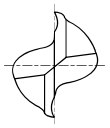
CARBIDE, 2 FLUTE MINIATURE

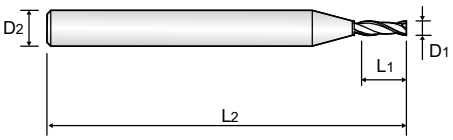
VOLLHARTMETALL, 2 SCHNEIDEN MINI
Fraise carbure, 2 dents, micro-fraise
2 TAGLIENTI, MINI

- ▶ High precision milling in medical, optical, electronics and aerospace industries.
- ▶ Excellent performance on hardened steel

- ▶ Hochpräzises Fräsen für Medizintechnik, Optik, Elektronik und Raumfahrt.
- ▶ Ausgezeichnete Leistung bei der Bearbeitung von gehärtetem Stahl.



up to Ø3mm



CARBIDE | 2 | 30° | PLAIN | P.385

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
GM810004	0.4	3	0.8	40
GM810005	0.5	3	1	40
GM810006	0.6	3	1.2	40
GM810007	0.7	3	1.4	40
GM810008	0.8	3	1.6	40
GM810009	0.9	3	2	40
GM810010	1.0	4	2.5	40
GM810901	1.0	6	2.5	40
GM810012	1.2	4	4	40
GM810014	1.4	4	4	40
GM810015	1.5	4	4	40

▶ NEXT PAGE

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	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		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											15	30	25	38	34			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																		○		◎	○

X-POWER PRO END MILLS

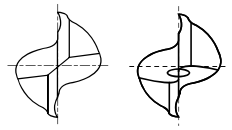
PLAIN SHANK **GM810 SERIES**

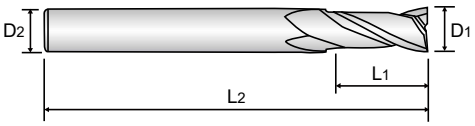
CARBIDE, 2 FLUTE SHORT LENGTH

VOLLHARTMETALL, 2 SCHNEIDEN KURZ
Fraise carbure, 2 dents, courte
2 TAGLIENTI, SERIE CORTA

- Designed to machine tool steels, alloy steels, mold steels and other hardened materials.
- Superior workpiece finishes.
- Increased feed rates.

- Zur Bearbeitung: Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.
- Bessere Werkstückoberflächen.
- Höhere Vorschübe.





CARBIDE | 2 | 30° | PLAIN P.385

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
GM810901	1.0	6	2.5	40
GM810902	1.5	6	4	40
GM810020	2.0	4	6	40
GM810903	2.0	6	6	40
GM810025	2.5	4	8	40
GM810030	3.0	6	8	45
GM810035	3.5	6	10	45
GM810040	4.0	6	11	45
GM810050	5.0	6	13	50
GM810060	6.0	6	13	50
GM810070	7.0	8	16	60
GM810080	8.0	8	19	60
GM810090	9.0	10	19	70
GM810100	10.0	10	22	70
GM810110	11.0	12	22	75
GM810120	12.0	12	26	75
GM810140	14.0	14	26	85
GM810160	16.0	16	32	100
GM810180	18.0	18	32	100
GM810200	20.0	20	38	105

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

◎ : Excellent ○ : Good

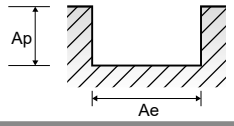
ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		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											15	30	25	38	34			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																		○		◎	○

X-POWER PRO END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

GM810 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) 0.4	0.8	1.0	1.2	1.5
P	5	Non-alloy steel	1.0D	D<1:0.15D D≥1:0.25D	Vc	40	65	70	65	60
					fz	0.002	0.003	0.004	0.005	0.006
					RPM	31831	25863	22282	17242	12732
					FEED	127	155	178	172	153
	8-9	Low alloy steel	1.0D	D<1:0.15D D≥1:0.25D	Vc	40	65	70	65	60
					fz	0.002	0.003	0.004	0.005	0.006
					RPM	31831	25863	22282	17242	12732
					FEED	127	155	178	172	153
	11.1 - 11.2	High alloyed steel, and tool steel	1.0D	D<1:0.15D D≥1:0.25D	Vc	40	65	70	65	60
					fz	0.002	0.003	0.004	0.005	0.006
					RPM	31831	25863	22282	17242	12732
					FEED	127	155	178	172	153
H	38.1 - 38.2	Hardened steel	1.0D	D<1:0.02D D≥1:0.05D	Vc	30	50	50	50	45
					fz	0.001	0.002	0.003	0.003	0.004
					RPM	23873	19894	15915	13263	9549
					FEED	48	80	95	80	76
	40	Chilled Cast Iron	1.0D	D<1:0.15D D≥1:0.25D	Vc	40	65	70	65	60
					fz	0.002	0.003	0.004	0.005	0.006
					RPM	31831	25863	22282	17242	12732
					FEED	127	155	178	172	153
	41	Hardened Cast Iron	1.0D	D<1:0.02D D≥1:0.05D	Vc	30	50	50	50	45
					fz	0.001	0.002	0.003	0.003	0.004
					RPM	23873	19894	15915	13263	9549
					FEED	48	80	95	80	76

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø) 2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0	16.0	20.0
P	1-4	Non-alloy steel	1.0D	D≤3:0.2D D>3:0.5D	Vc	65	75	85	90	95	95	90	95	100	95
					fz	0.01	0.015	0.025	0.032	0.039	0.057	0.064	0.064	0.062	0.063
					RPM	10345	7958	6764	5730	5040	3780	2865	2520	1989	1512
					FEED	207	239	338	367	393	431	367	323	247	191
	5		1.0D	D≤3:0.2D D>3:0.5D	Vc	45	45	50	55	55	55	55	55	60	60
					fz	0.010	0.016	0.024	0.032	0.041	0.050	0.050	0.048	0.051	0.047
					RPM	7162	4775	3979	3501	2918	2188	1751	1459	1194	955
					FEED	143	153	191	224	239	219	175	140	122	90
	6-7	Low alloy steel	1.0D	D≤3:0.2D D>3:0.5D	Vc	65	75	85	90	95	95	90	95	100	95
					fz	0.01	0.015	0.025	0.032	0.039	0.057	0.064	0.064	0.062	0.063
					RPM	10345	7958	6764	5730	5040	3780	2865	2520	1989	1512
					FEED	207	239	338	367	393	431	367	323	247	191
	8-9		1.0D	D≤3:0.2D D>3:0.5D	Vc	45	45	50	55	55	55	55	55	60	60
					fz	0.010	0.016	0.024	0.032	0.041	0.050	0.050	0.048	0.051	0.047
					RPM	7162	4775	3979	3501	2918	2188	1751	1459	1194	955
					FEED	143	153	191	224	239	219	175	140	122	90
	10	High alloyed steel, and tool steel	1.0D	D≤3:0.2D D>3:0.5D	Vc	65	75	85	90	95	95	90	95	100	95
					fz	0.01	0.015	0.025	0.032	0.039	0.057	0.064	0.064	0.062	0.063
					RPM	10345	7958	6764	5730	5040	3780	2865	2520	1989	1512
					FEED	207	239	338	367	393	431	367	323	247	191
	11.1 - 11.2		1.0D	D≤3:0.2D D>3:0.5D	Vc	45	45	50	55	55	55	55	55	60	60
					fz	0.010	0.016	0.024	0.032	0.041	0.050	0.050	0.048	0.051	0.047
					RPM	7162	4775	3979	3501	2918	2188	1751	1459	1194	955
					FEED	143	153	191	224	239	219	175	140	122	90
M	14.1	Stainless steel	1.0D	D≤3:0.2D D>3:0.5D	Vc	35	40	45	45	50	45	45	45	50	45
					fz	0.009	0.016	0.024	0.032	0.039	0.053	0.06	0.059	0.066	0.06
					RPM	5570	4244	3581	2865	2653	1790	1432	1194	995	716
					FEED	100	136	172	183	207	190	172	141	131	86
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	1.0D	D≤3:0.2D D>3:0.5D	Vc	65	75	85	90	95	95	90	95	100	95
					fz	0.01	0.015	0.025	0.032	0.039	0.057	0.064	0.064	0.062	0.063
					RPM	10345	7958	6764	5730	5040	3780	2865	2520	1989	1512
					FEED	207	239	338	367	393	431	367	323	247	191
H	38.1 - 38.2	Hardened steel	1.0D	0.05D	Vc	30	30	35	35	35	40	40	40	40	40
					fz	0.004	0.007	0.009	0.013	0.017	0.028	0.027	0.029	0.028	0.028
					RPM	4775	3183	2785	2228	1857	1592	1273	1061	796	637
					FEED	38	45	50	58	63	89	69	62	45	36
	40	Chilled Cast Iron	1.0D	D≤3:0.2D D>3:0.5D	Vc	45	45	50	55	55	55	55	55	60	60
					fz	0.01	0.016	0.024	0.032	0.041	0.05	0.05	0.048	0.051	0.047
					RPM	7162	4775	3979	3501	2918	2188	1751	1459	1194	955
					FEED	143	153	191	224	239	219	175	140	122	90
	41	Hardened Cast Iron	1.0D	0.05D	Vc	30	30	35	35	35	40	40	40	40	40
					fz	0.004	0.007	0.009	0.013	0.017	0.028	0.027	0.029	0.028	0.028
					RPM	4775	3183	2785	2228	1857	1592	1273	1061	796	637
					FEED	38	45	50	58	63	89	69	62	45	36