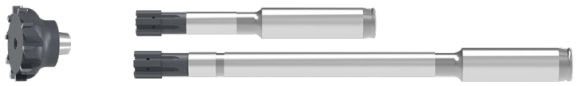
New products for machining technicians

NEW Expansion of REAMAX TS / Monomax



- Expansion of the REAMAX TS and Monomax range with a Monomax version in two lengths (3xD and 5xD) and a REAMAX TS reaming head variant
- With coated carbide blanks – ideal for interrupted cuts: DBG-P ASG 3000
- Specially designed for through hole machining of cast iron and steel materials

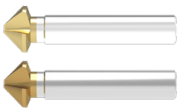
Expansion REAMAX TS → Page 10
Expansion Monomax short → Page 22
Expansion Monomax long → Page 25

NEW Machine reamers sim. DIN 8093-A / -B

- Extremely irregular pitch
- Universal solid carbide reamer without thro' coolant

→ Page 48

NEW 90° Countersink with irregular pitch, DIN 335-C



- All sizes with 3 cutting edges and extremely irregular pitch, resulting in quiet running, excellent roundness and chatter-free countersinking giving the highest surface quality
- TiN coating and special HPC-TiN coating
- For a very long service life in almost all materials
- Greatly reduced axial and radial forces
- For DIN ISO 7721 and DIN 7991 countersunk head screws

Solid carbide version → Page 63
HSS version → Page 65

NEW Indexable insert countersink for counterbores

- Universal application and maximum service life thanks to use of tried-and-tested WOEX indexable inserts (grade: BK8425 / K10; chip breaker -01)
- For creating countersinks according to DIN 974
- With thro' coolant supply

→ Page 57+58

Table of contents

KOMET \ Performance

Premium quality tools for high performance.

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

KOMET \ Standard

Quality tools for standard applications.

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

Symbol explanation

Coolant supply version


central internal coolant


lateral internal coolant

Shank


Plain cylindrical shank


Morse taper


Cylindrical shank with lateral driving face „Weldon"

Applications


Through hole


Blind hole


Through hole with transverse hole/ interrupted cut

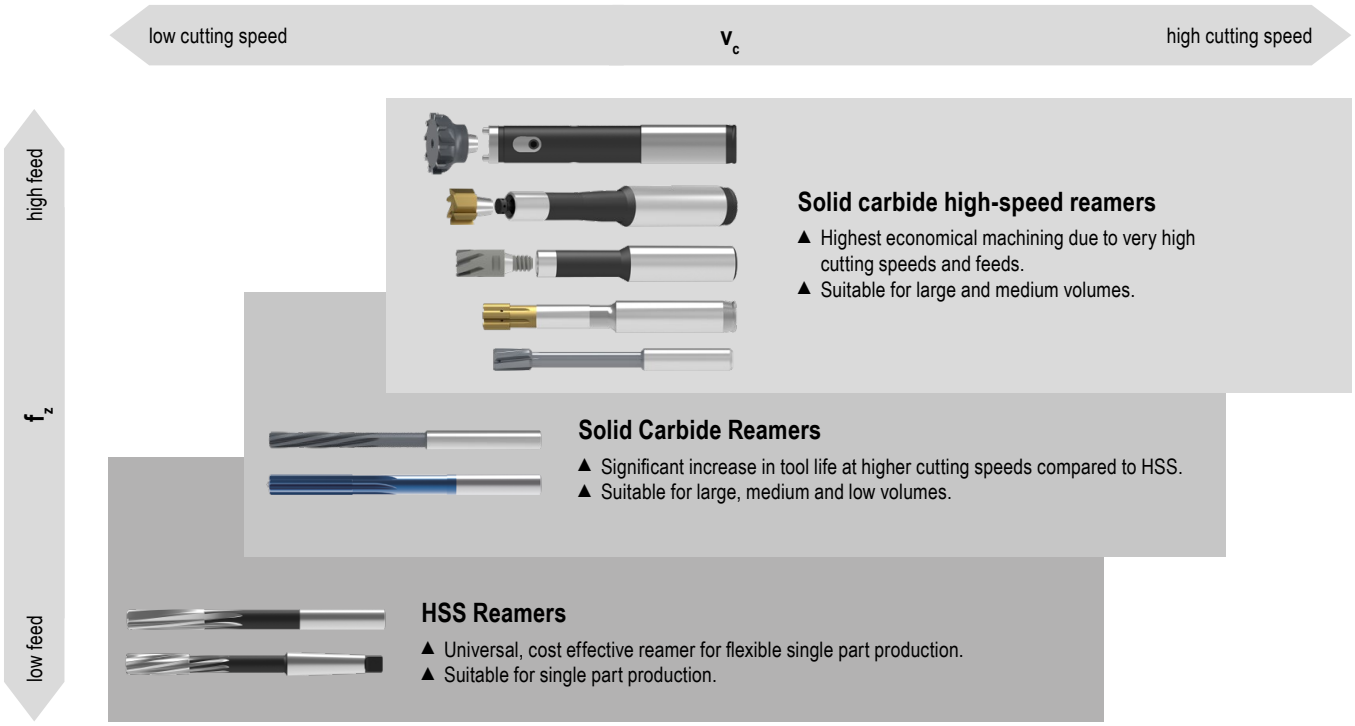

Blind hole with transverse hole/interrupted cut

ZEFP = Number of flutes

● = Main Application

○ = Extended application

Selection guide – reamers



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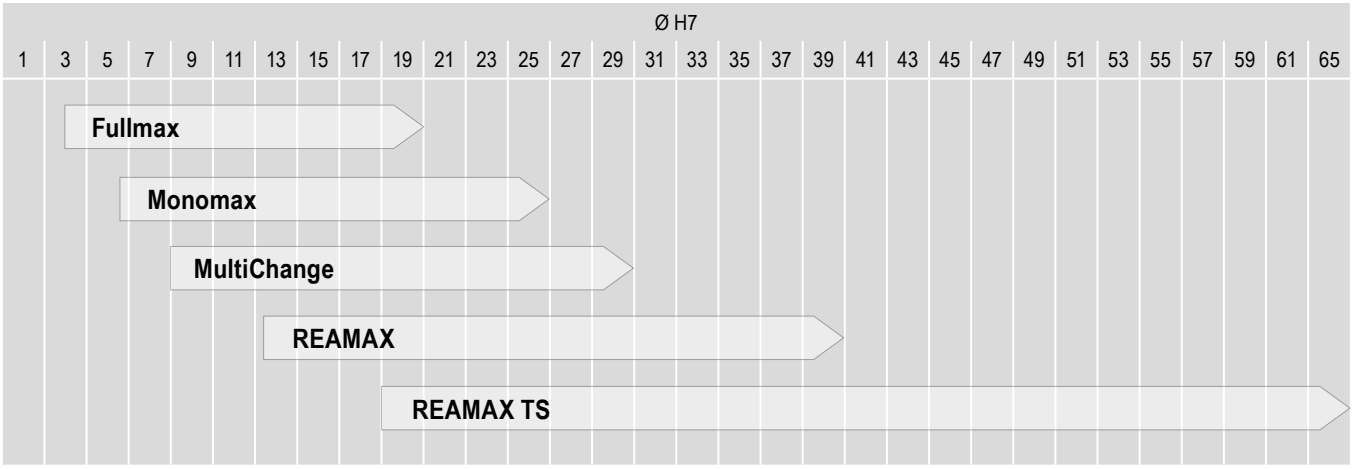
Overview of solid carbide high-speed reamers



	mono	modular
fixed	Fullmax	MultiChange, REAMAX
adjustable	Monomax	REAMAX TS

Toolfinder – Reamers

Solid carbide – high speed reamers	REAMAX TS			▲ highly flexible and economical replaceable head system ▲ all common materials ▲ can be adjusted in µm range
				▲ holder available in 3xD and 5xD ▲ holder type DAH Zero available in 3xD and 5xD
	REAMAX			▲ Exchangeable head system, optimised for use with minimum quantity lubrication (MQL) ▲ Maximum changeover precision guaranteed thanks to face and taper contact
				▲ holder available in 3xD and 5xD
	MultiChange			▲ Flexible quick change system for reaming, countersinking and milling ▲ A high level of changeover precision guaranteed thanks to face and taper contact
				▲ stable holder in solid carbide and steel, from short to long
	Monomax			▲ adjustable monoblock reamer in 3xD and 5xD ▲ regrinding and re-tipping on the base body ▲ all common materials
				
	Fullmax			▲ High-speed reamer in shorter and longer version ▲ Reamers for machining steel, stainless and acid-resistant steels, cast materials, aluminium and hardened materials up to 63 HRC ▲ Extremely irregular pitch ▲ Standard shank ~ DIN 6535 HA
				
Solid carbide – Reamers	NC	NC 100		▲ universal solid carbide reamer without thro' coolant ▲ extremely irregular pitch ▲ DIN 6535 HA shank
	NC	NC 100H		▲ Solid carbide reamer without thro' coolant suitable for use in hardened materials ▲ Standard shank ~ DIN 6535 HA
	N			▲ universal solid carbide reamer without thro' coolant ▲ extremely irregular pitch
HSS – Reamers	NC	NC 100		▲ HSS-E NC machine reamer ▲ DIN 1835 A shank
	N	N 100		▲ HSS-E machine reamer
	AR	AR 100		▲ HSS-E automatic machine reamer DIN 8089
	N			▲ HSS-e machine reamer DIN 208 ▲ with Morse taper
	H			▲ HSS hand reamer with cylindrical shank DIN 206

	Hole diameter (mm) Ø DC	Standard Tolerance	Through hole	Blind hole	Int. coolant supply	P Steel	M Stainless steel	K Cast iron	N Non-ferrous metals	S Heat-resistant	H Tempered steel	O Non-metal materials	KOMET \ Performance	KOMET \ Standard
	18,00–65,00	H7 1/100			✓	●	●	●	●			○	9–11	
					✓								12+13	
	12,50–40,00	H7 1/100			✓	●	●	●	●		●	○	14+15	
					✓								16	
	8,00–30,20	H7 1/100			✓	●	●	●	●				17–19	
					✓								→ Catalogue – Clamping technology, Chapter 16 Accessories	
short version	5,60–25,89	H7 1/100			✓	●	●	●	●			○	20–23	
long version	5,60–25,89	H7 1/100			✓	●	●	●	●			○	24–26	
short version	4,00–16,00 2,96–20,05	H7 1/100			✓	●	●	●	○	○	○		27–32	
long version	4,00–16,00 2,96–20,05	H7 1/100			✓	●	●	●	●	○	●	○	33–42	
	2,00–30,00 0,59–12,05	H7 1/100				●	○	●	●	○	○	●	43–45	
	0,98–12,05	H7				○	○	○			●		46+47	
	2,00–12,00	H7				●		○	●					48
	1,50–20,00 0,95–12,00	H7 1/100				●		●	●			●	49+50	
	1,00–20,00 0,95–12,00	H7 1/100				●	○	●	●	○		●		51–53
	4,00–20,00 3,76–12,00	H7 1/100				●	○	●	●	○		●		54+55
	16,00–50,00	H7				●	○	●	●	○		●		56
	3,00–30,00	H7				●	○	●	●	○		●		56

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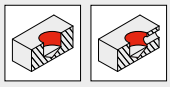
Countersinks Overview

	Tool type	Coating	Hole diameter (mm) Ø DC	Countersinking angle SIG	Steel P	Stainless steel M	Cast iron K	Non-ferrous metals N	Heat-resistant S	Tempered steel H	Non-metal materials O	KOMET \ Performance	KOMET \ Standard
Indexable Insert Counterbore Tool													
	WPS		10–48	180°	●	●	●	●	●	○	●	57+58	
Insert countersink 60°/90°													
	WPS		16,5–25,5 19,0–37,0	60° 90°	●	●	●	●	●	○	●	59–61	
HSS – Counterbores													
			6,0–20,0	180°	●	●	●	●	○		●		62
Solid Carbide Countersinks													
	N	HPC-TiN	6,3–31,0	90°	●	○	●	●	○	○	○	63	
	N		12,5–25,0	60°	●	○	●	●	○	○			64
	N		10,4–31,0	90°	●	○	●	●	○	○			64
HSS Countersinks													
	N	TiN	4,3–31,0	90°	●	○	●	●	○	○	○	65	
	N		4,3–31,0	90°	●	○	●	●	○		●		66
	N	TiN	5,0–31,0	90°	●	○	●	●	○	○	●		66
	N	TiAlN	5,0–31,0	90°	●	○	●	●	○	○	●		66
	VA	TiAlN	6,3–31,0	90°	○	●	○	○	○	○	●		66
	AL		6,3–31,0	90°	○	○	○	●	○		●		66
			6,3–25,0	60°	●	○	●	●	○		●		67
	N		30,0–80,0	90°	●	○	●	●	○		●		67
			6,3–25,0	120°	●	○	●	●	○		●		68
Deburring Countersink													
			6,3–28,0	90°	●	○	●	●	○		●		68
		TiN	6,3–28,0	90°	●	○	●	●	○	○	●		68

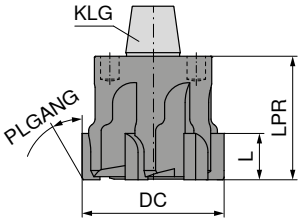
REAMAX TS – Selection guide

Ø 18 – 65 mm										
Article no.			40 597 …	40 544 …	40 577 …	40 521 …	40 526 …	40 539 …	40 585 …	40 571 …	40 580 …
KOMET no.			75J.93	75J.93	75J.65	75J.65	75J.17	75H.93	75H.65	75H.65	75H.17
Cutting edge geometry			ASG4000	ASG3000	ASG3000	ASG0106	ASG0706	ASG3000	ASG3000	ASG0106	ASG0706
Lead angle			25°	45°	45°	45°	45°/8°	45°	45°	45°	45°/8°
Grade / coating			DST	DST	DBG-P	DBG-P	DBC	DST	DBG-P	DBG-P	DBC
Preferred type available			✓	✓	✓	✓	✓	✓	✓	✓	
Application			Through hole					Blind hole			
Material sub-group		Index									
P	Non alloyed steel	P.1.1	●	●	●			●	●		
		P.1.2	●	●	●			●	●		
		P.1.3	●	●	●			●	●		
		P.1.4	●	●	●			●	●		
		P.1.5	●	●	●			●	●		
	Low alloyed steel	P.2.1	●	●	●			●	●		
		P.2.2	●	●	●			●	●		
		P.2.3	●	●	●			●	●		
		P.2.4	●	●	●			●	●		
	High-alloy steel and high-alloy tool steel	P.3.1				●				●	
		P.3.2				●				●	
		P.3.3				●				●	
	Stainless steel	P.4.1				●				●	
		P.4.2				●				●	
M	Stainless steel	M.1.1				●				●	
		M.2.1				●				●	
		M.3.1				●				●	
K	Grey cast iron	K.1.1			●				●		
		K.1.2			●				●		
	Spherulitic graphite cast iron	K.2.1	●	●	●			●	●		
		K.2.2	●	●	●			●	●		
	Malleable iron	K.3.1		●	●			●	●		
		K.3.2	●	●	●			●	●		
N	Aluminum alloys	N.1.1					●				●
		N.1.2					●				●
	Cast Aluminium Alloys	N.2.1					●				●
		N.2.2					●				●
		N.2.3					●				●
	Copper and copper alloys (Bronze, Brass)	N.3.1		○				○			
		N.3.2		○				○			
		N.3.3									
	Magnesium alloys	N.4.1					●				●
O	Non-metal materials	O.1.1									
		O.1.2									
		O.2.1									
		O.2.2									
		O.3.1					○				○

● = Main application
○ = Additional range of application

REAMAX TS – Replaceable reaming heads

- ▲ Up to tolerance class IT 6 with absolute process security, from the first hole
- ▲ Maximum changeover precision guaranteed
- ▲ High precision grind for maximum quality
- ▲ Can be adjusted for the smallest hole tolerances
- ▲ Interface enables head change in the machine
- ▲ Retraction from the hole at 3-4x feed rate
- ▲ KLG = Coupling size



					NEW				
					DST	DBG-P	DBC	DBG-P	DST
									
					75J.93 PLGANG 25° ASG4000 CERMET Through hole	75J.65 PLGANG 45° ASG0106 HM Through hole	75J.17 PLGANG 45/8° ASG0706 HM Through hole	75J.65 PLGANG 45° ASG3000 HM Through hole	75J.93 PLGANG 45° ASG3000 CERMET Through hole
					40 597 ...	40 521 ...	40 526 ...	40 577 ...	40 544 ...
DC H7 mm	L mm	LPR mm	ZEFP	KLG					
18,00	6	20	6	1	18000	18000	18000	18000	18000
18,01 - 19,99	6	20	6	1	xxxx 1)	xxxx 1)	xxxx 1)	xxxx 1)	xxxx 1)
20,00	6	20	6	2	20000	20000	20000	20000	20000
20,01 - 21,99	6	20	6	2	xxxx 1)	xxxx 1)	xxxx 1)	xxxx 1)	xxxx 1)
22,00	6	20	6	3	22000	22000	22000	22000	22000
22,01 - 23,99	6	20	6	3	xxxx 1)	xxxx 1)	xxxx 1)	xxxx 1)	xxxx 1)
24,00	6	20	6	3	24000	24000	24000	24000	24000 1)
24,01 - 24,99	6	20	6	3	xxxx 1)	xxxx 1)	xxxx 1)	xxxx 1)	xxxx 1)
25,00	6	20	6	3	25000	25000	25000	25000	25000
25,01 - 25,99	6	20	6	3	xxxx 1)	xxxx 1)	xxxx 1)	xxxx 1)	xxxx 1)
26,00	6	20	6	3	26000	26000	26000 1)	26000	26000
26,01 - 26,99	6	20	6	3	xxxx 1)	xxxx 1)	xxxx 1)	xxxx 1)	xxxx 1)
27,00 - 27,99	6	25	6	4	xxxx 1)	xxxx 1)	xxxx 1)	xxxx 1)	xxxx 1)
28,00	6	25	6	4	28000	28000	28000	28000	28000
28,01 - 29,99	6	25	6	4	xxxx 1)	xxxx 1)	xxxx 1)	xxxx 1)	xxxx 1)
30,00	6	25	6	4	30000	30000	30000	30000	30000
30,01 - 31,79	6	25	6	4	xxxx 1)	xxxx 1)	xxxx 1)	xxxx 1)	xxxx 1)
31,80 - 31,99	6	25	8	4	xxxx 1)	xxxx 1)	xxxx 1)	xxxx 1)	xxxx 1)
32,00	6	25	8	4	32000	32000	32000	32000	32000
32,01 - 34,99	6	25	8	4	xxxx 1)	xxxx 1)	xxxx 1)	xxxx 1)	xxxx 1)
35,00	6	25	8	5	35000	35000	35000	35000	35000
35,01 - 39,99	6	25	8	5	xxxx 1)	xxxx 1)	xxxx 1)	xxxx 1)	xxxx 1)
40,00	6	25	8	5	40000	40000	40000	40000	40000
40,01 - 41,99	6	25	8	5	xxxx 1)	xxxx 1)	xxxx 1)	xxxx 1)	xxxx 1)
42,00	6	30	8	6	42000	42000	42000 1)	42000	42000
42,01 - 49,99	6	30	8	6	xxxx 1)	xxxx 1)	xxxx 1)	xxxx 1)	xxxx 1)
50,00	6	30	8	6	50000	50000	50000	50000	50000
50,01 - 51,99	6	30	8	6	xxxx 1)	xxxx 1)	xxxx 1)	xxxx 1)	xxxx 1)
52,00 - 53,99	8	35	10	7	xxxx 1)	xxxx 1)	xxxx 1)	xxxx 1)	xxxx 1)
54,00	8	35	10	7	54000 1)	54000 1)	54000 1)	54000 1)	54000 1)
54,01 - 65,00	8	35	10	7	xxxx 1)	xxxx 1)	xxxx 1)	xxxx 1)	xxxx 1)
P					●	●		●	●
M						●			
K					●			●	●
N							●		○
S									
H									
O							○		

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

→ v_c Page 70–72

For xxxx please indicate requested Ø in H7 in the order (e.g Ø 24.12 H7 → article no. 40 597 2412)!
All other diameters and tolerance classes are also possible on request (e.g. 18.5 $^{+0.025}$ or 18 N7)!
All heads are also available as fixed head variants (not adjustable) on request.

→ **Page 96+97**
Here you will find a detailed operating instruction.

→ **Page 100**
Here you will find more information on chamfer geometries (ASG).

REAMAX TS – Replaceable reaming heads

- ▲ Up to tolerance class IT 6 with absolute process security, from the first hole
- ▲ Maximum changeover precision guaranteed
- ▲ High precision grind for maximum quality
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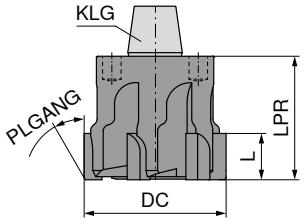
- ▲ Interface enables head change in the machine
- ▲ Retraction from the hole at 3-4x feed rate
- ▲ KLG = Coupling size



	DST	DBG-P	DBC	DBG-P
				
	75H.93 PLGANG 45° ASG3000 CERMET Blind hole	75H.65 PLGANG 45° ASG0106 HM Blind hole	75H.17 PLGANG 45/8° ASG0706 HM Blind hole	75H.65 PLGANG 45° ASG3000 HM Blind hole
	40 539 ...	**40 571 ...**	**40 580 ...**	**40 585 ...**

DC H7 mm	L mm	LPR mm	ZEFP	KLG							
18,00	6	20	6	1	18000		18000		18000 1)		18000
18,01 - 19,99	6	20	6	1	xxxx 1)		xxxx 1)		xxxx 1)		xxxx 1)
20,00	6	20	6	2	20000		20000		20000 1)		20000
20,01 - 21,99	6	20	6	2	xxxx 1)		xxxx 1)		xxxx 1)		xxxx 1)
22,00	6	20	6	3	22000		22000		22000 1)		22000
22,01 - 23,99	6	20	6	3	xxxx 1)		xxxx 1)		xxxx 1)		xxxx 1)
24,00	6	20	6	3	24000		24000		24000 1)		24000
24,01 - 24,99	6	20	6	3	xxxx 1)		xxxx 1)		xxxx 1)		xxxx 1)
25,00	6	20	6	3	25000		25000		25000 1)		25000
25,01 - 25,99	6	20	6	3	xxxx 1)		xxxx 1)		xxxx 1)		xxxx 1)
26,00	6	20	6	3	26000		26000		26000 1)		26000
26,01 - 26,99	6	20	6	3	xxxx 1)		xxxx 1)		xxxx 1)		xxxx 1)
27,00 - 27,99	6	25	6	4	xxxx 1)		xxxx 1)		xxxx 1)		xxxx 1)
28,00	6	25	6	4	28000		28000		28000 1)		28000
28,01 - 29,99	6	25	6	4	xxxx 1)		xxxx 1)		xxxx 1)		xxxx 1)
30,00	6	25	6	4	30000		30000		30000 1)		30000
30,01 - 31,79	6	25	6	4	xxxx 1)		xxxx 1)		xxxx 1)		xxxx 1)
31,80 - 31,99	6	25	8	4	xxxx 1)		xxxx 1)		xxxx 1)		xxxx 1)
32,00	6	25	8	4	32000		32000		32000 1)		32000
32,01 - 34,99	6	25	8	4	xxxx 1)		xxxx 1)		xxxx 1)		xxxx 1)
35,00	6	25	8	5	35000		35000		35000 1)		35000
35,01 - 39,99	6	25	8	5	xxxx 1)		xxxx 1)		xxxx 1)		xxxx 1)
40,00	6	25	8	5	40000		40000		40000 1)		40000
40,01 - 41,99	6	25	8	5	xxxx 1)		xxxx 1)		xxxx 1)		xxxx 1)
42,00	6	30	8	6	42000		42000		42000 1)		42000
42,01 - 49,99	6	30	8	6	xxxx 1)		xxxx 1)		xxxx 1)		xxxx 1)
50,00	6	30	8	6	50000		50000		50000 1)		50000
50,01 - 51,99	6	30	8	6	xxxx 1)		xxxx 1)		xxxx 1)		xxxx 1)
52,00 - 53,99	8	35	10	7	xxxx 1)		xxxx 1)		xxxx 1)		xxxx 1)
54,00	8	35	10	7	54000 1)		54000 1)		54000 1)		54000 1)
54,01 - 65,00	8	35	10	7	xxxx 1)		xxxx 1)		xxxx 1)		xxxx 1)
P					●		●				●
M							●				
K					●						●
N					○				●		
S											
H											
O									○		

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

→ v_c Page 70–72

For xxxx please indicate requested Ø in H7 in the order (e.g Ø 24.12 H7 → article no. 40 539 2412)!
All other diameters and tolerance classes are also possible on request (e.g. 18.5 $^{+0.025}$ or 18 N7)!
All heads are also available as fixed head variants (not adjustable) on request.

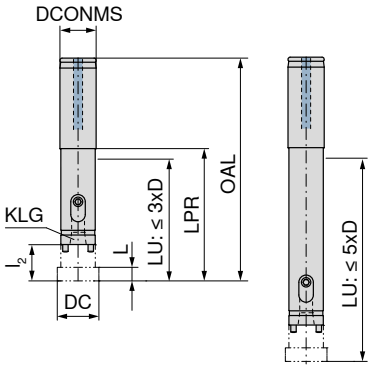
→ **Page 96+97**
Here you will find a detailed operating instruction.

→ **Page 100**
Here you will find more information on chamfer geometries (ASG).

REAMAX TS – Holder

▲ KLG = Coupling Size

Scope of supply:
Complete holder incl. pull stud but without exchangeable head



DC mm	KOMET no.	KLG	OAL mm	l_2 mm	LPR mm	L mm	DCONMS mm	torque moment Nm	40 501 ...	40 503 ...
18,00 - 19,99	75A.40.13010	1	130	20	80	6	20	1,5	**02099**	
18,00 - 19,99	75A.40.15010	1	190	20	140	6	20	1,5		**02099**
20,00 - 21,99	75A.40.13020	2	130	20	80	6	20	2,5	**02299**	
20,00 - 21,99	75A.40.15020	2	190	20	140	6	20	2,5		**02299**
22,00 - 26,99	75A.40.13030	3	130	20	80	6	20	4	**02799**	
22,00 - 26,99	75A.40.15030	3	210	20	160	6	20	4		**02799**
27,00 - 34,99	75A.40.13040	4	176	25	120	6	25	5	**03599**	
27,00 - 34,99	75A.40.15040	4	236	25	180	6	25	5		**03599**
35,00 - 41,99	75A.40.13050	5	176	25	120	6	25	6	**04299**	
35,00 - 41,99	75A.40.15050	5	256	25	200	6	25	6		**04299**
42,00 - 51,99	75A.40.13060	6	180	30	120	6	32	10	**05299**	
42,00 - 51,99	75A.40.15060	6	280	30	220	6	32	10		**05299**
52,00 - 65,00	75A.40.13070	7	180	30	120	8	32	13	**06599**	
52,00 - 65,00	75A.40.15070	7	280	30	220	8	32	13		**06599**

Do not heat shrink tools !


Clamping key – T


Key D


Reamax TS pull stud

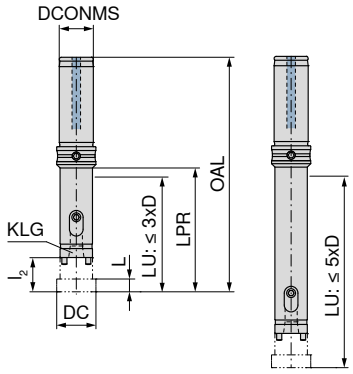
Spare parts DC		80 397 ...		80 950 ...	40 900 ...
18,00 - 19,99			T08 - IP	**039**	**00100**
20,00 - 21,99	SW2,5	**025**			**00200**
22,00 - 26,99	SW3	**030**			**00300**
27,00 - 34,99	SW3	**030**			**00400**
35,00 - 41,99	SW3	**030**			**00500**
42,00 - 51,99	SW4	**040**			**00500**
52,00 - 65,00	SW5	**050**			**00700**

→ **Page 96+97**
Here you will find a detailed operating instruction.

REAMAX TS – Holder

▲ KLG = Coupling size
▲ Adjustment inside the machine
▲ Alignable DAH Zero holder for correction of concentricity error
▲ DAH Zero holder is pre-loaded and set to a runout of < 0.005 mm

Scope of supply:
Complete holder incl. pull stud but without exchangeable head



DC mm	KOMET no.	KLG	OAL mm	l_2 mm	LPR mm	L mm	DCONMS mm	torque moment Nm	40 504 ...	40 506 ...
18,00 - 19,99	75A.41.13010	1	145	20	80	6	20	1,5	**02099**	
18,00 - 19,99	75A.41.15010	1	205	20	140	6	20	1,5		**02099**
20,00 - 21,99	75A.41.13020	2	145	20	80	6	20	2,5	**02299**	
20,00 - 21,99	75A.41.15020	2	205	20	140	6	20	2,5		**02299**
22,00 - 26,99	75A.41.13030	3	145	20	80	6	20	4	**02799**	
22,00 - 26,99	75A.41.15030	3	225	20	160	6	20	4		**02799**
27,00 - 34,99	75A.41.13040	4	176	25	120	6	25	5	**03599**	
27,00 - 34,99	75A.41.15040	4	236	25	180	6	25	5		**03599**
35,00 - 41,99	75A.41.13050	5	176	25	120	6	25	6	**04299**	
35,00 - 41,99	75A.41.15050	5	256	25	200	6	25	6		**04299**

Do not heat shrink tools !


Clamping key – T

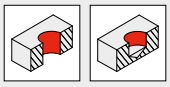
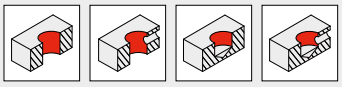

Key D


Reamax TS pull stud

Spare parts DC		80 397 ...		80 950 ...		40 900 ...
18,00 - 19,99			T08 - IP	**039**		**00100**
20,00 - 21,99	SW2,5	**025**				**00200**
22,00 - 26,99	SW3	**030**				**00300**
27,00 - 34,99	SW3	**030**				**00400**
35,00 - 41,99	SW3	**030**				**00500**

→ **Page 96+97**
Here you will find a detailed operating instruction.

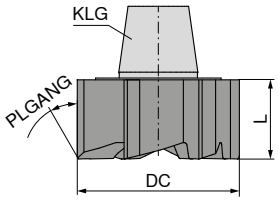
REAMAX – Selection guide

Ø 12,5 – 40 mm								
Article no.			40 536 …	40 525 …	40 560 …	40 551 …	40 570 …	40 505 …
KOMET no.			640.93	640.93	640.65	640.65	640.27	640.71
Cutting edge geometry			ASG4000	ASG3000	ASG3000	ASG0106	ASG0706	ASG3000
Lead angle			25°	45°	45°	45°	45°/8°	45°
Grade / coating			DST	DST	DBG-P	DBG-P	DBC	TiN
Preferred type available			✓	✓	✓	✓		✓
Application			Through hole	Through hole + blind hole				
Material sub-group		Index						
P	Non alloyed steel	P.1.1	●	●	●			○
		P.1.2	●	●	●			○
		P.1.3	●	●	●			○
		P.1.4	●	●	●			○
		P.1.5	●	●	●			○
	Low alloyed steel	P.2.1	●	●	●			○
		P.2.2	●	●	●			○
		P.2.3	●	●	●			○
		P.2.4			●	●		○
	High-alloy steel and high-alloy tool steel	P.3.1				●		
		P.3.2				●		
		P.3.3				●		
	Stainless steel	P.4.1				●		
		P.4.2				●		
M	Stainless steel	M.1.1				●		
		M.2.1				●		
		M.3.1				●		
K	Grey cast iron	K.1.1			●			○
		K.1.2			●			○
	Spherulitic graphite cast iron	K.2.1	○	●	●			
		K.2.2	○	●	●			
	Malleable iron	K.3.1		●	●			
		K.3.2	○	●	●			
N	Aluminum alloys	N.1.1					●	
		N.1.2					●	
	Cast aluminium alloys	N.2.1					●	
		N.2.2					●	
		N.2.3						
	Copper and copper alloys (Bronze, Brass)	N.3.1		○				●
		N.3.2		○				●
		N.3.3						●
	Magnesium alloys	N.4.1						
H	Hardened steel	H.1.1				●		
		H.1.2				●		
		H.1.3				●		
		H.1.4						
	Chilled iron	H.2.1				●		
	Hardened cast iron	H.3.1				●		
O	Non-metal materials	O.1.1						
		O.1.2						
		O.2.1						
		O.2.2						
		O.3.1					○	

● = Main application
○ = Additional range of application

REAMAX – Replaceable reaming heads

- ▲ Up to tolerance class IT 7 with absolute process security, from the first hole
- ▲ Maximum changeover precision guaranteed
- ▲ Maximum radial run-out accuracy thanks to precision-ground face and taper contact
- ▲ No Ø adjustment necessary
- ▲ Optimised for use with minimum quantity lubrication (MQL)
- ▲ Retraction from the hole at 3-4x feed rate
- ▲ KLG = Coupling size



	DST	DBG-P	DBC	DST	DBG-P	TiN
						
	640.93 PLGANG 25° ASG4000 CERMET	640.65 PLGANG 45° ASG0106 HM	640.27 PLGANG 45/8° ASG0706 HM	640.93 PLGANG 45° ASG3000 CERMET	640.65 PLGANG 45° ASG3000 HM	640.71 PLGANG 45° ASG3000 HM
	Through hole	Through hole + blind hole	Through hole + blind hole	Through hole + blind hole	Through hole + blind hole	Through hole + blind hole
	40 536 ...	**40 551 ...**	**40 570 ...**	**40 525 ...**	**40 560 ...**	**40 505 ...**

DC H7 mm	L mm	ZEFP	KLG											
12,50 - 14,99	9	6	1	xxxx [1]		xxxx [1]		xxxx [1]		xxxx [1]		xxxx [1]		xxxx [1]
15,00	9	6	1	15000[1]		15000		15000[1]		15000[1]		15000		150
15,01 - 15,99	9	6	1	xxxx [1]		xxxx [1]		xxxx [1]		xxxx [1]		xxxx [1]		xxxx [1]
16,00	9	6	2	160		16000		16000[1]		160		16000		160
16,01 - 17,99	9	6	2	xxxx [1]		xxxx [1]		xxxx [1]		xxxx [1]		xxxx [1]		xxxx [1]
18,00	9	6	2	180		18000		18000[1]		180		18000		180
18,01 - 19,99	9	6	2	xxxx [1]		xxxx [1]		xxxx [1]		xxxx [1]		xxxx [1]		xxxx [1]
20,00	9	6	2	200		20000		20000[1]		200		20000		200
20,01 - 21,99	9	6	2	xxxx [1]		xxxx [1]		xxxx [1]		xxxx [1]		xxxx [1]		xxxx [1]
22,00	9	8	3	220		22000		22000[1]		220		22000		220
22,01 - 23,99	9	8	3	xxxx [1]		xxxx [1]		xxxx [1]		xxxx [1]		xxxx [1]		xxxx [1]
24,00	9	8	3	24000[1]		24000		24000[1]		24000[1]		24000		240
24,01 - 24,99	9	8	3	xxxx [1]		xxxx [1]		xxxx [1]		xxxx [1]		xxxx [1]		xxxx [1]
25,00	9	8	3	250		25000		25000[1]		250		25000		250
25,01 - 25,99	9	8	3	xxxx [1]		xxxx [1]		xxxx [1]		xxxx [1]		xxxx [1]		xxxx [1]
26,00 - 27,99	9	8	4	xxxx [1]		xxxx [1]		xxxx [1]		xxxx [1]		xxxx [1]		xxxx [1]
28,00	9	8	4	280		28000		28000[1]		280		28000		280
28,01 - 29,99	9	8	4	xxxx [1]		xxxx [1]		xxxx [1]		xxxx [1]		xxxx [1]		xxxx [1]
30,00	9	8	4	300		30000		30000[1]		300		30000		300
30,01 - 32,00	9	8	4	xxxx [1]		xxxx [1]		xxxx [1]		xxxx [1]		xxxx [1]		xxxx [1]
32,01 - 39,99	9	8	5	xxxx [1]		xxxx [1]		xxxx [1]		xxxx [1]		xxxx [1]		xxxx [1]
40,00	9	8	5	400		40000		40000[1]		400		40000		400

P				●		●				●		●		○
M						●								
K				○						●		●		○
N								●		○				●
S														
H						●								
O								○						

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

→ v_c Page 73–75

For xxxx please indicate requested Ø in H7 in the order (e.g. Ø 15.12 H7 → article no. 40 525 1512)!
All other diameters and tolerance classes are also possible on request (e.g. 18.5 $^{+0.025}$ or 18 N7)!

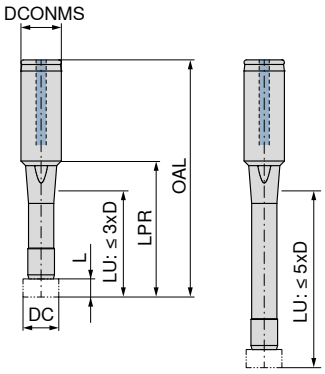
A detailed operating manual is available for download in the online shop next to the product.

→ **Page 100**
Here you will find more information on chamfer geometries (ASG).

REAMAX – Holder

▲ KLG = Coupling Size

Scope of supply:
Complete holder, but without exchangeable head

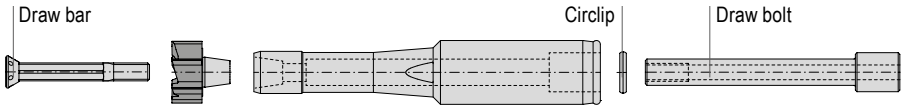


DC mm	KOMET no.	KLG	OAL mm	LPR mm	L mm	DCONMS mm	torque moment Nm	40 590 ...	40 591 ...
12,50 - 15,99	640.01.001	1	107	59	9	16	4 - 5	**016** [1]	**016** [1]
12,50 - 15,99	640.81.001	1	137	89	9	16	4 - 5		
16,00 - 21,99	640.01.002	2	119	69	9	20	6 - 7	**022**	**022**
16,00 - 21,99	640.81.002	2	169	119	9	20	6 - 7		
22,00 - 25,99	640.01.003	3	140	84	9	25	10 - 12	**026**	**026**
22,00 - 25,99	640.81.003	3	196	140	9	25	10 - 12		
26,00 - 32,00	640.01.005	4	160	104	9	25	18 - 20	**032**	**032**
26,00 - 32,00	640.81.005	4	226	170	9	25	18 - 20		
32,01 - 40,00	640.01.006	5	199	139	9	32	26 - 28	**040**	**040**
32,01 - 40,00	640.81.006	5	270	210	9	32	26 - 28		

1) This holder can also be used for reaming heads for through holes from Ø 12 mm, which are available on request

Do not heat shrink tools !

Spare parts DC	Draw bolt 5xD 40 950 ...	Draw bolt 3xD 40 950 ...	Draw bar 40 950 ...	Circlip 40 950 ...
12,50 - 15,99		**101**	**001**	**301**
12,50 - 15,99	**107**		**001**	**301**
16,00 - 21,99		**102**	**002**	**302**
16,00 - 21,99	**108**		**002**	**302**
22,00 - 25,99		**103**	**003**	**303**
22,00 - 25,99	**109**		**003**	**303**
26,00 - 32,00		**104**	**004**	**303**
26,00 - 32,00	**110**		**004**	**303**
32,01 - 40,00		**106**	**005**	**304**
32,01 - 40,00	**112**		**005**	**304**



A detailed operating manual is available for download in the online shop next to the product.

MultiChange – Programme Overview

The "MultiChange" interchangeable head system enables an extremely fast and problem free tool change. Provides quick changeover and concentricity with the highest stability at the same time. For a multitude of applications, the suitable interchangeable heads are available in the following chapters.

Exchangeable heads

→ Chapter 2, Solid carbide drilling

Page No. 2|107

Solid Carbide NC Spot Drills

Ø 8, 10, 12, 16, 20 mm
NOF 2

SIG 90° | SIG 120° | SIG 142°

→ Chapter 4, Reaming and countersinking

Page No. 4|18 + 4|19

Replaceable reaming heads

Ø 8,00 – 30,20 mm

Through hole

Ø 12,20 – 30,20 mm

Blind hole

→ Chapter 14, Solid carbide milling cutters

Page No. 14|198 – 14|202

Solid carbide shoulder mills
Ø 8, 10, 12, 16, 20 mm /
ZEFP 3+4

Type PCR-UNI | Type PCR-ALU | Type N

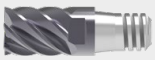
Solid carbide torus bull nose milling cutters
Ø 8, 10, 12, 16, 20 mm / ZEFP 3+4

Type W | Type N

Solid carbide rough and finish milling cutters
Ø 8, 10, 12, 16, 20 mm / ZEFP 4+6

Type NF

Solid carbide finish milling cutters
Ø 8, 10, 12, 16, 20 mm / ZEFP 6



Type N

Solid carbide ball-nosed end mills
Ø 10, 12, 16, 20 mm / ZEFP 4

Type N

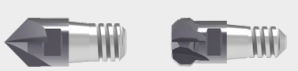
Solid carbide high-feed cutters
Ø 8, 10, 12, 16, 20 mm / ZEFP 6

Type N

Solid carbide quarter round cutter
Ø 8, 10, 12, 16, 20 mm / ZEFP 6

Type N

Solid carbide deburring cutters
Ø 10, 12, 16, 20 mm / ZEFP 4+6



Type N | Type N

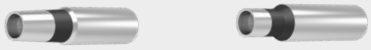
NOF / ZEFP = Number of cutting edges

Tool holder

→ Catalogue – Clamping technology, Chapter 16 Accessories

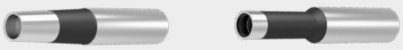
Page No. 16|259 – 16|261

OAL 60 – 90 mm

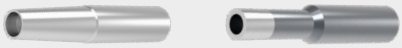


Tapered 87° / Steel | Cylindrical* / Steel

OAL 85 – 120 mm



Tapered 87° / Steel | Cylindrical* / Steel



Tapered 87° / Solid carbide | Cylindrical* / Solid carbide

OAL 110 – 150 mm

Tapered 87° / Solid carbide

Cylindrical* / Solid carbide

OAL 150 – 200 mm

Tapered 87° / Solid carbide

Cylindrical* / Steel

Cylindrical* / Solid carbide

OAL 200 – 250 mm

Cylindrical* / Steel

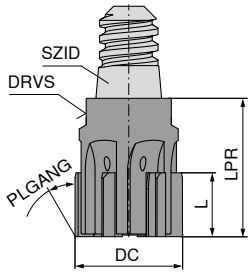
Cylindrical* / Solid carbide

* only conditionally suitable for milling

4

MultiChange – Reaming Head, for Thro' Holes

- ▲ Up to tolerance class IT 7 with absolute process security, from the first hole
- ▲ High-speed reaming heads
- ▲ Irregular pitch for highest radial run-out accuracy
- ▲ A high level of changeover precision guaranteed
- ▲ SZID = Coupling size



	CWC10	TiAlN	K10
			
	Left Hand Helix PLGANG 30° CERMET Through hole	Left Hand Helix PLGANG 30° HM Through hole	straight flute PLGANG 45° Solid carbide Through hole
	40 210 ...	**40 220 ...**	**40 240 ...**

DC H7 mm	SZID	L mm	LPR mm	ZEFP	DRVS mm	TQX Nm				
8,00	06	8	18	4	6	5,0	080		080	080 [1]
8,01 - 9,70	06	8	18	4	6	5,0	xxxx [1]		xxxx [2]	xxxx [1]
9,71 - 9,99	06	8	18	6	8	5,0	xxxx [1]		xxxx [2]	xxxx [1]
10,00	06	8	18	6	8	5,0	100		100	100 [1]
10,01 - 10,70	06	8	18	6	8	5,0	xxxx [1]		xxxx [2]	xxxx [1]
10,71 - 11,99	08	8	20	6	8	12,5	xxxx [1]		xxxx [2]	xxxx [1]
12,00	08	8	20	6	8	12,5	120		120	120 [1]
12,01 - 12,70	08	8	20	6	8	12,5	xxxx [1]		xxxx [2]	xxxx [1]
12,71 - 13,99	10	8	22	6	10	15,0	xxxx [1]		xxxx [2]	xxxx [1]
14,00	10	8	22	6	10	15,0	140		140	140 [1]
14,01 - 15,99	10	8	22	6	10	15,0	xxxx [1]		xxxx [2]	xxxx [1]
16,00	10	8	22	6	10	15,0	160		160	160 [1]
16,01 - 16,20	10	8	22	6	10	15,0	xxxx [1]		xxxx [2]	xxxx [1]
16,21 - 17,20	10	8	22	6	13	15,0	xxxx [1]		xxxx [2]	xxxx [1]
17,21 - 17,99	12	12	26	6	13	20,0	xxxx [1]		xxxx [2]	xxxx [1]
18,00	12	12	26	6	13	20,0	180		180	180 [1]
18,01 - 19,20	12	12	26	6	13	20,0	xxxx [1]		xxxx [2]	xxxx [1]
19,21 - 19,99	12	12	26	6	16	20,0	xxxx [1]		xxxx [2]	xxxx [1]
20,00	12	12	26	6	16	20,0	200		200	200 [1]
20,01 - 20,20	12	12	26	6	16	20,0	xxxx [1]		xxxx [2]	xxxx [1]
20,21 - 21,20	12	12	26	6	16	20,0	xxxx [1]		xxxx [2]	xxxx [1]
21,21 - 21,99	16	12	26	6	16	25,0	xxxx [1]		xxxx [2]	xxxx [1]
22,00	16	12	26	6	16	25,0	220		220	220 [1]
22,01 - 23,99	16	12	26	6	16	25,0	xxxx [1]		xxxx [2]	xxxx [1]
24,00	16	12	26	6	16	25,0	240		240	240 [1]
24,01 - 24,20	16	12	26	6	16	25,0	xxxx [1]		xxxx [2]	xxxx [1]
24,21 - 24,99	16	12	26	6	19	25,0	xxxx [1]		xxxx [2]	xxxx [1]
25,00	16	12	26	6	19	25,0	250		250	250 [1]
25,01 - 25,99	16	12	26	6	19	25,0	xxxx [1]		xxxx [2]	xxxx [1]
26,00	16	12	26	6	19	25,0	260		260	260 [1]
26,01 - 26,20	16	12	26	6	19	25,0	xxxx [1]		xxxx [2]	xxxx [1]
26,21 - 27,99	16	12	26	6	21	25,0	xxxx [1]		xxxx [2]	xxxx [1]
28,00	16	12	26	6	21	25,0	280		280	280 [1]
28,01 - 28,20	16	12	26	6	21	25,0	xxxx [1]		xxxx [2]	xxxx [1]
28,21 - 29,20	16	12	26	6	24	25,0	xxxx [1]		xxxx [2]	xxxx [1]
29,21 - 29,99	16	12	26	8	24	25,0	xxxx [1]		xxxx [2]	xxxx [1]
30,00	16	12	26	8	24	25,0	300		300	300 [1]
30,01 - 30,20	16	12	26	8	24	25,0	xxxx [1]		xxxx [2]	xxxx [1]

P	●	●	
M		●	
K	●		
N			●
S			
H			
O			

1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 12 working days / Minimum order 2 pieces
2) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 23 working days / Minimum order 2 pieces

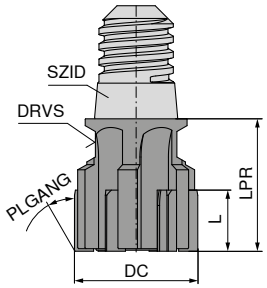
→ v_c Page 76

For xxxx please indicate requested diameter in H7 in the order (e.g. 10.89 H7 → article no. 40 210 1089)!
All other diameters and tolerance classes are also possible on request (e.g. 8.5 $^{+0.025}$ or 11 N7).

Holders and accessories can be found in → **Catalogue – Clamping technology, Chapter 16**.

MultiChange – Reaming Head, for blind holes

- ▲ Up to tolerance class IT 7 with absolute process security, from the first hole
- ▲ High-speed reaming heads
- ▲ Irregular pitch for highest radial run-out accuracy
- ▲ A high level of changeover precision guaranteed
- ▲ SZID = Coupling size



	CWC10	TiAlN	K10
			
	straight flute PLGANG 60° CERMET Blind hole	straight flute PLGANG 60° HM Blind hole	straight flute PLGANG 60° Solid carbide Blind hole
	40 211 ...	**40 221 ...**	**40 241 ...**

DC H7 mm	SZID	L mm	LPR mm	ZEFP	DRVS mm	TQX Nm				
12,20 - 12,70	06	8	20	6	6	5,0	xxxx [1]		xxxx [2]	xxxx [1]
12,71 - 13,99	06	8	22	6	6	5,0	xxxx [1]		xxxx [2]	xxxx [1]
14,00	06	8	22	6	6	5,0	140		140	140 [1]
14,01 - 14,20	06	8	22	6	6	5,0	xxxx [1]		xxxx [2]	xxxx [1]
14,21 - 15,99	08	8	22	6	8	12,5	xxxx [1]		xxxx [2]	xxxx [1]
16,00	08	8	22	6	8	12,5	160		160	160 [1]
16,01 - 16,20	08	8	22	6	8	12,5	xxxx [1]		xxxx [2]	xxxx [1]
16,21 - 17,20	10	8	22	6	10	15,0	xxxx [1]		xxxx [2]	xxxx [1]
17,21 - 17,99	10	12	26	6	10	15,0	xxxx [1]		xxxx [2]	xxxx [1]
18,00	10	12	26	6	10	15,0	180		180	180 [1]
18,01 - 19,99	10	12	26	6	10	15,0	xxxx [1]		xxxx [2]	xxxx [1]
20,00	10	12	26	6	10	15,0	200		200	200 [1]
20,01 - 20,20	10	12	26	6	10	15,0	xxxx [1]		xxxx [2]	xxxx [1]
20,21 - 21,99	12	12	26	6	13	20,0	xxxx [1]		xxxx [2]	xxxx [1]
22,00	12	12	26	6	13	20,0	220		220	220 [1]
22,01 - 23,99	12	12	26	6	13	20,0	xxxx [1]		xxxx [2]	xxxx [1]
24,00	12	12	26	6	13	20,0	240		240	240 [1]
24,01 - 24,20	12	12	26	6	13	20,0	xxxx [1]		xxxx [2]	xxxx [1]
24,21 - 24,99	16	12	26	6	16	25,0	xxxx [1]		xxxx [2]	xxxx [1]
25,00	16	12	26	6	16	25,0	250		250	250 [1]
25,01 - 25,99	16	12	26	6	16	25,0	xxxx [1]		xxxx [2]	xxxx [1]
26,00	16	12	26	6	16	25,0	260		260	260 [1]
26,01 - 27,99	16	12	26	6	16	25,0	xxxx [1]		xxxx [2]	xxxx [1]
28,00	16	12	26	6	16	25,0	280		280	280 [1]
28,01 - 28,20	16	12	26	6	16	25,0	xxxx [1]		xxxx [2]	xxxx [1]
28,21 - 29,20	16	12	26	6	16	25,0	xxxx [1]		xxxx [2]	xxxx [1]
29,21 - 29,99	16	12	26	8	16	25,0	xxxx [1]		xxxx [2]	xxxx [1]
30,00	16	12	26	8	16	25,0	300		300	300 [1]
30,01 - 30,20	16	12	26	8	16	25,0	xxxx [1]		xxxx [2]	xxxx [1]

P	●	●	
M		●	
K	●		
N			●
S			
H			
O			

1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 12 working days / Minimum order 2 pieces
2) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 23 working days / Minimum order 2 pieces

→ v_c Page 76

For xxxx please indicate requested diameter in H7 in the order (e.g. 12.89 H7 → article no. 40 211 1289)!
All other diameters and tolerance classes are also possible on request (e.g. 18.5 $^{+0.025}$ or 15 N7).

Holders and accessories can be found in → **Catalogue – Clamping technology, Chapter 16**.

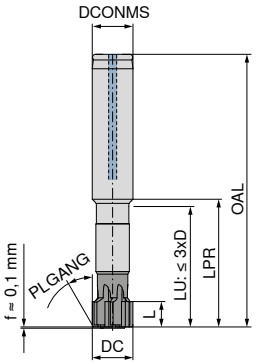
Monomax – Selection guide

Ø 5,60 – 25,89 mm											
Article no. (3xD)			40 635 …	40 625 …	40 656 …	40 652 …	40 648 …	40 605 …	40 657 …	40 644 …	40 640 …
Article no. (5xD)			40 636 …	40 626 …	40 666 …	40 653 …	40 649 …	40 606 …	40 665 …	40 645 …	40 641 …
KOMET no. (3xD)			56J.93	56J.93	56J.65	56J.65	56J.17	56J.71	56H.65	56H.65	56H.17
KOMET no. (5xD)			56R.93	56R.93	56R.65	56R.65	56R.17	56R.71	56Q.65	56Q.65	56Q.17
Cutting edge geometry			ASG4000	ASG3000	ASG3000	ASG0106	ASG0706	ASG3000	ASG3000	ASG0106	ASG0706
Lead angle			25°	45°	45°	45°	45°/8°	45°	45°	45°	45°/8°
Grade / coating			DST	DST	DBG-P	DBG-P	DBC	TIN	DBG-P	DBG-P	DBC
Preferred type available			✓	✓	✓	✓		✓			
Application			Through hole						Blind hole		
Material sub-group		Index									
P	Non alloyed steel	P.1.1	●	●	●			○	●		
		P.1.2	●	●	●			○	●		
		P.1.3	●	●	●			○	●		
		P.1.4	●	●	●			○	●		
		P.1.5	●	●	●			○	●		
	Low alloyed steel	P.2.1	●	●	●			○	●		
		P.2.2	●	●	●			○	●		
		P.2.3	●	●	●			○	●		
		P.2.4			●	●		○	●		
	High-alloy steel and high-alloy tool steel	P.3.1				●				●	
		P.3.2				●				●	
		P.3.3				●				●	
	Stainless steel	P.4.1				●				●	
		P.4.2				●				●	
M	Stainless steel	M.1.1				●				●	
		M.2.1				●				●	
		M.3.1				●				●	
K	Grey cast iron	K.1.1			●			○	●		
		K.1.2			●			○	●		
	Spherulitic graphite cast iron	K.2.1	○	●	●				●		
		K.2.2	○	●	●				●		
	Malleable iron	K.3.1	○	●	●				●		
		K.3.2	○	●	●				●		
N	Aluminum alloys	N.1.1					●				●
		N.1.2					●				●
	Cast aluminium alloys	N.2.1					●				●
		N.2.2					●				●
		N.2.3					●				●
	Copper and copper alloys (Bronze, Brass)	N.3.1		○				●			
		N.3.2		○				●			
		N.3.3						●			
	Magnesium alloys	N.4.1									
O	Non-metal materials	O.1.1									
		O.1.2									
		O.2.1									
		O.2.2									
		O.3.1					○				○

● = Main application
○ = Additional range of application

Monomax – High-speed reamers, short

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



	DST	DST	TiN
	56J.93	56J.93	56J.71
	≤ 3xD	≤ 3xD	≤ 3xD
	PLGANG 45°	PLGANG 25°	PLGANG 45°
	ASG3000	ASG4000	ASG3000
	CERMET	CERMET	HM
	Through hole	Through hole	Through hole
	40 625 ...	**40 635 ...**	**40 605 ...**

DC H7 mm	L mm	LU mm	LPR mm	OAL mm	DCONMS h6 mm	ZEFP			
5,60 - 5,99	9,5	35	40	85	12	4	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
6,00	9,5	35	40	85	12	4	**060**	**060**	**060**
6,01 - 7,99	9,5	35	40	85	12	4	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
8,00	9,5	35	40	85	12	4	**080**	**080**	**080**
8,01 - 8,89	9,5	35	40	85	12	4	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
8,90 - 9,89	9,5	45	50	95	12	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
9,90 - 9,99	9,5	45	50	95	12	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
10,00	9,5	45	50	95	12	6	**100**	**100**	**100**
10,01 - 11,99	9,5	45	50	95	12	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
12,00	9,5	45	50	95	12	6	**120**	**120**	**120**
12,01 - 13,99	9,5	45	50	95	12	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
14,00	9,5	45	50	95	12	6	**140**	**140**	**140**
14,01 - 14,99	9,5	45	50	95	12	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
15,00	9,5	45	50	95	12	6	**150**	**150**	**150**
15,01 - 15,89	9,5	45	50	95	12	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
15,90 - 15,99	9,5	45	50	100	16	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
16,00	9,5	45	50	100	16	6	**160**	**160**	**160**
16,01 - 17,99	9,5	45	50	100	16	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
18,00	9,5	45	50	100	16	6	**180**	**180**	**180**
18,01 - 18,89	9,5	45	50	100	16	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
18,90 - 19,99	9,5	55	60	120	20	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
20,00	9,5	55	60	120	20	6	**200**	**200**	**200**
20,01 - 25,89	9,5	55	60	120	20	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
P							●	●	○
M									
K							●	○	○
N							○		●
S									
H									
O									

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

→ v_c Page 77–80

Do not heat shrink tools !

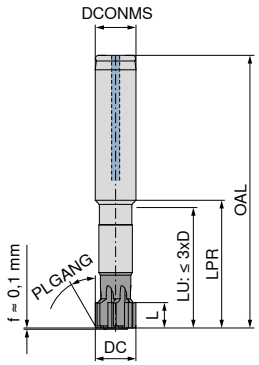
For xxxx please indicate requested Ø in H7 in the order (e.g. 15.89 H7 → article no. 40 635 1589)!
All other diameters and tolerance classes are also possible on request (e.g. 18.5 $^{+0.025}$ or 18 N7).

Detailed adjustment instructions are available to download in the online shop for the item.

→ **Page 100**
Here you will find more information on chamfer geometries (ASG).

Monomax – High-speed reamers, short

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



NEW

	DBG-P	DBC	DBG-P
			
	56J.65	56J.17	56J.65
			
	≤ 3xD	≤ 3xD	≤ 3xD
	PLGANG 45°	PLGANG 45/8°	PLGANG 45°
	ASG0106	ASG0706	ASG3000
	HM	HM	HM
	Through hole	Through hole	Through hole
	40 652 ...	**40 648 ...**	**40 656 ...**

DC $_{H7}$ mm	L mm	LU mm	LPR mm	OAL mm	DCONMS $_{h6}$ mm	ZEFP			
5,60 - 5,99	9,5	35	40	85	12	4	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
6,00	9,5	35	40	85	12	4	**06000**	**06000**[1]	**06000**
6,01 - 7,99	9,5	35	40	85	12	4	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
8,00	9,5	35	40	85	12	4	**08000**	**08000**[1]	**08000**
8,01 - 8,89	9,5	35	40	85	12	4	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
8,90 - 9,89	9,5	45	50	95	12	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
9,90 - 9,99	9,5	45	50	95	12	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
10,00	9,5	45	50	95	12	6	**10000**	**10000**[1]	**10000**
10,01 - 11,99	9,5	45	50	95	12	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
12,00	9,5	45	50	95	12	6	**12000**	**12000**[1]	**12000**
12,01 - 13,99	9,5	45	50	95	12	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
14,00	9,5	45	50	95	12	6	**14000**	**14000**[1]	**14000**
14,01 - 14,99	9,5	45	50	95	12	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
15,00	9,5	45	50	95	12	6	**15000**	**15000**[1]	**15000**
15,01 - 15,89	9,5	45	50	95	12	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
15,90 - 15,99	9,5	45	50	100	16	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
16,00	9,5	45	50	100	16	6	**16000**	**16000**[1]	**16000**
16,01 - 17,99	9,5	45	50	100	16	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
18,00	9,5	45	50	100	16	6	**18000**	**18000**[1]	**18000**
18,01 - 18,89	9,5	45	50	100	16	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
18,90 - 19,99	9,5	55	60	120	20	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
20,00	9,5	55	60	120	20	6	**20000**	**20000**[1]	**20000**
20,01 - 25,89	9,5	55	60	120	20	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
P							●		●
M							●		
K									●
N								●	
S									
H									
O								○	

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

→ v_c Page 77–80

Do not heat shrink tools !

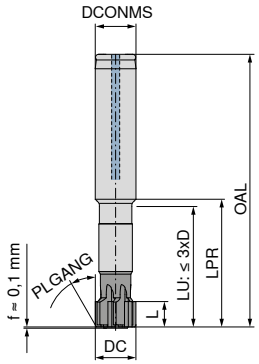
For xxxx please indicate requested Ø in H7 in the order (e.g. 15.89 H7 → article no. 40 652 1589)!
All other diameters and tolerance classes are also possible on request (e.g. 18.5 $^{+0.025}$ or 18 N7).

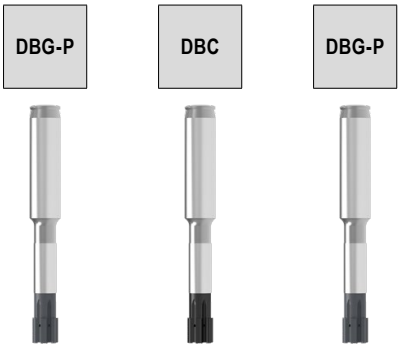
Detailed adjustment instructions are available to download in the online shop for the item.

→ **Page 100**
Here you will find more information on chamfer geometries (ASG).

Monomax – High-speed reamers, short

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





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

DC $_{H7}$ mm	L mm	LU mm	LPR mm	OAL mm	DCONMS $_{h6}$ mm	ZEFP			
5,60 - 5,99	9,5	35	40	85	12	4	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
6,00	9,5	35	40	85	12	4	**06000** [1]	**06000** [1]	**06000** [1]
6,01 - 7,99	9,5	35	40	85	12	4	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
8,00	9,5	35	40	85	12	4	**08000** [1]	**08000** [1]	**08000** [1]
8,01 - 8,89	9,5	35	40	85	12	4	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
8,90 - 9,89	9,5	45	50	95	12	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
9,90 - 9,99	9,5	45	50	95	12	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
10,00	9,5	45	50	95	12	6	**10000** [1]	**10000** [1]	**10000** [1]
10,01 - 11,99	9,5	45	50	95	12	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
12,00	9,5	45	50	95	12	6	**12000** [1]	**12000** [1]	**12000** [1]
12,01 - 13,99	9,5	45	50	95	12	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
14,00	9,5	45	50	95	12	6	**14000** [1]	**14000** [1]	**14000** [1]
14,01 - 14,99	9,5	45	50	95	12	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
15,00	9,5	45	50	95	12	6	**15000** [1]	**15000** [1]	**15000** [1]
15,01 - 15,89	9,5	45	50	95	12	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
15,90 - 15,99	9,5	45	50	100	16	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
16,00	9,5	45	50	100	16	6	**16000** [1]	**16000** [1]	**16000** [1]
16,01 - 17,99	9,5	45	50	100	16	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
18,00	9,5	45	50	100	16	6	**18000** [1]	**18000** [1]	**18000** [1]
18,01 - 18,89	9,5	45	50	100	16	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
18,90 - 19,99	9,5	55	60	120	20	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
20,00	9,5	55	60	120	20	6	**20000** [1]	**20000** [1]	**20000** [1]
20,01 - 25,89	9,5	55	60	120	20	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
P							●		●
M							●		
K									●
N								●	
S									
H									
O								○	

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

→ v_c Page 77–80

Do not heat shrink tools !

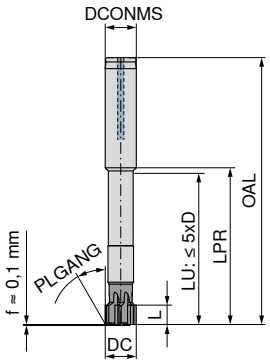
For xxxx please indicate requested Ø in H7 in the order (e.g. 15.89 H7 → article no. 40 644 1589)!
All other diameters and tolerance classes are also possible on request (e.g. 18.5 $^{+0.025}$ or 18 N7).

Detailed adjustment instructions are available to download in the online shop for the item.

→ **Page 100**
Here you will find more information on chamfer geometries (ASG).

Monomax – High-speed reamers, long

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



	DST	DST	TiN
			
	56R.93	56R.93	56R.71
			
	≤ 5xD	≤ 5xD	≤ 5xD
	PLGANG 45°	PLGANG 25°	PLGANG 45°
	ASG3000	ASG4000	ASG3000
	CERMET	CERMET	HM
	Through hole	Through hole	Through hole
	40 626 ...	**40 636 ...**	**40 606 ...**

DC $_{H7}$ mm	L mm	LU mm	LPR mm	OAL mm	DCONMS $_{h6}$ mm	ZEFP				
5,60 - 5,99	9,5	80	85	130	12	4	**xxxx** [1]		**xxxx** [1]		**xxxx** [1]
6,00	9,5	80	85	130	12	4	**060**		**060**		**060**
6,01 - 7,99	9,5	80	85	130	12	4	**xxxx** [1]		**xxxx** [1]		**xxxx** [1]
8,00	9,5	80	85	130	12	4	**080**		**080**		**080**
8,01 - 8,89	9,5	80	85	130	12	4	**xxxx** [1]		**xxxx** [1]		**xxxx** [1]
8,90 - 9,89	9,5	80	85	130	12	6	**xxxx** [1]		**xxxx** [1]		**xxxx** [1]
9,90 - 9,99	9,5	110	115	160	12	6	**xxxx** [1]		**xxxx** [1]		**xxxx** [1]
10,00	9,5	110	115	160	12	6	**100**		**100**		**100**
10,01 - 11,99	9,5	110	115	160	12	6	**xxxx** [1]		**xxxx** [1]		**xxxx** [1]
12,00	9,5	110	115	160	12	6	**120**		**120**		**120**
12,01 - 13,99	9,5	110	115	160	12	6	**xxxx** [1]		**xxxx** [1]		**xxxx** [1]
14,00	9,5	110	115	160	12	6	**140**		**140**		**140**
14,01 - 14,99	9,5	110	115	160	12	6	**xxxx** [1]		**xxxx** [1]		**xxxx** [1]
15,00	9,5	110	115	160	12	6	**150**		**150**		**150**
15,01 - 15,89	9,5	110	115	160	12	6	**xxxx** [1]		**xxxx** [1]		**xxxx** [1]
15,90 - 15,99	9,5	125	130	180	16	6	**xxxx** [1]		**xxxx** [1]		**xxxx** [1]
16,00	9,5	125	130	180	16	6	**160**		**160**		**160**
16,01 - 17,99	9,5	125	130	180	16	6	**xxxx** [1]		**xxxx** [1]		**xxxx** [1]
18,00	9,5	125	130	180	16	6	**180**		**180**		**180**
18,01 - 18,89	9,5	125	130	180	16	6	**xxxx** [1]		**xxxx** [1]		**xxxx** [1]
18,90 - 19,99	9,5	135	140	200	20	6	**xxxx** [1]		**xxxx** [1]		**xxxx** [1]
20,00	9,5	135	140	200	20	6	**200**		**200**		**200**
20,01 - 25,89	9,5	135	140	200	20	6	**xxxx** [1]		**xxxx** [1]		**xxxx** [1]
P							●		●		○
M											
K							●		○		○
N							○				●
S											
H											
O											

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→ v_c Page 77–80

Do not heat shrink tools !

For xxxx please indicate requested Ø in H7 in the order (e.g. 15.89 H7 → article no. 40 636 1589)!
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→ **Page 100**
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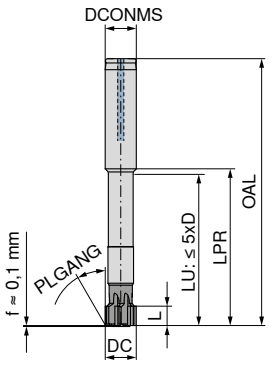
Monomax – High-speed reamers, long

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



NEW

	DBG-P	DBC	DBG-P
			
	56R.65	56R.17	56R.65
	≤ 5xD	≤ 5xD	≤ 5xD
	PLGANG 45°	PLGANG 45/8°	PLGANG 45°
	ASG0106	ASG0706	ASG3000
	HM	HM	HM
	Through hole	Through hole	Through hole
	40 653 ...	**40 649 ...**	**40 666 ...**

DC H7 mm	L mm	LU mm	LPR mm	OAL mm	DCONMS h6 mm	ZEFP			
5,60 - 5,99	9,5	80	85	130	12	4	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
6,00	9,5	80	85	130	12	4	**06000**	**06000**[1]	**06000**
6,01 - 7,99	9,5	80	85	130	12	4	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
8,00	9,5	80	85	130	12	4	**08000**	**08000**[1]	**08000**
8,01 - 8,89	9,5	80	85	130	12	4	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
8,90 - 9,89	9,5	80	85	130	12	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
9,90 - 9,99	9,5	110	115	160	12	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
10,00	9,5	110	115	160	12	6	**10000**	**10000**[1]	**10000**
10,01 - 11,99	9,5	110	115	160	12	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
12,00	9,5	110	115	160	12	6	**12000**	**12000**[1]	**12000**
12,01 - 13,99	9,5	110	115	160	12	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
14,00	9,5	110	115	160	12	6	**14000**	**14000**[1]	**14000**
14,01 - 14,99	9,5	110	115	160	12	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
15,00	9,5	110	115	160	12	6	**15000**	**15000**[1]	**15000**
15,01 - 15,89	9,5	110	115	160	12	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
15,90 - 15,99	9,5	125	130	180	16	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
16,00	9,5	125	130	180	16	6	**16000**	**16000**[1]	**16000**
16,01 - 17,99	9,5	125	130	180	16	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
18,00	9,5	125	130	180	16	6	**18000**	**18000**[1]	**18000**
18,01 - 18,89	9,5	125	130	180	16	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
18,90 - 19,99	9,5	135	140	200	20	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
20,00	9,5	135	140	200	20	6	**20000**	**20000**[1]	**20000**
20,01 - 25,89	9,5	135	140	200	20	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
P							●		●
M							●		
K									●
N								●	
S									
H									
O								○	

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→ v_c Page 77–80

Do not heat shrink tools !

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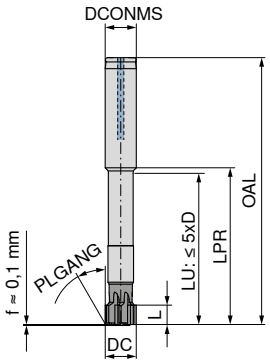

	DBG-P	DBC	DBG-P
			
	56Q.65	56Q.17	56Q.65
			
	≤ 5xD	≤ 5xD	≤ 5xD
	PLGANG 45°	PLGANG 45/8°	PLGANG 45°
	ASG0106	ASG0706	ASG3000
	HM	HM	HM
	Blind hole	Blind hole	Blind hole
	40 645 ...	**40 641 ...**	**40 665 ...**

DC H7 mm	L mm	LU mm	LPR mm	OAL mm	DCONMS h6 mm	ZEFP			
5,60 - 5,99	9,5	80	85	130	12	4	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
6,00	9,5	80	85	130	12	4	**06000**[1]	**06000**[1]	**06000**[1]
6,01 - 7,99	9,5	80	85	130	12	4	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
8,00	9,5	80	85	130	12	4	**08000**[1]	**08000**[1]	**08000**[1]
8,01 - 8,89	9,5	80	85	130	12	4	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
8,90 - 9,89	9,5	80	85	130	12	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
9,90 - 9,99	9,5	110	115	160	12	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
10,00	9,5	110	115	160	12	6	**10000**[1]	**10000**[1]	**10000**[1]
10,01 - 11,99	9,5	110	115	160	12	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
12,00	9,5	110	115	160	12	6	**12000**[1]	**12000**[1]	**12000**[1]
12,01 - 13,99	9,5	110	115	160	12	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
14,00	9,5	110	115	160	12	6	**14000**[1]	**14000**[1]	**14000**[1]
14,01 - 14,99	9,5	110	115	160	12	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
15,00	9,5	110	115	160	12	6	**15000**[1]	**15000**[1]	**15000**[1]
15,01 - 15,89	9,5	110	115	160	12	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
15,90 - 15,99	9,5	125	130	180	16	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
16,00	9,5	125	130	180	16	6	**16000**[1]	**16000**[1]	**16000**[1]
16,01 - 17,99	9,5	125	130	180	16	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
18,00	9,5	125	130	180	16	6	**18000**[1]	**18000**[1]	**18000**[1]
18,01 - 18,89	9,5	125	130	180	16	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
18,90 - 19,99	9,5	135	140	200	20	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
20,00	9,5	135	140	200	20	6	**20000**[1]	**20000**[1]	**20000**[1]
20,01 - 25,89	9,5	135	140	200	20	6	**xxxx** [1]	**xxxx** [1]	**xxxx** [1]
P							●		●
M							●		
K									●
N								●	
S									
H									
O								○	

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→ v_c Page 77–80

Do not heat shrink tools !

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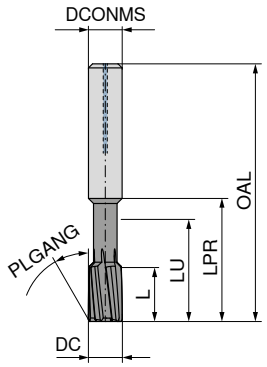
→ **Page 100**
Here you will find more information on chamfer geometries (ASG).

Fullmax – High-performance machine reamers, short

- ▲ extremely irregular pitch
- ▲ designed for high-speed machining
- ▲ specialised geometry and coating for universal use

UNI

DBG-U



51P.57

Left Hand Helix
PLGANG 30°
ASG2210
Solid carbide
Through hole

40 483 ...

DC $_{H7}$ mm	L mm	LU mm	LPR mm	OAL mm	DCONMS $_{h6}$ mm	ZEFP	
4	12	24	28	50	4	4	**04000**
5	12	31	36	64	6	4	**05000**
6	12	31	36	64	6	4	**06000**
7	16	31	36	70	8	6	**07000**
8	16	31	36	70	8	6	**08000**
9	16	35	40	80	10	6	**09000**
10	16	35	40	80	10	6	**10000**
11	20	40	45	90	12	6	**11000**
12	20	40	45	90	12	6	**12000**
16	20	40	45	93	16	8	**16000**

P	●
M	●
K	●
N	○
S	○
H	○
O	

→ v_c Page 83

→ **Page 100**
Here you will find more information on chamfer geometries (ASG).

Fullmax – High-performance machine reamers, short

- ▲ extremely irregular pitch
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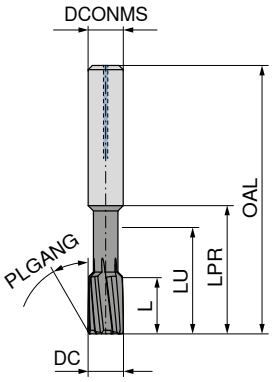
- ▲ specialised geometry and coating for universal use
- ▲ tolerance: Ø 2,96 – 6,03 mm = +0,004 mm
- ▲ tolerance: Ø 6,04 – 20,05 mm = +0,005 mm

UNI

DBG-U



51P.57

Left Hand Helix
PLGANG 30°
ASG2210
Solid carbide
Through hole

40 489 ...

DC +0,004/+0,005 mm	L mm	LU mm	LPR mm	OAL mm	DCONMS h6 mm	ZEFP	
2,96 - 3,96	12	24	28	50	4	4	**xxxxx**[1]
3,97	12	24	28	50	4	4	**03970**
3,98	12	24	28	50	4	4	**03980**
3,99	12	24	28	50	4	4	**03990**
4,00	12	24	28	50	4	4	**04000**
4,01	12	24	28	50	4	4	**04010**
4,02	12	24	28	50	4	4	**04020**
4,03	12	24	28	50	4	4	**04030**
4,04 - 4,05	12	24	28	50	4	4	**xxxxx**[1]
4,06 - 4,96	12	31	36	64	6	4	**xxxxx**[1]
4,97	12	31	36	64	6	4	**04970**
4,98	12	31	36	64	6	4	**04980**
4,99	12	31	36	64	6	4	**04990**
5,00	12	31	36	64	6	4	**05000**
5,01	12	31	36	64	6	4	**05010**
5,02	12	31	36	64	6	4	**05020**
5,03	12	31	36	64	6	4	**05030**
5,04 - 5,96	12	31	36	64	6	4	**xxxxx**[1]
5,97	12	31	36	64	6	4	**05970**
5,98	12	31	36	64	6	4	**05980**
5,99	12	31	36	64	6	4	**05990**
6,00	12	31	36	64	6	4	**06000**
6,01	12	31	36	64	6	4	**06010**
6,02	12	31	36	64	6	4	**06020**
6,03	12	31	36	64	6	4	**06030**
6,04 - 6,05	12	31	36	64	6	4	**xxxxx**[1]
6,06 - 7,96	16	31	36	70	8	6	**xxxxx**[1]
7,97	16	31	36	70	8	6	**07970**
7,98	16	31	36	70	8	6	**07980**
7,99	16	31	36	70	8	6	**07990**
8,00	16	31	36	70	8	6	**08000**
8,01	16	31	36	70	8	6	**08010**
8,02	16	31	36	70	8	6	**08020**
8,03	16	31	36	70	8	6	**08030**

P	●
M	●
K	●
N	○
S	○
H	○
O	

1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time on request

→ v_c Page 83

→ **Page 101**
Here you will find the fit dimensions that can be covered with this tool concept.
For xxxxx please indicate required Ø in the order (e.g. Ø 8.82 mm → Article No. 40 489 08820)!

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Continued on next page

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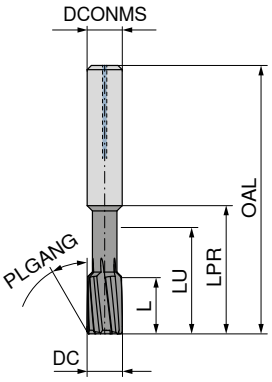
UNI

DBG-U



51P.57

Left Hand Helix
PLGANG 30°
ASG2210
Solid carbide
Through hole

40 489 ...

DC +0,004/+0,005 mm	L mm	LU mm	LPR mm	OAL mm	DCONMS h6 mm	ZEFP	
8,04 - 8,05	16	31	36	70	8	6	**xxxxx**[1]
8,06 - 9,96	16	35	40	80	10	6	**xxxxx**[1]
9,97	16	35	40	80	10	6	**09970**
9,98	16	35	40	80	10	6	**09980**
9,99	16	35	40	80	10	6	**09990**
10,00	16	35	40	80	10	6	**10000**
10,01	16	35	40	80	10	6	**10010**
10,02	16	35	40	80	10	6	**10020**
10,03	16	35	40	80	10	6	**10030**
10,04 - 10,05	16	35	40	80	10	6	**xxxxx**[1]
10,06 - 11,96	20	40	45	90	12	6	**xxxxx**[1]
11,97	20	40	45	90	12	6	**11970**
11,98	20	40	45	90	12	6	**11980**
11,99	20	40	45	90	12	6	**11990**
12,00	20	40	45	90	12	6	**12000**
12,01	20	40	45	90	12	6	**12010**
12,02	20	40	45	90	12	6	**12020**
12,03	20	40	45	90	12	6	**12030**
12,04 - 12,05	20	40	45	90	12	6	**xxxxx**[1]
12,06 - 14,05	20	40	45	90	14	6	**xxxxx**[1]
14,06 - 15,96	20	40	45	93	16	6	**xxxxx**[1]
15,97 - 16,05	20	40	45	93	16	8	**xxxxx**[1]
16,06 - 18,05	20	47	52	100	18	8	**xxxxx**[1]
18,06 - 20,05	20	45	50	102	20	8	**xxxxx**[1]

P	●
M	●
K	●
N	○
S	○
H	○
O	

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→ v_c Page 83

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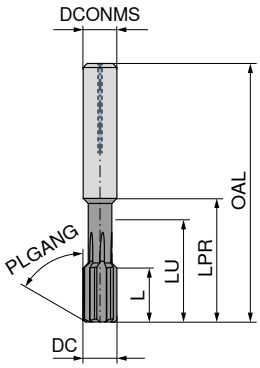
UNI

DBG-U



51M.57

straight flute
PLGANG 60°
ASG2110
Solid carbide
Blind hole

40 481 ...

DC $_{H7}$ mm	L mm	LU mm	LPR mm	OAL mm	DCONMS $_{h6}$ mm	ZEFP	
4	12	24	28	50	4	4	**04000**
5	12	31	36	64	6	4	**05000**
6	12	31	36	64	6	4	**06000**
7	16	31	36	70	8	6	**07000**
8	16	31	36	70	8	6	**08000**
9	16	35	40	80	10	6	**09000**
10	16	35	40	80	10	6	**10000**
11	20	40	45	90	12	6	**11000**
12	20	40	45	90	12	6	**12000**
16	20	40	45	93	16	8	**16000**

P	●
M	●
K	●
N	○
S	○
H	○
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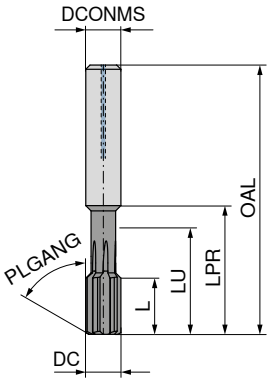
UNI

DBG-U



51M.57

straight flute
PLGANG 60°
ASG2110
Solid carbide
Blind hole

40 488 ...

DC +0,004/+0,005 mm	L mm	LU mm	LPR mm	OAL mm	DCONMS h6 mm	ZEFP	
2,96 - 3,96	12	24	28	50	4	4	**xxxxx**[1]
3,97	12	24	28	50	4	4	**03970**
3,98	12	24	28	50	4	4	**03980**
3,99	12	24	28	50	4	4	**03990**
4,00	12	24	28	50	4	4	**04000**
4,01	12	24	28	50	4	4	**04010**
4,02	12	24	28	50	4	4	**04020**
4,03	12	24	28	50	4	4	**04030**
4,04 - 4,05	12	24	28	50	4	4	**xxxxx**[1]
4,06 - 4,96	12	31	36	64	6	4	**xxxxx**[1]
4,97	12	31	36	64	6	4	**04970**
4,98	12	31	36	64	6	4	**04980**
4,99	12	31	36	64	6	4	**04990**
5,00	12	31	36	64	6	4	**05000**
5,01	12	31	36	64	6	4	**05010**
5,02	12	31	36	64	6	4	**05020**
5,03	12	31	36	64	6	4	**05030**
5,04 - 5,96	12	31	36	64	6	4	**xxxxx**[1]
5,97	12	31	36	64	6	4	**05970**
5,98	12	31	36	64	6	4	**05980**
5,99	12	31	36	64	6	4	**05990**
6,00	12	31	36	64	6	4	**06000**
6,01	12	31	36	64	6	4	**06010**
6,02	12	31	36	64	6	4	**06020**
6,03	12	31	36	64	6	4	**06030**
6,04 - 6,05	12	31	36	64	6	4	**xxxxx**[1]
6,06 - 7,96	16	31	36	70	8	6	**xxxxx**[1]
7,97	16	31	36	70	8	6	**07970**
7,98	16	31	36	70	8	6	**07980**
7,99	16	31	36	70	8	6	**07990**
8,00	16	31	36	70	8	6	**08000**
8,01	16	31	36	70	8	6	**08010**
8,02	16	31	36	70	8	6	**08020**
8,03	16	31	36	70	8	6	**08030**

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1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time on request

→ v_c Page 83

→ **Page 101**
Here you will find the fit dimensions that can be covered with this tool concept.
For xxxxx please indicate required Ø in the order (e.g. Ø 8.82 mm → Article No. 40 488 08820)!

→ **Page 100**
Here you will find more information on chamfer geometries (ASG).

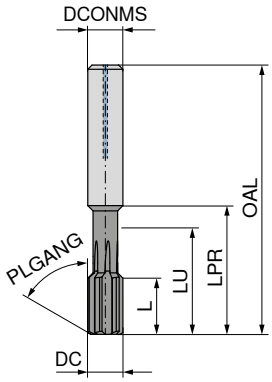
Continued on next page

Fullmax – High-performance machine reamers, short

- ▲ extremely irregular pitch
- ▲ designed for high-speed machining
- ▲ specialised geometry and coating for universal use
- ▲ tolerance: Ø 2,96 – 6,03 mm = +0,004 mm
- ▲ tolerance: Ø 6,04 – 20,05 mm = +0,005 mm

UNI

DBG-U



51M.57

straight flute
PLGANG 60°
ASG2110
Solid carbide
Blind hole

40 488 ...

DC +0,004/+0,005 mm	L mm	LU mm	LPR mm	OAL mm	DCONMS h6 mm	ZEFP	
8,04 - 8,05	16	31	36	70	8	6	**xxxxx**[1]
8,06 - 9,96	16	35	40	80	10	6	**xxxxx**[1]
9,97	16	35	40	80	10	6	**09970**
9,98	16	35	40	80	10	6	**09980**
9,99	16	35	40	80	10	6	**09990**
10,00	16	35	40	80	10	6	**10000**
10,01	16	35	40	80	10	6	**10010**
10,02	16	35	40	80	10	6	**10020**
10,03	16	35	40	80	10	6	**10030**
10,04 - 10,05	16	35	40	80	10	6	**xxxxx**[1]
10,06 - 11,96	20	40	45	90	12	6	**xxxxx**[1]
11,97	20	40	45	90	12	6	**11970**
11,98	20	40	45	90	12	6	**11980**
11,99	20	40	45	90	12	6	**11990**
12,00	20	40	45	90	12	6	**12000**
12,01	20	40	45	90	12	6	**12010**
12,02	20	40	45	90	12	6	**12020**
12,03	20	40	45	90	12	6	**12030**
12,04 - 12,05	20	40	45	90	12	6	**xxxxx**[1]
12,06 - 14,05	20	40	45	90	14	6	**xxxxx**[1]
14,06 - 15,96	20	40	45	93	16	6	**xxxxx**[1]
15,97 - 16,05	20	40	45	93	16	8	**xxxxx**[1]
16,06 - 18,05	20	47	52	100	18	8	**xxxxx**[1]
18,06 - 20,05	20	45	50	102	20	8	**xxxxx**[1]

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→ v_c Page 83

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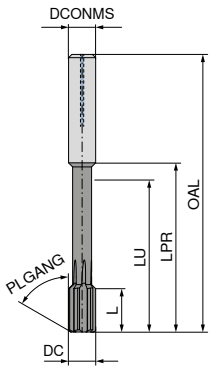
Fullmax – High-performance machine reamers, long

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



UNI	VA	ALU
DBG-U	DBQ	DBC-N

52P.57	52S.44	52N.17
Left Hand Helix	Left Hand Helix	straight flute
PLGANG 30°	PLGANG 30°	PLGANG 30°
ASG2210	ASG2231	ASG2270
Solid carbide	Solid carbide	Solid carbide
Through hole	Through hole	Through hole
40 484 ...	**40 401 ...**	**40 471 ...**

DC $_{H7}$ mm	L mm	LU mm	LPR mm	OAL mm	DCONMS $_{h6}$ mm	ZEFP			
4	12	28	32	60	4	4	**04000**	**04000**	**04000**[1)]
5	12	35	40	76	6	4	**05000**	**05000**	**05000**[1)]
6	12	35	40	76	6	4	**06000**	**06000**	**06000**[1)]
7	16	60	65	101	8	6	**07000**	**07000**	**07000**[1)]
8	16	60	65	101	8	6	**08000**	**08000**	**08000**[1)]
9	16	63	68	108	10	6	**09000**	**09000**	**09000**[1)]
10	16	63	68	108	10	6	**10000**	**10000**	**10000**[1)]
11	20	80	85	130	12	6	**11000**	**11000**	**11000**[1)]
12	20	80	85	130	12	6	**12000**	**12000**	**12000**[1)]
16	20	97	102	150	16	6	**16000**	**16000**	**16000**[1)]

P	●	●	
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H	○		
O			○

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→ v_c Page 81+82

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Fullmax – High-performance machine reamers, long

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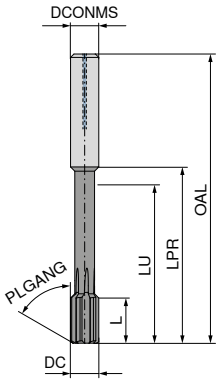
- ▲ specialised geometries and coatings
- ▲ tolerance: Ø 2,96 – 5,96 mm = +0,004 mm
- ▲ tolerance: Ø 5,97 – 20,05 mm = +0,005 mm



UNI	VA	K	ALU	H
DBG-U	DBQ	DBG-P	DBC-N	DBF-A
				
52P.57	52S.44	52J.65	52N.17	52G.55
				
Left Hand Helix	Left Hand Helix	straight flute	straight flute	straight flute
PLGANG 30°	PLGANG 30°	PLGANG 30°	PLGANG 30°	PLGANG 30°
ASG2210	ASG2231	ASG2350	ASG2270	ASG2360
Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide
Through hole	Through hole	Through hole	Through hole	Through hole
40 486 ...	**40 403 ...**	**40 477 ...**	**40 473 ...**	**40 475 ...**

DC +0,004/+0,005 mm	L mm	LU mm	LPR mm	OAL mm	DCONMS h6 mm	ZEFP					
2,96 - 3,96	12	28	32	60	4	4	xxxxx[2]	xxxxx[1]		xxxxx[1]	xxxxx[1]
2,96 - 3,96	12	28	32	60	4	6			xxxxx[1]		
3,97	12	28	32	60	4	4	03970	03970[1]		03970[1]	03970[1]
3,97	12	28	32	60	4	6			03970[1]		
3,98	12	28	32	60	4	4	03980	03980[1]		03980[1]	03980[1]
3,98	12	28	32	60	4	6			03980[1]		
3,99	12	28	32	60	4	4	03990	03990[1]		03990[1]	03990[1]
3,99	12	28	32	60	4	6			03990[1]		
4,00	12	28	32	60	4	4	04000	04000[1]		04000[1]	04000[1]
4,00	12	28	32	60	4	6			04000[1]		
4,01	12	28	32	60	4	4	04010	04010[1]		04010[1]	04010[1]
4,01	12	28	32	60	4	6			04010[1]		
4,02	12	28	32	60	4	4	04020	04020[1]		04020[1]	04020[1]
4,02	12	28	32	60	4	6			04020[1]		
4,03	12	28	32	60	4	4	04030	04030[1]		04030[1]	04040[1]
4,03	12	28	32	60	4	6			04030[1]		
4,04 - 4,05	12	28	32	60	4	4	xxxxx[2]	xxxxx[1]		xxxxx[1]	xxxxx[1]
4,04 - 4,05	12	28	32	60	4	6			xxxxx[1]		
4,06 - 4,96	12	35	40	76	6	4	xxxxx[2]	xxxxx[1]		xxxxx[1]	xxxxx[1]
4,06 - 4,96	12	35	40	76	6	6			xxxxx[1]		
4,97	12	35	40	76	6	4	04970	04970[1]		04970[1]	04970[1]
4,97	12	35	40	76	6	6			04970[1]		
4,98	12	35	40	76	6	4	04980	04980[1]		04980[1]	04980[1]
4,98	12	35	40	76	6	6			04980[1]		
4,99	12	35	40	76	6	4	04990	04990[1]		04990[1]	04990[1]
4,99	12	35	40	76	6	6			04990[1]		
5,00	12	35	40	76	6	4	05000	05000[1]		05000[1]	05000[1]
5,00	12	35	40	76	6	6			05000[1]		
5,01	12	35	40	76	6	4	05010	05010[1]		05010[1]	05010[1]
5,01	12	35	40	76	6	6			05010[1]		
5,02	12	35	40	76	6	4	05020	05020[1]		05020[1]	05020[1]

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O				○	

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→ v_c Page 81+82

→ **Page 101**
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→ **Page 100**
Here you will find more information on chamfer geometries (ASG).

Continued on next page

Fullmax – High-performance machine reamers, long

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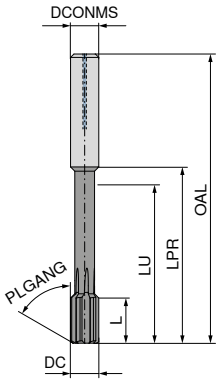
- ▲ specialised geometries and coatings
- ▲ tolerance: Ø 2,96 – 5,96 mm = +0,004 mm
- ▲ tolerance: Ø 5,97 – 20,05 mm = +0,005 mm



UNI	VA	K	ALU	H
DBG-U	DBQ	DBG-P	DBC-N	DBF-A
				
52P.57	52S.44	52J.65	52N.17	52G.55
				
Left Hand Helix	Left Hand Helix	straight flute	straight flute	straight flute
PLGANG 30°	PLGANG 30°	PLGANG 30°	PLGANG 30°	PLGANG 30°
ASG2210	ASG2231	ASG2350	ASG2270	ASG2360
Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide
Through hole	Through hole	Through hole	Through hole	Through hole
40 486 ...	**40 403 ...**	**40 477 ...**	**40 473 ...**	**40 475 ...**

DC +0,004/+0,005 mm	L mm	LU mm	LPR mm	OAL mm	DCONMS h6 mm	ZEFP	40 486 ...	40 403 ...	40 477 ...	40 473 ...	40 475 ...
5,02	12	35	40	76	6	6			05020[1]		
5,03	12	35	40	76	6	4	05030	05030[1]		05030[1]	05030[1]
5,03	12	35	40	76	6	6			05030[1]		
5,04 - 5,96	12	35	40	76	6	4	xxxxx[2]	xxxxx[1]		xxxxx[1]	xxxxx[1]
5,04 - 5,96	12	35	40	76	6	6			xxxxx[1]		
5,97	12	35	40	76	6	4	05970	05970[1]		05970[1]	05970[1]
5,97	12	35	40	76	6	6			05970[1]		
5,98	12	35	40	76	6	4	05980	05980[1]		05980[1]	05980[1]
5,98	12	35	40	76	6	6			05980[1]		
5,99	12	35	40	76	6	4	05990	05990[1]		05990[1]	05990[1]
5,99	12	35	40	76	6	6			05990[1]		
6,00	12	35	40	76	6	4	06000	06000[1]		06000[1]	06000[1]
6,00	12	35	40	76	6	6			06000[1]		
6,01	12	35	40	76	6	4	06010	06010[1]		06010[1]	06010[1]
6,01	12	35	40	76	6	6			06010[1]		
6,02	12	35	40	76	6	4	06020	06020[1]		06020[1]	06020[1]
6,02	12	35	40	76	6	6			06020[1]		
6,03	12	35	40	76	6	4	06030	06030[1]		06030[1]	06030[1]
6,03	12	35	40	76	6	6			06030[1]		
6,04 - 6,05	12	35	40	76	6	4	xxxxx[2]	xxxxx[1]		xxxxx[1]	xxxxx[1]
6,04 - 6,05	12	35	40	76	6	6			xxxxx[1]		
6,06 - 7,96	16	60	65	101	8	6	xxxxx[2]	xxxxx[1]		xxxxx[1]	xxxxx[1]
6,06 - 7,96	16	60	65	101	8	8			xxxxx[1]		
7,97	16	60	65	101	8	6	07970	07970[1]		07970[1]	07970[1]
7,97	16	60	65	101	8	8			07970[1]		
7,98	16	60	65	101	8	6	07980	07980[1]		07980[1]	07980[1]
7,98	16	60	65	101	8	8			07980[1]		
7,99	16	60	65	101	8	6	07990	07990[1]		07990[1]	07990[1]
7,99	16	60	65	101	8	8			07990[1]		
8,00	16	60	65	101	8	6	08000	08000[1]		08000[1]	08000[1]
8,00	16	60	65	101	8	8			08000[1]		

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→ v_c Page 81+82

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Continued on next page

Fullmax – High-performance machine reamers, long

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- ▲ tolerance: Ø 2,96 – 5,96 mm = +0,004 mm
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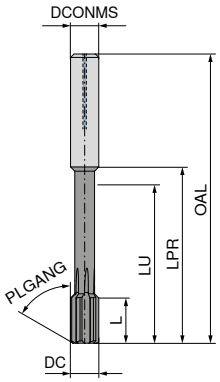

UNI	VA	K	ALU	H
DBG-U	DBQ	DBG-P	DBC-N	DBF-A
				
52P.57	52S.44	52J.65	52N.17	52G.55
				
Left Hand Helix	Left Hand Helix	straight flute	straight flute	straight flute
PLGANG 30°	PLGANG 30°	PLGANG 30°	PLGANG 30°	PLGANG 30°
ASG2210	ASG2231	ASG2350	ASG2270	ASG2360
Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide
Through hole	Through hole	Through hole	Through hole	Through hole

DC +0,004/+0,005 mm	L mm	LU mm	LPR mm	OAL mm	DCONMS h6 mm	ZEFP	40 486 ...	40 403 ...	40 477 ...	40 473 ...	40 475 ...
8,01	16	60	65	101	8	6	08010	08010[1]		08010[1]	08010[1]
8,01	16	60	65	101	8	8			08010[1]		
8,02	16	60	65	101	8	6	08020	08020[1]		08020[1]	08020[1]
8,02	16	60	65	101	8	8			08020[1]		
8,03	16	60	65	101	8	6	08030	08030[1]		08030[1]	08030[1]
8,03	16	60	65	101	8	8			08030[1]		
8,04 - 8,05	16	60	65	101	8	6	xxxxx[2]	xxxxx[1]		xxxxx[1]	xxxxx[1]
8,04 - 8,05	16	60	65	101	8	8			xxxxx[1]		
8,06 - 9,96	16	63	68	108	10	6	xxxxx[2]	xxxxx[1]		xxxxx[1]	xxxxx[1]
8,06 - 9,96	16	63	68	108	10	8			xxxxx[1]		
9,97	16	63	68	108	10	6	09970	09970[1]		09970[1]	09970[1]
9,97	16	63	68	108	10	8			09970[1]		
9,98	16	63	68	108	10	6	09980	09980[1]		09980[1]	09980[1]
9,98	16	63	68	108	10	8			09980[1]		
9,99	16	63	68	108	10	6	09990	09990[1]		09990[1]	09990[1]
9,99	16	63	68	108	10	8			09990[1]		
10,00	16	63	68	108	10	6	10000	10000[1]		10000[1]	10000[1]
10,00	16	63	68	108	10	8			10000[1]		
10,01	16	63	68	108	10	6	10010	10010[1]		10010[1]	10010[1]
10,01	16	63	68	108	10	8			10010[1]		
10,02	16	63	68	108	10	6	10020	10020[1]		10020[1]	10020[1]
10,02	16	63	68	108	10	8			10020[1]		
10,03	16	63	68	108	10	6	10030	10030[1]		10030[1]	10030[1]
10,03	16	63	68	108	10	8			10030[1]		
10,04 - 10,05	16	63	68	108	10	6	xxxxx[2]	xxxxx[1]		xxxxx[1]	xxxxx[1]
10,04 - 10,05	16	63	68	108	10	8			xxxxx[1]		
10,06 - 11,96	20	80	85	130	12	6	xxxxx[2]	xxxxx[1]		xxxxx[1]	xxxxx[1]
10,06 - 11,96	20	80	85	130	12	8			xxxxx[1]		
11,97	20	80	85	130	12	6	11970	11970[1]		11970[1]	11970[1]
11,97	20	80	85	130	12	8			11970[1]		
11,98	20	80	85	130	12	6	11980	11980[1]		11980[1]	11980[1]

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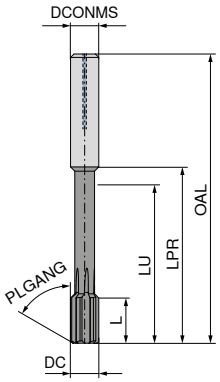
- ▲ tolerance: Ø 5,97 – 20,05 mm = +0,005 mm



UNI	VA	K	ALU	H
DBG-U	DBQ	DBG-P	DBC-N	DBF-A

52P.57	52S.44	52J.65	52N.17	52G.55
Left Hand Helix	Left Hand Helix	straight flute	straight flute	straight flute
PLGANG 30°	PLGANG 30°	PLGANG 30°	PLGANG 30°	PLGANG 30°
ASG2210	ASG2231	ASG2350	ASG2270	ASG2360
Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide
Through hole	Through hole	Through hole	Through hole	Through hole
40 486 ...	**40 403 ...**	**40 477 ...**	**40 473 ...**	**40 475 ...**

DC +0,004/+0,005 mm	L mm	LU mm	LPR mm	OAL mm	DCONMS h6 mm	ZEFP									
11,98	20	80	85	130	12	8					11980[1]				
11,99	20	80	85	130	12	6	11990		11990[1]				11990[1]		11990[1]
11,99	20	80	85	130	12	8					11990[1]				
12,00	20	80	85	130	12	6	12000		12000[1]				12000[1]		12000[1]
12,00	20	80	85	130	12	8					12000[1]				
12,01	20	80	85	130	12	6	12010		12010[1]				12010[1]		12010[1]
12,01	20	80	85	130	12	8					12010[1]				
12,02	20	80	85	130	12	6	12020		12020[1]				12020[1]		12020[1]
12,02	20	80	85	130	12	8					12020[1]				
12,03	20	80	85	130	12	6	12030		12030[1]				12030[1]		12030[1]
12,03	20	80	85	130	12	8					12030[1]				
12,04 - 12,05	20	80	85	130	12	6	xxxxx[2]		xxxxx[1]				xxxxx[1]		xxxxx[1]
12,04 - 12,05	20	80	85	130	12	8					xxxxx[1]				
12,06 - 14,05	20	80	85	130	14	6	xxxxx[2]		xxxxx[1]				xxxxx[1]		xxxxx[1]
12,06 - 14,05	20	80	85	130	14	8					xxxxx[1]				
14,06 - 16,05	20	97	102	150	16	6	xxxxx[2]		xxxxx[1]				xxxxx[1]		xxxxx[1]
14,06 - 16,05	20	97	102	150	16	8					xxxxx[1]				
16,06 - 18,05	20	97	102	150	18	6	xxxxx[2]		xxxxx[1]				xxxxx[1]		xxxxx[1]
16,06 - 18,05	20	97	102	150	18	8					xxxxx[1]				
18,06 - 20,05	20	105	110	160	20	6	xxxxx[2]		xxxxx[1]				xxxxx[1]		xxxxx[1]
18,06 - 20,05	20	105	110	160	20	8					xxxxx[1]				

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→ **Page 101**
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→ **Page 100**
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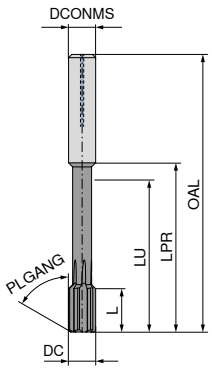
Fullmax – High-performance machine reamers, long

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



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

DC $_{H7}$ mm	L mm	LU mm	LPR mm	OAL mm	DCONMS $_{h6}$ mm	ZEFP			
4	12	28	32	60	4	4	**04000**	**04000**	**04000**[1)]
5	12	35	40	76	6	4	**05000**	**05000**	**05000**[1)]
6	12	35	40	76	6	4	**06000**	**06000**	**06000**[1)]
7	16	60	65	101	8	6	**07000**	**07000**	**07000**[1)]
8	16	60	65	101	8	6	**08000**	**08000**	**08000**[1)]
9	16	63	68	108	10	6	**09000**	**09000**	**09000**[1)]
10	16	63	68	108	10	6	**10000**	**10000**	**10000**[1)]
11	20	80	85	130	12	6	**11000**	**11000**	**11000**[1)]
12	20	80	85	130	12	6	**12000**	**12000**	**12000**[1)]
16	20	97	102	150	16	6	**16000**	**16000**	**16000**[1)]

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N	○		●
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Fullmax – High-performance machine reamers, long

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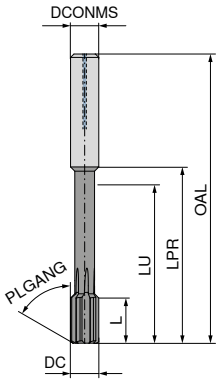
- ▲ tolerance: Ø 2,96 – 5,96 mm = +0,004 mm
- ▲ tolerance: Ø 5,97 – 20,05 mm = +0,005 mm



UNI	VA	K	ALU	H
DBG-U	DBQ	DBG-P	DBC-N	DBF-A

52M.57	52T.45	52K.65	52Q.17	52H.55
straight flute	straight flute	straight flute	straight flute	straight flute
PLGANG 60°	PLGANG 45°	PLGANG 30°	PLGANG 60°	PLGANG 30°
ASG2110	ASG2131	ASG2350	ASG2170	ASG2360
Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide
Blind hole	Blind hole	Blind hole	Blind hole	Blind hole
40 487 ...	**40 404 ...**	**40 478 ...**	**40 474 ...**	**40 476 ...**

DC +0,004/+0,005 mm	L mm	LU mm	LPR mm	OAL mm	DCONMS h6 mm	ZEFP					
2,96 - 3,96	12	28	32	60	4	4	xxxxx[2]	xxxxx[1]		xxxxx[1]	xxxxx[1]
2,96 - 3,96	12	28	32	60	4	6			xxxxx[1]		
3,97	12	28	32	60	4	4	03970	03970[1]		03970[1]	03970[1]
3,97	12	28	32	60	4	6			03970[1]		
3,98	12	28	32	60	4	4	03980	03980[1]		03980[1]	03980[1]
3,98	12	28	32	60	4	6			03980[1]		
3,99	12	28	32	60	4	4	03990	03990[1]		03990[1]	03990[1]
3,99	12	28	32	60	4	6			03990[1]		
4,00	12	28	32	60	4	4	04000	04000[1]		04000[1]	04000[1]
4,00	12	28	32	60	4	6			04000[1]		
4,01	12	28	32	60	4	4	04010	04010[1]		04010[1]	04010[1]
4,01	12	28	32	60	4	6			04010[1]		
4,02	12	28	32	60	4	4	04020	04020[1]		04020[1]	04020[1]
4,02	12	28	32	60	4	6			04020[1]		
4,03	12	28	32	60	4	4	04030	04030[1]		04030[1]	04030[1]
4,03	12	28	32	60	4	6			04030[1]		
4,04 - 4,05	12	28	32	60	4	4	xxxxx[2]	xxxxx[1]		xxxxx[1]	xxxxx[1]
4,04 - 4,05	12	28	32	60	4	6			xxxxx[1]		
4,06 - 4,96	12	35	40	76	6	4	xxxxx[2]	xxxxx[1]		xxxxx[1]	xxxxx[1]
4,06 - 4,96	12	35	40	76	6	6			xxxxx[1]		
4,97	12	35	40	76	6	4	04970	04970[1]		04970[1]	04970[1]
4,97	12	35	40	76	6	6			04970[1]		
4,98	12	35	40	76	6	4	04980	04980[1]		04980[1]	04980[1]
4,98	12	35	40	76	6	6			04980[1]		
4,99	12	35	40	76	6	4	04990	04990[1]		04990[1]	04990[1]
4,99	12	35	40	76	6	6			04990[1]		
5,00	12	35	40	76	6	4	05000	05000[1]		05000[1]	05000[1]
5,00	12	35	40	76	6	6			05000[1]		
5,01	12	35	40	76	6	4	05010	05010[1]		05010[1]	05010[1]
5,01	12	35	40	76	6	6			05010[1]		
5,02	12	35	40	76	6	4	05020	05020[1]		05020[1]	05020[1]

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H	○				●
O				○	

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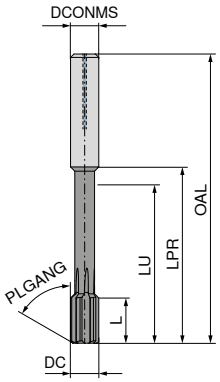

UNI	VA	K	ALU	H
DBG-U	DBQ	DBG-P	DBC-N	DBF-A

52M.57	52T.45	52K.65	52Q.17	52H.55
straight flute	straight flute	straight flute	straight flute	straight flute
PLGANG 60°	PLGANG 45°	PLGANG 30°	PLGANG 60°	PLGANG 30°
ASG2110	ASG2131	ASG2350	ASG2170	ASG2360
Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide
Blind hole	Blind hole	Blind hole	Blind hole	Blind hole
40 487 ...	**40 404 ...**	**40 478 ...**	**40 474 ...**	**40 476 ...**

DC +0,004/+0,005 mm	L mm	LU mm	LPR mm	OAL mm	DCONMS h6 mm	ZEFP									
5,02	12	35	40	76	6	6					05020[1]				
5,03	12	35	40	76	6	4	05030		05030[1]				05030[1]		05030[1]
5,03	12	35	40	76	6	6					05030[1]				
5,04 - 5,96	12	35	40	76	6	4	xxxxx[2]		xxxxx[1]				xxxxx[1]		xxxxx[1]
5,04 - 5,96	12	35	40	76	6	6					xxxxx[1]				
5,97	12	35	40	76	6	4	05970		05970[1]				05970[1]		05970[1]
5,97	12	35	40	76	6	6					05970[1]				
5,98	12	35	40	76	6	4	05980		05980[1]				05980[1]		05980[1]
5,98	12	35	40	76	6	6					05980[1]				
5,99	12	35	40	76	6	4	05990		05990[1]				05990[1]		05990[1]
5,99	12	35	40	76	6	6					05990[1]				
6,00	12	35	40	76	6	4	06000		06000[1]				06000[1]		06000[1]
6,00	12	35	40	76	6	6					06000[1]				
6,01	12	35	40	76	6	4	06010		06010[1]				06010[1]		06010[1]
6,01	12	35	40	76	6	6					06010[1]				
6,02	12	35	40	76	6	4	06020		06020[1]				06020[1]		06020[1]
6,02	12	35	40	76	6	6					06020[1]				
6,03	12	35	40	76	6	4	06030		06030[1]				06030[1]		06030[1]
6,03	12	35	40	76	6	6					06030[1]				
6,04 - 6,05	12	35	40	76	6	4	xxxxx[2]		xxxxx[1]				xxxxx[1]		xxxxx[1]
6,04 - 6,05	12	35	40	76	6	6					xxxxx[1]				
6,06 - 7,96	16	60	65	101	8	6	xxxxx[2]		xxxxx[1]				xxxxx[1]		xxxxx[1]
6,06 - 7,96	16	60	65	101	8	8					xxxxx[1]				
7,97	16	60	65	101	8	6	07970		07970[1]				07970[1]		07970[1]
7,97	16	60	65	101	8	8					07970[1]				
7,98	16	60	65	101	8	6	07980		07980[1]				07980[1]		07980[1]
7,98	16	60	65	101	8	8					07980[1]				
7,99	16	60	65	101	8	6	07990		07990[1]				07990[1]		07990[1]
7,99	16	60	65	101	8	8					07990[1]				
8,00	16	60	65	101	8	6	08000		08000[1]				08000[1]		08000[1]
8,00	16	60	65	101	8	8					08000[1]				

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Continued on next page

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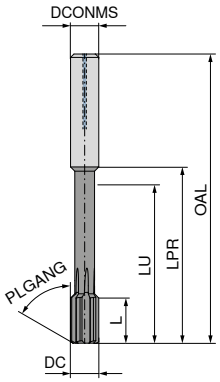

UNI	VA	K	ALU	H
DBG-U	DBQ	DBG-P	DBC-N	DBF-A

52M.57	52T.45	52K.65	52Q.17	52H.55
straight flute	straight flute	straight flute	straight flute	straight flute
PLGANG 60°	PLGANG 45°	PLGANG 30°	PLGANG 60°	PLGANG 30°
ASG2110	ASG2131	ASG2350	ASG2170	ASG2360
Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide
Blind hole	Blind hole	Blind hole	Blind hole	Blind hole

DC +0,004/+0,005 mm	L mm	LU mm	LPR mm	OAL mm	DCONMS h6 mm	ZEFP	40 487 ...	40 404 ...	40 478 ...	40 474 ...	40 476 ...
8,01	16	60	65	101	8	6	08010	08010[1]		08010[1]	08010[1]
8,01	16	60	65	101	8	8			08010[1]		
8,02	16	60	65	101	8	6	08020	08020[1]		08020[1]	08020[1]
8,02	16	60	65	101	8	8			08020[1]		
8,03	16	60	65	101	8	6	08030	08030[1]		08030[1]	08030[1]
8,03	16	60	65	101	8	8			08030[1]		
8,04 - 8,05	16	60	65	101	8	6	xxxxx[2]	xxxxx[1]		xxxxx[1]	xxxxx[1]
8,04 - 8,05	16	60	65	101	8	8			xxxxx[1]		
8,06 - 9,96	16	63	68	108	10	6	xxxxx[2]	xxxxx[1]		xxxxx[1]	xxxxx[1]
8,06 - 9,96	16	63	68	108	10	8			xxxxx[1]		
9,97	16	63	68	108	10	6	09970	09970[1]		09970[1]	09970[1]
9,97	16	63	68	108	10	8			09970[1]		
9,98	16	63	68	108	10	6	09980	09980[1]		09980[1]	09980[1]
9,98	16	63	68	108	10	8			09980[1]		
9,99	16	63	68	108	10	6	09990	09990[1]		09990[1]	09990[1]
9,99	16	63	68	108	10	8			09990[1]		
10,00	16	63	68	108	10	6	10000	10000[1]		10000[1]	10000[1]
10,00	16	63	68	108	10	8			10000[1]		
10,01	16	63	68	108	10	6	10010	10010[1]		10010[1]	10010[1]
10,01	16	63	68	108	10	8			10010[1]		
10,02	16	63	68	108	10	6	10020	10020[1]		10020[1]	10020[1]
10,02	16	63	68	108	10	8			10020[1]		
10,03	16	63	68	108	10	6	10030	10030[1]		10030[1]	10030[1]
10,03	16	63	68	108	10	8			10030[1]		
10,04 - 10,05	16	63	68	108	10	6	xxxxx[2]	xxxxx[1]		xxxxx[1]	xxxxx[1]
10,04 - 10,05	16	63	68	108	10	8			xxxxx[1]		
10,06 - 11,96	20	80	85	130	12	6	xxxxx[2]	xxxxx[1]		xxxxx[1]	xxxxx[1]
10,06 - 11,96	20	80	85	130	12	8			xxxxx[1]		
11,97	20	80	85	130	12	6	11970	11970[1]		11970[1]	11970[1]
11,97	20	80	85	130	12	8			11970[1]		
11,98	20	80	85	130	12	6	11980	11980[1]		11980[1]	11980[1]

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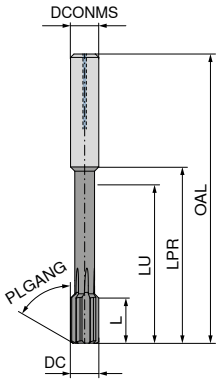

UNI	VA	K	ALU	H
DBG-U	DBQ	DBG-P	DBC-N	DBF-A

52M.57	52T.45	52K.65	52Q.17	52H.55
straight flute	straight flute	straight flute	straight flute	straight flute
PLGANG 60°	PLGANG 45°	PLGANG 30°	PLGANG 60°	PLGANG 30°
ASG2110	ASG2131	ASG2350	ASG2170	ASG2360
Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide
Blind hole	Blind hole	Blind hole	Blind hole	Blind hole

DC +0,004/+0,005 mm	L mm	LU mm	LPR mm	OAL mm	DCONMS h6 mm	ZEFP	40 487 ...	40 404 ...	40 478 ...	40 474 ...	40 476 ...
11,98	20	80	85	130	12	8			11980[1]		
11,99	20	80	85	130	12	6	11990	11990[1]		11990[1]	11990[1]
11,99	20	80	85	130	12	8			11990[1]		
12,00	20	80	85	130	12	6	12000	12000[1]		12000[1]	12000[1]
12,00	20	80	85	130	12	8			12000[1]		
12,01	20	80	85	130	12	6	12010	12010[1]		12010[1]	12010[1]
12,01	20	80	85	130	12	8			12010[1]		
12,02	20	80	85	130	12	6	12020	12020[1]		12020[1]	12020[1]
12,02	20	80	85	130	12	8			12020[1]		
12,03	20	80	85	130	12	6	12030	12030[1]		12030[1]	12030[1]
12,03	20	80	85	130	12	8			12030[1]		
12,04 - 12,05	20	80	85	130	12	6	xxxxx[2]	xxxxx[1]		xxxxx[1]	xxxxx[1]
12,04 - 12,05	20	80	85	130	12	8			xxxxx[1]		
12,06 - 14,05	20	80	85	130	14	6	xxxxx[2]	xxxxx[1]		xxxxx[1]	xxxxx[1]
12,06 - 14,05	20	80	85	130	14	8			xxxxx[1]		
14,06 - 16,05	20	97	102	150	16	6	xxxxx[2]	xxxxx[1]		xxxxx[1]	xxxxx[1]
14,06 - 16,05	20	97	102	150	16	8			xxxxx[1]		
16,06 - 18,05	20	97	102	150	18	6	xxxxx[2]	xxxxx[1]		xxxxx[1]	xxxxx[1]
16,06 - 18,05	20	97	102	150	18	8			xxxxx[1]		
18,06 - 20,05	20	105	110	160	20	6	xxxxx[2]	xxxxx[1]		xxxxx[1]	xxxxx[1]
18,06 - 20,05	20	105	110	160	20	8			xxxxx[1]		

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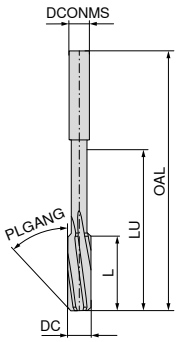
For xxxxx please indicate required Ø in the order (e.g. Ø 8.82 mm → Article No. 40 487 08820)!

→ **Page 100**
Here you will find more information on chamfer geometries (ASG).

NC machine reamers, DIN 8093-2B

- ▲ extremely irregular pitch
- ▲ Ø 2–3.5 mm with centres both ends
- ▲ Ø 4–13 mm with protected centres
- ▲ from Ø 22 mm, similar to DIN 8093-2B
- ▲ PLGANG ≤ Ø 3,75 = 30° / > Ø 3,75 = 45°

NC



Left Hand Helix
Solid carbide
Through hole

40 420 ...

DC H7 mm	L mm	LU mm	OAL mm	DCONMS h6 mm	ZEFP	
2,0	12	18,5	50	3	4	020
2,5	16	29,0	60	3	4	025
3,0	17	33,0	65	4	6	030
3,2	18	33,0	65	4	6	032
3,5	18	43,0	75	4	6	035
4,0	19	43,0	75	4	6	040
4,5	21	39,0	80	6	6	045
5,0	23	52,0	93	6	6	050
5,5	26	53,0	93	6	6	055
6,0	26	53,0	93	6	6	060
6,5	28	61,0	101	6	6	065
7,0	31	68,0	109	8	6	070
7,5	31	68,0	109	8	6	075
8,0	33	77,0	117	8	6	080
8,5	33	77,0	117	8	6	085
9,0	36	80,0	125	10	6	090
9,5	36	80,0	125	10	6	095
10,0	38	88,0	133	10	6	100
10,5	38	88,0	133	10	6	105
11,0	41	97,0	142	10	6	110
12,0	44	100,0	151	12	6	120
13,0	44	100,0	151	12	6	130
14,0	47	106,0	160	16	6	140 1)
15,0	50	108,0	162	16	6	150 1)
16,0	52	116,0	170	16	6	160 1)
17,0	52	121,0	175	18	6	170 1)
18,0	52	128,0	182	18	6	180 1)
19,0	52	133,0	189	20	6	190 1)
20,0	52	139,0	195	20	6	200 1)
22,0	25	105,0	160	20	6	220 1)
24,0	25	125,0	180	20	8	240 1)
25,0	25	125,0	180	20	8	250 1)
26,0	25	125,0	180	20	8	260 1)
28,0	25	119,0	180	25	8	280 1)
30,0	25	139,0	200	25	8	300 1)

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→ v_c Page 84

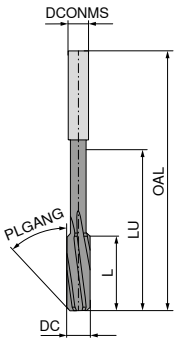
1) with carbide cutting edges

NC machine reamers, DIN 8093-2B

- ▲ extremely irregular pitch
- ▲ Ø 2–3.5 mm with centres both ends
- ▲ Ø 4–13 mm with protected centres
- ▲ PLGANG ≤ Ø 3,75 = 30° / > Ø 3,75 = 45°

NC

TiAlN



Left Hand Helix
Solid carbide
Through hole

40 421 ...

DC H7 mm	L mm	LU mm	OAL mm	DCONMS h6 mm	ZEFP	
2,0	12	18,5	50	3	4	020
2,5	16	29,0	60	3	4	025
3,0	17	33,0	65	4	6	030
3,2	18	33,0	65	4	6	032
3,5	18	43,0	75	4	6	035
4,0	19	43,0	75	4	6	040
4,5	21	39,0	80	6	6	045
5,0	23	52,0	93	6	6	050
5,5	26	53,0	93	6	6	055
6,0	26	53,0	93	6	6	060
6,5	28	61,0	101	6	6	065
7,0	31	68,0	109	8	6	070
7,5	31	68,0	109	8	6	075
8,0	33	77,0	117	8	6	080
8,5	33	77,0	117	8	6	085
9,0	36	80,0	125	10	6	090
9,5	36	80,0	125	10	6	095
10,0	38	88,0	133	10	6	100
10,5	38	88,0	133	10	6	105
11,0	41	97,0	142	10	6	110
12,0	44	100,0	151	12	6	120
13,0	44	100,0	151	12	6	130
14,0	47	106,0	160	16	6	140 1)
15,0	50	108,0	162	16	6	150 1)
16,0	52	116,0	170	16	6	160 1)
17,0	52	121,0	175	18	6	170 1)
18,0	52	128,0	182	18	6	180 1)
19,0	52	133,0	189	20	6	190 1)
20,0	52	139,0	195	20	6	200 1)

P	●
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S	○
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O	

→ v_c Page 84

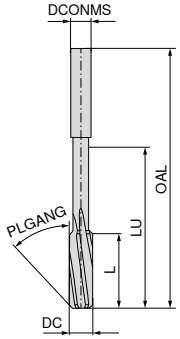
1) with carbide cutting edges

4

NC machine reamers, DIN 8093-2B

- ▲ 0.01 mm steps
- ▲ extremely irregular pitch
- ▲ PLGANG ≤ Ø 3.75 = 30° / > Ø 3.75 = 45°
- ▲ Ø 0.6–0.94 mm similar to DIN 8093-B
- ▲ Ø 0.95–3.75 mm with centres both ends
- ▲ Ø 3.76–12.05 mm with protected centres

NC 100



Left Hand Helix
Solid carbide
Through hole

40 430 ...

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

40 430 ...

DC +0,004 mm	L mm	LU mm	OAL mm	DCONMS h6 mm	ZEFP	
4,76 - 4,96	23	52,0	93	6	6	xxxxx[2]
4,97	23	52,0	93	6	6	04970
4,98	23	52,0	93	6	6	04980
4,99	23	52,0	93	6	6	04990
5,00	23	52,0	93	6	6	05000
5,01	23	52,0	93	6	6	05010
5,02	23	52,0	93	6	6	05020
5,03	23	52,0	93	6	6	05030
5,04 - 5,30	23	52,0	93	6	6	xxxxx[2]
5,31 - 5,96	26	53,0	93	6	6	xxxxx[2]
5,97	26	53,0	93	6	6	05970
5,98	26	53,0	93	6	6	05980
5,99	26	53,0	93	6	6	05990
6,00	26	53,0	93	6	6	06000
6,01	26	53,0	93	6	6	06010
6,02	26	53,0	93	6	6	06020
6,03	26	53,0	93	6	6	06030
6,04 - 6,70	28	61,0	101	6	6	xxxxx[2]
6,71 - 7,50	31	68,0	109	8	6	xxxxx[2]
7,51 - 7,96	33	77,0	117	8	6	xxxxx[2]
7,97	33	77,0	117	8	6	07970
7,98	33	77,0	117	8	6	07980
7,99	33	77,0	117	8	6	07990
8,00	33	77,0	117	8	6	08000
8,01	33	77,0	117	8	6	08010
8,02	33	77,0	117	8	6	08020
8,03	33	77,0	117	8	6	08030
8,04	33	77,0	117	8	6	08040
8,05 - 8,50	33	77,0	117	8	6	xxxxx[2]
8,51 - 9,04	36	80,0	125	10	6	xxxxx[2]
9,05 - 9,50	36	80,0	125	10	6	xxxxx[2]
9,51 - 9,96	38	88,0	133	10	6	xxxxx[2]
9,97	38	88,0	133	10	6	09970
9,98	38	88,0	133	10	6	09980
9,99	38	88,0	133	10	6	09990
10,00	38	88,0	133	10	6	10000
10,01	38	88,0	133	10	6	10010
10,02	38	88,0	133	10	6	10020
10,03	38	88,0	133	10	6	10030
10,04	38	88,0	133	10	6	10040
10,05	38	88,0	133	10	6	10050
10,06 - 10,60	38	88,0	133	10	6	xxxxx[2]
10,61 - 11,80	41	97,0	142	10	6	xxxxx[2]
11,81 - 11,96	44	100,0	151	12	6	xxxxx[2]
11,97	44	100,0	151	12	6	11970
11,98	44	100,0	151	12	6	11980
11,99	44	100,0	151	12	6	11990
12,00	44	100,0	151	12	6	12000
12,01	44	100,0	151	12	6	12010
12,02	44	100,0	151	12	6	12020
12,03	44	100,0	151	12	6	12030
12,04	44	100,0	151	12	6	12040
12,05	44	100,0	151	12	6	12050

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→ v_c Page 84

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

2) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 10 working days

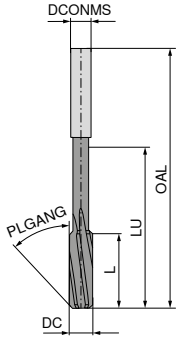
→ **Page 101**
Here you will find the fit dimensions that can be covered with this tool concept.
For xxxxx please indicate required Ø in the order (e.g. Ø 8.05 mm → Article no. 40 430 08050)!

NC machine reamers, DIN 8093-2B

- ▲ 0.01 mm steps
- ▲ extremely irregular pitch
- ▲ PLGANG ≤ Ø 3.75 = 30° / > Ø 3.75 = 45°
- ▲ Ø 0.6–0.94 mm similar to DIN 8093-B
- ▲ Ø 0.95–3.75 mm with centres both ends
- ▲ Ø 3.76–12.05 mm with protected centres

NC 100

TiAlN



Left Hand Helix
Solid carbide
Through hole

40 431 ...

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

40 431 ...

DC +0,004 mm	L mm	LU mm	OAL mm	DCONMS h6 mm	ZEFP	
4,99	23	52,0	93	6	6	04990
5,00	23	52,0	93	6	6	05000
5,01	23	52,0	93	6	6	05010
5,02	23	52,0	93	6	6	05020
5,03	23	52,0	93	6	6	05030
5,04 - 5,30	23	52,0	93	6	6	xxxxx[1]
5,31 - 5,96	26	53,0	93	6	6	xxxxx[1]
5,97	26	53,0	93	6	6	05970
5,98	26	53,0	93	6	6	05980
5,99	26	53,0	93	6	6	05990
6,00	26	53,0	93	6	6	06000
6,01	26	53,0	93	6	6	06010
6,02	26	53,0	93	6	6	06020
6,03	26	53,0	93	6	6	06030
6,04 - 6,70	28	61,0	101	6	6	xxxxx[1]
6,71 - 7,50	31	68,0	109	8	6	xxxxx[1]
7,51 - 7,96	33	77,0	117	8	6	xxxxx[1]
7,97	33	77,0	117	8	6	07970
7,98	33	77,0	117	8	6	07980
7,99	33	77,0	117	8	6	07990
8,00	33	77,0	117	8	6	08000
8,01	33	77,0	117	8	6	08010
8,02	33	77,0	117	8	6	08020
8,03	33	77,0	117	8	6	08030
8,04	33	77,0	117	8	6	08040
8,05 - 8,50	33	77,0	117	8	6	xxxxx[1]
8,51 - 9,04	36	80,0	125	10	6	xxxxx[1]
9,05 - 9,50	36	80,0	125	10	6	xxxxx[1]
9,51 - 9,96	38	88,0	133	10	6	xxxxx[1]
9,97	38	88,0	133	10	6	09970
9,98	38	88,0	133	10	6	09980
9,99	38	88,0	133	10	6	09990
10,00	38	88,0	133	10	6	10000
10,01	38	88,0	133	10	6	10010
10,02	38	88,0	133	10	6	10020
10,03	38	88,0	133	10	6	10030
10,04	38	88,0	133	10	6	10040
10,05	38	88,0	133	10	6	10050
10,06 - 10,60	38	88,0	133	10	6	xxxxx[1]
10,61 - 11,80	41	97,0	142	10	6	xxxxx[1]
11,81 - 11,96	44	100,0	151	12	6	xxxxx[1]
11,97	44	100,0	151	12	6	11970
11,98	44	100,0	151	12	6	11980
11,99	44	100,0	151	12	6	11990
12,00	44	100,0	151	12	6	12000
12,01	44	100,0	151	12	6	12010
12,02	44	100,0	151	12	6	12020
12,03	44	100,0	151	12	6	12030
12,04	44	100,0	151	12	6	12040
12,05	44	100,0	151	12	6	12050

P	●
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H	○
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→ v_c Page 84

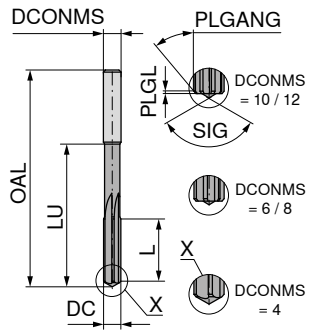
1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 15 working days

→ **Page 101**
Here you will find the fit dimensions that can be covered with this tool concept.
For xxxxx please indicate required Ø in the order (e.g. Ø 8.05 mm → Article no. 40 431 08050)!

4

NC machine reamers, sim. DIN 8093-A

NC100 H



TiAlSiN

straight flute
PLGANG 45°
SIG 120°
Solid carbide
Through hole + blind hole

40 435 ...

DC H7 mm	L mm	LU mm	OAL mm	DCONMS h5 mm	PLGL mm	
0,98	6	16	50	4	0,12	**00980**
0,99	6	16	50	4	0,12	**00990**
1,00	6	16	50	4	0,12	**01000**
1,01	6	16	50	4	0,12	**01010**
1,02	6	16	50	4	0,12	**01020**
1,03	6	16	50	4	0,12	**01030**
1,48	9	16	50	4	0,12	**01480**
1,49	9	16	50	4	0,12	**01490**
1,50	9	16	50	4	0,12	**01500**
1,51	9	16	50	4	0,12	**01510**
1,52	9	16	50	4	0,12	**01520**
1,60	10	16	50	4	0,12	**01600**
1,70	10	16	50	4	0,12	**01700**
1,80	11	16	50	4	0,12	**01800**
1,90	11	16	50	4	0,12	**01900**
1,97	12	16	50	4	0,30	**01970**
1,98	12	16	50	4	0,30	**01980**
1,99	12	16	50	4	0,30	**01990**
2,00	12	16	50	4	0,30	**02000**
2,01	12	16	50	4	0,30	**02010**
2,02	12	16	50	4	0,30	**02020**
2,03	12	16	50	4	0,30	**02030**
2,05	12	16	50	4	0,30	**02050**
2,10	12	16	50	4	0,30	**02100**
2,20	13	16	50	4	0,30	**02200**
2,30	13	16	50	4	0,30	**02300**
2,40	16	26	60	4	0,30	**02400**
2,50	16	26	60	4	0,30	**02500**
2,60	16	26	60	4	0,30	**02600**
2,70	17	30	64	4	0,30	**02700**
2,80	17	30	64	4	0,30	**02800**
2,90	17	30	64	4	0,30	**02900**
2,97	17	30	64	4	0,30	**02970**
2,98	17	30	64	4	0,30	**02980**
2,99	17	30	64	4	0,30	**02990**
3,00	17	30	64	4	0,30	**03000**
3,01	17	30	64	4	0,30	**03010**
3,02	17	30	64	4	0,30	**03020**
3,03	17	30	64	4	0,30	**03030**
3,05	18	34	68	4	0,30	**03050**
3,10	18	34	68	4	0,30	**03100**
3,20	18	34	68	4	0,30	**03200**
3,30	18	34	68	4	0,30	**03300**
3,40	20	40	74	4	0,30	**03400**
3,50	20	40	74	4	0,30	**03500**
3,60	20	40	74	4	0,30	**03600**
3,70	20	40	74	4	0,30	**03700**
3,80	21	43	77	4	0,40	**03800**
3,90	21	43	77	4	0,40	**03900**
3,97	21	43	77	4	0,40	**03970**
3,98	21	43	77	4	0,40	**03980**

40 435 ...

DC H7 mm	L mm	LU mm	OAL mm	DCONMS h5 mm	PLGL mm	
3,99	21	43	77	4	0,40	**03990**
4,00	21	43	77	4	0,40	**04000**
4,01	21	43	77	4	0,40	**04010**
4,02	21	43	77	4	0,40	**04020**
4,03	21	43	77	4	0,40	**04030**
4,05	21	40	82	6	0,40	**04050**
4,10	21	40	82	6	0,40	**04100**
4,20	21	40	82	6	0,40	**04200**
4,30	23	40	82	6	0,40	**04300**
4,40	23	40	82	6	0,40	**04400**
4,50	23	40	82	6	0,40	**04500**
4,60	23	40	82	6	0,40	**04600**
4,70	23	40	82	6	0,40	**04700**
4,80	26	51	93	6	0,50	**04800**
4,90	26	51	93	6	0,50	**04900**
4,97	26	51	93	6	0,50	**04970**
4,98	26	51	93	6	0,50	**04980**
4,99	26	51	93	6	0,50	**04990**
5,00	26	51	93	6	0,50	**05000**
5,01	26	51	93	6	0,50	**05010**
5,02	26	51	93	6	0,50	**05020**
5,03	26	51	93	6	0,50	**05030**
5,05	26	51	93	6	0,50	**05050**
5,10	26	51	93	6	0,50	**05100**
5,20	26	51	93	6	0,50	**05200**
5,30	26	51	93	6	0,50	**05300**
5,40	26	51	93	6	0,50	**05400**
5,50	26	51	93	6	0,50	**05500**
5,60	26	51	93	6	0,50	**05600**
5,70	26	51	93	6	0,50	**05700**
5,80	26	51	93	6	0,50	**05800**
5,90	26	51	93	6	0,50	**05900**
5,97	26	51	93	6	0,50	**05970**
5,98	26	51	93	6	0,50	**05980**
5,99	26	51	93	6	0,50	**05990**
6,00	26	51	93	6	0,50	**06000**

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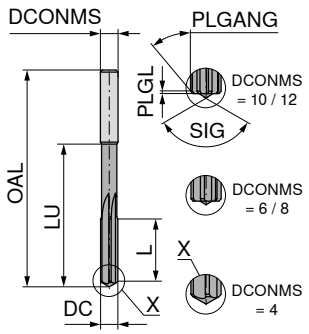
→ **Page 101**
Here you will find the fit dimensions that can be covered with this tool concept.
Intermediate dimensions available on request.

Continued on next page

NC machine reamers, sim. DIN 8093-A

NC100 H



TiAlSiN

straight flute
PLGANG 45°
SIG 120°
Solid carbide
Through hole + blind hole

40 435 ...

DC H7 mm	L mm	LU mm	OAL mm	DCONMS h5 mm	PLGL mm	
6,01	26	51	93	6	0,5	**06010**
6,02	26	51	93	6	0,5	**06020**
6,03	26	51	93	6	0,5	**06030**
6,05	26	59	101	8	0,5	**06050**
6,10	26	59	101	8	0,5	**06100**
6,20	26	59	101	8	0,5	**06200**
6,30	26	59	101	8	0,5	**06300**
6,40	26	59	101	8	0,5	**06400**
6,50	26	59	101	8	0,5	**06500**
6,60	26	59	101	8	0,5	**06600**
6,70	26	59	101	8	0,5	**06700**
6,80	31	67	109	8	0,6	**06800**
6,85	31	67	109	8	0,6	**06850**
6,90	31	67	109	8	0,6	**06900**
7,00	31	67	109	8	0,6	**07000**
7,10	31	67	109	8	0,6	**07100**
7,20	31	67	109	8	0,6	**07200**
7,30	31	67	109	8	0,6	**07300**
7,40	31	67	109	8	0,6	**07400**
7,50	31	67	109	8	0,6	**07500**
7,60	31	67	109	8	0,6	**07600**
7,70	33	75	117	8	0,6	**07700**
7,80	33	75	117	8	0,6	**07800**
7,90	33	75	117	8	0,6	**07900**
7,97	33	75	117	8	0,6	**07970**
7,98	33	75	117	8	0,6	**07980**
7,99	33	75	117	8	0,6	**07990**
8,00	33	75	117	8	0,6	**08000**
8,01	33	75	117	8	0,7	**08010**
8,02	33	75	117	8	0,7	**08020**
8,03	33	75	117	8	0,7	**08030**
8,05	33	71	117	10	0,7	**08050**
8,10	33	71	117	10	0,7	**08100**
8,20	33	71	117	10	0,7	**08200**
8,30	33	71	117	10	0,7	**08300**
8,40	33	71	117	10	0,7	**08400**
8,50	33	71	117	10	0,7	**08500**
8,60	33	71	117	10	0,7	**08600**
8,70	36	79	125	10	0,7	**08700**
8,80	36	79	125	10	0,7	**08800**
8,90	36	79	125	10	0,7	**08900**
9,00	36	79	125	10	0,7	**09000**
9,10	36	79	125	10	0,7	**09100**
9,20	36	79	125	10	0,7	**09200**
9,30	36	79	125	10	0,7	**09300**
9,40	36	79	125	10	0,7	**09400**
9,50	36	79	125	10	0,7	**09500**
9,60	36	79	125	10	0,7	**09600**
9,70	38	87	133	10	0,7	**09700**
9,80	38	87	133	10	0,7	**09800**
9,90	38	87	133	10	0,7	**09900**

40 435 ...

DC H7 mm	L mm	LU mm	OAL mm	DCONMS h5 mm	PLGL mm	
9,97	41	87	133	10	0,7	**09970**
9,98	41	87	133	10	0,7	**09980**
9,99	41	87	133	10	0,7	**09990**
10,00	41	87	133	10	0,7	**10000**
10,01	41	87	133	10	0,7	**10010**
10,02	41	87	133	10	0,8	**10020**
10,03	41	87	133	10	0,8	**10030**
10,04	41	87	133	10	0,8	**10040**
10,05	41	87	133	10	0,8	**10050**
11,17	44	99	150	12	0,8	**11170**
11,97	44	99	150	12	0,8	**11970**
11,98	44	99	150	12	0,8	**11980**
11,99	44	99	150	12	0,8	**11990**
12,00	44	99	150	12	0,8	**12000**
12,01	44	99	150	12	0,8	**12010**
12,02	44	99	150	12	0,8	**12020**
12,03	44	99	150	12	0,8	**12030**
12,04	44	99	150	12	0,8	**12040**
12,05	44	99	150	12	0,8	**12050**

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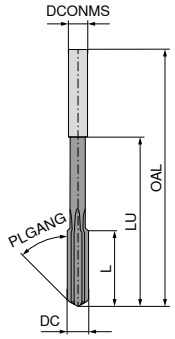
→ **Page 101**
Here you will find the fit dimensions that can be covered with this tool concept.
Intermediate dimensions available on request.

4

Machine reamers, similar to DIN 8093-A / -B

▲ extremely irregular pitch

N



NEW

Left Hand Helix
PLGANG 45°
Solid carbide
Through hole

NEW

straight flute
PLGANG 45°
Solid carbide
Blind hole

DC H7 mm	L mm	LU mm	OAL mm	DCONMS h7 mm	ZEFP	40 415 ...	40 405 ...
2,0	11	31	49	2,0	4	02000	02000
2,1	11	31	49	2,0	4	02100	02100
2,2	12	35	53	2,2	4	02200	02200
2,3	12	35	53	2,2	4	02300	02300
2,4	14	34	57	2,5	4	02400	02400
2,5	14	34	57	2,5	4	02500	02500
2,6	14	34	57	2,5	4	02600	02600
2,7	15	36	61	3,0	4	02700	02700
2,8	15	36	61	3,0	4	02800	02800
2,9	15	36	61	3,0	4	02900	02900
3,0	15	36	61	3,0	4	03000	03000
3,1	15	36	61	3,0	4	03100	03100
3,2	18	40	70	3,5	4	03200	03200
3,3	18	40	70	3,5	4	03300	03300
3,4	18	40	70	3,5	4	03400	03400
3,5	18	40	70	3,5	4	03500	03500
3,6	18	40	70	3,5	4	03600	03600
3,7	18	40	70	3,5	4	03700	03700
3,8	19	43	75	4,0	4	03800	03800
3,9	19	43	75	4,0	4	03900	03900
4,0	19	43	75	4,0	4	04000	04000
4,1	19	43	75	4,0	4	04100	04100
4,2	19	43	75	4,0	4	04200	04200
4,3	21	42	75	4,5	4	04300	04300
4,4	21	42	75	4,5	4	04400	04400
4,5	21	42	75	4,5	4	04500	04500
4,6	21	42	75	4,5	4	04600	04600
4,7	21	42	75	4,5	4	04700	04700
4,8	23	52	86	5,0	6	04800	04800
4,9	23	52	86	5,0	6	04900	04900
5,0	23	52	86	5,0	6	05000	05000
5,1	23	52	86	5,0	6	05100	05100
5,2	23	52	86	5,0	6	05200	05200
5,3	23	52	86	5,0	6	05300	05300
5,4	26	57	93	5,6	6	05400	05400
5,5	26	57	93	5,6	6	05500	05500
5,6	26	57	93	5,6	6	05600	05600
5,7	26	57	93	5,6	6	05700	05700
5,8	26	57	93	5,6	6	05800	05800
5,9	26	57	93	5,6	6	05900	05900
6,0	26	57	93	5,6	6	06000	06000
6,1	26	57	93	5,6	6	06100	06100
6,2	26	57	93	5,6	6	06200	06200
6,3	28	63	101	6,3	6	06300	06300
6,4	28	63	101	6,3	6	06400	06400
6,5	28	63	101	6,3	6	06500	06500
6,6	28	63	101	6,3	6	06600	06600
6,7	28	63	101	6,3	6	06700	06700
6,8	31	69	109	7,1	6	06800	06800
6,9	31	69	109	7,1	6	06900	06900
7,0	31	69	109	7,1	6	07000	07000
7,1	31	69	109	7,1	6	07100	07100
7,2	31	69	109	7,1	6	07200	07200
7,3	31	69	109	7,1	6	07300	07300
7,4	31	69	109	7,1	6	07400	07400
7,5	31	69	109	7,1	6	07500	07500
7,6	33	75	117	8,0	6	07600	07600
7,7	33	75	117	8,0	6	07700	07700
7,8	33	75	117	8,0	6	07800	07800
7,9	33	75	117	8,0	6	07900	07900
8,0	33	75	117	8,0	6	08000	08000
8,1	33	75	117	8,0	6	08100	08100
8,2	33	75	117	8,0	6	08200	08200
8,3	33	75	117	8,0	6	08300	08300
8,4	33	75	117	8,0	6	08400	08400
8,5	33	75	117	8,0	6	08500	08500
8,6	36	81	125	9,0	6	08600	08600
8,7	36	81	125	9,0	6	08700	08700
8,8	36	81	125	9,0	6	08800	08800
8,9	36	81	125	9,0	6	08900	08900
9,0	36	81	125	9,0	6	09000	09000
9,1	36	81	125	9,0	6	09100	09100
9,2	36	81	125	9,0	6	09200	09200
9,3	36	81	125	9,0	6	09300	09300
9,4	36	81	125	9,0	6	09400	09400
9,5	36	81	125	9,0	6	09500	09500
9,6	38	87	133	10,0	6	09600	09600
9,7	38	87	133	10,0	6	09700	09700
9,8	38	87	133	10,0	6	09800	09800
9,9	38	87	133	10,0	6	09900	09900
10,0	38	87	133	10,0	6	10000	10000
10,1	38	87	133	10,0	6	10100	10100
10,2	38	87	133	10,0	6	10200	10200
10,3	38	87	133	10,0	6	10300	10300
10,4	38	87	133	10,0	6	10400	10400
10,5	38	87	133	10,0	6	10500	10500
10,6	38	87	133	10,0	6	10600	10600
10,7	41	96	142	10,0	6	10700	10700
10,8	41	96	142	10,0	6	10800	10800
10,9	41	96	142	10,0	6	10900	10900
11,0	41	96	142	10,0	6	11000	11000
11,1	41	96	142	10,0	6	11100	11100
11,2	41	96	142	10,0	6	11200	11200
11,3	41	96	142	10,0	6	11300	11300
11,4	41	96	142	10,0	6	11400	11400
11,5	41	96	142	10,0	6	11500	11500
11,6	41	96	142	10,0	6	11600	11600
11,7	41	96	142	10,0	6	11700	11700
11,8	41	96	142	10,0	6	11800	11800
11,9	44	100	151	10,0	6	11900	11900
12,0	44	100	151	10,0	6	12000	12000

	40 415 ...	40 405 ...
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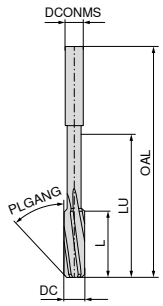
NC machine reamers, DIN 212-3-B

▲ maximum radial run-out accuracy
▲ PLGANG ≤ Ø 3,75 = 30° / > Ø 3,75 = 45°

NC



Left Hand Helix
HSS-E
Through hole

40 110 ...

DC H7 mm	L mm	LU mm	OAL mm	DCONMS h6 mm	ZEFP	
1,5	8	15,5	40	2	3	015
1,6	9	16,0	43	2	3	016
1,7	9	16,0	43	2	3	017
1,8	10	19,0	46	2	4	018
1,9	10	19,0	46	2	4	019
2,0	11	21,0	49	2	4	020
2,1	11	21,0	49	2	4	021
2,2	12	22,0	53	3	4	022
2,3	12	22,0	53	3	4	023
2,4	14	26,0	57	3	4	024
2,5	14	26,0	57	3	4	025
2,6	14	26,0	57	3	4	026
2,7	15	30,0	61	3	6	027
2,8	15	30,0	61	3	6	028
2,9	15	30,0	61	3	6	029
3,0	15	30,0	61	3	6	030
3,1	16	34,0	65	4	6	031
3,2	16	34,0	65	4	6	032
3,3	16	34,0	65	4	6	033
3,4	18	39,0	70	4	6	034
3,5	18	39,0	70	4	6	035
3,6	18	39,0	70	4	6	036
3,7	18	39,0	70	4	6	037
3,8	19	44,0	75	4	6	038
3,9	19	44,0	75	4	6	039
4,0	19	44,0	75	4	6	040
4,1	19	44,0	75	4	6	041
4,2	19	44,0	75	4	6	042
4,3	21	48,0	80	5	6	043
4,4	21	48,0	80	5	6	044
4,5	21	48,0	80	5	6	045
4,6	21	48,0	80	5	6	046
4,7	21	48,0	80	5	6	047
4,8	23	54,0	86	5	6	048
4,9	23	54,0	86	5	6	049
5,0	23	54,0	86	5	6	050
5,1	23	54,0	86	5	6	051
5,2	23	54,0	86	5	6	052
5,3	23	54,0	86	5	6	053
5,4	26	53,0	93	6	6	054
5,5	26	53,0	93	6	6	055
5,6	26	53,0	93	6	6	056
5,7	26	53,0	93	6	6	057
5,8	26	53,0	93	6	6	058
5,9	26	53,0	93	6	6	059
6,0	26	53,0	93	6	6	060
6,1	28	61,0	101	6	6	061
6,2	28	61,0	101	6	6	062
6,3	28	61,0	101	6	6	063
6,4	28	61,0	101	6	6	064
6,5	28	61,0	101	6	6	065
6,6	28	61,0	101	6	6	066

40 110 ...

DC H7 mm	L mm	LU mm	OAL mm	DCONMS h6 mm	ZEFP	
6,7	28	61,0	101	6	6	067
6,8	31	69,0	109	8	6	068
6,9	31	69,0	109	8	6	069
7,0	31	69,0	109	8	6	070
7,1	31	69,0	109	8	6	071
7,2	31	69,0	109	8	6	072
7,3	31	69,0	109	8	6	073
7,4	31	69,0	109	8	6	074
7,5	31	69,0	109	8	6	075
7,6	33	77,0	117	8	6	076
7,7	33	77,0	117	8	6	077
7,8	33	77,0	117	8	6	078
7,9	33	77,0	117	8	6	079
8,0	33	77,0	117	8	6	080
8,1	33	77,0	117	8	6	081
8,2	33	77,0	117	8	6	082
8,3	33	77,0	117	8	6	083
8,4	33	77,0	117	8	6	084
8,5	33	77,0	117	8	6	085
8,6	36	81,0	125	10	6	086
8,7	36	81,0	125	10	6	087
8,8	36	81,0	125	10	6	088
8,9	36	81,0	125	10	6	089
9,0	36	81,0	125	10	6	090
9,1	36	81,0	125	10	6	091
9,2	36	81,0	125	10	6	092
9,3	36	81,0	125	10	6	093
9,4	36	81,0	125	10	6	094
9,5	36	81,0	125	10	6	095
9,6	38	89,0	133	10	6	096
9,7	38	89,0	133	10	6	097
9,8	38	89,0	133	10	6	098
9,9	38	89,0	133	10	6	099
10,0	38	89,0	133	10	6	100
11,0	41	98,0	142	10	6	110
12,0	44	106,0	151	10	6	120
13,0	44	106,0	151	10	6	130
14,0	47	110,0	160	14	8	140
15,0	50	112,0	162	14	8	150
16,0	52	120,0	170	14	8	160
17,0	54	125,0	175	14	8	170
18,0	56	132,0	182	14	8	180
19,0	58	136,0	189	16	8	190
20,0	60	142,0	195	16	8	200

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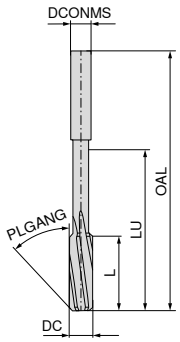
→ v_c Page 87

4

NC machine reamers, DIN 212-3-B

▲ 0.01 mm steps
▲ tolerance: Ø 1.00 – Ø 5.50 mm = +0.004 mm
▲ tolerance: Ø 5.51 – Ø 12.00 mm = +0.005 mm
▲ PLGANG ≤ Ø 3,75 = 30° / > Ø 3,75 = 45°

NC 100



Left Hand Helix
HSS-E
Through hole

40 115 ...

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

40 115 ...

DC mm	L mm	LU mm	OAL mm	DCONMS h6 mm	ZEFP	
5,02	23,0	54,0	86	5	6	05020
5,03 - 5,30	23,0	54,0	86	5	6	xxxxx[1]
5,31 - 5,60	26,0	53,0	93	6	6	xxxxx[1]
5,61 - 5,96	26,0	53,0	93	6	6	xxxxx[1]
5,97	26,0	53,0	93	6	6	05970
5,98	26,0	53,0	93	6	6	05980
5,99	26,0	53,0	93	6	6	05990
6,00	26,0	53,0	93	6	6	06000
6,01	26,0	53,0	93	6	6	06010
6,02	26,0	53,0	93	6	6	06020
6,03	26,0	53,0	93	6	6	06030[1]
6,04 - 6,70	28,0	61,0	101	6	6	xxxxx[1]
6,71 - 7,20	31,0	69,0	109	8	6	xxxxx[1]
7,21 - 7,50	31,0	69,0	109	8	6	xxxxx[1]
7,51 - 7,96	33,0	77,0	117	8	6	xxxxx[1]
7,97	33,0	77,0	117	8	6	07970
7,98	33,0	77,0	117	8	6	07980
7,99	33,0	77,0	117	8	6	07990
8,00	33,0	77,0	117	8	6	08000
8,01	33,0	77,0	117	8	6	08010
8,02	33,0	77,0	117	8	6	08020
8,03 - 8,20	33,0	77,0	117	8	6	xxxxx[1]
8,21 - 8,50	33,0	77,0	117	8	6	xxxxx[1]
8,51 - 8,99	36,0	81,0	125	10	6	xxxxx[1]
9,00	36,0	81,0	125	10	6	09000
9,01	36,0	81,0	125	10	6	09010
9,02	36,0	81,0	125	10	6	09020
9,03 - 9,20	36,0	81,0	125	10	6	xxxxx[1]
9,21 - 9,50	36,0	81,0	125	10	6	xxxxx[1]
9,51 - 9,96	38,0	89,0	133	10	6	xxxxx[1]
9,97	38,0	89,0	133	10	6	09970
9,98	38,0	89,0	133	10	6	09980
9,99	38,0	89,0	133	10	6	09990
10,00	38,0	89,0	133	10	6	10000
10,01	38,0	89,0	133	10	6	10010
10,02	38,0	89,0	133	10	6	10020
10,03 - 10,20	38,0	89,0	133	10	6	xxxxx[1]
10,21 - 10,60	38,0	89,0	133	10	6	xxxxx[1]
10,61 - 11,20	41,0	98,0	142	10	6	xxxxx[1]
11,21 - 11,80	41,0	98,0	142	10	6	xxxxx[1]
11,81 - 11,96	44,0	106,0	151	10	6	xxxxx[1]
11,97	44,0	106,0	151	10	6	11970
11,98	44,0	106,0	151	10	6	11980
11,99	44,0	106,0	151	10	6	11990
12,00	44,0	106,0	151	10	6	12000

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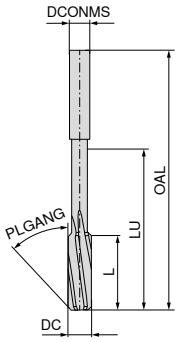
→ v_c Page 87

1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 10 working days / Minimum order 5 pieces

→ **Page 101**
Here you will find the fit dimensions that can be covered with this tool concept.
For xxxxx please indicate required Ø in the order (e.g. Ø 8.03 mm → Article no. 40 115 08030)!

Machine reamers, DIN 212-B

N



4

Left Hand Helix
PLGANG 45°
HSS-E
Through hole

40 150 ...

DC H7 mm	L mm	LU mm	OAL mm	DCONMS h9 mm	ZEFP	
1,0	5,5	13	34	1,0	3	**010**
1,5	8,0	16	40	1,5	3	**015**
2,0	11,0	22	49	2,0	4	**020**
2,5	14,0	26	57	2,5	4	**025**
3,0	15,0	29	61	3,0	6	**030**
3,5	18,0	38	70	3,5	6	**035**
4,0	19,0	46	75	4,0	6	**040**
4,5	21,0	51	80	4,5	6	**045**
5,0	23,0	57	86	5,0	6	**050**
5,5	26,0	56	93	5,6	6	**055**
6,0	26,0	56	93	5,6	6	**060**
6,5	28,0	64	101	6,3	6	**065**
7,0	31,0	72	109	7,1	6	**070**
7,5	31,0	72	109	7,1	6	**075**
8,0	33,0	80	117	8,0	6	**080**
8,5	33,0	80	117	8,0	6	**085**
9,0	36,0	84	125	9,0	6	**090**
9,5	36,0	84	125	9,0	6	**095**
10,0	38,0	92	133	10,0	6	**100**
11,0	41,0	101	142	10,0	6	**110**
12,0	44,0	110	151	10,0	6	**120**
13,0	44,0	110	151	10,0	6	**130**
14,0	47,0	114	160	12,5	8	**140**
15,0	50,0	116	162	12,5	8	**150**
16,0	52,0	124	170	12,5	8	**160**
17,0	54,0	129	175	14,0	8	**170**
18,0	56,0	136	182	14,0	8	**180**
19,0	58,0	140	189	16,0	8	**190**
20,0	60,0	146	195	16,0	8	**200**

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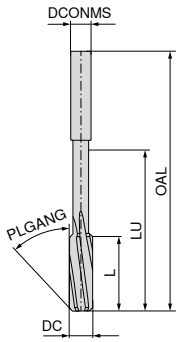
→ v_c Page 88

All other diameters, tolerance classes and chamfers also available on request.

Machine reamers, DIN 212-B

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

N 100



Left Hand Helix
PLGANG 45°
HSS-E
Through hole

40 140 ...

DC mm	L mm	LU mm	OAL mm	DCONMS h9 mm	ZEFP	
0,95 - 1,06	5,5	13	34	1,0	3	xxxxx[1]
1,07 - 1,18	6,5	14	36	1,1	3	xxxxx[1]
1,19 - 1,32	7,5	15	38	1,2	3	xxxxx[1]
1,33 - 1,41	8,0	16	40	1,4	3	xxxxx[1]
1,42 - 1,47	8,0	16	40	1,5	3	xxxxx[1]
1,48	8,0	16	40	1,5	3	01480
1,49	8,0	16	40	1,5	3	01490
1,50	8,0	16	40	1,5	3	01500
1,51 - 1,70	9,0	18	43	1,6	3	xxxxx[1]
1,71 - 1,90	10,0	20	46	1,8	4	xxxxx[1]
1,91 - 1,97	11,0	22	49	2,0	4	xxxxx[1]
1,98	11,0	22	49	2,0	4	01980
1,99	11,0	22	49	2,0	4	01990
2,00	11,0	22	49	2,0	4	02000
2,01	11,0	22	49	2,0	4	02010
2,02	11,0	22	49	2,0	4	02020
2,03	11,0	22	49	2,0	4	02030
2,04	11,0	22	49	2,0	4	02040
2,05	11,0	22	49	2,0	4	02050
2,06 - 2,09	11,0	22	49	2,0	4	xxxxx[1]
2,10 - 2,12	11,0	22	49	2,0	4	xxxxx[1]
2,13 - 2,36	12,0	24	53	2,2	4	xxxxx[1]
2,37 - 2,49	14,0	26	57	2,5	4	xxxxx[1]
2,50 - 2,59	14,0	26	57	2,5	4	xxxxx[1]
2,60 - 2,65	14,0	26	57	2,5	4	xxxxx[1]
2,66 - 2,80	15,0	30	61	2,8	6	xxxxx[1]
2,81 - 2,94	15,0	29	61	3,0	6	xxxxx[1]
2,95	15,0	29	61	3,0	6	02950[1]
2,96	15,0	29	61	3,0	6	02960[1]
2,97	15,0	29	61	3,0	6	02970
2,98	15,0	29	61	3,0	6	02980
2,99	15,0	29	61	3,0	6	02990
3,00	15,0	29	61	3,0	6	03000
3,01	16,0	33	65	3,2	6	03010
3,02	16,0	33	65	3,2	6	03020
3,03	16,0	33	65	3,2	6	03030
3,04	16,0	33	65	3,2	6	03040
3,05	16,0	33	65	3,2	6	03050
3,06	16,0	33	65	3,2	6	03060
3,07	16,0	33	65	3,2	6	03070
3,08 - 3,09	16,0	33	65	3,2	6	xxxxx[1]
3,10 - 3,35	16,0	33	65	3,2	6	xxxxx[1]
3,36 - 3,49	18,0	38	70	3,5	6	xxxxx[1]
3,50 - 3,59	18,0	38	70	3,5	6	xxxxx[1]
3,60 - 3,75	18,0	38	70	3,5	6	xxxxx[1]
3,76 - 3,81	19,0	46	75	4,0	6	xxxxx[1]
3,82 - 3,94	19,0	46	75	4,0	6	xxxxx[1]
3,95	19,0	46	75	4,0	6	03950[1]
3,96	19,0	46	75	4,0	6	03960[1]
3,97	19,0	46	75	4,0	6	03970

40 140 ...

DC mm	L mm	LU mm	OAL mm	DCONMS h9 mm	ZEFP	
3,98	19,0	46	75	4,0	6	03980
3,99	19,0	46	75	4,0	6	03990
4,00	19,0	46	75	4,0	6	04000
4,01	19,0	46	75	4,0	6	04010
4,02	19,0	46	75	4,0	6	04020
4,03	19,0	46	75	4,0	6	04030
4,04	19,0	46	75	4,0	6	04040
4,05	19,0	46	75	4,0	6	04050
4,06	19,0	46	75	4,0	6	04060
4,07	19,0	46	75	4,0	6	04070
4,08	19,0	46	75	4,0	6	04080
4,09 - 4,20	19,0	46	75	4,0	6	xxxxx[1]
4,21 - 4,25	19,0	46	75	4,0	6	xxxxx[1]
4,26 - 4,75	21,0	51	80	4,5	6	xxxxx[1]
4,76 - 4,95	23,0	57	86	5,0	6	xxxxx[1]
4,96	23,0	57	86	5,0	6	04960[1]
4,97	23,0	57	86	5,0	6	04970
4,98	23,0	57	86	5,0	6	04980
4,99	23,0	57	86	5,0	6	04990
5,00	23,0	57	86	5,0	6	05000
5,01	23,0	57	86	5,0	6	05010
5,02	23,0	57	86	5,0	6	05020
5,03	23,0	57	86	5,0	6	05030
5,04	23,0	57	86	5,0	6	05040
5,05	23,0	57	86	5,0	6	05050
5,06	23,0	57	86	5,0	6	05060
5,07	23,0	57	86	5,0	6	05070
5,08 - 5,20	23,0	57	86	5,0	6	xxxxx[1]
5,21 - 5,30	23,0	57	86	5,0	6	xxxxx[1]
5,31 - 5,94	26,0	56	93	5,6	6	xxxxx[1]
5,95	26,0	56	93	5,6	6	05950[1]
5,96	26,0	56	93	5,6	6	05960[1]
5,97	26,0	56	93	5,6	6	05970
5,98	26,0	56	93	5,6	6	05980
5,99	26,0	56	93	5,6	6	05990

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→ v_c Page 88

1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 16 working days

→ **Page 101**
Here you will find the fit dimensions that can be covered with this tool concept.
For xxxxx please indicate required Ø in the order (e.g. Ø 10.06 mm → Article no. 40 140 10060)!

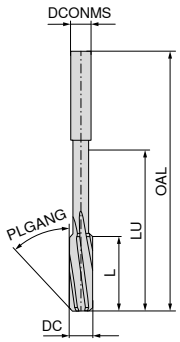
All other diameters, tolerance classes and chamfers also available on request.

Continued on next page

Machine reamers, DIN 212-B

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

N 100



Left Hand Helix
PLGANG 45°
HSS-E
Through hole

40 140 ...

DC mm	L mm	LU mm	OAL mm	DCONMS h9 mm	ZEFP	
6,00	26	56	93	5,6	6	06000
6,01	28	64	101	6,3	6	06010
6,02	28	64	101	6,3	6	06020
6,03	28	64	101	6,3	6	06030
6,04	28	64	101	6,3	6	06040
6,05	28	64	101	6,3	6	06050
6,06 - 6,11	28	64	101	6,3	6	xxxxx[1]
6,12 - 6,34	28	64	101	6,3	6	xxxxx[1]
6,35	28	64	101	6,3	6	06350
6,36 - 6,70	28	64	101	6,3	6	xxxxx[1]
6,71 - 6,94	31	72	109	7,1	6	xxxxx[1]
6,95	31	72	109	7,1	6	06950[1]
6,96	31	72	109	7,1	6	06960[1]
6,97	31	72	109	7,1	6	06970[1]
6,98	31	72	109	7,1	6	06980[1]
6,99	31	72	109	7,1	6	06990[1]
7,00	31	72	109	7,1	6	07000[1]
7,01	31	72	109	7,1	6	07010[1]
7,02	31	72	109	7,1	6	07020[1]
7,03	31	72	109	7,1	6	07030[1]
7,04 - 7,50	31	72	109	7,1	6	xxxxx[1]
7,51 - 7,94	33	80	117	8,0	6	xxxxx[1]
7,95	33	80	117	8,0	6	07950[1]
7,96	33	80	117	8,0	6	07960[1]
7,97	33	80	117	8,0	6	07970
7,98	33	80	117	8,0	6	07980
7,99	33	80	117	8,0	6	07990
8,00	33	80	117	8,0	6	08000
8,01	33	80	117	8,0	6	08010
8,02	33	80	117	8,0	6	08020
8,03	33	80	117	8,0	6	08030
8,04	33	80	117	8,0	6	08040
8,05	33	80	117	8,0	6	08050
8,06 - 8,20	33	80	117	8,0	6	xxxxx[1]
8,21 - 8,50	33	80	117	8,0	6	xxxxx[1]
8,51 - 8,63	36	84	125	9,0	6	xxxxx[1]
8,64 - 8,95	36	84	125	9,0	6	xxxxx[1]
8,96	36	84	125	9,0	6	08960[1]
8,97	36	84	125	9,0	6	08970[1]
8,98	36	84	125	9,0	6	08980[1]
8,99	36	84	125	9,0	6	08990[1]
9,00	36	84	125	9,0	6	09000[1]
9,01	36	84	125	9,0	6	09010[1]
9,02	36	84	125	9,0	6	09020[1]
9,03 - 9,50	36	84	125	9,0	6	xxxxx[1]
9,51 - 9,63	38	92	133	10,0	6	xxxxx[1]
9,64 - 9,95	38	92	133	10,0	6	xxxxx[1]
9,96	38	92	133	10,0	6	09960[1]
9,97	38	92	133	10,0	6	09970
9,98	38	92	133	10,0	6	09980

40 140 ...

DC mm	L mm	LU mm	OAL mm	DCONMS h9 mm	ZEFP	
9,99	38	92	133	10,0	6	09990
10,00	38	92	133	10,0	6	10000
10,01	38	92	133	10,0	6	10010
10,02	38	92	133	10,0	6	10020
10,03	38	92	133	10,0	6	10030
10,04	38	92	133	10,0	6	10040
10,05	38	92	133	10,0	6	10050
10,06 - 10,09	38	92	133	10,0	6	xxxxx[1]
10,10	38	92	133	10,0	6	10100
10,11 - 10,19	38	92	133	10,0	6	xxxxx[1]
10,20	38	92	133	10,0	6	10200
10,21 - 10,60	38	92	133	10,0	6	xxxxx[1]
10,61 - 11,20	41	101	142	10,0	6	xxxxx[1]
11,21 - 11,80	41	101	142	10,0	6	xxxxx[1]
11,81 - 11,95	44	110	151	10,0	6	xxxxx[1]
11,96	44	110	151	10,0	6	11960[1]
11,97	44	110	151	10,0	6	11970
11,98	44	110	151	10,0	6	11980
11,99	44	110	151	10,0	6	11990
12,00	44	110	151	10,0	6	12000
12,01 - 12,05	44	110	151	10,0	6	xxxxx[1]

P	●
M	○
K	●
N	●
S	○
H	
O	●

→ v_c Page 88

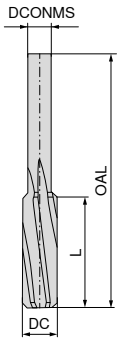
1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 16 working days

→ **Page 101**
Here you will find the fit dimensions that can be covered with this tool concept.
For xxxxx please indicate required Ø in the order (e.g. Ø 10.06 mm → Article no. 40 140 10060)!

All other diameters, tolerance classes and chamfers also available on request.

Stub reamers, DIN 8089-B

AR



Left Hand Helix
PLGANG 45°
HSS-E
Through hole

40 145 ...

DC $_{H7}$ mm	L mm	OAL mm	DCONMS $_{h8}$ mm	ZEFP	
4	20	56	3,55	6	**040**
5	22	63	4,00	6	**050**
6	22	63	5,00	6	**060**
8	25	71	6,30	6	**080**
10	25	71	8,00	6	**100**
12	28	80	10,00	6	**120**
14	32	90	12,50	8	**140**
16	32	90	12,50	8	**160**
18	36	100	16,00	8	**180**
20	36	100	16,00	8	**200**

P	●
M	○
K	●
N	●
S	○
H	
O	●

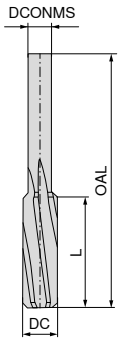
→ v_c Page 88

All other diameters, tolerance classes and chamfers also available on request.

Stub reamers, DIN 8089-B

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

AR 100



Left Hand Helix
PLGANG 45°
HSS-E
Through hole

40 139 ...

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

40 139 ...

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

P	●
M	○
K	●
N	●
S	○
H	
O	●

→ v_c Page 88

1) Not available ex stock, articles are non-returnable and cannot be exchanged / Delivery time 16 working days

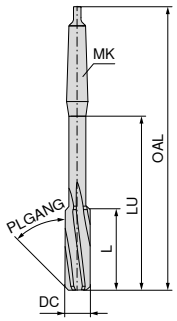
→ **Page 101**
Here you will find the fit dimensions that can be covered with this tool concept.
For xxxxx please indicate required Ø in the order (e.g. Ø 10.06 mm → Article no. 40 139 10060)!

All other diameters, tolerance classes and chamfers also available on request.

Machine reamers HSS-E DIN 208

▲ the circular land on the cutting edge burnishes the hole and guides the reamer

N



Left Hand Helix
PLGANG 45°
HSS-E
Through hole

40 160 ...

DC H7 mm	L mm	LU mm	OAL mm	MK	ZEFP	
16	52	127	210	2	8	**160**
17	54	132	214	2	8	**170**
18	56	137	219	2	8	**180**
19	58	142	223	2	8	**190**
20	60	147	228	2	8	**200**
21	62	151	232	2	8	**210**
22	64	156	237	2	8	**220**
23	66	160	241	2	8	**230**
24	68	167	268	3	8	**240**
25	68	167	268	3	8	**250**
26	70	172	273	3	8	**260**
27	71	177	277	3	10	**270**
28	71	177	277	3	10	**280**
29	73	181	281	3	10	**290**
30	73	181	281	3	10	**300**
32	77	190	317	4	10	**320**
34	78	194	321	4	10	**340**
35	78	195	321	4	10	**350**
36	79	200	325	4	10	**360**
38	81	204	329	4	10	**380**
40	81	204	329	4	10	**400**
42	82	211	333	4	12	**420**
44	83	215	336	4	12	**440**
50	86	224	344	4	12	**500**

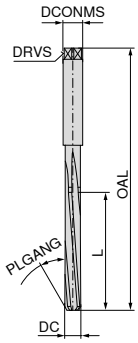
P	●
M	○
K	●
N	●
S	○
H	
O	●

→ v_c Page 88

Hand reamers, DIN 206-B

▲ PLGANG ≤ Ø 3,5 = 30°; > Ø 3,5 = 45°/30°

H



Left Hand Helix
HSS
Through hole

40 100 ...

DC H7 mm	L mm	OAL mm	DRVS mm	DCONMS mm	ZEFP	
3,0	31	62	2,24	3,0	6	**030**
3,2	33	66	2,50	3,2	6	**032**
3,5	35	71	2,80	3,5	6	**035**
4,0	38	76	3,15	4,0	6	**040**
4,5	41	81	3,55	4,5	6	**045**
5,0	44	87	4,00	5,0	6	**050**
5,5	47	93	4,50	5,5	6	**055**
6,0	47	93	4,50	6,0	6	**060**
7,0	54	107	5,60	7,0	6	**070**
8,0	58	115	6,30	8,0	6	**080**
9,0	62	124	7,10	9,0	6	**090**
10,0	66	133	8,00	10,0	6	**100**
11,0	71	142	9,00	11,0	6	**110**
12,0	76	152	10,00	12,0	6	**120**
13,0	76	152	10,00	13,0	6	**130**
14,0	81	163	11,20	14,0	8	**140**
15,0	81	163	11,20	15,0	8	**150**
16,0	87	175	12,50	16,0	8	**160**
17,0	87	175	14,00	17,0	8	**170**
18,0	93	188	14,00	18,0	8	**180**
19,0	93	188	14,00	19,0	8	**190**
20,0	100	201	16,00	20,0	8	**200**
22,0	107	215	18,00	22,0	8	**220**
24,0	115	231	20,00	24,0	8	**240**
25,0	115	231	20,00	25,0	8	**250**
26,0	115	231	20,00	26,0	8	**260**
28,0	124	247	22,40	28,0	10	**280**
30,0	124	247	22,40	30,0	10	**300**

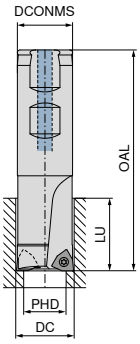
P	●
M	○
K	●
N	●
S	○
H	
O	●

All other diameters, tolerance classes and chamfers also available on request.

Insert countersink 180°

Scope of supply:
Indexable insert countersink including clamping screws

WPS



NEW

4


SIG 180°

30 198 ...

DC mm	PHD mm	ZEFP	ZNF	DCONMS mm	LU mm	OAL mm	Insert	
10	5,3	1	1	16	10	80	WOEX 030204	**01000** [1]
11	6,4	1	1	16	11	80	WOEX 030204	**01100** [1]
15	8,4	1	1	16	15	80	WOEX 05T304	**01500**
18	10,4	1	1	16	18	80	WOEX 05T304	**01800**
20	13,0	1	1	25	20	100	WOEX 05T304	**02000**
24	15,0	2	2	25	24	100	WOEX 05T304	**02400**
26	17,0	2	2	25	26	100	WOEX 05T304	**02600**
30	19,0	2	2	25	30	100	WOEX 06T304	**03000**
33	21,0	2	2	25	33	100	WOEX 080404	**03300**
36	21,0	2	2	25	36	100	WOEX 080404	**03600**
40	25,0	2	2	25	40	100	WOEX 080404	**04000**
48	28,0	2	2	32	48	120	WOEX 100504	**04800**

1) Without Through Coolant


Key D

80 950 ...

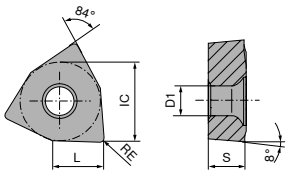

Clamping screw

10 950 ...

Spare parts DC				
10 - 11	T06 - IP	**123**	M2,0x4,3 - 06IP	**10000**
15 - 26	T08 - IP	**125**	M2,5x7,2 - 08IP	**10500**
30	T10 - IP	**127**	M3,5x7,3 - 10IP	**10600**
33 - 48	T15 - IP	**128**	M4,5x9 - 15IP	**12700**

WOEX

Designation	L	IC	S	D1
	mm	mm	mm	mm
WOEX 0302..	3,2	5	2,30	2,30
WOEX 05T3..	5,3	8	3,80	2,85
WOEX 06T3..	6,6	10	3,80	4,05
WOEX 0804..	7,9	12	4,80	4,90
WOEX 1005..	9,9	15	5,30	4,90



WOEX

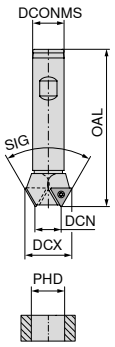
	-01 K10	-01 BK8425
		
	WOEX	WOEX
	10 821 ...	10 821 ...
ISO / RE mm		
030204 / 0,4	35301	30301
05T304 / 0,4	35501	30501
06T304 / 0,4	35601	30601
080404 / 0,4	35801	30801
100504 / 0,4	36001	31001
P		●
M		●
K		●
N	●	○
S	●	●
H		○
O	●	

→ v_c Page 89

Indexable chamfer milling 90°

Scope of supply:
Indexable insert countersink including clamping screws

WPS




SIG 90°

30 196 ...

DCX mm	DCN mm	PHD mm	ZEFP	ZNF	DCONMS mm	OAL mm	Insert	
19	7	9,5	2	2	16	100	TOHX 090204	**19000**
23	11	12,0	2	2	16	100	TOHX 090204	**23000**
26	11	12,0	1	2	16	100	TOHX 090204	**26000**
30	12	13,0	2	2	20	100	TOHX 140305	**30000**
34	16	17,0	2	2	20	100	TOHX 140305	**34000**
37	19	20,0	2	2	20	100	TOHX 140305	**37000**


TORX® Screws

62 950 ...


Key D

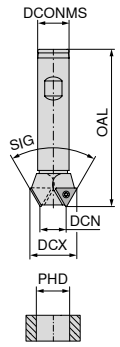
80 950 ...

Spare parts DCX				
19 - 26	M2,6x6,2 - 08IP	**09900**	T08 - IP	**125**
30 - 37	M3,5x7,3 - 10IP	**12600**	T10 - IP	**127**

Indexable chamfer milling 60°

Scope of supply:
Indexable insert countersink including clamping screws

WPS




SIG 60°

30 197 ...

DCX mm	DCN mm	PHD mm	ZEFP	ZNF	DCONMS mm	OAL mm	Insert	
16,5	8,1	8,5	1	1	16	100	TOHX 090204	**16500**
20,0	11,6	12,0	2	2	16	100	TOHX 090204	**20000**
22,0	13,6	14,0	2	2	16	100	TOHX 090204	**22000**
23,5	15,1	15,5	2	2	16	100	TOHX 090204	**23500**
25,5	17,1	17,5	2	2	16	100	TOHX 090204	**25500**


TORX® Screws

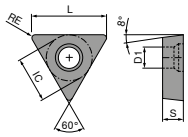

Key D

62 950 ... **80 950 ...**

Spare parts DCX				
16,5 - 22	M2,6x5,2 - 08IP	**12000**	T08 - IP	**125**
23,5 - 25,5	M2,6x6,2 - 08IP	**09900**	T08 - IP	**125**

TOHX

Designation	L mm	IC mm	S mm	D1 mm
TOHX 0902..	9,12	5,6	2,50	2,8
TOHX 1403..	13,62	8,2	3,00	3,8



TOHX

	-G06 BK8425	-U877 BK8425	-G12 BK8425
	F TOHX	F TOHX	F TOHX
ISO / RE mm	62 602 ...	62 604 ...	62 603 ...
090204EN 0,4		31400	31400
140305EN 0,5	33000		
P	●	●	●
M	●	●	●
K	●	●	●
N	○	○	○
S	●	●	●
H	○	○	○
O			

→ v_c Page 89

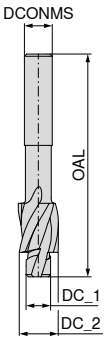
TOHX

	-U877 K10	-G12 K10
	F TOHX	F TOHX
ISO / RE mm	62 604 ...	62 603 ...
090204EN 0,4	51400	
090204FN 0,4		51600
140305FN 0,5		52800
P		
M		
K		
N	●	●
S	●	●
H		
O	●	●

→ v_c Page 89

Counterbore, DIN 373

▲ with fixed pilot
▲ with 3 cutting edges, right-hand flutes for counterbores according to DIN 74
▲ for countersinking to suit hexagon socket screws according to DIN 912, DIN 6912, DIN 7984 and cap screws according to DIN 84




fine
SIG 180°
HSS


medium
SIG 180°
HSS

Thread	DC_2 z9 mm	DCONMS h9 mm	OAL mm	DC_1 e8 mm	30 190 ...	30 191 ...
M3	6	5,0	71	3,2	030 1)	
M3	6	5,0	71	3,4		030 1)
M4	8	5,0	71	4,3	040 1)	
M4	8	5,0	71	4,5		040 1)
M5	10	8,0	80	5,3	050 1)	
M5	10	8,0	80	5,5		050 1)
M6	11	8,0	80	6,4	060 1)	
M6	11	8,0	80	6,6		060 1)
M8	15	12,5	100	8,4	080 1)	
M8	15	12,5	100	9,0		080 1)
M10	18	12,5	100	10,5	100 1)	
M10	18	12,5	100	11,0		100 1)
M12	20	12,5	100	13,0	120	
M12	20	12,5	100	13,5		120
P					●	●
M					●	●
K					●	●
N					●	●
S					○	○
H						
O					●	●

1) Included in the set

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Counterbore, DIN 373 – Set

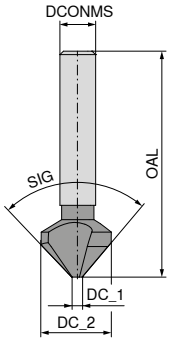
Scope of supply:
Counterbores M3; M4; M5; M6; M8; M10 in case

30 190 ...	30 191 ...
999	999

Countersink 90° with irregular pitch, DIN 335-C

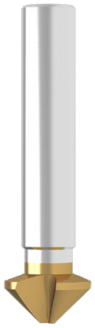
▲ all sizes with 3 cutting edges and highly irregular pitch, resulting in smooth running, excellent roundness and chatter reduction giving the highest surface quality
▲ special HPC-TiN coating
▲ for very high tool life in almost all materials
▲ greatly reduced axial and radial forces
▲ for countersinking to DIN 7991

N



NEW

HPC-TiN



SIG 90°
Solid carbide

DC_2 z9 mm	DC_1 mm	DCONMS h9 mm	OAL mm	DIN 7991	30 117 ...
6,3	1,5	5	45	M3	**06300**
8,3	2,0	6	50	M4	**08300**
10,4	2,5	6	50	M5	**10400** 1)
12,4	2,8	8	56	M6	**12400**
16,5	3,2	10	60	M8	**16500** 1)
20,5	3,5	10	60	M10	**20500**
25,0	3,8	10	67	M12	**25000** 1)
31,0	4,2	12	71	M16	**31000**

P	●
M	○
K	●
N	●
S	○
H	○
O	○

1) Included in the set

→ v_c Page 91

Countersink 90° with irregular pitch, DIN 335-C – Set

Scope of supply:
Countersinks Ø 10.4 / 16.5 / 25.0 mm in storage case

N

NEW

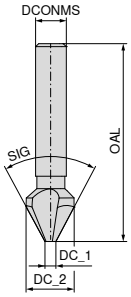
HPC-TiN

30 117 ...
99900

Countersink 60°
factory standard-C

▲ with 3 cutting edges for countersinking and deburring in high-tensile steels, grey cast iron, aluminium alloys containing silicon and corrosion resistant steels.

N



SIG 60°
Solid carbide

30 160 ...

DC_2 z9 mm	DC_1 mm	DCONMS h9 mm	OAL mm	
12,5	3,2	8	56	**125**
16,0	4,0	10	63	**160**
20,0	5,0	10	67	**200**
25,0	6,3	10	71	**250**

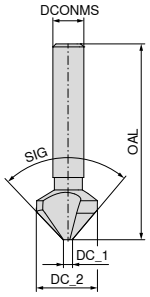
P	●
M	○
K	●
N	●
S	○
H	○
O	

→ v_c Page 90

Countersink 90°,
factory standard-C

▲ with 3 cutting edges for countersinking and deburring in high-tensile steels, grey cast iron, alumínium alloys containing silicon and corrosion resistant steels.

N



SIG 90°
Solid carbide

30 115 ...

DC_2 z9 mm	DC_1 mm	DCONMS h9 mm	OAL mm	DIN ISO 7721	DIN 7991	
10,4	2,5	8	46	M5		**100**
12,4	2,8	8	56		M6	**124**
15,0	3,2	10	60	M8		**150**
16,5	3,2	10	60		M8	**165**
20,5	3,5	10	63		M10	**205**
25,0	3,8	10	67		M12	**250**
31,0	4,2	12	71		M16	**310**

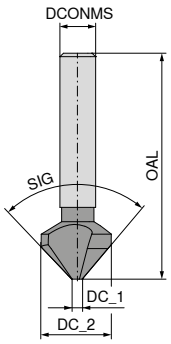
P	●
M	○
K	●
N	●
S	○
H	○
O	

→ v_c Page 90

Countersink 90° with irregular pitch, DIN 335-C

▲ all sizes with 3 cutting edges and highly irregular pitch, resulting in smooth running, excellent roundness and chatter reduction giving the highest surface quality
▲ for very high tool life in almost all materials
▲ greatly reduced axial and radial forces
▲ for countersinking to DIN ISO 7721 and DIN 7991

N



NEW

TiN

SIG 90°
HSS

4

DC_2 z9 mm	DC_1 mm	DCONMS h9 mm	OAL mm	DIN ISO 7721	DIN 7991	30 141 ...
4,3	1,3	4	40	M2		**04300**
6,0	1,5	5	45	M3		**06000**
6,3	1,5	5	45		M3	**06300**
8,0	2,0	6	50	M4		**08000**
8,3	2,0	6	50		M4	**08300**
10,0	2,5	6	50	M5		**10000**
10,4	2,5	6	50		M5	**10400** 1)
11,5	2,8	8	56	M6		**11500**
12,4	2,8	8	56		M6	**12400**
15,0	3,2	10	60	M8		**15000**
16,5	3,2	10	60		M8	**16500** 1)
19,0	3,5	10	63	M10		**19000**
20,5	3,5	10	63		M10	**20500**
23,0	3,8	10	67	M12		**23000**
25,0	3,8	10	67		M12	**25000** 1)
31,0	4,2	12	71		M16	**31000**

P	●
M	○
K	●
N	●
S	○
H	○
O	○

1) Included in the set

→ v_c Page 91

Countersink 90° with irregular pitch, DIN 335-C – Set

Scope of supply:
Countersinks Ø 10.4 / 16.5 / 25.0 mm in storage case

N

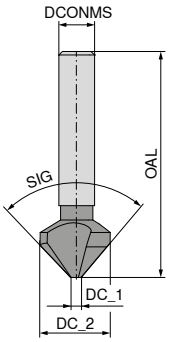
NEW

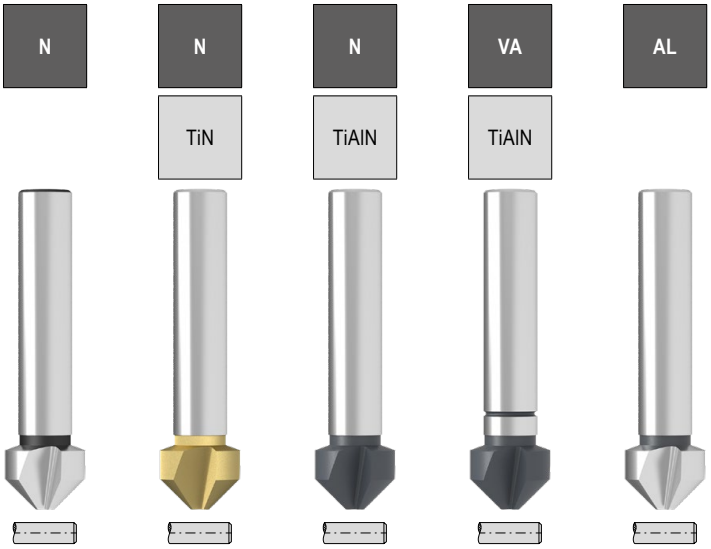
TiN

30 141 ...
99900

Countersink 90°, DIN 335-C

▲ 3 cutting edges to avoid burrs and chatter marks when countersinking and deburring in virtually all materials. Particularly suitable for DIN screws according to DIN ISO 7721 and 7991, as the countersink diameters are matched to the heads of these screws.
▲ the TiN version makes high cutting rates possible; very long tool life and very good friction resistance properties in order to avoid material sticking.
▲ TiAlN version shows considerably improved performance compared to TiN version. Particularly suitable for all abrasive materials (cast iron, AlSi) and/or at high temperature.





	N	N	N	VA	AL
		TiN	TiAlN	TiAlN	
	SIG 90° HSS	SIG 90° HSS	SIG 90° HSS	SIG 90° HSS	SIG 90° HSS
	30 100 ...	30 110 ...	30 130 ...	30 132 ...	30 102 ...

DC_2 z9 mm	DC_1 mm	DCONMS mm	OAL mm	DIN ISO 7721	DIN 7991									
4,3	1,3	4	40	M2		043								
5,0	1,5	4	40	M2,5		050		050		050				
6,0	1,5	5	45	M3		060								
6,3	1,5	5	45		M3	063 1)		063 1)		063		063		063
7,0	1,8	6	50	M3,5		070								
8,0	2,0	6	50	M4		080		080		080				
8,3	2,0	6	50		M4	083 1)		083 1)		083		083		083
9,4	2,2	6	50			094								
10,0	2,5	6	50	M5		100		100		100				
10,4	2,5	6	50		M5	104 1)		104 1)		104		104		104
11,5	2,8	8	56	M6		115								
12,4	2,8	8	56		M6	124 1)		124 1)		124		124		124
13,4	2,9	8	56			134								
15,0	3,2	10	60	M8		150		150		150		150		150
16,5	3,2	10	60		M8	165 1)		165 1)		165		165		165
19,0	3,5	10	63	M10		190								
20,5	3,5	10	63		M10	205 1)		205 1)		205		205		205
23,0	3,8	10	67	M12		230								
25,0	3,8	10	67		M12	250		250		250		250		250
31,0	4,2	12	71		M16	310		310		310		310		
31,0	4,2	12	67		M16									310
P						●		●		●		○		○
M						○		○		○		●		○
K						●		●		●		○		○
N						●		●		●		○		●
S						○		○		○		○		○
H								○		○		○		
O						●		●		●		●		●

1) Included in the set

→ v_c Page 92+93

Countersink 90°, DIN 335-C – set

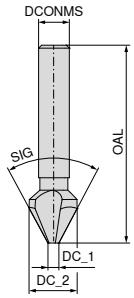
Scope of supply:
Countersinks Ø 6,3; 8,3; 10,4; 12,4; 16,5; 20,5 in case

N

TiN	
30 100 ...	30 110 ...
999	999

Countersink 60°, DIN 334-C

▲ 3 cutting edges for countersinking and deburring in virtually all materials



SIG 60°
HSS

30 150 ...

DC_2 z9 mm	DC_1 mm	DCONMS h9 mm	OAL mm	
6,3	1,6	5	45	**063** 1)
8,0	2,0	6	50	**080** 1)
10,0	2,5	6	52	**100** 1)
12,5	3,2	8	56	**125** 1)
16,0	4,0	10	63	**160** 1)
20,0	5,0	10	67	**200** 1)
25,0	6,3	10	71	**250**

P	●
M	○
K	●
N	●
S	○
H	
O	●

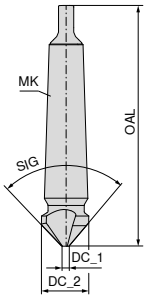
1) Included in the set

→ v_c Page 94

Countersink 90°, DIN 335-C

▲ 3 cutting edges to avoid burrs and chatter marks when countersinking and deburring in virtually all materials. Particularly suitable for DIN screws according to DIN ISO 7721 and 7991, as the countersink diameters are matched to the heads of these screws.

N



SIG 90°
HSS

30 105 ...

DC_2 z9 mm	DC_1 mm	OAL mm	MK	
30	4,2	112	2	**300**
31	4,2	112	2	**310**
34	4,5	118	2	**340**
37	4,8	118	2	**370**
40	10,0	140	3	**400**
50	14,0	150	3	**500**
63	16,0	180	4	**630**
80	22,0	190	4	**800**

P	●
M	○
K	●
N	●
S	○
H	
O	●

→ v_c Page 94

Countersink 60°, DIN 334-C – set

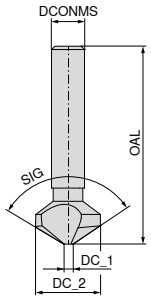
Scope of supply:
Countersinks Ø 6,3; 8,0; 10,0; 12,5; 16,0; 20,0 in case

30 150 ...

999

Countersink 120°, factory standard-C

▲ 3 cutting edges for countersinking and deburring in virtually all materials



SIG 120°
HSS

DC_2 z9 mm	DC_1 mm	DCONMS h9 mm	OAL mm	30 170 ...
6,3	1,5	5	45	063
8,3	2,0	6	50	083
10,4	2,5	6	50	104
12,4	2,8	8	56	124
16,5	3,2	10	60	165
20,5	3,5	10	60	205
25,0	3,8	10	63	250

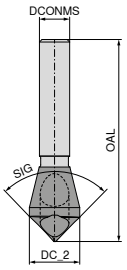
P	●
M	○
K	●
N	●
S	○
H	
O	●

→ v_c Page 94

Deburring countersink 90°, factory standard-A

▲ with angled hole to avoid burrs and chattermarks when countersinking and deburring in soft long-chipping materials, e.g. aluminium, plastics etc.

TiN



SIG 90°
HSS-E

SIG 90°
HSS-E

DC_2 mm	PHD mm	DCONMS h9 mm	OAL mm	30 120 ...	30 121 ...
6,3	1 - 4	6,3	45	040 1)	040 1)
10,0	2 - 5	6,0	45	050	050
14,0	5 - 10	8,0	48	101	101
21,0	10 - 15	10,0	65	150	150
28,0	15 - 20	12,0	85	200	200

P	●	●
M	○	○
K	●	●
N	●	●
S	○	○
H		○
O	●	●

1) can be used in both directions

→ v_c Page 95

Material examples for cutting data tables

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

*** Tensile strength**

Cutting data standard values for REAMAX TS

Index	40 577 ..., 40 585 ... 75J.65, 75H.65 – ASG3000 / HM-DBG-P						40 521 ..., 40 571 ... 75J.65, 75H.65 – ASG0106 / HM-DBG-P					
	Nominal Ø in mm ▸		18–21,999	22–31,799	31,8–51,999	52–65	Nominal Ø in mm ▸		18–21,999	22–31,799	31,8–51,999	52–65
	Reaming allowance Ø ▸		0,20–0,30	0,20–0,30	0,30–0,40	0,30–0,50	Reaming allowance Ø ▸		0,20–0,30	0,20–0,30	0,30–0,40	0,30–0,50
	Number of flutes ▸		6	6	8	10	Number of flutes ▸		6	6	8	10
	3xD	5xD					3xD	5xD				
	v_c (m/min)		f (mm/rev)				v_c (m/min)		f (mm/rev)			
P.1.1	**150** (130–200)	**120** (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80						
P.1.2	**150** (130–200)	**120** (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80						
P.1.3	**150** (130–200)	**120** (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80						
P.1.4	**150** (130–200)	**120** (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80						
P.1.5	**150** (130–200)	**120** (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80						
P.2.1	**150** (130–200)	**120** (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80						
P.2.2	**150** (130–200)	**120** (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80						
P.2.3	**150** (130–200)	**120** (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80						
P.2.4	**150** (130–200)	**120** (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80						
P.3.1							**30** (25–50)	**30** (25–40)	0,60–0,90	0,80–1,10	1,10–1,50	1,50–2,30
P.3.2							**30** (25–50)	**30** (25–40)	0,60–0,90	0,80–1,10	1,10–1,50	1,50–2,30
P.3.3							**30** (25–50)	**30** (25–40)	0,60–0,90	0,80–1,10	1,10–1,50	1,50–2,30
P.4.1							**45** (35–60)	**40** (35–50)	0,60–0,90	0,80–1,10	1,10–1,50	1,50–2,30
P.4.2							**45** (35–60)	**40** (35–50)	0,60–0,90	0,80–1,10	1,10–1,50	1,50–2,30
M.1.1							**45** (35–60)	**40** (30–50)	0,60–0,90	0,80–1,10	1,10–1,50	1,50–2,30
M.2.1							**45** (35–60)	**40** (30–50)	0,60–0,90	0,80–1,10	1,10–1,50	1,50–2,30
M.3.1							**30** (25–50)	**30** (25–40)	0,60–0,90	0,80–1,10	1,10–1,50	1,50–2,30
K.1.1	**150** (130–220)	**120** (100–150)	0,90–1,30	1,20–1,70	1,60–2,30	2,30–3,40						
K.1.2	**150** (130–220)	**120** (100–150)	0,90–1,30	1,20–1,70	1,60–2,30	2,30–3,40						
K.2.1	**175** (150–300)	**150** (130–180)	0,90–1,30	1,20–1,70	1,60–2,30	2,30–3,40						
K.2.2	**120** (100–180)	**120** (100–150)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80						
K.3.1	**120** (100–180)	**120** (100–150)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80						
K.3.2	**120** (100–180)	**120** (100–150)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80						
N.1.1												
N.1.2												
N.2.1												
N.2.2												
N.2.3												
N.3.1												
N.3.2												
N.3.3												
N.4.1												
S.1.1												
S.1.2												
S.2.1												
S.2.2												
S.2.3												
S.3.1												
S.3.2												
S.3.3												
H.1.1												
H.1.2												
H.1.3												
H.1.4												
H.2.1												
H.3.1												
O.1.1												
O.1.2												
O.2.1												
O.2.2												
O.3.1												

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

Cutting data standard values for REAMAX TS

Index	40 526 …, 40 580 … 75J.17, 75H.17 – ASG0706 / HM-DBC						40 539 … 75H.93 – ASG3000 / DST					
Nominal Ø in mm ▸			18–21,999	22–31,799	31,8–51,999	52–65			18–21,999	22–31,799	31,8–51,999	52–65
Reaming allowance Ø ▸			0,20–0,30	0,20–0,30	0,30–0,40	0,30–0,50			0,20–0,30	0,20–0,30	0,30–0,40	0,30–0,50
Number of flutes ▸			6	6	8	10			6	6	8	10
	3xD	5xD					3xD	5xD				
	v_c (m/min)		f (mm/rev)				v_c (m/min)		f (mm/rev)			
P.1.1							**150** (130–200)	**120** (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80
P.1.2							**150** (130–200)	**120** (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80
P.1.3							**150** (130–200)	**120** (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80
P.1.4							**150** (130–200)	**120** (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80
P.1.5							**150** (130–200)	**120** (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80
P.2.1							**150** (130–200)	**120** (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80
P.2.2							**150** (130–200)	**120** (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80
P.2.3							**150** (130–200)	**120** (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80
P.2.4							**150** (130–200)	**120** (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80
P.3.1												
P.3.2												
P.3.3												
P.4.1												
P.4.2												
M.1.1												
M.2.1												
M.3.1												
K.1.1												
K.1.2												
K.2.1							**175** (150–300)	**150** (130–180)	0,90–1,30	1,20–1,70	1,60–2,30	2,30–3,40
K.2.2							**120** (100–150)	**100** (80–120)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80
K.3.1							**120** (100–180)	**120** (100–150)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80
K.3.2							**120** (100–180)	**120** (100–150)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80
N.1.1	**150** (130–300)	**150** (130–200)	0,90–1,30	1,10–1,70	1,50–2,30	2,20–3,40						
N.1.2	**150** (130–300)	**150** (130–200)	0,90–1,30	1,10–1,70	1,50–2,30	2,20–3,40						
N.2.1	**200** (180–300)	**150** (130–200)	0,90–1,30	1,10–1,70	1,50–2,30	2,20–3,40						
N.2.2	**200** (180–300)	**150** (130–200)	0,90–1,30	1,10–1,70	1,50–2,30	2,20–3,40						
N.2.3	**200** (180–300)	**150** (130–200)	0,90–1,30	1,10–1,70	1,50–2,30	2,20–3,40						
N.3.1							150 (130–320)	150 (130–200)	0,90–1,30	1,10–1,70	1,50–2,30	2,10–3,10
N.3.2							150 (130–320)	150 (130–200)	0,90–1,30	1,10–1,70	1,50–2,30	2,10–3,10
N.3.3												
N.4.1	**150** (180–300)	**150** (130–200)	0,90–1,30	1,10–1,70	1,50–2,30	2,20–3,40						
S.1.1												
S.1.2												
S.2.1												
S.2.2												
S.2.3												
S.3.1												
S.3.2												
S.3.3												
H.1.1												
H.1.2												
H.1.3												
H.1.4												
H.2.1												
H.3.1												
O.1.1												
O.1.2												
O.2.1												
O.2.2												
O.3.1	250 (220–270)	250 (220–270)	0,90–1,30	1,10–1,70	1,50–2,30	2,20–3,40						

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

Cutting data standard values for REAMAX TS

Index	40 544 … 75J.93 – ASG3000 / DST						40 597 … 75J.93 – ASG4000 / DST					
	Nominal Ø in mm ▸		18–21,999	22–31,799	31,8–51,999	52–65	Nominal Ø in mm ▸		18–21,999	22–31,799	31,8–51,999	52–65
	Reaming allowance Ø ▸		0,20–0,30	0,20–0,30	0,30–0,40	0,30–0,50	Reaming allowance Ø ▸		0,20–0,30	0,20–0,30	0,30–0,40	0,30–0,50
	Number of flutes ▸		6	6	8	10	Number of flutes ▸		6	6	8	10
	3xD	5xD					3xD	5xD				
	v_c (m/min)		f (mm/rev)				v_c (m/min)		f (mm/rev)			
P.1.1	**150** (130–200)	**120** (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80	**150** (130–200)	**120** (100–160)	1,00–1,30	1,20–1,70	1,70–2,30	2,40–3,40
P.1.2	**150** (130–200)	**120** (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80	**150** (130–200)	**120** (100–160)	1,00–1,30	1,20–1,70	1,70–2,30	2,40–3,40
P.1.3	**150** (130–200)	**120** (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80	**150** (130–200)	**120** (100–160)	1,00–1,30	1,20–1,70	1,70–2,30	2,40–3,40
P.1.4	**150** (130–200)	**120** (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80	**150** (130–200)	**120** (100–160)	1,00–1,30	1,20–1,70	1,70–2,30	2,40–3,40
P.1.5	**150** (130–200)	**120** (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80	**150** (130–200)	**120** (100–160)	1,00–1,30	1,20–1,70	1,70–2,30	2,40–3,40
P.2.1	**150** (130–200)	**120** (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80	**150** (130–200)	**120** (100–160)	1,00–1,30	1,20–1,70	1,70–2,30	2,40–3,40
P.2.2	**150** (130–200)	**120** (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80	**150** (130–200)	**120** (100–160)	1,00–1,30	1,20–1,70	1,70–2,30	2,40–3,40
P.2.3	**150** (130–200)	**120** (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80	**150** (130–200)	**120** (100–160)	1,00–1,30	1,20–1,70	1,70–2,30	2,40–3,40
P.2.4	**150** (130–200)	**120** (100–160)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80	**150** (130–200)	**120** (100–160)	1,00–1,30	1,20–1,70	1,70–2,30	2,40–3,40
P.3.1												
P.3.2												
P.3.3												
P.4.1												
P.4.2												
M.1.1												
M.2.1												
M.3.1												
K.1.1												
K.1.2												
K.2.1	**175** (150–300)	**150** (130–180)	0,90–1,30	1,20–1,70	1,60–2,30	2,30–3,40	**225** (200–300)	**180** (160–240)	1,20–1,60	1,50–2,00	2,00–2,70	2,90–4,10
K.2.2	**120** (100–150)	**100** (80–120)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80	**120** (100–150)	**100** (80–120)	1,20–1,60	1,50–2,00	2,00–2,70	2,90–4,10
K.3.1	**120** (100–180)	**120** (100–150)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80						
K.3.2	**120** (100–180)	**120** (100–150)	0,80–1,10	1,00–1,40	1,30–1,90	1,90–2,80	**120** (100–180)	**120** (100–150)	1,00–1,30	1,20–1,70	1,70–2,30	2,40–3,40
N.1.1												
N.1.2												
N.2.1												
N.2.2												
N.2.3												
N.3.1	150 (130–320)	150 (130–200)	0,90–1,30	1,10–1,70	1,50–2,30	2,10–3,10						
N.3.2	150 (130–320)	150 (130–200)	0,90–1,30	1,10–1,70	1,50–2,30	2,10–3,10						
N.3.3												
N.4.1												
S.1.1												
S.1.2												
S.2.1												
S.2.2												
S.2.3												
S.3.1												
S.3.2												
S.3.3												
H.1.1												
H.1.2												
H.1.3												
H.1.4												
H.2.1												
H.3.1												
O.1.1												
O.1.2												
O.2.1												
O.2.2												
O.3.1												

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

Cutting data standard values for REAMAX

Index	40 560 … 640.65 – ASG3000 / HM-DBG-P					40 551 … 640.65 – ASG0106 / HM-DBG-P				
Nominal Ø in mm ▸			12–21,999	22–32,000	32,001–40			12–21,999	22–32,000	32,001–40
Reaming allowance Ø ▸			0,10–0,30	0,20–0,40	0,20–0,40			0,10–0,30	0,20–0,40	0,20–0,40
Number of flutes ▸			6	8	8			6	8	8
	3xD	5xD				3xD	5xD			
	v_c (m/min)		f (mm/rev)			v_c (m/min)		f (mm/rev)		
P.1.1	**150** (130–200)	**120** (100–160)	0,90–1,20	1,50–2,00	1,50–2,00					
P.1.2	**150** (130–200)	**120** (100–160)	0,90–1,20	1,50–2,00	1,50–2,00					
P.1.3	**150** (130–200)	**120** (100–160)	0,90–1,20	1,50–2,00	1,50–2,00					
P.1.4	**150** (130–200)	**120** (100–160)	0,90–1,20	1,50–2,00	1,50–2,00					
P.1.5	**150** (130–200)	**120** (100–160)	0,90–1,20	1,50–2,00	1,50–2,00					
P.2.1	**150** (130–200)	**120** (100–160)	0,90–1,20	1,50–2,00	1,50–2,00					
P.2.2	**150** (130–200)	**120** (100–160)	0,90–1,20	1,50–2,00	1,50–2,00					
P.2.3	**150** (130–200)	**120** (100–160)	0,90–1,20	1,50–2,00	1,50–2,00					
P.2.4	**150** (130–200)	**120** (100–160)	0,90–1,20	1,50–2,00	1,50–2,00	**150** (130–200)	**120** (100–160)	0,90–1,20	1,50–2,00	1,50–2,00
P.3.1						**30** (25–50)	**30** (25–40)	0,70–0,90	1,20–1,60	1,20–1,60
P.3.2						**30** (25–50)	**30** (25–40)	0,70–0,90	1,20–1,60	1,20–1,60
P.3.3						**30** (25–50)	**30** (25–40)	0,70–0,90	1,20–1,60	1,20–1,60
P.4.1						**45** (35–60)	**40** (35–50)	0,70–0,90	1,20–1,60	1,20–1,60
P.4.2						**45** (35–60)	**40** (35–50)	0,70–0,90	1,20–1,60	1,20–1,60
M.1.1						**45** (35–60)	**40** (35–50)	0,70–0,90	1,20–1,60	1,20–1,60
M.2.1						**30** (25–50)	**30** (25–40)	0,70–0,90	1,20–1,60	1,20–1,60
M.3.1						**30** (25–50)	**30** (25–40)	0,70–0,90	1,20–1,60	1,20–1,60
K.1.1	**200** (180–250)	**160** (140–200)	1,00–1,40	1,30–1,90	1,30–1,90					
K.1.2	**200** (180–250)	**160** (140–200)	1,00–1,40	1,30–1,90	1,30–1,90					
K.2.1	**225** (200–300)	**180** (160–240)	1,00–1,40	1,30–1,90	1,30–1,90					
K.2.2	**120** (100–150)	**100** (80–120)	0,90–1,20	1,20–1,60	1,20–1,60					
K.3.1	**150** (130–250)	**120** (100–200)	0,90–1,20	1,20–1,60	1,20–1,60					
K.3.2	**120** (100–150)	**100** (80–120)	0,90–1,20	1,20–1,60	1,20–1,60					
N.1.1										
N.1.2										
N.2.1										
N.2.2										
N.2.3										
N.3.1										
N.3.2										
N.3.3										
N.4.1										
S.1.1										
S.1.2										
S.2.1										
S.2.2										
S.2.3										
S.3.1										
S.3.2										
S.3.3										
H.1.1						**40** (35–60)	**40** (35–60)	0,40–0,80	0,60–1,00	0,60–1,00
H.1.2						**40** (35–60)	**40** (35–60)	0,40–0,80	0,60–1,00	0,60–1,00
H.1.3						**30** (25–50)	**30** (25–50)	0,40–0,80	0,60–1,00	0,60–1,00
H.1.4										
H.2.1						**40** (35–60)	**40** (35–60)	0,40–0,80	0,60–1,00	0,60–1,00
H.3.1						**40** (35–60)	**40** (35–60)	0,40–0,80	0,60–1,00	0,60–1,00
O.1.1										
O.1.2										
O.2.1										
O.2.2										
O.3.1										

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

Cutting data standard values for REAMAX

Index	40 505 … 640.71 – ASG3000 / HM-TiN					40 570 … 640.27 – ASG0706 / HM-DBC				
	Nominal Ø in mm ▸		12–21,999	22–32,000	32,001–40	Nominal Ø in mm ▸		12–21,999	22–32,000	32,001–40
	Reaming allowance Ø ▸		0,10–0,30	0,20–0,40	0,20–0,40	Reaming allowance Ø ▸		0,10–0,30	0,20–0,40	0,20–0,40
	Number of flutes ▸		6	8	8	Number of flutes ▸		6	8	8
	3xD	5xD				3xD	5xD			
	v_c (m/min)		f (mm/rev)			v_c (m/min)		f (mm/rev)		
P.1.1	100 (80–140)	80 (60–120)	0,90–1,20	1,50–2,00	1,50–2,00					
P.1.2	100 (80–140)	80 (60–120)	0,90–1,20	1,50–2,00	1,50–2,00					
P.1.3	100 (80–140)	80 (60–120)	0,90–1,20	1,50–2,00	1,50–2,00					
P.1.4	100 (80–140)	80 (60–120)	0,90–1,20	1,50–2,00	1,50–2,00					
P.1.5	100 (80–140)	80 (60–120)	0,90–1,20	1,50–2,00	1,50–2,00					
P.2.1	100 (80–140)	80 (60–120)	0,90–1,20	1,50–2,00	1,50–2,00					
P.2.2	100 (80–140)	80 (60–120)	0,90–1,20	1,50–2,00	1,50–2,00					
P.2.3	100 (80–140)	80 (60–120)	0,90–1,20	1,50–2,00	1,50–2,00					
P.2.4	100 (80–140)	80 (60–120)	0,90–1,20	1,50–2,00	1,50–2,00					
P.3.1										
P.3.2										
P.3.3										
P.4.1										
P.4.2										
M.1.1										
M.2.1										
M.3.1										
K.1.1	80 (60–130)	80 (60–120)	1,00–1,40	1,80–2,40	1,80–2,40					
K.1.2	80 (60–130)	80 (60–120)	1,00–1,40	1,80–2,40	1,80–2,40					
K.2.1										
K.2.2										
K.3.1										
K.3.2										
N.1.1						**150** (130–300)	**150** (130–200)	1,00–1,40	1,70–2,40	1,70–2,40
N.1.2						**200** (180–300)	**150** (130–200)	1,00–1,40	1,70–2,40	1,70–2,40
N.2.1						**200** (180–300)	**150** (130–200)	1,00–1,40	1,70–2,40	1,70–2,40
N.2.2						**200** (180–300)	**150** (130–200)	1,00–1,40	1,70–2,40	1,70–2,40
N.2.3										
N.3.1	**120** (100–200)	**120** (100–150)	1,00–1,40	1,70–2,40	1,70–2,40					
N.3.2	**120** (100–200)	**120** (100–150)	1,00–1,40	1,70–2,40	1,70–2,40					
N.3.3	**80** (60–150)	**80** (60–120)	0,80–1,20	1,40–2,00	1,40–2,00					
N.4.1										
S.1.1										
S.1.2										
S.2.1										
S.2.2										
S.2.3										
S.3.1										
S.3.2										
S.3.3										
H.1.1										
H.1.2										
H.1.3										
H.1.4										
H.2.1										
H.3.1										
O.1.1										
O.1.2										
O.2.1										
O.2.2										
O.3.1						250 (220–270)	250 (220–270)	1,00–1,40	1,70–2,40	1,70–2,40

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

Cutting data standard values for REAMAX

Index	40 525 … 640.93 – ASG3000 / DST					40 536 … 640.93 – ASG4000 / DST				
Nominal Ø in mm ▸			12–21,999	22–32,000	32,001–40			12–21,999	22–32,000	32,001–40
Reaming allowance Ø ▸			0,10–0,30	0,20–0,40	0,20–0,40			0,10–0,30	0,20–0,40	0,20–0,40
Number of flutes ▸			6	8	8			6	8	8
	3xD	5xD				3xD	5xD			
	v_c (m/min)		f (mm/rev)			v_c (m/min)		f (mm/rev)		
P.1.1	**150** (130–200)	**120** (100–160)	0,90–1,20	1,50–2,00	1,50–2,00	**150** (130–200)	**120** (100–160)	1,10–1,40	1,80–2,40	1,80–2,40
P.1.2	**150** (130–200)	**120** (100–160)	0,90–1,20	1,50–2,00	1,50–2,00	**150** (130–200)	**120** (100–160)	1,10–1,40	1,80–2,40	1,80–2,40
P.1.3	**150** (130–200)	**120** (100–160)	0,90–1,20	1,50–2,00	1,50–2,00	**150** (130–200)	**120** (100–160)	1,10–1,40	1,80–2,40	1,80–2,40
P.1.4	**150** (130–200)	**120** (100–160)	0,90–1,20	1,50–2,00	1,50–2,00	**150** (130–200)	**120** (100–160)	1,10–1,40	1,80–2,40	1,80–2,40
P.1.5	**150** (130–200)	**120** (100–160)	0,90–1,20	1,50–2,00	1,50–2,00	**150** (130–200)	**120** (100–160)	1,10–1,40	1,80–2,40	1,80–2,40
P.2.1	**150** (130–200)	**120** (100–160)	0,90–1,20	1,50–2,00	1,50–2,00	**150** (130–200)	**120** (100–160)	1,10–1,40	1,80–2,40	1,80–2,40
P.2.2	**150** (130–200)	**120** (100–160)	0,90–1,20	1,50–2,00	1,50–2,00	**150** (130–200)	**120** (100–160)	1,10–1,40	1,80–2,40	1,80–2,40
P.2.3	**150** (130–200)	**120** (100–160)	0,90–1,20	1,50–2,00	1,50–2,00	**150** (130–200)	**120** (100–160)	1,10–1,40	1,80–2,40	1,80–2,40
P.2.4										
P.3.1										
P.3.2										
P.3.3										
P.4.1										
P.4.2										
M.1.1										
M.2.1										
M.3.1										
K.1.1										
K.1.2										
K.2.1	**175** (150–300)	**150** (130–180)	1,00–1,40	1,80–2,40	1,80–2,40	175 (150–300)	150 (130–180)	1,20–1,60	1,50–2,00	2,00–2,70
K.2.2	**150** (130–250)	**120** (100–160)	1,00–1,40	1,80–2,40	1,80–2,40	120 (100–180)	120 (100–150)	1,20–1,60	1,50–2,00	2,00–2,70
K.3.1	**150** (130–250)	**120** (100–160)	1,00–1,40	1,80–2,40	1,80–2,40					
K.3.2	**120** (100–180)	**120** (100–150)	0,90–1,20	1,50–2,00	1,50–2,00	120 (100–180)	120 (100–150)	1,00–1,30	1,20–1,70	1,70–2,30
N.1.1										
N.1.2										
N.2.1										
N.2.2										
N.2.3										
N.3.1	150 (130–300)	150 (130–200)	1,00–1,40	1,70–2,40	1,70–2,40					
N.3.2	150 (130–300)	150 (130–200)	1,00–1,40	1,70–2,40	1,70–2,40					
N.3.3										
N.4.1										
S.1.1										
S.1.2										
S.2.1										
S.2.2										
S.2.3										
S.3.1										
S.3.2										
S.3.3										
H.1.1										
H.1.2										
H.1.3										
H.1.4										
H.2.1										
H.3.1										
O.1.1										
O.1.2										
O.2.1										
O.2.2										
O.3.1										

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

Cutting data for MultiChange exchange head reamers

Index	40 210 ..., 40 211 ... CWC10				40 220 ..., 40 221 ... TiAlN				40 240 ..., 40 241 ... K10			
	Nominal Ø in mm ▸	8,0–12,59	12,6–29,99	30,0–32,00	Nominal Ø in mm ▸	8,0–12,59	12,6–29,99	30,0–32,00	Nominal Ø in mm ▸	8,0–12,59	12,6–29,99	30,0–32,00
	Reaming allowance Ø ▸	0,15–0,3	0,2–0,4	0,2–0,4	Reaming allowance Ø ▸	0,15–0,3	0,15–0,3	0,15–0,3	Reaming allowance Ø ▸	0,15–0,5	0,15–0,5	0,15–0,5
	Number of flutes ▸	4 / 6	6	8	Number of flutes ▸	4 / 6	6	8	Number of flutes ▸	4 / 6	6	8
	v_c (m/min)	f (mm/rev)			v_c (m/min)	f (mm/rev)			v_c (m/min)	f (mm/rev)		
P.1.1	140	0,6	0,8	1,0								
P.1.2	140	0,6	0,8	1,0								
P.1.3	90	0,6	0,8	1,0								
P.1.4	90	0,6	0,8	1,0								
P.1.5	90	0,6	0,8	1,0								
P.2.1	140	0,6	0,8	1,0								
P.2.2	140	0,6	0,8	1,0								
P.2.3	90	0,6	0,8	1,0								
P.2.4	90	0,6	0,8	1,0								
P.3.1	120	0,6	0,8	1,0								
P.3.2	90	0,6	0,8	1,0								
P.3.3	90	0,6	0,8	1,0								
P.4.1					40	0,3	0,4	0,5				
P.4.2					40	0,3	0,4	0,5				
M.1.1					40	0,3	0,4	0,5				
M.2.1					40	0,3	0,4	0,5				
M.3.1					30	0,3	0,4	0,5				
K.1.1												
K.1.2												
K.2.1	120	0,7	1,2	1,6								
K.2.2	90	0,7	1,2	1,6								
K.3.1	90	0,7	1,2	1,6								
K.3.2	90	0,7	1,2	1,6								
N.1.1									30	0,4	0,5	0,6
N.1.2									30	0,4	0,5	0,6
N.2.1									30	0,4	0,5	0,6
N.2.2									30	0,4	0,5	0,6
N.2.3									30	0,4	0,5	0,6
N.3.1									30	0,4	0,5	0,6
N.3.2									30	0,4	0,5	0,6
N.3.3									30	0,4	0,5	0,6
N.4.1												
S.1.1												
S.1.2												
S.2.1												
S.2.2												
S.2.3												
S.3.1												
S.3.2												
S.3.3												
H.1.1												
H.1.2												
H.1.3												
H.1.4												
H.2.1												
H.3.1												
O.1.1												
O.1.2												
O.2.1												
O.2.2												
O.3.1												

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

Cutting data standard values for Monomax

Index	40 656 …, 40 666 …, 40 657 …, 40 665 … 56J.65, 56R.65, 56H.65, 56Q.65 – ASG3000 / HM-DBG-P						40 652 …, 40 653 … 56J.65, 56R.65 – ASG0106 / HM-DBG-P					
	Nominal Ø in mm ▸		5,6–8,899	8,9–12,00	12,01–22,00	22,01–25,899	Nominal Ø in mm ▸		5,6–8,899	8,9–12,00	12,01–22,00	22,01–25,899
	Reaming allowance Ø ▸		0,10–0,20	0,10–0,30	0,20–0,30	0,20–0,40	Reaming allowance Ø ▸		0,10–0,20	0,10–0,30	0,20–0,30	0,20–0,40
	Number of flutes ▸		4	6	6	6	Number of flutes ▸		4	6	6	6
	3xD	5xD					3xD	5xD				
	v_c (m/min)		f (mm/rev)				v_c (m/min)		f (mm/rev)			
P.1.1	**150** (130–200)	**120** (100–160)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30						
P.1.2	**150** (130–200)	**120** (100–160)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30						
P.1.3	**150** (130–200)	**120** (100–160)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30						
P.1.4	**150** (130–200)	**120** (100–160)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30						
P.1.5	**150** (130–200)	**120** (100–160)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30						
P.2.1	**150** (130–200)	**120** (100–160)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30						
P.2.2	**150** (130–200)	**120** (100–160)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30						
P.2.3	**150** (130–200)	**120** (100–160)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30						
P.2.4	**60** (50–100)	**60** (50–100)	0,20–0,30	0,40–0,50	0,50–0,70	0,60–0,90	**60** (50–100)	**60** (50–100)	0,20–0,30	0,40–0,50	0,50–0,70	0,60–0,90
P.3.1							**40** (35–60)	**40** (35–60)	0,20–0,30	0,40–0,50	0,50–0,70	0,60–0,90
P.3.2							**40** (35–60)	**40** (35–60)	0,20–0,30	0,40–0,50	0,50–0,70	0,60–0,90
P.3.3							**30** (25–50)	**30** (25–40)	0,30–0,40	0,40–0,60	0,60–0,80	0,70–1,00
P.4.1							**45** (35–60)	**40** (35–50)	0,30–0,40	0,40–0,60	0,60–0,80	0,70–1,00
P.4.2							**45** (35–60)	**40** (35–50)	0,30–0,40	0,40–0,60	0,60–0,80	0,70–1,00
M.1.1							**30** (25–50)	**30** (25–40)	0,30–0,40	0,40–0,60	0,60–0,80	0,70–1,00
M.2.1							**30** (25–50)	**30** (25–40)	0,30–0,40	0,40–0,60	0,60–0,80	0,70–1,00
M.3.1							**30** (25–50)	**30** (25–40)	0,30–0,40	0,40–0,60	0,60–0,80	0,70–1,00
K.1.1	**150** (130–220)	**120** (100–150)	0,40–0,60	0,70–0,90	0,90–1,20	1,10–1,50						
K.1.2	**150** (130–220)	**120** (100–150)	0,40–0,60	0,70–0,90	0,90–1,20	1,10–1,50						
K.2.1	**175** (150–300)	**150** (130–180)	0,40–0,60	0,70–0,90	0,90–1,20	1,10–1,50						
K.2.2	**120** (100–180)	**120** (100–150)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30						
K.3.1	**150** (130–250)	**120** (100–160)	0,40–0,60	0,70–0,90	0,90–1,20	1,10–1,50						
K.3.2	**120** (100–180)	**120** (100–150)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30						
N.1.1												
N.1.2												
N.2.1												
N.2.2												
N.2.3												
N.3.1												
N.3.2												
N.3.3												
N.4.1												
S.1.1												
S.1.2												
S.2.1												
S.2.2												
S.2.3												
S.3.1												
S.3.2												
S.3.3												
H.1.1												
H.1.2												
H.1.3												
H.1.4												
H.2.1												
H.3.1												
O.1.1												
O.1.2												
O.2.1												
O.2.2												
O.3.1												

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

Cutting data standard values for Monomax

Index	40 644 ..., 40 645 ...						40 605 ..., 40 606 ...					
	56H.65, 56Q.65 – ASG0106 / HM-DBG-P						56J.71, 56R.71 – ASG3000 / HM-TiN					
	Nominal Ø in mm ▸		5,6–8,899	8,9–12,00	12,01–22,00	22,01–25,899	Nominal Ø in mm ▸		5,6–8,899	8,9–12,00	12,01–22,00	22,01–25,899
	Reaming allowance Ø ▸		0,10–0,20	0,10–0,30	0,20–0,30	0,20–0,40	Reaming allowance Ø ▸		0,10–0,20	0,10–0,30	0,20–0,30	0,20–0,40
	Number of flutes ▸		4	6	6	6	Number of flutes ▸		4	6	6	6
	3xD	5xD					3xD	5xD				
	v_c (m/min)		f (mm/rev)				v_c (m/min)		f (mm/rev)			
P.1.1							100 (80–140)	80 (60–120)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30
P.1.2							100 (80–140)	80 (60–120)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30
P.1.3							100 (80–140)	80 (60–120)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30
P.1.4							100 (80–140)	80 (60–120)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30
P.1.5							100 (80–140)	80 (60–120)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30
P.2.1							100 (80–140)	80 (60–120)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30
P.2.2							100 (80–140)	80 (60–120)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30
P.2.3							100 (80–140)	80 (60–120)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30
P.2.4							100 (80–140)	80 (60–120)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30
P.3.1	**30** (25–50)	**30** (25–40)	0,30–0,40	0,40–0,60	0,60–0,80	0,70–1,00						
P.3.2	**30** (25–50)	**30** (25–40)	0,30–0,40	0,40–0,60	0,60–0,80	0,70–1,00						
P.3.3	**30** (25–50)	**30** (25–40)	0,30–0,40	0,40–0,60	0,60–0,80	0,70–1,00						
P.4.1	**45** (35–60)	**40** (35–50)	0,30–0,40	0,40–0,60	0,60–0,80	0,70–1,00						
P.4.2	**45** (35–60)	**40** (35–50)	0,30–0,40	0,40–0,60	0,60–0,80	0,70–1,00						
M.1.1	**45** (35–60)	**40** (35–50)	0,30–0,40	0,40–0,60	0,60–0,80	0,70–1,00						
M.2.1	**45** (35–60)	**40** (35–50)	0,30–0,40	0,40–0,60	0,60–0,80	0,70–1,00						
M.3.1	**30** (25–50)	**30** (25–40)	0,30–0,40	0,40–0,60	0,60–0,80	0,70–1,00						
K.1.1							80 (60–130)	80 (60–120)	0,40–0,60	0,70–0,90	0,90–1,20	1,10–1,50
K.1.2							80 (60–130)	80 (60–120)	0,40–0,60	0,70–0,90	0,90–1,20	1,10–1,50
K.2.1												
K.2.2												
K.3.1												
K.3.2												
N.1.1												
N.1.2												
N.2.1												
N.2.2												
N.2.3												
N.3.1							**120** (–200)	**120** (–200)	0,40–0,60	0,60–0,90	0,80–1,20	1,10–1,50
N.3.2							**120** (–200)	**120** (–200)	0,40–0,60	0,60–0,90	0,80–1,20	1,10–1,50
N.3.3							**80** (–150)	**80** (–120)	0,40–0,60	0,60–0,90	0,80–1,20	1,10–1,50
N.4.1												
S.1.1												
S.1.2												
S.2.1												
S.2.2												
S.2.3												
S.3.1												
S.3.2												
S.3.3												
H.1.1												
H.1.2												
H.1.3												
H.1.4												
H.2.1												
H.3.1												
O.1.1												
O.1.2												
O.2.1												
O.2.2												
O.3.1												

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

Cutting data standard values for Monomax

Index	40 625 …, 40 626 … 56J.93, 56R.93 – ASG3000 / DST						40 635 … , 40 636 … 56J.93, 56R.93 – ASG4000 / DST					
Nominal Ø in mm ▸			5,6–8,899	8,9–12,00	12,01–22,00	22,01–25,899			5,6–8,899	8,9–12,00	12,01–22,00	22,01–25,899
Reaming allowance Ø ▸			0,10–0,20	0,10–0,30	0,20–0,30	0,20–0,40			0,10–0,20	0,10–0,30	0,20–0,30	0,20–0,40
Number of flutes ▸			4	6	6	6			4	6	6	6
	3xD	5xD					3xD	5xD				
	v_c (m/min)		f (mm/rev)				v_c (m/min)		f (mm/rev)			
P.1.1	**150** (130–200)	**120** (100–160)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30	**150** (130–200)	**120** (100–160)	0,40–0,60	0,70–0,90	0,90–1,20	1,20–1,50
P.1.2	**150** (130–200)	**120** (100–160)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30	**150** (130–200)	**120** (100–160)	0,40–0,60	0,70–0,90	0,90–1,20	1,20–1,50
P.1.3	**150** (130–200)	**120** (100–160)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30	**150** (130–200)	**120** (100–160)	0,40–0,60	0,70–0,90	0,90–1,20	1,20–1,50
P.1.4	**150** (130–200)	**120** (100–160)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30	**150** (130–200)	**120** (100–160)	0,40–0,60	0,70–0,90	0,90–1,20	1,20–1,50
P.1.5	**150** (130–200)	**120** (100–160)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30	**150** (130–200)	**120** (100–160)	0,40–0,60	0,70–0,90	0,90–1,20	1,20–1,50
P.2.1	**150** (130–200)	**120** (100–160)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30	**150** (130–200)	**120** (100–160)	0,40–0,60	0,70–0,90	0,90–1,20	1,20–1,50
P.2.2	**150** (130–200)	**120** (100–160)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30	**150** (130–200)	**120** (100–160)	0,40–0,60	0,70–0,90	0,90–1,20	1,20–1,50
P.2.3	**150** (130–200)	**120** (100–160)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30	**150** (130–200)	**120** (100–160)	0,40–0,60	0,70–0,90	0,90–1,20	1,20–1,50
P.2.4												
P.3.1												
P.3.2												
P.3.3												
P.4.1												
P.4.2												
M.1.1												
M.2.1												
M.3.1												
K.1.1												
K.1.2												
K.2.1	**175** (150–300)	**150** (130–180)	0,40–0,60	0,70–0,90	0,90–1,20	1,10–1,50	175 (150–300)	150 (130–180)	0,40–0,60	0,70–0,90	0,90–1,20	1,10–1,50
K.2.2	**120** (100–150)	**100** (80–120)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30	120 (100–180)	120 (100–150)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30
K.3.1	**150** (130–250)	**120** (100–200)	0,40–0,60	0,70–0,90	0,90–1,20	1,10–1,50	120 (100–180)	120 (100–150)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30
K.3.2	**120** (100–180)	**120** (100–150)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30	120 (100–180)	120 (100–150)	0,30–0,50	0,50–0,70	0,70–1,00	0,90–1,30
N.1.1												
N.1.2												
N.2.1												
N.2.2												
N.2.3												
N.3.1	150 (130–300)	150 (130–200)	0,40–0,60	0,60–0,90	0,80–1,20	1,10–1,50						
N.3.2	150 (130–300)	150 (130–200)	0,40–0,60	0,60–0,90	0,80–1,20	1,10–1,50						
N.3.3												
N.4.1												
S.1.1												
S.1.2												
S.2.1												
S.2.2												
S.2.3												
S.3.1												
S.3.2												
S.3.3												
H.1.1												
H.1.2												
H.1.3												
H.1.4												
H.2.1												
H.3.1												
O.1.1												
O.1.2												
O.2.1												
O.2.2												
O.3.1												

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

Cutting data standard values for Monomax

Index	40 648 …, 40 649 … 56J.17, 56R.17 – ASG0706 / DBC						40 640 …, 40 641 … 56H.17, 56Q.17 – ASG0706 / DBC					
Nominal Ø in mm ▸			5,6–8,899	8,9–12,00	12,01–22,00	22,01–25,899			5,6–8,899	8,9–12,00	12,01–22,00	22,01–25,899
Reaming allowance Ø ▸			0,10–0,20	0,10–0,30	0,20–0,30	0,20–0,40			0,10–0,20	0,10–0,30	0,20–0,30	0,20–0,40
Number of flutes ▸			4	6	6	6			4	6	6	6
	3xD	5xD					3xD	5xD				
	v_c (m/min)		f (mm/rev)				v_c (m/min)		f (mm/rev)			
P.1.1												
P.1.2												
P.1.3												
P.1.4												
P.1.5												
P.2.1												
P.2.2												
P.2.3												
P.2.4												
P.3.1												
P.3.2												
P.3.3												
P.4.1												
P.4.2												
M.1.1												
M.2.1												
M.3.1												
K.1.1												
K.1.2												
K.2.1												
K.2.2												
K.3.1												
K.3.2												
N.1.1	**150** (130–300)	**150** (130–200)	0,40–0,60	0,40–0,60	0,80–1,20	0,80–1,50	**150** (130–300)	**150** (130–200)	0,40–0,60	0,40–0,60	0,80–1,20	0,80–1,50
N.1.2	**150** (130–300)	**150** (130–200)	0,40–0,60	0,40–0,60	0,80–1,20	0,80–1,50	**150** (130–300)	**150** (130–200)	0,40–0,60	0,40–0,60	0,80–1,20	0,80–1,50
N.2.1	**200** (180–300)	**150** (130–200)	0,40–0,60	0,40–0,60	0,80–1,20	0,80–1,50	**200** (180–300)	**150** (130–200)	0,40–0,60	0,40–0,60	0,80–1,20	0,80–1,50
N.2.2	**200** (180–300)	**150** (130–200)	0,40–0,60	0,40–0,60	0,80–1,20	0,80–1,50	**200** (180–300)	**150** (130–200)	0,40–0,60	0,40–0,60	0,80–1,20	0,80–1,50
N.2.3	**200** (180–300)	**150** (130–200)	0,40–0,60	0,40–0,60	0,80–1,20	0,80–1,50	**200** (180–300)	**150** (130–200)	0,40–0,60	0,40–0,60	0,80–1,20	0,80–1,50
N.3.1												
N.3.2												
N.3.3												
N.4.1												
S.1.1												
S.1.2												
S.2.1												
S.2.2												
S.2.3												
S.3.1												
S.3.2												
S.3.3												
H.1.1												
H.1.2												
H.1.3												
H.1.4												
H.2.1												
H.3.1												
O.1.1												
O.1.2												
O.2.1												
O.2.2												
O.3.1	250 (220–270)	250 (220–270)	0,40–0,60	0,40–0,60	0,80–1,20	0,80–1,50	250 (220–270)	250 (220–270)	0,40–0,60	0,40–0,60	0,80–1,20	0,80–1,50

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

Cutting data standard values for Fullmax, long

Index	UNI	40 484 ..., 40 485 ..., 40 486 ..., 40 487 ... Type UNI											
	Ø range (mm) ▸	Ø 2,97 – 4,05		Ø 4,06 – 6,05		Ø 6,06 – 7,55		Ø 7,56 – 12,05		Ø 12,06 – 16,05		Ø 16,06 – 20,05	
	Number of flutes ▸	4		4		6		6		6		6	
	v_c (m/min)	f (mm/rev)	Reaming allowance Ø	f (mm/rev)	Reaming allowance Ø	f (mm/rev)	Reaming allowance Ø	f (mm/rev)	Reaming allowance Ø	f (mm/rev)	Reaming allowance Ø	f (mm/rev)	Reaming allowance Ø
P.1.1	**180** (160–250)	0,60–0,80	0,10–0,20	0,70–0,90	0,10–0,20	1,30–1,60	0,20	1,40–1,80	0,20	1,50–1,90	0,20–0,30	1,80–2,20	0,30
P.1.2	**180** (160–250)	0,60–0,80	0,10–0,20	0,70–0,90	0,10–0,20	1,30–1,60	0,20	1,40–1,80	0,20	1,50–1,90	0,20–0,30	1,80–2,20	0,30
P.1.3	**180** (160–250)	0,60–0,80	0,10–0,20	0,70–0,90	0,10–0,20	1,30–1,60	0,20	1,40–1,80	0,20	1,50–1,90	0,20–0,30	1,80–2,20	0,30
P.1.4	**180** (160–250)	0,60–0,80	0,10–0,20	0,70–0,90	0,10–0,20	1,30–1,60	0,20	1,40–1,80	0,20	1,50–1,90	0,20–0,30	1,80–2,20	0,30
P.1.5	**180** (160–250)	0,60–0,80	0,10–0,20	0,70–0,90	0,10–0,20	1,30–1,60	0,20	1,40–1,80	0,20	1,50–1,90	0,20–0,30	1,80–2,20	0,30
P.2.1	**180** (160–250)	0,60–0,80	0,10–0,20	0,70–0,90	0,10–0,20	1,30–1,60	0,20	1,40–1,80	0,20	1,50–1,90	0,20–0,30	1,80–2,20	0,30
P.2.2	**180** (160–250)	0,60–0,80	0,10–0,20	0,70–0,90	0,10–0,20	1,30–1,60	0,20	1,40–1,80	0,20	1,50–1,90	0,20–0,30	1,80–2,20	0,30
P.2.3	**180** (160–250)	0,60–0,80	0,10–0,20	0,70–0,90	0,10–0,20	1,30–1,60	0,20	1,40–1,80	0,20	1,50–1,90	0,20–0,30	1,80–2,20	0,30
P.2.4	**80** (70–120)	0,40–0,50	0,10–0,20	0,40–0,60	0,10–0,20	0,90–1,10	0,20	1,00–1,20	0,20	1,00–1,30	0,20–0,30	1,30–1,50	0,30
P.3.1	**20** (15–40)	0,32–0,50	0,10–0,20	0,32–0,50	0,10–0,20	0,48–0,60	0,20	0,48–0,60	0,20	0,60–0,72	0,20–0,30	0,60–0,72	0,30
P.3.2	**20** (15–40)	0,32–0,50	0,10–0,20	0,32–0,50	0,10–0,20	0,48–0,60	0,20	0,48–0,60	0,20	0,60–0,72	0,20–0,30	0,60–0,72	0,30
P.3.3	**20** (15–40)	0,32–0,50	0,10–0,20	0,32–0,50	0,10–0,20	0,48–0,60	0,20	0,48–0,60	0,20	0,60–0,72	0,20–0,30	0,60–0,72	0,30
P.4.1	**20** (15–40)	0,32–0,50	0,10–0,20	0,32–0,50	0,10–0,20	0,48–0,60	0,20	0,48–0,60	0,20	0,60–0,72	0,20–0,30	0,60–0,72	0,30
P.4.2	**20** (15–40)	0,32–0,50	0,10–0,20	0,32–0,50	0,10–0,20	0,48–0,60	0,20	0,48–0,60	0,20	0,60–0,72	0,20–0,30	0,60–0,72	0,30
M.1.1	**20** (15–40)	0,32–0,50	0,10–0,20	0,32–0,50	0,10–0,20	0,48–0,60	0,20	0,48–0,60	0,20	0,60–0,72	0,20–0,30	0,60–0,72	0,30
M.2.1	**20** (15–40)	0,32–0,50	0,10–0,20	0,32–0,50	0,10–0,20	0,48–0,60	0,20	0,48–0,60	0,20	0,60–0,72	0,20–0,30	0,60–0,72	0,30
M.3.1	**15** (10–30)	0,32–0,50	0,10–0,20	0,32–0,50	0,10–0,20	0,48–0,60	0,20	0,48–0,60	0,20	0,60–0,72	0,20–0,30	0,60–0,72	0,30
K.1.1	**120** (100–180)	0,60–0,80	0,10–0,20	0,70–0,90	0,10–0,20	1,30–1,60	0,20	1,30–1,60	0,20	1,60–2,00	0,20–0,30	1,90–2,20	0,30
K.1.2	**120** (100–180)	0,60–0,80	0,10–0,20	0,70–0,90	0,10–0,20	1,30–1,60	0,20	1,30–1,60	0,20	1,60–2,00	0,20–0,30	1,90–2,20	0,30
K.2.1	**200** (180–250)	0,60–0,80	0,10–0,20	0,70–0,90	0,10–0,20	1,30–1,60	0,20	1,30–1,60	0,20	1,60–2,00	0,20–0,30	1,90–2,20	0,30
K.2.2	**120** (100–150)	0,50–0,60	0,10–0,20	0,50–0,70	0,10–0,20	1,00–1,30	0,20	1,00–1,30	0,20	1,30–1,60	0,20–0,30	1,50–1,80	0,30
K.3.1	**200** (180–250)	0,60–0,80	0,10–0,20	0,70–0,90	0,10–0,20	1,30–1,60	0,20	1,30–1,60	0,20	1,60–2,00	0,20–0,30	1,90–2,20	0,30
K.3.2	**120** (100–150)	0,50–0,60	0,10–0,20	0,50–0,70	0,10–0,20	1,00–1,30	0,20	1,00–1,30	0,20	1,30–1,60	0,20–0,30	1,50–1,80	0,30
N.1.1													
N.1.2													
N.2.1													
N.2.2													
N.2.3													
N.3.1	150 (130–250)	0,50–0,80	0,10–0,20	0,70–0,90	0,10–0,20	1,30–1,40	0,20	1,40–1,70	0,20	1,60–1,90	0,20–0,30	1,90–2,20	0,30
N.3.2	100 (80–150)	0,40–0,60	0,10–0,20	0,60–0,80	0,10–0,20	1,00–1,30	0,20	1,20–1,40	0,20	1,30–1,60	0,20–0,30	1,60–1,80	0,30
N.3.3													
N.4.1													
S.1.1													
S.1.2													
S.2.1	40 (30–60)	0,30–0,40	0,10–0,20	0,40–0,50	0,10–0,20	0,70–0,90	0,20	0,80–1,10	0,20	0,90–1,10	0,20–0,30	1,10–1,30	0,30
S.2.2	40 (30–60)	0,30–0,40	0,10–0,20	0,40–0,50	0,10–0,20	0,70–0,90	0,20	0,80–1,10	0,20	0,90–1,10	0,20–0,30	1,10–1,30	0,30
S.2.3													
S.3.1	30 (25–60)	0,30–0,40	0,10–0,20	0,40–0,50	0,10–0,20	0,70–0,90	0,20	0,80–1,10	0,20	0,90–1,10	0,20–0,30	1,10–1,30	0,30
S.3.2	30 (25–60)	0,30–0,40	0,10–0,20	0,40–0,50	0,10–0,20	0,70–0,90	0,20	0,80–1,10	0,20	0,90–1,10	0,20–0,30	1,10–1,30	0,30
S.3.3													
H.1.1	40 (35–60)	0,50–0,60	0,10–0,20	0,60–0,90	0,10–0,20	1,10–1,60	0,20	1,20–1,60	0,20	1,20–1,80	0,20	1,20–1,80	0,20
H.1.2	40 (35–60)	0,50–0,60	0,10–0,20	0,60–0,90	0,10–0,20	1,10–1,60	0,20	1,20–1,60	0,20	1,20–1,80	0,20	1,20–1,80	0,20
H.1.3	30 (25–50)	0,50–0,70	0,10–0,20	0,70–1,00	0,10–0,20	1,20–1,70	0,20	1,30–1,70	0,20	1,30–2,00	0,20	1,30–2,00	0,20
H.1.4													
H.2.1	40 (35–60)	0,50–0,60	0,10–0,20	0,60–0,90	0,10–0,20	1,10–1,60	0,20	1,20–1,60	0,20	1,20–1,80	0,20–0,30	1,20–1,80	0,30
H.3.1	40 (35–60)	0,50–0,60	0,10–0,20	0,60–0,90	0,10–0,20	1,10–1,60	0,20	1,20–1,60	0,20	1,20–1,80	0,20–0,30	1,20–1,80	0,30
O.1.1													
O.1.2													
O.2.1													
O.2.2													
O.3.1													

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

Cutting data standard values for Fullmax, long

Index	K	40 477 …, 40 478 …					
		Type K					
	Ø range (mm) ▸	Ø 2,97 – 4,05	Ø 4,06 – 6,05	Ø 6,06 – 7,55	Ø 7,56 – 12,05	Ø 12,06 – 16,05	Ø 16,06 – 20,05
	Reaming allowance Ø ▸	0,10–0,20	0,10–0,20	0,20	0,20	0,20–0,30	0,30
	Number of flutes ▸	6	6	8	8	8	8
	v_c (m/min)	f (mm/rev)					
K.1.1	**200** (180–250)	0,80–1,00	0,90–1,20	1,50–1,90	1,50–1,90	1,80–2,30	2,20–2,60
K.1.2	**200** (180–250)	0,80–1,00	0,90–1,20	1,50–1,90	1,50–1,90	1,80–2,30	2,20–2,60
K.2.1	**225** (200–300)	0,80–1,00	0,90–1,20	1,50–1,90	1,50–1,90	1,80–2,30	2,20–2,60
K.2.2	**120** (100–150)	0,60–0,90	0,70–1,00	1,20–1,60	1,20–1,60	1,50–1,90	1,80–2,20
K.3.1	**225** (200–300)	0,80–1,00	0,90–1,20	1,50–1,90	1,50–1,90	1,80–2,30	2,20–2,60
K.3.2	**120** (100–150)	0,60–0,90	0,70–1,00	1,20–1,60	1,20–1,60	1,50–1,90	1,80–2,20

Index	VA	40 401 …, 40 402 …, 40 403 …, 40 404 …					
		Type VA					
	Ø range (mm) ▸	Ø 2,97 – 4,05	Ø 4,06 – 6,05	Ø 6,06 – 7,55	Ø 7,56 – 12,05	Ø 12,06 – 16,05	Ø 16,06 – 20,05
	Reaming allowance Ø ▸	0,10–0,20	0,10–0,20	0,20	0,20	0,20–0,30	0,30
	Number of flutes ▸	4	4	6	6	6	6
	v_c (m/min)	f (mm/rev)					
P.3.1	20 (15–40)	0,32–0,50	0,32–0,50	0,48–0,60	0,48–0,60	0,60–0,72	0,60–0,72
P.3.2	20 (15–40)	0,32–0,50	0,32–0,50	0,48–0,60	0,48–0,60	0,60–0,72	0,60–0,72
P.3.3	20 (15–40)	0,32–0,50	0,32–0,50	0,48–0,60	0,48–0,60	0,60–0,72	0,60–0,72
P.4.1	**20** (15–40)	0,32–0,50	0,32–0,50	0,48–0,60	0,48–0,60	0,60–0,72	0,60–0,72
P.4.2	**20** (15–40)	0,32–0,50	0,32–0,50	0,48–0,60	0,48–0,60	0,60–0,72	0,60–0,72
M.1.1	**20** (15–40)	0,32–0,50	0,32–0,50	0,48–0,60	0,48–0,60	0,60–0,72	0,60–0,72
M.2.1	**15** (10–30)	0,32–0,50	0,32–0,50	0,48–0,60	0,48–0,60	0,60–0,72	0,60–0,72
M.3.1	**15** (10–30)	0,32–0,50	0,32–0,50	0,48–0,60	0,48–0,60	0,60–0,72	0,60–0,72

Index	ALU	40 471 …, 40 472 …, 40 473 …, 40 474 …					
		Type ALU					
	Ø range (mm) ▸	Ø 2,97 – 4,05	Ø 4,06 – 6,05	Ø 6,06 – 7,55	Ø 7,56 – 12,05	Ø 12,06 – 16,05	Ø 16,06 – 20,05
	Reaming allowance Ø ▸	0,10–0,20	0,10–0,20	0,20	0,20	0,20–0,30	0,30
	Number of flutes ▸	4	4	6	6	6	6
	v_c (m/min)	f (mm/rev)					
N.1.1	**200** (180–300)	0,50–0,60	0,60–0,90	1,10–1,60	1,20–1,60	1,20–1,80	1,20–1,80
N.1.2	**200** (180–300)	0,50–0,60	0,60–0,90	1,10–1,60	1,20–1,60	1,20–1,80	1,20–1,80
N.2.1	**200** (180–250)	0,50–0,70	0,70–1,00	1,20–1,70	1,30–1,70	1,30–2,00	1,30–2,00
N.2.2	**200** (180–300)	0,50–0,70	0,70–1,00	1,20–1,70	1,30–1,70	1,30–2,00	1,30–2,00
N.2.3	**200** (180–250)	0,50–0,70	0,70–1,00	1,20–1,70	1,30–1,70	1,30–2,00	1,30–2,00
O.3.1	250 (220–270)	0,50–0,70	0,70–1,00	1,20–1,70	1,30–1,70	1,30–2,00	1,30–2,00

Index	H	40 475 …, 40 476 …					
		Type H					
	Ø range (mm) ▸	Ø 2,97 – 4,05	Ø 4,06 – 6,05	Ø 6,06 – 7,55	Ø 7,56 – 12,05	Ø 12,06 – 16,05	Ø 16,06 – 20,05
	Reaming allowance Ø ▸	0,10–0,20	0,10–0,20	0,20	0,20	0,20	0,20
	Number of flutes ▸	4	4	6	6	6	6
	v_c (m/min)	f (mm/rev)					
H.1.1	**40** (35–60)	0,20–0,30	0,20–0,30	0,40–0,60	0,50–0,60	0,50–0,70	0,60–0,80
H.1.2	**30** (25–50)	0,20–0,30	0,20–0,30	0,40–0,60	0,50–0,60	0,50–0,70	0,60–0,80
H.1.3	**30** (25–50)	0,20–0,30	0,20–0,30	0,40–0,60	0,50–0,60	0,50–0,70	0,60–0,80
H.1.4	**30** (25–50)	0,20–0,30	0,20–0,30	0,40–0,60	0,50–0,60	0,50–0,70	0,60–0,80
H.2.1	**40** (35–60)	0,20–0,30	0,20–0,30	0,40–0,60	0,50–0,60	0,50–0,70	0,60–0,80
H.3.1	**40** (35–60)	0,20–0,30	0,20–0,30	0,40–0,60	0,50–0,60	0,50–0,70	0,60–0,80

* Wet machining recommended

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

Cutting data standard values for Fullmax, short

Index	UNI	40 481 …, 40 483 …, 40 488 …, 40 489 … Type UNI											
	Ø range (mm) ▸	Ø 2,97 – 4,05		Ø 4,06 – 6,05		Ø 6,06 – 7,55		Ø 7,56 – 12,05		Ø 12,06 – 15,97		Ø 15,98 – 20,05	
	Number of flutes ▸	4		4		6		6		6		6	
	v_c (m/min)	f (mm/rev)	Reaming allowance Ø	f (mm/rev)	Reaming allowance Ø	f (mm/rev)	Reaming allowance Ø	f (mm/rev)	Reaming allowance Ø	f (mm/rev)	Reaming allowance Ø	f (mm/rev)	Reaming allowance Ø
P.1.1	**200** (180–250)	0,65–0,80	0,10–0,20	0,75–0,90	0,10–0,20	1,40–1,60	0,20	1,65–1,80	0,20	1,65–1,90	0,20–0,30	2,56–3,00	0,30
P.1.2	**200** (180–250)	0,65–0,80	0,10–0,20	0,75–0,90	0,10–0,20	1,40–1,60	0,20	1,65–1,80	0,20	1,65–1,90	0,20–0,30	2,56–3,00	0,30
P.1.3	**200** (180–250)	0,65–0,80	0,10–0,20	0,75–0,90	0,10–0,20	1,40–1,60	0,20	1,65–1,80	0,20	1,65–1,90	0,20–0,30	2,56–3,00	0,30
P.1.4	**200** (180–250)	0,65–0,80	0,10–0,20	0,75–0,90	0,10–0,20	1,40–1,60	0,20	1,65–1,80	0,20	1,65–1,90	0,20–0,30	2,56–3,00	0,30
P.1.5	**200** (180–250)	0,65–0,80	0,10–0,20	0,75–0,90	0,10–0,20	1,40–1,60	0,20	1,65–1,80	0,20	1,65–1,90	0,20–0,30	2,56–3,00	0,30
P.2.1	**200** (180–250)	0,65–0,80	0,10–0,20	0,75–0,90	0,10–0,20	1,40–1,60	0,20	1,65–1,80	0,20	1,65–1,90	0,20–0,30	2,56–3,00	0,30
P.2.2	**200** (180–250)	0,65–0,80	0,10–0,20	0,75–0,90	0,10–0,20	1,40–1,60	0,20	1,65–1,80	0,20	1,65–1,90	0,20–0,30	2,56–3,00	0,30
P.2.3	**200** (180–250)	0,65–0,80	0,10–0,20	0,75–0,90	0,10–0,20	1,40–1,60	0,20	1,65–1,80	0,20	1,65–1,90	0,20–0,30	2,56–3,00	0,30
P.2.4	**65** (55–110)	0,45–0,50	0,10–0,20	0,45–0,60	0,10–0,20	1,00–1,10	0,20	1,20–1,30	0,20	1,20–1,40	0,20–0,30	1,90–2,10	0,30
P.3.1	**40** (30–80)	0,40–0,60	0,10–0,20	0,50–0,70	0,10–0,20	1,00–1,30	0,20	1,10–1,40	0,20	1,20–1,50	0,20–0,30	1,90–2,25	0,30
P.3.2	**40** (30–80)	0,40–0,60	0,10–0,20	0,50–0,70	0,10–0,20	1,00–1,30	0,20	1,10–1,40	0,20	1,20–1,50	0,20–0,30	1,90–2,25	0,30
P.3.3	**40** (30–80)	0,40–0,60	0,10–0,20	0,50–0,70	0,10–0,20	1,00–1,30	0,20	1,10–1,40	0,20	1,20–1,50	0,20–0,30	1,90–2,25	0,30
P.4.1	**45** (40–65)	0,45–0,50	0,10–0,20	0,45–0,60	0,10–0,20	1,00–1,10	0,20	1,20–1,30	0,20	1,20–1,40	0,20–0,30	1,90–2,10	0,30
P.4.2	**45** (40–65)	0,45–0,50	0,10–0,20	0,45–0,60	0,10–0,20	1,00–1,10	0,20	1,20–1,30	0,20	1,20–1,40	0,20–0,30	1,90–2,10	0,30
M.1.1	**40** (35–60)	0,40–0,60	0,10–0,20	0,50–0,70	0,10–0,20	1,00–1,30	0,20	1,10–1,40	0,20	1,20–1,50	0,20–0,30	1,90–2,25	0,30
M.2.1	**40** (35–60)	0,40–0,60	0,10–0,20	0,50–0,70	0,10–0,20	1,00–1,30	0,20	1,10–1,40	0,20	1,20–1,50	0,20–0,30	1,90–2,25	0,30
M.3.1	**40** (35–60)	0,40–0,60	0,10–0,20	0,50–0,70	0,10–0,20	1,00–1,30	0,20	1,10–1,40	0,20	1,20–1,50	0,20–0,30	1,90–2,25	0,30
K.1.1	**200** (180–250)	0,80–1,00	0,10–0,20	0,90–1,20	0,10–0,20	1,50–1,90	0,20	1,50–1,90	0,20	1,80–2,30	0,20–0,30	2,50–2,90	0,30
K.1.2	**200** (180–250)	0,80–1,00	0,10–0,20	0,90–1,20	0,10–0,20	1,50–1,90	0,20	1,50–1,90	0,20	1,80–2,30	0,20–0,30	2,50–2,90	0,30
K.2.1	**225** (200–300)	0,80–1,00	0,10–0,20	0,90–1,20	0,10–0,20	1,50–1,90	0,20	1,50–1,90	0,20	1,80–2,30	0,20–0,30	2,50–2,90	0,30
K.2.2	**120** (100–150)	0,60–0,90	0,10–0,20	0,70–1,00	0,10–0,20	1,20–1,60	0,20	1,20–1,60	0,20	1,50–1,90	0,20–0,30	2,00–2,40	0,30
K.3.1	**225** (200–300)	0,80–1,00	0,10–0,20	0,90–1,20	0,10–0,20	1,50–1,90	0,20	1,50–1,90	0,20	1,80–2,30	0,20–0,30	2,00–2,40	0,30
K.3.2	**120** (100–150)	0,60–0,90	0,10–0,20	0,70–1,00	0,10–0,20	1,20–1,60	0,20	1,20–1,60	0,20	1,50–1,90	0,20–0,30	2,00–2,40	0,30
N.1.1													
N.1.2													
N.2.1													
N.2.2													
N.2.3													
N.3.1	150 (120–250)	0,50–0,80	0,10–0,20	0,70–0,90	0,10–0,20	1,30–1,40	0,20	1,40–1,70	0,20	1,60–1,90	0,20–0,30	2,50–2,90	0,30
N.3.2	100 (80–150)	0,40–0,60	0,10–0,20	0,60–0,80	0,10–0,20	1,00–1,30	0,20	1,20–1,40	0,20	1,30–1,60	0,20–0,30	2,10–2,40	0,30
N.3.3													
N.4.1													
S.1.1													
S.1.2													
S.2.1	40 (30–60)	0,30–0,40	0,10–0,20	0,40–0,50	0,10–0,20	0,70–0,90	0,20	0,80–1,10	0,20	0,90–1,10	0,20–0,30	1,10–1,30	0,30
S.2.2	40 (30–60)	0,30–0,40	0,10–0,20	0,40–0,50	0,10–0,20	0,70–0,90	0,20	0,80–1,10	0,20	0,90–1,10	0,20–0,30	1,10–1,30	0,30
S.2.3													
S.3.1	30 (25–60)	0,30–0,40	0,10–0,20	0,40–0,50	0,10–0,20	0,70–0,90	0,20	0,80–1,10	0,20	0,90–1,10	0,20–0,30	1,10–1,30	0,30
S.3.2	30 (25–60)	0,30–0,40	0,10–0,20	0,40–0,50	0,10–0,20	0,70–0,90	0,20	0,80–1,10	0,20	0,90–1,10	0,20–0,30	1,10–1,30	0,30
S.3.3													
H.1.1	40 (35–60)	0,20–0,30	0,10–0,20	0,20–0,30	0,10–0,20	0,40–0,60	0,20	0,50–0,60	0,20	0,50–0,70	0,20	0,80–1,00	0,20
H.1.2	30 (25–50)	0,20–0,30	0,10–0,20	0,20–0,30	0,10–0,20	0,40–0,60	0,20	0,50–0,60	0,20	0,50–0,70	0,20	0,80–1,00	0,20
H.1.3	30 (25–50)	0,20–0,30	0,10–0,20	0,20–0,30	0,10–0,20	0,40–0,60	0,20	0,50–0,60	0,20	0,50–0,70	0,20	0,80–1,00	0,20
H.1.4													
H.2.1	40 (35–60)	0,50–0,60	0,10–0,20	0,60–0,90	0,10–0,20	1,10–1,60	0,20	1,20–1,60	0,20	1,20–1,80	0,20–0,30	1,20–1,80	0,30
H.3.1	40 (35–60)	0,50–0,60	0,10–0,20	0,60–0,90	0,10–0,20	1,10–1,60	0,20	1,20–1,60	0,20	1,20–1,80	0,20–0,30	1,20–1,80	0,30
O.1.1													
O.1.2													
O.2.1													
O.2.2													
O.3.1													

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

Cutting data standard values for solid carbide reamers

Index	40 420 ..., 40 421 ..., 40 430 ..., 40 431 ...																			
			≤ Ø 0,94		Ø 0,95–5		Ø 5,01–8		Ø 8,01–10		Ø 10,01–12		Ø 12,01–15		Ø 15,01–20		Ø 20,01–25		Ø 25,01–30	
	uncoated	TiAlN																		
	v_c (m/min)		f (mm/rev)	Reaming allowance Ø	f (mm/rev)	Reaming allowance Ø	f (mm/rev)	Reaming allowance Ø	f (mm/rev)	Reaming allowance Ø	f (mm/rev)	Reaming allowance Ø	f (mm/rev)	Reaming allowance Ø	f (mm/rev)	Reaming allowance Ø	f (mm/rev)	Reaming allowance Ø	f (mm/rev)	Reaming allowance Ø	f (mm/rev)	Reaming allowance Ø
P.1.1	**20**	**30**	0,10	0,10	0,10	0,10	0,15	0,15	0,20	0,20	0,20	0,20	0,25	0,20	0,30	0,30	0,30	0,30	0,30	0,30
P.1.2	**20**	**30**	0,10	0,10	0,10	0,10	0,15	0,15	0,20	0,20	0,20	0,20	0,25	0,20	0,30	0,30	0,30	0,30	0,30	0,30
P.1.3	**12**	**15**	0,10	0,10	0,10	0,10	0,15	0,15	0,20	0,20	0,20	0,20	0,25	0,20	0,30	0,30	0,30	0,30	0,30	0,30
P.1.4	**12**	**15**	0,10	0,10	0,10	0,10	0,15	0,15	0,20	0,20	0,20	0,20	0,25	0,20	0,30	0,30	0,30	0,30	0,30	0,30
P.1.5	**12**	**15**	0,10	0,10	0,10	0,10	0,15	0,15	0,20	0,20	0,20	0,20	0,25	0,20	0,30	0,30	0,30	0,30	0,30	0,30
P.2.1	**15**	**25**	0,10	0,10	0,10	0,10	0,15	0,15	0,20	0,20	0,20	0,20	0,25	0,20	0,30	0,30	0,30	0,30	0,30	0,30
P.2.2	**12**	**15**	0,10	0,10	0,10	0,10	0,15	0,15	0,20	0,20	0,20	0,20	0,25	0,20	0,30	0,30	0,30	0,30	0,30	0,30
P.2.3	**12**	**15**	0,10	0,10	0,10	0,10	0,15	0,15	0,20	0,20	0,20	0,20	0,25	0,20	0,30	0,30	0,30	0,30	0,30	0,30
P.2.4	**12**	**15**	0,10	0,10	0,10	0,10	0,15	0,15	0,20	0,20	0,20	0,20	0,25	0,20	0,30	0,30	0,30	0,30	0,30	0,30
P.3.1	**15**	**25**	0,10	0,10	0,10	0,10	0,15	0,15	0,20	0,20	0,20	0,20	0,25	0,20	0,30	0,30	0,30	0,30	0,30	0,30
P.3.2	**12**	**15**	0,10	0,10	0,10	0,10	0,15	0,15	0,20	0,20	0,20	0,20	0,25	0,20	0,30	0,30	0,30	0,30	0,30	0,30
P.3.3	**12**	**15**	0,10	0,10	0,10	0,10	0,15	0,15	0,20	0,20	0,20	0,20	0,25	0,20	0,30	0,30	0,30	0,30	0,30	0,30
P.4.1																				
P.4.2																				
M.1.1		**15**			0,08	0,08	0,10	0,10	0,15	0,10	0,15	0,10	0,20	0,20	0,25	0,20	0,25	0,20	0,25	0,20
M.2.1		**15**			0,08	0,08	0,10	0,10	0,15	0,10	0,15	0,10	0,20	0,20	0,25	0,20	0,25	0,20	0,25	0,20
M.3.1		**10**			0,08	0,08	0,10	0,10	0,15	0,10	0,15	0,10	0,20	0,20	0,25	0,20	0,25	0,20	0,25	0,20
K.1.1	18	**30**	0,10	0,10	0,10	0,10	0,20	0,15	0,30	0,20	0,30	0,20	0,30	0,20	0,40	0,30	0,40	0,30	0,40	0,30
K.1.2	18	**30**	0,10	0,10	0,10	0,10	0,20	0,15	0,30	0,20	0,30	0,20	0,30	0,20	0,40	0,30	0,40	0,30	0,40	0,30
K.2.1	15	**25**	0,10	0,10	0,10	0,10	0,20	0,15	0,30	0,20	0,30	0,20	0,30	0,20	0,40	0,30	0,40	0,30	0,40	0,30
K.2.2	10	**20**	0,10	0,10	0,10	0,10	0,20	0,15	0,30	0,20	0,30	0,20	0,30	0,20	0,40	0,30	0,40	0,30	0,40	0,30
K.3.1	15	**25**	0,10	0,10	0,10	0,10	0,20	0,15	0,30	0,20	0,30	0,20	0,30	0,20	0,40	0,30	0,40	0,30	0,40	0,30
K.3.2	10	**20**	0,10	0,10	0,10	0,10	0,20	0,15	0,30	0,20	0,30	0,20	0,30	0,20	0,40	0,30	0,40	0,30	0,40	0,30
N.1.1	**40**		0,15	0,10	0,15	0,10	0,20	0,15	0,25	0,20	0,25	0,20	0,30	0,20	0,40	0,30	0,40	0,30	0,40	0,30
N.1.2	**40**		0,15	0,10	0,15	0,10	0,20	0,15	0,25	0,20	0,25	0,20	0,30	0,20	0,40	0,30	0,40	0,30	0,40	0,30
N.2.1	**25**		0,15	0,10	0,15	0,10	0,20	0,15	0,25	0,20	0,25	0,20	0,30	0,20	0,40	0,30	0,40	0,30	0,40	0,30
N.2.2	**25**		0,15	0,10	0,15	0,10	0,20	0,15	0,25	0,20	0,25	0,20	0,30	0,20	0,40	0,30	0,40	0,30	0,40	0,30
N.2.3																				
N.3.1	**30**		0,15	0,10	0,15	0,10	0,20	0,15	0,25	0,20	0,25	0,20	0,30	0,20	0,40	0,30	0,40	0,30	0,40	0,30
N.3.2	**30**		0,15	0,10	0,15	0,10	0,20	0,15	0,25	0,20	0,25	0,20	0,30	0,20	0,40	0,30	0,40	0,30	0,40	0,30
N.3.3	**30**		0,15	0,10	0,15	0,10	0,20	0,15	0,25	0,20	0,25	0,20	0,30	0,20	0,40	0,30	0,40	0,30	0,40	0,30
N.4.1																				
S.1.1		**10**			0,06	0,05	0,10	0,10	0,12	0,10	0,12	0,10	0,18	0,15–0,20	0,20	0,20	0,20	0,20	0,20	0,20
S.1.2		**10**			0,06	0,05	0,10	0,10	0,12	0,10	0,12	0,10	0,18	0,15–0,20	0,20	0,20	0,20	0,20	0,20	0,20
S.2.1		**10**			0,06	0,05	0,10	0,10	0,12	0,10	0,12	0,10	0,18	0,15–0,20	0,20	0,20	0,20	0,20	0,20	0,20
S.2.2		**10**			0,06	0,05	0,10	0,10	0,12	0,10	0,12	0,10	0,18	0,15–0,20	0,20	0,20	0,20	0,20	0,20	0,20
S.2.3		**10**			0,06	0,05	0,10	0,10	0,12	0,10	0,12	0,10	0,18	0,15–0,20	0,20	0,20	0,20	0,20	0,20	0,20
S.3.1		**10**			0,06	0,05	0,10	0,10	0,12	0,10	0,12	0,10	0,18	0,15–0,20	0,20	0,20	0,20	0,20	0,20	0,20
S.3.2		**10**			0,06	0,05	0,10	0,10	0,12	0,10	0,12	0,10	0,18	0,15–0,20	0,20	0,20	0,20	0,20	0,20	0,20
S.3.3		**10**			0,06	0,05	0,10	0,10	0,12	0,10	0,12	0,10	0,18	0,15–0,20	0,20	0,20	0,20	0,20	0,20	0,20
H.1.1		**8**			0,05	0,05	0,08	0,05	0,10	0,10	0,10	0,10	0,13	0,10	0,15	0,15	0,15	0,15	0,15	0,15
H.1.2		**8**			0,05	0,05	0,08	0,05	0,10	0,10	0,10	0,10	0,13	0,10	0,15	0,15	0,15	0,15	0,15	0,15
H.1.3																				
H.1.4																				
H.2.1		**8**			0,05	0,05	0,08	0,05	0,10	0,10	0,10	0,10	0,13	0,10	0,15	0,15	0,15	0,15	0,15	0,15
H.3.1																				
O.1.1	**40**		0,15	0,10	0,15	0,10	0,20	0,15	0,25	0,20	0,25	0,20	0,30	0,20	0,40	0,30	0,40	0,30	0,40	0,30
O.1.2	**40**		0,15	0,10	0,15	0,10	0,20	0,15	0,25	0,20	0,25	0,20	0,30	0,20	0,40	0,30	0,40	0,30	0,40	0,30
O.2.1																				
O.2.2																				
O.3.1																				

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

Cutting data standard values for solid carbide reamers – Type H

Index	H / *	40 435 …							
		Ø 0,98 – 3,99		Ø 4,00 – 8,00		Ø 8,01 – 16,00		Ø 16,01 – 20,00	
	v_c (m/min)	f (mm/rev)	Reaming allowance Ø	f (mm/rev)	Reaming allowance Ø	f (mm/rev)	Reaming allowance Ø	f (mm/rev)	Reaming allowance Ø
P.1.1	16	0,10	0,20	0,20	0,20	0,238	0,30	0,275	0,30
P.1.2	13	0,08	0,20	0,16	0,20	0,195	0,30	0,23	0,30
P.1.3	12	0,075	0,20	0,15	0,20	0,175	0,30	0,20	0,30
P.1.4	12	0,075	0,20	0,15	0,20	0,175	0,30	0,20	0,30
P.1.5	19	0,08	0,20	0,16	0,20	0,195	0,30	0,23	0,30
P.2.1	15	0,08	0,20	0,16	0,20	0,195	0,30	0,23	0,30
P.2.2	14	0,08	0,20	0,16	0,20	0,195	0,30	0,23	0,30
P.2.3	13	0,08	0,20	0,16	0,20	0,195	0,30	0,23	0,30
P.2.4	12	0,075	0,20	0,15	0,20	0,175	0,30	0,20	0,30
P.3.1									
P.3.2	11	0,063	0,20	0,125	0,20	0,15	0,30	0,175	0,30
P.3.3	11	0,063	0,20	0,125	0,20	0,15	0,30	0,175	0,30
P.4.1	11	0,063	0,20	0,125	0,20	0,15	0,30	0,175	0,30
P.4.2	8	0,05	0,20	0,10	0,20	0,113	0,30	0,125	0,30
M.1.1									
M.2.1	9	0,063	0,10	0,125	0,10	0,15	0,20	0,175	0,20
M.3.1	9	0,063	0,10	0,125	0,10	0,15	0,20	0,175	0,20
K.1.1	17	0,125	0,20	0,25	0,20	0,325	0,30	0,40	0,30
K.1.2	14	0,113	0,20	0,225	0,20	0,275	0,30	0,325	0,30
K.2.1	17	0,113	0,20	0,225	0,20	0,275	0,30	0,325	0,30
K.2.2	14	0,10	0,20	0,20	0,20	0,238	0,30	0,275	0,30
K.3.1	17	0,113	0,20	0,225	0,20	0,275	0,30	0,325	0,30
K.3.2	14	0,10	0,20	0,20	0,20	0,238	0,30	0,275	0,30
N.1.1									
N.1.2									
N.2.1									
N.2.2									
N.2.3									
N.3.1									
N.3.2									
N.3.3									
N.4.1									
S.1.1									
S.1.2									
S.2.1									
S.2.2									
S.2.3									
S.3.1									
S.3.2									
S.3.3									
H.1.1	8	0,075	0,10	0,15	0,20	0,175	0,30	0,20	0,30
H.1.2	7	0,063	0,10	0,125	0,20	0,15	0,30	0,175	0,30
H.1.3	5	0,05	0,10	0,10	0,20	0,113	0,30	0,125	0,30
H.1.4									
H.2.1									
H.3.1									
O.1.1									
O.1.2									
O.2.1									
O.2.2									
O.3.1									

* Wet machining preferred/dry machining possible

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

Cutting data standard values for solid carbide reamers

Index	40 405 …, 40 415 …						
	uncoated	≤ Ø 4,80		Ø 4,81 – 8,00		Ø 8,01 – 12,00	
	v_c (m/min)	f (mm/rev)	Reaming allowance Ø	f (mm/rev)	Reaming allowance Ø	f (mm/rev)	Reaming allowance Ø
P.1.1	**15** (10–20)	0,1	0,05–0,1	0,15	0,1–0,15	0,175–0,2	0,1–0,2
P.1.2	**15** (10–20)	0,1	0,05–0,1	0,15	0,1–0,15	0,175–0,2	0,1–0,2
P.1.3	**15** (10–20)	0,1	0,05–0,1	0,15	0,1–0,15	0,175–0,2	0,1–0,2
P.1.4	**15** (10–20)	0,1	0,05–0,1	0,15	0,1–0,15	0,175–0,2	0,1–0,2
P.1.5	**15** (10–20)	0,1	0,05–0,1	0,15	0,1–0,15	0,175–0,2	0,1–0,2
P.2.1	**15** (10–20)	0,1	0,05–0,1	0,15	0,1–0,15	0,175–0,2	0,1–0,2
P.2.2	**15** (10–20)	0,1	0,05–0,1	0,15	0,1–0,15	0,175–0,2	0,1–0,2
P.2.3	**15** (10–20)	0,1	0,05–0,1	0,15	0,1–0,15	0,175–0,2	0,1–0,2
P.2.4	**15** (10–20)	0,1	0,05–0,1	0,15	0,1–0,15	0,175–0,2	0,1–0,2
P.3.1	**15** (10–20)	0,1	0,05–0,1	0,15	0,1–0,15	0,175–0,2	0,1–0,2
P.3.2	**15** (10–20)	0,1	0,05–0,1	0,15	0,1–0,15	0,175–0,2	0,1–0,2
P.3.3							
P.4.1							
P.4.2							
M.1.1							
M.2.1							
M.3.1							
K.1.1	15 (10–15)	0,1	0,05–0,1	0,2	0,1–0,15	0,25–0,3	0,1–0,2
K.1.2	15 (10–20)	0,1	0,05–0,1	0,2	0,1–0,15	0,25–0,3	0,1–0,2
K.2.1	15 (10–15)	0,1	0,05–0,1	0,2	0,1–0,15	0,25–0,3	0,1–0,2
K.2.2	10 (5–15)	0,1	0,05–0,1	0,2	0,1–0,15	0,25–0,3	0,1–0,2
K.3.1	15 (10–20)	0,1	0,05–0,1	0,2	0,1–0,15	0,25–0,3	0,1–0,2
K.3.2	10 (5–15)	0,1	0,05–0,1	0,2	0,1–0,15	0,25–0,3	0,1–0,2
N.1.1	**30** (20–40)	0,1–0,15	0,05–0,1	0,15–0,2	0,1–0,15	0,175–0,25	0,1–0,2
N.1.2	**30** (20–40)	0,1–0,15	0,05–0,1	0,15–0,2	0,1–0,15	0,175–0,25	0,1–0,2
N.2.1	**15** (10–20)	0,1–0,15	0,05–0,1	0,15–0,2	0,1–0,15	0,175–0,25	0,1–0,2
N.2.2	**15** (10–20)	0,1–0,15	0,05–0,1	0,15–0,2	0,1–0,15	0,175–0,25	0,1–0,2
N.2.3							
N.3.1	**20** (15–25)	0,1–0,15	0,05–0,1	0,15–0,2	0,1–0,15	0,175–0,25	0,1–0,2
N.3.2	**20** (15–25)	0,1–0,15	0,05–0,1	0,15–0,2	0,1–0,15	0,175–0,25	0,1–0,2
N.3.3	**20** (15–25)	0,1–0,15	0,05–0,1	0,15–0,2	0,1–0,15	0,175–0,25	0,1–0,2
N.4.1							
S.1.1							
S.1.2							
S.2.1							
S.2.2							
S.2.3							
S.3.1							
S.3.2							
S.3.3							
H.1.1							
H.1.2							
H.1.3							
H.1.4							
H.2.1							
H.3.1							
O.1.1							
O.1.2							
O.2.1							
O.2.2							
O.3.1							

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

Cutting data for HSS-E reamers

Index	40 110 …, 40 115 …								
Nominal Ø in mm ▸		≤ Ø 5	Ø 5,01–8	Ø 8,01–12	Ø 12,01–15	Ø 15,01–20	Ø 20,01–25	Ø 25,01–30	Ø 30,01–40	Ø 40,01–50
Reaming allowance Ø ▸		0,10	0,15	0,20	0,20	0,30	0,30	0,30	0,30	0,30
	v_c (m/min)	f (mm/rev)								
P.1.1	12	0,10	0,15	0,20	0,25	0,30	0,30	0,30	0,40	0,40
P.1.2	12	0,10	0,15	0,20	0,25	0,30	0,30	0,30	0,40	0,40
P.1.3	10	0,10	0,15	0,20	0,25	0,30	0,30	0,30	0,40	0,40
P.1.4	10	0,10	0,15	0,20	0,25	0,30	0,30	0,30	0,40	0,40
P.1.5	10	0,10	0,15	0,20	0,25	0,30	0,30	0,30	0,40	0,40
P.2.1	12	0,10	0,15	0,20	0,25	0,30	0,30	0,30	0,40	0,40
P.2.2	12	0,10	0,15	0,20	0,25	0,30	0,30	0,30	0,40	0,40
P.2.3	10	0,10	0,15	0,20	0,25	0,30	0,30	0,30	0,40	0,40
P.2.4	10	0,10	0,15	0,20	0,25	0,30	0,30	0,30	0,40	0,40
P.3.1	12	0,10	0,15	0,20	0,25	0,30	0,30	0,30	0,40	0,40
P.3.2	10	0,10	0,15	0,20	0,25	0,30	0,30	0,30	0,40	0,40
P.3.3	10	0,10	0,15	0,20	0,25	0,30	0,30	0,30	0,40	0,40
P.4.1										
P.4.2										
M.1.1										
M.2.1										
M.3.1										
K.1.1	12	0,15	0,20	0,25	0,30	0,35	0,35	0,35	0,40	0,40
K.1.2	12	0,15	0,20	0,25	0,30	0,35	0,35	0,35	0,40	0,40
K.2.1	10	0,15	0,20	0,25	0,30	0,35	0,35	0,35	0,40	0,40
K.2.2	10	0,15	0,20	0,25	0,30	0,35	0,35	0,35	0,40	0,40
K.3.1	10	0,15	0,20	0,25	0,30	0,35	0,35	0,35	0,40	0,40
K.3.2	10	0,15	0,20	0,25	0,30	0,35	0,35	0,35	0,40	0,40
N.1.1	15	0,15	0,20	0,20	0,25	0,30	0,30	0,30	0,40	0,40
N.1.2	15	0,15	0,20	0,20	0,25	0,30	0,30	0,30	0,40	0,40
N.2.1										
N.2.2										
N.2.3										
N.3.1	20	0,15	0,20	0,20	0,25	0,30	0,30	0,30	0,40	0,40
N.3.2	20	0,15	0,20	0,20	0,25	0,30	0,30	0,30	0,40	0,40
N.3.3	20	0,15	0,20	0,20	0,25	0,30	0,30	0,30	0,40	0,40
N.4.1										
S.1.1										
S.1.2										
S.2.1										
S.2.2										
S.2.3										
S.3.1										
S.3.2										
S.3.3										
H.1.1										
H.1.2										
H.1.3										
H.1.4										
H.2.1										
H.3.1										
O.1.1	25	0,15	0,20	0,20	0,25	0,30	0,30	0,30	0,40	0,40
O.1.2	25	0,15	0,20	0,20	0,25	0,30	0,30	0,30	0,40	0,40
O.2.1										
O.2.2										
O.3.1										

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

Cutting data for HSS-E reamers

Index	40 139 ..., 40 140 ..., 40 145 ..., 40 150 ..., 40 160 ...																			
		≤ Ø 5		Ø 5,01–8		Ø 8,01–12		Ø 12,01–15		Ø 15,01–20		Ø 20,01–25		Ø 25,01–30		Ø 30,01–40		Ø 40,01–50	
	v_c (m/min)	f (mm/rev)	Reaming allowance Ø	f (mm/rev)	Reaming allowance Ø	f (mm/rev)	Reaming allowance Ø	f (mm/rev)	Reaming allowance Ø	f (mm/rev)	Reaming allowance Ø	f (mm/rev)	Reaming allowance Ø	f (mm/rev)	Reaming allowance Ø	f (mm/rev)	Reaming allowance Ø	f (mm/rev)	Reaming allowance Ø
P.1.1	15	0,10	0,10–0,15	0,20	0,15–0,20	0,25	0,20	0,30	0,25	0,35	0,30	0,40	0,30	0,40	0,35	0,40	0,40	0,50	0,50
P.1.2	12	0,10	0,10–0,15	0,20	0,15–0,20	0,25	0,20	0,30	0,25	0,35	0,30	0,40	0,30	0,40	0,35	0,40	0,40	0,50	0,50
P.1.3	10	0,10	0,10–0,15	0,20	0,15–0,20	0,25	0,20	0,30	0,25	0,35	0,30	0,40	0,30	0,40	0,35	0,40	0,40	0,50	0,50
P.1.4	10	0,08	0,10–0,15	0,15	0,15–0,20	0,20	0,20	0,25	0,25	0,30	0,30	0,40	0,30	0,40	0,35	0,40	0,40	0,50	0,50
P.1.5	8	0,08	0,10–0,15	0,15	0,15–0,20	0,20	0,20	0,25	0,25	0,30	0,30	0,30	0,30	0,40	0,35	0,40	0,40	0,50	0,50
P.2.1	10	0,10	0,10–0,15	0,20	0,15–0,20	0,25	0,20	0,25	0,25	0,35	0,30	0,40	0,30	0,40	0,35	0,40	0,40	0,50	0,50
P.2.2	8	0,08	0,10–0,15	0,15	0,15–0,20	0,20	0,20	0,25	0,25	0,30	0,30	0,30	0,30	0,40	0,35	0,40	0,40	0,50	0,50
P.2.3	8	0,08	0,10–0,15	0,15	0,15–0,20	0,20	0,20	0,25	0,25	0,30	0,30	0,30	0,30	0,40	0,35	0,40	0,40	0,50	0,50
P.2.4	8	0,08	0,10–0,15	0,15	0,15–0,20	0,20	0,20	0,25	0,25	0,30	0,30	0,30	0,30	0,40	0,35	0,40	0,40	0,50	0,50
P.3.1	8	0,08	0,10–0,15	0,12	0,15–0,20	0,20	0,20	0,20	0,25	0,25	0,30	0,30	0,30	0,30	0,35	0,35	0,40	0,40	0,50
P.3.2	6	0,08	0,10–0,15	0,12	0,15–0,20	0,20	0,20	0,20	0,25	0,25	0,25	0,30	0,30	0,30	0,35	0,35	0,40	0,40	0,50
P.3.3	6	0,08	0,10–0,15	0,12	0,15–0,20	0,20	0,20	0,20	0,25	0,25	0,25	0,30	0,30	0,30	0,35	0,35	0,40	0,40	0,50
P.4.1	6	0,08	0,10–0,15	0,12	0,15–0,20	0,20	0,20	0,20	0,25	0,25	0,25	0,30	0,30	0,30	0,35	0,35	0,40	0,40	0,50
P.4.2	6	0,08	0,10–0,15	0,12	0,15–0,20	0,20	0,20	0,20	0,25	0,25	0,25	0,30	0,30	0,30	0,35	0,35	0,40	0,40	0,50
M.1.1	6	0,08	0,10	0,12	0,15	0,20	0,20	0,20	0,20	0,25	0,25	0,30	0,25	0,30	0,30	0,35	0,30	0,40	0,35
M.2.1	4	0,08	0,10	0,12	0,15	0,20	0,20	0,20	0,20	0,25	0,25	0,30	0,25	0,30	0,30	0,35	0,30	0,40	0,35
M.3.1	4	0,08	0,10	0,12	0,15	0,20	0,20	0,20	0,20	0,25	0,25	0,30	0,25	0,30	0,30	0,35	0,30	0,40	0,35
K.1.1	14	0,10	0,10–0,15	0,16	0,20	0,24	0,20	0,28	0,25	0,35	0,30	0,35	0,35	0,35	0,35	0,40	0,40	0,50	0,40
K.1.2	12	0,10	0,10–0,15	0,16	0,20	0,24	0,20	0,28	0,25	0,35	0,30	0,35	0,35	0,35	0,35	0,40	0,40	0,50	0,40
K.2.1	12	0,10	0,10–0,15	0,16	0,15–0,20	0,20	0,20	0,25	0,25	0,35	0,30	0,35	0,35	0,35	0,35	0,40	0,40	0,50	0,40
K.2.2	10	0,10	0,10–0,15	0,16	0,15–0,20	0,20	0,20	0,25	0,25	0,30	0,30	0,30	0,35	0,35	0,35	0,40	0,40	0,40	0,40
K.3.1	12	0,10	0,10–0,15	0,16	0,20	0,24	0,20	0,28	0,25	0,35	0,30	0,35	0,35	0,35	0,35	0,40	0,40	0,50	0,40
K.3.2	10	0,10	0,10–0,15	0,16	0,15–0,20	0,20	0,20	0,25	0,25	0,30	0,30	0,30	0,35	0,35	0,35	0,40	0,40	0,40	0,40
N.1.1	20	0,10	0,15	0,20	0,20	0,25	0,20	0,30	0,25	0,40	0,30	0,40	0,35	0,50	0,40	0,60	0,45	0,80	0,50
N.1.2	20	0,10	0,15	0,20	0,20	0,25	0,20	0,30	0,25	0,40	0,30	0,40	0,35	0,50	0,40	0,60	0,45	0,80	0,50
N.2.1	18	0,10	0,15	0,20	0,20	0,25	0,20	0,30	0,25	0,40	0,30	0,40	0,35	0,50	0,40	0,60	0,45	0,80	0,50
N.2.2	18	0,10	0,15	0,20	0,20	0,25	0,20	0,30	0,25	0,40	0,30	0,40	0,35	0,50	0,40	0,50	0,45	0,80	0,50
N.2.3																			
N.3.1	18	0,10	0,15	0,18	0,30	0,20	0,30	0,25	0,30	0,30	0,30	0,30	0,40	0,30	0,40	0,40	0,50	0,40	0,50
N.3.2	15	0,10	0,15	0,18	0,30	0,20	0,30	0,25	0,30	0,30	0,30	0,30	0,40	0,30	0,40	0,40	0,50	0,40	0,50
N.3.3	15	0,10	0,15	0,18	0,30	0,20	0,30	0,25	0,30	0,30	0,30	0,30	0,40	0,30	0,40	0,40	0,50	0,40	0,50
N.4.1	18	0,10	0,15	0,18	0,30	0,20	0,30	0,25	0,30	0,30	0,30	0,30	0,40	0,30	0,40	0,40	0,50	0,40	0,50
S.1.1																			
S.1.2																			
S.2.1	4	0,08	0,10	0,12	0,15	0,16	0,20	0,20	0,20	0,25	0,20	0,30	0,25	0,30	0,30	0,35	0,35	0,40	0,35
S.2.2	4	0,08	0,10	0,12	0,15	0,16	0,20	0,20	0,20	0,25	0,20	0,30	0,25	0,30	0,30	0,35	0,35	0,40	0,35
S.2.3																			
S.3.1	6	0,08	0,10	0,12	0,15	0,16	0,20	0,20	0,20	0,25	0,20	0,30	0,25	0,30	0,30	0,35	0,35	0,40	0,35
S.3.2	4	0,08	0,10	0,10	0,15	0,125	0,20	0,20	0,20	0,25	0,20	0,30	0,25	0,30	0,30	0,35	0,35	0,40	0,35
S.3.3																			
H.1.1																			
H.1.2																			
H.1.3																			
H.1.4																			
H.2.1																			
H.3.1																			
O.1.1	15	0,15	0,15	0,20	0,20	0,25	0,20	0,25	0,25	0,30	0,30	0,30	0,30	0,35	0,35	0,40	0,40	0,40	0,50
O.1.2	12	0,12	0,15	0,16	0,20	0,20	0,20	0,20	0,25	0,25	0,30	0,25	0,30	0,30	0,35	0,30	0,40	0,35	0,50
O.2.1																			
O.2.2																			
O.3.1																			

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

Cutting data standard values indexable insert countersink

Index	30 196 ..., 30 197 ...			30 198 ...					
	Insert		Tool diameter	Insert		Tool diameter			
	BK8425	K10	Ø 16,5–37	BK8425	K10	Ø 10–15	Ø 15–20	Ø 20–30	Ø 30–48
	v_c (m/min)		f (mm/rev)	v_c (m/min)		f (mm/rev)			
P.1.1	200		0,12–0,16	260		0,06–0,12	0,12–0,20	0,15–0,25	0,20–0,30
P.1.2	200		0,20–0,30	260		0,06–0,12	0,12–0,20	0,15–0,25	0,20–0,30
P.1.3	200		0,20–0,30	270		0,06–0,12	0,12–0,20	0,25–0,40	0,25–0,40
P.1.4	180		0,20–0,30	240		0,06–0,12	0,12–0,20	0,25–0,40	0,25–0,40
P.1.5	180		0,17–0,27	230		0,04–0,08	0,15	0,20–0,30	0,20–0,35
P.2.1	160		0,20–0,30	270		0,06–0,12	0,12–0,20	0,25–0,40	0,25–0,40
P.2.2	160		0,20–0,30	260		0,04–0,08	0,15	0,20–0,30	0,20–0,35
P.2.3	160		0,15–0,20	180		0,04–0,08	0,15	0,20–0,30	0,20–0,35
P.2.4	160		0,10–0,16	150		0,04–0,08	0,15	0,20–0,30	0,20–0,35
P.3.1	140		0,10–0,15	160		0,04–0,08	0,15	0,20–0,30	0,20–0,35
P.3.2	140		0,08–0,13	130		0,04–0,08	0,15	0,20–0,30	0,20–0,35
P.3.3	140		0,06–0,12	120		0,04–0,08	0,15	0,20–0,30	0,20–0,35
P.4.1	120		0,10–0,16	180		0,08	0,15	0,16	0,18
P.4.2	120		0,06–0,12	130		0,08	0,15	0,16	0,18
M.1.1	160		0,10–0,15	150		0,08	0,15	0,16	0,18
M.2.1	140		0,10–0,15	150		0,08	0,15	0,16	0,18
M.3.1	100		0,07–0,13	130		0,08	0,15	0,16	0,18
K.1.1	180		0,40	160		0,15	0,30	0,40	0,60
K.1.2	160		0,32	120		0,15	0,30	0,40	0,60
K.2.1	140		0,30	160		0,15	0,25	0,30	0,35
K.2.2	140		0,18	100		0,12	0,20	0,25	0,35
K.3.1	120		0,20	120		0,10	0,18	0,25	0,30
K.3.2	120		0,18	100		0,10	0,18	0,25	0,30
N.1.1		250	0,20	400	250	0,05	0,12	0,15	0,20
N.1.2		250	0,20	400	250	0,05	0,12	0,15	0,20
N.2.1		250	0,30	250	250	0,06	0,16	0,20	0,25
N.2.2		250	0,30	250	250	0,06	0,16	0,20	0,25
N.2.3		250	0,25	230	250	0,10	0,20	0,25	0,30
N.3.1		230	0,30	200	230	0,05	0,10	0,12	0,15
N.3.2		230	0,32	220	230	0,05	0,10	0,12	0,15
N.3.3		230	0,22	330	230	0,05	0,10	0,12	0,15
N.4.1		230	0,30	200	230	0,05	0,10	0,12	0,15
S.1.1	60	20	0,12		20	0,05	0,10	0,12	0,15
S.1.2	50	20	0,10		20	0,05	0,10	0,12	0,15
S.2.1	60	20	0,12		20	0,05	0,10	0,12	0,15
S.2.2	50	20	0,10		20	0,05	0,10	0,12	0,15
S.2.3	30	20	0,06		20	0,05	0,10	0,12	0,15
S.3.1	100	60	0,22		60	0,05	0,10	0,12	0,15
S.3.2	80	30	0,20		30	0,05	0,10	0,12	0,15
S.3.3	50	30	0,12		30	0,05	0,10	0,12	0,15
H.1.1	100		0,10	100		0,05	0,10	0,15	0,20
H.1.2	80		0,08	80		0,05	0,10	0,15	0,20
H.1.3	50		0,05	50		0,05	0,10	0,15	0,20
H.1.4									
H.2.1	100		0,10	100		0,05	0,10	0,15	0,20
H.3.1	80		0,08	80		0,05	0,10	0,15	0,20
O.1.1		100	0,10		100	0,05	0,12	0,15	0,20
O.1.2		100	0,10		100	0,05	0,12	0,15	0,20
O.2.1									
O.2.2		100	0,03		100	0,05	0,12	0,15	0,20
O.3.1		100	0,08		100	0,05	0,12	0,15	0,20

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

Cutting data for solid carbide countersinks

Index	30 115 … Solid carbide 90°						30 160 … Solid carbide 60°			
		Ø 8,0–12,4	Ø 12,4–16,5	Ø 16,5–20,5	Ø 20,5–25,0	Ø 25,0–31,0		Ø 12,4–16,5	Ø 16,5–20,5	Ø 20,5–25,0
	v_c (m/min)	f (mm/rev)					v_c (m/min)	f (mm/rev)		
P.1.1	40	0,10	0,12	0,14	0,18	0,22	40	0,12	0,14	0,18
P.1.2	40	0,10	0,12	0,14	0,18	0,22	40	0,12	0,14	0,18
P.1.3	30	0,08	0,10	0,10	0,14	0,18	30	0,10	0,10	0,14
P.1.4	30	0,08	0,10	0,12	0,14	0,18	30	0,10	0,12	0,14
P.1.5	18	0,05	0,06	0,08	0,10	0,12	18	0,06	0,08	0,10
P.2.1	30	0,08	0,10	0,12	0,14	0,18	30	0,10	0,12	0,14
P.2.2	20	0,05	0,06	0,08	0,10	0,12	20	0,06	0,08	0,10
P.2.3	18	0,05	0,06	0,08	0,10	0,12	18	0,06	0,08	0,10
P.2.4	18	0,05	0,06	0,08	0,10	0,12	18	0,06	0,08	0,10
P.3.1	18	0,05	0,06	0,08	0,10	0,12	18	0,06	0,08	0,10
P.3.2	18	0,05	0,06	0,08	0,10	0,12	18	0,06	0,08	0,10
P.3.3	18	0,05	0,06	0,08	0,10	0,12	18	0,06	0,08	0,10
P.4.1										
P.4.2										
M.1.1	15	0,06	0,07	0,08	0,09	0,12	15	0,07	0,08	0,09
M.2.1	15	0,06	0,07	0,08	0,09	0,12	15	0,07	0,08	0,09
M.3.1	15	0,06	0,07	0,08	0,09	0,12	15	0,07	0,08	0,09
K.1.1	24	0,12	0,14	0,18	0,20	0,25	24	0,14	0,18	0,20
K.1.2	24	0,12	0,14	0,18	0,20	0,25	24	0,14	0,18	0,20
K.2.1	18	0,12	0,14	0,18	0,20	0,25	18	0,14	0,18	0,20
K.2.2	18	0,12	0,14	0,18	0,20	0,25	18	0,14	0,18	0,20
K.3.1	24	0,12	0,14	0,18	0,20	0,25	24	0,14	0,18	0,20
K.3.2	18	0,12	0,14	0,18	0,20	0,25	18	0,14	0,18	0,20
N.1.1	58	0,12	0,14	0,18	0,22	0,26	58	0,14	0,18	0,22
N.1.2	58	0,12	0,14	0,18	0,22	0,26	58	0,14	0,18	0,22
N.2.1	45	0,12	0,14	0,18	0,22	0,26	45	0,14	0,18	0,22
N.2.2	45	0,12	0,14	0,18	0,22	0,26	45	0,14	0,18	0,22
N.2.3	50	0,14	0,18	0,20	0,24	0,30	50	0,18	0,20	0,24
N.3.1	50	0,14	0,18	0,20	0,24	0,30	50	0,18	0,20	0,24
N.3.2	50	0,14	0,18	0,20	0,24	0,30	50	0,18	0,20	0,24
N.3.3	50	0,14	0,18	0,20	0,24	0,30	50	0,18	0,20	0,24
N.4.1	50	0,14	0,18	0,20	0,24	0,30	50	0,18	0,20	0,24
S.1.1	12	0,05	0,06	0,07	0,08	0,10	12	0,06	0,07	0,08
S.1.2	12	0,05	0,06	0,07	0,08	0,10	12	0,06	0,07	0,08
S.2.1	12	0,05	0,06	0,07	0,08	0,10	12	0,06	0,07	0,08
S.2.2	12	0,05	0,06	0,07	0,08	0,10	12	0,06	0,07	0,08
S.2.3	12	0,05	0,06	0,07	0,08	0,10	12	0,06	0,07	0,08
S.3.1	12	0,05	0,06	0,07	0,08	0,10	12	0,06	0,07	0,08
S.3.2	12	0,05	0,06	0,07	0,08	0,10	12	0,06	0,07	0,08
S.3.3	12	0,05	0,06	0,07	0,08	0,10	12	0,06	0,07	0,08
H.1.1	8	0,06	0,08	0,08	0,10	0,12	8	0,08	0,08	0,10
H.1.2										
H.1.3										
H.1.4										
H.2.1										
H.3.1										
O.1.1										
O.1.2										
O.2.1										
O.2.2										
O.3.1										

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

Cutting data standard values for countersinks with irregular pitch

Index	30 117 ... HPC-TiN / Solid carbide							30 141 ... TiN / HSS						
	N	Ø 4,3–8,0	Ø 8,0–12,4	Ø 12,4–16,5	Ø 16,5–20,5	Ø 20,5–25,0	Ø 25,0–31,0	N	Ø 4,3–8,0	Ø 8,0–12,4	Ø 12,4–16,5	Ø 16,5–20,5	Ø 20,5–25,0	Ø 25,0–31,0
	v_c (m/min)	f (mm/rev)						v_c (m/min)	f (mm/rev)					
P.1.1	58	0,08	0,10	0,12	0,14	0,18	0,22	38	0,08	0,10	0,12	0,14	0,18	0,22
P.1.2	58	0,08	0,10	0,12	0,14	0,18	0,22	38	0,08	0,10	0,12	0,14	0,18	0,22
P.1.3	50	0,06	0,08	0,10	0,10	0,14	0,18	30	0,06	0,08	0,10	0,10	0,14	0,18
P.1.4	50	0,06	0,08	0,10	0,12	0,14	0,18	30	0,06	0,08	0,10	0,12	0,14	0,18
P.1.5	50	0,06	0,05	0,06	0,08	0,10	0,12	30	0,06	0,05	0,06	0,08	0,10	0,12
P.2.1	50	0,06	0,08	0,10	0,12	0,14	0,18	30	0,06	0,08	0,10	0,12	0,14	0,18
P.2.2	50	0,06	0,05	0,06	0,08	0,10	0,12	12	0,06	0,05	0,06	0,08	0,10	0,12
P.2.3	40	0,04	0,05	0,06	0,08	0,10	0,12	12	0,04	0,05	0,06	0,08	0,10	0,12
P.2.4	40	0,04	0,05	0,06	0,08	0,10	0,12	12	0,04	0,05	0,06	0,08	0,10	0,12
P.3.1	50	0,06	0,05	0,06	0,08	0,10	0,12	30	0,06	0,05	0,06	0,08	0,10	0,12
P.3.2	40	0,04	0,05	0,06	0,08	0,10	0,12	12	0,04	0,05	0,06	0,08	0,10	0,12
P.3.3	40	0,04	0,05	0,06	0,08	0,10	0,12	12	0,04	0,05	0,06	0,08	0,10	0,12
P.4.1	30	0,05	0,06	0,07	0,08	0,09	0,12	15	0,05	0,06	0,07	0,08	0,09	0,12
P.4.2	30	0,05	0,06	0,07	0,08	0,09	0,12	15	0,05	0,06	0,07	0,08	0,09	0,12
M.1.1	30	0,05	0,06	0,07	0,08	0,09	0,12	15	0,05	0,06	0,07	0,08	0,09	0,12
M.2.1	30	0,05	0,06	0,07	0,08	0,09	0,12	15	0,05	0,06	0,07	0,08	0,09	0,12
M.3.1	25	0,05	0,06	0,07	0,08	0,09	0,12							
K.1.1	50	0,10	0,12	0,14	0,18	0,20	0,25	20	0,10	0,12	0,14	0,18	0,20	0,25
K.1.2	50	0,10	0,12	0,14	0,18	0,20	0,25	20	0,10	0,12	0,14	0,18	0,20	0,25
K.2.1	45	0,10	0,12	0,14	0,18	0,20	0,25	20	0,10	0,12	0,14	0,18	0,20	0,25
K.2.2	45	0,10	0,12	0,14	0,18	0,20	0,25	20	0,10	0,12	0,14	0,18	0,20	0,25
K.3.1	35	0,10	0,12	0,14	0,18	0,20	0,25	20	0,10	0,12	0,14	0,18	0,20	0,25
K.3.2	35	0,10	0,12	0,14	0,18	0,20	0,25	20	0,10	0,12	0,14	0,18	0,20	0,25
N.1.1	80	0,10	0,12	0,14	0,18	0,22	0,26	48	0,10	0,12	0,14	0,18	0,22	0,26
N.1.2	80	0,10	0,12	0,14	0,18	0,22	0,26	48	0,10	0,12	0,14	0,18	0,22	0,26
N.2.1	60	0,10	0,12	0,14	0,18	0,22	0,26	40	0,10	0,12	0,14	0,18	0,22	0,26
N.2.2	60	0,10	0,12	0,14	0,18	0,22	0,26	40	0,10	0,12	0,14	0,18	0,22	0,26
N.2.3	60	0,10	0,14	0,18	0,20	0,24	0,30	40	0,10	0,14	0,18	0,20	0,24	0,30
N.3.1	68	0,12	0,14	0,18	0,20	0,24	0,30	40	0,12	0,14	0,18	0,20	0,24	0,30
N.3.2	68	0,12	0,14	0,18	0,20	0,24	0,30	40	0,12	0,14	0,18	0,20	0,24	0,30
N.3.3	68	0,12	0,14	0,18	0,20	0,24	0,30	40	0,12	0,14	0,18	0,20	0,24	0,30
N.4.1														
S.1.1	15	0,05	0,06	0,07	0,08	0,09	0,10	10	0,05	0,06	0,07	0,08	0,09	0,10
S.1.2	15	0,05	0,06	0,07	0,08	0,09	0,10	10	0,05	0,06	0,07	0,08	0,09	0,10
S.2.1	15	0,05	0,06	0,07	0,08	0,09	0,10	10	0,05	0,06	0,07	0,08	0,09	0,10
S.2.2	15	0,05	0,06	0,07	0,08	0,09	0,10	10	0,05	0,06	0,07	0,08	0,09	0,10
S.2.3	15	0,05	0,06	0,07	0,08	0,09	0,10	10	0,05	0,06	0,07	0,08	0,09	0,10
S.3.1	15	0,05	0,06	0,07	0,08	0,09	0,10	10	0,05	0,06	0,07	0,08	0,09	0,10
S.3.2	15	0,05	0,06	0,07	0,08	0,09	0,10	10	0,05	0,06	0,07	0,08	0,09	0,10
S.3.3	15	0,05	0,06	0,07	0,08	0,09	0,10	10	0,05	0,06	0,07	0,08	0,09	0,10
H.1.1	12	0,05	0,06	0,07	0,07	0,08		6	0,05	0,06	0,07	0,07	0,08	
H.1.2	8	0,05	0,06	0,07	0,07	0,08								
H.1.3														
H.1.4														
H.2.1	12	0,05	0,06	0,07	0,07	0,08								
H.3.1														
O.1.1	68	0,12	0,14	0,18	0,20	0,24	0,30	38	0,12	0,14	0,18	0,20	0,24	0,30
O.1.2	68	0,12	0,14	0,18	0,20	0,24	0,30	38	0,12	0,14	0,18	0,20	0,24	0,30
O.2.1	25	0,10	0,12	0,14	0,18	0,20	0,25							
O.2.2	25	0,10	0,12	0,14	0,18	0,20	0,25							
O.3.1	25	0,10	0,12	0,14	0,18	0,20	0,25							

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

Cutting data standard values for HSS countersink

Index	30 100 ... Type N							30 102 ... Type AL						
	N	Ø 4,3–8,0	Ø 8,0–12,4	Ø 12,4–16,5	Ø 16,5–20,5	Ø 20,5–25,0	Ø 25,0–31,0	AL	Ø 4,3–8,0	Ø 8,0–12,4	Ø 12,4–16,5	Ø 16,5–20,5	Ø 20,5–25,0	Ø 25,0–31,0
	v_c (m/min)	f (mm/rev)						v_c (m/min)	f (mm/rev)					
P.1.1	30	0,06–0,08	0,10	0,12	0,14	0,18	0,22	30	0,06–0,08	0,10	0,12	0,14	0,18	0,22
P.1.2	30	0,06–0,08	0,10	0,12	0,14	0,18	0,22	30	0,06–0,08	0,10	0,12	0,14	0,18	0,22
P.1.3	25	0,04–0,06	0,04–0,06	0,08	0,10	0,12	0,14	25	0,04–0,06	0,04–0,06	0,08	0,10	0,12	0,14
P.1.4	25	0,04–0,06	0,04–0,06	0,08	0,10	0,12	0,14	25	0,04–0,06	0,04–0,06	0,08	0,10	0,12	0,14
P.1.5	12	0,03–0,04	0,05	0,06	0,08	0,10	0,12	12	0,03–0,04	0,05	0,06	0,08	0,10	0,12
P.2.1	25	0,04–0,06	0,08	0,10	0,12	0,14	0,18	25	0,04–0,06	0,08	0,10	0,12	0,14	0,18
P.2.2	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12
P.2.3	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12
P.2.4	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12
P.3.1	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12
P.3.2	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12
P.3.3	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12
P.4.1														
P.4.2														
M.1.1	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12
M.2.1	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12
M.3.1	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12
K.1.1	12	0,06–0,10	0,12	0,14	0,18	0,20	0,25	12	0,06–0,10	0,12	0,14	0,18	0,20	0,25
K.1.2	12	0,06–0,10	0,12	0,14	0,18	0,20	0,25	12	0,06–0,10	0,12	0,14	0,18	0,20	0,25
K.2.1	10	0,06–0,10	0,12	0,14	0,18	0,20	0,25	10	0,06–0,10	0,12	0,14	0,18	0,20	0,25
K.2.2	10	0,06–0,10	0,12	0,14	0,18	0,20	0,25	10	0,06–0,10	0,12	0,14	0,18	0,20	0,25
K.3.1	12	0,06–0,10	0,12	0,14	0,18	0,20	0,25	12	0,06–0,10	0,12	0,14	0,18	0,20	0,25
K.3.2	10	0,06–0,10	0,12	0,14	0,18	0,20	0,25	10	0,06–0,10	0,12	0,14	0,18	0,20	0,25
N.1.1	35	0,08–0,10	0,12	0,14	0,18	0,22	0,26	39	0,08–0,10	0,12	0,14	0,18	0,22	0,26
N.1.2	35	0,08–0,10	0,12	0,14	0,18	0,22	0,26	39	0,08–0,10	0,12	0,14	0,18	0,22	0,26
N.2.1	25	0,08–0,10	0,12	0,14	0,18	0,22	0,26	28	0,08–0,10	0,12	0,14	0,18	0,22	0,26
N.2.2	25	0,08–0,10	0,12	0,14	0,18	0,22	0,26	28	0,08–0,10	0,12	0,14	0,18	0,22	0,26
N.2.3	25	0,08–0,10	0,12	0,14	0,18	0,22	0,26	28	0,08–0,10	0,12	0,14	0,18	0,22	0,26
N.3.1	35	0,10–0,12	0,14	0,18	0,20	0,24	0,30	39	0,10–0,12	0,14	0,18	0,20	0,24	0,30
N.3.2	35	0,10–0,12	0,14	0,18	0,20	0,24	0,30	39	0,10–0,12	0,14	0,18	0,20	0,24	0,30
N.3.3	35	0,10–0,12	0,14	0,18	0,20	0,24	0,30	39	0,10–0,12	0,14	0,18	0,20	0,24	0,30
N.4.1	60	0,10–0,13	0,16	0,20	0,23	0,26	0,30	66	0,10–0,13	0,16	0,20	0,23	0,26	0,30
S.1.1	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12
S.1.2	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12
S.2.1	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12
S.2.2	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12
S.2.3	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12
S.3.1	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12
S.3.2	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12
S.3.3	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12
H.1.1														
H.1.2														
H.1.3														
H.1.4														
H.2.1														
H.3.1														
O.1.1	35	0,10–0,12	0,14	0,18	0,20	0,24	0,30	35	0,10–0,12	0,14	0,18	0,20	0,24	0,30
O.1.2	35	0,10–0,12	0,14	0,18	0,20	0,24	0,30	35	0,10–0,12	0,14	0,18	0,20	0,24	0,30
O.2.1	35	0,10–0,12	0,14	0,18	0,20	0,24	0,30	35	0,10–0,12	0,14	0,18	0,20	0,24	0,30
O.2.2	35	0,10–0,12	0,14	0,18	0,20	0,24	0,30	35	0,10–0,12	0,14	0,18	0,20	0,24	0,30
O.3.1														

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

Cutting data standard values for HSS countersink

Index	30 110 ..., 30 130 ... Type N – TiN / TiAlN							30 132 ... Type VA – TiAlN						
	N	Ø 4,3–8,0	Ø 8,0–12,4	Ø 12,4–16,5	Ø 16,5–20,5	Ø 20,5–25,0	Ø 25,0–31,0	VA	Ø 4,3–8,0	Ø 8,0–12,4	Ø 12,4–16,5	Ø 16,5–20,5	Ø 20,5–25,0	Ø 25,0–31,0
	v_c (m/min)	f (mm/rev)						v_c (m/min)	f (mm/rev)					
P.1.1	35	0,06–0,08	0,10	0,12	0,14	0,18	0,22	35	0,06–0,08	0,10	0,12	0,14	0,18	0,22
P.1.2	35	0,06–0,08	0,10	0,12	0,14	0,18	0,22	35	0,06–0,08	0,10	0,12	0,14	0,18	0,22
P.1.3	29	0,04–0,06	0,04–0,06	0,08	0,10	0,12	0,14	29	0,04–0,06	0,04–0,06	0,08	0,10	0,12	0,14
P.1.4	29	0,04–0,06	0,04–0,06	0,08	0,10	0,12	0,14	29	0,04–0,06	0,04–0,06	0,08	0,10	0,12	0,14
P.1.5	14	0,03–0,04	0,05	0,06	0,08	0,10	0,12	14	0,03–0,04	0,05	0,06	0,08	0,10	0,12
P.2.1	29	0,04–0,06	0,08	0,10	0,12	0,14	0,18	29	0,04–0,06	0,08	0,10	0,12	0,14	0,18
P.2.2	12	0,03–0,04	0,05	0,06	0,08	0,10	0,12	12	0,03–0,04	0,05	0,06	0,08	0,10	0,12
P.2.3	12	0,03–0,04	0,05	0,06	0,08	0,10	0,12	12	0,03–0,04	0,05	0,06	0,08	0,10	0,12
P.2.4	12	0,03–0,04	0,05	0,06	0,08	0,10	0,12	12	0,03–0,04	0,05	0,06	0,08	0,10	0,12
P.3.1	12	0,03–0,04	0,05	0,06	0,08	0,10	0,12	13	0,03–0,04	0,05	0,06	0,08	0,10	0,12
P.3.2	12	0,03–0,04	0,05	0,06	0,08	0,10	0,12	13	0,03–0,04	0,05	0,06	0,08	0,10	0,12
P.3.3	12	0,03–0,04	0,05	0,06	0,08	0,10	0,12	13	0,03–0,04	0,05	0,06	0,08	0,10	0,12
P.4.1														
P.4.2														
M.1.1	9	0,04–0,05	0,06	0,07	0,08	0,09	0,12	11	0,04–0,05	0,06	0,07	0,08	0,09	0,12
M.2.1	9	0,04–0,05	0,06	0,07	0,08	0,09	0,12	11	0,04–0,05	0,06	0,07	0,08	0,09	0,12
M.3.1	9	0,04–0,05	0,06	0,07	0,08	0,09	0,12	11	0,04–0,05	0,06	0,07	0,08	0,09	0,12
K.1.1	9	0,06–0,10	0,12	0,14	0,18	0,20	0,25	14	0,06–0,10	0,12	0,14	0,18	0,20	0,25
K.1.2	9	0,06–0,10	0,12	0,14	0,18	0,20	0,25	14	0,06–0,10	0,12	0,14	0,18	0,20	0,25
K.2.1	9	0,06–0,10	0,12	0,14	0,18	0,20	0,25	12	0,06–0,10	0,12	0,14	0,18	0,20	0,25
K.2.2	14	0,06–0,10	0,12	0,14	0,18	0,20	0,25	12	0,06–0,10	0,12	0,14	0,18	0,20	0,25
K.3.1	14	0,06–0,10	0,12	0,14	0,18	0,20	0,25	14	0,06–0,10	0,12	0,14	0,18	0,20	0,25
K.3.2	12	0,06–0,10	0,12	0,14	0,18	0,20	0,25	12	0,06–0,10	0,12	0,14	0,18	0,20	0,25
N.1.1	40	0,08–0,10	0,12	0,14	0,18	0,22	0,26	40	0,08–0,10	0,12	0,14	0,18	0,22	0,26
N.1.2	40	0,08–0,10	0,12	0,14	0,18	0,22	0,26	40	0,08–0,10	0,12	0,14	0,18	0,22	0,26
N.2.1	29	0,08–0,10	0,12	0,14	0,18	0,22	0,26	29	0,08–0,10	0,12	0,14	0,18	0,22	0,26
N.2.2	29	0,08–0,10	0,12	0,14	0,18	0,22	0,26	29	0,08–0,10	0,12	0,14	0,18	0,22	0,26
N.2.3	29	0,08–0,10	0,12	0,14	0,18	0,22	0,26	29	0,08–0,10	0,12	0,14	0,18	0,22	0,26
N.3.1	40	0,10–0,12	0,14	0,18	0,20	0,24	0,30	40	0,10–0,12	0,14	0,18	0,20	0,24	0,30
N.3.2	40	0,10–0,12	0,14	0,18	0,20	0,24	0,30	40	0,10–0,12	0,14	0,18	0,20	0,24	0,30
N.3.3	40	0,10–0,12	0,14	0,18	0,20	0,24	0,30	40	0,10–0,12	0,14	0,18	0,20	0,24	0,30
N.4.1	69	0,10–0,13	0,16	0,20	0,23	0,26	0,30	69	0,10–0,13	0,16	0,20	0,23	0,26	0,30
S.1.1	9	0,04–0,05	0,06	0,07	0,08	0,09	0,12	9	0,04–0,05	0,06	0,07	0,08	0,09	0,12
S.1.2	9	0,04–0,05	0,06	0,07	0,08	0,09	0,12	9	0,04–0,05	0,06	0,07	0,08	0,09	0,12
S.2.1	9	0,04–0,05	0,06	0,07	0,08	0,09	0,12	9	0,04–0,05	0,06	0,07	0,08	0,09	0,12
S.2.2	9	0,04–0,05	0,06	0,07	0,08	0,09	0,12	9	0,04–0,05	0,06	0,07	0,08	0,09	0,12
S.2.3	9	0,04–0,05	0,06	0,07	0,08	0,09	0,12	9	0,04–0,05	0,06	0,07	0,08	0,09	0,12
S.3.1	9	0,04–0,05	0,06	0,07	0,08	0,09	0,12	9	0,04–0,05	0,06	0,07	0,08	0,09	0,12
S.3.2	9	0,04–0,05	0,06	0,07	0,08	0,09	0,12	9	0,04–0,05	0,06	0,07	0,08	0,09	0,12
S.3.3	9	0,04–0,05	0,06	0,07	0,08	0,09	0,12	9	0,04–0,05	0,06	0,07	0,08	0,09	0,12
H.1.1	5	0,04–0,05	0,06	0,07	0,08	0,10	0,12	5	0,04–0,05	0,06	0,07	0,08	0,10	0,12
H.1.2														
H.1.3														
H.1.4														
H.2.1														
H.3.1	5	0,04–0,05	0,06	0,07	0,08	0,10	0,12	5	0,04–0,05	0,06	0,07	0,08	0,10	0,12
O.1.1	40	0,10–0,12	0,14	0,18	0,20	0,24	0,30	40	0,10–0,12	0,14	0,18	0,20	0,24	0,30
O.1.2	40	0,10–0,12	0,14	0,18	0,20	0,24	0,30	40	0,10–0,12	0,14	0,18	0,20	0,24	0,30
O.2.1	40	0,10–0,12	0,14	0,18	0,20	0,24	0,30	40	0,10–0,12	0,14	0,18	0,20	0,24	0,30
O.2.2	40	0,10–0,12	0,14	0,18	0,20	0,24	0,30	40	0,10–0,12	0,14	0,18	0,20	0,24	0,30
O.3.1														

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

Cutting data standard values for HSS countersink and counterbore

Index	30 105 ..., 30 150 ..., 30 170 .... HSS – 60° / 90° / 120°									30 190 ..., 30 191 ... HSS			
		Ø 4,3–8,0	Ø 8,0–12,4	Ø 12,4–16,5	Ø 16,5–20,5	Ø 20,5–25,0	Ø 25,0–31,0	Ø 31,0–55,0	Ø 55,0–80,0		DC_2 Ø 6,3	DC_2 Ø 10,0	DC_2 Ø 14,0
	v_c (m/min)	f (mm/rev)								v_c (m/min)	f (mm/rev)		
P.1.1	30	0,06–0,08	0,10	0,12	0,14	0,18	0,22	0,22–0,26	0,26–0,36	30	0,07	0,10	0,12
P.1.2	30	0,06–0,08	0,10	0,12	0,14	0,18	0,22	0,22–0,26	0,26–0,36	30	0,07	0,10	0,12
P.1.3	25	0,04–0,06	0,04–0,06	0,08	0,10	0,12	0,14	0,14–0,22	0,22–0,28	25	0,05	0,07	0,09
P.1.4	25	0,04–0,06	0,04–0,06	0,08	0,10	0,12	0,14	0,14–0,22	0,22–0,28	25	0,05	0,07	0,09
P.1.5	12	0,03–0,04	0,05	0,06	0,08	0,10	0,12	0,12–0,14	0,14–0,18	12	0,04	0,05	0,07
P.2.1	25	0,04–0,06	0,08	0,10	0,12	0,14	0,18	0,18–0,24	0,24–0,30	25	0,05	0,07	0,09
P.2.2	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12	0,12–0,16	0,16–0,18	10	0,04	0,05	0,06
P.2.3	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12	0,12–0,16	0,16–0,18	10	0,04	0,05	0,06
P.2.4	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12	0,12–0,16	0,16–0,18	10	0,04	0,05	0,06
P.3.1	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12	0,12–0,16	0,16–0,18	10	0,04	0,05	0,06
P.3.2	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12	0,12–0,16	0,16–0,18	10	0,04	0,05	0,06
P.3.3	10	0,03–0,04	0,05	0,06	0,08	0,10	0,12	0,12–0,16	0,16–0,18	10	0,04	0,05	0,06
P.4.1													
P.4.2													
M.1.1	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	0,12–0,16	0,16–0,18	8	0,04	0,06	0,07
M.2.1	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	0,12–0,16	0,16–0,18	8	0,04	0,06	0,07
M.3.1	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	0,12–0,16	0,16–0,18	8	0,04	0,06	0,07
K.1.1	12	0,06–0,10	0,12	0,14	0,18	0,20	0,25	0,25–0,27	0,27–0,36	12	0,08	0,13	0,16
K.1.2	12	0,06–0,10	0,12	0,14	0,18	0,20	0,25	0,25–0,27	0,27–0,36	12	0,08	0,13	0,16
K.2.1	10	0,06–0,10	0,12	0,14	0,18	0,20	0,25	0,25–0,27	0,27–0,36	10	0,08	0,13	0,16
K.2.2	10	0,06–0,10	0,12	0,14	0,18	0,20	0,25	0,25–0,27	0,27–0,36	10	0,08	0,13	0,16
K.3.1	12	0,06–0,10	0,12	0,14	0,18	0,20	0,25	0,25–0,27	0,27–0,36	12	0,08	0,13	0,16
K.3.2	10	0,06–0,10	0,12	0,14	0,18	0,20	0,25	0,25–0,27	0,27–0,36	10	0,08	0,13	0,16
N.1.1	35	0,08–0,10	0,12	0,14	0,18	0,22	0,26	0,26–0,34	0,34–0,40	35	0,09	0,13	0,16
N.1.2	35	0,08–0,10	0,12	0,14	0,18	0,22	0,26	0,26–0,34	0,34–0,40	35	0,09	0,13	0,16
N.2.1	25	0,08–0,10	0,12	0,14	0,18	0,22	0,26	0,26–0,34	0,34–0,40	25	0,09	0,13	0,16
N.2.2	25	0,08–0,10	0,12	0,14	0,18	0,22	0,26	0,26–0,34	0,34–0,40	25	0,09	0,13	0,16
N.2.3	25	0,08–0,10	0,12	0,14	0,18	0,22	0,26	0,26–0,34	0,34–0,40	25	0,09	0,13	0,16
N.3.1	35	0,10–0,12	0,14	0,18	0,20	0,24	0,30	0,30–0,42	0,42–0,46	35	0,11	0,16	0,18
N.3.2	35	0,10–0,12	0,14	0,18	0,20	0,24	0,30	0,30–0,42	0,42–0,46	35	0,11	0,16	0,18
N.3.3	35	0,10–0,12	0,14	0,18	0,20	0,24	0,30	0,30–0,42	0,42–0,46	35	0,11	0,16	0,18
N.4.1	60	0,10–0,13	0,16	0,20	0,23	0,26	0,30	0,30–0,42	0,42–0,46	60	0,12	0,18	0,21
S.1.1	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	0,12	0,12	8	0,04	0,06	0,07
S.1.2	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	0,12	0,12	8	0,04	0,06	0,07
S.2.1	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	0,12	0,12	8	0,04	0,06	0,07
S.2.2	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	0,12	0,12	8	0,04	0,06	0,07
S.2.3	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	0,12	0,12	8	0,04	0,06	0,07
S.3.1	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	0,12	0,12	8	0,04	0,06	0,07
S.3.2	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	0,12	0,12	8	0,04	0,06	0,07
S.3.3	8	0,04–0,05	0,06	0,07	0,08	0,09	0,12	0,12	0,12	8	0,04	0,06	0,07
H.1.1													
H.1.2													
H.1.3													
H.1.4													
H.2.1													
H.3.1													
O.1.1	35	0,10–0,12	0,14	0,18	0,20	0,24	0,30	0,30	0,30	35	0,11	0,16	0,18
O.1.2	35	0,10–0,12	0,14	0,18	0,20	0,24	0,30	0,30	0,30	35	0,11	0,16	0,18
O.2.1	35	0,10–0,12	0,14	0,18	0,20	0,24	0,30	0,30	0,30	35	0,11	0,16	0,18
O.2.2	35	0,10–0,12	0,14	0,18	0,20	0,24	0,30	0,30	0,30	35	0,11	0,16	0,18
O.3.1													

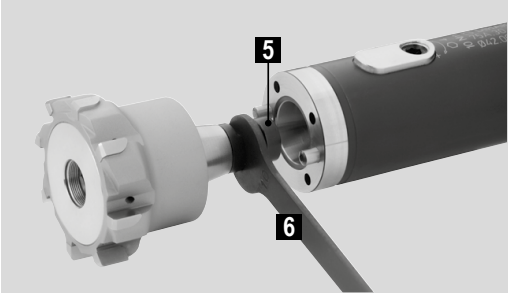
The cutting data is strongly influenced by external conditions, such as the stability of the tool and workpiece clamping, material and type of machine. The specified values represent guideline cutting data that can be adjusted by approx. **±20%** according to the usage conditions.

Cutting data standard values for HSS-E deburring countersink

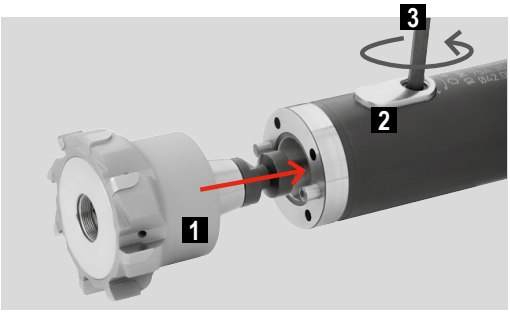
Index	30 120 ..., 30 121 ... HSS-E – 90°						
	TiN	uncoated	Ø 6,3	Ø 10,0	Ø 14,0	Ø 21,0	Ø 28,0
	v_c (m/min)		f (mm/rev)				
P.1.1	35	30	0,06–0,08	0,10	0,12	0,14	0,18
P.1.2	35	30	0,06–0,08	0,10	0,12	0,14	0,18
P.1.3	29	25	0,04–0,06	0,04–0,06	0,08	0,10	0,12
P.1.4	29	25	0,04–0,06	0,04–0,06	0,08	0,10	0,12
P.1.5	14	12	0,03–0,04	0,05	0,06	0,08	0,10
P.2.1	29	25	0,04–0,06	0,08	0,10	0,12	0,14
P.2.2	12	10	0,03–0,04	0,05	0,06	0,08	0,10
P.2.3	12	10	0,03–0,04	0,05	0,06	0,08	0,10
P.2.4	12	10	0,03–0,04	0,05	0,06	0,08	0,10
P.3.1	12	10	0,03–0,04	0,05	0,06	0,08	0,10
P.3.2	12	10	0,03–0,04	0,05	0,06	0,08	0,10
P.3.3	12	10	0,03–0,04	0,05	0,06	0,08	0,10
P.4.1							
P.4.2							
M.1.1	9	8	0,04–0,05	0,06	0,07	0,08	0,09
M.2.1	9	8	0,04–0,05	0,06	0,07	0,08	0,09
M.3.1	9	8	0,04–0,05	0,06	0,07	0,08	0,09
K.1.1	9	12	0,06–0,10	0,12	0,14	0,18	0,20
K.1.2	9	12	0,06–0,10	0,12	0,14	0,18	0,20
K.2.1	9	10	0,06–0,10	0,12	0,14	0,18	0,20
K.2.2	14	10	0,06–0,10	0,12	0,14	0,18	0,20
K.3.1	14	12	0,06–0,10	0,12	0,14	0,18	0,20
K.3.2	12	10	0,06–0,10	0,12	0,14	0,18	0,20
N.1.1	40	35	0,08–0,1	0,12	0,14	0,18	0,22
N.1.2	40	35	0,08–0,1	0,12	0,14	0,18	0,22
N.2.1	29	25	0,08–0,1	0,12	0,14	0,18	0,22
N.2.2	29	25	0,08–0,1	0,12	0,14	0,18	0,22
N.2.3	29	25	0,08–0,1	0,12	0,14	0,18	0,22
N.3.1	40	35	0,1–0,12	0,14	0,18	0,20	0,24
N.3.2	40	35	0,1–0,12	0,14	0,18	0,20	0,24
N.3.3	40	35	0,1–0,12	0,14	0,18	0,20	0,24
N.4.1	69	60	0,1–0,13	0,16	0,20	0,23	0,26
S.1.1	9	8	0,04–0,05	0,06	0,07	0,08	0,09
S.1.2	9	8	0,04–0,05	0,06	0,07	0,08	0,09
S.2.1	9	8	0,04–0,05	0,06	0,07	0,08	0,09
S.2.2	9	8	0,04–0,05	0,06	0,07	0,08	0,09
S.2.3	9	8	0,04–0,05	0,06	0,07	0,08	0,09
S.3.1	9	8	0,04–0,05	0,06	0,07	0,08	0,09
S.3.2	9	8	0,04–0,05	0,06	0,07	0,08	0,09
S.3.3	9	8	0,04–0,05	0,06	0,07	0,08	0,09
H.1.1	4		0,04–0,05	0,06	0,07	0,08	0,10
H.1.2							
H.1.3							
H.1.4							
H.2.1							
H.3.1	4		0,04–0,05	0,06	0,07	0,08	0,10
O.1.1	40	35	0,1–0,12	0,14	0,18	0,20	0,24
O.1.2	40	35	0,1–0,12	0,14	0,18	0,20	0,24
O.2.1	40	35	0,1–0,12	0,14	0,18	0,20	0,24
O.2.2	40	35	0,1–0,12	0,14	0,18	0,20	0,24
O.3.1							

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

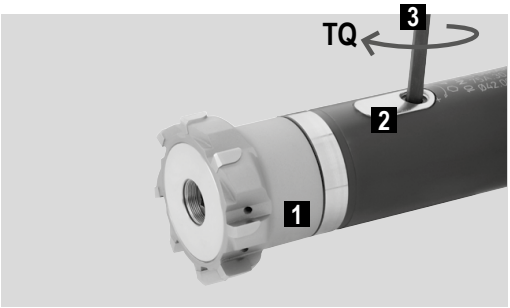
REAMAX TS – Assembly instructions



Clean the Morse taper adapter/face contact → grease-free.
Screw the pull stud (5) into the reaming head and tighten using the open-ended spanner (6).

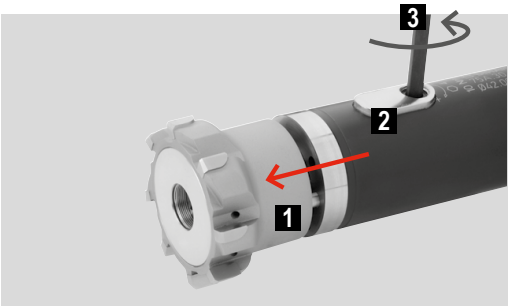


Use key (3) to open jaws (2), but do not fully release, and insert reaming head (1).

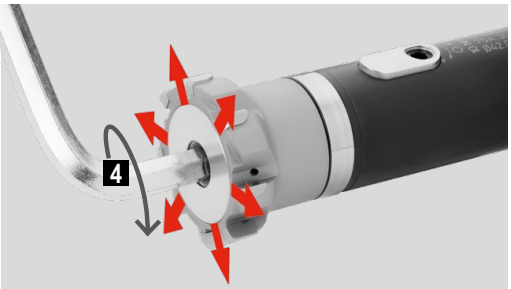


Use the key (3) to close the jaws (2), observe the recommended tightening torque.
When inserting the reaming head (1), this is pulled into its final position when the jaws (2) are closed.

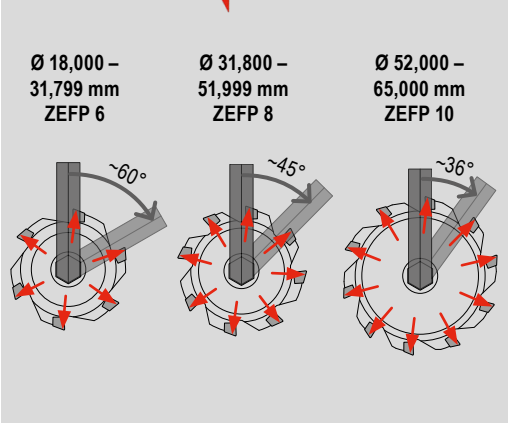
Ø Range	Tightening torque (TQ)
18,000 – 19,999	1,5 Nm
20,000 – 21,999	2,5 Nm
22,000 – 26,999	4 Nm
27,000 – 34,999	5 Nm
35,000 – 41,999	6 Nm
42,000 – 51,999	10 Nm
52,000 – 65,000	13 Nm



When removing the reamer head (1), this is pressed out of its position by the jaws (2) and can thus be easily removed from the holder:
Use key (3) to open the jaws (2) but do not fully release, and remove reamer head (1).



Adjustment for wear compensation:
The smallest drilling tolerances up to IT4 can be achieved through adjustment with the hex key (4).



ZEFP = Number of effective cutting edges, around the periphery	ZEFP 6		ZEFP 8		ZEFP 10	
Pitch	~ 60°		~ 45°		~ 36°	
Turning the hex key by ~ ...°, results in an adjustment of ~ ... mm in diameter	~ 15°	~ 0,006 mm in the Ø	~ 15°	~ 0,003 mm in the Ø	~ 18°	~ 0,005 mm in the Ø
	~ 30°	~ 0,012 mm in the Ø	~ 30°	~ 0,006 mm in the Ø	~ 36°	~ 0,010 mm in the Ø
	~ 45°	~ 0,018 mm in the Ø	~ 45°	~ 0,009 mm in the Ø		
	~ 60°	~ 0,024 mm in the Ø				

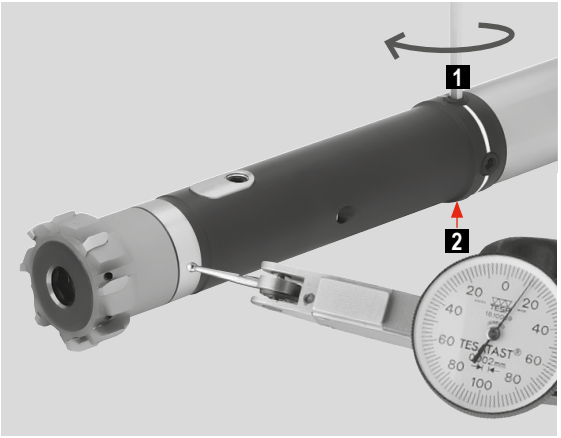
Caution: For technical reasons, all REAMAX TS reaming heads and Monomax reamers have an irregular cutting edge pitch. For this reason, the angles specified above are approximate values, to make handling easier.
If the required diameter is over turned, turning back the adjustment screw is not enough! If this occurs, the reaming head/reamer must be fully released and re-set again.
This adjustment facility is only intended to compensate for wear. Therefore, an adjustment of 0.015 mm in diameter should not normally be exceeded!
The adjustment values given above are recommended values based on empirical values and test results. However, these may vary slightly from case to case.

REAMAX TS – Operating instructions

Aligning the DAH Zero holder

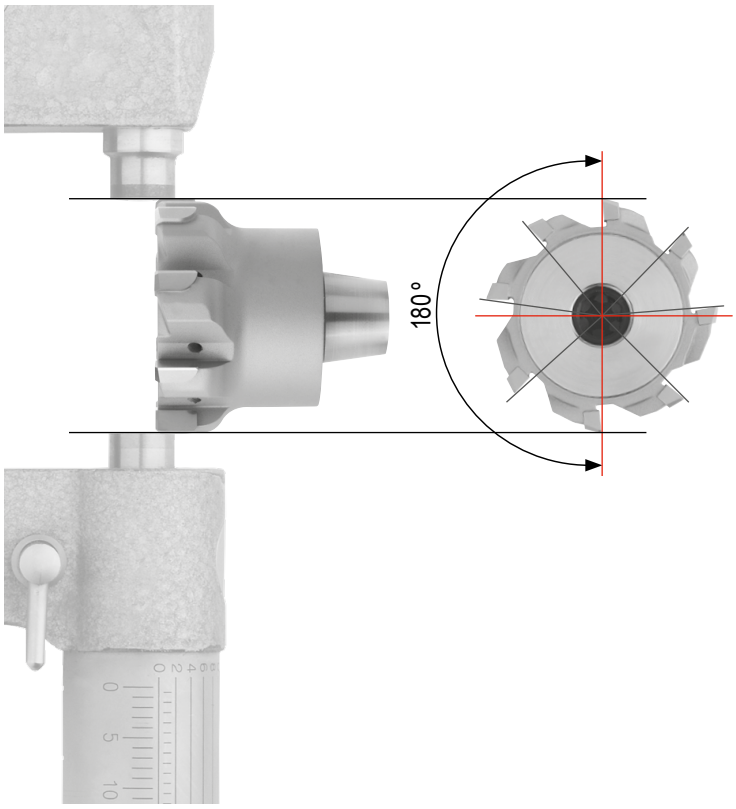
The tool is recommended for radial alignment of max. 20 µm.

1. Loosen all adjustment screws and pre-load with 1 Nm (new tools are already supplied like this).
2. Place dial gauge with µm display on the ground bezel diameter.
3. Turn the tool to determine the point with the largest runout error using the dial gauge.
4. Adjust the corresponding adjustment screw with the hex key clockwise (1) until half the runout error has been corrected. In doing so, over-tighten by approx. 5 µm.
5. Release the opposite adjustment screw (2) by the over-tightened amount.
6. Adjust all 4 adjustment screws until the runout is < 2 µm.

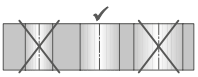


Please note:
- ▲ The runout must be checked and if necessary re-aligned after an adapter changeover, change of application, after any adjustment for wear compensation and before every re-commissioning, using adjustment steps 1 to 6
- ▲ Adjustment screws must always be tightened during usage with at least 1 Nm
- ▲ The max. re-adjustment torque is 4.5 Nm

Please note:
- ▲ Both measurement cutting edges are marked on the reaming head by a dot. Please use only this pair of cutting edges for mechanical measurement. Using other pairs of cutting edges will result in measurement errors.
- ▲ Measure the diameter at the front on the cutting edge due to back taper (see diagram)
- ▲ Please also avoid damage to the cutting edges during the measurement process.

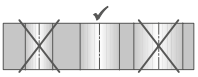


Problems / possible causes / solutions



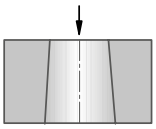
Hole too large

- ▲ Runout error for reamer in the spindle → use DAH compensation system and correct runout
- ▲ Inaccurate alignment, reamer back-cuts → correct alignment and use DPS floating holder
- ▲ Built-up edge → reduce cutting speed v_c for uncoated carbide cutting material, increase it for DST and coated cutting material or increase the oil content of the coolant
- ▲ Reamer too large → have reamer adapted



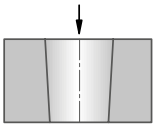
Hole too small

- ▲ Worn reamer → have reamer adjusted, replaced or repaired
- ▲ Reaming allowance too small → increase reaming allowance
- ▲ Cutting force too high → reduce feed or select other lead geometry (ASG)
- ▲ Reamer too small → have reamer adjusted, replaced or repaired



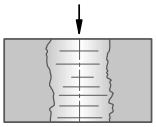
Conical hole, tapered backwards

- ▲ Inaccurate alignment → correct alignment and use DPS floating holder
- ▲ Misalignment between headstock and turret → correct turret and use DPS floating holder



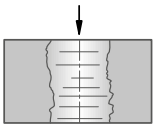
Conical hole, tapered forwards

- ▲ Poor alignment, cutting edges push initially → correct alignment and use DPS floating holder



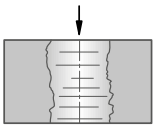
Hole is not round

- ▲ Reamer runout error too large → correct the runout with DAH compensation system
- ▲ Alignment error → correct alignment error and use DPS floating holder
- ▲ Asymmetric initial cutting through angled entry surface → countersink hole
- ▲ Workpiece tensioning → correct clamping of the workpieces
- ▲ Poor pre-machining → optimise pre-machining
- ▲ Feed too high → reduce feed



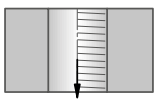
Hole exhibits chatter marks

- ▲ Cutting speed v_c too high → reduce cutting speed
- ▲ L to D ratio too high→ reduce the speed of entry, pilot the bore or select other lead geometry (ASG)



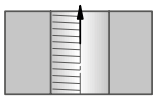
Non clean-up

- ▲ Built-up edge → reduce cutting speed v_c for uncoated carbide cutting material, increase it for DST and coated cutting material or increase the oil content of the coolant
- ▲ Cutting edge worn→ have cutting edge repaired or replace the tool
- ▲ Reamer runout error → correct the runout with DAH compensation system
- ▲ No or insufficient cooling, chips are getting trapped → use thro' coolant supply and increase coolant pressure
- ▲ Unsuitable coolant → increase the oil content of the coolant
- ▲ Incorrect cutting data→ use data according to catalogue recommendation



Grooves in the hole "Feed marking"

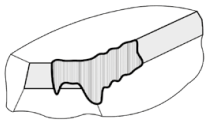
- ▲ Faulty cutting edge (edge breakage) → have reamer replaced or repaired
- ▲ Built-up edges → reduce cutting speed v_c for uncoated carbide cutting material, increase it for DST and coated cutting material or increase the oil content of the coolant



Grooves in the hole "Retraction marking"

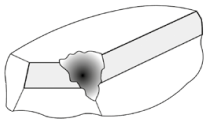
- ▲ Cutting edges moved too far out of the hole → move no more than lead length + 2 mm out of the hole
- ▲ Material springs back → do not retract at high speed but with increased (2-3 times) feed rate

Types of wear



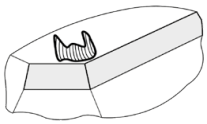
Wear on clearance face

Reduce the cutting speed and select a more wear resistant cutting material or coating.



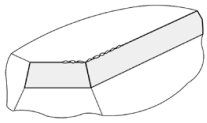
Cutting edge breakage

Reduce feed and reaming allowance. In the case of interrupted holes, use coated carbide instead of DST.



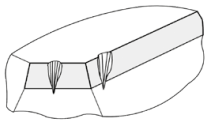
Cratering

Reduce the cutting speed and use a positive cutting edge geometry.



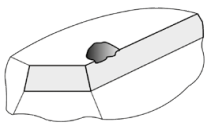
Edge breakages

Increase the cutting speed and use larger rake angle.



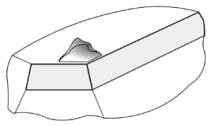
Notch wear

Reduce the cutting speed and select a more wear resistant cutting material or coating.



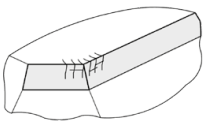
Fatigue fracture

Reduce feed, increase reamer stability.



Built-up edge

Use positive cutting edge geometry, increase the oil content of the coolant, reduce the cutting speed v_c for uncoated carbide cutting material, increase it for DST and coated cutting material.



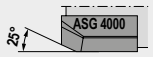
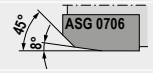
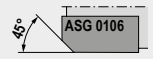
Cracks at right angles to the cutting edge

Use sufficient coolant and thro' coolant, reduce the cutting speed.

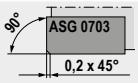
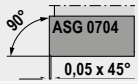
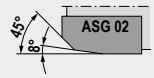
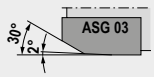
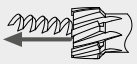
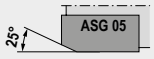
Common cutting edge geometries in the performance area

REAMAX, REAMAX TS, Monomax

Standard geometries

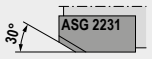
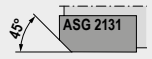
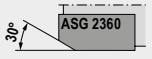
Cutting edge geometry	Flute type	Chip flow	Lead angle
Through hole			
ASG4000	straight	←	
Through hole-Blind hole			
ASG3000	straight	↔	
ASG0706	straight	↔	
ASG0106	straight	↔	

Special geometries

Cutting edge geometry	Flute type	Chip flow Comments	Lead angle
ASG0703	straight	Leading edge	
ASG0704	straight	Leading edge with increased positional accuracy	
ASG09B	straight	Swarf control < Ø 32 mm	
ASG1402	straight	Swarf control > Ø 32 mm	
ASG02	straight	↔	
ASG03	straight	↔	
ASG05	left-handed		

Fullmax

Standard geometries

Cutting edge geometry	Flute type	Chip flow	Lead angle
Through hole			
ASG2210	left-hand helix	←	
ASG2231	left-hand helix	←	
ASG2270	straight	←	
Blind hole			
ASG2110	straight	→	
ASG2131	straight	→	
ASG2170	straight	→	
Through hole-Blind hole			
ASG2350	straight	↔	
ASG2360	straight	↔	

Numerous other cutting edge geometries, especially for your application, are available on request. Simply contact our technicians or use the form „Semi standard – Solid carbide reamer“ on our homepage in the download area.

Achievable surface quality

		Roughness ▸	N11	N10	N9	N8		N7	N6		N5	N4	N3	N2	N1
		Average roughness R_a ▸	25	12,5	6,3	3,2		1,6	0,8		0,4	0,2	0,1	0,05	0,025
		Surface roughness R_z ▸	100	63	40	25	16	10	6,3	4	2,5	1,6	1	0,63	0,25
Material group	P	1.0 – 4.2													
	M	1.1 – 3.1													
	K	1.1 + 2.1 + 3.1													
		1.2 + 2.2 + 3.2													
	N	1.1 – 2.3													
		3.1 – 3.3													
	S	1.1 – 3.3													
	H	1.1 – 1.3													

reachable ▬ conditionally reachable

This information is based on experience and may vary from case to case, depending on the prevailing conditions.
(all other surface values on request)

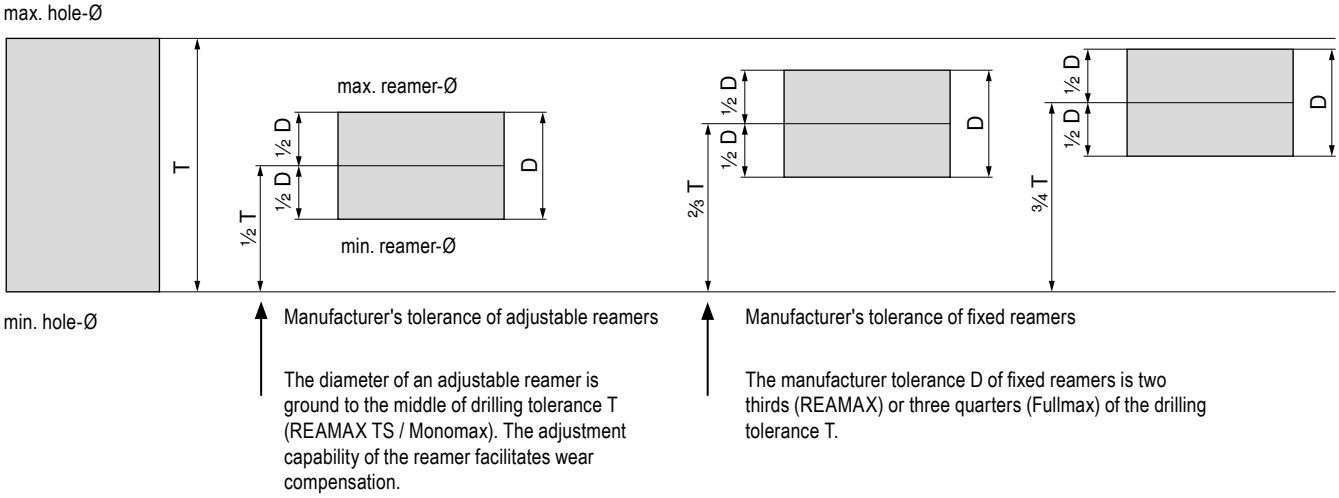
Tolerance classes covered with 1/100 reamer

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

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

Manufacturer's tolerance of the reamers

T = Hole tolerance field
D = Manufacturer's tolerance of the reamer



Manufacturer's tolerance of adjustable reamers

The diameter of an adjustable reamer is ground to the middle of drilling tolerance T (REAMAX TS / Monomax). The adjustment capability of the reamer facilitates wear compensation.

Manufacturer's tolerance of fixed reamers

The manufacturer tolerance D of fixed reamers is two thirds (REAMAX) or three quarters (Fullmax) of the drilling tolerance T.

Coatings – Reaming and Countersinking

HPC TiN

- Nanostructured TiN multilayer coating
- Friction-optimised top layer enables process-secure dry hard machining
- Extreme resistance to oxidation and elevated-temperature hardness
- Maximum application temperature: 900 °C

TiN

- TiN coating
- Maximum application temperature: 450 °C

TiAlN

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

TiAlSiN

- TiAlSiN- Multilayer coating
- Maximum application temperature: 800 °C
- Specially designed for machining hardened steels: high hardness and heat resistance with low thermal conductivity.

DBC

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

DBG-U

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

DBG-P

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

DBC-N

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

DBQ

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

DBF-A

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

Grade description – Reamers

DST

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

CWC10

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

K10

- Carbide, uncoated
- ISO | **K10**
- Uncoated carbide grade for machining grey cast iron or non-ferrous metals, depending on the cutting edge geometry

4

Grade description – Indexable insert countersink

BK8425

- Carbide, TiAlN/TiN-coated
- ISO | **P25** | **M25** | **K25**
- Universal grade with greater wear resistance thanks to innovative PVD multi-layer coating

K10

- Carbide, uncoated
- ISO | **K10**
- Uncoated carbide grade for machining grey cast iron or non-ferrous metals, depending on the cutting edge geometry

Chip breakers

-01

- Rake angle 12°
- All-round topography chamfered, rounded
- Very smooth-cutting thanks to positive cutting edge geometry
- Also suitable for less-powerful machines and unstable workpieces
- Easily controllable chip formation also in less solid materials

-U877

- Rake angle 6°
- circumferentially ground
- Three-ground chip breaker with second clearance angle for clearance with small tool diameters

-G06

- Rake angle 6°
- For P / M / K materials
- High stability due to significant wedge angle

-G12

- Rake angle 12°
- For P / N / S materials
- Extremely smooth-cutting thanks to positive cutting edge geometry
- Extremely suitable for less-powerful machines and unstable workpieces
- Easily controllable chip formation also in less solid materials

Adapters which are ideal for reaming operations (such as the DAH compensation holder) can be found in the → **Clamping technology catalogue, Chapter 16**