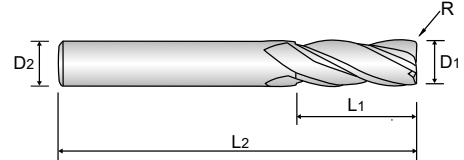
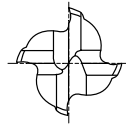


CARBIDE, 4 FLUTE LONG LENGTH CORNER RADIUS

- **VOLLHARTMETALL, 4 SCHNEIDEN LANG ECKENRADIUS**
- **Fraise carbure, 4 dents, torique, longue**
- **4 TAGLIENTI, TORICA, SERIE LUNGA**

- ▶ Designed to machine tool steels, alloy steels, mold steels and other hardened materials.
- ▶ 4 flute allows for better workpiece finishes.
- ▶ Increased production.

- ▶ Zur Bearbeitung von Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.
- ▶ 4 Schneiden für bessere Oberflächengüte des Werkstücks.
- ▶ Gesteigerte Productivität.



Unit : mm

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R	D1	D2	L1	L2
GM819030	R0.3	3.0	6	12	50
GM819040	R0.3	4.0	6	15	50
GM819911	R0.5	4.0	6	15	50
GM819912	R0.5	5.0	6	20	60
GM819060	R0.5	6.0	6	20	60
GM819901	R1.0	6.0	6	20	60
GM819080	R0.5	8.0	8	25	70
GM819902	R1.0	8.0	8	25	70
GM819904	R2.0	8.0	8	25	70
GM819100	R0.5	10.0	10	30	90
GM819905	R1.0	10.0	10	30	90
GM819906	R1.5	10.0	10	30	90
GM819907	R2.0	10.0	10	30	90
GM819120	R0.5	12.0	12	30	90
GM819908	R1.0	12.0	12	30	90
GM819909	R1.5	12.0	12	30	90
GM819910	R2.0	12.0	12	30	90
GM819160	R0.5	16.0	16	50	110
GM819916	R1.0	16.0	16	50	110
GM819918	R2.0	16.0	16	50	110
GM819921	R2.0	20.0	20	55	110

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

◎ : Excellent ○ : Good

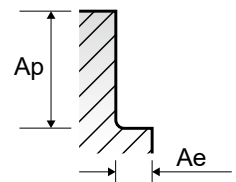
ISO Material Description	P										M					K																										
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel					Stainless steel					Grey cast iron		Nodular cast iron		Malleable cast iron																	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	150	180	250	280	320	400 Rm	1050 Rm	550	630	550	630	400	420	550	550	630	400	420	550			
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	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	550	630	400	420	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

GM819 SERIES 4 FLUTE CORNER RADIUS - SIDE CUTTING

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	1-4	Non-alloy steel	0.05D	2.5D	Vc	70	75	80	80	85	85	85	95	85	fz	0.006	0.01	0.012	0.014	0.019	0.023	0.022	0.023	0.022	RPM	7427	5968	5093	4244	3382	2706	2255	1890	1353	FEED	178	239	244	238	257	249	198	174	119
					Vc	45	45	50	50	55	55	60	60	55	fz	0.008	0.011	0.016	0.018	0.024	0.028	0.029	0.030	0.028	RPM	4775	3581	3183	2653	2188	1751	1592	1194	875	FEED	153	158	204	191	210	196	185	143	98
	5	Non-alloy steel	0.05D	2.5D	Vc	70	75	80	80	85	85	85	95	85	fz	0.006	0.01	0.012	0.014	0.019	0.023	0.022	0.023	0.022	RPM	7427	5968	5093	4244	3382	2706	2255	1890	1353	FEED	178	239	244	238	257	249	198	174	119
					Vc	45	45	50	50	55	55	60	60	55	fz	0.008	0.011	0.016	0.018	0.024	0.028	0.029	0.030	0.028	RPM	4775	3581	3183	2653	2188	1751	1592	1194	875	FEED	153	158	204	191	210	196	185	143	98
	6-7	Low alloy steel	0.05D	2.5D	Vc	70	75	80	80	85	85	85	95	85	fz	0.006	0.01	0.012	0.014	0.019	0.023	0.022	0.023	0.022	RPM	7427	5968	5093	4244	3382	2706	2255	1890	1353	FEED	178	239	244	238	257	249	198	174	119
					Vc	45	45	50	50	55	55	60	60	55	fz	0.008	0.011	0.016	0.018	0.024	0.028	0.029	0.030	0.028	RPM	4775	3581	3183	2653	2188	1751	1592	1194	875	FEED	153	158	204	191	210	196	185	143	98
	8-9	Low alloy steel	0.05D	2.5D	Vc	70	75	80	80	85	85	85	95	85	fz	0.006	0.01	0.012	0.014	0.019	0.023	0.022	0.023	0.022	RPM	7427	5968	5093	4244	3382	2706	2255	1890	1353	FEED	178	239	244	238	257	249	198	174	119
					Vc	45	45	50	50	55	55	60	60	55	fz	0.008	0.011	0.016	0.018	0.024	0.028	0.029	0.030	0.028	RPM	4775	3581	3183	2653	2188	1751	1592	1194	875	FEED	153	158	204	191	210	196	185	143	98
	10	High alloyed steel, and tool steel	0.05D	2.5D	Vc	70	75	80	80	85	85	85	95	85	fz	0.006	0.01	0.012	0.014	0.019	0.023	0.022	0.023	0.022	RPM	7427	5968	5093	4244	3382	2706	2255	1890	1353	FEED	178	239	244	238	257	249	198	174	119
					Vc	45	45	50	50	55	55	60	60	55	fz	0.008	0.011	0.016	0.018	0.024	0.028	0.029	0.030	0.028	RPM	4775	3581	3183	2653	2188	1751	1592	1194	875	FEED	153	158	204	191	210	196	185	143	98
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.05D	2.5D	Vc	70	75	80	80	85	85	85	95	85	fz	0.006	0.01	0.012	0.014	0.019	0.023	0.022	0.023	0.022	RPM	7427	5968	5093	4244	3382	2706	2255	1890	1353	FEED	178	239	244	238	257	249	198	174	119
					Vc	25	30	35	35	35	35	35	35	35	35	35	35	35	fz	0.006	0.008	0.011	0.013	0.017	0.021	0.020	0.022	0.023	RPM	2653	2387	2228	1857	1393	1114	928	696	557	FEED	64	76	98	97	95
H	38.1 - 38.2	Hardened steel	0.02D	2.0D	Vc	25	30	35	35	35	35	35	35	35	fz	0.006	0.008	0.011	0.013	0.017	0.021	0.020	0.022	0.023	RPM	2653	2387	2228	1857	1393	1114	928	696	557	FEED	64	76	98	97	95	94	74	61	51
					Vc	45	45	50	50	55	55	60	60	55	fz	0.008	0.011	0.016	0.018	0.024	0.028	0.029	0.030	0.028	RPM	4775	3581	3183	2653	2188	1751	1592	1194	875	FEED	153	158	204	191	210	196	185	143	98
	40	Chilled Cast Iron	0.05D	2.5D	Vc	70	75	80	80	85	85	85	95	85	fz	0.006	0.01	0.012	0.014	0.019	0.023	0.022	0.023	0.022	RPM	7427	5968	5093	4244	3382	2706	2255	1890	1353	FEED	178	239	244	238	257	249	198	174	119
Vc					45	45	50	50	55	55	60	60	55	fz	0.008	0.011	0.016	0.018	0.024	0.028	0.029	0.030	0.028	RPM	4775	3581	3183	2653	2188	1751	1592	1194	875	FEED	153	158	204	191	210	196	185	143	98	
41	Hardened Cast Iron	0.02D	2.0D	Vc	25	30	35	35	35	35	35	35	35	35	fz	0.006	0.008	0.011	0.013	0.017	0.021	0.020	0.022	0.023	RPM	2653	2387	2228	1857	1393	1114	928	696	557	FEED	64	76	98	97	95	94	74	61	51
				Vc	45	45	50	50	55	55	60	60	55	fz	0.008	0.011	0.016	0.018	0.024	0.028	0.029	0.030	0.028	RPM	4775	3581	3183	2653	2188	1751	1592	1194	875	FEED	153	158	204	191	210	196	185	143	98	



SELECTION GUIDE



SERIES	GM876	GM813	GM886	GM902
FLUTE	2	2	2	2
HELIX ANGLE	30°	30°	30°	30°
CUTTING EDGE SHAPE	BALL NOSE	BALL NOSE	BALL NOSE	BALL NOSE
SIZE MIN	R0.5	R0.5	R0.25	R0.5
SIZE MAX	R8.0	R10.0	R3.0	R4.0
PAGE	350	351	352	354

SOLID CARBIDE
X-POWER PRO
END MILLS

for Pre-Hardened Steels up to HRC55,
 Mold & Die, Dry & Wet Cutting

SHORT LENGTH	LONG LENGTH	RIB PROCESSING	TAPER NECK
Y-Coating	Y-Coating	Y-Coating	Y-Coating



Please visit
globalyg1.com/mat
 for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : P 372

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		Ferritic	130		○	○	○		
20	Malleable cast iron	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		Cutting Alloys, PB>1%	110						
	27	Copper and Copper Alloys	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	○	○	○	○	

GM815	GM818	GM8A1	GM839	GM819	GM810	GM883	GM895	GM811	GM817	GM812	GM834	GM814
4	2	2	4	4	2	2	3	4	4	6&8	6	3&4
30°	30°	30°	30°	30°	30°	30°	38°	30°	30°	45°	45°	20°
BALL NOSE	CORNER RADIUS	CORNER RADIUS	CORNER RADIUS	CORNER RADIUS	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	ROUGHING
R1.0	D4.0	D1.0	D2.0	D3.0	D0.4	D0.4	D1.0	D2.0	D2.0	D6.0	D6.0	D6.0
R8.0	D12.0	D6.0	D12.0	D20.0	D20.0	D6.0	D16.0	D25.0	D20.0	D20.0	D25.0	D20.0
355	356	357	359	360	361	363	366	367	368	369	370	371
LONG LENGTH	LONG LENGTH	RIB PROCESSING	STUB LENGTH	LONG LENGTH	SHORT LENGTH	RIB PROCESSING	SHORT LENGTH	SHORT LENGTH	LONG LENGTH	LONG LENGTH	EXTRA LONG LENGTH	LONG LENGTH
Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating

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HSS

CBN END MILLS

i-Xmill END MILLS

i-SMART MODULAR END MILLS

X5070 END MILLS

4G MILL END MILLS

X-POWER PRO END MILLS

TitaNox-POWER END MILLS

JET-POWER END MILLS

V7 PLUS END MILLS

ALU-POWER HPC END MILLS

ALU-POWER END MILLS

D-POWER GRAPHITE END MILLS

D-POWER CFRP END MILLS

ROUTERS

CRX S END MILLS

K-2 END MILLS

ONLY ONE COATED PM60 END MILLS

TANK-POWER END MILLS

GENERAL HSS END MILLS

MILLING CUTTERS

TECHNICAL DATA