

GÜHRING

Sharp extra short for 40 % higher milling performance **new**



RF100 SHARP

Solid carbide milling cutter for top performance
in soft, tough and high-alloyed materials

OUR SHARPEST MILLING CUTTER

Specialist for soft, tough and high-alloyed materials

Milling soft, tough and high-alloyed materials presents particular challenges when it comes to the tool. If you choose the wrong one, you will end up with chips that stick and jam – causing the tool to break. With our sharpest solid carbide milling cutter to date, you don't have to worry as you'll achieve high-quality machining results.



exceptionally easy cutting
in soft, tough & high-alloyed materials
with a tensile strength of 300 - 900 N/mm²



full flexibility in milling operations
slotting, roughing, ramping, helical, finishing



powerful & smooth
on all machines



application-oriented construction dimensions
for cost-efficient machining

RF100 SHARP

Steel



Stainless steel



Aluminium



Special alloys



FROM UNSTABLE TO HPC

Powerful on all machines

The RF 100 Sharp solid carbide milling cutter is designed to cover all of the different operating conditions – and always achieves outstanding results.



Application example

Effective, quiet milling on weaker machines and unstable clamping.



Machine	Spinner TC 600 CNC lathe
Milling tool	RF 100 Sharp, art. no. 6478, Ø 10 mm, Z=4
Operating conditions	MTC
Milling operation	Hexagonal milling
Tool holder	BMT Life Tool ER 25 collet chuck
Material/component	1.7131 or 16MnCr5/shaft
Cutting parameters	v_c 130 m/min S 4,138 rpm f_z 0.07 mm v_f 1,158 mm/min a_e 8 mm a_p 3.8 mm
	Metal removal rate Q 35 cm ³ /min
	Tool life 78 min

Short machining times and long tool lives

- **tough carbide**
prevents tool breakage even under very unstable conditions
- **AlCrN coating**
provides optimum wear protection at all cutting speeds
- **optimised facet grinding**
dampens vibrations and increases smoothness and service life
- **corner protection chamfer**
provides more stability and edge strength

HPC

Application example

High-performance milling with extremely high cutting speeds under stable operating conditions.



Machine	CNC BAZ DMG DMU 100 P
Milling tool	RF 100 Sharp, art. no. 6479, Ø 16 mm, Z=4
Operating conditions	HPC
Milling operation	Contour roughing
Tool holder	HSK 100 A GühroJet Weldon tool holder
Material/component	1.0503 or C45 / block
Cutting parameters	v_c 180 m/min S 3,580 rpm f_z 0.1 mm v_f 1,430 mm/min a_e 6 mm a_p 34 mm
	Metal removal rate Q 291 cm ³ /min
	Tool life 134 min

THE EXTRA SHORT



**Ressource-efficient and economical
thanks to lower material consumption**

new

40% HIGHER MILLING PERFORMANCE
thanks to more compact dimensions

EXTRA SHORT DESIGN
maximum stability and
hardly any radial deflection

EXTRA-TOUGH CUTTING MATERIAL
prevents damage to cutting edges
even under unstable conditions



SPECIAL FRONT END
for slot drilling and high ramping angles



1xD CUTTING EDGE LENGTH
maximum feed rate when slotting

AICrN COATING
for highest wear resistance

2xD THE REACH
for more flexibility
with deeper contours

RF100 SHARP
EXTRA SHORT

EXTRA SHORT

Application example

HSC slot drilling in the micro range with \varnothing 1 mm in stainless steel and high-performance slotting \varnothing 10 mm in C45 steel.



Machine	Core micro
Milling tool	RF 100 Sharp extra short, art. no. 6938, \varnothing 1 mm, Z=4
Milling operation	Plunging + slotting (slot drilling)
Tool holder	HSK-E40 precision collet chuck holders
Cooling	Emulsion
Material	INOX 1.4301
Cutting parameters	v_c 70 m/min S 22,282 rpm f_z Slotting 0.01 mm v_f Slotting 891 mm/min f_z Plunging 0.002 mm v_f Plunging 178 mm/min a_e 1 mm a_p 0.8 mm
	Metal removal rate Q Slotting 0.7 cm ³ /min
	Tool life 1,850 slots (10.5 mm long each)

Machine	MAG NBV 700
Milling tool	RF 100 Sharp extra short, art. no. 6938, \varnothing 10 mm, Z=4
Milling operation	Slotting
Tool holder	HPC clamping chuck HSK-A 63
Cooling	Air
Material	C45
Cutting parameters	v_c 180 m/min S 5,730 rpm f_z 0.08 mm v_f 1,833 mm/min a_e 10 mm a_p 10 mm
	Metal removal rate Q 183.3 cm ³ /min
	Tool life 113 min

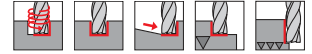


Ratio end mills RF 100 Sharp extra short

Article no. 6938



especially for soft, tough and high-alloyed materials • neck clearance • centre cutting • 40% higher milling performance thanks to short stable design • with special front end

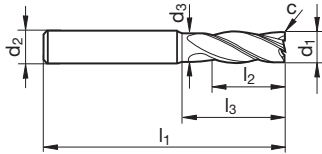
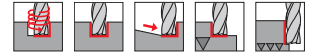


Ratio end mills RF 100 Sharp extra short

Article no. 6939



especially for soft, tough and high-alloyed materials • neck clearance • centre cutting • 40% higher milling performance thanks to short stable design • with special front end



Article no.

6938

6939

d1 e8 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Order no.
0.80	4.00	0.75	40	0.8	1.7	0.00	4	6938 0.800
1.00	4.00	0.92	40	1.0	2.1	0.01	4	6938 1.000
1.20	4.00	1.12	40	1.2	2.5	0.01	4	6938 1.200
1.40	4.00	1.32	40	1.4	2.9	0.01	4	6938 1.400
1.50	4.00	1.40	40	1.5	3.2	0.01	4	6938 1.500
1.60	4.00	1.50	40	1.6	3.4	0.01	4	6938 1.600
1.80	4.00	1.70	40	1.8	3.8	0.01	4	6938 1.800
2.00	6.00	1.85	50	2.0	4.2	0.02	4	6938 2.000
2.50	6.00	2.35	50	2.5	5.3	0.02	4	6938 2.500
2.80	6.00	2.65	50	2.8	5.9	0.02	4	6938 2.800
3.00	6.00	2.85	50	3.0	6.3	0.03	4	6938 3.000
3.50	6.00	3.30	50	3.5	7.4	0.03	4	6938 3.500 6939 3.500
3.80	6.00	3.60	50	3.8	8.0	0.03	4	6938 3.800 6939 3.800
4.00	6.00	3.80	50	4.0	8.4	0.04	4	6938 4.000 6939 4.000
4.50	6.00	4.30	50	4.5	9.5	0.04	4	6938 4.500 6939 4.500
4.80	6.00	4.60	50	4.8	10.1	0.04	4	6938 4.800 6939 4.800
5.00	6.00	4.80	50	5.0	10.5	0.05	4	6938 5.000 6939 5.000
5.50	6.00	5.30	50	5.5	12.0	0.05	4	6938 5.500 6939 5.500
5.70	6.00	5.50	50	5.7	12.0	0.05	4	6938 5.700 6939 5.700
6.00	6.00	5.70	50	6.0	12.0	0.06	4	6938 6.000 6939 6.000
6.70	8.00	6.40	55	6.7	16.0	0.06	4	6938 6.700 6939 6.700
7.00	8.00	6.70	55	7.0	16.0	0.07	4	6938 7.000 6939 7.000
7.70	8.00	7.40	55	7.7	16.0	0.07	4	6938 7.700 6939 7.700
8.00	8.00	7.70	55	8.0	16.0	0.08	4	6938 8.000 6939 8.000
9.00	10.00	8.70	61	9.0	20.0	0.09	4	6938 9.000 6939 9.000
9.70	10.00	9.40	61	9.7	20.0	0.09	4	6938 9.700 6939 9.700
10.00	10.00	9.50	61	10.0	20.0	0.10	4	6938 10.000 6939 10.000
11.00	12.00	10.50	70	11.0	24.0	0.11	4	6938 11.000 6939 11.000
11.70	12.00	11.20	70	11.7	24.0	0.11	4	6938 11.700 6939 11.700
12.00	12.00	11.50	70	12.0	24.0	0.12	4	6938 12.000 6939 12.000
14.00	14.00	13.50	75	14.0	28.0	0.14	4	6938 14.000 6939 14.000
15.60	16.00	15.10	82	15.6	32.0	0.15	4	6938 15.600 6939 15.600
16.00	16.00	15.50	82	16.0	32.0	0.16	4	6938 16.000 6939 16.000

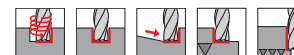
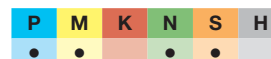


Ratio end mills RF 100 Sharp

Article no. 6478



especially for soft, tough and high-alloyed materials • longer cutting edge than DIN 6527 L • neck clearance • centre cutting

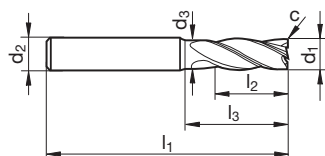
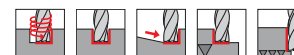
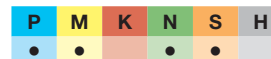


Ratio end mills RF 100 Sharp

Article no. 6479



especially for soft, tough and high-alloyed materials • longer cutting edge than DIN 6527 L • neck clearance • centre cutting



Article no. **6478** **6479**

d1 e8 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Order no.
1.00	4.00	0.92	50	3.0	4.0	0.02	4	6478 1.000
1.50	4.00	1.40	50	4.5	6.0	0.03	4	6478 1.500
2.00	6.00	1.85	50	6.0	8.0	0.04	4	6478 2.000
2.50	6.00	2.35	50	7.5	10.0	0.05	4	6478 2.500
3.00	6.00	2.85	57	10.0	15.0	0.06	4	6478 3.000
4.00	6.00	3.80	57	14.0	18.0	0.08	4	6478 4.000 6479 4.000
5.00	6.00	4.80	57	15.0	20.0	0.10	4	6478 5.000 6479 5.000
6.00	6.00	5.70	57	16.0	20.0	0.12	4	6478 6.000 6479 6.000
8.00	8.00	7.70	63	21.0	26.0	0.16	4	6478 8.000 6479 8.000
10.00	10.00	9.50	72	25.0	31.0	0.20	4	6478 10.000 6479 10.000
12.00	12.00	11.50	83	28.0	37.0	0.24	4	6478 12.000 6479 12.000
14.00	14.00	13.50	83	28.0	37.0	0.28	4	6478 14.000 6479 14.000
16.00	16.00	15.50	92	36.0	43.0	0.32	4	6478 16.000 6479 16.000
20.00	20.00	19.50	104	41.0	53.0	0.40	4	6478 20.000 6479 20.000

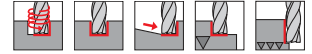
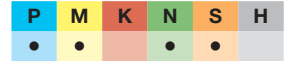


Ratio end mills RF 100 Sharp

Article no. **6480**



especially for soft, tough and high-alloyed materials • medium length version • neck clearance • centre cutting

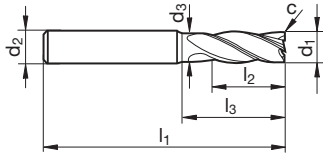
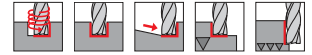


Ratio end mills RF 100 Sharp

Article no. **6481**



especially for soft, tough and high-alloyed materials • medium length version • neck clearance • centre cutting



Article no.

6480

6481

d1 e8 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Order no.
1.00	4.00	0.92	50	3.0	5.5	0.02	4	6480 1.000
1.50	4.00	1.40	50	4.5	8.5	0.03	4	6480 1.500
2.00	6.00	1.85	57	6.0	11.5	0.04	4	6480 2.000
2.50	6.00	2.35	57	7.5	14.5	0.05	4	6480 2.500
3.00	6.00	2.85	65	10.0	20.0	0.06	4	6480 3.000
4.00	6.00	3.80	65	14.0	27.0	0.08	4	6480 4.000 6481 4.000
5.00	6.00	4.80	65	15.0	28.0	0.10	4	6480 5.000 6481 5.000
6.00	6.00	5.70	75	19.0	38.0	0.12	4	6480 6.000 6481 6.000
8.00	8.00	7.70	80	21.0	43.0	0.16	4	6480 8.000 6481 8.000
10.00	10.00	9.50	93	26.0	52.0	0.20	4	6480 10.000 6481 10.000
12.00	12.00	11.50	100	28.0	54.0	0.24	4	6480 12.000 6481 12.000
14.00	14.00	13.50	100	28.0	54.0	0.28	4	6480 14.000 6481 14.000
16.00	16.00	15.50	123	38.0	74.0	0.32	4	6480 16.000 6481 16.000
20.00	20.00	19.50	126	41.0	75.0	0.40	4	6480 20.000 6481 20.000

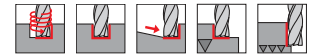
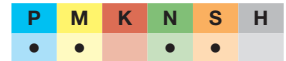


Ratio end mills RF 100 Sharp

Article no. 6962



especially for soft, tough and high-alloyed materials • neck clearance • centre cutting

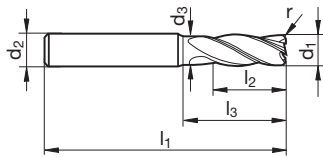
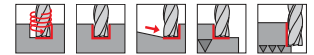
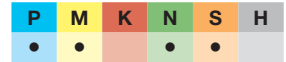


Ratio end mills RF 100 Sharp

Article no. 6963



especially for soft, tough and high-alloyed materials • neck clearance • centre cutting



Article no.

6962

6963

d1 e8 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	r mm	Z	Order no.
3.00	6.00	2.85	57	8.0	15.0	0.20	4	6962 3.002 6963 3.002
3.00	6.00	2.85	57	8.0	15.0	0.50	4	6962 3.005 6963 3.005
4.00	6.00	3.80	57	11.0	18.0	0.20	4	6962 4.002 6963 4.002
4.00	6.00	3.80	57	11.0	18.0	0.50	4	6962 4.005 6963 4.005
4.00	6.00	3.80	57	11.0	18.0	1.00	4	6962 4.010 6963 4.010
5.00	6.00	4.80	57	13.0	18.0	0.20	4	6962 5.002 6963 5.002
5.00	6.00	4.80	57	13.0	18.0	0.50	4	6962 5.005 6963 5.005
5.00	6.00	4.80	57	13.0	18.0	1.00	4	6962 5.010 6963 5.010
6.00	6.00	5.70	57	13.0	20.0	0.20	4	6962 6.002 6963 6.002
6.00	6.00	5.70	57	13.0	20.0	0.50	4	6962 6.005 6963 6.005
6.00	6.00	5.70	57	13.0	20.0	1.00	4	6962 6.010 6963 6.010
6.00	6.00	5.70	57	13.0	20.0	1.50	4	6962 6.015 6963 6.015
8.00	8.00	7.70	63	19.0	26.0	0.30	4	6962 8.003 6963 8.003
8.00	8.00	7.70	63	19.0	26.0	0.50	4	6962 8.005 6963 8.005
8.00	8.00	7.70	63	19.0	26.0	1.00	4	6962 8.010 6963 8.010
8.00	8.00	7.70	63	19.0	26.0	1.50	4	6962 8.015 6963 8.015
8.00	8.00	7.70	63	19.0	26.0	2.00	4	6962 8.020 6963 8.020
10.00	10.00	9.50	72	22.0	31.0	0.30	4	6962 10.003 6963 10.003
10.00	10.00	9.50	72	22.0	31.0	0.50	4	6962 10.005 6963 10.005
10.00	10.00	9.50	72	22.0	31.0	1.00	4	6962 10.010 6963 10.010
10.00	10.00	9.50	72	22.0	31.0	1.50	4	6962 10.015 6963 10.015
10.00	10.00	9.50	72	22.0	31.0	2.00	4	6962 10.020 6963 10.020
10.00	10.00	9.50	72	22.0	31.0	2.50	4	6962 10.025 6963 10.025
12.00	12.00	11.50	83	26.0	37.0	0.30	4	6962 12.003 6963 12.003
12.00	12.00	11.50	83	26.0	37.0	0.50	4	6962 12.005 6963 12.005
12.00	12.00	11.50	83	26.0	37.0	1.00	4	6962 12.010 6963 12.010
12.00	12.00	11.50	83	26.0	37.0	1.50	4	6962 12.015 6963 12.015
12.00	12.00	11.50	83	26.0	37.0	2.00	4	6962 12.020 6963 12.020
12.00	12.00	11.50	83	26.0	37.0	2.50	4	6962 12.025 6963 12.025
12.00	12.00	11.50	83	26.0	37.0	3.00	4	6962 12.030 6963 12.030
16.00	16.00	15.50	92	32.0	43.0	0.50	4	6962 16.005 6963 16.005
16.00	16.00	15.50	92	32.0	43.0	1.00	4	6962 16.010 6963 16.010
16.00	16.00	15.50	92	32.0	43.0	1.50	4	6962 16.015 6963 16.015
16.00	16.00	15.50	92	32.0	43.0	2.00	4	6962 16.020 6963 16.020
16.00	16.00	15.50	92	32.0	43.0	2.50	4	6962 16.025 6963 16.025
16.00	16.00	15.50	92	32.0	43.0	3.00	4	6962 16.030 6963 16.030
16.00	16.00	15.50	92	32.0	43.0	4.00	4	6962 16.040 6963 16.040
20.00	20.00	19.50	104	38.0	53.0	0.50	4	6962 20.005 6963 20.005
20.00	20.00	19.50	104	38.0	53.0	1.00	4	6962 20.010 6963 20.010
20.00	20.00	19.50	104	38.0	53.0	1.50	4	6962 20.015 6963 20.015
20.00	20.00	19.50	104	38.0	53.0	2.00	4	6962 20.020 6963 20.020
20.00	20.00	19.50	104	38.0	53.0	2.50	4	6962 20.025 6963 20.025
20.00	20.00	19.50	104	38.0	53.0	3.00	4	6962 20.030 6963 20.030
20.00	20.00	19.50	104	38.0	53.0	4.00	4	6962 20.040 6963 20.040

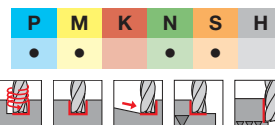


Ratio end mill sets RF 100 Sharp extra short

Article no. 6468



especially for soft, tough and high-alloyed materials • 40% higher milling performance thanks to short stable design • neck clearance • special front end • consisting of art. no. 6938

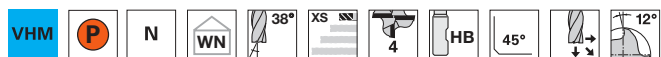


Article no. **6468**

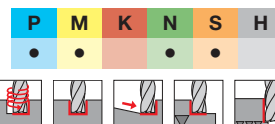
Ø-range mm	Pieces/set	Order no.
6/8/10/12	4	6468 1.000

Ratio end mill sets RF 100 Sharp extra short

Article no. 6469



especially for soft, tough and high-alloyed materials • 40% higher milling performance thanks to short stable design • neck clearance • special front end • consisting of art. no. 6939



Article no. **6469**

Ø-range mm	Pieces/set	Order no.
6/8/10/12	4	6469 1.000

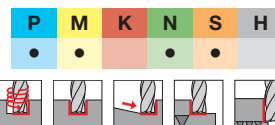


Ratio end mill sets RF 100 Sharp

Article no. 6482



especially for soft, tough and high-alloyed materials • longer cutting edge than DIN 6527 L • neck clearance • centre cutting • consisting of item no. 6478



Article no. **6482**

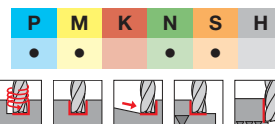
Ø-range mm	Pieces/set	Order no.
6/8/10/12/16	5	6482 1.000
6/8/10/12	4	6482 2.000

Ratio end mill sets RF 100 Sharp

Article no. 6483



especially for soft, tough and high-alloyed materials • longer cutting edge than DIN 6527 L • neck clearance • centre cutting • consisting of item no. 6479



Article no. **6483**

Ø-range mm	Pieces/set	Order no.
6/8/10/12/16	5	6483 1.000
6/8/10/12	4	6483 2.000



RF 100 Sharp

Milling conditions:

HPC	stable machining conditions high drive power
MTC	unstable machining conditions low drive power
	long tools
	long (DIN)+ tools

Correction factors:

	a_p roughing > 1.5 x D	v_c -25 %	f_z -25 %
	medium length tools	v_c -40 %	f_z -40 %
	extra short tools		f_z +40 %



Machining group	Application	v_c (m/min)	a_e max.	f_z (mm/z) with nom. \emptyset								
				1	3	4	6	8	10	12	16	20
P1.1.1 Unalloyed steel, annealed, 0.15 % C, Rm 420 N/mm ² , 125 HB P1.1.2 Unalloyed steel, heat-treated, 0.15 % C, Rm 420 N/mm ² , 125 HB P1.1.3 Unalloyed steel, annealed, 0.45 % C, Rm 640 N/mm ² , 190 HB P1.1.4 Unalloyed steel, heat-treated, 0.45 % C, Rm 640 N/mm ² , 190 HB P1.1.5 Unalloyed steel, heat-treated, 0.45 % C, Rm 850 N/mm ² , 250 HB P1.1.6 Unalloyed steel, annealed, 0.75 % C, Rm 915 N/mm ² , 270 HB P1.1.7 Unalloyed steel, heat-treated, 0.75 % C, Rm 1020 N/mm ² , 300 HB	Slotting	180	1xD	0.005	0.016	0.020	0.030	0.040	0.060	0.070	0.095	0.120
	Roughing	205	0.75xD	0.007	0.021	0.030	0.040	0.055	0.070	0.085	0.110	0.140
	Finishing	360	0.02xD	0.007	0.020	0.025	0.040	0.055	0.065	0.080	0.105	0.130
P2.1.1 Low-alloy steel, annealed, Rm 610 N/mm ² , 180 HB P2.1.2 Low-alloy steel, heat-treated, Rm 930 N/mm ² , 275 HB P2.1.3 Low-alloy steel, heat-treated, Rm 1020 N/mm ² , 300 HB P2.1.4 Low-alloy steel, heat-treated, Rm 1190 N/mm ² , 350 HB	Slotting	160	1xD	0.005	0.015	0.020	0.030	0.040	0.055	0.065	0.090	0.110
	Roughing	185	0.75xD	0.006	0.019	0.025	0.040	0.050	0.065	0.075	0.100	0.125
	Finishing	320	0.02xD	0.006	0.018	0.025	0.035	0.050	0.060	0.075	0.095	0.120
P3.1.1 High-alloy steel and tool steel, annealed, Rm 680 N/mm ² , 200 HB P3.1.2 High-alloy steel and tool steel, hardened and tempered, Rm 1100 N/mm ² , 325 HB	Slotting	135	1xD	0.004	0.013	0.020	0.025	0.035	0.050	0.060	0.080	0.100
	Roughing	155	0.75xD	0.006	0.017	0.025	0.035	0.045	0.060	0.070	0.090	0.115
	Finishing	270	0.02xD	0.006	0.017	0.020	0.035	0.045	0.055	0.065	0.090	0.110
M1.1.1 Stainless steel, ferritic/martensitic, with machining additives M1.1.2 Stainless steel, ferritic/martensitic, annealed, Rm 680 N/mm ² , 200 HB	Slotting	120	1xD	0.004	0.013	0.020	0.025	0.035	0.050	0.060	0.080	0.100
	Roughing	140	0.75xD	0.006	0.017	0.025	0.035	0.045	0.060	0.070	0.090	0.115
	Finishing	240	0.02xD	0.006	0.017	0.020	0.035	0.045	0.055	0.065	0.090	0.110
M1.1.3 Stainless steel, ferritic/martensitic, heat-treated, Rm 810 N/mm ² , 240 HB	Slotting	90	1xD	0.004	0.012	0.015	0.025	0.030	0.045	0.055	0.070	0.090
	Roughing	100	0.75xD	0.005	0.016	0.020	0.030	0.040	0.050	0.060	0.085	0.105
	Finishing	175	0.02xD	0.005	0.015	0.020	0.030	0.040	0.050	0.060	0.080	0.100
M2.1.1 Stainless steel, austenitic, quenched, 180 HB	Slotting	80	1xD	0.004	0.012	0.015	0.025	0.030	0.045	0.055	0.070	0.090
	Roughing	100	0.6xD	0.005	0.016	0.020	0.030	0.045	0.055	0.065	0.085	0.110
	Finishing	160	0.01xD	0.005	0.014	0.020	0.025	0.035	0.045	0.055	0.070	0.090
M2.2.1 Duplex steel, high-strength stainless steels	Slotting	60	1xD	0.003	0.010	0.015	0.020	0.030	0.040	0.045	0.065	0.080
	Roughing	75	0.6xD	0.005	0.014	0.020	0.030	0.040	0.045	0.055	0.075	0.095
	Finishing	120	0.01xD	0.004	0.012	0.015	0.025	0.030	0.040	0.045	0.065	0.080
K1.1.1 Grey cast iron, pearlitic/ferritic, 180 HB K1.1.2 Grey cast iron, pearlitic/martensitic, 260 HB K1.2.1 Cast iron with spheroidal graphite, ferritic, 160 HB K1.2.2 Cast iron with spheroidal graphite, pearlitic, 250 HB												
K1.3.1 Malleable cast iron, ferritic, 130 HB K1.3.2 Malleable cast iron, pearlitic, 230 HB												
K2.1.1 Vermicular graphite cast iron (GJV) K2.2.1 Austenitic-ferritic spheroidal graphite cast iron (ADI)												
N1.1.1 Wrought aluminium alloys, non-hardened, 60 HB N1.1.2 Wrought aluminium alloys, hardened, 100 HB	Slotting	500	1xD	0.007	0.021	0.030	0.040	0.055	0.080	0.095	0.130	0.160
	Roughing	575	0.75xD	0.009	0.028	0.035	0.055	0.075	0.090	0.110	0.145	0.185
	Finishing	1000	0.02xD	0.009	0.026	0.035	0.055	0.070	0.090	0.105	0.140	0.175
N2.1.1 Aluminium casting alloys, non-hardened, ≤ 12 % Si, 75 HB N2.1.2 Aluminium casting alloys, hardened, ≤ 12 % Si, 90 HB	Slotting	230	1xD	0.005	0.016	0.020	0.030	0.040	0.060	0.070	0.095	0.120
	Roughing	265	0.75xD	0.007	0.021	0.030	0.040	0.055	0.070	0.085	0.110	0.140
	Finishing	460	0.02xD	0.007	0.020	0.025	0.040	0.055	0.065	0.080	0.105	0.130
N2.1.3 Aluminium casting alloys, non-hardened, > 12 % Si, 130 HB	Slotting	180	1xD	0.005	0.016	0.020	0.030	0.040	0.060	0.070	0.095	0.120
	Roughing	180	0.75xD	0.006	0.018	0.025	0.035	0.050	0.060	0.070	0.095	0.120
	Finishing	365	0.02xD	0.007	0.020	0.025	0.040	0.055	0.065	0.080	0.105	0.130



Machining group	Application	V _c (m/min)	a _e max.	f _z (mm/z) with nom. Ø								
				1	3	4	6	8	10	12	16	20
N3.1.1 Copper and copper alloys: Free-machining alloy, Pb > 1 % N3.1.2 Copper and copper alloys: CuZn, CuSnZn	Slotting	250	1xD	0.005	0.016	0.020	0.030	0.040	0.060	0.070	0.095	0.120
	Roughing	290	0.75xD	0.007	0.021	0.030	0.040	0.055	0.070	0.085	0.110	0.140
	Finishing	500	0.02xD	0.007	0.020	0.025	0.040	0.055	0.065	0.080	0.105	0.130
N3.1.3 Copper and copper alloys: CuSn, lead-free copper and copper electrolyte	Slotting	195	1xD	0.005	0.015	0.020	0.030	0.040	0.055	0.065	0.090	0.110
	Roughing	225	0.75xD	0.006	0.019	0.025	0.040	0.050	0.065	0.075	0.100	0.125
	Finishing	390	0.02xD	0.006	0.018	0.025	0.035	0.050	0.060	0.075	0.095	0.120
N4.1.1 Non-metallic materials: Duroplastics, fibre-reinforced plastics	Slotting	150	1xD	0.006	0.017	0.020	0.035	0.045	0.065	0.075	0.100	0.125
	Roughing	175	0.75xD	0.007	0.022	0.030	0.045	0.060	0.070	0.085	0.115	0.145
	Finishing	300	0.02xD	0.007	0.021	0.030	0.040	0.055	0.070	0.085	0.110	0.140
N4.1.2 Non-metallic materials: Hard rubber, wood, etc.	Slotting	200	1xD	0.005	0.015	0.020	0.030	0.040	0.055	0.065	0.090	0.110
	Roughing	230	0.75xD	0.006	0.019	0.025	0.040	0.050	0.065	0.075	0.105	0.130
	Finishing	400	0.02xD	0.006	0.019	0.025	0.035	0.050	0.060	0.075	0.100	0.125
N4.1.3 Non-metallic materials: Graphite	Slotting	240	1xD	0.007	0.021	0.030	0.040	0.055	0.080	0.095	0.130	0.160
	Roughing	275	0.75xD	0.009	0.028	0.035	0.055	0.075	0.090	0.110	0.145	0.185
	Finishing	480	0.02xD	0.009	0.026	0.035	0.055	0.070	0.090	0.105	0.140	0.175
S1.1.1 Heat-resistant alloys, Fe-based, annealed, 200 HB	Slotting	30	1xD	0.004	0.011	0.015	0.020	0.030	0.040	0.050	0.065	0.080
	Roughing	40	0.6xD	0.005	0.014	0.020	0.030	0.040	0.050	0.060	0.075	0.095
	Finishing	60	0.01xD	0.004	0.012	0.015	0.025	0.030	0.040	0.050	0.065	0.080
S1.1.2 Heat-resistant alloys, Fe-based, hardened, 280 HB	Slotting	25	1xD	0.004	0.011	0.015	0.020	0.030	0.040	0.050	0.065	0.080
	Roughing	30	0.6xD	0.005	0.014	0.020	0.030	0.040	0.050	0.060	0.075	0.095
	Finishing	50	0.01xD	0.004	0.012	0.015	0.025	0.030	0.040	0.050	0.065	0.080
S1.1.3 Heat-resistant alloys, Ni- or Co-based, annealed, 250 HB	Slotting	15	1xD	0.003	0.009	0.010	0.015	0.025	0.030	0.040	0.050	0.065
	Roughing	20	0.6xD	0.004	0.012	0.015	0.025	0.030	0.040	0.045	0.060	0.080
	Finishing	35	0.01xD	0.003	0.010	0.015	0.020	0.025	0.030	0.040	0.050	0.065
S1.1.4 Heat-resistant alloys, Ni- or Co-based, hardened, 350 HB	Slotting	15	1xD	0.003	0.008	0.010	0.015	0.020	0.030	0.035	0.050	0.060
	Roughing	15	0.6xD	0.004	0.011	0.015	0.020	0.030	0.035	0.045	0.060	0.075
	Finishing	25	0.01xD	0.003	0.009	0.010	0.020	0.025	0.030	0.035	0.050	0.060
S1.1.5 Heat-resistant alloys, Ni- or Co-based, cast, 320 HB	Slotting	15	1xD	0.003	0.009	0.010	0.015	0.025	0.030	0.040	0.050	0.065
	Roughing	20	0.6xD	0.004	0.012	0.015	0.025	0.030	0.040	0.045	0.060	0.080
	Finishing	30	0.01xD	0.003	0.010	0.015	0.020	0.025	0.030	0.040	0.050	0.065
S2.1.1 Titanium alloys, pure titanium, Rm 400 N/mm ²	Slotting	70	1xD	0.004	0.013	0.020	0.025	0.035	0.050	0.060	0.080	0.100
	Roughing	90	0.6xD	0.006	0.018	0.025	0.035	0.050	0.060	0.070	0.095	0.120
	Finishing	140	0.02xD	0.006	0.017	0.020	0.035	0.045	0.055	0.065	0.090	0.110
S2.1.2 Titanium alloys, Alpha and Beta alloys, hardened, Rm 1050 N/mm ²	Slotting	60	1xD	0.004	0.012	0.015	0.025	0.030	0.045	0.055	0.070	0.090
	Roughing	75	0.6xD	0.005	0.016	0.020	0.030	0.045	0.055	0.065	0.085	0.110
	Finishing	120	0.02xD	0.005	0.015	0.020	0.030	0.040	0.050	0.060	0.080	0.100
H1.1.1 Hardened steel, hardened and tempered, < 55 HRC												
H1.1.2 Hardened steel, hardened and tempered, < 60 HRC												
H1.1.3 Hardened steel, hardened and tempered, > 60 HRC												
H2.1.1 Chilled cast iron, 400 HB												
H2.1.2 Chilled cast iron, hardened and tempered, < 55 HRC												

LENGTH SELECTION MADE EASY

RF100
SHARP

RF 100 SHARP ER

- Standard design according to "DIN 6527 long"
- dimensions from Ø 3 mm
- corner radii available from 0.2-4 mm



RF 100 SHARP DIN+

- flexible use at different depths, requiring fewer milling cutters and making it possible to regrind more often
- is based on "DIN long", but +12 % more cutting length (with Ø 16.0 mm)
- micro range dimensions from Ø 1 mm



RF 100 SHARP MEDIUM LENGTH

- extended reach enables machining with 2 milling cutters and suitable for the bridging of interference contours at greater depths
- cutting edge makes up more than 50 % of the reach
- micro range dimensions from Ø 1 mm



RF 100 SHARP EXTRA SHORT

- short dimension ensures high stability and running smoothness
- machining with up to 40 % higher feed rate
- cutting edge length of 1xD and 2xD the reach
- micro range dimensions from Ø 0.8 mm



DIMENSION COMPARISON

Product	Length	d1 mm	d3 mm	l1 mm	l2 mm	l3 mm	Z
RF 100 Sharp ER		16.0	15.5	92.0	32.0	43.0	4
RF 100 Sharp DIN+		16.0	15.5	92.0	36.0	43.0	4
RF 100 Sharp medium length		16.0	15.5	123.0	38.0	74.0	4
RF 100 Sharp extra short		16.0	15.5	82.0	16.0	32.0	4



Tool shopping made easy

Gühring online shop

With just a few clicks, you can order tools exactly when it suits you. Check tool availability online 24/7. Creating watch lists and shopping cart templates saves you work for recurring orders. You can also assign individual user roles to your employees. Furthermore, use our subscription function in the shop to automatically reorder tools. And with the retrieval function, you can manage your contracts yourself in the shop.

- **check price and stock in real time**
- **own material numbers make ordering easier**
- **individual approval processes for your company**
- **conveniently download CAD data when purchasing**

ISO code

P	Steel, high-alloyed steel
M	Stainless steel
K	Grey cast iron, spheroidal graphite iron and malleable cast iron
N	Aluminium and other non-ferrous metals
S	Special-, super- and titanium-alloys
H	Hardened steel and chilled cast iron
O	Fibre-reinforced plastics (FRP), graphite

Tool recommendations regarding the suitability for application groups or specifications of max. tensile strength and hardness can be found on the product and cutting value pages.

- optimal suitability
- limited suitability

Surfaces

P AlCrN

Pictograms

Cutting material

VHM

Solid carbide

Shank form



according to DIN 6535

Standard



according to DIN



according to company standard

Type



Applications



Slotting



Roughing



Ramping



Helix



Finishing

Length



extra short



long (DIN)



long (DIN) +



medium length

Number of cutting edges



Number of main cutting edges

Helix angle



Size of helix angle/no. of different helix angles

Rake angle



Rake angle of circumference cutting edges

Cutting edge profile



Corner chamfer



Radius with tolerance

Infeed



for lateral infeeds,
for ramping and drilling



Solid carbide milling cutter RF 100 Sharp

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