

GUHRING

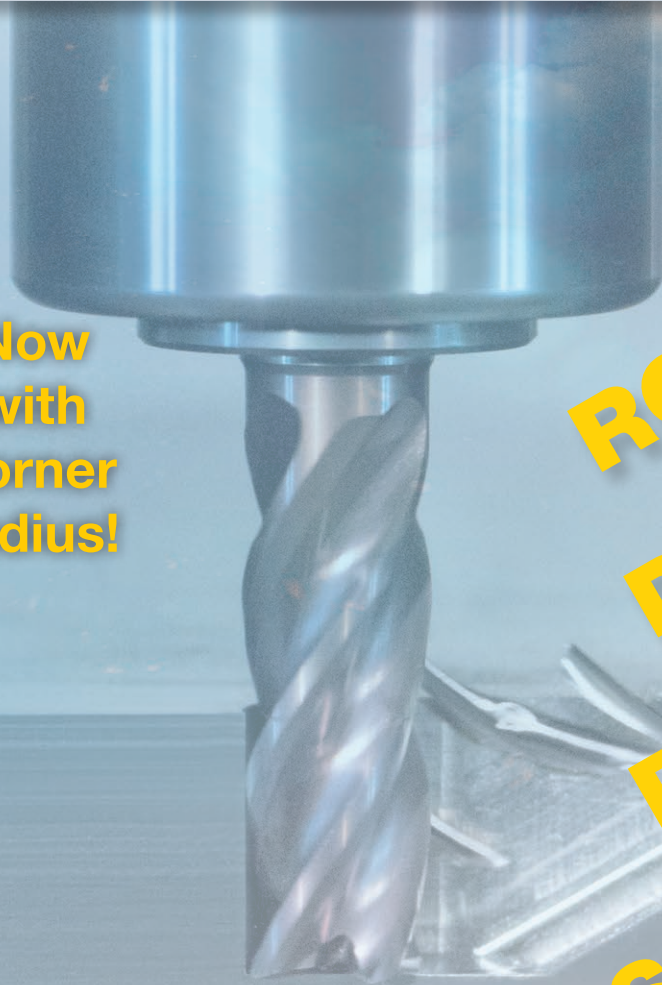
RF100

diver

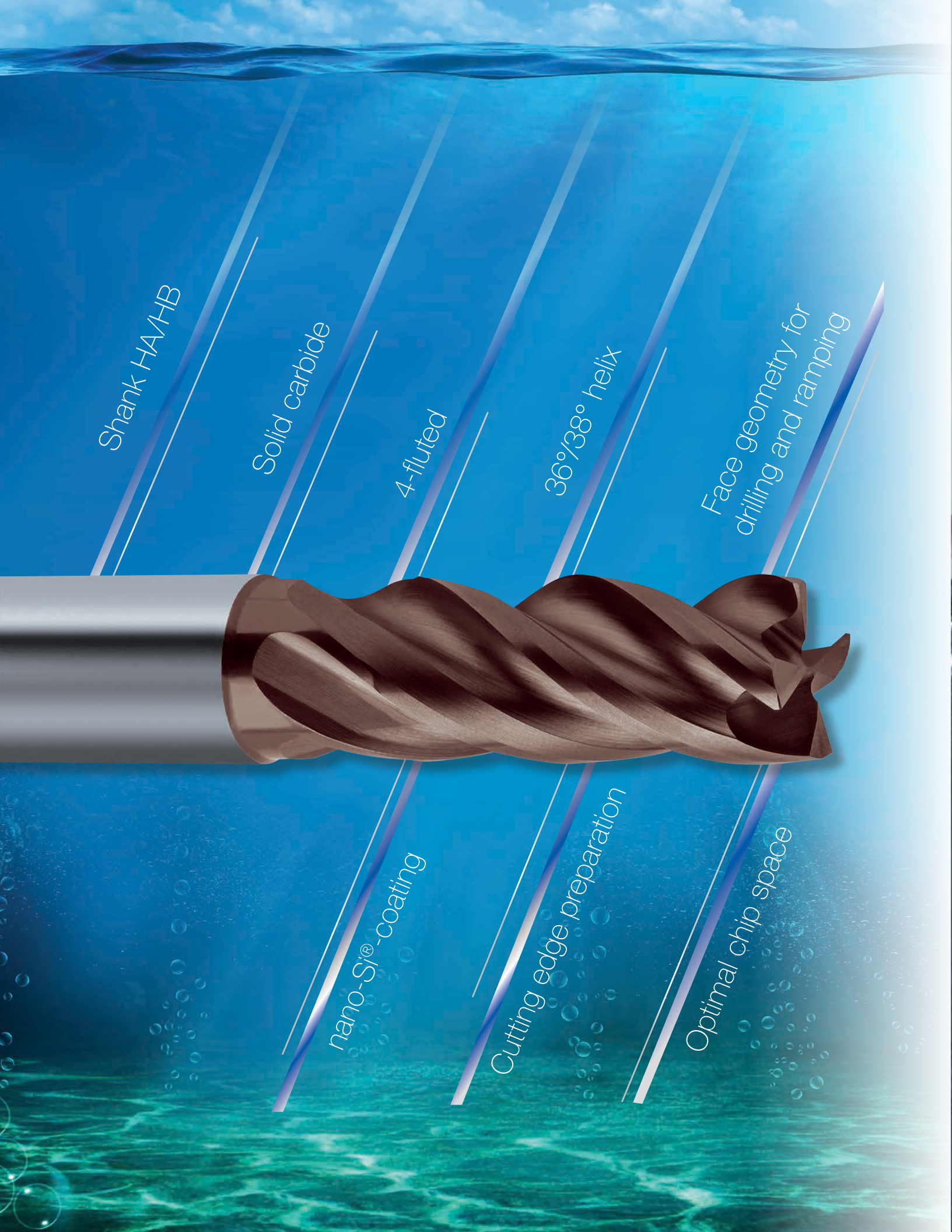
END MILLS



Now
with
corner
radius!



ROUGHING
DRILLING
RAMPING
SLOTTING
FINISHING



Shank HAVHB

Solid carbide

4-fluted

36°/38° helix

Face geometry for drilling and ramping

nano-Si[®]-coating

Cutting edge preparation

Optimal chip space

SLOTTING

High process reliability with
smooth operation

└ High feed rate for plunging and slotting

└ High metal removal rate

└ Up to 100% increased cutting speed in steel

ROUGHING

Thanks to low power consumption also
suitable for less rigid machines

└ Contours with high surface quality

FINISHING

└ Up to 100% increased tool life

└ High cutting parameters also in alloyed heat-treatable steels

└ Precision slots can be produced in all tolerances

DRILLING & RAMPING

└ Piloting on curved or oblique surfaces

center cutting



Type N



Std. Length



Variable Helix



4 Flutes



45°
Corner Chamfer



Feed Dir.



Rake Angle



Slotting



Roughing



Ramping



Helix



Drilling



Finishing

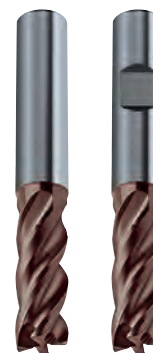
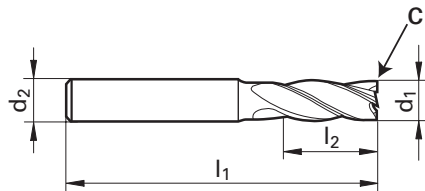
Tool material
Surface finish



Solid Carbide
nano-Si®

Series Number

6757



d1 _{h10} fract.	d2 _{h6} fract.	l1 fract.	l2 fract.	corner chamfer (in.)	No. of flutes	Shank style	Order Code	EDP Number
1/8	1/8	1 1/2	1/4	0.001	4	HA	3.170	9067570031700
3/16	3/16	2	3/8	0.002	4	HA	4.760	9067570047600
1/4	1/4	2 1/2	1/2	0.002	4	HA	6.350	9067570063500
5/16	5/16	2 1/2	3/4	0.003	4	HA	7.940	9067570079400
3/8	3/8	2 1/2	7/8	0.004	4	HA	9.520	9067570095200
7/16	7/16	2 3/4	7/8	0.004	4	HA	11.110	9067570111100
1/2	1/2	3 1/2	1	0.005	4	HB	12.700	9067570127000
5/8	5/8	3 1/2	1 1/4	0.006	4	HB	15.870	9067570158700
3/4	3/4	4	1 1/2	0.007	4	HB	19.050	9067570190500
1	1	5	1 1/2	0.010	4	HB	25.400	9067570254000

center cutting, with corner radius options



Type N



Std. Length



Variable Helix



4 Flutes



Corner Radius



Feed Dir.



Rake Angle



Slotting



Roughing



Ramping



Helix



Drilling



Finishing

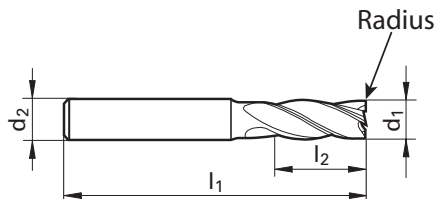
Tool material
Surface finish



Solid Carbide
nano-Si®

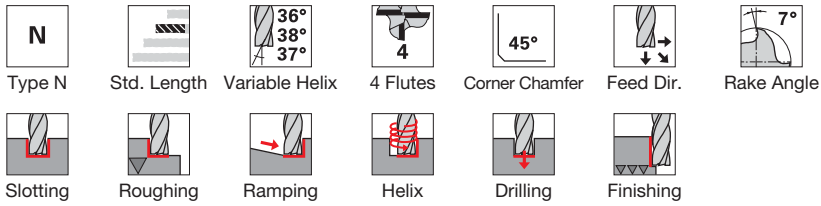
Series Number

6759



d1 _{h10} fract.	d2 _{h6} fract	l1 fract	l2 fract	corner radius (in.)	No. of flutes	Shank style	Order Code	EDP Number
1/8	1/8	1 1/2	1/4	0.015	4	HA	3.172	9067590031720
1/8	1/8	1 1/2	1/4	0.031	4	HA	3.174	9067590031740
3/16	3/16	2	3/8	0.015	4	HA	4.762	9067590047620
3/16	3/16	2	3/8	0.031	4	HA	4.764	9067590047640
1/4	1/4	2 1/2	1/2	0.015	4	HA	6.352	9067590063520
1/4	1/4	2 1/2	1/2	0.031	4	HA	6.354	9067590063540
1/4	1/4	2 1/2	1/2	0.062	4	HA	6.356	9067590063560
5/16	5/16	2 1/2	3/4	0.015	4	HA	7.942	9067590079420
5/16	5/16	2 1/2	3/4	0.031	4	HA	7.944	9067590079440
5/16	5/16	2 1/2	3/4	0.062	4	HA	7.946	9067590079460
3/8	3/8	2 1/2	7/8	0.015	4	HA	9.522	9067590095220
3/8	3/8	2 1/2	7/8	0.031	4	HA	9.524	9067590095240
3/8	3/8	2 1/2	7/8	0.062	4	HA	9.526	9067590095260
3/8	3/8	2 1/2	7/8	0.090	4	HA	9.527	9067590095270
1/2	1/2	3 1/2	1	0.015	4	HB	12.702	9067590127020
1/2	1/2	3 1/2	1	0.031	4	HB	12.704	9067590127040
1/2	1/2	3 1/2	1	0.062	4	HB	12.706	9067590127060
1/2	1/2	3 1/2	1	0.090	4	HB	12.707	9067590127070
1/2	1/2	3 1/2	1	0.125	4	HB	12.709	9067590127090
5/8	5/8	3 1/2	1 1/4	0.031	4	HB	15.874	9067590158740
5/8	5/8	3 1/2	1 1/4	0.062	4	HB	15.876	9067590158760
5/8	5/8	3 1/2	1 1/4	0.090	4	HB	15.877	9067590158770
5/8	5/8	3 1/2	1 1/4	0.125	4	HB	15.879	9067590158790
3/4	3/4	4	1 1/2	0.031	4	HB	19.054	9067590190540
3/4	3/4	4	1 1/2	0.062	4	HB	19.056	9067590190560
3/4	3/4	4	1 1/2	0.090	4	HB	19.057	9067590190570
3/4	3/4	4	1 1/2	0.125	4	HB	19.059	9067590190590
3/4	3/4	4	1 1/2	0.190	4	HB	19.050	9067590190500
3/4	3/4	4	1 1/2	0.250	4	HB	19.051	9067590190510
1	1	5	1 1/2	0.031	4	HB	25.404	9067590254040
1	1	5	1 1/2	0.062	4	HB	25.406	9067590254060
1	1	5	1 1/2	0.090	4	HB	25.407	9067590254070
1	1	5	1 1/2	0.125	4	HB	25.409	9067590254090
1	1	5	1 1/2	0.190	4	HB	25.400	9067590254000
1	1	5	1 1/2	0.250	4	HB	25.401	9067590254010

center cutting, metric diameters



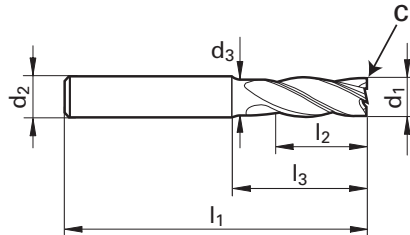
Tool material
Surface finish



Solid Carbide
nano-Si®

Series Number

6736



metric diameter end mills are stocked in Germany

d1 _{h10} mm	d2 _{h6} mm	d3 mm	l1 mm	l2 mm	l3 mm	corner chamfer (mm)	No. of flutes	Order Code	EDP Number
4.00	6.00	3.800	57.00	11.00	18.0	0.04	4	4.000	9067360040000
5.00	6.00	4.800	57.00	13.00	18.0	0.05	4	5.000	9067360050000
5.70	6.00	5.500	57.00	13.00	20.4	0.06	4	5.700	9067360057000
6.00	6.00	5.700	57.00	13.00	20.0	0.06	4	6.000	9067360060000
7.70	8.00	7.400	63.00	19.00	25.5	0.08	4	7.700	9067360077000
8.00	8.00	7.700	63.00	19.00	26.0	0.08	4	8.000	9067360080000
9.70	10.00	9.400	72.00	22.00	30.5	0.10	4	9.700	9067360097000
10.00	10.00	9.500	72.00	22.00	30.0	0.10	4	10.000	9067360100000
11.70	12.00	11.200	83.00	26.00	35.3	0.12	4	11.700	9067360117000
12.00	12.00	11.500	83.00	26.00	36.0	0.12	4	12.000	9067360120000
13.70	14.00	13.200	83.00	26.00	35.3	0.14	4	13.700	9067360137000
14.00	14.00	13.500	83.00	26.00	36.0	0.14	4	14.000	9067360140000
15.60	16.00	15.100	92.00	32.00	41.2	0.16	4	15.600	9067360156000
16.00	16.00	15.500	92.00	32.00	42.0	0.16	4	16.000	9067360160000
19.50	20.00	19.000	104.00	38.00	51.1	0.20	4	19.500	9067360195000
20.00	20.00	19.500	104.00	38.00	52.0	0.20	4	20.000	9067360200000

center cutting, metric diameters



Type N



Std. Length



Variable Helix



4 Flutes



Corner Chamfer



Feed Dir.



Rake Angle



Slotting



Roughing



Ramping



Helix



Drilling



Finishing

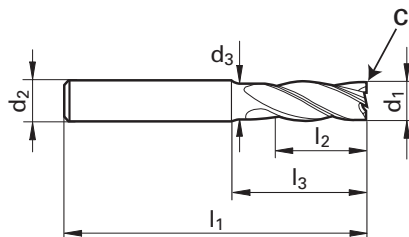
Tool material
Surface finish



Solid Carbide
nano-Si®

Series Number

6737



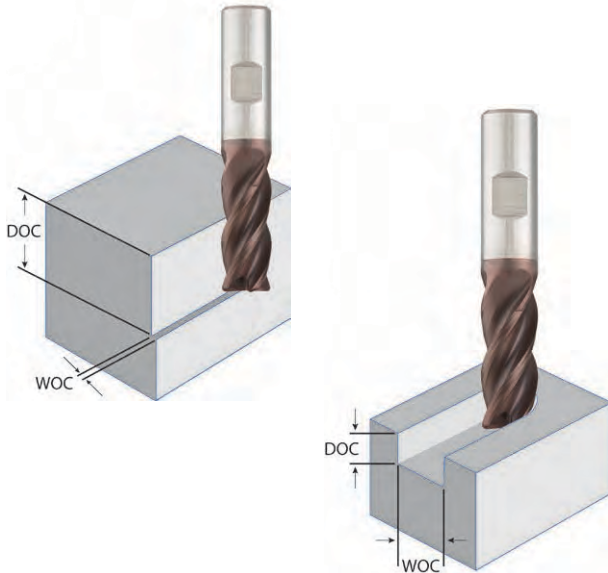
metric diameter end mills are stocked in Germany

d1 _{h10} mm	d2 _{h6} mm	d3 mm	l1 mm	l2 mm	l3 mm	corner chamfer (mm)	No. of flutes	Order Code	EDP Number
4.00	6.00	3.800	57.00	11.00	18.0	0.04	4	4.000	9067370040000
5.00	6.00	4.800	57.00	13.00	18.0	0.05	4	5.000	9067370050000
5.70	6.00	5.500	57.00	13.00	20.4	0.06	4	5.700	9067370057000
6.00	6.00	5.700	57.00	13.00	20.0	0.06	4	6.000	9067370060000
7.70	8.00	7.400	63.00	19.00	25.5	0.08	4	7.700	9067370077000
8.00	8.00	7.700	63.00	19.00	26.0	0.08	4	8.000	9067370080000
9.70	10.00	9.400	72.00	22.00	30.5	0.10	4	9.700	9067370097000
10.00	10.00	9.500	72.00	22.00	30.0	0.10	4	10.000	9067370100000
11.70	12.00	11.200	83.00	26.00	35.3	0.12	4	11.700	9067370117000
12.00	12.00	11.500	83.00	26.00	36.0	0.12	4	12.000	9067370120000
13.70	14.00	13.200	83.00	26.00	35.3	0.14	4	13.700	9067370137000
14.00	14.00	13.500	83.00	26.00	36.0	0.14	4	14.000	9067370140000
15.60	16.00	15.100	92.00	32.00	41.2	0.16	4	15.600	9067370156000
16.00	16.00	15.500	92.00	32.00	42.0	0.16	4	16.000	9067370160000
19.50	20.00	19.000	104.00	38.00	51.1	0.20	4	19.500	9067370195000
20.00	20.00	19.500	104.00	38.00	52.0	0.20	4	20.000	9067370200000



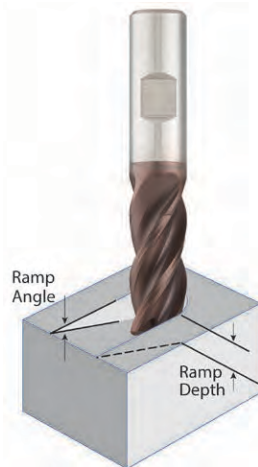
FEEDS AND SPEEDS

SLOTTING / ROUGHING / FINISHING*

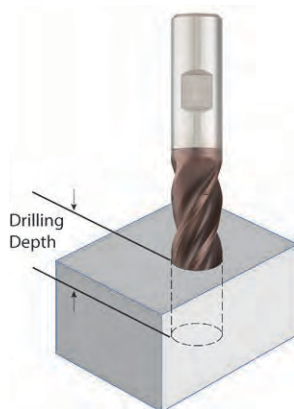


Material / ISO Material	
P	Structural/free-cutting steels, unalloyed heat-treated/case hardened steels
	Free-cutting steels, unalloyed case hardened steels, nitrided steels
	Alloyed heat-treatable, tool and high speed steels
M	Stainless steel - easy to machine / sulphured
	Stainless steel - moderately difficult to machine
K	Cast iron, grey cast iron, spheroidal graphite/malleable cast iron
N	Aluminium, Al-wrought alloys, Al-alloys
	Aluminium-cast alloys
S	Titanium

RAMPING*



Material / ISO Material	
P	Structural/free-cutting steels, unalloyed heat-treated/case hardened steels
	Free-cutting steels, unalloyed case hardened steels, nitrided steels
	Alloyed heat-treatable, tool and high speed steels
M	Stainless steel - easy to machine / sulphured
	Stainless steel - moderately difficult to machine
K	Cast iron, grey cast iron, spheroidal graphite/malleable cast iron
N	Aluminium, Al-wrought alloys, Al-alloys
	Aluminium-cast alloys
S	Titanium

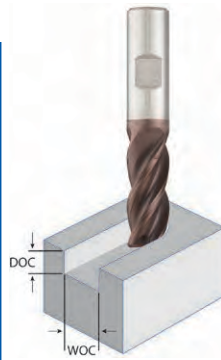
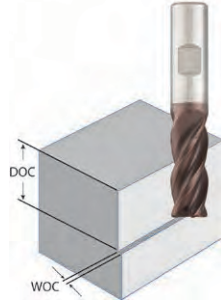


DRILLING* **

Material / ISO Material	
P	Structural/free-cutting steels, unalloyed heat-treated/case hardened steels
	Free-cutting steels, unalloyed case hardened steels, nitrided steels
	Alloyed heat-treatable, tool and high speed steels
K	Cast iron, grey cast iron, spheroidal graphite/malleable cast iron
N	Aluminium, Al-wrought alloys, Al-alloys
	Aluminium-cast alloys

HIGH SPEED MILLING:

Increase IPT based on radial width of cut (WOC)
 WOC = .1xd multiply IPT x 1.8
 WOC = .2xd multiply IPT x 1.3
 WOC = .3xd multiply IPT x 1.1



* peripheral cooling "Guhrojet" recommended for optimal chip evacuation and tool life
 For finishing increase SFM and reduce IPT depending on surface finish requirements

Hardness	SFM High Speed Milling			SFM Slotting/Roughing	IPT by end mill ø (d1)							
	DOC 2xd			DOC 1xd								
	WOC .1xd	WOC .2xd	WOC .3xd	WOC .4xd to 1xd	1/8	1/4	5/16	3/8	1/2	5/8	3/4	1
up to 28 HRc	1725	1380	1150	900	0.0005	0.0011	0.0014	0.0019	0.0026	0.0032	0.0038	0.0051
28 - 38 HRc	1425	1140	950	800	0.0005	0.0011	0.0014	0.0019	0.0026	0.0032	0.0038	0.0051
28 - 44 HRc	1125	900	750	650	0.0005	0.0011	0.0012	0.0017	0.0021	0.0028	0.0033	0.0044
up to 20 HRc	675	540	450	400	0.0004	0.0009	0.0012	0.0017	0.0026	0.0026	0.0029	0.0038
20 - 30 HRc	560	450	375	250	0.0004	0.0009	0.0012	0.0015	0.0019	0.0024	0.0027	0.0036
up to 240 HB 30	860	690	575	525	0.0005	0.0011	0.0014	0.0019	0.0026	0.0032	0.0038	0.0051
up to 3% Si	2850	2280	1900	1600	0.0007	0.0013	0.0016	0.0025	0.0034	0.0038	0.0042	0.0056
above 3% Si	2025	1620	1350	1100	0.0004	0.0009	0.0012	0.0021	0.0028	0.0032	0.0038	0.0051
up to 44 HRc	560	450	375	175	0.0004	0.0009	0.0012	0.0015	0.0019	0.0024	0.0027	0.0036

* peripheral cooling "Guhrojet" recommended for optimal chip evacuation and tool life

Hardness	Ramp depth* (ap max.)	Ramping* max. angle	SFM	IPT by d1 Ø							
				1/8	1/4	5/16	3/8	1/2	5/8	3/4	1
up to 28 HRc	1 x d	45°	900	0.0005	0.0008	0.0012	0.0015	0.0019	0.0020	0.0023	0.0030
28 - 38 HRc	1 x d	45°	800	0.0004	0.0006	0.0008	0.0013	0.0017	0.0018	0.0019	0.0025
28 - 44 HRc	1 x d	30°	650	0.0003	0.0004	0.0006	0.0009	0.0013	0.0014	0.0015	0.0020
up to 20 HRc	1 x d	10°	200	0.0003	0.0004	0.0006	0.0009	0.0013	0.0014	0.0015	0.0020
20 - 30 HRc	0.5 x d	5°	150	0.0003	0.0004	0.0006	0.0008	0.0010	0.0012	0.0013	0.0018
up to 240 HB 30	1 x d	45°	500	0.0005	0.0008	0.0012	0.0015	0.0019	0.0020	0.0023	0.0030
up to 3% Si	1 x d	30°	600	0.0004	0.0006	0.0008	0.0013	0.0017	0.0018	0.0019	0.0025
above 3% Si	1 x d	45°	450	0.0005	0.0008	0.0012	0.0015	0.0019	0.0020	0.0023	0.0030
up to 44 HRc	0.5 x d	10°	150	0.0003	0.0004	0.0006	0.0008	0.0010	0.0012	0.0013	0.0018

* pecking recommended from drilling depth 1 x D

** peripheral cooling "Guhrojet" recommended for optimal chip evacuation and tool life

Hardness	Drilling Depth (ap)	SFM	IPT by d1 Ø							
			1/8	1/4	5/16	3/8	1/2	5/8	3/4	1
up to 28 HRc	*2 x d	900	0.0005	0.0008	0.0012	0.0015	0.0019	0.0020	0.0023	0.0030
28 - 38 HRc	*2 x d	800	0.0003	0.0006	0.0008	0.0013	0.0017	0.0018	0.0019	0.0025
28 - 44 HRc	1 x d	650	0.0003	0.0004	0.0006	0.0009	0.0013	0.0014	0.0015	0.0020
up to 240 HB 30	*2 x d	500	0.0005	0.0008	0.0012	0.0015	0.0019	0.0020	0.0023	0.0030
up to 3% Si	1 x d	600	0.0003	0.0006	0.0008	0.0013	0.0017	0.0018	0.0019	0.0025
above 3% Si	1 x d	450	0.0005	0.0008	0.0012	0.0015	0.0019	0.0020	0.0023	0.0030

Recommended holders for Diver end mills: HPC PRECISION CLAMPING CHUCKS

Guhring's precision clamping chucks offer extremely high clamping forces while maintaining extremely tight concentricity tolerances, making it an ideal solution for milling operations, as well as drilling and reaming applications. It excels in both heavy-duty and high-speed machining applications. The special clamping sleeve is clamped via a worm gear, which transfers the optimal clamping force onto the tool shank. This creates clamping forces of > 200 Nm for 12 mm shank diameters and > 300 Nm for 16 mm shank diameters.

New: Now available with
PinLock Pull-out Protection!



This system offers the following advantages:

- increased cutting depths in comparison to conventional tool holders
- increased radial engagement and subsequently higher material removal rate
- maintenance-free technology
- suitable for use with both round shanks and flatted shanks
- concentricity 3 μm with 2,5 x D
- balancing quality: G2.5 / 20.000 rev./min or $U < 1.2\text{gmm}$

Power milling with PinLock

Secure volume machining and no pull-out – with Guhrojet cooling. Perfect combination - Guhring's HPC clamping chuck with PinLock pull-out protection

- process reliability (no tool pull-out, no part damage)
- long tool life and optimal surface finish
- easy handling
- accepts standard milling tools therefore no licenses are required

Thanks to the securing pin in the PinLock clamping sleeve, tool pull-out is prevented when applied with standard milling tools utilizing HB shanks to DIN 6535 specifications. The combination of the HPC clamping technology, high concentricity, and the Guhrojet peripheral cooling feature allows us to achieve the perfect balance of high metal removal rates, longer tool life and improved surface finish.



GUHRING

The Tool Company

DRILLING

TAPPING/THREAD-
MILLING/FLUTELESS
TAPPING

MILLING

REAMING

PCD/PCBN



SPECIAL TOOLING
SOLUTIONS

COUNTERSINKING/
DE-BURRING

MODULAR TOOLING
SYSTEMS

TOOL RECONDITIONING SERVICE

Guhring, Inc. Main Office

P.O. Box 643, Brookfield, WI 53008-0643

Shipping Address

1445 Commerce Avenue

Brookfield, WI 53045

Tel (262) 784-6730 (800) 776-6170

Fax (262) 784-9096

**West Coast Distribution Center and
Reconditioning Facility**

15581 Computer Ln.
Huntington Beach, CA 92649

Reconditioning Facility

121 W. Dudley Town Rd.
Bloomfield, CT 06002

**Manufacturing and
Reconditioning Facility**

29550 W.K. Smith Rd. Suite B
New Hudson, MI 48165

Guhring Corporation

20 Steckle Place, Unit #14
Kitchener, ON N2E 2C3
Tel (519) 748-9664 (800) 463-5555
Fax (519) 748-2954