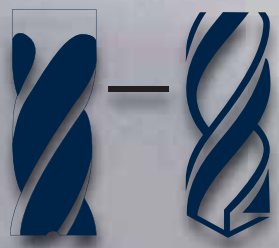
GUHRING
The Tool Company

RF100

diver



SLOTTING

ROUGHING

DRILLING & RAMPING


Shank HA/HB
Solid carbide
nano-Si®-coating
4-fluted
Cutting edge preparation
36°/38° helix
Optimal chip space
Face geometry for drilling and ramping

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

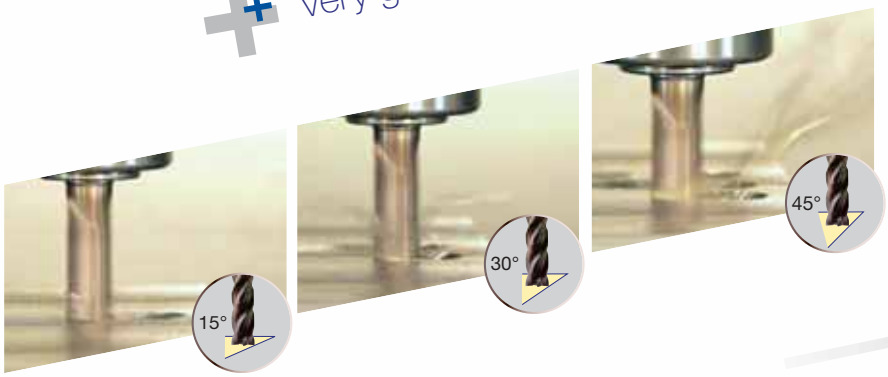
Precision slots can be produced in all tolerances

DRILLING & RAMPING

Piloting on curved or oblique surfaces

RAMPING

+ Plunge angle up to 45°
+ Very good chip removal



APPLICATION EXAMPLE

Wet machining in 42CrMo4 (4140)

Plunge angle = 30°

a_p = 12 mm (.472")

a_e = 11.7 mm (.461")

v_c = 200 m/min (650 SFM)

V_f = 1200 mm/min (47.2 IPM)

RPM = 5400

f_z = .056mm (.0022" IPT)

RAMPING* | CUTTING VALUES

	Material / ISO Material	Hardness	Drilling 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
P	Struct./free-cutt. steels, unall. heat-treat./case hard. steels	up to 28 HRc	1 x d	45°	900	0.0004	0.0009	0.0012	0.0015	0.0019	0.0020	0.0023	0.0031
P	Free-cutting steels, unalloyed case hard. steels, nitr. steels	28 - 38 HRc	1 x d	45°	800	0.0003	0.0007	0.0008	0.0014	0.0017	0.0018	0.0019	0.0026
P	Alloyed heat-treatable, tool and high speed steels	28 - 44 HRc	1 x d	30°	650	0.0002	0.0004	0.0006	0.0010	0.0013	0.0014	0.0015	0.0021
M	Stainless steel - easy to machine / sulphured	up to 20 HRc	1 x d	10°	200	0.0002	0.0004	0.0006	0.0010	0.0013	0.0014	0.0015	0.0021
M	Stainless steel - moderately difficult to machine	20 - 30 HRc	0.5 x d	5°	150	0.0002	0.0004	0.0006	0.0008	0.0011	0.0012	0.0013	0.0018
K	Cast iron, grey cast iron, spher. graphite/mall. cast iron	up to 240 HB 30	1 x d	45°	500	0.0004	0.0009	0.0012	0.0015	0.0019	0.0020	0.0023	0.0031
N	Aluminium, Al-wrought alloys, Al-alloys	up to 3% Si	1 x d	30°	600	0.0003	0.0007	0.0008	0.0014	0.0017	0.0018	0.0019	0.0026
N	Aluminium-cast alloys	above 3% Si	1 x d	45°	450	0.0004	0.0009	0.0012	0.0015	0.0019	0.0020	0.0023	0.0031
S	Titanium	up to 44 HRc	0.5 x d	10°	150	0.0002	0.0005	0.0006	0.0008	0.0011	0.0012	0.0013	0.0018

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

DRILLING* ** | CUTTING VALUES

	Material / ISO Material	Hardness	DOC	SFM	IPT by d1 Ø							
					1/8	1/4	5/16	3/8	1/2	5/8	3/4	1
P	Struct./free-cutt. steels, unall. heat-treat./case hard. steels	up to 28 HRc	2 x d	900	0.0004	0.0009	0.0012	0.0015	0.0019	0.0020	0.0023	0.0031
P	Free-cutting steels, unalloyed case hard. steels, nitr. steels	28 - 38 HRc	2 x d	800	0.0003	0.0007	0.0008	0.0014	0.0017	0.0018	0.0019	0.0026
P	Alloyed heat-treatable, tool and high speed steels	28 - 44 HRc	1 x d	650	0.0002	0.0004	0.0006	0.0010	0.0013	0.0014	0.0015	0.0021
K	Cast iron, grey cast iron, spher. graphite/mall. cast iron	up to 240 HB 30	2 x d	500	0.0004	0.0009	0.0012	0.0015	0.0019	0.0020	0.0023	0.0031
N	Aluminium, Al-wrought alloys, Al-alloys	up to 3% Si	1 x d	590	0.0003	0.0007	0.0008	0.0014	0.0017	0.0018	0.0019	0.0026
N	Aluminium-cast alloys	above 3% Si	1 x d	450	0.0004	0.0009	0.0012	0.0015	0.0019	0.0020	0.0023	0.0031

* pecking recommended from drilling depth 1 x D
** peripheral cooling "Guhrojet" recommended for optimal chip evacuation and tool life

SLOTTING

- High feed rate for plunging and slotting
- High metal removal rate
- High process reliability with smooth operation

APPLICATION EXAMPLE

Dry machining in steel 42CrMo4 (4140)

a_p = 12 mm (.472")

a_e = 11.7 mm (.461")

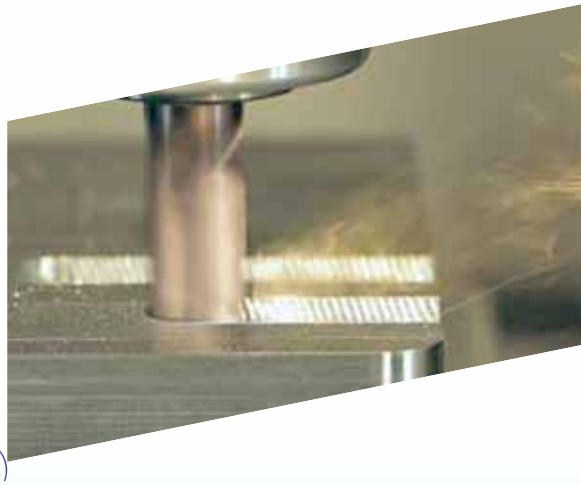
v_c = 240 m/min (790 SFM)

V_f = 1800 mm/min (70.9 IPM)

RPM = 6550

f_Z = .069mm (.0027" IPT)

Metal removal rate Q = 252 cm^3/min (15.4 in^3/min)



SLOTTING* | CUTTING VALUES

	Material / ISO Material	Hardness	DOC	WOC	SFM	IPT by d1 Ø							
						1/8	1/4	5/16	3/8	1/2	5/8	3/4	1
P	Struct./free-cutt. steels, unall. heat-treat./case hard. steels	up to 28 HRc	1 x d	1 x d	900	0.0005	0.0011	0.0014	0.0019	0.0026	0.0032	0.0038	0.0051
	Free-cutting steels, unalloyed case hard. steels, nitr. steels	28 - 38 HRc	1 x d	1 x d	800	0.0005	0.0011	0.0014	0.0019	0.0026	0.0032	0.0038	0.0051
	Alloyed heat-treatable, tool and high speed steels	28 - 44 HRc	1 x d	1 x d	650	0.0005	0.0011	0.0012	0.0017	0.0021	0.0028	0.0033	0.0044
M	Stainless steel - easy to machine / sulphured	up to 20 HRc	1 x d	1 x d	400	0.0004	0.0009	0.0012	0.0017	0.0026	0.0026	0.0029	0.0038
	Stainless steel - moderately difficult to machine	20 - 30 HRc	1 x d	1 x d	250	0.0004	0.0009	0.0012	0.0015	0.0019	0.0024	0.0027	0.0036
K	Cast iron, grey cast iron, spher. graphite/mall. cast iron	up to 240 HB 30	1 x d	1 x d	525	0.0005	0.0011	0.0014	0.0019	0.0026	0.0032	0.0038	0.0051
N	Aluminium, Al-wrought alloys, Al-alloys	up to 3% Si	1 x d	1 x d	1600	0.0007	0.0013	0.0016	0.0025	0.0034	0.0038	0.0042	0.0056
	Aluminium-cast alloys	above 3% Si	1 x d	1 x d	1100	0.0004	0.0009	0.0012	0.0021	0.0028	0.0032	0.0038	0.0051
S	Titanium	up to 44 HRc	1 x d	1 x d	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

- Thanks to low power consumption also suitable on less rigid machines
- Up to 100% increased cutting speed in steel
- High metal removal rate

APPLICATION EXAMPLE

Dry machining in steel 42CrMo4 (4140)

a_p = 24 mm (.946")

a_e = 3 mm (.118")

v_c = 280 m/min (920 SFM)

V_f = 3050 mm/min (120 IPM)

RPM = 7625

f_Z = 0.1mm (.0039" IPT)

Metal removal rate Q = 219 cm^3/min (13.4 in^3/min)

- Contours with high surface quality
- Up to 100% increased tool life
- High cutting parameters also in alloyed heat-treatable steels

HIGH SPEED MILLING * **

CUTTING VALUES

	Material / ISO Material	Hardness	DOC	WOC	SFM	IPT by d1 Ø							
						1/8	1/4	5/16	3/8	1/2	5/8	3/4	1
P	Struct./free-cutt. steels, unall. heat-treat./case hard. steels	up to 28 HRc	2 x d	0.2 x d	1150	0.0007	0.0013	0.0018	0.0023	0.0032	0.0036	0.0042	0.0056
	Free-cutting steels, unalloyed case hard. steels, nitr. steels	28 - 38 HRc	2 x d	0.2 x d	950	0.0007	0.0013	0.0018	0.0023	0.0032	0.0036	0.0042	0.0056
	Alloyed heat-treatable, tool and high speed steels	28 - 44 HRc	2 x d	0.15 x d	800	0.0005	0.0011	0.0012	0.0021	0.0030	0.0034	0.0038	0.0051
M	Stainless steel - easy to machine / sulphured	up to 20 HRc	2 x d	0.2 x d	450	0.0005	0.0011	0.0014	0.0021	0.0028	0.0032	0.0035	0.0046
	Stainless steel - moderately difficult to machine	20 - 30 HRc	2 x d	0.15 x d	400	0.0004	0.0009	0.0012	0.0017	0.0021	0.0026	0.0029	0.0038
K	Cast iron, grey cast iron, spher. graphite/mall. cast iron	up to 240 HB 30	2 x d	0.2 x d	600	0.0007	0.0013	0.0018	0.0023	0.0032	0.0036	0.0042	0.0056
N	Aluminium, Al-wrought alloys, Al-alloys	up to 3% Si	2 x d	0.4 x d	2000	0.0009	0.0018	0.0024	0.0031	0.0043	0.0048	0.0058	0.0077
	Aluminium-cast alloys	above 3% Si	2 x d	0.4 x d	1400	0.0007	0.0013	0.0018	0.0023	0.0032	0.0036	0.0042	0.0056
	Titanium	up to 44 HRc	2 x d	0.25 x d	375	0.0004	0.0009	0.0012	0.0017	0.0021	0.0026	0.0029	0.0038

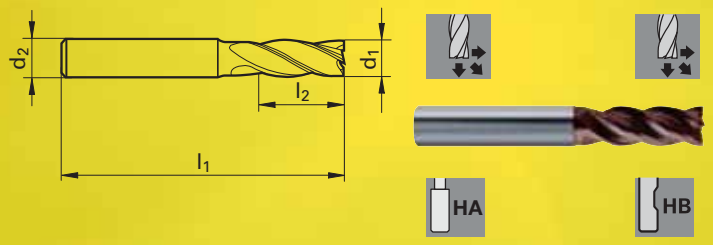
* peripheral cooling "Guhrojet" recommended for optimal chip evacuation and tool life

** for trochoidal milling and imachining with ae = 0.1-0.2xd the cutting speed vc and the feed rate can be increased by 50 %.

Solid carbide

4-fluted

With cutting edge preparation and nano-Si® coating



Series No.	EDP number	Surface Finish	HB	d_1	d_2	l_1	l_2	Corner Chamfer Inch
6757	9067570031700	nano-Si®		1/8	1/8	1 1/2	1/4	0.001
6757	9067570047600	nano-Si®		3/16	3/16	2	3/8	0.002
6757	9067570063500	nano-Si®		1/4	1/4	2 1/2	1/2	0.002
6757	9067570079400	nano-Si®		5/16	5/16	2 1/2	3/4	0.003
6757	9067570095200	nano-Si®		3/8	3/8	2 1/2	7/8	0.004
6757	9067570111100	nano-Si®		7/16	7/16	2 3/4	7/8	0.004
6757	9067570127000	nano-Si®	*	1/2	1/2	3 1/2	1	0.005
6757	9067570158700	nano-Si®	*	5/8	5/8	3 1/2	1 1/4	0.006
6757	9067570190500	nano-Si®	*	3/4	3/4	4	1 1/2	0.007
6757	9067570254000	nano-Si®	*	1	1	5	1 1/2	0.010

GUHRING

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