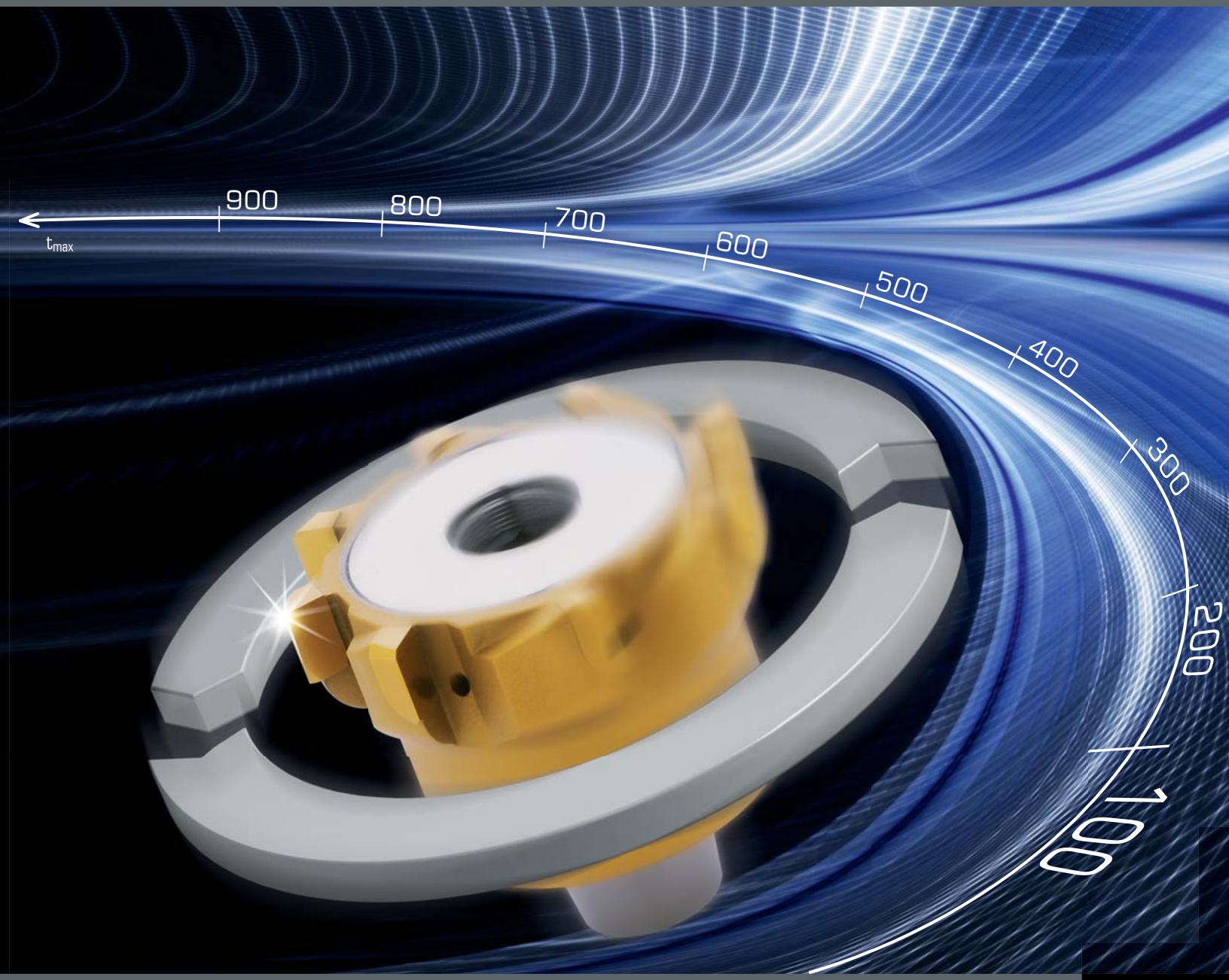
KOMET GROUP



KOMPASS – TOOL*life*

Drilling, Milling, Threading, Reaming, Turning, Countersinking

& Service

TOOLS + IDEAS®

Tools and Service

KOMET GROUP's innovative tool designs and comprehensive bore machining solutions make it a global technology leader. You know us as a supplier of premium tools and know the ideas behind our solutions.
In addition, we offer you a comprehensive menu of services and support functions.

The KomPass TOOL*life* tool program combines refurbishable tools from the KOMET GROUP product portfolio with a local KOMET SERVICE® Partner capable of providing the appropriate services.

We combine the following advantages under the TOOL*life* concept:

- High quality, long-lasting products.
- Guidance from the KOMET SERVICE® Partner and KOMET® outside sales representatives for optimized use of tools.
- A catalog with recommended cutting data and applications.
- The service portfolio of the KOMET SERVICE® Partner Network.

KomPass TOOL *life* – Program overview

TOOL *life* – Tool program		4 – 5	
Drilling	KUB® Drillmax KUB® Drillmax XL KUB® K2	6 – 27	1
Milling	Solid carbide milling cutters, end milling cutters, roughing end mills, HPC, spherical, torus, chamfer, and radius milling cutters	28 – 53	2
Threading	MKG, MGF, UMGF, BGF, UBGF, DBGF, GWF, TOMILL CUT, DOREX, TINIB, FEDUB, FEDUC, GG, TAREX, SIREX	54 – 157	3
Reaming	Reamax® TS, Reamax® Monomax® Solid carbide reamers	158 – 209	4
Turning	External and internal machining UniTurn®	210 – 237	5
Countersinking		238 – 241	6
KOMET SERVICE®		242 – 243	
Services menu	Overview	244 – 245	7
Special tools	Quote request form	246 – 251	8
Service partner	Partner benefits	252 – 253	9
More information	Technical information Numerical index	254 – 265	10

KomPass TOOL*life* – Tool program

Tools that last.

The KomPass TOOL*life* Program offers you the full range of KOMET GROUP standard solid carbide and HSS tools.

The program encompasses quality tools used for solid drilling, reaming, threading, milling, turning and chamfering and that can be refurbished.

You will find the KOMET GROUP's complete product offerings in these catalogs:
- KomPass Bore Machining
- KomPass Reaming
- Threading Systems
- Milling / Turning, and
- Facing Heads

Please refer to our compact technical user guide "KomGuide" for comprehensive technical information such as machining parameters, formulas and recommended uses.

1 Solid Drilling — Page 6 – 27

KUB® Drillmax — Ø 3 – 16 mm

KUB® Drillmax XL — Ø 3 – 10 mm

KUB K2® — Ø 10 – 20.5 mm

2 Milling — Page 28 – 53

End milling cutter UNI — Ø 3 – 20 mm

End milling cutter HPC — Ø 6 – 20 mm

End milling cutter XH — Ø 3 – 20 mm; Ø 4 – 10 mm

End milling cutter AL — Ø 3 – 20 mm; Ø 4 – 8 mm

End milling cutter HF — Ø 3 – 25 mm

Roughing end mill — Ø 6 – 20 mm

Spherical cutter — Ø 3 – 20 mm

Spherical cutter XH — Ø 3 – 16 mm; Ø 3 – 20 mm

Torus milling cutter XH — Ø 6 – 12 mm

Chamfer milling cutter — Ø 6 – 12 mm

Radius milling cutter — Ø 6 – 8 mm

3 Threading

Page 54 – 157

Thread milling tool MKG size of thread < Ø 20 mm

Thread milling tool MGF size of thread <Ø 20 mm

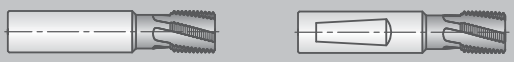
Thread milling tool UMGF size of thread < Ø 20 mm

Thread milling tool BGF size of thread < Ø 20 mm

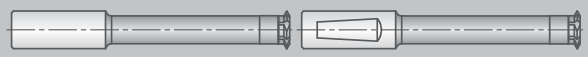
Thread milling tool UBGF size of thread < Ø 20 mm

Thread milling tool DBGF size of thread < Ø 20 mm

Thread milling tool GWF size of thread > Ø 20 mm



Thread milling tool TOMILL CUT size of thread > Ø 20 mm



HSS tap DOREX, GG, TAREX

Ø 2 – 24 mm

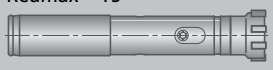
Solid carbide tap DOREX, GG, SIREX SR

Ø 3 – 16 mm

4 Reaming

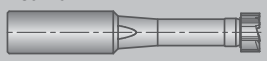
Page 157 – 209

Reamax® TS



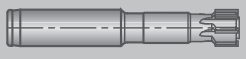
Ø 18^{H7} – 50^{H7} mm

Reamax®



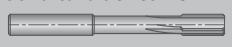
Ø 15^{H7} – 30^{H7} mm

Monomax®



Ø 6^{H7} – 20^{H7} mm

Solid carbide reamer

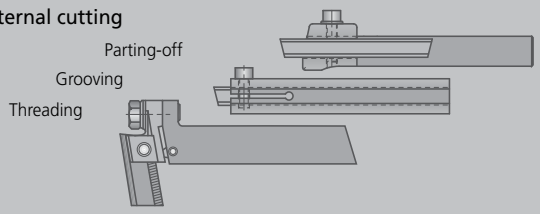


Ø 1.4 – 12.7 mm

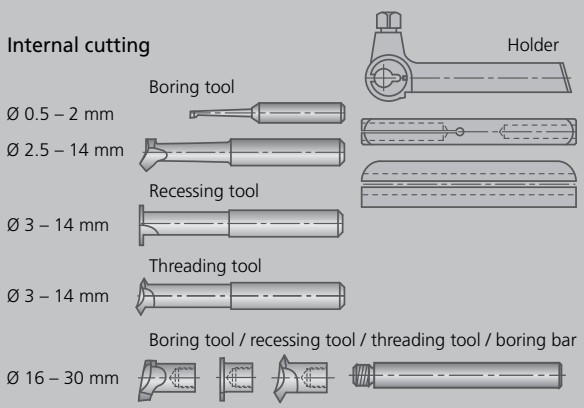
5 Turning

Page 210 – 237

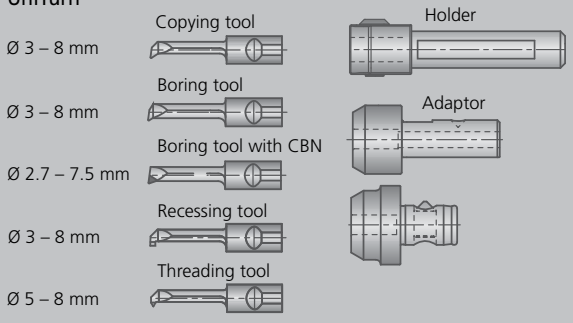
External cutting



Internal cutting

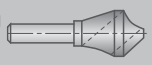
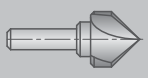


UniTurn®

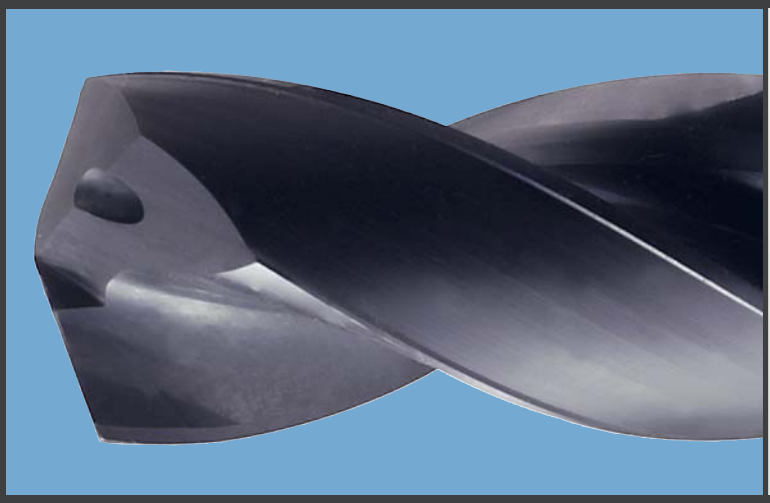


6 Countersinking

Page 238 – 241

Countersinking tool SE		Ø 2 - 15 mm
Countersinking tool DSE		Ø 1 - 4 mm
Countersinking tool SEA		Ø 2 - 30 mm
Countersinking tool SX		Ø 2.5 - 25 mm
Countersinking tool SID		Ø 8 - 20 mm

KOMET KUB® Drillmax · KUB® Drillmax XL
High-performance solid carbide drill



KUB® Drillmax
High-performance drill for small diameters

The high performance. solid carbide KUB® Drillmax drills round out our product range of drill diameters from 3 to 16 mm and length/diameter ratios of 5×D and 7-8×D. Optimized. special cutting flutes permit ideal chip removal and perfect machining results.

Versions:
- Drill diameter: 3.00 – 16.00 mm
- Hole tolerance: IT9 (attainable)
- Drilling depth: 5×D, 7-8×D
- Shank shape: HA and HE (DIN 6535)
- Coating: TiAlN
- Point angle: 140°
- Helix angle: 30°
- Coolant supply: internal

Your PLUS:

- Excellent hole tolerances
- Optimal chip removal through special cutting flutes
- Optimal machining results and long tool life thanks to good coordination of carbide and coating with drill geometry
- Our extensive network of professional KOMET SERVICE® Partners provides OEM-quality regrinding and recoating services.

KUB® Drillmax XL
High-performance drill for deep holes

Expertise gained from many special solutions comes together in a standard tool program: the KOMET KUB® Drillmax XL, available from stock for 20xD in diameters from 3.0 to 10.0 mm and for 30×D in diameters from 3.0 to 8.0 mm. The spiral-fluted, deep hole drills have four guide chamfers.

Versions:
- 4 guide chamfers
- Drill diameters: for 20×D: 3.00 – 10.0 mm
  for 30×D: 3.00 – 8.00 mm
- Shank shape: DIN 6535 HA
- Coating: TiAlN
- Point angle: 140°
- Helix angle: 30°
- Coolant supply: internal

Your PLUS:

- 4 chamfers for high-precision drilling and alignment
- Ideal chip removal thanks to optimized special cutting flutes
- Reliable drilling to 30×D without pecking
- Significantly shortened production times due to extremely high feed rates and cutting speeds

Note:
Pilot holes required, depth 2 to 3×D.
KOMET KUB® Drillmax 5×D standard drills of same diameter may be used.

KOMET KUB® Drillmax — Page

Straight shank DIN 6535 HA / HE

3 – 16 mm. right-hand cutting
Drilling depth 5×D — 8 – 9
Drilling depth 7-8×D — 10–11

KOMET KUB® Drillmax XL — Page

Straight shank DIN 6535 HA

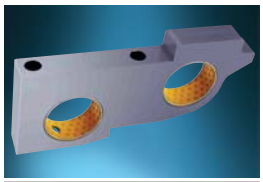
3 – 10 mm. right-hand cutting
Drilling depth 20×D — 12

3 – 8 mm. right-hand cutting
Drilling depth 30×D — 13

Cutting recommendations — 14 – 15
Guideline values for solid drilling

Technical notes — 17

Component: bearing bracket



Machining:
lateral mounting holes
Ø 11 mm, length 60 - 75 mm

Tool: KUB® Drillmax 8×D

Machining time: 15 seconds

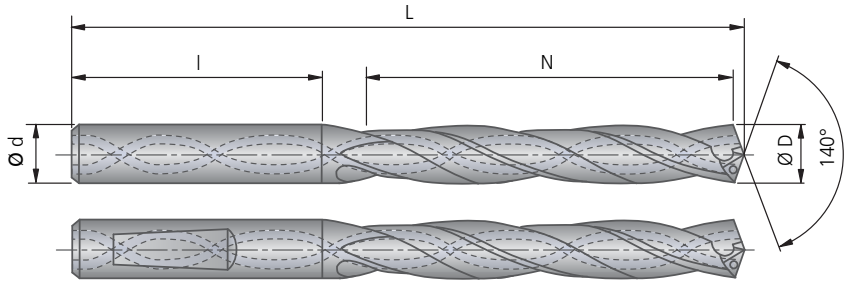
- No pilot holes required
- Tool does not deviate
- Machining time reduced from 30 sec to 15 sec
- High process reliability
- Precise alignment
- Good chip removal

KOMET KUB® Drillmax — Ø 3.0 – 16.0 mm

High performance solid carbide drill with straight shank DIN 6535 HA / HE, right-hand

L / D	Through hole	Blind hole	Welded joint	Slanted surface	Curved surface	Cross hole	Center drilled hole	Interrupted cut	Stackplate	Rough boring	Adjustable diameter
5×D	●	●	◐	○	○	○	○	✕	◐	○	✕

● very good ◐ good ○ possible: refer to drilling technical notes. Page 17 ✕ not possible



5 × D							For work piece material
Ø D	Ø d × l	DIN 6535 HA Order #	DIN 6535 HE Order #	L	N	kg p	P M K N S H
3.0	6 × 36	V03 03000.112730	V03 03000.212730	66	24	0.016	
3.1	6 × 36	V03 03100.112730	V03 03100.212730	66	24	0.016	
3.2	6 × 36	V03 03200.112730	V03 03200.212730	66	24	0.017	
3.3	6 × 36	V03 03300.112730	V03 03300.212730	66	24	0.017	● ◐ ◐
3.4	6 × 36	V03 03400.112730	V03 03400.212730	66	24	0.017	
3.5	6 × 36	V03 03500.112730	V03 03500.212730	66	24	0.018	
3.6	6 × 36	V03 03600.112730	V03 03600.212730	66	24	0.018	
3.7	6 × 36	V03 03700.112730	V03 03700.212730	66	24	0.018	
3.8	6 × 36	V03 03800.112730	V03 03800.212730	74	30	0.018	
3.9	6 × 36	V03 03900.112730	V03 03900.212730	74	30	0.018	
4.0	6 × 36	V03 04000.112730	V03 04000.212730	74	30	0.018	
4.1	6 × 36	V03 04100.112730	V03 04100.212730	74	30	0.019	
4.2	6 × 36	V03 04200.112730	V03 04200.212730	74	30	0.019	
4.3	6 × 36	V03 04300.112730	V03 04300.212730	74	30	0.019	● ◐ ◐
4.4	6 × 36	V03 04400.112730	V03 04400.212730	74	30	0.019	
4.5	6 × 36	V03 04500.112730	V03 04500.212730	74	30	0.019	
4.6	6 × 36	V03 04600.112730	V03 04600.212730	74	30	0.019	
4.7	6 × 36	V03 04700.112730	V03 04700.212730	74	30	0.019	
4.8	6 × 36	V03 04800.112730	V03 04800.212730	82	35	0.020	
4.9	6 × 36	V03 04900.112730	V03 04900.212730	82	35	0.020	
5.0	6 × 36	V03 05000.112730	V03 05000.212730	82	35	0.020	
5.1	6 × 36	V03 05100.112730	V03 05100.212730	82	35	0.021	
5.2	6 × 36	V03 05200.112730	V03 05200.212730	82	35	0.021	
5.3	6 × 36	V03 05300.112730	V03 05300.212730	82	35	0.022	
5.4	6 × 36	V03 05400.112730	V03 05400.212730	82	35	0.022	● ◐ ◐
5.5	6 × 36	V03 05500.112730	V03 05500.212730	82	35	0.023	
5.54	6 × 36	V03 05540.112730	V03 05540.212730	82	35	0.023	
5.6	6 × 36	V03 05600.112730	V03 05600.212730	82	35	0.023	
5.7	6 × 36	V03 05700.112730	V03 05700.212730	82	35	0.024	
5.8	6 × 36	V03 05800.112730	V03 05800.212730	82	35	0.024	
5.9	6 × 36	V03 05900.112730	V03 05900.212730	82	35	0.025	
6.0	6 × 36	V03 06000.112730	V03 06000.212730	82	35	0.025	
6.1	8 × 36	V03 06100.112730	V03 06100.212730	91	43	0.027	
6.2	8 × 36	V03 06200.112730	V03 06200.212730	91	43	0.027	
6.3	8 × 36	V03 06300.112730	V03 06300.212730	91	43	0.030	
6.4	8 × 36	V03 06400.112730	V03 06400.212730	91	43	0.030	
6.5	8 × 36	V03 06500.112730	V03 06500.212730	91	43	0.032	● ◐ ◐
6.6	8 × 36	V03 06600.112730	V03 06600.212730	91	43	0.032	
6.7	8 × 36	V03 06700.112730	V03 06700.212730	91	43	0.032	
6.8	8 × 36	V03 06800.112730	V03 06800.212730	91	43	0.035	
6.9	8 × 36	V03 06900.112730	V03 06900.212730	91	43	0.035	

Note: with whistle notch clamping surface per DIN 6535 HE. Minimum order quantity: 3 pieces.

High performance solid carbide drill with straight shank DIN 6535 HA / HE, right-hand

5 × D							For work piece material
X D	X d × l	DIN 6535 HA Order #	DIN 6535 HE Order #	L	N	kg p	P M K N S H
7.0	8 × 36	V03 07000.112730	V03 07000.212730	91	43	0.037	
7.1	8 × 36	V03 07100.112730	V03 07100.212730	91	43	0.037	
7.2	8 × 36	V03 07200.112730	V03 07200.212730	91	43	0.039	
7.3	8 × 36	V03 07300.112730	V03 07300.212730	91	43	0.039	
7.4	8 × 36	V03 07400.112730	V03 07400.212730	91	43	0.040	
7.43	8 × 36	V03 07430.112730	V03 07430.212730	91	43	0.040	● ◐ ◐
7.5	8 × 36	V03 07500.112730	V03 07500.212730	91	43	0.040	
7.6	8 × 36	V03 07600.112730	V03 07600.212730	91	43	0.041	
7.7	8 × 36	V03 07700.112730	V03 07700.212730	91	43	0.041	
7.8	8 × 36	V03 07800.112730	V03 07800.212730	91	43	0.043	
7.9	8 × 36	V03 07900.112730	V03 07900.212730	91	43	0.043	
8.0	8 × 36	V03 08000.112730	V03 08000.212730	91	43	0.044	
8.1	10 × 40	V03 08100.112730	V03 08100.212730	103	49	0.045	
8.2	10 × 40	V03 08200.112730	V03 08200.212730	103	49	0.045	
8.3	10 × 40	V03 08300.112730	V03 08300.212730	103	49	0.047	
8.4	10 × 40	V03 08400.112730	V03 08400.212730	103	49	0.047	
8.5	10 × 40	V03 08500.112730	V03 08500.212730	103	49	0.050	
8.6	10 × 40	V03 08600.112730	V03 08600.212730	103	49	0.050	
8.7	10 × 40	V03 08700.112730	V03 08700.212730	103	49	0.052	
8.8	10 × 40	V03 08800.112730	V03 08800.212730	103	49	0.052	
8.9	10 × 40	V03 08900.112730	V03 08900.212730	103	49	0.055	
9.0	10 × 40	V03 09000.112730	V03 09000.212730	103	49	0.055	
9.1	10 × 40	V03 09100.112730	V03 09100.212730	103	49	0.057	● ◐ ◐
9.2	10 × 40	V03 09200.112730	V03 09200.212730	103	49	0.057	
9.3	10 × 40	V03 09300.112730	V03 09300.212730	103	49	0.062	
9.4	10 × 40	V03 09400.112730	V03 09400.212730	103	49	0.062	
9.5	10 × 40	V03 09500.112730	V03 09500.212730	103	49	0.067	
9.54	10 × 40	V03 09540.112730	V03 09540.212730	103	49	0.067	
9.6	10 × 40	V03 09600.112730	V03 09600.212730	103	49	0.067	
9.7	10 × 40	V03 09700.112730	V03 09700.212730	103	49	0.072	
9.8	10 × 40	V03 09800.112730	V03 09800.212730	103	49	0.072	
9.9	10 × 40	V03 09900.112730	V03 09900.212730	103	49	0.077	
10.0	10 × 40	V03 10000.112730	V03 10000.212730	103	49	0.077	
10.1	12 × 45	V03 10100.112730	V03 10100.212730	118	56	0.080	
10.2	12 × 45	V03 10200.112730	V03 10200.212730	118	56	0.085	
10.3	12 × 45	V03 10300.112730	V03 10300.212730	118	56	0.090	
10.4	12 × 45	V03 10400.112730	V03 10400.212730	118	56	0.094	
10.5	12 × 45	V03 10500.112730	V03 10500.212730	118	56	0.097	
10.6	12 × 45	V03 10600.112730	V03 10600.212730	118	56	0.100	
10.7	12 × 45	V03 10700.112730	V03 10700.212730	118	56	0.102	
10.8	12 × 45	V03 10800.112730	V03 10800.212730	118	56	0.105	
10.9	12 × 45	V03 10900.112730	V03 10900.212730	118	56	0.107	
11.0	12 × 45	V03 11000.112730	V03 11000.212730	118	56	0.110	
11.1	12 × 45	V03 11100.112730	V03 11100.212730	118	56	0.112	● ◐ ◐
11.2	12 × 45	V03 11200.112730	V03 11200.212730	118	56	0.115	
11.3	12 × 45	V03 11300.112730	V03 11300.212730	118	56	0.117	
11.4	12 × 45	V03 11400.112730	V03 11400.212730	118	56	0.120	
11.5	12 × 45	V03 11500.112730	V03 11500.212730	118	56	0.122	
11.54	12 × 45	V03 11540.112730	V03 11540.212730	118	56	0.122	
11.6	12 × 45	V03 11600.112730	V03 11600.212730	118	56	0.125	
11.7	12 × 45	V03 11700.112730	V03 11700.212730	118	56	0.127	
11.8	12 × 45	V03 11800.112730	V03 11800.212730	118	56	0.130	
11.9	12 × 45	V03 11900.112730	V03 11900.212730	118	56	0.132	
12.0	12 × 45	V03 12000.112730	V03 12000.212730	118	56	0.135	
12.5	14 × 45	V03 12500.112730	V03 12500.212730	124	60	0.180	
12.8	14 × 45	V03 12800.112730	V03 12800.212730	124	60	0.180	
13.0	14 × 45	V03 13000.112730	V03 13000.212730	124	60	0.182	
13.3	14 × 45	V03 13300.112730	V03 13300.212730	124	60	0.182	● ◐ ◐
13.5	14 × 45	V03 13500.112730	V03 13500.212730	124	60	0.185	
13.8	14 × 45	V03 13800.112730	V03 13800.212730	124	60	0.185	
14.0	14 × 45	V03 14000.112730	V03 14000.212730	124	60	0.188	
14.5	16 × 48	V03 14500.112730	V03 14500.212730	133	63	0.240	
14.8	16 × 48	V03 14800.112730	V03 14800.212730	133	63	0.240	
15.0	16 × 48	V03 15000.112730	V03 15000.212730	133	63	0.250	
15.5	16 × 48	V03 15500.112730	V03 15500.212730	133	63	0.270	● ◐ ◐
15.8	16 × 48	V03 15800.112730	V03 15800.212730	133	63	0.270	
16.0	16 × 48	V03 16000.112730	V03 16000.212730	133	63	0.282	

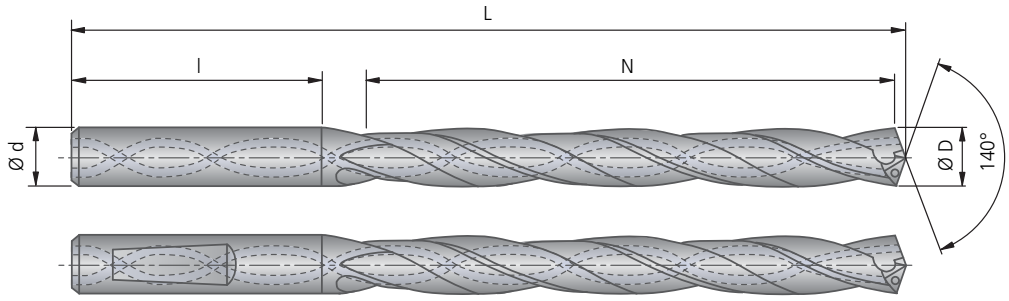
Other diameters available as special orders. **Recommended values for solid drilling: Pages 14-15.**

KOMET KUB® Drillmax — Ø 3.0 – 16.0 mm

High performance solid carbide drill with straight shank DIN 6535 HA / HE, right-hand

L / D	Through hole	Blind hole	Welded joint	Slanted surface	Curved surface	Cross hole	Center drilled hole	Interrupted cut	Stackplate	Rough boring	Adjustable diameter
7-8×D	●	●	◐	○	○	○	○	✕	◐	○	✕

● very good ◐ good ○ possible: refer to drilling technical notes. Page 17 ✕ not possible



7 – 8 × D							For work piece material
Ø D	Ø d × l	DIN 6535 HA Order #	DIN 6535 HE Order #	L	N	kg p	P M K N S H
3.0	6 × 36	V04 03000.112730	V04 03000.212730	70	28	0.017	
3.1	6 × 36	V04 03100.112730	V04 03100.212730	70	28	0.017	
3.2	6 × 36	V04 03200.112730	V04 03200.212730	70	28	0.017	
3.3	6 × 36	V04 03300.112730	V04 03300.212730	70	28	0.017	● ◐ ◐
3.4	6 × 36	V04 03400.112730	V04 03400.212730	70	28	0.018	
3.5	6 × 36	V04 03500.112730	V04 03500.212730	70	28	0.018	
3.6	6 × 36	V04 03600.112730	V04 03600.212730	70	28	0.018	
3.7	6 × 36	V04 03700.112730	V04 03700.212730	70	28	0.018	
3.8	6 × 36	V04 03800.112730	V04 03800.212730	80	36	0.019	
3.9	6 × 36	V04 03900.112730	V04 03900.212730	80	36	0.019	
4.0	6 × 36	V04 04000.112730	V04 04000.212730	80	36	0.019	
4.1	6 × 36	V04 04100.112730	V04 04100.212730	80	36	0.020	
4.2	6 × 36	V04 04200.112730	V04 04200.212730	80	36	0.020	● ◐ ◐
4.3	6 × 36	V04 04300.112730	V04 04300.212730	80	36	0.020	
4.4	6 × 36	V04 04400.112730	V04 04400.212730	80	36	0.021	
4.5	6 × 36	V04 04500.112730	V04 04500.212730	80	36	0.021	
4.6	6 × 36	V04 04600.112730	V04 04600.212730	80	36	0.021	
4.7	6 × 36	V04 04700.112730	V04 04700.212730	80	36	0.021	
4.8	6 × 36	V04 04800.112730	V04 04800.212730	92	45	0.023	
4.9	6 × 36	V04 04900.112730	V04 04900.212730	92	45	0.023	
5.0	6 × 36	V04 05000.112730	V04 05000.212730	92	45	0.024	
5.1	6 × 36	V04 05100.112730	V04 05100.212730	92	45	0.025	
5.2	6 × 36	V04 05200.112730	V04 05200.212730	92	45	0.025	
5.3	6 × 36	V04 05300.112730	V04 05300.212730	92	45	0.026	
5.4	6 × 36	V04 05400.112730	V04 05400.212730	92	45	0.027	● ◐ ◐
5.5	6 × 36	V04 05500.112730	V04 05500.212730	92	45	0.027	
5.54	6 × 36	V04 05540.112730	V04 05540.212730	92	45	0.027	
5.6	6 × 36	V04 05600.112730	V04 05600.212730	92	45	0.028	
5.7	6 × 36	V04 05700.112730	V04 05700.212730	92	45	0.029	
5.8	6 × 36	V04 05800.112730	V04 05800.212730	92	45	0.030	
5.9	6 × 36	V04 05900.112730	V04 05900.212730	92	45	0.030	
6.0	6 × 36	V04 06000.112730	V04 06000.212730	92	45	0.031	
6.1	8 × 36	V04 06100.112730	V04 06100.212730	100	52	0.032	
6.2	8 × 36	V04 06200.112730	V04 06200.212730	100	52	0.034	
6.3	8 × 36	V04 06300.112730	V04 06300.212730	100	52	0.036	
6.4	8 × 36	V04 06400.112730	V04 06400.212730	100	52	0.038	
6.5	8 × 36	V04 06500.112730	V04 06500.212730	100	52	0.039	● ◐ ◐
6.6	8 × 36	V04 06600.112730	V04 06600.212730	100	52	0.040	
6.7	8 × 36	V04 06700.112730	V04 06700.212730	100	52	0.041	
6.8	8 × 36	V04 06800.112730	V04 06800.212730	100	52	0.043	

Note: with whistle notch clamping surface per DIN 6535 HE. Minimum order quantity: 3 pieces.

High performance solid carbide drill with straight shank DIN 6535 HA / HE, right-hand

7 – 8 × D							For work piece material
Ø D	Ø d × l	DIN 6535 HA Order #	DIN 6535 HE Order #	L	N	kg p	P M K N S H
6.9	8 × 36	V04 06900.112730	V04 06900.212730	108	60	0.045	
7.0	8 × 36	V04 07000.112730	V04 07000.212730	108	60	0.045	
7.1	8 × 36	V04 07100.112730	V04 07100.212730	108	60	0.046	
7.2	8 × 36	V04 07200.112730	V04 07200.212730	108	60	0.047	
7.3	8 × 36	V04 07300.112730	V04 07300.212730	108	60	0.047	
7.4	8 × 36	V04 07400.112730	V04 07400.212730	108	60	0.048	
7.43	8 × 36	V04 07430.112730	V04 07430.212730	108	60	0.048	● ◐ ◐
7.5	8 × 36	V04 07500.112730	V04 07500.212730	108	60	0.049	
7.6	8 × 36	V04 07600.112730	V04 07600.212730	108	60	0.050	
7.7	8 × 36	V04 07700.112730	V04 07700.212730	108	60	0.050	
7.8	8 × 36	V04 07800.112730	V04 07800.212730	108	60	0.051	
7.9	8 × 36	V04 07900.112730	V04 07900.212730	108	60	0.052	
8.0	8 × 36	V04 08000.112730	V04 08000.212730	108	60	0.053	
8.1	10 × 40	V04 08100.112730	V04 08100.212730	122	68	0.055	
8.2	10 × 40	V04 08200.112730	V04 08200.212730	122	68	0.057	
8.3	10 × 40	V04 08300.112730	V04 08300.212730	122	68	0.060	
8.4	10 × 40	V04 08400.112730	V04 08400.212730	122	68	0.062	
8.5	10 × 40	V04 08500.112730	V04 08500.212730	122	68	0.065	
8.6	10 × 40	V04 08600.112730	V04 08600.212730	122	68	0.067	
8.7	10 × 40	V04 08700.112730	V04 08700.212730	122	68	0.070	
8.8	10 × 40	V04 08800.112730	V04 08800.212730	122	68	0.072	
8.9	10 × 40	V04 08900.112730	V04 08900.212730	122	68	0.075	
9.0	10 × 40	V04 09000.112730	V04 09000.212730	122	68	0.077	
9.1	10 × 40	V04 09100.112730	V04 09100.212730	130	76	0.080	● ◐ ◐
9.2	10 × 40	V04 09200.112730	V04 09200.212730	130	76	0.082	
9.3	10 × 40	V04 09300.112730	V04 09300.212730	130	76	0.085	
9.4	10 × 40	V04 09400.112730	V04 09400.212730	130	76	0.087	
9.5	10 × 40	V04 09500.112730	V04 09500.212730	130	76	0.090	
9.54	10 × 40	V04 09540.112730	V04 09540.212730	130	76	0.090	
9.6	10 × 40	V04 09600.112730	V04 09600.212730	130	76	0.090	
9.7	10 × 40	V04 09700.112730	V04 09700.212730	130	76	0.092	
9.8	10 × 40	V04 09800.112730	V04 09800.212730	130	76	0.095	
9.9	10 × 40	V04 09900.112730	V04 09900.212730	130	76	0.097	
10.0	10 × 40	V04 10000.112730	V04 10000.212730	130	76	0.099	
10.1	12 × 45	V04 10100.112730	V04 10100.212730	152	90	0.102	
10.2	12 × 45	V04 10200.112730	V04 10200.212730	152	90	0.105	
10.3	12 × 45	V04 10300.112730	V04 10300.212730	152	90	0.110	
10.4	12 × 45	V04 10400.112730	V04 10400.212730	152	90	0.112	
10.5	12 × 45	V04 10500.112730	V04 10500.212730	152	90	0.115	
10.6	12 × 45	V04 10600.112730	V04 10600.212730	152	90	0.117	
10.7	12 × 45	V04 10700.112730	V04 10700.212730	152	90	0.120	
10.8	12 × 45	V04 10800.112730	V04 10800.212730	152	90	0.122	
10.9	12 × 45	V04 10900.112730	V04 10900.212730	152	90	0.125	
11.0	12 × 45	V04 11000.112730	V04 11000.212730	152	90	0.127	
11.1	12 × 45	V04 11100.112730	V04 11100.212730	152	90	0.130	● ◐ ◐
11.2	12 × 45	V04 11200.112730	V04 11200.212730	152	90	0.132	
11.3	12 × 45	V04 11300.112730	V04 11300.212730	152	90	0.135	
11.4	12 × 45	V04 11400.112730	V04 11400.212730	152	90	0.137	
11.5	12 × 45	V04 11500.112730	V04 11500.212730	152	90	0.140	
11.54	12 × 45	V04 11540.112730	V04 11540.212730	152	90	0.140	
11.6	12 × 45	V04 11600.112730	V04 11600.212730	152	90	0.145	
11.7	12 × 45	V04 11700.112730	V04 11700.212730	152	90	0.150	
11.8	12 × 45	V04 11800.112730	V04 11800.212730	152	90	0.155	
11.9	12 × 45	V04 11900.112730	V04 11900.212730	152	90	0.160	
12.0	12 × 45	V04 12000.112730	V04 12000.212730	152	90	0.168	
12.5	14 × 45	V04 12500.112730	V04 12500.212730	170	106	0.198	
12.8	14 × 45	V04 12800.112730	V04 12800.212730	170	106	0.200	
13.0	14 × 45	V04 13000.112730	V04 13000.212730	170	106	0.210	
13.3	14 × 45	V04 13300.112730	V04 13300.212730	170	106	0.220	● ◐ ◐
13.5	14 × 45	V04 13500.112730	V04 13500.212730	170	106	0.230	
13.8	14 × 45	V04 13800.112730	V04 13800.212730	170	106	0.240	
14.0	14 × 45	V04 14000.112730	V04 14000.212730	170	106	0.246	
14.5	16 × 48	V04 14500.112730	V04 14500.212730	192	122	0.315	
14.8	16 × 48	V04 14800.112730	V04 14800.212730	192	122	0.317	
15.0	16 × 48	V04 15000.112730	V04 15000.212730	192	122	0.320	
15.5	16 × 48	V04 15500.112730	V04 15500.212730	192	122	0.340	● ◐ ◐
15.8	16 × 48	V04 15800.112730	V04 15800.212730	192	122	0.350	
16.0	16 × 48	V04 16000.112730	V04 16000.212730	192	122	0.360	

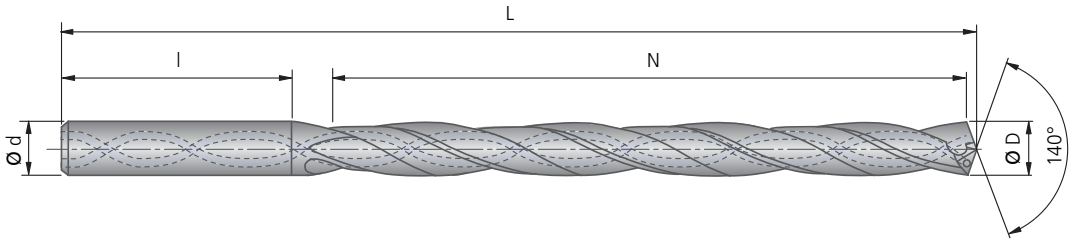
Other diameters available as special orders. **Recommended values for solid drilling: Pages 14-15.**

KOMET KUB® Drillmax XL Ø 3.0 – 10.0 mm · 20×D

High performance solid carbide drill with straight shank DIN 6535 HA, right-hand

Caution! Always drill a pilot hole! Direct spot drilling is not possible, even on a machined spot drill surface. Angled or unmachined spot surfaces must also be faced or spot faced for the pilot tool. (Page 16).

- 4 guide chamfers
- TiAlN coating
- Coolant channels



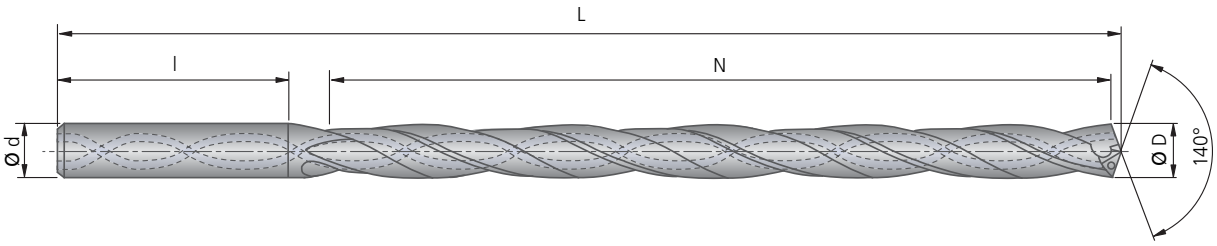
20 × D					For workpiece material
Ø D	Ø d × l	DIN 6535 HA Order #	L	N	P M K N S H
3.0	6 × 36	V05 03000.117830	108	62	
4.0	6 × 36	V05 04000.117830	132	82	
4.5	6 × 36	V05 04500.117830	144	95	● ●
5.0	6 × 36	V05 05000.117830	156	103	
5.5	6 × 36	V05 05500.117830	168	113	
6.0	6 × 36	V05 06000.117830	178	123	
6.5	8 × 36	V05 06500.117830	192	133	● ●
8.0	8 × 36	V05 08000.117830	222	164	
8.5	10 × 40	V05 08500.117830	244	174	
9.0	10 × 40	V05 09000.117830	256	184	● ●
10.0	10 × 40	V05 10000.117830	270	205	

Other diameters available as special orders.

High performance solid carbide drill with straight shank DIN 6535 HA, right-hand

Caution! Always drill a pilot hole! Direct spot drilling is not possible, even on a machined spot drill surface. Angled or unmachined spot surfaces must also be faced or spot faced for the pilot tool. (Page 16).

4 guide chamfers ■
TiAlN coating ■
Coolant channels ■



30 × D					For workpiece material
Ø D	Ø d × l	DIN 6535 HA Order #	L	N	P M K N S H
3.0	6 × 36	V06 03000.117830	138	92	
4.0	6 × 36	V06 04000.117830	172	122	
4.5	6 × 36	V06 04500.117830	189	137	● ●
5.0	6 × 36	V06 05000.117830	206	153	
5.5	6 × 36	V06 05500.117830	223	168	
6.0	6 × 36	V06 06000.117830	238	183	
6.5	8 × 36	V06 06500.117830	257	198	● ●
8.0	8 × 36	V06 08000.117830	302	244	

Other diameters available as special orders.

Recommended values for solid drilling: Pages 14-15.

KOMET KUB® Drillmax, KOMET KUB® Drillmax XL

Cutting recommendations

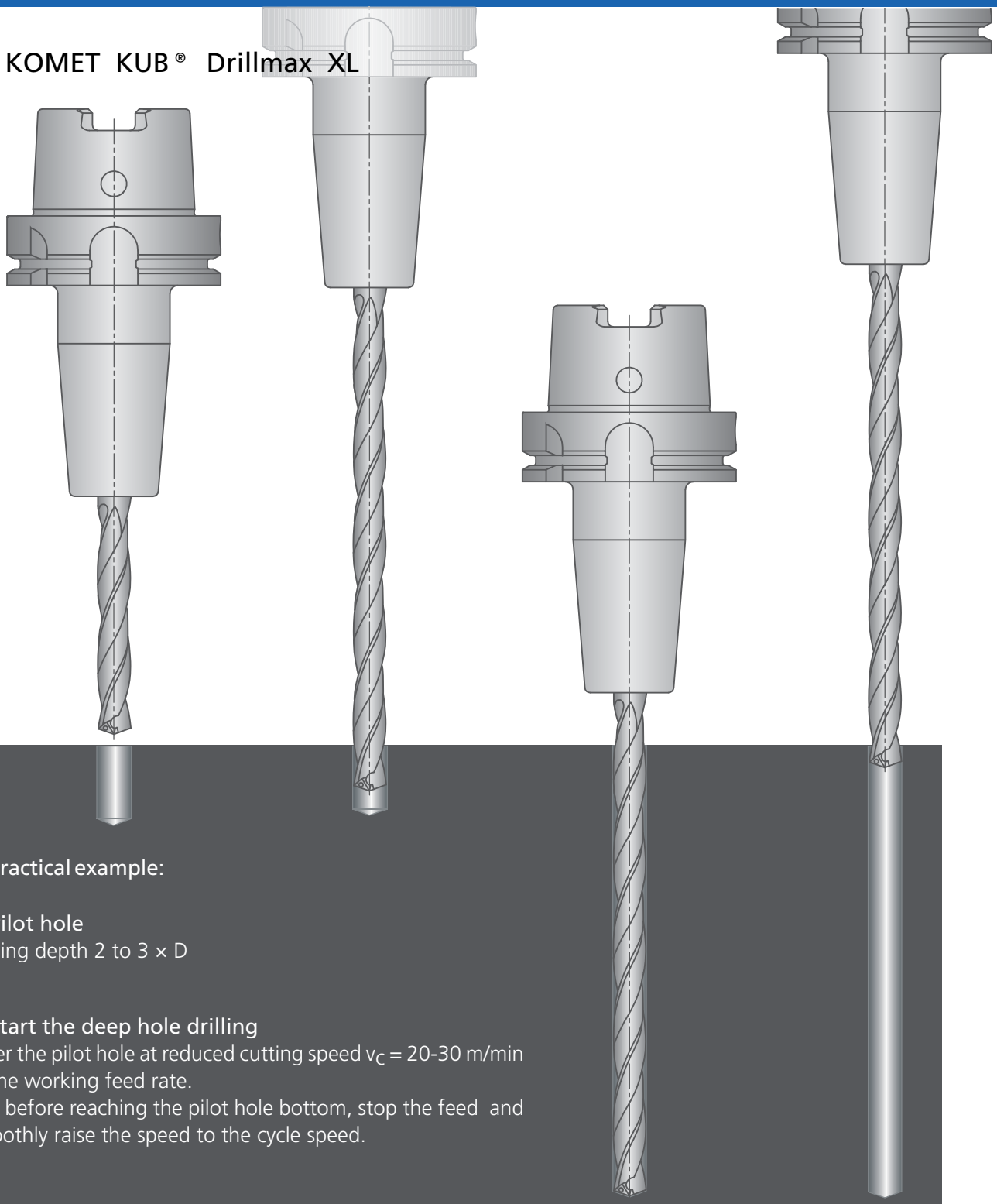
Guideline values for solid drilling						5×D / 7-8×D									
Material group		Strength Rm (N/mm²)	Hardness HB	Material	Materials examples Material code ANSI / SAE	Cutting speed v_c (m/min)			Feed rate f (mm/rev.) Ø 3.0-5.0			Ø 5.1-8.0			
						min	opt.	max	min	opt.	max	min	opt.	max	
P	1.0	≤ 500		Non-alloy steels: structural, case hardened, machining and cast steel	A570.36 1213 A573.81	95	**115**	135	0.08	**0.14**	0.20	0.15	**0.20**	0.25	
P	2.0	500-900		Non-alloy/ low alloy steels: structural, case hardened, heat treated, tool and cast steel	5120 1055 5115	70	**85**	100	0.06	**0.12**	0.18	0.12	**0.17**	0.22	
P	2.1	< 500		Lead alloy machining steels	12L13	70	**85**	100	0.06	**0.12**	0.18	0.10	**0.18**	0.25	
P	3.0	> 900 - 1200		Low alloy steels: heat resistant structural, heat treated, nitride and tool steel	4140 1064	70	**75**	80	0.05	**0.10**	0.15	0.10	**0.15**	0.20	
P	4.0	> 1200		High alloy steel: tool steel	H13 H21	45	**60**	75	0.05	**0.09**	0.13	0.10	**0.14**	0.18	
P	4.1			High speed steel (HSS)											
S	5.0		250	Special alloys: Inconel, Hastelloy, Nimonic, etc.	Inconel® 718 Nimonic® 80A										
S	5.1	400		Titanium, titanium alloys	AMS R54520										
M	6.0	≤ 600		Stainless steels	304L 316	40	**55**	70	0.06	**0.12**	0.18	0.12	**0.17**	0.22	
M	6.1	< 900		Stainless steels	630	25	**45**	65	0.05	**0.08**	0.10	0.09	**0.15**	0.20	
M	7.0	> 900		Stainless / heat proof steels	420 403	15	**30**	40	0.05	**0.08**	0.10	0.06	**0.10**	0.14	
K	8.0		180	Gray cast iron	No 35 B No 50 B	90	**115**	140	0.10	**0.18**	0.25	0.15	**0.23**	0.30	
K	8.1		250	Gray cast iron alloy	A436 Type 2	70	**95**	120	0.10	**0.18**	0.25	0.15	**0.23**	0.30	
K	9.0	≤ 600	130	Spheroidal graphite cast iron, ferritic	60-40-18	100	**120**	140	0.08	**0.14**	0.20	0.15	**0.20**	0.25	
K	9.1		230	Spheroidal graphite cast iron, ferritic / pearlitic	80-55-06	80	**100**	120	0.06	**0.12**	0.18	0.10	**0.15**	0.20	
K	10.0	> 600	250	Spheroidal graphite cast iron, pearlitic ductile iron	100-70-03 70003	70	**90**	110	0.06	**0.12**	0.18	0.10	**0.15**	0.20	
K	10.1		200	Spheroidal cast iron alloy	A43D2	60	**70**	80	0.06	**0.12**	0.18	0.10	**0.15**	0.20	
K	10.2		300	Vermicular cast iron		60	**70**	80	0.06	**0.12**	0.18	0.10	**0.15**	0.20	
N	12.0		90	Copper alloy, brass, lead alloy bronze, lead bronze: good cuttability.	UNS C36000										
N	12.1		100	Copper alloy, brass, bronze: average cuttability											
N	13.0		60	Wrought aluminum alloy											
N	13.1		75	Cast aluminum alloy: Si content < 10% magnesium alloy	GD-AlSi12										
N	14.0		100	Cast aluminum alloy: Si content > 10%	A360.2										
H	15.0	1400		Hardened steels < 45 HRC											
H	16,0	1800		Hardened steels> 45 HRC											

Cutting values shown on these pages relate to the basic recommendations indicated for cutting materials.

	5×D / 7-8×D												20×D / 30×D											
	Feed rate f (mm/rev.)												Cutting speed v_C (m/min)	Feed rate f (mm/rev.)										
	Ø 8.1-10.0			Ø 10.1-12.0			Ø 12.1-14.0			Ø 14.1-16.0				Ø 3.0-4.0			Ø 4.1-6.0			Ø 6.1-10.0				
	min	opt.	max	min	opt.	max	min	opt.	max	min	opt.	max	min opt. max	min	opt.	max	min	opt.	max	min	opt.	max		
	0.15	**0.23**	0.30	0.20	**0.28**	0.35	0.25	**0.33**	0.40	0.30	**0.38**	0.45	40 **85** 100	0.06	**0.10**	0.15	0.10	**0.20**	0.30	0.15	**0.25**	0.35		
	0.15	**0.20**	0.25	0.18	**0.24**	0.30	0.20	**0.28**	0.35	0.30	**0.44**	0.48	40 **75** 100	0.06	**0.09**	0.12	0.10	**0.17**	0.25	0.15	**0.20**	0.25		
	0.20	**0.28**	0.35	0.25	**0.33**	0.40	0.30	**0.38**	0.45	0.35	**0.44**	0.52	40 **85** 100	0.06	**0.10**	0.15	0.15	**0.25**	0.30	0.15	**0.25**	0.35		
	0.12	**0.19**	0.25	0.15	**0.23**	0.30	0.20	**0.28**	0.35	0.25	**0.33**	0.40	35 **60** 80	0.06	**0.09**	0.12	0.10	**0.15**	0.20	0.15	**0.20**	0.25		
	0.12	**0.18**	0.23	0.15	**0.22**	0.28	0.18	**0.25**	0.32	0.20	**0.28**	0.35												
	0.15	**0.20**	0.25	0.18	**0.24**	0.30	0.20	**0.28**	0.35	0.22	**0.31**	0.40												
	0.11	**0.17**	0.22	0.14	**0.20**	0.25	0.16	**0.23**	0.30	0.20	**0.28**	0.35												
	0.08	**0.13**	0.18	0.12	**0.17**	0.22	0.14	**0.20**	0.26	0.16	**0.23**	0.30												
	0.20	**0.30**	0.40	0.25	**0.33**	0.40	0.25	**0.35**	0.45	0.30	**0.40**	0.50	40 **70** 85	0.07	**0.11**	0.15	0.18	**0.24**	0.30	0.20	**0.25**	0.35		
	0.20	**0.30**	0.40	0.25	**0.33**	0.40	0.25	**0.35**	0.45	0.30	**0.40**	0.50	40 **70** 85	0.07	**0.11**	0.15	0.18	**0.24**	0.30	0.20	**0.25**	0.35		
	0.15	**0.23**	0.30	0.20	**0.28**	0.35	0.25	**0.33**	0.40	0.30	**0.38**	0.45	35 **65** 80	0.06	**0.10**	0.15	0.15	**0.20**	0.25	0.15	**0.25**	0.30		
	0.14	**0.20**	0.25	0.18	**0.24**	0.30	0.20	**0.28**	0.35	0.25	**0.33**	0.40	35 **65** 80	0.06	**0.10**	0.15	0.15	**0.20**	0.25	0.15	**0.25**	0.30		
	0.14	**0.20**	0.25	0.18	**0.24**	0.30	0.20	**0.28**	0.35	0.25	**0.33**	0.40	35 **65** 80	0.06	**0.10**	0.15	0.15	**0.20**	0.25	0.15	**0.25**	0.30		
	0.14	**0.20**	0.25	0.18	**0.24**	0.30	0.20	**0.28**	0.35	0.25	**0.33**	0.40												
	0.14	**0.20**	0.25	0.18	**0.24**	0.30	0.20	**0.28**	0.35	0.25	**0.33**	0.40	35 **65** 80	0.06	**0.09**	0.12	0.15	**0.20**	0.25	0.15	**0.25**	0.30		

Be sure to check Chapter 10 for more application details and safety notes!

KOMET KUB® Drillmax XL



A practical example:

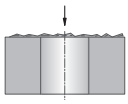
1. Pilot hole
Drilling depth 2 to 3 × D

2. Start the deep hole drilling
Enter the pilot hole at reduced cutting speed v_C = 20-30 m/min at the working feed rate.
Just before reaching the pilot hole bottom, stop the feed and smoothly raise the speed to the cycle speed.

3. Drill the deep hole
Increase the feed to cycle speed. Drill to the required hole depth without pecking. Because of the risk of breakouts when drilling a through hole, the feed should be reduced by 50% when the drill tip exits.

4. Backing out
On reaching the final drilling depth, draw out the tool 2 to 3 mm, then reduce the cutting speed to v_C = 20-30 m/min and pull back to the pilot depth at v_f = 3,000 mm/min. Finally, back out of the hole at n = 300 rpm and v_f = 3,000 mm/min.

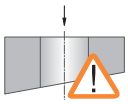
Please also refer to the additional user and safety instructions in Chapter 10.

1. 

Starting on uneven surfaces (cast surfaces)
- reduce the feed according to the surface quality or when spot drilling

2.

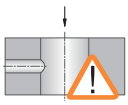
Starting on angled surfaces
- Spot face the surface before starting to drill

3. 

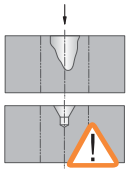
Angled hole exit
- Reduce feed by 50% when nearing the exit

4.

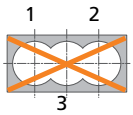
Starting on curved surfaces
- drilling on center with reduced feed is possible
- do spot facing if the bore start point lies outside the radius center

5. 

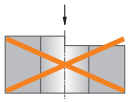
Drilling through a cross hole
- halve the feed rate when erupting

6. 

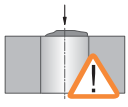
Starting on a groove or a large centering hole
- end face the groove or the center beforehand (diameter min. 0.1 mm larger than drill diameter)
- possible under certain conditions, reduce feed as needed

7. 

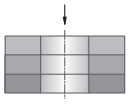
Interrupted cut
- not possible

8. 

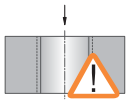
Starting on an edge
- not possible (the starting point must be flat)

9. 

Starting on a welded seam
- spot face the surface beforehand

10. 

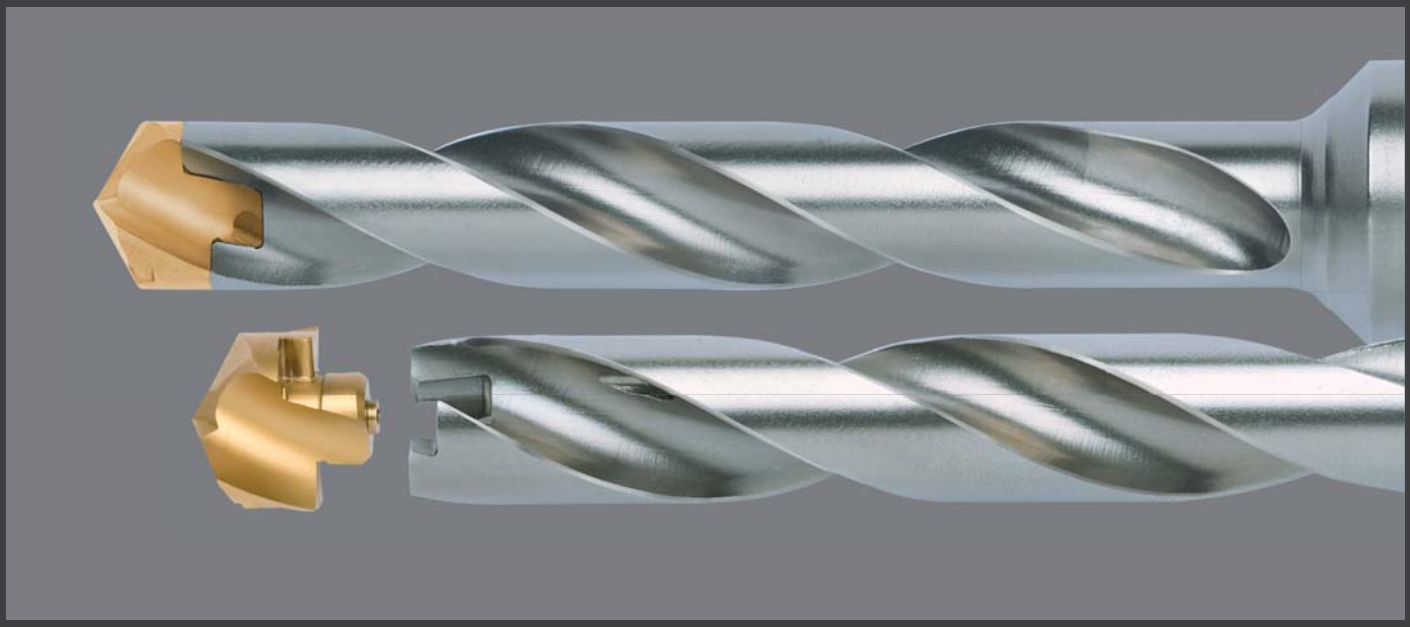
Drilling through stacked plates
- possible in principle
- good workpiece clamping required
- avoid large spaces between elements

11. 

Rough boring
- 5×D and 7-8×D possible
- 20×D and 30×D not possible

Caution! Always drill a pilot hole! Direct spot drilling is not possible, even on a machined spot drill surface. Angled or unmachined spot surfaces must also be faced or spot faced for the pilot tool.

KOMET KUB K2 ® Replaceable head drill for small diameters



KOMET KUB K2 ® replaceable head drill

With the double-cuttingKUB K2 ® replaceable head system, KOMET ® introduced an ingenious system of replaceable head drills.

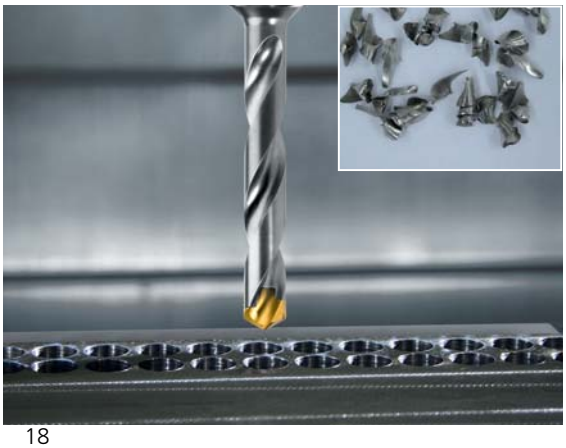
With small drilling diameters starting from 10 mm, it lets you take advantage of the economy and flexibility of replaceable cutting heads.

The double-cutting carbide drill heads cannot be reground. Thanks to a patented attachment point, they are self-clamping. self-centering and easy to change.

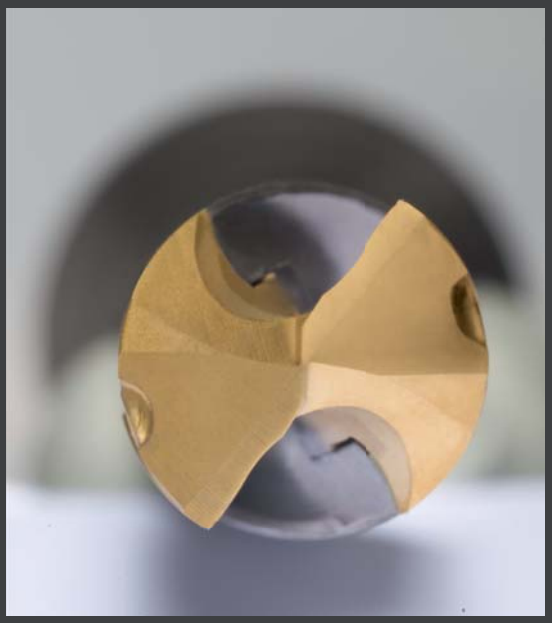
Your PLUS:

- User-friendly quick-change connector permits easy. secure change-out of the KUB K2 ® replaceable heads even in the machine.
- Maximum performance and optimum feed thanks to the latest coatings and high-end radial lands.
- Optimized flutes provide outstanding chip removal for all materials.
- Special surface treatment provides maximum performance and base element life.

Rotating application
in a machining center
Material: 1.4571, V4A
v_C = 70 m/min · f = 0.2 mm/rev



Stationary application
in a cyclically-controlled lathe
Material: 42CrMo4
v_C = 90 m/min · f = 0.22 mm/rev



Applications:

- For diameter range 10 to 20.5 mm
- Internal coolant supply
- Suitable for use with steel, cast metal and stainless materials
- Replaceable head system makes it possible to use a wide variety of lands and coatings.

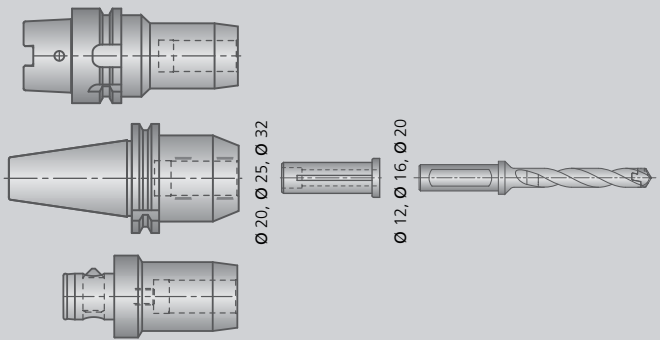
KOMET KUB K2®

	Page
Straight shank ISO 9766	20 – 25
Ø 10 – 20.5 mm. right-hand cut Drilling depth 3×D, 5×D, 7×D	
Cutting recommendations	26
Recommended values for solid drilling	
Technical notes	27

Rotating application
in a machining center

Material: 1.6758 (23MnNiMoCr5-4)
v_c = 46 m/min · f = 0.1 mm/rev

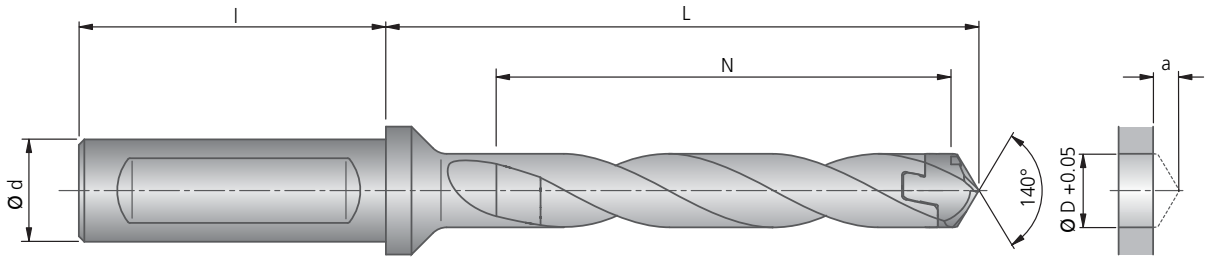
Please note: Use of the KUB K2® in a hydraulic expansion chuck requires a reduction sleeve.



KOMET KUB K2 ®

Ø 10.0 – 12.9 mm

Replaceable head drill with straight shank similar to ISO 9766, right-hand



Replaceable head							
Ø D	BK8425 Order #	BK2725 Order #	a	kg	Coating	For workpiece material P M K N S H	
10.0	H70 10000.018425	H70 10000.012725	4.00	0.004	BK8425 BK2725		
10.1	H70 10100.018425	H70 10100.012725					
10.2	H70 10200.018425	H70 10200.012725					
10.3	H70 10300.018425	H70 10300.012725					
10.4	H70 10400.018425	H70 10400.012725					
10.5	H70 10500.018425	H70 10500.012725	4.00	0.004	BK8425 BK2725		
10.6	H70 10600.018425	H70 10600.012725					
10.7	H70 10700.018425	H70 10700.012725					
10.8	H70 10800.018425	H70 10800.012725					
10.9	H70 10900.018425	H70 10900.012725					
11.0	H70 11000.018425	H70 11000.012725	4.18	0.005	BK8425 BK2725		
11.1	H70 11100.018425	H70 11100.012725					
11.2	H70 11200.018425	H70 11200.012725					
11.3	H70 11300.018425	H70 11300.012725					
11.4	H70 11400.018425	H70 11400.012725					
11.5	H70 11500.018425	H70 11500.012725	4.18	0.005	BK8425 BK2725		
11.6	H70 11600.018425	H70 11600.012725					
11.7	H70 11700.018425	H70 11700.012725					
11.8	H70 11800.018425	H70 11800.012725					
11.9	H70 11900.018425	H70 11900.012725					
12.0	H70 12000.018425	H70 12000.012725	4.87	0.006	BK8425 BK2725		
12.1	H70 12100.018425	H70 12100.012725					
12.2	H70 12200.018425	H70 12200.012725					
12.3	H70 12300.018425	H70 12300.012725					
12.4	H70 12400.018425	H70 12400.012725					
12.5	H70 12500.018425	H70 12500.012725	4.87	0.007	BK8425 BK2725		
12.6	H70 12600.018425	H70 12600.012725					
12.7	H70 12700.018425	H70 12700.012725					
12.8	H70 12800.018425	H70 12800.012725					
12.9	H70 12900.018425	H70 12900.012725					

For other diameters, see following page.

Includes:
Replaceable head with mounting key. Please order base element and accessories separately.

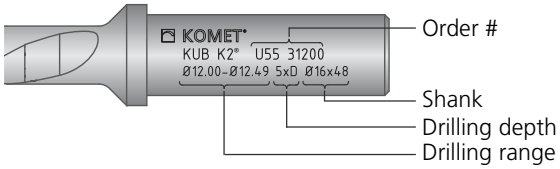
Replaceable head drill with straight shank similar to ISO 9766, right-hand

L / D	Through hole	Blind hole	Weld seam	Slanted surface	Curved surface	Cross hole	Center drilled hole	Interrupted cut	Stackplates	Rough boring	Adjustable diameter
3×D	●	●	○	○	✕	✕	●	✕	●	✕	✕
5×D	●	●	○	○	✕	✕	●	✕	●	✕	✕
7×D*	●	●	○	○	✕	✕	●	✕	●	✕	✕

● very good ◐ good ○ possible: see technical notes., page 27 ✕ not possible

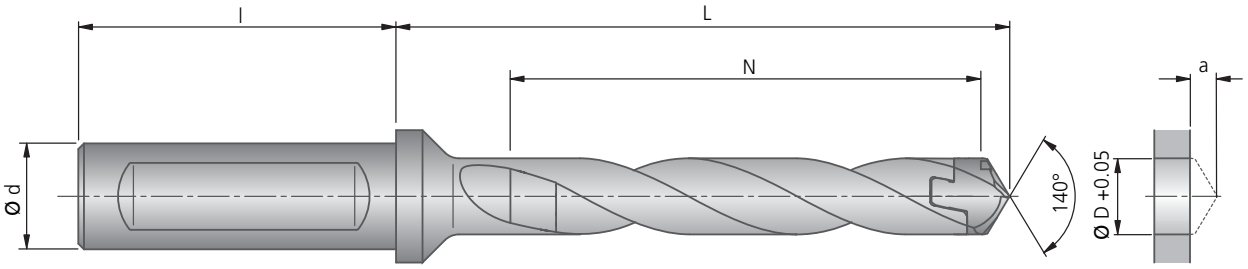
* Be sure to check the technical information on page 27, item 15.

	Base element												Accessories
		3×D				5×D				7×D				Multi-key
	Straight shank Ø d × l	Order #	L	N	kg	Order #	L	N	kg	Order #	L	N	kg	Order #
	12 × 45	U53 21000	56.6	33	0.05	U55 21000	78.6	55	0.055	U57 21000	100.6	77	0.06	L05 10010 Size 1
	12 × 45	U53 21050	56.6	33	0.05	U55 21050	78.6	55	0.057	U57 21050	100.6	77	0.065	
	12 × 45	U53 21100	60.7	36	0.054	U55 21100	84.7	60	0.062	U57 21100	108.7	84	0.07	
	12 × 45	U53 21150	60.7	36	0.055	U55 21150	84.7	60	0.064	U57 21150	108.7	84	0.075	
	16 × 48	U53 31200	66.7	39	0.09	U55 31200	92.7	65	0.10	U57 31200	118.7	91	0.111	L05 10020 Size 2
	16 × 48	U53 31250	66.7	39	0.09	U55 31250	92.7	65	0.10	U57 31250	118.7	91	0.115	



Recommended values for solid drilling: see page 26.

Replaceable head drill with straight shank similar to ISO 9766, right-hand



Replaceable head							
Ø D	BK8425 Order #	BK2725 Order #	a	kg	Coating	For workpiece material P M K N S H	
13.0	H70 13000.018425	H70 13000.012725	5.05	0.008	BK8425 BK2725		
13.1	H70 13100.018425	H70 13100.012725					
13.2	H70 13200.018425	H70 13200.012725					
13.3	H70 13300.018425	H70 13300.012725					
13.4	H70 13400.018425	H70 13400.012725					
13.5	H70 13500.018425	H70 13500.012725					
13.6	H70 13600.018425	H70 13600.012725					
13.7	H70 13700.018425	H70 13700.012725					
13.8	H70 13800.018425	H70 13800.012725					
13.9	H70 13900.018425	H70 13900.012725					
14.0	H70 14000.018425	H70 14000.012725	5.23	0.010	BK8425 BK2725		
14.1	H70 14100.018425	H70 14100.012725					
14.2	H70 14200.018425	H70 14200.012725					
14.3	H70 14300.018425	H70 14300.012725					
14.4	H70 14400.018425	H70 14400.012725					
14.5	H70 14500.018425	H70 14500.012725					
14.6	H70 14600.018425	H70 14600.012725					
14.7	H70 14700.018425	H70 14700.012725					
14.8	H70 14800.018425	H70 14800.012725					
14.9	H70 14900.018425	H70 14900.012725					
15.0	H70 15000.018425	H70 15000.012725	5.41	0.012	BK8425 BK2725		
15.1	H70 15100.018425	H70 15100.012725					
15.2	H70 15200.018425	H70 15200.012725					
15.3	H70 15300.018425	H70 15300.012725					
15.4	H70 15400.018425	H70 15400.012725					
15.5	H70 15500.018425	H70 15500.012725					
15.6	H70 15600.018425	H70 15600.012725					
15.7	H70 15700.018425	H70 15700.012725					
15.8	H70 15800.018425	H70 15800.012725					
15.9	H70 15900.018425	H70 15900.012725					
16.0	H70 16000.018425	H70 16000.012725	6.09	0.014	BK8425 BK2725		
16.1	H70 16100.018425	H70 16100.012725					
16.2	H70 16200.018425	H70 16200.012725					
16.3	H70 16300.018425	H70 16300.012725					
16.4	H70 16400.018425	H70 16400.012725					
16.5	H70 16500.018425	H70 16500.012725					
16.6	H70 16600.018425	H70 16600.012725					
16.7	H70 16700.018425	H70 16700.012725					
16.8	H70 16800.018425	H70 16800.012725					
16.9	H70 16900.018425	H70 16900.012725					

For other diameters see following page.

Patents pending (KUB K2)

Replaceable head drill with straight shank similar to ISO 9766, right-hand

L / D	Through hole	Blind hole	Weld seam	Slanted surface	Curved surface	Cross hole	Center drilled hole	Interrupted cut	Stackplates	Rough boring	Adjustable diameter
3×D	●	●	○	○	✕	✕	●	✕	●	✕	✕
5×D	●	●	○	○	✕	✕	●	✕	●	✕	✕
7×D*	●	●	○	○	✕	✕	●	✕	●	✕	✕

● very good ◐ good ○ possible: see technical notes, page 27 ✕ not possible

* Note: See technical notes page 27, item 15.

Includes: Replaceable head with mounting key. Please order base element and accessories separately.

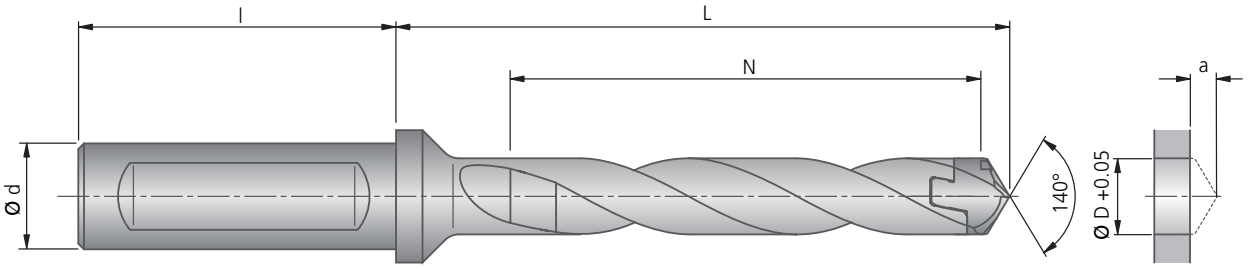
	Base element												Accessories
		3×D				5×D				7×D				Multi-key
	Straight shank Ø d × l	Order #	L	N	kg	Order #	L	N	kg	Order #	L	N	kg	Order #
	16 × 48	**U53 31300**	70.8	42	0.10	**U55 31300**	98.8	70	0.11	**U57 31300**	126.8	98	0.123	**L05 10020** Size 2
	16 × 48	**U53 31400**	74.9	45	0.10	**U55 31400**	104.9	75	0.12	**U57 31400**	134.8	105	0.137	
	16 × 48	**U53 31500**	78.9	48	0.11	**U55 31500**	110.9	80	0.13	**U57 31500**	142.9	112	0.154	
	20 × 50	**U53 41600**	85.5	51	0.17	**U55 41600**	119.5	85	0.19	–				

Recommended values for solid drilling: see page 26.

KOMET KUB K2 ®

Ø 17.0 – 20.5 mm

Replaceable head drill with straight shank similar to ISO 9766, right-hand



Replaceable head							
Ø D	BK8425 Order #	BK2725 Order #	a	kg	Coating	For workpiece material P M K N S H	
17.0	H70 17000.018425	H70 17000.012725	6.28	0.017	BK8425 BK2725		
17.1	H70 17100.018425	H70 17100.012725					
17.2	H70 17200.018425	H70 17200.012725					
17.3	H70 17300.018425	H70 17300.012725					
17.4	H70 17400.018425	H70 17400.012725					
17.5	H70 17500.018425	H70 17500.012725					
17.6	H70 17600.018425	H70 17600.012725					
17.7	H70 17700.018425	H70 17700.012725					
17.8	H70 17800.018425	H70 17800.012725					
17.9	H70 17900.018425	H70 17900.012725					
18.0	H70 18000.018425	H70 18000.012725	6.46	0.020	BK8425 BK2725		
18.1	H70 18100.018425	H70 18100.012725					
18.2	H70 18200.018425	H70 18200.012725					
18.3	H70 18300.018425	H70 18300.012725					
18.4	H70 18400.018425	H70 18400.012725					
18.5	H70 18500.018425	H70 18500.012725					
18.6	H70 18600.018425	H70 18600.012725					
18.7	H70 18700.018425	H70 18700.012725					
18.8	H70 18800.018425	H70 18800.012725					
18.9	H70 18900.018425	H70 18900.012725					
19.0	H70 19000.018425	H70 19000.012725	6.73	0.023	BK8425 BK2725		
19.1	H70 19100.018425	H70 19100.012725					
19.2	H70 19200.018425	H70 19200.012725					
19.3	H70 19300.018425	H70 19300.012725					
19.4	H70 19400.018425	H70 19400.012725					
19.5	H70 19500.018425	H70 19500.012725					
19.6	H70 19600.018425	H70 19600.012725					
19.7	H70 19700.018425	H70 19700.012725					
19.8	H70 19800.018425	H70 19800.012725					
19.9	H70 19900.018425	H70 19900.012725					
20.0	H70 20000.018425	H70 20000.012725					
20.1	H70 20100.018425	H70 20100.012725					
20.2	H70 20200.018425	H70 20200.012725					
20.3	H70 20300.018425	H70 20300.012725					
20.4	H70 20400.018425	H70 20400.012725					
20.5	H70 20500.018425	H70 20500.012725					

Includes: Replaceable head with mounting key. Please order base element and accessories separately.

Patents pending (KUB K2)

Replaceable head drill with straight shank similar to ISO 9766, right-hand

L / D	Through hole	Blind hole	Weld seam	Slanted surface	Curved surface	Cross hole	Center drilled hole	Interrupted cut	Stackplates	Rough boring	Adjustable diameter
3×D	●	●	○	○	✕	✕	●	✕	●	✕	✕
5×D	●	●	○	○	✕	✕	●	✕	●	✕	✕

● very good ◐ good ○ possible: see technical notes., page 27 ✕ not possible

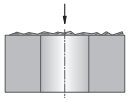
Base element									Accessories
	3×D				5×D				Multi-key
Straight shank Ø d × l	Order #	L	N	kg	Order #	L	N	kg	Order #
20 × 50	U53 41700	89.5	54	0.18	U55 41700	125.5	90	0.21	L05 10020 Size 2
20 × 50	U53 41800	93.7	57	0.19	U55 41800	131.7	95	0.23	
20 × 50	U53 41900	97.7	61.5	0.21	U55 41900	137.7	102.5	0.25	

Recommended values for solid drilling: see page 26.

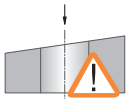
Cutting recommendations

Material group		Strength Rm (N/mm²)	Hardness HB	Material	Materials examples Material code/ ANSI/SAE	v_c (m/min) Cutting speed BK8425			v_c (m/min) Cutting speed BK2725			f (mm/U) Feed 3×D / 5×D Ø10–20.5			f (mm/U) Feed 7×D Ø10–159		
						min	opt.	max	min	opt.	max	min	opt.	max	min	opt.	max
P	1.0	≤500		Non-alloy steels: structural, case hardened, machining and cast steel	A570.36 1213 A573.81	100	**120**	140				0.15	**0.18**	0.22	0.16	**0.18**	0.20
P	2.0	500-900		Non-alloy/ low alloy steels: structural, case hardened, heat treated, tool and cast steel	5120 1055 5115	100	**120**	140	100	**120**	140	0.15	**0.20**	0.25	0.15	**0.18**	0.22
P	2.1	<500		Lead alloy machining steels	12L13	80	**100**	120	80	**100**	120	0.20	**0.25**	0.30	0.18	**0.22**	0.28
P	3.0	>900		Low alloy steels: heat resistant structural, heat treated, nitride and tool steel	4140 1064	70	**90**	110	70	**90**	110	0.20	**0.25**	0.30	0.18	**0.22**	0.28
P	4.0	>900		High alloy steel: tool steel	H13 H21	50	**70**	90	50	**70**	90	0.15	**0.20**	0.25	0.14	**0.18**	0.22
P	4.1			High speed steel (HSS)													
S	5.0		250	Special alloys: Inconel, Hastelloy, Nimonic, etc.	Inconel® 718 Nimonic® 80A												
S	5.1	400		Titanium, titanium alloys	AMS R54520												
M	6.0	≤600		Stainless steels	304L 316				40	**60**	80	0.15	**0.20**	0.25	0.12	**0.15**	0.18
M	6.1	<900		Stainless steels	630				30	**50**	70	0.18	**0.20**	0.22	0.12	**0.15**	0.18
M	7.0	>900		Stainless / heat proof steels	420 403				30	**50**	70	0.18	**0.18**	0.20	0.12	**0.14**	0.16
K	8.0		180	Gray cast iron	No 35 B No 50 B	70	**90**	110				0.20	**0.30**	0.40	0.20	**0.28**	0.38
K	8.1		250	Gray cast iron alloy	A436 Type 2	60	**80**	100				0.20	**0.30**	0.40	0.20	**0.28**	0.38
K	9.0	≤600	130	Spheroidal graphite cast iron, ferritic	60-40-18	60	**80**	100				0.25	**0.35**	0.45	0.20	**0.30**	0.40
K	9.1		230	Spheroidal graphite cast iron, ferritic / pearlitic	80-55-06	50	**70**	90				0.25	**0.35**	0.45	0.20	**0.30**	0.40
K	10.0	>600	250	Spheroidal graphite cast iron, pearliticductile iron	100-70-03 70003	50	**70**	90				0.25	**0.35**	0.45	0.20	**0.30**	0.40
K	10.1		200	Spheroidal cast iron alloy	A43D2	30	**50**	70				0.20	**0.25**	0.35	0.18	**0.22**	0.30
K	10.2		300	Vermicular cast iron		40	**60**	80				0.25	**0.35**	0.45	0.20	**0.30**	0.40
N	12.0		90	Copper alloy, brass, lead alloy bronze, lead bronze: good cuttability.	UNS C36000												
N	12.1		100	Copper alloy, brass, bronze: average cuttability													
N	13.0		60	Wrought aluminum alloy													
N	13.1		75	Cast aluminum alloy: Si content < 10% magnesium alloy	GD-AlSi12												
N	14.0		100	Cast aluminum alloy: Si content > 10%	A360.2												
H	15.0	1400		Hardened steels < 45 HRC													
H	16.0	1800		Hardened steels> 45 HRC													

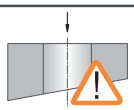
Cutting values shown on these pages relate to the basic recommendations indicated for cutting materials.

1. 

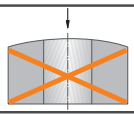
Starting on uneven surfaces (cast surfaces)
- depending on the quality of the surface or when spot drilling, reduce the feed

2. 

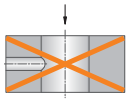
Starting on angled surfaces
- spot face surface before starting bore

3. 

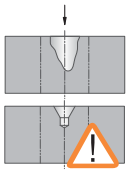
Angled hole exit
- reduce feed by 50 % in the exit area

4. 

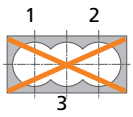
Starting on curved surfaces
- not possible

5. 

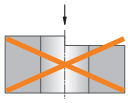
Drilling through a cross hole
- not possible

6. 

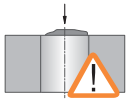
Starting on a groove or large centering hole
- end face the seam or center beforehand where applicable (diameter min. 0.1 mm greater than drill diameter)
- possible under certain conditions, reduce feed as needed.

7. 

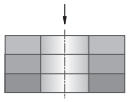
Drilling into an interrupted cut
- not possible

8. 

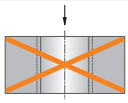
Starting on an edge
- not possible (start point must be flat)

9. 

Starting on a welded seam
- spot face the surface beforehand

10. 

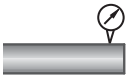
Drilling through stacked plates
- possible in principle
- good workpiece clamping required
- avoid large spaces between elements

11. 

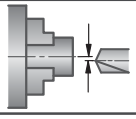
Rough boring
- not possible

12.

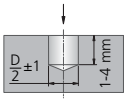
Coolant
- internal coolant supply, min. 5 bar

13. 

Rotating application
- max. concentricity in rotating application 0.05 mm

14. 

Stationary application
- max. offset in stationary application 0.025 mm

15. 

For base element > 5×D, a pilot hole with a depth of approx. 1×D is recommended

JEL® solid carbide milling cutters

The new solid carbide milling cutter range provides tools to meet all demands in the 3.0 - 25.0 mm diameter range.

For use in cast iron and steel materials; soft and hard machining (up to 65 HRC); and in mold and die making.

This product range encompasses tools for aluminum and non-ferrous materials.

Your PLUS:

- Comprehensive standard product range from stock
- Perfectly tuned grade profile and coating suited to all workpiece materials for high productivity
- Original regrinding service and recoating service by a comprehensive network of professional KOMET SERVICE® partners

Versions:

End milling cutter, roughing end mill, HPC milling cutter, spherical cutter, torus milling cutter, chamfer milling cutter, radius milling cutter

KOMET® JEL®

JEL® solid carbide milling cutters

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JEL® Solid carbide milling cutters

Overview

Material Group		Strength Rm (N/mm²)	Hardness HB	Type	End milling cutter UNI	End milling cutter UNI	End milling cutter HPC	End milling cutter XH	End milling cutter XH	Roughing end mill	Spherical cutter
				Diameter	Ø 3– 20 mm	Ø 6 – 20 mm	Ø 6 – 20 mm	Ø 3 – 20 mm	Ø 6 – 16 mm	Ø 6 – 20 mm	Ø 3 – 20 mm
				# of teeth	2 – 4	2 – 4	4	4 – 8	6 – 16	4	2 – 4
				Shank	DIN 6535 HB	DIN 6535 HB	DIN 6535 HB	DIN 6535 HA	DIN 6535 HA	DIN 6535 HB	DIN 6535 HB
				Coating	TiAlN	TiAlN	TiAlN	AlTiN	AlTiN	TiAlN	TiAlN
				Facet	0.05-0.35 mm	0.1-0.35 mm	0.2-0.5 mm	0.05-0.2 mm	–	0.5-1.0 mm	–
				Corner radius	–	–	–	–	–	–	1.5-10.0 mm
				Page	32	33	34	35	36	37	38
				Material							
P	1.1	≤400	≤120	Magnetic soft iron	●	●	●	◐	◐	●	●
P	1.2	≤700	≤200	Structural, case hardened steel	●	●	●	◐	◐	●	●
P	1.3	≤850	≤250	Carbon steel	●	●	●	◐	◐	●	●
P	1.4	≤850	≤250	Alloy steel	●	●	●	◐	◐	●	●
P	1.5	>850 ≤1200	>250 ≤350	Alloy/heat treated steel	●	●	●	◐	◐	●	●
P	1.6	>1200	>350	Alloy/heat treated steel	●	●	●	◐	◐	●	●
H	1.7	≤1400	≤400	Hardened steel to 56 HRC				●	●		
H	1.8	≤2200	≤600	Hardened steel to 65 HRC				◐	●		
M	2.1	≤850	≤250	Stainless steel, sulphuretted	◐	◐	◐			◐	◐
M	2.2	≤850	≤250	Austentic	◐	◐	◐			◐	◐
M	2.3	≤1000	≤300	Ferritic, ferritic & austentic, martensitic	◐	◐	◐			◐	◐
K	3.1	≤500	≤150	Grey cast iron	●	●	●			●	●
K	3.2	>500 ≤1000	>150 ≤300	Grey cast iron, heat treated	●	●	●			●	●
K	3.3	400-500	200-250	Vermicular cast iron	●	●	●			●	●
K	3.4	≤700	≤200	Spheroidal graphite cast iron	●	●	●			●	●
K	3.5	>700 ≤1000	>200 ≤300	Spheroidal graphite cast iron, heat treated	●	●	●			●	●
K	3.6	≤700	≤200	Malleable iron	●	●	●			●	●
K	3.7	>700 <1000	>200 ≤300	Malleable iron, heat treated	●	●	●			●	●
S	4.1	≤700	≤200	Pure titanium	◐	◐	◐			◐	◐
S	4.2	≤900	≤270	Titanium alloys	◐	◐	◐			◐	◐
S	4.3	>900 ≤1250	>270 ≤300	Titanium alloys	◐	◐	◐			◐	◐
S	5.1	≤500	≤150	Pure nickel	◐	◐	◐			◐	◐
S	5.2	≤900	<270	Nickel alloys, heat resistant	◐	◐	◐			◐	◐
S	5.3	>900 ≤1200	>270 ≤350	Nickel alloys, high heat resistant	◐	◐	◐			◐	◐
N	6.1	≤350	≤100	Non-alloy copper	◐	◐	◐			◐	◐
N	6.2	≤700	≤200	Short chip, brass, bronze, red brass	◐	◐	◐			◐	◐
N	6.3	≤700	≤200	Long chip brass	◐	◐	◐			◐	◐
N	6.4	≤500	≤470	Cu-Al-Fe alloy (Ampco)	◐	◐	◐			◐	◐
N	7.1	≤350	≤100	Al, Mg non-alloy	◐	◐	◐			◐	◐
N	7.2	≤600	≤180	Al wrought alloy, breaking strain (A5) <14 %	◐	◐	◐			◐	◐
N	7.3	≤600	≤180	Al wrought alloy, breaking strain (A5) ≥14 %	◐	◐	◐			◐	◐
N	7.4	≤600	≤180	Al cast alloy, Si <10 %	◐	◐	◐			◐	◐
N	7.5	≤600	≤180	Al cast alloy, Si ≥10 %	◐	◐	◐			◐	◐
N	8.1			Thermoplastics	◐	◐	◐			◐	◐
N	8.2			Thermosetting plastics	◐	◐	◐			◐	◐
N	8.3			Fiber reinforced plastics	◐	◐	◐			◐	◐

● very good ◐ good

Overview

Spherical cutter XH	Spherical cutter XH	End milling cutter	End milling cutter XH	End milling cutter XH	Torus milling cutter XH	Chamfer milling cutter	Radius milling cutter	End milling cutter AL	End milling cutter HF	End milling cutter AL
Ø 3 – 16 mm	Ø 6 – 16 mm	Ø 3 – 20 mm	Ø 4 – 10 mm	Ø 6 – 10 mm	Ø 6 – 12 mm	Ø 6 – 12 mm	Ø 6 – 8 mm	Ø 3 – 20 mm	Ø 6 – 25 mm	Ø 4 – 8 mm
2	2 – 4	2 – 4	2 – 4	6	2	3 – 4	4	2 – 3	2	1
DIN 6535 HA	DIN 6535 HA	DIN 6535 HA/HB	DIN 6535 HA	DIN 6535 HA	DIN 6535 HA	DIN 6535 HB	DIN 6535 HB	DIN 6535 HB	DIN 6535 HA	DIN 6535 HA
AlTiN	AlTiN	TiAlN	AlTiN	AlTiN	AlTiN	TiAlN	TiAlN	TiAlN	TiB2	TiAlN
–	–	–	–	–	–	–	–	–	–	–
1.5-8.0 mm	3.0-8.0 mm	0.5-2.0 mm	0.5-2.0 mm	0.3-1.0 mm	1.5-3.0 mm		0.5-6.0 mm	–	–	–
39	40	41	42	43	44	45	46	47	48	49
◐	◐	●	◐	◐	◐	●	●			
◐	◐	●	◐	◐	◐	●	●			
◐	◐	●	◐	◐	◐	●	●			
◐	◐	●	◐	◐	◐	●	●			
◐	◐	●	◐	◐	◐	●	●			
◐	◐	●	◐	◐	◐	●	●			
●	●		●	●	●					
●	●		◐	●	◐					
		◐				◐	◐			
		◐				◐	◐			
		◐				◐	◐			
		●				●	●			
		●				●	●			
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		●				●	●			
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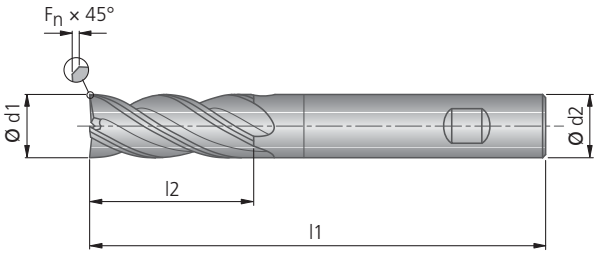
		◐				◐	◐			
		◐				◐	◐			
		◐				◐	◐			
		◐				●	●	●		●
		◐				●	●	●		●
		◐				●	●	●		●
		◐				●	●	●		●
		◐				●	●	●	●	●
		◐				●	●	●	●	●
		◐				●	●	●	●	●
		◐				●	●	●	●	●
		◐				●	●	●	●	●
		◐				●	●	●		●
		◐				●	●	●		●
		◐				●	●	●		●

JEL® UNI

Ø 3 – 20 mm

End milling cutter for universal use

Shank design	Helix angle	Milling direction	Material hardness	# of teeth Z	Coating
DIN 6535 HB Weldon	F_n 30°		< 48 HRC	2/3/4	TiAlN

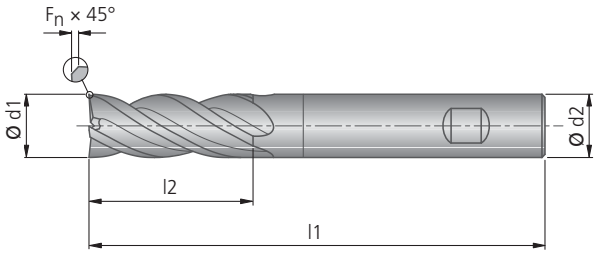


Ø d1 h10	Ø d2 h6	l1	l2	F_n	Description	Order #
Z = 2						
3	6	57	8	0.05	End milling cutter UNI 3.0 NZ2 30° short TiAlN	70900157020300
4	6	57	11	0.05	End milling cutter UNI 4.0 NZ2 30° short TiAlN	70900157020400
5	6	57	13	0.05	End milling cutter UNI 5.0 NZ2 30° short TiAlN	70900157020500
6	6	57	13	0.10	End milling cutter UNI 6.0 NZ2 30° short TiAlN	70900157020600
8	8	63	19	0.15	End milling cutter UNI 8.0 NZ2 30° short TiAlN	70900163020800
10	10	72	22	0.20	End milling cutter UNI 10.0 NZ2 30° short TiAlN	70900172021000
12	12	82	26	0.25	End milling cutter UNI 12.0 NZ2 30° short TiAlN	70900182021200
14	14	82	26	0.30	End milling cutter UNI 14.0 NZ2 30° short TiAlN	70900182021400
16	16	92	32	0.30	End milling cutter UNI 16.0 NZ2 30° short TiAlN	70900192021600
18	18	92	32	0.35	End milling cutter UNI 18.0 NZ2 30° short TiAlN	70900192021800
20	20	105	38	0.35	End milling cutter UNI 20.0 NZ2 30° short TiAlN	70900105022000
Z = 3						
3	6	57	8	0.05	End milling cutter UNI 3.0 NZ3 30° short TiAlN	70901157030300
4	6	57	11	0.05	End milling cutter UNI 4.0 NZ3 30° short TiAlN	70901157030400
5	6	57	13	0.05	End milling cutter UNI 5.0 NZ3 30° short TiAlN	70901157030500
6	6	57	13	0.10	End milling cutter UNI 6.0 NZ3 30° short TiAlN	70901157030600
8	8	63	19	0.15	End milling cutter UNI 8.0 NZ3 30° short TiAlN	70901163030800
10	10	72	22	0.20	End milling cutter UNI 10.0 NZ3 30° short TiAlN	70901172031000
12	12	82	26	0.25	End milling cutter UNI 12.0 NZ3 30° short TiAlN	70901182031200
14	14	82	26	0.30	End milling cutter UNI 14.0 NZ3 30° short TiAlN	70901182031400
16	16	92	32	0.30	End milling cutter UNI 16.0 NZ3 30° short TiAlN	70901192031600
18	18	92	32	0.35	End milling cutter UNI 18.0 NZ3 30° short TiAlN	70901192031800
20	20	105	38	0.35	End milling cutter UNI 20.0 NZ3 30° short TiAlN	70901105032000
Z = 4						
3	6	57	8	0.05	End milling cutter UNI 3.0 NZ4 30° short TiAlN	70902157040300
4	6	57	11	0.05	End milling cutter UNI 4.0 NZ4 30° short TiAlN	70902157040400
5	6	57	13	0.05	End milling cutter UNI 5.0 NZ4 30° short TiAlN	70902157040500
6	6	57	13	0.10	End milling cutter UNI 6.0 NZ4 30° short TiAlN	70902157040600
8	8	63	19	0.15	End milling cutter UNI 8.0 NZ4 30° short TiAlN	70902163040800
10	10	72	22	0.20	End milling cutter UNI 10.0 NZ4 30° short TiAlN	70902172041000
12	12	82	26	0.25	End milling cutter UNI 12.0 NZ4 30° short TiAlN	70902182041200
14	14	82	26	0.30	End milling cutter UNI 14.0 NZ4 30° short TiAlN	70902182041400
16	16	92	32	0.30	End milling cutter UNI 16.0 NZ4 30° short TiAlN	70902192041600
18	18	92	32	0.35	End milling cutter UNI 18.0 NZ4 30° short TiAlN	70902192041800
20	20	105	38	0.35	End milling cutter UNI 20.0 NZ4 30° short TiAlN	70902105042000

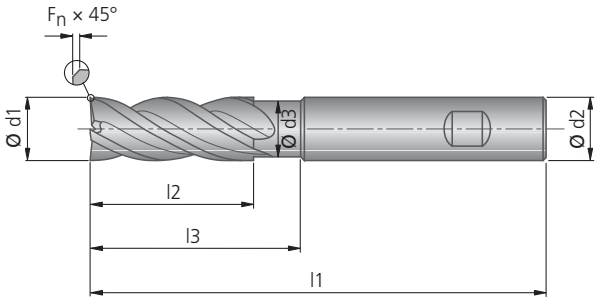
End milling cutter for universal use

Shank design	Helix angle	Milling direction	Material hardness	# of teeth Z	Coating
DIN 6535 HB Weldon	30° / 45°		< 48 HRC	2 / 4	TiAlN

Short version



Long version
with neck groove



Ø d1 h10	Ø d2 h6	Ø d3	l1	l2	l3	F_n	Description	Order #
Z = 2 35°								
6	6	–	50	15	–	0.10	End milling cutter UNI 6.0 NZ2 35° short TiAlN	70903150020600
6	6	5.8	75	24	39	0.10	End milling cutter UNI 6.0 NZ2 35° long TiAlN	70903175020600
8	8	–	60	20	–	0.15	End milling cutter UNI 8.0 NZ2 35° short TiAlN	70903160020800
8	8	7.7	75	32	39	0.15	End milling cutter UNI 8.0 NZ2 35° long TiAlN	70903175020800
10	10	–	75	25	–	0.20	End milling cutter UNI 10.0 NZ2 35° short TiAlN	70903175021000
10	10	9.6	100	40	60	0.20	End milling cutter UNI 10.0 NZ2 35° long TiAlN	70903100021000
Z = 4 45°								
6	6	–	50	15	–	0.10	End milling cutter UNI 6.0 NZ4 45° short TiAlN	70904150040600
6	6	5.8	75	24	39	0.10	End milling cutter UNI 6.0 NZ4 45° long TiAlN	70904175040600
8	8	–	60	20	–	0.15	End milling cutter UNI 8.0 NZ4 45° short TiAlN	70904160040800
8	8	7.7	75	32	39	0.15	End milling cutter UNI 8.0 NZ4 45° long TiAlN	70904175040800
10	10	–	75	25	–	0.20	End milling cutter UNI 10.0 NZ4 45° short TiAlN	70904175041000
10	10	9.6	100	40	60	0.20	End milling cutter UNI 10.0 NZ4 45° long TiAlN	70904100041000
12	12	–	82	26	–	0.25	End milling cutter UNI 12.0 NZ4 45° short TiAlN	70904182041200
12	12	11.6	105	48	60	0.25	End milling cutter UNI 12.0 NZ4 45° long TiAlN	70904105041200
14	14	–	82	26	–	0.30	End milling cutter UNI 14.0 NZ4 45° short TiAlN	70904182041400
16	16	–	92	32	–	0.30	End milling cutter UNI 16.0 NZ4 45° short TiAlN	70904192041600
18	18	–	92	32	–	0.35	End milling cutter UNI 18.0 NZ4 45° short TiAlN	70904192041800
20	20	–	105	38	–	0.35	End milling cutter UNI 20.0 NZ4 45° short TiAlN	70904105042000

For milling guideline values see pages 50 - 51

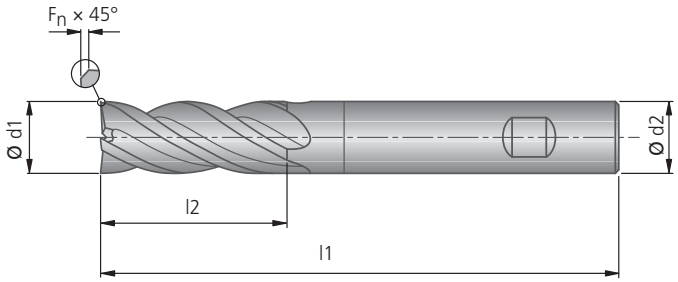
JEL® HPC

Ø 6 – 20 mm

End milling cutter for roughing and finishing

DIN 6535 HB Weldon	F_n 35°/38°		< 44 HRC	4	TiAlN

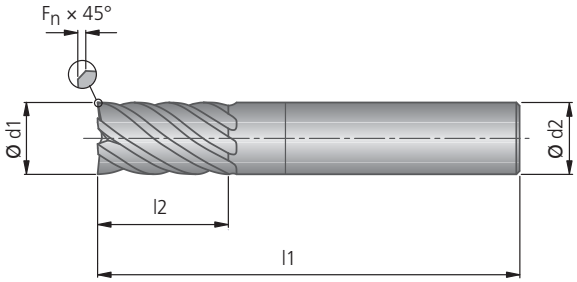
Low-vibration thanks to the uneven helix angle of 35°/38°
Two front cutting edges that cut as far as the center



Z = 4						
Ø d1 $_{h10}$	Ø d2 $_{h6}$	l1	l2	F_n	Description	Order #
6	6	57	13	0.2	End milling cutter HPC 6.0 NZ4 35-38° TiAlN	**70906157040600**
8	8	63	19	0.2	End milling cutter HPC 8.0 NZ4 35-38° TiAlN	**70906163040800**
10	10	72	22	0.3	End milling cutter HPC 10.0 NZ4 35-38° TiAlN	**70906172041000**
12	12	83	26	0.3	End milling cutter HPC 12.0 NZ4 35-38° TiAlN	**70906183041200**
14	14	83	26	0.3	End milling cutter HPC 14.0 NZ4 35-38° TiAlN	**70906183041400**
16	16	92	32	0.4	End milling cutter HPC 16.0 NZ4 35-38° TiAlN	**70906192041600**
20	20	104	38	0.5	End milling cutter HPC 20.0 NZ4 35-38° TiAlN	**70906104042000**

End milling cutter for finish machining on hardened steel

Shank design	Helix angle	Milling direction	Material hardness	# of teeth Z	Coating
DIN 6535 HA	50°		< 46-56 HRC	4/6/8	AlTiN



Ø d1 h10	Ø d2 h6	l1	l2	F_n	Description	Order #
Z = 4						
3	6	50	4	–	End milling cutter ØH 3.0 NZ4 50° short AlTiN	**78910250040300**
4	6	50	5	–	End milling cutter ØH 4.0 NZ4 50° short AlTiN	**78910250040400**
Z = 6						
6	6	57	13	–	End milling cutter ØH 6.0 NZ6 50° short AlTiN	**78910257060600**
8	8	63	19	–	End milling cutter ØH 8.0 NZ6 50° short AlTiN	**78910263060800**
10	10	72	22	0.1	End milling cutter ØH 10.0 NZ6 50° short AlTiN	**78910272061000**
12	12	82	26	0.1	End milling cutter ØH 12.0 NZ6 50° short AlTiN	**78910282061200**
Z = 8						
16	16	92	32	0.2	End milling cutter ØH 16.0 NZ8 50° short AlTiN	**78910292081600**
18	18	92	32	0.2	End milling cutter ØH 18.0 NZ8 50° short AlTiN	**78910292081800**
20	20	105	38	0.2	End milling cutter ØH 20.0 NZ8 50° short AlTiN	**78910205082000**

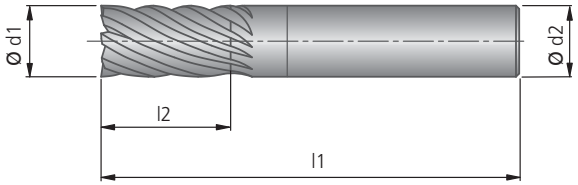
For milling guideline values see pages 50 - 51

JEL® XH

Ø 6 – 16 mm

End milling cutter for finish machining on hardened steel

Shank design	Helix angle	Milling direction	Material hardness	# of teeth Z	Coating
DIN 6535 HA	30°		< 50-65 HRC	6/8/10 12/16	AlTiN

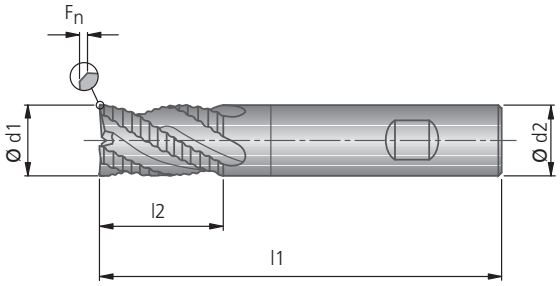


Z = 6 - 16						
Ø d1 h10	Ø d2 h6	l1	l2	Z	Description	Order #
6	6	57	13	6	End milling cutter ØH 6.0 NZ6 30° short AlTiN	**78911257060600**
8	8	63	19	8	End milling cutter ØH 8.0 NZ8 30° short AlTiN	**78911263080800**
10	10	72	22	10	End milling cutter ØH 10.0 NZ10 30° short AlTiN	**78911272101000**
12	12	82	26	12	End milling cutter ØH 12.0 NZ12 30° short AlTiN	**78911282121200**
16	16	92	32	16	End milling cutter ØH 16.0 NZ16 30° short AlTiN	**78911292161600**

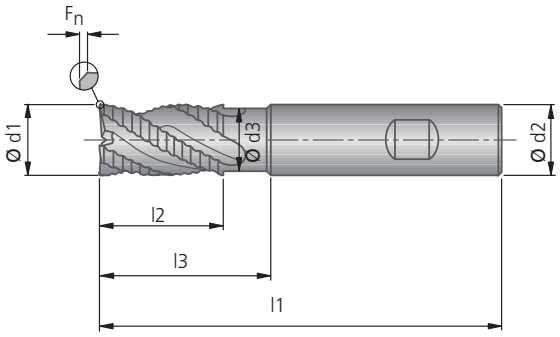
Roughing end mill with cord profile

Shank design	Helix angle	Milling direction	Material hardness	# of teeth Z	Coating
DIN 6535 HB Weldon	30°		< 48 HRC	4	TiAlN

Ø 6 - 8 mm
without neck groove



≥ Ø 10 mm
with neck groove



Z = 4								
Ø d1 $_{h10}$	Ø d2 $_{h6}$	Ø d3	l1	l2	l3	F_n	Description	Order #
6	6	–	57	13	–	0.5	Roughing end mill6.0 NZ4 30° short TiAlN	**70905157040600**
8	8	–	63	19	–	0.5	Roughing end mill8.0 NZ4 30° short TiAlN	**70905163040800**
10	10	9.6	72	22	32	0.5	Roughing end mill10.0 NZ4 30° short TiAlN	**70905172041000**
12	12	11.6	82	26	37	1	Roughing end mill12.0 NZ4 30° short TiAlN	**70905182041200**
14	14	13.6	82	26	37	1	Roughing end mill14.0 NZ4 30° short TiAlN	**70905182041400**
16	16	15.6	92	32	44	1	Roughing end mill16.0 NZ4 30° short TiAlN	**70905192041600**
18	18	17.4	92	32	44	1	Roughing end mill18.0 NZ4 30° short TiAlN	**70905192041800**
20	20	19.4	105	38	55	1	Roughing end mill20.0 NZ4 30° short TiAlN	**70905104042000**

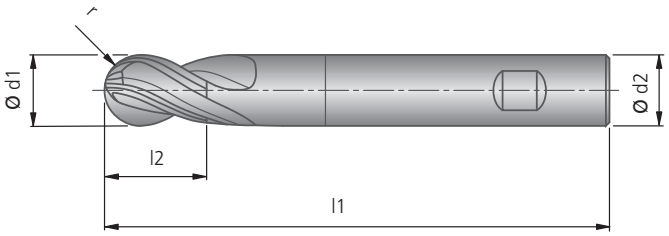
For milling guideline values see pages 50 - 51

JEL ®

Ø 3 – 20 mm

Spherical cutter for universal use

Shank design	Helix angle	Milling direction	Materials hardness	# of teeth Z	Coating
DIN 6535 HB Weldon	30°		< 48 HRC	2 / 4	TiAlN

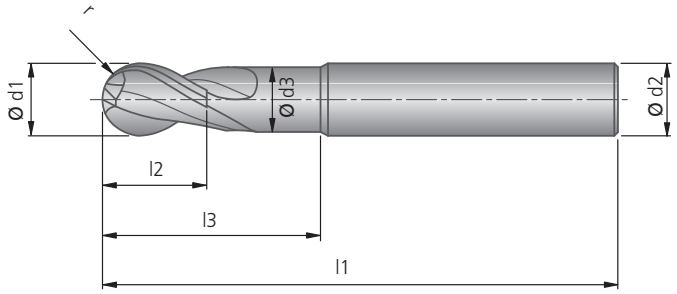


Z = 2						
Ø d1 h10	Ø d2 h6	l1	l2	r±0.02	Description	Order #
3	6	60	6	1.5	Spherical cutter3.0 R1.5 NZ2 30° short TiAlN	70950460020300
4	6	75	8	2.0	Spherical cutter4.0 R2.0 NZ2 30° long TiAlN	70950475020400
5	6	50	10	2.5	Spherical cutter5.0 R2.5 NZ2 30° short TiAlN	70950450020500
5	6	75	10	2.5	Spherical cutter5.0 R2.5 NZ2 30° long TiAlN	70950475020500
6	6	50	12	3.0	Spherical cutter6.0 R3.0 NZ2 30° short TiAlN	70950450020600
6	6	75	12	3.0	Spherical cutter6.0 R3.0 NZ2 30° long TiAlN	70950475020600
8	8	60	16	4.0	Spherical cutter8.0 R4.0 NZ2 30° short TiAlN	70950460020800
8	8	100	16	4.0	Spherical cutter8.0 R4.0 NZ2 30° long TiAlN	70950400020800
10	10	75	20	5.0	Spherical cutter10.0 R5.0 NZ2 30° short TiAlN	70950475021000
10	10	100	20	5.0	Spherical cutter10.0 R5.0 NZ2 30° long TiAlN	70950400021000
12	12	105	30	6.0	Spherical cutter12.0 R6.0 NZ2 30° short TiAlN	70950405021200
14	14	105	30	7.0	Spherical cutter14.0 R7.0 NZ2 30° short TiAlN	70950405021400
16	16	160	40	8.0	Spherical cutter16.0 R8.0 NZ2 30° long TiAlN	70950460021600
18	18	160	40	9.0	Spherical cutter18.0 R9.0 NZ2 30° long TiAlN	70950460021800
20	20	160	55	10.0	Spherical cutter20.0 R10.0 NZ2 30° long TiAlN	70950460022000
Z = 4						
5	6	50	10	2.5	Spherical cutter5.0 R2.5 NZ4 30° short TiAlN	70951450040500
6	6	50	12	3.0	Spherical cutter6.0 R3.0 NZ4 30° short TiAlN	70951450040600
8	8	60	16	4.0	Spherical cutter8.0 R4.0 NZ4 30° short TiAlN	70951460040800
10	10	75	20	5.0	Spherical cutter10.0 R5.0 NZ4 30° short TiAlN	70951475041000
12	12	105	30	6.0	Spherical cutter12.0 R6.0 NZ4 30° short TiAlN	70951405041200
14	14	105	30	7.0	Spherical cutter14.0 R7.0 NZ4 30° short TiAlN	70951405041400
16	16	160	40	8.0	Spherical cutter16.0 R8.0 NZ4 30° long TiAlN	70951460041600
18	18	160	40	9.0	Spherical cutter18.0 R9.0 NZ4 30° long TiAlN	70951460041800
20	20	160	55	10.0	Spherical cutter20.0 R10.0 NZ4 30° long TiAlN	70951460042000

Spherical cutter for use on hardened steel

Shank design	Helix angle	Milling direction	Material hardness	# of teeth Z	Coating
DIN 6535 HA	20°		< 50-65 HRC	2	

With neck groove
Front cutting technology for plunging



Z = 2								
Ø d1 h10	Ø d2 h6	Ø d3	l1	l2	l3	r±0.02	Description	Order #
3	6	–	50	4	10	1.5	Spherical cutter XH 3.0 R1.5 NZ2 20° AlTiN	**78952450020300**
4	6	–	50	5	16	2.0	Spherical cutter XH 4.0 R2.0 NZ2 20° AlTiN	**78952450020400**
6	6	5.6	80	6	20	3.0	Spherical cutter XH 6.0 R3.0 NZ2 20° AlTiN	**78952480020600**
8	8	7.6	80	8	25	4.0	Spherical cutter XH 8.0 R4.0 NZ2 20° AlTiN	**78952480020800**
10	10	9.6	105	10	30	5.0	Spherical cutter XH 10.0 R5.0 NZ2 20° AlTiN	**78952405021000**
12	12	11.6	105	12	32	6.0	Spherical cutter XH 12.0 R6.0 NZ2 20° AlTiN	**78952405021200**
16	16	15.6	105	16	36	8.0	Spherical cutter XH 16.0 R8.0 NZ2 20° AlTiN	**78952405021600**

For milling guideline values see pages 50 - 51

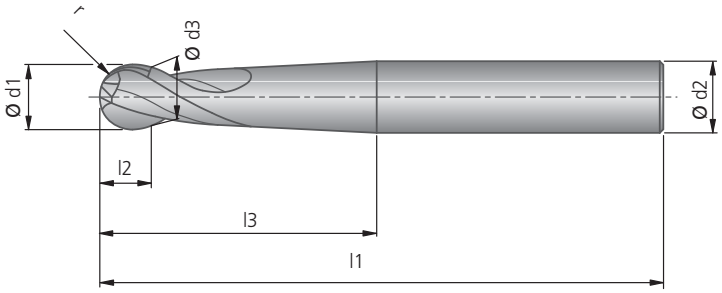
JEL® XH

Ø 6 – 16 mm

Spherical cutter for use on hardened steel

Shank design	Helix angle	Milling direction	Material hardness	# of teeth Z	Coating
DIN 6535 HA	30°		< 50-65 HRC	2 / 4	AlTiN

Spherical version



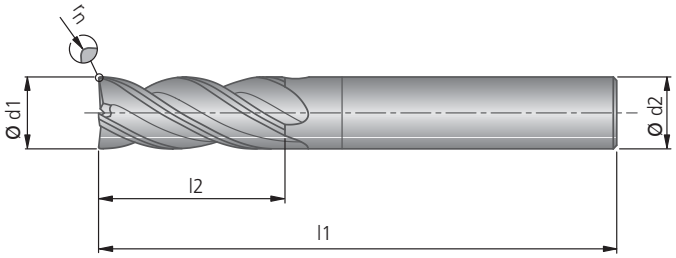
Ø d1 h10	Ø d2 h6	Ø d3	l1	l2	l3	r±0.02	Description	Order #
Z = 2								
6	6	4.7	100	4.9	30	3.0	Spherical cutter XH 6.0 R3.0 NZ2 30° AlTiN	**78953400020600**
8	8	6.5	100	6.3	36	4.0	Spherical cutter XH 8.0 R4.0 NZ2 30° AlTiN	**78953400020800**
10	10	8.2	100	7.9	43	5.0	Spherical cutter XH 10.0 R5.0 NZ2 30° AlTiN	**78953400021000**
12	12	9.8	100	9.5	52	6.0	Spherical cutter XH 12.0 R6.0 NZ2 30° AlTiN	**78953400021200**
16	16	13.4	160	12.4	61	8.0	Spherical cutter XH 16.0 R8.0 NZ2 30° AlTiN	**78953460021600**
Z = 4								
6	6	4.7	100	4.9	30	3.0	Spherical cutter XH 6.0 R3.0 NZ4 30° AlTiN	**78954400040600**
8	8	6.5	100	6.3	36	4.0	Spherical cutter XH 8.0 R4.0 NZ4 30° AlTiN	**78954400040800**
10	10	8.2	100	7.9	43	5.0	Spherical cutter XH 10.0 R5.0 NZ4 30° AlTiN	**78954400041000**
12	12	9.8	100	9.5	52	6.0	Spherical cutter XH 12.0 R6.0 NZ4 30° AlTiN	**78954400041200**
16	16	13.4	160	12.4	61	8.0	Spherical cutter XH 16.0 R8.0 NZ4 30° AlTiN	**78954460041600**

End milling cutter for universal use

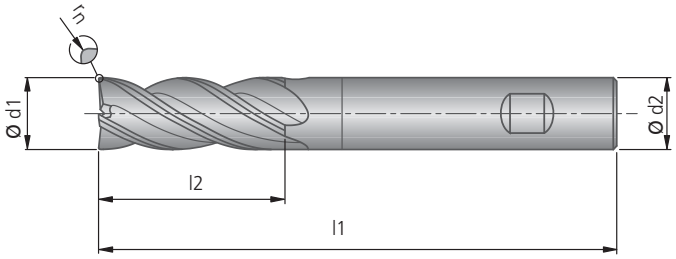
Shank design	Helix angle	Milling direction	Material hardness	# of teeth Z	Coating
DIN 6535 HA Ød2 <6mm / DIN 6535 HB Weldon	35° / 45°		< 48 HRC	2 / 4	TiAlN

With corner radius

Ø d1 < 6 mm



Ø d1 ≥ 6 mm



Ø d1 $_{h10}$	Ø d2 $_{h6}$	l1	l2	r_n ±0.02	Description	Order #
Z = 2 35°						
3	4	50	8	0.5	End milling cutter 3.0 R0.5 NZ2 35° TiAlN	**78955150020302**
4	4	50	10	0.5	End milling cutter 4.0 R0.5 NZ2 35° TiAlN	**78955150020402**
4	4	50	10	1.0	End milling cutter 4.0 R1.0 NZ2 35° TiAlN	**78955150020403**
6	6	50	15	0.5	End milling cutter 6.0 R0.5 NZ2 35° TiAlN	**70955150020602**
6	6	50	15	1.0	End milling cutter 6.0 R1.0 NZ2 35° TiAlN	**70955150020603**
8	8	60	20	0.5	End milling cutter 8.0 R0.5 NZ2 35° TiAlN	**70955160020802**
8	8	60	20	1.0	End milling cutter 8.0 R1.0 NZ2 35° TiAlN	**70955160020803**
10	10	75	25	0.5	End milling cutter 10.0 R0.5 NZ2 35° TiAlN	**70955175021002**
10	10	75	25	1.0	End milling cutter 10.0 R1.0 NZ2 35° TiAlN	**70955175021003**
10	10	75	25	2.0	End milling cutter 10.0 R2.0 NZ2 35° TiAlN	**70955175021005**
12	12	82	26	1.5	End milling cutter 12.0 R1.5 NZ2 35° TiAlN	**70955182021204**
12	12	82	26	2.0	End milling cutter 12.0 R2.0 NZ2 35° TiAlN	**70955182021205**
16	16	92	32	1.5	End milling cutter 16.0 R1.5 NZ2 35° TiAlN	**70955192021604**
16	16	92	32	2.0	End milling cutter 16.0 R2.0 NZ2 35° TiAlN	**70955192021605**
20	20	105	38	1.5	End milling cutter 20.0 R1.5 NZ2 35° TiAlN	**70955105022004**
20	20	105	38	2.0	End milling cutter 20.0 R2.0 NZ2 35° TiAlN	**70955105022005**
Z = 4 45°						
3	4	50	8	0.5	End milling cutter 3.0 R0.5 NZ4 45° TiAlN	**78956150040302**
4	4	50	10	0.5	End milling cutter 4.0 R0.5 NZ4 45° TiAlN	**78956150040402**
4	4	50	10	1.0	End milling cutter 4.0 R1.0 NZ4 45° TiAlN	**78956150040403**
6	6	50	15	0.5	End milling cutter 6.0 R0.5 NZ4 45° TiAlN	**70956150040602**
6	6	50	15	1.0	End milling cutter 6.0 R1.0 NZ4 45° TiAlN	**70956150040603**
8	8	60	20	0.5	End milling cutter 8.0 R0.5 NZ4 45° TiAlN	**70956160040802**
8	8	60	20	1.0	End milling cutter 8.0 R1.0 NZ4 45° TiAlN	**70956160040803**
10	10	75	25	0.5	End milling cutter 10.0 R0.5 NZ4 45° TiAlN	**70956175041002**
10	10	75	25	1.0	End milling cutter 10.0 R1.0 NZ4 45° TiAlN	**70956175041003**
10	10	75	25	2.0	End milling cutter 10.0 R2.0 NZ4 45° TiAlN	**70956175041005**
12	12	82	26	1.5	End milling cutter 12.0 R1.5 NZ4 45° TiAlN	**70956182041204**
12	12	82	26	2.0	End milling cutter 12.0 R2.0 NZ4 45° TiAlN	**70956182041205**
16	16	92	32	1.5	End milling cutter 16.0 R1.5 NZ4 45° TiAlN	**70956192041604**
16	16	92	32	2.0	End milling cutter 16.0 R2.0 NZ4 45° TiAlN	**70956192041605**
20	20	105	38	1.5	End milling cutter 20.0 R1.5 NZ4 45° TiAlN	**70956105042004**
20	20	105	38	2.0	End milling cutter 20.0 R2.0 NZ4 45° TiAlN	**70956105042005**

For milling guideline values see pages 50 - 51

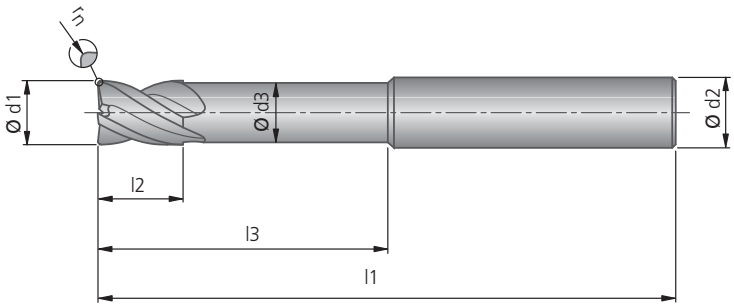
JEL® XH

Ø 4 – 10 mm

End milling cutter for use on hardened steel

Shank design	Helix angle	Machining direction	Material hardness	# of teeth Z	Coating
DIN 6535 HA	30°		< 46-56 HRC	2 / 4	AlTiN

With corner radius
With neck groove
Two front cutting edges to the center

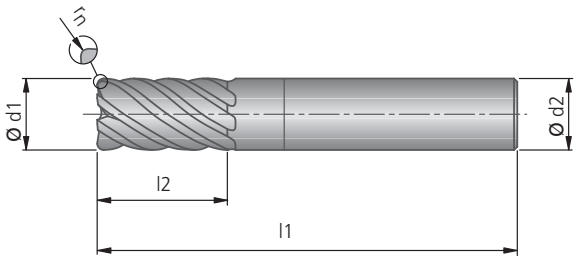


Ø d1 h10	Ø d2 h6	Ø d3	l1	l2	l3	r_n ±0.02	Description	Order #
Z = 2								
4	6	3.7	50	4	10	0.5	End milling cutter XH 4.0 R0.5 NZ2 30° AlTiN	78912250020402
6	6	5.6	50	6	15	0.5	End milling cutter XH 6.0 R0.5 NZ2 30° AlTiN	78912250020602
8	8	7.6	60	8	20	0.5	End milling cutter XH 8.0 R0.5 NZ2 30° AlTiN	78912260020802
8	8	7.6	60	8	20	1.0	End milling cutter XH 8.0 R1.0 NZ2 30° AlTiN	78912260020803
8	8	7.6	60	8	20	2.0	End milling cutter XH 8.0 R2.0 NZ2 30° AlTiN	78912260020805
10	10	9.6	75	10	25	0.5	End milling cutter XH 10.0 R0.5 NZ2 30° AlTiN	78912275021002
10	10	9.6	75	10	25	1.0	End milling cutter XH 10.0 R1.0 NZ2 30° AlTiN	78912275021003
10	10	9.6	75	10	25	2.0	End milling cutter XH 10.0 R2.0 NZ2 30° AlTiN	78912275021005
Z = 4								
4	6	3.7	75	4	10	0.5	End milling cutter XH 4.0 R0.5 NZ4 30° AlTiN	78913275040402
6	6	5.6	75	6	15	0.5	End milling cutter XH 6.0 R0.5 NZ4 30° AlTiN	78913275040602
6	6	5.6	75	6	15	1.0	End milling cutter XH 6.0 R1.0 NZ4 30° AlTiN	78913275040603
8	8	7.6	100	8	20	0.5	End milling cutter XH 8.0 R0.5 NZ4 30° AlTiN	78913200040802
8	8	7.6	100	8	20	1.0	End milling cutter XH 8.0 R1.0 NZ4 30° AlTiN	78913200040803
10	10	9.6	100	10	25	1.0	End milling cutter XH 10.0 R1.0 NZ4 30° AlTiN	78913200041003
10	10	9.6	100	10	25	2.0	End milling cutter XH 10.0 R2.0 NZ4 30° AlTiN	78913200041005

End milling cutter for finish machining on hardened steel

Shank design	Helix angle	Machining direction	Material hardness	# of teeth Z	Coating
DIN 6535 HA	50°		< 50-65 HRC	6	AlTiN

With corner radius



Z = 6						
Ø d1 $_{h10}$	Ø d2 $_{h6}$	l1	l2	r_n ±0.02	Description	Order #
6	6	50	15	0.3	End milling cutter XH 6.0 R0.3 NZ6 50° AlTiN	**78914250060601**
6	6	50	15	0.5	End milling cutter XH 6.0 R0.5 NZ6 50° AlTiN	**78914250060602**
8	8	60	20	0.3	End milling cutter XH 8.0 R0.3 NZ6 50° AlTiN	**78914260060801**
8	8	60	20	0.5	End milling cutter XH 8.0 R0.5 NZ6 50° AlTiN	**78914260060802**
10	10	75	25	0.5	End milling cutter XH 6.0 R0.3 NZ6 50° AlTiN	**78914275061002**
10	10	75	25	1	End milling cutter XH 6.0 R0.3 NZ6 50° AlTiN	**78914275061003**

For milling guideline values see pages 50 - 51

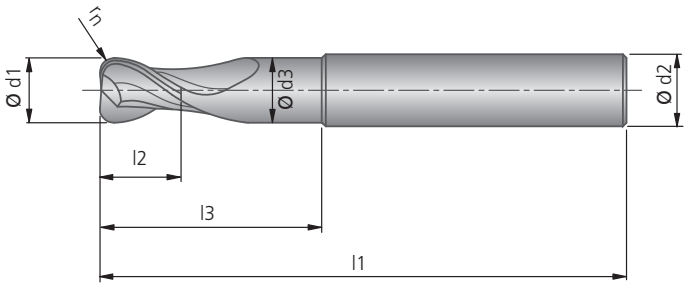
JEL® XH

Ø 6 – 12 mm

Torus milling cutter

Shank design	Helix angle	Milling direction	Material hardness	# of teeth Z	Coating
DIN 6535 HA	30°		< 46-56 HRC	2	AlTiN

With neck groove
Front cutting for plunging
Used especially in mold and die making for copy milling

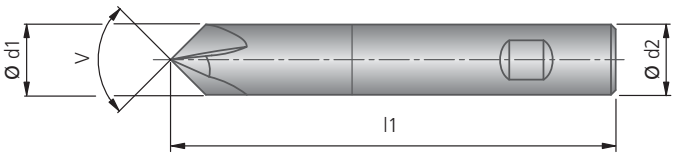


Z = 2								
Ø d1 h10	Ø d2 h6	Ø d3	l1	l2	l3	r_n ±0.02	Description	Order #
6	6	5.4	100	8	30	1.5	Torus milling cutter XH 6.0 R1.5 NZ2 30° AlTiN	**78915200020604**
8	8	7.2	100	10	30	2.0	Torus milling cutter XH 8.0 R2.0 NZ2 30° AlTiN	**78915200020805**
10	10	9	100	12	35	2.5	Torus milling cutter XH 10.0 R2.5 NZ2 30° AlTiN	**78915200021006**
12	12	11	105	14	40	3.0	Torus milling cutter XH 12.0 R3.0 NZ2 30° AlTiN	**78915205021207**

Chamfer milling cutter

Shank design	Helix angle	Milling direction	# of teeth Z	Coating
DIN 6535 HB Weldon		< 58 HRC	3 / 4	TiAlN

For chamfering and deburring of workpiece edges



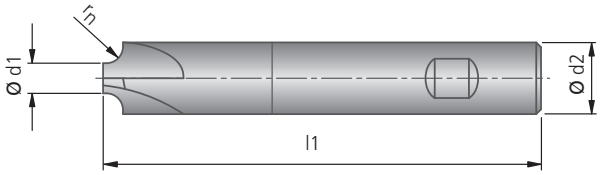
Z = 3					
Ø d1	Ø d2 $_{h6}$	l1	V	Description	Order #
6	6	57	60°	Chamfer milling cutter 6.0 60° NZ3 TiAlN	**70920557030600**
6	6	57	90°	Chamfer milling cutter 6.0 90° NZ3 TiAlN	**70921557030600**
8	8	63	60°	Chamfer milling cutter 8.0 60° NZ3 TiAlN	**70920563030800**
8	8	63	90°	Chamfer milling cutter 8.0 90° NZ3 TiAlN	**70921563030800**
Z = 4					
10	10	72	60°	Chamfer milling cutter 10.0 60° NZ4 TiAlN	**70920572041000**
10	10	72	90°	Chamfer milling cutter 10.0 90° NZ4 TiAlN	**70921572041000**
12	12	82	60°	Chamfer milling cutter 12.0 60° NZ4 TiAlN	**70920582041200**
12	12	82	90°	Chamfer milling cutter 12.0 90° NZ4 TiAlN	**70921582041200**

For milling guideline values see pages 50 - 51

Radius milling cutter

Shank design	Helix angle	Machining direction	# of teeth Z	Coating
DIN 6535 HB Weldon		< 58 HRC	4	TiAlN

For chamfering and deburring edges and contours



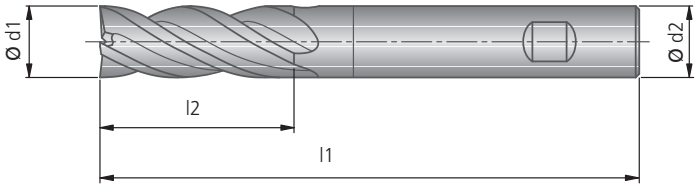
Z = 4					
Ø d1 h6	Ø d2 h6	l1	r_n±0.02	Description	Order #
7	8	70	0.5	Radius milling cutter 7.0 R0.5 NZ4 TiAlN	**70922570040702**
6	8	70	1.0	Radius milling cutter 6.0 R1.0 NZ4 TiAlN	**70922570040603**
6	10	75	2.0	Radius milling cutter 6.0 R2.0 NZ4 TiAlN	**70922575040605**
6	12	75	3.0	Radius milling cutter 6.0 R3.0 NZ4 TiAlN	**70922575040607**
8	16	75	4.0	Radius milling cutter 8.0 R4.0 NZ4 TiAlN	**70922575040808**
6	16	75	5.0	Radius milling cutter 6.0 R5.0 NZ4 TiAlN	**70922575040609**
8	20	80	6.0	Radius milling cutter 8.0 R6.0 NZ4 TiAlN	**70922580040809**

JEL® AL

End milling cutter

Shank design	Helix angle	Machining direction	# of teeth Z	Coating
DIN 6535 HB Weldon	45°		2 / 3	TiAlN

For machining aluminum and non-ferrous metals
Front-cutting
Short and long versions



Z = 2					
Ø d1 h6	Ø d2 h6	l1	l2	Description	Order #
3	6	57	9	End milling cutter AL 3.0 NZ2 45° short TiAlN	**70933057020300**
4	6	57	12	End milling cutter AL 4.0 NZ2 45° short TiAlN	**70933057020400**
5	6	57	15	End milling cutter AL 5.0 NZ2 45° short TiAlN	**70933057020500**
6	6	57	13	End milling cutter AL 6.0 NZ2 45° short TiAlN	**70933057020600**
6	6	75	24	End milling cutter AL 6.0 NZ2 45° long TiAlN	**70933075020600**
8	8	63	19	End milling cutter AL 8.0 NZ2 45° short TiAlN	**70933063020800**
8	8	75	32	End milling cutter AL 8.0 NZ2 45° long TiAlN	**70933075020800**
10	10	72	22	End milling cutter AL 10.0 NZ2 45° short TiAlN	**70933072021000**
10	10	100	40	End milling cutter AL 10.0 NZ2 45° long TiAlN	**70933000021000**
12	12	82	26	End milling cutter AL 12.0 NZ2 45° short TiAlN	**70933082021200**
16	16	92	32	End milling cutter AL 16.0 NZ2 45° short TiAlN	**70933092021600**
20	20	105	38	End milling cutter AL 20.0 NZ2 45° short TiAlN	**70933005022000**
Z = 4					
3	6	57	9	End milling cutter AL 3.0 NZ4 45° short TiAlN	**70934057030300**
4	6	57	12	End milling cutter AL 4.0 NZ4 45° short TiAlN	**70934057030400**
5	6	57	15	End milling cutter AL 5.0 NZ4 45° short TiAlN	**70934057030500**
6	6	57	13	End milling cutter AL 6.0 NZ4 45° short TiAlN	**70934057030600**
8	8	63	19	End milling cutter AL 8.0 NZ4 45° short TiAlN	**70934063030800**
10	10	72	22	End milling cutter AL 10.0 NZ4 45° short TiAlN	**70934072031000**
12	12	82	26	End milling cutter AL 12.0 NZ4 45° short TiAlN	**70934082031200**
16	16	92	32	End milling cutter AL 16.0 NZ4 45° short TiAlN	**70934092031600**
20	20	105	38	End milling cutter AL 20.0 NZ4 45° short TiAlN	**70934005032000**

For milling guideline values see pages 50 - 51

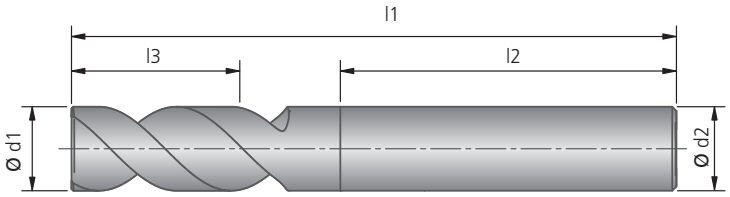
JEL® HF

Ø 6 – 25 mm

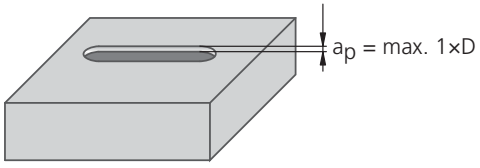
High-performance end milling cutter

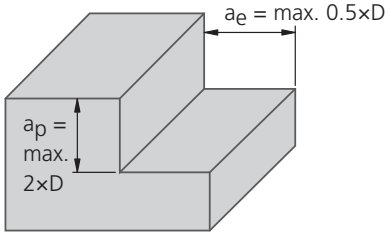
Shank design	Helix angle	Machining direction	# of teeth Z	Coating
DIN 6535 HA	25°		2	TiB_2

For aluminum machining
Front-cutting



Z = 2						
Ø d1	Ø d2	l1	l2	l3	Description	Order #
6	6	57	36	12	End milling cutter HF 6.0 NZ2 TiB_2	**78931057000600**
8	8	63	36	16	End milling cutter HF 8.0 NZ2 TiB_2	**78931063000800**
10	10	72	40	20	End milling cutter HF 10.0 NZ2 TiB_2	**78931072001000**
12	12	83	45	24	End milling cutter HF 12.0 NZ2 TiB_2	**78931083001200**
16	16	90	48	35	End milling cutter HF 16.0 NZ2 TiB_2	**78931090001600**
20	20	104	50	40	End milling cutter HF 20.0 NZ2 TiB_2	**78931004002000**
25	25	120	56	45	End milling cutter HF 25.0 NZ2 TiB_2	**78931020002500**

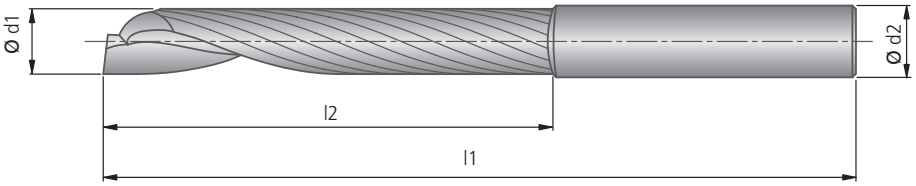




End milling cutter

Shank design	Helix angle	Machining direction	# of teeth Z	Coating
DIN 6535 HA	25°		1	TiAlN

Special geometry for aluminum and plastic machining
Contour milling
1 cutting edge



Z = 1					
Ø d1 h6	Ø d2 h6	l1	l2	Description	Order #
4	4	50	12	End milling cutter AL 4.0 NZ1 25° short TiAlN	**78935050010400**
4	4	75	20	End milling cutter AL 4.0 NZ1 25° long TiAlN	**78935075010400**
5	5	50	16	End milling cutter AL 5.0 NZ1 25° short TiAlN	**78935050010500**
5	5	75	28	End milling cutter AL 5.0 NZ1 25° long TiAlN	**78935075010500**
6	6	50	16	End milling cutter AL 6.0 NZ1 25° short TiAlN	**78935050010600**
6	6	75	35	End milling cutter AL 6.0 NZ1 25° long TiAlN	**78935075010600**
8	8	50	18	End milling cutter AL 8.0 NZ1 25° short TiAlN	**78935050010800**
8	8	100	40	End milling cutter AL 8.0 NZ1 25° long TiAlN	**78935000010800**

For milling guideline values see pages 50 - 51

JEL® Solid carbide milling cutters

Guideline values for milling

Material Group		Strength Rm (N/mm²)	Hardness HB	Type	End milling cutter UNI		End milling cutter UNI		End milling cutter HPC		End milling cutter XH		End milling cutter XH		Roughing end mill		Spherical cutter	
				Diameter	Ø 3 – 20 mm		Ø 6 – 20 mm		Ø 6 – 20 mm		Ø 3 – 20 mm		Ø 6 – 16 mm		Ø 6 – 20 mm		Ø 3 – 20 mm	
				# of teeth	2 – 4		2 – 4		4		4 – 8		6 – 16		4		2 – 4	
				Shank	DIN 6535 HB		DIN 6535 HB		DIN 6535 HB		DIN 6535 HA		DIN 6535 HA		DIN 6535 HB		DIN 6535 HB	
				Coating	TiAlN		TiAlN		TiAlN		AlTiN		AlTiN		TiAlN		TiAlN	
				Page	32		33		34		35		36		37		38	
				Material	v_C (m/min)	Kf	v_C (m/min)	Kf	v_C (m/min)	Kf	v_C (m/min)	Kf	v_C (m/min)	Kf	v_C (m/min)	Kf	v_C (m/min)	Kf
P	1.1	≤400	≤120	Magnetic soft iron	165	2	165	2	180	2					165	2	170	p4
P	1.2	≤700	≤200	Structural, case hardened steel	135	2	135	2	160	2					150	2	160	p4
P	1.3	≤850	≤250	Carbon steel	125	2	125	2	140	2					140	2	150	p4
P	1.4	≤850	≤250	Alloy steel	125	2	125	2	140	2					140	2	150	p4
P	1.5	>850 ≤1200	>250 ≤350	Alloy/heat treated steel	100	1	100	1	120	1					120	1	130	p4
P	1.6	>1200	>350	Alloy/heat treated steel	90	1	90	1	100	1					100	1	95	p3
H	1.7	≤1400	≤400	Hardened steel to 56 HRC							80	4	80	4				
H	1.8	≤2200	≤600	Hardened steel to 65 HRC							60	4	60	4				
M	2.1	≤850	≤250	Stainless steel, sulphuretted	75	1	75	1	110	1							95	p3
M	2.2	≤850	≤250	Austentic	65	1	65	1	110	1							85	p2
M	2.3	≤1000	≤300	Ferritic, ferritic & austentic, martensitic	70	1	70	1	110	1							75	p3
K	3.1	≤500	≤150	Grey cast iron	150	2	150	2	150	2					160	2	225	p4
K	3.2	>500 ≤1000	>150 ≤300	Grey cast iron, heat treated	130	2	130	2	130	2					140	2	210	p4
K	3.3	400-500	200-250	Vermicular cast iron	130	2	130	2	130	2					140	2	210	p4
K	3.4	≤700	≤200	spheroidal graphite cast iron	130	2	130	2	130	2					140	2	190	p4
K	3.5	>700 ≤1000	>200 ≤300	Spheroidal graphite cast iron, heat treated	110	2	110	2	110	2					120	2	160	p4
K	3.6	≤700	≤200	Malleable iron	110	2	110	2	110	2					120	2	145	p4
K	3.7	>700 <1000	>200 ≤300	Malleable iron, heat treated	110	2	110	2	110	2					120	2	145	p4
S	4.1	≤700	≤200	Pure titanium	60	1	60	1	60	1					65	1		
S	4.2	≤900	≤270	Titanium alloys	60	1	60	1	60	1					65	1		
S	4.3	>900 ≤1250	>270 ≤300	Titanium alloys	55	1	55	1	55	1					60	1		
S	5.1	≤500	≤150	Pure nickel	45	1	45	1	45	1							55	p2
S	5.2	≤900	<270	Nickel alloys, heat resistant	35	1	35	1	35	1							55	p2
S	5.3	>900 ≤1200	>270 ≤350	Nickel alloys, high heat resistant	30	1	30	1	30	1							45	p2
N	6.1	≤350	≤100	Non-alloy copper	175	3	175	3							190	3	145	p5
N	6.2	≤700	≤200	Short chip brass, bronze, red brass	160	3	160	3							180	3	140	p5
N	6.3	≤700	≤200	Long chip brass	175	3	175	3							190	3	145	p5
N	6.4	≤500	≤470	Cu-Al-Fe alloy (Ampco)	100	3	100	3							110	3	80	p5
N	7.1	≤350	≤100	Al, Mg non-alloy	280	3	280	3							310	3	520	p5
N	7.2	≤600	≤180	Al wrought alloy, breaking strain (A5) <14 %	260	3	260	3							285	3	460	p5
N	7.3	≤600	≤180	Al wrought alloy, breaking strain (A5) ≥14 %	260	3	260	3							285	3	460	p5
N	7.4	≤600	≤180	Al cast alloy, Si <10 %	240	3	240	3							270	3	270	p5
N	7.5	≤600	≤180	Al cast alloy, Si ≥10 %	200	3	200	3							220	3	220	p5
N	8.1			Thermoplastics	160	3	160	3							175	3	210	p5
N	8.2			Thermosetting plastics	175	3	175	3							190	3	225	p5
N	8.3			Fiber reinforced plastics	145	3	145	3							160	3	190	p5

v_C = Cutting speed; Kf = Correction factor for feed f_Z (page 53)

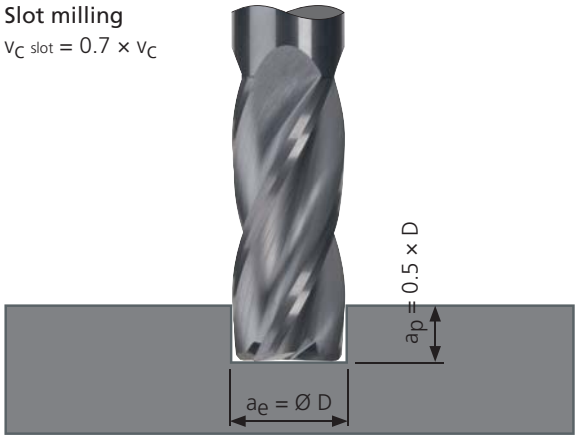
Guideline values for milling

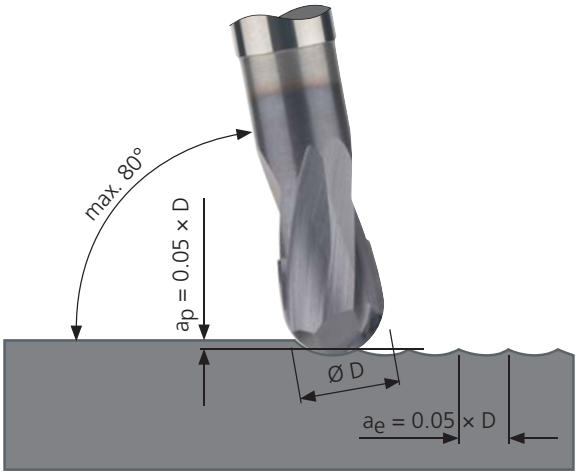
Spherical cutter XH Ø 3 – 16 mm 2 DIN 6535 HA AlTiN 39		Spherical cutter XH Ø 6 – 16 mm 2 – 4 DIN 6535 HA AlTiN 40		End milling cutter Ø 3 – 20 mm 2 – 4 DIN 6535 HA/HB TiAlN 41		End milling cutter XH Ø 4 – 10 mm 2 – 4 DIN 6535 HA AlTiN 42		End milling cutter XH Ø 6 – 10 mm 6 DIN 6535 HA AlTiN 43		Torus milling cutter XH Ø 6 – 12 mm 2 DIN 6535 HA AlTiN 44		Chamfer milling cutter Ø 6 – 12 mm 3 – 4 DIN 6535 HB TiAlN 45	Radius milling cutter Ø 6 – 8 mm 4 DIN 6535 HB TiAlN 46	End milling cutter AL Ø 3 – 20 mm 2 – 3 DIN 6535 HB TiAlN 47		End milling cutter HF Ø 6 – 25 mm 2 DIN 6535 HA TiB2 48		End milling cutter AL Ø 4 – 8 mm 1 DIN 6535 HA TiAlN 49	
v_c (m/min)	Kf	v_c (m/min)	Kf	v_c (m/min)	Kf	v_c (m/min)	Kf	v_c (m/min)	Kf	v_c (m/min)	Kf	v_c (m/min)	v_c (m/min)	v_c (m/min)	Kf	v_c (m/min)	Kf	v_c (m/min)	Kf
235	p4	225	p4	165	2					225	p4	165	165						
220	p4	210	p4	135	2					210	p4	135	135						
205	p4	200	p4	125	2					200	p4	125	125						
205	p4	200	p4	125	2					200	p4	125	125						
180	p4	175	p4	100	1					175	p4	100	100						
135	p3	125	p3	90	1					125	p3	90	90						
145	p1	140	p1			80	p4	80	4	140	p1								
125	p1	120	p1			60	p4	60	4	120	p1								
				75	1							75	75						
				65	1							65	65						
				70	1							70	70						
305	p4	300	p4	150	2					300	p4	150	150						
280	p4	275	p4	130	2					275	p4	130	130						
280	p4	275	p4	130	2					275	p4	130	130						
260	p4	250	p4	130	2					250	p4	130	130						
220	p4	210	p4	110	2					210	p4	110	110						
200	p4	190	p4	110	2					190	p4	110	110						
200	p4	190	p4	110	2					190	p4	110	110						
				60	1							60	60						
				60	1							60	60						
				55	1							55	55						
				45	1							45	45						
				35	1							35	35						
				30	1							30	30						
				175	3							175	175	150	3			150	3
				160	3							160	160	140	3			140	3
				175	3							175	175	150	3			150	3
				100	3							100	100	80	3			80	3
				280	3							280	280	500	3	300 - 600	3	500	3
				260	3							260	260	420	3	300 - 600	3	420	3
				260	3							260	260	420	3	300 - 600	3	420	3
				240	3							240	240	270	3	200 - 500	3	270	3
				200	3							200	200	220	3	100 - 300	3	220	3
				160	3							160	160	150	3			150	3
				175	3							175	175	160	3			160	3
				145	3							145	145	120	3			120	3

Technical notes

Slot milling

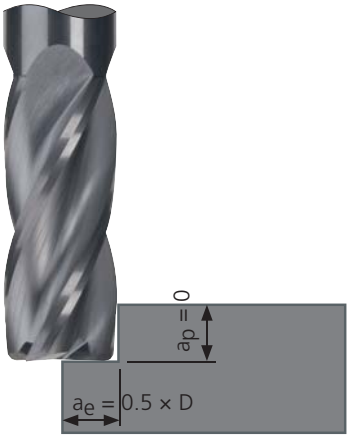
$v_{C\ slot} = 0.7 \times v_C$





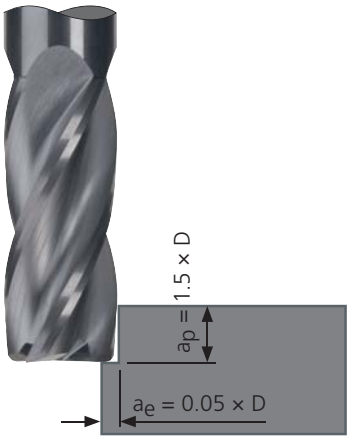
Rough milling

$v_{C\ rough} = v_C$



Finish milling

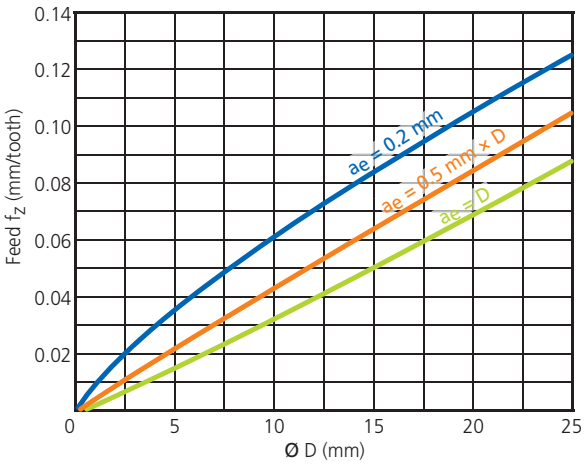
$v_{C\ finish} = 1.5 \times v_C$



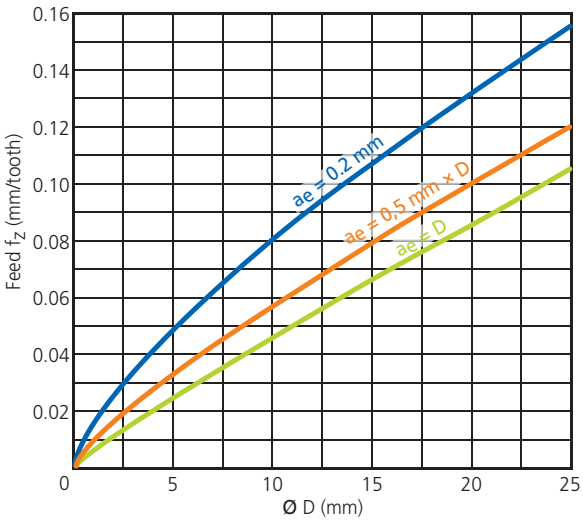
Correction factors Kf

for feed f_z

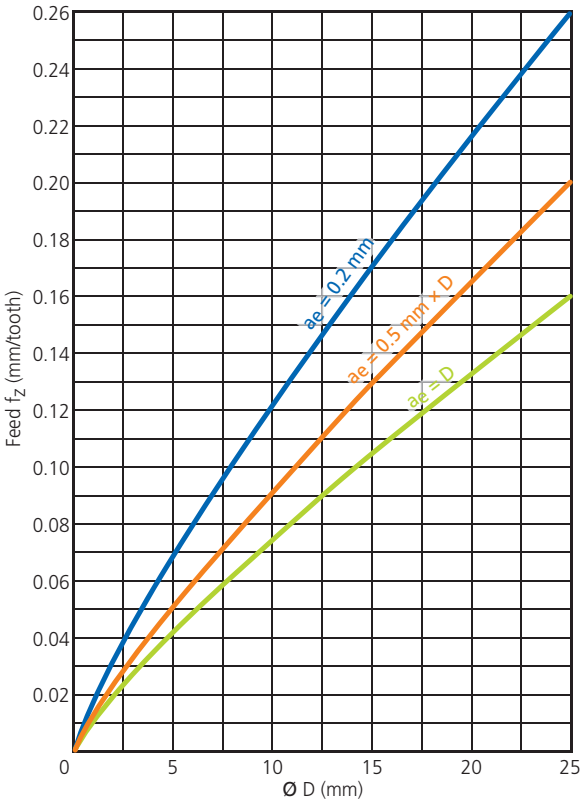
Kf 1



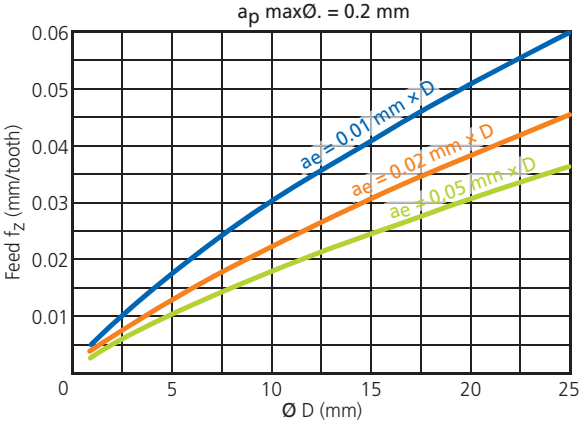
Kf 2



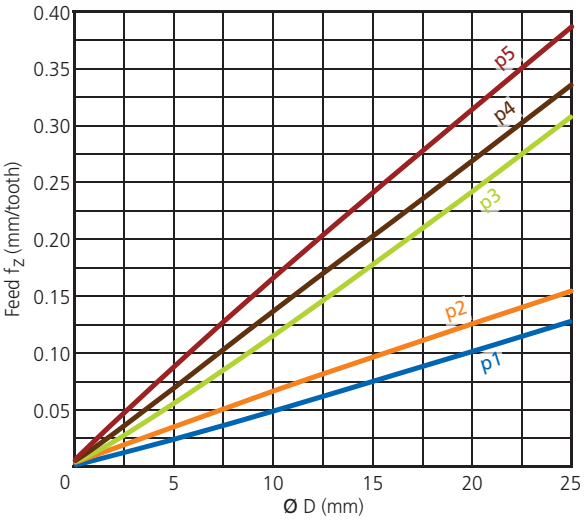
Kf 3



Kf 4 – hardened steel
a_p maxØ. = 0.2 mm



Kf p1-p5



JEL® – Innovative solutions for thread cutting

The KOMET GROUP is one of the world's leading providers of high-precision JEL® thread milling tools for efficient thread production. Our potential for providing innovative solutions, comprehensive service offerings and personal commitment form the basis for successful partnerships with our customers.

Thread milling

- Chip producing method
- Thread production by helical interpolation within the pitch
- Same tool usable for all threads with the same pitch from the nominal Ø
- Same tool usable for different materials up to 45 HRC
- Lower torque than with tapping and roll form tapping
- Drill depth = thread depth if tool is not used for chamfering
- Reversing the machining spindle is not required
- May be used for High Speed Cutting (HSC)

Drill thread milling

- Chip production method
- Production of a complete thread, with drilling, chamfering and thread milling in a single pass
- A single tool per dimension that can also be used with different materials. This requires a CNC machine or machining center with helical interpolation

Contents

	Page
General information	
Tool selection procedure	56
Producing internal threads	57
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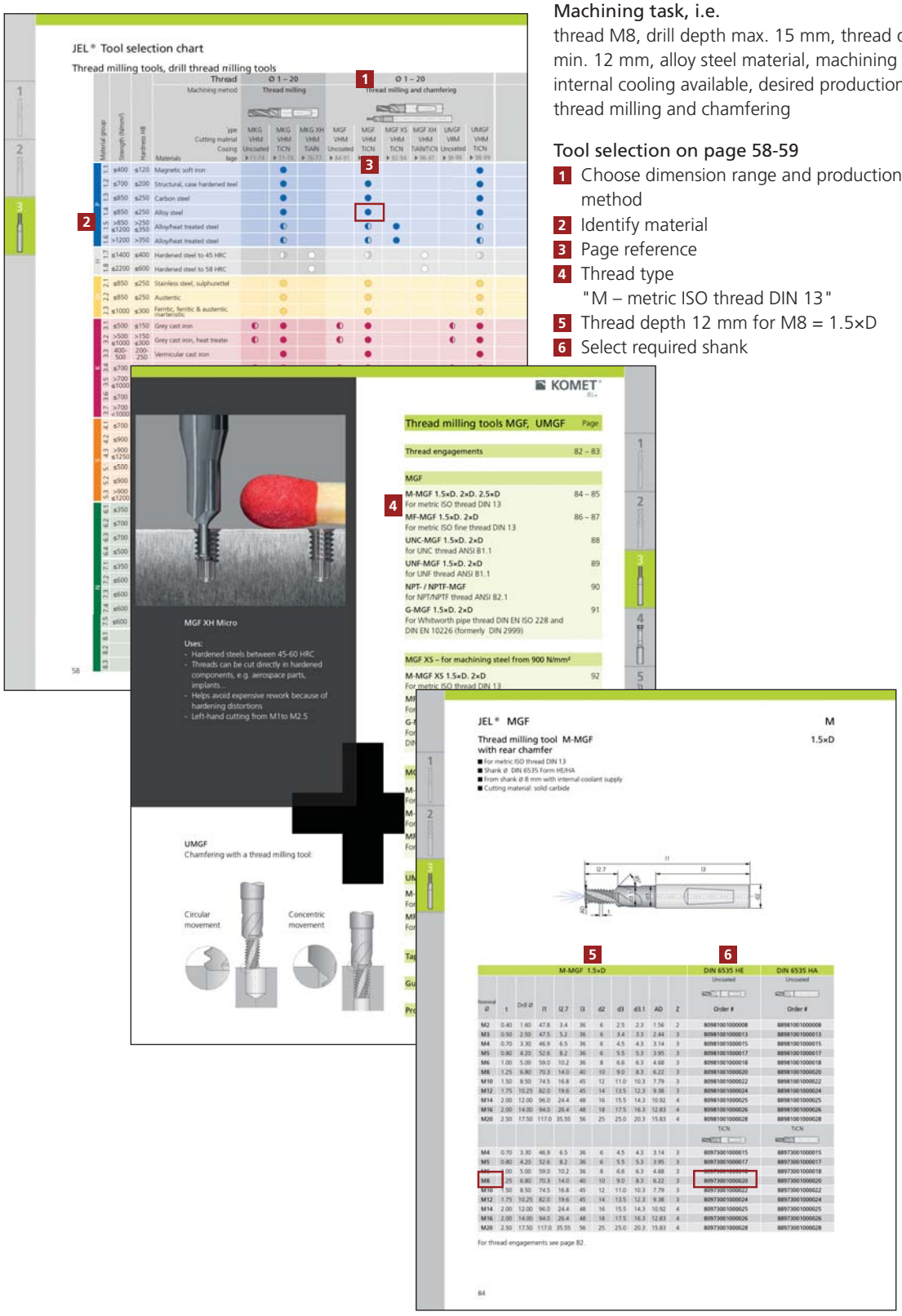
Achievable thread lengths	64
Formulas	64
CNC program description	65
Tool preparation	66
Milling procedures for different materials	67
Threading tools	
Thread milling	68 – 79
Thread milling and chamfering	80 – 101
Drilling, thread milling and chamfering	102 – 125
Thread milling > Ø 20 mm	126 – 141
Thread tapping	142 – 157

Tapping

- Chip producing method
- Thread production through rotation - pitch is on the tool
- May be used on nearly all machines
- Requires one tool per dimension

JEL® Tool selection procedure

Thread milling tools, drill thread milling tools



Machining task, i.e.
thread M8, drill depth max. 15 mm, thread depth min. 12 mm, alloy steel material, machining center, internal cooling available, desired production method: thread milling and chamfering

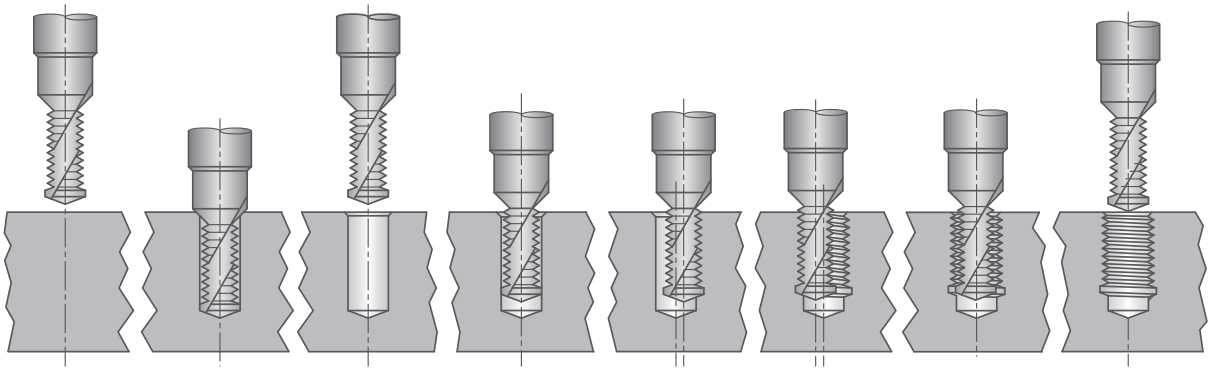
Tool selection on page 58-59

1. Choose dimension range and production method
2. Identify material
3. Page reference
4. Thread type
   "M – metric ISO thread DIN 13"
5. Thread depth 12 mm for M8 = 1.5×D
6. Select required shank

JEL® internal thread production

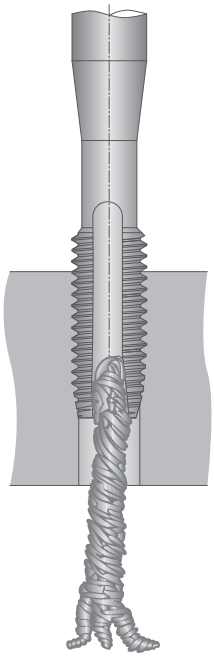
Process description

Drill thread milling

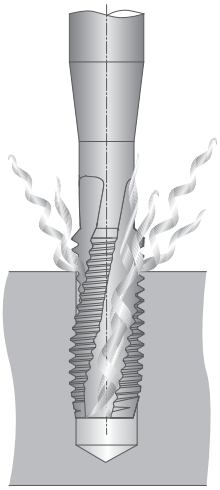


Tapping

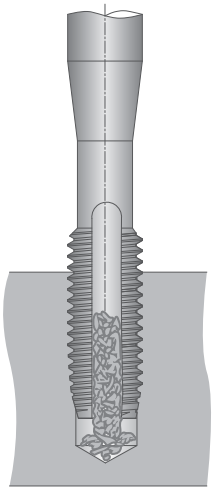
Through hole with
JEL® DOREX tap



Blind hole with
JEL® SIREX SR tap



Machining of short chipping materials for
through holes and blind holes with JEL® GG tap



JEL ® Tool selection chart

Thread milling tools, drill thread milling tools

Material group		Strength (N/mm²)	Hardness HB	Material	Thread milling Ø 1 – 20			Thread milling and chamfering Ø 1 – 20					
				Type	MKG	MKG	MKG XH	MGF	MGF	MGF XS	MGF XH	UMGF	UMGF
				Cutting material	VHM	VHM	VHM	VHM	VHM	VHM	VHM	VHM	VHM
				Coating	Uncoated	TiCN	TiAlN	Uncoated	TiCN	TiCN	TiAlN/TiCN	Uncoated	TiCN
				Page	▶ 71-74	▶ 71-74	▶ 76-77	▶ 84-91	▶ 84-91	▶ 92-94	▶ 96-97	▶ 98-99	▶ 98-99
P	1.1	≤400	≤120	Magnetic soft iron		●			●				●
P	1.2	≤700	≤200	Structural, case hardened steel		●			●				●
P	1.3	≤850	≤250	Carbon steel		●			●				●
P	1.4	≤850	≤250	Alloy steel		●			●				●
P	1.5	>850 ≤1200	>250 ≤350	Alloy/heat treated steel		◐			◐	●			◐
P	1.6	>1200	>350	Alloy/heat treated steel		◐			◐	●			◐
H	1.7	≤1400	≤400	Hardened steel to 45 HRC		◑	○		◑		○		◑
H	1.8	≤2200	≤600	Hardened steel to 58 HRC			○				○		
M	2.1	≤850	≤250	Stainless steel, sulphuretted		◐			◐				◐
M	2.2	≤850	≤250	Austentic		◐			◐				◐
M	2.3	≤1000	≤300	Ferritic, ferritic & austentic, martensitic		◐			◐				◐
K	3.1	≤500	≤150	Grey cast iron	◐	●		◐	●			◐	●
K	3.2	>500 ≤1000	>150 ≤300	Grey cast iron, heat treated	◐	●		◐	●			◐	●
K	3.3	400-500	200-250	Vermicular cast iron		●			●				●
K	3.4	≤700	≤200	Spheroidal graphite cast iron	◐	●		◐	●			◐	●
K	3.5	>700 ≤1000	>200 ≤300	Spheroidal graphite cast iron, heat treated		●			●				●
K	3.6	≤700	≤200	Malleable iron		●			●				●
K	3.7	>700 <1000	>200 ≤300	Malleable iron, heat treated		●			●				●
S	4.1	≤700	≤200	Pure titanium		●			●				●
S	4.2	≤900	≤270	Titanium alloys		●			●				●
S	4.3	>900 ≤1250	>270 ≤300	Titanium alloys		●			●	●			●
S	5.1	≤500	≤150	Pure nickel		●			●				●
S	5.2	≤900	<270	Nickel alloys, heat resistant		●			●				●
S	5.3	>900 ≤1200	>270 ≤350	Nickel alloys, high heat resistant		●			●	●			●
N	6.1	≤350	≤100	Non-alloy copper	●	◐		●	◐			●	◐
N	6.2	≤700	≤200	Short chip brass, bronze, red brass	●	◐		●	◐			●	◐
N	6.3	≤700	≤200	Long chip brass	●	◐		●	◐			●	◐
N	6.4	≤500	≤470	Cu-Al-Fe alloy (Ampco)	●	◐		●	◐			●	◐
N	7.1	≤350	≤100	Al, Mg non-alloy	●	◐		●	◐			●	◐
N	7.2	≤600	≤180	Al wrought alloy, breaking strain (A5) <14 %	●	◐		●	◐			●	◐
N	7.3	≤600	≤180	Al wrought alloy, breaking strain (A5) ≥14 %	●	◐		●	◐			●	◐
N	7.4	≤600	≤180	Al cast alloy, Si <10 %	●	◐		●	◐			●	◐
N	7.5	≤600	≤180	Al cast alloy, Si ≥10 %	◐	●		◐	●			◐	●
N	8.1			Thermoplastics	●	◐		●	◐			●	◐
N	8.2			Thermosetting plastics	●	◐		●	◐			●	◐
N	8.3			Fiber reinforced plastics	◐	●		◐	●			◐	●

● very good ◐ good

	Ø 3 – 20						> Ø 20			> Ø 20		> Ø 20
	Drilling, chamfering and thread milling						Thread milling			Circular spot facing, chamfering, thread milling		Thread milling TOMILL CUT
	BGF VHM Uncoated ▶ 106-116	BGF VHM TiAlN ▶ 106-116	BGF NZ4 VHM AlCrN ▶ 117	UBGF VHM Uncoated ▶ 118-122	UBGF VHM TiAlN ▶ 118-122	DBGF VHM TiAlN ▶ 123	GWF SR VHM Uncoated ▶ 131-136	GWF SR VHM TiCN ▶ 131-136	GWF XS VHM TiCN ▶ 137	GWF GP VHM Uncoated ▶ 138-139	GWF GP VHM TiCN ▶ 138-139	GWF CUT VHM-Head TiAlN ▶ 128-129
						●		●			●	●
						●		●			●	●
						●		●			●	●
						●		●			●	●
						●		●	●		●	●
						●		●	●		●	●
								◑	○		◑	◑
								●			●	●
								●			●	●
								●			●	●
	◐	◐	●	◐	◐	●	◐	●		◐	●	●
	◐	◐	●	◐	◐	●	◐	●		◐	●	●
						●		●			●	●
		●			●	●	◐	●		◐	●	●
						●		●			●	●
						●		●			●	●
						●		●			●	●
								●			●	●
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								●			●	●
							●	◐		●	◐	◐
	●			●		●	●	◐		●	◐	◐
						●	●	◐		●	◐	◐
							◐	●		◐	●	●
	●	◐		●	◐	●	●	◐		●	◐	◐
	●	◐		●	◐	●	●	◐		●	◐	●
	●	◐		●	◐	●	●	◐		●	◐	●
	●	●		●	◐	●	●	◐		●	◐	●
	◐	●		◐	●	●	◐	●		◐	●	◐
	●	◐		●	◐	●	●	◐		●	◐	●
	●	◐		●	◐	●	●	◐		●	◐	●
	◐	●		◐	●	●	◐	●		◐	●	●

JEL ® Tool selection chart

Taps

Material group		Strength (N/mm²)	Hardness HB	Material	Page	DOREX	DOREX VAV	DOREX TiN	TINIB	FEDUB	GG	GG TiN
				Cutting material		HSS-E	HSS-E	HSS-E	HSS-PM	HSS-PM	HSS-E	HSS-E
				Coating		Uncoated	Vaporized	TiN	Vaporized	Vaporized	Nitrided	TiN
				Blind hole							✓	✓
				Through hole		✓	✓	✓	✓	✓	✓	✓
P	1.1	≤400	≤120	Magnetic soft iron	▸ 144		●	●				
P	1.2	≤700	≤200	Structural, case hardened steel	▸ 144	◐	●	●				
P	1.3	≤850	≤250	Carbon steel	▸ 144	◐	●	●				
P	1.4	≤850	≤250	Alloy steel	▸ 144		●	●				
P	1.5	>850 ≤1200	>250 ≤350	Alloy/heat treated steel	▸ 144		◐	◐				
P	1.6	>1200	>350	Alloy/heat treated steel	▸ 144							
H	1.7	≤1400	≤400	Hardened steel to 45 HRC	▸ 144							
H	1.8	≤2200	≤600	Hardened steel to 58 HRC	▸ 144							
M	2.1	≤850	≤250	Stainless steel, sulphuretted	▸ 144		◐	◐				
M	2.2	≤850	≤250	Austentic	▸ 144		◐	◐				
M	2.3	≤1000	≤300	Ferritic, ferritic & austentic, martensitic	▸ 144					◐		
K	3.1	≤500	≤150	Grey cast iron	▸ 144						●	●
K	3.2	>500 ≤1000	>150 ≤300	Grey cast iron, heat treated	▸ 144						◐	●
K	3.3	400-500	200-250	Vermicular cast iron	▸ 144							
K	3.4	≤700	≤200	Spheroidal graphite cast iron	▸ 144	◐	●	●				
K	3.5	>700 ≤1000	>200 ≤300	Spheroidal graphite cast iron, heat treated	▸ 144		◐	◐				
K	3.6	≤700	≤200	Malleable iron	▸ 144	◐	●	●				
K	3.7	>700 <1000	>200 ≤300	Malleable iron, heat treated	▸ 144		◐	◐				
S	4.1	≤700	≤200	Pure titanium	▸ 144				●			
S	4.2	≤900	≤270	Titanium alloys	▸ 144				●			
S	4.3	>900 ≤1250	>270 ≤300	Titanium alloys	▸ 144				●			
S	5.1	≤500	≤150	Pure nickel	▸ 144		●	●				
S	5.2	≤900	<270	Nickel alloys, heat resistant	▸ 144					●		
S	5.3	>900 ≤1200	>270 ≤350	Nickel alloys, high heat resistant	▸ 144					●		
N	6.1	≤350	≤100	Non-alloy copper	▸ 144	◐		◐				
N	6.2	≤700	≤200	Short chip, brass, bronze, red brass	▸ 144						◐	●
N	6.3	≤700	≤200	Long chip brass	▸ 144	◐		●				
N	6.4	≤500	≤470	Cu-Al-Fe alloy (Ampco)	▸ 144							
N	7.1	≤350	≤100	Al, Mg non-alloy	▸ 144	◐		◐				
N	7.2	≤600	≤180	Al wrought alloy, breaking strain (A5) <14 %	▸ 144	●		●				
N	7.3	≤600	≤180	Al wrought alloy, breaking strain (A5) ≥14 %	▸ 144	◐		●				
N	7.4	≤600	≤180	Al cast alloy, Si <10 %	▸ 144	◐		●				
N	7.5	≤600	≤180	Al cast alloy, Si ≥10 %	▸ 144	◐		◐				
N	8.1			Thermoplastics	▸ 144	◐		●				
N	8.2			Thermosetting plastics	▸ 144						●	●
N	8.3			Fiber reinforced plastics	▸ 144						●	●

● very good ◐ good

Taps

FEDUC	TAREX	TAREX VAV	TAREX TiN	TAREX OT TiN	TAREX IK TIN	GG IK TiN	SIREX	SIREX SR	GG	DOREX	SIREX XH TiAlN
HSS-PM Vaporized	HSS-E Uncoated	HSS-E Vaporized	HSS-E TiN	HSS-PM TiN	HSS-E TiN	HSS-E TiN	VHM Uncoated	VHM Uncoated	VHM Uncoated	VHM Uncoated	VHM TiAlN
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓
						✓	✓		✓	✓	✓
▸ 146	▸ 147	▸ 147	▸ 147	▸ 147	▸ 148	▸ 149	▸ 150	▸ 154	▸ 150	▸ 152	▸ 153

JEL® Tap drill diameters for milled and cut threads

M Metric threads			
	Milled and cut threads		
Size	Nominal-Ø	Pitch	Tap drill Ø
M 1	1.0	0.25	0.75
M 1.1	1.1	0.25	0.85
M 1.2	1.2	0.25	0.95
M 1.4	1.4	0.30	1.10
M 1.6	1.6	0.35	1.25
M 1.8	1.8	0.35	1.45
M 2	2.0	0.40	1.60
M 2.2	2.2	0.45	1.75
M 2.5	2.5	0.45	2.05
M 3	3.0	0.50	2.50
M 3.5	3.5	0.60	2.90
M 4	4.0	0.70	3.30
M 4.5	4.5	0.75	3.70
M 5	5.0	0.80	4.20
M 6	6.0	1.00	5.00
M 7	7.0	1.00	6.00
M 8	8.0	1.25	6.80
M 9	9.0	1.25	7.80
M10	10.0	1.50	8.50
M11	11.0	1.50	9.50
M12	12.0	1.75	10.20
M14	14.0	2.00	12.00
M16	16.0	2.00	14.00
M18	18.0	2.50	15.50
M20	20.0	2.50	17.50
M22	22.0	2.50	19.50
M24	24.0	3.00	21.00
M27	27.0	3.00	24.00
M30	30.0	3.50	26.50
M33	33.0	3.50	29.50
M36	36.0	4.00	32.00
M39	39.0	4.00	35.00
M42	42.0	4.50	37.50
M45	45.0	4.50	40.50
M48	48.0	5.00	43.00
M52	52.0	5.00	47.00
M56	56.0	5.50	50.50
M60	60.0	5.50	54.50
M64	64.0	6.00	58.00

MF Metric Fine threads			
	Milled and cut threads		
Size	Nominal-Ø	Pitch	Tap drill Ø
M2.5×0.35	2.5	0.35	2.15
M3×0.35	3	0.35	2.65
M3.5×0.35	3.5	0.35	3.15
M4×0.5	4	0.50	3.50
M5×0.5	5	0.50	4.50
M6×0.5	6	0.50	5.50
M6×0.75	6	0.75	5.30
M8×0.5	8	0.50	7.50
M8×0.75	8	0.75	7.30
M8×1	8	1.00	7.00
M10×0.75	10	0.75	9.30
M10×1	10	1.00	9.00
M12×1	12	1.00	11.00
M12×1.5	12	1.50	10.50
M14×1	14	1.00	13.00
M14×1.5	14	1.50	12.50
M15×1.5	15	1.50	13.50
M16×1	16	1.00	15.00
M16×1.5	16	1.50	14.50
M17×1.5	17	1.50	15.50
M18×1	18	1.00	17.00
M18Ø1.5	18	1.50	16.50
M18×2	18	2.00	16.00
M20×1	20	1.00	19.00
M20×1.5	20	1.50	18.50
M20×2	20	2.00	18.00
M22×1	22	1.00	21.00
M22×1.5	22	1.50	20.50
M22×2	22	2.00	20.00
M24×1	24	1.00	23.00
M24×1.5	24	1.50	22.50
M24×2	24	2.00	22.00
M30×1.5	30	1.50	28.50
M30×2	30	2.00	28.00
M30×3	30	3.00	27.00
M33×1.5	33	1.50	31.50
M33×2	33	2.00	31.00
M33×3	33	3.00	30.00
M36×1.5	36	1.50	34.50
M36×2	36	2.00	34.00
M36×3	36	3.00	33.00
M40×1.5	40	1.50	38.50
M40×2	40	2.00	38.00
M40×3	40	3.00	37.00
M42×1.5	42	1.50	40.50
M42×2	42	2.00	40.00
M42×3	42	3.00	39.00
M48×1.5	48	1.50	46.50
M48×2	48	2.00	46.00
M48×3	48	3.00	45.00
M48×4	48	4.00	44.00

MF Metric Fine threads			
	Milled and cut threads		
Size	Nominal-Ø	Pitch	Tap drill Ø
M50×1.5	50	1.50	48.50
M50×2	50	2.00	48.00
M50×3	50	3.00	47.00
M56×2	56	2.00	54.00
M56×4	56	4.00	52.00
M60×1.5	60	1.50	58.50
M60×2	60	2.00	58.00
M60×3	60	3.00	57.00
M60×4	60	4.00	56.00
M64×1.5	64	1.50	62.50
M64×2	64	2.00	62.00
M64×3	64	3.00	61.00
M64×4	64	4.00	60.00
M72×2	72	2.00	70.00
M72×3	72	3.00	69.00
M72×4	72	4.00	68.00
M72×6	72	6.00	66.00
M80×2	80	2.00	78.00
M80×4	80	4.00	76.00
M80×6	80	6.00	74.00
M90×2	90	2.00	88.00
M90×4	90	4.00	86.00
M90×6	90	6.00	84.00
M95×2	95	2.00	93.00
M95×6	95	6.00	89.00
M100×6	100	6.00	94.00

JEL® Tap drill diameters for milled and cut threads

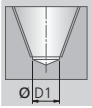
UNC – American Unified Coarse threads

Size	Milled and cut threads		
	Nominal- Ø	Pitch t.p.i.	Tap drill Ø
No. 4	2.845	40	2.35
No. 5	3.175	40	2.65
No. 6	3.505	32	2.85
No. 8	4.166	32	3.50
No. 10	4.820	24	3.90
No. 12	5.486	24	4.50
1/4"	6.350	20	5.10
5/16"	7.938	18	6.60
3/8"	9.525	16	8.00
7/16"	11.112	14	9.40
1/2"	12.700	13	10.80
9/16"	14.288	12	12.20
5/8"	15.875	11	13.50
3/4"	19.050	10	16.50
7/8"	22.225	9	19.50
1"	25.400	8	22.50
1 1/8"	28.575	7	25.00
1 1/4"	31.750	7	38.00
1 3/8"	34.925	6	30.75
1 1/2"	38.100	6	34.00
1 3/4"	44.450	5	39.50
2"	50.800	4 1/2	45.00

UNF – American Unified Fine threads

Size	Milled and cut threads		
	Nominal- Ø	Pitch t.p.i	Tap drill Ø
No. 4	2.845	48	2.30
No. 5	3.175	44	2.60
No. 6	3.505	40	2.85
No.8	4.166	36	3.45
No. 10	4.826	32	4.05
No. 12	5.486	28	4.60
1/4"	6.350	28	5.45
5/16"	7.938	24	6.90
3/8"	9.525	24	8.45
7/16"	11.112	20	9.85
1/2"	12.700	20	11.45
9/16"	14.288	18	12.90
5/8"	15.875	18	14.45
3/4"	19.050	16	17.45
7/8"	22.225	14	20.40
1"	25.400	12	23.30
1 1/8"	28.575	12	26.45
1 1/4"	31.750	12	29.65
1 3/8"	34.925	12	32.80
1 1/2"	38.100	12	36.00

NPT, NPTF – without using a reamer

Size 	Milled and cut threads		
	Pitch t.p.i	Tap drill Ø D1 NPT	Tap drill Ø D1 NPTF
1/16"	27	6,15	6,10
1/8"	27	8,50	8,45
1/4"	18	11,00	10,90
3/8"	18	14,50	14,30
1/2"	14	17,85	17,60
3/4"	14	23,20	23,00
1"	11 1/2	29,00	28,75
1 1/4"	11 1/2	37,80	37,50
1 1/2"	11 1/2	44,00	43,75
2"	11 1/2	56,00	55,75

G Pipe threads DIN EN ISO 228

Size	Milled and cut threads		
	Nominal Ø	Pitch t.p.i	Tap drill Ø
G 1/8"	9.728	28	8.90
G 1/4"	13.157	19	11.70
G 3/8"	16.662	19	15.40
G 1/2"	20.955	14	19.10
G 5/8"	22.911	14	21.10
G 3/4"	26.441	14	24.60
G 7/8"	30.201	14	28.40
G 1"	33.249	11	30.80
G 1 1/8"	37.897	11	35.50
G 1 1/4"	41.910	11	39.50
G 1 3/8"	44.323	11	41.90
G 1 1/2"	47.803	11	45.40
G 1 3/4"	53.746	11	51.40
G 2"	59.614	11	57.20
G 2 1/4"	65.710	11	63.20
G 2 1/2"	75.184	11	72.80
G 2 3/4"	81.834	11	79.10
G 3"	87.884	11	85.50

EG Helical wire insert thread

Size	Milled and cut threads		
	Nominal Ø	Pitch	Tap drill Ø
EG M3	3	0.50	3.15
EG M3.5	3.5	0.60	3.70
EG M4	4	0.70	4.20
EG M4.5	4.5	0.75	4.75
EG M5	5	0.80	5.25
EG M6	6	1.00	6.30
EG M7	7	1.00	7.30
EG M8	8	1.25	8.40
EG M10	10	1.50	10.50
EG M12	12	1.75	12.50
EG M14	14	2.00	14.50
EG M16	16	2.00	16.50
EG M18	18	2.50	18.75
EG M20	20	2.50	20.75
EG M22	22	2.50	22.75
EG M24	24	3.00	24.75
EG M27	27	3.00	27.75
EG M30	30	3.50	31.00

JEL® Thread milling, drill thread milling

Achievable thread lengths

Material	Drill thread milling	Thread milling	Thread milling
	BGF	MKG	MGF
Steel		2.0 × D	2.0 × D
Stainless steel		2.0 × D	2.0 × D
Grey cast iron	2.5 × D	2.0 × D	2.5 × D
Nodular grey cast iron	2.0 × D	2.0 × D	2.0 × D
Titanium alloys		1.5 × D	1.5 × D
Nickel alloys		1.5 × D	1.5 × D
Copper alloys	2.5 × D	2.0 × D	2.5 × D
Aluminum	2.5 × D	2.0 × D	2.5 × D
Plastics	2.5 × D	2.0 × D	2.5 × D

Formulas

Formula symbols and abbreviations		
n	r.p.m.	Spindle speed
z		No. of teeth
v_c	m/min	Cutting speed
f_z	mm/teeth	Milling feed
f	mm/rev	Boring feed
r_f	mm	Tool radius
e	mm	Eccentricity
g	mm	Amount of withdrawal for conventional milling
g	mm	Amount of withdrawal for climb milling
D	mm	Nominal thread diameter
R1	mm	Nominal thread radius
R2	mm	Radius entry loop, external path (J)
z	mm	z dimension entry and exit loop
R3	mm	Radius entry loop, center path (J)
R4	mm	Radius full circle, center path (=e)

Path feeds

Entry loop contour path

$$F_1 = n \times z \times f_z$$

Entry loop center point path

$$F_1 = n \times z \times f_z \times \frac{e}{r_f + R_1}$$

Full circle contour path

$$F_2 = n \times z \times f_z$$

Full circle center point path

$$F_2 = n \times z \times f_z \times \frac{2 \times e}{D}$$

Exit loop contour path

$$F_3 = n \times z \times f_z \times 2.5$$

Exit loop center point path

$$F_3 = F_2 \times 2.5$$

Formulas

$$v_c = \frac{D \times \pi \times n}{1000}$$ Cutting speed in m/min

$$n = \frac{v_c \times 1000}{D \times \pi}$$ Spindle speed in r.p.m.

$$r_f = R1 - e$$ Tool radius in mm

$$e = R1 - r_f$$ Eccentricity in mm

$$g = 1.3 \times \text{pitch} + \frac{e}{\tan(\frac{\alpha}{2})}$$ Amount of withdrawal for conventional milling in mm

$$g = \frac{e}{\tan(\frac{\alpha}{2})}$$[1] Amount of withdrawal for climb milling in mm

1 where α = 90° countersink angle = tan45° = 1 where countersink angle is 60° the amount of withdrawal is larger

$$R_1 = \frac{D}{2}$$ Nominal thread radius in mm

$$R_2 = \frac{r_f + R_1}{2}$$ Radius entry loop, external path (J) in mm

$$z = p \times 0.15$$ z dimension entry and exit loop in mm

$$R_3 = \frac{e}{2}$$ Radius entry loop, center path (J) in mm

$$R_4 = e$$ Radius full circle, center path (=e) in mm

CNC program – step-by-step explanation

Machining task:
Thread: M10, Depth=20.560 mm (EL)
Bore: Blind hole, D=8.500 mm,
Cyl. depth = 22.060 mm
Chamfer steps:
1) conical, D=10.300 mm, W=90.0°

Material:
7.2 Wrought aluminum alloy (A5 < 14%),
AlMn 1 Mg 0.5, 3.0525

Tool:
BGF-M10 2.0D, Uncoated
Tool radius = 3.980 mm
Eccentricity = 1.020 mm
Order No: 80.9410.01.000022
Drawing No: 80.9410.01.000022.01
Machining time: 4.0 sec

Cutting values (external path):

v_c	= 400 m/min	n	= 14,980 rev./min
f_s	= 0.300 mm/rev	F	= 4,494 mm/min (chamfering)
f_b	= 0.300 mm/rev	F	= 4,494 mm/min (drilling)
f_{z1}	= 0.100 mm/tooth	F1	= 2,996 mm/min (thread milling)

NC machine:
Drive: conventional NC machine
Max. RPM: 15,000 rev./min
Control system: Sinumerik
Reference: external path, incremental

NC Options:
Entry loop: 180°
Exit loop: 180°
Milling method: conventional
Chip removal: single degressive

Caution: deepest tool position = -23.370 mm
For control systems that relate the feed to the midpoint path, use the bracketed values!

`N5 G00 G53 G40 G60 G90 D0 Z+0.0000`	Initializing, absolute coordinates
`N10 G80`	Deselect any pending cycles
`N15 T1 M06`	Tool selection
`N20 G54 X+0.0000 Y+0.0000 M07`	Zero offset
`N25 Z+1.0000 D1 S14980 M03`	Set starting position 1 mm above workpiece
`N30 G01 Z-1.3000 F1498`	Drill with reduced boring feed
`N35 G01 Z-15.6580 F4494`	Drill to first drill depth
`N40 G00 Z+0.0000`	Clear chips
`N45 G00 Z-14.6580`	Set starting position for second drilling depth
`N50 G01 Z-23.3700`	Drill to final drilling depth
`N55 G00 Z+0.0000`	Clear chips
`;(CONVENTIONAL MILLING)`	
`N60 G00 Z-20.4000`	Set starting position for thread milling
`N65 G01 G91 G42 G64 X+0.0000 Y+3.9800 F2996 ;(F340)`	Incremental coordinates, select tool radius correction, no movement
`N70 G02 X+0.0000 Y-8.9800 I+0.0000 J-4.4900 Z-0.2250`	Entry loop with pitch adjustment (Z = 0.15×P)
`N75 G02 X+0.0000 Y+0.0000 I+0.0000 J+5.0000 Z-1.5000 ;(F611)`	Finish thread milling to nominal dimension (Z=P)
`N80 G02 X+0.0000 Y+8.9800 I+0.0000 J+4.4900 Z-0.2250 F7490 ;(F851)`	Exit loop with pitch adjustment (Z = 0.15×P)
`N85 G00 G40 G60 X+0.0000 Y-3.9800`	Deselect tool radius correction
`N90 G00 G53 G40 G90 D0 Z+0.0000 M95`	Exit state
`N95 M30`	Program end

The CNC program comes with the tool and is available for popular control systems such as SINUMERIK, FANUC, HEIDENHAIN and others.
Be sure to check the additional user and safety information in Chapter 10.

Set up

Preparing the tool

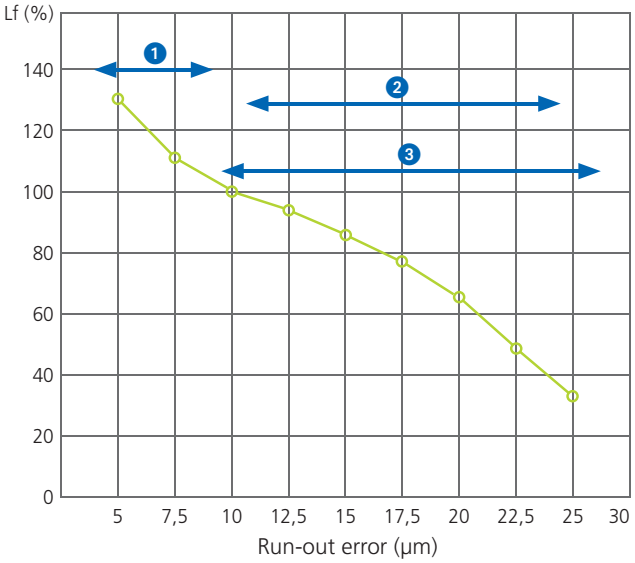
Tool clamping

- Correctly align clamping screw on clamping surface for whistle notch adapter
- Minimize overhang, but the tool's cutting sweep should be beyond the adapter

Effect of concentricity on tool life using a solid carbide thread milling tool as an example

Material: heat treated steel, Rm = 1,000 N/mm²
Size: M10
Cutting values: v_C = 100 m/min, f_Z = 0.06 mm/tooth

1. Thermal expansion or hydraulic expansion chuck
2. HE cylinder shank with side clamping screw
3. Collet



Tool measurement

- Only measure tool length on pre-setter
- Check concentricity at drill tip or thread milling section < 0.02 mm
- Use the tool radius from the CNC program

Preparing the machine

- Input the tool length and tool radius to the control system's offset register

Program test

- Do a test run over the workpiece (increase tool length in tool record).
- Check machining time. If the time recorded is clearly different from that given in the program, there is an error in the feed rate calculation (contour path/center point path).
- Optimize coolant supply. If flood coolant is used, it means directing coolant flow onto the milling section of the tool. For through holes, use flood coolant if there is no lateral flute coolant supply on the tool.

Milling method for different materials

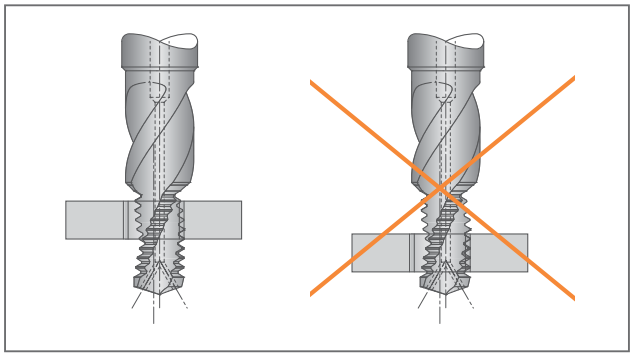
Cast aluminum
- Can be machined without peck cycle
- Tools with internal coolant supply do not require chip clearance after boring.

Long chipping aluminum
- At least once peck cycle
- Radial division of cut may be necessary if the objective is a thread with very low burring

Grey cast iron
- Pecking not required
- Normally, conventional thread milling in one pass. For tools longer than 2×D, a second pass may be required.

Special cases

Through hole
- For tool with internal coolant supply, switch to external coolant for milling
- To reduce side load, work with the milling section on the shank



Angled bore exit / cutting cross holes
- Reduce bore feed rate at bore exit by 60%

Cavities (inclusions) in cast materials
- Reduce bore feed rate by 40-60%

Be sure to check additional user and safety information in Chapter 10

Thread milling for small threads M4 and up
Spiral fluted tools of solid carbide with corrected profile for diameters ranging from 4 - 14 mm

Your PLUS:

- A single tool for different tolerances
- A single tool for different diameters > nominal Ø with the same pitch
- A single tool for blind holes and through holes
- A single tool for different materials
- Exact, repeatable thread depths
- No chip roots remain in threads
- High Speed Cutting (HSC) possible

■ Factory regrinding and recoating service is assured by our network of professional KOMET SERVICE® Partners

Thread milling tool MKG

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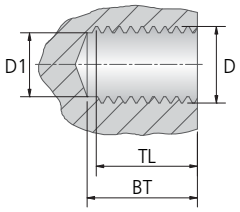
JEL® MKG

Thread engagements



TL = full thread length
BT = drilling depth (as a safety precaution, 0.2 deeper than TL)

M					
Nominal Ø		1.5×D		2×D	
D	D1	BT	TL	BT	TL
M4	3.30	6.70	6.50	8.10	7.90
M5	4.20	7.70	7.50	10.10	9.90
M6	5.00	9.50	9.30	12.50	12.30
M8	6.80	13.10	12.90	16.80	16.60
M10	8.50	15.70	15.50	20.20	20.00
M12	10.30	18.20	18.00	25.30	25.10
M14	12.00	–	–	28.80	28.60

M – Metric ISO thread DIN 13

MF					
Nominal Ø		1.5×D		2×D	
D	D1	BT	TL	BT	TL
M10×1	9.00	–	–	20.50	20.30
M12×1.5	10.50	18.67	18.47	24.70	24.50
M14×1.5	12.50	21.67	21.47	–	–
M16×1.5	14.50	24.66	24.46	–	–

MF – Metric ISO Fine thread DIN 13

UNC			
Nominal Ø	2×D		
D	D1	BT	TL
Nr.10-24 UNC	3.77	10.10	9.90
Nr.12-24 UNC	4.43	11.13	10.93
1/4-20 UNC	5.08	14.60	14.40
5/16-18 UNC	6.53	16.20	16.00
3/8-16 UNC	7.94	19.80	19.60
7/16-14 UNC	9.30	22.60	22.40
1/2-13 UNC	10.75	26.20	26.00
9/16-12 UNC	12.17	30.50	30.30
5/8-11 UNC	13.57	33.27	33.07

UNC – American Unified Coarse thread ANSI B1.1

UNF			
Nominal Ø	2×D		
D	D1	BT	TL
Nr.10-32 UNF	4.03	10.00	9.80
Nr.12-28 UNF	4.58	12.30	12.10
1/4-28 UNF	5.44	14.10	13.90
5/16-24 UNF	6.88	16.40	16.20
3/8-24 UNF	8.47	19.60	19.40
7/16-20 UNF	9.84	22.20	22.00
1/2-20 UNF	11.43	26.00	25.80
9/16-18 UNF	12.88	28.90	28.70
5/8-18 UNF	14.46	33.10	32.90

UNF – American Unified Fine thread ANSI B1.1

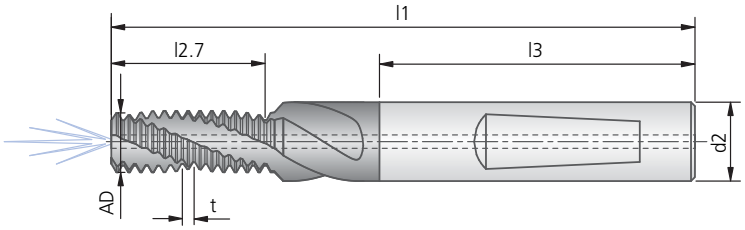
G			
Nominal Ø	2×D		
D	D1	BT	TL
G1/8-28	8.82	20.40	20.20
G1/4-19	11.82	27.30	27.10
G3/8-19	15.32	35.40	35.20

G – Whitworth pipe thread DIN EN ISO 228 and DIN EN 10226 (formerly DIN 2999)

2.0×D

Thread milling tool M-MKG

For metric ISO thread DIN 13 ■
Shank Ø DIN 6535 Form HE/HA ■
From shank Ø 8 mm with internal coolant supply ■
Cutting material: solid carbide ■



Use for	
Thread	Thread milling tool
M16	MKG M14

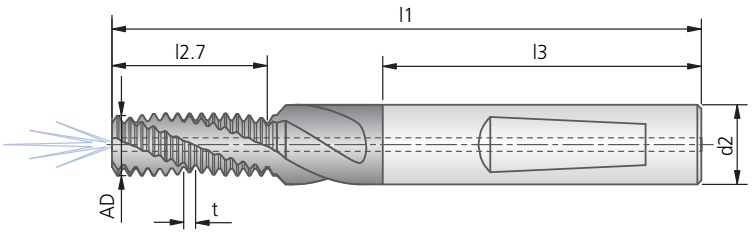
M-MKG 2.0×D									DIN 6535 HE	DIN 6535 HA
Nominal Ø	t	Drill Ø	l1	l2.7	l3	d2	AD	Z	Uncoated Order #	Uncoated Order #
M4	0.70	3.30	49	8.00	36	6	3.14	3	80980001000015	88980001000015
M5	0.80	4.20	49	10.00	36	6	3.95	3	80980001000017	88980001000017
M6	1.00	5.00	55	12.00	36	6	4.68	3	80980001000018	88980001000018
M8	1.25	6.80	62	16.25	36	8	6.22	3	80980001000020	88980001000020
M10	1.50	8.50	74	19.50	40	10	7.79	3	80980001000022	88980001000022
M12	1.75	10.25	79	24.50	45	12	9.38	3	80980001000024	88980001000024
M14	2.00	12.00	89	28.00	45	14	10.92	4	80980001000025	88980001000025
									TiCN	TiCN
M4	0.70	3.30	49	8.00	36	6	3.14	3	80983001000015	88983001000015
M5	0.80	4.20	49	10.00	36	6	3.95	3	80983001000017	88983001000017
M6	1.00	5.00	55	12.00	36	6	4.68	3	80983001000018	88983001000018
M8	1.25	6.80	62	16.25	36	8	6.22	3	80983001000020	88983001000020
M10	1.50	8.50	74	19.50	40	10	7.79	3	80983001000022	88983001000022
M12	1.75	10.25	79	24.50	45	12	9.38	3	80983001000024	88983001000024
M14	2.00	12.00	89	28.00	45	14	10.92	4	80983001000025	88983001000025

For thread engagements see page 70.

For thread milling guideline values see page 78.

Thread milling tool MF-MKG 2.0×D

- For metric ISO fine thread DIN 13
- Shank Ø DIN 6535 Form HE/HA
- From shank Ø 8 mm with internal coolant supply
- Cutting material: solid carbide



Use for	
Thread	Thread milling tool
M12×1	MF-MKG M10×1
M14×1.5	MF-MKG M12×1.5
M16×1.5	MF-MKG M12×1.5

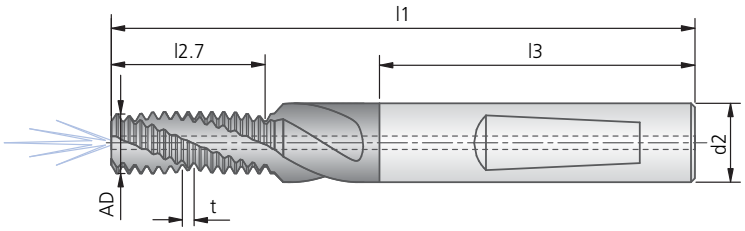
MF-MKG 2.0×D									DIN 6535 HE	DIN 6535 HA
Nominal Ø	t	Drill Ø	l1	l2.7	l3	d2	AD	Z	Uncoated Order #	Uncoated Order #
M10×1	1.00	9.0	74.0	20.0	40	10	7.79	3	**80980002000094**	**88980002000094**
M12×1.5	1.50	10.5	79.0	24.0	45	12	9.38	3	**80980002000113**	**88980002000113**
									TiCN	TiCN
M10×1	1.00	9.0	74.0	20.0	40	10	7.79	3	**80983002000094**	**88983002000094**
M12×1.5	1.50	10.5	79.0	24.0	45	12	9.38	3	**80983002000113**	**88983002000113**

For thread engagements see page 70.

2.0×D

Thread milling tool UNC-MKG

For American Unified Coarse thread ANSI B1.1 ■
Shank Ø DIN 6535 Form HE/HA ■
From shank Ø 8 mm with internal coolant supply ■
Cutting material: solid carbide ■

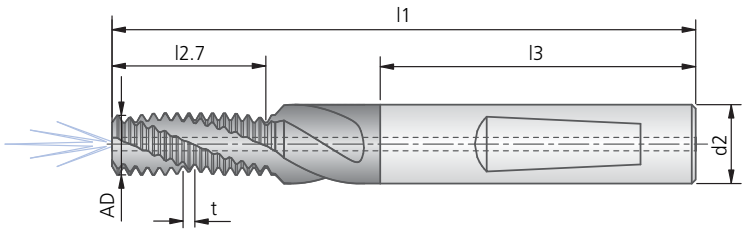


UNC-MKG 2.0×D									DIN 6535 HE	DIN 6535 HA
									Uncoated	Uncoated
Nominal Ø	t	Drill Ø	l1	l2.7	l3	d2	AD	Z	Order #	Order #
Nr.10-24 UNC	1.058	3.77	55	9.5	36	6	3.68	3	80980010000009	88980010000009
Nr.12-24 UNC	1.058	4.43	55	10.6	36	6	4.26	3	80980010000010	88980010000010
1/4-20 UNC	1.270	5.08	55	13.9	36	6	4.70	3	80980010000011	88980010000011
5/16-18 UNC	1.411	6.53	62	15.5	36	8	6.22	3	80980010000012	88980010000012
3/8-16 UNC	1.588	7.94	74	19.1	40	10	7.34	3	80980010000013	88980010000013
7/16-14 UNC	1.814	9.30	79	21.8	45	12	8.57	3	80980010000014	88980010000014
1/2-13 UNC	1.954	10.75	79	25.4	45	12	9.38	3	80980010000015	88980010000015
9/16-12 UNC	2.117	12.17	89	29.6	45	14	10.92	4	80980010000016	88980010000016
5/8-11 UNC	2.309	13.57	102	32.3	48	16	12.50	4	80980010000017	88980010000017
									TiCN	TiCN
Nr.10-24 UNC	1.058	3.77	55	9.5	36	6	3.68	3	80983010000009	88983010000009
Nr.12-24 UNC	1.058	4.43	55	10.6	36	6	4.26	3	80983010000010	88983010000010
1/4-20 UNC	1.270	5.08	55	13.9	36	6	4.70	3	80983010000011	88983010000011
5/16-18 UNC	1.411	6.53	62	15.5	36	8	6.22	3	80983010000012	88983010000012
3/8-16 UNC	1.588	7.94	74	19.1	40	10	7.34	3	80983010000013	88983010000013
7/16-14 UNC	1.814	9.30	79	21.8	45	12	8.57	3	80983010000014	88983010000014
1/2-13 UNC	1.954	10.75	79	25.4	45	12	9.38	3	80983010000015	88983010000015
9/16-12 UNC	2.117	12.17	89	29.6	45	14	10.92	4	80983010000016	88983010000016
5/8-11 UNC	2.309	13.57	102	32.3	48	16	12.50	4	80983010000017	88983010000017

For thread engagements see page 70.

Thread milling tool UNF-MKG 2.0×D

- For American Unified Fine thread ANSI B1.1
- Shank Ø DIN 6535 Form HE/HA
- From shank Ø 8 mm with internal coolant supply
- Cutting material: solid carbide



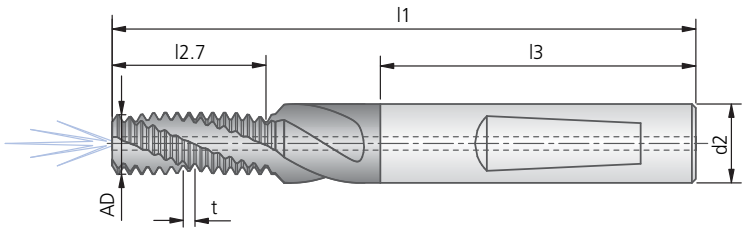
UNF-MKG 2.0×D									DIN 6535 HE	DIN 6535 HA
									Uncoated	Uncoated
Nominal Ø	t	Drill Ø	l1	l2.7	l3	d2	AD	Z	Order #	Order #
Nr.10-32 UNF	0.794	4.03	49	9.5	36	6	3.95	3	80980011000009	88980011000009
Nr.12-28 UNF	0.907	4.58	55	11.8	36	6	4.45	3	80980011000010	88980011000010
1/4-28 UNF	0.907	5.44	55	13.6	36	6	4.70	3	80980011000011	88980011000011
5/16-24 UNF	1.058	6.88	62	15.9	36	8	6.22	3	80980011000012	88980011000012
3/8-24 UNF	1.058	8.47	74	19.0	40	10	7.79	3	80980011000013	88980011000013
7/16-20 UNF	1.270	9.84	79	21.6	45	12	7.82	3	80980011000014	88980011000014
1/2-20 UNF	1.270	11.43	79	25.4	45	12	9.38	3	80980011000015	88980011000015
9/16-18 UNF	1.411	12.88	89	28.2	45	14	10.92	4	80980011000016	88980011000016
5/8-18 UNF	1.411	14.46	102	32.4	48	16	12.82	4	80980011000017	88980011000017
									TiCN	TiCN
Nr.10-32 UNF	0.794	4.03	49	9.5	36	6	3.95	3	80983011000009	88983011000009
Nr.12-28 UNF	0.907	4.58	55	11.8	36	6	4.45	3	80983011000010	88983011000010
1/4-28 UNF	0.907	5.44	55	13.6	36	6	4.70	3	80983011000011	88983011000011
5/16-24 UNF	1.058	6.88	62	15.9	36	8	6.22	3	80983011000012	88983011000012
3/8-24 UNF	1.058	8.47	74	19.0	40	10	7.79	3	80983011000013	88983011000013
7/16-20 UNF	1.270	9.84	79	21.6	45	12	7.82	3	80983011000014	88983011000014
1/2-20 UNF	1.270	11.43	79	25.4	45	12	9.38	3	80983011000015	88983011000015
9/16-18 UNF	1.411	12.88	89	28.2	45	14	10.92	4	80983011000016	88983011000016
5/8-18 UNF	1.411	14.46	102	32.4	48	16	12.82	4	80983011000017	88983011000017

For thread engagements see page 70.

2.0×D

Thread milling tool G-MKG

For Whitworth pipe thread DIN EN ISO 228 and DIN EN 10226 (formerly DIN 2999) ■
Shank ø DIN 6535 Form HE/HA ■
From shank ø 10 mm with internal coolant supply ■
Cutting material: solid carbide ■



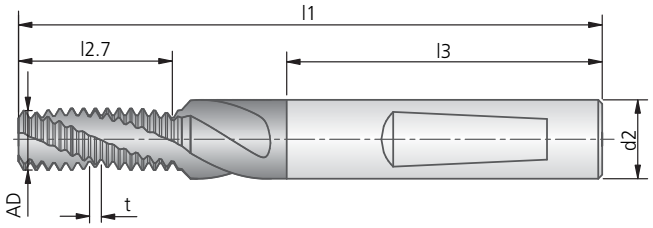
G-MKG 2.0×D									DIN 6535 HE	DIN 6535 HA
									Uncoated	Uncoated
Nominal ø	t	Drill ø	l1	l2.7	l3	d2	AD	Z	Order #	Order #
G1/8-28	0.907	8.82	74	20.0	40	10	7.79	3	80980025000001	88980025000001
G1/4-19	1.337	11.82	89	26.7	45	14	10.92	4	80980025000002	88980025000002
G3/8-19	1.337	15.32	102	34.84	48	18	13.92	4	80980025000003	88980025000003
									TiCN	TiCN
G1/8-28	0.907	8.82	74	20.0	40	10	7.79	3	80983025000001	88983025000001
G1/4-19	1.337	11.82	89	26.7	45	14	10.92	4	80983025000002	88983025000002
G3/8-19	1.337	15.32	102	34.84	48	18	13.92	4	80983025000003	88983025000003

For thread engagements see page 70.

For guideline values for thread milling see page 78.

Thread milling tool M-MKG XH 1.5×D

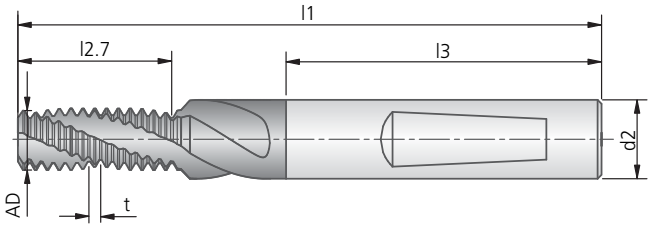
- For metric ISO thread DIN 13
- For hard machining from 45 HRC
- Shank Ø DIN 6535 Form HA
- Tools without internal coolant supply
- Cutting material: solid carbide



M-MKG XH 1.5×D									DIN 6535 HE	DIN 6535 HA
									TiAlN	TiAlN
Nominal Ø	t	Drill Ø	l1	l2.7	l3	d2	AD	Z	Order #	Order #
M4	0.70	3.30	46	6.3	36	6	3.14	4	80987001000015	88987001000015
M5	0.80	4.20	47	7.2	36	6	3.95	4	80987001000017	88987001000017
M6	1.00	5.00	52	8.5	36	6	4.68	4	80987001000018	88987001000018
M8	1.25	6.80	57	12.5	36	8	6.22	4	80987001000020	88987001000020
M10	1.50	8.50	66	15.0	40	10	7.79	5	80987001000022	88987001000022
M12	1.75	10.25	76	17.5	45	12	9.38	5	80987001000024	88987001000024

For thread engagements see page 70.

- For metric ISO thread DIN 13
- For hard machining from 45 HRC
- Shank Ø DIN 6535 Form HA
- Tools without internal coolant supply
- Cutting material: solid carbide



MF-MKG XH 1.5×D									DIN 6535 HE	DIN 6535 HA
									TiAlN	TiAlN
Nominal Ø	t	Drill Ø	l1	l2.7	l3	d2	AD	Z	Order #	Order #
M12×1.5	1.50	10.5	76	17.9	45	12	9.38	5	**80987002000113**	**88987002000113**
M14×1.5	1.50	12.5	82	21.4	45	14	10.92	5	**80987002000131**	**88987002000131**
M16×1.5	1.50	14.5	94	23.9	48	16	12.82	5	**80987002000147**	**88987002000147**

For thread engagements see page 70.

For guideline values for thread milling see page 78.

JEL® Thread milling

Guideline values for thread milling

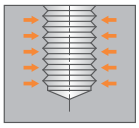
Material group		Strength Rm (N/mm²)	Hardness HB	v_c (m/min) = cutting speed f_b (mm/U) = drilling feed f_z (mm/tooth) = milling feed Material	MKG				
				Coating	Uncoated	TiCN	≤ Ø 6	≤ Ø 12	≥ Ø 16
				Material	v_c m/min	v_c m/min	f_z mm/tooth	f_z mm/tooth	f_z mm/tooth
P	1.1	≤400	≤120	Magnetic soft iron		80-150	0.015-0.04	0.04-0.06	0.08-0.15
P	1.2	≤700	≤200	Structural, case hardened steel		80-100	0.015-0.04	0.04-0.06	0.08-0.15
P	1.3	≤850	≤250	Carbon steel		80-100	0.015-0.04	0.04-0.06	0.08-0.15
P	1.4	≤850	≤250	Alloy steel		80-100	0.015-0.04	0.04-0.06	0.08-0.15
P	1.5	>850 ≤1200	>250 ≤350	Alloy/heat treated steel		60-80	0.01-0.03	0.04-0.06	0.04-0.10
P	1.6	>1200	>350	Alloy/heat treated steel		50-60	0.01-0.025	0.03-0.05	0.04-0.10
H	1.7	≤1400	≤400	Hardened steel to 45 HRC		30-50	0.01-0.015	0.015-0.02	0.03-0.08
H	1.8	≤2200	≤600	Hardened steel to 58 HRC		20-40	0.01-0.015	0.015-0.02	
M	2.1	≤850	≤250	Stainless steel, sulphurated		60-80	0.015-0.03	0.03-0.05	0.08-0.15
M	2.2	≤850	≤250	Austentic		60-80	0.015-0.03	0.03-0.05	0.04-0.10
M	2.3	≤1000	≤300	Ferritic, ferritic & austentic, martensitic		60-80	0.01-0.025	0.02-0.04	0.04-0.10
K	3.1	≤500	≤150	Grey cast iron	50-80	80-120	0.02-0.04	0.04-0.10	0.08-0.15
K	3.2	>500 ≤1000	>150 ≤300	Grey cast iron, heat treated	50-80	80-120	0.02-0.03	0.04-0.08	0.08-0.12
K	3.3	400-500	200-250	Vermicular cast iron		80-100	0.02-0.04	0.04-0.08	0.08-0.15
K	3.4	≤700	≤200	Spheroidal graphite cast iron		80-120	0.02-0.04	0.04-0.10	0.08-0.15
K	3.5	>700 ≤1000	>200 ≤300	Spheroidal graphite cast iron, heat treated		80-100	0.02-0.03	0.04-0.08	0.08-0.12
K	3.6	≤700	≤200	Malleable iron		80-100	0.02-0.04	0.04-0.10	0.08-0.15
K	3.7	>700 <1000	>200 ≤300	Malleable iron, heat treated		80-100	0.02-0.03	0.04-0.08	0.08-0.12
S	4.1	≤700	≤200	Pure titanium		40-100	0.015-0.03	0.03-0.08	0.08-0.15
S	4.2	≤900	≤270	Titanium alloys		40-100	0.015-0.03	0.03-0.08	0.08-0.15
S	4.3	>900 ≤1250	>270 ≤300	Titanium alloys		40-80	0.015-0.02	0.03-0.06	0.08-0.12
S	5.1	≤500	≤150	Pure nickel		50-60	0.02-0.04	0.04-0.06	0.04-0.10
S	5.2	≤900	<270	Nickel alloys, heat resistant		30-40	0.02-0.04	0.04-0.06	0.04-0.10
S	5.3	>900 ≤1200	>270 ≤350	Nickel alloys, high heat resistant		10-30	0.015-0.03	0.03-0.05	0.04-0.08
N	6.1	≤350	≤100	Non-alloy copper	100-300	100-400	0.04-0.07	0.07-0.12	0.10-0.20
N	6.2	≤700	≤200	Short chip, brass, bronze, red brass	100-300	100-400	0.04-0.07	0.07-0.12	0.10-0.20
N	6.3	≤700	≤200	Long chip brass	100-300	100-400	0.04-0.07	0.07-0.12	0.10-0.20
N	6.4	≤500	≤470	Cu-Al-Fe alloy (Ampco)	60-80	60-80	0.02-0.04	0.03-0.06	0.08-0.15
N	7.1	≤350	≤100	Al, Mg non-alloy	100-400	100-400	0.03-0.07	0.07-0.12	0.10-0.20
N	7.2	≤600	≤180	Al wrought alloy, breaking strain (A5) <14 %	100-400	100-400	0.03-0.07	0.07-0.12	0.10-0.20
N	7.3	≤600	≤180	Al wrought alloy, breaking strain (A5) ≥14 %	100-400	100-400	0.03-0.07	0.07-0.12	0.10-0.20
N	7.4	≤600	≤180	Al cast alloy, Si <10 %	100-300	100-400	0.03-0.07	0.07-0.12	0.10-0.20
N	7.5	≤600	≤180	Al cast alloy, Si ≥10 %	100-200	100-250	0.03-0.07	0.07-0.12	0.10-0.20
N	8.1			Thermoplastics	80-100	100-120	0.04-0.06	0.06-0.12	0.08-0.20
N	8.2			Thermosetting plastics	80-100	100-120	0.04-0.06	0.06-0.12	0.08-0.15
N	8.3			Fiber reinforced plastics	50-60	60-80	0.04-0.06	0.06-0.12	0.08-0.15

Cutting values shown on these pages relate to the basic recommendations indicated for cutting materials.

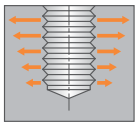
1.

Chip packing or gluing on thread profile
- poor coolant

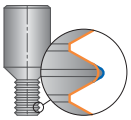
→ improve coolant situation (e.g. add flood cooling, lateral flute coolant supply for through holes)
→ add coolant flutes on shank

2. 

Thread plug go-gauge does not fit
- thread too small → reduce tool radius
- chips in thread → improve coolant

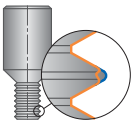
3. 

Thread is becoming tapered
- weak tool clamping → improve tool holding (i.e. shrink fit holders)
- thread milling feed too high → reduce thread milling feed

4. 

Uneven tool wear
- excessive tool run out

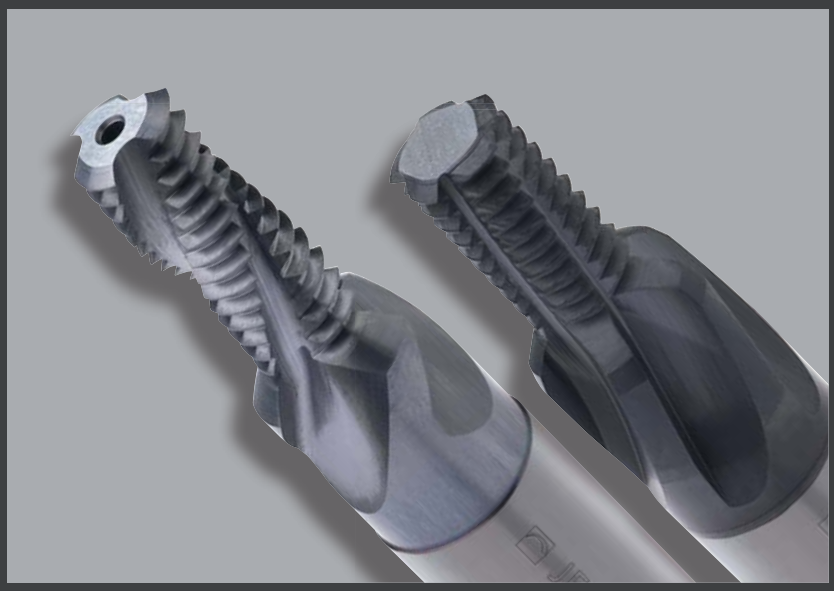
→ use better tool holders (i.e. shrink fit holders), check material uniformity

5. 

Chippage, tool breakage
- feed rate too high → reduce thread milling feed
- vibrations → check tool clamping (do not use modular systems!!!), change feeds and speeds

6.

Poor thread surface
- tool overhang too long → check workpiece clamping and stability. If clamping is weak, distribute the cutting force with multiple cuts.
- sub-optimal tool use → reduce cutting speed, increase feed/tooth rate, preferably do conventional milling



Chamfering and thread milling M2 and up

The MGF and UMGF thread milling tools feature a larger core cross section and slender, geometrically optimized cutting flutes.These features results in good chip formation and low cutting pressures during thread milling.

The solid carbide grades used together with the coatings assure a long tool life.

For a pure thread milling tool without chamfering cabability we offer our MKG thread milling tool.

Your PLUS:

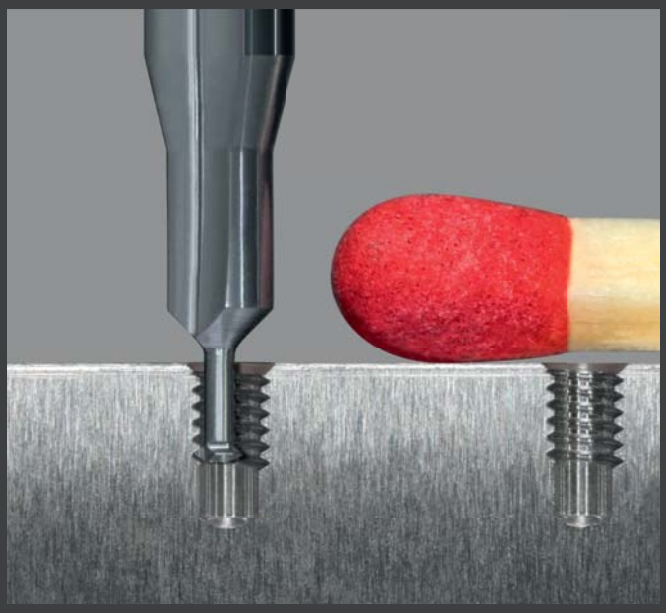
- Exceptional workpiece surface through varied cutting parameters
- Exact pitch, no flattening at the front of the thread.
- Shorter cutting chips (no chip problems as with taps)
- Different tolerances and thread sizes (6H, 6G or M18x1,5, M20x1,5 and M24x1,5) possible
- A single tool for blind and through holes
- A single tool for R.H and L.H. threads
- Fewer tool stations
- No chip roots left in threads
- Low cutting pressure when machining thin walled parts
- Exact thread depth

Component:
Swivel heads, rocker bearings made of unsulphurated stainless steel material 1.4301

Machining:
Core counterbore and thread in one pass

Tool: MGF thread milling tool

- Make right- as well as left-hand threads
- Reduced tool costs
- More process reliability than taps because of shorter chips

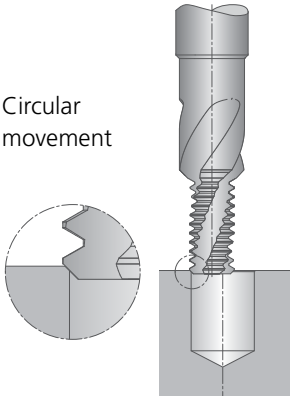


MGF XH Micro

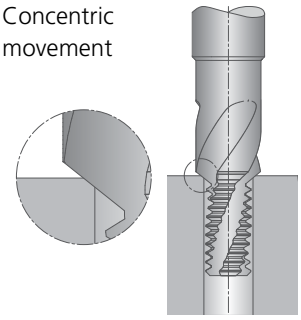
Uses:
- Hardened steels between 45-60 HRC
- Threads can be cut directly in hardened components, e.g. aerospace parts, implants...
- Helps avoid expensive rework because of hardening distortions
- Left-hand cutting from M1to M2.5

UMGF
Chamfering with a thread milling tool:

Circular movement



Concentric movement



Thread milling tools MGF, UMGF

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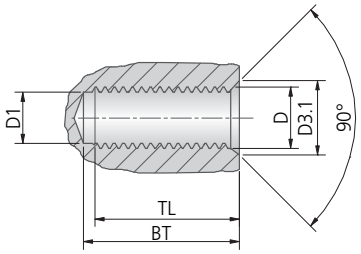
JEL® MGF

Thread engagements



TL = full thread length
BT = drilling depth
D3.1 = max. chamfer ø with rear chamfer

M								
Nominal Ø D	D1	D3.1	1.5×D BT	1.5×D TL	2×D BT	2×D TL	2.5×D BT	2.5×D TL
M2	1.60	2.30	3.36	3.06	4.56	4.26	–	–
M3	2.50	3.30	5.16	4.77	6.66	6.27	–	–
M4	3.30	4.30	6.48	5.91	8.58	8.01	10.68	10.11
M5	4.20	5.30	8.22	7.52	10.60	9.92	13.00	12.32
M6	5.00	6.30	10.21	9.36	13.21	12.36	16.21	15.36
M8	6.80	8.30	14.01	12.89	17.76	16.64	21.51	20.39
M10	8.50	10.30	16.81	15.42	21.31	19.92	27.31	25.92
M12	10.30	12.30	19.65	17.95	26.60	24.96	31.85	30.21
M14	12.00	14.30	24.40	22.50	30.40	28.50	38.40	36.50
M16	14.00	16.30	26.42	24.47	34.42	32.47	42.42	40.47
M20	17.50	20.30	35.55	33.00	45.55	43.00	53.05	50.50

M – MGF XH Micro				
Nominal Ø D	D1	D3.1	1.5×D BT	1.5×D TL
M1	0.75	1.50	2.10	1.85
M1.4	1.10	1.70	2.60	2.36
M1.6	1.25	2.10	3.10	2.77
M2	1.60	2.60	3.70	3.44
M2.2	1.75	2.50	3.90	3.61
M2.5	2.05	2.90	4.50	4.11

M – Metric ISO thread DIN 13

MF						
Nominal Ø D	D1	D3.1	1.5×D BT	1.5×D TL	2×D BT	2×D TL
M4×0.5	3.50	4.30	6.73	6.21	8.73	8.21
M5×0.5	4.50	5.30	8.30	7.70	10.80	10.20
M6×0.75	5.25	6.30	10.03	9.20	13.03	12.20
M8×1	7.00	8.30	13.34	12.26	17.34	16.26
M10×1	9.00	10.30	16.46	15.17	21.46	20.17
M12×1.5	10.50	12.30	19.92	18.33	25.92	24.33
M12×1	11.00	12.30	19.57	18.08	25.57	24.08
M14×1.5	12.50	14.30	23.05	21.23	30.55	28.73
M16×1.5	14.50	16.30	26.07	24.21	33.57	31.71

MF – Metric Fine ISO thread DIN 13

G						
Nominal Ø D	D1	D3.1	1.5×D BT	1.5×D TL	2×D BT	2×D TL
G1/8-28	8.82	10.03	15.81	14.67	21.25	20.11
G1/4-19	11.82	13.46	21.74	20.37	28.43	27.06
G3/8-19	15.32	16.96	27.22	25.60	35.24	33.62

G – Whitworth pipe thread DIN EN ISO 228 and DIN EN 10226 (formerly DIN 2999)

UNC						
Nominal Ø D	D1	D3.1	1.5×D BT	1.5×D TL	2×D BT	2×D TL
1/4-20 UNC	5.08	6.65	11.65	10.62	15.46	14.40
5/16-18 UNC	6.53	8.24	12.93	11.80	17.14	16.01
3/8-16 UNC	7.94	9.83	16.20	14.81	20.92	19.53
1/2-13 UNC	10.75	13.00	21.97	20.00	27.83	25.81

UNC – American Unified Coarse thread ANSI B1.1

NPT				
Nominal Ø D	D1	D3.1	Standard length BT	Standard length TL
1/16-27 NPT	6.15	8.70	11.36	9.00
1/8-27 NPT	8.43	11.10	11.36	9.00
1/4-18 NPT	11.13	14.50	16.77	13.50
3/8-18 NPT	14.27	17.90	16.77	13.50

NPT thread ANSI B2.1

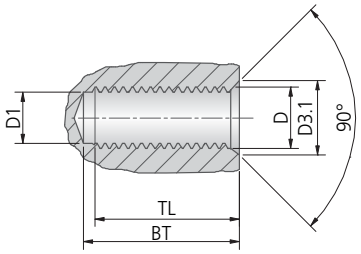
UNF						
Nominal Ø D	D1	D3.1	1.5×D BT	1.5×D TL	2×D BT	2×D TL
1/4-28 UNF	5.44	6.65	11.20	10.20	14.84	13.85
5/16-24 UNF	6.88	8.24	13.00	11.90	17.23	16.18
3/8-24 UNF	8.47	9.83	15.16	14.09	20.42	19.35
7/16-20 UNF	9.84	11.41	18.05	16.90	23.13	21.99
1/2-20 UNF	11.43	13.00	21.01	19.10	27.36	25.50

UNF – American Unified Fine thread ANSI B1.1

NPTF				
Nominal Ø D	D1	D3.1	Standard length BT	Standard length TL
1/16-27 NPTF	6.10	8.70	11.36	9.00
1/8-27 NPTF	8.40	11.10	11.36	9.00
1/4-18 NPTF	11.00	14.50	16.77	13.50
3/8-18 NPTF	14.50	17.90	16.77	13.50

NPTF thread ANSI B2.1

Thread engagements



TL = full thread length
BT = drilling depth
D3.1 = max. chamfer ø with rear chamfer

M						
Nominal Ø			2×D		2.5×D	
D	D1	D3.1	BT	TL	BT	TL
M4	3.30	4.30	8.58	7.31	–	–
M5	4.20	5.30	10.60	9.12	–	–
M6	5.00	6.30	13.21	11.36	16.21	14.36
M8	6.80	8.30	17.76	15.39	21.51	19.14
M10	8.50	10.30	21.31	18.42	27.31	24.42
M12	10.30	12.30	26.60	23.21	31.85	28.46
M14	12.00	14.30	30.40	26.50	–	–
M16	14.00	16.30	34.42	30.47	–	–

M – Metric ISO thread DIN 13

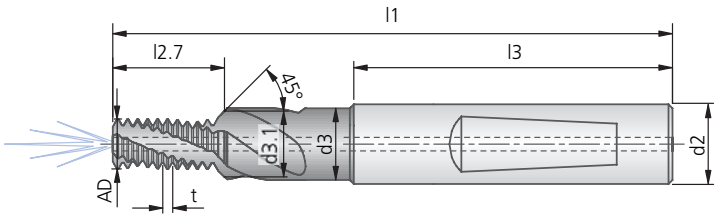
MF				
Nominal Ø			2×D	
D	D1	D3.1	BT	TL
M8×1	7.00	8.30	17.37	15.29
M10×1	8.00	10.30	21.46	19.17
M12×1.5	10.50	12.30	25.98	22.88
M12×1	11.00	12.30	25.57	23.08
M14×1.5	12.50	14.30	30.55	27.23
M16×1.5	14.50	16.30	33.53	30.21

MF – Metric Fine ISO thread DIN 13

Thread milling tool M-MGF with rear chamfer

1.5×D

- For metric ISO thread DIN 13
- Shank Ø DIN 6535 Form HE/HA
- From shank Ø 8 mm with internal coolant supply
- Cutting material: solid carbide



M-MGF 1.5×D											DIN 6535 HE	DIN 6535 HA
											Uncoated	Uncoated
Nominal Ø	t	Drill Ø	l1	l2.7	l3	d2	d3	d3.1	AD	Z	Order #	Order #
M2	0.40	1.60	47.8	3.4	36	6	2.5	2.3	1.56	2	80981001000008	88981001000008
M3	0.50	2.50	47.5	5.2	36	6	3.4	3.3	2.44	3	80981001000013	88981001000013
M4	0.70	3.30	46.9	6.5	36	6	4.5	4.3	3.14	3	80981001000015	88981001000015
M5	0.80	4.20	52.6	8.2	36	6	5.5	5.3	3.95	3	80981001000017	88981001000017
M6	1.00	5.00	59.0	10.2	36	8	6.6	6.3	4.68	3	80981001000018	88981001000018
M8	1.25	6.80	70.3	14.0	40	10	9.0	8.3	6.22	3	80981001000020	88981001000020
M10	1.50	8.50	74.5	16.8	45	12	11.0	10.3	7.79	3	80981001000022	88981001000022
M12	1.75	10.25	82.0	19.6	45	14	13.5	12.3	9.38	3	80981001000024	88981001000024
M14	2.00	12.00	96.0	24.4	48	16	15.5	14.3	10.92	4	80981001000025	88981001000025
M16	2.00	14.00	94.0	26.4	48	18	17.5	16.3	12.83	4	80981001000026	88981001000026
M20	2.50	17.50	117.0	35.55	56	25	25.0	20.3	15.83	4	80981001000028	88981001000028
											TiCN	TiCN
M4	0.70	3.30	46.9	6.5	36	6	4.5	4.3	3.14	3	80973001000015	88973001000015
M5	0.80	4.20	52.6	8.2	36	6	5.5	5.3	3.95	3	80973001000017	88973001000017
M6	1.00	5.00	59.0	10.2	36	8	6.6	6.3	4.68	3	80973001000018	88973001000018
M8	1.25	6.80	70.3	14.0	40	10	9.0	8.3	6.22	3	80973001000020	88973001000020
M10	1.50	8.50	74.5	16.8	45	12	11.0	10.3	7.79	3	80973001000022	88973001000022
M12	1.75	10.25	82.0	19.6	45	14	13.5	12.3	9.38	3	80973001000024	88973001000024
M14	2.00	12.00	96.0	24.4	48	16	15.5	14.3	10.92	4	80973001000025	88973001000025
M16	2.00	14.00	94.0	26.4	48	18	17.5	16.3	12.83	4	80973001000026	88973001000026
M20	2.50	17.50	117.0	35.55	56	25	25.0	20.3	15.83	4	80973001000028	88973001000028

For thread engagements see page 82.

2.0×D
2.5×D

Thread milling tool M-MGF
with rear chamfer

M-MGF 2.0×D											DIN 6535 HE	DIN 6535 HA
Nominal Ø	t	Drill Ø	l1	l2.7	l3	d2	d3	d3.1	AD	Z	Uncoated Order #	Uncoated Order #
M2	0.40	1.60	49.0	4.6	36	6	2.5	2.3	1.56	2	80970001000008	88970001000008
M3	0.50	2.50	49.0	6.7	36	6	3.4	3.3	2.44	3	80970001000013	88970001000013
M4	0.70	3.30	49.0	8.6	36	6	4.5	4.3	3.14	3	80970001000015	88970001000015
M5	0.80	4.20	55.0	10.6	36	6	5.5	5.3	3.95	3	80970001000017	88970001000017
M6	1.00	5.00	62.0	13.2	36	8	6.6	6.3	4.68	3	80970001000018	88970001000018
M8	1.25	6.80	74.0	17.8	40	10	9.0	8.3	6.22	3	80970001000020	88970001000020
M10	1.50	8.50	79.0	21.3	45	12	11.0	10.3	7.79	3	80970001000022	88970001000022
M12	1.75	10.25	89.0	26.6	45	14	13.5	12.3	9.38	3	80970001000024	88970001000024
M14	2.00	12.00	102.0	30.4	48	16	15.5	14.3	10.92	4	80970001000025	88970001000025
M16	2.00	14.00	102.0	34.4	48	18	17.5	16.3	12.83	4	80970001000026	88970001000026
M20	2.50	17.50	127.0	45.55	56	25	25.0	20.3	15.83	4	80970001000028	88970001000028
											TiCN	TiCN
M4	0.70	3.30	49.0	8.6	36	6	4.5	4.3	3.14	3	80992001000015	88992001000015
M5	0.80	4.20	55.0	10.6	36	6	5.5	5.3	3.95	3	80992001000017	88992001000017
M6	1.00	5.00	62.0	13.2	36	8	6.6	6.3	4.68	3	80992001000018	88992001000018
M8	1.25	6.80	74.0	17.8	40	10	9.0	8.3	6.22	3	80992001000020	88992001000020
M10	1.50	8.50	79.0	21.3	45	12	11.0	10.3	7.79	3	80992001000022	88992001000022
M12	1.75	10.25	89.0	26.6	45	14	13.5	12.3	9.38	3	80992001000024	88992001000024
M14	2.00	12.00	102.0	30.4	48	16	15.5	14.3	10.92	4	80992001000025	88992001000025
M16	2.00	14.00	102.0	34.4	48	18	17.5	16.3	12.83	4	80992001000026	88992001000026
M20	2.50	17.50	127.0	45.55	56	25	25.0	20.3	15.83	4	80992001000028	88992001000028

M-MGF 2.5×D											DIN 6535 HE	DIN 6535 HA
Nominal Ø	t	Drill Ø	l1	l2.7	l3	d2	d3	d3.1	AD	Z	Uncoated Order #	Uncoated Order #
M5	0.80	4.20	55.0	13.0	36	6	5.5	5.3	3.95	3	80990001000017	88990001000017
M6	1.00	5.00	62.0	16.2	36	8	6.6	6.3	4.68	3	80990001000018	88990001000018
M8	1.25	6.80	74.0	21.5	40	10	9.0	8.3	6.22	3	80990001000020	88990001000020
M10	1.50	8.50	79.0	27.3	45	12	11.0	10.3	7.79	3	80990001000022	88990001000022
M12	1.75	10.25	89.0	31.9	45	14	13.5	12.3	9.38	3	80990001000024	88990001000024
											TiCN	TiCN
M6	1.00	5.00	62.0	16.2	36	8	6.6	6.3	4.68	3	80995001000018	88995001000018
M8	1.25	6.80	74.0	21.5	40	10	9.0	8.3	6.22	3	80995001000020	88995001000020
M10	1.50	8.50	79.0	27.3	45	12	11.0	10.3	7.79	3	80995001000022	88995001000022
M12	1.75	10.25	89.0	31.9	45	14	13.5	12.3	9.38	3	80995001000024	88995001000024

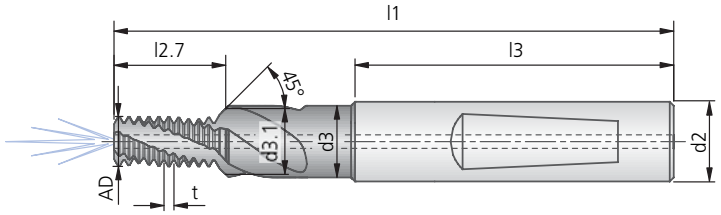
For thread engagements see page 82.

For guideline values for thread milling see page 100.

Thread milling tool MF-MGF with rear chamfer

1.5×D

- For metric fine ISO thread DIN 13
- Shank Ø DIN 6535 Form HE/HA
- From shank Ø 8 mm with internal coolant supply
- Cutting material: solid carbide



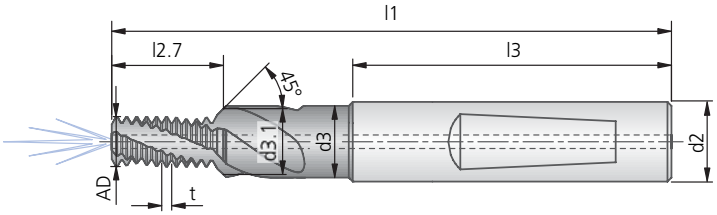
MF-MGF 1.5×D											DIN 6535 HE	DIN 6535 HA
Nominal Ø	t	Drill Ø	l1	l2.7	l3	d2	d3	d3.1	AD	Z	Uncoated Order #	Uncoated Order #
M8×1	1.00	7.00	70.0	13.3	40	10	9.0	8.3	6.22	3	80981002000070	88981002000070
M10×1	1.00	9.00	74.0	16.5	45	12	11.0	10.3	7.79	3	80981002000094	88981002000094
M12×1	1.00	11.00	83.0	19.6	45	14	13.5	12.3	9.38	3	80981002000111	88981002000111
M12×1.5	1.50	10.50	83.0	19.9	45	14	13.5	12.3	9.38	3	80981002000113	88981002000113
M14×1.5	1.50	12.50	94.5	23.1	48	16	15.5	14.3	10.92	4	80981002000131	88981002000131
M16×1.5	1.50	14.50	94.5	26.1	48	18	17.5	16.3	12.82	4	80981002000147	88981002000147
											TiCN	TiCN
M8×1	1.00	7.00	70.0	13.3	40	10	9.0	8.3	6.22	3	80973002000070	88973002000070
M10×1	1.00	9.00	74.0	16.5	45	12	11.0	10.3	7.79	3	80973002000094	88973002000094
M12×1.5	1.50	10.50	83.0	19.9	45	14	13.5	12.3	9.38	3	80973002000113	88973002000113
M14×1.5	1.50	12.50	94.5	23.1	48	16	15.5	14.3	10.92	4	80973002000131	88973002000131
M16×1.5	1.50	14.50	94.5	26.1	48	18	17.5	16.3	12.82	4	80973002000147	88973002000147

For thread engagements see page 82.

2.0×D

Thread milling tool MF-MGF with rear chamfer

- For metric fine ISO thread DIN 13
- Shank Ø DIN 6535 Form HE/HA
- From shank Ø 8 mm with internal coolant supply
- Cutting material: solid carbide



MF-MGF 2.0×D											DIN 6535 HE	DIN 6535 HA
											Uncoated	Uncoated
Nominal Ø	t	Drill Ø	l1	l2.7	l3	d2	d3	d3.1	AD	Z	Order #	Order #
M5×0.5	0.50	4.50	55.0	10.8	36	6	5.5	5.3	3.95	3	**80970002000037**	**88970002000037**
M6×0.75	0.75	5.25	62.0	13.0	36	8	6.6	6.3	4.68	3	**80970002000048**	**88970002000048**
M8×1	1.00	7.00	74.0	17.3	40	10	9.0	8.3	6.22	3	**80970002000070**	**88970002000070**
M10×1	1.00	9.00	79.0	21.5	45	12	11.0	10.3	7.79	3	**80970002000094**	**88970002000094**
M12×1	1.00	11.00	89.0	25.6	45	14	13.5	12.3	9.38	3	**80970002000111**	**88970002000111**
M12×1.5	1.50	10.50	89.0	25.9	45	14	13.5	12.3	9.38	3	**80970002000113**	**88970002000113**
M14×1.5	1.50	12.50	102.0	30.6	48	16	15.5	14.3	10.92	4	**80970002000131**	**88970002000131**
M16×1.5	1.50	14.50	102.0	33.6	48	18	17.5	16.3	12.82	4	**80970002000147**	**88970002000147**
											TiCN	TiCN
M8×1	1.00	7.00	74.0	17.3	40	10	9.0	8.3	6.22	3	**80992002000070**	**88992002000070**
M10×1	1.00	9.00	79.0	21.5	45	12	11.0	10.3	7.79	3	**80992002000094**	**88992002000094**
M12×1.5	1.50	10.50	89.0	25.9	45	14	13.5	12.3	9.38	3	**80992002000113**	**88992002000113**
M14×1.5	1.50	12.50	102.0	30.6	48	16	15.5	14.3	10.92	4	**80992002000131**	**88992002000131**
M16×1.5	1.50	14.50	102.0	33.6	48	18	17.5	16.3	12.82	4	**80992002000147**	**88992002000147**

For thread engagements see page 82.

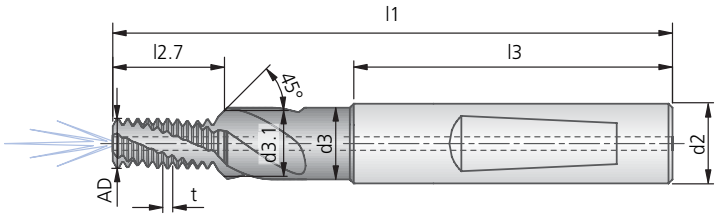
JEL® MGF

UNC

Thread milling tool UNC-MGF with rear chamfer

1.5×D
2.0×D

- For American Unified Coarse thread ANSI B1.1
- Shank ø DIN 6535 Form HE/HA
- From shank ø 8 mm with internal coolant supply
- Cutting material: solid carbide



UNC-MGF 1.5×D											DIN 6535 HE	DIN 6535 HA
Nominal Ø	t	Drill Ø	l1	l2.7	l3	d2	d3	d3.1	AD	Z	Uncoated Order #	Uncoated Order #
1/4-20 UNC	1.270	5.08	58.2	11.65	36	8	7.8	6.7	4.70	3	80981010000011	88981010000011
5/16-18 UNC	1.411	6.53	69.8	12.90	40	10	9.0	8.2	6.22	3	80981010000012	88981010000012
3/8-16 UNC	1.588	7.94	74.2	16.20	45	12	11.0	9.8	7.34	3	80981010000013	88981010000013
1/2-13 UNC	1.954	10.75	83.1	22.00	45	14	13.5	13.0	9.38	3	80981010000015	88981010000015
											TiCN	TiCN
1/4-20 UNC	1.270	5.08	58.2	11.65	36	8	7.8	6.7	4.70	3	80973010000011	88973010000011
5/16-18 UNC	1.411	6.53	69.8	12.90	40	10	9.0	8.2	6.22	3	80973010000012	88973010000012
3/8-16 UNC	1.588	7.94	74.2	16.20	45	12	11.0	9.8	7.34	3	80973010000013	88973010000013
1/2-13 UNC	1.954	10.75	83.1	22.00	45	14	13.5	13.0	9.38	3	80973010000015	88973010000015

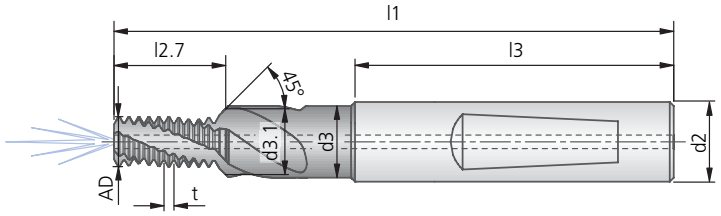
UNC-MGF 2.0×D											DIN 6535 HE	DIN 6535 HA
Nominal Ø	t	Drill Ø	l1	l2.7	l3	d2	d3	d3.1	AD	Z	Uncoated Order #	Uncoated Order #
1/4-20 UNC	1.270	5.08	62.0	15.46	36	8	7.8	6.7	4.70	3	80970010000011	88970010000011
5/16-18 UNC	1.411	6.53	74.0	17.10	40	10	9.0	8.2	6.22	3	80970010000012	88970010000012
3/8-16 UNC	1.588	7.94	79.0	20.90	45	12	11.0	9.8	7.34	3	80970010000013	88970010000013
1/2-13 UNC	1.954	10.75	89.0	27.80	45	14	13.5	13.0	9.38	3	80970010000015	88970010000015
											TiCN	TiCN
1/4-20 UNC	1.270	5.08	62.0	15.46	36	8	7.8	6.7	4.70	3	80992010000011	88992010000011
5/16-18 UNC	1.411	6.53	74.0	17.10	40	10	9.0	8.2	6.22	3	80992010000012	88992010000012
3/8-16 UNC	1.588	7.94	79.0	20.90	45	12	11.0	9.8	7.34	3	80992010000013	88992010000013

For thread engagements see page 82.

1.5×D
2.0×D

Thread milling tool UNF-MGF with rear chamfer

- For American Unified Fine thread ANSI B1.1 ■
- Shank Ø DIN 6535 Form HE/HA ■
- From shank Ø 8 mm with internal coolant supply ■
- Cutting material: solid carbide ■



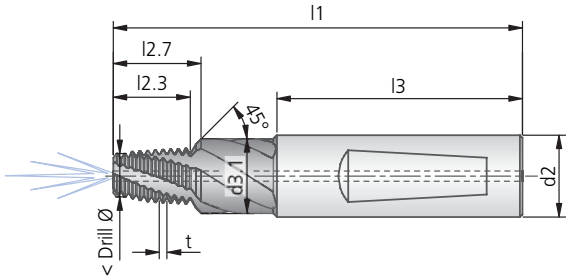
UNF-MGF 1.5×D											DIN 6535 HE	DIN 6535 HA
Nominal Ø	t	Drill Ø	l1	l2.7	l3	d2	d3	d3.1	AD	Z	Uncoated Order #	Uncoated Order #
1/4-28 UNF	0.907	5.44	58.4	11.2	36	8	7.8	6.65	4.70	3	80981011000011	88981011000011
5/16-24 UNF	1.058	6.88	69.8	13.0	40	10	9.0	8.24	6.22	3	80981011000012	88981011000012
3/8-24 UNF	1.058	8.47	73.7	15.1	45	12	11.0	9.83	7.79	3	80981011000013	88981011000013
7/16-20 UNF	1.270	9.84	82.9	18.05	45	14	13.5	11.41	9.32	3	80981011000014	88981011000014
1/2-20 UNF	1.270	11.43	82.7	21.0	45	14	13.5	13.00	9.38	3	80981011000015	88981011000015
											TiCN	TiCN
1/4-28 UNF	0.907	5.44	58.4	11.2	36	8	7.8	6.65	4.70	3	80973011000011	88973011000011
5/16-24 UNF	1.058	6.88	69.8	13.0	40	10	9.0	8.24	6.22	3	80973011000012	88973011000012
3/8-24 UNF	1.058	8.47	73.7	15.1	45	12	11.0	9.83	7.79	3	80973011000013	88973011000013
7/16-20 UNF	1.270	9.84	82.9	18.05	45	14	13.5	11.41	9.32	3	80973011000014	88973011000014
1/2-20 UNF	1.270	11.43	82.7	21.0	45	14	13.5	13.00	9.38	3	80973011000015	88973011000015

UNF-MGF 2.0×D											DIN 6535 HE	DIN 6535 HA
Nominal Ø	t	Drill Ø	l1	l2.7	l3	d2	d3	d3.1	AD	Z	Uncoated Order #	Uncoated Order #
1/4-28 UNF	0.907	5.44	62.0	14.8	36	8	7.8	6.65	4.70	3	80970011000011	88970011000011
5/16-24 UNF	1.058	6.88	74.0	17.2	40	10	9.0	8.24	6.22	3	80970011000012	88970011000012
3/8-24 UNF	1.058	8.47	79.0	20.4	45	12	11.0	9.83	7.79	3	80970011000013	88970011000013
7/16-20 UNF	1.270	9.84	88.0	23.1	45	14	13.5	11.41	9.32	3	80970011000014	88970011000014
1/2-20 UNF	1.270	11.43	89.0	27.4	45	14	13.5	13.00	9.38	3	80970011000015	88970011000015
											TiCN	TiCN
1/4-28 UNF	0.907	5.44	62.0	14.8	36	8	7.8	6.65	4.70	3	80992011000011	88992011000011
5/16-24 UNF	1.058	6.88	74.0	17.2	40	10	9.0	8.24	6.22	3	80992011000012	88992011000012
3/8-24 UNF	1.058	8.47	79.0	20.4	45	12	11.0	9.83	7.79	3	80992011000013	88992011000013
7/16-20 UNF	1.270	9.84	88.0	23.1	45	14	13.5	11.41	9.32	3	80992011000014	88992011000014
1/2-20 UNF	1.270	11.43	89.0	27.4	45	14	13.5	13.00	9.38	3	80992011000015	88992011000015

For guideline values for thread milling see page 100.

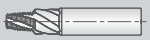
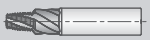
Thread milling tool NPT-MGF, NPTF-MGF with rear chamfer

- For NPT, NPTF thread ANSI B2.1
- Shank Ø DIN 6535 Form HE/HA
- From shank Ø 12 mm with internal coolant supply
- Cutting material: solid carbide



NPT-MGF										DIN 6535 HE	DIN 6535 HA
Nominal Ø	t	Drill Ø	l1	l2.3	l2.7	l3	d2	d3.1	Z	Uncoated Order #	Uncoated Order #
1/16-27 NPT	0.941	6.15	64.0	9.7	11.36	40	10	8.7	3	80970016000001	88970016000001
1/8-27 NPT	0.941	8.50	70.0	9.7	11.36	45	12	11.1	3	80970016000002	88970016000002
1/4-18 NPT	1.411	11.0	80.0	14.81	16.77	48	16	14.5	4	80970016000003	88970016000003
3/8-18 NPT	1.411	14.5	81.0	14.81	16.77	48	18	17.9	4	80970016000004	88970016000004
										TiCN	TiCN
1/8-27 NPT	0.941	8.50	70.0	9.7	11.36	45	12	11.1	3	80973016000002	88973016000002
1/4-18 NPT	1.411	11.0	80.0	14.81	16.77	48	16	14.5	4	80973016000003	88973016000003
3/8-18 NPT	1.411	14.5	81.0	14.81	16.77	48	18	17.9	4	80973016000004	88973016000004

For threads 1/2"-14 NPT and larger use thread milling tool JEL® TOMILL GS.

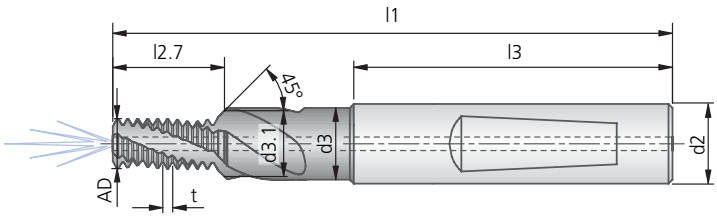
NPTF-MGF										DIN 6535 HE	DIN 6535 HA
Nominal Ø	t	Drill Ø	l1	l2.3	l2.7	l3	d2	d3.1	Z	Uncoated Order #	Uncoated  Order #
1/8-27 NPTF	0.941	8.45	70.0	9.7	11.36	45	12	11.1	3	80970017000002	88970017000002
1/4-18 NPTF	1.411	10.90	80.0	14.81	16.77	48	16	14.5	4	80970017000003	88970017000003
3/8-18 NPTF	1.411	14.30	81.0	14.81	16.77	48	18	17.9	4	80970017000004	88970017000004
										TiCN	TiCN 
1/8-27 NPTF	0.941	8.45	70.0	9.7	11.36	45	12	11.1	3	80973017000002	88973017000002
1/4-18 NPTF	1.411	10.90	80.0	14.81	16.77	48	16	14.5	4	80973017000003	88973017000003
3/8-18 NPTF	1.411	14.30	81.0	14.81	16.77	48	18	17.9	4	80973017000004	88973017000004

For threads 1/2"-14 NPTF and larger use thread milling tool JEL® TOMILL GS.

1.5×D
2.0×D

Thread milling tool G-MGF with rear chamfer

- For Whitworth pipe thread DIN EN ISO 228 and DIN EN 10226 (formerly DIN 2999)
- Shank ø DIN 6535 Form HE/HA
- From shank ø 12 mm with internal coolant supply
- Cutting material: solid carbide



G-MGF 1.5×D											DIN 6535 HE	DIN 6535 HA
Nominal Ø	t	Drill Ø	l1	l2.7	l3	d2	d3	d3.1	AD	Z	Uncoated Order #	Uncoated Order #
G1/8-28	0.907	8.82	73.6	15.8	45	12	11.0	10.0	7.79	3	80981025000001	88981025000001
G1/4-19	1.337	11.82	94.0	21.7	48	16	15.5	13.5	10.92	4	80981025000002	88981025000002
G3/8-19	1.337	15.32	94.0	27.2	50	20	17.5	17.0	13.92	4	80981025000003	88981025000003
											TiCN	TiCN
G1/8-28	0.907	8.82	73.6	15.8	45	12	11.0	10.0	7.79	3	80973025000001	88973025000001
G1/4-19	1.337	11.82	94.0	21.7	48	16	15.5	13.5	10.92	4	80973025000002	88973025000002

G-MGF 2.0×D											DIN 6535 HE	DIN 6535 HA
Nominal Ø	t	Drill Ø	l1	l2.7	l3	d2	d3	d3.1	AD	Z	Uncoated Order #	Uncoated Order #
G1/8-28	0.907	8.82	79.0	21.2	45	12	11.0	10.0	7.79	3	80970025000001	88970025000001
G1/4-19	1.337	11.82	100.5	28.4	48	16	15.5	13.5	10.92	4	80970025000002	88970025000002
G3/8-19	1.337	15.32	102.0	35.2	50	20	17.5	17.0	13.92	4	80970025000003	88970025000003
											TiCN	TiCN
G1/8-28	0.907	8.82	79.0	21.2	45	12	11.0	10.0	7.79	3	80992025000001	88992025000001
G1/4-19	1.337	11.82	100.5	28.4	48	16	15.5	13.5	10.92	4	80992025000002	88992025000002

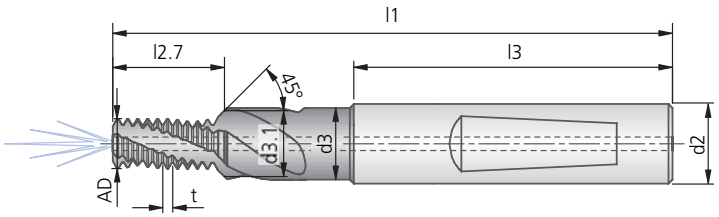
For thread engagements see page 82.

For guideline values for thread milling see page 100.

Thread milling tool M-MGF XS with rear chamfer

1.5×D
2.0×D

- For metric ISO thread DIN 13
- For machining steel from 900 N/mm² strength
- Shank Ø DIN 6535 Form HE/HA
- From shank Ø 8 mm with internal coolant supply
- Cutting material: solid carbide



M-MGF XS 1.5×D											DIN 6535 HE	DIN 6535 HA
Nominal Ø	t	Drill Ø	l1	l2.7	l3	d2	d3	d3.1	AD	Z	TiCN Order #	TiCN Order #
M4	0.70	3.30	46.9	6.5	36	6	4.5	4.3	3.14	3	80273001000015	88273001000015
M5	0.80	4.20	52.6	8.2	36	6	5.5	5.3	3.95	3	80273001000017	88273001000017
M6	1.00	5.00	59.0	10.2	36	8	6.6	6.3	4.68	3	80273001000018	88273001000018
M8	1.25	6.80	70.3	14.0	40	10	9.0	8.3	6.22	3	80273001000020	88273001000020
M10	1.50	8.50	74.5	16.8	45	12	11.0	10.3	7.79	3	80273001000022	88273001000022
M12	1.75	10.25	82.0	19.6	45	14	13.5	12.3	9.38	3	80273001000024	88273001000024
M14	2.00	12.00	96.0	24.4	48	16	15.5	14.3	10.92	4	80273001000025	88273001000025
M16	2.00	14.00	94.0	26.4	48	18	17.5	16.3	12.83	4	80273001000026	88273001000026
M20	2.50	17.50	117.0	35.55	56	25	25.0	20.3	15.83	4	80273001000028	88273001000028

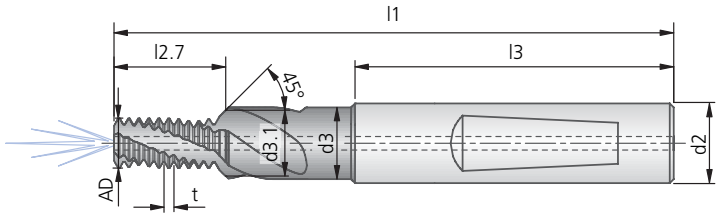
M-MGF XS 2.0×D											DIN 6535 HE	DIN 6535 HA
Nominal Ø	t	Drill Ø	l1	l2.7	l3	d2	d3	d3.1	AD	Z	TiCN Order #	TiCN Order #
M4	0.70	3.30	49.0	8.6	36	6	4.5	4.3	3.14	3	80292001000015	88292001000015
M5	0.80	4.20	55.0	10.6	36	6	5.5	5.3	3.95	3	80292001000017	88292001000017
M6	1.00	5.00	62.0	13.2	36	8	6.6	6.3	4.68	3	80292001000018	88292001000018
M8	1.25	6.80	74.0	17.8	40	10	9.0	8.3	6.22	3	80292001000020	88292001000020
M10	1.50	8.50	79.0	21.3	45	12	11.0	10.3	7.79	3	80292001000022	88292001000022
M12	1.75	10.25	89.0	26.6	45	14	13.5	12.3	9.38	3	80292001000024	88292001000024
M14	2.00	12.00	102.0	30.4	48	16	15.5	14.3	10.92	4	80292001000025	88292001000025
M16	2.00	14.00	102.0	34.4	48	18	17.5	16.3	12.83	4	80292001000026	88292001000026
M20	2.50	17.50	127.0	45.55	56	25	25.0	20.3	15.83	4	80292001000028	88292001000028

For thread engagements see page 82.

1.5×D
2.0×D

Thread milling tool MF-MGF XS with rear chamfer

- For metric fine ISO thread DIN 13
- For machining steel from 900 N/mm² tensile strength
- Shank Ø DIN 6535 Form HE/HA
- From shank Ø 8 mm with internal coolant supply
- Cutting material: solid carbide



MF-MGF XS 1.5×D											DIN 6535 HE	DIN 6535 HA
											TiCN	TiCN
Nominal Ø	t	Drill Ø	l1	l2.7	l3	d2	d3	d3.1	AD	Z	Order #	Order #
M8×1	1.00	7.00	70.0	13.3	40	10	9.0	8.3	6.22	3	80273002000070	88273002000070
M10×1	1.00	9.00	74.0	16.5	45	12	11.0	10.3	7.79	3	80273002000094	88273002000094
M12×1.5	1.50	10.50	83.0	19.9	45	14	13.5	12.3	9.38	3	80273002000113	88273002000113
M14×1.5	1.50	12.50	94.5	23.1	48	16	15.5	14.3	10.92	4	80273002000131	88273002000131
M16×1.5	1.50	14.50	94.5	26.1	48	18	17.5	16.3	12.82	4	80273002000147	88273002000147

MF-MGF XS 2.0×D											DIN 6535 HE	DIN 6535 HA
											TiCN	TiCN
Nominal Ø	t	Drill Ø	l1	l2.7	l3	d2	d3	d3.1	AD	Z	Order #	Order #
M8×1	1.00	7.00	74.0	17.3	40	10	9.0	8.3	6.22	3	80292002000070	88292002000070
M10×1	1.00	9.00	79.0	21.5	45	12	11.0	10.3	7.79	3	80292002000094	88292002000094
M12×1.5	1.50	10.50	89.0	25.9	45	14	13.5	12.3	9.38	3	80292002000113	88292002000113
M14×1.5	1.50	12.50	102.0	30.6	48	16	15.5	14.3	10.92	4	80292002000131	88292002000131
M16×1.5	1.50	14.50	102.0	33.6	48	18	17.5	16.3	12.82	4	80292002000147	88292002000147

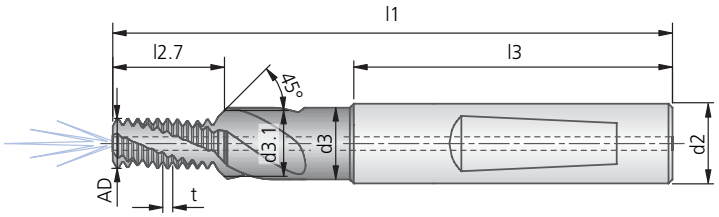
For thread engagements see page 82.

For guideline values for thread milling see page 100.

Thread milling tool G-MGF XS with rear chamfer

1.5×D
2.0×D

- For Whitworth pipe thread DIN EN ISO 228 and DIN EN 10226 (formerly DIN 2999)
- For machining steel from 900 N/mm² strength
- Shank Ø DIN 6535 Form HE/HA
- From shank Ø 8 mm with internal coolant supply
- Cutting material: solid carbide



G-MGF XS 1.5×D											DIN 6535 HE	DIN 6535 HA
Nominal Ø	t	Drill Ø	l1	l2.7	l3	d2	d3	d3.1	AD	Z	TiCN Order #	TiCN Order #
G1/8-28	0.907	8.82	73.6	15.8	45	12	11.0	10.0	7.79	3	80273025000001	88273025000001
G1/4-19	1.337	11.82	95.3	21.7	48	16	15.5	13.5	10.92	4	80273025000002	88273025000002

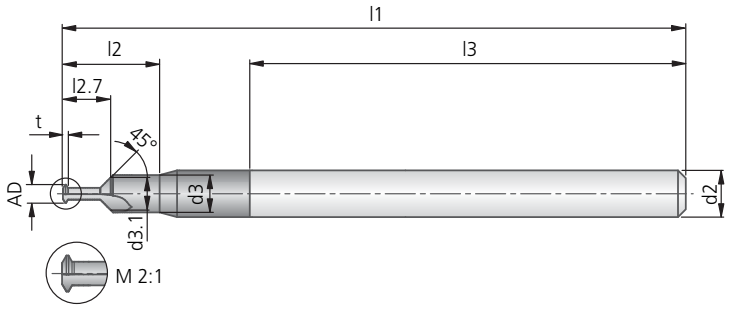
G-MGF XS 2.0×D											DIN 6535 HE	DIN 6535 HA
Nominal Ø	t	Drill Ø	l1	l2.7	l3	d2	d3	d3.1	AD	Z	TiCN Order #	TiCN Order #
G1/8-28	0.907	8.82	79.0	21.2	45	12	11.0	10.0	7.79	3	80292025000001	88292025000001
G1/4-19	1.337	11.82	102.0	28.4	48	16	15.5	13.5	10.92	4	80292025000002	88292025000002

For thread engagements see page 82.

1.5×D

Thread milling tool M-MGF XH Micro with rear chamfer

- For metric ISO thread DIN 13 ■
- For hard machining from 45 HRC ■
- Shank Ø DIN 6535 Form HA ■
- Tools without internal coolant supply ■
- Cutting material: solid carbide ■
- Left-hand cutting tools ■



M-MGF XH Micro 1.5×D												DIN 6535 HA
												TiCN
Nominal Ø	t	Drill Ø	l1	l2.7	l2	l3	d2	d3.1	d3	AD	Z	Order #
M1	0.25	0.75	40	2.1	5.2	28	3	1.5	1.8	< Ø 0.75	2	**88977001000001**
M1.4	0.30	1.10	40	2.6	5.7	28	3	1.7	2.0	< Ø 1.10	2	**88977001000004**
M1.6	0.35	1.25	40	3.1	6.0	28	3	2.1	2.4	< Ø 1.25	2	**88977001000005**
M2	0.40	1.60	40	3.7	*	28	3	2.6	3.0	< Ø 1.60	2	**88977001000008**
M2.2	0.45	1.75	40	3.9	*	28	3	2.5	3.0	< Ø 1.75	2	**88977001000009**
M2.5	0.45	2.05	40	4.5	*	28	3	2.9	3.0	< Ø 2.05	3	**88977001000011**

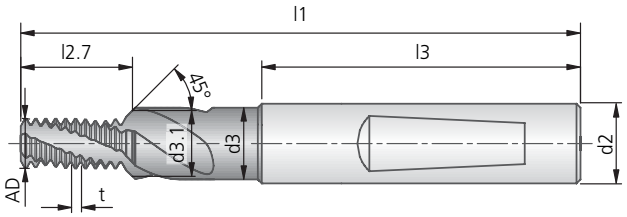
For thread engagements see page 82.

For guideline values for thread milling see page 100.

Thread milling tool M-MGF XH with rear chamfer

1.5×D

- For metric ISO thread DIN 13
- For hard machining from 45 HRC
- Shank Ø DIN 6535 Form HE/HA
- Tools without internal coolant supply
- Cutting material: solid carbide



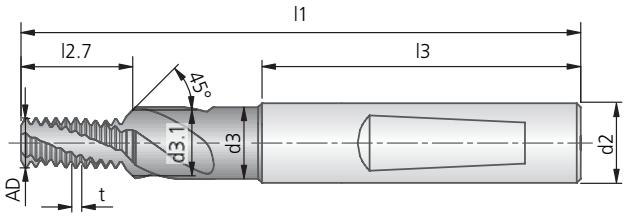
M-MGF XH 1.5×D											DIN 6535 HE	DIN 6535 HA
											TiAlN	TiAlN
Nominal Ø	t	Drill Ø	l1	l2.7	l3	d2	d3	d3.1	AD	Z	Order #	Order #
M3	0.50	2.50	49.0	5.31	36	6	4.9	3.3	2.55	3	80977001000013	88977001000013
M4	0.70	3.30	47.0	6.5	36	6	4.5	4.3	3.14	4	80977001000015	88977001000015
M5	0.80	4.20	52.0	8.2	36	6	5.5	5.3	3.95	4	80977001000017	88977001000017
M6	1.00	5.00	59.0	10.2	36	8	6.6	6.3	4.68	4	80977001000018	88977001000018
M8	1.25	6.80	70.0	14.0	40	10	9.0	8.3	6.22	4	80977001000020	88977001000020
M10	1.50	8.50	74.0	16.8	45	12	11.0	10.3	7.79	5	80977001000022	88977001000022
M12	1.75	10.25	82.0	19.6	45	14	13.5	12.3	9.38	5	80977001000024	88977001000024

For thread engagements see page 82.

1.5×D

Thread milling tool MF-MGF XH with rear chamfer

- For metric fine ISO thread DIN 13
- For hard machining from 45 HRC
- Shank Ø DIN 6535 Form HE/HA
- Tools without internal coolant supply
- Cutting material: solid carbide



MF-MGF XH 1.5×D											DIN 6535 HE	DIN 6535 HA
											TiAlN	TiAlN
Nominal Ø	t	Drill Ø	l1	l2.7	l3	d2	d3	d3.1	AD	Z	Order #	Order #
M12×1.5	1.50	10.50	82.0	19.9	45	14	13.5	12.3	9.38	5	**80977002000113**	**88977002000113**
M14×1.5	1.50	12.50	94.0	23.1	48	16	15.5	14.3	10.92	5	**80977002000131**	**88977002000131**
M16×1.5	1.50	14.50	94.0	26.1	48	18	17.5	16.3	12.82	5	**80977002000147**	**88977002000147**

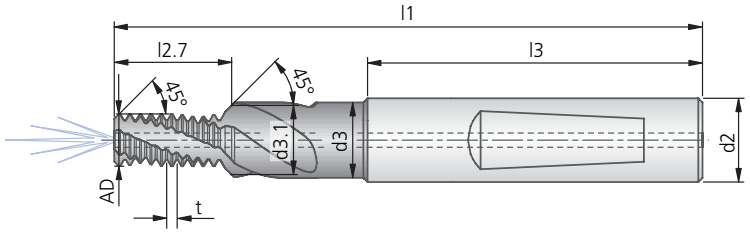
For thread engagements see page 82.

For guideline values for thread milling see page 100.

Thread milling tool M-UMGF with front and rear chamfers

2.0×D
2.5×D

- For metric ISO thread DIN 13
- Shank Ø DIN 6535 Form HE/HA
- From shank Ø 8 mm with internal coolant supply
- Cutting material: solid carbide



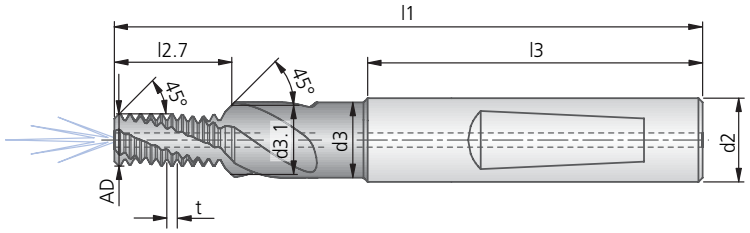
M-UMGF 2.0×D											DIN 6535 HE	DIN 6535 HA
Nominal Ø	t	Drill Ø	l1	l2.7	l3	d2	d3	d3.1	AD	Z	Uncoated Order #	Uncoated Order #
M6	1.00	5.00	62.0	13.2	36	8	6.6	6.3	4.68	3	80670001000018	88670001000018
M8	1.25	6.80	74.0	17.8	40	10	9.0	8.3	6.22	3	80670001000020	88670001000020
M10	1.50	8.50	79.0	21.3	45	12	11.0	10.3	7.79	3	80670001000022	88670001000022
M12	1.75	10.25	89.0	26.6	45	14	13.5	12.3	9.38	3	80670001000024	88670001000024
											TiCN	TiCN
M6	1.00	5.00	62.0	13.2	36	8	6.6	6.3	4.68	3	80692001000018	88692001000018
M8	1.25	6.80	74.0	17.8	40	10	9.0	8.3	6.22	3	80692001000020	88692001000020
M10	1.50	8.50	79.0	21.3	45	12	11.0	10.3	7.79	3	80692001000022	88692001000022
M12	1.75	10.25	89.0	26.6	45	14	13.5	12.3	9.38	3	80692001000024	88692001000024

M-UMGF 2.5×D											DIN 6535 HE	DIN 6535 HA
Nominal Ø	t	Drill Ø	l1	l2.7	l3	d2	d3	d3.1	AD	Z	Uncoated Order #	Uncoated Order #
M6	1.00	5.00	62.0	16.2	36	8	6.6	6.3	4.68	3	80690001000018	88690001000018
M8	1.25	6.80	74.0	21.5	40	10	9.0	8.3	6.22	3	80690001000020	88690001000020
M10	1.50	8.50	79.0	27.3	45	12	11.0	10.3	7.79	3	80690001000022	88690001000022
M12	1.75	10.25	89.0	31.8	45	14	13.5	12.3	9.38	3	80690001000024	88690001000024

For thread engagements see page 83.

Thread milling tool MF-UMGF with front and rear chamfers

- For metric ISO thread DIN 13
- Shank Ø DIN 6535 Form HE/HA
- From shank Ø 8 mm with internal coolant supply
- Cutting material: solid carbide



MF-UMGF 2.0×D											DIN 6535 HE	DIN 6535 HA
											Uncoated	Uncoated
Nominal Ø	t	Drill Ø	l1	l2.7	l3	d2	d3	d3.1	AD	Z	Order #	Order #
M8×1	1.0	7.0	74.0	17.3	40	10	9.0	8.3	6.22	3	80670002000070	88670002000070
M10×1	1.0	9.0	79.0	21.5	45	12	11.0	10.3	7.79	3	80670002000094	88670002000094
M12×1.5	1.5	10.5	89.0	25.9	45	14	13.5	12.3	9.38	3	80670002000113	88670002000113
M14×1.5	1.5	12.5	102.0	30.6	48	16	15.5	14.3	10.92	4	80670002000131	88670002000131
M16×1.5	1.5	14.5	102.0	33.6	48	18	17.5	16.3	12.82	4	80670002000147	88670002000147
											TiCN	TiCN
M8×1	1.0	7.0	74.0	17.3	40	10	9.0	8.3	6.22	3	80692002000070	88692002000070
M10×1	1.0	9.0	79.0	21.5	45	12	11.0	10.3	7.79	3	80692002000094	88692002000094
M12×1.5	1.5	10.5	89.0	25.9	45	14	13.5	12.3	9.38	3	80692002000113	88692002000113
M14×1.5	1.5	12.5	102.0	30.6	48	16	15.5	14.3	10.92	4	80692002000131	88692002000131
M16×1.5	1.5	14.5	102.0	33.6	48	18	17.5	16.3	12.82	4	80692002000147	88692002000147

For thread engagements see page 83.

For guideline values for thread milling see page 100.

JEL® Thread milling tool

Guideline values for thread milling

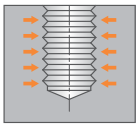
Material group		Strength Rm (N/mm²)	Hardness HB	v_c (m/min) = cutting speed f_b (mm/U) = drilling feed f_z (mm/tooth) = milling feed Coating Material	MGF / UMGF				
					Uncoated v_c m/min	TiCN v_c m/min	≤ Ø 6 f_z mm/tooth	≤ Ø 12 f_z mm/tooth	≥ Ø 16 f_z mm/tooth
P	1.1	≤400	≤120	Magnetic soft iron		80-150	0.015-0.04	0.04-0.06	0.08-0.15
P	1.2	≤700	≤200	Structural, case hardened steel		80-100	0.015-0.04	0.04-0.06	0.08-0.15
P	1.3	≤850	≤250	Carbon steel		80-100	0.015-0.04	0.04-0.06	0.08-0.15
P	1.4	≤850	≤250	Alloy steel		80-100	0.015-0.04	0.04-0.06	0.08-0.15
P	1.5	>850 ≤1200	>250 ≤350	Alloy/heat treated steel		60-80	0.01-0.03	0.04-0.06	0.04-0.10
P	1.6	>1200	>350	Alloy/heat treated steel		50-60	0.01-0.025	0.03-0.05	0.04-0.10
H	1.7	≤1400	≤400	Hardened steel to 45 HRC		30-50	0.01-0.015	0.015-0.02	0.03-0.08
H	1.8	≤2200	≤600	Hardened steel to 58 HRC		20-40	0.01-0.015	0.015-0.02	
M	2.1	≤850	≤250	Stainless steel, sulphurated		60-80	0.015-0.03	0.03-0.05	0.08-0.15
M	2.2	≤850	≤250	Austentic		60-80	0.015-0.03	0.03-0.05	0.04-0.10
M	2.3	≤1000	≤300	Ferritic, ferritic & austentic, martensitic		60-80	0.01-0.025	0.02-0.04	0.04-0.10
K	3.1	≤500	≤150	Grey cast iron	50-80	80-120	0.02-0.04	0.04-0.10	0.08-0.15
K	3.2	>500 ≤1000	>150 ≤300	Grey cast iron, heat treated	50-80	80-120	0.02-0.03	0.04-0.08	0.08-0.12
K	3.3	400-500	200-250	Vermicular cast iron		80-100	0.02-0.04	0.04-0.08	0.08-0.15
K	3.4	≤700	≤200	Spheroidal graphite cast iron		80-120	0.02-0.04	0.04-0.10	0.08-0.15
K	3.5	>700 ≤1000	>200 ≤300	Spheroidal graphite cast iron, heat treated		80-100	0.02-0.03	0.04-0.08	0.08-0.12
K	3.6	≤700	≤200	Malleable iron		80-100	0.02-0.04	0.04-0.10	0.08-0.15
K	3.7	>700 <1000	>200 ≤300	Malleable iron, heat treated		80-100	0.02-0.03	0.04-0.08	0.08-0.12
S	4.1	≤700	≤200	Pure titanium		40-100	0.015-0.03	0.03-0.08	0.08-0.15
S	4.2	≤900	≤270	Titanium alloys		40-100	0.015-0.03	0.03-0.08	0.08-0.15
S	4.3	>900 ≤1250	>270 ≤300	Titanium alloys		40-80	0.015-0.02	0.03-0.06	0.08-0.12
S	5.1	≤500	≤150	Pure nickel		50-60	0.02-0.04	0.04-0.06	0.04-0.10
S	5.2	≤900	<270	Nickel alloys, heat resistant		30-40	0.02-0.04	0.04-0.06	0.04-0.10
S	5.3	>900 ≤1200	>270 ≤350	Nickel alloys, high heat resistant		10-30	0.015-0.03	0.03-0.05	0.04-0.08
N	6.1	≤350	≤100	Non-alloy copper	100-300	100-400	0.04-0.07	0.07-0.12	0.10-0.20
N	6.2	≤700	≤200	Short chip brass, bronze, red brass	100-300	100-400	0.04-0.07	0.07-0.12	0.10-0.20
N	6.3	≤700	≤200	Long chip brass	100-300	100-400	0.04-0.07	0.07-0.12	0.10-0.20
N	6.4	≤500	≤470	Cu-Al-Fe alloy (Ampco)	60-80	60-80	0.02-0.04	0.03-0.06	0.08-0.15
N	7.1	≤350	≤100	Al, Mg non-alloy	100-400	100-400	0.03-0.07	0.07-0.12	0.10-0.20
N	7.2	≤600	≤180	Al wrought alloy, breaking strain (A5) <14 %	100-400	100-400	0.03-0.07	0.07-0.12	0.10-0.20
N	7.3	≤600	≤180	Al wrought alloy, breaking strain (A5) ≥14 %	100-400	100-400	0.03-0.07	0.07-0.12	0.10-0.20
N	7.4	≤600	≤180	Al cast alloy, Si <10 %	100-300	100-400	0.03-0.07	0.07-0.12	0.10-0.20
N	7.5	≤600	≤180	Al cast alloy, Si ≥10 %	100-200	100-250	0.03-0.07	0.07-0.12	0.10-0.20
N	8.1			Thermoplastics	80-100	100-120	0.04-0.06	0.06-0.12	0.08-0.20
N	8.2			Thermosetting plastics	80-100	100-120	0.04-0.06	0.06-0.12	0.08-0.15
N	8.3			Fiber reinforced plastics	50-60	60-80	0.04-0.06	0.06-0.12	0.08-0.15

Cutting values shown on these pages relate to the basic recommendations indicated for cutting materials.

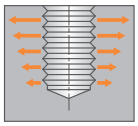
1.

Chip packing or gluing on thread profile
- poor coolant

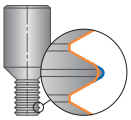
→ improve coolant situation (e.g. add flood cooling, lateral flute coolant supply for through holes)
→ add coolant flutes on shank

2. 

Thread plug go-gauge does not fit
- thread too small → reduce tool radius in offset register
- chips in thread → improve coolant

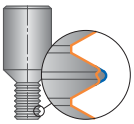
3. 

Thread is becoming tapered
- weak tool clamping → improve tool holding (i.e. shrink fit holder)
- thread milling feed too high → reduce thread milling feed

4. 

Uneven tool wear
- excessive tool run out

→ use better tool holder (i.e. shrink fit holder), check material uniformity

5. 

Chippage, tool breakage
- feed rate too high → reduce thread milling feed
- vibrations → check tool clamping (do not use modular systems!!!), change feeds and speeds

6.

Poor thread surface
- tool overhang too long → check workpiece clamping and stability. If clamping is weak, distribute the cutting force with multiple cuts.
- sub-optimal tool use → reduce cutting speed, increase feed/tooth rate, preferably do conventional milling

JEL® BGF, UBGF, DBGF Drilling, chamfering and thread milling tools

Thread milling for small threads starting at M4.

Revolutionary thread milling in perfect form made possilbe by CNC technology. With a combined thread milling tool : Drilling, chamfering and interior thread milling in a single pass!

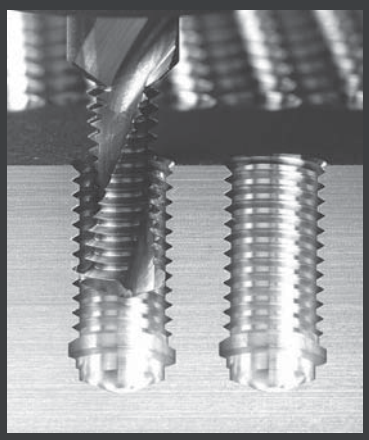
We offer two standard versions of our drill thread milling tool JEL® BGF with rear chamfer for defined thread lengths from 1.5×D; 2.0×D and 2.5×D.

Our universal drill thread milling tool JEL® UBGF with front and rear chamfers is ideal for different thread lengths.

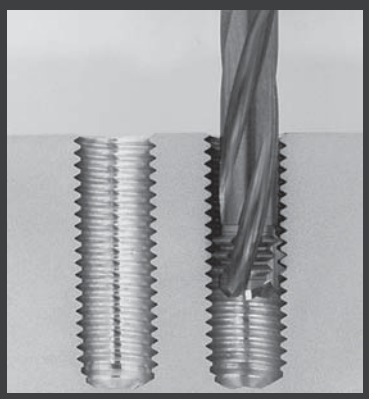
We use the finest grain carbide grades and coatings to guarantee a long tool life.

Your PLUS:

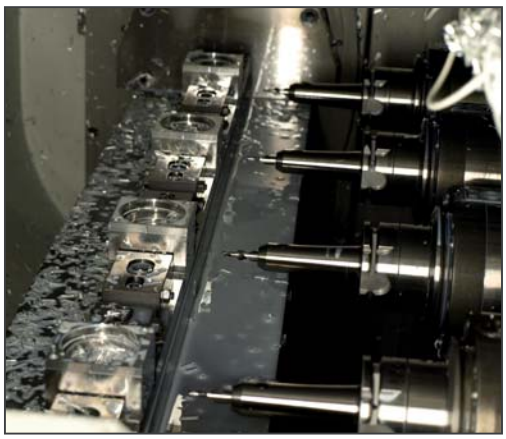
- At least 50% shorter machining time thanks to higher cutting speeds and feed rates
- Shorter tool changing times and fewer tool changes
- Superior workpiece surface finish thanks to variable machining parameters
- Same tool for blind holes and through holes
- Precise thread depth
- Exact and repeatable thread depth
- No chip residue left at the bottom of the bore
- High Speed Cutting (HSC) possible
- Factory regrinding and recoating services assured by our network of professional KOMET SERVICE® Partners



Cross section of thread cut by thread milling. Note the characte-ristic free grooves created during machining.



JEL® premium tools
Experiece process reliability working on hydraulic components with thread milling tools in a multi-spindle operation at 15,000 rpm.



BGF, UBGF, DBGF drill thread milling tools Page

Thread engagements 104 – 105

BGF – with 2 cutting edges and rear chamfer

M-BGF 1.5×D. 2×D. 2.5×D. 3×D 106 – 108
SGCIfor metric ISO thread DIN 13 109

EG-BGF 2×D
for metric ISO thread DIN 8140 110

MF-BGF 1.5×D. 2×D
for metric fine ISO thread DIN 13 111

UNC-BGF 1.5×D. 2×D
for UNC thread ANSI B1.1 112

UNF-BGF 1.5×D. 2×D
for UNF thread ANSI B1.1 113

G-BGF 2×D
for Whitworth pipe thread DIN EN ISO 228 and DIN EN 10226 (formerly DIN 2999) 114

BGF – with 3 cutting edges and rear chamfer

M-BGF 1.5×D. 2×D. 2.5×D 115 – 116
for metric ISO thread DIN 13

BGF – with 4 cutting edges and rear chamfer

M-BGF NZ4 1.5×D. 2×D. 2.5×D 117
for metric ISO thread DIN 13

UBGF – with rear chamfer

M-UBGF 2×D 118
for metric ISO thread DIN 13

MF-UBGF 2×D 119
for metric fine ISO thread DIN 13

UNC-UBGF 2×D 120
for UNC thread ANSI B1.1

UNF-UBGF 2×D 121
for UNF thread ANSI B1.1

G-UBGF 2×D 122
for Whitworth pipe thread DIN EN ISO 228 and DIN EN 10226 (formerly DIN 2999)

DBGF – diect circular drill thread milling tool

M-DBGF 2×D. 3×D 123
for metric ISO thread DIN 13

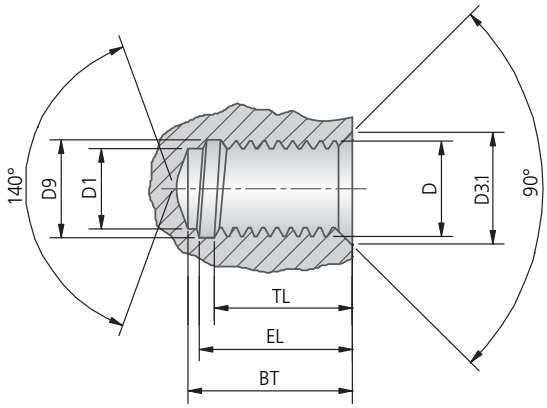
Tap drill diameters 62 - 63

Guideline values for drill thread milling 124

Problem – Cause – Solution 125

JEL® BGF

Thread engagements



BT = drilling depth
D3.1 = max. chamfer Ø with rear chamfer
EL = thread engagement
TL = full thread length

M															
Nominal Ø				1.5×D			2.0×D			2.5×D			3.0×D		
D	D1	D3.1	D9	BT	EL	TL	BT	EL	TL	BT	EL	TL	BT	EL	TL
M3	2.50	3.30	3.10	4.90	4.40	3.80	6.90	6.40	5.80	–	–	–	–	–	–
M4	3.30	4.30	4.12	6.80	6.10	5.25	8.90	8.20	7.30	11.00	10.30	9.40	12.54	11.84	11.55
M5	4.20	5.30	5.19	8.58	7.80	6.80	11.00	10.20	9.20	13.38	12.58	11.57	15.94	15.14	14.77
M6	5.00	6.30	6.25	10.70	9.70	8.40	13.70	12.70	11.40	15.70	14.70	13.40	18.89	17.89	17.42
M8	6.80	8.30	8.41	13.35	12.15	10.45	17.10	15.90	14.20	22.10	20.90	19.20	24.89	23.64	22.97
M10	8.50	10.30	10.54	17.60	16.06	14.00	22.10	20.60	18.50	26.60	25.10	23.00	31.36	29.86	29.02
M12	10.30	12.30	12.65	20.25	18.45	16.35	25.50	23.70	21.60	32.50	30.70	28.60	–	–	–
M14	12.00	14.30	14.81	22.90	20.90	18.60	30.90	28.90	26.60	36.90	34.90	32.60	–	–	–
M16	14.00	16.30	16.88	27.00	25.00	22.60	35.00	33.00	30.60	43.00	41.00	38.60	–	–	–

M – BGF NZ4 and BGF GGG												
Nominal Ø				1.5×D			2.0×D			2.5×D		
D	D1	D3.1	D9	BT	EL	TL	BT	EL	TL	BT	EL	TL
M6	5.00	6.30	6.25	10.37	9.40	8.40	13.47	12.50	11.40	15.47	14.50	13.40
M8	6.80	8.30	8.41	13.02	11.80	10.50	16.77	15.50	14.30	21.77	20.50	19.30
M10	8.50	10.30	10.54	17.07	15.60	14.10	21.57	20.10	18.60	26.07	24.60	23.10
M12	10.30	12.30	12.65	19.65	17.90	16.40	24.90	23.10	21.60	31.90	30.10	28.60
M14	12.00	14.30	14.81	22.44	20.40	18.60	30.44	28.40	26.60	36.44	34.40	32.60
M16	14.00	16.30	16.88	26.45	24.50	22.60	34.45	32.50	30.60	42.45	40.50	38.60

M – Metric ISO thread DIN 13

MF									
Nominal Ø				1.5×D			2.0×D		
D	D1	D3.1	D9	BT	EL	TL	BT	EL	TL
M6×0.75	5.25	6.30	6.18	10.30	9.60	8.60	14.05	13.30	12.30
M8×1	7.00	8.30	8.31	13.70	12.70	11.40	17.70	16.70	15.40
M10×1	9.00	10.30	10.35	16.80	15.80	14.40	21.80	20.80	19.40
M12×1.5	10.50	12.30	12.35	20.60	19.08	17.01	26.60	25.08	23.01
M12×1	11.00	12.30	12.35	19.75	18.80	17.40	24.75	23.80	22.40
M14×1.5	12.50	14.30	14.61	23.61	22.11	19.98	29.60	28.10	26.00
M16×1.5	14.50	16.30	16.64	26.62	25.12	22.97	34.10	32.60	30.50

MF – Metric Fine ISO thread DIN 13

EG						
Nominal Ø				2.0×D		
D	D1	D3.1	D9	BT	EL	TL
EG-M6	6.30	7.60	7.70	15.78	14.80	13.40
EG-M8	8.37	9.92	10.21	20.99	19.70	17.90
EG-M10	10.45	12.25	12.68	25.18	23.70	21.50
EG-M12	12.52	14.57	15.14	30.85	29.10	26.80

EG – Metric ISO thread DIN 8140 for helical wire inserts

UNC									
Nominal Ø				1.5×D			2.0×D		
D	D1	D3.1	D9	BT	EL	TL	BT	EL	TL
1/4-20 UNC	5.08	6.65	6.83	11.09	9.82	8.06	14.90	13.60	11.90
5/16-18 UNC	6.53	8.24	8.56	13.77	12.36	10.34	18.00	16.60	14.60
3/8-16 UNC	7.94	9.83	10.23	16.99	15.40	13.20	21.80	20.20	18.00
1/2-13 UNC	10.75	13.00	13.72	22.56	20.60	18.10	28.40	26.50	24.00

UNC – American Unified Coarse thread ANSI B1.1

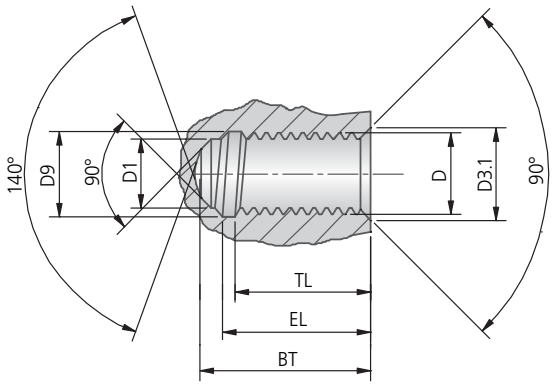
UNF									
Nominal Ø				1.5×D			2.0×D		
D	D1	D3.1	D9	BT	EL	TL	BT	EL	TL
1/4-28 UNF	5.44	6.65	6.70	10.68	9.78	8.52	14.30	13.40	12.10
5/16-24 UNF	6.88	8.24	8.40	13.54	12.50	11.00	17.80	16.70	15.20
3/8-24 UNF	8.47	9.83	10.01	15.67	14.61	13.07	19.90	18.80	17.30
1/2-20 UNF	11.43	13.00	13.35	20.08	18.80	16.90	26.40	25.20	23.30

UNF – American Unified Coarse thread ANSI B1.1

G						
Nominal Ø				2.0×D		
D	D1	D3.1	D9	BT	EL	TL
G1/8-28	8.82	10.03	10.12	20.70	19.80	18.50
G1/4-19	11.82	13.46	13.52	27.70	26.30	24.60

G – Whitworth pipe thread DIN EN ISO 228 and DIN EN 10226 (formerly DIN 2999)

Thread engagements



BT = drilling depth
D3.1 = max. chamfer Ø with rear chamfer
EL = thread engagement
TL = full thread length

M						
Nominal Ø	2.0×D					
D	D1	D3.1	D9	BT	EL	TL
M3	2.50	3.30	3.10	6.65	6.10	5.80
M4	3.30	4.30	4.12	8.58	7.90	7.30
M5	4.20	5.30	5.19	10.63	9.80	9.20
M6	5.00	6.30	6.25	13.28	12.30	11.40
M8	6.80	8.30	8.41	16.64	15.40	14.20
M10	8.50	10.30	10.54	21.49	20.00	18.50
M12	10.30	12.30	12.65	24.83	23.10	21.60
M14	12.00	14.30	14.81	30.19	28.20	26.60
M16	14.00	16.30	16.88	34.23	32.20	30.60

M – Metric ISO thread DIN 13

MF						
Nominal Ø	2.0×D					
D	D1	D3.1	D9	BT	EL	TL
M6×0.75	5.25	6.30	6.18	12.97	12.20	11.60
M8×1	7.00	8.30	8.31	17.70	16.70	15.40
M10×1	9.00	10.30	10.35	21.39	20.40	19.40
M12×1.5	10.50	12.30	12.35	24.34	23.30	22.40
M12×1	11.00	12.30	12.35	26.01	24.50	23.00
M14×1.5	12.50	14.30	14.61	29.03	27.50	26.00
M16×1.5	14.50	16.30	16.64	33.53	32.00	30.50

MF – Metric Fine ISO thread DIN 13

UNC						
Nominal Ø	2.0×D					
D	D1	D3.1	D9	BT	EL	TL
1/4-20 UNC	5.08	6.65	6.83	14.41	13.10	11.90
5/16-18 UNC	6.53	8.24	8.56	17.46	16.00	14.60
3/8-16 UNC	7.94	9.83	10.23	21.15	19.60	18.00
1/2-13 UNC	10.75	13.00	13.72	27.70	25.70	24.00

UNC – American Unified Coarse thread ANSI B1.1

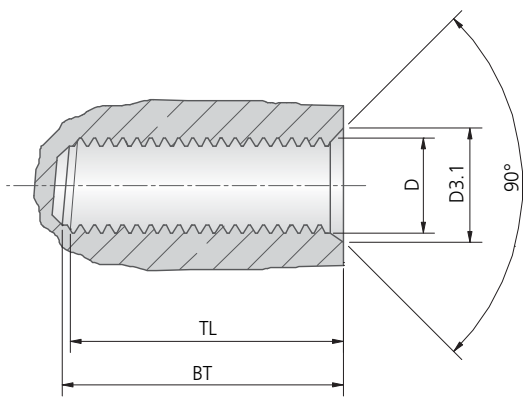
UNF						
Nominal Ø	2.0×D					
D	D1	D3.1	D9	BT	EL	TL
1/4-28 UNF	5.44	6.65	6.70	13.94	13.00	12.10
5/16-24 UNF	6.88	8.24	8.40	17.34	16.30	15.20
3/8-24 UNF	8.47	9.83	10.01	19.47	18.40	17.30
1/2-20 UNF	11.43	13.00	13.35	25.94	24.70	23.30

UNF – American Unified Fine thread ANSI B1.1

G						
Nominal Ø	2.0×D					
D	D1	D3.1	D9	BT	EL	TL
G1/8-28	8.82	10.03	10.12	20.30	19.40	18.50
G1/4-19	11.82	13.46	13.52	27.10	25.70	24.50

G – Whitworth pipe thread DIN EN ISO 228 and DIN EN 10226 (formerly DIN 2999)

JEL® DBGF



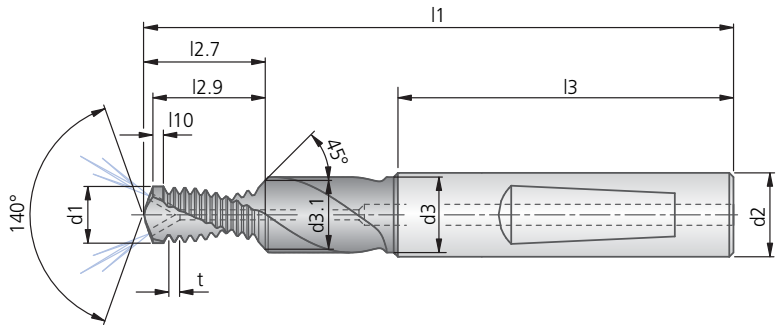
M					
Nominal Ø		2.0×D		3.0×D	
D	D3.1	BT	TL	BT	TL
M6 / M7	6.3	17.8	14.0	23.8	20.0
M8	8.3	23.2	18.5	31.2	26.5
M10	10.3	28.5	23.0	38.5	33.0
M12	12.3	34.0	27.5	46.0	39.5

M – Metric ISO thread DIN 13

Drill thread milling tool M-BGF with 2 cutting edges and rear chamfer

1.5×D

- For metric ISO thread DIN 13
- Shank Ø DIN 6535 Form HE/HA
- Tools with internal coolant supply
- Cutting material: solid carbide



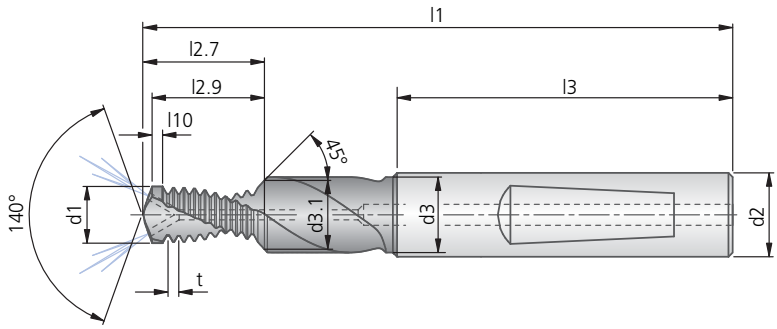
M-BGF 1.5×D													DIN 6535 HE	DIN 6535 HA
Nominal Ø	t	l1	l2.7	l2.9	l3	l10	d1	d2	d3	d3.1	AD	Z	Uncoated Order #	Uncoated Order #
M4	0.70	47.0	7.3	6.8	36	0.7	3.3	6	4.5	4.3	3.24	2	80945001000015	88945001000015
M5	0.80	52.6	9.3	8.6	36	0.8	4.2	6	5.5	5.3	4.10	2	80945001000017	88945001000017
M6	1.00	59.0	11.5	10.7	36	1.0	5.0	8	6.6	6.3	4.85	2	80945001000018	88945001000018
M8	1.25	70.3	14.4	13.4	40	1.3	6.8	10	9.0	8.3	6.45	2	80945001000020	88945001000020
M10	1.50	74.5	18.9	17.6	45	1.5	8.5	12	11.0	10.3	8.08	2	80945001000022	88945001000022
M12	1.75	83.8	21.8	20.2	45	1.5	10.3	14	13.5	12.3	9.74	2	80945001000024	88945001000024
													TiAlN	TiAlN
M4	0.70	47.0	7.3	6.8	36	0.7	3.3	6	4.5	4.3	3.24	2	80934001000015	88934001000015
M5	0.80	52.6	9.3	8.6	36	0.8	4.2	6	5.5	5.3	4.10	2	80934001000017	88934001000017
M6	1.00	59.0	11.5	10.7	36	1.0	5.0	8	6.6	6.3	4.85	2	80934001000018	88934001000018
M8	1.25	70.3	14.4	13.4	40	1.3	6.8	10	9.0	8.3	6.45	2	80934001000020	88934001000020
M10	1.50	74.5	18.9	17.6	45	1.5	8.5	12	11.0	10.3	8.08	2	80934001000022	88934001000022
M12	1.75	83.8	21.8	20.2	45	1.5	10.3	14	13.5	12.3	9.74	2	80934001000024	88934001000024

For thread engagements, see page 104.

2.0×D

Drill thread milling tool M-BGF with 2 cutting edges and rear chamfer

For metric ISO thread DIN 13 ■
Shank Ø DIN 6535 Form HE/HA ■
Tools with internal coolant supply ■
Cutting material: solid carbide ■



M-BGF 2.0×D													DIN 6535 HE	DIN 6535 HA
Nominal Ø	t	l1	l2.7	l2.9	l3	l10	d1	d2	d3	d3.1	AD	Z	Uncoated Order #	Uncoated Order #
M3*	0.50	49.0	7.3	6.9	36	0.5	2.5	6	4.5	3.3	2.45	2	80901001000013	88901001000013
M4	0.70	49.0	9.4	8.9	36	0.7	3.3	6	4.5	4.3	3.24	2	80941001000015	88941001000015
M5	0.80	55.0	11.7	11.0	36	0.8	4.2	6	5.5	5.3	4.10	2	80941001000017	88941001000017
M6	1.00	62.0	14.5	13.7	36	1.0	5.0	8	6.6	6.3	4.85	2	80941001000018	88941001000018
M8	1.25	74.0	18.2	17.1	40	1.3	6.8	10	9.0	8.3	6.45	2	80941001000020	88941001000020
M10	1.50	79.0	23.4	22.1	45	1.5	8.5	12	11.0	10.3	8.08	2	80941001000022	88941001000022
M12	1.75	89.0	27.1	25.5	45	1.5	10.3	14	13.5	12.3	9.74	2	80941001000024	88941001000024
M14	2.00	102.0	32.8	30.9	48	1.5	12.0	16	15.5	14.3	11.35	2	80941001000025	88941001000025
M16	2.00	102.0	37.1	35.0	48	1.5	14.0	18	17.5	16.3	13.28	2	80941001000026	88941001000026
													TiAlN	TiAlN
M3*	0.50	49.0	6.8	7.3	36	0.5	2.5	6	4.5	3.3	2.45	2	80906001000013	88906001000013
M4	0.70	49.0	9.4	8.9	36	0.7	3.3	6	4.5	4.3	3.24	2	80935001000015	88935001000015
M5	0.80	55.0	11.7	11.0	36	0.8	4.2	6	5.5	5.3	4.10	2	80935001000017	88935001000017
M6	1.00	62.0	14.5	13.7	36	1.0	5.0	8	6.6	6.3	4.85	2	80935001000018	88935001000018
M8	1.25	74.0	18.2	17.1	40	1.3	6.8	10	9.0	8.3	6.45	2	80935001000020	88935001000020
M10	1.50	79.0	23.4	22.1	45	1.5	8.5	12	11.0	10.3	8.08	2	80935001000022	88935001000022
M12	1.75	89.0	27.1	25.5	45	1.5	10.3	14	13.5	12.3	9.74	2	80935001000024	88935001000024
M14	2.00	102.0	32.8	30.9	48	1.5	12.0	16	15.5	14.3	11.35	2	80935001000025	88935001000025
M16	2.00	102.0	37.1	35.0	48	1.5	14.0	18	17.5	16.3	13.28	2	80935001000026	88935001000026

* Tools without internal coolant supply

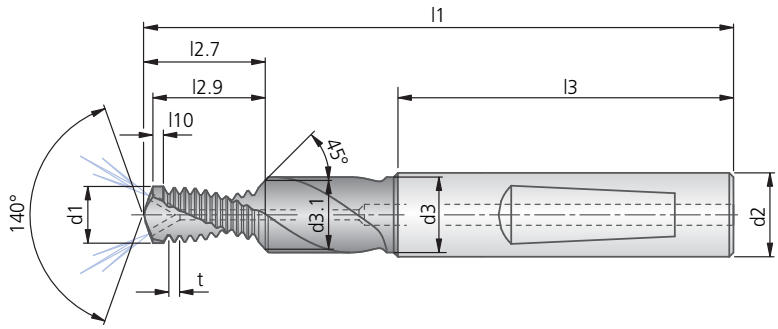
For thread engagements, see page 104.

See guideline values for drill thread milling on page 124.

Drill thread milling tool M-BGF with 2 cutting edges and rear chamfer

2.5×D
3.0×D

- For metric ISO thread DIN 13
- Shank Ø DIN 6535 Form HE/HA
- Tools with internal coolant supply
- Cutting material: solid carbide



M-BGF 2.5×D													DIN 6535 HE	DIN 6535 HA
Nominal Ø	t	l1	l2.7	l2.9	l3	l10	d1	d2	d3	d3.1	AD	Z	Uncoated Order #	Uncoated Order #
M5	0.80	55.0	14.1	13.4	36	0.8	4.2	6	5.5	5.3	4.10	2	80961001000017	88961001000017
M6	1.00	62.0	16.5	15.7	36	1.0	5.0	8	6.6	6.3	4.85	2	80961001000018	88961001000018
M8	1.25	74.0	23.2	22.1	40	1.3	6.8	10	9.0	8.3	6.45	2	80961001000020	88961001000020
M10	1.50	79.0	27.9	26.6	45	1.5	8.5	12	11.0	10.3	8.08	2	80961001000022	88961001000022
M12	1.75	89.0	34.1	32.5	45	1.5	10.3	14	13.5	12.3	9.74	2	80961001000024	88961001000024
M16	2.00	102.0	45.1	43.0	48	1.5	14.0	18	17.5	16.3	13.28	2	80961001000026	88961001000026
													TiAlN	TiAlN
M6	1.00	62.0	16.5	15.7	36	1.0	5.0	8	6.6	6.3	4.85	2	80956001000018	88956001000018
M8	1.25	74.0	23.2	22.1	40	1.3	6.8	10	9.0	8.3	6.45	2	80956001000020	88956001000020
M10	1.50	79.0	27.9	26.6	45	1.5	8.5	12	11.0	10.3	8.08	2	80956001000022	88956001000022
M12	1.75	89.0	34.1	32.5	45	1.5	10.3	14	13.5	12.3	9.74	2	80956001000024	88956001000024

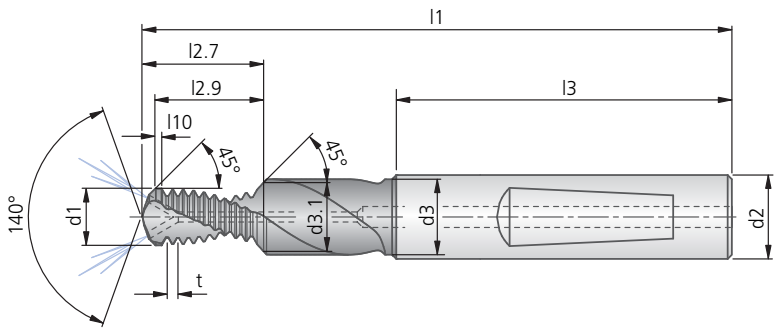
M-BGF 3.0×D – for material group 7.4													DIN 6535 HE	DIN 6535 HA
Nominal Ø	t	l1	l2.7	l2.9	l3	l10	d1	d2	d3	d3.1	AD	Z	Uncoated Order #	Uncoated Order #
M4	0.70	58	13.16	12.54	36	0.14	3.30	6	4.5	4.3	3.24	2	80904001000015	88904001000015
M5	0.90	63	16.73	15.94	36	0.16	4.20	6	5.5	5.3	4.10	2	80904001000017	88904001000017
M6	1.00	68	19.83	18.89	36	0.20	5.00	8	6.6	6.3	4.85	2	80904001000018	88904001000018
M8	1.25	82	26.11	24.89	40	0.25	6.80	10	9.0	8.3	6.45	2	80904001000020	88904001000020
M10	1.50	95	32.90	31.36	45	0.30	8.50	12	11.0	10.3	8.08	2	80904001000022	88904001000022

For thread engagements, see page 104.

1.5×D
2.0×D

Drill thread milling tool M-BGF for SGCI with 2 cutting edges and rear chamfer

- For metric ISO thread DIN 13 ■
- Shank Ø DIN 6535 Form HE/HA ■
- Tools with internal coolant supply ■
- Cutting material: solid carbide ■



M-BGF 1.5×D													DIN 6535 HE	DIN 6535 HA
Nominal Ø	t	l1	l2.7	l2.9	l3	l10	d1	d2	d3	d3.1	AD	Z	TiAlN Order #	TiAlN Order #
M6	1.00	59.0	11.5	10.7	36	1.0	5.0	8	6.6	6.3	4.85	2	80949001000018	88949001000018
M8	1.25	70.3	14.4	13.4	40	1.3	6.8	10	9.0	8.3	6.45	2	80949001000020	88949001000020
M10	1.50	74.5	18.9	17.6	45	1.5	8.5	12	11.0	10.3	8.08	2	80949001000022	88949001000022
M12	1.75	83.8	21.8	20.2	45	1.5	10.3	14	13.5	12.3	9.74	2	80949001000024	88949001000024

M-BGF 2.0×D													DIN 6535 HE	DIN 6535 HA
Nominal Ø	t	l1	l2.7	l2.9	l3	l10	d1	d2	d3	d3.1	AD	Z	TiAlN Order #	TiAlN Order #
M6	1.00	62.0	14.5	13.7	36	1.0	5.0	8	6.6	6.3	4.85	2	80943001000018	88943001000018
M8	1.25	74.0	18.2	17.1	40	1.3	6.8	10	9.0	8.3	6.45	2	80943001000020	88943001000020
M10	1.50	79.0	23.4	22.1	45	1.5	8.5	12	11.0	10.3	8.08	2	80943001000022	88943001000022
M12	1.75	89.0	27.1	25.5	45	1.5	10.3	14	13.5	12.3	9.74	2	80943001000024	88943001000024

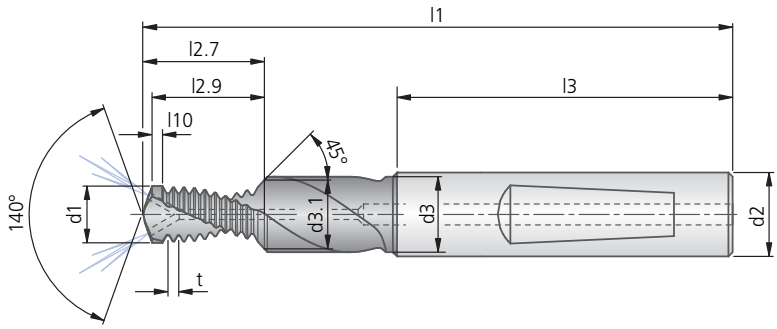
For thread engagements, see page 104.

See guideline values for drill thread milling on page 124.

Drill thread milling tool EG-BGF with 2 cutting edges and rear chamfer

2.0×D

- For metric ISO thread DIN 8140 for helical wire inserts
- Shank Ø DIN 6535 Form HE/HA
- Tools with internal coolant supply
- Cutting material: solid carbide



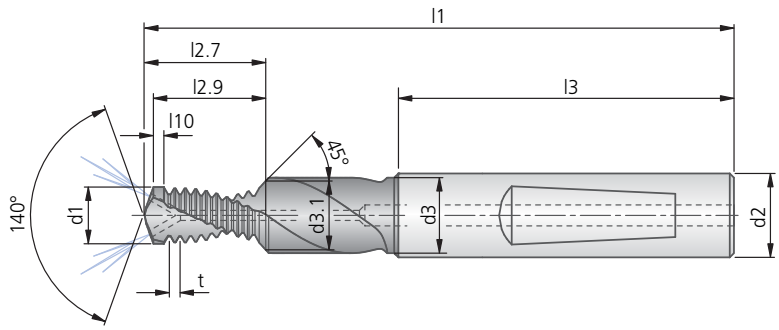
EG-BGF 2.0×D													DIN 6535 HE	DIN 6535 HA
Nominal Ø	t	l1	l2.7	l2.9	l3	l10	d1	d2	d3	d3.1	AD	Z	Uncoated Order #	Uncoated Order #
EG-M6	1.00	74.0	16.8	15.8	40	1.0	6.3	10	9	7.6	5.98	2	80941051000018	88941051000018
EG-M8	1.25	78.0	22.3	21.0	45	1.3	8.4	12	11	9.9	7.89	2	80941051000020	88941051000020
EG-M10	1.50	87.5	26.8	25.2	45	1.5	10.5	14	14	12.3	9.83	2	80941051000022	88941051000022
EG-M12	1.75	102.0	32.8	30.9	48	1.5	12.5	16	16	14.6	11.80	2	80941051000024	88941051000024
													TiAlN	TiAlN
EG-M6	1.00	74.0	16.8	15.8	40	1.0	6.3	10	9	7.6	5.98	2	80935051000018	88935051000018
EG-M8	1.25	78.0	22.3	21.0	45	1.3	8.4	12	11	9.9	7.89	2	80935051000020	88935051000020
EG-M10	1.50	87.5	26.8	25.2	45	1.5	10.5	14	14	12.3	9.83	2	80935051000022	88935051000022
EG-M12	1.75	102.0	32.8	30.9	48	1.5	12.5	16	16	14.6	11.80	2	80935051000024	88935051000024

For thread engagements, see page 104.

1.5×D
2.0×D

Drill thread milling tool MF-BGF with 2 cutting edges and rear chamfer

For metric fine ISO thread DIN 13 ■
Shank Ø DIN 6535 Form HE/HA ■
Tools with internal coolant supply ■
Cutting material: solid carbide ■



MF-BGF 1.5×D													DIN 6535 HE	DIN 6535 HA
Nominal Ø	t	l1	l2.7	l2.9	l3	l10	d1	d2	d3	d3.1	AD	Z	Uncoated Order #	Uncoated Order #
M8×1	1.0	70.0	14.8	13.7	40	1.0	7.0	10	9.0	8.3	6.79	2	80945002000070	88945002000070
M10×1	1.0	74.0	18.2	16.8	45	1.0	9.0	12	11.0	10.3	8.75	2	80945002000094	88945002000094
M12×1.5	1.5	83.0	22.2	20.6	45	1.5	10.5	14	13.5	12.3	10.06	2	80945002000113	88945002000113

MF-BGF 2.0×D													DIN 6535 HE	DIN 6535 HA
Nominal Ø	t	l1	l2.7	l2.9	l3	l10	d1	d2	d3	d3.1	AD	Z	Uncoated Order #	Uncoated Order #
M6×0.75	0.75	62.0	14.9	13.3	36	0.8	5.25	8	6.6	6.3	5.14	2	80941002000048	88941002000048
M8×1	1.0	74.0	18.8	17.7	40	1.0	7.0	10	9.0	8.3	6.79	2	80941002000070	88941002000070
M10×1	1.0	79.0	23.2	21.8	45	1.0	9.0	12	11.0	10.3	8.75	2	80941002000094	88941002000094
M12×1	1.0	89.0	26.4	24.8	45	1.0	11.0	14	13.5	12.3	10.74	2	80941002000111	88941002000111
M12×1.5	1.5	89.0	28.2	26.6	45	1.5	10.5	14	13.5	12.3	10.06	2	80941002000113	88941002000113
M14×1.5	1.5	102.0	31.5	29.6	48	1.5	12.5	16	15.5	14.3	12.01	2	80941002000131	88941002000131
M16×1.5	1.5	102.0	36.3	34.1	48	1.5	14.5	18	17.5	16.3	13.95	2	80941002000147	88941002000147
													TiAlN	TiAlN
M8×1	1.0	74.0	18.8	17.7	40	1.0	7.0	10	9.0	8.3	6.79	2	80935002000070	88935002000070
M10×1	1.0	79.0	23.2	21.8	45	1.0	9.0	12	11.0	10.3	8.75	2	80935002000094	88935002000094
M12×1	1.0	89.0	26.4	24.8	45	1.0	11.0	14	13.5	12.3	10.74	2	80935002000111	88935002000111
M12×1.5	1.5	89.0	28.2	26.6	45	1.5	10.5	14	13.5	12.3	10.06	2	80935002000113	88935002000113

For thread engagements, see page 104.

See guideline values for drill thread milling on page 124.

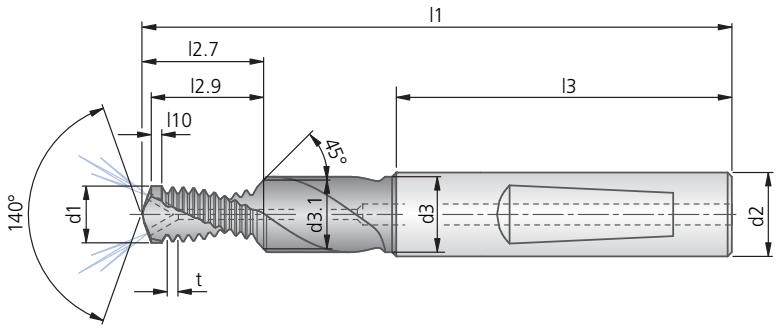
JEL® BGF

UNC

Drill thread milling tool UNC-BGF with 2 cutting edges and rear chamfer

1.5×D
2.0×D

- For American Unified Coarse thread ANSI B1.1
- Shank Ø DIN 6535 Form HE/HA
- Tools with internal coolant supply
- Cutting material: solid carbide



UNC-BGF 1.5×D													DIN 6535 HE	DIN 6535 HA
Nominal Ø	t	l1	l2.7	l2.9	l3	l10	d1	d2	d3	d3.1	AD	Z	Uncoated Order #	Uncoated Order #
1/4-20 UNC	1.270	58.2	11.9	11.1	36	1.3	5.1	8	7.8	6.7	4.70	2	80945010000011	88945010000011
5/16-18 UNC	1.411	69.8	14.8	13.8	40	1.4	6.5	10	9.0	8.2	6.01	2	80945010000012	88945010000012
3/8-16 UNC	1.588	74.2	18.2	17.0	45	1.5	7.9	12	11.0	9.8	7.36	2	80945010000013	88945010000013
1/2-13 UNC	1.954	83.0	24.2	22.6	45	1.5	10.8	14	13.5	13.0	9.87	2	80945010000015	88945010000015

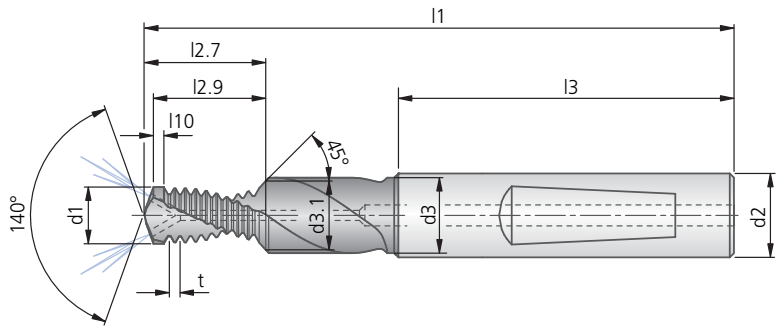
UNC-BGF 2.0×D													DIN 6535 HE	DIN 6535 HA
Nominal Ø	t	l1	l2.7	l2.9	l3	l10	d1	d2	d3	d3.1	AD	Z	Uncoated Order #	Uncoated Order #
1/4-20 UNC	1.270	62.0	15.7	14.9	36	1.3	5.1	8	7.8	6.7	4.70	2	80941010000011	88941010000011
5/16-18 UNC	1.411	74.0	19.0	18.0	40	1.4	6.5	10	9.0	8.2	6.01	2	80941010000012	88941010000012
3/8-16 UNC	1.588	79.0	23.0	21.8	45	1.5	7.9	12	11.0	9.8	7.36	2	80941010000013	88941010000013
1/2-13 UNC	1.954	89.0	30.1	28.4	45	1.5	10.8	14	13.5	13.0	9.87	2	80941010000015	88941010000015

For thread engagements, see page 104.

1.5×D
2.0×D

Drill thread milling tool UNF-BGF with 2 cutting edges and rear chamfer

- For American Unified Fine thread ANSI B1.1 ■
- Shank Ø DIN 6535 Form HE/HA ■
- Tools with internal coolant supply ■
- Cutting material: solid carbide ■



UNF-BGF 1.5×D													DIN 6535 HE	DIN 6535 HA
Nominal Ø	t	l1	l2.7	l2.9	l3	l10	d1	d2	d3	d3.1	AD	Z	Uncoated Order #	Uncoated Order #
1/4-28 UNF	0.907	58.4	11.5	10.7	36	0.9	5.4	8	7.8	6.7	5.17	2	80945011000011	88945011000011
5/16-24 UNF	1.058	70.0	14.6	13.5	40	1.1	6.9	10	9.0	8.2	6.51	2	80945011000012	88945011000012
3/8-24 UNF	1.058	74.8	17.0	15.7	45	1.1	8.5	12	11.0	9.8	8.07	2	80945011000013	88945011000013
1/2-20 UNF	1.270	82.7	21.8	20.1	45	1.3	11.4	14	13.5	13.0	10.88	2	80945011000015	88945011000015

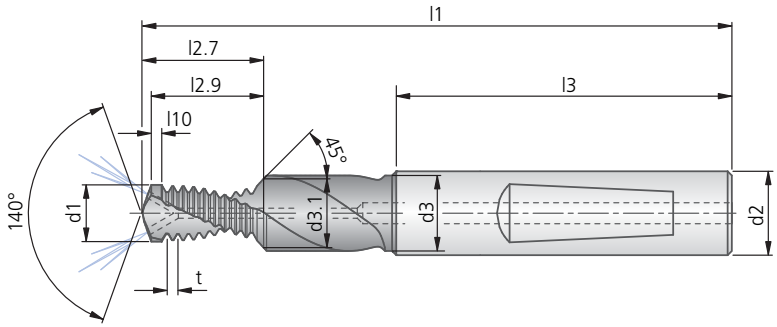
UNF-BGF 2.0×D													DIN 6535 HE	DIN 6535 HA
Nominal Ø	t	l1	l2.7	l2.9	l3	l10	d1	d2	d3	d3.1	AD	Z	Uncoated Order #	Uncoated Order #
1/4-28 UNF	0.907	62.0	15.2	14.3	36	0.9	5.4	8	7.8	6.7	5.17	2	80941011000011	88941011000011
5/16-24 UNF	1.058	74.0	18.8	17.8	40	1.1	6.9	10	9.0	8.2	6.51	2	80941011000012	88941011000012
3/8-24 UNF	1.058	79.0	21.2	19.9	45	1.1	8.5	12	11.0	9.8	8.07	2	80941011000013	88941011000013
1/2-20 UNF	1.270	89.0	28.2	26.4	45	1.3	11.4	14	13.5	13.0	10.88	2	80941011000015	88941011000015

For thread engagements, see page 104.

Drill thread milling tool G-BGF with 2 cutting edges and rear chamfer

2.0×D

- For Whitworth pipe thread DIN EN ISO 228 and DIN EN 10226 (formerly DIN 2999)
- Shank Ø DIN 6535 Form HE/HA
- Tools with internal coolant supply
- Cutting material: solid carbide



G-BGF 2.0×D													DIN 6535 HE	DIN 6535 HA
Nominal Ø	t	l1	l2.7	l2.9	l3	l10	d1	d2	d3	d3.1	AD	Z	Uncoated Order #	Uncoated Order #
G1/8-28	0.907	79.0	22.1	20.7	45	0.9	8.8	12	11.0	10.0	8.40	2	80941025000001	88941025000001
G1/4-19	1.337	102.0	29.5	27.7	48	1.3	11.8	16	13.5	13.5	11.44	2	80941025000002	88941025000002

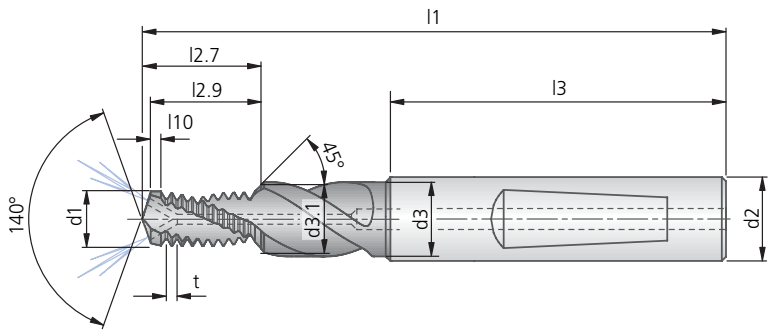
For thread engagements, see page 104.

1.5×D
2.0×D

Drill thread milling tool M-BGF with 3 cutting edges and rear chamfer

- For metric ISO thread DIN 13 ■
- Shank Ø DIN 6535 Form HE/HA ■
- Tools with internal coolant supply ■
- Cutting material: solid carbide ■

For precast core holes



M-BGF 1.5×D													DIN 6535 HE	DIN 6535 HA
Nominal Ø	t	l1	l2.7	l2.9	l3	l10	d1	d2	d3	d3.1	AD	Z	Uncoated Order #	Uncoated Order #
M6	1.00	59.0	11.5	10.7	36	1.0	5.0	8	6.6	6.3	4.85	3	80345001000018	88345001000018
M8	1.25	70.3	14.4	13.4	40	1.3	6.8	10	9.0	8.3	6.45	3	80345001000020	88345001000020
M10	1.50	74.5	18.9	17.6	45	1.5	8.5	12	11.0	10.3	8.08	3	80345001000022	88345001000022
M12	1.75	83.8	21.8	20.2	45	1.5	10.3	14	13.5	12.3	9.74	3	80345001000024	88345001000024
													TiAlN Order #	TiAlN Order #
M6	1.00	59.0	11.5	10.7	36	1.0	5.0	8	6.6	6.3	4.85	3	80334001000018	88334001000018
M8	1.25	70.3	14.4	13.4	40	1.3	6.8	10	9.0	8.3	6.45	3	80334001000020	88334001000020
M10	1.50	74.5	18.9	17.6	45	1.5	8.5	12	11.0	10.3	8.08	3	80334001000022	88334001000022
M12	1.75	83.8	21.8	20.2	45	1.5	10.3	14	13.5	12.3	9.74	3	80334001000024	88334001000024

M-BGF 2.0×D													DIN 6535 HE	DIN 6535 HA
Nominal Ø	t	l1	l2.7	l2.9	l3	l10	d1	d2	d3	d3.1	AD	Z	Uncoated Order #	Uncoated Order #
M6	1.00	62.0	14.5	13.7	36	1.0	5.0	8	6.6	6.3	4.85	3	80341001000018	88341001000018
M8	1.25	74.0	18.2	17.1	40	1.3	6.8	10	9.0	8.3	6.45	3	80341001000020	88341001000020
M10	1.50	79.0	23.4	22.1	45	1.5	8.5	12	11.0	10.3	8.08	3	80341001000022	88341001000022
M12	1.75	89.0	27.1	25.5	45	1.5	10.3	14	13.5	12.3	9.74	3	80341001000024	88341001000024
													TiAlN Order #	TiAlN Order #
M6	1.00	62.0	14.5	13.7	36	1.0	5.0	8	6.6	6.3	4.85	3	80335001000018	88335001000018
M8	1.25	74.0	18.2	17.1	40	1.3	6.8	10	9.0	8.3	6.45	3	80335001000020	88335001000020
M10	1.50	79.0	23.4	22.1	45	1.5	8.5	12	11.0	10.3	8.08	3	80335001000022	88335001000022
M12	1.75	89.0	27.1	25.5	45	1.5	10.3	14	13.5	12.3	9.74	3	80335001000024	88335001000024

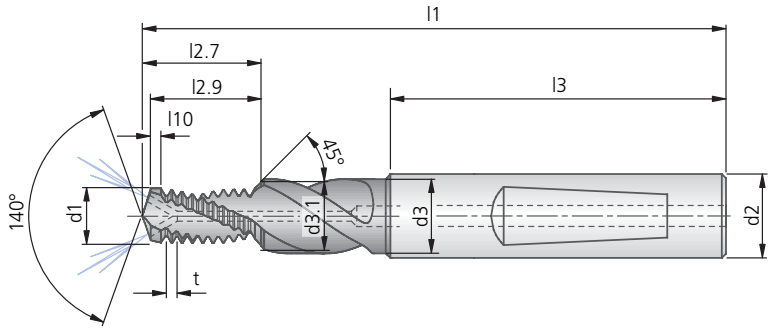
For thread engagements, see page 104.

See guideline values for drill thread milling on page 124.

Drill thread milling tool M-BGF with 3 cutting edges and rear chamfer

2.5×D

- For metric ISO thread DIN 13
- For precasted holes
- Shank Ø DIN 6535 Form HE/HA
- Tools with internal coolant supply
- Cutting material: solid carbide



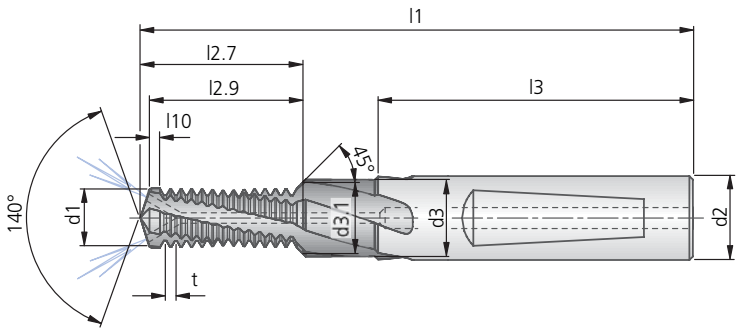
M-BGF 2.5×D													DIN 6535 HE	DIN 6535 HA
													Uncoated	Uncoated
Nominal Ø	t	l1	l2.7	l2.9	l3	l10	d1	d2	d3	d3.1	AD	Z	Order #	Order #
M6	1.00	62.0	16.5	15.7	36	1.0	5.0	8	6.6	6.3	4.85	3	80361001000018	88361001000018
M8	1.25	74.0	23.2	22.1	40	1.3	6.8	10	9.0	8.3	6.45	3	80361001000020	88361001000020
M10	1.50	79.0	27.9	26.6	45	1.5	8.5	12	11.0	10.3	8.08	3	80361001000022	88361001000022
M12	1.75	89.0	34.1	32.5	45	1.5	10.3	14	13.5	12.3	9.74	3	80361001000024	88361001000024
													TiAlN	TiAlN
M6	1.00	62.0	16.5	15.7	36	1.0	5.0	8	6.6	6.3	4.85	3	80356001000018	88356001000018
M8	1.25	74.0	23.2	22.1	40	1.3	6.8	10	9.0	8.3	6.45	3	80356001000020	88356001000020
M10	1.50	79.0	27.9	26.6	45	1.5	8.5	12	11.0	10.3	8.08	3	80356001000022	88356001000022
M12	1.75	89.0	34.1	32.5	45	1.5	10.3	14	13.5	12.3	9.74	3	80356001000024	88356001000024

For thread engagements, see page 104.

1.5×D
2.0×D
2.5×D

Drill thread milling tool M-BGF NZ4 with 4 cutting edges and rear chamfer

- For metric ISO thread DIN 13 ■
- Shank Ø DIN 6535 Form HE/HA ■
- Tools with internal coolant supply ■
- Cutting material: solid carbide ■



M-BGF 1.5×D													DIN 6535 HE	DIN 6535 HA
													AlCrN	AlCrN
Nominal Ø	t	l1	l2.7	l2.9	l3	l10	d1	d2	d3	d3.1	AD	Z	Order #	Order #
M6	1.00	59.0	11.6	10.5	36	0.8	5.0	8	6.6	6.3	4.85	4	80369001000018	88369001000018
M8	1.25	70.3	14.5	13.0	40	1.0	6.8	10	9.0	8.3	6.61	4	80369001000020	88369001000020
M10	1.50	74.7	19.0	17.1	45	1.1	8.5	12	11.0	10.3	8.29	4	80369001000022	88369001000022
M12	1.75	83.8	22.0	19.7	45	1.1	10.3	14	13.5	12.3	10.00	4	80369001000024	88369001000024

M-BGF 2.0×D													DIN 6535 HE	DIN 6535 HA
													AlCrN	AlCrN
Nominal Ø	t	l1	l2.7	l2.9	l3	l10	d1	d2	d3	d3.1	AD	Z	Order #	Order #
M6	1.00	62.0	14.6	13.5	36	0.8	5.0	8	6.6	6.3	4.85	4	80373001000018	88373001000018
M8	1.25	74.0	18.3	16.8	40	1.0	6.8	10	9.0	8.3	6.61	4	80373001000020	88373001000020
M10	1.50	79.0	23.5	21.6	45	1.1	8.5	12	11.0	10.3	8.29	4	80373001000022	88373001000022
M12	1.75	89.0	27.2	24.9	45	1.1	10.3	14	13.5	12.3	10.00	4	80373001000024	88373001000024

M-BGF 2.5×D													DIN 6535 HE	DIN 6535 HA
													AlCrN	AlCrN
Nominal Ø	t	l1	l2.7	l2.9	l3	l10	d1	d2	d3	d3.1	AD	Z	Order #	Order #
M6	1.00	62.0	16.6	15.5	36	0.8	5.0	8	6.6	6.3	4.85	4	80380001000018	88380001000018
M8	1.25	74.0	23.3	21.8	40	1.0	6.8	10	9.0	8.3	6.61	4	80380001000020	88380001000020
M10	1.50	79.0	28.0	26.1	45	1.1	8.5	12	11.0	10.3	8.29	4	80380001000022	88380001000022
M12	1.75	89.0	34.2	31.9	45	1.1	10.3	14	13.5	12.3	10.00	4	80380001000024	88380001000024

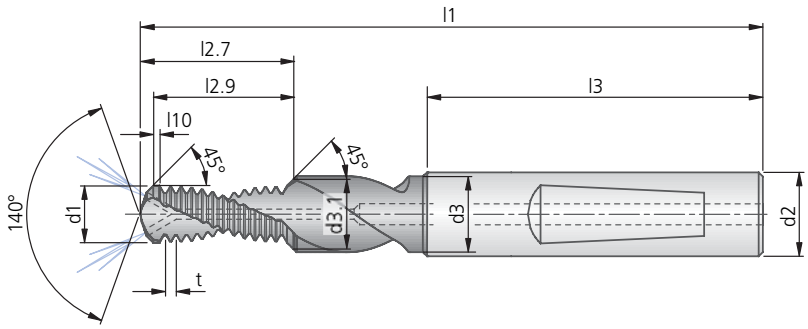
For thread engagements, see page 104.

See guideline values for drill thread milling on page 124.

Drill thread milling tool M-UBGF with 2 cutting edges and front and rear chamfers

2.0×D

- For metric ISO thread DIN 13
- Shank Ø DIN 6535 Form HE/HA
- Tools with internal coolant supply
- Cutting material: solid carbide



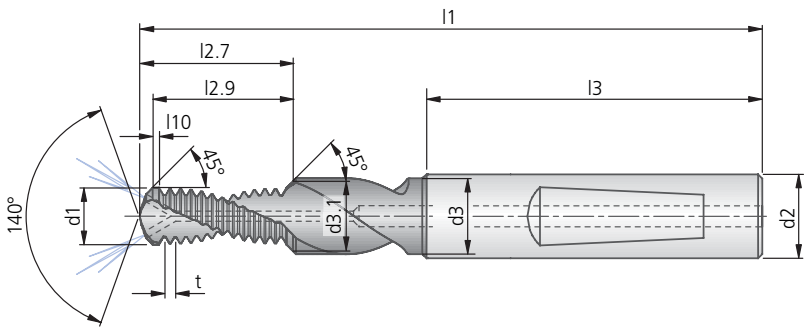
M-UBGF 2.0×D													DIN 6535 HE	DIN 6535 HA
Nominal Ø	t	l1	l2.7	l2.9	l3	l10	d1	d2	d3	d3.1	AD	Z	Uncoated Order #	Uncoated Order #
M6	1.00	62.0	14.5	13.3	36	0.6	5.0	8	6.6	6.3	4.85	2	80641001000018	88641001000018
M8	1.25	74.0	19.4	17.9	40	0.8	6.8	10	9.0	8.3	6.45	2	80641001000020	88641001000020
M10	1.50	79.0	23.4	21.5	45	0.9	8.5	12	11.0	10.3	8.08	2	80641001000022	88641001000022
M12	1.75	89.0	28.8	26.6	45	0.9	10.3	14	13.5	12.3	9.74	2	80641001000024	88641001000024
													TiAlN Order #	TiAlN Order #
M6	1.00	62.0	14.5	13.3	36	0.6	5.0	8	6.6	6.3	4.85	2	80635001000018	88635001000018
M8	1.25	74.0	19.4	17.9	40	0.8	6.8	10	9.0	8.3	6.45	2	80635001000020	88635001000020
M10	1.50	79.0	23.4	21.5	45	0.9	8.5	12	11.0	10.3	8.08	2	80635001000022	88635001000022
M12	1.75	89.0	28.8	26.6	45	0.9	10.3	14	13.5	12.3	9.74	2	80635001000024	88635001000024

For thread engagements, see page 105.

2.0×D

Drill thread milling tool MF-UBGF with 2 cutting edges and front and rear chamfers

For metric ISO fine thread DIN 13 ■
Shank Ø DIN 6535 Form HE/HA ■
Tools with internal coolant supply ■
Cutting material: solid carbide ■



MF-UBGF 2.0×D													DIN 6535 HE	DIN 6535 HA
													Uncoated	Uncoated
Nominal Ø	t	l1	l2.7	l2.9	l3	l10	d1	d2	d3	d3.1	AD	Z	Order #	Order #
M6×0.75	0.75	61.7	14.9	13.0	36	0.4	5.3	8	6.6	6.3	5.14	2	**80641002000048**	**88641002000048**
M8×1	1.00	74.0	18.8	17.3	40	0.6	7.0	10	9.0	8.3	6.79	2	**80641002000070**	**88641002000070**
M10×1	1.00	79.0	24.2	22.4	45	0.6	9.0	12	11.0	10.3	8.75	2	**80641002000094**	**88641002000094**
M12×1	1.00	88.4	26.4	24.3	45	0.6	11.0	14	13.5	12.3	10.74	2	**80641002000111**	**88641002000111**
M12×1.5	1.50	89.0	28.2	26.0	45	0.9	10.5	14	13.5	12.3	10.06	2	**80641002000113**	**88641002000113**
M14×1.5	1.50	102.0	33.0	30.5	48	0.9	12.5	16	15.5	14.3	12.01	2	**80641002000131**	**88641002000131**
													TiAlN	TiAlN
M8×1	1.00	74.0	18.8	17.3	40	0.6	7.0	10	9.0	8.3	6.79	2	**80635002000070**	**88635002000070**
M10×1	1.00	79.0	24.2	22.4	45	0.6	9.0	12	11.0	10.3	8.75	2	**80635002000094**	**88635002000094**
M12×1	1.00	88.4	26.4	24.3	45	0.6	11.0	14	13.5	12.3	10.74	2	**80635002000111**	**88635002000111**
M12×1.5	1.50	89.0	28.2	26.0	45	0.9	10.5	14	13.5	12.3	10.06	2	**80635002000113**	**88635002000113**

For thread engagements, see page 105.

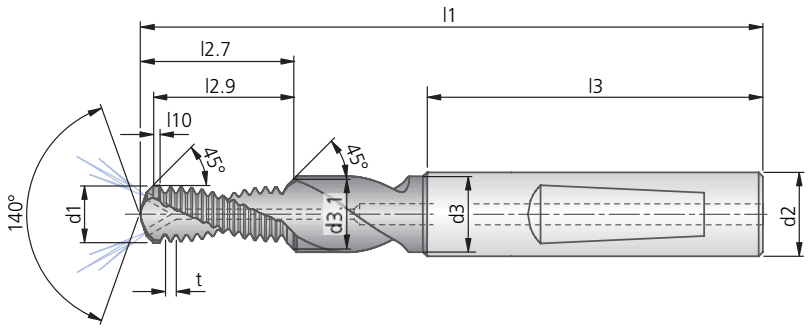
JEL® UBGF

UNC

Drill thread milling tool UNC-UBGF with 2 cutting edges and front and rear chamfers

2.0×D

- For American Unified Coarse thread ANSI B1.1
- Shank Ø DIN 6535 Form HE/HA
- Tools with internal coolant supply
- Cutting material: solid carbide



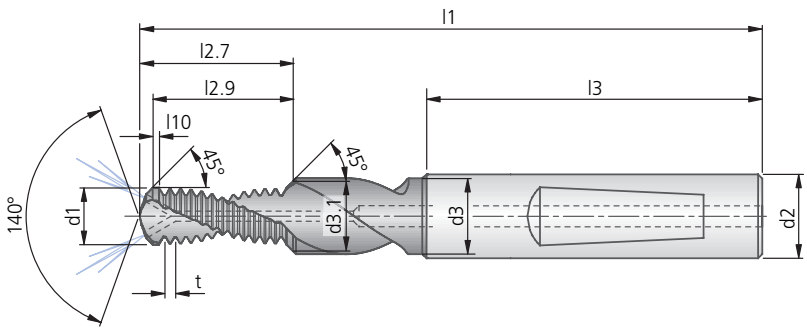
UNC-UBGF 2.0×D													DIN 6535 HE	DIN 6535 HA
Nominal Ø	t	l1	l2.7	l2.9	l3	l10	d1	d2	d3	d3.1	AD	Z	Uncoated Order #	Uncoated Order #
1/4-20 UNC	1.270	62.0	15.7	14.4	36	0.8	5.1	8	7.8	6.7	4.70	2	**80641010000011**	**88641010000011**
5/16-18 UNC	1.411	74.0	19.0	17.5	40	0.9	6.5	10	9.0	8.2	6.01	2	**80641010000012**	**88641010000012**
3/8-16 UNC	1.588	79.0	23.0	21.2	45	0.9	7.9	12	11.0	9.8	7.36	2	**80641010000013**	**88641010000013**
1/2-13 UNC	1.954	89.0	30.1	27.7	45	0.8	10.8	14	13.5	13.0	9.87	2	**80641010000015**	**88641010000015**

For thread engagements, see page 105.

2.0×D

Drill thread milling tool UNF-UBGF with 2 cutting edges and front and rear chamfers

For American Unified Fine thread ANSI B1.1 ■
Shank Ø DIN 6535 Form HE/HA ■
Tools with internal coolant supply ■
Cutting material: solid carbide ■



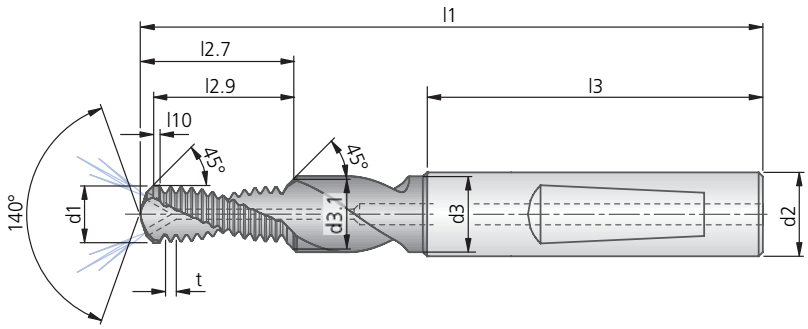
UNF-UBGF 2.0×D													DIN 6535 HE	DIN 6535 HA
Nominal Ø	t	l1	l2.7	l2.9	l3	l10	d1	d2	d3	d3.1	AD	Z	Uncoated Order #	Uncoated Order #
1/4-28 UNF	0.907	62.0	15.2	13.9	36	0.5	5.4	8	7.8	6.7	5.17	2	**80641011000011**	**88641011000011**
5/16-24 UNF	1.058	74.0	18.8	17.3	40	0.6	6.9	10	9.0	8.2	6.51	2	**80641011000012**	**88641011000012**
3/8-24 UNF	1.058	79.0	22.3	20.5	45	0.6	8.5	12	11.0	9.8	8.07	2	**80641011000013**	**88641011000013**
1/2-20 UNF	1.270	89.0	29.5	27.2	45	0.8	11.4	14	13.5	13.0	10.88	2	**80641011000015**	**88641011000015**

For thread engagements, see page 105.

See guideline values for drill thread milling on page 124.

Drill thread milling tool G-UBGF 2.0×D
with 2 cutting edges and front and rear chamfers

- For Whitworth pipe thread DIN EN ISO 228 and DIN EN 10226 (formerly DIN 2999)
- Shank Ø DIN 6535 Form HE/HA
- Tools with internal coolant supply
- Cutting material: solid carbide



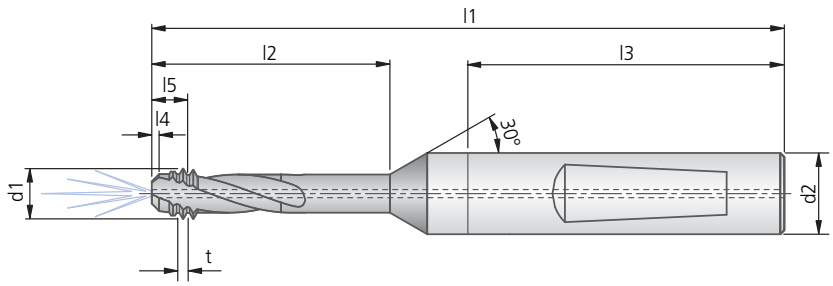
G-UBGF 2.0×D													DIN 6535 HE	DIN 6535 HA
Nominal Ø	t	l1	l2.7	l2.9	l3	l10	d1	d2	d3	d3.1	AD	Z	Uncoated Order #	Uncoated Order #
G1/8-28	0.907	79.0	22.1	20.3	45	0.5	8.8	12	11.0	10.0	8.40	2	80641025000001	88641025000001
G1/4-19	1.337	102.0	30.8	28.5	48	0.8	11.8	16	15.5	13.5	11.44	2	80641025000002	88641025000002

For thread engagements, see page 105.

2.0×D
3.0×D

Circular drill thread milling tool M-DBGF with 3 or 4 cutting edges with front chamfer

- For metric ISO thread DIN 13 ■
- Shank Ø DIN 6535 Form HE/HA ■
- Tools with internal coolant supply ■
- Cutting material: solid carbide ■



M-DBGF 2.0×D										DIN 6535 HE	DIN 6535 HA
										TiAlN	TiAlN
Nominal Ø	t	l1	l2	l3	l4	l5	d1	d2	Z	Order #	Order #
M6 / M7	1.00	60.0	17.8	36	0.4	3.8	4.7	8	3	80752001000018	88752001000018
M8	1.25	71.0	23.2	40	0.5	4.7	6.3	10	4	80752001000020	88752001000020
M10	1.50	76.0	28.5	40	0.6	5.5	7.8	10	4	80752001000022	88752001000022
M12	1.75	86.0	34.0	45	0.6	6.5	9.5	12	4	80752001000024	88752001000024

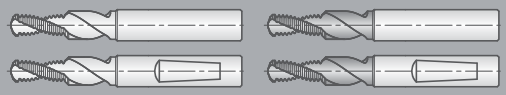
M-DBGF 3.0×D										DIN 6535 HE	DIN 6535 HA
										TiAlN	TiAlN
Nominal Ø	t	l1	l2	l3	l4	l5	d1	d2	Z	Order #	Order #
M6 / M7	1.00	65.0	23.8	36	0.4	3.8	4.7	8	3	80758001000018	88758001000018
M8	1.25	79.0	31.2	40	0.5	4.7	6.3	10	4	80758001000020	88758001000020
M10	1.50	85.0	38.5	40	0.6	5.5	7.8	10	4	80758001000022	88758001000022
M12	1.75	100.0	46.0	45	0.6	6.5	9.5	12	4	80758001000024	88758001000024

For thread engagements, see page 105

See guideline values for drill thread milling on page 124.

JEL® Drill thread milling tools

Guideline values for drill thread milling

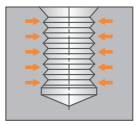
Material group		Strength (N/mm²)	Hardness HB	v_c (m/min) = cutting speed f_b (mm/Rev) = drill feed f_z (mm/Tooth) = milling feed Material	BGF / UBGF							DBGF	
													
				Coating	Uncoated	TiAlN	AlCrN	≤ Ø 6	≤ Ø 12	≤ Ø 6	≤ Ø 12	TiAlN	
					v_c m/min	v_c m/min	v_c m/min	f_b mm/U	f_b mm/U	f_z mm/tooth	f_z mm/tooth	v_c m/min	f_z mm/tooth
P	1.1	≤400	≤120	Magnetic soft iron								100-150	0.03-0.10
	1.2	≤700	≤200	Structural, case hardened steel								100-150	0.03-0.10
	1.3	≤850	≤250	Carbon steel								100-150	0.03-0.10
	1.4	≤850	≤250	Alloy steel								100-150	0.03-0.10
	1.5	>850 ≤1200	>250 ≤350	Alloy/heat treated steel								100-150	0.03-0.10
	1.6	>1200	>350	Alloy/heat treated steel								100-150	0.03-0.10
H	1.7	≤1400	≤400	Hardened steel to 45 HRC									
	1.8	≤2200	≤600	Hardened steel to 58 HRC									
M	2.1	≤850	≤250	Stainless steel, sulphuretted									
	2.2	≤850	≤250	Austentic									
	2.3	≤1000	≤300	Ferritic, ferritic & austentic, martensitic									
K	3.1	≤500	≤150	Grey cast iron	50-80	80-120	80-120	0.10-0.15	0.15-0.22	0.02-0.05	0.05-0.10	100-200	0.05-0.15
	3.2	>500 ≤1000	>150 ≤300	Grey cast iron, heat treated	50-80	80-120	80-120	0.10-0.15	0.15-0.22	0.02-0.05	0.05-0.10	100-200	0.05-0.15
	3.3	400-500	200-250	Vermicular cast iron		80-100		0.10-0.15	0.15-0.22	0.02-0.05	0.05-0.10	100-150	0.05-0.15
	3.4	≤700	≤200	Spheroidal graphite cast iron	50-80	80-120		0.10-0.15	0.15-0.22	0.02-0.05	0.05-0.10	100-200	0.05-0.15
	3.5	>700 ≤1000	>200 ≤300	Spheroidal graphite cast iron, heat treated								100-200	0.05-0.15
	3.6	≤700	≤200	Malleable iron								100-200	0.05-0.15
	3.7	>700 <1000	>200 ≤300	Malleable iron, heat treated								100-200	0.05-0.15
S	4.1	≤700	≤200	Pure titanium									
	4.2	≤900	≤270	Titanium alloys									
	4.3	>900 ≤1250	>270 ≤300	Titanium alloys									
	5.1	≤500	≤150	Pure nickel									
	5.2	≤900	<270	Nickel alloys, heat resistant									
	5.3	>900 ≤1200	>270 ≤350	Nickel alloys, high heat resistant									
N	6.1	≤350	≤100	Non-alloy copper									
	6.2	≤700	≤200	Short chip brass, bronze, red brass	100-300			0.10-0.30	0.06-0.10	0.03-0.06	0.06-0.10	100-200	0.05-0.15
	6.3	≤700	≤200	Long chip brass								100-200	0.05-0.15
	6.4	≤500	≤470	Cu-Al-Fe alloy (Ampco)									
	7.1	≤350	≤100	Al, Mg non-alloy	100-400	100-400		0.10-0.25	0.25-0.30	0.03-0.06	0.06-0.10	100-400	0.05-0.20
	7.2	≤600	≤180	Al wrought alloy, breaking strain (A5) <14 %	100-400	100-400		0.10-0.25	0.25-0.30	0.03-0.06	0.06-0.10	100-400	0.05-0.20
	7.3	≤600	≤180	Al wrought alloy, breaking strain (A5) ≥14 %	100-400	100-400		0.03-0.06	0.06-0.12	0.03-0.06	0.06-0.10	100-400	0.05-0.20
	7.4	≤600	≤180	Al cast alloy, Si <10 %	100-300	100-400		0.10-0.25	0.25-0.30	0.03-0.06	0.06-0.10	100-400	0.05-0.20
	7.5	≤600	≤180	Al cast alloy, Si ≥10 %		100-300		0.10-0.25	0.25-0.30	0.03-0.06	0.06-0.10	100-300	0.05-0.20
	8.1			Thermoplastics	60-120	60-120		0.10-0.25	0.25-0.30	0.03-0.06	0.06-0.10	100-200	0.05-0.20
	8.2			Thermosetting plastics	60-100	60-100		0.10-0.25	0.25-0.30	0.03-0.06	0.06-0.10	100-200	0.05-0.20
	8.3			Fiber reinforced plastics	40-60	60-80		0.10-0.15	0.15-0.22	0.02-0.05	0.05-0.10	100-150	0.05-0.20

 Cutting values shown on these pages relate to the basic recommendations indicated for cutting materials.

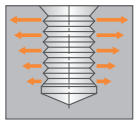
1.

Chips packing or glueing on thread profile
- poor coolant

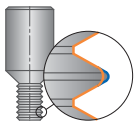
→ improve coolant (i.e. add flood coolant, lateral flute coolant supply for through holes)
→ add coolant flutes on shank

2. 

Thread plug go-gage does not fit
- thread too small → reduce tool radius in offset register
- chips in thread → improve coolant

3. 

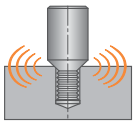
Thread is becoming tapered
- weak tool clamping → improve tool holding (i.e. shrink fit holder)
- thread milling feed too high → reduce thread milling feed

4. 

Uneven tool wear
- excessive tool run out → use better tool holder (i.e. shrink fit holder)

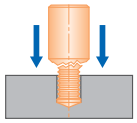
5.

Counterbore chips are winding around the tool
- chamfer feed too low → increase chamfer feed

6. 

Loud drilling noise (especially towards the final drilling depth)
- chip problem

→ reduce drill feed rate
→ use tool with coolant through
→ add peck cycle

7. 

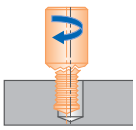
Tool breakage while drilling (especially in long chipping material)
- chip problem

→ reduce drill feed rate
→ use tool with coolant through
→ add peck cycle (multiple pecks)

8.

Chips glued up in the flutes
- poor coolant

→ improve coolant situation
→ use tool with coolant through
→ use coated tool

9. 

Chippage, tool breakage while thread milling
- feed rate too high → check that the chip grooves are free of chips after the boring operation
- vibrations → reduce feed rate (check whether NC feeds relate to center point or external track)

10.

Poor thread surface (harmonics)
- vibrations

→ check tool holder (do not use modular systems !)
→ check workpiece clamping and fixture. If the clamping set-up is unstable, effect a distribution of the cutting force.
→ reduce cutting speed
→ increase tooth feed rate
→ introduce distribution of cutting force

Thread production with the highest precision.

The JEL® GWF TOMILL is ideal for producing larger thread diameters accordning to the 2/3 concept.
Our tools have a helix angle of approximately 15° to the right, which results in extremely quiet machining.
The cubic capacity complies with the JEL® standard, and the shank is manufactured according to DIN 6535.

JEL® GWF TOMILL SR
Thread milling to the bottom of the hole.

JEL® GWF TOMILL GP
Use of this tool greatly reduces machining time. Chamfering, face milling and thread milling with one single tool.

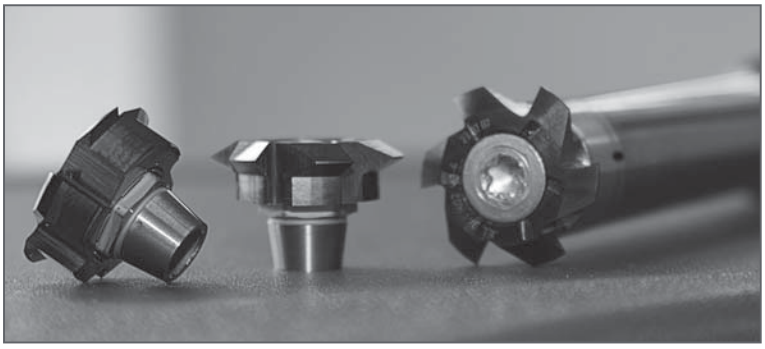
JEL® GWF TOMILL GS
Counterboring and thread milling in one clamping operation.

JEL® TOMILL CUT

Five holders with seven thread milling heads, three chamfering heads and various types of grooving heads by upon request.

Thread milling
- for 1.0 - 6.0 mm pitch, as well as UN 24-UN4 threads/ inch and G14 - G11 threads/inch
- for metric and metric fine ISO threads from M20×1, as well as13/16“ and G½"
- can produce thread lengths up to 136 mm

90° chamfering and deburring
- solid carbide chamfer head, TiAlN coated
- 90° chamfering of the bore top as well as the bore exit
- trimming and deburring of the workpiece edges
- chamfer heads with other angles and angle combinations upon request



Grooving
- various types of grooving heads available by upon request
- comes in solid carbide or PCD-tipped versions

Your PLUS:

- A single tool for different tolerances
- A single tool for different diameters > nominal Ø with the same pitch
- A single tool for blind holes and through holes
- A single tool for different materials
- Exact and repeatable thread depth
- No chip roots remain in threads
- High Speed Cutting (HSC) possible
- Factory regrinding and recoating services assured by our network of professional KOMET SERVICE® Partners

Workpiece: Track rod end with
M24×1.5 threads
45 mm deep

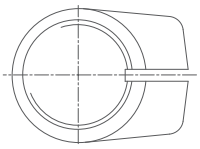
Material: Ck40

Special feature:
Thread with lateral slots

Tool:
JEL® thread milling tool
GWF 16×25×1.5 IK TiCN

Cutting values:
v_C = 153 m/min
f_Z = 0.1 mm/Z
2 revolutions

Customer benefit:
Tool life of 800 threads



Thread milling tool TOMILL CUT

for threads M, MF, UN, G from Ø 20 mm — Page 128 – 129

Thread milling tool GWF TOMILL

Thread engagements — 130

GWF TOMILL

M-GWF SR — 131 – 132
for metric ISO threads DIN 13

MF-GWF SR — 131 – 132
for metric ISO fine threads DIN 13

UN-GWF SR — 133
for UN threads ANSI B1.1

G-GWF SR — 134
for Whitworth pipe threads DIN EN ISO 228 and DIN EN 10226 (formerly DIN 2999)

NPT-/NPTF-GWF GS — 135
for UN threads ANSI B2.1

GWF TOMILL – for external threads

M-GWF SR — 136
for metric ISO threads DIN 13

MF-GWF SR — 136
for metric ISO fine threads DIN 13

GWF TOMILL – for machining steel from 900 N/mm²

M-GWF XS — 137
for metric ISO threads DIN 13

MF-GWF XS — 137
for metric ISO fine threads DIN 13

GWF TOMILL – Spot facing, chamfering and thread milling

M-GWF GP — 138
for metric ISO threads DIN 13

MF-GWF GP — 138
for metric ISO fine threads DIN 13

G-GWF GP — 139
for Whitworth pipe threads DIN EN ISO 228 and DIN EN 10226 (formerly DIN 2999)

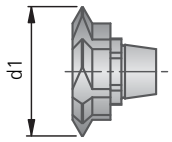
Tap drill diameters — 62 – 63

Thread milling guidelines — 140

Problem – Cause – Solution — 141

Thread milling, chamfering, deburring, grooving from Ø 20 mm

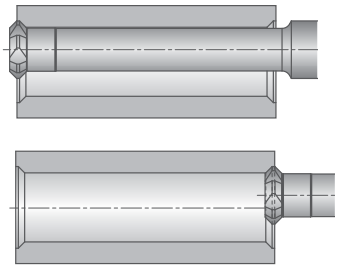
- Thread milling head
- TiAlN coated
- Cylindrical connection with d1=34

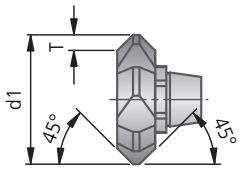


			M / MF		UN			G		
Suitable for holder	d1	Z	Metric ISO thread DIN 13 Thread	Nut d min	American Unified thread ANSI B1.1 Thread	Nut d min	Order #	Whitworth pipe thread DIN EN ISO 228 Thread	Nut d min	Order #
❶	16	6	M1.0 - M2.0	20	UN24 - UN12	13/16-20 UNEF	50341001001020	G11	G1/2	50341001251400
			M1.5 - M2.5		UN18 - UN10		50341001001525	G14		50341001251100
❷	20	6	M1.0 - M2.0	24	UN24-UN12	1-8UNC	50341002001020			–
			M3.0 - M4.0		UN8-UN6		50341002003040			–
❸	34	6	M5.0 - M6.0	48	UN5-UN4	1-3/4-5UNC	50341004005060			–

Chamfering head

TiAlN coated
Cylindrical connection with d1=34

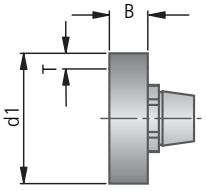


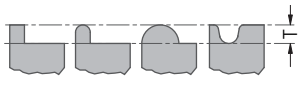


Chamfering and deburring					
Suitable for holder	d1	Z	T	Hole d min	Order #
❶	16	6	1.4	16.5	50391045011600
❷	20	6	2.4	20.5	50391045022000
❸	34	6	3.5	34.5	50391045043400

Grooving head

Various types of grooving heads available upon request
Solid carbide or PCD tipped
Cylindrical connection with d1=34





Examples of possible grooves

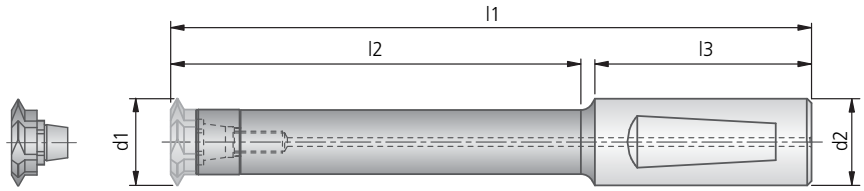
Grooving				
Suitable for holder	d1 max	B max	T max	Hole d min
❶	16	4.5	1.4	16.5
❷	20	5.5	2.4	20.5
❸	34	9.5	3.5	34.5

Holder

Thread milling

Chamfering and deburring

Grooving



Your KOMET SERVICE® Partner will be glad to grind to the desired shape.
See Chapter 8 for a "Special Order Form."

Holder			DIN 6535 HE	DIN 6535 HA	Assembly part		
Straight shank Ø d2×l3	l1	l2	Order #	Order #	Countersink screw DIN 7991 Article	Order #	Suitable for milling, chamfer and grooving head
16 × 48	100	50	50310016001050	58310016001050	M4×20	55021 04020	❶
16 × 48	130	80	50310016001080	58310016001080			
20 × 50	112	60	50310020002060	58310020002060	M5×25	55021 05025	❷
20 × 50	148	96	50310020002096	58310020002096			
25 × 56	197	136	50310025004136	58310025004136	M8×35	55021 08035	❸

Includes:
Holder with screw

Application example
JEL® TOMILL CUT for M48, 70 mm deep in plate made of St50-3

Challenge
Material: Structural steel St50-3
Workpiece: Plate
Produce a thread M48, blind hole, 70 mm deep

Solution
Thread milling head M5.0-6.0 TiAlN, mounted on holder shank 25×56, l2=136

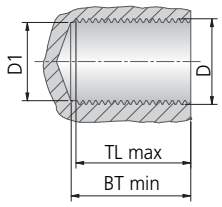
Cutting values
v_c = 80 m/min
f_z = 0.14mm/tooth
t_h= 7.2 min

For thread milling guideline values see page 140.

JEL® GWF TOMILL

Thread engagements

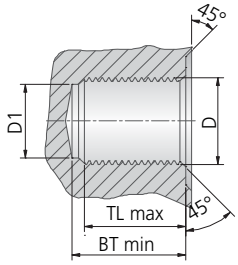
GWF SR



BT = drilling depth
TL = full thread length
*with axial adjustment

GWF SR			
d1×l2	BT min	Thread length on tool	TL max
10×16	TL + min. 0.20 mm	16.00	16.00
12×20	TL + min. 0.20 mm	20.00	20.00
16×16	TL + min. 0.20 mm	16.00	*28.00
16×25	TL + min. 0.20 mm	25.00	*38.00
20×20	TL + min. 0.20 mm	20.00	*38.00
20×32	TL + min. 0.20 mm	32.00	*48.00

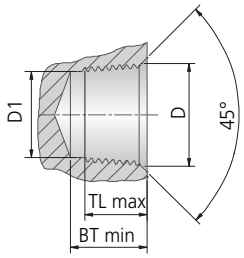
GWF GP



BT = drilling depth
TL = full thread length
*with axial adjustment

GWF GP			
d1×l2	BT min	Thread length on tool	TL max
16×25	TL + 1 × t + 0.20 mm	25.00	*36.00
20×32	TL + 1 × t + 0.20 mm	32.00	*45.00

GWF GS

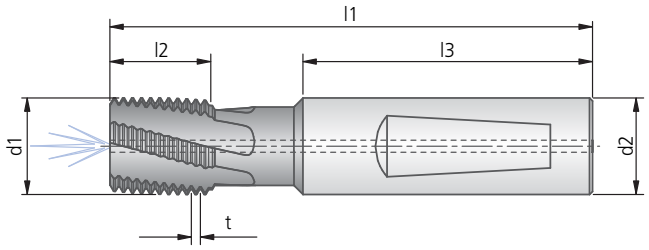


BT = drilling depth (as a safety precaution, 0.2 deeper than deepest tool position)
TL = full thread length

NPT-GWF GS			
d1×l2×t	Dimension	BT min	TL max
12.5×18.3×14	½ -14 – ¾-14 NPT	20.20	18.10
19×22.2×11½	1-11½ – 2-11½ NPT	24.60	22.10

NPTF-GWF GS			
d1×l2×t	Dimension	BT min	TL max
12.5×18.3×14	½ -14 – ¾-14 NPTF	20.20	18.10
19×22.2×11½	1-11½ – 2-11½ NPTF	24.60	22.10

Thread milling tool M-GWF SR, MF-GWF SR



*without neck recess

- For metric and metric fine ISO thread DIN 13
- Shank Ø DIN 6535 Form HE/HA
- Tools with internal coolant supply
- Cutting material: solid carbide

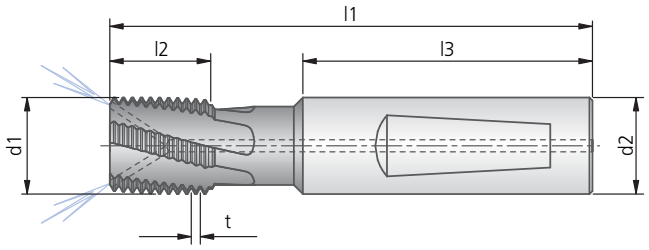
For thread Ø (d_{min} Nut) smaller than shown on this page, please use our thread milling tools MGF or MKG.

M-GWF SR. MF-GWF SR							DIN 6535 HE	DIN 6535 HA
							Uncoated	Uncoated
d1 × l2 × t t = pitch mm	Nut d min	l1	l2	l3	d2	Z	Order #	Order #
10×16×M1*	15.0	70.0	16.0	40	10	4	80802002001100	88802002001100
10×16×M1.5*	15.0	70.0	16.5	40	10	4	80802002001150	88802002001150
12×20×M1*	18.0	80.0	20.0	45	12	4	80802004001100	88802004001100
12×20×M1.5*	18.0	80.0	19.5	45	12	4	80802004001150	88802004001150
16×16×M1	24.0	80.0	16.0	48	16	5	80802005001100	88802005001100
16×16×M1.5	24.0	80.0	16.5	48	16	5	80802005001150	88802005001150
16×16×M2	24.0	80.0	16.0	48	16	5	80802005001200	88802005001200
16×25×M1	24.0	90.0	25.0	48	16	5	80802006001100	88802006001100
16×25×M1.5	24.0	90.0	25.5	48	16	5	80802006001150	88802006001150
16×25×M2	24.0	90.0	24.0	48	16	5	80802006001200	88802006001200
16×25×M3*	24.0	90.0	27.0	48	16	4	80802006001300	88802006001300
20×20×M1	30.0	92.0	21.0	50	20	5	80802007001100	88802007001100
20×20×M1.5	30.0	92.0	21.0	50	20	5	80802007001150	88802007001150
20×20×M2	30.0	92.0	20.0	50	20	5	80802007001200	88802007001200
20×20×M3	30.0	92.0	21.0	50	20	5	80802007001300	88802007001300
20×32×M1	30.0	105.0	33.0	50	20	5	80802008001100	88802008001100
20×32×M1.5	30.0	105.0	33.0	50	20	5	80802008001150	88802008001150
20×32×M2	30.0	105.0	32.0	50	20	5	80802008001200	88802008001200
20×32×M3	30.0	105.0	33.0	50	20	5	80802008001300	88802008001300
							TiCN	TiCN
10×16×M1*	15.0	70.0	16.0	40	10	4	80842002001100	88842002001100
10×16×M1.5*	15.0	70.0	16.5	40	10	4	80842002001150	88842002001150
12×20×M1*	18.0	80.0	20.0	45	12	4	80842004001100	88842004001100
12×20×M1.5*	18.0	80.0	19.5	45	12	4	80842004001150	88842004001150
16×16×M1	24.0	80.0	16.0	48	16	5	80842005001100	88842005001100
16×16×M1.5	24.0	80.0	16.5	48	16	5	80842005001150	88842005001150
16×16×M2	24.0	80.0	16.0	48	16	5	80842005001200	88842005001200
16×25×M1	24.0	90.0	25.0	48	16	5	80842006001100	88842006001100
16×25×M1.5	24.0	90.0	25.5	48	16	5	80842006001150	88842006001150
16×25×M2	24.0	90.0	24.0	48	16	5	80842006001200	88842006001200
16×25×M3*	24.0	90.0	27.0	48	16	4	80842006001300	88842006001300
20×20×M1	30.0	92.0	21.0	50	20	5	80842007001100	88842007001100
20×20×M1.5	30.0	92.0	21.0	50	20	5	80842007001150	88842007001150
20×20×M2	30.0	92.0	20.0	50	20	5	80842007001200	88842007001200
20×20×M3	30.0	92.0	21.0	50	20	5	80842007001300	88842007001300
20×32×M1	30.0	105.0	33.0	50	20	5	80842008001100	88842008001100
20×32×M1.5	30.0	105.0	33.0	50	20	5	80842008001150	88842008001150
20×32×M2	30.0	105.0	32.0	50	20	5	80842008001200	88842008001200
20×32×M3	30.0	105.0	33.0	50	20	5	80842008001300	88842008001300

For thread milling guideline values see page 140.

Thread milling tool M-GWF SR, MF-GWF SR

- For metric and metric fine ISO thread DIN 13
- Shank Ø DIN 6535 Form HE/HA
- Tools with internal coolant supply, lateral outlet
- Cutting material: solid carbide



*without neck recess

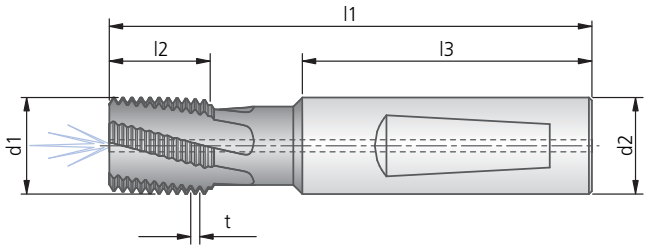
M-GWF SR. MF-GWF SR							DIN 6535 HE	DIN 6535 HA
							Uncoated	Uncoated
d1 × l2 × t t = pitch in mm	Nut d min	l1	l2	l3	d2	z	Order #	Order #
12×20×M1*	18.0	80.0	20.0	45	12	4	80803004001100	88803004001100
12×20×M1.5*	18.0	80.0	19.5	45	12	4	80803004001150	88803004001150
16×25×M1	24.0	90.0	25.0	48	16	5	80803006001100	88803006001100
16×25×M1.5	24.0	90.0	25.5	48	16	5	80803006001150	88803006001150
20×32×M1.5	30.0	105.0	33.0	50	20	5	80803008001150	88803008001150
20×32×M2	30.0	105.0	32.0	50	20	5	80803008001200	88803008001200
							TiCN	TiCN
12×20×M1*	18.0	80.0	20.0	45	12	4	80843004001100	88843004001100
12×20×M1.5*	18.0	80.0	19.5	45	12	4	80843004001150	88843004001150
16×25×M1	24.0	90.0	25.0	48	16	5	80843006001100	88843006001100
16×25×M1.5	24.0	90.0	25.5	48	16	5	80843006001150	88843006001150
20×32×M1.5	30.0	105.0	33.0	50	20	5	80843008001150	88843008001150
20×32×M2	30.0	105.0	32.0	50	20	5	80843008001200	88843008001200

For thread Ø (d_{min} Nut) smaller than shown on this page, please use our thread milling tools MGF or MKG.

For thread engagements see page 130.

Thread milling tool UN-GWF SR

For American Unified thread ANSI B1.1 ■
Shank Ø DIN 6535 Form HE/HA ■
Tools with internal coolant supply ■
Cutting material: solid carbide ■



*without neck recess

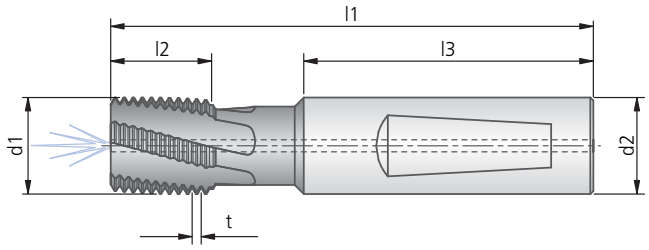
UN-GWF SR							DIN 6535 HE	DIN 6535 HA
							Uncoated	Uncoated
d1 × l2 × t t = threads/inch	Nut d min	l1	l2	l3	d2	Z	Order #	Order #
16×16×UN12	24.0	80.0	14.8	48	16	5	80802005001012	88802005001012
16×16×UN20	24.0	80.0	16.5	48	16	5	80802005001020	88802005001020
16×16×UN24	24.0	80.0	15.8	48	16	5	80802005001024	88802005001024
16×25×UN12	24.0	90.0	25.4	48	16	5	80802006001012	88802006001012
16×25×UN20	24.0	90.0	25.4	48	16	5	80802006001020	88802006001020
16×25×UN24	24.0	90.0	25.4	48	16	5	80802006001024	88802006001024
20×20×UN8	30.0	92.0	19.05	50	20	5	80802007001008	88802007001008
20×20×UN12	30.0	92.0	21.2	50	20	5	80802007001012	88802007001012
20×20×UN20	30.0	92.0	20.3	50	20	5	80802007001020	88802007001020
20×20×UN24	30.0	92.0	21.2	50	20	5	80802007001024	88802007001024
20×32×UN8	30.0	105.0	31.8	50	20	5	80802008001008	88802008001008
20×32×UN12	30.0	105.0	31.8	50	20	5	80802008001012	88802008001012
20×32×UN20	30.0	105.0	31.8	50	20	5	80802008001020	88802008001020

For thread Ø (d_{min} Nut) smaller than shown on this page, please use our thread milling tools MGF or MKG.

For thread engagements see page 130.

Thread milling tool G-GWF SR

- For Whitworth pipe thread DIN EN ISO 228
- Shank Ø DIN 6535 Form HE/HA
- Tools with internal coolant supply
- Cutting material: solid carbide



G-GWF SR							DIN 6535 HE	DIN 6535 HA
							Uncoated	Uncoated
d1 × l2 × t t = threads/inch	Nut d min	l1	l2	l3	d2	z	Order #	Order #
16×25×G14	G 1/2"	90.0	25.4	48	16	5	80802006002014	88802006002014
20×20×G14	G 7/8"	92.0	19.9	50	20	5	80802007002014	88802007002014
20×20×G11	G 1"	92.0	20.8	50	20	5	80802007002011	88802007002011
20×32×G14	G 7/8"	105.0	32.7	50	20	5	80802008002014	88802008002014
20×32×G11	G1"	105.0	32.3	50	20	5	80802008002011	88802008002011
							TiCN	TiCN
16×25×G14	G 1/2"	90.0	25.4	48	16	5	80842006002014	88842006002014
20×20×G14	G 7/8"	92.0	19.9	50	20	5	80842007002014	88842007002014
20×20×G11	G 1"	92.0	20.8	50	20	5	80842007002011	88842007002011
20×32×G14	G 7/8"	105.0	32.7	50	20	5	80842008002014	88842008002014
20×32×G11	G1"	105.0	32.3	50	20	5	80842008002011	88842008002011

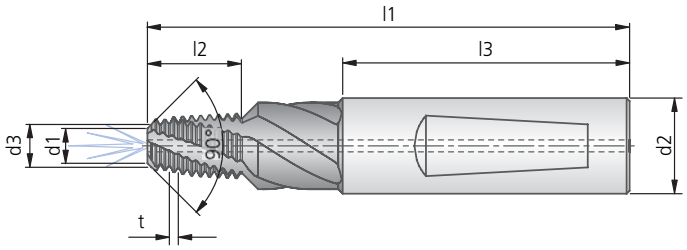
For thread Ø (d_{min} Nut) smaller than shown on this page, please use our thread milling tools MGF or MKG.

For thread engagements see page 130.

Thread milling tool NPT-GWF GS, NPTF-GWF GS

For NPT-/NPTF thread ANSI B2.1 ■
Shank Ø DIN 6535 Form HE/HA ■
Tools with internal coolant supply ■
Cutting material: solid carbide ■

Chamfering and thread milling with one tool



NPT-GWF GS								DIN 6535 HE	DIN 6535 HA
d1 × l2 × t t = threads/inch	Nut d min	l1	l2	l3	d2	d3	Z	Uncoated Order #	Uncoated Order #
12.5×18.3×14	½" - 14	90.0	21.3	48	16	5.30	5	80872016000005	88872016000005
19.0×22.2×11½	1" - 11½	92.0	25.5	50	20	10.50	5	80872016000007	88872016000007
								TiCN	TiCN
12.5×18.3×14	½" - 14	90.0	21.3	48	16	5.30	5	80875016000005	88875016000005
19.0×22.2×11½	1" - 11½	92.0	25.5	50	20	10.50	5	80875016000007	88875016000007

NPTF-GWF GS								DIN 6535 HE	DIN 6535 HA
d1 × l2 × t t = threads/inch	Nut d min	l1	l2	l3	d2	d3	Z	Uncoated Order #	Uncoated Order #
12.5×18.3×14	½" - 14	90.0	21.3	48	16	5.30	5	80872017000005	88872017000005
19.0×22.2×11½	1" - 11½	92.0	25.5	50	20	10.50	5	80872017000007	88872017000007
								TiCN	TiCN
12.5×18.3×14	½" - 14	90.0	21.3	48	16	5.30	5	80875017000005	88875017000005
19.0×22.2×11½	1" - 11½	92.0	25.5	50	20	10.50	5	80875017000007	88875017000007

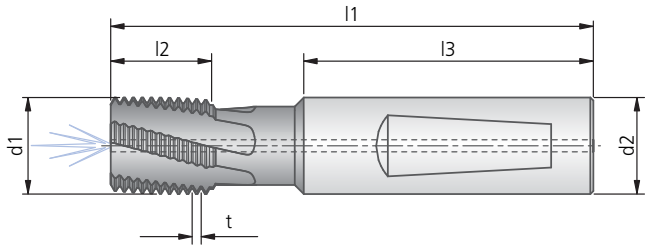
For thread Ø (d_{min} Nut) smaller than shown on this page, please use our thread milling tools MGF or MKG.

For thread engagements see page 130.

Thread milling tool M-GWF SR, MF-GWF SR

- For metric and metric fine ISO thread DIN 13
- Shank Ø DIN 6535 Form HE/HA
- Tools with internal coolant supply
- Cutting material: solid carbide

For external thread



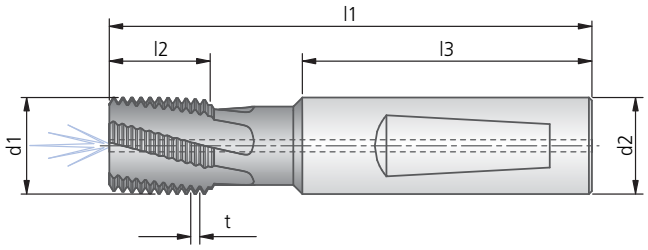
*without neck recess

M-GWF SR, MF-GWF SR							DIN 6535 HE	DIN 6535 HA
							Uncoated	Uncoated
d1 × l2 × t t = pitch in mm	Nut d min	l1	l2	l3	d2	z	Order #	Order #
16×25×M1.5	24.0	90.0	25.5	48	16	5	80819006001150	88819006001150
20×32×M1.5	30.0	105.0	33.0	50	20	5	80819008001150	88819008001150

Thread milling tool M-GWF XS, MF-GWF XS

For metric and metric fine ISO thread DIN 13 ■
Shank Ø DIN 6535 Form HE/HA ■
Tools with internal coolant supply ■
Cutting material: solid carbide ■

For machining steel from ≥ 900 N/mm²



M-GWF XS, MF-GWF XS						DIN 6535 HE	DIN 6535 HA
						TiCN	TiCN
d1 × l2 × t t = pitch in mm	l1	l2	l3	d2	Z	Order #	Order #
16×25×M1	90.0	25.0	48	16	4	80806006001100	88806006001100
16×25×M1.5	90.0	25.5	48	16	4	80806006001150	88806006001150
20×32×M1.5	105.0	33.0	50	20	4	80806008001150	88806008001150
20×32×M2	105.0	32.0	50	20	4	80806008001200	88806008001200
20×32×M3	105.0	33.0	50	20	4	80806008001300	88806008001300

For thread Ø (d_{min} Nut) smaller than shown on this page, please use our thread milling tools MGF or MKG.

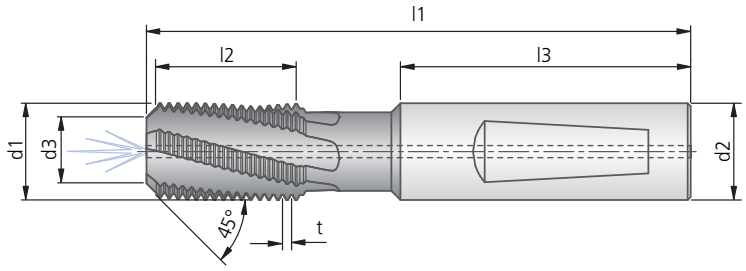
For thread engagements see page 130.

For thread milling guideline values see page 140.

Thread milling tool M-GWF GP, MF-GWF GP

- For metric and metric fine ISO thread DIN 13
- Shank Ø DIN 6535 Form HE/HA
- Tools with internal coolant supply
- Cutting material: solid carbide

Spot facing, chamfering and thread milling with a single tool.

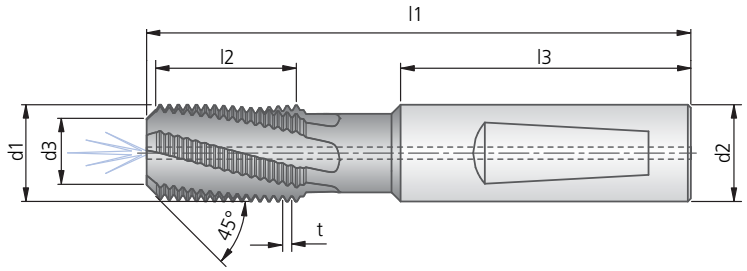


M-GWF GP, MF-GWF GP								DIN 6535 HE	DIN 6535 HA
d1 × l2 × t t = pitch in mm	Nut d min	l1	l2	l3	d2	d3	Z	Uncoated Order #	Uncoated Order #
16×25×M1	24.0	90.0	24.0	48	16	12.90	5	80882006001100	88882006001100
16×25×M1.5	24.0	90.0	24.0	48	16	11.20	5	80882006001150	88882006001150
16×25×M2	24.0	90.0	22.0	48	16	9.60	5	80882006001200	88882006001200
20×32×M1	30.0	105.0	32.0	50	20	16.90	5	80882008001100	88882008001100
20×32×M1.5	30.0	105.0	31.5	50	20	15.20	5	80882008001150	88882008001150
20×32×M2	30.0	105.0	30.0	50	20	13.60	5	80882008001200	88882008001200
20×32×M3	30.0	105.0	30.0	50	20	10.50	5	80882008001300	88882008001300
								TiCN 	TiCN
16×25×M1	24.0	90.0	24.0	48	16	12.90	5	80885006001100	88885006001100
16×25×M1.5	24.0	90.0	24.0	48	16	11.20	5	80885006001150	88885006001150
16×25×M2	24.0	90.0	22.0	48	16	9.60	5	80885006001200	88885006001200
20×32×M1	30.0	105.0	32.0	50	20	16.90	5	80885008001100	88885008001100
20×32×M1.5	30.0	105.0	31.5	50	20	15.20	5	80885008001150	88885008001150
20×32×M2	30.0	105.0	30.0	50	20	13.60	5	80885008001200	88885008001200
20×32×M3	30.0	105.0	30.0	50	20	10.50	5	80885008001300	88885008001300

Thread milling tool G-GWF GP

For Whitworth pipe thread DIN EN ISO 228 and DIN EN 10226 (formerly DIN 2999) ■
Shank Ø DIN 6535 Form HE/HA ■
Tools with internal coolant supply ■
Cutting material: solid carbide ■

Spot facing, chamfering and thread milling with a single tool.

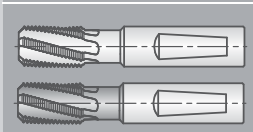
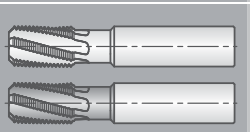


G-GWF GP								DIN 6535 HE	DIN 6535 HA
								Uncoated	Uncoated
d1 × l2 × t t = threads/inch	Nut d min	l1	l2	l3	d2	d3	Z	Order #	Order #
16×25×G14	G ½"	90.0	23.6	48	16	9.80	5	**80882006002014**	**88882006002014**
20×32×G14	G ⅞"	105.0	30.8	50	20	13.80	5	**80882008002014**	
20×32×G11	G 1"	105.0	30.0	50	20	12.20	5	**80882008002011**	**88882008002011**
								TiCN	TiCN
16×25×G14	G ½"	90.0	23.6	48	16	9.80	5	**80885006002014**	**88885006002014**
20×32×G14	G ⅞"	105.0	30.8	50	20	13.80	5	**80885008002014**	
20×32×G11	G 1"	105.0	30.0	50	20	12.20	5	**80885008002011**	**88885008002011**

For thread milling guideline values see page 140.

JEL® Thread milling tool

Guideline values for thread milling

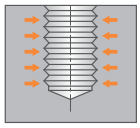
Material group		Strength Rm (N/mm²)	Hardness HB	v_c (m/min) = cutting speed f_b (mm/U) = drilling feed f_z (mm/tooth) = milling feed Coating Material	GWF				TOMILL CUT	
										
					Uncoated v_c m/min	TiCN v_c m/min	≤ Ø 12 f_z mm/tooth	≥ Ø 16 f_z mm/tooth	v_c m/min	f_z mm/tooth
P	1.1	≤400	≤120	Magnetic soft iron		80-150	0.04-0.06	0.08-0.15	80-100	0.08-0.12
P	1.2	≤700	≤200	Structural, case hardened steel		80-100	0.04-0.06	0.08-0.15	80-100	0.08-0.12
P	1.3	≤850	≤250	Carbon steel		80-100	0.04-0.06	0.08-0.15	80-100	0.08-0.12
P	1.4	≤850	≤250	Alloy steel		80-100	0.04-0.06	0.08-0.15	80-100	0.08-0.12
P	1.5	>850 ≤1200	>250 ≤350	Alloy/heat treated steel		60-80	0.04-0.06	0.04-0.10	60-80	0.04-0.08
P	1.6	>1200	>350	Alloy/heat treated steel		50-60	0.03-0.05	0.04-0.10	50-60	0.04-0.08
H	1.7	≤1400	≤400	Hardened steel to 45 HRC		30-50	0.015-0.02	0.03-0.08		
H	1.8	≤2200	≤600	Hardened steel to 58 HRC		20-40	0.015-0.02			
M	2.1	≤850	≤250	Stainless steel, sulphurated		60-80	0.03-0.05	0.08-0.15	60-80	0.04-0.08
M	2.2	≤850	≤250	Austentic		60-80	0.03-0.05	0.04-0.10	60-80	0.04-0.08
M	2.3	≤1000	≤300	Ferritic, ferritic & austentic, martensitic		60-80	0.02-0.04	0.04-0.10	60-80	0.04-0.08
K	3.1	≤500	≤150	Grey cast iron	50-80	80-120	0.04-0.10	0.08-0.15	80-120	0.08-0.15
K	3.2	>500 ≤1000	>150 ≤300	Grey cast iron, heat treated	50-80	80-120	0.04-0.08	0.08-0.12	80-120	0.08-0.15
K	3.3	400-500	200-250	Vermicular cast iron		80-100	0.04-0.08	0.08-0.15	80-100	0.08-0.15
K	3.4	≤700	≤200	Spheroidal graphite cast iron		80-120	0.04-0.10	0.08-0.15	80-120	0.08-0.15
K	3.5	>700 ≤1000	>200 ≤300	Spheroidal graphite cast iron, heat treated		80-100	0.04-0.08	0.08-0.12	80-120	0.08-0.15
K	3.6	≤700	≤200	Malleable iron		80-100	0.04-0.10	0.08-0.15	80-120	0.08-0.15
K	3.7	>700 <1000	>200 ≤300	Malleable iron, heat treated		80-100	0.04-0.08	0.08-0.12	80-120	0.08-0.15
S	4.1	≤700	≤200	Pure titanium		40-100	0.03-0.08	0.08-0.15	40-80	0.04-0.08
S	4.2	≤900	≤270	Titanium alloys		40-100	0.03-0.08	0.08-0.15	40-80	0.04-0.08
S	4.3	>900 ≤1250	>270 ≤300	Titanium alloys		40-80	0.03-0.06	0.08-0.12	40-80	0.04-0.08
S	5.1	≤500	≤150	Pure nickel		50-60	0.04-0.06	0.04-0.10	20-40	0.04-0.06
S	5.2	≤900	<270	Nickel alloys, heat resistant		30-40	0.04-0.06	0.04-0.10	20-40	0.04-0.06
S	5.3	>900 ≤1200	>270 ≤350	Nickel alloys, high heat resistant		10-30	0.03-0.05	0.04-0.08	20-40	0.04-0.06
N	6.1	≤350	≤100	Non-alloy copper	100-300	100-400	0.07-0.12	0.10-0.20	100-300	0.10-0.15
N	6.2	≤700	≤200	Short chip brass, bronze, red brass	100-300	100-400	0.07-0.12	0.10-0.20	100-300	0.10-0.15
N	6.3	≤700	≤200	Long chip brass	100-300	100-400	0.07-0.12	0.10-0.20	100-300	0.10-0.15
N	6.4	≤500	≤470	Cu-Al-Fe alloy (Ampco)	60-80	60-80	0.03-0.06	0.08-0.15		
N	7.1	≤350	≤100	Al, Mg non-alloy	100-400	100-400	0.07-0.12	0.10-0.20	100-400	0.10-0.15
N	7.2	≤600	≤180	Al wrought alloy, breaking strain (A5) <14 %	100-400	100-400	0.07-0.12	0.10-0.20	100-400	0.10-0.15
N	7.3	≤600	≤180	Al wrought alloy, breaking strain (A5) ≥14 %	100-400	100-400	0.07-0.12	0.10-0.20	100-400	0.10-0.15
N	7.4	≤600	≤180	Al cast alloy, Si <10 %	100-300	100-400	0.07-0.12	0.10-0.20	100-400	0.15-0.20
N	7.5	≤600	≤180	Al cast alloy, Si ≥10 %	100-200	100-250	0.07-0.12	0.10-0.20	100-400	0.15-0.20
N	8.1			Thermoplastics	80-100	100-120	0.06-0.12	0.08-0.20	100-120	0.10-0.20
N	8.2			Thermosetting plastics	80-100	100-120	0.06-0.12	0.08-0.15	100-120	0.10-0.15
N	8.3			Fiber reinforced plastics	50-60	60-80	0.06-0.12	0.08-0.15	60-80	0.10-0.15

Cutting values shown on these pages relate to the basic recommendations indicated for cutting materials.

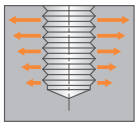
1.

Chips packing or glueing on thread profile
- poor coolant

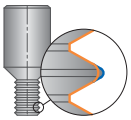
→ improve coolant (i.e. add flood coolant, lateral flute coolant supply for through holes)
→ add coolant flutes on shank

2. 

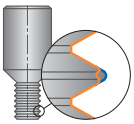
Thread plug go-gage does not fit
- thread too small → reduce tool radius in offset register
- chips in thread → improve coolant

3. 

Thread is becoming tapered
- weak tool clamping → improve tool holding (i.e. shrink fit holder)
- thread milling feed too high → reduce thread milling feed

4. 

Uneven tool wear
- excessive tool run out → use better tool holder (i.e. shrink fit holder)

5. 

Chippage, tool breakage while thread milling
- feed rate too high → check that the chip grooves are free of chips after the boring operation
- vibrations → reduce feed rate (check whether NC feeds relate to center point or external track)

6.

Poor thread surface
- tool overhang too long → check workpiece clamping and stability. If clamping is weak, distribute the cutting force with multiple cuts.
- sub-optimal tool use → reduce cutting speed, increase tooth feed rate, preferably do conventional milling

JEL ® DOREX | JEL ® TAREX | JEL ® SIREX | JEL ® GG

Application example: Grey cast iron

Workpiece: Engine block
Material: GG25

Tool:
JEL ® Solid carbide tap (CM8-6HX IK VHM)
Thread: Blind hole M8, drilling depth 20 mm,
thread length 16 mm

Machine: Transfer line
Coolant: Emulsion

Cutting speed: v_c = 30 m/min
Tool life: > 75,000 threads

Thread machining

JEL® tap drills open up a wide range of applications in thread cutting operations. Whether you are machining wet, with internal coolant supply, with minimal lubrication or dry, we have the optimal tap for you.

Compared to HSS-E taps, solid carbide taps offer substantial advantages.

- Up to 20x longer life than HSS-E taps
- Longer tool life = fewer tool changes
- Higher cutting speeds = shorter work piece machining times
- Production costs shrink thanks to longer life, higher cutting speeds and fewer tool changes
- Factory regrinding and recoating services assured by our network of professional KOMET SERVICE® Partners

Taps

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M – Metric ISO thread DIN 13	
HSS taps	
DOREX, TINIB, FEDUB	144
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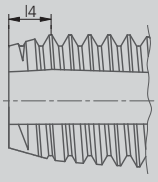
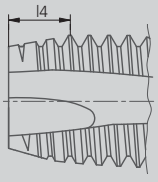
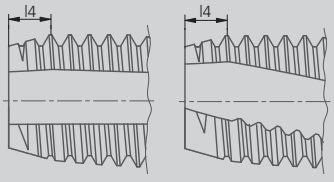
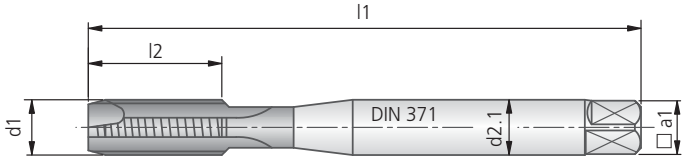
Chamfer form

Type of cutting flutes	Straight flutes	Straight flutes spiral point	Straight or helical flutes		
					
	A	B	C	D	E
# of threads l4	6 - 8	3.5 - 5.5	2 - 3	3.5 - 5	1.5 - 2
Used primarily for	Short through hole threads	Through hole threads	Blind as well as through hole threads in short chipping materials	Blind threads with long thread runout and through hole threads	Blind threads with short thread runout

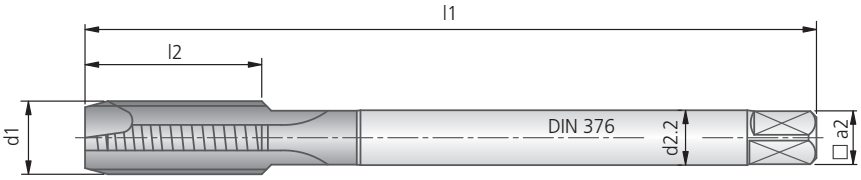
HSS-E / HSS-PM taps

- For metric ISO thread DIN 13
- No internal coolant supply
- Tolerance field ISO 2
- Chamfer form B

M1.6 - M10



M12 - M24



						DOREX	DOREX VAV	DOREX TiN
					Cutting material ▸	HSS-E	HSS-E	HSS-E
					Coating ▸	Uncoated	Vaporized	TiN
					Shank Ø DIN 371 ▸			
Nominal Ø d1	P	l1	l2	d2.1	a1	Order #	Order #	Order #
M1.6	0.35	40	8.0	2.5	2.1	20122001000005	20136001000005	
M2	0.40	45	8.0	2.8	2.1	20122001000008	20136001000008	
M2.5	0.45	50	9.0	2.8	2.1	20122001000011	20136001000011	
M3	0.50	56	11.0	3.5	2.7	20122001000013	20136001000013	20322001000013
M4	0.70	63	13.0	4.5	3.4	20122001000015	20136001000015	20322001000015
M5	0.80	70	16.0	6.0	4.9	20122001000017	20136001000017	20322001000017
M6	1.00	80	18.0	6.0	4.9	20122001000018	20136001000018	20322001000018
M7	1.00	80	18.0	7.0	5.5	20122001000019		
M8	1.25	90	18.0	8.0	6.2	20122001000020	20136001000020	20322001000020
M10	1.50	100	21.0	10.0	8.0	20122001000022	20136001000022	20322001000022
Nominal Ø					Shank Ø DIN 376 ▸			
d1	P	l1	l2	d2.2	a2	Order #	Order #	Order #
M12	1.75	110	24.0	9.0	7.0	20123001000024	20137001000024	20323001000024
M14	2.00	110	24.0	11.0	9.0	20123001000025	20137001000025	
M16	2.00	110	27.0	12.0	9.0	20123001000026	20137001000026	
M18	2.50	125	32.0	14.0	11.0	20123001000027	20137001000027	
M20	2.50	140	32.0	16.0	12.0	20123001000028	20137001000028	
M22	2.50	140	32.0	18.0	14.5	20123001000029		
M24	3.00	160	38.0	18.0	14.5	20123001000030		

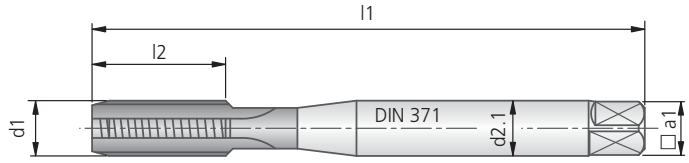
						TINIB	FEDUB
					Cutting material ▸	HSS-PM	HSS-PM
					Coating ▸	Vaporized	Vaporized
					Shank Ø DIN 371 ▸		
Nominal Ø d1	P	l1	l2	d2.1	a1	Order #	Order #
M2	0.40	45	8.0	2.8	2.1	20194001000008*	
M2.5	0.45	50	9.0	2.8	2.1	20194001000011*	
M3	0.50	56	11.0	3.5	2.7	20194001000013*	20186001000013*
M4	0.70	63	13.0	4.5	3.4	20194001000015*	20186001000015*
M5	0.80	70	16.0	6.0	4.9	20194001000017*	20186001000017*
M6	1.00	80	18.0	6.0	4.9	20194001000018*	20186001000018*
M8	1.25	90	18.0	8.0	6.2	20194001000020	20186001000020
M10	1.50	100	21.0	10.0	8.0	20194001000022	20186001000022
Nominal Ø					Shank Ø DIN 376 ▸		
d1	P	l1	l2	d2.2	a2	Order #	Order #
M12	1.75	110	24.0	9.0	7.0		20187001000024

* without neck recess

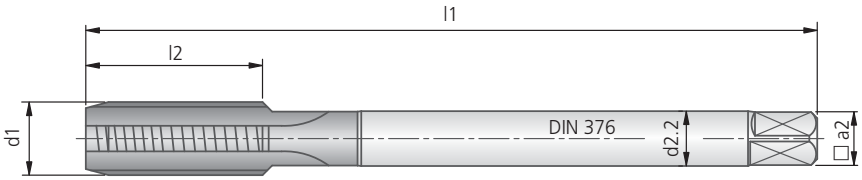
HSS-E taps

For metric ISO thread DIN 13 ■
No internal coolant supply ■
Tolerance field ISO 2 ■
Chamfer form C ■

M3 - M10



M12 - M20



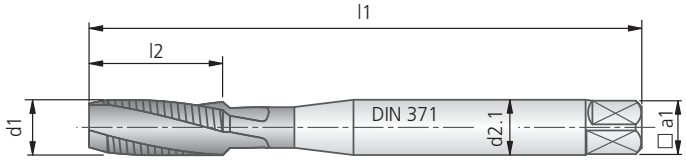
						GG	GG TiN
					Cutting material ▸	HSS-E	HSS-E
					Coating ▸	Nitrided	TiN
Nominal Ø					Shank Ø DIN 371 ▸		
d1	P	l1	l2	d2.1	a1	Order #	Order #
M3	0.50	56	11.0	3.5	2.7		20356001000013
M4	0.70	63	13.0	4.5	3.4	20156001000015	20356001000015
M5	0.80	70	16.0	6.0	4.9	20156001000017	20356001000017
M6	1.00	80	18.0	6.0	4.9	20156001000018	20356001000018
M8	1.25	90	18.0	8.0	6.2	20156001000020	20356001000020
M10	1.50	100	21.0	10.0	8.0	20156001000022	20356001000022
Nominal Ø					Shank Ø DIN 376 ▸		
d1	P	l1	l2	d2.2	a2	Order #	Order #
M12	1.75	110	24.0	9.0	7.0	20157001000024	20357001000024
M14	2.00	110	24.0	11.0	9.0	20157001000025	
M16	2.00	110	27.0	12.0	9.0	20157001000026	
M18	2.50	125	32.0	14.0	11.0	20157001000027	
M20	2.50	140	32.0	16.0	12.0	20157001000028	

For tapping guideline values see page 156.

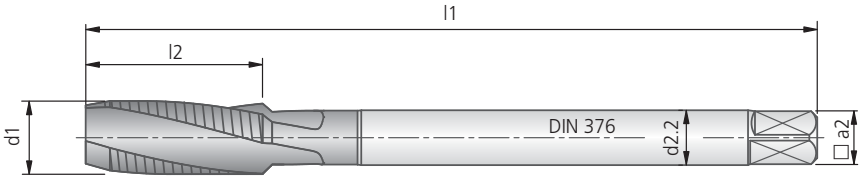
HSS-PM taps

- For metric ISO thread DIN 13
- No internal coolant supply
- Tolerance field ISO 2
- Chamfer form C

M2 - M10



M12



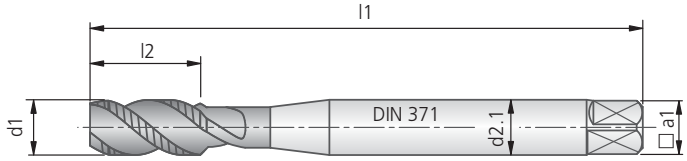
* without neck recess

						FEDUC
					Cutting material ▸ Coating ▸	HSS-PM Vaporized
Nominal Ø					Shank Ø DIN 371 ▸	
d1	P	l1	l2	d2.1	a1	Order #
M2	0.40	45	8.0	2.8	2.1	20192001000008*
M2.5	0.45	50	9.0	2.8	2.1	20192001000011*
M3	0.50	56	11.0	3.5	2.7	20192001000013*
M4	0.70	63	13.0	4.5	3.4	20192001000015*
M5	0.80	70	16.0	6.0	4.9	20192001000017*
M6	1.00	80	18.0	6.0	4.9	20192001000018*
M8	1.25	90	18.0	8.0	6.2	20192001000020
M10	1.50	100	21.0	10.0	8.0	20192001000022
Nominal Ø					Shank Ø DIN 376 ▸	
d1	P	l1	l2	d2.2	a2	Order #
M12	1.75	110	24.0	9.0	7.0	20193001000024

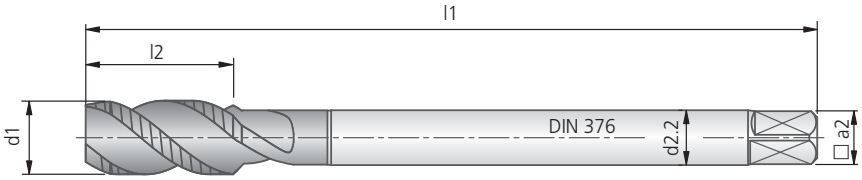
Machine taps HSS-E / HSS-PM

For metric ISO thread DIN 13 ■
No internal coolant supply ■
Tolerance field ISO 2 ■
Chamfer form C ■

M2 - M10



M12 - M24



* without neck recess

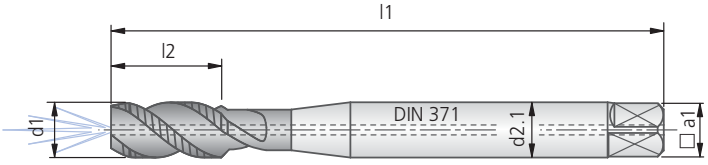
						TAREX	TAREX VAV	TAREX TiN	TAREX OT TiN
Nom. Ø					Cutting material ▸ Coating ▸	HSS-E Uncoated	HSS-E Vaporized	HSS-E TiN	HSS-PM TiN
					Shank Ø DIN 371 ▸				
d1	P	l1	l2	d2.1	a1	Order #	Order #	Order #	Order #
M2	0.40	45	4.0	2.8	2.1	20146001000008	20170001000008		
M2.5	0.45	50	4.0	2.8	2.1	20146001000011	20170001000011		
M3	0.50	56	5.0	3.5	2.7	20146001000013	20170001000013	20346001000013	20342001000013*
M3.5	0.60	56	5.0	4.0	3.0	20146001000014	20170001000014		
M4	0.70	63	7.0	4.5	3.4	20146001000015	20170001000015	20346001000015	20342001000015*
M5	0.80	70	8.0	6.0	4.9	20146001000017	20170001000017	20346001000017	20342001000017*
M6	1.00	80	10.0	6.0	4.9	20146001000018	20170001000018	20346001000018	20342001000018*
M8	1.25	90	12.0	8.0	6.2	20146001000020	20170001000020	20346001000020	20342001000020
M10	1.50	100	14.0	10.0	8.0	20146001000022	20170001000022	20346001000022	20342001000022
Nom. Ø					Shank Ø DIN 376 ▸				
d1	P	l1	l2	d2.2	a2	Order #	Order #	Order #	Order #
M12	1.75	110	16.0	9.0	7.0	20147001000024	20171001000024	20347001000024	20343001000024
M14	2.00	110	20.0	11.0	9.0	20147001000025	20171001000025	20347001000025	
M16	2.00	110	20.0	12.0	9.0	20147001000026	20171001000026	20347001000026	
M18	2.50	125	24.0	14.0	11.0	20147001000027	20171001000027	20347001000027	
M20	2.50	140	24.0	16.0	12.0	20147001000028	20171001000028	20347001000028	
M22	2.50	140	24.0	18.0	14.5	20147001000029			
M24	3.00	160	28.0	18.0	14.5	20147001000030			

For tapping guideline values see page 156.

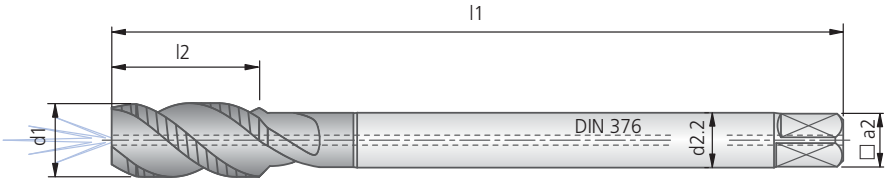
HSS-E taps

- For metric ISO thread DIN 13
- Tools with internal coolant supply
- Tolerance field ISO 2
- Chamfer form C

M6 - M10



M12

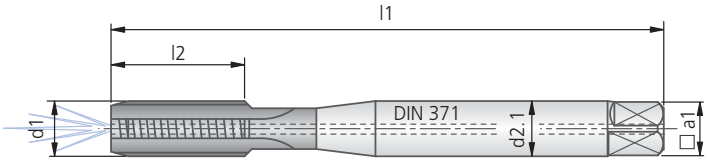


						TAREX IK TiN
					Cutting material ▸	HSS-E
					Coating ▸	TiN
Nominal Ø					Shank Ø DIN 371 ▸	
d1	P	l1	l2	d2.1	a1	Order #
M6	1.00	80	10.0	6.0	4.9	20546001000018
M8	1.25	90	12.0	8.0	6.2	20546001000020
M10	1.50	100	14.0	10.0	8.0	20546001000022
Nominal Ø					Shank Ø DIN 376 ▸	
d1	P	l1	l2	d2.2	a2	Order #
M12	1.75	110	16.0	9.0	7.0	20547001000024

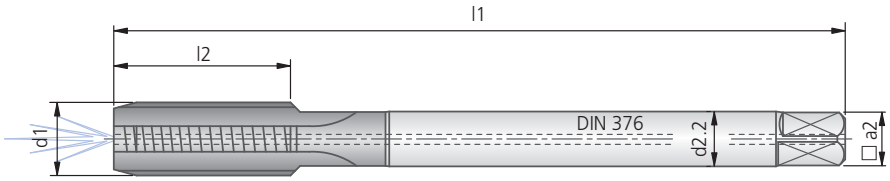
HSS-E taps

- For metric ISO thread DIN 13 ■
- Tools with internal coolant supply ■
- Tolerance field ISO 2X ■
- Chamfer form C ■

M6 - M10



M12



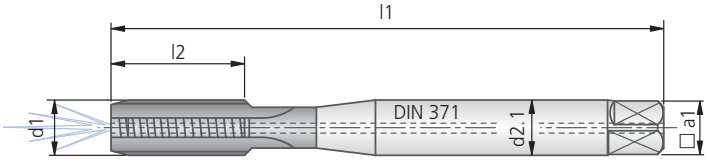
						GG IK TiN
					Cutting material ▸	HSS-E
					Coating ▸	TiN
Nominal Ø					Shank Ø DIN 371 ▸	
d1	P	l1	l2	d2.1	a1	Order #
M6	1.00	80	18.0	6.0	4.9	20556001000018
M8	1.25	90	18.0	8.0	6.2	20556001000020
M10	1.50	100	21.0	10.0	8.0	20556001000022
Nominal Ø					Shank Ø DIN 376 ▸	
d1	P	l1	l2	d2.2	a2	Order #
M12	1.75	110	24.0	9.0	7.0	20557001000024

For tapping guideline values see page 156.

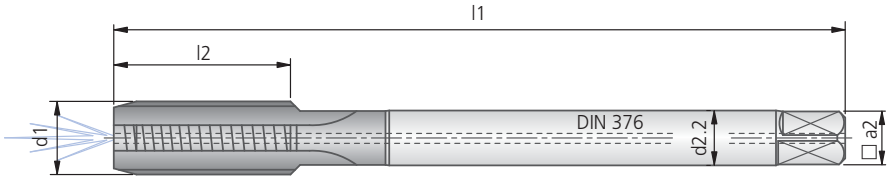
Solid carbide taps

- For metric ISO thread DIN 13
- From nominal Ø M4 with central coolant supply
- Tolerance field: SIREX = ISO 2, GG = ISO 2X
- Chamfer form C

M3 no coolant supply
M4 - M10



M12

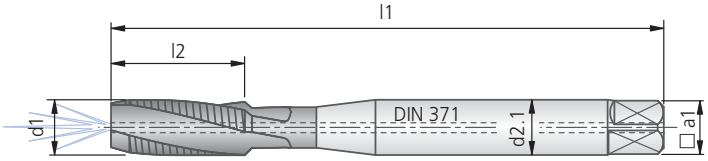


						SIREX	GG
Nominal Ø					Cutting material ▸ Coating ▸ Shank Ø DIN 371 ▸	Solid carbide Uncoated	Solid carbide Uncoated
d1	P	l1	l2	d2.1	a1	Order #	Order #
M3	0.50	56	11.0	3.5	2.7	80420001000013	
M4	0.70	63	13.0	4.5	3.4	80420001000015	80456001000015
M5	0.80	70	16.0	6.0	4.9	80420001000017	80456001000017
M6	1.00	80	18.0	6.0	4.9	80420001000018	80456001000018
M8	1.25	90	18.0	8.0	6.2	80420001000020	80456001000020
M10	1.50	100	21.0	10.0	8.0	80420001000022	80456001000022
Nominal Ø					Shank Ø DIN 376 ▸		
d1	P	l1	l2	d2.2	a2	Order #	Order #
M12	1.75	110	24.0	9.0	7.0	80421001000024	80457001000024

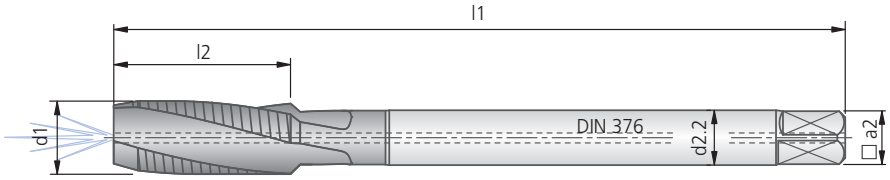
Solid carbide taps

For metric ISO thread DIN 13 ■
From nominal Ø M4 with central coolant supply ■
Tolerance field ISO 2 ■
Chamfer form C or E ■

M3 no coolant supply
M4 - M10



M12



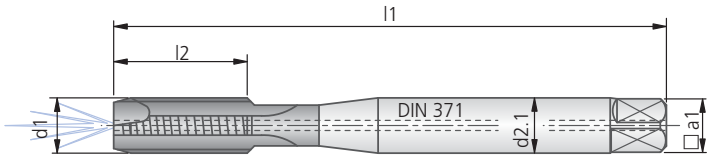
						SIREX SR	SIREX SR
					Cutting material ▸	Solid carbide	Solid carbide
					Coating ▸	Uncoated	Uncoated
Nominal Ø					Shank Ø DIN 371 ▸		
d1	P	l1	l2	d2.1	a1	Order # Chamfer form C	Order # Chamfer form E
M3	0.50	56	11.0	3.5	2.7	80444001000013	
M4	0.70	63	13.0	4.5	3.4	80444001000015	
M5	0.80	70	16.0	6.0	4.9	80444001000017	
M6	1.00	80	18.0	6.0	4.9	80444001000018	80416001000018
M8	1.25	90	18.0	8.0	6.2	80444001000020	80416001000020
M10	1.50	100	21.0	10.0	8.0	80444001000022	80416001000022
Nominal Ø					Shank Ø DIN 376 ▸		
d1	P	l1	l2	d2.2	a2	Order #	
M12	1.75	110	24.0	9.0	7.0	80445001000024	

For tapping guideline values see page 156.

Solid carbide tap

- For metric ISO thread DIN 13
- Tools with internal coolant supply
- Tolerance field ISO 2
- Chamfer form B

M6 - M10

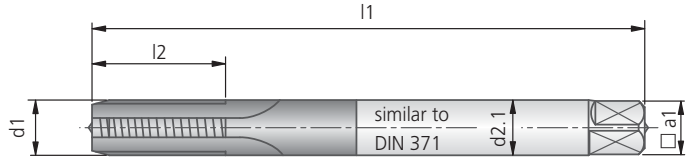


						DOREX
					Cutting material ▸ Coating ▸	Solid carbide Uncoated
Nominal Ø					Shank Ø DIN 371 ▸	
d1	P	l1	l2	d2.1	a1	Order #
M6	1.00	80	18.0	6.0	4.9	80418001000018
M8	1.25	90	18.0	8.0	6.2	80418001000020
M10	1.50	100	21.0	10.0	8.0	80418001000022

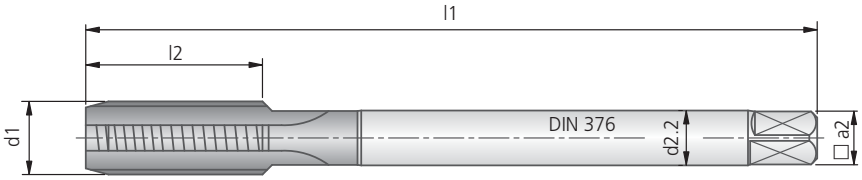
Solid carbide tap

For metric ISO thread DIN 13 ■
For hard machining from 45 HRC hardness ■
Tolerance field ISO 2X ■
Chamfer form C or D ■

M4 - M10



M12 - M16

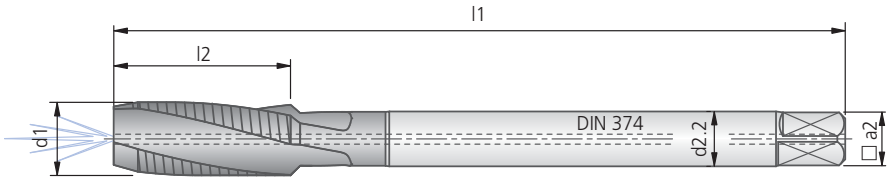


						SIREX XH ≤ 58 HRC	SIREX XH ≤ 52 HRC
					Cutting material ▸ Coating ▸	Solid carbide TiAlN	Solid carbide TiAlN
Nominal Ø					Shank Ø similar to DIN 371 ▸		
d1	P	l1	l2	d2.1	a1	Order # Chamfer form D	Order # Chamfer form C
M4	0.70	63	18.0	4.5	3.4	80126001000015	80128001000015
M5	0.80	70	20.0	6.0	4.9	80126001000017	80128001000017
M6	1.00	80	24.0	6.0	4.9	80126001000018	80128001000018
M8	1.25	90	24.0	8.0	6.2	80126001000020	80128001000020
M10	1.50	100	26.0	10.0	8.0	80126001000022	80128001000022
Nominal Ø					Shank Ø DIN 376 ▸		
d1	P	l1	l2	d2.2	a2	Order #	Order #
M12	1.75	110	26.0	9.0	7.0	80127001000024	80129001000024
M14	2.00	110	26.0	11.0	9.0	80127001000025	80129001000025
M16	2.00	110	27.0	12.0	9.0	80127001000026	80129001000026

For tapping guideline values see page 156.

Solid carbide tap

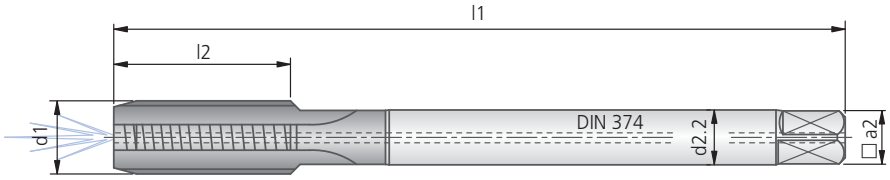
- For metric ISO fine thread DIN 13
- Tools with internal coolant supply
- Tolerance field ISO 2
- Chamfer form C



							SIREX SR
						Cutting material ▸ Coating ▸	Solid carbide Uncoated
Nominal Ø						Shank Ø DIN 374 ▸	
d1 × P	l1	l2	d2.1	a1	d2.2	a2	Order #
M4×0.5	63	10	4.5	3.4			80444002000029
M6×0.75	80	14	6.0	4.9			80444002000048
M8×1	90	18	8.0	4.9			80444002000070
M10×1	90	18			7.0	5.5	80445002000094
M12×1.5	100	20			9.0	7.0	80445002000113
M14×1.5	100	20			11.0	9.0	80445002000131
M16×1.5	100	20			12.0	9.0	80445002000147

Solid carbide tap

For metric ISO fine thread DIN 13 ■
Tools with internal coolant supply ■
Tolerance field ISO 2 ■
Chamfer form C ■

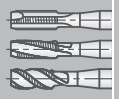
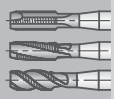
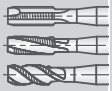
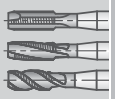


							SIREX
						Cutting material ▸ Coating ▸	Solid carbide Uncoated
Nominal Ø						Shank Ø DIN 374 ▸	
d1 × P	l1	l2	d2.1	a1	d2.2	a2	Order #
M4×0.5	63	10	4.5	3.4			80420002000029
M6×0.75	80	14	6.0	4.9			80420002000048
M8×1	90	18	8.0	4.9			80420002000070
M10×1	90	18			7.0	5.5	80421002000094
M12×1.5	100	20			9.0	7.0	80421002000113
M14×1.5	100	20			11.0	9.0	80421002000131
M16×1.5	100	20			12.0	9.0	80421002000147

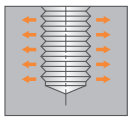
For tapping guideline values see page 156.

JEL® Taps

Guideline values for tapping

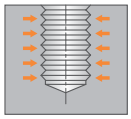
Material group		Strength Rm (N/mm²)	Hardness HB	Material	Cutting speed				Coolant			
				Cutting material:	HSS-E		Solid carbide					
				Coating:	Uncoated	Coated	Uncoated	Coated				
												
					v_c m/min	v_c m/min	v_c m/min	v_c m/min	Emulsion	Oil	Dry	Air
P	1.1	≤400	≤120	Magnetic soft iron	15-30	20-50			✓	✓		
P	1.2	≤700	≤200	Structural, case hardened steel	15-25	20-40			✓	✓		
P	1.3	≤850	≤250	Carbon steel	15-20	20-35			✓	✓		
P	1.4	≤850	≤250	Alloy steel	10-15	20-30			✓	✓		
P	1.5	>850 ≤1200	>250 ≤350	Alloy/heat treated steel	5-10	15-20			✓	✓		
P	1.6	>1200	>350	Alloy/heat treated steel	2-5	10-15				✓		
H	1.7	≤1400	≤400	Hardened steel to 45 HRC				2-8		✓		
H	1.8	≤2200	≤600	Hardened steel to 58 HRC				2-5		✓		
M	2.1	≤850	≤250	Stainless steel, sulphuretted	5-10	10-25				✓		
M	2.2	≤850	≤250	Austentic	4-8	10-20				✓		
M	2.3	≤1000	≤300	Ferritic, ferritic & austentic, martensitic	3-5	7-12				✓		
K	3.1	≤500	≤150	Grey cast iron	10-20	20-25	20-50		✓		✓	
K	3.2	>500 ≤1000	>150 ≤300	Grey cast iron, heat treated	5-10	15-20	20-50		✓			
K	3.3	400-500	200-250	Vermicular cast iron								
K	3.4	≤700	≤200	Spheroidal graphite cast iron	10-20	20-40	20-50		✓			
K	3.5	>700 ≤1000	>200 ≤300	Spheroidal graphite cast iron, heat treated	5-10	10-15	20-50		✓	✓		
K	3.6	≤700	≤200	Malleable iron	10-15	30-40	20-50		✓	✓		
K	3.7	>700 <1000	>200 ≤300	Malleable iron, heat treated	5-10	10-20	20-50		✓	✓		
S	4.1	≤700	≤200	Pure titanium	5-15	10-15			✓	✓		
S	4.2	≤900	≤270	Titanium alloys	3-10	10-15			✓	✓		
S	4.3	>900 ≤1250	>270 ≤300	Titanium alloys	1-5	5-10				✓		
S	5.1	≤500	≤150	Pure nickel	7-10	10-15				✓		
S	5.2	≤900	<270	Nickel alloys, heat resistant	4-8	5-10				✓		
S	5.3	>900 ≤1200	>270 ≤350	Nickel alloys, high heat resistant	3-5	4-7				✓		
N	6.1	≤350	≤100	Non-alloy copper	10-15	15-20			✓	✓		
N	6.2	≤700	≤200	Short chip brass, bronze, red brass	25-30	40-50	25-60		✓		✓	
N	6.3	≤700	≤200	Long chip brass	10-20	30-40			✓	✓		
N	6.4	≤500	≤470	Cu-Al-Fe alloy (Ampco)	2-5	5-8	5-9		✓	✓		
N	7.1	≤350	≤100	Al, Mg non-alloy	10-15	20-50			✓			
N	7.2	≤600	≤180	Al wrought alloy, breaking strain (A5) <14 %	15-20	20-40			✓			
N	7.3	≤600	≤180	Al wrought alloy, breaking strain (A5) ≥14 %	10-15	20-40			✓			
N	7.4	≤600	≤180	Al cast alloy, Si <10 %	20-30	25-50	25-80		✓			
N	7.5	≤600	≤180	Al cast alloy, Si ≥10 %	15-25	20-30	20-60		✓			
N	8.1			Thermoplastics	15-25	20-30			✓		✓	
N	8.2			Thermosetting plastics	5-10	10-15	10-30		✓			✓
N	8.3			Fiber reinforced plastics	3-5	8-12	8-25		✓			

Cutting values shown on these pages relate to the basic recommendations indicated for cutting materials.

1. 

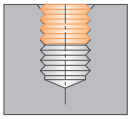
Oversized thread

- Wrong tool type → select correct tool type per the catalog
- Cutting edge geometry does not fit the material being machined → select correct tool type per the catalog
- Cold weld beads form on the tap flanks
  → Optimize coolant lubrication
  → Use coated tap
- Minor diameter is too small, tool cuts full profile → Choose correct core Ø
- Chip jam
  → Blind hole: increase spindle RPM, select correct tool (spiral flute)
  → Through hole: select correct tool (spiral point)
- Tolerances of the tap and thread gauge do not agree → use a tap with the correct tolerance
- Angle or position error in drilling the core hole → correct the tool clamping, use tapping chuck with paraxial float

2. 

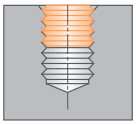
Thread becomes too tight

- Tolerances of the tap and thread gauge do not match → use a tap with the correct tolerance
- Wrong tool type → select correct tool type per the catalog

3. 

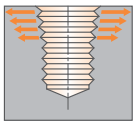
Thread is cut wrong axially

- Cutting lead pressure on the tapping chuck is too high → select the correct cutting lead pressure

4. 

Pitch distortion
(Plug gauge cannot be screwed all the way into the workpiece's full thread length)

- Tap is not cutting true to pitch
  → select correct tool
  → select correct cutting lead pressure
  → with length adjusting chucks, reduce feed to 95 %

5. 

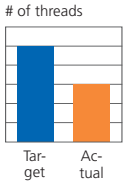
Thread oversize at entry

- Incorrect cutting lead pressure
  → Insert tapping chuck with length compensation under tension
  → work with a lead screw
  → select correct tool

6.

Poor thread surface:

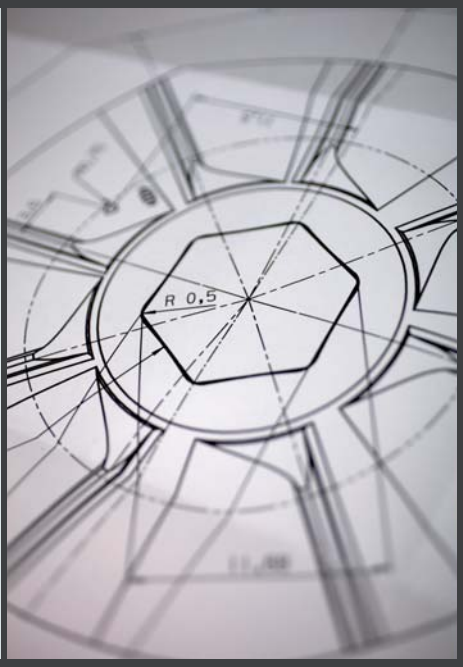
- Wrong tool type → select correct tool
- Chip jam → see "Oversize thread – chip jam"
- Core diameter is too small, → Choose correct core Ø
- Material buildup on the thread flanks
  → Use surface-treated tools
  → Optimize coolant lubrication
- Cutting speed is too low → Increase cutting speed

7. 

Tool life is too short

- Wrong tool type → select correct tool
- Cutting speed too high or too low → adjust cutting speed
- Coolant composition and supply are inadequate → provide suitable, sufficient coolant
- Premature wear due to lack of or unsuitable surface treatment → use coated tools, poss. solid carbide tools

DIHART® – Innovative solutions for precision finishing of bores



The KOMET GROUP is a leading global provider of high precision DIHART® reaming tools for cost effective, precise machining of bores. Our innovative solution capabilities, comprehensive service array and dedication are the basis for successful partnerships with our customers.

For more than 60 years, DIHART® has been synonymous with high-precision reaming. We are successfully meeting the growing demand for application-specific solutions and flexible standard tools by continuously expanding our solution capabiltiies and our innovative edge. Our leading market position is the result of consistently higher quality and continuous development.

The KOMET GROUP also offers the complete range of services internationally. You can find us wherever you manufacture your products with an exacting demand for quality.

The standardized tool range and application-specific special tools guarantee precise, cost effective and reliable machining.

With new product and modular high-speed concepts such as the modular high-speed Reamax® TS reaming tools, we set new benchmarks especially for standard products. Our knowledge of application-specific solutions gives us a unique perspective.

DIHART® is the KOMET GROUP's brand for precision reaming in new dimensions.

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DIHART® Tool selection guide

Tool selection guides let you quickly and easily select the tool system that fits you requirements.

On page 161, you will find our tool recommendations for a suitable tool system that takes into account tolerance and diameter requirements.

Example: machining diameter 20 H7 points to a Reamax® TS tool system.

DIHART® Tool selection guide — **Example**

Tool recommendations					
IT-Tolerance	Ø 1.40 – 5.59 mm	Ø 5.60 – 11.99 mm	Ø 12.00 – 17.99 mm	Ø 18 – 40 mm	Ø 40 – 65 mm
IT 5 – IT 6	Solid carbide reamer	Monomax®	Monomax®	Reamax® TS	Reamax® TS
IT 7	Solid carbide reamer	Monomax®	Reamax®	Reamax® TS	Reamax® TS
≥ IT 8	Solid carbide reamer	Solid carbide reamer	Reamax®	Reamax®	Reamax® TS

Depending on the type of hole and material to be machined, you will be guided to the appropriate tool. You find the best cutting geometry (ASG) in the "Tool selection guide" in each catalog section.

DIHART Reamax® TS

Tool selection guide — **Example**

Materials groups	Strength Rm (N/mm²)	Hardness HB	Materials	Materials example. Materials code / DIN	HIGH SPEED MACHINING Order #	Cutting geometry (ASG)	Cutting material/ Coating	Order #	Cutting geometry (ASG)	Cutting material/ Coating
1.0	≤ 500		Non-alloy steels - structural, heat treated, machining, cast	St37-2 / 1.0037; 9SMn28 / 1.0715; St44-2 / 1.0044	75J.93	ASG09	DST	75J.71	ASG09	TiN
2.0	500-900		Non-alloy / low alloy steels - structural, heat resistant, heat treated, nitrided, tool, cast steel	St52-2 / 1.0050, C55 / 1.0525, 16MnCr5 / 1.7131	75J.93	ASG09	DST	75J.71	ASG09	TiN

Example:
Material:
Non-alloy steel St37
Bore type: through hole

Tool recommendation:
DST cutting material
Order #: 75J.93
Cutting geometry: ASG09

Recommended cutting data:
Cutting speed:
v_C = 100 – 200 m/min
Feed for Ø 18.000 mm:
f_Z = 0.10 – 0.21 mm/tooth

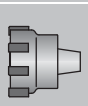
DIHART® Cutting Data

Guideline values for reaming					Cutting speed v_C (m/min)													
					Reamers short / 3×D								Reamers long / 5×D					
Material group	Strength Rm (N/mm²)	Hardness HB	Materials	Materials example material code/ DIN	HM	DST	TiN	DBG-N	DBF	DJC	DBC	PCD	HM	DST	TiN	DBG-N	DBF	DJC
					min-max	min-max	min-max	min-max	min-max	min-max	min-max	min-max	min-max	min-max	min-max	min-max	min-max	min-max
1.0	≤ 500		Non-alloy steels - structural, heat treated, machining, cast	St37-2 / 1.0037; 9SMn28 / 1.0715 St44-2 / 1.0044	6-10	100-200	60-140			100-200			6-10	80-160	60-120			80-160
2.0	500-900		Non-alloy / low alloy steels - structural, heat resistant, heat treated, nitrided, tool, cast steel	St52-2 / 1.0050. C55 / 1.0525. 16MnCr5 / 1.7131	6-10	100-200	60-140			100-200			6-10	80-160	60-120			80-160

Example

Feed f_Z (mm/tooth) (with face cut, feed reduced by 30%)				
fluted 03. ASG11. ASG1101		Straight fluted ASG09. ASG09B. ASG14		
Ø 25 - 50	> Ø 50	< Ø 12	Ø 12 - 25	Ø 25 - 5
min-max	min-max	min-max	min-max	min-max
0.09-0.20	0.10-0.25	0.07-0.14	0.10-0.21	0.12-0.2
0.09-0.20	0.10-0.25	0.07-0.14	0.10-0.21	0.12-0.2

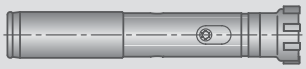
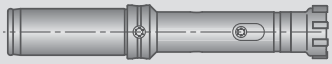
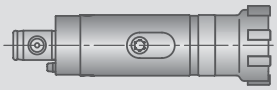
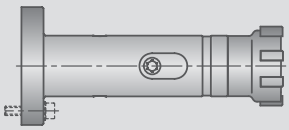
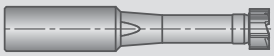
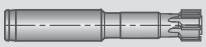
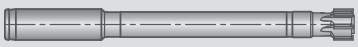
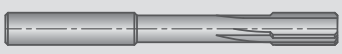
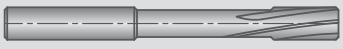
Tool recommendations					
IT-Tolerance	Ø 1.40 – 5.59 mm	Ø 5.60 – 11.99 mm	Ø 12.00 – 17.99 mm	Ø 18 – 40 mm	Ø 40 – 65 mm
IT 5 – IT 6	Solid carbide reamer	Monomax ®	Monomax ®	Reamax ® TS	Reamax ® TS
IT 7	Solid carbide reamer	Monomax ®	Reamax ®	Reamax ® TS	Reamax ® TS
≥ IT 8	Solid carbide reamer	Solid carbide reamer	Reamax ®	Reamax ®	Reamax ® TS
IT - tolerance class see page 161					

Overview: standard reamers	Ø 1.400	Ø 4.000	Ø 5.600	Ø 9.600	Ø 10.159	Ø 12.000	Ø 12.700	Ø 17.600	Ø 18.000	Ø 18.899	Ø 20.100	Ø 25.899	Ø 40.000	Ø 50.000	Ø 60.600	Ø 65.000	Ø 110.599	Ø 139.599	Ø 300.599	Tool adapter
 Reamax ® TS									■	■	■	■	■	■	■	■				Straight shank DAH ®
Reamax ®						■	■	■	■	■	■	■	■							Straight shank
Monomax ® expandable			■	■	■	■	■	■	■	■	■	■								Straight shank Morse taper
Solid carbide reamer	■	■	■	■	■	■	■													Straight shank

If you do not see a standard tool for your machining needs in this catalog, we will be glad to quote you a special application-specific tool.

DIHART® Program summary

Reaming tools

			Page
		Reamax® TS expandable	
Ø 20 Ø 25 Ø 32		Ø 18^{H7} – 50^{H7} mm Holder with straight shank similar to DIN 1835	▸ 184
Ø 20 Ø 25 Ø 32		Ø 18^{H7} – 40^{H7} mm DAH® Zero with straight shank similar to DIN 1835	▸ 185
ABS 32		Ø 35^{H7} – 50^{H7} mm Holder with ABS® connection	▸ 186
DAH 81		Ø 50^{H7} mm Holder with DAH® connection	▸ 187
		Reamax® fixed	
Ø 16 Ø 20 Ø 25 Ø 32		Ø 15^{H7} – 30^{H7} mm Holder with straight shank similar to DIN 1835	▸ 195
		Monomax® expandable	
Ø 12 Ø 16 Ø 20		Ø 6^{H7} – 20^{H7} mm with straight shank similar to DIN 6535	▸ 202
Ø 12 Ø 16 Ø 20		Ø 6^{H7} – 20^{H7} mm with straight shank similar to DIN 6535	▸ 202
		Solid carbide reamer fixed	
Ø 3 Ø 4 Ø 6 Ø 8 Ø 10		Ø 1.400 – 12.700 mm Holder with straight shank similar to DIN 6535 HA	▸ 208
Ø 6 Ø 8 Ø 10		Ø 4.800 – 12.700 mm Holder with straight shank similar to DIN 6535 HA	▸ 209

Design your own tool!

Don't see a solution in the standard product range? Are the dimensions shown not what you need?
Easy Special™ lets you create your own combination of standard modules in the widest variety of dimensions.
Select the basic type, define the effective length and choose the desired adapter for the tool.
We'll check you specifications for technical feasibility and you will receive a prompt reply.

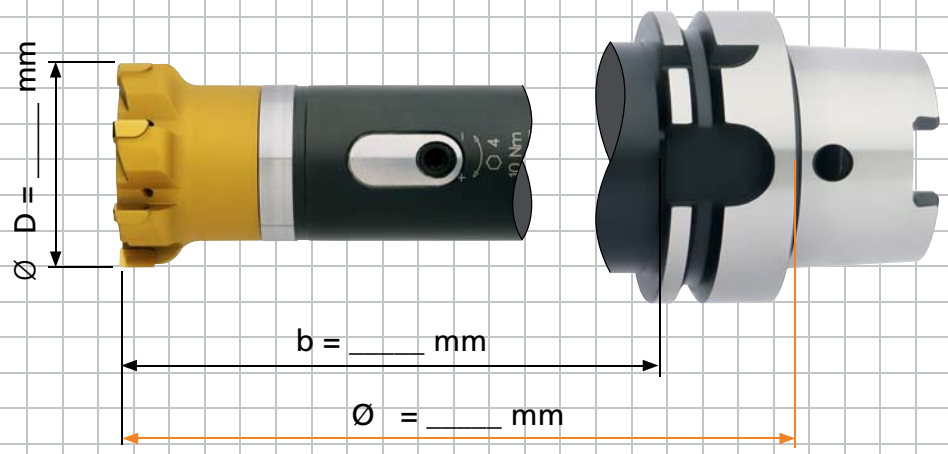
Company: Contact:

Department: E-Mail:

Telephone: Customer #:

Fax : Distributor:

Date:



Material to be machined:

Machining method
☐ through hole ☐ blind hole

Length of bore:

Interrupted cut
☐ yes ☐ no

Bore tolerance:

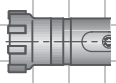
Required surface finish:

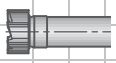
Stock allowance on Ø:

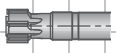
Required cutting material/coating
☐ carbide ☐ TiN ☐ DBG-N
☐ DST ☐ DJC ☐ PCD
☐ DBF ☐ DBC ☐ other:

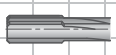
Other:

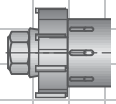
Cutter style

☐ Reamax® TS 

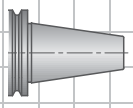
☐ Reamax® 

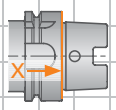
☐ Monomax® 

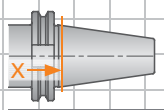
☐ Solid carbide reamer 

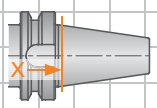
☐ Cutting ring 

Connection (Type and size)

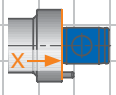

☐ CAT _____


☐ HSK _____
DIN 69893 A


☐ ISO _____
DIN 69871 AD/B


☐ BT _____
JIS B 6339 AD/B
(MAS 403 BT)

☐ DAH _____


☐ ABS _____

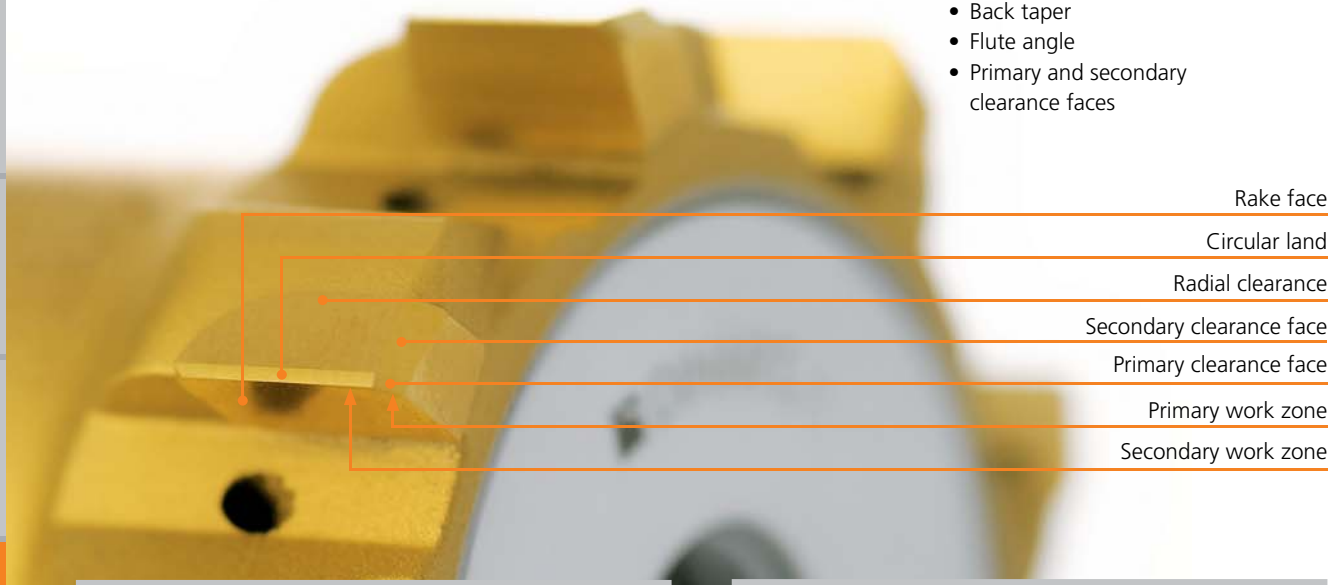
☐ Ø _____ inch
☐ (Ø _____ mm)
similar DIN 1835

other ☐ _____

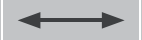
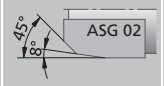
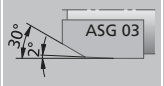
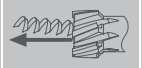
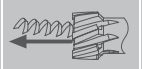
DIHART® ASG – Cutting geometries

The cutting geometry (ASG) comprises these dimension:

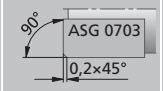
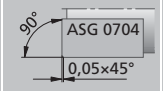
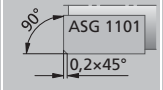
- Bevel angle
- Width of circular land
- Back taper
- Flute angle
- Primary and secondary clearance faces



Standard geometries

Geometry	Flute form	Chip evacuation	Bevel angles	Cutting material / coating
ASG0106	Straight			HM TiN **DBG-N**
ASG02	Straight			HM
ASG03	Straight			HM
ASG0501	Left hand spiraled			HM TiN **DBG-N** **DJC**
ASG07	Straight			HM TiN DST **DBG-N** **DJC**
ASG0706	Straight			**DBC**
ASG09	Straight			HM TiN DST **DBG-N** **DJC**

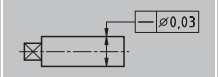
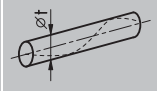
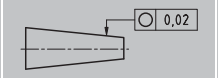
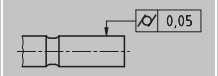
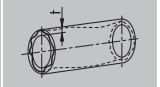
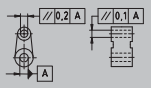
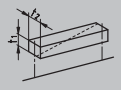
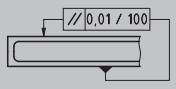
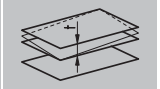
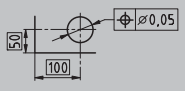
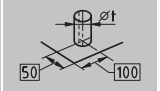
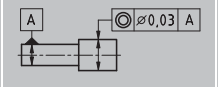
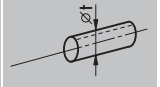
Special geometries

Geometry	Flute form	Chip evacuation comment	Bevel angles	Cutting material / coating
ASG0703	Straight	Front cutting		HM TiN DST **DBG-N** **DJC**
ASG0704	Straight	Front cutting, for increased positional accuracy		HM TiN DST **DBG-N** **DJC**
ASG09B	Straight	Chip breaking < Ø 32 mm		HM TiN DST **DBG-N** **DJC**
ASG1402	Straight	Chip breaking > Ø 32 mm		HM TiN DST **DBG-N** **DJC**
ASG11	Straight			**PCD**
ASG1101	Straight	Front cutting		**PCD**

Cutting materials	HM	HM is a fine-grained carbide, which features high abrasion resistance and achieves good results in standard materials. It is very suitable for coating, and therefore mainly used also as substrate for coated reamers.
	DST	DST is a high-performance cutting material and very suitable for high-speed reaming. DST is ideal for machining non-alloyed or low-alloyed steels up to 1,200 N/mm² tensile strength. DST is also excellent for reaming spheroidal iron.
Coatings	TiN	TiN is an all purpose coating material. It has a very smooth surface and has very little affinity for many materials. This avoids structure deformation, which gives excellent surface finish results when reaming and with considerably higher cutting values than with non-coated carbide reamers.
	DBG-N	DBG-N is a coating which offers a very high grade of hardness. The coating also has a very high oxidation resistance. This makes this particular high-performance coating very suitable for high cutting speeds and for use with minimum quantity lubricant (MQL) machining.
	DJC	DJC is a combination of the high-performance cutting material DST and the high-performance coating DBG-N. With this combination, a very long tool life with extremely high cutting values can be reached.
	DBF	DBF is a coating that exhibits a very high level of hardness and a high resistance to oxidation. This makes the coating suitable for cast iron machining. A very smooth layer means that stainless materials can also be successfully machined.
	DBC	DBC is a coating with a very high level of hardness and an extremely smooth surface. It is suitable for machining aluminum and copper alloys.

Additional high-tech coatings are available for special applications.

Form and positional tolerances DI EN ISO 1101

Form and positional tolerances						
Tolerance type		Symbols and characteristics to tolerance		Drawing details examples	Explanation	Tolerance zone
Form tolerances		—	**Straightness** of a line or axis		The axis of the cylindrical part of the pin must lie within the cylinder to t = 0.03 mm	
		○	**Circularity** of a disc, a cylinder, a cone, etc.		The circumference line of any cross section must be contained in a circular ring with a width of t = 0.02 mm	
		⌭	**Cylindricity**		The surface to tolerance must lie within two coaxial cylinders which have a radial spacing of t = 0.05 mm	
Positional tolerances	Directional tolerances	//	**Parallelism** of a line (axis) with reference to a basic straight line		The top axis must lie in a square-shaped area, within 0.1 mm in the vertical and 0.2 mm in the horizontal direction. The area will lie parallel to the basic axis of bore A.	
		//	**Parallelism** of a surface with reference to a basic plane		Any 100 mm long section of the top surface must lie with a gap of 0.01 mm between two parallel planes. The planes will lie parallel to the lower surface (basic surface).	
	Location tolerances	⌖	**Position** of lines, axes or surfaces in relation to one another or to one or several basic elements		The axis of the hole must lie within a cylinder with a diameter to tolerance t = 0.05 mm, whose axis lies at the precise geometrical place (with dimensions as shown in boxes).	
		◎	**Concentricity** of an axis or a point in relation to a basic axis (basic point)		The axis of the part of the shaft to tolerance must lie within a cylinder with a diameter to tolerance t = 0.03 mm, whose axis aligns with the base axis.	

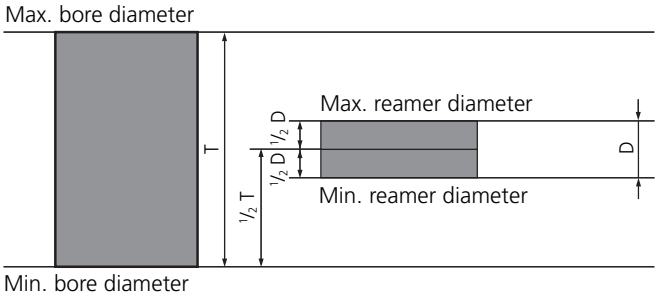
ISO basic tolerance class DIN 7151

ISO tolerance class (µm)												
Nominal dimension range	IT 1	IT 2	IT 3	IT 4	IT 5	IT 6	IT 7	IT 8	IT 9	IT 10	IT 11	IT 12
1 – 3 mm	0.8	1.2	2	3	4	6	10	14	25	40	60	100
> 3 – 6 mm	1	1.5	2.5	4	5	8	12	18	30	48	75	120
> 6 – 10 mm	1	1.5	2.5	4	6	9	15	22	36	58	90	150
> 10 – 18 mm	1.2	2	3	5	8	11	18	27	43	70	110	180
> 18 – 30 mm	1.5	2.5	4	6	9	13	21	33	52	84	130	210
> 30 – 50 mm	1.5	2.5	4	7	11	16	25	39	62	100	160	250
> 50 – 80 mm	2	3	5	8	13	19	30	46	74	120	190	300
> 80 – 120 mm	2.5	4	6	10	15	22	35	54	87	140	220	350
> 120 – 180 mm	3.5	5	8	12	18	25	40	63	100	160	250	400
> 180 – 250 mm	4.5	7	10	14	20	29	46	72	115	185	290	460
> 250 – 315 mm	6	8	12	16	23	32	52	81	130	210	320	520

Manufacturing tolerance of DIHART® Reamers

Manufacturing tolerance of expandable reamers

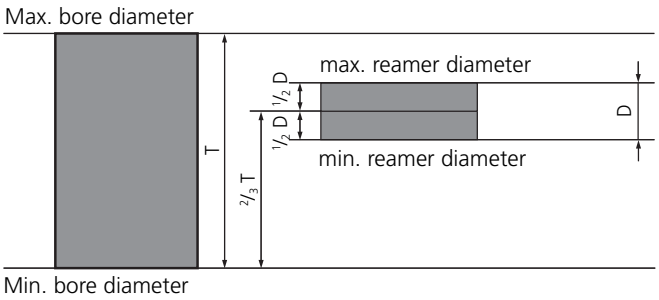
The diameter of an expandable reamer is ground to the middle of the bore tolerance T.
The expansion feature of these tools allows for compensation of wear.



T = Tolerance field of bore
D = Manufacturing tolerance of reamer

Manufacturing tolerance of solid reamers

The manufacturing tolerance field D of the solid reamers is two-thirds of the bore tolerance T.



T = Tolerance field of bore
D = Manufacturing tolerance of reamer

Attainable surface quality

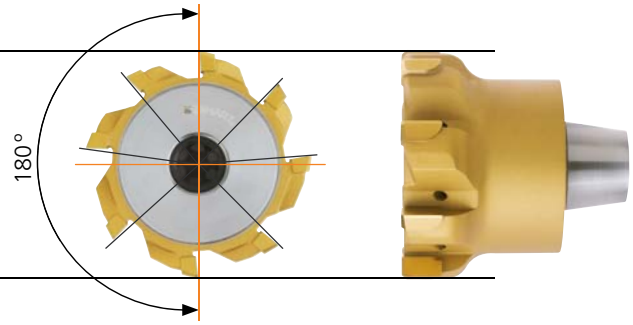
Material group		Surface finish class	N11	N10	N9	N8		N7	N6		N5	N4	N3	N2	N1
		Mean surface finish R_a	25	12.5	6.3	3.2		1.6	0.8		0.4	0.2	0.1	0.05	0.025
		Average surface uniformity R_z	100	63	40	25	16	10	6.3	4	2.5	1.6	1	0.63	0.25
P	1.0 – 4.0	Structural steel, low alloy steels: case-hardened steels, heat-treated steel													
S	5.0	Special alloys: Inconel													
S	5.1	Titanium, Titanium alloys													
M	6.0 – 7.0	Stainless steels, Fireproof steels													
K	8.0 – 10.2	Gray cast iron ferritic													
K		Gray cast iron pearlitic													
K		Spheroidal graphite cast iron ferritic													
K		Spheroidal graphite cast iron perlitic													
N	12.0	Copper alloy, brass													
N	13.0	Wrought aluminum alloys													
N	13.1	Cast aluminum alloy: Si-content < 10%													
N	14.0	Cast aluminum alloy: Si-content > 10%													
H	15.0	Hardened steels < 45 HRC													
H	16.0	Hardened steels > 45 HRC, ≤ 55 HRC													

achievable limited achievability

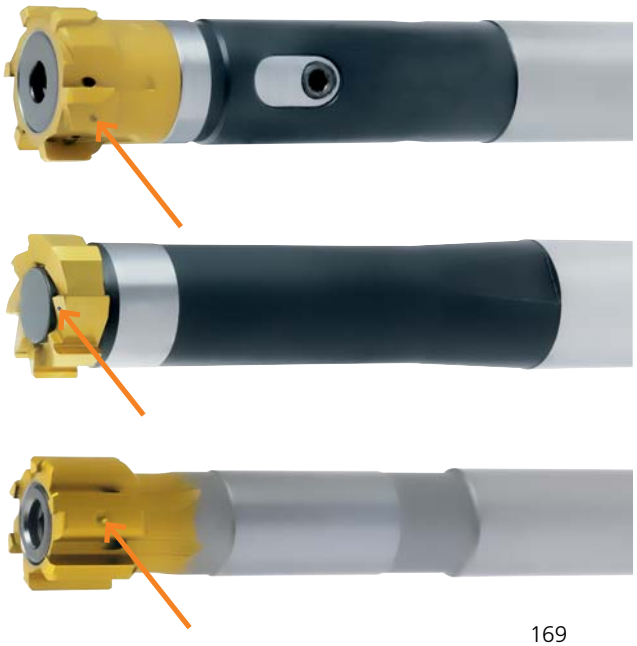
All other surface values upon request.

Unequal flute spacing!
Only two cutting edges are 180° opposed.
→ measurement teeth
The tools back taper means that they have to be measured at the front of the cutting edge.

PCD-tipped reamers require use of a non-contact measuring device!



Marking of measuring teeth with
- Drive pin, lobe
- Number
- Punch-mark



DIHART® cutting data

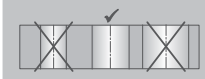
Guideline values for reaming						Cutting speed v_c (m/min)															
						Reamers short / 3×D								Reamers long / 5×D							
Material group	Strength Rm (N/mm²)	Hardness HB	Material	Materials example material code ANSI/SAE		HM	DST	TiN	DBG-N	DBF	DJC	DBC	PCD	HM	DST	TiN	DBG-N	DBF	DJC	DBC	PCD
						min-max	min-max	min-max	min-max	min-max	min-max	min-max	min-max	min-max	min-max	min-max	min-max	min-max	min-max	min-max	min-max
P 1.0	≤ 500		Non-alloy steels - structural, heat treated, machining, cast	1010 1144 1213		6-10	100-200	60-140			100-200			6-10	80-160	60-120			80-160		
P 2.0	500-900		Non-alloy / low alloy steels - structural, heat resistant, heat treated, nitrided, tool, cast steel	1055 5115 5120		6-10	100-200	60-140			100-200			6-10	80-160	60-120			80-160		
P 2.1	< 500		Lead alloy machining steel	12L14		15-45	100-200	60-140			100-200			15-45	80-160	60-120			80-160		
P 3.0	> 900		Non alloy / low alloy steels: heat resistant structural, heat treated, nitride and tools steels	1064 4140		5-9	80-150	60-110			80-150			5-9	80-120	60-90			80-120		
P 4.0	> 900		High alloy steels	H13 H21		4-7		15-45						4-7		15-45					
P 4.1			HSS	M10 T4																	
S 5.0		250	Special alloys: Inconel, Hastelloy, Nimonic, stc,	Inconel® 718 Nimonic® 80A																	
S 5.1	400		Titanium, Titanium alloys	Ti-6Al-4V		5-12								5-12							
M 6.0	≤ 600		Stainless steels	304L 316		5-8		15-40		30-60				5-8		15-40		30-60			
M 6.1	< 900		Stainless steels	630		4-6		10-35		20-50				4-6		10-35		20-50			
M 7.0	> 900		Stainless / fireproof steels	403 420		4-6		10-35		20-50				4-6		10-35		20-50			
K 8.0		180	Gray cast iron	Class 25 G3000		10-25		50-130	80-220	80-220				10-25		50-100	80-150	80-150			
K 8.1		250	Alloy gray cast iron	A436 Type 2		6-12		30-90	40-130	40-130				6-12		30-90	40-100	40-100			
K 9.0	≤ 600	130	Spheroidal graphite cast iron, ferritic	60-40-18 D4512		9-18	130-300		130-300	130-300	130-300			9-18	120-180		120-180	120-180	120-180		
K 9.1		230	Spheroidal graphite cast iron, ferritic / pearlitic	80-55-06 D5506		9-18	100-250		100-250	100-250	100-250			9-18	100-160		100-160	100-160	100-160		
K 10.0	> 600	250	Spheroidal graphite cast iron, pearlitic, malleable iron	100-70-03 07003		8-15	80-180		80-180	80-180	80-180			8-15	80-150		80-150	80-150	80-150		
K 10.1		200	Alloyed spheroidal graphite cast iron	A43D2		6-12		30-60	50-100	50-100				6-12		30-60	50-100	50-100	50-100		
K 10.2		300	Vermicular cast iron			6-12		30-70	40-130	40-130				6-12		30-70	40-130	40-130	40-130		
N 12.0		90	Copper alloy, brass, lead-alloy bronze, lead bronze: good cut	316		10-30	100-320	80-200						10-30	100-200	80-150					
N 12.1		100	Copper alloy, brass, bronze: average cut			10-20		50-150						10-20		50-120					
N 13.0		60	Wrought aluminum alloys	6151 7075		10-30						50-300	110-330	10-30						50-240	100-240
N 13.1		75	Cast aluminum alloy: Si-content <10% magnesium alloy	380 A356.0		10-30						150-300	110-550	10-30						150-250	100-300
N 14.0		100	Cast aluminum alloy: Si-content > 10%	383 A413.0		8-20						150-300	110-440	8-20						150-250	100-250
H 15.0	1400		Hardened steels < 45 HRC						40-60								40-60				
H 16.0	1800		Hardened steels > 45 HRC, ≤ 55 HRC						30-50								30-50				

Feed rate f_z (mm/tooth) (with face cut, feed reduced by 30%)									
Straight fluted ASG07. ASG0106. ASG03. ASG11. ASG1101				Straight fluted ASG09. ASG09B. ASG1402				Left hand spiraled ASG0501
< Ø 12	Ø 12 - 25	Ø 25 - 50	> Ø 50	< Ø 12	Ø 12 - 25	Ø 25 - 50	> Ø 50	Ø 4.8 - 12.7
min-max	min-max	min-max	min-max	min-max	min-max	min-max	min-max	min-max
0.05-0.10	0.07-0.15	0.09-0.20	0.10-0.25	0.07-0.14	0.10-0.21	0.12-0.24	0.13-0.30	0.07-0.14
0.05-0.10	0.07-0.15	0.09-0.20	0.10-0.25	0.07-0.14	0.10-0.21	0.12-0.24	0.13-0.30	0.07-0.14
0.05-0.10	0.07-0.15	0.09-0.20	0.10-0.25	0.07-0.14	0.10-0.21	0.12-0.24	0.13-0.30	0.07-0.14
0.04-0.08	0.06-0.12	0.07-0.16	0.08-0.20	0.06-0.11	0.08-0.17	0.09-0.19	0.10-0.24	0.06-0.11
0.04-0.07	0.05-0.11	0.06-0.14	0.07-0.18					
0.05-0.11	0.07-0.17	0.10-0.24	0.11-0.30					
0.04-0.08	0.06-0.12	0.07-0.16	0.08-0.20					0.06-0.12
0.04-0.08	0.06-0.12	0.07-0.16	0.08-0.20					0.06-0.12
0.04-0.08	0.06-0.12	0.07-0.16	0.08-0.20					0.06-0.12
0.06-0.13	0.08-0.20	0.11-0.26	0.12-0.33					0.08-0.20
0.06-0.12	0.08-0.18	0.11-0.24	0.12-0.30					0.08-0.18
0.06-0.13	0.08-0.20	0.11-0.26	0.12-0.33					0.08-0.20
0.06-0.13	0.08-0.20	0.11-0.26	0.12-0.33					0.08-0.20
0.06-0.12	0.08-0.18	0.11-0.24	0.12-0.30					0.08-0.18
0.06-0.12	0.08-0.18	0.11-0.24	0.12-0.30					0.08-0.18
0.06-0.12	0.08-0.18	0.11-0.24	0.12-0.30					0.08-0.18
0.05-0.12	0.07-0.18	0.09-0.24	0.10-0.30					0.07-0.18
0.05-0.12	0.07-0.18	0.09-0.24	0.10-0.30					0.07-0.18
0.05-0.12	0.07-0.18	0.09-0.24	0.10-0.30					0.07-0.18
0.05-0.12	0.07-0.18	0.09-0.24	0.10-0.30					0.07-0.18
0.05-0.12	0.07-0.18	0.09-0.24	0.10-0.30					0.07-0.18
0.04-0.08	0.06-0.12	0.07-0.16	0.08-0.20					
0.04-0.08	0.06-0.12	0.07-0.16	0.08-0.20					

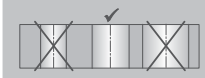
Reaming allowance in Ø (mm)								
0.10-0.20	0.20-0.30	0.20-0.40	0.30-0.50	0.10-0.20	0.20-0.30	0.20-0.40	0.30-0.50	0.10-0.20

DIHART® Technical operating notes

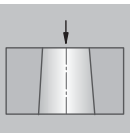
Problems • Possible causes → Solutions



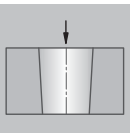
Bore too large
- Run-out of the reamer in the spindle → use DAH® compensating holder and correct run-out
- Alignment not precise, reamer cuts at the back end → correct alignment and use DPS floating holder
- Built-up edge → reduce cutting speed v_C for uncoated carbide cutting material, increase for DST and coated cutting material or increase the oil content of the coolant
- Reamer too big → have the reamer reworked



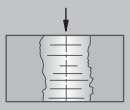
Bore too small
- Worn reamer → have the reamer readjusted, replaced or repaired
- Stock allowance too small → increase stock allowance
- Cutting forces too large → reduce feed or choose a different cutting geometry (ASG)
- Reamer too small → have reamer readjusted, replaced or repaired



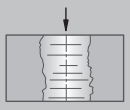
Conical bore, tapered
- Poor alignment → correct alignment and use DPS floating holder
- Misalignment of head-stock in relation to turret → correct turret and use DPS floating holder



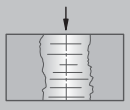
Conical bore, lipped
- Poor alignment. Cutting edges press at start → correct alignment and use DPS floating holder



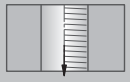
Bore not straight
- Run-out of reamer too large → correct run-out using DAH® compensation system
- Poor alignment → correct alignment and use DPS floating holder
- Asymmetrical cutting through uneven entry surface → countersink bore
- Deformation through clamping of the work piece → correct clamping of the work piece
- Poor premachining → optimize premachining
- Feed too high → reduce feed



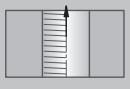
Bore shows chatter marks
- Cutting speed too high → reduce cutting speed
- L to D ratio too large → reduce the entry speed, pilot the bore or choose a different cutting geometry (ASG)



Surface quality unsatisfactory
- Cutting edge build-up → reduce cutting speed v_c for uncoated carbide cutting material, increase for DST and coated cutting material or increase oil content of the coolant
- Cutting edges worn → have reamer repaired or replace tool
- Run-out error of reamer → correct run-out using DAH® compensation system
- Failing or insufficient coolant, chips getting jammed → use internal coolant supply and increase coolant pressure
- Unsuitable coolant → increase the oil content of the coolant
- Wrong cutting values → use values according to catalog recommendation

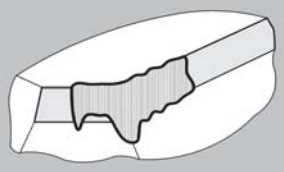


Scoring in bore «feed marks»
- Cutters worn → replace reamer or have repaired
- Cutting edge build-ups → reduce cutting speed v_c for uncoated carbide cutting material, and increase for DST and coated cutting material or increase oil content of the coolant

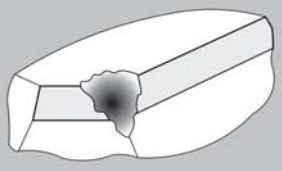


Scoring in bore «retraction marks»
- Reamer is allowed to travel too far out of the bore → only allow the reamer to travel out of the hole at most 2 mm more than the cutting length
- Material springs back → do not rapid retract, rather feed out (2-3 times)

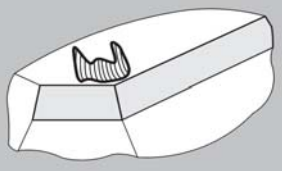
Types of tool wear



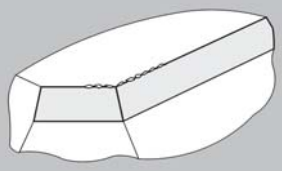
Flank wear
Reduce cutting speed or use a cutting material or coating with higher abrasion resistance.



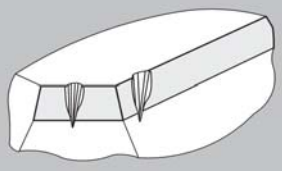
Major breakage
Reduce feed rate and stock allowance. Use carbide with coating instead of DST for interrupted bores.



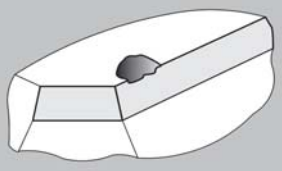
Pitting of chip surface
Reduce cutting speed or use a more positive rake angle.



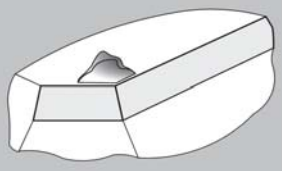
Edge wear
Increase cutting speed or use a more positive rake angle.



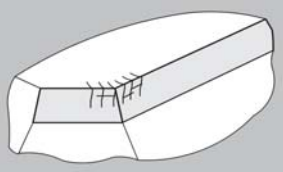
Notch wear
Reduce cutting speed or use a cutting material or coating with higher abrasion resistance.



Fatigue wear
Reduce feed rate, increase stability of the reamer.



Build-up on chip surface
Use positive cutting geometry, increase oil content of coolant, reduce cutting speed v_C for uncoated carbide cutting material, increase for DST and coated cutting material.



Hairline cracks
Use enough coolant and inner coolant supply, reduce cutting speed.

Usage and safety notes

Safety notes:

- The usage values provided in the technical operating notes depend on the environmental and usage conditions (such as machine, ambient temperature, lubrication/coolant used and desired machining results): they assume proper usage conditions, proper use and observance of the spindle speed limits given for the tools.
- To prevent damage to machine and tool, we recommend that the drive power be calculated in advance. Get the actual drive power from the machine manufacturer's spindle speed/performance diagram.
- Safety equipment should be provided to protect personnel from flying chips. Please see our safety note (enclosed with our package).

Hazard warning:
If using tungsten carbide-based hard metal products together with cobalt as a binder metal, please read our safety data sheets, which are available for you to download from our website, www.komet.com/navigation-top/download/service/msds.html

Liability information:
Subject to change. The KOMET GROUP is not liable for damages resulting from selecting the wrong tools.

Abbreviations used:

ISO	International Organization for Standardisation	The International Organization for Standardization– abbreviated ISO (grade: "isos") – is the international federation of standards organizations and develops international standards many sectors
DIN	German Institute for Standardisation (Deutsches Institut für Normung e. V)	The German Institute for Standardisation is the most important national standardization organization in the Federal Republic of Germany.
JIS (MAS-BT)	Japan Industrial Standard	Machine tools from Asia normally use tool holders in accordance with the JIS B standard ... (former designation MAS-BT).
HSK	Hollow shank taper	The hollow shank taper, HSK for short, is used as a tool adapter in machine tools (standardised according to DIN 69893).
SK	Steep taper	The steep taper is the standardized form of a tool taper for clamping tools in the main spindle of a machine tool (standardised in DIN 69871 part 1).
MK	Morse taper	The Morse taper or Morse cone is the standardized form of a tool taper for clamping tools.
ABS	Adapter attachment system (ABS)	The KOMET ABS system is often used as a direct adapter in spindles. In contrast to steep taper adapters, with the ABS System, the spindle or shank diameter is decisive for vibration stability and enables a relatively extended tool projection.
DAH	DIHART compensating holder	DIHART compensating holders are static compensating systems. Axis and concentricity errors are compensated for extremely simply.
DPS	DIHART floating holder	DIHART floating holders are dynamic compensating systems. Axis and concentricity errors are compensated for extremely simply.
ASG	Cutting geometry	The cutting geometry defines the following sizes: cutting angle, cylindrical grinding chamfer width, tapering, rake angle, primary and secondary relief angle.
HM VHM	Carbide Solid carbide	Carbide in this case means sintered carbide hard metals.
TiN	Titanium nitride	TiN is the chemical molecular formula for titanium nitride, a ceramic material with very high hardness and corrosion resistance.
DST	DIHART cutting material	DST is a high-performance cutting material.
DBG-N	DIHART coating	DBG-N is a coating that is characterized by a very high level of hardness.
DJC	DIHART coating	DJC is a combination of the high-performance cutting tool material DST with the high-performance coating DBG-N.
DBF	DIHART coating	DBF is a coating that exhibits a very high level of hardness and a high resistance to oxidation.
DBC	DIHART coating	DBC is a coating with a very high level of hardness and an extremely smooth surface.
PCD	Polycrystalline diamond	Polycrystalline diamond is a synthetically manufactured, extremely hard, mass of diamond particles with random orientation sintered in a metal matrix.
Rm	Tensile strength (N/mm²)	Tensile strength is a material property and describes the mechanical resistance with which a material opposes plastic deformation or separation.
HB	Brinell hardness testing	Hardness is the mechanical resistance with which a material opposes mechanical penetration by a harder test piece.
R_a R_z	Roughness depth (µm)	R_a = Mean surface finish to DIN 3142 R_z = Average surface uniformity to DIN 4768

Quote requests:

In order to handle requests rapidly in a manner that is best for our customers, we require the following details:

- A completed questionnaire (page 176)
- A part drawing or hand sketch of the application in question

This will enable the order department to design an optimal tool expeditiously.

Test results and returns:

To process returns or test results efficiently, we request the following details and items:

- A completed evaluation form (page 177)
- A part drawing or hand sketch of the application in question
- If possible, the faulty workpiece and/or tool

This will guarantee a fast and simple turnaround.

Please forward this information to your KOMET Partner.

KOMET GROUP addresses are printed on the last pages of this catalog.

For tool work-up and machining recommendations, please send this completed questionnaire to your local KOMET Partner

KOMET FORM 500

Sales Rep: _____
Sales Rep #: _____
Request Date: _____

Distributor

Distributor Acct. No: _____
Inquiry No: _____
Send Quote To: _____
Telephone: _____
Fax: _____
E-Mail: _____

End User

Date of Visit: _____
Technical Contact: _____
Telephone: _____
Fax: _____
E-Mail: _____

Tooling Needed: _____

Quotation

☐ Fixed price ☐ Budgetary price
Concept Drawing Required: ☐ Yes ☐ No
Date Quotation Needed: _____
Tool Delivery Date Requested: _____
Quantity Requested: _____
For OEM's:
☐ Machine on order
☐ Machine order expected
☐ Quotation for project

Annual Production / Batch Size: _____

Tool Information

Max tool weight & moment: _____
Max tool width: _____
Max tool length: _____
Bore length: _____

Tool change: ☐ Automatic ☐ Manual
Tool set-up: ☐ Inside machine ☐ Outside

Type of connection: _____

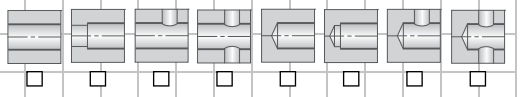
Part Information

Drawing Number: _____
Material Specification: _____
Tensile Strength (specify unit): _____
Hardness (specify unit): _____
Application:
☐ Drilling ☐ Roughing ☐ Semi finish machining ☐ Finish machining
☐ Reaming ☐ Threading ☐ Milling ☐ Other
Stock removal on Ø: _____
Position Requirement: _____
Fixture Interference
☐ None ☐ See Drawing
CPK-Value:

Reaming Information

Diameter & Tolerance: _____
Pre-machined Ø: _____
Pre-machining Method: _____

Hole Type:



☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Length of Interruption: _____
Bottom Machined: ☐ Yes ☐ No
Surface Quality (specify unit): _____
Roundness Requirement: _____

Machine Information

Brand / Type: _____
Condition: ☐ New ☐ Used
No. of Spindles: _____
Operation: ☐ Horizontal ☐ Vertical
Available Horse Power: _____
Spindle Speed: Variable ☐ Yes ☐ No
Spindle Speed: rpm_{min} _____ rpm_{max} _____
☐ Tools rotating
☐ Parts rotating
Feed Type: ☐ NC ☐ Hydraulic
Spindle Type (CAT, HSK, etc.): _____
Spindle Runout: _____

Coolant:

Coolant Pressure (psi):
Coolant Type & Concentration:

Sketch or Process Description

Evaluation Form

DIHART ®

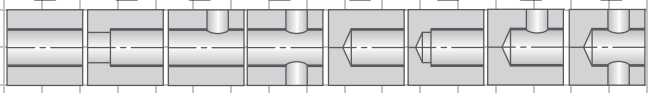
For reaming tests and returns, please send the completed form to your local KOMET Partner.

Company:	Contact:
Department:	E-Mail:
Telephone:	Customer-No.:
Fax:	Distributor:
Date:	

1. Work piece

Name of work piece:	Tensile strength:
Material specification:	Heat treatment:
Material No.:	Additional information:

2. Bore

Diameter and tolerance:	Type of bore
Length of bore:	☐ ☐[1] ☐[2] ☐[2] ☐[1] ☐[1] ☐[1)2)] ☐[1)2)]
Surface finish CLA / R_t / R_z:	
Circular error allowed:	
CPK:	
Diameter of pre-machining:	[1] bottom to be reamed? ☐ yes ☐ no
Method of pre-reaming:	[2] length of interruption: inch / (mm)
Number of bores, parts per year:	

3. Machine and tool fixing arrangement

Machine type and brand:	Machining: ☐ horizontal ☐ vertical
Attachment of spindle:	Tool: ☐ rotating ☐ stationary
Tool fixing arrangement:	Coolant supply through tool shank: ☐ yes ☐ no
max. speed: rpm ☐ variable ☐ fix	Brand and type of lubricant:
max. feed: inch (mm) / min ☐ variable ☐ fix	Lubricant ratio of mixture:
Circular accuracy of spindle:	

4. Tool

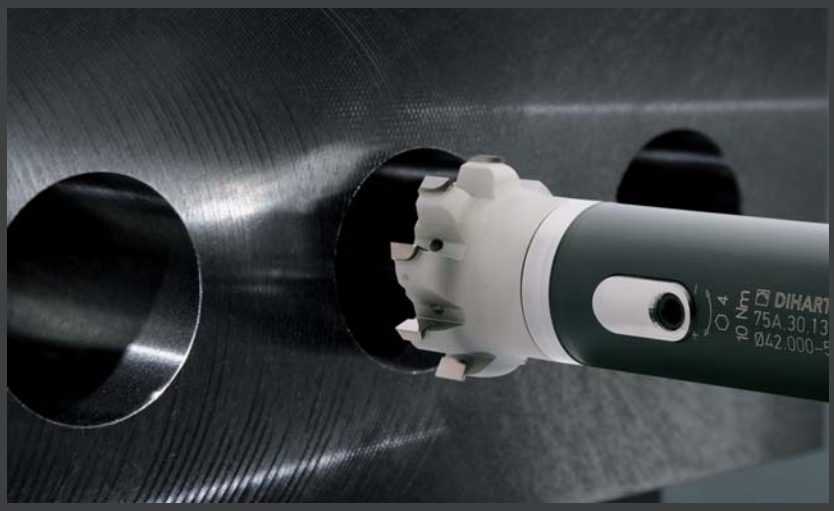
Type:	Cutting material / coating:
Order No.:	Cutting geometry (ASG):

5. Test results

Bore:	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6
Cutting speed ft/min (m/min):						
Speed (rpm):						
Feed: ☐ inch (mm) / rev ☐ inch (mm) / min						
Concentricity of the tool measured in the machine (µm):						
Bore diameter: entrance						
exit						
Circular error (µm):						
Surface quality: ☐ CLA ☐ R_t ☐ R_z						
No. of reamed bores:						
Tool life ft (m):						
Performance:						

Overall performance: ☐ excellent ☐ good ☐ unsatisfactory

DIHART Reamax® TS



Modular reaming system

Unlimited flexibility and cost-effectiveness distinguishes the DIHART Reamax® TS uniform clamping system with a standard connection for all DIHART® reaming heads, making quick, high-precision tool changing possible.

DIHART Reamax® TS provides a maximum of system modularity thanks to a versatile and clearly structured range of reaming heads which can handle all commonly encountered diameter ranges and machining requirements. This results in a reduction of tool costs and holding inventory to a minimum.

Your PLUS:

- High-precision manufacturing for guaranteed quality
- Modular tool system for maximum flexibility
- Wear compensation through simple adjustment
- Integrated run-out adjustments for short lengths
- Can be adjusted for extremely small hole tolerances
- Factory regrinding and recoating services assured by our network of professional KOMET SERVICE® Partners

Applications:

- All commonly-used materials
- Through holes and blind holes
- Small bore tolerances
- Up to 5×D
- High speed, up to 300 m/min
- High feed, up to 2.4 mm/rev

Connection for maximum process reliability

This high-precision connection ensures safer transfer of the torque during reaming and provides the concentricity required for precision machining.
DIHART Reamax® TS is designed for high speed machining.

Multi-flute tools

Adjustable for smallest tolerances
To compensate for wear and to meet tolerances as small as IT4, all DIHART Reamax® TS multi-flute tools are adjustable.
Maximum repeatable accuracy is achieved without pre-setting, therefore
- longer tool life
- maximum performance
- extremely tight bore tolerances
- less machine down time

With internal coolant supply

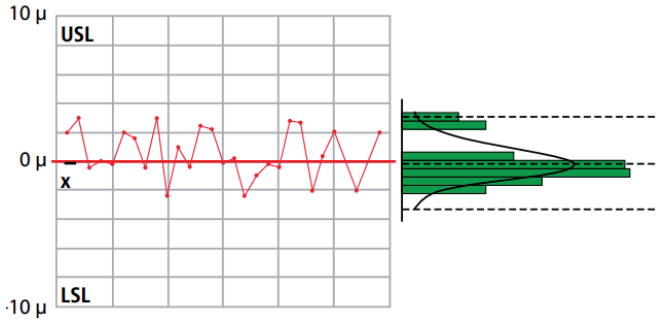
The internal coolant is supplied through the tool with flute or blind hole coolant styles

DIHART Reamax® TS	Page
Tool selection guide	180 – 181
Reaming head	
Ø 18^{H7} – 50^{H7} mm	182 – 183
Holder	
Straight shank	184
DAH® Zero	185
ABS® adapter	186
DAH® adapter	187
Assembly instructions	188 – 189
Assembly parts / accessories	189

Minimizing set-up time

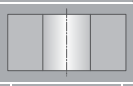
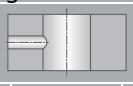
Set-up time is substantially reduced because the radial clamping system allows the reaming tools to be changed without removing the holder from the adapter.

DIHART Reamax® TS provides maximum process reliability for the smallest tolerances.



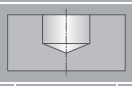
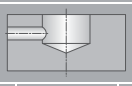
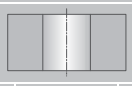
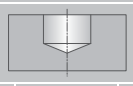
DIHART Reamax® TS

Tool selection guide

Material group		Strength Rm (N/mm²)	Hardness HB	Material	Materials example. Materials code ANSI/SAE	High-speed machining						
												
						Order #	Cutting geometry (ASG)	Cutting material/ Coating	Order #	Cutting geometry (ASG)	Cutting material/ Coating	
P	1.0	≤ 500		Non-alloy steels - structural, heat treated, machining, cast	1010 1144 1213	**75J.93**	ASG09	**DST**	**75J.71**	ASG09	TiN	
P	2.0	500-900		Non-alloy / low alloy steels - structural, heat resistant, heat treated, nitrided, tool, cast steel	1055 5115 5120	**75J.93**	ASG09	**DST**	**75J.71**	ASG09	TiN	
P	2.1	< 500		Lead alloy machining steel	12L14	**75J.93**	ASG09	**DST**	**75J.71**	ASG09	TiN	
P	3.0	> 900		Non alloy / low alloy steels: heat resistant structural, heat treated, nitride and tools steel	1064 4140	**75J.93**	ASG09	**DST**	**75J.71**	ASG07	TiN	
P	4.0	> 900		High alloy steel, tool steels	H13 H21	**75J.71**	ASG0106	TiN	**75J.71**	ASG0106	TiN	
P	4.1			High speed steels (HSS)	M10 T4							
S	5.0		250	Special alloys: Inconel, Hastelloy, Nimonic, etc.	Inconel® 718 Nimonic® 80A							
S	5.1	400		Titanium. Titanium alloys	Ti-6Al-4V							
M	6.0	≤ 600		Stainless steels	304L 316	**75J.71**	ASG0106	TiN	**75J.71**	ASG0106	TiN	
M	6.1	< 900		Stainless steels	630	**75J.71**	ASG0106	TiN	**75J.71**	ASG0106	TiN	
M	7.0	> 900		Stainless / heat proof steels	403 420	**75J.71**	ASG0106	TiN	**75J.71**	ASG0106	TiN	
K	8.0		180	Gray cast iron	Class 25 G3000	**75J.37**	ASG07	**DBG-N**	**75J.37**	ASG07	**DBG-N**	
K	8.1		250	Gray cast iron alloy	A436 Type 2	**75J.37**	ASG07	**DBG-N**	**75J.37**	ASG07	**DBG-N**	
K	9.0	≤ 600	130	Spheroidal graphite cast iron, ferritic	60-40-18 D4512	**75J.93**	ASG07	**DST**	**75J.37**	ASG07	**DBG-N**	
K	9.1		230	Spheroidal graphite cast iron, ferritic /pearlitic	80-55-06 D5506	**75J.93**	ASG07	**DST**	**75J.37**	ASG07	**DBG-N**	
K	10.0	> 600	250	Spheroidal graphite cast iron, pearlitic ductile iron	100-70-03 07003	**75J.93**	ASG07	**DST**	**75J.37**	ASG07	**DBG-N**	
K	10.1		200	Spheroidal graphite cast iron	A43D2	**75J.37**	ASG07	**DBG-N**	**75J.37**	ASG07	**DBG-N**	
K	10.2		300	Vermicular cast iron		**75J.37**	ASG07	**DBG-N**	**75J.37**	ASG07	**DBG-N**	
N	12.0		90	Copper alloy, brass, lead alloy bronze, lead bronze: good cuttability	316	**75J.93**	ASG07	**DST**	**75J.71**	ASG07	TiN	
N	12.1		100	Copper alloy, brass, lead alloy bronze: average cuttability		**75J.71**	ASG07	TiN	**75J.71**	ASG07	TiN	
N	13.0		60	Wrought aluminum alloys	6151 7075	**75J.17**	ASG0706	**DBC**				
N	13.1		75	Cast aluminum alloy: Sicontent <10% magnesium alloy	380 A356.0	**75J.17**	ASG0706	**DBC**				
N	14.0		100	Cast aluminum alloy: Si content >10%	383 A413.0	**75J.17**	ASG0706	**DBC**				
H	15.0	1400		Hardened steels < 45 HRC		**75J.37**	ASG0106	**DBG-N**				
H	16.0	1800		Hardened steels > 45 HRC		**75J.37**	ASG0106	**DBG-N**				

Please inquire if you do not see any tool selections for a given material.

Foreign and domestic patents pending (Reamax®)

	High-speed machining						Conventional machining with solid carbide					
												
	Order #	Cutting geometry (ASG)	Cutting material/ Coating	Order #	Cutting geometry (ASG)	Cutting material/ coating	Order #	Cutting geometry (ASG)	Cutting material	Order #	Cutting geometry (ASG)	Cutting material
	75H.93	ASG07	DST	75H.71	ASG07	TiN	75J.21	ASG07	HM	75H.21	ASG07	HM
	75H.93	ASG07	DST	75H.71	ASG07	TiN	75J.21	ASG02	HM	75H.21	ASG02	HM
	75H.93	ASG07	DST	75H.71	ASG07	TiN	75J.21	ASG07	HM	75H.21	ASG07	HM
	75H.93	ASG07	DST	75H.71	ASG07	TiN	75J.21	ASG07	HM	75H.21	ASG07	HM
	75H.71	ASG0106	TiN	75H.71	ASG0106	TiN	75J.21	ASG0106	HM	75H.21	ASG0106	HM
							75J.21	ASG03	HM	75H.21	ASG03	HM
	75H.71	ASG0106	TiN	75H.71	ASG0106	TiN	75J.21	ASG0106	HM	75H.21	ASG0106	HM
	75H.71	ASG0106	TiN	75H.71	ASG0106	TiN	75J.21	ASG0106	HM	75H.21	ASG0106	HM
	75H.71	ASG0106	TiN	75H.71	ASG0106	TiN	75J.21	ASG0106	HM	75H.21	ASG0106	HM
	75H.37	ASG07	DBG-N	75H.37	ASG07	DBG-N	75J.21	ASG07	HM	75H.21	ASG07	HM
	75H.37	ASG07	DBG-N	75H.37	ASG07	DBG-N	75J.21	ASG07	HM	75H.21	ASG07	HM
	75H.93	ASG07	DST	75H.37	ASG07	DBG-N	75J.21	ASG02	HM	75H.21	ASG02	HM
	75H.93	ASG07	DST	75H.37	ASG07	DBG-N	75J.21	ASG07	HM	75H.21	ASG07	HM
	75H.93	ASG07	DST	75H.37	ASG07	DBG-N	75J.21	ASG07	HM	75H.21	ASG07	HM
	75H.37	ASG07	DBG-N	75H.37	ASG07	DBG-N	75J.21	ASG07	HM	75H.21	ASG07	HM
	75H.37	ASG07	DBG-N	75H.37	ASG07	DBG-N	75J.21	ASG07	HM	75H.21	ASG07	HM
	75H.93	ASG07	DST	75H.71	ASG07	TiN	75J.21	ASG0106	HM	75H.21	ASG0106	HM
	75H.71	ASG07	TiN	75H.71	ASG07	TiN	75J.21	ASG0106	HM	75H.21	ASG0106	HM
	75H.17	ASG0706	DBC				75J.21	ASG02	HM	75H.21	ASG02	HM
	75H.17	ASG0706	DBC				75J.21	ASG07	HM	75H.21	ASG07	HM
	75H.17	ASG0706	DBC				75J.21	ASG07	HM	75H.21	ASG07	HM
	75H.37	ASG0106	DBG-N									
	75H.37	ASG0106	DBG-N									

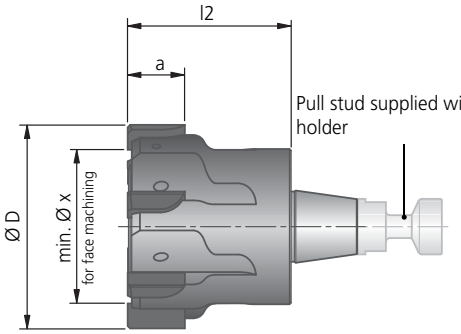
For cutting speeds and feeds see pages 170-171

Be sure to check Chapter 10 for more application details and safety notes!

DIHART Reamax® TS

Ø 18H7 – 50H7 mm

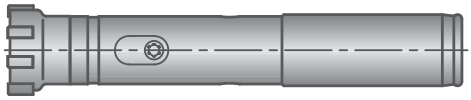
Reaming head – expandable



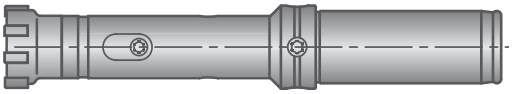
Reamax® TS					TiN coated		DBG-N coated
Type of machining	1) conventional machining 2) SGCI (Spheroidal grey cast iron) 3) Materials group 12.0 4) Materials group 12.1 5) Materials group 12.0 & 12.1				For workpiece material P M K N S H	For workpiece material P M K N S H	For workpiece material P M K N S H
Without cut interruption					◐ ◑ ◑4) ◐	◐ ◑ ◑4) ◐	◐ ○
With cut interruption					● ◑ ◑5) ◐	● ◑ ◑5) ◐	◐ ◐ ○
Ø D	Ø x ~	a ~	l2 ~	# of teeth	Cutting geometry 45° ASG 07 Order #	Cutting geometry 20° ASG 09 Order #	Cutting geometry 45° ASG 07 Order #
18H7	14	6	20	6	75J.71.18H7G	75J.71.18H7L	75J.37. 18H7G
20H7	16	6	20	6	75J.71.20H7G	75J.71.20H7L	75J.37. 20H7G
22H7	17.8	6	20	6	75J.71.22H7G	75J.71.22H7L	75J.37. 22H7G
24H7	19.8	6	20	6	75J.71.24H7G	75J.71.24H7L	75J.37. 24H7G
25H7	20.8	6	20	6	75J.71.25H7G	75J.71.25H7L	75J.37. 25H7G
28H7	22.6	6	25	6	75J.71.28H7G	75J.71.28H7L	75J.37. 28H7G
30H7	24.6	6	25	6	75J.71.30H7G	75J.71.30H7L	75J.37. 30H7G
32H7	26	6	25	8	75J.71.32H7G	75J.71.32H7L	75J.37. 32H7G
35H7	28.1	6	25	8	75J.71.35H7G	75J.71.35H7L	75J.37. 35H7G
40H7	33.1	6	25	8	75J.71.40H7G	75J.71.40H7L	75J.37. 40H7G
50H7	42.5	6	30	8	75J.71.50H7G	75J.71.50H7L	75J.37. 50H7G

Patents pending (Reamax TS)

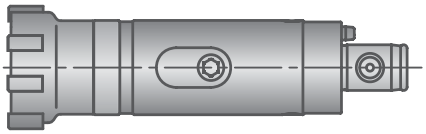
Holder with straight shank similar to DIN 1835
For Ø 18 – 50 mm
▸ page 184



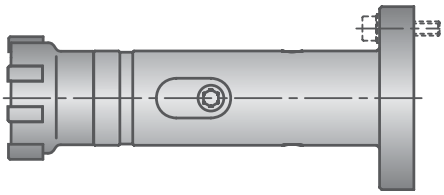
DAH Zero® holder with straight shank similar to DIN 1835
For Ø 18 – 40 mm
▸ page 185



Holder with ABS® connection
For Ø 35 – 50 mm
▸ page 186



Holder with DAH® adapter
For Ø 50 mm
▸ page 187



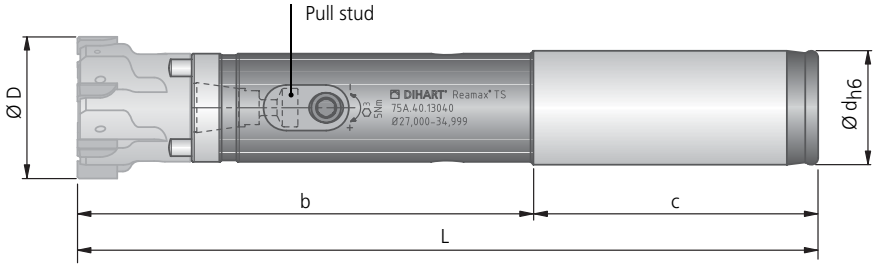
	DBF coated	DBC coated	DST cutting material		DJF coated
	For workpiece material P M K N S H	For workpiece material P M K N S H	For workpiece material P M K N S H	For workpiece material P M K N S H	For workpiece material P M K N S H
	● ●	●	● ◐ ◐[3)]	● ◐ ◐[3)]	◐
	◐ ● ●	●			
	Cutting geometry 45° ASG 07 Order #	Cutting geometry 45° ASG 0706 Order #	Cutting geometry 45° ASG 07 Order #	Cutting geometry 20° ASG 09 Order #	Cutting geometry 45° ASG 07 Order #
	75J.47.18H7G	75J.17.18H7G	75J.93.18H7G	75J.93.18H7L	75J.87.18H7G
	75J.47.20H7G	75J.17.20H7G	75J.93.20H7G	75J.93.20H7L	75J.87.20H7G
	75J.47.22H7G	75J.17.22H7G	75J.93.22H7G	75J.93.22H7L	75J.87.22H7G
	75J.47.24H7G	75J.17.24H7G	75J.93.24H7G	75J.93.24H7L	75J.87.24H7G
	75J.47.25H7G	75J.17.25H7G	75J.93.25H7G	75J.93.25H7L	75J.87.25H7G
	75J.47.28H7G	75J.17.28H7G	75J.93.28H7G	75J.93.28H7L	75J.87.28H7G
	75J.47.30H7G	75J.17.30H7G	75J.93.30H7G	75J.93.30H7L	75J.87.30H7G
	75J.47.32H7G	75J.17.32H7G	75J.93.32H7G	75J.93.32H7L	75J.87.32H7G
	75J.47.35H7G	75J.17.35H7G	75J.93.35H7G	75J.93.35H7L	75J.87.35H7G
	75J.47.40H7G	75J.17.40H7G	75J.93.40H7G	75J.93.40H7L	75J.87.40H7G
	75J.47.50H7G	75J.17.50H7G	75J.93.50H7G	75J.93.50H7L	75J.87.50H7G

DIHART Reamax® TS

Holder with straight shank similar to DIN 1835

Ø 18 – 50 mm

■ With internal coolant supply



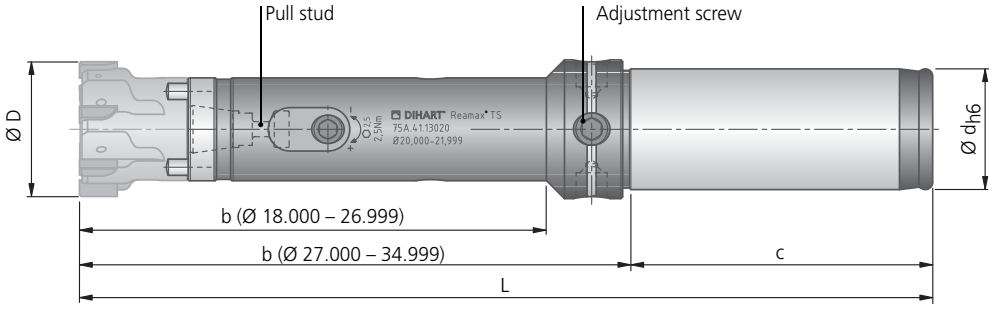
	Short version						Long version					
For Ø D	Order #	L	b	c	Ø d	kg	Order #	L	b	c	Ø d	kg
18H7	**75A.40.13010**	130	80	50	20	0.2	**75A.40.15010**	190	140	50	20	0.3
20H7	**75A.40.13020**	130	80	50	20	0.2	**75A.40.15020**	190	140	50	20	0.3
22H7	**75A.40.13030**	130	80	50	20	0.3	**75A.40.15030**	210	160	50	20	0.4
24H7												
25H7												
28H7	**75A.40.13040**	176	120	56	25	0.5	**75A.40.15040**	236	180	56	25	0.7
30H7												
32H7												
35H7	**75A.40.13050**	176	120	56	25	0.6	**75A.40.15050**	256	200	56	25	1.0
40H7												
50H7	**75A.40.13060**	180	120	60	32	0.9	**75A.40.15060**	280	220	60	32	1.5

Included: Reamax® TS holder with operating key, pull stud and open-end wrench (see page 189). Please order reaming head separately.

DAH® Zero holder with straight shank similar to DIN 1835

Ø 18 – 40 mm

with internal coolant supply ■
holder is pre-clamped and set to a run-out of < 0.005 mm ■



	Short version						Long version					
For Ø D	Order #	L	b	c	Ø d	kg	Order #	L	b	c	Ø d	kg
18H7	**75A.41.13010**	145	80	50	20	0.2	**75A.41.15010**	205	140	50	20	0.3
20H7	**75A.41.13020**	145	80	50	20	0.3	**75A.41.15020**	205	140	50	20	0.4
22H7	**75A.41.13030**	145	80	50	20	0.3	**75A.41.15030**	225	160	50	20	0.4
24H7												
25H7												
28H7	**75A.41.13040**	176	120	56	25	0.5	**75A.41.15040**	236	180	56	25	0.7
30H7												
32H7												
35H7	**75A.41.13050**	176	120	56	25	0.5	**75A.41.15050**	256	200	56	25	1.05
40H7												

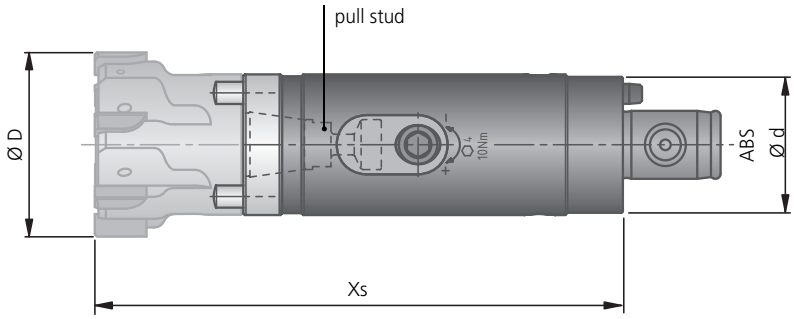
Includes: DAH® Zero holder with operating key, pull stud and open-end wrench (see page 189). Please order reaming head separately.

DIHART Reamax® TS

Holder with ABS® connection

Ø 35 – 50 mm

■ With internal coolant supply



ABS®				
For Ø D	Order #	Xs	ABS Ø d	kg
35^{H7}	75A.60.13050	110	32	0.42
40^{H7}				
50^{H7}	75A.60.13060	115	32	0.53

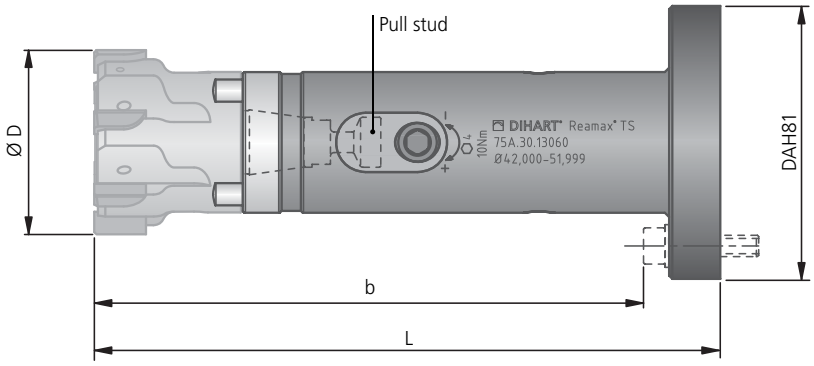
Included: Reamax® TS holder with operating key, pull stud and open-end wrench (see page 189). Please order reaming head separately.

Patents pending (ABS)

Holder with DAH® adapter

Ø 50 mm

With internal coolant supply ■

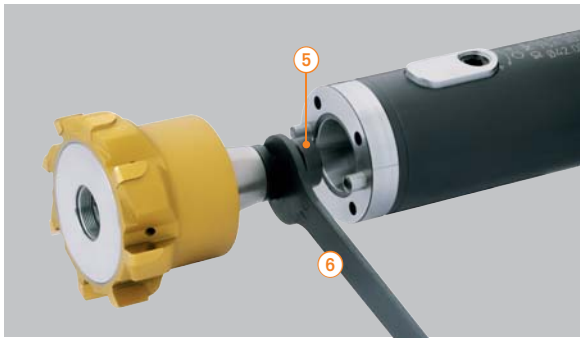


For Ø D	Short version					Long version				
	Order #	L	b	DAH	kg	Order #	L	b	DAH	kg
50^{H7}	**75A.30.13060**	138	120	81	0.9	**75A.30.15060**	238	220	81	1.5

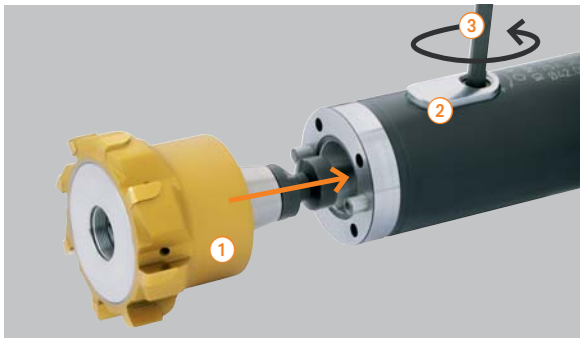
Includes: Reamax® TS holder with operating key, pull stud and open-end wrench (see page 189). Please order reaming head separately. For the DAH® compensation holder, see Chapter 7.

DIHART Reamax® TS

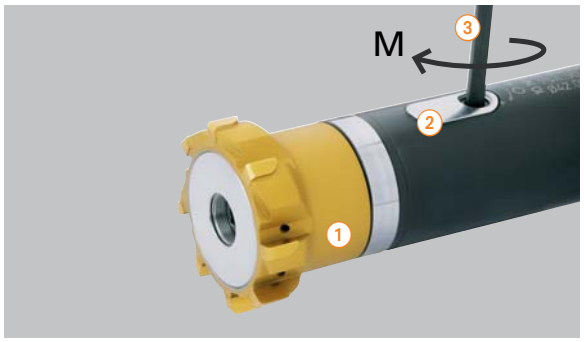
Assembly instructions



Clean taper/face contact thoroughly (grease and debris free). Screw pull stud ⑤ into reaming head and tighten with open-end wrench ⑥.

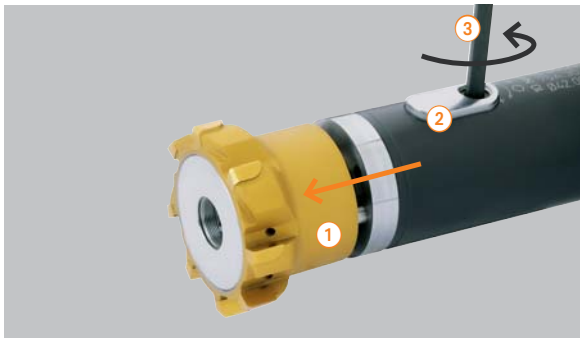


Open clamping jaws ② with key ③.
Insert reaming head ①.

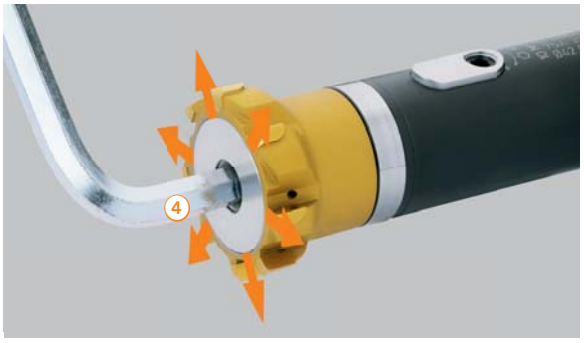


Close clamping jaws ② with key ③ observing the recommended torque. The inserted reaming head ① is drawn into its final position by closing the clamping jaws ② .

Ø range	Starting torque M
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



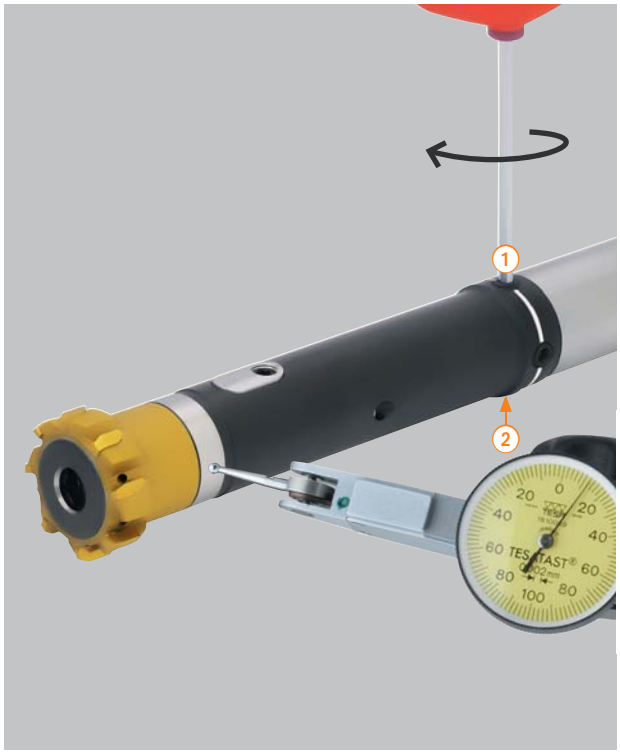
When removing the reaming head ① it is pressed out of its position by the clamping jaws ② which makes it easy to remove it from the holder: open the clamping jaws ② with the key ③, remove the reaming head ①.



Compensating adjustment for wear
The smallest bore tolerances of up to IT4 can be achieved by readjusting with the Allen wrench ④.

Patents pending (Reamax TS)

DAH® Zero operating instructions



Adjusting:

- Set the indicator dial by adjusting the bezel position.
- Locate the highest run-out point on the dial by rotating the tool.
- Turn the adjustment screw clockwise using an Allen key ①, correcting the run-out.
  Over-tension by approx. 5 µm.
- Engage the opposite adjustment screws ② and drive back the tool by the specified over-tension value.
- Engage the two other adjustment screws.
- Align all 4 adjustment screws until concentricity is < 2 µm.

Please note:

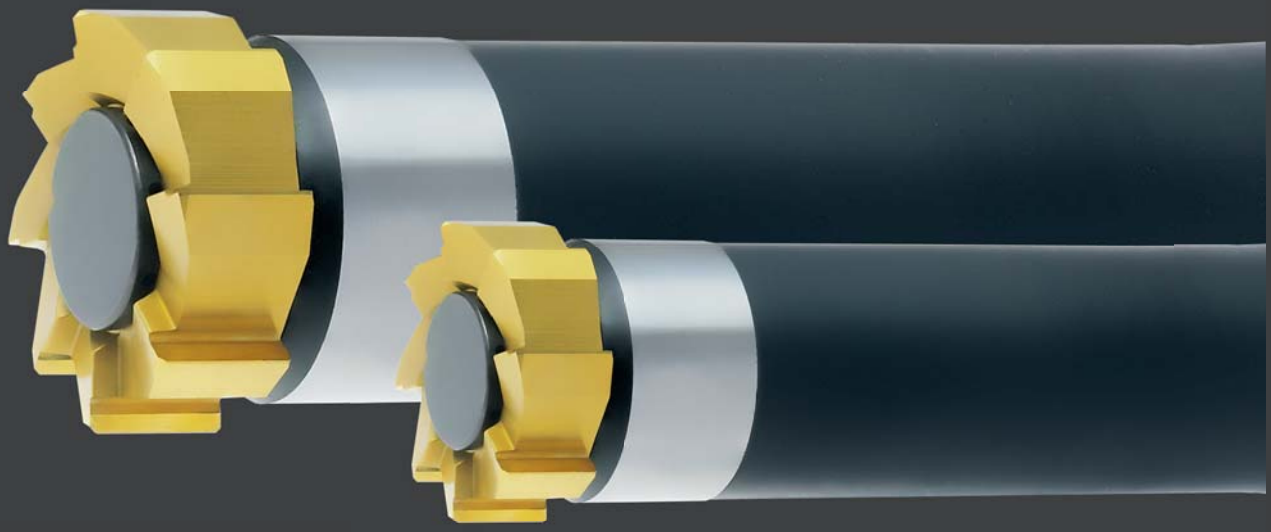
- Only unscrew the adjustment screws by a max of ½ to 1 rotation.
- Never use the holder without the reamer head clamped and then only when the adjustment screws are tightened.
- In order to properly set this tool, an indicator with 0.002mm or 0.0001" discrimination is required.
- Indicate the tool when mounted in the machine spindle.

Parts / Accessories

	③				④	⑤	⑥	
	Operating key				Hexagonal key*	Pull studs	Open-end wrench for pull studs	
Ø D	Size	**Order #**	L	Torque M	Size	**Order #**	Size	**Order #**
18^{H7}	8IP	**L05 01240**		13.3 in-lbs (1.5 Nm)	SW 4	**15E.30.10010**	SW 5	**18589 10005**
20^{H7}	SW 2.5	**18050 10025**	100	22.1 in-lbs (2.5 Nm)	SW 5	**15E.30.10020**	SW 5	**18589 10005**
22^{H7}	SW 3	**18050 10030**	100	35.4 in-lbs (4 Nm)	SW 5	**15E.30.10030**	SW 6	**18589 10006**
24^{H7}								
25^{H7}								
28^{H7}	SW 3	**18050 10030**	100	44.3 in-lbs (5 Nm)	SW 8	**15E.30.10040**	SW 8	**18589 10008**
30^{H7}								
32^{H7}								
35^{H7}	SW 3	**18050 10030**	100	53.1 in-lbs (6 Nm)	SW 6	**15E.30.10050**	SW 10	**18589 10010**
40^{H7}								
50^{H7}	SW 4	**18050 10040**	100	88.5 in-lbs (10 Nm)	SW 8	**15E.30.10050**	SW 10	**18589 10010**

* not included with heads or holders

DIHART Reamax ®



A new dimension in high performance reaming

Better performance. More flexibility.
DIHART Reamax ® high-speed reaming tools offer maximum cutting performance thanks to multiple cutting edges and the advantages of replaceable cutting heads in a single system.

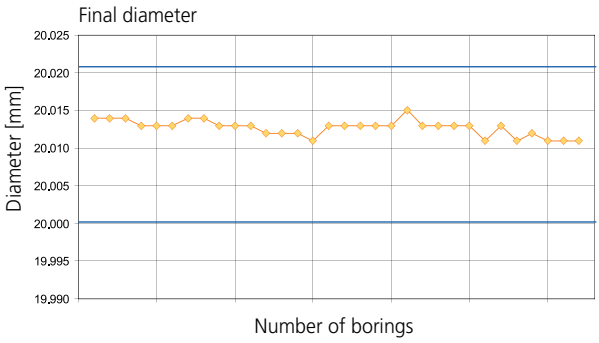
- Highest cost effectiveness and absolute process reliability
- High rigidity at even the highest cutting speeds.
- No size resetting when changing blades
- Maximum flexibility with regard to combination of cutting materials and coatings
- Diameter and geometry of replaceable cutters are specific to applications and available in a wide range of choices
- Manufactured to order with short turn around times
- Precise repeatability
- Maximum replacement accuracy
- Designed for internal coolant supply and minimum quantity lubrication (MQL)

Reaming tools

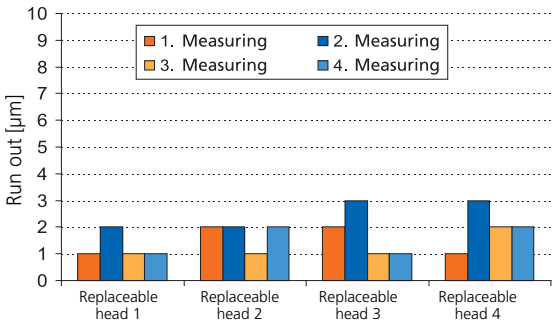
The modular reaming tool consists of a tool holder with straight shank and the DIHART Reamax ® replaceable cutter. A high precision short taper with face contact makes for a solid connection between the replaceable head and the cutter. This ensures exact reproducibility of diameters and minimal tool change time with a new replaceable head.

Maximum process reliability and accurate repeatability

Result in steel with DIHART Reamax ® replaceable head



Replacement accuracy for
DIHART Reamax ® connection



Your PLUS:

- Precision ground for guaranteed quality
- Modular tool system
- Tensile clamping ensures maximum stability in the most demanding machining tasks
- Extremely exact repeatability thanks to tapered flat bearing surface
- Extremely high machining performance for greatest efficiency
- Optimized for environmentally friendly use through minimum quantity lubrication (MQL)

Simple replacement

The DIHART Reamax® replaceable head is fixed to the tool holder by means of a tie rod and clamping nut. There is no need for time-consuming or costly setting of the final diameter, because the replaceable heads are manufactured with application-specific diameters. With DIHART Reamax® , replacement time does not have to be down time.

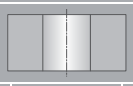
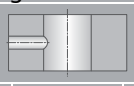
Applications:

- All commonly-used materials
- Through holes and blind holes
- 3×D and 5×D
- High-speed, up to 300 m/min
- Feed up to 2.4 mm/rev

DIHART Reamax®	Page
Tool selection guide	192 – 193
Replaceable head	194
Ø 15^{H7} – 30^{H7} mm	
Holder	195
Straight shank	
Assembly instructions	196
Assembly parts / accessories	197

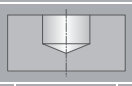
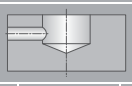
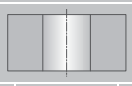
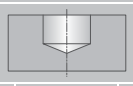
DIHART Reamax®

Tool selection guide

Material group		Strength Rm (N/mm²)	Hardness HB	Material	Materials example. Materials code ANSI / SAE	High-speed machining						
												
						Order #	Cutting geometry (ASG)	Cutting material /Coating	Order #	Cutting geometry (ASG)	Cutting material /Coating	
P	1.0	≤ 500		Non-alloy steels - structural, heat treated, machining, cast	1010 1144 1213	640.93	ASG09	DST	640.71	ASG09	TiN	
P	2.0	500-900		Non-alloy / low alloy steels - structural, heat resistant, heat treated, nitrided, tool, cast steel	1055 5115 5120	640.93	ASG09	DST	640.71	ASG09	TiN	
P	2.1	< 500		Lead alloy machining steel	12L14	640.93	ASG09	DST	640.71	ASG09	TiN	
P	3.0	> 900		Non alloy / low alloy steels: heat resistant structural, heat treated, nitride and tools steel	1064 4140	640.93	ASG09	DST	640.71	ASG07	TiN	
P	4.0	> 900		High alloy steel, tool steels	H13 H21	640.71	ASG0106	TiN	640.71	ASG0106	TiN	
P	4.1			High speed steels (HSS)	M10 T4							
S	5.0		250	Special alloys: Inconel, Hastelloy, Nimonic, etc.	Inconel® 718 Nimonic® 80A							
S	5.1	400		Titanium. Titanium alloys	Ti-6Al-4V							
M	6.0	≤ 600		Stainless steels	304L 316	640.71	ASG0106	TiN	640.71	ASG0106	TiN	
M	6.1	< 900		Stainless steels	630	640.71	ASG0106	TiN	640.71	ASG0106	TiN	
M	7.0	> 900		Stainless / heat proof steels	403 420	640.71	ASG0106	TiN	640.71	ASG0106	TiN	
K	8.0		180	Gray cast iron	Class 25 G3000	640.37	ASG07	DBG-N	640.37	ASG07	DBG-N	
K	8.1		250	Gray cast iron alloy	A436 Type 2	640.37	ASG07	DBG-N	640.37	ASG07	DBG-N	
K	9.0	≤ 600	130	Spheroidal graphite cast iron, ferritic	60-40-18 D4512	640.93	ASG07	DST	640.37	ASG07	DBG-N	
K	9.1		230	Spheroidal graphite cast iron, ferritic /pearlitic	80-55-06 D5506	640.93	ASG07	DST	640.37	ASG07	DBG-N	
K	10.0	> 600	250	Spheroidal graphite cast iron, pearlitic ductile iron	100-70-03 07003	640.93	ASG07	DST	640.37	ASG07	DBG-N	
K	10.1		200	Spheroidal graphite cast iron	A43D2	640.37	ASG07	DBG-N	640.37	ASG07	DBG-N	
K	10.2		300	Vermicular cast iron		640.37	ASG07	DBG-N	640.37	ASG07	DBG-N	
N	12.0		90	Copper alloy, brass, lead alloy bronze, lead bronze: good cuttability	316	640.93	ASG07	DST	640.71	ASG07	TiN	
N	12.1		100	Copper alloy, brass, lead alloy bronze: average cuttability		640.71	ASG07	TiN	640.71	ASG07	TiN	
N	13.0		60	Wrought aluminum alloys	6151 7075							
N	13.1		75	Cast aluminum alloy: Sicontent <10% magnesium alloy	380 A356.0							
N	14.0		100	Cast aluminum alloy: Si content >10%	383 A413.0							
H	15.0	1400		Hardened steels < 45 HRC		640.37	ASG0106	DBG-N				
H	16.0	1800		Hardened steels > 45 HRC		640.37	ASG0106	DBG-N				

Please inquire if you do not see any tool selections for a given material.

Foreign and domestic patents pending (Reamax®)

	High-speed machining						Conventional machining with solid carbide					
												
	Order #	Cutting geometry (ASG)	Cutting material /Coating	Order #	Cutting geometry (ASG)	Cutting material /Coating	Order #	Cutting geometry (ASG)	Cutting material	Order #	Cutting geometry (ASG)	Cutting material
	640.93	ASG07	DST	640.71	ASG07	TiN	640.21	ASG07	HM	640.21	ASG07	HM
	640.93	ASG07	DST	640.71	ASG07	TiN	640.21	ASG02	HM	640.21	ASG02	HM
	640.93	ASG07	DST	640.71	ASG07	TiN	640.21	ASG07	HM	640.21	ASG07	HM
	640.93	ASG07	DST	640.71	ASG07	TiN	640.21	ASG07	HM	640.21	ASG07	HM
	640.71	ASG0106	TiN	640.71	ASG0106	TiN	640.21	ASG0106	HM	640.21	ASG0106	HM
							640.21	ASG03	HM	640.21	ASG03	HM
	640.71	ASG0106	TiN	640.71	ASG0106	TiN	640.21	ASG0106	HM	640.21	ASG0106	HM
	640.71	ASG0106	TiN	640.71	ASG0106	TiN	640.21	ASG0106	HM	640.21	ASG0106	HM
	640.71	ASG0106	TiN	640.71	ASG0106	TiN	640.21	ASG0106	HM	640.21	ASG0106	HM
	640.37	ASG07	DBG-N	640.37	ASG07	DBG-N	640.21	ASG07	HM	640.21	ASG07	HM
	640.37	ASG07	DBG-N	640.37	ASG07	DBG-N	640.21	ASG07	HM	640.21	ASG07	HM
	640.93	ASG07	DST	640.37	ASG07	DBG-N	640.21	ASG02	HM	640.21	ASG02	HM
	640.93	ASG07	DST	640.37	ASG07	DBG-N	640.21	ASG07	HM	640.21	ASG07	HM
	640.93	ASG07	DST	640.37	ASG07	DBG-N	640.21	ASG07	HM	640.21	ASG07	HM
	640.37	ASG07	DBG-N	640.37	ASG07	DBG-N	640.21	ASG07	HM	640.21	ASG07	HM
	640.37	ASG07	DBG-N	640.37	ASG07	DBG-N	640.21	ASG07	HM	640.21	ASG07	HM
	640.93	ASG07	DST	640.71	ASG07	TiN	640.21	ASG0106	HM	640.21	ASG0106	HM
	640.71	ASG07	TiN	640.71	ASG07	TiN	640.21	ASG0106	HM	640.21	ASG0106	HM
							640.21	ASG02	HM	640.21	ASG02	HM
							640.21	ASG07	HM	640.21	ASG07	HM
							640.21	ASG07	HM	640.21	ASG07	HM
	640.37	ASG0106	DBG-N									
	640.37	ASG0106	DBG-N									

For cutting speeds and feeds see pages 170-171

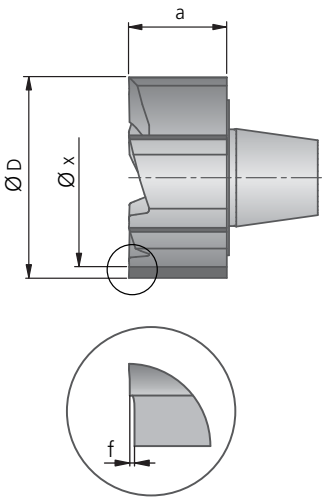
Be sure to check Chapter 10 for more application details and safety notes!

DIHART Reamax®

Ø 15^{H7} – 30^{H7} mm

Replaceable head

■ For through hole and blind hole machining
⚠ **Caution:** do not use Ø 12.000 - 12.500 for blind hole machining



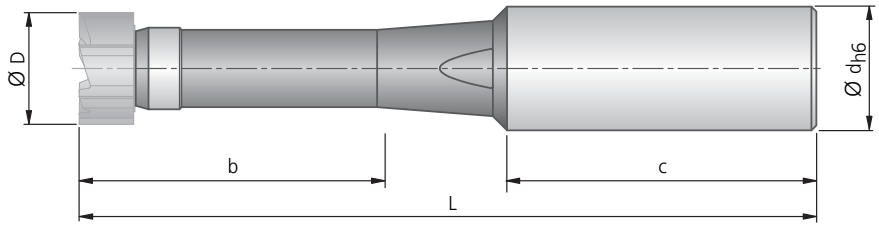
Reamax®		DBG-N coated	DST cutting material	
Type of machining	1) conventional machining 2) SGCI (Spheroidal grey cast iron) 3) Materials group 12.0 4) Materials group 12.1 5) Materials group 12.0 & 12.1	For workpiece material P M K N S H	For workpiece material P M K N S H	For workpiece material P M K N S H
Without cut interruption		● ○	● ◐3)	● ◐3)
With cut interruption		◐ ● ○		

Ø D	Ø x ~	a ~	f ~	# of teeth	Cutting geometry ASG 07 Order #	Cutting geometry ASG 07 Order #	Cutting geometry ASG 09 Order #
15^{H7}	12.5	9	0.5	6	640.37.15H7G	640.93.15H7G	640.93.15H7L
16^{H7}	13	9	0.5	6	640.37.16H7G	640.93.16H7G	640.93.16H7L
18^{H7}	15	9	0.5	6	640.37.18H7G	640.93.18H7G	640.93.18H7L
20^{H7}	17	9	0.5	6	640.37.20H7G	640.93.20H7G	640.93.20H7L
22^{H7}	19	9	0.5	6	640.37.22H7G	640.93.22H7G	640.93.22H7L
24^{H7}	21	9	0.5	6	640.37.24H7G	640.93.24H7G	640.93.24H7L
25^{H7}	22	9	0.5	8	640.37.25H7G	640.93.25H7G	640.93.25H7L
28^{H7}	24	9	0.5	8	640.37.28H7G	640.93.28H7G	640.93.28H7L
30^{H7}	26	9	0.5	8	640.37.30H7G	640.93.30H7G	640.93.30H7L

Holder with straight shank similar to DIN 1835

Ø 15 – 30 mm

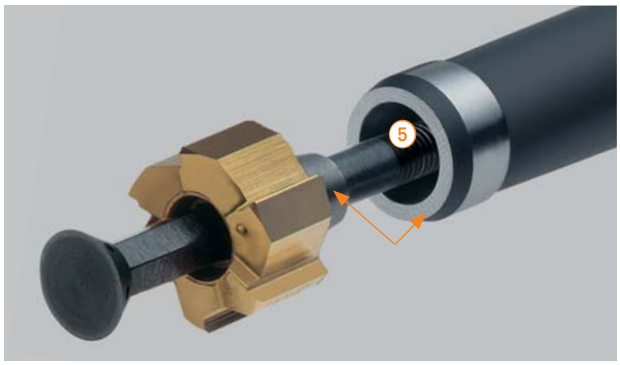
With internal coolant supply ■
Not suitable for shrink fit ■



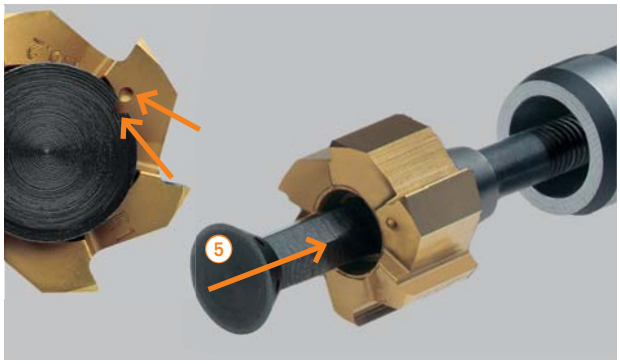
	Short version						Long version					
For Ø D	Order No.	L	b	c	Ø d	kg	Order No.	L	b	c	Ø d	kg
15^{H7}	**640.01.001**	107	3×D	48	16	0.11	**640.81.001**	137	5×D	48	16	0.13
16^{H7}	**640.01.002**	119	3×D	50	20	0.18	**640.81.002**	169	5×D	50	20	0.23
18^{H7}												
20^{H7}												
22^{H7}	**640.01.003**	140	3×D	56	25	0.34	**640.81.003**	196	5×D	56	25	0.44
24^{H7}												
25^{H7}												
28^{H7}	**640.01.005**	160	3×D	56	25	0.46	**640.81.005**	226	5×D	56	25	0.65
30^{H7}												

DIHART Reamax®

Assembly instructions



Clean taper/face contact thoroughly (grease and debris free). Apply light grease on tie bar thread ⑤.



Locate tie bar ⑤ on insert and holder.
Important note: for taper size 3, 4 and 5, fit with marking on tie bar and insert aligned.

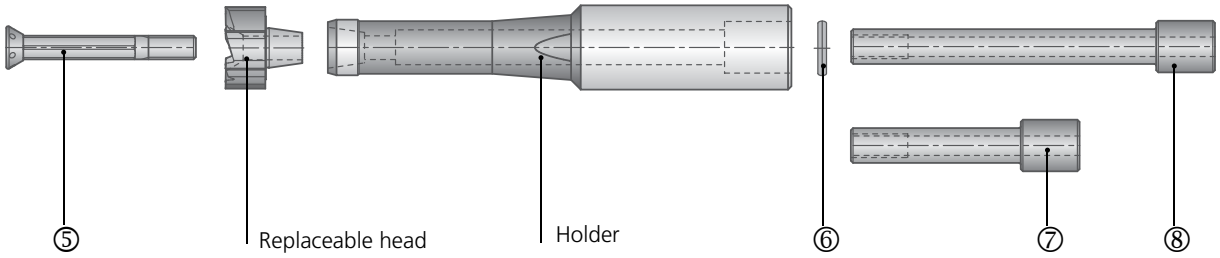
Draw in tie bar with the clamping nut. Before tightening, turn insert and tie bar clockwise until it stops.
Tighten the clamping nut as far as possible using the torque key to the recommended torque M.

Ø range	Starting torque M
12.000 – 15.999	4-5 Nm
16.000 – 21.999	6-7 Nm
22.000 – 25.999	10-12 Nm
26.000 – 32.000	18-20 Nm
32.001 – 40.000	26-28 Nm

Removing the replaceable head:
Loosen the clamping screw.
Pull tie bar from holder and head.

Locate operating key ③ in head and loosen insert by turning.

Foreign and domestic patents pending (Reamax®)

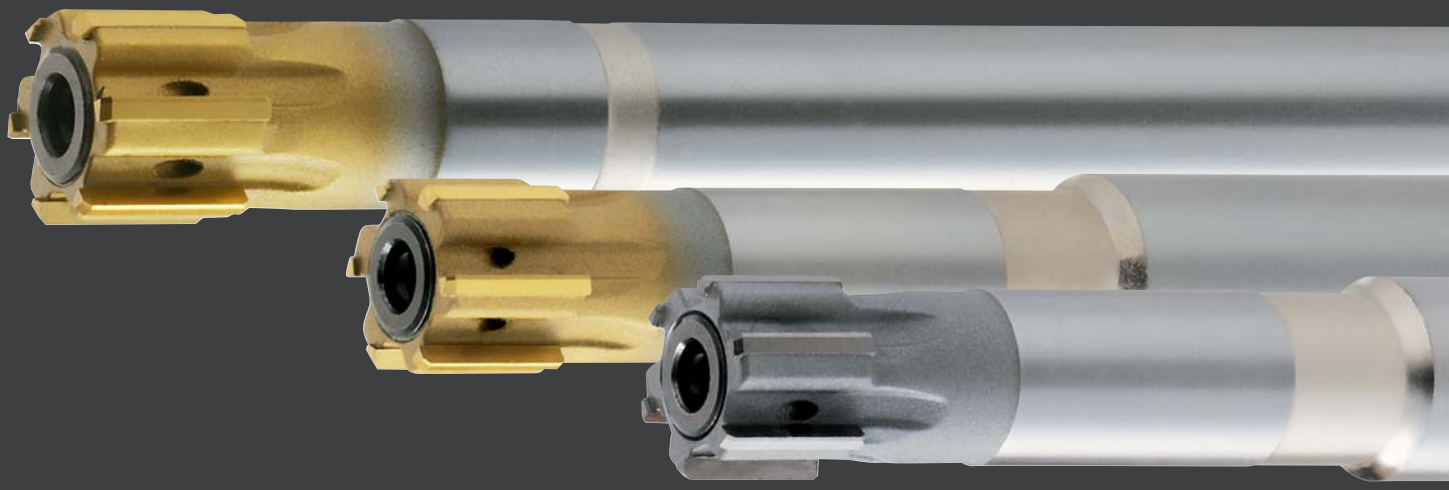


	③						④	
	Operating key						Open-end wrench	
For Ø D	Size	Short version Order #	L	Long version Order #	L	Starting torque M	Size	Order #
15H7	SW 4	18050 10040	100	18050 20040	200	4-5 Nm	SW 12	18589 00012
16H7	SW 5	18050 10050	100			6-7 Nm	SW 14	18589 00014
18H7								
20H7								
22H7	SW 7	18050 10070	100	18050 35070	350	10-12 Nm	SW 19	18589 00019
24H7								
25H7								
28H7	SW 8	18050 10080	100	18050 35080	350	18-20 Nm	SW 22	18589 00022
30H7								

	⑤	⑥	⑦	⑧
	Tie rod	Seal disk DIN 472	Clamping nut short version	Clamping nut long version
For Ø D	Order #	Order #	Order #	Order #
15H7	640.03.001	12864 39	640.04.001	640.84.001
16H7	640.03.002	12864 47	640.04.002	640.84.002
18H7				
20H7				
22H7	640.03.003	12864 63	640.04.003	640.84.003
24H7				
25H7				
28H7	640.03.004	12865 01	640.04.005	640.84.005
30H7				

Included: Reamax® holder, operating key, open-end wrench, tie-rod, seal disk and clamping nut.

DIHART Monomax®



DIHART Monomax®

Monoblock tools, i.e. one-piece tools, are a DIHART® specialty. An wide assortment of types and variants reflects decades of accumulated production challenges. This proven tool product line has been completely updated and standardized through highly efficient manufacturing processes.

Your PLUS:

- Designed for small hole diameters
- Adjustable for the smallest hole tolerances
- Monobloc-construction provides highest process capabilites
- Precision ground to size
- Factory regrinding and recoating services assured by our network of professional KOMET SERVICE® Partners

Uses:

- Non-alloy and low-alloy steels
- Stainless, heat-resistant and high-alloy steels
- Gray cast iron and spheroidal graphite cast iron
- Copper alloys, brass, bronze
- Aluminum
- Titanium, Titanium alloys
- Vermicular cast iron and plastics by special order

Versions:

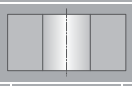
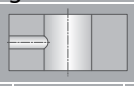
- Short and long versions
- Through and blind hole coolant outlets available
- Cutting materials: uncoated and coated solid carbide or DST
- Diameters from 5.600 – 25.899 mm

KOMET DIHART

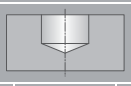
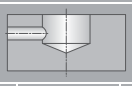
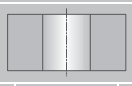
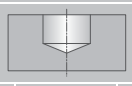
DIHART Monomax®	Page
Tool selection guide	200 – 201
Monomax®	
Ø 6^{H7} – 20^{H7} mm with straight shank	202 – 203

DIHART Monomax ®

Tool selection guide

Material group		Strength Rm (N/mm²)	Hardness HB	Material	Materials example. Materials code ANSI / SAE	High-speed machining						
												
						Order # short *long*	Cutting geometry (ASG)	Cutting material /Coating	Order # short *long*	Cutting geometry (ASG)	Cutting material /Coating	
P	1.0	≤ 500		Non-alloy steels - structural, heat treated, machining, cast	1010 1144 1213	56J.93 *56R.93*	ASG09	DST	56J.71 *56R.71*	ASG09	TiN	
P	2.0	500-900		Non-alloy / low alloy steels - structural, heat resistant, heat treated, nitrided, tool, cast steel	1055 5115 5120	56J.93 *56R.93*	ASG09	DST	56J.71 *56R.71*	ASG09	TiN	
P	2.1	< 500		Lead alloy machining steel	12L14	56J.93 *56R.93*	ASG09	DST	56J.71 *56R.71*	ASG09	TiN	
P	3.0	> 900		Non alloy / low alloy steels: heat resistant structural, heat treated, nitride and tools steel	1064 4140	56J.93 *56R.93*	ASG09	DST	56J.71 *56R.71*	ASG07	TiN	
P	4.0	> 900		High alloy steel, tool steels	H13 H21	56J.71 *56R.71*	ASG0106	TiN	56J.71 *56R.71*	ASG0106	TiN	
P	4.1			High speed steels (HSS)	M10 T4							
S	5.0		250	Special alloys: Inconel, Hastelloy, Nimonic, etc.	Inconel® 718 Nimonic® 80A							
S	5.1	400		Titanium. Titanium alloys	Ti-6Al-4V							
M	6.0	≤ 600		Stainless steels	304L 316	56J.71 *56R.71*	ASG0106	TiN	56J.71 *56R.71*	ASG0106	TiN	
M	6.1	< 900		Stainless steels	630	56J.71 *56R.71*	ASG0106	TiN	56J.71 *56R.71*	ASG0106	TiN	
M	7.0	> 900		Stainless / heat proof steels	403 420	56J.71 *56R.71*	ASG0106	TiN	56J.71 *56R.71*	ASG0106	TiN	
K	8.0		180	Gray cast iron	Class 25 G3000	56J.37 *56R.37*	ASG07	DBG-N	56J.37 *56R.37*	ASG07	DBG-N	
K	8.1		250	Gray cast iron alloy	A436 Type 2	56J.37 *56R.37*	ASG07	DBG-N	56J.37 *56R.37*	ASG07	DBG-N	
K	9.0	≤ 600	130	Spheroidal graphite cast iron, ferritic	60-40-18 D4512	56J.93 *56R.93*	ASG07	DST	56J.37 *56R.37*	ASG07	DBG-N	
K	9.1		230	Spheroidal graphite cast iron, ferritic /pearlitic	80-55-06 D5506	56J.93 *56R.93*	ASG07	DST	56J.37 *56R.37*	ASG07	DBG-N	
K	10.0	> 600	250	Spheroidal graphite cast iron, pearlitic ductile iron	100-70-03 07003	56J.93 *56R.93*	ASG07	DST	56J.37 *56R.37*	ASG07	DBG-N	
K	10.1		200	Spheroidal graphite cast iron	A43D2	56J.37 *56R.37*	ASG07	DBG-N	56J.37 *56R.37*	ASG07	DBG-N	
K	10.2		300	Vermicular cast iron		56J.37 *56R.37*	ASG07	DBG-N	56J.37 *56R.37*	ASG07	DBG-N	
N	12.0		90	Copper alloy, brass, lead alloy bronze, lead bronze: good cuttability	316	56J.93 *56R.93*	ASG07	DST	56J.71 *56R.71*	ASG07	TiN	
N	12.1		100	Copper alloy, brass, lead alloy bronze: average cuttability		56J.71 *56R.71*	ASG07	TiN	56J.71 *56R.71*	ASG07	TiN	
N	13.0		60	Wrought aluminum alloys	6151 7075							
N	13.1		75	Cast aluminum alloy: Sicontent <10% magnesium alloy	380 A356.0							
N	14.0		100	Cast aluminum alloy: Si content >10%	383 A413.0							
H	15.0	1400		Hardened steels < 45 HRC		56J.37 *56R.37*	ASG0106	DBG-N				
H	16.0	1800		Hardened steels > 45 HRC		56J.37 *56R.37*	ASG0106	DBG-N				

Please inquire if you do not see tool selections for a given material.

	High-speed machining						Conventional machining with solid carbide					
												
	Order # short *long*	Cutting geometry (ASG)	Cutting material /Coating	Order # short *long*	Cutting geometry (ASG)	Cutting material /Coating	Order # short *long*	Cutting geometry (ASG)	Cutting material	Order # short *long*	Cutting geometry (ASG)	Cutting material
	56H.93 *56Q.93*	ASG07	DST	56H.71 *56Q.71*	ASG07	TiN	56J.21 *56R.21*	ASG07	HM	56H.21 *56Q.21*	ASG07	HM
	56H.93 *56Q.93*	ASG07	DST	56H.71 *56Q.71*	ASG07	TiN	56J.21 *56R.21*	ASG02	HM	56H.21 *56Q.21*	ASG02	HM
	56H.93 *56Q.93*	ASG07	DST	56H.71 *56Q.71*	ASG07	TiN	56J.21 *56R.21*	ASG07	HM	56H.21 *56Q.21*	ASG07	HM
	56H.93 *56Q.93*	ASG07	DST	56H.71 *56Q.71*	ASG07	TiN	56J.21 *56R.21*	ASG07	HM	56H.21 *56Q.21*	ASG07	HM
	56H.71 *56Q.71*	ASG0106	TiN	56H.71 *56Q.71*	ASG0106	TiN	56J.21 *56R.21*	ASG0106	HM	56H.21 *56Q.21*	ASG0106	HM
							56J.21 *56R.21*	ASG03	HM	56H.21 *56Q.21*	ASG03	HM
	56H.71 *56Q.71*	ASG0106	TiN	56H.71 *56Q.71*	ASG0106	TiN	56J.21 *56R.21*	ASG0106	HM	56H.21 *56Q.21*	ASG0106	HM
	56H.71 *56Q.71*	ASG0106	TiN	56H.71 *56Q.71*	ASG0106	TiN	56J.21 *56R.21*	ASG0106	HM	56H.21 *56Q.21*	ASG0106	HM
	56H.71 *56Q.71*	ASG0106	TiN	56H.71 *56Q.71*	ASG0106	TiN	56J.21 *56R.21*	ASG0106	HM	56H.21 *56Q.21*	ASG0106	HM
	56H.37 *56Q.37*	ASG07	DBG-N	56H.37 *56Q.37*	ASG07	DBG-N	56J.21 *56R.21*	ASG07	HM	56H.21 *56Q.21*	ASG07	HM
	56H.37 *56Q.37*	ASG07	DBG-N	56H.37 *56Q.37*	ASG07	DBG-N	56J.21 *56R.21*	ASG07	HM	56H.21 *56Q.21*	ASG07	HM
	56H.93 *56Q.93*	ASG07	DST	56H.37 *56Q.37*	ASG07	DBG-N	56J.21 *56R.21*	ASG02	HM	56H.21 *56Q.21*	ASG02	HM
	56H.93 *56Q.93*	ASG07	DST	56H.37 *56Q.37*	ASG07	DBG-N	56J.21 *56R.21*	ASG07	HM	56H.21 *56Q.21*	ASG07	HM
	56H.93 *56Q.93*	ASG07	DST	56H.37 *56Q.37*	ASG07	DBG-N	56J.21 *56R.21*	ASG07	HM	56H.21 *56Q.21*	ASG07	HM
	56H.37 *56Q.37*	ASG07	DBG-N	56H.37 *56Q.37*	ASG07	DBG-N	56J.21 *56R.21*	ASG07	HM	56H.21 *56Q.21*	ASG07	HM
	56H.37 *56Q.37*	ASG07	DBG-N	56H.37 *56Q.37*	ASG07	DBG-N	56J.21 *56R.21*	ASG07	HM	56H.21 *56Q.21*	ASG07	HM
	56H.93 *56Q.93*	ASG07	DST	56H.71 *56Q.71*	ASG07	TiN	56J.21 *56R.21*	ASG0106	HM	56H.21 *56Q.21*	ASG0106	HM
	56H.71 *56Q.71*	ASG07	TiN	56H.71 *56Q.71*	ASG07	TiN	56J.21 *56R.21*	ASG0106	HM	56H.21 *56Q.21*	ASG0106	HM
							56J.21 *56R.21*	ASG02	HM	56H.21 *56Q.21*	ASG02	HM
							56J.21 *56R.21*	ASG07	HM	56H.21 *56Q.21*	ASG07	HM
							56J.21 *56R.21*	ASG07	HM	56H.21 *56Q.21*	ASG07	HM
	56H.37 *56Q.37*	ASG0106	DBG-N									
	56H.37 *56Q.37*	ASG0106	DBG-N									

For cutting speeds and feeds see pages 170-171

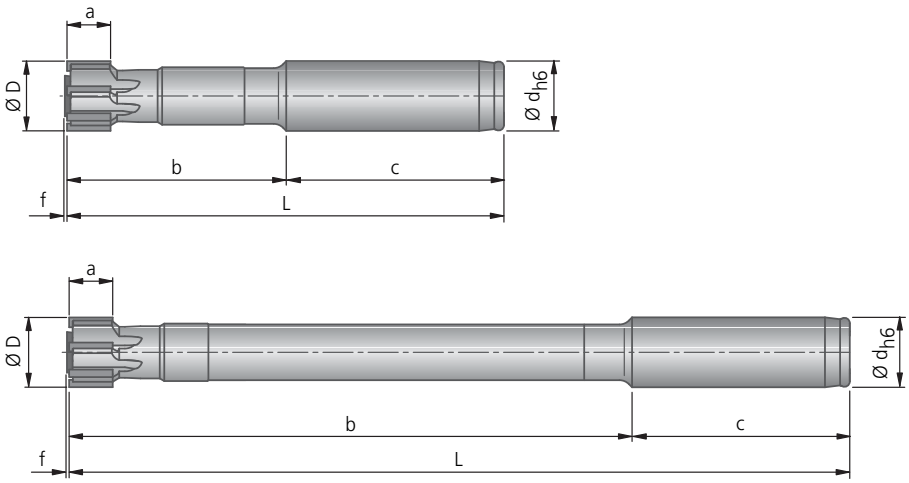
Be sure to check Chapter 10 for more application details and safety notes!

DIHART Monomax®

Ø 6^{H7} – 20^{H7} mm

Expandable reamer with straight shank similar to DIN 1835

■ With internal coolant supply



Monomax®							TiN coated		
Type of machining						1) conventional machining 2) SGCI (Spheroidal grey cast iron) 3) Materials group 12.0 4) Materials group 12.1 5) Materials group 12.0 & 12.1	For workpiece material P M K N S H	For workpiece material P M K N S H	
Without cut interruption							◐ ◐ ●4) ◐	◐ ◐ ●4) ◐	
With cut interruption							● ◐ ●5) ◐	● ◐ ●5) ◐	
Ø D	Ø d × c	L	b	f ~	a ~	# of teeth	Cutting geometry ASG 07 (45°) Order #	Cutting geometry ASG 09 (20°) Order #	
6^{H7}	12 × 45	85	40	0.1	9.5	4	56J.71.06H7G	56J.71.06H7L	
8^{H7}	12 × 45	85	40	0.1	9.5	4	56J.71.08H7G	56J.71.08H7L	
10^{H7}	12 × 45	95	50	0.1	9.5	6	56J.71.10H7G	56J.71.10H7L	
12^{H7}	12 × 45	95	50	0.1	9.5	6	56J.71.12H7G	56J.71.12H7L	
14^{H7}	12 × 45	95	50	0.1	9.5	6	56J.71.14H7G	56J.71.14H7L	
15^{H7}	12 × 45	95	50	0.1	9.5	6	56J.71.15H7G	56J.71.15H7L	
16^{H7}	16 × 50	100	50	0.1	9.5	6	56J.71.16H7G	56J.71.16H7L	
18^{H7}	16 × 50	100	50	0.1	9.5	6	56J.71.18H7G	56J.71.18H7L	
20^{H7}	20 × 60	120	60	0.1	9.5	6	56J.71.20H7G	56J.71.20H7L	
6^{H7}	12 × 45	130	85	0.1	9.5	4	56R.71.06H7G	56R.71.06H7L	
8^{H7}	12 × 45	130	85	0.1	9.5	4	56R.71.08H7G	56R.71.08H7L	
10^{H7}	12 × 45	160	115	0.1	9.5	6	56R.71.10H7G	56R.71.10H7L	
12^{H7}	12 × 45	160	115	0.1	9.5	6	56R.71.12H7G	56R.71.12H7L	
14^{H7}	12 × 45	160	115	0.1	9.5	6	56R.71.14H7G	56R.71.14H7L	
15^{H7}	12 × 45	160	115	0.1	9.5	6	56R.71.15H7G	56R.71.15H7L	
16^{H7}	16 × 50	180	130	0.1	9.5	6	56R.71.16H7G	56R.71.16H7L	
18^{H7}	16 × 50	180	130	0.1	9.5	6	56R.71.18H7G	56R.71.18H7L	
20^{H7}	20 × 60	200	140	0.1	9.5	6	56R.71.20H7G	56R.71.20H7L	

Design your own tool!

Don't see a solution in the standard product range?
Need different dimensions?

Easy Special™ lets you customize the combination of standard modules in the widest choice of sizes that you need.
Just choose the cutter type, define the effective length and select the desired tool adapter.

Use the fax order form on page 163.

Examples:

Extra long Monomax® reamer with straight shank

Monomax® reamer with DAH® / HSK adapter

	DBG-N coated	DBF coated	DST cutting material	
	For workpiece material P M K N S H	For workpiece material P M K N S H	For workpiece material P M K N S H	For workpiece material P M K N S H
	◐ ○	○ ●	● ●[3]	● ●[3]
	◐ ◐ ○	◐ ○ ●		
	Cutting geometry ASG 07 (45°)	Cutting geometry ASG 07 (45°)	Cutting geometry ASG 07 (45°)	Cutting geometry ASG 09 (20°)
	Order #	Order #	Order #	Order #
	56J.37.06H7G	56J.47.06H7G	56J.93.06H7G	56J.93.06H7L
	56J.37.08H7G	56J.47.08H7G	56J.93.08H7G	56J.93.08H7L
	56J.37.10H7G	56J.47.10H7G	56J.93.10H7G	56J.93.10H7L
	56J.37.12H7G	56J.47.12H7G	56J.93.12H7G	56J.93.12H7L
	56J.37.14H7G	56J.47.14H7G	56J.93.14H7G	56J.93.14H7L
	56J.37.15H7G	56J.47.15H7G	56J.93.15H7G	56J.93.15H7L
	56J.37.16H7G	56J.47.16H7G	56J.93.16H7G	56J.93.16H7L
	56J.37.18H7G	56J.47.18H7G	56J.93.18H7G	56J.93.18H7L
	56J.37.20H7G	56J.47.20H7G	56J.93.20H7G	56J.93.20H7L
	56R.37.06H7G	56R.47.06H7G	56R.93.06H7G	56R.93.06H7L
	56R.37.08H7G	56R.47.08H7G	56R.93.08H7G	56R.93.08H7L
	56R.37.10H7G	56R.47.10H7G	56R.93.10H7G	56R.93.10H7L
	56R.37.12H7G	56R.47.12H7G	56R.93.12H7G	56R.93.12H7L
	56R.37.14H7G	56R.47.14H7G	56R.93.14H7G	56R.93.14H7L
	56R.37.15H7G	56R.47.15H7G	56R.93.15H7G	56R.93.15H7L
	56R.37.16H7G	56R.47.16H7G	56R.93.16H7G	56R.93.16H7L
	56R.37.18H7G	56R.47.18H7G	56R.93.18H7G	56R.93.18H7L
	56R.37.20H7G	56R.47.20H7G	56R.93.20H7G	56R.93.20H7L

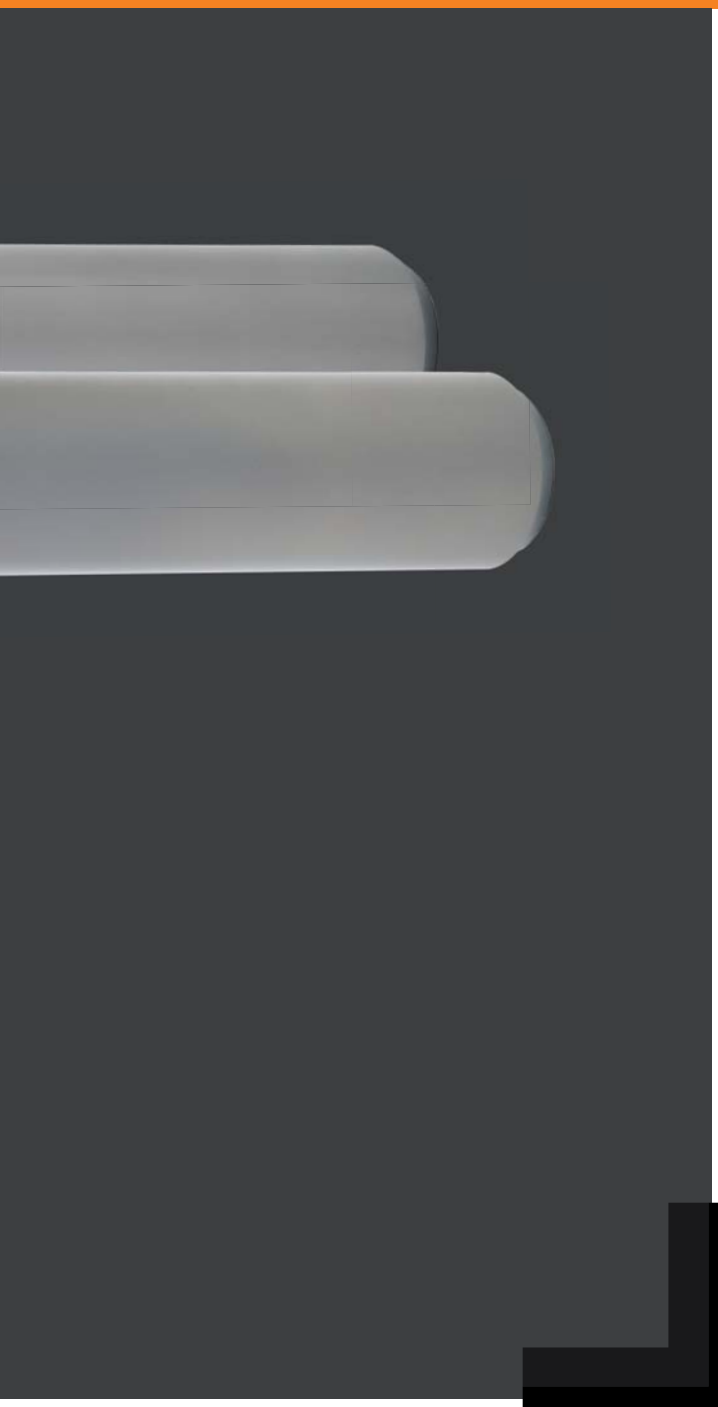
DIHART® solid carbide reamers

Hightech for smaller diameters

The DIHART® range of solid carbide, multiple blade reamers in diameters from 1.400 to 12.700 mm is the complement to the Reamax® product series (diameters 12.000 - 40.000 mm). DIHART® offers you a solid carbide range for high-performance machining up to a diameter of 40.0 mm. The solid carbide reamers are delivered from the factory with the required dimensions for your application.

Your PLUS:

- For very small hole diameters
- Extremely high rigidity for optimum machining processes
- Extremely high cutting performance through DIHART® cutting edge geometry
- Internal coolant supply for long tool life
- Left-hand spiraled for controlled chip flow



KOMET DIHART

DIHART® solid carbide reamers

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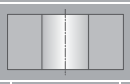
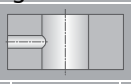
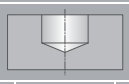
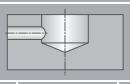
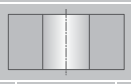
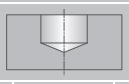
Tool selection guide	206 – 207
For blind hole machining	208
Ø 1.400 – 12.700 mm	
For through hole machining	209
Ø 4.800 – 12.700 mm	

DIHART® Solid carbide reamers

Tool selection guide

Material group		Strength Rm (N/mm²)	Hardness HB	Material	Materials example. Materials code / ANSI / SAE	High-speed machining						
												
						Order #	Cutting geometry (ASG)	Cutting material/ coating	Order #	Cutting geometry (ASG)	Cutting material/ coating	
P	1.0	≤ 500		Non-alloy steels - structural, heat treated, machining, cast	1010 1144 1213	526.39	ASG0501	TiN	526.39	ASG0501	TiN	
	2.0	500-900		Non-alloy / low alloy steels - structural, heat resistant, heat treated, nitrided, tool, cast steel	1055 5115 5120	526.39	ASG0501	TiN	526.39	ASG0501	TiN	
	2.1	< 500		Lead alloy machining steel	12L14	526.39	ASG0501	TiN	526.39	ASG0501	TiN	
	3.0	> 900		Non alloy / low alloy steels: heat resistant structural, heat treated, nitride and tools steel	1064 4140	526.39	ASG0501	TiN	526.39	ASG0501	TiN	
	4.0	> 900		High alloy steel, tool steels	H13 H21	526.39	ASG0501	TiN	526.39	ASG0501	TiN	
	4.1			High speed steels (HSS)	M10 T4							
S	5.0		250	Special alloys: Inconel, Hastelloy, Nimonic, etc.	Inconel® 718 Nimonic® 80A							
	5.1	400		Titanium. Titanium alloys	Ti-6Al-4V							
M	6.0	≤ 600		Stainless steels	304L 316	526.39	ASG0501	TiN	526.39	ASG0501	TiN	
	6.1	< 900		Stainless steels	630	526.39	ASG0501	TiN	526.39	ASG0501	TiN	
	7.0	> 900		Stainless / heat proof steels	403 420	526.39	ASG0501	TiN	526.39	ASG0501	TiN	
K	8.0		180	Gray cast iron	Class 25 G3000	526.37	ASG0501	DBG-N	526.37	ASG0501	DBG-N	
	8.1		250	Gray cast iron alloy	A436 Type 2	526.37	ASG0501	DBG-N	526.37	ASG0501	DBG-N	
	9.0	≤ 600	130	Spheroidal graphite cast iron, ferritic	60-40-18 D4512	526.37	ASG0501	DBG-N	526.37	ASG0501	DBG-N	
	9.1		230	Spheroidal graphite cast iron, ferritic /pearlitic	80-55-06 D5506	526.37	ASG0501	DBG-N	526.37	ASG0501	DBG-N	
	10.0	> 600	250	Spheroidal graphite cast iron, pearlitic ductile iron	100-70-03 07003	526.37	ASG0501	DBG-N	526.37	ASG0501	DBG-N	
	10.1		200	Spheroidal graphite cast iron	A43D2	526.37	ASG0501	DBG-N	526.37	ASG0501	DBG-N	
	10.2		300	Vermicular cast iron		526.37	ASG0501	DBG-N	526.37	ASG0501	DBG-N	
N	12.0		90	Copper alloy, brass, lead alloy bronze, lead bronze: good cuttability	316	526.39	ASG0501	TiN	526.39	ASG0501	TiN	
	12.1		100	Copper alloy, brass, lead alloy bronze: average cuttability		526.39	ASG0501	TiN	526.39	ASG0501	TiN	
	13.0		60	Wrought aluminum alloys	6151 7075							
	13.1		75	Cast aluminum alloy: Sicontent <10% magnesium alloy	380 A356.0							
	14.0		100	Cast aluminum alloy: Si content >10%	383 A413.0							
H	15.0	1400		Hardened steels < 45 HRC								
	16.0	1800		Hardened steels > 45 HRC								

Please inquire if you do not see any tool selections for a given material.

	High-speed machining						Conventional machining with solid carbide					
												
	Order #	Cutting geometry (ASG)	Cutting material/ coating	Order #	Cutting geometry (ASG)	Cutting material/ coating	Order #	Cutting geometry (ASG)	Cutting material	Order #	Cutting geometry (ASG)	Cutting material
	526.19	ASG07	**TiN**	**526.19**	ASG07	**TiN**	**526.35**	ASG0501	**HM**	**526.15**	ASG07	**HM**
	526.19	ASG07	**TiN**	**526.19**	ASG07	**TiN**	**526.35**	ASG0501	**HM**	**526.15**	ASG02	**HM**
	526.19	ASG07	**TiN**	**526.19**	ASG07	**TiN**	**526.35**	ASG0501	**HM**	**526.15**	ASG07	**HM**
	526.19	ASG07	**TiN**	**526.19**	ASG07	**TiN**	**526.35**	ASG0501	**HM**	**526.15**	ASG07	**HM**
	526.19	ASG0106	**TiN**	**526.19**	ASG0106	**TiN**	**526.35**	ASG0501	**HM**	**526.15**	ASG0106	**HM**
										526.15	ASG0106	**HM**
	526.19	ASG0106	**TiN**	**526.19**	ASG0106	**TiN**	**526.35**	ASG0501	**HM**	**526.15**	ASG0106	**HM**
	526.19	ASG0106	**TiN**	**526.19**	ASG0106	**TiN**	**526.35**	ASG0501	**HM**	**526.15**	ASG0106	**HM**
	526.19	ASG0106	**TiN**	**526.19**	ASG0106	**TiN**	**526.35**	ASG0501	**HM**	**526.15**	ASG0106	**HM**
	526.17	ASG07	**DBG-N**	**526.17**	ASG07	**DBG-N**	**526.35**	ASG0501	**HM**	**526.15**	ASG07	**HM**
	526.17	ASG07	**DBG-N**	**526.17**	ASG07	**DBG-N**	**526.35**	ASG0501	**HM**	**526.15**	ASG07	**HM**
	526.17	ASG07	**DBG-N**	**526.17**	ASG07	**DBG-N**	**526.35**	ASG0501	**HM**	**526.15**	ASG07	**HM**
	526.17	ASG07	**DBG-N**	**526.17**	ASG07	**DBG-N**	**526.35**	ASG0501	**HM**	**526.15**	ASG07	**HM**
	526.17	ASG07	**DBG-N**	**526.17**	ASG07	**DBG-N**	**526.35**	ASG0501	**HM**	**526.15**	ASG07	**HM**
	526.17	ASG07	**DBG-N**	**526.17**	ASG07	**DBG-N**	**526.35**	ASG0501	**HM**	**526.15**	ASG07	**HM**
	526.17	ASG07	**DBG-N**	**526.17**	ASG07	**DBG-N**	**526.35**	ASG0501	**HM**	**526.15**	ASG07	**HM**
	526.19	ASG07	**TiN**	**526.19**	ASG07	**TiN**	**526.35**	ASG0501	**HM**	**526.15**	ASG0106	**HM**
	526.19	ASG07	**TiN**	**526.19**	ASG07	**TiN**	**526.35**	ASG0501	**HM**	**526.15**	ASG0106	**HM**
							526.35	ASG0501	**HM**	**526.15**	ASG07	**HM**
							526.35	ASG0501	**HM**	**526.15**	ASG07	**HM**
							526.35	ASG0501	**HM**	**526.15**	ASG07	**HM**
	526.17	ASG0106	**DBG-N**									
	526.17	ASG0106	**DBG-N**									

For cutting speeds and feeds see pages 170-171

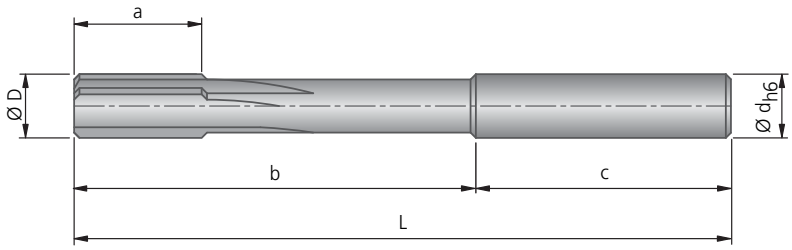
Be sure to check Chapter 10 for more application details and safety notes!

DIHART® Solid carbide reamers Ø 1.400 – 12.700 mm

with straight shank DIN 6535 HA

■ With or without internal coolant supply

For blind hole machining



For blind hole machining										Basic recommendation
	Ø 1.400 – 4.159				Ø 4.160 – 10.159					For workpiece materials
Order #	Ø 1.40-2.75	Ø 2.76-3.15	Ø 3.16-4.15	Ø 4.16-6.15	Ø 6.16-8.15	Ø 8.16-10.15	Ø 10.16-12.15	Ø 12.16-12.7	Cutting material/ coating	P M K N S H
526.15	✔	✔	✔	✔	✔	✔	✔	✔	HM	●1) ◐1) ●1) ●1) ◐1)
526.19	✔	✔	✔	✔	✔	✔	✔	✔	TiN	● ◐ ◐2) ◐
526.17	✔	✔	✔	✔	✔	✔	✔	✔	DBG-N	◐ ○
526.16	✔	✔	✔	✔	✔	✔	✔	✔	DBF	◐ ●
526.18	✔	✔	✔	✔	✔	✔	✔	✔	DBC	●

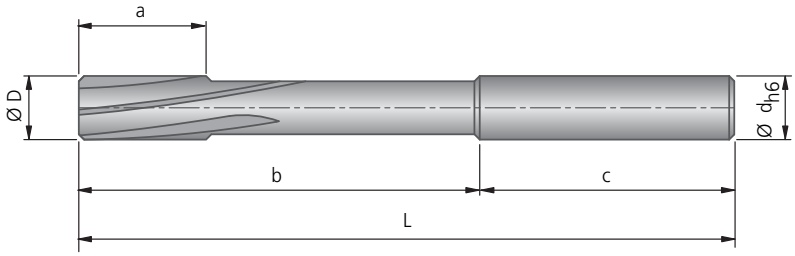
Dimensions					
Ø D	Straight shank Ø d × c	L	b	a ~	# of teeth
1.400 – 2.759	3 × 28	48	20	6	4
2.760 – 3.159	3 × 28	48	20	8	4
3.160 – 4.159	4 × 28	54	26	8	4
4.160 – 4.799	6 × 36	74	38	8	4
4.800 – 6.159	6 × 36	74	38	12	4
6.160 – 6.799	8 × 36	91	55	12	4
6.800 – 7.159	8 × 36	91	55	16	4
7.160 – 8.159	8 × 36	91	55	16	6
8.160 – 8.699	10 × 40	103	63	16	6
8.700 – 10.159	10 × 40	103	63	20	6
10.160 – 10.599	12 × 45	118	73	20	6
10.600 – 12.159	12 × 45	118	73	24	6
12.160 – 12.700	14 × 45	132	87	28	6

DIHART® Solid carbide reamers

with straight shank DIN 6535 HA

With internal coolant supply ■

For through hole machining



For through hole machining							Basic recommendation					
							For workpiece materials					
Order #	Ø 4.80-6.15	Ø 6.16-8.15	Ø 8.16-10.15	Ø 10.16-12.15	Ø 12.16-12.7	Cutting material/ coating	P	M	K	N	S	H
526.35	✔	✔	✔	✔	✔	HM	● 1)	◯ 1)	● 1)	● 1)	◯ 1)	
526.39	✔	✔	✔	✔	✔	TiN	●	◐		◑ 2)	◐	
526.37	✔	✔	✔	✔	✔	DBG-N			◐			○
526.36	✔	✔	✔	✔	✔	DBF		◯	●			
526.38	✔	✔	✔	✔	✔	DBC				●		

Dimensions					
Ø D	Straight shank Ø d × c	L	b	a ~	# of teeth
4.800 – 6.159	6 × 36	74	38	12	4
6.160 – 6.799	8 × 36	91	55	12	4
6.800 – 7.159	8 × 36	91	55	16	4
7.160 – 8.159	8 × 36	91	55	16	6
8.160 – 8.699	10 × 40	103	63	16	6
8.700 – 10.159	10 × 40	103	63	20	6
10.160 – 10.599	12 × 45	118	73	20	6
10.600 – 12.159	12 × 45	118	73	24	6
12.160 – 12.700	14 × 45	132	87	28	6

Sample order:

Order #	Bore diameter	Bore tolerance	Material or ASG
526.39	Ø 5 mm	H8	GGG40 or ASG0501

KOMET® turning tools are extremely versatile.

Our turning tools can be used on classic lathes, turret lathes, and on automatic or special machines as well as in drilling heads and milling machines.

Suited for external as well as internal machining.

Simple construction and handling combined with extreme precision and proven KOMET® quality explain why these turning tools have been in demand for decades worldwide.

Satisfied generations of customers – TOOL *life*.

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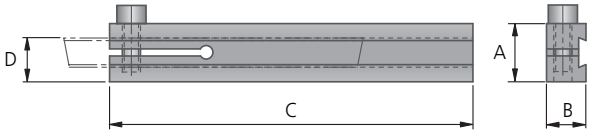
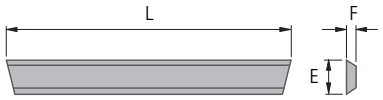
External machining – Parting off

Holder
A00, A0



For this design, blades are clamped by pulling the slotted front section of the holder together.

Blade
A00, A0

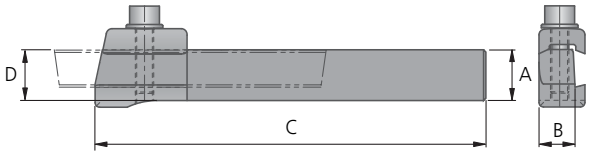


- HSS-Grade F
- For right- and left-hand use

- HM-Grade P20
- For right-hand use only
- with soldered-on cutter edge

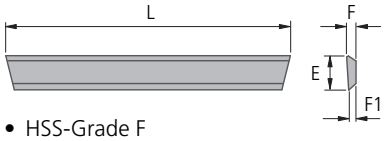
Holder							Blade						
Article	**Order #**	**A**	**B**	**C**	**D**	kg	Article	**Order #**	Grade	**E**	**F**	**L**	kg
A00	**H01 15010**	16	11	100	12	0.15	A00-F	**H10 15010.91**	F	8	2.2	75	0.010
A0	**H01 15020**	18	11	125	14	0.23	A0-F	**H10 15020.91**	F	10	2.7	100	0.019
							A0-R-P20	**H10 15020.02**	P20				

Holder
A1/2A, A3A

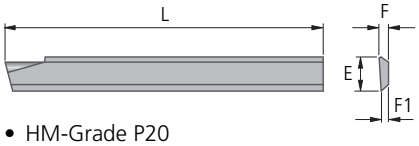


Holder also available in left-hand design

Blade
A1/2A, A3A



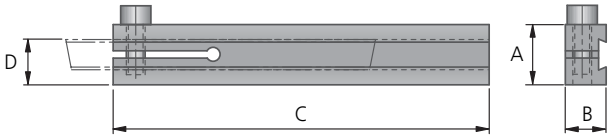
- HSS-Grade F
- For right- and left-hand use



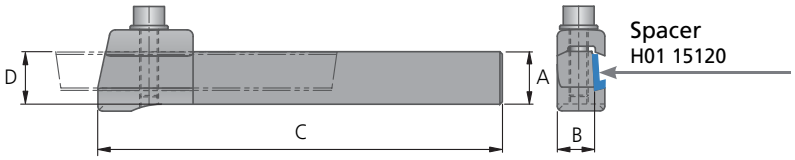
- HM-Grade P20
- For right-hand use only
- with soldered-on cutting edge

Holder							Blade							
Article	**Order #**	**A**	**B**	**C**	**D**	kg	Article	**Order #**	Grade	**E**	**F**	**F1**	**L**	kg
A1/2A	**H01 15110**	22	14.5	170	20	0.55	A1/2A-F	**H10 15110.91**	F	16	4	3	150	0.065
							A1/2A-R-P20	**H10 15110.02**	P20				100	0.044
A3A	**H01 15130**	27	18.0	210	25	1.00	A3A-F	**H10 15130.91**	F	18.5	5	4	150	0.095
							A3A-R-P20	**H10 15130.02**	P20				100	0.062

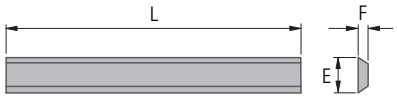
Holder for grooving width 0.8 - 2.0 mm
AE



Holder for Grooving width 0.8 - 2.0 mm
A1/2A



Blade
A0.9 - A2.15

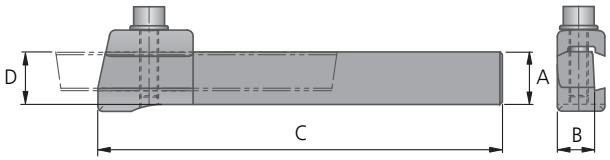


- HSS-Grade F
- For right- and left-hand use

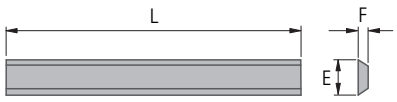
Holder						
Article	Order #	A	B	C	D	kg
AE	**H01 15030**	18	11	125	14	0.23
A1/2A	**H01 15110**	22	14.5	170	20	0.55

Blade							
Article	Order #	Grade	For grooving width	E	F	L	kg
A0.9-R-F	**H10 15210.91**	F	0.8	11	0.9	80	0.006
A1.1-R-F	**H10 15220.91**	F	1.0	11	1.1	80	0.007
A1.3-R-F	**H10 15230.91**	F	1.2	11	1.3	80	0.009
A1.6-R-F	**H10 15240.91**	F	1.5	11	1.6	80	0.010
A1.85-R-F	**H10 15250.91**	F	1.75	11	1.85	80	0.012
A2.15-R-F	**H10 15260.91**	F	2.0	11	2.15	80	0.014

Holder for grooving width 2.5 - 5.0 mm
A1/2A



Blade
A2.65 - A5.15



- HSS-Grade F
- For right- and left-hand use

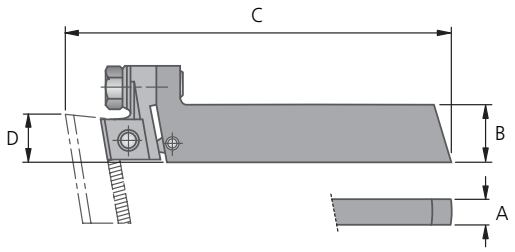
Holder						
Article	Order #	A	B	C	D	kg
A1/2A	**H01 15110**	22	14.5	170	20	0.55

Blade							
Article	Order #	Grade	For grooving width	E	F	L	kg
A2.65-R-F	**H10 15270.91**	F	2.5	16	2.65	150	0.038
A3.15-R-F	**H10 15280.91**	F	3.0	16	3.15	150	0.047
A4.15-R-F	**H10 15290.91**	F	4.0	16	4.15	150	0.066
A5.15-R-F	**H10 15300.91**	F	5.0	16	5.15	150	0.082

See guideline values for internal machining on page 225.

External machining – threading

Threading tool holder
for external thread. FG, spring-loaded and swiveling



External threading tool
- HSS-Grade F
- FG1 for 55° and 60° thread
- FG2 for 55°, 60° and trapezoidal thread

Threading tool holder						
Article	Order #	A	B	C	D	kg
FG1	**H04 15010**	10	22	145	15	0.35
FG2	**H04 15020**	13	29	175	20	0.70

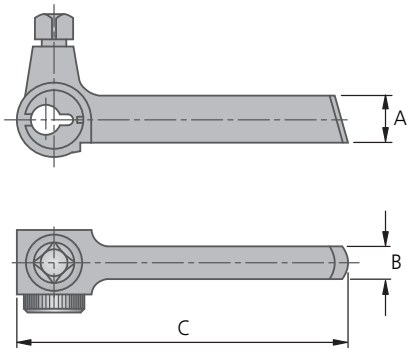
Grinding gauge
H09 15500

External threading tool					
Article	Order #	Grade	Suitable pitch	For threading tool holder	kg
FG1-55-F	**H11 11000.91**	F	to 3 mm/rev. 8 thread/inch	FG1	0.02
FG1-60-F	**H11 12000.91**				
FG2-55-F	**H11 21000.91**	F	to 4 mm/rev 6.5 thread/inch	FG2	0.05
FG2-60-F	**H11 22000.91**				
FG2TR-4.0-F	**H11 23040.91**	F	4 mm		
FG2TR-5.0-F	**H11 23050.91**	F	5 mm		

See guideline values for internal machining on page 225.

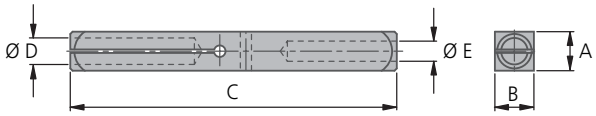
Boring tool holder
B0 – By rotating the eccentric bushing each tool can be easily brought to the required center. The awkward and often time-consuming shimming of the toolholder becomes unnecessary.

Includes: Boring tool holder with eccentric bush B0 (ø 8 and ø10)



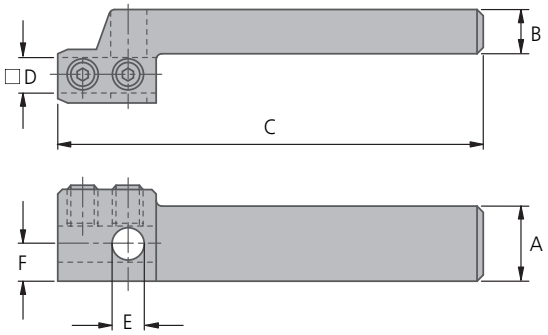
Boring tool holder						
Article	Order #	A	B	C	Cutting edge height min - max	kg
B0-8/10	H05 25010	22	12	150	7.5 - 14.5	0.72

Boring tool holder
B8, B10



Boring tool holder								
Article	Order #	A	B	C	D	E	Cutting edge height	kg
B8-8	H05 25110	12	12	100	8	8	6.0	0.07
B10-8/10	H05 25120	15	15	125	8	10	7.5	0.16

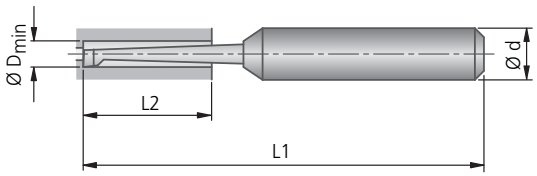
Boring tool holder
KD 8, KD 10
for round and square tools



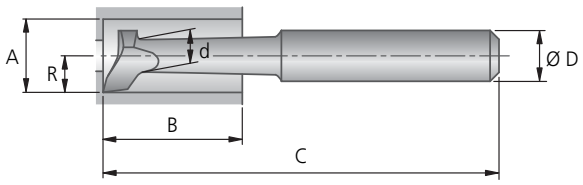
Boring tool holder								
Article	Order #	A	B	C	□D	E	F	kg
KD8-8/8	H05 65010	21	12	120	8	8	10.5	0.30
KD10-10/10	H05 65020	21	12	120	10	10	10.5	0.39

Internal machining

Boring tool
Form F
Solid carbide Grade K10



Ø D min	Article	Order #	Ø d	L1	L2	kg	Basic recommendation	
							Grade	For workpiece material
0.5	5K-F-K10	**H15 11100.21**	4	25	3	0.004	K10	P M K N S H
0.8	8K-F-K10	**H15 11110.21**	4	25	4	0.004		
1.0	10K-F-K10	**H15 11120.21**	4	25	4	0.004		
1.2	12K-F-K10	**H15 11130.21**	4	25	6	0.004		
1.5	15K-F-K10	**H15 11140.21**	4	28	7	0.004		
1.7	17K-F-K10	**H15 11150.21**	4	28	7	0.004		
2.0	20K-F-K10	**H15 11160.21**	4	30	9	0.005		



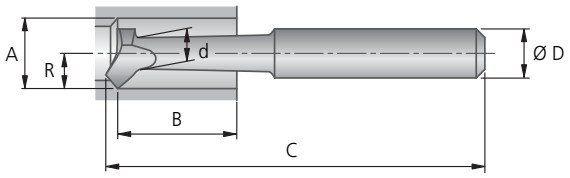
Boring tool
Form F
HSS-Grade H
Solid carbide Grade K10 and P20

Boring tool										
For bore Ø A from	Article	Order #	Grade	B	C	D	d	R	kg	For boring bar holder
2.5	B00F-H	H15 21100.93	H	10	50	8	1.5	1.2	0.02	B0 B8 B10 KD8
3.0	B01F-H	H15 21110.93	H	20	60	8	2.0	1.6	0.02	
	B01F-P20	H15 21110.02	P20	16						
	B01F-K10	H15 21110.21	K10	16						
5.0	B02F-H	H15 21120.93	H	24	60	8	3.0	2.8	0.02	
	B02F-P20	H15 21120.02	P20	19						
	B02F-K10	H15 21120.21	K10	19						
7.0	B03F-H	H15 21130.93	H	26	65	8	4.0	3.8	0.02	
	B03F-P20	H15 21130.02	P20							
	B03F-K10	H15 21130.21	K10							
9.0	B04F-H	H15 21140.93	H	30	75	8	5.8	5.0	0.03	
	B04F-P20	H15 21140.02	P20							
	B04F-K10	H15 21140.21	K10							
12.0	B05F-H	H15 21150.93	H	50	80	8	7.2	6.5	0.03	
	B05F-P20	H15 21150.02	P20							
	B05F-K10	H15 21150.21	K10							
14.0	B06F-H	H15 21160.93	H	60	95	10	9.2	7.6	0.06	B0 B10 KD10
	B06F-P20	H15 21160.02	P20							
	B06F-K10	H15 21160.21	K10							
Reinforced design										
3.0	B01F-D10-H	H15 22110.93	H	20	60	10	2.0	1.6	0.03	B0 B10 KD8
5.0	B02F-D10-P20	H15 22120.02	P20	19	60	10	3.0	2.8	0.03	
	B02F-D10-K10	H15 22120.21	K10							
7.0	B03F-D10-H	H15 22130.93	H	26	65	10	4.0	3.8	0.03	
9.0	B04F-D10-H	H15 22140.93	H	30	75	10	5.8	5.0	0.04	
	B04F-D10-K10	H15 22140.21	K10							
12.0	B05F-D10-H	H15 22150.93	H	50	80	10	7.2	6.5	0.05	
	B05F-D10-P20	H15 22150.02	P20							
Extra long design										
3.0	B01FLG-H	H15 23110.93	H	20	125	8	2.0	1.6	0.05	B0 B8 B10 KD8
	B01FLG-P20	H15 23110.02	P20	16						
	B01FLG-K10	H15 23110.21	K10	16						
5.0	B02FLG-H	H15 23120.93	H	24	125	8	3.0	2.8	0.05	
	B02FLG-P20	H15 23120.02	P20	19						
	B02FLG-K10	H15 23120.21	K10	19						
7.0	B03FLG-H	H15 23130.93	H	26	125	8	4.0	3.8	0.05	
	B03FLG-P20	H15 23130.02	P20							
	B03FLG-K10	H15 23130.21	K10							
9.0	B04FLG-H	H15 23140.93	H	30	125	8	5.8	5.0	0.05	
	B04FLG-P20	H15 23140.02	P20							
	B04FLG-K10	H15 23140.21	K10							
12.0	B05FLG-H	H15 23150.93	H	50	125	8	7.2	6.5	0.05	
	B05FLG-P20	H15 23150.02	P20							
14.0	B06FLG-H	H15 23160.93	H	60	125	10	9.2	7.6	0.08	B0 B10 KD10
	B06FLG-K10	H15 23160.21	K10							

See grinding instructions on page 224.
Left-hand cutting tools available by special order.
See guideline values for internal machining on page 225.

Internal machining

Boring tool
Form G
HSS-Grade H
Solid carbide Grade K10 and P20

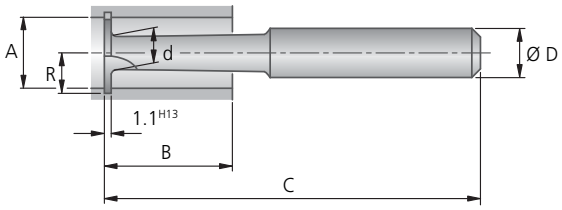


For boring through holes from Ø 2.5 mm

Boring tool										
For bore Ø A from	Article	Order #	Grade	B	C	D	d	R	kg	For boring bar holder
2.5	B00G-H	**H15 21200.9**	H	10	50	8	1.5	1.2	0.02	B0 B8 B10 KD8
3.0	B01G-H	**H15 21210.93**	H	20	60	8	2.0	1.6	0.02	
	B01G-P20	**H15 21210.02**	P20	16						
	B01G-K10	**H15 21210.21**	K10	16						
5.0	B02G-H	**H15 21220.93**	H	24	60	8	3.0	2.8	0.02	
	B02G-P20	**H15 21220.02**	P20	19						
	B02G-K10	**H15 21220.21**	K10	19						
7.0	B03G-H	**H15 21230.93**	H	26	65	8	4.0	3.8	0.02	
	B03G-P20	**H15 21230.02**	P20							
	B03G-K10	**H15 21230.21**	K10							
9.0	B04G-H	**H15 21240.93**	H	30	75	8	5.8	5.0	0.03	
	B04G-P20	**H15 21240.02**	P20							
	B04G-K10	**H15 21240.21**	K10							
12.0	B05G-H	**H15 21250.93**	H	50	80	8	7.2	6.5	0.03	
	B05G-P20	**H15 21250.02**	P20							
14.0	B06G-H	**H15 21260.93**	H	60	95	10	9.2	7.6	0.06	B0 B10 KD10
	B06G-P20	**H15 21260.02**	P20							
	B06G-K10	**H15 21260.21**	K10							
Extra long design										
5.0	B02GLG-H	**H15 23120.93**	H	24	125	8	3.0	2.8	0.05	B0 B8 B10 KD8
7.0	B03GLG-P20	**H15 23130.02**	P20	26	125	8	4.0	3.8	0.05	
9.0	B04GLG-H	**H15 23140.93**	H	30	125	8	5.8	5.0	0.05	
12.0	B05GLG-H	**H15 23150.93**	H	50	125	8	7.2	6.5	0.05	
	B05GLG-P20	**H15 23150.02**	P20							
14.0	B06GLG-H	**H15 23160.93**	H	60	125	10	9.2	7.6	0.08	B0 B10 KD10
	B06GLG-K10	**H15 23160.21**	K10							

See page 224 for grinding instructions.
Left-hand cutting tools available by special order.

Recessing tool
Form H
HSS-Grade H
Solid carbide Grade K10 and P20



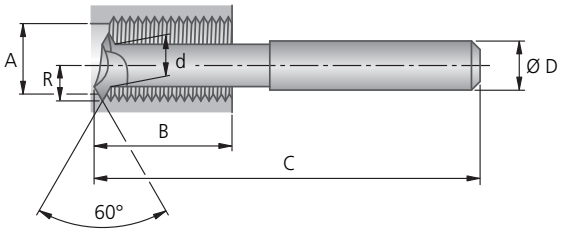
Internal recessing tool										
For bore Ø A from	Article	Order #	Grade	B	C	D	d	R	kg	For boring bar holder
3.0	B01H-H	**H15 21310.93**	H	20	60	8	2.0	1.6	0.02	B0 B8 B10 KD8
5.0	B02H-H	**H15 21320.93**	H	24	60	8	3.0	2.8	0.02	
7.0	B03H-H	**H15 21330.93**	H	26	65	8	4.0	3.8	0.02	
	B03H-P20	**H15 21330.02**	P20							
	B03H-K10	**H15 21330.21**	K10							
9.0	B04H-H	**H15 21340.93**	H	30	75	8	5.8	5.0	0.03	
	B04H-P20	**H15 21340.02**	P20							
	B04H-K10	**H15 21340.21**	K10							
12.0	B05H-H	**H15 21350.93**	H	50	80	8	7.2	6.5	0.03	
	B05H-P20	**H15 21350.02**	P20							
14.0	B06H-H	**H15 21360.93**	H	60	95	10	9.2	7.6	0.06	B0 B10 KD10
	B06H-P20	**H15 21360.02**	P20							
Extra long design										
5.0	B02HLG-H	**H15 23320.93**	H	24	125	8	3.0	2.8	0.05	B0 B8 B10 KD8
7.0	B03HLG-H	**H15 23330.93**	H	26	125	8	4.0	3.8	0.05	
9.0	B04HLG-H	**H15 23340.93**	H	30	125	8	5.8	5.0	0.05	
12.0	B05HLG-H	**H15 23350.93**	H	50	125	8	7.2	6.5	0.05	
14.0	B06HLG-H	**H15 23360.93**	H	60	125	10	9.2	7.6	0.08	B0 B10 KD10

See page 224 for grinding instructions.
Special grooving widths in HSS left-hand cutting internal recessing tools available by special order.

See guideline values for internal machining on page 225.

Internal machining

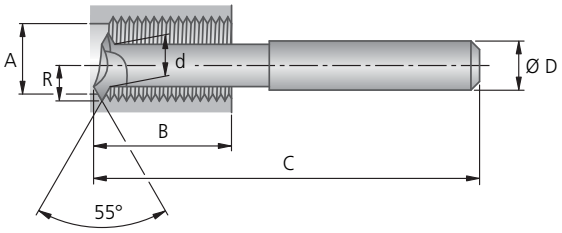
Internal threading tool
60° Thread
HSS-Grade H
Solid carbide Grade K10 and P20



Internal threading tool											
For bore Ø A from	Pitch mm	Article	Order #	Grade	B	C	D	d	R	kg	For boring bar holder
3.0	1.0	B01 60-H	**H15 21410.93**	H	20	60	8	2.0	1.6	0.02	B0 B8 B10 KD8
		B01 60-P20	**H15 21410.02**	P20	16						
5.0	1.0	B02 60-H	**H15 21420.93**	H	24	60	8	3.0	2.8	0.02	
		B02 60-P20	**H15 21420.02**	P20	19						
		B02 60-K10	**H15 21420.21**	K10	19						
7.0	1.5	B03 60-H	**H15 21430.93**	H	26	65	8	4.0	3.8	0.02	
		B03 60-P20	**H15 21430.02**	P20							
		B03 60-K10	**H15 21430.21**	K10							
9.0	1.5	B04 60-H	**H15 21440.93**	H	30	75	8	5.8	5.0	0.03	
		B04 60-P20	**H15 21440.02**	P20							
		B04 60-K10	**H15 21440.21**	K10							
12.0	2.0	B05 60-H	**H15 21450.93**	H	50	80	8	7.2	6.5	0.03	
		B05 60-K10	**H15 21450.21**	K10							
14.0	3.0	B06 60-H	**H15 21460.93**	H	60	95	10	9.2	7.6	0.06	B0 B10 KD10
		B06 60-P20	**H15 21460.02**	P20							
		B06 60-K10	**H15 21460.21**	K10							
Extra long design											
12.0	2.0	B05 60LG-H	**H15 23450.93**	H	50	125	8	7.2	6.5	0.05	B0 B8 B10 KD8

See page 224 for grinding instructions.
Left-hand internal threading tools available by special order.

Internal threading tool
55° Thread
HSS-Grade H
Solid carbide Grade P20



Internal threading tool											
For bore Ø A from	Pitch Gg/"	Article	Order #	Grade	B	C	D	d	R	kg	For boring bar holder
7.0	16-50	B03 55-H	**H15 21530.93**	H	26	65	8	4.0	3.8	0.02	B0 B8 B10 KD8
		B03 55-P20	**H15 21530.02**	P20							
9.0	16-50	B04 55-H	**H15 21540.93**	H	30	75	8	5.8	5.0	0.03	
		B04 55-P20	**H15 21540.02**	P20							
12.0	12-40	B05 550-H	**H15 21550.93**	H	50	80	8	7.2	6.5	0.03	
14.0	8-30	B06 55-H	**H15 21560.93**	H	60	95	10	9.2	7.6	0.06	B0 B10 KD10
		B06 55-P20	**H15 21560.02**	P20							

See page 224 for grinding instructions.
Left-hand internal threading tools available by special order.

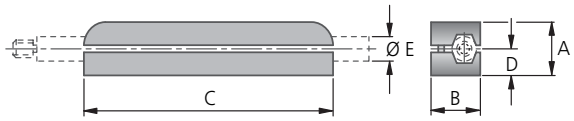
See guideline values for internal machining on page 225.

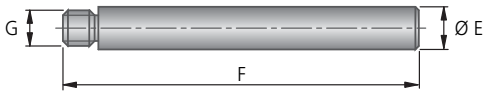
Internal machining

Boring tool holder

Boring bar

Boring bar with left-hand thread available by special order





Boring tool holder								Boring bar						
Article	Order #	A	B	C	D	E	kg	Article	Order #	E	F	G	kg	For boring bar
B1	**H05 25210**	20	19	110	10.0	10	0.24	B1	**H05 35010**	10	180	M6	0.11	B1 ..
B2	**H05 25220**	27	23	150	14.0	13	0.56	B1A	**H05 35020**	13	220	M8×20 Gg/"	0.23	B1A ..
								B2	**H05 35030**	13	250	M10×20 Gg/"	0.27	B2 ..
B3	**H05 25230**	40	30	180	20.0	20	1.21	B2A	**H05 35040**	20	275	M12×20 Gg/"	0.67	B2A ..
								B2B	**H05 35050**	20	300	M14×20 Gg/"	0.74	B2B ..
								B3	**H05 35060**	20	325	M15×20 Gg/"	0.80	B3 ..

Boring tool (detachable) Form F

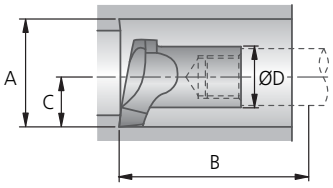
HSS-Grade F

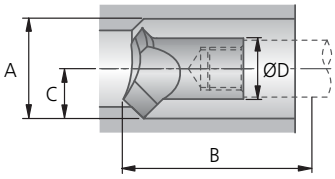
Boring tool (detachable) Form G

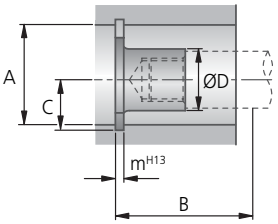
HSS-Grade F

Grooving tool (detachable) Form H

HSS-Grade F
Solid carbide Grade P20





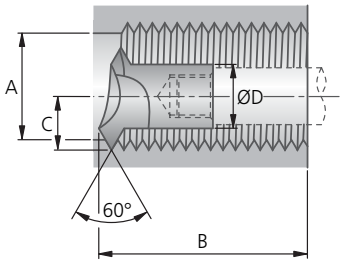


See page 224 for grinding instructions.

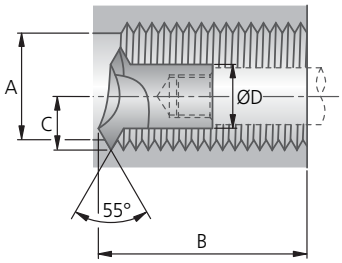
Special grooving widths in HSS available by special order

For bore Ø A	Boring tool - Form F		Boring tool - Form G		Grooving tool - Form H			Grade	B	C	D	kg	For boring bar
	Article	Order #	Article	Order #	For groove width m	Article	Order #						
16	B1 F-F	**H15 31010.91**	B1 G-F	**H15 31020.91**	1.10	B1 H-F	**H15 31030.91**	F	80	9.0	11.5	0.02	B1
18	B1A F-F	**H15 31110.91**	B1A G-F	**H15 31120.91**	1.30	B1A H-F	**H15 31130.91**	F	85	10.3	12.5	0.02	B1A
21	B2 F-F	**H15 31210.91**	B2 G-F	**H15 31220.91**	1.30	B2 H-F	**H15 31230.91**	F	115	12.0	16.0	0.03	B2
23	–		–		1.60	B2A H-F	**H15 31330.02**	P20	120	13.5	18.0	0.04	B2A
24	B2A F-F	**H15 31310.91**	B2A G-F	**H15 31320.91**	1.60	B2A H-F	**H15 31330.91**	F	120	13.5	18.0	0.04	B2A
28	B2B F-F	**H15 31410.91**	–		1.85	B2B H-F	**H15 31430.91**	F	140	15.5	20.2	0.05	B2B
30	B3 F-F	**H15 31510.91**	B3 G-F	**H15 31520.91**	2.15	B3 H-F	**H15 31530.91**	F	165	16.8	21.5	0.07	B3

Internal threading tool (detachable)
60° Thread
HSS-Grade F



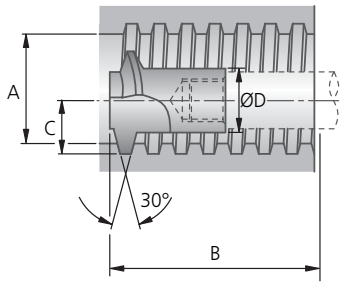
Internal threading tool (detachable)
55° Thread
HSS-Grade F



See page 224 for grinding instructions.

	Internal threading tool 60°			Internal threading tool 55°							
For bore Ø A from	Pitch mm	Article	Order #	Pitch Gg/"	Article	Order #	Grade	B	C	D	kg	For boring bar
16	4	B1 60-F	**H15 31040.91**	6.5	B1 55-F	**H15 31050.91**	F	80	9.0	11.5	0.02	B1
18	5	B1A 60-F	**H15 31140.91**	5	B1A 55-F	**H15 31150.91**	F	85	10.3	12.5	0.02	B1A
21	6	B2 60-F	**H15 31240.91**	4	B2 55-F	**H15 31250.91**	F	115	12.0	16.0	0.03	B2
24	7	B2A 60-F	**H15 31340.91**	3.5	B2A 55-F	**H15 31350.91**	F	120	13.5	18.0	0.04	B2A
28	8	B2B 60-F	**H15 31440.91**		–		F	140	15.5	20.2	0.05	B2B
30	9	B3 60-F	**H15 31540.91**	2.5	B3 55-F	**H15 31550.91**	F	165	16.8	21.5	0.07	B3

Internal threading tool (detachable)
Trapezoidal thread
HSS-Grade F



See page 224 for grinding instructions.

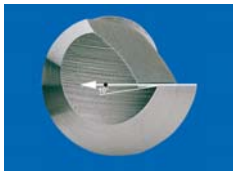
trapezoidal thread with pitch in thread/inch as well as other thread forms (only HSS- and left-hand cutting steels) available by special order.

	Internal threading tool							
For bore Ø A from	Article	Order #	Grade	B	C	D	kg	For boring bar
16	B1 TR-3.0-F	**H15 32030.91**	F	80	9.0	11.5	0.02	B1
	B1 TR-4.0-F	**H15 32040.91**						
18	B1A TR-4.0-F	**H15 32120.91**	F	85	10.3	13.5	0.02	B1A
	B1A TR-5.0-F	**H15 32130.91**						
21	B2 TR-4.0-F	**H15 32220.91**	F	115	12.0	15.0	0.03	B2
	B2 TR-5.0-F	**H15 32230.91**						
	B2 TR-6.0-F	**H15 32240.91**						
24	B2A TR-6.0-F	**H15 32330.91**	F	120	13.5	18.0	0.04	B2A
30	B3 TR-6.0-F	**H15 32530.91**	F	165	16.8	21.5	0.08	B3
	B3 TR-7.0-F	**H15 32540.91**						
	B3 TR-8.0-F	**H15 32550.91**						

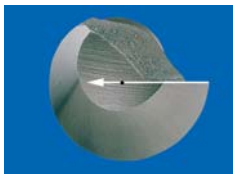
See guideline values for internal machining on page 225.

Your local KOMET SERVICE® Partner will be glad to handle this for you.

Internal cutting – grinding instructions



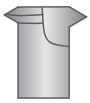
Boring tool
The cutting edge overhang shown above runs through the center point of the boring head. However, the top rake which is to be measured at right angles to the direction of the cutting edge (dotted line), should be ground off at an angle between 10° and 20° depending on the material. Always grind KOMET roughing tools on the back edge of the grinding wheel.



The cutting edge must always run to the center point (see illustration) or the angle will be distorted. When resharpening threading tools, use the sharp front edge of a chamfered grinding wheel.

Threading tools
KOMET internal threading tools, HSS design in particular, are also supplied for L.H. thread cutting. Please note the design details given below and state the form required.

Threading tool Form A
Right-hand thread (standard), for forward running, cutting direction from tailstock to headstock.



Threading tool Form D
Right-hand thread, for reverse running, cutting direction from headstock to tailstock.
Please note: When ordering Form D, the required form must be stated. For trapezoidal flat, round and buttress threads, the required pitch must also be stated. In addition, a special threading tool is also required for each pitch size.

Buttress saw thread Form 1
Right-hand thread, cutting direction for forward running from tailstock to headstock. When ordering buttress threading tools, please state whether thread is stressed at compression or tension. Form 1 can also be produced as left-hand threading tools, with cutting direction from headstock to tailstock for forward operation.

Buttress saw thread Form 2
R.H. thread, cutting direction for forward running from tailstock to headstock.
When ordering buttress threading tools, please state whether thread is stressed at compression or tension. Form 2 can also be produced as left-hand threading tools, with cutting direction from headstock to tailstock for forward operation.

Thread forming tool Form 5: Compression
Thread forming tool Form 6: Tension
A separate blade is required for each pitch for form threading tools. Edge, cord and Edison threads are three different thread types. For buttress saw threading tools, please state whether the thread is stressed for compression or tension.

Guidelines for external and internal machining

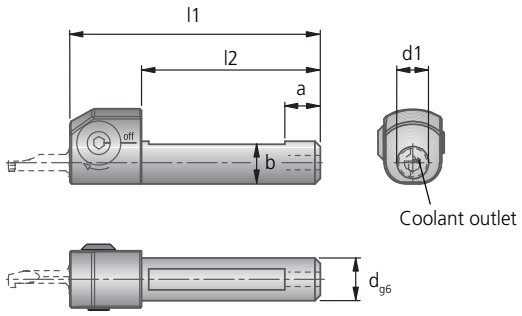
Material group		Strength Rm (N/mm²)	Hardnes HB	Material	Materials example Material code ANSI / SAE	Cutting speed v_c (m/min)											
						Grade F			Grade H			Carbide roughing			Carbide finishing		
						min	opt.	max	min	opt.	max	min	opt.	max	min	opt.	max
P	1.0	≤500		Non-alloy steels - structural, heat treated, machining, cast	A570.36 1213 A573.81	10	**25**	40	15	**30**	45	40	**70**	100	50	**85**	120
P	2.0	500-900		Non-alloy / low alloy steels - structural, heat resistant, heat treated, nitrided, tool , cast steel	5120 1055 5115	8	**22**	35	8	**19**	30	30	**60**	90	40	**70**	100
P	2.1	<500		Lead alloy machining steel	12L13	10	**20**	30	10	**23**	35	30	**65**	100	40	**80**	120
P	3.0	>900		Non alloy / low alloy steels: heat resistant structural, heat treated, nitride and tools steels	4140 1064	8	**17**	25	8	**19**	30	25	**48**	70	30	**60**	90
P	4.0	>900		High alloy steels	H13 H21	15	**20**	25	16	**23**	30	20	**40**	60	20	**45**	65
P	4.1			HSS		5	**8**	10	6	**9**	12	15	**28**	40	15	**33**	50
S	5.0		250	Special alloys: Inconel, Hastelloy, Nimonic, stc,	Inconel® 718 Nimonic® 80A	5	**7**	8	4	**7**	9	10	**15**	20	10	**18**	25
S	5.1	400		Titanium, Titanium alloys	AMS R54520	3	**5**	6	4	**7**	9	10	**20**	30	10	**20**	30
M	6.0	≤600		Stainless steels	304L 316	10	**13**	15	10	**13**	15	20	**35**	50	20	**35**	50
M	6.1	<900		Stainless steels	630	8	**12**	15	8	**12**	15	20	**35**	50	20	**35**	50
M	7.0	>900		Stainless / fireproof steels	420 403	6	**8**	10	6	**8**	10	15	**28**	40	15	**28**	40
K	8.0		180	Gray cast iron	No 35 B No 50 B	15	**20**	25	15	**20**	25	25	**38**	50	25	**38**	50
K	8.1		250	Alloy gray cast iron	A436 Type 2	15	**20**	25	15	**20**	25	30	**40**	50	30	**40**	50
K	9.0	≤600	130	Spheroidal graphite cast iron, ferritic	60-40-18	20	**25**	30	20	**25**	30	35	**48**	60	35	**48**	60
K	9.1		230	Spheroidal graphite cast iron, ferritic / pearlitic	80-55-06	20	**25**	30	20	**25**	30	35	**48**	60	35	**48**	60
K	10.0	>600	250	spheroidal graphite cast iron, pearlitic, malleable iron	100-70-03 70003	15	**20**	25	15	**20**	25	25	**38**	50	25	**38**	50
K	10.1		200	Alloyed spheroidal graphite cast iron	A43D2	12	**16**	20	12	**16**	20	25	**38**	50	25	**38**	50
K	10.2		300	Vermicular cast iron		10	**15**	20	10	**15**	20	25	**38**	50	25	**38**	50
N	12.0		90	Copper alloy, brass, lead-alloy bronze, lead bronze: good cut	UNS C36000	60	**80**	100	60	**80**	100	120	**150**	180	120	**150**	180
N	12.1		100	Copper alloy, brass, bronze:average cut		30	**50**	70	30	**50**	70	120	**160**	200	120	**160**	200
N	13.0		60	Wrought aluminum alloys		40	**60**	80	40	**60**	80	140	**180**	220	140	**180**	220
N	13.1		75	Cast aluminum alloy: Si-content <10% magnesium alloy	GD-AlSi12	30	**50**	70	30	**50**	70	140	**180**	220	140	**180**	220
N	14.0		100	Cast aluminum alloy: Si-content > 10%	A360.2	20	**40**	60	20	**40**	60	120	**160**	200	120	**160**	200
H	15.0	1400		Hardened steels < 45 HRC													
H	16.0	1800		Hardened steels > 45 HRC, m 55 HRC													

KOMET UniTurn®

Internal machining

Clamping holder

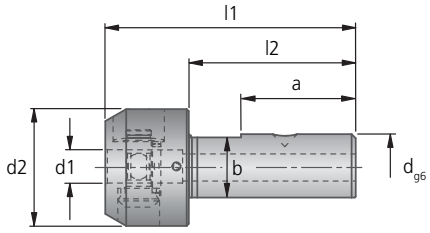
with straight shank connection



Order #	d_{g6}	d1	l1	l2	a	b	kg
H50 01240	12	4	70	50	10	11	0.08
H50 01281	12	8					
H50 01640	16	4	70	50	10	15	0.11
H50 01681	16	8					

Adapter

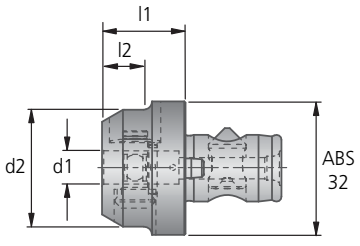
with straight shank connection



Order #	d_{g6}	d1	d2	l1	l2	a	b	kg
H50 21640	16	4	28	60	40	27.5	14.4	0.15
H50 21680	16	8	28	60	40	27.5	14.4	0.13

Adapter

with ABS® connection



Order #	ABS d	d1	d2	l1	l2	kg
H50 23240	32	4	28	20	12	0.15
H50 23280	32	8	28	20	12	0.12

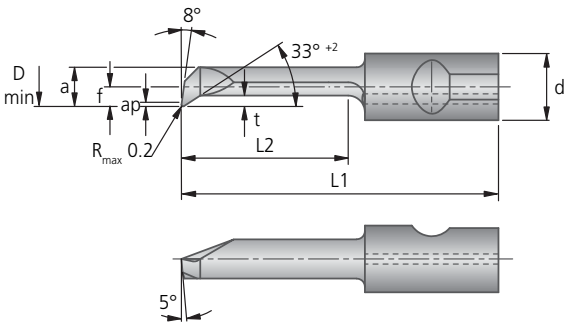
Foreign and domestic patents pending (ABS)
EP 0 973 625, and other foreign patents and patents pending (UniTurn)

Copying tool

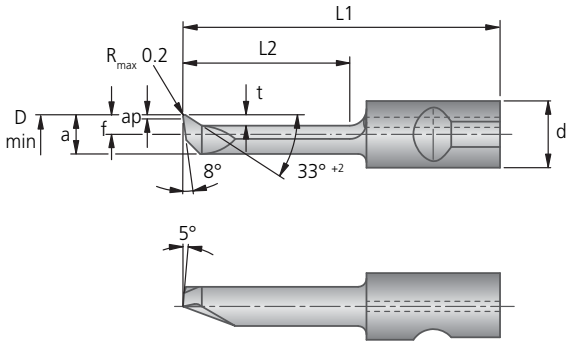
L / D	Through hole	Blind hole	Angled	Cross bore	Reverse machining	HRC > 54 Through hole	HRC > 54 Blind hole	Vibration damping
> 3.5×D	●	●	◐	◐	✕	✕	✕	●

● very good ◐ good ○ possible ✕ not possible

Right-hand cutting form



Left-hand cutting form



Ø D min	Cutting form Right Order #	Cutting form Left Order #	a_p max	t max	f	a	d	L1	L2	kg	Basic recommendation Grade	For workpiece material P	M	K	N	S	H
3	H51 32100.0182	H51 31100.0182	0.2	0.7	1.25	2.7	4	28	10	0.0032							
	H51 32150.0182	H51 31150.0182	0.2	0.7	1.25	2.7	4	33	15	0.0035	BK82	●		◐	●	◐	
	H51 32200.0182	H51 31200.0182	0.2	0.7	1.25	2.7	4	38	20	0.0037							
4	H51 42100.0182	H51 41100.0182	0.3	0.8	1.75	3.7	4	28	10	0.0038							
	H51 42150.0182	H51 41150.0182	0.3	0.8	1.75	3.7	4	33	15	0.0043	BK82	●		◐	●	◐	
	H51 42200.0182	H51 41200.0182	0.3	0.8	1.75	3.7	4	38	20	0.0047							
	H51 42250.0182	H51 41250.0182	0.3	0.8	1.75	3.7	4	43	25	0.0052							
5	H51 52100.0282	H51 51100.0282	0.5	1.0	2.25	4.7	8	28	10	0.013							
	H51 52150.0282	H51 51150.0282	0.5	1.0	2.25	4.7	8	33	15	0.013							
	H51 52200.0282	H51 51200.0282	0.5	1.0	2.25	4.7	8	38	20	0.014	BK82	●		◐	●	◐	
	H51 52250.0282	H51 51250.0282	0.5	1.0	2.25	4.7	8	43	25	0.015							
	H51 52300.0282	H51 51300.0282	0.5	1.0	2.25	4.7	8	48	30	0.016							
6	H51 62150.0282	H51 61150.0282	0.5	1.8	2.75	5.7	8	33	15	0.014							
	H51 62200.0282	H51 61200.0282	0.5	1.8	2.75	5.7	8	38	20	0.015							
	H51 62250.0282	H51 61250.0282	0.5	1.8	2.75	5.7	8	43	25	0.016	BK82	●		◐	●	◐	
	H51 62300.0282	H51 61300.0282	0.5	1.8	2.75	5.7	8	48	30	0.017							
	H51 62350.0282	H51 61350.0282	0.5	1.8	2.75	5.7	8	53	35	0.018							
8	H51 82150.0282	H51 81150.0282	0.6	2.5	3.75	7.7	8	33	15	0.016							
	H51 82200.0282	H51 81200.0282	0.6	2.5	3.75	7.7	8	38	20	0.018							
	H51 82250.0282	H51 81250.0282	0.6	2.5	3.75	7.7	8	43	25	0.020	BK82	●		◐	●	◐	
	H51 82300.0282	H51 81300.0282	0.6	2.5	3.75	7.7	8	48	30	0.022							
	H51 82350.0282	H51 81350.0282	0.6	2.5	3.75	7.7	8	53	35	0.023							
	H51 82400.0282	H51 81400.0282	0.6	2.5	3.75	7.7	8	58	40	0.025							

Note: from D_{min} 5 mm copying tools have internal coolant supply; for smaller diameters. coolant is passed over adapter.

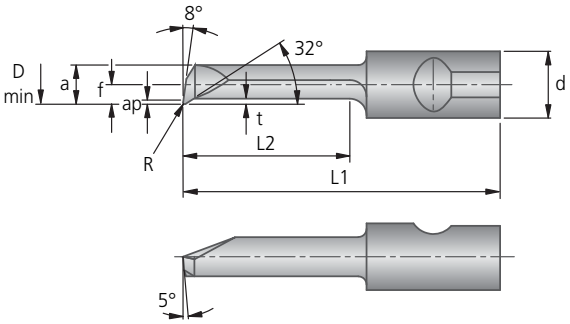
See page 234 for copying guideline values.

Boring tool

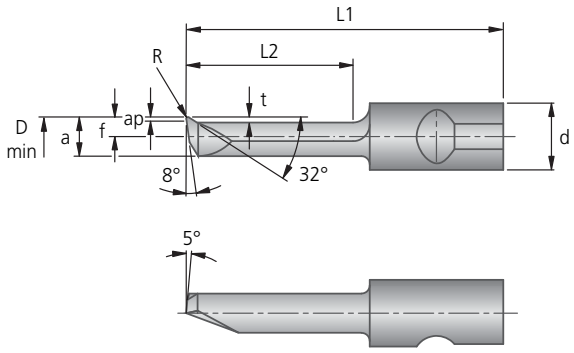
L / D	Through hole	Blind hole	Angled	Cross bore	Reverse machining	HRC > 54 Through hole	HRC > 54 Blind hole	Vibration damping
> 3.5×D	●	●	◐	◐	✕	✕	✕	●

● very good ◐ good ○ possible ✕ not possible

Right-hand cutting form



Left-hand cutting form



Recommended guideline value: Feed f = 0.025-0.1 mm

Ø D min	Cutting form Right Order #	Cutting form Left Order #	a_p max	t max	f	a	X d	L1	L2	kg	Basic recommendation Grade	for Workpiece material P M K N S H
3	H55 32100.0182	H55 31100.0182	0.6	0.3	1.25	2.6	4	28	10	0.004	BK82	● ◐ ● ◐
	H55 32150.0182	–						33	15			
4	H55 42150.0182	–	0.8	0.3	1.75	3.6	4	33	15	0.005	BK82	● ◐ ● ◐
	H55 42200.0182	H55 41200.0182						38	20	0.006		
5	–	H55 51150.0282	1.0	0.4	1.55	4.6	8	33	15	0.016	BK82	● ◐ ● ◐
	–	H55 51200.0282						38	20	0.018		
	H55 52250.0282	H55 51250.0282						43	25	0.019		
6	H55 62200.0282	–	1.1	0.4	1.55	5.4	8	38	20	0.020	BK82	● ◐ ● ◐
	H55 62300.0282	H55 61300.0282						48	30	0.023		
8	–	H55 81200.0282	1.2	0.4	1.5	5.5	8	38	20	0.020	BK82	● ◐ ● ◐
	H55 82400.0282	–						58	40	0.027		

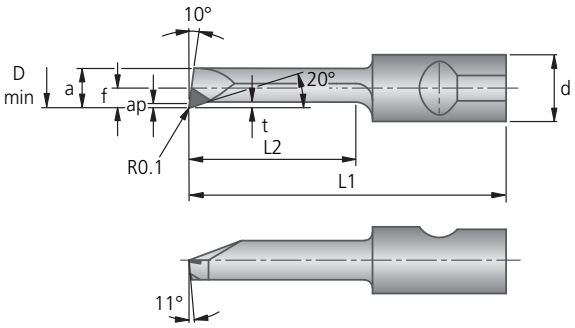
Note: from D_{min} 5 mm copying tools have internal coolant supply; for smaller diameters. coolant is passed over adapter.

EP 0 973 625, and other foreign patents and patents pending (UniTurn)

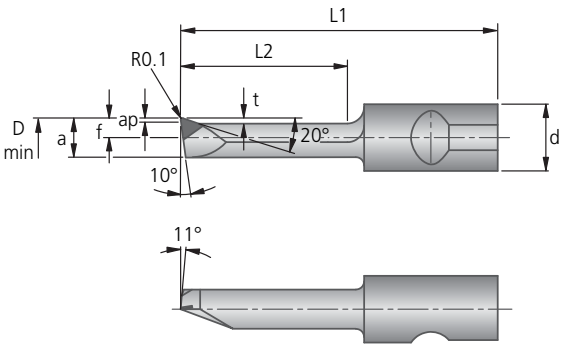
L / D	Through hole	Blind hole	Angled	Cross bore	Reverse machining	HRC > 54 Through hole	HRC > 54 Blind hole	Vibration damping
> 3.5×D	●	●	◐	◐	✕	●	●	●

● very good ◐ good ○ possible ✕ not possible

Right-hand cutting form



Left-hand cutting form



Recommended guideline values: a_p = 0.05-0.07 mm; f = 0.01-0.03 mm; v_c = 70-90 m/min

Ø D* min	Cutting form Right Order #	Cutting form Left Order #	t	f	a	X d	L1	L2	kg	Basic recommendation Grade	Basic recommendation For workpiece material P M K N S H
2.7	H56 32100.0140	H56 31100.0140	0.2	1.35	2.5	4	27	9	0.004	CBN40	◐ ≥52 HRC
3.8	H56 42121.0140	H56 41121.0140	0.2	1.9	3.6	8	30	12	0.015	CBN40	◐ ≥52 HRC
4.8	H56 52151.0140	H56 51151.0140	0.25	2.4	4.55	8	33	15	0.016	CBN40	◐ ≥52 HRC
5.4	H56 62201.0140	–	0.3	2.7	5.2	8	38	20	0.019	CBN40	◐ ≥52 HRC
7.5	H56 82251.0140	–	0.5	3.8	7.3	8	43	25	0.024	CBN40	◐ ≥52 HRC

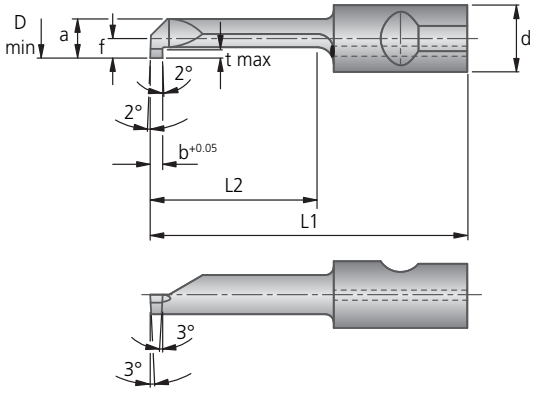
* Dimensions for stationary use only

Note: boring tools have internal coolant supply.

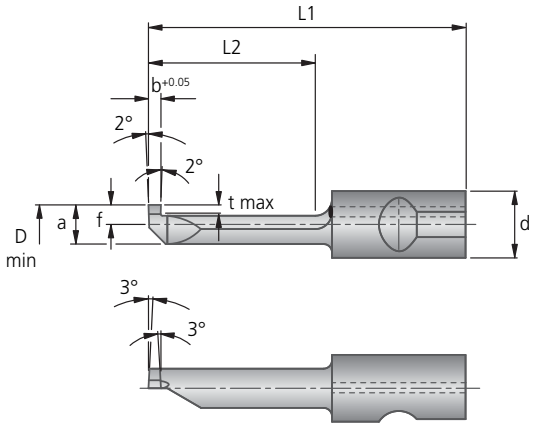
See page 234 for boring guideline values.

Grooving tool

Right-hand cutting form



Left-hand cutting form



Ø D min	b	Cutting form Right Order #	Cutting form Left Order #	t max	f	a	d	L1	L2	kg	Basic recommendation Grade	For workpiece material P M K N S H
3	1.0	H52 32100.1082	H52 31100.1082	0.7	1.25	2.7	4	28	10	0.0032	BK82	
		H52 32150.1082	H52 31150.1082					33	15	0.0035		
4	1.0	H52 42100.1082	H52 41100.1082	0.8	1.75	3.7	4	28	10	0.0038	BK82	
		H52 42150.1082	H52 41150.1082					33	15	0.0043		
		H52 42200.1082	H52 41200.1082					38	20	0.0047		
		H52 42250.1082	–					43	25	0.0052		
5	1.0	H52 52100.1082	–	1.0	2.25	4.7	8	28	10	0.013	BK82	
	2.0	H52 52100.2082	–									
5	1.0	H52 52150.1082	H52 51150.1082	1.0	2.25	4.7	8	33	15	0.013		
	2.0	H52 52150.2082	H52 51150.2082									
5	1.0	H52 52200.1082	H52 51200.1082	1.0	2.25	4.7	8	38	20	0.014		
	1.5	H52 52200.1582	H52 51200.1582									
	2.0	H52 52200.2082	H52 51200.2082									
5	1.0	H52 52250.1082	–	1.0	2.25	4.7	8	43	25	0.015		
	1.5	H52 52250.1582	–									
	2.0	H52 52250.2082	–									
5	1.0	H52 52300.1082	H52 51300.1082	1.0	2.25	4.7	8	48	30	0.016		
	2.0	H52 52300.2082	–									

Note: from D_{min} 5 mm copying tools have internal coolant supply; for smaller diameters coolant is passed over adapter.

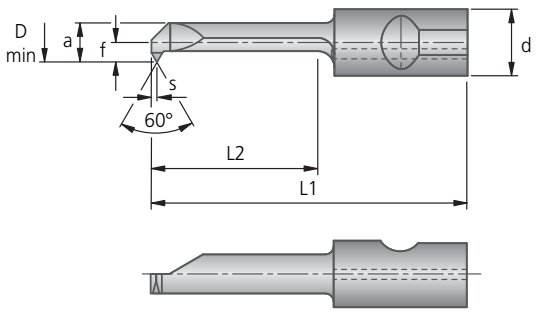
EP 0 973 625, and other foreign patents and patents pending (UniTurn)

Ø D min	b	Cutting form Right Order #	Cutting form Left Order #	t max	f	a	d	L1	L2	kg	Basic recommendation Grade	Basic recommendation For workpiece material P M K N S H
6	1.0	H52 62150.1082	H52 61150.1082	1.8	2.75	5.7	8	33	15	0.014		
	1.5	H52 62150.1582	H52 61150.1582									
	2.0	H52 62150.2082	H52 61150.2082									
6	1.0	H52 62200.1082	H52 61200.1082	1.8	2.75	5.7	8	38	20	0.015		
	1.5	H52 62200.1582	H52 61200.1582									
	2.0	H52 62200.2082	H52 61200.2082									
6	1.0	H52 62250.1082	–	1.8	2.75	5.7	8	43	25	0.016	BK82	● ◐ ● ◐
	2.0	H52 62250.2082	H52 61250.2082									
6	1.0	H52 62300.1082	H52 61300.1082	1.8	2.75	5.7	8	48	30	0.017		
	1.5	H52 62300.1582	–									
	2.0	H52 62300.2082	H52 61300.2082									
6	1.0	H52 62350.1082	H52 61350.1082	1.8	2.75	5.7	8	53	35	0.018		
	1.5	H52 62350.1582	–									
	2.0	H52 62350.2082	–									
8	1.0	H52 82150.1082	H52 81150.1082	2.5	3.75	7.7	8	33	15	0.016		
	1.5	H52 82150.1582	H52 81150.1582									
	2.0	H52 82150.2082	H52 81150.2082									
8	1.0	H52 82200.1082	H52 81200.1082	2.5	3.75	7.7	8	38	20	0.018		
	1.5	H52 82200.1582	H52 81200.1582									
	2.0	H52 82200.2082	H52 81200.2082									
8	1.0	H52 82250.1082	H52 81250.1082	2.5	3.75	7.7	8	43	25	0.020		
	1.5	H52 82250.1582	H52 81250.1582									
	2.0	H52 82250.2082	H52 81250.2082									
8	1.0	H52 82300.1082	–	2.5	3.75	7.7	8	48	30	0.022		
	1.5	H52 82300.1582	–									
	2.0	H52 82300.2082	H52 81300.2082									
8	1.0	H52 82350.1082	–	2.5	3.75	7.7	8	53	35	0.023		
	1.5	H52 82350.1582	–									
	2.0	H52 82350.2082	H52 81350.2082									
8	1.0	H52 82400.1082	–	2.5	3.75	7.7	8	58	40	0.025		
	1.5	H52 82400.1582	H52 81400.1582									
	2.0	H52 82400.2082	H52 81400.2082									

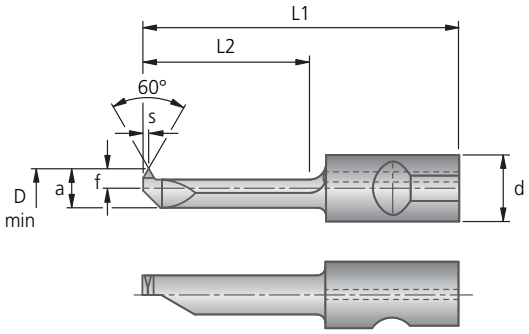
See page 234 for grooving guideline values

Threading tool

Right-hand cutting form



Left-hand cutting form



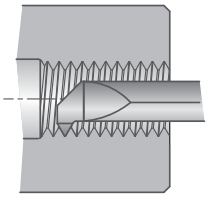
Ø D min	Size	Pitch P	s	Cutting form Right Order #	Cutting form Left Order #	f	a	d	L1	L2	kg	Basic recommendation Grade	Basic recommendation For workpiece material P M K N S H
5	M6	1	0.55	**H54 52150.1082**	**H54 51150.1082**	2.25	4.7	8	33	15	0.014	BK82	● ◐ ● ◐
6	M8	1.25	0.65	**H54 62150.1282**	–	2.75	5.7	8	33	15	0.014	BK82	● ◐ ● ◐
8	M10	1.5	0.75	**H54 82150.1282**	–	3.75	7.7	8	33	15	0.017	BK82	● ◐ ● ◐
	M12	1.75	0.85	**H54 82150.1782**	–								

Note: from D_{min} 5 mm copying tools have internal coolant supply; for smaller diameters coolant is passed over adapter.

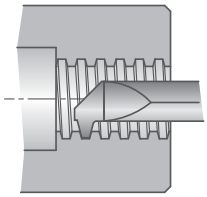
Special forms

available by special order

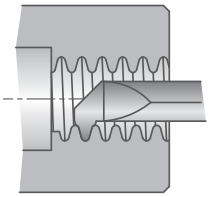
Fine thread



Profile grooving



Profile grooving



See page 235 for internal threading guidelines values.

EP 0 973 625, and other foreign patents and patents pending (UniTurn)

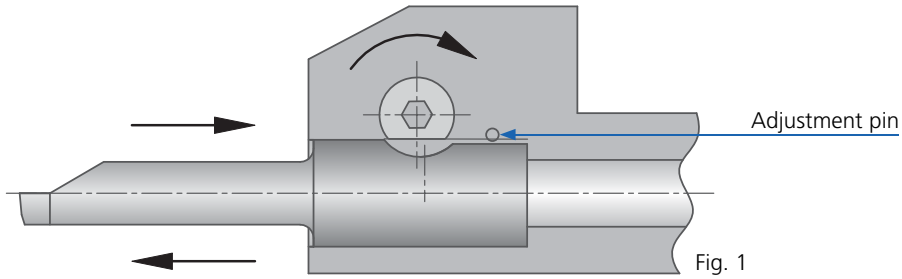


Fig. 1

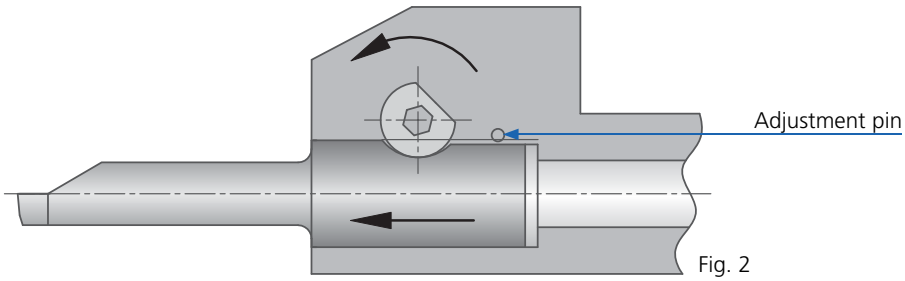


Fig. 2

Set the eccentric clamping element to the "off" position with Allen wrench (as far as the stop). This releases the clamping mechanism and the boring bar can now be changed (Fig. 1). Insert the new boring bar into the clamping holder as far as the stop with the flat surface up.

Tighten the eccentric clamping element with the wrench to a maximum of 3 Nm (Fig. 2). Turning the eccentric clamping element pushes the boring bar out of the holder in the axial position (±0.01) and at the same time moves it into the exact center height (±0.01).

A click will indicate that the clamping mechanism has been released.

Technical notes

Guideline values for boring, chamfering, copying and grooving

Material group		Strength Rm (N/mm²)	Hardnes HB	Material	Materials example Material code ANSI / SAE	Cutting speed v_c (m/min)			to 3×D Feed f (mm/U)			to 3×D Cutting depth a_p (mm)			> 3×D Feed f (mm/U)			> 3×D Cutting depth a_p (mm)		
						min	opt.	max	min	opt.	max	min	opt.	max	min	opt.	max	min	opt.	max
P	1.0	≤500		Non-alloy steels - structural, heat treated, machining, cast	A570.36 1213 A573.81	30	**100**	180	0.010	**0.02**	0.030	0.02	**0.08**	0.15	0.010	**0.02**	0.025	0.02	**0.07**	0.10
	2.0	500-900		Non-alloy / low alloy steels - structural, heat resistant, heat treated, nitrided, tool , cast steel	5120 1055 5115	30	**90**	130	0.010	**0.02**	0.030	0.02	**0.08**	0.15	0.010	**0.02**	0.025	0.02	**0.07**	0.10
	2.1	<500		Lead alloy machining steel	12L13	20	**80**	120	0.010	**0.02**	0.030	0.02	**0.08**	0.15	0.010	**0.02**	0.025	0.02	**0.07**	0.10
	3.0	>900		Non alloy / low alloy steels: heat resistant structural, heat treated, nitride and tools steels	4140 1064	20	**80**	120	0.005	**0.01**	0.025	0.02	**0.07**	0.10	0.005	**0.01**	0.020	0.02	**0.07**	0.10
	4.0	>900		High alloy steels	H13 H21	15	**50**	90	0.005	**0.01**	0.025	0.02	**0.08**	0.15	0.005	**0.01**	0.020	0.02	**0.07**	0.10
	4.1			HSS		10	**30**	60	0.005	**0.01**	0.025	0.02	**0.08**	0.15	0.005	**0.01**	0.020	0.02	**0.07**	0.10
S	5.0		250	Special alloys: Inconel, Hastelloy, Nimonic, stc,	Inconel® 718 Nimonic® 80A	5	**20**	30	0.005	**0.01**	0.025	0.02	**0.05**	0.08	0.005	**0.01**	0.020	0.02	**0.06**	0.10
	5.1	400		Titanium, Titanium alloys	AMS R54520	5	**30**	50	0.005	**0.01**	0.025	0.02	**0.05**	0.08	0.005	**0.01**	0.020	0.02	**0.06**	0.10
M	6.0	≤600		Stainless steels	304L 316	10	**50**	80	0.005	**0.01**	0.025	0.02	**0.07**	0.10	0.005	**0.01**	0.020	0.02	**0.07**	0.10
	6.1	<900		Stainless steels	630	10	**50**	80	0.005	**0.01**	0.025	0.02	**0.07**	0.10	0.005	**0.01**	0.020	0.02	**0.07**	0.10
	7.0	>900		Stainless / fireproof steels	420 403	8	**30**	60	0.005	**0.01**	0.025	0.02	**0.07**	0.10	0.005	**0.01**	0.020	0.02	**0.07**	0.10
K	8.0		180	Gray cast iron	No 35 B No 50 B	15	**55**	90	0.010	**0.02**	0.035	0.05	**0.10**	0.25	0.010	**0.02**	0.030	0.03	**0.10**	0.20
	8.1		250	Alloy gray cast iron	A436 Type 2	15	**55**	90	0.010	**0.02**	0.035	0.05	**0.10**	0.25	0.010	**0.02**	0.030	0.03	**0.10**	0.20
	9.0	≤600	130	Spheroidal graphite cast iron, ferritic	60-40-18	15	**55**	90	0.010	**0.02**	0.035	0.05	**0.10**	0.25	0.010	**0.02**	0.030	0.03	**0.10**	0.20
	9.1		230	Spheroidal graphite cast iron, ferritic / pearlitic	80-55-06	15	**55**	90	0.010	**0.02**	0.035	0.05	**0.10**	0.25	0.010	**0.02**	0.030	0.03	**0.10**	0.20
	10.0	>600	250	spheroidal graphite cast iron, pearlitic, malleable iron	100-70-03 70003	15	**55**	90	0.010	**0.02**	0.035	0.05	**0.10**	0.25	0.010	**0.02**	0.030	0.03	**0.10**	0.20
	10.1		200	Alloyed spheroidal graphite cast iron	A43D2	15	**55**	90	0.010	**0.02**	0.035	0.05	**0.10**	0.25	0.010	**0.02**	0.030	0.03	**0.10**	0.20
	10.2		300	Vermicular cast iron		15	**55**	90	0.010	**0.02**	0.035	0.05	**0.10**	0.25	0.010	**0.02**	0.030	0.03	**0.10**	0.20
N	12.0		90	Copper alloy, brass, lead-alloy bronze, lead bronze: good cut	UNS C36000	30	**120**	200	0.010	**0.02**	0.040	0.02	**0.40**	0.50	0.010	**0.02**	0.040	0.03	**0.15**	0.30
	12.1		100	Copper alloy, brass, bronze:average cut		30	**150**	250	0.010	**0.02**	0.040	0.02	**0.40**	0.50	0.010	**0.02**	0.040	0.03	**0.15**	0.30
	13.0		60	Wrought aluminum alloys		30	**180**	300	0.010	**0.02**	0.040	0.02	**0.40**	0.50	0.010	**0.02**	0.040	0.03	**0.15**	0.30
	13.1		75	Cast aluminum alloy: Si-content <10% magnesium alloy	GD-AlSi12	30	**150**	250	0.010	**0.02**	0.040	0.02	**0.40**	0.50	0.010	**0.02**	0.040	0.03	**0.15**	0.30
	14.0		100	Cast aluminum alloy: Si-content > 10%	A360.2	30	**120**	200	0.010	**0.02**	0.040	0.02	**0.40**	0.50	0.010	**0.02**	0.040	0.03	**0.15**	0.30
H	15.0	1400		Hardened steels < 45 HRC		20	**50**	80	0.005	**0.01**	0.020	0.02	**0.07**	0.12	–			–		
	16.0	1800		Hardened steels > 45 HRC		15	**40**	65	0.005	**0.01**	0.020	0.02	**0.07**	0.12	–			–		

Cutting values shown on these pages relate to the basic recommendations indicated for cutting materials.

EP 0 973 625, and other foreign patents and patents pending (UniTurn)

Guidelines values for internal threading

Material group		Strength Rm (N/mm²)	Hardness HB	Material	Materials example. Materials code ANSI/SAE	Cutting speed v_c (m/min) min	opt.	max	Number of cuts Pitch (mm) 0.50	0.75	1.00	1.25	1.50	1.75
P	1.0	≤500		Non-alloy steels - structural. heat treated. machining. cast	A570.36 1213 A573.81	30	**100**	180	4-6	4-7	4-8	5-9	6-10	7-12
P	2.0	500-900		Non-alloy / low alloy steels - structural. heat resistant. heat treated. nitrided. tool . cast steel	5120 1055 5115	30	**90**	130						
P	2.1	<500		Lead alloy machining steel	12L13	20	**80**	120						
P	3.0	>900		Non alloy / low alloy steels: heat resistant structural. heat treated. nitride and tools steel	4140 1064	20	**80**	120						
P	4.0	>900		High alloy steel. tool steels	H13 H21	15	**50**	90						
P	4.1			High speed steels (HSS)		10	**30**	60						
S	5.0		250	Special alloys: Inconel. Hastelloy. Nimonic. etc.	Inconel® 718 Nimonic® 80A	5	**20**	30	4-6	4-7	4-8	5-9	6-10	7-12
S	5.1	400		Titanium. Titanium alloys	AMS R54520	5	**30**	50						
M	6.0	≤600		Stainless steels	304L 316	10	**50**	80	4-6	4-7	4-8	5-9	6-10	7-12
M	6.1	<900		Stainless steels	630	10	**50**	80						
M	7.0	>900		Stainless / heat proof steels	420 403	8	**30**	60						
K	8.0		180	Gray cast iron	No 35 B No 50 B	15	**55**	90	4-6	4-7	4-8	5-9	6-10	7-12
K	8.1		250	Gray cast iron alloy	A436 Type 2	15	**55**	90						
K	9.0	≤600	130	Spheroidal graphite cast iron. ferritic	60-40-18	15	**55**	90						
K	9.1		230	Spheroidal graphite cast iron. ferritic /pearlitic	80-55-06	15	**55**	90						
K	10.0	>600	250	Spheroidal graphite cast iron. pearlitic ductile iron	100-70-03 70003	15	**55**	90						
K	10.1		200	Spheroidal graphite cast iron	A43D2	15	**55**	90						
K	10.2		300	Vermicular cast iron		15	**55**	90						
N	12.0		90	Copper alloy. brass. lead alloy bronze. lead bronze: good cut	UNS C36000	30	**120**	200	4-6	4-7	4-8	5-9	6-10	7-12
N	12.1		100	Copper alloy. brass. lead alloy bronze: average cut		30	**150**	250						
N	13.0		60	Wrought aluminum alloys		30	**180**	300						
N	13.1		75	Cast aluminum alloy: Sicontent <10% magnesium alloy	GD-AlSi12	30	**150**	250						
N	14.0		100	Cast aluminum alloy: Si content >10%	A360	30	**120**	200						
H	15.0	1400		Hardened steels < 45 HRC										
H	16.0	1800		Hardened steels > 45 HRC										

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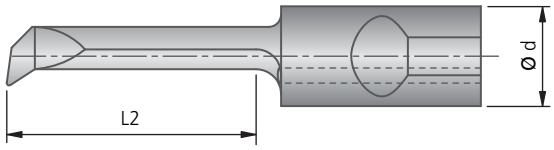

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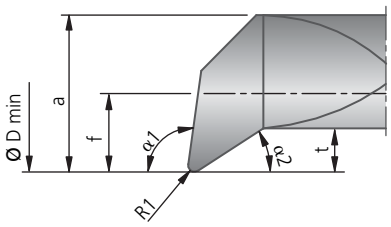
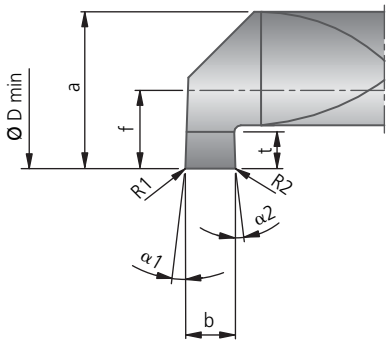
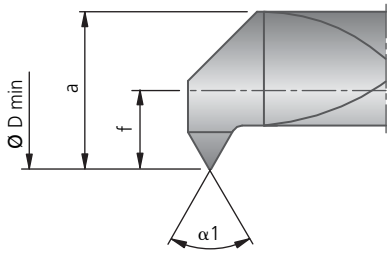


Grooving



Parameters											
Ø D min	b max	t max	a	f	Effective length L2						
3	1.3	0.7	2.7	1.25	10	15	20	–	–	–	–
4	1.3	0.8	3.7	1.75	10	15	20	25	–	–	–
5	2.3	1.0	4.7	2.25	10	15	20	25	30	–	–
6	2.3	1.8	5.7	2.75	–	15	20	25	30	35	–
8	2.3	2.5	7.7	3.75	–	15	20	25	30	35	40

Threading



- for ISO- and fine thread (M6 - M12)
- for left-hand and right-hand cutting form

Parameters											
Ø D min	b max	t max	a	f	Effective length L2						
5	2.3	1.0	4.7	2.25	10	15	20	25	30	–	–
6	2.3	1.8	5.7	2.75	–	15	20	25	30	35	–
8	2.3	2.5	7.7	3.75	–	15	20	25	30	35	40

Please note: Divergence from dimensions (L2-. a-. f-value) requires special handling on a case-by-case basis.

EP 0 973 625, and other foreign patents and patents pending (UniTurn)

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Order quantity:
(Minimum order 5 pieces)

Coating: ☐ Yes ☐ No

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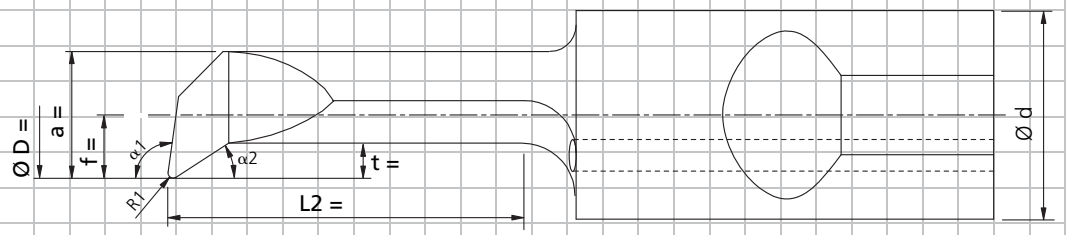
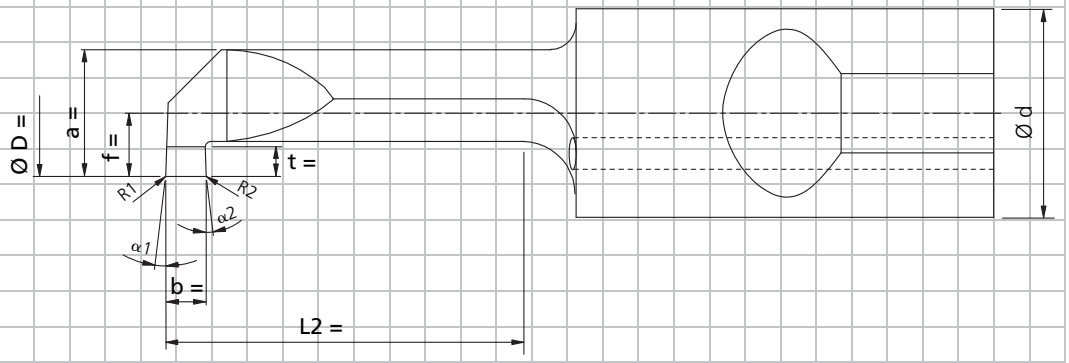
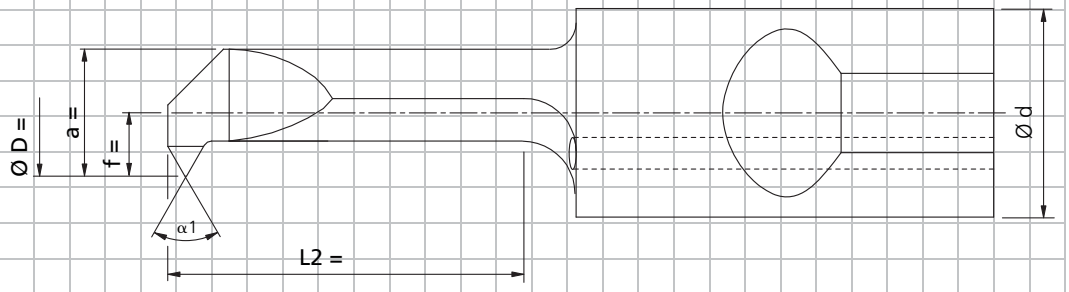


☐ Grooving



☐ Threading



Please provide workpiece sketch!

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KOMET® SEA and SX countersink tools
The choice for perfect machining results.

The tool's relief-ground taper forms the cutting edge at bore exit. KOMET® countersink tools ensure chatter-free operation even during deep countersinking.

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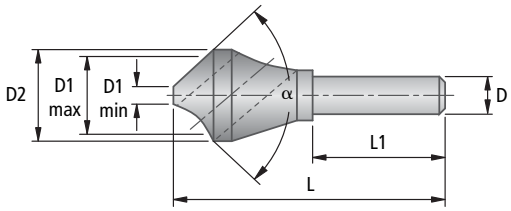
The tool forms a countersunk area that corresponds closely to the countersink's diameter. Its design ensures an optimal cutting process as well as burr-free, chatter-free countersinking and deburring.

KOMET®			Page
Countersinking and deburring tools			
SE	Ø	1 – 4 mm	240
DSE	Ø	2 – 15 mm	240
SEA	Ø	2 – 30 mm	240
SX	Ø	2.5 – 25 mm	241
SID	Ø	8 – 20 mm with pilot	241

Countersinking and deburring

Countersink SE Ø 2 - 15 mm

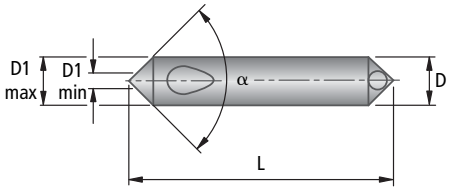
- With straight shank
- Head and body made of HSS



Countersunk area D1 min – max	α	Article	Order #	D	D2	L	L1	kg
2 – 5	90°	SE2/5-90ZYL	**H20 21011**	6	10	45	28.5	0.01
	60°	SE2/5-60ZYL	**H20 21511**	6	10	50	25	0.01
5 – 10	90°	SE5/10-90ZYL	**H20 21021**	6	14	56	30.5	0.02
	60°	SE5/10-60ZYL	**H20 21521**	6	14	63	28	0.02
10 – 15	90°	SE10/15-90ZYL	**H20 21031**	10	21	67	31.5	0.05

Countersink DSE Ø 1 - 4 mm

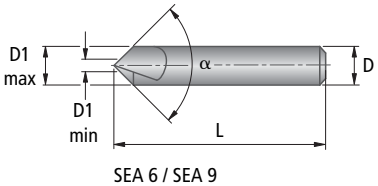
- available with 60° taper angle by special order



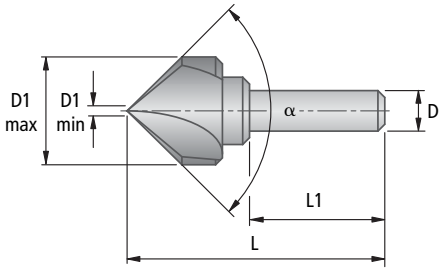
Countersunk area D1 min – max	α	Article	Order #	D	L	kg
1 – 4	90°	DSE2/5-90ZYL	**H20 21111**	6.35	45	0.01

Countersink SEA Ø 2 - 30 mm

- Head and body made of HSS *shank made of steel
- Single cutting edge

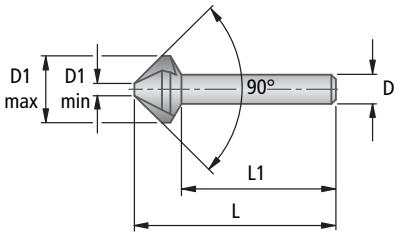


SEA 6 / SEA 9



Countersunk area D1 min – max	α	Article	Order #	D	L	L1	kg
2 – 5	90°	SEA6-90	**H20 43011**	5	50	–	0.02
2 – 10	90°	SEA9-90	**H20 43021**	10	60	–	0.03
2 – 15	90°	SEA13-90	**H20 43111**	10	65	52	0.04
2 – 20	90°	SEA19-90	**H20 43121**	10	73	48	0.06
2 – 25	90°	SEA25-90	**H20 43121**	10	80	50	0.07
3 – 30	90°	SEA32-90*	**H20 43141**	12	82	52	0.11

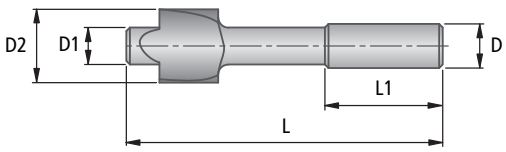
Countersinking and deburring



Countersink SX Ø 2.5 - 25 mm
With straight shank •
Made of HSS •

Countersunk area D1 min – max	Article	Order #	D	L	L1	kg	For countersink screw DIN 963 964	DIN 63 91	DIN 84	Inch
2.5 – 10.0	SX10/74-90ZYL	**H20 42011**	6	50	40.2	0.01	M5			
2.5 – 10.4	SX10.4-90ZYL	**H20 42021**	6	50	40.1	0.01		M6	M5	3/16
2.8 – 12.4	SX12.4-90ZYL	**H20 42041**	8	56	44.2	0.02			M6	1/4
3.2 – 15.0	SX15/74-90ZYL	**H20 42061**	10	60	46	0.04	M8			
3.2 – 16.5	SX16.5-90ZYL	**H20 42071**	10	60	44.8	0.04		M10	M8	5/16
3.5 – 20.5	SX20.5-90ZYL	**H20 42101**	10	63	44.6	0.05				
3.8 – 25.0	SX25-90ZYL	**H20 42121**	10	67	45.3	0.06			M12	

Your PLUS:
- Efficient, because three cutting edges are working simultaneously, making a higher feed possible.
- Even, sustained cutting, because each of the three cutters only has to cut one-third of the chamfered material.
- Highly suited also for deburring, because the tools work chatter-free and leave no burrs.



Countersink SID Ø 8 - 20 mm
With pilot for through hole •
DIN ISO 273 fine •

Countersunk area D2	Article	Order #	D	D1	L	L1	kg
8.0	SID-M4F	**H20 32121**	5	4.3	71	31.5	0.01
10.0	SID-M5F	**H20 32131**	8	5.3	80	35.5	0.03
11.0	SID-M6F	**H20 32141**	8	6.4	80	35.5	0.04
15.0	SID-M8F	**H20 32151**	12.5	8.4	100	40	0.06
18.0	SID-M10F	**H20 32161**	12.5	10.5	100	40	0.08
20.0	SID-M12F	**H20 32171**	12.5	13.0	100	40	0.10

KOMET SERVICE ® enables us to provide our customers a premium service designed to maintain the highest tool quality and ensure maximum process reliability and tool life during production.

Your PLUS:

- Standard tools and special solid carbide tools available directly from your KOMET SERVICE ® Partner.
- Individualized customer service from a regrinding expert located nearby.
- Process reliability due to original quality and, if indicated, coating.
- Reduced production costs and item costs, thanks to low volume of new purchases.
- Time savings thanks to proximity.
- Flexible, uncomplicated process.
- Access to a network of capable partners for regrinding of solid carbide saw blades, broaches and a variety of cutting tools used in the wood, paper and plastics industries.

KOMET SERVICE

KOMET SERVICE ® Page

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Form cutter	249
Pre-countersinking stage	250
Solid carbide grooving head	251
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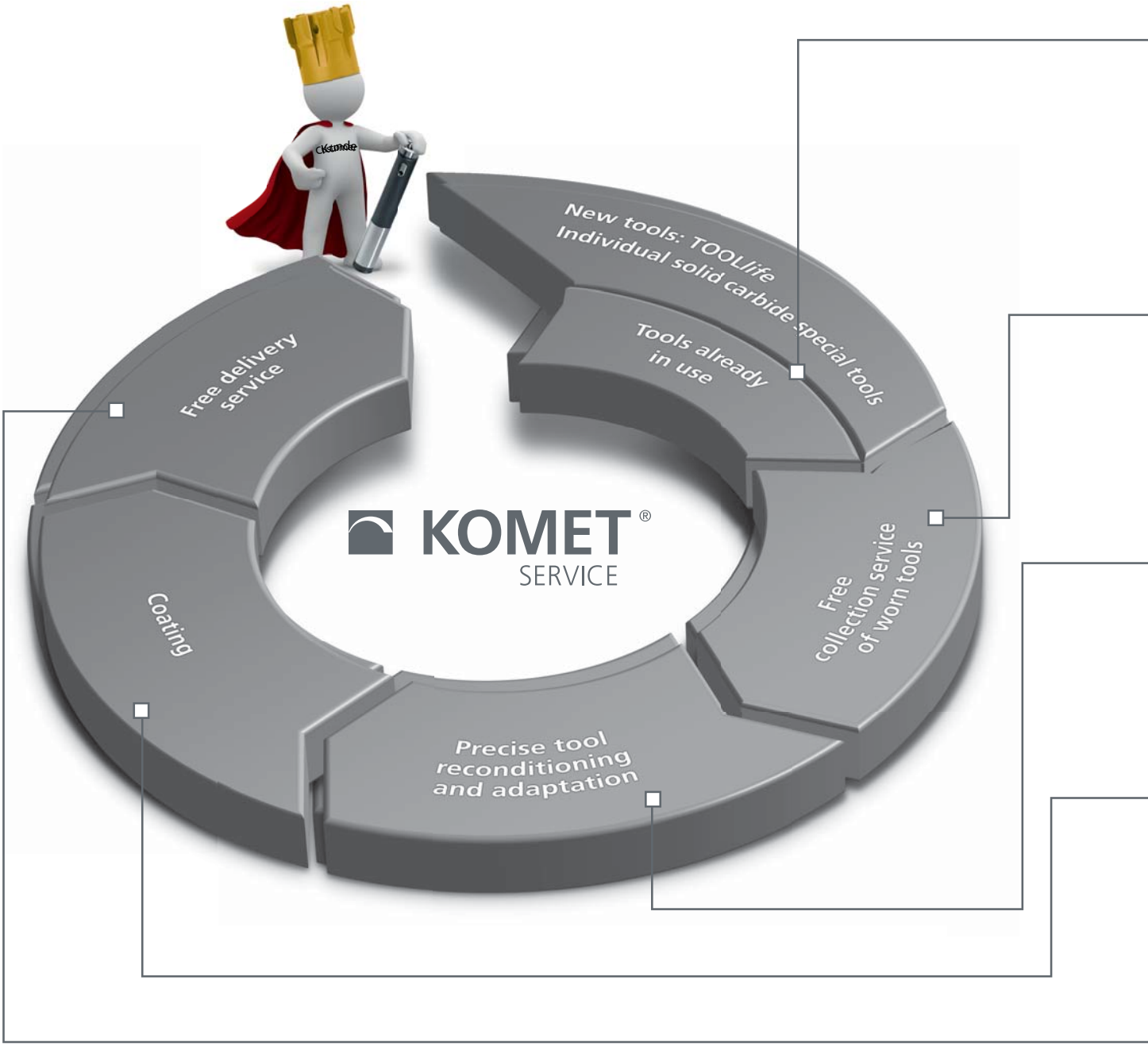
KOMET SERVICE ®
is the service brand name of the KOMET GROUP ®

A partner network of fast, flexible and local tool grinding shops, providing you with a single source for standard tools and made to order special solid carbide tools.

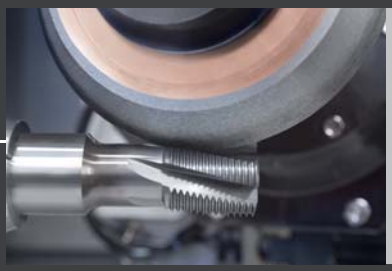


From stock or individually manufactured

Get your solid carbide TOOLlife tools directly from your KOMET SERVICE® partner or have your own customized solid carbide special tools manufactured. Your KOMET SERVICE® partner will happily refurbish these tools along with all tools from other brands.

One call does it all

Get on a regular pick-up schedule or arrange a one-time pick-up of your tools needing refurbishment by your KOMET SERVICE® partner. It's fast and it's free.



Tool refurbished to original quality

Our refurbishing experts fairly assess the current state of your tools (irrespective of the manufacturer) in order to recommend refurbishment or replacement. KOMET GROUP tools are refurbished according to strict criteria to restore the original geometry or original tipping. By request you receive a measurement report. Our partners will also professionally modify tools for you, quickly and flexibly.

Coating – fully customized

KOMET GROUP tools are of course given the original coatings once more. We customize our service to your needs, even with other standard coatings, all within a few days.

Just-in-time delivery

Your KOMET SERVICE® partner will return your KOMET GROUP tools refurbished to their original quality within 5 or 10 days (without or with coating) – safely stored in the KOMET SERVICE® TOOL *life* box.

KOMET SERVICE ®
Special solid carbide tools

Custom workpieces call for customized tools. It can make it necessary to work outside a standard tool program for the sake of cost-effective and efficient manufacturing.

For these situations, KOMET SERVICE ® offers solutions tailored to your requirements with customized manufacturing of special tools.

Using the most advanced CNC technology, we fabricate customized solid carbide special tools to customer specifications for all cutting applications.

Whether it involves step drills, milling cutters, form cutters or solid carbid groove heads – we offer you an unbeatable price-performance point for your solid carbide special tools.

KOMET SERVICE ® lets you configure special tools to your specific requirements. Simply fill out the quote request form and fax it to your KOMET SERVICE ® Partner. You will receive a comprehensive quote back in short order.

Of course, your professional KOMET SERVICE ® Partner is always ready to consult with you in person.

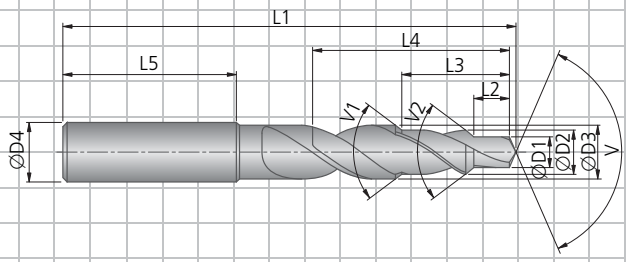
Fax to KOMET SERVICE ® at 1-800-865-6638

KOMET SERVICE

Special tool quote request: Step drill

Company:	Contact:
Customer #:	Department:
Address:	Phone:
	Fax:
	E-Mail:

Workpiece sketch:



Tool: Step drill	Dimension	Tolerance
Ø D1		
Ø D2		
Ø D3		
Shank- D4		
L1		
L2		
L3		
L4		
Shank length L5		
Point angle V		
Chamfer angle V1		
Chamfer angle V2		

Workpiece:

Tools required _____pieces

Workpiece _____pieces / year

Work material to be machined:

- ☐ Structural steel, good machining qualities
- ☐ Tool steel
- ☐ Stainless steels
- ☐ Hardened steel
- ☐ Malleable iron
- ☐ Spheroidal cast iron
- ☐ Non-ferrous metals (brittle)
- ☐ Non-ferrous metals (ductile)
- ☐ Other

Material description
Strength Rm (N/mm²)
Hardness (HRc, HB, HV, ...)

Number of cutting edges z	☐ 2	☐ 3
Straight toothed	☐	
R.H. spiraled, spiral angle λ	☐ λ =	
L.H. spiraled, spiral angle λ	☐ λ =	
Cutting direction	☐ Right	☐ Left
Coating	☐ Yes	☐ No
Internal coolant supply	☐ Yes	☐ No
Straight shank DIN 6535	☐ HA ☐ HE ☐ HB ☐ Other:	
Machine info		
Machine type		
Spindle type / size		
Spindle outpout (kW)		
Cutting speed v_C (m/min)		

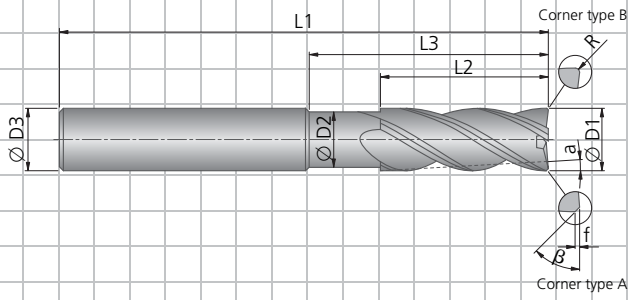
Fax to KOMET SERVICE® at 1-800-865-6638

KOMET SERVICE

Special tool quote request: Milling cutter

Company:	Contact:
Customer #:	Department:
Address:	Phone:
	Fax:
	E-Mail:

Workpiece sketch:



Workpiece:

Tools required _____pieces

Workpiece _____pieces / year

Work material to be machined:

- ☐ Structural steel, good machining qualities
- ☐ Tool steel
- ☐ Stainless steels
- ☐ Hardened steel
- ☐ Malleable iron
- ☐ Spheroidal cast iron
- ☐ Non-ferrous metals (brittle)
- ☐ Non-ferrous metals (ductile)
- ☐ Other

Material description

Strength Rm (N/mm²)

Hardness (HRc, HB, HV, ...)

Tool: Milling cutter	Dimension	Tolerance
Machining ☐ Roughing ☐ Finishing		
D1		
Neck recess	☐ Yes	☐ No
Neck- D2		
Shank- D3		
L1		
L2		
L3		
Tapered	☐ Yes	☐ No
Taper angle α		
Number of cutting edges z		
Face milling	☐ Yes	☐ No
Spot facing	☐ Yes	☐ No
Corner type	☐ A	☐ B
Corner radius R		
Chamfer f		
Chamfer angle β	☐ 45°	☐ ____°
Straight toothed	☐	
R.H. spiraled, spiral angle λ	☐ λ =	
L.H. spiraled, spiral angle λ	☐ λ =	
Cutting direction	☐ Right	☐ Left
Coating	☐ Yes	☐ No
Internal coolant supply & coolant outlet	☐ Yes: ☐ Lateral ☐ Central	
	☐ No	
Straight shank DIN 6535	☐ HA ☐ HE ☐ HB ☐ Other:	
Machine info		
Machine type		
Spindle type / size		
Spindle outpout (kW)		
Cutting speed v_C (m/min)		

Fax to KOMET SERVICE® at 1-800-865-6638

KOMET SERVICE

Special tool quote request: Form cutter

Company:	Contact:
Customer #:	Department:
Address:	Phone:
	Fax:
	E-Mail:

Workpiece sketch:

Workpiece:

Tools required _____pieces

Workpiece _____pieces / year

Work material to be machined:

- ☐ Structural steel, good machining qualities
- ☐ Tool steel
- ☐ Stainless steels
- ☐ Hardened steel
- ☐ Malleable iron
- ☐ Spheroidal cast iron
- ☐ Non-ferrous metals (brittle)
- ☐ Non-ferrous metals (ductile)
- ☐ Other

Material description
Strength Rm (N/mm²)
Hardness (HRc, HB, HV, ...)

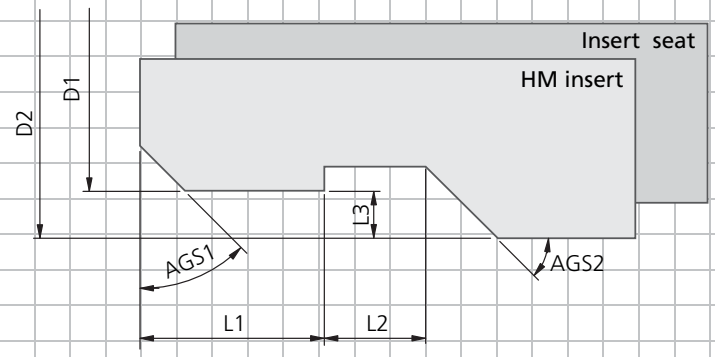
Tool: Form cutter	Dimension	Tolerance
Shank- D		
Total length		
Number of cutting edges z		
Straight toothed	☐	
R.H. spiraled, spiral angle λ	☐ λ =	
L.H. spiraled, spiral angle λ	☐ λ =	
Cutting direction	☐ Right	☐ Left
Coating	☐ Yes	☐ No
Internal coolant supply & coolant outlet	☐ Yes: ☐ Lateral ☐ Central ☐ No	
Straight shank DIN 6535	☐ HA ☐ HE ☐ HB ☐ Other:	
Machine info		
Machine type		
Spindle type / size		
Spindle outpout (kW)		
Cutting speed v_C (m/min)		

Fax to KOMET SERVICE® at 1-800-865-6638

KOMET SERVICE

Special tool quote request: Pre-countersinking tool

Company:	Contact:
Customer #:	Department:
Address:	Phone:
	Fax:
	E-Mail:



Pre-countersinking tool	Dimension
Ø D1	
Ø D2	
L1	
L2	
L3	
ASG1	
ASG2	

Tool type:

- ☐ Monomax®
- ☐ Cutting ring
- ☐ Reamax® TS
- ☐ Rapid Set heads

Fax to KOMET SERVICE® at 1-800-865-6638

KOMET SERVICE

Quote request: Solid carbide grooving head

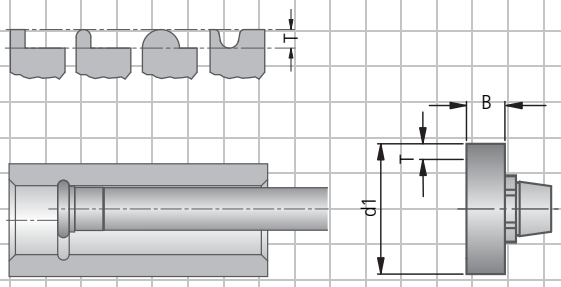
Company:	Contact:
Customer #:	Department:
Address:	Phone:
	Fax:
	E-Mail:

Type of groove:

Grooving head
Available in a variety of shapes by special order
Solid carbide version
Cylindrical connection of d1=34

Workpiece:
Tools required _____pieces
Workpiece _____pieces / year

Groove form examples



Work material to be machined:

- ☐ Structural steel, good machining qualities
- ☐ Tool steel
- ☐ Stainless steels
- ☐ Hardened steel
- ☐ Malleable iron
- ☐ Spheroidal cast iron
- ☐ Non-ferrous metals (brittle)
- ☐ Non-ferrous metals (ductile)
- ☐ Other

Material description
Strength Rm (N/mm²)
Hardness (HRc, HB, HV, ...)

Parameters			
d1	B	T	Hole d
max	max	max	min
16	4.5	1.4	16.5
20	5.5	2.4	20.5
34	9.5	3.5	34.5

KOMET SERVICE®

KOMET SERVICE® offers our customers additional service benefits that help ensure a consistent, optimal tool quality in order to maximize process reliability in production.

KOMET SERVICE® includes professional re-grinding, original re-coating, high-precision refurbishing and a complete range of standard and simple special carbide tools.

Our KOMET SERVICE® partners are your competent, local contacts for professional tool processing. They offer you everything from a single source; fast, easy, and complete:

- Pickup and delivery services that will save you time,
- Fast delivery thanks to close proximity,
- Ease of use: just drop your tools in our box and they do the rest
- Expedited re-grinding services to support you in case of emergency,
- Measuring log of re-ground tools for your safety, and
- Transparent quotes and clear costs.

KOMET SERVICE® Partner – your opportunity!

Our objective is to establish a nationwide network of professional KOMET SERVICE® partners. As an independent entrepreneur you can now secure all of the advantages of the partner concept.

KOMET SERVICE®

Services that maximize tool life and minimize costs for our customers.

- **Professional re-grinding**
  Our re-grinding services offer consistent, high-quality standards and reproducible results. Customers take advantage of the outstanding value of our re-grinding services for tools of all brands.

- **Original re-coating**
  We guarantee the original coating for KOMET®, JEL® and DIHART® brand tools. This ensures the optimal adhesion of the new coating and maximum functionality of the re-coated tool.

- **Standard carbide tools**
  You can offer our customers the readily available range of solid carbide tools from the KOMET GROUP:

  • KOMET® drilling and milling tools
  • JEL® threading tools
  • DIHART® reaming tools

- **Special carbide tools**
  We support you with the design of special carbide tools for our customers. Special step tools with multiple blades and specific geometries can be configured to meet each customer's specific needs.

- **Tool refurbishment, well worthwhile!**
  The certified KOMET SERVICE® partners provide professional tool refurbishment and professional advice.

  • They inspect the tools individually according to strict criteria for the restoration of the original geometry and/or fitting.
  • They assess the tool condition fairly, and recommend refurbishment or replacement based on the wear level.
  • They follow a strictly controlled and documented process and use high-tech machines to perform the re-grinding operations.

  This enables the refurbishment of a tool which will provide a cutting performance of up to 100% of that of a new tool.

IDEAS FACTORY +

A factory for ideas

The IDEAS FACTORY reflects the evolution of the KOMET GROUP from a tool manufacturer into a creative source of expert solutions covering all facets of boring, reaming, thread milling and mechatronic tools.

Our key objective is to offer our customers and employees scope for creative work and learning.

We deliberately integrated the IDEAS FACTORY with our modern, multi-story Besigheim 2,500 m² factory complex in order to have it located above a working manufacturing facility instead of in a stand-alone, off-site training facility.

While the metal chips fly downstairs, ideas percolate upstairs. In this way we visibly associate the work we do here with new ideas and creative drive.

With the IDEAS FACTORY and our comprehensive seminar program for customer and for employee training, we aim to provide our customers with a measurable and permanent competitive advantage in their markets.

If you would like to know more about our professional seminars, please contact us for a free course catalog.

TOOLS + IDEAS

The KOMET GROUP is the worldwide technology leader in innovative tool concepts and complete solutions for bore machining.

Our customers know us as a manufacturer of premium tools, and they know the ideas behind our solutions. We strive continually to exploit their unrealized potential added value for our customers' benefit.

We call this TOOLS+IDEAS. It is a a new and different concept for providing our customers with long-term, sustainable advantages through incremental value-added support and services.

With our IDEAS FACTORY in Besigheim we have taken the first step toward this goal.

KOMET®

More information

	Page
Power calculations	256 - 259
Usage and safety notes	260 - 261
International materials cross reference	262 - 263

Power calculations

The k_c values depend on the feed rate. The table therefore shows their upper limits. As a result, the power calculation may be slightly higher (~ 10 – 20%) than the actual performance required. This is intentional because of variability in the effective level and safeguards against poor outcomes.

Material group		Strength Rm (N/mm²)	Hardness HB	Material	Materials example, material code ANSI / SAE	Specific cutting force k_c (N/mm²)
P	1.0	≤500		Non-alloy steels: structural, heat treated, machining and cast steels	1010 1144 1213	1,740
P	2.0	500-900		Non-alloy / low alloy steels: structural, heat resistant, heat treated, tool and cast steels	1055 5115 5120	2,060
P	2.1	<500		Lead alloy machining steels	12L14	1,250
P	3.0	>900		Non alloy / low alloy steels: heat resistant structural, heat treated, nitride and tools steels	1064 4140	2,450
P	4.0	>900		High alloy steels, tool steels	H13 H21	1,820
P	4.1			HSS	M10 T4	1,860
S	5.0		250	Special alloys: Inconel, Hastelloy, Nimonic, stc.	Inconel® 718 Nimonic® 80A	2,090
S	5.1	400		Titanium, titanium alloys	Ti-6Al-4V	1,370
M	6.0	≤600		Stainless steels	304L 316	2,400
M	6.1	<900		Stainless steels	630	2,530
M	7.0	>900		Stainless / fireproof steels	403 420	2,580
K	8.0		180	Gray cast iron	Class 25 G3000	1,140
K	8.1		250	Alloy gray cast iron	A436 Type 2	1,280
K	9.0	≤600	130	Spheroidal graphite cast iron, ferritic	60-40-18 D4512	1,080
K	9.1		230	Spheroidal graphite cast iron, ferritic/perlitic	80-55-06 D5506	1,135
K	10.0	>600	250	spheroidal graphite cast iron, perlitic malleable iron	100-70-03 07003	1,050
K	10.1		200	Alloyed spheroidal graphite cast iron	A43D2	1,180
K	10.2		300	Vermicular cast iron		1050
N	12.0		90	Copper alloy, brass, lead-alloy bronze, lead bronze: good cut	316	780
N	12.1		100	Copper alloy, brass, bronze: average cut		780
N	13.0		60	Wrought aluminum alloys	6151 7075	650
N	13.1		75	Cast aluminum alloy: Si-content <10% magnesium alloy	380 A356.0	780
N	14.0		100	cast alum.alloy: Si-content >10%	383 A413.0	830
H	15.0	1,400		hardened steels < 45 HRC		2,880
H	16.0	1,800		hardened steels > 45 HRC		3,300

Important: See page 260-261 for usage and safety notes!

Solid drilling

Machine nominal power in kW

$$P_a = \frac{v_c \times f \times D \times k_c}{1{,}000 \times 60 \times 4 \times \eta}$$

The required feed F_f is approx.:

$$F_f \sim 0.7 \times \frac{D}{2} \times f \times k_c$$

Example: Material 42CrMo4, bore diameter 40 mm

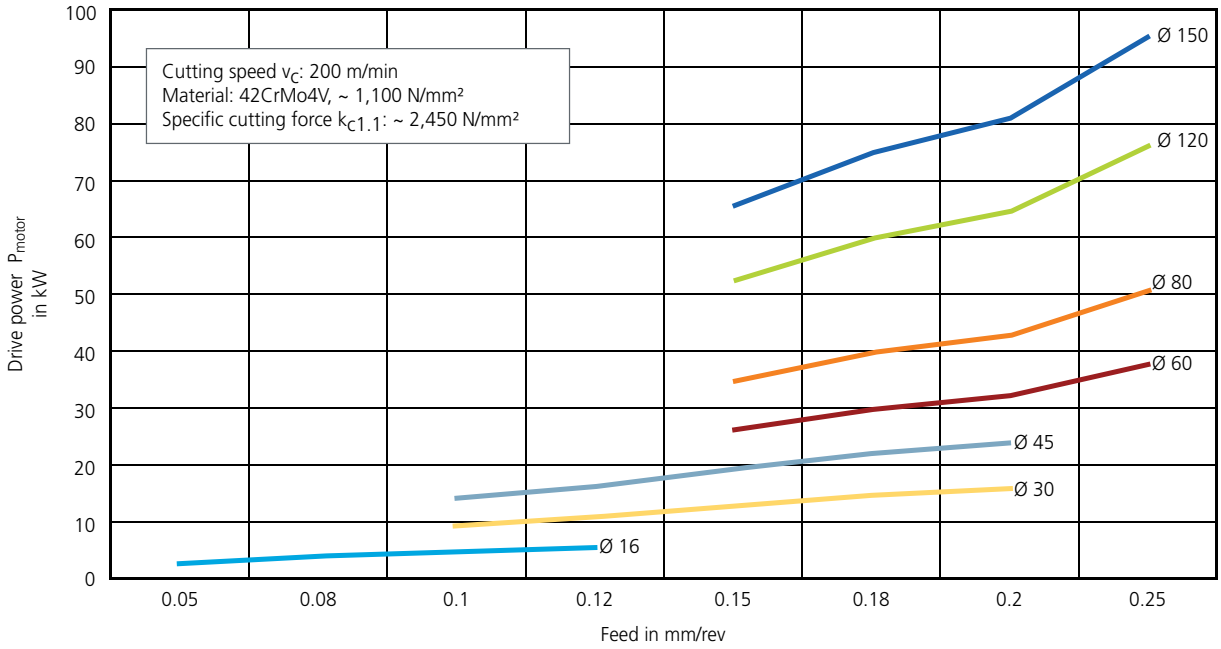
f = feed in mm/rev	= 0.15 mm/rev
k_c = special cutting force in N/mm²	= 2,450 N/mm²
D = diameter in mm	= 40 mm
v_c = cutting speed in m/min	= 180 m/min
η = machine output 0.7-0.85 (0.8)	= 0.8

$$P_a = \frac{180 \times 0.15 \times 40 \times 2450}{1000 \times 60 \times 4 \times 0.8} = 13.8 \text{ kW}$$

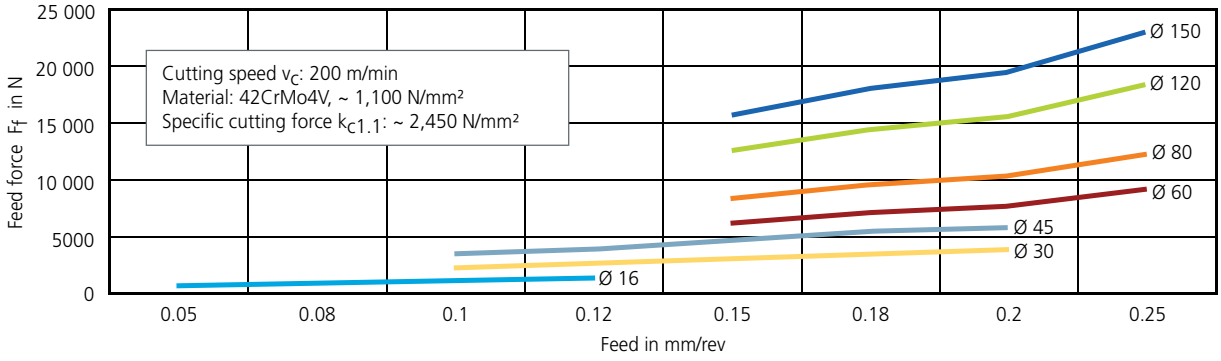
$$F_f \approx 0.7 \times \frac{40}{2} \times 0.15 \times 2450 = 5145 \text{ N}$$

Power calculations

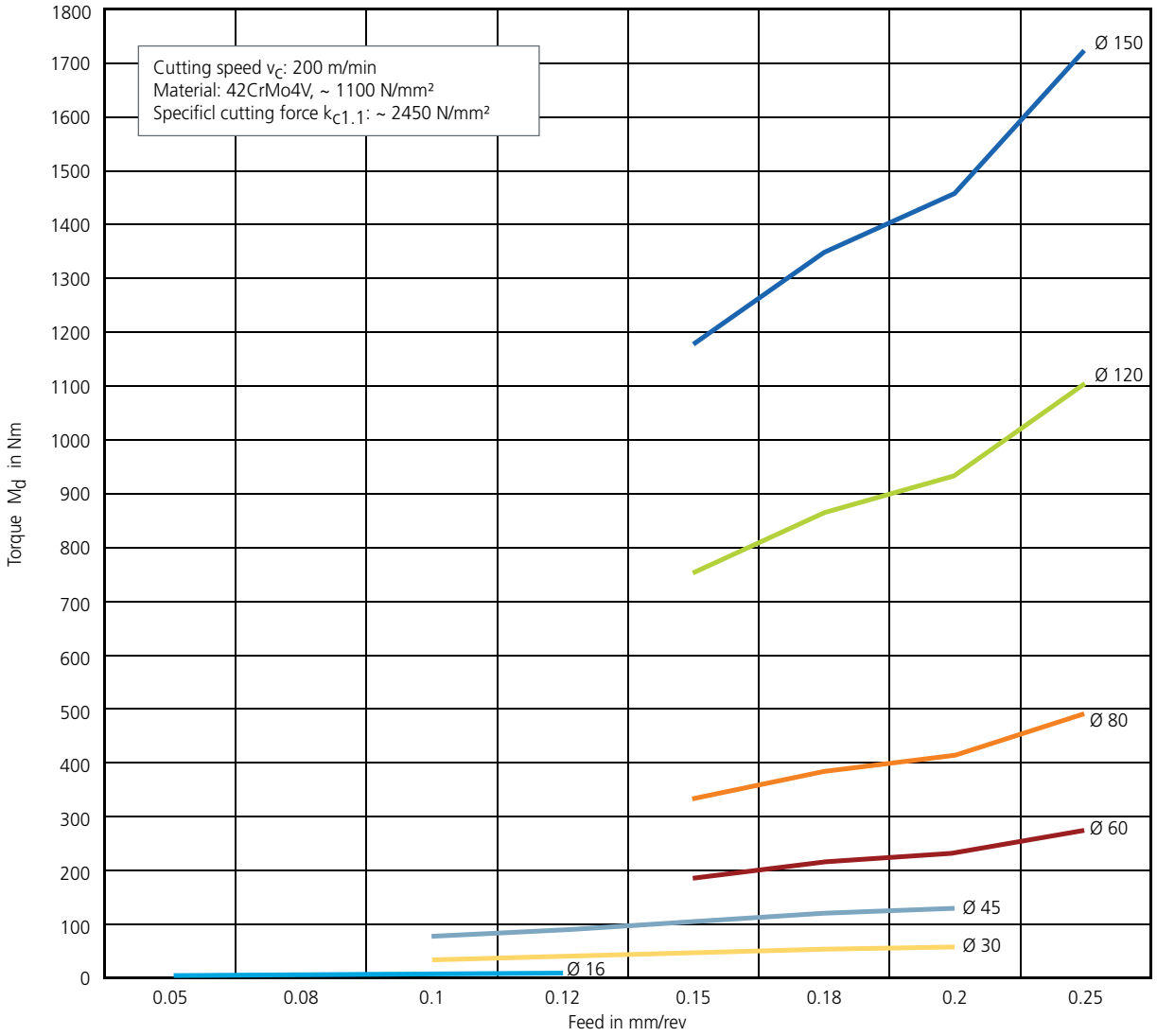
Drive power kW



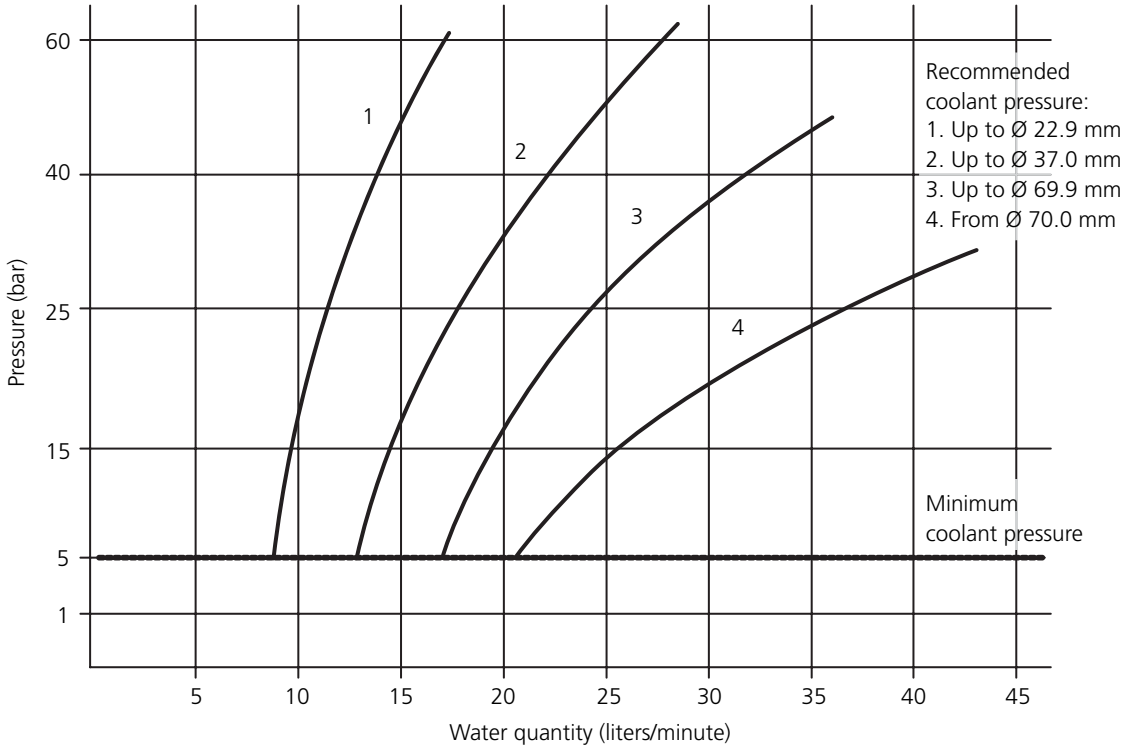
Feed force F_f



Torque M_d


Cutting speed v_c: 200 m/min
Material: 42CrMo4V, ~ 1100 N/mm²
Specificl cutting force $k_{c1.1}$: ~ 2450 N/mm²
Torque M_d in Nm
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
0.05
0.08
0.1
0.12
0.15
0.18
0.2
0.25
Feed in mm/rev
Ø 150
Ø 120
Ø 80
Ø 60
Ø 45
Ø 30
Ø 16

Coolant flow / coolant pressure:



Balancing note:

Tool holders or adapters are only balanced as delivered, i.e. no allowance is made for inserted tools which can alter it, e.g., boring tools, milling cutters, inserts, etc. When used at high speeds, we recommend performing precision balancing when the tool is in its ready to use state.

Safety notes:

- **Important note!** When the drill exits a bore hole, a disc like the one pictured will be ejected. Due to centrifugal forces from rotating components, this can result in accidents. Please take appropriate protective measures.

- The technical notes provided in the application details depend on the environmental and application conditions (such as machine used, ambient temperature, lubrication/coolant used and desired machining results): these are based on proper usage conditions, and compliance with the spindle speed limits given for the tools.

- To prevent damage to machine and tool, we recommend that the drive power be calculated in advance (see power calculations on previous pages). The available drive power will be found in the machine manufacturer's spindle speed/performance diagram.

- Safety equipment should be provided to protect personnel from flying chips. Please see our safety note (enclosed with our package).

- To ensure the best possible tool life, insert should be changed promptly.
  Acceptable width of flank wear marks on inserts: W29 10... to W29 18... VB max = 0.20 mm
  W29 24... to W29 34... VB max = 0.25 mm
  W29 42... to W29 58... VB max = 0.30 mm

Hazard warning:

If using tungsten carbide-based solid carbide products together with cobalt as a binder metal, please read our material safety data sheets, available from our website, www.komet.com/navigation-top/download/msds.html

			DIN	ANSI / SAE	BS EN	AFNOR	SS	UNI	UNE	JIS
P	1.0	1.0038	RSt37-2	A570-36	4360 40C	E24-2NE	1311			
	1.0	1.0116	St37-3	A573-81 65	4360 40B	E24-U	1312			
	1.0	1.0144	St44-3	A573-81	4360 43C	E28-4	1412			
	1.0	1.0201	St36	1006		Fd5	1160			
	1.0	1.0345	H1	A515 65	1 501 161	A37CP	1330			
	2.0	1.0401	C15	1015;1016;1017	080M15	CC12	1350	C15C16	F.111	
	2.0	1.0402	C22	1020;1023	055M15;070M20 ... 2C	AF42C20;XC25;1C22	1450	C20; C21; C25	1C22F.112	S20C; S22C
	2.0	1.0436	Ast45	A662C	1 501 224	A48FP	2103			
	2.0	1.0443	GS-45	A27 65-35	A1	E23-45M				
	2.0	1.0473	19Mn6	A537 1	1 501 224	A52CP	2101			
	2.0	1.0501	C35	1035	060A35	CC35	1550	C35	F.113	
	2.0	1.0503	C45	1043	080M46	AF65C45	1650	C45	F.5110	
	2.0	1.0503	C45	1045	080M46	CC45	1650	C45	F.114	
	2.0	1.0511	C40	1040	080M40	AF60C40		C40	F.114.A	
	2.0	1.0535	C55	1055	070M55		1655	C55	F.115	
	2.0	1.0551	GS-52	A27 70-36	A2	280-480M	1505			
	2.0	1.0553	GS-60	A148 80-40	A3	320-560M	1606			
	2.0	1.0577	Ast 52	A738	1 501 224	A52FP	2107			
	2.0	1.0601	C60	1060	080A62 ... 43D	CC55		C60		
	2.0	1.0841	St52-3	5120	150M19	20MC5	2172	Fe52	F.431	
	2.0	1.1121	Ck10	1010	045M10	XC10	1265	C10	F.1510-C10K	
	2.0	1.1133	20Mn5	1022;1518	120M19	20M5	1132	G22Mn3;20Mn7	F.1515-20Mn6	SMnC420
	2.0	1.1141	CK 15	1015, 1017	080M15	XC18	1370		F.1511	
	2.0	1.1158	C25E;Ck25	1025	070M26	2C25;XC25	1450	C25	F.1120-C25k	S25C; S28C
	2.0	1.1183	Cf35	1035	060A35	XC38TS	1572	C36		S35C
	2.0	1.1191	Ck45	1042	080A47	XC45	1660	C45	F.1140	
	2.0	1.1545	C105W1	W110	BW1A	Y105	1880	C36KU	F.5118	SK3
	2.0	1.5415	15Mo3	ASTM A204Gr.A	1501-240	15D3	2912	16Mo3KW	16Mo3	STBA 12
	2.0	1.5423	16Mo5	4520	1503-245-420			16Mo5	16Mo5	
	2.0	1.5622	14Ni6	ASTM A350LF5		16N6		14Ni6	15Ni6	
	2.1	1.0715	9 SMn28	1213	230M07	S250	1912	CF9SMn28	11SMn28	SUM22
	2.1	1.0718	9 SMnPb28	12 L 13		S250Pb	1914	CF9SMnPb28	11SMnPb28	SUM22,3,4L
	2.1	1.0722	10 SPb20	11 L 08		10PbF2		CF10 SPb20	10SPb20	
	2.1	1.0726	35S20	1140	212M36 ... 8M	35M F6	1957		F.210.G	
	2.1	1.0727	45S20	1146		45M F4	1973			
	2.1	1.0736	9SMn36	1215	240M07 ... 1b	S300		CF9SMn36	12SMn35	SUM25
	2.1	1.0737	9SMnPb36	12 L 14		S300Pb	1926	CF9SMnPb36	12SMnP35	
	3.0	1.0904	55Si7	9255	250A53 ... 45	55S7	2085	55Si8	56Si7	
	3.0	1.0961	60SiCr8	9262		60SC6		60SiCr8	60SiCr8	
	3.0	1.1157	40Mn4	1039	150M36 ... 15	35M5				
	3.0	1.1167	36Mn5	1335	150M36	40M5	2120		36Mn5	SMn438(H)
	3.0	1.1170	28Mn6	1330	150M28 ... 14A	20M5		C28Mn		SCMn1
	3.0	1.1203	Ck55	1055	070M55	XC55		C50	F.1203-36MnG	S55C
	3.0	1.1213	Cf53	1050	060A52	XC48TS	1674	C53		S50C
	3.0	1.1221	Ck60	1064	060A62	XC65	1678	C60	F.1150	
	3.0	1.1231	Ck67	1070	070A72	XC68	1770	C70	F.141	
	3.0	1.1248	Ck75	1080	060A78	XC75	1774		F.5107	
	3.0	1.1274	Ck101	1095	060A96	XC100	1870		F.5117	
	3.0	1.2713	55NiCrMoV6	L6		55NCDV7			F.520.S	SKT4
	3.0	1.2721	50NiCr13	L6		55NCV6	2550		F.528.S	
	3.0	1.3401	G-X120Mn12	ASTM A128 75	BW10	Z120M12	2183	GX120Mn12	AM-X120Mn12	SCMnH/1
	3.0	1.3505	100Cr6	52100	534A99 ... 31	100C6	2258	100Cr6	F.131	SUJ2
	3.0	1.5662	X8Ni9	ASM A353	502-650	9 Ni		X10Ni9	F.2645	SL9N60(53)
	3.0	1.5680	12Ni19	2515 (2517)	12Ni19	Z18N5		12Ni19	12Ni19	SL5N60
	3.0	1.5710	36NiCr6	3135	640A35 ... 111A	35NC6				SNC236
	3.0	1.5732	14NilCr10	3415		14NC11		16NiCr11	15NiCr11	SNC415(H)
	3.0	1.5752	14NilCr14	3310	655M13 ... 36A	12NC15				SNC815(H)
	3.0	1.6511	36CrNiMo4	9840	816M40 ... 110	40NCD3		36NiCrMo4(KB)	F.128	
	3.0	1.6523	21NiCrMo2	8620, 8617	805M20 ... 362	20NCD2	2506	20NiCrMo2	20NiCrMo2	SNCM220(H)
	3.0	1.6546	40NiCrMo22	8740, 8640, 8742	311-Type 7	40NCD2		40NiCrMo2(KB)	F.129	SNCM240
	3.0	1.6582	35CrNiMo6	4340	817M40 ... 24	35NCD6	2541	35NiCrMo6(KB)	F.127	
	3.0	1.6587	17CrNiMo6	4317	820A16	18NCD6			14NiCrMo13	
	3.0	1.6657	14NiCrMo13-4	9310	832M13 ... 36C			15NiCrMo13	14NiCrMo131	
	3.0	1.7015	15Cr3	5015	523M15	12C3				SCr415(H)
	3.0	1.7033	34Cr4	5132	530A32 ... 18B	32C4		34Cr4(KB)	35Cr4	SCr430(H)
	3.0	1.7035	41Cr4	5140	530M40 ... 18	42C4		41Cr4	42Cr4	SCr440(H)
	3.0	1.7039	34MoCrS4 G	L1	524A14		2092	105WCR 5		
	3.0	1.7045	42Cr4	5140			2245		42Cr4	SCr440
	3.0	1.7131	16MnCr5	5115	(527M20)	16MC5	2511	16MnCr5	16MnCr5	
	3.0	1.7139	16MnCr5				2127			
	3.0	1.7176	55Cr3	5155	527A60 ... 48	55C3				SUP9(A)
	3.0	1.7218	25CrMo4	4130	1717CDS110	25CD4	2225	25CrMo4(KB)	55Cr3	SCM420/430
	3.0	1.7220	34CrMo4	4135, 4137	34CrMo4	34CD4	2234	35CrMo4	34CrMo4	SCM435TK
	3.0	1.7223	41CrMo4	4142				41CrMo4	42CrMo4	SNB 22-1
	3.0	1.7225	42CrMo4	4140	708M40 ... 19A	42CD4	2244	42CrMo4	42CrMo4	SCM440(H)
	3.0	1.7262	15CrMo5			12CD4	2216		12CrMo4	SCM415(H)
	3.0	1.7335	13CrMo4 4	ASTM A182 F-12				14CrMo4 5	14CrMo45	
	3.0	1.7337	16CrMo44	ASTM A387 12-2	1501 620	15CD 4.5	2216	12CrMo910		
	3.0	1.7361	32CrMo12		722M24 ... 40B	30CD12	2240	32CrMo12	F.124.A	
	3.0	1.7715	14MoV6 3		1503-660-440				13MoCrV6	
	3.0	1.8159	50CrV4	6150				50CrV4	F.143	
	3.0	1.8509	41CrAlMo7	ASTM A290	905M39 ... 41B	40CAD6, 12	2940	41CrAlMo7	41CrAlMo7	
	3.0	1.8515	31 CeMo 12		722M24	30 CD 12	2240	30CrMo12	F.01712	
	3.0	1.8523	39CrMoV13 9		897M39 ... 40C			36CrMoV12		
	4.0	1.2067	100Cr6	L3	BL3	Y100C6			100Cr6	
	4.0	1.2080	X210Cr12	D3	BD3	Z200C12		X210Cr13KU	X210Cr12	SKD1
	4.0	1.2083	X42Cr13			X40Cr14	2314		F.5263	
	4.0	1.2344	X40CrMoV5 1	H13	BH13	Z40CDV5	2242	X40CrMoV511KU	F.5318	SKD61

			DIN	ANSI / SAE	BS EN	AFNOR	SS	UNI	UNE	JIS
P	4.0	1.2363	X100CrMoV5 1	A2	BA2	Z100CDV5	2260	X100CrMoV51KU	F.5227	SKD12
	4.0	1.2379	X155CrVMo121	D2	BD2	Z160CDV12	2310	X155CrVMo12 1KU	F.520.A	SKD11
	4.0	1.2419	105WCr6			105WC13	2140	107WCr5	105WCr5	SKS31
	4.0	1.2436	X210 CrW 12	D4 (D6)	BD6	Z200CD12-01	2312	X215CrW12 1KU	F.5213	
	4.0	1.2542	45WCrV7	S1	BS1	45WCrV8	2710	45WCrV8KU	F.524	
	4.0	1.2581	X30WCrV9 3	H21	BH21	Z30WCV9		X30WCrV9 3KU	F.526	SKD5
	4.0	1.2601	X165CrMoV12				2310	X165CrMoW12KU	F.5211	
	4.1	1.3243	S6/5/2/5	M35	BM35	6-5-2-5	2723	HS6 5 2 5	F.5613	SKH55
	4.1	1.3343	S6/5/2	M2	BM2	Z85WDCV	2722	HS6 5 2	F.5604	SKH51
	4.1	1.3348	S2/9/2	M7		2 9 2	2782	HS2 9 2		
S	5.0	–	CoCr22W14	AMS 5772		KC22				
	5.0	1.4362	X2CrNiN23 4	S32304		Z2CN23-04AZ	2327			
	5.0	1.4460	X8CrNiMo27-5	S32900			2324			
	5.0	1.4462	X2CrNiMoN2253	S31803		Z2CND22-05-03	2377			
	5.0	2.4375	NiCu30Al	4676	3072-76					
	5.0	2.4603	NiCr 30 FeMo	5390A		NC22FeD				
	5.0	2.4630	NiCr20Ti		HR5,203-4	NC20T				
	5.0	2.4631	NiCr20TiAk		Hr40,601	NC20TA				
	5.0	2.4856	NiCr22Mo9N	5666		NC22FeDNB				
	5.0	2.4973	NiCr19Co11	AMS 5399		NC19KDT				
	5.0	LW2 467	S-NiCr13A16	5391	3146-3	NC12AD				
	5.0	LW2.466	NiFe35Cr14	5660		ZSNCDT42				
	5.0	LW2.466	NiCr19Fe19	5383	HR8	NC19FeNb				
	5.0	LW2.466	NiCr19Fe19	AMS 5544		NC20K14				
	5.0	LW2.467	NiCo15Cr10	AMS 5397						
	5.0	LW2.496	CoCr20W15	5537C		KC20WN				
	5.1	–	TiAl4Mo4Sn4Si0.5							
	5.1	–	TiAl6V4ELI	AMS R56401	TA11					
	5.1	3.7114	TiAl5Sn2.5	AMS R54520	TA14/17	T-A5E				
	5.1	3.7164	TiAl6V4	AMS R56400	TA10-13/TA2	T-A6V				
M	6.0	1.4000	X7Cr13	403	403S17	Z6C13	2301	X6Cr13	F.3110	SUS403
	6.0	1.4006	X10Cr13	410	410S21 ... 56A	Z10C14	2302	X12Cr13	F.3401	SUS410
	6.0	1.4021	X20Cr13	420	420S37	Z20C13	2303	X20Cr13		
	6.0	1.4034	X46Cr13		420S45 ... 56D	Z40CM	2304	X40Cr14	F.3405	SUS420J2
	6.0	1.4057	X22CrNi17	431	431S29 ... 57	Z15CNi6.02	2321	X16CrNi16	F.3427	SUS431
	6.0	1.4104	X12CrMoS17	430F		Z10CF17	2383	X10CrS17	F.3117	SUS430F
	6.0	1.4112	X90 CrMoV 18	440B						
	6.0	1.4113	X6CrMo17	434	434S17	Z8CD17.01	2325	X8CrMo17		SUS434
	6.0	1.4305	X12CrNiS18 8	303	303S21 ... 58M	Z10CNF18.09	2346	X10CrNiS18.09	F.3508	SUS303
	6.0	1.4306	X2CrNiN18 9	304L	304S12	Z2CrNi18 10	2352	X2CrNi18 11	F.3503	SCS19
	6.0	1.4310	X12CrNi17 7	301		Z12CN17.07	2331	X12CrNi17 07	F.3517	SUS301
	6.0	1.4311	X4CrNiN18 10	304LN	304S62	Z2CN18.10	2371			SUS304LN
	6.0	1.4313	X5CrNi13 4		425C11	Z4CND13.4M				SCS5
	6.0	1.4350	X5CrNi189	304	304S31 ... 58E	Z6CN18.09	2332/2333	X5CrNi18 10	F.3551	SUS304
	6.0	1.4401	X5CrNiMo18 10	316	316S16 ... 58J	Z2CND17.11	2347	X5CrNiMo17 12	F.3543	SUS316
	6.1	1.4429	X2CrNiMoN1813	316LN		Z2CND17.13	2375			SUS316LN
	6.1	1.4435	X2CrNiMo18 12	316L	316S13	Z2CND17.12	2353			X2CrNiMo17 12
	6.1	1.4438	X2CrNiMo18 16	317L	317S12	Z2CND19.15	2367			X2CrNiMo18 16
	6.1	1.4541	X10CrNiTi18 9	321	321S12 ... 58B	Z6CNT18.10	2337	X6CrNiTi18 11	F.3553	SUS321
	6.1	1.4542/1.4548	X5CrNiCuNb17-4-4	630		Z7CNU17-04				
	6.1	1.4550	X10CrNiNb	347	347S17 ... 58F	Z6CNNb18.10	2338	X6CrNiNb18 11	F.3552	SUS347
	6.1	1.4568/1.4504	X12CrNiAl177	17-7PH	316S111			Z8CNA17-07	X2CrNiMo1712	
	6.1	1.4571	X10CrNiMoTi18	316Ti	320S17 ... 58J	Z6NDT17.12	2350	X6CrNiMoTi17 12	F.3535	
	6.1	1.4583	X10CrNiMoNb18	318		Z6CNDNb17 13B		X6CrNiMoNb	17 13	
	7.0	1.4718	X45CrSi9 3	HW 3	401S45 ... 52	Z45CS9		X45CrSi8	F.3220	SUH1
	7.0	1.4724	X10CrA113	405	403S17	Z10C13		X10CrA112	F.311	SUS405
	7.0	1.4742	X10CrA118	430	439S15 ... 60	Z10CAS18		X8Cr17	F.3113	SUS430
	7.0	1.4747	X80CrNiSi20	HNV6	443S65 ... 59	Z80CSN20.02		X80CrSiNi20	F.320B	SUH4
	7.0	1.4762	X10CrA124	446		Z10CAS24	2322	X16Cr26		SUH446
	7.0	1.4828	X15CrNiSi20 12	309	309S24	Z15CNS20.12				SUH309
	7.0	1.4845	X12CrNi25 21	310S	310S24	Z12CN25 20	2361	X6CrNi25 20	F.331	SUH310
	7.0	1.4864	X12NiCrSi	330		Z12NCS35.16				SUH330
	7.0	1.4865	G-X40NiCrSi		330C11			XG50NiCr		SCH15
	7.0	1.4871	X53CrMnNiN219	EV8	349S54	Z52CMN21.09		X53CrMnNiN		SUH35,SUH36
K	8.0	0.6010	GG10	A48 20 B		Ft10D	01 10-00	G10	FG10	
	8.0	0.6015	GG15	A48 25 B	Grade 150	Ft15D	01 15-00	G14	FG15	
	8.0	0.6020	GG20	A48 30 B	Grade 220	Ft20D	01 20-00	G20	FG20	
	8.0	0.6025	GG25	A48 35 B	Grade 260	Ft25D	01 25-00	G25	FG25	
	8.0	0.6030	GG30	A48 45 B	Grade 300	Ft30D	01 30-00	G30	FG30	
	8.0	0.6035	GG35	A48 50 B	Grade 350	Ft35D	01 35-00	G35	FG35	
	8.0	0.6040	GG40	A48 60 B	Grade 400	Ft40D	01 40-00			
	9.0	0.7033	GGG35.3				07 17-1			
	9.0	0.7040	GGG40	60-40-18	SNG420/12	FGS400-12	07 17-0 2	GS400-12		FCD40
	9.0	0.7043	GGG40.3	0.7043	SNG370/17	FGS370-17	07 17-1 5	GSO42/15		
	9.0	0.7050	GGG50	80-55-06	SNG500/7	FGS500-7	07 27-0 2	GS500/7		FCD50
	9.0	0.7060	GGG60		SNG600/3	FGS600-3	07 32-0 3	GS600/3		FCD60
	9.0	0.7070	GGG70	100-70-03	SNG700/2	FGS700-2	07 37-0 1	GS700/2		FCD70
	9.0	0.8135	GTS-35	32510	B340/12	MN35-10	08 15			
	9.0	0.8145	GTS-45	400 10	P440/7		08 52			
	9.0	0.8155	GTS-55	50005	P510/4	MP50-5	08 54			
	9.0	0.8165	GTS-65	70003	P570/3	MP60-3	08 58			
N	14.0	3.2162	GD-AlSi8Cu3	A380.1	LM24		4250			
	14.0	3.2381	G-AlSi10Mg	A360.2	LM9		4253			
	14.0	3.2581	G-AlSi12	A413.2	LM6		4261			
	14.0	3.2583	G-AlSi12(Cu)	A413.1	LM20		4260			
	14.0	3.2982	GD-AlSi12	A413.0			4247			

Terms and Conditions

TERMS AND CONDITIONS OF SALE
Komet of America, Inc., 2050 Mitchell Blvd., Schaumburg, Illinois 60193-4544

1. **Offer and Contract**. Acceptance by KOMET of Buyer's order is expressly made conditional on assent to these Terms and Conditions, either by written acknowledgement or by conduct of Buyer that recognizes the existence of the contract with respect to Products described on this acknowledgement form. These Terms and Conditions also serve as notice of KOMET's objection to and rejection of any Terms and Conditions of purchase or sale included in Buyer's purchase order or other writing that are different from or additional to these Terms and Conditions.

2. **Prices and Taxes**. All prices are F.O.B. Schaumburg, Illinois unless otherwise agreed by Buyer and KOMET in writing. Buyer agrees to pay all present and future U.S. federal, state and local tax obligations, including but not limited to sales, use and excise taxes. If Buyer claims that the Products are exempt from any particular tax, Buyer must provide KOMET with a tax exemption certificate acceptable to the tax authorities.

3. **Cancellation Charges**. No cancellations or changes of any kind in the purchase order shall be effective unless agreed to in writing by KOMET. All changes are accepted subject to adjustment in prices and delivery dates. All cancellations are accepted subject to cancellation charges which will be determined by KOMET and will reflect, among other factors, the expenses already incurred and commitments made by KOMET, sales and administrative overhead, and profits. KOMET shall have the absolute right to cancel the order upon (i) material breach of any of these Terms and Conditions by Buyer, or (ii) failure by Buyer to make any payment or (iii) insolvency of Buyer, the filing of a voluntary petition in bankruptcy by Buyer, the filing of an involuntary petition to have the Buyer declared bankrupt, the appointment of a receiver or trustee for Buyer, the execution by Buyer of an assignment for the benefit of creditors, or (iv) the discontinuance of business by Buyer or the sale by Buyer of the bulk of its assets other than in the usual course of business. Upon cancellation, KOMET shall be entitled to a cancellation charge as described above.

4. **Shipments**
(a) **Freight Allowance**: All shipments are KOMET's shipping point. No allowances are given for freight. Special shipping charges (airfreight or trucking) will be sent freight collect. Whenever possible all shipments will be made via regular UPS unless otherwise specified with your purchase order.
(b) **Drop Shipments**: Drop shipments are carried out under the condition that the ship to address is within the geographical area the distributor serves regularly. The invoice for drop shipments is forwarded to the Buyer's "Bill To" address and serves also as shipping advice to Buyer.
(c) **Pick-Up Orders**: Orders may be picked up at our Schaumburg stocking location providing the items are in stock and it is designated at the time of ordering. Pick-up times are Monday through Friday from 8:00 am to 11:30 am and 1:00 pm to 4:30 pm Central Time Zone.
(d) **Claims**: Since the title and right of possession passes to the customer upon delivery to the carrier, claims for damaged or lost shipments must be made to the carrier. Discrepancies in shipments must be reported to the KOMET Customer Service Department within five (5) working days from receipt of products.
(e) **Insurance**: KOMET takes no responsibility for insuring its shipments. All purchasers are encouraged to carry their own applicable shipping insurance.

5. **Force Majeure, Waiver**. KOMET shall not be liable for any delay to make delivery or failure to deliver due to any cause or contingency beyond the control of KOMET (including but not limited to accidents, breakdowns, strikes, riots, sabotage, insurrections, war, delay or interruptions in or failure of sources of materials, supplies, labor, energy or transportation, acts of God, or orders of any court, governmental body, authority or agency). KOMET may, at its option, allocate available supplies among its customers, including Buyer, in any manner that KOMET decides is fair and reasonable, extend the delivery time, or cancel the contract for such Products, in whole or in part. Such allocation, extension of delivery time, or cancellation shall not affect the right of KOMET to cover for any unpaid Products previously delivered. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES OR FOR ANY OTHER LOSS, DAMAGE OR EXPENSE OF ANY KIND, INCLUDING LOSS OF PROFITS, ARISING IN CONNECTION WITH SUCH FAILURE OR DELAY IN DELIVERY.

6. **Terms of Payment**. Unless otherwise expressly agreed between Buyer and KOMET in writing, terms of payment are net thirty (30) days after date of shipment. KOMET reserves the right to alter or suspend credit terms and require C.O.D. or advance payment, whenever KOMET has reasonable doubt as to Buyer's creditworthiness. If Buyer becomes delinquent in payment or refuses to accept C.O.D. shipments, KOMET shall have the right, in addition to any other rights it may have, to cancel any order of Buyer's, withhold further deliveries, and declare all unpaid amounts for Products previously delivered immediately due and payable. Each shipment shall be considered a separate and independent transaction and payment therefor shall be made accordingly. Amounts past due shall be subject to a late charge of 1.5% per month. All costs and expenses incurred by KOMET as a result of nonpayment or delinquent payment by Buyer, including collections, costs, interest and reasonable attorneys' fees, shall be paid by the Buyer.

7. **Warranty**. KOMET warrants that its Products are free from defects in design, workmanship and material for a period of twelve (12) months from the date of shipment, assuming normal and proper usage, storage and handling. KOMET's warranty shall not extend to any Products subjected to (i) improper handling or storage; (ii) accident, damage, abuse or misuse; (iii) abnormal or unusual operating conditions or applications; (iv) operating conditions or applications above the rated capacity of the Product; or (v) a purpose or application materially different from that for which the Products were designed.

THE WARRANTY EXPRESSED HEREIN IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND IS IN LIEU OF ANY AND ALL OTHER OBLIGATIONS OR LIABILITY ON KOMET'S PART. UNDER NO CIRCUMSTANCES WILL KOMET BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES, OR FOR ANY OTHER LOSS, DAMAGE OR EXPENSE OF ANY KIND, INCLUDING LOSS OF PROFITS, ARISING IN CONNECTION WITH THE SALE OR USE OF THE PRODUCTS. KOMET'S SOLE LIABILITY AND THE BUYER'S SOLE REMEDY IS LIMITED TO EITHER (i) REPAIR OR REPLACEMENT OF DEFECTIVE PARTS OR PRODUCTS, OR (ii) AT KOMET'S OPTION, RETURN OF THE PRODUCTS TO KOMET AND REFUND OF PURCHASE PRICE. SUCH REMEDY SHALL BE BUYER'S ENTIRE AND EXCLUSIVE REMEDY, IN THE EVENT OF BREACH OR WARRANTY OR NEGLIGENCE OF KOMET.

Warranty returns require a completed KOMET Form 600 in addition to a return authorization number prior to returning product. Returns not marked with a return authorization number will be refused and returned to the originator at their expense. All returns are subject to inspection and final count by KOMET. Freight charges both ways must be paid by the Buyer.

8. **Limitation of Actions**. Any cause of action arising from this agreement or the breach thereof must be commenced within one (1) year after the cause of action accrues.

9. **Applicable Law**. The law governing this agreement and any further agreement or contractual relation between KOMET and Buyer shall be the law of the State of Illinois. The invalidity of any provision of this agreement shall not affect the validity of the remaining provisions.

10. **Non-Assignment**. Buyer's rights and obligations hereunder may not be assigned without prior written consent of KOMET.

Fax to KOMET SERVICE® at 1-800-865-6638

KOMET SERVICE

KomPass – TOOL *life Order*

Customer # (required)	Order #	Date of order	Supplier #

Shipping address

Company

Contact Name

Industry Department/Shipping address

Street

Zip code, city

Tel. Fax

Date Signature

Alternate shipping address

Company

Contact Name

Industry Department/Shipping address

Street

Zip code, city

Tel. Fax

Order quantity	Order #	Description of tool/ article	Customer Material #	Additional information

The terms and conditions of KOMET USA apply to this order.

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H70 16200.018425	23	H70 19400.018425	25	U57 31500	23	V03 06000.112730	8	V03 09100.112730	9
H70 16300.012725	23	H70 19500.012725	25			V03 06000.212730	8	V03 09100.212730	9
H70 16300.018425	23	H70 19500.018425	25	V03 03000.112730	8	V03 06100.112730	8	V03 09200.112730	9
H70 16400.012725	23	H70 19600.012725	25	V03 03000.212730	8	V03 06100.212730	8	V03 09200.212730	9
H70 16400.018425	23	H70 19600.018425	25	V03 03100.112730	8	V03 06200.112730	8	V03 09300.112730	9
H70 16500.012725	23	H70 19700.012725	25	V03 03100.212730	8	V03 06200.212730	8	V03 09300.212730	9
H70 16500.018425	23	H70 19700.018425	25	V03 03200.112730	8	V03 06300.112730	8	V03 09400.112730	9
H70 16600.012725	23	H70 19800.012725	25	V03 03200.212730	8	V03 06300.212730	8	V03 09400.212730	9
H70 16600.018425	23	H70 19800.018425	25	V03 03300.112730	8	V03 06400.112730	8	V03 09500.112730	9
H70 16700.012725	23	H70 19900.012725	25	V03 03300.212730	8	V03 06400.212730	8	V03 09500.212730	9
H70 16700.018425	23	H70 19900.018425	25	V03 03400.112730	8	V03 06500.112730	8	V03 09540.112730	9
H70 16800.012725	23			V03 03400.212730	8	V03 06500.212730	8	V03 09540.212730	9
H70 16800.018425	23	H70 20000.012725	25	V03 03500.112730	8	V03 06600.112730	8	V03 09600.112730	9
H70 16900.012725	23	H70 20000.018425	25	V03 03500.212730	8	V03 06600.212730	8	V03 09600.212730	9
H70 16900.018425	23	H70 20100.012725	25	V03 03600.112730	8	V03 06700.112730	8	V03 09700.112730	9
		H70 20100.018425	25	V03 03600.212730	8	V03 06700.212730	8	V03 09700.212730	9
H70 17000.012725	25	H70 20200.012725	25	V03 03700.112730	8	V03 06800.112730	8	V03 09800.112730	9
H70 17000.018425	25	H70 20200.018425	25	V03 03700.212730	8	V03 06800.212730	8	V03 09800.212730	9
H70 17100.012725	25	H70 20300.012725	25	V03 03800.112730	8	V03 06900.112730	8	V03 09900.112730	9
H70 17100.018425	25	H70 20300.018425	25	V03 03800.212730	8	V03 06900.212730	8	V03 09900.212730	9
H70 17200.012725	25	H70 20400.012725	25	V03 03900.112730	8				
H70 17200.018425	25	H70 20400.018425	25	V03 03900.212730	8	V03 07000.112730	9	V03 10000.112730	9
H70 17300.012725	25	H70 20500.012725	25			V03 07000.212730	9	V03 10000.212730	9
H70 17300.018425	25	H70 20500.018425	25	V03 04000.112730	8	V03 07100.112730	9	V03 10100.112730	9
H70 17400.012725	25			V03 04000.212730	8	V03 07100.212730	9	V03 10100.212730	9
H70 17400.018425	25	L05 01240	189	V03 04100.112730	8	V03 07200.112730	9	V03 10200.112730	9
H70 17500.012725	25	L05 10010	21	V03 04100.212730	8	V03 07200.212730	9	V03 10200.212730	9
H70 17500.018425	25	L05 10020	21	V03 04200.112730	8	V03 07300.112730	9	V03 10300.112730	9
H70 17600.012725	25	L05 10020	23	V03 04200.212730	8	V03 07300.212730	9	V03 10300.212730	9
H70 17600.018425	25			V03 04300.112730	8	V03 07400.112730	9	V03 10400.112730	9
H70 17700.012725	25	U53 21000	21	V03 04300.212730	8	V03 07400.212730	9	V03 10400.212730	9
H70 17700.018425	25	U53 21050	21	V03 04400.112730	8	V03 07430.112730	9	V03 10500.112730	9
H70 17800.012725	25	U53 21100	21	V03 04400.212730	8	V03 07430.212730	9	V03 10500.212730	9
H70 17800.018425	25	U53 21150	21	V03 04500.112730	8	V03 07500.112730	9	V03 10600.112730	9
H70 17900.012725	25	U53 31200	21	V03 04500.212730	8	V03 07500.212730	9	V03 10600.212730	9
H70 17900.018425	25	U53 31250	21	V03 04600.112730	8	V03 07600.112730	9	V03 10700.112730	9
		U53 31300	23	V03 04600.212730	8	V03 07600.212730	9	V03 10700.212730	9
H70 18000.012725	25	U53 31400	23	V03 04700.112730	8	V03 07700.112730	9	V03 10800.112730	9
H70 18000.018425	25	U53 31500	23	V03 04700.212730	8	V03 07700.212730	9	V03 10800.212730	9
H70 18100.012725	25	U53 41600	23	V03 04800.112730	8	V03 07800.112730	9	V03 10900.112730	9
H70 18100.018425	25	U53 41700	25	V03 04800.212730	8	V03 07800.212730	9	V03 10900.212730	9
H70 18200.012725	25	U53 41800	25	V03 04900.112730	8	V03 07900.112730	9		
H70 18200.018425	25	U53 41900	25	V03 04900.212730	8	V03 07900.212730	9	V03 11000.112730	9
H70 18300.012725	25							V03 11000.212730	9
H70 18300.018425	25			V03 05000.112730	8	V03 08000.112730	9	V03 11100.112730	9

V03.. / V04..		V04..		V04..		V04..		V04.. / V06..	
V03 11100.212730	9	V04 03700.112730	10	V04 06800.112730	10	V04 09800.112730	11	V04 14500.112730	11
V03 11200.112730	9	V04 03700.212730	10	V04 06800.212730	10	V04 09800.212730	11	V04 14500.212730	11
V03 11200.212730	9	V04 03800.112730	10	V04 06900.112730	11	V04 09900.112730	11	V04 14800.112730	11
V03 11300.112730	9	V04 03800.212730	10	V04 06900.212730	11	V04 09900.212730	11	V04 14800.212730	11
V03 11300.212730	9	V04 03900.112730	10						
V03 11400.112730	9	V04 03900.212730	10	V04 07000.112730	11	V04 10000.112730	11	V04 15000.112730	11
V03 11400.212730	9			V04 07000.212730	11	V04 10000.212730	11	V04 15000.212730	11
V03 11500.112730	9	V04 04000.112730	10	V04 07100.112730	11	V04 10100.112730	11	V04 15500.112730	11
V03 11500.212730	9	V04 04000.212730	10	V04 07100.212730	11	V04 10100.212730	11	V04 15500.212730	11
V03 11540.112730	9	V04 04100.112730	10	V04 07200.112730	11	V04 10200.112730	11	V04 15800.112730	11
V03 11540.212730	9	V04 04100.212730	10	V04 07200.212730	11	V04 10200.212730	11	V04 15800.212730	11
V03 11600.112730	9	V04 04200.112730	10	V04 07300.112730	11	V04 10300.112730	11		
V03 11600.212730	9	V04 04200.212730	10	V04 07300.212730	11	V04 10300.212730	11	V04 16000.112730	11
V03 11700.112730	9	V04 04300.112730	10	V04 07400.112730	11	V04 10400.112730	11	V04 16000.212730	11
V03 11700.212730	9	V04 04300.212730	10	V04 07400.212730	11	V04 10400.212730	11		
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V03 11800.212730	9	V04 04400.212730	10	V04 07430.212730	11	V04 10500.212730	11	V05 04000.117830	12
V03 11900.112730	9	V04 04500.112730	10	V04 07500.112730	11	V04 10600.112730	11	V05 04500.117830	12
V03 11900.212730	9	V04 04500.212730	10	V04 07500.212730	11	V04 10600.212730	11	V05 05000.117830	12
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V03 12000.112730	9	V04 04600.212730	10	V04 07600.212730	11	V04 10700.212730	11	V05 06000.117830	12
V03 12000.212730	9	V04 04700.112730	10	V04 07700.112730	11	V04 10800.112730	11	V05 06500.117830	12
V03 12500.112730	9	V04 04700.212730	10	V04 07700.212730	11	V04 10800.212730	11	V05 08000.117830	12
V03 12500.212730	9	V04 04800.112730	10	V04 07800.112730	11	V04 10900.112730	11	V05 08500.117830	12
V03 12800.112730	9	V04 04800.212730	10	V04 07800.212730	11	V04 10900.212730	11	V05 09000.117830	12
V03 12800.212730	9	V04 04900.112730	10	V04 07900.112730	11			V05 10000.117830	12
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V03 13000.112730	9					V04 11000.212730	11	V06 03000.117830	13
V03 13000.212730	9	V04 05000.112730	10	V04 08000.112730	11	V04 11100.112730	11	V06 04000.117830	13
V03 13300.112730	9	V04 05000.212730	10	V04 08000.212730	11	V04 11100.212730	11	V06 04500.117830	13
V03 13300.212730	9	V04 05100.112730	10	V04 08100.112730	11	V04 11200.112730	11	V06 05000.117830	13
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V03 13500.212730	9	V04 05200.112730	10	V04 08200.112730	11	V04 11300.112730	11	V06 06000.117830	13
V03 13800.112730	9	V04 05200.212730	10	V04 08200.212730	11	V04 11300.212730	11	V06 06500.117830	13
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V04 03000.112730	10	V04 06100.112730	10	V04 09200.112730	11	V04 12800.112730	11		
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V04 03100.112730	10	V04 06200.112730	10	V04 09300.112730	11				
V04 03100.212730	10	V04 06200.212730	10	V04 09300.212730	11	V04 13000.112730	11		
V04 03200.112730	10	V04 06300.112730	10	V04 09400.112730	11	V04 13000.212730	11		
V04 03200.212730	10	V04 06300.212730	10	V04 09400.212730	11	V04 13300.112730	11		
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V04 03300.212730	10	V04 06400.212730	10	V04 09500.212730	11	V04 13500.112730	11		
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V04 03600.212730	10	V04 06700.212730	10	V04 09700.212730	11	V04 14000.212730	11		

Notes

TOOLS PLUS IDEAS –
for the benefit of our customers and the environment

Our goals as a company

The KOMET GROUP pursues a consistent investment policy, achieves long-term, profitable growth through continuous improvement of products and processes, and fosters employee growth and education. This increases the value of the company. The KOMET GROUP consistently improves its rate of innovation through research and development, bringing new products to market every year. The KOMET GROUP is a premium quality manufacturer and promotes employee and customer education in its IDEAS FACTORY. The training that our entry -level professionals receive is unequalled in the industry.

Products and services

KOMET GROUP products and services offer our customers high added value. As a full-spectrum supplier that designs, manufactures and sells, the KOMET GROUP has the most comprehensive modular portfolio for bore machining. The KOMET GROUP offers the most attractively-designed, innovative technologies that are also highly cost-effective and of highest quality. Under the concept of TOOLS PLUS IDEAS, we envision ourselves not just as a tool manufacturer, but as a supplier of innovative solutions and ideas for the customer's benefit .

The customer

The KOMET GROUP values long-term, committed customer relationships for mutual benefit. KOMET GROUP gathers customers' requirements and then produces the most effective ideas and tool solutions to fit their machining tasks. The KOMET GROUP offers the customer information and collaboration via its worldwide presence in local Service Centers. The IDEAS FACTORY supports vocational training and continuous education for customers.

The environment / surroundings

The KOMET GROUP is committed to sustainability and therefore practices responsible consumption of raw materials and careful recycling of waste materials. KOMET GROUP management is well aware of its societal responsibilities and fosters modern working environments and working conditions that take into account relevant ergonomic and work safety practices. The KOMET GROUP honors the legacy of its founder, Robert Breuning, by expanding its original headquarters facilities in Besigheim, Germany and maintaining relationships with local schools and the regional community.

To meet these demands, the KOMET GROUP has introduced KMS (KOMET Management System), a modern, integrated management system which has been certified under ISO 9001:2008, ISO 14001:2004 and the German Continuing Education Accreditation and Admission Ordinance (AZWV).

ISO 9001:2008 BUREAU VERITAS Certification

ISO 14001 BUREAU VERITAS Certification

zertifiziert nach AZWV durch HZA

Company values and policies:
www.komet.com/navigation-top/komet-group/company-policy.html
www.komet.com/navigation-top/komet-group/company-values.html

Certification:
www.komet.com/navigation-top/download/service/certificates.html

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