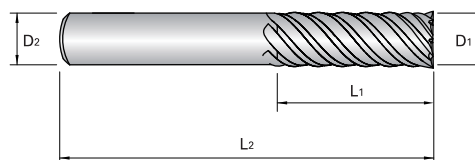


END MILLS for HARDENED MATERIAL

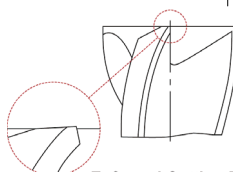


CARBIDE, 6 FLUTE 45° HELIX SHORT LENGTH

- Designed for machining high-hardened materials, dry cutting, and high-speed cutting.
- Consistently delivers an exceptional workpiece finish and boasts high wear resistance.



p. 79



Enforced Cutting Edge

Mill Dia.Tolerance (mm)	Shank Dia.Tolerance
0 ~ - 0.020	h5

GFJ74

SERIES

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
GFJ74060	6.0	6	16	50
GFJ74080	8.0	8	19	60
GFJ74100	10.0	10	22	75
GFJ74120	12.0	12	26	75
GFJ74140	14.0	14	30	90
GFJ74160	16.0	16	32	100
GFJ74180	18.0	18	38	100
GFJ74200	20.0	20	38	100

RECOMMENDED CUTTING CONDITIONS

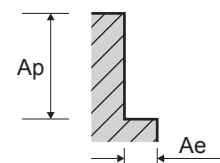
Vc = (m/min.)
fz = (mm/tooth)
RPM = (rev/min.)
FEED = (mm/min.)

GFJ74 SERIES			6 FLUTES - SIDE CUTTING				Diameter (Ø)				
ISO	VDI 3323	Material Description	Ae(mm)	Ap(mm)	Parameter	6.0	8.0	10.0	12.0	16.0	20.0
P	1-4	Non-alloy steel	0.05D	1.5D	Vc	123	123	121	124	123	123
					fz	0.030	0.038	0.045	0.053	0.062	0.069
					RPM	6,500	4,900	3,850	3,300	2,450	1,950
					FEED	1,165	1,125	1,050	1,050	915	810
	5	Non-alloy steel	0.05D	1.5D	Vc	82	83	82	83	83	82
					fz	0.030	0.038	0.045	0.053	0.062	0.069
					RPM	4,350	3,300	2,600	2,200	1,650	1,300
					FEED	790	745	705	705	610	540
	6-7	Low alloy steel	0.05D	1.5D	Vc	123	123	121	124	123	123
					fz	0.030	0.038	0.045	0.053	0.062	0.069
					RPM	6,500	4,900	3,850	3,300	2,450	1,950
					FEED	1,165	1,125	1,050	1,050	915	810
	8-9	Low alloy steel	0.03D	1.5D	Vc	82	83	82	83	83	82
					fz	0.030	0.038	0.045	0.053	0.062	0.069
					RPM	4,350	3,300	2,600	2,200	1,650	1,300
					FEED	790	745	705	705	610	540
	10	High alloyed steel, and tool steel	0.05D	1.5D	Vc	123	123	121	124	123	123
					fz	0.030	0.038	0.045	0.053	0.062	0.069
					RPM	6,500	4,900	3,850	3,300	2,450	1,950
					FEED	1,165	1,125	1,050	1,050	915	810
	11.1 11.2	High alloyed steel, and tool steel	0.05D	1.5D	Vc	82	83	82	83	83	82
					fz	0.030	0.038	0.045	0.053	0.062	0.069
					RPM	4,350	3,300	2,600	2,200	1,650	1,300
					FEED	790	745	705	705	610	540
H	38.1	Hardened steel	0.03D	1.5D	Vc	82	83	82	83	83	82
					fz	0.030	0.038	0.045	0.053	0.062	0.069
					RPM	4,350	3,300	2,600	2,200	1,650	1,300
					FEED	790	745	705	705	610	540
	38.2 39.1	Hardened steel	0.03D	1.5D	Vc	63	63	63	62	63	63
					fz	0.023	0.029	0.033	0.040	0.047	0.053
					RPM	3,350	2,500	2,000	1,650	1,250	1,000
					FEED	460	430	400	400	350	315
	39.2	Hardened steel	0.02D	1.5D	Vc	50	50	50	49	50	50
					fz	0.019	0.023	0.027	0.032	0.038	0.044
					RPM	2,650	2,000	1,600	1,300	1,000	800
					FEED	295	275	255	250	225	210
	40	Chilled Cast Iron	0.03D	1.5D	Vc	82	83	82	83	83	82
					fz	0.030	0.038	0.045	0.053	0.062	0.069
					RPM	4,350	3,300	2,600	2,200	1,650	1,300
					FEED	790	745	705	705	610	540

fz = (mm/tooth)

RPM = (rev/min.)

FEED = (mm/min.)



SUPER HARDENED
HSS END MILL

COATED CARBIDE END MILL
FOR GENERAL

COATED CARBIDE END MILL
FOR HEAVY CUTTING

COATED CARBIDE END MILL
FOR HARDENED MATERIAL

COATED CARBIDE DRILL
FOR GENERAL

SOLID CARBIDE, END MILLS for Hardened Material

Specially optimized geometry and coating
for machining Hardened steels up to 65 HRC

◎ : Excellent ○ : Good

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

Recommended cutting conditions : p.75~82

SERIES

FLUTE

HELIX ANGLE

CUTTING EDGE SHAPE

SIZE MIN

SIZE MAX

PAGE

GFJ69

GFJ68

2

2

30°

30°

BALL NOSE

BALL NOSE

R0.2

R0.1

R2.0

R6.0

66

69

LONG LENGTH

-

Z-VG Coating

Z-VG Coating



GFJ70	GFJ71	GFJ74	GFJ72	GFJ73
4	4	6	2	4
30°	30°	45°	30°	30°
CORNER RADIUS	CORNER RADIUS	SQUARE	SQUARE	SQUARE
D6.0	D3.0	D6.0	D0.4	D1.0
D12.0	D12.0	D20.0	D20.0	D20.0
70	71	72	73	74
-	SHORT LENGTH	-	STUB LENGTH	STUB LENGTH
Z-VG Coating	Z-VG Coating	Z-VG Coating	Z-VG Coating	Z-VG Coating
				
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◎	◎	◎	◎	41

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