717 220	**113**	**304**
70 716 025 / 70 717 025	**113**	**113**
70 716 225 / 70 717 225	**113**	**304**

MaxiLock-S – SCLC 95° – Boring bar with screw clamping

▲ Type: Solid carbide



Illustrations show right-hand versions

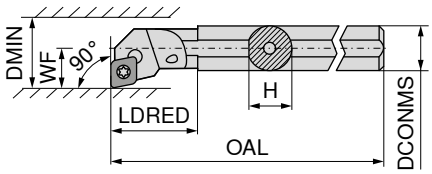
ISO designation	DCONMS mm	H mm	OAL mm	LDRED mm	WF mm	DMIN mm	torque moment Nm	Insert	Left-hand 70 719 ...	Right-hand 70 718 ...
E08H SCLC R/L 06	8	7,6	100		6	11	1,2	CC.. 0602	**008**	**008**
E10K SCLC R/L 06	10	9,0	125	22	7	13	1,2	CC.. 0602	**010**	**010**
E12Q SCLC R/L 06	12	11,5	180	26	9	16	1,2	CC.. 0602	**012**	**012**
E16R SCLC R/L 09	16	15,0	200	34	11	20	3,2	CC.. 09T3	**016**	**016**
E20S SCLC R/L 09	20	18,5	250	38	13	25	3,2	CC.. 09T3	**020**	**020**
E25T SCLC R/L 09	25	23,0	300	43	17	32	3,2	CC.. 09T3	**025**	**025**

Key D

Clamping screw

Spare parts for Article no.		80 950 ...		70 950 ...
70 719 008 / 70 718 008	T08	**110**	M2,5x5	**116**
70 719 010 / 70 718 010	T08	**110**	M2,5x5	**116**
70 719 012 / 70 718 012	T08	**110**	M2,5x5	**116**
70 719 016 / 70 718 016	T15	**113**	M3,5x7,2	**110**
70 719 020 / 70 718 020	T15	**113**	M3,5x8,6	**304**
70 719 025 / 70 718 025	T15	**113**	M3,5x11	**113**

MaxiLock-S – SCFC 90° – Boring bar with screw clamping



Illustrations show right-hand versions

ISO designation	DCONMS mm	H mm	OAL mm	LDRED mm	WF mm	DMIN mm	torque moment Nm	Insert	Left-hand 70 793 ...	Right-hand 70 792 ...
A08F SCFC R/L 06	8	7,6	80	17	5	11	1,2	CC.. 0602	**208**	**208**
A10H SCFC R/L 06	10	9,5	100	19	7	13	1,2	CC.. 0602	**210**	**210**
A12K SCFC R/L 06	12	11,5	125	22	9	16	1,2	CC.. 0602	**212**	**212**

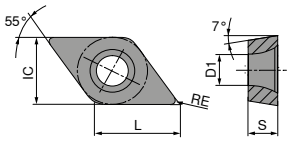
Key D

Clamping screw

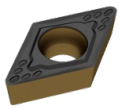
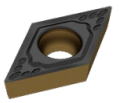
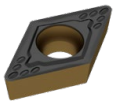
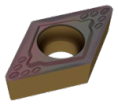
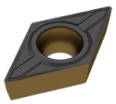
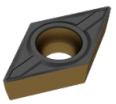
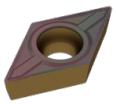
Spare parts for Article no.		80 950 ...		70 950 ...
70 792 208 / 70 793 208	T08	**110**	M2,5x5	**116**
70 792 210 / 70 793 210	T08	**110**	M2,5x5	**116**
70 792 212 / 70 793 212	T08	**110**	M2,5x5	**116**

DCGT / DCMT / DCXT / DCET

Designation	L mm	S mm	D1 mm	IC mm
DC.T 0702..	7,75	2,38	2,8	6,35
DC.T 11T3..	11,60	3,97	4,4	9,52



DCMT / DCGT

	NEW	NEW	NEW	NEW	NEW	NEW	NEW
	-SF CTCP115-P	-SF CTCP125-P	-SF CTCP125-P	-SF CTCP135-P	-SMF CTCP115-P	-SMF CTCP125-P	-SMF CTCP135-P
	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN
							
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ISO / RE mm							
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070204EN 0,4	30401		50401	70401		50401	70401
070208EN 0,8							70601
11T304EN 0,4	31601		51601	71601	31601	51601	71601
11T308EN 0,8	31801		51801	71801	31801	51801	71801
P	●	●	●	●	●	●	●
M				○			○
K	○	○	○		○	○	
N							
S							
H							
O							

3

DCMT / DCGT

		NEW	NEW	NEW	NEW	NEW	NEW	NEW
		-SM CTCP115-P	-SM CTCP125-P	-SM CTCP125-P	-SM CTCP135-P	-SM CTCP135-P	-SMQ CTCP115-P	-SMQ CTCP125-P
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		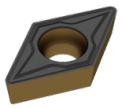	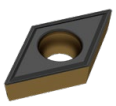	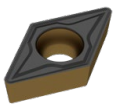	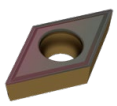	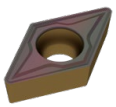	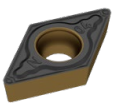	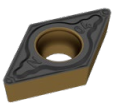
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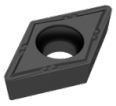
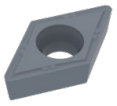
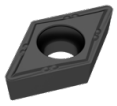
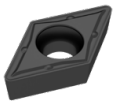
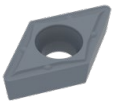
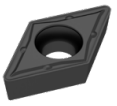
070204EN	0,4	30401		50401		70401	30401	50401
070208EN	0,8	30601		50601		70601		
11T304EL	0,4							51601
11T304EN	0,4	31601		51601		71601		51501
11T304ER	0,4							51701
11T308EN	0,8	31801		51801		71801		51801
11T312EN	1,2			52001				
P		●	●	●	●	●	●	●
M					○	○		
K		○	○	○			○	○
N								
S								
H								
O								

DCMT

		NEW		NEW	NEW		NEW
		-M25 CTCM120	-M25 CTPM125	-M25 CTCM130	-M55 CTCM120	-M55 CTPM125	-M55 CTCM130
		DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN
							
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		DCMT	DCMT	DCMT	DCMT	DCMT	DCMT
		75 213 ...	75 213 ...	75 213 ...	75 214 ...	75 214 ...	75 214 ...
ISO	RE mm						
070202EN	0,2	10200	202	30200			
070204EN	0,4	10400	204	30400	10400	204	30400
070208EN	0,8				10600	206	30600
11T302EN	0,2	11400	214	31400			
11T304EN	0,4	11600	216	31600	11600	216	31600
11T308EN	0,8	11800	218	31800	11800	218	31800
P		○	○	○	○	○	○
M		●	●	●	●	●	●
K							
N							
S				○			○
H							
O							

DCGT

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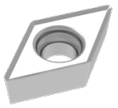
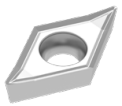
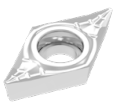
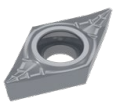
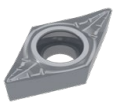
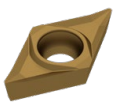
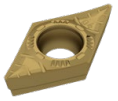
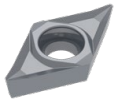
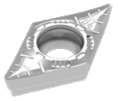
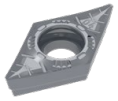
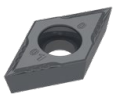
			
	F DCGT	F DCGT	F DCGT
	72 400 ...	72 400 ...	72 400 ...
ISO / RE mm			
0702006FN 0,06	006	706	506
0702015FN 0,15	015	715	515
0702035FN 0,35	035	735	535
11T3008FN 0,08	038	738	538
11T3015FN 0,15	045	745	
11T3035FN 0,35	065	765	565
P	○	●	●
M		●	○
K		○	●
N	●	○	○
S	○	●	○
H			
O	●	○	○

DCGT

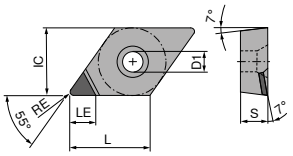
	-23P H216T	-25P H210T	NEW -25P CTPX710 DRAGONSKIN	-25Q H210T	NEW -25Q CTPX710 DRAGONSKIN	-27 H10T	-27 CWN15
							
	F DCGT	F DCGT	M DCGT	M DCGT	M DCGT	M DCGT	M DCGT
	70 261 ...	70 263 ...	70 263 ...	70 263 ...	70 263 ...	70 260 ...	70 260 ...
ISO / RE mm							
070202FN 0,2		632	70200			600	300
070204FN 0,4	654	634	70400			602	302
11T302FN 0,2		635	71400			604	304
11T304FL 0,4				670	75700		
11T304FN 0,4	664	636	71600	660	75600	606	306
11T304FR 0,4				680	75800		
11T308FL 0,8				672			
11T308FN 0,8	666	638	71800	662	76000	608	308
11T308FR 0,8				682			
P			●		●		
M			●		●		○
K	○	○		○		○	
N	●	●	●	●	●	●	●
S		○	●	○	●		
H							
O	○	○		○		○	

DCXT / DCGT / DCMT / DCET

			NEW	NEW	NEW	NEW
		-M81 CWN2120	-27 CTPX715 DRAGONSKIN	-29 H216T	-29 CTPX715 DRAGONSKIN	-F05 CTPX710 DRAGONSKIN
						
		M DCXT	M DCGT	M DCMT	M DCMT	F DCET
		70 260 ...	70 260 ...	70 246 ...	70 246 ...	76 254 ...
ISO	RE mm					
0702005FN	0,05					10200
070201FN	0,10					10400
0702015FN	0,15					10600
070202FN	0,20	100	80200			10800
070204FN	0,40	102	80400			
070204EN	0,40			60400	70400	
11T3005FN	0,05					11400
11T301FN	0,10					11600
11T3015FN	0,15					11800
11T302FN	0,20	104	81400			12000
11T304EN	0,40			61600	71600	
11T304FN	0,40	106	81600			12200
11T308EN	0,80			61800	71800	
11T308FN	0,80	108	81800			
P			●		●	●
M		●	●		●	●
K			○	○	○	
N		○	●	●	●	●
S			●		●	●
H						
O			○	○	○	

DCGT

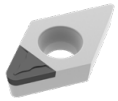
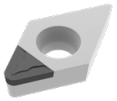
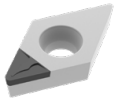
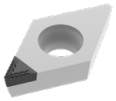
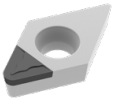
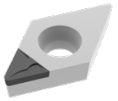
Designation	L mm	S mm	D1 mm	IC mm
DCGT 0702..	7,75	2,38	2,8	6,35
DCGT 11T3..	11,60	3,97	4,4	9,52



DCGT A

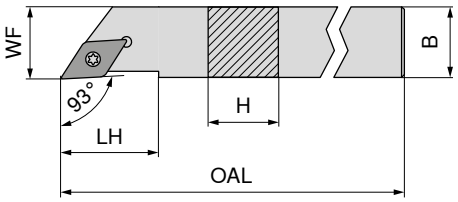
DCGT

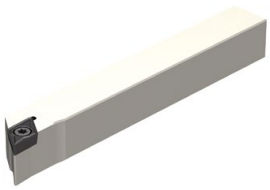
▲ TCE(NOI) = Design and number of equipped cutting edge corners

	-CB1 CTDPD20	-CB1 CTDPS30	-CB2 CTDPS30	-CB3 CTDPU20	-CB1 CTDCD10	-CB2 CTDCD10
						
	F DIAMOND DCGT	F DIAMOND DCGT	M DIAMOND DCGT	R DIAMOND DCGT	F DIAMOND DCGT	M DIAMOND DCGT
	71 310 ...	71 310 ...	71 311 ...	71 312 ...	71 310 ...	71 311 ...
ISO						
070201FN	10100	20100				
070202FN					302	30200
070202FN	102	202	202			
070204FN					304	304
070204FN	104	204	204	204		
070208FN						308
070208FN	108		208			
11T301FN	11100	21100	21100			
11T302FN					31200	31200
11T302FN	112	212	212			
11T304FN					314	314
11T304FN	114	214	214	214		
11T308FN					318	318
11T308FN	118	218	218	218		
P						
M						
K						
N	●	●	●	●	●	●
S						
H						
O	●	●	●	●	●	●

MaxiLock-S – SDJC 93° – Toolholder with screw clamping

▲ for sliding head lathes





Illustrations show right-hand versions

ISO designation	H mm	B mm	OAL mm	LH mm	WF mm	torque moment Nm	Insert	Left-hand 70 685 ...	Right-hand 70 684 ...
SDJC R/L 0808 H07	8	8	100	13,0	8	1,2	DC.. 0702	**108**	**108**
SDJC R/L 1010 H07	10	10	100	13,0	10	1,2	DC.. 0702	**110**	**110**
SDJC R/L 1212 H07	12	12	100	14,5	12	1,2	DC.. 0702	**112**	**112**
SDJC R/L 1616 K07	16	16	125	33,0	16	1,2	DC.. 0702	**116**	**116**
SDJC R/L 1212 H11	12	12	100	22,0	12	3,2	DC.. 11T3	**212**	**212**
SDJC R/L 1616 K11	16	16	125	33,0	16	3,2	DC.. 11T3	**216**	**216**
SDJC R/L 2020 K11	20	20	125		20		DC.. 11T3	**220**	**220**

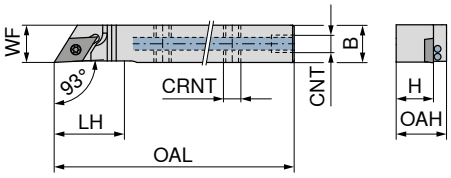

Key D **80 950 ...**


Clamping screw **72 950 ...**

Spare parts Insert			
DC.. 0702	T08	**110**	**002**
DC.. 11T3	T15	**113**	**006**

IsoClamp – SDJC 93° – Tool holder with thro' coolant

▲ for sliding head lathes



Illustrations show right-hand versions

ISO designation	H mm	B mm	OAL mm	LH mm	WF mm	CNT	CRNT	Insert	Left-hand 72 357 ...	Right-hand 72 356 ...
SDJC L 0808 H07 IC	8	8	100	17	8	M5	M5	DC.. 0702	**008**	
SDJC R/L 1010 H07 IC	10	10	100	17	10	M5	M5	DC.. 0702	**010**	**010**
SDJC R/L 1212 H07 IC	12	12	100	17	12	M5	M5	DC.. 0702	**012**	**012**
SDJC R/L 1616 K07 IC	16	16	125	17	16	G1/8"	M5	DC.. 0702	**016**	**016**
SDJC R/L 1010 H11 IC	10	10	100	22	10	M5	M5	DC.. 11T3	**110**	**110**
SDJC R/L 1212 H11 IC	12	12	100	22	12	M5	M5	DC.. 11T3	**112**	**112**
SDJC R/L 1616 K11 IC	16	16	125	22	16	G1/8"	M5	DC.. 11T3	**116**	**116**
SDJC R/L 2020 K11 IC	20	20	125	22	20	G1/8"	M5	DC.. 11T3	**120**	**120**


Cylindrical screw **72 950 ...**


Cylindrical screw **72 950 ...**

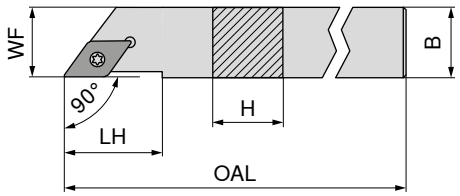

Key D **80 950 ...**


Clamping screw **72 950 ...**

Spare parts Insert	CNT				
DC.. 0702	M5		**011**	**110**	**002**
DC.. 0702	G1/8"	**010**	**011**	**110**	**002**
DC.. 11T3	M5		**011**	**113**	**006**
DC.. 11T3	G1/8"	**010**	**011**	**113**	**006**

MaxiLock-S – SDAC 90° – Toolholder with screw clamping

▲ for sliding head lathes



Illustrations show right-hand versions

ISO designation	H mm	B mm	OAL mm	LH mm	WF mm	torque moment Nm	Insert	Left-hand 70 789 ...	Right-hand 70 788 ...
SDAC R/L 0808 K07	8	8	125	14	8	1,2	DC.. 0702	**008**	**008**
SDAC R/L 1010 M07	10	10	150	14	10	1,2	DC.. 0702	**010**	**010**
SDAC R/L 1212 M07	12	12	150	14	12	1,2	DC.. 0702	**012**	**012**
SDAC R/L 1414 M11	14	14	150	21	14	3,2	DC.. 11T3	**014**	**014**

Key D

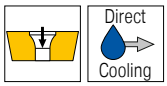
Clamping screw

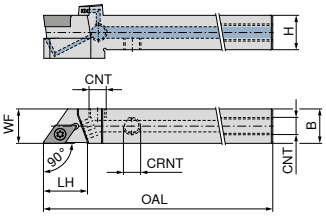
Spare parts for Article no.	Key D 80 950 ...		Clamping screw 70 950 ...	
70 788 008 / 70 789 008	T08	**110**	M2,5x6	**112**
70 788 010 / 70 789 010	T08	**110**	M2,5x6	**112**
70 788 012 / 70 789 012	T08	**110**	M2,5x6	**112**
70 788 014 / 70 789 014	T15	**113**	M3,5x11	**113**

3

MaxiLock-S – SDAC 90° DC – Tool holder with screw clamping

▲ for sliding head lathes





Illustrations show right-hand versions

ISO designation	H mm	B mm	OAL mm	LH mm	WF mm	CNT	CRNT	torque moment Nm	Insert	NEW Left-hand 70 771 ...	NEW Right-hand 70 771 ...
SDAC R/L 0808 K07 DC	8	8	125	14	8	M5	M5	1,2	DC.. 0702	00801	00800
SDAC R/L 1010 M07 DC	10	10	150	14	10	M6	M6	1,2	DC.. 0702	01001	01000
SDAC R/L 1212 M07 DC	12	12	150	14	12	M6	M6	1,2	DC.. 0702	01201	01200
SDAC R/L 1212 M11 DC	12	12	150	21	12	M6	M6	3,2	DC.. 11T3	11201	11200


Cylindrical screw 83 950 ...

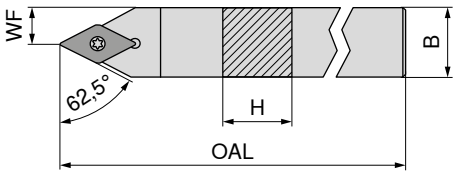

Key D 80 950 ...

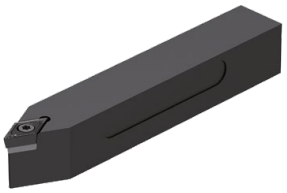

Clamping screw 70 950 ...


Grubscrew 70 950 ...

Spare parts for Article no.								
70 771 00800	157		110		112			
70 771 00801	157		039		112			
70 771 01000 / 70 771 01001			039		112		86700	
70 771 01200 / 70 771 01201			039		112		86700	
70 771 11200 / 70 771 11201			113		113		86700	

MaxiLock-S – SDNC 62.5° – Toolholder with screw clamping





ISO designation	H mm	B mm	OAL mm	WF mm	torque moment Nm	Insert	Neutral 70 680 ...
SDNC N 0808 D07	8	8	60	4,0	1,2	DC.. 0702	008
SDNC N 1010 E07	10	10	70	5,0	1,2	DC.. 0702	010
SDNC N 1212 F07	12	12	80	6,0	1,2	DC.. 0702	012
SDNC N 1616 H11	16	16	100	8,0	3,2	DC.. 11T3	016
SDNC N 2020 K11	20	20	125	10,0	3,2	DC.. 11T3	020
SDNC N 2525 M11	25	25	150	12,5	3,2	DC.. 11T3	025


Key D 80 950 ...


Combination Key 70 950 ...

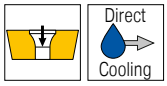

Clamping screw 70 950 ...

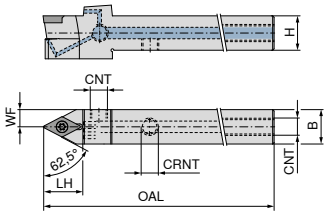

Solid Carbide Seat D 70 950 ...

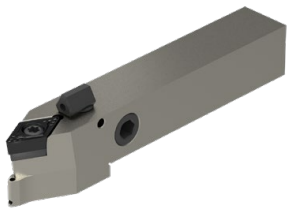

Threaded sleeve 70 950 ...

Spare parts for Article no.								
70 680 008	110				112			
70 680 010	110				112			
70 680 012	110				112			
70 680 016		398			113		106	171
70 680 020		398			113		106	171
70 680 025		398			113		106	171

MaxiLock-S – SDNC 62.5° DC – Tool holder with screw clamping







NEW

Neutral

70 774 ...

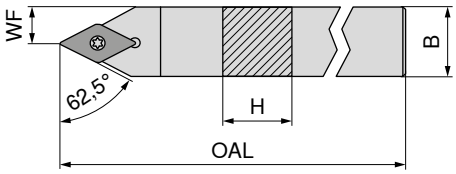
ISO designation	H mm	B mm	OAL mm	WF mm	CNT	CRNT	torque moment Nm	Insert	
SDNC N 1212 F07 DC	12	12	80	6,0	M6	M6	1,2	DC.. 0702	**01200**
SDNC N 1212 M07 DC	12	12	150	6,0	M6	M6	1,2	DC.. 0702	**11200**
SDNC N 1212 M11 DC	12	12	150	6,0	M6	M6	3,2	DC.. 11T3	**21200**
SDNC N 1616 H11 DC	16	16	100	8,0	G1/8"	M6	3,2	DC.. 11T3	**01600**
SDNC N 2020 K11 DC	20	20	125	10,0	G1/8"	M6	3,2	DC.. 11T3	**02000**
SDNC N 2525 M11 DC	25	25	150	12,5	G1/8"	M6	3,2	DC.. 11T3	**02500**

	 Clamping screw	 Solid Carbide Seat D	 Grubscrew	 Grubscrew	 Threaded sleeve
	70 950 ...	**70 950 ...**	**70 950 ...**	**70 950 ...**	**70 950 ...**
Spare parts for Article no.					
70 774 01200	**857**			**86700**	
70 774 11200	**857**			**86700**	
70 774 01600	**87900**	**106**	**88000**	**86700**	**171**
70 774 02000	**87900**	**106**	**88000**	**86700**	**171**
70 774 21200	**859**			**86700**	
70 774 02500	**87900**	**106**	**88000**	**86700**	**171**

	 Sealing plugs DC	 Key D	 O-Ring	 Coolant nozzle DC	 Coolant screw plug
	70 950 ...	**80 950 ...**	**70 950 ...**	**70 950 ...**	**70 950 ...**
Spare parts for Article no.					
70 774 01200		**039**			
70 774 11200		**039**			
70 774 01600	**87600**	**120**	**88100**	**87700**	**294**
70 774 02000	**87600**	**120**	**88100**	**87700**	**294**
70 774 21200		**120**			
70 774 02500	**87600**	**120**	**88100**	**87700**	**294**

3

MaxiLock-S – SDNC 62.5° – Toolholder with screw clamping



							Neutral
							70 784 ...
ISO designation	H mm	B mm	OAL mm	WF mm	torque moment Nm	Insert	
SDNC N 0808 K07	8	8	125	4	1,2	DC.. 0702	**008**
SDNC N 1010 M07	10	10	150	5	1,2	DC.. 0702	**010**
SDNC N 1212 M07	12	12	150	6	1,2	DC.. 0702	**012**
SDNC N 1414 M11	14	14	150	7	3,2	DC.. 11T3	**014**

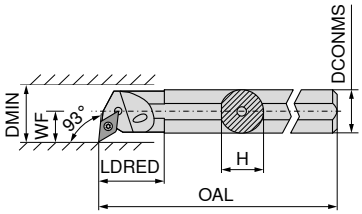

Key D


Clamping screw

		80 950 ...		**70 950 ...**	
Spare parts for Article no.					
70 784 008	T08	**110**	M2,5x6	**112**	
70 784 010	T08	**110**	M2,5x6	**112**	
70 784 012	T08	**110**	M2,5x6	**112**	
70 784 014	T15	**113**	M3,5x11	**113**	

MaxiLock-S – SDUC 93° – Boring bar with screw clamping

▲ A... = with thro' coolant
▲ S... = without thro' coolant



Illustrations show right-hand versions

ISO designation	DCONMS mm	H mm	OAL mm	LDRED mm	WF mm	DMIN mm	torque moment Nm	Insert	Left-hand 70 737 ...	Right-hand 70 736 ...
S12Q SDUC R/L 07	12	11,0	180		9	17	1,2	DC.. 0702	**012**	**012**
A12K SDUC R/L 07	12	11,5	125	22	9	16	1,2	DC.. 0702	**212**	**212**
S16R SDUC R/L 07	16	15,0	200		11	21	1,2	DC.. 0702	**016**	**016**
A16M SDUC R/L 07	16	15,0	150	29	11	20	1,2	DC.. 0702	**216**	**216**
S20S SDUC R 07	20	18,0	250		13	25	1,2	DC.. 0702		**020**
A20Q SDUC R/L 07	20	18,5	180	32	13	25	1,2	DC.. 0702	**220**	**220**
S20S SDUC R 11	20	18,0	250		13	25	3,2	DC.. 11T3		**120**
A20Q SDUC R/L 11	20	18,5	180	32	13	25	3,2	DC.. 11T3	**320**	**320**

Key D

80 950 ...

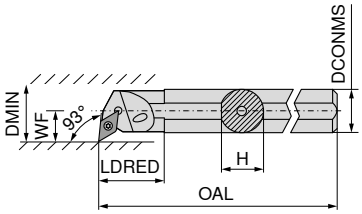
Clamping screw

70 950 ...

Spare parts Insert		
DC.. 0702	**110**	**112**
DC.. 11T3	**113**	**110**

MaxiLock-S – SDUC 93° – Boring bar with screw clamping

▲ Type: Solid carbide



Illustrations show right-hand versions

ISO designation	DCONMS mm	H mm	OAL mm	LDRED mm	WF mm	DMIN mm	torque moment Nm	Insert	Left-hand 70 739 ...	Right-hand 70 738 ...
E12Q SDUC R/L 07	12	11,5	180	26	9	16	1,2	DC.. 0702	**012**	**012**
E16R SDUC R/L 07	16	15,0	200	34	11	20	1,2	DC.. 0702	**016**	**016**
E20S SDUC R/L 11	20	18,5	250	38	13	25	3,2	DC.. 11T3	**120**	**120**
E25T SDUC R/L 11	25	23,0	300	43	17	32	3,2	DC.. 11T3	**125**	**125**

Key D

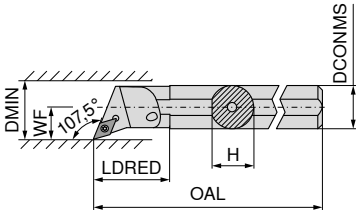
80 950 ...

Clamping screw

70 950 ...

Spare parts for Article no.		
70 739 012 / 70 738 012	**110**	**112**
70 739 016 / 70 738 016	**110**	**112**
70 739 120 / 70 738 120	**113**	**304**
70 739 125 / 70 738 125	**113**	**113**

MaxiLock-S – SDQC 107.5° – Boring bar with screw clamping

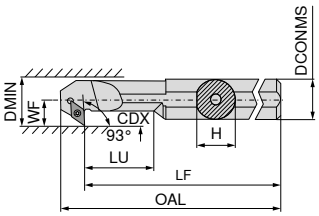


Illustrations show right-hand versions

ISO designation	DCONMS mm	H mm	OAL mm	LDRED mm	WF mm	DMIN mm	torque moment Nm	Insert	Left-hand 70 741 ...	Right-hand 70 740 ...
A10H SDQC R/L 07	10	9,0	100	22	7	12,5	1,2	DC.. 0702	**210**	**210**
A12K SDQC R/L 07	12	11,5	125	22	9	16,0	1,2	DC.. 0702	**212**	**212**
A16M SDQC R/L 07	16	15,0	150	29	11	20,0	1,2	DC.. 0702	**216**	**216**
A20Q SDQC R/L 07	20	18,5	180	32	13	25,0	1,2	DC.. 0702	**220**	**220**
A25R SDQC R/L 11	25	23,0	200	36	17	32,0	3,2	DC.. 11T3	**225**	**225**

Spare parts for Article no.	Key D 80 950 ...	Combination Key 70 950 ...	Clamping screw 70 950 ...	Solid Carbide Seat D 70 950 ...	Threaded sleeve 70 950 ...
70 740 210 / 70 741 210	**110**		**112**		
70 740 212 / 70 741 212	**110**		**112**		
70 740 216 / 70 741 216	**110**		**112**		
70 740 220 / 70 741 220	**110**		**112**		
70 740 225 / 70 741 225		**398**	**113**	**106**	**171**

MaxiLock-S – SDXC 93° – Boring bar with screw clamping



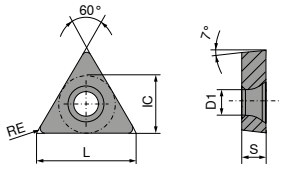
Illustrations show right-hand versions

ISO designation	DCONMS mm	H mm	LF mm	OAL mm	LU mm	WF mm	DMIN mm	CDX mm	torque moment Nm	Insert	Left-hand 70 733 ...	Right-hand 70 732 ...
A12K SDXC R/L 07	12	11,5	125	137,0	24	9	16	4,5	1,2	DC.. 0702	**212**	**212**
A16M SDXC R/L 07	16	15,0	150	162,0	36	11	20	4,5	1,2	DC.. 0702	**216**	**216**
A20Q SDXC R/L 11	20	18,5	180	196,5	40	13	25	6,5	3,2	DC.. 11T3	**220**	**220**
A25R SDXC R/L 11	25	23,0	200	216,8	50	17	32	9,5	3,2	DC.. 11T3	**225**	**225**

Spare parts for Article no.	Key D 80 950 ...	Clamping screw 70 950 ...
70 733 212 / 70 732 212	**110**	**112**
70 733 216 / 70 732 216	**110**	**112**
70 733 220 / 70 732 220	**113**	**304**
70 733 225 / 70 732 225	**113**	**304**

TCMT / TCGT

Designation	L mm	S mm	D1 mm	IC mm
TCMT 0902..	9,6	2,38	2,5	5,56
TC.T 1102..	11,0	2,38	2,8	6,35



TCMT / TCGT

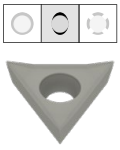
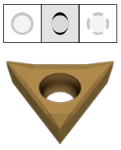
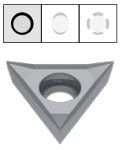
		NEW	NEW	NEW	NEW	NEW	NEW	NEW
		-SF CTCP125-P	-SMF CTCP115-P	-SMF CTCP135-P	-SM CTCP115-P	-SM CTCP125-P	-SM CTCP135-P	-SM CTCP135-P
		DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN
		F TCMT 76 275 ...	F TCMT 76 284 ...	F TCMT 76 284 ...	M TCMT 76 274 ...	M TCMT 76 274 ...	M TCGT 76 270 ...	M TCMT 76 274 ...
ISO	RE mm							
090204EN	0,4					50401		70401
110202EN	0,2						71401	
110204EN	0,4	51601			31601	51601		71601
110208EN	0,8	51801	31801	71801	31801			71801
P		●	●	●	●	●	●	●
M				○			○	○
K		○	○		○	○		
N								
S								
H								
O								

TCMT

		NEW		NEW	NEW		NEW
		-M25 CTCM120	-M25 CTPM125	-M25 CTCM130	-M55 CTCM120	-M55 CTPM125	-M55 CTCM130
		DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN
		F TCMT 75 217 ...	F TCMT 75 217 ...	F TCMT 75 217 ...	M TCMT 75 218 ...	M TCMT 75 218 ...	M TCMT 75 218 ...
ISO	RE mm						
090204EN	0,4				10400	204	30400
110204EN	0,4	11600	216	31600	11600	216	31600
P		○	○	○	○	○	○
M		●	●	●	●	●	●
K							
N							
S				○			○
H							
O							

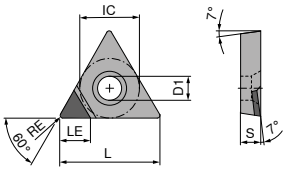
3

TCGT

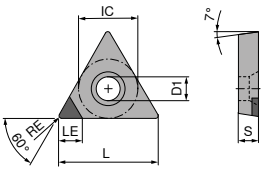
		NEW		
		-27 H10T	-27 CWN15	-27 CTPX715 DRAGONSKIN
				
		M TCGT	M TCGT	M TCGT
		70 276 ...	70 276 ...	70 276 ...
ISO	RE mm			
110202FN	0,2	600	300	71400
110204FN	0,4	602	302	81600
P				●
M			○	●
K		○		○
N		●	●	●
S				●
H				
O		○		○

TCGT / TCGW

Designation	L mm	S mm	D1 mm	IC mm
TCG. 0902..	9,6	2,38	2,5	5,56
TCG. 1102..	11,0	2,38	2,8	6,35



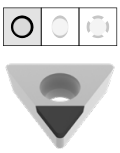
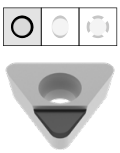
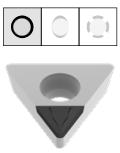
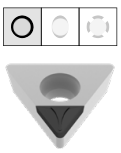
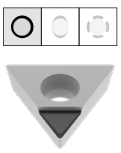
TCGT A



TCGW A

TCGW / TCGT

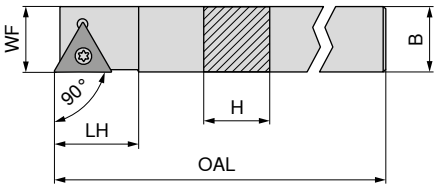
▲ TCE(NOI) = Design and number of equipped cutting edge corners

					NEW				NEW
				CTDPD20	CTDPD20	-CB1 CTDPD20	-CB2 CTDPS30	CTDPS30
								
				F DIAMOND TCGW	F DIAMOND TCGT	F DIAMOND TCGT	M DIAMOND TCGT	F DIAMOND TCGT
				71 140 ...	71 184 ...	71 325 ...	71 326 ...	71 184 ...
ISO	RE mm	TCE (NOI)	LE mm					
090202FN	0,2	A (1)	3,7	100		112	212	20001
090204FN	0,4	A (1)	3,4	102		114	214	20101
090208FN	0,8	A (1)	3,0	104	10001			
110202FN	0,2	A (1)	3,7	106	10101	122	222	
110204FN	0,4	A (1)	3,4	108	10201	124	224	20201
110208FN	0,8	A (1)	3,0	110	10301			
P								
M								
K								
N				●	●	●	●	●
S								
H								
O				●	●	●	●	●

3

MaxiLock-S – STAC 90° – Toolholder with screw clamping

▲ for sliding head lathes



Illustrations show right-hand versions

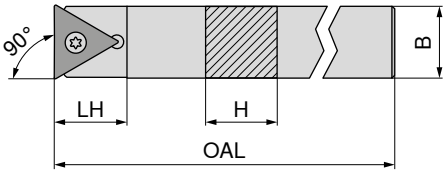
ISO designation	H mm	B mm	OAL mm	LH mm	WF mm	torque moment Nm	Insert	Left-hand 70 769 ...	Right-hand 70 768 ...
STAC R/L 1010 K09	10	10	125	12	10	1	TC.. 0902	010	010
STAC R/L 1212 K11	12	12	125	15	12	1,2	TC.. 1102	012	012
STAC R 1414 K11	14	14	125	15	14	1,2	TC.. 1102		014

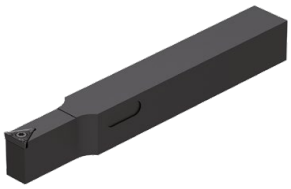
Key D

Clamping screw

Spare parts for Article no.	Key D 80 950 ...		Clamping screw 70 950 ...	
70 769 012 / 70 768 012	T08	110	M2,5x6	112
70 768 014	T08	110	M2,5x6	112

MaxiLock-S – STCC 90° – Toolholder with screw clamping





ISO designation	H mm	B mm	OAL mm	LH mm	torque moment Nm	Insert	Neutral 70 782 ...
STCC N 0808 K09	8	8	125	11	1	TC.. 0902	008
STCC N 1010 K11	10	10	125	15	1,2	TC.. 1102	010
STCC N 1212 K11	12	12	125	15	1,2	TC.. 1102	012
STCC N 1414 K11	14	14	125	21	1,2	TC.. 1102	014
STCC N 1616 K11	16	16	125	24	1,2	TC.. 1102	016

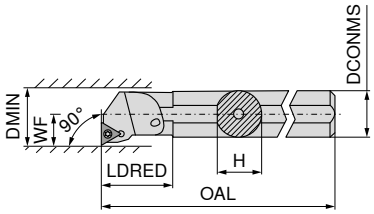
Key D

Clamping screw

Spare parts for Article no.	Key D 80 950 ...		Clamping screw 70 950 ...	
70 782 010	T08	110	M2,5x6	112
70 782 012	T08	110	M2,5x6	112
70 782 014	T08	110	M2,5x6	112
70 782 016	T08	110	M2,5x6	112

MaxiLock-S – STFC 90° – Boring bar with screw clamping

▲ A... = with thro' coolant
▲ S... = without thro' coolant



Illustrations show right-hand versions

									Left-hand	Right-hand
									70 729 ...	**70 728 ...**
ISO designation	DCONMS mm	H mm	OAL mm	LDRED mm	WF mm	DMIN mm	torque moment Nm	Insert		
A10H STFC R/L 09	10	9,5	100	19	7	13	1	TC.. 0902	**210**	**210**
A12K STFC R/L 11	12	11,5	125	22	9	16	1,2	TC.. 1102	**212**	**212**
A16M STFC R/L 11	16	15,0	150	29	11	20	1,2	TC.. 1102	**216**	**216**

Key D

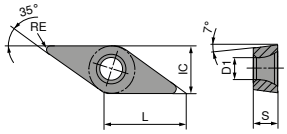
Clamping screw

			80 950 ...		**70 950 ...**	
Spare parts for Article no.						
70 729 212 / 70 728 212	T08	**110**		M2,5x6	**112**	
70 729 216 / 70 728 216	T08	**110**		M2,5x6	**112**	

3

VCGT / VCMT / VCET

Designation	L mm	S mm	D1 mm	IC mm
VC.T 1103..	11,1	3,18	2,9	6,35



VCGT / VCMT

		NEW	NEW	NEW	NEW	NEW	NEW	NEW
		-SF CTCP115-P	-SF CTCP125-P	-SF CTCP135-P	-SMF CTCP115-P	-SMF CTCP125-P	-SMF CTCP135-P	-SMF CTCP135-P
		DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN
		F VCGT 76 277 ...	F VCGT 76 277 ...	F VCGT 76 277 ...	F VCMT 76 288 ...	F VCMT 76 288 ...	F VCGT 76 285 ...	F VCMT 76 288 ...
ISO	RE mm							
110302EN	0,2	31401	51401	71401			71401	
110304EN	0,4	31601	51601	71601	31601	51601		71601
110308EN	0,8	31801	51801	71801				
P		●	●	●	●	●	●	●
M				○			○	○
K		○	○		○	○		
N								
S								
H								
O								

VCGT

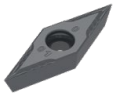
			NEW					NEW
		-25P H210T	-25P CTPX710	-25Q H210T	-27 H10T	-27 CWN15	-27 CTPX715	
			DRAGONSKIN				DRAGONSKIN	
		F VCGT 70 282 ...	M VCGT 70 282 ...	M VCGT 70 282 ...	M VCGT 70 280 ...	M VCGT 70 280 ...	M VCGT 70 280 ...	
ISO	RE mm							
110302FN	0,2	638	71400		606	306	81400	
110304FL	0,4			670				
110304FN	0,4	640	71600		608	308	81600	
110304FR	0,4			680				
110308FN	0,8				610	310	71800	
P			●				●	
M			●			○	●	
K		○		○	○		○	
N		●	●	●	●	●	●	
S		○	●	○			●	
H								
O		○		○	○		○	

VCET

NEW

-F05
CTPX710

DRAGONSKIN



F
VCET
76 255 ...

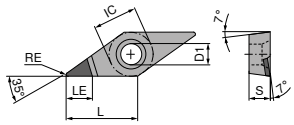
ISO	RE mm	
1103005FN	0,05	**11400**
1103015FN	0,15	**11800**
110301FN	0,10	**11600**
110302FN	0,20	**12000**
110304FN	0,40	**12200**

P	●
M	●
K	
N	●
S	●
H	
O	

3

VCGT

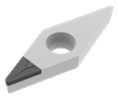
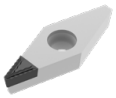
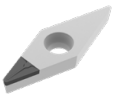
Designation	L mm	S mm	D1 mm	IC mm
VCGT 1103..	11,1	3,18	2,9	6,35



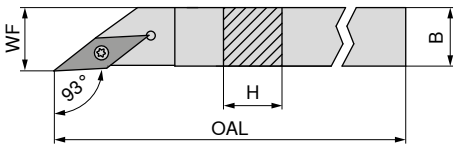
VCGT A

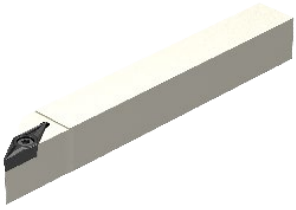
VCGT

▲ TCE(NOI) = Design and number of equipped cutting edge corners

	-CB1 CTDPD20	-CB1 CTDPS30	-CB2 CTDPS30	-CB3 CTDPU20	-CB1 CTDCD10	-CB2 CTDCD10
						
	F	F	M	R	F	M
	DIAMOND VCGT	DIAMOND VCGT	DIAMOND VCGT	DIAMOND VCGT	DIAMOND VCGT	DIAMOND VCGT
	71 330 ...	71 330 ...	71 331 ...	71 332 ...	71 330 ...	71 331 ...
ISO RE mm / **TCE (NOI)** / LE mm						
110301FN 0,1 **A (1)** 3,0					31000	
110301FN 0,1 **A (1)** 5,4	11000					
110302FN 0,2 **A (1)** 3,0					312	312
110302FN 0,2 **A (1)** 4,6	112	21200	212			
110304FN 0,4 **A (1)** 3,0					314	314
110304FN 0,4 **A (1)** 3,9	114	214	214	214		
110308FN 0,8 **A (1)** 3,3			21800			
P						
M						
K						
N	●	●	●	●	●	●
S						
H						
O	●	●	●	●	●	●

MaxiLock-S – SVJC 93° – Toolholder with screw clamping





Illustrations show right-hand versions

ISO designation	H mm	B mm	OAL mm	WF mm	torque moment Nm	Insert	Left-hand 70 697 ...	Right-hand 70 696 ...
SVJC R/L 0808 H11	8	8	100	8	1,2	VC.. 1103	008	008
SVJC R/L 1010 H11	10	10	100	10	1,2	VC.. 1103	010	010
SVJC R/L 1212 H11	12	12	100	12	1,2	VC.. 1103	112	112
SVJC R/L 1616 K11	16	16	125	16	1,2	VC.. 1103	116	116

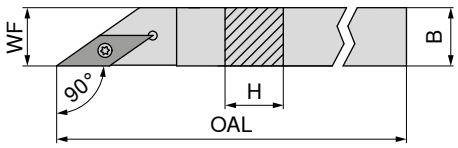

Key D

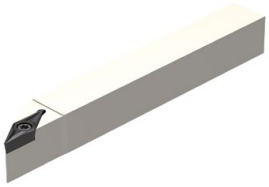

Clamping screw

Spare parts Insert	Key D 80 950 ...	Clamping screw 70 950 ...
VC.. 1103	110	112

MaxiLock-S – SVAC 90° – Toolholder with screw clamping

▲ for sliding head lathes





Illustrations show right-hand versions

ISO designation	H mm	B mm	OAL mm	WF mm	torque moment Nm	Insert	Left-hand 70 695 ...	Right-hand 70 694 ...
SVAC R/L 0808 H11	8	8	100	8	1,2	VC.. 1103	008	008
SVAC R/L 1010 H11	10	10	100	10	1,2	VC.. 1103	010	010
SVAC R/L 1212 H11	12	12	100	12	1,2	VC.. 1103	012	012

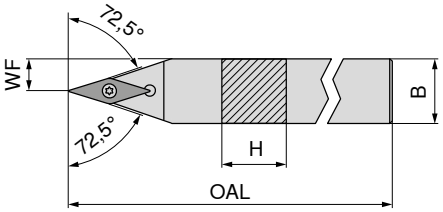

Key D

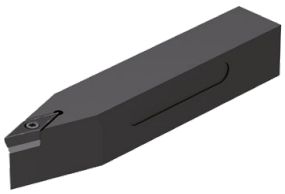

Clamping screw

Spare parts for Article no.	Key D		Clamping screw	
	T08	110	M2,5x6	112
70 694 008 / 70 695 008	T08	110	M2,5x6	112
70 694 010 / 70 695 010	T08	110	M2,5x6	112
70 694 012 / 70 695 012	T08	110	M2,5x6	112

3

MaxiLock-S – SVVC 72.5° – Toolholder with screw clamping





ISO designation	H mm	B mm	OAL mm	WF mm	torque moment Nm	Insert	Neutral 70 692 ...
SVVC N 1212 F11	12	12	80	6	1,2	VC.. 1103	**012**
SVVC N 1616 H11	16	16	100	8	1,2	VC.. 1103	**016**
SVVC N 2020 K11	20	20	125	10	1,2	VC.. 1103	**020**

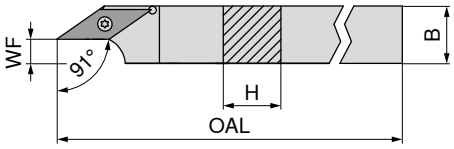

Key D

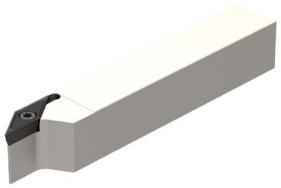

Clamping screw

Spare parts for Article no.	Key D 80 950 ...	Clamping screw 70 950 ...
70 692 012	**110**	**112**
70 692 016	**110**	**112**
70 692 020	**110**	**112**

MaxiLock-S – SVXC 91° – Toolholder with screw clamping

▲ for sliding head lathes





Illustrations show right-hand versions

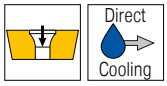
ISO designation	H mm	B mm	OAL mm	WF mm	torque moment Nm	Insert	Left-hand 70 691 ...	Right-hand 70 690 ...
SVXC R/L 1010 H11	10	10	100	2,5	1,2	VC.. 1103	**010**	**010**
SVXC R/L 1212 H11	12	12	100	4,5	1,2	VC.. 1103	**012**	**012**
SVXC R/L 1616 K11	16	16	125	8,5	1,2	VC.. 1103	**016**	**016**

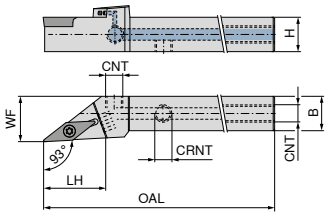

Key D


Clamping screw

Spare parts for Article no.	Key D 80 950 ...		Clamping screw 70 950 ...	
70 691 010 / 70 690 010	T08	**110**	M2,5x6	**112**
70 691 012 / 70 690 012	T08	**110**	M2,5x6	**112**
70 691 016 / 70 690 016	T08	**110**	M2,5x6	**112**

MaxiLock-S – SVJC 93° DC – Tool holder with screw clamping





Illustrations show right-hand versions

NEW
Left-hand
70 780 ...

NEW
Right-hand
70 780 ...

ISO designation	H mm	B mm	OAL mm	WF mm	CNT	CRNT	torque moment Nm	Insert		
SVJC R/L 1212 F11 DC	12	12	80	16	M6	M6	1,2	VC.. 1103	**01201**	**01200**
SVJC R/L 1616 H11 DC	16	16	100	20	G1/8"	M6	1,2	VC.. 1103	**01601**	**01600**


Sealing plugs DC
70 950 ...


Key D
80 950 ...


O-Ring
70 950 ...


Coolant nozzle DC
70 950 ...


Coolant screw plug
70 950 ...

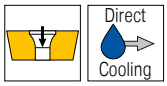

Clamping screw
70 950 ...

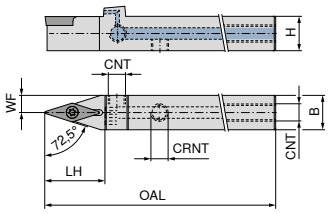

Grubscrew
70 950 ...

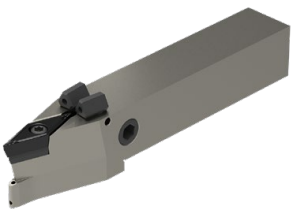

Grubscrew
70 950 ...

Spare parts for Article no.										
70 780 01200 / 70 780 01201			**039**					**857**		**86700**
70 780 01600 / 70 780 01601	**87600**		**039**		**88100**	**87700**	**294**	**857**	**88000**	**86700**

MaxiLock-S – SVVC 72.5° DC – Tool holder with screw clamping







NEW
Neutral
70 781 ...

ISO designation	H mm	B mm	OAL mm	WF mm	CNT	CRNT	torque moment Nm	Insert	
SVVC N 1212 F11 DC	12	12	80	6	M6	M6	1,2	VC.. 1103	**01200**
SVVC N 1616 H11 DC	16	16	100	8	G1/8"	M6	1,2	VC.. 1103	**01600**
SVVC N 2020 K11 DC	20	20	125	10	G1/8"	M6	1,2	VC.. 1103	**02000**


Sealing plugs DC
70 950 ...


Key D
80 950 ...


O-Ring
70 950 ...


Coolant nozzle DC
70 950 ...


Coolant screw plug
70 950 ...


Clamping screw
70 950 ...

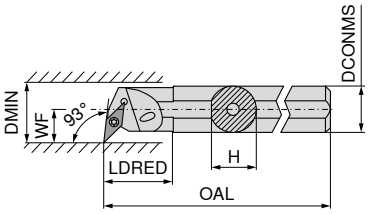

Grubscrew
70 950 ...


Grubscrew
70 950 ...

Spare parts for Article no.										
70 781 01200			**039**					**857**		**86700**
70 781 01600	**87600**		**039**		**88100**	**87700**	**294**	**857**	**88000**	**86700**
70 781 02000	**87600**		**039**		**88100**	**87800**	**294**	**857**	**88000**	**86700**

3

MaxiLock-S – SVUC 93° – Boring bar with screw clamping



Illustrations show right-hand versions

ISO designation	DCONMS mm	H mm	OAL mm	LDRED mm	WF mm	DMIN mm	torque moment Nm	Insert	Left-hand 70 745 ...	Right-hand 70 744 ...
A16M SVUC R/L 11	16	15,0	150	29	11	20	1,2	VC.. 1103	**216**	**216**
A20Q SVUC R/L 11	20	18,5	180	32	13	25	1,2	VC.. 1103	**220**	**220**
A25R SVUC R/L 11	25	23,0	200	36	17	32	1,2	VC.. 1103	**225**	**225**

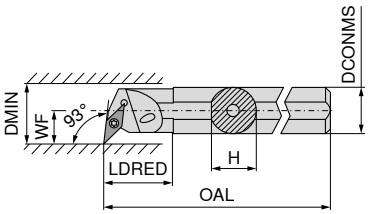

Key D


Clamping screw

Spare parts for Article no.	80 950 ...	70 950 ...
70 744 216 / 70 745 216	**110**	**112**
70 744 220 / 70 745 220	**110**	**112**
70 744 225 / 70 745 225	**110**	**112**

MaxiLock-S – SVUC 93° – Boring bar with screw clamping

▲ Type: Solid carbide



Illustrations show right-hand versions

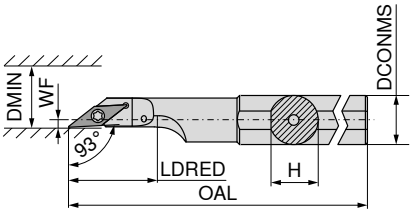
ISO designation	DCONMS mm	H mm	OAL mm	LDRED mm	WF mm	DMIN mm	torque moment Nm	Insert	Left-hand 70 747 ...	Right-hand 70 746 ...
E16R SVUC R/L 11	16	15,0	200	34	11	20	1,2	VC.. 1103	**016**	**016**
E20S SVUC R/L 11	20	18,5	250	38	13	25	1,2	VC.. 1103	**020**	**020**

Key D


Clamping screw

Spare parts for Article no.		80 950 ...		70 950 ...
70 746 016 / 70 747 016	T08	**110**	M2,5x6	**112**
70 746 020 / 70 747 020	T08	**110**	M2,5x6	**112**

MaxiLock-S – SVJC 93° – Boring bar with screw clamping



Illustrations show right-hand versions

ISO designation	DCONMS mm	H mm	OAL mm	LDRED mm	WF mm	DMIN mm	torque moment Nm	Insert	Left-hand 70 727 ...	Right-hand 70 726 ...
A16M SVJC R/L 11	16	15	150	30	2	22	1,2	VC.. 1103	**216**	**216**
A20M SVJC R/L 11	20	19	150	38	2	25	1,2	VC.. 1103	**220**	**220**

Key D

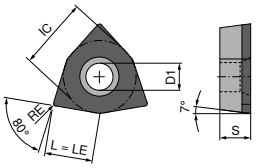
Clamping screw

Spare parts for Article no.	Key D 80 950 ...	Clamping screw 70 950 ...
70 727 216 / 70 726 216	**110**	**112**
70 727 220 / 70 726 220	**110**	**112**

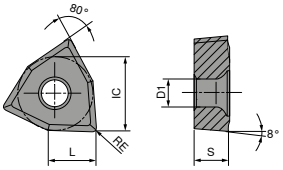
3

WCGT / WCGW

Designation	L mm	S mm	D1 mm	IC mm
WCGW 0201..	2,70	1,58	2,3	3,97
WCGT 0201..	2,71	1,59	2,1	3,97



CBN/PKD WCGW F



WCGT

WCGT

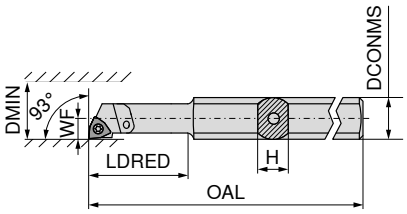
	-SF TCM10	-SF CTPP430 DRAGONSKIN	-SF H216T
			
	F	F	F
	CERMET WCGT	WCGT	WCGT
	70 287 ...	70 287 ...	70 287 ...
ISO / RE mm			
020102EN 0,2	900	450	600
020104EN 0,4	902	452	602
P	●	●	
M	○	●	
K	○	○	○
N		○	●
S		○	
H			
O			○

WCGW

▲ TCE(NOI) = Design and number of equipped cutting edge corners

	CTDPD20
	
	F
	DIAMOND WCGW
	71 154 ...
ISO / RE mm / TCE (NOI) / LE mm	
020102FN 0,2 F 2,7	100
020104FN 0,4 F 2,7	102
P	
M	
K	
N	●
S	
H	
O	●

MaxiLock-S – SWUC 93° – Boring bar with screw clamping



Illustrations show right-hand versions

ISO designation	H mm	OAL mm	LDRED mm	WF mm	DCONMS mm	DMIN mm	torque moment Nm	Insert	Left-hand 70 731 ...	Right-hand 70 730 ...
A0508H SWUC R/L 02	7	100	24	2,9	8	5,8	0,4	WC.. 0201..	**005**	**005**
A0608H SWUC R/L 02	7	100	24	3,9	8	7,8	0,4	WC.. 0201..	**006**	**006**

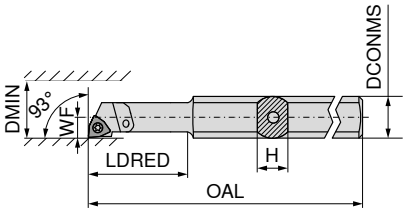

Key D


Clamping screw

Spare parts for Article no.		Key D 80 950 ...		w	Clamping screw 70 950 ...
70 731 005 / 70 730 005	T06	**108**	M1,8x3,4		**334**
70 731 006 / 70 730 006	T06	**108**	M1,8x3,4		**334**

MaxiLock-S – SWUC 93° – Boring bar with screw clamping

▲ with carbide core



Illustrations show right-hand versions

ISO designation	H mm	OAL mm	LDRED mm	WF mm	DCONMS mm	DMIN mm	torque moment Nm	Insert	Left-hand 70 743 ...	Right-hand 70 742 ...
E-A0508H SWUC R/L 02	7	100	24	2,9	8	5,8	0,4	WC.. 0201..	**005**	**005**
E-A0608H SWUC R/L 02	7	100	24	3,9	8	7,8	0,4	WC.. 0201..	**006**	**006**
SET							0,4	WC.. 0201..	**999**	**999**

Set includes boring bars 70 743 005 and 70 743 006 or 70 742 005 and 70 742 006


Key D


Clamping screw

Spare parts for Article no.		Key D 80 950 ...			Clamping screw 70 950 ...
70 743 005 / 70 742 005	T06	**108**	M1,8x3,4		**334**
70 743 006 / 70 742 006	T06	**108**	M1,8x3,4		**334**

Toolfinder – TriClamp

- ▲ Indexable inserts with ground wiper geometry
  Improves surface quality or increases feed rate
- ▲ Turning in all three contour directions
  Maximum flexibility without changing the tool
- ▲ Smallest corner radii 0.0–0.2 mm
  Generates sharp edges
- ▲ Perfect chip control
  Reduces downtime
- ▲ High cutting depths can be achieved
  Reduces the retraction distance

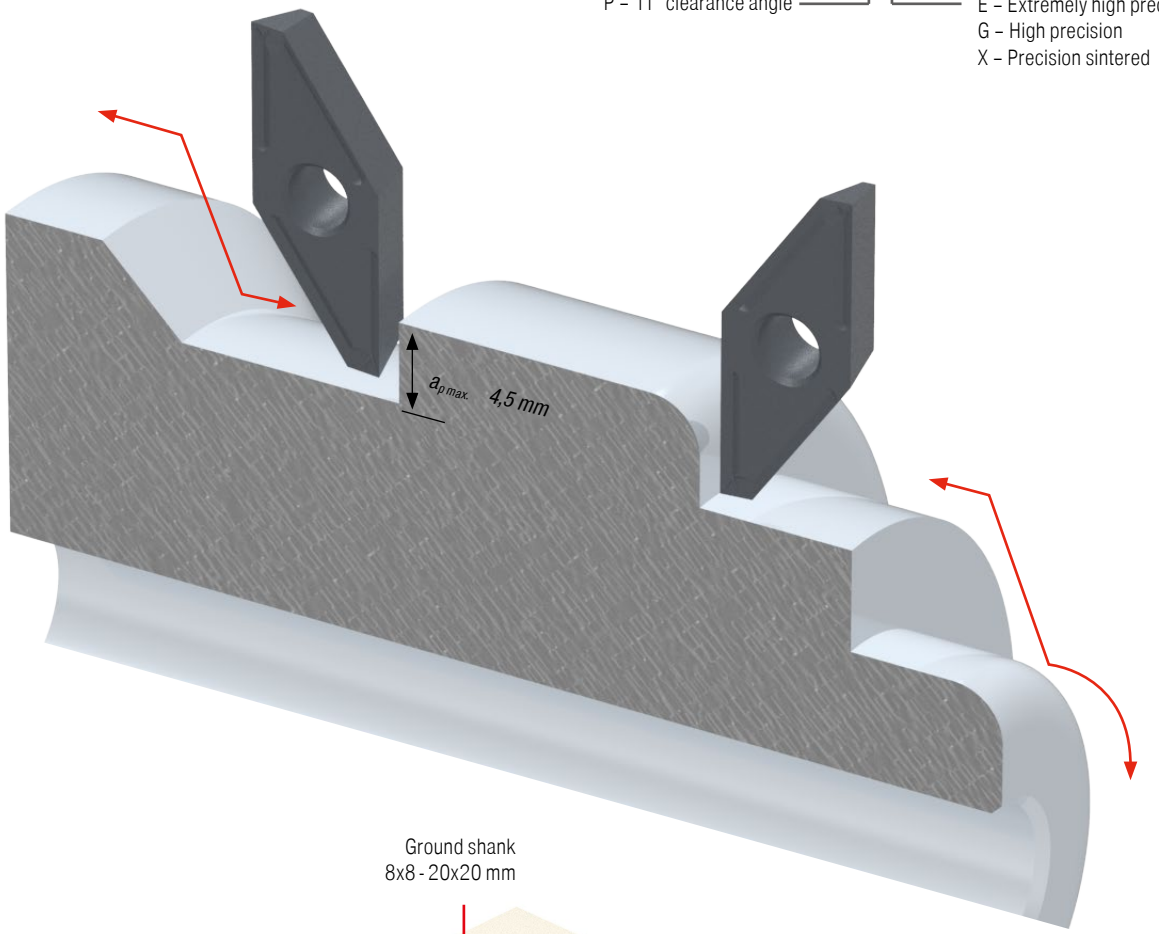
Application directions

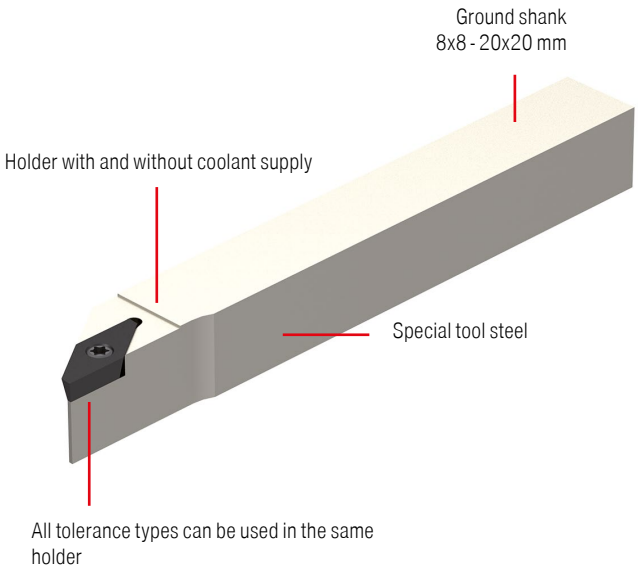
TriClamp system	
V P E T	→ Page 51
V P G T	→ Page 51
V P X T	→ Page 51

Precision

P – 11° clearance angle

E – Extremely high precision
G – High precision
X – Precision sintered

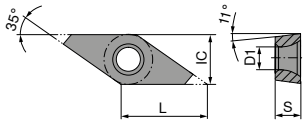




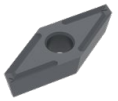
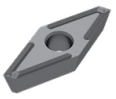
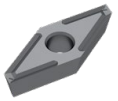
Tool holder	
90°	→ Page 53
91°	→ Page 54
93°	→ Page 53–59

VPGT / VPET / VPXT

Designation	L mm	S mm	D1 mm	IC mm
VP.T 1003..	10	3,18	4,4	6,35

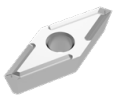
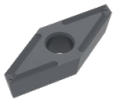
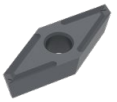


VPGT

		-FL WPU7610	-FR WPU7610	-FL TiAlN+	-FR TiAlN+	NEW -FL WUU7620	NEW -FR WUU7620
							
		F VPGT 72 405 ...	F VPGT 72 404 ...	F VPGT 72 493 ...	F VPGT 72 492 ...	F VPGT 72 493 ...	F VPGT 72 492 ...
ISO	RE mm						
1003ZZ	0,00	760 [2]	760 [1]	500 [2]	500 [1]	70000 [2]	70000 [1]
1003008	0,08	728 [2]	728 [1]	508 [2]	508 [1]	70800 [2]	70800 [1]
1003015	0,15	735 [2]	735 [1]	515 [2]	515 [1]	71500 [2]	71500 [1]
P		●	●	●	●	●	●
M		○	○	○	○		
K		●	●	●	●		
N		○	○	○	○	○	○
S		○	○	○	○	○	○
H							
O		○	○	○	○	○	○

1) Note ! Right hand insert for right hand holder
2) Note ! Left hand insert for left hand holder

VPET

		-FL WUU7610	-FR WUU7610	-FL WPU7610	-FR WPU7610	-FL WPU7620	-FR WPU7620
							
		F VPET 72 403 ...	F VPET 72 402 ...	F VPET 72 403 ...	F VPET 72 402 ...	F VPET 72 403 ...	F VPET 72 402 ...
ISO	RE mm						
1003ZZ	0,00	060 [2]	060 [1]	760 [2]	760 [1]	560 [2]	560 [1]
1003008	0,08	028 [2]	028 [1]	728 [2]	728 [1]	528 [2]	528 [1]
1003015	0,15	035 [2]	035 [1]	735 [2]	735 [1]	535 [2]	535 [1]
P		●	●	●	●	●	●
M				○	○	○	○
K				●	●	●	●
N		○	○	○	○	○	○
S		○	○	○	○	○	○
H							
O		○	○	○	○	○	○

1) Note ! Right hand insert for right hand holder
2) Note ! Left hand insert for left hand holder

3

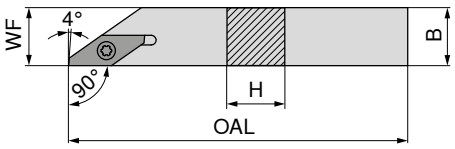
VPXT

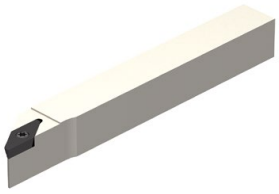
	-EL TiAIN+	-ER TiAIN+
		
	F	F
	VPXT	VPXT
	72 493 ...	72 492 ...

ISO	RE mm		
1003015	0,15	615 [2]	615 [1]
1003035	0,35	635 [2]	635 [1]
P		●	●
M		○	○
K		●	●
N		○	○
S		○	○
H			
O		○	○

1) Note ! Right hand insert for right hand holder
2) Note ! Left hand insert for left hand holder

TriClamp – SVAP 90° – Toolholder with screw clamping





Illustrations show right-hand versions

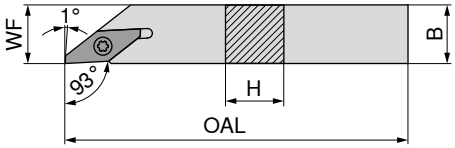
ISO designation	H mm	B mm	OAL mm	WF mm	Insert	Left-hand 72 382 ...	Right-hand 72 380 ...
SVAP R/L 0808 H10	8	8	100	8	VP.. 1003	**008**	**008**
SVAP R/L 1010 H10	10	10	100	10	VP.. 1003	**010**	**010**
SVAP R/L 1212 H10	12	12	100	12	VP.. 1003	**012**	**012**

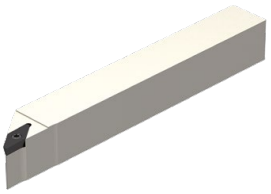
Key D **80 950 ...**

Clamping screw **72 950 ...**

Spare parts Insert			
VP.. 1003	T08	**110**	**002**

TriClamp – SVJP 93° – Toolholder with screw clamping





Illustrations show right-hand versions

ISO designation	H mm	B mm	OAL mm	WF mm	Insert	Left-hand 72 386 ...	Right-hand 72 384 ...
SVJP R/L 0808 H10	8	8	100	8	VP.. 1003	**008**	**008**
SVJP R/L 1010 H10	10	10	100	10	VP.. 1003	**010**	**010**
SVJP R/L 1212 H10	12	12	100	12	VP.. 1003	**012**	**012**
SVJP R/L 1616 K10	16	16	125	16	VP.. 1003	**016**	**016**

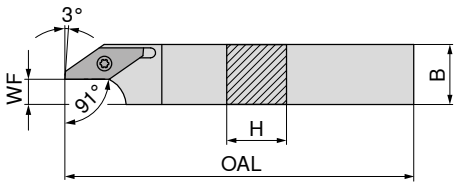
Key D **80 950 ...**

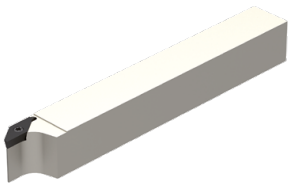
Clamping screw **72 950 ...**

Spare parts Insert			
VP.. 1003	T08	**110**	**002**

3

TriClamp – SVXP 91° – Toolholder with screw clamping





Illustrations show right-hand versions

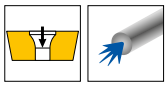
ISO designation	B mm	H mm	OAL mm	WF mm	Insert	Left-hand 72 390 ...	Right-hand 72 388 ...
SVXP R/L 0808 H10	8	8	100	1	VP.. 1003	**008**	**008**
SVXP R/L 1010 H10	10	10	100	3	VP.. 1003	**010**	**010**
SVXP R/L 1212 H10	12	12	100	5	VP.. 1003	**012**	**012**
SVXP R/L 1616 K10	16	16	125	9	VP.. 1003	**016**	**016**

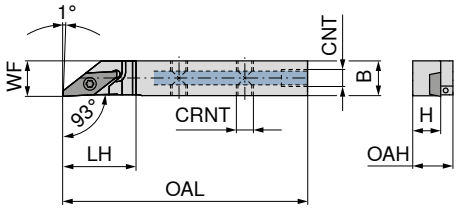

Key D


Clamping screw

Spare parts Insert		Key D 80 950 ...	Clamping screw 72 950 ...
VP.. 1003	T08	**110**	**002**

TriClamp – SVJP 93°-IC – Tool holder with screw clamping and thro' coolant





Illustrations show right-hand versions

ISO designation	H mm	B mm	LH mm	WF mm	OAL mm	OAH mm	CRNT	CNT	Insert	Left-hand 72 361 ...	Right-hand 72 360 ...
SVJP R/L 0810 H10 IC	8	10	21	10	100	11,5	M5	M5	VP.. 1003	**008**	**008**
SVJP R/L 1010 H10 IC	10	10	21	10	100	13,5	M5	M5	VP.. 1003	**010**	**010**
SVJP R/L 1212 H10 IC	12	12	21	12	100	15,5	M5	M5	VP.. 1003	**012**	**012**
SVJP R/L 1616 K10 IC	16	16	21	16	125	19,5	M5	G1/8"	VP.. 1003	**016**	**016**
SVJP R/L 2020 K10 IC	20	20	21	20	125	23,5	M5	G1/8"	VP.. 1003	**020**	**020**


Cylindrical screw


Cylindrical screw

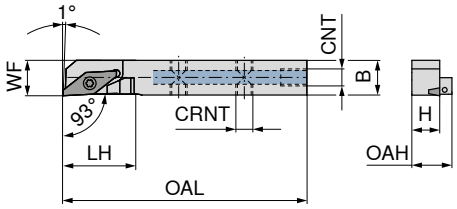

Key D


Clamping screw

Spare parts for Article no.		Cylindrical screw 72 950 ...		Cylindrical screw 72 950 ...		Key D 80 950 ...		Clamping screw 72 950 ...
72 360 008 / 72 361 008			M5x4	**011**	T08	**110**		**002**
72 360 010 / 72 361 010			M5x4	**011**	T08	**110**		**002**
72 360 012 / 72 361 012			M5x4	**011**	T08	**110**		**002**
72 360 016 / 72 361 016	G1/8"	**010**	M5x4	**011**	T08	**110**		**002**
72 360 020 / 72 361 020	G1/8"	**010**	M5x4	**011**	T08	**110**		**002**

Suitable accessories can be found on → **Page 131+132**

TriClamp – SVJP 93°-VIC – Reinforced tool holder with screw clamping and thro' coolant



Illustrations show right-hand versions

ISO designation	H mm	B mm	LH mm	WF mm	OAL mm	OAH mm	CRNT	CNT	Insert	Left-hand 72 363 ...	Right-hand 72 362 ...
SVJP R/L 0810 H10 VIC	8	10	21	10	100	11,5	M5	M5	VP.. 1003	**008**	**008**
SVJP R/L 1010 H10 VIC	10	10	21	10	100	13,5	M5	M5	VP.. 1003	**010**	**010**
SVJP R/L 1212 H10 VIC	12	12	21	12	100	15,5	M5	M5	VP.. 1003	**012**	**012**

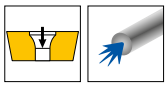

Cylindrical screw **72 950 ...**

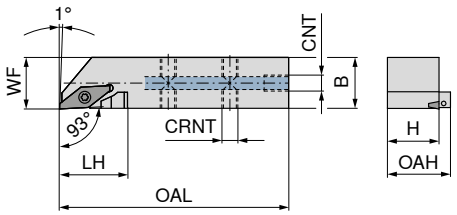

Key D **80 950 ...**


Clamping screw **72 950 ...**

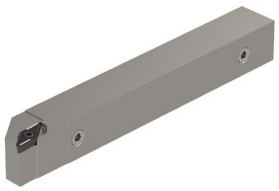
Spare parts Insert						
VP.. 1003	M5x4	**011**	T08	**110**		**002**

TriClamp – SVJP 93°-VIC – Reinforced tool holder with screw clamping and thro' coolant





Illustrations show right-hand versions



ISO designation	H mm	B mm	LH mm	WF mm	OAL mm	OAH mm	CRNT	CNT	Insert	Left-hand 72 365 ...	Right-hand 72 364 ...
SVJP R/L 1616 K10 VIC	16	16	21	16	125	19,5	M5	G1/8"	VP.. 1003	**016**	**016**
SVJP R/L 2020 K10 VIC	20	20	21	20	125	23,5	M5	G1/8"	VP.. 1003	**020**	**020**


Cylindrical screw **72 950 ...**


Cylindrical screw **72 950 ...**


Key D **80 950 ...**

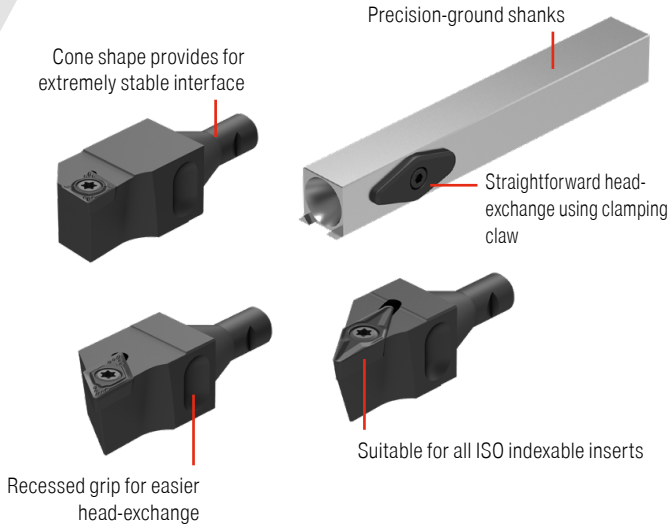

Clamping screw **72 950 ...**

Spare parts Insert							
VP.. 1003	G1/8"	**010**	M5x4	**011**	T08	**110**	**002**

Suitable accessories can be found on → **Page 131+132**

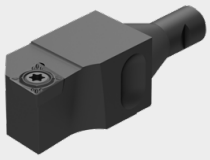
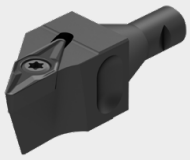
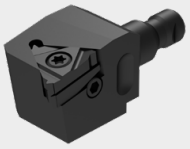
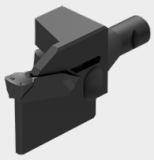
Highlights

- Quick and easy head-exchange
  Reduced downtime
- Uniform height and lengths
  No setup time required
- High repeatability of ±7.5 µm
  Low reject rate
- Ground base holder
  Maximum precision
- Secure positioning of heads
  Repeat inspections not required



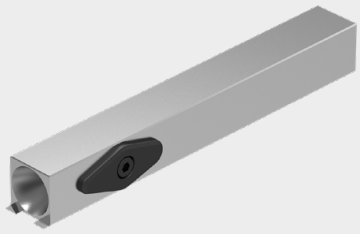
Overview

Exchangeable heads

CC.T	DC.T	VC.T	External thread	GX grooving
				
SCLC 95°	SDJC 93° / SDAC 90° / SDNC 62,5°	SVJC 93°	11.. / 16..	GX09 GX16
→ 57	→ 57+58	→ 59	→ 59+60	→ 60

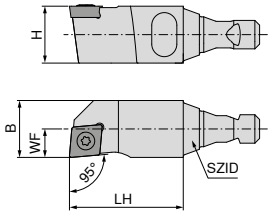
Basic holder

SZID 12: OAL = 63 mm
SZID 16: OAL = 63 mm
SZID 12: OAL = 93 mm
SZID 16: OAL = 89 mm



→ 61

XheadClamp – SCLC 95° exchangeable head turning tool



Illustrations show right-hand versions

ISO designation	SZID	H mm	B mm	LH mm	WF mm	Insert	Left-hand 72 809 ...	Right-hand 72 808 ...
SCLC R/L 06 BH12	12	12	12	24	6	CC.. 0602	**221**	**221**
SCLC R/L 06 BH16	16	16	16	28	8	CC.. 0602	**621**	**621**
SCLC R/L 09 BH12	12	12	12	24	6	CC.. 09T3	**222**	**222**
SCLC R/L 09 BH16	16	16	16	28	8	CC.. 09T3	**622**	**622**


Key D

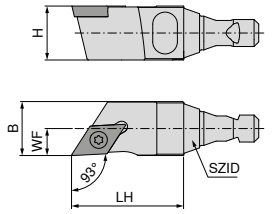

Combination Key


Clamping screw

Spare parts						
Insert		80 950 ...		70 950 ...		70 950 ...
CC.. 0602	T08	**110**			M2,5x6	**112**
CC.. 09T3			T15/SW	**398**	M3,5x11	**113**

Suitable indexable inserts can be found in the ISO turning section on → **Page 13–16.**

XheadClamp – SDJC 93° exchangeable head turning tool



Illustrations show right-hand versions

ISO designation	SZID	H mm	B mm	LH mm	WF mm	Insert	Left-hand 72 811 ...	Right-hand 72 810 ...
SDJC R/L 07-BH12	12	12	12	24	6	DC.. 0702	**230**	**230**
SDJC R/L 07-BH16	16	16	16	28	8	DC.. 0702	**630**	**630**
SDJC R/L 11-BH12	12	12	12	24	6	DC.. 11T3	**231**	**231**
SDJC R/L 11-BH16	16	16	16	28	8	DC.. 11T3	**631**	**631**


Key D

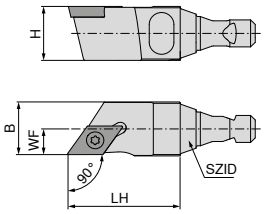

Clamping screw

Spare parts						
Insert		80 950 ...		70 950 ...		70 950 ...
DC.. 0702	T08	**110**			M2,5x6	**112**
DC.. 11T3	T15	**113**			M4x11	**174**

Suitable indexable inserts can be found in the ISO turning section on → **Page 23–27.**

3

XheadClamp – SDAC 90° exchangeable head turning tool



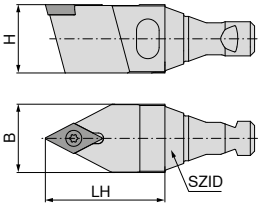
Illustrations show right-hand versions

ISO designation	SZID	B mm	H mm	WF mm	LH mm	Insert	NEW Left-hand 72 811 ...	NEW Right-hand 72 810 ...
SDACR 07-BH12	12	12	12	6	24	DC.. 0702	**228**	**228**
SDACR 07-BH16	16	16	16	8	28	DC.. 0702	**628**	**628**
SDACR 11-BH12	12	12	12	6	24	DC.. 11T3	**229**	**229**
SDACR 11-BH16	16	16	16	8	28	DC.. 11T3	**629**	**629**

Spare parts for Article no.	 Key D 80 950 ...	 Combination Key 70 950 ...	 Clamping screw 70 950 ...
72 810 229 / 72 811 229		**398**	**113**
72 810 228 / 72 811 228	**110**		**112**
72 810 628 / 72 811 628	**110**		**112**
72 810 629 / 72 811 629		**398**	**113**

Suitable indexable inserts can be found in the ISO turning section on → **Page 23–27.**

XheadClamp – SDNC 62.5° exchangeable head turning tool

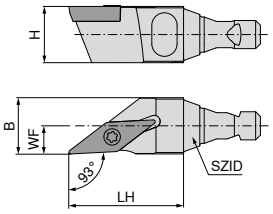


ISO designation	SZID	H mm	B mm	LH mm	Insert	NEW Neutral 72 814 ...
SDNC N 07-BH12	12	12	12	28	DC.. 0702	**232**
SDNC N 07-BH16	16	16	16	28	DC.. 0702	**632**
SDNC N 11-BH12	12	12	12	24	DC.. 11T3	**233**
SDNC N 11-BH16	16	16	16	28	DC.. 11T3	**633**

Spare parts for Article no.	 Key D 80 950 ...	 Combination Key 70 950 ...	 Clamping screw 70 950 ...
72 814 232	**110**		**112**
72 814 632	**110**		**112**
72 814 233		**398**	**113**
72 814 633		**398**	**113**

Suitable indexable inserts can be found in the ISO turning section on → **Page 23–27.**

XheadClamp – SVJC 93° exchangeable head turning tool



Illustrations show right-hand versions

ISO designation	SZID	H mm	B mm	LH mm	WF mm	Insert	Left-hand 72 813 ...	Right-hand 72 812 ...
SVJC R/L 11-BH12	12	12	12	24	6	VC.. 1103	**234**	**234**
SVJC R/L 11-BH16	16	16	16	28	8	VC.. 1103	**634**	**634**

Key D

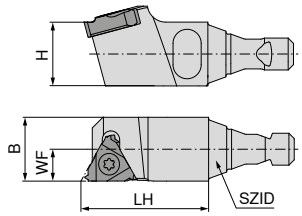
Clamping screw

Spare parts		Key D 80 950 ...		Clamping screw 70 950 ...	
Insert					
VC.. 1103	T08	**110**	M2,5x6	**112**	

Suitable indexable inserts can be found in the ISO turning section on → **Page 40–42.**

3

XheadClamp – Exchangeable head standard external threading tool



Illustrations show right-hand versions

Designation	SZID	H mm	LH mm	WF mm	Insert	NEW Left-hand 72 803 ...	NEW Right-hand 72 802 ...
SE R/L 11-BH12	12	12	24	6	11 ..	**241**	**241**
SE R/L 11-BH16	16	16	28	8	11 ..	**641**	**641**

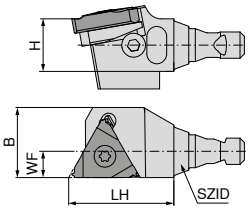
Key D

Clamping screw

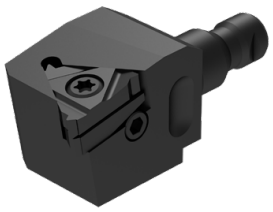
for Article no.	Key D 80 950 ...	Clamping screw 71 950 ...
72 802 241 / 72 803 241	**110**	**230**
72 802 641 / 72 803 641	**110**	**230**

Suitable indexable inserts can be found in **Chapter 2, Thread turning.**

XheadClamp – Exchangeable head standard external threading tool



Illustrations show right-hand versions

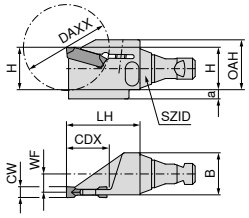


						NEW Left-hand	NEW Right-hand
						72 805 ...	72 804 ...
Designation	**SZID**	**H mm**	**LH mm**	**WF mm**	**Insert**		
SE R/L 16-BH12	12	12	24	16	16 ..	**242**	**242**
SE R/L 16-BH16	16	16	28	18	16 ..	**642**	**642**

	Shim	Screw-U	Key D	Clamping screw
	71 950 ...	71 950 ...	80 950 ...	71 950 ...
Spare parts for Article no.				
72 805 242	**129**	**234**	**110**	**231**
72 805 642	**129**	**234**	**110**	**231**
72 804 242	**121**	**234**	**110**	**231**
72 804 642	**121**	**234**	**110**	**231**

Suitable indexable inserts can be found in **Chapter 2, Thread turning.**

XheadClamp – GX 09/16 exchangeable head grooving tool holder



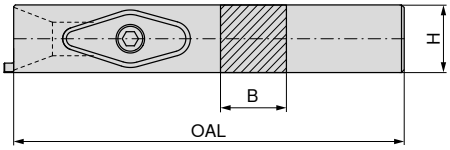
Illustrations show right-hand versions

											Left-hand	Right-hand
											72 801 ...	72 800 ...
Designation	**SZID**	**B mm**	**H mm**	**OAH mm**	**LH mm**	**CDX mm**	**DAXX mm**	**WF mm**	**CW mm**	**a mm**	**for grooving inserts**	
GX09-1 R/L -BH12	12	12	12	15	24	12,5	25	5,5	0,60-2,50	4,0	GX 09-1	**112**	**112**
GX09-1 R/L -BH16	16	16	16	19	28	16,0	32	7,5	0,60-2,50	3,5	GX 09-1	**116**	**116**
GX09-2 R/L -BH12	12	12	12	15	24	12,5	25	5,0	0,60-3,00	4,0	GX 09-2	**212**	**212**
GX09-2 R/L -BH16	16	16	16	19	28	16,0	32	7,0	0,60-3,00	3,5	GX 09-2	**216**	**216**
GX16-1 R/L -BH12	12	12	12	15	24	12,5	25	5,5	0,60-2,50	4,0	GX 16-1	**612**	**612**
GX16-1 R/L -BH16	16	16	16	19	28	16,0	32	7,5	0,60-2,50	3,5	GX 16-1	**616**	**616**
GX16-2 R/L -BH12	12	12	12	15	24	12,5	25	5,0	0,60-3,50	4,0	GX 16-2	**712**	**712**
GX16-2 R/L -BH16	16	16	16	19	28	16,0	32	7,0	0,60-3,50	3,5	GX 16-2	**716**	**716**

		Key D		Clamping screw
		80 950 ...		70 950 ...
Spare parts for grooving inserts				
GX 09-1	T15	**113**	M4x11	**174**
GX 09-2	T15	**113**	M4x11	**174**
GX 16-1	T15	**113**	M4x11	**174**
GX 16-2	T15	**113**	M4x11	**174**

Suitable indexable inserts can be found in the grooving tools section on → **Page 229**

XheadClamp – Base holder



Illustrations show right-hand versions

ISO designation	H mm	B mm	OAL mm	For exchangeable heads	Left-hand 72 841 ...	Right-hand 72 840 ...
BHSH.12X63 R/L	12	12	63	BH12	**263**	**263**
BHSH.12X93 R/L	12	12	93	BH12	**293**	**293**
BHSH.16X63 R/L	16	16	63	BH16	**663**	**663**
BHSH.16X89 R/L	16	16	89	BH16	**693**	**693**


Clamping screw


Clamp


Key I

Spare parts For exchangeable heads	Clamping screw 72 950 ...		Clamp 72 950 ...		Key I 70 950 ...	
BH12	SR.BHSH.12	**801**	PR.BHSH.12	**800**	SW2,5	**175**
BH16	SR.BHSH.16	**803**	PR.BHSH.16	**802**	SW3	**176**

3

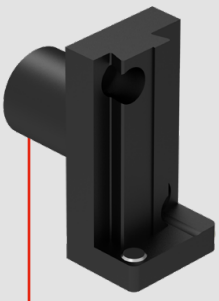
Reverse-side machining – highlights

- **Speed**
  Ultra-fast tool change by tightening / loosening just one bolt
- **Flexibility**
  Flexible on all machines
  Base holders are installed in the same way on all machines and remain in the machines
- **Precision**
  Most accurate height adjustment possible
- **Set-up time optimisation**
  Presetting via an adjustment screw directly in the machine or externally in the presetting device
- **Cooling**
  Optional coolant overpressure by attaching a coolant attachment

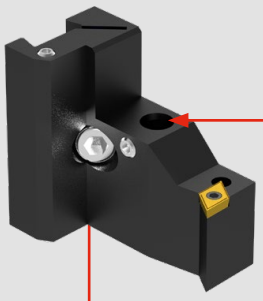
Reverse-side machining – Toolfinder

Modular tools

Distance plates
→ Page 68

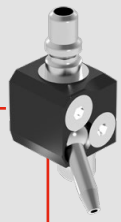


- CITIZEN → Page 64
- DOOSAN → Page 64
- HANHWA → Page 65
- MAIER → Page 65
- STAR → Page 66
- TORNOS → Page 66
- CITIZEN / GILDEMEISTER / HANWHA / TORNOS / TSUGAMI → Page 67
- TORNOS / TSUGAMI → Page 67



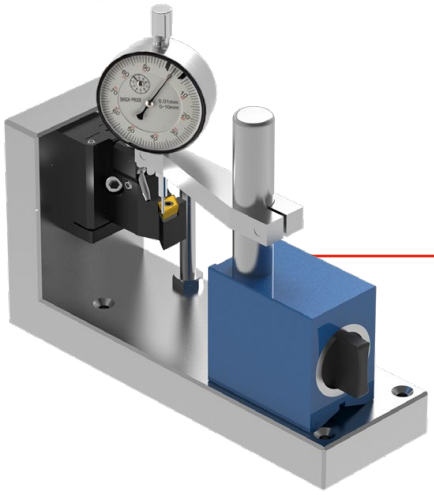
- Turning Holder CC / DC / VC → Page 69–71
- Thread turning holder → Page 72
- Grooving tool holder TX → Page 73
- Drills and boring bars → Page 74
- Cutting inserts → Page 75+76
- Collet Chuck → Page 77

Accessories



Coolant insert
→ Page 100

Setting Device

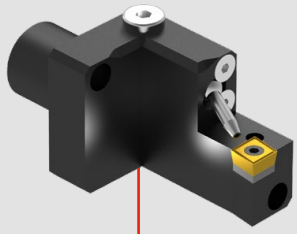


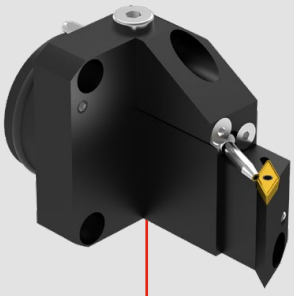
Using the adjustment device, you can set our modular holder to the right height outside the machine, which is a plus in terms of flexibility and time.

Setting Device
→ Page 103

Detailed information on using the adjustment device
→ Page 155+156

Monoblock tools





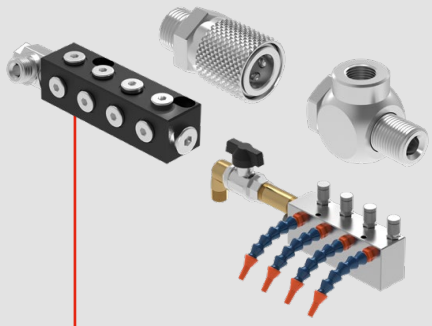
STAR

Turning Holder CC / DC / VC → Page 78–82
Thread turning holder → Page 83
Grooving tool holder TX → Page 84
Drills and boring bars → Page 96
Cutting inserts → Page 98

TSUGAMI

Turning Holder CC / DC / VC → Page 85–93
Thread turning holder → Page 94
Grooving tool holder TX → Page 95
Drills and boring bars → Page 97
Cutting inserts → Page 99

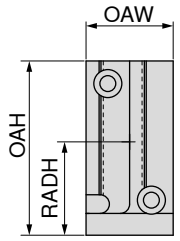
Accessories

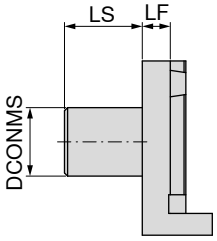


Coolant manifold → Page 100+101
Coolant nozzles → Page 101
Screw plug → Page 101
Coolant connection → Page 101+102
Threaded adapter → Page 102
Coolant hoses → Page 102
Coupler connector → Page 102
Quick-coupler → Page 102
Protection plug → Page 102

3

Machine base holder for CITIZEN





NEW

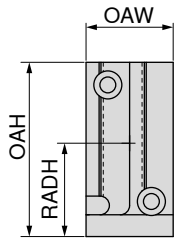
72 951 ...

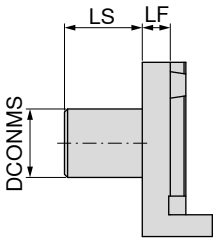
Designation	DCONMS mm	OAW mm	OAH mm	LF mm	LS mm	RADH mm	
CI.GH 3/4"-40	19,05	28	56	9	40	30	**07004**
CI.GH 25-30	25,00	28	56	9	30	30	**07002**
CI.GH 1"-60	25,40	28	56	9	60	30	**07003**
CI.GH 31-15	31,00	34	58	9	15	32	**07001**

suitable for the following machines:

Article no.	Machine manufacturer	Machine type
72 951 07001	Citizen	A32-VII with drive
72 951 07002	Citizen	L12 / A20 / CL20 with drive
72 951 07003	Citizen	A20 / A32 / C32 / L32 / M32 without drive
72 951 07004	Citizen	C16 / L12 / L20 / M16

Machine base holder for DOOSAN





NEW

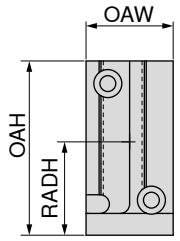
72 952 ...

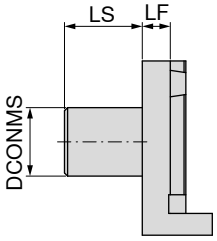
Designation	DCONMS mm	OAW mm	OAH mm	LF mm	LS mm	RADH mm	
DO.GH 32-25	32	34	56	9	25	30	**07001**

suitable for the following machines:

Article no.	Machine manufacturer	Machine type
72 952 07001	Doosan	Puma ST20G

Machine base holder for HANWHA





NEW

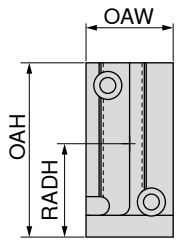
72 953 ...

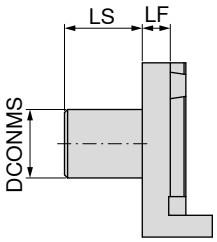
Designation	DCONMS mm	OAW mm	OAH mm	LF mm	LS mm	RADH mm	
HA.GH 25-40	25	28	56	9	40	30	**07003**
HA.GH 32-27	32	38	56	34	27	30	**07002**
HA.GH 33-40	33	28	56	9	40	30	**07001**

suitable for the following machines:

Article no.	Machine manufacturer	Machine type
72 953 07001	Hanwha	XD20 / 26 / 32 / 38
72 953 07002	Hanwha	XD38H
72 953 07003	Hanwha	XE26

Machine base holder for MAIER





NEW

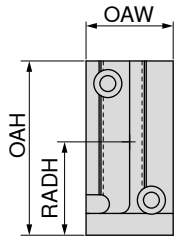
72 954 ...

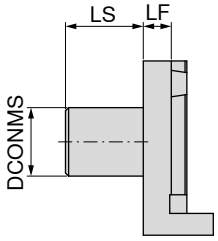
Designation	DCONMS mm	OAW mm	OAH mm	LF mm	LS mm	RADH mm	
MA.GH 34-20	34	38	56	9	20	30	**07001**

suitable for the following machines:

Article no.	Machine manufacturer	Machine type
72 954 07001	Maier	ML26 / ML32 / ML12C / ML16C / ML16D / ML20

Machine base holder for STAR





NEW

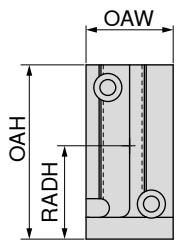
72 955 ...

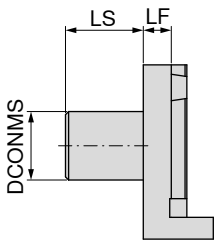
Designation	DCONMS mm	OAW mm	OAH mm	LF mm	LS mm	RADH mm	
ST.GH 22-20	22	38	56	9	20	30	**07001**
ST.GH 22-25	22	28	56	9	25	30	**07002**

suitable for the following machines:

Article no.	Machine manufacturer	Machine type
72 955 07001	Star	SR32 / SR32J / SR32JN (from mach. no 161)
72 955 07002	Star	ECAS12 / ECAS20 / SR20RIII / SR20N / SR20JN / SR32J / SR10J / SR16R / SR20R / SR20RII

Machine base holder for TORNOS





NEW

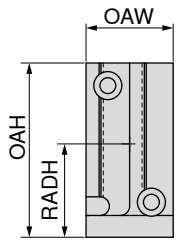
72 956 ...

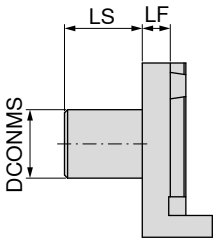
Designation	DCONMS mm	OAW mm	OAH mm	LF mm	LS mm	RADH mm	
TO.GH 20-100	20	28	56	9	100	30	**07002**
TO.GH 25-100	25	28	56	9	100	30	**07001**

suitable for the following machines:

Article no.	Machine manufacturer	Machine type
72 956 07001	Tornos	Deco 7 / 10 / 13 / 20 (Ø25)
72 956 07002	Tornos	Deco 7 / 10 / 13 / 20 (Ø20)

Machine base holder for CITIZEN / GILDEMEISTER / HANWHA / TORNOS / TSUGAMI





NEW

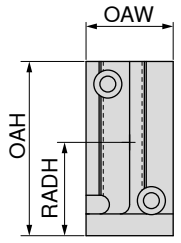
72 958 ...

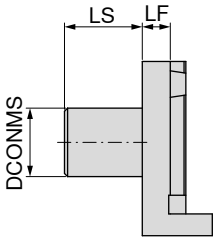
Designation	DCONMS mm	OAW mm	OAH mm	LF mm	LS mm	RADH mm	
CI/GI/HA/TO/TS.GH 20-40	20	28	56	9	40	30	**07001**

suitable for the following machines:

Article no.	Machine manufacturer	Machine type
72 958 07001	Citizen	K16
	Gildemeister	Sprint 20
	Hanwha	SL 12H
	Tornos	Delta 20 / Gamma 20
	Tsugami	BO 125 / 205

Machine base holder for TORNOS / TSUGAMI





NEW

72 958 ...

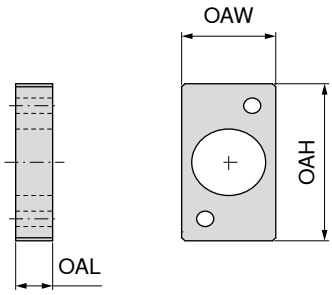
Designation	DCONMS mm	OAW mm	OAH mm	LF mm	LS mm	RADH mm	
TO/TS.GH 32-50	32	28	56	9	50	30	**07002**

suitable for the following machines:

Article no.	Machine manufacturer	Machine type
72 958 07001	Tornos	Delta 385 without drive
	Tsugami	BO 385 / BH 38

Distance plate

▲ flexible adjustment of the projection length



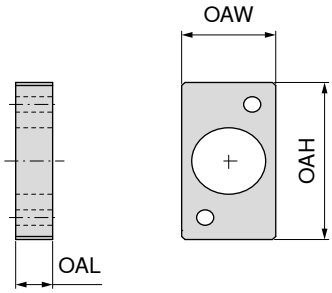
NEW

72 951 ...

Designation	OAW mm	OAH mm	OAL mm	Base holder	
CI.DP-GH1"-60-11	28	52	11	CI.GH1"-60	**04006**
CI.DP-GH25-30-11	28	52	11	CI.GH25-30	**04005**
CI.DP-GH3/4"-40-11	28	52	11	CI.GH3/4"-40	**04007**

Distance plate

▲ flexible adjustment of the projection length



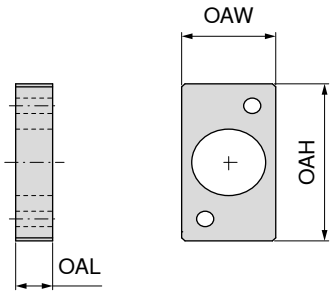
NEW

72 953 ...

Designation	OAW mm	OAH mm	OAL mm	Base holder	
HA.DP-GH33-40-11	35	52	11	HA.GH33-40	**04004**

Distance plate

▲ flexible adjustment of the projection length

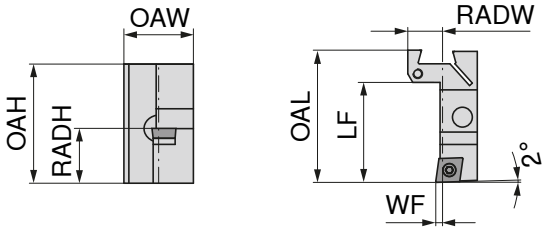


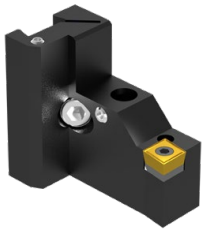
NEW

72 955 ...

Designation	OAW mm	OAH mm	OAL mm	Base holder	
ST.DP-GH22-25-11	28	52	11	ST.GH22-25	**04003**

Tool holder block with screw clamping for CC.. Indexable inserts





NEW

72 981 ...

Designation	OAW mm	OAH mm	LF mm	RADW mm	RADH mm	WF mm	OAL mm	Insert	
MU.AH-CC09-R	28	48	41	14	22	2,5	54	CC.. 09T3	**08001**


Key D
80 950 ...
113


Clamping screw
70 950 ...
113


Carbide type C
70 950 ...
165

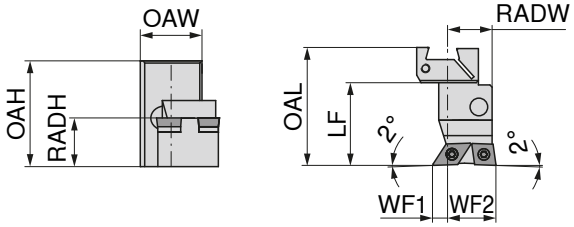

Threaded sleeve
70 950 ...
171

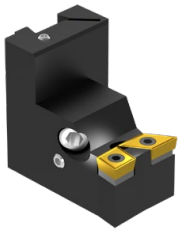
Spare parts for Article no.
72 981 08001

Suitable indexable inserts can be found in the ISO turning section on → **Page 13–16.**

3

Tool holder block (double) with screw clamping for CC.. / DC.. Indexable inserts





NEW

double

72 981 ...

Designation	OAH mm	LF mm	RADW mm	RADH mm	OAL mm	WF1 mm	WF2 mm	Insert	
MU.AH-CC09-L-DC11-R	48	38	20	22	54	22	7	CC.. 09T3 / DC.. 11T3	**08011**


Key D
80 950 ...
113


Combination Key
70 950 ...
398


Clamping screw
70 950 ...
113


Solid Carbide Seat D
70 950 ...
106

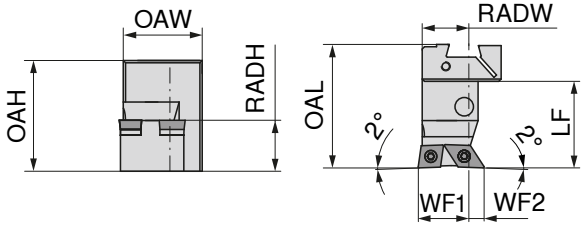

Carbide type C
70 950 ...
165


Threaded sleeve
70 950 ...
171

Spare parts for Article no.
72 981 08011

Suitable CC.. Indexable inserts can be found in the ISO turning section on → **Page 13–16.**
Suitable DC.. Indexable inserts can be found in the ISO turning section on → **Page 23–27.**

Tool holder block (double) with screw clamping for CC.. / DC.. Indexable inserts



NEW

double

72 981 ...

Designation	OAH mm	LF mm	RADW mm	RADH mm	OAL mm	WF1 mm	WF2 mm	Insert	
MU.AH-CC09-R-DC11-L	48	38	20	22	54	22	7	CC.. 09T3 / DC.. 11T3	**08010**


Key D
80 950 ...


Combination Key
70 950 ...


Clamping screw
70 950 ...


Solid Carbide Seat D
70 950 ...

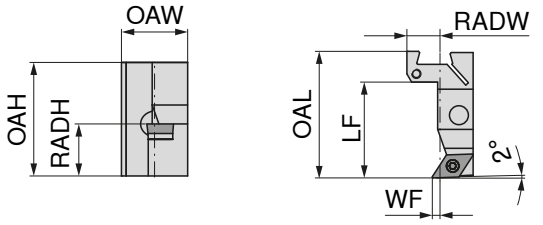

Carbide type C
70 950 ...


Threaded sleeve
70 950 ...

Spare parts for Article no.						
72 981 08010	**113**	**398**	**113**	**106**	**165**	**171**

Suitable CC.. Indexable inserts can be found in the ISO turning section on → **Page 13–16.**
Suitable DC.. Indexable inserts can be found in the ISO turning section on → **Page 23–27.**

Tool holder block with screw clamping for DC.. Indexable inserts



NEW

72 981 ...

Designation	OAW mm	OAH mm	LF mm	RADW mm	RADH mm	WF mm	OAL mm	Insert	
MU.AH-DC07-R	28	48	41	14	22	3,0	54	DC.. 0702	**08002**
MU.AH-DC11-R	28	48	41	14	22	3,5	54	DC.. 11T3	**08003**


Key D
80 950 ...


Combination Key
70 950 ...


Clamping screw
70 950 ...

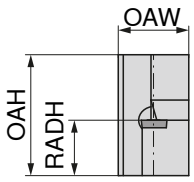

Solid Carbide Seat D
70 950 ...

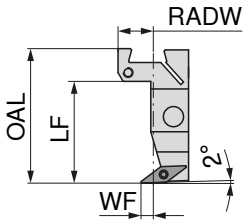

Threaded sleeve
70 950 ...

Spare parts for Article no.					
72 981 08002	**110**		**112**		
72 981 08003		**398**	**113**	**106**	**171**

Suitable indexable inserts can be found in the ISO turning section on → **Page 23–27.**

Tool holder block with screw clamping for VC.. Indexable inserts



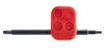


NEW

72 981 ...

Designation	OAW mm	OAH mm	LF mm	RADW mm	RADH mm	WF mm	OAL mm	Insert	
MU.AH-VC11-R	28	48	41	14	22	5,0	54	VC.. 1103	**08004**
MU.AH-VC16-R	28	48	41	14	22	14,5	54	VC.. 1604	**08005**


Key D
80 950 ...


Combination Key
70 950 ...


Clamping screw
70 950 ...

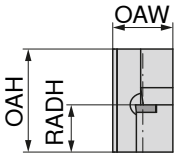

Solid Carbide Seat V
70 950 ...

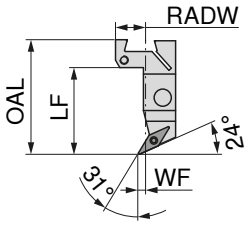

Threaded sleeve
70 950 ...

Spare parts for Article no.					
72 981 08004	**110**		**112**		
72 981 08005		**398**	**113**	**107**	**171**

(VC.. 1103) Suitable indexable inserts can be found in the ISO turning section on → **Page 40–42.**
(VC.. 1604) Suitable indexable inserts can be found in our OnlineShop.

Tool holder block with screw clamping for VC.. Indexable inserts





NEW

72 981 ...

Designation	OAW mm	OAH mm	LF mm	RADW mm	RADH mm	WF mm	OAL mm	Insert	
MU.AH-VC11-24-R	28	48	41	14	22	3	54	VC.. 1103	**08006**


Key D
80 950 ...


Clamping screw
70 950 ...

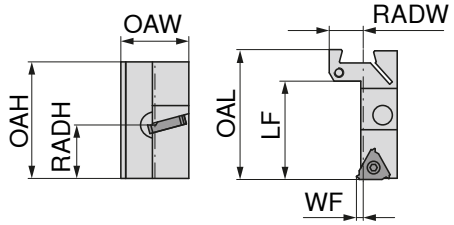
Spare parts for Article no.		
72 981 08006	**110**	**112**

Suitable indexable inserts can be found in the ISO turning section on → **Page 40–42.**

3

Tool holders for right external thread-turning inserts

- Tool holder with approach angle 1.5°
- Thread-turning inserts with pitch max. 1.5 mm



NEW

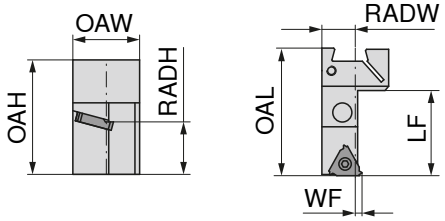
Right-hand

72 981 ...

Designation	OAW mm	OAH mm	LF mm	RADW mm	RADH mm	WF mm	OAL mm	Insert	
MU.AH-ER16-R	28	48	41	14	22	3	54	16 ER..	**08007**

Tool holders for left external thread-turning inserts

- Tool holder with approach angle 1.5°
- Thread-turning inserts with pitch max. 1.5 mm



NEW

Left-hand

72 981 ...

Designation	OAW mm	OAH mm	LF mm	RADW mm	RADH mm	WF mm	OAL mm	Insert	
MU.AH-ER16-L	28	48	34	14	22	3	54	16 EL..	**08008**

Key D

80 950 ...

Clamping screw

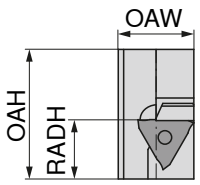
71 950 ...

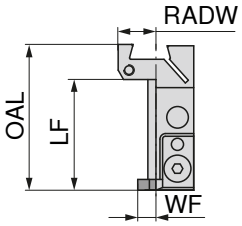
Spare parts for Article no.		
72 981 08008	**112**	**231**
72 981 08007	**112**	**231**

Suitable indexable inserts can be found in **Chapter 2, Thread turning.**

Tool holder block for TX grooving inserts

▲ Insert width 0.5-4.0 mm





NEW

Right-hand

72 986 ...

Designation	OAW mm	OAH mm	LF mm	RADW mm	RADH mm	WF mm	OAL mm	Insert	
MU.AH-TX-R	28	48	41	14	22	7	54	TX R/N/L ...2/3/4	**16001**

Clamp

72 950 ...

Spare parts for Article no.

72 986 16001 **19001**

Lock washer

72 950 ...

19002

Countersunk screw

72 950 ...

19003

Guide pin with flange

72 950 ...

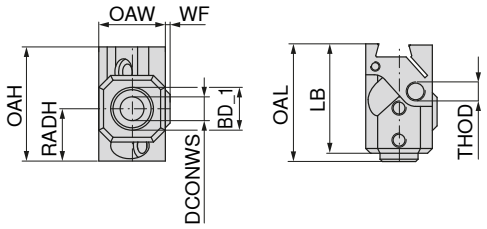
19004

Suitable indexable inserts can be found in the main catalogue, **Chapter 11 Grooving tools.**

3

Tool holder blocks for drills and boring bars

▲ with inner high-pressure coolant supply through the tool



NEW

72 982 ...

Designation	DCONWS mm	BD_1 mm	OAW mm	OAH mm	LB mm	WF mm	OAL mm	RADH mm	THOD	
MU.AH-BH06IK	6	12	28	48	46,0		48,5	22	M6	**03001**
MU.AH-BH08IK	8	14	28	48	46,0		48,5	22	M8	**03002**
MU.AH-BH10IK	10	16	28	48	46,0		49,5	22	M8	**03003**
MU.AH-BH12IK	12	18	28	48	50,0		52,5	22	M10	**03004**
MU.AH-BH14IK	14	19	28	48	50,5		54,0	22	M10	**03005**
MU.AH-BH16IK	16	21	28	48	50,5	2	54,0	22	M10	**03006**

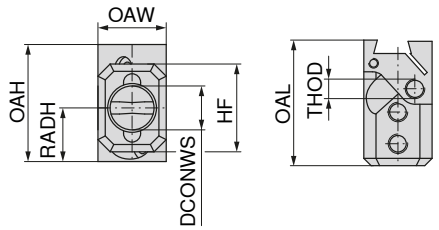
Grubscrew

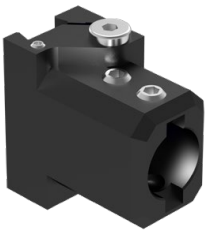
72 950 ...

Spare parts for Article no.	
72 982 03001	**19011**
72 982 03004	**19013**
72 982 03005	**19013**
72 982 03006	**19013**

Tool holders for clamping inserts

- ▲ Thro' coolant directly through base holder
- ▲ Also suitable for collet chucks





NEW

72 983 ...

Designation	DCONWS $_{H6}$ mm	HF mm	OAW mm	OAH mm	RADH mm	OAL mm	CRNT	
MU.AH-S20IK	20	36	28	48	22	51,5	M8x1	**20001**

Grubscrew

83 950 ...

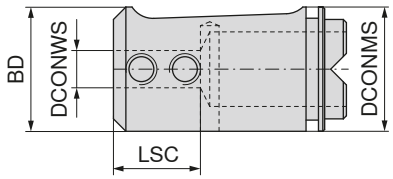
Spare parts for Article no.

72 983 20001	**464**

3

Clamping insert for UltraMini cutting inserts

▲ with inner high-pressure coolant supply through the tool



NEW

72 995 ...

Designation	DCONMS $_{g6}$ mm	DCONWS mm	BD $_{g6}$ mm	LSC mm	
MU.ULTRAMINI.KH-DM4	20	4	20	13	**08001**
MU.ULTRAMINI.KH-DM5	20	5	20	14	**08002**
MU.ULTRAMINI.KH-DM6	20	6	20	14	**08003**
MU.ULTRAMINI.KH-DM7	20	7	20	14	**08004**
MU.ULTRAMINI.KH-DM8	20	8	20	19	**08005**

Grubscrew

72 950 ...

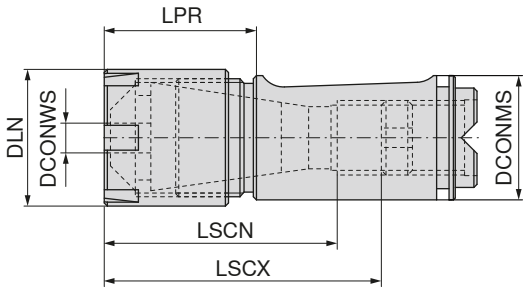
Spare parts DCONWS	
4	**19009**
5 - 7	**19010**
8	**19012**

Suitable UltraMini cutting inserts can be found on → **Page 290–309**

ER collet chuck (mini lock nut)

▲ with inner high-pressure coolant supply through the tool

Scope of supply:
Base body without lock nut



NEW

72 984 ...

Designation	LPR mm	DCONMS $_{g6}$ mm	DLN mm	LSCX mm	LSCN mm	for collet	
MU.S20-SPZH-ER16-IK	25,0	20	22	55	38	426E (ER16)	**06001**
MU.S20-SPZH-ER20-IK	27,5	20	28	56	40	428E (ER20)	**06002**

Mini IK

83 950 ...

Spare parts for Article no.	
72 984 06001	**058**
72 984 06002	**059**

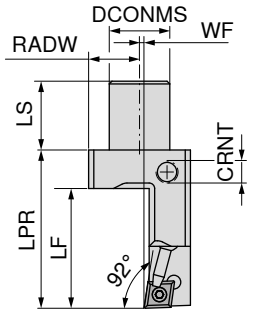
Sealing discs can be found in our clamping technology catalogue, Chapter Adapters and accessories on → **Page 269.**

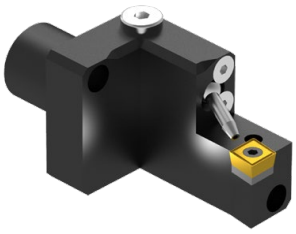
3

Rear holder with screw clamping for CC.. Indexable inserts

▲ for **STAR** SR 20 R-IV / 20 JII / 32 JII / 38 / SW 12 / 20 / SV 20 R

Scope of supply:
Holder with coolant nozzle and screw plug, without coolant connection





NEW

Designation	DCONMS g6 mm	LS mm	LF mm	WF mm	LPR mm	RADW mm	CRNT	Insert	72 955 ...
ST.SR20R4-RE-K-CC09-L-IK	22	25	43,5	1,5	77,5	18,5	M8x1	CC.. 09T3	**08005**
ST.SR20R4-RE-K-CC09-R-IK	22	25	43,5	1,5	57,5	18,5	M8x1	CC.. 09T3	**08004**

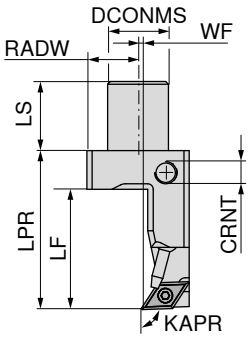
Spare parts for Article no.	 Screw plug 72 950 ...	 Countersunk screw 72 950 ...	 Coolant nozzle 72 989 ...	 Combination Key 70 950 ...	 Clamping screw 70 950 ...	 Carbide type C 70 950 ...	 Threaded sleeve 70 950 ...	 Alu ring 72 950 ...
72 955 08005	**19006**	**19007**	**10002**	**398**	**113**	**165**	**171**	**19008**
72 955 08004	**19006**	**19007**	**10002**	**398**	**113**	**165**	**171**	**19008**

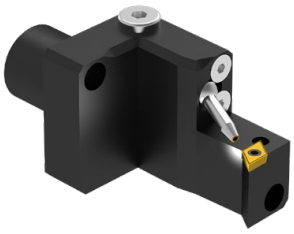
Suitable indexable inserts can be found in the ISO turning section on → **Page 13–16.**

Rear holder with screw clamping for DC.. Indexable inserts

▲ for **STAR** SR 20 R-IV / 20 JII / 32 JII / 38 / SW 12 / 20 / SV 20 R

Scope of supply:
Holder with coolant nozzle and screw plug, without coolant connection





NEW

Designation	DCONMS $_{g6}$ mm	LS mm	LF mm	WF mm	LPR mm	RADW mm	CRNT	KAPR °	Insert	72 955 ...
ST.SR20R4-RE-K-DC07-R-IK	22	25	43,5	1,5	57,5	18,5	M8x1	92	DC.. 0702	**08006**
ST.SR20R4-RE-K-DC11-R-IK	22	25	43,5	1,0	57,5	18,5	M8x1	92	DC.. 11T3	**08008**
ST.SR20R4-RE-L-DC07-R-IK	22	25	43,5	1,5	77,5	18,5	M8x1	92	DC.. 0702	**08007**
ST.SR20R4-RE-L-DC11-R-IK	22	25	43,5	1,0	77,5	18,5	M8x1	92	DC.. 11T3	**08009**

Spare parts for Article no.	 Combination Key 70 950 ...	 Clamping screw 70 950 ...	 Solid Carbide Seat D 70 950 ...	 Threaded bush 72 950 ...	 Alu ring 72 950 ...
72 955 08006		112			19008
72 955 08008	398	113	106	19005	19008
72 955 08007		112			19008
72 955 08009	398	113	106	19005	19008

Spare parts for Article no.	 Screw plug 72 950 ...	 Countersunk screw 72 950 ...	Key D 80 950 ...	 Coolant nozzle 72 989 ...
72 955 08006	19006	19007	110	10002
72 955 08008	19006	19007		10002
72 955 08007	19006	19007	110	10002
72 955 08009	19006	19007		10002

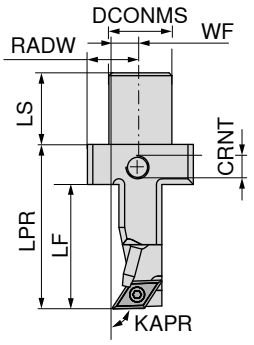
Suitable indexable inserts can be found in the ISO turning section on → **Page 40–42.**

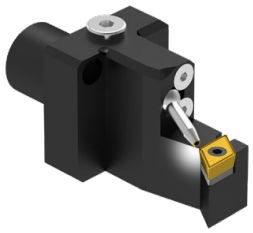
3

Rear holder with screw clamping for DC.. Indexable inserts

▲ for **STAR** SR 20 R-IV / 20 JII / 32 JII / 38 / SW 12 / 20 / SV 20 R

Scope of supply:
Holder with coolant nozzle and screw plug, without coolant connection





NEW

Designation	DCONMS g6 mm	LS mm	LF mm	WF mm	LPR mm	RADW mm	CRNT	KAPR °	Insert	72 955 ...
ST.SR20R4-RX-K-DC11-R-IK	22	25	43,5	10	57,5	18,5	M8x1	92	DC.. 11T3	**08010**
ST.SR20R4-RX-L-DC11-R-IK	22	25	43,5	10	77,5	18,5	M8x1	92	DC.. 11T3	**08011**

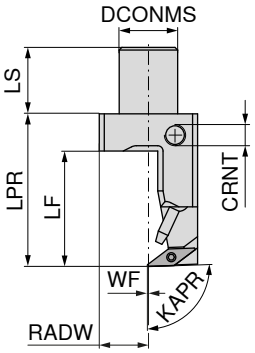
	 Screw plug	 Countersunk screw	 Coolant nozzle	 Combination Key	 Clamping screw	 Solid Carbide Seat D	 Threaded sleeve	 Alu ring
	72 950 ...	**72 950 ...**	**72 989 ...**	**70 950 ...**	**70 950 ...**	**70 950 ...**	**70 950 ...**	**72 950 ...**
Spare parts for Article no.								
72 955 08010	**19006**	**19007**	**10002**	**398**	**113**	**106**	**171**	**19008**
72 955 08011	**19006**	**19007**	**10002**	**398**	**113**	**106**	**171**	**19008**

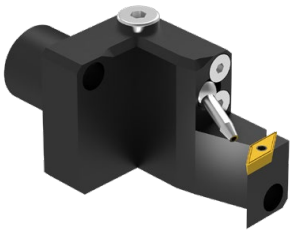
Suitable indexable inserts can be found in the ISO turning section on → **Page 40–42.**

Rear holder with screw clamping for VC.. Indexable inserts

▲ for **STAR** SR 20 R-IV / 20 JII / 32 JII / 38 / SW 12 / 20 / SV 20 R

Scope of supply:
Holder with coolant nozzle and screw plug, without coolant connection





NEW

Designation	DCONMS g6 mm	LS mm	LF mm	WF mm	LPR mm	RADW mm	CRNT	KAPR °	Insert	72 955 ...
ST.SR20R4-RE-K-VC11-R-IK	22	25	43,5	0,5	57,5	18,5	M8x1	92	VC.. 1103	**08012**
ST.SR20R4-RE-L-VC11-R-IK	22	25	43,5	0,5	77,5	18,5	M8x1	92	VC.. 1103	**08013**

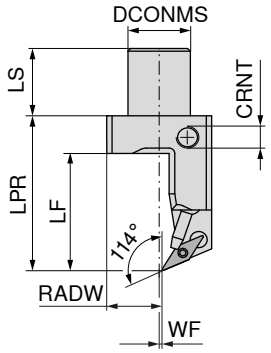
	 Screw plug	 Countersunk screw	 Key D	 Coolant nozzle	 Clamping screw	 Alu ring
	72 950 ...	**72 950 ...**	**80 950 ...**	**72 989 ...**	**70 950 ...**	**72 950 ...**
Spare parts for Article no.						
72 955 08012	**19006**	**19007**	**110**	**10002**	**112**	**19008**
72 955 08013	**19006**	**19007**	**110**	**10002**	**112**	**19008**

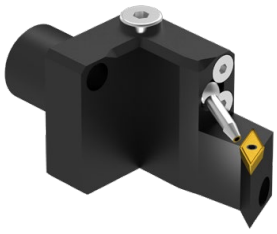
Suitable indexable inserts can be found in the ISO turning section on → **Page 40–42.**

Rear holder with screw clamping for VC.. Indexable inserts

▲ for **STAR** SR 20 R-IV / 20 JII / 32 JII / 38 / SW 12 / 20 / SV 20 R

Scope of supply:
Holder with coolant nozzle and screw plug, without coolant connection





NEW

Designation	DCONMS g6 mm	LS mm	LF mm	WF mm	LPR mm	RADW mm	CRNT	Insert	72 955 ...
ST.SR20R4-RE-K-VC11-24-R-IK	22	25	43,5	1,1	57,5	18,5	M8x1	VC.. 1103	**08014**
ST.SR20R4-RE-L-VC11-24-R-IK	22	25	43,5	1,1	77,5	18,5	M8x1	VC.. 1103	**08015**

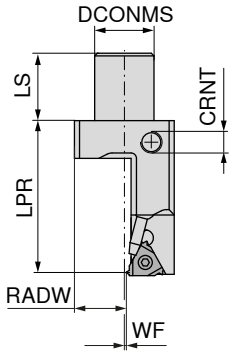
	 Screw plug	 Countersunk screw	 Key D	 Coolant nozzle	 Clamping screw	 Alu ring
	72 950 ...	**72 950 ...**	**80 950 ...**	**72 989 ...**	**70 950 ...**	**72 950 ...**
Spare parts for Article no.						
72 955 08014	**19006**	**19007**	**110**	**10002**	**112**	**19008**
72 955 08015	**19006**	**19007**	**110**	**10002**	**112**	**19008**

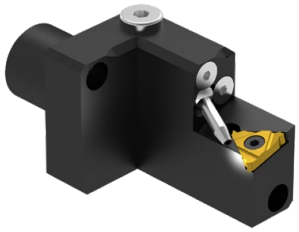
Suitable indexable inserts can be found in the ISO turning section on → **Page 40–42.**

Rear holder for right outer thread-turning inserts (ER 16..)

- for **STAR** SR 20 R-IV / 20 JII / 32 JII / 38 / SW 12 / 20 / SV 20 R
- Tool holder with approach angle 1.5°
- Thread-turning inserts with pitch max. 1.5 mm

Scope of supply:
Holder with coolant nozzle and screw plug, without coolant connection





NEW

Right-hand

Designation	DCONMS $_{g6}$ mm	LS mm	WF mm	LPR mm	RADW mm	CRNT	Insert	72 955 ...
ST.SR20R4-RE-K-ER16-R-IK	22	25	0,7	57,5	18,5	M8x1	16 ER..	**08016**
ST.SR20R4-RE-L-ER16-R-IK	22	25	0,7	77,5	18,5	M8x1	16 ER..	**08017**


Screw plug


Countersunk screw


Key D


Coolant nozzle


Clamping screw


Alu ring

Spare parts for Article no.	72 950 ...	72 950 ...	80 950 ...	72 989 ...	71 950 ...	72 950 ...
72 955 08016	**19006**	**19007**	**112**	**10002**	**231**	**19008**
72 955 08017	**19006**	**19007**	**112**	**10002**	**231**	**19008**

Suitable indexable inserts can be found in **Chapter 2, Thread turning.**

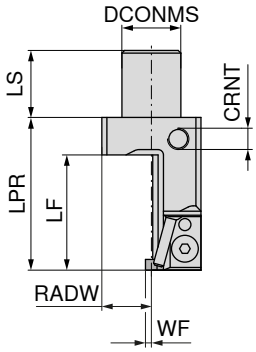
3

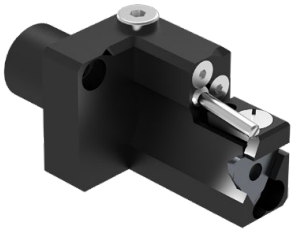
Rear holder for TX grooving inserts

- for **STAR** SR 20 R-IV / 20 JII / 32 JII / 38 / SW 12 / 20 / SV 20 R
- Insert width 0.5-4.0 mm

Scope of supply:

Holder with coolant nozzle and screw plug, without coolant connection





NEW

Designation	DCONMS $_{g6}$ mm	LS mm	LF mm	WF mm	LPR mm	RADW mm	CRNT	Insert	72 955 ...
ST.SR20R4-RE-K-TX-R-IK	22	25	43	2	57	18,5	M8x1	TX R/N/L ...2/3/4	**16018**
ST.SR20R4-RE-L-TX-R-IK	22	25	43	2	77	18,5	M8x1	TX R/N/L ...2/3/4	**16019**

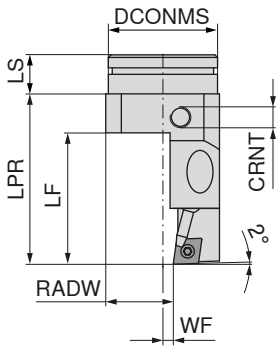
	 Screw plug	 Clamp	 Lock washer	 Countersunk screw	 Coolant nozzle	 Guide pin with flange	 Alu ring
	72 950 ...	**72 950 ...**	**72 950 ...**	**72 950 ...**	**72 989 ...**	**72 950 ...**	**72 950 ...**
Spare parts for Article no.							
72 955 16018	**19006**	**19001**	**19002**	**19003**	**10001**	**19004**	**19008**
72 955 16019	**19006**	**19001**	**19002**	**19003**	**10001**	**19004**	**19008**

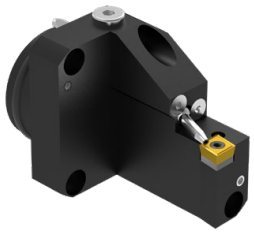
Suitable indexable inserts can be found in the main catalogue, **Chapter 11 Grooving tools.**

Rear holder with screw clamping for CC.. Indexable inserts

▲ for **TSUGAMI** BO 266 / 326 / 386 / 38T / HS 267 / 237 / 38M / BW 269 / 329

Scope of supply:
Holder with coolant nozzle and screw plug, without coolant connection





NEW

Designation	DCONMS g6 mm	LS mm	LF mm	WF mm	LPR mm	RADW mm	CRNT	Insert	72 957 ...
TS.RE42.65-CC09-R-IK	42	15	50,5	4	65,5	26	M8x1	CC.. 09T3	**08001**

	 Screw plug	 Countersunk screw	Key D	 Coolant nozzle	 Clamping screw	 Carbide type C	 Threaded sleeve	 Alu ring
	72 950 ...	**72 950 ...**	**80 950 ...**	**72 989 ...**	**70 950 ...**	**70 950 ...**	**70 950 ...**	**72 950 ...**
Spare parts for Article no.								
72 957 08001	**19006**	**19007**	**113**	**10002**	**113**	**165**	**171**	**19008**

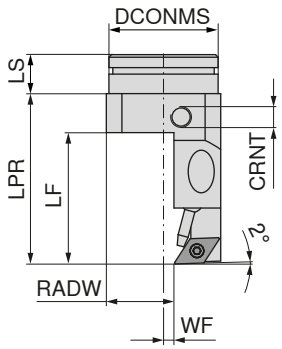
Suitable indexable inserts can be found in the ISO turning section on → **Page 13–16.**

3

Rear holder with screw clamping for DC.. Indexable inserts

▲ for **TSUGAMI** BO 266 / 326 / 386 / 38T / HS 267 / 237 / 38M / BW 269 / 329

Scope of supply:
Holder with coolant nozzle and screw plug, without coolant connection



NEW

Designation	DCONMS g6 mm	LS mm	LF mm	WF mm	LPR mm	RADW mm	CRNT	Insert	72 957 ...
TS.RE42.65-DC11-R-IK	42	15	50,5	4	65,5	26	M8x1	DC.. 11T3	**08002**

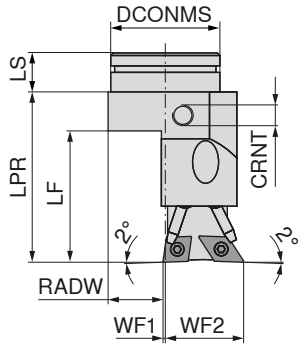
	 Screw plug	 Countersunk screw	 Coolant nozzle	 Combination Key	 Clamping screw	 Solid Carbide Seat D	 Threaded sleeve	 Alu ring
	72 950 ...	**72 950 ...**	**72 989 ...**	**70 950 ...**	**70 950 ...**	**70 950 ...**	**70 950 ...**	**72 950 ...**
Spare parts for Article no.								
72 957 08002	**19006**	**19007**	**10002**	**398**	**113**	**106**	**171**	**19008**

Suitable indexable inserts can be found in the ISO turning section on → **Page 40–42.**

Rear holder (double) with screw clamping for CC.. / DC.. Indexable inserts

▲ for **TSUGAMI** BO 266 / 326 / 386 / 38T / HS 267 / 237 / 38M / BW 269 / 329

Scope of supply:
Holder with coolant nozzle and screw plug, without coolant connection



NEW

double

72 957 ...

Designation	DCONMS $_{g6}$ mm	LS mm	LF mm	LPR mm	WF1 mm	WF2 mm	RADW mm	CRNT	Insert	
TS.RD42.65-CC09-R-DC11-L-IK	42	15	50,5	65,5	1	30	21	M8x1	CC.. 09T3 / DC.. 11T3	**08009**

	 Clamping screw	 Solid Carbide Seat D	 Carbide type C	 Threaded sleeve	 Alu ring
	70 950 ...	**70 950 ...**	**70 950 ...**	**70 950 ...**	**72 950 ...**
Spare parts for Article no. 72 957 08009	**113**	**106**	**165**	**171**	**19008**

	 Screw plug	 Countersunk screw	 Key D	 Coolant nozzle	 Combination Key
	72 950 ...	**72 950 ...**	**80 950 ...**	**72 989 ...**	**70 950 ...**
Spare parts for Article no. 72 957 08009	**19006**	**19007**	**113**	**10002**	**398**

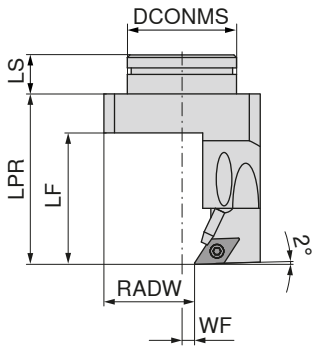
Suitable CC.. Indexable inserts can be found in the ISO turning section on → **Page 13–16.**
Suitable DC.. Indexable inserts can be found in the ISO turning section on → **Page 23–27.**

3

Overhead rear holder with screw clamping for DC.. Indexable inserts

▲ for **TSUGAMI** BO 266 / 326 / 386 / 38T / HS 267 / 237 / 38M / BW 269 / 329

Scope of supply:
Holder with coolant nozzle and screw plug, without coolant connection



NEW

Designation	DCONMS g6 mm	LS mm	LF mm	LPR mm	WF mm	RADW mm	Insert	72 957 ...
TS.RY42.65-DC11-R-IK	42	15	50,5	65,5	4,5	34,5	DC.. 11T3	**08007**

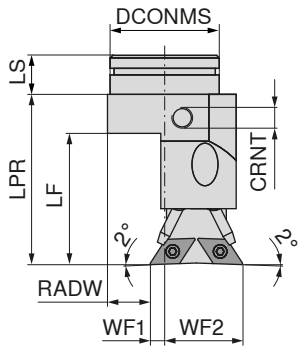
	 Screw plug	 Countersunk screw	 Coolant nozzle	 Combination Key	 Clamping screw	 Solid Carbide Seat D	 Threaded sleeve	 Alu ring
	72 950 ...	**72 950 ...**	**72 989 ...**	**70 950 ...**	**70 950 ...**	**70 950 ...**	**70 950 ...**	**72 950 ...**
Spare parts for Article no.								
72 957 08007	**19006**	**19007**	**10002**	**398**	**113**	**106**	**171**	**19008**

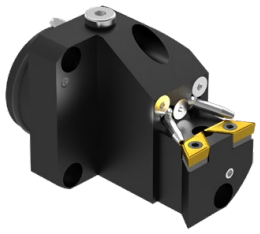
Suitable indexable inserts can be found in the ISO turning section on → **Page 23–27.**

Rear holder (double) with screw clamping for DC.. Indexable inserts

▲ for **TSUGAMI** BO 266 / 326 / 386 / 38T / HS 267 / 237 / 38M / BW 269 / 329

Scope of supply:
Holder with coolant nozzle and screw plug, without coolant connection





NEW

double

72 957 ...

Designation	DCONMS $_{g6}$ mm	LS mm	LF mm	LPR mm	WF1 mm	WF2 mm	RADW mm	CRNT	Insert	
TS.RD42.65-DC11-R-DC11-L-IK	42	15	50,5	65,5	5,5	30	16,5	M8x1	DC.. 11T3	**08011**

	 Screw plug	 Countersunk screw	 Coolant nozzle	 Combination Key	 Clamping screw	 Solid Carbide Seat D	 Threaded sleeve	 Alu ring
	72 950 ...	**72 950 ...**	**72 989 ...**	**70 950 ...**	**70 950 ...**	**70 950 ...**	**70 950 ...**	**72 950 ...**
Spare parts for Article no.								
72 957 08011	**19006**	**19007**	**10002**	**398**	**113**	**106**	**171**	**19008**

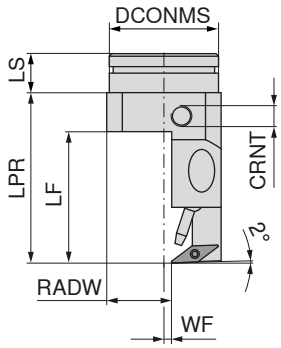
Suitable indexable inserts can be found in the ISO turning section on → **Page 40–42.**

3

Rear holder with screw clamping for VC.. Indexable inserts

▲ for **TSUGAMI** BO 266 / 326 / 386 / 38T / HS 267 / 237 / 38M / BW 269 / 329

Scope of supply:
Holder with coolant nozzle and screw plug, without coolant connection



NEW

Designation	DCONMS $_{g6}$ mm	LS mm	LF mm	LPR mm	WF mm	RADW mm	CRNT	Insert	72 957 ...
TS.RE42.65-VC11-R-IK	42	15	50,5	65,5	3	25	M8x1	VC.. 1103	**08003**

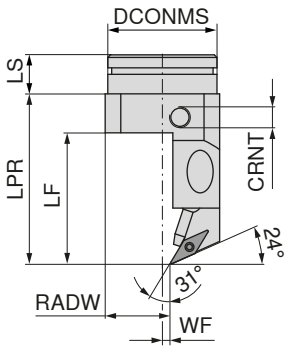
Spare parts for Article no.	 Screw plug	 Countersunk screw	 Key D	 Coolant nozzle	 Clamping screw	 Alu ring
	72 950 ...	**72 950 ...**	**80 950 ...**	**72 989 ...**	**70 950 ...**	**72 950 ...**
72 957 08003	**19006**	**19007**	**110**	**10002**	**112**	**19008**

Suitable indexable inserts can be found in the ISO turning section on → **Page 40–42.**

Rear holder with screw clamping for VC.. Indexable inserts

▲ for **TSUGAMI** BO 266 / 326 / 386 / 38T / HS 267 / 237 / 38M / BW 269 / 329

Scope of supply:
Holder with coolant nozzle and screw plug, without coolant connection



NEW

Designation	DCONMS g6 mm	LS mm	LF mm	LPR mm	WF mm	RADW mm	CRNT	Insert	72 957 ...
TS.RE42.65-VC11-24-R-IK	42	15	50,5	65,5	3	25	M8x1	VC.. 1103	**08004**

	Screw plug	Countersunk screw	Key D	Coolant nozzle	Clamping screw	Alu ring
	72 950 ...	**72 950 ...**	**80 950 ...**	**72 989 ...**	**70 950 ...**	**72 950 ...**
Spare parts for Article no.						
72 957 08004	**19006**	**19007**	**110**	**10002**	**112**	**19008**

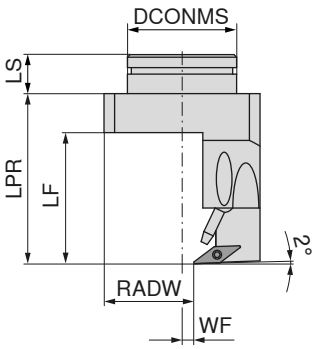
Suitable indexable inserts can be found in the ISO turning section on → **Page 40–42.**

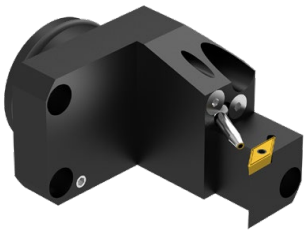
3

Overhead rear holder with screw clamping for VC.. Indexable inserts

▲ for **TSUGAMI** BO 266 / 326 / 386 / 38T / HS 267 / 237 / 38M / BW 269 / 329

Scope of supply:
Holder with coolant nozzle and screw plug, without coolant connection





NEW

Designation	DCONMS g6 mm	LS mm	WF mm	LF mm	LPR mm	RADW mm	CRNT	Insert	72 957 ...
TS.RY42.65-VC11-R-IK	42	15	3	50,5	65,5	25	M8x1	VC.. 1103	**08008**

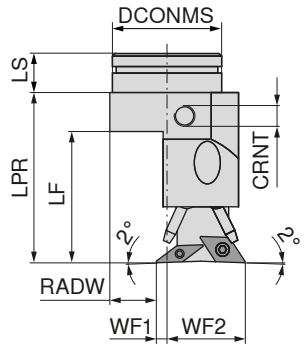
Spare parts for Article no.	 Screw plug	 Countersunk screw	 Key D	 Coolant nozzle	 Clamping screw	 Alu ring
	72 950 ...	**72 950 ...**	**80 950 ...**	**72 989 ...**	**70 950 ...**	**72 950 ...**
72 957 08008	**19006**	**19007**	**110**	**10002**	**112**	**19008**

Suitable indexable inserts can be found in the ISO turning section on → **Page 40–42.**

Rear holder (double) with screw clamping for VC.. / DC.. Indexable inserts

▲ for **TSUGAMI** BO 266 / 326 / 386 / 38T / HS 267 / 237 / 38M / BW 269 / 329

Scope of supply:
Holder with coolant nozzle and screw plug, without coolant connection



NEW

double

72 957 ...

Designation	DCONMS $_{g6}$ mm	LS mm	LF mm	LPR mm	WF1 mm	WF2 mm	RADW mm	CRNT	Insert	
TS.RD42.65-VC11-R-DC11-L-IK	42	15	50,5	65,5	4	30	18	M8x1	VC.. 1103 / DC.. 11T3	**08010**

Spare parts for Article no.
72 957 08010

Combination Key	Clamping screw	Solid Carbide Seat D	Threaded sleeve	Alu ring
70 950 ...	**70 950 ...**	**70 950 ...**	**70 950 ...**	**72 950 ...**
398	**113**	**106**	**171**	**19008**

Screw plug	Countersunk screw	Key D	Coolant nozzle
72 950 ...	**72 950 ...**	**80 950 ...**	**72 989 ...**
19006	**19007**	**110**	**10002**

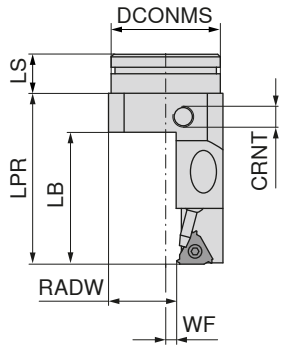
Spare parts for Article no.
72 957 08010

Suitable indexable inserts can be found in the ISO turning section on → **Page 40–42.**

Rear holder for right outer thread-turning inserts (ER 16..)

- for **TSUGAMI** BO 266 / 326 / 386 / 38T / HS 267 / 237 / 38M / BW 269 / 329
- Tool holder with approach angle 1.5°
- Thread-turning inserts with pitch max. 1.5 mm

Scope of supply:
Holder with coolant nozzle and screw plug, without coolant connection



NEW

Right-hand

72 957 ...

Designation	DCONMS $_{g6}$ mm	LS mm	LF mm	WF mm	LPR mm	RADW mm	CRNT	Insert	
TS.RE42.65-ER16-R-IK	42	15	50,5	4	65,5	26	M8x1	16 ER..	**08005**

	 Screw plug	 Countersunk screw	 Key D	 Coolant nozzle	 Clamping screw	 Alu ring
	72 950 ...	**72 950 ...**	**80 950 ...**	**72 989 ...**	**71 950 ...**	**72 950 ...**
Spare parts for Article no.						
72 957 08005	**19006**	**19007**	**112**	**10002**	**231**	**19008**

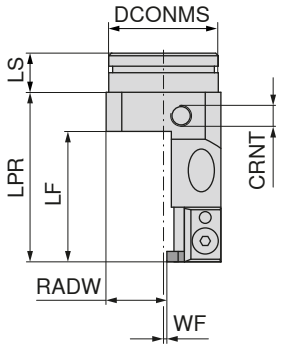
Suitable indexable inserts can be found in **Chapter 2, Thread turning.**

Rear holder for TX grooving inserts

- ▲ for **TSUGAMI** BO 266 / 326 / 386 / 38T / HS 267 / 237 / 38M / BW 269 / 329
- ▲ Insert width 0.5-4.0 mm

Scope of supply:

Holder with coolant nozzle and screw plug, without coolant connection



NEW

72 957 ...

Designation	DCONMS $_{g6}$ mm	LS mm	LF mm	WF mm	LPR mm	RADW mm	CRNT	Insert	
TS.RE42.65-TX-R-IK	42	15	50	1	65,5	23	M8x1	TX R/N/L ...2/3/4	**16006**

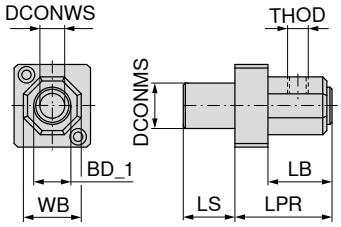
	Screw plug	Clamp	Lock washer	Countersunk screw	Coolant nozzle	Guide pin with flange	Alu ring
	72 950 ...	**72 950 ...**	**72 950 ...**	**72 950 ...**	**72 989 ...**	**72 950 ...**	**72 950 ...**
Spare parts for Article no.							
72 957 16006	**19006**	**19001**	**19002**	**19003**	**10001**	**19004**	**19008**

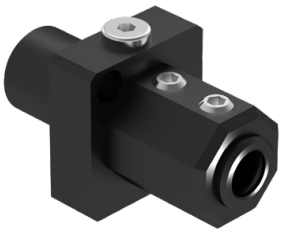
Suitable indexable inserts can be found in the main catalogue, **Chapter 11 Grooving tools.**

3

Rear holder for drills and boring bars

- for **STAR** SR 20 R-IV / 20 JII / 32 JII / 38 / SW 12 / 20 / SV 20 R
- with inner high-pressure coolant supply through the tool





NEW

72 955 ...

Designation	DCONMS $_{g6}$ mm	DCONWS mm	BD_1 mm	LPR mm	LS mm	WB mm	LB mm	THOD	
ST.SR20R4-BH-06-IK	22	6	12	47	25	28	31	M6	**03020**
ST.SR20R4-BH-08-IK	22	8	14	47	25	28	31	M8	**03021**
ST.SR20R4-BH-10-IK	22	10	16	47	25	28	31	M8	**03022**
ST.SR20R4-BH-12-IK	22	12	18	47	25	28	31	M10	**03023**
ST.SR20R4-BH-14-IK	22	14	19	47	25	28	31	M10	**03024**
ST.SR20R4-BH-66-IK	22	16	21	47	25	32	31	M10	**03025**

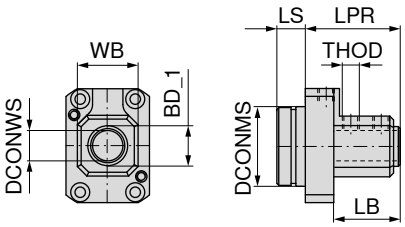
Grubscrew

72 950 ...

Spare parts for Article no.	
72 955 03020	**19011**
72 955 03023	**19013**
72 955 03024	**19013**
72 955 03025	**19013**

Rear holder for drills and boring bars

- for **TSUGAMI** BO 266 / 326 / 386 / 38T / HS 267 / 237 / 38M / BW 269 / 329
- with inner high-pressure coolant supply through the tool



NEW

72 957 ...

Designation	DCONMS $_{g6}$ mm	DCONWS mm	BD_1 mm	LPR mm	LS mm	WB mm	LB mm	THOD	
TS.RE42.65-BH-06-IK	42	6	12	50	15	28	35	M6	**03012**
TS.RE42.65-BH-08-IK	42	8	14	50	15	28	35	M8	**03013**
TS.RE42.65-BH-10-IK	42	10	16	50	15	28	35	M8	**03014**
TS.RE42.65-BH-12-IK	42	12	18	50	15	28	35	M10	**03015**
TS.RE42.65-BH-14-IK	42	14	18	50	15	28	35	M10	**03016**
TS.RE42.65-BH-16-IK	42	16	21	50	15	32	35	M10	**03017**

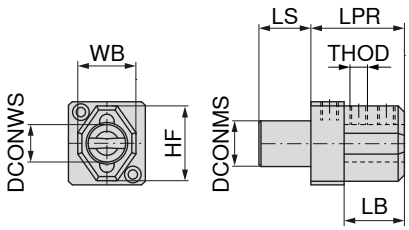
Grubscrew

72 950 ...

Spare parts for Article no.	
72 957 03012	**19011**
72 957 03015	**19013**
72 957 03016	**19013**
72 957 03017	**19013**

Rear holder for clamping inserts

- for **STAR** SR 20 R-IV / 20 JII / 32 JII / 38 / SW 12 / 20 / SV 20 R
- Thro' coolant directly through base holder
- Also suitable for collet holders



NEW

72 955 ...

Designation	DCONMS $_{g6}$ mm	DCONWS $_{H6}$ mm	HF mm	LS mm	LB mm	WB mm	LPR mm	CRNT	
ST.SR20R4-S20-IK	22	20	36	25	29	28	45	M8x1	**20027**

Grubscrew

83 950 ...

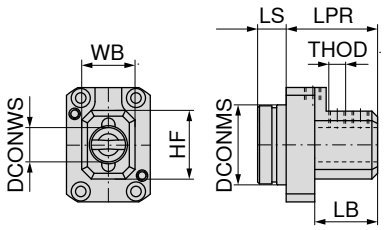
Spare parts for Article no.

72 955 20027	**464**

Suitable cutting inserts and collet holders can be found on → **Page 76+77**

Rear holder for clamping inserts

- for **TSUGAMI** BO 266 / 326 / 386 / 38T / HS 267 / 237 / 38M / BW 269 / 329
- Thro' coolant directly through base holder
- Also suitable for collet holders



NEW

72 957 ...

Designation	DCONMS $_{g6}$ mm	DCONWS $_{H6}$ mm	HF mm	LS mm	LB mm	WB mm	LPR mm	CRNT	
TS.RE42.65-S-20-IK	42	20	36	15	33	28	48	M8x1	**20018**

Grubscrew

83 950 ...

Spare parts for Article no.

72 957 20018	**464**

Suitable cutting inserts and collet holders can be found on → **Page 76+77**

3

Coolant attachment for height-adjustable insert holder, left

NEW

Left-hand

72 985 ...

Designation	for	
MU.KS-KA-AH-L	MU.AH-...-L	09003

Coolant attachment for height-adjustable insert holder, right

NEW

Right-hand

72 985 ...

Designation	for	
MU.KS-KA-AH-R	MU.AH-...-R	09001

Coolant attachment for height-adjustable insert holder, double

NEW

double

72 985 ...

Designation	for	
MU.KS-KA-AH-D	MU.AH-...-R/L	09002

Coolant attachment for STAR

NEW

72 955 ...

Designation	
ST.KS-KA-STAR	09026

Coolant distributor for high-pressure connections - 6 outlets

Scope of supply:
without quick-couplers

NEW

72 991 ...

Designation	
MU.KSV-45-30-35x6	12003

Coolant distributor for high-pressure connections - 7 outlets

Scope of supply:
without quick-couplers

NEW

72 991 ...

Designation	
MU.KSV-80-30-30x7	12002

Coolant distributor for high-pressure connections - 8 outlets

Scope of supply:
without quick-couplers

NEW

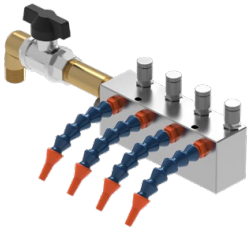
72 991 ...

Designation	
MU.KSV-110-30-30x8	12001

Coolant distributor for STAR SR 32

▲ 4x high-pressure and 4x low-pressure connections (G1/8")

Scope of supply:
without quick-couplers



NEW

72 991 ...

Designation	
MU.KSV-45-30-35x6	12004

Coolant nozzle for high-pressure applications

NEW

72 989 ...

Designation	
MU.KS-KD-HD	10002

Coolant nozzle for TX grooving tool holder

NEW

72 989 ...

Designation	
MU.KS-KD-HO	10001

Coolant nozzle for low-pressure applications

NEW

72 989 ...

Designation	
MU.KS-KD-ND	10003

G1/8” screw plug

▲ Max. 200 bar/2900 psi
▲ No sealing ring required

NEW

72 950 ...

Designation	THSZMS	
VS.G1/8	G1/8"	010

Angled coolant connection - short

NEW

short

72 987 ...

Designation	THOD	
MU.KS-KA-VU-K	M8x1	18001

Angled coolant connection - long

NEW

long

72 987 ...

Designation	THOD	
MU.KS-KA-VU-L	M8x1	18002

3

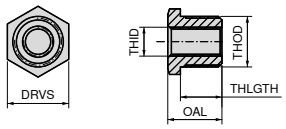
Angled coolant connection for distributor

NEW

72 987 ...

Designation	THOD	THID	
MU.KS-KA-KSV	G1/8"	G1/8"	18003

Threaded adapter



NEW

72 988 ...

THID	THOD	THLGTH mm	DRVS mm	OAL mm	
M8x1	G1/4"	11,5	17	15,0	01003
M8x1	M12x1	11,5	14	15,0	01001
M8x1	M14x1	11,5	17	15,0	01002
M8x1	G1/8"	11,5	14	23,5	01004

Flexible coolant hoses

- incl. prefitted quick-coupler and coupler connector
- extremely flexible
- pressure-resistant up to 300 bar

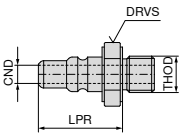
NEW

72 990 ...

Designation	BD mm	CND mm	OAL mm	
MU.KSS-DN3-150	6,0	3	150	11005
MU.KSS-DN3-250	6,0	3	250	11006
MU.KSS-DN5-200	9,5	5	200	11001
MU.KSS-DN5-300	9,5	5	300	11002
MU.KSS-DN5-400	9,5	5	400	11003
MU.KSS-DN5-500	9,5	5	500	11004

Coupler connector

- pressure-resistant up to at least 400 bar



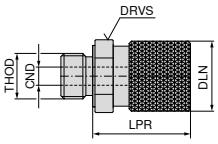
NEW

72 992 ...

Designation	LPR mm	CND mm	DRVS mm	OAL mm	
MU.KSKS-M8x1	18,5	4	12	19	13001

Quick-coupler

- pressure-resistant up to at least 400 bar
- rapid change of coolant distribution without screws thanks to click system



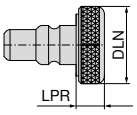
NEW

72 993 ...

THOD	BD mm	DLN mm	LPR mm	CND mm	
G1/8"	16	15,5	21,5	4	15001

Sealing plugs

- for closing off the quick-coupler to protect against contamination



NEW

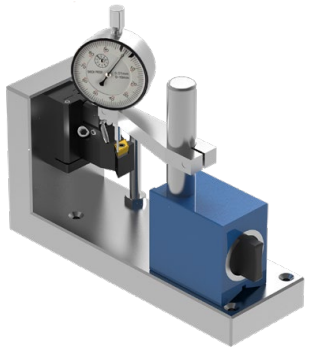
72 994 ...

Designation	LPR mm	DLN mm	
MU.KSVS	5,5	15,5	17001

Adjustment device for setting height of tool block holder

- Reduced setup times thanks to convenient presetting away from the machine
- prevention of machine downtimes
- best positional accuracy following tool change by presetting away from the machine

Scope of supply:
72 996 05001: Adjustment device with dial gauge and dial gauge stand
72 996 05002: Adjustment device without dial gauge and dial gauge stand



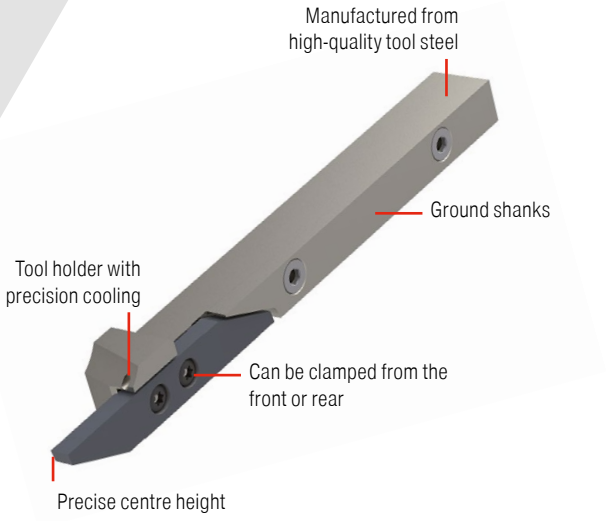
NEW

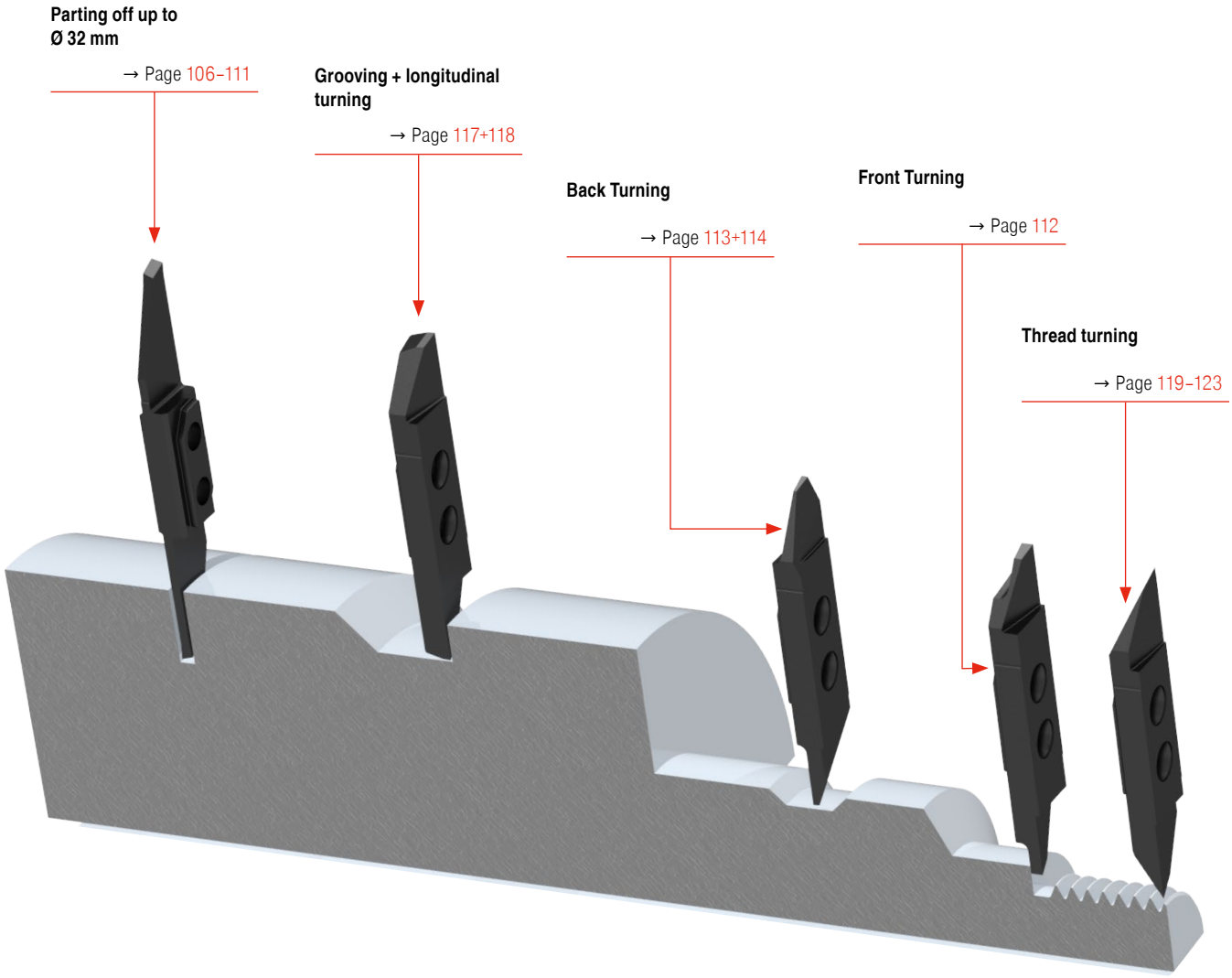
Designation	72 996 ...
MU.EV MAX	05001
MU.EV MAX-OMU	05002

Information on correct usage, and any conversions required can be found on → **Page 155+156**

Toolfinder – VertiClamp

- Vertical arrangement of cutting edges
  Less space required
- Second cutting edge can still be used in the event of breakage
  Minimises costs
- Insert seat protected against swarf
  Increases the service life of the holder
- High changeover precision
  Reduces unproductive times
- Large selection of indexable inserts and geometries
  Increases flexibility
- Optional coolant supply to cutting edge
  Increases service life and improves surface quality

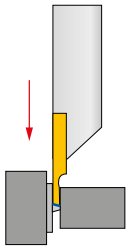




Overview – VertiClamp

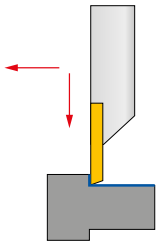
Inserts

Parting



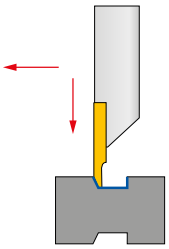
→ Page 106–111

Front Turning



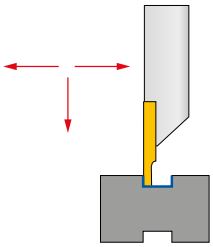
→ Page 112

Back Turning



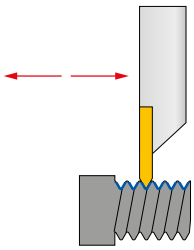
→ Page 113+114

Grooving + longitudinal turning



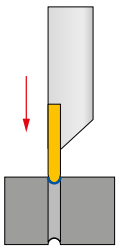
→ Page 115–118

Thread turning



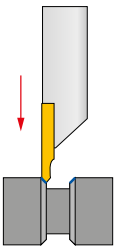
→ Page 119–123

Radius Grooving



→ Page 124

Chamfers



→ Page 125

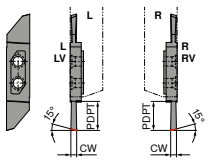
Tool holder

	Standard tool holders	Offset tool holders	Contra tool holders
			
normal	→ Page 127	→ Page 128	→ Page 130
with through coolant	→ Page 127	→ Page 129	

3

3002 L / 3002 LV / 3002 R / 3002 RV

Designation	CW mm	PDPT mm
3002-0,8-6	0,8	6
3002-0,8-10	0,8	10
3002-1,0-6	1,0	6
3002-1,0-13	1,0	13
3002-1,2-6	1,2	6
3002-1,5-8	1,5	8
3002-1,5-16	1,5	16
3002-1,8-8	1,8	8
3002-2,0-10	2,0	10
3002-2,0-16	2,0	16
3002-2,5-13	2,5	13
3002-2,5-16	2,5	16
3002-3,0-16	3,0	16



3002 L/LV / 3002 R/RV

3002 L / 3002 LV / 3002 R / 3002 RV

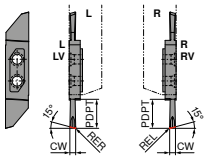
▲ for parting off

	WPU7620	WPU7620	WPU7620	WPU7620
				
	F	F	F	F
	3002 L	3002 LV	3002 R	3002 RV
ISO	72 420 ...	72 422 ...	72 416 ...	72 418 ...
3002-0,8-6	510	510	510	510
3002-0,8-10	530	530	530	530
3002-1,0-6	512	512	512	512
3002-1,0-13	532	532	532	532
3002-1,2-6	514	514	514	514
3002-1,5-8	516	516	516	516
3002-1,5-16	536	536	536	536
3002-1,8-8	518	518	518	518
3002-2,0-10	520	520	520	520
3002-2,0-16	540	540	540	540
3002-2,5-13	522 1)	522 1)	522 1)	522 1)
3002-2,5-16	542 1)	542 1)	542 1)	542 1)
3002-3,0-16	524 1)	524 1)	524 1)	524 1)
P	●	●	●	●
M	●	●	●	●
K	○	○	○	○
N	○	○	○	○
S	●	●	●	●
H				
O	○	○	○	○

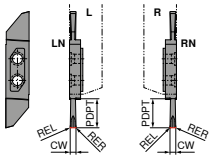
1) used with tool holders with 12 mm and larger shank size

3002 L / 3002 LN / 3002 LV / 3002 R / 3002 RN / 3002 RV

Designation	CW mm	PDPT mm
3002-1,5-8	1,5	8
3002-1,5-10	1,5	10
3002-1,5-16	1,5	16
3002-2,0-10	2,0	10
3002-2,0-16	2,0	16
3002-2,5-13	2,5	13
3002-2,5-16	2,5	16
3002-3,0-16	3,0	16



3002 L/LV / 3002 R/RV



3002 LN / 3002 RN

3002 L / 3002 LN / 3002 LV / 3002 R / 3002 RN / 3002 RV

▲ for parting off

	-SC WPU7620	-SC WPU7620	-SC WPU7620	-SC WPU7620	-SC WPU7620	-SC WPU7620
						
	F 3002 L	F 3002 LN	F 3002 LV	F 3002 R	F 3002 RN	F 3002 RV
	72 432 ...	72 426 ...	72 434 ...	72 428 ...	72 424 ...	72 430 ...
ISO						
3002-1,5-8	508		508			
3002-1,5-8				508		508
3002-1,5-10		510			510	
3002-1,5-16		530			530	
3002-1,5-16				528		528
3002-1,5-16	528		528			
3002-2,0-10		512			512	
3002-2,0-10				510		510
3002-2,0-10	510		510			
3002-2,0-16		532			532	
3002-2,0-16				530		530
3002-2,0-16	530		530			
3002-2,5-13		514 1)			514 1)	
3002-2,5-13				512 1)		512 1)
3002-2,5-13	512 1)		512 1)			
3002-2,5-16		534 1)			534 1)	
3002-2,5-16				532 1)		532 1)
3002-2,5-16	532 1)		532 1)			
3002-3,0-16		516 1)			516 1)	
3002-3,0-16				514 1)		514 1)
3002-3,0-16	514 1)		514 1)			

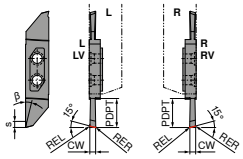
ISO	REL mm	RER mm						
P			●	●	●	●	●	●
M			●	●	●	●	●	●
K			○	○	○	○	○	○
N			○	○	○	○	○	○
S			●	●	●	●	●	●
H								
O			○	○	○	○	○	○

1) used with tool holders with 12 mm and larger shank size

3

3002 L / 3002 LV / 3002 R / 3002 RV

Designation	CW mm	PDPT mm	s mm
3002-0,8-10	0,8	10	2
3002-0,8-10	1,0	10	2
3002-1,0-13	1,0	13	2
3002-1,5-8-06	1,5	8	2
3002-1,5-8-12	1,5	8	2
3002-1,5-16	1,5	16	2
3002-2,0-10-06	2,0	10	2
3002-2,0-10-12	2,0	10	2
3002-2,0-16-12	2,0	16	2
3002-2,0-16-06	2,0	16	2
3002-2,5-13-12	2,5	13	2
3002-2,5-13-06	2,5	13	2
3002-2,5-16-12	2,5	16	2
3002-2,5-16-06	2,5	16	2
3002-3,0-16-12	3,0	16	2
3002-3,0-16-06	3,0	16	2



3002 L/LV / 3002 R/RV

3002 L / 3002 LV / 3002 R / 3002 RV

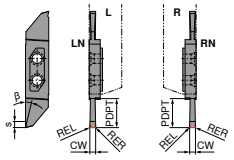
▲ for parting off

	-SPT WPU7620	-SPT WPU7620	-SPT WPU7620	-SPT WPU7620
				
	F 3002 L	F 3002 LV	F 3002 R	F 3002 RV
	72 440 ...	72 442 ...	72 436 ...	72 438 ...

ISO	REL mm	RER mm								
3002-0,8-10	0,00	0,00	50600		50600		50600		50600	
3002-1,0-13	0,00	0,00	52800		52800		52800		52800	
3002-1,5-16	0,00	0,00	53000		53000		53000		53000	
3002-1,5-8-06	0,00	0,05	540		540					
3002-1,5-8-06	0,05	0,00					540		540	
3002-1,5-8-12	0,00	0,05	570		570					
3002-1,5-8-12	0,05	0,00					570		570	
3002-2,0-10-06	0,00	0,05	572		572					
3002-2,0-10-06	0,05	0,00					572		572	
3002-2,0-10-12	0,00	0,05	582		582					
3002-2,0-10-12	0,05	0,00					582		582	
3002-2,0-16-06	0,00	0,05	552		552					
3002-2,0-16-06	0,05	0,00					552		552	
3002-2,0-16-12	0,00	0,05	592		592					
3002-2,0-16-12	0,05	0,00					592		592	
3002-2,5-13-06	0,00	0,05	554		554					
3002-2,5-13-06	0,05	0,00					554		554	
3002-2,5-13-12	0,00	0,05	584		584					
3002-2,5-13-12	0,05	0,00					584		584	
3002-2,5-16-06	0,00	0,05	574		574					
3002-2,5-16-06	0,05	0,00					574		574	
3002-2,5-16-12	0,00	0,05	594		594					
3002-2,5-16-12	0,05	0,00					594		594	
3002-3,0-16-06	0,00	0,05	556		556					
3002-3,0-16-06	0,05	0,00					556		556	
3002-3,0-16-12	0,00	0,05	586		586					
3002-3,0-16-12	0,05	0,00					586		586	
P			●		●		●		●	
M			●		●		●		●	
K			○		○		○		○	
N			○		○		○		○	
S			●		●		●		●	
H										
O			○		○		○		○	

3002 LN / 3002 RN

Designation	CW mm	PDPT mm	s mm	β°
3002-1,0-10	1,0	10	2	20
3002-1,5-10-06	1,5	10	2	6
3002-1,5-10-12	1,5	10	2	12
3002-1,5-16	1,5	16	2	20
3002-2,0-10-06	2,0	10	2	6
3002-2,0-10-12	2,0	10	2	12
3002-2,0-16-12	2,0	16	2	12
3002-2,0-16-06	2,0	16	2	6
3002-2,5-13-12	2,5	13	2	12
3002-2,5-13-06	2,5	13	2	6
3002-2,5-16-06	2,5	16	2	6
3002-2,5-16-12	2,5	16	2	12
3002-3,0-16-12	3,0	16	2	12
3002-3,0-16-06	3,0	16	2	6



3002 LN / 3002 RN

3002 LN / 3002 RN

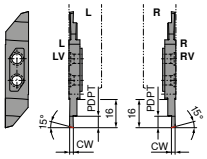
▲ for parting off

ISO	REL mm	RER mm	-SPT WPU7620 F 3002 LN 72 515 ...	-SPT WPU7620 F 3002 RN 72 514 ...
3002-1,0-10	0,05	0,05	50800	50800
3002-1,5-10-06	0,05	0,05	550	550
3002-1,5-10-12	0,05	0,05	580	580
3002-1,5-16	0,05	0,05	53000	53000
3002-2,0-10-06	0,05	0,05	572	572
3002-2,0-10-12	0,05	0,05	582	582
3002-2,0-16-06	0,05	0,05	552	552
3002-2,0-16-12	0,05	0,05	592	592
3002-2,5-13-06	0,05	0,05	554	554
3002-2,5-13-12	0,05	0,05	584	584
3002-2,5-16-06	0,05	0,05	574	574
3002-2,5-16-12	0,05	0,05	594	594
3002-3,0-16-06	0,05	0,05	556	556
3002-3,0-16-12	0,05	0,05	586	586
P			●	●
M			●	●
K			○	○
N			○	○
S			●	●
H				
O			○	○

3

3002 L-16 / 3002 LV-16 / 3002 R-16 / 3002 RV-16

Designation	CW mm	PDPT mm
3002-0,8-..	0,8	6
3002-1,0-..	1,0	6
3002-1,2-..	1,2	6



3002 L/LV / 3002 R/RV

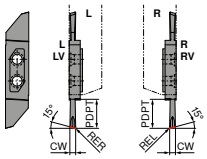
3002 L-16 / 3002 LV-16 / 3002 R-16 / 3002 RV-16

▲ For parting off with pick-up spindle

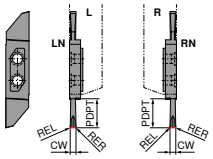
	WPU7620	WPU7620	WPU7620	WPU7620
	F	F	F	F
	3002 L-16	3002 LV-16	3002 R-16	3002 RV-16
	72 497 ...	72 499 ...	72 496 ...	72 498 ...
ISO				
3002-0,8-6-16	510 51200 514	510 51200 514	510 51200 514	510 51200 514
3002-1,0-6-16				
3002-1,2-6-16				
P	●	●	●	●
M	●	●	●	●
K	○	○	○	○
N	○	○	○	○
S	●	●	●	●
H				
O	○	○	○	○

3002 L / 3002 LN / 3002 LV / 3002 R / 3002 RN / 3002 RV

Designation	CW mm	PDPT mm
3002-2,0-10..	2	10



3002 L/LV / 3002 R/RV



3002 LN / 3002 RN

3002 L / 3002 LN / 3002 LV / 3002 R / 3002 RN / 3002 RV

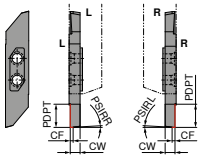
- For parting off
- **E:** Blade with rounded cutting edge
- **F:** Blade with sharp cutting edge

			-GS WPU7620	-GS WPU7620	-GS WPU7620	-GS WPU7620	-GS WPU7620	-GS WPU7620
								
			F	F	F	F	F	F
			3002 L	3002 LN	3002 LV	3002 R	3002 RN	3002 RV
			72 501 ...	72 505 ...	72 507 ...	72 500 ...	72 504 ...	72 506 ...
ISO	REL mm	RER mm						
3002-2,0-10 E	0,2	0,2		512			512	
3002-2,0-10 E	0,2	0,0				512		512
3002-2,0-10 E	0,0	0,2	512		512			
3002-2,0-10 F	0,2	0,2		552			552	
3002-2,0-10 F	0,2	0,0				552		552
3002-2,0-10 F	0,0	0,2	552		552			
P			●	●	●	●	●	●
M			●	●	●	●	●	●
K			○	○	○	○	○	○
N			○	○	○	○	○	○
S			●	●	●	●	●	●
H								
O			○	○	○	○	○	○

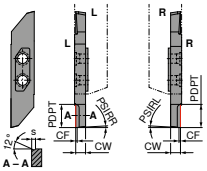
3

3003 L / 3003 R

Designation	CBMD	CW mm	CF mm	s mm	PDPT mm
3003-3,4-..	-SPU	3,4	0,2	1,2	8
3003-3,4-..		3,4	1,0	-	8



3003 L / 3003 R



-SPU 3002 L / 3002 R

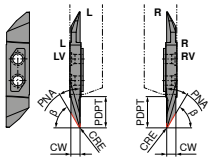
3003 L / 3003 R

▲ for front turning

	WPU7620	WPU7620	-SPU WPU7620	-SPU WPU7620
				
	F	**F**	**F**	**F**
	3003 L	3003 R	3003 L	3003 R
	72 446 ...	**72 444 ...**	**72 521 ...**	**72 520 ...**
ISO				
3003-3,4-8	**510**	**510**	**510**	**510**
P	●	●	●	●
M	●	●	●	●
K	○	○	○	○
N	○	○	○	○
S	●	●	●	●
H				
O	○	○	○	○

3004 L / 3004 LV / 3004 R / 3004 RV

Designation	CRE mm	CW mm	PDPT mm	PNA °	β°
3004-3,2-5 35015	0,15	3,2	11	35	55
3004-3,2-5 35035	0,35	3,2	11	35	55
3004-3,2-6 29008	0,08	3,2	11	29	61
3004-3,2-6 29015	0,15	3,2	11	29	61
3004-3,2-6 29035	0,35	3,2	11	29	61
3004-3,2-6 29075	0,75	3,2	11	29	61



3004 L/LV / 3004 R/RV

3004 L / 3004 LV / 3004 R / 3004 RV

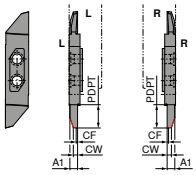
▲ for back turning

	-SP WPU7620	-SP WPU7620	-SP WPU7620	-SP WPU7620
				
	F 3004 L	F 3004 LV	F 3004 R	F 3004 RV
	72 562 ...	72 563 ...	72 560 ...	72 561 ...
ISO				
3004-3,2-5 35015	514		514	
3004-3,2-5 35035	516		516	
3004-3,2-6 29008	508	508	508	508
3004-3,2-6 29015	510	510	510	510
3004-3,2-6 29035	512	512	512	512
3004-3,2-6 29075	515	515	515	515
P	●	●	●	●
M	●	●	●	●
K	○	○	○	○
N	○	○	○	○
S	●	●	●	●
H				
O	○	○	○	○

3

3004 L / 3004 R

Designation	CW mm	CF mm	PDPT mm	a_1 mm
3004-0,8-..	0,8	0,5	6	2,0
3004-1,0-..	1,0	0,5	6	2,2
3004-1,2-..	1,2	0,5	8	2,4
3004-1,5-..	1,5	0,5	8	2,7
3004-1,8-..	1,8	0,5	8	3,0



3004 L / 3004 R

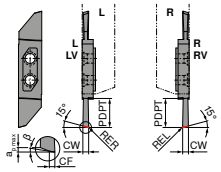
3004 L / 3004 R

▲ for back turning

ISO	WPU7620 F 3004 L 72 457 ...	WPU7620 F 3004 R 72 456 ...
3004-0,8-6	**504**	**504**
3004-1,0-6	**506**	**506**
3004-1,2-8	**508**	**508**
3004-1,5-8	**510**	**510**
3004-1,8-8	**512**	**512**
P	●	●
M	●	●
K	○	○
N	○	○
S	●	●
H		
O	○	○

3002-015 L / 3002-015 LV / 3002-015 R / 3002-015 RV

Designation	CW mm	CF mm	PDPT mm	β°	$a_{p\,max}$ mm
3002-015-..	2	0,3	10	1,5	0,45



3002-015 L/LV / 3002-015 R/RV

3002-015 L / 3002-015 LV / 3002-015 R / 3002-015 RV

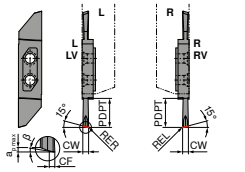
▲ For turning and parting off

	WPU7620	WPU7620	WPU7620	WPU7620
				
	F	**F**	**F**	**F**
	3002-015 L	3002-015 LV	3002-015 R	3002-015 RV
	72 517 ...	**72 519 ...**	**72 516 ...**	**72 518 ...**
ISO				
3002-015-2,0-10	**510**	**510**	**510**	**510**
P	●	●	●	●
M	●	●	●	●
K	○	○	○	○
N	○	○	○	○
S	●	●	●	●
H				
O	○	○	○	○

3

3002-015 L / 3002-015 LV / 3002-015 R / 3002-015 RV

Designation	CW mm	CF mm	PDPT mm	β°	$a_{p\,max}$ mm
3002-015-..	2	0,3	10	15	0,45



3002-015 L/LV / 3002-015 R/RV

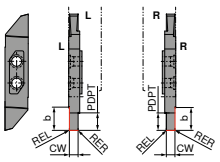
3002-015 L / 3002-015 LV / 3002-015 R / 3002-015 RV

▲ For turning and parting off

	-SC WPU7620	-SC WPU7620	-SC WPU7620	-SC WPU7620
				
	F 3002-015 L	**F** 3002-015 LV	**F** 3002-015 R	**F** 3002-015 RV
	72 511 ...	**72 513 ...**	**72 510 ...**	**72 512 ...**
ISO REL mm / RER mm				
3002-015-2,0-10 0,15 / 0,00		**510**		
3002-015-2,0-10 0,00 / 0,15	**510**		**510**	**510**
P	●	●	●	●
M	●	●	●	●
K	○	○	○	○
N	○	○	○	○
S	●	●	●	●
H				
O	○	○	○	○

3005 L / 3005 R

Designation	CW mm	PDPT mm	b mm
3005-1,0-..	1,0	2,5	8
3005-1,5-..	1,5	3,0	8
3005-2,0-..	2,0	4,0	8
3005-2,5-..	2,5	5,0	8
3005-3,0-..	3,0	6,0	8



3005 L / 3006 R

3005 L / 3005 R

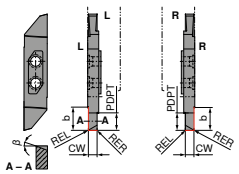
▲ for grooving and turning


ISO	REL mm	RER mm	F 3005 L 72 466 ...		F 3005 R 72 464 ...	
3005-1,0-2,5	0,05	0,05		**518**		**518**
3005-1,5-3	0,05	0,05		**510**		**510**
3005-2,0-4	0,05	0,05		**512**		**512**
3005-2,5-5	0,05	0,05		**514**		**514**
3005-3,0-6	0,05	0,05		**516**		**516**
P				●		●
M				●		●
K				o		o
N				o		o
S				●		●
H						
O				o		o

3

3005 L / 3005 R

Designation	CW mm	PDPT mm	b mm	β°
3005-0,8-2,5	0,8	2,5	8	10
3005-1,0-3,5	1,0	3,5	8	10
3005-1,5-4	1,5	4,0	8	10
3005-1,5-4 R08	1,5	4,0	8	10
3005-2,0-5	2,0	5,0	8	10
3005-2,0-5 R08	2,0	5,0	8	10
3005-2,0-5 R15	2,0	5,0	8	10
3005-2,5-6	2,5	6,0	8	10
3005-2,5-6 R08	2,5	6,0	8	10
3005-2,5-6 R15	2,5	6,0	8	10
3005-3,0-6	3,0	6,0	8	10
3005-3,0-6 R08	3,0	6,0	8	10
3005-3,0-6 R15	3,0	6,0	8	10



3005 L / 3006 R

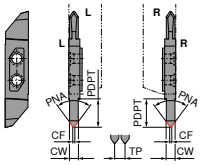
3005 L / 3005 R

▲ for grooving and turning

ISO	REL mm	RER mm	-CP WPU7620	-CP WPU7620
				
			F 3005 L **72 470 ...**	**F** 3005 R **72 468 ...**
3005-0,8-2,5	0,00	0,00	**508**	**508**
3005-1,0-3,5	0,00	0,00	**518**	**518**
3005-1,5-4	0,00	0,00	**510**	**528**
3005-1,5-4 R08	0,08	0,08	**519**	**519**
3005-2,0-5	0,00	0,00	**512**	**512**
3005-2,0-5 R08	0,08	0,08	**522**	**522**
3005-2,0-5 R15	0,15	0,15	**532**	**532**
3005-2,5-6	0,00	0,00	**514**	**514**
3005-2,5-6 R08	0,08	0,08	**524**	**524**
3005-2,5-6 R15	0,15	0,15	**534**	**534**
3005-3,0-6	0,00	0,00	**516**	**516**
3005-3,0-6 R08	0,08	0,08	**526**	**526**
3005-3,0-6 R15	0,15	0,15	**536**	**536**
P			●	●
M			●	●
K			○	○
N			○	○
S			●	●
H				
O			○	○

3006 L / 3006 R

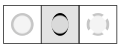
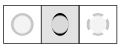
Designation	TP mm	CW mm	PDPT mm	PNA °	CF mm
3006-2-6-..	0,25 - 2,0	2	6	60	0,035
3006-3-10..	0,25 - 2,0	3	10	60	0,035



3006 L / 3006 R

3006 L / 3006 R

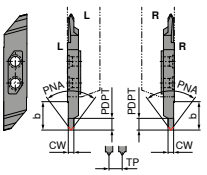
▲ For thread turning (partial profile)

		WPU7620	WPU7620
			
			
		F	**F**
		3006 L	3006 R
		72 478 ...	**72 476 ...**
ISO			
3006-2-6-60		**510**	**510**
3006-3-10-60		**512**	**512**
P		●	●
M		●	●
K		○	○
N		○	○
S		●	●
H			
O		○	○

3

3006 VP L / 3006 VP R

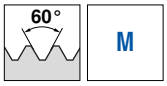
Designation	TP mm	TD mm	CW mm	PDPT mm	b mm	PNA °
3006-0,15..	0,15	M0,6	0,16	0,275	8	60
3006-0,25..	0,25	M1 - M1,2	0,28	0,275	8	60
3006-0,35..	0,35	M1,6 - M1,8	0,36	0,275	8	60
3006-0,35..	0,35	M1,6 - M1,8	0,38	0,275	8	60
3006-0,4-..	0,40	M2	0,44	0,275	8	60
3006-0,45..	0,45	M2,2 - M2,5	0,50	0,275	8	60
3006-0,5-..	0,50	M3	0,70	1,400	8	60
3006-0,6-..	0,60	M3,5	0,80	1,400	8	60
3006-0,7-..	0,70	M4	0,90	1,800	8	60
3006-0,75..	0,75	M4,5	0,95	1,900	8	60
3006-0,8-..	0,80	M5	1,00	2,000	8	60
3006-1,0-..	1,00	M6 - M7	1,20	2,400	8	60
3006-1,25..	1,25	M8 - M9	1,45	2,900	8	60
3006-1,5-..	1,50	M10 - M11	1,74	3,400	8	60
3006-1,75..	1,75	M12	1,95	3,900	8	60
3006-2,0-..	2,00	M14 - M16	2,20	4,000	8	60

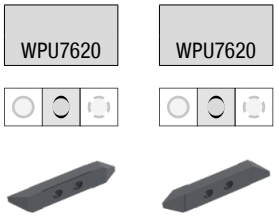


3006 L / 3006 R

3006 VP L / 3006 VP R

▲ For thread turning (full profile)

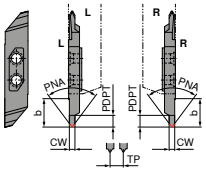




ISO	F 3006 VP L 72 474 ...	F 3006 VP R 72 472 ...
3006-0,15-10-60 VP	50800	50800
3006-0,25-10-60 VP	510	510
3006-0,35-10-60 VP	512	512
3006-0,4-10-60 VP	514	514
3006-0,45-10-60 VP	516	516
3006-0,5-10-60 VP	518	518
3006-0,6-10-60 VP	520	520
3006-0,7-10-60 VP	522	522
3006-0,75-10-60 VP	524	524
3006-0,8-10-60 VP	526	526
3006-1,0-10-60 VP	528	528
3006-1,25-10-60 VP	530	530
3006-1,5-10-60 VP	532	532
3006-1,75-10-60 VP	534	534
3006-2,0-10-60 VP		53600
P	●	●
M	●	●
K	○	○
N	○	○
S	●	●
H		
O	○	○

3006 VP L / 3006 VP R

Designation	TP mm	CW mm	PDPT mm	b mm	PNA °
3006-13 U..	1,954	2,4	4,2	8	60
3006-14 U..	1,814	2,2	3,9	8	60
3006-16 U..	1,588	1,8	3,6	8	60
3006-18 U..	1,411	1,6	3,4	8	60
3006-20 U..	1,270	1,4	2,9	8	60
3006-24 U..	1,058	1,2	2,4	8	60
3006-28 U..	0,907	1,2	2,2	8	60
3006-32 U..	0,794	1,0	2,0	8	60
3006-36 U..	0,705	0,8	1,8	8	60
3006-40 U..	0,635	0,8	1,8	8	60
3006-44 U..	0,577	0,8	1,4	8	60
3006-48 U..	0,529	0,6	1,4	8	60



3006 L / 3006 R

3006 VP L / 3006 VP R

▲ for thread turning (full profile UN)

NEW NEW

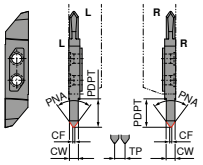
WPU7620 WPU7620

	F 3006 VP L 72 531 ...	F 3006 VP R 72 530 ...
ISO		
3006-13 UN 10-60 VP	52400	52400
3006-14 UN 10-60 VP	52200	52200
3006-16 UN 10-60 VP	52000	52000
3006-18 UN 10-60 VP	51800	51800
3006-20 UN 10-60 VP	51600	51600
3006-24 UN 10-60 VP	51400	51400
3006-28 UN 10-60 VP	51200	51200
3006-32 UN 10-60 VP	51000	51000
3006-36 UN 10-60 VP	50800	50800
3006-40 UN 10-60 VP	50600	50600
3006-44 UN 10-60 VP	50400	50400
3006-48 UN 10-60 VP	50200	50200
P	●	●
M	●	●
K	○	○
N	○	○
S	●	●
H		
O	○	○

3

3006 L / 3006 R

Designation	TP mm	CW mm	PDPT mm	PNA °	CF mm
3006-2-6-..	0,25 - 2,0	2	6	55	0,035
3006-3-10..	0,25 - 2,0	3	10	55	0,035



3006 L / 3006 R

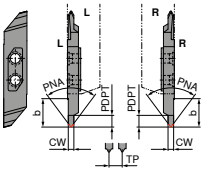
3006 L / 3006 R

▲ For thread turning (partial profile)

ISO	F 3006 L 72 527 ...	F 3006 R 72 526 ...
3006-2-6-55	50000	50000
3006-3-10-55	50200	50200
P	●	●
M	●	●
K	○	○
N	○	○
S	●	●
H		
O	○	○

3006 VP L / 3006 VP R

Designation	TP mm	TD mm	CW mm	PDPT mm	b mm	PNA °
3006-G11-..	2,309	1-11 - 6-11	2,54	5,0	8	55
3006-G14-..	1,814	1/2-14 - 7/8-14	2,00	4,5	8	55
3006-G19-..	1,337	1/4-19 - 3/8-19	1,48	3,3	8	55
3006-G28-..	0,907	1/8-28 - 1/16-28	1,00	2,3	8	55



3006 L / 3006 R

3006 VP L / 3006 VP R

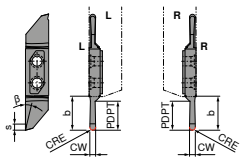
▲ For thread turning (full profile)

ISO	F 3006 VP L 72 529 ...	F 3006 VP R 72 528 ...
3006-G11-10-55 VP	**51100**	**51100**
3006-G14-10-55 VP	**51400**	**51400**
3006-G19-10-55 VP	**51900**	**51900**
3006-G28-10-55 VP	**52800**	**52800**
P	●	●
M	●	●
K	○	○
N	○	○
S	●	●
H		
O	○	○

3

3007 L / 3007 R

Designation	CW mm	b mm	PDPT mm	CRE mm	s mm	β°
3007-R0,25-2-..	0,5	12	2,0	0,25	2	6
3007-R0,5-2,5..	1,0	12	2,5	0,50	2	6
3007-R0,6-2,5..	1,2	12	2,5	0,60	2	6
3007-R0,75-3-..	1,5	12	3,0	0,75	2	6
3007-R0,8-3-1..	1,6	12	3,0	0,80	2	6
3007-R1,0-10	2,0	12	10,0	1,00	2	6
3007-R1,5-10	3,0	12	10,0	1,50	2	6
3007-R1,5-16	3,0	17	16,0	1,50	2	6



3007 L / 3008 R

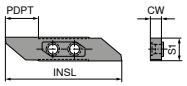
3007 L / 3007 R

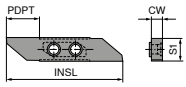
▲ for radius turning

	WPU7620	WPU7620
		
	F	F
	3007 L	3007 R
	72 482 ...	72 480 ...
ISO		
3007-R0,25-2-10	510	510
3007-R0,5-2,5-10	512	512
3007-R0,6-2,5-10	514	514
3007-R0,75-3-10	516	516
3007-R0,8-3-10	518	518
3007-R1,0-10	520	520
3007-R1,5-10	522	522
3007-R1,5-16	524	524
P	●	●
M	●	●
K	○	○
N	○	○
S	●	●
H		
O	○	○

3012 L / 3012 R / 3001 L / 3001 R

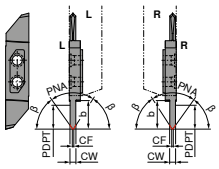
Designation	CW mm	PDPT mm	b mm	PNA °	CF mm
3012-2-6-..	2,0	2	10	60	0,035
3012-2-10..	2,0	10	12	90	0,02
3001-3,5-..	3,5	11	-	-	-





3001 L

3001 R



3012 L / 3012 R

3012 L / 3012 R

▲ for chamfering

NEW NEW

WPU7620 WPU7620

F F

3012 L 3012 R

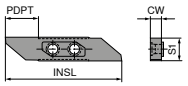
72 486 ... 72 484 ...

ISO		
3012-2-6-60	51000	51000
3012-2-10-45	51200	51200
P	●	●
M	●	●
K	○	○
N	○	○
S	●	●
H		
O	○	○

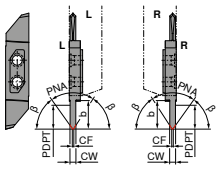
3

3012 L / 3012 R / 3001 L / 3001 R

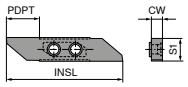
Designation	CW mm	PDPT mm	S1 mm	INSL mm
3001-3,5-..	3,5	11	8	40,5
3001-3,6-..	3,6	17	8	51,5
3012-2-10..	2,0	10	8	40,0
3012-2-6-..	2,0	2	8	40,0



3001 L



3012 L / 3012 R



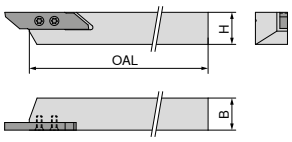
3001 R

3001 L / 3001 R

▲ Blank

	NEW	NEW
	WUU7620	WUU7620
		
	3001 L	3001 R
	72 414 ...	**72 412 ...**
ISO		
3001-3,5-10	**11000**	**11000**
3001-3,6-17	**13000**	**13000**

VertiClamp – Standard tool holder

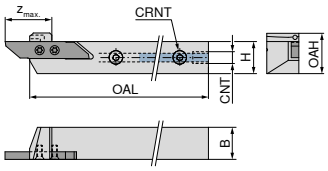


Illustrations show right-hand versions

ISO designation	H mm	B mm	OAL mm	Insert	Left-hand 72 302 ...	Right-hand 72 300 ...
3000-08x100 .	8	8	100	30..	**008**	**008**
3000-10x100 .	10	10	100	30..	**010**	**010**
3000-12x100 .	12	12	100	30..	**012**	**012**
3000-16x125 .	16	16	125	30..	**016**	**016**
3000-20x125 .	20	20	125	30..	**020**	**020**
3000-25x150 .	25	25	150	30..	**025**	

Spare parts for Article no.		Key D 80 950 ...	Clamping screw 72 950 ...
72 300 016 / 72 302 016	T08	**110**	**005**
72 300 008 / 72 302 008	T08	**110**	**004**
72 300 010 / 72 302 010	T08	**110**	**005**
72 300 012 / 72 302 012	T08	**110**	**005**
72 300 020 / 72 302 020	T08	**110**	**005**
72 302 025	T08	**110**	**005**

VertiClamp – Standard holder with thro' coolant

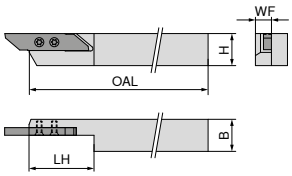


Illustrations show right-hand versions

ISO designation	H mm	B mm	OAL mm	OAH mm	$z_{max.}$ mm	CRNT	CNT	Insert	NEW Left-hand 72 311 ...	NEW Right-hand 72 310 ...
3000-08x100 .IC	8	12	100	12,2	26	M5	M5	30..	**008**	**008**
3000-10x100 .IC	10	12	100	14,0	26	M5	M5	30..	**010**	**010**
3000-12x100 .IC	12	12	100	16,0	26	M5	M5	30..	**012**	**012**
3000-16x100 .IC	16	16	125	20,0	26	M5	G1/8"	30..	**016**	**016**
3000-20x100 .IC	20	20	125	24,0	26	M5	G1/8"	30..	**020**	**020**
3000-25x100 .IC	25	25	125	29,0	26	M5	G1/8"	30..	**025**	**025**

Spare parts for Article no.		Cylindrical screw 72 950 ...		Cylindrical screw 72 950 ...		Key D 80 950 ...		Clamping screw 72 950 ...
72 310 008 / 72 311 008			M5x4	**011**	T08	**110**		**004**
72 310 010 / 72 311 010			M5x4	**011**	T08	**110**		**005**
72 310 012 / 72 311 012			M5x4	**011**	T08	**110**		**005**
72 310 016 / 72 311 016	G1/8"	**010**	M5x4	**011**	T08	**110**		**005**
72 310 020 / 72 311 020	G1/8"	**010**	M5x4	**011**	T08	**110**		**005**
72 310 025 / 72 311 025	G1/8"	**010**	M5x4	**011**	T08	**110**		**005**

VertiClamp – Offset tool holder



Illustrations show right-hand versions

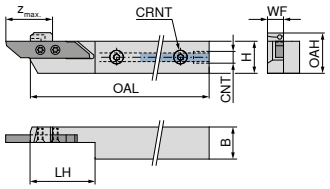
ISO designation	H mm	B mm	OAL mm	LH mm	WF mm	Insert	Left-hand 72 309 ...	Right-hand 72 308 ...
3000-10x100 .A	10	10	100	37	8	30..	006	006
3000-12x100 .A	12	12	100	37	8	30..	008	008
3000-16x125 .A	16	16	125	37	8	30..	010	010


Key D


Clamping screw

Spare parts for Article no.		Key D 80 950 ...	Clamping screw 72 950 ...
72 308 006 / 72 309 006	T08	110	004
72 308 008 / 72 309 008	T08	110	004
72 308 010 / 72 309 010	T08	110	004

VertiClamp – Offset holder with thro' coolant



Illustrations show right-hand versions

ISO designation	H mm	B mm	OAL mm	WF mm	LH mm	OAH mm	$z_{max.}$ mm	CNT	CRNT	Insert	NEW Left-hand 72 315 ...	NEW Right-hand 72 314 ...
3000-16x125 .A IC	16	16	125	8	37	20	27	G1/8"	M5	30..	016	016


Cylindrical screw

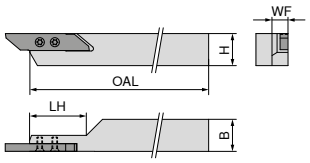

Cylindrical screw


Key D


Clamping screw

Spare parts for Article no.		Cylindrical screw 72 950 ...		Cylindrical screw 72 950 ...		Key D 80 950 ...	Clamping screw 72 950 ...
72 314 016 / 72 315 016	G1/8"	010	M5x4	011	T08	110	004

VertiClamp – Offset holder with offset insert seat



Illustrations show right-hand versions

ISO designation	H mm	B mm	OAL mm	LH mm	WF mm	Insert	NEW Left-hand 72 317 ...	NEW Right-hand 72 316 ...
3000-10x100 .AV	10	10	100	28	8	30..	010	010
3000-12x100 .AV	12	12	100	28	8	30..	012	
3000-16x125 .AV	16	16	125	28	8	30..	016	016

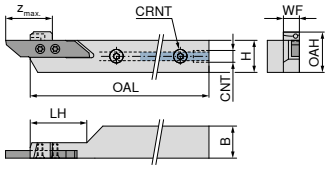

Key D


Clamping screw

Spare parts for Article no.		Key D 80 950 ...	Clamping screw 72 950 ...
72 316 010 / 72 317 010	T08	110	004
72 317 012	T08	110	004
72 316 016 / 72 317 016	T08	110	004

3

VertiClamp – Offset holder with offset insert seat and thro' coolant



Illustrations show right-hand versions

ISO designation	H mm	B mm	OAL mm	OAH mm	$Z_{max.}$ mm	CRNT	CNT	Insert	NEW Left-hand 72 313 ...	NEW Right-hand 72 312 ...
3000-16x125 .AV IC	16	16	125	20	27	M5	G1/8"	30..	016	016


Cylindrical screw

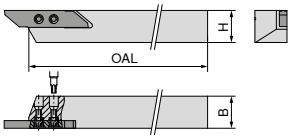

Cylindrical screw


Key D


Clamping screw

Spare parts for Article no.		Cylindrical screw 72 950 ...		Cylindrical screw 72 950 ...		Key D 80 950 ...	Clamping screw 72 950 ...
72 312 016 / 72 313 016	G1/8"	010	M5x4	011	T08	110	004

VertiClamp – Combi tool holder

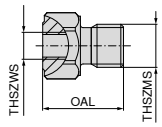


ISO designation	H mm	B mm	OAL mm	Insert	Left-hand 72 306 ...	Right-hand 72 304 ...
3000-08x100 .C	8	8	100	30..	**008**	**008**
3000-10x100 .C	10	10	100	30..	**010**	**010**
3000-12x100 .C	12	12	100	30..	**012**	**012**
3000-16x125 .C	16	16	125	30..	**016**	**016**
3000-20x125 .C	20	20	125	30..	**020**	**020**

Spare parts for Article no.		Key D 80 950 ...		 Clamping screw 72 950 ...		 Threaded sleeve 72 950 ...	
72 304 008 / 72 306 008	T08	**110**		**003**		**008**	
72 304 010 / 72 306 010	T08	**110**		**003**		**008**	
72 304 012 / 72 306 012	T08	**110**		**003**		**008**	
72 304 016 / 72 306 016	T08	**110**		**003**		**008**	
72 304 020 / 72 306 020	T08	**110**		**003**		**008**	

Reducer fitting

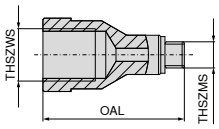
- Max. 200 bar/2900 psi
- No sealing ring required



Designation	THSZWS	THSZMS	OAL mm	72 301 ...
RV.100.M6-M5	M5	M6	18	**002**
RV.100.M8x1-M5	M5	M8x1	15	**008**
RV.100.M10x1-M5	M5	M10x1	15	**007**
RV.100.G1/8-M5	M5	G1/8"	15	**006**

Reducer fitting

- Max. 200 bar/2900 psi
- Includes sealing ring



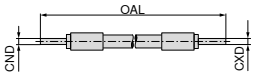
Designation	THSZWS	THSZMS	OAL mm	72 301 ...
RV.100.M5-M6	M6	M5	15	**001**
RV.100.M5-M8x1	M8x1	M5	23	**003**
RV.100.M5-M10x1	M10x1	M5	27	**005**
RV.100.M5-G1/8	G1/8"	M5	27	**004**

Sealing ring

Spare parts for Article no.	72 950 ...
72 301 001	**009**
72 301 003	**009**
72 301 005	**009**
72 301 004	**009**

Hose (connecting piece/connecting piece)

- Max. 200 bar/2900 psi



Designation	CND mm	CXD mm	OAL mm	72 305 ...
HDKS.150.4-4	4	4	150	**003**
HDKS.200.4-4	4	4	200	**014**
HDKS.300.4-4	4	4	300	**025**
HDKS.500.4-4	4	4	500	**037**

Hose (connecting piece/thread)

- Max. 200 bar/2900 psi
- No sealing ring required

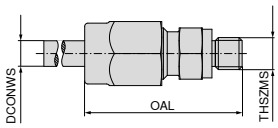
Designation	THSZMS	CXD mm	OAL mm	72 305 ...
HDKS.150.M5-4	M5	4	150	**010**
HDKS.200.M5-4	M5	4	200	**021**
HDKS.300.M5-4	M5	4	300	**033**
HDKS.500.M5-4	M5	4	500	**045**

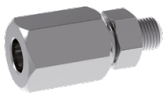
3

Coolant connections are supplied-to-order items

Straight fitting

▲ Max. 200 bar/2900 psi

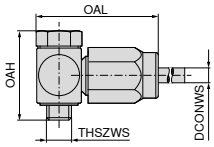




Designation	DCONWS mm	THSZMS	OAL mm	72 307 ...
KA. M5-4	4	M5	27	**009**
KA. G1/8-4	4	G1/8"	32	**003**

Swivel fitting

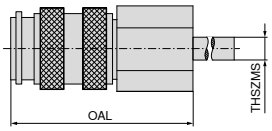
▲ Max. 200 bar/2900 psi



Designation	DCONWS mm	OAH mm	THSZMS	OAL mm	72 307 ...
KA.SV.M5-4	4	21	M5	28	**017**
KA.SV.G1/8-4	4	30	G1/8"	37	**012**

Quick connection (coupling)

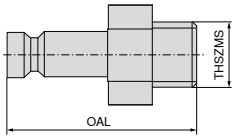
▲ Max. 200 bar/2900 psi



Designation	THSZMS	OAL mm	72 319 ...
KIG.M5	M5	26	**001**

Quick connection (connector)

▲ Max. 200 bar/2900 psi
▲ No sealing ring required



Designation	THSZMS	OAL mm	72 320 ...
SAG.M5	M5	20	**001**

Coolant connections are supplied-to-order items

Material examples for cutting data tables

	Material sub-group	Index	Composition / Structure / Heat treatment		Tensile strength N/mm²* / HB / HRC	Material number	Material designation	Material number	Material designation
P	Unalloyed steel	P.1.1	< 0,15 % C	Annealed	420 N/mm² / 125 HB	1.0401	C15	1.1141	Ck15
		P.1.2	< 0,45 % C	Annealed	640 N/mm² / 190 HB	1.1191	C45E	1.0718	9SMnPb28
		P.1.3		Tempered	840 N/mm² / 250 HB	1.1191	C45E	1.0535	C55
		P.1.4	< 0,75 % C	Annealed	910 N/mm² / 270 HB	1.1223	C60R	1.0535	C55
		P.1.5		Tempered	1010 N/mm² / 300 HB	1.1223	C60R	1.0727	45S20
	Low-alloy steel	P.2.1		Annealed	610 N/mm² / 180 HB	1.7131	16MnCr5	1.6587	17CrNiMo6
		P.2.2		Tempered	930 N/mm² / 275 HB	1.7131	16MnCr5	1.6587	17CrNiMo6
		P.2.3		Tempered	1010 N/mm² / 300 HB	1.7225	42CrMo4	1.3505	100Cr6
		P.2.4		Tempered	1200 N/mm² / 375 HB	1.7225	42CrMo4	1.3505	100Cr6
	High-alloy steel and high-alloy tool steel	P.3.1		Annealed	680 N/mm² / 200 HB	1.4021	X20Cr13	1.4034	X46Cr13
		P.3.2		Hardened and tempered	1100 N/mm² / 300 HB	1.2343	X38CrMoV5-1	1.4034	X46Cr13
		P.3.3		Hardened and tempered	1300 N/mm² / 400 HB	1.2343	X38CrMoV5-1	1.4034	X46Cr13
	Stainless steel	P.4.1	Ferritic / martensitic	Annealed	680 N/mm² / 200 HB	1.4016	X6Cr17	1.2316	X36CrMo16
		P.4.2	Martensitic	Tempered	1010 N/mm² / 300 HB	1.4112	X90CrMoV18	1.2316	X36CrMo16
M	Stainless steel	M.1.1	Austenitic / austenitic-ferritic	Quenched	610 N/mm² / 180 HB	1.4301	X5CrNi18-10	1.4571	X6CrNiMoTi17-12-2
		M.2.1	Austenitic	Tempered	300 HB	1.4841	X15CrNiSi25-21	1.4539	X1NiCrMoCu25-20-5
		M.3.1	Austenitic / ferritic (Duplex)		780 N/mm² / 230 HB	1.4462	X2CrNiMoN22-5-3	1.4501	X2CrNiMoCuWN25-7-4
K	Grey cast iron	K.1.1	Pearlitic / ferritic		350 N/mm² / 180 HB	0.6010	GG-10	0.6025	GG-25
		K.1.2	Pearlitic (martensitic)		500 N/mm² / 260 HB	0.6030	GG-30	0.6045	GG-45
	Spherulitic graphite cast iron	K.2.1	Ferritic		540 N/mm² / 160 HB	0.7040	GGG-40	0.7060	GGG-60
		K.2.2	Pearlitic		845 N/mm² / 250 HB	0.7070	GGG-70	0.7080	GGG-80
	Malleable iron	K.3.1	Ferritic		440 N/mm² / 130 HB	0.8035	GTW-35-04	0.8045	GTW-45
		K.3.2	Pearlitic		780 N/mm² / 230 HB	0.8165	GTS-65-02	0.8170	GTS-70-02
N	Aluminium wrought alloy	N.1.1	Non-hardenable		60 HB	3.0255	Al99,5	3.3315	AlMg1
		N.1.2	Hardenable	Age-hardened	340 N/mm² / 100 HB	3.1355	AlCuMg2	3.2315	AlMgSi1
	Cast aluminium alloy	N.2.1	≤ 12 % Si, non-hardenable		250 N/mm² / 75 HB	3.2581	G-AlSi12	3.2163	G-AlSi9Cu3
		N.2.2	≤ 12 % Si, hardenable	Age-hardened	300 N/mm² / 90 HB	3.2134	G-AlSi5Cu1Mg	3.2373	G-AlSi9Mg
		N.2.3	> 12 % Si, non-hardenable		440 N/mm² / 130 HB		G-AlSi17Cu4Mg		G-AlSi18CuNiMg
	Copper and copper alloys (bronze/brass)	N.3.1	Free-machining alloys, PB > 1 %		375 N/mm² / 110 HB	2.0380	CuZn39Pb2 (Ms58)	2.0410	CuZn44Pb2
		N.3.2	CuZn, CuSnZn		300 N/mm² / 90 HB	2.0331	CuZn15	2.4070	CuZn28Sn1As
		N.3.3	CuSn, lead-free copper and electrolytic copper		340 N/mm² / 100 HB	2.0060	E-Cu57	2.0590	CuZn40Fe
	Magnesium alloys	N.4.1	Magnesium and magnesium alloys		70 HB	3.5612	MgAl6Zn	3.5312	MgAl3Zn
S	Heat-resistant alloys	S.1.1	Fe – basis	Annealed	680 N/mm² / 200 HB	1.4864	X12NiCrSi 36-16	1.4865	G-X40NiCrSi38-18
		S.1.2		Age-hardened	950 N/mm² / 280 HB	1.4980	X6NiCrTiMoVB25-15-2	1.4876	X10NiCrAlTi32-20
		S.2.1	Ni or Co basis	Annealed	840 N/mm² / 250 HB	2.4631	NiCr20TiAl (Nimonic80A)	3.4856	NiCr22Mo9Nb
		S.2.2		Age-hardened	1180 N/mm² / 350 HB	2.4668	NiCr19Nb5Mo3 (Inconel 718)	2.4955	NiFe25Cr20NbTi
		S.2.3		Cast	1080 N/mm² / 320 HB	2.4765	CoCr20W15Ni	1.3401	G-X120Mn12
	Titanium alloys	S.3.1	Pure titanium		400 N/mm²	3.7025	Ti99,8	3.7034	Ti99,7
		S.3.2	Alpha + beta alloys	Age-hardened	1050 N/mm² / 320 HB	3.7165	TiAl6V4	Ti-6246	Ti-6Al-2Sn-4Zr-6Mo
		S.3.3	Beta alloys		1400 N/mm² / 410 HB	Ti555.3	Ti-5Al-5V-5Mo-3Cr	R56410	Ti-10V-2Fe-3Al
H	Hardened steel	H.1.1		Hardened and tempered	46–55 HRC				
		H.1.2		Hardened and tempered	56–60 HRC				
		H.1.3		Hardened and tempered	61–65 HRC				
		H.1.4		Hardened and tempered	66–70 HRC				
	Chilled iron	H.2.1		Cast	400 HB				
	Hardened cast iron	H.3.1		Hardened and tempered	55 HRC				
O	Non-metal materials	O.1.1	Plastics, duroplastic		≤ 150 N/mm²				
		O.1.2	Plastics, thermoplastic		≤ 100 N/mm²				
		O.2.1	Aramid fibre-reinforced		≤ 1000 N/mm²				
		O.2.2	Glass/carbon-fibre reinforced		≤ 1000 N/mm²				
		O.3.1	Graphite						

*** Tensile strength**

3

Cutting data standard values

		DRAGONSKIN																
	TCM10	CTCP115-P	CTCP125-P	CTCP135-P	CTCM120	CTPM125	CTCM130	CTPP430	CWN2120	CTPX710 -M34	CTPX710 -25P/-25Q	CTPX715 -27	H210T	H10T/ H216T	CWN15	WUU7610	WPU7610	WPU7620
Index	v_c in m/min																	
P.1.1	**309**	**370**	**295**	**210**	229	203	184	**215**		**325**	**340**	**275**				85	**110**	**115**
P.1.2	**266**	**315**	**250**	**175**	200	171	152	**190**		**286**	**300**	**236**				50	**65**	**70**
P.1.3	**227**	**270**	**210**	**145**	173	142	123	**165**		**250**	**260**	**200**				50	**65**	**70**
P.1.4	**213**	**250**	**200**	**135**	164	132	113	**160**		**238**	**250**	**188**				50	**65**	**70**
P.1.5	**193**	**230**	**180**	**120**	150	118	98	**150**		**220**	**235**	**170**				50	**65**	**70**
P.2.1	**273**	**325**	**260**	**180**	204	176	157	**200**		**292**	**300**	**242**				50	**65**	**70**
P.2.2	**210**	**250**	**195**	**130**	161	130	110	**160**		**235**	**250**	**185**				50	**65**	**70**
P.2.3	**193**	**230**	**180**	**120**	150	118	98	**140**		**220**	**235**	**170**				50	**65**	**70**
P.2.4	**144**	**170**	**130**	**85**	116	81	61	**110**		**175**	**190**	**125**				50	**65**	**70**
P.3.1	**219**	**200**	**170**	**150**	159	142	124	**140**		**140**	**150**	**138**				50	**65**	**70**
P.3.2	**167**	**140**	**105**	**95**	116	97	81	**100**		**85**	**95**	**81**				50	**65**	**70**
P.3.3	**114**	**85**	**40**	**35**	73	51	38	**70**		**30**	**35**	**24**				50	**65**	**70**
P.4.1	**219**	**200**	**170**	**155**	159	142	124	**140**		**140**	**155**	**138**				50	**65**	**70**
P.4.2	**193**	**170**	**135**	**125**	138	119	103	**120**		**113**	**130**	**109**				50	**65**	**70**
M.1.1	219			155	**159**	**142**	**124**	**140**	**130**	**140**	**150**	**138**			100		**55**	**65**
M.2.1				95	**116**	**97**	**81**	**100**	**85**	**85**	**90**	**81**			55		**40**	**45**
M.3.1				135	**146**	**128**	**111**	**130**	**115**	**124**	**130**	**120**			85		**55**	**65**
K.1.1		255	170					140				200	170	140			**110**	**115**
K.1.2		235	160					130				160	130	115			**110**	**115**
K.2.1	260	270	180					140				190	180	150			**110**	**115**
K.2.2	215	205	160					140				150	130	110			**110**	**115**
K.3.1	300	250	200					100				210	190	170			**110**	**115**
K.3.2	205	210	160					100				180	160	140			**110**	**115**
N.1.1								300	1750	1840	**1840**	**1750**	**1650**	**1400**	**1650**	**180**	**200**	220
N.1.2								315	1500	1600	**1600**	**1500**	**1350**	**1100**	**1400**	**180**	**200**	220
N.2.1								270	1250	1250	**1250**	**1200**	**1200**	**950**	**1250**	**180**	**200**	220
N.2.2								140	1250	1250	**1250**	**1200**	**1100**	**950**	**1200**	**180**	**200**	220
N.2.3								180	700	750	**750**	**700**	**600**	**500**	**750**	**180**	**200**	220
N.3.1								200	650	650	**650**	**625**	**525**	**425**	**600**	**180**	**200**	220
N.3.2								200	600	630	**630**	**600**	**500**	**400**	**570**	**180**	**200**	220
N.3.3								200	480	500	**500**	**475**	**375**	**275**	**460**	**180**	**200**	220
N.4.1								200	330	340	**340**	**325**	**275**	**225**	**280**	**180**	**200**	220
S.1.1							35	65		**100**	**110**	**40**	43			40	45	45
S.1.2							26	50		**80**	**85**	**30**	33			40	45	45
S.2.1							20	45		**63**	**75**	**30**	33			35	40	40
S.2.2							20	40		**40**	**45**	**24**	25			35	40	40
S.2.3							18	40		**38**	**43**	**20**	20					
S.3.1							110	65		**95**	**100**	**110**	110					
S.3.2							63	50		**55**	**60**	**70**	70			35	**45**	**45**
S.3.3							45	40		**40**	**45**	**50**	50			35	**45**	**45**
H.1.1																		
H.1.2																		
H.1.3																		
H.1.4																		
H.2.1																		
H.3.1																		
O.1.1												140	160	130		**180**	200	220
O.1.2																**180**	200	220
O.2.1												150	140	105				
O.2.2																		
O.3.1																		

The cutting data is strongly influenced by external conditions, such as the stability of the tool and workpiece clamping, material and type of machine.
The specified values represent guideline cutting data that can be adjusted by approx. **±20%** according to the usage conditions.

Machinability of non-ferrous metals with carbide indexable inserts

	Material group	Material examples			Machinability of aluminium alloys *	Comments
N	Pure aluminium	non hardenable	Al 99,5	W7	5	▲ Snarl chips ▲ Possibly bad surface ▲ Excessive built-up edge ▲ Long tool life ▲ Use coolant emulsion
			Al 99,5	F13	4	
			Al 99	W8	5	
			Al 99	F14	4	
	Aluminium wrought alloys	non hardenable	Al Mn	W10	5	▲ Snarl, continuous or fragmented chip ▲ Large feed rates necessary for good swarf control ▲ Built-up edge ▲ Long tool life ▲ Emulsion coolant is advantageous
			Al Mn	F16	4	
			Al Mg 1	W10	5	
			Al Mg 1	F19	4	
			Al Mg 3	W18	4	
			Al Mg 3	F25	3	
			Al Mg 5	W25	4	
			AL Mg 5	F28	2	
			Al Mg 4,5 Mn	W27	4	
			Al Mg 4,5 Mn	G35	3	
		hardenable	Al Mg Si 0,5	W	4	▲ Good swarf control with higher feed rates
			Al Mg Si 0,5	F13-25	3	
			Al Mg Si 1	W	4	
			Al Mg Si 1	F21-30	3	
			Al Mg Si Pb	F20-28	2	▲ Very good swarf control ▲ No built up edge ▲ Very good surface quality
			Al Cu Si Pb	F28-37	1	
			Al Cu Mg Pb	F34-37	1	
			Al Cu Mg 1	W	3	▲ Good swarf control ▲ Good surface quality ▲ Little built-up edge
			Al Cu Mg 1	F33-40	2	
			Al Cu Mg 2	W	3	
			Al Cu Mg 2	F40-47	2	
			Al Cu Si Mn	W	3	
			Al Cu Si Mn	F43-46	2	
			Al Zn Mg Cu 1,5	F50-52	2	
			Al Sn 6 Cu		1	
	Cast Aluminium Alloys	non hardenable	G-Al Si 12		3	▲ Good swarf control ▲ Built-up edge ▲ Higher Si content results in lower tool life
			G-Al Si 10 Mg		3	
			G-Al Si 5 Mg		2	
			G-Al Si 7 Mg (9 Mg)		2	
			G-Al Si Cu 3		2	▲ High wear of the carbide
			G-Al Si 6 Cu 4		2	
			G-Al Mg 3 (Mg 5)		2	▲ Good swarf control ▲ Good surface quality ▲ Long tool life
			G-Al Mg 9		2	
			G-Al Mg 10		2	
			G-Al Mg 3 Si (5 Si)		2	
			G-Al Cu 4 Ti (Mg)		2	
			G-Al Si 12 Cu Mg Ni		2	
	Copper wrought alloys		Cu Ag			
			Cu As			
			Cu Cd			
			Cu Cd Sn			
			Cu Mg			
			Cu Mn			
		brass	Cu Zn Al			
		bronze	Cu Sn			
			Cu Sn Zn			
			Cu Ni			
			Cu Ni Fe			
			Cu Al			
O	Non metal materials	Duroplastics				
		Fibre-reinforced plastics				
		hard rubber				

* 1 = good machinability, 5 = bad machinability

3

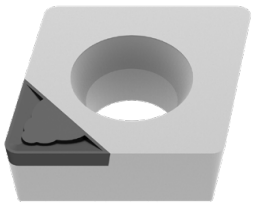
Cutting data standard values for diamond cutting materials CTD PD20 / PS30 / PU20 / CD10 / MD05

Index	Material group			a_p = 0,04–0,4 mm Surface roughness R_z in µm 2,5–5,0	a_p = 0,04–0,4 mm Surface roughness R_z in µm 5,0–10	a_p = 0,4–1,0 mm Surface roughness R_z in µm 2,5–5,0	a_p = 0,4–1,0 mm Surface roughness R_z in µm 5,0–10	a_p = 0,4–2,5 mm Surface roughness R_z in µm 2,5–5,0	a_p = 0,4–2,5 mm Surface roughness R_z in µm 5,0–10
				CTD ...	CTD ...	CTD ...	CTD ...	CTD ...	CTD ...
N.1.1 N.1.2	Aluminium wrought alloys without Si f=0.05–0.5 mm/rev.	○	Tool Material	PD20 / PU20 / CD10 / MD05	PD20 / PU20 / CD10 / MD05	PD20 / PU20 / CD10 / MD05	PD20 / PU20 / CD10 / MD05	PD20 / PU20 / CD10 / MD05	PD20 / PU20 / CD10 / MD05
			v_c in m/min	**400–2500**	**400–2500**	**400–2000**	**400–2000**	**400–1600**	**400–1600**
		◐	Tool Material		PD20 / CD10		PD20 / CD10		PD20 / CD10
			v_c in m/min		**400–2500**		**400–2000**		**400–1600**
		◌	Tool Material	PD20 / PU20	PD20 / PU20	PD20 / PU20	PD20 / PU20	PD20 / PU20	PD20 / PU20
			v_c in m/min	**400–2500**	**400–2500**	**400–2000**	**400–2000**	**400–1600**	**400–1600**
N.2.1	Cast Aluminium Alloys Si≤12 % – hardened or Si=12–20% – non hardened f=0,05–0,5 mm/rev.	○	Tool Material	PS30 / PU20 / CD10 / MD05	PS30 / PU20 / CD10 / MD05	PS30 / PU20 / CD10 / MD05	PS30 / PU20 / CD10 / MD05	PS30 / PU20 / CD10 / MD05	PS30 / PU20 / CD10 / MD05
			v_c in m/min	**600–2000**	**600–2200**	**600–1800**	**600–2000**	**600–1500**	**600–1800**
		◐	Tool Material	PD20 / PU20 / CD10	PD20 / PU20 / CD10	PD20 / PU20 / CD10	PS30 / PU20 / CD10	PS30 / PU20 / CD10	PS30 / PU20 / CD10
			v_c in m/min	**400–2000**	**400–2200**	**400–1800**	**600–2000**	**400–1500**	**400–1800**
		◌	Tool Material	PS30	PS30	PS30	PS30	PS30	
			v_c in m/min	**600–2000**	**600–2200**	**600–1800**	**600–2000**	**600–1500**	
N.2.2 N.2.3	Aluminium cast alloys Si=12–20 % f=0.05–0.5 mm/rev.	○	Tool Material	PU20 / CD10 / MD05	PU20 / CD10 / MD05	PU20 / CD10 / MD05	PU20 / CD10 / MD05	PU20 / CD10 / MD05	PU20 / CD10 / MD05
			v_c in m/min	**800-1200**	**400–1800**	**700–1000**	**400–1500**	**600–900**	**400–1200**
		◐	Tool Material		PU20 / CD10		PU20 / CD10		PU20 / CD10
			v_c in m/min		**600–1800**		**600–1500**		**600–1200**
		◌	Tool Material		PU20		PU20		
			v_c in m/min		**600–1800**		**600–1500**		
N.3.1 N.3.2 N.3.3	Copper and copper wrought alloys f=0.05–0.5 mm/rev.	○	Tool Material	PD20 / PU20 / CD10 / MD05	PD20 / PU20 / CD10 / MD05	PD20 / PU20 / CD10 / MD05	PS30 / PU20 / CD10 / MD05	PD20 / PU20 / CD10 / MD05	PD20 / PU20 / CD10 / MD05
			v_c in m/min	**400–1800**	**300–1600**	**400–1600**	**300–1600**	**400–1400**	**400–1500**
		◐	Tool Material	PU20 / CD10	PD20 / PU20 / CD10	PD20 / PU20 / CD10	PS30 / PU20 / CD10	PD20 / PU20 / CD10	PD20 / PU20 / CD10
			v_c in m/min	**300–1500**	**300–1500**	**400–1600**	**300–1500**	**400–1500**	**300–1400**
		◌	Tool Material		PD20 / PU20		PS30 / PU20	PD20 / PU20	PS30 / PU20
			v_c in m/min		**300–1800**		**300–1700**	**300–1600**	**200–1300**
O.1.1 O.1.2	Plastic materials without reinforcement (acrylic glass) f=0.05–0.7 mm/rev.	○	Tool Material		PD20 / CD10 / MD05		PD20 / CD10 / MD05		PS30 / CD10 / MD05
			v_c in m/min		**400–1200**		**300–1000**		**200–1000**
		◐	Tool Material		PD20 / CD10		PD20 / CD10		PS30 / CD10
			v_c in m/min		**300–1200**		**200–1000**		**200–900**
		◌	Tool Material		PD20 / CD10		PD20 / CD10		PD20 / CD10
			v_c in m/min		**400–1200**		**300–1000**		**200–1000**
O.2.1 O.2.2	Plastic materials with reinforcement (glass-fibre, carbon-fibre reinforced) f=0.05–0.7 mm/rev.	○	Tool Material	PS30 / PU20 / CD10 / MD05		PS30 / PU20 / CD10 / MD05	PS30 / PU20 / CD10 / MD05	PS30 / PU20 / CD10 / MD05	PS30 / PU20 / CD10 / MD05
			v_c in m/min	**500–1000**		**400–900**	**300–900**	**300–800**	**200–1200**
		◐	Tool Material	PS30 / PU20 / CD10		PS30 / PU20 / CD10	PS30 / PU20 / CD10	PS30 / PU20 / CD10	PS30 / PU20 / CD10
			v_c in m/min	**400–900**		**300–800**	**200–900**	**200–800**	**200–1400**
		◌	Tool Material	PU20		PU20	PU20	PU20	
			v_c in m/min	**500–1000**		**400–800**	**300–1000**	**300–800**	
O.3.1	Graphite		Tool Material	PD20 / PS30 / PU20 / CD10		PD20 / PS30 / PU20 / CD10		PD20 / PS30 / PU20 / CD10	
			v_c in m/min	**100–3000**		**100–3000**		**100–3000**	

○ Smooth cut | ◐ Irregular cutting depth | ◌ Interrupted cut

Cutting data standard values for the CB chip breaker geometries

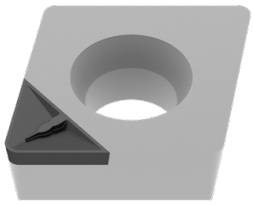
-CB1



3D-Chip Breaker -CB1				
Corner Radius	a_p in mm		f_z in mm/rev.	
	min.	max.	min.	max.
0,1 mm	0,05	0,30	0,02	0,05
0,2 mm	0,06	0,40	0,03	0,08
0,4 mm	0,10	0,80	0,04	0,15
0,8 mm	0,15	1,00	0,08	0,20
1,2 mm	0,30	1,50	0,12	0,25

- Finish and Superfinish
- Extremely sharp cutting edge geometry
- Depth of Cut a_p: 0.05–1.5 mm
- Smallest cutting pressure for highest accuracies
- For machining of thin-walled and unstable workpieces

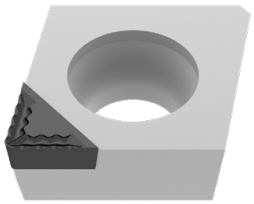
-CB2



3D-Chip Breaker -CB2				
Corner Radius	a_p in mm		f_z in mm/rev.	
	min.	max.	min.	max.
0,2 mm	0,50	0,80	0,08	0,12
0,4 mm	0,60	1,50	0,08	0,20
0,8 mm	0,70	1,50	0,15	0,30
1,2 mm	0,80	2,00	0,20	0,40

- Semi-finish and Finish machining
- Negative edge preperation
- Cutting Depth a_p: 0,5–2,0 mm
- High surface quality and tight tolerances
- Machining of solid workpieces under stable conditions

-CB3



3D-Chip Breaker -CB3				
Corner Radius	a_p in mm		f_z in mm/rev.	
	min.	max.	min.	max.
0,4 mm	1,00	3,00	0,10	0,20
0,8 mm	1,00	3,00	0,15	0,35

- Medium and rough machining
- Highly aggressive chip breaker
- Cutting depth a_p: 1,0–3,0 mm
- Stable component conditions necessary
- Cooling must be ensured

Cutting data standard values – VertiClamp system

	Parting				Turning				
	WPU7620	Fine	Medium	Rough	WPU7620		Fine	Medium	Rough
Index	v_c in m/min	f	f	f	v_c in m/min	a_p in mm	f	f	f
P.1.1	**80**	0,005–0,080	0,02–0,15	0,10–0,25	**80**	< 3	0,005–0,080	0,02–0,15	0,10–0,25
P.1.2	**75**	0,005–0,080	0,02–0,15	0,10–0,25	**75**	< 3	0,005–0,080	0,02–0,15	0,10–0,25
P.1.3	**75**	0,005–0,080	0,02–0,15	0,10–0,25	**75**	< 3	0,005–0,080	0,02–0,15	0,10–0,25
P.1.4	**75**	0,005–0,080	0,02–0,15	0,10–0,25	**75**	< 3	0,005–0,080	0,02–0,15	0,10–0,25
P.1.5	**75**	0,005–0,080	0,02–0,15	0,10–0,25	**75**	< 3	0,005–0,080	0,02–0,15	0,10–0,25
P.2.1	**75**	0,005–0,080	0,02–0,15	0,10–0,25	**75**	< 3	0,005–0,080	0,02–0,15	0,10–0,25
P.2.2	**75**	0,005–0,080	0,02–0,15	0,10–0,25	**75**	< 3	0,005–0,080	0,02–0,15	0,10–0,25
P.2.3	**75**	0,005–0,080	0,02–0,15	0,10–0,25	**75**	< 3	0,005–0,080	0,02–0,15	0,10–0,25
P.2.4	**75**	0,005–0,080	0,02–0,15	0,10–0,25	**75**	< 3	0,005–0,080	0,02–0,15	0,10–0,25
P.3.1	**75**	0,005–0,080	0,02–0,15	0,10–0,25	**75**	< 3	0,005–0,080	0,02–0,15	0,10–0,25
P.3.2	**75**	0,005–0,080	0,02–0,15	0,10–0,25	**75**	< 3	0,005–0,080	0,02–0,15	0,10–0,25
P.3.3	**75**	0,005–0,080	0,02–0,15	0,10–0,25	**75**	< 3	0,005–0,080	0,02–0,15	0,10–0,25
P.4.1	**75**	0,005–0,080	0,01–0,12	0,10–0,20	**75**	< 2,5	0,005–0,080	0,01–0,12	0,10–0,20
P.4.2	**75**	0,005–0,080	0,01–0,12	0,10–0,20	**75**	< 2,5	0,005–0,080	0,01–0,12	0,10–0,20
M.1.1	**55**	0,005–0,080	0,01–0,12	0,10–0,20	**55**	< 2,5	0,005–0,080	0,01–0,12	0,10–0,20
M.2.1	**55**	0,005–0,080	0,01–0,12	0,10–0,20	**55**	< 2,5	0,005–0,080	0,01–0,12	0,10–0,20
M.3.1	**55**	0,005–0,080	0,01–0,12	0,10–0,20	**55**	< 2,5	0,005–0,080	0,01–0,12	0,10–0,20
K.1.1	70	0,005–0,080	0,01–0,12	0,10–0,20	70	< 2,5	0,005–0,080	0,01–0,12	0,10–0,20
K.1.2	70	0,005–0,080	0,01–0,12	0,10–0,20	70	< 2,5	0,005–0,080	0,01–0,12	0,10–0,20
K.2.1	70	0,005–0,080	0,01–0,12	0,10–0,20	70	< 2,5	0,005–0,080	0,01–0,12	0,10–0,20
K.2.2	70	0,005–0,080	0,01–0,12	0,10–0,20	70	< 2,5	0,005–0,080	0,01–0,12	0,10–0,20
K.3.1	70	0,005–0,080	0,01–0,12	0,10–0,20	70	< 2,5	0,005–0,080	0,01–0,12	0,10–0,20
K.3.2	70	0,005–0,080	0,01–0,12	0,10–0,20	70	< 2,5	0,005–0,080	0,01–0,12	0,10–0,20
N.1.1	180	0,050–0,200	0,02–0,25	0,10–0,30	180	< 3	0,050–0,200	0,02–0,25	0,10–0,30
N.1.2	180	0,050–0,200	0,02–0,25	0,10–0,30	180	< 3	0,050–0,200	0,02–0,25	0,10–0,30
N.2.1	180	0,050–0,200	0,02–0,25	0,10–0,30	180	< 3	0,050–0,200	0,02–0,25	0,10–0,30
N.2.2	180	0,050–0,200	0,02–0,25	0,10–0,30	180	< 3	0,050–0,200	0,02–0,25	0,10–0,30
N.2.3	180	0,050–0,200	0,02–0,25	0,10–0,30	180	< 3	0,050–0,200	0,02–0,25	0,10–0,30
N.3.1	180	0,050–0,200	0,02–0,25	0,10–0,40	180	< 3	0,050–0,200	0,02–0,25	0,10–0,30
N.3.2	180	0,050–0,200	0,02–0,25	0,10–0,30	180	< 3	0,050–0,200	0,02–0,25	0,10–0,30
N.3.3	180	0,050–0,200	0,02–0,25	0,10–0,30	180	< 3	0,050–0,200	0,02–0,25	0,10–0,30
N.4.1	180	0,050–0,200	0,02–0,25	0,10–0,30	180	< 3	0,050–0,200	0,02–0,25	0,10–0,30
S.1.1	45	0,005–0,060	0,02–0,08	0,10–0,25	45	< 2,5	0,005–0,060	0,02–0,08	0,10–0,25
S.1.2	45	0,005–0,060	0,02–0,08	0,10–0,25	45	< 2,5	0,005–0,060	0,02–0,08	0,10–0,25
S.2.1	40	0,005–0,060	0,02–0,08	0,10–0,25	40	< 2,5	0,005–0,060	0,02–0,08	0,10–0,25
S.2.2	40	0,005–0,060	0,02–0,08	0,10–0,25	40	< 2,5	0,005–0,060	0,02–0,08	0,10–0,25
S.2.3									
S.3.1									
S.3.2	**45**	0,005–0,060	0,02–0,08	0,10–0,25	**45**	< 2,5	0,005–0,060	0,02–0,08	0,10–0,25
S.3.3	**45**	0,005–0,060	0,02–0,08	0,10–0,25	**45**	< 2,5	0,005–0,060	0,02–0,08	0,10–0,25
H.1.1									
H.1.2									
H.1.3									
H.1.4									
H.2.1									
H.3.1									
O.1.1	220	0,050–0,200	0,02–0,25	0,10–0,30	220	< 3	0,050–0,200	0,02–0,25	0,10–0,30
O.1.2	220	0,050–0,200	0,02–0,25	0,10–0,30	220	< 3	0,005–0,200	0,02–0,25	0,10–0,30
O.2.1									
O.2.2									
O.3.1									

The cutting data depends extremely on the external conditions, e.g. stability of the tool and tool clamping, material and machine type.
The indicated values are possible cutting data which have to be increased or reduced according to the application conditions.

Cutting data standard values – VertiClamp and TriClamp system

	VertiClamp system				TriClamp system					
	Grooving				Turning					
	WPU7620	Fine	Medium	Rough	WUU7610	WPU7610	WPU7620	WUU7620		
Index	v_c in m/min	f	f	f	v_c in m/min				f	$a_{p\,max.}$ in mm
P.1.1	**80**	0,005–0,080	0,02–0,15	0,10–0,25	85	**110**	**115**	**80**	0,005–0,080	1,5
P.1.2	**75**	0,005–0,080	0,02–0,15	0,10–0,25	50	**65**	**70**	**40**	0,005–0,080	1,5
P.1.3	**75**	0,005–0,080	0,02–0,15	0,10–0,25	50	**65**	**70**	**40**	0,005–0,080	1,5
P.1.4	**75**	0,005–0,080	0,02–0,15	0,10–0,25	50	**65**	**70**	**40**	0,005–0,080	1,5
P.1.5	**75**	0,005–0,080	0,02–0,15	0,10–0,25	50	**65**	**70**	**40**	0,005–0,080	1,5
P.2.1	**75**	0,005–0,080	0,02–0,15	0,10–0,25	50	**65**	**70**	40	0,005–0,080	1,5
P.2.2	**75**	0,005–0,080	0,02–0,15	0,10–0,25	50	**65**	**70**	40	0,005–0,080	1,5
P.2.3	**75**	0,005–0,080	0,02–0,15	0,10–0,25	50	**65**	**70**	40	0,005–0,080	1,5
P.2.4	**75**	0,005–0,080	0,02–0,15	0,10–0,25	50	**65**	**70**	40	0,005–0,080	1,5
P.3.1	**75**	0,005–0,080	0,02–0,15	0,10–0,25	50	**65**	**70**	40	0,005–0,080	1,5
P.3.2	**75**	0,005–0,080	0,02–0,15	0,10–0,25	50	**65**	**70**	40	0,005–0,080	1,5
P.3.3	**75**	0,005–0,080	0,02–0,15	0,10–0,25	50	**65**	**70**	40	0,005–0,080	1,5
P.4.1	**75**	0,005–0,080	0,01–0,12	0,10–0,20	50	**65**	**70**	40	0,005–0,080	1,5
P.4.2	**75**	0,005–0,080	0,01–0,12	0,10–0,20	50	**65**	**70**	40	0,005–0,080	1,5
M.1.1	**55**	0,005–0,080	0,01–0,12	0,10–0,20		**55**	**65**		0,005–0,080	1,5
M.2.1	**55**	0,005–0,080	0,01–0,12	0,10–0,20		**40**	**45**		0,005–0,080	1,5
M.3.1	**55**	0,005–0,080	0,01–0,12	0,10–0,20		**55**	**65**		0,005–0,080	1,5
K.1.1	70	0,005–0,080	0,01–0,12	0,10–0,20		110	115		0,005–0,080	1,5
K.1.2	70	0,005–0,080	0,01–0,12	0,10–0,20		110	115		0,005–0,080	1,5
K.2.1	70	0,005–0,080	0,01–0,12	0,10–0,20		110	115		0,005–0,080	1,5
K.2.2	70	0,005–0,080	0,01–0,12	0,10–0,20		110	115		0,005–0,080	1,5
K.3.1	70	0,005–0,080	0,01–0,12	0,10–0,20		110	115		0,005–0,080	1,5
K.3.2	70	0,005–0,080	0,01–0,12	0,10–0,20		110	115		0,005–0,080	1,5
N.1.1	180	0,050–0,200	0,02–0,25	0,10–0,30	**180**	**200**	220	180	0,050–0,200	1,5
N.1.2	180	0,050–0,200	0,02–0,25	0,10–0,30	**180**	**200**	220	180	0,050–0,200	1,5
N.2.1	180	0,050–0,200	0,02–0,25	0,10–0,30	**180**	**200**	220	180	0,050–0,200	1,5
N.2.2	180	0,050–0,200	0,02–0,25	0,10–0,30	**180**	**200**	220	180	0,050–0,200	1,5
N.2.3	180	0,050–0,200	0,02–0,25	0,10–0,30	**180**	**200**	220	180	0,050–0,200	1,5
N.3.1	180	0,050–0,200	0,02–0,25	0,10–0,30	**180**	**200**	220	180	0,050–0,200	1,5
N.3.2	180	0,050–0,200	0,02–0,25	0,10–0,30	**180**	**200**	220	180	0,050–0,200	1,5
N.3.3	180	0,050–0,200	0,02–0,25	0,10–0,30	**180**	**200**	220	180	0,050–0,200	1,5
N.4.1	180	0,050–0,200	0,02–0,25	0,10–0,30	**180**	**200**	220	180	0,050–0,200	1,5
S.1.1	45	0,005–0,060	0,02–0,08	0,10–0,25	40	45	45	40	0,005–0,060	1,0
S.1.2	45	0,005–0,060	0,02–0,08	0,10–0,25	40	45	45	40	0,005–0,060	1,0
S.2.1	40	0,005–0,060	0,02–0,08	0,10–0,25	35	40	40	35	0,005–0,060	1,0
S.2.2	40	0,005–0,060	0,02–0,08	0,10–0,25	35	40	40	35	0,005–0,060	1,0
S.2.3										
S.3.1										
S.3.2	**45**	0,005–0,060	0,02–0,08	0,10–0,25	35	**45**	**45**	40	0,005–0,060	1,0
S.3.3	**45**	0,005–0,060	0,02–0,08	0,10–0,25	35	**45**	**45**	40	0,005–0,060	1,0
H.1.1										
H.1.2										
H.1.3										
H.1.4										
H.2.1										
H.3.1										
O.1.1	220	0,050–0,200	0,02–0,25	0,10–0,30	**180**	200	220	180	0,050–0,200	2,0
O.1.2	220	0,050–0,200	0,02–0,25	0,10–0,30	**180**	200	220	180	0,050–0,200	2,0
O.2.1										
O.2.2										
O.3.1										

The cutting data depends extremely on the external conditions, e.g. stability of the tool and tool clamping, material and machine type.
The indicated values are possible cutting data which have to be increased or reduced according to the application conditions.

Cutting data standard values for negative inserts

	Designation	-F50						-M50					
		f			a_p			f			a_p		
		min.	Recommended	max.	min.	Recommended	max.	min.	Recommended	max.	min.	Recommended	max.
		mm/rev.			mm			mm/rev.			mm		
	CN.. 090304	0,06	**0,15**	0,25	0,2	**0,5**	1,5						
	CN.. 090308	0,10	**0,20**	0,30	0,4	**1,0**	2,0						
	CN.. 120404	0,06	**0,15**	0,25	0,2	**0,6**	1,5	0,10	**0,20**	0,30	0,4	**2,0**	5,0
	CN.. 120408	0,10	**0,20**	0,30	0,4	**1,0**	2,0	0,15	**0,25**	0,40	0,6	**2,0**	5,0
	CN.. 120412	0,14	**0,25**	0,35	0,6	**1,4**	2,6	0,20	**0,30**	0,50	1,0	**2,0**	5,0
	CN.. 120416							0,25	**0,40**	0,60	1,4	**2,0**	5,0
	CN.. 160608							0,15	**0,25**	0,40	0,6	**3,0**	8,0
	CN.. 160612							0,20	**0,30**	0,50	1,0	**3,0**	8,0
	CN.. 160616							0,25	**0,40**	0,60	1,4	**3,0**	8,0
	CN.. 160624												
	CN.. 190608												
	CN.. 190612												
	CN.. 190616												
	CN.. 190624												
	CN.. 250924												
	DN.. 110402	0,04	**0,10**	0,20	0,1	**0,4**	2,3						
	DN.. 110404	0,06	**0,15**	0,25	0,2	**0,6**	1,5	0,10	**0,20**	0,30	0,4	**1,5**	4,0
	DN.. 110408	0,10	**0,20**	0,30	0,4	**1,0**	2,0	0,15	**0,25**	0,40	0,6	**1,5**	4,0
	DN.. 110412	0,14	**0,25**	0,35	0,6	**1,4**	2,6	0,20	**0,30**	0,50	1,0	**1,5**	4,0
	DN.. 150404	0,06	**0,15**	0,25	0,2	**0,6**	1,5	0,10	**0,20**	0,30	0,4	**2,0**	5,0
	DN.. 150408	0,10	**0,20**	0,30	0,4	**1,0**	2,0	0,15	**0,25**	0,40	0,6	**2,0**	5,0
	DN.. 150412	0,14	**0,25**	0,35	0,6	**1,4**	2,6	0,20	**0,30**	0,50	1,0	**2,0**	5,0
	DN.. 150416							0,25	**0,40**	0,60	1,4	**2,0**	5,0
	DN.. 150604	0,06	**0,15**	0,25	0,2	**0,6**	1,5	0,10	**0,20**	0,30	0,4	**2,0**	5,0
	DN.. 150608	0,10	**0,20**	0,30	0,4	**1,0**	2,0	0,15	**0,25**	0,40	0,6	**2,0**	5,0
	DN.. 150612	0,14	**0,25**	0,35	0,6	**1,4**	2,6	0,20	**0,30**	0,50	1,0	**2,0**	5,0
	DN.. 150616							0,25	**0,40**	0,60	1,4	**2,0**	5,0
	SN.. 090308	0,10	**0,20**	0,30	0,4	**1,0**	2,0						
	SN.. 120404	0,06	**0,15**	0,25	0,2	**0,6**	1,5						
	SN.. 120408	0,10	**0,20**	0,30	0,4	**1,0**	2,0	0,15	**0,25**	0,40	0,6	**2,0**	5,0
	SN.. 120412	0,14	**0,25**	0,35	0,6	**1,4**	2,6	0,20	**0,30**	0,50	1,0	**2,0**	5,0
	SN.. 120416							0,25	**0,40**	0,60	1,4	**2,0**	5,0
	SN.. 150608							0,15	**0,25**	0,40	0,6	**3,0**	8,0
	SN.. 150612							0,20	**0,30**	0,50	1,0	**3,0**	8,0
	SN.. 150616							0,25	**0,40**	0,60	1,4	**3,0**	8,0
	SN.. 190612												
	SN.. 190616												
	SN.. 190624												
	SN.. 250724												
	SN.. 250924												
	TN.. 110304	0,06	**0,15**	0,25	0,2	**0,6**	1,5						
	TN.. 110308	0,10	**0,20**	0,30	0,4	**1,0**	2,0						
	TN.. 160404	0,06	**0,15**	0,25	0,2	**0,6**	1,5	0,10	**0,20**	0,30	0,4	**2,0**	5,0
	TN.. 160408	0,10	**0,20**	0,30	0,4	**1,0**	2,0	0,15	**0,25**	0,40	0,6	**2,0**	5,0
	TN.. 160412	0,14	**0,25**	0,35	0,6	**1,4**	2,6	0,20	**0,30**	0,50	1,0	**2,0**	5,0
	TN.. 220404												
	TN.. 220408							0,15	**0,25**	0,40	0,6	**3,0**	8,0
	TN.. 220412							0,20	**0,30**	0,50	1,0	**3,0**	8,0
	TN.. 220416												
	VN.. 160404	0,06	**0,15**	0,25	0,2	**0,6**	1,5	0,10	**0,20**	0,30	0,4	**1,0**	4,0
	VN.. 160408	0,10	**0,20**	0,30	0,4	**1,0**	2,0	0,15	**0,25**	0,40	0,6	**1,0**	4,0
	VN.. 160412							0,20	**0,30**	0,50	1,0	**1,0**	4,0
	WN.. 060404	0,06	**0,15**	0,25	0,2	**0,6**	1,5	0,10	**0,20**	0,30	0,4	**1,0**	3,0
	WN.. 060408	0,10	**0,20**	0,30	0,4	**1,0**	2,0	0,15	**0,25**	0,40	0,6	**1,0**	3,0
	WN.. 060412							0,20	**0,30**	0,50	1,0	**1,0**	3,0
	WN.. 080404	0,06	**0,15**	0,25	0,2	**0,6**	1,5	0,10	**0,20**	0,30	0,4	**1,5**	4,0
	WN.. 080408	0,10	**0,20**	0,30	0,4	**1,0**	2,0	0,15	**0,25**	0,40	0,6	**1,5**	4,0
	WN.. 080412	0,14	**0,25**	0,35	0,6	**1,4**	2,6	0,20	**0,30**	0,50	1,0	**1,5**	4,0
	WN.. 080416							0,25	**0,40**	0,60	1,4	**1,5**	4,0

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The data shows reference values. An adjustment to the actual conditions may be required.

Designation	-M70					
	f			a_p		
	min.	Recom-mended	max.	min.	Recom-mended	max.
	mm/rev.			mm		
CN.. 090304						
CN.. 090308						
CN.. 120404						
CN.. 120408	0,20	**0,30**	0,45	0,8	**3,0**	6,0
CN.. 120412	0,25	**0,40**	0,60	1,2	**3,0**	6,0
CN.. 120416	0,30	**0,45**	0,70	1,6	**3,0**	6,0
CN.. 160608	0,20	**0,30**	0,45	0,8	**4,0**	8,0
CN.. 160612	0,25	**0,40**	0,60	1,2	**4,0**	8,0
CN.. 160616	0,30	**0,45**	0,70	1,6	**4,0**	8,0
CN.. 160624	0,40	**0,70**	1,20	2,4	**4,0**	8,0
CN.. 190608	0,20	**0,30**	0,45	0,8	**4,5**	9,0
CN.. 190612	0,25	**0,40**	0,60	1,2	**4,5**	9,0
CN.. 190616	0,30	**0,45**	0,70	1,6	**4,5**	9,0
CN.. 190624	0,40	**0,70**	1,20	2,4	**4,5**	9,0
CN.. 250924	0,40	**0,70**	1,20	2,4	**6,0**	13,0
DN.. 110402						
DN.. 110404						
DN.. 110408	0,20	**0,25**	0,45	0,8	**2,0**	5,0
DN.. 110412	0,25	**0,35**	0,60	1,2	**2,0**	5,0
DN.. 150404						
DN.. 150408	0,20	**0,25**	0,45	0,8	**2,5**	6,0
DN.. 150412	0,25	**0,35**	0,60	1,2	**2,5**	6,0
DN.. 150416	0,30	**0,40**	0,70	1,6	**2,5**	6,0
DN.. 150604						
DN.. 150608	0,20	**0,25**	0,45	0,8	**2,5**	6,0
DN.. 150612	0,25	**0,35**	0,60	1,2	**2,5**	6,0
DN.. 150616	0,30	**0,40**	0,70	1,6	**2,5**	6,0
SN.. 090308						
SN.. 120404						
SN.. 120408	0,20	**0,30**	0,50	0,8	**3,0**	6,0
SN.. 120412	0,25	**0,40**	0,65	1,2	**3,0**	6,0
SN.. 120416	0,30	**0,45**	0,70	1,6	**3,0**	6,0
SN.. 150608						
SN.. 150612	0,25	**0,40**	0,65	1,2	**4,0**	8,0
SN.. 150616	0,30	**0,45**	0,75	1,6	**4,0**	8,0
SN.. 190612	0,25	**0,40**	0,65	1,2	**4,5**	9,0
SN.. 190616	0,30	**0,45**	0,75	1,6	**4,5**	9,0
SN.. 190624	0,40	**0,70**	1,20	2,4	**4,5**	9,0
SN.. 250724						
SN.. 250924	0,40	**0,70**	1,20	2,4	**6,0**	13,0
TN.. 110304						
TN.. 110308						
TN.. 160404						
TN.. 160408	0,20	**0,25**	0,45	0,8	**2,5**	6,0
TN.. 160412	0,25	**0,35**	0,60	1,2	**2,5**	6,0
TN.. 220404	0,15	**0,20**	0,30	0,4	**3,0**	7,0
TN.. 220408	0,20	**0,25**	0,45	0,8	**3,0**	7,0
TN.. 220412	0,25	**0,35**	0,60	1,2	**3,0**	7,0
TN.. 220416	0,30	**0,40**	0,70	1,6	**3,0**	7,0
VN.. 160404						
VN.. 160408						
VN.. 160412						
WN.. 060404						
WN.. 060408	0,20	**0,30**	0,45	0,8	**2,0**	4,0
WN.. 060412	0,25	**0,40**	0,60	1,2	**2,0**	4,0
WN.. 080404						
WN.. 080408	0,20	**0,30**	0,45	0,8	**2,5**	5,0
WN.. 080412	0,25	**0,40**	0,60	1,2	**2,5**	5,0
WN.. 080416	0,30	**0,45**	0,70	1,6	**2,5**	5,0

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Information on the cutting data of chip breakers not included in this overview, can be found on → **Page 149–152**

Cutting data standard values for negative inserts

	Designation	-F30						-M30					
		f			a_p			f			a_p		
		min.	Recom-mended	max.	min.	Recom-mended	max.	min.	Recom-mended	max.	min.	Recom-mended	max.
		mm/rev.			mm			mm/rev.			mm		
	CN.. 090304												
	CN.. 090308												
	CN.. 120404	0,05	**0,15**	0,25	0,4	**1,0**	2,0						
	CN.. 120408	0,10	**0,22**	0,35	0,8	**1,5**	2,5	0,15	**0,25**	0,40	1,0	**2,0**	4,5
	CN.. 120412							0,20	**0,30**	0,50	1,2	**2,5**	5,0
	CN.. 120416							0,25	**0,35**	0,55	1,6	**2,5**	5,0
	CN.. 160608												
	CN.. 160612												
	CN.. 160616												
	CN.. 160624												
	CN.. 190608												
	CN.. 190612												
	CN.. 190616												
	CN.. 190624												
	CN.. 250924												
	DN.. 110402												
	DN.. 110404	0,05	**0,15**	0,25	0,4	**1,0**	2,0						
	DN.. 110408	0,10	**0,20**	0,35	0,8	**1,5**	2,5	0,15	**0,25**	0,40	1,0	**2,0**	4,5
	DN.. 110412							0,20	**0,30**	0,50	1,2	**2,0**	4,5
	DN.. 150404												
	DN.. 150408												
	DN.. 150412												
	DN.. 150416												
	DN.. 150604	0,05	**0,15**	0,25	0,4	**1,0**	2,0						
	DN.. 150608	0,10	**0,20**	0,35	0,8	**1,5**	2,5	0,15	**0,25**	0,40	1,0	**2,0**	5,5
	DN.. 150612							0,20	**0,30**	0,50	1,2	**2,0**	5,5
	DN.. 150616												
	SN.. 090308												
	SN.. 120404	0,10	**0,15**	0,30	0,4	**1,0**	2,0						
	SN.. 120408	0,15	**0,20**	0,40	0,8	**1,5**	2,5	0,20	**0,25**	0,45	1,0	**2,0**	4,5
	SN.. 120412	0,15	**0,20**	0,40	1,2	**1,8**	2,5	0,25	**0,30**	0,50	1,2	**2,0**	5,0
	SN.. 120416												
	SN.. 150608												
	SN.. 150612												
	SN.. 150616												
	SN.. 190612												
	SN.. 190616												
	SN.. 190624												
	SN.. 250724												
	SN.. 250924												
	TN.. 110304												
	TN.. 110308												
	TN.. 160404	0,05	**0,15**	0,25	0,4	**1,0**	2,0						
	TN.. 160408	0,10	**0,15**	0,35	0,8	**1,5**	2,5	0,15	**0,25**	0,40	1,0	**2,0**	4,5
	TN.. 160412							0,20	**0,30**	0,50	1,2	**2,0**	4,5
	TN.. 220404												
	TN.. 220408												
	TN.. 220412												
	TN.. 220416												
	VN.. 160404	0,08	**0,10**	0,20	0,4	**1,0**	2,0						
	VN.. 160408	0,10	**0,15**	0,30	0,8	**1,5**	2,5	0,15	**0,25**	0,40	1,0	**1,5**	4,0
	VN.. 160412												
	WN.. 060404	0,05	**0,15**	0,25	0,4	**1,0**	2,0						
	WN.. 060408	0,10	**0,20**	0,30	0,8	**1,5**	2,5	0,15	**0,25**	0,40	1,0	**1,5**	3,5
	WN.. 060412							0,20	**0,30**	0,45	1,2	**1,5**	4,0
	WN.. 080404	0,05	**0,15**	0,25	0,4	**1,0**	2,0						
	WN.. 080408	0,10	**0,20**	0,35	0,8	**1,5**	2,5	0,15	**0,25**	0,40	1,0	**2,0**	4,5
	WN.. 080412							0,20	**0,30**	0,50	1,2	**2,0**	5,0
	WN.. 080416												

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The data shows reference values. An adjustment to the actual conditions may be required.

Designation	-M60						-M34					
	f			a_p			f			a_p		
	min.	Recom-mended	max.	min.	Recom-mended	max.	min.	Recom-mended	max.	min.	Recom-mended	max.
	mm/rev.			mm			mm/rev.			mm		
CN.. 090304												
CN.. 090308												
CN.. 120404							0,08	**0,12**	0,18	1,0	**1,5**	3,0
CN.. 120408	0,25	**0,30**	0,50	1,5	**2,5**	6,0	0,10	**0,15**	0,35	1,0	**1,8**	3,5
CN.. 120412	0,30	**0,35**	0,55	2,0	**3,0**	6,0	0,13	**0,20**	0,40	1,5	**2,0**	4,0
CN.. 120416	0,30	**0,40**	0,60	2,0	**3,0**	6,0	0,15	**0,25**	0,45	2,0	**3,0**	4,5
CN.. 160608												
CN.. 160612	0,30	**0,35**	0,55	2,0	**3,0**	8,0						
CN.. 160616												
CN.. 160624												
CN.. 190608												
CN.. 190612												
CN.. 190616												
CN.. 190624												
CN.. 250924												
DN.. 110402												
DN.. 110404												
DN.. 110408												
DN.. 110412												
DN.. 150404							0,08	**0,12**	0,18	0,8	**1,2**	2,5
DN.. 150408							0,10	**0,15**	0,30	1,0	**1,8**	3,5
DN.. 150412							0,13	**0,20**	0,38	1,5	**2,0**	4,0
DN.. 150416												
DN.. 150604												
DN.. 150608	0,25	**0,30**	0,45	1,5	**2,5**	6,0	0,10	**0,15**	0,30	1,0	**1,8**	3,5
DN.. 150612	0,30	**0,40**	0,55	1,5	**2,5**	6,0	0,13	**0,20**	0,38	1,5	**2,0**	4,0
DN.. 150616												
SN.. 090308												
SN.. 120404												
SN.. 120408	0,30	**0,35**	0,50	1,5	**2,0**	6,0	0,15	**0,25**	0,40	1,0	**2,0**	4,0
SN.. 120412	0,30	**0,40**	0,55	2,0	**2,5**	6,0	0,15	**0,25**	0,45	1,5	**2,5**	4,5
SN.. 120416	0,30	**0,40**	0,60	2,0	**2,5**	6,0						
SN.. 150608												
SN.. 150612												
SN.. 150616												
SN.. 190612												
SN.. 190616												
SN.. 190624												
SN.. 250724												
SN.. 250924												
TN.. 110304												
TN.. 110308												
TN.. 160404												
TN.. 160408	0,25	**0,25**	0,45	1,5	**2,5**	5,0	0,10	**0,15**	0,35	1,0	**2,0**	4,0
TN.. 160412	0,30	**0,30**	0,55	2,0	**2,5**	5,5						
TN.. 220404							0,10	**0,15**	0,35	1,0	**2,0**	4,0
TN.. 220408							0,13	**0,20**	0,40	1,5	**2,5**	4,0
TN.. 220412												
TN.. 220416							0,15	**0,25**	0,45	2,0	**2,5**	4,5
VN.. 160404							0,07	**0,10**	0,18	0,8	**1,2**	2,0
VN.. 160408							0,10	**0,15**	0,20	1,0	**1,5**	2,5
VN.. 160412							0,13	**0,18**	0,25	1,5	**1,8**	3,0
WN.. 060404												
WN.. 060408	0,25	**0,30**	0,45	1,5	**2,0**	4,0						
WN.. 060412	0,30	**0,35**	0,50	2,0	**2,5**	4,5						
WN.. 080404												
WN.. 080408	0,25	**0,30**	0,50	1,5	**2,0**	5,0	0,10	**0,15**	0,35	1,0	**2,0**	4,0
WN.. 080412	0,30	**0,35**	0,55	2,0	**2,5**	5,5	0,13	**0,20**	0,40	1,5	**2,0**	4,0
WN.. 080416												

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Information on the cutting data of chip breakers not included in this overview, can be found on → **Page 149–152**

Cutting data values for positive inserts

	Designation	-SF						-SMF					
		f			a_p			f			a_p		
		min.	Recom-mended	max.	min.	Recom-mended	max.	min.	Recom-mended	max.	min.	Recom-mended	max.
			mm/rev.			mm			mm/rev.			mm	
	CC.. 060200	0,02	**0,035**	0,05	0,1	**0,4**	1,5						
	CC.. 060201	0,02	**0,035**	0,05	0,2	**0,4**	1,5						
	CC.. 060202	0,03	**0,1**	0,15	0,2	**0,4**	1,5						
	CC.. 060204	0,05	**0,1**	0,2	0,2	**0,6**	1,5	0,07	**0,15**	0,25	0,3	**0,7**	2
	CC.. 060208	0,05	**0,125**	0,2	0,2	**1**	1,5	0,1	**0,17**	0,27	0,6	**1**	2
	CC.. 09T300	0,02	**0,035**	0,05	0,2	**0,75**	2						
	CC.. 09T301	0,02	**0,035**	0,05	0,2	**0,75**	2						
	CC.. 09T302	0,05	**0,075**	0,1	0,2	**0,75**	2						
	CC.. 09T304	0,05	**0,12**	0,2	0,2	**0,75**	2	0,07	**0,15**	0,25	0,3	**0,8**	2,5
	CC.. 09T308	0,05	**0,125**	0,25	0,4	**1**	2	0,1	**0,17**	0,27	0,6	**1**	2,5
	CC.. 09T312												
	CC.. 120402	0,05	**0,075**	0,1	0,2	**0,8**	2,5						
	CC.. 120404	0,05	**0,12**	0,2	0,2	**1**	2,5	0,07	**0,15**	0,25	0,3	**1**	3
	CC.. 120408	0,08	**0,15**	0,25	0,4	**1**	2,5	0,1	**0,17**	0,27	0,6	**1,2**	3
	CC.. 120412	0,08	**0,15**	0,25	0,4	**1,5**	2,5						
	DC.. 0702005												
	DC.. 070201												
	DC.. 0702015												
	DC.. 070202	0,03	**0,1**	0,15	0,1	**0,4**	1,5						
	DC.. 070204	0,05	**0,12**	0,2	0,2	**0,6**	1,5	0,07	**0,15**	0,25	0,3	**0,7**	2
	DC.. 070208							0,1	**0,17**	0,27	0,6	**1**	2
	DC.. 11T3005												
	DC.. 11T301												
	DC.. 11T3015												
	DC.. 11T302												
	DC.. 11T304	0,05	**0,12**	0,2	0,2	**0,7**	2	0,07	**0,15**	0,25	0,3	**0,8**	2,5
	DC.. 11T308	0,08	**0,15**	0,25	0,4	**1**	2	0,1	**0,17**	0,27	0,6	**1,2**	2,5
	DC.. 11T312												
	RC.. 0602M0												
	RC.. 0803M0												
	RC.. 1003M0												
	RC.. 1204M0												
	RC.. 1606M0							0,15	**0,3**	0,6	0,25	**2**	3,5
	RC.. 2006M0												
	RC.. 2507M0												
	SC.. 09T304	0,05	**0,12**	0,2	0,2	**0,7**	2	0,07	**0,15**	0,25	0,3	**0,8**	2,5
	SC.. 09T308	0,08	**0,15**	0,25	0,4	**1**	2	0,1	**0,17**	0,27	0,6	**1**	2,5
	SC.. 120408	0,08	**0,15**	0,25	0,4	**1**	2,5	0,1	**0,17**	0,27	0,6	**1,2**	3
	SC.. 120412												
	TC.. 090204												
	TC.. 110202												
	TC.. 110204	0,05	**0,12**	0,2	0,2	**0,7**	2						
	TC.. 110208	0,08	**0,15**	0,25	0,4	**1**	2	0,1	**0,17**	0,27	0,6	**1**	2,5
	TC.. 16T302												
	TC.. 16T304	0,05	**0,12**	0,2	0,2	**0,8**	2,5	0,07	**0,15**	0,25	0,3	**1**	3
	TC.. 16T308	0,08	**0,15**	0,25	0,4	**1**	2,5	0,1	**0,17**	0,27	0,6	**1,2**	3
	TC.. 16T312												
	TC.. 220408												
	VC.. 1103005												
	VC.. 110301												
	VC.. 1103015												
	VC.. 110302	0,02	**0,08**	0,15	0,1	**0,4**	1,5	0,05	**0,1**	0,18	0,2	**0,5**	2
	VC.. 110304	0,05	**0,1**	0,2	0,2	**0,6**	1,5	0,07	**0,15**	0,23	0,3	**0,7**	2
	VC.. 110308	0,08	**0,12**	0,22	0,4	**1**	1,5						
	VC.. 160402												
	VC.. 160404	0,05	**0,1**	0,2	0,2	**0,7**	2	0,07	**0,15**	0,23	0,3	**0,8**	2,5
	VC.. 160408	0,08	**0,12**	0,22	0,4	**1**	2	0,1	**0,17**	0,27	0,6	**1**	2,5
	VC.. 160412												
	VC.. 220530												
	WC.. 020102	0,02	**0,075**	0,1	0,1	**0,4**	1						
	WC.. 020104	0,02	**0,1**	0,2	0,1	**0,6**	1,5						

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The data shows reference values. An adjustment to the actual conditions may be required.

Designation	-SM						-SMQ					
	f			a_p			f			a_p		
	min.	Recom-mended	max.	min.	Recom-mended	max.	min.	Recom-mended	max.	min.	Recom-mended	max.
	mm/rev.			mm			mm/rev.			mm		
CC.. 060200												
CC.. 060201												
CC.. 060202	0,04	**0,12**	0,2	0,2	**0,6**	2,5						
CC.. 060204	0,08	**0,17**	0,3	0,4	**0,8**	2,5						
CC.. 060208	0,12	**0,2**	0,35	0,8	**1**	2,5						
CC.. 09T300												
CC.. 09T301												
CC.. 09T302												
CC.. 09T304	0,08	**0,17**	0,3	0,4	**1**	3	0,10	**0,25**	0,4	0,4	**2**	4
CC.. 09T308	0,12	**0,2**	0,35	0,8	**1,2**	3	0,15	**0,30**	0,5	0,8	**2**	4
CC.. 09T312	0,15	**0,22**	0,4	1,2	**1,5**	3						
CC.. 120402												
CC.. 120404	0,08	**0,17**	0,3	0,4	**1,2**	3,5	0,10	**0,25**	0,4	0,4	**2**	4
CC.. 120408	0,12	**0,2**	0,35	0,8	**1,5**	3,5	0,15	**0,30**	0,5	0,8	**2**	4
CC.. 120412	0,15	**0,22**	0,4	1,2	**2**	3,5						
DC.. 0702005												
DC.. 070201												
DC.. 0702015												
DC.. 070202	0,04	**0,12**	0,2	0,2	**0,6**	2,5						
DC.. 070204	0,08	**0,17**	0,3	0,4	**0,8**	2,5	0,10	**0,18**	0,25	0,4	**1,5**	3
DC.. 070208	0,12	**0,2**	0,3	0,8	**1**	2,5						
DC.. 11T3005												
DC.. 11T301												
DC.. 11T3015												
DC.. 11T302												
DC.. 11T304	0,8	**0,17**	0,3	0,4	**1**	3	0,10	**0,25**	0,4	0,4	**2**	4
DC.. 11T308	0,12	**0,2**	0,35	0,8	**1,2**	3	0,15	**0,30**	0,5	0,8	**2**	4
DC.. 11T312	0,15	**0,22**	0,4	1,2	**1,7**	3						
RC.. 0602M0	0,2	**0,3**	0,5	0,2	**0,5**	1,5						
RC.. 0803M0	0,2	**0,3**	0,6	0,2	**0,6**	2						
RC.. 1003M0	0,25	**0,4**	0,7	0,2	**0,7**	2,5						
RC.. 1204M0	0,3	**0,5**	0,8	0,2	**0,8**	3						
RC.. 1606M0	0,4	**0,6**	1	0,3	**1**	3,5						
RC.. 2006M0	0,5	**0,8**	1,2	0,4	**1,2**	4						
RC.. 2507M0	0,6	**0,9**	1,4	0,6	**2**	5						
SC.. 09T304	0,08	**0,17**	0,3	0,4	**1**	3						
SC.. 09T308	0,12	**0,2**	0,35	0,8	**1,2**	3						
SC.. 120408	0,12	**0,2**	0,35	0,8	**1,5**	3,5						
SC.. 120412	0,15	**0,22**	0,4	1,2	**2**	3,5						
TC.. 090204	0,08	**0,12**	0,2	0,4	**0,8**	2						
TC.. 110202	0,08	**0,1**	0,2	0,4	**0,6**	3						
TC.. 110204	0,12	**0,2**	0,35	0,8	**1,2**	3						
TC.. 110208	0,12	**0,2**	0,35	0,8	**1,2**	3						
TC.. 16T302												
TC.. 16T304	0,08	**0,17**	0,3	0,4	**1,2**	3,5						
TC.. 16T308	0,12	**0,2**	0,35	0,8	**1,5**	3,5						
TC.. 16T312	0,15	**0,22**	0,4	1,2	**1,7**	3,5						
TC.. 220408	0,12	**0,2**	0,35	0,8	**2,5**	6						
VC.. 1103005												
VC.. 110301												
VC.. 1103015												
VC.. 110302												
VC.. 110304												
VC.. 110308												
VC.. 160402												
VC.. 160404	0,08	**0,17**	0,25	0,4	**1**	3						
VC.. 160408	0,12	**0,2**	0,3	0,8	**1,2**	3						
VC.. 160412	0,15	**0,22**	0,32	1,2	**1,5**	3						
VC.. 220530												
WC.. 020102												
WC.. 020104												

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Information on the cutting data of chip breakers not included in this overview, can be found on → **Page 149–152**

Cutting data values for positive inserts

	Designation	-M25						-M55					
		f			a_p			f			a_p		
		min.	Recom-mended	max.	min.	Recom-mended	max.	min.	Recom-mended	max.	min.	Recom-mended	max.
		mm/rev.			mm			mm/rev.			mm		
	CC.. 060200												
	CC.. 060201												
	CC.. 060202												
	CC.. 060204	0,06	**0,13**	0,20	0,2	**1,1**	2,0	0,06	**0,13**	0,20	0,4	**1,5**	2,6
	CC.. 060208												
	CC.. 09T300												
	CC.. 09T301												
	CC.. 09T302												
	CC.. 09T304	0,06	**0,14**	0,22	0,2	**1,2**	2,2	0,08	**0,16**	0,24	0,4	**1,7**	3,0
	CC.. 09T308	0,10	**0,20**	0,30	0,4	**1,8**	3,2	0,12	**0,24**	0,35	0,8	**2,4**	4,0
	CC.. 09T312												
	CC.. 120402												
	CC.. 120404							0,08	**0,18**	0,28	0,4	**2,2**	4,0
	CC.. 120408							0,12	**0,26**	0,40	0,8	**2,8**	4,8
	CC.. 120412												
	DC.. 0702005												
	DC.. 070201												
	DC.. 0702015												
	DC.. 070202	0,04	**0,09**	0,13	0,1	**0,9**	1,6						
	DC.. 070204	0,06	**0,12**	0,18	0,2	**1,1**	2,0	0,06	**0,14**	0,22	0,4	**1,3**	2,2
	DC.. 070208							0,08	**0,16**	0,24	0,8	**1,6**	2,4
	DC.. 11T3005												
	DC.. 11T301												
	DC.. 11T3015												
	DC.. 11T302	0,04	**0,10**	0,16	0,1	**1,1**	2,0						
	DC.. 11T304	0,06	**0,14**	0,22	0,2	**1,2**	2,2	0,08	**0,16**	0,24	0,4	**1,7**	3,0
	DC.. 11T308	0,10	**0,20**	0,30	0,4	**1,8**	3,2	0,12	**0,24**	0,35	0,8	**2,4**	4,0
	DC.. 11T312												
	RC.. 0602M0												
	RC.. 0803M0												
	RC.. 1003M0												
	RC.. 1204M0												
	RC.. 1606M0												
	RC.. 2006M0												
	RC.. 2507M0												
	SC.. 09T304							0,12	**0,24**	0,35	0,8	**2,4**	4,0
	SC.. 09T308							0,12	**0,26**	0,40	0,8	**2,8**	4,8
	SC.. 120408												
	SC.. 120412												
	TC.. 090204							0,06	**0,12**	0,18	0,4	**1,3**	2,2
	TC.. 110202												
	TC.. 110204	0,06	**0,13**	0,20	0,2	**1,2**	2,2	0,06	**0,14**	0,22	0,4	**1,4**	2,4
	TC.. 110208												
	TC.. 16T302												
	TC.. 16T304	0,06	**0,14**	0,22	0,2	**1,6**	3,0						
	TC.. 16T308	0,10	**0,20**	0,30	0,4	**1,9**	3,4	0,12	**0,24**	0,35	0,8	**2,6**	4,4
	TC.. 16T312												
	TC.. 220408												
	VC.. 1103005												
	VC.. 110301												
	VC.. 1103015												
	VC.. 110302												
	VC.. 110304												
	VC.. 110308												
	VC.. 160402												
	VC.. 160404	0,06	**0,13**	0,20	0,2	**1,2**	2,2	0,08	**0,14**	0,20	0,4	**1,7**	3,0
	VC.. 160408	0,10	**0,15**	0,25	0,4	**1,4**	3,0	0,12	**0,21**	0,30	0,8	**2,1**	3,4
	VC.. 160412												
	VC.. 220530												
	WC.. 020102												
	WC.. 020104												

Sharp ⟷ stable

The data shows reference values. An adjustment to the actual conditions may be required.

Designation	-F05					
	f			a_p		
	min.	Recom-mended	max.	min.	Recom-mended	max.
	mm/rev.			mm		
CC.. 060200						
CC.. 060201						
CC.. 060202						
CC.. 060204						
CC.. 060208						
CC.. 09T300						
CC.. 09T301						
CC.. 09T302						
CC.. 09T304						
CC.. 09T308						
CC.. 09T312						
CC.. 120402						
CC.. 120404						
CC.. 120408						
CC.. 120412						
DC.. 0702005	0,02	**0,025**	0,04	0,1	**1**	2
DC.. 070201	0,02	**0,03**	0,05	0,1	**1**	2
DC.. 0702015	0,02	**0,04**	0,075	0,1	**1**	2
DC.. 070202	0,02	**0,05**	0,1	0,1	**1**	2
DC.. 070204						
DC.. 070208						
DC.. 11T3005	0,02	**0,025**	0,04	0,1	**1,25**	2,5
DC.. 11T301	0,02	**0,03**	0,05	0,1	**1,25**	2,5
DC.. 11T3015	0,02	**0,04**	0,075	0,1	**1,25**	2,5
DC.. 11T302	0,02	**0,075**	0,1	0,1	**1,25**	2,5
DC.. 11T304	0,02	**0,1**	0,25	0,1	**1,25**	2,5
DC.. 11T308						
DC.. 11T312						
RC.. 0602M0						
RC.. 0803M0						
RC.. 1003M0						
RC.. 1204M0						
RC.. 1606M0						
RC.. 2006M0						
RC.. 2507M0						
SC.. 09T304						
SC.. 09T308						
SC.. 120408						
SC.. 120412						
TC.. 090204						
TC.. 110202						
TC.. 110204						
TC.. 110208						
TC.. 16T302						
TC.. 16T304						
TC.. 16T308						
TC.. 16T312						
TC.. 220408						
VC.. 1103005	0,02	**0,025**	0,04	0,1	**1,25**	2,5
VC.. 110301	0,02	**0,03**	0,05	0,1	**1,25**	2,5
VC.. 1103015	0,02	**0,04**	0,075	0,1	**1,25**	2,5
VC.. 110302	0,02	**0,075**	0,1	0,1	**1,25**	2,5
VC.. 110304	0,02	**0,15**	0,25	0,1	**1,25**	2,5
VC.. 110308						
VC.. 160402						
VC.. 160404						
VC.. 160408						
VC.. 160412						
VC.. 220530						
WC.. 020102						
WC.. 020104						

Sharp ◄——————————————————————► stable

Information on the cutting data of chip breakers not included in this overview, can be found on → **Page 149–152**

Diamond as a cutting material

Ensures

- Optimal surface quality
- burr-free workpieces
- high service lives
- lowest cutting forces
- High Process Security

Complete programme of roughing, finishing and wiper inserts for machining aluminium, non ferrous metals, plastics, ...

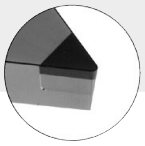
The cutting materials

	CTD CD10 (CVD)	CTD PD20 (PKD)	CTD PU20 (PKD)	CTD PS30 (PKD)
	Fine grain Size (N10)	Fine grain grade (N20)	Coarse grain grade (N20)	Coarse grain Size (N30)
Properties	▲ perfect sharp edges ▲ no cutting pressure ▲ very close tolerances ▲ highest abrasion resistance with highest toughness ▲ very high heat conductivity	▲ high sharpness ▲ lower cutting pressure than PDC-S ▲ close tolerance ▲ lower abrasion resistance with increased toughness	▲ Very sharp cutting edge ▲ Reduced cutting pressure ▲ Tight tolerances ▲ Very high level of wear resistance and toughness	▲ high sharpness ▲ lower cutting pressure ▲ close tolerance ▲ lower abrasion resistance than with the PDC, with increased toughness
Material	suitable for superfinishing and semi-finishing of all non ferrous metals and NE-composite materials with small to high levels of abrasiveness	suitable for fine machining of all NE-materials with low abrasiveness	suitable for finishing to roughing non-ferrous metals and non-ferrous materials with highly abrasive alloying element. High chip removal on fibre-reinforced plastics such as CFRP and GFRP.	suitable for fine machining of all NE-materials and non-ferrous metals with low to very high levels of abrasiveness

Cutting Geometries

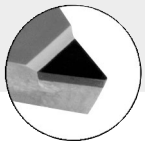
Neutral rake angle:

- higher cuting force
- higher temperature
- improved surface quality
- for stable workpieces



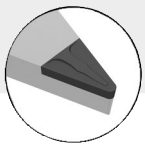
Positive rake angle:

- Lower cutting force
- Lower temperature
- reduction in surface quality
- for unstable workpieces
- improved accuracy



CB chip breaker geometries:

- Reliable chip control
- Ideal for low-alloy aluminium
- For F | M | R applications

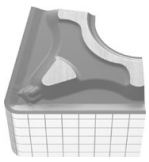


Notes on diamond usage

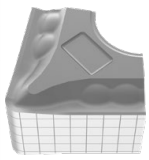
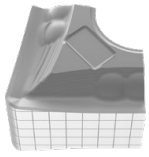
- Coolant is not generally needed, however it facilitates chip removal
- Note the chemical reaction to carbide-forming elements (PCD)
- Note the thermal interaction and critical temperature:
  PCD: 600 °C, CVD: 700 °C
  Depending on the material, use cooling.

Standard chip breakers / application notes

Negative

Model	Smooth cut	Irregular cutting depth	Interrupted cut	Sectional illustration a_p mm	Sectional illustration f mm	Geometry
Main application steel and cast iron, secondary application stainless steels						
-F50 ▲ Fine turning chip breaker for fine machining ▲ Steel and stainless steels ▲ Excellent chip control ▲ High surface quality	 **F**	**CTCP115 / CTCP125**	CTCP115 / CTCP125 / CTCP135	**CTCP135**	15° 0,10–2,60	0,06–0,35	CN.. DN.. SN.. TN.. VN.. WN..
-M50 ▲ Medium machining ▲ First choice for steel machining ▲ Universal application ▲ Wide range of applications	 **M**	**CTCP115 / CTCP125 / CTCK110 / CTCK120** CTCP115 CTCP115 / CTCP125 / **CTCK110 / CTCK120**	CTCP115 / **CTCP125** CTCP125 CTCP115 / CTCP125 / **CTCK110 / CTCK120**	CTCP125 / **CTCP135** CTCP135 CTCP125 / **CTCK120**	20° 0,25 0,50–5,00	0,12–0,40	CN.. DN.. SN.. TN.. VN.. WN..
-M70 ▲ Light to medium rough machining ▲ Cast crust and forging skin ▲ Stable cutting edge ▲ Interrupted cut ▲ Raw materials and forgings	 **M** **R**	**CTCK110 / CTCK120 / CTCP115** CTCP115 **CTCK110 / CTCK120 /** CTCP115 / CTCP125	CTCP115 / **CTCP125** CTCP125 **CTCK120 /** CTCP125	**CTCP125 / CTCP135** CTCP135 CTCP125 / **CTCK120**	15,7° 0,3 1,50–4,50	0,20–0,80	CN.. DN.. SN.. TN.. WN..

Negative

Model	Smooth cut	Irregular cutting depth	Interrupted cut	Sectional illustration a_p mm	Sectional illustration f mm	Geometry
Main application stainless steels, secondary application steel and super alloys						
-F30 ▲ Finishing of stainless steels ▲ Continous cut ▲ High surface quality ▲ Good swarf control	 **F**	CTCM120 / CTPM125 **CTCM120 / CTPM125**	CTCM120 / CTPM125 / CTCM130 **CTCM120 / CTPM125 / CTCM130**	CTCM130 **CTCM130**	15° 0,08–2,5	0,10–0,35	CN.. DN.. SN.. TN.. VN.. WN..
-M30 ▲ Option for stainless steel machining ▲ Good swarf control ▲ Little edg build up ▲ Low cutting forces ▲ Little built-up edge ▲ Applicable on unstable machines	 **F**	CTCM120 / CTPM125 **CTCM120 / CTPM125**	CTCM120 / CTPM125 / CTCM130 **CTCM120 / CTPM125 / CTCM130**	CTCM130 **CTCM130**	15° 0,25 1,00-4,50	0,15-0,40	CN.. DN.. SN.. TN.. VN.. WN..
-M60 ▲ Light to medium roughing ▲ Stable cutting edge ▲ Interrupted cut ▲ Forged skin and cast crust	 **F** **M**	CTCM120 / CTPM125 **CTCM120 / CTPM125**	CTCM120 / CTPM125 / CTCM130 **CTCM120 / CTPM125 / CTCM130**	CTCM130 **CTCM130**	18° 0,3 1,50–6,00	0,25–0,50	CN.. DN.. SN.. TN.. WN..

3

Standard chip breakers / application notes

Positive

Main application steel and cast iron, secondary application stainless steels

Model	Smooth cut	Irregular cutting depth	Interrupted cut	Sectional illustration a_p mm	Sectional illustration f mm	Geometry
-SF ▲ Finishing / contour turning ▲ Good swarf control ▲ High surface quality ▲ Low cutting forces	**CTCP115**	**CTCP125**	**CTCP125 / CTCP135**	0,05–2,50	0,05–0,25	CC.. DC.. SC.. TC.. VC.. WC..
F		CTCP125	CTCP125			
-SMF ▲ Finishing to medium machining ▲ Low cutting forces ▲ Good swarf control ▲ High surface quality	**CTEP110 / CTCP115**	**TCM10 / CTCP125 / CTCP115**	**CTCP135**	0,20–1,30	0,06–0,25	CC.. DC.. SC.. TC.. VC..
F	CTEP110	CTCP135	CTCP135			
M	CTEP110					
-SM ▲ Medium machining ▲ Universal application ▲ Stable cutting edge ▲ Varying depths of cut ▲ Wide range of applications	**CTCP115 / CTCP125**	**CTCP125 / CTCP135 / CTCP115**	**CTCP125 / CTCP135**	0,05–5,00	0,15–0,45	CC.. DC.. RC.. SC.. TC.. VC..
M	CTCP115 / **CTCK110 / CTCK120**	CTCP135 CTCP125 / **CTCK110 / CTCK120**	CTCP135 CTCK120			
-SMQ ▲ Positive wiper geometry ▲ Finishing to medium machining ▲ Very high feeds ▲ High surface quality	**CTCP115**	**CTCP125**	**CTCP125**	1,00–4,00	0,15–0,45	CC.. DC..
M	CTCP125 / CTCP115	CTCP125	CTCP125			

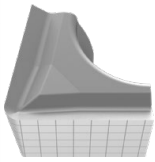
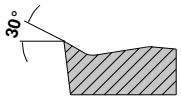
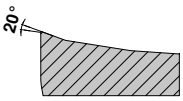
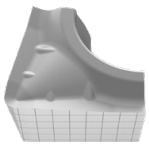
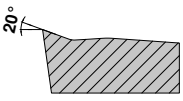
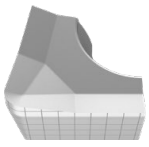
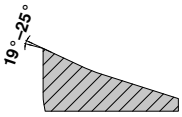
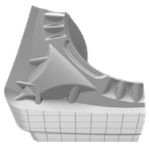
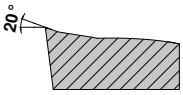
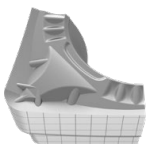
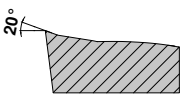
Positive

Main application stainless steels, secondary application steel and super alloys

Model				Sectional illustration a_p mm	Sectional illustration f mm	Geometry
-M25 ▲ First choice for medium machining of stainless steels ▲ High surface quality ▲ Little built-up edge	CTCM120 / CTPM125	CTCM120 / CTPM125 / CTCM130	CTCM130	0,40–3,20	0,10–0,30	CC.. DC.. TC.. VC..
F M	**CTCM120 / CTPM125**	**CTCM120 / CTPM125 / CTCM130**	**CTCM130**			
-M55 ▲ First choice for medium machining to roughing of stainless steels ▲ Smooth to lightly interrupted cut ▲ Good swarf control ▲ Stable cutting edge	CTCM120 / CTPM125	CTCM120 / CTPM125 / CTCM130	CTCM130	0,40–4,80	0,06–0,35	CC.. DC.. SC.. TC.. VC..
M	**CTCM120 / CTPM125**	**CTCM120 / CTPM125 / CTCM130**	**CTCM130**			

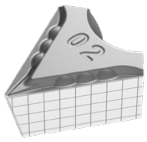
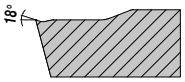
Standard chip breakers / application notes

Main application non-ferrous metals, secondary application stainless steels, steels, super alloys, cast iron

positive	Model	Smooth cut ○	Irregular cutting depth ◌	Interrupted cut ◌	Sectional illustration a_p mm	Sectional illustration f mm	Geometry
-23P ▲ Maximum tolerance class ▲ Outstanding chip control, even with the smallest cutting depths ▲ Very low cutting forces	 F	H216T **H216T** H216T	H216T **H216T** H216T	**H216T** H216T	 0,2–4,0	0,05–0,3	CC.. DC..
-25P ▲ Low adhesion ▲ Good chip control with soft aluminium alloys	 F M	**CTPX710** **CTPX710** **CTPX710 / H216T** **CTPX710** CTPX710	CTPX710 CTPX710 **CTPX710 / H216T** CTPX710 CTPX710	**CTPX710 / H216T**	 0,50–4,50	0,05–0,60	CC.. DC.. SC.. VC..
-25Q ▲ Sharp cutting edge ▲ Good swarf control on soft aluminium alloys ▲ Low adhesion	 M	**CTPX710** **CTPX710** H210T **H210T / CTPX710** H210T / **CTPX710** H210T	CTPX710 CTPX710 H210T **H210T / CTPX710** H210T / CTPX710 H210T	**H210T / CTPX710** H210T	 0,05–6,50	0,05–0,60	CC.. DC.. VC..
-27 ▲ Wiper geometry ▲ High feeds ▲ High surface quality ▲ Good chip control with softer aluminium alloys ▲ Low adhesion	 M R	**CTPX715** **CTPX715** CTPX715 / H216T **CTPX715 / H216T** **CTPX715** CTPX715 / H216T	CTPX715 CTPX715 CTPX715 / H216T **CTPX715 / H216T** CTPX715 CTPX715 / H216T	**CTPX715 / H216T**	 1,00–10,00	0,10–0,75	CC.. DC.. RC.. SC.. TC.. VC..
-29 ▲ Direct sintered aluminium geometry ▲ Positive rake angle ▲ Good chip control ▲ For medium to rough machining	 M	CTPX715 CTPX715 **CTPX715** **CTPX715 / H216T**	CTPX715 CTPX715 **CTPX715** **CTPX715 / H216T**	**H216T** **H216T**	 1,00–6,00	0,25–0,60	CC.. DC.. VC..
-M81 ▲ Dircetly pressed insert ▲ Positive rake angle ▲ Good swarf control ▲ For medium to rough machining	 M	**CWN2120** CWN2120	CWN2120	CWN2120	 1,00–6,00	0,25–0,60	CC.. DC.. VC..

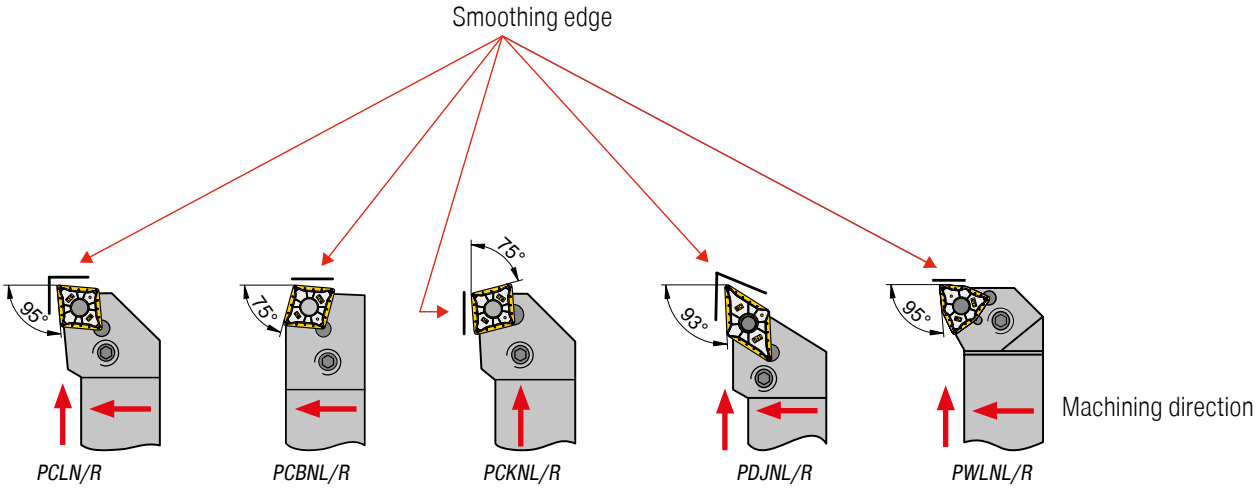
3

Standard chip breakers / application notes

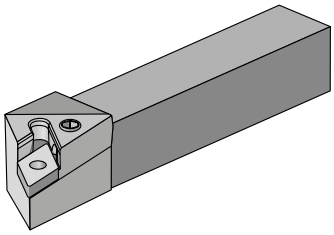
Positive	Model	Smooth cut	Irregular cutting depth	Interrupted cut	Sectional illustration a_p mm	Sectional illustration f mm	Geometry
Main application super alloys and stainless steels, secondary application steels and non-ferrous metals	-F05 ▲ The universal Alu geometry ▲ Sharp cutting edge ▲ Extremely positive rake angle ▲ Low adhesion ▲ High feed rates	 **F**	**CTPX710**	CTPX710			DC.. VC..
			CTPX710	CTPX710			
			CTPX710	CTPX710			
			CTPX710	**CTPX710**			
			CTPX710	**CTPX710**			
					0,10–2,50	0,02–0,25	
			CTPX710	CTPX710			

Masterfinish – smoothing geometry – information

High-quality surfaces can be produced inexpensively using indexable inserts with smoothing edge (-TFQ; -TMQ; -SMQ; -25Q).

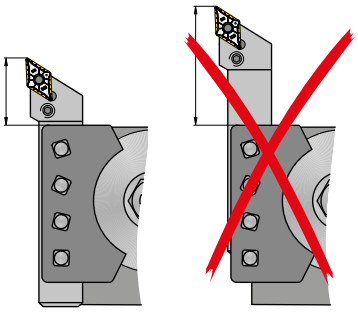


All turning inserts with smoothing cutting edge are clamped in standard ISO tool holders

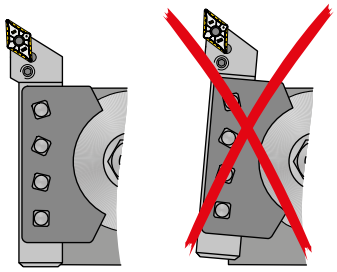


Check toolholder:

- Insert seat
- Shim
- Clamping Lever



Short tool overhang



Ensure correct tool alignment

Feed rate guide values for surface finish quality

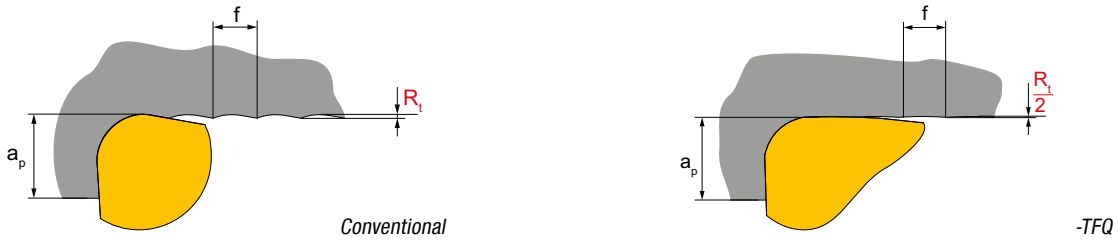
Roughness range R_z in µm	$R_{t\,max.}$	Corresponds to R_a	Roughness index	ISO 1302	Corner radius r_ε in mm and feed rate f in mm/rev.			
					r_ε = 0,4	r_ε = 0,8	r_ε = 1,2	r_ε = 1,6
63–100	R_t100	12,5–25	N11	25		0,51	0,69	0,88
40–63	R_t63	6,3–25	N10	12,5	0,27	0,43	0,56	0,68
31,5–40	R_t40	4,9–6,3	N9	6,3	0,25	0,37	0,49	0,57
25–31,5	R_t31,5	4,0–4,9			0,22	0,32	0,41	0,47
16–25	R_t25	2,5–4,0	N8	3,2	0,20	0,28	0,36	0,39
10–16	R_t16	1,6–2,5			0,15	0,22	0,29	0,31
6,3–10	R_t10	1,0–1,6	N7	1,6	0,10	0,13	0,18	0,20

Masterfinish – smoothing geometry – operating principle

Relationship of feed rate to surface roughness

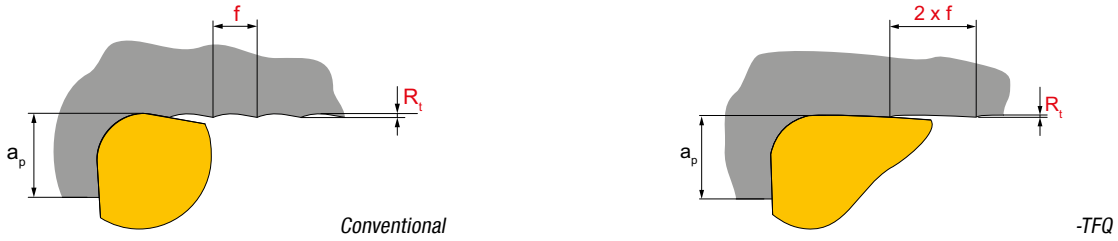
Improved Surface Quality

Given identical feed rates, the indexable insert with smoothing geometry attains an R_t value that is many times better than a conventional indexable insert.



Shorter machining time

If the same R_t value is achieved as with a standard indexable insert, the indexable insert with the smoothing geometry can be moved at twice the feed speed **(= lower cycle times!)**



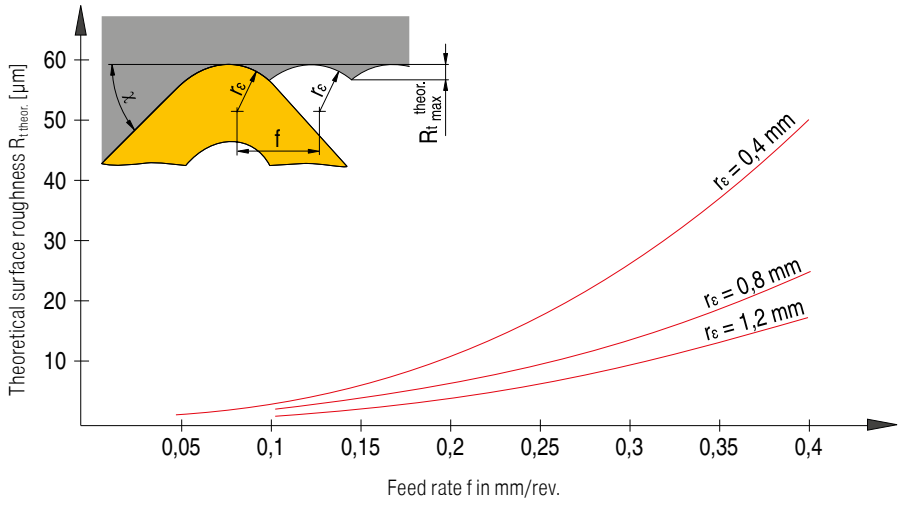
Theoretical Surface Quality

The maximum theoretical surface roughness with turning $Rt_{theor.}$ is the combination of feed rate and corner radius:

$$Rt_{theor.} = \left(r_\varepsilon - \sqrt{r_\varepsilon^2 - \frac{f^2}{4}}\right) \cdot 1000$$

or approximately:

$$Rt_{theor.} = \frac{125 \cdot f^2}{r\varepsilon} \quad [\mu m]$$

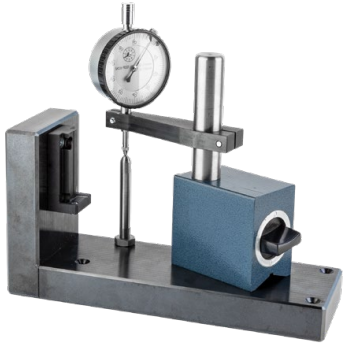


Setting Device

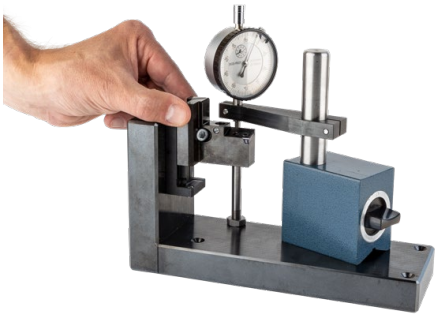
The adjustment device is profitable if the tool system is expanded with several tool holder blocks on several machines. The tool system can be preset so that holders on every machine have a suitable centre height in relation to the turning centre of the machine.

Setting Device

1. Zero the dial gauge on the surface of the measuring stick.



2. Place tool holder block on the device and gently tighten the clamping screw until the holder sits on the device free of play. Ideally, set the centre height slightly below the centre, so that the tool holder block is pushed upward when the height is set.

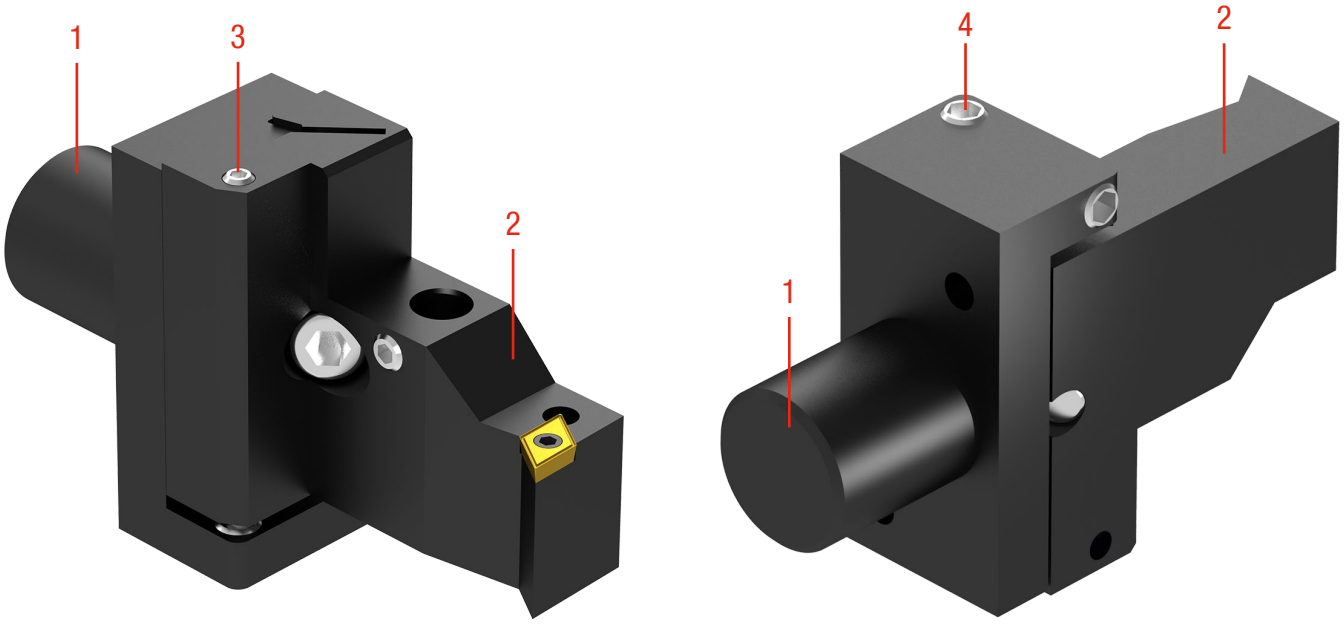


3. Carefully place the dial gauge on the tip of the tool's cutting edge.

4. Adjust the height adjustment screw until the dial gauge is set to zero.

Procedure when retrofitting on the CT tool system

1. Screw all base holders (1) into the machine.
2. Clamp the height-adjustable screw (4) of the individual base holders (1) and set to the same height using the dial gauge.
3. Clamp a tool holder block (2) onto any base holder (1) and set precisely on the turning centre using the height-adjustable screw (3) of the tool holder block (2).
4. Remove the tool holder block (2) from the machine and clamp it on the height presetting device.
5. Set the dial gauge on the tool to zero and adjust the measuring pin on the presetting device.
6. Each additional tool holder block (2) is set to zero once on the presetting device using the measuring pin and dial gauge.



If several tool holders are arranged side-by-side, you can quickly and reliably fix them at the same height using height adjustment screws (3) and (4).

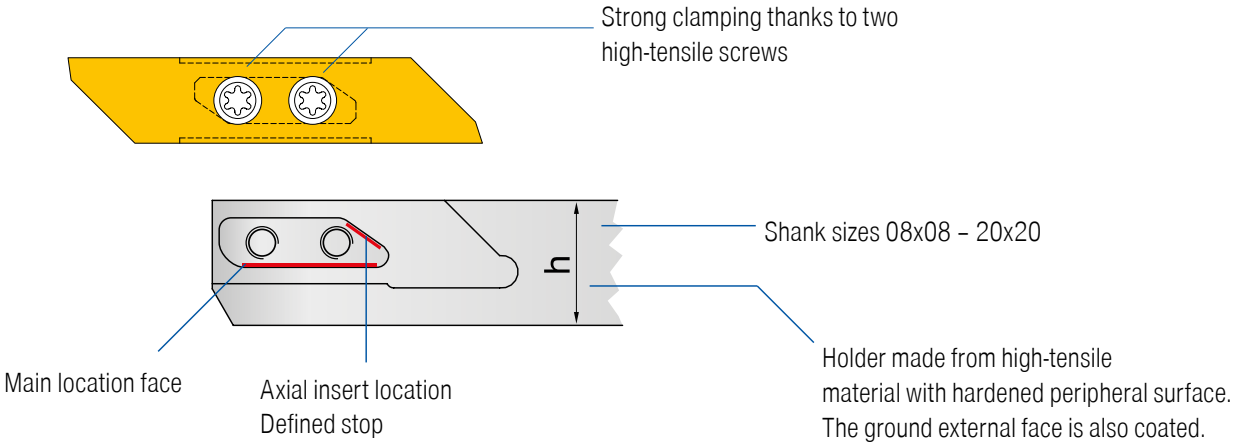
The same tool holders (2) can be used for multiple machines without presetting them again individually. However, the base holders (1) of the other machines must be adjusted to one another.

This is done as follows:

1. Screw all base holders into machine 2.
2. Clamp a preset tool block holder from machine 1 on any base holder in machine 2 and adjust the turning centre precisely using the height-adjustment screw of the base holder.
3. Set all other height-adjustable screws on the rest of the base holders in machine 2 to the same height using the dial gauge.
   The preset tool block holders can thus be used on each tool station of several machines without readjustment.

VertiClamp

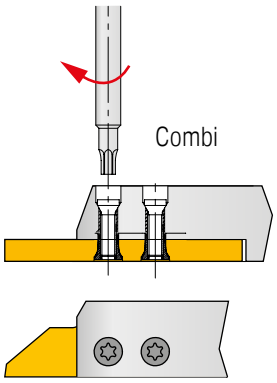
Features



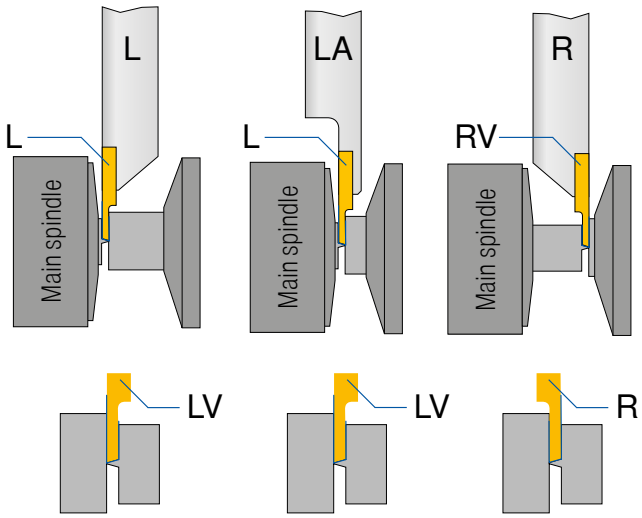
Advantages

- The connection between the indexable insert and holder guarantees optimum fixation
- The second cutting edge can always be used, even if the first cutting edge is broken off
- Shearing forces do not act on the screws
- For all cutting edge forms, the overhang of the cutting edge from the tool holder is identical
- Vertical insert orientation maintained thanks to large seating surface
- The indexable insert seat is completely protected against swarf
- Inserts are clamped through two high-tensile screws and a tapered axial stop of 30° in all cutting directions

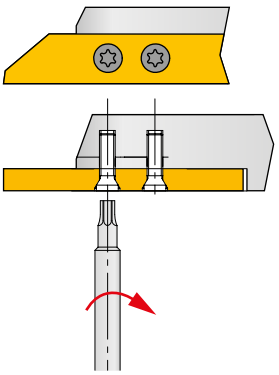
Clamping of cutting edge With combi holders



Turning away from the spindle



Clamping of cutting edge With standard holders

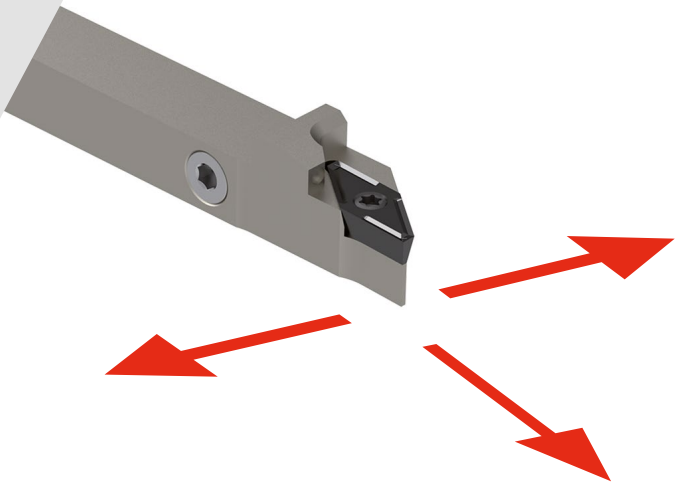


TriClamp

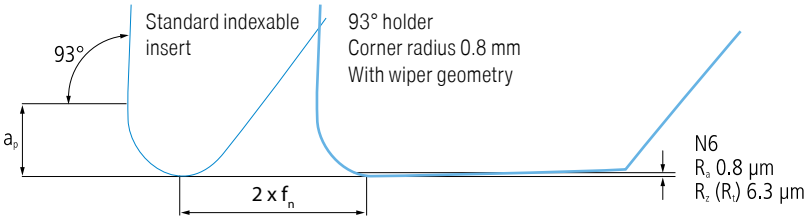
The feed rate can be doubled through the use of the TriClamp system with wiper geometry and 93° holder. This in turn allows machining times to be reduced considerably with no impact on quality, or the surface quality can be improved whilst retaining the same machining time. The ability to machine in a radial direction and in both axial directions makes this system particularly flexible.

Advantages

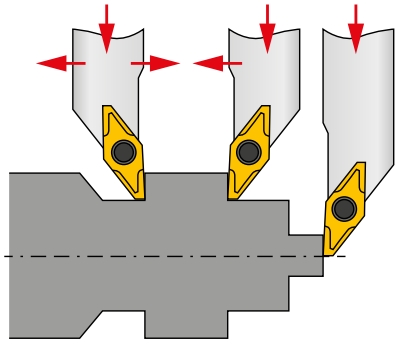
- Expansion of the ISO range
- Turning in three directions
- All cutting edges can easily be replaced
- Sharp positive cutting edges with 11° clearance angle
- Small corner radii 0.08 mm and 0.2 mm
- Perfect chip control
- Special holders for sliding head lathes (Cross-sections 8x8 mm to 16x16 mm)



Smoothing geometry in detail:

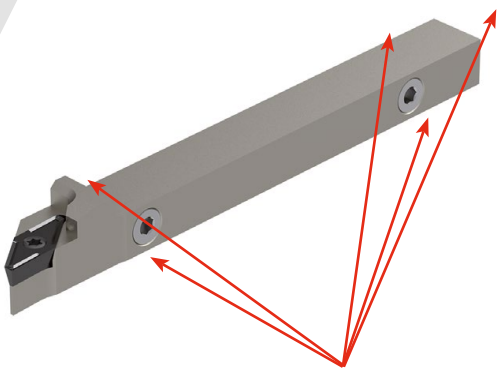


Applications:



Tool holders with a thro' coolant supply increase the performance of indexable inserts and improve the quality of components, particularly in the case of difficult-to-machine materials such as stainless steels and super alloys.

- All IC holders have five coolant supply options
- Made from highly tempered steel
- Precise coolant jet on the cutting edge
- Can be used at any coolant pressure



Coolant connection options

XheadClamp

The fast tool change with high repeatability has become a competitive advantage for series that usually have to be manufactured with the maximum chip evacuation possible. Ceratizit has taken this production requirement into account with the newly developed XheadClamp holder system. Time savings and an extremely short setup process are key advantages of the system. The XheadClamp system is also setting standards in terms of flexibility and ease of use.
With the XheadClamp, changing the indexable insert or geometry – e.g. switching from turning to grooving inserts – can be accomplished quickly, easily and with maximum precision.

Clamping method

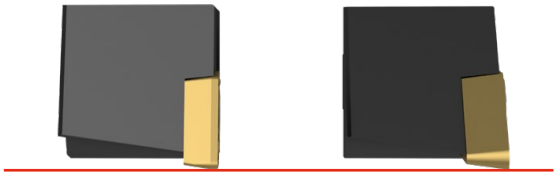
- Extremely high clamping forces
- Release and clamping of an exchangeable head using only one screw
- Repeatability of less than ± 7.5 µm
- Maximum stability

Versatility

- All heads can be installed regardless of system size
- Tools can be adapted to the component
- Fastest indexable insert change thanks to exchangeable head

Accuracy

- No variable X and Y dimensions when changing the head
- Repeatability of less than ±7.5 µm
- Centre height is retained even when the insert size is changed
- Two-nose system guarantees the correct position



ISO designation system for inserts

Indexable inserts – metric

C	N	M	G	12	04	08	E	N	-	M50
1	2	3	4	5	6	7	8	9		13

Indexable inserts – inch

C	N	M	G	4	3	2	E	N	-	M50
1	2	3	4	5	6	7	8	9		13

Indexable inserts, CBN, ceramic – metric

C	N	G	A	12	04	08	S	N	-	020D	_	B	3	-	Q
1	2	3	4	5	6	7	8	9		10		11	12		13

Indexable inserts, CBN, ceramic – inch

C	N	G	A	4	3	2	S	N	-	020D	_	B	3	-	Q
1	2	3	4	5	6	7	8	9		10		11	12		13

1 Insert shape

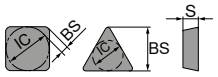
V	35°	Included angle
D	55°	
E	75°	
C	80°	
M	86°	
K	55°	Included angle
B	82°	
A	85°	
L	90°	Other shapes
P	108°	
H	120°	
O	135°	
R	-	
S	90°	
T	60°	
W	80°	

2 Clearance angle

	α		α
A	3°	F	25°
B	5°	G	30°
C	7°	N	0°
D	15°	P	11°
E	20°		

O – Clearance angles not included within the standard for which particular information is necessary.

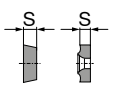
3 Tolerances



	IC±		BS		S	
	mm	inch	mm	inch	mm	inch
A	0,025	.0010	0,005	.0002	0,025	.001
F	0,013	.0005	0,005	.0002	0,025	.001
C	0,025	.0010	0,013	.0005	0,025	.001
H	0,013	.0005	0,013	.0005	0,025	.001
E	0,025	.0010	0,025	.0010	0,025	.001
G	0,025	.0010	0,025	.0010	0,13	.005
J	0,05-0,15*	.002-.006*	0,005	.0002	0,025	.001
K	0,05-0,15*	.002-.006*	0,013	.0005	0,025	.001
L	0,05-0,15*	.002-.006*	0,025	.0010	0,025	.001
M	0,05-0,15*	.002-.006*	0,05-0,20*	.003-.008*	0,13	.005
N	0,05-0,15*	.002-.006*	0,05-0,20*	.003-.008*	0,025	.001
U	0,08-0,25*	.003-.010*	0,13-0,38*	.005-.015*	0,13	.005

* Depends on insert size

6 Insert thickness



Code			
mm	inch	mm	inch
1,59	1/16	01	1
2,38	3/32	02	
3,18	1/8	03	2
3,97	5/32	T3	
4,76	3/16	04	3
5,56	7/32	05	
6,35	1/4	06	4
7,94	5/16	07	5
9,52	3/8	09	6

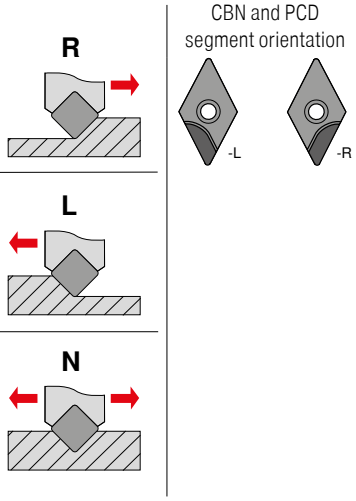
7 Corner radius

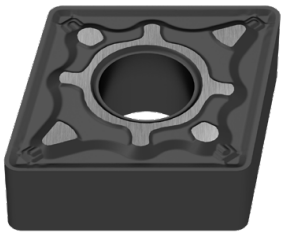
Code				RN 00 RC MO
mm	inch	mm	inch	
≤ 0,05	.0015	00	X0	
0,1	.004	01	0	
0,2	.008	02	.5	
0,4	1/64	04	1	
0,8	1/32	08	2	
1,2	3/64	12	3	
1,6	1/16	16	4	
2,0	5/64	20	5	
2,4	3/32	24	6	
2,8	7/64	28	7	
3,2	1/8	32	8	

8 Cutting edge

F	Sharp
E	rounded
T	chamfered
S	Chamfered and honed
K	Double-chamfered
P	Double-chamfered and honed
R	Round chamfer

9 Direction of cut





4 Characteristics

N	
R	
F	
A	
M, P	
G, P	
W	
T	
Q	
U	
B	
H	
C	
J	
X	Special version

inch
Change at inscribed circle
IK < 1/4"

IK > 1/4“	IK < 1/4“
N / R / F	E
A / M / G	D
X	X

5 Cutting length

Type	ISO	ANSI	L mm	L inch	IC mm	IC inch
C	06	2	6,4	.250	6,35	.250
	09	3	9,7	.382	9,525	.375
	12	4	12,9	.508	12,70	.500
	16	5	16,1	.634	15,875	.625
	19	6	19,3	.760	19,05	.750
	25	8	25,8	1.016	25,4	1.000
	32	12	35,24	1.269	31,75	1.250
S	06	2	6,35	.250	6,35	.250
	09	3	9,525	.375	9,525	.375
	12	4	12,7	.500	12,7	.500
	15	5	15,875	.625	15,875	.625
	19	6	19,05	.750	19,05	.750
	25	8	25,4	1.000	25,4	1.000
	31	10	31,75	1.250	31,75	1.250
D	07	2	7,7	.303	6,35	.250
	11	3	11,6	.457	9,525	.375
	15	4	15,5	.610	12,70	.500
V	11	2	11,1	.437	6,35	.250
	16	3	16,6	.653	9,525	.375
	22	4	22,10	.870	12,70	.500

* inch version

Type	ISO	ANSI	L mm	L inch	IC mm	IC inch
T	06	1.2	6,9	.272	3,97	.156
	09	1.8	9,6	.378	5,56	.219
	11	2	11,0	.433	6,35	.250
	16	3	16,5	.650	9,525	.375
	22	4	22,	.079	12,70	.039
	27	5	27,5	1.083	15,875	.625
	33	6	33,0	1.299	19,05	.750
W	06	3	6,5	.256	9,525	.375
	08	4	8,7	.331	12,70	.039
	10	5	10,9	.429	15,875	.625
R	06	2	6,35	.250	6,35	.250
	08	-	8,0	.315	8,0	.315
	09	3	9,52	.375	9,52	.375
	10	-	10,0	.394	10,0	.394
	12*	-	12,0	.472	12,0	.472
	12	4	12,7	.488	12,70	.488
	15	5	15,875	.625	15,875	.625
	16	-	16,0	.630	16,0	.630
	19	6	19,05	.750	19,05	.750
	25	8	25,0	.984	25,0	.984
	25*	-	25,4	1.000	25,4	1.000
	31	10	31,75	1.250	31,75	1.250
	32	-	32,0	1.260	32,0	1.260

10 Chamfer type

T / S K / P [1]

	mm	inch		
015	0,15	.006	A	05°
020	0,20	.008	B	10°
025	0,25	.010	C	15°
050	0,50	.020	D	20°
075	0,75	.030	E	25°
100	1,00	.040	F	30°
			G	35°

1) Two letters are assigned for double-chamfered cutting edges
e.g. BE =
chamfer angle 1 (γ_1) = 10°
chamfer angle 2 (γ_2) = 25°

11 Number of cutting edges

Single sided

A	
B	
C	
D	
G	
H	

Complete insert thickness

T	
U	
V	
W	
X	
Y	

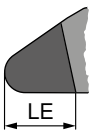
Double sided

K	
L	
M	
N	
P	
Q	

Entire clamping flat

S	
F	
E	

12 Segment length



Approx. specification in mm

13 Chip breaker designation

You can find a comprehensive chip breaker overview on
→ **page 149–152**

3

ISO designation system for tool holders

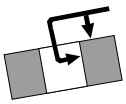
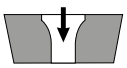
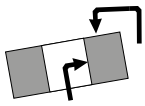
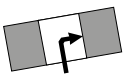
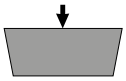
	P	C	L	N	R	20	20	K	12	-	T
	1	2	3	4	5	6	7	8	9		10
UT50	-	P	C	L	N	R			-12		
0		1	2	3	4	5	6	7	8	9	10
HSK-T63	-	D	C	L	N	R			-12		
0		1	2	3	4	5	6	7	8	9	10

0 System/size

UT = UTS
according to ISO 26622
UT40 = UTS 40 mm
UT50 = UTS 50 mm
UT63 = UTS 63 mm

HSK-T
according to ISO 12164
HSK-T63 = 63 mm
HSK-T100 = 100 mm

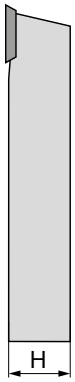
1 Tool holder

D  Retained from above and via bore	**S**  Retained via centre screw
M  Retained from above and via bore	**P**  Retained via the bore
C  Retained from above	**X** Special version

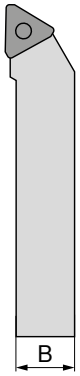
2 Insert shape

V	35°	Included angle
D	55°	
E	75°	
C	80°	
M	86°	
K	55°	Included angle
B	82°	
A	85°	
L	90°	Other shapes
P	108°	
H	120°	
O	135°	
R	-	
S	90°	
T	60°	
W	80°	

6 Shank height

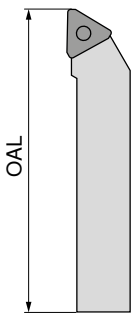


7 Shank width



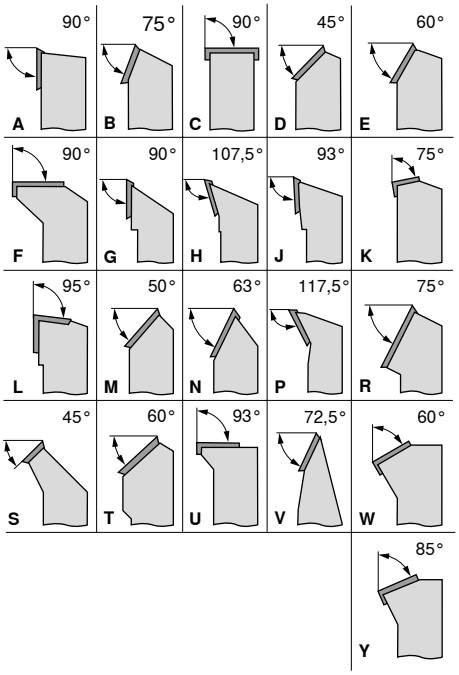
8 Tool length

OAL mm	OAL inch		OAL mm	OAL inch	
32	4.000	**A**	160	4.500	**N**
40	4.500	**B**	170	5.500	**P**
50	5.000	**C**	180	–	**Q**
60	6.000	**D**	200	6.000	**R**
70	7.000	**E**	250	7.000	**S**
80	8.000	**F**	300	8.000	**T**
90	5.500	**G**	350	5.500	**U**
100	5.625	**H**	400	3.500	**V**
110	5.300	**J**	450	3.500	**W**
125	14.000	**K**	500	3.750	**Y**
140	6.800	**L**	Special version		**X**
150	4.400	**M**			



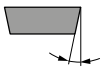
3

Style



4

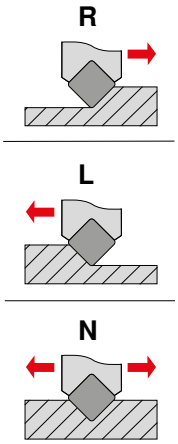
Clearance angle



	α		α
A	3°	**F**	25°
B	5°	**G**	30°
C	7°	**N**	0°
D	15°	**P**	11°
E	20°		
O	Clearance angles not included within the standard for which particular information is necessary.		

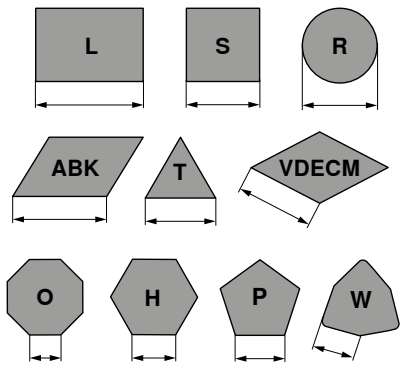
5

Direction of cut



9

Cutting length



10

Manufacturer specification

T = Toggle
Special length (mm)
Insert thickness (deviating from standard)
Special version (X..)
Machine manufacturer (specific)

ISO designation system for boring bars

		A	25	R	P	C	L	N	R	12	
		1	2	3	4	5	6	7	8	9	10
UT40	–		25	G	– P	C	L	N	R	– 12	
0		1	2	3	4	5	6	7	8	9	10
HSK–T63	–		50	Q	– D	C	L	N	R	– 12	
0		1	2	3	4	5	6	7	8	9	10

0 System/size

UT = UTS
according to ISO 26622
UT40 = UTS 40 mm
UT50 = UTS 50 mm
UT63 = UTS 63 mm

HSK–T
according to ISO 12164
HSK–T63 = 63 mm
HSK–T100 = 100 mm

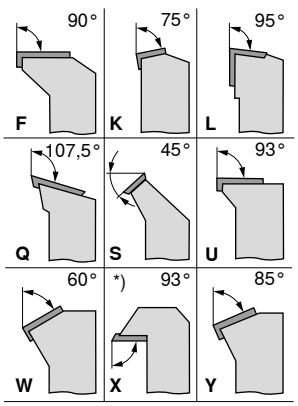
1 Shank type

S	Steel shank	**E**	As C with coolant hole
A	Steel shank with coolant hole	**F**	As C with antivibration system
B	Steel shank with antivibration system	**G**	As C with coolant hole and antivibration system
D	Steel shank with coolant hole and antivibration system	**H**	Heavy metal
C	Carbide shank with steel head	**J**	Heavy metal with coolant hole

5 Insert shape

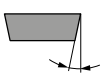
V	35°	Included angle	
D	55°		
E	75°		
C	80°		
M	86°		
K	55°	Included angle	
B	82°		
A	85°		
L	90°	Other shapes	
P	108°		
H	120°		
O	135°		
R	–		
S	90°		
T	60°		
W	80°		

6 Style



*) CERATIZIT factory standard

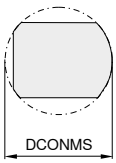
7 Clearance angle



	α		α
A	3°	**F**	25°
B	5°	**G**	30°
C	7°	**N**	0°
D	15°	**P**	11°
E	20°		
O	Clearance angles not included within the standard for which particular information is necessary.		

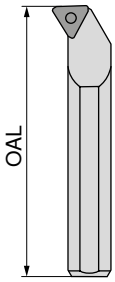
2 Shank type & size

DCONMS mm	DCONMS inch
08	A two-digit figure indicating the boring bar diameter in 1/16 of an inch.
10	
12	
16	
20	
25	
32	
40	
50	
60	

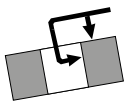
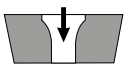
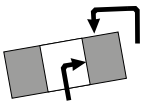
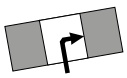
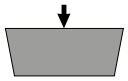


3 Tool length

OAL mm	OAL inch	
80	3	F
100	3,5	H
110	4	J
125	4,5	K
140	5	L
150	5,5	M
160	6	N
170	6,5	P
180	6,75	Q
200	7	R
250	8	S
300	10	T
350	12	U
400	14	V
450	16	W
500	18	Y
	20	
Special version		X

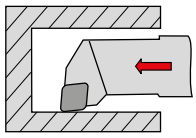


4 Clamping method

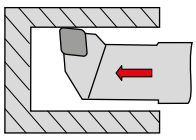
D  Retained from above and via bore	**S**  Retained via centre screw
M  Retained from above and via bore	**P**  Retained via the bore
C  Retained from above	**X** Special version

8 Direction of cut

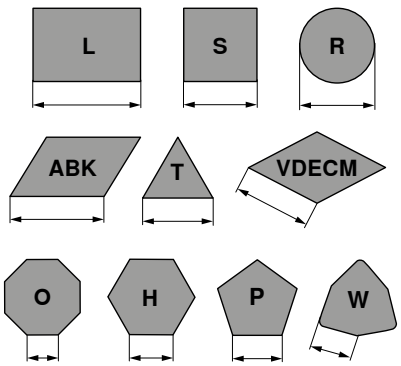
R



L



9 Cutting length



10 Manufacturer specification

T = Toggle
Special length (mm)
Insert thickness (deviating from standard)
Special version (X..)
Machine manufacturer (specific)

3

Types of wear

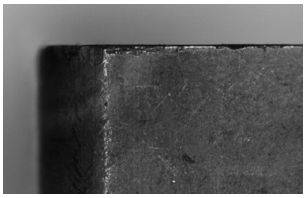
Wear on clearance face

Abrasion on flank: normal wear after a certain machining time

Cause
- Too high cutting speed
- Carbide grade with too low wear resistance
- Feed rate not adapted

Remedy
- Reduce cutting speed
- Use grade with higher wear resistance
- Adapt feed rate to cutting speed and cutting depth

Edge chipping

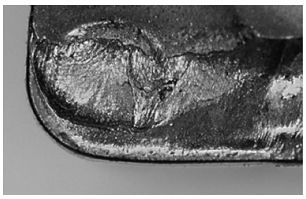


Through excessive mechanical stress at the cutting edge fracture and chipping can occur.

Cause
- Grade with too high wear resistance
- Vibration
- Too high cutting speed and / or feed rate
- Interrupted cut
- Swarf damage

Remedy
- Use tougher grade
- Use negative cutting edge geometry with chip groove
- Improve stability (tool, work piece)

Cratering

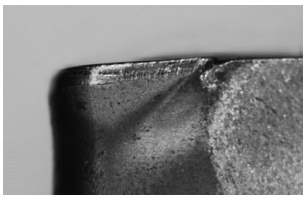


The hot chip which is being evacuated causes cratering at the rake face of the cutting edge.

Cause
- Too high cutting speed and / or feed rate
- Rake angle too shallow
- Grade with insufficient wear resistance
- Insufficient coolant supply

Remedy
- Reduce cutting speed and / or feed rate
- Use grade with higher wear resistance
- Increase coolant quantity and / or pressure, optimise coolant supply
- Use grade which is more resistant to cratering

Plastic deformation

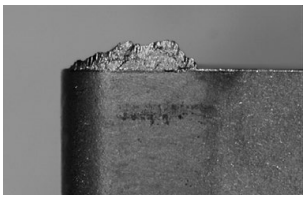


High machining temperature and simultaneous mechanical stress can lead to plastic deformation.

Cause
- Too high machining temperature resulting in softening of substrate
- Damage of coating
- Grade with insufficient wear resistance
- Insufficient coolant supply

Remedy
- Reduce cutting speed
- Use grade with higher wear resistance
- Provide cooling

Built-up edge

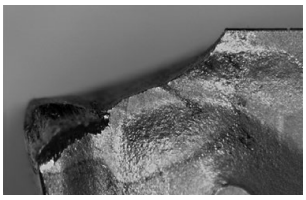


Built-up material / edges occur when the chip is not evacuated properly due to insufficient cutting temperature.

Cause
- Insufficient cutting speed
- Rake angle too shallow
- Wrong cutting material
- Lack of cooling / lubrication

Remedy
- Increase cutting speed
- Increase rake angle
- Apply TiN coating
- Use emulsion with higher concentration

Insert breakage

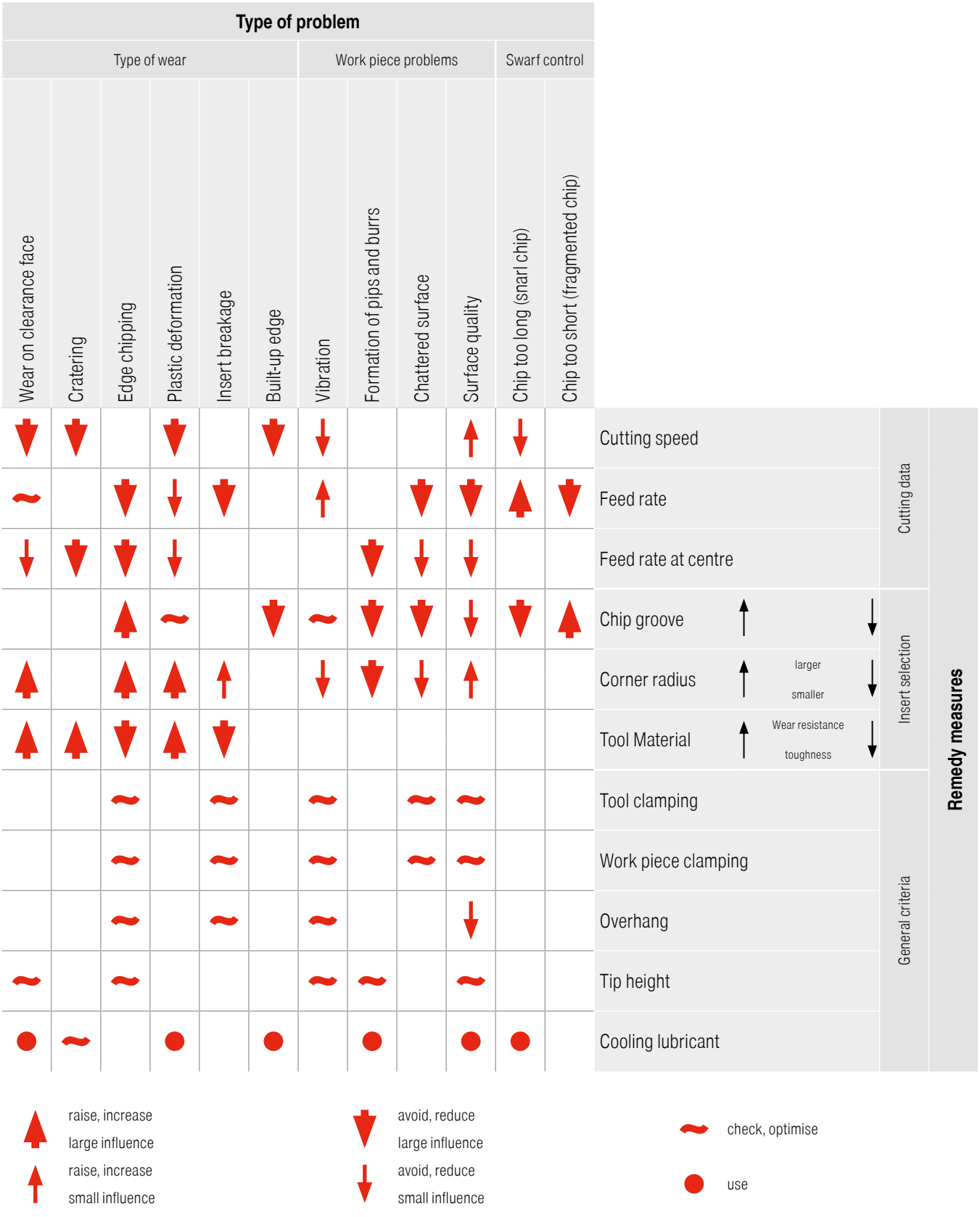


Excessive stress of the insert causes breakage.

Cause
- Excessive stress of cutting material
- Lack of stability
- Clearance angle too small

Remedy
- Use tougher grade
- Use protective edge chamfer
- Increase edge hone
- Use geometry with higher stability

Recommendation for Optimum Results



Grades Overview

Grade designation		Standard designation	ISO application range	Steel	Stainless steel	Cast iron	Non-ferrous metals	Heat-resistant	Tempered steel	Non-metal materials
			01 05 10 15 20 25 30 35 40 45 50	P	M	K	N	S	H	O
CTCP115-P	DRAGONSKIN	P15 K25		●		○				
CTCP125-P	DRAGONSKIN	P25 K30		●		○				
CTCP135-P	DRAGONSKIN	P35 M25		●	○					
CTCM120	DRAGONSKIN	P30 M20		○	●					
CTPM125	DRAGONSKIN	P35 M25		○	●					
CTCM130	DRAGONSKIN	P40 M35 K30		○	●			○		
CTPP430	DRAGONSKIN	P35 K25		●		●				
CTPX710	DRAGONSKIN	P10 M10 N10 S15		●	●		●	●		
CTPX715	DRAGONSKIN	P10 M10 K15 N10 S15 O10		●	●	○	●	●		○
H216T		K15 N15 O10				○	●			○
H10T		K15 N15 O10				○	●			○
CWN15		M20 N20			○		●			
TCM10		P15 M10 K10		●	○	○				
WUU7610		P10 N10 S15 O15		○			●	○		●
WPU7610		P10 M10 K10 N10 S10 O10		●	●	○	●	●		○
WPU7620		P20 M20 K20 N20 S20 O20		●	●	○	○	●		○

● **Main Application**
○ Extended application

wear-resistant V_c + ⟷ V_c – tough

Grades Overview

Grade designation	Standard designation	ISO application range	Steel	Stainless steel	Cast iron	Non-ferrous metals	Heat-resistant	Tempered steel	Stainless steels
		01 05 10 15 20 25 30 35 40 45 50	P	M	K	N	S	H	O
VertiClamp									
WPU7620	P20		●	●	○	○	●		○
	M20								
	K20								
	N20								
	S20								
	O20								
TriClamp									
WUU7610	P10		○			●	○		●
	N10								
	S15								
	O15								
WUU7620	P20		●			○	○		○
	N20								
	S20								
	O20								
WPU7610	P10		●	●	○	●	●		○
	M10								
	K10								
	N10								
	S10								
	O10								
WPU7620	P20		●	●	○	○	●		○
	M20								
	K20								
	N20								
	S20								
	O20								
TiAlN+	P20		●	●	○	○	●		○
	M20								
	K20								
	N20								
	S20								
	O20								

01 05 10 15 20 25 30 35 40 45 50

● **Main Application**
○ Extended application

wear-resistant v_c+ ◯ ⟷ ◯ v_c− tough

3

Grade description

CTCP115-P DRAGONSKIN
- Carbide, TiCN-Al_2O_3-coated
- with wear detection
- ISO | **P15** | K25
- The wear-resistant high-performance grades for stable conditions and continuous long cutting

CTCP125-P DRAGONSKIN
- Carbide, TiCN-Al_2O_3-coated
- with wear detection
- ISO | **P25** | K30
- The first choice for universal machining of steels

CTCP135-P DRAGONSKIN
- Carbide, TiCN-Al_2O_3-coated
- with wear detection
- ISO | **P35** | M25
- The robust alternative for heavily interrupted cutting and variable conditions

CTCM120 DRAGONSKIN
- Carbide, TiCN-Al_2O_3-coated
- ISO | P15 | **M20**
- Wear-resistant turning grade for austenitic stainless steel; top performance for smooth cuts

CTPM125 DRAGONSKIN
- ISO | P35 | **M25**
- The universal carbide grade with maximum toughness, without affecting the necessary hot hardness and wear resistance for stainless machining

CTCM130 DRAGONSKIN
- Carbide, TiCN-Al_2O_3-coated
- ISO | P25 | **M30**
- Robust turning grade for austenitic stainless steel with interrupted cuts

CTPX710 DRAGONSKIN
- Carbide, AlTiN-coated
- ISO | **P10** | **M10** | K10 | **N10** | **S15**
- Universal multi-material grade from the X7 line for highest machining requirements

CTPX715 DRAGONSKIN
- Carbide, AlTiN-coated
- ISO | **P10** | **M10** | K10 | **N10** | **S15** | O10
- Universal multi-material grade from the X7 line for highest machining requirements

CTPP430 DRAGONSKIN
- Carbide, TiAlN-coated
- ISO | **P30** | **M25** | K30 | S25 | N25
- The universal high-performance grades for steel, austenitic steel and heat-resistant alloys

H10T
- Carbide, uncoated
- ISO | K15 | **N15** | O10
- The uncoated carbide grade for machining aluminium and other non-ferrous metals

H210T
- Carbide, uncoated
- ISO | **N10** | **S10** | K10 | O10
- The wear-resistant carbide grade for machining aluminium and other non-ferrous metals

H216T
- Carbide, uncoated
- ISO | K15 | **N15** | O10
- The uncoated carbide grade for machining aluminium and other non-ferrous metals
- Also highly suitable for HSC machining

CWN15
- Carbide, TiN-coated
- ISO | M15 | **K15**
- Special carbide grade for abrasive aluminium alloys

WUU7610
- Carbide, uncoated
- ISO | P10 | **N10** | S10
- Uncoated carbide grades tailored for machining non-ferrous metals

WUU7620
- Carbide, uncoated
- ISO | **P20** | **N20** | S20
- Uncoated carbide for steel machining

WPU7610
- Carbide, PVD-AlTiN
- ISO | **P10** | **K10** | M10 | N10 | **S10**
- Wear-resistant carbide grades for machining stainless steels and super alloys

WPU7620
- Carbide, PVD-AlTiN
- ISO | **P20** | M20 | **K20** | N20 | S20
- Universal, PVD-coated carbide grades for a wide range of applications

TiAlN+
- Carbide, TiAlN-coated
- ISO | **P20** | **M20** | K20 | N20 | **S20**
- Universal, PVD-coated carbide grades for a wide range of applications

CWN2120
- Carbide, TiN coating
- ISO | **K20** | N10
- The universal carbide grades for stainless steel and super alloys

Grade description

C T C P 1 2 5 (Example)

Main application – material

1|P	Steel
2|M	Stainless steel
3|K	Cast iron
4|N	Light and non ferrous metals
5|S	Super alloys, titanium
6|H	Hard materials
7|X	Universal application

Application

1	Turning
2	Milling
3	Grooving
4	Drilling
5	Thread turning
6	Others
7	Several processes

Degree of hardness

05	ISO 05
10	ISO 10
15	ISO 15
	...

Environmentally friendly, sustainable & cost-effective

Certified recycling of valuable carbide

By deliberately conserving limited primary resources, we aim to significantly increase the proportion of recovered materials using carbide recycling. Our certified recycling process allows us to transform our used carbide products into a reusable powder and, using extremely low amounts of energy, to completely convert the finished product back into its original form.

Join our sustainable material cycle

As part of our long-term partnership, we hope that we can together complete the cycle from the secondary raw material to a new finished product. Send us your used carbide. We will then process it in the approved manner. The price we offer for the returned carbide is always based on the current market price. Best of all: We take care of the entire process for you and also provide free, quantity-specific collection containers and transport solutions. Do you want to conserve valuable resources and make an important contribution to protecting the environment together with us? If so, our recycling process is just what you need.

Table of contents

CERATIZIT \ Performance

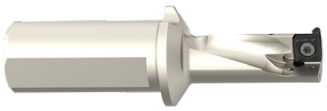
Premium quality tools for high performance.

The premium quality tools from the **CERATIZIT Performance** product line have been designed for specific applications and are distinguished by their outstanding performance. If you make high demands on the performance of your production and want to achieve the very best results, we recommend the Premium tools in this product line.

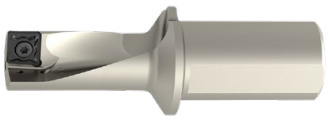
Advantages of EcoCut

- reduced machining time
- reduced need for tool positions
- generates flat bottom of hole
- less programming
- lower set-up costs / reduced setting time
- time savings due to fewer tool changes

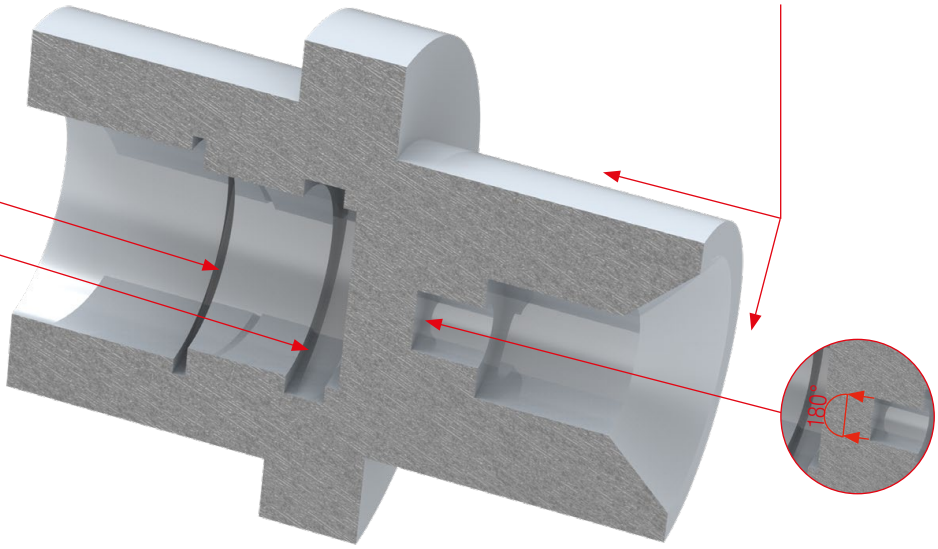
Application examples



EcoCut ProfileMaster



EcoCut Classic



EcoCut Mini

Symbol explanation

Turning outside profiles

Drilling into full material

Turning internal profiles

External / internal radial grooving

Axial grooving

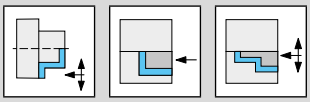
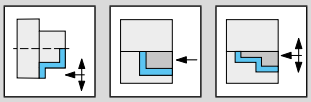
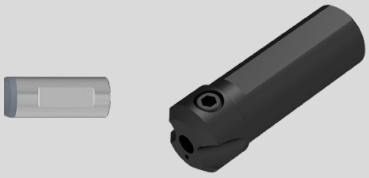
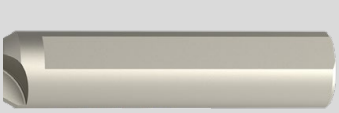
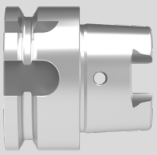
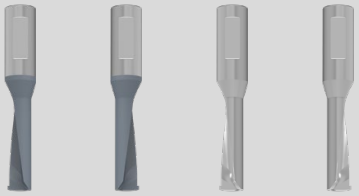
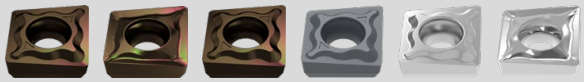
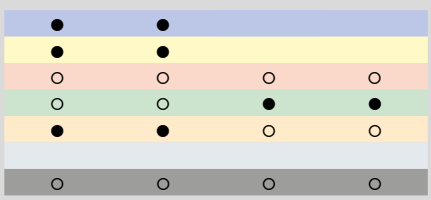
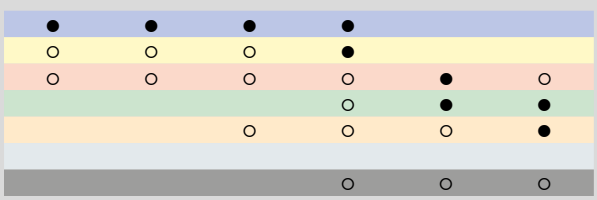
Int. coolant supply

-27P — Polished chip breaker
H216T — Carbide Grade

F	Fine Machining
M	Medium Machining
R	Rough Machining

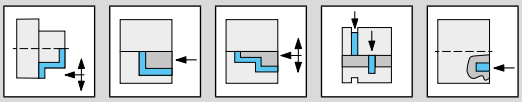
Smooth cut
Irregular cutting depth
Interrupted cut

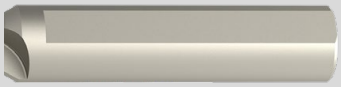
Toolfinder

Tool system	EcoCut Mini	EcoCut Classic
Application		
Machine interface	 → 177–178 Adapter for EcoCut Mini	  HSK-T 63
Lengths and diameters Versions	2,25xD Ø 2–8  → 176 4,0xD Ø 2–8  → 176	1,5xD Ø 8–32  → 180 2,25xD Ø 8–32  → 181 3,0xD Ø 8–32  → 182 2,25xD Ø 25–32 
Cutting material designation	CTPP435 | CTPP435 | CTWN425 | CTWN425	CTCP425 | -M50Q CTCP425 | CTCP435 | CTPP430 | -27P H216T | -27Q H210T
Cutting conditions	DRAGONSKIN	DRAGONSKIN
		
	Solid carbide | Solid carbide | Solid carbide | Solid carbide	M | M | M | M | M | M
	Left-hand | Right-hand | Left-hand | Right-hand	XCNT | XCNT | XCNT | XCNT | XCET | XCET
Application range		
Page No.	→ 176 | → 176 | → 176 | → 176	→ 179 | → 179 | → 179 | → 179 | → 179 | → 179
	→ v_c Page 187	→ v_c Page 187

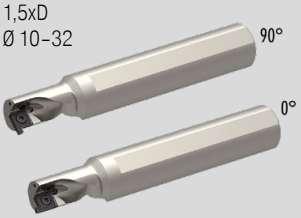
EcoCut tools are suitable for off-centre drilling. This permits certain deviations from the nominal tool diameter to be achieved
→ **For details, see the technical information.**

EcoCut ProfileMaster





1,5xD
Ø 10–32



→ 184

2,25xD
Ø 10–32

→ 185

-M20 CTPP430	-M20 CTPP430
DRAGONSKIN	DRAGONSKIN

M	M
PM-R	PM-L
●	●
●	●
○	○
○	○
●	●
○	○

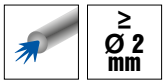
→ 183 → 183

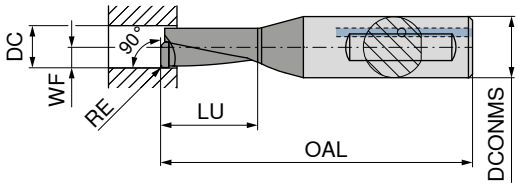
→ v_c Page 187

3

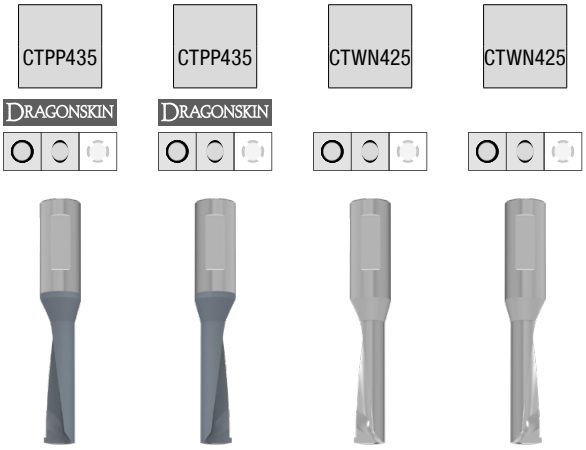
EcoCut – Mini

▲ Drilling and turning tool for small diameters





Illustrations show right-hand versions



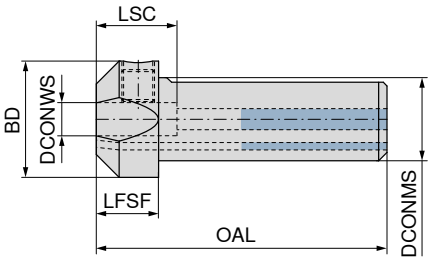
	Solid carbide Left-hand	Solid carbide Right-hand	Solid carbide Left-hand	Solid carbide Right-hand
	70 805 ...	**70 804 ...**	**70 805 ...**	**70 804 ...**

Designation	DC mm	DCONMS mm	OAL mm	LU mm	WF mm	RE mm						
ECM 02 R/L 2,25D	2,0	4	28	4,50	1,00	0,1	**320**		**320**			
ECM 02 R/L 2,25D AL	2,0	4	28	4,50	1,00	0,1					**420**	**420**
ECM 02 R/L 4,00D	2,0	4	31	8,00	1,00	0,1	**321**		**321**			
ECM 02 R/L 4,00D AL	2,0	4	31	8,00	1,00	0,1					**421**	**421**
ECM 02,5 R/L 2,25D	2,5	4	29	5,63	1,25	0,1	**325**		**325**			
ECM 02,5 R/L 2,25D AL	2,5	4	29	5,63	1,25	0,1					**425**	**425**
ECM 02,5 R/L 4,00D	2,5	4	33	10,00	1,25	0,1	**326**		**326**			
ECM 02,5 R/L 4,00D AL	2,5	4	33	10,00	1,25	0,1					**426**	**426**
ECM 03 R/L 2,25D	3,0	4	31	6,75	1,50	0,1	**330**		**330**			
ECM 03 R/L 2,25D AL	3,0	4	31	6,75	1,50	0,1					**430**	**430**
ECM 03 R/L 4,00D	3,0	4	35	12,00	1,50	0,1	**331**		**331**			
ECM 03 R/L 4,00D AL	3,0	4	35	12,00	1,50	0,1					**431**	**431**
ECM 03,5 R/L 2,25D	3,5	4	32	7,88	1,75	0,1	**335**		**335**			
ECM 03,5 R/L 2,25D AL	3,5	4	32	7,88	1,75	0,1					**435**	**435**
ECM 03,5 R/L 4,00D	3,5	4	37	14,00	1,75	0,1	**336**		**336**			
ECM 03,5 R/L 4,00D AL	3,5	4	37	14,00	1,75	0,1					**436**	**436**
ECM 04 R/L 2,25D	4,0	6	35	9,00	2,00	0,2	**300**		**300**			
ECM 04 R/L 2,25D AL	4,0	6	35	9,00	2,00	0,2					**450**	**450**
ECM 04 R/L 4,00D	4,0	6	41	16,00	2,00	0,2	**301**		**301**			
ECM 04 R/L 4,00D AL	4,0	6	41	16,00	2,00	0,2					**451**	**451**
ECM 05 R/L 2,25D	5,0	6	37	11,25	2,50	0,2	**302**		**302**			
ECM 05 R/L 2,25D AL	5,0	6	37	11,25	2,50	0,2					**452**	**452**
ECM 05 R/L 4,00D	5,0	6	45	20,00	2,50	0,2	**303**		**303**			
ECM 05 R/L 4,00D AL	5,0	6	45	20,00	2,50	0,2					**453**	**453**
ECM 06 R/L 2,25D	6,0	8	38	13,50	3,00	0,2	**306**		**306**			
ECM 06 R/L 2,25D AL	6,0	8	38	13,50	3,00	0,2					**456**	**456**
ECM 06 R/L 4,00D	6,0	8	49	24,00	3,00	0,2	**312**		**312**			
ECM 06 R/L 4,00D AL	6,0	8	49	24,00	3,00	0,2					**462**	**462**
ECM 07 R/L 2,25D	7,0	8	42	15,75	3,50	0,2	**308**		**308**			
ECM 07 R/L 2,25D AL	7,0	8	42	15,75	3,50	0,2					**458**	**458**
ECM 07 R/L 4,00D	7,0	8	53	28,00	3,50	0,2	**314**		**314**			
ECM 07 R/L 4,00D AL	7,0	8	53	28,00	3,50	0,2					**464**	**464**
ECM 08 R/L 2,25D	8,0	8	45	18,00	4,00	0,2	**310**		**310**			
ECM 08 R/L 2,25D AL	8,0	8	45	18,00	4,00	0,2					**460**	**460**
ECM 08 R/L 4,00D	8,0	8	57	32,00	4,00	0,2	**316**		**316**			
ECM 08 R/L 4,00D AL	8,0	8	57	32,00	4,00	0,2					**466**	**466**

P	●	●		
M	●	●		
K	○	○	○	○
N	○	○	●	●
S	●	●	○	○
H				
O	○	○	○	○

→ v_c Page 187

EcoCut – Adapter Mini

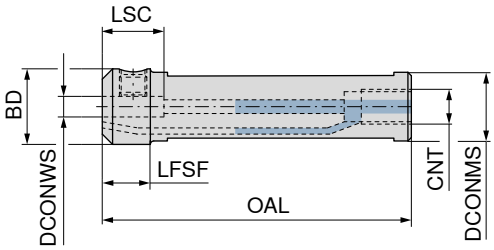


Designation	DCONWS mm	DCONMS mm	BD mm	OAL mm	LFSF mm	LSC mm	70 800 ...
EC-ADX16-04	4	16,00	22	59,0	14	18	**716**
EC-ADX12-04-E	4	19,05	25	63,5	14	18	**719**
EC-ADX20-04	4	20,00	25	64,0	14	18	**720**
EC-ADX16-06	6	16,00	22	59,0	14	18	**976**
EC-ADX12-06-E	6	19,05	25	63,5	14	18	**986**
EC-ADX20-06	6	20,00	25	64,0	14	18	**996**
EC-ADX16-08	8	16,00	22	59,0	14	18	**978**
EC-ADX12-08-E	8	19,05	25	63,5	14	18	**988**
EC-ADX20-08	8	20,00	25	64,0	14	18	**998**


Clamping screw

Spare parts for Article no.		70 950 ...
70 800 716	M5x10 ISO 4026	**867**
70 800 719	M5x10 ISO 4026	**867**
70 800 720	M5x10 ISO 4026	**867**
70 800 976	M8x1x8 – SW4	**123**
70 800 986	M8x1x8 – SW4	**123**
70 800 996	M8x1x8 – SW4	**123**
70 800 978	M8x1x8 – SW4	**123**
70 800 988	M8x1x8 – SW4	**123**
70 800 998	M8x1x8 – SW4	**123**

EcoCut – Mini adapter with coolant connection thread



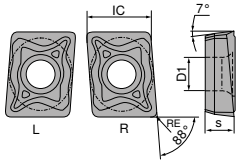
Designation	DCONWS mm	DCONMS mm	BD mm	OAL mm	LFSF mm	LSC mm	Thread	70 801 ...
ECA 16-04	4	16,00	20,0	75	14	18	G 1/8	**716**
ECA 0750-04	4	19,05	20,0	100	14	18	G 1/8	**719**
ECA 20-04	4	20,00	19,6	90	14	18	G 1/8	**720**
ECA 22-04	4	22,00	21,6	110	14	18	G 1/8	**722**
ECA 25-04	4	25,00	24,6	110	14	18	G 1/8	**725**
ECA 1000-04	4	25,40	25,0	110	14	18	G 1/8	**726**
ECA 16-06	6	16,00	22,0	75	14	18	G 1/8	**816**
ECA 0750-06	6	19,05	22,0	100	14	18	G 1/8	**819**
ECA 20-06	6	20,00	22,0	90	14	18	G 1/8	**820**
ECA 22-06	6	22,00	21,6	110	14	18	G 1/8	**822**
ECA 25-06	6	25,00	24,6	110	14	18	G 1/8	**825**
ECA 1000-06	6	25,40	25,0	110	14	18	G 1/8	**826**
ECA 16-08	8	16,00	22,0	75	14	18	G 1/8	**916**
ECA 0750-08	8	19,05	22,0	100	14	18	G 1/8	**919**
ECA 20-08	8	20,00	22,0	90	14	18	G 1/8	**920**
ECA 22-08	8	22,00	21,6	110	14	18	G 1/8	**922**
ECA 25-08	8	25,00	24,6	110	14	18	G 1/8	**925**
ECA 1000-08	8	25,40	25,0	110	14	18	G 1/8	**926**


Clamping screw

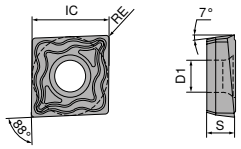
Spare parts for Article no.		70 950 ...
70 801 716	M5X8 – DIN 913	**13200**
70 801 719	M5X8 – DIN 913	**13200**
70 801 720	M5X8 – DIN 913	**13200**
70 801 722	M5X8 – DIN 913	**13200**
70 801 725	M5x10 ISO 4026	**867**
70 801 726	M5x10 ISO 4026	**867**
70 801 816	M8x1x8 – SW4	**123**
70 801 819	M8x1x8 – SW4	**123**
70 801 820	M8x1x8 – SW4	**123**
70 801 822	M8x1x8 – SW4	**123**
70 801 825	M8x1x8 – SW4	**123**
70 801 826	M8x1x8 – SW4	**123**
70 801 916	M8x1x8 – SW4	**123**
70 801 919	M8x1x8 – SW4	**123**
70 801 920	M8x1x8 – SW4	**123**
70 801 922	M8x1x8 – SW4	**123**
70 801 925	M8x1x8 – SW4	**123**
70 801 926	M8x1x8 – SW4	**123**

XCNT / XCET

Designation	S mm	D1 mm	IC mm
XC.T 0401..	1,80	2,10	4,5
XC.T 0502..	2,10	2,25	5,8
XC.T 0602..	2,38	2,50	6,5
XC.T 0703..	3,18	2,80	7,6
XC.T 0803..	3,18	3,40	8,5



XC. T 04..



XC. T 05../06../07../08../09../10../13../17..

XCNT / XCET

	CTCP425	-M50Q CTCP425	CTCP435	CTPP430	-27P H216T	-27Q H210T
	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN		
	M	M	M	M	M	M
	XCNT	XCNT	XCNT	XCNT	XCET	XCET
	70 386 ...	70 386 ...	70 386 ...	70 386 ...	70 286 ...	70 286 ...
ISO	RE mm					
040102EL	0,2	720		820	920		
040102ER	0,2	722		822	922		
040102FL	0,2					620	120
040102FR	0,2					622	122
040104EL	0,4	700	750	800	900		
040104ER	0,4	702	752	802	902		
040104FL	0,4					600	100
040104FR	0,4					602	102
050202EN	0,2	723		823	923		
050202FN	0,2					623	123
050204EN	0,4	703	753	803	903		
050204FN	0,4					603	103
060202EN	0,2	724		824	924		
060202FN	0,2					624	124
060204EN	0,4	704	754	804	904		
060204FN	0,4					604	104
070304EN	0,4	705	755	805	905		
070304FN	0,4					605	105
080304EN	0,4	706	756	806	906		
080304FN	0,4					606	106
P		●	●	●	●		
M		○	○	○	●		
K		○	○	○	○	●	○
N					○	●	●
S				○	○	○	●
H							
O					○	○	○

→ v_c Page 187

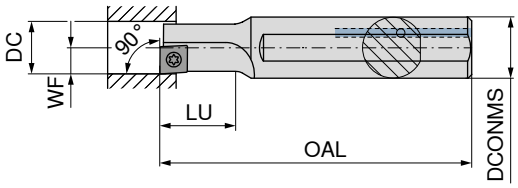
3

EcoCut – Classic 1.5xD

▲ Drilling and turning tool

Scope of supply:

Toolholder with 1 clamping screw + 2 spare screws and screwdriver



Illustrations show right-hand versions

Left-hand

Right-hand

Designation	DC mm	DCONMS mm	OAL mm	LU mm	WF mm	torque moment Nm	Insert	70 805 ...	70 804 ...
ECC 08 L 1,5D 04	8	12	80	12	4	0,4	XC.T 0401..EL	**008** [2]	
ECC 08 R 1,5D 04	8	12	80	12	4	0,4	XC.T 0401..ER		**008** [1]
ECC 10 R/L 1,5D 05	10	12	90	15	5	0,7	XC.T 0502..	**010**	**010**
ECC 12 R/L 1,5D 06	12	16	100	18	6	1,0	XC.T 0602..	**012**	**012**
ECC 14 R/L 1,5D 07	14	16	110	21	7	1,2	XC.T 0703..	**014**	**014**
ECC 16 R/L 1,5D 08	16	20	125	24	8	2,2	XC.T 0803..	**016**	**016**

1) Note! Right-hand insert on right-hand tool
2) Note! Left-hand insert on left-hand tool

Key D

Clamping screw

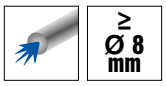
Spare parts for Article no.	80 950 ...		70 950 ...	
70 805 008	T06 – IP	**123**	M1,8x3,6 – IP	**862**
70 804 008	T06 – IP	**123**	M1,8x3,6 – IP	**862**
70 805 010 / 70 804 010	T06 – IP	**123**	M2x4,3 – IP	**863**
70 805 012 / 70 804 012	T07 – IP	**124**	M2,2x5 – IP	**856**
70 805 014 / 70 804 014	T08 – IP	**125**	M2,5x6 – IP	**857**
70 805 016 / 70 804 016	T09 – IP	**126**	M3x7 – IP	**819**

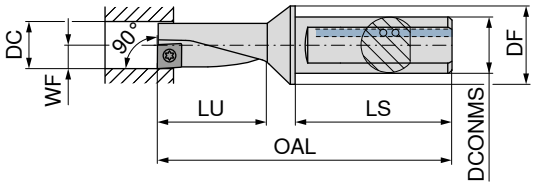
EcoCut – Classic 2.25xD

▲ Drilling and turning tool

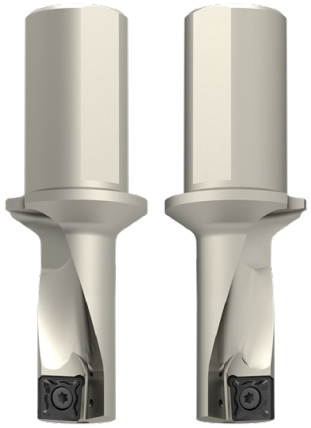
Scope of supply:

Toolholder with 1 clamping screw + 2 spare screws and screwdriver





Illustrations show right-hand versions



										Left-hand	Right-hand
										70 805 ...	**70 804 ...**
Designation	DC mm	DCONMS mm	DF mm	OAL mm	LU mm	LS mm	WF mm	torque moment Nm	Insert		
ECC 08 L 2,25D 04	8	10	12	60,0	18,0	38	4	0,4	XC.T 0401..EL	**108** [2]	
ECC 08 R 2,25D 04	8	10	12	60,0	18,0	38	4	0,4	XC.T 0401..ER		**108** [1]
ECC 10 R/L 2,25D 05	10	12	16	69,5	22,5	42	5	0,7	XC.T 0502..	**110**	**110**
ECC 12 R/L 2,25D 06	12	16	20	78,0	27,0	45	6	1,0	XC.T 0602..	**112**	**112**
ECC 14 R/L 2,25D 07	14	16	20	83,5	31,5	45	7	1,2	XC.T 0703..	**114**	**114**
ECC 16 R/L 2,25D 08	16	20	25	94,0	36,0	50	8	2,2	XC.T 0803..	**116**	**116**

1) Note! Right-hand insert on right-hand tool
2) Note! Left-hand insert on left-hand tool


Key D


Clamping screw

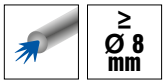
				80 950 ...	**70 950 ...**
Spare parts for Article no.					
70 805 108	T06 – IP	**123**	M1,8x3,6 – IP	**862**
70 804 108	T06 – IP	**123**	M1,8x3,6 – IP	**862**
70 805 110 / 70 804 110	T06 – IP	**123**	M2x4,3 – IP	**863**
70 805 112 / 70 804 112	T07 – IP	**124**	M2,2x5 – IP	**856**
70 805 114 / 70 804 114	T08 – IP	**125**	M2,5x6 – IP	**857**
70 805 116 / 70 804 116	T09 – IP	**126**	M3x7 – IP	**819**

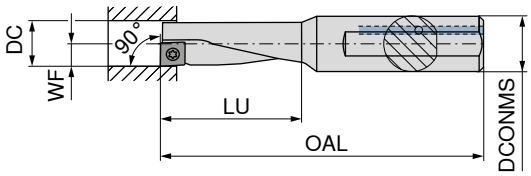
EcoCut – Classic 3xD – Heavy metal

- ▲ Drilling and turning tool
- ▲ vibration-damped

Scope of supply:

Toolholder with 1 clamping screw + 2 spare screws and screwdriver





Illustrations show right-hand versions

Left-hand

Right-hand

Designation	DC mm	DCONMS mm	OAL mm	LU mm	WF mm	torque moment Nm	Insert	70 805 ...	70 804 ...
ECC 08 L 3,00D 04 H	8	12	80	24	4	0,4	XC.T 0401..EL	**608** [2]	
ECC 08 R 3,00D 04 H	8	12	80	24	4	0,4	XC.T 0401..ER		**608** [1]
ECC 10 R/L 3,00D 05 H	10	12	85	30	5	0,7	XC.T 0502..	**610**	**610**
ECC 12 R/L 3,00D 06 H	12	16	95	36	6	1,0	XC.T 0602..	**612**	**612**
ECC 14 R/L 3,00D 07 H	14	16	100	42	7	1,2	XC.T 0703..	**614**	**614**
ECC 16 R/L 3,00D 08 H	16	20	110	48	8	2,2	XC.T 0803..	**616**	**616**

1) Note! Right-hand insert on right-hand tool
2) Note! Left-hand insert on left-hand tool

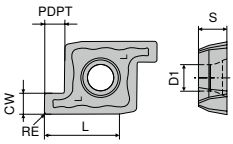
Key D

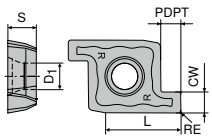
Clamping screw

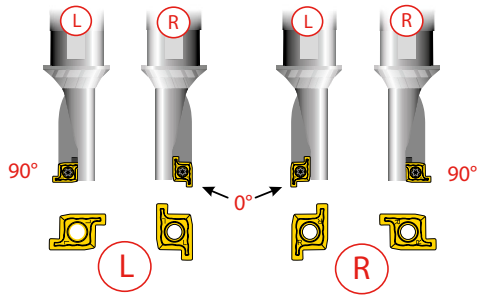
Spare parts for Article no.	80 950 ...		70 950 ...	
70 805 608	T06 – IP	**123**	M1,8x3,6 – IP	**862**
70 804 608	T06 – IP	**123**	M1,8x3,6 – IP	**862**
70 805 610 / 70 804 610	T06 – IP	**123**	M2x4,3 – IP	**863**
70 805 612 / 70 804 612	T07 – IP	**124**	M2,2x5 – IP	**856**
70 805 614 / 70 804 614	T08 – IP	**125**	M2,5x6 – IP	**857**
70 805 616 / 70 804 616	T09 – IP	**126**	M3x7 – IP	**819**

PM-R / PM-L

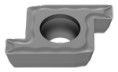
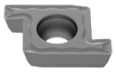
Designation	CW mm	PDPT mm	L mm	S mm	D1 mm
PM 10 G 201504	2,0	1,5	5	2,10	2,1
PM 12 G 201804	2,0	1,8	6	2,30	2,5
PM 16 G 252004	2,5	2,0	8	2,80	3,4







PM-L / PM-R

ISO	RE mm	-M20 CTPP430 DRAGONSKIN	-M20 CTPP430 DRAGONSKIN
			
		M PM-L	M PM-R
		70 289 ...	70 289 ...
PM 10 G 201504	0,4	510	511
PM 12 G 201804	0,4	515	516
PM 16 G 252004	0,4	520	521
P		●	●
M		●	●
K		○	○
N		○	○
S		●	●
H			
O		○	○

→ v_c Page 187

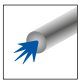
3

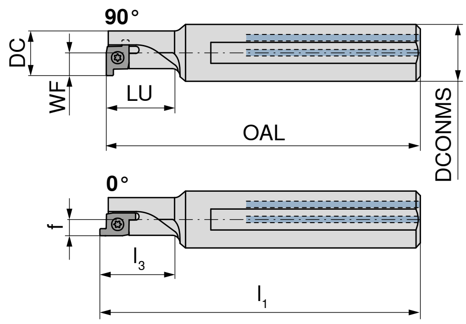
EcoCut – ProfileMaster 1.5xD

▲ Drilling, turning and grooving tool

Scope of supply:

Toolholder with one clamping screw and one screwdriver





Illustrations show right-hand versions

Designation	DC mm	DCONMS mm	OAL mm	LU mm	WF mm	l_1 mm	l_3 mm	f mm	torque moment Nm	Insert	Left-hand 70 821 ...	Right-hand 70 820 ...
PMC 10 R/L 1,5D	10	12	80	15	5				0,4	PM 10R/L	**010** 1)	**010** 1)
PMC 12 R/L 1,5D	12	16	90	18	6				1,0	PM 12R/L	**012** 1)	**012** 1)
PMC 16 R/L 1,5D	16	20	125	24	8	127,3	26,3	5,7	2,2	PM 16R/L	**016**	**016**

1) only usable as 90° version


Key D


Clamping screw

Spare parts

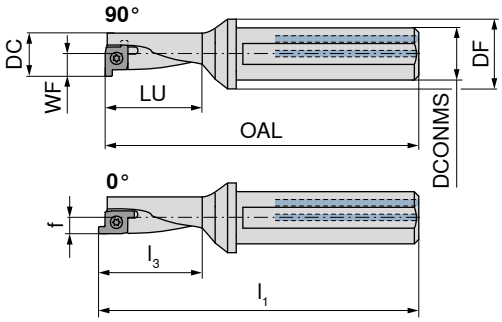
	Key D	80 950 ...	Clamping screw	70 950 ...
70 820 010 / 70 821 010	T06 – IP	**123**	M1,8x3,6 – IP	**862**
70 820 012 / 70 821 012	T07 – IP	**124**	M2,2x4,2 – IP	**137**
70 820 016 / 70 821 016	T09 – IP	**126**	M3x5,7 – IP	**008**

EcoCut – ProfileMaster 2.25xD

▲ Drilling, turning and grooving tool

Scope of supply:

Toolholder with one clamping screw and one screwdriver



Illustrations show right-hand versions

												Left-hand	Right-hand
												70 821 ...	**70 820 ...**
Designation	DC mm	DCONMS mm	DF mm	OAL mm	LU mm	WF mm	l_1 mm	l_3 mm	f mm	torque moment Nm	Insert		
PMC 10 R/L 2,25D	10	12	18	72,4	22,5	5				0,4	PM 10R/L	**110** [1]	**110** [1]
PMC 12 R/L 2,25D	12	16	22	78,0	27,0	6				1,0	PM 12R/L	**112** [1]	**112** [1]
PMC 16 R/L 2,25D	16	20	28	96,5	36,0	8	98,8	38,3	5,7	2,2	PM 16R/L	**116**	**116**

1) only usable as 90° version

Key D

Clamping screw

Spare parts				
		80 950 ...		**70 950 ...**
70 820 110 / 70 821 110	T06 – IP	**123**	M1,8x3,6 – IP	**862**
70 820 112 / 70 821 112	T07 – IP	**124**	M2,2x4,2 – IP	**137**
70 820 116 / 70 821 116	T09 – IP	**126**	M3x5,7 – IP	**008**

3

Material examples for cutting data tables

	Material sub-group	Index	Composition / Structure / Heat treatment		Tensile strength N/mm²* / HB / HRC	Material number	Material designation	Material number	Material designation
P	Unalloyed steel	P.1.1	< 0,15 % C	Annealed	420 N/mm² / 125 HB	1.0401	C15	1.1141	Ck15
		P.1.2	< 0,45 % C	Annealed	640 N/mm² / 190 HB	1.1191	C45E	1.0718	9SMnPb28
		P.1.3		Tempered	840 N/mm² / 250 HB	1.1191	C45E	1.0535	C55
		P.1.4	< 0,75 % C	Annealed	910 N/mm² / 270 HB	1.1223	C60R	1.0535	C55
		P.1.5		Tempered	1010 N/mm² / 300 HB	1.1223	C60R	1.0727	45S20
	Low-alloy steel	P.2.1		Annealed	610 N/mm² / 180 HB	1.7131	16MnCr5	1.6587	17CrNiMo6
		P.2.2		Tempered	930 N/mm² / 275 HB	1.7131	16MnCr5	1.6587	17CrNiMo6
		P.2.3		Tempered	1010 N/mm² / 300 HB	1.7225	42CrMo4	1.3505	100Cr6
		P.2.4		Tempered	1200 N/mm² / 375 HB	1.7225	42CrMo4	1.3505	100Cr6
	High-alloy steel and high-alloy tool steel	P.3.1		Annealed	680 N/mm² / 200 HB	1.4021	X20Cr13	1.4034	X46Cr13
		P.3.2		Hardened and tempered	1100 N/mm² / 300 HB	1.2343	X38CrMoV5-1	1.4034	X46Cr13
		P.3.3		Hardened and tempered	1300 N/mm² / 400 HB	1.2343	X38CrMoV5-1	1.4034	X46Cr13
	Stainless steel	P.4.1	Ferritic / martensitic	Annealed	680 N/mm² / 200 HB	1.4016	X6Cr17	1.2316	X36CrMo16
		P.4.2	Martensitic	Tempered	1010 N/mm² / 300 HB	1.4112	X90CrMoV18	1.2316	X36CrMo16
M	Stainless steel	M.1.1	Austenitic / austenitic-ferritic	Quenched	610 N/mm² / 180 HB	1.4301	X5CrNi18-10	1.4571	X6CrNiMoTi17-12-2
		M.2.1	Austenitic	Tempered	300 HB	1.4841	X15CrNiSi25-21	1.4539	X1NiCrMoCu25-20-5
		M.3.1	Austenitic / ferritic (Duplex)		780 N/mm² / 230 HB	1.4462	X2CrNiMoN22-5-3	1.4501	X2CrNiMoCuWN25-7-4
K	Grey cast iron	K.1.1	Pearlitic / ferritic		350 N/mm² / 180 HB	0.6010	GG-10	0.6025	GG-25
		K.1.2	Pearlitic (martensitic)		500 N/mm² / 260 HB	0.6030	GG-30	0.6045	GG-45
	Spherulitic graphite cast iron	K.2.1	Ferritic		540 N/mm² / 160 HB	0.7040	GGG-40	0.7060	GGG-60
		K.2.2	Pearlitic		845 N/mm² / 250 HB	0.7070	GGG-70	0.7080	GGG-80
	Malleable iron	K.3.1	Ferritic		440 N/mm² / 130 HB	0.8035	GTW-35-04	0.8045	GTW-45
		K.3.2	Pearlitic		780 N/mm² / 230 HB	0.8165	GTS-65-02	0.8170	GTS-70-02
N	Aluminium wrought alloy	N.1.1	Non-hardenable		60 HB	3.0255	Al99,5	3.3315	AlMg1
		N.1.2	Hardenable	Age-hardened	340 N/mm² / 100 HB	3.1355	AlCuMg2	3.2315	AlMgSi1
	Cast aluminium alloy	N.2.1	≤ 12 % Si, non-hardenable		250 N/mm² / 75 HB	3.2581	G-AlSi12	3.2163	G-AlSi9Cu3
		N.2.2	≤ 12 % Si, hardenable	Age-hardened	300 N/mm² / 90 HB	3.2134	G-AlSi5Cu1Mg	3.2373	G-AlSi9Mg
		N.2.3	> 12 % Si, non-hardenable		440 N/mm² / 130 HB		G-AlSi17Cu4Mg		G-AlSi18CuNiMg
	Copper and copper alloys (bronze/brass)	N.3.1	Free-machining alloys, PB > 1 %		375 N/mm² / 110 HB	2.0380	CuZn39Pb2 (Ms58)	2.0410	CuZn44Pb2
		N.3.2	CuZn, CuSnZn		300 N/mm² / 90 HB	2.0331	CuZn15	2.4070	CuZn28Sn1As
		N.3.3	CuSn, lead-free copper and electrolytic copper		340 N/mm² / 100 HB	2.0060	E-Cu57	2.0590	CuZn40Fe
	Magnesium alloys	N.4.1	Magnesium and magnesium alloys		70 HB	3.5612	MgAl6Zn	3.5312	MgAl3Zn
S	Heat-resistant alloys	S.1.1	Fe – basis	Annealed	680 N/mm² / 200 HB	1.4864	X12NiCrSi 36-16	1.4865	G-X40NiCrSi38-18
		S.1.2		Age-hardened	950 N/mm² / 280 HB	1.4980	X6NiCrTiMoVB25-15-2	1.4876	X10NiCrAlTi32-20
		S.2.1	Ni or Co basis	Annealed	840 N/mm² / 250 HB	2.4631	NiCr20TiAl (Nimonic80A)	3.4856	NiCr22Mo9Nb
		S.2.2		Age-hardened	1180 N/mm² / 350 HB	2.4668	NiCr19Nb5Mo3 (Inconel 718)	2.4955	NiFe25Cr20NbTi
		S.2.3		Cast	1080 N/mm² / 320 HB	2.4765	CoCr20W15Ni	1.3401	G-X120Mn12
	Titanium alloys	S.3.1	Pure titanium		400 N/mm²	3.7025	Ti99,8	3.7034	Ti99,7
		S.3.2	Alpha + beta alloys	Age-hardened	1050 N/mm² / 320 HB	3.7165	TiAl6V4	Ti-6246	Ti-6Al-2Sn-4Zr-6Mo
		S.3.3	Beta alloys		1400 N/mm² / 410 HB	Ti555.3	Ti-5Al-5V-5Mo-3Cr	R56410	Ti-10V-2Fe-3Al
H	Hardened steel	H.1.1		Hardened and tempered	46–55 HRC				
		H.1.2		Hardened and tempered	56–60 HRC				
		H.1.3		Hardened and tempered	61–65 HRC				
		H.1.4		Hardened and tempered	66–70 HRC				
	Chilled iron	H.2.1		Cast	400 HB				
	Hardened cast iron	H.3.1		Hardened and tempered	55 HRC				
O	Non-metal materials	O.1.1	Plastics, duroplastic		≤ 150 N/mm²				
		O.1.2	Plastics, thermoplastic		≤ 100 N/mm²				
		O.2.1	Aramid fibre-reinforced		≤ 1000 N/mm²				
		O.2.2	Glass/carbon-fibre reinforced		≤ 1000 N/mm²				
		O.3.1	Graphite						

*** Tensile strength**

Cutting data standard values for EcoCut

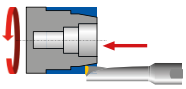
		DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN			DRAGONSKIN
	EcoCut Mini CTWN425	EcoCut Mini CTPP435	EcoCut Classic CTCP425	EcoCut Classic CTCP435	EcoCut Classic CTPP430	EcoCut Classic H210T	EcoCut Classic H216T	EcoCut ProfileMaster CTPP430
Index	v_c in m/min							
P.1.1		**146**	**227**	**208**	**182**			**168**
P.1.2		**125**	**197**	**179**	**156**			**141**
P.1.3		**106**	**169**	**151**	**132**			**115**
P.1.4		**100**	**160**	**142**	**124**			**106**
P.1.5		**90**	**146**	**128**	**112**			**94**
P.2.1		**128**	**202**	**183**	**160**			**145**
P.2.2		**98**	**158**	**140**	**122**			**104**
P.2.3		**90**	**146**	**128**	**112**			**94**
P.2.4		**67**	**112**	**94**	**82**			**61**
P.3.1		**104**	**156**	**143**	**116**			**112**
P.3.2		**67**	**113**	**98**	**86**			**76**
P.3.3		**31**	**70**	**53**	**56**			**39**
P.4.1		**104**	**156**	**143**	**116**			**112**
P.4.2		**86**	**134**	**120**	**101**			**94**
M.1.1		**104**	156	143	**116**			**112**
M.2.1		**67**			**86**			**76**
M.3.1		**93**			**107**			**102**
K.1.1	140	140	205	185	160	110	**170**	180
K.1.2	115	120	205	185	140	90	**130**	260
K.2.1	150	140	200	180	160	120	**180**	160
K.2.2	110	120	200	180	140	85	**130**	250
K.3.1	170	150	195	175	125	140	**190**	130
K.3.2	140	125	195	175	110	110	**160**	230
N.1.1	**300**	40			40	**40**	**60**	300
N.1.2	**50**	290			290	**290**	**310**	200
N.2.1	**300**	290			290	**290**	**60**	300
N.2.2	**300**	190			190	**190**	**460**	200
N.2.3	**450**	340			340	**340**	**60**	150
N.3.1	**350**	240			240	**240**	**460**	300
N.3.2	**350**	240			240	**240**	**460**	300
N.3.3	**250**	190			190	**190**	**360**	200
N.4.1	**200**	140			140	**140**	**260**	200
S.1.1	38	**35**		35	55	**33**	43	**35**
S.1.2	28	**30**		30	55	**25**	33	**30**
S.2.1	28	**18**		18	55	**25**	33	**20**
S.2.2	24	**15**		15	55	**20**	25	**15**
S.2.3	20	**15**		15	55	**20**	20	**15**
S.3.1	90	**85**		85	70	**65**	110	**85**
S.3.2	55	**40**		40	60	**43**	70	**40**
S.3.3	40	**30**		30	40	**30**	50	**30**
H.1.1								
H.1.2								
H.1.3								
H.1.4								
H.2.1								
H.3.1								
O.1.1	130	110			110	110	155	130
O.1.2								
O.2.1	105	95			95	95	140	105
O.2.2								
O.3.1								

The cutting data is strongly influenced by external conditions, such as the stability of the tool and workpiece clamping, material and type of machine. The specified values represent guideline cutting data that can be adjusted by approx. **±20%** according to the usage conditions.

Depth of Cut and Feedrate for EcoCut Mini

Turning

2.25xD

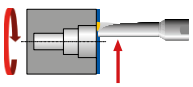


EcoCut Mini Size	Depth of Cut a_p in mm									
	0,25	0,5	0,75	1,0	1,5	2,0	2,5	3,0	3,5	4,0
	Feed rate f in mm/rev.									
ECM 02..	0,02–0,07	0,02–0,07								
ECM 02,5..	0,02–0,07	0,02–0,07	0,02–0,05							
ECM 03..	0,02–0,07	0,02–0,07	0,02–0,05	0,02–0,05						
ECM 03,5..	0,02–0,07	0,02–0,07	0,02–0,05	0,02–0,05	0,02–0,05					
ECM 04..	0,04–0,1	0,04–0,1	0,04–0,1	0,04–0,1	0,03–0,07	0,01–0,05				
ECM 05..	0,04–0,1	0,04–0,1	0,04–0,1	0,04–0,1	0,03–0,08	0,02–0,06	0,01–0,04			
ECM 06..	0,04–0,1	0,04–0,1	0,04–0,1	0,04–0,1	0,04–0,1	0,03–0,08	0,02–0,06	0,01–0,04		
ECM 07..	0,04–0,1	0,04–0,1	0,04–0,1	0,04–0,1	0,04–0,1	0,04–0,1	0,03–0,08	0,02–0,06	0,01–0,04	
ECM 08..	0,04–0,1	0,04–0,1	0,04–0,1	0,04–0,1	0,04–0,1	0,04–0,1	0,04–0,1	0,03–0,08	0,02–0,06	0,01–0,04

4xD

EcoCut Mini Size	Depth of Cut a_p in mm									
	0,25	0,5	0,75	1,0	1,5	2,0	2,5	3,0	3,5	4,0
	Feed rate f in mm/rev.									
ECM 02..	0,02–0,05	0,01–0,05								
ECM 02,5..	0,02–0,05	0,01–0,05								
ECM 03..	0,02–0,05	0,02–0,05	0,01–0,05							
ECM 03,5..	0,02–0,05	0,02–0,05	0,02–0,05	0,01–0,05						
ECM 04..	0,04–0,1	0,04–0,1	0,04–0,1	0,03–0,08	0,01–0,05					
ECM 05..	0,04–0,1	0,04–0,1	0,04–0,1	0,03–0,085	0,02–0,06	0,01–0,04				
ECM 06..	0,04–0,1	0,04–0,1	0,04–0,1	0,03–0,085	0,02–0,06	0,01–0,04				
ECM 07..	0,04–0,1	0,04–0,1	0,04–0,1	0,04–0,1	0,03–0,08	0,02–0,06	0,01–0,04			
ECM 08..	0,04–0,1	0,04–0,1	0,04–0,1	0,04–0,1	0,04–0,095	0,03–0,08	0,02–0,06	0,01–0,04		

Face turning

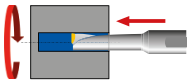


EcoCut Mini Size	2,25xD		4xD	
	$a_{p\,max.}$ in mm	f in mm/rev.	$a_{p\,max.}$ in mm	f in mm/rev.
ECM 02..	0,30	0,01–0,05	0,30	0,01–0,03
ECM 02,5..	0,30	0,01–0,05	0,30	0,01–0,03
ECM 03..	0,50	0,01–0,06	0,50	0,01–0,04
ECM 03,5..	0,50	0,01–0,06	0,50	0,01–0,04
ECM 04..	0,70	0,03–0,07	0,70	0,02–0,05
ECM 05..	0,70	0,03–0,07	0,70	0,02–0,05
ECM 06..	0,70	0,03–0,07	0,70	0,02–0,05
ECM 07..	1,00	0,04–0,08	1,00	0,03–0,06
ECM 08..	1,00	0,04–0,08	1,00	0,03–0,06

Depth of Cut and Feedrate for EcoCut Mini

Drilling

Feed rate



EcoCut Mini Size	2,25xD	4xD
	f in mm/rev.	f in mm/rev.
ECM 02..	0,0025–0,0075	0,0025–0,005
ECM 02,5..	0,0025–0,010	0,0025–0,005
ECM 03..	0,0025–0,0125	0,0025–0,010
ECM 03,5..	0,0025–0,0150	0,0025–0,010
ECM 04..	0,005–0,030	0,005–0,0125
ECM 05..	0,005–0,030	0,005–0,015
ECM 06..	0,005–0,030	0,005–0,020
ECM 07..	0,005–0,035	0,005–0,025
ECM 08..	0,005–0,040	0,005–0,030

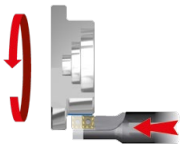
max. bore depth

EcoCut Mini Size	2,25xD	4xD
	Max. hole depth in mm	Max. hole depth in mm
ECM 02..	4,50	8,0
ECM 02,5..	5,63	10,0
ECM 03..	6,75	12,0
ECM 03,5..	7,88	14,0
ECM 04..	9,0	16,0
ECM 05..	11,25	20,0
ECM 06..	13,5	24,0
ECM 07..	15,75	28,0
ECM 08..	18,0	32,0

Depth of Cut and Feedrate for EcoCut Classic

Turning

1.5xD



EcoCut Classic Size	Depth of Cut a_p in mm											
	1	2	3	4	5	6	7	8	9	10	12	14
	Feed rate f in mm/rev.											
ECC 08	0,06–0,12	0,06–0,12	0,04–0,10	0,02–0,08								
ECC 10	0,07–0,15	0,07–0,15	0,05–0,13	0,04–0,11	0,02–0,09							
ECC 12	0,08–0,16	0,08–0,16	0,08–0,16	0,06–0,14	0,04–0,12	0,02–0,10						
ECC 14	0,09–0,18	0,09–0,18	0,09–0,18	0,09–0,18	0,07–0,16	0,05–0,14	0,02–0,11					
ECC 16	0,10–0,20	0,10–0,20	0,10–0,20	0,10–0,20	0,08–0,18	0,06–0,16	0,04–0,14	0,02–0,12				
ECC 18	0,11–0,22	0,11–0,22	0,11–0,22	0,11–0,22	0,11–0,22	0,09–0,20	0,07–0,18	0,05–0,16	0,03–0,13			
ECC 20	0,12–0,24	0,12–0,24	0,12–0,24	0,12–0,24	0,12–0,24	0,11–0,23	0,09–0,21	0,07–0,19	0,05–0,17	0,03–0,15		
ECC 25	0,13–0,26	0,13–0,26	0,13–0,26	0,13–0,26	0,13–0,26	0,13–0,26	0,13–0,26	0,11–0,24	0,09–0,22	0,07–0,20	0,03–0,16	
ECC 32	0,15–0,30	0,15–0,30	0,15–0,30	0,15–0,30	0,15–0,30	0,14–0,30	0,15–0,30	0,15–0,30	0,13–0,28	0,11–0,26	0,07–0,22	0,03–0,18

Feed f may be increased by 50–75 % when using -M50Q and -27Q.

2.25xD

EcoCut Classic Size	Depth of Cut a_p in mm										
	1,0	2,0	2,5	3,0	3,5	4,0	4,5	5,0	5,5	6,0	7,0
	Feed rate f in mm/rev.										
ECC 08	0,06–0,12	0,04–0,10	0,02–0,08								
ECC 10	0,07–0,15	0,05–0,13	0,03–0,11	0,02–0,09							
ECC 12	0,08–0,16	0,08–0,16	0,06–0,14	0,04–0,12	0,02–0,10						
ECC 14	0,09–0,18	0,09–0,18	0,07–0,16	0,05–0,14	0,04–0,13	0,02–0,11					
ECC 16	0,10–0,20	0,10–0,20	0,09–0,19	0,07–0,17	0,05–0,15	0,03–0,13					
ECC 18	0,11–0,22	0,11–0,22	0,11–0,22	0,09–0,20	0,07–0,18	0,05–0,16	0,03–0,14				
ECC 20	0,12–0,24	0,12–0,24	0,12–0,24	0,12–0,24	0,10–0,22	0,08–0,20	0,06–0,18	0,04–0,16			
ECC 25	0,13–0,26	0,13–0,26	0,13–0,26	0,13–0,26	0,13–0,26	0,12–0,25	0,10–0,23	0,08–0,21	0,06–0,19	0,04–0,17	
ECC 32	0,15–0,30	0,15–0,30	0,15–0,30	0,15–0,30	0,15–0,30	0,15–0,30	0,14–0,29	0,12–0,27	0,10–0,25	0,08–0,23	0,05–0,20

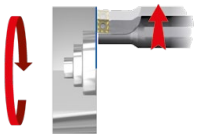
Feed f may be increased by 50–75 % when using -M50Q and -27Q.

3xD

EcoCut Classic Size	Depth of Cut a_p in mm								
	1,0	2,0	2,5	3,0	3,5	4,0	5,0	6,0	7,0
	Feed rate f in mm/rev.								
ECC 08	0,05–0,10	0,02–0,06							
ECC 10	0,06–0,11	0,03–0,07							
ECC 12	0,06–0,12	0,04–0,10	0,02–0,08						
ECC 14	0,07–0,13	0,05–0,11	0,02–0,09						
ECC 16	0,07–0,15	0,06–0,14	0,04–0,12	0,02–0,09					
ECC 18	0,08–0,16	0,08–0,16	0,06–0,14	0,04–0,12					
ECC 20	0,09–0,18	0,09–0,18	0,09–0,18	0,07–0,16	0,05–0,14	0,03–0,12			
ECC 25	0,10–0,19	0,10–0,19	0,10–0,19	0,08–0,17	0,06–0,15	0,03–0,13			
ECC 32	0,11–0,22	0,11–0,22	0,11–0,22	0,11–0,22	0,09–0,20	0,07–0,18	0,03–0,14		

Depth of Cut and Feedrate for EcoCut Classic

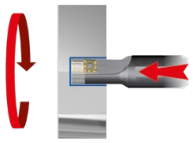
Face turning



EcoCut Classic Size	1,5xD		2,25xD		3xD	
	a_p in mm	f in mm/rev.	a_p in mm	f in mm/rev.	a_p in mm	f in mm/rev.
ECC 08	2,00	0,05–0,10	1,90	0,04–0,09	1,10	0,04–0,07
ECC 10	2,50	0,06–0,12	2,20	0,05–0,10	1,20	0,04–0,09
ECC 12	3,00	0,07–0,14	2,60	0,06–0,12	1,40	0,05–0,11
ECC 14	3,50	0,08–0,16	3,00	0,07–0,14	1,60	0,06–0,12
ECC 16	4,00	0,09–0,18	3,40	0,08–0,16	1,90	0,06–0,13
ECC 18	4,50	0,10–0,20	3,80	0,09–0,18	2,00	0,07–0,14
ECC 20	5,00	0,11–0,22	4,20	0,10–0,20	2,20	0,08–0,15
ECC 25	6,00	0,12–0,24	5,00	0,11–0,22	2,60	0,09–0,18
ECC 32	8,00	0,13–0,27	6,00	0,12–0,25	3,00	0,10–0,20

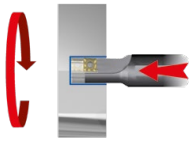
Drilling

Feed rate



EcoCut Classic Size	1,5xD	2,25xD	3xD
	f in mm/rev.	f in mm/rev.	f in mm/rev.
ECC 08	0,01–0,04	0,01–0,04	0,01–0,02
ECC 10	0,01–0,05	0,01–0,05	0,01–0,03
ECC 12	0,01–0,05	0,01–0,05	0,01–0,04
ECC 14	0,01–0,07	0,01–0,07	0,01–0,05
ECC 16	0,02–0,08	0,02–0,08	0,02–0,06
ECC 18	0,03–0,09	0,03–0,09	0,03–0,07
ECC 20	0,03–0,10	0,03–0,10	0,03–0,08
ECC 25	0,03–0,12	0,03–0,12	0,04–0,09
ECC 32	0,05–0,15	0,05–0,15	0,05–0,11

max. bore depth

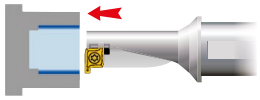


EcoCut Classic Size	1,5xD	2,25xD	3xD
	Max. hole depth in mm	Max. hole depth in mm	Max. hole depth in mm
ECC 08	12,0	18,0	24,0
ECC 10	15,0	22,5	30,0
ECC 12	18,0	27,0	36,0
ECC 14	21,0	31,5	42,0
ECC 16	24,0	36,0	48,0
ECC 18	27,0	40,5	54,0
ECC 20	30,0	45,0	60,0
ECC 25	37,5	56,5	75,0
ECC 32	48,0	72,0	96,0

Depth of Cut and Feedrate for EcoCut ProfileMaster 90°

Turning

1,5xD



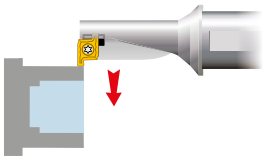
EcoCut ProfileMaster Size	Depth of Cut a_p in mm							
	1	2	3	4	5	6	7	8
	Feed rate f in mm/rev.							
EC PM 10	0,07–0,20	0,05–0,17	0,02–0,12					
EC PM 12	0,07–0,20	0,05–0,17	0,02–0,12					
EC PM 16	0,10–0,25	0,07–0,23	0,05–0,21	0,02–0,17				
EC PM 20	0,12–0,27	0,10–0,26	0,007–0,24	0,05–0,20	0,02–0,14			
EC PM 25	0,15–0,30	0,15–0,30	0,13–0,28	0,10–0,26	0,05–0,22	0,02–0,18		
EC PM 32	0,15–0,30	0,15–0,30	0,15–0,30	0,15–0,30	0,10–0,27	0,07–0,24	0,05–0,21	0,02–0,15

2,25xD

EcoCut ProfileMaster Size	Depth of Cut a_p in mm							
	1	2	3	4	5	6	7	8
	Feed rate f in mm/rev.							
EC PM 10	0,07–0,19	0,02–0,13						
EC PM 12	0,07–0,19	0,02–0,13						
EC PM 16	0,10–0,25	0,07–0,21	0,02–0,13					
EC PM 20	0,12–0,27	0,07–0,24	0,05–0,19					
EC PM 25	0,15–0,30	0,10–0,27	0,07–0,23	0,02–0,15				
EC PM 32	0,15–0,30	0,15–0,30	0,10–0,27	0,07–0,23	0,02–0,15			

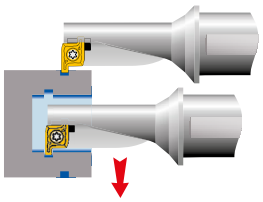
Face turning

1.5xD and 2.25xD



EcoCut ProfileMaster Size	Depth of Cut a_p in mm					
	1,0	1,5	2,0	2,5	3,0	3,5
	Feed rate f in mm/rev.					
EC PM 10	0,02–0,15	0,02–0,15				
EC PM 12	0,02–0,15	0,02–0,15				
EC PM 16	0,05–0,20	0,05–0,20	0,05–0,20			
EC PM 20	0,08–0,22	0,08–0,22	0,08–0,22	0,08–0,22		
EC PM 25	0,10–0,25	0,10–0,25	0,10–0,25	0,10–0,25	0,10–0,25	
EC PM 32	0,10–0,25	0,10–0,25	0,10–0,25	0,10–0,25	0,10–0,25	0,10–0,25

Internal + external – radial grooving

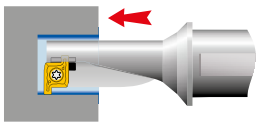


EcoCut ProfileMaster Size	1,5xD
	f in mm/rev.
EC PM 10	0,01–0,08
EC PM 12	0,02–0,10
EC PM 16	0,04–0,15
EC PM 20	0,04–0,16
EC PM 25	0,07–0,20
EC PM 32	0,08–0,22

EcoCut ProfileMaster Size	2,25xD
	f in mm/rev.
EC PM 10	0,01–0,08
EC PM 12	0,02–0,10
EC PM 16	0,04–0,15
EC PM 20	0,04–0,16
EC PM 25	0,07–0,20
EC PM 32	0,08–0,22

Drilling

Feed and max. hole depth



EcoCut ProfileMaster Size	1,5xD	
	f in mm/rev.	Max. hole depth in mm
EC PM 10	0,01–0,05	15,0
EC PM 12	0,01–0,06	18,0
EC PM 16	0,02–0,09	24,0
EC PM 20	0,03–0,10	30,0
EC PM 25	0,04–0,12	37,5
EC PM 32	0,04–0,14	48,0

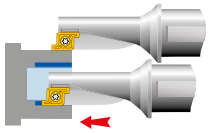
EcoCut ProfileMaster Size	2,25xD	
	f in mm/rev.	Max. hole depth in mm
EC PM 10	0,01–0,05	22,5
EC PM 12	0,01–0,06	27,0
EC PM 16	0,02–0,09	36,0
EC PM 20	0,03–0,10	45,0
EC PM 25	0,04–0,12	56,3
EC PM 32	0,04–0,14	72,0

Depth of Cut and Feedrate for EcoCut ProfileMaster 0°

EcoCut ProfileMaster Sizes 10 and 12 can not be used as 0 ° version.

Turning

1,5xD



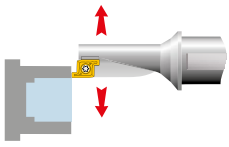
EcoCut ProfileMaster Size	Depth of cut a_p in mm					
	1,0	1,5	2,0	2,5	3,0	3,5
	Feed rate f in mm/rev.					
EC PM 16	0,04–0,20	0,04–0,20	0,04–0,20			
EC PM 20	0,06–0,22	0,06–0,22	0,06–0,22	0,06–0,22		
EC PM 25	0,08–0,25	0,08–0,25	0,08–0,25	0,08–0,25	0,08–0,25	
EC PM 32	0,10–0,28	0,10–0,28	0,10–0,28	0,10–0,28	0,10–0,28	0,10–0,28

2,25xD

EcoCut ProfileMaster Size	Depth of cut a_p in mm					
	1,0	1,5	2,0	2,5	3,0	3,5
	Feed rate f in mm/rev.					
EC PM 16	0,04–0,20	0,04–0,20	0,04–0,20			
EC PM 20	0,06–0,22	0,06–0,22	0,06–0,22	0,06–0,22		
EC PM 25	0,08–0,25	0,08–0,25	0,08–0,25	0,08–0,25	0,08–0,25	
EC PM 32	0,10–0,28	0,10–0,28	0,10–0,28	0,10–0,28	0,10–0,28	0,10–0,28

Face turning

1,5xD

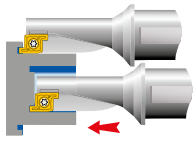


EcoCut ProfileMaster Size	Depth of cut a_p in mm						
	1,0	1,5	2,0	2,5	3,0	3,5	4,0
	Feed rate f in mm/rev.						
EC PM 16	0,05–0,20	0,05–0,20	0,05–0,20				
EC PM 20	0,05–0,20	0,05–0,20	0,05–0,20	0,05–0,20			
EC PM 25	0,10–0,25	0,10–0,25	0,10–0,25	0,10–0,25	0,10–0,25		
EC PM 32	0,10–0,25	0,10–0,25	0,10–0,25	0,10–0,25	0,10–0,25	0,10–0,25	0,10–0,25

2,25xD

EcoCut ProfileMaster Size	Depth of cut a_p in mm						
	1,0	1,5	2,0	2,5	3,0	3,5	4,0
	Feed rate f in mm/rev.						
EC PM 16	0,05–0,20	0,05–0,20	0,05–0,20				
EC PM 20	0,05–0,20	0,05–0,20	0,05–0,20	0,05–0,20			
EC PM 25	0,10–0,25	0,10–0,25	0,10–0,25	0,10–0,25	0,10–0,25		
EC PM 32	0,10–0,25	0,10–0,25	0,10–0,25	0,10–0,25	0,10–0,25	0,10–0,25	0,10–0,25

Axial grooving external + internal

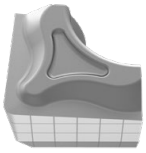
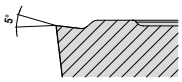
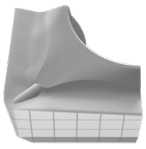
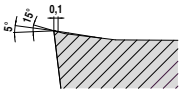
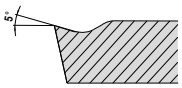
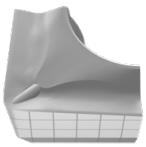
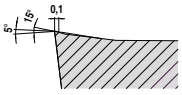


EcoCut ProfileMaster Size	1,5xD
	Feed rate f in mm/rev.
EC PM 16	0,02–0,12
EC PM 20	0,04–0,14
EC PM 25	0,06–0,18
EC PM 32	0,08–0,20

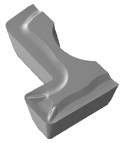
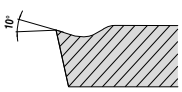
EcoCut ProfileMaster Size	2,25xD
	Feed rate f in mm/rev.
EC PM 16	0,02–0,12
EC PM 20	0,04–0,14
EC PM 25	0,06–0,18
EC PM 32	0,08–0,20

Chip Breakers Overview

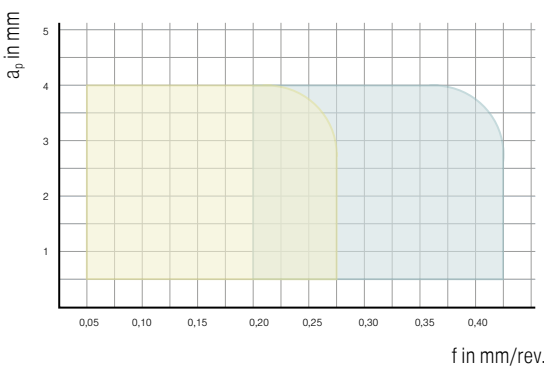
EcoCut Classic

	Model	Smooth cut ○	Irregular cutting depth ◔	Interrupted cut ◌	Sectional illustration f mm
-EN ▲ Universal geometry ▲ Excellent chip breakage ▲ Positive cutting edge ▲ Low to medium feeds		**CTCP425** **CTCP425 / CTPP430** CTCP425 CTPP430 CTCP435 / CTPP430 CTCP435 / CTPP430	**CTCP435 / CTPP430** **CTPP430** CTCP435 / CTPP430 CTPP430 CTCP435 / CTPP430 CTCP435 / CTPP430	**CTPP430 / CTCP435** **CTPP430** CTCP435 CTPP430 CTCP435 CTCP435	 0,05–0,275
-M50Q ▲ With smoothing geometry ▲ Excellent surface qualities ▲ Good chip formation ▲ Medium to high feeds		**CTCP425** CTCP425 CTCP425 	**CTCP425** CTCP425 	 	 0,2–0,425
-27P ▲ Positive cutting edge ▲ Periphery ground ▲ Polished rake face ▲ First choice for non-ferrous metals		 **H216T** **H216T** H216T H216T	 **H216T** **H216T** H216T H216T	 **H216T** **H216T** 	 0,1–0,4
-27Q ▲ With smoothing geometry ▲ Extremely positive geometry ▲ Periphery ground ▲ Low adhesion		 H210T **H210T** **H210T** H210T	 H210T **H210T** **H210T** H210T	 	 0,2–0,5

EcoCut ProfileMaster

	Model	Smooth cut ○	Irregular cutting depth ◔	Interrupted cut ◌	Sectional illustration f mm
-M20 ▲ Positive geometry ▲ Universal application ▲ Low to medium feeds		**CTPP430** **CTPP430** CTPP430 CTPP430 **CTPP430** CTPP430	**CTPP430** **CTPP430** CTPP430 CTPP430 **CTPP430** CTPP430	**CTPP40** **CTPP430** CTPP430 CTPP430 CTPP430	 0,05–0,25

Application area of -EN and -M50Q chip breakers



EcoCut Classic 2.25xD – ECC16 – XCNT 080304

= -M50Q

= Standard

EcoCut Classic – Application as the most stable boring tool

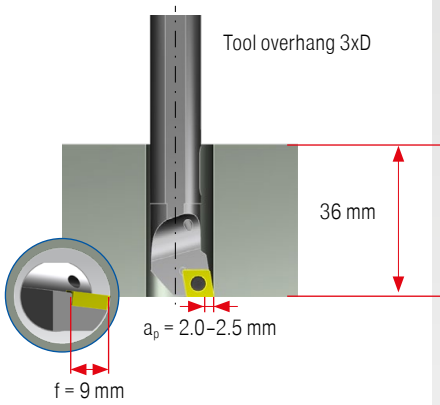
EcoCut can be used not only as a multifunctional tool. In comparison with a boring bar EcoCut used as a pure boring tool gives the user enormous benefits.

Example: machining bores, 16 mm diameter by 36 mm depth

Differences in the tool

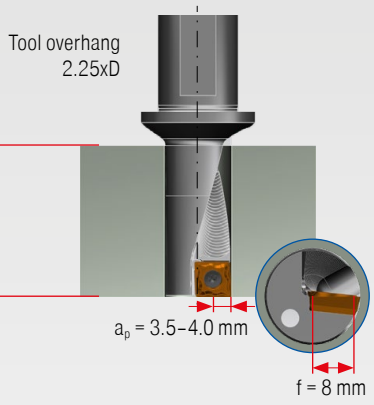
Boring Bar

A12K SCFCR 06



EcoCut Classic

ECC 16R-2.25D 08



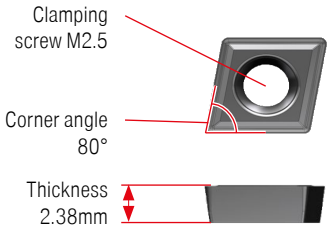
Your Advantages

Large, stable toolholder
- Absorption of high cutting forces
- Low vibration
- Chip Booster for perfect cooling and chip evacuation

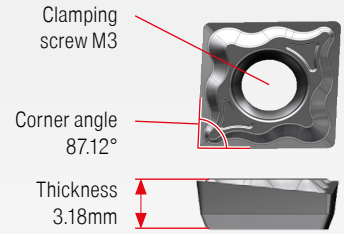
Benefits
- High surface quality
- Perfect chip control
- Max. process security

Differences in the insert

CCMT 060204



XCNT 080304

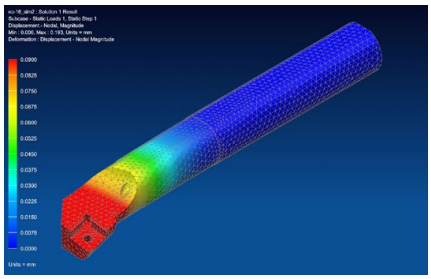


Large and stable insert
- Increased process security
- Enables large depths of cut
- Higher cutting data
- Higher tool life

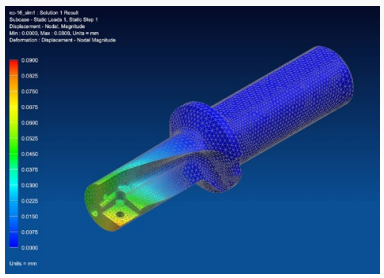
Benefits
- Reduction in machining time
- Increased productivity
- Reduced tooling costs

Stability Comparison

Calculation using FEM
A load of 1000 N on the insert seat corresponds to an approx. a_p of 2.0 mm and f 0.2 mm



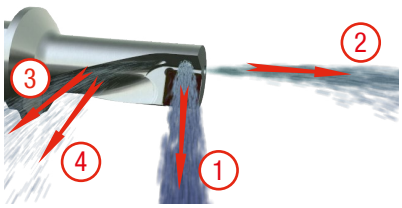
Deflection 0.19mm



Deflection 0.08mm

Practical experience shows:
- Reduced machining time by up to **75 %**
- Increase in tool life by **400 %** possible

Innovative chip removal – Chip-Booster



EcoCut tools are equipped with a unique coolant and chip removal system.

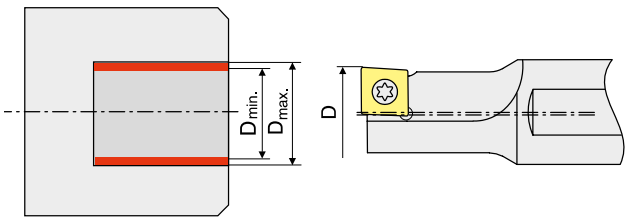
1. Cooling of the indexable insert
2. General coolant stream
3. Chip booster for improved chip transport
4. Chip booster prevents chips from getting stuck between tool and workpiece

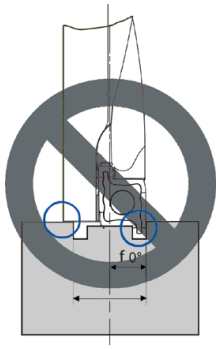
For maximum chip transport efficiency when drilling, coolant pressure must be 3–6 bar minimum (optimal 7–10 bar).

Application Tips

Drilling Off centre

Due to the special construction of the EcoCut tool and insert, off-centre drilling is possible.
Deviations from the tool nominal Ø,can be achieved (see adjacent table).





ProfileMaster 0°
Not suitable for drilling!

EcoCut Mini	Tool nominal-Ø	Work piece bore Ø	
	D in mm	$D_{min.}$ in mm	$D_{max.}$ in mm
ECM 02 L/R – ...D	2	1,95	2,1
ECM 02,5 L/R – ...D	2,5	2,45	2,6
ECM 03 L/R – ...D	3	2,95	3,15
ECM 03,5 L/R – ...D	3,5	3,45	3,65
ECM 04 R/L – ...D	4	3,90	4,20
ECM 05 R/L – ...D	5	4,90	5,20
ECM 06 R/L – ...D	6	5,90	6,20
ECM 07 R/L – ...D	7	6,90	7,20
ECM 08 R/L – ...D	8	7,90	8,20

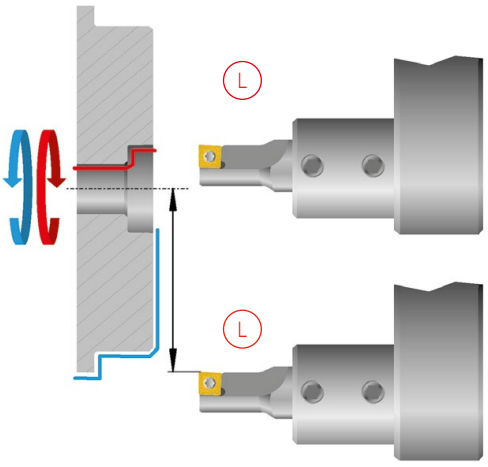
EcoCut Classic	Tool nominal-Ø	Work piece bore Ø	
	D in mm	$D_{min.}$ in mm	$D_{max.}$ in mm
ECC 08 R/L – ... 04	8	7,85	8,30
ECC 10 R/L – ... 05	10	9,85	10,50
ECC 12 R/L – ... 06	12	11,85	12,50
ECC 14 R/L – ... 07	14	13,85	14,50
ECC 16 R/L – ... 08	16	15,85	16,50
ECC 18 R/L – ... 09	18	17,85	18,50
ECC 20 R/L – ... 10	20	19,80	20,50
ECC 25 R/L – ... 13	25	24,80	25,80
ECC 32 R/L – ... 17	32	31,80	33,00

EcoCut ProfileMaster	Tool nominal-Ø	Work piece bore Ø	
	D in mm	$D_{min.}$ in mm	$D_{max.}$ in mm
PM 10R/L ...	10	9,85	12
PM 12R/L ...	12	11,85	15
PM 16R/L ...	16	15,85	19
PM 20R/L ...	20	19,80	24
PM 25R/L ...	25	24,80	29
PM 32R/L ...	32	31,80	38

Machining over centre

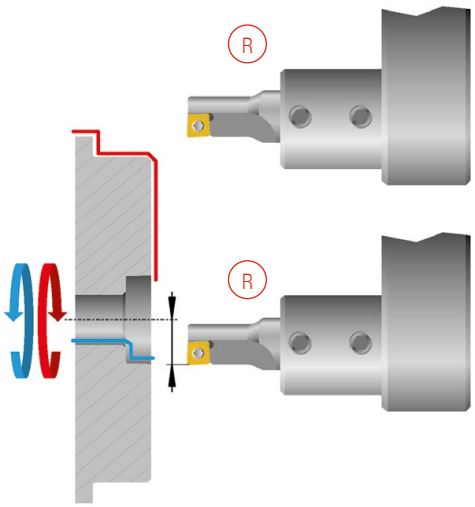
Problem

In case of insufficient movement of the machine across the centre line, the external diameter can not be machined with the same tool.



Solution

Use a right hand EcoCut tool.

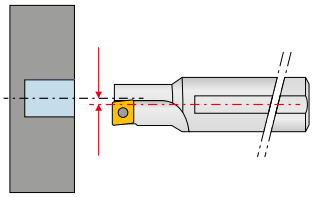


Application Tips

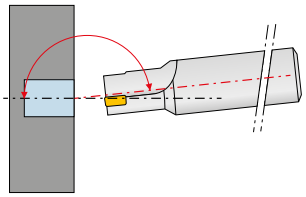
With axial displacement there is the danger of collision!

Problems

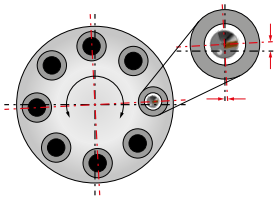
Displacement in x-direction:



Angular error:



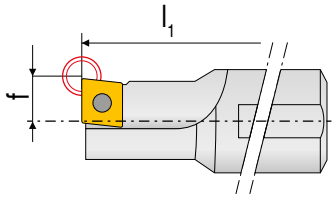
Turret position error:



Remedy

When pre-setting the tool:

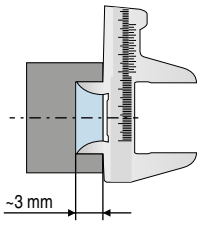
- Definition as an internal turning tool for programming



- Enter the tool nominal Ø as bore target Ø

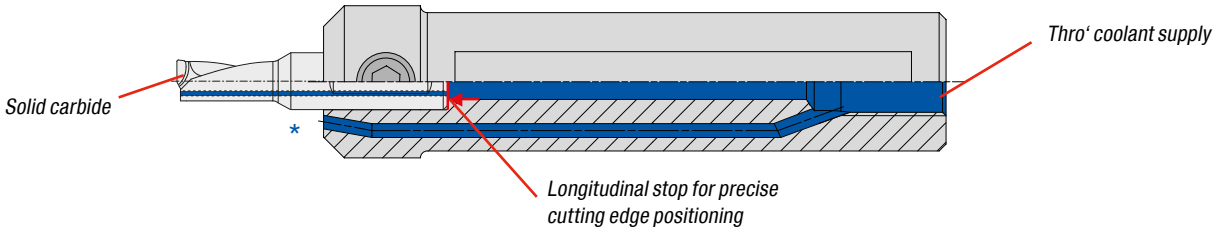
At the machine:

- Make measuring cut, approx. 3 mm deep
- Measure drilled diameter produced



- If necessary correct drilling Ø
- Start machining

EcoCut Mini adapter – Design



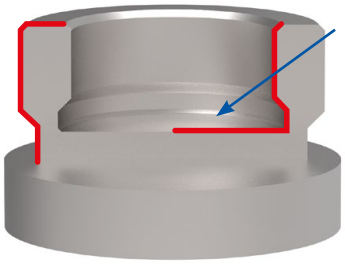
* Cross-section rotated by 90° for clarity

Mounting of the insert for EcoCut Classic

For tools up to Ø 8 mm right and left handed inserts are required. From Ø 10-32 mm neutral inserts are used.

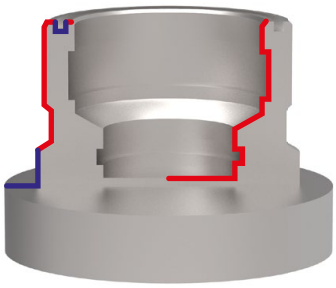
Note!
Ensure correct installation position.

EcoCut ProfileMaster – the highlight with regard to efficiency



Right hand tool

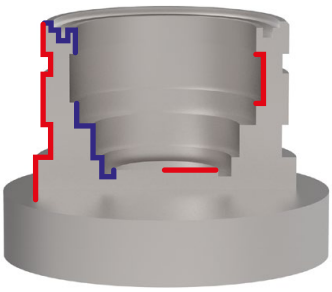
right hand insert



Right hand tool

left hand insert

right hand insert

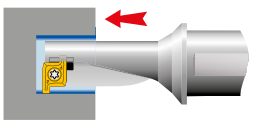


Left hand tool

Right hand tool

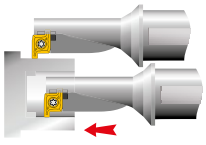
right hand insert

Version 90°



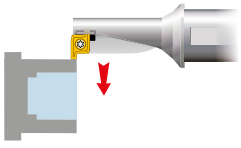
Drilling into solid material with flat bottom hole

Boring

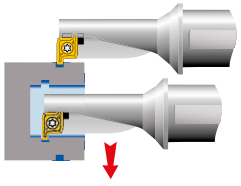


Turning External Diameters

Turning Internal Diameters



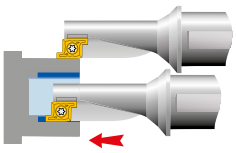
Turning Profiles



External radial grooving

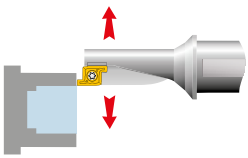
Internal radial grooving

Version 0°

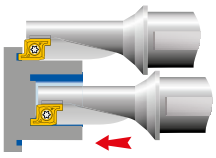


Turning External Diameters

Turning Internal Diameters



Turning Profiles



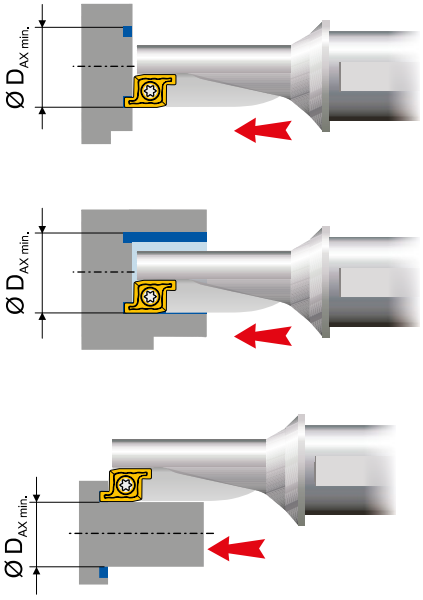
Axial grooving external

Axial grooving internal

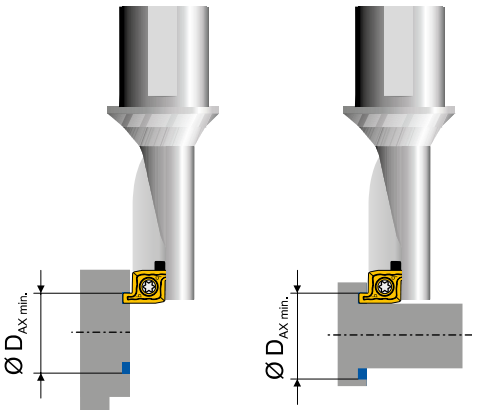
For maximum chip transport efficiency when drilling, coolant pressure must be 3 – 6 bar minimum (optimal 7 – 10 bar).

EcoCut ProfileMaster – Axial Grooving

0° (from Ø 16 mm)

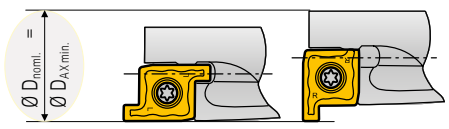


90°



EcoCut ProfileMaster	Ø $D_{noml.}$ mm	Ø $D_{AX\ min.}$ mm	Ø $D_{AX\ max.}$ mm
PM 10R/L 1,5D	10	10	> 10
PM 10R/L 2,25D	10	10	> 10
PM 12R/L 1,5D	12	12	> 12
PM 12R/L 2,25D	12	12	> 12
PM 16R/L 1,5D	16	16	> 16
PM 16R/L 2,25D	16	16	> 16
PM 20R/L 1,5D	20	20	> 20
PM 20R/L 2,25D	20	20	> 20
PM 25R/L 1,5D	25	25	> 25
PM 25R/L 2,25D	25	25	> 25
PM 32R/L 1,5D	32	32	> 32
PM 32R/L 2,25D	32	32	> 32

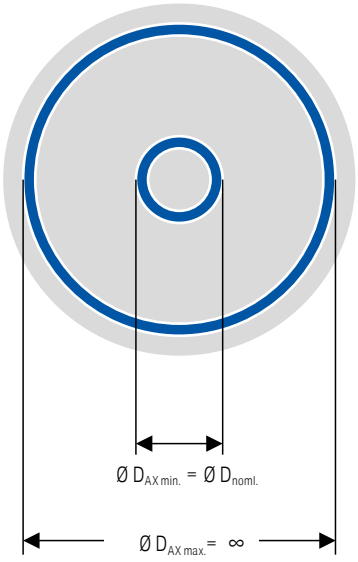
Ø $D_{AX\ min.}$ = Ø $D_{noml.}$



Ø $D_{noml.}$ = Nominal tool diameter

Ø $D_{AX\ min.}$ = smallest diameter for axial grooving

Ø $D_{AX\ max.}$ = largest diameter for axial grooving



Application Tips

Recommendation for Optimum Results

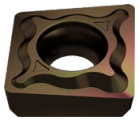
Type of problem										
Type of wear				Work piece problems		Swarf control				
Edge breakage	Built-up edge	Wear on clearance face	Plastic deformation	Vibration	Surface quality	Chip too long (snarl chip)	Chip too short (fragmented chip)	Remedy measures		
	↑	↓	↓	↓	↑	↓		Cutting data	Cutting speed	
↓		~	↓	↑	↓	↑	↓		Feed rate	
↑		↑	↑	↓	↑			Insert selection	Corner radius	larger ↑ ↓ smaller
↓		↑	↑						Tool Material	Wear resistance ↑ ↓ toughness
~				~	~			General criteria	Tool clamping	
~				~	~				Work piece clamping	
~				~	↓				Overhang	
~		~		~	~				Tip height	
	●	●	●		●	●			Cooling lubricant	

↑ raise, increase large influence
↑ raise, increase small influence
↓ avoid, reduce large influence
↓ avoid, reduce small influence
~ control, optimize
● use

Designation System

EcoCut – indexable insert designation

X	C	E	T		17	05	08	F	N	-	27P
1	2	3	4		5	6	7	8	9		10



1 Insert shape
2 Clearance angle
3 Tolerances
4 Characteristics
5 Cutting length
6 Insert thickness
7 Corner radius
8 Cutting edge
9 Direction of cut
10 Chip groove

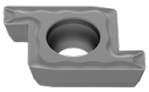
EcoCut – holder designation

ECC	32	R	-	3.0D	17	H
1	2	3		4	5	6

1 System
2 Nominal diameter in mm
3 Direction of cut
4 maximum hole depth
5 insert size
6 Tool holder version in Densimet

EcoCut ProfileMaster – indexable insert designation

PM	25	R	G	35	30	04	-	M20
1	2	3	4	5	6	7		8



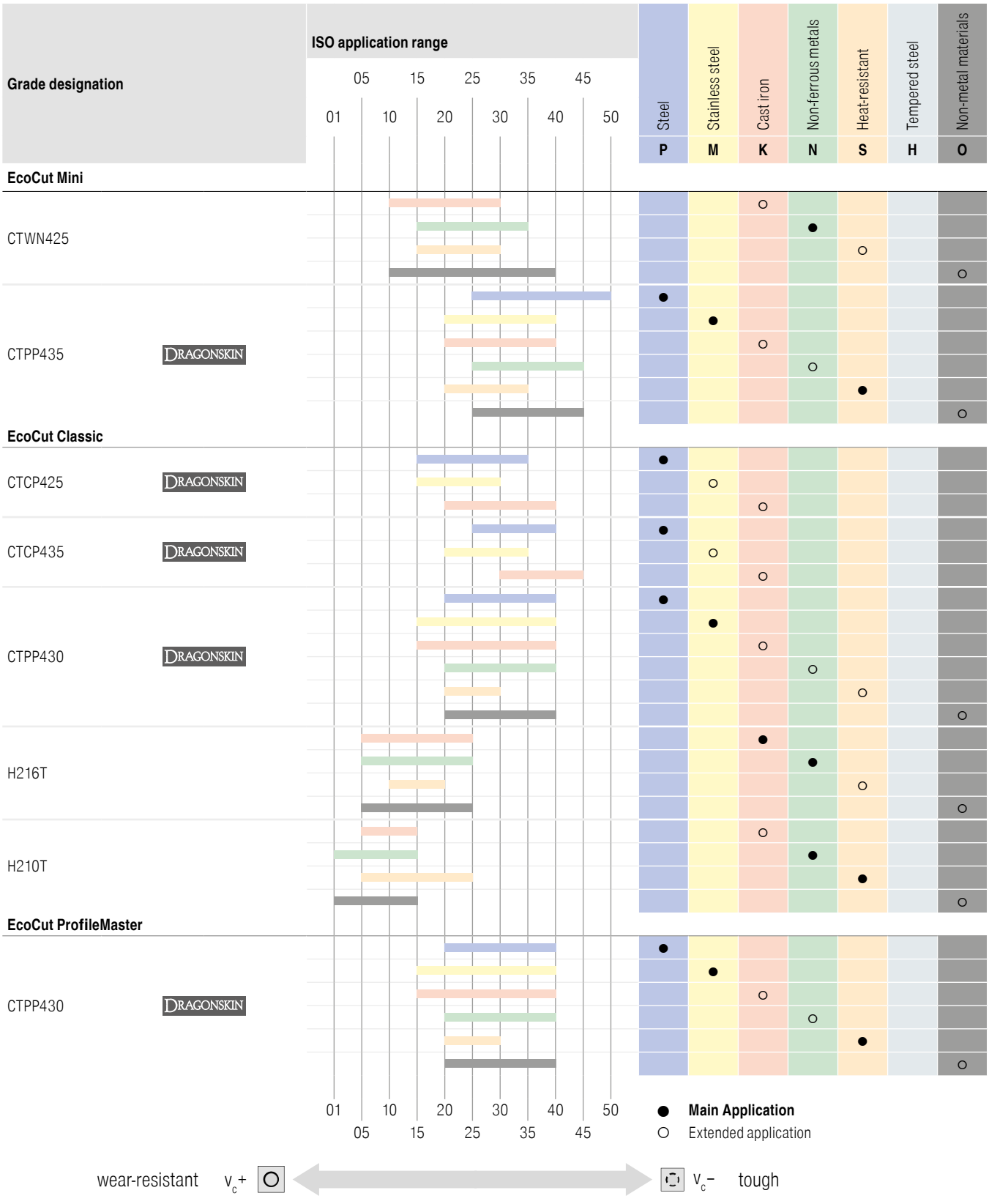
1 ProfileMaster
2 Nominal diameter in mm
3 Direction of cut
4 Version
5 Groove width in mm/10
6 Groove depth in mm/10
7 Corner radius
8 Chip groove

EcoCut ProfileMaster – holder designation

PMC	25	R	-	2.25D
1	2	3		4

1 ProfileMaster
2 Nominal diameter in mm
3 Direction of cut
4 maximum hole depth

Application



Grades Overview

EcoCut Classic

CTCP425 DRAGONSKIN
- Carbide, Ti+Al_2O_3-coated
- ISO | **P25** | K30 | M20
- The wear-resistant choice for steel and cast iron materials under stable conditions and at high cutting speeds

CTCP435 DRAGONSKIN
- Carbide, Ti+Al_2O_3-coated
- ISO | **P35** | M30 | K40
- The reliable choice for steel and cast iron materials under unstable conditions

CTPP430 DRAGONSKIN
- Carbide. TiAlN-coated
- ISO | **P30** | **M25** | K30 | N25 | S25 | O25
- The universal high-performance grade for steel, austenitic steel and heat-resistant alloys

H210T
- Carbide, uncoated
- ISO | K10 | **N10** | **S10** | O10
- The wear-resistant carbide grade for machining aluminium and other non-ferrous metals

H216T
- Carbide, uncoated
- ISO | **K15** | **N15** | S15 | O15
- The uncoated carbide grade for machining aluminium and other non-ferrous metals
- Also highly suitable for HSC machining

EcoCut Mini

CTPP435 DRAGONSKIN
- Carbide, TiAlN-coated
- ISO | **P35** | **M30** | K30 | N30 | **S30** | O30
- The universal high-performance grade for steel, austenitic steel and heat-resistant alloys

CTWN425
- Carbide, uncoated
- ISO | K20 | **N25** | S25 | O25
- The uncoated carbide grade for machining aluminium and other non-ferrous metals

EcoCut ProfileMaster

CTPP430 DRAGONSKIN
- Carbide. TiAlN-coated
- ISO | **P30** | **M25** | K30 | N25 | **S25** | O25
- The universal high-performance grade for steel, austenitic steel and heat-resistant alloys

Table of contents

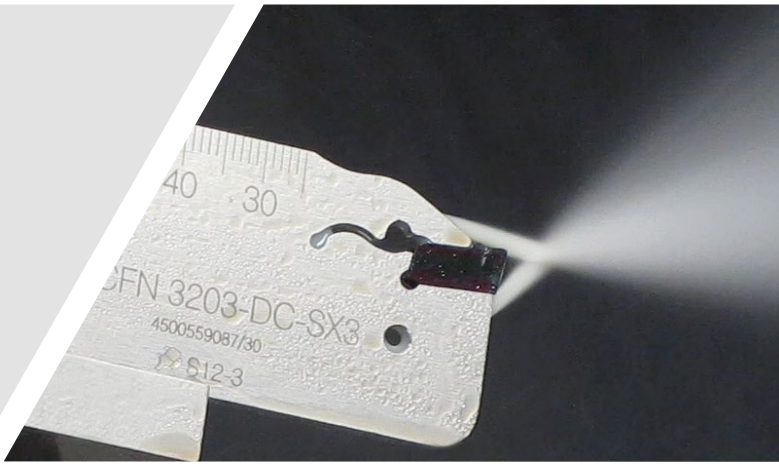
CERATIZIT \ Performance

Premium quality tools for high performance.

The premium quality tools from the **CERATIZIT Performance** product line have been designed for specific applications and are distinguished by their outstanding performance. If you make high demands on the performance of your production and want to achieve the very best results, we recommend the Premium tools in this product line.

Advantages of the DirectCooling blade

- The best machining results, even with reduced pump output
  Highest flow volume of all thro' coolant blades on the market
- User friendly
  Reinforced blades without sealing screw
- Process-secure spare part for easy handling and a long service life
  Single-piece sealing screw made from steel (for standard blades)



Symbol explanation


Grooving


Turning


Face turning


Axial grooving

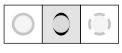

Main Application


Extended application


Repeatability

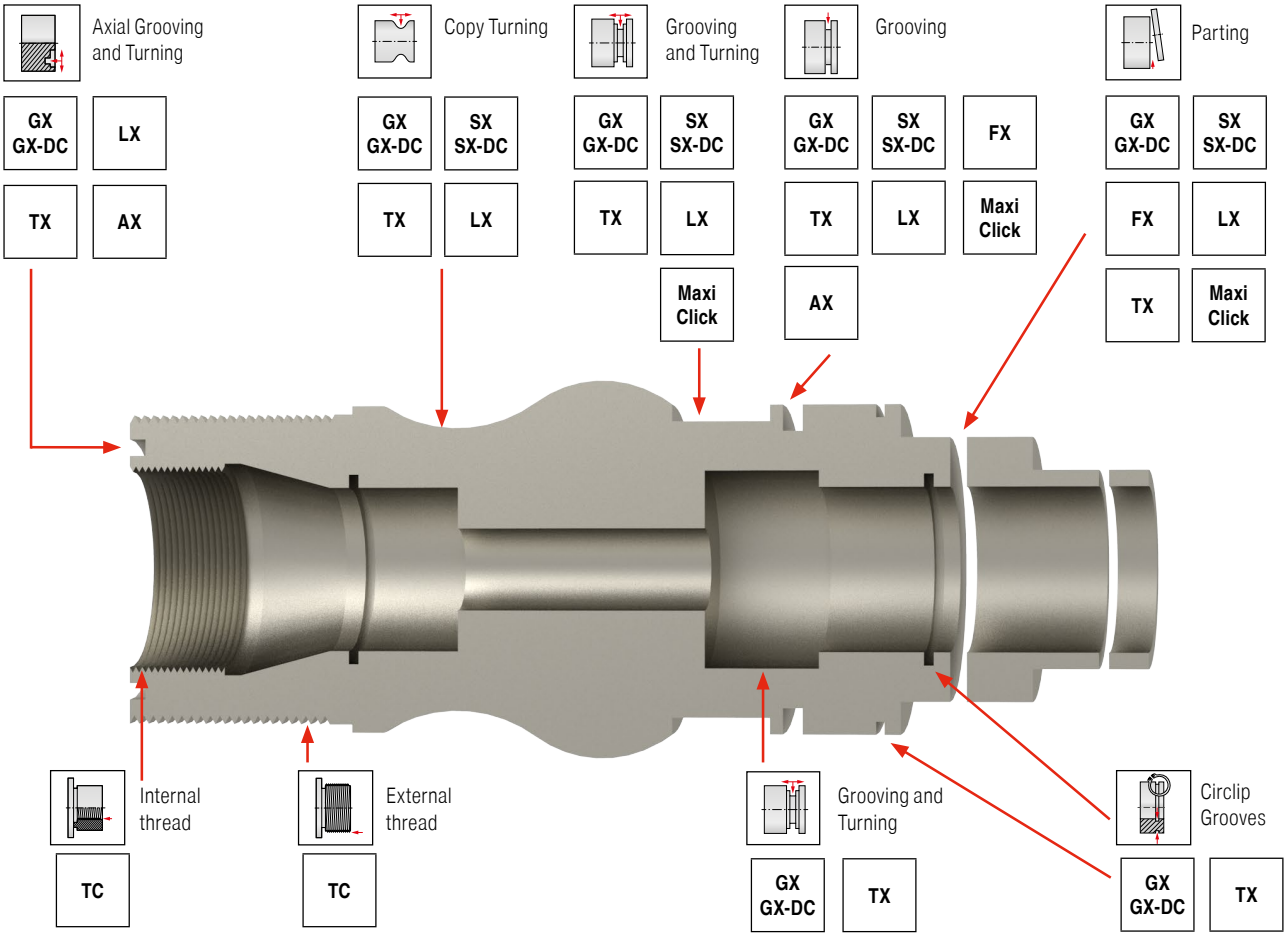
F	M	R
		

F: Fine Machining
M: Medium Machining
R: Rough Machining


Smooth cut
Irregular cutting depth
Interrupted cut

CTCP325 Carbide Grade

Toolfinder – System Overview

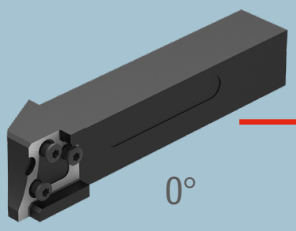


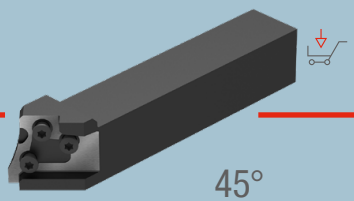
System Description

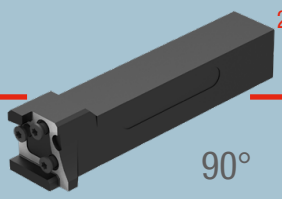
		Page No.
SX	The single edged SX grooving system is even more versatile with the -M3 chip breaker. Besides grooving / parting with the -F2, -M2, or -27P chip breakers, the SX -M3 type also allows copying turning operations with the highest chip control. With this additional option, the SX grooving system can cover all areas of grooving making it a universal grooving tool. Available as a Modular or Mono system.	210–216
SX-DC	Our tried-and-tested single-edged SX grooving system is now available with targeted DirectCooling (DC) thro' coolant supply. The coolant is guided through two coolant holes – one above and one below the grooving insert – straight to the point where it will be most effective: the cutting edge itself.	215
FX	A single-edged grooving system with a variety of specialized chip geometries. From fine machining in unstable parts through to high-performance machining under stable conditions. Available as a Modular or Mono system.	217–222
GX	Double edged grooving system for grooving, parting off, turning and for producing circlip grooves. Available in sizes GX09, GX16 and GX24. Available as a Modular or Mono system.	223–243
GX-DC	Our tried-and-tested two-edged GX grooving system is now available with targeted DirectCooling (DC) thro' coolant supply. The coolant is guided through two coolant holes – one above and one below the grooving insert – straight to the point where it will be most effective: the cutting edge itself.	233+244
TX	Three-edged system for parting, grooving, axial grooving, radial grooving, and fine turning. Positive ground cutting geometries, with a very soft cut with minimum cutting forces. Universally applicable for almost all materials. Available as a Monosystem.	
LX	Single edged system for extreme applications starting from a cutting width of 8.0 mm. The LX system is for use in stable conditions. Available as a Modular or Mono system	
AX	Double-edged Axial grooving system for grooving and groove turning with high precision. Due to the three different depths (5 mm, 10 mm and 15 mm) stable tools are available for each application.	
TC	Double-edged thread turning system for the production of external and internal threads. Advantage is the use without pitch angle correction and in narrow or difficult areas of application. Available as a Modular or Mono system.	246–253
Maxi Click	Five-edged grooving system for grooving and parting	254–258

Toolfinder – External Machining

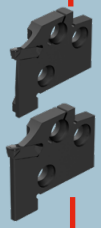
ModularClamp


259
0°

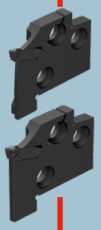

45°


260
90°

GX 09


230
231

GX 16

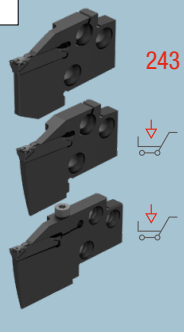

230
231

GX 24

Deep Radial Grooving, Parting and Turning

Axial Grooving and Face Turning

Deep Axial Grooving and Face Turning


243

GX 09

Circlip grooves


228
Cutting width
CW = 0,5–3,15 mm (H13)

Radius grooves

Standard

229
CRE = 0,8–1,2 mm

Grooving and Turning

-F2

223

Standard

224

-M40

225
Cutting width
CW = 2,0–3,5 mm

GX 16

Circlip grooves


228
Cutting width
CW = 0,5–5,15 mm (H13)

Radius grooves

Standard

229

-27P

CRE = 0,8–3,0 mm

Grooving and Turning

-F2

223

Standard

224

-M40

225

-M1

226

-27P

227
Cutting width
CW = 2,0–6,0 mm

GX 24

Radial, axial and deep axial grooving and parting, face turning and turning

-F2

237

-E

238

-M1

239

-M40

240

-M3

241

-27P

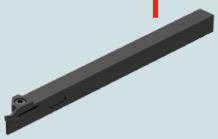
242
Cutting width
CW = 2,0–6,0 mm

-27P

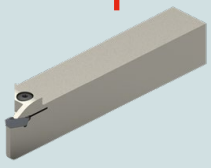
CRE = 1,5–4,0 mm

MonoClamp

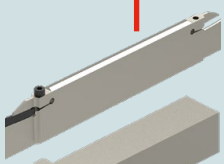
GX 09

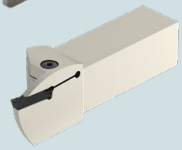

232

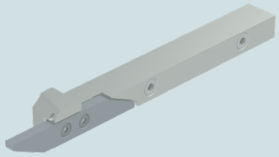
GX 16 - GX-DC


233+234

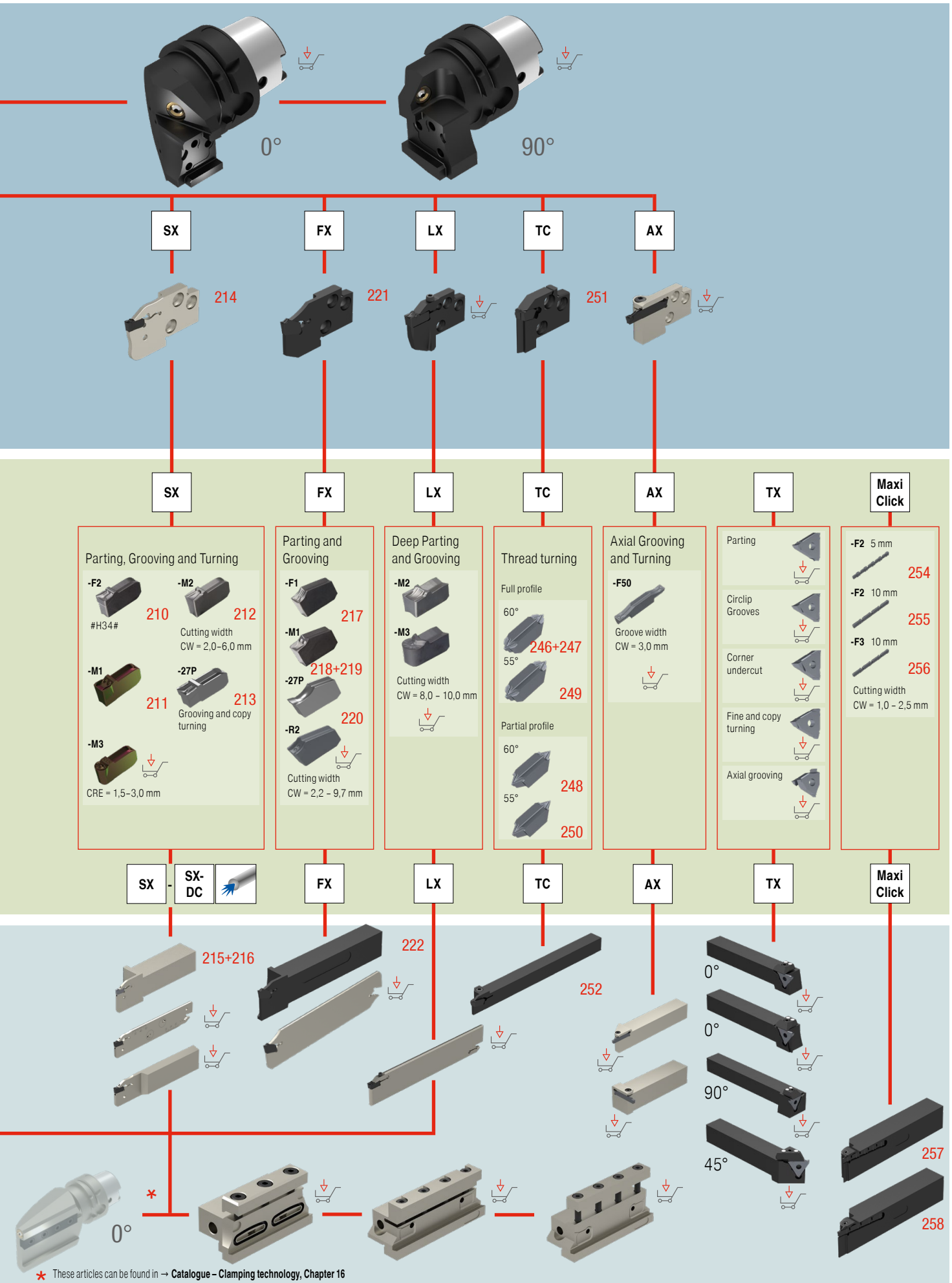
GX 24 - GX-DC


244+245



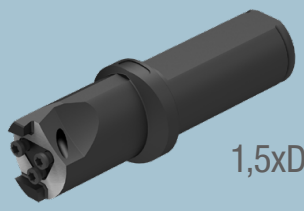


The VertiClamp grooving system can be found **in Chapter 3 Turning using VertiClamp**


0°
90°
SX
FX
LX
TC
AX
214
221
251
SX
FX
LX
TC
AX
TX
Maxi Click
Parting, Grooving and Turning
-F2
#H34#
210
-M2
212
Cutting width
CW = 2,0–6,0 mm
-M1
211
-27P
213
Grooving and copy turning
-M3
CRE = 1,5–3,0 mm
Parting and Grooving
-F1
217
-M1
218+219
-27P
220
-R2
Cutting width
CW = 2,2 – 9,7 mm
Deep Parting and Grooving
-M2
-M3
Cutting width
CW = 8,0 – 10,0 mm
Thread turning
Full profile
60°
246+247
55°
249
Partial profile
60°
248
55°
250
Axial Grooving and Turning
-F50
Groove width
CW = 3,0 mm
Parting
Circlip Grooves
Corner undercut
Fine and copy turning
Axial grooving
-F2 5 mm
254
-F2 10 mm
255
-F3 10 mm
256
Cutting width
CW = 1,0 – 2,5 mm
SX
SX-DC
FX
LX
TC
AX
TX
Maxi Click
215+216
222
252
0°
0°
90°
45°
257
258
0°
*
These articles can be found in → Catalogue – Clamping technology, Chapter 16

Toolfinder – Internal Machining

ModularClamp



GX 09

GX 16

GX 09

Circlip grooves


228

Cutting width
CW = 0,5–3,15 mm (H13)

Radius grooves

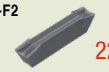
Standard


229

CRE = 0,8–1,2 mm

Grooving and Turning

-F2


223

Standard


224

-M40


225

Cutting width
CW = 2,0–3,5 mm

GX 16

Circlip grooves


228

Cutting width
CW = 0,5–5,15 mm (H13)

Radius grooves

Standard


229

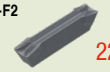
-27P


227

CRE = 0,8–3,0 mm

Grooving and Turning

-F2


223

Standard


224

-M40


225

-M1

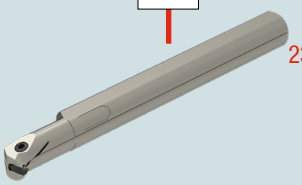

226

-27P

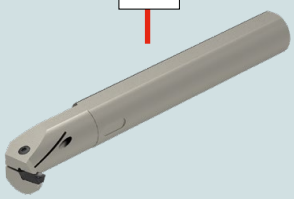
Cutting width
CW = 2,0–6,0 mm

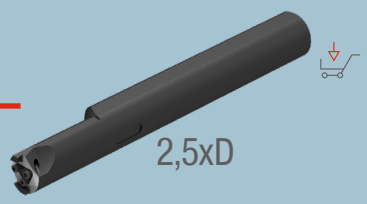
MonoClamp

GX 09

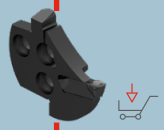

235

GX 16

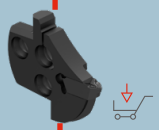

236



GX 24



TC



GX 24

Radial, axial and deep axial grooving and parting, face turning and turning

-M1 239

-M40 240

-E 238

-F2 237

-27P 227

Cutting width
CW = 2,0 - 6,0 mm

-M3 241

-27PF

CRE = 1,5 - 4,0 mm

TC

Thread turning

Partial profile 60° 248

Full profile 60° 247

Full profile 55° 249

Partial profile 55° 250

TX

Parting

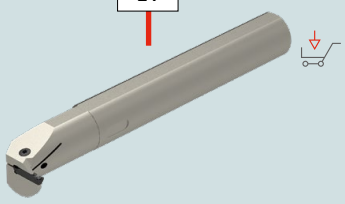
Circlip Grooving Inserts

For corner relief

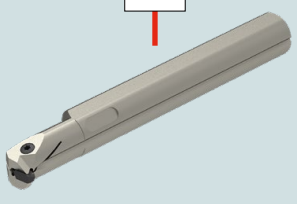
Fine and copy turning

Axial grooving

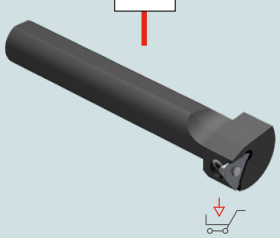
GX 24



TC

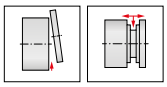

253

TX

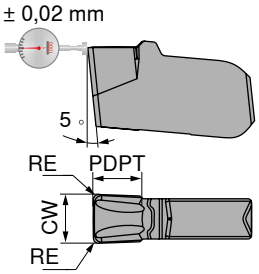


Insert SX

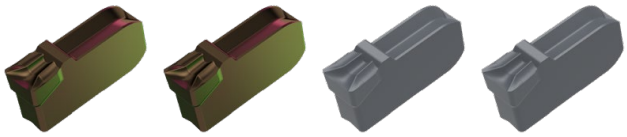
▲ High precision ground geometry



F	M	R



-F2 CTCP325	-F2 CTCP335	-F2 CTPP345	-F2 CTP1340
DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN



Designation	CW +/-0,02 mm	RE +/-0,05 mm	PDPT mm	for tool holder	70 346 ...	70 346 ...	70 346 ...	70 346 ...
SX E2.00 N 0.20	2	0,2	1,5	-SX2			**822**	**622**
SX E3.00 N 0.30	3	0,3	2,0	-SX3	**923**	**523**	**823**	**623**
P					●	●	●	●
M					○	○	●	●
K					●	●		●
N								○
S					○		○	●
H								
O								○

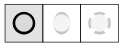
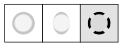
→ v_c Page 261
→ Application recommendation on page 266

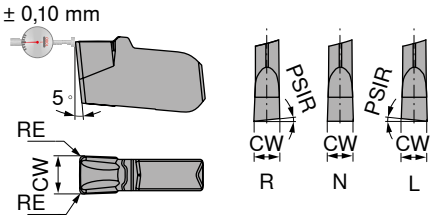
Internal machining	*External machining*	
		
	→ 214	→ 215+216

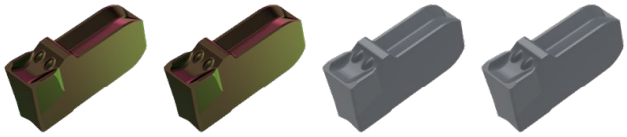
Insert SX

▲ Specially developed geometry with negative edge-chamfers available in right, left and neutral types

F	M	R
		

-M1 CTCP325	-M1 CTCP335	-M1 CTPP345	-M1 CTP1340
DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN
			





Designation	IH	CW +/-0,05 mm	RE +/-0,05 mm	PSIR	for tool holder	70 342 ...		70 342 ...		70 342 ...		70 342 ...	
SX E2.00 L 6	L	2	0,2	6°	-SX2								**612**
SX E3.00 L 6	L	3	0,2	6°	-SX3	**913**							**613**
SX E2.00 N 0.20	N	2	0,2		-SX2	**922**					**822**		**622**
SX E3.00 N 0.20	N	3	0,2		-SX3	**923**		**523**			**823**		**623**
SX E2.00 R 6	R	2	0,2	6°	-SX2								**602**
SX E3.00 R 6	R	3	0,2	6°	-SX3	**903**							**603**
P						●		●		●		●	
M						○		○		●		●	
K						●		●				●	
N												○	
S						○				○		●	
H													
O												○	

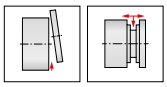
→ v_c Page 261
→ Application recommendation on page 267

Note: reduce feed rate by 20–50 % with R/L version!

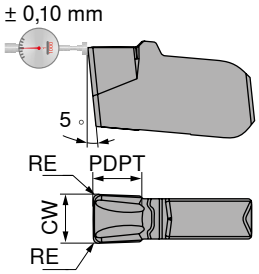
Internal machining	*External machining*						
							
	→ 214	→ 215+216					

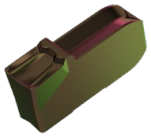
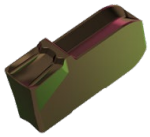
Insert SX

▲ All purpose geometry for parting, grooving & turning.



F	M	R
		



-M2 CTCP325	-M2 CTCP335	-M2 CTPP345	-M2 CTP1340
DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN
			

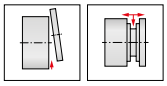
Designation	CW +/-0,05 mm	RE +/-0,05 mm	PDPT mm	for tool holder	70 343 ...		70 343 ...		70 343 ...		70 343 ...	
SX E2.00 N 0.20	2	0,2	1,5	-SX2	**922**		**522**		**822**		**622**	
SX E3.00 N 0.30	3	0,3	2,0	-SX3	**923**		**523**		**823**		**623**	
P					●		●		●		●	
M					○		○		●		●	
K					●		●				●	
N											○	
S					○				○		●	
H												
O											○	

→ v_c Page 261
→ Application recommendation on page 266

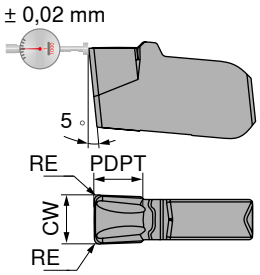
Internal machining	*External machining*						
							
	→ 214	→ 215+216					

Insert SX

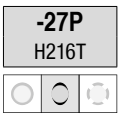
- Insert with highly positive cutting edge geometry and sharp cutting edge
- Specialist for aluminum and other soft long-chipping non-ferrous metals

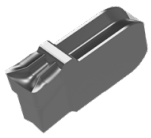


F	M	R
		



-27P
H216T





70 349 ...

Designation	CW +/-0,02 mm	RE +/-0,05 mm	PDPT mm	for tool holder	
SX E2.00 N 0.20	2	0,2	2,0	-SX2	**122**
SX E3.00 N 0.30	3	0,3	2,5	-SX3	**123**

P	
M	
K	●
N	●
S	○
H	
O	○

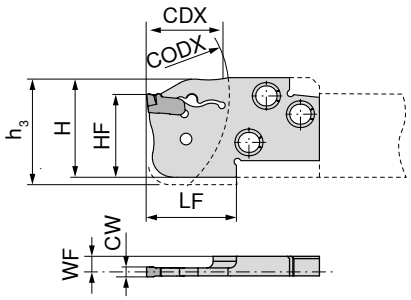
→ v_c Page 261
→ Application recommendation on page 266

Internal machining		*External machining*						
								
		→ 214	→ 215+216					

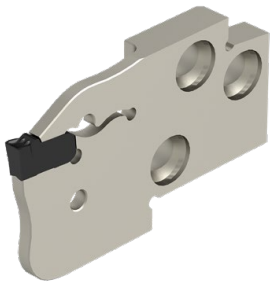
3

ModularClamp MSS – Radial grooving module SX

▲ for parting, grooving and finish turning



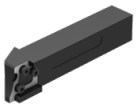
Illustrations show right-hand versions



Designation	HF mm	CW mm	WF mm	LF mm	H mm	h_3 mm	CODX mm	CDX mm	for grooving inserts	Left-hand 70 897 ...	Right-hand 70 896 ...
E20 R/L 20-SX2	20	2	3,57	22	24	27	60	20	SX .2..	**020**	**020**
E20 R/L 20-SX3	20	3	3,20	22	24	27	60	20	SX .3..	**120**	**120**

Ejector SX

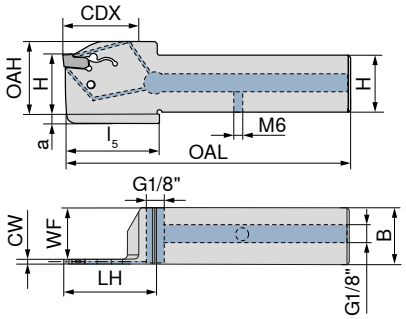
Spare parts for grooving inserts		70 950 ...
SX .2..	SX 2-3	**836**
SX .3..	SX 2-3	**836**



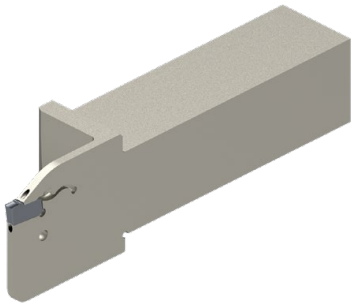
→ 210–213 → 259

Please order SX assembly key separately if required.

MonoClamp – Radial Monoholder SX-DC



Illustrations show right-hand versions



Designation	H mm	B mm	CW mm	WF mm	OAL mm	LH mm	l_5 mm	OAH mm	CDX mm	a mm	for grooving inserts	Left-hand 70 847 ...	Right-hand 70 847 ...
E12 R/L 0022-1212X-K-DC-SX2	12	12	2	11,2	71	27	28	22	22	5	SX .2..	**21201**	**21200**
E16 R/L 0026-1616X-K-DC-SX2	16	16	2	15,2	87	32	33	26	26	4	SX .2..	**21601**	**21600**
E20 R/L 0026-2020X-K-DC-SX2	20	20	2	19,2	102	32	33	31	26	5	SX .2..	**22001**	**22000**
E16 R/L 0026-1616X-K-DC-SX3	16	16	3	14,8	87	32	33	26	26	4	SX .3..	**31601**	**31600**
E20 R/L 0026-2020X-K-DC-SX3	20	20	3	18,8	102	32	33	31	26	5	SX .3..	**32001**	**32000**

Ejector SX

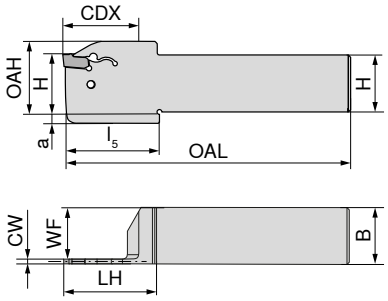
Spare parts for grooving inserts		70 950 ...
SX .2..	SX 2-3	**836**
SX .3..	SX 2-3	**836**

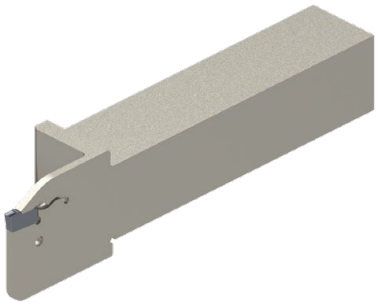
→ 210–213

Please order SX assembly key separately if required.

3

MonoClamp – Radial Monoholder SX





Illustrations show right-hand versions

												Left-hand	Right-hand
												70 846 ...	**70 846 ...**
Designation	H mm	B mm	CW mm	WF mm	OAL mm	LH mm	l_5 mm	OAH mm	CDX mm	a mm	for grooving inserts		
E12 R/L 0022-1212K-K-SX2	12	12	2	11,2	125	27	28	22	22	5	SX .2..	**21201**	**21200**
E16 R/L 0026-1616K-K-SX2	16	16	2	15,2	125	33	33	26	26	4	SX .2..	**21601**	**21600**
E20 R/L 0026-2020K-K-SX2	20	20	2	19,2	125	33	33	31	26	5	SX .2..	**22001**	**22000**
E16 R/L 0026-1616K-K-SX3	16	16	3	14,8	125	33	33	26	26	4	SX .3..	**31601**	**31600**
E20 R/L 0026-2020K-K-SX3	20	20	3	18,8	125	31	33	31	26	5	SX .3..	**32001**	**32000**

Ejector SX

70 950 ...

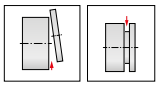
Spare parts for grooving inserts		
SX .2..	SX 2-3	**836**
SX .3..	SX 2-3	**836**

→ 210–213

Please order SX assembly key separately if required.

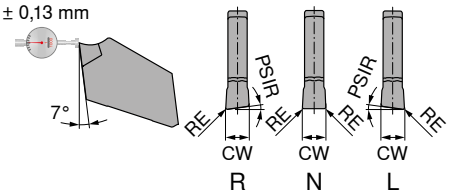
Insert FX

- Excellent cutting geometry with low cutting forces
- Very good swarf control also with low feed rates
- Reduced built-up edge



F	M	R

-F1 CTCP325	-F1 CTPP345	-F1 CTP1340
DRAGONSKIN	DRAGONSKIN	DRAGONSKIN



Designation	IH	CW $_{-0.1}$ mm	RE $_{+/-0,05}$ mm	PSIR	for tool holder	70 331 ...	70 331 ...	70 331 ...
FX 2.2 L 5-F1	L	2,2	0,15	5°	-FX 2.2		**847**	**647**
FX 3.1 L 5-F1	L	3,1	0,20	5°	-FX 3.1		**851**	**651**
FX 3.1 L 8-F1	L	3,1	0,20	8°	-FX 3.1		**855**	
FX 2.2 N 0.15-F1	N	2,2	0,15		-FX 2.2	**998**	**848**	**648**
FX 3.1 N 0.20-F1	N	3,1	0,20		-FX 3.1	**902**	**852**	**652**
FX 3.1 N 0.40-F1	N	3,1	0,40		-FX 3.1	**906**	**856**	**656**
FX 2.2 R 5-F1	R	2,2	0,15	5°	-FX 2.2		**849**	**649**
FX 3.1 R 5-F1	R	3,1	0,20	5°	-FX 3.1		**853**	**653**
FX 3.1 R 8-F1	R	3,1	0,20	8°	-FX 3.1		**857**	
P						●	●	●
M						○	●	●
K						●		●
N								○
S						○	○	●
H								
O								○

→ v_c Page 261
→ Application recommendation on page 268

Note: reduce feed rate by 20–50 % with R/L version!

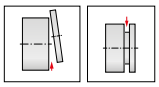
Internal machining *External machining*


→ 221 → 222

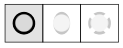
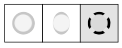
3

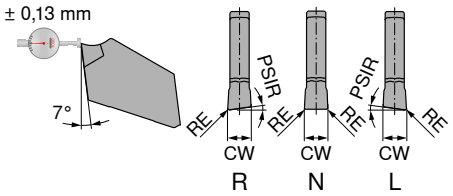
Insert FX

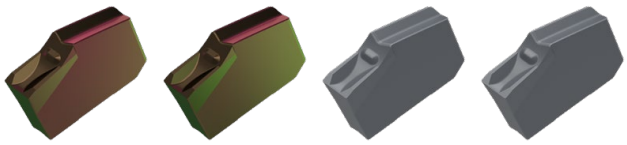
▲ narrow version



F	M	R
		

-M1 CTCP325	-M1 CTCP335	-M1 CTPP345	-M1 CTP1340
DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN
			





Designation	IH	CW -0.1 mm	RE +/-0.05 mm	PSIR	for tool holder	70 330 ...		70 330 ...		70 330 ...		70 330 ...	
FX 2.2 L 4-M1	L	2,2	0,1	4°	-FX 2.2				550		800		600
FX 2.2 N 0.10-M1	N	2,2	0,1		-FX 2.2		902		552		802		602
FX 2.2 R 4-M1	R	2,2	0,1	4°	-FX 2.2				554		804		604
P							●		●		●		●
M							○		○		●		●
K							●		●				●
N													○
S							○				○		●
H													
O													○

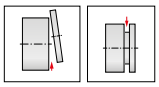
→ v_c Page 261
→ Application recommendation on page 268

Note: reduce feed rate by 20–50 % with R/L version!

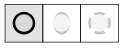
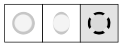
Internal machining	*External machining*						
							
	→ 221	→ 222					

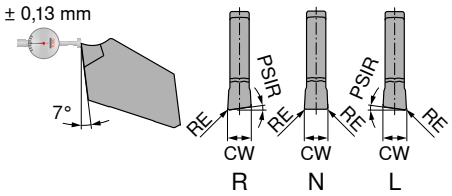
Insert FX

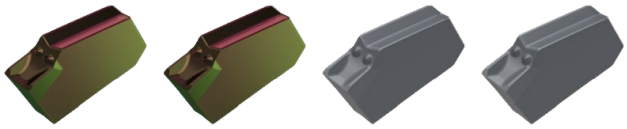
▲ wide version



F	M	R
		

-M1 CTCP325	-M1 CTCP335	-M1 CTPP345	-M1 CTP1340
DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN
			





Designation	IH	CW +/-0,05 mm	RE +/-0,05 mm	PSIR	for tool holder	70 332 ...		70 332 ...		70 332 ...		70 332 ...	
FX 3.1 L 6-M1	L	3,1	0,15	6°	-FX 3.1	**900**		**550**		**800**		**600**	
FX 3.1 N 0.15-M1	N	3,1	0,15		-FX 3.1	**902**		**552**		**802**		**602**	
FX 3.1 R 6-M1	R	3,1	0,15	6°	-FX 3.1	**904**		**554**		**804**		**604**	
P						●		●		●		●	
M						○		○		●		●	
K						●		●				●	
N												○	
S						○				○		●	
H													
O												○	

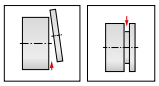
→ v_c Page 261
→ Application recommendation on page 268

Note: reduce feed rate by 20–50 % with R/L version!

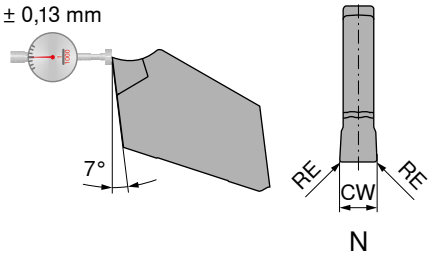
Internal machining	*External machining*						
							
	→ 221	→ 222					

Insert FX

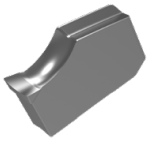
- ▲ Insert with highly positive cutting edge geometry and sharp cutting edge, polished chip breaker
- ▲ Reduced built-up edge



F	M	R
		



-27P
H216T



70 334 ...

Designation	IH	CW $_{-0,1}$ mm	RE $_{+/-0,05}$ mm	for tool holder	
FX 2.2 N 0.10	N	2,2	0,10	-FX 2.2	**650**
FX 3.1 N 0.15	N	3,1	0,15	-FX 3.1	**652**

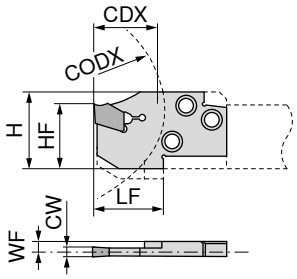
P	
M	
K	●
N	●
S	○
H	
O	○

→ v_c Page 261
→ Application recommendation on page 268

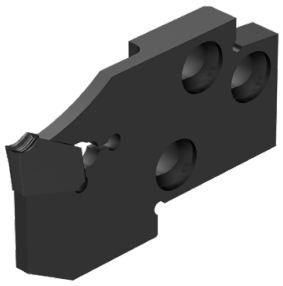
Internal machining	*External machining*							
								
		→ 221	→ 222					

ModularClamp MSS – Radial grooving module FX short/long

▲ For parting and grooving



Illustrations show right-hand versions

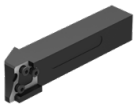


Designation	HF mm	CW mm	WF mm	LF mm	H mm	CODX mm	CDX mm	for grooving inserts	Left-hand 70 876 ...	Right-hand 70 875 ...
E20 R/L 20-FX 2.2	23	2,2	3,58	22	27	60	20	FX 2.2 ..	**020**	**020**
E20 R/L 20-FX 3.1	23	3,1	3,20	22	27	60	20	FX 3.1 ..	**120**	**120**

Ejector

70 950 ...

Spare parts for grooving inserts	
FX 2.2 ..	**375**
FX 3.1 ..	**376**



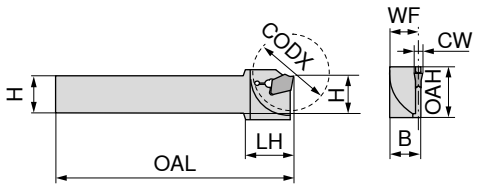
→ 217-220 → 259+260

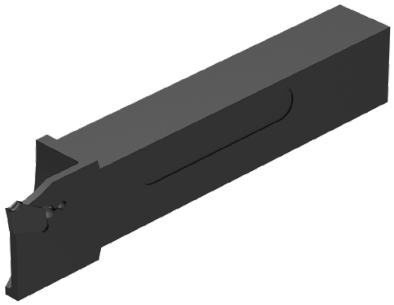
3

MonoClamp – Radial Monoholder FX

Scope of supply:

Blade and ejector





Illustrations show right-hand versions

Designation	H mm	B mm	OAL mm	LH mm	OAH mm	CW mm	WF mm	CODX mm	for grooving inserts	Left-hand 70 837 ...	Right-hand 70 836 ...
XLCE R/L 1010 M-FX2.2	10	10	150	19,4	21	2,2	9,18	30	FX 2.2 ..	**101**	**101**
XLCE R/L 1212 F-FX2.2	12	12	80	21,0	21	2,2	11,18	30	FX 2.2 ..	**102**	**102**
XLCE R/L 1212 M-FX2.2	12	12	150	19,4	21	2,2	11,18	30	FX 2.2 ..	**103**	**103**
XLCE R/L 1414 M-FX2.2	14	14	150	19,4	21	2,2	13,18	30	FX 2.2 ..	**104**	**104**
XLCE R/L 1612 H-FX2.2	16	12	100	21,0	21	2,2	11,18	30	FX 2.2 ..	**105**	**105**
XLCF R/L 1612 H-FX3.1	16	12	100	21,4	25	3,1	10,80	35	FX 3.1 ..	**106**	**106**
XLCF R/L 2016 K-FX3.1	20	16	125	26,4	26	3,1	14,80	40	FX 3.1 ..	**107**	**107**

Ejector

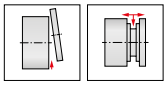
70 950 ...

Spare parts for grooving inserts	
FX 2.2 ..	**375**
FX 3.1 ..	**376**

→ 217-220

Insert GX 09/16

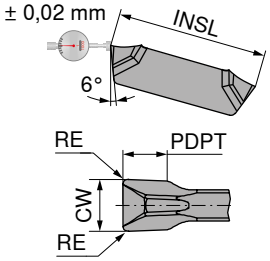
▲ Insert with ground periphery
▲ Suitable also for parting off tubes and thin-walled workpieces



F	M	R

-F2
CTP1340

DRAGONSKIN



70 360 ...

Designation	INSL mm	CW +/-0,02 mm	RE +/-0,05 mm	PDPT mm	for tool holder	
GX 09-1 E2.00 N 0.20	9	2,0	0,2	1,5	GX 09-1	**600**
GX 09-1 E2.50 N 0.20	9	2,5	0,2	1,5	GX 09-1	**602**
GX 09-2 E3.00 N 0.30	9	3,0	0,3	2,0	GX 09-2	**604**
GX 16-1 E2.00 N 0.20	16	2,0	0,2	2,5	GX 16-1	**650**
GX 16-2 E3.00 N 0.30	16	3,0	0,3	3,0	GX 16-2	**652**

P	●
M	●
K	●
N	○
S	●
H	
O	○

→ v_c Page 261
→ Application recommendation on page 262

Internal machining

→ 235+236

External machining

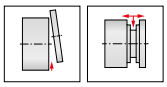
→ 230+231

→ 232

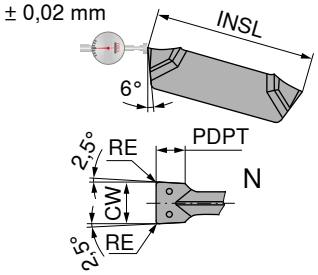
3

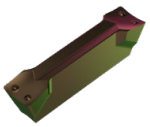
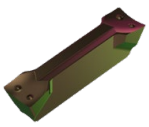
Insert GX 09/16 – Standard

▲ Suitable for parting thin-walled workpieces



F	M	R
		



CTCP325	CTCP335	CTP1340
DRAGONSKIN	DRAGONSKIN	DRAGONSKIN
		

Designation	INSL mm	CW +/-0,02 mm	RE +/-0,05 mm	PDPT mm	for tool holder	70 350 ...		70 350 ...		70 350 ...	
GX 09-1 E2.00 N 0.20	9	2,0	0,2	1,5	GX 09-1	**984**				**634**	
GX 09-1 E2.50 N 0.20	9	2,5	0,2	1,5	GX 09-1	**988**				**638**	
GX 09-2 E3.00 N 0.30	9	3,0	0,3	2,0	GX 09-2	**992**				**642**	
GX 16-1 E2.00 N 0.20	16	2,0	0,2	2,5	GX 16-1	**900**		**500**		**600**	
GX 16-1 E2.50 N 0.20	16	2,5	0,2	2,5	GX 16-1	**904**		**504**		**604**	
GX 16-2 E3.00 N 0.30	16	3,0	0,3	3,0	GX 16-2	**908**		**508**		**608**	
GX 16-2 E3.00 N 0.50	16	3,0	0,5	3,0	GX 16-2	**910**					
P						●		●		●	
M						○		○		●	
K						●		●		●	
N										○	
S						○				●	
H											
O										○	

→ v_c Page 261
→ Application recommendation on page 262

Internal machining

→ 235+236

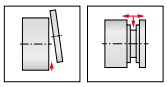
External machining

→ 230+231

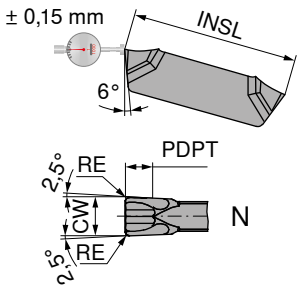
→ 232

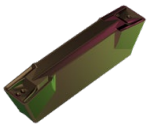
Insert GX 09/16

▲ Very good swarf control



F	M	R
		



-M40 CTCP325	-M40 CTPP345	-M40 CTP1340
DRAGONSKIN	DRAGONSKIN	DRAGONSKIN
		

Designation	INSL mm	CW +/-0,05 mm	RE +/-0,05 mm	PDPT mm	for tool holder	70 351 ...	70 351 ...	70 351 ...
GX 09-1 E2.00 N 0.20	9	2	0,2	1,5	GX 09-1	**986**	**886**	**686**
GX 09-2 E3.00 N 0.30	9	3	0,3	2,0	GX 09-2	**994**	**894**	**694**
GX 16-1 E2.00 N 0.20	16	2	0,2	2,5	GX 16-1	**902**	**802**	**602**
GX 16-2 E3.00 N 0.30	16	3	0,3	3,0	GX 16-2	**910**	**810**	**610**
P						●	●	●
M						○	●	●
K						●		●
N								○
S						○	○	●
H								
O								○

→ v_c Page 261
→ Application recommendation on page 262

Internal machining

→ 235+236

External machining

→ 230+231

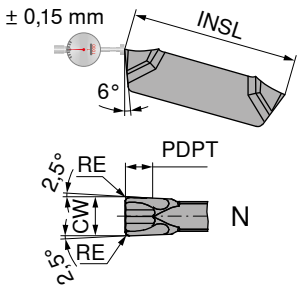
→ 232

3

Insert GX 16

▲ Very good swarf control

F	M	R
		



-M1 CTCP325	-M1 CTPP345	-M1 CTP1340
DRAGONSKIN	DRAGONSKIN	DRAGONSKIN
		

Designation	INSL mm	CW +/-0,05 mm	RE +/-0,05 mm	PDPT mm	for tool holder	70 362 ...	70 362 ...	70 362 ...
GX 16-1 E2.00 N 0.20	16	2	0,2	2,0	GX 16-1		**800**	**600**
GX 16-2 E3.00 N 0.20	16	3	0,2	2,5	GX 16-2	**902**	**802**	**602**
P						●	●	●
M						○	●	●
K						●		●
N								○
S						○	○	●
H								
O								○

→ v_c Page 261
→ Application recommendation on page 263

Internal machining

→ 236

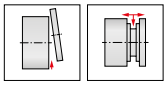
External machining

→ 230+231

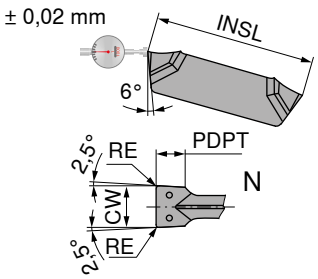
→ 232

Insert GX 16

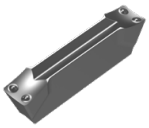
▲ Insert with highly positive cutting edge geometry and sharp cutting edge
▲ ground periphery



F	M	R
		



-27P
H216T



70 350 ...

Designation	INSL mm	CW +/-0,02 mm	RE +/-0,05 mm	PDPT mm	for tool holder	
GX 16-1 E2.00 N 0.20	16	2	0,2	2,5	GX 16-1	**650**
GX 16-2 E3.00 N 0.30	16	3	0,3	3,0	GX 16-2	**658**

P	
M	
K	●
N	●
S	○
H	
O	○

→ v_c Page 261
→ Application recommendation on page 262

Internal machining | *External machining*

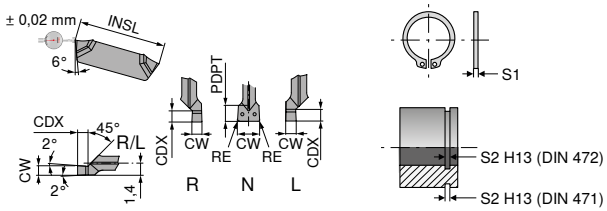


→ 236 | → 230+231 | → 232

3

Circlip groove insert GX 09/16 – Standard

F	M	R



Designation	IH	INSL mm	s_1 mm	s_2 mm	CW +/-0,02 mm	RE +/-0,05 mm	CDX mm	PDPT mm	for tool holder	70 352 ...	70 352 ...
GX 09-1 S0.60 L	L	9	0,40	0,50	0,60		0,75		R/L 02-GX 09-1		679
GX 09-1 S0.80 L	L	9	0,60	0,70	0,80		0,94		R/L 02-GX 09-1		681
GX 09-1 S0.90 L	L	9	0,70	0,80	0,90		1,04		R/L 02-GX 09-1		683
GX 09-1 S1.00 L	L	9	0,80	0,90	1,00		1,14		R/L 02-GX 09-1		684
GX 09-1 S1.20 L	L	9	1,00	1,10	1,20		1,34		R/L 02-GX 09-1		686
GX 09-1 S1.40 L	L	9	1,20	1,30	1,40		1,53		R/L 02-GX 09-1		688
GX 09-1 S1.70 L	L	9	1,50	1,60	1,70		1,82		R/L 02-GX 09-1		690
GX 16-2 S0.60 L	L	16	0,40	0,50	0,60		0,75		R/L 03-GX 16-2		607
GX 16-2 S0.80 L	L	16	0,60	0,70	0,80		0,94		R/L 03-GX 16-2		609
GX 16-2 S0.90 L	L	16	0,70	0,80	0,90		1,04		R/L 03-GX 16-2		611
GX 16-2 S1.00 L	L	16	0,80	0,90	1,00		1,14		R/L 03-GX 16-2		612
GX 16-2 S1.20 L	L	16	1,00	1,10	1,20		1,34		R/L 03-GX 16-2		614
GX 16-2 S1.40 L	L	16	1,20	1,30	1,40		1,53		R/L 03-GX 16-2		616
GX 16-2 S1.70 L	L	16	1,50	1,60	1,70		1,82		R/L 03-GX 16-2		618
GX 16-2 S1.95 L	L	16	1,75	1,85	1,95		2,07		R/L 03-GX 16-2		620
GX 16-2 S2.25 L	L	16	2,00	2,15	2,25		2,36		R/L 03-GX 16-2		622
GX 09-1 S1.95 N	N	9	1,75	1,85	1,95	0,1		2	GX 09-1	692	
GX 09-1 S2.25 N	N	9	2,00	2,15	2,25	0,1		2	GX 09-1	694	
GX 09-2 S2.75 N	N	9	2,50	2,65	2,75	0,1		2	GX 09-2	696	
GX 09-2 S3.25 N	N	9	3,00	3,15	3,25	0,1		2	GX 09-2	698	
GX 16-2 S2.75 N	N	16	2,50	2,65	2,75	0,1		3	GX 16-2	624	
GX 16-2 S3.25 N	N	16	3,00	3,15	3,25	0,1		3	GX 16-2	626	
GX 09-1 S0.60 R	R	9	0,40	0,50	0,60		0,75		R/L 02-GX 09-1		670
GX 09-1 S0.80 R	R	9	0,60	0,70	0,80		0,94		R/L 02-GX 09-1		672
GX 09-1 S0.90 R	R	9	0,70	0,80	0,90		1,04		R/L 02-GX 09-1		674
GX 09-1 S1.00 R	R	9	0,80	0,90	1,00		1,14		R/L 02-GX 09-1		676
GX 09-1 S1.20 R	R	9	1,00	1,10	1,20		1,34		R/L 02-GX 09-1		678
GX 09-1 S1.40 R	R	9	1,20	1,30	1,40		1,53		R/L 02-GX 09-1		680
GX 09-1 S1.70 R	R	9	1,50	1,60	1,70		1,82		R/L 02-GX 09-1		682
GX 16-2 S0.60 R	R	16	0,40	0,50	0,60		0,75		R/L 03-GX 16-2		695
GX 16-2 S0.80 R	R	16	0,60	0,70	0,80		0,94		R/L 03-GX 16-2		697
GX 16-2 S0.90 R	R	16	0,70	0,80	0,90		1,04		R/L 03-GX 16-2		699
GX 16-2 S1.00 R	R	16	0,80	0,90	1,00		1,14		R/L 03-GX 16-2		600
GX 16-2 S1.20 R	R	16	1,00	1,10	1,20		1,34		R/L 03-GX 16-2		602
GX 16-2 S1.40 R	R	16	1,20	1,30	1,40		1,53		R/L 03-GX 16-2		604
GX 16-2 S1.70 R	R	16	1,50	1,60	1,70		1,82		R/L 03-GX 16-2		606
GX 16-2 S1.95 R	R	16	1,75	1,85	1,95		2,07		R/L 03-GX 16-2		608
GX 16-2 S2.25 R	R	16	2,00	2,15	2,25		2,36		R/L 03-GX 16-2		610
P										●	●
M										●	●
K										●	●
N										○	○
S										●	●
H											
O										○	○

→ v_c Page 261
→ Application recommendation on page 262

Attention - applies only to internal machining:
Right-hand insert → left-hand module or monobloc boring bar
Left-hand insert → right-hand module or monobloc boring bar

Internal machining

→ 235+236

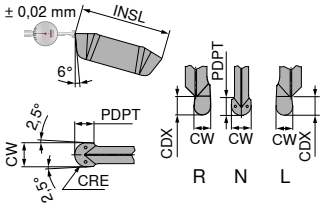
External machining

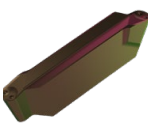
→ 230+231

→ 232

Radius groove insert GX 09/16

F	M	R
		



CTCP325	CTCP325	CTP1340
DRAGONSKIN	DRAGONSKIN	DRAGONSKIN
		

Designation	IH	INSL mm	CW +/-0,02 mm	CRE mm	PDPT mm	CDX mm	for tool holder	70 354 ...		70 354 ...		70 354 ...	
GX 09-1 R0.80 L	L	9	1,6	0,8		1,78	R/L 02-GX 09-1	**988**					
GX 16-2 R0.80 L	L	16	1,6	0,8		1,78	R/L 03-GX 16-2	**912**					
GX 16-2 R1.00 L	L	16	2,0	1,0		2,18	R/L 03-GX 16-2	**916**					
GX 16-2 R1.20 L	L	16	2,4	1,2		2,58	R/L 03-GX 16-2	**920**					
GX 09-1 R1.00 N	N	9	2,0	1,0	1,0		GX 09-1			**992**			
GX 09-1 R1.20 N	N	9	2,4	1,2	1,2		GX 09-1			**996**			
GX 16-2 R1.50 N	N	16	3,0	1,5	1,5		GX 16-2			**924**			**624**
GX 09-1 R0.80 R	R	9	1,6	0,8		1,78	R/L 02-GX 09-1	**984**					
GX 16-2 R0.80 R	R	16	1,6	0,8		1,78	R/L 03-GX 16-2	**900**					
GX 16-2 R1.00 R	R	16	2,0	1,0		2,18	R/L 03-GX 16-2	**904**					
GX 16-2 R1.20 R	R	16	2,4	1,2		2,58	R/L 03-GX 16-2	**908**					
P								●		●		●	
M								○		○		●	
K								●		●		●	
N												○	
S								○		○		●	
H													
O												○	

→ v_c Page 261
→ Application recommendation on page 263

Attention - applies only to internal machining:
Right-hand insert → left-hand module or monobloc boring bar
Left-hand insert → right-hand module or monobloc boring bar

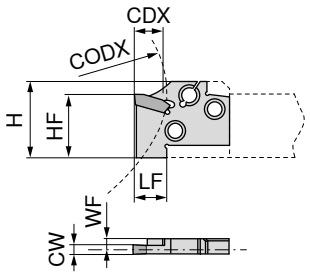
Internal machining | *External machining*



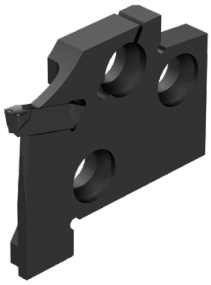
→ 235+236 | → 230+231 | → 232

ModularClamp MSS – Radial grooving module GX 09/16

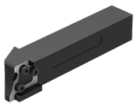
- For circlip grooves ≤ 2,75 mm
- For radius grooves up to ≤ 1,2 mm
- For external recessing



Illustrations show right-hand versions



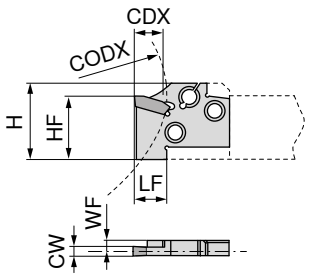
Designation	CW mm	WF mm	LF mm	HF mm	H mm	CODX mm	CDX mm	for grooving inserts	Left-hand 70 871 ...	Right-hand 70 870 ...
E12 R/L 02-GX 09-1	<1,95	3,15	8	12	14,5	36	2	GX 09-1 ..R/L	**112**	**112**
E16 R/L 02-GX 09-1	<1,95	3,15	8	16	19,5	48	2	GX 09-1 ..R/L	**116**	**116**
E20 R/L 03-GX 16-2	<2,75	3,40	13	20	24,0	60	3	GX 16-2 ..R/L	**120**	**120**



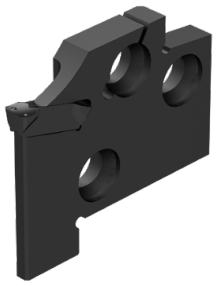
→ 223–229 → 259+260

ModularClamp MSS – Radial grooving module GX 09/16

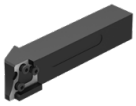
- For grooving and turning
- For circlip grooves ≤ 5,25 mm
- For radius grooves up to ≤ 2,5 mm
- For external recessing



Illustrations show right-hand versions



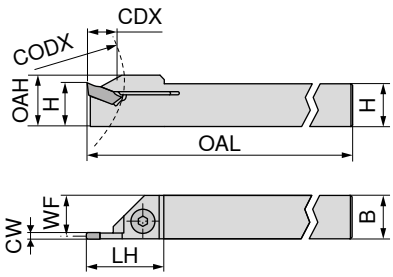
Designation	CW mm	WF mm	LF mm	HF mm	H mm	CODX mm	CDX mm	for grooving inserts	Left-hand 70 866 ...	Right-hand 70 865 ...
E12 R/L 07-GX 09-1	2,00 - 2,75	3,15	8	12	14,5	36	7	GX 09-1 ..N	**012**	**012**
E12 R/L 07-GX 09-2	2,76 - 3,75	3,15	8	12	14,5	36	7	GX 09-2 ..N	**112**	**112**
E16 R/L 07-GX 09-1	2,00 - 2,75	3,15	8	16	19,5	48	7	GX 09-1 ..N	**016**	**016**
E16 R/L 07-GX 09-2	2,76 - 3,75	3,15	8	16	19,5	48	7	GX 09-2 ..N	**116**	**116**
E20 R/L 12-GX 16-1	2,00 - 2,75	3,75	13	20	24,0	60	12	GX 16-1 ..N	**020**	**020**
E20 R/L 12-GX 16-2	2,76 - 3,75	3,40	13	20	24,0	60	12	GX 16-2 ..N	**120**	**120**



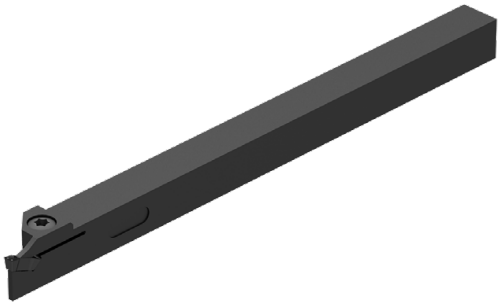
→ 223-229 → 259+260

3

MonoClamp – Radial Monoholder GX 09

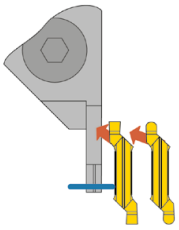


Illustrations show right-hand versions



Designation	H mm	B mm	CW mm	WF mm	OAH mm	OAL mm	LH mm	CODX mm	CDX mm	for grooving inserts	Left-hand 70 863 ...	Right-hand 70 862 ...
E10 R/L 00-1010M-GX09	10	10	2,00 - 3,50	9,35	12	150	18	30	7	GX 09 ..	**010**	**010**

When using 'R' or 'L' tools the tool must be modified at the end face to ensure cutting clearance.



Key D

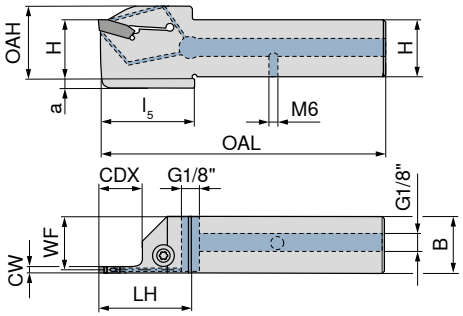
Clamping screw

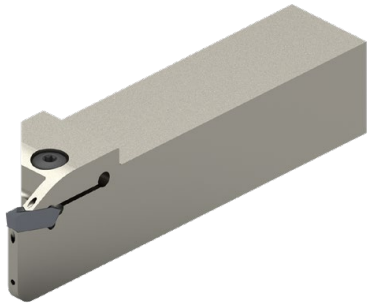
Spare parts for grooving inserts		Key D 80 950 ...		Clamping screw 70 950 ...
GX 09 ..	T15	**113**	M4x11	**442**

→ 223-229

MonoClamp – Radial Monoholder GX-DC 16

Direct Cooling





Illustrations show right-hand versions

Designation	H mm	B mm	CW mm	WF mm	OAH mm	OAL mm	LH mm	l_5 mm	a mm	CDX mm	for grooving inserts	NEW Left-hand 70 842 ...	NEW Right-hand 70 842 ...
E16 R/L 0013S2-1616X-S-DC-GX16	16	16	2	15,20	21	90	35	36	4	13	GX 16-1 E2..	**21601**	**21600**
E16 R/L 0013S3-1616X-S-DC-GX16	16	16	3	14,85	21	90	35	36	4	13	GX 16-2 E3..	**31601**	**31600**
E20 R/L 0013S2-2020X-S-DC-GX16	20	20	2	19,20	25	104	35			13	GX 16-1 E2..	**22001**	**22000**
E20 R/L 0013S3-2020X-S-DC-GX16	20	20	3	18,85	25	104	35			13	GX 16-2 E3..	**32001**	**32000**

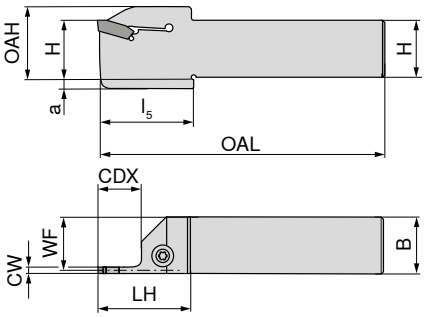
Key D

Spare parts for grooving inserts		80 950 ...
GX 16-1 E2..	T15 - IP	**128**
GX 16-2 E3..	T15 - IP	**128**

Suitable indexable inserts and cutting data can be found in the catalogue Cutting tools → **Chapter 11 – Grooving tools**

3

MonoClamp – Radial Monoholder GX 16



Illustrations show right-hand versions

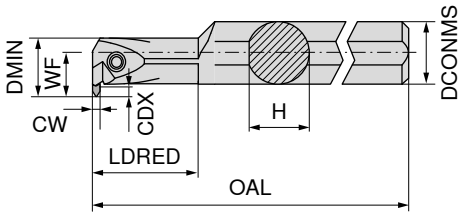
Designation	H mm	B mm	CW mm	WF mm	OAH mm	OAL mm	LH mm	l_5 mm	a mm	CDX mm	for grooving inserts	NEW Left-hand 70 843 ...	NEW Right-hand 70 843 ...
E12 R/L 0013S2-1212K-S-GX16	12	12	2	11,20	17	125	25	26	4	13	GX 16-1 E2..	**21201**	**21200**
E12 R/L 0013S3-1212K-S-GX16	12	12	3	10,85	17	125	25	26	4	13	GX 16-2 E3..	**31201**	**31200**
E16 R/L 0013S2-1616K-S-GX16	16	16	2	15,20	21	125	25	26	4	13	GX 16-1 E2..	**21601**	**21600**
E16 R/L 0013S3-1616K-S-GX16	16	16	3	14,85	21	125	25	26	4	13	GX 16-2 E3..	**31601**	**31600**
E20 R/L 0013S2-2020K-S-GX16	20	20	2	19,20	25	125	25			13	GX 16-1 E2..	**22001**	**22000**
E20 R/L 0013S3-2020K-S-GX16	20	20	3	18,85	25	125	25			13	GX 16-2 E3..	**32001**	**32000**

Key D

Spare parts for grooving inserts		80 950 ...
GX 16-1 E2..	T15 - IP	**128**
GX 16-2 E3..	T15 - IP	**128**

Suitable indexable inserts and cutting data can be found in the catalogue Cutting tools → **Chapter 11 – Grooving tools**

MonoClamp – Radial Mono-boring bars GX 09

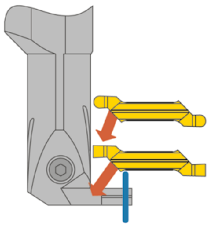


Illustrations show right-hand versions

Designation	H mm	DCONMS mm	DMIN mm	CW mm	CDX mm	WF mm	OAL mm	LDRED mm	for grooving inserts	Left-hand 70 859 ...	Right-hand 70 858 ...
I12 R/L 90-2,5D-GX09	15,25	16	16	2,00 - 3,75	3	11	150	30	GX 09 ..	**012**	**012**

Right hand boring bar→ left hand insert only
Left hand boring bar→ right hand insert only

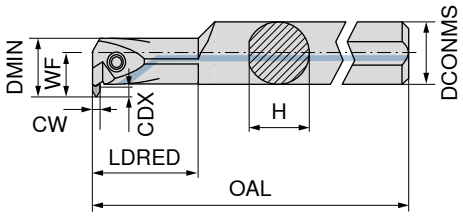
When using „R“ or „L“ tools the insert support seat requires modification to prevent the insert fouling.



Spare parts for grooving inserts		Key D 80 950 ...		Clamping screw 70 950 ...	
GX 09 ..	T15	**113**	M3,5x12,5	**441**	

→ 223-229

MonoClamp – Radial Mono-boring bars GX 16

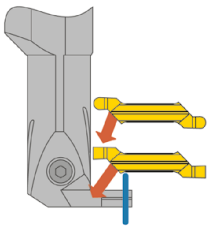


Illustrations show right-hand versions

Designation	H mm	DCONMS mm	DMIN mm	CW mm	CDX mm	WF mm	OAL mm	LDRED mm	for grooving inserts	Left-hand 70 893 ...	Right-hand 70 892 ...
I16 R/L 90-2.0D-GX16-1	15,25	16	20,5	2,00 - 2,75	5,0	13,5	150	32	GX 16-1	**516**	**516**
I16 R/L 90-2.0D-GX16-2	15,25	16	20,5	2,76 - 3,75	5,0	13,5	150	32	GX 16-2	**616**	**616**
I20 R/L 90-2.0D-GX16-2	19,00	20	25,0	2,76 - 3,75	5,5	15,5	180	40	GX 16-2	**620**	**620**

Right hand boring bar→ left hand insert only
Left hand boring bar→ right hand insert only

When using „R“ or „L“ tools the insert support seat requires modification to prevent the insert fouling.




Key D

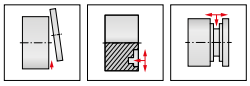

Clamping screw

Spare parts for grooving inserts		80 950 ...		70 950 ...
GX 16-1	T15	**113**	M4x14	**403**
GX 16-2	T15	**113**	M4x14	**403**

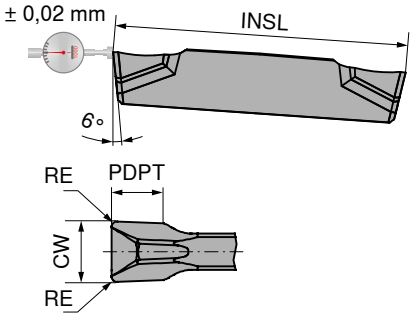
→ 223–229

Insert GX 24

▲ Insert with ground periphery
▲ Suitable also for parting off tubes and thin-walled workpieces



F	M	R



-F2 CTCP325	-F2 CTPP345	-F2 CTP1340
DRAGONSKIN	DRAGONSKIN	DRAGONSKIN

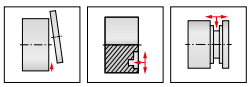
Designation	INSL mm	CW +/-0,02 mm	RE +/-0,05 mm	PDPT mm	for tool holder	70 350 ...	70 350 ...	70 350 ...
GX 24-2 E3.00 N 0.30	24	3,0	0,3	2,5	GX 24-2	**962**	**862**	**662**
GX 24-2 E3.50 N 0.30	24	3,5	0,3	2,5	GX 24-2		**864**	
P						●	●	●
M						○	●	●
K						●		●
N								○
S						○	○	●
H								
O								○

→ v_c Page 261
→ Application recommendation on page 262

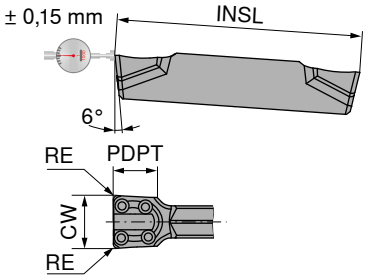
Internal machining	*External machining*
	
	→ 243

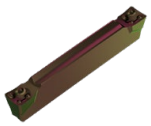
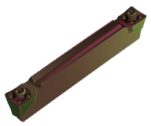
3

Insert GX 24



F	M	R
		



-E CTCP325	-E CTCP335	-E CTPP345	-E CTP1340
DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN
			

Designation	INSL mm	CW +/-0,05 mm	RE +/-0,05 mm	PDPT mm	for tool holder	70 350 ... 932	70 350 ... 532	70 350 ... 832	70 350 ... 632
GX 24-2 E3.00 N 0.30	24	3	0,3	2,5	GX 24-2				
P						●	●	●	●
M						○	○	●	●
K						●	●		●
N									○
S						○		○	●
H									
O									○

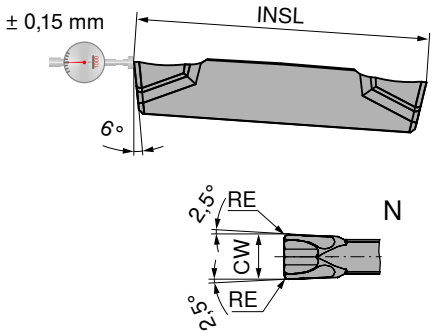
→ v_c Page 261
→ Application recommendation on page 262

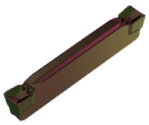
Internal machining	*External machining*
	
	→ 243

Insert GX 24

▲ Very good swarf control

F	M	R
		



-M1 CTCP325	-M1 CTPP345	-M1 CTP1340
DRAGONSKIN	DRAGONSKIN	DRAGONSKIN
		

Designation	INSL mm	CW +/-0,05 mm	RE +/-0,05 mm	for tool holder	70 363 ...		70 363 ...		70 363 ...	
GX 24-1 E2.00 N 0.20	24	2	0,2	GX 24-1		**900**		**800**		**600**
GX 24-2 E3.00 N 0.20	24	3	0,2	GX 24-2		**902**		**802**		**602**
P						●		●		●
M						○		●		●
K						●				●
N										○
S						○		○		●
H										
O										○

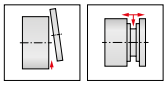
→ v_c Page 261
→ Application recommendation on page 263

Internal machining	*External machining*
	
	→ 243

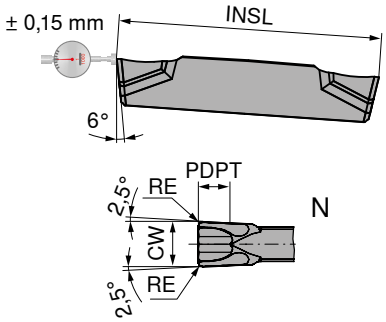
3

Insert GX 24

▲ Very good swarf control



F	M	R



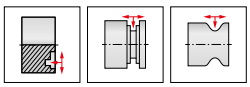
-M40 CTCP325	-M40 CTPP345	-M40 CTP1340
DRAGONSKIN	DRAGONSKIN	DRAGONSKIN

Designation	INSL mm	CW +/-0,05 mm	RE +/-0,05 mm	PDPT mm	for tool holder	70 364 ... 900	70 364 ... 800	70 364 ... 600
GX 24-2 E3.00 N 0.30	24	3	0,3	3,5	GX 24-2			
P						●	●	●
M						○	●	●
K						●		●
N								○
S						○	○	●
H								
O								○

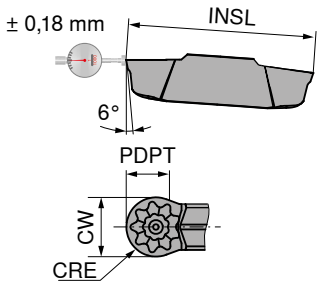
→ v_c Page 261
→ Application recommendation on page 262

Internal machining	*External machining*
	
	→ 243

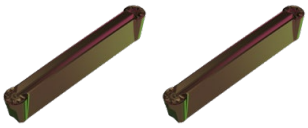
Radius groove insert GX 24



F	M	R



-M3 CTCP325	-M3 CTCP335
DRAGONSKIN	DRAGONSKIN



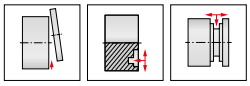
Designation	INSL mm	CW +/-0,05 mm	CRE mm	PDPT mm	for tool holder	70 354 ... 952	70 354 ... 552
GX 24-2 R1.50 N	24,4	3	1,5	1,5	GX 24-2		
P						●	●
M						○	○
K						●	●
N							
S						○	
H							
O							

→ v_c Page 261
→ Application recommendation on page 263

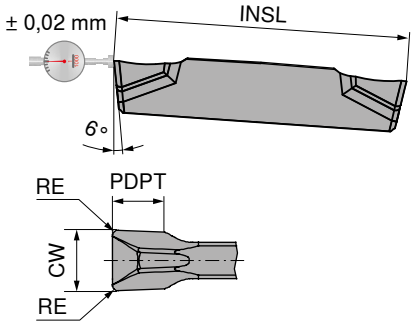
Internal machining	*External machining*
	
	→ 243

Insert GX 24

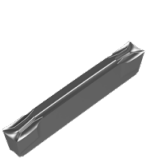
▲ Insert with highly positive cutting edge geometry and sharp cutting edge
▲ ground periphery



F	M	R
		



-27P
H216T



70 350 ...

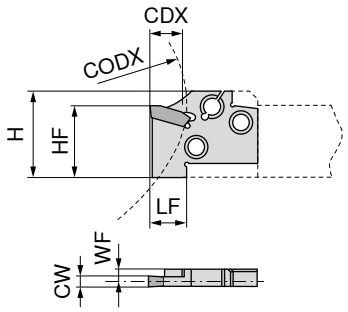
Designation	INSL mm	CW +/-0,02 mm	RE +/-0,05 mm	PDPT mm	for tool holder	
GX 24-2 E3.00 N 0.30	24	3	0,3	2,5	GX 24-2	**682**
P						
M						
K						●
N						●
S						○
H						
O						○

→ v_c Page 261
→ Application recommendation on page 262

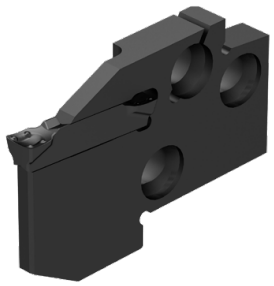
Internal machining	*External machining*
	
	→ 243

ModularClamp MSS – Radial grooving module GX 24

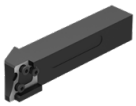
- For deep radial parting and grooving
- For turning



Illustrations show right-hand versions



Designation	CW mm	WF mm	LF mm	HF mm	H mm	CODX mm	CDX mm	for grooving inserts	Left-hand 70 868 ...	Right-hand 70 867 ...
E20 R/L 21-GX 24-1	2,00 - 2,75	3,85	22	20	24	60	21	GX 24-1	**020**	**020**
E20 R/L 21-GX 24-2	3	3,40	22	20	24	60	21	GX 24-2	**120**	**120**

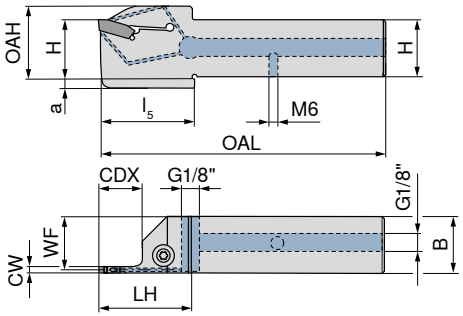



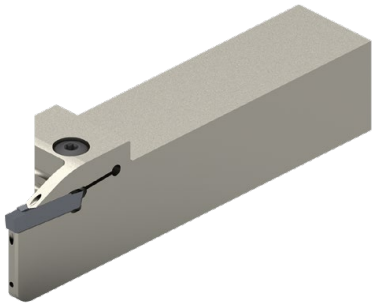
→ 237–242 → 259+260

3

MonoClamp – Radial Monoholder GX-DC 24

Direct Cooling





Illustrations show right-hand versions

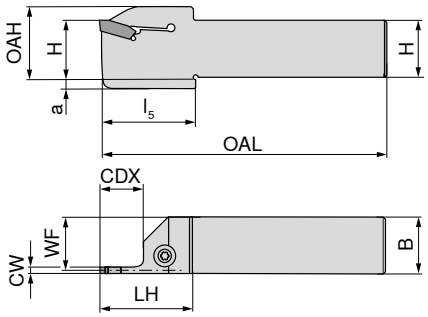
Designation	H mm	B mm	CW mm	WF mm	OAH mm	OAL mm	LH mm	l_5 mm	a mm	CDX mm	for grooving inserts	NEW Left-hand 70 844 ...	NEW Right-hand 70 844 ...
E16 R/L 0021S2-1616X-S-DC-GX24	16	16	2	15,2	22	94	39	40	4	21	GX 24-1 E2..	**21601**	**21600**
E16 R/L 0021S3-1616X-S-DC-GX24	16	16	3	14,8	22	94	39	40	4	21	GX 24-2 E3..	**31601**	**31600**
E20 R/L 0021S2-2020X-S-DC-GX24	20	20	2	19,2	26	109	40			21	GX 24-1 E2..	**22001**	**22000**
E20 R/L 0021S3-2020X-S-DC-GX24	20	20	3	18,8	26	109	40			21	GX 24-2 E3..	**32001**	**32000**

Key D

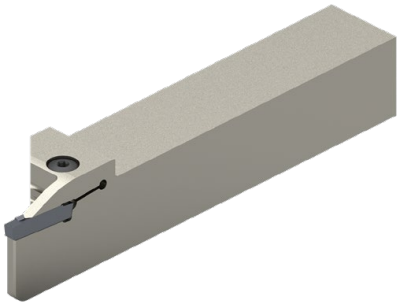
Spare parts for grooving inserts		80 950 ...
GX 24-1 E2..	T15 - IP	**128**
GX 24-2 E3..	T15 - IP	**128**

Suitable indexable inserts and cutting data can be found in the catalogue Cutting tools → **Chapter 11 – Grooving tools**

MonoClamp – Radial Monoholder GX 24



Illustrations show right-hand versions



Designation	H mm	B mm	CW mm	WF mm	OAH mm	OAL mm	LH mm	l_5 mm	a mm	CDX mm	for grooving inserts	NEW Left-hand 70 845 ...	NEW Right-hand 70 845 ...
E16 R/L 0021S2-1616K-S-GX24	16	16	2	15,2	22	125	39	40	4	21	GX 24-1 E2..	**21601**	**21600**
E16 R/L 0021S3-1616K-S-GX24	16	16	3	14,8	22	125	39	40	4	21	GX 24-2 E3..	**31601**	**31600**
E20 R/L 0021S2-2020K-S-GX24	20	20	2	19,2	26	125	40			21	GX 24-1 E2..	**22001**	**22000**
E20 R/L 0021S3-2020K-S-GX24	20	20	3	18,8	26	125	40			21	GX 24-2 E3..	**32001**	**32000**

Key D

80 950 ...

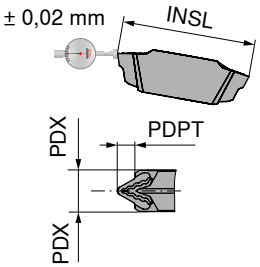
Spare parts for grooving inserts		
GX 24-1 E2..	T15 - IP	**128**
GX 24-2 E3..	T15 - IP	**128**

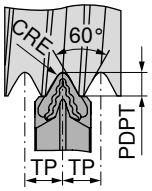
Suitable indexable inserts and cutting data can be found in the catalogue Cutting tools → **Chapter 11 – Grooving tools**

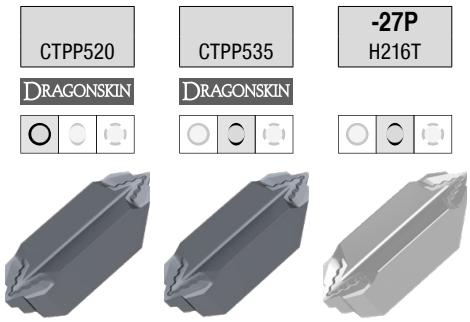
3

Threading inserts TC full profile – External thread 60°

F	M	R
		







Designation	Size	TP mm	INSL mm	PDPT mm	PDX mm	CRE mm	for tool holder	70 357 ...		70 357 ...		70 357 ...	
TC 16-1 E 0.5 ISO	TC 16-1 ...	0,50	16	0,32	1,05	0,06	E.. R/L TC 16-1	**010**		**110**		**610**	
TC 16-1 E 0.75 ISO	TC 16-1 ...	0,75	16	0,48	1,05	0,09	E.. R/L TC 16-1	**012**		**112**		**612**	
TC 16-1 E 1.0 ISO	TC 16-1 ...	1,00	16	0,64	1,05	0,12	E.. R/L TC 16-1	**014**		**114**		**614**	
TC 16-1 E 1.25 ISO	TC 16-1 ...	1,25	16	0,80	1,05	0,15	E.. R/L TC 16-1	**016**		**116**		**616**	
TC 16-1 E 1.5 ISO	TC 16-1 ...	1,50	16	0,95	1,05	0,18	E.. R/L TC 16-1	**018**		**118**		**618**	
TC 16-2 E 1.75 ISO	TC 16-2 ...	1,75	16	1,10	2,15	0,22	E.. R/L/N TC 16-2	**030**		**130**		**630**	
TC 16-2 E 2.0 ISO	TC 16-2 ...	2,00	16	1,26	2,15	0,25	E.. R/L/N TC 16-2	**032**		**132**		**632**	
TC 16-2 E 2.5 ISO	TC 16-2 ...	2,50	16	1,58	2,15	0,32	E.. R/L/N TC 16-2	**034**		**134**		**634**	
TC 16-2 E 3.0 ISO	TC 16-2 ...	3,00	16	1,89	2,15	0,38	E.. R/L/N TC 16-2	**036**		**136**		**636**	
P								●		●			
M								●		●			
K								●		●		●	
N												●	
S								○		●			
H								○					
O												○	

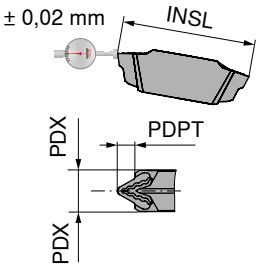
→ v_c Page 261
→ Application recommendation on page 269

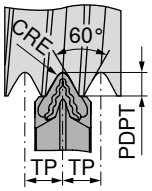
Internal machining | *External machining*

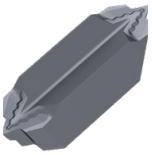
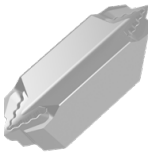

→ 251 → 252

Threading inserts TC full profile – Internal thread 60°

F	M	R
		





CTPP535	CTPP520	-27P H216T
DRAGONSKIN	DRAGONSKIN	
		

Designation	Size	TP mm	INSL mm	PDPT mm	PDX mm	CRE mm	for tool holder	70 358 ...		70 358 ...		70 358 ...	
TC 16-1 I 1.0 ISO	TC 16-1 ...	1,00	16	0,59	1,05	0,06	I32 R/L TC 16-1	**114**		**014**			
TC 16-1 I 1.25 ISO	TC 16-1 ...	1,25	16	0,74	1,05	0,07	I32 R/L TC 16-1			**016**			
TC 16-1 I 1.5 ISO	TC 16-1 ...	1,50	16	0,89	1,05	0,09	I32 R/L TC 16-1	**118**		**018**			**618**
TC 16-2 I 1.75 ISO	TC 16-2 ...	1,75	16	1,02	2,15	0,11	I32 R/L TC 16-2			**030**			
TC 16-2 I 2.0 ISO	TC 16-2 ...	2,00	16	1,17	2,15	0,13	I32 R/L TC 16-2	**132**		**032**			
TC 16-2 I 3.0 ISO	TC 16-2 ...	3,00	16	1,76	2,15	0,19	I32 R/L TC 16-2	**136**		**036**			**636**
P								●		●			
M								●		●			
K								●		●			●
N													●
S								●		○			
H										○			
O													○

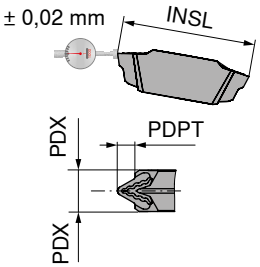
→ v_c Page 261
→ Application recommendation on page 269

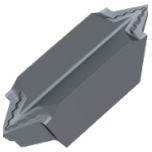
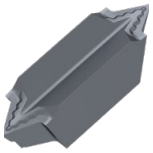
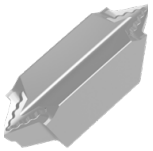
Internal machining | *External machining*

→ 253

Threading inserts TC partial profile 60°

F	M	R
		



	CTPP535	CTPP520	-27P H216T
	DRAGONSKIN	DRAGONSKIN	
			
	70 355 ...	**70 355 ...**	**70 355 ...**

Designation	Size	TP mm	INSL mm	PDPT mm	PDX mm	CRE mm	for tool holder					
TC 16-1 EI A 60	TC 16-1 ...	0,5 - 1,5	16	1,27	1,05	0,03	E/I.. R/L TC 16-1	**110**		**010**		**610**
TC 16-2 EI AG 60	TC 16-2 ...	0,5 - 3,0	16	2,57	2,15	0,03	E/I.. R/L/N TC 16-2	**132**		**032**		**632**
TC 16-2 EI G 60	TC 16-2 ...	1,75 - 3,0	16	2,49	2,15	0,11	E/I.. R/L/N TC 16-2	**130**		**030**		**630**

P	●	●	
M	●	●	
K	●	●	●
N			●
S	●	○	
H		○	
O			○

→ v_c Page 261
→ Application recommendation on page 269

Internal machining

→ 253

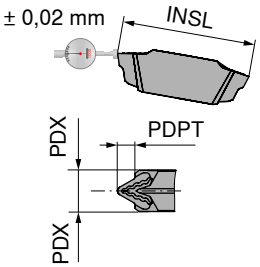
External machining

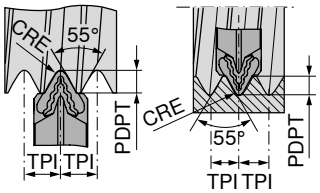
→ 251

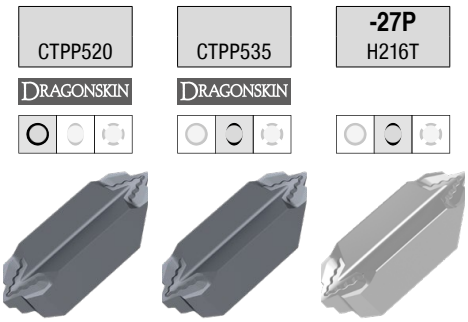
→ 252

Threading inserts TC full profile 55°

F	M	R
		







Designation	Size	TPI 1/"	INSL mm	PDPT mm	PDX mm	CRE mm	for tool holder	70 359 ...		70 359 ...		70 359 ...	
TC 16-1 EI 28 W	TC 16-1 ...	28	16	0,60	1,05	0,12	E/I.. R/L TC 16-1	**010**		**110**			
TC 16-1 EI 20 W	TC 16-1 ...	20	16	0,84	1,05	0,17	E/I.. R/L TC 16-1	**016**					
TC 16-1 EI 19 W	TC 16-1 ...	19	16	0,88	1,05	0,17	E/I.. R/L TC 16-1	**018**		**118**			**618**
TC 16-1 EI 16 W	TC 16-1 ...	16	16	1,05	1,05	0,21	E/I.. R/L TC 16-1	**022**					
TC 16-2 EI 14 W	TC 16-2 ...	14	16	1,20	2,15	0,23	E/I.. R/L/N TC 16-2	**030**		**130**			**630**
TC 16-2 EI 12 W	TC 16-2 ...	12	16	1,40	2,15	0,27	E/I.. R/L/N TC 16-2			**132**			
TC 16-2 EI 11 W	TC 16-2 ...	11	16	1,53	2,15	0,30	E/I.. R/L/N TC 16-2	**034**		**134**			**634**
P								●		●			
M								●		●			
K								●		●			●
N													●
S								○		●			
H								○					
O													○

→ v_c Page 261
→ Application recommendation on page 269

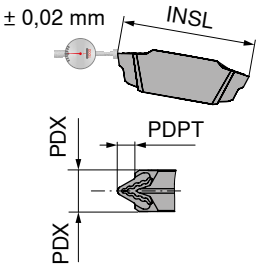
Internal machining | *External machining*

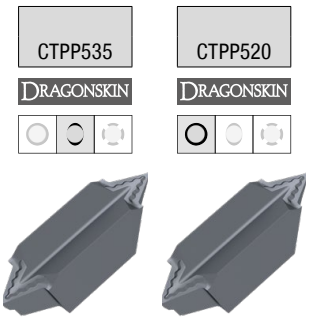


→ 253 | → 251 | → 252

Threading inserts TC partial profile 55°

F	M	R
		





Designation	Size	TPI 1/"	INSL mm	PDPT mm	PDX mm	CRE mm	for tool holder	70 356 ...		70 356 ...	
TC 16-1 EI A 55	TC 16-1 ...	28 - 16	16	1,39	1,05	0,12	E/I.. R/L TC 16-1	**110**			**010**
TC 16-2 EI AG 55	TC 16-2 ...	28 - 8	16	2,91	2,15	0,12	E/I.. R/L/N TC 16-2	**132**			**032**
TC 16-2 EI G 55	TC 16-2 ...	14 - 8	16	2,78	2,15	0,23	E/I.. R/L/N TC 16-2	**130**			**030**

P								●		●	
M								●		●	
K								●		●	
N											
S								●		○	
H										○	
O											

→ v_c Page 261
→ Application recommendation on page 269

Internal machining

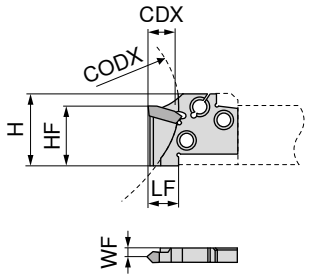
→ 253

External machining

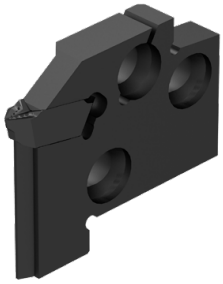
→ 251

→ 252

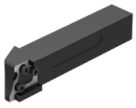
ModularClamp MSS – Threading module TC for external threads



Illustrations show right-hand versions



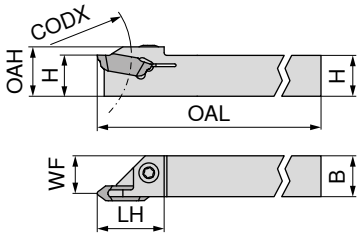
										Left-hand		Neutral		Right-hand	
										70 872 ...		70 872 ...		70 872 ...	
Designation	TP mm	TPI 1/"	WF mm	HF mm	LF mm	H mm	CODX mm	CDX mm	for grooving inserts						
E20 R/L TC 16-1	0,5 - 1,5	28 - 16	3,45	13	20	24	60	8	TC 16-1 ...		**120**				**020**
E20 N TC 16-2	1,75 - 3,0	14 - 8	2,20	13	20	24		12	TC 16-2 ...				**220**		

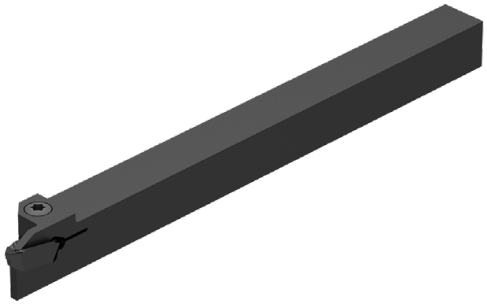


→ 246–250 → 259+260

3

MonoClamp – Monoholder TC – external thread





Illustrations show right-hand versions

Designation	TP mm	TPI 1/"	H mm	B mm	OAL mm	LH mm	OAH mm	WF mm	CODX mm	for grooving inserts	Left-hand 70 883 ...		Right-hand 70 882 ...	
E12 R/L 00-1212 TC16	0,5 - 3	28 - 8	12	12	150	20	14,5	11	30	TC16-1/2..		**012**		**012**

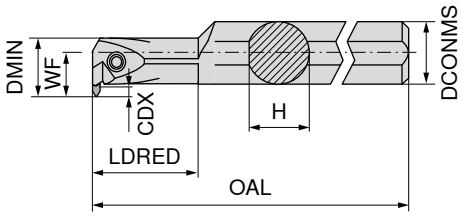
Key D

Clamping screw

Spare parts for grooving inserts		80 950 ...		70 950 ...	
TC16-1/2..	T15	**113**	M4x11	**442**

→ 246–250

MonoClamp – Monobloc boring bar TC – internal thread



Illustrations show right-hand versions

Designation	WF mm	DCONMS mm	H mm	OAL mm	LDRED mm	CDX mm	DMIN mm	for grooving inserts	Left-hand 70 857 ...	Right-hand 70 856 ...
I16 L 90-2D TC16	14,0	20	18	180	32	4	20	TC16-1/2..	**016**	
I20 R/L 90-2D TC16	17,5	25	23	200	40	5	25	TC16-..	**020**	**020**


Key D


Clamping screw

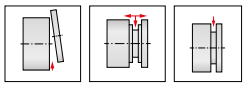
Spare parts for Article no.		80 950 ...		70 950 ...
70 857 016	T15	**113**	M4x14	**403**
70 857 020 / 70 856 020			M5x18	**404**

→ 246–250

3

MaxiClick – Insert – cutting depth 5 mm

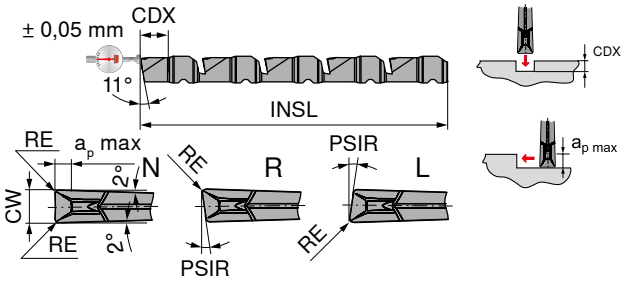
▲ 5 cutting edges

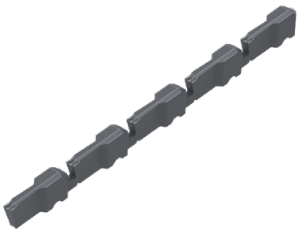


F	M	R

-F2
CTP1340

DRAGONSKIN





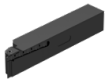
70 338 ...

Designation	IH	CW mm	RE mm	PSIR	INSL mm	$a_{p\,max}$ mm	CDX mm	for tool holder	
MC 05-5-1.00 L 07-F2	L	1,0	0,1	7°	59,2		5	MC 05 R/L	**250**
MC 05-5-1.50 L 07-F2	L	1,5	0,1	7°	59,2		5	MC 05 R/L	**260**
MC 05-5-1.00 N 0.10-F2	N	1,0	0,1		59,2	0,5	5	MC 05 R/L	**210**
MC 05-5-1.50 N 0.10-F2	N	1,5	0,1		59,2	1,0	5	MC 05 R/L	**220**
MC 05-5-1.00 R 07-F2	R	1,0	0,1	7°	59,2		5	MC 05 R/L	**230**
MC 05-5-1.50 R 07-F2	R	1,5	0,1	7°	59,2		5	MC 05 R/L	**240**

P	●
M	●
K	●
N	○
S	●
H	
O	○

→ v_c Page 261
→ Application recommendation on page 265

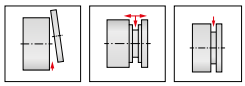
Internal machining | *External machining*



→ 257

MaxiClick – Insert – cutting depth 10 mm

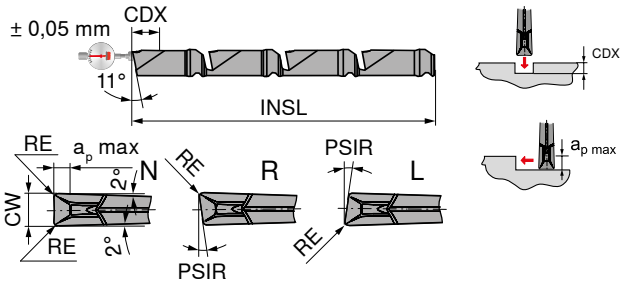
▲ 4 cutting edges



F	M	R
		

-F2
CTP1340

DRAGONSKIN



70 339 ...

Designation	IH	CW mm	RE mm	PSIR	INSL mm	$a_{p\,max}$ mm	CDX mm	for tool holder	
MC 10-4-1.50 L 07-F2	L	1,5	0,1	7°	59,2		10	MC 10 R/L	270
MC 10-4-2.00 L 07-F2	L	2,0	0,1	7°	59,2		10	MC 10 R/L	280
MC 10-4-2.50 L 07-F2	L	2,5	0,1	7°	59,2		10	MC 10 R/L	290
MC 10-4-1.50 N 0.10-F2	N	1,5	0,1		59,2	1,0	10	MC 10 R/L	210
MC 10-4-2.00 N 0.10-F2	N	2,0	0,1		59,2	1,5	10	MC 10 R/L	220
MC 10-4-2.50 N 0.10-F2	N	2,5	0,1		59,2	2,0	10	MC 10 R/L	230
MC 10-4-1.50 R 07-F2	R	1,5	0,1	7°	59,2		10	MC 10 R/L	240
MC 10-4-2.00 R 07-F2	R	2,0	0,1	7°	59,2		10	MC 10 R/L	250
MC 10-4-2.50 R 07-F2	R	2,5	0,1	7°	59,2		10	MC 10 R/L	260

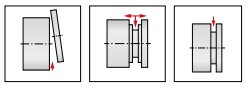
P	●
M	●
K	●
N	○
S	●
H	
O	○

→ v_c Page 261
→ Application recommendation on page 265

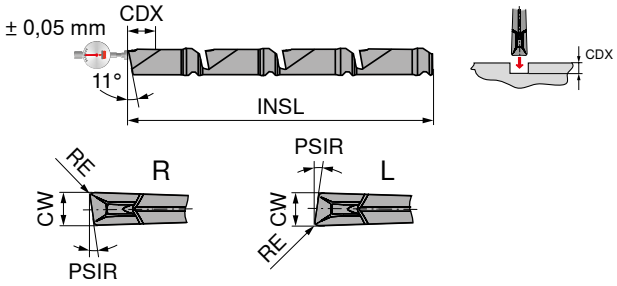
Internal machining	*External machining*
	
	→ 258

MaxiClick – Insert – cutting depth 10 mm

▲ 4 cutting edges



F	M	R



-F3
CTP1340

DRAGONSKIN

70 340 ...

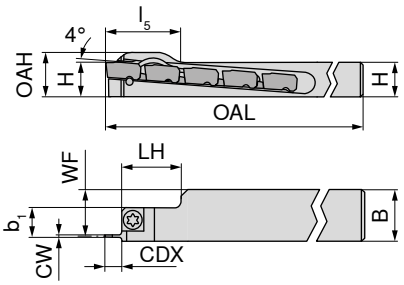
Designation	IH	CW mm	RE mm	PSIR	INSL mm	CDX mm	for tool holder	
MC 10-4-1.50 L 12-F3	L	1,5	0,1	12°	59,2	10	MC 10 R/L	**270**
MC 10-4-2.00 L 12-F3	L	2,0	0,1	12°	59,2	10	MC 10 R/L	**280**
MC 10-4-2.50 L 12-F3	L	2,5	0,1	12°	59,2	10	MC 10 R/L	**290**
MC 10-4-1.50 R 12-F3	R	1,5	0,1	12°	59,2	10	MC 10 R/L	**240**
MC 10-4-2.00 R 12-F3	R	2,0	0,1	12°	59,2	10	MC 10 R/L	**250**
MC 10-4-2.50 R 12-F3	R	2,5	0,1	12°	59,2	10	MC 10 R/L	**260**

P	●
M	●
K	●
N	○
S	●
H	
O	○

→ v_c Page 261
→ Application recommendation on page 265

Internal machining	*External machining*
	
	→ 258

MaxiClick – Toolholder – cutting depth 5 mm



Illustrations show right-hand versions

Designation	H mm	OAH mm	B mm	CW mm	CDX mm	WF mm	OAL mm	LH mm	l_5 mm	for grooving inserts	Left-hand 70 873 ...	Right-hand 70 873 ...
MC 05 R/L -1010K	10	13	10	1,00 - 1,50	5	8,5	125	23	27	MC 05	**210**	**110**
MC 05 R/L -1212K	12	15	12	1,00 - 1,50	5	10,5	125	23	27	MC 05	**212**	**112**
MC 05 R/L -1616K	16	19	16	1,00 - 1,50	5	14,5	125	23	20	MC 05	**216**	**116**
MC 05 R/L -2020K	20	23	20	1,00 - 1,50	5	18,8	125	23	20	MC 05	**220**	**120**


Key-T

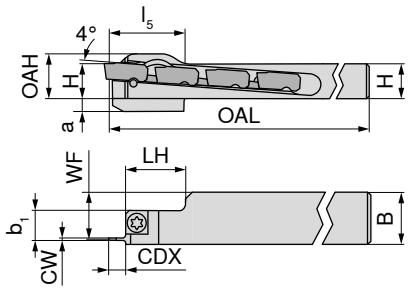

Clamping screw

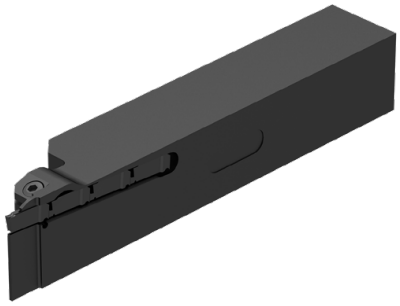
Spare parts for grooving inserts		70 950 ...		70 950 ...
MC 05	T15	**738**	M4x11	**174**

→ 254

3

MaxiClick – Toolholder – cutting depth 10 mm





Illustrations show right-hand versions

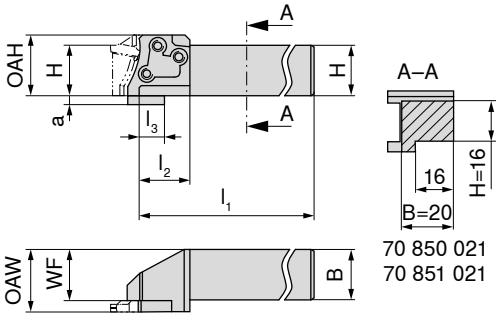
Designation	H mm	OAH mm	B mm	a mm	CW mm	CDX mm	WF mm	OAL mm	LH mm	l_5 mm	for grooving inserts	Left-hand 70 874 ...	Right-hand 70 874 ...
MC 10 R/L -1010K	10	13	10		1,50 - 2,50	10	8,5	125	28		MC 10	**210**	**110**
MC 10 R/L -1010K-S	10	13	10	6	1,50 - 2,50	10	8,5	125	28	27	MC 10	**410** [1]	**310** [1]
MC 10 R/L -1212K	12	15	12		1,50 - 2,50	10	10,5	125	28		MC 10	**212**	**112**
MC 10 R/L -1212K-S	12	15	12	4	1,50 - 2,50	10	10,5	125	28	27	MC 10	**412** [1]	**312** [1]
MC 10 R -1616K	16	19	16		1,50 - 2,50	10	14,5	125	28	20	MC 10		**116**
MC 10 R/L -2020K	20	23	20		1,50 - 2,50	10	18,8	125	28	20	MC 10	**220**	**120**

1) -S = strengthened variant

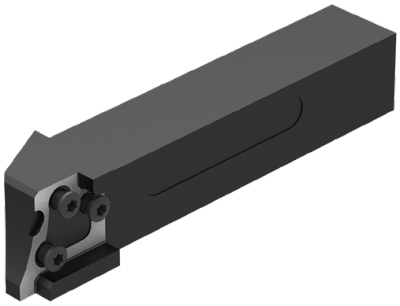
Spare parts for grooving inserts		Key-T 70 950 ...		Clamping screw 70 950 ...	
MC 10	T15	**738**	M4x11	**174**

→ 255+256

ModularClamp MSS – Tool holder 0°



Illustrations show right-hand versions



Designation	H mm	B mm	OAW mm	OAH mm	WF mm	l_1 mm	l_2 mm	for modules	Left-hand 70 851 ...	Right-hand 70 850 ...
E12 R/L 00-1212E	12	12	15,25	14,5	11,75	70	12	E12 R/L ...	**012**	**012**
E16 R/L 00-1616G	16	16	19,25	19,5	15,75	90	16	E16 R/L ...	**016**	**016**
E20 R/L 00-1620G	16	20	24,25	24,0	20,15	90	20	E20 R/L ...	**021** [1]	**021** [1]
E20 R/L 00-2020J	20	20	24,25	24,0	20,15	110	20	E20 R/L ...	**020**	**020**

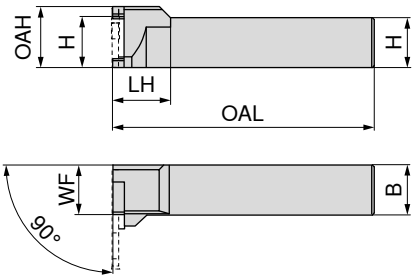
1) see view A-A

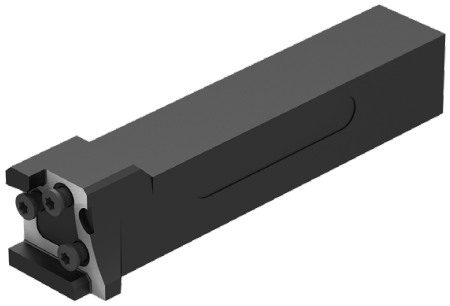
Spare parts for Article no.	Key D 80 950 ...		Clamping screw 70 950 ...	
70 851 012 / 70 850 012	T08	**110**	M2,5x10	**440**
70 851 016 / 70 850 016	T15	**113**	M3,5x12,5	**441**
70 851 021 / 70 850 021	T15	**113**	M4x14	**403**
70 851 020 / 70 850 020	T15	**113**	M4x14	**403**

Module Overview

→ 206+207

ModularClamp MSS – Tool holder 90°





Illustrations show right-hand versions

Designation	H mm	B mm	OAH mm	WF mm	OAL mm	LH mm	for modules	Left-hand 70 855 ...	Right-hand 70 854 ...
E20 R/L 90-2020J	20	20	24	20	110	20	E20 R/L ...	**020**	**020**

For right hand holder → left hand module only
For left hand holder → right hand module only

Spare parts for Article no.		Key D 80 950 ...		Clamping screw 70 950 ...	
70 855 020 / 70 854 020	T15	**113**	M4x14	**403**	

Module Overview

→ 206+207

Cutting data values for grooving inserts GX/LX/FX/SX/AX/TC/MaxiClick

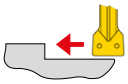
	DRAGONSKIN CTCP325	DRAGONSKIN CTCP335	DRAGONSKIN CTPP345	DRAGONSKIN CTPP520	DRAGONSKIN CTPP535	DRAGONSKIN CTP1340	H216T (SX/FX/GX)	H216T (TC)
Index	v_c in m/min.							
P.1.1	**220**	**184**	**135**	**236**	**180**	**177**		
P.1.2	**194**	**160**	**119**	**204**	**152**	**149**		
P.1.3	**171**	**138**	**105**	**174**	**126**	**123**		
P.1.4	**163**	**131**	**100**	**165**	**118**	**115**		
P.1.5	**151**	**120**	**93**	**150**	**105**	**102**		
P.2.1	**198**	**164**	**122**	**209**	**157**	**153**		
P.2.2	**161**	**129**	**99**	**162**	**116**	**112**		
P.2.3	**151**	**120**	**93**	**150**	**105**	**102**		
P.2.4	**121**	**92**	**74**	**113**	**73**	**70**		
P.3.1	**149**	**127**	**101**	**185**	**119**	**112**		
P.3.2	**96**	**89**	**80**	**131**	**88**	**76**		
P.3.3	**44**	**51**	**59**	**76**	**58**	**39**		
P.4.1	**149**	**127**	**101**	**185**	**119**	**112**		
P.4.2	**123**	**108**	**90**	**158**	**103**	**94**		
M.1.1	149	127	**101**	**185**	**119**	**112**		
M.2.1	96	89	**80**	**131**	**88**	**76**		
M.3.1	133	116	**94**	**169**	**109**	**102**		
K.1.1	**170**	**135**		**140**	**165**	**150**	**140**	**140**
K.1.2	**150**	**115**		**115**	**150**	**125**	**115**	**115**
K.2.1	**160**	**130**		**180**	**145**	**140**	**150**	**150**
K.2.2	**145**	**105**		**115**	**155**	**120**	**110**	**110**
K.3.1	**210**	**150**		**130**	**190**	**170**	**170**	**170**
K.3.2	**140**	**115**		**110**	**145**	**120**	**140**	**140**
N.1.1						300	**400**	**450**
N.1.2						200	**100**	**450**
N.2.1						300	**450**	**300**
N.2.2						200	**450**	**300**
N.2.3						150	**500**	**225**
N.3.1						300	**425**	**190**
N.3.2						300	**400**	**290**
N.3.3						200	**275**	**290**
N.4.1						200	**225**	**290**
S.1.1	35			40	**30**	**35**	38	
S.1.2	30		30	30	**25**	**30**	28	
S.2.1	20		25	20	**15**	**20**	28	
S.2.2	15			15	**15**	**15**	24	
S.2.3	15			18	**15**	**15**	20	
S.3.1				125	**85**	**85**	90	
S.3.2				50	**35**	**40**	55	
S.3.3				35	**25**	**30**	40	
H.1.1				30				
H.1.2				25				
H.1.3								
H.1.4								
H.2.1				25				
H.3.1				40				
O.1.1						130	130	290
O.1.2								
O.2.1						105	105	290
O.2.2								
O.3.1								

The cutting data is strongly influenced by external conditions, such as the stability of the tool and workpiece clamping, material and type of machine. The specified values represent guideline cutting data that can be adjusted by approx. **±20%** according to the usage conditions.

GX – Depths of cut and feed rates

GX Standard / GX-E

Turning



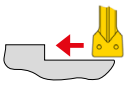
Parting / Grooving

	Depth of Cut a_p in mm							
GX Standard / GX-E	**0,5**	**1,0**	**1,5**	**2,0**	**2,5**	**3,0**	**3,5**	**GX Standard / GX-E**
Cutting width in mm	Feed rate f in mm/rev.							Feed rate f in mm/rev.
2	0,10–0,15	0,05–0,15	0,05–0,12	0,05–0,10				0,05–0,20
3	0,10–0,17	0,05–0,17	0,05–0,17	0,05–0,15	0,05–0,12			0,10–0,25
4	0,10–0,20	0,07–0,20	0,07–0,20	0,07–0,20	0,07–0,17	0,07–0,15		0,10–0,25
5	0,10–0,25	0,10–0,25	0,07–0,25	0,07–0,25	0,07–0,22	0,07–0,20		0,10–0,30
6	0,15–0,30	0,15–0,30	0,15–0,30	0,15–0,30	0,15–0,30	0,15–0,25	0,15–0,22	0,15–0,35

When axial grooving reduce feed by 40%.

GX-F2

Turning



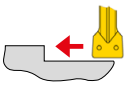
Parting / Grooving

	Depth of Cut a_p in mm								
GX-F2	**0,50**	**0,75**	**1,00**	**1,25**	**1,50**	**1,75**	**2,00**	**2,25**	**2,50**	**GX-F2**
Cutting width in mm	Feed rate f in mm/rev.									Feed rate f in mm/rev.
2	0,03–0,15	0,03–0,15	0,03–0,15	0,03–0,10						0,05–0,15
3	0,04–0,17	0,04–0,17	0,04–0,17	0,04–0,15	0,04–0,13	0,04–0,12				0,075–0,20
4	0,05–0,20	0,05–0,20	0,05–0,20	0,05–0,20	0,05–0,20	0,05–0,17	0,05–0,15			0,10–0,25
5	0,07–0,20	0,07–0,20	0,07–0,20	0,07–0,20	0,07–0,20	0,07–0,20	0,07–0,17	0,07–0,15		0,10–0,30
6	0,10–0,23	0,10–0,23	0,10–0,23	0,10–0,23	0,10–0,23	0,10–0,23	0,10–0,23	0,10–0,19	0,10–0,15	0,15–0,325

When axial grooving reduce feed by 40%.

GX-M40

Turning



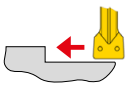
Parting / Grooving

	Depth of Cut a_p in mm								
GX-M40	**0,5**	**1,0**	**1,5**	**2,0**	**2,5**	**3,0**	**3,5**	**4,0**	**GX-M40**
Cutting width in mm	Feed rate f in mm/rev.								Feed rate f in mm/rev.
2	0,10–0,20	0,05–0,20	0,05–0,17	0,05–0,15					0,05–0,15
3	0,10–0,22	0,10–0,22	0,10–0,21	0,10–0,20	0,10–0,17				0,075–0,20
4	0,10–0,25	0,10–0,25	0,10–0,25	0,10–0,25	0,10–0,22	0,10–0,17			0,10–0,25
5	0,10–0,30	0,10–0,30	0,10–0,30	0,10–0,30	0,10–0,27	0,10–0,23	0,10–0,20		0,10–0,30
6	0,10–0,35	0,10–0,35	0,10–0,35	0,10–0,35	0,10–0,32	0,10–0,27	0,10–0,23	0,10–0,20	0,15–0,325

When axial grooving reduce feed by 40%.

GX-27P

Turning



Parting / Grooving

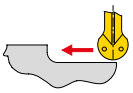
	Depth of Cut a_p in mm								
GX-27P	**0,5**	**1,0**	**1,5**	**2,0**	**2,5**	**3,0**	**3,5**	**4,0**	**GX-27P**
Cutting width in mm	Feed rate f in mm/rev.								Feed rate f in mm/rev.
2	0,05–0,23	0,05–0,23	0,05–0,23	0,05–0,20					0,05–0,20
3	0,05–0,25	0,05–0,25	0,05–0,25	0,05–0,25	0,05–0,20				0,05–0,25
4	0,10–0,30	0,10–0,30	0,10–0,30	0,10–0,30	0,10–0,30	0,10–0,25			0,05–0,30
5	0,10–0,35	0,10–0,35	0,10–0,35	0,10–0,35	0,10–0,35	0,10–0,32	0,10–0,30		0,10–0,35
6	0,10–0,40	0,10–0,40	0,10–0,40	0,10–0,40	0,10–0,40	0,10–0,36	0,10–0,33	0,10–0,30	0,10–0,40

When axial grooving reduce feed by 40%.

GX – Depths of cut and feed rates

GX-M3

Turning



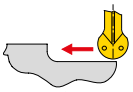
Parting / Grooving

	Depth of Cut a_p in mm							
GX-M3	**0,5**	**1,0**	**1,5**	**2,0**	**2,5**	**3,0**	**3,5**	**4,0**
Radius RE in mm	Feed rate f in mm/rev.							
1,5	0,15–0,35	0,15–0,35	0,15–0,30					
2	0,15–0,40	0,15–0,40	0,15–0,40	0,15–0,30				
2,5	0,15–0,50	0,15–0,50	0,15–0,50	0,15–0,40	0,15–0,35			
3	0,20–0,70	0,20–0,70	0,20–0,70	0,20–0,60	0,20–0,50	0,20–0,40		

GX-M3
Feed rate f in mm/rev.
0,05–0,20
0,10–0,25
0,10–0,25
0,10–0,35

GX-27P Full Radius

Turning



Parting / Grooving

	Depth of Cut a_p in mm							
GX-27P Full Radius	**0,5**	**1,0**	**1,5**	**2,0**	**2,5**	**3,0**	**3,5**	**4,0**
Radius RE in mm	Feed rate f in mm/rev.							
1,5	0,10–0,45	0,05–0,45	0,05–0,40					
2	0,15–0,50	0,10–0,50	0,10–0,50	0,10–0,40				
2,5	0,15–0,60	0,10–0,60	0,10–0,60	0,10–0,50	0,10–0,45			
3	0,25–0,70	0,20–0,70	0,15–0,70	0,15–0,70	0,15–0,65	0,15–0,60	0,15–0,55	
4	0,25–0,80	0,20–0,80	0,15–0,80	0,15–0,80	0,15–0,80	0,15–0,80	0,15–0,75	0,15–0,70

GX-27P Full Radius
Feed rate f in mm/rev.
0,05–0,15
0,075–0,20
0,10–0,25
0,10–0,30
0,15–0,35

GX-M1

Parting / Grooving

GX-M1	
Cutting width in mm	Feed rate f in mm/rev.
2	0,05–0,15
3	0,10–0,20
4	0,10–0,25

GX Radius grooving inserts

Parting / Grooving

GX Radius grooving insert	
Radius RE in mm	Feed rate f in mm/rev.
0,80	0,05–0,10
1,00	0,05–0,15
1,20	0,05–0,15

GX circlip grooving

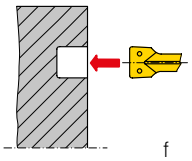
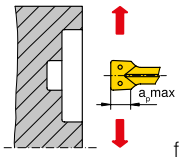
Grooving

GX circlip grooves	
Cutting width in mm	Feed rate f in mm/rev.
0,60–1,70	0,02–0,09
1,95–2,25	0,05–0,10
2,75–3,25	0,05–0,12

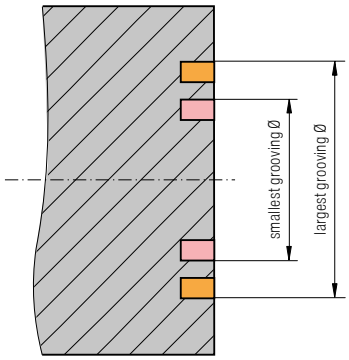
Feed guide and machining instructions for axial grooving and face turning with GX 24 axial

Approximate feed rates

GX

Designation	 f in mm/rev.	 f in mm/rev.	a_p max mm
GX 24-2 E 3.00 ..	0,05–0,15	0,05–0,20	2,5
GX 24-3 E 4.00 ..	0,05–0,15	0,05–0,25	3,0
GX 24-3 E 5.00 ..	0,05–0,15	0,10–0,25	3,0
GX 24-4 E 6.00 ..	0,05–0,20	0,10–0,30	3,5

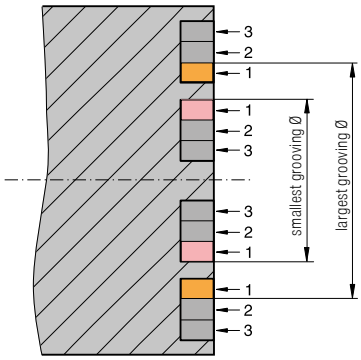
Axial grooving



It is only possible to plunge within the fixed diameter range of the axial grooving module or monoholder (e.g. 50 – 70 mm).

Important: The indicated diameter range is always valid for the external diameter of the groove!

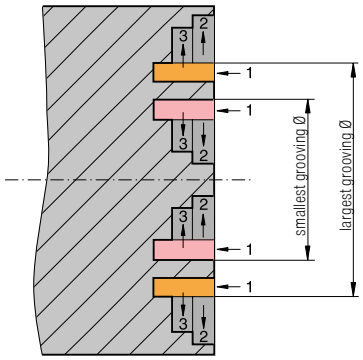
Axial grooving – Groove widening



In case of face turning it is possible to widen the groove above and below the diameter range indicated on the Axial grooving module or monoholder.

Important: Only the first groove must lie within the diameter range of the axial grooving module or axial monoholder. The depth of the widening groove must not be larger than the depth of the original groove.

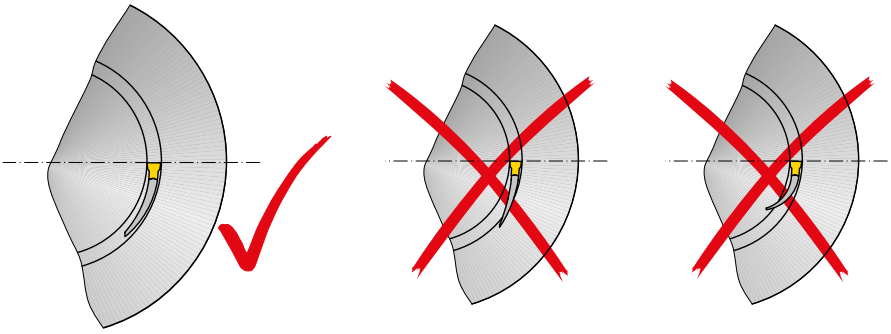
Axial grooving and face turning



Groove widening by face turning in the diameter range above and below the values specified for the Axial grooving module and Axial monoholder are possible.

Important: Only the first groove must lie within the diameter range of the module.

Attention: The diameter of face grooves must lie within the diameter range indicated on the axial grooving module and axial monoholder. Not following this range will result in the tool being damaged or destroyed.



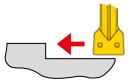
Correct Axial mono holder

Incorrect Axial mono holder

MaxiClick – Depths of cut and feed rates

MaxiClick 05

Turning



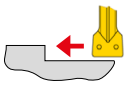
	Depth of Cut a_p in mm		
MaxiClick 05	**0,25**	**0,50**	**0,75**
Cutting width in mm	Feed rate f in mm/rev.		
1	0,02–0,15	0,02–0,10	
1,5	0,02–0,20	0,02–0,20	0,02–0,14

Parting / Grooving

MaxiClick 05
Feed rate f in mm/rev.
0,03–0,10
0,03–0,11

MaxiClick 10

Turning

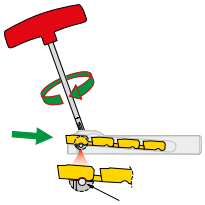


	Depth of Cut a_p in mm				
MaxiClick 10	**0,50**	**0,75**	**1,00**	**1,25**	**1,50**
Cutting width in mm	Feed rate f in mm/rev.				
1,5	0,02–0,20	0,02–0,15	0,02–0,10		
2	0,02–0,20	0,02–0,20	0,02–0,14	0,02–0,10	
2,5	0,02–0,20	0,02–0,20	0,02–0,17	0,02–0,13	0,02–0,10

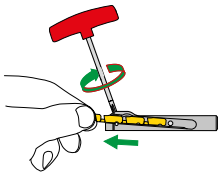
Parting / Grooving

MaxiClick 10
Feed rate f in mm/rev.
0,03–0,11
0,03–0,12
0,03–0,15

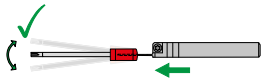
MaxiClick – System function

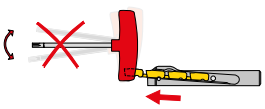


correct insert location in the seat

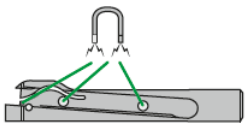


Withdraw cutting insert





Worn-out cutting edge is broken off towards the left or right side



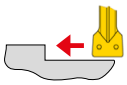
Magnets prevent the cutting insert from falling out of the tool holder during positioning

3

SX – Depths of cut and feed rates

SX -F2

Turning



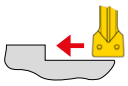
Parting / Grooving

	Depth of Cut a_p in mm								
SX -F2	**0,50**	**0,75**	**1,00**	**1,25**	**1,50**	**1,75**	**2,00**	**2,25**	**2,50**
Cutting width in mm	Feed rate f in mm/rev.								
2	0,03–0,15	0,03–0,15	0,03–0,15	0,03–0,10					
3	0,04–0,17	0,04–0,17	0,04–0,17	0,04–0,15	0,04–0,13	0,04–0,12			
4	0,05–0,20	0,05–0,20	0,05–0,20	0,05–0,20	0,05–0,20	0,05–0,17	0,05–0,15		

SX -F2
Feed rate f in mm/rev.
0,05–0,15
0,075–0,20
0,10–0,25

SX-M2

Turning



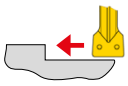
Parting / Grooving

	Depth of Cut a_p in mm							
SX-M2	**0,5**	**1,0**	**1,5**	**2,0**	**2,5**	**3,0**	**3,5**	**4,0**
Cutting width in mm	Feed rate f in mm/rev.							
2	0,05–0,17	0,05–0,13	0,05–0,10					
3	0,07–0,20	0,07–0,20	0,07–0,18	0,07–0,15				
4	0,10–0,25	0,10–0,25	0,10–0,25	0,10–0,22	0,10–0,18			
5	0,12–0,27	0,12–0,27	0,12–0,27	0,12–0,25	0,12–0,22			
6	0,15–0,30	0,15–0,30	0,15–0,30	0,15–0,30	0,15–0,25	0,15–0,20		

SX-M2
Feed rate f in mm/rev.
0,05–0,15
0,075–0,20
0,10–0,25
0,10–0,30
0,15–0,35

SX-27P

Turning



Parting / Grooving

	Depth of Cut a_p in mm							
SX-27P	**0,5**	**1,0**	**1,5**	**2,0**	**2,5**	**3,0**	**3,5**	**4,0**
Cutting width in mm	Feed rate f in mm/rev.							
2	0,05–0,23	0,05–0,23	0,05–0,23	0,05–0,20				
3	0,05–0,25	0,05–0,25	0,05–0,25	0,05–0,25	0,05–0,20			
4	0,10–0,30	0,10–0,30	0,10–0,30	0,10–0,30	0,10–0,30	0,10–0,25		

SX-27P
Feed rate f in mm/rev.
0,05–0,20
0,05–0,25
0,05–0,30

SX/LX – Depths of cut and feed rates

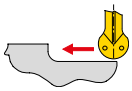
SX-M1

Parting / Grooving

SX-M1	
Cutting width in mm	Feed rate f in mm/rev.
2	0,05–0,15
3	0,10–0,20
4	0,10–0,25
5	0,15–0,30
6	0,15–0,35

SX-M3

Turning



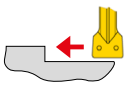
Parting / Grooving

	Depth of Cut a_p in mm							
SX-M3	**0,5**	**1,0**	**1,5**	**2,0**	**2,5**	**3,0**	**3,5**	**4,0**
Radius in mm	Feed rate f in mm/rev.							
1,5	0,15–0,35	0,15–0,35	0,15–0,30					
2	0,15–0,40	0,15–0,40	0,15–0,40	0,15–0,30				
2,5	0,15–0,50	0,15–0,50	0,15–0,50	0,15–0,40	0,15–0,35			
3	0,20–0,70	0,20–0,70	0,20–0,70	0,20–0,60	0,20–0,50	0,20–0,40		

SX-M3
Feed rate f in mm/rev.
0,05–0,20
0,10–0,25
0,10–0,25
0,10–0,35

LX-M2

Turning



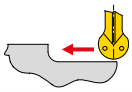
Parting / Grooving

	Depth of Cut a_p in mm							
LX-M2	**0,5**	**1,0**	**1,5**	**2,0**	**2,5**	**3,0**	**3,5**	**4,0**
Cutting width in mm	Feed rate f in mm/rev.							
8	0,17–0,45	0,17–0,45	0,17–0,45	0,17–0,45	0,17–0,40	0,17–0,37	0,17–0,35	
10	0,20–0,50	0,20–0,50	0,20–0,50	0,20–0,50	0,20–0,46	0,20–0,42	0,20–0,38	0,20–0,35

LX-M2
Feed rate f in mm/rev.
0,20–0,50
0,20–0,50

LX-M3

Turning



Parting / Grooving

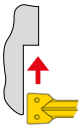
	Depth of Cut a_p in mm							
LX-M3	**0,5**	**1,0**	**1,5**	**2,0**	**2,5**	**3,0**	**3,5**	**4,0**
Radius in mm	Feed rate f in mm/rev.							
4	0,25–0,80	0,25–0,80	0,25–0,80	0,25–0,80	0,25–0,80	0,25–0,70	0,25–0,60	0,25–0,50

LX-M3
Feed rate f in mm/rev.
0,15–0,35

AX/FX – Depths of cut and feed rates

AX-F50

Face turning



Axial grooving

	Depth of Cut a_p in mm			
AX-F50	**0,5**	**1,0**	**1,5**	**2,3**
Size	Feed rate f in mm/rev.			
AX 05	0,03–0,10	0,03–0,10		
AX 10	0,03–0,13	0,03–0,13	0,03–0,135	
AX 15	0,03–0,15	0,03–0,15	0,03–0,15	0,03–0,15

1. Plunging	
Feed rate f in mm/rev.	Feed rate f in mm/rev.
0,025–0,080	0,025–0,20
0,025–0,065	0,05–0,25
0,025–0,050	0,05–0,30

FX-F1

Parting / Grooving

FX-F1	
Cutting width in mm	Feed rate f in mm/rev.
2,2	0,025–0,10
3,1	0,05–0,15
4,1	0,05–0,20

FX-M1

Parting / Grooving

FX-M1	
Cutting width in mm	Feed rate f in mm/rev.
2,20	0,05–0,15
3,10	0,08–0,18
4,10	0,10–0,20
5,10	0,15–0,28
6,50	0,15–0,33
8,20	0,20–0,40
9,70	0,20–0,40

FX-27P

Parting / Grooving

FX-27P	
Cutting width in mm	Feed rate f in mm/rev.
2,20	0,01–0,10
3,10	0,015–0,125
4,10	0,05–0,15

FX-R2

Grooving

FX-R2	
Cutting width in mm	Feed rate f in mm/rev.
3,10	0,10–0,275
4,10	0,15–0,35

TC – Reference values for profile depth and number of passes

All listed values are guide values for steel machining

Metric ISO 60° external thread

Pitch in mm	0,5	0,75	1,0	1,25	1,5	1,75	2,0	2,5	3,0	3,5	4,0	4,5	5,0
Number/cuts	4–6	4–7	4–8	5–9	6–10	7–11	8–12	9–14	10–18	10–18	12–20	12–20	12–20
Thread profile depth in mm	0,32	0,48	0,64	0,8	0,95	1,10	1,26	1,58	1,89	2,21	2,53	2,84	3,16

Metric ISO 60° internal thread

Pitch in mm	0,5	0,75	1,0	1,25	1,5	1,75	2,0	2,5	3,0	3,5	4,0	4,5	5,0
Number/cuts	4–6	4–7	4–8	5–9	6–10	7–11	8–12	9–14	10–18	10–18	12–20	12–20	12–20
Thread profile depth in mm	0,30	0,45	0,59	0,74	0,89	1,02	1,17	1,46	1,76	2,02	2,35	2,64	2,93

Whitworth 55° external and internal thread

TPI	28	26	24	20	19	18	16	14	12	11	10	9	8	7	6	5
Number/cuts	5–8	5–8	5–9	5–9	6–10	6–10	7–11	8–12	9–14	9–14	10–17	10–18	10–18	12–20	12–20	12–20
Thread profile depth in mm	0,60	0,65	0,70	0,84	0,88	0,93	1,05	1,20	1,40	1,53	1,68	1,87	2,11	2,41	2,81	3,37

Partial profile 60° external and internal thread

External	TC 16-2EI-AG60																
	TC 16-1EI-A60									TC 16-2EI-G60				TC 16-3EI-N60			
Pitch in mm	0,5	0,75	1,0	1,25	1,5	1,75	2,0	2,5	3,0	1,75	2,0	2,5	3,0	3,5	4,0	4,5	5,0
Number/cuts	4–6	4–7	5–9	6–10	7–11	8–12	9–14	10–15	12–19	8–12	9–14	10–15	12–20	12–20	13–21	14–22	14–22
Thread profile depth in mm	0,33	0,52	0,71	0,90	1,09	1,28	1,47	1,84	2,22	1,23	1,42	1,79	2,17	2,45	2,83	3,21	3,59

Internal	TC 16-2EI-AG60																
	TC 16-1EI-A60									TC 16-2EI-G60				TC 16-3EI-N60			
Pitch in mm	0,5	0,75	1,0	1,25	1,5	1,75	2,0	2,5	3,0	1,75	2,0	2,5	3,0	3,5	4,0	4,5	5,0
Number/cuts	4–6	4–7	5–9	6–10	7–11	8–12	9–14	10–15	12–19	8–12	9–14	10–15	12–20	12–20	13–21	14–22	14–22
Thread profile depth in mm	0,27	0,44	0,60	0,76	0,92	1,09	1,25	1,57	1,90	1,04	1,20	1,52	1,85	2,07	2,40	2,72	3,05

Partial profile 55° external and internal thread

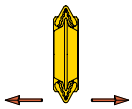
External	TC 16-2EI-AG55												
	TC 16-1EI-A55												
TPI	28	26	24	20	19	18	16	14	12	11	10	9	8
Number/cuts	5–8	5–8	6–9	6–9	7–12	7–12	8–14	9–14	10–16	10–16	11–18	12–20	12–20
Thread profile depth in mm	0,66	0,72	0,79	0,95	1,01	1,07	1,21	1,39	1,63	1,79	1,97	2,20	2,48

Internal	TC 16-2EI-G55						TC 16-3EI-N55		
TPI	14	12	11	10	9	8	7	6	5
Number/cuts	8–12	9–14	10–15	11–18	12–20	12–20	12–20	12–20	14–22
Thread profile depth in mm	1,22	1,46	1,56	1,80	2,03	2,31	2,40	2,89	3,56

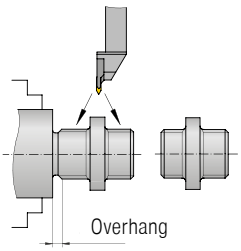
3

Comparison threading system with TC and conventional

TC

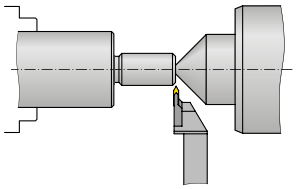


- Neutral configuration of insert makes operation in both directions possible
- Only one threading insert per pitch for partial profile and Whitworth thread; only two threading inserts (internal – external) per pitch for ISO threads
- Reduced stock holding
- good chip formation due to chip breaker with rake angle + 10 °

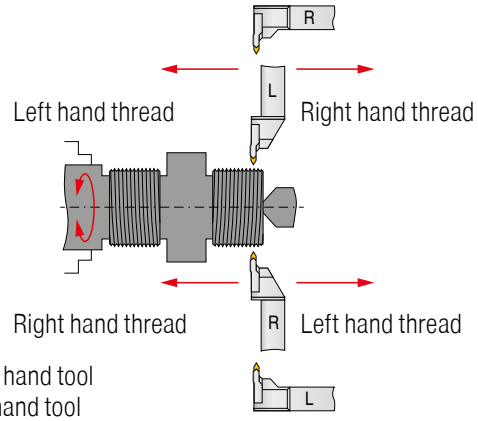


Greater efficiency through:

- shorter operating time
- Less tool changing
- High stability wih small overhang
- Material saving
- Thread turning between shoulders
- Fewer tools and indexable inserts



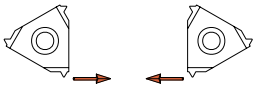
- Very good access to workpiece, therefore use of tailstock also possible with small thread diameters



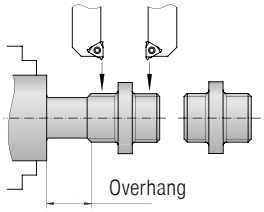
R = Right hand tool
L = Left hand tool

- ease of use, as the tools have no pitch angle correction they can be used in both directions

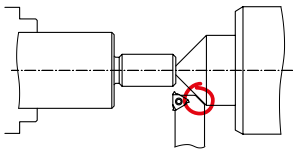
Conventional



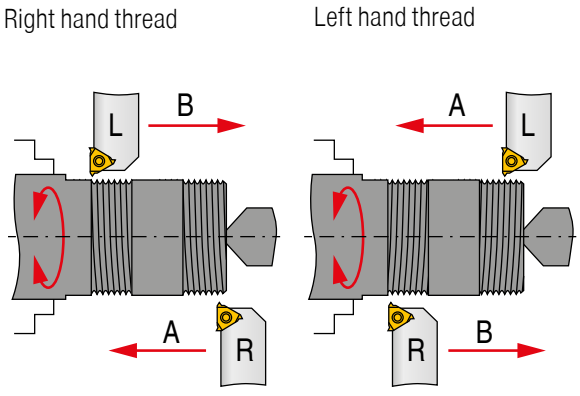
- Right-hand and left-hand version of indexable insert, therefore operation only in one direction
- For every pitch 4 threading inserts are necessary (right – left, internal – external)



- For this machining method 2 tools are required
- additional material and stability loss with large overhang



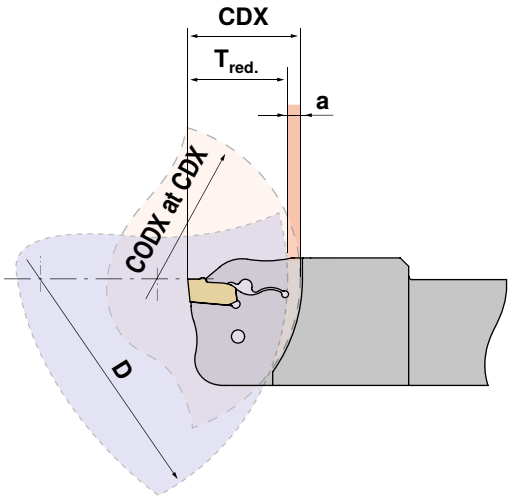
- poor accessibility
- Collision danger



- With conventional thread turning the correction of the helix angle is necessary, therefore a high degree of application know-how is required
- Can only be operated in one direction

ModularClamp

GX | SX | LX | FX



The ModularClamp grooving modules are matched according to size on a particular workpiece diameter CODX. If the diameter of the workpiece is greater than CODX of the grooving Modules, this reduces the achievable penetration depth by the dimension „a“. The extent of reduction can be determined with the following table.

CDX maximum plunge depth in mm
CODX maximum workpiece Ø with full penetration depth in mm
a Reduction amount in mm

$T_{red.}$ = CDX – a

Grooving depth reduction

	Reduction a (mm) of the maximum grooving depth (CDX)																
Size		0,5	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0	5,5	6,0	6,5	7,0	7,5	8,0
E12	35	40	45	60	75	115	>250										
E16	50	55	60	70	80	100	130	200	>420								
E20	60	65	70	75	85	95	110	130	165	220	>330						
E25	75	80	85	90	100	110	125	140	160	190	240	320	>500				
E32	95	100	105	110	120	125	135	145	160	180	200	225	270	320	400	530	>800
	Workpiece diameter D (mm)																

Maximum workpiece diameter (CODX) with full penetration depth (CDX) in mm

Calculation example:

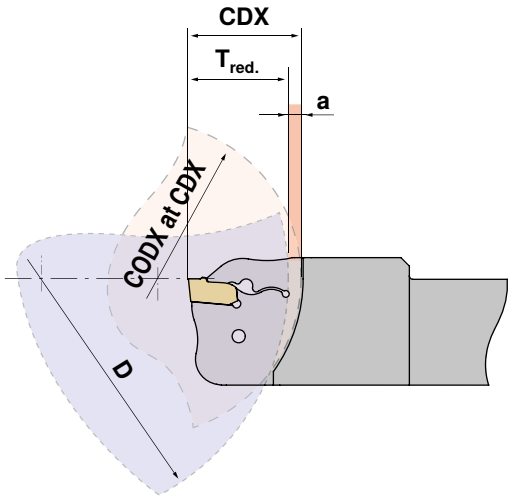
E25R**21**-GX24-3

Size 25 — CDX = 21 mm, Ø 75 mm

D = Ø 100 mm — CDX – a = $T_{red.}$ 21 – 2 = 19 mm

MonoClamp

SX



Depending on the groove width and shank size, the MonoClamp tools are designed for use with a specific workpiece diameter CODX. If the workpiece diameter is larger than the CODX of the grooving module, the achievable groove depth is reduced by the dimension „a“. The extent of the reduction is determined using the following table.

CDX maximum plunge depth in mm
CODX maximum workpiece Ø with full penetration depth in mm
a Reduction amount in mm

$T_{red.}$ = CDX – a

Grooving depth reduction

	Reduction a (mm) of the maximum grooving depth (CDX)																
Shank	0	0,5	1	1,5	2	2,5	3	3,5	4	4,5	5	5,5	6	6,5	7	7,5	8
E12R/L0022...	44	70	80	95	115	150	225	>450									
E16R/L0026...	52	90	105	125	155	210	305	>600									
E20R/L0026...	52	110	125	140	160	195	240	320	475	>950							
E20R/L0033...	66	110	125	140	160	195	240	320	475	>950							
E25R/L0026...	52	140	160	190	235	310	465	>930									
E25R/L0033...	66	155	175	200	230	275	340	450	675	>1350							
E25R/L0040...	80	155	175	200	230	275	340	450	675	>1350							
	Workpiece diameter D (mm)																

Maximum workpiece diameter (CODX) with full penetration depth (CDX) in mm

Calculation example:

E25R**0033...**

CDX = 33 mm, Ø 66 mm

D = Ø 200 mm	CDX – a = $T_{red.}$ 33 – 1,5 = 31,5 mm

Clamping Method – SX-System

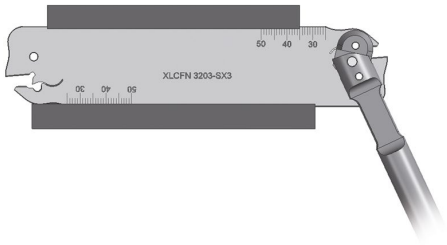
System function – inserting and removing the cutting inserts

Precision system for internal and external grooving.

The key has been designed in such a way that it will not stress the material beyond its 'elastic limit'.

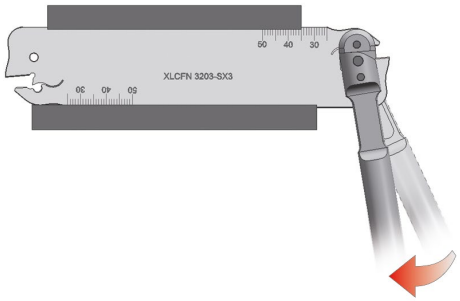
With this alternate system the material always remains in its flexible range and provides a substantial increase in tool life.

1



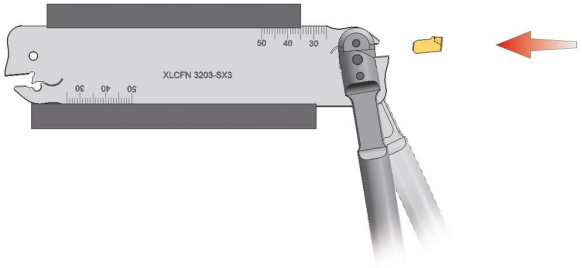
Locate wrench into blade with pins located in two holes

2



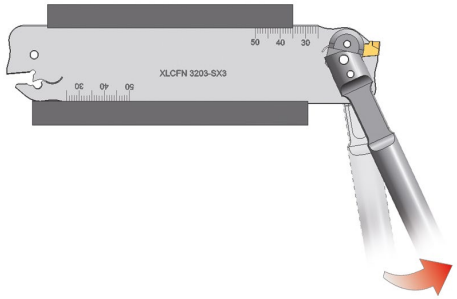
Movement of the fitting key in the direction of the insert seat opens the tool.

3



Load the grooving insert into position and press against the seat.

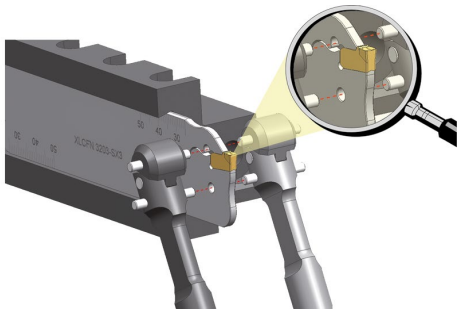
4



Moving the key forward causes the insert seat to close and clamp the insert.

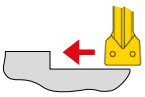
When changing the inserts, always maintain tension on the key!

The clamp is designed so that the wrench can be inserted from both sides of the blade according to the accessibility.



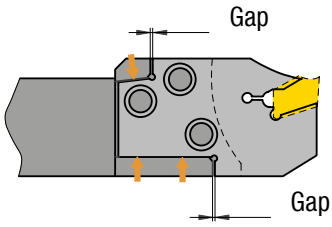
Maximum blade projection when turning

Blade	max. overhang
SX 2 – SX 3	25 mm
SX 4 – SX 5	30 mm
SX 6	35 mm



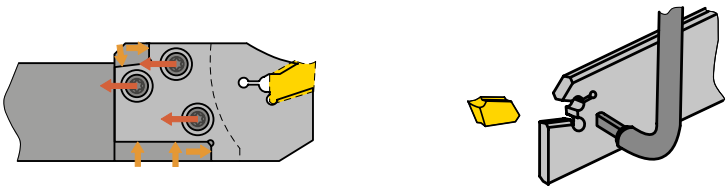
Clamping function – ModularClamp-Module

Module unclamped



- Gap between module and support face for axial clamping

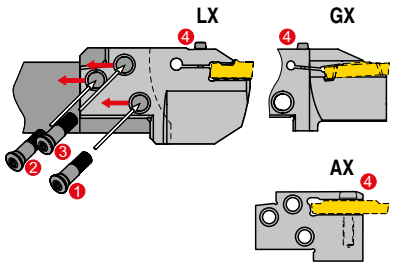
Module clamped



- Axial clamping with support face
- Connection free from play, therefore maximum stability

GX LX AX

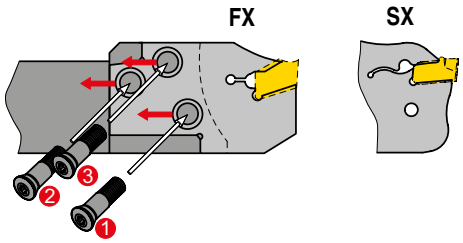
Active insert clamping



Clamping screws 1, 2 and 3 are used to clamp the modules.
The insert is clamped in the module via the additional screw 4.

FX SX

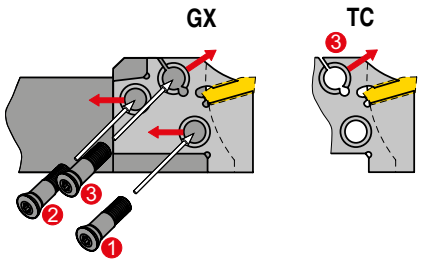
Self clamping of the insert



Clamping screws 1, 2 and 3 are used for clamping the module.
The insert is self-clamping.

GX TC

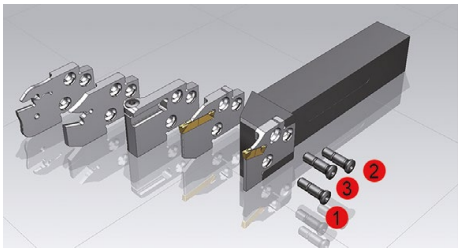
Active insert clamping



Clamping screws 1 and 2 are used for clamping the module.
Important: first tighten clamp screws 1 and 2.
Then clamp the insert with screw 3.

Torque Moment ModularClamp Module Screws

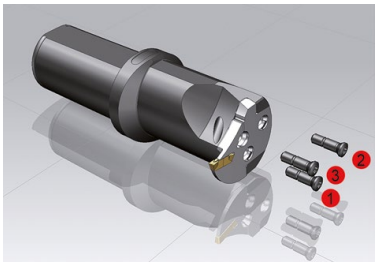
ModularClamp – Tool holder



Tighten screws to the correct Torque moment in this order.

ModularClamp – Tool holder	Screw	Torx	Torque moment	
			Nm	in.lbs
E12..	M2,5x10	T08	1,2	10,6
E16..	M3,5x12,5	T15	3,2	28,3
E20..	M4x14	T15	4,0	35,4
E25..	M5x18	T20	5,0	44,3
E32..	M6x20	T25	6,0	53,1

ModularClamp – Boring bar



Tighten screws to the correct Torque moment in this order.

ModularClamp – Boring bar	Screw	Torx	Torque moment	
			Nm	in.lbs
I16..	M2,5x10	T08	1,2	10,6
I20..	M3x11	T10	2,0	17,7
I25..	M3,5x12,5	T15	3,2	28,3
I32..	M4,5x17	T20	4,0	35,4
I40..	M5x18	T20	5,0	44,3

Tightening torque for the insert clamping

Recommended tightening torque

Grooving systems	Screw	Torx	Torque moment	
			Nm	in.lbs
GX / AX / LX	M3,5	T15	3,2	28,3
	M4,0	T15/T20	4,0	35,4
	M5,0	T20	5,0	44,3

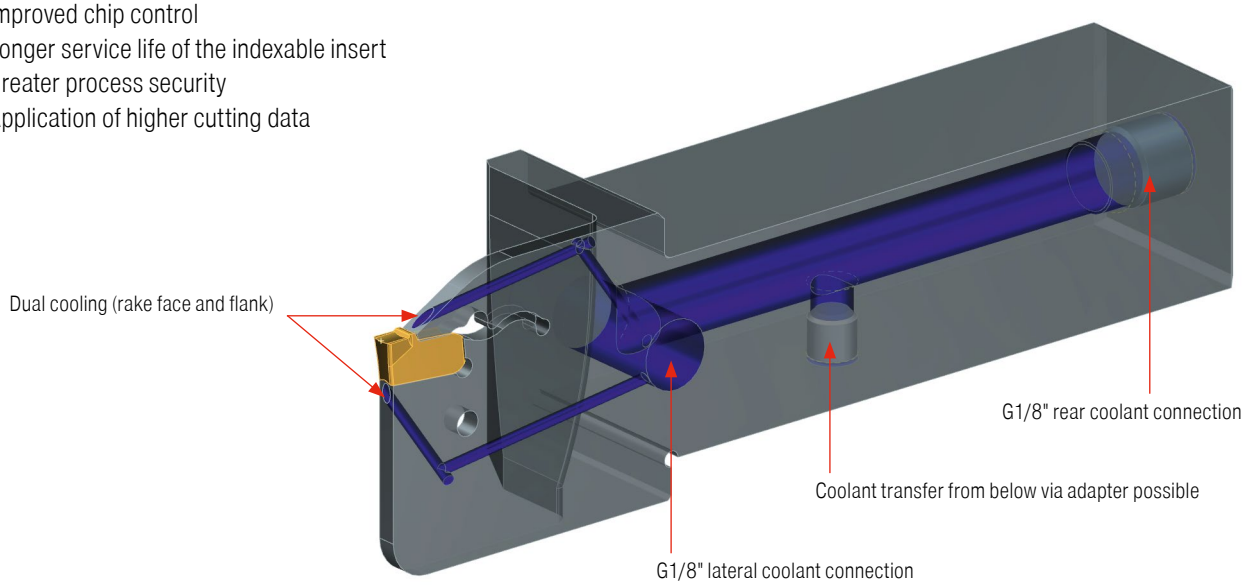
Advantages due to DirectCooling

Internal coolant supply with groove machining has a decisively positive effect on your turning process.
In our CERATIZIT grooving range, the following grooving systems have an internal coolant supply:

- **SX** Grooving holder (single tool)
- **GX** Grooving holder (single tool)

Advantages due to DirectCooling

- Improved chip control
- Longer service life of the indexable insert
- Greater process security
- Application of higher cutting data



Advantages of the trochoidal turning strategy

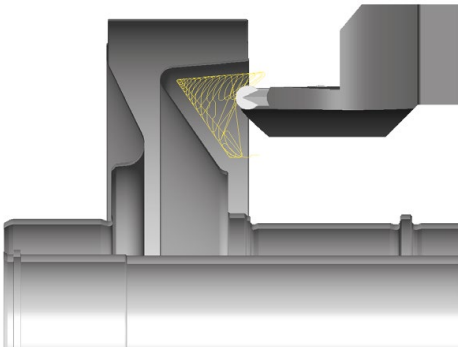
- Less wear and longer tool life due to softer entry and exit
- Smaller angle of engagement = less vibration
- Up to 40% higher feed rate values possible
- Broad field of application in austenitic steels, heat-resistant steels, Inconel and nickel-base alloys as well as long-chipping ductile materials
- Savings on tools

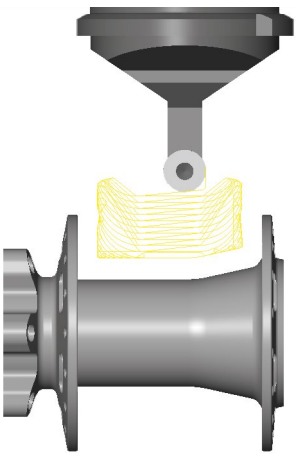
Trochoidal turning with support of the following CAM systems:

- hyperMill – High-performance turning
- Esprit CAM – ProfitTurning
- SolidCAM – Turning
- EdgeCAM – Waveform turning
- MasterCAM – Dynamic turning

Possible applications

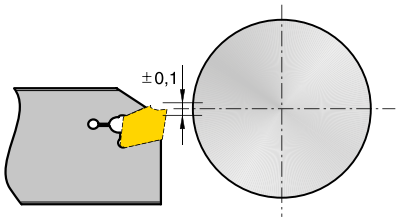
- Radial and axial recesses and grooves
- Rough machining – high-speed turning with button insert

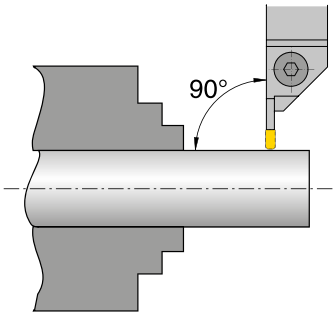




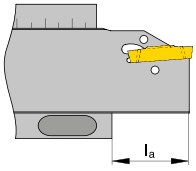
General references

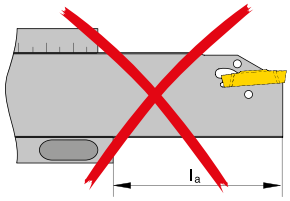
Tool position

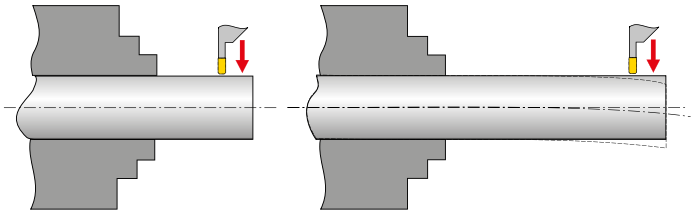




Tool overhang

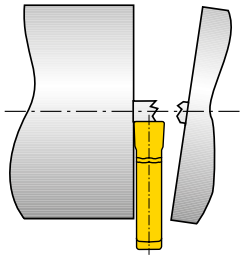




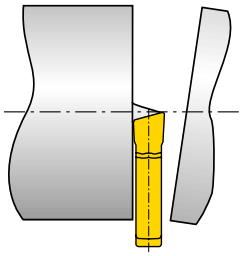


As a rule of thumb: Overhang l_a should not be greater than 8 x s (Groove width).

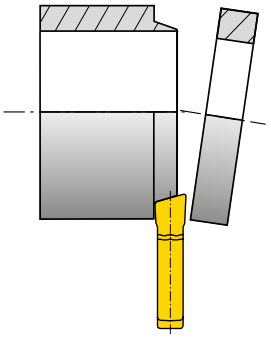
References for Parting off



From Ø 5 mm on, reduce feed "f" by approx. 50%. No parting across centre (risk of breakage).

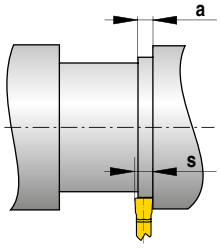


For parting pip-free, use R or L inserts. In order to minimize lateral deflection reduce feed by approx. 20–50 %.

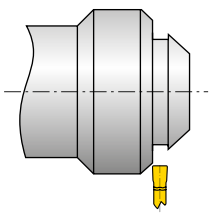


In order to prevent ring formation, use R or L inserts. Reduce feed "f" because of lateral deflection by approx. 20 % – 50%.

References for grooving



When grooving with an axial displacement the width **„a“** should amount to at least 70 % of the grooving width **„s“**.



When grooving oblique surfaces the feed should be reduced by approx. 20% – 50 % until fully engaged.

Trouble shooting guide for grooving FX/SX/GX/LX

Type of problem											
Type of wear				Work piece problems				Swarf control			
Edge breakage	Built-up edge	Wear on clearance face	Plastic deformation	Vibration	Formation of pips and burrs	Chattered surface	Surface quality	Chip too long (snarl chip)	Chip too short (fragmented chip)		
	↑	↓	↓	↓			↑	↓		Cutting speed	Cutting data / Remedy measures
↓			↓	↑		↓	↓	↑	↓	Feed rate	
↓		↓	↓		↓	↓	↓			Feed rate at centre (-R -F -M ↑ ↓)	
↑	↓		~	~	↓	↓	↓	↓	↑	Chip groove	Insert selection
					●					R/L execution	
↑		↑	↑	↓	↓	↓	↑			Corner radius (larger ↑ / smaller ↓)	
↓		↑	↑							Tool Material (Wear resistance ↑ / toughness ↓)	
				↓		↑	↑			Groove width	
~				~		~	~			Tool clamping	General criteria
~				~		~	~			Work piece clamping	
~				~			↓			Overhang	
~		~		~	~		~			Tip height	
	●	●	●		●		●	●		Cooling lubricant	

↑ raise, increase large influence
↑ raise, increase small influence
↓ avoid, reduce large influence
↓ avoid, reduce small influence
~ check, optimise
● use

Trouble shooting guide for TC threading

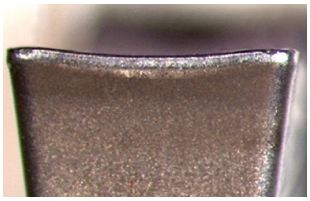
Type of problem												
Type of wear				Workpiece				Swarf control				
Wear on clearance face	Break out cut	Plastic deformation	Built-up edge	Formation of a shoulder at the external thread Ø	Profile	Surface quality	Chatter marks, vibrations	Chip too thick	Chip too thin	Chip shape (snarl chip)		
↓		↓	↑			↑	↓				Cutting speed	Cutting data
a, b	a, b		a, b	a, b		a, b	a, b	a, b		a, b	Feed (a – over the flanks; b – Alternating flanks)	Cutting data
↑	↓	↓		↓	↓	↓	↓	↓	↑	~	Feed (Cutting depth)	Cutting data
↓	↑	↑		~	~	↑	~	↑	↓	↓	Number of passes	Cutting data
				●	●	●					Spring cut (Air cut)	Cutting data
			●			●	●			●	Chip groove	Indexable insert selection
↑	↓	↑									Tool Material (Wear resistance ↑ toughness ↓)	Indexable insert selection
				●	●	●					Full profile	Indexable insert selection
											Partial profile	Indexable insert selection
	~					~	~				Stable tool holder / insert	Various criteria
	~					~	~				Stable workpiece	Various criteria
	↓					↓	↓				Overhang	Various criteria
~	~	~			~	~	~				Tip height	Various criteria
●	●	●	●	●		●					Cooling lubricant	Various criteria

Remedy measures

↑ raise, increase large influence
↑ raise, increase small influence
↓ avoid, reduce large influence
↓ avoid, reduce small influence
~ check, optimise
● use

Wear causes

Wear on clearance face



Abrasion on the flank, normal wear after a given operation time

Cause

- cutting speed too high
- grade with too low wear resistance
- insufficient coolant

Remedy

- Reduce the cutting speed
- select a more wear resistant grade
- Improve/check coolant feed

Edge chipping

Excessive mechanical stress on the cutting edge causing carbide particles to break out.

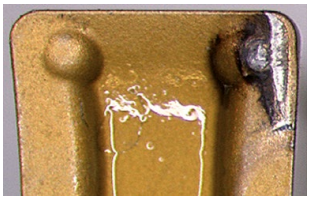
Cause

- too hard grade
- vibration
- too high feed and depth of cut
- chip impact

Remedy

- use tougher grade
- use negative geometry with chip breaker
- reduce overhang, check center height
- stabilize the cutting edge

Cratering



The outgoing hot chip causes cratering of the insert on the clamping surface.

Cause

- too high cutting speed, feed, or both
- too low rake angle
- grade with too low wear resistance
- incorrectly supplied cooling

Remedy

- Reduce cutting speed and / or feed
- Check coolant flow and / or increase pressure
- Use harder grade

Plastic deformation

Large mechanical load produces high temperature machining, this can lead to plastic deformation.

Cause

- too high operating temperature, thus softening the base material
- unsuitable grade
- inadequate coolant supply

Remedy

- Reduce the cutting speed
- select a more wear resistant grade
- use coolant

Built-up edge

Weld deposits of material on the cutting edge occurs when the chip does not flow caused by low average temperature.

Cause

- too low cutting speed
- too low rake angle
- Incorrect grade
- lack of cooling / lubrication

Remedy

- Increase the cutting speed
- Increase rake angle
- Use TiN coating
- increase coolant strength

Notch wear

Contraction at maximum cutting depth.

Cause

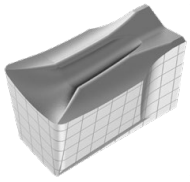
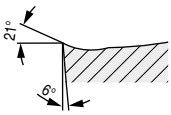
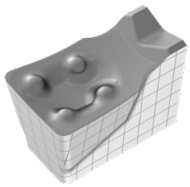
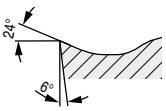
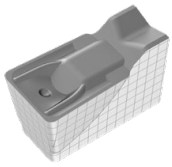
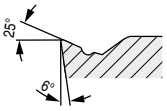
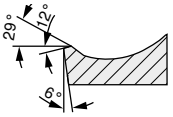
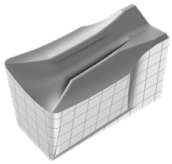
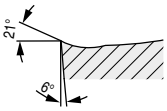
- Oxidation at the cutting edge
- Too high a temperature at the edge

Remedy

- Use different cutting depths
- Reduce cutting speed
- Improve/check coolant feed

Chip breakers / Applications

System GX

		Smooth cut	irregular cut	interrupted cut	Model	f in mm/rev.
-F2 ▲ very positive geometry ▲ honed cutting edge ▲ low feed rates ▲ low cutting forces ▲ first choice for stainless materials		**CTCP325** **CTP1340** **CTCP325** **CTP1340** CTCP325 CTP1340	**CTP1340** **CTP1340/CTPP345** **CTP1340** **CTP1340** CTP1340	**CTPP345** **CTPP345** CTPP345 		0,05–0,15
-Standard / -E ▲ positive geometry ▲ low-medium feed rates ▲ low cutting forces ▲ universal application ▲ first choice for axial grooving		**CTCP325** **CTP1340** **CTCP325** **CTP1340** CTCP325 CTP1340	**CTCP335/CTP1340** **CTP1340/CTPP345** **CTCP335/CTP1340** **CTP1340** CTP1340	**CTPP345** **CTPP345** CTP1340 CTPP345 		0,05–0,17
-M40 ▲ stable geometry ▲ medium feed rates ▲ universal application ▲ good chip control		**CTCP325** **CTP1340** **CTCP325** **CTP1340** CTCP325 CTP1340	**CTP1340** **CTP1340/CTPP345** **CTCP325/CTP1340** **CTP1340** CTP1340	**CTPP345** **CTPP345** CTP1340 CTPP345 		0,075–0,20
-M1 ▲ very stable cutting edge ▲ medium-high feed rates ▲ for intterrupted cut ▲ for high tensile materials ▲ first choice for parting off		**CTCP325** **CTP1340** **CTCP325** **CTP1340** CTCP325 CTP1340	**CTP1340** **CTP1340/CTPP345** **CTCP325/CTP1340** **CTP1340** CTP1340	**CTPP345** **CTPP345** CTP1340 CTPP345 		0,1–0,20
-27P ▲ very positive geometry ▲ ground periphery ▲ sharp cutting edge ▲ polished chip breaker ▲ first choice for non-ferrous metals		 **H216T** **H216T** H216T H216T	 **H216T** **H216T** H216T 	 **H216T** **H216T** 		0,05–0,25

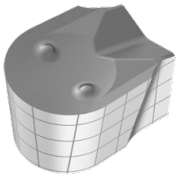
3

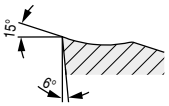
Chip breakers / Applications

System GX

Standard – Radius

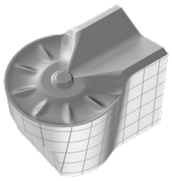
- positive geometry
- honed cutting edge
- low-medium feed rates
- low cutting forces
- Radius grooving/copy turning

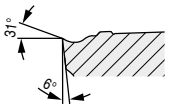


Smooth cut	irregular cut	interrupted cut	Model	f in mm/rev.
CTCP325	**CTCP325/CTP1340**	CTP1340		0,05–0,20
CTP1340	**CTP1340**	CTP1340		
CTCP325	**CTCP325/CTP1340**	CTP1340		
CTP1340	**CTP1340**			
CTCP325				
CTP1340	CTP1340			

-M3 – Radius

- stable geometry
- medium-high feed rates
- high surface quality
- Radius grooving/copy turning

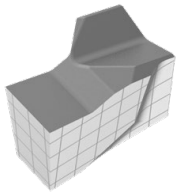


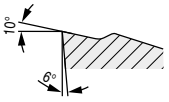
Smooth cut	irregular cut	interrupted cut	Model	f in mm/rev.
CTCP325	**CTCP325/CTCP335**	**CTCP335**		0,07–0,20
CTCP335	CTCP335			
CTCP325	**CTCP325/CTCP335**	**CTCP335**		
CTCP325				
CTCP325				

Circlip grooving

Standard

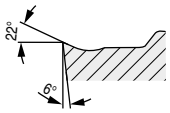
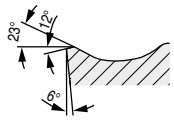
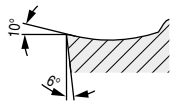
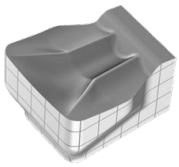
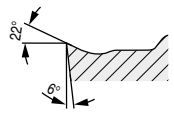
- positive geometry
- honed cuttign edge
- low feed rates
- small corner radius
- Circlip grooves



Smooth cut	irregular cut	interrupted cut	Model	f in mm/rev.
CTP1340	**CTP1340**	CTP1340		0,05–0,30
CTP1340	**CTP1340**	CTP1340		
CTP1340	**CTP1340**	CTP1340		
CTP1340	CTP1340	CTP1340		
CTP1340	**CTP1340**	CTP1340		
CTP1340	CTP1340			

Chip breakers / Applications

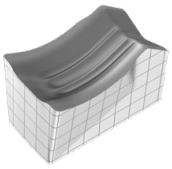
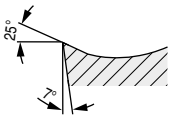
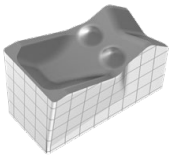
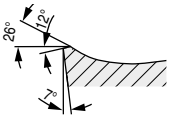
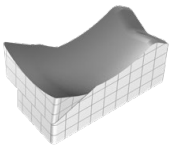
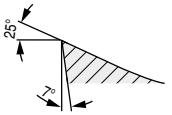
System SX

		Smooth cut	irregular cut	interrupted cut	Model	f in mm/rev.
-F2 ▲ very positive geometry ▲ honed cutting edge ▲ low feed rates ▲ low cutting forces ▲ first choice for stainless materials		**CTCP325** **CTP1340** **CTCP325** **CTP1340** CTCP325 CTP1340	**CTCP325/CTP1340** **CTP1340/CTPP345** **CTCP325/CTP1340** **CTP1340** CTP1340	**CTPP345** **CTPP345** **CTP1340** CTPP345 		0,05–0,15
-M1 ▲ very stable cutting edge ▲ medium-high feed rates ▲ for intterrupted cut ▲ for high tensile materials ▲ first choice for parting off		CTCP325 **CTP1340** **CTCP325** **CTP1340** CTCP325 CTP1340	CTCP335/CTP1340 **CTP1340** **CTCP325/CTP1340** **CTP1340** CTP1340	CTPP345 **CTPP345** CTP1340 CTPP345 		0,10–0,20
-M2 ▲ stable geometry ▲ medium feed rates ▲ universal application ▲ good chip control		CTCP325 **CTP1340** **CTCP325** **CTP1340** CTCP325 CTP1340	CTCP335/CTP1340 **CTP1340** **CTCP325/CTP1340** **CTP1340** CTP1340	CTPP345 **CTPP345** CTP1340 CTPP345 		0,075–0,20
-27P ▲ very positive geometry ▲ ground periphery ▲ sharp cutting edge ▲ polished chip breaker ▲ first choice for non-ferrous metals		 **H216T** **H216T** H216T H216T	 **H216T** **H216T** H216T 	 **H216T** **H216T** 		0,05–0,25

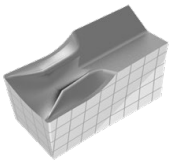
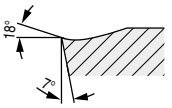
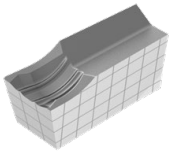
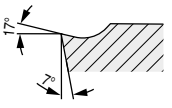
3

Chip breakers / Applications

System FX

		Smooth cut	irregular cut	interrupted cut	Model	f in mm/rev.
-F1 ▲ very positive geometry ▲ low-medium feed rates ▲ low cutting forces ▲ good chip control ▲ low cutting edge build up		**CTCP325** **CTP1340** **CTCP325** **CTP1340** CTCP325 CTP1340	**CTCP325/CTP1340** **CTP1340/CTPP345** **CTCP325/CTP1340** **CTP1340** CTP1340	**CTPP345** **CTPP345** CTP1340 CTPP345 		0,05–0,15
-M1 ▲ very stable cutting edge ▲ medium-high feed rates ▲ for intterrupted cut ▲ for high tensile materials ▲ first choice for parting off		**CTCP325** **CTP1340** **CTCP325** **CTP1340** CTCP325 CTP1340	**CTCP335/CTP1340** **CTP1340/CTPP345** **CTCP325/CTP1340** **CTP1340** CTP1340	**CTPP345** **CTPP345** CTP1340 CTPP345 		0,08–0,20
-27P ▲ very positive geometry ▲ ground periphery ▲ sharp cutting edge ▲ polished chip breaker ▲ first choice for non-ferrous metals		 **H216T** **H216T** H216T H216T	 **H216T** **H216T** H216T 	 **H216T** **H216T** 		0,03–0,13

System MC

-F2 ▲ very positive geometry ▲ honed cutting edge ▲ low feed rates ▲ low cutting forces ▲ first choice for stainless materials		**CTP1340** **CTP1340** **CTP1340** CTP1340 **CTP1340** CTP1340	**CTP1340** **CTP1340** **CTP1340** CTP1340 **CTP1340** CTP1340	CTP1340 CTP1340 CTP1340 CTP1340 CTP1340 		0,05–0,10
-F3 ▲ very positive geometry ▲ honed cutting edge ▲ low feed rates ▲ low cutting forces ▲ reduced burrs / edge build up		**CTP1340** **CTP1340** **CTP1340** CTP1340 **CTP1340** CTP1340	**CTP1340** **CTP1340** **CTP1340** CTP1340 **CTP1340** CTP1340	CTP1340 CTP1340 CTP1340 CTP1340 CTP1340 		0,02–0,06

Example of Coding Grooving Tools

Grooving insert

GX	16	2	E	3.00	N	0.50
Grooving system (GX)	Insert length (16 mm)	Width class of the holder / module or support surface (2 mm)	Type of insert, application	Groove width (3.0 mm)	Insert seat N=Neutral L=Left Handed R=Right Handed	Corner radius size (0.5 mm)

Module

E	25	R	12	GX	16	2
Application E = external I = internal	Size (25 mm)	Module version R=Right Handed L=Left Handed	Maximum groove depth (12 mm)	Grooving system (GX)	Insert size (16 mm)	Width class 2

Basic holder

E	25	R	00	2525	L
Application E = external I = internal	Size (25 mm)	Holder version R=Right Handed L=Left Handed	Approach angle 0°	Shank type 25x25mm	Shank length L = (sh. ISO)

GX mono holder (old)

E	25	R	00	21		2525	M			GX24-3

GX mono holder (new)

E	25	R	00	21	NEW S4	2525	M	NEW S		GX24
					Groove width grooving insert			Insert clamping screw		

GX mono holder (new with DC)

E	25	R	00	21	NEW S4	2525	M	NEW S	NEW DC	GX24
					Groove width grooving insert			Insert clamping screw	DirectCooling	

Compilation

Basic holder	Module	Grooving insert
E25 R 00 – 2525L	E25 R 12 – GX 16-2	GX 16-2 E3.00 N 0.50

Grades Overview

CTCP325
DRAGONSKIN

- Carbide, TiCN-Al_2O_3-coated
- ISO | **P25** | M20 | **K30** | S25
- The wear-resistant solution for steel and cast iron materials at high cutting speeds

CTCP335
DRAGONSKIN

- Carbide, TiCN-Al_2O_3-coated
- ISO | **P35** | M30 | **K35**
- The reliable choice for machining steel and cast iron materials

CTPP345
DRAGONSKIN

- Carbide, TiAlTaN-coated
- ISO | **P45** | **M40** | S40
- The reliable solution for steel materials and austenitic steels under unstable conditions

CTP1340
DRAGONSKIN

- Carbide, TiAlTaN-coated
- ISO | **P30** | **M25** | **K30** | N30 | **S30** | O30
- The universal high-performance grade for steel materials, austenitic steel, cast iron materials and heat-resistant alloys

CTPP520
DRAGONSKIN

- Carbide, TiAlTaN-coated
- ISO | **P20** | **M15** | **K25** | S25 | H5
- The wear-resistant grade for wet machining of steels

CTPP535
DRAGONSKIN

- Carbide, AlTiN-coated
- ISO | **P35** | **M30** | **K25** | **S30**
- The tough thread turning grade for universal application

H216T

- Carbide, uncoated
- ISO | **K15** | **N15** | S15 | O5
- The uncoated carbide grade for machining aluminium and other non-ferrous metals
- Also highly suitable for HSC machining

Application

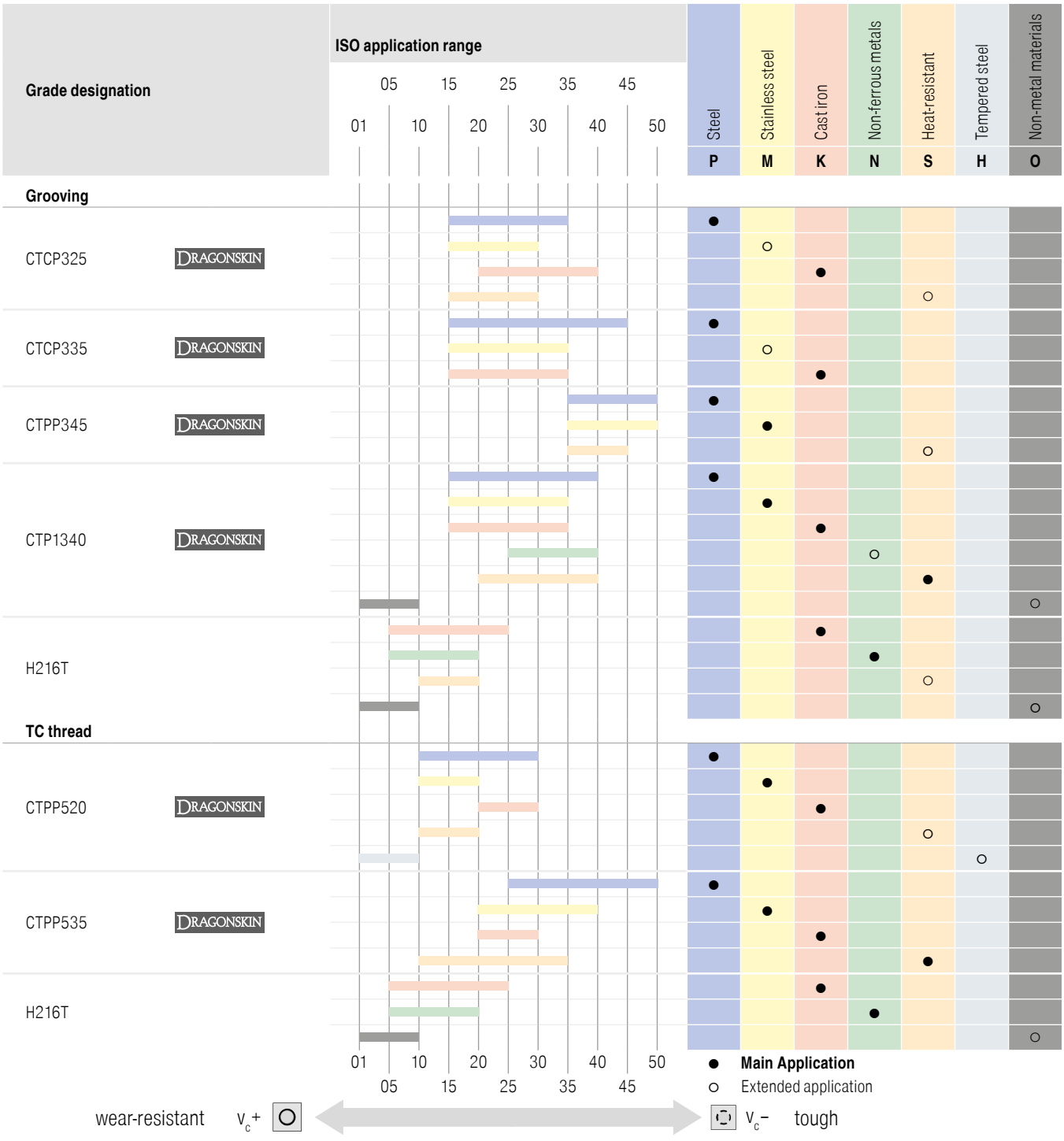


Table of contents

WNT \ Performance

Premium quality tools for high performance.

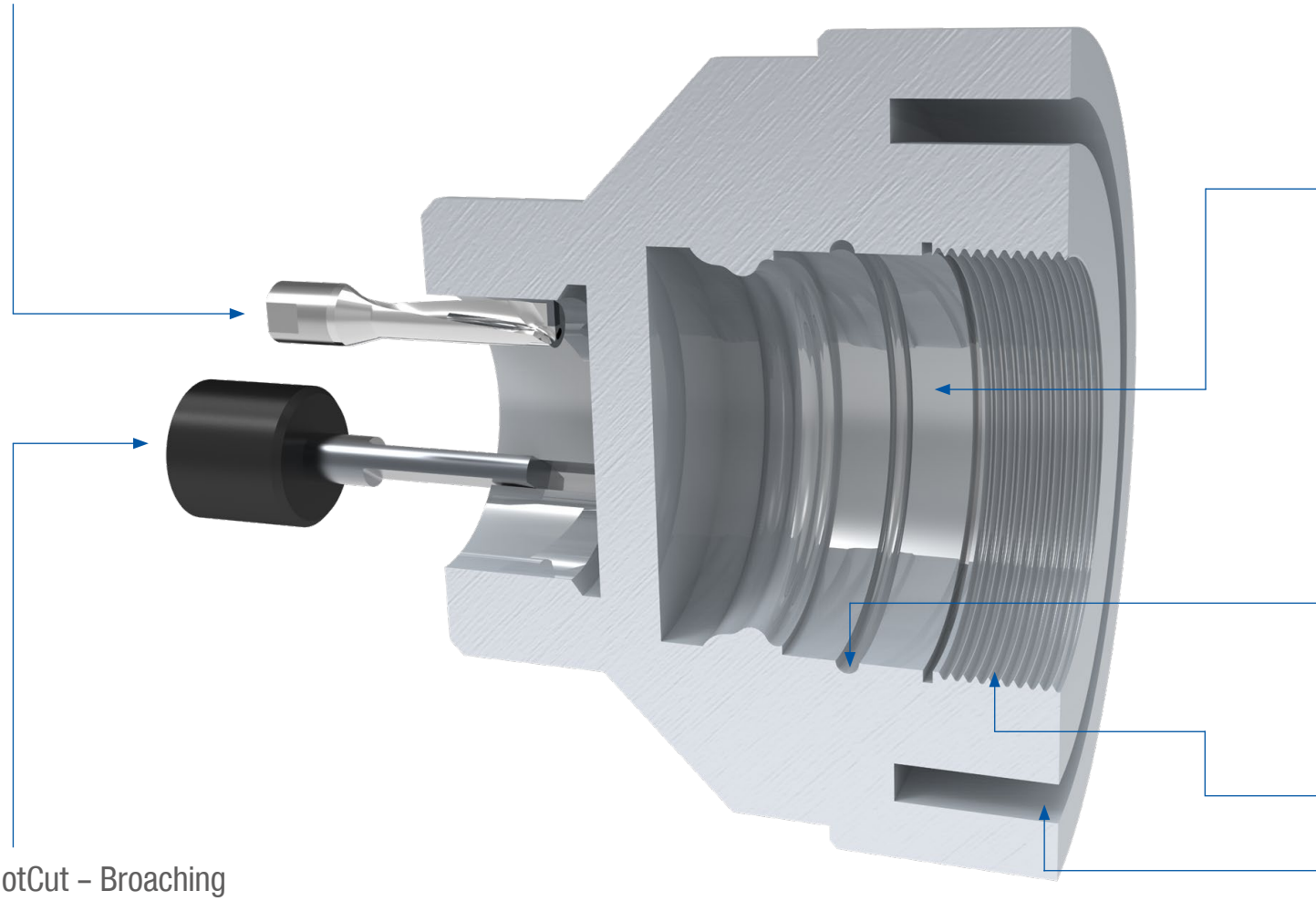
The premium quality tools from the **WNT Performance** product line have been designed for specific applications and are distinguished by their outstanding performance. If you make high demands on the performance of your production and want to achieve the very best results, we recommend the Premium tools in this product line.

Toolfinder

EcoCut Mini

From Ø 2 mm

Inserts and tool holders can be found in → **Chapter 10 – EcoCut**



SlotCut – Broaching

Inserts + Holder DIN138

Products and product information can be found in our main catalogue and online shop.

System overview

UltraMini

- from Ø 0.5 mm
- flexible system
- ground inserts
- high repeatability
- coolant supply to the cutting edge

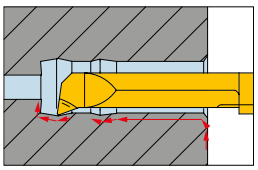
MiniCut

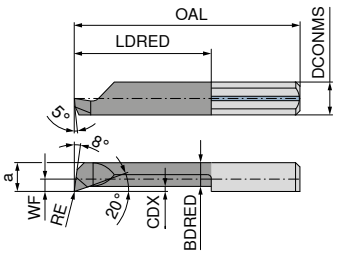
- from Ø 7.8 mm
- stable three-rib interface
- easy handling
- coolant supply to the cutting edge
- precise cutting edge position

Hole diameter in mm		UltraMini										MiniCut					
			≥ 0,5	≥ 2	≥ 2,4	≥ 2,8	≥ 3	≥ 4	≥ 5	≥ 6	≥ 8	≥ 16		≥ 8	≥ 9	≥ 11	≥ 14	≥ 16
Internal turning and profiling			290–293	290–293	290–293	290–293		290–293	290–293	290–293				321	321	321	321	
Internal turning and profiling – hard turning																		
High-feed turning				295			295	295	295	295								
Turning and profile turning – super alloys				294		294		294	294	294								
Internal turning						296		296	296					322	322	322	322	
Back boring							297	297	297	297				323	323	323	323	
Turning and chamfering									298	298				323	323	323	323	
Pre-parting and chamfering								298	298	298				324	324	324	324	
Groove turning				299–301			299–301	299–301	299–301	299–301				325+326	325+326	325+326	325+326	
Internal Undercuts				302		302		302	302	302				327	327	327	327	
Groove and profile turning								303	303	303				328	328	328	328	
Internal thread turning					304-306			304-306	304-306	304-306				329-331	329-331	329-331	329-331	
Axial grooving									309–314	309–314	309–314	309–314		332+333	332+333	332+333	332+333	
suitable holder			315–320											334–337				
Sets																		

UltraMini – Inserts for internal turning and profiling

▲ CDX = Maximum depth of cut when turning outwards





Illustrations show right-hand versions

TiN

TiN

TiAlN

TiAlN

											Left-hand	Right-hand	Left-hand	Right-hand
											73 005 ...	73 004 ...	73 005 ...	73 004 ...
Designation	DCONMS h6	WF	DMIN	a	OAL	LDRED	CDX	BDRED	RE	Standard tool holder				
	mm	mm	mm	mm	mm	mm	mm	mm	mm					
R/L 050.05-2	4		0,5	0,4	20	2	0,03	0,32	0,02	645.00..-D	500	500		
R/L 050.06-2	4		0,6	0,5	20	2	0,05	0,40	0,04	645.00..-D	510	510		
R/L 050.06-3	4		0,6	0,5	20	3	0,05	0,40	0,04	645.00..-D	511	511		
R/L 050.08-4	4		0,8	0,7	20	4	0,05	0,60	0,04	645.00..-D			812	812
R/L 050.1-8	4		1,0	0,9	22	8	0,10	0,75	0,05	645.00..-D			813	813
R/L 050.15-5	4		1,5	1,3	19	5	0,10	1,15	0,05	645.00..-D	515	515		
R/L 050.15-10	4		1,5	1,3	24	10	0,10	1,15	0,05	645.00..-D	516	516		
R/L 050.15-12	4		1,5	1,3	26	12	0,10	1,15	0,05	645.00..-D			818	818
R/L 050.2-5	4		2,0	1,7	19	5	0,10	1,50	0,05	645.00..-D	520	520		
R/L 050.2-10	4		2,0	1,7	24	10	0,10	1,50	0,05	645.00..-D	521	521		
R/L 050.2-15	4		2,0	1,7	29	15	0,10	1,50	0,05	645.00..-D	522	522		
R/L 050.3-10	4	0,6	2,8	2,6	24	10	0,20	2,30	0,10	645.00..-D	531	531		
R/L 050.3-16	4	0,6	2,8	2,6	30	16	0,20	2,30	0,10	645.00..-D	530	530		
R/L 050.3-20	4	0,6	2,8	2,6	34	20	0,20	2,30	0,10	645.00..-D	532	532		
R/L 050.35-10	4	1,1	3,5	3,1	24	10	0,25	2,80	0,10	645.00..-D			835	835
R/L 050.35-16	4	1,1	3,5	3,1	30	16	0,25	2,80	0,10	645.00..-D			836	836
R/L 050.35-20	4	1,1	3,5	3,1	34	20	0,25	2,80	0,10	645.00..-D			837	837
R/L 050.35-24	4	1,1	3,5	3,1	38	24	0,25	2,80	0,10	645.00..-D			838	838
R/L 050.4-10	4	1,5	4,0	3,5	24	10	0,30	3,00	0,10	645.00..-D	541	541	841	841
R/L 050.4-16	4	1,5	4,0	3,5	30	16	0,30	3,00	0,10	645.00..-D	540	540	840	840
R/L 050.4-20	4	1,5	4,0	3,5	34	20	0,30	3,00	0,10	645.00..-D	542	542	842	842
R/L 050.4-24	4	1,5	4,0	3,5	38	24	0,30	3,00	0,10	645.00..-D	545	545	845	845
R/L 050.4-28	4	1,5	4,0	3,5	42	28	0,30	3,00	0,10	645.00..-D	546	546	846	846
R/L 050.5-10	5	1,9	5,0	4,4	25	10	0,50	3,80	0,15	645.00..-D	551	551	851	851
R/L 050.5-15	5	1,9	5,0	4,4	30	15	0,50	3,80	0,15	645.00..-D	552	552	852	852
R/L 050.5-20	5	1,9	5,0	4,4	35	20	0,50	3,80	0,15	645.00..-D	550	550	850	850
R/L 050.5-25	5	1,9	5,0	4,4	40	25	0,50	3,80	0,15	645.00..-D	553	553	853	853
R/L 050.5-30	5	1,9	5,0	4,4	45	30	0,50	3,80	0,15	645.00..-D	554	554	854	854
R/L 050.5-35	5	1,9	5,0	4,4	50	35	0,50	3,80	0,15	645.00..-D	556	556	856	856
R/L 050.5-40	5	1,9	5,0	4,4	55	40	0,50	3,80	0,15	645.00..-D			857	857
R/L 050.6-15	6	2,3	6,0	5,3	30	15	0,50	4,50	0,15	676.00..-D	561	561	861	861
R/L 050.6-22	6	2,3	6,0	5,3	37	22	0,50	4,50	0,15	676.00..-D	560	560	860	860
R/L 050.6-25	6	2,3	6,0	5,3	40	25	0,50	4,50	0,15	676.00..-D	562	562	862	862
R/L 050.6-30	6	2,3	6,0	5,3	45	30	0,50	4,50	0,15	676.00..-D	563	563	863	863
R/L 050.6-35	6	2,3	6,0	5,3	50	35	0,50	4,50	0,15	676.00..-D	564	564	864	864
R/L 050.6-42	6	2,3	6,0	5,3	57	42	0,50	4,50	0,15	676.00..-D	565	565	865	865
R/L 050.7-20	7	2,8	6,8	6,3	35	20	0,60	5,50	0,15	676.00..-D	572	572	872	872
R/L 050.7-25	7	2,8	6,8	6,3	40	25	0,60	5,50	0,15	676.00..-D	573	573	873	873
R/L 050.7-30	7	2,8	6,8	6,3	45	30	0,60	5,50	0,15	676.00..-D	574	574	874	874
R/L 050.7-35	7	2,8	7,0	6,3	50	35	0,60	5,50	0,15	676.00..-D	575	575	875	875
R/L 050.7-40	7	2,8	7,0	6,3	55	40	0,60	5,50	0,15	676.00..-D	576	576	876	876
R/L 050.7-45	7	2,8	7,0	6,3	60	45	0,60	5,50	0,15	676.00..-D	577	577	877	877
R/L 050.7-50	7	2,8	7,0	6,3	65	50	0,60	5,50	0,15	676.00..-D	578	578	878	878

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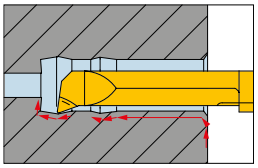
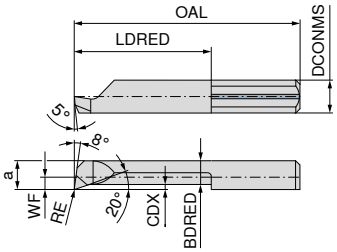
→ v_c Page 339

UltraMini – Inserts for internal turning and profiling

▲ CDX = Maximum depth of cut when turning outwards





Designation	DCONMS h6 mm	WF mm	DMIN mm	a mm	OAL mm	LDRED mm	CDX mm	BDRED mm	RE mm	Standard tool holder	Left-hand 73 005 ...	Right-hand 73 004 ...
R/L 050.2-5	4		2,0	1,7	19	5	0,1	1,5	0,05	645.00..-D	020	020
R/L 050.2-10	4		2,0	1,7	24	10	0,1	1,5	0,05	645.00..-D	021	021
R/L 050.2-15	4		2,0	1,7	29	15	0,1	1,5	0,05	645.00..-D	022	022
R/L 050.3-10	4	0,6	2,8	2,6	24	10	0,2	2,3	0,10	645.00..-D	031	031
R/L 050.3-16	4	0,6	2,8	2,6	30	16	0,2	2,3	0,10	645.00..-D	030	030
R/L 050.3-20	4	0,6	2,8	2,6	34	20	0,2	2,3	0,10	645.00..-D	032	032
R/L 050.4-10	4	1,5	4,0	3,5	24	10	0,3	3,0	0,10	645.00..-D	041	041
R/L 050.4-16	4	1,5	4,0	3,5	30	16	0,3	3,0	0,10	645.00..-D	040	040
R/L 050.4-20	4	1,5	4,0	3,5	34	20	0,3	3,0	0,10	645.00..-D	042	042
R/L 050.5-10	5	1,9	5,0	4,4	25	10	0,5	3,8	0,15	645.00..-D	051	051
R/L 050.5-15	5	1,9	5,0	4,4	30	15	0,5	3,8	0,15	645.00..-D	052	052
R/L 050.5-20	5	1,9	5,0	4,4	35	20	0,5	3,8	0,15	645.00..-D	050	050
R/L 050.5-25	5	1,9	5,0	4,4	40	25	0,5	3,8	0,15	645.00..-D	053	053
R 050.5-30	5	1,9	5,0	4,4	45	30	0,5	3,8	0,05	645.00..-D		054
L 050.5-30	5	1,9	5,0	4,4	45	30	0,5	3,8	0,15	645.00..-D	054	
R/L 050.6-15	6	2,3	6,0	5,3	30	15	0,5	4,5	0,15	676.00..-D	061	061
R/L 050.6-22	6	2,3	6,0	5,3	37	22	0,5	4,5	0,15	676.00..-D	060	060
R/L 050.6-25	6	2,3	6,0	5,3	40	25	0,5	4,5	0,15	676.00..-D	062	062
R/L 050.6-30	6	2,3	6,0	5,3	45	30	0,5	4,5	0,15	676.00..-D	063	063
R/L 050.7-20	7	2,8	6,8	6,3	35	20	0,6	5,5	0,15	676.00..-D	072	072
R/L 050.7-25	7	2,8	6,8	6,3	40	25	0,6	5,5	0,15	676.00..-D	073	073
R/L 050.7-30	7	2,8	6,8	6,3	45	30	0,6	5,5	0,15	676.00..-D	074	074

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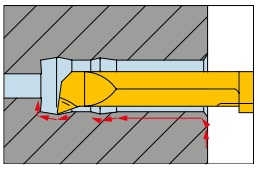
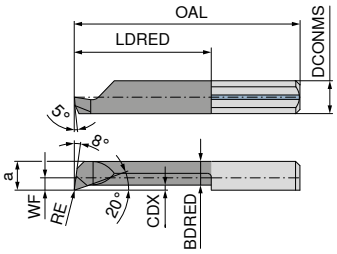
UltraMini – Inserts for internal turning and profiling

▲ with corner radius ≤ 0.05 mm
▲ CDX = Maximum depth of cut when turning outwards





Illustrations show right-hand versions

											Left-hand	Right-hand	Left-hand	Right-hand
											73 021 ...	**73 020 ...**	**73 023 ...**	**73 022 ...**
Designation	DCONMS h6	WF	DMIN	a	OAL	LDRED	CDX	BDRED	RE	Standard tool holder				
	mm	mm	mm	mm	mm	mm	mm	mm	mm					
R/L 053.3-10	4	0,6	2,8	2,6	24	10	0,2	2,3	0,03	645.00..-D	**310**	**310**		
R/L 053.3-16	4	0,6	2,8	2,6	30	16	0,2	2,3	0,03	645.00..-D	**316**	**316**		
R/L 053.3-20	4	0,6	2,8	2,6	34	20	0,2	2,3	0,03	645.00..-D	**320**	**320**		
R/L 053.4-10	4	1,5	4,0	3,5	24	10	0,3	3,0	0,03	645.00..-D	**410**	**410**		
R/L 053.4-16	4	1,5	4,0	3,5	30	16	0,3	3,0	0,03	645.00..-D	**416**	**416**		
R/L 053.4-20	4	1,5	4,0	3,5	34	20	0,3	3,0	0,03	645.00..-D	**420**	**420**		
R/L 053.4-24	4	1,5	4,0	3,5	38	24	0,3	3,0	0,03	645.00..-D	**424**	**424**		
R/L 053.4-28	4	1,5	4,0	3,5	42	28	0,3	3,0	0,03	645.00..-D	**428**	**428**		
R/L 055.2-10	4		2,0	1,7	24	10	0,1	1,5	0,05	645.00..-D			**210**	**210**
R/L 055.2-15	4		2,0	1,7	29	15	0,1	1,5	0,05	645.00..-D			**215**	**215**
R/L 055.2-5	4		2,0	1,7	19	5	0,1	1,5	0,05	645.00..-D			**205**	**205**
R/L 055.3-10	4	0,6	2,8	2,6	24	10	0,2	2,3	0,05	645.00..-D			**310**	**310**
R/L 055.3-16	4	0,6	2,8	2,6	30	16	0,2	2,3	0,05	645.00..-D			**316**	**316**
R/L 055.3-20	4	0,6	2,8	2,6	34	20	0,2	2,3	0,05	645.00..-D			**320**	**320**
R/L 055.4-10	4	1,5	4,0	3,5	24	10	0,3	3,0	0,05	645.00..-D			**410**	**410**
R/L 055.4-16	4	1,5	4,0	3,5	30	16	0,3	3,0	0,05	645.00..-D			**416**	**416**
R/L 055.4-20	4	1,5	4,0	3,5	34	20	0,3	3,0	0,05	645.00..-D			**420**	**420**
R/L 055.4-24	4	1,5	4,0	3,5	38	24	0,3	3,0	0,05	645.00..-D			**424**	**424**
R/L 055.4-28	4	1,5	4,0	3,5	42	28	0,3	3,0	0,05	645.00..-D			**428**	**428**
R/L 055.5-10	5	1,9	5,0	4,4	25	10	0,5	3,8	0,05	645.00..-D			**510**	**510**
R/L 055.5-15	5	1,9	5,0	4,4	30	15	0,5	3,8	0,05	645.00..-D			**515**	**515**
R/L 055.5-20	5	1,9	5,0	4,4	35	20	0,5	3,8	0,05	645.00..-D			**520**	**520**
R/L 055.5-25	5	1,9	5,0	4,4	40	25	0,5	3,8	0,05	645.00..-D			**525**	**525**
R/L 055.5-30	5	1,9	5,0	4,4	45	30	0,5	3,8	0,05	645.00..-D			**530**	**530**
R/L 055.5-35	5	1,9	5,0	4,4	50	35	0,5	3,8	0,05	645.00..-D			**535**	**535**
R/L 055.6-15	6	2,3	6,0	5,3	30	15	0,5	4,5	0,05	676.00..-D			**615**	**615**
R/L 055.6-22	6	2,3	6,0	5,3	37	22	0,5	4,5	0,05	676.00..-D			**622**	**622**
R/L 055.6-25	6	2,3	6,0	5,3	40	25	0,5	4,5	0,05	676.00..-D			**625**	**625**
R/L 055.6-30	6	2,3	6,0	5,3	45	30	0,5	4,5	0,05	676.00..-D			**630**	**630**
R/L 055.6-35	6	2,3	6,0	5,3	50	35	0,5	4,5	0,05	676.00..-D			**635**	**635**
R/L 055.6-42	6	2,3	6,0	5,3	57	42	0,5	4,5	0,05	676.00..-D			**642**	**642**

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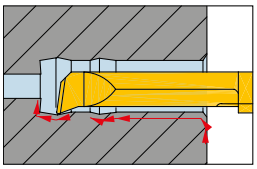
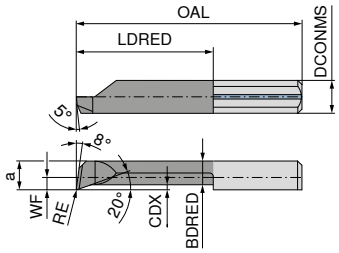
→ v_c Page 339

UltraMini – Inserts for internal turning and profiling

▲ with chip former





Illustrations show right-hand versions

TiAlN

Left-hand

TiAlN

Right-hand

Designation	DCONMS h6	WF	DMIN	a	OAL	LDRED	CDX	BDRED	RE	Standard tool holder	73 017 ...	73 016 ...
	mm	mm	mm	mm	mm	mm	mm	mm	mm			
R/L 050.4-10C	4	1,5	4	3,5	24	10	0,3	3,0	0,2	645.00..-D	**410**	**410**
R/L 050.4-16C	4	1,5	4	3,5	30	16	0,3	3,0	0,2	645.00..-D	**416**	**416**
R/L 050.4-20C	4	1,5	4	3,5	34	20	0,3	3,0	0,2	645.00..-D	**420**	**420**
R/L 050.4-24C	4	1,5	4	3,5	38	24	0,3	3,0	0,2	645.00..-D	**424**	**424**
R/L 050.4-28C	4	1,5	4	3,5	42	28	0,3	3,0	0,2	645.00..-D	**428**	**428**
R/L 050.5-10C	5	1,9	5	4,4	25	10	0,5	3,8	0,2	645.00..-D	**510**	**510**
R/L 050.5-15C	5	1,9	5	4,4	30	15	0,5	3,8	0,2	645.00..-D	**515**	**515**
R/L 050.5-20C	5	1,9	5	4,4	35	20	0,5	3,8	0,2	645.00..-D	**520**	**520**
R/L 050.5-25C	5	1,9	5	4,4	40	25	0,5	3,8	0,2	645.00..-D	**525**	**525**
R/L 050.5-30C	5	1,9	5	4,4	45	30	0,5	3,8	0,2	645.00..-D	**530**	**530**
R/L 050.5-35C	5	1,9	5	4,4	50	35	0,5	3,8	0,2	645.00..-D	**535**	**535**
R/L 050.6-15C	6	2,3	6	5,3	30	15	0,5	4,5	0,2	676.00..-D	**615**	**615**
R/L 050.6-22C	6	2,3	6	5,3	37	22	0,5	4,5	0,2	676.00..-D	**622**	**622**
R/L 050.6-25C	6	2,3	6	5,3	40	25	0,5	4,5	0,2	676.00..-D	**625**	**625**
R/L 050.6-30C	6	2,3	6	5,3	45	30	0,5	4,5	0,2	676.00..-D	**630**	**630**
R/L 050.6-35C	6	2,3	6	5,3	50	35	0,5	4,5	0,2	676.00..-D	**635**	**635**
R/L 050.6-42C	6	2,3	6	5,3	57	42	0,5	4,5	0,2	676.00..-D	**642**	**642**
R/L 050.7-20C	7	2,8	7	6,3	35	20	0,6	5,5	0,2	676.00..-D	**720**	**720**
R/L 050.7-25C	7	2,8	7	6,3	40	25	0,6	5,5	0,2	676.00..-D	**725**	**725**
R/L 050.7-30C	7	2,8	7	6,3	45	30	0,6	5,5	0,2	676.00..-D	**730**	**730**
R/L 050.7-35C	7	2,8	7	6,3	50	35	0,6	5,5	0,2	676.00..-D	**735**	**735**
R/L 050.7-40C	7	2,8	7	6,3	55	40	0,6	5,5	0,2	676.00..-D	**740**	**740**
R/L 050.7-45C	7	2,8	7	6,3	60	45	0,6	5,5	0,2	676.00..-D	**745**	**745**
R/L 050.7-50C	7	2,8	7	6,3	65	50	0,6	5,5	0,2	676.00..-D	**750**	**750**
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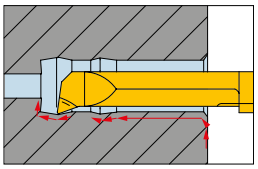
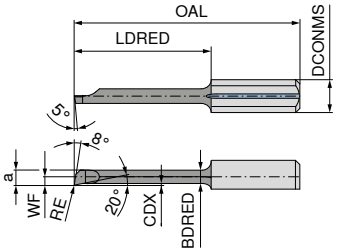
UltraMini – Inserts for internal turning and profiling

▲ Specially designed for super alloys
▲ CDX = Maximum depth of cut when turning outwards





Illustrations show right-hand versions

DPX 57S DRAGONSKIN

Left-hand

DPX 57S DRAGONSKIN

Right-hand

Designation	DCONMS $_{h6}$ mm	WF mm	DMIN mm	a mm	OAL mm	LDRED mm	CDX mm	BDRED mm	RE mm	Standard tool holder	73 027 ...	73 026 ...
R/L M050.05-2	4	0,20	0,5	0,40	20	2	0,02	0,02	0,02	645.00..-D	**052**	**052**
R/L M050.08-4	4	0,35	0,8	0,70	20	4	0,08	0,03	0,02	645.00..-D	**082**	**082**
R/L M050.1-5	4	0,40	1,0	0,90	20	5	0,05	0,05	0,02	645.00..-D	**102**	**102**
R/L M050.1-7	4	0,40	1,0	0,90	22	7	0,05	0,05	0,02	645.00..-D	**103**	**103**
R/L M050.15-5	4	0,60	1,5	1,15	19	5	0,08	0,08	0,02	645.00..-D	**151**	**151**
R/L M050.15-10	4	0,60	1,5	1,15	24	10	0,08	0,08	0,02	645.00..-D	**154**	**154**
R/L M050.2-5	4	0,80	2,0	1,70	19	5	0,08	0,08	0,02	645.00..-D	**201**	**201**
R/L M050.2-10	4	0,80	2,0	1,70	24	10	0,08	0,08	0,02	645.00..-D	**204**	**204**
R/L M050.25-5	4	0,20	2,5	2,20	19	5	0,10	0,10	0,02	645.00..-D	**251**	**251**
R/L M050.25-10	4	0,20	2,5	2,20	24	10	0,10	0,10	0,02	645.00..-D	**254**	**254**
R/L M050.3-10	4	0,60	3,0	2,60	24	10	0,15	0,15	0,02	645.00..-D	**304**	**304**
R/L M050.3-16	4	0,60	3,0	2,60	30	16	0,15	0,15	0,02	645.00..-D	**307**	**307**
R/L M050.35-10	4	1,10	3,5	3,10	24	10	0,17	0,17	0,02	645.00..-D	**350**	**350**
R/L M050.35-16	4	1,10	3,5	3,10	30	16	0,17	0,17	0,02	645.00..-D	**353**	**353**
R/L M050.35-20	4	1,10	3,5	3,10	34	20	0,17	0,17	0,02	645.00..-D	**354**	**354**
R/L M050.4-10	4	1,50	4,0	3,50	24	10	0,20	0,20	0,02	645.00..-D	**400**	**400**
R/L M050.4-16	4	1,50	4,0	3,50	30	16	0,20	0,20	0,02	645.00..-D	**403**	**403**
R/L M050.4-20	4	1,50	4,0	3,50	34	20	0,20	0,20	0,02	645.00..-D	**404**	**404**
R/L M050.4-24	4	1,50	4,0	3,50	38	24	0,20	0,20	0,02	645.00..-D	**406**	**406**

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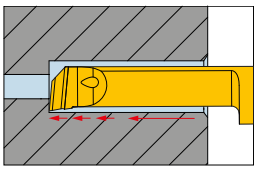
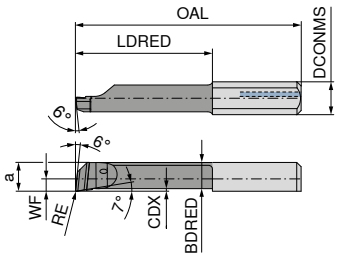
UltraMini – Inserts for internal turning

- with chip former
- High-feed internal turning





Illustrations show right-hand versions

DPX77S DRAGONSKIN

Left-hand

DPX77S DRAGONSKIN

Right-hand

Designation	DCONMS h6	WF	DMIN	a	OAL	LDRED	CDX	BDRED	RE	Standard tool holder	73 001 ...		73 000 ...	
	mm	mm	mm	mm	mm	mm	mm	mm	mm					
R/L X050.1-5	4		1,0	0,90	20	5	0,03	0,85	0,05	645.00..-D	121		121	
R/L X050.15-7	4		1,5	1,35	22	7	0,05	1,25	0,10	645.00..-D	233		233	
R/L X050.2-5	4		2,0	1,80	19	5	0,10	1,60	0,15	645.00..-D	245		245	
R/L X050.2-10	4		2,0	1,80	24	10	0,10	1,60	0,05	645.00..-D	215		215	
R/L X050.2-10	4		2,0	1,80	24	10	0,10	1,60	0,15	645.00..-D	241		241	
R/L X050.3-10	4	0,7	3,0	2,70	24	10	0,15	2,55	0,05	645.00..-D	341		341	
R/L X050.3-10	4	0,7	3,0	2,70	24	10	0,15	2,55	0,20	645.00..-D	347		347	
R/L X050.3-16	4	0,7	3,0	2,70	30	16	0,15	2,55	0,05	645.00..-D	371		371	
R/L X050.3-16	4	0,7	3,0	2,70	30	16	0,15	2,55	0,10	645.00..-D	373		373	
R/L X050.3-16	4	0,7	3,0	2,70	30	16	0,15	2,55	0,20	645.00..-D	377		377	
R/L X050.4-10	4	1,6	4,0	3,60	24	10	0,20	3,20	0,10	645.00..-D	403		403	
R/L X050.4-10	4	1,6	4,0	3,60	24	10	0,20	3,20	0,20	645.00..-D	407		407	
R/L X050.4-16	4	1,6	4,0	3,60	30	16	0,20	3,20	0,05	645.00..-D	431		431	
R/L X050.4-16	4	1,6	4,0	3,60	30	16	0,20	3,20	0,10	645.00..-D	433		433	
R/L X050.4-16	4	1,6	4,0	3,60	30	16	0,20	3,20	0,20	645.00..-D	437		437	
R/L X050.4-24	4	1,6	4,0	3,60	38	24	0,20	3,20	0,10	645.00..-D	463		463	
R/L X050.4-24	4	1,6	4,0	3,60	38	24	0,20	3,20	0,20	645.00..-D	467		467	
R/L X050.5-15	5	2,1	5,0	4,60	30	15	0,30	4,05	0,05	645.00..-D	511		511	
R/L X050.5-15	5	2,1	5,0	4,60	30	15	0,30	4,05	0,10	645.00..-D	513		513	
R/L X050.5-15	5	2,1	5,0	4,60	30	15	0,30	4,05	0,20	645.00..-D	517		517	
R/L X050.5-25	5	2,1	5,0	4,60	40	25	0,30	4,05	0,10	645.00..-D	543		543	
R/L X050.5-25	5	2,1	5,0	4,60	40	25	0,30	4,05	0,20	645.00..-D	547		547	
R/L X050.5-30	5	2,1	5,0	4,60	45	30	0,30	4,05	0,10	645.00..-D	553		553	
R/L X050.5-30	5	2,1	5,0	4,60	45	30	0,30	4,05	0,20	645.00..-D	557		557	
R/L X050.6-15	6	2,5	6,0	5,50	30	15	0,40	4,90	0,05	676.00..-D	611		611	
R/L X050.6-15	6	2,5	6,0	5,50	30	15	0,40	4,90	0,10	676.00..-D	613		613	
R/L X050.6-15	6	2,5	6,0	5,50	30	15	0,40	4,90	0,20	676.00..-D	617		617	
R/L X050.6-22	6	2,5	6,0	5,50	37	22	0,40	4,90	0,20	676.00..-D	637		637	
R/L X050.6-30	6	2,5	6,0	5,50	45	30	0,40	4,90	0,20	676.00..-D	657		657	
R/L X050.6-35	6	2,5	6,0	5,50	50	35	0,40	4,90	0,20	676.00..-D	667		667	
R/L X050.6-50	6	2,5	6,0	5,50	65	50	0,40	4,90	0,20	676.00..-D	697		697	
R/L X050.7-25	7	3,0	7,0	6,50	40	25	0,50	5,90	0,20	676.00..-D	747		747	
R/L X050.7-30	7	3,0	7,0	6,50	45	30	0,50	5,90	0,20	676.00..-D	757		757	

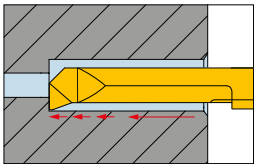
P	●	●
M	●	●
K	●	●
N	○	○
S	○	○
H	○	○
O	○	○

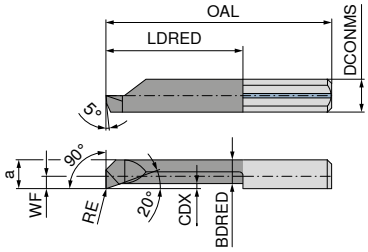
→ v_c Page 340+341

3

UltraMini – Inserts for internal turning

▲ CDX = Maximum depth of cut when turning outwards





TiN

TiN

Illustrations show right-hand versions

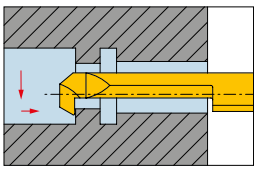
Designation	DCONMS $_{h6}$	WF	DMIN	a	OAL	LDRED	CDX	BDRED	RE	Standard tool holder	Left-hand	Right-hand
	mm	mm	mm	mm	mm	mm	mm	mm	mm		**73 015 ...**	**73 014 ...**
R/L 090.3-10	4	0,6	2,8	2,6	24	10	0,2	2,3	0,2	645.00..-D	**541**	**541**
R/L 090.3-16	4	0,6	2,8	2,6	30	16	0,2	2,3	0,2	645.00..-D	**542**	**542**
R/L 090.4-10	4	1,5	4,0	3,5	24	10	0,3	3,0	0,2	645.00..-D	**545**	**545**
R/L 090.4-16	4	1,5	4,0	3,5	30	16	0,3	3,0	0,2	645.00..-D	**546**	**546**
R/L 090.5-10	5	1,9	5,0	4,4	25	10	0,5	3,8	0,2	645.00..-D	**550**	**550**
R/L 090.5-15	5	1,9	5,0	4,4	30	15	0,5	3,8	0,2	645.00..-D	**551**	**551**
R/L 090.5-20	5	1,9	5,0	4,4	35	20	0,5	3,8	0,2	645.00..-D	**552**	**552**
P											●	●
M											●	●
K											●	●
N											●	●
S											o	o
H											o	o
O											●	●

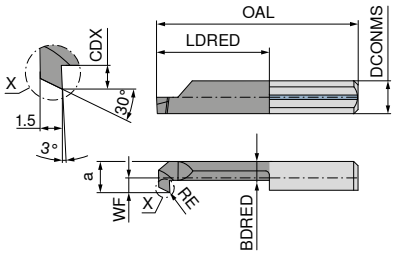
→ v_c Page 339

UltraMini – Inserts for back boring

▲ CDX = Maximum depth of cut when turning outwards

TiN TiN





Illustrations show right-hand versions

Left-hand Right-hand

73 013 ... **73 012 ...**

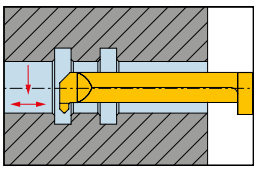
Designation	DCONMS h6 mm	WF mm	DMIN mm	a mm	OAL mm	LDRED mm	CDX mm	BDRED mm	RE mm	Standard tool holder		
R/L 080.0003-15	4	0,6	3	2,6	29	15	0,5	2,0	0,10	645.00..-D	**542**	**542**
R/L 080.0003-20	4	0,6	3	2,6	34	20	0,5	2,0	0,10	645.00..-D	**544**	**544**
R/L 080.0004-15	4	1,5	4	3,5	29	15	0,8	2,4	0,15	645.00..-D	**546**	**546**
R/L 080.0004-25	4	1,5	4	3,5	39	25	0,8	2,4	0,15	645.00..-D	**548**	**548**
R/L 080.0005-20	5	1,9	5	4,4	35	20	1,0	3,3	0,20	645.00..-D	**554**	**554**
R/L 080.0005-30	5	1,9	5	4,4	45	30	1,0	3,3	0,20	645.00..-D	**558**	**558**
R/L 080.0006-20	6	2,3	6	5,3	35	20	1,8	3,4	0,20	676.00..-D	**564**	**564**
R/L 080.0006-30	6	2,3	6	5,3	45	30	1,8	3,4	0,20	676.00..-D	**568**	**568**
R/L 080.0007-20	7	2,7	7	6,3	35	20	2,5	3,8	0,20	676.00..-D	**574**	**574**
R/L 080.0007-30	7	2,7	7	6,3	45	30	2,5	3,8	0,20	676.00..-D	**578**	**578**
P											●	●
M											●	●
K											●	●
N											●	●
S											o	o
H											o	o
O											●	●

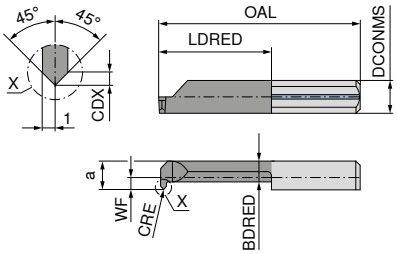
→ v_c Page 339

3

UltraMini – Inserts for internal turning and chamfering

▲ CDX = Maximum depth of cut when turning outwards





Illustrations show right-hand versions

TiN

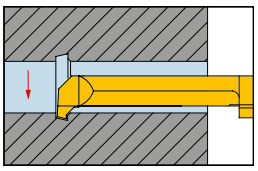
TiN

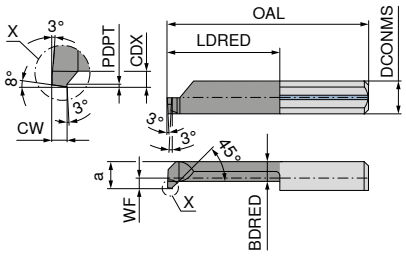
Designation	DCONMS h6	WF	DMIN	a	OAL	LDRED	CDX	BDRED	CRE	Standard tool holder	Left-hand	Right-hand
	mm	mm	mm	mm	mm	mm	mm	mm	mm		73 007 ...	73 006 ...
R/L 060.5-15	5	1,9	5,0	4,4	30	15	0,7	3,3	0,2	645.00..-D	551	551
R/L 060.5-20	5	1,9	5,0	4,4	35	20	0,7	3,3	0,2	645.00..-D	550	550
R/L 060.7-20	7	2,7	6,8	6,3	35	20	0,7	3,8	0,2	676.00..-D	570	570
P											●	●
M											●	●
K											●	●
N											●	●
S											○	○
H											○	○
O											●	●

→ v_c Page 339

UltraMini – Inserts for internal chamfering for subsequent parting off

▲ CDX = Maximum depth of cut when turning outwards





Illustrations show right-hand versions

TiN

TiN

Designation	DCONMS h6	WF	DMIN	a	OAL	LDRED	CDX	BDRED	CW	PDPT	Standard tool holder	Left-hand	Right-hand
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm		73 009 ...	73 008 ...
R/L 070.4-10	4	1,5	4	3,5	25	10	0,8	2,4	1	0,2	645.00..-D	410	410
R/L 070.4-16	4	1,5	4	3,5	30	16	0,8	2,4	1	0,2	645.00..-D	416	416
R/L 070.5-15	5	1,9	5	4,4	30	15	1,0	3,3	1	0,2	645.00..-D	551	551
R/L 070.5-20	5	1,9	5	4,4	35	20	1,0	3,3	1	0,2	645.00..-D	550	550
R/L 070.5-30	5	1,9	5	4,4	45	30	1,0	3,3	1	0,2	645.00..-D	530	530
R/L 070.6-30	6	2,3	6	5,3	45	30	1,0	4,2	1	0,2	676.00..-D	630	630
R/L 070.6-42	6	2,3	6	5,3	57	42	1,0	4,2	1	0,2	676.00..-D	642	642
P												●	●
M												●	●
K												●	●
N												●	●
S												○	○
H												○	○
O												●	●

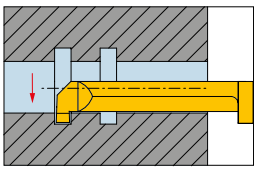
→ v_c Page 339

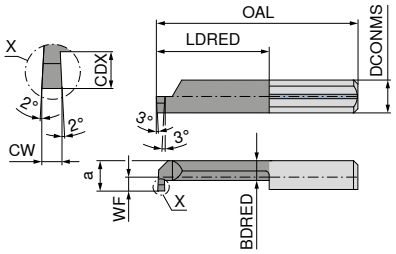
UltraMini – Inserts for Internal Grooving

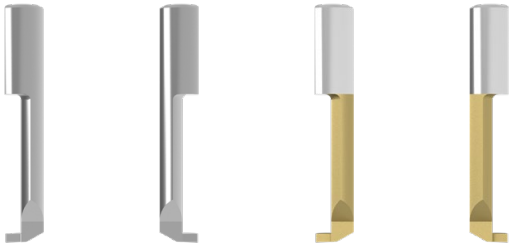
▲ CDX = Maximum depth of cut when turning outwards

TiN

TiN







Illustrations show right-hand versions

Designation	DCONMS h6	WF	DMIN	a	OAL	LDRED	CDX	BDRED	CW	Standard tool holder	Left-hand 73 003 ...	Right-hand 73 002 ...	Left-hand 73 003 ...	Right-hand 73 002 ...
	mm	mm	mm	mm	mm	mm	mm	mm	mm					
R/L 004.0100-10	4	1,5	4,0	3,5	24	10	0,8	2,4	1,0	645.00..-D	040	040	540	540
R/L 004.0100-16	4	1,5	4,0	3,5	30	16	0,8	2,4	1,0	645.00..-D	041	041	541	541
R/L 004.0100-20	4	1,5	4,0	3,5	34	20	0,8	2,4	1,0	645.00..-D	042	042	542	542
R/L 005.0100-10	5	1,9	5,0	4,4	25	10	1,0	3,3	1,0	645.00..-D	150	150	650	650
R/L 005.0150-10	5	1,9	5,0	4,4	25	10	1,0	3,3	1,5	645.00..-D	154	154	654	654
R/L 005.0200-10	5	1,9	5,0	4,4	25	10	1,0	3,3	2,0	645.00..-D	158	158	658	658
R/L 005.0100-15	5	1,9	5,0	4,4	30	15	1,0	3,3	1,0	645.00..-D	151	151	651	651
R/L 005.0150-15	5	1,9	5,0	4,4	30	15	1,0	3,3	1,5	645.00..-D	155	155	655	655
R/L 005.0200-15	5	1,9	5,0	4,4	30	15	1,0	3,3	2,0	645.00..-D	159	159	659	659
R/L 005.0100-20	5	1,9	5,0	4,4	35	20	1,0	3,3	1,0	645.00..-D	051	051	551	551
R/L 005.0150-20	5	1,9	5,0	4,4	35	20	1,0	3,3	1,5	645.00..-D	052	052	552	552
R/L 005.0200-20	5	1,9	5,0	4,4	35	20	1,0	3,3	2,0	645.00..-D	053	053	553	553
R/L 005.0100-25	5	1,9	5,0	4,4	40	25	1,0	3,3	1,0	645.00..-D	152	152	652	652
R/L 005.0150-25	5	1,9	5,0	4,4	40	25	1,0	3,3	1,5	645.00..-D	156	156	656	656
R/L 005.0200-25	5	1,9	5,0	4,4	40	25	1,0	3,3	2,0	645.00..-D	250	250	750	750
R/L 005.0100-30	5	1,9	5,0	4,4	45	30	1,0	3,3	1,0	645.00..-D	153	153	653	653
R/L 005.0150-30	5	1,9	5,0	4,4	45	30	1,0	3,3	1,5	645.00..-D	157	157	657	657
R/L 005.0200-30	5	1,9	5,0	4,4	45	30	1,0	3,3	2,0	645.00..-D	251	251	751	751
R/L 005.0100-35	5	1,9	5,0	4,4	50	35	1,0	3,3	1,0	645.00..-D			680	680
R/L 006.0100-10	6	2,3	6,0	5,3	25	10	1,8	3,4	1,0	676.00..-D	160	160	660	660
R/L 006.0150-10	6	2,3	6,0	5,3	25	10	1,8	3,4	1,5	676.00..-D	164	164	664	664
R/L 006.0200-10	6	2,3	6,0	5,3	25	10	1,8	3,4	2,0	676.00..-D	168	168	668	668
R/L 006.0100-15	6	2,3	6,0	5,3	30	15	1,8	3,4	1,0	676.00..-D	161	161	661	661
R/L 006.0150-15	6	2,3	6,0	5,3	30	15	1,8	3,4	1,5	676.00..-D	165	165	665	665
R/L 006.0200-15	6	2,3	6,0	5,3	30	15	1,8	3,4	2,0	676.00..-D	169	169	669	669
R/L 006.0100-22	6	2,3	6,0	5,3	37	22	1,8	3,4	1,0	676.00..-D	061	061	561	561
R/L 006.0150-22	6	2,3	6,0	5,3	37	22	1,8	3,4	1,5	676.00..-D	062	062	562	562
R/L 006.0200-22	6	2,3	6,0	5,3	37	22	1,8	3,4	2,0	676.00..-D	063	063	563	563
R/L 006.0100-25	6	2,3	6,0	5,3	40	25	1,8	3,4	1,0	676.00..-D	162	162	662	662
R/L 006.0150-25	6	2,3	6,0	5,3	40	25	1,8	3,4	1,5	676.00..-D	166	166	666	666
R/L 006.0200-25	6	2,3	6,0	5,3	40	25	1,8	3,4	2,0	676.00..-D	260	260	760	760
R/L 006.0100-30	6	2,3	6,0	5,3	45	30	1,8	3,4	1,0	676.00..-D	163	163	663	663
R/L 006.0150-30	6	2,3	6,0	5,3	45	30	1,8	3,4	1,5	676.00..-D	167	167	667	667
R/L 006.0200-30	6	2,3	6,0	5,3	45	30	1,8	3,4	2,0	676.00..-D	261	261	761	761
R/L 006.0100-35	6	2,3	6,0	5,3	50	35	1,8	3,4	1,0	676.00..-D			682	682
R/L 006.0150-35	6	2,3	6,0	5,3	50	35	1,8	3,4	1,5	676.00..-D			684	684
R/L 006.0100-42	6	2,3	6,0	5,3	57	42	1,8	3,4	1,0	676.00..-D			685	685
R/L 007.0100-10	7	2,7	6,8	6,3	25	10	2,5	3,8	1,0	676.00..-D	070	070	570	570
R/L 007.0150-10	7	2,7	6,8	6,3	25	10	2,5	3,8	1,5	676.00..-D	075	075	575	575
R/L 007.0200-10	7	2,7	6,8	6,3	25	10	2,5	3,8	2,0	676.00..-D	170	170	670	670
R/L 007.0100-15	7	2,7	6,8	6,3	30	15	2,5	3,8	1,0	676.00..-D	071	071	571	571
R/L 007.0150-15	7	2,7	6,8	6,3	30	15	2,5	3,8	1,5	676.00..-D	076	076	576	576
R/L 007.0200-15	7	2,7	6,8	6,3	30	15	2,5	3,8	2,0	676.00..-D	171	171	671	671
R/L 007.0100-22	7	2,7	6,8	6,3	37	22	2,5	3,8	1,0	676.00..-D	072	072	572	572
R/L 007.0150-22	7	2,7	6,8	6,3	37	22	2,5	3,8	1,5	676.00..-D	077	077	577	577
R/L 007.0200-22	7	2,7	6,8	6,3	37	22	2,5	3,8	2,0	676.00..-D	172	172	672	672
R/L 007.0100-25	7	2,7	6,8	6,3	40	25	2,5	3,8	1,0	676.00..-D	073	073	573	573
R/L 007.0150-25	7	2,7	6,8	6,3	40	25	2,5	3,8	1,5	676.00..-D	078	078	578	578
R/L 007.0200-25	7	2,7	6,8	6,3	40	25	2,5	3,8	2,0	676.00..-D	173	173	673	673
R/L 007.0100-30	7	2,7	6,8	6,3	45	30	2,5	3,8	1,0	676.00..-D	074	074	574	574
R/L 007.0150-30	7	2,7	6,8	6,3	45	30	2,5	3,8	1,5	676.00..-D	079	079	579	579
R/L 007.0200-30	7	2,7	6,8	6,3	45	30	2,5	3,8	2,0	676.00..-D	174	174	674	674
R/L 007.0100-35	7	2,7	7,0	6,3	50	35	2,5	3,8	1,0	676.00..-D			688	688
R/L 007.0150-35	7	2,7	7,0	6,3	50	35	2,5	3,8	1,5	676.00..-D			690	690
R/L 007.0200-35	7	2,7	7,0	6,3	50	35	2,5	3,8	2,0	676.00..-D			692	692
R/L 007.0100-40	7	2,7	7,0	6,3	55	40	2,5	3,8	1,0	676.00..-D			700	700
R/L 007.0150-40	7	2,7	7,0	6,3	55	40	2,5	3,8	1,5	676.00..-D			702	702
R/L 007.0100-45	7	2,7	7,0	6,3	60	45	2,5	3,8	1,0	676.00..-D			712	712
R/L 007.0100-50	7	2,7	7,0	6,3	65	50	2,5	3,8	1,0	676.00..-D			714	714

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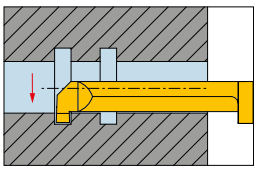
H			○	○
O	●	●	●	●

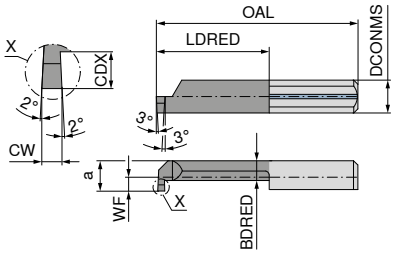
→ v_c Page 339

UltraMini – Inserts for Internal Grooving

▲ CDX = Maximum depth of cut when turning outwards

TiAlN TiAlN





Illustrations show right-hand versions

Left-hand Right-hand

73 003 ... **73 002 ...**

Designation	DCONMS $_{h6}$ mm	WF mm	DMIN mm	a mm	OAL mm	LDRED mm	CDX mm	BDRED mm	CW mm	Standard tool holder		
R/L 002.0050-5	4		2	1,8	19	5	0,4	1,2	0,5	645.00..-D	**820**	**820**
R/L 002.0050-10	4		2	1,8	24	10	0,4	1,2	0,5	645.00..-D	**821**	**821**
R/L 002.0050-15	4		2	1,8	29	15	0,4	1,2	0,5	645.00..-D	**822**	**822**
R/L 003.0070-5	4	0,7	3	2,7	19	5	0,6	1,9	0,7	645.00..-D	**830**	**830**
R/L 003.0070-10	4	0,7	3	2,7	24	10	0,6	1,9	0,7	645.00..-D	**831**	**831**
R/L 003.0070-16	4	0,7	3	2,7	30	16	0,6	1,9	0,7	645.00..-D	**832**	**832**

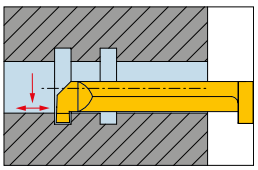
P	●	●
M	●	●
K	●	●
N	●	●
S	●	●
H	●	●
O	●	●

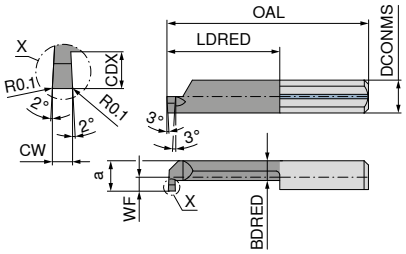
→ v_c Page 339

UltraMini – Inserts for Internal Grooving

▲ CDX = Maximum depth of cut when turning outwards

TiAlN TiAlN





Illustrations show right-hand versions

Designation	DCONMS h6	WF	DMIN	a	OAL	LDRED	CDX	BDRED	CW	Standard tool holder	Left-hand 73 203 ...	Right-hand 73 202 ...
	mm	mm	mm	mm	mm	mm	mm	mm	mm			
R/L 004M0100-10	4	1,5	4,0	3,5	24	10	0,8	2,4	1,0	645.00..-D	800	800
R/L 004M0100-16	4	1,5	4,0	3,5	30	16	0,8	2,4	1,0	645.00..-D	802	802
R/L 004M0100-20	4	1,5	4,0	3,5	34	20	0,8	2,4	1,0	645.00..-D	804	804
R/L 005M0100-10	5	1,9	5,0	4,4	25	10	1,0	3,3	1,0	645.00..-D	806	806
R/L 005M0150-10	5	1,9	5,0	4,4	25	10	1,0	3,3	1,5	645.00..-D	816	816
R/L 005M0200-10	5	1,9	5,0	4,4	25	10	1,0	3,3	2,0	645.00..-D	826	826
R/L 005M0100-15	5	1,9	5,0	4,4	30	15	1,0	3,3	1,0	645.00..-D	808	808
R/L 005M0150-15	5	1,9	5,0	4,4	30	15	1,0	3,3	1,5	645.00..-D	818	818
R/L 005M0200-15	5	1,9	5,0	4,4	30	15	1,0	3,3	2,0	645.00..-D	828	828
R/L 005M0100-20	5	1,9	5,0	4,4	35	20	1,0	3,3	1,0	645.00..-D	810	810
R/L 005M0150-20	5	1,9	5,0	4,4	35	20	1,0	3,3	1,5	645.00..-D	820	820
R/L 005M0200-20	5	1,9	5,0	4,4	35	20	1,0	3,3	2,0	645.00..-D	830	830
R/L 005M0100-25	5	1,9	5,0	4,4	40	25	1,0	3,3	1,0	645.00..-D	812	812
R/L 005M0150-25	5	1,9	5,0	4,4	40	25	1,0	3,3	1,5	645.00..-D	822	822
R/L 005M0200-25	5	1,9	5,0	4,4	40	25	1,0	3,3	2,0	645.00..-D	832	832
R/L 005M0100-30	5	1,9	5,0	4,4	45	30	1,0	3,3	1,0	645.00..-D	814	814
R/L 005M0150-30	5	1,9	5,0	4,4	45	30	1,0	3,3	1,5	645.00..-D	824	824
R/L 005M0200-30	5	1,9	5,0	4,4	45	30	1,0	3,3	2,0	645.00..-D	834	834
R/L 006M0100-10	6	2,3	6,0	5,3	25	10	1,8	3,4	1,0	676.00..-D	836	836
R/L 006M0150-10	6	2,3	6,0	5,3	25	10	1,8	3,4	1,5	676.00..-D	846	846
R/L 006M0200-10	6	2,3	6,0	5,3	25	10	1,8	3,4	2,0	676.00..-D	856	856
R/L 006M0100-15	6	2,3	6,0	5,3	30	15	1,8	3,4	1,0	676.00..-D	838	838
R/L 006M0150-15	6	2,3	6,0	5,3	30	15	1,8	3,4	1,5	676.00..-D	848	848
R/L 006M0200-15	6	2,3	6,0	5,3	30	15	1,8	3,4	2,0	676.00..-D	858	858
R/L 006M0100-20	6	2,3	6,0	5,3	35	22	1,8	3,4	1,0	676.00..-D	840	840
R/L 006M0150-20	6	2,3	6,0	5,3	37	22	1,8	3,4	1,5	676.00..-D	850	850
R/L 006M0200-20	6	2,3	6,0	5,3	37	22	1,8	3,4	2,0	676.00..-D	860	860
R/L 006M0100-25	6	2,3	6,0	5,3	40	25	1,8	3,4	1,0	676.00..-D	842	842
R/L 006M0150-25	6	2,3	6,0	5,3	40	25	1,8	3,4	1,5	676.00..-D	852	852
R/L 006M0200-25	6	2,3	6,0	5,3	40	25	1,8	3,4	2,0	676.00..-D	862	862
R/L 006M0100-30	6	2,3	6,0	5,3	45	30	1,8	3,4	1,0	676.00..-D	844	844
R/L 006M0150-30	6	2,3	6,0	5,3	45	30	1,8	3,4	1,5	676.00..-D	854	854
R/L 006M0200-30	6	2,3	6,0	5,3	45	30	1,8	3,4	2,0	676.00..-D	864	864
R/L 007M0100-10	7	2,7	6,8	6,3	25	10	2,5	3,7	1,0	676.00..-D	866	866
R/L 007M0150-10	7	2,7	6,8	6,3	25	10	2,5	3,7	1,5	676.00..-D	876	876
R/L 007M0200-10	7	2,7	6,8	6,3	25	10	2,5	3,7	2,0	676.00..-D	886	886
R/L 007M0100-15	7	2,7	6,8	6,3	30	15	2,5	3,7	1,0	676.00..-D	868	868
R/L 007M0150-15	7	2,7	6,8	6,3	30	15	2,5	3,7	1,5	676.00..-D	878	878
R/L 007M0200-15	7	2,7	6,8	6,3	30	15	2,5	3,7	2,0	676.00..-D	888	888
R/L 007M0100-22	7	2,7	6,8	6,3	37	22	2,5	3,7	1,0	676.00..-D	870	870
R/L 007M0150-22	7	2,7	6,8	6,3	37	22	2,5	3,7	1,5	676.00..-D	880	880
R/L 007M0200-22	7	2,7	6,8	6,3	37	22	2,5	3,7	2,0	676.00..-D	890	890
R/L 007M0100-25	7	2,7	6,8	6,3	40	25	2,5	3,7	1,0	676.00..-D	872	872
R/L 007M0150-25	7	2,7	6,8	6,3	40	25	2,5	3,7	1,5	676.00..-D	882	882
R/L 007M0200-25	7	2,7	6,8	6,3	40	25	2,5	3,7	2,0	676.00..-D	892	892
R/L 007M0100-30	7	2,7	6,8	6,3	45	30	2,5	3,7	1,0	676.00..-D	874	874
R/L 007M0150-30	7	2,7	6,8	6,3	45	30	2,5	3,7	1,5	676.00..-D	884	884
R/L 007M0200-30	7	2,7	6,8	6,3	45	30	2,5	3,7	2,0	676.00..-D	894	894

P	●	●
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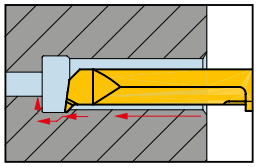
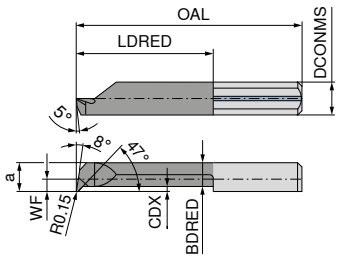
→ v_c Page 339

3

UltraMini – Inserts for internal undercuts

▲ CDX = Maximum depth of cut when turning outwards





Illustrations show right-hand versions

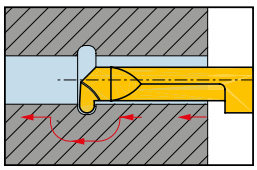
	TiN	TiN	TiAlN	TiAlN
				
	Left-hand	Right-hand	Left-hand	Right-hand
	73 011 ...	**73 010 ...**	**73 011 ...**	**73 010 ...**

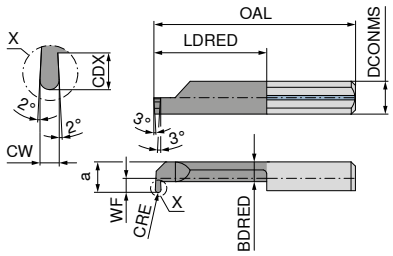
Designation	DCONMS $_{h6}$ mm	WF mm	DMIN mm	a mm	OAL mm	LDRED mm	CDX mm	BDRED mm	Standard tool holder				
R/L 047.2-10	4		2,0	1,7	24	10	0,4	1,2	645.00..-D			**221**	**221**
R/L 047.3-15	4	0,6	2,8	2,6	29	15	0,6	1,9	645.00..-D			**231**	**231**
R/L 047.4-10	4	1,5	4,0	3,5	24	10	0,6	2,8	645.00..-D			**241**	**241**
R/L 047.T4-20	4	1,5	4,0	3,5	34	20	0,6	2,8	645.00..-D			**242**	**242**
R/L 047.4-20	4	1,5	4,0	3,5	34	20	0,3	3,0	645.00..-D	**542**	**542**		
R/L 047.5-15	5	1,9	5,0	4,4	30	15	0,8	3,5	645.00..-D			**251**	**251**
R/L 047.T5-25	5	1,9	5,0	4,4	40	25	0,8	3,5	645.00..-D			**252**	**252**
R/L 047.5-25	5	1,9	5,0	4,4	40	25	0,5	3,8	645.00..-D	**552**	**552**		
R/L 047.T6-22	6	2,3	6,0	5,3	37	22	1,8	3,4	676.00..-D			**262**	**262**
R/L 047.T6-30	6	2,3	6,0	5,3	45	30	1,8	3,4	676.00..-D			**263**	**263**
R/L 047.6-30	6	2,3	6,0	5,3	45	30	0,5	4,5	676.00..-D	**562**	**562**		
P										●	●	●	●
M										●	●	●	●
K										●	●	●	●
N										●	●	●	●
S										○	○	●	●
H										○	○	●	●
O										●	●	●	●

→ v_c Page 339

UltraMini – Inserts for internal grooving and turning

▲ CDX = Maximum depth of cut when turning outwards





TiN

TiN

Illustrations show right-hand versions

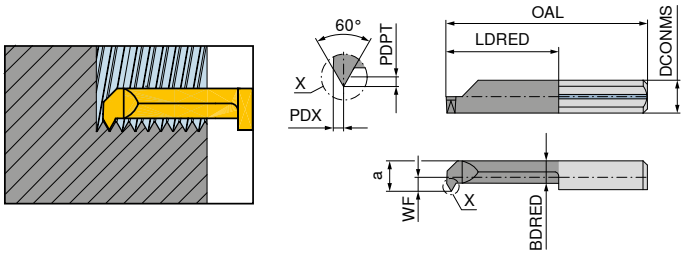
Designation	DCONMS $_{h6}$ mm	WF mm	DMIN mm	a mm	OAL mm	LDRED mm	CDX mm	BDRED mm	CW mm	CRE mm	Standard tool holder	Left-hand 73 019 ...	Right-hand 73 018 ...
R/L 006-0.75-25	6	2,3	6,0	5,3	40	25	1,8	3,4	1,5	0,75	676.00..-D	**564**	**564**
R/L 004-0.50-16	4	1,5	4,0	3,5	30	16	0,8	2,4	1,0	0,50	645.00..-D	**541**	**541**
R/L 005-0.50-20	5	1,9	5,0	4,4	35	20	1,0	3,3	1,0	0,50	645.00..-D	**552**	**552**
R/L 005-0.75-20	5	1,9	5,0	4,4	35	20	1,0	3,3	1,5	0,75	645.00..-D	**554**	**554**
R/L 005-1.00-20	5	1,9	5,0	4,4	35	20	1,0	3,3	2,0	1,00	645.00..-D	**556**	**556**
R/L 006-0.50-25	6	2,3	6,0	5,3	40	25	1,8	3,4	1,0	0,50	676.00..-D	**562**	**562**
R/L 006-1.00-25	6	2,3	6,0	5,3	40	25	1,8	3,4	2,0	1,00	676.00..-D	**566**	**566**
R/L 007-0.50-30	7	2,7	6,8	6,3	45	30	2,5	3,8	1,0	0,50	676.00..-D	**572**	**572**
R/L 007-0.75-30	7	2,7	6,8	6,3	45	30	2,5	3,8	1,5	0,75	676.00..-D	**574**	**574**
R/L 007-1.00-30	7	2,7	6,8	6,3	45	30	2,5	3,8	2,0	1,00	676.00..-D	**576**	**576**
P												●	●
M												●	●
K												●	●
N												●	●
S												o	o
H												o	o
O												●	●

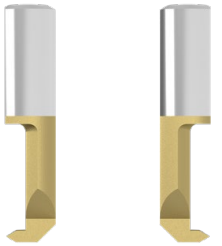
→ v_c Page 339

3

UltraMini – Inserts for internal threading (Partial profile)

TiN | TiN





Illustrations show right-hand versions

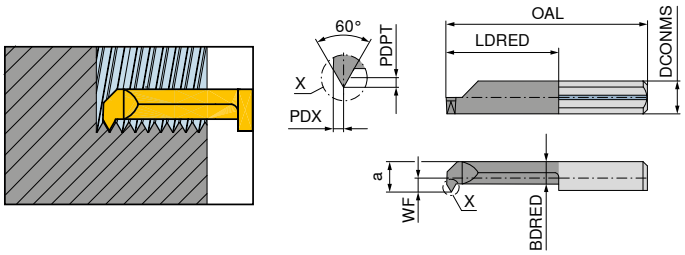
Designation	DCONMS h6 mm	TP mm	WF mm	DMIN mm	a mm	OAL mm	LDRED mm	BDRED mm	PDPT mm	PDX mm	Standard tool holder	Left-hand 73 101 ...	Right-hand 73 100 ...
R/L 005.0510-15	5	1 - 1,25	1,9	4,8	4,4	30	15	3,3	0,55	0,55	645.00..-D	545	545
R/L 005.0510-20	5	1 - 1,25	1,9	4,8	4,4	35	20	3,3	0,55	0,55	645.00..-D	544	544
R/L 006.0612-15	6	1,25 - 1,5	2,3	6,0	5,3	30	15	3,4	0,68	0,65	676.00..-D	547	547
R/L 006.0612-22	6	1,25 - 1,5	2,3	6,0	5,3	37	22	3,4	0,68	0,65	676.00..-D	546	546
R/L 006.0815-15	6	1,5 - 1,75	2,3	6,0	5,3	30	15	3,4	0,81	0,75	676.00..-D	549	549
R/L 006.0815-22	6	1,5 - 1,75	2,3	6,0	5,3	37	22	3,4	0,81	0,75	676.00..-D	548	548
R/L 007.0815-15	7	1,5 - 1,75	2,7	7,0	6,3	30	15	3,8	0,81	0,75	676.00..-D	550	550

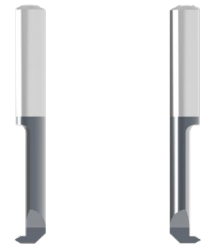
P	●	●
M	●	●
K	●	●
N	●	●
S	○	○
H	○	○
O	●	●

→ v_c Page 339

UltraMini – Inserts for internal threading (Partial profile)

TiAlN | TiAlN





Illustrations show right-hand versions

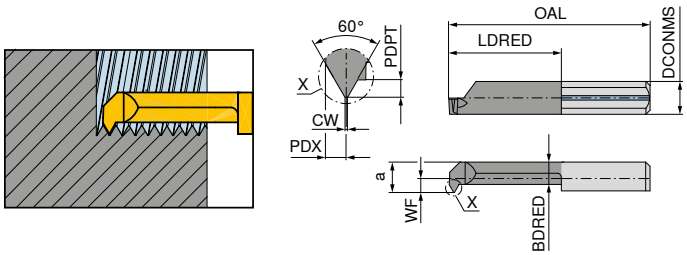
Designation	DCONMS h6 mm	TP mm	WF mm	DMIN mm	a mm	OAL mm	LDRED mm	BDRED mm	PDPT mm	PDX mm	Standard tool holder	Left-hand 73 101 ...	Right-hand 73 100 ...
R/L 003.0105-8	4	0,5 - 0,7	0,30	2,4	2,3	22	8	1,8	0,27	0,33	645.00..-D	551	551
R/L 004.0408-15	4	0,8 - 1	1,75	4,0	3,5	30	15	2,4	0,43	0,45	645.00..-D	552	552

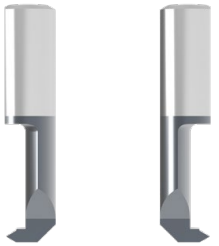
P	●	●
M	●	●
K	●	●
N	●	●
S	●	●
H	●	●
O	●	●

→ v_c Page 339

UltraMini – Inserts for Internal thread turning (Full profile)

TiAlN TiAlN





Illustrations show right-hand versions

Left-hand Right-hand

73 209 ... **73 208 ...**

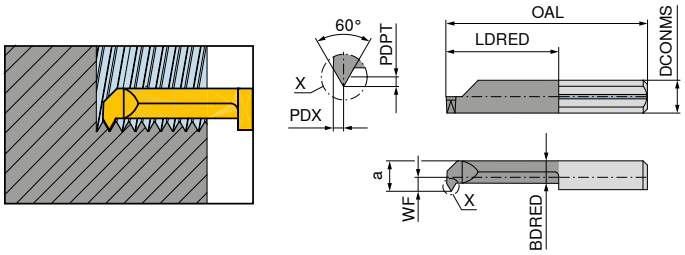
Designation	DCONMS $_{h6}$ mm	TP mm	WF mm	DMIN mm	a mm	OAL mm	LDRED mm	BDRED mm	PDPT mm	PDX mm	CW mm	Standard tool holder		
R/L 105.0408-15	5	0,80	1,9	4,8	4,4	30	15	3,3	0,43	0,50	0,10	645.00..-D	**799**	**799**
R/L 105.510-15	5	1,00	1,9	4,8	4,4	30	15	3,3	0,54	0,55	0,12	645.00..-D	**800**	**800**
R/L 106.612-15	6	1,25	2,3	6,0	5,3	30	15	3,4	0,67	0,65	0,15	676.00..-D	**802**	**802**
R/L 106.815-15	6	1,50	2,3	6,0	5,3	30	15	3,4	0,81	0,75	0,18	676.00..-D	**804**	**804**
R/L 106.815-15	7	1,50	2,7	7,0	6,3	30	15	3,8	0,81	0,75	0,18	676.00..-D	**806**	**806**
P													●	●
M													●	●
K													●	●
N													●	●
S													●	●
H													●	●
O													●	●

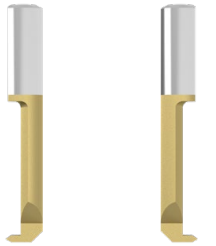
→ v_c Page 339

3

UltraMini – Inserts for internal thread turning (Partial profile)

TiN | TiN





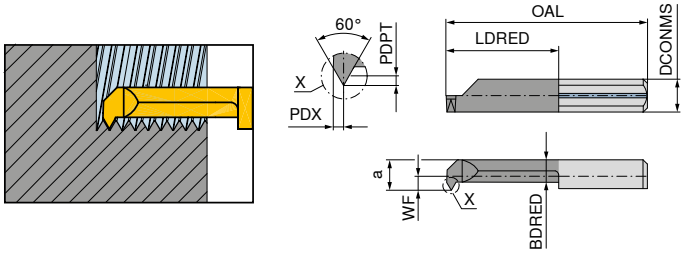
Illustrations show right-hand versions

Designation	DCONMS h6 mm	TP mm	WF mm	DMIN mm	a mm	OAL mm	LDRED mm	BDRED mm	PDPT mm	PDX mm	Standard tool holder	Left-hand 73 103 ...	Right-hand 73 102 ...
R/L 004.0205-15	4	0,5 - 0,75	1,5	4	3,5	30	15	2,4	0,27	0,35	645.00..-D	510	510
R/L 005.0205-20	5	0,5 - 0,75	1,9	5	4,4	35	20	3,3	0,27	0,35	645.00..-D	540	540
R/L 005.0205-15	5	0,5 - 0,75	1,9	5	4,4	30	15	3,3	0,27	0,35	645.00..-D	539	539
L 005.0407-15	5	0,75 - 1	1,9	5	4,4	30	15	3,3	0,40	0,45	645.00..-D	541	
R/L 005.0407-20	5	0,75 - 1	1,9	5	4,4	35	20	3,3	0,40	0,45	645.00..-D	542	542
R 005.0407-15	5	0,75 - 1	1,9	5	4,4	30	15	3,3	0,40	0,45	645.00..-D		541
R/L 006.0510-22	6	1 - 1,25	2,3	6	5,3	37	22	3,4	0,55	0,55	676.00..-D	544	544
R/L 006.0510-15	6	1 - 1,25	2,3	6	5,3	30	15	3,4	0,55	0,55	676.00..-D	543	543
P												●	●
M												●	●
K												●	●
N												●	●
S												○	○
H												○	○
O												●	●

→ v_c Page 339

UltraMini – Inserts for internal thread turning (Partial profile)

TiAlN | TiAlN



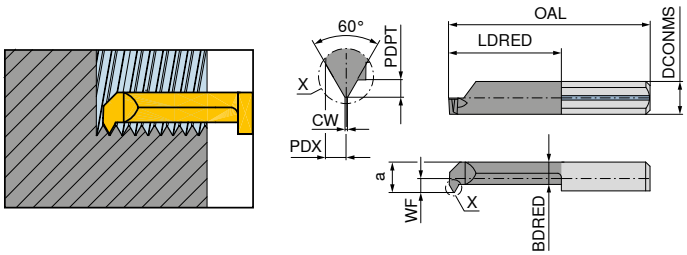
Illustrations show right-hand versions

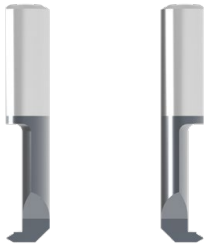
Designation	DCONMS h6 mm	TP mm	WF mm	DMIN mm	a mm	OAL mm	LDRED mm	BDRED mm	PDPT mm	PDX mm	Standard tool holder	Left-hand 73 103 ...	Right-hand 73 102 ...
R/L 004.0105-10	4	0,5 - 0,75	1	3,2	3	24	10	2,3	0,27	0,44	645.00..-D	509	509
P												●	●
M												●	●
K												●	●
N												●	●
S												●	●
H												●	●
O												●	●

→ v_c Page 339

UltraMini – Inserts for Internal thread turning (Full profile)

TiAlN | TiAlN





Illustrations show right-hand versions

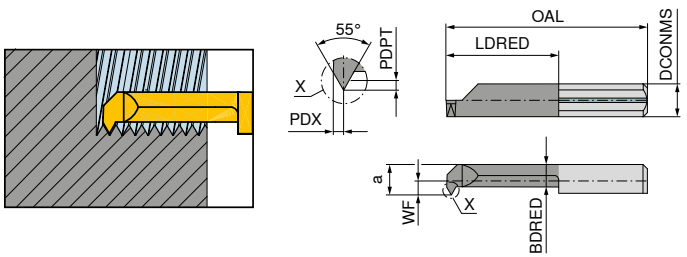
Designation	DCONMS h6 mm	TP mm	WF mm	DMIN mm	a mm	OAL mm	LDRED mm	BDRED mm	PDPT mm	PDX mm	CW mm	Standard tool holder	Left-hand 73 207 ...	Right-hand 73 206 ...
R/L 104.0205-15	5	0,50	1,5	4	3,5	30	15	2,4	0,27	0,35	0,06	645.00..-D	**800**	**800**
R/L 105.0205-15	5	0,50	1,9	5	4,4	30	15	3,3	0,27	0,35	0,06	645.00..-D	**802**	**802**
R/L 105.0407-15	5	0,75	1,9	5	4,4	30	15	3,3	0,40	0,45	0,09	645.00..-D	**804**	**804**
R/L 106.0510-15	6	1,00	2,3	6	5,3	30	15	3,4	0,54	0,55	0,12	676.00..-D	**806**	**806**

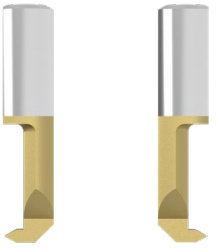
P	●	●
M	●	●
K	●	●
N	●	●
S	●	●
H	●	●
O	●	●

→ v_c Page 339

UltraMini – Inserts for internal thread turning (Partial profile)

TiN | TiN





Illustrations show right-hand versions

Designation	DCONMS h6 mm	TPI 1/"	WF mm	DMIN mm	a mm	OAL mm	LDRED mm	BDRED mm	PDPT mm	PDX mm	Standard tool holder	Left-hand 73 105 ...	Right-hand 73 104 ...
R/L 005.5548-15	5	48 - 24	1,9	4,8	4,4	30	15	3,3	0,40	0,45	645.00..-D	**552**	**552**
R/L 006.5548-15	6	48 - 24	2,3	6,0	5,3	30	15	3,4	0,40	0,45	676.00..-D	**562**	**562**
R/L 006.5524-15	6	24 - 16	2,3	6,0	5,3	30	15	3,4	0,81	0,75	676.00..-D	**563**	**563**
R/L 007.5524-15	7	24 - 16	2,7	7,0	6,3	30	15	3,8	0,81	0,75	676.00..-D	**572**	**572**

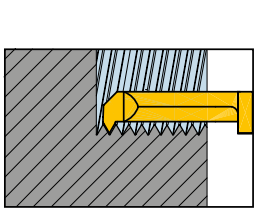
P	●	●
M	●	●
K	●	●
N	●	●
S	o	o
H	o	o
O	●	●

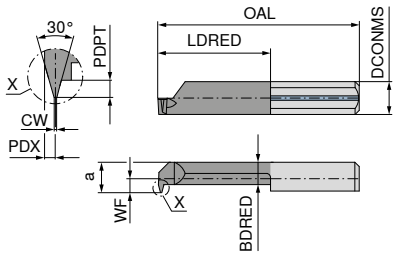
→ v_c Page 339

UltraMini – Inserts for internal thread turning (Partial profile)

▲ Trapezoidal thread DIN 103

TiAlN TiAlN



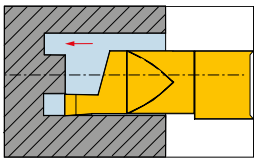


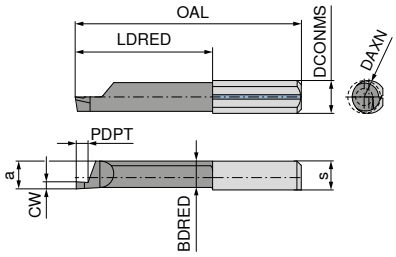
Illustrations show right-hand versions

													Left-hand	Right-hand
													73 211 ...	**73 210 ...**
Designation	DCONMS $_{h6}$ mm	TP mm	WF mm	DMIN mm	a mm	OAL mm	LDRED mm	BDRED mm	PDPT mm	PDX mm	CW mm	Standard tool holder		
R/L 007.1220-22	7	2	2,8	7	6,3	37	22	3,8	1,25	0,75	0,6	676.00..-D	**222**	**222**
R/L 007.1220-30	7	2	2,8	7	6,3	45	30	3,8	1,25	0,75	0,6	676.00..-D	**230**	**230**
R/L 007.1730-22	7	3	2,8	7	6,3	37	22	3,8	1,75	1,10	1,0	676.00..-D	**322**	**322**
R/L 007.1730-30	7	3	2,8	7	6,3	45	30	3,8	1,75	1,10	1,0	676.00..-D	**330**	**330**
P													●	●
M													●	●
K													●	●
N													●	●
S													●	●
H													●	●
O													●	●

→ v_c Page 339

UltraMini – Inserts for axial grooving





Illustrations show right-hand versions

	TiN	TiN	TiAlN	TiAlN
				
	Left-hand	Right-hand	Left-hand	Right-hand
	73 051 ...	**73 050 ...**	**73 053 ...**	**73 052 ...**

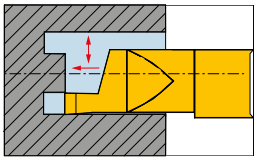
Designation	DCONMS h6 mm	a mm	DAXN mm	s mm	OAL mm	LDRED mm	PDPT mm	BDRED mm	CW mm	Standard tool holder							
R/L 010.1006-10	6	5,2	6	5,3	26	11	1,5	4,9	1,0	676.00..-D	**561**		**561**		**561**		**561**
R/L 010.1506-10	6	5,2	6	5,3	26	11	2,0	4,9	1,5	676.00..-D	**563**		**563**		**563**		**563**
R/L 010.1008-10	7	5,9	8	6,3	26	11	1,5	5,6	1,0	676.00..-D	**571**		**571**		**571**		**571**
R/L 010.1008-20	7	5,9	8	6,3	35	20	1,5	5,6	1,0	676.00..-D	**671**		**671**		**671**		**671**
R/L 010.1008-30	7	5,9	8	6,3	45	30	1,5	5,6	1,0	676.00..-D	**771**		**771**		**771**		**771**
R/L 010.1508-10	7	5,9	8	6,3	26	11	2,5	5,6	1,5	676.00..-D	**573**		**573**		**573**		**573**
R/L 010.1508-20	7	5,9	8	6,3	35	20	2,5	5,6	1,5	676.00..-D	**673**		**673**		**673**		**673**
R/L 010.1508-30	7	5,9	8	6,3	45	30	2,5	5,6	1,5	676.00..-D	**773**		**773**		**773**		**773**
R/L 010.2008-10	7	5,9	8	6,3	26	11	3,0	5,6	2,0	676.00..-D	**575**		**575**		**575**		**575**
R/L 010.2008-20	7	5,9	8	6,3	35	20	3,0	5,6	2,0	676.00..-D	**675**		**675**		**675**		**675**
R/L 010.2008-30	7	5,9	8	6,3	45	30	3,0	5,6	2,0	676.00..-D	**775**		**775**		**775**		**775**
R/L 010.2508-10	7	5,9	8	6,3	26	11	3,5	5,6	2,5	676.00..-D	**577**		**577**		**577**		**577**
R/L 010.2508-20	7	5,9	8	6,3	35	20	3,5	5,6	2,5	676.00..-D	**677**		**677**		**677**		**677**
R/L 010.2508-30	7	5,9	8	6,3	45	30	3,5	5,6	2,5	676.00..-D	**777**		**777**		**777**		**777**
R/L 010.3008-10	7	5,9	8	6,3	26	11	3,5	5,6	3,0	676.00..-D	**579**		**579**		**579**		**579**
R/L 010.3008-20	7	5,9	8	6,3	35	20	3,5	5,6	3,0	676.00..-D	**679**		**679**		**679**		**679**
R/L 010.3008-30	7	5,9	8	6,3	45	30	3,5	5,6	3,0	676.00..-D	**779**		**779**		**779**		**779**

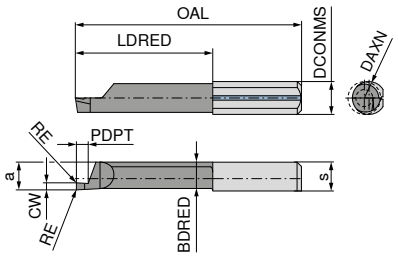
P	●	●	●	●
M	●	●	●	●
K	●	●	●	●
N	●	●	●	●
S	○	○	●	●
H	○	○	●	●
O	●	●	●	●

→ v_c Page 339

UltraMini – Inserts for axial grooving

▲ with corner radius





Illustrations show right-hand versions

TiAlN

Left-hand

TiAlN

Right-hand

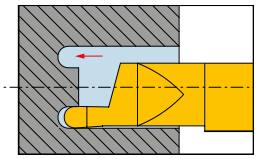
Designation	DCONMS h6	a	DAXN	s	OAL	LDRED	PDPT	BDRED	CW	RE	Standard tool holder	73 253 ...	73 252 ...
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm			
R/L 510M1008-10	5	4,3	5	6,3	26	11	2	4,0	1,0	0,05	645.00..-D	510	510
R/L 510M1008-20	5	4,3	5	6,3	35	20	2	4,0	1,0	0,05	645.00..-D	610	610
R/L 510M1508-10	5	4,3	5	6,3	26	11	3	4,0	1,5	0,05	645.00..-D	515	515
R/L 510M1508-20	5	4,3	5	6,3	35	20	3	4,0	1,5	0,05	645.00..-D	615	615
R/L 510M2008-10	5	4,3	5	6,3	26	11	4	4,0	2,0	0,05	645.00..-D	520	520
R/L 510M2008-20	5	4,3	5	6,3	35	20	4	4,0	2,0	0,05	645.00..-D	620	620
R/L 010M1008-10	7	5,9	8	6,3	26	11	2	5,6	1,0	0,10	676.00..-D	800	800
R/L 010M1008-20	7	5,9	8	6,3	35	20	2	5,6	1,0	0,10	676.00..-D	810	810
R/L 010M1008-30	7	5,9	8	6,3	45	30	2	5,6	1,0	0,10	676.00..-D	820	820
R/L 010M1508-10	7	5,9	8	6,3	26	11	3	5,6	1,5	0,10	676.00..-D	802	802
R/L 010M1508-20	7	5,9	8	6,3	35	20	3	5,6	1,5	0,10	676.00..-D	812	812
R/L 010M1508-30	7	5,9	8	6,3	45	30	3	5,6	1,5	0,10	676.00..-D	822	822
R/L 010M2008-10	7	5,9	8	6,3	26	11	4	5,6	2,0	0,10	676.00..-D	804	804
R/L 010M2008-20	7	5,9	8	6,3	35	20	4	5,6	2,0	0,10	676.00..-D	814	814
R/L 010M2008-30	7	5,9	8	6,3	45	30	4	5,6	2,0	0,10	676.00..-D	824	824
R/L 010M2508-10	7	5,9	8	6,3	26	11	5	5,6	2,5	0,10	676.00..-D	806	806
R/L 010M2508-20	7	5,9	8	6,3	35	20	5	5,6	2,5	0,10	676.00..-D	816	816
R/L 010M2508-30	7	5,9	8	6,3	45	30	5	5,6	2,5	0,10	676.00..-D	826	826
R/L 010M3008-10	7	5,9	8	6,3	26	11	6	5,6	3,0	0,10	676.00..-D	808	808
R/L 010M3008-20	7	5,9	8	6,3	35	20	6	5,6	3,0	0,10	676.00..-D	818	818
R/L 010M3008-30	7	5,9	8	6,3	45	30	6	5,6	3,0	0,10	676.00..-D	828	828
P												●	●
M												●	●
K												●	●
N												●	●
S												●	●
H												●	●
O												●	●

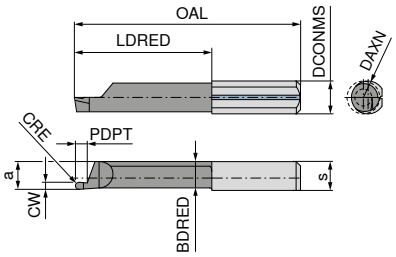
→ v_c Page 339

UltraMini – Inserts for axial grooving (Full radius)

TiAlN

TiAlN





Illustrations show right-hand versions

Left-hand

Right-hand

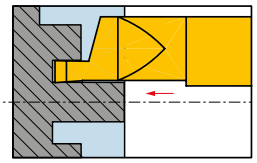
Designation	DCONMS $_{h6}$ mm	a mm	DAXN mm	s mm	OAL mm	LDRED mm	PDPT mm	BDRED mm	CW mm	CRE mm	Standard tool holder	73 059 ... Left-hand	73 058 ... Right-hand
R/L 610.1005-10	6	5,2	6	5,3	26	11	2	4,9	1,0	0,50	676.00..-D	**071**	**071**
R/L 610.1005-20	6	5,2	6	5,3	35	20	2	4,9	1,0	0,50	676.00..-D	**171**	**171**
R/L 610.1608-10	6	5,2	6	5,3	26	11	3	4,9	1,6	0,80	676.00..-D	**073**	**073**
R/L 610.1608-20	6	5,2	6	5,3	35	20	3	4,9	1,6	0,80	676.00..-D	**173**	**173**
R/L 610.2010-10	6	5,2	6	5,3	26	11	4	4,9	2,0	1,00	676.00..-D	**075**	**075**
R/L 610.2010-20	6	5,2	6	5,3	35	20	4	4,9	2,0	1,00	676.00..-D	**175**	**175**
R/L 610.2512-10	6	5,2	6	5,3	26	11	5	4,9	2,5	1,25	676.00..-D	**077**	**077**
R/L 610.2512-20	6	5,2	6	5,3	35	20	5	4,9	2,5	1,25	676.00..-D	**177**	**177**
R/L 610.3015-10	6	5,2	6	5,3	26	11	6	4,9	3,0	1,50	676.00..-D	**079**	**079**
R/L 610.3015-20	6	5,2	6	5,3	35	20	6	4,9	3,0	1,50	676.00..-D	**179**	**179**
R/L 010.1005-10	7	5,9	8	6,3	26	11	2	5,6	1,0	0,50	676.00..-D	**571**	**571**
R/L 010.1005-20	7	5,9	8	6,3	35	20	2	5,6	1,0	0,50	676.00..-D	**671**	**671**
R/L 010.1608-10	7	5,9	8	6,3	26	11	3	5,6	1,6	0,80	676.00..-D	**573**	**573**
R/L 010.1608-20	7	5,9	8	6,3	35	20	3	5,6	1,6	0,80	676.00..-D	**673**	**673**
R/L 010.2010-10	7	5,9	8	6,3	26	11	4	5,6	2,0	1,00	676.00..-D	**575**	**575**
R/L 010.2010-20	7	5,9	8	6,3	35	20	4	5,6	2,0	1,00	676.00..-D	**675**	**675**
R/L 010.2512-10	7	5,9	8	6,3	26	11	5	5,6	2,5	1,25	676.00..-D	**577**	**577**
R/L 010.2512-20	7	5,9	8	6,3	35	20	5	5,6	2,5	1,25	676.00..-D	**677**	**677**
R/L 010.3015-10	7	5,9	8	6,3	26	11	6	5,6	3,0	1,50	676.00..-D	**579**	**579**
R/L 010.3015-20	7	5,9	8	6,3	35	20	6	5,6	3,0	1,50	676.00..-D	**679**	**679**
P												●	●
M												●	●
K												●	●
N												●	●
S												●	●
H												●	●
O												●	●

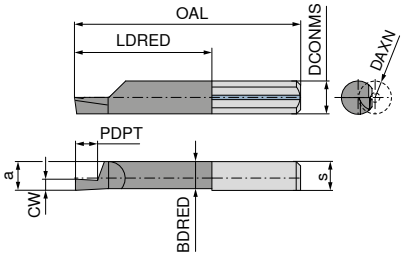
→ v_c Page 339

3

UltraMini – Inserts for axial grooving over a spigot

TiAlN TiAlN





Illustrations show right-hand versions

Left-hand Right-hand

73 061 ... **73 060 ...**

Designation	DCONMS h6 mm	a mm	DAXN mm	s mm	OAL mm	LDRED mm	PDPT mm	BDRED mm	CW mm	Standard tool holder		
R/L 620.1006-20	6	5,2	6	5,3	35	20	2	4,9	1,0	676.00..-D	**561**	**561**
R/L 620.1506-20	6	5,2	6	5,3	35	20	3	4,9	1,5	676.00..-D	**563**	**563**
R/L 620.2006-20	6	5,2	6	5,3	35	20	4	4,9	2,0	676.00..-D	**565**	**565**
R/L 620.2506-20	6	5,2	6	5,3	35	20	5	4,9	2,5	676.00..-D	**567**	**567**
R/L 620.3006-20	6	5,2	6	5,3	35	20	6	4,9	3,0	676.00..-D	**569**	**569**

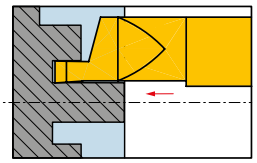
P	●	●
M	●	●
K	●	●
N	●	●
S	●	●
H	●	●
O	●	●

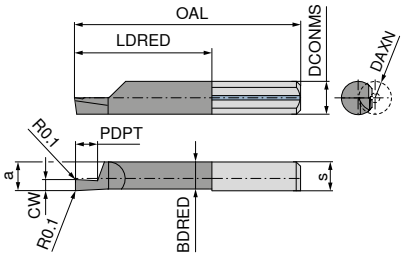
→ v_c Page 339

UltraMini – Inserts for axial grooving over a spigot

▲ with corner radius

TiAlN TiAlN





Illustrations show right-hand versions

Left-hand Right-hand

73 261 ... **73 260 ...**

Designation	DCONMS h6 mm	a mm	DAXN mm	s mm	OAL mm	LDRED mm	PDPT mm	BDRED mm	CW mm	Standard tool holder		
R/L 620M1006-20	6	5,2	6	5,3	35	20	2	4,9	1,0	676.00..-D	**800**	**800**
R/L 620M1506-20	6	5,2	6	5,3	35	20	3	4,9	1,5	676.00..-D	**802**	**802**
R/L 620M2006-20	6	5,2	6	5,3	35	20	4	4,9	2,0	676.00..-D	**804**	**804**
R/L 620M2506-20	6	5,2	6	5,3	35	20	5	4,9	2,5	676.00..-D	**806**	**806**
R/L 620M3006-20	6	5,2	6	5,3	35	20	6	4,9	3,0	676.00..-D	**808**	**808**

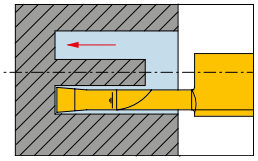
P	●	●
M	●	●
K	●	●
N	●	●
S	●	●
H	●	●
O	●	●

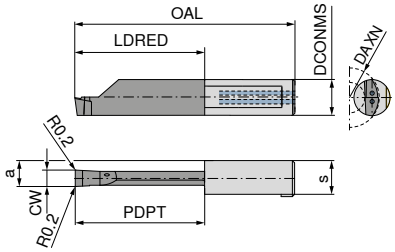
→ v_c Page 339

UltraMini – Inserts for axial grooving

- up to 70 bar
- dual cooling channel

TiAlN TiAlN





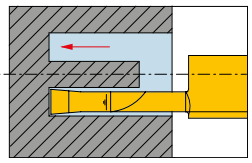
Illustrations show right-hand versions

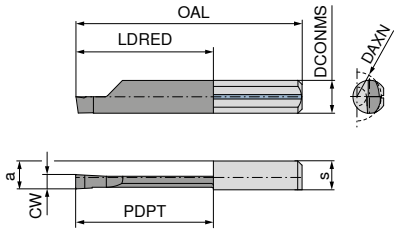
Designation	DCONMS $_{h6}$	a	DAXN	s	OAL	LDRED	PDPT	CW	Standard tool holder	Left-hand	Right-hand
	mm	mm	mm	mm	mm	mm	mm	mm		73 263 ...	73 262 ...
R/L 012.0200-10	8	5,00	12	7,3	30	10	10	2,0	687.00..-D	700	700
R/L 012.0200-15	8	5,00	12	7,3	35	15	15	2,0	687.00..-D	702	702
R/L 012.0250-10	8	5,25	12	7,3	30	10	10	2,5	687.00..-D	704	704
R/L 012.0250-20	8	5,25	12	7,3	40	20	20	2,5	687.00..-D	706	706
R/L 016.0300-10	8	5,50	16	7,3	30	10	10	3,0	687.00..-D	800	800
R/L 016.0300-20	8	5,50	16	7,3	40	20	20	3,0	687.00..-D	802	802
R/L 020.0300-25	8	5,50	20	7,3	45	25	25	3,0	687.00..-D	804	804
R/L 020.0300-30	8	5,50	20	7,3	50	30	30	3,0	687.00..-D	806	806
R/L 020.0300-35	8	5,50	20	7,3	55	35	35	3,0	687.00..-D	808	808
R/L 020.0300-40	8	5,50	20	7,3	60	40	40	3,0	687.00..-D	810	810
R/L 016.0400-10	8	6,00	16	7,3	30	10	10	4,0	687.00..-D	812	812
R/L 016.0400-20	8	6,00	16	7,3	40	20	20	4,0	687.00..-D	814	814
R/L 020.0400-25	8	6,00	20	7,3	45	25	25	4,0	687.00..-D	816	816
R/L 020.0400-30	8	6,00	20	7,3	50	30	30	4,0	687.00..-D	818	818
R/L 020.0400-35	8	6,00	20	7,3	55	35	35	4,0	687.00..-D	820	820
R/L 020.0400-40	8	6,00	20	7,3	60	40	40	4,0	687.00..-D	822	822
R/L 020.0500.20	8	6,50	20	7,3	40	20	20	5,0	687.00..-D	824	824
R/L 020.0500.25	8	6,50	20	7,3	45	25	25	5,0	687.00..-D	826	826
R/L 020.0500.30	8	6,50	20	7,3	50	30	30	5,0	687.00..-D	828	828
R/L 020.0500.35	8	6,50	20	7,3	55	35	35	5,0	687.00..-D	830	830
R/L 020.0500.40	8	6,50	20	7,3	60	40	40	5,0	687.00..-D	832	832
P										●	●
M										●	●
K										●	●
N										●	●
S										●	●
H										●	●
O										●	●

→ v_c Page 339

3

UltraMini – Inserts for axial grooving





TiN | TiN | TiAlN | TiAlN

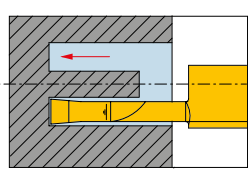
Illustrations show right-hand versions

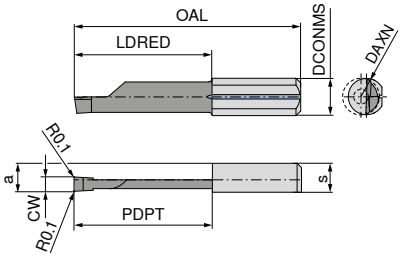
										Left-hand	Right-hand	Left-hand	Right-hand
										73 055 ...	73 054 ...	73 057 ...	73 056 ...
Designation	DCONMS h6 mm	a mm	DAXN mm	s mm	OAL mm	LDRED mm	PDPT mm	CW mm	Standard tool holder				
R/L 015.2515-20	7	5,9	15	6,3	35	20	20	2,5	676.00..-D	572	572	572	572
R/L 015.3015-20	7	5,9	15	6,3	35	20	20	3,0	676.00..-D	574	574	574	574
R/L 015.3015-30	7	5,9	15	6,3	45	30	30	3,0	676.00..-D	674	674	674	674
P										●	●	●	●
M										●	●	●	●
K										●	●	●	●
N										●	●	●	●
S										○	○	●	●
H										○	○	●	●
O										●	●	●	●

→ v_c Page 339

UltraMini – Inserts for axial grooving

▲ with corner radius





TiAlN | TiAlN

Illustrations show right-hand versions

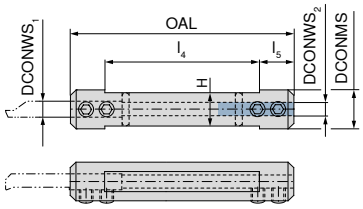
										Left-hand	Right-hand
										73 257 ...	73 256 ...
Designation	DCONMS h6 mm	a mm	DAXN mm	s mm	OAL mm	LDRED mm	PDPT mm	CW mm	Standard tool holder		
R/L 015M2515-20	7	5,9	8	6,3	35	20	20	2,5	676.00..-D	800	800
R/L 015M3015-20	7	5,9	8	6,3	35	20	20	3,0	676.00..-D	802	802
R/L 015M3015-30	7	5,9	8	6,3	45	30	30	3,0	676.00..-D	804	804
P										●	●
M										●	●
K										●	●
N										●	●
S										●	●
H										●	●
O										●	●

→ v_c Page 339

UltraMini – Standard tool holder for cutting inserts

- ▲ double ended
- ▲ Machining diameter from Ø 0.5 mm

Scope of supply:
Tool holder with allen key



Designation	$DCONWS_1$ mm	$DCONWS_2$ mm	DCONMS mm	OAL mm	l_4 mm	l_5 mm	H mm	73 080 ...
645.0012-D	4	5	12,00	75	55	10	10,3	**163**
645.0016-D	4	5	16,00	75	55	10	14,0	**164**
645.001905-D	4	5	19,05	90	70	10	17,2	**170**
645.0020-D	4	5	20,00	90	70	10	18,0	**165**
645.0022-D	4	5	22,00	90	70	10	20,0	**171**
645.00254-D	4	5	25,40	95	75	10	23,4	**172**
676.0016-D	6	7	16,00	75	55	10	14,0	**166**
676.001905-D	6	7	19,05	90	70	10	17,2	**173**
676.0020-D	6	7	20,00	90	70	10	18,0	**167**
676.0022-D	6	7	22,00	90	70	10	20,0	**174**
676.00254-D	6	7	25,40	95	75	10	23,4	**175**
687.0016-D	7	8	16,00	75	55	10	14,0	**168**
687.0020-D	7	8	20,00	90	70	10	18,0	**169**


Key I

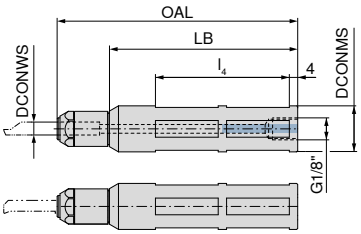

Clamping screw

Spare parts for Article no.	70 950 ...		73 082 ...	
73 080 169	SW2,5	**175**	M6x6	**014**
73 080 163	SW2,5	**175**	M5x4	**013**
73 080 164	SW2,5	**175**	M5x6	**001**
73 080 165	SW2,5	**175**	M5x8	**008**
73 080 166	SW2,5	**175**	M5x6	**001**
73 080 167	SW2,5	**175**	M5x8	**008**
73 080 168	SW2,5	**175**	M6x6	**014**
73 080 170	SW2,5	**175**	M5x6	**001**
73 080 171	SW2,5	**175**	M5x8	**008**
73 080 172	SW2,5	**175**	M5x8	**008**
73 080 173	SW2,5	**175**	M5x6	**001**
73 080 174	SW2,5	**175**	M5x8	**008**
73 080 175	SW2,5	**175**	M5x8	**008**

UltraMini – Quick change tool holder for cutting inserts

Scope of supply:

Tool holder, lock nut and clamping wedge



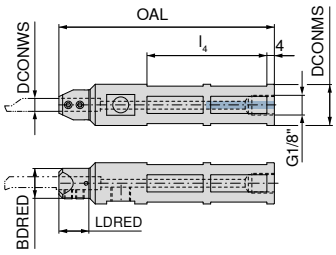
Designation	DCONWS mm	DCONMS g6 mm	OAL mm	LB mm	l_4 mm	73 089 ...
UM600H.0012.4	4	12,00	115	90	64	124
UM600H.0016.4	4	16,00	115	90	64	164
UM600H.001905.4	4	19,05	115	90	64	194
UM600H.0020.4	4	20,00	115	90	64	204
UM600H.0022.4	4	22,00	115	90	64	224
UM600H.0025.4	4	25,00	115	90	64	254
UM600H.00254.4	4	25,40	115	90	64	264
UM600H.0028.4	4	28,00	115	90	64	284
UM600H.0012.5	5	12,00	115	90	64	125
UM600H.0016.5	5	16,00	115	90	64	165
UM600H.001905.5	5	19,05	115	90	64	195
UM600H.0020.5	5	20,00	115	90	64	205
UM600H.0022.5	5	22,00	115	90	64	225
UM600H.0025.5	5	25,00	115	90	64	255
UM600H.00254.5	5	25,40	115	90	64	265
UM600H.0028.5	5	28,00	115	90	64	285
UM600H.0012.6	6	12,00	115	90	64	126
UM600H.0016.6	6	16,00	115	90	64	166
UM600H.001905.6	6	19,05	115	90	64	196
UM600H.0020.6	6	20,00	115	90	64	206
UM600H.0022.6	6	22,00	115	90	64	226
UM600H.0025.6	6	25,00	115	90	64	256
UM600H.00254.6	6	25,40	115	90	64	266
UM600H.0028.6	6	28,00	115	90	64	286
UM600H.0012.7	7	12,00	115	90	64	127
UM600H.0016.7	7	16,00	115	90	64	167
UM600H.001905.7	7	19,05	115	90	64	197
UM600H.0020.7	7	20,00	115	90	64	207
UM600H.0022.7	7	22,00	115	90	64	227
UM600H.0025.7	7	25,00	115	90	64	257
UM600H.00254.7	7	25,40	115	90	64	267
UM600H.0028.7	7	28,00	115	90	64	287

Avoid pulling cuts. Ensure a suitable clamping force is used when using thro' coolant supply. Can be tightened using a key.

Spare parts DCONWS		Lock nut UM600H 73 950 ...	Clamping wedge UM600H 73 950 ...
4	M4	104	111
5	M5	105	111
6	M6	106	111
7	M7	107	111

UltraMini – Toolholder for inserts

▲ Tool holder suitable for high coolant pressures



Designation	DCONWS mm	BDRED mm	DCONMS $_{g6}$ mm	OAL mm	LDRED mm	l_4 mm	73 088 ...
UMST.0016.4	4	16	16,00	115	24	42	164
UMST.001905.4	4	16	19,05	115	24	42	194
UMST.0020.4	4	16	20,00	115	24	42	204
UMST.0022.4	4	16	22,00	115	24	42	224
UMST.00254.4	4	16	25,40	115	24	42	264
UMST.0028.4	4	16	28,00	115	24	42	284
UMST.0016.5	5	16	16,00	115	24	42	165
UMST.001905.5	5	16	19,05	115	24	42	195
UMST.0020.5	5	16	20,00	115	24	42	205
UMST.0022.5	5	16	22,00	115	24	42	225
UMST.00254.5	5	16	25,40	115	24	42	265
UMST.0028.5	5	16	28,00	115	24	42	285
UMST.0016.6	6	16	16,00	115	24	42	166
UMST.001905.6	6	16	19,05	115	24	42	196
UMST.0020.6	6	16	20,00	115	24	42	206
UMST.0022.6	6	16	22,00	115	24	42	226
UMST.00254.6	6	16	25,40	115	24	42	266
UMST.0028.6	6	16	28,00	115	24	42	286
UMST.0016.7	7	16	16,00	115	24	42	167
UMST.001905.7	7	16	19,05	115	24	42	197
UMST.0020.7	7	16	20,00	115	24	42	207
UMST.0022.7	7	16	22,00	115	24	42	227
UMST.00254.7	7	16	25,40	115	24	42	267
UMST.0028.7	7	16	28,00	115	24	42	287
UMST.0016.8	8	16	16,00	115	24	42	168
UMST.001905.8	8	16	19,05	115	24	42	198
UMST.0020.8	8	16	20,00	115	24	42	208
UMST.0022.8	8	16	22,00	115	24	42	228
UMST.00254.8	8	16	25,40	115	24	42	268
UMST.0028.8	8	16	28,00	115	24	42	288

up to 150 bar

Key D

Clamping screw

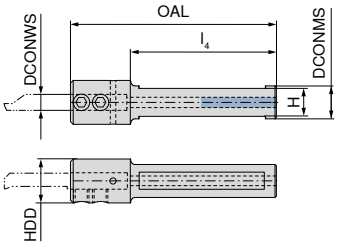
Spare parts DCONWS	80 950 ...		73 950 ...	
4	T10	104	M5x0,5x6T10	050
5	T10	104	M5x0,5x6T10	050
6	T10	104	M5x0,5x6T10	050
7	T10	104	M5x0,5x6T10	050
8	T10	104	M5x0,5x6T10	050

3

UltraMini – Toolholder for inserts

▲ single ended

Scope of supply:
Tool holder with allen key



Designation	DCONWS mm	HDD mm	DCONMS mm	OAL mm	l_4 mm	H mm	73 081 ...
640.0012-D	4	16	12	75	53	10,2	**264**
650.0012-D	5	16	12	75	53	10,2	**265**
660.0012-D	6	16	12	75	53	10,2	**266**
670.0012-D	7	16	12	75	53	10,2	**267**
680.0012-D	8	16	12	75	53	10,2	**268**

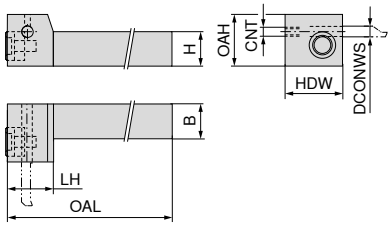

Key I

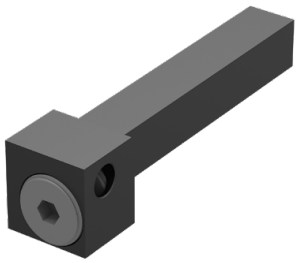

Clamping screw

Spare parts DCONWS	70 950 ...		73 082 ...	
4	SW2,5	**175**	M5x0,5x6	**010**
5	SW2,5	**175**	M5x0,5x6	**010**
6	SW2,5	**175**	M5x0,5x6	**010**
7	SW2,5	**175**	M5x0,5x6	**010**
8	SW2,5	**175**	M5x0,5x6	**010**

UltraMini – Toolholder for inserts

Scope of supply:
Tool holder with allen key





Designation	DCONWS mm	OAL mm	LH mm	B mm	HDW mm	H mm	OAH mm	CNT	Left-hand 73 083 ...	Right-hand 73 084 ...
R/L .IK.UHCM.1212.4	4	90	17	12	20	12	18	M5	124	124
R/L .IK.UHCM.1212.5	5	90	17	12	20	12	18	M5	125	125
R/L .IK.UHCM.1212.6	6	90	17	12	20	12	21	M5	126	126
R/L .IK.UHCM.1212.7	7	90	17	12	20	12	21	M5	127	127

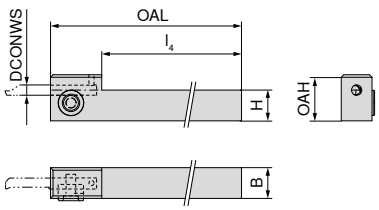
Suitable coolant connections can be found on → **page 131+132**

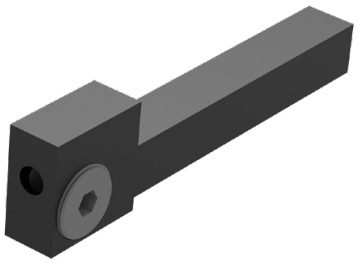

Clamping screw

Spare parts DCONWS		73 082 ...
4	UM 12	011
5	UM 12	011
6	UM 16	012
7	UM 16	012

UltraMini – Toolholder for inserts

Scope of supply:
Tool holder with allen key





Designation	DCONWS mm	OAL mm	l_4 mm	B mm	H mm	OAH mm	73 086 ...
UM.1010.4	4	100	75	10	10	20	104
UM.1212.4	4	100	75	12	12	22	124
UM.1010.5	5	100	75	10	10	20	105
UM.1212.5	5	100	75	12	12	22	125
UM.1212.6	6	100	75	12	12	22	126

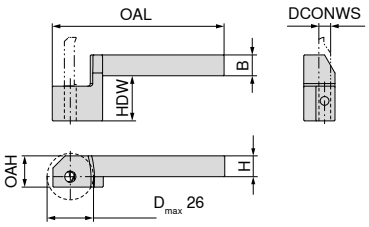

Clamping screw

Spare parts DCONWS		73 082 ...
4	UM 12	011
5	UM 12	011
6	UM 16	012

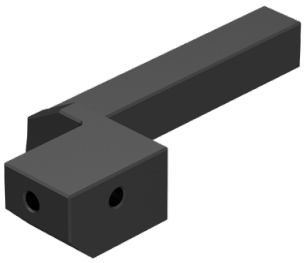
UltraMini – Toolholder for inserts

Scope of supply:

Tool holder with allen key



Illustrations show right-hand versions



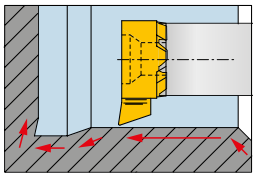
Designation	DCONWS	OAL	B	HDW	H	OAH	Left-hand	Right-hand
	mm	mm	mm	mm	mm	mm	**73 091 ...**	**73 090 ...**
R/L UM.18.1010.4	4	99	10	38	10	16	**104**	**104**
R/L UM.28.1010.4	4	99	10	48	10	16	**204**	**204**
R/L UM.18.1212.4	4	99	12	38	12	18	**124**	**124**
R/L UM.28.1212.4	4	99	12	48	12	18	**224**	**224**
R/L UM.18.1010.5	5	99	10	38	10	16	**105**	**105**
R/L UM.28.1010.5	5	99	10	48	10	16	**205**	**205**
R/L UM.18.1212.5	5	99	12	38	12	18	**125**	**125**
R/L UM.28.1212.5	5	99	12	48	12	18	**225**	**225**
R/L UM.18.1010.6	6	99	10	38	10	16	**106**	**106**
R/L UM.28.1010.6	6	99	10	48	10	16	**206**	**206**
R/L UM.18.1212.6	6	99	12	38	12	18	**126**	**126**
R/L UM.28.1212.6	6	99	12	48	12	18	**226**	**226**
R/L UM.18.1010.7	7	99	10	38	10	16	**107**	**107**
R/L UM.28.1010.7	7	99	10	48	10	16	**207**	**207**
R/L UM.18.1212.7	7	99	12	38	12	18	**127**	**127**
R/L UM.28.1212.7	7	99	12	48	12	18	**227**	**227**

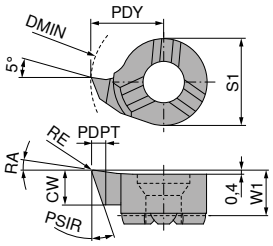
Key I

Clamping screw

Spare parts				
DCONWS		**70 950 ...**		**73 082 ...**
4	SW2,5	**175**	M5x8	**008**
5	SW2,5	**175**	M5x8	**008**
6	SW2,5	**175**	M5x8	**008**
7	SW2,5	**175**	M5x8	**008**

MiniCut – Insert for turning and profiling





CWX500 CWX500

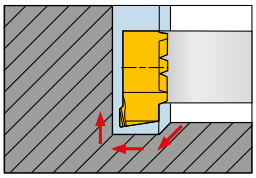
Illustrations show right-hand versions

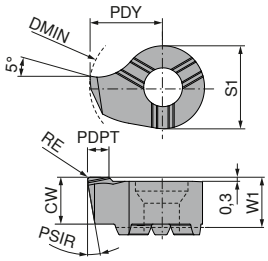
Size	Designation	DMIN mm	CW mm	W1 mm	PDY mm	S1 mm	RE mm	PDPT mm	PSIR °	RA °	Left-hand 73 324 ...	Right-hand 73 322 ...
08	8,00. R/L .3,30.18°	7,8	3,3	3,5	4,65	6,0	0,20	0,6	18	8	033	033
	8,00. R/L .3,50.18°	7,8	3,5	3,5	4,65	6,0	0,05	0,6	18	8	035	035
	8,00. R/L .3,50.20°	7,8	3,5	3,5	4,65	6,0	0,20	0,6	20	20	135	135
09	9,00. R/L .3,60.18°	9,0	3,6	3,6	5,50	6,2	0,20	0,8	18	8	136	136
	9,00. R/L .3,60.20°	9,0	3,6	3,6	5,50	6,2	0,20	0,8	20	20	236	236
11	9,80. R/L .3,90.18°	9,8	3,9	4,2	5,50	8,0	0,20	1,0	18	8	139	139
	11,00. R/L .3,90.18°	11,0	3,9	4,2	6,70	8,0	0,20	1,0	18	8	339	339
	11,00. R/L .4,20.20°	11,0	4,2	4,2	6,70	8,0	0,20	1,0	20	20	342	342
14	14,00. R/L .5,00.18°	13,8	5,0	5,1	8,70	9,0	0,20	1,5	18	8	550	550
	14,00. R/L .5,30.20°	14,0	5,3	5,3	8,70	9,0	0,20	1,5	20	20	553	553
P											●	●
M											●	●
K											●	●
N											●	●
S											●	●
H											●	●
O											●	●

→ v_c Page 339

MiniCut – Insert for copy turning

▲ with chip breaker





CWX500 CWX500

Illustrations show right-hand versions

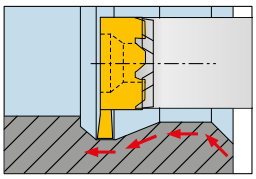
Size	Designation	DMIN mm	CW mm	W1 mm	PDY mm	S1 mm	RE mm	PDPT mm	PSIR °	Left-hand 73 388 ...	Right-hand 73 386 ...
08	8,00. R/L .3,40.10°	8	3,4	3,5	4,65	6,0	0,2	0,5	10	13400	13400
09	9,00. R/L .3,50.10°	9	3,5	3,6	5,50	6,2	0,2	0,5	10	136	136
11	11,00. R .4,10.10°	11	4,1	4,2	6,70	8,0	0,2	0,5	10	14100	14100
P										●	●
M										●	●
K										●	●
N										●	●
S										●	●
H										●	●
O										●	●

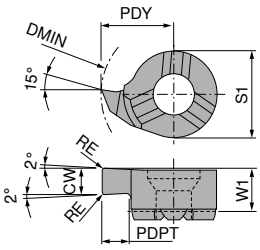
→ v_c Page 339

MiniCut – Internal turning insert

▲ CDX = ap_{max} (material dependant)

CWX500 CWX500





Illustrations show right-hand versions

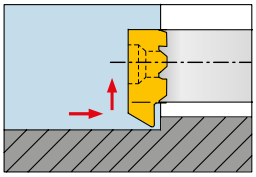
Size	Designation	DMIN mm	CW +0.05 mm	PDPT mm	W1 mm	PDY mm	S1 mm	RE mm	CDX mm	Left-hand 73 316 ...	Right-hand 73 314 ...
08	8,00. R/L .1,50.1,0	8	1,5	1,0	3,3	4,8	6,0	0,2	0,2	015	015
	8,00. R/L .2,00.1,0	8	2,0	1,0	3,3	4,8	6,0	0,2	0,2	020	020
09	9,00. R/L .1,50.2,0	9	1,5	2,0	3,6	5,5	6,2	0,2	0,2	115	115
	9,00. R/L .1,50.3,0	10	1,5	3,0	3,6	6,5	6,2	0,2	0,2	121	121
	9,00. R/L .2,00.2,0	9	2,0	2,0	3,6	5,5	6,2	0,2	0,2	120	120
	9,00. R/L .2,00.3,0	10	2,0	3,0	3,6	6,5	6,2	0,2	0,2	122	122
11	11,00. R/L .1,50.2,3	11	1,5	2,3	4,2	6,7	8,0	0,2	0,2	315	315
	11,00. R/L .2,00.2,3	11	2,0	2,3	4,2	6,7	8,0	0,2	0,2	320	320
14	14,00. R/L .1,50.4,0	14	1,5	4,0	5,3	9,0	9,0	0,2	0,2	515	515
	14,00. R/L .1,50.5,5	16	1,5	5,5	5,2	10,5	9,0	0,2	0,2	516	516
	14,00. R/L .1,50.6,5	17	1,5	6,5	5,2	11,5	9,0	0,2	0,2	517	517
	14,00. R/L .2,00.4,0	14	2,0	4,0	5,3	9,0	9,0	0,2	0,2	520	520
	14,00. R/L .2,00.5,5	16	2,0	5,5	5,2	10,5	9,0	0,2	0,2	521	521
	14,00. R/L .2,00.6,5	17	2,0	6,5	5,2	11,5	9,0	0,2	0,2	522	522
	14,00. R/L .2,50.5,5	16	2,5	5,5	5,2	10,5	9,0	0,2	0,2	525	525
	14,00. R/L .2,50.6,5	17	2,5	6,5	5,2	11,5	9,0	0,2	0,2	526	526
	14,00. R/L .3,00.5,5	16	3,0	5,5	5,2	10,5	9,0	0,2	0,2	530	530
	14,00. R/L .3,00.6,5	17	3,0	6,5	5,2	11,5	9,0	0,2	0,2	531	531
P										●	●
M										●	●
K										●	●
N										●	●
S										●	●
H										●	●
O										●	●

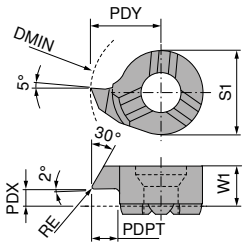
→ v_c Page 339

MiniCut – Back boring insert

▲ CDX = ap_{max} (material dependant)

CWX500 CWX500





Illustrations show right-hand versions

Size	Designation	DMIN mm	PDPT mm	W1 mm	PDX mm	PDY mm	S1 mm	RE mm	CDX mm	Left-hand 73 332 ...	Right-hand 73 330 ...
08	8,00. R/L .30°.1,3	7,8	1,3	3,50	1,0	4,65	6,0	0,2	0,6	013	013
09	9,00. R/L .30°.1,7	9,0	1,7	3,55	1,2	5,50	6,2	0,2	0,8	117	117
	9,00. R/L .30°.2,3	10,0	2,3	3,55	1,2	6,50	6,2	0,2	0,8	123	123
11	11,00. R/L .30°.2,3	11,0	2,3	4,30	1,6	6,70	8,0	0,2	1,0	323	323
14	14,00. R/L .30°.3,5	13,8	3,5	5,40	2,4	8,70	9,0	0,2	1,5	535	535
P										●	●
M										●	●
K										●	●
N										●	●
S										●	●
H										●	●
O										●	●

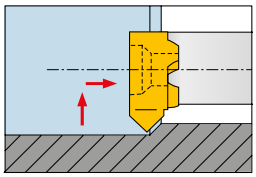
→ v_c Page 339

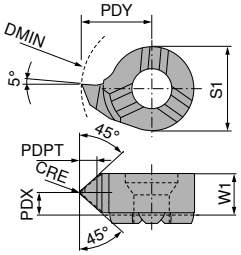
3

MiniCut – Internal turning and chamfering insert

▲ CDX = ap_{max} (material dependant)

CWX500 CWX500



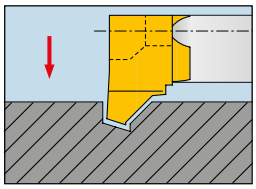


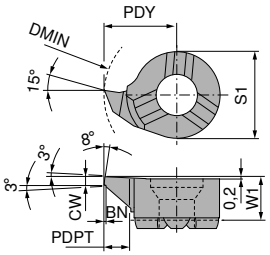
Illustrations show right-hand versions

Size	Designation	DMIN mm	PDPT mm	W1 mm	PDX mm	PDY mm	S1 mm	CRE mm	CDX mm	Left-hand 73 336 ...	Right-hand 73 334 ...
08	8,00. R/L .45°.1,4	8	1,4	3,50	1,8	4,8	6,0	0,2	0,6	010	010
09	9,00. R/L .45°.1,3	9	1,3	3,55	1,8	5,5	6,2	0,2	0,8	110	110
11	11,00. R/L .45°.1,5	11	1,5	4,30	2,2	6,7	8,0	0,2	1,0	310	310
14	14,00. R/L .45°.1,5	14	1,5	5,40	2,8	9,0	9,0	0,2	1,2	510	510
P										●	●
M										●	●
K										●	●
N										●	●
S										●	●
H										●	●
O										●	●

→ v_c Page 339

MiniCut – Insert for pregrooving and chamfering





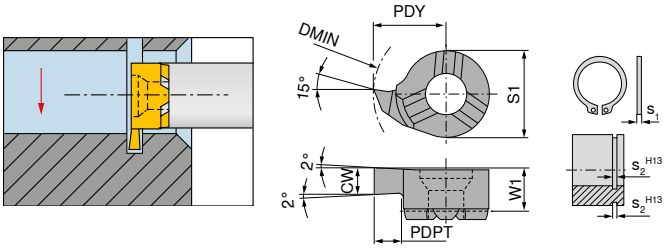
CWX500 CWX500

Illustrations show right-hand versions

Size	Designation	DMIN mm	CW mm	PDPT mm	W1 mm	PDY mm	S1 mm	BN mm	Left-hand 73 340 ...	Right-hand 73 338 ...
08	8,00. R/L .1,00.45°	8	1	1,0	3,3	4,8	6,0	0,2	100	100
09	9,00. R/L .1,00.45°	9	1	1,5	3,6	5,5	6,2	0,2	215	215
11	11,00. R/L .1,00.45°	11	1	1,5	4,2	6,7	8,0	0,2	315	315
14	14,00. R/L .1,00.45°	14	1	1,5	5,3	9,0	9,0	0,2	515	515
P									●	●
M									●	●
K									●	●
N									●	●
S									●	●
H									●	●
O									●	●

→ v_c Page 339

MiniCut – Grooving insert



CWX500 CWX500

Illustrations show right-hand versions

Size	Designation	DMIN mm	CW mm	PDPT mm	W1 mm	s_1 mm	$s_{2\ H13}$ mm	PDY mm	S1 mm	Left-hand 73 312 ...	Right-hand 73 310 ...
08	8,00. R/L .0,73.1,0	8	0,73	1,0	3,3	0,6	0,7	4,8	6,0	073	073
	8,00. R/L .0,83.1,0	8	0,83	1,0	3,3	0,7	0,8	4,8	6,0	083	083
	8,00. R/L .0,93.1,0	8	0,93	1,0	3,3	0,8	0,9	4,8	6,0	093	093
	8,00. R/L .1,00.1,0	8	1,00	1,0	3,3			4,8	6,0	110	110
	8,00. R/L .1,20.1,0	8	1,20	1,0	3,3	1,0	1,1	4,8	6,0	112	112
	8,00. R/L .1,40.1,0	8	1,40	1,0	3,3	1,2	1,3	4,8	6,0	114	114
	8,00. R/L .1,50.1,0	8	1,50	1,0	3,3			4,8	6,0	115	115
	8,00. R/L .1,70.1,0	8	1,70	1,0	3,3	1,5	1,6	4,8	6,0	117	117
	8,00. R/L .2,00.1,0	8	2,00	1,0	3,3			4,8	6,0	120	120
09	9,00. R/L .0,73.1,2	9	0,73	1,2	3,6	0,6	0,7	5,5	6,2	173	173
	9,00. R/L .0,83.1,3	9	0,83	1,3	3,6	0,7	0,8	5,5	6,2	183	183
	9,00. R/L .0,93.1,5	9	0,93	1,5	3,6	0,8	0,9	5,5	6,2	193	193
	9,00. R/L .1,00.1,8	9	1,00	1,8	3,6			5,5	6,2	210	210
	9,00. R/L .1,20.1,8	9	1,20	1,8	3,6	1,0	1,1	5,5	6,2	212	212
	9,00. R/L .1,40.1,8	9	1,40	1,8	3,6	1,2	1,3	5,5	6,2	214	214
	9,00. R/L .1,50.1,8	9	1,50	1,8	3,6			5,5	6,2	215	215
	9,00. R/L .1,70.1,8	9	1,70	1,8	3,6	1,5	1,6	5,5	6,2	217	217
	9,00. R/L .2,00.1,8	9	2,00	1,8	3,6			5,5	6,2	220	220
	9,00. R/L .2,50.1,8	9	2,50	1,8	3,6			5,5	6,2	225	225
	9,00. R/L .3,00.1,8	9	3,00	1,8	3,6			5,5	6,2	230	230
11	11,00. R/L .0,73.1,2	11	0,73	1,2	4,2	0,6	0,7	6,7	8,0	373	373
	11,00. R/L .0,83.1,3	11	0,83	1,3	4,2	0,7	0,8	6,7	8,0	383	383
	11,00. R .0,93.1,5	11	0,93	1,5	4,2	0,9	0,9	6,7	8,0		393
	11,00. L .0,93.1,5	11	0,93	1,5	4,2	0,8	0,9	6,7	8,0	393	
	11,00. R/L .1,00.2,3	11	1,00	2,3	4,2			6,7	8,0	310	310
	11,00. R/L .1,20.2,3	11	1,20	2,3	4,2	1,0	1,1	6,7	8,0	312	312
	11,00. R/L .1,40.2,3	11	1,40	2,3	4,2	1,2	1,3	6,7	8,0	314	314
	11,00. R/L .1,50.2,3	11	1,50	2,3	4,2			6,7	8,0	315	315
	11,00. R/L .1,70.2,3	11	1,70	2,3	4,2	1,5	1,6	6,7	8,0	317	317
	11,00. R/L .2,00.2,3	11	2,00	2,3	4,2			6,7	8,0	320	320
	11,00. R/L .2,50.2,3	11	2,50	2,3	4,2			6,7	8,0	325	325
	11,00. R/L .3,00.2,3	11	3,00	2,3	4,2			6,7	8,0	330	330
14	14,00. R/L .0,73.1,2	14	0,73	1,2	5,3	0,6	0,7	9,0	9,0	573	573
	14,00. R/L .0,83.1,3	14	0,83	1,3	5,3	0,7	0,8	9,0	9,0	583	583
	14,00. R/L .0,93.1,5	14	0,93	1,5	5,3	0,8	0,9	9,0	9,0	593	593
	14,00. R/L .1,20.4,0	14	1,20	4,0	5,3	1,0	1,1	9,0	9,0	512	512
	14,00. R/L .1,40.4,0	14	1,40	4,0	5,3	1,2	1,3	9,0	9,0	514	514
	14,00. R/L .1,50.4,0	14	1,50	4,0	5,3			9,0	9,0	515	515
	14,00. R/L .1,70.4,0	14	1,70	4,0	5,3	1,5	1,6	9,0	9,0	517	517
	14,00. R/L .2,00.4,0	14	2,00	4,0	5,3			9,0	9,0	520	520
	14,00. R/L .2,50.4,0	14	2,50	4,0	5,3			9,0	9,0	525	525
	14,00. R/L .3,00.4,0	14	3,00	4,0	5,3			9,0	9,0	530	530
P										●	●
M										●	●
K										●	●
N										●	●
S										●	●
H										●	●
O										●	●

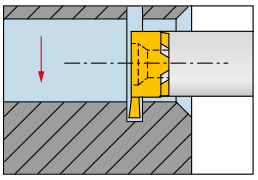
→ v_c Page 339

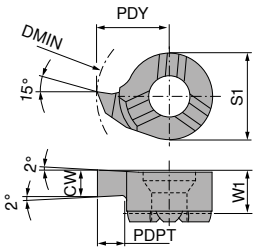
3

MiniCut – Grooving insert

▲ large groove depth ($T_{max.}$ 5.5 mm)

CWX500 CWX500





Illustrations show right-hand versions

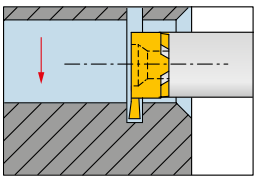
Size	Designation	DMIN mm	CW +0,03 mm	PDPT mm	W1 mm	PDY mm	S1 mm	Left-hand 73 372 ...	Right-hand 73 370 ...
14	14,00. R/L .1,50.5,5	16	1,5	5,5	5,2	10,5	9	715	715
	14,00. R/L .2,00.5,5	16	2,0	5,5	5,2	10,5	9	720	720
	14,00. R/L .2,50.5,5	16	2,5	5,5	5,2	10,5	9	725	725
	14,00. R/L .3,00.5,5	16	3,0	5,5	5,2	10,5	9	730	730
P								●	●
M								●	●
K								●	●
N								●	●
S								●	●
H								●	●
O								●	●

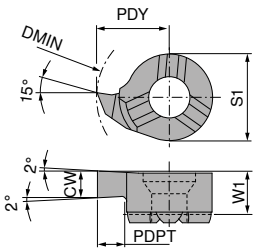
→ v_c Page 339

MiniCut – Grooving insert

▲ large groove depth ($T_{max.}$ 6.5 mm)

CWX500 CWX500





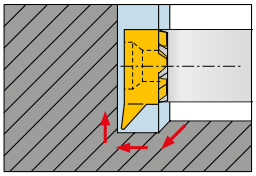
Illustrations show right-hand versions

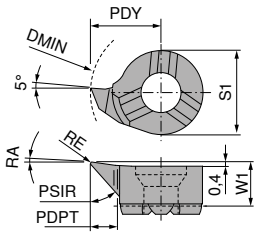
Size	Designation	DMIN mm	CW +0,03 mm	PDPT mm	W1 mm	PDY mm	S1 mm	Left-hand 73 384 ...	Right-hand 73 382 ...
14	14,00. R/L .1,50.6,5	17	1,5	6,5	5,2	11,5	9	515	515
	14,00. R/L .2,00.6,5	17	2,0	6,5	5,2	11,5	9	520	520
	14,00. R/L .2,50.6,5	17	2,5	6,5	5,2	11,5	9	525	525
	14,00. R/L .3,00.6,5	17	3,0	6,5	5,2	11,5	9	530	530
P								●	●
M								●	●
K								●	●
N								●	●
S								●	●
H								●	●
O								●	●

→ v_c Page 339

MiniCut – Internal undercut insert

▲ CDX = ap_{max} (material dependant)





CWX500 CWX500

Illustrations show right-hand versions

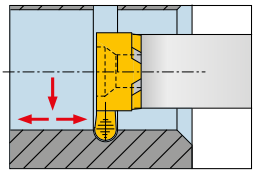
Size	Designation	DMIN mm	PDPT mm	W1 mm	PDY mm	S1 mm	RE mm	CDX mm	PSIR °	RA °	Left-hand 73 328 ...	Right-hand 73 326 ...
08	8,00. R/L .30°.1,0	7,8	1,0	3,5	4,65	6,0	0,2	0,4	30	3	010	010
	8,00. R/L .47°.1,2	7,8	1,2	3,5	4,65	6,0	0,2	0,4	47	3	012	012
09	9,00. R/L .47°.1,5	9,0	1,5	3,6	5,50	6,2	0,2	0,5	47	3	115	115
11	11,00. R/L .30°.2,3	11,0	2,3	4,2	6,70	8,0	0,2	0,6	30	3	423	423
	11,00. R/L .47°.2,3	11,0	2,3	4,2	6,70	8,0	0,2	0,6	47	3	323	323
14	13,70. R/L .47°.3,0	13,7	3,0	5,3	8,70	9,0	0,2	0,8	47	3	530	530
	13,70. R/L .30°.4,0	13,7	4,0	5,3	8,70	9,0	0,2	0,8	30	3	540	540
P											●	●
M											●	●
K											●	●
N											●	●
S											●	●
H											●	●
O											●	●

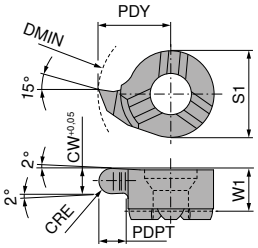
→ v_c Page 339

3

MiniCut – Full radius grooving and turning insert

CWX500 CWX500



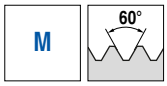


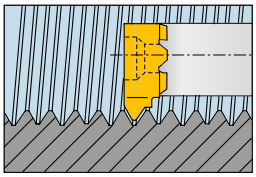
Illustrations show right-hand versions

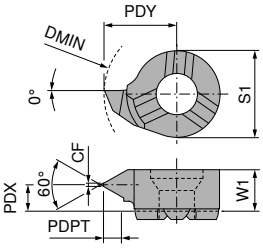
Size	Designation	DMIN mm	CW mm	PDPT mm	W1 mm	PDY mm	S1 mm	CRE mm	Left-hand 73 320 ...	Right-hand 73 318 ...
08	8,00. R/L .0,80.1,0	8	0,8	1,0	3,3	4,8	6,0	0,4	008	008
	8,00. R/L .1,20.1,0	8	1,2	1,0	3,3	4,8	6,0	0,6	012	012
	8,00. R/L .1,80.1,0	8	1,8	1,0	3,3	4,8	6,0	0,9	018	018
	8,00. R/L .2,00.1,0	8	2,0	1,0	3,3	4,8	6,0	1,0	020	020
09	9,00. R/L .0,80.1,6	9	0,8	1,6	3,6	5,5	6,2	0,4	108	108
	9,00. R/L .1,20.1,6	9	1,2	1,6	3,6	5,5	6,2	0,6	112	112
	9,00. R/L .1,80.1,6	9	1,8	1,6	3,6	5,5	6,2	0,9	118	118
	9,00. R/L .2,00.1,6	9	2,0	1,6	3,6	5,5	6,2	1,0	120	120
11	11,00. R/L .0,80.2,3	11	0,8	2,3	4,2	6,7	8,0	0,4	308	308
	11,00. R/L .1,20.2,3	11	1,2	2,3	4,2	6,7	8,0	0,6	312	312
	11,00. R/L .1,60.2,3	11	1,6	2,3	4,2	6,7	8,0	0,8	316	316
	11,00. R/L .1,80.2,3	11	1,8	2,3	4,2	6,7	8,0	0,9	318	318
	11,00. R/L .2,00.2,3	11	2,0	2,3	4,2	6,7	8,0	1,0	320	320
	11,00. R/L .2,40.2,3	11	2,4	2,3	4,2	6,7	8,0	1,2	324	324
	11,00. R/L .3,00.2,3	11	3,0	2,3	4,2	6,7	8,0	1,5	330	330
14	14,00. R/L .0,80.4,0	14	0,8	4,0	5,3	9,0	9,0	0,4	508	508
	14,00. R/L .1,20.4,0	14	1,2	4,0	5,3	9,0	9,0	0,6	512	512
	14,00. R/L .1,80.4,0	14	1,8	4,0	5,3	9,0	9,0	0,9	518	518
	14,00. R/L .2,00.4,0	14	2,0	4,0	5,3	9,0	9,0	1,0	520	520
	14,00. R/L .2,20.4,0	14	2,2	4,0	5,3	9,0	9,0	1,1	522	522
	14,00. R/L .3,00.4,0	14	3,0	4,0	5,3	9,0	9,0	1,5	530	530
P									●	●
M									●	●
K									●	●
N									●	●
S									●	●
H									●	●
O									●	●

→ v_c Page 339

MiniCut – Threading insert (Partial profile)







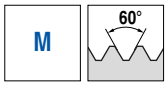
Illustrations show right-hand versions

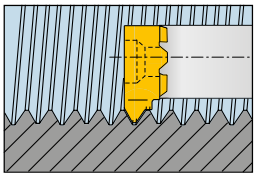
Size	Designation	DMIN mm	TP mm	CF mm	PDPT mm	W1 mm	PDX mm	PDY mm	S1 mm	Left-hand 73 344 ...	Right-hand 73 342 ...
08	8,00. R/L .0,5/0,75.60°	8	0,5 - 0,75	0,06	0,43	3,50	2,7	4,8	6,0	012	012
	8,00. R/L .1,0/1,25.60°	8	1,0 - 1,25	0,12	0,70	3,50	2,7	4,8	6,0	014	014
	8,00. R/L .1,5/1,75.60°	8	1,5 - 1,75	0,18	0,95	3,50	2,5	4,8	6,0	010	010
09	9,00. R/L .0,5/0,75.60°	9	0,5 - 0,75	0,06	0,27	3,55	3,2	5,5	6,2	112	112
	9,00. R/L .1,0/1,25.60°	9	1,0 - 1,25	0,12	0,54	3,55	3,0	5,5	6,2	114	114
	9,00. R/L .1,5/1,75.60°	9	1,5 - 1,75	0,18	0,81	3,55	2,8	5,5	6,2	116	116
	9,00. R/L .1,75/2,0.60°	9	1,75 - 2,0	0,20	0,95	3,55	2,6	5,5	6,2	118	118
	9,00. R/L .2,0/2,5.60°	9	2,0 - 2,5	0,25	1,08	3,55	2,5	5,5	6,2	120	120
	9,00. R/L .2,5/3,0.60°	9	2,5 - 3,0	0,31	1,35	3,55	2,1	5,5	6,2	122	122
	9,00. R/L .3,0/3,5.60°	9	3,0 - 3,5	0,37	1,62	3,55	1,9	5,5	6,2	124	124
11	11,00. R/L .0,5/0,75.60°	11	0,5 - 0,75	0,06	0,75	4,30	3,5	6,7	8,0	312	312
	11,00. R/L .1,0/1,25.60°	11	1,0 - 1,25	0,12	0,55	4,30	3,5	6,7	8,0	314	314
	11,00. R/L .1,5/1,75.60°	11	1,5 - 1,75	0,18	0,81	4,30	3,5	6,7	8,0	316	316
	11,00. R/L .2,0/2,5.60°	11	2,0 - 2,5	0,25	1,08	4,30	3,0	6,7	8,0	310	310
	11,00. R/L .2,5/3,0.60°	11	2,5 - 3,0	0,31	1,35	4,30	3,0	6,7	8,0	320	320
14	14,00. R/L .1,0/1,25.60°	14	1,0 - 1,25	0,12	0,55	5,40	4,7	9,0	9,0	512	512
	14,00. R/L .1,5/1,75.60°	14	1,5 - 1,75	0,18	0,81	5,40	4,5	9,0	9,0	514	514
	14,00. R/L .2,0/2,5.60°	14	2,0 - 2,5	0,25	1,08	5,40	4,2	9,0	9,0	510	510
	14,00. R/L .2,5/3,0.60°	14	2,5 - 3,0	0,31	1,35	5,40	4,7	9,0	9,0	520	520
P										●	●
M										●	●
K										●	●
N										●	●
S										●	●
H										●	●
O										●	●

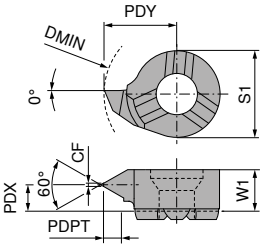
→ v_c Page 339

3

MiniCut – Threading insert (Full profile)





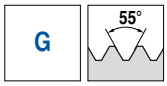


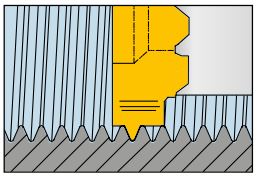
Illustrations show right-hand versions

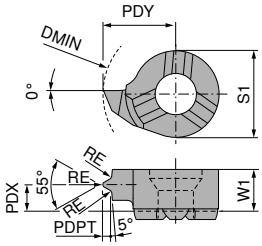
Size	Designation	DMIN mm	TP mm	CF mm	PDPT mm	W1 mm	PDX mm	PDY mm	S1 mm	Left-hand 73 348 ...	Right-hand 73 346 ...
09	9,00. R/L .0,5.60°	9	0,50	0,06	0,27	3,55	3,25	5,5	6,2	405	405
	9,00. R/L .1,0.60°	9	1,00	0,12	0,54	3,55	3,00	5,5	6,2	410	410
	9,00. R/L .1,5.60°	9	1,50	0,18	0,81	3,55	2,80	5,5	6,2	415	415
	9,00. R/L .1,75.60°	9	1,75	0,20	0,95	3,55	2,70	5,5	6,2	418	418
	9,00. R/L .2,0.60°	9	2,00	0,25	1,08	3,55	2,60	5,5	6,2	420	420
	9,00. R/L .2,5.60°	9	2,50	0,31	1,35	3,55	2,50	5,5	6,2	425	425
	9,00. R/L .3,0.60°	9	3,00	0,37	1,62	3,55	2,20	5,5	6,2	430	430
11	11,00. R/L .1,0.60°	11	1,00	0,12	0,54	4,30	3,50	6,7	8,0	314	314
	11,00. R/L .1,5.60°	11	1,50	0,18	0,81	4,30	3,50	6,7	8,0	316	316
	11,00. R/L .2,0.60°	11	2,00	0,25	1,08	4,30	3,20	6,7	8,0	310	310
	11,00. R/L .2,5.60°	11	2,50	0,31	1,35	4,30	3,00	6,7	8,0	320	320
	11,00. R/L .3,0.60°	11	3,00	0,37	1,62	4,30	2,90	6,7	8,0	330	330
14	14,00. R/L .0,5.60°	14	0,50	0,06	0,27	5,40	3,50	9,0	9,0	510	510
	14,00. R/L .1,0.60°	14	1,00	0,12	0,54	5,40	3,50	9,0	9,0	512	512
	14,00. R/L .1,5.60°	14	1,50	0,18	0,81	5,40	3,30	9,0	9,0	514	514
	14,00. R/L .2,0.60°	14	2,00	0,25	1,08	5,40	4,20	9,0	9,0	610	610
	14,00. R/L .2,5.60°	14	2,50	0,31	1,35	5,40	4,70	9,0	9,0	520	520
P										●	●
M										●	●
K										●	●
N										●	●
S										●	●
H										●	●
O										●	●

→ v_c Page 339

MiniCut – Threading insert (Full profile)







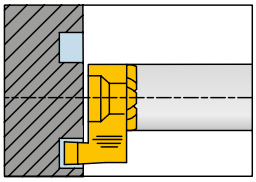
Illustrations show right-hand versions

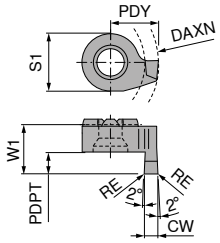
Size	Designation	DMIN mm	TP mm	TPI 1/"	PDPT mm	W1 mm	PDX mm	PDY mm	S1 mm	RE mm	Left-hand 73 352 ...	Right-hand 73 350 ...
11	11,00. R/L .1,814.55°	11	1,814	14	1,16	4,30	3,0	6,7	8	0,24	306	306
	11,00. R/L .1,337.55°	11	1,337	19	0,85	4,30	2,7	6,7	8	0,18	304	304
14	14,00. R/L .1,814.55°	14	1,814	14	1,16	5,35	3,6	9,0	9	0,24	506	506
	14,00. R/L .1,337.55°	14	1,337	19	0,85	5,35	3,8	9,0	9	0,18	504	504
P											●	●
M											●	●
K											●	●
N											●	●
S											●	●
H											●	●
O											●	●

→ v_c Page 339

MiniCut – Axial grooving insert

CWX500 CWX500





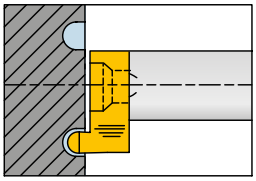
Illustrations show right-hand versions

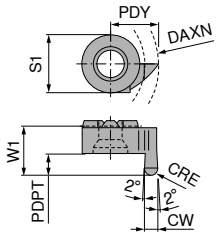
Size	Designation	DAXN mm	CW mm	PDPT mm	W1 mm	PDY mm	RE mm	S1 mm	Left-hand 73 364 ...	Right-hand 73 362 ...
14	14,00. R/L .1,0.1,5	14	1,0	1,5	8,3	9		9	510	510
	14,00. R/L .1,5.2,5	14	1,5	2,5	8,3	9	0,2	9	515	515
	14,00. R/L .2,0.3,0	14	2,0	3,0	8,3	9	0,2	9	520	520
	14,00. R/L .2,0.5,0	14	2,0	5,0	10,3	9	0,2	9	620	620
	14,00. R/L .2,5.3,0	14	2,5	3,0	8,3	9	0,2	9	525	525
	14,00. R/L .2,5.5,0	14	2,5	5,0	10,3	9	0,2	9	625	625
	14,00. R/L .3,0.3,0	14	3,0	3,0	8,3	9	0,2	9	530	530
	14,00. R/L .3,0.5,0	14	3,0	5,0	10,3	9	0,2	9	630	630
P									●	●
M									●	●
K									●	●
N									●	●
S									●	●
H									●	●
O									●	●

→ v_c Page 339

MiniCut – Full radius axial grooving insert

CWX500 CWX500





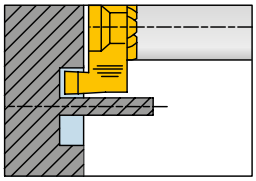
Illustrations show right-hand versions

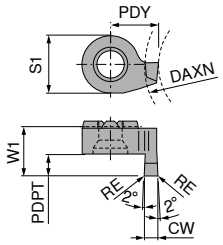
Size	Designation	DAXN mm	CW mm	PDPT mm	W1 mm	PDY mm	CRE mm	S1 mm	Left-hand 73 376 ...	Right-hand 73 374 ...
14	14,00. R/L . 1,0.1,5	14	1,0	1,5	8,3	9	0,5	9	510	510
	14,00. R/L . 1,6.2,5	14	1,6	2,5	8,3	9	0,8	9	516	516
	14,00. R/L . 2,0.3,0	14	2,0	3,0	8,3	9	1,0	9	520	520
	14,00. R/L . 2,5.3,0	14	2,5	3,0	8,3	9	1,2	9	525	525
	14,00. R/L . 3,0.3,0	14	3,0	3,0	8,3	9	1,5	9	530	530
P									●	●
M									●	●
K									●	●
N									●	●
S									●	●
H									●	●
O									●	●

→ v_c Page 339

MiniCut – Axial grooving insert over a spigot

CWX500 CWX500





Illustrations show right-hand versions

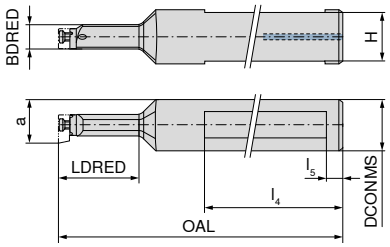
Size	Designation	DAXN mm	CW mm	PDPT mm	W1 mm	PDY mm	RE mm	S1 mm	Left-hand 73 360 ...	Right-hand 73 358 ...
14	14/12. R/L .1,0.1,5	12	1,0	1,5	8,3	7,0		9	310	310
	14/12. R/L .1,5.2,5	12	1,5	2,5	8,3	7,5	0,2	9	315	315
	14/12. R/L .2,0.3,0	12	2,0	3,0	8,3	8,0	0,2	9	320	320
	14/12. R/L .2,0.5,0	12	2,0	5,0	10,3	8,0	0,2	9	420	420
	14/12. R/L .2,5.3,0	12	2,5	3,0	8,3	8,5	0,2	9	325	325
	14/12. R/L .2,5.5,0	12	2,5	5,0	10,3	8,5	0,2	9	425	425
	14/12. R/L .3,0.3,0	12	3,0	3,0	8,3	9,0	0,2	9	330	330
	14/12. R/L .3,0.5,0	12	3,0	5,0	10,3	9,0	0,2	9	430	430

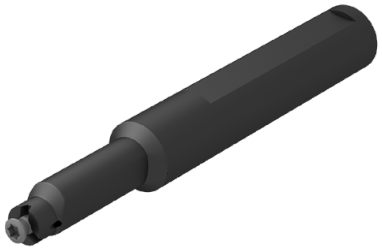
P	●	●
M	●	●
K	●	●
N	●	●
S	●	●
H	●	●
O	●	●

→ v_c Page 339

3

MiniCut – Steel Tool holder





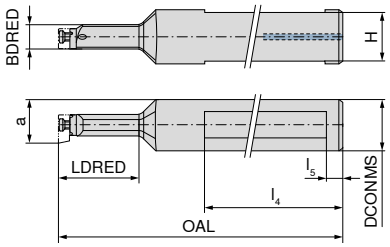
										73 522 ...
Size	Designation	a mm	DCONMS $_{f7}$ mm	OAL mm	l_4 mm	LDRED mm	BDRED mm	H mm	l_5 mm	
08	8,00/16.N.12.1,0	7,8	16	80	60	12	6,0	15,0	5	**012**
	8,00/16.N.22.1,0	7,8	16	90	60	22	6,0	15,0	5	**122**
09	9,00/16.N.14.1,8	8,6	16	95	60	14	7,4	15,0	5	**014**
	9,00/16.N.25.1,8	8,6	16	105	60	25	7,4	15,0	5	**125**
11	11,00/16.N.16.2,3	10,7	16	97	60	16	8,0	14,5	5	**016**
	11,00/16.N.29.2,3	10,7	16	110	60	29	8,0	14,5	5	**129**
14	14,00/16.N.18.4,0	13,8	16	100	60	18	11,0	14,5	5	**018**
	14,00/16.N.38.4,0	13,8	16	120	60	38	11,0	14,5	5	**138**

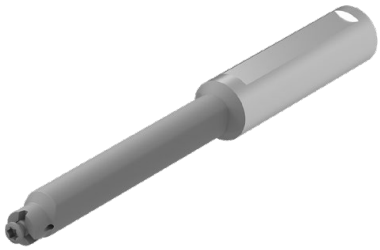
Key D

Clamping screw

Spare parts		**80 950 ...**		**73 082 ...**	
Size					
08	T08	**110**	M2,6	**002**
09	T08	**110**	M2,6	**002**
11	T10	**112**	M3,5	**003**
14	T15	**113**	M4	**004**

MiniCut – Solid Carbide Tool holder – vibration damped





Size	Designation	a mm	DCONMS f7 mm	OAL mm	l_4 mm	LDRED mm	BDRED mm	H mm	l_5 mm	73 520 ...
08	8,00/12.N.21.1,0 HM	7,8	12	80	48	21	6,0	11,0	5	021
	8,00/12.N.30.1,0 HM	7,8	12	90	48	30	6,0	11,0	5	030
	8,00/12.N.42.1,0 HM	7,8	12	100	48	42	6,0	11,0	5	042
	8,00/12.N.50.1,0 HM	7,8	12	115	48	50	6,0	11,0	5	050
09	9,00/12.N.22.1,0 HM	8,6	12	90	60	22	7,4	11,0	5	222
	9,00/12.N.30.2,0 HM	8,6	12	98	60	30	7,4	11,0	5	230
	9,00/12.N.42.3,0 HM	8,6	12	110	60	42	7,4	11,0	5	242
	9,00/12.N.56.4,0 HM	8,6	12	122	60	56	7,4	11,0	5	256
11	11,00/12.N.29.2,3 HM	10,7	12	95	60	29	8,0	10,5	5	129
	11,00/12.N.42.2,3 HM	10,7	12	110	60	42	8,0	10,5	5	142
	11,00/12.N.56.2,3 HM	10,7	12	120	60	56	8,0	10,5	5	156
	11,00/12.N.64.2,3 HM	10,7	12	130	60	64	8,0	10,5	5	164
14	14,00/12.N.34.4,0 HM	13,8	12	100	60	34	11,0	10,5	5	234
	14,00/12.N.45.4,0 HM	13,8	12	110	60	45	11,0	10,5	5	245
	14,00/12.N.64.4,0 HM	13,8	12	130	60	64	11,0	10,5	5	264
	14,00/16.N.34.4,0 HM	13,8	16	100	60	34	11,0	14,5	5	334
	14,00/16.N.45.4,0 HM	13,8	16	110	60	45	11,0	14,5	5	345
	14,00/16.N.64.4,0 HM	13,8	16	130	60	64	11,0	14,5	5	364
	14,00/16.N.75.4,0 HM	13,8	16	145	60	75	11,0	14,5	5	375

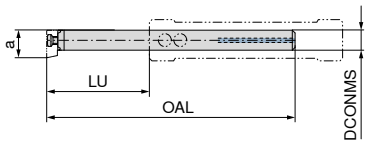

Key D

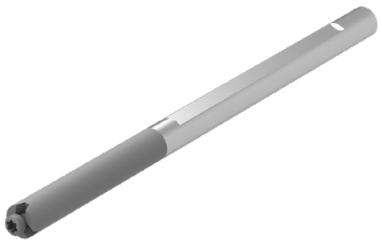

Clamping screw

Spare parts Size		80 950 ...		73 082 ...	
08	T08	110	M2,6	002
09	T08	110	M2,6	002
11	T10	112	M3,5	003
14	T15	113	M4	004

3

MiniCut – HM – Flexoholder





Size	Designation	DCONMS mm	OAL mm	LU mm	a mm	73 525 ...
08	8,0/6.N16/2	6	65	18	8	818
	8,0/6.N40/4	6	103	40	8	840
11	11,0/8.N20/2	8	79	20	11	120 1)
	11,0/8.N50/4	8	129	50	11	150 1)

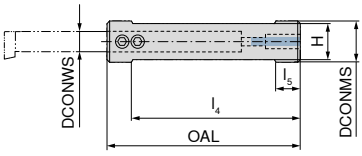
1) with thro' coolant


Key D


Clamping screw

Spare parts Size		80 950 ...		73 082 ...
08	T08	110	M2,6	002
11	T10	112	M3,5	003

MiniCut – Base holder for solid carbide Flexoholder



Size	Designation	DCONWS mm	DCONMS mm	H mm	OAL mm	l_4 mm	l_5 mm	73 526 ...
08	8/16.75	6	16	14	75	55	10	816
	8/20.75	6	20	18	75	70	10	820
11	11/16.75	8	16	14	75	55	10	116
	11/20.75	8	20	18	75	70	10	120

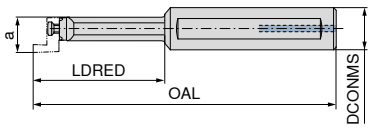

Key I

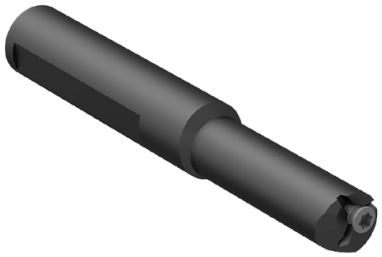

Clamping screw

Spare parts for Article no.		70 950 ...		73 082 ...
73 526 816	SW2,5	175	M5x0,5x6	010
73 526 820	SW2,5	175	M5x0,5x6	010
73 526 116	SW2,5	175	M5x0,5x4	009
73 526 120	SW2,5	175	M5x0,5x6	010

MiniCut – Steel holder

▲ for axial machining





Size	Designation	a	DCONMS	OAL	LDRED	Left-hand	Right-hand
		mm	mm	mm	mm	**73 523 ...**	**73 524 ...**
14	14,0/16. R/L .25.1,0	13,5	16	90	25	**025**	**025**
	14,0/16. R/L .45.1,0	13,5	16	110	45	**145**	**145**

Key D

80 950 ...

Clamping screw

73 082 ...

Spare parts

Size					
14	T15	**113**	M4	**004**

3

Material examples for cutting data tables

	Material sub-group	Index	Composition / Structure / Heat treatment		Tensile strength N/mm²* / HB / HRC	Material number	Material designation	Material number	Material designation
P	Unalloyed steel	P.1.1	< 0,15 % C	Annealed	420 N/mm² / 125 HB	1.0401	C15	1.1141	Ck15
		P.1.2	< 0,45 % C	Annealed	640 N/mm² / 190 HB	1.1191	C45E	1.0718	9SMnPb28
		P.1.3		Tempered	840 N/mm² / 250 HB	1.1191	C45E	1.0535	C55
		P.1.4	< 0,75 % C	Annealed	910 N/mm² / 270 HB	1.1223	C60R	1.0535	C55
		P.1.5		Tempered	1010 N/mm² / 300 HB	1.1223	C60R	1.0727	45S20
	Low-alloy steel	P.2.1		Annealed	610 N/mm² / 180 HB	1.7131	16MnCr5	1.6587	17CrNiMo6
		P.2.2		Tempered	930 N/mm² / 275 HB	1.7131	16MnCr5	1.6587	17CrNiMo6
		P.2.3		Tempered	1010 N/mm² / 300 HB	1.7225	42CrMo4	1.3505	100Cr6
		P.2.4		Tempered	1200 N/mm² / 375 HB	1.7225	42CrMo4	1.3505	100Cr6
	High-alloy steel and high-alloy tool steel	P.3.1		Annealed	680 N/mm² / 200 HB	1.4021	X20Cr13	1.4034	X46Cr13
		P.3.2		Hardened and tempered	1100 N/mm² / 300 HB	1.2343	X38CrMoV5-1	1.4034	X46Cr13
		P.3.3		Hardened and tempered	1300 N/mm² / 400 HB	1.2343	X38CrMoV5-1	1.4034	X46Cr13
	Stainless steel	P.4.1	Ferritic / martensitic	Annealed	680 N/mm² / 200 HB	1.4016	X6Cr17	1.2316	X36CrMo16
		P.4.2	Martensitic	Tempered	1010 N/mm² / 300 HB	1.4112	X90CrMoV18	1.2316	X36CrMo16
M	Stainless steel	M.1.1	Austenitic / austenitic-ferritic	Quenched	610 N/mm² / 180 HB	1.4301	X5CrNi18-10	1.4571	X6CrNiMoTi17-12-2
		M.2.1	Austenitic	Tempered	300 HB	1.4841	X15CrNiSi25-21	1.4539	X1NiCrMoCu25-20-5
		M.3.1	Austenitic / ferritic (Duplex)		780 N/mm² / 230 HB	1.4462	X2CrNiMoN22-5-3	1.4501	X2CrNiMoCuWN25-7-4
K	Grey cast iron	K.1.1	Pearlitic / ferritic		350 N/mm² / 180 HB	0.6010	GG-10	0.6025	GG-25
		K.1.2	Pearlitic (martensitic)		500 N/mm² / 260 HB	0.6030	GG-30	0.6045	GG-45
	Spherulitic graphite cast iron	K.2.1	Ferritic		540 N/mm² / 160 HB	0.7040	GGG-40	0.7060	GGG-60
		K.2.2	Pearlitic		845 N/mm² / 250 HB	0.7070	GGG-70	0.7080	GGG-80
	Malleable iron	K.3.1	Ferritic		440 N/mm² / 130 HB	0.8035	GTW-35-04	0.8045	GTW-45
		K.3.2	Pearlitic		780 N/mm² / 230 HB	0.8165	GTS-65-02	0.8170	GTS-70-02
N	Aluminium wrought alloy	N.1.1	Non-hardenable		60 HB	3.0255	Al99,5	3.3315	AlMg1
		N.1.2	Hardenable	Age-hardened	340 N/mm² / 100 HB	3.1355	AlCuMg2	3.2315	AlMgSi1
	Cast aluminium alloy	N.2.1	≤ 12 % Si, non-hardenable		250 N/mm² / 75 HB	3.2581	G-AlSi12	3.2163	G-AlSi9Cu3
		N.2.2	≤ 12 % Si, hardenable	Age-hardened	300 N/mm² / 90 HB	3.2134	G-AlSi5Cu1Mg	3.2373	G-AlSi9Mg
		N.2.3	> 12 % Si, non-hardenable		440 N/mm² / 130 HB		G-AlSi17Cu4Mg		G-AlSi18CuNiMg
	Copper and copper alloys (bronze/brass)	N.3.1	Free-machining alloys, PB > 1 %		375 N/mm² / 110 HB	2.0380	CuZn39Pb2 (Ms58)	2.0410	CuZn44Pb2
		N.3.2	CuZn, CuSnZn		300 N/mm² / 90 HB	2.0331	CuZn15	2.4070	CuZn28Sn1As
		N.3.3	CuSn, lead-free copper and electrolytic copper		340 N/mm² / 100 HB	2.0060	E-Cu57	2.0590	CuZn40Fe
	Magnesium alloys	N.4.1	Magnesium and magnesium alloys		70 HB	3.5612	MgAl6Zn	3.5312	MgAl3Zn
S	Heat-resistant alloys	S.1.1	Fe – basis	Annealed	680 N/mm² / 200 HB	1.4864	X12NiCrSi 36-16	1.4865	G-X40NiCrSi38-18
		S.1.2		Age-hardened	950 N/mm² / 280 HB	1.4980	X6NiCrTiMoVB25-15-2	1.4876	X10NiCrAlTi32-20
		S.2.1	Ni or Co basis	Annealed	840 N/mm² / 250 HB	2.4631	NiCr20TiAl (Nimonic80A)	3.4856	NiCr22Mo9Nb
		S.2.2		Age-hardened	1180 N/mm² / 350 HB	2.4668	NiCr19Nb5Mo3 (Inconel 718)	2.4955	NiFe25Cr20NbTi
		S.2.3		Cast	1080 N/mm² / 320 HB	2.4765	CoCr20W15Ni	1.3401	G-X120Mn12
	Titanium alloys	S.3.1	Pure titanium		400 N/mm²	3.7025	Ti99,8	3.7034	Ti99,7
		S.3.2	Alpha + beta alloys	Age-hardened	1050 N/mm² / 320 HB	3.7165	TiAl6V4	Ti-6246	Ti-6Al-2Sn-4Zr-6Mo
		S.3.3	Beta alloys		1400 N/mm² / 410 HB	Ti555.3	Ti-5Al-5V-5Mo-3Cr	R56410	Ti-10V-2Fe-3Al
H	Hardened steel	H.1.1		Hardened and tempered	46–55 HRC				
		H.1.2		Hardened and tempered	56–60 HRC				
		H.1.3		Hardened and tempered	61–65 HRC				
		H.1.4		Hardened and tempered	66–70 HRC				
	Chilled iron	H.2.1		Cast	400 HB				
	Hardened cast iron	H.3.1		Hardened and tempered	55 HRC				
O	Non-metal materials	O.1.1	Plastics, duroplastic		≤ 150 N/mm²				
		O.1.2	Plastics, thermoplastic		≤ 100 N/mm²				
		O.2.1	Aramid fibre-reinforced		≤ 1000 N/mm²				
		O.2.2	Glass/carbon-fibre reinforced		≤ 1000 N/mm²				
		O.3.1	Graphite						

*** Tensile strength**

Cutting data standard values

	UltraMini K10F uncoated	UltraMini K10F-TiN	UltraMini K10-TiAlN	UltraMini DPX 57S	MiniCut CWX500	UltraMini TiAlN+	MiniCut CBN
Index	v_c in m/min						
P.1.1		**90**	**110**	110	**160**	110	
P.1.2		**80**	**100**	100	**140**	100	
P.1.3		**60**	**80**	80	**140**	80	
P.1.4		**60**	**80**	80	**110**	80	
P.1.5		**60**	**60**	60	**100**	60	
P.2.1		**60**	**80**	80	**110**	80	
P.2.2		**60**	**60**	60	**100**	60	
P.2.3		**50**	**60**	60	**90**	60	
P.2.4		**50**	**60**	60	**80**	60	
P.3.1		**50**	**60**	60	**80**	60	
P.3.2		**30**	**50**	**50**	**70**	50	
P.3.3		**30**	**30**	**30**	**50**	30	
P.4.1		**60**	**70**	**70**	**100**	70	
P.4.2		**50**	**60**	**60**	**90**	60	
M.1.1		**60**	**80**	**80**	**80**	80	
M.2.1		**50**	**60**	**60**	**70**	60	
M.3.1		**40**	**50**	**50**	**60**	50	
K.1.1		**80**	**100**	100	**90**	100	
K.1.2		**60**	**70**	70	**100**	70	
K.2.1		**60**	**60**	60	**80**	60	
K.2.2		**50**	**60**	60	**70**	60	
K.3.1		**80**	**100**	100	**120**	100	
K.3.2		**70**	**80**	80	**100**	80	
N.1.1	100	**200**	**230**	230	**290**	230	
N.1.2	100	**180**	**220**	220	**280**	220	
N.2.1	90	**160**	**190**	190	**240**	190	
N.2.2	70	**140**	**170**	170	**200**	170	
N.2.3	50	**80**	**100**	100	**120**	100	
N.3.1	80	**140**	**170**	170	**210**	170	
N.3.2	70	**120**	**140**	140	**180**	140	
N.3.3	50	**100**	**120**	120	**130**	120	
N.4.1	50	**100**	**120**	120	**100**	120	
S.1.1		30	**50**	50	**50**	50	
S.1.2		30	**30**	30	**30**	30	30
S.2.1		30	**50**	50	**50**	50	50
S.2.2		30	**30**	30	**40**	30	30
S.2.3			**30**	30	**30**	30	30
S.3.1		30	**50**	50	**50**	50	
S.3.2		20	**30**	30	**40**	30	
S.3.3			**20**	20	**30**	20	20
H.1.1		30	**40**	40	**50**	**40**	**40**
H.1.2			30	30	40	**30**	**30**
H.1.3				20		**30**	**30**
H.1.4							
H.2.1							
H.3.1		20	**30**	30	**40**	**30**	**30**
O.1.1	**50**	**90**	**110**	110	**150**	110	
O.1.2	**50**	**100**	**120**	120	**150**	120	
O.2.1		**90**	**110**	110	**130**	110	
O.2.2		**60**	**80**	80	**100**	80	
O.3.1	50	**100**	**120**	120	**150**	120	

	UltraMini	MiniCut
	f in mm/rev.	
Internal turning and profiling	0,02–0,05	0,03–0,10
Internal turning and profiling – hard turning	0,02–0,06	0,03–0,10
Turning and profile turning – super alloys	0,02–0,08	
Internal turning	0,02–0,05	0,01–0,03
Back boring	0,02–0,04	0,03–0,10
Turning and chamfering	0,01–0,03	0,03–0,10
Pre-parting and chamfering	0,01–0,02	0,01–0,03
Groove turning	0,01–0,02	0,01–0,03
Internal Undercuts	0,01–0,03	0,03–0,08
Groove and profile turning	0,01–0,02	0,01–0,03
Axial grooving	0,02–0,05	0,02–0,05

3

The cutting data is strongly influenced by external conditions, such as the stability of the tool and workpiece clamping, material and type of machine.
The specified values represent guideline cutting data that can be adjusted by approx. **±20%** according to the usage conditions.

Cutting data standard values – 73 000 .../ 73 001 ...

Index	UltraMini DPX77S	Roughing										
		Ø ≤ 2 mm Corner radius in mm			Ø 2,5–4 mm Corner radius in mm				Ø ≥ 5 mm Corner radius in mm			
		0,05	0,1	0,15	0,05	0,1	0,15	0,2 / 0,4	0,05	0,1	0,15	0,2 / 0,4
	v_c in m/min	f in mm/rev.			f in mm/rev.				f in mm/rev.			
P.1.1	**110**	0,026–0,076	0,029–0,082	0,031–0,088	0,053–0,151	0,058–0,165	0,062–0,176	0,064–0,184	0,099–0,284	0,108–0,309	0,116–0,33	0,121–0,345
P.1.2	**100**	0,026–0,076	0,029–0,082	0,031–0,088	0,053–0,151	0,058–0,165	0,062–0,176	0,064–0,184	0,099–0,284	0,108–0,309	0,116–0,33	0,121–0,345
P.1.3	**80**	0,026–0,076	0,029–0,082	0,031–0,088	0,053–0,151	0,058–0,165	0,062–0,176	0,064–0,184	0,099–0,284	0,108–0,309	0,116–0,33	0,121–0,345
P.1.4	**80**	0,023–0,065	0,025–0,071	0,026–0,076	0,046–0,13	0,05–0,142	0,053–0,151	0,055–0,158	0,085–0,244	0,093–0,266	0,099–0,284	0,104–0,297
P.1.5	**60**	0,024–0,068	0,026–0,074	0,028–0,079	0,048–0,136	0,052–0,148	0,055–0,158	0,058–0,166	0,089–0,255	0,097–0,278	0,104–0,297	0,109–0,311
P.2.1	**80**	0,024–0,068	0,026–0,074	0,028–0,079	0,048–0,136	0,052–0,148	0,055–0,158	0,058–0,166	0,089–0,255	0,097–0,278	0,104–0,297	0,109–0,311
P.2.2	**60**	0,021–0,06	0,023–0,066	0,025–0,07	0,042–0,121	0,046–0,132	0,049–0,141	0,052–0,147	0,079–0,227	0,087–0,247	0,092–0,264	0,097–0,276
P.2.3	**60**	0,019–0,054	0,021–0,059	0,022–0,063	0,038–0,109	0,042–0,119	0,044–0,127	0,046–0,132	0,071–0,204	0,078–0,222	0,083–0,238	0,087–0,248
P.2.4	**60**	0,018–0,051	0,02–0,056	0,021–0,06	0,036–0,103	0,039–0,112	0,042–0,12	0,044–0,125	0,067–0,193	0,074–0,21	0,079–0,224	0,082–0,235
P.3.1	**60**	0,021–0,06	0,023–0,066	0,025–0,07	0,042–0,121	0,046–0,132	0,049–0,141	0,052–0,147	0,079–0,227	0,087–0,247	0,092–0,264	0,097–0,276
P.3.2	**50**	0,02–0,057	0,022–0,063	0,023–0,067	0,04–0,115	0,044–0,125	0,047–0,134	0,049–0,14	0,075–0,215	0,082–0,235	0,088–0,251	0,092–0,262
P.3.3	**30**	0,016–0,045	0,017–0,049	0,018–0,053	0,032–0,091	0,035–0,099	0,037–0,106	0,039–0,11	0,06–0,17	0,065–0,185	0,069–0,198	0,072–0,207
P.4.1	**70**	0,022–0,064	0,024–0,069	0,026–0,074	0,044–0,127	0,048–0,138	0,052–0,148	0,054–0,155	0,083–0,238	0,091–0,26	0,097–0,277	0,101–0,29
P.4.2	**60**	0,021–0,06	0,023–0,066	0,025–0,07	0,042–0,121	0,046–0,132	0,049–0,141	0,052–0,147	0,079–0,227	0,087–0,247	0,092–0,264	0,097–0,276
M.1.1	**80**	0,015–0,042	0,016–0,046	0,017–0,049	0,03–0,085	0,032–0,092	0,034–0,099	0,036–0,103	0,056–0,159	0,061–0,173	0,065–0,185	0,068–0,193
M.2.1	**60**	0,013–0,038	0,014–0,041	0,015–0,044	0,026–0,076	0,029–0,082	0,031–0,088	0,032–0,092	0,05–0,142	0,054–0,155	0,058–0,165	0,06–0,173
M.3.1	**50**	0,014–0,039	0,015–0,043	0,016–0,046	0,028–0,079	0,03–0,086	0,032–0,092	0,033–0,096	0,052–0,147	0,056–0,161	0,06–0,172	0,063–0,179
K.1.1	**100**	0,026–0,076	0,029–0,082	0,031–0,088	0,053–0,151	0,058–0,165	0,062–0,176	0,064–0,184	0,099–0,284	0,108–0,309	0,116–0,33	0,121–0,345
K.1.2	**70**	0,024–0,068	0,026–0,074	0,028–0,079	0,048–0,136	0,052–0,148	0,055–0,158	0,058–0,166	0,089–0,255	0,097–0,278	0,104–0,297	0,109–0,311
K.2.1	**60**	0,024–0,068	0,026–0,074	0,028–0,079	0,048–0,136	0,052–0,148	0,055–0,158	0,058–0,166	0,089–0,255	0,097–0,278	0,104–0,297	0,109–0,311
K.2.2	**60**	0,021–0,059	0,022–0,064	0,024–0,069	0,041–0,118	0,045–0,129	0,048–0,137	0,05–0,144	0,077–0,221	0,084–0,241	0,09–0,257	0,094–0,269
K.3.1	**100**	0,025–0,073	0,028–0,079	0,03–0,084	0,051–0,145	0,055–0,158	0,059–0,169	0,062–0,177	0,095–0,272	0,104–0,297	0,111–0,317	0,116–0,331
K.3.2	**80**	0,021–0,06	0,023–0,066	0,025–0,07	0,042–0,121	0,046–0,132	0,049–0,141	0,052–0,147	0,079–0,227	0,087–0,247	0,092–0,264	0,097–0,276
N.1.1	230	0,032–0,091	0,035–0,099	0,037–0,106	0,064–0,181	0,069–0,198	0,074–0,211	0,077–0,221	0,119–0,34	0,13–0,371	0,139–0,396	0,145–0,414
N.1.2	220	0,031–0,089	0,034–0,097	0,036–0,104	0,062–0,178	0,068–0,194	0,073–0,208	0,076–0,217	0,117–0,335	0,128–0,365	0,136–0,389	0,142–0,407
N.2.1	190	0,03–0,085	0,032–0,092	0,034–0,099	0,059–0,169	0,065–0,185	0,069–0,197	0,072–0,206	0,111–0,318	0,121–0,346	0,129–0,37	0,135–0,386
N.2.2	170	0,029–0,083	0,032–0,091	0,034–0,097	0,058–0,166	0,063–0,181	0,068–0,194	0,071–0,202	0,109–0,312	0,119–0,34	0,127–0,363	0,133–0,38
N.2.3	100	0,029–0,082	0,031–0,089	0,033–0,095	0,057–0,163	0,062–0,178	0,067–0,19	0,07–0,199	0,107–0,306	0,117–0,334	0,125–0,356	0,13–0,373
N.3.1	170	0,03–0,085	0,032–0,092	0,034–0,099	0,059–0,169	0,065–0,185	0,069–0,197	0,072–0,206	0,111–0,318	0,121–0,346	0,129–0,37	0,135–0,386
N.3.2	140	0,028–0,08	0,031–0,087	0,033–0,093	0,056–0,16	0,061–0,175	0,065–0,187	0,068–0,195	0,105–0,301	0,115–0,328	0,122–0,35	0,128–0,366
N.3.3	120	0,027–0,077	0,029–0,084	0,031–0,09	0,054–0,154	0,059–0,168	0,063–0,18	0,066–0,188	0,101–0,289	0,11–0,315	0,118–0,337	0,123–0,352
N.4.1	120	0,027–0,077	0,029–0,084	0,031–0,09	0,054–0,154	0,059–0,168	0,063–0,18	0,066–0,188	0,101–0,289	0,11–0,315	0,118–0,337	0,123–0,352
S.1.1	50	0,024–0,068	0,026–0,074	0,028–0,079	0,048–0,136	0,052–0,148	0,055–0,158	0,058–0,166	0,089–0,255	0,097–0,278	0,104–0,297	0,109–0,311
S.1.2	30	0,019–0,053	0,02–0,058	0,022–0,062	0,037–0,106	0,04–0,115	0,043–0,123	0,045–0,129	0,069–0,198	0,076–0,216	0,081–0,231	0,085–0,242
S.2.1	50	0,018–0,051	0,02–0,056	0,021–0,06	0,036–0,103	0,039–0,112	0,042–0,12	0,044–0,125	0,067–0,193	0,074–0,21	0,079–0,224	0,082–0,235
S.2.2	30	0,014–0,039	0,015–0,043	0,016–0,046	0,028–0,079	0,03–0,086	0,032–0,092	0,033–0,096	0,052–0,147	0,056–0,161	0,06–0,172	0,063–0,179
S.2.3	30	0,015–0,042	0,016–0,046	0,017–0,049	0,03–0,085	0,032–0,092	0,034–0,099	0,036–0,103	0,056–0,159	0,061–0,173	0,065–0,185	0,068–0,193
S.3.1	50	0,024–0,068	0,026–0,074	0,028–0,079	0,048–0,136	0,052–0,148	0,055–0,158	0,058–0,166	0,089–0,255	0,097–0,278	0,104–0,297	0,109–0,311
S.3.2	30	0,019–0,054	0,021–0,059	0,022–0,063	0,038–0,109	0,042–0,119	0,044–0,127	0,046–0,132	0,071–0,204	0,078–0,222	0,083–0,238	0,087–0,248
S.3.3	20	0,013–0,038	0,014–0,041	0,015–0,044	0,026–0,076	0,029–0,082	0,031–0,088	0,032–0,092	0,05–0,142	0,054–0,155	0,058–0,165	0,06–0,173
H.1.1	40	0,013–0,038	0,014–0,041	0,015–0,044	0,026–0,076	0,029–0,082	0,031–0,088	0,032–0,092	0,05–0,142	0,054–0,155	0,058–0,165	0,06–0,173
H.1.2	30	0,011–0,03	0,012–0,033	0,012–0,035	0,021–0,06	0,023–0,066	0,025–0,07	0,026–0,074	0,036–0,102	0,039–0,111	0,042–0,119	0,043–0,124
H.1.3												
H.1.4												
H.2.1	30	0,014–0,041	0,016–0,044	0,017–0,048	0,029–0,082	0,031–0,089	0,033–0,095	0,035–0,099	0,054–0,153	0,058–0,167	0,062–0,178	0,065–0,186
H.3.1	30	0,013–0,036	0,014–0,04	0,015–0,042	0,025–0,073	0,028–0,079	0,03–0,084	0,031–0,088	0,048–0,136	0,052–0,148	0,055–0,158	0,058–0,166
O.1.1	110	0,031–0,089	0,034–0,097	0,036–0,104	0,062–0,178	0,068–0,194	0,073–0,208	0,076–0,217	0,117–0,335	0,128–0,365	0,136–0,389	0,142–0,407
O.1.2	120	0,028–0,079	0,03–0,086	0,032–0,092	0,055–0,157	0,06–0,171	0,064–0,183	0,067–0,191	0,103–0,295	0,112–0,321	0,12–0,343	0,126–0,359
O.2.1	110	0,017–0,05	0,019–0,054	0,02–0,058	0,035–0,1	0,038–0,109	0,041–0,116	0,043–0,121	0,065–0,187	0,071–0,204	0,076–0,218	0,08–0,228
O.2.2	80	0,017–0,048	0,018–0,053	0,02–0,056	0,034–0,097	0,037–0,105	0,039–0,113	0,041–0,118	0,064–0,181	0,069–0,198	0,074–0,211	0,077–0,221
O.3.1	120											

The cutting data is strongly influenced by external conditions, such as the stability of the tool and workpiece clamping, material and type of machine.
The specified values represent guideline cutting data that can be adjusted by approx. **±20%** according to the usage conditions.

	Finishing													
	Ø ≤ 2 mm Corner radius in mm			Ø 2,5–4 mm Corner radius in mm					Ø ≥ 5 mm Corner radius in mm					
Index	0,05	0,1	0,15	0,05	0,1	0,15	0,2	0,4	0,05	0,1	0,15	0,2	0,4	
	f in mm/rev.			f in mm/rev.					f in mm/rev.					
P.1.1	0,007–0,019	0,008–0,022	0,009–0,025	0,017–0,049	0,02–0,058	0,023–0,065	0,025–0,072	0,032–0,092	0,027–0,076	0,031–0,089	0,035–0,1	0,039–0,11	0,05–0,142	
P.1.2	0,007–0,019	0,008–0,022	0,009–0,025	0,017–0,049	0,02–0,058	0,023–0,065	0,025–0,072	0,032–0,092	0,027–0,076	0,031–0,089	0,035–0,1	0,039–0,11	0,05–0,142	
P.1.3	0,007–0,019	0,008–0,022	0,009–0,025	0,017–0,049	0,02–0,058	0,023–0,065	0,025–0,072	0,032–0,092	0,027–0,076	0,031–0,089	0,035–0,1	0,039–0,11	0,05–0,142	
P.1.4	0,006–0,016	0,007–0,019	0,008–0,022	0,015–0,042	0,017–0,05	0,02–0,056	0,022–0,061	0,028–0,079	0,023–0,065	0,027–0,077	0,03–0,086	0,033–0,095	0,043–0,122	
P.1.5	0,006–0,017	0,007–0,02	0,008–0,023	0,016–0,044	0,018–0,052	0,02–0,059	0,023–0,064	0,029–0,083	0,024–0,068	0,028–0,08	0,032–0,09	0,035–0,099	0,045–0,128	
P.2.1	0,006–0,017	0,007–0,02	0,008–0,023	0,016–0,044	0,018–0,052	0,02–0,059	0,023–0,064	0,029–0,083	0,024–0,068	0,028–0,08	0,032–0,09	0,035–0,099	0,045–0,128	
P.2.2	0,005–0,015	0,006–0,018	0,007–0,02	0,014–0,04	0,016–0,046	0,018–0,052	0,02–0,057	0,026–0,074	0,021–0,061	0,025–0,071	0,028–0,08	0,031–0,088	0,04–0,114	
P.2.3	0,005–0,014	0,006–0,016	0,006–0,018	0,012–0,036	0,015–0,042	0,016–0,047	0,018–0,051	0,023–0,066	0,019–0,055	0,022–0,064	0,025–0,072	0,028–0,079	0,036–0,102	
P.2.4	0,005–0,013	0,005–0,015	0,006–0,017	0,012–0,034	0,014–0,039	0,015–0,044	0,017–0,049	0,022–0,063	0,018–0,052	0,021–0,061	0,024–0,068	0,026–0,075	0,034–0,097	
P.3.1	0,005–0,015	0,006–0,018	0,007–0,02	0,014–0,04	0,016–0,046	0,018–0,052	0,02–0,057	0,026–0,074	0,021–0,061	0,025–0,071	0,028–0,08	0,031–0,088	0,04–0,114	
P.3.2	0,005–0,014	0,006–0,017	0,007–0,019	0,013–0,038	0,015–0,044	0,017–0,049	0,019–0,054	0,025–0,07	0,02–0,058	0,024–0,068	0,027–0,076	0,029–0,084	0,038–0,108	
P.3.3	0,004–0,011	0,005–0,013	0,005–0,015	0,01–0,03	0,012–0,035	0,014–0,039	0,015–0,043	0,019–0,055	0,016–0,046	0,019–0,053	0,021–0,06	0,023–0,066	0,03–0,085	
P.4.1	0,006–0,016	0,007–0,019	0,007–0,021	0,015–0,041	0,017–0,049	0,019–0,055	0,021–0,06	0,027–0,078	0,022–0,064	0,026–0,075	0,029–0,084	0,032–0,092	0,042–0,119	
P.4.2	0,005–0,015	0,006–0,018	0,007–0,02	0,014–0,04	0,016–0,046	0,018–0,052	0,02–0,057	0,026–0,074	0,021–0,061	0,025–0,071	0,028–0,08	0,031–0,088	0,04–0,114	
M.1.1	0,004–0,011	0,004–0,012	0,005–0,014	0,01–0,028	0,011–0,032	0,013–0,036	0,014–0,04	0,018–0,052	0,015–0,043	0,017–0,05	0,02–0,056	0,022–0,062	0,028–0,08	
M.2.1	0,003–0,01	0,004–0,011	0,004–0,013	0,009–0,025	0,01–0,029	0,011–0,033	0,013–0,036	0,016–0,046	0,013–0,038	0,016–0,045	0,018–0,05	0,019–0,055	0,025–0,071	
M.3.1	0,003–0,01	0,004–0,012	0,005–0,013	0,009–0,026	0,011–0,03	0,012–0,034	0,013–0,037	0,017–0,048	0,014–0,04	0,016–0,046	0,018–0,052	0,02–0,057	0,026–0,074	
K.1.1	0,007–0,019	0,008–0,022	0,009–0,025	0,017–0,049	0,02–0,058	0,023–0,065	0,025–0,072	0,032–0,092	0,027–0,076	0,031–0,089	0,035–0,1	0,039–0,11	0,05–0,142	
K.1.2	0,006–0,017	0,007–0,02	0,008–0,023	0,016–0,044	0,018–0,052	0,02–0,059	0,023–0,064	0,029–0,083	0,024–0,068	0,028–0,08	0,032–0,09	0,035–0,099	0,045–0,128	
K.2.1	0,006–0,017	0,007–0,02	0,008–0,023	0,016–0,044	0,018–0,052	0,02–0,059	0,023–0,064	0,029–0,083	0,024–0,068	0,028–0,08	0,032–0,09	0,035–0,099	0,045–0,128	
K.2.2	0,005–0,015	0,006–0,017	0,007–0,02	0,013–0,039	0,016–0,045	0,018–0,051	0,02–0,056	0,025–0,072	0,021–0,059	0,024–0,069	0,027–0,078	0,03–0,086	0,039–0,111	
K.3.1	0,006–0,018	0,007–0,021	0,008–0,024	0,017–0,047	0,019–0,056	0,022–0,062	0,024–0,069	0,031–0,089	0,026–0,073	0,03–0,085	0,034–0,096	0,037–0,106	0,048–0,136	
K.3.2	0,005–0,015	0,006–0,018	0,007–0,02	0,014–0,04	0,016–0,046	0,018–0,052	0,02–0,057	0,026–0,074	0,021–0,061	0,025–0,071	0,028–0,08	0,031–0,088	0,04–0,114	
N.1.1	0,008–0,023	0,009–0,027	0,011–0,03	0,02–0,058	0,024–0,068	0,027–0,077	0,03–0,084	0,038–0,109	0,027–0,076	0,031–0,089	0,035–0,1	0,039–0,11	0,05–0,142	
N.1.2	0,008–0,022	0,009–0,026	0,01–0,03	0,02–0,058	0,024–0,068	0,027–0,077	0,03–0,084	0,038–0,109	0,027–0,076	0,031–0,089	0,035–0,1	0,039–0,11	0,05–0,142	
N.2.1	0,007–0,021	0,009–0,025	0,01–0,028	0,019–0,055	0,023–0,065	0,025–0,073	0,028–0,08	0,036–0,103	0,027–0,076	0,031–0,089	0,035–0,1	0,039–0,11	0,05–0,142	
N.2.2	0,007–0,021	0,009–0,024	0,01–0,028	0,019–0,054	0,022–0,064	0,025–0,072	0,028–0,079	0,036–0,102	0,027–0,076	0,031–0,089	0,035–0,1	0,039–0,11	0,05–0,142	
N.2.3	0,007–0,021	0,008–0,024	0,009–0,027	0,019–0,053	0,022–0,062	0,025–0,07	0,027–0,077	0,035–0,1	0,027–0,076	0,031–0,089	0,035–0,1	0,039–0,11	0,05–0,142	
N.3.1	0,007–0,021	0,009–0,025	0,01–0,028	0,019–0,055	0,023–0,065	0,025–0,073	0,028–0,08	0,036–0,103	0,027–0,076	0,031–0,089	0,035–0,1	0,039–0,11	0,05–0,142	
N.3.2	0,007–0,02	0,008–0,024	0,009–0,027	0,018–0,052	0,021–0,061	0,024–0,069	0,027–0,076	0,034–0,098	0,027–0,076	0,031–0,089	0,035–0,1	0,039–0,11	0,05–0,142	
N.3.3	0,007–0,019	0,008–0,023	0,009–0,026	0,018–0,05	0,021–0,059	0,023–0,066	0,026–0,073	0,033–0,094	0,027–0,076	0,031–0,089	0,035–0,1	0,039–0,11	0,05–0,142	
N.4.1	0,007–0,019	0,008–0,023	0,009–0,026	0,018–0,05	0,021–0,059	0,023–0,066	0,026–0,073	0,033–0,094	0,027–0,078	0,032–0,091	0,036–0,102	0,039–0,112	0,051–0,145	
S.1.1	0,006–0,017	0,007–0,02	0,008–0,023	0,016–0,044	0,018–0,052	0,02–0,059	0,023–0,064	0,029–0,083	0,024–0,068	0,028–0,08	0,032–0,09	0,035–0,099	0,045–0,128	
S.1.2	0,005–0,013	0,005–0,016	0,006–0,018	0,012–0,035	0,014–0,04	0,016–0,046	0,018–0,05	0,023–0,065	0,019–0,053	0,022–0,062	0,025–0,07	0,027–0,077	0,035–0,099	
S.2.1	0,005–0,013	0,005–0,015	0,006–0,017	0,012–0,034	0,014–0,039	0,015–0,044	0,017–0,049	0,022–0,063	0,018–0,052	0,021–0,061	0,024–0,068	0,026–0,075	0,034–0,097	
S.2.2	0,003–0,01	0,004–0,012	0,005–0,013	0,009–0,026	0,011–0,03	0,012–0,034	0,013–0,037	0,017–0,048	0,014–0,04	0,016–0,046	0,018–0,052	0,02–0,057	0,026–0,074	
S.2.3	0,004–0,011	0,004–0,012	0,005–0,014	0,01–0,028	0,011–0,032	0,013–0,036	0,014–0,04	0,018–0,052	0,015–0,043	0,017–0,05	0,02–0,056	0,022–0,062	0,028–0,08	
S.3.1	0,006–0,017	0,007–0,02	0,008–0,023	0,016–0,044	0,018–0,052	0,02–0,059	0,023–0,064	0,029–0,083	0,024–0,068	0,028–0,08	0,032–0,09	0,035–0,099	0,045–0,128	
S.3.2	0,005–0,014	0,006–0,016	0,006–0,018	0,012–0,036	0,015–0,042	0,016–0,047	0,018–0,051	0,023–0,066	0,019–0,055	0,022–0,064	0,025–0,072	0,028–0,079	0,036–0,102	
S.3.3	0,003–0,01	0,004–0,011	0,004–0,013	0,009–0,025	0,01–0,029	0,011–0,033	0,013–0,036	0,016–0,046	0,013–0,038	0,016–0,045	0,018–0,05	0,019–0,055	0,025–0,071	
H.1.1	0,003–0,01	0,004–0,011	0,004–0,013	0,009–0,025	0,01–0,029	0,011–0,033	0,013–0,036	0,016–0,046	0,013–0,038	0,016–0,045	0,018–0,05	0,019–0,055	0,025–0,071	
H.1.2	0,003–0,008	0,003–0,009	0,004–0,01	0,007–0,02	0,008–0,023	0,009–0,026	0,01–0,029	0,013–0,037	0,011–0,03	0,012–0,036	0,014–0,04	0,015–0,044	0,02–0,057	
H.1.3														
H.1.4														
H.2.1	0,004–0,01	0,004–0,012	0,005–0,014	0,009–0,027	0,011–0,031	0,012–0,035	0,014–0,039	0,017–0,05	0,014–0,041	0,017–0,048	0,019–0,054	0,021–0,059	0,027–0,077	
H.3.1	0,003–0,009	0,004–0,011	0,004–0,012	0,008–0,024	0,01–0,028	0,011–0,031	0,012–0,034	0,016–0,044	0,013–0,036	0,015–0,043	0,017–0,048	0,018–0,053	0,024–0,068	
O.1.1	0,008–0,022	0,009–0,026	0,01–0,03	0,02–0,058	0,024–0,068	0,027–0,077	0,03–0,084	0,038–0,109	0,027–0,076	0,031–0,089	0,035–0,1	0,039–0,11	0,05–0,142	
O.1.2	0,007–0,02	0,008–0,023	0,009–0,026	0,018–0,051	0,021–0,06	0,024–0,068	0,026–0,074	0,034–0,096	0,028–0,079	0,032–0,093	0,036–0,104	0,04–0,114	0,052–0,148	
O.2.1	0,004–0,013	0,005–0,015	0,006–0,017	0,011–0,033	0,013–0,038	0,015–0,043	0,017–0,047	0,021–0,061	0,018–0,05	0,021–0,059	0,023–0,066	0,025–0,073	0,033–0,094	
O.2.2	0,004–0,012	0,005–0,014	0,006–0,016	0,011–0,032	0,013–0,037	0,015–0,042	0,016–0,046	0,021–0,059	0,017–0,049	0,02–0,057	0,022–0,064	0,025–0,07	0,032–0,091	
O.3.1														

Symbol explanation

UltraMini


Internal turning and profiling


High-feed turning


Turning and profile turning – super alloys


Internal turning


Back boring


Turning and chamfering


Pre-parting and chamfering


Groove turning


Internal Undercuts


Groove and profile turning


Internal thread turning


Axial grooving

MiniCut


Internal turning and profiling


Internal turning


Back boring


Turning and chamfering


Pre-parting and chamfering


Groove turning


Internal Undercuts


Groove and profile turning


Internal thread turning


Axial grooving

Coatings

TiN

- TiN coating
- Maximum application temperature: 450°C

TiAlN

- TiAlN multilayer coating
- Maximum application temperature: 900°C

CWX500

- Carbide, TiAlN-coated
- The universal carbide grade for almost all materials

DPX57S DRAGONSKIN

- TiCrN coating
- Maximum application temperature: 900°C

DPX77S DRAGONSKIN

- TiAlN+X-coating
- Maximum application temperature: 900°C

Thread types

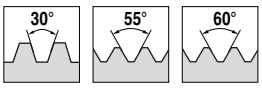
M Metric ISO standard thread

MF Metric ISO fine thread

G Whitworth thread

Tr Metric ISO trapezoidal fine thread

Thread flank angle



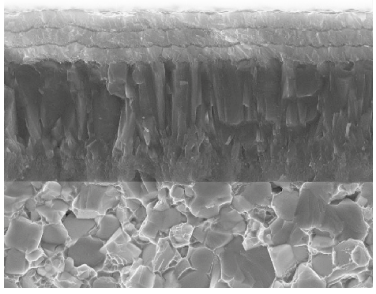
Cooling


with thro‘ coolant

DRAGONSKIN

Machining without compromise

The product category Dragonskin is intended to help make tools easily recognizable and quick to find using CERATIZIT‘s high-performance coating technology. All products that are marked with the Dragonskin icon represent unmatchable performance, maximum tool life and maximum process reliability.



Dragonskin Coating

Table of contents

WNT \ Performance

Premium quality tools for high performance.

The premium quality tools from the **WNT Performance** product line have been designed for specific applications and are distinguished by their outstanding performance. If you make high demands on the performance of your production and want to achieve the very best results, we recommend the Premium tools in this product line.

WNT \ Standard

Quality tools for standard applications.

The quality tools of the **WNT Standard** product line are high quality, powerful and reliable and enjoy the highest trust of our customers worldwide. Tools from this product line are the first choice for many standard applications and guarantee optimal results.

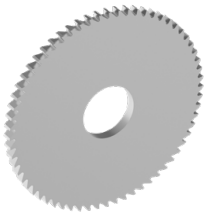
Overview

Solid carbide end mills

- Selection of high-performance solid carbide milling cutters from the Performance and Standard product lines.

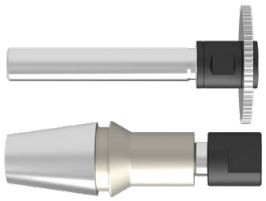
Circular saw blades

- Diameters ranging from 15 mm–63 mm with widths of 0.2 mm–6.0 mm
- Conforms to DIN 1837-A (fine-toothed)

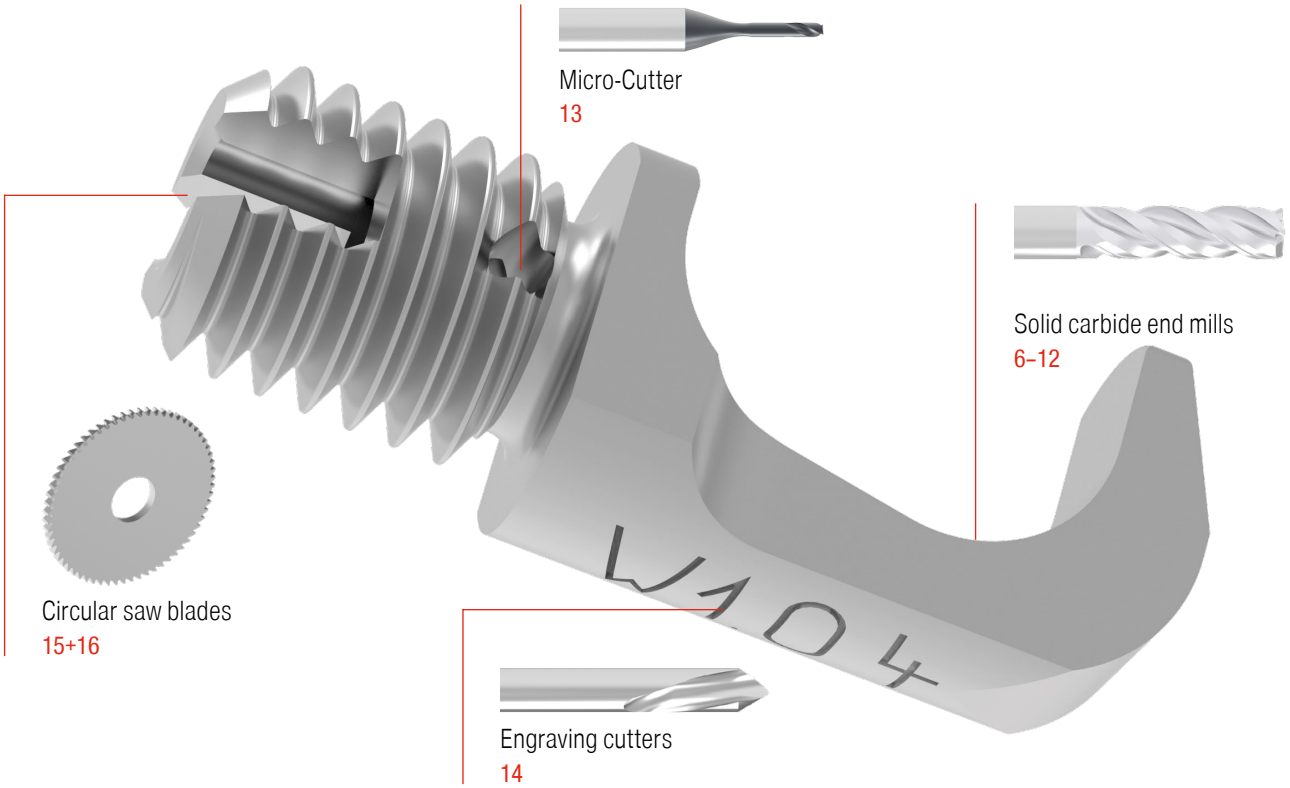


Adapters for circular saw blades

- Interfaces perfectly tailored to circular saw blades



Toolfinder



Symbol explanation

Shank

DIN 6535 HA / HB — Shank type

Length: extra short / short / medium / long / extra long

Axial thro' coolant

Radial thro' coolant

Cutting edge preparation

Sharp

Corner chamfer (CHW = chamfer width in mm)

Corner radius

● = **Main Application**

○ = Extended application

Application

HPC — High volume machining

54–70 HRC — Hard materials

The red arrows describe the possible feed directions

ZEFP — Number of flutes

λ_s=48° γ_s=10° — Cutting geometry
λ_s = Helix Angle
γ_s = Rake Angle

Type of machining

Peripheral milling

Helical plunging

Ramping

Full slot

plunge milling

Engraving

Circular saw blades

Multipurpose milling

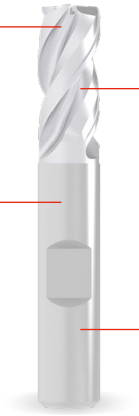
4

Highlights

SilverLine

Latest Dragonskin coating DPB72S – high temperature resistance and ideally suited for dry machining

Optimised core geometry – significantly reduced vibrations



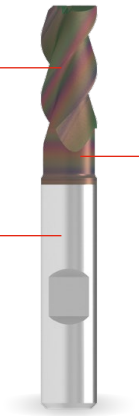
Redesigned cutting edge geometry – optimised chip flow and chip removal

Reinforced core diameter – optimal tool stability

AluLine

Extremely long tool service life possible thanks to the wear-resistant DLC coating.

Optimal/versatile tool selection for almost all applications in the machining of non-ferrous metals.

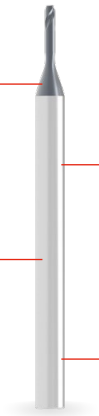


Economical and process-secure machining of aluminium and non-ferrous metals. Optimal performance thanks to the perfectly coordinated combination of geometry, substrate and coating.

Micro-End Mill

Robust and resilient Dragonskin DPA72S coating – can be used in material hardnesses up to 55 HRC.

Optimised neck geometry – for maximum tool stability



Latest generation of adapted carbide – guarantees high flexural strength

Shank tolerance h5 – for optimal radial run-out accuracy

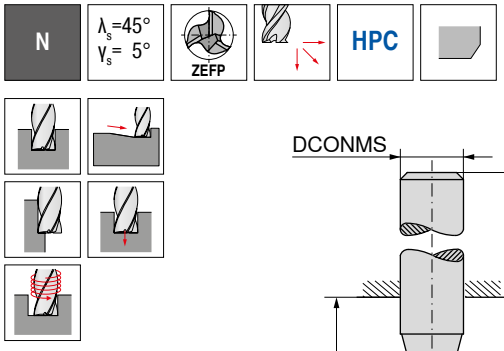
Overview of solid carbide milling cutters

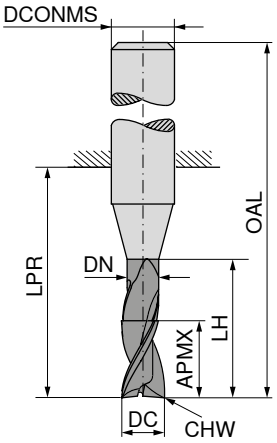
Tool type	Number of flutes ZEFP	Diameter in mm Ø DC	Steel P	Stainless steel M	Cast iron K	Non-ferrous metals N	Heat-resistant S	Tempered steel H	Non metal materials O	Sharp	Corner chamfer	Corner radius	Length	Tool design	Cooling	coated ■	uncoated □	WNT \ Performance	WNT \ Standard
SilverLine - End Mills																			
	N	3	3–12	●	●	●	○	●						HPC		■		6	
	N	4	3–12	●	●	●	○	●						HPC		■		7	
AluLine																			
	W	2	2–12				●									■		8	
	W	3	2–12				●									■		9+10	
End Mills with Finishing Geometry																			
	N	4	3–12	●	●	○	○	●						HPC		■		11	
	N	4	3–12	●		●								HPC		■		12	
Micro-Cutter																			
	N	2	0,2–2	●	●	●	●	●	○	○						■		13	
Engraving cutter 60°																			
	W	1	3–6	○	○	○	●	○		●							□	14	
Circular saw blades																			
		24–160	15–63	●	●	●	●	●		●							□	15+16	
Adapters for circular saw blades																			
																		17	
																		18	

More milling tools can be found in our → **main catalogue in chapters 13–15**

4

SilverLine – End milling cutter






≈DIN 6527 | ≈DIN 6527

HB | HB

DC f8 mm	APMX mm	DN mm	LH mm	LPR mm	OAL mm	DCONMS h6 mm	CHW mm	ZEFP	50 966 ...	50 966 ...
3,0	8	2,9	15	21	57	6	0,1	3		03200
3,5	11	3,4	16	21	57	6	0,1	3		03700
4,0	8	3,9	15	18	54	6	0,1	3	04100	
4,0	11	3,9	16	21	57	6	0,1	3		04200
4,5	13	4,4	19	21	57	6	0,1	3		04700
5,0	9	4,9	16	18	54	6	0,1	3	05100	
5,0	13	4,9	19	21	57	6	0,1	3		05200
5,5	13	5,4	19	21	57	6	0,1	3		05700
6,0	10	5,9	17	18	54	6	0,2	3	06100	
6,0	13	5,9	19	21	57	6	0,2	3		06200
6,5	19	6,3	25	27	63	8	0,2	3		06700
7,0	19	6,8	25	27	63	8	0,2	3		07200
7,5	19	7,3	25	27	63	8	0,2	3		07700
8,0	12	7,8	20	22	58	8	0,2	3	08100	
8,0	19	7,8	25	27	63	8	0,2	3		08200
8,5	22	8,2	30	32	72	10	0,2	3		08700
9,0	22	8,7	30	32	72	10	0,2	3		09200
9,5	22	9,2	30	32	72	10	0,2	3		09700
10,0	14	9,7	24	26	66	10	0,2	3	10100	
10,0	22	9,7	30	32	72	10	0,2	3		10200
12,0	16	11,7	26	28	73	12	0,2	3	12100	
12,0	26	11,7	36	38	83	12	0,2	3		12200

P	●	●
M	●	●
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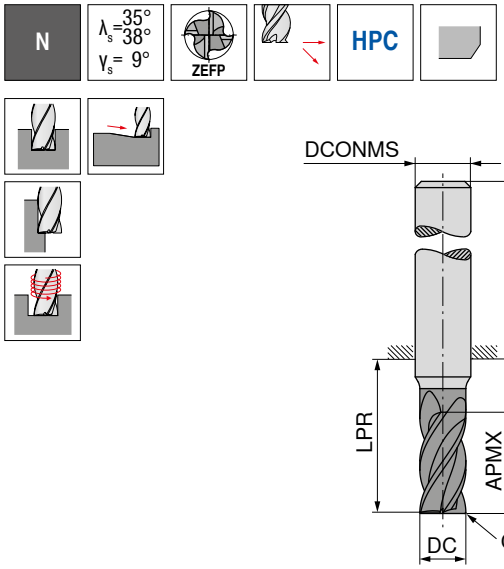
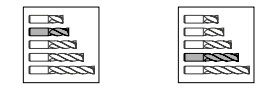
O		

→ v_c/f_z Page 20+21

SilverLine – End milling cutter

N | λ_s=35° γ_s= 9° | ZEFP | HPC





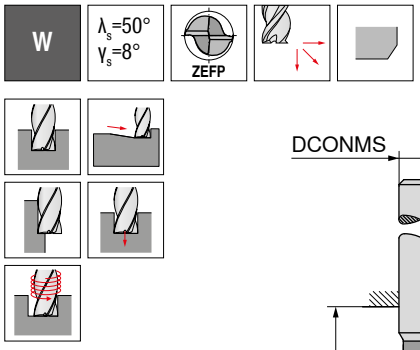
DC f8 mm	APMX mm	LPR mm	OAL mm	DCONMS h6 mm	CHW mm	ZEFP	≈DIN 6527 HB 50 973 ...	≈DIN 6527 HB 50 973 ...
3,0	5	14	50	6	0,1	4	03100	
3,0	8	21	57	6	0,1	4		03200
3,5	8	18	54	6	0,1	4	03600	
3,5	11	21	57	6	0,1	4		03700
4,0	8	18	54	6	0,1	4	04100	
4,0	11	21	57	6	0,1	4		04200
4,5	9	18	54	6	0,1	4	04600	
4,5	13	21	57	6	0,1	4		04700
5,0	9	18	54	6	0,1	4	05100	
5,0	13	21	57	6	0,1	4		05200
5,5	10	18	54	6	0,1	4	05600	
5,5	13	21	57	6	0,1	4		05700
6,0	10	18	54	6	0,1	4	06100	
6,0	13	21	57	6	0,1	4		06200
7,0	12	22	58	8	0,2	4	07100	
7,0	21	27	63	8	0,2	4		07200
8,0	12	22	58	8	0,2	4	08100	
8,0	21	27	63	8	0,2	4		08200
9,0	14	26	66	10	0,2	4	09100	
9,0	22	32	72	10	0,2	4		09200
10,0	14	26	66	10	0,2	4	10100	
10,0	22	32	72	10	0,2	4		10200
11,0	16	28	73	12	0,3	4	11100	
11,0	26	38	83	12	0,3	4		11200
12,0	16	28	73	12	0,3	4	12100	
P							●	●
M							●	●
K							●	●
N							○	○
S							●	●
H								
O								

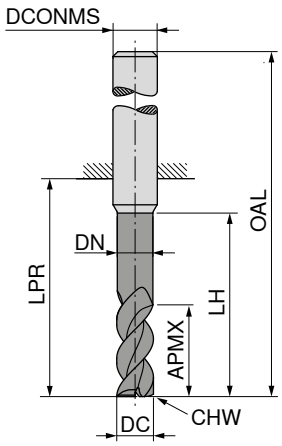
→ v_c/f_z Page 22+23

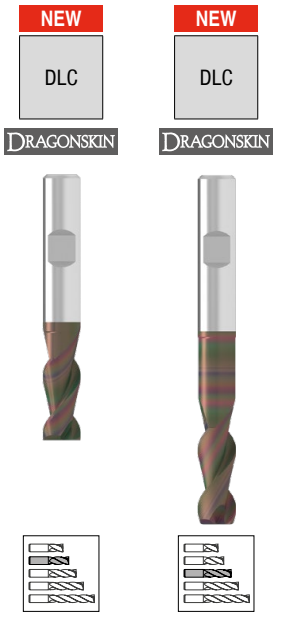
4

AluLine – End milling cutter

▲ With polished chip flutes







Factory standard | Factory standard

HB | HB

DC h6 mm	APMX mm	DN mm	LH mm	LPR mm	OAL mm	DCONMS h6 mm	CHW mm	ZEFP	53 622 ...	53 632 ...
2,0	5,5	1,8	10,0	19	55	6	0,05	2		**02300**
2,5	6,5	2,3	12,5	22	58	6	0,05	2		**02800**
3,0	8,0	2,8	15,0	22	58	6	0,10	2		**03300**
3,5	10,5	3,3	20,0	26	62	6	0,10	2		**03800**
4,0	10,5	3,8	20,0	26	62	6	0,10	2		**04300**
4,5	13,0	4,3	25,0	34	70	6	0,10	2		**04800**
5,0	10,5	4,8	15,0	22	58	6	0,10	2	**05100**	
5,0	13,0	4,8	25,0	34	70	6	0,10	2		**05300**
5,5	13,0	5,3	18,0	22	58	6	0,10	2	**05600**	
5,5	16,0	5,3	30,0	34	70	6	0,10	2		**05800**
6,0	13,0	5,8	18,0	22	58	6	0,10	2	**06100**	
6,0	16,0	5,8	30,0	34	70	6	0,10	2		**06300**
6,5	17,0	6,2	24,0	28	64	8	0,10	2	**06600**	
6,5	21,0	6,2	40,0	44	80	8	0,10	2		**06800**
7,0	17,0	6,7	24,0	28	64	8	0,10	2	**07100**	
7,0	21,0	6,7	40,0	44	80	8	0,10	2		**07300**
7,5	17,0	7,2	24,0	28	64	8	0,10	2	**07600**	
7,5	21,0	7,2	40,0	44	80	8	0,10	2		**07800**
8,0	17,0	7,7	24,0	28	64	8	0,10	2	**08100**	
8,0	21,0	7,7	40,0	44	80	8	0,10	2		**08300**
8,5	21,0	8,2	30,0	34	74	10	0,10	2	**08600**	
8,5	26,0	8,2	50,0	54	94	10	0,10	2		**08800**
9,0	21,0	8,7	30,0	34	74	10	0,10	2	**09100**	
9,0	26,0	8,7	50,0	54	94	10	0,10	2		**09300**
9,5	21,0	9,2	30,0	34	74	10	0,10	2	**09600**	
9,5	26,0	9,2	50,0	54	94	10	0,10	2		**09800**
10,0	21,0	9,7	30,0	34	74	10	0,10	2	**10100**	
10,0	26,0	9,7	50,0	54	94	10	0,10	2		**10300**
10,5	25,0	10,1	36,0	40	85	12	0,10	2	**10600**	
10,5	31,0	10,1	60,0	64	109	12	0,10	2		**10800**
11,0	25,0	10,6	36,0	40	85	12	0,10	2	**11100**	
11,0	31,0	10,6	60,0	64	109	12	0,10	2		**11300**
11,5	25,0	11,1	36,0	40	85	12	0,10	2	**11600**	
11,5	31,0	11,1	60,0	64	109	12	0,10	2		**11800**
12,0	25,0	11,6	36,0	40	85	12	0,10	2	**12100**	
12,0	31,0	11,6	60,0	64	109	12	0,10	2		**12300**

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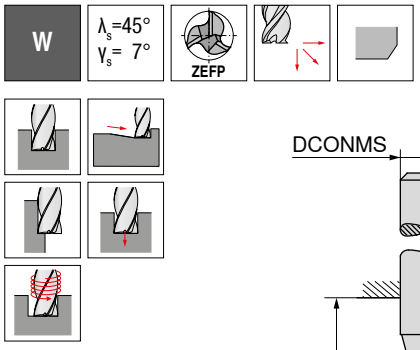
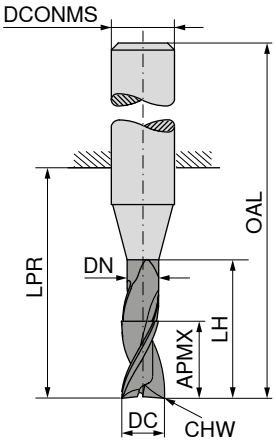
→ v_c/f_z Page 24+25

AluLine – End milling cutter

▲ With polished chip flutes





DC h6 mm	APMX mm	DN mm	LH mm	LPR mm	OAL mm	DCONMS h6 mm	CHW mm	ZEFP	Factory standard HB 53 614 ...	Factory standard HB 53 614 ...
2,0	4,5	1,8	6,0	14	50	6	0,05	3	02100	
2,0	5,5	1,8	10,0	19	55	6	0,05	3		02200
2,5	5,5	2,3	7,5	19	55	6	0,05	3	02600	
2,5	6,5	2,3	12,5	22	58	6	0,05	3		02700
3,0	6,5	2,8	9,0	19	55	6	0,10	3	03100	
3,0	8,0	2,8	15,0	22	58	6	0,10	3		03200
3,5	8,5	3,3	12,0	19	55	6	0,10	3	03600	
3,5	10,5	3,3	20,0	26	62	6	0,10	3		03700
4,0	8,5	3,8	12,0	19	55	6	0,10	3	04100	
4,0	10,5	3,8	20,0	26	62	6	0,10	3		04200
4,5	10,5	4,3	15,0	22	58	6	0,10	3	04600	
4,5	13,0	4,3	25,0	34	70	6	0,10	3		04700
5,0	10,5	4,8	15,0	22	58	6	0,10	3	05100	
5,0	13,0	4,8	25,0	34	70	6	0,10	3		05200
5,5	13,0	5,3	18,0	22	58	6	0,10	3	05600	
5,5	16,0	5,3	30,0	34	70	6	0,10	3		05700
6,0	13,0	5,8	18,0	22	58	6	0,20	3	06100	
6,0	16,0	5,8	30,0	34	70	6	0,20	3		06200
6,5	17,0	6,2	24,0	28	64	8	0,20	3	06600	
6,5	21,0	6,2	40,0	44	80	8	0,20	3		06700
7,0	17,0	6,7	24,0	28	64	8	0,20	3	07100	
7,0	21,0	6,7	40,0	44	80	8	0,20	3		07200
7,5	17,0	7,2	24,0	28	64	8	0,20	3	07600	
7,5	21,0	7,2	40,0	44	80	8	0,20	3		07700
8,0	17,0	7,7	24,0	28	64	8	0,20	3	08100	
8,0	21,0	7,7	40,0	44	80	8	0,20	3		08200
8,5	21,0	8,2	30,0	34	74	10	0,20	3	08600	
8,5	26,0	8,2	50,0	54	94	10	0,20	3		08700
9,0	21,0	8,7	30,0	34	74	10	0,20	3	09100	
9,0	26,0	8,7	50,0	54	94	10	0,20	3		09200
9,5	21,0	9,2	30,0	34	74	10	0,20	3	09600	
9,5	26,0	9,2	50,0	54	94	10	0,20	3		09700
10,0	21,0	9,7	30,0	34	74	10	0,20	3	10100	
10,0	26,0	9,7	50,0	54	94	10	0,20	3		10200
10,5	25,0	10,1	36,0	40	85	12	0,20	3	10600	
10,5	31,0	10,1	60,0	64	109	12	0,20	3		10700

P		
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→ v_c/f_z Page 24+25

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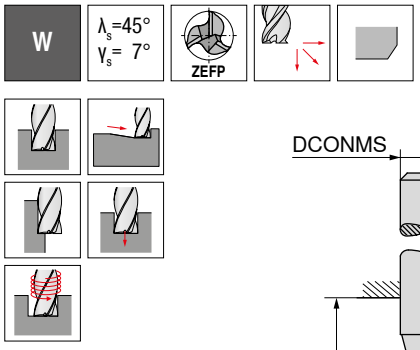
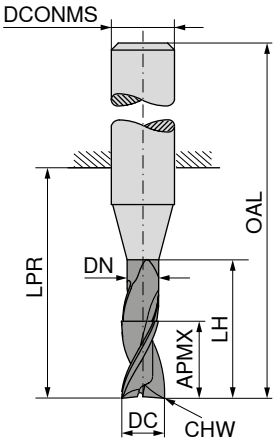
Continued on next page

AluLine – End milling cutter

▲ With polished chip flutes





Factory standard

HB

Factory standard

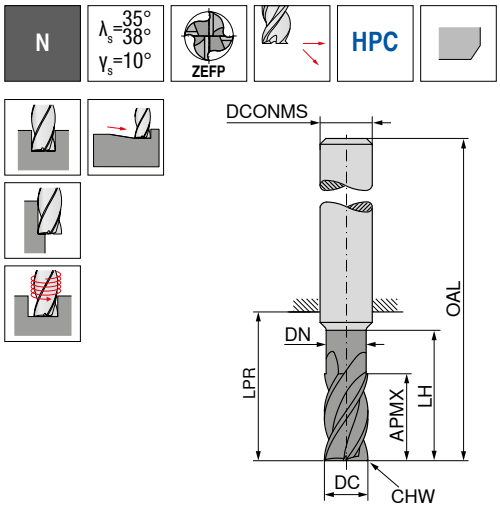
HB

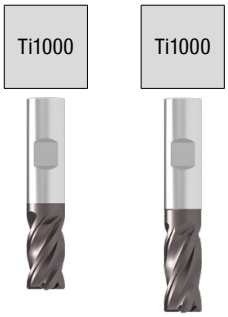
DC h6 mm	APMX mm	DN mm	LH mm	LPR mm	OAL mm	DCONMS h6 mm	CHW mm	ZEFP	53 614 ...	53 614 ...
11,0	25,0	10,6	36,0	40	85	12	0,20	3	**11100**	
11,0	31,0	10,6	60,0	64	109	12	0,20	3		**11200**
11,5	25,0	11,1	36,0	40	85	12	0,20	3	**11600**	
11,5	31,0	11,1	60,0	64	109	12	0,20	3		**11700**
12,0	25,0	11,6	36,0	40	85	12	0,20	3	**12100**	
12,0	31,0	11,6	60,0	64	109	12	0,20	3		**12200**
P										
M										
K										
N									●	●
S										
H										
O										

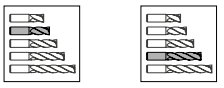
→ v_c/f_z Page 24+25

End milling cutter

- ▲ irregular helix angle
- ▲ special cutting edge preperation for the machining of steel







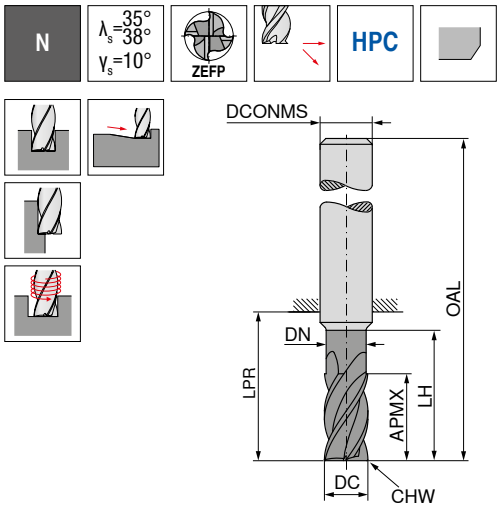
	≈DIN 6527	≈DIN 6527
	HB	HB
	54 001 ...	**54 002 ...**

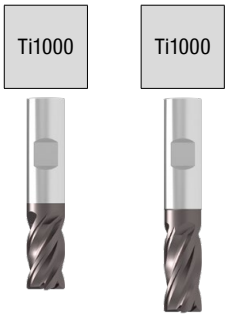
DC mm	APMX mm	DN mm	LH mm	LPR mm	OAL mm	DCONMS h6 mm	CHW mm	ZEFP		
3,0	5			14	50	6	0,15	4	030	
3,0	8	2,8	12,0	21	57	6	0,15	4		030
4,0	8			18	54	6	0,15	4	040	
4,0	11	3,8	15,0	21	57	6	0,15	4		040
5,0	9			18	54	6	0,15	4	050	
5,0	13	4,8	17,0	21	57	6	0,15	4		050
6,0	10			18	54	6	0,15	4	060	
6,0	13	5,8	21,0	21	57	6	0,15	4		060
8,0	12			22	58	8	0,25	4	080	
8,0	19	7,7	27,0	27	63	8	0,25	4		080
10,0	14			26	66	10	0,25	4	100	
10,0	22	9,7	32,0	32	72	10	0,25	4		100
12,0	16			28	73	12	0,35	4	120	
12,0	26	11,6	38,0	38	83	12	0,35	4		120
P									●	●
M										
K									●	●
N										
S										
H										
O										

→ v_c/f_z Page 26+27

End milling cutter

- irregular helix angle
- special cutting edge preperation for the machining of stainless steel





	≈DIN 6527	≈DIN 6527
	HB	HB
	54 005 ...	**54 006 ...**

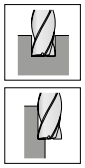
DC mm	APMX mm	DN mm	LH mm	LPR mm	OAL mm	DCONMS $_{h6}$ mm	CHW mm	ZEFP		
3,0	5			14	50	6	0,15	4	**030**	
3,0	8	2,8	12,0	21	57	6	0,15	4		**030**
4,0	8			18	54	6	0,15	4	**040**	
4,0	11	3,8	15,0	21	57	6	0,15	4		**040**
5,0	9			18	54	6	0,15	4	**050**	
5,0	13	4,8	17,0	21	57	6	0,15	4		**050**
6,0	10			18	54	6	0,15	4	**060**	
6,0	13	5,8	21,0	21	57	6	0,15	4		**060**
8,0	12			22	58	8	0,25	4	**080**	
8,0	19	7,7	27,0	27	63	8	0,25	4		**080**
10,0	14			26	66	10	0,25	4	**100**	
10,0	22	9,7	32,0	32	72	10	0,25	4		**100**
12,0	16			28	73	12	0,35	4	**120**	
12,0	26	11,6	38,0	38	83	12	0,35	4		**120**

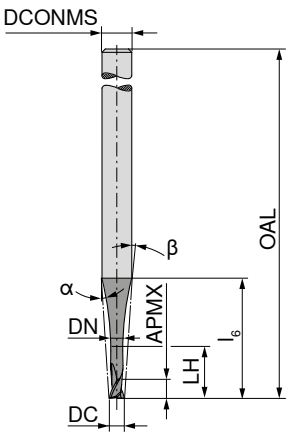
P	●	●
M	●	●
K	○	○
N	○	○
S	●	●
H		
O		

→ v_c/f_z Page 28+29

Micro-end milling cutter

▲ T_x = maximum engagement depth





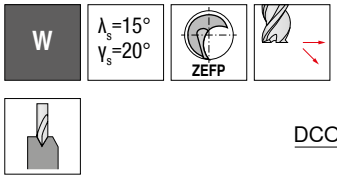
DC mm	APMX mm	DN mm	LH mm	l_6 mm	OAL mm	α°	β°	DCONMS $_{h5}$ mm	T_x	ZEFP	52 802 ...	52 802 ...
0,2	0,12	0,16	0,44	5,7	38	15	14	3	2,2 x DC	2	**021**	
0,2	0,20	0,16	1,00	6,4	38	15	13	3	5 x DC	2	**023**	
0,2	0,20	0,16	2,00	9,2	38	15	9	3	10 x DC	2	**025**	
0,2	0,20	0,16	0,44	5,7	43	15	14	3	2,2 x DC	2		**022**
0,2	0,20	0,16	1,00	6,4	43	15	13	3	5 x DC	2		**024**
0,2	0,20	0,16	2,00	9,2	43	15	9	3	10 x DC	2		**026**
0,5	0,30	0,40	1,10	5,8	38	15	13	3	2,2 x DC	2	**051**	
0,5	0,50	0,40	2,50	7,8	38	15	10	3	5 x DC	2	**053**	
0,5	0,50	0,40	5,00	10,7	38	13	7	3	10 x DC	2	**055**	
0,5	0,50	0,40	1,10	5,8	43	15	13	3	2,2 x DC	2		**052**
0,5	0,50	0,40	2,50	7,8	43	15	10	3	5 x DC	2		**054**
0,5	0,50	0,40	5,00	14,5	43	13	5	3	10 x DC	2		**056**
0,8	0,48	0,64	1,76	5,9	38	15	11	3	2,2 x DC	2	**081**	
0,8	0,80	0,64	4,00	9,0	38	15	7	3	5 x DC	2	**083**	
0,8	0,80	0,64	8,00	13,5	38	12	5	3	10 x DC	2	**085**	
0,8	0,80	0,64	1,76	5,9	43	15	11	3	2,2 x DC	2		**082**
0,8	0,80	0,64	4,00	9,0	43	15	7	3	5 x DC	2		**084**
0,8	0,80	0,64	8,00	15,5	43	9,8	5	3	10 x DC	2		**086**
1,0	0,60	0,80	2,20	5,9	38	15	10	3	2,2 x DC	2	**101**	
1,0	1,00	0,80	2,20	5,9	43	15	10	3	2,2 x DC	2		**102**
1,0	1,00	0,80	5,00	9,7	43	15	6	3	5 x DC	2	**103**	
1,0	1,00	0,80	10,00	15,3	43	11	4	3	10 x DC	2	**105**	
1,0	1,00	0,80	5,00	9,7	50	15	6	3	5 x DC	2		**104**
1,0	1,00	0,80	10,00	20,6	50	8,5	3	3	10 x DC	2		**106**
1,5	0,90	1,20	3,30	6,1	38	15	8	3	2,2 x DC	2	**151**	
1,5	1,50	1,20	3,30	6,1	43	15	8	3	2,2 x DC	2		**152**
1,5	1,50	1,20	7,50	11,8	43	14	4	3	5 x DC	2	**153**	
1,5	1,50	1,20	15,00	18,1	43	14,6	3	3	10 x DC	2	**155**	
1,5	1,50	1,20	7,50	11,8	50	14	4	3	5 x DC	2		**154**
1,5	1,50	1,20	15,00	22,0	50	6,2	2	3	10 x DC	2		**156**
1,8	1,08	1,44	3,96	6,2	38	15	6	3	2,2 x DC	2	**181**	
1,8	1,80	1,44	3,96	6,2	43	15	6	3	2,2 x DC	2		**182**
1,8	1,80	1,44	9,00	12,9	43	12	3	3	5 x DC	2	**183**	
1,8	1,80	1,44	18,00	20,0	43	19,8	2	3	10 x DC	2	**185**	
1,8	1,80	1,44	9,00	12,9	50	12	3	3	5 x DC	2		**184**
1,8	1,80	1,44	18,00	22,0	50	5,3	2	3	10 x DC	2		**186**
2,0	1,20	1,60	4,40	11,9	50	15	10	6	2,2 x DC	2	**201**	
2,0	2,00	1,60	10,00	19,7	50	15	6	6	5 x DC	2	**203**	
2,0	2,00	1,60	20,00	25,0	50	22,1	5	6	10 x DC	2	**205**	
2,0	2,00	1,60	4,40	11,9	57	15	10	6	2,2 x DC	2		**202**
2,0	2,00	1,60	10,00	19,7	57	15	6	6	5 x DC	2		**204**
2,0	2,00	1,60	20,00	29,0	57	7,8	4	6	10 x DC	2		**206**

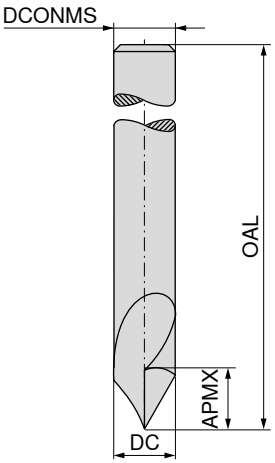
P	●	●
M	●	●
K	●	●
N	●	●
S	●	●
H	○	○
O	○	○

→ v_c/f_z Page 30–37

4

Engraving cutter 60°





Factory standard

HA

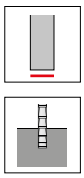
52 195 ...

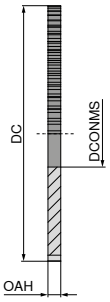
DC h6 mm	APMX mm	OAL mm	DCONMS h6 mm	ZEFP	
3	15	50	3	1	**030**
4	18	50	4	1	**040**
6	20	54	6	1	**060**

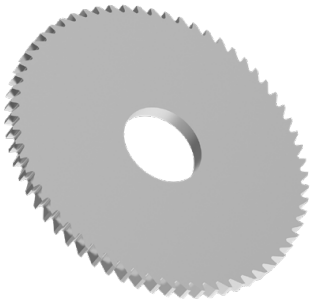
P	○
M	○
K	○
N	●
S	○
H	
O	●

Solid carbide circular saw blades

▲ fine-straight-cut







DIN 1837 A

54 700 ...

DC js15 mm	OAH ±0,01 mm	DCONMS H6 mm	ZEFP	
15	0,20	5	64	102
15	0,25	5	64	103
15	0,30	5	64	104
15	0,35	5	64	105
15	0,40	5	64	106
15	0,50	5	48	107
15	0,60	5	48	108
15	0,70	5	48	109
15	0,80	5	40	110
15	0,90	5	40	111
15	1,00	5	40	112
15	1,10	5	40	113
15	1,20	5	40	114
15	1,30	5	40	115
15	1,40	5	40	116
15	1,50	5	40	117
15	1,60	5	40	118
15	1,70	5	40	119
15	1,80	5	40	120
15	1,90	5	40	121
15	2,00	5	40	122
15	2,50	5	40	123
15	3,00	5	40	124
15	3,50	5	40	125
15	4,00	5	40	126
15	4,50	5	40	127
15	5,00	5	40	128
15	5,50	5	40	129
15	6,00	5	40	130
20	0,20	5	80	152
20	0,25	5	64	153
20	0,30	5	64	154
20	0,35	5	64	155
20	0,40	5	64	156
20	0,50	5	48	157
20	0,60	5	48	158
20	0,70	5	48	159
20	0,80	5	48	160
20	0,90	5	40	161
20	1,00	5	40	162
20	1,10	5	40	163
20	1,20	5	40	164
20	1,30	5	40	165
20	1,40	5	40	166
20	1,50	5	40	167
20	1,60	5	40	168
20	1,70	5	40	169
20	1,80	5	32	170
20	1,90	5	32	171
20	2,00	5	32	172
20	2,50	5	32	173
20	3,00	5	32	174
20	3,50	5	24	175
20	4,00	5	24	176
20	4,50	5	24	177
20	5,00	5	24	178
20	5,50	5	24	179
20	6,00	5	24	180
25	0,20	8	80	202

54 700 ...

DC js15 mm	OAH ±0,01 mm	DCONMS H6 mm	ZEFP	
25	0,25	8	80	203
25	0,30	8	80	204
25	0,35	8	64	205
25	0,40	8	64	206
25	0,50	8	64	207
25	0,60	8	64	208
25	0,70	8	48	209
25	0,80	8	48	210
25	0,90	8	48	211
25	1,00	8	48	212
25	1,10	8	48	213
25	1,20	8	48	214
25	1,30	8	40	215
25	1,40	8	40	216
25	1,50	8	40	217
25	1,60	8	40	218
25	1,70	8	40	219
25	1,80	8	40	220
25	1,90	8	40	221
25	2,00	8	40	222
25	2,50	8	40	223
25	3,00	8	32	224
25	3,50	8	32	225
25	4,00	8	32	226
25	4,50	8	32	227
25	5,00	8	32	228
25	5,50	8	24	229
25	6,00	8	24	230
30	0,20	8	100	252
30	0,25	8	100	253
30	0,30	8	80	254
30	0,35	8	80	255
30	0,40	8	80	256
30	0,50	8	80	257
30	0,60	8	64	258
30	0,70	8	64	259
30	0,80	8	64	260
30	0,90	8	64	261
30	1,00	8	64	262
30	1,10	8	64	263
30	1,20	8	48	264
30	1,30	8	48	265
30	1,40	8	48	266
30	1,50	8	48	267
30	1,60	8	48	268
30	1,70	8	48	269
30	1,80	8	48	270
30	1,90	8	48	271
30	2,00	8	48	272
30	2,50	8	40	273
30	3,00	8	40	274
30	3,50	8	40	275
30	4,00	8	40	276
30	4,50	8	32	277
30	5,00	8	32	278
30	5,50	8	32	279
30	6,00	8	32	280

P	●
M	●
K	●
N	●
S	●
H	
O	●

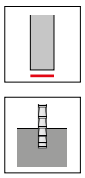
→ v_c/fz Page 38

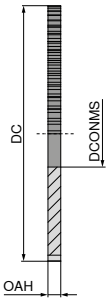
Diameters 80–200 mm, and the coarse toothed variant according to DIN 1838 B can be found in our online shop.

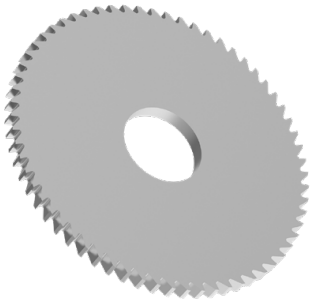
4

Solid carbide circular saw blades

▲ fine-straight-cut







DIN 1837 A

54 700 ...

DC js15 mm	OAH ±0,01 mm	DCONMS H6 mm	ZEFP	
40	0,20	10	128	**302**
40	0,25	10	100	**303**
40	0,30	10	100	**304**
40	0,35	10	100	**305**
40	0,40	10	100	**306**
40	0,50	10	80	**307**
40	0,60	10	80	**308**
40	0,70	10	80	**309**
40	0,80	10	80	**310**
40	0,90	10	64	**311**
40	1,00	10	64	**312**
40	1,10	10	64	**313**
40	1,20	10	64	**314**
40	1,30	10	64	**315**
40	1,40	10	64	**316**
40	1,50	10	64	**317**
40	1,60	10	64	**318**
40	1,70	10	48	**319**
40	1,80	10	48	**320**
40	1,90	10	48	**321**
40	2,00	10	48	**322**
40	2,50	10	48	**323**
40	3,00	10	48	**324**
40	3,50	10	48	**325**
40	4,00	10	40	**326**
40	4,50	10	40	**327**
40	5,00	10	40	**328**
40	5,50	10	40	**329**
40	6,00	10	40	**330**
50	0,20	13	128	**352**
50	0,25	13	128	**353**
50	0,30	13	128	**354**
50	0,35	13	100	**355**
50	0,40	13	100	**356**
50	0,50	13	100	**357**
50	0,60	13	100	**358**
50	0,70	13	80	**359**
50	0,80	13	80	**360**
50	0,90	13	80	**361**
50	1,00	13	80	**362**
50	1,10	13	80	**363**
50	1,20	13	80	**364**
50	1,30	13	64	**365**
50	1,40	13	64	**366**
50	1,50	13	64	**367**
50	1,60	13	64	**368**
50	1,70	13	64	**369**
50	1,80	13	64	**370**
50	1,90	13	64	**371**
50	2,00	13	64	**372**
50	2,50	13	64	**373**
50	3,00	13	48	**374**
50	3,50	13	48	**375**
50	4,00	13	48	**376**
50	4,50	13	48	**377**
50	5,00	13	48	**378**
50	5,50	13	40	**379**
50	6,00	13	40	**380**
63	0,20	16	160	**402**

54 700 ...

DC js15 mm	OAH ±0,01 mm	DCONMS H6 mm	ZEFP	
63	0,25	16	160	**403**
63	0,30	16	128	**404**
63	0,35	16	128	**405**
63	0,40	16	128	**406**
63	0,50	16	128	**407**
63	0,60	16	100	**408**
63	0,70	16	100	**409**
63	0,80	16	100	**410**
63	0,90	16	100	**411**
63	1,00	16	100	**412**
63	1,10	16	80	**413**
63	1,20	16	80	**414**
63	1,30	16	80	**415**
63	1,40	16	80	**416**
63	1,50	16	80	**417**
63	1,60	16	80	**418**
63	1,70	16	80	**419**
63	1,80	16	80	**420**
63	1,90	16	80	**421**
63	2,00	16	80	**422**
63	2,50	16	64	**423**
63	3,00	16	64	**424**
63	3,50	16	64	**425**
63	4,00	16	64	**426**
63	4,50	16	64	**427**
63	5,00	16	48	**428**
63	5,50	16	48	**429**
63	6,00	16	48	**430**

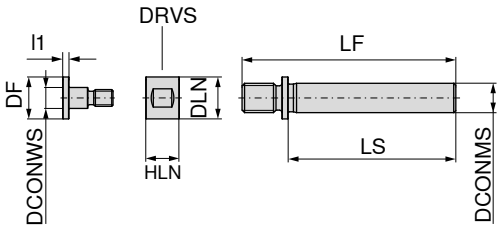
P	●
M	●
K	●
N	●
S	●
H	
O	●

→ v_c/fz Page 38

Diameters 80–200 mm, and the coarse toothed variant according to DIN 1838 B can be found in our online shop.

Cylindrical shank adapter for circular saw blades

▲ DCONWS = circular saw blade bore diameter



DCONWS $_{H7}$ mm	DCONMS $_{h7}$ mm	DLN mm	DF mm	LF mm	LS mm	HLN mm	l_1 mm	DRVS mm	72 900 ...
5	7	10	10	51	40	8	3	9	**005**
5	10	10	10	61	50	8	3	9	**105**
8	7	15	15	51	40	8	3	14	**008**
8	10	15	15	61	50	8	3	14	**108**
10	7	17	17	53	40	10	3	16	**010**
10	10	17	17	63	50	10	3	16	**110**
10	16	17	17	74	55	10	3	16	**210**
13	10	20	20	66	50	10	3	18	**113**
13	16	20	20	77	55	10	3	18	**213**
16	10	24	24	66	50	14	3	22	**116**
16	16	24	24	79	55	14	3	22	**216**

Screw – SR

Lock nut – KM

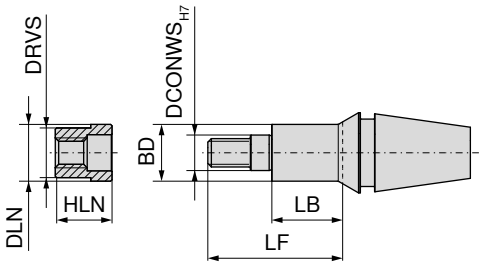
Spare parts for Article no.	72 945 ...	72 945 ...
72 900 005	**000**	**005**
72 900 105	**000**	**005**
72 900 008	**001**	**006**
72 900 108	**001**	**006**
72 900 010	**002**	**007**
72 900 110	**002**	**007**
72 900 210	**010**	**012**
72 900 113	**003**	**008**
72 900 213	**003**	**008**
72 900 116	**004**	**009**
72 900 216	**011**	**013**

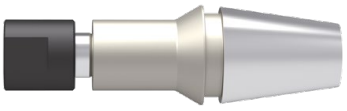
ER mono clamping - Circular saw blades

▲ DCONWS = circular saw blade bore diameter

Scope of supply:

Adapter incl. Lock nut





DCONWS H7 mm	Adapter	DLN mm	LB mm	HLN mm	BD mm	LF mm	DRVS mm	72 930 ...
5	ER 11	8	10	8	8	21	7	**51100**
5	ER 16	10	18	8	10	29	9	**51600**
5	ER 20	10	18	8	10	29	9	**52000**
8	ER 20	15	18	8	15	29	13	**82000**
10	ER 20	16	30	8	15	41	14	**12000**

Lock nut – ER

Spare parts for Article no.	72 946 ...
72 930 51100	**51100**
72 930 51600	**51600**
72 930 52000	**52000**
72 930 82000	**82000**
72 930 12000	**12000**

Material examples for cutting data tables

	Material sub-group	Index	Composition / Structure / Heat treatment		Tensile strength N/mm²* / HB / HRC	Material number	Material designation	Material number	Material designation
P	Unalloyed steel	P.1.1	< 0,15 % C	Annealed	420 N/mm² / 125 HB	1.0401	C15	1.1141	Ck15
		P.1.2	< 0,45 % C	Annealed	640 N/mm² / 190 HB	1.1191	C45E	1.0718	9SMnPb28
		P.1.3		Tempered	840 N/mm² / 250 HB	1.1191	C45E	1.0535	C55
		P.1.4	< 0,75 % C	Annealed	910 N/mm² / 270 HB	1.1223	C60R	1.0535	C55
		P.1.5		Tempered	1010 N/mm² / 300 HB	1.1223	C60R	1.0727	45S20
	Low-alloy steel	P.2.1		Annealed	610 N/mm² / 180 HB	1.7131	16MnCr5	1.6587	17CrNiMo6
		P.2.2		Tempered	930 N/mm² / 275 HB	1.7131	16MnCr5	1.6587	17CrNiMo6
		P.2.3		Tempered	1010 N/mm² / 300 HB	1.7225	42CrMo4	1.3505	100Cr6
		P.2.4		Tempered	1200 N/mm² / 375 HB	1.7225	42CrMo4	1.3505	100Cr6
	High-alloy steel and high-alloy tool steel	P.3.1		Annealed	680 N/mm² / 200 HB	1.4021	X20Cr13	1.4034	X46Cr13
		P.3.2		Hardened and tempered	1100 N/mm² / 300 HB	1.2343	X38CrMoV5-1	1.4034	X46Cr13
		P.3.3		Hardened and tempered	1300 N/mm² / 400 HB	1.2343	X38CrMoV5-1	1.4034	X46Cr13
	Stainless steel	P.4.1	Ferritic / martensitic	Annealed	680 N/mm² / 200 HB	1.4016	X6Cr17	1.2316	X36CrMo16
		P.4.2	Martensitic	Tempered	1010 N/mm² / 300 HB	1.4112	X90CrMoV18	1.2316	X36CrMo16
M	Stainless steel	M.1.1	Austenitic / austenitic-ferritic	Quenched	610 N/mm² / 180 HB	1.4301	X5CrNi18-10	1.4571	X6CrNiMoTi17-12-2
		M.2.1	Austenitic	Tempered	300 HB	1.4841	X15CrNiSi25-21	1.4539	X1NiCrMoCu25-20-5
		M.3.1	Austenitic / ferritic (Duplex)		780 N/mm² / 230 HB	1.4462	X2CrNiMoN22-5-3	1.4501	X2CrNiMoCuWN25-7-4
K	Grey cast iron	K.1.1	Pearlitic / ferritic		350 N/mm² / 180 HB	0.6010	GG-10	0.6025	GG-25
		K.1.2	Pearlitic (martensitic)		500 N/mm² / 260 HB	0.6030	GG-30	0.6045	GG-45
	Spherulitic graphite cast iron	K.2.1	Ferritic		540 N/mm² / 160 HB	0.7040	GGG-40	0.7060	GGG-60
		K.2.2	Pearlitic		845 N/mm² / 250 HB	0.7070	GGG-70	0.7080	GGG-80
	Malleable iron	K.3.1	Ferritic		440 N/mm² / 130 HB	0.8035	GTW-35-04	0.8045	GTW-45
		K.3.2	Pearlitic		780 N/mm² / 230 HB	0.8165	GTS-65-02	0.8170	GTS-70-02
N	Aluminium wrought alloy	N.1.1	Non-hardenable		60 HB	3.0255	Al99,5	3.3315	AlMg1
		N.1.2	Hardenable	Age-hardened	340 N/mm² / 100 HB	3.1355	AlCuMg2	3.2315	AlMgSi1
	Cast aluminium alloy	N.2.1	≤ 12 % Si, non-hardenable		250 N/mm² / 75 HB	3.2581	G-AlSi12	3.2163	G-AlSi9Cu3
		N.2.2	≤ 12 % Si, hardenable	Age-hardened	300 N/mm² / 90 HB	3.2134	G-AlSi5Cu1Mg	3.2373	G-AlSi9Mg
		N.2.3	> 12 % Si, non-hardenable		440 N/mm² / 130 HB		G-AlSi17Cu4Mg		G-AlSi18CuNiMg
	Copper and copper alloys (bronze/brass)	N.3.1	Free-machining alloys, PB > 1 %		375 N/mm² / 110 HB	2.0380	CuZn39Pb2 (Ms58)	2.0410	CuZn44Pb2
		N.3.2	CuZn, CuSnZn		300 N/mm² / 90 HB	2.0331	CuZn15	2.4070	CuZn28Sn1As
		N.3.3	CuSn, lead-free copper and electrolytic copper		340 N/mm² / 100 HB	2.0060	E-Cu57	2.0590	CuZn40Fe
	Magnesium alloys	N.4.1	Magnesium and magnesium alloys		70 HB	3.5612	MgAl6Zn	3.5312	MgAl3Zn
S	Heat-resistant alloys	S.1.1	Fe - basis	Annealed	680 N/mm² / 200 HB	1.4864	X12NiCrSi 36-16	1.4865	G-X40NiCrSi38-18
		S.1.2		Age-hardened	950 N/mm² / 280 HB	1.4980	X6NiCrTiMoVB25-15-2	1.4876	X10NiCrAlTi32-20
		S.2.1	Ni or Co basis	Annealed	840 N/mm² / 250 HB	2.4631	NiCr20TiAl (Nimonic80A)	3.4856	NiCr22Mo9Nb
		S.2.2		Age-hardened	1180 N/mm² / 350 HB	2.4668	NiCr19Nb5Mo3 (Inconel 718)	2.4955	NiFe25Cr20NbTi
		S.2.3		Cast	1080 N/mm² / 320 HB	2.4765	CoCr20W15Ni	1.3401	G-X120Mn12
	Titanium alloys	S.3.1	Pure titanium		400 N/mm²	3.7025	Ti99,8	3.7034	Ti99,7
		S.3.2	Alpha + beta alloys	Age-hardened	1050 N/mm² / 320 HB	3.7165	TiAl6V4	Ti-6246	Ti-6Al-2Sn-4Zr-6Mo
		S.3.3	Beta alloys		1400 N/mm² / 410 HB	Ti555.3	Ti-5Al-5V-5Mo-3Cr	R56410	Ti-10V-2Fe-3Al
H	Hardened steel	H.1.1		Hardened and tempered	46–55 HRC				
		H.1.2		Hardened and tempered	56–60 HRC				
		H.1.3		Hardened and tempered	61–65 HRC				
		H.1.4		Hardened and tempered	66–70 HRC				
	Chilled iron	H.2.1		Cast	400 HB				
	Hardened cast iron	H.3.1		Hardened and tempered	55 HRC				
O	Non-metal materials	O.1.1	Plastics, duroplastic		≤ 150 N/mm²				
		O.1.2	Plastics, thermoplastic		≤ 100 N/mm²				
		O.2.1	Aramid fibre-reinforced		≤ 1000 N/mm²				
		O.2.2	Glass/carbon-fibre reinforced		≤ 1000 N/mm²				
		O.3.1	Graphite						

*** Tensile strength**

4

Cutting data standard values – SilverLine – End mill

							50 966 ...											
	Type short		Type long		Type extra long		Ø DC = 3,0 mm			Ø DC = 3,5–4,0 mm			Ø DC = 4,5–5,0 mm			Ø DC = 5,5–6,0 mm		
							a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,6–1,0 x DC	a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,6–1,0 x DC	a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,6–1,0 x DC	a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,6–1,0 x DC
Index	v_c m/min	$a_{p\,max}$ x DC	v_c m/min	$a_{p\,max}$ x DC	v_c m/min	$a_{p\,max}$ x DC	f_z mm			f_z mm			f_z mm			f_z mm		
P.1.1	252	1,0	210	1,0*	105	0,8	0,028	0,022	0,014	0,038	0,030	0,019	0,049	0,039	0,025	0,060	0,048	0,030
P.1.2	240	1,0	200	1,0*	100	0,8	0,028	0,022	0,014	0,038	0,030	0,019	0,049	0,039	0,025	0,060	0,048	0,030
P.1.3	240	1,0	200	1,0*	100	0,8	0,028	0,022	0,014	0,038	0,030	0,019	0,049	0,039	0,025	0,060	0,048	0,030
P.1.4	228	1,0	190	1,0*	95	0,8	0,028	0,022	0,014	0,038	0,030	0,019	0,049	0,039	0,025	0,060	0,048	0,030
P.1.5	228	1,0	190	1,0*	95	0,8	0,028	0,022	0,014	0,038	0,030	0,019	0,049	0,039	0,025	0,060	0,048	0,030
P.2.1	240	1,0	200	1,0*	100	0,8	0,028	0,022	0,014	0,038	0,030	0,019	0,049	0,039	0,025	0,060	0,048	0,030
P.2.2	228	1,0	190	1,0*	95	0,8	0,028	0,022	0,014	0,038	0,030	0,019	0,049	0,039	0,025	0,060	0,048	0,030
P.2.3	216	1,0	180	1,0*	90	0,8	0,028	0,022	0,014	0,038	0,030	0,019	0,049	0,039	0,025	0,060	0,048	0,030
P.2.4	204	1,0	170	1,0*	85	0,8	0,028	0,022	0,014	0,038	0,030	0,019	0,049	0,039	0,025	0,060	0,048	0,030
P.3.1																		
P.3.2																		
P.3.3																		
P.4.1	120	1,0	100	1,0*	60	0,8	0,017	0,014	0,009	0,024	0,019	0,012	0,031	0,025	0,016	0,038	0,030	0,019
P.4.2	96	1,0	80	1,0*	50	0,8	0,017	0,014	0,009	0,024	0,019	0,012	0,031	0,025	0,016	0,038	0,030	0,019
M.1.1	120	1,0	100	1,0*	60	0,8	0,017	0,014	0,009	0,024	0,019	0,012	0,031	0,025	0,016	0,038	0,030	0,019
M.2.1	120	1,0	100	1,0*	60	0,8	0,017	0,014	0,009	0,024	0,019	0,012	0,031	0,025	0,016	0,038	0,030	0,019
M.3.1	120	1,0	100	1,0*	60	0,8	0,017	0,014	0,009	0,024	0,019	0,012	0,031	0,025	0,016	0,038	0,030	0,019
K.1.1	240	1,0	200	1,0*	100	0,8	0,037	0,030	0,019	0,048	0,038	0,024	0,060	0,048	0,030	0,070	0,056	0,035
K.1.2	216	1,0	180	1,0*	90	0,8	0,037	0,030	0,019	0,048	0,038	0,024	0,060	0,048	0,030	0,070	0,056	0,035
K.2.1	228	1,0	190	1,0*	60	0,8	0,028	0,022	0,014	0,038	0,030	0,019	0,049	0,039	0,025	0,060	0,048	0,030
K.2.2	204	1,0	170	1,0*	85	0,8	0,028	0,022	0,014	0,038	0,030	0,019	0,049	0,039	0,025	0,060	0,048	0,030
K.3.1	216	1,0	180	1,0*	90	0,8	0,028	0,022	0,014	0,038	0,030	0,019	0,049	0,039	0,025	0,060	0,048	0,030
K.3.2	192	1,0	160	1,0*	80	0,8	0,028	0,022	0,014	0,038	0,030	0,019	0,049	0,039	0,025	0,060	0,048	0,030
N.1.1																		
N.1.2																		
N.2.1																		
N.2.2																		
N.2.3																		
N.3.1	420	1,0	350	1,0*	175	0,8	0,037	0,030	0,019	0,048	0,038	0,024	0,060	0,048	0,030	0,070	0,056	0,035
N.3.2	420	1,0	350	1,0*	175	0,8	0,037	0,030	0,019	0,048	0,038	0,024	0,060	0,048	0,030	0,070	0,056	0,035
N.3.3	336	1,0	280	1,0*	140	0,8	0,037	0,030	0,019	0,048	0,038	0,024	0,060	0,048	0,030	0,070	0,056	0,035
N.4.1																		
S.1.1	30	0,5	25	0,5	15	0,4	0,015	0,012	0,008	0,020	0,016	0,010	0,025	0,020	0,013	0,030	0,024	0,015
S.1.2	30	0,5	25	0,5	15	0,4	0,015	0,012	0,008	0,020	0,016	0,010	0,025	0,020	0,013	0,030	0,024	0,015
S.2.1	30	0,5	25	0,5	15	0,4	0,015	0,012	0,008	0,020	0,016	0,010	0,025	0,020	0,013	0,030	0,024	0,015
S.2.2	30	0,5	25	0,5	15	0,4	0,015	0,012	0,008	0,020	0,016	0,010	0,025	0,020	0,013	0,030	0,024	0,015
S.2.3	30	0,5	25	0,5	15	0,4	0,015	0,012	0,008	0,020	0,016	0,010	0,025	0,020	0,013	0,030	0,024	0,015
S.3.1	108	1,0	90	1,0*	45	0,8	0,028	0,022	0,014	0,038	0,030	0,019	0,049	0,039	0,025	0,060	0,048	0,030
S.3.2	60	1,0	50	1,0*	25	0,8	0,017	0,014	0,009	0,024	0,019	0,012	0,031	0,025	0,016	0,038	0,030	0,019
S.3.3																		
H.1.1																		
H.1.2																		
H.1.3																		
H.1.4																		
H.2.1																		
H.3.1																		
O.1.1																		
O.1.2																		
O.2.1																		
O.2.2																		
O.3.1																		

* = long version: $a_{p\,max.}$ = 1.5 x DC at f_z x 0.75

"Extra-long" version: when profiling with an a_e of 0.1–0.4 x DC an a_p of 1.0 x DC should be used.

	50 966 ...											
	Ø DC = 6,5–8,0 mm			Ø DC = 8,5–10,0mm			Ø DC = 12,0 mm			● 1st choice		
										○ suitable		
	a_p 0,1–0,2 x DC	a_p 0,3–0,4 x DC	a_e 0,6–1,0 x DC	a_p 0,1–0,2 x DC	a_p 0,3–0,4 x DC	a_e 0,6–1,0 x DC	a_p 0,1–0,2 x DC	a_p 0,3–0,4 x DC	a_e 0,6–1,0 x DC			
Index	f_z mm			f_z mm			f_z mm			Emulsion	Compressed air	MMS
P.1.1	0,080	0,064	0,040	0,100	0,080	0,050	0,120	0,096	0,060	●	○	○
P.1.2	0,080	0,064	0,040	0,100	0,080	0,050	0,120	0,096	0,060	●	○	○
P.1.3	0,080	0,064	0,040	0,100	0,080	0,050	0,120	0,096	0,060	●	○	○
P.1.4	0,080	0,064	0,040	0,100	0,080	0,050	0,120	0,096	0,060	●	○	○
P.1.5	0,080	0,064	0,040	0,100	0,080	0,050	0,120	0,096	0,060	●	○	○
P.2.1	0,080	0,064	0,040	0,100	0,080	0,050	0,120	0,096	0,060	●	○	○
P.2.2	0,080	0,064	0,040	0,100	0,080	0,050	0,120	0,096	0,060	●	○	○
P.2.3	0,080	0,064	0,040	0,100	0,080	0,050	0,120	0,096	0,060	●	○	○
P.2.4	0,080	0,064	0,040	0,100	0,080	0,050	0,120	0,096	0,060	●	○	○
P.3.1										●	○	○
P.3.2												
P.3.3												
P.4.1	0,052	0,042	0,026	0,066	0,053	0,033	0,080	0,064	0,040	●		
P.4.2	0,052	0,042	0,026	0,066	0,053	0,033	0,080	0,064	0,040	●		
M.1.1	0,052	0,042	0,026	0,066	0,053	0,033	0,080	0,064	0,040	●		
M.2.1	0,052	0,042	0,026	0,066	0,053	0,033	0,080	0,064	0,040	●		
M.3.1	0,052	0,042	0,026	0,066	0,053	0,033	0,080	0,064	0,040	●		
K.1.1	0,094	0,075	0,047	0,116	0,093	0,058	0,140	0,112	0,070	●	●	●
K.1.2	0,094	0,075	0,047	0,116	0,093	0,058	0,140	0,112	0,070	●	●	●
K.2.1	0,080	0,064	0,040	0,100	0,080	0,050	0,120	0,096	0,060	●	●	●
K.2.2	0,080	0,064	0,040	0,100	0,080	0,050	0,120	0,096	0,060	●	●	●
K.3.1	0,080	0,064	0,040	0,100	0,080	0,050	0,120	0,096	0,060	●	●	●
K.3.2	0,080	0,064	0,040	0,100	0,080	0,050	0,120	0,096	0,060	●	●	●
N.1.1												
N.1.2												
N.2.1												
N.2.2												
N.2.3												
N.3.1	0,094	0,075	0,047	0,116	0,093	0,058	0,140	0,112	0,070	●		
N.3.2	0,094	0,075	0,047	0,116	0,093	0,058	0,140	0,112	0,070	●		
N.3.3	0,094	0,075	0,047	0,116	0,093	0,058	0,140	0,112	0,070	●		
N.4.1												
S.1.1	0,040	0,032	0,020	0,050	0,040	0,025	0,060	0,048	0,030	●		
S.1.2	0,040	0,032	0,020	0,050	0,040	0,025	0,060	0,048	0,030	●		
S.2.1	0,040	0,032	0,020	0,050	0,040	0,025	0,060	0,048	0,030	●		
S.2.2	0,040	0,032	0,020	0,050	0,040	0,025	0,060	0,048	0,030	●		
S.2.3	0,040	0,032	0,020	0,050	0,040	0,025	0,060	0,048	0,030	●		
S.3.1	0,080	0,064	0,040	0,100	0,080	0,050	0,120	0,096	0,060	●		
S.3.2	0,052	0,042	0,026	0,066	0,053	0,033	0,080	0,064	0,040	●		
S.3.3												
H.1.1												
H.1.2												
H.1.3												
H.1.4												
H.2.1												
H.3.1												
O.1.1												
O.1.2												
O.2.1												
O.2.2												
O.3.1												

Plunging angle for ramping and helical milling: 3°

4

Cutting data standard values – SilverLine – End mill

				50 973 ...											
				Ø DC = 3,0 mm			Ø DC = 3,5–4,0 mm			Ø DC = 4,5–5,0 mm			Ø DC = 5,5–6,0 mm		
	Type short	Type long		a_o 0,1–0,2 x DC	a_o 0,3–0,4 x DC	a_o 0,6–1,0 x DC	a_o 0,1–0,2 x DC	a_o 0,3–0,4 x DC	a_o 0,6–1,0 x DC	a_o 0,1–0,2 x DC	a_o 0,3–0,4 x DC	a_o 0,6–1,0 x DC	a_o 0,1–0,2 x DC	a_o 0,3–0,4 x DC	a_o 0,6–1,0 x DC
Index	v_c m/min		$a_{p\,max}$ x DC	f_z mm			f_z mm			f_z mm			f_z mm		
P.1.1	253	230	1,0*	0,037	0,030	0,019	0,048	0,038	0,024	0,060	0,048	0,030	0,070	0,056	0,035
P.1.2	242	220	1,0*	0,037	0,030	0,019	0,048	0,038	0,024	0,060	0,048	0,030	0,070	0,056	0,035
P.1.3	242	220	1,0*	0,037	0,030	0,019	0,048	0,038	0,024	0,060	0,048	0,030	0,070	0,056	0,035
P.1.4	230	210	1,0*	0,037	0,030	0,019	0,048	0,038	0,024	0,060	0,048	0,030	0,070	0,056	0,035
P.1.5	230	210	1,0*	0,037	0,030	0,019	0,048	0,038	0,024	0,060	0,048	0,030	0,070	0,056	0,035
P.2.1	242	220	1,0*	0,037	0,030	0,019	0,048	0,038	0,024	0,060	0,048	0,030	0,070	0,056	0,035
P.2.2	230	210	1,0*	0,028	0,022	0,014	0,038	0,030	0,019	0,049	0,039	0,025	0,060	0,048	0,030
P.2.3	220	200	1,0*	0,037	0,030	0,019	0,048	0,038	0,024	0,060	0,048	0,030	0,070	0,056	0,035
P.2.4	210	190	1,0*	0,028	0,022	0,014	0,038	0,030	0,019	0,049	0,039	0,025	0,060	0,048	0,030
P.3.1	220	200	1,0*	0,037	0,030	0,019	0,048	0,038	0,024	0,060	0,048	0,030	0,070	0,056	0,035
P.3.2	210	190	1,0*	0,037	0,030	0,019	0,048	0,038	0,024	0,060	0,048	0,030	0,070	0,056	0,035
P.3.3	176	160	1,0*	0,037	0,030	0,019	0,048	0,038	0,024	0,060	0,048	0,030	0,070	0,056	0,035
P.4.1	120	110	1,0*	0,017	0,014	0,009	0,024	0,019	0,012	0,031	0,025	0,016	0,038	0,030	0,019
P.4.2	100	90	1,0*	0,017	0,014	0,009	0,024	0,019	0,012	0,031	0,025	0,016	0,038	0,030	0,019
M.1.1	120	110	1,0*	0,017	0,014	0,009	0,024	0,019	0,012	0,031	0,025	0,016	0,038	0,030	0,019
M.2.1	120	110	1,0*	0,017	0,014	0,009	0,024	0,019	0,012	0,031	0,025	0,016	0,038	0,030	0,019
M.3.1	120	110	1,0*	0,017	0,014	0,009	0,024	0,019	0,012	0,031	0,025	0,016	0,038	0,030	0,019
K.1.1	242	220	1,0*	0,046	0,037	0,023	0,062	0,050	0,031	0,078	0,062	0,039	0,094	0,075	0,047
K.1.2	220	200	1,0*	0,046	0,037	0,023	0,062	0,050	0,031	0,078	0,062	0,039	0,094	0,075	0,047
K.2.1	230	210	1,0*	0,037	0,030	0,019	0,048	0,038	0,024	0,060	0,048	0,030	0,070	0,056	0,035
K.2.2	210	190	1,0*	0,037	0,030	0,019	0,048	0,038	0,024	0,060	0,048	0,030	0,070	0,056	0,035
K.3.1	220	200	1,0*	0,037	0,030	0,019	0,048	0,038	0,024	0,060	0,048	0,030	0,070	0,056	0,035
K.3.2	200	180	1,0*	0,037	0,030	0,019	0,048	0,038	0,024	0,060	0,048	0,030	0,070	0,056	0,035
N.1.1															
N.1.2															
N.2.1															
N.2.2															
N.2.3															
N.3.1	385	350	1,0*	0,046	0,037	0,023	0,062	0,050	0,031	0,078	0,062	0,039	0,094	0,075	0,047
N.3.2	308	350	1,0*	0,046	0,037	0,023	0,062	0,050	0,031	0,078	0,062	0,039	0,094	0,075	0,047
N.3.3	308	280	1,0*	0,046	0,037	0,023	0,062	0,050	0,031	0,078	0,062	0,039	0,094	0,075	0,047
N.4.1															
S.1.1	35	30	0,5	0,015	0,012	0,008	0,020	0,016	0,010	0,025	0,020	0,013	0,030	0,024	0,015
S.1.2	35	30	0,5	0,015	0,012	0,008	0,020	0,016	0,010	0,025	0,020	0,013	0,030	0,024	0,015
S.2.1	35	30	0,5	0,015	0,012	0,008	0,020	0,016	0,010	0,025	0,020	0,013	0,030	0,024	0,015
S.2.2	35	30	0,5	0,015	0,012	0,008	0,020	0,016	0,010	0,025	0,020	0,013	0,030	0,024	0,015
S.2.3	35	30	0,5	0,015	0,012	0,008	0,020	0,016	0,010	0,025	0,020	0,013	0,030	0,024	0,015
S.3.1	110	90	0,5	0,028	0,022	0,014	0,038	0,030	0,019	0,049	0,039	0,025	0,060	0,048	0,030
S.3.2	70	50	0,5	0,017	0,014	0,009	0,024	0,019	0,012	0,031	0,025	0,016	0,038	0,030	0,019
S.3.3															
H.1.1															
H.1.2															
H.1.3															
H.1.4															
H.2.1															
H.3.1															
O.1.1															
O.1.2															
O.2.1															
O.2.2															
O.3.1															

* = long version: $a_{p\,max.}$ = 1.5 x DC at f_z x 0.75

Plunging angle for ramping and helical milling: 3°

	50 973 ...											
	Ø DC = 7,0–8,0 mm			Ø DC = 9,0–10,0 mm			Ø DC = 11,0–12,0 mm			● 1st choice		
										○ suitable		
	a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,6–1,0 x DC	a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,6–1,0 x DC	a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,6–1,0 x DC			
Index	f_z mm			f_z mm			f_z mm			Emulsion	Compressed air	MMS
P.1.1	0,094	0,075	0,047	0,116	0,093	0,058	0,140	0,112	0,070	●	○	○
P.1.2	0,094	0,075	0,047	0,116	0,093	0,058	0,140	0,112	0,070	●	○	○
P.1.3	0,094	0,075	0,047	0,116	0,093	0,058	0,140	0,112	0,070	●	○	○
P.1.4	0,094	0,075	0,047	0,116	0,093	0,058	0,140	0,112	0,070	●	○	○
P.1.5	0,094	0,075	0,047	0,116	0,093	0,058	0,140	0,112	0,070	●	○	○
P.2.1	0,094	0,075	0,047	0,116	0,093	0,058	0,140	0,112	0,070	●	○	○
P.2.2	0,080	0,064	0,040	0,100	0,080	0,050	0,120	0,096	0,060	●	○	○
P.2.3	0,094	0,075	0,047	0,116	0,093	0,058	0,140	0,112	0,070	●	○	○
P.2.4	0,080	0,064	0,040	0,100	0,080	0,050	0,120	0,096	0,060	●	○	○
P.3.1	0,094	0,075	0,047	0,116	0,093	0,058	0,140	0,112	0,070	●	○	○
P.3.2	0,094	0,075	0,047	0,116	0,093	0,058	0,140	0,112	0,070	●	○	○
P.3.3	0,094	0,075	0,047	0,116	0,093	0,058	0,140	0,112	0,070	●	○	○
P.4.1	0,052	0,042	0,026	0,066	0,053	0,033	0,080	0,064	0,040	●		
P.4.2	0,052	0,042	0,026	0,066	0,053	0,033	0,080	0,064	0,040	●		
M.1.1	0,052	0,042	0,026	0,066	0,053	0,033	0,080	0,064	0,040	●		
M.2.1	0,052	0,042	0,026	0,066	0,053	0,033	0,080	0,064	0,040	●		
M.3.1	0,052	0,042	0,026	0,066	0,053	0,033	0,080	0,064	0,040	●		
K.1.1	0,126	0,101	0,063	0,160	0,128	0,080	0,192	0,154	0,096	●	●	●
K.1.2	0,126	0,101	0,063	0,160	0,128	0,080	0,192	0,154	0,096	●	●	●
K.2.1	0,094	0,075	0,047	0,116	0,093	0,058	0,140	0,112	0,070	●	●	●
K.2.2	0,094	0,075	0,047	0,116	0,093	0,058	0,140	0,112	0,070	●	●	●
K.3.1	0,094	0,075	0,047	0,116	0,093	0,058	0,140	0,112	0,070	●	●	●
K.3.2	0,094	0,075	0,047	0,116	0,093	0,058	0,140	0,112	0,070	●	●	●
N.1.1												
N.1.2												
N.2.1												
N.2.2												
N.2.3												
N.3.1	0,126	0,101	0,063	0,160	0,128	0,080	0,192	0,154	0,096	●		
N.3.2	0,126	0,101	0,063	0,160	0,128	0,080	0,192	0,154	0,096	●		
N.3.3	0,126	0,101	0,063	0,160	0,128	0,080	0,192	0,154	0,096	●		
N.4.1												
S.1.1	0,040	0,032	0,020	0,050	0,040	0,025	0,060	0,048	0,030	●		
S.1.2	0,040	0,032	0,020	0,050	0,040	0,025	0,060	0,048	0,030	●		
S.2.1	0,040	0,032	0,020	0,050	0,040	0,025	0,060	0,048	0,030	●		
S.2.2	0,040	0,032	0,020	0,050	0,040	0,025	0,060	0,048	0,030	●		
S.2.3	0,040	0,032	0,020	0,050	0,040	0,025	0,060	0,048	0,030	●		
S.3.1	0,080	0,064	0,040	0,100	0,080	0,050	0,120	0,096	0,060	●		
S.3.2	0,052	0,042	0,026	0,066	0,053	0,033	0,080	0,064	0,040	●		
S.3.3												
H.1.1												
H.1.2												
H.1.3												
H.1.4												
H.2.1												
H.3.1												
O.1.1												
O.1.2												
O.2.1												
O.2.2												
O.3.1												

4

Cutting data standard values – AluLine – End mills – ZEFP = 2

	53 622 ... / 53 632 ...																
	Type short		Medium-length version		Ø DC = 2 mm			Ø DC = 2,5–3,0 mm			Ø DC = 3,5–4,0 mm			Ø DC = 4,5–5,0 mm		
					a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,6–1,0 x DC	a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,6–1,0 x DC	a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,6–1,0 x DC	a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,6–1,0 x DC
Index	v_c m/min	$a_{p\,max.}$ x DC	v_c m/min	$a_{p\,max.}$ x DC	f_z mm			f_z mm			f_z mm			f_z mm		
N.1.1	600	1,0	360	0,7	0,032	0,027	0,021	0,045	0,039	0,030	0,057	0,049	0,038	0,071	0,061	0,047
N.1.2	600	1,0	360	0,7	0,032	0,027	0,021	0,045	0,039	0,030	0,057	0,049	0,038	0,071	0,061	0,047
N.2.1	360	1,0	215	0,7	0,023	0,020	0,015	0,035	0,030	0,023	0,047	0,040	0,031	0,059	0,051	0,039
N.2.2	360	1,0	215	0,7	0,023	0,020	0,015	0,035	0,030	0,023	0,047	0,040	0,031	0,059	0,051	0,039
N.2.3	240	1,0	145	0,7	0,023	0,020	0,015	0,035	0,030	0,023	0,047	0,040	0,031	0,059	0,051	0,039
N.3.1	240	1,0	145	0,7	0,018	0,016	0,012	0,029	0,025	0,019	0,038	0,033	0,025	0,048	0,042	0,032
N.3.2	240	1,0	145	0,7	0,018	0,016	0,012	0,029	0,025	0,019	0,038	0,033	0,025	0,048	0,042	0,032
N.3.3	170	1,0	100	0,7	0,018	0,016	0,012	0,029	0,025	0,019	0,038	0,033	0,025	0,048	0,042	0,032
N.4.1	220	1,0	130	0,7	0,023	0,020	0,015	0,035	0,030	0,023	0,047	0,040	0,031	0,059	0,051	0,039

Cutting data standard values – AluLine – End mill – ZEFP = 3

	53 614 ...																
	Type short		Type long		Ø DC = 2,0 mm			Ø DC = 2,5–3,0 mm			Ø DC = 3,5–4,0 mm			Ø DC = 4,5–5,0 mm		
					a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,6–1,0 x DC	a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,6–1,0 x DC	a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,6–1,0 x DC	a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,6–1,0 x DC
Index	v_c m/min	$a_{p\,max.}$ x DC	v_c m/min	$a_{p\,max.}$ x DC	f_z mm			f_z mm			f_z mm			f_z mm		
N.1.1	600	1,0	480	0,8	0,023	0,020	0,015	0,035	0,030	0,023	0,047	0,040	0,031	0,059	0,051	0,039
N.1.2	600	1,0	480	0,8	0,023	0,020	0,015	0,035	0,030	0,023	0,047	0,040	0,031	0,059	0,051	0,039
N.2.1	360	1,0	290	0,8	0,023	0,020	0,015	0,033	0,029	0,022	0,044	0,038	0,029	0,054	0,047	0,036
N.2.2	360	1,0	290	0,8	0,023	0,020	0,015	0,033	0,029	0,022	0,044	0,038	0,029	0,054	0,047	0,036
N.2.3	240	1,0	190	0,8	0,023	0,020	0,015	0,033	0,029	0,022	0,044	0,038	0,029	0,054	0,047	0,036
N.3.1	240	1,0	190	0,8	0,015	0,013	0,010	0,024	0,021	0,016	0,032	0,028	0,022	0,041	0,035	0,027
N.3.2	240	1,0	190	0,8	0,015	0,013	0,010	0,024	0,021	0,016	0,032	0,028	0,022	0,041	0,035	0,027
N.3.3	170	1,0	135	0,8	0,015	0,013	0,010	0,024	0,021	0,016	0,032	0,028	0,022	0,041	0,035	0,027
N.4.1	220	1,0	175	0,8	0,023	0,020	0,015	0,033	0,029	0,022	0,044	0,038	0,029	0,054	0,047	0,036

	53 622 ... / 53 632 ...												● 1st choice ○ suitable		
	Ø DC = 5,5–6,0 mm			Ø DC = 6,5–8,0 mm			Ø DC = 8,5-10,0 mm			Ø DC = 10,5–12 mm					
	a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,6–1,0 x DC	a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,6–1,0 x DC	a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,6–1,0 x DC	a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,6–1,0 x DC	Emulsion	Compressed air	MMS
Index	f_z mm			f_z mm			f_z mm			f_z mm					
N.1.1	0,084	0,073	0,056	0,110	0,095	0,073	0,137	0,118	0,091	0,162	0,140	0,108	●	○*	○
N.1.2	0,084	0,073	0,056	0,110	0,095	0,073	0,137	0,118	0,091	0,162	0,140	0,108	●	○*	○
N.2.1	0,071	0,061	0,047	0,095	0,082	0,063	0,120	0,104	0,080	0,144	0,125	0,096	●	○*	○
N.2.2	0,071	0,061	0,047	0,095	0,082	0,063	0,120	0,104	0,080	0,144	0,125	0,096	●	○*	○
N.2.3	0,071	0,061	0,047	0,095	0,082	0,063	0,120	0,104	0,080	0,144	0,125	0,096	●	○*	○
N.3.1	0,058	0,050	0,039	0,078	0,068	0,052	0,098	0,085	0,065	0,119	0,103	0,079	●	○*	○
N.3.2	0,058	0,050	0,039	0,078	0,068	0,052	0,098	0,085	0,065	0,119	0,103	0,079	●	○*	○
N.3.3	0,058	0,050	0,039	0,078	0,068	0,052	0,098	0,085	0,065	0,119	0,103	0,079	●	○*	○
N.4.1	0,071	0,061	0,047	0,095	0,082	0,063	0,120	0,104	0,080	0,144	0,125	0,096	●	○*	○

	53 614 ...												● 1st choice ○ suitable		
	Ø DC =5,5–6,0 mm			Ø DC = 6,5–8,0 mm			Ø DC = 8,5–10,0 mm			Ø DC = 10,5–12,0 mm					
	a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,6–1,0 x DC	a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,6–1,0 x DC	a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,6–1,0 x DC	a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,6–1,0 x DC	Emulsion	Compressed air	MMS
Index	f_z mm			f_z mm			f_z mm			f_z mm					
N.1.1	0,071	0,061	0,047	0,095	0,082	0,063	0,120	0,104	0,080	0,144	0,125	0,096	●	○*	○
N.1.2	0,071	0,061	0,047	0,095	0,082	0,063	0,120	0,104	0,080	0,144	0,125	0,096	●	○*	○
N.2.1	0,066	0,057	0,044	0,087	0,075	0,058	0,110	0,095	0,073	0,132	0,114	0,088	●	○*	○
N.2.2	0,066	0,057	0,044	0,087	0,075	0,058	0,110	0,095	0,073	0,132	0,114	0,088	●	○*	○
N.2.3	0,066	0,057	0,044	0,087	0,075	0,058	0,110	0,095	0,073	0,132	0,114	0,088	●	○*	○
N.3.1	0,050	0,043	0,033	0,066	0,057	0,044	0,083	0,072	0,055	0,099	0,086	0,066	●	○*	○
N.3.2	0,050	0,043	0,033	0,066	0,057	0,044	0,083	0,072	0,055	0,099	0,086	0,066	●	○*	○
N.3.3	0,050	0,043	0,033	0,066	0,057	0,044	0,083	0,072	0,055	0,099	0,086	0,066	●	○*	○
N.4.1	0,066	0,057	0,044	0,087	0,075	0,058	0,110	0,095	0,073	0,132	0,114	0,088	●	○*	○

4

* = only suitable for DLC-coated cutters

Cutting data standard values – End mill

	54 001 ... / 54 002 ...																
	Type short / long	Type extra long	Type short / long	Type extra long	Ø DC = 3 mm			Ø DC = 4 mm			Ø DC = 5 mm			Ø DC = 6 mm			
					a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,6–1,0 x DC	a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,6–1,0 x DC	a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,6–1,0 x DC	a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,6–1,0 x DC	
Index	v_c m/min		$a_{p\,max.}$ x DC	$a_{p\,max.}$ x DC	f_z mm			f_z mm			f_z mm			f_z mm			
P.1.1	190	150	1,0	0,5	0,019	0,015	0,011	0,032	0,025	0,018	0,049	0,036	0,024	0,059	0,044	0,030	
P.1.2	180	145	1,0	0,5	0,019	0,015	0,011	0,032	0,025	0,018	0,049	0,036	0,024	0,059	0,044	0,030	
P.1.3	180	145	1,0	0,5	0,019	0,015	0,011	0,032	0,025	0,018	0,049	0,036	0,024	0,059	0,044	0,030	
P.1.4	170	140	1,0	0,5	0,021	0,016	0,011	0,032	0,025	0,018	0,049	0,036	0,024	0,059	0,044	0,030	
P.1.5	170	140	1,0	0,5	0,021	0,016	0,011	0,032	0,025	0,018	0,049	0,036	0,024	0,059	0,044	0,030	
P.2.1	170	140	1,0	0,5	0,021	0,016	0,011	0,032	0,025	0,018	0,049	0,036	0,024	0,059	0,044	0,030	
P.2.2	170	140	1,0	0,5	0,014	0,011	0,008	0,032	0,025	0,018	0,049	0,036	0,024	0,059	0,044	0,030	
P.2.3	150	125	1,0	0,5	0,014	0,011	0,008	0,032	0,025	0,018	0,049	0,036	0,024	0,059	0,044	0,030	
P.2.4	150	125	1,0	0,5	0,014	0,011	0,008	0,032	0,025	0,018	0,049	0,036	0,024	0,059	0,044	0,030	
P.3.1	170	140	1,0	0,5	0,021	0,016	0,011	0,032	0,025	0,018	0,049	0,036	0,024	0,059	0,044	0,030	
P.3.2	160	130	1,0	0,5	0,019	0,015	0,011	0,032	0,025	0,018	0,049	0,036	0,024	0,059	0,044	0,030	
P.3.3	140	110	1,0	0,5	0,019	0,015	0,011	0,032	0,025	0,018	0,049	0,036	0,024	0,059	0,044	0,030	
P.4.1																	
P.4.2																	
M.1.1																	
M.2.1																	
M.3.1																	
K.1.1	180	145	1,0	0,5	0,027	0,021	0,015	0,040	0,031	0,023	0,058	0,043	0,029	0,068	0,051	0,034	
K.1.2	160	130	1,0	0,5	0,021	0,016	0,011	0,040	0,031	0,023	0,058	0,043	0,029	0,068	0,051	0,034	
K.2.1	170	140	1,0	0,5	0,021	0,016	0,011	0,032	0,025	0,018	0,049	0,036	0,024	0,059	0,044	0,030	
K.2.2	155	125	1,0	0,5	0,021	0,016	0,011	0,032	0,025	0,018	0,049	0,036	0,024	0,059	0,044	0,030	
K.3.1	150	120	1,0	0,5	0,021	0,016	0,011	0,032	0,025	0,018	0,049	0,036	0,024	0,059	0,044	0,030	
K.3.2	145	120	1,0	0,5	0,021	0,016	0,011	0,032	0,025	0,018	0,049	0,036	0,024	0,059	0,044	0,030	
N.1.1																	
N.1.2																	
N.2.1																	
N.2.2																	
N.2.3																	
N.3.1																	
N.3.2																	
N.3.3																	
N.4.1																	
S.1.1																	
S.1.2																	
S.2.1																	
S.2.2																	
S.2.3																	
S.3.1																	
S.3.2																	
S.3.3																	
H.1.1																	
H.1.2																	
H.1.3																	
H.1.4																	
H.2.1																	
H.3.1																	
O.1.1																	
O.1.2																	
O.2.1																	
O.2.2																	
O.3.1																	

"Extra-long" version: when profiling with an a_e of 0.1–0.4 x DC an a_p of 1.0 x DC should be used.

Plunging angle for ramping and helical milling: 3°

	54 001 ... / 54 002 ...											
	Ø DC = 8 mm			Ø DC = 10 mm			Ø DC = 12 mm			● 1st choice		○ suitable
	a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,6–1,0 x DC	a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,6–1,0 x DC	a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,6–1,0 x DC			
Index	f_z mm			f_z mm			f_z mm			Emulsion	Compressed air	MMS
P.1.1	0,070	0,050	0,040	0,090	0,070	0,050	0,110	0,080	0,050	●	○	○
P.1.2	0,070	0,050	0,040	0,090	0,070	0,050	0,110	0,080	0,050	●	○	○
P.1.3	0,070	0,050	0,040	0,090	0,070	0,050	0,110	0,080	0,050	●	○	○
P.1.4	0,070	0,050	0,040	0,090	0,070	0,050	0,110	0,080	0,050	●	○	○
P.1.5	0,070	0,050	0,040	0,090	0,070	0,050	0,110	0,080	0,050	●	○	○
P.2.1	0,070	0,050	0,040	0,090	0,070	0,050	0,110	0,080	0,050	●	○	○
P.2.2	0,070	0,050	0,040	0,090	0,070	0,050	0,110	0,080	0,050	●	○	○
P.2.3	0,070	0,050	0,040	0,090	0,070	0,050	0,110	0,080	0,050	●	○	○
P.2.4	0,070	0,050	0,040	0,090	0,070	0,050	0,110	0,080	0,050	●	○	○
P.3.1	0,070	0,050	0,040	0,090	0,070	0,050	0,110	0,080	0,050	●	○	○
P.3.2	0,070	0,050	0,040	0,090	0,070	0,050	0,110	0,080	0,050	●	●	○
P.3.3	0,070	0,050	0,040	0,090	0,070	0,050	0,110	0,080	0,050	●	●	○
P.4.1												
P.4.2												
M.1.1												
M.2.1												
M.3.1												
K.1.1	0,080	0,060	0,040	0,100	0,080	0,050	0,130	0,090	0,060	●	●	●
K.1.2	0,080	0,060	0,040	0,100	0,080	0,050	0,130	0,090	0,060	●	●	●
K.2.1	0,070	0,050	0,040	0,090	0,070	0,050	0,110	0,080	0,050	●	●	●
K.2.2	0,070	0,050	0,040	0,090	0,070	0,050	0,110	0,080	0,050	●	●	●
K.3.1	0,070	0,050	0,040	0,090	0,070	0,050	0,110	0,080	0,050	●	●	●
K.3.2	0,070	0,050	0,040	0,090	0,070	0,050	0,110	0,080	0,050	●	●	●
N.1.1												
N.1.2												
N.2.1												
N.2.2												
N.2.3												
N.3.1												
N.3.2												
N.3.3												
N.4.1												
S.1.1												
S.1.2												
S.2.1												
S.2.2												
S.2.3												
S.3.1												
S.3.2												
S.3.3												
H.1.1												
H.1.2												
H.1.3												
H.1.4												
H.2.1												
H.3.1												
O.1.1												
O.1.2												
O.2.1												
O.2.2												
O.3.1												

Cutting data standard values – End mill

					54 005 ... / 54 006 ...											
	Type short / long	Type extra long	Type short / long	Type extra long	Ø DC = 3 mm			Ø DC = 4 mm			Ø DC = 5 mm			Ø DC = 6 mm		
					a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,6–1,0 x DC	a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,6–1,0 x DC	a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,6–1,0 x DC	a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,6–1,0 x DC
Index	v_c m/min		$a_{p\,max.}$ x DC	$a_{p\,max.}$ x DC	f_z mm			f_z mm			f_z mm			f_z mm		
P.1.1	**180**	**140**	1,0	0,5	0,017	0,013	0,010	0,029	0,022	0,016	0,043	0,032	0,022	0,053	0,039	0,026
P.1.2	**170**	**135**	1,0	0,5	0,017	0,013	0,010	0,029	0,022	0,016	0,043	0,032	0,022	0,053	0,039	0,026
P.1.3	**170**	**135**	1,0	0,5	0,017	0,013	0,010	0,029	0,022	0,016	0,043	0,032	0,022	0,053	0,039	0,026
P.1.4	**160**	**130**	1,0	0,5	0,018	0,014	0,010	0,029	0,022	0,016	0,043	0,032	0,022	0,053	0,039	0,026
P.1.5	**160**	**130**	1,0	0,5	0,018	0,014	0,010	0,029	0,022	0,016	0,043	0,032	0,022	0,053	0,039	0,026
P.2.1	**160**	**130**	1,0	0,5	0,018	0,014	0,010	0,029	0,022	0,016	0,043	0,032	0,022	0,053	0,039	0,026
P.2.2	**160**	**130**	1,0	0,5	0,012	0,009	0,007	0,029	0,022	0,016	0,043	0,032	0,022	0,053	0,039	0,026
P.2.3	**140**	**115**	1,0	0,5	0,012	0,009	0,007	0,029	0,022	0,016	0,043	0,032	0,022	0,053	0,039	0,026
P.2.4	**140**	**115**	1,0	0,5	0,012	0,009	0,007	0,029	0,022	0,016	0,043	0,032	0,022	0,053	0,039	0,026
P.3.1	**160**	**130**	1,0	0,5	0,018	0,014	0,010	0,029	0,022	0,016	0,043	0,032	0,022	0,053	0,039	0,026
P.3.2	**150**	**120**	1,0	0,5	0,017	0,013	0,010	0,029	0,022	0,016	0,043	0,032	0,022	0,053	0,039	0,026
P.3.3	**130**	**100**	1,0	0,5	0,017	0,013	0,010	0,029	0,022	0,016	0,043	0,032	0,022	0,053	0,039	0,026
P.4.1	**100**	**80**	1,0	0,5	0,012	0,009	0,007	0,018	0,014	0,010	0,027	0,020	0,014	0,036	0,027	0,018
P.4.2	**100**	**80**	1,0	0,5	0,012	0,009	0,007	0,018	0,014	0,010	0,027	0,020	0,014	0,036	0,027	0,018
M.1.1	**100**	**80**	1,0	0,5	0,012	0,009	0,007	0,018	0,014	0,010	0,027	0,020	0,014	0,036	0,027	0,018
M.2.1	**85**	**70**	1,0	0,5	0,012	0,009	0,007	0,018	0,014	0,010	0,027	0,020	0,014	0,036	0,027	0,018
M.3.1	**100**	**80**	1,0	0,5	0,012	0,009	0,007	0,018	0,014	0,010	0,027	0,020	0,014	0,036	0,027	0,018
K.1.1	170	135	1,0	0,5	0,024	0,019	0,014	0,036	0,028	0,020	0,051	0,038	0,026	0,061	0,045	0,030
K.1.2	140	110	1,0	0,5	0,018	0,014	0,010	0,036	0,028	0,020	0,051	0,038	0,026	0,061	0,045	0,030
K.2.1	160	130	1,0	0,5	0,018	0,014	0,010	0,029	0,022	0,016	0,043	0,032	0,022	0,053	0,039	0,026
K.2.2	130	100	1,0	0,5	0,018	0,014	0,010	0,029	0,022	0,016	0,043	0,032	0,022	0,053	0,039	0,026
K.3.1	140	110	1,0	0,5	0,018	0,014	0,010	0,029	0,022	0,016	0,043	0,032	0,022	0,053	0,039	0,026
K.3.2	135	110	1,0	0,5	0,018	0,014	0,010	0,029	0,022	0,016	0,043	0,032	0,022	0,053	0,039	0,026
N.1.1																
N.1.2																
N.2.1																
N.2.2																
N.2.3																
N.3.1	300	240	1,0	0,5	0,029	0,022	0,016	0,038	0,029	0,021	0,054	0,041	0,027	0,065	0,048	0,032
N.3.2	240	190	1,0	0,5	0,029	0,022	0,016	0,038	0,029	0,021	0,054	0,041	0,027	0,065	0,048	0,032
N.3.3	240	190	1,0	0,5	0,029	0,022	0,016	0,038	0,029	0,021	0,054	0,041	0,027	0,065	0,048	0,032
N.4.1																
S.1.1	**25**	**20**	0,5	0,3	0,011	0,008	0,006	0,015	0,012	0,009	0,022	0,016	0,011	0,029	0,022	0,014
S.1.2	**25**	**20**	0,5	0,3	0,011	0,008	0,006	0,015	0,012	0,009	0,022	0,016	0,011	0,029	0,022	0,014
S.2.1	**25**	**20**	0,5	0,3	0,011	0,008	0,006	0,015	0,012	0,009	0,022	0,016	0,011	0,029	0,022	0,014
S.2.2	**25**	**20**	0,5	0,3	0,011	0,008	0,006	0,015	0,012	0,009	0,022	0,016	0,011	0,029	0,022	0,014
S.2.3	**25**	**20**	0,5	0,3	0,011	0,008	0,006	0,015	0,012	0,009	0,022	0,016	0,011	0,029	0,022	0,014
S.3.1	**100**	**70**	0,5	0,3	0,021	0,017	0,012	0,031	0,024	0,017	0,046	0,034	0,023	0,056	0,042	0,028
S.3.2	**80**	**60**	0,5	0,3	0,015	0,012	0,009	0,023	0,018	0,013	0,034	0,025	0,017	0,043	0,032	0,021
S.3.3																
H.1.1																
H.1.2																
H.1.3																
H.1.4																
H.2.1																
H.3.1																
O.1.1																
O.1.2																
O.2.1																
O.2.2																
O.3.1																

"Extra-long" version: when profiling with an a_e of 0.1–0.4 x DC an a_p of 1.0 x DC should be used.

Plunging angle for ramping and helical milling: 3°

	54 005 ... / 54 006 ...											
	Ø DC = 8 mm			Ø DC = 10 mm			Ø DC = 12 mm			● 1st choice		○ suitable
	a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,6–1,0 x DC	a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,6–1,0 x DC	a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,6–1,0 x DC			
Index	f_z mm			f_z mm			f_z mm			Emulsion	Compressed air	MMS
P.1.1	0,060	0,050	0,030	0,080	0,060	0,040	0,100	0,070	0,050	●	○	○
P.1.2	0,060	0,050	0,030	0,080	0,060	0,040	0,100	0,070	0,050	●	○	○
P.1.3	0,060	0,050	0,030	0,080	0,060	0,040	0,100	0,070	0,050	●	○	○
P.1.4	0,060	0,050	0,030	0,080	0,060	0,040	0,100	0,070	0,050	●	○	○
P.1.5	0,060	0,050	0,030	0,080	0,060	0,040	0,100	0,070	0,050	●	○	○
P.2.1	0,060	0,050	0,030	0,080	0,060	0,040	0,100	0,070	0,050	●	○	○
P.2.2	0,060	0,050	0,030	0,080	0,060	0,040	0,100	0,070	0,050	●	○	○
P.2.3	0,060	0,050	0,030	0,080	0,060	0,040	0,100	0,070	0,050	●	○	○
P.2.4	0,060	0,050	0,030	0,080	0,060	0,040	0,100	0,070	0,050	●	○	○
P.3.1	0,060	0,050	0,030	0,080	0,060	0,040	0,100	0,070	0,050	●	○	○
P.3.2	0,060	0,050	0,030	0,080	0,060	0,040	0,100	0,070	0,050	●	○	○
P.3.3	0,060	0,050	0,030	0,080	0,060	0,040	0,100	0,070	0,050	●	○	○
P.4.1	0,040	0,030	0,020	0,050	0,040	0,030	0,070	0,050	0,030	●		
P.4.2	0,040	0,030	0,020	0,050	0,040	0,030	0,070	0,050	0,030	●		
M.1.1	0,040	0,030	0,020	0,050	0,040	0,030	0,070	0,050	0,030	●		
M.2.1	0,040	0,030	0,020	0,050	0,040	0,030	0,070	0,050	0,030	●		
M.3.1	0,040	0,030	0,020	0,050	0,040	0,030	0,070	0,050	0,030	●		
K.1.1	0,070	0,050	0,040	0,090	0,070	0,050	0,110	0,080	0,060	●	●	●
K.1.2	0,070	0,050	0,040	0,090	0,070	0,050	0,110	0,080	0,060	●	●	●
K.2.1	0,060	0,050	0,030	0,080	0,060	0,040	0,100	0,070	0,050	●	●	●
K.2.2	0,060	0,050	0,030	0,080	0,060	0,040	0,100	0,070	0,050	●	●	●
K.3.1	0,060	0,050	0,030	0,080	0,060	0,040	0,100	0,070	0,050	●	●	●
K.3.2	0,060	0,050	0,030	0,080	0,060	0,040	0,100	0,070	0,050	●	●	●
N.1.1												
N.1.2												
N.2.1												
N.2.2												
N.2.3												
N.3.1	0,080	0,060	0,040	0,100	0,070	0,050	0,140	0,110	0,070	●		
N.3.2	0,080	0,060	0,040	0,100	0,070	0,050	0,140	0,110	0,070	●		
N.3.3	0,080	0,060	0,040	0,100	0,070	0,050	0,140	0,110	0,070	●		
N.4.1												
S.1.1	0,030	0,030	0,020	0,040	0,030	0,020	0,060	0,040	0,030	●		
S.1.2	0,030	0,030	0,020	0,040	0,030	0,020	0,060	0,040	0,030	●		
S.2.1	0,030	0,030	0,020	0,040	0,030	0,020	0,060	0,040	0,030	●		
S.2.2	0,030	0,030	0,020	0,040	0,030	0,020	0,060	0,040	0,030	●		
S.2.3	0,030	0,030	0,020	0,040	0,030	0,020	0,060	0,020	0,030	●		
S.3.1	0,070	0,050	0,030	0,090	0,060	0,040	0,120	0,090	0,060	●		
S.3.2	0,050	0,040	0,030	0,070	0,050	0,030	0,090	0,070	0,050	●		
S.3.3												
H.1.1												
H.1.2												
H.1.3												
H.1.4												
H.2.1												
H.3.1												
O.1.1												
O.1.2												
O.2.1												
O.2.2												
O.3.1												

4

Cutting data standard values – Micro cutter – 2.2xDC

		52 802 ...															
		Ø DC = 0,2–0,4 mm					Ø DC = 0,5–0,7 mm						Ø DC = 0,8–0,9 mm				
	a_e	0,1 x DC	0,2 x DC	0,3 x DC	0,4 x DC	0,6–1,0 x DC	a_e	0,1 x DC	0,2 x DC	0,3 x DC	0,4 x DC	0,6–1,0 x DC	a_e	0,1 x DC	0,2 x DC	0,3 x DC	0,4 x DC	0,6–1,0 x DC
	$a_{p\,max.}$	0,02	0,02	0,02	0,01	0,01	$a_{p\,max.}$	0,1	0,1	0,1	0,1	0,05	$a_{p\,max.}$	0,2	0,2	0,2	0,2	0,12
	$n_{min.}$	30.000					$n_{min.}$	12.000					$n_{min.}$	8.000				
Index	n	v_f mm/min.					n	v_f mm/min.					n	v_f mm/min.				
P.1.1	50.000	232	202	174	144	116	50.000	274	238	205	170	137	50.000	485	422	364	301	242
P.1.2	50.000	232	202	174	144	116	50.000	274	238	205	170	137	50.000	485	422	364	301	242
P.1.3	50.000	232	202	174	144	116	50.000	274	238	205	170	137	50.000	485	422	364	301	242
P.1.4	50.000	201	175	151	125	101	50.000	237	206	178	147	119	50.000	420	365	315	260	210
P.1.5	50.000	201	175	151	125	101	50.000	237	206	178	147	119	50.000	420	365	315	260	210
P.2.1	50.000	232	202	174	144	116	50.000	274	238	205	170	137	50.000	485	422	364	301	242
P.2.2	50.000	232	202	174	144	116	50.000	274	238	205	170	137	50.000	485	422	364	301	242
P.2.3	50.000	201	175	151	125	101	50.000	237	206	178	147	119	50.000	420	365	315	260	210
P.2.4	50.000	201	175	151	125	101	50.000	237	206	178	147	119	50.000	420	365	315	260	210
P.3.1	50.000	201	175	151	125	101	50.000	237	206	178	147	119	50.000	420	365	315	260	210
P.3.2	50.000	232	202	174	144	116	50.000	274	238	205	170	137	50.000	485	422	364	301	242
P.3.3	50.000	201	175	151	125	101	50.000	237	206	178	147	119	50.000	420	365	315	260	210
P.4.1	50.000	232	202	174	144	116	50.000	274	238	205	170	137	50.000	485	422	364	301	242
P.4.2	50.000	232	202	174	144	116	50.000	274	238	205	170	137	50.000	485	422	364	301	242
M.1.1	50.000	232	202	174	144	116	50.000	274	238	205	170	137	50.000	485	422	364	301	242
M.2.1	50.000	232	202	174	144	116	50.000	274	238	205	170	137	50.000	485	422	364	301	242
M.3.1	50.000	232	202	174	144	116	50.000	274	238	205	170	137	50.000	485	422	364	301	242
K.1.1	50.000	232	202	174	144	116	50.000	274	238	205	170	137	50.000	485	422	364	301	242
K.1.2	50.000	232	202	174	144	116	50.000	274	238	205	170	137	50.000	485	422	364	301	242
K.2.1	50.000	232	202	174	144	116	50.000	274	238	205	170	137	50.000	485	422	364	301	242
K.2.2	50.000	232	202	174	144	116	50.000	274	238	205	170	137	50.000	485	422	364	301	242
K.3.1	50.000	141	123	106	88	71	50.000	175	152	131	109	88	32.000	285	248	213	176	142
K.3.2	50.000	141	123	106	88	71	50.000	175	152	131	109	88	32.000	285	248	213	176	142
N.1.1	50.000	232	202	174	144	116	50.000	274	238	205	170	137	50.000	582	506	436	361	291
N.1.2	50.000	232	202	174	144	116	50.000	274	238	205	170	137	50.000	582	506	436	361	291
N.2.1																		
N.2.2																		
N.2.3																		
N.3.1	50.000	232	202	174	144	116	50.000	274	238	205	170	137	44.000	485	422	364	301	242
N.3.2	50.000	232	202	174	144	116	50.000	274	238	205	170	137	50.000	582	506	436	361	291
N.3.3	50.000	232	202	174	144	116	50.000	274	238	205	170	137	50.000	582	506	436	361	291
N.4.1	50.000	212	185	159	132	106	50.000	250	218	188	155	125	50.000	531	462	398	329	266
S.1.1	50.000	46	40	35	29	23	30.000	55	48	41	34	27	19.000	69	60	51	43	34
S.1.2	50.000	46	40	35	29	23	30.000	55	48	41	34	27	19.000	69	60	51	43	34
S.2.1	50.000	72	62	54	44	36	50.000	89	77	66	55	44	25.000	91	79	68	56	45
S.2.2	50.000	46	40	35	29	23	30.000	55	48	41	34	27	19.000	69	60	51	43	34
S.2.3	50.000	54	47	41	34	27	30000	66	57	49	41	33	12.000	78	68	59	49	39
S.3.1	50.000	114	99	85	71	57	50.000	164	143	123	102	82	44.000	114	99	85	71	57
S.3.2	50.000	114	99	85	71	57	50.000	164	143	123	102	82	44.000	164	143	123	102	82
S.3.3	50.000	70	61	53	43	35	50.000	85	74	64	53	42	38.000	101	88	76	63	51
H.1.1	50.000	219	191	164	136	110	50.000	232	202	174	144	116	50.000	388	338	291	241	194
H.1.2	50.000	201	175	151	125	101	50.000	285	248	213	176	142	38.000	336	292	252	208	168
H.1.3	50.000	114	99	85	71	57	50.000	134	117	101	83	67	25.000	156	136	117	97	78
H.1.4	50.000	107	93	80	67	54	50.000	126	110	95	78	63	25.000	141	123	106	88	71
H.2.1	50.000	219	191	164	136	110	50.000	232	202	174	144	116	50.000	388	338	291	241	194
H.3.1	50.000	201	175	151	125	101	50.000	285	248	213	176	142	38.000	336	292	252	208	168
O.1.1	50.000	232	202	174	144	116	50.000	274	238	205	170	137	50.000	582	506	436	361	291
O.1.2	50.000	232	202	174	144	116	50.000	274	238	205	170	137	50.000	582	506	436	361	291
O.2.1	50.000	212	185	159	132	106	50.000	200	174	150	124	100	38.000	316	275	237	196	158
O.2.2	50.000	212	185	159	132	106	50.000	200	174	150	124	100	38.000	316	275	237	196	158
O.3.1																		

		52 802 ...														
		Ø DC = 1,0–1,4 mm						Ø DC = 1,5–1,7 mm						● 1st choice		
														○ suitable		
	a_e	0,1 x DC	0,2 x DC	0,3 x DC	0,4 x DC	0,6 –1,0 x DC		a_e	0,1 x DC	0,2 x DC	0,3 x DC	0,4 x DC	0,6–1,0 x DC			
	$a_{p\,max.}$	0,3	0,3	0,3	0,3	0,2		$a_{p\,max.}$	0,45	0,45	0,45	0,45	0,3			
	$n_{min.}$	6.500						$n_{min.}$	6.500							
Index	n	v_f mm/min.						n	v_f mm/min.					Emulsion	Compressed air	MMS
P.1.1	50.000	775	674	581	480	387		33.000	1200	1044	900	744	600	●	○	○
P.1.2	50.000	775	674	581	480	387		33.000	1200	1044	900	744	600	●	○	○
P.1.3	50.000	775	674	581	480	387		33.000	1200	1044	900	744	600	●	○	○
P.1.4	50.000	671	584	503	416	335		33.000	1039	904	779	644	520	●	○	○
P.1.5	50.000	671	584	503	416	335		33.000	1039	904	779	644	520	●	○	○
P.2.1	50.000	775	674	581	480	387		33.000	1200	1044	900	744	600		●	○
P.2.2	50.000	775	674	581	480	387		33.000	1200	1044	900	744	600		●	○
P.2.3	50.000	671	584	503	416	335		33.000	1039	904	779	644	520		●	○
P.2.4	50.000	671	584	503	416	335		33.000	1039	904	779	644	520		●	○
P.3.1	50.000	671	584	503	416	335		33.000	1039	904	779	644	520		●	○
P.3.2	50.000	775	674	581	480	387		33.000	1200	1044	900	744	600		●	○
P.3.3	50.000	671	584	503	416	335		33.000	1039	904	779	644	520		●	○
P.4.1	50.000	775	674	581	480	387		33.000	1200	1044	900	744	600		●	○
P.4.2	50.000	775	674	581	480	387		33.000	1200	1044	900	744	600		●	○
M.1.1	50.000	775	674	581	480	387		33.000	1200	1044	900	744	600	●		○
M.2.1	50.000	775	674	581	480	387		33.000	1200	1044	900	744	600	●		○
M.3.1	50.000	775	674	581	480	387		33.000	1200	1044	900	744	600	●		○
K.1.1	50.000	775	674	581	480	387		33.000	1200	1044	900	744	600	○	●	
K.1.2	50.000	775	674	581	480	387		33.000	1200	1044	900	744	600	○	●	
K.2.1	50.000	775	674	581	480	387		33.000	1200	1044	900	744	600	○	●	
K.2.2	50.000	775	674	581	480	387		33.000	1200	1044	900	744	600	○	●	
K.3.1	50.000	389	338	292	241	194		21.000	548	477	411	340	274		●	
K.3.2	25000	389	338	292	241	194		21.000	548	477	411	340	274		●	
N.1.1	50.000	930	809	697	576	465		50.000	1500	1305	1125	930	750	●		○
N.1.2	50.000	930	809	697	576	465		50.000	1500	1305	1125	930	750	●		○
N.2.1																
N.2.2																
N.2.3																
N.3.1	44.000	775	674	581	480	387		29.000	1160	1009	870	719	580	●		○
N.3.2	50.000	930	809	697	576	465		38.000	1400	1218	1050	868	700	●		○
N.3.3	50.000	930	809	697	576	465		38.000	1400	1218	1050	868	700	●		○
N.4.1	50.000	849	738	636	526	424		38.000	1388	1207	1041	860	694	●		○
S.1.1	15.000	99	86	74	61	49		12.000	170	148	127	105	85	●		○
S.1.2	15.000	99	86	74	61	49		12.000	170	148	127	105	85	●		○
S.2.1	25.000	152	132	114	94	76		16.000	294	256	220	182	147	●		○
S.2.2	15.000	99	86	74	61	49		12.000	170	148	127	105	85	●		○
S.2.3	12.000	131	114	99	82	66		8.000	255	221	191	158	127	●		○
S.3.1	44.000	170	148	127	105	85		29.000	329	286	246	204	164	●		○
S.3.2	44.000	247	215	186	153	124		29.000	365	318	274	226	183	●		○
S.3.3	38.000	170	148	127	105	85		25.000	329	286	246	204	164	●		○
H.1.1	50.000	620	539	465	384	310		33.000	850	740	638	527	425		●	
H.1.2	38.000	537	467	402	333	268		25.000	779	678	585	483	390		●	
H.1.3	25.000	235	204	176	146	117		16.000	346	301	260	215	173		●	
H.1.4	25.000	221	193	166	137	111		16.000	327	284	245	202	163		●	
H.2.1	50.000	620	539	465	384	310		33.000	850	740	638	527	425		●	
H.3.1	38.000	537	467	402	333	268		25.000	779	678	585	483	390		●	
O.1.1	50.000	930	809	697	576	465		38.000	1520	1322	1140	942	760	●	○	○
O.1.2	50.000	930	809	697	576	465		33.000	1320	1148	990	818	660	●	○	○
O.2.1	38.000	495	431	371	307	247		25.000	685	596	513	424	342	●	○	○
O.2.2	38.000	495	431	371	307	247		25.000	685	596	513	424	342	●	○	○
O.3.1																

Cutting data standard values – Micro cutter – 2.2xDC

		52 802 ...														
		Ø DC = 1,8–1,9 mm						Ø DC = 2,0 mm						● 1st choice		
														○ suitable		
	a_e	0,1 x DC	0,2 x DC	0,3 x DC	0,4 x DC	0,6–1,0 x DC	a_e	0,1 x DC	0,2 x DC	0,3 x DC	0,4 x DC	0,6–1,0 x DC				
	$a_{p\,max.}$	0,54	0,54	0,54	0,54	0,36	$a_{p\,max.}$	0,6	0,6	0,6	0,6	0,4				
	$n_{min.}$	5.500					$n_{min.}$	5.000								
Index	n	v_f mm/min.					n	v_f mm/min.						Emulsion	Compressed air	MMS
P.1.1	29.000	1300	1131	975	806	650	25.000	1500	1300	1125	930	750		●	○	○
P.1.2	29.000	1300	1131	975	806	650	25.000	1500	1300	1125	930	750		●	○	○
P.1.3	29.000	1300	1131	975	806	650	25.000	1500	1300	1125	930	750		●	○	○
P.1.4	29.000	1300	1131	975	806	650	25.000	1500	1300	1125	930	750		●	○	○
P.1.5	29.000	1300	1131	975	806	650	25.000	1500	1300	1125	930	750		●	○	○
P.2.1	29.000	1300	1131	975	806	650	25.000	1500	1300	1125	930	750			●	○
P.2.2	29.000	1300	1131	975	806	650	25.000	1500	1300	1125	930	750			●	○
P.2.3	29.000	1300	1131	975	806	650	25.000	1500	1300	1125	930	750			●	○
P.2.4	29.000	1300	1131	975	806	650	25.000	1500	1300	1125	930	750			●	○
P.3.1	29.000	1300	1131	975	806	650	25.000	1500	1300	1125	930	750			●	○
P.3.2	29.000	1300	1131	975	806	650	25.000	1500	1300	1125	930	750			●	○
P.3.3	29.000	1300	1131	975	806	650	25.000	1500	1300	1125	930	750			●	○
P.4.1	29.000	1300	1131	975	806	650	25.000	1500	1300	1125	930	750			●	○
P.4.2	29.000	1300	1131	975	806	650	25.000	1500	1300	1125	930	750			●	○
M.1.1	29.000	1300	1131	975	806	650	25.000	1500	1300	1125	930	750		●		○
M.2.1	29.000	1300	1131	975	806	650	25.000	1500	1300	1125	930	750		●		○
M.3.1	29.000	1300	1131	975	806	650	25.000	1500	1300	1125	930	750		●		○
K.1.1	29.000	1300	1131	975	806	650	25.000	1500	1300	1125	930	750		○	●	
K.1.2	29.000	1300	1131	975	806	650	25.000	1500	1300	1125	930	750		○	●	
K.2.1	29.000	1300	1131	975	806	650	25.000	1500	1300	1125	930	750		○	●	
K.2.2	29.000	1300	1131	975	806	650	25.000	1500	1300	1125	930	750		○	●	
K.3.1	18.000	630	548	473	391	315	12.000	750	650	550	450	350			●	
K.3.2	18.000	630	548	473	391	315	12.000	750	650	550	450	350			●	
N.1.1	44.000	1800	1566	1350	1116	900	25.000	1500	1300	1125	930	750		●		○
N.1.2	44.000	1800	1566	1350	1116	900	25.000	1500	1300	1125	930	750		●		○
N.2.1																
N.2.2																
N.2.3																
N.3.1	25.000	1250	1088	938	775	625	19.000	1140	990	855	700	570		●		○
N.3.2	32.000	1520	1322	1140	942	760	25.000	1500	1300	1125	930	750		●		○
N.3.3	32.000	1520	1322	1140	942	760	25.000	1500	1300	1125	930	750		●		○
N.4.1	33.000	1560	1357	1170	967	780	25.000	1500	1300	1125	930	750		●		○
S.1.1	10.000	280	244	210	174	140	7.500	300	260	230	200	160		●		○
S.1.2	10.000	280	244	210	174	140	7.500	300	260	230	200	160		●		○
S.2.1	14.000	420	365	315	260	210	12.500	500	400	350	300	250		●		○
S.2.2	10.000	280	244	210	174	140	7.500	300	260	230	200	160		●		○
S.2.3	7.000	370	322	278	229	185	6.000	300	260	230	200	160		●		○
S.3.1	25.000	400	348	300	248	200	25.000	1500	1300	1125	930	750		●		○
S.3.2	25.000	480	418	360	298	240	25.000	1500	1300	1125	930	750		●		○
S.3.3	22.000	380	331	285	236	190	25.000	1500	1300	1125	930	750		●		○
H.1.1	29.000	1200	1044	900	744	600	25.000	1500	1300	1125	930	750			●	
H.1.2	22.000	1000	870	750	620	500	19.000	1140	990	855	700	570			●	
H.1.3	14.000	420	365	315	260	210	19.000	1140	990	855	700	570			●	
H.1.4	14.000	420	365	315	260	210	19.000	1140	990	855	700	570			●	
H.2.1	29.000	1200	1044	900	744	600	25.000	1500	1300	1125	930	750			●	
H.3.1	22.000	1000	870	750	620	500	19.000	1140	990	855	700	570			●	
O.1.1	33.000	1560	1357	1170	967	780	19.000	1140	990	855	700	570		●	○	○
O.1.2	28.000	1400	1218	1050	868	700	19.000	1140	990	855	700	570		●	○	○
O.2.1	22.000	800	696	600	496	400	12.000	720	630	540	450	360		●	○	○
O.2.2	22.000	800	696	600	496	400	12.000	720	630	540	450	360		●	○	○
O.3.1																

Cutting data standard values – Micro cutter – 5xDC

	52 802 ...																		
	Ø DC = 0,2–0,4 mm					Ø DC = 0,5–0,7 mm					Ø DC = 0,8–0,9 mm						● 1st choice		
																	○ suitable		
	a_e	0,1 x DC	0,2 x DC	0,3 x DC	0,4 x DC	a_e	0,1 x DC	0,2 x DC	0,3 x DC	0,4 x DC	a_e	0,1 x DC	0,2 x DC	0,3 x DC	0,4 x DC	0,6–1,0 x DC			
	$a_{p\,max.}$	0,012	0,012	0,012	0,012	$a_{p\,max.}$	0,06	0,06	0,06	0,06	$a_{p\,max.}$	0,12	0,12	0,12	0,12	0,064			
	$n_{min.}$	30.000				$n_{min.}$	12.000				$n_{min.}$	8.000							
Index	n	v_f mm/min.				n	v_f mm/min.				n	v_f mm/min.					Emulsion	Compressed air	MMS
P.1.1	50.000	232	202	174	144	50.000	274	238	205	170	44.000	485	422	364	301	242	●	○	○
P.1.2	50.000	232	202	174	144	50.000	274	238	205	170	44.000	485	422	364	301	242	●	○	○
P.1.3	50.000	232	202	174	144	50.000	274	238	205	170	44.000	485	422	364	301	242	●	○	○
P.1.4	50.000	201	175	151	125	50.000	237	206	178	147	31.000	330	287	248	205	165	●	○	○
P.1.5	50.000	201	175	151	125	50.000	237	206	178	147	31.000	330	287	248	205	165	●	○	○
P.2.1	50.000	232	202	174	144	50.000	274	238	205	170	44.000	485	422	364	301	242		●	○
P.2.2	50.000	232	202	174	144	50.000	274	238	205	170	44.000	485	422	364	301	242		●	○
P.2.3	50.000	201	175	151	125	50.000	237	206	178	147	31.000	330	287	248	205	165		●	○
P.2.4	50.000	201	175	151	125	50.000	237	206	178	147	31.000	330	287	248	205	165		●	○
P.3.1	50.000	201	175	151	125	50.000	237	206	178	147	31.000	330	287	248	205	165		●	○
P.3.2	50.000	232	202	174	144	50.000	274	238	205	170	44.000	485	422	364	301	242		●	○
P.3.3	50.000	201	175	151	125	50.000	237	206	178	147	31.000	330	287	248	205	165		●	○
P.4.1	50.000	232	202	174	144	50.000	274	238	205	170	44.000	485	422	364	301	242		●	○
P.4.2	50.000	232	202	174	144	50.000	274	238	205	170	44.000	485	422	364	301	242		●	○
M.1.1	50.000	232	202	174	144	50.000	219	191	164	136	31.000	346	301	260	215	173	●		○
M.2.1	50.000	232	202	174	144	50.000	219	191	164	136	31.000	346	301	260	215	173	●		○
M.3.1	50.000	232	202	174	144	50.000	219	191	164	136	31.000	346	301	260	215	173	●		○
K.1.1	50.000	232	202	174	144	50.000	219	191	164	136	50.000	416	362	312	258	208	○	●	
K.1.2	50.000	232	202	174	144	50.000	219	191	164	136	50.000	416	362	312	258	208	○	●	
K.2.1	50.000	232	202	174	144	50.000	219	191	164	136	50.000	416	362	312	258	208	○	●	
K.2.2	50.000	232	202	174	144	50.000	219	191	164	136	50.000	416	362	312	258	208	○	●	
K.3.1	50.000	141	123	106	88	50.000	175	152	131	109	25.000	240	209	180	149	120		●	
K.3.2	50.000	141	123	106	88	50.000	175	152	131	109	25.000	240	209	180	149	120		●	
N.1.1	50.000	232	202	174	144	50.000	274	238	205	170	50.000	554	482	416	344	277	●		○
N.1.2	50.000	232	202	174	144	50.000	274	238	205	170	50.000	554	482	416	344	277	●		○
N.2.1																			
N.2.2																			
N.2.3																			
N.3.1	50.000	232	202	174	144	50.000	274	238	205	170	38.000	485	422	364	301	242	●		○
N.3.2	50.000	232	202	174	144	50.000	274	238	205	170	50.000	554	482	416	344	277	●		○
N.3.3	50.000	232	202	174	144	50.000	274	238	205	170	50.000	554	482	416	344	277	●		○
N.4.1	50.000	212	185	159	132	50.000	250	218	188	155	50.000	506	440	379	314	253	●		○
S.1.1	50.000	55	48	41	32	31.000	58	51	44	36	15.000	98	85	73	61	49	●		○
S.1.2	50.000	55	48	41	32	31.000	58	51	44	36	15.000	98	85	73	61	49	●		○
S.2.1	50.000	63	54	47	39	44.000	76	66	57	47	22.000	91	79	68	56	45	●		○
S.2.2	50.000	55	47	40	32	31.000	58	51	44	36	15.000	98	85	73	61	49	●		○
S.2.3	50.000	46	40	35	29	25.000	55	48	41	34	12.000	78	68	59	49	39	●		○
S.3.1	50.000	60	61	48	41	50.000	71	62	53	44	38.000	114	99	85	71	57	●		○
S.3.2	50.000	60	61	48	41	50.000	71	62	53	44	38.000	126	110	95	78	63	●		○
S.3.3	50.000	60	52	45	37	50.000	71	62	49	39	31.000	89	77	66	55	44	●		○
H.1.1	50.000	95	83	71	59	50.000	134	117	101	83	31.000	180	157	135	112	90		●	
H.1.2	50.000	95	83	71	59	44.000	134	117	101	83	22.000	180	157	135	112	90		●	
H.1.3	50.000	89	78	67	55	44.000	126	110	95	78	22.000	170	148	127	105	85		●	
H.1.4																			
H.2.1	50.000	155	135	116	96	50.000	164	143	123	102	44.000	346	301	260	215	173		●	
H.3.1	50.000	95	83	71	59	50.000	134	117	101	83	31.000	180	157	135	112	90		●	
O.1.1	50.000	232	202	174	144	50.000	274	238	205	170	50.000	554	482	416	344	277	●	○	○
O.1.2	50.000	232	202	174	144	50.000	274	238	205	170	44.000	554	482	416	344	277	●	○	○
O.2.1	50.000	141	123	106	88	50.000	200	174	150	124	31.000	316	275	237	196	158	●	○	○
O.2.2	50.000	141	123	106	88	50.000	200	174	150	124	31.000	316	275	237	196	158	●	○	○
O.3.1																			

a_e = 0.6–1.0 x DC: If values are missing, only trochoidal slot milling and profiling are permitted. Otherwise, there is the risk of tool breakage.

Cutting data standard values – Micro cutter – 5xDC

		52 802 ...															
		Ø DC = 1,0–1,4 mm					Ø DC = 1,5–1,7 mm					Ø DC = 1,8–1,9 mm					
	a_e	0,1 x DC	0,2 x DC	0,3 x DC	0,4 x DC	0,6–1,0 x DC	a_e	0,1 x DC	0,2 x DC	0,3 x DC	0,4 x DC	0,6–1,0 x DC	a_e	0,1 x DC	0,2 x DC	0,3 x DC	0,4 x DC	0,6–1,0 x DC
	$a_{p\,max.}$	0,3	0,3	0,3	0,3	0,2	$a_{p\,max.}$	0,3	0,3	0,3	0,3	0,2	$a_{p\,max.}$	0,54	0,54	0,54	0,54	0,36
	$n_{min.}$	6.500					$n_{min.}$	6.500					$n_{min.}$	5.500				
Index	n	v_f mm/min.					n	v_f mm/min.					n	v_f mm/min.				
P.1.1	44.000	682	593	511	423	341	29.000	1160	1009	870	719	580	25.000	1250	1088	938	775	625
P.1.2	44.000	682	593	511	423	341	29.000	1160	1009	870	719	580	25.000	1250	1088	938	775	625
P.1.3	44.000	682	593	511	423	341	29.000	1160	1009	870	719	580	25.000	1250	1088	938	775	625
P.1.4	31.000	416	362	312	258	208	21.000	693	603	520	430	346	18.000	850	740	638	527	425
P.1.5	31.000	416	362	312	258	208	21.000	693	603	520	430	346	18.000	850	740	638	527	425
P.2.1	44.000	682	593	511	423	341	29.000	1160	1009	870	719	580	25.000	1250	1088	938	775	625
P.2.2	44.000	682	593	511	423	341	29.000	1160	1009	870	719	580	25.000	1250	1088	938	775	625
P.2.3	31.000	416	362	312	258	208	21.000	693	603	520	430	346	18.000	850	740	638	527	425
P.2.4	31.000	416	362	312	258	208	21.000	693	603	520	430	346	18.000	850	740	638	527	425
P.3.1	31.000	416	362	312	258	208	21.000	693	603	520	430	346	18.000	850	740	638	527	425
P.3.2	44.000	682	593	511	423	341	29.000	1160	1009	870	719	580	25.000	1250	1088	938	775	625
P.3.3	31.000	416	362	312	258	208	21.000	693	603	520	430	346	18.000	850	740	638	527	425
P.4.1	44.000	682	593	511	423	341	29.000	1160	1009	870	719	580	25.000	1250	1088	938	775	625
P.4.2	44.000	682	593	511	423	341	29.000	1160	1009	870	719	580	25.000	1250	1088	938	775	625
M.1.1	31.000	480	418	360	298	240	21.000	800	696	600	496	400	18.000	850	740	638	527	425
M.2.1	31.000	480	418	360	298	240	21.000	800	696	600	496	400	18.000	850	740	638	527	425
M.3.1	31.000	480	418	360	298	240	21.000	800	696	600	496	400	18.000	850	740	638	527	425
K.1.1	50.000	620	539	465	384	310	33.000	1000	870	750	620	500	28.000	1320	1148	990	818	660
K.1.2	50.000	620	539	465	384	310	33.000	1000	870	750	620	500	28.000	1320	1148	990	818	660
K.2.1	50.000	620	539	465	384	310	33.000	1000	870	750	620	500	28.000	1320	1148	990	818	660
K.2.2	50.000	620	539	465	384	310	33.000	1000	870	750	620	500	28.000	1320	1148	990	818	660
K.3.1	25.000	297	258	223	184	148	16.000	411	357	308	255	205	14.000	480	418	360	298	240
K.3.2	25.000	297	258	223	184	148	16.000	411	357	308	255	205	14.000	480	418	360	298	240
N.1.1	50.000	775	674	581	480	387	42.000	1200	1044	900	744	600	36.000	1500	1305	1125	930	750
N.1.2	50.000	775	674	581	480	387	42.000	1200	1044	900	744	600	36.000	1500	1305	1125	930	750
N.2.1																		
N.2.2																		
N.2.3																		
N.3.1	38.000	697	607	523	432	349	25.000	1000	870	750	620	500	22.000	1100	957	825	682	550
N.3.2	50.000	930	809	697	576	465	33.000	1320	1148	990	818	660	28.000	1400	1218	1050	868	700
N.3.3	50.000	930	809	697	576	465	33.000	1320	1148	990	818	660	28.000	1400	1218	1050	868	700
N.4.1	50.000	849	738	636	526	424	33.000	1205	1048	904	747	602	28.000	1400	1218	1050	868	700
S.1.1	15.000	120	105	90	75	60	10.000	184	160	138	114	92	8.000	280	244	210	174	140
S.1.2	15.000	120	105	90	75	60	10.000	184	160	138	114	92	8.000	280	244	210	174	140
S.2.1	22.000	114	99	85	71	57	14.000	196	170	147	121	98	12.000	300	261	225	186	150
S.2.2	15.000	120	105	90	75	60	10.000	184	160	138	114	92	8.000	280	244	210	174	140
S.2.3	12.000	131	114	99	82	66	8.000	170	148	127	105	85	7.000	240	209	180	149	120
S.3.1	38.000	156	135	117	96	78	25.000	274	238	205	170	137	22.000	380	331	285	236	190
S.3.2	38.000	212	185	159	132	106	25.000	365	318	274	226	183	22.000	450	392	338	279	225
S.3.3	31.000	127	111	95	79	64	21.000	201	175	151	125	100	18.000	300	261	225	186	150
H.1.1	31.000	201	175	151	125	101	21.000	346	301	260	215	173	16.000	500	435	375	310	250
H.1.2	22.000	235	204	176	146	117	14.000	346	301	260	215	173	12.000	450	392	338	279	225
H.1.3	22.000	221	193	166	137	111	14.000	327	284	245	202	163	12.000	450	392	338	279	225
H.1.4																		
H.2.1	44.000	426	371	320	264	213	29.000	600	522	450	372	300	25.000	800	696	600	496	400
H.3.1	31.000	201	175	151	125	101	21.000	346	301	260	215	173	16.000	500	435	375	310	250
O.1.1	50.000	930	809	697	576	465	33.000	1320	1148	990	818	660	28.000	1400	1218	1050	868	700
O.1.2	44.000	813	708	610	504	407	29.000	1160	1009	870	719	580	25.000	1200	1044	900	744	600
O.2.1	31.000	438	381	329	272	219	21.000	575	500	431	357	288	18.000	650	566	488	403	325
O.2.2	31.000	438	381	329	272	219	21.000	575	500	431	357	288	18.000	650	566	488	403	325
O.3.1																		

		52 802 ...							
		Ø DC = 2,0 mm					● 1st choice		
							○ suitable		
	a_e	0,1 x DC	0,2 x DC	0,3 x DC	0,4 x DC	0,6–1,0 x DC			
	$a_{p\,max.}$	0,6	0,6	0,6	0,6	0,4			
	$n_{min.}$	5.000							
Index	n	v_f mm/min.					Emulsion	Compressed air	MMS
P.1.1	22.000	1320	1148	990	818	660	●	○	○
P.1.2	22.000	1320	1148	990	818	660	●	○	○
P.1.3	22.000	1320	1148	990	818	660	●	○	○
P.1.4	15.000	900	783	675	558	450	●	○	○
P.1.5	15.000	900	783	675	558	450	●	○	○
P.2.1	22.000	1320	1148	990	818	660		●	○
P.2.2	22.000	1320	1148	990	818	660		●	○
P.2.3	15.000	900	783	675	558	450		●	○
P.2.4	15.000	900	783	675	558	450		●	○
P.3.1	15.000	900	783	675	558	450		●	○
P.3.2	22.000	1320	1148	990	818	660		●	○
P.3.3	15.000	900	783	675	558	450		●	○
P.4.1	22.000	1320	1148	990	818	660		●	○
P.4.2	22.000	1320	1148	990	818	660		●	○
M.1.1	15.000	900	783	675	558	450	●		○
M.2.1	15.000	900	783	675	558	450	●		○
M.3.1	15.000	900	783	675	558	450	●		○
K.1.1	25.000	1500	1305	1125	930	750	○	●	
K.1.2	25.000	1500	1305	1125	930	750	○	●	
K.2.1	25.000	1500	1305	1125	930	750	○	●	
K.2.2	25.000	1500	1305	1125	930	750	○	●	
K.3.1	12.000	520	452	390	322	260		●	
K.3.2	12.000	520	452	390	322	260		●	
N.1.1	31.000	1860	1618	1395	1153	930	●		○
N.1.2	31.000	1860	1618	1395	1153	930	●		○
N.2.1									
N.2.2									
N.2.3									
N.3.1	19.000	1140	992	855	707	570	●		○
N.3.2	25.000	1500	1305	1125	930	750	●		○
N.3.3	25.000	1500	1305	1125	930	750	●		○
N.4.1	25.000	1500	1305	1125	930	750	●		○
S.1.1	7.000	300	261	225	186	150	●		○
S.1.2	7.000	300	261	225	186	150	●		○
S.2.1	11.000	400	348	300	248	200	●		○
S.2.2	7.000	300	261	225	186	150	●		○
S.2.3	6.000	260	226	195	161	130	●		○
S.3.1	19.000	420	365	315	260	210	●		○
S.3.2	19.000	500	435	375	310	250	●		○
S.3.3	15.000	400	348	300	248	200	●		○
H.1.1	15.000	500	435	375	310	250		●	
H.1.2	11.000	480	418	360	298	240		●	
H.1.3	11.000	480	418	360	298	240		●	
H.1.4									
H.2.1	22.000	1000	870	750	620	500		●	
H.3.1	15.000	500	435	375	310	250		●	
O.1.1	25.000	1500	1305	1125	930	750	●	○	○
O.1.2	22.000	1320	1148	990	818	660	●	○	○
O.2.1	15.000	660	574	495	409	330	●	○	○
O.2.2	15.000	660	574	495	409	330	●	○	○
O.3.1									

Cutting data standard values – Micro cutter – 10xDC

		52 802 ...															
		Ø DC = 0,2–0,4 mm				Ø DC = 0,5–0,7 mm					Ø DC = 0,8–0,9 mm				Ø DC = 1,0–1,4 mm			
	a_e	0,1 x DC	0,2 x DC	0,3 x DC	0,4 x DC	0,1 x DC	0,2 x DC	0,3 x DC	0,4 x DC	a_e	0,1 x DC	0,2 x DC	0,3 x DC	0,4 x DC	0,1 x DC	0,2 x DC	0,3 x DC	0,4 x DC
	$a_{p\,max.}$	0,006	0,006	0,006	0,006	0,015	0,015	0,015	0,015	$a_{p\,max.}$	0,024	0,024	0,024	0,024	0,03	0,03	0,03	0,03
	$n_{min.}$	30.000				12.000				$n_{min.}$	8.000				6.500			
Index	n	v_f mm/min.				v_f mm/min.				n	v_f mm/min.				v_f mm/min.			
P.1.1	50.000	232	202	174	144	274	238	205	170	38.000	450	392	338	279	589	512	442	365
P.1.2	50.000	232	202	174	144	274	238	205	170	38.000	450	392	338	279	589	512	442	365
P.1.3	50.000	232	202	174	144	274	238	205	170	38.000	450	392	338	279	589	512	442	365
P.1.4	50.000	201	175	151	125	190	165	142	118	25.000	300	261	225	186	335	292	252	208
P.1.5	50.000	201	175	151	125	190	165	142	118	25.000	300	261	225	186	335	292	252	208
P.2.1	50.000	232	202	174	144	274	238	205	170	38.000	450	392	338	279	589	512	442	365
P.2.2	50.000	232	202	174	144	274	238	205	170	38.000	450	392	338	279	589	512	442	365
P.2.3	50.000	201	175	151	125	190	165	142	118	25.000	300	261	225	186	335	292	252	208
P.2.4	50.000	201	175	151	125	190	165	142	118	25.000	300	261	225	186	335	292	252	208
P.3.1	50.000	201	175	151	125	190	165	142	118	25.000	300	261	225	186	335	292	252	208
P.3.2	50.000	232	202	174	144	274	238	205	170	38.000	450	392	338	279	589	512	442	365
P.3.3	50.000	201	175	151	125	190	165	142	118	25.000	300	261	225	186	335	292	252	208
P.4.1	50.000	232	202	174	144	274	238	205	170	38.000	450	392	338	279	589	512	442	365
P.4.2	50.000	232	202	174	144	274	238	205	170	38.000	450	392	338	279	589	512	442	365
M.1.1	50.000	155	135	116	96	219	191	164	136	25.000	312	271	234	193	387	337	290	240
M.2.1	50.000	155	135	116	96	219	191	164	136	25.000	312	271	234	193	387	337	290	240
M.3.1	50.000	155	135	116	96	219	191	164	136	25.000	312	271	234	193	387	337	290	240
K.1.1	50.000	232	202	174	144	274	238	205	170	44.000	485	422	364	301	682	593	511	423
K.1.2	50.000	232	202	174	144	274	238	205	170	44.000	485	422	364	301	682	593	511	423
K.2.1	50.000	232	202	174	144	274	238	205	170	44.000	485	422	364	301	682	593	511	423
K.2.2	50.000	232	202	174	144	274	238	205	170	44.000	485	422	364	301	682	593	511	423
K.3.1	50.000	141	123	106	88	150	131	113	93	19.000	215	187	161	133	269	234	202	167
K.3.2	50.000	141	123	106	88	150	131	113	93	19.000	215	187	161	133	269	234	202	167
N.1.1	50.000	232	202	174	144	438	381	329	272	50.000	693	603	520	430	930	809	697	576
N.1.2	50.000	232	202	174	144	438	381	329	272	50.000	693	603	520	430	930	809	697	576
N.2.1																		
N.2.2																		
N.2.3																		
N.3.1	50.000	232	202	174	144	274	238	205	170	31.000	402	350	301	249	480	418	360	298
N.3.2	50.000	232	202	174	144	274	238	205	170	44.000	416	362	312	258	542	472	407	336
N.3.3	50.000	232	202	174	144	274	238	205	170	44.000	416	362	312	258	542	472	407	336
N.4.1	50.000	212	185	159	132	300	261	225	186	44.000	506	440	379	314	742	646	557	460
S.1.1	50.000	46	40	35	29	55	48	41	34	12.000	69	60	51	43	88	76	66	54
S.1.2	50.000	46	40	35	29	55	48	41	34	12.000	69	60	51	43	88	76	66	54
S.2.1	50.000	54	47	40	33	63	55	47	39	19.000	102	89	76	63	126	110	95	78
S.2.2	50.000	46	40	35	29	55	48	41	34	12.000	69	60	51	43	88	76	66	54
S.2.3	50.000	46	40	35	29	55	48	41	34	12.000	59	51	44	36	82	71	62	51
S.3.1	50.000	60	52	45	37	71	62	53	44	31.000	101	88	76	63	141	123	106	88
S.3.2	50.000	60	52	45	37	71	62	53	44	31.000	101	88	76	63	177	154	133	110
S.3.3	50.000	60	52	45	37	71	62	53	44	25.000	89	77	66	55	141	123	106	88
H.1.1	50.000	47	41	36	29	67	58	50	42	25.000	90	78	68	56	101	88	75	62
H.1.2	50.000	47	41	36	29	67	58	50	42	19.000	90	78	68	56	101	88	75	62
H.1.3	50.000	45	39	34	28	63	55	47	39	19.000	85	74	64	53	95	83	71	59
H.1.4																		
H.2.1	50.000	77	67	58	48	82	71	62	51	38.000	173	151	130	107	194	168	145	120
H.3.1	50.000	47	41	36	29	67	58	50	42	25.000	90	78	68	56	101	88	75	62
O.1.1	50.000	232	202	174	144	329	286	246	204	44.000	554	482	416	344	813	708	610	504
O.1.2	50.000	232	202	174	144	329	286	246	204	38.000	554	482	416	344	705	613	529	437
O.2.1	50.000	141	123	106	88	200	174	150	124	25.000	285	248	213	176	339	295	255	210
O.2.2	50.000	141	123	106	88	200	174	150	124	25.000	285	248	213	176	339	295	255	210
O.3.1																		

a_e = 0,6–1,0 x DC: Missing values only trochodial slotting and milling is recommended. Otherwise there is the risk of tool breakage.

		52 802 ...																
		Ø DC = 1,5–1,7 mm				Ø DC = 1,8–1,9 mm				Ø DC = 2,0 mm					● 1st choice		
															○ suitable		
	a_e	0,1 x DC	0,2 x DC	0,3 x DC	0,4 x DC	0,1 x DC	0,2 x DC	0,3 x DC	0,4 x DC	0,1 x DC	0,2 x DC	0,3 x DC	0,4 x DC				
	$a_{p\,max.}$	0,06	0,06	0,06	0,06	0,072	0,072	0,072	0,072	0,08	0,08	0,08	0,08				
	$n_{min.}$	6.500				5.500				5.000							
Index	n	v_f mm/min.				n	v_f mm/min.			n	v_f mm/min.				Emulsion	Compressed air	MMS
P.1.1	25.000	1000	870	750	620	22.000	1080	940	810	670	19.000	1140	992	855	707	●	○	○
P.1.2	25.000	1000	870	750	620	22.000	1080	940	810	670	19.000	1140	992	855	707	●	○	○
P.1.3	25.000	1000	870	750	620	22.000	1080	940	810	670	19.000	1140	992	855	707	●	○	○
P.1.4	16.000	554	482	416	344	14.000	680	592	510	422	12.000	720	626	540	446	●	○	○
P.1.5	16.000	554	482	416	344	14.000	680	592	510	422	12.000	720	626	540	446	●	○	○
P.2.1	25.000	1000	870	750	620	22.000	1080	940	810	670	19.000	1140	992	855	707		●	○
P.2.2	25.000	1000	870	750	620	22.000	1080	940	810	670	19.000	1140	992	855	707		●	○
P.2.3	16.000	554	482	416	344	14.000	680	592	510	422	12.000	720	626	540	446		●	○
P.2.4	16.000	554	482	416	344	14.000	680	592	510	422	12.000	720	626	540	446		●	○
P.3.1	16.000	554	482	416	344	14.000	680	592	510	422	12.000	720	626	540	446		●	○
P.3.2	25.000	1000	870	750	620	22.000	1080	940	810	670	19.000	1140	992	855	707		●	○
P.3.3	16.000	554	482	416	344	14.000	680	592	510	422	12.000	720	626	540	446		●	○
P.4.1	25.000	1000	870	750	620	22.000	1080	940	810	670	19.000	1140	992	855	707		●	○
P.4.2	25.000	1000	870	750	620	22.000	1080	940	810	670	19.000	1140	992	855	707		●	○
M.1.1	16.000	600	522	450	372	14.000	650	566	488	403	12.000	720	626	540	446	●		○
M.2.1	16.000	600	522	450	372	14.000	650	566	488	403	12.000	720	626	540	446	●		○
M.3.1	16.000	600	522	450	372	14.000	650	566	488	403	12.000	720	626	540	446	●		○
K.1.1	29.000	1160	1009	870	719	25.000	1240	1079	930	769	22.000	1320	1148	990	818	○	●	
K.1.2	29.000	1160	1009	870	719	25.000	1240	1079	930	769	22.000	1320	1148	990	818	○	●	
K.2.1	29.000	1160	1009	870	719	25.000	1240	1079	930	769	22.000	1320	1148	990	818	○	●	
K.2.2	29.000	1160	1009	870	719	25.000	1240	1079	930	769	22.000	1320	1148	990	818	○	●	
K.3.1	12.000	329	286	246	204	10.000	380	331	285	236	9.000	390	339	293	242		●	
K.3.2	12.000	329	286	246	204	10.000	380	331	285	236	9.000	390	339	293	242		●	
N.1.1	38.000	1520	1322	1140	942	33.000	1600	1392	1200	992	28.000	1680	1462	1260	1042	●		○
N.1.2	38.000	1520	1322	1140	942	33.000	1600	1392	1200	992	28.000	1680	1462	1260	1042	●		○
N.2.1																		
N.2.2																		
N.2.3																		
N.3.1	21.000	800	696	600	496	18.000	850	740	638	527	15.000	900	783	675	558	●		○
N.3.2	29.000	900	783	675	558	25.000	1000	870	750	620	22.000	1140	992	855	707	●		○
N.3.3	29.000	900	783	675	558	25.000	1000	870	750	620	22.000	1140	992	855	707	●		○
N.4.1	29.000	1059	921	794	657	25.000	1200	1044	900	744	22.000	1320	1148	990	818	●		○
S.1.1	8.000	127	111	95	79	7.000	220	191	165	136	6.000	250	218	188	155	●		○
S.1.2	8.000	127	111	95	79	7.000	220	191	165	136	6.000	250	218	188	155	●		○
S.2.1	12.000	204	178	153	127	10.000	300	261	225	186	9.000	350	305	263	217	●		○
S.2.2	8.000	127	111	95	79	7.000	220	191	165	136	6.000	250	218	188	155	●		○
S.2.3	8.000	106	92	80	66	7.000	200	174	150	124	6.000	220	191	165	136	●		○
S.3.1	21.000	228	199	171	141	18.000	300	261	225	186	15.000	380	331	285	236	●		○
S.3.2	21.000	274	238	205	170	18.000	400	348	300	248	15.000	450	392	338	279	●		○
S.3.3	16.000	237	206	178	147	14.000	300	261	225	186	12.000	380	331	285	236	●		○
H.1.1	16.000	173	151	130	107	14.000	200	174	150	124	12.000	240	209	180	149		●	
H.1.2	12.000	173	151	130	107	10.000	200	174	150	124	9.000	240	209	180	149		●	
H.1.3	12.000	163	142	122	101	10.000	200	174	150	124	9.000	240	209	180	149		●	
H.1.4																		
H.2.1	25.000	300	261	225	186	21.000	400	348	300	248	19.000	500	435	375	310		●	
H.3.1	16.000	173	151	130	107	14.000	200	174	150	124	12.000	240	209	180	149		●	
O.1.1	29.000	1160	1009	870	719	25.000	1200	1044	900	744	22.000	1320	1148	990	818	●	○	○
O.1.2	25.000	1000	870	750	620	18.000	1000	870	750	620	19.000	1140	992	855	707	●	○	○
O.2.1	16.000	438	381	329	272	14.000	500	435	375	310	12.000	520	452	390	322	●	○	○
O.2.2	16.000	438	381	329	272	14.000	500	435	375	310	12.000	520	452	390	322	●	○	○
O.3.1																		

Cutting data standard values – Circular saw blades

	54 700 ... Circular saws Solid carbide Fine	
Index	v_c m/min	f_z mm
P.1.1	80 – 140	0,002 – 0,012
P.1.2	50 – 80	0,001 – 0,012
P.1.3	50 – 80	0,001 – 0,012
P.1.4	50 – 80	0,001 – 0,012
P.1.5	50 – 80	0,001 – 0,012
P.2.1	50 – 80	0,001 – 0,012
P.2.2	50 – 80	0,001 – 0,012
P.2.3	50 – 80	0,001 – 0,012
P.2.4	50 – 80	0,001 – 0,012
P.3.1	50 – 80	0,001 – 0,012
P.3.2	50 – 80	0,001 – 0,012
P.3.3	50 – 80	0,001 – 0,012
P.4.1	80 – 120	0,001 – 0,012
P.4.2	50 – 80	0,001 – 0,012
M.1.1	50 – 80	0,001 – 0,012
M.2.1	50 – 80	0,001 – 0,012
M.3.1	50 – 80	0,001 – 0,012
K.1.1	80 – 140	0,002 – 0,012
K.1.2	50 – 80	0,001 – 0,01
K.2.1	50 – 80	0,001 – 0,01
K.2.2	50 – 80	0,001 – 0,01
K.3.1	50 – 80	0,001 – 0,01
K.3.2	50 – 80	0,001 – 0,01
N.1.1	200 – 500	0,003 – 0,012
N.1.2	200 – 500	0,003 – 0,012
N.2.1	200 – 450	0,003 – 0,012
N.2.2	200 – 450	0,003 – 0,012
N.2.3	200 – 450	0,003 – 0,012
N.3.1	200 – 450	0,003 – 0,012
N.3.2	200 – 450	0,003 – 0,012
N.3.3	200 – 450	0,003 – 0,012
N.4.1		
S.1.1	20 – 30	0,001 – 0,012
S.1.2	20 – 30	0,001 – 0,012
S.2.1	20 – 30	0,001 – 0,012
S.2.2	20 – 30	0,001 – 0,012
S.2.3	20 – 30	0,001 – 0,012
S.3.1	30 – 70	0,001 – 0,012
S.3.2	30 – 70	0,001 – 0,012
S.3.3	30 – 70	0,001 – 0,012
H.1.1		
H.1.2		
H.1.3		
H.1.4		
H.2.1		
H.3.1		
O.1.1	130 – 200	0,003 – 0,015
O.1.2	130 – 200	0,003 – 0,015
O.2.1		
O.2.2		
O.3.1		

The cutting data depends extremely on the external conditions, e.g. stability of the tool and tool clamping, material and machine type.
The indicated values are possible cutting data which have to be increased or reduced according to the application conditions.

Technical references

Feedrate Adjustment

If the rpm indicated in the tables cannot be obtained by the machine spindle, the feed rate is to be reduced proportionally to the max rpm.

Example:
according to table = n 50000 1/min. and v_f 1000 mm/min.,
maximum machine rpm = 40000 1/min.

Calculation of feed rate which can be applied:
40000 = 80 % of 50000 1/min. accordingly 80 % of 1000 = 800 mm/min.

Feed rate which can be applied = **800 mm/min.**

Tool Holding

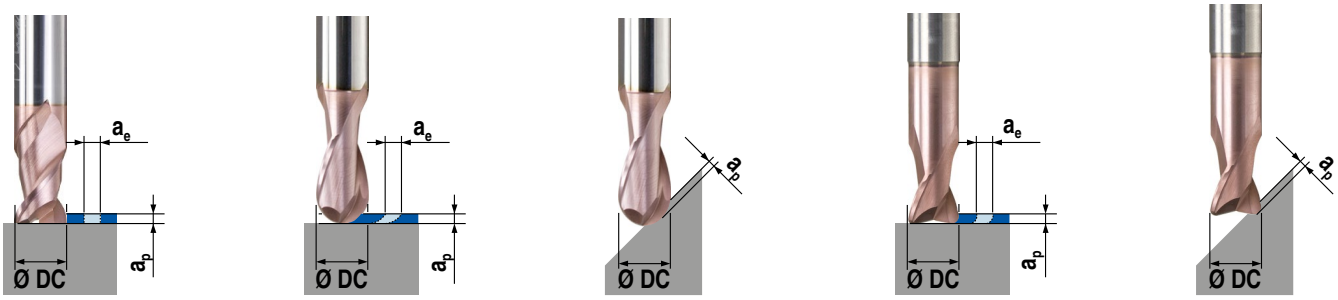
You should always use a clamping device with a high-precision radial run-out.
Collets are ideally suited for this, for example.
You can find suitable clamping devices in → **Chapter 16 Adapters and accessories in the clamping technology catalogue.**

Machine

Use the Micro mills on machines with the highest accuracy and good stability.

Cutting Data Information

The indicated cutting data is dependant upon the machine, workpiece, stability, etc. and may need to be adjusted up or downward to suit.



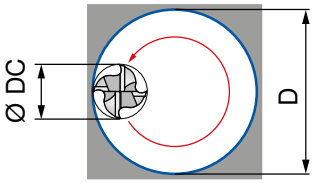
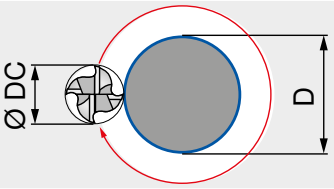
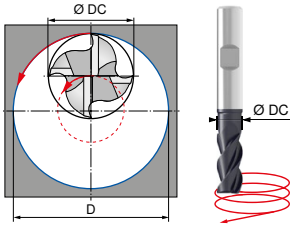
4

General formula for calculating the cutting parameters

Designation	Abbreviation	Unit	Formula	Example	
Number of revolutions	**n**	**min^{-1}**	$n = \frac{v_c \times 1000}{DC \times \pi}$	v_c = 25 m/min DC = 20 mm	$n = \frac{25 \times 1000}{20 \times \pi}$ = 398 min^{-1}
Cutting speed	**v_c**	**m/min**	$v_c = \frac{DC \times \pi \times n}{1000}$	n = 400 min^{-1} DC = 20 mm	$v_c = \frac{20 \times \pi \times 400}{1000}$ = 25 m/min
Feed per tooth	**f_z**	**mm**	$f_z = \frac{v_f}{ZEFP \times n}$	v_f = 320 mm/min. n = 400 min^{-1} ZEFP = 4	$f_z = \frac{320}{4 \times 400}$ = 0,2 mm
Feed per revolution	**f**	**mm**	$f = f_z \times ZEFP$	f_z = 0,2 mm ZEFP = 4	f = 0,2 x 4 = 0,8 mm
Feed rate	**v_f**	**mm/min.**	$v_f = f_z \times ZEFP \times n$	f_z = 0,2 mm ZEFP = 4 n = 400 min^{-1}	v_f = 0,2 x 4 x 400 = 320 mm/min
Average chip thickness	**h_m**	**mm**	$h_m = f_z \times \sqrt{\frac{a_e}{DC}}$	f_z = 0,2 mm a_e = 0,3 mm DC = 20 mm	h_m = 0,2 x $\sqrt{\frac{0,3}{20}}$ = 0,024 mm

ZEFP = Number of flutes
a_e = cutting width

Calculation of the feed rate on the midpoint path of the milling cutter (v_{fM})

Designation	Abbreviation	Unit	Formula	Example
Internal contour	**v_{fM}**	**mm/min.**	$V_{fM} = \frac{v_f \times (D - DC)}{D}$	
Outside profile	**v_{fM}**	**mm/min.**	$V_{fM} = \frac{v_f \times (D + DC)}{D}$	
Helical ramping	**v_{fM}**	**mm/min.**	$V_{fM} = \frac{n \times f_z \times ZEFP \times (D - D_C)}{D}$	

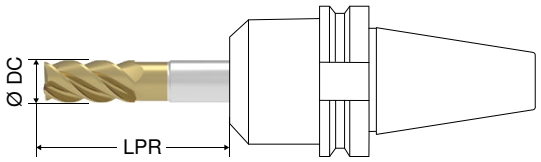
Tips for Tool Selection

Rake and helix angles combined with the coating are decisive factors for the operational area.

Characteristics	Benefits
Helix angle with slow spiral	
▲ For materials with high tensile strength	▲ High edge stability
▲ For high material removal rates	▲ Low tendency to edge chipping
▲ For slot milling, pocket milling, rough milling	
Helix angle with quick spiral	
▲ For soft steels, non ferrous metals, etc.	▲ Soft cut
▲ For low material removal rates	▲ Low cutting forces
▲ Typical for finishing processes	
Small rake angles are applied	
▲ For hard, brittle materials	▲ High edge stability
▲ For high material removal rates	▲ Low tendency to edge chipping
▲ For rough machining	
Large rake angles are applied	
▲ For soft materials	▲ Soft cut
▲ For low material removal rates	▲ Low cutting forces
▲ For finishing	▲ Favorable chip flow
	▲ Low tendency to stick

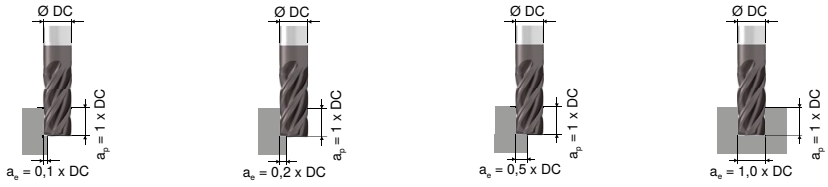
Correction factor for solid carbide milling cutters

Factors for cutting speed (v_c) and feed rate (f_z) in relation to the overhang length (LPR)



Length					
Overhang length (LPR)	1,5 x DC	4 x DC	8 x DC	12 x DC	> 12 x DC
Factor for v_c (Kf v_c)	1,0	1,0	0,9	0,85	0,7
Factor for f_z (Kf f_z)	1,2	1,0	0,8	0,7	0,5

Factors for cutting speed (v_c) and feed rate (f_z) in relation to the cutting depth (a_p) and cutting width (a_e)



Factor for v_c (Kf v_c)	1,3	1,1	1,0	0,85
Factor for f_z (Kf f_z)	1,5	1,3	1,0	0,8

Coatings

DPB72S

DRAGONSKIN

- TiAlCrN multilayer coating
- $HV_{0.05}$ = 3200
- Coefficient of friction (against steel) = 0.35
- Maximum application temperature: 1000 °C

Ti 1000

- Ti monolayer coating
- $HV_{0.05}$ = 3500
- Coefficient of friction (against steel) = 0.3
- Maximum application temperature: 800 °C

DPA72S

DRAGONSKIN

- Special nanolayer coating
- $HV_{0.05}$ = 3200
- Coefficient of friction (against steel) = 0.5
- Maximum application temperature: 1000 °C

DLC

DRAGONSKIN

- Diamond-like carbon coating
- Specially for machining non-ferrous metals
- Maximum application temperature: 400 °C

Fast and efficient availability

The new portfolio: simple ways to new tools and service

With the most modern logistics center in Europe we ensure the shortest delivery times, with our Tool Supply 24/7 service for digitally simplified orders. The Tool-O-Mat, which can hold up to 840 different products, ensures that tools are ready when they are needed as a removal system on site. Payment is only made when withdrawn.

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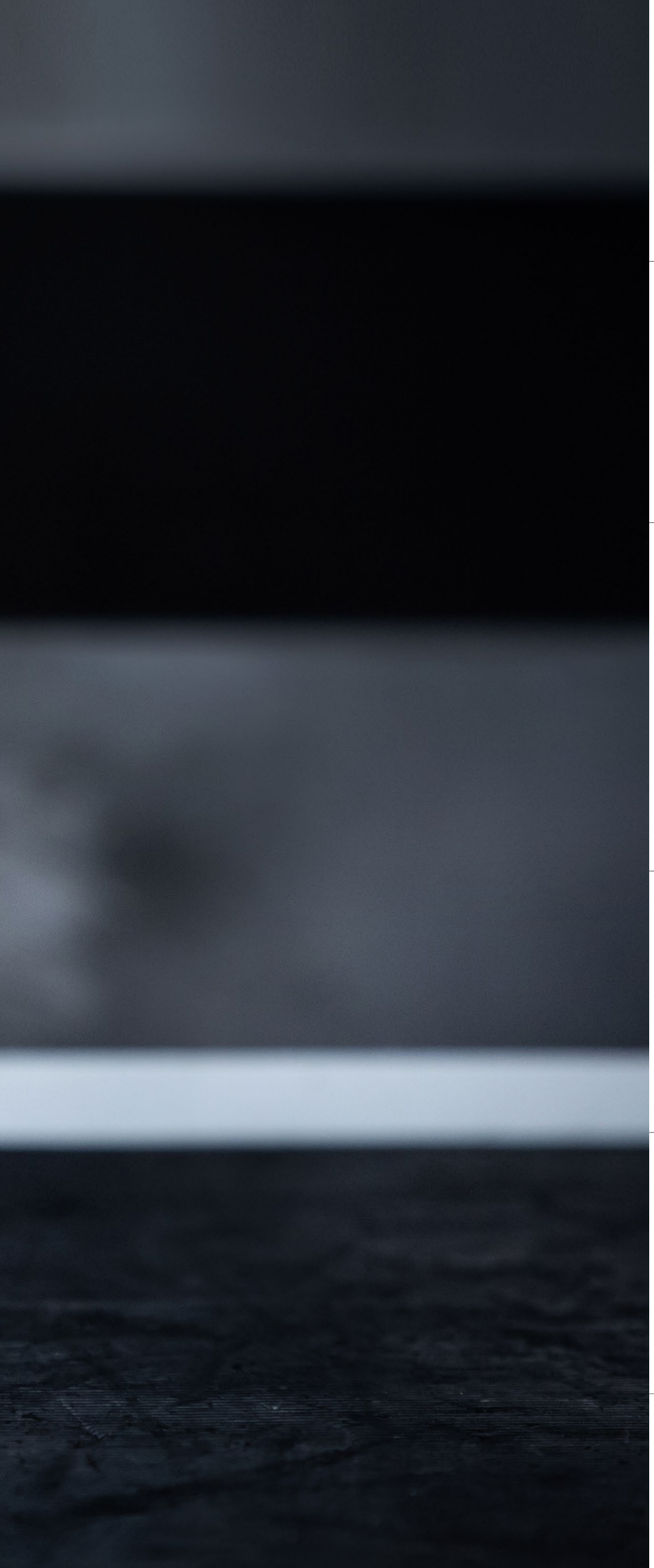


Table of contents

WNT \ Performance

Premium quality tools for high performance.

The premium quality tools from the **WNT Performance** product line have been designed for specific applications and are distinguished by their outstanding performance. If you make high demands on the performance of your production and want to achieve the very best results, we recommend the Premium tools in this product line.

Overview

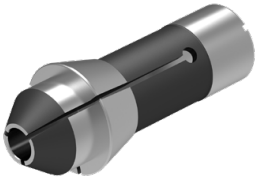
Collets

Collets for clamping the bar in the main spindle and for the sub-spindle

3–13

Stem collets

With an adapted stem for improved pick-up of the workpieces and for better secondary operation machinability



14–19

Guide bushes

Ensures bar guidance in the main spindle

20–30

Clamping sleeves

Mounting for bar feeder magazines

31–39

Reduction sleeves

With a reduction sleeve, small tools can be used directly on tool clamping points with larger mounting diameters.

40

Other profile shapes and sizes and extended options available on request.

Collets overview

Norm	Clamping diameter range in mm	Profile	Version	Page No.
116 E / F 13	Ø 6,0 – 10,0		Grooved	4
	Ø 1,0 – 10,0		Smooth	4
120 E / F 15	Ø 6,0 – 12,0		Grooved	5
	Ø 1,0 – 12,0		Smooth	5
	SW 2,0 – 11,0		Grooved*	5
F 16 / 1212 E	Ø 1,0 – 13,0		Grooved	6
	Ø 6,0 – 13,0		Smooth	6
136 E / F 20-201	Ø 6,0 – 16,0		Grooved	7
	Ø 1,0 – 16,0		Smooth	7
138 E / F 20-87	Ø 6,0 – 16,0		Grooved	8
	Ø 1,0 – 16,0		Smooth	8
	SW 2,0 – 14,0		Grooved*	8
145 E / F 25	Ø 6,0 – 20,0		Grooved	9+10
	Ø 1,5 – 20,0		Smooth	9+10
	SW 2,0 – 19,0		Grooved*	9+10
	SW 2,0 – 15,0		Grooved*	9+10
F 37 / 1536 E	Ø 6,0 – 32,0		Grooved	11–13
	Ø 1,0 – 32,0		Smooth	11–13
	SW 3,0 – 27,0		Grooved*	11–13
	SW 3,0 – 23,0		Grooved*	11–13

* Grooved from SW 8

Other profile shapes and sizes and extended options available on request.

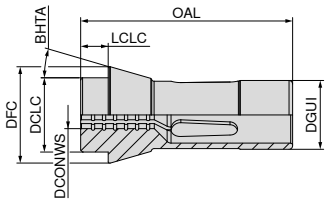
Should you wish to send us a request for specially adjusted solutions, you will find a detailed form in the download area on our homepage.
Please fill it out carefully and send it via email or print it out and send via fax. → **cuttingtools.ceratizit.com/int/en/download.html**

Please email the completed form to global.techsupport@ceratizit.com.

5

Collets

Designation	DGUI mm	DFC mm	DCLC mm	LCLC mm	OAL mm	BHTA °
116 E / F 13	13	19	13	6	64	16

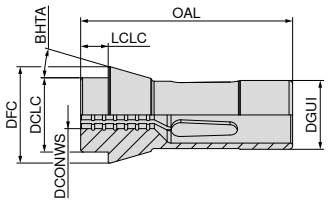


Pressure collet 116 E / F 13

DCONWS mm	Grooved 116 E / F 13 81 000 ...	Smooth 116 E / F 13 81 002 ...
1,0		01000
1,5		01500
2,0		02000
2,5		02500
3,0		03000
3,5		03500
4,0		04000
4,5		04500
5,0		05000
5,5		05500
6,0	06000	06000
6,5	06500	06500
7,0	07000	07000
7,5	07500	07500
8,0	08000	08000
8,5	08500	08500
9,0	09000	09000
9,5	09500	09500
10,0	10000	10000

Collets

Designation	DGUI mm	DFC mm	DCLC mm	LCLC mm	OAL mm	BHTA °
120 E / F 15	15	21	15	6	64	16



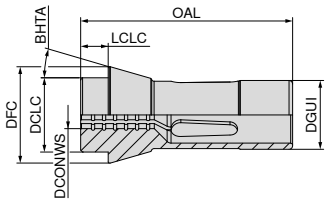
Pressure collet 120 E / F 15

DCONWS mm	DCONWS inch	Grooved 120 E / F 15	Smooth 120 E / F 15	Grooved 120 E / F 15
		81 003 ...	**81 005 ...**	**81 031 ...**
1,000			**01000**	
1,500			**01500**	
2,000			**02000**	**02000**[1]
2,500			**02500**	
3,000			**03000**	**03000**[1]
3,175	1/8			**03175**[1]
3,500			**03500**	
4,000			**04000**	**04000**[1]
4,500			**04500**	
5,000			**05000**	**05000**[1]
5,500			**05500**	
6,000		**06000**	**06000**	**06000**[1]
6,350	1/4			**06350**[1]
6,500		**06500**	**06500**	
7,000		**07000**	**07000**	**07000**[1]
7,500		**07500**	**07500**	
8,000		**08000**	**08000**	**08000**
8,500		**08500**	**08500**	
9,000		**09000**	**09000**	**09000**
9,500			**09500**	
10,000		**10000**	**10000**	**10000**
10,500		**10500**	**10500**	
11,000		**11000**	**11000**	**11000**
11,500		**11500**	**11500**	
12,000		**12000**	**12000**	

1) Without transverse grooves

Collets

Designation	DGUI mm	DFC mm	DCLC mm	LCLC mm	OAL mm	BHTA °
F 16 / 1212 E	16	21	16	6	64	16

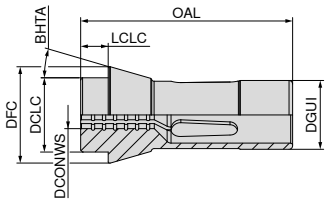


Pressure collet F 16 / 1212 E

	Grooved F 16 / 1212 E	Smooth F 16 / 1212 E
DCONWS mm	81 019 ...	81 021 ...
1,0		01000
1,5		01500
2,0		02000
2,5		02500
3,0		03000
3,5		03500
4,0		04000
4,5		04500
5,0		05000
5,5		05500
6,0	06000	06000
6,5	06500	06500
7,0	07000	07000
7,5	07500	07500
8,0	08000	08000
8,5	08500	08500
9,0	09000	09000
9,5	09500	09500
10,0	10000	10000
10,5	10500	10500
11,0	11000	11000
11,5	11500	11500
12,0	12000	12000
12,5	12500	12500
13,0	13000	13000

Collets

Designation	DGUI mm	DFC mm	DCLC mm	LCLC mm	OAL mm	BHTA °
136 E / F 20-201	20	26	19	5	54	15

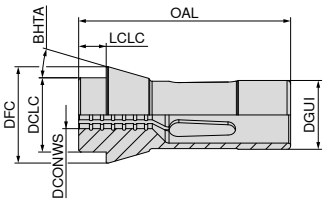


Pressure collet 136 E / F 20-201

	Grooved 136 E / F 20-201	Smooth 136 E / F 20-201
DCONWS mm	81 007 ...	81 009 ...
1,0		01000
1,5		01500
2,0		02000
2,5		02500
3,0		03000
3,5		03500
4,0		04000
4,5		04500
5,0		05000
5,5		05500
6,0	06000	06000
6,5	06500	06500
7,0	07000	07000
7,5	07500	07500
8,0	08000	08000
8,5	08500	08500
9,0	09000	09000
9,5	09500	09500
10,0	10000	10000
10,5	10500	10500
11,0	11000	11000
11,5	11500	11500
12,0	12000	12000
12,5	12500	12500
13,0	13000	13000
13,5	13500	13500
14,0	14000	14000
14,5	14500	14500
15,0	15000	15000
15,5	15500	15500
16,0	16000	16000

Collets

Designation	DGUI mm	DFC mm	DCLC mm	LCLC mm	OAL mm	BHTA °
138 E / F20-87	20	28	21	7	67	16



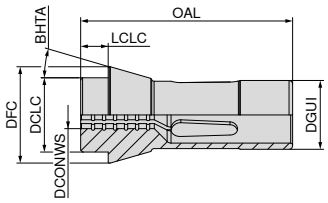
Pressure collet 138 E / F 20-87

DCONWS mm	DCONWS inch	Grooved 138 E / F20-87 81 011 ...	Smooth 138 E / F20-87 81 013 ...	Grooved 138 E / F20-87 81 026 ...
1,00			01000	
1,50			01500	
2,00			02000	02000 1)
2,50			02500	
3,00			03000	03000 1)
3,50			03500	
4,00			04000	04000 1)
4,50			04500	
5,00			05000	05000 1)
5,50			05500	
6,00		06000	06000	06000 1)
6,35	1/4			06350 1)
6,50		06500	06500	
7,00		07000	07000	07000 1)
7,50		07500	07500	
8,00		08000	08000	08000
8,50		08500	08500	
9,00		09000	09000	09000
9,50		09500	09500	
10,00		10000	10000	10000
10,50		10500	10500	
11,00		11000	11000	11000
11,50		11500	11500	
12,00		12000	12000	12000
12,50		12500	12500	
13,00		13000	13000	13000
13,50		13500	13500	
14,00		14000	14000	14000
14,50		14500	14500	
15,00		15000	15000	
15,50		15500	15500	
16,00		16000	16000	

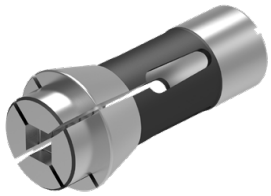
1) Without transverse grooves

Collets

Designation	DGUI mm	DFC mm	DCLC mm	LCLC mm	OAL mm	BHTA °
145 E / F 25	25	35	27	10	77	16



Pressure collet 145 E / F 25



DCONWS mm	DCONWS inch	Grooved 145 E / F 25	Smooth 145 E / F 25	Grooved 145 E / F 25	Grooved 145 E / F 25
		81 015 ...	**81 017 ...**	**81 027 ...**	**81 029 ...**
1,500			01500		
1,501 - 1,999			xxxxx[2]		
2,000			02000	02000[1]	02000[1]
2,001 - 2,499			xxxxx[2]		
2,500			02500		
2,501 - 2,999			xxxxx[2]		
3,000			03000	03000[1]	03000[1]
3,001 - 3,499			xxxxx[2]		
3,500			03500		
3,501 - 3,999			xxxxx[2]		
4,000			04000	04000[1]	04000[1]
4,001 - 4,499			xxxxx[2]		
4,500			04500		
4,501 - 4,999			xxxxx[2]		
5,000			05000	05000[1]	05000[1]
5,001 - 5,499			xxxxx[2]		
5,500			05500		
5,501 - 5,999			xxxxx[2]		
6,000		06000	06000	06000[1]	06000[1]
6,001 - 6,349		xxxxx[2]			
6,350	1/4	06350	06350	06350[1]	
6,351 - 6,499		xxxxx[2]			
6,500		06500	06500		
6,501 - 6,999		xxxxx[2]			
7,000		07000	07000	07000[1]	07000[1]
7,001 - 7,499		xxxxx[2]			
7,500		07500	07500		
7,501 - 7,937		xxxxx[2]			
7,938	5/16	07938	07938		
7,939 - 7,999		xxxxx[2]			
8,000		08000	08000	08000	08000
8,001 - 8,499		xxxxx[2]			
8,500		08500	08500		
8,501 - 8,999		xxxxx[2]			
9,000		09000	09000	09000	09000
9,001 - 9,499		xxxxx[2]			
9,500		09500	09500		
9,501 - 9,999		xxxxx[2]			
10,000		10000	10000	10000	10000
10,001 - 10,499		xxxxx[2]			
10,500		10500	10500		
10,501 - 10,999		xxxxx[2]			
11,000		11000	11000	11000	11000
11,001 - 11,112		xxxxx[2]			

1) Without transverse grooves

2) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 7 working days

For xxxxx please specify the required diameter when ordering (e.g. **Ø 6.789** – article number 81 015 **06789**).

5

Continued on next page

Pressure collet 145 E / F 25

DCONWS mm	DCONWS inch	Grooved 145 E / F 25	Smooth 145 E / F 25	Grooved 145 E / F 25	Grooved 145 E / F 25
		81 015 ...	**81 017 ...**	**81 027 ...**	**81 029 ...**
11,113	7/16	**11113**	**11113**		
11,114 - 11,499		**xxxxx**[2)]			
11,500		**11500**	**11500**		
11,501 - 11,999		**xxxxx**[2)]			
12,000		**12000**	**12000**	**12000**	**12000**
12,001 - 12,499		**xxxxx**[2)]			
12,500		**12500**	**12500**		
12,501 - 12,699		**xxxxx**[2)]			
12,700	1/2	**12700**	**12700**	**12700**	
12,701 - 12,999		**xxxxx**[2)]			
13,000		**13000**	**13000**	**13000**	**13000**
13,001 - 13,499		**xxxxx**[2)]			
13,500		**13500**	**13500**		
13,501 - 13,999		**xxxxx**[2)]			
14,000		**14000**	**14000**	**14000**	**14000**
14,001 - 14,499		**xxxxx**[2)]			
14,500		**14500**	**14500**		
14,501 - 14,999		**xxxxx**[2)]			
15,000		**15000**	**15000**	**15000**	**15000**
15,001 - 15,499		**xxxxx**[2)]			
15,500		**15500**	**15500**		
15,501 - 15,999		**xxxxx**[2)]			
16,000		**16000**	**16000**	**16000**	
16,001 - 16,499		**xxxxx**[2)]			
16,500		**16500**	**16500**		
16,501 - 16,999		**xxxxx**[2)]			
17,000		**17000**	**17000**	**17000**	
17,001 - 17,499		**xxxxx**[2)]			
17,500		**17500**	**17500**		
17,501 - 17,999		**xxxxx**[2)]			
18,000		**18000**	**18000**	**18000**	
18,001 - 18,499		**xxxxx**[2)]			
18,500		**18500**	**18500**		
18,501 - 18,999		**xxxxx**[2)]			
19,000		**19000**	**19000**	**19000**	
19,001 - 19,049		**xxxxx**[2)]			
19,050	3/4	**19050**			
19,051 - 19,499		**xxxxx**[2)]			
19,500		**19500**	**19500**		
19,501 - 19,999		**xxxxx**[2)]			
20,000		**20000**	**20000**		

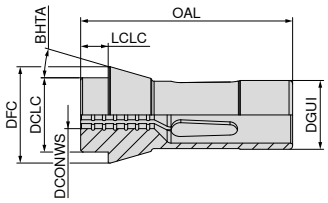
1) Without transverse grooves

2) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 7 working days

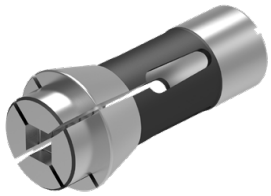
For xxxxx please specify the required diameter when ordering (e.g. **Ø 6.789** – article number 81 015 **06789**).

Collets

Designation	DGUI mm	DFC mm	DCLC mm	LCLC mm	OAL mm	BHTA °
F 37 / 1536 E	37	47	40	10	92	16



Pressure collet F 37 / 1536 E



DCONWS mm	DCONWS inch	Grooved F 37 / 1536 E 81 023 ...	Smooth F 37 / 1536 E 81 025 ...	Grooved F 37 / 1536 E 81 028 ...	Grooved F 37 / 1536 E 81 030 ...
1,000			01000		
1,001 - 1,499			xxxxx[2]		
1,500			01500		
1,501 - 1,999			xxxxx[2]		
2,000			02000		
2,001 - 2,499			xxxxx[2]		
2,500			02500		
2,501 - 2,999			xxxxx[2]		
3,000			03000	03000[1]	03000[1]
3,001 - 3,499			xxxxx[2]		
3,500			03500		
3,501 - 3,999			xxxxx[2]		
4,000			04000	04000[1]	04000[1]
4,001 - 4,499			xxxxx[2]		
4,500			04500		
4,501 - 4,999			xxxxx[2]		
5,000			05000	05000[1]	05000[1]
5,001 - 5,499			xxxxx[2]		
5,500			05500		
5,501 - 5,999			xxxxx[2]		
6,000		06000	06000	06000[1]	06000[1]
6,001 - 6,349		xxxxx[2]			
6,350	1/4	06350	06350	06350[1]	06350[1]
6,351 - 6,499		xxxxx[2]			
6,500		06500	06500		
6,501 - 6,999		xxxxx[2]			
7,000		07000	07000	07000[1]	07000[1]
7,001 - 7,499		xxxxx[2]			
7,500		07500	07500		
7,501 - 7,999		xxxxx[2]			
8,000		08000	08000	08000	08000
8,001 - 8,499		xxxxx[2]			
8,500		08500	08500		
8,501 - 8,999		xxxxx[2]			
9,000		09000	09000	09000	09000
9,001 - 9,499		xxxxx[2]			
9,500		09500	09500		
9,501 - 9,524		xxxxx[2]			
9,525	3/8	09525			
9,526 - 9,999		xxxxx[2]			
10,000		10000	10000	10000	10000
10,001 - 10,499		xxxxx[2]			
10,500		10500	10500		
10,501 - 10,999		xxxxx[2]			

1) Without transverse grooves

2) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 7 working days

For xxxxx please specify the required diameter when ordering (e.g. **Ø 6.789** – article number 81 023 **06789**).

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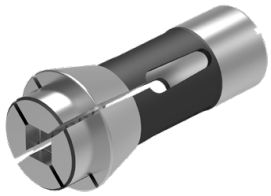
Pressure collet F 37 / 1536 E



DCONWS mm	DCONWS inch	Grooved F 37 / 1536 E 81 023 ...	Smooth F 37 / 1536 E 81 025 ...	Grooved F 37 / 1536 E 81 028 ...	Grooved F 37 / 1536 E 81 030 ...
11,000		11000	11000	11000	11000
11,001 - 11,499		xxxxx[2]			
11,500		11500	11500		
11,501 - 11,999		xxxxx[2]			
12,000		12000	12000	12000	12000
12,001 - 12,499		xxxxx[2]			
12,500		12500	12500		
12,501 - 12,699		xxxxx[2]			
12,700	1/2	12700	12700	12700	12700
12,701 - 12,999		xxxxx[2]			
13,000		13000	13000	13000	13000
13,001 - 13,499		xxxxx[2]			
13,500		13500	13500		
13,501 - 13,999		xxxxx[2]			
14,000		14000	14000	14000	14000
14,001 - 14,499		xxxxx[2]			
14,500		14500	14500		
14,501 - 14,999		xxxxx[2]			
15,000		15000	15000	15000	15000
15,001 - 15,499		xxxxx[2]			
15,500		15500	15500		
15,501 - 15,999		xxxxx[2]			
16,000		16000	16000	16000	16000
16,001 - 16,499		xxxxx[2]			
16,500		16500	16500		
16,501 - 16,999		xxxxx[2]			
17,000		17000	17000	17000	17000
17,001 - 17,499		xxxxx[2]			
17,500		17500	17500		
17,501 - 17,999		xxxxx[2]			
18,000		18000	18000	18000	18000
18,001 - 18,499		xxxxx[2]			
18,500		18500	18500		
18,501 - 18,999		xxxxx[2]			
19,000		19000	19000	19000	19000
19,001 - 19,049		xxxxx[2]			
19,050	3/4	19050	19050		
19,051 - 19,499		xxxxx[2]			
19,500		19500	19500		
19,501 - 19,999		xxxxx[2]			
20,000		20000	20000	20000	20000
20,001 - 20,499		xxxxx[2]			
20,500		20500	20500		
20,501 - 20,999		xxxxx[2]			
21,000		21000	21000	21000	21000
21,001 - 21,499		xxxxx[2]			
21,500		21500	21500		
21,501 - 21,999		xxxxx[2]			
22,000		22000	22000	22000	22000
22,001 - 22,224		xxxxx[2]			
22,225	7/8	22225			
22,226 - 22,499		xxxxx[2]			
22,500		22500	22500		
22,501 - 22,999		xxxxx[2]			
23,000		23000	23000	23000	23000

1) Without transverse grooves

2) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 7 working days

For xxxxx please specify the required diameter when ordering (e.g. **Ø 6.789** – article number 81 023 **06789**).

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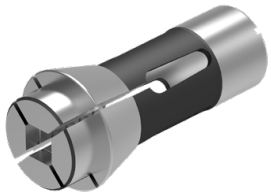
Pressure collet F 37 / 1536 E



DCONWS mm	DCONWS inch	Grooved F 37 / 1536 E	Smooth F 37 / 1536 E	Grooved F 37 / 1536 E	Grooved F 37 / 1536 E
		81 023 ...	**81 025 ...**	**81 028 ...**	**81 030 ...**
23,001 - 23,499		xxxxx[2]			
23,500		23500	23500		
23,501 - 23,999		xxxxx[2]			
24,000		24000	24000	24000	
24,001 - 24,499		xxxxx[2]			
24,500		24500	24500		
24,501 - 24,999		xxxxx[2]			
25,000		25000	25000	25000	
25,001 - 25,499		xxxxx[2]			
25,400	1/1			25400	
25,500		25500	25500		
25,501 - 25,999		xxxxx[2]			
26,000		26000	26000	26000	
26,001 - 26,499		xxxxx[2]			
26,500		26500	26500		
26,501 - 26,999		xxxxx[2]			
27,000		27000	27000	27000	
27,001 - 27,499		xxxxx[2]			
27,500		27500	27500		
27,501 - 27,999		xxxxx[2]			
28,000		28000	28000		
28,001 - 28,499		xxxxx[2]			
28,500		28500	28500		
28,501 - 28,999		xxxxx[2]			
29,000		29000	29000		
29,001 - 29,499		xxxxx[2]			
29,500		29500	29500		
29,501 - 29,999		xxxxx[2]			
30,000		30000	30000		
30,001 - 30,499		xxxxx[2]			
30,500		30500	30500		
30,501 - 30,999		xxxxx[2]			
31,000		31000	31000		
31,001 - 31,499		xxxxx[2]			
31,500		31500	31500		
31,501 - 31,999		xxxxx[2]			
32,000		32000	32000		

1) Without transverse grooves

2) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 7 working days

For xxxxx please specify the required diameter when ordering (e.g. **Ø 6.789** – article number 81 023 **06789**).

5

Stem collets overview

Norm	Clamping diameter range in mm	Profile	Version	Page No.
116 E / F 13	Ø 1,0 – 8,0		Smooth	15
120 E / F 15	Ø 1,0 – 8,0		Smooth	15
F 16 / 1212 E	Ø 1,0 – 9,0		Smooth	16
138 E / F 20-87	Ø 1,0 – 12,0		Smooth	16
136 E / F 20-201	Ø 1,0 – 14,0		Smooth	17
145 E / F 25	Ø 1,0 – 20,0		Smooth	18
F 37 / 1536 E	Ø 1,0 – 28,0		Smooth	19

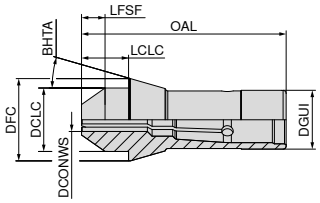
Other profile shapes and sizes and extended options available on request.

Should you wish to send us a request for specially adjusted solutions, you will find a detailed form in the download area on our homepage.
Please fill it out carefully and send it via email or print it out and send via fax. → **cuttingtools.ceratizit.com/int/en/download.html**

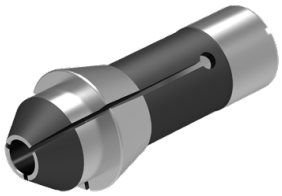
Please email the completed form to global.techsupport@ceratizit.com.

Stem collets

Designation	DGUI mm	DFC mm	DCLC mm	LCLC mm	OAL mm	BHTA °	LFSF mm
116 E / F 13	13	19	13	12	70	16	6
120 E / F 15	15	21	15	13	71	16	7
120 E / F 15	15	21	15	15	73	16	9



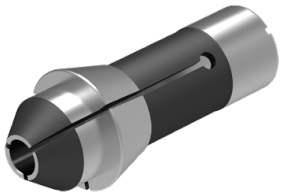
Stem collet 116 E / F 13



Smooth
116 E / F 13

DCONWS mm	81 001 ...
1	01000
2	02000
3	03000
4	04000
5	05000
6	06000
7	07000

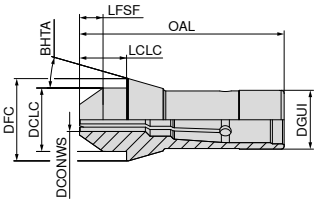
Stem collet 120 E / F 15



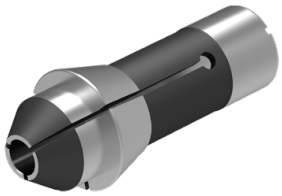
	Smooth 120 E / F 15 LFSF = 7 mm	Smooth 120 E / F 15 LFSF = 9 mm
DCONWS mm	81 004 ...	81 006 ...
1	01000	01000
2	02000	02000
3	03000	03000
4	04000	04000
5	05000	05000
6	06000	06000
7	07000	07000
8	08000	08000

Stem collets

Designation	DGUI mm	DFC mm	DCLC mm	LCLC mm	OAL mm	BHTA °	LFSF mm
F 16 / 1212 E	16	21	16	13	71	16	7
F 16 / 1212 E	16	21	16	15	73	16	9
138 E / F20-87	20	28	21	15	78	16	8
138 E / F20-87	20	28	21	20	80	16	13

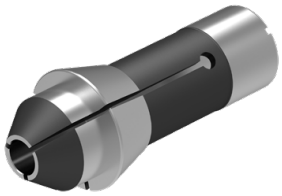


Stem collet F 16 / 1212 E



DCONWS mm	Smooth F 16 / 1212 E LFSF = 7 mm 81 020 ...	Smooth F 16 / 1212 E LFSF = 9 mm 81 022 ...
1	**01000**	**01000**
2	**02000**	**02000**
3	**03000**	**03000**
4	**04000**	**04000**
5	**05000**	**05000**
6	**06000**	**06000**
7	**07000**	**07000**
8	**08000**	**08000**
9	**09000**	**09000**

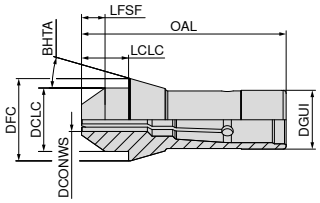
Stem collet 138 E / F 20-87



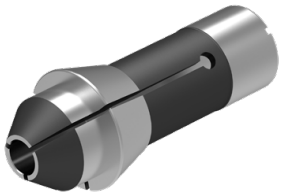
DCONWS mm	Smooth 138 E / F20-87 LFSF = 8 mm 81 012 ...	Smooth 138 E / F20-87 LFSF = 13 mm 81 014 ...
1	**01000**	**01000**
2	**02000**	**02000**
3	**03000**	**03000**
4	**04000**	**04000**
5	**05000**	**05000**
6	**06000**	**06000**
7	**07000**	**07000**
8	**08000**	**08000**
9	**09000**	**09000**
10	**10000**	**10000**
11	**11000**	**11000**
12	**12000**	**12000**

Stem collets

Designation	DGUI mm	DFC mm	DCLC mm	LCLC mm	OAL mm	BHTA °	LFSF mm
136 E / F 20-201	20	26	19	13	62	15	8
136 E / F 20-201	20	26	19	15	64	15	10



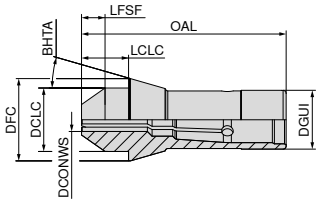
Stem collet 136 E / F 20-201



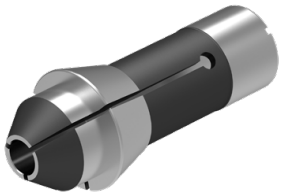
DCONWS mm	Smooth 136 E / F 20-201 LFSF = 8 mm 81 008 ...	Smooth 136 E / F 20-201 LFSF = 10 mm 81 010 ...
1	**01000**	**01000**
2	**02000**	**02000**
3	**03000**	**03000**
4	**04000**	**04000**
5	**05000**	**05000**
6	**06000**	**06000**
7	**07000**	**07000**
8	**08000**	**08000**
9	**09000**	**09000**
10	**10000**	**10000**
11	**11000**	**11000**
12	**12000**	**12000**
13		**13000**
14		**14000**

Stem collets

Designation	DGUI mm	DFC mm	DCLC mm	LCLC mm	OAL mm	BHTA °	LFSF mm
145 E / F 25	25	35	27	20	87	16	10
145 E / F 25	25	35	27	25	92	16	15



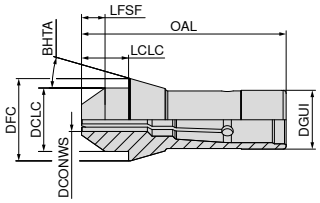
Stem collet 145 E / F 25



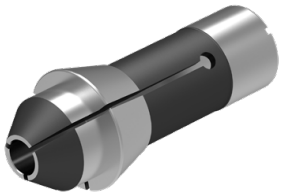
	Smooth 145 E / F 25 LFSF = 10 mm	Smooth 145 E / F 25 LFSF = 15 mm
DCONWS mm	**81 016 ...**	**81 018 ...**
1	**01000**	**01000**
2	**02000**	**02000**
3	**03000**	**03000**
4	**04000**	**04000**
5	**05000**	**05000**
6	**06000**	**06000**
7	**07000**	**07000**
8	**08000**	**08000**
9	**09000**	**09000**
10	**10000**	**10000**
11	**11000**	**11000**
12	**12000**	**12000**
13	**13000**	**13000**
14	**14000**	**14000**
15	**15000**	**15000**
16	**16000**	**16000**
17	**17000**	**17000**
18	**18000**	**18000**
19	**19000**	**19000**
20	**20000**	**20000**

Stem collets

Designation	DGUI mm	DFC mm	DCLC mm	LCLC mm	OAL mm	BHTA °	LFSF mm
F 37 / 1536 E	37	47	40	25	107	16	15



Stem collet F 37 / 1536 E



Smooth
F 37 / 1536 E

DCONWS mm	81 024 ...
1	01000
2	02000
3	03000
4	04000
5	05000
6	06000
7	07000
8	08000
9	09000
10	10000
11	11000
12	12000
13	13000
14	14000
15	15000
16	16000
17	17000
18	18000
19	19000
20	20000
21	21000
22	22000
23	23000
24	24000
25	25000
26	26000
27	27000
28	28000

Adjustable guide bushes overview

Norm	Guide diameter range in mm	Profile	Version	Page No.
I353	Ø 1,0 – 10,5		Carbide insert	21
F853	Ø 1,0 – 13,0		Carbide insert	22
F391	Ø 1,0 – 18,0		Carbide insert	23
F605	Ø 1,0 – 17,0		Carbide insert	24
T223	Ø 1,0 – 22,0		Carbide insert	25
	SW 2,0 – 11,0		Carbide insert	25
	SW 2,0 – 15,0		Carbide insert	25
I357	Ø 2,0 – 22,0		Carbide insert	26
T227	Ø 1,0 – 25,0		Carbide insert	27
T229	Ø 2,0 – 32,0		Carbide insert	28
	SW 2,0 – 14,0		Carbide insert	28

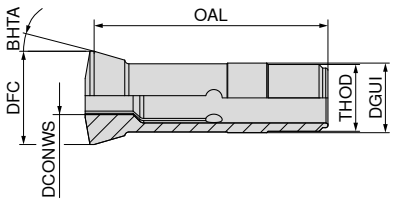
Flexible GBE guide bushes overview

GBE 28	Ø 2,0 – 15,0			29
GBE 42	Ø 2,0 – 15,0			30

Other profile shapes and sizes and extended options available on request.

Adjustable guide bushes

Designation	DGUI mm	DFC mm	OAL mm	BHTA °	THOD
I 353	16	19,5	56,79	16	M14 x 1



Adjustable guide bush I 353

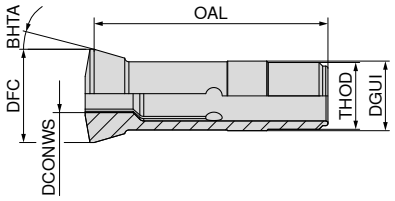
- For Star* CNC sliding head lathes
- With carbide insert

I 353

DCONWS mm	81 035 ...
1,0	01000
1,5	01500
2,0	02000
2,5	02500
3,0	03000
3,5	03500
4,0	04000
4,5	04500
5,0	05000
5,5	05500
6,0	06000
6,5	06500
7,0	07000
7,5	07500
8,0	08000
8,5	08500
9,0	09000
9,5	09500
10,0	10000
10,5	10500

Adjustable guide bushes

Designation	DGUI mm	DFC mm	OAL mm	BHTA °	THOD
F 853	18	22	60	30	M16 x 1



Adjustable guide bush F 853

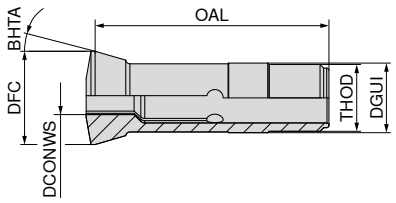
▲ With carbide insert

F 853

DCONWS mm	81 034 ...
1,0	01000
1,5	01500
2,0	02000
2,5	02500
3,0	03000
3,5	03500
4,0	04000
4,5	04500
5,0	05000
5,5	05500
6,0	06000
6,5	06500
7,0	07000
7,5	07500
8,0	08000
8,5	08500
9,0	09000
9,5	09500
10,0	10000
10,5	10500
11,0	11000
11,5	11500
12,0	12000
12,5	12500
13,0	13000

Adjustable guide bushes

Designation	DGUI mm	DFC mm	OAL mm	BHTA °	THOD
F 391	22	29	68	16	M22 x 1



Adjustable guide bush F 391

▲ With carbide insert

F 391

DCONWS mm	DCONWS inch	81 032 ...
1,000		01000
1,001 - 1,499		xxxxx[1]
1,500		01500
1,501 - 1,999		xxxxx[1]
2,000		02000
2,001 - 2,499		xxxxx[1]
2,500		02500
2,501 - 2,999		xxxxx[1]
3,000		03000
3,001 - 3,499		xxxxx[1]
3,500		03500
3,501 - 3,999		xxxxx[1]
4,000		04000
4,001 - 4,499		xxxxx[1]
4,500		04500
4,501 - 4,999		xxxxx[1]
5,000		05000
5,001 - 5,499		xxxxx[1]
5,500		05500
5,501 - 5,999		xxxxx[1]
6,000		06000
6,001 - 6,349		xxxxx[1]
6,350	1/4	06350
6,351 - 6,499		xxxxx[1]
6,500		06500
6,501 - 6,999		xxxxx[1]
7,000		07000
7,001 - 7,499		xxxxx[1]
7,500		07500
7,501 - 7,999		xxxxx[1]
8,000		08000
8,001 - 8,499		xxxxx[1]
8,500		08500
8,501 - 8,999		xxxxx[1]
9,000		09000
9,001 - 9,499		xxxxx[1]
9,500		09500
9,501 - 9,999		xxxxx[1]
10,000		10000
10,001 - 10,499		xxxxx[1]
10,500		10500
10,501 - 10,999		xxxxx[1]
11,000		11000
11,001 - 11,499		xxxxx[1]
11,500		11500
11,501 - 11,999		xxxxx[1]
12,000		12000
12,001 - 12,499		xxxxx[1]
12,500		12500
12,501 - 12,699		xxxxx[1]
12,700	1/2	12700
12,701 - 12,999		xxxxx[1]
13,000		13000
13,001 - 13,499		xxxxx[1]
13,500		13500
13,501 - 13,999		xxxxx[1]
14,000		14000
14,001 - 14,499		xxxxx[1]
14,500		14500
14,501 - 14,999		xxxxx[1]
15,000		15000
15,001 - 15,499		xxxxx[1]
15,500		15500
15,501 - 15,999		xxxxx[1]
16,000		16000
16,001 - 16,499		xxxxx[1]
16,500		16500
16,501 - 16,999		xxxxx[1]
17,000		17000
17,001 - 17,499		xxxxx[1]
17,500		17500
17,501 - 17,999		xxxxx[1]
18,000		18000

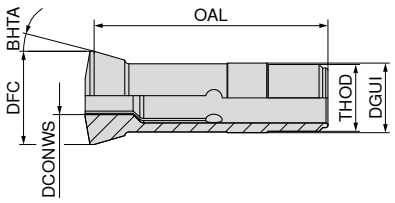
1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 7 working days

For xxxxx please specify the required diameter when ordering (e.g. **Ø 6.789** – article number 81 032 **06789**).

5

Adjustable guide bushes

Designation	DGUI mm	DFC mm	OAL mm	BHTA °	THOD
F 605	24	29,5	61	30	M24 x 1



Adjustable guide bush F 605

▲ With carbide insert

F 605

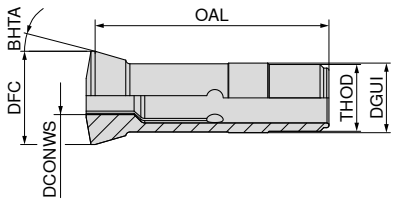
DCONWS mm	DCONWS inch	81 033 ...
1,000		01000
1,001 - 1,499		xxxxx[1]
1,500		01500
1,501 - 1,999		xxxxx[1]
2,000		02000
2,001 - 2,499		xxxxx[1]
2,500		02500
2,501 - 2,999		xxxxx[1]
3,000		03000
3,001 - 3,174		xxxxx[1]
3,175	1/8	03175
3,176 - 3,499		xxxxx[1]
3,500		03500
3,501 - 3,999		xxxxx[1]
4,000		04000
4,001 - 4,499		xxxxx[1]
4,500		04500
4,501 - 4,762		xxxxx[1]
4,763	3/16	04763
4,764 - 4,999		xxxxx[1]
5,000		05000
5,001 - 5,499		xxxxx[1]
5,500		05500
5,501 - 5,999		xxxxx[1]
6,000		06000
6,001 - 6,349		xxxxx[1]
6,350	1/4	06350
6,351 - 6,499		xxxxx[1]
6,500		06500
6,501 - 6,999		xxxxx[1]
7,000		07000
7,001 - 7,499		xxxxx[1]
7,500		07500
7,501 - 7,999		xxxxx[1]
8,000		08000
8,001 - 8,499		xxxxx[1]
8,500		08500
8,501 - 8,999		xxxxx[1]
9,000		09000
9,001 - 9,499		xxxxx[1]
9,500		09500
9,501 - 9,999		xxxxx[1]
10,000		10000
10,001 - 10,499		xxxxx[1]
10,500		10500
10,501 - 10,999		xxxxx[1]
11,000		11000
11,001 - 11,499		xxxxx[1]
11,500		11500
11,501 - 11,999		xxxxx[1]
12,000		12000
12,001 - 12,499		xxxxx[1]
12,500		12500
12,501 - 12,699		xxxxx[1]
12,700	1/2	12700
12,701 - 12,999		xxxxx[1]
13,000		13000
13,001 - 13,499		xxxxx[1]
13,500		13500
13,501 - 13,999		xxxxx[1]
14,000		14000
14,001 - 14,499		xxxxx[1]
14,500		14500
14,501 - 14,999		xxxxx[1]
15,000		15000
15,001 - 15,499		xxxxx[1]
15,500		15500
15,501 - 15,999		xxxxx[1]
16,000		16000
16,001 - 16,499		xxxxx[1]
16,500		16500
16,501 - 16,999		xxxxx[1]
17,000		17000

1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 7 working days

For xxxxx please specify the required diameter when ordering (e.g. **Ø 6.789** – article number 81 033 **06789**).

Adjustable guide bushes

Designation	DGUI mm	DFC mm	OAL mm	BHTA °	THOD
T 223	28	34	82	16	M25 x 1



Adjustable guide bush T 223

▲ With carbide insert

		T 223	T 223	T 223
		81 037 ...	81 038 ...	81 039 ...
DCONWS mm	DCONWS inch			
1,000		01000		
1,001 - 1,499		xxxxx[1]		
1,500		01500		
1,501 - 1,999		xxxxx[1]		
2,000		02000		
2,001 - 2,499		xxxxx[1]		
2,500		02500		
2,501 - 2,999		xxxxx[1]		
3,000		03000	03000	03000
3,001 - 3,499		xxxxx[1]		
3,500		03500		
3,501 - 3,999		xxxxx[1]		
4,000		04000	04000	04000
4,001 - 4,499		xxxxx[1]		
4,500		04500		
4,501 - 4,999		xxxxx[1]		
5,000		05000	05000	05000
5,001 - 5,499		xxxxx[1]		
5,500		05500		
5,501 - 5,999		xxxxx[1]		
6,000		06000	06000	06000
6,001 - 6,349		xxxxx[1]		
6,350	1/4	06350	06350	06350
6,351 - 6,499		xxxxx[1]		
6,500		06500		
6,501 - 6,999		xxxxx[1]		
7,000		07000	07000	07000
7,001 - 7,499		xxxxx[1]		
7,500		07500		
7,501 - 7,999		xxxxx[1]		
7,938	5/16		07938	
8,000		08000	08000	08000
8,001 - 8,499		xxxxx[1]		
8,500		08500		
8,501 - 8,999		xxxxx[1]		
9,000		09000	09000	09000
9,001 - 9,499		xxxxx[1]		
9,500		09500		
9,501 - 9,999		xxxxx[1]		
9,525	3/8		09525	
10,000		10000	10000	10000
10,001 - 10,499		xxxxx[1]		
10,500		10500		
10,501 - 10,999		xxxxx[1]		
11,000		11000	11000	11000
11,001 - 11,499		xxxxx[1]		
11,500		11500		
11,501 - 11,999		xxxxx[1]		
12,000		12000	12000	12000
12,001 - 12,499		xxxxx[1]		
12,500		12500		
12,501 - 12,699		xxxxx[1]		
12,700	1/2	12700	12700	
12,701 - 12,999		xxxxx[1]		
13,000		13000	13000	13000
13,001 - 13,499		xxxxx[1]		
13,500		13500		
13,501 - 13,999		xxxxx[1]		
14,000		14000	14000	14000
14,001 - 14,499		xxxxx[1]		
14,500		14500		
14,501 - 14,999		xxxxx[1]		
15,000		15000	15000	
15,001 - 15,499		xxxxx[1]		
15,500		15500		
15,501 - 15,999		xxxxx[1]		
16,000		16000	16000	
16,001 - 16,499		xxxxx[1]		
16,500		16500		
16,501 - 16,999		xxxxx[1]		
17,000		17000	17000	
17,001 - 17,499		xxxxx[1]		
17,500		17500		
17,501 - 17,999		xxxxx[1]		
18,000		18000		
18,001 - 18,499		xxxxx[1]		
18,500		18500		
18,501 - 18,999		xxxxx[1]		
19,000		19000		
19,001 - 19,499		xxxxx[1]		
19,500		19500		
19,501 - 19,999		xxxxx[1]		
20,000		20000		
20,001 - 20,499		xxxxx[1]		
20,500		20500		
20,501 - 20,999		xxxxx[1]		
21,000		21000		
21,001 - 21,499		xxxxx[1]		
21,500		21500		
21,501 - 21,999		xxxxx[1]		
22,000		22000		

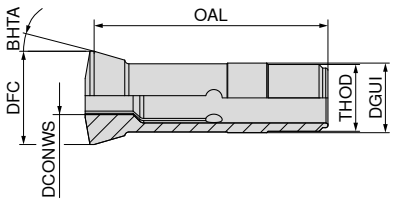
1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 7 working days

For xxxxx please specify the required diameter when ordering (e.g. **Ø 6.789** – article number 81 037 **06789**).

5

Adjustable guide bushes

Designation	DGUI mm	DFC mm	OAL mm	BHTA °	THOD
I 357	28	38	81	30	M25 x 1



Adjustable guide bush I 357

▲ With carbide insert

I 357

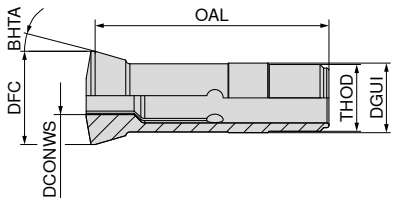
DCONWS mm	DCONWS inch	81 036 ...
2,000		02000
2,001 - 2,499		xxxxx[1]
2,500		02500
2,501 - 2,999		xxxxx[1]
3,000		03000
3,001 - 3,174		xxxxx[1]
3,175	1/8	03175
3,176 - 3,499		xxxxx[1]
3,500		03500
3,501 - 3,999		xxxxx[1]
4,000		04000
4,001 - 4,499		xxxxx[1]
4,500		04500
4,501 - 4,999		xxxxx[1]
5,000		05000
5,001 - 5,499		xxxxx[1]
5,500		05500
5,501 - 5,999		xxxxx[1]
6,000		06000
6,001 - 6,499		xxxxx[1]
6,500		06500
6,501 - 6,999		xxxxx[1]
7,000		07000
7,001 - 7,143		xxxxx[1]
7,144	9/32	07144
7,145 - 7,499		xxxxx[1]
7,500		07500
7,501 - 7,999		xxxxx[1]
8,000		08000
8,001 - 8,499		xxxxx[1]
8,500		08500
8,501 - 8,999		xxxxx[1]
9,000		09000
9,001 - 9,499		xxxxx[1]
9,500		09500
9,501 - 9,999		xxxxx[1]
10,000		10000
10,001 - 10,499		xxxxx[1]
10,500		10500
10,501 - 10,999		xxxxx[1]
11,000		11000
11,001 - 11,499		xxxxx[1]
11,500		11500
11,501 - 11,999		xxxxx[1]
12,000		12000
12,001 - 12,499		xxxxx[1]
12,500		12500
12,501 - 12,699		xxxxx[1]
12,700	1/2	12700
12,701 - 12,999		xxxxx[1]
13,000		13000
13,001 - 13,499		xxxxx[1]
13,500		13500
13,501 - 13,999		xxxxx[1]
14,000		14000
14,001 - 14,499		xxxxx[1]
14,500		14500
14,501 - 14,999		xxxxx[1]
15,000		15000
15,001 - 15,499		xxxxx[1]
15,500		15500
15,501 - 15,999		xxxxx[1]
16,000		16000
16,001 - 16,499		xxxxx[1]
16,500		16500
16,501 - 16,999		xxxxx[1]
17,000		17000
17,001 - 17,499		xxxxx[1]
17,500		17500
17,501 - 17,999		xxxxx[1]
18,000		18000
18,001 - 18,499		xxxxx[1]
18,500		18500
18,501 - 18,999		xxxxx[1]
19,000		19000
19,001 - 19,499		xxxxx[1]
19,500		19500
19,501 - 19,999		xxxxx[1]
20,000		20000
20,001 - 20,499		xxxxx[1]
20,500		20500
20,501 - 20,999		xxxxx[1]
21,000		21000
21,001 - 21,499		xxxxx[1]
21,500		21500
21,501 - 21,999		xxxxx[1]
22,000		22000

1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 7 working days

For xxxxx please specify the required diameter when ordering (e.g. **Ø 6.789** – article number 81 036 **06789**).

Adjustable guide bushes

Designation	DGUI mm	DFC mm	OAL mm	BHTA °	THOD
T 227	34	41	87,5	10	M34 x 1



Adjustable guide bush T 227

▲ With carbide insert

T 227

DCONWS mm	DCONWS inch	81 040 ...
1,000		01000
1,001 - 1,499		xxxxx[1]
1,500		01500
1,501 - 1,999		xxxxx[1]
2,000		02000
2,001 - 2,499		xxxxx[1]
2,500		02500
2,501 - 2,999		xxxxx[1]
3,000		03000
3,001 - 3,499		xxxxx[1]
3,500		03500
3,501 - 3,999		xxxxx[1]
4,000		04000
4,001 - 4,499		xxxxx[1]
4,500		04500
4,501 - 4,999		xxxxx[1]
5,000		05000
5,001 - 5,499		xxxxx[1]
5,500		05500
5,501 - 5,999		xxxxx[1]
6,000		06000
6,001 - 6,349		xxxxx[1]
6,350	1/4	06350
6,351 - 6,499		xxxxx[1]
6,500		06500
6,501 - 6,999		xxxxx[1]
7,000		07000
7,001 - 7,499		xxxxx[1]
7,500		07500
7,501 - 7,999		xxxxx[1]
8,000		08000
8,001 - 8,499		xxxxx[1]
8,500		08500
8,501 - 8,999		xxxxx[1]
9,000		09000
9,001 - 9,499		xxxxx[1]
9,500		09500
9,501 - 9,999		xxxxx[1]
10,000		10000
10,001 - 10,499		xxxxx[1]
10,500		10500
10,501 - 10,999		xxxxx[1]
11,000		11000
11,001 - 11,499		xxxxx[1]
11,500		11500
11,501 - 11,999		xxxxx[1]
12,000		12000
12,001 - 12,499		xxxxx[1]
12,500		12500
12,501 - 12,699		xxxxx[1]
12,700	1/2	12700
12,701 - 12,999		xxxxx[1]
13,000		13000
13,001 - 13,499		xxxxx[1]
13,500		13500
13,501 - 13,999		xxxxx[1]
14,000		14000
14,001 - 14,499		xxxxx[1]
14,500		14500
14,501 - 14,999		xxxxx[1]
15,000		15000
15,001 - 15,499		xxxxx[1]
15,500		15500
15,501 - 15,999		xxxxx[1]
16,000		16000
16,001 - 16,499		xxxxx[1]
16,500		16500
16,501 - 16,999		xxxxx[1]
17,000		17000
17,001 - 17,499		xxxxx[1]
17,500		17500
17,501 - 17,999		xxxxx[1]
18,000		18000
18,001 - 18,499		xxxxx[1]
18,500		18500
18,501 - 18,999		xxxxx[1]
19,000		19000
19,001 - 19,499		xxxxx[1]
19,500		19500
19,501 - 19,999		xxxxx[1]
20,000		20000
20,001 - 20,499		xxxxx[1]
20,500		20500
20,501 - 20,999		xxxxx[1]
21,000		21000
21,001 - 21,499		xxxxx[1]
21,500		21500
21,501 - 21,999		xxxxx[1]
22,000		22000
22,001 - 22,499		xxxxx[1]
22,500		22500
22,501 - 22,999		xxxxx[1]
23,000		23000
23,001 - 23,499		xxxxx[1]
23,500		23500
23,501 - 23,999		xxxxx[1]
24,000		24000
24,001 - 24,499		xxxxx[1]
24,500		24500
24,501 - 24,999		xxxxx[1]
25,000		25000

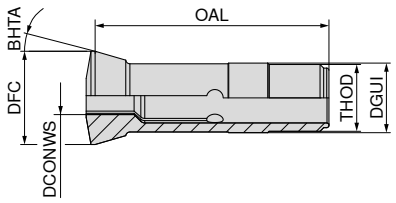
1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 7 working days

For xxxxx please specify the required diameter when ordering (e.g. **Ø 6.789** – article number 81 040 **06789**).

5

Adjustable guide bushes

Designation	DGUI mm	DFC mm	OAL mm	BHTA °	THOD
T 229	42	49	82	16	M40 x 1



Adjustable guide bush T 229

▲ With carbide insert

T 229 T 229

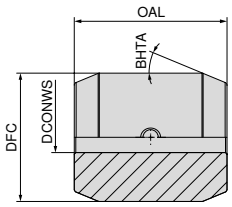
DCONWS mm	DCONWS inch	81 041 ...	81 042 ...
2,000		02000	
2,001 - 2,499		xxxxx[1]	
2,500		02500	
2,501 - 2,999		xxxxx[1]	
3,000		03000	
3,001 - 3,499		xxxxx[1]	
3,500		03500	
3,501 - 3,999		xxxxx[1]	
4,000		04000	04000
4,001 - 4,499		xxxxx[1]	
4,500		04500	
4,501 - 4,999		xxxxx[1]	
5,000		05000	05000
5,001 - 5,499		xxxxx[1]	
5,500		05500	
5,501 - 5,999		xxxxx[1]	
6,000		06000	06000
6,001 - 6,349		xxxxx[1]	
6,350	1/4	06350	06350
6,351 - 6,499		xxxxx[1]	
6,500		06500	
6,501 - 6,999		xxxxx[1]	
7,000		07000	07000
7,001 - 7,499		xxxxx[1]	
7,500		07500	
7,501 - 7,999		xxxxx[1]	
8,000		08000	08000
8,001 - 8,499		xxxxx[1]	
8,500		08500	
8,501 - 8,999		xxxxx[1]	
9,000		09000	09000
9,001 - 9,499		xxxxx[1]	
9,500		09500	
9,501 - 9,524		xxxxx[1]	
9,525	3/8	09525	
9,526 - 9,999		xxxxx[1]	
10,000		10000	10000
10,001 - 10,499		xxxxx[1]	
10,500		10500	
10,501 - 10,999		xxxxx[1]	
11,000		11000	11000
11,001 - 11,499		xxxxx[1]	
11,500		11500	
11,501 - 11,999		xxxxx[1]	
12,000		12000	12000
12,001 - 12,499		xxxxx[1]	
12,500		12500	
12,501 - 12,699		xxxxx[1]	
12,700	1/2	12700	
12,701 - 12,999		xxxxx[1]	
13,000		13000	13000
13,001 - 13,499		xxxxx[1]	
13,500		13500	
13,501 - 13,999		xxxxx[1]	
14,000		14000	14000
14,001 - 14,499		xxxxx[1]	
14,500		14500	
14,501 - 14,999		xxxxx[1]	
15,000		15000	15000
15,001 - 15,499		xxxxx[1]	
15,500		15500	
15,501 - 15,999		xxxxx[1]	
16,000		16000	16000
16,001 - 16,499		xxxxx[1]	
16,500		16500	
16,501 - 16,999		xxxxx[1]	
17,000		17000	17000
17,001 - 17,499		xxxxx[1]	
17,500		17500	
17,501 - 17,999		xxxxx[1]	
18,000		18000	18000
18,001 - 18,499		xxxxx[1]	
18,500		18500	
18,501 - 18,999		xxxxx[1]	
19,000		19000	19000
19,001 - 19,049		xxxxx[1]	
19,050	3/4	19050	
19,051 - 19,499		xxxxx[1]	
19,500		19500	
19,501 - 19,999		xxxxx[1]	
20,000		20000	20000
20,001 - 20,499		xxxxx[1]	
20,500		20500	
20,501 - 20,999		xxxxx[1]	
21,000		21000	21000
21,001 - 21,499		xxxxx[1]	
21,500		21500	
21,501 - 21,999		xxxxx[1]	
22,000		22000	22000
22,001 - 22,224		xxxxx[1]	
22,225	7/8	22225	
22,226 - 22,499		xxxxx[1]	
22,500		22500	
22,501 - 22,999		xxxxx[1]	
23,000		23000	23000
23,001 - 23,499		xxxxx[1]	
23,500		23500	
23,501 - 23,999		xxxxx[1]	
24,000		24000	24000
24,001 - 24,499		xxxxx[1]	
24,500		24500	
24,501 - 24,999		xxxxx[1]	
25,000		25000	25000
25,001 - 25,499		xxxxx[1]	
25,500		25500	
25,501 - 25,999		xxxxx[1]	
26,000		26000	26000
26,001 - 26,499		xxxxx[1]	
26,500		26500	
26,501 - 26,999		xxxxx[1]	
27,000		27000	27000
27,001 - 27,499		xxxxx[1]	
27,500		27500	
27,501 - 27,999		xxxxx[1]	
28,000		28000	
28,001 - 28,499		xxxxx[1]	
28,500		28500	
28,501 - 28,999		xxxxx[1]	
29,000		29000	
29,001 - 29,499		xxxxx[1]	
29,500		29500	
29,501 - 29,999		xxxxx[1]	
30,000		30000	
30,001 - 30,499		xxxxx[1]	
30,500		30500	
30,501 - 30,999		xxxxx[1]	
31,000		31000	
31,001 - 31,499		xxxxx[1]	
31,500		31500	
31,501 - 31,999		xxxxx[1]	
32,000		32000	

1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 7 working days

For xxxxx please specify the required diameter when ordering (e.g. **Ø 6.789** – article number 81 041 **06789**).

Flexible guide bushes

Designation	DFC mm	OAL mm	BHTA °
GBE 28	28	40	22,5



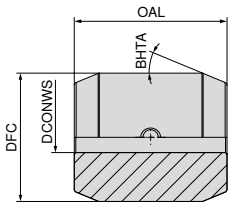
Guide bush GBE 28

GBE 28

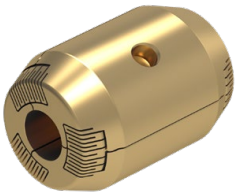
DCONWS mm	DCONWS inch	81 059 ...
3,000		03000
4,000		04000
5,000		05000
6,000		06000
6,350	1/4	06350
7,000		07000
8,000		08000
9,000		09000
9,525	3/8	09525
10,000		10000
11,000		11000
12,000		12000
12,700	1/2	12700
13,000		13000
14,000		14000
15,000		15000
16,000		16000
17,000		17000
18,000		18000
19,000		19000
19,050	3/4	19050
20,000		20000

Flexible guide bushes

Designation	DFC mm	OAL mm	BHTA °
GBE 42	42	50	22,5



Guide bush GBE 42



GBE 42

DCONWS mm	DCONWS inch	81 060 ...
3,000		03000
4,000		04000
5,000		05000
6,000		06000
6,350	1/4	06350
7,000		07000
8,000		08000
9,000		09000
10,000		10000
11,000		11000
12,000		12000
12,700	1/2	12700
13,000		13000
14,000		14000
15,000		15000
15,875	5/8	15880
16,000		16000
17,000		17000
18,000		18000
19,000		19000
19,050	3/4	19050
20,000		20000
21,000		21000
22,000		22000
22,225	7/8	22225
23,000		23000
24,000		24000
25,000		25000
25,400	1/1	25400
26,000		26000
27,000		27000
28,000		28000
29,000		29000
30,000		30000
31,000		31000
32,000		32000

Clamping sleeves overview

Norm	External diameter range in mm	Clamping diameter range	Profile	Version	Page No.
S 10 / 210 E	10	Ø 3,0 - 10,0			32
		SW 3,0 - 8,0			32
S 12 / 212 E	12	Ø 3,0 - 11,0			33
		SW 3,0 - 9,0			33
S 15 / 203 E	15	Ø 3,0 - 14,0			34
		SW 3,0 - 12,0			34
S 16	16	Ø 3,0 - 15,0			35
		SW 3,0 - 13,0			35
S 18 / 218 E	18	Ø 3,0 - 16,0			36
		SW 5,0 - 14,0			36
S 20 / 225 E	20	Ø 4,0 - 19,0			37
		SW 5,0 - 16,0			37
S 25 / 222 E	25	Ø 4,0 - 24,0			38
		SW 5,0 - 20,0			38
ST32 „Turbo“	32	Ø 5,0 - 32,0		Turbo	39
		SW 5,0 - 26,0			39

Other profile shapes and sizes and extended options available on request.

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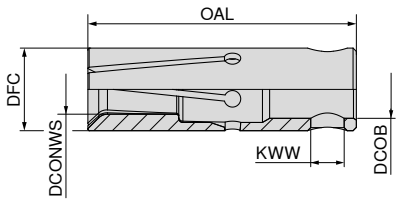
Clamping sleeves

Designation	Pusher Ø	DFC mm	KWW mm	DCOB $_{H7}$ mm	OAL mm
S 10 / 210 E	D 10	10	4	7	40



Clamping sleeve S 10 / 210 E

▲ Also suitable for all INDEX multi-spindle machines

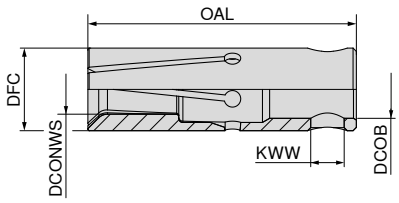
DCONWS mm	DCONWS inch	S 10 / 210 E 81 043 ...	S 10 / 210 E 81 044 ...
3,000		**03000**	**03000**
3,001 - 3,499		**xxxxx** [1]	
3,500		**03500**	
3,501 - 3,999		**xxxxx** [1]	
4,000		**04000**	**04000**
4,001 - 4,499		**xxxxx** [1]	
4,500		**04500**	
4,501 - 4,999		**xxxxx** [1]	
5,000		**05000**	**05000**
5,001 - 5,499		**xxxxx** [1]	
5,500		**05500**	
5,501 - 5,999		**xxxxx** [1]	
6,000		**06000**	**06000**
6,001 - 6,349		**xxxxx** [1]	
6,350	1/4	**06350**	
6,351 - 6,499		**xxxxx** [1]	
6,500		**06500**	
6,501 - 6,999		**xxxxx** [1]	
7,000		**07000**	**07000**
7,001 - 7,143		**xxxxx** [1]	
7,144	9/32	**07144**	
7,145 - 7,499		**xxxxx** [1]	
7,500		**07500**	
7,501 - 7,937		**xxxxx** [1]	
7,938	5/16	**07938**	
7,939 - 7,999		**xxxxx** [1]	
8,000		**08000**	**08000**
8,001 - 8,499		**xxxxx** [1]	
8,500		**08500**	
8,501 - 8,999		**xxxxx** [1]	
9,000		**09000**	
9,001 - 9,499		**xxxxx** [1]	
9,500		**09500**	
9,501 - 9,999		**xxxxx** [1]	
10,000		**10000**	

1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 7 working days

For xxxxx please specify the required diameter when ordering (e.g. **Ø 6.789** – article number 81 043 **06789**).

Clamping sleeves

Designation	Pusher Ø	DFC mm	KWW mm	DCOB H7 mm	OAL mm
S 12 / 212 E	D 12	12	4	8	40



Clamping sleeve S 12 / 212 E

▲ Also suitable for all INDEX multi-spindle machines

DCONWS mm	DCONWS inch	S 12 / 212 E 81 045 ...	S 12 / 212 E 81 046 ...
3,000		03000	03000
3,001 - 3,499		xxxxx [1]	
3,500		03500	
3,501 - 3,999		xxxxx [1]	
4,000		04000	04000
4,001 - 4,499		xxxxx [1]	
4,500		04500	
4,501 - 4,762		xxxxx [1]	
4,763	3/16	04763	
4,764 - 4,999		xxxxx [1]	
5,000		05000	05000
5,001 - 5,499		xxxxx [1]	
5,500		05500	
5,501 - 5,999		xxxxx [1]	
6,000		06000	06000
6,001 - 6,349		xxxxx [1]	
6,350	1/4	06350	06350
6,351 - 6,499		xxxxx [1]	
6,500		06500	
6,501 - 6,999		xxxxx [1]	
7,000		07000	07000
7,001 - 7,499		xxxxx [1]	
7,500		07500	
7,501 - 7,937		xxxxx [1]	
7,938	5/16	07938	
7,939 - 7,999		xxxxx [1]	
8,000		08000	08000
8,001 - 8,499		xxxxx [1]	
8,500		08500	
8,501 - 8,999		xxxxx [1]	
9,000		09000	09000
9,001 - 9,499		xxxxx [1]	
9,500		09500	
9,501 - 9,524		xxxxx [1]	
9,525	3/8	09525	
9,526 - 9,999		xxxxx [1]	
10,000		10000	
10,001 - 10,499		xxxxx [1]	
10,500		10500	
10,501 - 10,999		xxxxx [1]	
11,000		11000	

1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 7 working days

For xxxxx please specify the required diameter when ordering (e.g. **Ø 6.789** – article number 81 045 **06789**).

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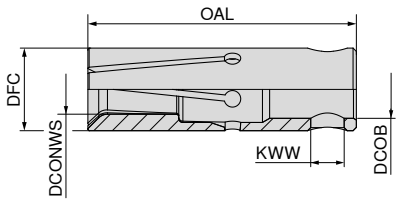
Clamping sleeves

Designation	Pusher Ø	DFC mm	KWW mm	DCOB H7 mm	OAL mm
S 15 / 203 E	D 15	15	6	11	40



Clamping sleeve S 15 / 203 E

▲ Also suitable for all INDEX multi-spindle machines

S 15 / 203 E ○ | S 15 / 203 E ⬡

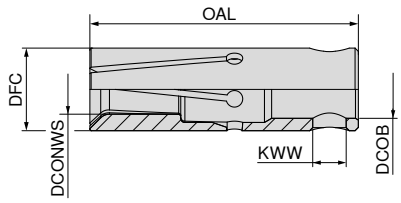
DCONWS mm	DCONWS inch	81 047 ...	81 048 ...
3,000		03000	03000
3,001 - 3,174		xxxxx[1]	
3,175	1/8	03175	
3,176 - 3,499		xxxxx[1]	
3,500		03500	
3,501 - 3,999		xxxxx[1]	
4,000		04000	04000
4,001 - 4,499		xxxxx[1]	
4,500		04500	
4,501 - 4,999		xxxxx[1]	
5,000		05000	05000
5,001 - 5,499		xxxxx[1]	
5,500		05500	
5,501 - 5,999		xxxxx[1]	
6,000		06000	06000
6,001 - 6,349		xxxxx[1]	
6,350	1/4	06350	06350
6,351 - 6,499		xxxxx[1]	
6,500		06500	
6,501 - 6,999		xxxxx[1]	
7,000		07000	07000
7,001 - 7,499		xxxxx[1]	
7,500		07500	
7,501 - 7,937		xxxxx[1]	
7,938	5/16	07938	07938
7,939 - 7,999		xxxxx[1]	
8,000		08000	08000
8,001 - 8,499		xxxxx[1]	
8,500		08500	
8,501 - 8,999		xxxxx[1]	
9,000		09000	09000
9,001 - 9,499		xxxxx[1]	
9,500		09500	
9,501 - 9,524		xxxxx[1]	
9,525	3/8	09525	
9,526 - 9,999		xxxxx[1]	
10,000		10000	10000
10,001 - 10,499		xxxxx[1]	
10,500		10500	
10,501 - 10,999		xxxxx[1]	
11,000		11000	11000
11,001 - 11,112		xxxxx[1]	
11,113	7/16	11113	
11,114 - 11,499		xxxxx[1]	
11,500		11500	
11,501 - 11,999		xxxxx[1]	
12,000		12000	12000
12,001 - 12,499		xxxxx[1]	
12,500		12500	
12,501 - 12,699		xxxxx[1]	
12,700	1/2	12700	
12,701 - 12,999		xxxxx[1]	
13,000		13000	
13,001 - 13,499		xxxxx[1]	
13,500		13500	
13,501 - 13,999		xxxxx[1]	
14,000		14000	

1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 7 working days

For xxxxx please specify the required diameter when ordering (e.g. **Ø 6.789** – article number 81 047 **06789**).

Clamping sleeves

Designation	Pusher Ø	DFC mm	KWW mm	DCOB H7 mm	OAL mm
S 16	D 16	16	6	11	40



Clamping sleeve S 16

▲ Also suitable for all INDEX multi-spindle machines

S 16 S 16

DCONWS mm	DCONWS inch	81 049 ...	81 050 ...
3,000		03000	03000
3,001 - 3,499		xxxxx[1]	
3,500		03500	
3,501 - 3,999		xxxxx[1]	
4,000		04000	04000
4,001 - 4,499		xxxxx[1]	
4,500		04500	
4,501 - 4,999		xxxxx[1]	
5,000		05000	05000
5,001 - 5,499		xxxxx[1]	
5,500		05500	
5,501 - 5,999		xxxxx[1]	
6,000		06000	06000
6,001 - 6,349		xxxxx[1]	
6,350	1/4	06350	
6,351 - 6,499		xxxxx[1]	
6,500		06500	
6,501 - 6,999		xxxxx[1]	
7,000		07000	07000
7,001 - 7,499		xxxxx[1]	
7,500		07500	
7,501 - 7,999		xxxxx[1]	
8,000		08000	08000
8,001 - 8,499		xxxxx[1]	
8,500		08500	
8,501 - 8,999		xxxxx[1]	
9,000		09000	09000
9,001 - 9,499		xxxxx[1]	
9,500		09500	
9,501 - 9,524		xxxxx[1]	
9,525	3/8	09525	
9,526 - 9,999		xxxxx[1]	
10,000		10000	10000
10,001 - 10,499		xxxxx[1]	
10,500		10500	
10,501 - 10,999		xxxxx[1]	
11,000		11000	11000
11,001 - 11,112		xxxxx[1]	
11,113	7/16	11113	
11,114 - 11,499		xxxxx[1]	
11,500		11500	
11,501 - 11,999		xxxxx[1]	
12,000		12000	12000
12,001 - 12,499		xxxxx[1]	
12,500		12500	
12,501 - 12,699		xxxxx[1]	
12,700	1/2	12700	
12,701 - 12,999		xxxxx[1]	
13,000		13000	13000
13,001 - 13,499		xxxxx[1]	
13,500		13500	
13,501 - 13,999		xxxxx[1]	
14,000		14000	
14,001 - 14,287		xxxxx[1]	
14,288	9/16	14288	
14,289 - 14,499		xxxxx[1]	
14,500		14500	
14,501 - 14,999		xxxxx[1]	
15,000		15000	

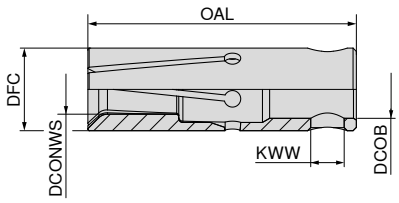
1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 7 working days

For xxxxx please specify the required diameter when ordering (e.g. **Ø 6.789** – article number 81 049 **06789**).

5

Clamping sleeves

Designation	Pusher Ø	DFC mm	KWW mm	DCOB H7 mm	OAL mm
S 18 / 218 E	D 18	18	6	11	40



Clamping sleeve S 18 / 218 E

▲ Also suitable for all INDEX multi-spindle machines

S 18 / 218 E ○ | S 18 / 218 E ⬡

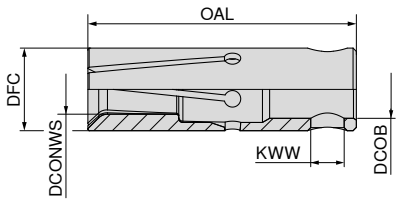
DCONWS mm	DCONWS inch	81 051 ...	81 052 ...
3,000		03000	
3,001 - 3,174		xxxxx[1]	
3,175	1/8	03175	
3,176 - 3,499		xxxxx[1]	
3,500		03500	
3,501 - 3,999		xxxxx[1]	
4,000		04000	
4,001 - 4,499		xxxxx[1]	
4,500		04500	
4,501 - 4,762		xxxxx[1]	
4,763	3/16	04763	
4,764 - 4,999		xxxxx[1]	
5,000		05000	05000
5,001 - 5,499		xxxxx[1]	
5,500		05500	
5,501 - 5,999		xxxxx[1]	
6,000		06000	06000
6,001 - 6,499		xxxxx[1]	
6,500		06500	
6,501 - 6,999		xxxxx[1]	
7,000		07000	07000
7,001 - 7,499		xxxxx[1]	
7,500		07500	
7,501 - 7,937		xxxxx[1]	
7,938	5/16	07938	
7,939 - 7,999		xxxxx[1]	
8,000		08000	08000
8,001 - 8,499		xxxxx[1]	
8,500		08500	
8,501 - 8,999		xxxxx[1]	
9,000		09000	09000
9,001 - 9,499		xxxxx[1]	
9,500		09500	
9,501 - 9,524		xxxxx[1]	
9,525	3/8	09525	
9,526 - 9,999		xxxxx[1]	
10,000		10000	10000
10,001 - 10,499		xxxxx[1]	
10,500		10500	
10,501 - 10,999		xxxxx[1]	
11,000		11000	11000
11,001 - 11,112		xxxxx[1]	
11,113	7/16	11113	
11,114 - 11,499		xxxxx[1]	
11,500		11500	
11,501 - 11,999		xxxxx[1]	
12,000		12000	12000
12,001 - 12,499		xxxxx[1]	
12,500		12500	
12,501 - 12,699		xxxxx[1]	
12,700	1/2	12700	12700
12,701 - 12,999		xxxxx[1]	
13,000		13000	13000
13,001 - 13,499		xxxxx[1]	
13,500		13500	
13,501 - 13,999		xxxxx[1]	
14,000		14000	14000
14,001 - 14,287		xxxxx[1]	
14,288	9/16	14288	
14,289 - 14,499		xxxxx[1]	
14,500		14500	
14,501 - 14,999		xxxxx[1]	
15,000		15000	
15,001 - 15,499		xxxxx[1]	
15,500		15500	
15,501 - 15,874		xxxxx[1]	
15,875	5/8	15875	
15,876 - 15,999		xxxxx[1]	
16,000		16000	

1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 7 working days

For xxxxx please specify the required diameter when ordering (e.g. **Ø 6.789** – article number 81 051 **06789**).

Clamping sleeves

Designation	Pusher Ø	DFC mm	KWW mm	DCOB H7 mm	OAL mm
S 20 / 225 E	D 20	20	8	14	65



Clamping sleeve S 20 / 225 E

▲ Also suitable for all INDEX multi-spindle machines

S 20 / 225 E — S 20 / 225 E

DCONWS mm	DCONWS inch	81 053 ...	81 054 ...
4,000		04000	
4,001 - 4,499		xxxxx[1]	
4,500		04500	
4,501 - 4,762		xxxxx[1]	
4,763	3/16	04763	
4,764 - 4,999		xxxxx[1]	
5,000		05000	05000
5,001 - 5,499		xxxxx[1]	
5,500		05500	
5,501 - 5,999		xxxxx[1]	
6,000		06000	06000
6,001 - 6,349		xxxxx[1]	
6,350	1/4	06350	06350
6,351 - 6,499		xxxxx[1]	
6,500		06500	
6,501 - 6,999		xxxxx[1]	
7,000		07000	07000
7,001 - 7,499		xxxxx[1]	
7,500		07500	
7,501 - 7,937		xxxxx[1]	
7,938	5/16	07938	
7,939 - 7,999		xxxxx[1]	
8,000		08000	08000
8,001 - 8,499		xxxxx[1]	
8,500		08500	
8,501 - 8,999		xxxxx[1]	
9,000		09000	09000
9,001 - 9,499		xxxxx[1]	
9,500		09500	
9,501 - 9,524		xxxxx[1]	
9,525	3/8	09525	
9,526 - 9,999		xxxxx[1]	
10,000		10000	10000
10,001 - 10,499		xxxxx[1]	
10,500		10500	
10,501 - 10,999		xxxxx[1]	
11,000		11000	11000
11,001 - 11,112		xxxxx[1]	
11,113	7/16	11113	
11,114 - 11,499		xxxxx[1]	
11,500		11500	
11,501 - 11,999		xxxxx[1]	
12,000		12000	12000
12,001 - 12,499		xxxxx[1]	
12,500		12500	
12,501 - 12,699		xxxxx[1]	
12,700	1/2	12700	12700
12,701 - 12,999		xxxxx[1]	
13,000		13000	13000
13,001 - 13,499		xxxxx[1]	
13,500		13500	
13,501 - 13,999		xxxxx[1]	
14,000		14000	14000
14,001 - 14,499		xxxxx[1]	
14,500		14500	
14,501 - 14,999		xxxxx[1]	
15,000		15000	15000
15,001 - 15,499		xxxxx[1]	
15,500		15500	
15,501 - 15,999		xxxxx[1]	
16,000		16000	16000
16,001 - 16,499		xxxxx[1]	
16,500		16500	
16,501 - 16,999		xxxxx[1]	
17,000		17000	
17,001 - 17,499		xxxxx[1]	
17,500		17500	
17,501 - 17,999		xxxxx[1]	
18,000		18000	
18,001 - 18,499		xxxxx[1]	
18,500		18500	
18,501 - 18,999		xxxxx[1]	
19,000		19000	

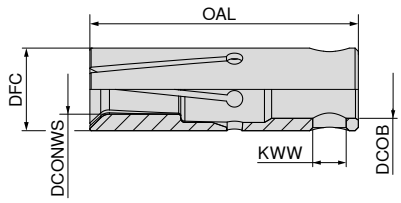
1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 7 working days

For xxxxx please specify the required diameter when ordering (e.g. **Ø 6.789** – article number 81 053 **06789**).

5

Clamping sleeves

Designation	Pusher Ø	DFC mm	KWW mm	DCOB H7 mm	OAL mm
S 25 / 222 E	D 25	25	8	20	65



Clamping sleeve S 25 / 222 E

▲ Also suitable for all INDEX multi-spindle machines

S 25 / 222 E — S 25 / 222 E

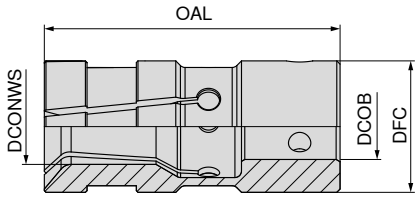
DCONWS mm	DCONWS inch	81 056 ...	81 055 ...
4,000			04000
4,001 - 4,499			xxxxx[1]
4,500			04500
4,501 - 4,999			xxxxx[1]
5,000		05000	05000
5,001 - 5,499			xxxxx[1]
5,500			05500
5,501 - 5,999			xxxxx[1]
6,000		06000	06000
6,001 - 6,349			xxxxx[1]
6,350	1/4	06350	06350
6,351 - 6,499			xxxxx[1]
6,500			06500
6,501 - 6,999			xxxxx[1]
7,000		07000	07000
7,001 - 7,499			xxxxx[1]
7,500			07500
7,501 - 7,999			xxxxx[1]
8,000		08000	08000
8,001 - 8,499			xxxxx[1]
8,500			08500
8,501 - 8,999			xxxxx[1]
9,000		09000	09000
9,001 - 9,499			xxxxx[1]
9,500			09500
9,501 - 9,999			xxxxx[1]
10,000		10000	10000
10,001 - 10,499			xxxxx[1]
10,500			10500
10,501 - 10,999			xxxxx[1]
11,000		11000	11000
11,001 - 11,499			xxxxx[1]
11,500			11500
11,501 - 11,999			xxxxx[1]
12,000		12000	12000
12,001 - 12,499			xxxxx[1]
12,500			12500
12,501 - 12,699			xxxxx[1]
12,700	1/2		12700
12,701 - 12,999			xxxxx[1]
13,000		13000	13000
13,001 - 13,499			xxxxx[1]
13,500			13500
13,501 - 13,999			xxxxx[1]
14,000		14000	14000
14,001 - 14,499			xxxxx[1]
14,500			14500
14,501 - 14,999			xxxxx[1]
15,000		15000	15000
15,001 - 15,499			xxxxx[1]
15,500			15500
15,501 - 15,999			xxxxx[1]
16,000		16000	16000
16,001 - 16,499			xxxxx[1]
16,500			16500
16,501 - 16,999			xxxxx[1]
17,000		17000	17000
17,001 - 17,499			xxxxx[1]
17,500			17500
17,501 - 17,999			xxxxx[1]
18,000		18000	18000
18,001 - 18,499			xxxxx[1]
18,500			18500
18,501 - 18,999			xxxxx[1]
19,000		19000	19000
19,001 - 19,049			xxxxx[1]
19,050	3/4		19050
19,051 - 19,499			xxxxx[1]
19,500			19500
19,501 - 19,999			xxxxx[1]
20,000		20000	20000
20,001 - 20,499			xxxxx[1]
20,500			20500
20,501 - 20,999			xxxxx[1]
21,000			21000
21,001 - 21,499			xxxxx[1]
21,500			21500
21,501 - 21,999			xxxxx[1]
22,000			22000
22,001 - 22,499			xxxxx[1]
22,500			22500
22,501 - 22,999			xxxxx[1]
23,000			23000
23,001 - 23,499			xxxxx[1]
23,500			23500
23,501 - 23,999			xxxxx[1]
24,000			24000

1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 7 working days

For xxxxx please specify the required diameter when ordering (e.g. **Ø 6.789** – article number 81 056 **06789**).

Clamping sleeves

Designation	Pusher Ø	DFC mm	DCOB $_{H7}$ mm	OAL mm
ST 32	D 32	32	20	90



Clamping sleeve ST 32 (turbo version)

▲ Also suitable for all INDEX multi-spindle machines

ST 32 ST 32

DCONWS mm	DCONWS inch	81 057 ...	81 058 ...
5,000		05000	05000
5,001 - 5,499		xxxxx[1]	
5,500		05500	
5,501 - 5,999		xxxxx[1]	
6,000		06000	06000
6,001 - 6,349		xxxxx[1]	
6,350	1/4	06350	
6,351 - 6,499		xxxxx[1]	
6,500		06500	
6,501 - 6,999		xxxxx[1]	
7,000		07000	07000
7,001 - 7,499		xxxxx[1]	
7,500		07500	
7,501 - 7,999		xxxxx[1]	
8,000		08000	08000
8,001 - 8,499		xxxxx[1]	
8,500		08500	
8,501 - 8,999		xxxxx[1]	
9,000		09000	09000
9,001 - 9,499		xxxxx[1]	
9,500		09500	
9,501 - 9,524		xxxxx[1]	
9,525	3/8	09525	
9,526 - 9,999		xxxxx[1]	
10,000		10000	10000
10,001 - 10,499		xxxxx[1]	
10,500		10500	
10,501 - 10,999		xxxxx[1]	
11,000		11000	11000
11,001 - 11,499		xxxxx[1]	
11,500		11500	
11,501 - 11,999		xxxxx[1]	
12,000		12000	12000
12,001 - 12,499		xxxxx[1]	
12,500		12500	
12,501 - 12,699		xxxxx[1]	
12,700	1/2	12700	
12,701 - 12,999		xxxxx[1]	
13,000		13000	13000
13,001 - 13,499		xxxxx[1]	
13,500		13500	
13,501 - 13,999		xxxxx[1]	
14,000		14000	14000
14,001 - 14,499		xxxxx[1]	
14,500		14500	
14,501 - 14,999		xxxxx[1]	
15,000		15000	15000
15,001 - 15,499		xxxxx[1]	
15,500		15500	
15,501 - 15,874		xxxxx[1]	
15,875	5/8	15875	
15,876 - 15,999		xxxxx[1]	
16,000		16000	16000
16,001 - 16,499		xxxxx[1]	
16,500		16500	
16,501 - 16,999		xxxxx[1]	
17,000		17000	17000
17,001 - 17,462		xxxxx[1]	
17,463	11/16	17463	
17,464 - 17,499		xxxxx[1]	
17,500		17500	
17,501 - 17,999		xxxxx[1]	
18,000		18000	18000
18,001 - 18,499		xxxxx[1]	
18,500		18500	
18,501 - 18,999		xxxxx[1]	
19,000		19000	19000
19,001 - 19,049		xxxxx[1]	
19,050	3/4	19050	
19,051 - 19,499		xxxxx[1]	
19,500		19500	
19,501 - 19,999		xxxxx[1]	
20,000		20000	20000
20,001 - 20,499		xxxxx[1]	
20,500		20500	
20,501 - 20,999		xxxxx[1]	
21,000		21000	21000
21,001 - 21,499		xxxxx[1]	
21,500		21500	
21,501 - 21,999		xxxxx[1]	
22,000		22000	22000
22,001 - 22,224		xxxxx[1]	
22,225	7/8	22225	
22,226 - 22,499		xxxxx[1]	
22,500		22500	
22,501 - 22,999		xxxxx[1]	
23,000		23000	23000
23,001 - 23,499		xxxxx[1]	
23,500		23500	
23,501 - 23,999		xxxxx[1]	
24,000		24000	24000
24,001 - 24,499		xxxxx[1]	
24,500		24500	
24,501 - 24,999		xxxxx[1]	
25,000		25000	25000
25,001 - 25,399		xxxxx[1]	
25,400	1/1	25400	
25,401 - 25,499		xxxxx[1]	
25,500		25500	
25,501 - 25,999		xxxxx[1]	
26,000		26000	26000
26,001 - 26,499		xxxxx[1]	
26,500		26500	
26,501 - 26,999		xxxxx[1]	
27,000		27000	
27,001 - 27,499		xxxxx[1]	
27,500		27500	
27,501 - 27,999		xxxxx[1]	
28,000		28000	
28,001 - 28,499		xxxxx[1]	
28,500		28500	
28,501 - 28,574		xxxxx[1]	
28,575	1 1/8	28575	
28,576 - 28,999		xxxxx[1]	
29,000		29000	
29,001 - 29,499		xxxxx[1]	
29,500		29500	
29,501 - 29,999		xxxxx[1]	
30,000		30000	

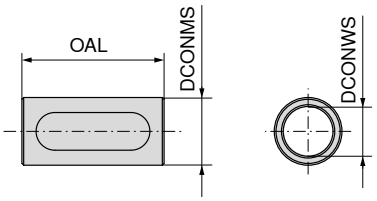
1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 7 working days

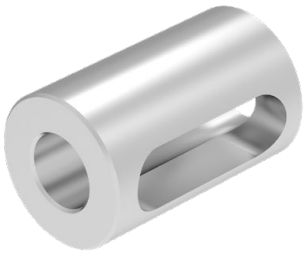
For xxxxx please specify the required diameter when ordering (e.g. **Ø 6.789** – article number 81 057 **06789**).

5

Reduction sleeve

- for tools with cylindrical shank
- Radial run-out accuracy < 0.01 mm



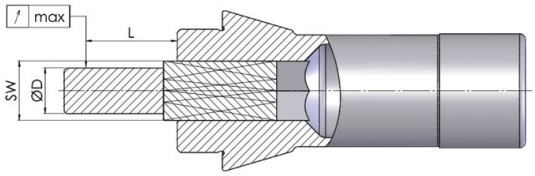


NEW

DCONMS $_{g6}$ mm	DCONMS $_{g6}$ inch	DCONWS $_{H7}$ mm	OAL mm	81 427 ...
15,875	5/8	12	30	15912
16,000		12	30	16012
19,050	3/4	8	40	19108
19,050	3/4	10	40	19110
19,050	3/4	12	40	19112
19,050	3/4	14	40	19114
19,050	3/4	16	40	19116
20,000		10	40	20010
20,000		12	40	20012
20,000		16	40	20016
22,000		12	40	22012
22,000		16	40	22016
25,000		12	40	25012
25,000		16	40	25016
25,000		20	40	25020
25,400	1	12	40	25412
25,400	1	16	40	25416
25,400	1	20	40	25420
33,000		20	40	33020
33,000		22	40	33022
33,000		25	40	33025

Technical Information

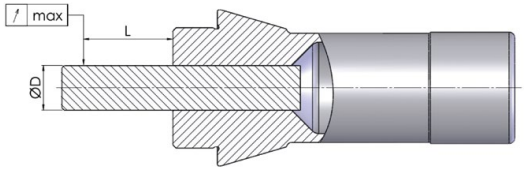
Runout accuracy



Run-out tolerances of collets with profiles					
Profile size		L	Standard	Norm	
from	up to	mm	norm	Standard	HP*
0,5	0,9	3	0,12	< 0,02	< 0,01
1	1,5	6	0,12	< 0,02	< 0,01
1,6	3	10	0,12	< 0,02	< 0,01
3,1	6	16	0,12	< 0,02	< 0,01
6,1	10	25	0,15	< 0,02	< 0,01
10,1	18	40	0,2	< 0,02	< 0,01
18,1	24	50	0,2	< 0,02	< 0,01
24,1	30	60	0,2	< 0,02	< 0,01
30,0		80	0,2	< 0,02	< 0,01

* Lower run-out tolerances with the HP (High Precision) option on request.

Our profile collets and guide bushes are micro-eroded with up to 7 slots. This ensures maximum quality with minimal run-out tolerances.



Run-out tolerances of round collets				
hole		L	Norm	
from	up to	mm	Standard	HP*
0,5	0,9	3	< 0,01	< 0,008
1	1,5	6	< 0,01	< 0,008
1,6	3	10	< 0,015	< 0,008
3,1	6	16	< 0,015	< 0,008
6,1	10	25	< 0,015	< 0,008
10,1	18	40	< 0,02	< 0,01
18,1	24	50	< 0,02	< 0,01
24,1	30	60	< 0,02	< 0,01
30,0		80	< 0,03	< 0,015

* Lower run-out tolerances with the HP (High Precision) option on request.

Your wish is our command. That is why the WNT tolerances are far tighter than standard tolerances. The service lives of both the machine components and the tools are extended.

Special shapes

Due to the variety of different applications, it may be necessary to individually adapt some products to the processes.
To do this, we offer you maximum quality according to your specifications.
Get in touch using one of the options below and let us create your clamping device:

Technical Advice

Interested in our clamping devices?

Our Technical Sales Engineers would be happy to advise you. You can of course also talk to our in-house Technical Sales Engineers by calling our freefone number.

Enquiry Form

Should you wish to send us a request for specially adjusted solutions, you will find a detailed form in the download area on our homepage. Please fill it out carefully and send it via email or print it out and send via fax.
→ **cuttingtools.ceratizit.com/int/en/download.html**

Please email the completed form to global.techsupport@ceratizit.com.

5

Other profile shapes and sizes and extended options available on request.

Extended Material Examples for the Cutting Data Tables

	Material sub-group	Index	Composition / Structure / Heat treatment		Tensile strength N/mm²* / HB / HRC
P	Unalloyed steel	P.1.1	< 0,15 % C	Annealed	420 N/mm² / 125 HB
		P.1.2	< 0,45 % C	Annealed	640 N/mm² / 190 HB
		P.1.3		Tempered	840 N/mm² / 250 HB
		P.1.4	< 0,75 % C	Annealed	910 N/mm² / 270 HB
		P.1.5		Tempered	1010 N/mm² / 300 HB
	Low-alloy steel	P.2.1		Annealed	610 N/mm² / 180 HB
		P.2.2		Tempered	930 N/mm² / 275 HB
		P.2.3		Tempered	1010 N/mm² / 300 HB
		P.2.4		Tempered	1200 N/mm² / 375 HB
	High-alloy steel and high-alloy tool steel	P.3.1		Annealed	680 N/mm² / 200 HB
		P.3.2		Hardened and tempered	1100 N/mm² / 300 HB
		P.3.3		Hardened and tempered	1300 N/mm² / 400 HB
	Stainless steel	P.4.1	Ferritic / martensitic	Annealed	680 N/mm² / 200 HB
		P.4.2	Martensitic	Tempered	1010 N/mm² / 300 HB
M	Stainless steel	M.1.1	Austenitic / austenitic-ferritic	Quenched	610 N/mm² / 180 HB
		M.2.1	Austenitic	Tempered	300 HB
		M.3.1	Austenitic / ferritic (Duplex)		780 N/mm² / 230 HB
K	Grey cast iron	K.1.1	Pearlitic / ferritic		350 N/mm² / 180 HB
		K.1.2	Pearlitic (martensitic)		500 N/mm² / 260 HB
	Spherulitic graphite cast iron	K.2.1	Ferritic		540 N/mm² / 160 HB
		K.2.2	Pearlitic		845 N/mm² / 250 HB
	Malleable iron	K.3.1	Ferritic		440 N/mm² / 130 HB
		K.3.2	Pearlitic		780 N/mm² / 230 HB
N	Aluminium wrought alloy	N.1.1	Non-hardenable		60 HB
		N.1.2	Hardenable	Age-hardened	340 N/mm² / 100 HB
	Cast aluminium alloy	N.2.1	≤ 12 % Si, non-hardenable		250 N/mm² / 75 HB
		N.2.2	≤ 12 % Si, hardenable	Age-hardened	300 N/mm² / 90 HB
		N.2.3	> 12 % Si, non-hardenable		440 N/mm² / 130 HB
	Copper and copper alloys (bronze/brass)	N.3.1	Free-machining alloys, PB > 1 %		375 N/mm² / 110 HB
		N.3.2	CuZn, CuSnZn		300 N/mm² / 90 HB
		N.3.3	CuSn, lead-free copper and electrolytic copper		340 N/mm² / 100 HB
	Magnesium alloys	N.4.1	Magnesium and magnesium alloys		70 HB
S	Heat-resistant alloys	S.1.1	Fe - basis	Annealed	680 N/mm² / 200 HB
		S.1.2		Age-hardened	950 N/mm² / 280 HB
		S.2.1	Ni or Co basis	Annealed	840 N/mm² / 250 HB
		S.2.2		Age-hardened	1180 N/mm² / 350 HB
		S.2.3		Cast	1080 N/mm² / 320 HB
	Titanium alloys	S.3.1	Pure titanium		400 N/mm²
		S.3.2	Alpha + beta alloys	Age-hardened	1050 N/mm² / 320 HB
		S.3.3	Beta alloys		1400 N/mm² / 410 HB
H	Hardened steel	H.1.1		Hardened and tempered	46–55 HRC
		H.1.2		Hardened and tempered	56–60 HRC
		H.1.3		Hardened and tempered	61–65 HRC
		H.1.4		Hardened and tempered	66–70 HRC
	Chilled iron	H.2.1		Cast	400 HB
	Hardened cast iron	H.3.1		Hardened and tempered	55 HRC
O	Non-metal materials	O.1.1	Plastics, duroplastic		≤ 150 N/mm²
		O.1.2	Plastics, thermoplastic		≤ 100 N/mm²
		O.2.1	Aramid fibre-reinforced		≤ 1000 N/mm²
		O.2.2	Glass/carbon-fibre reinforced		≤ 1000 N/mm²
		O.3.1	Graphite		

*** Tensile strength**

On the following 16 pages you will find an extension of the material examples to our usual indexes with additional international standards.

Overview of standards:

DIN

Deutsche **I**ndustrie **N**orm (German Standard)

AFNOR

Association **F**rancaise de **N**ormalisation (French Standard)

UNI

Unificazione **I**taliana (Italian Standard)

CSN

Czechoslovakian Standard

BS

British **S**tandards

SIS

Standardiseringen **i** **S**verige (Swedish Standard)

UNE

Spanish Standard

JIS

Japanese **I**ndustrial **S**tandard

GOST

Soviet Standard

UNS

Unified **N**umbering **S**ystem

USA

Under **USA** several American standards are summarized

	Index	Material number	DIN	AFNOR	UNI	ČSN	BS	SIS	UNE	JIS	GOST	UNS	USA
P	P.1.1	1.5423	16 Mo 5		16 Mo 5		1503-245-420					G 45200	4520
		1.0037	St 37-2	E 24-2		11 343				STKM 12 C			
		1.0044	St 44-2	E 28-2	Fe 430 B FN	11 443	4360-43 B	1412		SM 41 B			A 570 Gr. 40
		1.0116	St 37-3	E 24-3; E 24-4	Fe 360 D FF	11 378	4360-40 C	1312; 1313			St 3 kp; ps; sp		A 573 Gr. 58
		1.0144	St 44-3	E 28-3; E 28-4	Fe 430 D FF		4360-43 C	1412; 1414		SM 41 C	St 4 kp; ps; sp		A 573 Gr. 70
		1.0301	C 10	AF 34 C 10; XC 10	C 10	12 010	045 M 10			S 10 C	10	G 10100	1010
		1.0401	C 15	AF3 7 C 12; XC 18	C 15; C 16	12 020	080 M 15	1350	F-111			G 10170	1015
		1.0402	C 22	AF 42 C 20	C 20; C 21	12 024	050 A 20	1450	F-112		20	G 10200	1020
		1.0406	C 25	AF 50 C 30	C 25	12 030	070 M 26						1025
		1.0570	St 52-3	E 36-3; E 36-4	Fe 510 B; C; D	11 523	4360-50 B	2132		SM 50 YA	17 GS		
		1.1121	Ck 10	XC 10	C 10	12 010	045 M 10	1265	F-1510	S 10 C; S 9 CK	08; 10	G 10100	1010
		1.1133	20 Mn 5	20 M 5	G 22 Mn 3		120 M 19			SMnC 420		G 10220	1022; 1518
		1.1141	Ck 15	XC 15; XC 18	C 15; C 16	12 020	080 M 15	1370	F-1511	S 15 C; S 15 CK	15	G 10170	1015
		1.1151	Ck 22	XC 25; XC 18	C 20		050 A 20			S 20 C; S 20 CK	20		1023
		1.1158	Ck 25	XC 25	C 25	12 030	070 M 26			S 25 C	25	G 10250	1025
	P.1.2	1.0050	St 50-2	A 50-2	Fe 490	11 500	4360-50 B	2172		SS 50	BSt 5 ps; sp		A 570 Gr. 50
		1.0060	St 60-2	A 60-2	Fe 590; Fe 60-2	11 600	4360-SSE; SSC			SM 58	St 6 ps; sp		
		1.0406	C 25	AF 50 C 30	C 25	12 030	070 M 26						1025
		1.0420	GS-38										
		1.0446	GS-45										
		1.0481	17 Mn 4			11 748							
		1.0501	C 35	AF 55 C 35	C 35	12 040	060 A 35	1550	F-113		35	G 10350	1035
		1.0503	C 45	AF 65 C 45	C 45	12 050	080 M 46	1650	F-114		45	G 10430	1045
		1.0511	C 40	AF 60 C 40	C 40	12 041							1040
		1.0528	C 30			12 031							
		1.0540	C 50										
		1.0552	GS-52										
		1.0558	GS-60										
		1.0619	GS-C 25										
		1.0711	9 S 20		CF 9 S 22		220 M 07	220 M 07		SUM 21	SUM 21	G 12120	1212
		1.0715	9 SMn 28	S 250	CF 9 SMn 28	11 109	230 M 07	1912	F-211 / F-2111	SUM 22		G 12130	1213
		1.0718	9 SMnPb 28	S 250 Pb	CF 9 SMnPb 28			1914	F-212 / F-2112	SUM 22 L		G 12134	12 L 13
		1.0721	10 S 20	10 F 1	CF 10 S 20	10 110	210 M 15		F-2121				1108
		1.0722	10 SPb 20	10 PbF 2	CF 10 SPb 20				F-2122				11 L 08
		1.0723	15 S 20				210 A 15	1922		SUM 32			
		1.0736	9 SMn 36	S 300	CF 9 SMn 36		240 M 07		F-2113			G 12150	1215
		1.0737	9 SMnPb 36	S 300 Pb	CF 9 SMnPb 36			1926	F-2114			G 12144	12 L 14
		1.1118	GS-24 Mn 6			42 2714							
		1.1120	GS-20 Mn 5										
		1.1131	GS-16 Mn 5										
		1.1138	GS-21 Mn 5										
		1.1142	GS-Ck 16										
		1.1151	Ck 22	XC 25; XC 18	C 20		050 A 20			S 20 C; S 20 CK	20		1023
		1.1155	GS-Ck 25										
		1.1158	Ck 25	XC 25	C 25	12 030	070 M 26			S 25 C	25	G 10250	1025
		1.1178	Ck 30										
		1.1181	Ck 35	XC 38 H1:XC 32	C 35		080 M 36	1572		S 35 C	35	G 10340	1035
		1.1186	Ck 40	XC 42 H1	C 40		080 M 40			S 40 C	40		1040
		1.1191	Ck 45	XC 42	C 45		080 M 46	1672		S 45 C	45	G 10420	1045
		1.1206	Ck 50	XC 48 H1			080 M 50				50		1050
		1.1730	C 45 W	Y3 42									

	Index	Material number	DIN	AFNOR	UNI	ČSN	BS	SIS	UNE	JIS	GOST	UNS	USA
P	P.1.3	1.0501	C 35	AF 55 C 35	C 35	12 040	060 A 35	1550	F-113		35	G 10350	1035
		1.0503	C 45	AF 65 C 45	C 45	12 050	080 M 46	1650	F-114		45	G 10430	1045
		1.0511	C 40	AF 60 C 40	C 40	12 041							1040
		1.0528	C 30			12 031							
		1.0540	C 50										
		1.0726	35 S 20	35 MF 4		11 140	212 M 36	1957	F-210.G			G 11400	1140
		1.0727	45 S 20	45 MF 4			212 M 44	1973				G 11460	1146
		1.0728	60 S 20	60 MF 4									
		1.1178	Ck 30										
		1.1181	Ck 35	XC 38 H1:XC 32	C 35		080 M 36	1572		S 35 C	35	G 10340	1035
		1.1186	Ck 40	XC 42 H1	C 40		080 M 40			S 40 C	40		1040
		1.1191	Ck 45	XC 42	C 45		080 M 46	1672		S 45 C	45	G 10420	1045
		1.1206	Ck 50	XC 48 H1			080 M 50				50		1050
	P.1.4	1.0535	C 55	AF 70 C55	C 55	12 060	070 M 55	1655			55		1055
		1.0601	C 60	CC 55	C 60		080 A 62				60	G 10600	1060
		1.0757	46 SPb 20										
		1.1203	Ck 55	XC 55	C50		070 M 55			S 55 C	55		1055
		1.1221	Ck 60	XC 60	C60		080 A 62	1665; 1678		S 58 C	60; 60G	G 10640	1060
		1.1248	Ck 75	XC 75	C 75	12 081	060 A 78	1774; 1778			75	G 10780	1078; 1080
		1.1274	Ck 101	XC 100			060 A 96	1870		SUP 4		G 10950	1095
		1.1520	C 70 W1										
		1.1525	C 80 W1	Y1 90; Y1 80	C 80 KU						U8A	T 72301	W 108
		1.1545+G502	C 105 W1	Y1 105	C 100 KU			1880			U10A	T 72301	W 110
		1.1620	C 70 W2										
		1.1625	C 80 W2		C 80 KU		BW 1 B			SKC 3; SK 5; SK 6	U8; 80	T 72301	W 1
		1.1645	C 105 W2	Y2 105	C 100 KU					SK 3	U10	T 72301	
		1.1663	C 125 W	Y2 120	C 120 KU					SK 2	U13	T 72301	W 112
		1.1673	C 135 W	Y2 140	C 140 KU					SK 1			
		1.1740	C 60 W	Y3 55						SK 7			
		1.1750	C 75 W				BW 1A				75		W 1
		1.1820	C 55 W										
		1.1830	C 85 W	Y3 90						SK 5			
	P.1.5	1.0535	C 55	AF 70 C55	C 55	12 060	070 M 55	1655			55		1055
		1.0601	C 60	CC 55	C 60		080 A 62				60	G 10600	1060
		1.1203	Ck 55	XC 55	C50		070 M 55			S 55 C	55		1055
		1.1221	Ck 60	XC 60	C60		080 A 62	1665; 1678		S 58 C	60; 60G	G 10640	1060
		1.1231	Ck 67	XC 68	C 70	12 071	060 A 67	1770			70	G 10700	1070
		1.1274	Ck 101	XC 100			060 A 96	1870		SUP 4		G 10950	1095
		1.1520	C 70 W1										
	P.2.1	1.2162	21 MnCr 5	20 NC 5		19 487				SCR 420 H			
		1.2210	115 CrV 3	100 C 3	107 CrV 3 KU	19 421						T 61202	L 2
		1.2323	GS-48 CrMoV 6 7										
		1.2341	X 6 CrMo 4										
		1.2369	81 CrMov 42 16										
		1.2516	120 WV 4	110 WC 20	110 W 4 KU	19 711	BF 1						
		1.2542	45 WCrV 7		45 WCrV 8 KU	19 732	BS 1	2710				T 41901	S 1
		1.2550	60 WCrV 7	55 WC 20	55 WCrV 8 KU	19 735							
		1.2711	54 NiCrMoV 6	55 NCDV 6		19 662							
		1.2735	15 NiCr 14	10 NC 12		16 240				SNC 22		T 51606	
		1.2762	75 CrMoNiW 6 7										
		1.2842	90 MnCrV 8	90 MV 8	90 MnVCr 8 KU	19 314	BO 2					T 31502	O 2

	Index	Material number	DIN	AFNOR	UNI	ČSN	BS	SIS	UNE	JIS	GOST	UNS	USA
P	P.2.1	1.5015	GS-8 Mn 7										
		1.5122	37 MnSi 4			13 240							
		1.5415	15 Mo 3	15 D 3	16 Mo 3		1501-240	2912					A 204 Gr. A
		1.5419	GS-22 Mo 4										
		1.5621	GS-10 Ni 6										
		1.5622	14 Ni 6	16 N 6	14 Ni 6								A 350-LF 5
		1.5633	GS-24 Ni 8										
		1.5638	GS-10 Ni 14										
		1.5732	14 NiCr 10	14 NC 11	16 NiCr 11				F-1540	SNC 415 (H)			3415
		1.5752	14 NiCr 14	12 NC 15		16 240	655 M 13		F-1540	SNC 815 (H)		G 33106	3310; 9314
		1.5919	15 CrNi 6	16 NC 6	16 CrNi 4	16 220	S 107						
		1.5920	18 CrNi 8	20 NC 6		13 231							
		1.6221	GS-13 MnNi 6 4										
		1.6523	21 NiCrMo 2	20 NCD 2	20 NiCrMo 2		805 M 20	2506	F-1522	SNCM 220 (H)		G 86170	8620
		1.6587	17 CrNiMo 6	18 NCD 6	18 NiCrMo 7		820 A 16						
		1.6750	GS-20 NiCrMo 3 7										
		1.7003	38 Cr 2	38 C 2	38 Cr 2								
		1.7006	46 Cr 2	42 C 2	45 Cr 2								5045
		1.7012	13 Cr 2										
		1.7015	15 Cr 3	12 C 3		14 120	523 M 15			SCr 415 (H)	15Ch	G 50150	5015
		1.7020	32 Cr 2										
		1.7030	28 Cr 4				530 A 30				30Ch		5130
		1.7033	34 Cr 4	32 C 4	34 Cr 4 (KB)		530 A 32			SCr 430 (H)	35Ch	G 51320	5132
		1.7131	16 MnCr 5	16 MC 5	16 MnCr 5	14 220	527 M 17	2511	F-1516 / F-1517	SCR 415	18ChG	G 51170	5115
		1.7139	16 MnCrS 5						F-150D				
		1.7147	20 MnCr 5	20 MC 5	20 MnCr 5	14 221				SMnC 420 (H)	18ChG	G 51200	5120
		1.7149	20 MnCrS 5						F-1551				
		1.7218	25 CrMo 4	25 CD 4 S	25 CrMo 4 (KB)	15 130	1717 CDS 110	2225		SCM 420; SCM 430	30ChM	G 41300	4130
		1.7219	GS-26 CrMo 4										
		1.7220	34 CrMo 4	35 CD 4	35 CrMo 4	15 131	708 A 37	2234		SCM 432; SCCrM 3	AS38ChGM	G 41350	4135; 4137
		1.7262	15 CrMo 5	12 CD 4	12 CrMo 4					SCM 415 (H)			
		1.7264	20 CrMo 5	18 CD 4						SCM 421			
		1.7271	23 CrMoB 3 3										
		1.7311	20 CrMo 2						F-1523				
		1.7321	20 MoCr 4	20 CD 4									
		1.7335	13 CrMo 4 4	15 CD 3.5	14 CrMo 4 5		1501-620 Gr. 27	2216			12ChM; 15ChM		A 182-F11; F12
		1.7337	16 CrMo 4 4	15 CD 4.5	14 CrMo 4 5		1501-620 Gr. 27	2216			15ChM		A 387 Gr. 12 Cl. 2
		1.7357	GS-17 CrMo 5 5										
		1.7363	GS-12 CrMo 19 5										
		1.7377	GS-17 CrMo 9 10										
		1.7379	GS-18 CrMo 9 10										
		1.7380	10 CrMo 9 10	10 CD 9.10	12 CrMo 9 10		1501-622 Gr. 31; 45	2218				J 21890	A 182-F22
		1.7715	14 MoV 6 3				1503-660-440						
		1.7725	GS-30 CrMoV 6 4										
		1.8504	34 CrAl 6			14 340							
		1.8506	34 CrAlS 5									K 23745	
		1.8521	15 CrMoV 5 9										
		1.0904	55 Si 7	55 S 7	55 Si 8		250 A 53	2085; 2090			55S2		9255
	P.2.2	1.2067	100 Cr 6	Y 100 C 6			BL 3					T 61203	L 3
		1.2101	62 SiMnCr 4										
		1.2103	58 SiCr 8			19 452							

	Index	Material number	DIN	AFNOR	UNI	ČSN	BS	SIS	UNE	JIS	GOST	UNS	USA
P	P.2.2	1.2108	90 CrSi 5P										
		1.2162	21 MnCr 5	20 NC 5		19 487				SCR 420 H			
		1.2210	115 CrV 3	100 C 3	107 CrV 3 KU	19 421						T 61202	L 2
		1.2311	40 CrMnMo 7			19 520							
		1.2312	40 CrMnMoS 8 6	40 CMD 8 + S									
		1.2323	GS-48 CrMoV 6 7										
		1.2330	35 CrMo 4	34 CD 4	35 CrMo 4		708 A 37	2234			35 HM	T 51620	4135
		1.2332	47 CrMo 4	42 CD 4	40 CrMo 4		708 M 40	2244					4142
		1.2419	105 WCr 6	105 WC 13	107 WCr 5 KU					SKS 31	ChWG		
		1.2510	100 MnCrW 4	90 MWCV 5	95 MnWCr 5 KU	19 314	BO 1	2140	F-5220	SKS 3		T 31501	O 1
		1.2542	45 WCrV 7		45 WCrV 8 KU	19 732	BS 1	2710				T 41901	S 1
		1.2550	60 WCrV 7	55 WC 20	55 WCrV 8 KU	19 735							
		1.2711	54 NiCrMoV 6	55 NCDV 6		19 662							
		1.2713	55 NiCrMoV 6	55 NCDV 7		19 662			F-520.S	SKT 4	5ChNM	T 61206	L 6
		1.2721	50 NiCr 13										
		1.2738	40 CrMnNiMo 8						F-5303				
		1.2826	60 MnSiCr 4										
		1.2833	100 V 1	Y1 105 V	102 V 2 KU	19 356	BW 2			SKS 43		T 72302	W 210
		1.2842	90 MnCrV 8	90 MV 8	90 MnVCr 8 KU	19 314	BO 2					T 31502	O 2
		1.3505	100 Cr 6	100 C 6	100 Cr 6	14 100	534 A 99	2258	F-131 / F-1310	SUJ 2	SchCh 15	G 52986	52100
		1.3520	100 CrMn 6			14 209							
		1.3561	44 Cr 2										
		1.3563	43 CrMo 4										
		1.5120	38 MnSi 4										
		1.5121	46 MnSi 4										
		1.5122	37 MnSi 5			13 240							
		1.5131	50 MnSi 4										
		1.5141	53 MnSi 4										
		1.5223	42 MnV 7			13 242							
		1.5710	36 NiCr 6	35 NC 6		16 240	640 A 35			SNC 236			3135
		1.5736	36 NiCr 10	30 NC 11	35 NiCr 9					SNC 631 (H)			3435
		1.5755	31 NiCr 14	18 NC 13			653 M 31			SNC 836			
		1.6511	36 CrNiMo 4	40 NCD 3	38 NiCrMo 4 (KB)	16 341	816 M 40				40 ChN2MA	G 98400	9840
		1.6513	28 NiCrMo 4										
		1.6546	40 NiCrMo 2 2	40 NCD 2	40 NiCrMo 2 (KB)		311-Type 7			SNCM 240	38ChGNM	G 87400	8740
		1.6565	40 NiCrMo 6				311-Type 6			SNCM 439	40Ch2N2MA		4340
		1.6570	GS-30 NiCrMo 8 5										
		1.6580	30 CrNiMo 8	30 CND 8	30 NiCrMo 8		823 M 30		F-1272	SNCM 431			
		1.6582	34 CrNiMo 6	35 NCD 6	35 NiCrMo 6 (KW)	16 342	817 M 40	2541	F-128 / F-1270	SNCM 447	38Ch2N2MA		4340
		1.6746	32 NiCrMo 14 5	35 NCD 14			830 M 31						
		1.6781	GS-18 NiCrMo 12 6										
		1.7003	38 Cr 2	38 C 2	38 Cr 2								
		1.7006	46 Cr 2	42 C 2	45 Cr 2								5045
		1.7030	28 Cr 4				530 A 30				30Ch		5130
		1.7033	34 Cr 4	32 C 4	34 Cr 4 (KB)		530 A 32			SCr 430 (H)	35Ch	G 51320	5132
		1.7034	37 Cr 4	38 C 4	38 Cr 4	14 140	530 A 36			SCr 435 H	40Ch		5135
		1.7035	41 Cr 4	42 C 4	41 Cr 4		530 M 40			SCr 440 (H)	40Ch	G 51400	5140
		1.7045	42 Cr 4	42 C 4 TS	41 Cr 4		530 A 40	2245		SCr 440	40Ch		5140
		1.7103	67 SiCr 5										
		1.7131	16 MnCr 5	16 MC 5	16 MnCr 5	14 220	527 M 17	2511	F-1516 / F-1517	SCR 415	18ChG	G 51170	5115
		1.7139	16 MnCrS 5						F-150D				

	Index	Material number	DIN	AFNOR	UNI	ČSN	BS	SIS	UNE	JIS	GOST	UNS	USA
P	P.2.2	1.7147	20 MnCr 5	20 MC 5	20 MnCr 5	14 221				SMnC 420 (H)	18ChG	G 51200	5120
		1.7149	20 MnCrS 5						F-1551				
		1.7176	55 Cr 3	55 C 3	55 Cr 3		527 A 60	2253	F-1431	SUP 9 (A)	50ChGA	G 51550	5155
		1.7218	25 CrMo 4	25 CD 4 S	25 CrMo 4 (KB)	15 130	1717 CDS 110	2225		SCM 420; SCM 430	30ChM	G 41300	4130
		1.7220	34 CrMo 4	35 CD 4	35 CrMo 4	15 131	708 A 37	2234		SCM 432; SCCrM 3	AS38ChGM	G 41350	4135; 4137
		1.7223	41 CrMo 4	42 CD 4 TS	41 CrMo 4		708 M 40	2244		SCM 440	40 ChFA	G 41420	4142; 4140
		1.7225	42 CrMo 4	42 CD 4	42 CrMo 4	15 142	708 M 40	2244		SCM 440 (H)		G 41400	4142; 4140
		1.7228	50 CrMo 4	50 CR MO4			708 A 47			SCM 445 (H)	50ChFA	G 41470	4150
		1.7323	20 MoCrS 4	20 CD 4 S									
		1.7325	25 MoCr 4	25 CD 4									
		1.7326	25 MoCrS 4	25 CD 4 S									
		1.7361	32 CrMo 12	30 CD 12	32 CrMo 12	15 230	722 M 24	2240	F-124A				
		1.7707	30 CrMoV 9			15 330							
		1.7709	21 CrMoV 5 7										
		1.7725	GS-30 CrMoV 6 4										
		1.7735	14 CrMoV 6 9	15 CDV 6									
		1.8159	50 CrV 4	50 CV 4	51 CrV 4	15 260	735 A 50	2230	F-143 / F-1430	SUP 10	50ChGFA	G 61500	6150
		1.8161	58 CrV 4			15 261							
		1.8507	34 CrAlMo 5	30 CAD 6.12	34 CrAlMo 7		905 M 31		F-1741			K 23545	A 355 Cl. D
		1.8509	41 CrAlMo 7	40 CAD 6.12	41 CrAlMo 7	15 340	905 M 39	2940	F-1740	SACM 645	38ChMJuA	K 24065	A 355 Cl. A
		1.8515	31 CrMo 12	30 CD 12	31 CrMo 12		722 M 24	2240	F-1712				
		1.8519	31 CrMoV 9						F-1721				
		1.8523	39 CrMoV 13 9		36 CrMoV 13 9		897 M 39						
		1.8550	34 CrAlNi 7									K 52440	
		1.0904	55 Si 7	55 S 7	55 Si 8		250 A 53	2085; 2090			55S2		9255
		1.1157	40 Mn 4	35 M 5			150 M 36				40G	G 10390	1039
		1.1165	30 Mn 5	35 M 5			120 M 36			SMn 433 H; SCMn 2	30GSL		1330
		1.1167	36 Mn 5	40 M 5		42 2715	150 M 36	2120		SMn 438 (H); SCMn 3	35G2; 35GL	G 13350	1335
		1.1170	28 Mn 6	20 M 5	C 28 Mn		150 M 28			SCMn 1	30G		1330
	P.2.3	1.2744	57 NiCrMoV 7 7										
		1.7131	16 MnCr 5	16 MC 5	16 MnCr 5	14 220	527 M 17		F-1516 / F-1517	SCR 415	18ChG	G 51170	5115
		1.7755	GS-35 CrMoV 10 4										
	P.2.4	1.2714	56 NiCrMoV 7										
		1.3505	100 Cr 6	100 C 6	100 Cr 6	14 100	534 A 99	2258	F-131 / F-1310	SUJ 2	SchCh 15	G 52986	52100
		1.7225	42 CrMo 4	42 CD 4	42 CrMo 4	15 142	708 M 40	2244		SCM 440 (H)		G 41400	4142; 4140
	P.3.1	1.2080	X 210 Cr 12	Z 200 C 12	X 210 Cr 13 KU	19 436	BD 3			SKD 1	Ch12	T 30403	D 3
		1.2201	G-X 165 CrV 12										
		1.2343	X 38 CrMoV 5 1	Z 38 CDV 5	X 37 CrMoV 5 1 KU	19 552	BH 11		F-5317	SKD 6	4Ch5MFS	T 28811	H 11
		1.2363	X 100 CrMoV 5 1	Z 100 CDV 5	X 100 CrMoV 5 1 KU	19 571	BA 2	2260	F-5227	SKD 12		T 30102	A 2
		1.2365	X 32 CrMoV 3 3	32 DCV 28	30 CrMoV 12 27 KU	19 541	BH 10			SKD 7	3Ch3M3F	T 20810	H 10
		1.2367	X 38 CrMoV 5 3										
		1.2379	X 155 CrVMo 12 1	Z 160 CDV 12	X 155 CrV-Mo 12 1 KU	19 573	BD 2		F-5211	SKD 11		T 30402	D 2
		1.2436	X 210 CrW 12	Z 200 CW 12	X 215 CrW 12 1 KU	19 437		2312	F-5213	SKD 2			
		1.2567	X 30 WCrV 5 3	Z 32 WCV 5	X 30 WCrV 5 3 KU	19 720				SKD 4			
		1.2581	X 30 WCrV 9 3	Z 30 WCV 9	X 30 WCrV 9 3 KU	19 721	BH 21			SKD 5	3Ch2W8F	T 20821	H 21
		1.2601	X 165 CrMoV 12		X 165 CrMoW 12 KU	19 572		2310					
		1.2606	G-X 37 CrMoW 5 1										
		1.2764	X 19 NiCrMo 4										
		1.2767	X 45 NiCrMo 4	Y 35 NCD 16	42 NiCrMo 15 7	19 655							
		1.2880	G-X 165 CrCoMo 12										
		1.2885	X 32 CrMoCoV 3 3 3	30 DCKV 28									

	Index	Material number	DIN	AFNOR	UNI	ČSN	BS	SIS	UNE	JIS	GOST	UNS	USA
P	P.3.1	1.3302	S 12-1-4			19 810							
		1.3318	S 12-1-2			19 802							
		1.3333	S 3-3-2		HS 3-3-2	19 820							
		1.3343	S 6-5-2	Z 85 WDCV 06-05-04-0	HS 6-5-2	19 830	BM 2	2722	F-5603	SKH 9; SKH 51	R6AM5	T 11302	M 2
		1.3346	S 2-9-1	Z 85 DCWV 08-04-02-0	HS 1-8-1		BM 1				H41	T 11301	H 41; M 1
		1.4943	X 4 NiCrTi 25 15	Z 6 NCTDV 25.15 B			HR 251; HR 52; HR 51			SUH 660			
		1.5662	G-X 8 Ni 9										
		1.5680	12 Ni 19	Z 18 N 5									2515
	P.3.2	1.2080	X 210 Cr 12	Z 200 C 12	X 210 Cr 13 KU	19 436	BD 3			SKD 1	Ch12	T 30403	D 3
		1.2343	X 38 CrMoV 5 1	Z 38 CDV 5	X 37 CrMoV 5 1 KU	19 552	BH 11		F-5317	SKD 6	4Ch5MFS	T 28811	H 11
		1.2344	X 40 CrMoV 5 1	Z 40 CDV 5	X 40 CrMo 5 1 1 KU	19 554	BH 13	2242	F-5318	SKD 61	4Ch5MF1S	T 20813	H 13
		1.2363	X 100 CrMoV 5 1	Z 100 CDV 5	X 100 CrMoV 5 1 KU	19 571	BA 2	2260	F-5227	SKD 12		T 30102	A 2
		1.2365	X 32 CrMoV 3 3	32 DCV 28	30 CrMoV 12 27 KU	19 541	BH 10			SKD 7	3Ch3M3F	T 20810	H 10
		1.2367	X 38 CrMoV 5 3										
		1.2379	X 155 CrVMo 12 1	Z 160 CDV 12	X 155 CrVMo 12 1 KU	19 573	BD 2		F-5211	SKD 11		T 30402	D 2
		1.2567	X 30 WCrV 5 3	Z 32 WCV 5	X 30 WCrV 5 3 KU	19 720				SKD 4			
		1.2581	X 30 WCrV 9 3	Z 30 WCV 9	X 30 WCrV 9 3 KU	19 721	BH 21			SKD 5	3Ch2W8F	T 20821	H 21
		1.2606	G-X 37 CrMoW 5 1										
		1.2709	X 2 NiCoMoTi 18 9 5										
		1.2764	X 19 NiCrMo 4										
		1.2767	X 45 NiCrMo 4	Y 35 NCD 16	42 NiCrMo 15 7	19 655							
		1.2885	X 32 CrMoCoV 3 3 3	30 DCKV 28									
		1.3207	S 10-4-3-10	Z 130 WKCDV 10-10-04	HS 10-4-3-10	19 861	BT 42		F-5553	SKH 57			
		1.3243	S 6-5-2-5	Z 85 WDKCV 06-05-05	HS 6-5-2-5	19 852		2723	F-5613	SKH 55	R6M5K5		
		1.3246	S 7-4-2-5	Z 110 WKCDV 07-05-04	HS 7-4-2-5	19 851						T 11341	M 41
		1.3247	S 2-10-1-8	Z 110 DKCWV 09-08-04	HS 2-9-1-8		BM 42			SKH 51		T 11342	M 42
		1.3249	S 2-9-2-8				BM 34					T 11333	M 33; M 34
		1.3255	S 18-1-2-5	Z 80 WKCV 18-05-04-0	HS 18-1-1-5	19 855	BT 4			SKH 3		T 12004	T 4
		1.3265	S 18-1-2-10		HS 18-0-1-10	19 860	BT 5			SKH 4 A		T 12005	T 5
		1.3344	S 6-5-3	Z 120 WDCV 06-05-04	HS 6-5-3		BM 4			SKH 52; SKH 53		T 11323	M 3 Cl. 2
		1.3348	S 2-9-2	Z 100 DCWV 09-04-02	HS 2-9-2			2782				T 11307	M 7
		1.3401	G-X 120 Mn 12	Z 120 M 12	XG 120 Mn 12		Z 120 M 12			SCMnH 1	110G13L		A 128 (A)
		1.5860	14 NiCr 18			16 523							
		1.5864	35 NiCr 18			16 640			F-122				
	P.3.3	1.6359	X 2 NiCrMo 18 8 5	Maraging 250								K 92890	
	P.4.1	1.2083	X 42 Cr 13	Z 40 C 14	X 41 Cr 13 KU	19 435			F-5263	SUS 420 J 2			
		1.2316	X 36 CrMo 17	Z 38 CD 17	X 38 CrMo 16 1 KU								
		1.3543	X 102 CrMo 17	Z 100 CD 17									
		1.4001	G-X 7 Cr 13	Z 8 C 13 FF		17 020			F-8401				
		1.4002	X 6 CrAl 13	Z 6 CA 13	X 6 CrAl 13		405 S 17	2302	F-3111	SUS 405		S 40500	405
		1.4005	X 12 CrS 13	Z 12 CF 13	X 12 CrS 13		416 S 21	2380		SUS 416		S 41600	416
		1.4006	X 10 Cr 13	Z 12 C 13	X 12 Cr 13	17 021	410 S 21	2302	F-3401	SUS 410	12Ch13	S 41000	410; CA-15
		1.4008	G-X 8 CrNi 13	Z 12 CN 13 M		42 2904							
		1.4016	X 6 Cr 17	Z 8 C 17	X 8 Cr 17	17 040	430 S 15	2320	F-3113	SUS 430	12Ch17	S 43000	430
		1.4021	X 20 Cr 13	Z 20 C 13	X 20 Cr 13	17 022	420 S 37	2303	F-3402	SUS 420 J 1	20Ch13	S 42000	420
		1.4024	X 15 Cr 13	Z 13 C 13		17 021	420 S 29			SUS 410 J 1			
		1.4027	G-X 20 Cr 14	Z 20 C 13 M		42 2906	420 C 29			SCS 2	20Ch13L		
		1.4028	X 30 Cr 13	Z 30 C 13	X 30 Cr 13	17 023	420 S 45	2304		SUS 420 J 2	30Ch13		
		1.4031	X 38 Cr 13	Z 40 C 14	X 40 Cr 14	17 024		2304	F-3404	SUS 420 J 2	40Ch13		
		1.4034	X 46 Cr 13	Z 40 C 14	X 40 Cr 14	17 029	420 S 45		F-3405		40Ch13		
		1.4085	G-X 70 Cr 29										

	Index	Material number	DIN	AFNOR	UNI	ČSN	BS	SIS	UNE	JIS	GOST	UNS	USA
P	P.4.1	1.4104	X 12 CrMoS 17	Z 10 CF 17	X 10 CrS 17	17 140		2383	F-3403	SUS 430 F		S 43020	430 F
		1.4105	X 4 CrMoS 18						F-3114				
		1.4106	X 2 CrMoSiS 18 2 1										
		1.4107	G-X 8 CrNi 12			42 2904							
		1.4109	X 65 CrMo 14										
		1.4112	X 90 CrMoV 18									S 44003	
		1.4113	X 6 CrMo 17	Z 8 CD 17.01	X 8 CrMo 17		434 S 17	2325	F-3116	SUS 434		S 43400	434
		1.4116	X 45 CrMoV 15						F-3422				
		1.4122	G-X 35 CrMo 17			17 137							
		1.4125	X 105 CrMo 17	Z 100 CD 17	X 105 CrMo 17					SUS 440 C		S 44004	440 C
		1.4136	G-X 70 CrMo 29 2										
		1.4405	G-X 5 CrNiMo 16 5										
		1.4407	G-X 5 CrNiMo 13 4										
		1.4510	X 6 CrTi 17	Z 8 CT 17	X 6 CrTi 17					SUS 430 LX	08Ch17T	S 43036	XM 8; 430 Ti
		1.4511	X 8 CrNb 17	Z 8 CNb 17	X 6 CrNb 17				F-3122	SUS 430 LX			
		1.4512	X 5 CrTi 12	Z 6 CT 12	X 6 CrTi 12		409 S 19		F-3121	SUH 409		S 40900	409
		1.4528	X 105 CrCoMo 18 2										
		1.4540	G-X 4 CrNiCuNb 16 4										
		1.4724	X 10 CrAl 13	Z 10 C 13	X 10 CrAl 12	17 125	403 S 17		F-3152		10Ch13SJu		
		1.4742	X 10 CrAl 18	Z 10 CAS 18	X 8 Cr 17		430 S 15		F-3153	SUS 430; SUH21			430
		1.4761	G-X 120 CrSi 23										
		1.4762	X 10 CrAl 24	Z 10 CAS 24	X 16 Cr 26	17 153			F-3154			S 44600	446
		1.4931	G-X 22 CrMoV 12 1										
		1.4962	X 12 CrNiWTi 16 3										
		1.6982	G-X 3 CrNi 13 4										
	P.4.2	1.2316	X 36 CrMo 17	Z 38 CD 17	X 38 CrMo 16 1 KU								
		1.4000	X 6 Cr 13	Z 6 C 13	X 6 Cr 13	17 020	403 S 17	2301		SUS 403	08Ch13	S 40300	403
		1.4021	X 20 Cr 13	Z 20 C 13	X 20 Cr 13	17 022	420 S 37	2303	F-3402	SUS 420 J 1	20Ch13	S 42000	420
		1.4024	X 15 Cr 13	Z 13 C 13		17 021	420 S 29			SUS 410 J 1			
		1.4028	X 30 Cr 13	Z 30 C 13	X 30 Cr 13	17 023	420 S 45	2304		SUS 420 J 2	30Ch13		
		1.4031	X 38 Cr 13	Z 40 C 14	X 40 Cr 14	17 024		2304	F-3404	SUS 420 J 2	40Ch13		
		1.4034	X 46 Cr 13	Z 40 C 14	X 40 Cr 14	17 029	420 S 45		F-3405		40Ch13		
		1.4057	X 20 CrNi 17 2	Z 15 CN 16.02	X 16 CrNi 16	17 145	431 S 29	2321	F-3427	SUS 431	20Ch17N2	S 43100	431
		1.4059	G-X 22 CrNi 17										
		1.4086	G-X 120 Cr 29										
		1.4108	X 100 CrMo 13										
		1.4112	X 90 CrMoV 18									S 44003	
		1.4116	X 45 CrMoV 15						F-3422				
		1.4120	G-X 20 CrMo 13										
		1.4122	G-X 35 CrMo 17			17 137							
		1.4138	G-X 120 CrMo 29 2										
		1.4313	X 5 CrNi 13 4	Z 5 CN 13.4	X 6 CrNi 13 04		425 C 11	2385		SCS 5			CA 6-NM
		1.4340	G-X 40 CrNi 27 4										
		1.4464	G-X 40 CrNiMo 27 5										
		1.4542	X 7 CrNiCu 16 4 4	Z7 CNU 17 04 04 (17-4PH)						SCS 24; SUS 630		S 17400	630
		1.4545	X 5 CrNiCu 15-5	E-Z5 CNU 15 05 (15-5PH)									
		1.4710	G-X 30 CrSi 6										
		1.4718	X 45 CrSi 9 3	Z 45 CS 9	X 45 CrSi 8	17 115	401 S 45		F-3220	SUH 1	40Ch9S2	S 65007	HNV 3
		1.4729	G-X 40 CrSi 13										
		1.4740	G-X 40 CrSi 17										
		1.4743	G-X 160 CrSi 18										

	Index	Material number	DIN	AFNOR	UNI	ČSN	BS	SIS	UNE	JIS	GOST	UNS	USA
P	P.4.2	1.4745	G-X 40 CrSi 23										
		1.4747	X 80 CrNiSi 20	Z 80 CSN 20.02	X 80 CrSiNi 20		443 S 65			SUH 4		S 65006	HNV 6
		1.4776	G-X 40 CrSi 29										
		1.4823	G-X 40 CrNiSi 27 4										
		1.4923	X 22 CrMoV 12 1			17 134	762						
		1.4928	G-X 12 CrNiMoCoVN 12										
		1.4935	X 20 CrMoWV 12 1									S 42200	
M	M.1.1	1.3941	G-X 4 CrNi 18 13										
		1.3944	G-X 5 CrNi 18 11										
		1.3952	G-X 4 CrNiMoN 18 14										
		1.3953	G-X 2 CrNiMo 18 15										
		1.3955	G-X 12 CrNi 18 11										
		1.3959	G-X 10 CrNiNb 16 13										
		1.4301	X 5 CrNi 18 10	Z6 CN 18-09	X 5 CrNi 18 10	17 240	304 S 15	2332; 2333	F-3504	SUS 304	08Ch18N10	S 30400	304; 304 H
		1.4303	X 5 CrNi 18 12	Z 8 CN 18.12	X 8 CrNi 19 10		305 S 19			SUS 305	06Ch18N11	S 30500	308; 305
		1.4305	X 10 CrNiS 18 9	Z8 CNF 18-03	X 10 CrNi 18 09	17 243	303 S 21	2346		SUS 303		S 30300	303
		1.4306	X 2 CrNi 19 11	Z3 CN 18-10	X 2 CrNi 18 11	17 249	304 S 12	2352; 2333	F-3503	SCS 19	03Ch18N11	S 30403	304 L
		1.4308	G-X 6 CrNi 18 9	Z 6 CN 18.10 M		42 2930	304 C 15	2333	F-8411	SCS 13	07Ch18N9L		CF-8
		1.4311	X 2 CrNiN 18 10	Z 2 CN 18 .10	X 2 CrNiN 18 11	17 249	304 S 62	2371		SUS 304 LN		S 30453	304 LN
		1.4312	G-X 10 CrNi 18 8			42 2931							
		1.4401	X 5 CrNiMo 18 10	Z6 CND 17 12 02	X 5 CrNiMo 17 12	17 346	316 S 16	2347	F-3543	SUS 316		S 31600	316
		1.4404	X 2 CrNiMo 17 13 2	Z3 CND 17 12 02	X 2 CrNiMo 17 12	17 349	316 S 11	2348	F-3533	SUS 316 L		S 31603	316 L
		1.4406	X 2 CrNiMoN 17 12 2	Z 2 CND 17.12 Az	X 2 CrNiMoN 17 12		316 S 61			SUS 316 LN		S 31653	316 LN
		1.4408	G-X 6 CrNiMo 18 10			42 2940			F-8414				
		1.4413	G-X 4 CrNiMo 13-4										
		1.4429	X 2 CrNiMoN 17 13 3	Z3 CND 17 11 03 Az	X 2 CrNiMoN 17 13		316 S 62	2375		SUS 316 LN		S 31653	316 LN
		1.4435	X 2 CrNiMo 18 14 3	Z 2 CND 17.13	X 2 CrNiMo 17 13		316 S 12	2353		SCS 16; SUS 316 L	03Ch17N 14M2	S 31603	316 L
		1.4436	X 5 CrNiMo 17 13 3	Z 6 CND 17.12	X 5 CrNiMo 17 13		316 S 16	2343		SUS 316		S 31600	316
		1.4437	G-X 6 CrNiMo 18 12			42 2940							
		1.4438	X 2 CrNiMo 18 16 4	Z 2 CND 19.15	X 2 CrNiMo 18 15		317 S 12	2367		SUS 317 L		S 31703	317 L
		1.4439	G-X 3 CrNiMo 17 13 5						F-3544				
		1.4446	G-X 2 CrNiMo 17 13 4										
		1.4448	G-X 6 CrNiMo 17 13										
		1.4449	X 3 CrNiMo 18 12 3										
		1.4507	X 2 CrNiMOCuN 25 6 3	Z3 CNDU 25 07 Az (Uranus 52 N)								S 32750	F61
		1.4541	X 6 CrNiTi 18 10	Z 6 CNT 18.10	X 6 CrNiTi 18 11	17 248	321 S 12	2337		SUS 321	12Ch18N 10T	S 32100	321
		1.4546	X 5 CrNiNb 18 10		X 6 CrNiNb 18 11		347 S 18					S 34800	348
		1.4550	X 6 CrNiNb 18 10	Z10 CNNb 18-10	X 6 CrNiNb 18 11	17 245	347 S 17	2338	F-3552 / F-3524	SUS 347	08Ch18N 12B	S 34700	347
		1.4552	G-X 5 CrNiNb 18 9			42 2933			F-8413				
		1.4571	X 6 CrNiMoTi 17 12 2	Z 6 CNT 17.12	X 6 CrNiMoTi 17 12	17 348	320 S 31	2350	F-3535		10Ch17N-13M2T	S 31635	316 Ti
		1.4573	X 10 CrNiMoTi 18 12		X 6 CrNiMoTi 17 13		320 S 33				10Ch17N-13M3T	S 31635	316 Ti
		1.4580	X 6 CrNiMoNb 17 12 2	Z 6 CNDNb 17.12	X 6 CrNiMoNb 17 12		318 S 17		F-3536		08Ch16N-13M2B	S 31640	316 Cb
		1.4581	G-X 5 CrNiMoNb 18 10	Z 4 CNDNb 18.12 M	GX 6 CrMoNb 20 11	42 2941	318 C 17			SCS 22			
		1.4583	X 10 CrNiMoNb 18 12		X 6 CrNiMoNb 17 13								318
		1.4821	X 15 CrNiSi 25-4	Z20 CNS 25 04									
		1.4825	G-X 25 CrNiSi 18 9			42 2932							
		1.4826	G-X 40 CrNiSi 22 9			42 2934							
		1.4828	X 15 CrNiSi 20 12	Z 15 CNS 20.12		17 251	309 S 24		F-3312	SUH 309	20Ch20N 14S2	S 30900	309
		1.4832	G-X 25 CrNiSi 20 14										
		1.4876	X 10 NiCrAlTi 32 20	Z10 NCAT 32-21 (Incoloy 800)		17 358	NA 15 (H)		F-3314	NCF 800			B 163
		1.4878	X 12 CrNiTi 18 9	Z 6 CNT 18.12 (B)	X 6 CrNiTi 18 11	17 246	321 S 20	2337		SUS 321	12Ch18N 10T		321

	Index	Material number	DIN	AFNOR	UNI	ČSN	BS	SIS	UNE	JIS	GOST	UNS	USA
M	M.1.1	1.4968	G-X 7 CrNiNb 16 13										
		1.4988	G-X 8 CrNiMoVNb 16 1										
		1.6901	G-X 8 CrNi 18 10										
		1.6902	G-X 6 CrNi 18 10										
		1.6905	G-X 5 CrNiNb 18 10										
	M.2.1	1.3964	G-X 4 CrNiMnMoN 19 1										
		1.4310	X 12 CrNi 17 7	Z 12 CN 17.07	X 12 CrNi 17 07		301 S 21			SUS 301		S 30100	301
		1.4465	G-X 2 CrNiMoN 25 25										
		1.4536	G-X 2 NiCrMoCuN 25 2										
		1.4539	X 1 NiCrMoCu 25 20 5	Z2 NCDU 25 20 (Uranus B6)								N 08904	904L
		1.4547	X 1 CrNiMoCuN 20 18 17	Z1 CNDU 20 18 06 Az (254 SMO)									F44
		1.4568	X 7 CrNiAl 17 7										17-7 PH
		1.4837	G-X 40 CrNiSi 25 12			42 2936							
		1.4840	G-X 15 CrNi 25 20										
		1.4841	X 15 CrNiSi 25 20	Z 15 CNS 25.20	X 16 CrNiSi 25 20	17 255			F-3310	SUH 310	20Ch25N 20S2	S 31000	314; 310
		1.4845	X 12 CrNi 25 21	Z 12 CN 25.20	X 6 CrNi 26 20	17 255	310 S24	2361		SUH 310;		S 31008	310 S
		1.4848	G-X 40 CrNiSi 25 20		GX 40 CrNi 26 20	42 2952							
		1.4849	G-X 40 NiCrSiNb 38 1										
		1.4852	G-X 40 NiCrNb 35 25										
		1.4855	G-X 30 CrNiSiNb 24 2										
		1.4857	G-X 40 NiCrSi 35 25										
		1.4864	X 12 NiCrSi 36 16	Z 12 NCS 37.18		17 253	NA 17		F-3313	SUH 330		N 08330	330
		1.4865	G-X 40 NiCrSi 38 18		GX 50 NiCr 39 19		330 C 40			SCH 15; SCH 16			
		1.4871	X 53 CrMnNiN 21 9	Z 52 CMN 21.09	X 53 CrMnNiN 21 9		349 S 54		F-3217	SUH 35; SUH 36	55Ch-20G9AN4	S 63008	EV 8
		1.4873	X 45 CrNiW 18 9	Z 35 CNWS 20.09	X 45 CrNiW 18 9		331 S 40			SUH 31			
	M.3.1	1.4339	G-X 32 CrNi 28 10										
		1.4347	G-X 8 CrNi 26 7										
		1.4410	X 2 CrNiMoN 25 7 4	Z2 CND 25 07 04 Az					F-3552				F53
		1.4460	X 8 CrNiMo 27 5	Z5 CND 25 05 AZ				2324		SUS 329 J 1		S 32900	329 LN
		1.4462	X 2 CrNiMoN 22 5 3	Z2 CND 22 05 03 AZ (Uranus 45 N)		17 381			F-3308			S 31803	329 A (F51)
		1.4463	G-X 6 CrNiMo 24 8 2										
		1.4501	X 2 CrNiMoCuWN 25 7 4	Z2 CNDUW 25 07 04 Az (Zeron 100)								S 32760	F55
		1.4815	G-X 8 CrNi 19 10										
		1.4822	G-X 40 CrNi 24 5										
K	K.1.1	0.6010	GG-10	Ft 10 D	G 10	42 2410		01 10-00		FC 10	Sc 10		A48-20 B
		0.6015	GG-15	Ft 15 D	G 15	42 2415	Grade 150	01 15-00	FG-15	FC 15	Sc 15		A48-25 B
		0.6020	GG-20	Ft 20 D	G 20	42 2420	Grade 220	01 20-00	FG-20	FC 20	Sc 20		A48-30 B
		0.6025	GG-25	Ft 25 D	G 25	42 2425	Grade 260	01 25-00	FG-25	FC 25	Sc 25		A48-40 B
	K.1.2	0.6030	GG-30	Ft 30 D	G 30	42 2430	Grade 300	01 30-00	FG-30	FC 30	Sc 30		A48-45 B
		0.6035	GG-35	Ft 35 D	G 35	42 2435	Grade 350	01 35-00	FG-35	FC 35	Sc 35		A48-50 B
		0.6040	GG-40	Ft 40 D		42 2440	Grade 400	01 40-00			Sc 40		A48-60 B
		0.6652	GGL-NiMn 13 7	L- NM 13 7			L-NiMn 13 7						
		0.6655	GGL-NiCuCr 15 6 2	L-NUC 15 6 2			L-NiCuCr 15 6 2						A 436 Type 1
		0.6656	GGL-NiCuCr 15 6 3	L-NUC 15 6 3			L-NiCuCr 15 6 3						A 436 Type 1b
		0.6660	GGL-NiCr 20 2	L-NC 20 2			L-NiCr 20 2	05 23-00					A 436 Type 2
		0.6661	GGL-NiCr 20 3	L-NC 20 3			L-NiCr 20 3						A 436 Type 2b
		0.6667	GGL-NiSiCr 20 5 3	L-NSC 20 5 3			L-NiSiCr 20 5 3						
		0.6676	GGL-NiCr 30 3	L-NC 30 3			L-NiCr 30 3						A 436 Type 3
		0.6680	GGL-NiSiCr 30 5 5	L-NSC 30 5 5			L-NiSiCr 30 5 5						A 436 Type 4
	K.2.1	0.7033	GGG-35.3			42 2303							
		0.7040	GGG-40	FGS 400-12	GS 400-12	42 2304	SNG 420/12	0717-02	FGE 38-17	FCD 40	VC 42-12		60 40 18

	Index	Material number	DIN	AFNOR	UNI	ČSN	BS	SIS	UNE	JIS	GOST	UNS	USA
K	K.2.1	0.7043	GGG-40.3	FGS 370-17	GSO 42/17	42 2314	SNG 370/17	0717-15			VC 42-12		
		0.7050	GGG-50	FGS 500-7	GS 500/7	42 2305	SNG 500/7	0727-02	FGE 50-7	FCD 50	VC 50-2		65-45-12
		0.7060	GGG-60	FGS 600-3	GS 600/3	42 2306	SNG 600/3	0732-03		FCD 60	VC 60-2		80-55-06
	K.2.2	0.7070	GGG-70	FGS 700-2	GS 700-2	42 2307	SNG 700/2	0737-01	FGS 70-2	FCD 70	VC 70-2		100-70-03
		0.7080	GGG-80	FGS 800-2	GS 800-2	42 2308	SNG 800/2				VC 80-2		120-90-02
		0.7652	GGG-NiMn 13 7	S-NM 13 7			S-NiMn 13 7						
		0.7660	GGG-NiCr 20 2	S-NC 20 2			S-NiCr 20 2						A 439 Type D-2
		0.7661	GGG-NiCr 20 3	S-NC 20 3			S-NiCr 20 3						A 439 Type D-2B
		0.7665	GGG-NiSiCr 20 5 2	S-NSC 20 5 2			S-NiSiCr 20 5 2						
		0.7670	GGG-Ni 22	S-N 22			S-Ni 22						A 439 Type D-2C
		0.7673	GGG-NiMn 23 4	S-NM 23 4			S-NiMn 23 4						A 439 Type D-2M
		0.7676	GGG-NiCr 30 3	S-NC 30 3			S-NiCr 30 3						A 439 Type D-3
		0.7677	GGG-NiCr 30 1	S-NC 30 1			S-NiCr 30 1						A 439 Type D-3A
		0.7680	GGG-NiSiCr 30 5 5	S-NSC 30 5 5			S-NiSiCr 30 5 5						A 439 Type D-4
		0.7683	GGG-Ni 35	S-N 35			S-Ni 35						A 439 Type D-5
		0.7685	GGG-NiCr 35 3	S-NC 35 3			S-NiCr 35 3						A 439 Type D-5B
		0.8065	GTW-65										
	K.3.1	0.8035	GTW-35-04			42 2536			GTW 35				
		0.8040	GTW-40-05			42 2540							
		0.8045	GTW-45-07										
		0.8055	GTW-55										
		0.8135	GTS-35-10	MN 35-10		42 2533	B 340/12		GTS 35				
		0.8145	GTS-45-06			42 2545	P 440/7		GTS 45				
		0.8155	GTS-55-04	MP 50-5		42 2555	P 510/4		GTS 55				
		0.8165	GTS-65-02	MP 60-3			P 570/3		GTS 65				
	K.3.2	0.8170	GTS-70-02	IP 70-2			P 690/2		GTS 70				
N	N.1.1	3.3307	Al99.85Mg0.5										
		3.3308	Al99,9Mg0,5										
		3.3315	AlMg1	5005 (AlMg1)					L-3350				
		3.3316	AlMg1.5										
		3.3317	Al99.85Mg1										
		3.3318	Al99.9Mg1										
		3.3326	AlMg1.8										
		3.3523	AlMg2.5										
		3.3525	AlMg2Mn0.3										
		3.3527	AlMg2Mn0.8										
		3.3535	AlMg3	5754									
		3.3537	AlMg2.7Mn										
		3.3555	AlMg5	5056 A									
		3.3561	G-AlMg5										
		3.3591	G-AlMg10										
		3.0205	Al99	1200 (A4)	9001/1	42 4009			L-3001				
		3.0255	Al99.5	1050 A	9001/2	42 4004			L-3051				
		3.0275	Al99.7	1070 A		42 4003			L-3071				
		3.0285	Al99.8	1080 A (A8)		42 4002			L-3081				
		3.0305	Al99.9										
		3.0505	AlMn0.5Mg0.5										
		3.0506	AlMn0.6										
		3.0515	AlMn1			42 4432			L-3810				
		3.0517	AlMnCu										
		3.0525	AlMn1Mg0.5	3005									

	Index	Material number	DIN	AFNOR	UNI	ČSN	BS	SIS	UNE	JIS	GOST	UNS	USA
N	N.1.1	3.0526	AlMn1Mg1										
		3.0615	AlMgSiPb										
		3.0915	AlFeSi										
	N.1.2	3.2307	Al99.85MgSi										
		3.2315	AlMgSi1	6082	9006/4	42 4400							6082
		3.3206	AlMgSi0,5	6060 (AGS)		42 4401			L-3441				6063
		3.3208	Al99.9MgSi										
		3.3210	AlMgSi0.7	6005 A									
		3.3211	AlMg1SiCu	6061									
		3.3345	AlMg4.5										
		3.3545	AlMg4Mn	5086 (AG4MC)	9005/5				L-3322				5083
		3.3547	AlMg4,5Mn0,7	5083 (AlMg5Mn0,7)			N8		L-3321	A 5083			A95083
		3.3549	AlMg5Mn										
		3.4335	AlZn4,5Mg1	7020 (AZ5G)	9007/1	42 4441			L-3741				7020
		3.4337	Al99.8ZnMg										
		3.4345	AlZnMgCu0.5										
		3.4365	AlZnMgCu1.5	7075 (AZ5GU)		42 4222			L-3710				7075
		2.1086	G-CuSn10Zn										
		3.1255	AlCuSiMn	2014	9002/3								2014
		3.1305	AlCu2.5Mg0.5										
		3.1325	AlCuMg1	2017 A (AU4G)					L-3120				2017 A
		3.1355	AlCuMg2	2024 (AU4G1)	9002/4	42 4203			L-3140				2024
		3.1645	AlCuMgPb	2030 (AU4PB)		42 4254			L-3121				
		3.1655	AlCuBiPb	2011 (AU5PbBi)	9002/5				L-3192				2011
		MFK											
	N.2.1	3.2581	G-AlSi12			42 4330							
		3.2583	G-AlSi12(Cu)			42 4330							
		3.3261	G-AlMg5Si			42 4515							
		3.3292	GD-AlMg9			42 4519							
		3.3541	G-AlMg3										
		3.3543	G-AlMg3(Cu)										
	N.2.2	3.2134	G-AlSi5Cu1Mg										
		3.2151	G-AlSi6Cu4			42 4357							
		3.2161	G-AlSi8Cu3										
		3.2341	G-AlSi5Mg										
		3.2371	G-AlSi7Mg			42 4334							
		3.2373	G-AlSi9Mg			42 4331							
		3.2381	G-AlSi10Mg			42 4331							
		3.2383	G-AlSi10Mg(Cu)			42 4331							
		3.3241	G-AlMg3Si										
		3.1371	G-AlCu4TiMg										
		3.1841	G-AlCu4Ti										
	N.3.1	2.0040	OF-Cu			42 3000							
		2.0060	E-Cu57			42 3001							
		2.0065	E-Cu58			42 3001							
		2.0070	SE-Cu										
		2.0076	SW-Cu										
		2.0090	SF-Cu			42 3003							
		2.0220	CuZn5			42 3200							
		2.0230	CuZn10			42 3201							
		2.0240	CuZn15			42 3202							

	Index	Material number	DIN	AFNOR	UNI	ČSN	BS	SIS	UNE	JIS	GOST	UNS	USA
N	N.3.1	2.0250	CuZn20			42 3203							
		2.0261	CuZn28										
		2.0265	CuZn30			42 3210							
		2.0280	CuZn33			42 3212							
		2.0321	CuZn37		C2700	42 3213							
		2.0335	CuZn36										
		2.0360	CuZn40			42 3220							
		2.0460	CuZn20Al2										
		2.0470	CuZn28Sn1										
		2.0510	CuZn37Al1			42 3231							
		2.0530	CuZn38Sn1			42 3237							
		2.0730	CuNi12Zn24										
		2.0740	CuNi18Zn20										
		2.0830	CuNi25										
		2.0842	CuNi44Mn1										
		2.0853	CuNi1.5Si										
		2.0855	CuNi2Si			42 3054							
		2.0857	CuNi3Si										
		2.0872	CuNi10Fe1Mn										
		2.0875	CuNi9Sn2										
		2.0882	CuNi30Mn1Fe										
		2.0883	CuNi30Fe2Mn2										
		2.0918	CuAl5As										
		2.0920	CuAl8										
		2.0932	CuAl8Fe3										
		2.0936	CuAl10Fe3Mn2										
		2.0960	CuAl9Mn2										
		2.0966	CuAl10Ni5Fe4										
		2.0971	CuAl9Ni3Fe2										
		2.1016	CuSn4										
		2.1020	CuSn6										
		2.1030	CuSn8										
		2.1080	CuSn6Zn6										
		2.1191	CuAg0.1P										
		2.1203	CuAg0.1										
		2.1245	CuBe1.7										
		2.1247	CuBe2										
		2.1293	CuCrZr			42 3039							
		2.1310	CuFe2P										
		2.1522	CuSi2Mn										
		2.1525	CuSi3Mn										
		Ampco 16	CuAl10Fe3										
		Ampco 18	CuAl10.5Fe3.5										
		Ampco 8	CuAl6.5Fe2.5Sn										
			Ampco 8-16										
	N.3.2	2.0331	CuZn36Pb1.5			42 3214							
		2.0332	CuZn37Pb0.5										
		2.0372	CuZn39Pb0.5			42 3221							
		2.0540	CuZn35Ni2										
		2.0550	CuZn40Al2										
		2.0561	CuZn40Al1			42 3231							

	Index	Material number	DIN	AFNOR	UNI	ČSN	BS	SIS	UNE	JIS	GOST	UNS	USA
N	N.3.2	2.0572	CuZn40Mn1			42 3234							
		2.0580	CuZn40Mn1Pb										
		2.0780	CuNi12Zn30Pb1										
		2.0790	CuNi18Zn19Pb1										
		2.1498	CuSP										
		2.1504	NiAlBz										
		2.1546	CuTeP										
		Ampco 12	CuAl9Fe3										
		Ampco 20	CuAl11Fe4										
	N.3.3	2.0371	CuZn38Pb1.5			42 3222							
		2.0375	CuZn36Pb3										
		2.0380	CuZn39Pb2			42 3223							
		2.0401	CuZn39Pb3										
		2.0402	CuZn40Pb2			42 3223							
		2.0410	CuZn44Pb2										
		2.0490	CuZn31Si1										
		2.0500	CuZn23Al6Mn-4Fe3										
		2.0771	CuNi7Zn39Mn-5Pb3										
		2.0978	CuAl11Ni6Fe5										
		2.1093	G-CuSn6ZnNi										
		2.1096	G-CuSn5ZnPb										
		2.1285	CuCo2Be										
		Ampco 21	CuAl13Fe4.5										
		Ampco 22	CuAl14Fe5										
		Ampco 25											
		Ampco 26											
			Ampco 18-26										
	N.4.1	3.5101	G-MgZn4SE1Zr1										
		3.5102	G-MgZn5Th2Zr1										
		3.5103	G-MgSE3Zn2Zr1										
		3.5105	G-MgTh3Zn2Zr1										
		3.5106	G-MgAg3Se2Zr1										
		3.5200	MgMn2										
		3.5312	MgAl3Zn										
		3.5470	GD-MgAl4Si1										
		3.5612	GD-MgAl6Zn1										
		3.5662	G-MgAl6										
		3.5812	G-MgAl8Zn1			42 4911							
		3.5912	GD-MgAl9Zn1			42 4911							
S	S.1.2	1.4980	X 5 NiCrTi 26 15									S66286	
	S.2.1	1.3924	Ni54										
		1.3926	RNi12			42 3484							
		1.3927	RNi8			42 3484							
		2.4360	NiCu30Fe	Monel 400		42 3431							
		2.4610	NiMo16Cr16Ti	Hastelloy C-4									
		2.4617	NiMo28	Hastelloy B-2									
		2.4630	NiCr20Ti	Nimonic 75			HR 5						
		2.4668	NiCr19Fe18Nb5Mg	Inconel 718									
		2.4812	NiCr17Mo17FeW	Hastelloy C									
		2.4819	NiMo16Cr15W	Hastelloy C-276									
		2.4851	NiCr23Fe, Inconel 601	Inconel 601									

	Index	Material number	DIN	AFNOR	UNI	ČSN	BS	SIS	UNE	JIS	GOST	UNS	USA
S	S.2.1	2.4856	NiCr22Mo9Nb	Inconel 625									
		2.4858	NiCr21Mo				NA 16			NCF 825		N 08825	
		2.4951	NiCr20Ti	Nimonic 75			HR 5						
		2.4964	CoCr20W15Ni										
		2.4989	CoCr20NiW										
	S.2.2	2.4375	NiCu30Al	Monel K 500									
		2.4631	NiCr20TiAl	Nimonic 80 A			HR 401; 601			NCF 80 A		N 07080	
		2.4634	NiCo20Cr15MoAlTi	Nimonic 105									
		2.4640	NiCr15Fe	Inconel 600									
		2.4654	NiCr20Co13Mo-4Ti4Al	Waspaloy									
		2.4662	NiCr13Mo6Ti3	Nimonic 901									
		2.4668	NiCr19Fe18Nb5Mg	Inconel 718									
		2.4816	NiCr15Fe	Inconel 600			NA 14			NCF 600		N 06600	
		2.4952	NiCr20TiAl	Nimonic 80 A									
		2.4973	NiCr19Co11MoTi										
		2.4983	NiCr18Co18MoAlTi	Udimet 500									
	S.2.3	2.4670	G-NiCr13Al6MoNb	Nimocast 713									
		2.4674	NiCo15Cr10MoAlTi	Nimocast PK 24									
		2.4979	CoCr28MoNi										
	S.3.1	3.7024	Ti99,5										
		3.7025	Ti99,8										
		3.7034	Ti99,7										
		3.7055	Ti99,4										
		3.7064	Ti99,2										
		3.7124	TiCu2										
	S.3.2	3.7114	TiAl5Sn2										
		3.7144	TiAl6Sn2Zr4Mo2										
		3.7154	TiAl6Zr5										
		3.7165	TiAl6V4	T-A 6 V			TA 10 – TA 13					R 56400	
		3.7174	TiAl6V6Sn2										
		3.7184	TiAl4Mo4Sn2				TA 45 – TA 51						
H	H.1.1	1.2311	40 CrMnMo 7			19 520							
		1.2312	40 CrMnMoS 8 6	40 CMD 8 + S									
		1.2316	X 36 CrMo 17	Z 38 CD 17	X 38 CrMo 16 1 KU								
		1.2365	X 32 CrMoV 3 3	32 DCV 28	30 CrMoV 12 27 KU	19 541	BH 10			SKD 7	3Ch3M3F	T 20810	H 10
		1.2567	X 30 WCrV 5 3	Z 32 WCV 5	X 30 WCrV 5 3 KU	19 720				SKD 4			
		1.2581	X 30 WCrV 9 3	Z 30 WCV 9	X 30 WCrV 9 3 KU	19 721	BH 21			SKD 5	3Ch2W8F	T 20821	H 21
		1.2738	40 CrMnNiMo 8						F-5303				
		1.2885	X 32 CrMoCoV 3 3 3	30 DCKV 28									
		1.4028	X 30 Cr 13	Z 30 C 13	X 30 Cr 13	17 023	420 S 45	2304		SUS 420 J 2	30Ch13		
		1.4031	X 38 Cr 13	Z 40 C 14	X 40 Cr 14	17 024		2304	F-3404	SUS 420 J 2	40Ch13		
		1.4034	X 46 Cr 13	Z 40 C 14	X 40 Cr 14	17 029	420 S 45		F-3405		40Ch13		
		1.4112	X 90 CrMoV 18									S 44003	
		1.5122	37 MnSi 4			13 240							
		1.6358	X 2 NiCoMoTi 18 9 5										
		1.6582	34 CrNiMo 6	35 NCD 6	35 NiCrMo 6 (KW)	16 342	817 M 40	2541	F-128 / F-1270	SNCM 447	38Ch2N2MA		4340
		1.7003	38 Cr 2	38 C 2	38 Cr 2								
		1.7006	46 Cr 2	42 C 2	45 Cr 2								5045
		1.7030	28 Cr 4				530 A 30				30Ch		5130
		1.7176	55 Cr 3	55 C 3	55 Cr 3		527 A 60	2253	F-1431	SUP 9 (A)	50ChGA	G 51550	5155
		1.0961	60 SiCr 7	60 SC 7	60 SiCr 8					SUP 7			9262

	Index	Material number	DIN	AFNOR	UNI	ČSN	BS	SIS	UNE	JIS	GOST	UNS	USA
H	H.1.1	1.1248	Ck 75	XC 75	C 75	12 081	060 A 78	1774; 1778			75	G 10780	1078; 1080
		1.1273	90 Mn 4										
	H.1.2	1.2083	X 42 Cr 13	Z 40 C 14	X 41 Cr 13 KU	19 435			F-5263	SUS 420 J 2			
		1.2323	GS-48 CrMoV 6 7										
		1.2343	X 38 CrMoV 5 1	Z 38 CDV 5	X 37 CrMoV 5 1 KU	19 552	BH 11		F-5317	SKD 6	4Ch5MFS	T 28811	H 11
		1.2367	X 38 CrMoV 5 3										
		1.2510	100 MnCrW 4	90 MWCV 5	95 MnWCr 5 KU	19 314	BO 1	2140	F-5220	SKS 3		T 31501	O 1
		1.2542	45 WCrV 7		45 WCrV 8 KU	19 732	BS 1	2710				T 41901	S 1
		1.2550	60 WCrV 7	55 WC 20	55 WCrV 8 KU	19 735							
		1.2606	G-X 37 CrMoW 5 1										
		1.2711	54 NiCrMoV 6	55 NCDV 6		19 662							
		1.2713	55 NiCrMoV 6	55 NCDV 7		19 662			F-520.S	SKT 4	5ChNM	T 61206	L 6
		1.2764	X 19 NiCrMo 4										
		1.2767	X 45 NiCrMo 4	Y 35 NCD 16	42 NiCrMo 15 7	19 655							
		1.4109	X 65 CrMo 14										
		1.4112	X 90 CrMoV 18									S 44003	
		1.1157	40 Mn 4	35 M 5			150 M 36				40G	G 10390	1039
		1.1231	Ck 67	XC 68	C 70	12 071	060 A 67	1770			70	G 10700	1070
		1.1274	Ck 101	XC 100			060 A 96	1870		SUP 4		G 10950	1095
	H.1.3	1.2080	X 210 Cr 12	Z 200 C 12	X 210 Cr 13 KU	19 436	BD 3			SKD 1	Ch12	T 30403	D 3
		1.2101	62 SiMnCr 4										
		1.2162	21 MnCr 5	20 NC 5		19 487				SCR 420 H			
		1.2201	G-X 165 CrV 12										
		1.2210	115 CrV 3	100 C 3	107 CrV 3 KU	19 421						T 61202	L 2
		1.2341	X 6 CrMo 4										
		1.2379	X 155 CrVMo 12 1	Z 160 CDV 12	X 155 CrV-Mo 12 1 KU	19 573	BD 2		F-5211	SKD 11		T 30402	D 2
		1.2419	105 WCr 6	105 WC 13	107 WCr 5 KU					SKS 31	ChWG		
		1.2601	X 165 CrMoV 12		X 165 CrMoW 12 KU	19 572		2310					
		1.2721	50 NiCr 13										
		1.2735	15 NiCr 14	10 NC 12		16 240				SNC 22		T 51606	
		1.2833	100 V 1	Y1 105 V	102 V 2 KU	19 356	BW 2			SKS 43		T 72302	W 210
		1.2842	90 MnCrV 8	90 MV 8	90 MnVCr 8 KU	19 314	BO 2					T 31502	O 2
		1.3505	100 Cr 6	100 C 6	100 Cr 6	14 100	534 A 99	2258	F-131 / F-1310	SUJ 2	SchCh 15	G 52986	52100
		1.4112	X 90 CrMoV 18									S 44003	
		1.4125	X 105 CrMo 17	Z 100 CD 17	X 105 CrMo 17					SUS 440 C		S 44004	440 C
		1.8161	58 CrV 4			15 261							
		1.1520	C 70 W1										
	H.1.4	1.2363	X 100 CrMoV 5 1	Z 100 CDV 5	X 100 CrMoV 5 1 KU	19 571	BA 2	2260	F-5227	SKD 12		T 30102	A 2
		1.2436	X 210 CrW 12	Z 200 CW 12	X 215 CrW 12 1 KU	19 437		2312	F-5213	SKD 2			
		1.2880	G-X 165 CrCoMo 12										
		1.3202	S 12-1-4-5			19 858						T 12015	T15
		1.3207	S 10-4-3-10	Z 130 WKCDV 10-10-04	HS 10-4-3-10	19 861	BT 42		F-5553	SKH 57			
		1.3243	S 6-5-2-5	Z 85 WDKCV 06-05-05	HS 6-5-2-5	19 852		2723	F-5613	SKH 55	R6M5K5		
		1.3246	S 7-4-2-5	Z 110 WKCDV 07-05-04	HS 7-4-2-5	19 851						T 11341	M 41
		1.3247	S 2-10-1-8	Z 110 DKCWV 09-08-04	HS 2-9-1-8		BM 42			SKH 51		T 11342	M 42
		1.3249	S 2-9-2-8				BM 34					T 11333	M 33; M 34
		1.3257	S 18-1-2-15										
		1.3333	S 3-3-2		HS 3-3-2	19 820							
		1.3343	S 6-5-2	Z 85 WDCV 06-05-04-0	HS 6-5-2	19 830	BM 2	2722	F-5603	SKH 9; SKH 51	R6AM5	T 11302	M 2
		1.3344	S 6-5-3	Z 120 WDCV 06-05-04	HS 6-5-3		BM 4			SKH 52; SKH 53		T 11323	M 3 Cl. 2
		1.3346	S 2-9-1	Z 85 DCWV 08-04-02-0	HS 1-8-1		BM 1				H41	T 11301	H 41; M 1

	Index	Material number	DIN	AFNOR	UNI	ČSN	BS	SIS	UNE	JIS	GOST	UNS	USA
H	H.1.4	1.3348	S 2-9-2	Z 100 DCWV 09-04-02	HS 2-9-2			2782				T 11307	M 7
		1.3355	S 18-0-1	Z 80 WCV 18-04-01	HS 18-0-1	19 824	BT 1			SKH 2	R18	T 12001	T 1
		1.1654	C 110 W										
	H.3.1	0.9620	G-X 260 NiCr 4 2				Grade 2 A	0512-00					A 532 I B NiCr-LC
		0.9625	G-X 330 NiCr 4 2				Grade 2 B	0513-00					A 532 I A NiCr-HC
		0.9630	G-X 300 CrNiSi 9 5 2				Grade 2 C; D; E	0457-00					A 532 I D Ni-HiCr
		0.9635	G-X 330 CrMo 15 3				Grade 3 A; B						A 532 II C 15% CrMo-
		0.9640	G-X 300 CrMoNi 15 2				Grade 3 A; B						
		0.9645	G-X 260 CrMoNi 20 2				Grade 3 C						A 532 II D 20% CrMo-
		0.9650	G-X 260 Cr 27				Grade 3 D	0466-00					A 532 III A 25% Cr
		0.9655	G-X 300 CrMo 27 1				Grade 3 E						A 532 III A 25% Cr
O	O.1.1	EP											
		MF											
		PF											
		UP											
	O.1.2	PA											
		PC											
		PE											
		PI											
		PMMA											
		POM											
		PP											
		PS											
		PTFE											
		PVC											
	O.2.1	AFK											
	O.2.2	CFK											
		GFK											
	O.3.1	Graphit											

Article No.	Designation	Page No.
70 248 ...	Turning	3 / 15
70 254 ...	Turning	3 / 15
70 255 ...	Turning	3 / 15
70 260 ...	Turning	3 / 25
70 261 ...	Turning	3 / 25
70 263 ...	Turning	3 / 25
70 276 ...	Turning	3 / 36
70 280 ...	Turning	3 / 40
70 282 ...	Turning	3 / 40
70 286 ...	Turning	3 / 179
70 287 ...	Turning	3 / 48
70 289 ...	Turning	3 / 183
70 330 ...	Turning	3 / 218
70 331 ...	Turning	3 / 217
70 332 ...	Turning	3 / 219
70 334 ...	Turning	3 / 220
70 338 ...	Turning	3 / 254
70 339 ...	Turning	3 / 255
70 340 ...	Turning	3 / 256
70 342 ...	Turning	3 / 211
70 343 ...	Turning	3 / 212
70 346 ...	Turning	3 / 210
70 349 ...	Turning	3 / 213
70 350 ...	Turning	3 / 237
70 351 ...	Turning	3 / 225
70 352 ...	Turning	3 / 228
70 354 ...	Turning	3 / 241
70 355 ...	Turning	3 / 248
70 356 ...	Turning	3 / 250
70 357 ...	Turning	3 / 246
70 358 ...	Turning	3 / 247
70 359 ...	Turning	3 / 249
70 360 ...	Turning	3 / 223
70 362 ...	Turning	3 / 226
70 363 ...	Turning	3 / 239
70 364 ...	Turning	3 / 240
70 386 ...	Turning	3 / 179
70 540 ...	Turning	3 / 9
70 541 ...	Turning	3 / 9
70 542 ...	Turning	3 / 12
70 543 ...	Turning	3 / 12
70 680 ...	Turning	3 / 30
70 684 ...	Turning	3 / 28
70 685 ...	Turning	3 / 28
70 690 ...	Turning	3 / 44
70 691 ...	Turning	3 / 44
70 692 ...	Turning	3 / 44
70 694 ...	Turning	3 / 43
70 695 ...	Turning	3 / 43
70 696 ...	Turning	3 / 43
70 697 ...	Turning	3 / 43
70 698 ...	Turning	3 / 9
70 699 ...	Turning	3 / 9

Article No.	Designation	Page No.
70 716 ...	Turning	3 / 21
70 717 ...	Turning	3 / 21
70 718 ...	Turning	3 / 22
70 719 ...	Turning	3 / 22
70 726 ...	Turning	3 / 47
70 727 ...	Turning	3 / 47
70 728 ...	Turning	3 / 39
70 729 ...	Turning	3 / 39
70 730 ...	Turning	3 / 49
70 731 ...	Turning	3 / 49
70 732 ...	Turning	3 / 34
70 733 ...	Turning	3 / 34
70 736 ...	Turning	3 / 33
70 737 ...	Turning	3 / 33
70 738 ...	Turning	3 / 33
70 739 ...	Turning	3 / 33
70 740 ...	Turning	3 / 34
70 741 ...	Turning	3 / 34
70 742 ...	Turning	3 / 49
70 743 ...	Turning	3 / 49
70 744 ...	Turning	3 / 46
70 745 ...	Turning	3 / 46
70 746 ...	Turning	3 / 46
70 747 ...	Turning	3 / 46
70 752 ...	Turning	3 / 19
70 756 ...	Turning	3 / 17
70 757 ...	Turning	3 / 17
70 760 ...	Turning	3 / 17
70 761 ...	Turning	3 / 17
70 766 ...	Turning	3 / 18
70 767 ...	Turning	3 / 19
70 768 ...	Turning	3 / 38
70 769 ...	Turning	3 / 38
70 771 ...	Turning	3 / 30
70 774 ...	Turning	3 / 31
70 780 ...	Turning	3 / 45
70 781 ...	Turning	3 / 45
70 782 ...	Turning	3 / 38
70 784 ...	Turning	3 / 32
70 788 ...	Turning	3 / 29
70 789 ...	Turning	3 / 29
70 792 ...	Turning	3 / 22
70 793 ...	Turning	3 / 22
70 800 ...	Turning	3 / 177
70 801 ...	Turning	3 / 178
70 804 ...	Turning	3 / 176
70 805 ...	Turning	3 / 176
70 820 ...	Turning	3 / 185
70 821 ...	Turning	3 / 185
70 836 ...	Turning	3 / 222
70 837 ...	Turning	3 / 222
70 842 ...	Turning	3 / 233
70 843 ...	Turning	3 / 234

Article No.	Designation	Page No.
70 844 ...	Turning	3 / 244
70 845 ...	Turning	3 / 245
70 846 ...	Turning	3 / 216
70 847 ...	Turning	3 / 215
70 850 ...	Turning	3 / 259
70 851 ...	Turning	3 / 259
70 854 ...	Turning	3 / 260
70 855 ...	Turning	3 / 260
70 856 ...	Turning	3 / 253
70 857 ...	Turning	3 / 253
70 858 ...	Turning	3 / 235
70 859 ...	Turning	3 / 235
70 862 ...	Turning	3 / 232
70 863 ...	Turning	3 / 232
70 865 ...	Turning	3 / 231
70 866 ...	Turning	3 / 231
70 867 ...	Turning	3 / 243
70 868 ...	Turning	3 / 243
70 870 ...	Turning	3 / 230
70 871 ...	Turning	3 / 230
70 872 ...	Turning	3 / 251
70 873 ...	Turning	3 / 257
70 874 ...	Turning	3 / 258
70 875 ...	Turning	3 / 221
70 876 ...	Turning	3 / 221
70 882 ...	Turning	3 / 252
70 883 ...	Turning	3 / 252
70 896 ...	Turning	3 / 214
70 897 ...	Turning	3 / 214
71 140 ...	Turning	3 / 37
71 154 ...	Turning	3 / 48
71 184 ...	Turning	3 / 37
71 200 ...	Threading	2 / 59
71 202 ...	Threading	2 / 59
71 203 ...	Threading	2 / 60
71 204 ...	Threading	2 / 60
71 206 ...	Threading	2 / 57
71 208 ...	Threading	2 / 57
71 210 ...	Threading	2 / 58
71 212 ...	Threading	2 / 58
71 220 ...	Threading	2 / 43
71 222 ...	Threading	2 / 44
71 224 ...	Threading	2 / 45
71 226 ...	Threading	2 / 46
71 228 ...	Threading	2 / 49
71 229 ...	Threading	2 / 50
71 230 ...	Threading	2 / 51
71 231 ...	Threading	2 / 52
71 264 ...	Threading	2 / 53
71 266 ...	Threading	2 / 54
71 268 ...	Threading	2 / 55
71 270 ...	Threading	2 / 56
71 271 ...	Threading	2 / 64

Article No.	Designation	Page No.
71 272 ...	Threading	2 / 65
71 273 ...	Threading	2 / 66
71 274 ...	Threading	2 / 65
71 280 ...	Threading	2 / 61
71 281 ...	Threading	2 / 61
71 282 ...	Threading	2 / 69
71 283 ...	Threading	2 / 62
71 284 ...	Threading	2 / 48
71 285 ...	Threading	2 / 48
71 286 ...	Threading	2 / 47
71 287 ...	Threading	2 / 47
71 300 ...	Turning	3 / 16
71 301 ...	Turning	3 / 16
71 302 ...	Turning	3 / 16
71 305 ...	Turning	3 / 16
71 306 ...	Turning	3 / 16
71 310 ...	Turning	3 / 27
71 311 ...	Turning	3 / 27
71 312 ...	Turning	3 / 27
71 325 ...	Turning	3 / 37
71 326 ...	Turning	3 / 37
71 330 ...	Turning	3 / 42
71 331 ...	Turning	3 / 42
71 332 ...	Turning	3 / 42
71 950 ...	Threading	2 / 70
72 300 ...	Turning	3 / 127
72 301 ...	Turning	3 / 131
72 302 ...	Turning	3 / 127
72 304 ...	Turning	3 / 130
72 305 ...	Turning	3 / 131
72 306 ...	Turning	3 / 130
72 307 ...	Turning	3 / 132
72 308 ...	Turning	3 / 128
72 309 ...	Turning	3 / 128
72 310 ...	Turning	3 / 127
72 311 ...	Turning	3 / 127
72 312 ...	Turning	3 / 129
72 313 ...	Turning	3 / 129
72 314 ...	Turning	3 / 128
72 315 ...	Turning	3 / 128
72 316 ...	Turning	3 / 129
72 317 ...	Turning	3 / 129
72 319 ...	Turning	3 / 132
72 320 ...	Turning	3 / 132
72 350 ...	Turning	3 / 20
72 351 ...	Turning	3 / 20
72 352 ...	Turning	3 / 20
72 353 ...	Turning	3 / 20
72 356 ...	Turning	3 / 28
72 357 ...	Turning	3 / 28
72 360 ...	Turning	3 / 54
72 361 ...	Turning	3 / 54
72 362 ...	Turning	3 / 55

Article No.	Designation	Page No.
72 363 ...	Turning	3 / 55
72 364 ...	Turning	3 / 55
72 365 ...	Turning	3 / 55
72 380 ...	Turning	3 / 53
72 382 ...	Turning	3 / 53
72 384 ...	Turning	3 / 53
72 386 ...	Turning	3 / 53
72 388 ...	Turning	3 / 54
72 390 ...	Turning	3 / 54
72 400 ...	Turning	3 / 25
72 401 ...	Turning	3 / 8
72 402 ...	Turning	3 / 51
72 403 ...	Turning	3 / 51
72 404 ...	Turning	3 / 51
72 405 ...	Turning	3 / 51
72 412 ...	Turning	3 / 126
72 414 ...	Turning	3 / 126
72 416 ...	Turning	3 / 106
72 418 ...	Turning	3 / 106
72 420 ...	Turning	3 / 106
72 422 ...	Turning	3 / 106
72 424 ...	Turning	3 / 107
72 426 ...	Turning	3 / 107
72 428 ...	Turning	3 / 107
72 430 ...	Turning	3 / 107
72 432 ...	Turning	3 / 107
72 434 ...	Turning	3 / 107
72 436 ...	Turning	3 / 108
72 438 ...	Turning	3 / 108
72 440 ...	Turning	3 / 108
72 442 ...	Turning	3 / 108
72 444 ...	Turning	3 / 112
72 446 ...	Turning	3 / 112
72 456 ...	Turning	3 / 114
72 457 ...	Turning	3 / 114
72 464 ...	Turning	3 / 117
72 466 ...	Turning	3 / 117
72 468 ...	Turning	3 / 118
72 470 ...	Turning	3 / 118
72 472 ...	Turning	3 / 120
72 474 ...	Turning	3 / 120
72 476 ...	Turning	3 / 119
72 478 ...	Turning	3 / 119
72 480 ...	Turning	3 / 124
72 482 ...	Turning	3 / 124
72 484 ...	Turning	3 / 125
72 486 ...	Turning	3 / 125
72 492 ...	Turning	3 / 52
72 493 ...	Turning	3 / 52
72 494 ...	Turning	3 / 8
72 496 ...	Turning	3 / 110
72 497 ...	Turning	3 / 110
72 498 ...	Turning	3 / 110

Article No.	Designation	Page No.
72 499 ...	Turning	3 / 110
72 500 ...	Turning	3 / 111
72 501 ...	Turning	3 / 111
72 504 ...	Turning	3 / 111
72 505 ...	Turning	3 / 111
72 506 ...	Turning	3 / 111
72 507 ...	Turning	3 / 111
72 510 ...	Turning	3 / 116
72 511 ...	Turning	3 / 116
72 512 ...	Turning	3 / 116
72 513 ...	Turning	3 / 116
72 514 ...	Turning	3 / 109
72 515 ...	Turning	3 / 109
72 516 ...	Turning	3 / 115
72 517 ...	Turning	3 / 115
72 518 ...	Turning	3 / 115
72 519 ...	Turning	3 / 115
72 520 ...	Turning	3 / 112
72 521 ...	Turning	3 / 112
72 526 ...	Turning	3 / 122
72 527 ...	Turning	3 / 122
72 528 ...	Turning	3 / 123
72 529 ...	Turning	3 / 123
72 530 ...	Turning	3 / 121
72 531 ...	Turning	3 / 121
72 560 ...	Turning	3 / 113
72 561 ...	Turning	3 / 113
72 562 ...	Turning	3 / 113
72 563 ...	Turning	3 / 113
72 800 ...	Turning	3 / 60
72 801 ...	Turning	3 / 60
72 802 ...	Turning	3 / 59
72 803 ...	Turning	3 / 59
72 804 ...	Turning	3 / 60
72 805 ...	Turning	3 / 60
72 808 ...	Turning	3 / 57
72 809 ...	Turning	3 / 57
72 810 ...	Turning	3 / 57
72 811 ...	Turning	3 / 58
72 812 ...	Turning	3 / 59
72 813 ...	Turning	3 / 59
72 814 ...	Turning	3 / 58
72 840 ...	Turning	3 / 61
72 841 ...	Turning	3 / 61
72 900 ...	Milling	4 / 17
72 930 ...	Milling	4 / 18
72 950 ...	Turning	3 / 101
72 951 ...	Turning	3 / 68
72 952 ...	Turning	3 / 64
72 953 ...	Turning	3 / 68
72 954 ...	Turning	3 / 65
72 955 ...	Turning	3 / 66
72 956 ...	Turning	3 / 66

Article No.	Designation	Page No.
73 348 ...	Turning	3 / 330
73 350 ...	Turning	3 / 331
73 352 ...	Turning	3 / 331
73 358 ...	Turning	3 / 333
73 360 ...	Turning	3 / 333
73 362 ...	Turning	3 / 332
73 364 ...	Turning	3 / 332
73 370 ...	Turning	3 / 326
73 372 ...	Turning	3 / 326
73 374 ...	Turning	3 / 332
73 376 ...	Turning	3 / 332
73 382 ...	Turning	3 / 326
73 384 ...	Turning	3 / 326
73 386 ...	Turning	3 / 321
73 388 ...	Turning	3 / 321
73 520 ...	Turning	3 / 335
73 522 ...	Turning	3 / 334
73 523 ...	Turning	3 / 337
73 524 ...	Turning	3 / 337
73 525 ...	Turning	3 / 336
73 526 ...	Turning	3 / 336
75 013 ...	Turning	3 / 8
75 014 ...	Turning	3 / 8
75 024 ...	Turning	3 / 11
75 025 ...	Turning	3 / 11
75 026 ...	Turning	3 / 11
75 210 ...	Turning	3 / 14
75 211 ...	Turning	3 / 14
75 213 ...	Turning	3 / 24
75 214 ...	Turning	3 / 24
75 217 ...	Turning	3 / 35
75 218 ...	Turning	3 / 35
76 134 ...	Turning	3 / 7
76 136 ...	Turning	3 / 7
76 139 ...	Turning	3 / 10
76 157 ...	Turning	3 / 10
76 195 ...	Turning	3 / 24
76 243 ...	Turning	3 / 15
76 249 ...	Turning	3 / 13
76 250 ...	Turning	3 / 13
76 251 ...	Turning	3 / 13
76 252 ...	Turning	3 / 14
76 253 ...	Turning	3 / 13
76 254 ...	Turning	3 / 26
76 255 ...	Turning	3 / 41
76 256 ...	Turning	3 / 24
76 257 ...	Turning	3 / 23
76 258 ...	Turning	3 / 24
76 259 ...	Turning	3 / 23
76 263 ...	Turning	3 / 7
76 265 ...	Turning	3 / 23
76 270 ...	Turning	3 / 35
76 273 ...	Turning	3 / 10

Article No.	Designation	Page No.
76 274 ...	Turning	3 / 35
76 275 ...	Turning	3 / 35
76 277 ...	Turning	3 / 40
76 284 ...	Turning	3 / 35
76 285 ...	Turning	3 / 40
76 288 ...	Turning	3 / 40
81 000 ...	Clamping technology	5 / 4
81 001 ...	Clamping technology	5 / 15
81 002 ...	Clamping technology	5 / 4
81 003 ...	Clamping technology	5 / 5
81 004 ...	Clamping technology	5 / 15
81 005 ...	Clamping technology	5 / 5
81 006 ...	Clamping technology	5 / 15
81 007 ...	Clamping technology	5 / 7
81 008 ...	Clamping technology	5 / 17
81 009 ...	Clamping technology	5 / 7
81 010 ...	Clamping technology	5 / 17
81 011 ...	Clamping technology	5 / 8
81 012 ...	Clamping technology	5 / 16
81 013 ...	Clamping technology	5 / 8
81 014 ...	Clamping technology	5 / 16
81 015 ...	Clamping technology	5 / 9
81 016 ...	Clamping technology	5 / 18
81 017 ...	Clamping technology	5 / 9
81 018 ...	Clamping technology	5 / 18
81 019 ...	Clamping technology	5 / 6
81 020 ...	Clamping technology	5 / 16
81 021 ...	Clamping technology	5 / 6
81 022 ...	Clamping technology	5 / 16
81 023 ...	Clamping technology	5 / 11
81 024 ...	Clamping technology	5 / 19
81 025 ...	Clamping technology	5 / 11
81 026 ...	Clamping technology	5 / 8
81 027 ...	Clamping technology	5 / 9
81 028 ...	Clamping technology	5 / 11
81 029 ...	Clamping technology	5 / 9
81 030 ...	Clamping technology	5 / 11
81 031 ...	Clamping technology	5 / 5
81 032 ...	Clamping technology	5 / 23
81 033 ...	Clamping technology	5 / 24
81 034 ...	Clamping technology	5 / 22
81 035 ...	Clamping technology	5 / 21
81 036 ...	Clamping technology	5 / 26
81 037 ...	Clamping technology	5 / 25
81 038 ...	Clamping technology	5 / 25
81 039 ...	Clamping technology	5 / 25
81 040 ...	Clamping technology	5 / 27
81 041 ...	Clamping technology	5 / 28
81 042 ...	Clamping technology	5 / 28
81 043 ...	Clamping technology	5 / 32
81 044 ...	Clamping technology	5 / 32
81 045 ...	Clamping technology	5 / 33
81 046 ...	Clamping technology	5 / 33

ISO designation system

ISO attribute	Feature Description
A	
ADJRG	Adjustment range
ADJRGR	Adjustment range radial
ALP	Clearance angle axial
AN	Clearance angle major
APMX	Depth of cut maximum
B	
B	Shank width
BD	Body diameter
BD_1	Body diameter, 1st cutting step
BD_2	Body diameter, 2nd cutting step
BD_3	Body diameter, 3rd cutting step
BD_4	Body diameter, 4th cutting step
BDRED	Body diameter, reduced
BDX	Body diameter maximum
BHTA	Body half taper angle
BN	Face land width
BS	Wiper edge length
BTED	Body taper end diameter
C	
CDX	Cutting depth maximum
CF	Central flat
CHW	Corner chamfer width
CHWTL	Flank chamfer width left hand
CLDIS_1	centre line distance 1
CLDIS_2	centre line distance 2
CLDIS_3	centre line distance 3
CND	Coolant entry diameter
CNT	Coolant entry, thread size
CODX	Parting off diameter, max.
CRE	Spot radius
CRKS	Pull stud thread size
CW	Cutting width
CXD	Coolant exit diameter
D	
D1	Fixing hole diameter
DAXN	Axial groove outside diameter minimum
DAXX	Axial groove outside diameter maximum
DC	Cutting diameter
DC_1	Cutting diameter, 1st cutting step
DC_2	Cutting diameter, 2nd cutting step
DCD	Cutting diameter drilling part
DCINTF	Interference cutting diameter
DCN	Cutting diameter minimum
DCONMS	Mounting spigot diameter
DCONWS	Connection diameter workpiece side
DCONWS_1	Connection diameter workpiece side – 1
DCONWS_2	Connection diameter workpiece side – 2
DCSKX	Countersunk diameter, max
DCX	Cutting diameter maximum
DF	Flange diameter
DFC	Functional diameter
DHUB	Hub diameter
DLN	Diameter lock nut
DMIN	Minimum bore diameter
DN	Neck Diameter
DRVS	Drive size

ISO attribute	Feature Description
G	
GAN	Insert rake angle
GB	Face land angle
H	
H	Shank height
HDD	Head diameter
HDW	head width
HF	Functional height
HLN	Lock nut height
HSUP	Support height
I	
IC	Inscribed circle diameter
IH	Insert hand
INSL	Insert length
K	
KAPR	Tool cutting edge angle
KCH	Corner chamfer angle
L	
L	Cutting edge length
L_1	Cutting edge length 1
L_2	Cutting edge length 2
L_3	Cutting edge length 3
LB	Body length
LB_1	Body length 1
LB_2	Body length 2
LCF	Length chip flute
LCOL	Collet length
LDRED	Reduced body diameter length
LE	Cutting edge effective length
LF	Functional length
LF_1	Functional length 1
LF_2	Functional length 2
LF_3	Functional length 3
LFSF	Distance to face
LH	Head length
LPCON	Connection protruding length
LPR	Protruding length
LS	Shank length
LSC	Clamping length machine side
LSCN	Clamping length minimum machine side
LSCX	Clamping length maximum machine side
LTA	length tool assembly
LU	Usable length
LUX	Usable length maximum
M	
MXC_R	Clamping force maximum
N	
NOF	Flute count
NT	Tooth count
O	
OAH	Overall height
OAL	Overall length
OAW	Overall width

Continued on next page

ISO designation system

ISO attribute	Feature Description
P	
PDPT	Profile depth insert
PDX	Profile distance ex
PDY	Profile distance ey
PHD	Premachined hole diameter
PL	Point length
PLGL	Plug length
PNA	Profile included angle
PRFA	Profile angle
PRFRAD	Profile radius
PRFRAD1	Profile radius 1
PRFRAD2	Profile radius 2
PRFRAD3	Profile radius 3
PSIR	Tool lead angle
R	
RA	Relief angle
RADH	Radial height
RADW	Radial width
RADWOF	Radial offset width
RAR	Relief angle rh
RCSK	Radius countersunk
RE	Corner radius
RE_1	Corner radius 1
RE_2	Corner radius 2
RE_3	Corner radius 3
REL	Corner radius left hand
RETL	Flank radius left hand
RETR	Flank radius right hand
RPMX	Rotational speed maximum
S	
S	Insert thickness
S1	Insert thickness total
SD	Step distance
SDL	Step diameter length
SDL_1	Step diameter length 1
SDL_2	Step diameter length 2
SZID	nominal size
T	
THID	Thread designation inside
THL	Thread cutting part length
THOD	Thread designation outside
THSZMS	Connection thread nominal size
THSZWS	Connection thread nominal size workpiece side
TP	Thread pitch
TPI	Threads per inch
TQX	Torque maximum
W	
W1	Insert width
WF	Functional width
WF2	Functional width 2
WT	Weight of item
Z	
ZEFP	Peripheral effective cutting edge count
ZNF	Face mounted insert count
ZNP	Peripheral mounted insert count

Find out more at:
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