



Leading Through Innovation



SOLID CARBIDE

X-POWER PRO END MILLS

X-POWER PRO VHM - FRÄSER

- For Pre-Hardened Steels up to HRc55
- Für vorgehärtete Stähle bis HRc55

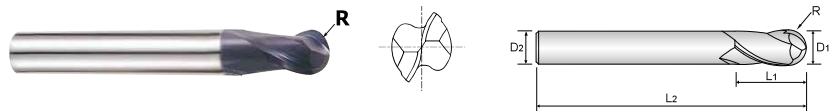
YG X-POWER PRO END MILLS

PLAIN SHANK **GM876** SERIES

CARBIDE, 2 FLUTE SHORT LENGTH BALL NOSE

- VOLLHARTMETALL, 2 SCHNEIDEN KURZ KUGELSTIRN**
- Fraise carbure, 2 dents, hémisphérique, courte**
- 2 TAGLIENTI, SEMISFERICA, SERIE CORTA**

- Economic type with short overall length. **Günstige Variante, kurze Gesamlänge.**
- Radius tolerance $\pm 0.02\text{mm}$ & short length of cut. **Radius Toleranz $\pm 0.02\text{mm}$ und kurze Schneidenlänge.**



CARBIDE 2 30° ± 0.02 PLAIN P.372-373

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut		Overall Length
	R(± 0.02)	D1	D2	L1	L2	
GM876010	R0.5	1.0	3	3	3	38
GM876020	R1.0	2.0	6	3	50	50
GM876030	R1.5	3.0	6	4	50	50
GM876040	R2.0	4.0	6	5	54	54
GM876060	R3.0	6.0	6	7	54	54
GM876080	R4.0	8.0	8	9	58	58
GM876100	R5.0	10.0	10	11	66	66
GM876120	R6.0	12.0	12	12	73	73
GM876160	R8.0	16.0	16	16	82	82

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

◎ : Excellent ○ : Good

ISO	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	13	25	28	32	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					T						
	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						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	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

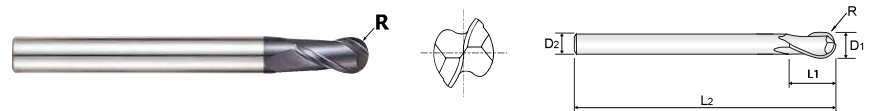
YG X-POWER PRO END MILLS

PLAIN SHANK **GM813** SERIES

CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE

- VOLLHARTMETALL, 2 SCHNEIDEN LANG KUGELSTIRN**
- Fraise carbure, 2 dents, hémisphérique, longue**
- 2 TAGLIENTI, SEMISFERICA, SERIE LUNGA**

- Designed to machine tool steel, alloy steel, mold steel and other high hardened materials. **Zur Bearbeitung von Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.**
- For copy - milling machines. **Für Kopierfräsmaschinen.**



CARBIDE 2 30° ± 0.02 PLAIN P.372-373

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut		Overall Length
	R(± 0.02)	D1	D2	L1	L2	
GM813010	R0.5	1.0	4	2.5	50	50
GM813020	R1.0	2.0	6	5	50	50
GM813030	R1.5	3.0	6	8	60	60
GM813040	R2.0	4.0	6	8	70	70
GM813050	R2.5	5.0	6	10	80	80
GM813060	R3.0	6.0	6	12	90	90
GM813080	R4.0	8.0	8	14	100	100
GM813100	R5.0	10.0	10	18	100	100
GM813120	R6.0	12.0	12	22	110	110
GM813160	R8.0	16.0	16	30	140	140
GM813200	R10.0	20.0	20	38	160	160

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

◎ : Excellent ○ : Good

ISO	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	13	25	28	32	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	○	○	○	◎	◎	○	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○	○

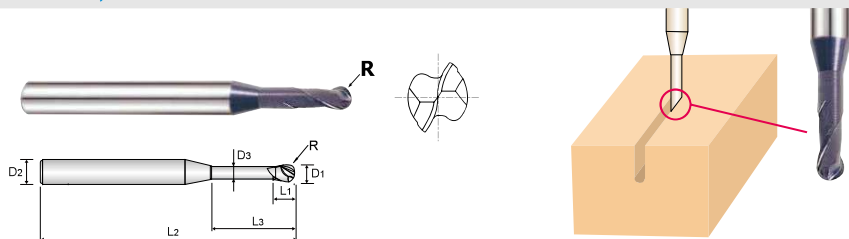
ISO	N										S					T						
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc	15	30	25	38	34						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	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

YG X-POWER PRO END MILLS

PLAIN SHANK **GM886** SERIES

CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING

VOLLHARTMETALL, 2 SCHNEIDEN KUGELSTIRN für SCHMALE RIPPEN
 (1) Fraise carbure, 2 dents, hémisphérique pour usinage de rainure
 (2) TAGLIENTI, SEMISFERICA PER NERVATURE



CARBIDE 2 30° ±0.01 PLAIN P.374-375

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R(±0.01)	D1	D2	L1	L3	L2	D3
GM886005	R0.25	0.5	4	0.7	2	45	0.45
GM886962	R0.25	0.5	4	0.7	4	45	0.45
GM886957	R0.3	0.6	4	0.9	2	45	0.55
GM886915	R0.3	0.6	4	0.9	4	45	0.55
GM886916	R0.3	0.6	4	0.9	6	45	0.55
GM886919	R0.4	0.8	4	1.2	4	45	0.75
GM886008	R0.4	0.8	4	1.2	6	45	0.75
GM886921	R0.5	1.0	4	1.5	4	45	0.95
GM886923	R0.5	1.0	4	1.5	5	45	0.95
GM886010	R0.5	1.0	4	1.5	6	45	0.95
GM886902	R0.5	1.0	4	1.5	8	45	0.95
GM886903	R0.5	1.0	4	1.5	10	45	0.95
GM886904	R0.5	1.0	4	1.5	12	45	0.95
GM886927	R0.5	1.0	4	1.5	16	50	0.95
GM886012	R0.6	1.2	4	1.8	8	45	1.15
GM886930	R0.75	1.5	4	2.3	6	45	1.45
GM886015	R0.75	1.5	4	2.3	8	45	1.45
GM886931	R0.75	1.5	4	2.3	10	45	1.45
GM886906	R0.75	1.5	4	2.3	12	45	1.45
GM886940	R1.0	2.0	4	3	6	45	1.95
GM886020	R1.0	2.0	4	3	8	45	1.95
GM886941	R1.0	2.0	4	3	10	45	1.95
GM886942	R1.0	2.0	4	3	12	50	1.95
GM886909	R1.0	2.0	4	3	16	50	1.95

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0 ~ -0.02	h5

▶ NEXT PAGE

◎ : 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	○	○	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

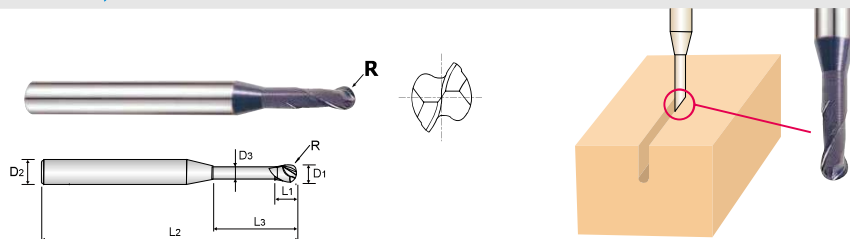
ISO	N				S				T													
Material Description	Aluminum-wrought alloy		Aluminum-cast. alloyed		Copper and Copper Alloys (Bronze/Brass)		Non Metallic Materials		Heat Resistant Super Alloys		Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron								
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc	60	100	75	90	130	110	90	100	15	30	25	38	34	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	400	550	550	
Recommend																						

YG X-POWER PRO END MILLS

PLAIN SHANK **GM886** SERIES

CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING

VOLLHARTMETALL, 2 SCHNEIDEN KUGELSTIRN für SCHMALE RIPPEN
 (1) Fraise carbure, 2 dents, hémisphérique pour usinage de rainure
 (2) TAGLIENTI, SEMISFERICA PER NERVATURE



CARBIDE 2 30° ±0.01 PLAIN P.374-375

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R(±0.01)	D1	D2	L1	L3	L2	D3
GM886910	R1.0	2.0	4	3	20	55	1.95
GM886945	R1.0	2.0	4	3	25	60	1.95
GM886967	R1.0	2.0	4	3	30	70	1.95
GM886947	R1.5	3.0	6	4.5	10	50	2.85
GM886948	R1.5	3.0	6	4.5	12	50	2.85
GM886030	R1.5	3.0	6	4.5	16	55	2.85
GM886911	R1.5	3.0	6	4.5	20	60	2.85
GM886968	R1.5	3.0	6	4.5	25	65	2.85
GM886040	R2.0	4.0	6	6	16	60	3.85
GM886912	R2.0	4.0	6	6	20	65	3.85
GM886913	R2.0	4.0	6	6	25	70	3.85
GM886971	R2.0	4.0	6	6	30	70	3.85
GM886972	R2.0	4.0	6	6	35	80	3.85
GM886050	R2.5	5.0	6	7.5	16	60	4.85
GM886060	R3.0	6.0	6	9	20	80	5.85
GM886954	R3.0	6.0	6	9	30	90	5.85

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0 ~ -0.02	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				T													
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	60	100	75	90	130	110	90	100	15	30	25	38	34	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	400	550	550	
Recommend																						

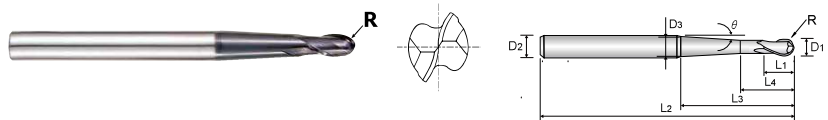
YG X-POWER PRO END MILLS

PLAIN SHANK **GM902** SERIES

CARBIDE, 2 FLUTE BALL NOSE with TAPER NECK

VOLLHARTMETALL, 2 SCHNEIDEN KUGELSTIRN mit KONISCH ABGESETZTEM SCHAFTTEIL
 (1) Fraise carbure, 2 dents, hémisphérique avec entrée conique
 (1) 2 TAGLIENTI, SEMISFERICA, SCARICO CONICO

► High efficiency milling in deep slotting due to long projection of the end mills. ► Effizientes Tiefnutenfräsen von tiefliegenden Bereichen möglich.



EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Under Neck Parallel Length	Length Below Shank	Overall Length	Neck Diameter	Taper Neck Angle
	R(±0.01)	D1	D2	L1	L4	L3	L2	D3	θ
GM902010	R0.5	1.0	6	2	4	23	60	2	1° 30'
GM902901	R0.5	1.0	6	2	4	23	60	4.3	5°
GM902902	R0.5	1.0	6	2	4	42	80	5	3°
GM902020	R1.0	2.0	6	4	6	23	60	2.9	1° 30'
GM902903	R1.0	2.0	6	4	6	23	60	5	5°
GM902904	R1.0	2.0	6	4	6	41	80	5.7	3°
GM902030	R1.5	3.0	6	6	8	32	70	5.6	3°
GM902905	R1.5	3.0	6	6	8	52	90	5.3	1° 30'
GM902040	R2.0	4.0	6	8	10	28	70	5.9	3°
GM902906	R2.0	4.0	6	8	10	49	90	6	1° 30'
GM902060	R3.0	6.0	8	12	15	34	90	8	3°
GM902908	R3.0	6.0	8	12	15	53	110	8	1° 30'
GM902080	R4.0	8.0	10	14	17	36	100	10	3°
GM902909	R4.0	8.0	10	14	17	55	120	10	1° 30'

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

◎: Excellent ○: Good

ISO	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	13	25	28	32	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						T															
	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	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	42	55						
HB	60	100	75	90	130	110	90	100			15	30	25	38	34	200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	◎	◎	◎	◎	◎	◎

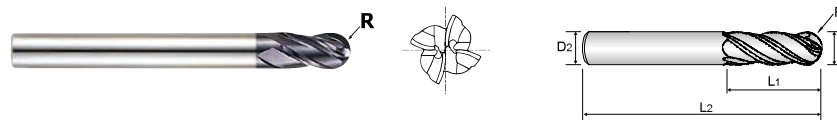
YG X-POWER PRO END MILLS

PLAIN SHANK **GM815** SERIES

CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE

VOLLHARTMETALL, 4 SCHNEIDEN LANG KUGELSTIRN
 (1) Fraise carbure, 4 dents, hémisphérique, longue
 (1) 4 TAGLIENTI, SEMISFERICA, SERIE LUNGA

► Designed to machine tool steels, alloy steels, mold steels and other high hardened materials. ► Zur Bearbeitung von Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.
 ► For copy - milling machines. ► Für Kopierfräsmaschinen.
 ► 4 Flute design - higher feed than GM813 series. ► 4 Schneiden - Höherer Vorschub als bei GM813 serien.



EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R(±0.02)	D1	D2	L1	L2
GM815020	R1.0	2.0	6	5	50
GM815030	R1.5	3.0	6	8	60
GM815040	R2.0	4.0	6	8	70
GM815050	R2.5	5.0	6	10	80
GM815060	R3.0	6.0	6	12	90
GM815080	R4.0	8.0	8	14	100
GM815100	R5.0	10.0	10	18	100
GM815120	R6.0	12.0	12	22	110
GM815160	R8.0	16.0	16	30	140

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

◎: Excellent ○: Good

ISO	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	13	25	28	32	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						T															
	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	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	42	55						
HB	60	100	75	90	130	110	90	100			15	30	25	38	34	200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	◎	◎	◎	◎	◎	◎

YG X-POWER PRO END MILLS

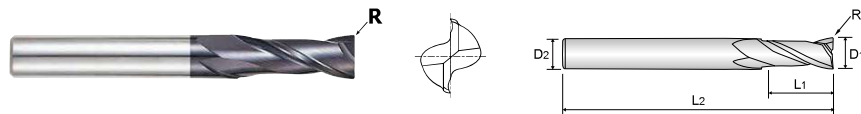
PLAIN SHANK **GM818** SERIES

CARBIDE, 2 FLUTE LONG LENGTH CORNER RADIUS

- VOLLHARTMETALL, 2 SCHNEIDEN LANG ECKENRADIUS
- ① Fraise carbure, 2 dents, torique, longue
- ② 2 TAGLIENTI, TORICA, SERIE LUNGA

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

- ▶ Zur Bearbeitung von Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.
- ▶ Bessere Werkstückoberflächen.
- ▶ Höhere Vorschubwerte.



Unit : mm

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R	D1	D2	L1	L2
GM818911	R0.5	4.0	6	15	50
GM818060	R0.5	6.0	6	20	60
GM818901	R1.0	6.0	6	20	60
GM818080	R0.5	8.0	8	25	70
GM818902	R1.0	8.0	8	25	70
GM818100	R0.5	10.0	10	30	90
GM818905	R1.0	10.0	10	30	90
GM818908	R1.0	12.0	12	30	90

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

◎ : Excellent ○ : Good

ISO	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					
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
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	32	10	29	32	38	15	35	15	23	10	10	26	3	25	19	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	○	◎	◎	○	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○

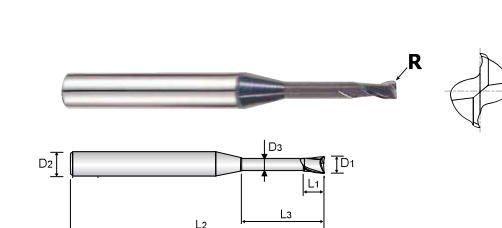
ISO	N					S					T												
	Aluminum-wrought alloy	Aluminum-cast. alloyed	Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials	Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron											
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41		
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	15	30	25	38	34	55	60	42	55	55	60	42	55	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	550	630	400	550
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

YG X-POWER PRO END MILLS

PLAIN SHANK **GM8A1** SERIES

CARBIDE, 2 FLUTE CORNER RADIUS for RIB PROCESSING

- VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS für SCHMALE RIPPEN
- ① Fraise carbure, 2 dents, torique pour usinage de rainure
- ② 2 TAGLIENTI, TORICA PER NERVATURE



P.381-382

Unit : mm

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R	D1	D2	L1	L3	L2	D3
GM8A1010	R0.1	1.0	4	1.5	6	45	0.95
GM8A1920	R0.1	1.0	4	1.5	8	45	0.95
GM8A1921	R0.1	1.0	4	1.5	10	45	0.95
GM8A1012	R0.2	1.2	4	1.8	6	45	1.15
GM8A1015	R0.2	1.5	4	2.3	6	45	1.45
GM8A1937	R0.2	1.5	4	2.3	8	45	1.45
GM8A1938	R0.2	1.5	4	2.3	10	45	1.45
GM8A1939	R0.2	1.5	4	2.3	12	45	1.45
GM8A1941	R0.2	1.5	4	2.3	16	50	1.45
GM8A1018	R0.2	1.8	4	2.7	6	45	1.75
GM8A1960	R0.2	2.0	4	3	6	45	1.95
GM8A1020	R0.2	2.0	4	3	8	45	1.95
GM8A1962	R0.2	2.0	4	3	12	45	1.95
GM8A1961	R0.2	2.0	4	3	10	45	1.95
GM8A1964	R0.2	2.0	4	3	16	50	1.95
GM8A1966	R0.2	2.0	4	3	20	55	1.95
GM8A1967	R0.2	2.0	4	3	25	60	1.95
GM8A1969	R0.2	2.5	4	3.7	12	45	2.40

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

▶ NEXT PAGE

◎ : Excellent ○ : Good

ISO	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					
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
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	32	10	29	32	38	15	35	15	23	10	10	26	3	25	19	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	○	◎	◎	○	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○

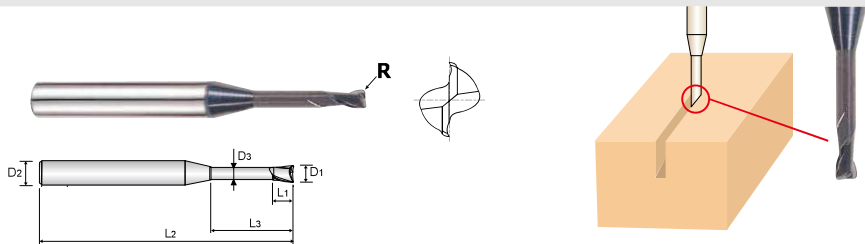
ISO	N					S					T												
	Aluminum-wrought alloy	Aluminum-cast. alloyed	Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials	Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron											
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41		
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	15	30	25	38	34	55	60	42	55	55	60	42	55	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	550	630	400	550
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

YG X-POWER PRO END MILLS

PLAIN SHANK **GM8A1** SERIES

CARBIDE, 2 FLUTE CORNER RADIUS for RIB PROCESSING

- VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS für SCHMALE RIPPEN
- ① Fraise carbure, 2 dents, torique pour usinage de rainure
- ② 4 TAGLIENTI, TORICA PER NERVATURE



CARBIDE ② 30° PLAIN P.381-382

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R	D1	D2	L1	L3	L2	D3
GM8A1981	R0.3	3.0	6	4.5	16	55	2.85
GM8A1983	R0.3	3.0	6	4.5	20	60	2.85
GM8A1984	R0.3	3.0	6	4.5	25	65	2.85
GM8A1976	R0.3	3.0	6	4.5	30	70	2.85
GM8A1985	R0.3	3.0	6	4.5	40	90	2.85
GM8A1040	R0.3	4.0	6	6	12	50	3.85
GM8A1986	R0.3	4.0	6	6	16	60	3.85
GM8A1987	R0.3	4.0	6	6	20	60	3.85
GM8A1060	R0.5	6.0	6	9	20	80	5.85
GM8A1802	R0.5	6.0	6	9	40	100	5.85

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

◎: Excellent ○: Good

ISO	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	13	25	28	32	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						T										
	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	15	30	25	38	34	55	60	42	55	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	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

YG X-POWER PRO END MILLS

PLAIN SHANK **GM839** SERIES

CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS

- VOLLHARTMETALL, 4 SCHNEIDEN EXTRA KURZ ECKENRADIUS
- ① Fraise carbure, 4 dents, torique, extra-courte
- ② 4 TAGLIENTI, TORICA, TAGLIENTE CORTO, SCARICATA

- Designed to machine tool steels, alloy steels, mold steels and other hardened materials.
- Superior workpiece finishes.
- Increased feed rates.
- Zur Bearbeitung von Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.
- Bessere Werkstückoberflächen.
- Höhere Vorschubwerte.



CARBIDE ④ 30° PLAIN P.383

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R	D1	D2	L1	L3	L2	D3
GM839020	R0.2	2.0	6	2.5	5	50	1.9
GM839030	R0.3	3.0	6	4	7	50	2.8
GM839040	R0.4	4.0	6	5	9	50	3.7
GM839060	R0.6	6.0	6	7	14	55	5.6
GM839080	R0.8	8.0	8	10	18	60	7.4
GM839100	R1.0	10.0	10	12	25	70	9.4
GM839120	R1.2	12.0	12	15	30	80	11.4

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

◎: Excellent ○: Good

ISO	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	13	25	28	32	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						T										
	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	15	30	25	38	34	55	60	42	55	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	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	



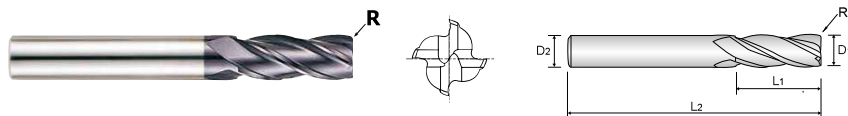
PLAIN SHANK **GM819** SERIES

CARBIDE, 4 FLUTE LONG LENGTH CORNER RADIUS

- VOLLHARTMETALL, 4 SCHNEIDEN LANG ECKENRADIUS
- (1) Fraise carbure, 4 dents, torique, longue
- (2) 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 Produktivität.



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	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	13	25	28	32	30	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				T												
	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	61	60	55	50	45	40	35	30	25	20	15	30	25	38	34	55	60	42	55		
HB	200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	630	400	550							
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○							



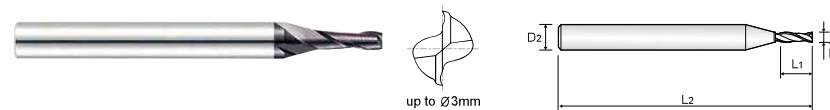
PLAIN SHANK **GM810** SERIES

CARBIDE, 2 FLUTE MINIATURE

- VOLLHARTMETALL, 2 SCHNEIDEN MINI
- (1) Fraise carbure, 2 dents, micro-fraise
- (2) 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.



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
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

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

▶ NEXT PAGE

◎ : Excellent ○ : Good

ISO	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	13	25	28	32	30	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				T												
	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	61	60	55	50	45	40	35	30	25	20	15	30	25	38	34	55	60	42	55		
HB	200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	630	400	550							
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○							

YG X-POWER PRO END MILLS

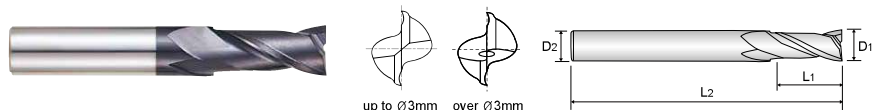
PLAIN SHANK **GM810** SERIES

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.



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					
	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	30	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	○	○	○	◎	◎	○	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○	○

YG X-POWER PRO END MILLS

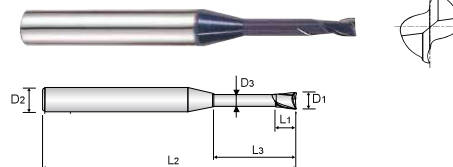
PLAIN SHANK **GM883** SERIES

CARBIDE, 2 FLUTE for RIB PROCESSING

- VOLLHARTMETALL, 2 SCHNEIDEN für SCHMALE RIPPEN**
- Fraise carbure, 2 dents pour usinage de rainure**
- 2 TAGLIENTI, SCARICATA PER NERVATURE**

- 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.



Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	D1	D2	L1	L3	L2	D3
GM883004	0.4	4	0.6	2	45	0.37
GM883005	0.5	4	0.7	2	45	0.45
GM883988	0.5	4	0.7	4	45	0.45
GM883820	0.7	4	1	3	45	0.65
GM883008	0.8	4	1.2	4	45	0.75
GM883908	0.8	4	1.2	6	45	0.75
GM883996	1.0	4	1.5	4	45	0.95
GM883010	1.0	4	1.5	6	45	0.95
GM883912	1.0	4	1.5	8	45	0.95
GM883913	1.0	4	1.5	10	45	0.95
GM883914	1.0	4	1.5	12	45	0.95
GM883997	1.0	4	1.5	16	50	0.95
GM883998	1.0	4	1.5	20	55	0.95
GM883012	1.2	4	1.8	6	45	1.15
GM883015	1.5	4	2.3	6	45	1.45
GM883923	1.5	4	2.3	8	45	1.45
GM883924	1.5	4	2.3	10	45	1.45
GM883925	1.5	4	2.3	12	45	1.45
GM883927	1.5	4	2.3	16	50	1.45
GM883810	1.5	4	2.3	20	55	1.45

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0 ~ -0.015	h5

▶ NEXT PAGE

◎ : Excellent ○ : Good

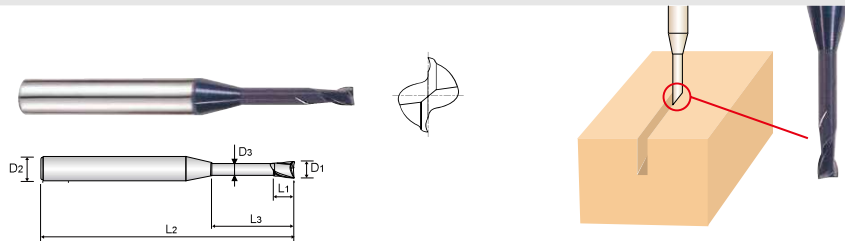
ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel and tool steel		Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron			
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	○	◎	◎	○	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○	○

YG X-POWER PRO END MILLS

PLAIN SHANK **GM883** SERIES

CARBIDE, 2 FLUTE for RIB PROCESSING

- VOLLHARTMETALL, 2 SCHNEIDEN für SCHMALE RIPPEN
- ① Fraise carbure, 2 dents pour usinage de rainure
- ② TAGLIENTI, SCARICATA PER NERVATURE



CARBIDE 2 30° PLAIN P.386-387

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	D1	D2	L1	L3	L2	D3
GM883946	1.8	4	2.7	12	45	1.75
GM883958	2.0	4	3	6	45	1.95
GM883020	2.0	4	3	8	45	1.95
GM883959	2.0	4	3	10	45	1.95
GM883960	2.0	4	3	12	45	1.95
GM883961	2.0	4	3	14	50	1.95
GM883962	2.0	4	3	16	50	1.95
GM883964	2.0	4	3	20	55	1.95
GM883966	2.0	4	3	25	60	1.95
GM883814	2.0	4	3	30	70	1.95
GM883970	2.5	4	3.7	16	55	2.40
GM883975	3.0	6	4.5	10	45	2.85
GM883976	3.0	6	4.5	12	45	2.85
GM883978	3.0	6	4.5	16	55	2.85
GM883979	3.0	6	4.5	18	55	2.85
GM883980	3.0	6	4.5	20	60	2.85
GM883981	3.0	6	4.5	25	65	2.85
GM883832	3.0	6	4.5	30	70	2.85
GM883983	3.0	6	4.5	40	90	2.85

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0 ~ - 0.015	h5

▶ NEXT PAGE

◎ : Excellent ○ : Good

ISO	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	13	25	28	32	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	○	○	○	◎	◎	○	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○

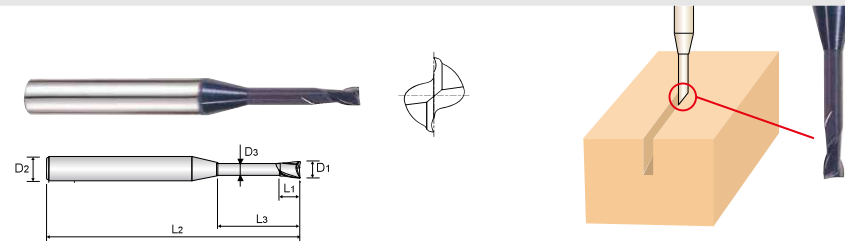
ISO	N					S					T												
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys		Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron										
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41		
HRc	60	61	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HB	60	100	75	90	130	110	90	100	200	280	250	350	320	400 Rm	1050 Rm	550	630	400	400	550	550	550	
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

YG X-POWER PRO END MILLS

PLAIN SHANK **GM883** SERIES

CARBIDE, 2 FLUTE for RIB PROCESSING

- VOLLHARTMETALL, 2 SCHNEIDEN für SCHMALE RIPPEN
- ① Fraise carbure, 2 dents pour usinage de rainure
- ② TAGLIENTI, SCARICATA PER NERVATURE



CARBIDE 2 30° PLAIN P.386-387

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	D1	D2	L1	L3	L2	D3
GM883801	4.0	6	6	16	60	3.85
GM883802	4.0	6	6	20	60	3.85
GM883803	4.0	6	6	25	70	3.85
GM883834	4.0	6	6	30	70	3.85
GM883836	4.0	6	6	40	90	3.85
GM883838	4.0	6	6	50	100	3.85
GM883807	6.0	6	9	30	90	5.85
GM883809	6.0	6	9	50	110	5.85

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0 ~ - 0.015	h5

◎ : Excellent ○ : Good

ISO	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	13	25	28	32	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					T												
	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	61	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HB	60	100	75	90	130	110	90	100	200	280	250	350	320	400 Rm	1050 Rm	550	630	400	400	550	550	550	
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

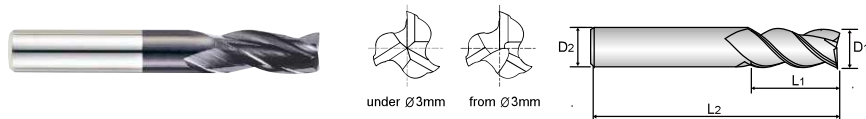
YG X-POWER PRO END MILLS

PLAIN SHANK **GM895** SERIES

CARBIDE, 3 FLUTE 38° HELIX SHORT LENGTH

- VOLLHARTMETALL, 3 SCHNEIDEN 38° RECHTSSPIRALE KURZ
- () Fraise carbure, 3 dents, hélice 38°, courte
- () 3 TAGLIENTI, ELICA 38°, SERIE CORTA

- Designed to machine tool steels, alloy steels, mold steels and other hardened materials.
- Possesses the advantage of 2 flute and 4 flute end mill.
- Superior workpiece finishes.
- Zur Bearbeitung: Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.
- Besitzt die Vorteile von 2 und 4 Schneiden Fräsern
- Bessere Werkstückoberflächen



EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
GM895010	1.0	3	2.5	38
GM895015	1.5	4	5	50
GM895025	2.5	3	7	38
GM895030	3.0	3	10	38
GM895901	3.0	6	10	50
GM895040	4.0	4	12	50
GM895903	4.0	6	12	50
GM895050	5.0	5	14	50
GM895904	5.0	6	14	57
GM895060	6.0	6	16	57
GM895080	8.0	8	20	63
GM895100	10.0	10	22	72
GM895120	12.0	12	25	73
GM895160	16.0	16	32	82

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

◎: Excellent ○: Good

ISO	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	13	25	28	32	30	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					T										
	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	23	24	25	26	27	28	29	30	31	32	15	30	25	38	34	40	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	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

YG X-POWER PRO END MILLS

PLAIN SHANK **GM811** SERIES

CARBIDE, 4 FLUTE SHORT LENGTH

- VOLLHARTMETALL, 4 SCHNEIDEN KURZ
- () Fraise carbure, 4 dents, courte
- () 4 TAGLIENTI, SERIE CORTA

- Designed to machine tool steels, alloy steels, mold steels and other hardened materials.
- 4 flute allows for better workpiece finishes.
- Increased Productivity.
- Zur Bearbeitung: Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.
- 4 Schneiden erzeugen eine bessere Oberfläche des Werkstücks.
- Höhere Produktivität.



EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
GM811020	2.0	4	6	40
GM811901	2.0	6	6	40
GM811025	2.5	4	8	40
GM811902	2.5	6	8	40
GM811030	3.0	6	8	45
GM811035	3.5	6	10	45
GM811040	4.0	6	11	45
GM811045	4.5	6	11	45
GM811050	5.0	6	13	50
GM811060	6.0	6	13	50
GM811080	8.0	8	19	60
GM811100	10.0	10	22	70
GM811120	12.0	12	26	75
GM811140	14.0	14	26	85
GM811160	16.0	16	32	100
GM811200	20.0	20	38	105
GM811250	25.0	25	45	120

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

◎: Excellent ○: Good

ISO	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	13	25	28	32	30	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					T										
	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	23	24	25	26	27	28	29	30	31	32	15	30	25	38	34	40	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	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

YG X-POWER PRO END MILLS

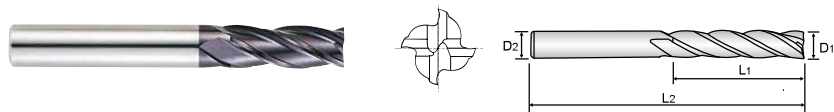
PLAIN SHANK **GM817** SERIES

CARBIDE, 4 FLUTE LONG LENGTH

- VOLLHARTMETALL, 4 SCHNEIDEN LANG
- () Fraise carbure, 4 dents, longue
- () 4 TAGLIENTI, SERIE LUNGA

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

- Zur Bearbeitung: Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.
- 4 Schneiden erzeugen eine bessere Oberfläche des Werkstücks.
- Höhere Produktivität.



Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
GM817020	2.0	4	8	40
GM817030	3.0	6	12	50
GM817040	4.0	6	15	50
GM817050	5.0	6	20	60
GM817060	6.0	6	20	60
GM817080	8.0	8	25	70
GM817100	10.0	10	30	90
GM817120	12.0	12	30	90
GM817140	14.0	16	40	110
GM817160	16.0	16	50	110
GM817200	20.0	20	55	110

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

◎ : Excellent ○ : Good

ISO	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	13	25	28	32	30	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					T							
	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				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																			◎	◎	○

YG X-POWER PRO END MILLS

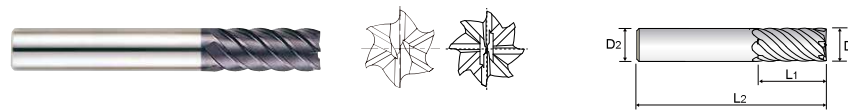
PLAIN SHANK **GM812** SERIES

CARBIDE, 6&8 FLUTE 45° HELIX LONG LENGTH

- VOLLHARTMETALL, 6&8 SCHNEIDEN 45° RECHTSSPIRALE LANG
- () Fraise carbure, 6&8 dents, hélice 45°, longue
- () 6&8 TAGLIANTI, ELICA 45°, SERIE

- Designed to machine hardened materials.
- High speed cutting and finish milling with high feed rates.
- Superior workpiece finishes.
- Superior wear resistance.
- Suitable for dry milling.

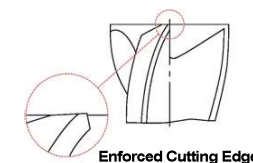
- Geeignet zum Fräsen von gehärteten Stählen.
- Hochgeschwindigkeitsfräsen und Finishing mit erhöhtem Vorschub.
- Bessere Werkstückoberflächen
- Höhere Verschleißfestigkeit.
- Geeignet zum Trocken-Fräsen.



Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
	D1	D2	L1	L2	
GM812060	6.0	6	13	57	6
GM812080	8.0	8	19	63	6
GM812100	10.0	10	22	72	6
GM812120	12.0	12	26	83	6
GM812160	16.0	16	32	92	6
GM812200	20.0	20	38	104	8

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



Enforced Cutting Edge

◎ : Excellent ○ : Good

ISO	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	13	25	28	32	30	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					T							
	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				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																			◎	◎	○

YG X-POWER PRO END MILLS

PLAIN SHANK **GM834** SERIES

CARBIDE, 6 FLUTE 45° HELIX EXTRA LONG LENGTH

VOLLHARTMETALL, 6 SCHNEIDEN 45° RECHTSSPIRALE EXTRA LANG

- 1) Fraise carbure, 6 dents, hélice 45°, extra-longue
- 2) 6 TAGLIANTI, ELICA 45°, SERIE EXTRA LUNGA

- Designed to machine hardened materials.
- High speed cutting and finish milling with high feed rates.
- Superior workpiece finishes.
- Superior wear resistance.
- Suitable for dry milling.

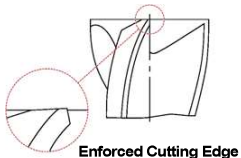
- Geeignet zum Fräsen von gehärteten Stählen.
- Hochgeschwindigkeitsfräsen und Finishing mit erhöhtem Vorschub.
- Bessere Werkstückoberflächen
- Höhere Verschleißfestigkeit.
- Geeignet zum Trocken-Fräsen.



Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
GM834060	6.0	6	26	70
GM834080	8.0	8	36	90
GM834100	10.0	10	46	100
GM834120	12.0	12	56	110
GM834160	16.0	16	66	130
GM834200	20.0	20	76	140
GM834250	25.0	25	92	180

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



◎ : Excellent ○ : Good

ISO	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			
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
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	32	10	29	32	38	15	35	15	23	10	10	26	3	25	19	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					T										
	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					
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
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	15	30	25	38	34	15	30	25	38	34	55	60	42	55	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

YG X-POWER PRO END MILLS

PLAIN SHANK **GM814** SERIES

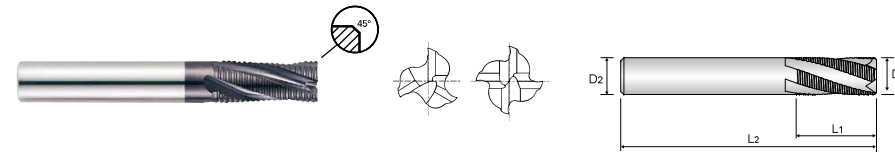
CARBIDE, 3&4 FLUTE 20° HELIX LONG LENGTH ROUGHING - FINE

VOLLHARTMETALL, 3&4 SCHNEIDEN 20° RECHTSSPIRALE LANG SCHRUPPFRÄSER - FEIN

- 1) Fraise carbure, 3&4-dents ébauche, hélice 20°, pas fin, longue
- 2) 3 - 4 TAGLIANTI, BOMBATO FINE PER SGROSSATURA, ELICA 20° SERIE LUNGA

- Designed to machine tool steels, alloy steels, mold steels and other hardened materials.
- High velocity milling of hardened steels.
- For dry and wet milling.
- Fast chip ejection.

- Zur Bearbeitung von Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.
- Hochgeschwindigkeitsfräsen von gehärteten Stählen.
- Für Trocken- und Nassfräsen.
- Schnelle Spanabfuhr.

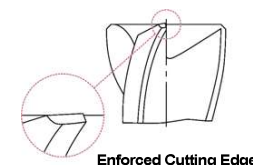


Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute	Chamfer
	D1	D2	L1	L2		
GM814060	6.0	6	16	57	3	0.38
GM814080	8.0	8	16	63	3	0.38
GM814100	10.0	10	22	72	4	0.60
GM814120	12.0	12	26	83	4	0.60
GM814160	16.0	16	32	92	4	0.60
GM814200	20.0	20	38	104	4	0.60

Tolerances according to DIN 7160 & 7161

	Tolerance range in µm				
	Nominal-Diameter in mm				
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30
h10	0	0	0	0	0
	-40	-48	-58	-70	-84
h5	0	0	0	0	0
	-4	-5	-6	-8	-9



◎ : Excellent ○ : Good

ISO	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			
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
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	32	10	29	32	38	15	35	15	23	10	10	26	3	25	19	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					T										
	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					
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
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	15	30	25	38	34	15	30	25	38	34	55	60	42	55	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

GM876, GM813 SERIES 2 FLUTE BALL NOSE

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

NORMAL SPEED

ISO	VDI 3323	Material Description	Ae	Parameter	Diameter (Ø)																																																																					
					1.0	1.5	2.0	2.5	3.0	4.0	5.0	6.0	8.0	10.0	12.0	16.0	20.0																																																									
P	1-4	Non-alloy steel	0.2D	Vc	55	85	100	125	140	150	160	180	200	225	245	270	290	fz	0.008	0.011	0.026	0.026	0.026	0.035	0.045	0.06	0.09	0.12	0.15	0.18	0.2	RPM	17507	18038	15915	15915	14854	11937	10186	9549	7958	7162	6499	5371	4615	FEED	280	397	828	828	772	836	917	1146	1432	1719	1950	1934	1846	Ap	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3
				Vc	45	65	75	95	105	120	130	145	160	180	195	215	230	fz	0.008	0.011	0.023	0.023	0.023	0.032	0.040	0.060	0.080	0.100	0.120	0.140	0.160	RPM	14324	13793	11937	12096	11141	9549	8276	7692	6366	5730	5173	4277	3661	FEED	229	303	549	556	512	611	662	923	1019	1146	1241	1198	1171	Ap	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	
				Vc	55	85	100	125	140	150	160	180	200	225	245	270	290	fz	0.008	0.011	0.026	0.026	0.026	0.035	0.045	0.06	0.09	0.12	0.15	0.18	0.2	RPM	17507	18038	15915	15915	14854	11937	10186	9549	7958	7162	6499	5371	4615	FEED	280	397	828	828	772	836	917	1146	1432	1719	1950	1934	1846	Ap	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	
	5	Non-alloy steel	0.2D	Vc	45	65	75	95	105	120	130	145	160	180	195	215	230	fz	0.008	0.011	0.023	0.023	0.023	0.032	0.040	0.060	0.080	0.100	0.120	0.140	0.160	RPM	14324	13793	11937	12096	11141	9549	8276	7692	6366	5730	5173	4277	3661	FEED	229	303	549	556	512	611	662	923	1019	1146	1241	1198	1171	Ap	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	
				Vc	55	85	100	125	140	150	160	180	200	225	245	270	290	fz	0.008	0.011	0.026	0.026	0.026	0.035	0.045	0.06	0.09	0.12	0.15	0.18	0.2	RPM	17507	18038	15915	15915	14854	11937	10186	9549	7958	7162	6499	5371	4615	FEED	280	397	828	828	772	836	917	1146	1432	1719	1950	1934	1846	Ap	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	
				Vc	45	65	75	95	105	120	130	145	160	180	195	215	230	fz	0.008	0.011	0.023	0.023	0.023	0.032	0.040	0.060	0.080	0.100	0.120	0.140	0.160	RPM	14324	13793	11937	12096	11141	9549	8276	7692	6366	5730	5173	4277	3661	FEED	229	303	549	556	512	611	662	923	1019	1146	1241	1198	1171	Ap	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	
	6-7	Low alloy steel	0.2D	Vc	55	85	100	125	140	150	160	180	200	225	245	270	290	fz	0.008	0.011	0.026	0.026	0.026	0.035	0.045	0.06	0.09	0.12	0.15	0.18	0.2	RPM	17507	18038	15915	15915	14854	11937	10186	9549	7958	7162	6499	5371	4615	FEED	280	397	828	828	772	836	917	1146	1432	1719	1950	1934	1846	Ap	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	
				Vc	45	65	75	95	105	120	130	145	160	180	195	215	230	fz	0.008	0.011	0.023	0.023	0.023	0.032	0.040	0.060	0.080	0.100	0.120	0.140	0.160	RPM	14324	13793	11937	12096	11141	9549	8276	7692	6366	5730	5173	4277	3661	FEED	229	303	549	556	512	611	662	923	1019	1146	1241	1198	1171	Ap	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	
				Vc	55	85	100	125	140	150	160	180	200	225	245	270	290	fz	0.008	0.011	0.026	0.026	0.026	0.035	0.045	0.06	0.09	0.12	0.15	0.18	0.2	RPM	17507	18038	15915	15915	14854	11937	10186	9549	7958	7162	6499	5371	4615	FEED	280	397	828	828	772	836	917	1146	1432	1719	1950	1934	1846	Ap	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	
	8-9	High alloyed steel, and tool steel	0.2D	Vc	45	65	75	95	105	120	130	145	160	180	195	215	230	fz	0.008	0.011	0.023	0.023	0.023	0.032	0.040	0.060	0.080	0.100	0.120	0.140	0.160	RPM	14324	13793	11937	12096	11141	9549	8276	7692	6366	5730	5173	4277	3661	FEED	229	303	549	556	512	611	662	923	1019	1146	1241	1198	1171	Ap	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	
				Vc	55	85	100	125	140	150	160	180	200	225	245	270	290	fz	0.008	0.011	0.026	0.026	0.026	0.035	0.045	0.06	0.09	0.12	0.15	0.18	0.2	RPM	17507	18038	15915	15915	14854	11937	10186	9549	7958	7162	6499	5371	4615	FEED	280	397	828	828	772	836	917	1146	1432	1719	1950	1934	1846	Ap	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	
				Vc	45	65	75	95	105	120	130	145	160	180	195	215	230	fz	0.008	0.011	0.023	0.023	0.023	0.032	0.040	0.060	0.080	0.100	0.120	0.140	0.160	RPM	14324	13793	11937	12096	11141	9549	8276	7692	6366	5730	5173	4277	3661	FEED	229	303	549	556	512	611	662	923	1019	1146	1241	1198	1171	Ap	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	
10	High alloyed steel, and tool steel	0.2D	Vc	55	85	100	125	140	150	160	180	200	225	245	270	290	fz	0.008	0.011	0.026	0.026	0.026	0.035	0.045	0.06	0.09	0.12	0.15	0.18	0.2	RPM	17507	18038	15915	15915	14854	11937	10186	9549	7958	7162	6499	5371	4615	FEED	280	397	828	828	772	836	917	1146	1432	1719	1950	1934	1846	Ap	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3		
			Vc	45	65	75	95	105	120	130	145	160	180	195	215	230	fz	0.008	0.011	0.023	0.023	0.023	0.032	0.040	0.060	0.080	0.100	0.120	0.140	0.160	RPM	14324	13793	11937	12096	11141	9549	8276	7692	6366	5730	5173	4277	3661	FEED	229	303	549	556	512	611	662	923	1019	1146	1241	1198	1171	Ap	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3		
			Vc	55	85	100	125	140	150	160	180	200	225	245	270	290	fz	0.008	0.011	0.026	0.026	0.026	0.035	0.045	0.06	0.09	0.12	0.15	0.18	0.2	RPM	17507	18038	15915	15915	14854	11937	10186	9549	7958	7162	6499	5371	4615	FEED	280	397	828	828	772	836	917	1146	1432	1719	1950	1934	1846	Ap	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3		
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.2D	Vc	55	80	100	125	135	145	160	180	200	220	245	265	290	fz	0.008	0.011	0.026	0.026	0.026	0.035	0.045	0.06	0.09	0.12	0.15	0.181	0.201	RPM	17507	16977	15915	15915	14324	11539	10186	9549	7958	7003	6499	5272	4615	FEED	280	373	828	828	745	808	917	1146	1432	1681	1950	1908	1855	Ap	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	
				Vc	20	30	35	40	50	60	65	70	70	70	75	75	80	fz	0.008	0.011	0.016	0.016	0.017	0.021	0.024	0.030	0.044	0.055	0.070	0.091	0.113	RPM	6366	6366	5570	5093	5305	4775	4138	3448	2785	2228	1989	1492	1273	FEED	102	140	178	163	180	201	199	207	245	245	279	272	288	Ap	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	
				Vc	45	65	75	95	105	120	130	145	160	180	195	215	230	fz	0.008	0.011	0.023	0.023	0.023	0.032	0.040	0.060	0.080	0.100	0.120	0.140	0.160	RPM	14324	13793	11937	12096	11141	9549	8276	7692	6366	5730	5173	4277	3661	FEED	229	303	549	556	512	611	662	923	1019	1146	1241	1198	1171	Ap	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	
H	38.1 - 38.2	Hardened steel	0.1D	Vc	20	30	35	40	50	60	65	70	70	75	75	80	fz	0.008	0.011	0.016	0.016	0.017	0.021	0.024	0.030	0.044	0.055	0.070	0.091	0.113	RPM	6366	6366	5570	5093	5305	4775	4138	3448	2785	2228	1989	1492	1273																														

YG X-POWER PRO END MILLS

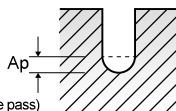
**RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER**

GM886 SERIES 2 FLUTE BALL NOSE RIB PROCESSING

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

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)							
				0.5	0.6	0.8	1.0	1.2	1.4		
P	1-4	Non-alloy steel	Vc	49-63	58-75	78-101	91-115	90-115	92-114		
			fz	0.003-0.006	0.004-0.008	0.004-0.008	0.004-0.010	0.005-0.013	0.006-0.015		
			RPM	32550-42000	32550-42000	32550-42000	30450-38330	25200-32030	22050-27300		
			FEED	185-515	235-660	235-660	265-735	265-820	265-820		
	5	Non-alloy steel	Vc	35-45	42-54	57-72	64-82	64-81	66-79		
			fz	0.002-0.005	0.002-0.006	0.002-0.006	0.003-0.008	0.004-0.009	0.004-0.011		
			RPM	23630-29930	23630-29930	23630-29930	21530-27300	17850-22580	15750-18900		
			FEED	90-285	115-370	115-370	130-410	130-410	130-410		
	6-7	Low alloy steel	Vc	49-63	58-75	78-101	91-115	90-115	92-114		
			fz	0.004-0.006	0.004-0.008	0.004-0.008	0.004-0.010	0.005-0.013	0.006-0.015		
			RPM	32550-42000	32550-42000	32550-42000	30450-38330	25200-32030	22050-27300		
			FEED	185-515	235-660	235-660	265-735	265-820	265-820		
8-9	Low alloy steel	Vc	35-45	42-54	57-72	64-82	64-81	66-79			
		fz	0.002-0.005	0.002-0.006	0.002-0.006	0.003-0.008	0.004-0.009	0.004-0.011			
		RPM	23630-29930	23630-29930	23630-29930	21530-27300	17850-22580	15750-18900			
		FEED	90-285	115-370	115-370	130-410	130-410	130-410			
10	High alloyed steel, and tool steel	Vc	49-63	58-75	78-101	91-115	90-115	92-114			
		fz	0.003-0.006	0.004-0.008	0.004-0.008	0.004-0.010	0.005-0.013	0.006-0.015			
		RPM	32550-42000	32550-42000	32550-42000	30450-38330	25200-32030	22050-27300			
		FEED	185-515	235-660	235-660	265-735	265-820	265-820			
11.1 - 11.2	High alloyed steel, and tool steel	Vc	35-45	42-54	57-72	64-82	64-81	66-79			
		fz	0.002-0.005	0.002-0.006	0.002-0.006	0.003-0.008	0.004-0.009	0.004-0.011			
		RPM	23630-29930	23630-29930	23630-29930	21530-27300	17850-22580	15750-18900			
		FEED	90-285	115-370	115-370	130-410	130-410	130-410			
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	Vc	49-63	58-75	78-101	91-115	90-115	92-114		
			fz	0.003-0.006	0.004-0.008	0.004-0.008	0.004-0.010	0.005-0.013	0.006-0.015		
			RPM	32550-42000	32550-42000	32550-42000	30450-38330	25200-32030	22050-27300		
			FEED	185-515	235-660	235-660	265-735	265-820	265-820		
H	38.1 - 38.2	Hardened steel	Vc	22-28	27-34	36-45	41-51	41-52	41-51		
			fz	0.003-0.005	0.004-0.006	0.004-0.006	0.005-0.008	0.006-0.009	0.007-0.011		
			RPM	15020-18900	15020-18900	15020-18900	13650-17120	11340-14390	9870-12290		
			FEED	90-185	115-235	115-235	130-265	130-265	130-265		
	40	Chilled Cast Iron	Vc	35-45	42-54	57-72	64-82	64-81	66-79		
			fz	0.002-0.005	0.002-0.006	0.002-0.006	0.003-0.008	0.004-0.009	0.004-0.011		
			RPM	23630-29930	23630-29930	23630-29930	21530-27300	17850-22580	15750-18900		
			FEED	90-285	115-370	115-370	130-410	130-410	130-410		
	41	Hardened Cast Iron	Vc	22-28	27-34	36-45	41-51	41-52	41-51		
			fz	0.003-0.005	0.004-0.006	0.004-0.006	0.005-0.008	0.006-0.009	0.007-0.011		
			RPM	15020-18900	15020-18900	15020-18900	13650-17120	11340-14390	9870-12290		
			FEED	90-185	115-235	115-235	130-265	130-265	130-265		

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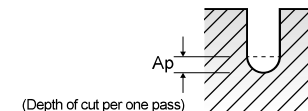
YG X-POWER PRO END MILLS

**RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER**

GM886 SERIES 2 FLUTE BALL NOSE RIB PROCESSING

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

VDI 3323		Material Description	Parameter	Diameter (Ø)									
				1.5	1.6	1.8	2.0	3.0	4.0	5.0	6.0		
1-4	Vc	Non-alloy steel	Vc	90-113	90-118	96-122	97-119	99-123	107-138	107-138	107-138		
			fz	0.007-0.016	0.007-0.017	0.007-0.018	0.008-0.021	0.012-0.030	0.015-0.035	0.018-0.044	0.022-0.053		
			RPM	19950-25200	18900-24680	17850-22580	16280-19950	11030-13650	8930-11550	7140-9240	5990-7670		
			FEED	265-820	265-820	265-820	265-820	265-820	265-820	265-820	265-820		
5	Vc	Non-alloy steel	Vc	64-82	66-83	68-85	69-85	66-85	73-98	72-97	74-98		
			fz	0.005-0.011	0.005-0.012	0.005-0.013	0.006-0.014	0.009-0.022	0.011-0.025	0.014-0.031	0.016-0.038		
			RPM	14180-18380	13860-17330	12600-15750	11550-14180	7350-9450	6090-8190	4830-6510	4100-5460		
			FEED	130-410	130-410	130-410	130-410	130-410	130-410	130-410	130-410		
6-7	Vc	Low alloy steel	Vc	90-113	90-118	96-122	97-119	99-123	107-138	107-138	107-138		
			fz	0.007-0.016	0.007-0.017	0.007-0.018	0.008-0.021	0.012-0.030	0.015-0.035	0.018-0.044	0.022-0.053		
			RPM	19950-25200	18900-24680	17850-22580	16280-19950	11030-13650	8930-11550	7140-9240	5990-7670		
			FEED	265-820	265-820	265-820	265-820	265-820	265-820	265-820	265-820		
8-9	Vc	Low alloy steel	Vc	64-82	66-83	68-85	69-85	66-85	73-98	72-97	74-98		
			fz	0.005-0.011	0.005-0.012	0.005-0.013	0.006-0.014	0.009-0.022	0.011-0.025	0.014-0.031	0.016-0.038		
			RPM	14180-18380	13860-17330	12600-15750	11550-14180	7350-9450	6090-8190	4830-6510	4100-5460		
			FEED	130-410	130-410	130-410	130-410	130-410	130-410	130-410	130-410		
10	Vc	High alloyed steel, and tool steel	Vc	90-113	90-118	96-122	97-119	99-123	107-138	107-138	107-138		
			fz	0.007-0.016	0.007-0.017	0.007-0.018	0.008-0.021	0.012-0.030	0.015-0.035	0.018-0.044	0.022-0.053		
			RPM	19950-25200	18900-24680	17850-22580	16280-19950	11030-13650	8930-11550	7140-9240	5990-7670		
			FEED	265-820	265-820	265-820	265-820	265-820	265-820	265-820	265-820		
11.1 - 11.2	Vc	High alloyed steel, and tool steel	Vc	64-82	66-83	68-85	69-85	66-85	73-98	72-97	74-98		
			fz	0.005-0.011	0.005-0.012	0.005-0.013	0.006-0.014	0.009-0.022	0.011-0.025	0.014-0.031	0.016-0.038		
			RPM	14180-18380	13860-17330	12600-15750	11550-14180	7350-9450	6090-8190	4830-6510	4100-5460		
			FEED	130-410	130-410	130-410	130-410	130-410	130-410	130-410	130-410		
15 - 20	Vc	Grey cast iron Nodular cast iron Malleable cast iron	Vc	90-113	90-118	96-122	97-119	99-123	107-138	107-138	107-138		
			fz	0.007-0.016	0.007-0.017	0.007-0.018	0.008-0.021	0.012-0.030	0.015-0.035	0.018-0.044	0.022-0.053		
			RPM	19950-25200	18900-24680	17850-22580	16280-19950	11030-13650	8930-11550	7140-9240	5990-7670		
			FEED	265-820	265-820	265-820	265-820	265-820	265-820	265-820	265-820		
38.1 - 38.2	Vc	Hardened steel	Vc	41-50	42-52	42-53	43-54	43-54	49-62	49-61	49-62		
			fz	0.007-0.012	0.008-0.012	0.008-0.013	0.009-0.015	0.014-0.022	0.016-0.026	0.020-0.032	0.024-0.038		
			RPM	9140-11240	8720-10920	7770-9870	7250-9030	4830-5990	4100-5150	3260-4100	2730-3470		
			FEED	130-265	130-265	130-265	130-265	130-265	130-265	130-265	130-265		
40	Vc	Chilled Cast Iron	Vc	64-82	66-83	68-85	69-85	66-85	73-98	72-97	74-98		
			fz	0.005-0.011	0.005-0.012	0.005-0.013	0.006-0.014	0.009-0.022	0.011-0.025	0.014-0.031	0.016-0.038		
			RPM	14180-18380	13860-17330	12600-15750	11550-14180	7350-9450	6090-8190	4830-6510	4100-5460		
			FEED	130-410	130-410	130-410	130-410	130-410	130-410	130-410	130-410		
41	Vc	Hardened Cast Iron	Vc	41-50	42-52	42-53	43-54	43-54	49-62	49-61	49-62		
			fz	0.007-0.012	0.008-0.012	0.008-0.013	0.009-0.015	0.014-0.022	0.016-0.026	0.020-0.032	0.024-0.038		
			RPM	9140-11240	8720-10920	7770-9870	7250-9030	4830-5990	4100-5150	3260-4100	2730-3470		
			FEED	130-265	130-265	130-265	130-265	130-265	130-265	130-265	130-265		



GM902 SERIES

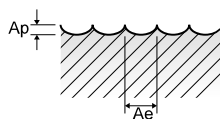
2 FLUTE BALL NOSE with TAPER NECK

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

NORMAL SPEED

ISO	VDI 3323	Material Description	Ae	Parameter	Diameter (Ø)																	
					1.0	2.0	3.0	4.0	5.0	6.0	8.0											
5	Non-alloy steel	0.2D	Vc	fz	35	60	80	90	95	110	120	120										
					RPM	11141	9549	8488	7162	6048	5836	4775										
					FEED	178	267	390	444	484	700	764										
					Ap	0.2	0.2	0.2	0.2	0.2	0.2	0.3										
					8-9	Low alloy steel	0.2D	Vc	fz	35	60	80	90	95	110	120						
										RPM	11141	9549	8488	7162	6048	5836	4775					
										FEED	178	267	390	444	484	700	764					
										Ap	0.2	0.2	0.2	0.2	0.2	0.2	0.3					
										11.1	High alloyed steel, and tool steel	0.2D	Vc	fz	35	60	80	90	95	110	120	
															RPM	11141	9549	8488	7162	6048	5836	4775
															FEED	178	267	390	444	484	700	764
															Ap	0.2	0.2	0.2	0.2	0.2	0.2	0.3
11.2	High alloyed steel, and tool steel	0.1D	Vc	fz											55	75	100	110	125	135	150	
															RPM	17507	11937	10610	8754	7958	7162	5968
															FEED	420	668	912	910	939	960	895
															Ap	0.05	0.1	0.15	0.2	0.25	0.25	0.25
					H	38.1	Hardened steel	0.1D	Vc						55	75	100	110	125	135	150	
															fz	0.012	0.028	0.043	0.052	0.059	0.067	0.075
															RPM	17507	11937	10610	8754	7958	7162	5968
															FEED	420	668	912	910	939	960	895
										Ap	0.05	0.1	0.15	0.2	0.25	0.25	0.25					
										H	38.2	Hardened steel	0.1D	Vc	55	75	95	110	125	130	140	
															fz	0.012	0.026	0.043	0.052	0.059	0.068	0.075
															RPM	17507	11937	10080	8754	7958	6897	5570
FEED	420	621	867	910											939	938	836					
Ap	0.05	0.1	0.15	0.2											0.25	0.25	0.25					
H	40	Chilled Cast Iron	0.1D	Vc											55	75	100	110	125	135	150	
															fz	0.012	0.028	0.043	0.052	0.059	0.067	0.075
					RPM	17507	11937	10610	8754						7958	7162	5968					
					FEED	420	668	912	910						939	960	895					
					Ap	0.05	0.1	0.15	0.2						0.25	0.25	0.25					
					H	41	Hardened Cast Iron	0.1D	Vc						55	75	95	110	125	130	140	
															fz	0.012	0.026	0.043	0.052	0.059	0.068	0.075
										RPM	17507	11937	10080	8754	7958	6897	5570					
										FEED	420	621	867	910	939	938	836					
										Ap	0.05	0.1	0.15	0.2	0.25	0.25	0.25					

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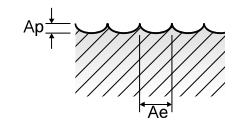
GM902 SERIES

2 FLUTE BALL NOSE with TAPER NECK

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

HIGH SPEED

ISO	VDI 3323	Material Description	Ae	Parameter	Diameter (Ø)																
					1.0	2.0	3.0	4.0	5.0	6.0	8.0										
P	1-5	Non-alloy steel	0.05D	Vc	65	110	165	220	275	335	355										
					fz	0.026	0.036	0.048	0.07	0.086	0.095	0.119									
					RPM	20690	17507	17507	17507	17507	17772	14125									
					FEED	1076	1261	1681	2451	3011	3377	3362									
					Ap	0.2	0.2	0.2	0.2	0.2	0.2	0.3									
					P	6-9	Low alloy steel	0.05D	Vc	65	110	165	220	275	335	355					
										fz	0.026	0.036	0.048	0.07	0.086	0.095	0.119				
										RPM	20690	17507	17507	17507	17507	17772	14125				
										FEED	1076	1261	1681	2451	3011	3377	3362				
										Ap	0.2	0.2	0.2	0.2	0.2	0.2	0.3				
										K	10-11.2	High alloyed steel, and tool steel	0.05D	Vc	65	110	165	220	275	335	355
															fz	0.026	0.036	0.048	0.07	0.086	0.095
RPM	20690	17507	17507	17507											17507	17772	14125				
FEED	1076	1261	1681	2451											3011	3377	3362				
Ap	0.2	0.2	0.2	0.2											0.2	0.2	0.3				
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.05D	Vc											65	110	165	220	275	335	355
															fz	0.026	0.036	0.048	0.07	0.086	0.095
					RPM	20690	17507	17507	17507						17507	17772	14125				
					FEED	1076	1261	1681	2451						3011	3377	3362				
					Ap	0.2	0.2	0.2	0.2						0.2	0.2	0.3				
					H	38	Hardened steel	0.05D	Vc						55	75	100	110	125	135	150
															fz	0.019	0.037	0.069	0.080	0.088	0.101
										RPM	17507	11937	10610	8754	7958	7162	5968				
										FEED	665	883	1464	1401	1401	1447	1337				
										Ap	0.05	0.10	0.15	0.2	0.25	0.25	0.25				
										H	38.2	Hardened steel	0.05D	Vc	55	75	95	110	120	130	140
															fz	0.017	0.043	0.066	0.079	0.087	0.102
RPM	17507	11937	10080	8754											7639	6897	5570				
FEED	595	1027	1331	1383											1329	1407	1214				
Ap	0.05	0.10	0.15	0.2											0.25	0.25	0.25				
H	40	Chilled Cast Iron	0.05D	Vc											65	110	165	220	275	335	355
															fz	0.026	0.036	0.048	0.07	0.086	0.095
					RPM	20690	17507	17507	17507						17507	17772	14125				
					FEED	1076	1261	1681	2451						3011	3377	3362				
					Ap	0.2	0.2	0.2	0.2						0.2	0.2	0.3				
					H	41	Hardened Cast Iron	0.05D	Vc						55	75	95	110	120	130	140
															fz	0.017	0.043	0.066	0.079	0.087	0.102
										RPM	17507	11937	10080	8754	7639	6897	5570				
										FEED	595	1027	1331	1383	1329	1407	1214				
										Ap	0.05	0.10	0.15	0.2	0.25	0.25	0.25				



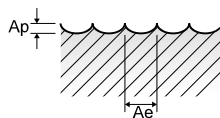
GM815 SERIES 4 FLUTE BALL NOSE

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

NORMAL SPEED

ISO	VDI 3323	Material Description	Ae	Parameter	Diameter (Ø)																																																
					2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0	16.0																																								
P	1-4	Non-alloy steel	0.2D	Vc	105	130	140	150	170	190	210	230	250	fz	0.013	0.019	0.026	0.034	0.045	0.068	0.09	0.111	0.136	RPM	16711	13793	11141	9549	9019	7560	6685	6101	4974	FEED	869	1048	1159	1299	1623	2056	2406	2709	2706	Ap	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3
				Vc	75	100	110	120	135	150	170	185	200	fz	0.010	0.017	0.024	0.030	0.045	0.060	0.075	0.089	0.106	RPM	11937	10610	8754	7639	7162	5968	5411	4907	3979	FEED	477	722	840	917	1289	1432	1623	1747	1687	Ap	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3
				Vc	105	130	140	150	170	190	210	230	250	fz	0.013	0.019	0.026	0.034	0.045	0.068	0.09	0.111	0.136	RPM	16711	13793	11141	9549	9019	7560	6685	6101	4974	FEED	869	1048	1159	1299	1623	2056	2406	2709	2706	Ap	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3
	5	Non-alloy steel	0.2D	Vc	75	100	110	120	135	150	170	185	200	fz	0.010	0.017	0.024	0.030	0.045	0.060	0.075	0.089	0.106	RPM	11937	10610	8754	7639	7162	5968	5411	4907	3979	FEED	477	722	840	917	1289	1432	1623	1747	1687	Ap	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3
				Vc	105	130	140	150	170	190	210	230	250	fz	0.013	0.019	0.026	0.034	0.045	0.068	0.09	0.111	0.136	RPM	16711	13793	11141	9549	9019	7560	6685	6101	4974	FEED	869	1048	1159	1299	1623	2056	2406	2709	2706	Ap	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3
				Vc	75	100	110	120	135	150	170	185	200	fz	0.010	0.017	0.024	0.030	0.045	0.060	0.075	0.089	0.106	RPM	11937	10610	8754	7639	7162	5968	5411	4907	3979	FEED	477	722	840	917	1289	1432	1623	1747	1687	Ap	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3
	6-7	Low alloy steel	0.2D	Vc	105	130	140	150	170	190	210	230	250	fz	0.013	0.019	0.026	0.034	0.045	0.068	0.09	0.111	0.136	RPM	16711	13793	11141	9549	9019	7560	6685	6101	4974	FEED	869	1048	1159	1299	1623	2056	2406	2709	2706	Ap	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3
				Vc	75	100	110	120	135	150	170	185	200	fz	0.010	0.017	0.024	0.030	0.045	0.060	0.075	0.089	0.106	RPM	11937	10610	8754	7639	7162	5968	5411	4907	3979	FEED	477	722	840	917	1289	1432	1623	1747	1687	Ap	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3
				Vc	105	130	140	150	170	190	210	230	250	fz	0.013	0.019	0.026	0.034	0.045	0.068	0.09	0.111	0.136	RPM	16711	13793	11141	9549	9019	7560	6685	6101	4974	FEED	869	1048	1159	1299	1623	2056	2406	2709	2706	Ap	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3
	8-9	Low alloy steel	0.2D	Vc	75	100	110	120	135	150	170	185	200	fz	0.010	0.017	0.024	0.030	0.045	0.060	0.075	0.089	0.106	RPM	11937	10610	8754	7639	7162	5968	5411	4907	3979	FEED	477	722	840	917	1289	1432	1623	1747	1687	Ap	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3
				Vc	105	130	140	150	170	190	210	230	250	fz	0.013	0.019	0.026	0.034	0.045	0.068	0.09	0.111	0.136	RPM	16711	13793	11141	9549	9019	7560	6685	6101	4974	FEED	869	1048	1159	1299	1623	2056	2406	2709	2706	Ap	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3
				Vc	75	100	110	120	135	150	170	185	200	fz	0.010	0.017	0.024	0.030	0.045	0.060	0.075	0.089	0.106	RPM	11937	10610	8754	7639	7162	5968	5411	4907	3979	FEED	477	722	840	917	1289	1432	1623	1747	1687	Ap	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3
10	High alloyed steel, and tool steel	0.2D	Vc	105	130	140	150	170	190	210	230	250	fz	0.013	0.019	0.026	0.034	0.045	0.068	0.09	0.111	0.136	RPM	16711	13793	11141	9549	9019	7560	6685	6101	4974	FEED	869	1048	1159	1299	1623	2056	2406	2709	2706	Ap	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	
			Vc	75	100	110	120	135	150	170	185	200	fz	0.010	0.017	0.024	0.030	0.045	0.060	0.075	0.089	0.106	RPM	11937	10610	8754	7639	7162	5968	5411	4907	3979	FEED	477	722	840	917	1289	1432	1623	1747	1687	Ap	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	
			Vc	105	130	140	150	170	190	210	230	250	fz	0.013	0.019	0.026	0.034	0.045	0.068	0.09	0.111	0.136	RPM	16711	13793	11141	9549	9019	7560	6685	6101	4974	FEED	869	1048	1159	1299	1623	2056	2406	2709	2706	Ap	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.2D	Vc	105	130	140	150	170	190	210	230	250	fz	0.013	0.019	0.026	0.034	0.045	0.068	0.09	0.111	0.136	RPM	16711	13793	11141	9549	9019	7560	6685	6101	4974	FEED	869	1048	1159	1299	1623	2056	2406	2709	2706	Ap	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3
				Vc	75	100	110	120	135	150	170	185	200	fz	0.010	0.017	0.024	0.030	0.045	0.060	0.075	0.089	0.106	RPM	11937	10610	8754	7639	7162	5968	5411	4907	3979	FEED	477	722	840	917	1289	1432	1623	1747	1687	Ap	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3
				Vc	105	130	140	150	170	190	210	230	250	fz	0.013	0.019	0.026	0.034	0.045	0.068	0.09	0.111	0.136	RPM	16711	13793	11141	9549	9019	7560	6685	6101	4974	FEED	869	1048	1159	1299	1623	2056	2406	2709	2706	Ap	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3
H	38.1 - 39.2	Hardened steel	0.1D	Vc	30	45	55	60	65	65	70	70	fz	0.008	0.012	0.016	0.018	0.022	0.033	0.041	0.053	0.069	RPM	4775	4775	4377	3820	3448	2586	2069	1857	1393	FEED	153	229	280	275	303	341	339	394	384	Ap	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	
				Vc	75	100	110	120	135	150	170	185	200	fz	0.01	0.017	0.024	0.03	0.045	0.06	0.075	0.089	0.106	RPM	11937	10610	8754	7639	7162	5968	5411	4907	3979	FEED	477	722	840	917	1289	1432	1623	1747	1687	Ap	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3
				Vc	30	45	55	60	65	65	70	70	fz	0.008	0.012	0.016	0.018	0.022	0.033	0.041	0.053	0.069	RPM	4775	4775	4377	3820	3448	2586	2069	1857	1393	FEED	153	229	280	275	303	341	339	394	384	Ap	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	
H	40	Chilled Cast Iron	0.2D	Vc	75	100	110	120	135	150	170	185	200	fz	0.01	0.017	0.024	0.03	0.045	0.06	0.075	0.089	0.106	RPM	11937	10610	8754	7639	7162	5968	5411	4907	3979	FEED	477	722	840	917	1289	1432	1623	1747	1687	Ap	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3
				Vc	30	45	55	60	65	65	70	70	fz	0.008	0.012	0.016	0.018	0.022	0.033	0.041	0.053	0.069	RPM	4775	4775	4377	3820	3448	2586	2069	1857	1393	FEED	153	229	280	275	303	341	339	394	384	Ap	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	
				Vc	75	100	110	120	135	150	170	185	200	fz	0.01	0.017	0.024	0.03	0.045	0.06	0.075	0.089	0.106	RPM	11937	10610	8754	7639	7162	5968	5411	4907	3979	FEED	477	722	840	917	1289	1432	1623	1747	1687	Ap	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3

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GM815 SERIES 4 FLUTE BALL NOSE

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

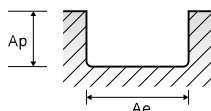
HIGH SPEED

ISO	VDI 3323	Material Description	Ae	Parameter	Diameter (Ø)										
					2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0	16.0		
P	1-5	Non-alloy steel	0.05D	Vc	140	210	275	345	415	440	460				

GM818 SERIES 2 FLUTE CORNER RADIUS - SLOTTING

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

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)					
						4.0	5.0	6.0	8.0	10.0	12.0
P	1-4	Non-alloy steel	1.0D	0.3D	Vc	75	80	80	85	85	85
					fz	0.016	0.023	0.032	0.045	0.053	0.051
					RPM	5968	5093	4244	3382	2706	2255
					FEED	191	234	272	304	287	230
	5	Non-alloy steel	1.0D	0.3D	Vc	45	50	50	55	55	60
					fz	0.013	0.017	0.025	0.033	0.039	0.041
					RPM	3581	3183	2653	2188	1751	1592
					FEED	93	108	133	144	137	131
	6-7	Low alloy steel	1.0D	0.3D	Vc	75	80	80	85	85	85
					fz	0.016	0.023	0.032	0.045	0.053	0.051
					RPM	5968	5093	4244	3382	2706	2255
					FEED	191	234	272	304	287	230
8-9	Low alloy steel	1.0D	0.3D	Vc	45	50	50	55	55	60	
				fz	0.013	0.017	0.025	0.033	0.039	0.041	
				RPM	3581	3183	2653	2188	1751	1592	
				FEED	93	108	133	144	137	131	
10	High alloyed steel, and tool steel	1.0D	0.3D	Vc	75	80	80	85	85	85	
				fz	0.016	0.023	0.032	0.045	0.053	0.051	
				RPM	5968	5093	4244	3382	2706	2255	
				FEED	191	234	272	304	287	230	
11.1 - 11.2	High alloyed steel, and tool steel	1.0D	0.3D	Vc	45	50	50	55	55	60	
				fz	0.013	0.017	0.025	0.033	0.039	0.041	
				RPM	3581	3183	2653	2188	1751	1592	
				FEED	93	108	133	144	137	131	
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	1.0D	0.3D	Vc	75	80	80	85	85	85
					fz	0.016	0.023	0.032	0.045	0.053	0.051
					RPM	5968	5093	4244	3382	2706	2255
					FEED	191	234	272	304	287	230
H	38.1 - 38.2	Hardened steel	1.0D	0.3D	Vc	30	35	35	35	35	35
					fz	0.006	0.008	0.010	0.013	0.016	0.019
					RPM	2387	2228	1857	1393	1114	928
					FEED	29	36	37	36	36	35
H	40	Chilled Cast Iron	1.0D	0.3D	Vc	45	50	50	55	55	60
					fz	0.013	0.017	0.025	0.033	0.039	0.041
					RPM	3581	3183	2653	2188	1751	1592
					FEED	93	108	133	144	137	131
H	41	Hardened Cast Iron	1.0D	0.3D	Vc	30	35	35	35	35	35
					fz	0.006	0.008	0.010	0.013	0.016	0.019
					RPM	2387	2228	1857	1393	1114	928
					FEED	29	36	37	36	36	35

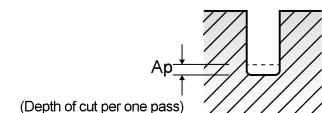


GM8A1 SERIES 2 FLUTE CORNER RADIUS RIB PROCESSING

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

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)							
				1.0	1.2	1.4	1.5	1.6	1.8		
P	1-4	Non-alloy steel	Vc	71~88	70~85	70~88	68~87	70~90	74~93		
			fz	0.006~0.014	0.008~0.020	0.009~0.023	0.010~0.024	0.010~0.025	0.011~0.027		
			RPM	23630~29400	19430~23630	16800~21000	15230~19430	14700~18900	13650~17330		
			FEED	295~850	295~945	295~945	295~945	295~945	295~945		
	5	Non-alloy steel	1.0D	0.3D	Vc	0.045~0.090	0.055~0.100	0.062~0.125	0.070~0.135	0.075~0.145	0.080~0.160
					fz	49~63	49~62	51~62	49~64	51~64	52~65
					RPM	16490~21000	13650~17330	12080~14700	11030~14180	10710~13440	9660~12080
					FEED	200~630	200~630	200~630	200~630	200~630	200~630
	6-7	Low alloy steel	1.0D	0.3D	Vc	71~88	70~85	70~88	68~87	70~90	74~93
					fz	0.006~0.014	0.008~0.020	0.009~0.023	0.010~0.024	0.010~0.025	0.011~0.027
					RPM	23630~29400	19430~23630	16800~21000	15230~19430	14700~18900	13650~17330
					FEED	295~850	295~945	295~945	295~945	295~945	295~945
8-9	Low alloy steel	1.0D	0.3D	Vc	0.045~0.090	0.055~0.100	0.062~0.125	0.070~0.135	0.075~0.145	0.080~0.160	
				fz	49~63	49~62	51~62	49~64	51~64	52~65	
				RPM	16490~21000	13650~17330	12080~14700	11030~14180	10710~13440	9660~12080	
				FEED	200~630	200~630	200~630	200~630	200~630	200~630	
10	High alloyed steel, and tool steel	1.0D	0.3D	Vc	71~88	70~85	70~88	68~87	70~90	74~93	
				fz	0.006~0.014	0.008~0.020	0.009~0.023	0.010~0.024	0.010~0.025	0.011~0.027	
				RPM	23630~29400	19430~23630	16800~21000	15230~19430	14700~18900	13650~17330	
				FEED	295~850	295~945	295~945	295~945	295~945	295~945	
11.1 - 11.2	High alloyed steel, and tool steel	1.0D	0.3D	Vc	0.045~0.090	0.055~0.100	0.062~0.125	0.070~0.135	0.075~0.145	0.080~0.160	
				fz	49~63	49~62	51~62	49~64	51~64	52~65	
				RPM	16490~21000	13650~17330	12080~14700	11030~14180	10710~13440	9660~12080	
				FEED	200~630	200~630	200~630	200~630	200~630	200~630	
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	1.0D	0.3D	Vc	71~88	70~85	70~88	68~87	70~90	74~93
					fz	0.006~0.014	0.008~0.020	0.009~0.023	0.010~0.024	0.010~0.025	0.011~0.027
					RPM	23630~29400	19430~23630	16800~21000	15230~19430	14700~18900	13650~17330
					FEED	295~850	295~945	295~945	295~945	295~945	295~945
H	38.1 - 38.2	Hardened steel	1.0D	0.3D	Vc	31~39	31~40	32~40	32~39	32~40	32~41
					fz	0.003~0.005	0.004~0.006	0.005~0.007	0.005~0.008	0.005~0.008	0.006~0.009
					RPM	10500~13130	8720~11030	7560~9450	7040~8610	6720~8400	5990~7560
					FEED	70~135	70~135	70~135	70~135	70~135	70~135
H	40	Chilled Cast Iron	1.0D	0.3D	Vc	0.009~0.018	0.010~0.022	0.012~0.025	0.014~0.028	0.015~0.030	0.016~0.032
					fz	49~63	49~62	51~62	49~64	51~64	52~65
					RPM	16490~21000	13650~17330	12080~14700	11030~14180	10710~13440	9660~12080
					FEED	200~630	200~630	200~630	200~630	200~630	200~630
H	41	Hardened Cast Iron	1.0D	0.3D	Vc	0.009~0.018	0.010~0.022	0.012~0.025	0.014~0.028	0.015~0.030	0.016~0.032
					fz	31~39	31~40	32~40	32~39	32~40	32~41
					RPM	10500~13130	8720~11030	7560~9450	7040~8610	6720~8400	5990~7560
					FEED	70~135	70~135	70~135	70~135	70~135	70~135

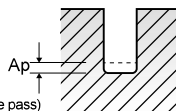
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GM8A1 SERIES 2 FLUTE CORNER RADIUS RIB PROCESSING

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

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)						
				2.0	2.5	3.0	4.0	5.0	6.0	
P	1-4	Non-alloy steel	Vc	75-91	75-94	75-94	75-94	75-94	75-94	75-94
			fz	0.012-0.031	0.015-0.038	0.018-0.045	0.023-0.060	0.029-0.075	0.035-0.090	
			RPM	12600-15230	9980-12600	8400-10500	6300-7880	5040-6300	4200-5250	
			FEED	295-945	295-945	295-945	295-945	295-945	295-945	
			Ap	0.090-0.180	0.112-0.235	0.135-0.270	0.180-0.360	0.225-0.450	0.270-0.540	
			Ap	0.090-0.180	0.112-0.235	0.135-0.270	0.180-0.360	0.225-0.450	0.270-0.540	
	5	Non-alloy steel	Vc	52-66	53-67	52-66	52-67	52-66	53-66	
			fz	0.011-0.029	0.014-0.035	0.017-0.043	0.023-0.057	0.029-0.071	0.034-0.086	
			RPM	8720-11030	7040-8930	5780-7350	4310-5570	3470-4410	2940-3680	
			FEED	200-630	200-630	200-630	200-630	200-630	200-630	
			Ap	0.090-0.180	0.112-0.235	0.135-0.270	0.180-0.360	0.225-0.450	0.270-0.540	
			Ap	0.090-0.180	0.112-0.235	0.135-0.270	0.180-0.360	0.225-0.450	0.270-0.540	
6-7	Low alloy steel	Vc	75-91	75-94	75-94	75-94	75-94	75-94		
		fz	0.012-0.031	0.015-0.038	0.018-0.045	0.023-0.060	0.029-0.075	0.035-0.090		
		RPM	12600-15230	9980-12600	8400-10500	6300-7880	5040-6300	4200-5250		
		FEED	295-945	295-945	295-945	295-945	295-945	295-945		
		Ap	0.090-0.180	0.112-0.235	0.135-0.270	0.180-0.360	0.225-0.450	0.270-0.540		
		Ap	0.090-0.180	0.112-0.235	0.135-0.270	0.180-0.360	0.225-0.450	0.270-0.540		
8-9	Low alloy steel	Vc	52-66	53-67	52-66	52-67	52-66	53-66		
		fz	0.011-0.029	0.014-0.035	0.017-0.043	0.023-0.057	0.029-0.071	0.034-0.086		
		RPM	8720-11030	7040-8930	5780-7350	4310-5570	3470-4410	2940-3680		
		FEED	200-630	200-630	200-630	200-630	200-630	200-630		
		Ap	0.090-0.180	0.112-0.235	0.135-0.270	0.180-0.360	0.225-0.450	0.270-0.540		
		Ap	0.090-0.180	0.112-0.235	0.135-0.270	0.180-0.360	0.225-0.450	0.270-0.540		
10	High alloyed steel, and tool steel	Vc	75-91	75-94	75-94	75-94	75-94	75-94		
		fz	0.012-0.031	0.015-0.038	0.018-0.045	0.023-0.060	0.029-0.075	0.035-0.090		
		RPM	12600-15230	9980-12600	8400-10500	6300-7880	5040-6300	4200-5250		
		FEED	295-945	295-945	295-945	295-945	295-945	295-945		
		Ap	0.090-0.180	0.112-0.235	0.135-0.270	0.180-0.360	0.225-0.450	0.270-0.540		
		Ap	0.090-0.180	0.112-0.235	0.135-0.270	0.180-0.360	0.225-0.450	0.270-0.540		
11.1 - 11.2	High alloyed steel, and tool steel	Vc	52-66	53-67	52-66	52-67	52-66	53-66		
		fz	0.011-0.029	0.014-0.035	0.017-0.043	0.023-0.057	0.029-0.071	0.034-0.086		
		RPM	8720-11030	7040-8930	5780-7350	4310-5570	3470-4410	2940-3680		
		FEED	200-630	200-630	200-630	200-630	200-630	200-630		
		Ap	0.090-0.180	0.112-0.235	0.135-0.270	0.180-0.360	0.225-0.450	0.270-0.540		
		Ap	0.090-0.180	0.112-0.235	0.135-0.270	0.180-0.360	0.225-0.450	0.270-0.540		
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	Vc	75-91	75-94	75-94	75-94	75-94	75-94	
			fz	0.012-0.031	0.015-0.038	0.018-0.045	0.023-0.060	0.029-0.075	0.035-0.090	
			RPM	12600-15230	9980-12600	8400-10500	6300-7880	5040-6300	4200-5250	
			FEED	295-945	295-945	295-945	295-945	295-945	295-945	
			Ap	0.090-0.180	0.112-0.235	0.135-0.270	0.180-0.360	0.225-0.450	0.270-0.540	
			Ap	0.090-0.180	0.112-0.235	0.135-0.270	0.180-0.360	0.225-0.450	0.270-0.540	
H	38.1 - 38.2	Hardened steel	Vc	33-41	34-42	33-41	33-41	33-41	33-49	
			fz	0.006-0.010	0.008-0.012	0.009-0.015	0.013-0.020	0.015-0.025	0.019-0.025	
			RPM	5570-6930	4520-5570	3680-4620	2730-3470	2210-2730	1840-2730	
			FEED	70-135	70-135	70-135	70-135	70-135	70-135	
			Ap	0.018-0.035	0.022-0.045	0.028-0.055	0.036-0.072	0.045-0.090	0.054-0.108	
			Ap	0.018-0.035	0.022-0.045	0.028-0.055	0.036-0.072	0.045-0.090	0.054-0.108	
	40	Chilled Cast Iron	Vc	52-66	53-67	52-66	52-67	52-66	53-66	
			fz	0.011-0.029	0.014-0.035	0.017-0.043	0.023-0.057	0.029-0.071	0.034-0.086	
			RPM	8720-11030	7040-8930	5780-7350	4310-5570	3470-4410	2940-3680	
			FEED	200-630	200-630	200-630	200-630	200-630	200-630	
			Ap	0.090-0.180	0.112-0.235	0.135-0.270	0.180-0.360	0.225-0.450	0.270-0.540	
			Ap	0.090-0.180	0.112-0.235	0.135-0.270	0.180-0.360	0.225-0.450	0.270-0.540	
41	Hardened Cast Iron	Vc	33-41	34-42	33-41	33-41	33-41	33-49		
		fz	0.006-0.010	0.008-0.012	0.009-0.015	0.013-0.020	0.015-0.025	0.019-0.025		
		RPM	5570-6930	4520-5570	3680-4620	2730-3470	2210-2730	1840-2730		
		FEED	70-135	70-135	70-135	70-135	70-135	70-135		
		Ap	0.018-0.035	0.022-0.045	0.028-0.055	0.036-0.072	0.045-0.090	0.054-0.108		
		Ap	0.018-0.035	0.022-0.045	0.028-0.055	0.036-0.072	0.045-0.090	0.054-0.108		



GM839 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)							
						2.0	3.0	4.0	6.0	8.0	10.0	12.0	
P	1-4	Non-alloy steel	0.05D	1.0D	Vc	95	110	125	140	140	135	135	
					fz	0.006	0.009	0.019	0.03	0.042	0.047	0.048	
					RPM	15120	11671	9947	7427	5570	4297	3581	
					FEED	363	420	756	891	936	808	688	
					Vc	65	70	75	85	85	85		
					fz	0.006	0.009	0.019	0.030	0.038	0.037		
	5	Non-alloy steel	0.05D	1.0D	RPM	10345	7427	5968	4509	3382	2706	2255	
					FEED	248	267	454	541	514	400		
					Vc	95	110	125	140	140	135		
					fz	0.006	0.009	0.019	0.03	0.042	0.047		
					RPM	15120	11671	9947	7427	5570	4297		
					FEED	363	420	756	891	936	808		
6-7	Low alloy steel	0.05D	1.0D	Vc	95	110	125	140	140	135			
				fz	0.006	0.009	0.019	0.03	0.042	0.047			
				RPM	15120	11671	9947	7427	5570	4297			
				FEED	363	420	756	891	936	808			
				Vc	65	70	75	85	85	85			
				fz	0.006	0.009	0.019	0.030	0.038	0.037			
8-9	Low alloy steel	0.05D	1.0D	RPM	10345	7427	5968	4509	3382	2706			
				FEED	248	267	454	541	514	400			
				Vc	95	110	125	140	140	135			
				fz	0.006	0.009	0.019	0.03	0.042	0.047			
				RPM	15120	11671	9947	7427	5570	4297			
				FEED	363	420	756	891	936	808			
10	High alloyed steel, and tool steel	0.05D	1.0D	Vc	95	110	125	140	140	135			
				fz	0.006	0.009	0.019	0.03	0.042	0.047			
				RPM	15120	11671	9947	7427	5570	4297			
				FEED	363	420	756	891	936	808			
				Vc	65	70	75	85	85	85			
				fz	0.006	0.009	0.019	0.030	0.038	0.037			
11.1 - 11.2	High alloyed steel, and tool steel	0.05D	1.0D	RPM	10345	7427	5968	4509	3382	2706			
				FEED	248	267	454	541	514	400			
				Vc	95	110	125	140	140	135			
				fz	0.006	0.009	0.019	0.03	0.042	0.047			
				RPM	10345	7427	5968	4509	3382	2706			
				FEED	248	267	454	541	514	400			
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.05D	1.0D	Vc	95	110	125	140	140	135		
					fz	0.006	0.009	0.019	0.03	0.042	0.047		
					RPM	15120	11671	9947	7427	5570	4297		
					FEED	363	420	756	891	936	808		
					Vc	65	70	75	85	85	85		
					fz	0.006	0.009	0.019	0.030	0.038	0.037		
H	38.1 - 38.2	Hardened steel	0.05D	1.0D	RPM	6366	4244	3979	2653	2188	1751		
					FEED	51	68	80	106	140	119		
					Vc	65	70	75	85	85	85		
					fz	0.006	0.009	0.019	0.030	0.038	0.037		
					RPM	10345	7427	5968	4509	3382	2706		
					FEED	248	267	454	541	514	400		
40	Chilled Cast Iron	0.05D	1.0D	Vc	65	70	75	85	85	85			
				fz	0.006	0.009	0.019	0.030	0.038	0.037			
				RPM	10345	7427	5968	4509	3382	2706			
				FEED	248	267	454	541	514	400			
				Vc	40	40	50	55	55	60			
				fz	0.002	0.004	0.005	0.010	0.016	0.017			
41	Hardened Cast Iron	0.05D	1.0D	RPM	6366	4244	3979	2653	2188	1751			
				FEED	51	68	80	106	140	119			
				Vc	40	40	50	55	55	60			
				fz	0.002	0.004	0.005	0.010	0.016	0.017			

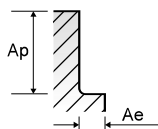
YG X-POWER PRO END MILLS

**RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER**

GM819 SERIES 4 FLUTE CORNER RADIUS - SIDE CUTTING

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

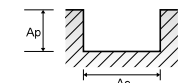
ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)									
						3.0	4.0	5.0	6.0	8.0	10.0	12.0	16.0	20.0	
P	1-4	Non-alloy steel	0.05D	2.5D	Vc	70	75	80	80	85	85	85	95	85	85
					fz	0.006	0.01	0.012	0.014	0.019	0.023	0.022	0.023	0.022	0.022
					RPM	7427	5968	5093	4244	3382	2706	2255	1890	1353	1353
	FEED				178	239	244	238	257	249	198	174	119	119	
	Vc				45	45	50	50	55	55	60	60	55	55	
	fz				0.008	0.011	0.016	0.018	0.024	0.028	0.029	0.030	0.028	0.028	
	RPM	4775	3581	3183	2653	2188	1751	1592	1194	875	875				
	FEED	153	158	204	210	191	196	185	143	98	98				
	5	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	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	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	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						
11.1 - 11.2	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	
					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						
H	38.1 - 38.2	Hardened steel	0.02D	2.0D	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	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		
				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						



YG 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	Dc1:0.15D Dz1:0.25D	Vc	40	65	70	65	60
					fz	0.002	0.003	0.004	0.005	0.006
					RPM	31831	25863	22282	17242	12732
	8-9	Low alloy steel	1.0D	Dc1:0.15D Dz1:0.25D	Vc	40	65	70	65	60
					fz	0.002	0.003	0.004	0.005	0.006
					RPM	31831	25863	22282	17242	12732
11.1 - 11.2	High alloyed steel, and tool steel	1.0D	Dc1:0.15D Dz1:0.25D	Vc	40	65	70	65	60	
				fz	0.002	0.003	0.004	0.005	0.006	
				RPM	31831	25863	22282	17242	12732	
H	38.1 - 38.2	Hardened steel	1.0D	Dc1:0.02D Dz1:0.05D	Vc	30	50	50	50	45
					fz	0.001	0.002	0.003	0.003	0.004
					RPM	23873	19894	15915	13263	9549
	40	Chilled Cast Iron	1.0D	Dc1:0.15D Dz1:0.25D	Vc	40	65	70	65	60
					fz	0.002	0.003	0.004	0.005	0.006
					RPM	31831	25863	22282	17242	12732
41	Hardened Cast Iron	1.0D	Dc1:0.02D Dz1:0.05D	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	Ds3:0.2D Dz3:0.5D	Vc	65	75	85	90	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	
	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				
	5	1.0D	Ds3:0.2D Dz3:0.5D	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	
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	1.0D	Ds3:0.2D Dz3:0.5D	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		
			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					
8-9	1.0D	Ds3:0.2D Dz3:0.5D	Vc	65	75	85	90	95	95	90	95	100	95		
			fz	0.01	0.015</										

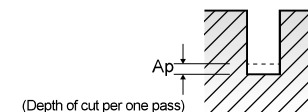
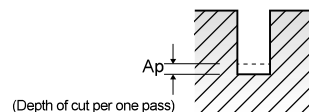
YG X-POWER PRO END MILLS

**RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER**

GM883 SERIES 2 FLUTE RIB PROCESSING

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)																	
				0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2										
P	1-4	Non-alloy steel	Vc	39-50	49-63	58-75	68-88	68-88	71-89	71-88	70-85										
			fc	0.003-0.006	0.003-0.006	0.004-0.007	0.004-0.007	0.005-0.009	0.006-0.011	0.006-0.014	0.008-0.020										
			RPM	32550-42000	32550-42000	32550-42000	32550-42000	28350-36750	26250-33080	23630-29400	19430-23630										
			FEED	210-460	210-460	265-600	265-600	295-660	295-755	295-850	295-945										
			Ap	0.007-0.018	0.009-0.022	0.011-0.026	0.012-0.031	0.014-0.035	0.030-0.060	0.045-0.090	0.055-0.100										
			Vc	28-35	35-44	42-53	49-62	49-62	49-64	49-63	49-62										
	5	Non-alloy steel	fc	0.002-0.006	0.002-0.006	0.002-0.008	0.002-0.008	0.003-0.010	0.005-0.012	0.006-0.015	0.007-0.018										
			RPM	23630-29400	23630-29400	23630-29400	23630-29400	20480-25730	18380-23630	16490-21000	13650-17330										
			FEED	90-355	90-355	115-450	115-450	125-505	170-565	200-630	200-630										
			Ap	0.007-0.018	0.009-0.022	0.011-0.026	0.012-0.031	0.014-0.035	0.030-0.060	0.045-0.090	0.055-0.100										
			Vc	39-50	49-63	58-75	68-88	68-88	71-89	71-88	70-85										
			fc	0.003-0.006	0.003-0.006	0.004-0.007	0.004-0.007	0.005-0.009	0.006-0.011	0.006-0.014	0.008-0.020										
6-7	Low alloy steel	RPM	32550-42000	32550-42000	32550-42000	32550-42000	28350-36750	26250-33080	23630-29400	19430-23630											
		FEED	210-460	210-460	265-600	265-600	295-660	295-755	295-850	295-945											
		Ap	0.007-0.018	0.009-0.022	0.011-0.026	0.012-0.031	0.014-0.035	0.030-0.060	0.045-0.090	0.055-0.100											
		Vc	28-35	35-44	42-53	49-62	49-62	49-64	49-63	49-62											
		fc	0.002-0.006	0.002-0.006	0.002-0.008	0.002-0.008	0.003-0.010	0.005-0.012	0.006-0.015	0.007-0.018											
		RPM	23630-29400	23630-29400	23630-29400	23630-29400	20480-25730	18380-23630	16490-21000	13650-17330											
8-9	Low alloy steel	FEED	90-355	90-355	115-450	115-450	125-505	170-565	200-630	200-630											
		Ap	0.007-0.018	0.009-0.022	0.011-0.026	0.012-0.031	0.014-0.035	0.030-0.060	0.045-0.090	0.055-0.100											
		Vc	39-50	49-63	58-75	68-88	68-88	71-89	71-88	70-85											
		fc	0.003-0.006	0.003-0.006	0.004-0.007	0.004-0.007	0.005-0.009	0.006-0.011	0.006-0.014	0.008-0.020											
		RPM	32550-42000	32550-42000	32550-42000	32550-42000	28350-36750	26250-33080	23630-29400	19430-23630											
		FEED	210-460	210-460	265-600	265-600	295-660	295-755	295-850	295-945											
10	High alloyed steel, and tool steel	Ap	0.007-0.018	0.009-0.022	0.011-0.026	0.012-0.031	0.014-0.035	0.030-0.060	0.045-0.090	0.055-0.100											
		Vc	28-35	35-44	42-53	49-62	49-62	49-64	49-63	49-62											
		fc	0.002-0.006	0.002-0.006	0.002-0.008	0.002-0.008	0.003-0.010	0.005-0.012	0.006-0.015	0.007-0.018											
		RPM	23630-29400	23630-29400	23630-29400	23630-29400	20480-25730	18380-23630	16490-21000	13650-17330											
		FEED	90-355	90-355	115-450	115-450	125-505	170-565	200-630	200-630											
		Ap	0.007-0.018	0.009-0.022	0.011-0.026	0.012-0.031	0.014-0.035	0.030-0.060	0.045-0.090	0.055-0.100											
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	Vc	39-50	49-63	58-75	68-88	68-88	71-89	71-88	70-85										
			fc	0.003-0.006	0.003-0.006	0.004-0.007	0.004-0.007	0.005-0.009	0.006-0.011	0.006-0.014	0.008-0.020										
			RPM	32550-42000	32550-42000	32550-42000	32550-42000	28350-36750	26250-33080	23630-29400	19430-23630										
			FEED	210-460	210-460	265-600	265-600	295-660	295-755	295-850	295-945										
			Ap	0.007-0.018	0.009-0.022	0.011-0.026	0.012-0.031	0.014-0.035	0.030-0.060	0.045-0.090	0.055-0.100										
			Vc	18-21	22-27	27-32	31-37	31-37	31-35	31-39	31-40										
H	38.1 - 38.2	Hardened steel	fc	0.001-0.003	0.001-0.003	0.001-0.003	0.001-0.003	0.002-0.004	0.003-0.005	0.003-0.005	0.004-0.006										
			RPM	15020-17850	15020-17850	15020-17850	15020-17850	13130-15540	11550-13130	10500-13130	8720-11030										
			FEED	30-95	30-95	40-115	40-115	45-130	60-135	70-135	70-135										
			Ap	0.004-0.008	0.004-0.009	0.005-0.011	0.006-0.013	0.007-0.015	0.008-0.016	0.009-0.018	0.010-0.022										
			Vc	28-35	35-44	42-53	49-62	49-62	49-64	49-63	49-62										
			fc	0.002-0.006	0.002-0.006	0.002-0.008	0.002-0.008	0.003-0.010	0.005-0.012	0.006-0.015	0.007-0.018										
H	40	Chilled Cast Iron	RPM	23630-29400	23630-29400	23630-29400	23630-29400	20480-25730	18380-23630	16490-21000	13650-17330										
			FEED	90-355	90-355	115-450	115-450	125-505	170-565	200-630	200-630										
			Ap	0.007-0.018	0.009-0.022	0.011-0.026	0.012-0.031	0.014-0.035	0.030-0.060	0.045-0.090	0.055-0.100										
			Vc	18-21	22-27	27-32	31-37	31-37	31-35	31-39	31-40										
			fc	0.001-0.003	0.001-0.003	0.001-0.003	0.001-0.003	0.002-0.004	0.003-0.005	0.003-0.005	0.004-0.006										
			RPM	15020-17850	15020-17850	15020-17850	15020-17850	13130-15540	11550-13130	10500-13130	8720-11030										
H	41	Hardened Cast Iron	FEED	30-95	30-95	40-115	40-115	45-130	60-135	70-135	70-135										
			Ap	0.004-0.008	0.004-0.009	0.005-0.011	0.006-0.013	0.007-0.015	0.008-0.016	0.009-0.018	0.010-0.022										

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YG X-POWER PRO END MILLS

**RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER**

GM883 SERIES 2 FLUTE RIB PROCESSING

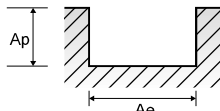
VDI 3323	Parameter	Diameter (Ø)																		
		1.4	1.5	1.6	1.8	2.0	2.5	3.0	4.0	5.0	6.0									
P	1-4	Non-alloy steel	Vc	70-88	68-87	70-90	74-93	75-91	75-94	75-94	75-94	75-94								
			fc	0.009-0.023	0.010-0.024	0.010-0.025	0.011-0.027	0.012-0.031	0.015-0.038	0.018-0.045	0.023-0.060	0.029-0.075	0.035-0.090							
			RPM	16800-21000	15230-19430	14700-18900	13650-17330	12600-15230	9980-12600	8400-10500	6300-7880	5040-6300	4200-5250							
			FEED	295-945	295-945	295-945	295-945	295-945	295-945	295-945	295-945	295-945	295-945							
			Ap	0.062-0.125	0.070-0.135	0.075-0.145	0.080-0.160	0.090-0.180	0.112-0.235	0.135-0.270	0.180-0.360	0.225-0.450	0.270-0.540							
			Vc	51-62	49-64	51-64	52-65	52-66	53-67	52-66	52-67	52-66	53-66							
	5	Non-alloy steel	fc	0.008-0.021	0.009-0.022	0.009-0.023	0.010-0.026	0.011-0.029	0.014-0.035	0.017-0.043	0.023-0.057	0.029-0.071	0.034-0.086							
			RPM	12080-14700	11030-14180	10710-13440	9660-12080	8720-11030	7040-8930	5780-7350	4310-5570	3470-4410	2940-3680							
			FEED	200-630	200-630	200-630	200-630	200-630	200-630	200-630	200-630	200-630	200-630							
			Ap	0.062-0.125	0.070-0.135	0.075-0.145	0.080-0.160	0.090-0.180	0.112-0.235	0.135-0.270										

GM895 SERIES 3 FLUTE - SLOTTING

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

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		
P	1-4	Non-alloy steel	1.0D	D$3:0.2D$ D>math>3:0.5D</math>	Vc	80	90	105	110	115	115	115	115	120		
					fz	0.005	0.007	0.012	0.015	0.019	0.027	0.031	0.03	0.03		
	RPM	12732	9549	8356	7003	6101	4576	3661	3050	2387						
	FEED	191	201	301	315	348	371	340	275	215						
	5	Non-alloy steel	1.0D	D$3:0.2D$ D>math>3:0.5D</math>	Vc	50	60	65	65	70	70	70	70	75		
					fz	0.005	0.008	0.011	0.015	0.020	0.024	0.023	0.023	0.024		
	RPM	7958	6366	5173	4138	3714	2785	2228	1857	1492						
	FEED	119	153	171	186	223	201	154	128	107						
	6-7	Low alloy steel	1.0D	D$3:0.2D$ D>math>3:0.5D</math>	Vc	80	90	105	110	115	115	115	115	120		
					fz	0.005	0.007	0.012	0.015	0.019	0.027	0.031	0.03	0.03		
	RPM	12732	9549	8356	7003	6101	4576	3661	3050	2387						
	FEED	191	201	301	315	348	371	340	275	215						
8-9	Low alloy steel	1.0D	D$3:0.2D$ D>math>3:0.5D</math>	Vc	50	60	65	65	70	70	70	70	75			
				fz	0.005	0.008	0.011	0.015	0.020	0.024	0.023	0.023	0.024			
RPM	7958	6366	5173	4138	3714	2785	2228	1857	1492							
FEED	119	153	171	186	223	201	154	128	107							
10	High alloyed steel, and tool steel	1.0D	D$3:0.2D$ D>math>3:0.5D</math>	Vc	80	90	105	110	115	115	115	115	120			
				fz	0.005	0.007	0.012	0.015	0.019	0.027	0.031	0.03	0.03			
RPM	12732	9549	8356	7003	6101	4576	3661	3050	2387							
FEED	191	201	301	315	348	371	340	275	215							
11.1 11.2	High alloyed steel, and tool steel	1.0D	D$3:0.2D$ D>math>3:0.5D</math>	Vc	50	60	65	65	70	70	70	70	75			
				fz	0.005	0.008	0.011	0.015	0.020	0.024	0.023	0.023	0.024			
RPM	7958	6366	5173	4138	3714	2785	2228	1857	1492							
FEED	119	153	171	186	223	201	154	128	107							
M	14.1	Stainless steel	1.0D	D$3:0.2D$ D>math>3:0.5D</math>	Vc	45	50	55	55	60	60	60	60	60		
					fz	0.004	0.008	0.011	0.015	0.019	0.025	0.029	0.029	0.031		
RPM	7162	5305	4377	3501	3183	2387	1910	1459	1194							
FEED	86	127	144	158	181	179	166	127	111							
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	1.0D	D$3:0.2D$ D>math>3:0.5D</math>	Vc	80	90	105	110	115	115	115	115	120		
					fz	0.005	0.007	0.012	0.015	0.019	0.027	0.031	0.03	0.03		
RPM	12732	9549	8356	7003	6101	4576	3661	3050	2387							
FEED	191	201	301	315	348	371	340	275	215							
H	38.1 38.2	Hardened steel	1.0D	0.05D	Vc	35	35	40	40	40	45	45	50	50		
					fz	0.002	0.004	0.004	0.007	0.008	0.013	0.013	0.014	0.013		
RPM	5570	3714	3183	2546	2122	1790	1432	1326	995							
FEED	33	45	38	53	51	70	56	56	39							
H	40	Chilled Cast Iron	1.0D	D$3:0.2D$ D>math>3:0.5D</math>	Vc	50	60	65	65	70	70	70	70	75		
					fz	0.005	0.008	0.011	0.015	0.020	0.024	0.023	0.023	0.024		
RPM	7958	6366	5173	4138	3714	2785	2228	1857	1492							
FEED	119	153	171	186	223	201	154	128	107							
H	41	Hardened Cast Iron	1.0D	0.05D	Vc	35	35	40	40	40	45	45	50	50		
					fz	0.002	0.004	0.004	0.007	0.008	0.013	0.013	0.014	0.013		
RPM	5570	3714	3183	2546	2122	1790	1432	1326	995							
FEED	33	45	38	53	51	70	56	56	39							

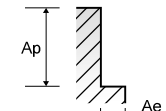
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GM895 SERIES 3 FLUTE - SIDE CUTTING

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

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)										
						2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0	16.0		
P	1-4	Non-alloy steel	0.05D	1.0D	Vc	80	90	105	110	115	115	115	115	120		
					fz	0.006	0.009	0.019	0.024	0.03	0.042	0.047	0.048	0.047		
	RPM	12732	9549	8356	7003	6101	4576	3661	3050	2387						
	FEED	229	258	476	504	549	577	516	439	337						
	5	Non-alloy steel	0.05D	1.0D	Vc	50	60	65	65	70	70	70	70	75		
					fz	0.006	0.009	0.019	0.024	0.031	0.039	0.039	0.038	0.037		
	RPM	7958	6366	5173	4138	3714	2785	2228	1857	1492						
	FEED	143	172	295	298	345	326	261	212	166						
	6-7	Low alloy steel	0.05D	1.0D	Vc	80	90	105	110	115	115	115	115	120		
					fz	0.006	0.009	0.019	0.024	0.031	0.039	0.039	0.038	0.037		
	RPM	12732	9549	8356	7003	6101	4576	3661	3050	2387						
	FEED	229	258	476	504	549	577	516	439	337						
8-9	Low alloy steel	0.05D	1.0D	Vc	50	60	65	65	70	70	70	70	75			
				fz	0.006	0.009	0.019	0.024	0.031	0.039	0.039	0.038	0.037			
RPM	7958	6366	5173	4138	3714	2785	2228	1857	1492							
FEED	143	172	295	298	345	326	261	212	166							
10	High alloyed steel, and tool steel	0.05D	1.0D	Vc	80	90	105	110	115	115	115	115	120			
				fz	0.006	0.009	0.019	0.024	0.031	0.039	0.039	0.038	0.037			
RPM	12732	9549	8356	7003	6101	4576	3661	3050	2387							
FEED	229	258	476	504	549	577	516	439	337							
11.1 11.2	High alloyed steel, and tool steel	0.05D	1.0D	Vc	50	60	65	65	70	70	70	70	75			
				fz	0.006	0.009	0.019	0.024	0.031	0.039	0.039	0.038	0.037			
RPM	7958	6366	5173	4138	3714	2785	2228	1857	1492							
FEED	143	172	295	298	345	326	261	212	166							
M	14.1	Stainless steel	0.05D	1.0D	Vc	45	50	55	55	60	60	60	60	60		
					fz	0.006	0.009	0.018	0.024	0.029	0.042	0.046	0.044	0.047		
RPM	7162	5305	4377	3501	3183	2387	1910	1459	1194							
FEED	129	143	236	252	277	301	264	193	168							
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.05D	1.0D	Vc	80	90	105	110	115	115	115	115	120		
					fz	0.006	0.009	0.019	0.024	0.03	0.042	0.047	0.048	0.047		
RPM	12732	9549	8356	7003	6101	4576	3661	3050	2387							
FEED	229	258	476	504	549	577	516	439	337							
H	38.1 38.2	Hardened steel	0.05D	1.0D	Vc	35	35	40	40	40	45	45	50	50		
					fz	0.002	0.004	0.005	0.008	0.010	0.016	0.017	0.017	0.017		
RPM	5570	3714	3183	2546	2122	1790	1432	1326	995							
FEED	33	45	38	53	51	70	56	56	39							
H	40	Chilled Cast Iron	0.05D	1.0D	Vc	50	60	65	65	70	70	70	70	75		
					fz	0.006	0.009	0.019	0.024	0.031	0.039	0.039	0.038	0.037		
RPM	7958	6366	5173	4138	3714	2785	2228	1857	1492							
FEED	143	172	295	298	345	326	261	212	166							
H	41	Hardened Cast Iron	0.05D	1.0D	Vc	35	35	40	40	40	45	45	50	50		
					fz	0.002	0.004	0.005	0.008	0.010	0.016	0.017	0.017	0.017		
RPM	5570	3714	3183	2546	2122	1790	1432	1326	995							
FEED	33	45	38	53	51	70	56	56	39							



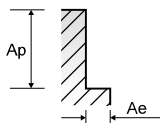
YG X-POWER PRO END MILLS

**RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER**

GM811 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	Diameter (Ø)												
						2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0	16.0	20.0	25.0		
P	1-4	Non-alloy steel	0.05D	1.0D	Vc	80	95	105	110	115	120	115	115	125	120	120		
					fz	0.006	0.009	0.019	0.024	0.03	0.042	0.047	0.047	0.048	0.048	0.046		
					RPM	12732	10080	8356	7003	6101	4775	3661	3050	2487	1910	1528		
					FEED	306	363	635	672	732	802	688	573	468	367	281		
					Vc	55	60	65	65	70	70	70	75	75	75	75		
					fz	0.006	0.009	0.019	0.024	0.031	0.038	0.037	0.037	0.037	0.038	0.039		
	5	Non-alloy steel	0.05D	1.0D	Vc	8754	6366	5173	4138	3714	2785	2228	1857	1492	1194	955		
					fz	210	229	393	397	460	423	330	275	221	181	149		
					RPM	80	95	105	110	115	120	115	115	125	120	120		
					FEED	0.006	0.009	0.019	0.024	0.03	0.042	0.047	0.047	0.047	0.048	0.046		
					Vc	12732	10080	8356	7003	6101	4775	3661	3050	2487	1910	1528		
					FEED	306	363	635	672	732	802	688	573	468	367	281		
6-7	Low alloy steel	0.05D	1.0D	Vc	55	60	65	65	70	70	70	75	75	75				
				fz	0.006	0.009	0.019	0.024	0.031	0.038	0.037	0.037	0.037	0.038	0.039			
				RPM	8754	6366	5173	4138	3714	2785	2228	1857	1492	1194	955			
				FEED	210	229	393	397	460	423	330	275	221	181	149			
				Vc	80	95	105	110	115	120	115	115	125	120	120			
				fz	0.006	0.009	0.019	0.024	0.03	0.042	0.047	0.047	0.047	0.048	0.046			
8-9	Low alloy steel	0.05D	1.0D	Vc	12732	10080	8356	7003	6101	4775	3661	3050	2487	1910	1528			
				fz	306	363	635	672	732	802	688	573	468	367	281			
				RPM	8754	6366	5173	4138	3714	2785	2228	1857	1492	1194	955			
				FEED	210	229	393	397	460	423	330	275	221	181	149			
				Vc	55	60	65	65	70	70	70	75	75	75	75			
				fz	0.006	0.009	0.019	0.024	0.031	0.038	0.037	0.037	0.037	0.038	0.039			
10	High alloyed steel, and tool steel	0.05D	1.0D	Vc	8754	6366	5173	4138	3714	2785	2228	1857	1492	1194	955			
				fz	306	363	635	672	732	802	688	573	468	367	281			
				RPM	12732	10080	8356	7003	6101	4775	3661	3050	2487	1910	1528			
				FEED	210	229	393	397	460	423	330	275	221	181	149			
				Vc	55	60	65	65	70	70	70	75	75	75	75			
				fz	0.006	0.009	0.019	0.024	0.031	0.038	0.037	0.037	0.037	0.038	0.039			
11.1 11.2	High alloyed steel, and tool steel	0.05D	1.0D	Vc	8754	6366	5173	4138	3714	2785	2228	1857	1492	1194	955			
				fz	306	363	635	672	732	802	688	573	468	367	281			
				RPM	12732	10080	8356	7003	6101	4775	3661	3050	2487	1910	1528			
				FEED	210	229	393	397	460	423	330	275	221	181	149			
				Vc	55	60	65	65	70	70	70	75	75	75	75			
				fz	0.006	0.009	0.019	0.024	0.031	0.038	0.037	0.037	0.037	0.038	0.039			
M	14.1	Stainless steel	0.05D	1.0D	Vc	45	50	55	55	60	60	60	65	60	60	60		
					fz	0.005	0.009	0.018	0.024	0.029	0.041	0.045	0.044	0.046	0.045	0.044		
					RPM	7162	5305	4377	3501	3183	2387	1910	1459	1194	955	764		
					FEED	143	191	315	336	369	392	344	257	220	172	134		
					Vc	80	95	105	110	115	120	115	115	125	120	120		
					fz	0.006	0.009	0.019	0.024	0.03	0.042	0.047	0.047	0.047	0.048	0.046		
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.05D	1.0D	Vc	12732	10080	8356	7003	6101	4775	3661	3050	2487	1910	1528		
					fz	306	363	635	672	732	802	688	573	468	367	281		
					RPM	80	95	105	110	115	120	115	115	125	120	120		
					FEED	0.006	0.009	0.019	0.024	0.03	0.042	0.047	0.047	0.047	0.048	0.046		
					Vc	12732	10080	8356	7003	6101	4775	3661	3050	2487	1910	1528		
					FEED	306	363	635	672	732	802	688	573	468	367	281		
H	38.1 38.2	Hardened steel	0.05D	1.0D	Vc	35	35	40	40	40	45	50	50	50	50	45		
					fz	0.002	0.004	0.005	0.008	0.010	0.017	0.016	0.017	0.016	0.015	0.015		
					RPM	5570	3714	3183	2546	2122	1790	1592	1326	995	796	573		
					FEED	45	59	64	81	85	122	102	90	64	48	34		
					Vc	55	60	65	65	70	70	70	75	75	75	75		
					fz	0.006	0.009	0.019	0.024	0.031	0.038	0.037	0.037	0.037	0.038	0.039		
	40	Chilled Cast Iron	0.05D	1.0D	Vc	8754	6366	5173	4138	3714	2785	2228	1857	1492	1194	955		
					fz	210	229	393	397	460	423	330	275	221	181	149		
					RPM	80	95	105	110	115	120	115	115	125	120	120		
					FEED	0.002	0.004	0.005	0.008	0.010	0.017	0.016	0.017	0.016	0.015	0.015		
					Vc	55	60	65	65	70	70	70	75	75	75	75		
					fz	0.006	0.009	0.019	0.024	0.031	0.038	0.037	0.037	0.037	0.038	0.039		
41	Hardened Cast Iron	0.05D	1.0D	Vc	8754	6366	5173	4138	3714	2785	2228	1857	1492	1194	955			
				fz	210	229	393	397	460	423	330	275	221	181	149			
				RPM	80	95	105	110	115	120	115	115	125	120	120			
				FEED	0.002	0.004	0.005	0.008	0.010	0.017	0.016	0.017	0.016	0.015	0.015			
				Vc	55	60	65	65	70	70	70	75	75	75	75			
				fz	0.006	0.009	0.019	0.024	0.031	0.038	0.037	0.037	0.037	0.038	0.039			



YG X-POWER PRO END MILLS

**RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER**

GM817 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	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	0.05D	2.5D	Vc	60	65	70	75	80	80	80	85	80	80	85		
					fz	0.006	0.009	0.014	0.021	0.029	0.041	0.049	0.047	0.05	0.049	0.05		
					RPM	9549	6897	5570	4775	4244	3183	2706	2122	1790	1353	1015		
					FEED	229	248	312	401	492	522	530	399	358	265	265		
					Vc	35	40	40	45	45	45	50	50	50	50	50		
					fz	0.004	0.007	0.010	0.014	0.021	0.028	0.033	0.035	0.035	0.033	0.033		
	5	Non-alloy steel	0.05D	2.5D	Vc	5570	4244	3183	2865	2387	1790	1592	1326	995	796			
					fz	89	119	127	160	201	201	210	186	139	105			
					RPM	80	95	105	110	115	120	120	120	120	120	120		
					FEED	0.006	0.009	0.014	0.021	0.029	0.041	0.049	0.047	0.05	0.049	0.05		
					Vc	12732	10080	8356	7003	6101	4775	3661	3050	2487	1910	1528		
					FEED	306	363	635	672	732	802	688	573	468	367	281		
6-7	Low alloy steel	0.05D	2.5D	Vc	60	65	70	75	80	80	80	85	80	80	85			
				fz	0.006	0.009	0.014	0.021	0.029	0.041	0.049	0.047	0.05	0.049	0.05			
				RPM	9549	6897	5570	4775	4244	3183	2706	2122	1790	1353	1015			
				FEED	229	248	312	401	492	522	530	399	358	265	265			
				Vc	35	40	40	45	45	45	50	50	50	50	50			
				fz	0.004	0.007	0.010	0.014	0.021	0.028	0.033	0.035	0.035	0.033	0.033			
8-9	Low alloy steel	0.05D	2.5D	Vc	5570	4244	3183	2865	2387	1790	1592	1326	995	796				
				fz	89	119	127	160	201	201	210	186	139	105				
				RPM	80	95	105	110	115	120	120	120	120	120	120			
				FEED	0.006	0.009	0.014	0.021	0.029	0.041	0.049	0.047	0.05	0.049	0.05			
				Vc	12732	10080	8356	7003	6101	4775	3661	3050	2487	1910	1528			
				FEED	306	363	635	672	732	802	688	573	468	367	281			
10	High alloyed steel, and tool steel	0.05D	2.5D	Vc	60	65	70	75	80	80	80	85	80	80	85			
				fz	0.006	0.009	0.014	0.021	0.029	0.041	0.049	0.047	0.05	0.049	0.05			
				RPM	9549	6897	5570	4775	4244	3183	2706	2122	1790	1353	1015			
				FEED	229	248	312	401	492	522	530	399	358	265	265			
				Vc	35	40	40	45	45	45	50	50	50					

GM814 SERIES

3&4 FLUTE ROUGHING - SIDE CUTTING

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

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)					
						6.0	8.0	10.0	12.0	16.0	20.0
P	1-4	Non-alloy steel	0.3D	1.5D	Vc	310	305	305	315	315	315
					fz	0.05	0.067	0.063	0.075	0.1	0.113
					RPM	16446	12136	9708	8356	6267	5013
					FEED	2467	2439	2447	2507	2507	2266
	5	Non-alloy steel	0.3D	1.5D	Vc	245	245	250	240	255	240
					fz	0.023	0.030	0.028	0.033	0.040	0.039
					RPM	12998	9748	7958	6366	5073	3820
					FEED	897	877	891	840	812	596
	6-7	Low alloy steel	0.3D	1.5D	Vc	310	305	305	315	315	315
					fz	0.05	0.067	0.063	0.075	0.1	0.113
					RPM	16446	12136	9708	8356	6267	5013
					FEED	2467	2439	2447	2507	2507	2266
8-9	Low alloy steel	0.3D	1.5D	Vc	245	245	250	240	255	240	
				fz	0.023	0.030	0.028	0.033	0.040	0.039	
				RPM	12998	9748	7958	6366	5073	3820	
				FEED	897	877	891	840	812	596	
10	High alloyed steel, and tool steel	0.3D	1.5D	Vc	310	305	305	315	315	315	
				fz	0.05	0.067	0.063	0.075	0.1	0.113	
				RPM	16446	12136	9708	8356	6267	5013	
				FEED	2467	2439	2447	2507	2507	2266	
11.1 - 11.2	High alloyed steel, and tool steel	0.3D	1.5D	Vc	245	245	250	240	255	240	
				fz	0.023	0.030	0.028	0.033	0.040	0.039	
				RPM	12998	9748	7958	6366	5073	3820	
				FEED	897	877	891	840	812	596	
M	14.1	Stainless steel	0.3D	1.5D	Vc	165	165	170	165	175	160
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.3D	1.5D	fz	0.023	0.03	0.028	0.034	0.039	0.038
					RPM	8754	6565	5411	4377	3482	2546
					FEED	604	591	606	595	543	387
					Vc	310	305	305	315	315	315
H	38.1 - 38.2	Hardened steel	0.05D	1.0D	fz	0.05	0.067	0.063	0.075	0.1	0.113
					RPM	16446	12136	9708	8356	6267	5013
					FEED	2467	2439	2447	2507	2507	2266
					Vc	65	65	65	65	65	65
H	40	Chilled Cast Iron	0.3D	1.5D	fz	0.026	0.033	0.036	0.039	0.034	0.038
					RPM	3448	2586	2069	1724	1293	1035
					FEED	269	256	298	269	176	157
					Vc	245	245	250	240	255	240
H	41	Hardened Cast Iron	0.05D	1.0D	fz	0.023	0.030	0.028	0.033	0.040	0.039
					RPM	12998	9748	7958	6366	5073	3820
					FEED	897	877	891	840	812	596
					Vc	65	65	65	65	65	65
H	41	Hardened Cast Iron	0.05D	1.0D	fz	0.026	0.033	0.036	0.039	0.034	0.038
					RPM	3448	2586	2069	1724	1293	1035
					FEED	269	256	298	269	176	157

