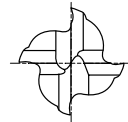


CARBIDE, 4 FLUTE LONG LENGTH

 **VOLLHARTMETALL, 4 SCHNEIDEN LANG**
 **Fraise carbure, 4 dents, longue**
 **4 TAGLIENTI, SERIE LUNGA**

- ▶ Suitable for dry milling applications at high temperatures.
- ▶ Excellent high-performance end mills.
- ▶ 4 flute allows for better work piece finishes.

- ▶ Für die Trockenbearbeitung.
- ▶ Hervorragendes Preis - Leistungsverhältnis.
- ▶ 4 Schneiden erzeugen eine bessere Oberflächengüte des Werkstücks.



Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
G9449901	2.0	● 3	7	38
G9449030	3.0	6	8	57
G9449035	3.5	6	10	57
G9449040	4.0	6	11	57
G9449045	4.5	6	11	57
G9449050	5.0	6	13	57
G9449060	6.0	6	13	57
G9449070	7.0	8	16	63
G9449080	8.0	8	19	63
G9449090	9.0	10	19	72
G9449100	10.0	10	22	72
G9449120	12.0	12	26	83
G9449140	14.0	14	26	83
G9449160	16.0	16	32	92
G9449180	18.0	18	32	92
G9449200	20.0	20	38	104

● with plain shank

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0 ~ - 0.03	h5

◎ : Excellent ○ : Good																								
ISO	P										M					K								
Material Description	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	13	23	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21				
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230				
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○				
ISO	N										S						H							
Material Description	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	21	22	23	24	25	26	27	28	29	30	15	30	25	38	34	36	37	55	60	42	55			
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550			
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○			



RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

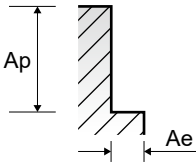
G9432, G9G50, G9A69, G9448, G9540, G9449, G9G51, G9453 SERIES

4 FLUTE - SIDE CUTTING

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

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Mill Diameter (Ø)													
						1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0	14.0	16.0	20.0	
P	1-4	Non-alloy steel	0.1D	1.0D	Vc	55	55	60	70	80	85	90	90	85	90	90	95	90	
					fz	0.002	0.005	0.006	0.009	0.019	0.024	0.029	0.043	0.047	0.047	0.047	0.047	0.047	
					RPM	17507	11671	9549	7427	6366	5411	4775	3581	2706	2387	2046	1890	1432	
	5	Non-alloy steel	0.1D	1.0D	FEED	140	233	229	267	484	519	554	616	509	449	385	355	269	
					Vc	30	35	40	45	50	50	55	55	55	55	55	60	55	
					fz	0.002	0.004	0.006	0.009	0.019	0.024	0.031	0.038	0.038	0.037	0.038	0.037	0.038	
	6-7	Low alloy steel	0.1D	1.0D	RPM	9549	7427	6366	4775	3979	3183	2918	2188	1751	1459	1251	1194	875	
					FEED	76	119	153	172	302	306	362	333	266	216	190	177	133	
					Vc	55	55	60	70	80	85	90	90	85	90	90	95	90	
	8-9	Low alloy steel	0.1D	1.0D	fz	0.002	0.005	0.006	0.009	0.019	0.024	0.029	0.043	0.047	0.047	0.047	0.047	0.047	
					RPM	17507	11671	9549	7427	6366	5411	4775	3581	2706	2387	2046	1890	1432	
					FEED	140	233	229	267	484	519	554	616	509	449	385	355	269	
	10	High alloyed steel, and tool steel	0.1D	1.0D	Vc	30	35	40	45	50	50	55	55	55	55	55	60	55	
					fz	0.002	0.004	0.006	0.009	0.019	0.024	0.031	0.038	0.038	0.037	0.038	0.037	0.038	
					RPM	9549	7427	6366	4775	3979	3183	2918	2188	1751	1459	1251	1194	875	
	11.1 - 11.2	High alloyed steel, and tool steel	0.1D	1.0D	FEED	76	119	153	172	302	306	362	333	266	216	190	177	133	
					Vc	55	55	60	70	80	85	90	90	85	90	90	95	90	
fz					0.002	0.005	0.006	0.009	0.019	0.024	0.029	0.043	0.047	0.047	0.047	0.047	0.047		
M	14.1	Stainless steel	0.1D	1.0D	RPM	17507	11671	9549	7427	6366	5411	4775	3581	2706	2387	2046	1890	1432	
					FEED	140	233	229	267	484	519	554	616	509	449	385	355	269	
					Vc	30	35	40	45	50	50	55	55	55	55	55	60	55	
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.1D	1.5D	fz	0.002	0.004	0.006	0.009	0.019	0.024	0.031	0.038	0.038	0.037	0.038	0.037	0.038	
					RPM	9549	7427	6366	4775	3979	3183	2918	2188	1751	1459	1251	1194	875	
					FEED	76	119	153	172	302	306	362	333	266	216	190	177	133	
N	21~22	Aluminum-wrought alloy	0.1D	1.5D	Vc	25	35	35	35	40	40	45	45	45	45	45	50	45	
					fz	0.002	0.004	0.006	0.009	0.018	0.024	0.029	0.042	0.044	0.045	0.045	0.045	0.046	
					RPM	7958	7427	5570	3714	3183	2546	2387	1790	1432	1194	1023	995	716	
					FEED	64	119	134	134	229	244	277	301	252	215	184	179	132	
	23~25	Aluminum-cast, alloyed	0.1D	1.5D	Vc	60	55	60	55	60	55	55	55	60	55	55	55	55	
					fz	0.008	0.013	0.017	0.026	0.035	0.044	0.065	0.093	0.116	0.155	0.182	0.22	0.288	
					RPM	19099	11671	9549	5836	4775	3501	2918	2188	1910	1459	1251	1094	875	
					FEED	611	607	649	607	668	616	759	814	886	905	910	963	1008	
	26-28	Copper and Copper Alloys (Bronze / Brass)	0.1D	1.5D	Vc	140	130	140	145	140	145	145	145	145	140	145	145	140	
					fz	0.006	0.011	0.015	0.021	0.03	0.036	0.047	0.063	0.078	0.095	0.108	0.125	0.163	
					RPM	44563	27587	22282	15385	11141	9231	7692	5769	4615	3714	3297	2885	2228	
					FEED	1070	1214	1337	1292	1337	1329	1446	1454	1440	1411	1424	1442	1453	
	29.1	Non Metallic Materials	0.1D	1.5D	Vc	140	130	140	145	140	145	145	145	145	140	145	145	140	
					fz	0.006	0.011	0.015	0.021	0.03	0.036	0.047	0.063	0.078	0.095	0.108	0.125	0.163	
					RPM	44563	27587	22282	15385	11141	9231	7692	5769	4615	3714	3297	2885	2228	
					FEED	1070	1214	1337	1292	1337	1329	1446	1454	1440	1411	1424	1442	1453	
40	Chilled Cast Iron	0.1D	1.0D	Vc	80	95	105	105	110	105	105	110	105	105	105	110	105		
				fz	0.006	0.011	0.016	0.024	0.029	0.038	0.048	0.063	0.081	0.096	0.115	0.125	0.162		
				RPM	25465	20160	16711	11141	8754	6685	5570	4377	3342	2785	2387	2188	1671		
				FEED	611	887	1070	1070	1015	1016	1070	1103	1083	1070	1098	1094	1083		
H	40	Chilled Cast Iron	0.1D	1.0D	Vc	80	95	105	105	110	105	105	110	105	105	105	110	105	
					fz	0.006	0.011	0.016	0.024	0.029	0.038	0.048	0.063	0.081	0.096	0.115	0.125	0.162	
					RPM	25465	20160	16711	11141	8754	6685	5570	4377	3342	2785	2387	2188	1671	
					FEED	611	887	1070	1070	1015	1016	1070	1103	1083	1070	1098	1094	1083	
H	40	Chilled Cast Iron	0.1D	1.0D	Vc	30	35	40	45	50	50	55	55	55	55	55	60	55	
					fz	0.002	0.004	0.006	0.009	0.019	0.024	0.031	0.038	0.038	0.037	0.038	0.037	0.038	
					RPM	9549	7427	6366	4775	3979	3183	2918	2188	1751	1459	1251	1194	875	
					FEED	76	119	153	172	302	306	362	333	266	216	190	177	133	

※ The FEED, in long & extra long types, should be reduced by around 50%



SELECTION GUIDE



SERIES	G9G49	G9432	G9G50
FLUTE	3	4	4
HELIX ANGLE	45°	30°	30°
CUTTING EDGE SHAPE	SQUARE	SQUARE	SQUARE
SIZE MIN	D3.0	D1.0	D3.0
SIZE MAX	D20.0	D20.0	D20.0
PAGE	585	586	587

SOLID CARBIDE
K-2
END MILLS

General Purpose with Coating
Conventional or High Speed Milling, Wet or Dry Cutting



Please visit
globalyg1.com/mat
for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : P 597

	LONG LENGTH with CHAMFER	SHORT LENGTH	SHORT LENGTH with CHAMFER
	TiAlN based	TiAlN based	TiAlN based
			
1	◎	◎	◎
2	◎	◎	◎
3	◎	◎	◎
4	◎	◎	◎
5	◎	◎	◎
6	◎	◎	◎
7	◎	◎	◎
8	◎	◎	◎
9	◎	◎	◎
10	◎	◎	◎
11	◎	◎	◎
12	○	○	○
13	○	○	○
14	○	○	○
15	○	○	○
16	○	○	○
17	○	○	○
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19	○	○	○
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29	○	○	○
30	○	○	○
31	○	○	○
32	○	○	○
33	○	○	○
34	○	○	○
35	○	○	○
36	○	○	○
37	○	○	○
38			
39			
40	○	○	○
41			

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 Cutting Alloys, PB>1%	110	
	27	Copper Alloys (Bronze / Brass)	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		Annealed	250	25
	34		Ni or Co Based 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

[illegible]