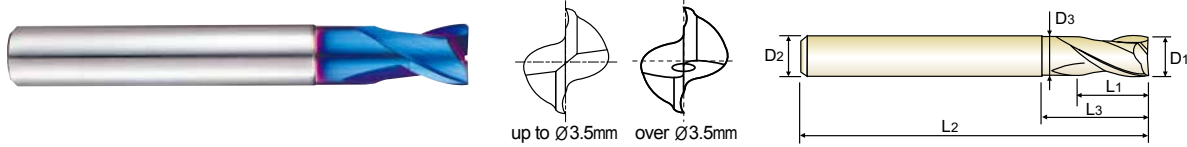


CARBIDE, 2 FLUTE with EXTENDED NECK

- VOLLHARTMETALL, 2 SCHNEIDEN mit ABGESETZTEM SCHAFTTEIL
- Fraise carbure, 2 dents, détalonnée
- 2 TAGLIANTI CON SCARICO ESTESO

- ▶ Designed to machine high hardened materials.
- ▶ Suitable for dry cutting, high speed cutting thanks to newly developed raw-material and new coating.
- ▶ Excellent workpiece finish.
- ▶ Designed for high precision milling operation.
- ▶ Higher wear-resistance.

- ▶ Geeignet zum Fräsen hochgehärteter Stähle.
- ▶ Geeignet zum Trockenfräsen und HSC-Fräsen dank neuentwickeltem Material und Beschichtung.
- ▶ Excellente Werkstückoberflächen.
- ▶ Geeignet für hochpräzises Fräsen.
- ▶ Höhere Verschleißfestigkeit.



CARBIDE 2 BLUE 30° PLAIN P.153-155

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	D1	D2	L1	L3	L2	D3
G8A01001	0.1	4	0.2	-	40	-
G8A01002	0.2	4	0.4	-	40	-
G8A01003	0.3	4	0.6	-	40	-
G8A01004	0.4	4	0.8	-	40	-
G8A01005	0.5	4	1	-	40	-
G8A01006	0.6	4	1.2	-	40	-
G8A01007	0.7	4	1.4	-	40	-
G8A01008	0.8	4	1.6	-	40	-
G8A01009	0.9	4	2	-	40	-
G8A010104S	1.0	4	1.5	3	50	0.95
G8A01010	1.0	6	1.5	3	50	0.95
G8A010154S	1.5	4	1.7	4	50	1.45
G8A01015	1.5	6	1.7	4	50	1.45
G8A010204S	2.0	4	2	5	50	1.95
G8A01020	2.0	6	2	5	50	1.95
G8A010254S	2.5	4	2.5	6	55	2.4
G8A01025	2.5	6	2.5	6	55	2.4
G8A01030	3.0	6	3	8	55	2.85
G8A01035	3.5	6	3.5	9	55	3.35
G8A01040	4.0	6	4	10	55	3.85
G8A01050	5.0	6	5	13	55	4.85
G8A01060	6.0	6	6	15	55	5.85
G8A01080	8.0	8	8	20	65	7.7
G8A01100	10.0	10	10	25	75	9.7
G8A01120	12.0	12	12	28	85	11.7
G8A01160	16.0	16	16	32	90	15.7
G8A01200	20.0	20	20	40	105	19.7

Unit : mm

Due to the characteristics of the blue decoration layer, it might be erased during short term use and the color layer might not be uniformed. However, it doesn't affect the performance of the tool.

Size	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to Ø6	0 ~ - 0.012	h5
over Ø6	0 ~ - 0.015	

◎ : Excellent ○ : Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRC																				
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○					○					○									

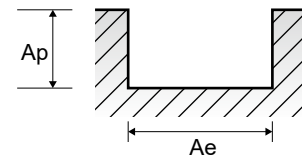
ISO Material Description	N					S										H					
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials	Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRC																					
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	◎		◎		◎	◎					◎		◎	◎	◎						

G8A01, G8A36 SERIES

2 FLUTE - SLOTTING

Vc = m/min.
fz = mm/tooth
RPM = rev./min.
FEED = mm/min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)									
						0.2	0.3	0.4	0.5	0.6	0.8	0.9	1.0	2.0	
P	5	Non-alloy steel	1.0D	0.05D	Vc	30	45	65	80	95	125	140	150	210	
					fz	0.001	0.002	0.002	0.004	0.005	0.006	0.007	0.01	0.013	
					RPM	47746	47746	51725	50930	50399	49736	49515	47746	33423	
					FEED	95	191	207	407	504	597	693	955	869	
	8-9	Low alloy steel	1.0D	0.05D	Vc	30	45	65	80	95	125	140	150	210	
					fz	0.001	0.002	0.002	0.004	0.005	0.006	0.007	0.01	0.013	
					RPM	47746	47746	51725	50930	50399	49736	49515	47746	33423	
					FEED	95	191	207	407	504	597	693	955	869	
	11.1	High alloyed steel, and tool steel	1.0D	0.05D	Vc	30	45	65	80	95	125	140	150	210	
					fz	0.001	0.002	0.002	0.004	0.005	0.006	0.007	0.01	0.013	
					RPM	47746	47746	51725	50930	50399	49736	49515	47746	33423	
					FEED	95	191	207	407	504	597	693	955	869	
11.2	High alloyed steel, and tool steel	1.0D	0.05D	Vc	30	40	55	70	85	100	110	120	165		
				fz	0.001	0.002	0.002	0.003	0.004	0.006	0.007	0.008	0.013		
				RPM	47746	42441	43768	44563	45094	39789	38905	38197	26261		
				FEED	95	170	175	267	361	477	545	611	683		
H	38.1	Hardened steel	1.0D	0.05D	Vc	30	40	55	70	85	100	110	120	165	
					fz	0.001	0.002	0.002	0.003	0.004	0.006	0.007	0.008	0.013	
					RPM	47746	42441	43768	44563	45094	39789	38905	38197	26261	
					FEED	95	170	175	267	361	477	545	611	683	
	38.2	Hardened steel	1.0D	0.05D	Vc	25	40	50	65	75	75	80	80	110	
					fz	0.001	0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.012	
					RPM	39789	42441	39789	41380	39789	29842	28294	25465	17507	
					FEED	80	85	159	248	318	298	340	357	420	
	39.1	Hardened steel	1.0D	0.05D	Vc	20	30	40	50	55	65	65	65	90	
					fz	0.001	0.001	0.001	0.002	0.003	0.004	0.005	0.005	0.009	
					RPM	31831	31831	31831	31831	29178	25863	22989	20690	14324	
					FEED	64	64	64	127	175	207	230	207	258	
	39.2	Hardened steel	1.0D	0.05D	Vc	20	25	30	40	45	50	50	50	70	
					fz	0.001	0.001	0.001	0.002	0.002	0.003	0.004	0.004	0.007	
					RPM	31831	26526	23873	25465	23873	19894	17684	15915	11141	
					FEED	64	53	48	102	95	119	141	127	156	
	39.3	Hardened steel	1.0D	0.02D	Vc	15	20	25	30	40	40	40	40	60	
					fz	0.001	0.001	0.001	0.002	0.002	0.003	0.003	0.003	0.006	
					RPM	23873	21221	19894	19099	21221	15915	14147	12732	9549	
					FEED	29	38	40	57	81	83	91	87	116	
	40	Chilled Cast Iron	1.0D	0.05D	Vc	30	40	55	70	85	100	110	120	165	
					fz	0.001	0.002	0.002	0.003	0.004	0.006	0.007	0.008	0.013	
					RPM	47746	42441	43768	44563	45094	39789	38905	38197	26261	
					FEED	95	170	175	267	361	477	545	611	683	
41	Hardened Cast Iron	1.0D	0.05D	Vc	25	40	50	65	75	75	80	80	110		
				fz	0.001	0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.012		
				RPM	39789	42441	39789	41380	39789	29842	28294	25465	17507		
				FEED	80	85	159	248	318	298	340	357	420		

▶ NEXT PAGE


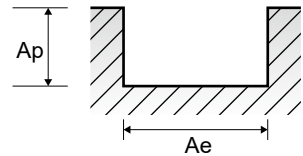


RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

G8A01, G8A36 SERIES 2 FLUTE - SLOTTING

Vc = m/min.
fz = mm/tooth
RPM = rev./min.
FEED = mm/min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)									
						3.0	4.0	5.0	6.0	8.0	10.0	12.0	16.0	20.0	
P	5	Non-alloy steel	1.0D	0.05D	Vc	205	210	245	245	250	245	250	245	245	
					fz	0.019	0.026	0.032	0.036	0.047	0.054	0.064	0.074	0.085	
					RPM	21751	16711	15597	12998	9947	7799	6631	4874	3899	
					FEED	827	869	998	936	935	842	849	721	663	
	8-9	Low alloy steel	1.0D	0.05D	Vc	205	210	245	245	250	245	250	245	245	
					fz	0.019	0.026	0.032	0.036	0.047	0.054	0.064	0.074	0.085	
					RPM	21751	16711	15597	12998	9947	7799	6631	4874	3899	
					FEED	827	869	998	936	935	842	849	721	663	
	11.1	High alloyed steel, and tool steel	1.0D	0.05D	Vc	205	210	245	245	250	245	250	245	245	
					fz	0.019	0.026	0.032	0.036	0.047	0.054	0.064	0.074	0.085	
					RPM	21751	16711	15597	12998	9947	7799	6631	4874	3899	
					FEED	827	869	998	936	935	842	849	721	663	
	11.2	High alloyed steel, and tool steel	1.0D	0.05D	Vc	165	165	195	195	195	195	200	195	195	
					fz	0.02	0.027	0.032	0.037	0.046	0.055	0.065	0.074	0.085	
					RPM	17507	13130	12414	10345	7759	6207	5305	3879	3104	
					FEED	700	709	794	766	714	683	690	574	528	
H	38.1	Hardened steel	1.0D	0.05D	Vc	165	165	195	195	195	195	200	195	195	
					fz	0.02	0.027	0.032	0.037	0.046	0.055	0.065	0.074	0.085	
					RPM	17507	13130	12414	10345	7759	6207	5305	3879	3104	
					FEED	700	709	794	766	714	683	690	574	528	
	38.2	Hardened steel	1.0D	0.05D	Vc	110	110	130	130	130	130	130	130	130	
					fz	0.018	0.025	0.03	0.035	0.043	0.051	0.059	0.07	0.082	
					RPM	11671	8754	8276	6897	5173	4138	3448	2586	2069	
					FEED	420	438	497	483	445	422	407	362	339	
	39.1	Hardened steel	1.0D	0.05D	Vc	90	90	100	100	100	100	100	100	100	
					fz	0.014	0.019	0.022	0.026	0.032	0.038	0.045	0.053	0.061	
					RPM	9549	7162	6366	5305	3979	3183	2653	1989	1592	
					FEED	267	272	280	276	255	242	239	211	194	
	39.2	Hardened steel	1.0D	0.05D	Vc	70	70	80	80	80	80	80	80	80	
					fz	0.011	0.015	0.018	0.021	0.026	0.03	0.037	0.042	0.048	
					RPM	7427	5570	5093	4244	3183	2546	2122	1592	1273	
					FEED	163	167	183	178	166	153	157	134	122	
39.3	Hardened steel	1.0D	0.02D	Vc	60	60	70	70	70	70	70	70	70		
				fz	0.009	0.012	0.015	0.018	0.021	0.026	0.03	0.034	0.039		
				RPM	6366	4775	4456	3714	2785	2228	1857	1393	1114		
				FEED	115	118	132	131	119	114	112	94	86		
40	Chilled Cast Iron	1.0D	0.05D	Vc	165	165	195	195	195	195	200	195	195		
				fz	0.02	0.027	0.032	0.037	0.046	0.055	0.065	0.074	0.085		
				RPM	17507	13130	12414	10345	7759	6207	5305	3879	3104		
				FEED	700	709	794	766	714	683	690	574	528		
41	Hardened Cast Iron	1.0D	0.05D	Vc	110	110	130	130	130	130	130	130	130		
				fz	0.018	0.025	0.03	0.035	0.043	0.051	0.059	0.07	0.082		
				RPM	11671	8754	8276	6897	5173	4138	3448	2586	2069		
				FEED	420	438	497	483	445	422	407	362	339		

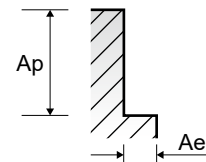


G8A01, G8A36 SERIES

2 FLUTE - SIDE CUTTING

Vc = m/min.
fz = mm/tooth
RPM = rev./min.
FEED = mm/min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)										
						1.0	2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0	16.0	20.0
P	5	Non-alloy steel	0.03D	1.0D	Vc	150	210	205	210	245	245	250	245	250	245	245
					fz	0.011	0.018	0.028	0.037	0.046	0.052	0.067	0.077	0.09	0.107	0.122
					RPM	47746	33423	21751	16711	15597	12998	9947	7799	6631	4874	3899
					FEED	1050	1203	1218	1237	1435	1352	1333	1201	1194	1043	951
	8-9	Low alloy steel	0.03D	1.0D	Vc	150	210	205	210	245	245	250	245	250	245	245
					fz	0.011	0.018	0.028	0.037	0.046	0.052	0.067	0.077	0.09	0.107	0.122
					RPM	47746	33423	21751	16711	15597	12998	9947	7799	6631	4874	3899
					FEED	1050	1203	1218	1237	1435	1352	1333	1201	1194	1043	951
	11.1	High alloyed steel, and tool steel	0.03D	1.0D	Vc	150	210	205	210	245	245	250	245	250	245	245
					fz	0.011	0.018	0.028	0.037	0.046	0.052	0.067	0.08	0.09	0.107	0.122
					RPM	47746	33423	21751	16711	15597	12998	9947	7799	6631	4874	3899
					FEED	1050	1203	1218	1237	1435	1352	1333	1248	1194	1043	951
11.2	High alloyed steel, and tool steel	0.03D	1.0D	Vc	120	165	165	165	195	195	195	195	200	195	195	
				fz	0.011	0.019	0.028	0.038	0.046	0.053	0.066	0.079	0.092	0.108	0.121	
				RPM	38197	26261	17507	13130	12414	10345	7759	6207	5305	3879	3104	
				FEED	840	998	980	998	1142	1097	1024	981	976	838	751	
H	38.1	Hardened steel	0.03D	1.0D	Vc	120	165	165	165	195	195	195	195	200	195	195
					fz	0.011	0.019	0.028	0.038	0.046	0.053	0.066	0.079	0.092	0.108	0.121
					RPM	38197	26261	17507	13130	12414	10345	7759	6207	5305	3879	3104
					FEED	840	998	980	998	1142	1097	1024	981	976	838	751
	38.2	Hardened steel	0.03D	1.0D	Vc	80	110	110	110	130	130	130	130	130	130	130
					fz	0.01	0.017	0.026	0.036	0.043	0.05	0.061	0.072	0.084	0.1	0.116
					RPM	25465	17507	11671	8754	8276	6897	5173	4138	3448	2586	2069
					FEED	509	595	607	630	712	690	631	596	579	517	480
	39.1	Hardened steel	0.03D	1.0D	Vc	65	90	90	90	100	100	100	100	100	100	100
					fz	0.008	0.013	0.019	0.027	0.032	0.038	0.046	0.053	0.064	0.075	0.086
					RPM	20690	14324	9549	7162	6366	5305	3979	3183	2653	1989	1592
					FEED	331	372	363	387	407	403	366	337	340	298	274
	39.2	Hardened steel	0.03D	1.0D	Vc	50	70	70	70	80	80	80	80	80	80	80
					fz	0.006	0.01	0.015	0.021	0.025	0.03	0.037	0.043	0.052	0.059	0.067
					RPM	15915	11141	7427	5570	5093	4244	3183	2546	2122	1592	1273
					FEED	191	223	223	234	255	255	236	219	221	188	171
	39.3	Hardened steel	0.03D	1.0D	Vc	40	60	60	60	70	70	70	70	70	70	70
					fz	0.005	0.009	0.013	0.018	0.021	0.025	0.03	0.036	0.043	0.05	0.057
					RPM	12732	9549	6366	4775	4456	3714	2785	2228	1857	1393	1114
					FEED	127	172	166	172	187	186	167	160	160	139	127
	40	Chilled Cast Iron	0.03D	1.0D	Vc	120	165	165	165	195	195	195	195	200	195	195
					fz	0.011	0.019	0.028	0.038	0.046	0.053	0.066	0.079	0.092	0.108	0.121
					RPM	38197	26261	17507	13130	12414	10345	7759	6207	5305	3879	3104
					FEED	840	998	980	998	1142	1097	1024	981	976	838	751
41	Hardened Cast Iron	0.03D	1.0D	Vc	80	110	110	110	130	130	130	130	130	130	130	
				fz	0.01	0.017	0.026	0.036	0.043	0.05	0.061	0.072	0.084	0.1	0.116	
				RPM	25465	17507	11671	8754	8276	6897	5173	4138	3448	2586	2069	
				FEED	509	595	607	630	712	690	631	596	579	517	480	



SELECTION GUIDE



SERIES	G8A45	G8A01	G8A02	G8D63	G8D64
FLUTE	2	2	4	6&8	6&8
HELIX ANGLE	30°	30°	30°	45°	45°
CUTTING EDGE SHAPE	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE
SIZE MIN	D0.1	D0.1	D1.0	D6.0	D6.0
SIZE MAX	D4.0	D20.0	D20.0	D25.0	D25.0
PAGE	131	135	136	137	138

SOLID CARBIDE
X5070
END MILLS

High Hardened Steels HRc45 to HRc70,
High Speed Machining, Dry Cutting



Please visit
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for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : P 139

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRc					
P	1	Non-alloy steel	About 0.15% C Annealed	125						
	2		About 0.45% C Annealed	190	13					
	3		About 0.45% C Quenched & Tempered	250	25					
	4		About 0.75% C Annealed	270	28					
	5		About 0.75% C Quenched & Tempered	300	32	○	○	○	○	○
	6	Low alloy steel	Annealed	180	10					
	7		Quenched & Tempered	275	29					
	8		Quenched & Tempered	300	32	○	○	○	○	○
	9		Quenched & Tempered	350	38	○	○	○	○	○
	10		High alloyed steel, and tool steel	Annealed	200	15				
	11	Quenched & Tempered		325	35	○	○	○	○	○
M	12	Stainless steel	Ferritic / Martensitic Annealed	200	15					
	13		Martensitic Quenched & Tempered	240	23					
	14		Austenitic	180	10					
K	15	Grey cast iron	Pearlitic / ferritic	180	10					
	16		Pearlitic (Martensitic)	260	26					
	17	Nodular cast iron	Ferritic	160	3					
	18		Pearlitic	250	25					
	19	Malleable cast iron	Ferritic	130						
20	Pearlitic		230	21						
N	21	Aluminum-wrought alloy	Not Curable	60						
	22		Curable Hardened	100						
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable	75						
	24		≤ 12% Si, Curable Hardened	90						
	25		> 12% Si, Not Curable	130						
	26	Copper and Copper Alloys (Bronze / Brass)	Cutting Alloys, PB>1%	110						
	27		CuZn, CuSnZn (Brass)	90						
	28		CuSn, lead-free copper and electrolytic copper	100						
	29	Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic							
	30		Rubber, Wood, etc.							
S	31	Heat Resistant Super Alloys	Fe Based	Annealed	200	15				
	32			Cured	280	30				
	33		Ni or Co Based	Annealed	250	25				
	34			Cured	350	38				
	35			Cast	320	34				
36	Titanium Alloys	Pure Titanium	400 Rm							
37		Alpha + Beta Alloys Hardened	1050 Rm							
H	38	Hardened steel	Hardened	550	55	◎	◎	◎	◎	◎
	39		Hardened	630	60	◎	◎	◎	◎	◎
	40	Chilled Cast Iron	Cast	400	42	○	○	○	○	○
	41	Hardened Cast Iron	Hardened	550	55	◎	◎	◎	◎	◎