Strong Performance

Milling cutters for maximum performance and quality

RF 100

High-performance end mills
with unequal helix

GUHRING

MILLING CUTTERS

CR 100

Milling cutters for CFK

GUHRING

Standard	Type	Shank design	Tool illustration		Tool material	Surface	d1	Guhring no.	Discount group	Standard range page
RF 100 U										
centre cutting										
DIN 6527 K	N	HB			Solid carbide	○	6,000 - 20,000	3200	106	1101
DIN 6527 K	N	HB			Solid carbide	F	6,000 - 20,000	3731	106	1101
DIN 6527 K	N	HA		NEW	Solid carbide	F	6,000 - 20,000	6706	106	1101
DIN 6527 L	N	HA			Solid carbide	○	4,000 - 25,000	3208	106	1102
DIN 6527 L	N	HA			Solid carbide	F	4,000 - 25,000	3736	106	1102
DIN 6527 L	N	HB			Solid carbide	○	4,000 - 25,000	3201	106	1102
DIN 6527 L	N	HB			Solid carbide	F	4,000 - 25,000	3732	106	1102
Guhring std.	N	HA			Solid carbide	○	10,000 - 25,000	3209	106	1103
Guhring std.	N	HA			Solid carbide	F	10,000 - 25,000	3627	106	1103
Guhring std.	N	HA		NEW	Solid carbide	F	6,000 - 20,000	3837	106	1104
Guhring std.	N	HB		NEW	Solid carbide	F	6,000 - 20,000	3838	106	1104
Guhring std.	N	HA		NEW	Solid carbide	F	6,000 - 20,000	3839	106	1104
Guhring std.	N	HB		NEW	Solid carbide	F	6,000 - 20,000	3871	106	1104
DIN 6527 L	N	HA		NEW	Solid carbide	F	6,000 - 25,000	3872	106	1105
DIN 6527 L	N	HB		NEW	Solid carbide	F	6,000 - 25,000	3873	106	1105

○ bright ◌ steam tempered ◒ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

Standard	Type	Shank design	Tool illustration		Tool material	Surface	d1	Guhring no.	Discount group	Standard range page
RF 100 U (3-fluted)										
centre cutting										
~ DIN 6527 L	N	HA		NEW	Solid carbide	F	3,000 - 16,000	3893	106	1106
~ DIN 6527 L	N	HB		NEW	Solid carbide	F	3,000 - 16,000	3894	106	1106
~ DIN 6527 L	N	HA		NEW	Solid carbide	F	3,000 - 20,000	3891	106	1106
~ DIN 6527 L	N	HB		NEW	Solid carbide	F	3,000 - 20,000	3892	106	1106
Rf 100 U/HF										
centre cutting										
DIN 6527 L	HF	HA		NEW	Solid carbide	F	6,000 - 25,000	3507	106	1107
DIN 6527 L	HF	HB		NEW	Solid carbide	F	6,000 - 25,000	3508	106	1107
Guhring std.	HF	HA		NEW	Solid carbide	F	6,000 - 20,000	3509	106	1107
Guhring std.	HF	HB		NEW	Solid carbide	F	6,000 - 20,000	3522	106	1107
Guhring std.	HF	HA		NEW	Solid carbide	F	6,000 - 20,000	3598	106	1108
Guhring std.	HF	HB		NEW	Solid carbide	F	6,000 - 20,000	3600	106	1108
RF 100 F										
centre cutting										
DIN 6527 L	NH	HA			Solid carbide	F	4,000 - 20,000	3629	106	1109
DIN 6527 L	NH	HB			Solid carbide	F	4,000 - 20,000	3630	106	1109
DIN 6527 L	NH	HB			Solid carbide	F	6,000 - 20,000	3366	106	1109

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

Standard	Type	Shank design	Tool illustration		Tool material	Surface	d1	Guhring no.	Discount group	Standard range page
RF 100 VA										
centre cutting										
DIN 6527 K	N	HA		NEW	Solid carbide	a	4,000 - 20,000	3804	106	1110
DIN 6527 K	N	HB		NEW	Solid carbide	a	4,000 - 20,000	3805	106	1110
DIN 6527 L	N	HA		NEW	Solid carbide	a	3,000 - 25,000	3800	106	1110
DIN 6527 L	N	HB		NEW	Solid carbide	a	3,000 - 25,000	3803	106	1110
DIN 6527 L	N	HA		NEW	Solid carbide	a	6,000 - 25,000	6700	106	1111
DIN 6527 L	N	HB		NEW	Solid carbide	a	6,000 - 25,000	6701	106	1111
Guhring std.	N	HA		NEW	Solid carbide	a	6,000 - 20,000	3806	106	1111
Guhring std.	N	HB		NEW	Solid carbide	a	6,000 - 20,000	3807	106	1111
RF 100 VA/NF										
centre cutting										
DIN 6527 L	NF	HA		NEW	Solid carbide	a	5,000 - 25,000	3696	106	1112
DIN 6527 L	NF	HB		NEW	Solid carbide	a	5,000 - 25,000	3718	106	1112
Guhring std.	NF	HA		NEW	Solid carbide	a	6,000 - 20,000	3733	106	1112
Guhring std.	NF	HB		NEW	Solid carbide	a	6,000 - 20,000	3885	106	1112
RF 100 VA with ball nose										
centre cutting										
DIN 6527 L	N	HA		NEW	Solid carbide	a	4,000 - 25,000	6707	106	1113

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Standard	Type	Shank design	Tool illustration		Tool material	Surface	d1	Guhring no.	Discount group	Standard range page
RF 100 VA with ball nose centre cutting										
DIN 6527 L	N	HB		NEW	Solid carbide	a	4,000 - 25,000	6708	106	1113
RF 100 A centre cutting										
DIN 6527 L	W	HA			Solid carbide	◯	4,000 - 20,000	3202	106	1114
DIN 6527 L	W	HB			Solid carbide	◯	4,000 - 20,000	3319	106	1114
RF 100 A (3-fluted) centre cutting										
Guhring std.	W	HA		NEW	Solid carbide	◯	3,000 - 20,000	3472	106	1115
Guhring std.	W	HA		NEW	Solid carbide	◯	6,000 - 20,000	3473	106	1115
Guhring std.	W	HB		NEW	Solid carbide	◯	3,000 - 20,000	6702	106	1116
Guhring std.	W	HB		NEW	Solid carbide	◯	6,000 - 20,000	6703	106	1116
RF 100 A/WF centre cutting										
~ DIN 6527 L	WF	HA		NEW	Solid carbide	◯	6,000 - 25,000	3468	106	1117
~ DIN 6527 L	WF	HB			Solid carbide	◯	6,000 - 25,000	3469	106	1117
Guhring std.	WF	HA		NEW	Solid carbide	◯	6,000 - 20,000	3470	106	1117
Guhring std.	WF	HB		NEW	Solid carbide	◯	6,000 - 20,000	3471	106	1117

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

Standard	Type	Shank design	Tool illustration		Tool material	Surface	d1	Guhring no.	Discount group	Standard range page
RF 100 H										
centre cutting										
DIN 6527 L	H	HA		NEW	Solid carbide	A	6,000 - 20,000	3895	106	1118
DIN 6527 L	H	HB		NEW	Solid carbide	A	6,000 - 20,000	3896	106	1118
RF 100 Ti										
centre cutting										
DIN 6527 L	N	HA		NEW	Solid carbide	A	6,000 - 25,000	3498	106	1120
DIN 6527 L	N	HB		NEW	Solid carbide	A	6,000 - 25,000	3499	106	1120
RF 100 S/F (5-fluted)										
centre cutting										
~ DIN 6527 L	NH	HA		NEW	Solid carbide	F	4,000 - 25,000	6709	106	1122
~ DIN 6527 L	NH	HB		NEW	Solid carbide	F	4,000 - 25,000	6710	106	1122
Guhring std.	NH	HA		NEW	Solid carbide	F	4,000 - 20,000	3897	106	1122
Guhring std.	NH	HB		NEW	Solid carbide	F	4,000 - 20,000	3898	106	1122
RF 100 S/F (6-fluted)										
centre cutting										
~ DIN 6527 L	NH	HA			Solid carbide	F	8,000 - 25,000	3631	106	1123
~ DIN 6527 L	NH	HB			Solid carbide	F	8,000 - 25,000	3632	106	1123

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Standard	Type	Shank design	Tool illustration	Tool material	Surface	d1	Guhring no.	Discount group	Standard range page
GH 100 U - slot drills (3-fluted)									
centre cutting									
DIN 6527 K	NH	HA		Solid carbide	○	3,000 - 20,000	3193	106	1125
DIN 6527 K	NH	HA		Solid carbide	F	3,000 - 20,000	3540	106	1125
DIN 6527 K	NH	HB		Solid carbide	F	3,000 - 20,000	3729	106	1125
DIN 6527 L	NH	HA		Solid carbide	○	1,000 - 20,000	3196	106	1126
DIN 6527 L	NH	HA		Solid carbide	F	1,000 - 20,000	3636	106	1126
DIN 6527 L	NH	HB		Solid carbide	F	3,000 - 20,000	3730	106	1126
DIN 6528	NH	HA		Solid carbide	○	2,000 - 20,000	3203	106	1127
DIN 6528	NH	HA		Solid carbide	F	2,000 - 20,000	3741	106	1127
GH 100 U - mini-slot drills (3-fl.)									
centre cutting									
Guhring std.	NH	Ø<2.0 HA/HB		Solid carbide	F	1,000 - 10,000	3686	106	1127
GA 200 A - slot drills (3-fluted)									
for Al, centre cutting and with corner radius									
~ DIN 6527 L	W	HA		Solid carbide	○	6,000 - 25,000	3367	106	1129
RS 100 U									
high-performance roughing end mills with centre cutting									
DIN 6527 L	NF	HA		Solid carbide	F	6,000 - 25,000	3887	106	1131
DIN 6527 L	NF	HB		Solid carbide	F	6,000 - 25,000	3888	106	1131

Ⓒ TiCN Ⓒb Carbo Ⓓ Cristall Ⓕ FIRE/nanoFIRE Ⓟ AlCrN Ⓢ TiN Ⓢ+ TiN+ Ⓜ MolyGlide Ⓨ Signum

Standard	Type	Shank design	Tool illustration		Tool material	Surface	d1	Guhring no.	Discount group	Standard range page
RS 100 F										
high-performance roughing end mills with centre cutting										
DIN 6527 L	NF	HA			Solid carbide	F	6,000 - 25,000	3889	106	1131
DIN 6527 L	NF	HB			Solid carbide	F	6,000 - 25,000	3890	106	1131
GS 100 U - roughing end mills with fine teeth										
for materials < 48 HRC, centre cutting										
DIN 6527 L	NRf	HB			Solid carbide	○	6,000 - 25,000	3204	117	1132
DIN 6527 L	NRf	HB			Solid carbide	F	6,000 - 25,000	3723	117	1132
DIN 6527 L	NRf	HB			Solid carbide	F	6,000 - 20,000	3365	106	1132
GS 100 A - roughing end mills with coarse teeth										
for Al < 600 N/mm², **centre cutting**										
DIN 6527 L	WR	HB			Solid carbide	○	6,000 - 20,000	3364	106	1133
DIN 6527 L	WR	HB			Solid carbide	○	6,000 - 25,000	3127	117	1133
GS 100 H - roughing end mills with fine teeth										
for materials < 56 HRC, centre cutting										
DIN 6527 L	HR	HB			Solid carbide	F	6,000 - 20,000	3682	117	1134
DIN 6527 L	HR	HA		NEW	Solid carbide	F	6,000 - 25,000	6704	106	1134
DIN 6527 L	HR	HB		NEW	Solid carbide	F	6,000 - 25,000	6705	106	1134
GH 100 U - multi-tooth end mills										
for superfine finishing of materials < 50 HRC										
~ DIN 6527 L	NH	HA			Solid carbide	○	3,000 - 25,000	3311	106	1135

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Standard	Type	Shank design	Tool illustration	Tool material	Surface	d1	Guhring no.	Discount group	Standard range page
GH 100 U - multi-tooth end mills for superfine finishing of materials < 50 HRC									
~ DIN 6527 L	NH	HA		Solid carbide	F	3,000 - 25,000	3689	106	1135
~ DIN 6527 L	NH	HB		Solid carbide	F	6,000 - 25,000	3047	106	1135
Guhring std.	NH	HA		Solid carbide	○	6,000 - 25,000	3312	106	1136
Guhring std.	NH	HA		Solid carbide	F	6,000 - 25,000	3691	106	1136
Guhring std.	NH	HB		Solid carbide	○	6,000 - 25,000	3313	106	1136
Guhring std.	NH	HB		Solid carbide	F	6,000 - 25,000	3693	106	1136
GH 100 H - hard multi-t. end mills for superfine finishing of materials < 62 HRC									
~ DIN 6527 L	H	HA		Solid carbide	F	3,000 - 20,000	3715	106	1138
Guhring std.	H	HA		Solid carbide	F	6,000 - 20,000	3716	106	1138
Pilot end mill 180° centre cutting									
~ DIN 6527 L	N	HA	NEW	Solid carbide	A	1,400 - 12,000	6716	106	1139

Standard	Type	Shank design	Tool illustration		Tool material	Surface	d1		Guhring no.	Discount group	Standard range page
CR 100 - End mills											
For fibre-reinforced plastics											
Guhring std.	N	HA		NEW	Solid carbide	D	4,000	- 16,000	6720	106	1140
Guhring std.	N	HA		NEW	Solid carbide	D	4,000	- 16,000	6717	106	1140
Guhring std.	N	HA		NEW	Solid carbide	D	4,000	- 16,000	6719	106	1140
CR 100 Air - End mills with internal cooling											
For fibre-reinforced plastics											
Guhring std.	N	HA		NEW	Solid carbide	D	6,000	- 16,000	6718	106	1141

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Slot drills (2-fluted)

centre cutting

Standard	Type	Shank design	Tool illustration	Tool material	Surface	d1	Guhring no.	Discount group	Standard range page
DIN 6527 K	N	HA		Solid carbide	○	2,000 - 20,000	3194	117	1142
DIN 6527 K	N	HA		Solid carbide	F	2,000 - 20,000	3633	117	1142
DIN 6527 K	N	HB		Solid carbide	○	2,000 - 20,000	3294	117	1142
DIN 6527 K	N	HB		Solid carbide	F	2,000 - 20,000	3634	117	1142
DIN 6527 L	N	HA		Solid carbide	○	1,000 - 20,000	3195	117	1143
DIN 6527 L	N	HA		Solid carbide	F	1,000 - 20,000	3635	117	1143
DIN 6527 L	N	HB		Solid carbide	○	2,000 - 20,000	3295	117	1143
DIN 6527 L	N	HB		Solid carbide	F	2,000 - 20,000	3154	117	1143
DIN 6528	N	HA		Solid carbide	○	2,000 - 20,000	3303	117	1144
DIN 6528	N	HA		Solid carbide	F	2,000 - 20,000	3676	117	1144
Guhring std.	N	HA		Solid carbide	○	2,000 - 20,000	3212	117	1144
Guhring std.	N	HA		Solid carbide	F	2,000 - 20,000	3709	117	1144

XL slot drills (2-fluted)

centre cutting

Standard	Type	Shank design	Tool illustration	Tool material	Surface	d1	Guhring no.	Discount group	Standard range page
Guhring std.	N	HA		Solid carbide	○	3,000 - 20,000	3011	117	1145
Guhring std.	N	HA		Solid carbide	F	3,000 - 20,000	3021	117	1145

(C) TiCN (Cb) Carbo (D) Cristall (F) FIRE/nanoFIRE (P) AlCrN (S) TiN (S+) TiN+ (M) MolyGlide (Y) Signum

Standard	Type	Shank design	Tool illustration	Tool material	Surface	d1	Guhring no.	Discount group	Standard range page
Al slot drills (2-fluted)									
centre cutting									
DIN 6527 K	W	HA		Solid carbide	○	3,000 - 20,000	3310	117	1145
DIN 6527 K	W	HB		Solid carbide	○	3,000 - 20,000	3126	117	1145
DIN 6527 L	W	HA		Solid carbide	○	3,000 - 20,000	3309	117	1146
DIN 6527 L	W	HB		Solid carbide	○	3,000 - 20,000	3059	117	1146
XL Al slot drills (2-fluted)									
centre cutting									
Guhring std.	W	HA		Solid carbide	○	5,000 - 16,000	3358	117	1146
Slot drills (3-fluted)									
centre cutting									
DIN 6527 K	N	HA		Solid carbide	○	2,000 - 20,000	3555	117	1147
DIN 6527 K	N	HA		Solid carbide	F	2,000 - 20,000	3558	117	1147
DIN 6527 K	N	HB		Solid carbide	○	2,000 - 20,000	3296	117	1147
DIN 6527 K	N	HB		Solid carbide	F	2,000 - 20,000	3719	117	1147
DIN 6527 L	N	HA		Solid carbide	○	2,000 - 20,000	3559	117	1148
DIN 6527 L	N	HA		Solid carbide	F	2,000 - 20,000	3560	117	1148
DIN 6527 L	N	HB		Solid carbide	○	2,000 - 20,000	3297	117	1148
DIN 6527 L	N	HB		Solid carbide	F	2,000 - 20,000	3720	117	1148

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Standard	Type	Shank design	Tool illustration	Tool material	Surface	d1	Guhring no.	Discount group	Standard range page
Slot drills (3-fluted)									
centre cutting									
DIN 6528	N	HA		Solid carbide	○	2,000 - 20,000	3307	117	1149
DIN 6528	N	HA		Solid carbide	(F)	2,000 - 20,000	3677	117	1149
Guhring std.	N	HA		Solid carbide	○	2,000 - 20,000	3220	117	1149
Guhring std.	N	HA		Solid carbide	(F)	2,000 - 20,000	3711	117	1149
XL slot drills (3-fluted)									
centre cutting									
Guhring std.	N	HA		Solid carbide	○	3,000 - 20,000	3314	117	1150
Guhring std.	N	HA		Solid carbide	(F)	3,000 - 20,000	3680	117	1150
Guhring std.	N	HA	NEW	Solid carbide	(D)	3,000 - 16,000	6721	106	1150
Mini slot drills (3-fluted)									
centre cutting									
Guhring std.	N	Ø<2.0 HA/HB		Solid carbide	(F)	0,300 - 20,000	3684	117	1151
End mills (4-fluted)									
centre cutting									
DIN 6527 K	N	HA		Solid carbide	○	2,000 - 20,000	3198	117	1152
DIN 6527 K	N	HA		Solid carbide	(F)	2,000 - 20,000	3637	117	1152
DIN 6527 K	N	HB		Solid carbide	○	2,000 - 20,000	3298	117	1152
DIN 6527 K	N	HB		Solid carbide	(F)	2,000 - 20,000	3721	117	1152

(C) TiCN (Cb) Carbo (D) Cristall (F) FIRE/nanoFIRE (P) AlCrN (S) TiN (S+) TiN+ (M) MolyGlide (Y) Signum

Standard	Type	Shank design	Tool illustration	Tool material	Surface	d1	Guhring no.	Discount group	Standard range page
End mills (4-fluted)									
centre cutting									
DIN 6527 L	N	HA		Solid carbide	○	2,000 - 20,000	3197	117	1153
DIN 6527 L	N	HA		Solid carbide	F	2,000 - 20,000	3649	117	1153
DIN 6527 L	N	HB		Solid carbide	○	2,000 - 20,000	3299	117	1153
DIN 6527 L	N	HB		Solid carbide	F	2,000 - 20,000	3722	117	1153
DIN 6528	N	HA		Solid carbide	○	2,000 - 20,000	3304	117	1154
DIN 6528	N	HA		Solid carbide	F	2,000 - 20,000	3678	117	1154
Guhring std.	N	HA		Solid carbide	○	4,500 - 20,000	3257	117	1154
Guhring std.	N	HA		Solid carbide	F	4,500 - 20,000	3713	117	1154
XL end mills (4-fluted)									
centre cutting									
Guhring std.	N	HA		Solid carbide	○	3,000 - 20,000	3012	117	1155
Guhring std.	N	HA		Solid carbide	F	3,000 - 20,000	3023	117	1155
Chamfering milling cutters 60°									
straight-fluted									
Guhring std.		HA	NEW	Solid carbide	A	4,000 - 12,000	6711	117	1156
Guhring std.		HB	NEW	Solid carbide	A	6,000 - 12,000	6712	117	1156

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Standard	Type	Shank design	Tool illustration		Tool material	Surface	d1			Guhring no.	Discount group	Standard range page
Chamfering milling cutters 90° straight-fluted												
Guhring std.		HA		NEW	Solid carbide	A	4,000	-	12,000	6713	117	1156
Guhring std.		HB		NEW	Solid carbide	A	6,000	-	12,000	3396	117	1156
Chamfering milling cutters 120° straight-fluted												
Guhring std.		HA		NEW	Solid carbide	A	4,000	-	12,000	6714	117	1157
Guhring std.		HB		NEW	Solid carbide	A	6,000	-	12,000	6715	117	1157

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

Standard	Type	Shank design	Tool illustration		Tool material	Surface	d1			Guhring no.	Discount group	Standard range page
Slot drills with corner radius (2-fluted) centre cutting												
DIN 6527 L	N	HA			Solid carbide	○	6,000	-	20,000	3106	117	1158
DIN 6527 L	N	HA			Solid carbide	F	6,000	-	20,000	3561	117	1158
DIN 6527 L	N	HA		NEW	Solid carbide	D	6,000	-	12,000	6722	106	1159
End mills with corner radius (4-fluted) centre cutting												
DIN 6527 L	N	HA			Solid carbide	○	6,000	-	20,000	3111	117	1160
DIN 6527 L	N	HA			Solid carbide	F	6,000	-	20,000	3562	117	1160
DIN 6527 L	N	HA		NEW	Solid carbide	D	6,000	-	12,000	6723	106	1161
GH 100 U - multi-tooth end mills with corner radius centre cutting												
~ DIN 6527 L	NH	HA			Solid carbide	F	6,000	-	20,000	3563	106	1162
GF 500 T - HSC-profile cutters with Torus form for materials < 54 HRC, centre cutting												
Guhring std.	N	HA			Solid carbide	A	4,000	-	12,000	3863	106	1163
Guhring std.	N	HA			Solid carbide	A	2,000	-	12,000	3856	106	1164
Guhring std.	N	HA			Solid carbide	A	6,000	-	12,000	3865	106	1165
Guhring std.	N	HA			Solid carbide	A	2,000	-	8,000	3860	106	1166
Guhring std.	N	HA			Solid carbide	A	2,000	-	12,000	3859	106	1167

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Standard	Type	Shank design	Tool illustration		Tool material	Surface	d1	Guhring no.	Discount group	Standard range page
GF 300 T - hard profile cutters with Torus form for materials < 62 HRC, centre cutting										
Guhring std.	H	HA			Solid carbide	F	3,000 - 16,000	3361	106	1168
Guhring std.	H	HA			Solid carbide	F	6,000 - 16,000	3362	106	1169
GH 100 H - hard multi-tooth end mills with corner radius for superfine finishing of materials < 62 HRC										
Guhring std.	H	HA			Solid carbide	F	6,000 - 16,000	3363	106	1170
Ball nose slot drills (2-fluted) centre cutting										
DIN 6527 L	N	HA			Solid carbide	○	0,500 - 20,000	3308	117	1171
DIN 6527 L	N	HA			Solid carbide	F	0,500 - 20,000	3679	117	1171
DIN 6527 L	N	HA		NEW	Solid carbide	D	3,000 - 12,000	6724	106	1171
DIN 6527 L	N	HB			Solid carbide	○	3,000 - 20,000	3024	117	1172
DIN 6527 L	N	HB			Solid carbide	F	3,000 - 20,000	3049	117	1172
XL ball nose slot drills (2-fluted) centre cutting										
Guhring std.	N	HA			Solid carbide	○	3,000 - 12,000	3014	117	1172
Guhring std.	N	HA			Solid carbide	F	3,000 - 12,000	3030	117	1172
Ball nose end mills (4-fluted) centre cutting										
DIN 6528	N	HA			Solid carbide	○	4,000 - 20,000	3306	117	1173

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Standard	Type	Shank design	Tool illustration	Tool material	Surface	d1	Guhring no.	Discount group	Standard range page
Ball nose end mills (4-fluted)									
centre cutting									
DIN 6528	N	HA		Solid carbide	F	4,000 - 20,000	3727	117	1173
DIN 6527 L	N	HB		Solid carbide	○	3,000 - 20,000	3026	117	1173
DIN 6527 L	N	HB		Solid carbide	F	3,000 - 20,000	3050	117	1173
XL ball nose end mills (4-fluted)									
centre cutting									
Guhring std.	N	HA		Solid carbide	○	3,000 - 12,000	3015	117	1174
Guhring std.	N	HA		Solid carbide	F	3,000 - 12,000	3043	117	1174
Guhring std.	N	HA	NEW	Solid carbide	D	3,000 - 12,000	6725	106	1174
GF 200 B - ball nose pr. cutters									
for materials < 48 HRC, centre cutting									
Guhring std.	N	HA		Solid carbide	F	3,000 - 10,000	3044	106	1175
Guhring std.	N	HA		Solid carbide	F	3,000 - 10,000	3045	106	1175
GF 500 B - HSC-ball nose profile cutters									
for materials < 54 HRC, centre cutting									
Guhring std.	N	HA		Solid carbide	A	6,000 - 12,000	3854	106	1176
Guhring std.	N	HA		Solid carbide	A	4,000 - 12,000	3866	106	1177
Guhring std.	N	HA		Solid carbide	A	2,000 - 12,000	3848	106	1178
Guhring std.	N	HA		Solid carbide	A	6,000 - 12,000	3855	106	1179

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Standard	Type	Shank design	Tool illustration	Tool material	Surface	d1	Guhring no.	Discount group	Standard range page
GF 500 B - HSC-ball nose profile cutters for materials < 54 HRC, centre cutting									
Guhring std.	N	HA		Solid carbide	A	2,000 - 8,000	3853	106	1180
Guhring std.	N	HA		Solid carbide	A	2,000 - 12,000	3849	106	1181
GF 300 B - ball nose hard profile cutters for materials < 62 HRC, centre cutting									
Guhring std.	H	HA		Solid carbide	F	0,500 - 16,000	3359	106	1182
Guhring std.	H	HA		Solid carbide	F	3,000 - 16,000	3360	106	1183
GF 200 WP									
Guhring std.	GF 200	HA				10,000 - 32,000	1941	140	1184
Guhring std.	GF 200	HA				10,000 - 32,000	1942	140	1184
Indexable inserts round									
Guhring std.				Cermet	○	10.000 - 32.000	1947	141	1185
Guhring std.				Solid carbide	F	10.000 - 32.000	2520	141	1185
Torx screwdriver									
Guhring std.						-	1612	140	1185

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Standard	Type	Shank design	Tool illustration		Tool material	Surface	d1		Guhring no.	Discount group	Standard range page
Slot drills (2-fluted)											
centre cutting											
Guhring std.		HA			**PCD**	◯	4,000	- 20,000	**5492**	110	1186
Guhring std.		cyl.			**PCD**	◯	4,000	- 20,000	**5493**	110	1187
Slot drills (3-fluted)											
centre cutting											
Guhring std.		HA		NEW	**PCD**	◯	14,000	- 20,000	**5495**	110	1188
Guhring std.		cyl.		NEW	**PCD**	◯	14,000	- 20,000	**5496**	110	1189

Milling cutters

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Standard	Type	Shank design	Tool illustration	Tool material	Surface	d1	Guhring no.	Discount group	Standard range page
RF 40 - Ratio end mills									
centre cutting									
DIN 844 K	N	B		HSS-E-PM	◯	8,000 - 30,000	3429	112	1190
DIN 844 K	N	B		HSS-E-PM	F	8,000 - 20,000	3705	112	1190
DIN 844 L	N	B		HSS-E-PM	◯	16,000 - 30,000	3432	112	1190
DIN 844 L	N	B		HSS-E-PM	F	16,000 - 30,000	3706	112	1190
GS 40 - roughing end mills									
fine teeth, with centre cutting									
DIN 844 K	NRf	B		HSS-E-PM	◯	6,000 - 20,000	3322	112	1191
DIN 844 K	NRf	B		HSS-E-PM	F	6,000 - 20,000	3668	112	1191
DIN 844 K	NRf	B		HSS-E-PM	◯	6,000 - 32,000	3340	112	1191
DIN 844 K	NRf	B		HSS-E-PM	F	6,000 - 32,000	3660	112	1191

Standard	Type	Shank design	Tool illustration	Tool material	Surface	d1	Guhring no.	Discount group	Standard range page
Slot drills (2-fluted)									
centre cutting									
DIN 327	N	B		M42	○	1,000 - 25,000	3451	112	1192
DIN 327	N	B		M42	F	1,000 - 25,000	3663	112	1192
DIN 844 K	N	B		M42	○	3,000 - 20,000	3452	112	1192
DIN 844 K	N	B		M42	F	3,000 - 20,000	3694	112	1192
DIN 844 L	N	B		M42	○	3,000 - 20,000	3453	112	1193
DIN 844 L	N	B		M42	F	3,000 - 20,000	3695	112	1193
Slot drills (3-fluted)									
centre cutting									
DIN 327	N	B		M42	○	2,800 - 30,000	3458	112	1193
DIN 327	N	B		M42	F	2,800 - 30,000	3651	112	1193
DIN 844 K	N	B		M42	○	2,800 - 20,000	3459	112	1194
DIN 844 K	N	B		M42	F	2,800 - 20,000	3664	112	1194
DIN 844 L	N	B		M42	○	3,000 - 20,000	3460	112	1194
DIN 844 L	N	B		M42	F	3,000 - 20,000	3836	112	1194
Mini-End Mill (3-fluted)									
centre cutting									
Guhring std.	N	B		M42	○	3,000 - 10,000	3142	112	1195

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Standard	Type	Shank design	Tool illustration	Tool material	Surface	d1	Guhring no.	Discount group	Standard range page
Mini-End Mill (3-fluted)									
centre cutting									
Guhring std.	N	B		M42	F	3,000 - 10,000	3144	112	1195
Guhring std.	N	B		M42	○	3,000 - 10,000	3143	112	1195
Guhring std.	N	B		M42	F	3,000 - 10,000	3145	112	1195
Ball nose slot drills (2-fluted)									
centre cutting									
DIN 327	N	B		M42	○	2,000 - 28,000	3466	112	1196
DIN 327	N	B		M42	F	2,000 - 30,000	3703	112	1196
Guhring std.	N	B		M42	○	3,000 - 30,000	3467	112	1197
Guhring std.	N	B		M42	F	3,000 - 20,000	3704	112	1197
End mills									
centre cutting									
DIN 844 K	N	B		M42	○	2,000 - 32,000	3428	112	1198
DIN 844 K	N	B		M42	F	2,000 - 32,000	3670	112	1198
DIN 844 L	N	B		M42	○	3,000 - 40,000	3431	112	1198
DIN 844 L	N	B		M42	F	3,000 - 32,000	3692	112	1198
Guhring std.	N	B		M42	○	6,000 - 20,000	3433	112	1199

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Standard	Type	Shank design	Tool illustration	Tool material	Surface	d1	Guhring no.	Discount group	Standard range page
Roughing end mills centre cutting									
DIN 844 K	NR	B		M42	○	6,000 - 50,000	3346	112	1200
DIN 844 K	NR	B		M42	F	6,000 - 50,000	3690	112	1200
DIN 844 L	NR	B		M42	○	6,000 - 36,000	3347	112	1200
DIN 844 L	NR	B		M42	F	6,000 - 36,000	3650	112	1200
Roughing/finishing end mills centre cutting									
DIN 844 K	NF	B		M42	○	6,000 - 50,000	3343	112	1201
DIN 844 K	NF	B		M42	F	6,000 - 40,000	3669	112	1201
DIN 844 L	NF	B		M42	○	6,000 - 36,000	3342	112	1201
DIN 844 L	NF	B		M42	F	6,000 - 32,000	3698	112	1201
Morse taper end mills									
DIN 845 K	NF	MK		HSCO	○	10,000 - 50,000	3118	112	1202
DIN 845 K	NR	MK		HSCO	○	10,000 - 50,000	3117	112	1202
DIN 845 K	N	MK		HSCO	○	14,000 - 45,000	3440	112	1202
DIN 845 L	NR	MK		HSCO	○	16,000 - 50,000	3121	112	1203
DIN 845 L	N	MK		HSCO	○	16,000 - 63,000	3120	112	1203

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Standard	Type	Shank design	Tool illustration	Tool material	Surface	d1	Guhring no.	Discount group	Standard range page
End mills with international taper									
DIN 2328 K	NR	SK		HSCO	○	32,000 - 80,000	3131	112	1204
DIN 2328 K	N	SK		HSCO	○	32,000 - 80,000	3130	112	1204
DIN 2328 L	NR	SK		HSCO	○	32,000 - 80,000	3134	112	1205
DIN 2328 L	N	SK		HSCO	○	32,000 - 80,000	3133	112	1205
Side and face cutters									
DIN 885	N			HSCO	○	50,000 - 200,000	3530	112	1206
Shell end mills									
DIN 1880	N			M42	○	40,000 - 125,000	3504	112	1206
DIN 1880	N			M42	C	40,000 - 100,000	3654	112	1206
DIN 1880	NR			M42	○	40,000 - 125,000	3185	112	1207
DIN 1880	NR			HSCO	C	40,000 - 100,000	3749	112	1207
DIN 1880	NF			M42	○	40,000 - 125,000	3187	112	1207
Woodruff cutters									
DIN 850	N	B		HSCO	○	4,500 - 45,500	3580	112	1208
DIN 850	H	B		HSCO	○	4,500 - 45,500	3579	112	1208

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Standard	Type	Shank design	Tool illustration	Tool material	Surface	d1	Guhring no.	Discount group	Standard range page
T-slot end mills									
DIN 851	N	B		HSCO	◯	12,500 - 32,000	3570	112	1209
Corner rounding cutters with face relief									
DIN 6518	N	B		HSCO	◯	10,000 - 56,000	3176	112	1209
Dovetail cutters									
DIN 1833	H	B		HSCO	◯	16,000 - 32,000	3572	112	1210
DIN 1833	H	B		HSCO	◯	16,000 - 25,000	3576	112	1210
DIN 1833	H	B		HSCO	◯	16,000 - 32,000	3574	112	1210
DIN 1833	H	B		HSCO	◯	16,000 - 32,000	3577	112	1210

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Standard	Type	Shank design	Tool illustration		Tool material	Surface	d1			Guhring no.	Discount group	Standard range page
RF 100 U												
centre cutting												
Guhring std.	N	cil. h6			Solid carbide	F	3/16	-	1	3113	106	1212
Guhring std.	N	~HB			Solid carbide	F	3/8	-	1	3099	106	1212
Guhring std.	N	cil. h6			Solid carbide	F	3/16	-	1	3114	106	1212
Guhring std.	N	~HB			Solid carbide	F	3/8	-	1	3100	106	1212
Guhring std.	N	Ø<1/2 HA/HB		NEW	Solid carbide	F	1/4	-	1	3079	106	1213
Rf 100 U/HF												
centre cutting												
Guhring std.	HF	Ø<1/2 HA/HB		NEW	Solid carbide	F	1/4	-	1	3082	106	1213
RF 100 F												
centre cutting												
Guhring std.	NH	Ø<1/2 HA/HB		NEW	Solid carbide	F	3/16	-	3/4	3078	106	1214
RF 100 VA												
centre cutting												
Guhring std.	N	Ø<1/2 HA/HB		NEW	Solid carbide	a	3/16	-	1	3080	106	1214
RF 100 VA/NF												
centre cutting												
Guhring std.	NF	Ø<1/2 HA/HB		NEW	Solid carbide	a	1/4	-	1	3081	106	1215
RF 100 A												
centre cutting												
Guhring std.	W	Ø<1/2 HA/HB		NEW	Solid carbide	○	3/16	-	3/4	3077	106	1215

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Standard	Type	Shank design	Tool illustration		Tool material	Surface	d1			Guhring no.	Discount group	Standard range page
RF 100 Ti												
centre cutting												
Guhring std.	N	Ø<1/2 HA/HB		NEW	Solid carbide	A	1/4	-	1	3876	106	1216
RF 100 S/F (6-fluted)												
centre cutting												
Guhring std.	NH	cil. h6			Solid carbide	F	5/16	-	1	3115	106	1216
GH 100 U - slot drills (3-fluted)												
centre cutting												
Guhring std.	NH	cyl.		NEW	Solid carbide	F	1/16	-	1/2	3086	106	1217
Guhring std.	NH	cil. h6			Solid carbide		1/8	-	1	3172	106	1217
Guhring std.	NH	cil. h6			Solid carbide	F	1/8	-	1	3173	106	1217
GA 200 A - slot drills (3-fluted)												
for Al, centre cutting and with corner radius												
Guhring std.	W	cil. h6			Solid carbide		1/4	-	3/4	3177	106	1218
RS 100 U												
high-performance roughing end mills with centre cutting												
Guhring std.	NF	cil. h6			Solid carbide	F	1/4	-	1	3097	106	1219
RS 100 F												
high-performance roughing end mills with centre cutting												
Guhring std.	NF	cil. h6			Solid carbide	F	1/4	-	1	3098	106	1219
GS 100 U - rough. cutter, fine tooth												
for materials < 48 HRC, centre cutting												
Guhring std.	NRf	cil. h6			Solid carbide		1/4	-	1	3186	106	1220

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Standard	Type	Shank design	Tool illustration	Tool material	Surface	d1	Guhring no.	Discount group	Standard range page
GS 100 U - rough. cutter, fine tooth for materials < 48 HRC, centre cutting									
Guhring std.	NRf	cil. h6		Solid carbide	F	1/4 - 1	3188	106	1220
GS 100 A - roughing end mills with coarse teeth for Al < 600 N/mm², centre cutting									
Guhring std.	WR	cil. h6		Solid carbide	○	1/4 - 1	3184	106	1220
GS 100 H - rough. cutter, fine tooth for materials < 56 HRC, centre cutting									
Guhring std.	HR	cil. h6		Solid carbide	F	1/4 - 3/4	3189	106	1221
Guhring std.	HR	cil. h6		Solid carbide	F	1/4 - 3/4	3190	106	1221
GH 100 U - multifluted end mills for superfine finishing of materials < 50 HRC									
Guhring std.	NH	cil. h6		Solid carbide	○	1/4 - 1	3178	106	1222
Guhring std.	NH	cil. h6		Solid carbide	F	1/4 - 1	3179	106	1222
Guhring std.	NH	cil. h6		Solid carbide	○	1/4 - 3/4	3180	106	1222
Guhring std.	NH	cil. h6		Solid carbide	F	1/4 - 3/4	3181	106	1222
GH 100 H - hard multi-t. end mills for superfine finishing of materials < 62 HRC									
Guhring std.	H	cil. h6		Solid carbide	F	1/4 - 3/4	3182	106	1223
Guhring std.	H	cil. h6		Solid carbide	F	1/4 - 3/4	3183	106	1223

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Standard	Type	Shank design	Tool illustration	Tool material	Surface	d1	Guhring no.	Discount group	Standard range page
Slot drills (2-fluted)									
centre cutting									
Guhring std.	N	cil. h6		Solid carbide	F	1/16 - 1	3148	106	1224
Guhring std.	N	cil. h6		Solid carbide	○	1/16 - 1	3146	106	1224
Guhring std.	N	cil. h6		Solid carbide	F	1/16 - 3/4	3092	106	1224
Guhring std.	N	cil. h6		Solid carbide	○	1/8 - 1	3147	106	1225
Guhring std.	N	cil. h6		Solid carbide	F	1/8 - 1	3149	106	1225
Al slot drills (2-fluted)									
centre cutting									
Guhring std.	W	cil. h6		Solid carbide	○	1/8 - 1	3174	106	1226
Guhring std.	W	cil. h6		Solid carbide	○	1/4 - 5/8	3175	106	1226
Slot drills (3-fluted)									
centre cutting									
Guhring std.	N	cil. h6		Solid carbide	○	1/8 - 1	3168	106	1227
Guhring std.	N	cil. h6		Solid carbide	F	1/8 - 1	3170	106	1227
XL slot drills (3-fluted)									
centre cutting									
Guhring std.	N	cil. h6		Solid carbide	○	3/16 - 1	3169	106	1227
Guhring std.	N	cil. h6		Solid carbide	F	3/16 - 1	3171	106	1227

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Standard	Type	Shank design	Tool illustration		Tool material	Surface	d1			Guhring no.	Discount group	Standard range page
End mills (4-fluted)												
centre cutting												
Guhring std.	N	cil. h6			Solid carbide	○	1/16	-	1	3150	106	1228
Guhring std.	N	cil. h6			Solid carbide	F	1/16	-	1	3153	106	1228
Guhring std.	N	cil. h6			Solid carbide	F	1/16	-	3/4	3093	106	1228
Guhring std.	N	cil. h6			Solid carbide	○	1/8	-	1	3152	106	1229
Guhring std.	N	cil. h6			Solid carbide	F	1/8	-	1	3156	106	1229
XL end mills (4-fluted)												
centre cutting												
Guhring std.	N	cil. h6			Solid carbide	○	3/16	-	1	3151	106	1229
Guhring std.	N	cil. h6			Solid carbide	F	3/16	-	1	3155	106	1229
Slot drills (2-fluted)												
with corner radius, with centre cutting												
Guhring std.	N	cil. h6		NEW	Solid carbide	F	1/8	-	1/2	3087	106	1230
Guhring std.	N	cil. h6		NEW	Solid carbide	F	1/8	-	1/2	3088	106	1230
End mills (4-fluted)												
with corner radius, with centre cutting												
Guhring std.	N	cil. h6		NEW	Solid carbide	F	1/8	-	1/2	3089	106	1231
Guhring std.	N	cil. h6		NEW	Solid carbide	F	1/4	-	1/2	3090	106	1231

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Standard	Type	Shank design	Tool illustration	Tool material	Surface	d1	Guhring no.	Discount group	Standard range page
GH 100 U - multifluted end mills with corner radius, with centre cutting									
Guhring std.	NH	cil. h6	NEW	Solid carbide	F	1/4 - 3/4	3091	106	1232
GF 300 T - hard profile cutters with Torus form for materials < 62 HRC, centre cutting									
Guhring std.	H	cil. h6		Solid carbide	F	3/16 - 5/8	3192	106	1233
Ball nose slot drills (2-fluted) centre cutting									
Guhring std.	N	cil. h6		Solid carbide	○	1/16 - 3/4	3157	106	1234
Guhring std.	N	cil. h6		Solid carbide	F	1/16 - 3/4	3159	106	1234
Guhring std.	N	cil. h6		Solid carbide	○	1/8 - 3/4	3158	106	1235
Guhring std.	N	cil. h6		Solid carbide	F	1/8 - 3/4	3160	106	1235
Ball nose end mills (4-fluted) centre cutting									
Guhring std.	N	cil. h6		Solid carbide	○	1/16 - 3/4	3161	106	1236
Guhring std.	N	cil. h6		Solid carbide	F	1/16 - 3/4	3165	106	1236
Guhring std.	N	cil. h6		Solid carbide	○	1/8 - 3/4	3164	106	1236
Guhring std.	N	cil. h6		Solid carbide	F	1/8 - 3/4	3167	106	1236
XL ball nose end mills (4-fluted) centre cutting									
Guhring std.	N	cil. h6		Solid carbide	○	3/16 - 3/4	3162	106	1237

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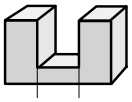
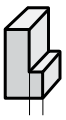
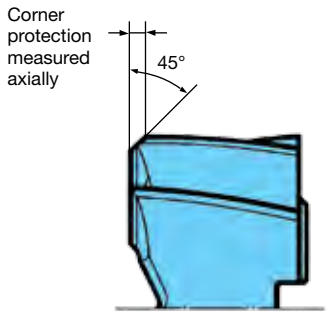
Standard	Type	Shank design	Tool illustration	Tool material	Surface	d1			Guhring no.	Discount group	Standard range page
XL ball nose end mills (4-fluted) centre cutting											
Guhring std.	N	cil. h6		Solid carbide	F	3/16	-	3/4	3166	106	1237
GF 300 B - ball nose hard profile cutters for materials < 62 HRC, centre cutting											
Guhring std.	H	cil. h6		Solid carbide	F	1/8	-	1/2	3101	106	1238
Guhring std.	H	cil. h6		Solid carbide	F	1/8	-	5/8	3191	106	1239

			Application			
			Slot drilling  **1 x d**	**Roughing** **0.3-0.8 x d**	**Finishing** **> 0.1 x d**	**Super finishing**  **0.1 x d**
Material/ Application group	Hardness tensile strength	Example material	Rigid conditions: - good cooling - sufficient performance - short-chipping	Unstable conditions: - standard cooling - average performance - medium- to long-chipping		
Steel **P**	up to 850 Nmm²	C45/ 16MnCr5	RF 100 F Guh. no. 3366 page 1109	RF 100 VA/NF Guh. no. 3696 page 1112		RF 100 S/F Guh. no. 3631 page 1123
	above 850 Nmm²	42CrMo4	RF 100 U Guh. no. 3732 page 1102	RF 100 U/HF Guh. no. 3508 page 1107		
Stainless steel **M**	up to 750 Nmm²	1.4301 1.4305	RF 100 VA Guh. no. 3803 page 1110	RF 100 VA/NF Guh. no. 3696 page 1112		
	above 750 Nmm²	1.4571	RF 100 F Guh. no. 3366 page 1109	RF 100 VA/NF Guh. no. 3696 page 1112		
Cast iron **K**	up to 180 HB 30	GG	RF 100 F Guh. no. 3366 page 1109	RF 100 U/HF Guh. no. 3508 page 1107		
	above 180 HB 30	GGG / GGT / GGv	RF 100 U Guh. no. 3732 page 1102	RF 100 U/HF Guh. no. 3508 page 1107		
Aluminium **N**	up to 3% Si	AlMgSi1	RF 100 A Guh. no. 3472 page 1115	RF 100 A/WF Guh. no. 3469 page 1117		RF 100 A Guh. no. 3202 page 1114
	above 3% Si	G-AlSi7Cu3	RF 100 F Guh. no. 3366 page 1109	RF 100 A/WF Guh. no. 3469 page 1117		RF 100 F Guh. no. 3629 page 1109
Ti-special alloys **S**	Ti-basis	TiAl6V4 Inconel 625	RF 100 Ti Guh. no. 3499 page 1120	RF 100 U/HF Guh. no. 3508 page 1107		RF 100 S/F Guh. no. 3631 page 1123
	Ni-basis	Inconel 728	RF 100 F Guh. no. 3366 page 1109	RF 100 U/HF Guh. no. 3508 page 1107		
Hardened steel **H**	up to 52 HRC	1.2343	RF 100 U Guh. no. 3732 page 1102	RF 100 U/HF Guh. no. 3508 page 1109		
	above 52 HRC	1.2379	RF 100 H Guh. no. 3896 page 1118	-		RF 100 H Guh. no. 3895 page 1118

RT 100 milling cutter corner protection dimensions



RF 100 Type	RF 100 U (3-fluted) RF 100 S/F (5-fluted) RF 100 S/F (6-fluted)	RF 100 U (4-fluted) RF 100 F RF 100 A	RF 100 U/HF RF 100 VA/NF RF 100 A/WF	RF 100 VA RF 100 H	RF 100 A (3-fluted)
Ø nom. mm	Corner protection dimensions (mm)				
< 2	0.025 x 45°				
3	0.05 x 45°				0.06 x 45°
4	0.05 x 45°	0.10 x 45°		0.15 x 45°	0.08 x 45°
5	0.05 x 45°	0.10 x 45°		0.15 x 45°	0.10 x 45°
6	0.05 x 45°	0.15 x 45°	0.30 x 45°	0.20 x 45°	0.12 x 45°
8	0.10 x 45°	0.15 x 45°	0.30 x 45°	0.25 x 45°	0.16 x 45°
10	0.10 x 45°	0.20 x 45°	0.30 x 45°	0.30 x 45°	0.20 x 45°
12	0.15 x 45°	0.20 x 45°	0.50 x 45°	0.35 x 45°	0.24 x 45°
14	0.15 x 45°	0.25 x 45°	0.50 x 45°	0.40 x 45°	0.28 x 45°
16	0.15 x 45°	0.35 x 45°	0.50 x 45°	0.50 x 45°	0.32 x 45°
18	0.15 x 45°	0.40 x 45°	0.50 x 45°	0.60 x 45°	0.36 x 45°
20	0.15 x 45°	0.45 x 45°	0.50 x 45°	0.60 x 45°	0.40 x 45°
25	0.20 x 45°	0.60 x 45°	0.60 x 45°	0.75 x 45°	0.50 x 45°
32	0,30 x 45°	0,75 x 45°	0,80 x 45°	0,90 x 45°	0,64 x 45°

Application	Milling cutter type	Type	Helix angle	No. of teeth	Tool illustration	Material to ISO P	M	K	N	S	H	Slot drilling	Roughing	Finishing	Copying	Page
HPC	RF 100 U	N	41/43/45°	3		<1400 N/mm²	all	> 200 HB30	> 5% Si	Ti & Ni		●	●	●		1106
HPC	RF 100 U	N	35/38°	4		< 48 HRC	>1000 N/mm²	> 200 HB30		Ti & Ni		●	●	●		1101
HPC	RF 100 U (corner radius)	N	35/38°	4		< 48 HRC		> 200 HB30				●	●	●	●	1105
	RF 100 U/HF	HF	30/32°	4		< 48 HRC	>1000 N/mm²	> 200 HB30				○	●			1107
HPC	RF 100 F	NH	40/42°	4		<750 N/mm²	<850 N/mm²	< 200 HB30				●	●	●		1109
HPC	RF 100 VA	N	36/38°	4		<850 N/mm²	all	< 200 HB30	> 5% Si	Ti & Ni		●	●	●		1110
HPC	RF 100 VA (ball-nosed)	N	36/38°	4		<850 N/mm²	all	< 200 HB30	> 5% Si	Ti & Ni		●	●	●	●	1113
	RF 100 VA/NF	NF	36/38°	4		<750 N/mm²	all					○	●			1112
HPC	RF 100 A	W	40/42°	4					> 3% Si			○	●	●		1114
HPC	RF 100 A	W	39/40/41°	3					all			●	●	●		1115
	RF 100 A/WF	WF	29/30/31°	3					all			○	●			1117
HPC/ HSC	RF 100 H	NH	40/42°	4		> 48 HRC					< 62 HRC	●	●	●		1118
HPC	RF 100 Ti (corner radius)	N	35/38°	4			<850 N/mm²			Ti & Ni		●	●	●	●	1120
HPC/ HSC	RF 100 S/F	NH	45°	5		< 48 HRC	all	all	> 3% Si	Ti & Ni			●	●		1122
HPC/ HSC	RF 100 S/F	NH	44/45/46°	6		< 48 HRC	all	all	> 3% Si	Ti & Ni			●	●		1123

● = optimal suitability ○ = limited suitability

Application group	Material examples
P	Steel, high-alloyed steel
M	Stainless steel
K	Grey cast iron, spheroidal and malleable cast iron
N	Aluminium and other non-ferrous metals
S	Special-, super- and Ti-alloys
H	Hardened steel and hard cast iron

○ bright ◎ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A AlTiN SuperA

Application	Milling cutter type	Type	Helix angle	No. of teeth	Tool illustration	Material to ISO P	M	K	N	S	H	Slot drilling	Roughing	Finishing	Copying	Page
HPC	GH 100 U	NH	45°	3		<1400 N/mm²	all	all	> 3% Si			●	●	○		1125
	GH 100 U (Mini-slot drills)	NH	45°	3		< 850 N/mm²	all		> 3% Si			●	●	○		1127
HPC	GA 200 A (corner radius)	W	45°	3					all			●	●	●		1129
	RS 100 U	NF	30°	4-5		<1000 N/mm²	all	all	> 5% Si			○	●			1131
	RS 100 F	NF	45°	5-6		< 48 HRC	<850 N/mm²	> 200 HB30	> 5% Si	Ti & Ni		○	●			1131
	GS 100 A	WR	30°	3					all			○	●			1133
	GS 100 U	NRf	30°	4-5		< 48 HRC	<850 N/mm²	< 200 HB30	> 5% Si			○	●			1132
	GS 100 H	HR	20°	4		>1200 N/mm²		< 300 HB30			< 52 HRC	○	●			1134
HPC	GH 100 U	NH	45°	6-10		< 48 HRC	all	all						●		1135
HPC/ HSC	GH 100 U (corner radius)	NH	45°	6-8		< 48 HRC	all	all	> 3% Si	Ti & Ni				●	●	1162
HPC/ HSC	GH 100 H	H	55°	6-8				< 300 HB30			< 62 HRC			●		1138
HPC/ HSC	GH 100 H (corner radius)	H	55°	6				< 300 HB30			< 62 HRC			●		1170
	CR 100	N	0°	6-14					CFK	CFK		●	●	●		1140
	Pilot end mill	N	30°	4		all	all	all	> 5% Si			pilot milling				1139
HSC	GF 300 B	H	30°	2		> 48 HRC		< 300 HB30			< 62 HRC				●	1183
HSC	GF 300 T	H	30°	4		> 48 HRC		< 300 HB30			< 62 HRC			●	●	1168
HSC	GF 500 B	N	30°	2		> 850 N/mm²	all	< 200 HB30		Ti & Ni	< 54 HRC				●	1176
HSC	GF 500 T	N	30°	2		> 850 N/mm²	all	< 200 HB30		Ti & Ni	< 54 HRC			●	●	1163
	End mills, PCD-tipped	-	0°	2-3					< 3% Si			●	●	●		1186

● = optimal suitability ○ = limited suitability

Application group	Material examples
P	Steel, high-alloyed steel
M	Stainless steel
K	Grey cast iron, spheroidal and malleable cast iron
N	Aluminium and other non-ferrous metals
S	Special-, super- and Ti-alloys
H	Hardened steel and hard cast iron

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

Application	Milling cutter type	Type	Helix angle	No. of teeth	Tool illustration	Material to ISO P	M	K	N	S	H	Slot drilling	Roughing	Finishing	Copying	Page
	Slot drills (Aluminium)	W	30°	2					< 3% Si			●	●	●		1106
	Slot drills	N	30°	2		< 1000 N/mm²		< 180 HB30				●	○			1101
	Slot drills (corner radius)	N	30°	2		< 48 HRC	<850 N/mm²	< 180 HB30	> 3% Si			●	○		●	1105
	Slot drills (ball-nosed)	N	30°	2		< 48 HRC	<850 N/mm²	< 180 HB30	> 3% Si						●	1107
	Slot drills	N	30°	3		< 1000 N/mm²		< 180 HB30				●	○	○		1109
	Slot drills (Mini-slot drills)	N	30°	3		<850 N/mm²	<850 N/mm²			< 850 N/mm²		●	○	○		1110
	End Mills	N	30°	4		< 1000 N/mm²		< 180 HB30						●		1113
	End Mills (corner radius)	N	30°	4		< 48 HRC		< 180 HB30						●	●	1112
	End Mills (ball-nosed)	N	30°	4		< 48 HRC		< 180 HB30						●	●	1114
	Chamfering milling cutters 60°	N	0°	4		< 48 HRC	all	all	> 3% Si					●		1115
	Chamfering milling cutters 90°	N	0°	4		< 48 HRC	all	all	> 3% Si					●		1117
	Chamfering milling cutters 120°	N	0°	4		< 48 HRC	all	all	> 3% Si					●		1118

● = optimal suitability ○ = limited suitability

Application group	Material examples
P	Steel, high-alloyed steel
M	Stainless steel
K	Grey cast iron, spheroidal and malleable cast iron
N	Aluminium and other non-ferrous metals
S	Special-, super- and Ti-alloys
H	Hardened steel and hard cast iron

○ bright ◎ steam tempered ◓ nitrided lands ● nitrided ◉ golden brown A TiAlN a TiAlN nanoA A AlTiN SuperA

fz-corrections:*
ap = 2 x d; fz -30%
fz-corrections:**
ap = 1-2 x d; fz +25%
fz-corrections:***
ap = 1-2 x d; fz +60%

Stable conditions:
- good cooling
- sufficient performance
- short-chipping

Application	Feed width (ae)	Feed depth (ap)
Slotting*	1 x d	0.5 to 1.0 x d
Roughing*	0.5 to 0.9 x d	0.5 to 1.0 x d
Finishing	0.05 to 0.1 x d	1.0 to 2.0 x d
HPC-roughing**	0.25 to 0.5 x d	1.0 to 2.0 x d
HSC-roughing***	0.1 to 0.25 x d	1.0 to 2.0 x d

Material	Hardness	recom-mended RF 100 type	Type of application	cut Vc	fz (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/mm²	F	Slotting	180	0.018	0.035	0.045	0.06	0.07	0.09	0.1	0.15
		F	Roughing	200	0.02	0.04	0.055	0.07	0.085	0.1	0.12	0.17
		SF	Finishing	280	0.016	0.03	0.04	0.055	0.065	0.08	0.095	0.14
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/mm²	F	Slotting	160	0.018	0.035	0.045	0.06	0.07	0.09	0.1	0.15
		F	Roughing	180	0.02	0.04	0.055	0.07	0.085	0.1	0.12	0.17
		SF	Finishing	220	0.016	0.03	0.04	0.055	0.065	0.08	0.095	0.14
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/mm²	U	Slotting	135	0.016	0.03	0.04	0.055	0.065	0.08	0.095	0.14
		U	Roughing	160	0.02	0.04	0.05	0.065	0.08	0.095	0.11	0.16
		SF	Finishing	200	0.015	0.03	0.04	0.05	0.06	0.07	0.09	0.13
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	0.012	0.025	0.03	0.04	0.045	0.06	0.07	0.1
		U	Roughing	110	0.015	0.025	0.035	0.045	0.05	0.065	0.08	0.12
		SF	Finishing	150	0.015	0.03	0.04	0.05	0.06	0.07	0.09	0.13
	54-60 HRC		Slotting									
		H	Roughing									
		H	Finishing	110	0,01	0,015	0,025	0,035	0,042	0,05	0,08	0,09
Stainless steel 1.4104 X14CrMoS17, 1.4105 X6CrMoS17, 1.4305 X10CrNiS18-9 USA = 303, 410, 420F, 430, 430F	up to 750 N/mm²	VA	Slotting	120	0.015	0.03	0.04	0.05	0.06	0.07	0.09	0.13
		VA	Roughing	140	0.018	0.035	0.045	0.06	0.07	0.09	0.1	0.15
		SF	Finishing	180	0.016	0.03	0.04	0.055	0.065	0.08	0.095	0.14
Stainless steel 1.4301X5CrNi18-10, 1.4303 X5CrNi18-12 1.4310 XCrNi18-8 USA = 304, 304L, 420	750-850 N/mm²	VA	Slotting	80	0.015	0.025	0.035	0.045	0.05	0.065	0.08	0.12
		VA	Roughing	120	0.016	0.03	0.04	0.055	0.065	0.08	0.095	0.14
		SF	Finishing	140	0.015	0.03	0.04	0.05	0.06	0.07	0.09	0.13
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/mm²	VA/F	Slotting	70	0.012	0.025	0.03	0.04	0.045	0.06	0.07	0.1
		VA/F	Roughing	100	0.015	0.025	0.035	0.045	0.05	0.065	0.08	0.12
		SF	Finishing	120	0.015	0.025	0.035	0.045	0.05	0.065	0.08	0.12
Special alloys (nickel based "Ni") Nimonic, Inconel, Monel, Hastelloy	up to 1,300 N/mm²	Ti/U	Slotting	30	0,01	0.015	0.02	0.025	0.03	0.04	0.05	0.06
		Ti/U	Roughing	35	0.01	0.02	0.03	0.035	0.04	0.055	0.065	0.08
		SF	Finishing	45	0.015	0.025	0.035	0.045	0.05	0.065	0.08	0.12
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/mm²	Ti/U	Slotting	60	0.015	0.025	0.035	0.045	0.05	0.065	0.08	0.12
		Ti/U	Roughing	90	0.016	0.03	0.04	0.055	0.065	0.08	0.095	0.14
		SF	Finishing	130	0.016	0.03	0.04	0.055	0.065	0.08	0.095	0.14
Cast iron, grey cast iron, spheroidal graphite and malleable cast iron 0.6010 EN-GL100 (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	0.02	0.04	0.05	0.065	0.08	0.095	0.11	0.16
		F	Roughing	180	0.02	0.04	0.055	0.07	0.085	0.1	0.12	0.17
		SF	Finishing	220	0.018	0.035	0.045	0.06	0.07	0.09	0.1	0.15
Cast iron, grey cast iron, spheroidal graphite and malleable cast iron 0.6025 EN-GL250 (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	0.016	0.03	0.04	0.055	0.065	0.08	0.095	0.14
		U	Roughing	160	0.02	0.04	0.05	0.065	0.08	0.095	0.11	0.16
		SF	Finishing	200	0.018	0.035	0.045	0.06	0.07	0.09	0.1	0.15
Aluminium, 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	0.04	0.05	0.065	0.08	0.095	0.11	0.16
		A	Roughing	600	0.02	0.04	0.055	0.07	0.085	0.1	0.12	0.17
		A	Finishing	1000	0.018	0.035	0.045	0.06	0.07	0.09	0.1	0.15
Aluminium-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	0.016	0.03	0.04	0.055	0.065	0.08	0.095	0.14
		A	Roughing	280	0.02	0.04	0.05	0.065	0.08	0.095	0.11	0.16
		A	Finishing	350	0.018	0.035	0.045	0.06	0.07	0.09	0.1	0.15
Magnesium-alloys MgMn2, G-MgAl8Zn1, G-MgAl6Zn3	-	A	Slotting	180	0.016	0.03	0.04	0.055	0.065	0.08	0.095	0.14
		A	Roughing	220	0.02	0.04	0.05	0.065	0.08	0.095	0.11	0.16
		A	Finishing	280	0.018	0.035	0.045	0.06	0.07	0.09	0.1	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 CuSn7ZnPb, 2.1170 CuPb5Sn5, 2.1176 CuPb10Sn 2.0916 CuAl5, 2.0960 CuAl9Mn, 2.1050 CuSn10	up to 850 N/mm²	A	Slotting	250	0.015	0.025	0.035	0.045	0.05	0.065	0.08	0.12
		A	Roughing	300	0.016	0.03	0.04	0.055	0.065	0.08	0.095	0.14
		SF	Finishing	400	0.016	0.03	0.04	0.055	0.065	0.08	0.095	0.14

All recommendations are valid for coated tools. For bright milling cutters please vc - 40% and fz -25%!

fz-corrections:*
ap = 2 x d; fz -30%
fz-corrections:**
ap = 1-2 x d; fz +25%
fz-corrections:***
ap = 1-2 x d; fz +60%

Unstable conditions:
- standard cooling
- average performance
- medium- to long-chipping

Application	Feed width (ae)	Feed depth (ap)
Slotting*	1 x d	0.5 up to 1.0 x d
Roughing*	0.5 up to 0.9 x d	0.5 up to 1.0 x d
Finishing	0.05 up to 0.1 x d	1.0 up to 2.0 x d
HPC-roughing**	0.25 up to 0.5 x d	1.0 up to 2.0 x d
HSC-roughing***	0.1 up to 0.25 x d	1.0 up to 2.0 x d

Material	Hardness	recom-mended RF 100 type	Type of application	cut Vc	fz (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/mm²	VA/NF	Slotting	180	0.012	0.025	0.03	0.04	0.045	0.06	0.07	0.1
		VA/NF	Roughing	200	0.015	0.025	0.035	0.045	0.05	0.065	0.08	0.12
			Finishing									
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/mm²	VA/NF	Slotting	160	0.012	0.025	0.03	0.04	0.045	0.06	0.07	0.1
		VA/NF	Roughing	180	0.015	0.025	0.035	0.045	0.05	0.065	0.08	0.12
			Finishing									
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/mm²	U/HF	Slotting	135	0,01	0.015	0.025	0.03	0.035	0.045	0.06	0.07
		U/HF	Roughing	160	0.01	0.02	0.03	0.035	0.04	0.055	0.065	0.08
			Finishing									
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/HF	Slotting	70	0,01	0.015	0.02	0.025	0.03	0.04	0.05	0.06
		U/HF	Roughing	110	0,012	0.015	0.025	0.03	0.035	0.045	0.06	0.07
			Finishing									
	54-60 HRC		Slotting									
			Roughing									
			Finishing									
Stainless steel 1.4104 X14CrMoS17, 1.4105 X6CrMoS17, 1.4305 X10CrNiS18-9 USA = 303, 410, 420F, 430, 430F	up to 750 N/mm²	VA/NF	Slotting	120	0.012	0.025	0.03	0.04	0.045	0.06	0.07	0.1
		VA/NF	Roughing	140	0.015	0.025	0.035	0.045	0.05	0.065	0.08	0.12
			Finishing									
Stainless steel 1.4301X5CrNi18-10, 1.4303 X5CrNi18-12 1.4310 XCrNi18-8 USA = 304, 304L, 420	750-850 N/mm²	VA/NF	Slotting	80	0,01	0.015	0.025	0.03	0.035	0.045	0.06	0.07
		VA/NF	Roughing	120	0,012	0.02	0.03	0.035	0.04	0.055	0.065	0.08
			Finishing									
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/mm²	VA/NF	Slotting	70	0,01	0.015	0.02	0.025	0.03	0.04	0.05	0.06
		VA/NF	Roughing	100	0,012	0.015	0.025	0.03	0.035	0.045	0.06	0.07
			Finishing									
Special alloys (nickel based "Ni") Nimonic, Inconel, Monel, Hastelloy	up to 1,300 N/mm²	U/HF	Slotting	30	0,008	0.01	0.015	0.02	0.025	0.035	0.04	0.05
		U/HF	Roughing	35	0,01	0.015	0.02	0.025	0.03	0.04	0.05	0.06
			Finishing									
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/mm²	U/HF	Slotting	60	0,01	0.015	0.025	0.03	0.035	0.045	0.06	0.07
		U/HF	Roughing	90	0,012	0.02	0.03	0.035	0.04	0.055	0.065	0.08
			Finishing									
Cast iron, grey cast iron, spheroidal graphite and malleable cast iron 0.6010 EN-GL100 (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	VA/NF	Slotting	160	0.015	0.025	0.035	0.045	0.05	0.065	0.08	0.12
		VA/NF	Roughing	180	0.015	0.03	0.04	0.05	0.06	0.07	0.09	0.13
			Finishing									
Cast iron, grey cast iron, spheroidal graphite and malleable cast iron 0.6025 EN-GL250 (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/HF	Slotting	140	0.012	0.025	0.03	0.04	0.045	0.06	0.07	0.1
		U/HF	Roughing	160	0.015	0.025	0.035	0.045	0.05	0.065	0.08	0.12
			Finishing									
Aluminium, 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/WF	Slotting	500	0.016	0.03	0.04	0.055	0.065	0.08	0.095	0.14
		A/WF	Roughing	600	0.018	0.035	0.045	0.06	0.07	0.09	0.1	0.15
			Finishing									
Aluminium-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/WF	Slotting	230	0.015	0.025	0.035	0.045	0.05	0.065	0.08	0.12
		A/WF	Roughing	280	0.015	0.03	0.04	0.05	0.06	0.07	0.09	0.13
			Finishing									
Magnesium-alloys MgMn2, G-MgAl8Zn1, G-MgAl6Zn3	-	A/WF	Slotting	180	0.012	0.025	0.03	0.04	0.045	0.06	0.07	0.1
		A/WF	Roughing	220	0.015	0.03	0.04	0.05	0.06	0.07	0.09	0.13
			Finishing									
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 CuSn7ZnPb, 2.1170 CuPb5Sn5, 2.1176 CuPb10Sn 2.0916 CuAl5, 2.0960 CuAl9Mn, 2.1050 CuSn10	up to 850 N/mm²	VA/NF	Slotting	250	0.012	0.025	0.03	0.04	0.045	0.06	0.07	0.1
		VA/NF	Roughing	300	0.015	0.03	0.04	0.05	0.06	0.07	0.09	0.13
			Finishing									

All recommendations are valid for coated tools. For bright milling cutters please vc - 40% and fz -25%!

fz-corrections:*
ap = 2 x d; fz -30%
fz-corrections:**
ap = 1-2 x d; fz +25%
fz-corrections:***
ap = 1-2 x d; fz +60%

Application	Feed width (ae)	Feed depth (ap)
Slotting*	1 x d	0.5 to 1.0 x d
Roughing*	0.5 to 0.9 x d	0.5 to 1.0 x d
Finishing	0.05 to 0.1 x d	1.0 to 2.0 x d
HPC-roughing**	0.25 to 0.5 x d	1.0 to 2.0 x d
HSC-roughing***	0.1 to 0.25 x d	1.0 to 2.0 x d

Material	Hardness	usable GH 100 type	Type of application	cut Vc	fz (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/mm²	U (3-Flt.)	Slotting	180	0.016	0.032	0.041	0.054	0.063	0.081	0.090	0.135
		U (3-Flt.)	Roughing	200	0.018	0.036	0.050	0.063	0.077	0.090	0.108	0.153
		U (6-/8-Flt.)	Finishing	280	0.014	0.027	0.036	0.050	0.059	0.072	0.086	0.126
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/mm²	U (3-Flt.)	Slotting	160	0.016	0.032	0.041	0.054	0.063	0.081	0.090	0.135
		U (3-Flt.)	Roughing	180	0.018	0.036	0.050	0.063	0.077	0.090	0.108	0.153
		U (6-/8-Flt.)	Finishing	220	0.014	0.027	0.036	0.050	0.059	0.072	0.086	0.126
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/mm²	U (3-Flt.)	Slotting	120	0.013	0.024	0.032	0.044	0.052	0.064	0.076	0.112
		U (3-Flt.)	Roughing	150	0.016	0.032	0.040	0.052	0.064	0.076	0.088	0.128
		U (6-/8-Flt.)	Finishing	180	0.012	0.024	0.032	0.040	0.048	0.056	0.072	0.104
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 (3-Flt.)	Slotting	60	0.008	0.018	0.021	0.028	0.032	0.042	0.049	0.070
		H (6-/8-Flt.)****	Roughing	90	0.011	0.018	0.025	0.032	0.035	0.046	0.056	0.084
		H (6-/8-Flt.)	Finishing	120	0.011	0.021	0.028	0.035	0.042	0.049	0.063	0.091
	54-60 HRC		Slotting									
			Roughing									
		H (6-/8-Flt.)	Finishing	90	0.01	0.015	0.025	0.035	0.042	0.05	0.08	0.09
Stainless steel 1.4104 X14CrMoS17, 1.4105 X6CrMoS17, 1.4305 X10CrNiS18-9 USA = 303, 410, 420F, 430, 430F	up to 750 N/mm²	U (3-Flt.)	Slotting	100	0.014	0.027	0.036	0.045	0.054	0.063	0.081	0.117
		U (3-Flt.)	Roughing	115	0.016	0.032	0.041	0.054	0.063	0.081	0.090	0.135
		U (6-/8-Flt.)	Finishing	150	0.014	0.027	0.036	0.050	0.059	0.072	0.086	0.126
Stainless steel 1.4301X5CrNi18-10, 1.4303 X5CrNi18-12 1.4310 XCrNi18-8 USA = 304, 304L, 420	750-850 N/mm²	U (3-Flt.)	Slotting	60	0.014	0.023	0.032	0.041	0.045	0.059	0.072	0.108
		U (3-Flt.)	Roughing	100	0.014	0.027	0.036	0.050	0.059	0.072	0.086	0.126
		U (6-/8-Flt.)	Finishing	110	0.014	0.027	0.036	0.045	0.054	0.063	0.081	0.117
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/mm²	U (3-Flt.)	Slotting	60	0.011	0.023	0.027	0.036	0.041	0.054	0.063	0.090
		U (3-Flt.)	Roughing	80	0.014	0.023	0.032	0.041	0.045	0.059	0.072	0.108
		U (6-/8-Flt.)	Finishing	100	0.014	0.023	0.032	0.041	0.045	0.059	0.072	0.108
Special alloys (nickel based "Ni") Nimonic, Inconel, Monel, Hastelloy	up to 1,300 N/mm²	U (3-Flt.)	Slotting	25	0.009	0.014	0.018	0.023	0.027	0.036	0.045	0.054
		U (3-Flt.)	Roughing	30	0.009	0.018	0.027	0.032	0.036	0.050	0.059	0.072
		U (6-/8-Flt.)	Finishing	35	0.014	0.023	0.032	0.041	0.045	0.059	0.072	0.108
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/mm²	U (3-Flt.)	Slotting	55	0.014	0.023	0.032	0.041	0.045	0.059	0.072	0.108
		U (3-Flt.)	Roughing	80	0.014	0.027	0.036	0.050	0.059	0.072	0.086	0.126
		U (6-/8-Flt.)	Finishing	120	0.014	0.027	0.036	0.050	0.059	0.072	0.086	0.126
Cast iron, grey cast iron, spheroidal graphite and malleable cast iron 0.6010 EN-GL100 (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	U (3-Flt.)	Slotting	130	0.018	0.036	0.045	0.059	0.072	0.086	0.099	0.144
		U (3-Flt.)	Roughing	150	0.018	0.036	0.050	0.063	0.077	0.090	0.108	0.153
		U (6-/8-Flt.)	Finishing	180	0.016	0.032	0.041	0.054	0.063	0.081	0.090	0.135
Cast iron, grey cast iron, spheroidal graphite and malleable cast iron 0.6025 EN-GL250 (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 (3-Flt.)	Slotting	115	0.014	0.027	0.036	0.050	0.059	0.072	0.086	0.126
		U (3-Flt.)	Roughing	130	0.018	0.036	0.045	0.059	0.072	0.086	0.099	0.144
		U (6-/8-Flt.)	Finishing	160	0.016	0.032	0.041	0.054	0.063	0.081	0.090	0.135
Aluminium, 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 (3-Flt.)	Slotting	400	0.018	0.036	0.045	0.059	0.072	0.086	0.099	0.144
		A (3-Flt.)	Roughing	480	0.018	0.036	0.050	0.063	0.077	0.090	0.108	0.153
		A (3-Flt.)	Finishing	800	0.016	0.032	0.041	0.054	0.063	0.081	0.090	0.135
Aluminium-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 (3-Flt.)	Slotting	180	0.014	0.027	0.036	0.050	0.059	0.072	0.086	0.126
		A (3-Flt.)	Roughing	220	0.018	0.036	0.045	0.059	0.072	0.086	0.099	0.144
		U (6-/8-Flt.)	Finishing	280	0.016	0.032	0.041	0.054	0.063	0.081	0.090	0.135
Magnesium-alloys MgMn2, G-MgAl8Zn1, G-MgAl6Zn3	-	A (3-Flt.)	Slotting	150	0.014	0.027	0.036	0.050	0.059	0.072	0.086	0.126
		A (3-Flt.)	Roughing	180	0.018	0.036	0.045	0.059	0.072	0.086	0.099	0.144
		A (3-Flt.)	Finishing	230	0.016	0.032	0.041	0.054	0.063	0.081	0.090	0.135
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 CuSn7ZnPb, 2.1170 CuPb5Sn5, 2.1176 CuPb10Sn 2.0916 CuAl5, 2.0960 CuAl9Mn, 2.1050 CuSn10	up to 850 N/mm²	A (3-Flt.)	Slotting	200	0.014	0.023	0.032	0.041	0.045	0.059	0.072	0.108
		A (3-Flt.)	Roughing	240	0.014	0.027	0.036	0.050	0.059	0.072	0.086	0.126
		U (6-/8-Flt.)	Finishing	320	0.014	0.027	0.036	0.050	0.059	0.072	0.086	0.126

All recommendations are valid for coated tools. For bright milling cutters please vc - 40% and fz -25%!

**** trochoid milling strategy

fz-corrections:*
ap = 2 x d; fz -30%
fz-corrections:**
ap = 1-2 x d; fz +25%
fz-corrections:***
ap = 1-2 x d; fz +60%

Application	Feed width (ae)	Feed depth (ap)
Slotting*	1 x d	0.5 up to 1.0 x d
Roughing*	0.5 up to 0.9 x d	0.5 up to 1.0 x d
Finishing	0.05 up to 0.1 x d	1.0 up to 2.0 x d
HPC-roughing**	0.25 up to 0.5 x d	1.0 up to 2.0 x d
HSC-roughing***	0.1 up to 0.25 x d	1.0 up to 2.0 x d

Material	Hardness	usable GS 100 type	Type of application	cut Vc	fz (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/mm²	U	Slotting	140	0.010	0.020	0.024	0.032	0.036	0.048	0.056	0.080
		U	Roughing	160	0.012	0.020	0.028	0.036	0.040	0.052	0.064	0.096
			Finishing									
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/mm²	U	Slotting	130	0.010	0.020	0.024	0.032	0.036	0.048	0.056	0.080
		U	Roughing	150	0.012	0.020	0.028	0.036	0.040	0.052	0.064	0.096
			Finishing									
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/mm²	U	Slotting	110	0.008	0.012	0.020	0.024	0.028	0.036	0.048	0.056
		H	Roughing	130	0.008	0.016	0.024	0.028	0.032	0.044	0.052	0.064
			Finishing									
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	H	Slotting	55	0.008	0.012	0.016	0.020	0.024	0.032	0.040	0.048
		H	Roughing	90	0.010	0.012	0.020	0.024	0.028	0.036	0.048	0.056
			Finishing									
	54-60 HRC		Slotting									
			Roughing									
			Finishing									
Stainless steel 1.4104 X14CrMoS17, 1.4105 X6CrMoS17, 1.4305 X10CrNiS18-9 USA = 303, 410, 420F, 430, 430F	up to 750 N/mm²	U	Slotting	100	0.010	0.020	0.024	0.032	0.036	0.048	0.056	0.080
		U	Roughing	115	0.012	0.020	0.028	0.036	0.040	0.052	0.064	0.096
			Finishing									
Stainless steel 1.4301X5CrNi18-10, 1.4303 X5CrNi18-12 1.4310 XCrNi18-8 USA = 304, 304L, 420	750-850 N/mm²	U	Slotting	65	0.007	0.011	0.018	0.021	0.025	0.032	0.042	0.049
		U	Roughing	100	0.008	0.014	0.021	0.025	0.028	0.039	0.046	0.056
			Finishing									
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/mm²	U	Slotting	55	0.007	0.011	0.014	0.018	0.021	0.028	0.035	0.042
		U	Roughing	80	0.008	0.011	0.018	0.021	0.025	0.032	0.042	0.049
			Finishing									
Special alloys (nickel based "Ni") Nimonic, Inconel, Monel, Hastelloy	up to 1,300 N/mm²	U	Slotting	25	0.006	0.007	0.011	0.014	0.018	0.025	0.028	0.035
		U	Roughing	30	0.007	0.011	0.014	0.018	0.021	0.028	0.035	0.042
			Finishing									
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/mm²	U	Slotting	50	0.007	0.011	0.018	0.021	0.025	0.032	0.042	0.049
		U	Roughing	70	0.008	0.014	0.021	0.025	0.028	0.039	0.046	0.056
			Finishing									
Cast iron, grey cast iron, spheroidal graphite and malleable cast iron 0.6010 EN-GL100 (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	U	Slotting	130	0.011	0.018	0.025	0.032	0.035	0.046	0.056	0.084
		U	Roughing	140	0.011	0.021	0.028	0.035	0.042	0.049	0.063	0.091
			Finishing									
Cast iron, grey cast iron, spheroidal graphite and malleable cast iron 0.6025 EN-GL250 (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	H	Slotting	110	0.008	0.018	0.021	0.028	0.032	0.042	0.049	0.070
		H	Roughing	130	0.011	0.018	0.025	0.032	0.035	0.046	0.056	0.084
			Finishing									
Aluminium, 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	450	0.013	0.024	0.032	0.044	0.052	0.064	0.076	0.112
		A	Roughing	540	0.014	0.028	0.036	0.048	0.056	0.072	0.080	0.120
			Finishing									
Aluminium-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	200	0.012	0.020	0.028	0.036	0.040	0.052	0.064	0.096
		A	Roughing	250	0.012	0.024	0.032	0.040	0.048	0.056	0.072	0.104
			Finishing									
Magnesium-alloys MgMn2, G-MgAl8Zn1, G-MgAl6Zn3	-	A	Slotting	160	0.010	0.020	0.024	0.032	0.036	0.048	0.056	0.080
		A	Roughing	200	0.012	0.024	0.032	0.040	0.048	0.056	0.072	0.104
			Finishing									
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 CuSn7ZnPb, 2.1170 CuPb5Sn5, 2.1176 CuPb10Sn 2.0916 CuAl5, 2.0960 CuAl9Mn, 2.1050 CuSn10	up to 850 N/mm²	A	Slotting	225	0.010	0.020	0.024	0.032	0.036	0.048	0.056	0.080
		A	Roughing	270	0.012	0.024	0.032	0.040	0.048	0.056	0.072	0.104
			Finishing									

All recommendations are valid for coated tools. For bright milling cutters please vc - 40% and fz -25%!

fz-corrections:*
ap = 2 x d; fz -30%
fz-corrections:**
ap = 1-2 x d; fz +25%
fz-corrections:***
ap = 1-2 x d; fz +60%

Application	Feed width (ae)	Feed depth (ap)
Slotting*	1 x d	0.5 to 1.0 x d
Roughing*	0.5 to 0.9 x d	0.5 to 1.0 x d
Finishing	0.05 to 0.1 x d	1.0 to 2.0 x d
HPC-roughing**	0.25 to 0.5 x d	1.0 to 2.0 x d
HSC-roughing***	0.1 to 0.25 x d	1.0 to 2.0 x d

Material	Hardness	usable RS 100 type	Type of application	cut Vc	fz (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/mm²	U	Slotting	140	0.011	0.023	0.027	0.036	0.041	0.054	0.063	0.090
		F	Roughing	160	0.014	0.023	0.032	0.041	0.045	0.059	0.072	0.108
			Finishing									
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/mm²	U	Slotting	130	0.011	0.023	0.027	0.036	0.041	0.054	0.063	0.090
		F	Roughing	150	0.014	0.023	0.032	0.041	0.045	0.059	0.072	0.108
			Finishing									
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/mm²	U	Slotting	110	0.009	0.014	0.023	0.027	0.032	0.041	0.054	0.063
		F	Roughing	130	0.009	0.018	0.027	0.032	0.036	0.050	0.059	0.072
			Finishing									
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	F****	Slotting	55	0.009	0.014	0.018	0.023	0.027	0.036	0.045	0.054
		F	Roughing	90	0.011	0.014	0.023	0.027	0.032	0.041	0.054	0.063
			Finishing									
	54-60 HRC		Slotting									
			Roughing									
			Finishing									
Stainless steel 1.4104 X14CrMoS17, 1.4105 X6CrMoS17, 1.4305 X10CrNiS18-9 USA = 303, 410, 420F, 430, 430F	up to 750 N/mm²	U	Slotting	100	0.011	0.023	0.027	0.036	0.041	0.054	0.063	0.090
		U	Roughing	115	0.014	0.023	0.032	0.041	0.045	0.059	0.072	0.108
			Finishing									
Stainless steel 1.4301X5CrNi18-10, 1.4303 X5CrNi18-12 1.4310 XCrNi18-8 USA = 304, 304L, 420	750-850 N/mm²	U	Slotting	65	0.009	0.014	0.023	0.027	0.032	0.041	0.054	0.063
		U	Roughing	100	0.011	0.018	0.027	0.032	0.036	0.050	0.059	0.072
			Finishing									
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/mm²	U	Slotting	55	0.009	0.014	0.018	0.023	0.027	0.036	0.045	0.054
		U	Roughing	80	0.011	0.014	0.023	0.027	0.032	0.041	0.054	0.063
			Finishing									
Special alloys (nickel based "Ni") Nimonic, Inconel, Monel, Hastelloy	up to 1,300 N/mm²	U	Slotting	25	0.007	0.009	0.014	0.018	0.023	0.032	0.036	0.045
		F	Roughing	30	0.009	0.014	0.018	0.023	0.027	0.036	0.045	0.054
			Finishing									
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/mm²	U	Slotting	55	0.009	0.014	0.023	0.027	0.032	0.041	0.054	0.063
		F	Roughing	80	0.011	0.018	0.027	0.032	0.036	0.050	0.059	0.072
			Finishing									
Cast iron, grey cast iron, spheroidal graphite and malleable cast iron 0.6010 EN-GL100 (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	U	Slotting	150	0.014	0.023	0.032	0.041	0.045	0.059	0.072	0.108
		F	Roughing	160	0.014	0.027	0.036	0.045	0.054	0.063	0.081	0.117
			Finishing									
Cast iron, grey cast iron, spheroidal graphite and malleable cast iron 0.6025 EN-GL250 (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	130	0.011	0.023	0.027	0.036	0.041	0.054	0.063	0.090
		F	Roughing	150	0.014	0.023	0.032	0.041	0.045	0.059	0.072	0.108
			Finishing									
Aluminium, 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	U	Slotting	450	0.014	0.027	0.036	0.050	0.059	0.072	0.086	0.126
		U	Roughing	540	0.016	0.032	0.041	0.054	0.063	0.081	0.090	0.135
			Finishing									
Aluminium-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	U	Slotting	200	0.014	0.023	0.032	0.041	0.045	0.059	0.072	0.108
		U	Roughing	250	0.014	0.027	0.036	0.045	0.054	0.063	0.081	0.117
			Finishing									
Magnesium-alloys MgMn2, G-MgAl8Zn1, G-MgAl6Zn3	-	U	Slotting	160	0.011	0.023	0.027	0.036	0.041	0.054	0.063	0.090
		U	Roughing	200	0.014	0.027	0.036	0.045	0.054	0.063	0.081	0.117
			Finishing									
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 CuSn7ZnPb, 2.1170 CuPb5Sn5, 2.1176 CuPb10Sn 2.0916 CuAl5, 2.0960 CuAl9Mn, 2.1050 CuSn10	up to 850 N/mm²	U	Slotting	225	0.011	0.023	0.027	0.036	0.041	0.054	0.063	0.090
		U	Roughing	270	0.014	0.027	0.036	0.045	0.054	0.063	0.081	0.117
			Finishing									

All recommendations are valid for coated tools. For bright milling cutters please vc - 40% and fz -25%!

**** trochoid milling strategy

Tool length/reach up to 3xD Vc and fz 100%
Tool length/reach 3-5xD Vc and fz 80%
Tool length/reach > 5-10xD Vc and fz 60%

Application	Width/depth		Nom. diameter (mm) 2	3	4	6	8	10	12	16
Roughing	ap	(mm)	0.1	0.15	0.2	0.4	0.6	0.75	1	1.2
	ae	(mm)	0.15	0.15	0.3	0.5	0.75	1	1.5	1.5
Finishing	ap	(mm)	0.05	0.07	0.1	0.14	0.16	0.18	0.2	0.3
	ae	(mm)	0.05	0.05	0.07	0.1	0.15	0.2	0.25	0.3

Material	Hardness	usable GF type	Type of application	cut Vc	fz (mm/z) with nom. Ø 2	3	4	6	8	10	12	16
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/mm²	GF 500 B	Roughing	200	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
		GF 500 B	Finishing	300	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
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/mm²	GF 500 B	Roughing	200	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
		GF 500 B	Finishing	300	0.03	0.04	0.045	0.05	0.07	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/mm²	GF 500 B	Roughing	180	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
		GF 500 B	Finishing	280	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
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	GF 500 B	Roughing	140	0.02	0.03	0.035	0.04	0.05	0.07	0.08	0.1
		GF 500 B	Finishing	200	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
	54-60 HRC	GF 300 B	Roughing	80	0.02	0.03	0.035	0.04	0.05	0.07	0.08	0.1
		GF 300 B	Finishing	130	0.025	0.03	0.04	0.045	0.05	0.07	0.1	0.12
Stainless steel 1.4104 X14CrMoS17, 1.4105 X6CrMoS17, 1.4305 X10CrNiS18-9 USA = 303, 410, 420F, 430, 430F	up to 750 N/mm²	GF 500 B	Roughing	180	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
		GF 500 B	Finishing	280	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
Stainless steel 1.4301X5CrNi18-10, 1.4303 X5CrNi18-12 1.4310 XCrNi18-8 USA = 304, 304L, 420	750-850 N/mm²	GF 500 B	Roughing	120	0.02	0.03	0.035	0.04	0.05	0.07	0.08	0.1
		GF 500 B	Finishing	180	0.025	0.03	0.04	0.045	0.05	0.07	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/mm²	GF 500 B	Roughing	80	0.02	0.03	0.035	0.04	0.05	0.07	0.08	0.1
		GF 500 B	Finishing	130	0.025	0.03	0.04	0.045	0.05	0.07	0.1	0.12
Special alloys (nickel based "Ni") Nimonic, Inconel, Monel, Hastelloy	up to 1,300 N/mm²	GF 500 B	Roughing	40	0.01	0.02	0.03	0.035	0.04	0.05	0.07	0.08
		GF 500 B	Finishing	60	0.02	0.025	0.03	0.04	0.045	0.06	0.08	0.09
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/mm²	GF 500 B	Roughing	90	0.02	0.03	0.035	0.04	0.05	0.07	0.08	0.1
		GF 500 B	Finishing	150	0.025	0.03	0.04	0.045	0.05	0.07	0.1	0.12
Cast iron, grey cast iron, spheroidal graphite and malleable cast iron 0.6010 EN-GL100 (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	GF 500 B	Roughing	200	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
		GF 500 B	Finishing	300	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
Cast iron, grey cast iron, spheroidal graphite and malleable cast iron 0.6025 EN-GL250 (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	GF 500 B	Roughing	150	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
		GF 500 B	Finishing	230	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
Aluminium, 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											
Aluminium-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	GF 500 B	Roughing	280	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
		GF 500 B	Finishing	350	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
Magnesium-alloys MgMn2, G-MgAl8Zn1, G-MgAl6Zn3	-											
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 CuSn7ZnPb, 2.1170 CuPb5Sn5, 2.1176 CuPb10Sn 2.0916 CuAl5, 2.0960 CuAl9Mn, 2.1050 CuSn10	up to 850 N/mm²	GF 500 B	Roughing	250	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
		GF 500 B	Finishing	400	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15

All recommendations are valid for coated tools. For bright milling cutters please vc - 40% and fz -25%!

Tool length/reach up to 3xD Vc and fz 100%
Tool length/reach 3-5xD Vc and fz 80%
Tool length/reach > 5-10xD Vc and fz 60%

Application	Width/depth		Nom. diameter (mm) 2	3	4	6	8	10	12	16
Roughing	ap	(mm)	0.15	0.2	0.3	0.4	0.6	0.75	1	1.5
	ae	(mm)	1	1.5	2	3	4	5	6	8
Finishing	ap	(mm)	0.08	0.11	0.13	0.15	0.2	0.3	0.4	0.5
	ae	(mm)	0.2	0.3	0.4	0.7	1	1.5	2	3

Material	Hardness	usable GF type	Type of application	cut Vc	fz (mm/min.) 2	3	4	6	8	10	12	16
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/mm²	GF 500 T	Roughing	200	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
		GF 500 T	Finishing	300	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
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/mm²	GF 500 T	Roughing	200	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
		GF 500 T	Finishing	300	0.03	0.04	0.045	0.05	0.07	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/mm²	GF 300 T	Roughing	180	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
		GF 300 T	Finishing	280	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
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	GF 300 T	Roughing	140	0.02	0.03	0.035	0.04	0.05	0.07	0.08	0.1
		GF 300 T	Finishing	200	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
	54-60 HRC	GF 300 T	Roughing	80	0.02	0.03	0.035	0.04	0.05	0.07	0.08	0.1
		GF 300 T	Finishing	130	0.025	0.03	0.04	0.045	0.05	0.07	0.1	0.12
Stainless steel 1.4104 X14CrMoS17, 1.4105 X6CrMoS17, 1.4305 X10CrNiS18-9 USA = 303, 410, 420F, 430, 430F	up to 750 N/mm²	GF 500 T	Roughing	180	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
		GF 500 T	Finishing	280	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
Stainless steel 1.4301X5CrNi18-10, 1.4303 X5CrNi18-12 1.4310 XCrNi18-8 USA = 304, 304L, 420	750-850 N/mm²	GF 500 T	Roughing	120	0.02	0.03	0.035	0.04	0.05	0.07	0.08	0.1
		GF 500 T	Finishing	180	0.025	0.03	0.04	0.045	0.05	0.07	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/mm²	GF 500 T	Roughing	80	0.02	0.03	0.035	0.04	0.05	0.07	0.08	0.1
		GF 500 T	Finishing	130	0.025	0.03	0.04	0.045	0.05	0.07	0.1	0.12
Special alloys (nickel based “Ni“) Nimonic, Inconel, Monel, Hastelloy	up to 1,300 N/mm²	GF 500 T	Roughing	40	0.01	0.02	0.03	0.035	0.04	0.05	0.07	0.08
		GF 500 T	Finishing	60	0.02	0.025	0.03	0.04	0.045	0.06	0.08	0.09
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/mm²	GF 500 T	Roughing	90	0.02	0.03	0.035	0.04	0.05	0.07	0.08	0.1
		GF 500 T	Finishing	150	0.025	0.03	0.04	0.045	0.05	0.07	0.1	0.12
Cast iron, grey cast iron, spheroidal graphite and malleable cast iron 0.6010 EN-GL100 (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	GF 500 T	Roughing	200	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
		GF 300 T	Finishing	300	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
Cast iron, grey cast iron, spheroidal graphite and malleable cast iron 0.6025 EN-GL250 (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	GF 300 T	Roughing	150	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
		GF 300 T	Finishing	230	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
Aluminium, 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											
Aluminium-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	GF 500 T	Roughing	280	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
		GF 500 T	Finishing	350	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
Magnesium-alloys MgMn2, G-MgAl8Zn1, G-MgAl6Zn3	-											
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 CuSn7ZnPb, 2.1170 CuPb5Sn5, 2.1176 CuPb10Sn 2.0916 CuAl5, 2.0960 CuAl9Mn, 2.1050 CuSn10	up to 850 N/mm²	GF 500 T	Roughing	250	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15
		GF 500 T	Finishing	400	0.03	0.04	0.045	0.05	0.07	0.1	0.12	0.15

All recommendations are valid for coated tools. For bright milling cutters please vc - 40% and fz -25%!

fz-corrections:*
ap = 2 x d; fz -30%
fz-corrections:**
ap = 1-2 x d; fz +25%
fz-corrections:***
ap = 1-2 x d; fz +60%

Application	Feed width (ae)	Feed depth (ap)
Slotting*	1 x d	0.5 up to 1.0 x d
Roughing*	0.5 up to 0.9 x d	0.5 up to 1.0 x d
Finishing	0.05 up to 0.1 x d	1.0 up to 2.0 x d
HPC-roughing**	0.25 up to 0.5 x d	1.0 up to 2.0 x d
HSC-roughing***	0.1 up to 0.25 x d	1.0 up to 2.0 x d

Material	Hardness	usable type	Type of application	cut Vc	fz (mm/min.)							
					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/mm²	2-fluted	Slotting	125	0.013	0.025	0.032	0.042	0.049	0.063	0.070	0.105
		2- or 3-fluted	Roughing	140	0.014	0.028	0.039	0.049	0.060	0.070	0.084	0.119
		4-fluted	Finishing	190	0.011	0.021	0.028	0.039	0.046	0.056	0.067	0.098
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/mm²	2-fluted	Slotting	110	0.013	0.025	0.032	0.042	0.049	0.063	0.070	0.105
		2- or 3-fluted	Roughing	130	0.014	0.028	0.039	0.049	0.060	0.070	0.084	0.119
		4-fluted	Finishing	150	0.011	0.021	0.028	0.039	0.046	0.056	0.067	0.098
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/mm²	2-fluted	Slotting	95	0.011	0.021	0.028	0.039	0.046	0.056	0.067	0.098
		2- or 3-fluted	Roughing	115	0.014	0.028	0.035	0.046	0.056	0.067	0.077	0.112
		4-fluted	Finishing	140	0.011	0.021	0.028	0.035	0.042	0.049	0.063	0.091
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	2-fluted	Slotting	50	0.007	0.015	0.018	0.024	0.027	0.036	0.042	0.060
		2- or 3-fluted	Roughing	75	0.009	0.015	0.021	0.027	0.030	0.039	0.048	0.072
		4-fluted	Finishing	105	0.009	0.018	0.024	0.030	0.036	0.042	0.054	0.078
	54-60 HRC	2-fluted	Slotting									
		2- or 3-fluted	Roughing									
		4-fluted	Finishing									
Stainless steel 1.4104 X14CrMoS17, 1.4105 X6CrMoS17, 1.4305 X10CrNiS18-9 USA = 303, 410, 420F, 430, 430F	up to 750 N/mm²	2-fluted	Slotting	85	0.009	0.018	0.024	0.030	0.036	0.042	0.054	0.078
		2- or 3-fluted	Roughing	100	0.011	0.021	0.027	0.036	0.042	0.054	0.060	0.090
		4-fluted	Finishing	125	0.010	0.018	0.024	0.033	0.039	0.048	0.057	0.084
Stainless steel 1.4301X5CrNi18-10, 1.4303 X5CrNi18-12 1.4310 XCrNi18-8 USA = 304, 304L, 420	750-850 N/mm²	2-fluted	Slotting	55	0.009	0.015	0.021	0.027	0.030	0.039	0.048	0.072
		2- or 3-fluted	Roughing	85	0.010	0.018	0.024	0.033	0.039	0.048	0.057	0.084
		4-fluted	Finishing	100	0.009	0.018	0.024	0.030	0.036	0.042	0.054	0.078
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/mm²	2-fluted	Slotting	50	0.007	0.015	0.018	0.024	0.027	0.036	0.042	0.060
		2- or 3-fluted	Roughing	70	0.009	0.015	0.021	0.027	0.030	0.039	0.048	0.072
		4-fluted	Finishing	85	0.009	0.015	0.021	0.027	0.030	0.039	0.048	0.072
Special alloys (nickel based "Ni") Nimonic, Inconel, Monel, Hastelloy	up to 1,300 N/mm²	2-fluted	Slotting	20	0.006	0.009	0.012	0.015	0.018	0.024	0.030	0.036
		2- or 3-fluted	Roughing	25	0.006	0.012	0.018	0.021	0.024	0.033	0.039	0.048
		4-fluted	Finishing	30	0.009	0.015	0.021	0.027	0.030	0.039	0.048	0.072
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/mm²	2-fluted	Slotting	40	0.009	0.015	0.021	0.027	0.030	0.039	0.048	0.072
		2- or 3-fluted	Roughing	60	0.010	0.018	0.024	0.033	0.039	0.048	0.057	0.084
		4-fluted	Finishing	90	0.010	0.018	0.024	0.033	0.039	0.048	0.057	0.084
Cast iron, grey cast iron, spheroidal graphite and malleable cast iron 0.6010 EN-GL100 (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	2-fluted	Slotting	115	0.012	0.024	0.030	0.039	0.048	0.057	0.066	0.096
		2- or 3-fluted	Roughing	125	0.012	0.024	0.033	0.042	0.051	0.060	0.072	0.102
		4-fluted	Finishing	155	0.011	0.021	0.027	0.036	0.042	0.054	0.060	0.090
Cast iron, grey cast iron, spheroidal graphite and malleable cast iron 0.6025 EN-GL250 (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	2-fluted	Slotting	100	0.010	0.018	0.024	0.033	0.039	0.048	0.057	0.084
		2- or 3-fluted	Roughing	115	0.012	0.024	0.030	0.039	0.048	0.057	0.066	0.096
		4-fluted	Finishing	140	0.011	0.021	0.027	0.036	0.042	0.054	0.060	0.090
Aluminium, 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	2-fluted	Slotting	350	0.014	0.028	0.035	0.046	0.056	0.067	0.077	0.112
		2- or 3-fluted	Roughing	420	0.014	0.028	0.039	0.049	0.060	0.070	0.084	0.119
		4-fluted	Finishing	700	0.013	0.025	0.032	0.042	0.049	0.063	0.070	0.105
Aluminium-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	2-fluted	Slotting	160	0.011	0.021	0.028	0.039	0.046	0.056	0.067	0.098
		2- or 3-fluted	Roughing	200	0.014	0.028	0.035	0.046	0.056	0.067	0.077	0.112
		4-fluted	Finishing	245	0.013	0.025	0.032	0.042	0.049	0.063	0.070	0.105
Magnesium-alloys MgMn2, G-MgAl8Zn1, G-MgAl6Zn3	-	2-fluted	Slotting	125	0.011	0.021	0.028	0.039	0.046	0.056	0.067	0.098
		2- or 3-fluted	Roughing	150	0.014	0.028	0.035	0.046	0.056	0.067	0.077	0.112
		4-fluted	Finishing	200	0.013	0.025	0.032	0.042	0.049	0.063	0.070	0.105
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 CuSn7ZnPb, 2.1170 CuPb5Sn5, 2.1176 CuPb10Sn 2.0916 CuAl5, 2.0960 CuAl9Mn, 2.1050 CuSn10	up to 850 N/mm²	2-fluted	Slotting	175	0.011	0.018	0.025	0.032	0.035	0.046	0.056	0.084
		2- or 3-fluted	Roughing	210	0.011	0.021	0.028	0.039	0.046	0.056	0.067	0.098
		4-fluted	Finishing	280	0.011	0.021	0.028	0.039	0.046	0.056	0.067	0.098

All recommendations are valid for coated tools. For bright milling cutters please vc - 40% and fz -25%!

fz-corrections:*
ap = 2 x d; fz -30%
fz-corrections:**
ap = 1-2 x d; fz +25%
fz-corrections:***
ap = 1-2 x d; fz +60%

Application	Feed width (ae)	Feed depth (ap)
Slotting*	1 x d	0.5 up to 1.0 x d
Roughing*	0.5 up to 0.9 x d	0.5 up to 1.0 x d
Finishing	0.05 up to 0.1 x d	1.0 up to 2.0 x d
HPC-roughing**	0.25 up to 0.5 x d	1.0 up to 2.0 x d
HSC-roughing***	0.1 up to 0.25 x d	1.0 up to 2.0 x d

Material	Hardness	usable type	Type of application	cut Vc	fz (mm/min.) 2	3	4	6	8	10	12	16
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/mm²											
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/mm²											
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/mm²											
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											
	54-60 HRC											
Stainless steel 1.4104 X14CrMoS17, 1.4105 X6CrMoS17, 1.4305 X10CrNiS18-9 USA = 303, 410, 420F, 430, 430F	up to 750 N/mm²											
Stainless steel 1.4301X5CrNi18-10, 1.4303 X5CrNi18-12 1.4310 XCrNi18-8 USA = 304, 304L, 420	750-850 N/mm²											
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/mm²											
Special alloys (nickel based "Ni") Nimonic, Inconel, Monel, Hastelloy	up to 1,300 N/mm²											
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/mm²											
Cast iron, grey cast iron, spheroidal graphite and malleable cast iron 0.6010 EN-GL100 (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											
Cast iron, grey cast iron, spheroidal graphite and malleable cast iron 0.6025 EN-GL250 (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											
Aluminium, 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	2-fluted	Slotting	350	0.014	0.028	0.035	0.046	0.056	0.067	0.077	0.112
		2-fluted	Roughing	420	0.014	0.028	0.039	0.049	0.060	0.070	0.084	0.119
		2-fluted	Finishing	700	0.013	0.025	0.032	0.042	0.049	0.063	0.070	0.105
Aluminium-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	2-fluted	Slotting	160	0.011	0.021	0.028	0.039	0.046	0.056	0.067	0.098
		2-fluted	Roughing	200	0.014	0.028	0.035	0.046	0.056	0.067	0.077	0.112
		2-fluted	Finishing	245	0.013	0.025	0.032	0.042	0.049	0.063	0.070	0.105
Magnesium-alloys MgMn2, G-MgAl8Zn1, G-MgAl6Zn3	-	2-fluted	Slotting	125	0.011	0.021	0.028	0.039	0.046	0.056	0.067	0.098
		2-fluted	Roughing	150	0.014	0.028	0.035	0.046	0.056	0.067	0.077	0.112
		2-fluted	Finishing	200	0.013	0.025	0.032	0.042	0.049	0.063	0.070	0.105
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 CuSn7ZnPb, 2.1170 CuPb5Sn5, 2.1176 CuPb10Sn 2.0916 CuAl5, 2.0960 CuAl9Mn, 2.1050 CuSn10	up to 850 N/mm²	2-fluted	Slotting	175	0.011	0.018	0.025	0.032	0.035	0.046	0.056	0.084
		2-fluted	Roughing	210	0.011	0.021	0.028	0.039	0.046	0.056	0.067	0.098
		2-fluted	Finishing	280	0.011	0.021	0.028	0.039	0.046	0.056	0.067	0.098

All recommendations are valid for coated tools. For bright milling cutters please vc - 40% and fz -25%!

Tool length/reach up to 3xD Vc and fz 100%
Tool length/reach 3-5xD Vc and fz 80%
Tool length/reach > 5-10xD Vc and fz 60%

Application	Width/depth		Nom. diameter (mm) 2	3	4	6	8	10	12	16
Roughing	ap	(mm)	0.1	0.15	0.2	0.4	0.6	0.75	1	1.2
	ae	(mm)	0.15	0.15	0.3	0.5	0.75	1	1.5	1.5
Finishing	ap	(mm)	0.05	0.07	0.1	0.14	0.16	0.18	0.2	0.3
	ae	(mm)	0.05	0.05	0.07	0.1	0.15	0.2	0.25	0.3

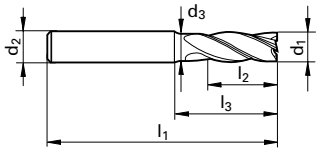
Material	Hardness	usable type	Type of application	cut Vc	fz (mm/min.) 3	6	8	10	12	16	20	25
Structural + free-cutting steels, unalloyed heat-treatable + case hardened steels 1.0035 S185, 1.0486 P275N, 1.0345 P235GH, 1.0050, 1.0070, 1.8937 1.0718 11SMnPb30, 1.0736 11SMn37 1.0402 C22, 1.1178 C30E 1.0503 C45, 1.1191 C30E 1.0301 C10, 1.1121 C10E 1.1750 C75W, 1.2076 102Cr6, 1.2307 29CrMoV9	up to 850 N/mm²	2-/4-fluted	Roughing	175	0.021	0.028	0.032	0.035	0.049	0.070	0.084	0.105
		2-/4-fluted	Finishing	350	0.021	0.028	0.032	0.035	0.049	0.070	0.084	0.105
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/mm²	2-/4-fluted	Roughing	175	0.021	0.028	0.032	0.035	0.049	0.070	0.084	0.105
		2-/4-fluted	Finishing	245	0.021	0.028	0.032	0.035	0.049	0.070	0.084	0.105
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/mm²	2-/4-fluted	Roughing	140	0.021	0.028	0.032	0.035	0.049	0.070	0.084	0.105
		2-/4-fluted	Finishing	210	0.021	0.028	0.032	0.035	0.049	0.070	0.084	0.105
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		Roughing									
			Finishing									
	54-60 HRC		Roughing									
			Finishing									
Stainless steel 1.4104 X14CrMoS17, 1.4105 X6CrMoS17, 1.4305 X10CrNiS18-9 USA = 303, 410, 420F, 430, 430F	up to 750 N/mm²	2-/4-fluted	Roughing	126	0.021	0.028	0.032	0.035	0.049	0.070	0.084	0.105
		2-/4-fluted	Finishing	196	0.021	0.028	0.032	0.035	0.049	0.070	0.084	0.105
Stainless steel 1.4301X5CrNi18-10, 1.4303 X5CrNi18-12 1.4310 XCrNi18-8 USA = 304, 304L, 420	750-850 N/mm²	2-/4-fluted	Roughing	91	0.014	0.021	0.025	0.028	0.035	0.049	0.056	0.070
		2-/4-fluted	Finishing	140	0.018	0.021	0.028	0.032	0.035	0.049	0.070	0.084
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/mm²	2-/4-fluted	Roughing	56	0.014	0.021	0.025	0.028	0.035	0.049	0.056	0.070
		2-/4-fluted	Finishing	91	0.018	0.021	0.028	0.032	0.035	0.049	0.070	0.084
Special alloys (nickel based "Ni") Nimonic, Inconel, Monel, Hastelloy	up to 1,300 N/mm²	2-/4-fluted	Roughing	28	0.007	0.014	0.021	0.025	0.028	0.035	0.049	0.056
		2-/4-fluted	Finishing	42	0.014	0.018	0.021	0.028	0.032	0.042	0.056	0.063
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/mm²	2-/4-fluted	Roughing	56	0.014	0.021	0.025	0.028	0.035	0.049	0.056	0.070
		2-/4-fluted	Finishing	105	0.018	0.021	0.028	0.032	0.035	0.049	0.070	0.084
Cast iron, grey cast iron, spheroidal graphite and malleable cast iron 0.6010 EN-GL100 (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	2-/4-fluted	Roughing	140	0.021	0.028	0.032	0.035	0.049	0.070	0.084	0.105
		2-/4-fluted	Finishing	210	0.021	0.028	0.032	0.035	0.049	0.070	0.084	0.105
Cast iron, grey cast iron, spheroidal graphite and malleable cast iron 0.6025 EN-GL250 (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	2-/4-fluted	Roughing	105	0.021	0.028	0.032	0.035	0.049	0.070	0.084	0.105
		2-/4-fluted	Finishing	161	0.021	0.028	0.032	0.035	0.049	0.070	0.084	0.105
Aluminium, 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											
Aluminium-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	2-/4-fluted	Roughing	196	0.021	0.028	0.032	0.035	0.049	0.070	0.084	0.105
		2-/4-fluted	Finishing	245	0.021	0.028	0.032	0.035	0.049	0.070	0.084	0.105
Magnesium-alloys MgMn2, G-MgAl8Zn1, G-MgAl6Zn3	-											
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 CuSn7ZnPb, 2.1170 CuPb5Sn5, 2.1176 CuPb10Sn 2.0916 CuAl5, 2.0960 CuAl9Mn, 2.1050 CuSn10	up to 850 N/mm²	2-/4-fluted	Roughing	175	0.021	0.028	0.032	0.035	0.049	0.070	0.084	0.105
		2-/4-fluted	Finishing	280	0.021	0.028	0.032	0.035	0.049	0.070	0.084	0.105

All recommendations are valid for coated tools. For bright milling cutters please vc - 40% and fz -25%!

RF 100 U

centre cutting

Guhring no.	3200	3731
Standard	DIN 6527 K	
Tool material	Solid carbide	
Carbide grade	K	K/P
Surface	○	F
Type	N	N
Shank design	HB	HB
Helix	35°/38°	
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1091	1091



d1	d2	d3	l1	l2	l3	Z	Availability	
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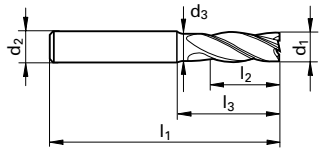
8.000	8.000	7.500	58.00	12.00	22.00	4	●	●
10.000	10.000	9.200	66.00	14.00	26.00	4	●	●
12.000	12.000	11.200	73.00	16.00	28.00	4	●	●
14.000	14.000	13.200	75.00	18.00	30.00	4	●	●
16.000	16.000	15.000	82.00	22.00	34.00	4	●	●
18.000	18.000	17.000	84.00	24.00	36.00	4	●	●
20.000	20.000	19.000	92.00	26.00	42.00	4	●	●

centre cutting

Guhring no.	6706
Standard	DIN 6527 K
Tool material	Solid carbide
Carbide grade	K/P
Surface	F
Type	N
Shank design	HA
Helix	35°/38°
Tolerance	h10
Discount group	106
Techn. data page	1091

NEW



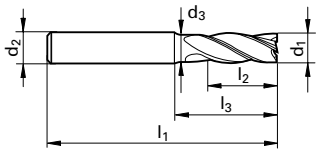
d1	d2	d3	l1	l2	l3	Z	Availability
mm	mm	mm	mm	mm	mm		
6.000	6.000	5.500	54.00	10.00	18.00	4	●
8.000	8.000	7.500	58.00	12.00	22.00	4	●
10.000	10.000	9.200	66.00	14.00	26.00	4	●
12.000	12.000	11.200	73.00	16.00	28.00	4	●
14.000	14.000	13.200	75.00	18.00	30.00	4	●
16.000	16.000	15.000	82.00	22.00	34.00	4	●
18.000	18.000	17.000	84.00	24.00	36.00	4	●
20.000	20.000	19.000	92.00	26.00	42.00	4	●

C TiCN | Cb Carbo | D Cristall | F FIRE/nanoFIRE | P AlCrN | S TiN | S+ TiN+ | M MolyGlide | Y Signum

RF 100 U

centre cutting

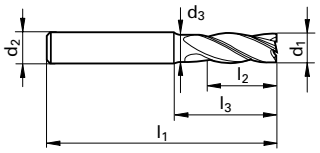
Guhring no.	3208	3736
Standard	DIN 6527 L	
Tool material	Solid carbide	
Carbide grade	K	K/P
Surface	○	F
Type	N	N
Shank design	HA	HA
Helix	35°/38°	
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1091	1091



d1	d2	d3	l1	l2	l3	Z	Availability	
mm	mm	mm	mm	mm	mm			
4.000	6.000	3.700	57.00	11.00	21.00	4	●	●
5.000	6.000	4.700	57.00	13.00	21.00	4	●	●
6.000	6.000	5.500	57.00	13.00	21.00	4	●	●
8.000	8.000	7.500	63.00	19.00	27.00	4	●	●
10.000	10.000	9.200	72.00	22.00	32.00	4	●	●
12.000	12.000	11.200	83.00	26.00	38.00	4	●	●
14.000	14.000	13.200	83.00	26.00	38.00	4	●	●
16.000	16.000	15.000	92.00	32.00	44.00	4	●	●
18.000	18.000	17.000	92.00	32.00	44.00	4	●	●
20.000	20.000	19.000	104.00	38.00	54.00	4	●	●
25.000	25.000	23.500	121.00	45.00	65.00	4	●	●

centre cutting

Guhring no.	3201	3732
Standard	DIN 6527 L	
Tool material	Solid carbide	
Carbide grade	K	K/P
Surface	○	F
Type	N	N
Shank design	HB	HB
Helix	35°/38°	
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1091	1091

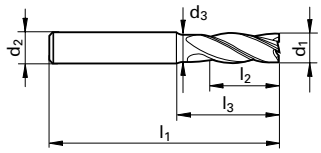


d1	d2	d3	l1	l2	l3	Z	Availability	
mm	mm	mm	mm	mm	mm			
4.000	6.000	3.700	57.00	11.00	21.00	4	●	●
5.000	6.000	4.700	57.00	13.00	21.00	4	●	●
6.000	6.000	5.500	57.00	13.00	21.00	4	●	●
8.000	8.000	7.500	63.00	19.00	27.00	4	●	●
10.000	10.000	9.200	72.00	22.00	32.00	4	●	●
12.000	12.000	11.200	83.00	26.00	38.00	4	●	●
14.000	14.000	13.200	83.00	26.00	38.00	4	●	●
16.000	16.000	15.000	92.00	32.00	44.00	4	●	●
18.000	18.000	17.000	92.00	32.00	44.00	4	●	●
20.000	20.000	19.000	104.00	38.00	54.00	4	●	●
25.000	25.000	23.500	121.00	45.00	65.00	4	●	●

○ bright ◍ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

centre cutting

Guhring no.	3209	3627
Standard	Guhring std.	
Tool material	Solid carbide	
Carbide grade	K	K/P
Surface	◯	F
Type	N	N
Shank design	HA	HA
Helix	35°/38°	
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1091	1091



d1	d2	d3	l1	l2	l3	Z	Availability	
mm	mm	mm	mm	mm	mm			
10.000	10.000	9.200	100.00	40.00	60.00	4	●	●
12.000	12.000	11.200	150.00	45.00	105.00	4	●	●
14.000	14.000	13.200	150.00	45.00	105.00	4	●	●
16.000	16.000	15.000	150.00	65.00	102.00	4	●	●
18.000	18.000	17.000	150.00	65.00	102.00	4	●	●
20.000	20.000	19.000	150.00	65.00	100.00	4	●	●
25.000	25.000	23.500	150.00	75.00	94.00	4	●	●

RF 100 U - high-performance end mills for materials up to 1600 N/mm2 (48 HRC)

RF 100 high-performance end mills excel thanks to unequal helix angles which considerably reduce vibration. The uneven helix angle vastly improves surface quality with finshing operations and considerably higher feed rates with slot drilling and roughing operations are also achieved.

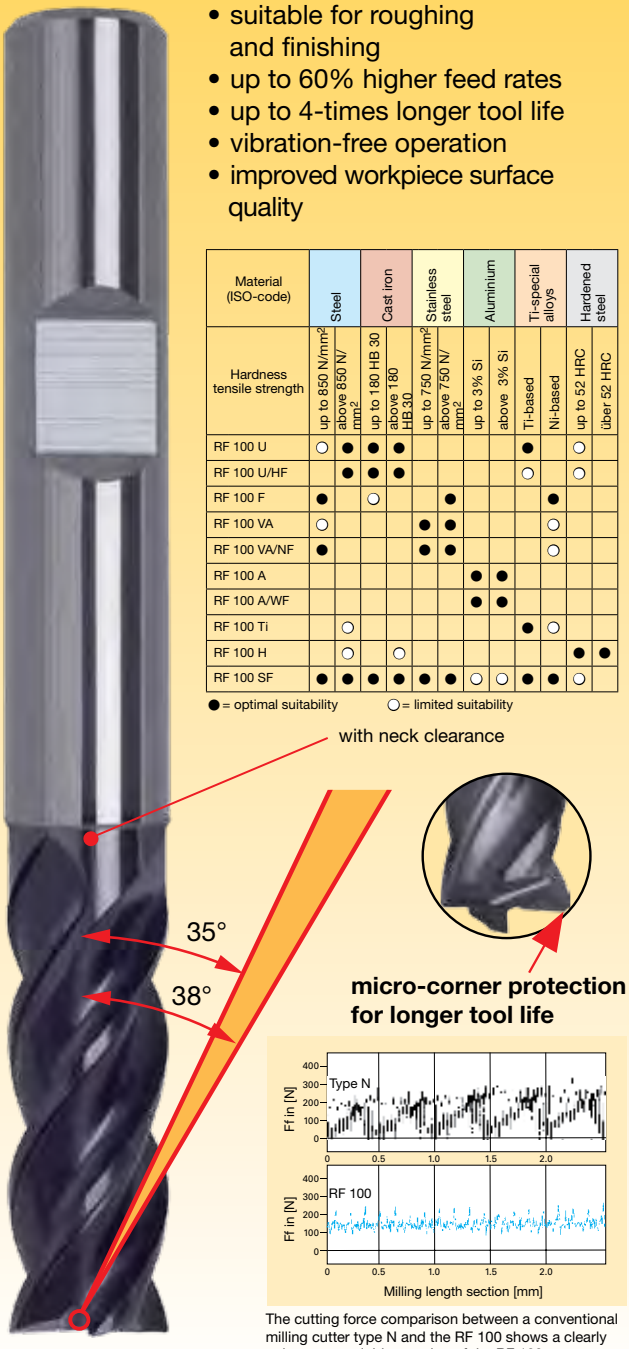
With many applications. the complete milling process can be covered with one RF 100. which as well as increasing tool life and dimensional accuracy of the workpiece generates a considerable cost advantage.

Summary of advantages

- suitable for roughing and finishing
- up to 60% higher feed rates
- up to 4-times longer tool life
- vibration-free operation
- improved workpiece surface quality

Material (ISO-code)	Steel		Cast iron		Stainless steel		Aluminium		Ti-special alloys		Hardened steel	
Hardness tensile strength	up to 850 N/mm²	above 850 N/mm²	up to 180 HB 30	above 180 HB 30	up to 750 N/mm²	above 750 N/mm²	up to 3% Si	above 3% Si	Ti-based	Ni-based	up to 52 HRC	über 52 HRC
RF 100 U	◯	●	●	●					●		◯	
RF 100 U/HF		●	●	●					◯		◯	
RF 100 F	●		◯			●				●		
RF 100 VA	◯				●	●				◯		
RF 100 VA/NF	●				●	●				◯		
RF 100 A							●	●				
RF 100 A/WF							●	●				
RF 100 Ti		◯							●	◯		
RF 100 H		◯		◯							●	●
RF 100 SF	●	●	●	●	●	●	◯	◯	●	●	◯	

● = optimal suitability ◯ = limited suitability



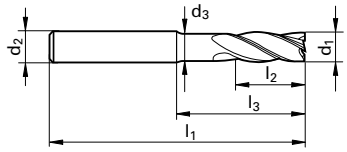
The cutting force comparison between a conventional milling cutter type N and the RF 100 shows a clearly quieter. more rigid operation of the RF 100.

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

RF 100 U

centre cutting

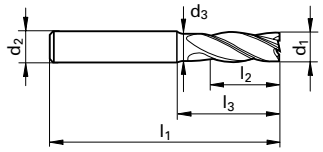
Guhring no.	3837	3838
Standard	Guhring std.	
Tool material	Solid carbide	
Carbide grade	K/P	
Surface	F	F
Type	N	N
Shank design	HA	HB
Helix	35°/38°	
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1091	1091
	NEW	NEW



d1	d2	d3	l1	l2	l3	Z	Availability	
mm	mm	mm	mm	mm	mm			
6.000	6.000	5.500	65.00	13.00	29.00	4	●	●
8.000	8.000	7.500	75.00	19.00	39.00	4	●	●
10.000	10.000	9.200	80.00	22.00	40.00	4	●	●
12.000	12.000	11.200	93.00	26.00	48.00	4	●	●
16.000	16.000	15.000	108.00	32.00	60.00	4	●	●
20.000	20.000	19.000	126.00	38.00	76.00	4	●	●

centre cutting

Guhring no.	3839	3871
Standard	Guhring std.	
Tool material	Solid carbide	
Carbide grade	K/P	
Surface	F	F
Type	N	N
Shank design	HA	HB
Helix	35°/38°	
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1091	1091
	NEW	NEW

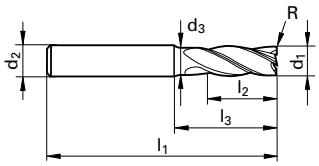


d1	d2	d3	l1	l2	l3	Z	Availability	
mm	mm	mm	mm	mm	mm			
6.000	6.000	5.500	65.00	18.00	29.00	4	●	●
8.000	8.000	7.500	75.00	24.00	39.00	4	●	●
10.000	10.000	9.200	80.00	30.00	40.00	4	●	●
12.000	12.000	11.200	93.00	36.00	48.00	4	●	●
16.000	16.000	15.000	108.00	48.00	60.00	4	●	●
20.000	20.000	19.000	126.00	60.00	76.00	4	●	●

○ bright ◎ steam tempered ◓ nitrided lands ● nitrided ◉ golden brown Ⓐ TiAlN ⓐ TiAlN nanoA Ⓐ TiAlN SuperA

centre cutting

Guhring no.	3872	3873
Standard	DIN 6527 L	
Tool material	Solid carbide	
Carbide grade	K/P	
Surface	F	F
Type	N	N
Shank design	HA	HB
Helix	35°/38°	35°/38°
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1091	1091
	NEW	NEW



d1	d2	d3	l1	l2	l3	r	Z	Code no.	Availability	
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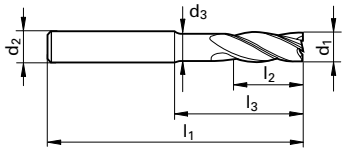
6.000	6.000	5.500	57.00	13.00	21.00	1.00	4	6.010	●	●
6.000	6.000	5.500	57.00	13.00	21.00	2.00	4	6.020	●	●
8.000	8.000	7.500	63.00	19.00	27.00	0.50	4	8.005	●	●
8.000	8.000	7.500	63.00	19.00	27.00	1.00	4	8.010	●	●
8.000	8.000	7.500	63.00	19.00	27.00	2.00	4	8.020	●	●
10.000	10.000	9.200	72.00	22.00	32.00	0.50	4	10.005	●	●
10.000	10.000	9.200	72.00	22.00	32.00	1.00	4	10.010	●	●
10.000	10.000	9.200	72.00	22.00	32.00	2.00	4	10.020	●	●
12.000	12.000	11.200	83.00	26.00	38.00	0.50	4	12.005	●	●
12.000	12.000	11.200	83.00	26.00	38.00	1.00	4	12.010	●	●
12.000	12.000	11.200	83.00	26.00	38.00	2.00	4	12.020	●	●
16.000	16.000	15.000	92.00	32.00	44.00	0.50	4	16.005	●	●
16.000	16.000	15.000	92.00	32.00	44.00	1.00	4	16.010	●	●
16.000	16.000	15.000	92.00	32.00	44.00	2.00	4	16.020	●	●
16.000	16.000	15.000	92.00	32.00	44.00	3.00	4	16.030	●	●
20.000	20.000	19.000	104.00	38.00	54.00	0.50	4	20.005	●	●
20.000	20.000	19.000	104.00	38.00	54.00	1.00	4	20.010	●	●
20.000	20.000	19.000	104.00	38.00	54.00	2.00	4	20.020	●	●
20.000	20.000	19.000	104.00	38.00	54.00	3.00	4	20.030	●	●
25.000	25.000	23.500	121.00	45.00	65.00	2.00	4	25.020	●	●
25.000	25.000	23.500	121.00	45.00	65.00	3.00	4	25.030	●	●

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

RF 100 U (3-fluted)

centre cutting

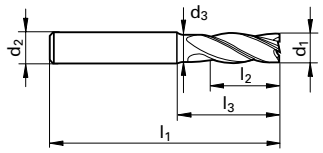
Guhring no.	3893	3894
Standard	~ DIN 6527 L	
Tool material	Solid carbide	
Carbide grade	K/P	
Surface	F	F
Type	N	N
Shank design	HA	HB
Helix	41°/43°/45°	
Tolerance	e8	e8
Discount group	106	106
Techn. data page	1091	1091
	NEW	NEW



d1	d2	d3	l1	l2	l3	Z	Availability	
mm	mm	mm	mm	mm	mm			
3.000	6.000	2.700	57.00	4.00	21.00	3	●	●
4.000	6.000	3.700	57.00	5.00	21.00	3	●	●
5.000	6.000	4.700	57.00	6.00	21.00	3	●	●
6.000	6.000	5.500	57.00	7.00	21.00	3	●	●
8.000	8.000	7.500	63.00	9.00	27.00	3	●	●
10.000	10.000	9.200	72.00	11.00	32.00	3	●	●
12.000	12.000	11.200	83.00	12.00	38.00	3	●	●
16.000	16.000	15.000	92.00	16.00	44.00	3	●	●

centre cutting

Guhring no.	3891	3892
Standard	~ DIN 6527 L	
Tool material	Solid carbide	
Carbide grade	K/P	
Surface	F	F
Type	N	N
Shank design	HA	HB
Helix	41°/43°/45°	
Tolerance	e8	e8
Discount group	106	106
Techn. data page	1091	1091
	NEW	NEW



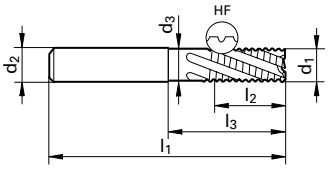
d1	d2	d3	l1	l2	l3	Z	Availability	
mm	mm	mm	mm	mm	mm			
3.000	6.000	2.700	57.00	8.00	21.00	3	●	●
3.500	6.000	3.200	57.00	10.00	21.00	3	●	●
3.700	6.000	3.400	57.00	11.00	21.00	3	●	●
4.000	6.000	3.700	57.00	11.00	21.00	3	●	●
4.500	6.000	4.200	57.00	11.00	21.00	3	●	●
4.700	6.000	4.400	57.00	13.00	21.00	3	●	●
5.000	6.000	4.700	57.00	13.00	21.00	3	●	●
5.500	6.000	5.200	57.00	13.00	21.00	3	●	●
5.700	6.000	5.400	57.00	13.00	21.00	3	●	●
6.000	6.000	5.500	57.00	13.00	21.00	3	●	●
6.500	8.000	6.000	63.00	16.00	27.00	3	●	●
7.000	8.000	6.500	63.00	16.00	27.00	3	●	●
7.500	8.000	7.000	63.00	19.00	27.00	3	●	●
8.000	8.000	7.500	63.00	19.00	27.00	3	●	●
8.500	10.000	8.000	72.00	19.00	32.00	3	●	●
9.000	10.000	8.500	72.00	19.00	32.00	3	●	●
9.500	10.000	9.000	72.00	22.00	32.00	3	●	●
10.000	10.000	9.200	72.00	22.00	32.00	3	●	●
12.000	12.000	11.200	83.00	26.00	38.00	3	●	●
16.000	16.000	15.000	92.00	32.00	44.00	3	●	●
20.000	20.000	19.000	104.00	38.00	54.00	3	●	●

○ bright ◍ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

Rf 100 U/HF

centre cutting

Guhring no.	3507	3508
Standard	DIN 6527 L	
Tool material	Solid carbide	
Carbide grade	K/P	
Surface	F	F
Type	HF	HF
Shank design	HA	HB
Helix	30°/32°	
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1092	1092
	NEW	NEW



d1	d2	d3	l1	l2	l3	Z	Availability	
mm	mm	mm	mm	mm	mm			
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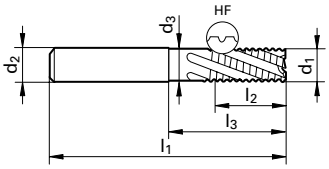
8.000	8.000	7.500	63.00	19.00	27.00	4	●	●
10.000	10.000	9.200	72.00	22.00	32.00	4	●	●
12.000	12.000	11.200	83.00	26.00	38.00	4	●	●
16.000	16.000	15.000	92.00	32.00	44.00	4	●	●
20.000	20.000	19.000	104.00	38.00	54.00	4	●	●
25.000	25.000	23.500	121.00	45.00	65.00	4	●	●

centre cutting

Guhring no.	3509	3522
Standard	Guhring std.	
Tool material	Solid carbide	
Carbide grade	K/P	
Surface	F	F
Type	HF	HF
Shank design	HA	HB
Helix	30°/32°	
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1092	1092
	NEW	NEW

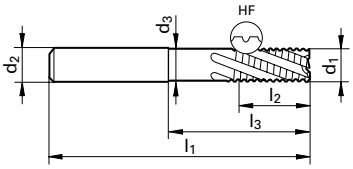


d1	d2	d3	l1	l2	l3	Z	Availability	
mm	mm	mm	mm	mm	mm			
6.000	6.000	5.500	65.00	18.00	29.00	4	●	●
8.000	8.000	7.500	75.00	24.00	39.00	4	●	●
10.000	10.000	9.200	80.00	30.00	40.00	4	●	●
12.000	12.000	11.200	93.00	36.00	48.00	4	●	●
16.000	16.000	15.000	108.00	48.00	60.00	4	●	●
20.000	20.000	19.000	126.00	60.00	76.00	4	●	●

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

centre cutting

Guhring no.	3598	3600
Standard	Guhring std.	
Tool material	Solid carbide	
Carbide grade	K/P	
Surface	F	F
Type	HF	HF
Shank design	HA	HB
Helix	30°/32°	
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1092	1092
	NEW	NEW



d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm	Z	Availability	
6.000	6.000	5.500	75.00	13.00	39.00	4	●	●
8.000	8.000	7.500	100.00	19.00	64.00	4	●	●
10.000	10.000	9.200	100.00	22.00	60.00	4	●	●
12.000	12.000	11.200	150.00	26.00	105.00	4	●	●
16.000	16.000	15.000	150.00	32.00	102.00	4	●	●
20.000	20.000	19.000	150.00	38.00	100.00	4	●	●

RF 100 U/HF - high-performance roughing end mills for materials up to 1600 N/mm² (48 HRC)

Based on our RF 100 end mill with unequal helix angles in combination with a newly developed roughing geometry. The result is a dramatic increase in tool life in comparison to conventional rough milling cutters with round or flat knuckle-type teeth. At the same time. the surface quality of the workpiece is improved to a peak-to-valley height of appr. Ra = 2-3 µm. making in many cases finishing operations unnecessary.

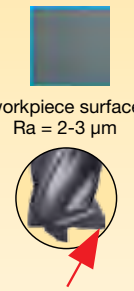
Simultaneously. the innovative design reduces power consumption in comparison to conventional RF 100 end mills allowing the application in unstable conditions and on less powerful machines.

Summary of advantages

- low cutting pressure and power consumption
- vibration-free operation
- increased feed rates possible
- increased surface qualities (Ra = 2-3 µm)
- longer tool life

Material (ISO-code)	Steel		Cast iron		Stainless steel		Aluminium		Ti-special alloys		Hardened steel	
Hardness tensile strength	up to 850 N/mm²	above 850 N/mm²	up to 180 HB 30	above 180 HB 30	up to 750 N/mm²	above 750 N/mm²	up to 3% Si	above 3% Si	Ti-based	Ni-based	up to 52 HRC	above 52 HRC
RF 100 U	○	●	●	●					●		○	
RF 100 U/HF		●	●	●					○		○	
RF 100 F	●		○			●				●		
RF 100 VA	○				●	●				○		
RF 100 VA/NF	●				●	●				○		
RF 100 A							●	●				
RF 100 A/WF							●	●				
RF 100 Ti		○							●	○		
RF 100 H		○		○							●	●
RF 100 SF	●	●	●	●	●	●	○	○	●	●	○	

●= optimal suitability ○= limited suitability



micro corner protection for longer tool life

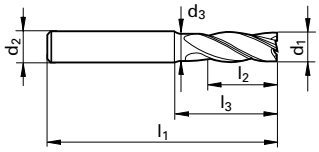
Type	RF 100 U smooth cutting	RF 100 U/HF
Performance index	100%	70%
Workpiece surface	R_a = 1-2 µm	R_a = 2-3 µm
Tool life index	100%	75%
Power consumption	160%	100%
Cutting pressure	150%	100%

bright · steam tempered · nitrided lands · nitrided · golden brown · A TiAlN · a TiAlN nanoA · A TiAlN SuperA

RF 100 F

centre cutting

Guhring no.	3629	3630
Standard	DIN 6527 L	
Tool material	Solid carbide	
Carbide grade	K/P	
Surface	F	F
Type	NH	NH
Shank design	HA	HB
Helix	40°/42°	
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1091	1091



d1	d2	d3	l1	l2	l3	Z	Availability	
mm	mm	mm	mm	mm	mm			
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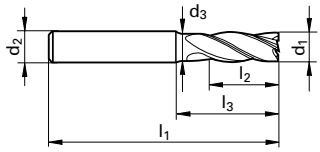
5.000	6.000	4.700	57.00	13.00	21.00	4	●	●
6.000	6.000	5.500	57.00	13.00	21.00	4	●	●
8.000	8.000	7.500	63.00	19.00	27.00	4	●	●
10.000	10.000	9.200	72.00	22.00	32.00	4	●	●
12.000	12.000	11.200	83.00	26.00	38.00	4	●	●
16.000	16.000	15.000	92.00	32.00	44.00	4	●	●
20.000	20.000	19.000	104.00	38.00	54.00	4	●	●

centre cutting

Guhring no.	3366
Standard	DIN 6527 L
Tool material	Solid carbide
Carbide grade	K/P
Surface	F
Type	NH
Shank design	HB
Helix	40°/42°
Tolerance	h10
Discount group	106
Techn. data page	1091



d1	d2	d3	l1	l2	l3	Z	Availability
mm	mm	mm	mm	mm	mm		
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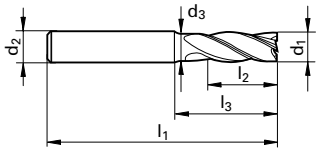
8.000	8.000	7.500	63.00	19.00	27.00	4	●
10.000	10.000	9.200	72.00	22.00	32.00	4	●
12.000	12.000	11.200	83.00	26.00	38.00	4	●
16.000	16.000	15.000	92.00	32.00	44.00	4	●
20.000	20.000	19.000	104.00	38.00	54.00	4	●

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

RF 100 VA

centre cutting

Guhring no.	3804	3805
Standard	DIN 6527 K	
Tool material	Solid carbide	
Carbide grade	K/P	
Surface	a	a
Type	N	N
Shank design	HA	HB
Helix	36°/38°	
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1091	1091
	NEW	NEW



d1	d2	d3	l1	l2	l3	Z	Availability	
mm	mm	mm	mm	mm	mm			
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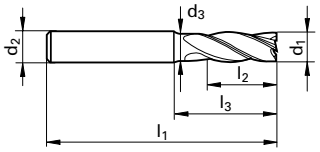
5.000	6.000	4.700	54.00	9.00	18.00	4	●	●
6.000	6.000	5.500	54.00	10.00	18.00	4	●	●
8.000	8.000	7.500	58.00	12.00	22.00	4	●	●
10.000	10.000	9.200	66.00	14.00	26.00	4	●	●
12.000	12.000	11.200	73.00	16.00	28.00	4	●	●
16.000	16.000	15.000	82.00	22.00	34.00	4	●	●
20.000	20.000	19.000	92.00	26.00	42.00	4	●	●

centre cutting

Guhring no.	3800	3803
Standard	DIN 6527 L	
Tool material	Solid carbide	
Carbide grade	K/P	
Surface	a	a
Type	N	N
Shank design	HA	HB
Helix	36°/38°	
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1091	1091
	NEW	NEW



d1	d2	d3	l1	l2	l3	Z	Availability	
mm	mm	mm	mm	mm	mm			
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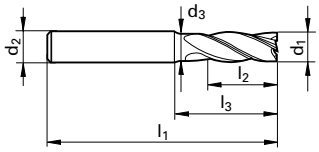
4.000	6.000	3.700	57.00	11.00	21.00	4	●	●
4.500	6.000	4.200	57.00	11.00	21.00	4	●	●
5.000	6.000	4.700	57.00	13.00	21.00	4	●	●
5.500	6.000	5.200	57.00	13.00	21.00	4	●	●
6.000	6.000	5.500	57.00	13.00	21.00	4	●	●
6.500	8.000	6.000	63.00	16.00	27.00	4	●	●
7.000	8.000	6.500	63.00	16.00	27.00	4	●	●
7.500	8.000	7.000	63.00	19.00	27.00	4	●	●
8.000	8.000	7.500	63.00	19.00	27.00	4	●	●
8.500	10.000	8.000	72.00	19.00	32.00	4	●	●
9.000	10.000	8.500	72.00	19.00	32.00	4	●	●
9.500	10.000	9.000	72.00	22.00	32.00	4	●	●
10.000	10.000	9.200	72.00	22.00	32.00	4	●	●
11.000	12.000	10.200	83.00	26.00	38.00	4	●	●
12.000	12.000	11.200	83.00	26.00	38.00	4	●	●
14.000	14.000	13.200	83.00	26.00	38.00	4	●	●
16.000	16.000	15.000	92.00	32.00	44.00	4	●	●
18.000	18.000	17.000	92.00	32.00	44.00	4	●	●
20.000	20.000	19.000	104.00	38.00	54.00	4	●	●
25.000	25.000	23.500	121.00	45.00	65.00	4	●	●

○ bright ◍ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

RF 100 VA

centre cutting

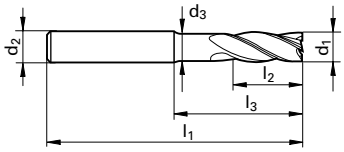
Guhring no.	6700	6701
Standard	DIN 6527 L	
Tool material	Solid carbide	
Carbide grade	K/P	
Surface	a	a
Type	N	N
Shank design	HA	HB
Helix	36°/38°	
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1091	1091
	NEW	NEW



d1	d2	d3	l1	l2	l3	Z	Availability	
mm	mm	mm	mm	mm	mm			
6.000	6.000	5.500	57.00	13.00	21.00	4	●	●
8.000	8.000	7.500	63.00	19.00	27.00	4	●	●
10.000	10.000	9.200	72.00	22.00	32.00	4	●	●
12.000	12.000	11.200	83.00	26.00	38.00	4	●	●
16.000	16.000	15.000	92.00	32.00	44.00	4	●	●
20.000	20.000	19.000	104.00	38.00	54.00	4	●	●
25.000	25.000	23.500	121.00	45.00	65.00	4	●	●

centre cutting

Guhring no.	3806	3807
Standard	Guhring std.	
Tool material	Solid carbide	
Carbide grade	K/P	
Surface	a	a
Type	N	N
Shank design	HA	HB
Helix	36°/38°	
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1091	1091
	NEW	NEW



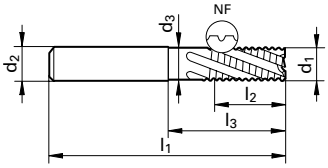
d1	d2	d3	l1	l2	l3	Z	Availability	
mm	mm	mm	mm	mm	mm			
6.000	6.000	5.500	65.00	10.00	29.00	4	●	●
8.000	8.000	7.500	75.00	12.00	39.00	4	●	●
10.000	10.000	9.200	80.00	14.00	40.00	4	●	●
12.000	12.000	11.200	93.00	16.00	48.00	4	●	●
16.000	16.000	15.000	108.00	22.00	60.00	4	●	●
20.000	20.000	19.000	126.00	26.00	76.00	4	●	●

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

RF 100 VA/NF

centre cutting

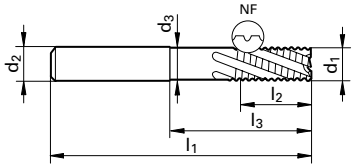
Guhring no.	3696	3718
Standard	DIN 6527 L	
Tool material	Solid carbide	
Carbide grade	K/P	
Surface	a	a
Type	NF	NF
Shank design	HA	HB
Helix	36°/38°	
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1092	1092
	NEW	NEW



d1	d2	d3	l1	l2	l3	Z	Availability	
mm	mm	mm	mm	mm	mm			
5.000	6.000	4.500	57.00	13.00	18.00	4	●	●
6.000	6.000	5.500	57.00	13.00	21.00	4	●	●
7.000	8.000	6.500	63.00	16.00	27.00	4	●	●
8.000	8.000	7.500	63.00	19.00	27.00	4	●	●
9.000	10.000	8.500	72.00	19.00	32.00	4	●	●
10.000	10.000	9.200	72.00	22.00	32.00	4	●	●
12.000	12.000	11.200	83.00	26.00	38.00	4	●	●
14.000	14.000	13.200	83.00	26.00	38.00	4	●	●
16.000	16.000	15.000	92.00	32.00	44.00	4	●	●
18.000	20.000	17.000	92.00	32.00	44.00	4	●	●
20.000	20.000	19.000	104.00	38.00	54.00	4	●	●
25.000	25.000	23.500	121.00	45.00	65.00	4	●	●

centre cutting

Guhring no.	3733	3885
Standard	Guhring std.	
Tool material	Solid carbide	
Carbide grade	K/P	
Surface	a	a
Type	NF	NF
Shank design	HA	HB
Helix	36°/38°	
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1092	1092
	NEW	NEW

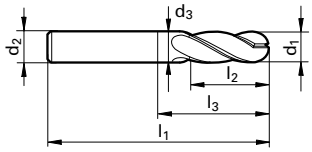


d1	d2	d3	l1	l2	l3	Z	Availability	
mm	mm	mm	mm	mm	mm			
6.000	6.000	5.500	65.00	10.00	29.00	4	●	●
8.000	8.000	7.500	75.00	12.00	39.00	4	●	●
10.000	10.000	9.200	80.00	14.00	40.00	4	●	●
12.000	12.000	11.200	93.00	16.00	48.00	4	●	●
16.000	16.000	15.000	108.00	22.00	60.00	4	●	●
20.000	20.000	19.000	126.00	26.00	76.00	4	●	●

○ bright ◍ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

centre cutting

Guhring no.	6707	6708
Standard	DIN 6527 L	
Tool material	Solid carbide	
Carbide grade	K/P	
Surface	a	a
Type	N	N
Shank design	HA	HB
Helix	36°/38°	
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1091	1091
	NEW	NEW



d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm	Z	Availability	
4.000	6.000	3.700	57.00	11.00	21.00	4	●	●
5.000	6.000	4.700	57.00	13.00	21.00	4	●	●
6.000	6.000	5.500	57.00	13.00	21.00	4	●	●
8.000	8.000	7.500	63.00	19.00	27.00	4	●	●
10.000	10.000	9.200	72.00	22.00	32.00	4	●	●
12.000	12.000	11.200	83.00	26.00	38.00	4	●	●
16.000	16.000	15.000	92.00	32.00	44.00	4	●	●
20.000	20.000	19.000	104.00	38.00	54.00	4	●	●
25.000	25.000	23.500	121.00	45.00	65.00	4	●	●

RF 100 VA - high-performance end mills for stainless steels with ball nose

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

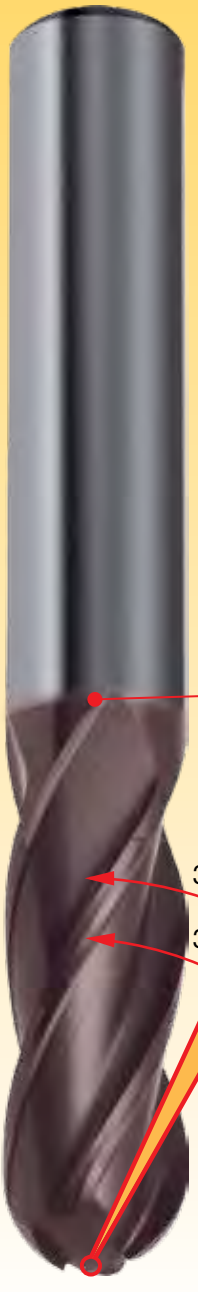
With many applications. the complete milling process can be covered with one RF 100. which as well as increasing tool life and dimensional accuracy of the workpiece generates a considerable cost advantage.

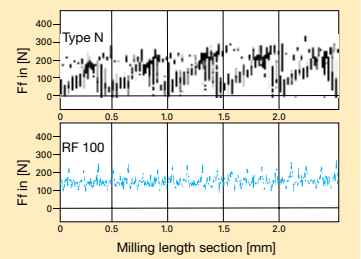
Summary of advantages

- suitable for roughing and finishing
- up to 60% higher feed rates
- up to 4-times longer tool life
- vibration-free operation
- improved workpiece surface quality

Material (ISO-code)	Steel		Cast iron		Stainless steel		Aluminium		Ti-special alloys		Hardened steel	
Hardness tensile strength	up to 850 N/mm²	above 850 N/mm²	up to 180 HB 30	above 180 HB 30	up to 750 N/mm²	above 750 N/mm²	up to 3% Si	above 3% Si	Ti-based	Ni-based	up to 52 HRC	above 52 HRC
RF 100 U	○	●	●	●					●		○	
RF 100 U/HF		●	●	●					○		○	
RF 100 F	●		○			●				●		
RF 100 VA	○				●	●				○		
RF 100 VA/NF	●				●	●				○		
RF 100 A							●	●				
RF 100 A/WF							●	●				
RF 100 Ti		○							●	○		
RF 100 H		○		○							●	●
RF 100 SF	●	●	●	●	●	●	○	○	●	●	○	

● = optimal suitability ○ = limited suitability



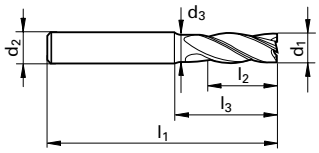


The cutting force comparison between a conventional milling cutter type N and the RF 100 shows a clearly quieter. more rigid operation of the RF 100.

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

centre cutting

Guhring no.	3202	3319
Standard	DIN 6527 L	
Tool material	Solid carbide	
Carbide grade	K	
Surface	◯	◯
Type	W	W
Shank design	HA	HB
Helix	40°/42°	
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1091	1091



d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm	Z	Availability	
4.000	6.000	3.700	57.00	11.00	21.00	4	●	●
5.000	6.000	4.700	57.00	13.00	21.00	4	●	●
6.000	6.000	5.500	57.00	13.00	21.00	4	●	●
8.000	8.000	7.500	63.00	19.00	27.00	4	●	●
10.000	10.000	9.200	72.00	22.00	32.00	4	●	●
12.000	12.000	11.200	83.00	26.00	38.00	4	●	●
16.000	16.000	15.000	92.00	32.00	44.00	4	●	●
20.000	20.000	19.000	104.00	38.00	54.00	4	●	●

RF 100 A - high-performance roughing end mills for aluminium and Al-alloys

RF 100 high-perfomance end mills excel thanks to unequal 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.

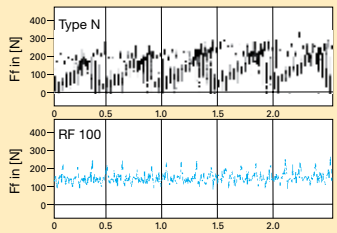
Summary of advantages

- suitable for roughing and finishing
- up to 60% higher feed rates
- up to 4-times longer tool life
- vibration-free operation
- improved workpiece surface quality

Material (ISO-code)	Steel		Cast iron		Stainless steel		Aluminium		Ti-special alloys		Hardened steel	
Hardness tensile strength	up to 850 N/mm²	above 850 N/mm²	up to 180 HB 30	above 180 HB 30	up to 750 N/mm²	above 750 N/mm²	up to 3% Si	above 3% Si	Ti-based	Ni-based	up to 52 HRC	above 52 HRC
RF 100 U	◯	●	●	●					●		◯	
RF 100 U/HF		●	●	●					◯		◯	
RF 100 F	●		◯			●				●		
RF 100 VA	◯				●	●				◯		
RF 100 VA/NF	●				●	●				◯		
RF 100 A							●	●				
RF 100 A/WF							●	●				
RF 100 Ti		◯							●	◯		
RF 100 H		◯		◯							●	●
RF 100 SF	●	●	●	●	●	●	◯	◯	●	●	◯	

●= optimal suitability ◯= limited suitability

micro-corner protection for longer tool life



The cutting force comparison between a conventional milling cutter type N and the RF 100 shows a clearly quieter. more rigid operation of the RF 100.

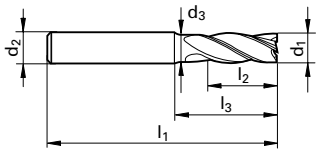
◯ bright ◯ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

RF 100 A (3-fluted)

centre cutting

Guhring no.	3472
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K
Surface	◯
Type	W
Shank design	HA
Helix	39°/40°41°
Tolerance	h10
Discount group	106
Techn. data page	1091

NEW

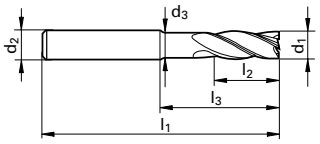


d1	d2	d3	l1	l2	l3	Z	Availability
mm	mm	mm	mm	mm	mm		
3.000	6.000	2.700	57.00	8.00	21.00	3	●
4.000	6.000	3.700	57.00	11.00	21.00	3	●
5.000	6.000	4.700	57.00	13.00	21.00	3	●
6.000	6.000	5.500	57.00	13.00	21.00	3	●
8.000	8.000	7.500	63.00	16.00	27.00	3	●
10.000	10.000	9.200	72.00	19.00	32.00	3	●
12.000	12.000	11.200	83.00	22.00	38.00	3	●
16.000	16.000	15.000	92.00	26.00	44.00	3	●
20.000	20.000	19.000	104.00	32.00	54.00	3	●

centre cutting

Guhring no.	3473
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K
Surface	◯
Type	W
Shank design	HA
Helix	39°/40°41°
Tolerance	h10
Discount group	106
Techn. data page	1091

NEW



d1	d2	d3	l1	l2	l3	Z	Availability
mm	mm	mm	mm	mm	mm		
6.000	6.000	5.500	65.00	10.00	29.00	3	●
8.000	8.000	7.500	75.00	12.00	39.00	3	●
10.000	10.000	9.200	80.00	14.00	40.00	3	●
12.000	12.000	11.200	93.00	16.00	48.00	3	●
16.000	16.000	15.000	108.00	22.00	60.00	3	●
20.000	20.000	19.000	126.00	26.00	76.00	3	●

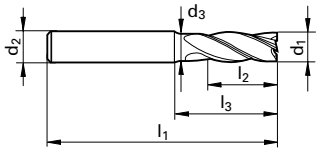
Ⓒ TiCN Ⓒb Carbo Ⓓ Cristall Ⓕ FIRE/nanoFIRE Ⓟ AlCrN Ⓢ TiN Ⓢ+ TiN+ Ⓜ MolyGlide Ⓨ Signum

RF 100 A (3-fluted)

centre cutting

Guhring no.	6702
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K
Surface	◯
Type	W
Shank design	HB
Helix	39°/40°/41°
Tolerance	h10
Discount group	106
Techn. data page	1091

NEW

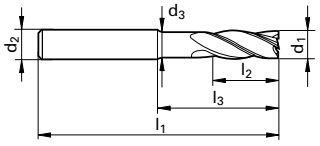


d1	d2	d3	l1	l2	l3	Z	Availability
mm	mm	mm	mm	mm	mm		
3.000	6.000	2.700	57.00	8.00	15.00	3	●
4.000	6.000	3.700	57.00	11.00	18.00	3	●
5.000	6.000	4.700	57.00	13.00	18.00	3	●
6.000	6.000	5.500	57.00	13.00	21.00	3	●
8.000	8.000	7.500	63.00	19.00	27.00	3	●
10.000	10.000	9.200	72.00	22.00	32.00	3	●
12.000	12.000	11.200	83.00	26.00	38.00	3	●
16.000	16.000	15.000	92.00	32.00	44.00	3	●
20.000	20.000	19.000	104.00	38.00	54.00	3	●

centre cutting

Guhring no.	6703
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K
Surface	◯
Type	W
Shank design	HB
Helix	39°/40°/41°
Tolerance	h10
Discount group	106
Techn. data page	1091

NEW



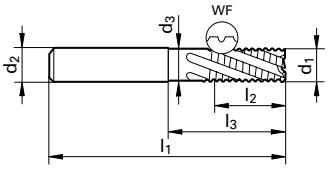
d1	d2	d3	l1	l2	l3	Z	Availability
mm	mm	mm	mm	mm	mm		
6.000	6.000	5.500	65.00	13.00	29.00	3	●
8.000	8.000	7.500	75.00	19.00	39.00	3	●
10.000	10.000	9.200	80.00	22.00	40.00	3	●
12.000	12.000	11.200	93.00	26.00	48.00	3	●
16.000	16.000	15.000	108.00	32.00	60.00	3	●
20.000	20.000	19.000	126.00	38.00	76.00	3	●

◯ bright ◯ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

RF 100 A/WF

centre cutting

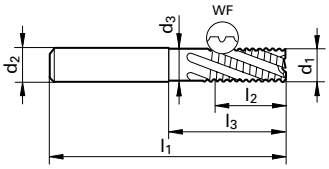
Guhring no.	3468	3469
Standard	~ DIN 6527 L	
Tool material	Solid carbide	
Carbide grade	K	
Surface	◯	◯
Type	WF	WF
Shank design	HA	HB
Helix	29°/30°/31°	
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1092	1092
	NEW	



d1	d2	d3	l1	l2	l3	Z	Availability	
mm	mm	mm	mm	mm	mm			
6.000	6.000	5.500	57.00	13.00	21.00	3	●	●
8.000	8.000	7.500	63.00	19.00	27.00	3	●	●
10.000	10.000	9.200	72.00	22.00	32.00	3	●	●
12.000	12.000	11.200	83.00	26.00	38.00	3	●	●
16.000	16.000	15.000	92.00	32.00	44.00	3	●	●
20.000	20.000	19.000	104.00	38.00	54.00	3	●	●
25.000	25.000	23.500	121.00	45.00	65.00	3	●	●

centre cutting

Guhring no.	3470	3471
Standard	Guhring std.	
Tool material	Solid carbide	
Carbide grade	K	
Surface	◯	◯
Type	WF	WF
Shank design	HA	HB
Helix	29°/30°/31°	
Tolerance	h12	h10
Discount group	106	106
Techn. data page	1092	1092
	NEW	NEW

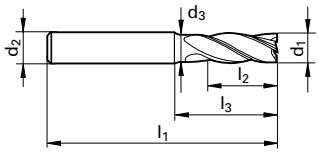


d1	d2	d3	l1	l2	l3	Z	Availability	
mm	mm	mm	mm	mm	mm			
6.000	6.000	5.500	65.00	13.00	29.00	3	●	●
8.000	8.000	7.500	75.00	19.00	39.00	3	●	●
10.000	10.000	9.200	80.00	22.00	40.00	3	●	●
12.000	12.000	11.200	93.00	26.00	48.00	3	●	●
16.000	16.000	15.000	108.00	32.00	60.00	3	●	●
20.000	20.000	19.000	126.00	38.00	76.00	3	●	●

Ⓒ TiCN Ⓒb Carbo Ⓓ Cristall Ⓕ FIRE/nanoFIRE Ⓟ AlCrN Ⓢ TiN Ⓢ+ TiN+ Ⓜ MolyGlide Ⓨ Signum

centre cutting

Guhring no.	3895	3896
Standard	DIN 6527 L	
Tool material	Solid carbide	
Carbide grade	K/P	
Surface	A	A
Type	H	H
Shank design	HA	HB
Helix	40°/42°	
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1091	1091
	NEW	NEW



d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm	Z	Availability
6.000	6.000	5.500	57.00	13.00	21.00	4	● ●
8.000	8.000	7.500	63.00	19.00	27.00	4	● ●
10.000	10.000	9.200	72.00	22.00	32.00	4	● ●
12.000	12.000	11.200	83.00	26.00	38.00	4	● ●
16.000	16.000	15.000	92.00	32.00	44.00	4	● ●
20.000	20.000	19.000	104.00	38.00	54.00	4	● ●

RF 100 H - high-performance roughing end mills for hardened steels up to 60 HRC

RF 100 high-perfomance end mills excel thanks to unequal helix angles which considerably reduce vibration. The uneven helix angle vastly improves surface quality for finishing operations.

Innovative design with core stability enables roughing operations up to 1xD in materials up 54 HRC as well as finishing operations over the entire cutting edge length (up to 2.5xD) in materials up to 60 HRC. Also applicable with HPC strategy for roughing materials over 60 HRC.

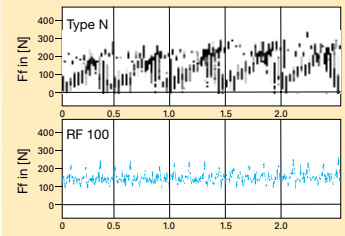
Summary of advantages

- suitable for roughing and finishing
- up to 60% higher feed rates
- up to 4-times longer tool life
- vibration-free operation
- improved workpiece surface quality

Material (ISO-code)	Steel		Cast iron		Stainless steel		Aluminium		Ti-special alloys		Hardened steel	
Hardness tensile strength	up to 850 N/mm²	above 850 N/mm²	up to 180 HB 30	above 180 HB 30	up to 750 N/mm²	above 750 N/mm²	up to 3% Si	above 3% Si	Ti-based	Ni-based	up to 52 HRC	above 52 HRC
RF 100 U	○	●	●	●					●		○	
RF 100 U/HF		●	●	●					○		○	
RF 100 F	●		○			●				●		
RF 100 VA	○				●	●				○		
RF 100 VA/NF	●				●	●				○		
RF 100 A							●	●				
RF 100 A/WF							●	●				
RF 100 Ti		○							●	○		
RF 100 H		○		○							●	●
RF 100 SF	●	●	●	●	●	●	○	○	●	●	○	

● = optimal suitability ○ = limited suitability

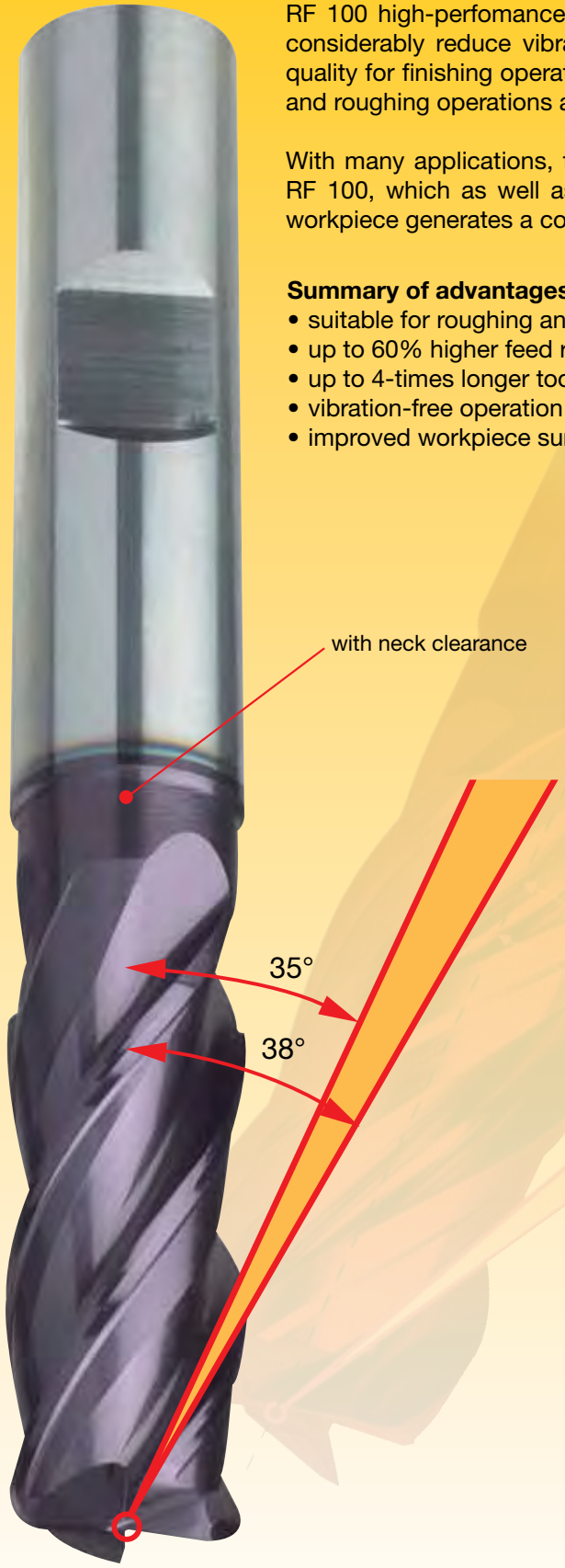
micro-corner protection for longer tool life



The cutting force comparison between a conventional milling cutter type N and the RF 100 shows a clearly quieter. more rigid operation of the RF 100.

○ bright ◌ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

RF 100 Ti - high-performance roughing end mills for special and Ti-alloys



RF 100 high-perfomance end mills excel thanks to unequal 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.

Summary of advantages

- suitable for roughing and finishing
- up to 60% higher feed rates
- up to 4-times longer tool life
- vibration-free operation
- improved workpiece surface quality

High wear protection through constant rake angle in radius area

Seamless radius area for high form and contour accuracy

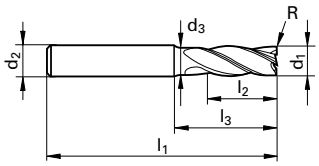
Material (ISO-code)	Steel		Cast iron		Stainless steel		Aluminium		Ti-special alloys		Hardened steel	
Hardness tensile strength	up to 850 N/mm²	above 850 N/mm²	up to 180 HB 30	above 180 HB 30	up to 750 N/mm²	above 750 N/mm²	up to 3% Si	above 3% Si	Ti-based	Ni-based	up to 52 HRC	above 52 HRC
RF 100 U	○	●	●	●					●		○	
RF 100 U/HF		●	●	●					○		○	
RF 100 F	●		○			●				●		
RF 100 VA	○				●	●				○		
RF 100 VA/NF	●				●	●				○		
RF 100 A							●	●				
RF 100 A/WF							●	●				
RF 100 Ti		○							●	○		
RF 100 H		○		○							●	●
RF 100 SF	●	●	●	●	●	●	○	○	●	●	○	

● = optimal suitability ○ = limited suitability

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Sygnum

centre cutting

Guhring no.	3498	3499
Standard	DIN 6527 L	
Tool material	Solid carbide	
Carbide grade	K/P	
Surface	A	A
Type	N	N
Shank design	HA	HB
Helix	35°/38°	35°/38°
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1091	1091
	NEW	NEW



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8.000	8.000	7.500	63.00	19.00	27.00	1.00	4	8.010	●	●
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10.000	10.000	9.200	72.00	22.00	32.00	0.80	4	10.008	●	●
10.000	10.000	9.200	72.00	22.00	32.00	1.00	4	10.010	●	●
10.000	10.000	9.200	72.00	22.00	32.00	1.50	4	10.015	●	●
10.000	10.000	9.200	72.00	22.00	32.00	2.00	4	10.020	●	●
12.000	12.000	11.200	83.00	26.00	38.00	0.50	4	12.005	●	●
12.000	12.000	11.200	83.00	26.00	38.00	0.80	4	12.008	●	●
12.000	12.000	11.200	83.00	26.00	38.00	1.00	4	12.010	●	●
12.000	12.000	11.200	83.00	26.00	38.00	1.50	4	12.015	●	●
12.000	12.000	11.200	83.00	26.00	38.00	2.00	4	12.020	●	●
12.000	12.000	11.200	83.00	26.00	38.00	2.50	4	12.025	●	●
12.000	12.000	11.200	83.00	26.00	38.00	3.00	4	12.030	●	●
12.000	12.000	11.200	83.00	26.00	38.00	3.175	4	12.031	●	●
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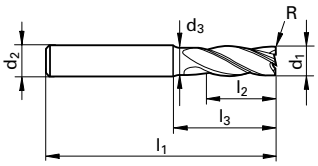
16.000	16.000	15.000	92.00	32.00	44.00	0.50	4	16.005	●	●
16.000	16.000	15.000	92.00	32.00	44.00	0.80	4	16.008	●	●
16.000	16.000	15.000	92.00	32.00	44.00	1.00	4	16.010	●	●
16.000	16.000	15.000	92.00	32.00	44.00	1.50	4	16.015	●	●
16.000	16.000	15.000	92.00	32.00	44.00	2.00	4	16.020	●	●
16.000	16.000	15.000	92.00	32.00	44.00	2.50	4	16.025	●	●
16.000	16.000	15.000	92.00	32.00	44.00	3.00	4	16.030	●	●
16.000	16.000	15.000	92.00	32.00	44.00	3.175	4	16.031	●	●
16.000	16.000	15.000	92.00	32.00	44.00	4.00	4	16.040	●	●
20.000	20.000	19.000	104.00	38.00	54.00	0.50	4	20.005	●	●
20.000	20.000	19.000	104.00	38.00	54.00	1.00	4	20.010	●	●
20.000	20.000	19.000	104.00	38.00	54.00	1.50	4	20.015	●	●

○ bright ◔ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

centre cutting

Guhring no.	3498	3499
Standard	DIN 6527 L	
Tool material	Solid carbide	
Carbide grade	K/P	
Surface	A	A
Type	N	N
Shank design	HA	HB
Helix	35°/38°	35°/38°
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1091	1091
	NEW	NEW



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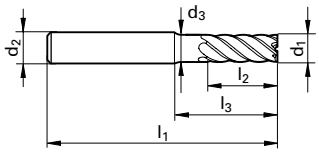
20.000	20.000	19.000	104.00	38.00	54.00	2.50	4	20.025	●	●
20.000	20.000	19.000	104.00	38.00	54.00	3.00	4	20.030	●	●
20.000	20.000	19.000	104.00	38.00	54.00	3.175	4	20.031	●	●
20.000	20.000	19.000	104.00	38.00	54.00	4.00	4	20.040	●	●
25.000	25.000	23.500	121.00	45.00	65.00	1.50	4	25.015	●	●
25.000	25.000	23.500	121.00	45.00	65.00	2.00	4	25.020	●	●
25.000	25.000	23.500	121.00	45.00	65.00	2.50	4	25.025	●	●
25.000	25.000	23.500	121.00	45.00	65.00	3.00	4	25.030	●	●
25.000	25.000	23.500	121.00	45.00	65.00	3.175	4	25.031	●	●
25.000	25.000	23.500	121.00	45.00	65.00	4.00	4	25.040	●	●
25.000	25.000	23.500	121.00	45.00	65.00	5.00	4	25.050	●	●

(C) TiCN (Cb) Carbo (D) Cristall (F) FIRE/nanoFIRE (P) AlCrN (S) TiN (S+) TiN+ (M) MolyGlide (Y) Signum

RF 100 S/F (5-fluted)

centre cutting

Guhring no.	6709	6710
Standard	~ DIN 6527 L	
Tool material	Solid carbide	
Carbide grade	K/P	
Surface	F	F
Type	NH	NH
Shank design	HA	HB
Helix	45°	
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1091	1091
	NEW	NEW



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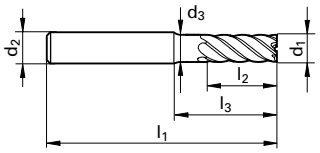
6.000	6.000	5.500	57.00	13.00	21.00	5	●	●
8.000	8.000	7.500	63.00	19.00	27.00	5	●	●
10.000	10.000	9.200	72.00	22.00	32.00	5	●	●
12.000	12.000	11.200	83.00	26.00	38.00	5	●	●
16.000	16.000	15.000	92.00	32.00	44.00	5	●	●
20.000	20.000	19.000	104.00	38.00	54.00	5	●	●
25.000	25.000	23.500	121.00	45.00	65.00	5	●	●

centre cutting

Guhring no.	3897	3898
Standard	Guhring std.	
Tool material	Solid carbide	
Carbide grade	K/P	
Surface	F	F
Type	NH	NH
Shank design	HA	HB
Helix	45°	
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1091	1091
	NEW	NEW



d1	d2	d3	l1	l2	l3	Z	Availability	
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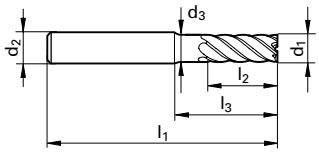
5.000	6.000	4.700	65.00	15.00	29.00	5	●	●
6.000	6.000	5.500	65.00	18.00	29.00	5	●	●
8.000	8.000	7.500	75.00	24.00	39.00	5	●	●
10.000	10.000	9.200	80.00	30.00	40.00	5	●	●
12.000	12.000	11.200	93.00	36.00	48.00	5	●	●
16.000	16.000	15.000	108.00	48.00	60.00	5	●	●
20.000	20.000	19.000	126.00	60.00	76.00	5	●	●

○ bright ◍ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

centre cutting

Guhring no.	3631	3632
Standard	~ DIN 6527 L	
Tool material	Solid carbide	
Carbide grade	K/P	
Surface	F	F
Type	NH	NH
Shank design	HA	HB
Helix	44°/45°/46°	
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1091	1091



d1	d2	d3	l1	l2	l3	Z	Availability	
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10.000	10.000	9.200	72.00	22.00	32.00	6	●	●
12.000	12.000	11.200	83.00	26.00	38.00	6	●	●
16.000	16.000	15.000	92.00	32.00	44.00	6	●	●
20.000	20.000	19.000	104.00	38.00	54.00	6	●	●
25.000	25.000	23.500	121.00	45.00	65.00	6	●	●

RF 100 S/F - high-performance semi-roughing end mills for materials up to 1600 N/mm² (48 HRC)

Based on our 4-fluted RF 100 U the RF 100 S/F has a higher, more rigid web paired with 6 cutting edges. In addition, its innovative flute geometry ensures optimal chip evacuation.
The range of application includes super finishing and HSC finishing as well as semi-roughing operations (HPC-machining), i.e. feed widths (ae) up to 0.3xD with close to complete cutting length.

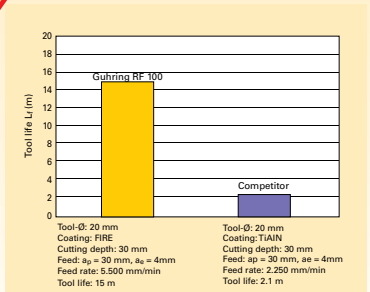
Summary of advantages

- suitable for semi-roughing (HPC) and HSC-finishing
- extremely high form accuracy
- vibration-free operation
- optimised flute geometry
- high feed rates possible
- optimal surface quality
- increased tool life

Material (ISO-code)	Steel		Cast iron		Stainless steel		Aluminium		Ti-special alloys		Hardened steel	
Hardness tensile strength	up to 850 N/mm²	above 850 N/mm²	up to 180 HB 30	above 180 HB 30	up to 750 N/mm²	above 750 N/mm²	up to 3% Si	above 3% Si	Ti-based	Ni-based	up to 52 HRC	up to 52 HRC
RF 100 U	○	●	●	●					●		○	
RF 100 U/HF		●	●	●					○		○	
RF 100 F	●		○			●				●		
RF 100 VA	○				●	●				○		
RF 100 VA/NF	●				●	●				○		
RF 100 A							●	●				
RF 100 A/WF							●	●				
RF 100 Ti		○							●	○		
RF 100 H		○		○							●	●
RF 100 SF	●	●	●	●	●	●	○	○	●	●	○	

● = optimal suitability ○ = limited suitability

micro-corner protection for longer tool life



Tool life comparison:
Semi-roughing in 48 HRC the RF 100 S/F achieves more than 7 times the too life in comparison to conventional end mills.

C TiCN | Cb Carbo | D Cristall | F FIRE/nanoFIRE | P AlCrN | S TiN | S+ TiN+ | M MolyGlide | Y Signum

GH 100 U – high performance end mills with helix

The new design Guhring GH 100 U end mills offer the ultimate pre-requisite for a cost-efficient, optimal machining of general steels, high-alloyed steels, CrNi steels as well as stainless steels and titanium-alloys up to 50 HRC.

All GH 100 U end mills excel thanks to their micro-corner protection combined with a reinforced and corrected minor cutting edge. This design considerably reduces the wear at the cutting edges allowing a higher feed rate as well as improving tool life.

Micro-corner protection and corrected reinforced cutting edge = optimal stability

GH 100 U slot drills (3-fluted) excel further thanks to their optimised flute geometry, achieving ultimate machining efficiency especially for slot milling and roughing operations. Paired with a very high spiral, optimal chip evacuation is achieved whilst reducing vibration. The advantages:

- reduced wear
- high feed rates possible
- optimal chip evacuation
- can be applied for roughing and finishing

GH 100 U multi-tooth end mills excel thanks to a reinforced core, providing high stability and enabling the production of optimal workpiece surfaces. Together with the reduced machining time wear is drastically reduced. The advantages:

- reduced wear
- high feed rates possible
- high contour accuracy
- reduced machining time
- suitable for HSC

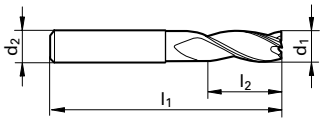
Material (ISO-code)	Steel		Cast iron		Stainless steel		Aluminium		Ti-special alloys		Hardened steel	
Hardness tensile strength	up to 850 N/mm²	above 850 N/mm²	up to 180 HB 30	above 180 HB 30	up to 750 N/mm²	above 750 N/mm²	up to 3% Si	above 3% Si	Ti-based	Ni-based	up to 52 HRC	above 52 HRC
GH 100 U mini	●				●	○	●	○	●			
GH 100 U	○	●	○	●	○	●		●	○	●	○	
GH 100 H			○	●							●	●

● = optimal suitability ○ = limited suitability

○ bright ◌ steam tempered ◒ nitrided lands ● nitrided ◉ golden brown A TiAlN a TiAlN nanoA A AlTiN SuperA

centre cutting

Guhring no.	3193	3540	3729
Standard		DIN 6527 K	
Tool material		Solid carbide	
Carbide grade	K	K/P	
Surface	○	F	F
Type	NH	NH	NH
Shank design	HA	HA	HB
Helix	45°	45°	45°
Tolerance	h10	h10	h10
Discount group	106	106	106
Techn. data page	1093	1093	1093



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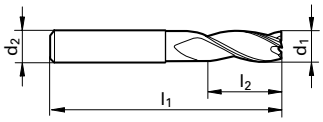
6.000	6.000	54.00	7.00	3	6.000	○	●	●
7.000	8.000	58.00	8.00	3	7.000	○	●	●
8.000	8.000	58.00	9.00	3	8.000	○	●	●
9.000	10.000	66.00	10.00	3	9.000	○	●	●
10.000	10.000	66.00	11.00	3	10.000	○	●	●
12.000	12.000	73.00	12.00	3	12.000	○	●	●
14.000	14.000	75.00	14.00	3	14.000	○	●	●
16.000	16.000	82.00	16.00	3	16.000	○	●	●
18.000	18.000	84.00	18.00	3	18.000	○	●	●
20.000	20.000	92.00	20.00	3	20.000	○	●	●

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

centre cutting

Guhring no.	3196	3636	3730
Standard		DIN 6527 L	
Tool material		Solid carbide	
Carbide grade	K	K/P	
Surface	○	F	F
Type	NH	NH	NH
Shank design	HA	HA	HB
Helix	45°	45°	45°
Tolerance	h10	h10	h10
Discount group	106	106	106
Techn. data page	1093	1093	1093



d1	d2	l1	l2	Z	Code no.	Availability		
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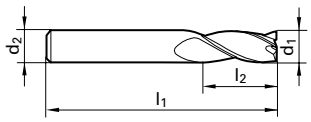
1.500	3.000	38.00	3.00	3	1.500	○	●	
2.000	6.000	57.00	6.00	3	2.000	○	●	
2.500	6.000	57.00	7.00	3	2.500	○	●	
3.000	6.000	57.00	7.00	3	3.000	○	●	●
3.500	6.000	57.00	7.00	3	3.500	○	●	●
4.000	6.000	57.00	8.00	3	4.000	○	●	●
4.500	6.000	57.00	8.00	3	4.500	○	●	●
5.000	6.000	57.00	10.00	3	5.000	○	●	●
6.000	6.000	57.00	10.00	3	6.000	○	●	●
7.000	8.000	63.00	13.00	3	7.000	○	●	●
8.000	8.000	63.00	16.00	3	8.000	○	●	●
9.000	10.000	72.00	16.00	3	9.000	○	●	●
10.000	10.000	72.00	19.00	3	10.000	○	●	●
12.000	12.000	83.00	22.00	3	12.000	○	●	●
14.000	14.000	83.00	22.00	3	14.000	○	●	●
14.000	16.000	92.00	26.00	3	14.001	○	○	
16.000	16.000	92.00	26.00	3	16.000	○	●	●
18.000	18.000	92.00	26.00	3	18.000	○	●	●
18.000	20.000	104.00	32.00	3	18.001	○	○	
20.000	20.000	104.00	32.00	3	20.000	○	●	●

○ bright ◎ steam tempered ◓ nitrided lands ● nitrided ◉ golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

centre cutting

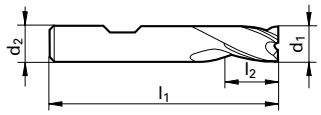
Guhring no.	3203	3741
Standard	DIN 6528	
Tool material	Solid carbide	
Carbide grade	K	K/P
Surface	○	F
Type	NH	NH
Shank design	HA	HA
Helix	45°	45°
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1093	1093



d1	d2	l1	l2	Z	Availability	
mm	mm	mm	mm			
2.000	2.000	32.00	6.00	3	○	●
2.500	2.500	32.00	7.00	3	○	●
3.000	3.000	38.00	7.00	3	○	●
3.500	3.500	50.00	7.00	3	○	●
4.000	4.000	50.00	8.00	3	○	●
4.500	4.500	50.00	8.00	3	○	●
5.000	5.000	50.00	10.00	3	○	●
5.500	5.500	57.00	10.00	3	○	●
6.000	6.000	57.00	10.00	3	○	●
6.500	6.500	60.00	13.00	3	○	●
7.000	7.000	60.00	13.00	3	○	●
7.500	7.500	63.00	16.00	3	○	●
8.000	8.000	63.00	16.00	3	○	●
8.500	8.500	67.00	16.00	3	○	●
9.000	9.000	67.00	16.00	3	○	●
9.500	9.500	72.00	19.00	3	○	●
10.000	10.000	72.00	19.00	3	○	●
11.000	11.000	83.00	22.00	3	○	●
12.000	12.000	83.00	22.00	3	○	●
13.000	13.000	83.00	22.00	3	○	●
14.000	14.000	83.00	22.00	3	○	●
15.000	15.000	92.00	26.00	3	○	●
16.000	16.000	92.00	26.00	3	○	●
18.000	18.000	92.00	26.00	3	○	●
20.000	20.000	104.00	32.00	3	○	●

centre cutting

Guhring no.	3686
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	F
Type	NH
Shank design	HB/<2,0 HA
Helix	45°
Tolerance	e8
Discount group	106
Techn. data page	1093



d1	d2	l1	l2	Z	Availability
mm	mm	mm	mm		
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1.200	3.000	38.00	2.00	3	●
1.500	3.000	38.00	3.00	3	●
1.800	3.000	38.00	3.00	3	●
2.000	6.000	45.00	4.00	3	●
2.500	6.000	45.00	5.00	3	●
3.000	6.000	45.00	6.00	3	●
3.500	6.000	45.00	6.00	3	●
4.000	6.000	45.00	7.00	3	●
4.500	6.000	45.00	8.00	3	●
5.000	6.000	45.00	8.00	3	●
5.500	6.000	45.00	8.00	3	●
5.750	6.000	45.00	10.00	3	●
6.000	6.000	45.00	10.00	3	●
6.750	8.000	55.00	10.00	3	●
7.000	8.000	55.00	12.00	3	●
7.750	8.000	55.00	12.00	3	●
8.000	8.000	55.00	13.00	3	●
8.700	10.000	55.00	14.00	3	●
9.000	10.000	55.00	14.00	3	●
9.700	10.000	55.00	16.00	3	●
10.000	10.000	55.00	16.00	3	●

HPC high performance end mills

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

High metal removal end mills GA 200 A: The specialist for machining aluminium

Reduced neck ground for collision reduction

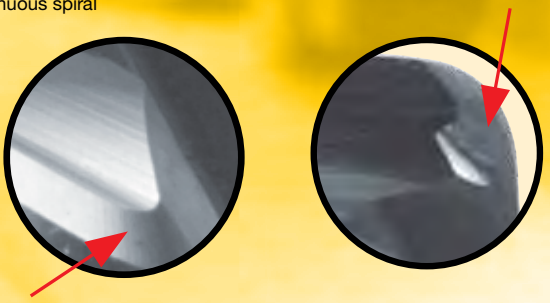
Optimal chip evacuation thanks to 64° radial coolant exit.

This innovative tool was developed specifically for the machining of integrated aluminium components and is suitable for roughing and slot dilling as well as finishing operations.

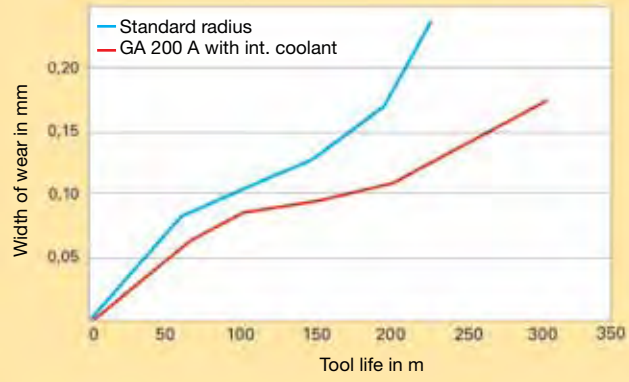
Special features:

- radial coolant exit (64° angle) for optimal chip evacuation
- radius geometry with continuous helix-radius-correction
- reduced neck ground for collision reduction

High wear protection thanks to radius geometry with constant rake angle and continuous spiral



Seamless radius area provides high form and contour accuracy



Tool life comparison in AlSi9:
Guhring's seamless radius geometry reduces wear and provides a considerably longer tool life in comparison with tools ground with conventional corner radii.

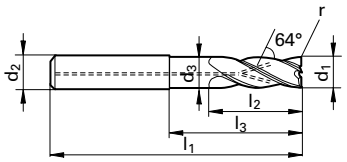
Material (ISO-code)	Steel		Cast iron		Stainless steel		Aluminium		Ti-special alloys		Hardened steel	
Hardness tensile strength	up to 850 N/mm²	above 850 N/mm²	up to 180 HB 30	above 180 HB 30	up to 750 N/mm²	above 750 N/mm²	up to 3% Si	above 3% Si	Ti-based	Ni-based	up to 52 HRC	above 52 HRC
GA 100 A	○						●	●				

● = optimal suitability ○ = limited suitability

○ bright ◎ steam tempered ◒ nitrided lands ● nitrided ◉ golden brown Ⓐ TiAlN ⓐ TiAlN nanoA Ⓐ AlTiN SuperA

for Al, centre cutting and with corner radius

Guhring no.	**3367**
Standard	**~ DIN 6527 L**
Tool material	**Solid carbide**
Carbide grade	**K**
Surface	◯
Type	**W**
Shank design	**HA**
Helix	**45°**
Tolerance	**h10**
Discount group	**106**
Techn. data page	**1093**



d1	d2	d3	l1	l2	l3	r	Z	Code no.	Availability
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6.000	6.000	5.700	57.00	10.00	21.00	1.00	3	6.000	●
8.000	8.000	7.700	63.00	16.00	27.00	1.00	3	8.000	●
10.000	10.000	9.500	72.00	19.00	32.00	1.50	3	10.000	●
12.000	12.000	11.500	83.00	22.00	38.00	1.50	3	12.000	●
12.000	12.000	11.500	83.00	22.00	38.00	2.00	3	12.020	●
12.000	12.000	11.500	83.00	22.00	38.00	2.50	3	12.025	●
12.000	12.000	11.500	83.00	22.00	38.00	4.00	3	12.040	●
16.000	16.000	15.500	92.00	26.00	44.00	2.00	3	16.000	●
16.000	16.000	15.500	92.00	26.00	44.00	2.50	3	16.025	●
16.000	16.000	15.500	92.00	26.00	44.00	3.00	3	16.030	●
16.000	16.000	15.500	92.00	26.00	44.00	4.00	3	16.040	●
20.000	20.000	19.500	104.00	32.00	54.00	2.50	3	20.000	●
20.000	20.000	19.500	104.00	32.00	54.00	2.00	3	20.020	●
20.000	20.000	19.500	104.00	32.00	54.00	3.00	3	20.030	●
20.000	20.000	19.500	104.00	32.00	54.00	4.00	3	20.040	●
25.000	25.000	24.500	121.00	38.00	65.00	2.00	3	25.020	●
25.000	25.000	24.500	121.00	38.00	65.00	3.00	3	25.030	●
25.000	25.000	24.500	121.00	38.00	65.00	4.00	3	25.040	●

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

RS 100 - high-performance roughing cutters: New roughing geometry for optimal efficiency

RS 100 high-performance roughing cutters benefit from a completely new roughing geometry, considerably reducing surface wear thanks to its unequal spacing. The result is a drastic increase in tool life compared to conventional round knuckle-type geometries and an improvement in the surface quality of the workpiece, so that in many applications finishing operations are unnecessary and the machining cost per workpiece is vastly reduced. In addition, the tool excels with a much reduced power requirement in comparison to tools without chip breaking geometry.

Two types of RS 100 high-performance roughing cutters are available: The 4-flute, 30° RH spiral RS 100 U is suitable for the machining of all standard steels. As well as offering a new 5-6-flute geometry and a helix angle increased to 45°, RS 100 F possesses a considerably increased core diameter and is suitable for roughing/finishing operations with a width of cut up to 0.25 x D in all general purpose steels and tough materials.

Advantages at a glance:

- increased tool life in comparison to milling cutters with round knuckle-type teeth
- increased feed rate thanks to new edge wear protection
- improved workpiece surface
- reduced power requirement compared to smooth cutting milling cutters

Comparison overview:

Type	NR round knuckle-type	NF flat knuckle-type (conv.)	RS 100 U&F (NF new)
Perform. index	100%	65%	120%
Workpiece surface	Ra = 9-10 µm	Ra = 6-7 µm	Ra = 2-3 µm
Tool life index	100%	100%	140%

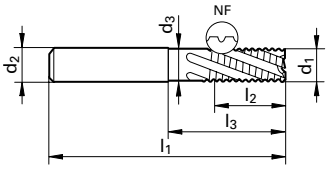
Material (ISO-code)	Steel		Cast iron		Stainless steel		Aluminium		Ti-special alloys		Hardened steel	
Hardness tensile strength	up to 850 N/mm²	above 850 N/mm²	up to 180 HB 30	above 180 HB 30	up to 750 N/mm²	above 750 N/mm²	up to 3% Si	above 3% Si	Ti-based	Ni-based	up to 52 HRC	above 52 HRC
RS 100 U	●	○	●		●	○		○	●		○	
RS 100 F	●	○	●		●	○		○		●		
GS 100 A							●	●		○		
GS 100 U	●	○	●		●	○		○				
GS 100 H	○	●	○		○	●					●	

● = optimal suitability ○ = limited suitability

○ bright ◎ steam tempered ◒ nitrided lands ● nitrided ◉ golden brown Ⓐ TiAlN ⓐ TiAlN nanoA Ⓐ AlTiN SuperA

high-performance roughing end mills with centre cutting

Guhring no.	3887	3888
Standard	DIN 6527 L	
Tool material	Solid carbide	
Carbide grade	K/P	
Surface	F	F
Type	NF	NF
Shank design	HA	HB
Helix	30°	
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1095	1095



d1	d2	d3	l1	l2	l3	Z	Availability	
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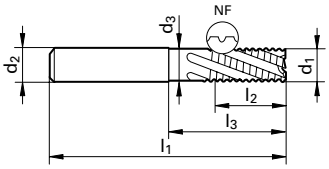
8.000	8.000	7.700	63.00	19.00	27.00	4	●	●
10.000	10.000	9.500	72.00	22.00	32.00	4	●	●
12.000	12.000	11.500	83.00	26.00	38.00	4	●	●
14.000	14.000	13.500	83.00	26.00	38.00	4	●	●
16.000	16.000	15.500	92.00	32.00	44.00	4	●	●
18.000	18.000	17.500	92.00	32.00	44.00	4	●	●
20.000	20.000	19.500	104.00	38.00	54.00	4	●	●
25.000	25.000	24.000	121.00	45.00	65.00	5	●	●

high-performance roughing end mills with centre cutting

Guhring no.	3889	3890
Standard	DIN 6527 L	
Tool material	Solid carbide	
Carbide grade	K/P	
Surface	F	F
Type	NF	NF
Shank design	HA	HB
Helix	45°	
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1095	1095

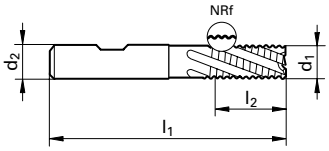


d1	d2	d3	l1	l2	l3	Z	Availability	
mm	mm	mm	mm	mm	mm			
6.000	6.000	5.700	57.00	13.00	21.00	5	●	●
8.000	8.000	7.700	63.00	19.00	27.00	5	●	●
10.000	10.000	9.500	72.00	22.00	32.00	5	●	●
12.000	12.000	11.500	83.00	26.00	38.00	5	●	●
14.000	14.000	13.500	83.00	26.00	38.00	5	●	●
16.000	16.000	15.500	92.00	32.00	44.00	6	●	●
18.000	18.000	17.500	92.00	32.00	44.00	6	●	●
20.000	20.000	19.500	104.00	38.00	54.00	6	●	●
25.000	25.000	24.000	121.00	45.00	65.00	6	●	●

C TiCN | Cb Carbo | D Cristall | F FIRE/nanoFIRE | P AlCrN | S TiN | S+ TiN+ | M MolyGlide | Y Signum

for materials < 48 HRC, centre cutting

Guhring no.	3204	3723	3365
Standard		DIN 6527 L	
Tool material		Solid carbide	
Carbide grade	K	K/P	
Surface	○	F	F
Type	NRf	NRf	NRf
Shank design	HB	HB	HB
Helix	30°	30°	30°
Tolerance	h10	h10	h10
Discount group	117	117	106
Techn. data page	1094	1094	1094



d1	d2	l1	l2	Z	Code no.	Availability		
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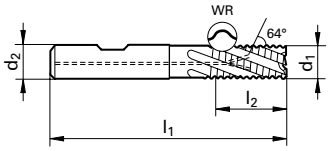
8.000	8.000	63.00	19.00	4	8.000	●	●	●
10.000	10.000	72.00	22.00	4	10.000	●	●	●
12.000	12.000	83.00	26.00	4	12.000	●	●	●
14.000	14.000	83.00	26.00	4	14.000	●	●	
14.000	16.000	92.00	32.00	4	14.001	❍	❍	
16.000	16.000	92.00	32.00	4	16.000	●	●	●
18.000	18.000	92.00	32.00	4	18.000	●	●	
18.000	20.000	104.00	38.00	4	18.001	❍	❍	
20.000	20.000	104.00	38.00	4	20.000	●	●	●
25.000	25.000	121.00	45.00	5	25.000	●	●	

○ bright ◍ steam tempered ◓ nitrided lands ● nitrided ◍ golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

for Al < 600 N/mm², centre cutting

Guhring no.	3364	3127
Standard	DIN 6527 L	
Tool material	Solid carbide	
Carbide grade	K	
Surface	◯	◯
Type	WR	WR
Shank design	HB	HB
Helix	30°	30°
Tolerance	h10	h10
Discount group	106	117
Techn. data page	1094	1094

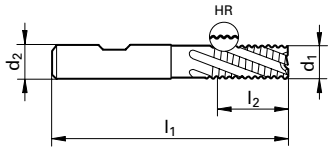


d1	d2	l1	l2	Z	Availability	
mm	mm	mm	mm			
6.000	6.000	57.00	10.00	3	●	●
8.000	8.000	63.00	16.00	3	●	●
10.000	10.000	72.00	19.00	3	●	●
12.000	12.000	83.00	22.00	3	●	●
14.000	14.000	83.00	22.00	3		●
16.000	16.000	92.00	26.00	3	●	●
18.000	18.000	92.00	26.00	3		●
20.000	20.000	104.00	32.00	3	●	●
25.000	25.000	121.00	45.00	3		●

Ⓒ TiCN Ⓒb Carbo Ⓓ Cristall Ⓕ FIRE/nanoFIRE Ⓟ AlCrN Ⓢ TiN Ⓢ+ TiN+ Ⓜ MolyGlide Ⓨ Signum

for materials < 56 HRC, centre cutting

Guhring no.	3682	6704	6705
Standard		DIN 6527 L	
Tool material		Solid carbide	
Carbide grade		K/P	
Surface	F	F	F
Type	HR	HR	HR
Shank design	HB	HA	HB
Helix	20°	20°	20°
Tolerance	h10	h10	h10
Discount group	117	106	106
Techn. data page	1094	1094	1094
		NEW	NEW



d1 mm	d2 mm	l1 mm	l2 mm	Z	Availability		
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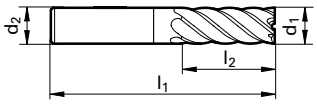
8.000	8.000	63.00	19.00	4	●	●	●
10.000	10.000	72.00	22.00	4	●	●	●
12.000	12.000	83.00	26.00	4	●	●	●
16.000	16.000	92.00	32.00	4	●	●	●
20.000	20.000	104.00	38.00	4	●	●	●
25.000	25.000	121.00	45.00	4		●	●

○ bright ◍ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

for superfine finishing of materials < 50 HRC

Guhring no.	3311	3689	3047
Standard		~ DIN 6527 L	
Tool material		Solid carbide	
Carbide grade	K	K/P	
Surface	○	F	F
Type	NH	NH	NH
Shank design	HA	HA	HB
Helix	45°	45°	45°
Tolerance	h10	h10	h10
Discount group	106	106	106
Techn. data page	1093	1093	1093



d1 mm	d2 mm	l1 mm	l2 mm	Z	Code no.	Availability		
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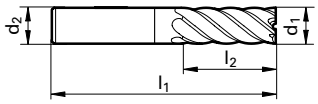
5.000	6.000	57.00	13.00	6	5.000	●	●	
6.000	6.000	57.00	13.00	6	6.000	●	●	●
8.000	8.000	63.00	19.00	6	8.000	●	●	●
10.000	10.000	72.00	22.00	6	10.000	●	●	●
12.000	12.000	83.00	26.00	6	12.000	●	●	●
14.000	14.000	83.00	26.00	6	14.000	●	●	●
14.000	16.000	92.00	32.00	6	14.001	○	○	
16.000	16.000	92.00	32.00	6	16.000	●	●	●
18.000	18.000	92.00	32.00	8	18.000	●	●	●
18.000	20.000	104.00	38.00	8	18.001	○	○	
20.000	20.000	104.00	38.00	8	20.000	●	●	●
25.000	25.000	121.00	45.00	10	25.000	●	●	●

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

for superfine finishing of materials < 50 HRC

Guhring no.	3312	3691	3313	3693
Standard	Guhring std.			
Tool material	Solid carbide			
Carbide grade	K	K/P	K	K/P
Surface	○	F	○	F
Type	NH	NH	NH	NH
Shank design	HA	HA	HB	HB
Helix	45°	45°	45°	45°
Tolerance	h10	h10	h10	h10
Discount group	106	106	106	106
Techn. data page	1093	1093	1093	1093



d1 mm	d2 mm	l1 mm	l2 mm	Z	Code no.	Availability
6.000	6.000	75.00	30.00	6	6.000	● ● ● ●
8.000	8.000	100.00	40.00	6	8.000	● ● ● ●
10.000	10.000	100.00	40.00	6	10.000	● ● ● ●
12.000	12.000	150.00	45.00	6	12.000	● ● ● ●
16.000	16.000	150.00	65.00	6	16.000	● ● ● ●
20.000	20.000	150.00	65.00	8	20.000	● ● ● ●
25.000	25.000	150.00	75.00	10	25.000	● ● ● ●

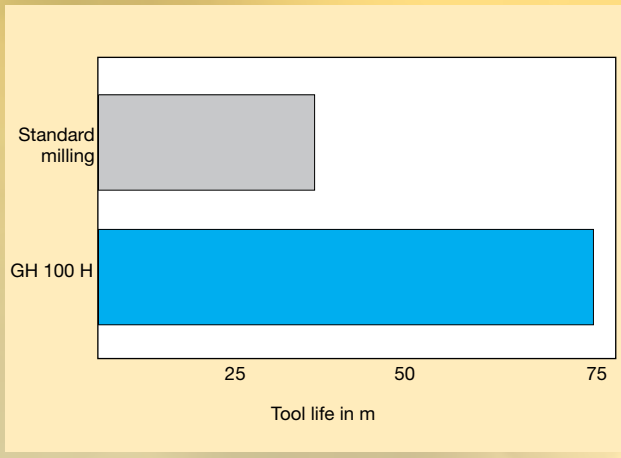
○ bright ◌ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

GH 100 H: The optimal tool for hard milling in the die and mould industry

Guhring's hard milling cutters optimally satisfy the requirements for time- and cost-saving machining of hardened workpieces. Different geometries as well as the carbide grade DK500UF with its high hardness and toughness are optimally adapted for the various milling operations. Subsequently, Guhring's hard milling cutters achieve highest contour accuracy for cutting depths up to 3xD.

Advantages:

- application up to 62 HRC
- high tool rigidity
- optimal surface quality
- high feed rates and tool life



Tool life comparison between Guhring GH 100 H milling cutters and conventional milling cutters for finish machining tool steel hardened to 57 HRC.

Material (ISO-code)	Steel		Cast iron		Stainless steel		Aluminium		Ti-special alloys		Hardened steel	
Hardness tensile strength	up to 850 N/mm²	above 850 N/mm²	up to 180 HB 30	above 180 HB 30	up to 750 N/mm²	above 750 N/mm²	up to 3% Si	above 3% Si	Ti-based	Ni-based	up to 52 HRC	above 52 HRC
GH 100 U mini	●				●	○	●	○	●			
GH 100 U	○	●	○	●	○	●		●	○	●	○	
GH 100 H			○	●							●	●

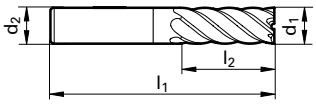
● = optimal suitability ○ = limited suitability

Ⓒ TiCN Ⓒb Carbo Ⓓ Cristall Ⓕ FIRE/nanoFIRE Ⓟ AlCrN Ⓢ TiN Ⓢ+ TiN+ Ⓜ MolyGlide Ⓨ Sygnum

GH 100 H - hard multi-t. end mills

for superfine finishing of materials < 62 HRC

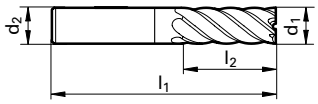
Guhring no.	3715
Standard	~ DIN 6527 L
Tool material	Solid carbide
Carbide grade	DK 500 UF
Surface	F
Type	H
Shank design	HA
Helix	55°
Tolerance	h10
Discount group	106
Techn. data page	1093



d1 mm	d2 mm	l1 mm	l2 mm	Z	Code no.	Availability
3.000	6.000	57.00	8.00	6	3.000	●
4.000	6.000	57.00	11.00	6	4.000	●
5.000	6.000	57.00	13.00	6	5.000	●
6.000	6.000	57.00	13.00	6	6.000	●
8.000	8.000	63.00	19.00	6	8.000	●
10.000	10.000	72.00	22.00	6	10.000	●
12.000	12.000	83.00	26.00	6	12.000	●
14.000	14.000	83.00	26.00	6	14.000	●
14.000	16.000	92.00	32.00	6	14.001	○
16.000	16.000	92.00	32.00	6	16.000	●
18.000	18.000	92.00	32.00	8	18.000	●
18.000	20.000	104.00	38.00	8	18.001	○
20.000	20.000	104.00	38.00	8	20.000	●

for superfine finishing of materials < 62 HRC

Guhring no.	3716
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	DK 500 UF
Surface	F
Type	H
Shank design	HA
Helix	55°
Tolerance	h10
Discount group	106
Techn. data page	1093



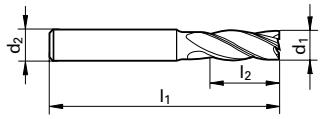
d1 mm	d2 mm	l1 mm	l2 mm	Z	Code no.	Availability
6.000	6.000	75.00	30.00	6	6.000	●
8.000	8.000	100.00	40.00	6	8.000	●
10.000	10.000	100.00	40.00	6	10.000	●
12.000	12.000	150.00	45.00	6	12.000	●
16.000	16.000	150.00	65.00	6	16.000	●
20.000	20.000	150.00	65.00	8	20.000	●

○ bright ◍ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

centre cutting

Guhring no.	6716
Standard	~ DIN 6527 L
Tool material	Solid carbide
Carbide grade	K/P
Surface	A
Type	N
Shank design	HA
Helix	30°
Tolerance	h6
Discount group	106
Techn. data page	-

NEW



d1	d2	l1	l2	Z	Availability
mm	mm	mm	mm		
1.400	3.000	38.00	3.00	4	●
1.500	3.000	38.00	4.00	4	●
1.800	3.000	38.00	6.00	4	●
2.000	3.000	38.00	7.00	4	●
2.100	3.000	38.00	7.00	4	●
2.300	3.000	38.00	7.00	4	●
2.500	3.000	38.00	7.00	4	●
2.800	3.000	38.00	7.00	4	●
3.000	6.000	57.00	8.00	4	●
3.500	6.000	57.00	10.00	4	●
4.000	6.000	57.00	11.00	4	●
4.500	6.000	57.00	11.00	4	●
5.000	6.000	57.00	13.00	4	●
5.500	6.000	57.00	13.00	4	●
6.000	8.000	63.00	13.00	4	●
6.500	8.000	63.00	13.00	4	●
7.000	8.000	63.00	16.00	4	●
7.500	8.000	63.00	16.00	4	●
8.000	10.000	72.00	19.00	4	●
8.500	10.000	72.00	19.00	4	●
9.000	10.000	72.00	19.00	4	●
10.000	12.000	83.00	22.00	4	●
11.000	12.000	83.00	26.00	4	●
12.000	14.000	83.00	26.00	4	●

CR 100 – high-performance milling cutter for CFRP not only for the aircraft industry

Guhring's CR 100 high-performance milling cutter for CFRP and similar composite materials are the optimal solution for milling applications in the aerospace industry, in energy technology and many other industries thanks to its special geometries and its diamond coating.

Advantages:
- long tool life
- high feed rates and cutting speeds
- smooth running
- very good, burr-free surfaces
- no delamination

CR 100 Air:
Special, rear facing air-cooling ducts ensure an optimal evacuation of the CFRP dust.

CR 100 With drill point:
Especially for plunging and subsequent profiling operations.

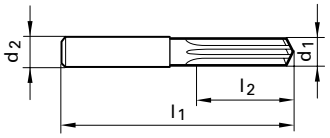
C TiCN | Cb Carbo | D Cristall | F FIRE/nanoFIRE | P AlCrN | S TiN | S+ TiN+ | M MolyGlide | Y Signum

CR 100 - End mills

CFK end mill

For fibre-reinforced plastics

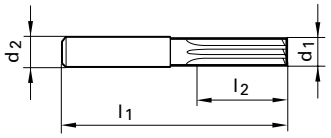
Guhring no.	6720
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	Ⓓ
Type	N
Shank design	HA
Helix	0°
Tolerance	e10
Discount group	106
Techn. data page	-
	NEW



d1 mm	d2 mm	l1 mm	l2 mm	Z	Availability
4.000	4.000	55.00	12.00	6	●
6.000	6.000	65.00	18.00	8	●
8.000	8.000	75.00	24.00	10	●
10.000	10.000	80.00	30.00	12	●
12.000	12.000	93.00	36.00	14	●
16.000	16.000	108.00	48.00	14	●

For fibre-reinforced plastics

Guhring no.	6717	6719
Standard	Guhring std.	
Tool material	Solid carbide	
Carbide grade	K/P	
Surface	Ⓓ	Ⓓ
Type	N	N
Shank design	HA	HA
Helix	0°	0°
Tolerance	e10	e10
Discount group	106	106
Techn. data page	-	-
	NEW	NEW



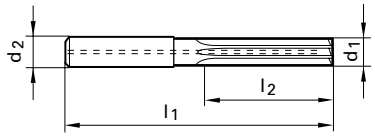
d1 mm	d2 mm	l1 mm	l2 mm	Z	Availability	
4.000	6.000	57.00	10.00	6	●	●
6.000	6.000	65.00	15.00	8	●	●
8.000	8.000	75.00	20.00	10	●	●
10.000	10.000	80.00	25.00	12	●	●
12.000	12.000	93.00	32.00	14	●	●
16.000	16.000	108.00	34.00	14	●	●

○ bright ◌ steam tempered ◒ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

For fibre-reinforced plastics

Guhring no.	6718
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	D
Type	N
Shank design	HA
Helix	0°
Tolerance	e10
Discount group	106
Techn. data page	-

NEW

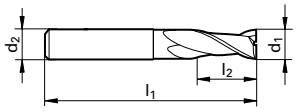


d1	d2	l1	l2	Z	Availability
mm	mm	mm	mm		
6.000	6.000	70.00	24.00	8	●
8.000	8.000	80.00	32.00	10	●
10.000	10.000	90.00	40.00	12	●
12.000	12.000	110.00	48.00	14	●
16.000	16.000	130.00	64.00	14	●

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

centre cutting

Guhring no.	3194	3633	3294	3634
Standard	DIN 6527 K			
Tool material	Solid carbide			
Carbide grade	K	K/P	K	K/P
Surface	○	F	○	F
Type	N	N	N	N
Shank design	HA	HA	HB	HB
Helix	30°	30°	30°	30°
Tolerance	h10	h10	h10	h10
Discount group	117	117	117	117
Techn. data page	1098	1098	1098	1098

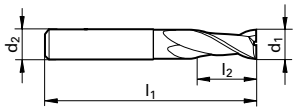


d1	d2	l1	l2	Z	Code no.	Availability			
mm	mm	mm	mm						
2.000	6.000	50.00	3.00	2	2.000	●	●	●	●
2.500	6.000	50.00	3.00	2	2.500	●	●	●	❍
3.000	6.000	50.00	4.00	2	3.000	●	●	●	●
4.000	6.000	54.00	5.00	2	4.000	●	●	●	●
5.000	6.000	54.00	6.00	2	5.000	●	●	●	●
6.000	6.000	54.00	7.00	2	6.000	●	●	●	●
6.500	8.000	58.00	8.00	2	6.500	❍	❍	❍	❍
8.000	8.000	58.00	9.00	2	8.000	●	●	●	●
10.000	10.000	66.00	11.00	2	10.000	●	●	●	●
12.000	12.000	73.00	12.00	2	12.000	●	●	●	●
14.000	14.000	75.00	14.00	2	14.000	●	●	●	●
16.000	16.000	82.00	16.00	2	16.000	●	●	●	●
18.000	18.000	84.00	18.00	2	18.000	●	●	●	●
20.000	20.000	92.00	20.00	2	20.000	●	●	●	●

○ bright ◎ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

centre cutting

Guhring no.	3195	3635	3295	3154
Standard	DIN 6527 L			
Tool material	Solid carbide			
Carbide grade	K	K/P	K	K/P
Surface	○	F	○	F
Type	N	N	N	N
Shank design	HA	HA	HB	HB
Helix	30°	30°	30°	30°
Tolerance	h10	h10	h10	h10
Discount group	117	117	117	117
Techn. data page	1098	1098	1098	1098



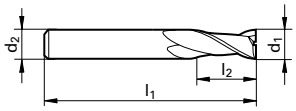
d1	d2	l1	l2	Z	Code no.	Availability			
mm	mm	mm	mm						
1.000	3.000	38.00	2.00	2	1.000	●	●		
1.500	3.000	38.00	3.00	2	1.500	●	●		
2.000	6.000	57.00	6.00	2	2.000	●	●	●	●
2.500	6.000	57.00	7.00	2	2.500	●	●	●	●
2.800	6.000	57.00	7.00	2	2.800	●	●	●	●
3.000	6.000	57.00	7.00	2	3.000	●	●	●	●
3.500	6.000	57.00	7.00	2	3.500	●	●	●	●
3.800	6.000	57.00	8.00	2	3.800	●	●	●	●
4.000	6.000	57.00	8.00	2	4.000	●	●	●	●
4.500	6.000	57.00	8.00	2	4.500	●	●	●	●
4.800	6.000	57.00	10.00	2	4.800	●	●	●	●
5.000	6.000	57.00	10.00	2	5.000	●	●	●	●
5.500	6.000	57.00	10.00	2	5.500	●	●	●	●
5.750	6.000	57.00	10.00	2	5.750	●	●	●	●
6.000	6.000	57.00	10.00	2	6.000	●	●	●	●
6.750	8.000	63.00	13.00	2	6.750	●	●	●	●
7.000	8.000	63.00	13.00	2	7.000	●	●	●	●
7.500	8.000	63.00	16.00	2	7.500	●	○	○	○
7.750	8.000	63.00	16.00	2	7.750	●	●	●	●
8.000	8.000	63.00	16.00	2	8.000	●	●	●	●
8.700	10.000	72.00	16.00	2	8.700	●	●	●	●
9.000	10.000	72.00	16.00	2	9.000	●	●	●	●
9.700	10.000	72.00	19.00	2	9.700	●	●	●	●
10.000	10.000	72.00	19.00	2	10.000	●	●	●	●
11.700	12.000	83.00	22.00	2	11.700	●	●	●	●
12.000	12.000	83.00	22.00	2	12.000	●	●	●	●
13.700	14.000	83.00	22.00	2	13.700	●	●	●	●
14.000	14.000	83.00	22.00	2	14.000	●	●	●	●
14.000	16.000	92.00	26.00	2	14.001	○	○		
15.700	16.000	92.00	26.00	2	15.700	●	●	●	●
16.000	16.000	92.00	26.00	2	16.000	●	●	●	●
18.000	18.000	92.00	26.00	2	18.000	●	●	●	●
18.000	20.000	104.00	32.00	2	18.001	○	○		
20.000	20.000	104.00	32.00	2	20.000	●	●	●	●

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

Slot drills (2-fluted)

centre cutting

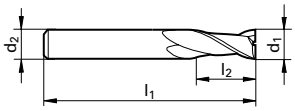
Guhring no.	3303	3676
Standard	DIN 6528	
Tool material	Solid carbide	
Carbide grade	K	K/P
Surface	○	F
Type	N	N
Shank design	HA	HA
Helix	30°	30°
Tolerance	h10	h10
Discount group	117	117
Techn. data page	1098	1098



d1	d2	l1	l2	Z	Availability	
mm	mm	mm	mm			
2.000	2.000	32.00	5.00	2	●	●
2.500	2.500	32.00	6.00	2	●	●
3.000	3.000	38.00	7.00	2	●	●
3.500	3.500	50.00	7.00	2	●	●
4.000	4.000	50.00	8.00	2	●	●
4.500	4.500	50.00	8.00	2	●	●
5.000	5.000	50.00	10.00	2	●	●
5.500	5.500	57.00	10.00	2	●	●
6.000	6.000	57.00	10.00	2	●	●
6.500	6.500	60.00	13.00	2	●	●
7.000	7.000	60.00	13.00	2	●	●
7.500	7.500	63.00	16.00	2	●	●
8.000	8.000	63.00	16.00	2	●	●
8.500	8.500	67.00	16.00	2	●	●
9.000	9.000	67.00	16.00	2	●	●
9.500	9.500	72.00	19.00	2	●	●
10.000	10.000	72.00	19.00	2	●	●
11.000	11.000	83.00	22.00	2	●	●
12.000	12.000	83.00	22.00	2	●	●
13.000	13.000	83.00	22.00	2	●	●
14.000	14.000	83.00	22.00	2	●	●
15.000	15.000	92.00	26.00	2	●	●
16.000	16.000	92.00	26.00	2	●	●
18.000	18.000	92.00	26.00	2	●	●
20.000	20.000	104.00	32.00	2	●	●

centre cutting

Guhring no.	3212	3709
Standard	Guhring std.	
Tool material	Solid carbide	
Carbide grade	K	K/P
Surface	○	F
Type	N	N
Shank design	HA	HA
Helix	30°	30°
Tolerance	e8	e8
Discount group	117	117
Techn. data page	1098	1098

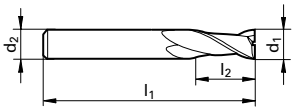


d1	d2	l1	l2	Z	Availability	
mm	mm	mm	mm			
2.000	2.000	32.00	8.00	2	○	○
2.500	2.500	32.00	8.00	2	○	○
3.000	3.000	32.00	12.00	2	○	○
3.500	3.500	32.00	12.00	2	○	○
4.000	4.000	40.00	12.00	2	○	○
4.500	4.500	50.00	14.00	2	○	○
5.000	5.000	50.00	14.00	2	○	○
5.500	5.500	50.00	16.00	2	○	○
6.000	6.000	50.00	16.00	2	○	○
6.500	6.500	60.00	16.00	2	○	○
7.000	7.000	60.00	20.00	2	○	○
7.500	7.500	60.00	20.00	2	○	○
8.000	8.000	60.00	20.00	2	○	○
8.500	8.500	60.00	20.00	2	○	○
9.000	9.000	60.00	20.00	2	○	○
9.500	9.500	70.00	22.00	2	○	○
10.000	10.000	70.00	22.00	2	○	○
11.000	11.000	70.00	22.00	2	○	○
12.000	12.000	70.00	22.00	2	○	○
13.000	13.000	75.00	25.00	2	○	○
14.000	14.000	75.00	25.00	2	○	○
15.000	15.000	75.00	25.00	2	○	○
16.000	16.000	75.00	25.00	2	○	○
18.000	18.000	100.00	35.00	2	○	○
20.000	20.000	100.00	35.00	2	○	○

○ bright ◍ steam tempered ◓ nitrided lands ● nitrided ◉ golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

centre cutting

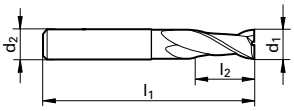
Guhring no.	3011	3021
Standard	Guhring std.	
Tool material	Solid carbide	
Carbide grade	K	K/P
Surface	○	F
Type	N	N
Shank design	HA	HA
Helix	30°	30°
Tolerance	h10	h10
Discount group	117	117
Techn. data page	1098	1098



d1 mm	d2 mm	l1 mm	l2 mm	Z	Code no.	Availability	
3.000	3.000	75.00	20.00	2	3.000	●	●
4.000	4.000	75.00	25.00	2	4.000	●	●
5.000	5.000	75.00	30.00	2	5.000	●	●
6.000	6.000	75.00	30.00	2	6.000	●	●
8.000	8.000	100.00	40.00	2	8.000	●	●
10.000	10.000	100.00	40.00	2	10.000	●	●
12.000	12.000	150.00	45.00	2	12.000	●	●
14.000	14.000	150.00	45.00	2	14.000	●	●
14.000	16.000	150.00	65.00	2	14.001	○	○
16.000	16.000	150.00	65.00	2	16.000	●	●
18.000	18.000	150.00	65.00	2	18.000	●	●
18.000	20.000	150.00	65.00	2	18.001	○	○
20.000	20.000	150.00	65.00	2	20.000	●	●

centre cutting

Guhring no.	3310	3126
Standard	DIN 6527 K	
Tool material	Solid carbide	
Carbide grade	K	
Surface	○	○
Type	W	W
Shank design	HA	HB
Helix	45°	45°
Tolerance	e8	e8
Discount group	117	117
Techn. data page	1099	1099

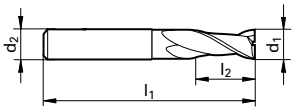


d1 mm	d2 mm	l1 mm	l2 mm	Z	Code no.	Availability	
3.000	6.000	50.00	4.00	2	3.000	●	●
4.000	6.000	54.00	5.00	2	4.000	●	●
5.000	6.000	54.00	6.00	2	5.000	●	●
6.000	6.000	54.00	7.00	2	6.000	●	●
8.000	8.000	58.00	9.00	2	8.000	●	●
10.000	10.000	66.00	11.00	2	10.000	●	●
12.000	12.000	73.00	12.00	2	12.000	●	●
14.000	14.000	75.00	14.00	2	14.000	●	●
16.000	16.000	82.00	16.00	2	16.000	●	●
18.000	18.000	84.00	18.00	2	18.000	●	●
20.000	20.000	92.00	20.00	2	20.000	●	●

C TiCN | Cb Carbo | D Cristall | F FIRE/nanoFIRE | P AlCrN | S TiN | S+ TiN+ | M MolyGlide | Y Signum

centre cutting

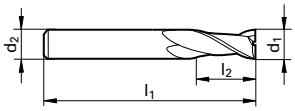
Guhring no.	3309	3059
Standard	DIN 6527 L	
Tool material	Solid carbide	
Carbide grade	K	
Surface	◯	◯
Type	W	W
Shank design	HA	HB
Helix	45°	45°
Tolerance	e8	e8
Discount group	117	117
Techn. data page	1099	1099



d1 mm	d2 mm	l1 mm	l2 mm	Z	Code no.	Availability	
3.000	6.000	57.00	7.00	2	3.000	●	●
4.000	6.000	57.00	8.00	2	4.000	●	●
5.000	6.000	57.00	10.00	2	5.000	●	●
6.000	6.000	57.00	10.00	2	6.000	●	●
8.000	8.000	63.00	16.00	2	8.000	●	●
10.000	10.000	72.00	19.00	2	10.000	●	●
12.000	12.000	83.00	22.00	2	12.000	●	●
14.000	14.000	83.00	22.00	2	14.000	●	●
14.000	16.000	92.00	26.00	2	14.001	❍	
16.000	16.000	92.00	26.00	2	16.000	●	●
18.000	18.000	92.00	26.00	2	18.000	●	●
18.000	20.000	104.00	32.00	2	18.001	❍	
20.000	20.000	104.00	32.00	2	20.000	●	●

centre cutting

Guhring no.	3358
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K
Surface	◯
Type	W
Shank design	HA
Helix	45°
Tolerance	h10
Discount group	117
Techn. data page	1099

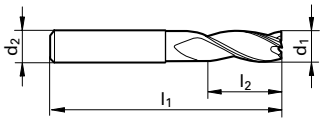


d1 mm	d2 mm	l1 mm	l2 mm	Z	Availability
5.000	5.000	75.00	30.00	2	●
6.000	6.000	75.00	30.00	2	●
8.000	8.000	100.00	40.00	2	●
10.000	10.000	100.00	40.00	2	●
12.000	12.000	150.00	45.00	2	●
16.000	16.000	150.00	65.00	2	●

◯ bright ◯ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

centre cutting

Guhring no.	3555	3558	3296	3719
Standard	DIN 6527 K			
Tool material	Solid carbide			
Carbide grade	K	K/P	K	K/P
Surface	◯	F	◯	F
Type	N	N	N	N
Shank design	HA	HA	HB	HB
Helix	30°	30°	30°	30°
Tolerance	h10	h10	h10	h10
Discount group	117	117	117	117
Techn. data page	1098	1098	1098	1098

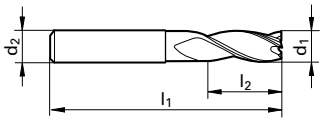


d1	d2	l1	l2	Z	Code no.	Availability			
mm	mm	mm	mm						
2.000	6.000	50.00	3.00	3	2.000	●	●	●	●
2.500	6.000	50.00	3.00	3	2.500	❍	●	●	❍
3.000	6.000	50.00	4.00	3	3.000	●	●	●	●
3.500	6.000	50.00	4.00	3	3.500	❍	❍	●	●
4.000	6.000	54.00	5.00	3	4.000	●	●	●	●
5.000	6.000	54.00	6.00	3	5.000	●	●	●	●
5.500	6.000	54.00	7.00	3	5.500	❍	❍	●	❍
6.000	6.000	54.00	7.00	3	6.000	●	●	●	●
7.000	8.000	58.00	8.00	3	7.000	●	●	●	●
8.000	8.000	58.00	9.00	3	8.000	●	●	●	●
8.500	10.000	66.00	10.00	3	8.500	❍	❍	●	❍
9.000	10.000	66.00	10.00	3	9.000	●	●	●	●
10.000	10.000	66.00	11.00	3	10.000	●	●	●	●
12.000	12.000	73.00	12.00	3	12.000	●	●	●	●
14.000	14.000	75.00	14.00	3	14.000	●	●	●	●
16.000	16.000	82.00	16.00	3	16.000	●	●	●	●
18.000	18.000	84.00	18.00	3	18.000	●	●	●	●
20.000	20.000	92.00	20.00	3	20.000	●	●	●	●

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

centre cutting

Guhring no.	3559	3560	3297	3720
Standard	DIN 6527 L			
Tool material	Solid carbide			
Carbide grade	K	K/P	K	K/P
Surface	○	F	○	F
Type	N	N	N	N
Shank design	HA	HA	HB	HB
Helix	30°	30°	30°	30°
Tolerance	h10	h10	h10	h10
Discount group	117	117	117	117
Techn. data page	1098	1098	1098	1098



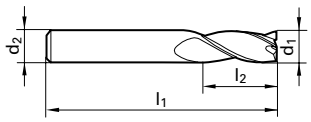
d1	d2	l1	l2	Z	Code no.	Availability			
mm	mm	mm	mm						
2.000	6.000	57.00	6.00	3	2.000	●	●	●	●
2.500	6.000	57.00	7.00	3	2.500	●	●	●	●
3.000	6.000	57.00	7.00	3	3.000	●	●	●	●
3.500	6.000	57.00	7.00	3	3.500	●	●	●	●
4.000	6.000	57.00	8.00	3	4.000	●	●	●	●
4.500	6.000	57.00	8.00	3	4.500	●	●	●	●
5.000	6.000	57.00	10.00	3	5.000	●	●	●	●
6.000	6.000	57.00	10.00	3	6.000	●	●	●	●
7.000	8.000	63.00	13.00	3	7.000	●	●	●	●
8.000	8.000	63.00	16.00	3	8.000	●	●	●	●
8.500	10.000	72.00	16.00	3	8.500	○	○	○	○
9.000	10.000	72.00	16.00	3	9.000	●	●	●	●
10.000	10.000	72.00	19.00	3	10.000	●	●	●	●
12.000	12.000	83.00	22.00	3	12.000	●	●	●	●
14.000	14.000	83.00	22.00	3	14.000	●	●	●	●
14.000	16.000	92.00	26.00	3	14.001	○	○		
16.000	16.000	92.00	26.00	3	16.000	●	●	●	●
18.000	18.000	92.00	26.00	3	18.000	●	●	●	●
18.000	20.000	104.00	32.00	3	18.001	○	○		
20.000	20.000	104.00	32.00	3	20.000	●	●	●	●

○ bright ◔ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

Slot drills (3-fluted)

centre cutting

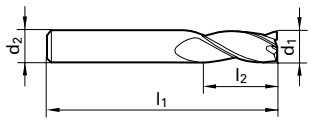
Guhring no.	3307	3677
Standard	DIN 6528	
Tool material	Solid carbide	
Carbide grade	K	K/P
Surface	○	F
Type	N	N
Shank design	HA	HA
Helix	30°	30°
Tolerance	h10	h10
Discount group	117	117
Techn. data page	1098	1098



d1 mm	d2 mm	l1 mm	l2 mm	Z	Availability	
2.000	2.000	32.00	5.00	3	●	●
2.500	2.500	32.00	6.00	3	●	●
3.000	3.000	38.00	7.00	3	●	●
3.500	3.500	50.00	7.00	3	●	●
4.000	4.000	50.00	8.00	3	●	●
4.500	4.500	50.00	8.00	3	●	●
5.000	5.000	50.00	10.00	3	●	●
5.500	5.500	57.00	10.00	3	●	●
6.000	6.000	57.00	10.00	3	●	●
6.500	6.500	60.00	13.00	3	●	●
7.000	7.000	60.00	13.00	3	●	●
7.500	7.500	63.00	16.00	3	●	●
8.000	8.000	63.00	16.00	3	●	●
8.500	8.500	67.00	16.00	3	●	●
9.000	9.000	67.00	16.00	3	●	●
9.500	9.500	72.00	19.00	3	●	●
10.000	10.000	72.00	19.00	3	●	●
11.000	11.000	83.00	22.00	3	●	●
12.000	12.000	83.00	22.00	3	●	●
13.000	13.000	83.00	22.00	3	●	●
14.000	14.000	83.00	22.00	3	●	●
15.000	15.000	92.00	26.00	3	●	●
16.000	16.000	92.00	26.00	3	●	●
18.000	18.000	92.00	26.00	3	●	●
20.000	20.000	104.00	32.00	3	●	●

centre cutting

Guhring no.	3220	3711
Standard	Guhring std.	
Tool material	Solid carbide	
Carbide grade	K	K/P
Surface	○	F
Type	N	N
Shank design	HA	HA
Helix	30°	30°
Tolerance	e8/h11	e8/h11
Discount group	117	117
Techn. data page	1098	1098



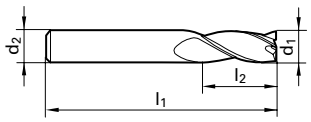
d1 mm	d2 mm	l1 mm	l2 mm	Z	Availability	
2.000	2.000	32.00	8.00	3	○	○
2.500	2.500	32.00	8.00	3	○	○
3.000	3.000	32.00	12.00	3	○	○
3.500	3.500	32.00	12.00	3	○	
4.000	4.000	40.00	12.00	3	○	○
4.500	4.500	50.00	14.00	3	○	○
5.000	5.000	50.00	14.00	3	○	○
5.500	5.500	50.00	16.00	3	○	○
6.000	6.000	50.00	16.00	3	○	○
6.500	6.500	60.00	16.00	3	○	○
7.000	7.000	60.00	20.00	3	○	○
7.500	7.500	60.00	20.00	3	○	○
8.000	8.000	60.00	20.00	3	○	○
8.500	8.500	60.00	20.00	3	○	○
9.000	9.000	60.00	20.00	3	○	○
9.500	9.500	70.00	22.00	3	○	○
10.000	10.000	70.00	22.00	3	○	○
11.000	11.000	70.00	22.00	3	○	○
12.000	12.000	70.00	22.00	3	○	○
13.000	13.000	75.00	25.00	3	○	○
14.000	14.000	75.00	25.00	3	○	○
15.000	15.000	75.00	25.00	3	○	○
16.000	16.000	75.00	25.00	3	○	○
18.000	18.000	100.00	35.00	3	○	○
20.000	20.000	100.00	35.00	3	○	○

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

centre cutting

Guhring no.	3314	3680	6721
Standard		Guhring std.	
Tool material		Solid carbide	
Carbide grade	K	K/P	
Surface	○	F	D
Type	N	N	N
Shank design	HA	HA	HA
Helix	30°	30°	30°
Tolerance	h10	h10	h10
Discount group	117	117	106
Techn. data page	1098	1098	1098

NEW

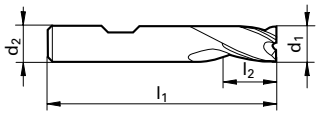


d1	d2	l1	l2	Z	Availability		
mm	mm	mm	mm				
3.000	3.000	75.00	20.00	3	●	●	●
4.000	4.000	75.00	25.00	3	●	●	●
5.000	5.000	75.00	30.00	3	●	●	●
6.000	6.000	75.00	30.00	3	●	●	●
8.000	8.000	100.00	40.00	3	●	●	●
10.000	10.000	100.00	40.00	3	●	●	●
12.000	12.000	150.00	45.00	3	●	●	●
16.000	16.000	150.00	65.00	3	●	●	●
20.000	20.000	150.00	65.00	3	●	●	

○ bright ◎ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

centre cutting

Guhring no.	3684
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	F
Type	N
Shank design	HB/<2,0 HA
Helix	30°
Tolerance	e8
Discount group	117
Techn. data page	1098

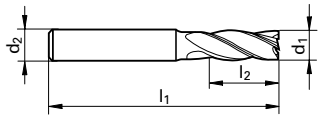


d1 mm	d2 mm	l1 mm	l2 mm	Z	Availability
0.300	3.000	38.00	1.00	3	●
0.400	3.000	38.00	1.00	3	●
0.500	3.000	38.00	1.50	3	●
0.600	3.000	38.00	1.50	3	●
0.800	3.000	38.00	2.00	3	●
1.000	3.000	38.00	2.00	3	●
1.200	3.000	38.00	2.00	3	●
1.500	3.000	38.00	2.00	3	●
1.800	3.000	38.00	2.00	3	●
2.000	6.000	38.00	4.00	3	●
2.500	6.000	38.00	5.00	3	●
3.000	6.000	38.00	5.00	3	●
3.500	6.000	38.00	6.00	3	●
4.000	6.000	38.00	7.00	3	●
4.500	6.000	38.00	8.00	3	●
5.000	6.000	38.00	8.00	3	●
5.500	6.000	38.00	8.00	3	●
5.750	6.000	38.00	8.00	3	●
6.000	6.000	38.00	8.00	3	●
6.750	8.000	42.00	10.00	3	●
7.000	8.000	42.00	10.00	3	●
7.750	8.000	42.00	10.00	3	●
8.000	8.000	43.00	11.00	3	●
8.700	10.000	48.00	11.00	3	●
9.000	10.000	48.00	11.00	3	●
9.700	10.000	48.00	11.00	3	●
10.000	10.000	50.00	13.00	3	●
12.000	12.000	55.00	15.00	3	●
14.000	14.000	58.00	15.00	3	●
16.000	16.000	62.00	18.00	3	●
18.000	18.000	70.00	20.00	3	●
20.000	20.000	75.00	22.00	3	●

C TiCN | Cb Carbo | D Cristall | F FIRE/nanoFIRE | P AlCrN | S TiN | S+ TiN+ | M MolyGlide | Y Signum

centre cutting

Guhring no.	3198	3637	3298	3721
Standard	DIN 6527 K			
Tool material	Solid carbide			
Carbide grade	K	K/P	K	K/P
Surface	○	F	○	F
Type	N	N	N	N
Shank design	HA	HA	HB	HB
Helix	30°	30°	30°	30°
Tolerance	h10	h10	h10	h10
Discount group	117	117	117	117
Techn. data page	1098	1098	1098	1098



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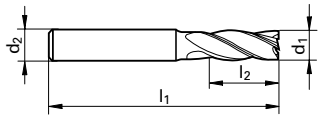
5.000	6.000	54.00	9.00	4	5.000	●	●	●	●
6.000	6.000	54.00	10.00	4	6.000	●	●	●	●
8.000	8.000	58.00	12.00	4	8.000	●	●	●	●
10.000	10.000	66.00	14.00	4	10.000	●	●	●	●
12.000	12.000	73.00	16.00	4	12.000	●	●	●	●
14.000	14.000	75.00	18.00	4	14.000	●	●	●	●
16.000	16.000	82.00	22.00	4	16.000	●	●	●	●
18.000	18.000	84.00	24.00	4	18.000	●	●	●	●
20.000	20.000	92.00	26.00	4	20.000	●	●	●	●

○ bright ◍ steam tempered ◓ nitrided lands ● nitrided ● golden brown Ⓐ TiAlN ⓐ TiAlN nanoA Ⓐ TiAlN SuperA

centre cutting

Guhring no.	3197	3649	3299	3722
Standard	DIN 6527 L			
Tool material	Solid carbide			
Carbide grade	K	K/P	K	K/P
Surface	○	F	○	F
Type	N	N	N	N
Shank design	HA	HA	HB	HB
Helix	30°	30°	30°	30°
Tolerance	h10	h10	h10	h10
Discount group	117	117	117	117
Techn. data page	1098	1098	1098	1098



d1	d2	l1	l2	Z	Code no.	Availability			
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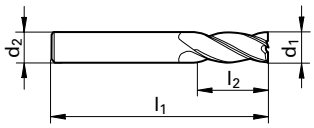
3.000	6.000	57.00	8.00	4	3.000	●	●	●	●
3.500	6.000	57.00	10.00	4	3.500	●	●	●	●
4.000	6.000	57.00	11.00	4	4.000	●	●	●	●
4.500	6.000	57.00	11.00	4	4.500	●	●	●	●
5.000	6.000	57.00	13.00	4	5.000	●	●	●	●
6.000	6.000	57.00	13.00	4	6.000	●	●	●	●
7.000	8.000	63.00	16.00	4	7.000	●	●	●	●
8.000	8.000	63.00	19.00	4	8.000	●	●	●	●
9.000	10.000	72.00	19.00	4	9.000	●	●	●	●
10.000	10.000	72.00	22.00	4	10.000	●	●	●	●
12.000	12.000	83.00	26.00	4	12.000	●	●	●	●
14.000	14.000	83.00	26.00	4	14.000	●	●	●	●
14.000	16.000	92.00	32.00	4	14.001	❍	❍		
16.000	16.000	92.00	32.00	4	16.000	●	●	●	●
18.000	18.000	92.00	32.00	4	18.000	●	●	●	●
18.000	20.000	104.00	38.00	4	18.001	❍	❍		
20.000	20.000	104.00	38.00	4	20.000	●	●	●	●

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

End mills (4-fluted)

centre cutting

Guhring no.	3304	3678
Standard	DIN 6528	
Tool material	Solid carbide	
Carbide grade	K	K/P
Surface	○	F
Type	N	N
Shank design	HA	HA
Helix	30°	30°
Tolerance	h10	h10
Discount group	117	117
Techn. data page	1098	1098



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mm	mm	mm	mm			
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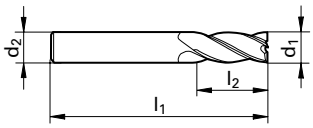
2.500	2.500	32.00	6.00	4	●	●
3.000	3.000	38.00	7.00	4	●	●
3.500	3.500	50.00	8.00	4	●	●
4.000	4.000	50.00	11.00	4	●	●
4.500	4.500	50.00	11.00	4	○	○
5.000	5.000	50.00	13.00	4	●	●
6.000	6.000	57.00	13.00	4	●	●
7.000	7.000	60.00	16.00	4	●	●
7.500	7.500	63.00	19.00	4	○	○
8.000	8.000	63.00	19.00	4	●	●
9.000	9.000	67.00	19.00	4	●	●
10.000	10.000	72.00	22.00	4	●	●
11.000	11.000	83.00	26.00	4	●	●
12.000	12.000	83.00	26.00	4	●	●
13.000	13.000	83.00	26.00	4	●	●
14.000	14.000	83.00	26.00	4	●	●
15.000	15.000	92.00	32.00	4	●	
16.000	16.000	92.00	32.00	4	●	●
18.000	18.000	92.00	32.00	4	●	●
20.000	20.000	104.00	38.00	4	●	●

centre cutting

Guhring no.	3257	3713
Standard	Guhring std.	
Tool material	Solid carbide	
Carbide grade	K	K/P
Surface	○	F
Type	N	N
Shank design	HA	HA
Helix	30°	30°
Tolerance	h11	h11
Discount group	117	117
Techn. data page	1098	1098



d1	d2	l1	l2	Z	Availability	
mm	mm	mm	mm			
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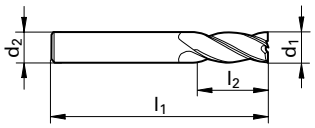
5.000	5.000	50.00	14.00	4	○	○
5.500	5.500	50.00	16.00	4	○	
6.000	6.000	50.00	16.00	4	○	○
6.500	6.500	60.00	16.00	4	○	
7.000	7.000	60.00	20.00	4	○	○
7.500	7.500	60.00	20.00	4	○	○
8.000	8.000	60.00	20.00	4	○	○
8.500	8.500	60.00	20.00	4	○	
9.000	9.000	60.00	20.00	4	○	○
9.500	9.500	70.00	22.00	4	○	
10.000	10.000	70.00	22.00	4	○	○
11.000	11.000	70.00	22.00	4	○	○
12.000	12.000	70.00	22.00	4	○	○
13.000	13.000	75.00	25.00	4	○	○
14.000	14.000	75.00	25.00	4	○	○
15.000	15.000	75.00	25.00	4	○	
16.000	16.000	75.00	25.00	4	○	○
18.000	18.000	100.00	35.00	4	○	○
20.000	20.000	100.00	35.00	4	○	○

○ bright ◒ steam tempered ◓ nitrided lands ● nitrided ◍ golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

centre cutting

Guhring no.	3012	3023
Standard	Guhring std.	
Tool material	Solid carbide	
Carbide grade	K	K/P
Surface	◯	F
Type	N	N
Shank design	HA	HA
Helix	30°	30°
Tolerance	h10	h10
Discount group	117	117
Techn. data page	1098	1098



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4.000	4.000	75.00	25.00	4	4.000	●	●
5.000	5.000	75.00	30.00	4	5.000	●	●
6.000	6.000	75.00	30.00	4	6.000	●	●
8.000	8.000	100.00	40.00	4	8.000	●	●
10.000	10.000	100.00	40.00	4	10.000	●	●
12.000	12.000	150.00	45.00	4	12.000	●	●
14.000	14.000	150.00	45.00	4	14.000	●	●
14.000	16.000	150.00	65.00	4	14.001	◯	◯
16.000	16.000	150.00	65.00	4	16.000	●	●
18.000	18.000	150.00	65.00	4	18.000	●	●
18.000	20.000	150.00	65.00	4	18.001	◯	◯
20.000	20.000	150.00	65.00	4	20.000	●	●

The perfect combination: Shrink fit chuck + end mill with HA shank

The combination of shrink fit chuck from our GM 300 program and end mill with HA shank offers highest concentricity even with long tool neck lengths. Benefit from these advantages especially

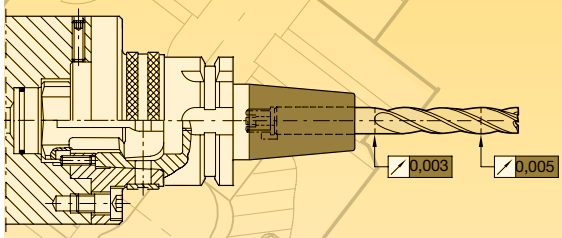
… with long range applications due to deep forms or obstructions

… where there are highest demands on surface quality

… the powerful and accurate clamping

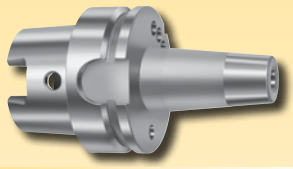
The concentricity of a solid carbide end mill

HSK-A 63 shrink fit chuck, clamping diameter 12.0 mm



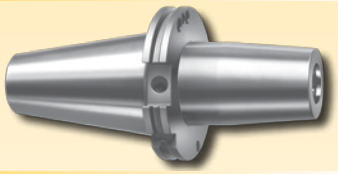
HSK-A

Guhring no. **4736**



ISO

Guhring no. **4738**



GISS 3000 shrink fit system

Guhring no. **4753**

with axial adjustment

Induction shrink fit system with integrated length pre-setting

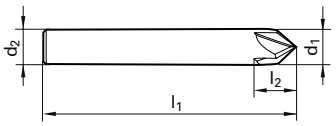
Solid carbide universal end mills

C TiCN | Cb Carbo | D Cristall | F FIRE/nanoFIRE | P AlCrN | S TiN | S+ TiN+ | M MolyGlide | Y Signum

straight-fluted

Guhring no.	6711	6712
Standard	Guhring std.	
Tool material	Solid carbide	
Carbide grade	K/P	
Surface	A	A
Type		
Shank design	HA	HB
Helix	0°	0°
Tolerance	js9	js9
Discount group	117	117
Techn. data page	-	-

NEW



d1 mm	d2 mm	l1 mm	l2 mm	Z	Availability	
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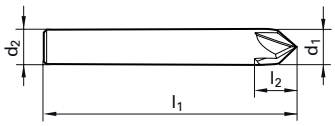
6.000	6.000	57.00	21.00	4	●	●
8.000	8.000	63.00	27.00	4	●	●
10.000	10.000	72.00	32.00	4	●	●
12.000	12.000	83.00	38.00	4	●	●

straight-fluted

Guhring no.	6713	3396
Standard	Guhring std.	
Tool material	Solid carbide	
Carbide grade	K/P	
Surface	A	A
Type		
Shank design	HA	HB
Helix	0°	0°
Tolerance	js9	js9
Discount group	117	117
Techn. data page	-	-

NEW NEW



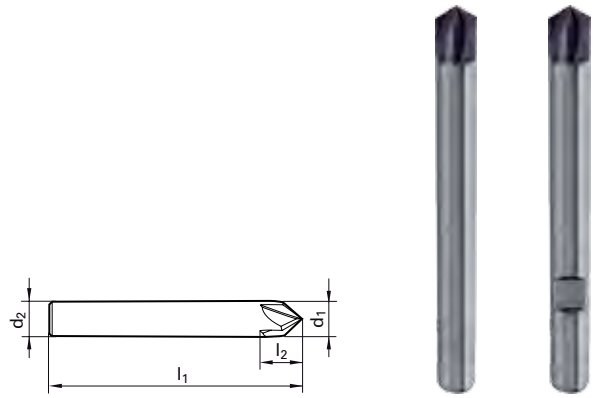
d1 mm	d2 mm	l1 mm	l2 mm	Z	Availability	
4.000	4.000	50.00	22.00	4	●	
6.000	6.000	57.00	21.00	4	●	●
8.000	8.000	63.00	27.00	4	●	●
10.000	10.000	72.00	32.00	4	●	●
12.000	12.000	83.00	38.00	4	●	●

○ bright ◍ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

straight-fluted

Guhring no.	6714	6715
Standard	Guhring std.	
Tool material	Solid carbide	
Carbide grade	K/P	
Surface	A	A
Type		
Shank design	HA	HB
Helix	0°	0°
Tolerance	js9	js9
Discount group	117	117
Techn. data page	-	-

NEW NEW



d1	d2	l1	l2	Z	Availability	
mm	mm	mm	mm			
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6.000	6.000	57.00	21.00	4	●	●
8.000	8.000	63.00	27.00	4	●	●
10.000	10.000	72.00	32.00	4	●	●
12.000	12.000	83.00	38.00	4	●	●

Milling cutters with corner radius: Satisfying the highest demands on accuracy and tool life

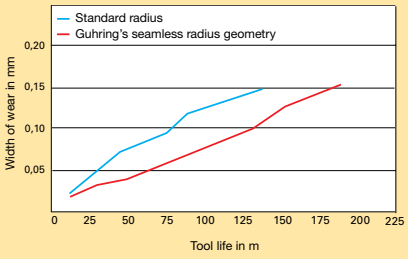
Especially the die and mould industry places ever higher demands on milling cutters – primarily with regard to accuracy and tool life. Therefore, Guhring's cutting tool program now includes radius milling cutters that are perfectly adapted to satisfy these demands and provide optimal machining results thanks to application orientated geometries, carbide grades and coatings. The advantages are especially high form and contour accuracy of the workpiece, minimal wear and therefore excellent tool life.

The special features of Guhring's milling cutters with corner corner radius are:

- outside diameter and the radius is ground in one-pass
- radius point geometry with constant helix-radius-correction
- reduced neck ground for collision reduction with protruding edges

High wear protection thanks to radius geometry with constant rake angle and continuous spiral.

Seamless radius area provides high form and contour accuracy.



Wear comparison:
Guhring's seamless radius geometry reduces wear and provides a considerably longer tool life in comparison with tools ground with conventional corner radius.

Reduced neck ground for collision reduction

Material (ISO-code)	Steel		Cast iron		Stainless steel		Aluminium		Ti-special alloys		Hardened steel	
Hardness tensile strength	up to 850 N/mm²	above 850 N/mm²	up to 180 HB 30	above 180 HB 30	up to 750 N/mm²	above 750 N/mm²	up to 3% Si	above 3% Si	Ti-based	Ni-based	up to 52 HRC	above 52 HRC
GF 500 T	●	●	●	○	○	●	●		●	●	●	
GF 300 T		○	●	●						○	●	●

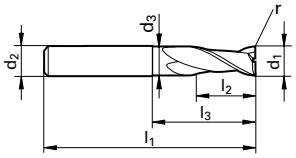
● = optimal suitability ○ = limited suitability

Solid carbide universal end mills

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

centre cutting

Guhring no.	3106	3561
Standard	DIN 6527 L	
Tool material	Solid carbide	
Carbide grade	K	K/P
Surface	○	F
Type	N	N
Shank design	HA	HA
Helix	30°	30°
Tolerance	h10	h10
Discount group	117	117
Techn. data page	1098	1098



d1	d2	d3	l1	l2	l3	r	Z	Code no.	Availability	
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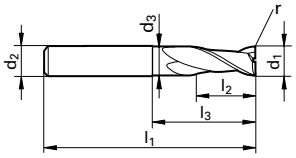
6.000	6.000	5.700	57.00	10.00	21.00	1.00	2	6.010	●	●
8.000	8.000	7.700	63.00	16.00	27.00	0.50	2	8.005	●	●
8.000	8.000	7.700	63.00	16.00	27.00	1.00	2	8.010	●	●
8.000	8.000	7.700	63.00	16.00	27.00	1.50	2	8.015	●	●
8.000	8.000	7.700	63.00	16.00	27.00	2.00	2	8.020	●	●
10.000	10.000	9.500	72.00	19.00	32.00	0.50	2	10.005	●	●
10.000	10.000	9.500	72.00	19.00	32.00	1.00	2	10.010	●	●
10.000	10.000	9.500	72.00	19.00	32.00	1.50	2	10.015	●	●
10.000	10.000	9.500	72.00	19.00	32.00	2.00	2	10.020	●	●
12.000	12.000	11.500	83.00	22.00	38.00	0.50	2	12.005	●	●
12.000	12.000	11.500	83.00	22.00	38.00	1.00	2	12.010	●	●
12.000	12.000	11.500	83.00	22.00	38.00	1.50	2	12.015	●	●
12.000	12.000	11.500	83.00	22.00	38.00	2.00	2	12.020	●	●
16.000	16.000	15.500	92.00	26.00	44.00	1.00	2	16.010	●	●
16.000	16.000	15.500	92.00	26.00	44.00	1.50	2	16.015	●	●
16.000	16.000	15.500	92.00	26.00	44.00	2.00	2	16.020	●	●
20.000	20.000	19.500	104.00	32.00	54.00	1.00	2	20.010	●	●
20.000	20.000	19.500	104.00	32.00	54.00	1.50	2	20.015	●	●
20.000	20.000	19.500	104.00	32.00	54.00	2.00	2	20.020	●	●

○ bright ◍ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

centre cutting

Guhring no.	6722
Standard	DIN 6527 L
Tool material	Solid carbide
Carbide grade	K/P
Surface	D
Type	N
Shank design	HA
Helix	30°
Tolerance	h10
Discount group	106
Techn. data page	1098

NEW



d1	d2	d3	l1	l2	l3	r	Z	Code no.	Availability
mm	mm	mm	mm	mm	mm	mm			
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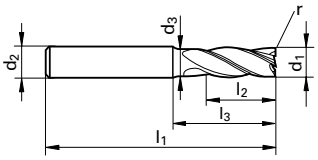
6.000	6.000	5.700	57.00	10.00	21.00	1.00	2	6.010	●
8.000	8.000	7.700	63.00	16.00	27.00	0.50	2	8.005	●
8.000	8.000	7.700	63.00	16.00	27.00	1.00	2	8.010	●
10.000	10.000	9.500	72.00	19.00	32.00	0.50	2	10.005	●
10.000	10.000	9.500	72.00	19.00	32.00	1.00	2	10.010	●
12.000	12.000	11.500	83.00	22.00	38.00	0.50	2	12.005	●
12.000	12.000	11.500	83.00	22.00	38.00	1.00	2	12.010	●

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

centre cutting

Guhring no.	3111	3562
Standard	DIN 6527 L	
Tool material	Solid carbide	
Carbide grade	K	K/P
Surface	○	F
Type	N	N
Shank design	HA	HA
Helix	30°	30°
Tolerance	h10	h10
Discount group	117	117
Techn. data page	1098	1098



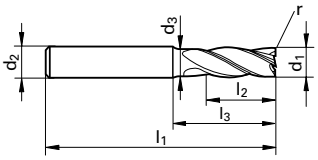
d1	d2	d3	l1	l2	l3	r	Z	Code no.	Availability	
mm	mm	mm	mm	mm	mm	mm				
6.000	6.000	5.700	57.00	13.00	21.00	0.50	4	6.005	●	●
6.000	6.000	5.700	57.00	13.00	21.00	1.00	4	6.010	●	●
8.000	8.000	7.700	63.00	19.00	27.00	0.50	4	8.005	●	●
8.000	8.000	7.700	63.00	19.00	27.00	1.00	4	8.010	●	●
8.000	8.000	7.700	63.00	19.00	27.00	1.50	4	8.015	●	●
8.000	8.000	7.700	63.00	19.00	27.00	2.00	4	8.020	●	●
10.000	10.000	9.500	72.00	22.00	32.00	0.50	4	10.005	●	●
10.000	10.000	9.500	72.00	22.00	32.00	0.80	4	10.008	●	●
10.000	10.000	9.500	72.00	22.00	32.00	1.00	4	10.010	●	●
10.000	10.000	9.500	72.00	22.00	32.00	1.50	4	10.015	●	●
10.000	10.000	9.500	72.00	22.00	32.00	2.00	4	10.020	●	●
12.000	12.000	11.500	83.00	26.00	38.00	0.50	4	12.005	●	●
12.000	12.000	11.500	83.00	26.00	38.00	0.80	4	12.008	●	●
12.000	12.000	11.500	83.00	26.00	38.00	1.00	4	12.010	●	●
12.000	12.000	11.500	83.00	26.00	38.00	1.50	4	12.015	●	●
12.000	12.000	11.500	83.00	26.00	38.00	2.00	4	12.020	●	●
16.000	16.000	15.500	92.00	32.00	44.00	1.00	4	16.010	●	●
16.000	16.000	15.500	92.00	32.00	44.00	1.50	4	16.015	●	●
16.000	16.000	15.500	92.00	32.00	44.00	2.00	4	16.020	●	●
20.000	20.000	19.500	104.00	38.00	54.00	1.00	4	20.010	●	●
20.000	20.000	19.500	104.00	38.00	54.00	1.50	4	20.015	●	●
20.000	20.000	19.500	104.00	38.00	54.00	2.00	4	20.020	●	●

○ bright ◍ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

centre cutting

Guhring no.	6723
Standard	DIN 6527 L
Tool material	Solid carbide
Carbide grade	K/P
Surface	D
Type	N
Shank design	HA
Helix	30°
Tolerance	h10
Discount group	106
Techn. data page	1098

NEW

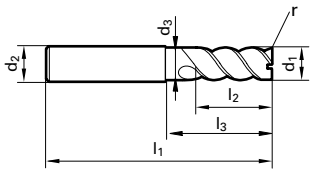


d1	d2	d3	l1	l2	l3	r	Z	Code no.	Availability
mm	mm	mm	mm	mm	mm	mm			
6.000	6.000	5.700	57.00	13.00	21.00	0.50	4	6.005	●
6.000	6.000	5.700	57.00	13.00	21.00	1.00	4	6.010	●
8.000	8.000	8.700	63.00	19.00	27.00	0.50	4	8.005	●
8.000	8.000	8.700	63.00	19.00	27.00	1.00	4	8.010	●
10.000	10.000	9.500	72.00	22.00	32.00	0.50	4	10.005	●
10.000	10.000	9.500	72.00	22.00	32.00	1.00	4	10.010	●
12.000	12.000	11.500	83.00	26.00	38.00	0.50	4	12.005	●
12.000	12.000	11.500	83.00	26.00	38.00	1.00	4	12.010	●

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

centre cutting

Guhring no.	3563
Standard	~ DIN 6527 L
Tool material	Solid carbide
Carbide grade	K/P
Surface	F
Type	NH
Shank design	HA
Helix	45°
Tolerance	h10
Discount group	106
Techn. data page	1093

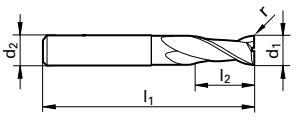


d1	d2	d3	l1	l2	l3	r	Z	Code no.	Availability
mm	mm	mm	mm	mm	mm	mm			
6.000	6.000	5.700	57.00	13.00	21.00	0.50	6	6.005	●
6.000	6.000	5.700	57.00	13.00	21.00	1.00	6	6.010	●
8.000	8.000	7.700	63.00	19.00	27.00	0.50	6	8.005	●
8.000	8.000	7.700	63.00	19.00	27.00	1.00	6	8.010	●
8.000	8.000	7.700	63.00	19.00	27.00	1.50	6	8.015	●
8.000	8.000	7.700	63.00	19.00	27.00	2.00	6	8.020	●
10.000	10.000	9.500	72.00	22.00	32.00	0.50	6	10.005	●
10.000	10.000	9.500	72.00	22.00	32.00	1.00	6	10.010	●
10.000	10.000	9.500	72.00	22.00	32.00	1.50	6	10.015	●
10.000	10.000	9.500	72.00	22.00	32.00	2.00	6	10.020	●
12.000	12.000	11.500	83.00	26.00	38.00	0.50	6	12.005	●
12.000	12.000	11.500	83.00	26.00	38.00	1.00	6	12.010	●
12.000	12.000	11.500	83.00	26.00	38.00	1.50	6	12.015	●
12.000	12.000	11.500	83.00	26.00	38.00	2.00	6	12.020	●
16.000	16.000	15.500	92.00	32.00	44.00	0.50	6	16.005	●
16.000	16.000	15.500	92.00	32.00	44.00	1.00	6	16.010	●
16.000	16.000	15.500	92.00	32.00	44.00	1.50	6	16.015	●
16.000	16.000	15.500	92.00	32.00	44.00	2.00	6	16.020	●
20.000	20.000	19.500	104.00	38.00	54.00	0.50	8	20.005	●
20.000	20.000	19.500	104.00	38.00	54.00	1.00	8	20.010	●
20.000	20.000	19.500	104.00	38.00	54.00	1.50	8	20.015	●
20.000	20.000	19.500	104.00	38.00	54.00	2.00	8	20.020	●

○ bright ◍ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

for materials < 54 HRC, centre cutting

Guhring no.	3863
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	A
Type	N
Shank design	HA
Helix	30°
Tolerance	h8
Discount group	106
Techn. data page	1097

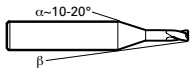


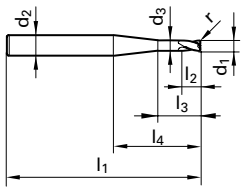
d1	d2	d3	l1	l2	l3	l4	r	β	Z	Availability
mm	mm	mm	mm	mm	mm	mm	mm	°		
4.000	4.000		80.00	8.00		17.50	0.50		2	●
6.000	6.000		100.00	12.00		24.00	1.00		2	●
8.000	8.000		100.00	16.00		29.00	1.00		2	●
10.000	10.000		100.00	20.00		35.00	1.00		2	●
12.000	12.000		120.00	24.00		42.00	1.50		2	●

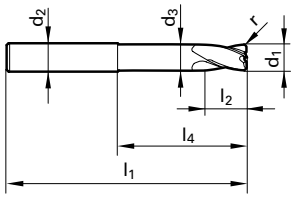
C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

for materials < 54 HRC, centre cutting

Guhring no.	3856
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	A
Type	N
Shank design	HA
Helix	30°
Tolerance	h8
Discount group	106
Techn. data page	1097





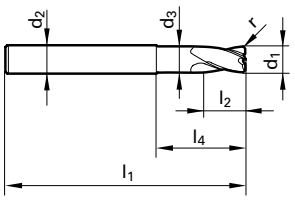


d1	d2	d3	l1	l2	l3	l4	r	β	Z	Availability
mm	mm	mm	mm	mm	mm	mm	mm	°		
2.000	6.000	1.800	57.00	3.00	6.20	20.00	0.50	5.70	2	●
3.000	6.000	2.800	57.00	3.50	8.40	20.00	0.50	4.30	2	●
4.000	6.000	3.800	57.00	4.00	9.40	20.00	1.00	2.90	2	●
6.000	6.000	5.600	57.00	6.00		20.00	2.00		2	●
8.000	8.000	7.600	63.00	7.00		26.00	2.00		2	●
10.000	10.000	9.600	72.00	8.00		30.00	3.00		2	●
12.000	12.000	11.500	83.00	10.00		35.00	4.00		2	●

○ bright ◎ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

for materials < 54 HRC, centre cutting

Guhring no.	3865
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	A
Type	N
Shank design	HA
Helix	30°
Tolerance	h8
Discount group	106
Techn. data page	1097

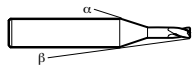


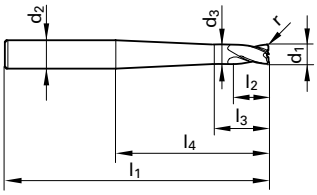
d1	d2	d3	l1	l2	l3	l4	r	β	Z	Availability
mm	mm	mm	mm	mm	mm	mm	mm	°		
6.000	6.000	5.600	80.00	6.00		40.00	2.00		2	●
8.000	8.000	7.600	100.00	7.00		60.00	2.00		2	●
10.000	10.000	9.600	120.00	8.00		75.00	3.00		2	●
12.000	12.000	11.500	120.00	10.00		70.00	4.00		2	●

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

for materials < 54 HRC, centre cutting

Guhring no.	3860
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	A
Type	N
Shank design	HA
Helix	30°
Tolerance	h8
Discount group	106
Techn. data page	1097



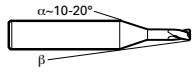


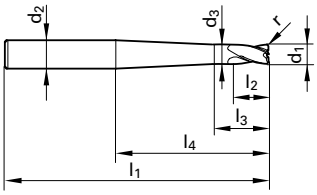
d1	d2	d3	l1	l2	l3	l4	r	β	Z	Availability
mm	mm	mm	mm	mm	mm	mm	mm	°		
2.000	6.000	1.800	80.00	3.00	8.00	40.00	0.50	1.00	2	●
3.000	6.000	2.800	80.00	3.50	12.00	45.00	0.50	1.00	2	●
4.000	6.000	3.800	100.00	4.00	20.00	60.00	0.50	1.00	2	●
6.000	8.000	5.600	120.00	6.00	25.00	80.00	1.00	1.00	2	●
8.000	10.000	7.600	150.00	7.00	20.00	105.00	1.00	0.60	2	●

○ bright ◎ steam tempered ◒ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

for materials < 54 HRC, centre cutting

Guhring no.	3859
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	A
Type	N
Shank design	HA
Helix	30°
Tolerance	h8
Discount group	106
Techn. data page	1097



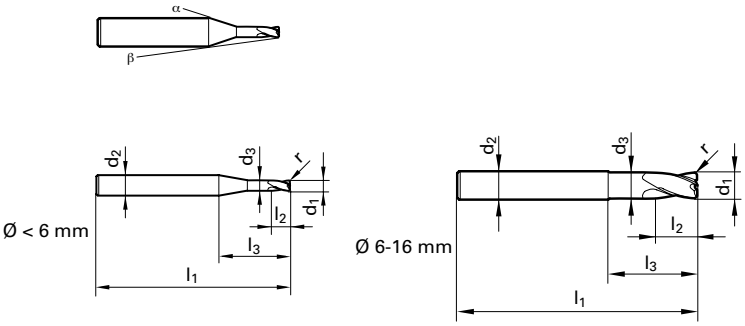


d1	d2	d3	l1	l2	l3	l4	r	β	Z	Availability
mm	mm	mm	mm	mm	mm	mm	mm	°		
2.000	6.000	1.800	80.00	3.00	8.00	40.00	0.50	2.90	2	●
3.000	6.000	2.800	80.00	3.50	12.00	40.00	0.50	2.20	2	●
4.000	6.000	3.800	80.00	4.00	20.00	40.00	1.00	1.40	2	●
6.000	8.000	5.600	100.00	6.00	25.00	60.00	2.00	1.00	2	●
8.000	10.000	7.600	120.00	7.00	30.00	75.00	2.00	0.80	2	●
10.000	12.000	9.600	120.00	8.00	30.00	70.00	3.00	0.80	2	●
12.000	16.000	11.500	150.00	10.00	35.00	100.00	4.00	1.20	2	●

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

for materials < 62 HRC, centre cutting

Guhring no.	3361
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	F
Type	H
Shank design	HA
Helix	30°
Tolerance	h8
Discount group	106
Techn. data page	1097

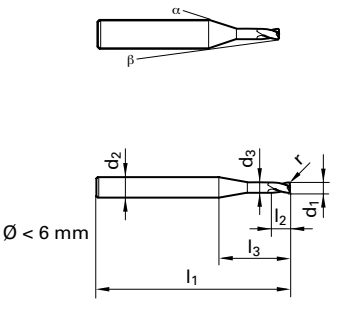


d1	d2	d3	l1	l2	l3	R	Z	Availability
mm	mm	mm	mm	mm	mm	mm		
3.000	6.000	2.700	57.00	5.00	21.00	0.50	4	●
4.000	6.000	3.700	57.00	6.00	21.00	0.50	4	●
5.000	6.000	4.700	57.00	8.00	21.00	0.50	4	●
6.000	6.000	5.700	57.00	9.00	21.00	1.00	4	●
8.000	8.000	7.700	63.00	12.00	27.00	1.00	4	●
10.000	10.000	9.500	72.00	15.00	32.00	1.50	4	●
12.000	12.000	11.500	83.00	18.00	38.00	1.50	4	●
16.000	16.000	15.500	92.00	24.00	44.00	2.00	4	●

○ bright ◌ steam tempered ◒ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

for materials < 62 HRC, centre cutting

Guhring no.	**3362**
Standard	**Guhring std.**
Tool material	**Solid carbide**
Carbide grade	**K/P**
Surface	**F**
Type	**H**
Shank design	**HA**
Helix	**30°**
Tolerance	**h8**
Discount group	**106**
Techn. data page	**1097**

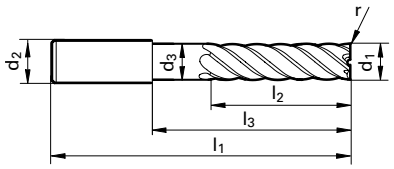


d1	d2	d3	l1	l2	l3	R	Z	Availability
mm	mm	mm	mm	mm	mm	mm		
6.000	6.000	5.700	75.00	9.00	39.00	1.00	4	●
8.000	8.000	7.700	100.00	12.00	64.00	1.00	4	●
10.000	10.000	9.500	100.00	15.00	60.00	1.50	4	●
12.000	12.000	11.500	150.00	18.00	105.00	1.50	4	●
16.000	16.000	15.500	150.00	24.00	102.00	2.00	4	●

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

for superfine finishing of materials < 62 HRC

Guhring no.	3363
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	F
Type	H
Shank design	HA
Helix	55°
Tolerance	h10
Discount group	106
Techn. data page	1093

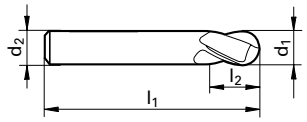


d1	d2	d3	l1	l2	l3	R	Z	Availability
mm	mm	mm	mm	mm	mm	mm		
6.000	6.000	5.700	75.00	13.00	39.00	0.50	6	●
8.000	8.000	7.700	100.00	19.00	64.00	0.50	6	●
10.000	10.000	9.500	100.00	22.00	60.00	0.50	6	●
12.000	12.000	11.500	150.00	26.00	105.00	1.00	6	●
16.000	16.000	15.500	150.00	32.00	102.00	1.00	6	●

○ bright ◌ steam tempered ◒ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

centre cutting

Guhring no.	3308	3679	6724
Standard		DIN 6527 L	
Tool material		Solid carbide	
Carbide grade	K	K/P	
Surface	◯	(F)	(D)
Type	N	N	N
Shank design	HA	HA	HA
Helix	30°	30°	30°
Tolerance	h10	h10	h10
Discount group	117	117	106
Techn. data page	1100	1100	1100
			NEW



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0.800	3.000	38.00	1.00	2	0.800	●	●	
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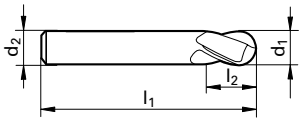
1.500	3.000	38.00	3.00	2	1.500	●	●	
2.000	6.000	57.00	6.00	2	2.000	●	●	
3.000	6.000	57.00	7.00	2	3.000	●	●	●
4.000	6.000	57.00	8.00	2	4.000	●	●	●
5.000	6.000	57.00	10.00	2	5.000	●	●	●
6.000	6.000	57.00	10.00	2	6.000	●	●	●
8.000	8.000	63.00	16.00	2	8.000	●	●	●
10.000	10.000	72.00	19.00	2	10.000	●	●	●
12.000	12.000	83.00	22.00	2	12.000	●	●	●
14.000	14.000	83.00	22.00	2	14.000	●	●	
14.000	16.000	92.00	26.00	2	14.001	❍	❍	
16.000	16.000	92.00	26.00	2	16.000	●	●	
18.000	18.000	92.00	26.00	2	18.000	●	●	
18.000	20.000	104.00	32.00	2	18.001	❍	❍	
20.000	20.000	104.00	32.00	2	20.000	●	●	

(C) TiCN (Cb) Carbo (D) Cristall (F) FIRE/nanoFIRE (P) AlCrN (S) TiN (S+) TiN+ (M) MolyGlide (Y) Signum

centre cutting

Guhring no.	3024	3049
Standard	DIN 6527 L	
Tool material	Solid carbide	
Carbide grade	K	K/P
Surface	○	F
Type	N	N
Shank design	HB	HB
Helix	30°	30°
Tolerance	h10	h10
Discount group	117	117
Techn. data page	1100	1100



d1 mm	d2 mm	l1 mm	l2 mm	Z	Code no.	Availability	
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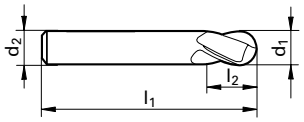
4.000	6.000	57.00	8.00	2	4.000	●	●
5.000	6.000	57.00	10.00	2	5.000	●	●
6.000	6.000	57.00	10.00	2	6.000	●	●
8.000	8.000	63.00	16.00	2	8.000	●	●
10.000	10.000	72.00	19.00	2	10.000	●	●
12.000	12.000	83.00	22.00	2	12.000	●	●
14.000	14.000	83.00	22.00	2	14.000	●	●
16.000	16.000	92.00	26.00	2	16.000	●	●
18.000	18.000	92.00	26.00	2	18.000	●	●
20.000	20.000	104.00	32.00	2	20.000	●	●

centre cutting

Guhring no.	3014	3030
Standard	Guhring std.	
Tool material	Solid carbide	
Carbide grade	K	K/P
Surface	○	F
Type	N	N
Shank design	HA	HA
Helix	30°	30°
Tolerance	h10	h10
Discount group	117	117
Techn. data page	1100	1100



d1 mm	d2 mm	l1 mm	l2 mm	Z	Availability	
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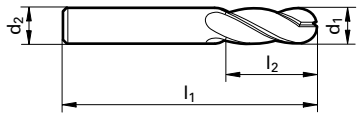
4.000	4.000	75.00	25.00	2	●	●
5.000	5.000	75.00	30.00	2	●	●
6.000	6.000	75.00	30.00	2	●	●
8.000	8.000	100.00	40.00	2	●	●
10.000	10.000	100.00	40.00	2	●	●
12.000	12.000	150.00	45.00	2	●	●

○ bright ◍ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

Ball nose end mills (4-fluted)

centre cutting

Guhring no.	3306	3727
Standard	DIN 6528	
Tool material	Solid carbide	
Carbide grade	K	K/P
Surface	◯	F
Type	N	N
Shank design	HA	HA
Helix	30°	30°
Tolerance	h10	h10
Discount group	117	117
Techn. data page	1100	1100



d1 mm	d2 mm	l1 mm	l2 mm	Z	Code no.	Availability	
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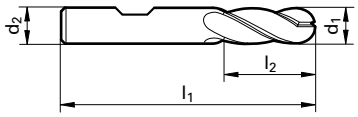
5.000	5.000	50.00	13.00	4	5.000	●	●
6.000	6.000	57.00	13.00	4	6.000	●	●
8.000	8.000	63.00	19.00	4	8.000	●	●
10.000	10.000	72.00	22.00	4	10.000	●	●
12.000	12.000	83.00	26.00	4	12.000	●	●
14.000	14.000	83.00	26.00	4	14.000	●	●
14.000	16.000	92.00	32.00	4	14.001	○	○
16.000	16.000	92.00	32.00	4	16.000	●	●
18.000	18.000	92.00	32.00	4	18.000	●	●
18.000	20.000	104.00	38.00	4	18.001	○	○
20.000	20.000	104.00	38.00	4	20.000	●	●

centre cutting

Guhring no.	3026	3050
Standard	DIN 6527 L	
Tool material	Solid carbide	
Carbide grade	K	K/P
Surface	◯	F
Type	N	N
Shank design	HB	HB
Helix	30°	30°
Tolerance	h10	h10
Discount group	117	117
Techn. data page	1100	1100



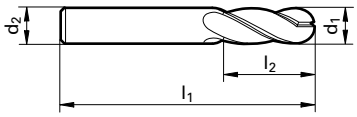
d1 mm	d2 mm	l1 mm	l2 mm	Z	Code no.	Availability	
3.000	6.000	57.00	8.00	4	3.000	●	●
4.000	6.000	57.00	11.00	4	4.000	●	●
5.000	6.000	57.00	13.00	4	5.000	●	●
6.000	6.000	57.00	13.00	4	6.000	●	●
8.000	8.000	63.00	19.00	4	8.000	●	●
10.000	10.000	72.00	22.00	4	10.000	●	●
12.000	12.000	83.00	26.00	4	12.000	●	●
14.000	14.000	83.00	26.00	4	14.000	●	●
16.000	16.000	92.00	32.00	4	16.000	●	●
18.000	18.000	92.00	32.00	4	18.000	●	●
20.000	20.000	104.00	38.00	4	20.000	●	●

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

centre cutting

Guhring no.	3015	3043	6725
Standard		Guhring std.	
Tool material		Solid carbide	
Carbide grade	K	K/P	
Surface	○	F	D
Type	N	N	N
Shank design	HA	HA	HA
Helix	30°	30°	30°
Tolerance	h10	h10	h10
Discount group	117	117	106
Techn. data page	1100	1100	1100

NEW



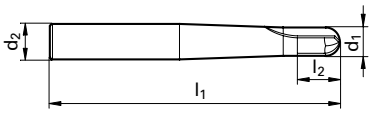
d1 mm	d2 mm	l1 mm	l2 mm	Z	Availability		
3.000	3.000	75.00	20.00	4	●	●	●
4.000	4.000	75.00	25.00	4	●	●	●
5.000	5.000	75.00	30.00	4	●	●	●
6.000	6.000	75.00	30.00	4	●	●	●
8.000	8.000	100.00	40.00	4	●	●	●
10.000	10.000	100.00	40.00	4	●	●	●
12.000	12.000	150.00	45.00	4	●	●	●

○ bright ◌ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

GF 200 B - ball nose pr. cutters

for materials < 48 HRC, centre cutting

Guhring no.	3044
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	F
Type	N
Shank design	HA
Helix	0°
Tolerance	h10
Discount group	106
Techn. data page	-



d1	d2	l1	l2	Z	Availability
mm	mm	mm	mm		
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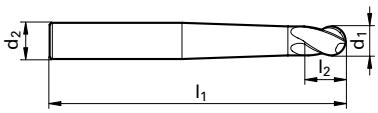
4.000	6.000	75.00	5.00	2	❍
5.000	6.000	75.00	6.00	2	❍
6.000	8.000	75.00	8.00	2	❍
8.000	10.000	100.00	12.00	2	❍
10.000	12.000	100.00	15.00	2	❍

for materials < 48 HRC, centre cutting

Guhring no.	3045
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	F
Type	N
Shank design	HA
Helix	30°
Tolerance	h10
Discount group	106
Techn. data page	-



d1	d2	l1	l2	Z	Availability
mm	mm	mm	mm		
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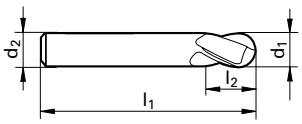
4.000	6.000	75.00	5.00	4	❍
5.000	6.000	75.00	6.00	4	❍
6.000	8.000	75.00	8.00	4	❍
8.000	10.000	100.00	12.00	4	❍
10.000	12.000	100.00	15.00	4	❍

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

for materials < 54 HRC, centre cutting

Guhring no.	3854
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	A
Type	N
Shank design	HA
Helix	30°
Tolerance	h8
Discount group	106
Techn. data page	1096

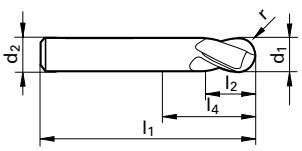


d1	d2	d3	l1	l2	l3	l4	r	β	Z	Availability
mm	mm	mm	mm	mm	mm	mm	mm	°		
6.000	6.000		57.00	12.00		24.00	3.00		2	●
8.000	8.000		63.00	16.00		29.00	4.00		2	●
10.000	10.000		72.00	20.00		35.00	5.00		2	●
12.000	12.000		83.00	24.00		42.00	6.00		2	●

○ bright ◎ steam tempered ◒ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

for materials < 54 HRC, centre cutting

Guhring no.	3866
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	A
Type	N
Shank design	HA
Helix	30°
Tolerance	h8
Discount group	106
Techn. data page	1096

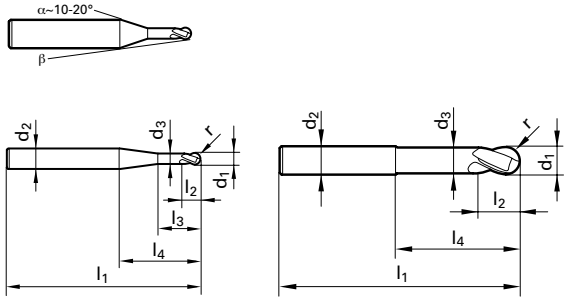


d1	d2	d3	l1	l2	l3	l4	r	β	Z	Availability
mm	mm	mm	mm	mm	mm	mm	mm	°		
4.000	4.000		80.00	8.00		17.50	2.00		2	●
6.000	6.000		100.00	12.00		24.00	3.00		2	●
8.000	8.000		100.00	16.00		29.00	4.00		2	●
10.000	10.000		100.00	20.00		35.00	5.00		2	●
12.000	12.000		120.00	24.00		42.00	6.00		2	●

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

for materials < 54 HRC, centre cutting

Guhring no.	3848
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	A
Type	N
Shank design	HA
Helix	30°
Tolerance	h8
Discount group	106
Techn. data page	1096

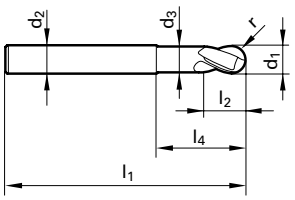


d1	d2	d3	l1	l2	l3	l4	r	β	Z	Availability
mm	mm	mm	mm	mm	mm	mm	mm	°		
2.000	6.000	1.800	57.00	3.00	6.20	20.00	1.00	5.70	2	●
3.000	6.000	2.800	57.00	3.50	8.40	20.00	1.50	4.30	2	●
4.000	6.000	3.800	57.00	4.00	9.40	20.00	2.00	2.90	2	●
6.000	6.000	5.600	57.00	6.00		20.00	3.00		2	●
8.000	8.000	7.600	63.00	7.00		26.00	4.00		2	●
10.000	10.000	9.600	72.00	8.00		30.00	5.00		2	●
12.000	12.000	11.500	83.00	10.00		35.00	6.00		2	●

○ bright ◎ steam tempered ◒ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

for materials < 54 HRC, centre cutting

Guhring no.	3855
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	A
Type	N
Shank design	HA
Helix	30°
Tolerance	h8
Discount group	106
Techn. data page	1096

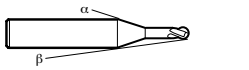


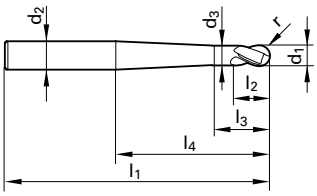
d1	d2	d3	l1	l2	l3	l4	r	β	Z	Availability
mm	mm	mm	mm	mm	mm	mm	mm	°		
6.000	6.000	5.600	80.00	6.00		40.00	3.00		2	●
8.000	8.000	7.600	100.00	7.00		60.00	4.00		2	●
10.000	10.000	9.600	120.00	8.00		75.00	5.00		2	●
12.000	12.000	11.500	120.00	10.00		70.00	6.00		2	●

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

for materials < 54 HRC, centre cutting

Guhring no.	3853
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	A
Type	N
Shank design	HA
Helix	30°
Tolerance	h8
Discount group	106
Techn. data page	1096



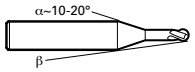


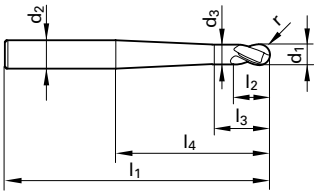
d1	d2	d3	l1	l2	l3	l4	r	β	Z	Availability
mm	mm	mm	mm	mm	mm	mm	mm	°		
2.000	6.000	1.800	80.00	3.00	8.00	40.00	1.00	1.00	2	●
3.000	6.000	2.800	80.00	3.50	12.00	45.00	1.50	1.00	2	●
4.000	6.000	3.800	100.00	4.00	20.00	60.00	2.00	1.00	2	●
6.000	8.000	5.600	120.00	6.00	25.00	80.00	3.00	1.00	2	●
8.000	10.000	7.600	150.00	7.00	20.00	105.00	4.00	0.60	2	●

○ bright ◎ steam tempered ◒ nitrided lands ● nitrided ◉ golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

for materials < 54 HRC, centre cutting

Guhring no.	3849
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	A
Type	N
Shank design	HA
Helix	30°
Tolerance	h8
Discount group	106
Techn. data page	1096



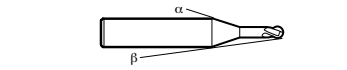


d1	d2	d3	l1	l2	l3	l4	r	β	Z	Availability
mm	mm	mm	mm	mm	mm	mm	mm	°		
2.000	6.000	1.800	80.00	3.00	8.00	40.00	1.00	2.90	2	●
3.000	6.000	2.800	80.00	3.50	12.00	40.00	1.50	2.20	2	●
4.000	6.000	3.800	80.00	4.00	20.00	40.00	2.00	1.40	2	●
5.000	6.000	4.700	80.00	5.00	25.00	40.00	2.50	0.70	2	●
6.000	8.000	5.600	100.00	6.00	25.00	60.00	3.00	1.00	2	●
8.000	10.000	7.600	120.00	7.00	30.00	75.00	4.00	0.80	2	●
10.000	12.000	9.600	120.00	8.00	30.00	70.00	5.00	0.80	2	●
12.000	16.000	11.500	150.00	10.00	35.00	100.00	6.00	1.20	2	●

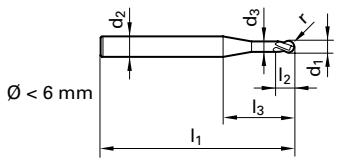
C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

for materials < 62 HRC, centre cutting

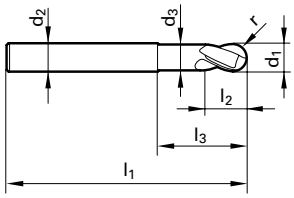
Guhring no.	3359
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	F
Type	H
Shank design	HA
Helix	30°
Tolerance	h8
Discount group	106
Techn. data page	1096



Ø < 6 mm



Ø 6-16 mm

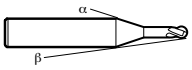


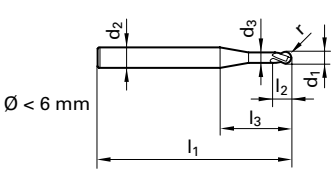
d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm	r mm	Z	Code no.	Availability
0.500	3.000	0.400	38.00	0.75	10.00	0.25	2	0.500	●
0.800	3.000	0.700	38.00	1.20	10.00	0.40	2	0.800	●
1.000	3.000	0.900	38.00	1.50	10.00	0.50	2	1.000	●
1.500	3.000	1.400	38.00	2.25	10.00	0.75	2	1.500	●
2.000	6.000	1.900	57.00	3.00	21.00	1.00	2	2.000	●
3.000	6.000	2.700	57.00	5.00	21.00	1.50	2	3.000	●
4.000	6.000	3.700	57.00	6.00	21.00	2.00	2	4.000	●
5.000	6.000	4.700	57.00	8.00	21.00	2.50	2	5.000	●
6.000	6.000	5.700	57.00	9.00	21.00	3.00	2	6.000	●
8.000	8.000	7.700	63.00	12.00	27.00	4.00	2	8.000	●
10.000	10.000	9.500	72.00	15.00	32.00	5.00	2	10.000	●
12.000	12.000	11.500	83.00	18.00	38.00	6.00	2	12.000	●
16.000	16.000	15.500	92.00	24.00	44.00	8.00	2	16.000	●

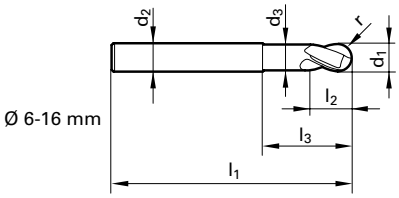
○ bright ◍ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

for materials < 62 HRC, centre cutting

Guhring no.	3360
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	F
Type	H
Shank design	HA
Helix	30°
Tolerance	h8
Discount group	106
Techn. data page	1096





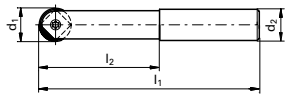


d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm	r mm	Z	Code no.	Availability
3.000	6.000	2.700	75.00	5.00	39.00	1.50	2	3.000	●
4.000	6.000	3.700	75.00	6.00	39.00	2.00	2	4.000	●
5.000	6.000	4.700	75.00	8.00	39.00	2.50	2	5.000	●
6.000	6.000	5.700	75.00	9.00	39.00	3.00	2	6.000	●
8.000	8.000	7.700	100.00	12.00	64.00	4.00	2	8.000	●
10.000	10.000	9.500	100.00	15.00	60.00	5.00	2	10.000	●
12.000	12.000	11.500	150.00	18.00	105.00	6.00	2	12.000	●
16.000	16.000	15.500	150.00	24.00	102.00	8.00	2	16.000	●

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

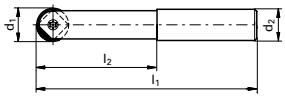
GF 200 WP

Guhring no.	1941
Standard	Guhring std.
Tool material	
Carbide grade	
Surface	
Type	GF 200
Shank design	HA
Helix	
Tolerance	
Discount group	140
Techn. data page	-



d1 mm	d2 mm	l1 mm	l2 mm	Availability
10.000	10.000	94.20	45.00	❍
12.000	12.000	109.20	50.00	❍
16.000	16.000	124.00	65.00	❍
20.000	20.000	139.00	75.00	❍
25.000	25.000	164.00	90.00	❍
32.000	32.000	184.00	105.00	❍

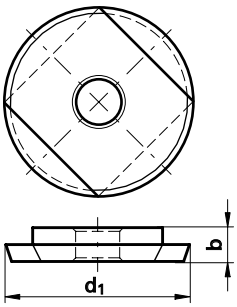
Guhring no.	1942
Standard	Guhring std.
Tool material	
Carbide grade	
Surface	
Type	GF 200
Shank design	HA
Helix	
Tolerance	
Discount group	140
Techn. data page	-



d1 mm	d2 mm	l1 mm	l2 mm	Availability
10.000	12.000	149.20	35.00	❍
12.000	16.000	159.20	60.00	❍
16.000	20.000	173.50	70.00	❍
20.000	25.000	188.50	80.00	❍
25.000	32.000	209.00	100.00	❍
32.000	40.000	239.00	125.00	❍

◯ bright ◯ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

Guhring no.	1947	2520
Standard	Guhring std.	
Tool material	Cermet	Solid carbide
Carbide grade	P15/P20	K/P
Surface	○	F
Cutting direction	right-hand	right-hand
Discount group	141	141
Techn. data page	-	-



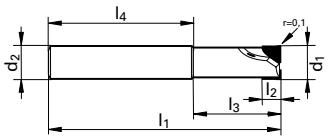
d1 mm	b mm	Availability	
10.000	2.500	❍	●
12.000	2.500	❍	●
16.000	3.200	❍	●
20.000	4.000	❍	●
25.000	4.600	❍	●
32.000	5.000	❍	❍

Guhring no.	1612
Standard	Guhring std.
Tool material	
Carbide grade	
Surface	
Cutting direction	
Discount group	140
Techn. data page	-

Torx	Code no.	Availability
T8	8.000	●
T15	15.001	●
T20	20.001	●

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

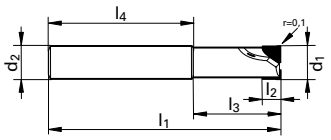
Guhring no.	**5492**
Standard	**Guhring std.**
Tool material	**PCD**
Surface	○
Type	
Shank design	**HA**
Helix	**0°**
Cooling	**axial**
Discount group	**110**
Techn. data page	-



d1	d2	l1	l2	l3	l4	Z	Code no.	Availability
mm	mm	mm	mm	mm	mm			
4.000	6.000	51.00	6.00	15.00	36.00	2	4.000	●
5.000	6.000	51.00	8.00	15.00	36.00	2	5.000	●
6.000	6.000	57.00	8.00	21.00	36.00	2	6.000	●
8.000	8.000	63.00	8.00	27.00	36.00	2	8.000	●
8.000	8.000	63.00	12.00	27.00	36.00	2	8.001	●
10.000	10.000	72.00	8.00	32.00	40.00	2	10.000	●
10.000	10.000	72.00	16.00	32.00	40.00	2	10.001	●
12.000	12.000	83.00	8.00	38.00	45.00	2	12.000	●
12.000	12.000	83.00	16.00	38.00	45.00	2	12.001	●
14.000	14.000	83.00	8.00	38.00	45.00	2	14.000	●
14.000	14.000	83.00	16.00	38.00	45.00	2	14.001	●
16.000	16.000	100.00	12.00	52.00	48.00	2	16.000	●
16.000	16.000	100.00	20.00	52.00	48.00	2	16.001	●
18.000	18.000	100.00	12.00	52.00	48.00	2	18.000	●
18.000	18.000	100.00	20.00	52.00	48.00	2	18.001	●
20.000	20.000	100.00	12.00	50.00	50.00	2	20.000	●
20.000	20.000	100.00	20.00	50.00	50.00	2	20.001	●

○ bright ◍ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

Guhring no.	**5493**
Standard	**Guhring std.**
Tool material	**PCD**
Surface	◯
Type	
Shank design	**DZ**
Helix	**0°**
Cooling	**axial**
Discount group	**110**
Techn. data page	-

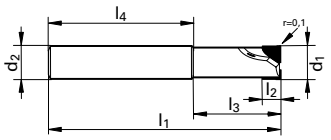


d1	d2	l1	l2	l3	l4	Z	Code no.	Availability
mm	mm	mm	mm	mm	mm			
4.000	6.000	70.00	6.00	15.00	55.00	2	4.000	●
5.000	6.000	70.00	8.00	15.00	55.00	2	5.000	●
6.000	6.000	75.00	8.00	21.00	54.00	2	6.000	●
8.000	8.000	100.00	8.00	27.00	73.00	2	8.000	●
8.000	8.000	100.00	12.00	27.00	73.00	2	8.001	●
10.000	10.000	100.00	8.00	32.00	68.00	2	10.000	●
10.000	10.000	100.00	16.00	32.00	68.00	2	10.001	●
12.000	12.000	100.00	8.00	38.00	62.00	2	12.000	●
12.000	12.000	100.00	16.00	38.00	62.00	2	12.001	●
14.000	14.000	100.00	8.00	38.00	62.00	2	14.000	●
14.000	14.000	100.00	16.00	38.00	62.00	2	14.001	●
16.000	16.000	150.00	12.00	52.00	98.00	2	16.000	●
16.000	16.000	150.00	20.00	52.00	98.00	2	16.001	●
18.000	18.000	125.00	12.00	52.00	73.00	2	18.000	●
18.000	18.000	125.00	20.00	52.00	73.00	2	18.001	●
18.000	18.000	150.00	20.00	52.00	98.00	2	18.002	●
18.000	18.000	150.00	12.00	52.00	98.00	2	18.003	●
20.000	20.000	150.00	12.00	50.00	100.00	2	20.000	●
20.000	20.000	150.00	20.00	50.00	100.00	2	20.001	●

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

Guhring no.	5495
Standard	Guhring std.
Tool material	PCD
Surface	◯
Type	
Shank design	HA
Helix	0°
Cooling	axial
Discount group	110
Techn. data page	

NEW

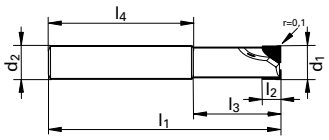


d1	d2	l1	l2	l3	l4	Z	Code no.	Availability
mm	mm	mm	mm	mm	mm			
14.000	14.000	83.00	8.00	38.00	45.00	3	14.000	●
14.000	14.000	83.00	16.00	38.00	45.00	3	14.001	●
16.000	16.000	100.00	12.00	52.00	48.00	3	16.000	●
16.000	16.000	100.00	20.00	52.00	48.00	3	16.001	●
18.000	18.000	100.00	12.00	52.00	48.00	3	18.000	●
18.000	18.000	100.00	20.00	52.00	48.00	3	18.001	●
20.000	20.000	100.00	12.00	50.00	50.00	3	20.000	●
20.000	20.000	100.00	20.00	50.00	50.00	3	20.001	●

◯ bright ◯ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

Guhring no.	5496
Standard	Guhring std.
Tool material	PCD
Surface	◯
Type	
Shank design	DZ
Helix	0°
Cooling	axial
Discount group	110
Techn. data page	

NEW



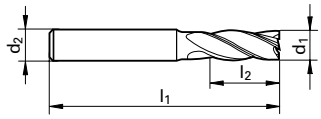
d1	d2	l1	l2	l3	l4	Z	Code no.	Availability
mm	mm	mm	mm	mm	mm			
14.000	14.000	100.00	8.00	38.00	62.00	3	14.000	●
14.000	14.000	100.00	16.00	38.00	62.00	3	14.001	●
16.000	16.000	150.00	12.00	52.00	98.00	3	16.000	●
16.000	16.000	150.00	20.00	52.00	98.00	3	16.001	●
18.000	18.000	150.00	12.00	52.00	98.00	3	18.000	●
18.000	18.000	150.00	20.00	52.00	98.00	3	18.001	●
20.000	20.000	150.00	12.00	50.00	100.00	3	20.000	●
20.000	20.000	150.00	20.00	50.00	100.00	3	20.001	●

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

RF 40 - Ratio end mills

centre cutting

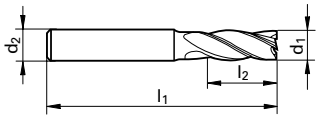
Guhring no.	3429	3705
Standard	DIN 844 K	
Tool material	HSS-E-PM	
Carbide grade		
Surface	○	F
Type	N	N
Shank design	B	B
Helix	35°/38°	35°/38°
Tolerance	k10	k10
Discount group	112	112
Techn. data page		



d1	d2	l1	l2	Z	Availability	
mm	mm	mm	mm			
8.000	10.000	69.00	19.00	4	●	●
10.000	10.000	72.00	22.00	4	●	●
12.000	12.000	83.00	26.00	4	●	●
14.000	12.000	83.00	26.00	4	●	●
16.000	16.000	92.00	32.00	4	●	●
18.000	16.000	92.00	32.00	4	●	●
20.000	20.000	104.00	38.00	4	●	●
25.000	25.000	121.00	45.00	4	❍	
30.000	25.000	121.00	45.00	6	❍	

centre cutting

Guhring no.	3432	3706
Standard	DIN 844 L	
Tool material	HSS-E-PM	
Carbide grade		
Surface	○	F
Type	N	N
Shank design	B	B
Helix	30°/32°	30°/32°
Tolerance	k10	k10
Discount group	112	112
Techn. data page		



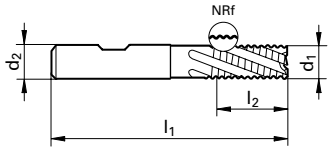
d1	d2	l1	l2	Z	Availability	
mm	mm	mm	mm			
16.000	16.000	123.00	63.00	4	●	●
18.000	16.000	123.00	63.00	4	●	●
20.000	20.000	141.00	75.00	4	●	●
25.000	25.000	166.00	90.00	4	●	●
30.000	25.000	166.00	90.00	6	❍	●

○ bright ◍ steam tempered ◓ nitrided lands ● nitrided ◉ golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

GS 40 - roughing end mills

fine teeth, with centre cutting

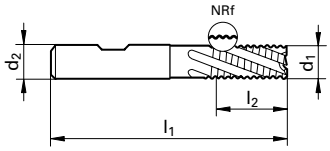
Guhring no.	3322	3668
Standard	DIN 844 K	
Tool material	HSS-E-PM	
Carbide grade		
Surface	○	F
Type	NRf	NRf
Shank design	B	B
Helix	30°	30°
Tolerance	k12	k12
Discount group	112	112
Techn. data page		



d1	d2	l1	l2	Z	Availability	
mm	mm	mm	mm			
6.000	6.000	57.00	13.00	3	●	●
8.000	10.000	69.00	19.00	3	●	●
10.000	10.000	72.00	22.00	3	●	●
12.000	12.000	83.00	26.00	3	●	●
14.000	12.000	83.00	26.00	3	●	●
16.000	16.000	92.00	32.00	3	●	●
18.000	16.000	92.00	32.00	3	●	●
20.000	20.000	104.00	38.00	3	●	●

fine teeth, with centre cutting

Guhring no.	3340	3660
Standard	DIN 844 K	
Tool material	HSS-E-PM	
Carbide grade		
Surface	○	F
Type	NRf	NRf
Shank design	B	B
Helix	30°	30°
Tolerance	k12	k12
Discount group	112	112
Techn. data page		



d1	d2	l1	l2	Z	Availability	
mm	mm	mm	mm			
6.000	6.000	57.00	13.00	4	●	●
7.000	10.000	66.00	16.00	4	●	●
8.000	10.000	69.00	19.00	4	●	●
9.000	10.000	69.00	19.00	4	●	●
10.000	10.000	72.00	22.00	4	●	●
11.000	12.000	79.00	22.00	4	❍	●
12.000	12.000	83.00	26.00	4	●	●
13.000	12.000	83.00	26.00	4	●	●
14.000	12.000	83.00	26.00	4	●	●
15.000	12.000	83.00	26.00	4	❍	●
16.000	16.000	92.00	32.00	4	●	●
18.000	16.000	92.00	32.00	4	●	●
20.000	20.000	104.00	38.00	4	●	●
25.000	25.000	121.00	45.00	5	●	●
28.000	25.000	121.00	45.00	5	●	●
30.000	25.000	121.00	45.00	5	●	●
32.000	32.000	133.00	53.00	6	●	●

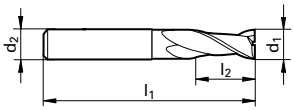
High performance end mills made from HSS-E-PM

Ⓒ TiCN Ⓒb Carbo Ⓓ Cristall Ⓕ FIRE/nanoFIRE Ⓟ AlCrN Ⓢ TiN Ⓢ+ TiN+ Ⓜ MolyGlide Ⓨ Signum

Slot drills (2-fluted)

centre cutting

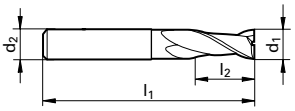
Guhring no.	3451	3663
Standard	DIN 327	
Tool material	M42	
Carbide grade		
Surface	○	F
Type	N	N
Shank design	B	B
Helix	30°	30°
Tolerance	e8/h10	e8/h10
Discount group	112	112
Techn. data page		



d1 mm		d2 mm	l1 mm	l2 mm	Z	Availability	
1.000	h10	6.000	47.00	2.00	2	●	●
1.500	h10	6.000	47.00	3.00	2	●	●
2.000	e8	6.000	48.00	4.00	2	●	●
2.500	e8	6.000	49.00	5.00	2	●	●
3.000	e8	6.000	49.00	5.00	2	●	●
3.500	h10	6.000	50.00	6.00	2	●	●
4.000	e8	6.000	51.00	7.00	2	●	●
4.500	h10	6.000	51.00	7.00	2	●	●
5.000	e8	6.000	52.00	8.00	2	●	●
5.500	h10	6.000	52.00	8.00	2	●	●
6.000	e8	6.000	52.00	8.00	2	●	●
6.500	h10	10.000	60.00	10.00	2	●	●
7.000	e8	10.000	60.00	10.00	2	●	●
7.500	h10	10.000	60.00	10.00	2	●	●
8.000	e8	10.000	61.00	11.00	2	●	●
8.500	h10	10.000	61.00	11.00	2	●	●
9.000	h10	10.000	61.00	11.00	2	●	●
9.500	h10	10.000	61.00	11.00	2	●	●
10.000	e8	10.000	63.00	13.00	2	●	●
10.500	h10	12.000	70.00	13.00	2	●	●
11.000	h10	12.000	70.00	13.00	2	●	●
11.500	h10	12.000	70.00	13.00	2	●	●
12.000	e8	12.000	73.00	16.00	2	●	●
13.000	h10	12.000	73.00	16.00	2	●	●
14.000	e8	12.000	73.00	16.00	2	●	●
15.000	h10	12.000	73.00	16.00	2	●	●
16.000	e8	16.000	79.00	19.00	2	●	●
17.000	h10	16.000	79.00	19.00	2	●	●
18.000	e8	16.000	79.00	19.00	2	●	●
19.000	h10	16.000	79.00	19.00	2	●	●
20.000	e8	20.000	88.00	22.00	2	●	●
22.000	e8	20.000	88.00	22.00	2	●	●
24.000	e8	25.000	102.00	26.00	2	●	●
25.000	e8	25.000	102.00	26.00	2	●	●

centre cutting

Guhring no.	3452	3694
Standard	DIN 844 K	
Tool material	M42	
Carbide grade		
Surface	○	F
Type	N	N
Shank design	B	B
Helix	30°	30°
Tolerance	e8/h10	e8/h10
Discount group	112	112
Techn. data page		

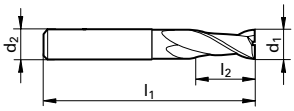


d1 mm		d2 mm	l1 mm	l2 mm	Z	Availability	
3.000	e8	6.000	52.00	8.00	2	●	●
3.500	h10	6.000	54.00	10.00	2	●	●
4.000	e8	6.000	55.00	11.00	2	●	●
4.500	h10	6.000	55.00	11.00	2	●	●
5.000	e8	6.000	57.00	13.00	2	●	●
5.500	h10	6.000	57.00	13.00	2	●	●
6.000	e8	6.000	57.00	13.00	2	●	●
7.000	e8	10.000	66.00	16.00	2	●	●
8.000	e8	10.000	69.00	19.00	2	●	●
10.000	e8	10.000	72.00	22.00	2	●	●
11.000	h10	12.000	79.00	22.00	2	●	○
12.000	e8	12.000	83.00	26.00	2	●	●
13.000	h10	12.000	83.00	26.00	2	○	○
14.000	e8	12.000	83.00	26.00	2	●	●
15.000	h10	12.000	83.00	26.00	2	○	○
16.000	e8	16.000	92.00	32.00	2	●	●
18.000	e8	16.000	92.00	32.00	2	●	●
20.000	e8	20.000	104.00	38.00	2	●	●

○ bright ◍ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

centre cutting

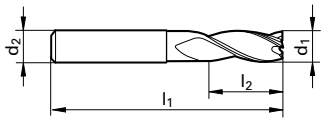
Guhring no.	3453	3695
Standard	DIN 844 L	
Tool material	M42	
Carbide grade		
Surface	◯	F
Type	N	N
Shank design	B	B
Helix	30°	30°
Tolerance	h10	h10
Discount group	112	112
Techn. data page		



d1		d2	l1	l2	Z	Availability	
mm		mm	mm	mm			
3.000	h10	6.000	56.00	12.00	2	●	●
4.000	h10	6.000	63.00	19.00	2	●	●
5.000	h10	6.000	68.00	24.00	2	●	●
6.000	h10	6.000	68.00	24.00	2	●	●
8.000	h10	10.000	88.00	38.00	2	●	●
10.000	h10	10.000	95.00	45.00	2	●	●
12.000	h10	12.000	110.00	53.00	2	●	●
14.000	h10	12.000	110.00	53.00	2	●	●
16.000	h10	16.000	123.00	63.00	2	●	●
18.000	h10	16.000	123.00	63.00	2	●	●
20.000	h10	20.000	141.00	75.00	2	●	●

centre cutting

Guhring no.	3458	3651
Standard	DIN 327	
Tool material	M42	
Carbide grade		
Surface	◯	F
Type	N	N
Shank design	B	B
Helix	30°	30°
Tolerance	e8/h10	e8/h10
Discount group	112	112
Techn. data page		



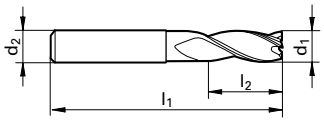
d1		d2	l1	l2	Z	Availability	
mm		mm	mm	mm			
2.800	h10	6.000	49.00	5.00	3	●	●
3.000	e8	6.000	49.00	5.00	3	●	●
3.800	h10	6.000	51.00	7.00	3	●	●
4.000	e8	6.000	51.00	7.00	3	●	●
4.800	h10	6.000	52.00	8.00	3	●	●
5.000	e8	6.000	52.00	8.00	3	●	●
5.750	h10	6.000	52.00	8.00	3	●	●
6.000	e8	6.000	52.00	8.00	3	●	●
6.750	h10	10.000	60.00	10.00	3	◯	◯
7.000	e8	10.000	60.00	10.00	3	●	●
7.750	h10	10.000	61.00	11.00	3	●	●
8.000	e8	10.000	61.00	11.00	3	●	●
9.700	h10	10.000	63.00	13.00	3	●	●
10.000	e8	10.000	63.00	13.00	3	●	●
11.700	h10	12.000	70.00	13.00	3	●	●
12.000	e8	12.000	73.00	16.00	3	●	●
13.700	h10	12.000	73.00	16.00	3	◯	◯
14.000	e8	12.000	73.00	16.00	3	●	●
15.700	h10	16.000	79.00	19.00	3	◯	◯
16.000	e8	16.000	79.00	19.00	3	●	●
18.000	e8	16.000	79.00	19.00	3	●	●
20.000	e8	20.000	88.00	22.00	3	●	●
22.000	e8	20.000	88.00	22.00	3	●	●
25.000	e8	25.000	102.00	26.00	3	●	●
30.000	h10	25.000	102.00	26.00	3	●	●

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

Slot drills (3-fluted)

centre cutting

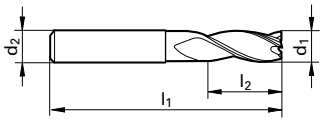
Guhring no.	3459	3664
Standard	DIN 844 K	
Tool material	M42	
Carbide grade		
Surface	○	F
Type	N	N
Shank design	B	B
Helix	30°	30°
Tolerance	e8/h10	e8/h10
Discount group	112	112
Techn. data page		



d1 mm		d2 mm	l1 mm	l2 mm	Z	Availability	
2.800	h10	6.000	52.00	8.00	3	●	●
3.000	e8	6.000	52.00	8.00	3	●	●
3.800	h10	6.000	55.00	11.00	3	●	●
4.000	e8	6.000	55.00	11.00	3	●	●
4.800	h10	6.000	57.00	13.00	3	●	●
5.000	e8	6.000	57.00	13.00	3	●	●
5.750	h10	6.000	57.00	13.00	3	●	●
6.000	e8	6.000	57.00	13.00	3	●	●
6.750	h10	10.000	66.00	16.00	3	●	●
7.000	e8	10.000	66.00	16.00	3	●	●
7.750	h10	10.000	69.00	19.00	3	●	●
8.000	e8	10.000	69.00	19.00	3	●	●
9.000	h10	10.000	69.00	19.00	3	●	●
9.700	h10	10.000	72.00	22.00	3	●	●
10.000	e8	10.000	72.00	22.00	3	●	●
11.000	h10	12.000	79.00	22.00	3	●	●
11.700	h10	12.000	79.00	22.00	3	●	●
12.000	e8	12.000	83.00	26.00	3	●	●
13.700	h10	12.000	83.00	26.00	3	●	●
14.000	e8	12.000	83.00	26.00	3	●	●
15.000	h10	12.000	83.00	26.00	3	●	●
15.700	h10	16.000	92.00	32.00	3	●	●
16.000	e8	16.000	92.00	32.00	3	●	●
18.000	e8	16.000	92.00	32.00	3	●	●
20.000	e8	20.000	104.00	38.00	3	●	●

centre cutting

Guhring no.	3460	3836
Standard	DIN 844 L	
Tool material	M42	
Carbide grade		
Surface	○	F
Type	N	N
Shank design	B	B
Helix	30°	30°
Tolerance	h10	h10
Discount group	112	112
Techn. data page		



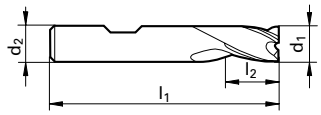
d1 mm		d2 mm	l1 mm	l2 mm	Z	Availability	
3.000	h10	6.000	56.00	12.00	3	●	●
4.000	h10	6.000	63.00	19.00	3	●	●
5.000	h10	6.000	68.00	24.00	3	●	●
6.000	h10	6.000	68.00	24.00	3	●	●
8.000	h10	10.000	88.00	38.00	3	●	●
10.000	h10	10.000	95.00	45.00	3	●	●
12.000	h10	12.000	110.00	53.00	3	●	●
14.000	h10	12.000	110.00	53.00	3	●	●
16.000	h10	16.000	123.00	63.00	3	●	●
18.000	h10	16.000	123.00	63.00	3	●	●
20.000	h10	20.000	141.00	75.00	3	●	●

○ bright ◍ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

Mini-End Mill (3-fluted)

centre cutting

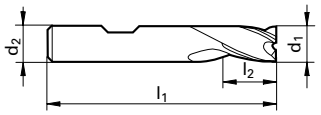
Guhring no.	3142	3144
Standard	Guhring std.	
Tool material	M42	
Carbide grade		
Surface	◯	F
Type	N	N
Shank design	B	B
Helix	30°	30°
Tolerance	e8	e8
Discount group	112	112
Techn. data page		



d1	d2	l1	l2	Z	Availability	
mm	mm	mm	mm			
3.000	6.000	36.00	5.00	3	●	●
4.000	6.000	38.00	7.00	3	●	●
5.000	6.000	39.00	8.00	3	●	●
6.000	6.000	39.00	8.00	3	●	●
8.000	8.000	43.00	11.00	3	●	●
10.000	10.000	50.00	13.00	3	●	●

centre cutting

Guhring no.	3143	3145
Standard	Guhring std.	
Tool material	M42	
Carbide grade		
Surface	◯	F
Type	N	N
Shank design	B	B
Helix	30°	30°
Tolerance	e8	e8
Discount group	112	112
Techn. data page		

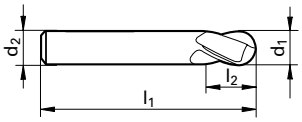


d1	d2	l1	l2	Z	Availability	
mm	mm	mm	mm			
3.000	6.000	39.00	8.00	3	●	●
4.000	6.000	42.00	11.00	3	●	●
5.000	6.000	44.00	13.00	3	●	●
6.000	6.000	44.00	13.00	3	●	●
8.000	8.000	51.00	19.00	3	●	●
10.000	10.000	59.00	22.00	3	●	●

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

centre cutting

Guhring no.	3466	3703
Standard	DIN 327	
Tool material	M42	
Carbide grade		
Surface	○	F
Type	N	N
Shank design	B	B
Helix	30°	30°
Tolerance	e8/h10	e8/h10
Discount group	112	112
Techn. data page		

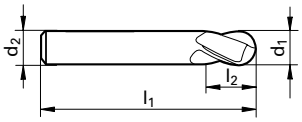


d1	d2	l1	l2	Z	Availability	
mm	mm	mm	mm			
2.000	6.000	48.00	4.00	2	●	●
3.000	6.000	49.00	5.00	2	●	●
4.000	6.000	51.00	7.00	2	●	●
5.000	6.000	52.00	8.00	2	●	●
6.000	6.000	52.00	8.00	2	●	●
7.000	10.000	60.00	10.00	2	●	●
8.000	10.000	61.00	11.00	2	●	●
9.000	10.000	61.00	11.00	2	●	●
10.000	10.000	63.00	13.00	2	●	●
11.000	12.000	70.00	13.00	2		○
12.000	12.000	73.00	16.00	2	●	●
13.000	12.000	73.00	16.00	2	○	●
14.000	12.000	73.00	16.00	2	●	●
15.000	12.000	73.00	16.00	2	○	○
16.000	16.000	79.00	19.00	2	●	●
17.000	16.000	79.00	19.00	2	○	○
18.000	16.000	79.00	19.00	2	●	●
19.000	16.000	79.00	19.00	2	○	○
20.000	20.000	88.00	22.00	2	●	●
22.000	20.000	88.00	22.00	2	○	○
24.000	25.000	102.00	26.00	2	○	○
25.000	25.000	102.00	26.00	2	○	
26.000	25.000	102.00	26.00	2	○	
28.000	25.000	102.00	26.00	2	○	
30.000	25.000	102.00	26.00	2		○

○ bright ◍ steam tempered ◓ nitrided lands ● nitrided ◉ golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

centre cutting

Guhring no.	3467	3704
Standard	Guhring std.	
Tool material	M42	
Carbide grade		
Surface	○	F
Type	N	N
Shank design	B	B
Helix	30°	30°
Tolerance	h10	h10
Discount group	112	112
Techn. data page		



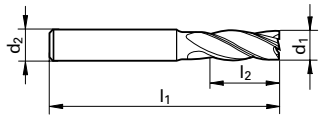
d1	d2	l1	l2	Z	Availability	
mm	mm	mm	mm			
3.000	6.000	56.00	8.00	2	●	●
4.000	6.000	63.00	11.00	2	●	●
5.000	6.000	68.00	13.00	2	●	●
6.000	6.000	68.00	13.00	2	●	●
7.000	10.000	80.00	16.00	2	○	○
8.000	10.000	88.00	19.00	2	●	●
10.000	10.000	95.00	22.00	2	●	●
12.000	12.000	110.00	26.00	2	●	●
14.000	12.000	110.00	26.00	2	●	●
15.000	12.000	110.00	26.00	2	○	○
16.000	16.000	123.00	32.00	2	●	●
18.000	16.000	123.00	32.00	2	●	●
20.000	20.000	141.00	38.00	2	●	●
24.000	25.000	166.00	45.00	2	○	
25.000	25.000	166.00	45.00	2	○	
30.000	25.000	166.00	45.00	2	○	

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

End mills

centre cutting

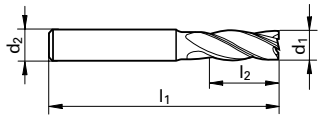
Guhring no.	3428	3670
Standard	DIN 844 K	
Tool material	M42	
Carbide grade		
Surface	○	F
Type	N	N
Shank design	B	B
Helix	30°	30°
Tolerance	k10	k10
Discount group	112	112
Techn. data page		



d1	d2	l1	l2	Z	Availability	
mm	mm	mm	mm			
2.000	6.000	51.00	7.00	4	●	●
2.500	6.000	52.00	8.00	4	●	●
3.000	6.000	52.00	8.00	4	●	●
3.500	6.000	54.00	10.00	4	●	●
4.000	6.000	55.00	11.00	4	●	●
4.500	6.000	55.00	11.00	4	●	●
5.000	6.000	57.00	13.00	4	●	●
5.500	6.000	57.00	13.00	4	●	●
6.000	6.000	57.00	13.00	4	●	●
6.500	10.000	66.00	16.00	4	●	●
7.000	10.000	66.00	16.00	4	●	●
7.500	10.000	66.00	16.00	4	●	●
8.000	10.000	69.00	19.00	4	●	●
8.500	10.000	69.00	19.00	4	●	●
9.000	10.000	69.00	19.00	4	●	●
9.500	10.000	69.00	19.00	4	●	●
10.000	10.000	72.00	22.00	4	●	●
11.000	12.000	79.00	22.00	4	●	●
12.000	12.000	83.00	26.00	4	●	●
13.000	12.000	83.00	26.00	4	●	●
14.000	12.000	83.00	26.00	4	●	●
15.000	12.000	83.00	26.00	4	●	●
16.000	16.000	92.00	32.00	4	●	●
18.000	16.000	92.00	32.00	4	●	●
20.000	20.000	104.00	38.00	4	●	●
22.000	20.000	104.00	38.00	6	●	●
24.000	25.000	121.00	45.00	6	●	●
25.000	25.000	121.00	45.00	6	●	●
26.000	25.000	121.00	45.00	6	●	○
28.000	25.000	121.00	45.00	6	●	●
30.000	25.000	121.00	45.00	6	●	●
32.000	32.000	133.00	53.00	6	●	●

centre cutting

Guhring no.	3431	3692
Standard	DIN 844 L	
Tool material	M42	
Carbide grade		
Surface	○	F
Type	N	N
Shank design	B	B
Helix	30°	30°
Tolerance	k10	k10
Discount group	112	112
Techn. data page		

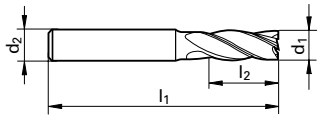


d1	d2	l1	l2	Z	Availability	
mm	mm	mm	mm			
3.000	6.000	56.00	12.00	4	●	●
4.000	6.000	63.00	19.00	4	●	●
5.000	6.000	68.00	24.00	4	●	●
6.000	6.000	68.00	24.00	4	●	●
7.000	10.000	80.00	30.00	4	●	●
8.000	10.000	88.00	38.00	4	●	●
9.000	10.000	88.00	38.00	4	●	●
10.000	10.000	95.00	45.00	4	●	●
11.000	12.000	102.00	45.00	4	●	○
12.000	12.000	110.00	53.00	4	●	●
14.000	12.000	110.00	53.00	4	●	●
15.000	12.000	110.00	53.00	4	●	○
16.000	16.000	123.00	63.00	4	●	●
18.000	16.000	123.00	63.00	4	●	●
20.000	20.000	141.00	75.00	4	●	●
25.000	25.000	166.00	90.00	6	●	●
28.000	25.000	166.00	90.00	6	●	●
30.000	25.000	166.00	90.00	6	●	●
32.000	32.000	186.00	106.00	6	●	●
40.000	40.000	217.00	125.00	6	●	

○ bright ◔ steam tempered ◓ nitrided lands ● nitrided ◍ golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

centre cutting

Guhring no.	3433
Standard	Guhring std.
Tool material	M42
Carbide grade	
Surface	◯
Type	N
Shank design	B
Helix	30°
Tolerance	k10
Discount group	112
Techn. data page	



d1	d2	l1	l2	Z	Availability
mm	mm	mm	mm		
6.000	6.000	79.00	40.00	4	●
8.000	10.000	105.00	56.00	4	●
10.000	10.000	112.00	63.00	4	●
12.000	12.000	125.00	71.00	4	●
14.000	12.000	125.00	71.00	4	●
16.000	16.000	141.00	80.00	4	●
18.000	16.000	141.00	80.00	4	●
20.000	20.000	163.00	100.00	4	●

HSS special milling cutters

For special applications, Guhring also produces special milling cutters to customer requirements. This includes application orientated HSS-E or HSS-E-PM milling cutters with bores, straight or taper shanks coated with the optimal surface finish from the Guhring coating range as for example FIRE or TiAlN.

As well as end mills with straight, ISO taper, Morse taper or HSK shank this also includes form relieved and profile relief ground milling cutters, taper and radius milling cutters as well as milling cutters with quick spiral or knuckle-type teeth. Furthermore, we produce straight, staggered and spiral teeth gear cutters as well as side and face cutters.

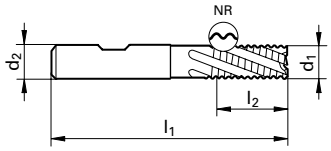
Contact Guhring or send us your tool drawing and/or workpiece drawing. We offer advice regarding the optimal tool application!

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

Roughing end mills

centre cutting

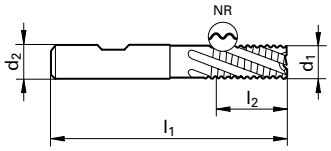
Guhring no.	3346	3690
Standard	DIN 844 K	
Tool material	M42	
Carbide grade		
Surface	○	F
Type	NR	NR
Shank design	B	B
Helix	30°	30°
Tolerance	k12	k12
Discount group	112	112
Techn. data page		



d1 mm	d2 mm	l1 mm	l2 mm	Z	Availability	
6.000	6.000	57.00	13.00	4	●	●
7.000	10.000	66.00	16.00	4	●	●
8.000	10.000	69.00	19.00	4	●	●
9.000	10.000	69.00	19.00	4	●	●
10.000	10.000	72.00	22.00	4	●	●
11.000	12.000	79.00	22.00	4	●	●
12.000	12.000	83.00	26.00	4	●	●
14.000	12.000	83.00	26.00	4	●	●
15.000	12.000	83.00	26.00	4	●	●
16.000	16.000	92.00	32.00	4	●	●
18.000	16.000	92.00	32.00	4	●	●
20.000	20.000	104.00	38.00	4	●	●
22.000	20.000	104.00	38.00	4	●	●
24.000	25.000	121.00	45.00	4	●	○
25.000	25.000	121.00	45.00	4	●	●
26.000	25.000	121.00	45.00	4	●	●
28.000	25.000	121.00	45.00	4	●	●
30.000	25.000	121.00	45.00	4	●	●
32.000	32.000	133.00	53.00	4	●	●
36.000	32.000	133.00	53.00	6		●
40.000	40.000	155.00	63.00	6	●	●
50.000	50.000	177.00	75.00	8	○	○

centre cutting

Guhring no.	3347	3650
Standard	DIN 844 L	
Tool material	M42	
Carbide grade		
Surface	○	F
Type	NR	NR
Shank design	B	B
Helix	30°	30°
Tolerance	k12	k12
Discount group	112	112
Techn. data page		



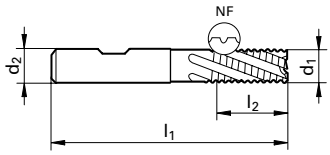
d1 mm	d2 mm	l1 mm	l2 mm	Z	Availability	
6.000	6.000	68.00	24.00	4	●	●
7.000	10.000	80.00	30.00	4	●	●
8.000	10.000	88.00	38.00	4	●	●
9.000	10.000	88.00	38.00	4	●	●
10.000	10.000	95.00	45.00	4	●	●
12.000	12.000	110.00	53.00	4	●	●
14.000	12.000	110.00	53.00	4	●	●
16.000	16.000	123.00	63.00	4	●	●
18.000	16.000	123.00	63.00	4	●	●
20.000	20.000	141.00	75.00	4	●	●
22.000	20.000	141.00	75.00	4	●	●
25.000	25.000	166.00	90.00	4	●	●
28.000	25.000	166.00	90.00	4	●	●
32.000	32.000	186.00	106.00	4	●	●
36.000	32.000	186.00	106.00	6	●	●

○ bright ◐ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

Roughing/finishing end mills

centre cutting

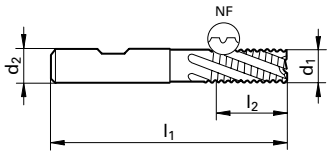
Guhring no.	3343	3669
Standard	DIN 844 K	
Tool material	M42	
Carbide grade		
Surface	○	F
Type	NF	NF
Shank design	B	B
Helix	30°	30°
Tolerance	k12	k12
Discount group	112	112
Techn. data page		



d1	d2	l1	l2	Z	Availability	
mm	mm	mm	mm			
6.000	6.000	57.00	13.00	4	●	●
7.000	10.000	66.00	16.00	4	●	●
8.000	10.000	69.00	19.00	4	●	●
9.000	10.000	69.00	19.00	4	●	●
10.000	10.000	72.00	22.00	4	●	●
11.000	12.000	79.00	22.00	4	●	●
12.000	12.000	83.00	26.00	4	●	●
14.000	12.000	83.00	26.00	4	●	●
15.000	12.000	83.00	26.00	4	●	●
16.000	16.000	92.00	32.00	4	●	●
18.000	16.000	92.00	32.00	4	●	●
20.000	20.000	104.00	38.00	4	●	●
22.000	20.000	104.00	38.00	4	●	●
24.000	25.000	121.00	45.00	4	○	○
25.000	25.000	121.00	45.00	4	●	●
26.000	25.000	121.00	45.00	4	○	○
28.000	25.000	121.00	45.00	4	●	●
30.000	25.000	121.00	45.00	4	●	●
32.000	32.000	133.00	53.00	4	●	●
36.000	32.000	133.00	53.00	6	○	
40.000	40.000	155.00	63.00	6	●	○
50.000	50.000	177.00	75.00	8	○	

centre cutting

Guhring no.	3342	3698
Standard	DIN 844 L	
Tool material	M42	
Carbide grade		
Surface	○	F
Type	NF	NF
Shank design	B	B
Helix	30°	30°
Tolerance	k12	k12
Discount group	112	112
Techn. data page		

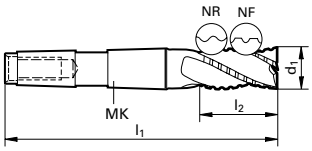


d1	d2	l1	l2	Z	Availability	
mm	mm	mm	mm			
6.000	6.000	68.00	24.00	4	●	●
8.000	10.000	88.00	38.00	4	●	●
10.000	10.000	95.00	45.00	4	●	●
12.000	12.000	110.00	53.00	4	●	●
14.000	12.000	110.00	53.00	4	●	●
16.000	16.000	123.00	63.00	4	●	●
18.000	16.000	123.00	63.00	4	●	●
20.000	20.000	141.00	75.00	4	●	●
22.000	20.000	141.00	75.00	4	●	●
25.000	25.000	166.00	90.00	4	●	●
28.000	25.000	166.00	90.00	4	●	●
32.000	32.000	186.00	106.00	4	●	●
36.000	32.000	186.00	106.00	6	○	

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

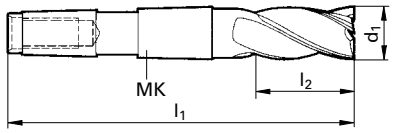
Morse taper end mills

Guhring no.	3118	3117
Standard	DIN 845 K	
Tool material	HSCO	
Carbide grade		
Surface	◯	◯
Type	NF	NR
Shank design	MK	MK
Helix	30°	30°
Tolerance	k12	k12
Discount group	112	112
Techn. data page		



d1	MK	Form	l1	l2	Z	Availability	
mm			mm				
10.000	1	B	92.00	22.00	4	◯	◯
14.000	2	B	111.00	26.00	4	◯	◯
16.000	2	B	117.00	32.00	4	◯	●
18.000	2	B	117.00	32.00	4	◯	◯
20.000	2	B	123.00	38.00	4	◯	●
24.000	3	B	147.00	45.00	4	◯	
25.000	3	B	147.00	45.00	4	◯	●
26.000	3	B	147.00	45.00	4		◯
28.000	3	B	147.00	45.00	5		◯
30.000	3	B	147.00	45.00	5	◯	●
32.000	4	C	201.00	53.00	6		●
35.000	4	C	201.00	53.00	6	◯	
40.000	4	C	211.00	63.00	6		●
50.000	5	C	261.00	75.00	8	◯	●

Guhring no.	3440
Standard	DIN 845 K
Tool material	HSCO
Carbide grade	
Surface	◯
Type	N
Shank design	MK
Helix	30°
Tolerance	k10
Discount group	112
Techn. data page	

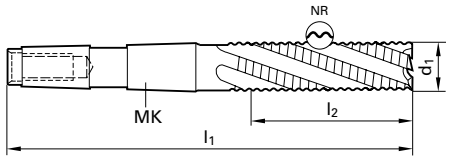


d1	MK	Form	l1	l2	Z	Availability
mm			mm			
14.000	2	B	111.00	26.00	4	◯
16.000	2	B	117.00	32.00	4	●
18.000	2	B	117.00	32.00	4	●
19.000	2	B	117.00	32.00	4	◯
20.000	2	B	123.00	38.00	4	●
22.000	2	B	123.00	38.00	6	●
25.000	3	B	147.00	45.00	6	●
26.000	3	B	147.00	45.00	6	●
28.000	3	B	147.00	45.00	6	●
30.000	3	B	147.00	45.00	6	●
32.000	4	C	201.00	53.00	6	●
40.000	4	C	211.00	63.00	6	●
45.000	4	C	211.00	63.00	8	◯

◯ bright ◯ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

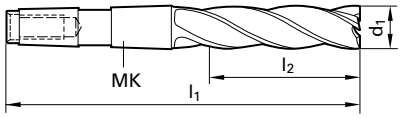
Morse taper end mills

Guhring no.	3121
Standard	DIN 845 L
Tool material	HSCO
Carbide grade	
Surface	◯
Type	NR
Shank design	MK
Helix	30°
Tolerance	k12
Discount group	112
Techn. data page	



d1	MK	Form	l1	l2	Z	Availability
mm			mm			
16.000	2	B	148.00	63.00	4	●
18.000	2	B	148.00	63.00	4	◯
20.000	2	B	160.00	75.00	4	●
25.000	3	B	192.00	90.00	4	●
28.000	3	B	192.00	90.00	5	●
30.000	3	B	192.00	90.00	5	◯
32.000	4	C	254.00	106.00	6	●
36.000	4	C	254.00	106.00	6	●
40.000	4	C	273.00	125.00	6	●
50.000	5	C	336.00	150.00	8	◯

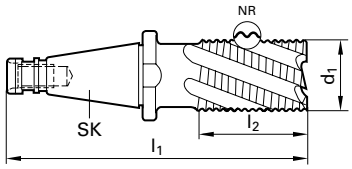
Guhring no.	3120
Standard	DIN 845 L
Tool material	HSCO
Carbide grade	
Surface	◯
Type	N
Shank design	MK
Helix	30°
Tolerance	k10
Discount group	112
Techn. data page	



d1	MK	Form	l1	l2	Z	Code no.	Availability
mm			mm	mm			
16.000	2	B	148.00	63.00	4	16.000	●
16.000	3	B	165.00	63.00	4	16.001	◯
18.000	2	B	148.00	63.00	4	18.000	◯
18.000	3	B	165.00	63.00	4	18.001	◯
20.000	2	B	160.00	75.00	4	20.000	●
25.000	3	B	192.00	90.00	6	25.000	●
28.000	3	B	192.00	90.00	6	28.000	●
28.000	4	C	265.00	112.00	6	28.001	●
32.000	4	C	254.00	106.00	6	32.000	●
36.000	4	C	254.00	106.00	6	36.000	●
40.000	4	C	273.00	125.00	6	40.000	●
40.000	5	C	317.00	125.00	6	40.002	●
50.000	5	C	298.00	112.00	8	50.001	●
56.000	5	C	336.00	150.00	8	56.000	◯
63.000	5	C	411.00	225.00	8	63.002	◯

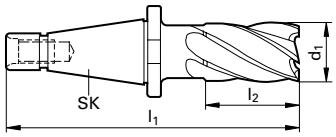
End mills with international taper

Guhring no.	3131
Standard	DIN 2328 K
Tool material	HSCO
Carbide grade	
Surface	◯
Type	NR
Shank design	SK
Helix	30°
Tolerance	k12
Discount group	112
Techn. data page	



d1	SK	Form	l1	l2	Z	Code no.	Availability
mm			mm	mm			
32.000	40	A	188.00	53.00	4	32.000	●
36.000	40	A	188.00	53.00	6	36.000	●
40.000	40	A	198.00	63.00	6	40.000	●
40.000	50	A	240.00	63.00	6	40.001	●
45.000	50	A	240.00	63.00	6	45.001	●
50.000	40	A	210.00	75.00	6	50.000	●
50.000	50	A	252.00	75.00	6	50.001	●
56.000	40	A	210.00	75.00	8	56.000	●
56.000	50	A	252.00	75.00	8	56.001	●
63.000	50	A	267.00	90.00	8	63.000	●
80.000	50	A	283.00	106.00	8	80.000	●

Guhring no.	3130
Standard	DIN 2328 K
Tool material	HSCO
Carbide grade	
Surface	◯
Type	N
Shank design	SK
Helix	30°
Tolerance	k10
Discount group	112
Techn. data page	

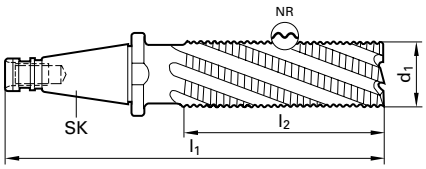


d1	SK	Form	l1	l2	Z	Code no.	Availability
mm			mm	mm			
32.000	40	A	188.00	53.00	6	32.000	●
36.000	40	A	188.00	53.00	6	36.000	●
40.000	40	A	198.00	63.00	6	40.000	●
40.000	40	A	198.00	63.00	8	40.001	●
45.000	40	A	198.00	63.00	8	45.000	●
45.000	50	A	240.00	63.00	8	45.001	●
50.000	40	A	210.00	75.00	8	50.000	●
50.000	50	A	252.00	75.00	8	50.001	●
56.000	40	A	210.00	75.00	8	56.000	●
56.000	50	A	252.00	75.00	8	56.001	●
63.000	50	A	267.00	90.00	8	63.000	●
80.000	50	A	283.00	106.00	10	80.000	●

◯ bright ◯ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

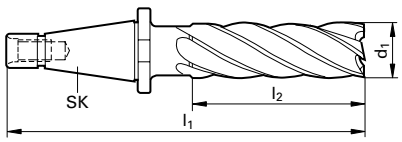
End mills with international taper

Guhring no.	3134
Standard	DIN 2328 L
Tool material	HSCO
Carbide grade	
Surface	◯
Type	NR
Shank design	SK
Helix	30°
Tolerance	k12
Discount group	112
Techn. data page	



d1	SK	Form	l1	l2	Z	Code no.	Availability
mm			mm	mm			
32.000	40	A	215.00	80.00	4	32.001	◯
32.000	40	A	241.00	106.00	4	32.000	◯
36.000	40	A	241.00	106.00	6	36.000	◯
40.000	40	A	260.00	125.00	6	40.000	◯
40.000	50	A	277.00	100.00	6	40.003	◯
45.000	40	A	260.00	100.00	6	45.001	◯
45.000	50	A	260.00	100.00	6	45.004	◯
50.000	40	A	285.00	150.00	6	50.000	◯
50.000	50	A	289.00	112.00	6	50.003	◯
50.000	50	A	327.00	150.00	6	50.002	◯
56.000	40	A	285.00	112.00	8	56.001	◯
63.000	50	A	317.00	140.00	8	63.001	◯
80.000	50	A	337.00	160.00	8	80.001	◯

Guhring no.	3133
Standard	DIN 2328 L
Tool material	HSCO
Carbide grade	
Surface	◯
Type	N
Shank design	SK
Helix	30°
Tolerance	h10
Discount group	112
Techn. data page	

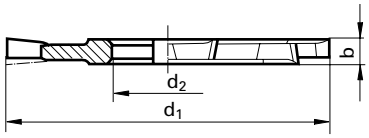


d1	SK	Form	l1	l2	Z	Code no.	Availability
mm			mm	mm			
32.000	40	A	241.00	106.00	6	32.000	◯
36.000	40	A	215.00	80.00	6	36.001	◯
36.000	40	A	241.00	106.00	6	36.000	◯
40.000	40	A	260.00	125.00	6	40.000	◯
45.000	40	A	260.00	125.00	8	45.000	◯
45.000	50	A	277.00	100.00	8	45.003	◯
45.000	50	A	302.00	125.00	8	45.002	◯
45.000	50	A	337.00	160.00	8	45.004	◯
50.000	40	A	247.00	112.00	8	50.001	●
56.000	50	A	327.00	150.00	8	56.002	◯
80.000	50	A	389.00	212.00	10	80.000	●
80.000	50	A	477.00	300.00	10	80.003	◯

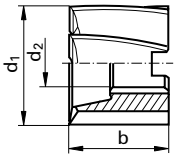
Ⓒ TiCN Ⓒb Carbo Ⓓ Cristall Ⓕ FIRE/nanoFIRE Ⓟ AlCrN Ⓢ TiN Ⓢ+ TiN+ Ⓜ MolyGlide Ⓨ Signum

Guhring no.	3530
Standard	DIN 885
Tool material	HSCO
Carbide grade	
Surface	○
Type	N
Helix	staggered teeth
Tolerance	k14
Discount group	112
Techn. data page	

Guhring no.	3504	3654
Standard	DIN 1880	
Tool material	M42	
Carbide grade		
Surface	○	C
Type	N	N
Shank design		
Helix	30°	30°
Tolerance	k12	k12
Discount group	112	112
Techn. data page		



d1 mm	d2 mm	b mm	Z	Code no.	Availability
50.000	16.000	4.00	10	50.000	○
50.000	16.000	6.00	10	50.002	○
50.000	16.000	8.00	10	50.003	○
63.000	22.000	5.00	12	63.000	●
63.000	22.000	6.00	12	63.001	●
63.000	22.000	8.00	12	63.002	●
63.000	22.000	10.00	12	63.003	○
63.000	22.000	12.00	12	63.004	○
80.000	27.000	5.00	14	80.000	○
80.000	27.000	6.00	14	80.001	○
80.000	27.000	8.00	14	80.002	●
80.000	27.000	10.00	14	80.003	○
80.000	27.000	12.00	14	80.004	○
80.000	27.000	16.00	14	80.006	○
100.000	32.000	6.00	16	100.000	●
100.000	32.000	8.00	16	100.001	●
100.000	32.000	10.00	16	100.002	●
100.000	32.000	12.00	16	100.003	○
100.000	32.000	14.00	16	100.004	○
100.000	32.000	16.00	16	100.005	○
100.000	32.000	18.00	16	100.006	○
100.000	32.000	20.00	16	100.007	●
125.000	32.000	6.00	16	125.000	●
125.000	32.000	8.00	16	125.001	●
125.000	32.000	10.00	16	125.002	●
125.000	32.000	14.00	16	125.004	○
125.000	32.000	16.00	16	125.005	○
125.000	32.000	18.00	16	125.006	○
125.000	32.000	20.00	16	125.007	●
160.000	40.000	8.00	18	160.000	○
160.000	40.000	10.00	18	160.001	○
160.000	40.000	12.00	18	160.002	○
160.000	40.000	14.00	18	160.003	○
160.000	40.000	18.00	18	160.005	○
160.000	40.000	20.00	18	160.006	○
200.000	40.000	12.00	22	200.001	○
200.000	40.000	14.00	22	200.002	○
200.000	40.000	18.00	22	200.004	○
200.000	40.000	20.00	22	200.005	○



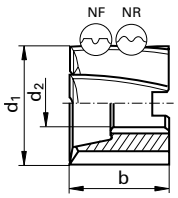
d1 mm	d2 mm	b mm	Z	Availability	
40.000	16.000	32.00	8	●	●
50.000	22.000	36.00	8	●	●
63.000	27.000	40.00	8	●	●
80.000	27.000	45.00	10	●	●
100.000	32.000	50.00	10		○
125.000	40.000	56.00	12	○	

○ bright ◔ steam tempered ◓ nitrided lands ● nitrided ◯ golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

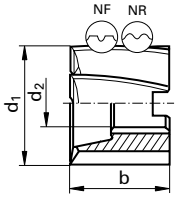
Shell end mills

Guhring no.	3185	3749
Standard	DIN 1880	
Tool material	M42	HSCO
Carbide grade		
Surface	◯	C
Type	NR	NR
Shank design		
Helix	30°	30°
Tolerance	k12	k12
Discount group	112	112
Techn. data page		

Guhring no.	3187
Standard	DIN 1880
Tool material	M42
Carbide grade	
Surface	◯
Type	NF
Shank design	
Helix	30°
Tolerance	k12
Discount group	112
Techn. data page	



d1 mm	d2 mm	b mm	Z	Availability	
40.000	16.000	32.00	6	●	●
50.000	22.000	36.00	8	●	●
63.000	27.000	40.00	8	●	●
80.000	27.000	45.00	10	❍	●
100.000	32.000	50.00	10	❍	❍
125.000	40.000	56.00	12	❍	



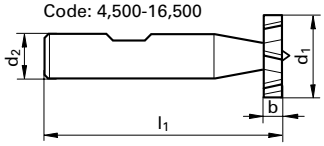
d1 mm	d2 mm	b mm	Z	Availability
40.000	16.000	32.00	6	●
50.000	22.000	36.00	8	●
63.000	27.000	40.00	8	●
80.000	27.000	45.00	10	●
100.000	32.000	50.00	10	❍
125.000	40.000	56.00	12	❍

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

Woodruff cutters

Guhring no.	3580
Standard	DIN 850
Tool material	HSCO
Carbide grade	
Surface	◯
Type	N
Shank design	B
Helix	
Tolerance	h12
Discount group	112
Techn. data page	

Code: 4,500-16,500



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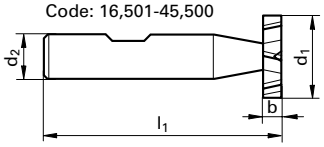
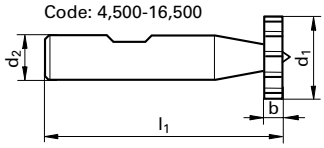


for keyseats	d1 mm	d2 mm	l1 mm	b mm	Z	Code no.	Availability
1,0x 1,4	4.500	6.000	50.00	1.00	6	4.500	●
1,5x 2,6	7.500	6.000	50.00	1.50	6	7.500	●
2,0x 2,6	7.500	6.000	50.00	2.00	6	7.501	●
2,0x 3,7	10.500	6.000	50.00	2.00	6	10.500	●
2,5x 3,7	10.500	6.000	50.00	2.50	6	10.501	●
3,0x 3,7	10.500	6.000	50.00	3.00	6	10.502	●
3,0x 5,0	13.500	10.000	56.00	3.00	8	13.500	●
4,0x 5,0	13.500	10.000	56.00	4.00	8	13.501	●
3,0x 6,5	16.500	10.000	56.00	3.00	8	16.500	●
4,0x 6,5	16.500	10.000	56.00	4.00	8	16.501	●
5,0x 6,5	16.500	10.000	56.00	5.00	8	16.502	●
4,0x 7,5	19.500	10.000	63.00	4.00	8	19.500	●
5,0x 7,5	19.500	10.000	63.00	5.00	8	19.501	●
6,0x 7,5	19.500	10.000	63.00	6.00	8	19.502	●
5,0x 9,0	22.500	10.000	63.00	5.00	10	22.500	●
6,0x 9,0	22.500	10.000	63.00	6.00	10	22.501	●
8,0x 9,0	22.500	10.000	63.00	8.00	10	22.502	●
6,0x10,0	25.500	10.000	63.00	6.00	10	25.500	●
6,0x11,0	28.500	10.000	63.00	6.00	10	28.500	●
8,0x11,0	28.500	10.000	63.00	8.00	10	28.501	●
10,0x11,0	28.500	12.000	71.00	10.00	10	28.502	●
8,0x13,0	32.500	12.000	71.00	8.00	10	32.500	●
10,0x13,0	32.500	12.000	71.00	10.00	10	32.501	●
10,0x16,0	45.500	12.000	71.00	10.00	12	45.500	●

Guhring no.	3579
Standard	DIN 850
Tool material	HSCO
Carbide grade	
Surface	◯
Type	H
Shank design	B
Helix	
Tolerance	h12
Discount group	112
Techn. data page	

Code: 4,500-16,500



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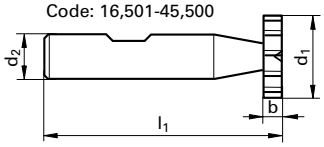


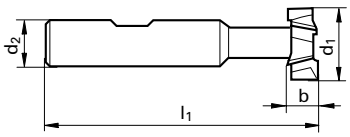
for keyseats	d1 mm	d2 mm	l1 mm	b mm	Z	Code no.	Availability
1,0x 1,4	4.500	6.000	50.00	1.00	8	4.500	◯
1,5x 2,6	7.500	6.000	50.00	1.50	8	7.500	◯
2,0x 2,6	7.500	6.000	50.00	2.00	8	7.501	◯
2,0x 3,7	10.500	6.000	50.00	2.00	10	10.500	◯
2,5x 3,7	10.500	6.000	50.00	2.50	10	10.501	◯
3,0x 3,7	10.500	6.000	50.00	3.00	10	10.502	◯
3,0x 5,0	13.500	10.000	56.00	3.00	10	13.500	◯
4,0x 5,0	13.500	10.000	56.00	4.00	10	13.501	◯
3,0x 6,5	16.500	10.000	56.00	3.00	10	16.500	◯
4,0x 6,5	16.500	10.000	56.00	4.00	10	16.501	◯
5,0x 6,5	16.500	10.000	56.00	5.00	10	16.502	◯
4,0x 7,5	19.500	10.000	63.00	4.00	12	19.500	◯
5,0x 7,5	19.500	10.000	63.00	5.00	12	19.501	◯
6,0x 7,5	19.500	10.000	63.00	6.00	12	19.502	◯
5,0x 9,0	22.500	10.000	63.00	5.00	12	22.500	◯
6,0x 9,0	22.500	10.000	63.00	6.00	12	22.501	◯
8,0x 9,0	22.500	10.000	63.00	8.00	12	22.502	◯
6,0x10,0	25.500	10.000	63.00	6.00	14	25.500	◯
6,0x11,0	28.500	10.000	63.00	6.00	16	28.500	◯
8,0x11,0	28.500	10.000	63.00	8.00	16	28.501	◯
10,0x11,0	28.500	12.000	71.00	10.00	16	28.502	◯
8,0x13,0	32.500	12.000	71.00	8.00	18	32.500	◯
10,0x13,0	32.500	12.000	71.00	10.00	18	32.501	◯
10,0x16,0	45.500	12.000	71.00	10.00	22	45.500	◯

◯ bright ◯ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

Corner rounding cutters

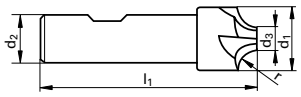
with face relief

Guhring no.	3570
Standard	DIN 851
Tool material	HSCO
Carbide grade	
Surface	◯
Type	N
Shank design	B
Helix	
Tolerance	d11
Discount group	112
Techn. data page	



for keyseats	d1 mm	d2 mm	l1 mm	b mm	Z	Code no.	Availability
6	12.500	10.000	57.00	6.00	6	12.500	●
8	16.000	10.000	62.00	8.00	6	16.000	●
10	18.000	12.000	70.00	8.00	6	18.000	●
10	19.000	12.000	71.00	9.00	6	19.000	●
12	21.000	12.000	74.00	9.00	8	21.000	●
12	22.000	12.000	75.00	10.00	8	22.000	●
14	25.000	16.000	82.00	11.00	8	25.000	●
16	28.000	16.000	85.00	12.00	8	28.000	●
18	32.000	16.000	90.00	14.00	8	32.000	●

Guhring no.	3176
Standard	DIN 6518
Tool material	HSCO
Carbide grade	
Surface	◯
Type	N
Shank design	B
Helix	5°
Tolerance	
Discount group	112
Techn. data page	

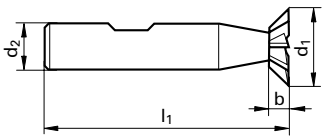


r mm	d1 mm	d2 mm	d3 mm	l1 mm	Z	Code no.	Availability
2.00	10.000	10.000	6.000	60.00	4	2.000	●
2.50	11.000	10.000	6.000	60.00	4	2.500	◯
3.00	12.000	12.000	6.000	60.00	4	3.000	●
4.00	14.000	12.000	6.000	60.00	4	4.000	●
5.00	16.000	12.000	6.000	60.00	4	5.000	●
6.00	20.000	16.000	8.000	67.00	4	6.000	●
8.00	24.000	16.000	8.000	71.00	4	8.000	●
10.00	28.000	25.000	8.000	85.00	4	10.000	●
12.00	34.000	25.000	10.000	90.00	4	12.000	◯
16.00	48.000	25.000	16.000	100.00	6	16.000	◯
20.00	56.000	32.000	16.000	112.00	6	20.000	◯

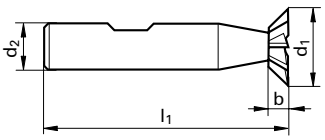
Dovetail cutters

Guhring no.	3572	3576
Standard	DIN 1833	
Tool material	HSCO	
Surface	◯	◯
Type	H	H
Form	C	D
Shank design	B	B
Profile angle	45	45
Tolerance	js16	js16
Discount group	112	112
Techn. data page		

Guhring no.	3574	3577
Standard	DIN 1833	
Tool material	HSCO	
Surface	◯	◯
Type	H	H
Form	C	D
Shank design	B	B
Profile angle	60	60
Tolerance	js16	js16
Discount group	112	112
Techn. data page		



d1	d2	l1	b	Z	Availability	
mm	mm	mm	mm			
16.000	12.000	60.00	4.00	8	●	●
20.000	12.000	63.00	5.00	10	●	●
25.000	12.000	67.00	6.30	10	●	●
32.000	16.000	71.00	8.00	12	●	



d1	d2	l1	b	Z	Availability	
mm	mm	mm	mm			
16.000	12.000	60.00	6.30	8	●	●
20.000	12.000	63.00	8.00	10	●	●
25.000	12.000	67.00	10.00	10	●	●
32.000	16.000	71.00	12.50	12	●	●

◯ bright ◯ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

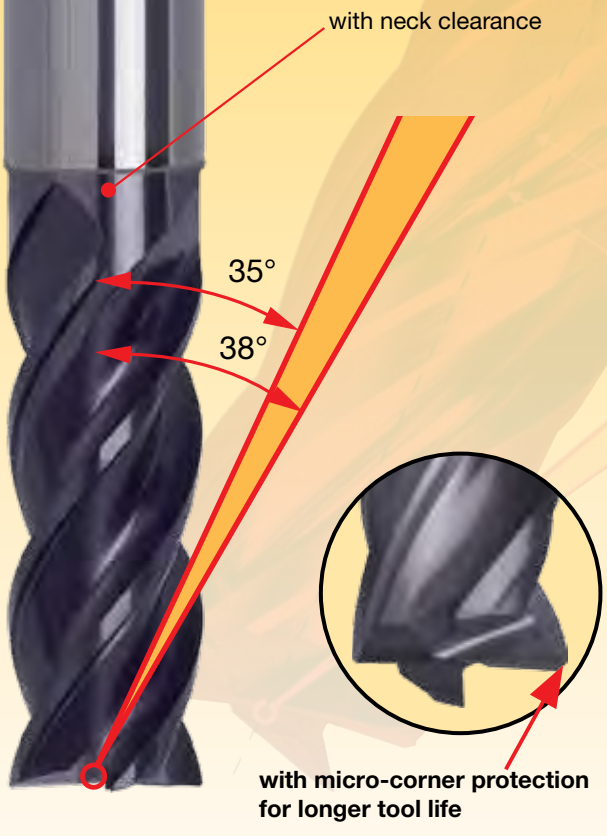
RF 100 U - high-performance end mills for materials up to 1600 N/mm² (48 HRC)

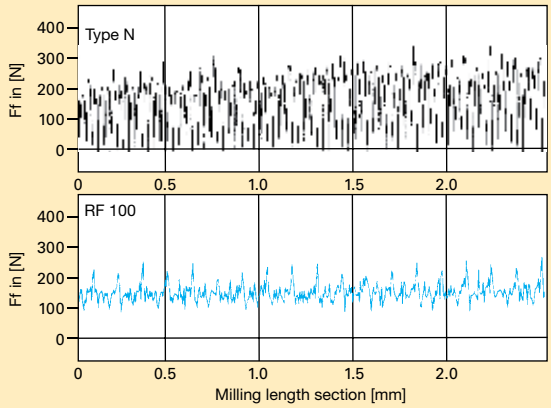
RF 100 U high-performance end mills excel thanks to unequal helix angles which considerably reduce vibration. The uneven helix angle vastly improves surface quality with finishing operations and considerably higher feed rates with slot drilling and roughing operations are also achieved.

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.

Summary of advantages

- suitable for roughing and finishing
- up to 60% higher feed rates
- up to 4-times longer tool life
- vibration-free operation
- improved workpiece surface quality





The cutting force comparison between a conventional milling cutter type N and a RF100 clearly shows the quieter. more rigid operation of the RF100.

Material (ISO-code)	Steel		Cast iron		Stainless steel		Aluminium		Ti-special alloys		Hardened steel	
Hardness tensile strength	up to 850 N/mm²	above 850 N/mm²	up to 180 HB 30	above 180 HB 30	up to 750 N/mm²	above 750 N/mm²	up to 3% Si	above 3% Si	Ti-based	Ni-based	up to 52 HRC	above 52 HRC
RF 100 U	○	●	●	●					●		○	
RF 100 U/HF		●	●	●					○		○	
RF 100 F	●		○			●				●		
RF 100 VA	○				●	●				○		
RF 100 VA/NF	●				●	●				○		
RF 100 A							●	●				
RF 100 A/WF							●	●				
RF 100 Ti		○							●	○		
RF 100 H		○		○							●	●
RF 100 SF	●	●	●	●	●	●	○	○	●	●	○	

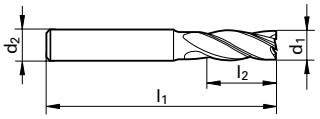
● = optimal suitability ○ = limited suitability

Ⓒ TiCN Ⓒb Carbo Ⓓ Cristall Ⓕ FIRE/nanoFIRE Ⓟ AlCrN Ⓢ TiN Ⓢ+ TiN+ Ⓜ MolyGlide Ⓨ Signum

RF 100 U

centre cutting

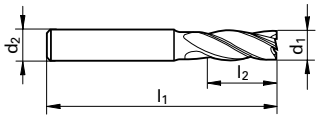
Guhring no.	3113	3099
Standard	Guhring std.	
Tool material	Solid carbide	
Carbide grade	K/P	
Surface	F	F
Type	N	N
Shank design	cil. h6	~HB
Helix	35°/38°	35°/38°
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1091	1091



d1	d2	l1	l2	Z	Code no.	Availability	
inch	inch	inch	inch				
3/16	3/16	2	3/8	4	4.760	●	
1/4	1/4	2	1/2	4	6.350	●	
5/16	5/16	2	1/2	4	7.940	●	
3/8	3/8	2	5/8	4	9.520	●	●
1/2	1/2	2 1/2	5/8	4	12.700	●	●
5/8	5/8	3	3/4	4	15.870	●	●
3/4	3/4	3	1	4	19.050	●	●
1	1	3	1	4	25.400	●	●

centre cutting

Guhring no.	3114	3100
Standard	Guhring std.	
Tool material	Solid carbide	
Carbide grade	K/P	
Surface	F	F
Type	N	N
Shank design	cil. h6	~HB
Helix	35°/38°	35°/38°
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1091	1091



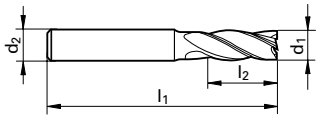
d1	d2	l1	l2	Z	Code no.	Availability	
inch	inch	inch	inch				
3/16	3/16	2	3/8	4	4.760	●	
1/4	1/4	2 1/2	3/4	4	6.350	●	
5/16	5/16	2 1/2	13/16	4	7.940	●	
3/8	3/8	2 1/2	1	4	9.520	●	●
7/16	7/16	2 3/4	1	4	11.110	●	
1/2	1/2	3	1	4	12.700	●	●
5/8	5/8	3 1/2	1 1/4	4	15.870	●	●
3/4	3/4	4	1 1/2	4	19.050	●	●
1	1	4	1 1/2	4	25.400	●	●

○ bright ◎ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

centre cutting

Guhring no.	3079
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	F
Type	N
Shank design	Ø<1/2 HA/HB
Helix	35°/38°
Tolerance	h10
Discount group	106
Techn. data page	1091

NEW

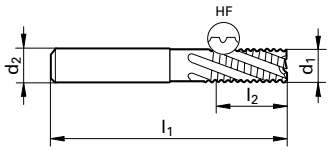


d1	d2	l1	l2	Z	r	Code no.	Availability
inch	inch	inch	inch		mm		
1/4	1/4	2 1/2	3/4	4	0.381	6.352	●
1/4	1/4	2 1/2	3/4	4	0.787	6.354	●
5/16	5/16	2 1/2	13/16	4	0.787	7.944	●
3/8	3/8	2 1/2	1	4	0.787	9.524	●
7/16	7/16	2 3/4	1	4	0.787	11.114	●
1/2	1/2	3 1/2	1 1/4	4	0.787	12.704	●
1/2	1/2	3 1/2	1 1/4	4	1.016	12.705	●
1/2	1/2	3 1/2	1 1/4	4	1.575	12.706	●
1/2	1/2	3 1/2	1 1/4	4	2.286	12.707	●
5/8	5/8	3 1/2	1 1/4	4	0.787	15.874	●
5/8	5/8	3 1/2	1 1/4	4	1.575	15.876	●
3/4	3/4	4	1 1/2	4	1.575	19.056	●
3/4	3/4	4	1 1/2	4	2.286	19.057	●
3/4	3/4	4	1 1/2	4	3.175	19.059	●
1	1	4	1 1/2	4	1.575	25.406	●
1	1	4	1 1/2	4	2.286	25.407	●
1	1	4	1 1/2	4	3.175	25.409	●

centre cutting

Guhring no.	3082
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	F
Type	HF
Shank design	Ø<1/2 HA/HB
Helix	30°/32°
Tolerance	h10
Discount group	106
Techn. data page	1092

NEW



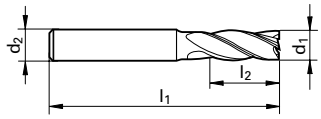
d1	d2	l1	l2	Z	Code no.	Availability
inch	inch	inch	inch			
1/4	1/4	2 1/2	3/4	4	6.350	●
5/16	5/16	2 1/2	13/16	4	7.940	●
3/8	3/8	2 1/2	1	4	9.520	●
1/2	1/2	3 1/2	1 1/4	4	12.700	●
5/8	5/8	3 1/2	1 1/4	4	15.870	●
3/4	3/4	4	1 1/2	4	19.050	●
1	1	4	1 1/2	4	25.400	●

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

centre cutting

Guhring no.	3078
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	F
Type	NH
Shank design	Ø<1/2 HA/HB
Helix	40°/42°
Tolerance	h10
Discount group	106
Techn. data page	1091

NEW

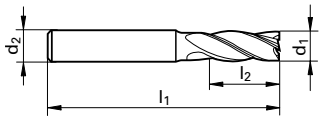


d1 inch	d2 inch	l1 inch	l2 inch	Z	Code no.	Availability
3/16	3/16	2	5/8	4	4.760	●
1/4	1/4	2 1/2	3/4	4	6.350	●
5/16	5/16	2 1/2	13/16	4	7.940	●
3/8	3/8	2 1/2	1	4	9.520	●
1/2	1/2	3 1/2	1 1/4	4	12.700	●
5/8	5/8	3 1/2	1 1/4	4	15.870	●
3/4	3/4	4	1 1/2	4	19.050	●

centre cutting

Guhring no.	3080
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	a
Type	N
Shank design	Ø<1/2 HA/HB
Helix	36°/38°
Tolerance	h10
Discount group	106
Techn. data page	1091

NEW



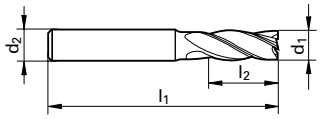
d1 inch	d2 inch	l1 inch	l2 inch	Z	Code no.	Availability
3/16	3/16	2	5/8	4	4.760	●
1/4	1/4	2 1/2	3/4	4	6.350	●
5/16	5/16	2 1/2	13/16	4	7.940	●
3/8	3/8	2 1/2	1	4	9.520	●
1/2	1/2	3 1/2	1 1/4	4	12.700	●
5/8	5/8	3 1/2	1 1/4	4	15.870	●
3/4	3/4	4	1 1/2	4	19.050	●
1	1	4	1 1/2	4	25.400	●

○ bright ◍ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

centre cutting

Guhring no.	3081
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	a
Type	NF
Shank design	Ø<1/2 HA/HB
Helix	36°/38°
Tolerance	h10
Discount group	106
Techn. data page	1092

NEW

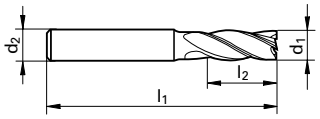


d1 inch	d2 inch	l1 inch	l2 inch	Z	Code no.	Availability
1/4	1/4	2 1/2	3/4	4	6.350	●
5/16	5/16	2 1/2	13/16	4	7.940	●
3/8	3/8	2 1/2	7/8	4	9.520	●
1/2	1/2	3 1/2	1 1/4	4	12.700	●
5/8	5/8	3 1/2	1 1/4	4	15.870	●
3/4	3/4	4	1 1/2	4	19.050	●
1	1	4	1 1/2	4	25.400	●

centre cutting

Guhring no.	3077
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K
Surface	◯
Type	W
Shank design	Ø<1/2 HA/HB
Helix	40°/42°
Tolerance	h10
Discount group	106
Techn. data page	1091

NEW



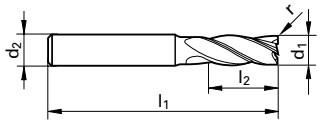
d1 inch	d2 inch	l1 inch	l2 inch	Z	Code no.	Availability
3/16	3/16	2	5/8	4	4.760	●
1/4	1/4	2 1/2	3/4	4	6.350	●
5/16	5/16	2 1/2	13/16	4	7.940	●
3/8	3/8	2 1/2	1	4	9.520	●
1/2	1/2	3 1/2	1 1/4	4	12.700	●
5/8	5/8	3 1/2	1 1/4	4	15.870	●
3/4	3/4	4	1 1/2	4	19.050	●

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

centre cutting

Guhring no.	3876
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	A
Type	N
Shank design	Ø<1/2 HA/HB
Helix	35°/38°
Tolerance	h10
Discount group	106
Techn. data page	1091

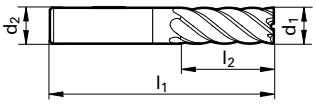
NEW



d1	d2	l1	l2	Z	r	Code no.	Availability
inch	inch	inch	inch		mm		
1/4	1/4	2 1/2	3/4	4	0.381	6.352	●
1/4	1/4	2 1/2	3/4	4	0.787	6.354	●
5/16	5/16	2 1/2	13/16	4	0.787	7.944	●
3/8	3/8	2 1/2	1	4	0.787	9.524	●
7/16	7/16	2 3/4	1	4	0.787	11.114	●
1/2	1/2	3 1/2	1 1/4	4	0.787	12.704	●
1/2	1/2	3 1/2	1 1/4	4	1.016	12.705	●
1/2	1/2	3 1/2	1 1/4	4	1.575	12.706	●
1/2	1/2	3 1/2	1 1/4	4	2.286	12.707	●
5/8	5/8	3 1/2	1 1/4	4	0.787	15.874	●
5/8	5/8	3 1/2	1 1/4	4	1.575	15.876	●
3/4	3/4	4	1 1/2	4	1.575	19.056	●
3/4	3/4	4	1 1/2	4	2.286	19.057	●
3/4	3/4	4	1 1/2	4	3.175	19.059	●
1	1	4	1 1/2	4	1.575	25.406	●
1	1	4	1 1/2	4	2.286	25.407	●
1	1	4	1 1/2	4	3.175	25.409	●

centre cutting

Guhring no.	3115
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	F
Type	NH
Shank design	cil. h6
Helix	44°/45°/46°
Tolerance	h10
Discount group	106
Techn. data page	1091



d1	d2	l1	l2	Z	Code no.	Availability
inch	inch	inch	inch			
5/16	5/16	2 1/2	13/16	6	7.940	●
3/8	3/8	2 1/2	1	6	9.520	●
1/2	1/2	3	1	6	12.700	●
5/8	5/8	3 1/2	1 1/4	6	15.870	●
3/4	3/4	4	1 1/2	6	19.050	●
1	1	4	1 1/2	6	25.400	●

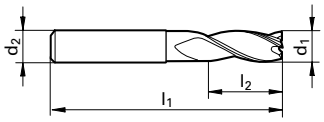
○ bright ◎ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

GH 100 U - slot drills (3-fluted)

centre cutting

Guhring no.	3086
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	F
Type	NH
Shank design	cyl.
Helix	45°
Tolerance	h10
Discount group	106
Techn. data page	1093

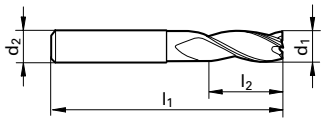
NEW



d1 inch	d2 inch	l1 inch	l2 inch	Z	Code no.	Availability
1/16	1/16	1 1/2	1/4	3	1.590	●
1/8	1/8	1 1/2	1/4	3	3.170	●
3/16	3/16	2	3/8	3	4.760	●
1/4	1/4	2	1/2	3	6.350	●
5/16	5/16	2	1/2	3	7.940	●
3/8	3/8	2	5/8	3	9.520	●
7/16	7/16	2 1/2	5/8	3	11.110	●
1/2	1/2	2 1/2	5/8	3	12.700	●

centre cutting

Guhring no.	3172	3173
Standard	Guhring std.	
Tool material	Solid carbide	
Carbide grade	K	K/P
Surface	○	F
Type	NH	NH
Shank design	cil. h6	cil. h6
Helix	45°	45°
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1093	1093

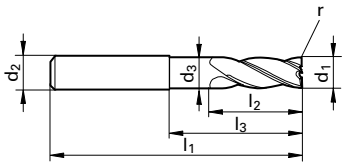


d1 inch	d2 inch	l1 inch	l2 inch	Z	Code no.	Availability	
1/8	1/8	1 1/2	3/8	3	3.170	●	●
3/16	3/16	2	5/8	3	4.760	●	●
1/4	1/4	2 1/2	3/4	3	6.350	●	●
5/16	5/16	2 1/2	13/16	3	7.940	●	●
3/8	3/8	3	1	3	9.520	●	●
7/16	7/16	2 3/4	2 3/4	3	11.110	●	●
1/2	1/2	3	1	3	12.700	●	●
5/8	5/8	3 1/2	1 1/4	3	15.870	●	●
3/4	3/4	4	1 1/2	3	19.050	●	●
1	1	4	1 1/2	3	25.400	●	●

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

for Al, centre cutting and with corner radius

Guhring no.	3177
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K
Surface	◯
Type	W
Shank design	zyl h6
Helix	45°
Tolerance	h10
Discount group	106
Techn. data page	1093

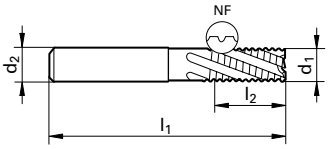


d1	d2	d3	l1	l2	l3	r	Z	Code no.	Availability
inch	inch	mm	inch	inch	mm	mm			
1/4	1/4	6.050	3	3/8	38.10	0.25	3	6.350	●
5/16	5/16	7.640	3	7/16	38.10	0.32	3	7.940	●
3/8	3/8	9.220	3	9/16	38.10	0.38	3	9.520	●
1/2	1/2	12.200	4 1/2	3/4	69.85	0.51	3	12.700	●
5/8	5/8	15.370	5	7/8	76.20	0.64	3	15.870	●
3/4	3/4	18.550	5	1	76.20	0.76	3	19.050	●

◯ bright ◯ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

high-performance roughing end mills with centre cutting

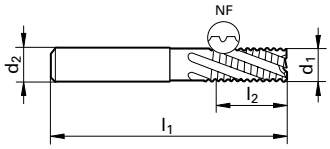
Guhring no.	3097
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	F
Type	NF
Shank design	cil. h6
Helix	30°
Tolerance	h10
Discount group	106
Techn. data page	1095



d1	d2	l1	l2	Z	Code no.	Availability
inch	inch	inch	inch			
1/4	1/4	2 1/2	3/4	4	6.350	●
5/16	5/16	2 1/2	13/16	4	7.940	●
3/8	3/8	2 1/2	7/8	4	9.520	●
1/2	1/2	3	1	4	12.700	●
5/8	5/8	3 1/2	1 1/4	4	15.870	●
3/4	3/4	4	1 5/8	4	19.050	●
1	1	4	1 3/4	5	25.400	●

high-performance roughing end mills with centre cutting

Guhring no.	3098
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	F
Type	NF
Shank design	cil. h6
Helix	45°
Tolerance	h10
Discount group	106
Techn. data page	1095

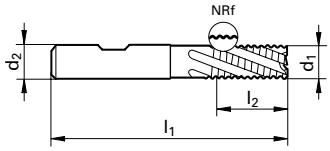


d1	d2	l1	l2	Z	Code no.	Availability
inch	inch	inch	inch			
1/4	1/4	2 1/2	3/4	5	6.350	●
5/16	5/16	2 1/2	13/16	5	7.940	●
3/8	3/8	2 1/2	7/8	5	9.520	●
1/2	1/2	3	1	5	12.700	●
5/8	5/8	3 1/2	1 1/4	6	15.870	●
3/4	3/4	4	1 5/8	6	19.050	●
1	1	4	1 3/4	6	25.400	●

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

for materials < 48 HRC, centre cutting

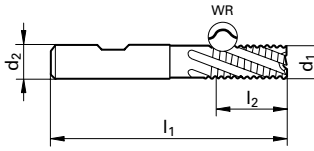
Guhring no.	3186	3188
Standard	Guhring std.	
Tool material	Solid carbide	
Carbide grade	K	K/P
Surface	◯	F
Type	NRf	NRf
Shank design	cil. h6	cil. h6
Helix	30°	30°
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1094	1094



d1	d2	l1	l2	Z	Code no.	Availability	
inch	inch	inch	inch				
1/4	1/4	2 1/2	3/4	4	6.350	●	●
5/16	5/16	2 1/2	3/4	4	7.940	●	●
3/8	3/8	2 1/2	7/8	4	9.520	●	●
1/2	1/2	3	1	4	12.700	●	●
5/8	5/8	3 1/2	1 1/4	4	15.870	●	●
3/4	3/4	4	1 5/8	4	19.050	●	●
1	1	4	1 3/4	5	25.400	●	●

for Al < 600 N/mm², centre cutting

Guhring no.	3184
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K
Surface	◯
Type	WR
Shank design	cil. h6
Helix	30°
Tolerance	h10
Discount group	106
Techn. data page	1094



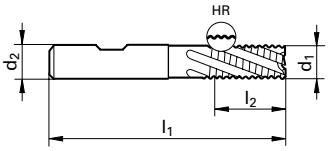
d1	d2	l1	l2	Z	Code no.	Availability
inch	inch	inch	inch			
1/4	1/4	2 1/2	3/4	3	6.350	●
5/16	5/16	2 1/2	3/4	3	7.940	●
3/8	3/8	2 1/2	7/8	3	9.520	●
1/2	1/2	3	1	3	12.700	●
5/8	5/8	3 1/2	1 1/4	3	15.870	●
3/4	3/4	4	1 5/8	3	19.050	●
1	1	4	1 3/4	3	25.400	●

◯ bright ◯ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

GS 100 H - rough. cutter, fine tooth

for materials < 56 HRC, centre cutting

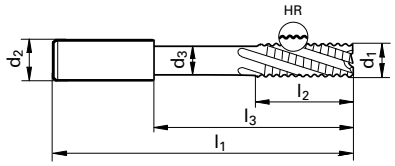
Guhring no.	3189
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	F
Type	HR
Shank design	cil. h6
Helix	20°
Tolerance	h11
Discount group	106
Techn. data page	1094



d1	d2	l1	l2	Z	Code no.	Availability
inch	inch	inch	inch			
1/4	1/4	2 1/2	3/4	4	6.350	●
5/16	5/16	2 1/2	3/4	4	7.940	●
3/8	3/8	2 1/2	7/8	4	9.520	●
1/2	1/2	3	1	4	12.700	●
5/8	5/8	3 1/2	1 1/4	4	15.870	●
3/4	3/4	4	1 5/8	4	19.050	●

for materials < 56 HRC, centre cutting

Guhring no.	3190
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	F
Type	HR
Shank design	zyl h6
Helix	20°
Tolerance	h11
Discount group	106
Techn. data page	1094



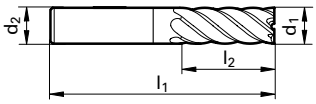
d1	d3	l1	l2	l3	Z	Code no.	Availability
inch	mm	inch	inch	mm			
1/4	6.050	3	3/4	38.10	4	6.350	●
5/16	7.638	3	7/8	38.10	4	7.940	●
3/8	9.225	3	7/8	38.10	4	9.520	●
1/2	12.200	4 1/2	1	69.85	4	12.700	●
5/8	15.375	5	1 1/4	76.20	4	15.870	●
3/4	18.550	5	1 1/2	76.20	4	19.050	●

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

GH 100 U - multifluted end mills

for superfine finishing of materials < 50 HRC

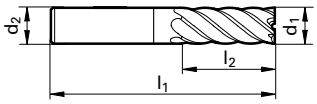
Guhring no.	3178	3179
Standard	Guhring std.	
Tool material	Solid carbide	
Carbide grade	K	K/P
Surface	◯	F
Type	NH	NH
Shank design	cil. h6	cil. h6
Helix	45°	45°
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1093	1093



d1 inch	d2 inch	l1 inch	l2 inch	Z	Code no.	Availability	
1/4	1/4	2 1/2	3/4	6	6.350	●	●
5/16	5/16	2 1/2	7/8	6	7.940	●	●
3/8	3/8	2 1/2	7/8	6	9.520	●	●
1/2	1/2	3	1	6	12.700	●	●
5/8	5/8	3 1/2	1 1/4	6	15.870	●	●
3/4	3/4	4	1 1/2	8	19.050	●	●
1	1	4	1 1/2	10	25.400	●	●

for superfine finishing of materials < 50 HRC

Guhring no.	3180	3181
Standard	Guhring std.	
Tool material	Solid carbide	
Carbide grade	K	K/P
Surface	◯	F
Type	NH	NH
Shank design	cil. h6	cil. h6
Helix	45°	45°
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1093	1093



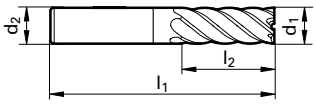
d1 inch	d2 inch	l1 inch	l2 inch	Z	Code no.	Availability	
1/4	1/4	3	1 1/8	6	6.350	●	●
5/16	5/16	3	1 1/8	6	7.940	●	●
3/8	3/8	3	1 1/8	6	9.520	●	●
1/2	1/2	4 1/2	2	6	12.700	●	●
5/8	5/8	5	2 1/4	6	15.870	●	●
3/4	3/4	5	2 1/4	8	19.050	●	●

◯ bright ◯ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

GH 100 H - hard multi-t. end mills

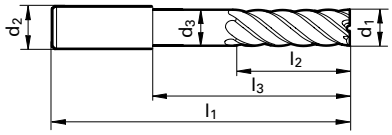
for superfine finishing of materials < 62 HRC

Guhring no.	3182
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	F
Type	H
Shank design	cil. h6
Helix	55°
Tolerance	h10
Discount group	106
Techn. data page	1093



d1 inch	d2 inch	l1 inch	l2 inch	Z	Code no.	Availability
1/4	1/4	2 1/2	3/4	6	6.350	●
5/16	5/16	2 1/2	7/8	6	7.940	●
3/8	3/8	2 1/2	7/8	6	9.520	●
1/2	1/2	3	1	6	12.700	●
5/8	5/8	3 1/2	1 1/4	6	15.870	●
3/4	3/4	4	1 1/2	8	19.050	●

Guhring no.	3183
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	F
Type	H
Shank design	cil. h6
Helix	55°
Tolerance	h10
Discount group	106
Techn. data page	1093



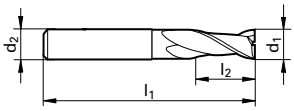
d1 inch	d2 inch	l1 inch	l2 inch	Z	Code no.	Availability
1/4	1/4	3	3/4	6	6.350	●
5/16	5/16	3	7/8	6	7.940	●
3/8	3/8	3	7/8	6	9.520	●
1/2	1/2	4 1/2	1	6	12.700	●
5/8	5/8	5	1 1/4	6	15.870	●
3/4	3/4	5	1 1/2	8	19.050	●

C TiCN | Cb Carbo | D Cristall | F FIRE/nanoFIRE | P AlCrN | S TiN | S+ TiN+ | M MolyGlide | Y Signum

Slot drills (2-fluted)

centre cutting

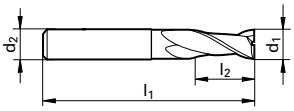
Guhring no.	3148	3146
Standard	Guhring std.	
Tool material	Solid carbide	
Carbide grade	K/P	K
Surface	F	○
Type	N	N
Shank design	cil. h6	cil. h6
Helix	30°	30°
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1098	1098



d1	d2	l1	l2	Z	Code no.	Availability	
inch	inch	inch	inch				
1/16	1/8	1 1/2	3/16	2	1.590	●	●
3/32	1/8	1 1/2	1/4	2	2.380	●	●
1/8	1/8	1 1/2	3/8	2	3.170	●	●
5/32	3/16	2	1/2	2	3.970	●	●
3/16	3/16	2	3/8	2	4.760	●	●
7/32	1/4	2 1/2	5/8	2	5.560	●	●
1/4	1/4	2 1/2	3/4	2	6.350	●	●
9/32	5/16	2 1/2	3/4	2	7.140	●	●
5/16	5/16	2 1/2	13/16	2	7.940	●	●
5/16	3/8	2 1/2	1	2	8.730	●	●
3/8	3/8	2 1/2	1	2	9.520	●	●
13/32	7/16	2 3/4	1	2	10.320	●	●
7/16	7/16	2 3/4	1	2	11.110	●	●
15/32	1/2	3	1	2	11.910	●	●
1/2	1/2	3	1	2	12.700	●	●
9/16	9/16	3 1/2	1 1/8	2	14.290	●	●
5/8	5/8	3 1/2	1 1/4	2	15.870	●	●
11/16	3/4	4	1 3/8	2	17.460	●	●
3/4	3/4	4	1 1/2	2	19.050	●	●
1	1	4	1 1/2	2	25.400	●	●

centre cutting

Guhring no.	3092
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	F
Type	N
Shank design	cil. h6
Helix	30°
Tolerance	h10
Discount group	106
Techn. data page	1098

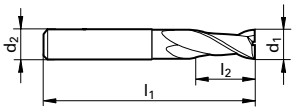


d1	d2	l1	l2	Z	Code no.	Availability
inch	inch	inch	inch			
1/16	1/8	1 1/2	1/8	2	1.590	●
1/8	1/8	1 1/2	1/4	2	3.170	●
3/16	3/16	2	3/8	2	4.760	●
1/4	1/4	2	1/2	2	6.350	●
5/16	5/16	2	1/2	2	7.940	●
3/8	3/8	2	5/8	2	9.520	●
7/16	7/16	2 1/2	5/8	2	11.110	●
1/2	1/2	2 1/2	5/8	2	12.700	●
5/8	5/8	3	3/4	2	15.870	●
3/4	3/4	3	1	2	19.050	●

○ bright ◍ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

centre cutting

Guhring no.	3147	3149
Standard	Guhring std.	
Tool material	Solid carbide	
Carbide grade	K	K/P
Surface	◯	F
Type	N	N
Shank design	cil. h6	cil. h6
Helix	30°	30°
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1098	1098



d1 inch	d2 inch	l1 inch	l2 inch	Z	Code no.	Availability	
1/8	1/8	1 1/2	1/4	2	3.170	●	●
3/16	3/16	2 1/2	3/4	2	4.760	●	●
1/4	1/4	3	1 1/8	2	6.350	●	●
5/16	5/16	3	1 1/8	2	7.940	●	●
3/8	3/8	3	1 1/8	2	9.520	●	●
7/16	7/16	4 1/2	2	2	11.110	●	●
1/2	1/2	4 1/2	2	2	12.700	●	●
5/8	5/8	5	2 1/4	2	15.870	●	●
3/4	3/4	5	2 1/4	2	19.050	●	●
1	1	5	2 1/4	2	25.400	●	●

The perfect combination: Shrink fit chuck + end mill with HA shank

The combination of shrink fit chuck from our GM 300 program and end mill with HA shank offers highest concentricity even with long tool neck lengths. Benefit from these advantages especially

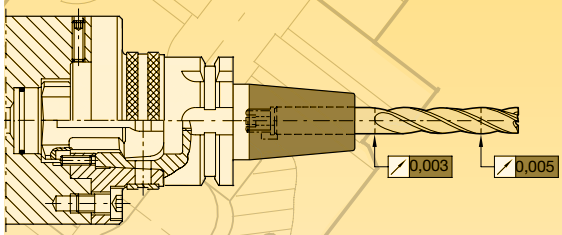
... with long range applications due to deep forms or obstructions

... where there are highest demands on surface quality

... the powerful and accurate clamping

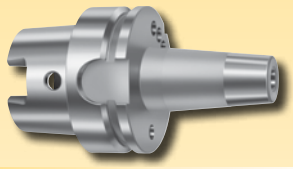
The concentricity of a solid carbide end mill

HSK-A 63 shrink fit chuck, clamping diameter 12.0 mm



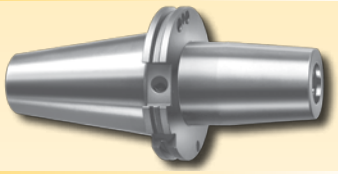
HSK-A

Guhring no. **4736**



ISO

Guhring no. **4738**



GISS 3000 shrink fit system

Guhring no. **4753**

with axial adjustment

Induction shrink fit system with integrated length pre-setting

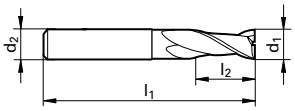
Solid carbide end mills (imperial)

C TiCN | Cb Carbo | D Cristall | F FIRE/nanoFIRE | P AlCrN | S TiN | S+ TiN+ | M MolyGlide | Y Signum

Al slot drills (2-fluted)

centre cutting

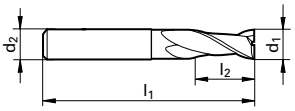
Guhring no.	3174
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K
Surface	◯
Type	W
Shank design	cil. h6
Helix	45°
Tolerance	h10
Discount group	106
Techn. data page	1099



d1 inch	d2 inch	l1 inch	l2 inch	Z	Code no.	Availability
1/8	1/8	1 1/2	7/16	2	3.170	●
3/16	3/16	2	9/16	2	4.760	●
1/4	1/4	2 1/2	3/4	2	6.350	●
5/16	5/16	2 1/2	13/16	2	7.940	●
3/8	3/8	2 1/2	7/8	2	9.520	●
7/16	7/16	2 3/4	1	2	11.110	●
1/2	1/2	3	1	2	12.700	●
9/16	9/16	3 1/2	1 1/8	2	14.290	●
5/8	5/8	3 1/2	1 1/4	2	15.870	●
3/4	3/4	4	1 1/2	2	19.050	●
1	1	4	1 1/2	2	25.400	●

centre cutting

Guhring no.	3175
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K
Surface	◯
Type	W
Shank design	cil. h6
Helix	45°
Tolerance	h10
Discount group	106
Techn. data page	1099

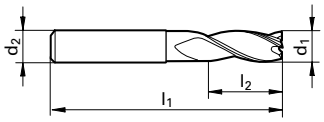


d1 inch	d2 inch	l1 inch	l2 inch	Z	Code no.	Availability
1/4	1/4	3	1 1/8	2	6.350	●
3/8	3/8	3	1 1/8	2	9.520	●
1/2	1/2	4 1/2	2	2	12.700	●
5/8	5/8	5	2 1/4	2	15.870	●

◯ bright ◯ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

centre cutting

Guhring no.	3168	3170
Standard	Guhring std.	
Tool material	Solid carbide	
Carbide grade	K	K/P
Surface	◯	F
Type	N	N
Shank design	cil. h6	cil. h6
Helix	30°	30°
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1098	1098

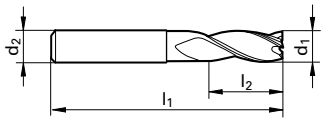


d1	d2	l1	l2	Z	Code no.	Availability	
inch	inch	inch	inch				
1/8	1/8	1 1/2	3/8	3	3.170	●	●
3/16	3/16	2	5/8	3	4.760	●	●
1/4	1/4	2 1/2	3/4	3	6.350	●	●
5/16	5/16	2 1/2	13/16	3	7.940	●	●
3/8	3/8	3	1	3	9.520	●	●
7/16	7/16	2 3/4	1	3	11.110	●	●
1/2	1/2	3	1	3	12.700	●	●
9/16	9/16	3 1/2	1 1/8	3	14.290	●	●
5/8	5/8	3 1/2	1 1/4	3	15.870	●	●
3/4	3/4	4	1 1/2	3	19.050	●	●
1	1	4	1 1/2	3	25.400	●	●

XL slot drills (3-fluted)

centre cutting

Guhring no.	3169	3171
Standard	Guhring std.	
Tool material	Solid carbide	
Carbide grade	K	K/P
Surface	◯	F
Type	N	N
Shank design	cil. h6	cil. h6
Helix	30°	30°
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1098	1098



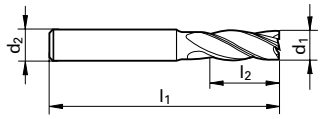
d1	d2	l1	l2	Z	Code no.	Availability	
inch	inch	inch	inch				
3/16	3/16	3	1 1/4	3	4.760	●	●
1/4	1/4	4	1 5/8	3	6.350	●	●
5/16	5/16	4	1 5/8	3	7.940	●	●
3/8	3/8	4	1 5/8	3	9.520	●	●
7/16	7/16	5	2	3	11.110	●	●
1/2	1/2	6	3	3	12.700	●	●
5/8	5/8	6	3	3	15.870	●	●
3/4	3/4	6	3	3	19.050	●	●
1	1	6	3	3	25.400	●	●

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

End mills (4-fluted)

centre cutting

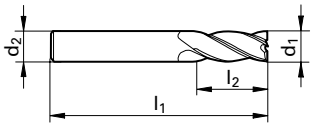
Guhring no.	3150	3153
Standard	Guhring std.	
Tool material	Solid carbide	
Carbide grade	K	K/P
Surface	○	F
Type	N	N
Shank design	cil. h6	cil. h6
Helix	30°	30°
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1098	1098



d1 inch	d2 inch	l1 inch	l2 inch	Z	Code no.	Availability	
1/16	1/8	1 1/2	3/16	4	1.590	●	●
3/32	1/8	1 1/2	1/4	4	2.380	●	●
1/8	1/8	1 1/2	3/8	4	3.170	●	●
5/32	3/16	2	1/2	4	3.970	●	●
3/16	3/16	2	3/8	4	4.760	●	●
7/32	1/4	2 1/2	5/8	4	5.560	●	●
1/4	1/4	2 1/2	3/4	4	6.350	●	●
9/32	5/16	2 1/2	3/4	4	7.140	●	●
5/16	5/16	2 1/2	13/16	4	7.940	●	●
11/32	3/8	2 1/2	1	4	8.730	●	●
3/8	3/8	2 1/2	1	4	9.520	●	●
13/32	7/16	2 3/4	1	4	10.320	●	●
7/16	7/16	2 3/4	1	4	11.110	●	●
15/32	1/2	3	1	4	11.910	●	●
1/2	1/2	3	1	4	12.700	●	●
9/16	9/16	3 1/2	1 1/8	4	14.290	●	●
5/8	5/8	3 1/2	1 1/4	4	15.870	●	●
11/16	3/4	4	1 3/8	4	17.460	●	●
3/4	3/4	4	1 1/2	4	19.050	●	●
1	1	4	1 1/2	6	25.400	●	●

centre cutting

Guhring no.	3093
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	F
Type	N
Shank design	cil. h6
Helix	30°
Tolerance	h10
Discount group	106
Techn. data page	1098

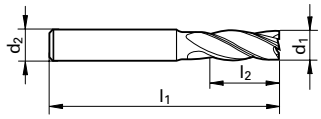


d1 inch	d2 inch	l1 inch	l2 inch	Z	Code no.	Availability
1/16	1/8	1 1/2	1/8	4	1.590	●
1/8	1/8	1 1/2	1/4	4	3.170	●
3/16	3/16	2	3/8	4	4.760	●
1/4	1/4	2	1/2	4	6.350	●
5/16	5/16	2	1/2	4	7.940	●
3/8	3/8	2	5/8	4	9.520	●
7/16	7/16	2 1/2	5/8	4	11.110	●
1/2	1/2	2 1/2	5/8	4	12.700	●
5/8	5/8	3	3/4	4	15.870	●
3/4	3/4	3	1	4	19.050	●

○ bright ◌ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

centre cutting

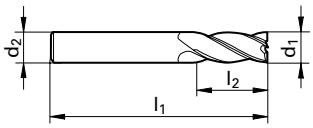
Guhring no.	3152	3156
Standard	Guhring std.	
Tool material	Solid carbide	
Carbide grade	K	K/P
Surface	◯	F
Type	N	N
Shank design	cil. h6	cil. h6
Helix	30°	30°
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1098	1098



d1	d2	l1	l2	Z	Code no.	Availability	
inch	inch	inch	inch				
1/8	1/8	1 1/2	1/4	4	3.170	●	●
3/16	3/16	2 1/2	3/4	4	4.760	●	●
1/4	1/4	3	1 1/8	4	6.350	●	●
5/16	5/16	3	1 1/8	4	7.940	●	●
3/8	3/8	3	1 1/8	4	9.520	●	●
7/16	7/16	4 1/2	2	4	11.110	●	●
1/2	1/2	4 1/2	2	4	12.700	●	●
5/8	5/8	5	2 1/4	4	15.870	●	●
3/4	3/4	5	2 1/4	4	19.050	●	●
1	1	5	2 1/4	6	25.400	●	●

centre cutting

Guhring no.	3151	3155
Standard	Guhring std.	
Tool material	Solid carbide	
Carbide grade	K	K/P
Surface	◯	F
Type	N	N
Shank design	cil. h6	cil. h6
Helix	30°	30°
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1098	1098



d1	d2	l1	l2	Z	Code no.	Availability	
inch	inch	inch	inch				
3/16	3/16	3	1 1/4	4	4.760	●	●
1/4	1/4	4	1 5/8	4	6.350	●	●
5/16	5/16	4	1 5/8	4	7.940	●	●
3/8	3/8	4	1 5/8	4	9.520	●	●
7/16	7/16	5	2	4	11.110	●	●
1/2	1/2	6	3	4	12.700	●	●
5/8	5/8	6	3	4	15.870	●	●
3/4	3/4	6	3	4	19.050	●	●
1	1	6	3	6	25.400	●	●

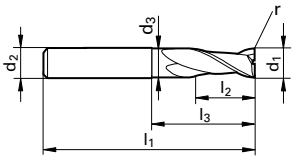
Ⓒ TiCN Ⓒb Carbo Ⓓ Cristall Ⓕ FIRE/nanoFIRE Ⓟ AlCrN Ⓢ TiN Ⓢ+ TiN+ Ⓜ MolyGlide Ⓨ Signum

Slot drills (2-fluted)

with corner radius, with centre cutting

Guhring no.	3087
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	F
Type	N
Shank design	cil. h6
Helix	30°
Tolerance	h10
Discount group	106
Techn. data page	1098

NEW

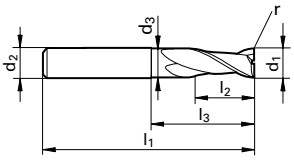


d1	d2	l1	l2	Z	r	Code no.	Availability
inch	inch	inch	inch		mm		
1/8	1/8	1 1/2	3/8	2	0.381	3.172	●
1/8	1/8	1 1/2	3/8	2	0.787	3.174	●
3/16	3/16	2	5/8	2	0.381	4.762	●
3/16	3/16	2	5/8	2	0.787	4.764	●
3/16	3/16	2	5/8	2	1.575	4.766	●
1/4	1/4	2 1/2	3/4	2	0.381	6.352	●
1/4	1/4	2 1/2	3/4	2	0.787	6.354	●
1/4	1/4	2 1/2	3/4	2	1.575	6.356	●
5/16	5/16	2 1/2	13/16	2	0.381	7.942	●
5/16	5/16	2 1/2	13/16	2	0.787	7.944	●
5/16	5/16	2 1/2	13/16	2	1.575	7.946	●
3/8	3/8	2 1/2	1	2	0.381	9.522	●
3/8	3/8	2 1/2	1	2	0.787	9.524	●
3/8	3/8	2 1/2	1	2	1.575	9.526	●
1/2	1/2	3	1	2	0.381	12.702	●
1/2	1/2	3	1	2	0.787	12.704	●
1/2	1/2	3	1	2	1.575	12.706	●

with corner radius, with centre cutting

Guhring no.	3088
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	F
Type	N
Shank design	cil. h6
Helix	30°
Tolerance	h10
Discount group	106
Techn. data page	1098

NEW



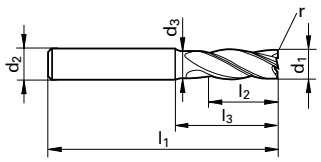
d1	d2	l1	l2	Z	r	Code no.	Availability
inch	inch	inch	inch		mm		
1/8	1/8	2	1/2	2	0.381	3.172	●
1/8	1/8	2	1/2	2	0.787	3.174	●
1/4	1/4	3	1 1/8	2	0.381	6.352	●
1/4	1/4	3	1 1/8	2	0.787	6.354	●
1/4	1/4	3	1 1/8	2	1.575	6.356	●
3/8	3/8	3	1 1/8	2	0.381	9.522	●
3/8	3/8	3	1 1/8	2	0.787	9.524	●
3/8	3/8	3	1 1/8	2	1.575	9.526	●
1/2	1/2	4 1/2	2	2	0.381	12.702	●
1/2	1/2	4 1/2	2	2	0.787	12.704	●
1/2	1/2	4 1/2	2	2	1.575	12.706	●

○ bright ◍ steam tempered ◓ nitrided lands ● nitrided ● golden brown (A) TiAlN (a) TiAlN nanoA (A) TiAlN SuperA

with corner radius, with centre cutting

Guhring no.	3089
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	F
Type	N
Shank design	cil. h6
Helix	30°
Tolerance	h10
Discount group	106
Techn. data page	1098

NEW

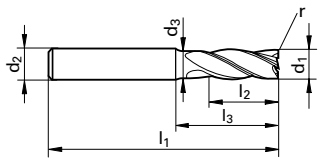


d1	d2	l1	l2	Z	r	Code no.	Availability
inch	inch	inch	inch		mm		
1/8	1/8	1 1/2	3/8	4	0.381	3.172	●
1/8	1/8	1 1/2	3/8	4	0.787	3.174	●
3/16	3/16	2	5/8	4	0.381	4.762	●
3/16	3/16	2	5/8	4	0.787	4.764	●
3/16	3/16	2	5/8	4	1.575	4.766	●
1/4	1/4	2 1/2	3/4	4	0.381	6.352	●
1/4	1/4	2 1/2	3/4	4	0.787	6.354	●
1/4	1/4	2 1/2	3/4	4	1.575	6.356	●
5/16	5/16	2 1/2	13/16	4	0.381	7.942	●
5/16	5/16	2 1/2	13/16	4	0.787	7.944	●
5/16	5/16	2 1/2	13/16	4	1.575	7.946	●
3/8	3/8	2 1/2	1	4	0.381	9.522	●
3/8	3/8	2 1/2	1	4	0.787	9.524	●
3/8	3/8	2 1/2	1	4	1.575	9.526	●
1/2	1/2	3	1	4	0.381	12.702	●
1/2	1/2	3	1	4	0.787	12.704	●
1/2	1/2	3	1	4	1.575	12.706	●

with corner radius, with centre cutting

Guhring no.	3090
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	F
Type	N
Shank design	cil. h6
Helix	30°
Tolerance	h10
Discount group	106
Techn. data page	1098

NEW



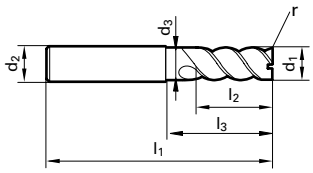
d1	d2	l1	l2	Z	r	Code no.	Availability
inch	inch	inch	inch		mm		
1/4	1/4	4	1 5/8	4	0.381	6.352	●
1/4	1/4	4	1 5/8	4	0.787	6.354	●
1/4	1/4	4	1 5/8	4	1.575	6.356	●
3/8	3/8	4	1 5/8	4	0.381	9.522	●
3/8	3/8	4	1 5/8	4	0.787	9.524	●
3/8	3/8	4	1 5/8	4	1.575	9.526	●
1/2	1/2	6	3	4	0.381	12.702	●
1/2	1/2	6	3	4	0.787	12.704	●
1/2	1/2	6	3	4	1.575	12.706	●

C TiCN | Cb Carbo | D Cristall | F FIRE/nanoFIRE | P AlCrN | S TiN | S+ TiN+ | M MolyGlide | Y Signum

with corner radius, with centre cutting

Guhring no.	3091
Standard	Guhring std.
Tool material	Solid carbide
Carbide grade	K/P
Surface	F
Type	NH
Shank design	cil. h6
Helix	45°
Tolerance	h10
Discount group	106
Techn. data page	1093

NEW



d1 inch	d2 inch	l1 inch	l2 inch	Z	r mm	Code no.	Availability
1/4	1/4	2 1/2	3/4	6	0.381	6.352	●
1/4	1/4	2 1/2	3/4	6	0.787	6.354	●
1/4	1/4	2 1/2	3/4	6	1.575	6.356	●
5/16	5/16	2 1/2	13/16	6	0.381	7.942	●
5/16	5/16	2 1/2	13/16	6	0.787	7.944	●
5/16	5/16	2 1/2	13/16	6	1.575	7.946	●
3/8	3/8	2 1/2	1	6	0.381	9.522	●
3/8	3/8	2 1/2	1	6	0.787	9.524	●
3/8	3/8	2 1/2	1	6	1.575	9.526	●
1/2	1/2	3	1	6	0.381	12.702	●
1/2	1/2	3	1	6	0.787	12.704	●
1/2	1/2	3	1	6	1.575	12.706	●
1/2	1/2	3	1	6	2.286	12.707	●
5/8	5/8	3 1/2	1 1/4	6	0.787	15.874	●
5/8	5/8	3 1/2	1 1/4	6	1.575	15.876	●
5/8	5/8	3 1/2	1 1/4	6	2.286	15.877	●
3/4	3/4	4	1 1/2	8	0.787	19.054	●
3/4	3/4	4	1 1/2	8	1.575	19.056	●
3/4	3/4	4	1 1/2	8	2.286	19.057	●
3/4	3/4	4	1 1/2	8	3.175	19.059	●

Satisfying the highest demands on accuracy and tool life

Especially in the die and mould industry are ever-higher demands on milling cutters – primarily with regard to accuracy and tool life. Therefore, Guhring's cutting tool program now includes radius milling cutters that are perfectly adapted to satisfy these demands and provide optimal machining results thanks to application orientated geometries, carbide grades and coatings.
The advantages are especially high form and contour accuracy of the workpiece, minimal wear and therefore excellent tool life.

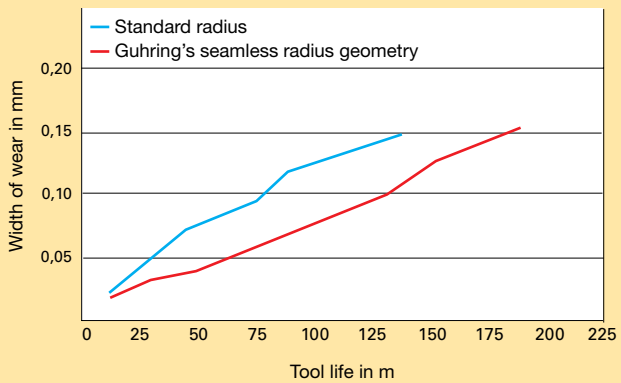
The special features of Guhring's milling cutters with corner or full radius are:

- outside diameter and the radius is ground in one-pass
- radius point geometry with constant helix-radius-correction
- reduced neck ground for collision reduction with protruding edges

High wear protection thanks to radius geometry with constant rake angle and continuous spiral.

Seamless radius area provides high form and contour accuracy.

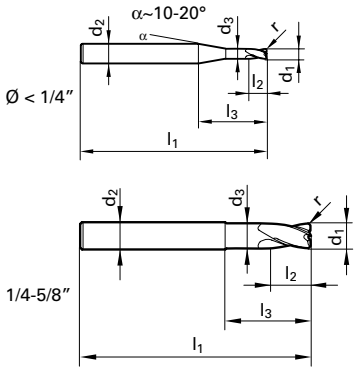
Wear comparison:
Guhring's seamless radius geometry reduces wear and provides a considerably longer tool life in comparison with tools ground with conventional corner radii.



bright | steam tempered | nitrided lands | nitrided | golden brown | A TiAlN | a TiAlN nanoA | A TiAlN SuperA

for materials < 62 HRC, centre cutting

Guhring no.	**3192**
Standard	**Guhring std.**
Tool material	**Solid carbide**
Carbide grade	**K/P**
Surface	**F**
Type	**H**
Shank design	**zyl h6**
Helix	**30°**
Tolerance	**h10**
Discount group	**106**
Techn. data page	**1097**



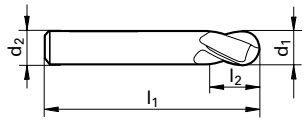
d1	d2	d3	l1	l2	l3	r	Z	Code no.	Availability
inch	inch	mm	inch	inch	mm	mm			
3/16	1/4	4.463	2 1/2	3/16	25.40	0.20	4	4.760	●
1/4	1/4	6.050	3	1/4	38.10	0.25	4	6.350	●
5/16	5/16	7.638	3	5/16	38.10	0.32	4	7.940	●
3/8	3/8	9.225	3	3/8	38.10	0.38	4	9.520	●
1/2	1/2	12.200	4 1/2	1/2	69.85	0.51	4	12.700	●
5/8	5/8	15.375	5	5/8	76.20	0.64	4	15.870	●

C TiCN Cb Carbo D Cristall F FIRE/nanoFIRE P AlCrN S TiN S+ TiN+ M MolyGlide Y Signum

centre cutting

Guhring no.	3157	3159
Standard	Guhring std.	
Tool material	Solid carbide	
Carbide grade	K	K/P
Surface	○	F
Type	N	N
Shank design	zyl h6	zyl h6
Helix	30°	30°
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1100	1100

Solid carbide end mills (imperial)

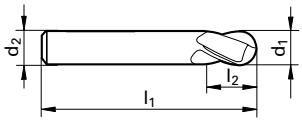


d1	d2	l1	l2	Z	Code no.	Availability	
inch	inch	inch	inch				
1/16	1/8	1 1/2	3/16	2	1.590	●	●
1/8	1/8	1 1/2	3/8	2	3.170	●	●
3/16	3/16	2	5/8	2	4.760	●	●
1/4	1/4	2 1/2	3/4	2	6.350	●	●
5/16	5/16	2 1/2	13/16	2	7.940	●	●
3/8	3/8	2 1/2	1	2	9.520	●	●
7/16	7/16	2 3/4	1	2	11.110	●	●
1/2	1/2	3	1	2	12.700	●	●
9/16	9/16	3 1/2	1 1/8	2	14.290	●	●
5/8	5/8	3 1/2	1 1/4	2	15.870	●	●
3/4	3/4	4	1 1/2	2	19.050	●	●

○ bright ◍ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

centre cutting

Guhring no.	3158	3160
Standard	Guhring std.	
Tool material	Solid carbide	
Carbide grade	K	K/P
Surface	○	F
Type	N	N
Shank design	zyl h6	zyl h6
Helix	30°	30°
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1100	1100



d1	d2	l1	l2	Z	Code no.	Availability	
inch	inch	inch	inch				
1/8	1/8	2	1/2	2	3.170	●	●
3/16	3/16	2 1/2	3/4	2	4.760	●	●
1/4	1/4	3	1 1/8	2	6.350	●	●
5/16	5/16	3	1 1/8	2	7.940	●	●
3/8	3/8	3	1 1/8	2	9.520	●	●
7/16	7/16	4 1/2	2	2	11.110	●	●
1/2	1/2	4 1/2	2	2	12.700	●	●
5/8	5/8	5	2 1/4	2	15.870	●	●
3/4	3/4	5	2 1/4	2	19.050	●	●

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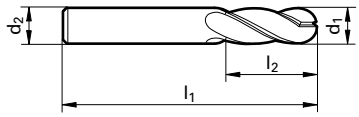
Ball nose end mills (4-fluted)

centre cutting

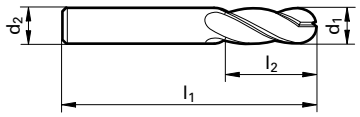
Guhring no.	3161	3165
Standard	Guhring std.	
Tool material	Solid carbide	
Carbide grade	K	K/P
Surface	○	F
Type	N	N
Shank design	cil. h6	cil. h6
Helix	30°	30°
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1100	1100



d1 inch	d2 inch	l1 inch	l2 inch	Z	Code no.	Availability	
1/16	1/8	1 1/2	3/16	4	1.590	●	●
1/8	1/8	1 1/2	3/8	4	3.170	●	●
3/16	3/16	2	5/8	4	4.760	●	●
1/4	1/4	2 1/2	3/4	4	6.350	●	●
5/16	5/16	2 1/2	13/16	4	7.940	●	●
3/8	3/8	2 1/2	1	4	9.520	●	●
7/16	7/16	2 3/4	1	4	11.110	●	●
1/2	1/2	3	1	4	12.700	●	●
9/16	9/16	3 1/2	1 1/8	4	14.290	●	●
5/8	5/8	3 1/2	1 1/4	4	15.870	●	●
3/4	3/4	4	1 1/2	4	19.050	●	●

centre cutting

Guhring no.	3164	3167
Standard	Guhring std.	
Tool material	Solid carbide	
Carbide grade	K	K/P
Surface	○	F
Type	N	N
Shank design	cil. h6	cil. h6
Helix	30°	30°
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1100	1100

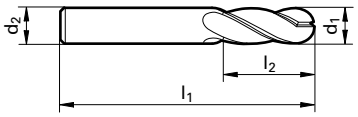


d1 inch	d2 inch	l1 inch	l2 inch	Z	Code no.	Availability	
1/8	1/8	2	1/2	4	3.170	●	●
3/16	3/16	2 1/2	3/4	4	4.760	●	●
1/4	1/4	3	1 1/8	4	6.350	●	●
5/16	5/16	3	1 1/8	4	7.940	●	●
3/8	3/8	3	1 1/8	4	9.520	●	●
7/16	7/16	4 1/2	2	4	11.110	●	●
1/2	1/2	4 1/2	2	4	12.700	●	●
5/8	5/8	5	2 1/4	4	15.870	●	●
3/4	3/4	5	2 1/4	4	19.050	●	●

○ bright ◍ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

centre cutting

Guhring no.	3162	3166
Standard	Guhring std.	
Tool material	Solid carbide	
Carbide grade	K	K/P
Surface	○	F
Type	N	N
Shank design	zyl h6	zyl h6
Helix	30°	30°
Tolerance	h10	h10
Discount group	106	106
Techn. data page	1100	1100



d1	d2	l1	l2	Z	Code no.	Availability	
inch	inch	inch	inch				
3/16	3/16	3	1 1/4	4	4.760	●	●
1/4	1/4	4	1 5/8	4	6.350	●	●
5/16	5/16	4	1 5/8	4	7.940	●	●
3/8	3/8	4	1 5/8	4	9.520	●	●
7/16	7/16	5	2	4	11.110	●	●
1/2	1/2	6	3	4	12.700	●	●
5/8	5/8	6	3	4	15.870	●	●
3/4	3/4	6	3	4	19.050	●	●

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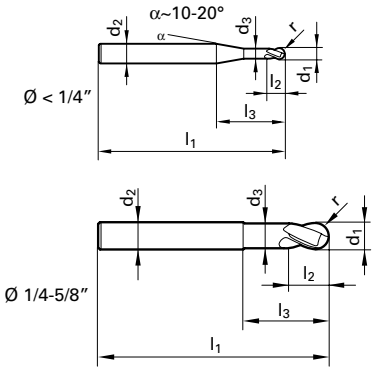
for materials < 62 HRC, centre cutting

Guhring no.	**3101**
Standard	**Guhring std.**
Tool material	**Solid carbide**
Carbide grade	**K/P**
Surface	**F**
Type	**H**
Shank design	**zyl h6**
Helix	**30°**
Tolerance	**h8**
Discount group	**106**
Techn. data page	**1096**

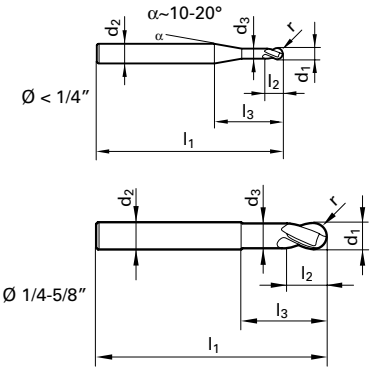


d1	d2	d3	l1	l2	l3	r	Z	Code no.	Availability
inch	inch	mm	inch	inch	mm	mm			
1/8	1/4	2.875	2	1/4	12.70	1.587	2	3.170	●
3/16	1/4	4.463	2	3/16	12.70	2.382	2	4.760	●
1/4	1/4	6.050	2	1/4	17.70	3.175	2	6.350	●
5/16	5/16	7.638	2	5/16	25.40	3.969	2	7.940	●
3/8	3/8	9.225	2 1/2	3/8	25.40	4.763	2	9.520	●
1/2	1/2	12.200	3	1/2	31.75	6.35	2	12.700	●

○ bright ◍ steam tempered ◓ nitrided lands ● nitrided ● golden brown A TiAlN a TiAlN nanoA A TiAlN SuperA

for materials < 62 HRC, centre cutting

Guhring no.	**3191**
Standard	**Guhring std.**
Tool material	**Solid carbide**
Carbide grade	**K/P**
Surface	**F**
Type	**H**
Shank design	**zyl h6**
Helix	**30°**
Tolerance	**h10**
Discount group	**106**
Techn. data page	**1096**



d1	d2	d3	l1	l2	l3	r	Z	Code no.	Availability
inch	inch	mm	inch	inch	mm	mm			
1/8	1/4	2.875	2 1/2	1/8	25.40	1.587	2	3.170	●
3/16	1/4	4.463	2 1/2	3/16	25.40	2.382	2	4.760	●
1/4	1/4	6.050	3	1/4	38.10	3.175	2	6.350	●
5/16	5/16	7.638	3	5/16	38.10	3.969	2	7.940	●
3/8	3/8	9.225	3	3/8	38.10	4.763	2	9.520	●
1/2	1/2	12.200	4 1/2	1/2	69.85	6.35	2	12.700	●
5/8	5/8	15.375	5	5/8	76.20	7.938	2	15.870	●

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The QS principle encourages requests for inspection records or certificates of conformity to be supplied with ordered tools. We will gladly do this. But as the setting-up of inspection records is particularly time consuming and costly - special marking on a specified number of tools, the provision of measuring records, the entry of measured data in special forms - and we do not wish to incorporate these costs in our overhead costs, we have chosen to charge the prices below in relation to the quantity ordered. Surely you will appreciate this.

inspection criteria \ inspected number of items	1	up to 3	up to 5	up to 10	up to 15	up to 20	up to 30	up to 50	up to 100
	net prices for the inspected number of items per inspection criteria								
cutting diameter	●	●	●	●	●	●	●	●	●
shank diameter	●	●	●	●	●	●	●	●	●
total length	●	●	●	●	●	●	●	●	●
cutting length	●	●	●	●	●	●	●	●	●
circular clearance	●	●	●	●	●	●	●	●	●
clearance angle minor cutting edge	●	●	●	●	●	●	●	●	●
clearance angle major cutting edge	●	●	●	●	●	●	●	●	●
orthogonal rake angle minor c. e.	●	●	●	●	●	●	●	●	●
back rake angle minor cutting edge	●	●	●	●	●	●	●	●	●
lead angle	●	●	●	●	●	●	●	●	●
concentricity minor cutting edge Tr	●	●	●	●	●	●	●	●	●
cutting edge tolerance Tp	●	●	●	●	●	●	●	●	●
tolerance	●	●	●	●	●	●	●	●	●
optical	●	●	●	●	●	●	●	●	●
marking of test tools	●	●	●	●	●	●	●	●	●

	net prices for the inspected number of items for all inspection criteria								
	●	●	●	●	●	●	●	●	●
	plus cost of inspection report								
total price	●	●	●	●	●	●	●	●	●

Quality control requirements

○ bright ◌ steam tempered ◓ nitrided lands ● nitrided ◉ golden brown A TiAlN a TiAlN nanoA A AlTiN SuperA

Additional charges for grinding of flat to DIN 6535 form HB on straight shanks

from quantity	gross additional charges per item depending on core drill diameter (mm)							
	up to 6.00	up to 8.00	up to 10.00	up to 12.00	up to 14.00	up to 16.00	up to 18.00	up to 20.00
3.....10	●	●	●	●	●	●	●	●
11.....20	●	●	●	●	●	●	●	●
21.....30	●	●	●	●	●	●	●	●
31.....50	●	●	●	●	●	●	●	●
51....100	●	●	●	●	●	●	●	●
101....200	●	●	●	●	●	●	●	●

Additional charges for screwed shank to DIN 1835 form D

from quantity	gross additional charges per item depending on core drill diameter (mm)		
	up to 15.00	up to 30.00	up to 50.00
3	●	●	●
4 and 5	●	●	●
6.....10	●	●	●
11.....20	●	●	●
21.....30	●	●	●
over 30	on request	on request	on request

Additional charges for corner rounding and ball nosing on carbides

from quantity	gross additional charges per item depending on core drill diameter (mm)
3	●
4	●
5	●
6	●
7	●
8	●
9	●
10	●
11.....14	●
15.....19	●
20.....24	●
25.....29	●
30.....49	●
50.....99	●
over 100	on request