Product Innovations 9/20

Catalogue

Version 2019

2019 EN

ZCC Cutting Tools Europe GmbH

your Partner \ your Value

The Company

Zhuzhou Cemented Carbide Cutting Tools Co., Ltd. (ZCC-CT) is located in Zhuzhou, Hunan in the People's Republic of China is the largest Chinese manufacturer of carbide tools. ZCC-CT belongs to the Zhuzhou Cemented Carbide Group (ZCC), which manufactures carbide products and carbide powders. Both companies are part of the Minmetals Corporation, which Trades in mining metals and minerals.

Since its founding in 1953, ZCC Cutting Tools has become one of the world's leading carbide manufacturers and has more than 2,000 employees, thanks to its highly qualified staff and use of the latest technologies. As a Minmetals Corporation company, ZCC-CT can completely cover the entire value-added chain of modern carbide tool production from the extraction of raw materials to the coated final product and all the steps in between.

Based on the latest European production technologies, it is possible for us to offer products with a consistent high quality at all times. The extensive product range includes carbide indexable inserts, indexable inserts made from cermet, CBN, PKD and ceramic, solid carbide tools as well as turning tool holders and suitable tool systems. The products are produced in accordance with the current international standards, such as ISO, DIN, ANSI, JIS and BSI. In addition, ZCC Cutting Tools offer customer-specific solutions and special carbide products in accordance with specifications.

Research and development are a very high priority at ZCC-CT. In this area ZCC-CT use the world's most modern equipment and advanced machinery from Germany and Switzerland, for which the investments are higher than average. With highly trained engineers and a qualified international team, ZCC Cutting Tools researches the necessary foundations and is constantly developing new and improved products based on them. The company continuously strives to improve quality in order to meet customers' growing demands for new and innovative products and to be able to individually enhance customer benefits.

Both production and administration in China are subject to the ISO 9001:2008 standard. Environmental management is subject to the ISO 14001:2004 standard.

Since 2003, ZCC Cutting Tools has had a branch office in Europe.

The European head office and central warehouse are located in Düsseldorf, Germany. All European countries as well as Russia and Turkey are serviced from there. The company's quality management system is certified in the area of sales and logistics of tools for metal processing in accordance with DIN EN ISO 9001:2008.

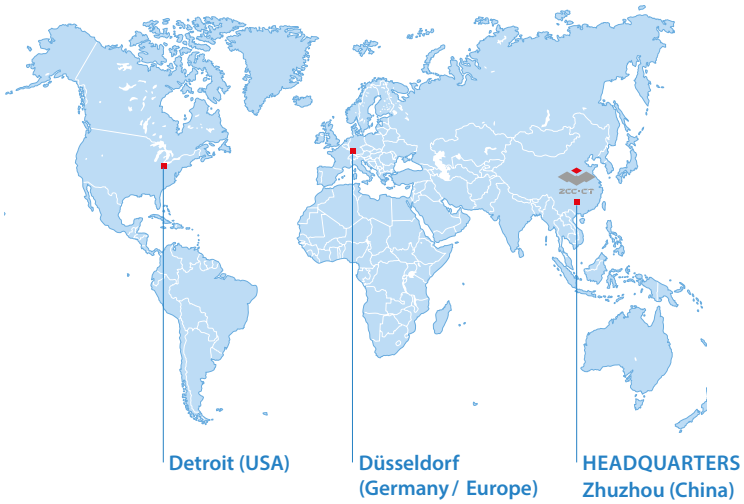
In order to meet our own high requirements for above-average customer service and in parallel with the growth of the company as a whole, the number of employees at ZCC Cutting Tools is growing in sales and internal sales, in technical support and application technology, research and development as well as in the areas of logistic, marketing, IT, human resources and accounting.

Our sales representatives and our sales partners in Europe together serve customers on site. ZCC-CT application engineers are furthermore available with all their expertise and experience by phone, email or personally in your production environment.

The internal sales team handles enquiries throughout Europe with native speakers and ensures together with the employees in logistics that all orders are delivered to you and all our customers as fast as possible.

All of us at ZCC Cutting Tools Europe are here for you and will support you as your competent partner in all questions of machining production. That is our definition of added value through partnership.

Member of Minmetals Group



General turning

100% chip control

– **100% chip control** when machining long-chipping materials
– Exchangeable cartridge ensures high economic efficiency of the system: In case of tool collision, only the cartridge needs to be changed
– Star-shaped coolant nozzles for improved coolant performance
– Due to cartridge serrated connection: positive fit, exact positioning is guaranteed
– The open truss version reduces vibrations even more and prevents the tool head from overheating
– Holders available with all machine tool interfaces

Primary workpiece materials

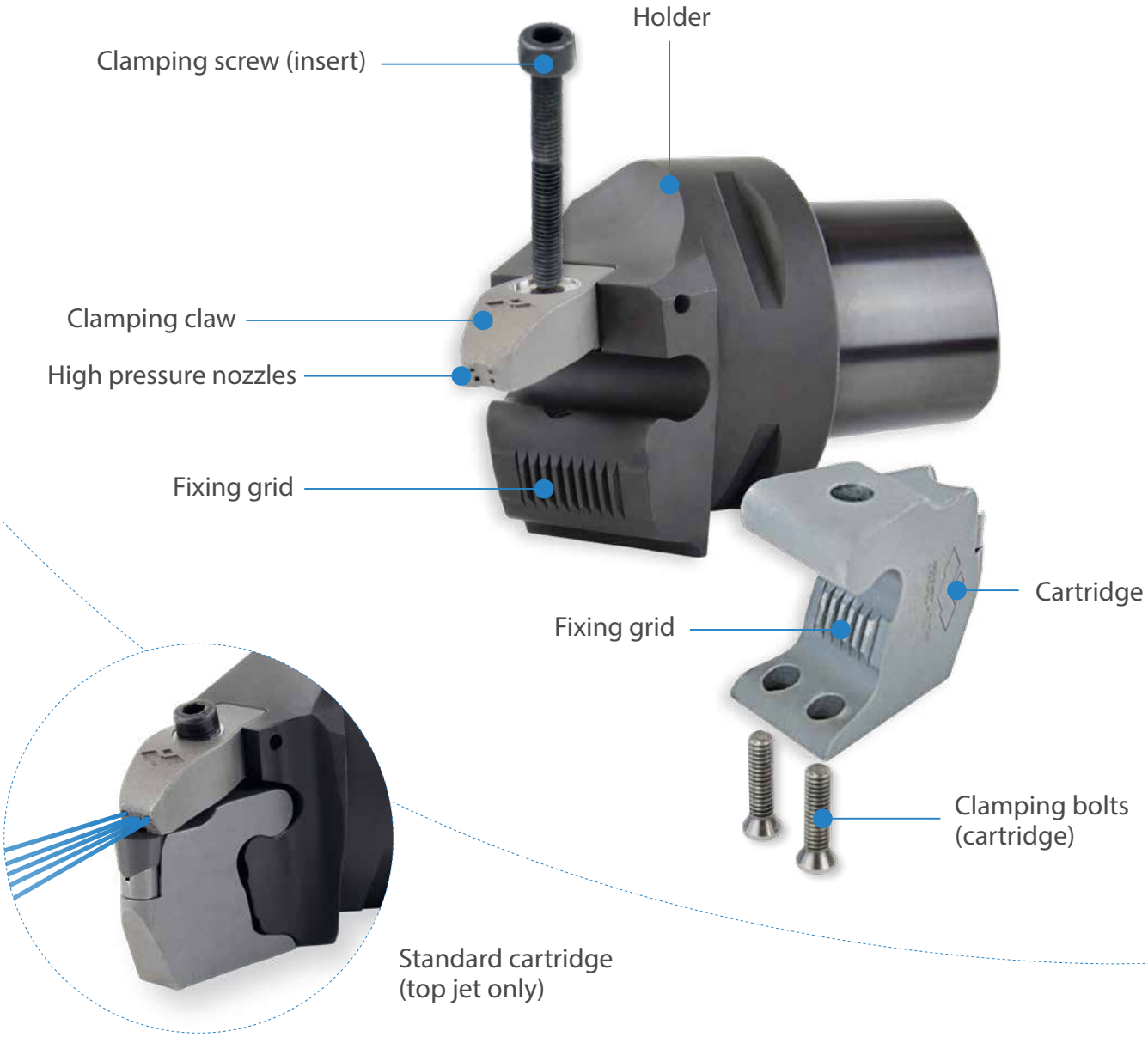
- Heat-resistant alloys
- Titanium alloys
- Roller bearing steels

Main industry segments and components

- Aerospace industry (engine components)
- Energy technology (turbine components)
- Transport (naval engine components)
- Bearing industry

Customized tool system available on request.

Safe chip control due to precise coolant pressure (min. 40 bar, max. 150 bar) at the spindle discharge.
Recommended pressure: 80 bar



Standard cartridge
(top jet only)

Standard cartridge
(top and bottom jet)

Premium cartridge
(top and bottom jet)

Premium cartridge

Framework version zRAY™

Bottom jet (lower coolant supply)

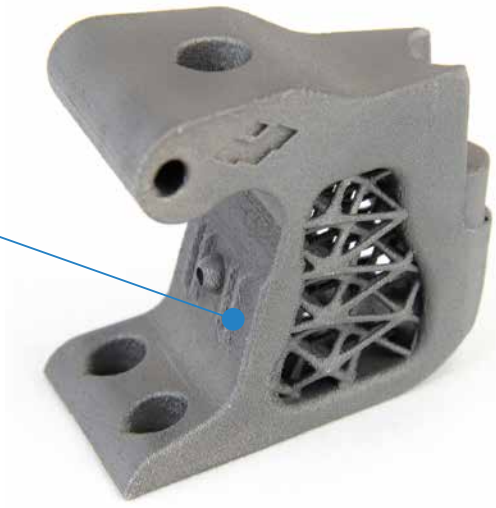
Targeted coolant supply to the open area reduces heat build-up in the cutting area, so that extended tool life is possible.

Framework

The two main benefits of the framework version are, 1) reduced vibration 2) reduced heat generation when machining HRSA or titanium alloy materials.

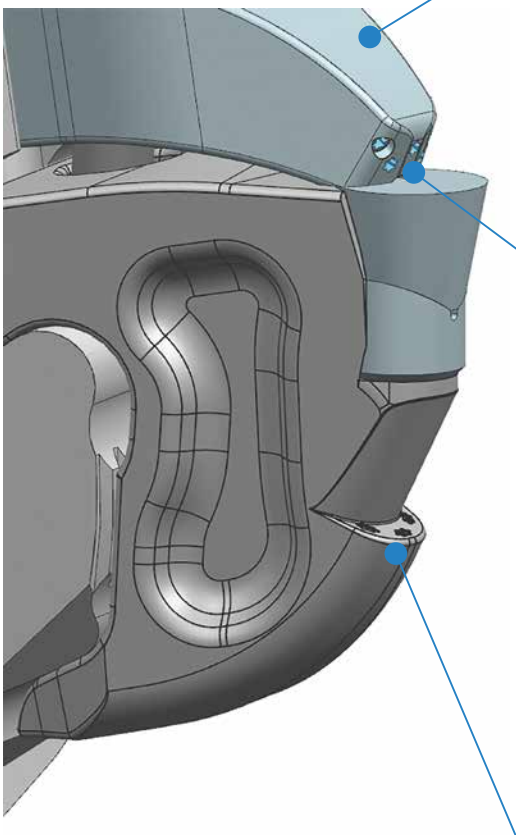
Serrated system

The serrated system allows the cassette to achieve a positive locking with the holder and thus an exact positioning. The additional dampening capacity has a positive effect on the surface finish.



Dual coolant supply

Efficient high pressure cooling ZRAY™



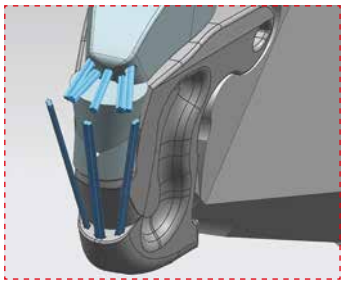
YOUR BENEFITS

Top jet (upper coolant supply)

Targeted coolant supply to the cutting surface reduces the heat build-up and improves chip control.

Star-shaped design

Star-shaped coolant nozzles provide improved coolant performance.



YOUR BENEFITS

Bottom jet (lower coolant supply)

Targeted coolant supply to the open area reduces heat build-up in the cutting area, so that an extended tool life is possible.

Customized Tool System zRay

Name/Company: **Address:** **Tel.:** **Fax:** **E-mail:**	ZCC-CT **Wanheimer Str. 57** **40472 Düsseldorf, Germany** **Fax:** +49-(0)211-989240-111 **E-mail:** technik@zccct-europe.com Executable PDF version

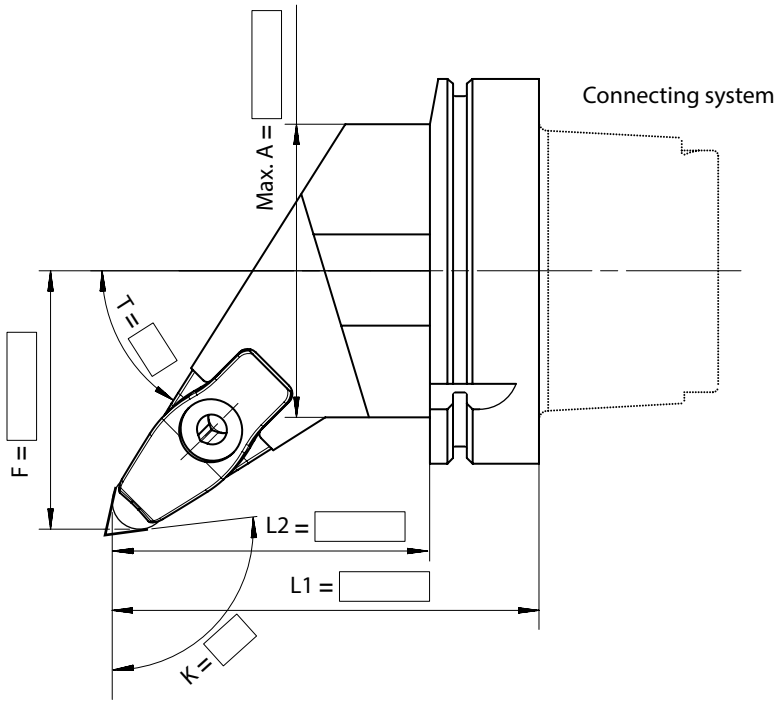
Tool type	
External turning	☐
Internal turning	☐
Right hand	☐
Left hand	☐
Neutral	☐
Connecting system:	
Insert:	

Cooling	
Top jet only	☐
Top & bottom jet	☐
Low pressure	☐

If chip control is required, use inserts without chip breaker.

Global delivery information: Design and manufacturing =10 to 12 weeks
Manufacturing only = 8 to 10 weeks

Machining information	
Workpiece material:	
Existing max. coolant pressure:	**[bar]**
Max. depth of cut:	**[mm]**
Max. feed rate:	**[mm/rev]**
Cutting speed:	**[m/min]**
Continous cut	☐
Lightly interrupted cut	☐
Strongly interrupted cut	☐



Remark
Please attach any additional information required. For internal turning operations, please indicate the minimum workpiece diameter prior to machining.

Order quantity:	Desired delivery date:
Date:	Signature:

B

Indexable milling

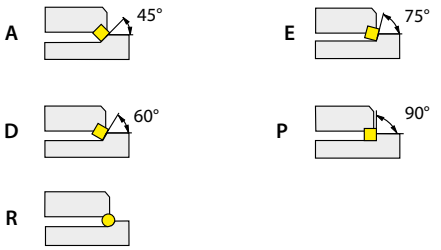
Solid carbide milling

FM	A	12	050	–	A22	O	–	N	06	–	04	(L)	(C)
1	2	3	4		5	6		7	8		9	10	11

Type	
Code	Description
BM	Profile milling
CM	Chamfer milling
EM	Square shoulder milling
FM	Face milling
HM	Helical milling
SM	Slot milling
TM	T-slot milling
XM	Special

1

Entering angle



2

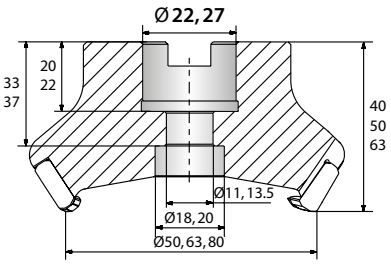
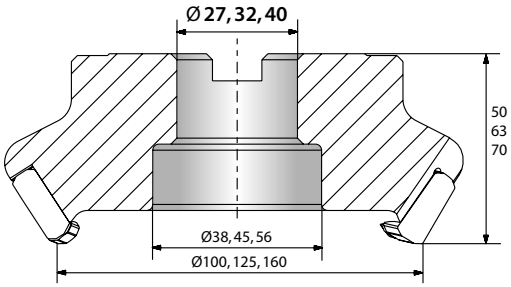
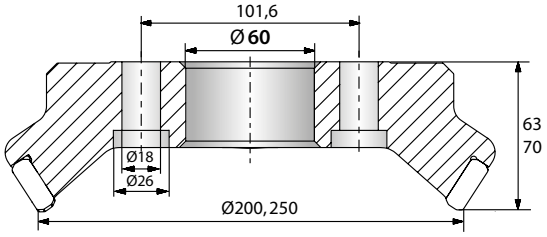
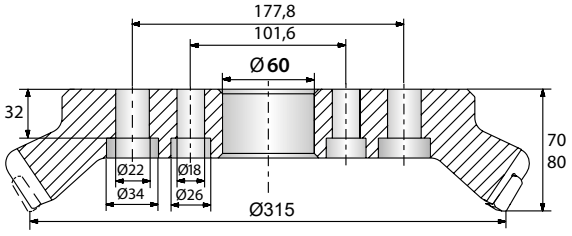
Nominal diameter [mm]	
Code	Description
025	25
050	50
160	160
315	315
...	

4

Serial number

3

Type and size of tool holders

Code	Type	Code	Type
A	Nominal diameter Ø50 – 80 mm 	**B**	Nominal diameter Ø100 – 160 mm 
C	Nominal diameter Ø200 – 250 mm 	**D**	Nominal diameter Ø315 mm 
G	Straight shank	**XP**	Weldon shank
K	Bore with keyway		

5

With respect to mounting please adhere to the information provided by the tool holder manufacturer.

Insert shape			
A		C	
H		L	
M		O	
P		R	
S		T	
W		X	Special
Z	Special		

6

Clearance angle			
B	5°	C	7°
D	15°	E	20°
F	25°	N	0°
P	11°		

7

Cutting edge length l [mm]	
Insert shape	
A	C, M
H, O, P	L
R	S
T	W

8

Number of teeth

9

Cutting direction	
Code	Description
L	Left

10

With inner cooling

11

Tools with B coupling and inner coolant supply require the following spare parts:

Coolant clamp screw

Coolant shower plate

Spare parts (B coupling with inner coolant supply)

		B27	B32	B40	B40
	Ø	**80**	**100**	**125**	**160**
	**Coolant clamp screw**	LDB27C	LDB32C	LDB40C	LDB40C
	**Coolant shower plate**	B27-002-CP	B32-002-CP	B40-002-CP	B40-003-CP

When purchasing tools with inner coolant supply and B coupling these spare parts are included in delivery.

Indexable milling ISO code – inserts

S	P	K	N	12	04	ED	T21K	R	–	DM
1	2	3	4	5	6	7	8	9		10

Insert shape

A		C	
H		L	
M		O	
P		R	
S		T	
W		X	Special
Z	Special		

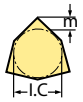
1

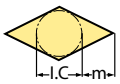
Clearance angle

B		C	
D		E	
F		N	
P			

2

Tolerance class





Code	I.C [mm]	m [mm]	S [mm]
A	±0,025	±0,005	±0,025
C	±0,025	±0,013	±0,025
E	±0,025	±0,025	±0,025
F	±0,013	±0,005	±0,025
G	±0,025	±0,025	±0,130
H	±0,013	±0,013	±0,025
J	±0,05–0,13	±0,005	±0,025
K	±0,05–0,13	±0,013	±0,025
L	±0,05–0,13	±0,025	±0,025
M	±0,05–0,13	±0,08–0,18	±0,130
N	±0,05–0,13	±0,08–0,18	±0,025
U	±0,08–0,25	±0,13–0,38	±0,130

3

Fastening features (metric)

Insert shape

A		B	
C		F	
G		H	
J		M	
N		Q	
R		T	
U		W	
X	Special		

4

Cutting edge length l [mm]

Insert shape

	
A	C, M
	
H, O, P	L
R	S
T	W

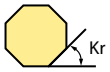
5

Insert thickness S [mm]

Code	S	Code	S
00	0,79	**05**	5,56
T0	0,99	**T5**	5,95
01	1,59	**06**	6,35
T1	1,98	**T6**	6,75
02	2,38	**07**	7,94
T2	2,58	**09**	9,52
03	3,18	**T9**	9,72
T3	3,97	**11**	11,11
04	4,76	**12**	12,70
T4	4,96		

6

Angle



Code	Kr	Code	αn
A	45°	**A**	3°
D	60°	**B**	5°
E	75°	**C**	7°
F	85°	**D**	15°
P	90°	**E**	20°
Z	Special	**F**	25°
		G	30°
		N	0°
		P	11°
		Z	Special

7

Chamfer

Code	Type	Code	Angle	Code	Width [mm]	Code	Position
F		**0**	5°	**0**	0,10	**K**	
E		**1**	10°	**1**	0,15		
T		**2**	15°	**2**	0,20	**P**	
S		**3**	20°	**3**	0,25		
		4	25°	**4**	0,30	**W**	
		5	30°	**5**	0,35		
				6	0,40		
				7	0,45	**–**	

8

Cutting direction

Code	Description
R	Right
L	Left
N	Right and left

9

Chip breaker overview (starting on page B20 in the main catalogue, version 2019)

10

Notes

FMA12 Kr: 45°

Face mill

- High cost-benefit factor due to 16 cutting edges.
- Three-dimensional chip breaker for tough materials.
- Smooth cut due to positive and sharp cutting edge.
- Optional wiper inserts for improved surface quality

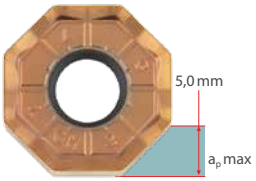
Insert grades

YBM253	YBG205	YB9320 (New)	YBD152	YBD252
CVD P20 – P40 M15 – M35	PVD P10 – P30 M20 – M40	PVD P10 – P30 M10 – M25	CVD K10 – K25	CVD K20 – K35

16 cutting edges

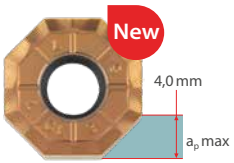
Chip breakers

-GM



ONHU08T624R-GM

-GL



ONHU060404ANN-GL

-GH

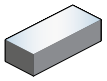
ONMU060412-GH

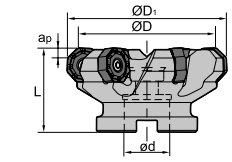
-W

ONHU0604-W

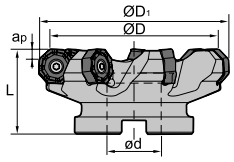
Face milling

FMA12 Kr: 45°





A



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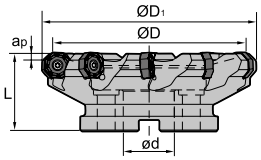
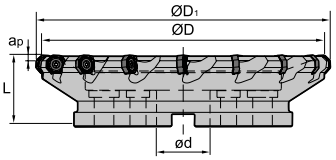


C



D

Article	✻	Stock	Dimensions [mm] ØD	ØD1	ød	L	ap max	Teeth	Coupling	kg	Inserts
FMA12-050-A22-ON06-04C	✻	●	50	62	22	40	4	4	A	0,3	
FMA12-050-A22-ON06-05C	✻	●	50	62	22	40	4	5	A	0,3	
FMA12-063-A27-ON06-05C	✻	●	63	75	27	40	4	5	A	0,5	
FMA12-063-A27-ON06-07C	✻	●	63	75	27	40	4	7	A	0,5	
FMA12-080-A27-ON06-06C	✻	●	80	92	27	50	4	6	A	1	
FMA12-080-A27-ON06-09C	✻	●	80	92	27	50	4	9	A	1	
FMA12-100-A32-ON06-08C	✻	●	100	112	32	63	4	8	A	1,9	
FMA12-100-A32-ON06-11C	✻	●	100	112	32	63	4	11	A	1,9	
FMA12-125-B40-ON06-10		●	125	137	40	63	4	10	B	3,5	ONHU0604
FMA12-125-B40-ON06-14		●	125	137	40	63	4	14	B	3,5	
FMA12-160-C40-ON06-12		●	160	172	40	63	4	12	C	4,3	
FMA12-160-C40-ON06-18		●	160	172	40	63	4	18	C	4,3	
FMA12-200-C60-ON06-14		○	200	212	60	63	4	14	C	6,4	
FMA12-200-C60-ON06-22		○	200	212	60	63	4	22	C	6,4	
FMA12-125-B40-ON06-14W2		○	125	137	40	63	4	14+2	B	3,5	
FMA12-160-C40-ON06-18W3		○	160	172	40	63	4	18+3	C	4,3	
FMA12-200-C60-ON06-22W4		○	200	212	60	63	4	22+4	C	6,4	

● Ex stock ○ On demand

✻ With internal cooling

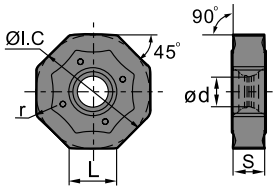
Spare parts

	Insert	**ONHU0604**
	ØD	**50–200**
	Screw (insert)	IRM4X10 (3,4 Nm)
	Wrench (insert)	WT15IP

Ideal machining conditions
Normal machining conditions
Unfavourable machining conditions

ONHU	L	I.C	S	d
06 04	6,15	15,8	5,54	6,0

Milling insert



ON** milling insert			HC¹ (CVD)		HC¹ (PVD)			HT	HC²	HW
		P								
		M								
		K								
		N								
		S								
		H								
	ISO	r	YBM253	YBD152	YBG105	YB9320	YBG205			
	**ONHU060404ANN-GL NEW!**	0,4	●	●		●	●			
	**ONMU060412-GH NEW!**	1,2	●	●		●	●			
	ONHU060408ANN-GH NEW!	0,8	●	●		●	●			
	**ONHU0604AN-W NEW!**				●					
	**ONMU060412-GM**	1,2	●	●		●	●			
	ONHU060408ANN-GM	0,8	●	●		●	●			

● Ex stock ○ On demand

HC¹ Coated carbide
HT Uncoated cermet
HC² Coated cermet
HW Uncoated carbide

Indexable milling – group 1 (FMA07/11/12, FMD02, EMP09/13)

Material group		Composition / structure / heat treatment			Machining group	Starting values for cutting speed v_c [m/min]							
						HC (CVD)							
						YBC302		YBC401		YBD152		YBD252	
						a_e / D		a_e / D		a_e / D		a_e / D	
						1/1 | 3/4	1/5	1/1 | 3/4	1/5	1/1 | 3/4	1/5	1/1 | 3/4	1/5
P	Unalloyed steel	approx. 0,15 % C	annealed	125	1	260	300	225	260				
		approx. 0,45 % C	annealed	190	2	225	255	195	225				
		approx. 0,45 % C	tempered	250	3	210	240	180	210				
		approx. 0,75 % C	annealed	270	4	185	210	160	185				
		approx. 0,75 % C	tempered	300	5	170	195	150	170				
	Low-alloyed steel		annealed	180	6	225	255	195	225				
			tempered	275	7	185	210	160	185				
			tempered	300	8	170	195	150	170				
			tempered	350	9	145	165	125	145				
	High-alloyed steel and high-alloyed tool steel		annealed	200	10	130	150	115	130				
			hardened and tempered	325	11	95	105	80	95				
M	Stainless steel	ferritic/martensitic	annealed	200	12								
		martensitic	tempered	240	13								
		austenitic	quench hardened	180	14								
		austenitic-ferritic		230	15								
K	Grey cast iron	perlitic/ferritic		180	16					370	430	320	370
		perlitic (martensitic)		260	17					220	255	190	220
	Cast iron with spheroidal graphite	ferritic		160	18					255	295	220	255
		perlitic		250	19					170	200	145	170
	Malleable cast iron	ferritic		130	20					305	355	265	305
		perlitic		230	21					205	240	175	205
N	Aluminium wrought alloys	cannot be hardened		60	22								
		hardenable	hardened	100	23								
	Cast aluminium alloys	≤ 12 % Si, cannot be hardened		75	24								
		≤ 12 % Si, hardenable	hardened	90	25								
		> 12 % Si, cannot be hardened		130	26								
	Copper and copper alloys (bronze/brass)	machining steel, PB> 1%		110	27								
		CuZn, CuSnZn		90	28								
		CuSn, Pb-free copper, electrolytic copper		100	29								
S	Heat-resistant alloys	Fe-based alloys	annealed	200	30								
			hardened	280	31								
		Ni or Co bass	annealed	250	32								
			hardened	350	33								
			cast	320	34								
	Titanium alloys	pure titanium		R_m 400	35								
		α and β alloys	hardened	R_m 1050	36								
H	Hardened steel		hardened and tempered	55 HRC	37								
			hardened and tempered	60 HRC	38								
	Hard cast iron		cast	400	39								
	Hardened cast iron		hardened and tempered	55 HRC	40								
X	Non-metallic materials	Thermoplasts			41								
		Thermosetting plastics			42								
		Plastic, glass-fibre reinforced GFRP			43								
		Plastic, carbon fibre reinforced CFRP			44								
		Graphite			45								
		Wood			46								

Note: The given cutting values are guide values, which were determined under ideal conditions.
The values have to be adapted in individual cases.
Feed rate recommendations on page B248.
For examples of material for cutting tool groups view page D22.

	Starting values for cutting speed v_c [m/min]																
	HC (CVD)		HC (PVD)										HW				
	YBM253		YBG102		YB9320		YBG205		YBG252		YBG302		YD101		YD201		
	a_e / D		a_e / D		a_e / D		a_e / D		a_e / D		a_e / D		a_e / D		a_e / D		
	1/1 | 3/4	1/5	1/1 | 3/4	1/5	1/1 | 3/4	1/5	1/1 | 3/4	1/5	1/1 | 3/4	1/5	1/1 | 3/4	1/5	1/1 | 3/4	1/5	1/1 | 3/4	1/5	
	260	300	270	315	245	285	235	275	230	265	225	260					
	225	255	230	270	210	245	200	235	200	230	195	225					
	210	240	220	255	200	230	190	220	185	215	180	210					
	185	210	190	225	175	200	165	195	165	190	160	185					
	170	195	180	205	160	190	155	180	150	175	150	170					
	225	255	230	270	210	245	200	235	200	230	195	225					
	185	210	190	225	175	200	165	195	165	190	160	185					
	170	195	180	205	160	190	155	180	150	175	150	170					
	145	165	150	175	135	160	130	155	130	150	125	145					
	130	150	135	160	125	145	120	140	115	135	115	130					
	95	105	95	115	90	100	85	100	85	95	80	95					
	130	150	135	160	125	145	120	140	115	135	115	130					
	110	130	115	135	105	120	100	120	100	115	95	110					
	140	160	145	170	130	155	125	150	125	145	120	140					
	110	130	115	135	105	120	100	120	100	115	95	110					
			300	345	270	315	260	300	255	295	250	290					
			180	205	160	190	155	180	150	175	150	170					
			205	240	185	215	180	210	175	200	170	195					
			135	160	125	145	120	140	115	135	115	130					
			245	285	225	260	215	250	210	240	205	235					
			165	190	150	175	145	165	140	160	135	160					
													1505	1735	1450	1670	
													1225	1420	1180	1370	
													540	620	515	600	
													435	505	420	485	
													220	255	215	250	
													170	195	160	190	
													210	245	205	235	
													385	445	370	430	

HC Coated carbide
HT Uncoated carbide, main component (TiC) o. (TiN), cermet
HC_1 Coated cermet
HW Uncoated carbide, main component (WC)

Recommended feed rate

Indexable milling – group1 (FMA07/11/12, FMD02, EMP09/13)

Material group		Feed rate per cutting edge [mm]																		
		FMA12 ONHU06			FMA12 ONHU08															
		Application																		
		F	M	R	F	M	R													
P	Unalloyed steel	0,19	0,23			0,23														
	Low-alloyed steel	0,17	0,22			0,22														
	High-alloyed steel and high-alloyed tool steel	0,16	0,20			0,20														
M	Stainless steel					0,16														
K	Grey cast iron	0,20	0,26			0,26														
	Cast iron with spheroidal graphite	0,19	0,23			0,23														
	Malleable cast iron	0,19	0,23			0,23														
N	Aluminum wrought alloys																			
	Aluminum cast alloys																			
	Copper and copper alloys (bronze/brass)																			
S	Heat-resistant alloys																			
	Titanium alloys																			
H	Hardened steel																			
	Hard cast iron																			
	Hardened cast iron																			
X	Non-metallic materials																			

Note: The given cutting values are guide values, which were determined under ideal conditions.
The values have to be adapted in individual cases.

Notes

Indexable milling System code – indexable heads

QCH	–	35	–	SDMT	09	–	Q	18	–	03
1		2		3	4		5	6		7

Series [mm]

Code	Description
QCH	Indexable head system

1

Nominal diameter [mm]

Code	Description
16	16
20	20
25	25
35	35
...	

2

Insert shape

3

Cutting edge length l [mm]

A 

R 

S 

4

Thread type

Code	Description
M	Metric
Q	Q thread

5

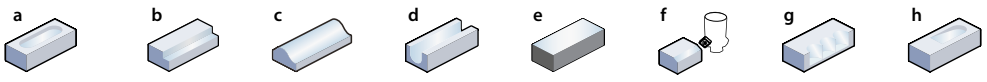
Thread size [mm]

Code	Description
8	8
10	10
12	12
14	14
...	

6

Number of teeth

7



a Groove milling **b** Square shoulder milling **c** Profile milling **d** Slot milling **e** Face milling **f** Chamfer milling **g** Plunge milling **h** Circular milling/Ramping

QCH series

Indexable heads with internal cooling for universal use

- Wide range for a variety of applications
- Low-vibration machining due to solid carbide shanks
- Optimum concentricity due to patented interface
  - Q thread combinable with solid carbide indexable heads

High-feed mills: QCH-SDMT

- For roughing
- Dampened noise reduction for extended gauge length machining

Shoulder milling cutter: QCH-APKT

- For roughing and semi-finishing
- Extensive APKT insert range for every material

45° deburring cutter: QCH-SPGT

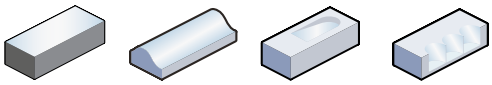
- Economic deburring by four-edged SPGT inserts

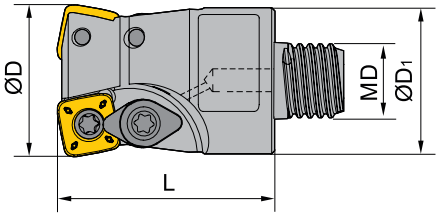
Force-locking connection

- Extensions available in steel and solid carbide

High-feed mills – QCH series

QCH – SDMT Kr: 15°





Article	✻	Stock	Dimensions [mm]				Teeth	kg	Insert
			ØD	D_1	L	MD			
QCH-25-SDMT09-Q14-02	✻	●	25	24	35	14	2	0,088	SDMT09T3
QCH-35-SDMT09-Q18-03	✻	●	35	30	45	18	3	0,216	

● Ex stock ○ On demand

✻ With internal cooling

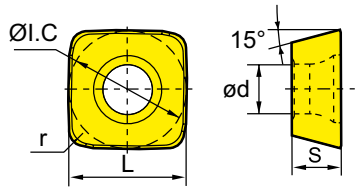
Spare parts

	Insert	**SDMT09T3**
	ØD	**25–35**
	Clamp	WD-204
	Screw (clamp)	I60M4*8,4 (3,4 Nm)
	Screw (insert)	I60M3,5*08TT (2,7 Nm)
	Wrench (insert)	WT15IP
	Wrench (clamp)	WT10IP

Milling inserts

Ideal machining conditions
Normal machining conditions
Unfavourable machining conditions

SDMT	L	I.C	S	d
09 T3	9,525	9,525	3,97	4



	HC¹ (CVD)				HC¹ (PVD)					HT	HC²	HW
P	⊛	⊛	⊛	⊛	⊛	⊛	⊛	⊛	⊛			
M		⊛	⊛		⊛	⊛	⊛	⊛	⊛			
K				⊛								
N												
S		⊛	⊛		⊛	⊛	⊛	⊛				
H												

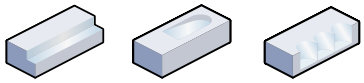
	ISO	r	α	YBC302	YBM253	YBM351	YBD252	YBG205	YBG202	YBS203	YBS303	YBG212
	**SDMT09T312-NM**	1,2	15		●					●	●	●
	**SDMT09T312-DM**	1,2	15	●		●	○		●			○
	**SDMT09T312-PM**	1,2	15		●		○	●	●			

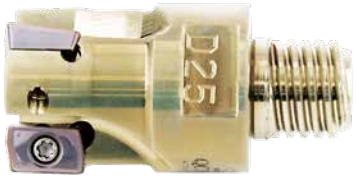
● Ex stock ○ On demand

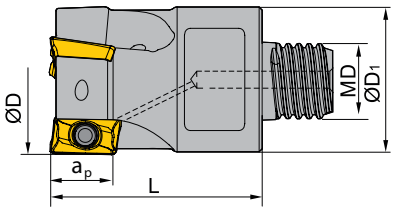
HC¹ Coated carbide
HT Uncoated cermet
HC² Coated cermet
HW Uncoated carbide

Square shoulder milling cutter – QCH series

QCH – APKT Kr: 90°







Article	✲	Stock	Dimensions [mm]					Teeth	kg	Insert
			ØD	D_1	a_p	L	MD			
QCH-16-APKT11-Q10-02	✲	●	16	15,2	10,5	28	10	2	0,028	
QCH-20-APKT11-Q12-02	✲	●	20	19	10,5	30	12	2	0,059	APKT11T3
QCH-25-APKT11-Q14-03	✲	●	25	24	10,5	35	14	3	0,104	

● Ex stock ○ On demand

✲ With internal cooling

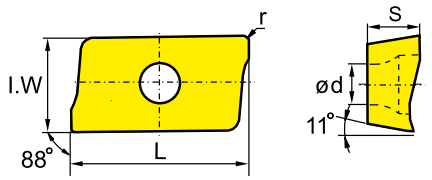
Spare parts

	Insert	**APKT11T3**	
	ØD	**16–25**	
	Screw (insert)	I60M2,5*5,5 (1,0 Nm)	
	Wrench (insert)	WT07IP	

Milling inserts

Ideal machining conditions
Normal machining conditions
Unfavourable machining conditions

APKT	L	S	d
11 T3	12,24	3,6	2,8



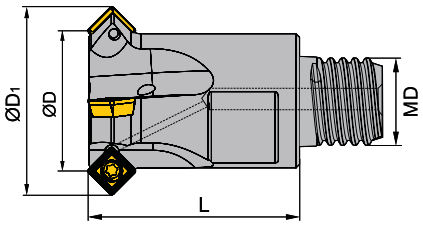
AP** milling insert				HC¹ (CVD)							HC¹ (PVD)								HT	HC²	HW	
			P																			
			M																			
			K																			
			N																			
			S																			
			H																			
ISO		r	I.W	YBC302	YBC301	YBC401	YBM253	YBM251	YBM351	YBD152	YBD252	YBG101	YBG102	YB9320	YBG205	YBG202	YBG212	YBG302	YBS203	YBS303			YD101	YD201
	APKT11T3-XR	0,6	6,5								●			●	●									
	APKT11T308-NM	0,8	6,5																●	●				
	APKT11T312-NM	1,2	6,5																●	●				
	APKT11T304-ALH	0,4	6,5									●											●	●
	APKT11T308-ALH	0,8	6,5									●											●	●
	APKT11T304-APF	0,4	6,5											●										
	APKT11T308-APF	0,8	6,5											●										
	APKT11T304-APM	0,4	6,5				●			●				●										
	APKT11T308-APM	0,8	6,5				●			●				●										
	APKT11T312-APM	1,2	6,5				●			●				●										
	APKT11T316-APM	1,6	6,5				●			●				●										
	APKT11T320-APM	2	6,5				●			●				●										
	APKT11T304-LH	0,4	6,5																				●	●
	APKT11T308-LH	0,8	6,5																				●	●
	APKT11T304-PF	0,4	6,5		○			●					●			●		●						
	APKT11T308-PF	0,8	6,5					○					○			●								
	APKT11T312-PF	1,2	6,5													○								
	APKT11T316-PF	1,6	6,5													○								
	APKT11T304-PM	0,4	6,5	●	●	○		●	●				○			●		●						
	APKT11T308-PM	0,8	6,5	●	●		●	●	●	●	●		●		●	●		●						
	APKT11T312-PM	1,2	6,5					○					○			●		○						
	APKT11T316-PM	1,6	6,5					●					○			●		○						
	APKT11T304-PR	0,4	6,5						○							○		○						
	APKT11T316-PR	1,6	6,5															○						

● Ex stock ○ On demand

HC¹ Coated carbide
HT Uncoated cermet
HC² Coated cermet
HW Uncoated carbide

45° deburring cutter – QCH series

QCH – SPGT Kr: 45°



Article	✻	Stock	Dimensions [mm]				Teeth	kg	Insert
			ØD	D_1	L	MD			
QCH-16-SPGT05-Q10-45-03	✻	●	16	22,6	25	10	3	0,032	SPGT0504
QCH-20-SPGT05-Q12-45-04	✻	●	20	26,6	30	12	4	0,644	

● Ex stock ○ On demand

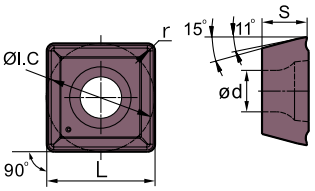
✻ With internal cooling

Spare parts		
	Insert	**SPGT0502****
	ØD	**16–20**
	Screw (insert)	I60M2x4,3 (0,5Nm)
	Wrench (insert)	WT06IP

Milling inserts

Ideal machining conditions
Normal machining conditions
Unfavourable machining conditions

SPGT	L	l.C	S	d
05 02	5	5	2,38	2,2

SP** milling insert			HC[1] (CVD)	HC[1] (PVD)	HW
		P			
		M			
		K			
		N			
		S			
		H			
ISO		r	YB6338	YBG205 YBG212	
PM 	**SPGT050204-PM**	0,4	●	● ●	
EM 	**SPGT050204-EM**	0,4		● ●	

● Ex stock ○ On demand

HC[1] Coated carbide
HW Uncoated carbide

Indexable milling System code – indexable heads shanks

G	25	–	QCH	Q	12	–	250	C	–	(ZJ)	(115)
1	2		3	4	5		6	7		8	9

Clamping form	
Code	Description
G	Cylindrical
XP	Weldon

1

Clamping diameter [mm]	
Code	Description
12	12
16	16
20	20
25	25
32	32

2

Series [mm]	
Code	Description
QCH	Indexable head system

3

Thread type	
Code	Description
M	Metric
Q	Q thread

4

Thread size [mm]	
Code	Description
8	8
10	10
12	12
14	14
...	

5

Total length [mm]	
Code	Description
85	85
150	150
200	200
...	

6

Material	
Code	Description
C	Solid carbide
S	Steel

7

Shank	
Code	Description
ZJ	Conical
–	Cylindrically stepped

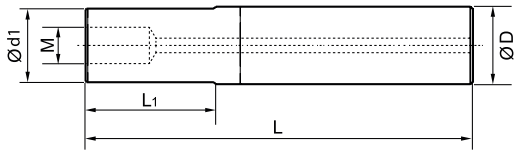
8

Taper length [mm]	
Code	Description
90	90
115	115
...	

9

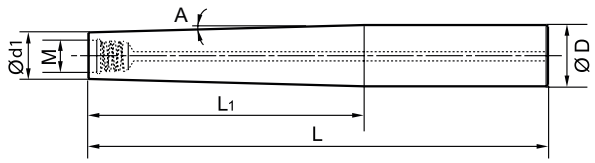
Indexable heads shanks

Solid carbide shank, stepped, Q thread



Article	Dimensions [mm]				Thread (M)	Stock
	D	d1	L	L1		
G12-QCH-Q08-80C	12	11,5	80	30	Q8	●
G12-QCH-Q08-100C	12	11,5	100	50	Q8	●
G12-QCH-Q08-120C	12	11,5	120	70	Q8	●
G16-QCH-Q10-90C	16	15,2	90	40	Q10	●
G16-QCH-Q10-120C	16	15,2	120	70	Q10	●
G16-QCH-Q10-150C	16	15,2	150	100	Q10	●
G20-QCH-Q12-100C	20	19	100	40	Q12	●
G20-QCH-Q12-140C	20	19	140	80	Q12	●
G20-QCH-Q12-180C	20	19	180	120	Q12	●
G25-QCH-Q14-120C	25	24	120	50	Q14	●
G25-QCH-Q14-170C	25	24	170	100	Q14	●
G25-QCH-Q14-220C	25	24	220	150	Q14	●
G32-QCH-Q18-140C	32	30	140	70	Q18	●
G32-QCH-Q18-200C	32	30	200	130	Q18	●
G32-QCH-Q18-260C	32	30	260	190	Q18	●
G32-QCH-Q18-320C	32	30	320	250	Q18	●

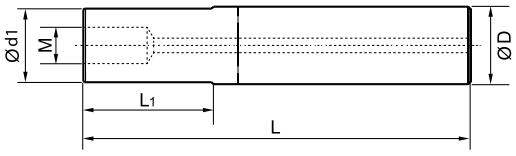
Solid carbide shank, tapered, Q thread



Article	Dimensions [mm]				Thread (M)	Angle (A)	Stock
	D	d1	L	L1			
G16-QCH-Q08-140C-ZJ90	16	11,5	140	90	Q8	1,0	●
G20-QCH-Q10-200C-ZJ140	20	15,2	200	140	Q8	0,8	●
G25-QCH-Q12-250C-ZJ180	25	19	250	180	Q8	0,8	●
G32-QCH-Q14-270C-ZJ200	32	30	270	200	Q10	0,8	●

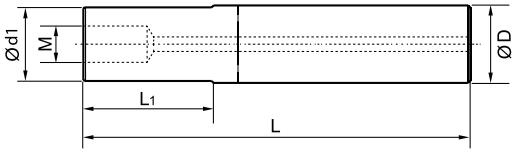
Indexable heads shanks

Steel shank, stepped, Q thread



Article	Dimensions [mm]				Thread (M)	Stock
	D	d1	L	L1		
G12-QCH-Q08-65S	12	11,5	65	19	Q08	●
G16-QCH-Q10-100S	16	15,2	100	42	Q10	●
G20-QCH-Q12-110S	20	19	110	54	Q12	●

Solid carbide shank, stepped, metric thread New



Article	Dimensions [mm]				Thread (M)	Stock
	D	d1	L	L1		
G16-QCH-M8-90C-125	16	12,5	90	35	M8	○
G16-QCH-M8-110C-125	16	12,5	110	55	M8	○
G16-QCH-M8-130C-125	16	12,5	130	75	M8	○
G16-QCH-M8-90C	16	15	90	35	M8	○
G16-QCH-M8-110C	16	15	110	55	M8	○
G16-QCH-M8-130C	16	15	130	75	M8	○
G16-QCH-M8-170C	16	15	170	115	M8	○
G16-QCH-M8-200C	16	15	200	145	M8	○
G20-QCH-M10-87C	20	18,5	87	30	M10	○
G20-QCH-M10-107C	20	18,5	107	50	M10	○
G20-QCH-M10-127C	20	18,5	127	70	M10	○
G20-QCH-M10-167C	20	18,5	167	110	M10	○
G20-QCH-M10-197C	20	18,5	197	140	M10	○
G25-QCH-M12-128C	25	23	128	65	M12	○
G25-QCH-M12-148C	25	23	148	85	M12	○
G25-QCH-M12-168C	25	23	168	105	M12	○
G25-QCH-M12-198C	25	23	198	135	M12	○
G25-QCH-M12-228C	25	23	228	165	M12	○
G32-QCH-M16-161C	32	29	161	95	M16	○
G32-QCH-M16-211C	32	29	211	145	M16	○
G32-QCH-M16-281C	32	29	281	215	M16	○
G32-QCH-M16-311C	32	29	311	245	M16	○
G32-QCH-M16-361C	32	29	361	295	M16	○

Notes

Indexable milling – group 7 (XMR01, XMP01)

Material group		Composition / structure / heat treatment			Machining group	Starting values for cutting speed v_c [m/min] HC (CVD) YBC302 a_e / D 1/1 | 3/4	1/5	1/20	YBD152 a_e / D 1/1 | 3/4	1/5	1/20
P	Unalloyed steel	approx. 0,15 % C	annealed	125	1	260	300	390			
		approx. 0,45 % C	annealed	190	2	225	255	335			
		approx. 0,45 % C	tempered	250	3	210	240	315			
		approx. 0,75 % C	annealed	270	4	185	210	275			
		approx. 0,75 % C	tempered	300	5	170	195	255			
	Low-alloyed steel		annealed	180	6	225	255	335			
			tempered	275	7	185	210	275			
			tempered	300	8	170	195	255			
			tempered	350	9	145	165	215			
	High-alloyed steel and high-alloyed tool steel		annealed	200	10	130	150	195			
			hardened and tempered	325	11	95	105	140			
M	Stainless steel	ferritic/martensitic	annealed	200	12						
		martensitic	tempered	240	13						
		austenitic	quench hardened	180	14						
		austenitic-ferritic		230	15						
K	Grey cast iron	perlitic/ferritic		180	16				335	390	510
		perlitic (martensitic)		260	17				200	230	300
	Cast iron with spheroidal graphite	ferritic		160	18				225	260	340
		perlitic		250	19				150	175	230
	Malleable cast iron	ferritic		130	20				275	320	420
		perlitic		230	21				185	215	280
N	Aluminium wrought alloys	cannot be hardened		60	22						
		hardenable	hardened	100	23						
	Cast aluminium alloys	≤ 12 % Si, cannot be hardened		75	24						
		≤ 12 % Si, hardenable	hardened	90	25						
		> 12 % Si, cannot be hardened		130	26						
	Copper and copper alloys (bronze/brass)	machining steel, PB> 1%		110	27						
		CuZn, CuSnZn		90	28						
		CuSn, Pb-free copper, electrolytic copper		100	29						
S	Heat-resistant alloys	Fe-based alloys	annealed	200	30						
			hardened	280	31						
		Ni or Co bass	annealed	250	32						
			hardened	350	33						
			cast	320	34						
	Titanium alloys	pure titanium		R_m 400	35						
		α and β alloys	hardened	R_m 1050	36						
H	Hardened steel		hardened and tempered	55 HRC	37						
			hardened and tempered	60 HRC	38						
	Hard cast iron		cast	400	39						
	Hardened cast iron		hardened and tempered	55 HRC	40						
X	Non-metallic materials	Thermoplasts			41						
		Thermosetting plastics			42						
		Plastic, glass-fibre reinforced GFRP			43						
		Plastic, carbon fibre reinforced CFRP			44						
		Graphite			45						
		Wood			46						

Note: The given cutting values are guide values, which were determined under ideal conditions.
The values have to be adapted in individual cases.
Feed rate recommendations on page B248.
For examples of material for cutting tool groups view page D22.

	Starting values for cutting speed v_c [m/min]																				
	HC (CVD)						HC (PVD)														
	YBD252			YBM253			YBG102			YBG152			YB9320			YBG205			YBG212		
	a_e / D			a_e / D			a_e / D			a_e / D			a_e / D			a_e / D			a_e / D		
	1/1 | 3/4	1/5	1/20	1/1 | 3/4	1/5	1/20	1/1 | 3/4	1/5	1/20	1/1 | 3/4	1/5	1/20	1/1 | 3/4	1/5	1/20	1/1 | 3/4	1/5	1/20	1/1 | 3/4	1/5	1/20
				260	300	390	270	315	410	255	295	385	245	285	375	235	275	360	240	280	365
				225	255	335	230	270	355	220	255	335	210	245	320	200	235	310	205	240	315
				210	240	315	220	255	335	205	240	315	200	230	300	190	220	290	195	225	295
				185	210	275	190	225	295	180	210	275	175	200	260	165	195	255	170	200	260
				170	195	255	180	205	270	170	195	255	160	190	250	155	180	235	160	185	245
				225	255	335	230	270	355	220	255	335	210	245	320	200	235	310	205	240	315
				185	210	275	190	225	295	180	210	275	175	200	260	165	195	255	170	200	260
				170	195	255	180	205	270	170	195	255	160	190	250	155	180	235	160	185	245
				145	165	215	150	175	230	145	165	215	135	160	210	130	155	205	135	155	205
				130	150	195	135	160	210	130	150	195	125	145	190	120	140	185	120	140	185
				95	105	140	95	115	150	90	105	140	90	100	130	85	100	130	85	100	130
				130	150	195	135	160	205	130	150	195	125	145	190	120	140	180	120	140	185
				110	130	165	115	135	175	110	125	165	105	120	160	100	120	155	105	120	155
				140	160	210	145	170	220	140	160	205	130	155	200	125	150	195	130	150	195
				110	130	165	115	135	175	110	125	165	105	120	160	100	120	155	105	120	155
	290	335	440				300	345	450	285	330	430	270	315	410	260	300	390	265	305	400
	170	195	255				180	205	270	170	195	255	160	190	250	155	180	235	160	185	245
	195	225	295				205	240	315	195	225	295	185	215	280	180	210	275	180	210	275
	130	150	195				135	160	210	130	150	195	125	145	190	120	140	185	120	140	185
	235	270	355				245	285	375	230	270	355	225	260	340	215	250	325	220	255	335
	160	180	235				165	190	250	155	180	235	150	175	230	145	165	215	145	170	225

HC Coated carbide
HT Uncoated carbide, main component (TiC) o. (TiN), cermet
HC_1 Coated cermet
HW Uncoated carbide, main component (WC)

Recommended feed rate

Indexable milling – group7 (XMR01, XMP01)

Material group		Feed rate per cutting edge [mm]		
		QCH	QCH	
		APKT	SDMT	
		Tool diameter [mm]		
		16-40	20-40	
P	Unalloyed steel	0,15	1,00	
P	Low-alloyed steel	0,14	0,93	
P	High-alloyed steel and high-alloyed tool steel	0,13	0,70	
M	Stainless steel	0,11	0,50	
K	Grey cast iron	0,17	0,90	
K	Cast iron with spheroidal graphite	0,15	0,90	
K	Malleable cast iron	0,15	1,00	
N	Aluminium wrought alloys	0,13		
N	Aluminum cast alloys	0,13		
N	Copper and copper alloys (bronze/brass)	0,11		
S	Heat-resistant alloys			
S	Titanium alloys			
H	Hardened steel			
H	Hard cast iron			
H	Hardened cast iron			
X	Non-metallic materials			

Note: The given cutting values are guide values, which were determined under ideal conditions.
The values have to be adapted in individual cases.

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Solid carbide milling

System code – DIN-ISO series

5	5	0	1	R	30	2	GM	R05	0800
1	2	3	4	5	6	7	8	9	10

Type

Code	Description
5	Milling cutter

1

Shank type

Code	Description
1	Shank
5	DIN 6535 HA
6	Weldon shank DIN 6535 HB
7	Whistle Notch DIN 6535 HE
9	Morse taper shank

2

Cutting edge type

Code	Description
0	Square shoulder mill
6	Ball nose cutter
8	Torus mill

3

Tool length

Code	Description
1	DIN 6527 K
2	DIN 6527 L
5	Factory standard ZCC-A
6	Factory standard ZCC-B
8	DIN 6528
9	Factory standard ZCC-D

4

Rotation direction

Code	Description
R	Right
L	Left

5

Helix angle

Code	Description
20	20°
30	30°
3841	38°/41°
45	45°
55	55°
60	60°

6

Number of teeth

Code	Description
2	2
...	
M	Indicated when different diameters have a different number of teeth

7

Application

Code	Description
GM	Semi-finishing
GF	Finishing
HM	Hard machining
MHH	High-speed hard machining
NH	High-performance machining of heat-resistant alloys

8

Radius [mm]

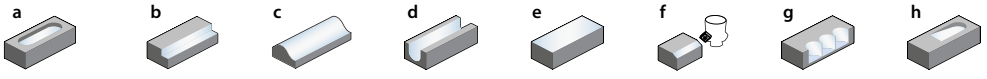
Code	Description
R03	0,3
R15	1,5
R30	3,0
...	

9

Diameter [mm]

Code	Description
0100	1,0
0800	8,0
2000	20,0
...	

10



a Groove milling
b Square shoulder milling
c Profile milling
d Slot milling
e Face milling
f Chamfer milling
g Plunge milling
h Circular milling/Ramping

HPC series

High Performance Cutter (HPC)

- For roughing and finishing
- Geometry with unequal helix angle (38°/41°) and unequal pitch for smooth machining without vibrations.
- End mills and torus mills
- Diameter range 4.0–20.0 mm

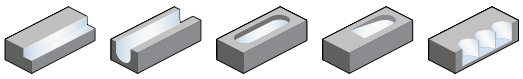
New **New grade KMG406:**

- PVD coated carbide substrate for entry into high performance machining
- Universal range of application for steel and cast materials up to 55 HRC as well as stainless steel

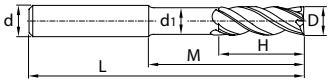
End mill long cutting edge

HSC/HPC machining

5502R38414GM



– Type of shank: DIN 6535HA
– Centre cutting
– Helix angle 38°/41°



Article	✻	Dimensions [mm]						Teeth	Grade	
		D	d (h6)	d_1	H	M	L		KMG405	KMG406 **NEW!**
5502R38414GM-0400		4	6	3,7	11	19	57	4	●	●
5502R38414GM-0500		5	6	4,7	13	21	57	4	●	●
5502R38414GM-0600		6	6	5,7	13	21	57	4	●	●
5502R38414GM-0800		8	8	7,7	19	27	63	4	●	●
5502R38414GM-1000		10	10	9,5	22	32	72	4	●	●
5502R38414GM-1200		12	12	11,5	26	38	83	4	●	●
5502R38414GM-1400		14	14	13,5	26	38	83	4	●	●
5502R38414GM-1600		16	16	15,5	32	44	92	4	●	●
5502R38414GM-1800		18	18	17,5	32	44	92	4	●	●
5502R38414GM-2000		20	20	19,5	38	54	104	4	●	●

● Ex stock ○ On demand
✻ With internal cooling

Application field

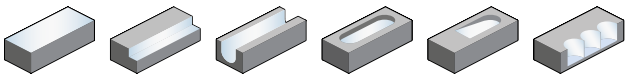
P	M	K	N	S	H
✔	✔	✔			✔

✔ Very suitable
✔ Suitable

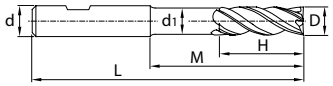
End mill long cutting edge

HSC/HPC machining

5602R38414GM



– Type of shank: DIN 6535HA
– Centre cutting
– Helix angle 38°/41°



Article	✻	Dimensions [mm]						Teeth	Grade	
		D	d (h6)	d_1	H	M	L		KMG405	KMG406 **NEW!**
5602R38414GM-0300L		3	6	2,7	6,5	15	58	4	○	
5602R38414GM-0400		4	6	3,7	11	19	57	4	●	●
5602R38414GM-0400L		4	6	3,7	8,5	20	62	4	○	
5602R38414GM-0500L		5	6	4,7	10,5	25	70	4	○	
5602R38414GM-0500		5	6	4,7	13	21	57	4	●	●
5602R38414GM-0600		6	6	5,7	13	21	57	4	●	●
5602R38414GM-0600L		6	6	5,7	13	30	70	4	○	
5602R38414GM-0800		8	8	7,7	19	27	63	4	●	●
5602R38414GM-0800L		8	8	7,7	17	40	80	4	○	
5602R38414GM-1000L		10	10	9,5	21	50	94	4	○	
5602R38414GM-1000		10	10	9,5	22	32	72	4	●	●
5602R38414GM-1200		12	12	11,5	26	38	83	4	●	●
5602R38414GM-1200L		12	12	11,5	25	60	109	4	○	
5602R38414GM-1400		14	14	13,5	26	38	83	4	●	●
5602R38414GM-1600L		16	16	15,5	33	80	132	4	○	
5602R38414GM-1600		16	16	15,5	32	44	92	4	●	●
5602R38414GM-1800		18	18	17,5	32	44	92	4	●	●
5602R38414GM-2000		20	20	19,5	38	54	104	4	●	●

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			✔

✔ Very suitable
✔ Suitable

End mill – UM/HPC/VSM series

Material group		Composition / structure / heat treatment		Brinell hardness HB	Machining group	Starting values for cutting speed v_c [m/min]							
						5501R38414GM (-R) 5502R38414GM (-R) 5602R38414GM (-R)				5501R38414GM 5502R38414GM 5602R38414GM			
						Slot milling		Shoulder milling		Slot milling		Shoulder milling	
						Ø [mm]	$a_{p\,max}$	Ø [mm]	$a_{e\,max}$	Ø [mm]	$a_{p\,max}$	Ø [mm]	$a_{e\,max}$
						0 < x < 3	0,3x D	0 < x < 3	0.15 x D	0 < x < 3	0,3x D	0 < x < 3	0.15 x D
						3 ≤ x < 12	0,7 x D	3 ≤ x < 20	0,3 x D	3 ≤ x < 12	0,7 x D	3 ≤ x < 20	0,3 x D
						12≤x≤20	1,5xD			12≤x≤20	1,5xD		
						KMG405				KMG406			
						a_e / D				a_e / D			
						1/1	1/2	1/10	f-group	1/1	1/2	1/10	f-group
P	Unalloyed steel	approx. 0,15 % C	annealed	125	1	250	300	380	9	230	280	350	9
		approx. 0,45 % C	annealed	190	2	240	285	365	9	220	270	340	9
		approx. 0,45 % C	tempered	250	3	175	210	270	9	160	190	250	9
		approx. 0,75 % C	annealed	270	4	150	180	230	9	140	160	210	9
		approx. 0,75 % C	tempered	300	5	140	165	210	9	130	150	200	9
	Low-alloyed steel		annealed	180	6	190	225	285	9	180	215	270	9
			tempered	275	7	150	180	230	9	130	170	220	9
			tempered	300	8	140	165	210	9	125	150	190	9
			tempered	350	9	130	160	200	9	120	150	190	9
	High-alloyed steel and high-alloyed tool steel		annealed	200	10	175	210	270	9	160	190	250	9
			hardened and tempered	325	11	135	160	205	9	115	140	190	9
M	Stainless steel	ferritic/martensitic	annealed	200	12	80	100	125	9	70	90	110	9
		martensitic	tempered	240	13	70	85	110	9	60	80	100	9
		austenitic	quench hardened	180	14	85	105	130	9	75	90	120	9
		austenitic-ferritic		230	15	70	85	110	9	65	80	100	9
K	Grey cast iron	perlitic/ferritic		180	16	185	220	280	9	160	200	260	9
		perlitic (martensitic)		260	17	150	180	230	9	140	170	220	9
	Cast iron with spheroidal graphite	ferritic		160	18	225	270	345	9	215	250	330	9
		perlitic		250	19	175	210	270	9	160	200	250	9
	Malleable cast iron	ferritic		130	20	250	300	380	9	230	280	360	9
		perlitic		230	21	200	240	305	9	180	230	290	9
N	Aluminium wrought alloys	cannot be hardened		60	22								
		hardenable	hardened	100	23								
	Cast aluminium alloys	≤ 12 % Si, cannot be hardened		75	24								
		≤ 12 % Si, hardenable	hardened	90	25								
		> 12 % Si, cannot be hardened		130	26								
	Copper and copper alloys (bronze/brass)	machining steel, PB> 1%		110	27								
		CuZn, CuSnZn		90	28								
		CuSn, Pb-free copper, electrolytic copper		100	29								
S	Heat-resistant alloys	Fe-based alloys	annealed	200	30								
			hardened	280	31								
		Ni or Co bass	annealed	250	32								
			hardened	350	33								
			cast	320	34								
	Titanium alloys	pure titanium		R_m 400	35								
		α and β alloys	hardened	R_m 1050	36								
H	Hardened steel		hardened and tempered	55 HRC	37	115	140	175	9	100	120	150	9
			hardened and tempered	60 HRC	38								
	Hard cast iron		cast	400	39	135	165	205	9	110	150	180	9
	Hardened cast iron		hardened and tempered	55 HRC	40								
X	Non-metallic materials	Thermoplasts			41								
		Thermosetting plastics			42								
		Plastic, glass-fibre reinforced GFRP			43								
		Plastic, carbon fibre reinforced CFRP			44								
		Graphite			45								
		Wood			46								

Note: The given cutting values are guide values, which were determined under ideal conditions.
The values have to be adapted in individual cases.
Feed rate recommendations on page B460.
For examples of material for cutting tool groups view page D22.

	Starting values for cutting speed v_c [m/min]																			
	5501R38414GM (-R) long series 5502R38414GM (-R) long series 5602R38414GM (-R) long series				UM-4E UM-4E-W UM-4R				UM-4EL UM-4EL-W UM-4ELP UM-4EFP				UM-4RL UM-4RFP				VSM-4E VSM-4R			
	Slot milling		Shoulder milling		Slot milling		Shoulder milling		Slot milling		Shoulder milling		Slot milling		Shoulder milling		Slot milling		Shoulder milling	
	Ø [mm]	$a_{p\,max}$	Ø [mm]	$a_{e\,max}$	Ø [mm]	$a_{p\,max}$	Ø [mm]	$a_{e\,max}$	Ø [mm]	$a_{p\,max}$	Ø [mm]	$a_{e\,max}$	Ø [mm]	$a_{p\,max}$	Ø [mm]	$a_{e\,max}$	Ø [mm]	$a_{p\,max}$	Ø [mm]	$a_{e\,max}$
	0 < x < 3	0,3x D	0 < x < 3	0.15 x D	0 < x < 3	0,3x D	0 < x < 3	0.15 x D	0 < x < 3	0,3x D	0 < x < 3	0.15 x D	0 < x < 3	0,3x D	0 < x < 3	0.15 x D	0 < x < 3	0,3x D	0 < x < 3	0.15 x D
	3 ≤ x < 12	0,7 x D	3 ≤ x < 20	0,3 x D	3 ≤ x < 12	0,7 x D	3 ≤ x < 20	0,3 x D	3 ≤ x < 12	0,7 x D	3 ≤ x < 20	0,3 x D	3 ≤ x < 12	0,7 x D	3 ≤ x < 20	0,3 x D	3 ≤ x < 12	0,7 x D	3 ≤ x < 20	0,3 x D
	12≤x≤20	1,5xD			12≤x≤20	1,5xD			12≤x≤20	1,5xD			12≤x≤20	1,5xD			12≤x≤20	1,5xD		
	KMG405				KMG405				KMG405				KMG405				KMG405			
	a_e / D				a_e / D				a_e / D				a_e / D				a_e / D			
	1/1	1/2	1/10	f-group	1/1	1/2	1/10	f-group	1/1	1/2	1/10	f-group	1/1	1/2	1/10	f-group	1/1	1/2	1/10	f-group
	190	225	285	9	250	300	380	9	150	180	230	9	150	180	230	9	145	180	250	10
	185	215	275	9	240	285	365	9	145	175	220	9	145	175	220	9	140	175	240	10
	135	160	200	9	175	210	270	9	105	130	165	9	105	130	165	9	105	130	175	10
	115	135	175	9	150	180	230	9	90	110	140	9	90	110	140	9	90	110	150	10
	105	125	160	9	140	165	210	9	85	100	130	9	85	100	130	9	80	100	140	10
	145	170	215	9	190	225	285	9	115	135	175	9	115	135	175	9	110	135	190	10
	115	135	175	9	150	180	230	9	90	110	140	9	90	110	140	9	90	110	150	10
	105	125	160	9	140	165	210	9	85	100	130	9	85	100	130	9	80	100	140	10
	100	120	150	9	130	160	200	9	80	95	120	9	80	95	120	9	80	95	130	10
	135	160	200	9	175	210	270	9	105	130	165	9	105	130	165	9	105	130	175	10
	105	120	155	9	135	160	205	9	80	100	125	9	80	100	125	9	80	100	135	10
	65	75	95	9	80	100	125	9	50	60	75	9	50	60	75	9	50	60	80	10
	55	65	80	9	70	85	110	9	45	55	65	9	45	55	65	9	45	55	70	10
	65	80	100	9	85	105	130	9	55	65	80	9	55	65	80	9	50	65	85	10
	55	65	80	9	70	85	110	9	45	55	65	9	45	55	65	9	45	55	70	10
	140	165	210	9	185	220	280	9	110	135	170	9	110	135	170	9				
	115	135	175	9	150	180	230	9	90	110	140	9	90	110	140	9				
	175	205	260	9	225	270	345	9	135	165	210	9	135	165	210	9				
	135	160	200	9	175	210	270	9	105	130	165	9	105	130	165	9				
	190	225	285	9	250	300	380	9	150	180	230	9	150	180	230	9				
	155	180	230	9	200	240	305	9	120	145	185	9	120	145	185	9				
																	45	55	85	10
																	25	30	45	10
																	45	55	85	10
																	25	30	45	10
																	25	30	45	10
																	75	90	135	10
																	45	55	85	10
					115	140	175	9	70	85	110	9	70	85	110	9				
					135	165	205	9	85	100	130	9	85	100	130	9				

Recommended feed rate

Solid carbide milling group 9 – Square shoulder mills UM series/HPC series HSC/HPC

	a_e / D	Feed rate per cutting edge (f_z) [mm]																			
		Ø 4	Ø 5	Ø 6	Ø 8	Ø 10	Ø 12	Ø 14	Ø 16	Ø 18	Ø 20										
P	1/1	0,06	0,06	0,06	0,07	0,07	0,07	0,07	0,08	0,08	0,08										
	1/2	0,08	0,08	0,08	0,09	0,09	0,09	0,09	0,10	0,10	0,10										
	1/10	0,14	0,14	0,16	0,18	0,22	0,25	0,27	0,3	0,32	0,36										
M	1/1	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,06	0,06	0,06										
	1/2	0,06	0,06	0,06	0,07	0,07	0,07	0,07	0,08	0,08	0,08										
	1/10	0,10	0,10	0,10	0,12	0,12	0,14	0,16	0,16	0,18	0,18										
K	1/1	0,06	0,06	0,06	0,07	0,07	0,07	0,07	0,08	0,08	0,08										
	1/2	0,08	0,08	0,08	0,09	0,09	0,09	0,09	0,10	0,10	0,10										
	1/10	0,14	0,14	0,16	0,18	0,22	0,25	0,27	0,3	0,32	0,36										
H	1/1	0,045	0,045	0,045	0,053	0,053	0,053	0,053	0,06	0,06	0,06										
	1/2	0,06	0,06	0,06	0,07	0,07	0,07	0,07	0,08	0,08	0,08										
	1/10	0,10	0,10	0,10	0,12	0,12	0,14	0,16	0,16	0,18	0,18										

Note: The given cutting values are guide values, which were determined under ideal conditions.
The values have to be adapted in individual cases.

Indexable drilling

Solid carbide drilling

Indexable drills

System code – drilling bodies

ZSD	–	03	300	–	XP	–	32	S	P	09	–	02
1		2	3		4		5	6	7	8		9

Type	
Code	Description
ZSD	Indexable drill (SPMX*)
ZTD	Indexable drill (SPGT*)
ZD	Indexable drill (WCMX*)

1

L/D relation	
Code	Description
02	2xD
03	3xD
04	4xD
05	5xD

2

Diameter [mm]	
Code	Description
130	13
...	

3

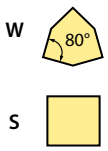
Shank type	
Code	Description
XP	Weldon shank

4

Coupling size [mm]

5

Insert shape



6

Clearance angle	
Code	Description
C	7°
P	11°

7

Cutting edge length [mm]		
Code	Insert shape	
	W	S
03	3,8	
04	4,3	
05	5,4	5
06	6,5	6
08	8,7	7,94
09		9,8
11		11,5
12		12,7
14		14,3

8

Number of teeth

9

ZSD series

Indexable drills ZSD02 / 03 / 04 / 05

Inserts

- For machining of steel, stainless steel, cast iron and hard-to-cut materials
- Four-edge SPMX inserts with three chip breakers and four different types
- Wiper geometry for improved surface quality
- Wave form geometry provides optimum chip breaking and removal of short chips
- Chip breakers for soft cut produce lower cutting forces

Drilling bodies

- Specially designed drill body with high rigidity
- Large drilling depths up to 5xD with high precision and process reliability
- Diameter ranges 12–63 mm as well as available in common intermediate sizes

Insert grades

YB9320	YBG212	YBS203	YB6338
PVD	*PVD*	*PVD*	*CVD*
P10 – P30	*P20 – P35*	*M15 – M35*	*P20 – P30*
M10 – M25	*M10 – M25*	*S10 – S30*	*K20 – K30*

Chip breakers

- Marking of the cutting edges for optimal positioning
- **Wiper technology:** excellent surface finish and drilling precision

-XM

- All-rounder geometry with good chip control for steel and cast iron

-EM

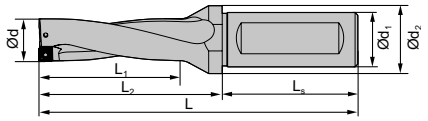
- Optimised geometry with very good chip control for stainless steel and super alloys

-LM

- Light cutting geometry with very good chip control for soft steels

Indexable drills series

ZSD02



Article	✻	Stock	Dimensions [mm]								Inserts
			ØD	ØD1	ØD2	L1	L2	LS	L	kg	
ZSD02-120-XP20-SP04-02	✻	•	12.0	20	25	27	44	50	94		SPMX040203**
ZSD02-125-XP20-SP04-02	✻	•	12.5	20	25	28	45	50	95		SPMX040203**
ZSD02-130-XP20-SP04-02	✻	•	13.0	20	25	29	46	50	96		SPMX040203**
ZSD02-135-XP20-SP04-02	✻	•	13.5	20	25	30	47	50	97		SPMX040203**
ZSD02-140-XP20-SP04-02	✻	•	14.0	20	25	31	48	50	98		SPMX040203**
ZSD02-145-XP20-SP04-02	✻	•	14.5	20	25	32	49	50	99		SPMX040203**
ZSD02-150-XP20-SP05-02	✻	•	15.0	20	25	33	50	50	100		SPMX050204**
ZSD02-155-XP20-SP05-02	✻	•	15.5	20	25	34	51	50	101		SPMX050204**
ZSD02-160-XP20-SP05-02	✻	•	16.0	20	25	35	52	50	102		SPMX050204**
ZSD02-165-XP20-SP05-02	✻	•	16.5	20	25	36	53	50	103		SPMX050204**
ZSD02-170-XP20-SP05-02	✻	•	17.0	20	25	37	54	50	104		SPMX050204**
ZSD02-175-XP20-SP05-02	✻	•	17.5	20	25	38	55	50	105		SPMX050204**
ZSD02-180-XP25-SP06-02	✻	•	18.0	25	32	39	57	56	113		SPMX060204**
ZSD02-185-XP25-SP06-02	✻	•	18.5	25	32	40	58	56	114		SPMX060204**
ZSD02-190-XP25-SP06-02	✻	•	19.0	25	32	41	59	56	115		SPMX060204**
ZSD02-195-XP25-SP06-02	✻	•	19.5	25	32	42	60	56	116		SPMX060204**
ZSD02-200-XP25-SP06-02	✻	•	20.0	25	32	43	61	56	117		SPMX060204**
ZSD02-205-XP25-SP06-02	✻	•	20.5	25	32	44	62	56	118		SPMX060204**
ZSD02-210-XP25-SP06-02	✻	•	21.0	25	32	45	63	56	119		SPMX060204**
ZSD02-215-XP25-SP06-02	✻	•	21.5	25	32	46	64	56	120		SPMX060204**
ZSD02-220-XP25-SP06-02	✻	•	22.0	25	32	47	65	56	121		SPMX060204**
ZSD02-225-XP25-SP07-02	✻	•	22.5	25	32	48	66	56	122		SPMX07T308**
ZSD02-230-XP25-SP07-02	✻	•	23.0	25	32	49	67	56	123		SPMX07T308**
ZSD02-235-XP25-SP07-02	✻	•	23.5	25	32	50	68	56	124		SPMX07T308**
ZSD02-240-XP25-SP07-02	✻	•	24.0	25	32	51	69	56	125		SPMX07T308**
ZSD02-245-XP25-SP07-02	✻	•	24.5	25	32	52	70	56	126		SPMX07T308**
ZSD02-250XP25-SP07-02	✻	•	25.0	25	32	53	71	56	127		SPMX07T308**
ZSD02-255-XP25-SP07-02	✻	•	25.5	25	32	54	72	56	128		SPMX07T308**
ZSD02-260-XP25-SP07-02	✻	•	26.0	25	32	55	73	56	129		SPMX07T308**
ZSD02-265-XP25-SP07-02	✻	•	26.5	25	32	56	74	56	130		SPMX07T308**
ZSD02-270-XP25-SP07-02	✻	•	27.0	25	32	57	75	56	131		SPMX07T308**
ZSD02-275-XP25-SP07-02	✻	•	27.5	25	32	58	76	56	132		SPMX07T308**
ZSD02-280-XP32-SP09-02	✻	•	28.0	32	37	59	79	60	139		SPMX090408**

• Ex stock ○ On demand

✻ With internal cooling

Article	✻	Stock	Dimensions [mm]								Inserts
			ØD	ØD1	ØD2	L1	L2	LS	L	kg	
ZSD02-290-XP32-SP09-02	✻	•	29.0	32	37	60	81	60	141		SPMX090408**
ZSD02-300-XP32-SP09-02	✻	•	30.0	32	37	61	83	60	143		SPMX090408**
ZSD02-310-XP32-SP09-02	✻	•	31.0	32	37	65	85	60	145		SPMX090408**
ZSD02-320-XP32-SP09-02	✻	•	32.0	32	37	67	87	60	147		SPMX090408**
ZSD02-330-XP32-SP09-02	✻	•	33.0	32	37	69	89	60	149		SPMX090408**
ZSD02-340-XP40-SP11-02	✻	•	34.0	40	47	71	96	70	166		SPMX110408**
ZSD02-350-XP40-SP11-02	✻	•	35.0	40	47	73	98	70	168		SPMX110408**
ZSD02-360-XP40-SP11-02	✻	•	36.0	40	47	75	100	70	170		SPMX110408**
ZSD02-370-XP40-SP11-02	✻	•	37.0	40	47	77	102	70	172		SPMX110408**
ZSD02-380-XP40-SP11-02	✻	•	38.0	40	47	79	104	70	174		SPMX110408**
ZSD02-390-XP40-SP11-02	✻	•	39.0	40	47	81	106	70	176		SPMX110408**
ZSD02-400-XP40-SP11-02	✻	•	40.0	40	47	83	108	70	178		SPMX110408**
ZSD02-410-XP40-SP11-02	✻	•	41.0	40	47	85	110	70	180		SPMX110408**
ZSD02-420-XP40-SP14-02	✻	•	42.0	40	52	87	119	70	189		SPMX140512**
ZSD02-430-XP40-SP14-02	✻	•	43.0	40	52	89	121	70	191		SPMX140512**
ZSD02-440-XP40-SP14-02	✻	•	44.0	40	52	91	123	70	193		SPMX140512**
ZSD02-450-XP40-SP14-02	✻	•	45.0	40	52	93	125	70	195		SPMX140512**
ZSD02-460-XP40-SP14-02	✻	•	46.0	40	52	95	127	70	197		SPMX140512**
ZSD02-470-XP40-SP14-02	✻	•	47.0	40	52	97	129	70	199		SPMX140512**
ZSD02-480-XP40-SP14-02	✻	•	48.0	40	52	99	131	70	201		SPMX140512**
ZSD02-490-XP40-SP14-02	✻	•	49.0	40	52	102	133	70	203		SPMX140512**
ZSD02-500-XP40-SP14-02	✻	•	50.0	40	52	103	135	70	205		SPMX140512**
ZSD02-510-XP50-SP14-02	✻	•	51,0	50	57	105	137	80	217		SPMX110408**
ZSD02-520-XP50-SP14-02	✻	•	52,0	50	57	107	139	80	219		SPMX140512**
ZSD02-530-XP50-SP14-02	✻	•	53,0	50	57	109	141	80	221		SPMX140512**
ZSD02-540-XP50-SP09-04	✻	•	54,0	50	57	111	143	80	223		SPMX090408**
ZSD02-550-XP50-SP09-04	✻	•	55,0	50	57	113	145	80	225		SPMX090408**
ZSD02-560-XP50-SP09-04	✻	•	56,0	50	57	115	147	80	227		SPMX090408**
ZSD02-570-XP50-SP09-04	✻	•	57,0	50	57	117	149	80	229		SPMX090408**
ZSD02-580-XP50-SP09-04	✻	•	58,0	50	57	119	151	80	231		SPMX090408**
ZSD02-590-XP50-SP09-04	✻	•	59,0	50	57	121	153	80	233		SPMX090408**
ZSD02-600-XP50-SP09-04	✻	•	60,0	50	57	123	155	80	235		SPMX090408**
ZSD02-610-XP50-SP09-04	✻	•	61,0	50	57	125	157	80	237		SPMX090408**
ZSD02-620-XP50-SP09-04	✻	•	62,0	50	57	127	159	80	239		SPMX090408**
ZSD02-630-XP50-SP09-04	✻	•	63,0	50	57	129	161	80	241		SPMX090408**

• Ex stock ○ On demand

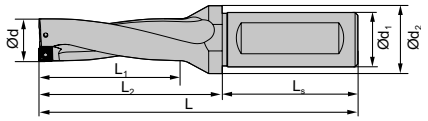
✻ With internal cooling

Spare parts

	Insert	SPMX040204**	SPMX050204**	SPMX060204**	SPMX07T308**	SPMX090408**	SPMX110408**	SPMX140512**
	Screw	I60M2x4.3	I60M2x4.3	I60M2.2x5.5	I60M2.5x6.5	I60M3.5x8	I60M4x10	I60M5x13
	Wrench	WT06IP	WT06IP	WT07IP	WT07IP	WT15IP	WT15IP	WT20IP

Indexable drills series

ZSD03



Article	✻	Stock	Dimensions [mm]								Inserts
			ØD	ØD1	ØD2	L1	L2	LS	L	kg	
ZSD03-120-XP20-SP04-02	✻	•	12.0	20	25	39	55	50	105		SPMX040203**
ZSD03-125-XP20-SP04-02	✻	•	12.5	20	25	41	57	50	107		SPMX040203**
ZSD03-130-XP20-SP04-02	✻	•	13.0	20	25	42	58	50	108		SPMX040203**
ZSD03-135-XP20-SP04-02	✻	•	13.5	20	25	44	60	50	110		SPMX040203**
ZSD03-140-XP20-SP04-02	✻	•	14.0	20	25	45	61	50	111		SPMX040203**
ZSD03-145-XP20-SP04-02	✻	•	14.5	20	25	47	63	50	113		SPMX040203**
ZSD03-150-XP20-SP05-02	✻	•	15.0	20	25	48	64	50	114		SPMX050204**
ZSD03-155-XP20-SP05-02	✻	•	15.5	20	25	50	66	50	116		SPMX050204**
ZSD03-160-XP20-SP05-02	✻	•	16.0	20	25	51	67	50	117		SPMX050204**
ZSD03-165-XP20-SP05-02	✻	•	16.5	20	25	53	69	50	119		SPMX050204**
ZSD03-170-XP20-SP05-02	✻	•	17.0	20	25	54	70	50	120		SPMX050204**
ZSD03-175-XP20-SP05-02	✻	•	17.5	20	25	56	72	50	122		SPMX050204**
ZSD03-180-XP25-SP06-02	✻	•	18.0	25	32	57	75	56	131		SPMX060204**
ZSD03-185-XP25-SP06-02	✻	•	18.5	25	32	59	77	56	133		SPMX060204**
ZSD03-190-XP25-SP06-02	✻	•	19.0	25	32	60	78	56	134		SPMX060204**
ZSD03-195-XP25-SP06-02	✻	•	19.5	25	32	62	80	56	136		SPMX060204**
ZSD03-200-XP25-SP06-02	✻	•	20.0	25	32	63	81	56	137		SPMX060204**
ZSD03-205-XP25-SP06-02	✻	•	20.5	25	32	65	83	56	139		SPMX060204**
ZSD03-210-XP25-SP06-02	✻	•	21.0	25	32	66	84	56	140		SPMX060204**
ZSD03-215-XP25-SP06-02	✻	•	21.5	25	32	68	86	56	142		SPMX060204**
ZSD03-220-XP25-SP06-02	✻	•	22.0	25	32	69	87	56	143		SPMX060204**
ZSD03-225-XP25-SP07-02	✻	•	22.5	25	32	71	89	56	145		SPMX07T308**
ZSD03-230-XP25-SP07-02	✻	•	23.0	25	32	72	91	56	147		SPMX07T308**
ZSD03-235-XP25-SP07-02	✻	•	23.5	25	32	74	93	56	149		SPMX07T308**
ZSD03-240-XP25-SP07-02	✻	•	24.0	25	32	75	94	56	150		SPMX07T308**
ZSD03-245-XP25-SP07-02	✻	•	24.5	25	32	77	96	56	152		SPMX07T308**
ZSD03-250XP25-SP07-02	✻	•	25.0	25	32	78	97	56	153		SPMX07T308**
ZSD03-255-XP25-SP07-02	✻	•	25.5	25	32	80	99	56	155		SPMX07T308**
ZSD03-260-XP25-SP07-02	✻	•	26.0	25	32	81	100	56	156		SPMX07T308**
ZSD03-265-XP25-SP07-02	✻	•	26.5	25	32	83	102	56	158		SPMX07T308**
ZSD03-270-XP25-SP07-02	✻	•	27.0	25	32	84	104	56	160		SPMX07T308**
ZSD03-275-XP25-SP07-02	✻	•	27.5	25	32	86	106	56	162		SPMX07T308**
ZSD03-280-XP32-SP09-02	✻	•	28.0	32	37	87	109	60	169		SPMX090408**

• Ex stock ○ On demand

✻ With internal cooling

Article	✻	Stock	Dimensions [mm]								Inserts
			ØD	ØD1	ØD2	L1	L2	LS	L	kg	
ZSD03-290-XP32-SP09-02	✻	•	29.0	32	37	90	112	60	172		SPMX090408**
ZSD03-300-XP32-SP09-02	✻	•	30.0	32	37	93	115	60	175		SPMX090408**
ZSD03-310-XP32-SP09-02	✻	•	31.0	32	37	96	118	60	178		SPMX090408**
ZSD03-320-XP32-SP09-02	✻	•	32.0	32	37	99	121	60	181		SPMX090408**
ZSD03-330-XP32-SP09-02	✻	•	33.0	32	37	102	124	60	184		SPMX090408**
ZSD03-340-XP40-SP11-02	✻	•	34.0	40	47	105	130	70	200		SPMX110408**
ZSD03-350-XP40-SP11-02	✻	•	35.0	40	47	108	133	70	203		SPMX110408**
ZSD03-360-XP40-SP11-02	✻	•	36.0	40	47	111	136	70	206		SPMX110408**
ZSD03-370-XP40-SP11-02	✻	•	37.0	40	47	114	139	70	209		SPMX110408**
ZSD03-380-XP40-SP11-02	✻	•	38.0	40	47	117	142	70	212		SPMX110408**
ZSD03-390-XP40-SP11-02	✻	•	39.0	40	47	120	145	70	215		SPMX110408**
ZSD03-400-XP40-SP11-02	✻	•	40.0	40	47	123	148	70	218		SPMX110408**
ZSD03-410-XP40-SP11-02	✻	•	41.0	40	47	126	151	70	221		SPMX110408**
ZSD03-420-XP40-SP14-02	✻	•	42.0	40	52	129	161	70	231		SPMX140512**
ZSD03-430-XP40-SP14-02	✻	•	43.0	40	52	132	164	70	234		SPMX140512**
ZSD03-440-XP40-SP14-02	✻	•	44.0	40	52	135	167	70	237		SPMX140512**
ZSD03-450-XP40-SP14-02	✻	•	45.0	40	52	138	170	70	240		SPMX140512**
ZSD03-460-XP40-SP14-02	✻	•	46.0	40	52	141	173	70	243		SPMX140512**
ZSD03-470-XP40-SP14-02	✻	•	47.0	40	52	144	176	70	245		SPMX140512**
ZSD03-480-XP40-SP14-02	✻	•	48.0	40	52	147	179	70	249		SPMX140512**
ZSD03-490-XP40-SP14-02	✻	•	49.0	40	52	150	182	70	252		SPMX140512**
ZSD03-500-XP40-SP14-02	✻	•	50.0	40	52	153	185	70	255		SPMX140512**
ZSD03-510-XP50-SP14-02	✻	•	51,0	50	57	156	188	80	268		SPMX110408**
ZSD03-520-XP50-SP14-02	✻	•	52,0	50	57	159	191	80	271		SPMX140512**
ZSD03-530-XP50-SP14-02	✻	•	53,0	50	57	162	194	80	274		SPMX140512**
ZSD03-540-XP50-SP09-04	✻	•	54,0	50	57	165	197	80	277		SPMX090408**
ZSD03-550-XP50-SP09-04	✻	•	55,0	50	57	168	200	80	280		SPMX090408**
ZSD03-560-XP50-SP09-04	✻	•	56,0	50	57	171	203	80	283		SPMX090408**
ZSD03-570-XP50-SP09-04	✻	•	57,0	50	57	174	206	80	286		SPMX090408**
ZSD03-580-XP50-SP09-04	✻	•	58,0	50	57	177	209	80	289		SPMX090408**
ZSD03-590-XP50-SP09-04	✻	•	59,0	50	57	180	212	80	292		SPMX090408**
ZSD03-600-XP50-SP09-04	✻	•	60,0	50	57	183	215	80	295		SPMX090408**
ZSD03-610-XP50-SP09-04	✻	•	61,0	50	57	186	218	80	298		SPMX090408**
ZSD03-620-XP50-SP09-04	✻	•	62,0	50	57	189	221	80	301		SPMX090408**
ZSD03-630-XP50-SP09-04	✻	•	63,0	50	57	192	224	80	304		SPMX090408**

• Ex stock ○ On demand

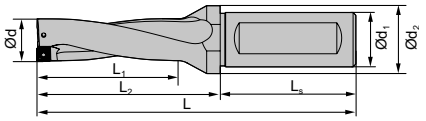
✻ With internal cooling

Spare parts

	Insert	SPMX040204**	SPMX050204**	SPMX060204**	SPMX07T308**	SPMX090408**	SPMX110408**	SPMX140512**
	Screw	I60M2x4.3	I60M2x4.3	I60M2.2x5.5	I60M2.5x6.5	I60M3.5x8	I60M4x10	I60M5x13
	Wrench	WT06IP	WT06IP	WT07IP	WT07IP	WT15IP	WT15IP	WT20IP

Indexable drills series

ZSD04



Article	✻	Stock	Dimensions [mm]								Inserts
			ØD	ØD1	ØD2	L1	L2	LS	L	kg	
ZSD04-120-XP20-SP04-02	✻	•	12.0	20	25	51	67	50	117		SPMX040203**
ZSD04-125-XP20-SP04-02	✻	•	12.5	20	25	53	69	50	119		SPMX040203**
ZSD04-130-XP20-SP04-02	✻	•	13.0	20	25	55	71	50	121		SPMX040203**
ZSD04-135-XP20-SP04-02	✻	•	13.5	20	25	57	73	50	123		SPMX040203**
ZSD04-140-XP20-SP04-02	✻	•	14.0	20	25	59	75	50	125		SPMX040203**
ZSD04-145-XP20-SP04-02	✻	•	14.5	20	25	61	77	50	127		SPMX040203**
ZSD04-150-XP20-SP05-02	✻	•	15.0	20	25	63	79	50	129		SPMX050204**
ZSD04-155-XP20-SP05-02	✻	•	15.5	20	25	65	81	50	131		SPMX050204**
ZSD04-160-XP20-SP05-02	✻	•	16.0	20	25	67	83	50	133		SPMX050204**
ZSD04-165-XP20-SP05-02	✻	•	16.5	20	25	69	85	50	135		SPMX050204**
ZSD04-170-XP20-SP05-02	✻	•	17.0	20	25	71	87	50	137		SPMX050204**
ZSD04-175-XP20-SP05-02	✻	•	17.5	20	25	73	89	50	139		SPMX050204**
ZSD04-180-XP25-SP06-02	✻	•	18.0	25	32	75	93	56	149		SPMX060204**
ZSD04-185-XP25-SP06-02	✻	•	18.5	25	32	77	95	56	151		SPMX060204**
ZSD04-190-XP25-SP06-02	✻	•	19.0	25	32	79	97	56	153		SPMX060204**
ZSD04-195-XP25-SP06-02	✻	•	19.5	25	32	81	99	56	155		SPMX060204**
ZSD04-200-XP25-SP06-02	✻	•	20.0	25	32	83	101	56	157		SPMX060204**
ZSD04-205-XP25-SP06-02	✻	•	20.5	25	32	85	103	56	159		SPMX060204**
ZSD04-210-XP25-SP06-02	✻	•	21.0	25	32	87	105	56	161		SPMX060204**
ZSD04-215-XP25-SP06-02	✻	•	21.5	25	32	89	107	56	163		SPMX060204**
ZSD04-220-XP25-SP06-02	✻	•	22.0	25	32	91	109	56	165		SPMX060204**
ZSD04-225-XP25-SP07-02	✻	•	22.5	25	32	93	111	56	167		SPMX07T308**
ZSD04-230-XP25-SP07-02	✻	•	23.0	25	32	95	114	56	170		SPMX07T308**
ZSD04-235-XP25-SP07-02	✻	•	23.5	25	32	97	116	56	172		SPMX07T308**
ZSD04-240-XP25-SP07-02	✻	•	24.0	25	32	99	118	56	174		SPMX07T308**
ZSD04-245-XP25-SP07-02	✻	•	24.5	25	32	101	120	56	176		SPMX07T308**
ZSD04-250XP25-SP07-02	✻	•	25.0	25	32	103	122	56	178		SPMX07T308**
ZSD04-255-XP25-SP07-02	✻	•	25.5	25	32	105	125	56	181		SPMX07T308**
ZSD04-260-XP25-SP07-02	✻	•	26.0	25	32	107	126	56	182		SPMX07T308**
ZSD04-265-XP25-SP07-02	✻	•	26.5	25	32	109	128	56	184		SPMX07T308**
ZSD04-270-XP25-SP07-02	✻	•	27.0	25	32	111	131	56	187		SPMX07T308**
ZSD04-275-XP25-SP07-02	✻	•	27.5	25	32	113	134	56	190		SPMX07T308**
ZSD04-280-XP32-SP09-02	✻	•	28.0	32	37	115	139	60	199		SPMX090408**

• Ex stock ○ On demand

✻ With internal cooling

Article	✻	Stock	Dimensions [mm]								Inserts
			ØD	ØD1	ØD2	L1	L2	LS	L	kg	
ZSD04-290-XP32-SP09-02	✻	•	29.0	32	37	119	143	60	203		SPMX090408**
ZSD04-300-XP32-SP09-02	✻	•	30.0	32	37	123	147	60	207		SPMX090408**
ZSD04-305-XP32-SP09-02	✻	•	30.5	32	37	125	149	60	209		SPMX090408**
ZSD04-310-XP32-SP09-02	✻	•	31.0	32	37	127	151	60	211		SPMX090408**
ZSD04-320-XP32-SP09-02	✻	•	32.0	32	37	131	155	60	215		SPMX090408**
ZSD04-330-XP32-SP09-02	✻	•	33.0	32	37	135	159	60	219		SPMX090408**
ZSD04-340-XP40-SP11-02	✻	•	34.0	40	47	139	164	70	234		SPMX110408**
ZSD04-350-XP40-SP11-02	✻	•	35.0	40	47	143	168	70	238		SPMX110408**
ZSD04-360-XP40-SP11-02	✻	•	36.0	40	47	147	172	70	242		SPMX110408**
ZSD04-370-XP40-SP11-02	✻	•	37.0	40	47	151	176	70	246		SPMX110408**
ZSD04-380-XP40-SP11-02	✻	•	38.0	40	47	155	180	70	250		SPMX110408**
ZSD04-390-XP40-SP11-02	✻	•	39.0	40	47	159	184	70	254		SPMX110408**
ZSD04-400-XP40-SP11-02	✻	•	40.0	40	47	163	188	70	258		SPMX110408**
ZSD04-405-XP40-SP11-02	✻	•	40.5	40	47	165	190	70	260		SPMX110408**
ZSD04-410-XP40-SP11-02	✻	•	41.0	40	47	167	192	70	262		SPMX110408**
ZSD04-420-XP40-SP14-02	✻	•	42.0	40	52	171	203	70	273		SPMX140512**
ZSD04-430-XP40-SP14-02	✻	•	43.0	40	52	175	207	70	277		SPMX140512**
ZSD04-440-XP40-SP14-02	✻	•	44.0	40	52	179	211	70	281		SPMX140512**
ZSD04-450-XP40-SP14-02	✻	•	45.0	40	52	183	215	70	285		SPMX140512**
ZSD04-460-XP40-SP14-02	✻	•	46.0	40	52	187	219	70	289		SPMX140512**
ZSD04-470-XP40-SP14-02	✻	•	47.0	40	52	191	223	70	293		SPMX140512**
ZSD04-480-XP40-SP14-02	✻	•	48.0	40	52	195	227	70	297		SPMX140512**
ZSD04-490-XP40-SP14-02	✻	•	49.0	40	52	199	231	70	301		SPMX140512**
ZSD04-500-XP40-SP14-02	✻	•	50.0	40	52	203	235	70	305		SPMX140512**
ZSD04-510-XP50-SP14-02	✻	○	51,0	50	57	207	239	80	319		SPMX110408**
ZSD04-520-XP50-SP14-02	✻	○	52,0	50	57	211	243	80	323		SPMX140512**
ZSD04-530-XP50-SP14-02	✻	○	53,0	50	57	215	247	80	327		SPMX140512**
ZSD04-540-XP50-SP09-04	✻	○	54,0	50	57	219	251	80	331		SPMX090408**
ZSD04-550-XP50-SP09-04	✻	○	55,0	50	57	223	255	80	335		SPMX090408**
ZSD04-560-XP50-SP09-04	✻	○	56,0	50	57	227	259	80	339		SPMX090408**
ZSD04-570-XP50-SP09-04	✻	○	57,0	50	57	231	263	80	343		SPMX090408**
ZSD04-580-XP50-SP09-04	✻	○	58,0	50	57	235	267	80	347		SPMX090408**
ZSD04-590-XP50-SP09-04	✻	○	59,0	50	57	239	271	80	351		SPMX090408**
ZSD04-600-XP50-SP09-04	✻	○	60,0	50	57	243	275	80	355		SPMX090408**
ZSD04-610-XP50-SP09-04	✻	○	61,0	50	57	247	279	80	359		SPMX090408**
ZSD04-620-XP50-SP09-04	✻	○	62,0	50	57	251	283	80	363		SPMX090408**
ZSD04-630-XP50-SP09-04	✻	○	63,0	50	57	255	287	80	367		SPMX090408**

• Ex stock ○ On demand

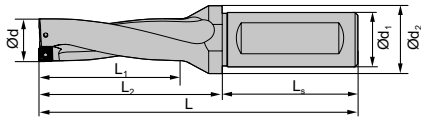
✻ With internal cooling

Spare parts

	Insert	SPMX040204**	SPMX050204**	SPMX060204**	SPMX07T308**	SPMX090408**	SPMX110408**	SPMX140512**
	Screw	I60M2x4.3	I60M2x4.3	I60M2.2x5.5	I60M2.5x6.5	I60M3.5x8	I60M4x10	I60M5x13
	Wrench	WT06IP	WT06IP	WT07IP	WT07IP	WT15IP	WT15IP	WT20IP

Indexable drills series

ZSD05



Article	✻	Stock	Dimensions [mm]								Inserts
			ØD	ØD1	ØD2	L1	L2	LS	L	kg	
ZSD05-120-XP20-SP04-02	✻	•	12.0	20	25	63	79	50	129		SPMX040203**
ZSD05-125-XP20-SP04-02	✻	•	12.5	20	25	66	82	50	132		SPMX040203**
ZSD05-130-XP20-SP04-02	✻	•	13.0	20	25	68	84	50	134		SPMX040203**
ZSD05-135-XP20-SP04-02	✻	•	13.5	20	25	71	87	50	137		SPMX040203**
ZSD05-140-XP20-SP04-02	✻	•	14.0	20	25	73	89	50	139		SPMX040203**
ZSD05-145-XP20-SP04-02	✻	•	14.5	20	25	76	91	50	141		SPMX040203**
ZSD05-150-XP20-SP05-02	✻	•	15.0	20	25	78	94	50	144		SPMX050204**
ZSD05-155-XP20-SP05-02	✻	•	15.5	20	25	81	97	50	147		SPMX050204**
ZSD05-160-XP20-SP05-02	✻	•	16.0	20	25	83	99	50	149		SPMX050204**
ZSD05-165-XP20-SP05-02	✻	•	16.5	20	25	86	102	50	152		SPMX050204**
ZSD05-170-XP20-SP05-02	✻	•	17.0	20	25	88	104	50	154		SPMX050204**
ZSD05-175-XP20-SP05-02	✻	•	17.5	20	25	91	107	50	157		SPMX050204**
ZSD05-180-XP25-SP06-02	✻	•	18.0	25	32	93	112	56	167		SPMX060204**
ZSD05-185-XP25-SP06-02	✻	•	18.5	25	32	96	114	56	170		SPMX060204**
ZSD05-190-XP25-SP06-02	✻	•	19.0	25	32	98	116	56	172		SPMX060204**
ZSD05-195-XP25-SP06-02	✻	•	19.5	25	32	101	119	56	175		SPMX060204**
ZSD05-200-XP25-SP06-02	✻	•	20.0	25	32	103	121	56	177		SPMX060204**
ZSD05-205-XP25-SP06-02	✻	•	20.5	25	32	106	124	56	180		SPMX060204**
ZSD05-210-XP25-SP06-02	✻	•	21.0	25	32	108	126	56	182		SPMX060204**
ZSD05-215-XP25-SP06-02	✻	•	21.5	25	32	111	129	56	185		SPMX060204**
ZSD05-220-XP25-SP06-02	✻	•	22.0	25	32	113	131	56	187		SPMX060204**
ZSD05-225-XP25-SP07-02	✻	•	22.5	25	32	116	134	56	190		SPMX07T308**
ZSD05-230-XP25-SP07-02	✻	•	23.0	25	32	118	138	56	194		SPMX07T308**
ZSD05-235-XP25-SP07-02	✻	•	23.5	25	32	121	141	56	197		SPMX07T308**
ZSD05-240-XP25-SP07-02	✻	•	24.0	25	32	123	143	56	199		SPMX07T308**
ZSD05-245-XP25-SP07-02	✻	•	24.5	25	32	126	146	56	202		SPMX07T308**
ZSD05-250XP25-SP07-02	✻	•	25.0	25	32	128	148	56	204		SPMX07T308**
ZSD05-255-XP25-SP07-02	✻	•	25.5	25	32	131	151	56	207		SPMX07T308**
ZSD05-260-XP25-SP07-02	✻	•	26.0	25	32	133	153	56	209		SPMX07T308**
ZSD05-265-XP25-SP07-02	✻	•	26.5	25	32	136	156	56	212		SPMX07T308**
ZSD05-270-XP25-SP07-02	✻	•	27.0	25	32	138	158	56	214		SPMX07T308**
ZSD05-275-XP25-SP07-02	✻	•	27.5	25	32	141	161	56	217		SPMX07T308**
ZSD05-280-XP32-SP09-02	✻	•	28.0	32	37	143	163	60	223		SPMX090408**

• Ex stock ○ On demand

✻ With internal cooling

Article	✻	Stock	Dimensions [mm]								Inserts
			ØD	ØD1	ØD2	L1	L2	LS	L	kg	
ZSD05-290-XP32-SP09-02	✻	•	29.0	32	37	148	168	60	228		SPMX090408**
ZSD05-300-XP32-SP09-02	✻	•	30.0	32	37	153	173	60	233		SPMX090408**
ZSD05-310-XP32-SP09-02	✻	•	31.0	32	37	158	178	60	238		SPMX090408**
ZSD05-320-XP32-SP09-02	✻	•	32.0	32	37	163	183	60	243		SPMX090408**
ZSD05-330-XP32-SP09-02	✻	•	33.0	32	37	168	189	60	249		SPMX090408**
ZSD05-340-XP40-SP11-02	✻	•	34.0	40	47	173	198	70	268		SPMX110408**
ZSD05-350-XP40-SP11-02	✻	•	35.0	40	47	178	203	70	273		SPMX110408**
ZSD05-360-XP40-SP11-02	✻	•	36.0	40	47	183	208	70	278		SPMX110408**
ZSD05-370-XP40-SP11-02	✻	•	37.0	40	47	188	213	70	283		SPMX110408**
ZSD05-380-XP40-SP11-02	✻	•	38.0	40	47	193	218	70	288		SPMX110408**
ZSD05-390-XP40-SP11-02	✻	•	39.0	40	47	198	223	70	293		SPMX110408**
ZSD05-400-XP40-SP11-02	✻	•	40.0	40	47	203	228	70	298		SPMX110408**
ZSD05-410-XP40-SP11-02	✻	•	41.0	40	47	208	233	70	303		SPMX110408**
ZSD05-420-XP40-SP14-02	✻	•	42.0	40	52	213	245	70	315		SPMX140512**
ZSD05-430-XP40-SP14-02	✻	•	43.0	40	52	218	250	70	320		SPMX140512**
ZSD05-440-XP40-SP14-02	✻	•	44.0	40	52	223	255	70	325		SPMX140512**
ZSD05-450-XP40-SP14-02	✻	•	45.0	40	52	228	260	70	330		SPMX140512**
ZSD05-460-XP40-SP14-02	✻	•	46.0	40	52	233	265	70	335		SPMX140512**
ZSD05-470-XP40-SP14-02	✻	•	47.0	40	52	238	270	70	340		SPMX140512**
ZSD05-480-XP40-SP14-02	✻	•	48.0	40	52	243	275	70	345		SPMX140512**
ZSD05-490-XP40-SP14-02	✻	•	49.0	40	52	248	280	70	350		SPMX140512**
ZSD05-500-XP40-SP14-02	✻	•	50.0	40	52	253	285	70	355		SPMX140512**
ZSD05-510-XP50-SP14-02	✻	○	51,0	50	57	258	290	80	370		SPMX110408**
ZSD05-520-XP50-SP14-02	✻	○	52,0	50	57	263	295	80	375		SPMX140512**
ZSD05-530-XP50-SP14-02	✻	○	53,0	50	57	268	300	80	380		SPMX140512**
ZSD05-540-XP50-SP09-04	✻	○	54,0	50	57	273	305	80	385		SPMX090408**
ZSD05-550-XP50-SP09-04	✻	○	55,0	50	57	278	310	80	390		SPMX090408**
ZSD05-560-XP50-SP09-04	✻	○	56,0	50	57	283	315	80	395		SPMX090408**
ZSD05-570-XP50-SP09-04	✻	○	57,0	50	57	288	320	80	400		SPMX090408**
ZSD05-580-XP50-SP09-04	✻	○	58,0	50	57	293	325	80	405		SPMX090408**
ZSD05-590-XP50-SP09-04	✻	○	59,0	50	57	298	330	80	410		SPMX090408**
ZSD05-600-XP50-SP09-04	✻	○	60,0	50	57	303	335	80	415		SPMX090408**
ZSD05-610-XP50-SP09-04	✻	○	61,0	50	57	308	340	80	420		SPMX090408**
ZSD05-620-XP50-SP09-04	✻	○	62,0	50	57	313	345	80	425		SPMX090408**
ZSD05-630-XP50-SP09-04	✻	○	63,0	50	57	318	350	80	430		SPMX090408**

• Ex stock ○ On demand

✻ With internal cooling

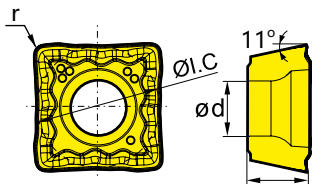
Spare parts

	Insert	**SPMX040204****	**SPMX050204****	**SPMX060204****	**SPMX07T308****	**SPMX090408****	**SPMX110408****	**SPMX140512****
	Screw	I60M2x4.3	I60M2x4.3	I60M2.2x5.5	I60M2.5x6.5	I60M3.5x8	I60M4x10	I60M5x13
	Wrench	WT06IP	WT06IP	WT07IP	WT07IP	WT15IP	WT15IP	WT20IP

SPMX	L	I.C	S	d
04 02	4	4	2,38	2,2
05 02	5	5	2,38	2,2
06 02	6	6	2,38	2,5
07 T3	7,94	7,94	3,97	2,8
09 04	9,8	9,8	4,30	4,1
11 04	11,5	11,5	4,76	4,4
14 05	14,3	14,3	5,20	5,5

Ideal machining conditions
Normal machining conditions
Unfavourable maching conditions

Drilling inserts



SP** drilling insert			HC[1] (CVD)					HC[1] (PVD)					HW				
		P															
		M															
		K															
		N															
		S															
		H															
ISO		r	YB6338					YBG202	YBG205	YBG212	YB9320	YBS203					
XM	**SPMX040203-XM**	0,3	•								•						
	SPMX050204-XM	0,4	•							○	•						
	SPMX060204-XM	0,4	•								•						
	SPMX07T308-XM	0,8	•							○	•						
	SPMX090408-XM	0,8	•								•						
	SPMX110408-XM	0,8	•								•						
	SPMX140512-XM	1,2	•								•						
EM	**SPMX040203-EM**	0,3									○	○					
	SPMX050204-EM	0,4									○	○					
	SPMX060204-EM	0,4									○	○					
	SPMX07T308-EM	0,8									○	○					
	SPMX090408-EM	0,8									○	○					
	SPMX110408-EM	0,8									○	○					
	SPMX140512-EM	1,2									○	○					
LM	**SPMX040203-LM**	0,3									○						
	SPMX050204-LM	0,4									○						
	SPMX060204-LM	0,4									○						
	SPMX07T308-LM	0,8									○						
	SPMX090408-LM	0,8									○						
	SPMX110408-LM	0,8									○						
	SPMX140512-LM	1,2									○						

● Ex stock ○ On demand

HC[1] Coated carbide
HW Uncoated carbide

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Indexable drills

Material group		Composition / structure / heat treatment		HB	Machining group	ZSD* SPMX04		ZSD* SPMX05/06	
						v_c [m/min]	f [mm]	v_c [m/min]	f [mm]
P	Unalloyed steel	approx. 0,15 % C	annealed	125	1	200-300	0,05-0,08	200-300	0,05-0,10
		approx. 0,45 % C	annealed	190	2	200-300	0,05-0,08	200-300	0,05-0,10
		approx. 0,45 % C	tempered	250	3	200-300	0,05-0,08	200-300	0,05-0,10
		approx. 0,75 % C	annealed	270	4	200-300	0,05-0,08	200-300	0,05-0,10
		approx. 0,75 % C	tempered	300	5	200-300	0,05-0,08	200-300	0,05-0,10
	Low-alloyed steel		annealed	180	6	140-220	0,05-0,08	140-220	0,05-0,10
			tempered	275	7	140-220	0,05-0,08	140-220	0,05-0,10
			tempered	300	8	140-220	0,05-0,08	140-220	0,05-0,10
			tempered	350	9	140-220	0,05-0,08	140-220	0,05-0,10
	High-alloyed steel and high-alloyed tool steel		annealed	200	10	120-180	0,05-0,08	120-180	0,05-0,10
			hardened and tempered	325	11	120-180	0,05-0,08	120-180	0,05-0,10
M	Stainless steel	ferritic/martensitic	annealed	200	12	110-230	0,05-0,08	110-230	0,05-0,10
		martensitic	tempered	240	13	110-230	0,05-0,08	110-230	0,05-0,10
		austenitic	quench hardened	180	14	110-230	0,05-0,08	110-230	0,05-0,10
		austenitic-ferritic		230	15	110-230	0,05-0,08	110-230	0,05-0,10
K	Grey cast iron	perlitic/ferritic		180	16	170-240	0,05-0,08	170-240	0,05-0,10
		perlitic (martensitic)		260	17	170-240	0,05-0,08	170-240	0,05-0,10
	Cast iron with spheroidal graphite	ferritic		160	18	130-200	0,05-0,08	130-200	0,05-0,10
		perlitic		250	19	130-200	0,05-0,08	130-200	0,05-0,10
	Malleable cast iron	ferritic		130	20	120-220	0,05-0,08	120-220	0,05-0,10
		perlitic		230	21	120-220	0,05-0,08	120-220	0,05-0,10
N	Aluminium wrought alloys	cannot be hardened		60	22				
		hardenable	hardened	100	23				
	Cast aluminium alloys	≤ 12 % Si, cannot be hardened		75	24				
		≤ 12 % Si, hardenable	hardened	90	25				
		> 12 % Si, cannot be hardened		130	26				
	Copper and copper alloys (bronze/brass)	machining steel, PB> 1%		110	27				
		CuZn, CuSnZn		90	28				
		CuSn, Pb-free copper, electrolytic copper		100	29				
S	Heat-resistant alloys	Fe-based alloys	annealed	200	30				
			hardened	280	31				
		Ni or Co bass	annealed	250	32				
			hardened	350	33				
			cast	320	34				
	Titanium alloys	pure titanium		R_m 400	35				
		α and β alloys	hardened	R_m 1050	36				
H	Hardened steel		hardened and tempered	55 HRC	37				
			hardened and tempered	60 HRC	38				
	Hard cast iron		cast	400	39				
	Hardened cast iron		hardened and tempered	55 HRC	40				
X	Non-metallic materials	Thermoplasts			41				
		Thermosetting plastics			42				
		Plastic, glass-fibre reinforced GFRP			43				
		Plastic, carbon fibre reinforced CFRP			44				
		Graphite			45				
		Wood			46				

Note: The given cutting values are guide values, which were determined under ideal conditions.
The values have to be adapted in individual cases.
With hole depths of 5xD adjust the cutting data accordingly to the application.
For examples of material for cutting tool groups view page D22.

	ZSD*		ZSD*		ZTD*		ZTD*		ZTD*		ZD03		ZD03		
	SPMX07/09		SPMX11/14		SPGT05/06		SPGT07/09		SPGT11/14		WCMX03-05		WCMX06-08		
	v_c [m/min]	f [mm]	v_c [m/min]	f [mm]	v_c [m/min]	f [mm]	v_c [m/min]	f [mm]	v_c [m/min]	f [mm]	v_c [m/min]	f [mm]	v_c [m/min]	f [mm]	
	200-300	0,06-0,14	200-300	0,08-0,17	200-300	0,05-0,08	200-300	0,06-0,11	200-300	0,08-0,14	200-300	0,05-0,08	200-300	0,06-0,11	
	200-300	0,06-0,14	200-300	0,08-0,17	200-300	0,05-0,08	200-300	0,06-0,11	200-300	0,08-0,14	200-300	0,05-0,08	200-300	0,06-0,11	
	200-300	0,06-0,14	200-300	0,08-0,17	200-300	0,05-0,08	200-300	0,06-0,11	200-300	0,08-0,14	200-300	0,05-0,08	200-300	0,06-0,11	
	200-300	0,06-0,14	200-300	0,08-0,17	200-300	0,05-0,08	200-300	0,06-0,11	200-300	0,08-0,14	200-300	0,05-0,08	200-300	0,06-0,11	
	200-300	0,06-0,14	200-300	0,08-0,17	200-300	0,05-0,08	200-300	0,06-0,11	200-300	0,08-0,14	200-300	0,05-0,08	200-300	0,06-0,11	
	140-220	0,06-0,14	140-220	0,09-0,19	140-220	0,05-0,08	140-220	0,07-0,12	140-220	0,09-0,16	140-220	0,05-0,08	140-220	0,07-0,12	
	140-220	0,06-0,14	140-220	0,09-0,19	140-220	0,05-0,08	140-220	0,07-0,12	140-220	0,09-0,16	140-220	0,05-0,08	140-220	0,07-0,12	
	140-220	0,06-0,14	140-220	0,09-0,19	140-220	0,05-0,08	140-220	0,07-0,12	140-220	0,09-0,16	140-220	0,05-0,08	140-220	0,07-0,12	
	140-220	0,06-0,14	140-220	0,09-0,19	140-220	0,05-0,08	140-220	0,07-0,12	140-220	0,09-0,16	140-220	0,05-0,08	140-220	0,07-0,12	
	120-180	0,06-0,14	120-180	0,09-0,19	120-180	0,05-0,08	120-180	0,07-0,12	120-180	0,09-0,16	120-180	0,05-0,08	120-180	0,07-0,12	
	120-180	0,06-0,14	120-180	0,09-0,19	120-180	0,05-0,08	120-180	0,07-0,12	120-180	0,09-0,16	120-180	0,05-0,08	120-180	0,07-0,12	
	110-230	0,06-0,14	110-230	0,08-0,17	110-230	0,05-0,08	110-230	0,06-0,11	110-230	0,08-0,14	110-230	0,05-0,08	110-230	0,06-0,11	
	110-230	0,06-0,14	110-230	0,08-0,17	110-230	0,05-0,08	110-230	0,06-0,11	110-230	0,08-0,14	110-230	0,05-0,08	110-230	0,06-0,11	
	110-230	0,06-0,14	110-230	0,08-0,17	110-230	0,05-0,08	110-230	0,06-0,11	110-230	0,08-0,14	110-230	0,05-0,08	110-230	0,06-0,11	
	110-230	0,06-0,14	110-230	0,08-0,17	110-230	0,05-0,08	110-230	0,06-0,11	110-230	0,08-0,14	110-230	0,05-0,08	110-230	0,06-0,11	
	170-240	0,08-0,16	170-240	0,12-0,24	170-240	0,05-0,08	170-240	0,08-0,14	170-240	0,12-0,21	170-240	0,05-0,08	170-240	0,08-0,14	
	170-240	0,08-0,16	170-240	0,12-0,24	170-240	0,05-0,08	170-240	0,08-0,14	170-240	0,12-0,21	170-240	0,05-0,08	170-240	0,08-0,14	
	130-200	0,08-0,16	130-200	0,12-0,24	130-200	0,05-0,08	130-200	0,08-0,14	130-200	0,12-0,21	130-200	0,05-0,08	130-200	0,08-0,14	
	130-200	0,08-0,16	130-200	0,12-0,24	130-200	0,05-0,08	130-200	0,08-0,14	130-200	0,12-0,21	130-200	0,05-0,08	130-200	0,08-0,14	
	120-220	0,08-0,16	120-220	0,12-0,24	120-220	0,05-0,08	120-220	0,08-0,14	120-220	0,12-0,21	120-220	0,05-0,08	120-220	0,08-0,14	
	120-220	0,08-0,16	120-220	0,12-0,24	120-220	0,05-0,08	120-220	0,08-0,14	120-220	0,12-0,21	120-220	0,05-0,08	120-220	0,08-0,14	

Solid carbide drills

System code – solid carbide drills

1	5	3	6	SU	05	(C)	–	0850	(S)
1	2	3	4	5	6	7		8	9

Type	
Code	Description
1	Forets

1

Shank type	
Code	Description
1	Straight shank
2	Square shank DIN 10
3	Double flattened straight shank DIN 1809
5	Straight shank DIN 6535 HA
6	Weldon shank DIN 6535 HB
7	Whistle Notch shank DIN 6535 HE
9	Morse taper shank

2

Drill type	
Code	Description
0	Twist drill
3	Universal twist drill
4	NC tapping device
5	Step drill
6	Three-lips drill
7	Straight flute drill
8	Deep hole drill

3

Tool length	
Code	Description
1	DIN 338
2	DIN 1897
3	QJ/ZZQ(TO)01.001.002
4	DIN 6537 K
5	DIN 6539
6	DIN 6537 L
7	Factory standard ZCC-C
8	Factory standard ZCC-D
9	Factory standard ZCC-E

4

Application	
Code	Description
UD	Twist drills for tough materials
GD	Twist drills for high feeds
SU	Twist drill for general machining
SUK	Twist drill for cast iron
SL	Twist drill for deep hole drilling
SLK	Deep hole drill for cast iron
SP	Pilot drill
ST	Twist drill for soft steel and stainless steel
SH	Twist drill for hardened materials
SC	Twist drill for non-ferrous metals and cast iron
PA	Three-lips drill for non-ferrous metals and cast iron
PC	Straight flute drill for non-ferrous metals and cast iron

5

L/D relation		Angle	
Drill		NC tapping device	
Code	Description	Code	Description
03	3 x D	**90**	90°
05	5 x D	**120**	120°
08	8 x D		
10	10 x D		
12	12 x D		
15	15 x D		
20	20 x D		
30	30 x D		

6

With inner cooling

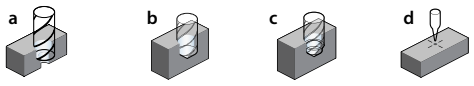
7

Bore diameter [mm]	
Code	Description
0200	2,0
0850	8,5
1800	18,0
...	

8

Shank diameter [mm]	
Code	Description
S	4,0

9



a Boring **b** Drilling **c** Profile drilling **d** Centering

Notes

UD series

Solid carbide drills for tough materials

- For machining of Inox (stainless steel) and HRSA
- Optimised design of the main and chisel edge preparation minimises the cutting pressure
- PVD coating with increased hardness, optimised thermal stability and a low coefficient of friction
- Diameter range 3.0–20.0 mm (3xD, 5xD)

Straight cut

New **New grade KDG305:**

- PVD coated carbide substrate for machining stainless steel and HRSA
- High process reliability due to improved wear resistance

Feed calculator

ISO group	Material	Cutting speed v_c (m/min)	Feed factor F_m
M	Stainless steels	80	0,02
S	Ni- / Co-based alloys	40	0,01
S	Titanium alloys	60	0,012

Formula:	feed per revolution (F_n)	$D \times F_m$
Example:	drill diameter (D)	10 mm
	material	stainless steel

$$F_n = 10\ mm \times 0{,}02 = 0{,}2\ mm/r$$

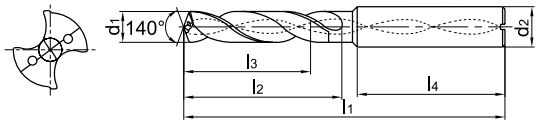
UD drill 3xD

Stainless steel, heat-resistant alloys

1534UD03C

– Shank type: DIN 6535HA
– Coolant exit, axial concentric

Internal coolant



Article	✻	Dimensions [mm]						Grade
		d_1 (m7)	d_2 (h6)	l_1	l_2	l_3	l_4	KDG305
1534UD03C-0300	✻	3	6	62	20	14	36	●
1534UD03C-0310	✻	3,1	6	62	20	14	36	●
1534UD03C-0320	✻	3,2	6	62	20	14	36	●
1534UD03C-0330	✻	3,3	6	62	20	14	36	●
1534UD03C-0340	✻	3,4	6	62	20	14	36	●
1534UD03C-0350	✻	3,5	6	62	20	14	36	●
1534UD03C-0360	✻	3,6	6	62	20	14	36	●
1534UD03C-0370	✻	3,7	6	62	20	14	36	●
1534UD03C-0380	✻	3,8	6	66	24	17	36	●
1534UD03C-0390	✻	3,9	6	66	24	17	36	●
1534UD03C-0400	✻	4	6	66	24	17	36	●
1534UD03C-0410	✻	4,1	6	66	24	17	36	●
1534UD03C-0420	✻	4,2	6	66	24	17	36	●
1534UD03C-0430	✻	4,3	6	66	24	17	36	●
1534UD03C-0440	✻	4,4	6	66	24	17	36	●
1534UD03C-0450	✻	4,5	6	66	24	17	36	●
1534UD03C-0460	✻	4,6	6	66	24	17	36	●
1534UD03C-0465	✻	4,65	6	66	24	17	36	●
1534UD03C-0470	✻	4,7	6	66	24	17	36	●
1534UD03C-0480	✻	4,8	6	66	28	20	36	●
1534UD03C-0490	✻	4,9	6	66	28	20	36	●
1534UD03C-0500	✻	5	6	66	28	20	36	●
1534UD03C-0510	✻	5,1	6	66	28	20	36	●
1534UD03C-0520	✻	5,2	6	66	28	20	36	●
1534UD03C-0530	✻	5,3	6	66	28	20	36	●
1534UD03C-0540	✻	5,4	6	66	28	20	36	●
1534UD03C-0550	✻	5,5	6	66	28	20	36	●
1534UD03C-0560	✻	5,6	6	66	28	20	36	●
1534UD03C-0570	✻	5,7	6	66	28	20	36	●
1534UD03C-0580	✻	5,8	6	66	28	20	36	●
1534UD03C-0590	✻	5,9	6	66	28	20	36	●
1534UD03C-0600	✻	6	6	66	28	20	36	●
1534UD03C-0610	✻	6,1	8	79	34	24	36	●
1534UD03C-0620	✻	6,2	8	79	34	24	36	●
1534UD03C-0630	✻	6,3	8	79	34	24	36	●

● Ex stock ○ On demand
✻ With internal cooling

Application field

Type	P	M	K	N	S	H
1534UD*	✔	✔			✔	

✔ Very suitable
✔ Suitable

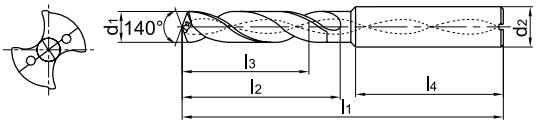
UD drill 3xD

Stainless steel, heat-resistant alloys

1534UD03C

– Shank type: DIN 6535HA
– Coolant exit, axial concentric

Internal coolant



Article	✻	Dimensions [mm]						Grade
		d_1 (m7)	d_2 (h6)	l_1	l_2	l_3	l_4	KDG305
1534UD03C-0640	✻	6,4	8	79	34	24	36	●
1534UD03C-0650	✻	6,5	8	79	34	24	36	●
1534UD03C-0660	✻	6,6	8	79	34	24	36	●
1534UD03C-0670	✻	6,7	8	79	34	24	36	●
1534UD03C-0680	✻	6,8	8	79	34	24	36	●
1534UD03C-0690	✻	6,9	8	79	34	24	36	●
1534UD03C-0700	✻	7	8	79	34	24	36	●
1534UD03C-0710	✻	7,1	8	79	41	29	36	●
1534UD03C-0720	✻	7,2	8	79	41	29	36	●
1534UD03C-0730	✻	7,3	8	79	41	29	36	●
1534UD03C-0740	✻	7,4	8	79	41	29	36	●
1534UD03C-0750	✻	7,5	8	79	41	29	36	●
1534UD03C-0760	✻	7,6	8	79	41	29	36	●
1534UD03C-0770	✻	7,7	8	79	41	29	36	●
1534UD03C-0780	✻	7,8	8	79	41	29	36	●
1534UD03C-0790	✻	7,9	8	79	41	29	36	●
1534UD03C-0800	✻	8	8	79	41	29	36	●
1534UD03C-0810	✻	8,1	10	89	47	35	40	●
1534UD03C-0820	✻	8,2	10	89	47	35	40	●
1534UD03C-0830	✻	8,3	10	89	47	35	40	●
1534UD03C-0840	✻	8,4	10	89	47	35	40	●
1534UD03C-0850	✻	8,5	10	89	47	35	40	●
1534UD03C-0860	✻	8,6	10	89	47	35	40	●
1534UD03C-0870	✻	8,7	10	89	47	35	40	●
1534UD03C-0880	✻	8,8	10	89	47	35	40	●
1534UD03C-0890	✻	8,9	10	89	47	35	40	●
1534UD03C-0900	✻	9	10	89	47	35	40	●
1534UD03C-0910	✻	9,1	10	89	47	35	40	●
1534UD03C-0920	✻	9,2	10	89	47	35	40	●
1534UD03C-0930	✻	9,3	10	89	47	35	40	●
1534UD03C-0940	✻	9,4	10	89	47	35	40	●
1534UD03C-0950	✻	9,5	10	89	47	35	40	●
1534UD03C-0960	✻	9,6	10	89	47	35	40	●
1534UD03C-0970	✻	9,7	10	89	47	35	40	●
1534UD03C-0980	✻	9,8	10	89	47	35	40	●

● Ex stock ○ On demand
✻ With internal cooling

Application field

Type	P	M	K	N	S	H
1534UD*	✔	✔			✔	

✔ Very suitable
✔ Suitable

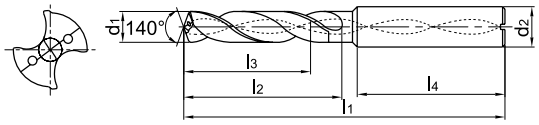
UD drill 3xD

Stainless steel, heat-resistant alloys

1534UD03C

– Shank type: DIN 6535HA
– Coolant exit, axial concentric

Internal coolant



Article	✲	Dimensions [mm]						Grade
		d_1 (m7)	d_2 (h6)	l_1	l_2	l_3	l_4	KDG305
1534UD03C-0990	✲	9,9	10	89	47	35	40	●
1534UD03C-1000	✲	10	10	89	47	35	40	●
1534UD03C-1020	✲	10,2	12	102	55	40	45	●
1534UD03C-1050	✲	10,5	12	102	55	40	45	●
1534UD03C-1100	✲	11	12	102	55	40	45	●
1534UD03C-1150	✲	11,5	12	102	55	40	45	●
1534UD03C-1200	✲	12	12	102	55	40	45	●
1534UD03C-1250	✲	12,5	14	107	60	43	45	●
1534UD03C-1300	✲	13	14	107	60	43	45	●
1534UD03C-1350	✲	13,5	14	107	60	43	45	●
1534UD03C-1400	✲	14	14	107	60	43	45	●
1534UD03C-1450	✲	14,5	16	115	65	45	48	●
1534UD03C-1500	✲	15	16	115	65	45	48	●
1534UD03C-1550	✲	15,5	16	115	65	45	48	●
1534UD03C-1600	✲	16	16	115	65	45	48	●
1534UD03C-1650	✲	16,5	18	123	73	51	48	●
1534UD03C-1700	✲	17	18	123	73	51	48	●
1534UD03C-1750	✲	17,5	18	123	73	51	48	●
1534UD03C-1800	✲	18	18	123	73	51	48	●
1534UD03C-1850	✲	18,5	20	131	79	55	50	●
1534UD03C-1900	✲	19	20	131	79	55	50	●
1534UD03C-1950	✲	19,5	20	131	79	55	50	●
1534UD03C-2000	✲	20	20	131	79	55	50	●

● Ex stock ○ On demand
✲ With internal cooling

Application field

Type	P	M	K	N	S	H
1534UD*	✔	✔			✔	

✔ Very suitable
✔ Suitable

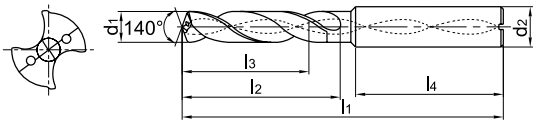
UD drill 5xD

Stainless steel, heat-resistant alloys

1536UD05C

– Shank type: DIN 6535HA
– Coolant exit, axial concentric

Internal coolant



Article	✻	Dimensions [mm]						Grade
		d_1 (m7)	d_2 (h6)	l_1	l_2	l_3	l_4	KDG305
1536UD05C-0300	✻	3	6	66	28	23	36	●
1536UD05C-0310	✻	3,1	6	66	28	23	36	●
1536UD05C-0320	✻	3,2	6	66	28	23	36	●
1536UD05C-0330	✻	3,3	6	66	28	23	36	●
1536UD05C-0340	✻	3,4	6	66	28	23	36	●
1536UD05C-0350	✻	3,5	6	66	28	23	36	●
1536UD05C-0360	✻	3,6	6	66	28	23	36	●
1536UD05C-0370	✻	3,7	6	66	28	23	36	●
1536UD05C-0380	✻	3,8	6	74	36	29	36	●
1536UD05C-0390	✻	3,9	6	74	36	29	36	●
1536UD05C-0400	✻	4	6	74	36	29	36	●
1536UD05C-0410	✻	4,1	6	74	36	29	36	●
1536UD05C-0420	✻	4,2	6	74	36	29	36	●
1536UD05C-0430	✻	4,3	6	74	36	29	36	●
1536UD05C-0440	✻	4,4	6	74	36	29	36	●
1536UD05C-0450	✻	4,5	6	74	36	29	36	●
1536UD05C-0460	✻	4,6	6	74	36	29	36	●
1536UD05C-0465	✻	4,65	6	74	36	29	36	●
1536UD05C-0470	✻	4,7	6	74	36	29	36	●
1536UD05C-0480	✻	4,8	6	82	44	35	36	●
1536UD05C-0490	✻	4,9	6	82	44	35	36	●
1536UD05C-0500	✻	5	6	82	44	35	36	●
1536UD05C-0510	✻	5,1	6	82	44	35	36	●
1536UD05C-0520	✻	5,2	6	82	44	35	36	●
1536UD05C-0530	✻	5,3	6	82	44	35	36	●
1536UD05C-0540	✻	5,4	6	82	44	35	36	●
1536UD05C-0550	✻	5,5	6	82	44	35	36	●
1536UD05C-0560	✻	5,6	6	82	44	35	36	●
1536UD05C-0570	✻	5,7	6	82	44	35	36	●
1536UD05C-0580	✻	5,8	6	82	44	35	36	●
1536UD05C-0590	✻	5,9	6	82	44	35	36	●
1536UD05C-0600	✻	6	6	82	44	35	36	●
1536UD05C-0610	✻	6,1	8	91	53	43	36	●
1536UD05C-0620	✻	6,2	8	91	53	43	36	●
1536UD05C-0630	✻	6,3	8	91	53	43	36	●

● Ex stock ○ On demand
✻ With internal cooling

Application field

Type	P	M	K	N	S	H
1536UD*	✔	✔			✔	

✔ Very suitable
✔ Suitable

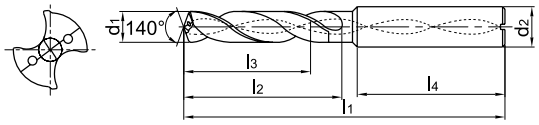
UD drill 5xD

Stainless steel, heat-resistant alloys

1536UD05C

– Shank type: DIN 6535HA
– Coolant exit, axial concentric

Internal coolant



Article	✻	Dimensions [mm]						Grade
		d_1 (m7)	d_2 (h6)	l_1	l_2	l_3	l_4	KDG305
1536UD05C-0640	✻	6,4	8	91	53	43	36	●
1536UD05C-0650	✻	6,5	8	91	53	43	36	●
1536UD05C-0660	✻	6,6	8	91	53	43	36	●
1536UD05C-0670	✻	6,7	8	91	53	43	36	●
1536UD05C-0680	✻	6,8	8	91	53	43	36	●
1536UD05C-0690	✻	6,9	8	91	53	43	36	●
1536UD05C-0700	✻	7	8	91	53	43	36	●
1536UD05C-0710	✻	7,1	8	91	53	43	36	●
1536UD05C-0720	✻	7,2	8	91	53	43	36	●
1536UD05C-0730	✻	7,3	8	91	53	43	36	●
1536UD05C-0740	✻	7,4	8	91	53	43	36	●
1536UD05C-0750	✻	7,5	8	91	53	43	36	●
1536UD05C-0760	✻	7,6	8	91	53	43	36	●
1536UD05C-0770	✻	7,7	8	91	53	43	36	●
1536UD05C-0780	✻	7,8	8	91	53	43	36	●
1536UD05C-0790	✻	7,9	8	91	53	43	36	●
1536UD05C-0800	✻	8	8	91	53	43	36	●
1536UD05C-0810	✻	8,1	10	103	61	49	40	●
1536UD05C-0820	✻	8,2	10	103	61	49	40	●
1536UD05C-0830	✻	8,3	10	103	61	49	40	●
1536UD05C-0840	✻	8,4	10	103	61	49	40	●
1536UD05C-0850	✻	8,5	10	103	61	49	40	●
1536UD05C-0860	✻	8,6	10	103	61	49	40	●
1536UD05C-0870	✻	8,7	10	103	61	49	40	●
1536UD05C-0880	✻	8,8	10	103	61	49	40	●
1536UD05C-0890	✻	8,9	10	103	61	49	40	●
1536UD05C-0900	✻	9	10	103	61	49	40	●
1536UD05C-0910	✻	9,1	10	103	61	49	40	●
1536UD05C-0920	✻	9,2	10	103	61	49	40	●
1536UD05C-0930	✻	9,3	10	103	61	49	40	●
1536UD05C-0940	✻	9,4	10	103	61	49	40	●
1536UD05C-0950	✻	9,5	10	103	61	49	40	●
1536UD05C-0960	✻	9,6	10	103	61	49	40	●
1536UD05C-0970	✻	9,7	10	103	61	49	40	●
1536UD05C-0980	✻	9,8	10	103	61	49	40	●

● Ex stock ○ On demand
✻ With internal cooling

Application field

Type	P	M	K	N	S	H
1536UD*	✔	✔			✔	

✔ Very suitable
✔ Suitable

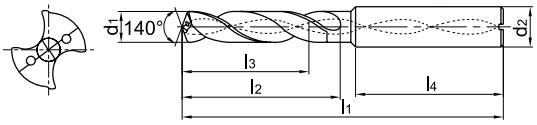
UD drill 5xD

Stainless steel, heat-resistant alloys

1536UD05C

– Shank type: DIN 6535HA
– Coolant exit, axial concentric

Internal coolant



Article	✻	Dimensions [mm]						Grade
		d_1 (m7)	d_2 (h6)	l_1	l_2	l_3	l_4	KDG305
1536UD05C-0990	✻	9,9	10	103	61	49	40	●
1536UD05C-1000	✻	10	10	103	61	49	40	●
1536UD05C-1020	✻	10,2	12	118	71	56	45	●
1536UD05C-1050	✻	10,5	12	118	71	56	45	●
1536UD05C-1100	✻	11	12	118	71	56	45	●
1536UD05C-1150	✻	11,5	12	118	71	56	45	●
1536UD05C-1200	✻	12	12	118	71	56	45	●
1536UD05C-1250	✻	12,5	14	124	77	60	45	●
1536UD05C-1300	✻	13	14	124	77	60	45	●
1536UD05C-1350	✻	13,5	14	124	77	60	45	●
1536UD05C-1400	✻	14	14	124	77	60	45	●
1536UD05C-1450	✻	14,5	16	133	83	63	48	●
1536UD05C-1500	✻	15	16	133	83	63	48	●
1536UD05C-1550	✻	15,5	16	133	83	63	48	●
1536UD05C-1600	✻	16	16	133	83	63	48	●
1536UD05C-1650	✻	16,5	18	143	93	71	48	●
1536UD05C-1700	✻	17	18	143	93	71	48	●
1536UD05C-1750	✻	17,5	18	143	93	71	48	●
1536UD05C-1800	✻	18	18	143	93	71	48	●
1536UD05C-1850	✻	18,5	20	153	101	77	50	●
1536UD05C-1900	✻	19	20	153	101	77	50	●
1536UD05C-1950	✻	19,5	20	153	101	77	50	●
1536UD05C-2000	✻	20	20	153	101	77	50	●

● Ex stock ○ On demand
✻ With internal cooling

Application field

Type	P	M	K	N	S	H
1536UD*	✔	✔			✔	

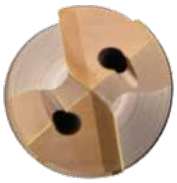
✔ Very suitable
✔ Suitable

Notes

GD series

Solid carbide drills for high feeds

- For machining of steel and cast iron materials
- 4 guide chamfer design offers increased stability at high feed rates
- Special chip flute design allows a significantly increased metal removed rate
- Multi-layer PVD coating with low risk of cracking and increased thermal stability
- Up to 2.5 higher productivity due to high feed rates at low cutting speeds
- Diameter range 3.0–20.0 mm (5xD)



Straight cut

New **New grade KDG304:**

- PVD coated carbide substrate for machining cast steel and cast iron
- Optimised toughness for high feeds

Feed calculator

ISO group	Material	Cutting speed v_c (m/min)	Feed factor* F_m
P	Low-alloy steel	130	0,04
	High-alloy steel	100	0,03
K	Cast iron	160	0,04
	Cast steel	130	0,03

Formula:	feed per revolution (F_n)	$D \times F_m$
Example:	drill diameter (D)	10 mm
	material	high-alloy steel

$$F_n = 10\ mm \times 0,03 = 0,3\ mm/r$$

*The stated values are maximum values. For unstable clamping set-ups or low-powered machines, we recommend reducing the feed by around 30% for a drill diameter of Ø12 mm or greater.

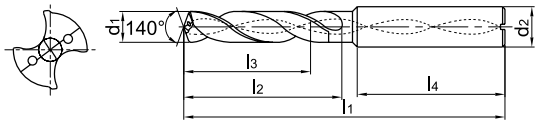
GD drill 5xD

Steel, cast iron

1536GD05C

– Shank type: DIN 6535HA
– Coolant exit, axial concentric

Internal coolant



Article	✻	Dimensions [mm]						Grade
		d_1 (m7)	d_2 (h6)	l_1	l_2	l_3	l_4	KDG304
1536GD05C-0300	✻	3	6	66	28	23	36	●
1536GD05C-0330	✻	3,3	6	66	28	23	36	●
1536GD05C-0350	✻	3,5	6	66	28	23	36	●
1536GD05C-0370	✻	3,7	6	66	28	23	36	●
1536GD05C-0400	✻	4	6	74	36	29	36	●
1536GD05C-0420	✻	4,2	6	74	36	29	36	●
1536GD05C-0450	✻	4,5	6	74	36	29	36	●
1536GD05C-0465	✻	4,65	6	74	36	29	36	●
1536GD05C-0500	✻	5	6	82	44	35	36	●
1536GD05C-0550	✻	5,5	6	82	44	35	36	●
1536GD05C-0600	✻	6	6	82	44	35	36	●
1536GD05C-0650	✻	6,5	8	91	53	43	36	●
1536GD05C-0680	✻	6,8	8	91	53	43	36	●
1536GD05C-0700	✻	7	8	91	53	43	36	●
1536GD05C-0740	✻	7,4	8	91	53	43	36	●
1536GD05C-0750	✻	7,5	8	91	53	43	36	●
1536GD05C-0800	✻	8	8	91	53	43	40	●
1536GD05C-0850	✻	8,5	10	103	61	49	40	●
1536GD05C-0900	✻	9	10	103	61	49	40	●
1536GD05C-0930	✻	9,3	10	103	61	49	40	●
1536GD05C-0950	✻	9,5	10	103	61	49	40	●
1536GD05C-1000	✻	10	10	103	61	49	40	●
1536GD05C-1020	✻	10,2	12	118	71	56	45	●
1536GD05C-1050	✻	10,5	12	118	71	56	45	●
1536GD05C-1100	✻	11	12	118	71	56	45	●
1536GD05C-1150	✻	11,5	12	118	71	56	45	●
1536GD05C-1200	✻	12	12	118	71	56	45	●
1536GD05C-1250	✻	12,5	14	124	77	60	45	●
1536GD05C-1300	✻	13	14	124	77	60	45	●
1536GD05C-1350	✻	13,5	14	124	77	60	45	●
1536GD05C-1400	✻	14	14	124	77	60	45	●
1536GD05C-1450	✻	14,5	16	133	83	63	48	●
1536GD05C-1500	✻	15	16	133	83	63	48	●
1536GD05C-1550	✻	15,5	16	133	83	63	48	●
1536GD05C-1600	✻	16	16	133	83	63	48	●

● Ex stock ○ On demand
✻ With internal cooling

Application field

Type	P	M	K	N	S	H
1536GD*	✔		✔			

✔ Very suitable
✔ Suitable

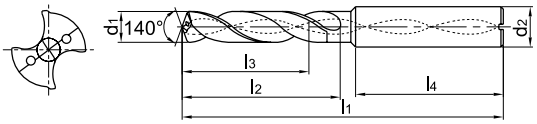
GD drill 5xD

Steel, cast iron

1536GD05C

– Shank type: DIN 6535HA
– Coolant exit, axial concentric

Internal coolant



Article	✻	Dimensions [mm]						Grade
		d_1 (m7)	d_2 (h6)	l_1	l_2	l_3	l_4	KDG304
1536GD05C-1650	✻	16,5	18	143	93	71	48	●
1536GD05C-1700	✻	17	18	143	93	71	48	●
1536GD05C-1750	✻	17,5	18	143	93	71	48	●
1536GD05C-1800	✻	18	18	143	93	71	48	●
1536GD05C-1850	✻	18,5	20	153	101	77	50	●
1536GD05C-1900	✻	19	20	153	101	77	50	●
1536GD05C-1950	✻	19,5	20	153	101	77	50	●
1536GD05C-2000	✻	20	20	153	101	77	50	●

● Ex stock ○ On demand
✻ With internal cooling

Application field

Type	P	M	K	N	S	H
1536GD*	✔		✔			

✔ Very suitable
✔ Suitable

Notes

Hydraulic Expansion Toolholder

Accessoires

T|E|N|D|O® E compact

The Universal Hydraulic Expansion Toolholder

YOUR BENEFITS

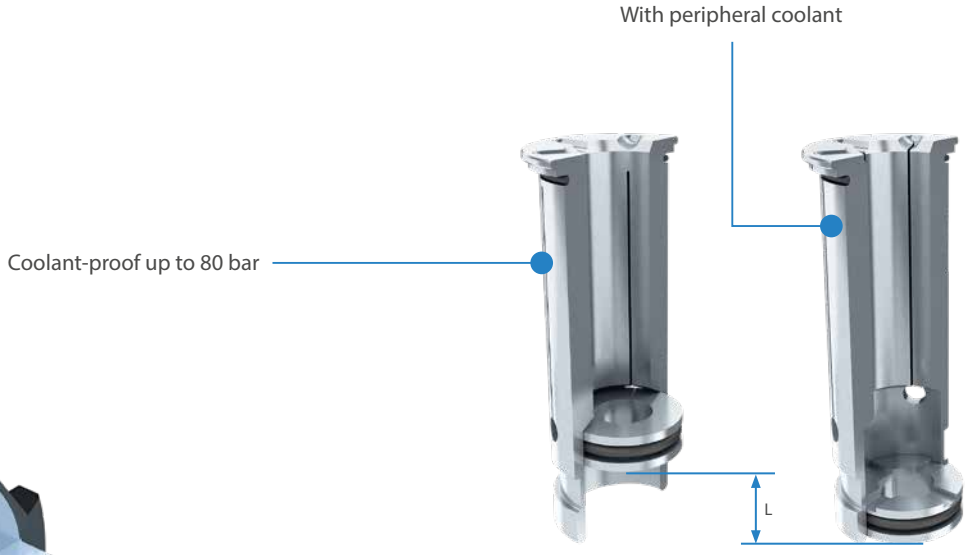
– High torque of up to 900 Nm (Ø 20) and 2,000 Nm (Ø 32) for highest volume machining
– Permanent run-out accuracy of less than 0.003 mm – without any fluctuations
– Excellent vibration damping
– Tool change within seconds, micron-precise without peripheral equipment – just screw to the dead stop
– All shaft types can be clamped
– Suitable for HSC / HPC machining – precision-balanced as standard

Intermediate Sleeves GZB-S

Flexible clamping areas due to intermediate sleeves

YOUR BENEFITS WITH PERIPHERAL COOLANT CHANNELS

– Optimized collant emission
– Increase of the tool service life
– Optimal chip removal by systematic coolant rinsing
– Significantly improved machining results



The tool length L can be adjusted flexibly via a moveable intermediate piece.

Notes

Notes

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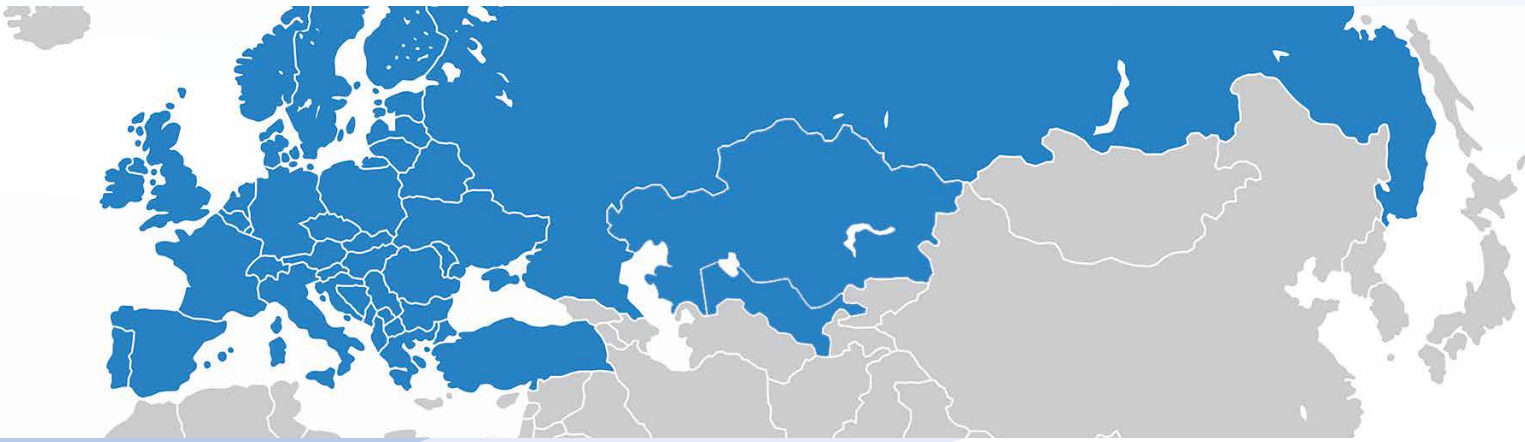

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