

Stable conditions:

- good cooling
- sufficient performance
- short-chipping



Application	v_c factor	f_z factor	Feed width (ae)	Feed depth (ap)
Slotting	1	1 (0.7 for $a_p = 2xd$)	1xd	0.5 up to 1xd
Roughing	1	1 (0.7 for $a_p = 2xd$)	0.4 up to 0.9xd	0.5 up to 1xd
Finishing	1	1	0.01 up to 0.1xd	1 up to 2xd
HPC-roughing	1.3	1.5	0.15 up to 0.4xd	1 up to 2xd
HSC-roughing	1.5	2	0.05 up to 0.15xd	1 up to 2xd

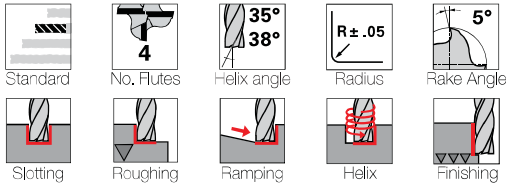
Material	Hardness	Recommended RF 100 type	Type of application	cut V_c	f_z (mm/z) with nom. Ø							
					3	6	8	10	12	16	20	25
Structural + free-cutting steels, unalloyed heat-treatable + case hardened steels 1.0035 S185, 1.0486 P275N, 1.0345 P235GH, 1.0050, 1.0070, 1.8937 1.0718 11SMnPb30, 1.0736 11SMn37 1.0402 C22, 1.1178 C30E 1.0503 C45, 1.1191 C30E 1.0301 C10, 1.1121 C10E 1.1750 C75W, 1.2076 102Cr6, 1.2307 29CrMoV9	up to 850 N/mm ²	F	Slotting	180	0.016	0.031	0.042	0.06	0.072	0.01	0.12	0.15
		F	Roughing	210	0.018	0.036	0.048	0.069	0.083	0.011	0.014	0.017
		SF	Finishing	360	0.017	0.034	0.046	0.066	0.079	0.11	0.13	0.17
Free-cutting steels, unalloyed case hardened steels, nitriding steels 1.0727 46 S20, 1.0728 60 S20, 1.0757 46SPb20 1.0601 C60, 1.1221 C60E 1.7043 38Cr4 1.5752 15NiCr13, 1.7131 16MnCr5, 1.7264 20CrMo5 1.8504 34CrAl6 1.8519 31CrMoV9, 1.8550 34CrAlNi7	850-1,200 N/mm ²	F	Slotting	160	0.014	0.029	0.038	0.055	0.066	0.09	0.11	0.14
		F	Roughing	190	0.017	0.033	0.044	0.063	0.076	0.1	0.13	0.16
		SF	Finishing	320	0.016	0.032	0.042	0.061	0.073	0.1	0.12	0.15
Alloyed heat-treatable, tool and high speed steels 1.5131 50MnSi4, 1.7003 38Cr2, 1.7030 28Cr4 1.5710 36NiCr6, 1.7035 41Cr4, 1.7225 42CrMo4 1.2080 X210Cr12, 1.2083 X42Cr13, 1.2419 105WCr6, 1.2379 X155CrVMo12-1 1.3243 S 6-5-2-5, 1.3343 S 6-5-2, 1.3344 S 6-5-3 Spring steel = 1.5026 55Si7, 1.7176 55Cr3, 1.8159 51CrV4	850-1,400 N/mm ²	U	Slotting	135	0.014	0.027	0.036	0.05	0.06	0.08	0.1	0.13
		U	Roughing	160	0.016	0.031	0.041	0.058	0.069	0.09	0.12	0.14
		SF	Finishing	270	0.015	0.03	0.04	0.055	0.066	0.06	0.11	0.14
Hardened steel Tool steel, heat-treatable steel, spring steel, high-speed steel, case hardened steel, etc. Z.B.: 1.2344 X40CrMoV5-1; 1.2767 X45NiCrMo4; 1.2379 X155CrVMo12-1; 1.2080 X210Cr12 1.3343 S 6-5-2	up to 54 HRC	U	Slotting	70	0.011	0.021	0.028	0.04	0.048	0.06	0.08	0.1
		U	Roughing	100	0.014	0.027	0.036	0.052	0.062	0.08	0.1	0.13
		SF	Finishing	140	0.011	0.021	0.028	0.04	0.048	0.06	0.08	0.1
		H	Roughing	80	0.021	0.042	0.056	0.075	0.09	0.12	0.15	0.19
		H	Finishing	100	0.008	0.015	0.02	0.027	0.032	0.04	0.05	0.07
Stainless steel 1.4104 X14CrMoS17, 1.4105 X6CrMoS17, 1.4305 X10CrNiS18-9 USA = 303, 410, 420F, 430, 430F	up to 750 N/mm ²	VA	Slotting	120	0.014	0.027	0.036	0.05	0.06	0.08	0.1	0.13
		VA	Roughing	140	0.016	0.031	0.041	0.058	0.069	0.09	0.12	0.14
		SF	Finishing	240	0.015	0.03	0.04	0.055	0.066	0.09	0.11	0.14
Stainless steel 1.4301 X5CrNi18-10, 1.4303 X5CrNi18-12 1.4310 XCrNi18-8 USA = 304, 304L, 420	750-850 N/mm ²	VA	Slotting	80	0.012	0.024	0.032	0.045	0.054	0.07	0.09	0.11
		VA	Roughing	100	0.014	0.028	0.037	0.052	0.062	0.08	0.1	0.12
		SF	Finishing	160	0.013	0.026	0.035	0.05	0.059	0.08	0.1	0.12
Stainless steel 1.4438 X2CrNiMo18-15-4, 1.4404 X2CrNiMo17-12-2, 1.4571 X6CrNiTi18-10 USA = 310, 316, 316B, 316L, 317	above 850 N/mm ²	VA/F	Slotting	60	0.011	0.021	0.028	0.04	0.048	0.06	0.08	0.1
		VA/F	Roughing	80	0.013	0.025	0.034	0.048	0.058	0.08	0.1	0.12
		SF	Finishing	120	0.011	0.021	0.028	0.04	0.048	0.06	0.08	0.1
Special alloys (nickel based "Ni") Nimonic, Inconel, Monel, Hastelloy	up to 1,300 N/mm ²	Ti/U	Slotting	60	0.008	0.017	0.022	0.032	0.038	0.05	0.06	0.08
		Ti/U	Roughing	80	0.01	0.02	0.027	0.038	0.046	0.06	0.08	0.1
		SF	Finishing	120	0.008	0.017	0.022	0.032	0.038	0.05	0.06	0.08
Titanium alloys ("Ti") 3.7024 Ti99.5, 3.7114 TiAl5Sn2.5, 3.7124 TiCu2 3.7154 TiAl6Zr5, 3.7164 TiAl6V4, 3.7184 TiAl4Mo4Sn2.5	up to 1,300 N/mm ²	Ti/U	Slotting	30	0.01	0.015	0.02	0.025	0.03	0.04	0.05	0.06
		Ti/U	Roughing	40	0.01	0.02	0.03	0.035	0.04	0.055	0.065	0.08
		SF	Finishing	60	0.015	0.025	0.035	0.045	0.05	0.065	0.08	0.12
Cast iron, grey cast iron, spheroidal graphite and malleable cast iron 0.6010 EN-GJL100 (GG10), 0.6020 EN-GJL-200 (GG20), 0.7050 EN-GJS-500-7 (GGG50), 0.8535 EN-GJMW-350-4 (GTW35)	up to 240 HB 30	F	Slotting	160	0.017	0.033	0.044	0.065	0.078	0.1	0.13	0.16
		F	Roughing	190	0.019	0.038	0.051	0.075	0.09	0.12	0.15	0.19
		SF	Finishing	320	0.018	0.036	0.048	0.072	0.086	0.11	0.14	0.18
Cast iron, grey cast iron, spheroidal graphite and malleable cast iron 0.6025 EN-GJL250 (GG25), 0.6035 EN-GJL-350 (GG35), 0.7070 EN-GJS-700-2 (GGG70), 0.8170 EN-GJMB-700-2 (GTS70)	above 240 HB 30	U	Slotting	140	0.015	0.03	0.04	0.055	0.066	0.09	0.11	0.14
		U	Roughing	170	0.017	0.035	0.046	0.063	0.076	0.1	0.13	0.16
		SF	Finishing	280	0.017	0.033	0.044	0.061	0.073	0.1	0.12	0.15
Aluminum, Al-wrought alloys, Al-alloys 3.0255 Al99.5, 3.2315 AlMgSi1, 3.3515 AlMg1 3.0615 AlMgSiPb, 3.1325 AlCuMg1, 3.3245 AlMg3Si, 3.4365 AlZnMgCu1.5	up to 3% Si	A	Slotting	500	0.02	0.039	0.052	0.08	0.096	0.13	0.16	0.2
		A	Roughing	600	0.022	0.045	0.06	0.092	0.11	0.15	0.18	0.23
		A	Finishing	1000	0.021	0.043	0.057	0.088	0.106	0.14	0.18	0.22
Aluminum-cast alloys 3.2131 G-AlSi5Cu1, 3.2153 G-AlSi7Cu3, 3.2573 G-AlSi9 3.2581 G-AlSi12, 3.2583 G-AlSi12Cu, - G-AlSi12CuNiMg	above 3% Si	A	Slotting	230	0.017	0.033	0.044	0.06	0.072	0.1	0.12	0.15
		A	Roughing	280	0.019	0.038	0.051	0.069	0.083	0.11	0.14	0.17
		A	Finishing	350	0.018	0.036	0.048	0.066	0.079	0.11	0.13	0.17
Magnesium-alloys MgMn2, G-MgAl8Zn1, G-MgAl6Zn3	—	A	Slotting	180	0.015	0.03	0.04	0.055	0.066	0.09	0.11	0.14
		A	Roughing	210	0.017	0.035	0.046	0.063	0.076	0.1	0.13	0.16
		A	Finishing	360	0.017	0.033	0.044	0.061	0.073	0.1	0.12	0.15
Non-ferrous metals (copper, short- or long-chipping brass or bronze) 2.0070 SE-Cu, 2.1020 CuSn6, 2.1096 G-CuSn5ZnPb 2.0380 CuZn39Pb2, 2.0401 CuZn39Pb3, 2.0410 CuZn43Pb2 2.0250 CuZn20, 2.0280 CuZn33, 2.0332 CuZn37Pb0.5 2.1090 CuSn7Zn2Pb, 2.1170 CuPb5Sn5, 2.1176 CuPb10Sn 2.0916 CuAl5, 2.0960 CuAl9Mn, 2.1050 CuSn10	up to 850 N/mm ²	A	Slotting	250	0.017	0.033	0.044	0.06	0.072	0.1	0.12	0.15
		A	Roughing	290	0.019	0.038	0.051	0.069	0.083	0.11	0.14	0.17
		SF	Finishing	500	0.018	0.036	0.048	0.066	0.079	0.11	0.13	0.17

All recommendations are valid for coated tools. For bright milling cutters please v_c - 40% and f_z - 25%

RF 100 Ti (4-flute) - Metric - Standard Length

A

center cutting with corner radius



Tool material

Solid Carbide

Surface finish

Super-A™

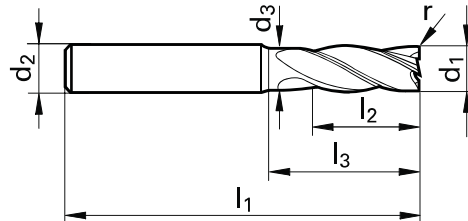
Series

3498

3499

Application group	Material examples	Ideal for
P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	—
S	Ni / Ti alloys	●
H	Hardened steel	—
●=Optimal ○=Secondary		

Speed and Feed data found on page 302



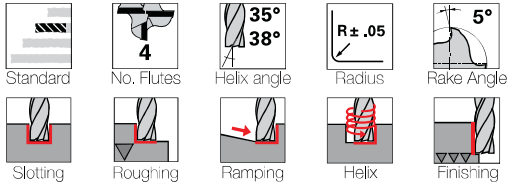
d1 h10	d2 h6	d3	l1	l2	l3	r	No. of Flutes	Code no.	EDP Number	
mm	mm	mm	mm	mm	mm	mm				
6.000	6.000	5.700	57.00	13.00	20.00	0.50	4	6.005	9034980060050	9034990060050
6.000	6.000	5.700	57.00	13.00	20.00	0.80	4	6.008	9034980060080	9034990060080
6.000	6.000	5.700	57.00	13.00	20.00	1.00	4	6.010	9034980060100	9034990060100
6.000	6.000	5.700	57.00	13.00	20.00	1.50	4	6.015	9034980060150	9034990060150
6.000	6.000	5.700	57.00	13.00	20.00	2.00	4	6.020	9034980060200	9034990060200
8.000	8.000	7.700	63.00	19.00	26.00	0.50	4	8.005	9034980080050	9034990080050
8.000	8.000	7.700	63.00	19.00	26.00	0.80	4	8.008	9034980080080	9034990080080
8.000	8.000	7.700	63.00	19.00	26.00	1.00	4	8.010	9034980080100	9034990080100
8.000	8.000	7.700	63.00	19.00	26.00	1.50	4	8.015	9034980080150	9034990080150
8.000	8.000	7.700	63.00	19.00	26.00	2.00	4	8.020	9034980080200	9034990080200
10.000	10.000	9.500	72.00	22.00	30.00	0.50	4	10.005	9034980100050	9034990100050
10.000	10.000	9.500	72.00	22.00	30.00	0.80	4	10.008	9034980100080	9034990100080
10.000	10.000	9.500	72.00	22.00	30.00	1.00	4	10.010	9034980100100	9034990100100
10.000	10.000	9.500	72.00	22.00	30.00	1.50	4	10.015	9034980100150	9034990100150
10.000	10.000	9.500	72.00	22.00	30.00	2.00	4	10.020	9034980100200	9034990100200
12.000	12.000	11.500	83.00	26.00	36.00	0.50	4	12.005	9034980120050	9034990120050
12.000	12.000	11.500	83.00	26.00	36.00	0.80	4	12.008	9034980120080	9034990120080
12.000	12.000	11.500	83.00	26.00	36.00	1.00	4	12.010	9034980120100	9034990120100
12.000	12.000	11.500	83.00	26.00	36.00	1.50	4	12.015	9034980120150	9034990120150
12.000	12.000	11.500	83.00	26.00	36.00	2.00	4	12.020	9034980120200	9034990120200
12.000	12.000	11.500	83.00	26.00	36.00	2.50	4	12.025	9034980120250	9034990120250
12.000	12.000	11.500	83.00	26.00	36.00	3.00	4	12.030	9034980120300	9034990120300
12.000	12.000	11.500	83.00	26.00	36.00	3.175	4	12.031	9034980120310	9034990120310
12.000	12.000	11.500	83.00	26.00	36.00	4.00	4	12.040	9034980120400	9034990120400

Continued on next page

RF 100 Ti (4-flute) - Metric - Standard Length

A

center cutting with corner radius



Tool material

Solid Carbide

Surface finish

Super-A™

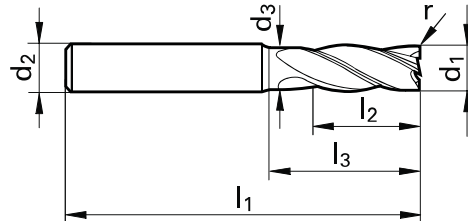
Series

3498

3499

Application group	Material examples	Ideal for
P	Steel	●
M	Stainless steel	○
K	Cast iron	●
N	Aluminum	—
S	Ni / Ti alloys	●
H	Hardened steel	—
●=Optimal ○=Secondary		

Speed and Feed data found on page 302



Continued from previous page

d1 h10	d2 h6	d3	l1	l2	l3	r	No. of Flutes	Code no.	EDP Number	
mm	mm	mm	mm	mm	mm	mm				
16.000	16.000	15.500	92.00	32.00	42.00	0.50	4	16.005	9034980160050	9034990160050
16.000	16.000	15.500	92.00	32.00	42.00	0.80	4	16.008	9034980160080	9034990160080
16.000	16.000	15.500	92.00	32.00	42.00	1.00	4	16.010	9034980160100	9034990160100
16.000	16.000	15.500	92.00	32.00	42.00	1.50	4	16.015	9034980160150	9034990160150
16.000	16.000	15.500	92.00	32.00	42.00	2.00	4	16.020	9034980160200	9034990160200
16.000	16.000	15.500	92.00	32.00	42.00	2.50	4	16.025	9034980160250	9034990160250
16.000	16.000	15.500	92.00	32.00	42.00	3.00	4	16.030	9034980160300	9034990160300
16.000	16.000	15.500	92.00	32.00	42.00	3.175	4	16.031	9034980160310	9034990160310
16.000	16.000	15.500	92.00	32.00	42.00	4.00	4	16.040	9034980160400	9034990160400
20.000	20.000	19.500	104.00	38.00	52.00	0.50	4	20.005	9034980200050	9034990200050
20.000	20.000	19.500	104.00	38.00	52.00	1.00	4	20.010	9034980200100	9034990200100
20.000	20.000	19.500	104.00	38.00	52.00	1.50	4	20.015	9034980200150	9034990200150
20.000	20.000	19.500	104.00	38.00	52.00	2.00	4	20.020	9034980200200	9034990200200
20.000	20.000	19.500	104.00	38.00	52.00	2.50	4	20.025	9034980200250	9034990200250
20.000	20.000	19.500	104.00	38.00	52.00	3.00	4	20.030	9034980200300	9034990200300
20.000	20.000	19.500	104.00	38.00	52.00	3.175	4	20.031	9034980200310	9034990200310
20.000	20.000	19.500	104.00	38.00	52.00	4.00	4	20.040	9034980200400	9034990200400
25.000	25.000	24.000	121.00	45.00	63.00	1.50	4	25.015	9034980250150	9034990250150
25.000	25.000	24.000	121.00	45.00	63.00	2.00	4	25.020	9034980250200	9034990250200
25.000	25.000	24.000	121.00	45.00	63.00	2.50	4	25.025	9034980250250	9034990250250
25.000	25.000	24.000	121.00	45.00	63.00	3.00	4	25.030	9034980250300	9034990250300
25.000	25.000	24.000	121.00	45.00	63.00	3.175	4	25.031	9034980250310	9034990250310
25.000	25.000	24.000	121.00	45.00	63.00	4.00	4	25.040	9034980250400	9034990250400
25.000	25.000	24.000	121.00	45.00	63.00	5.00	4	25.050	9034980250500	9034990250500

RF 100 Ti

High-performance roughing end mills for special and Ti-alloys

RF 100 high-performance end mills excel thanks to variable helix angles which considerably reduce vibration. The uneven helix angle vastly improves surface quality for finishing operations and a considerably higher feed rate for slot drilling and roughing operations are also achieved.

With many applications, the complete milling process can be covered with one RF 100, which as well as increasing tool life and dimensional accuracy of the workpiece generates a considerable cost advantage.

Suitable for roughing and finishing. Up to 60% higher feed rates and up to 4-times longer tool life.

Vibration-free operation and improved workpiece surface quality.

RF 100 Ti · Guhring series 3498



High wear protection through constant rake angle in radius area



Seamless radius area for high form and contour accuracy