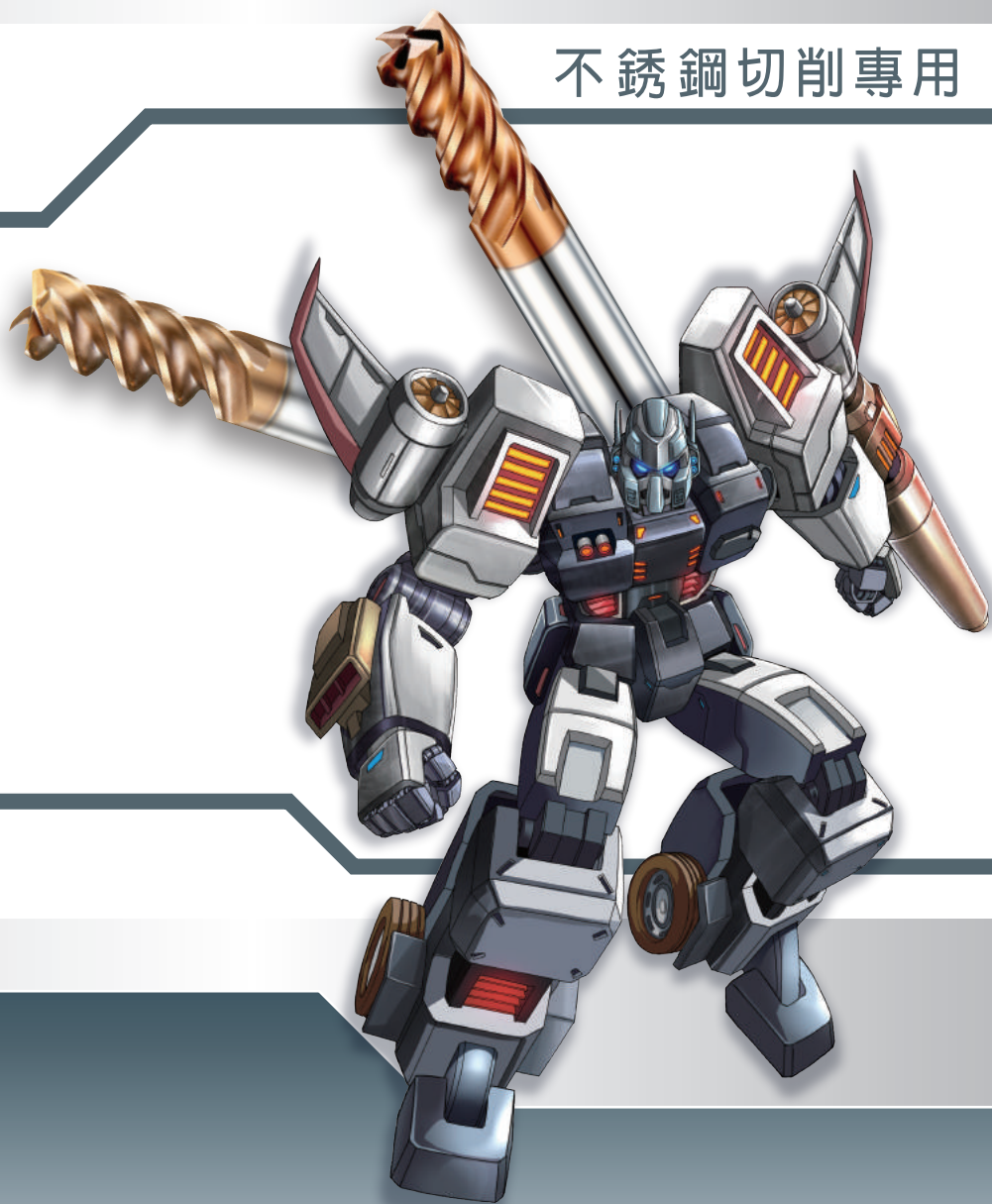


DESIGN . HONESTY . FUTURE




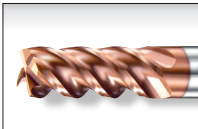

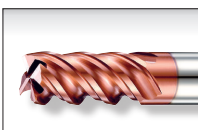
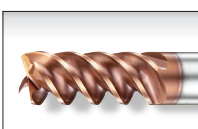
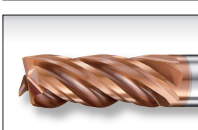
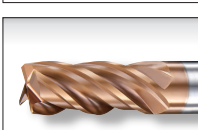
Stainless Steel Cutting


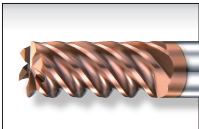
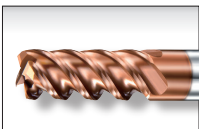



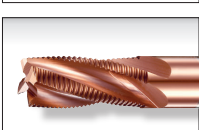
不銹鋼切削專用



INDEX

目錄

品名 Product	照片 Photo	說明 Explanation
ETB		P.4
ETH		P.9
UPS		P.14
UPZ		P.19
UTH		P.24
UPE		P.27
UPG		P.33

品名 Product	照片 Photo	說明 Explanation
UPJ		P.40
VTB		P.45
RTB		P.47
UTHR		P.51
UPER		P.57
WWA		P.60
WWB		P.63

Guide Line to Icons

圖示說明

鎢鋼種類 CARBIDE



超微粒。
Micro grain.



極超微粒。
Super micro grain.

顆粒大小 GRAIN SIZE



粉末顆粒是0.4 μm。
Grain size is 0.4 μm.



粉末顆粒是0.6 μm。
Grain size is 0.6 μm.

螺旋角 HELIX ANGLE



螺旋角度20°、30°、35°、35-38°、45°、50°、52°
Helix Angle is 20°,30°,35°,35-38°,45°,50°,52°.

圓隅角 CORNER R



圓隅角。
Corner Radius.

刃數 FLUTE



被切削材硬度 WORK MATERIAL HARDNESS



被切削工件硬度可達HRC55、HRC60。
Work material hardness is up to HRC55、HRC60.

鍍層 COATING



適用於高速加工。乾式切削。
Good at high speed cutting. For dry cutting.



適用於難切削材，油霧、溼式切削。
Good at difficult material. For Dry & Wet cutting.

齒形 ROUGHING



細粗齒
Small Roughing.



中粗齒
Middle Roughing.

切削性能 CUTTING PERFORMANCE



優
Excellent



良
Good



尚可
Acceptable



禁止
No

Standard

ETB

極超微粒立銑刀 END MILLS

	乾式切削 Dry Machining	
	油霧切削 MQL (Mist)	精銑 Finishing
	水性切削 Emulsion Machining	中銑 Semi-finishing
	油性切削 Oil Machining	粗銑 Roughing



產品規格 SPECIFICATIONS

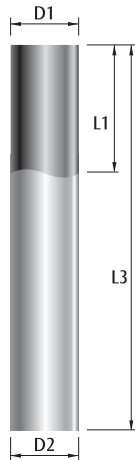
型號 Type No.	D1 直徑 Diameter	L1 刃長 Flute Length	L3 全長 O.A.L.	D2 柄徑 Shank Dia.
ETB0104	1.0	3	50	4
ETB0154	1.5	4	50	4
ETB0204S	2.0	6	50	4
ETB0204	2.0	6	50	6
ETB0254S	2.5	8	50	4
ETB0254	2.5	8	50	6
ETB0304S	3.0	8	50	4
ETB0304	3.0	8	50	6
ETB0354	3.5	10	50	6
ETB0404S	4.0	11	50	4
ETB0404	4.0	11	50	6
ETB0454	4.5	11	50	6
ETB0504	5.0	13	50	6
ETB0604	6.0	16	50	6
ETB0804	8.0	20	60	8
ETB1004Z	10.0	25	75	10
ETB1004	10.0	30	75	10
ETB1204	12.0	30	75	12
ETB1604	16.0	40	100	16
ETB2004	20.0	45	100	20

unit : mm

Stainless Steel Cutting



公差表 TOLERANCE



直徑 D1	直徑公差值 D1 Tolerance	柄徑 D2	柄徑公差值 D2 Tolerance
1.0	$0_{-0.02}$	Ø4	$0_{-0.008}$
1.5	$0_{-0.02}$	Ø6	$0_{-0.008}$
2.0	$0_{-0.02}$	Ø8	$0_{-0.009}$
2.5	$0_{-0.02}$	Ø10	$0_{-0.009}$
3.0	$0_{-0.02}$	Ø12	$0_{-0.011}$
3.5	$0_{-0.02}$	Ø16	$0_{-0.011}$
4.0	$0_{-0.02}$	Ø20	$0_{-0.013}$
4.5	$0_{-0.02}$		
5.0	$0_{-0.02}$		
6.0	$0_{-0.02}$		
8.0	$0_{-0.025}$		
10.0	$0_{-0.03}$		
12.0	$0_{-0.035}$		
16.0	$0_{-0.04}$		
20.0	$0_{-0.04}$		

unit : mm

ETB

被切削材 Work Material

沃斯田鐵系不銹鋼

Stainless Steels [Easy] :SUS304 : 1.4301 : AISI 304 (HRc 28~32)

切削條件表 **MILLING CONDITIONS**

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
ETB0104	9	80	25000	1100~1300	0~0.1	1	溝銑 SLOTTING
ETB0104	9	80	25000	600~900	0.1~0.2	1	溝銑 SLOTTING
ETB0104	9	80	25000	400~600	0.2~0.3	1	溝銑 SLOTTING
ETB0104	9	80	25000	200~400	1~2	0~0.1	側銑 SIDE MILLING
ETB0104	9	80	25000	800~1100	1	0.15	側銑 SIDE MILLING
ETB0104	9	80	25000	600~900	1~2	0~0.06	側銑 SIDE MILLING
ETB0154	9	105	22000	1100~1300	0~0.13	1.5	溝銑 SLOTTING
ETB0154	9	105	22000	600~900	0.13~0.3	1.5	溝銑 SLOTTING
ETB0154	9	105	22000	400~600	0.3~0.5	1.5	溝銑 SLOTTING
ETB0154	9	105	22000	200~400	1.5~3	0~0.13	側銑 SIDE MILLING
ETB0154	9	105	22000	800~1100	1.5	0.25	側銑 SIDE MILLING
ETB0154	9	105	22000	600~900	1.5~3	0~0.08	側銑 SIDE MILLING
ETB0204S	11	105	16500	1100~1300	0~0.18	2	溝銑 SLOTTING
ETB0204S	11	105	16500	600~900	0.2~0.3	2	溝銑 SLOTTING
ETB0204S	11	105	16500	400~600	0.3~0.6	2	溝銑 SLOTTING
ETB0204S	11	105	16500	200~400	2~4	0~0.18	側銑 SIDE MILLING
ETB0204S	11	105	16500	800~1100	2	0.35	側銑 SIDE MILLING
ETB0204S	11	105	16500	600~900	2~4	0~0.1	側銑 SIDE MILLING
ETB0204	11	105	16500	1100~1300	0~0.18	2	溝銑 SLOTTING
ETB0204	11	105	16500	600~900	0.2~0.3	2	溝銑 SLOTTING
ETB0204	11	105	16500	400~600	0.3~0.6	2	溝銑 SLOTTING
ETB0204	11	105	16500	200~400	2~4	0~0.18	側銑 SIDE MILLING
ETB0204	11	105	16500	800~1100	2	0.35	側銑 SIDE MILLING
ETB0204	11	105	16500	600~900	2~4	0~0.1	側銑 SIDE MILLING
ETB0254S	12	105	13300	1200~1400	0~0.25	2.5	溝銑 SLOTTING
ETB0254S	12	105	13300	800~1000	0.25~0.6	2.5	溝銑 SLOTTING
ETB0254S	12	105	13300	500~700	0.6~1	2.5	溝銑 SLOTTING
ETB0254S	12	105	13300	1000~1200	2.5~5	0~0.25	側銑 SIDE MILLING
ETB0254S	12	105	13300	800~1000	2.5	0.45	側銑 SIDE MILLING
ETB0254S	12	105	13300	700~900	2.5~5	0~0.12	側銑 SIDE MILLING
ETB0254	12	105	13300	1200~1600	0~0.25	2.5	溝銑 SLOTTING
ETB0254	12	105	13300	800~1000	0.25~0.6	2.5	溝銑 SLOTTING
ETB0254	12	105	13300	600~800	0.6~1	2.5	溝銑 SLOTTING
ETB0254	12	105	13300	1000~1200	2.5~5	0~0.25	側銑 SIDE MILLING
ETB0254	12	105	13300	800~1000	2.5	0.45	側銑 SIDE MILLING
ETB0254	12	105	13300	700~900	2.5~5	0~0.12	側銑 SIDE MILLING

Stainless Steel Cutting

被切削材 Work Material
沃斯田鐵系不銹鋼
Stainless Steels [Easy]:SUS304 : 1.4301 : AISI 304 (HRc 28~32)
切削條件表 MILLING CONDITIONS

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
ETB0304S	13	105	11100	1200~1600	0~0.3	3	溝銼 SLOTTING
ETB0304S	13	105	11100	800~1000	0.3~0.7	3	溝銼 SLOTTING
ETB0304S	13	105	11100	600~800	0.8~1.5	3	溝銼 SLOTTING
ETB0304S	13	105	11100	1000~1200	3~6	0~0.3	側銼 SIDE MILLING
ETB0304S	13	105	11100	800~1000	3	0.65	側銼 SIDE MILLING
ETB0304S	13	105	11100	700~900	3~6	0~0.12	側銼 SIDE MILLING
ETB0304	15	105	11100	1200~1600	0~0.3	3	溝銼 SLOTTING
ETB0304	15	105	11100	800~1000	0.3~0.7	3	溝銼 SLOTTING
ETB0304	15	105	11100	600~800	0.8~1.5	3	溝銼 SLOTTING
ETB0304	15	105	11100	1000~1200	3~6	0~0.3	側銼 SIDE MILLING
ETB0304	15	105	11100	800~1000	3	0.65	側銼 SIDE MILLING
ETB0304	15	105	11100	700~900	3~6	0~0.12	側銼 SIDE MILLING
ETB0354	15	105	9600	1200~1600	0~0.35	3.5	溝銼 SLOTTING
ETB0354	15	105	9600	800~1000	0.35~0.8	3.5	溝銼 SLOTTING
ETB0354	15	105	9600	600~800	0.8~1.6	3.5	溝銼 SLOTTING
ETB0354	15	105	9600	1000~1200	3.5~7	0~0.35	側銼 SIDE MILLING
ETB0354	15	105	9600	800~1000	3.5	0.75	側銼 SIDE MILLING
ETB0354	15	105	9600	700~900	3.5~7	0~0.15	側銼 SIDE MILLING
ETB0404S	16	105	8400	1200~1600	0~0.4	4	溝銼 SLOTTING
ETB0404S	16	105	8400	800~1000	0.4~1	4	溝銼 SLOTTING
ETB0404S	16	105	8400	600~800	1~2	4	溝銼 SLOTTING
ETB0404S	16	105	8400	1000~1200	4~8	0~0.4	側銼 SIDE MILLING
ETB0404S	16	105	8400	800~1000	8	0.9	側銼 SIDE MILLING
ETB0404S	16	105	8400	700~900	4~8	0~0.2	側銼 SIDE MILLING
ETB0404	16	105	8400	1400~1800	0~0.4	4	溝銼 SLOTTING
ETB0404	16	105	8400	1000~1200	0.4~1	4	溝銼 SLOTTING
ETB0404	16	105	8400	700~900	1~2	4	溝銼 SLOTTING
ETB0404	16	105	8400	1200~1400	4~8	0~0.4	側銼 SIDE MILLING
ETB0404	16	105	8400	900~1100	8	0.9	側銼 SIDE MILLING
ETB0404	16	105	8400	800~1000	4~8	0~0.2	側銼 SIDE MILLING
ETB0454	16	105	7500	1400~1800	0~0.45	4.5	溝銼 SLOTTING
ETB0454	16	105	7500	1000~1200	0.45~1.1	4.5	溝銼 SLOTTING
ETB0454	16	105	7500	750~950	1.1~2	4.5	溝銼 SLOTTING
ETB0454	16	105	7500	1200~1400	4.5~9	0~0.45	側銼 SIDE MILLING
ETB0454	16	105	7500	900~1100	4.5	0.9	側銼 SIDE MILLING
ETB0454	16	105	7500	800~1000	4.5~9	0~0.2	側銼 SIDE MILLING

被切削材 Work Material

沃斯田鐵系不銹鋼

Stainless Steels [Easy] :SUS304 : 1.4301 : AISI 304 (HRc 28~32)

切削條件表 MILLING CONDITIONS

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
ETB0504	19	105	6700	1400~1800	0~0.45	5	溝銑 SLOTTING
ETB0504	19	105	6700	1000~1200	0.45~1.2	5	溝銑 SLOTTING
ETB0504	19	105	6700	750~950	1.3~2.5	5	溝銑 SLOTTING
ETB0504	19	105	6700	1200~1400	5~10	0~0.45	側銑 SIDE MILLING
ETB0504	19	105	6700	900~1100	5~10	0.9	側銑 SIDE MILLING
ETB0504	19	95	6050	700~900	5~10	1.5	側銑 SIDE MILLING
ETB0504	19	95	6050	500~700	5	2	側銑 SIDE MILLING
ETB0504	19	105	6700	800~1000	5~10	0~0.25	側銑 SIDE MILLING
ETB0604	21	105	5600	1400~1800	0~0.5	6	溝銑 SLOTTING
ETB0604	21	105	5600	1000~1200	0.5~1.5	6	溝銑 SLOTTING
ETB0604	21	105	5600	800~1000	1.5~3	6	溝銑 SLOTTING
ETB0604	21	105	5600	1200~1400	6~12	0~0.5	側銑 SIDE MILLING
ETB0604	21	105	5600	900~1100	6~12	1	側銑 SIDE MILLING
ETB0604	21	90	4750	700~900	6~12	2	側銑 SIDE MILLING
ETB0604	21	90	4750	550~750	6~12	3	側銑 SIDE MILLING
ETB0604	21	90	4750	400~600	6	5	側銑 SIDE MILLING
ETB0604	21	105	5600	800~1000	6~12	0~0.25	側銑 SIDE MILLING
ETB0804	27	105	4200	1300~1600	0~0.5	8	溝銑 SLOTTING
ETB0804	27	105	4200	800~1000	0.5~2	8	溝銑 SLOTTING
ETB0804	27	105	4200	600~800	3~4	8	溝銑 SLOTTING
ETB0804	27	105	4200	1000~1200	8~16	0~0.5	側銑 SIDE MILLING
ETB0804	27	70	2750	600~800	8~16	1	側銑 SIDE MILLING
ETB0804	27	70	2750	300~500	8~16	2	側銑 SIDE MILLING
ETB0804	27	70	2750	300~500	8	2~4	側銑 SIDE MILLING
ETB0804	27	115	4500	600~800	16	0~0.3	側銑 SIDE MILLING
ETB1004Z	30	115	3600	1400~1800	0~0.6	10	溝銑 SLOTTING
ETB1004Z	30	115	3600	650~850	2~3	10	溝銑 SLOTTING
ETB1004Z	30	115	3600	500~700	3~5	10	溝銑 SLOTTING
ETB1004Z	30	105	3300	1200~1500	10~25	0~0.6	側銑 SIDE MILLING
ETB1004Z	30	105	3300	600~800	20	1	側銑 SIDE MILLING
ETB1004Z	30	65	2000or2700	250~400	20	2~4	側銑 SIDE MILLING
ETB1004Z	30	65	2000	200~350	20	4~5	側銑 SIDE MILLING
ETB1004Z	30	105	3400	700~900	25	0~0.3	側銑 SIDE MILLING
ETB1004	34	105	3350	1300~1500	0~0.6	10	溝銑 SLOTTING
ETB1004	34	110	3500	600~800	2~3	10	溝銑 SLOTTING
ETB1004	34	105	3300	450~650	3~5	10	溝銑 SLOTTING

被切削材 Work Material
沃斯田鐵系不銹鋼
Stainless Steels [Easy]:SUS304 : 1.4301 : AISI 304 (HRc 28~32)
切削條件表 MILLING CONDITIONS

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
ETB1004	34	105	3300	1100~1400	10~20	0~0.6	側銑 SIDE MILLING
ETB1004	34	105	3300	600~800	20	1	側銑 SIDE MILLING
ETB1004	34	65	2000	250~400	20	2~4	側銑 SIDE MILLING
ETB1004	34	65	2000	200~350	20	4~5	側銑 SIDE MILLING
ETB1004	34	115	3600	700~900	10~20	0~0.3	側銑 SIDE MILLING
ETB1204	37	105	2800	1000~1300	0~0.7	12	溝銑 SLOTTING
ETB1204	37	85	2250	400~600	0.7~2	12	溝銑 SLOTTING
ETB1204	37	75	1950	300~400	3~4.5	12	溝銑 SLOTTING
ETB1204	37	105	2800	800~1000	12~24	0~0.7	側銑 SIDE MILLING
ETB1204	37	80	2100	500~700	12~24	1~1.3	側銑 SIDE MILLING
ETB1204	37	65	1700	250~400	24	1.5~3	側銑 SIDE MILLING
ETB1204	37	65	1700	200~300	24	3~5	側銑 SIDE MILLING
ETB1204	37	105	2800	600~800	12~24	0~0.35	側銑 SIDE MILLING
ETB1604	50	105	2100	800~1000	0~0.7	16	溝銑 SLOTTING
ETB1604	50	85	1700	300~500	0.7~2	16	溝銑 SLOTTING
ETB1604	50	75	1500	200~300	3~4	16	溝銑 SLOTTING
ETB1604	50	105	2100	600~800	16~32	0~0.7	側銑 SIDE MILLING
ETB1604	50	80	1600	400~600	16	1~1.3	側銑 SIDE MILLING
ETB1604	50	105	2100	400~600	16~32	0~0.35	側銑 SIDE MILLING
ETB2004	50	105	1650	600~800	0~0.7	20	溝銑 SLOTTING
ETB2004	50	85	1350	200~400	0.7~2	20	溝銑 SLOTTING
ETB2004	50	75	1200	150~250	3~4	20	溝銑 SLOTTING
ETB2004	50	105	1650	450~650	20~40	0~0.7	側銑 SIDE MILLING
ETB2004	50	80	1250	300~500	20	1~1.3	側銑 SIDE MILLING
ETB2004	50	105	1650	300~500	20~40	0~0.35	側銑 SIDE MILLING

附註

- ETB適用於粗、精銑加工，溝銑(Aa)與側銑(Ap)都有0.3~0.5D切削能力。粗切削時建議使用溼式高壓水溶性切削液，以免造成排屑不良；當使用精銑及0.1D以內請用乾式切削（因塗層特性關係）。直徑 ϕ 10以上，需視機器剛性與主軸扭力值的不同，做適當調整。
- 建議冷卻方式為溼式。

NOTE

- ETB is good at Roughing and Finishing. It can do a 0.3~0.5D machining for both Slotting (Aa) and Side milling (Ap). When Roughing, we suggest high pressure emulsion coolant for better chip removal. Please use Dry Maching for Finishing and 0.1D cutting (due to coating features). For diameter above 10.0mm, make necessary adjustment as per the rigidity of machine and the torque of spindle.
- Suggest to use wet coolant.

Standard



ETH

極超微粒立銑刀 END MILLS

產品規格 SPECIFICATIONS

型號 Type No.	D1 直徑 Diameter	L1 刃長 Flute Length	L3 全長 O.A.L.	D2 柄徑 Shank Dia.
ETH0104	1.0	3	50	4
ETH0154	1.5	4	50	4
ETH0204	2.0	6	50	4
ETH0254	2.5	8	50	4
ETH0304	3.0	8	50	4
ETH0354	3.5	10	50	4
ETH0404	4.0	11	50	4
ETH0454	4.5	11	50	6
ETH0504	5.0	13	50	6
ETH0604	6.0	16	50	6
ETH0804	8.0	20	60	8
ETH1004Z	10.0	25	75	10
ETH1004	10.0	30	75	10
ETH1204	12.0	30	75	12
ETH1604	16.0	40	100	16
ETH2004	20.0	45	100	20

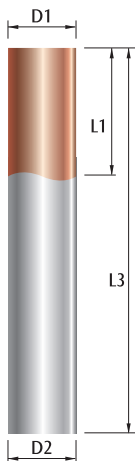
unit : mm

	乾式切削 Dry Machining		
	油霧切削 MQL (Mist)		精銑 Finishing
	水溶性切削 Emulsion Machining		中銑 Semi-finishing
	油性切削 Oil Machining		粗銑 Roughing

公差表 TOLERANCE

直徑 D1	直徑公差值 D1 Tolerance	柄徑 D2	柄徑公差值 D2 Tolerance
1.0	$0_{-0.02}$	Ø4	$0_{-0.008}$
1.5	$0_{-0.02}$	Ø6	$0_{-0.008}$
2.0	$0_{-0.02}$	Ø8	$0_{-0.009}$
2.5	$0_{-0.02}$	Ø10	$0_{-0.009}$
3.0	$0_{-0.02}$	Ø12	$0_{-0.011}$
3.5	$0_{-0.02}$	Ø16	$0_{-0.011}$
4.0	$0_{-0.02}$	Ø20	$0_{-0.013}$
4.5	$0_{-0.02}$		
5.0	$0_{-0.02}$		
6.0	$0_{-0.02}$		
8.0	$0_{-0.025}$		
10.0	$0_{-0.03}$		
12.0	$0_{-0.035}$		
16.0	$0_{-0.04}$		
20.0	$0_{-0.04}$		

unit : mm



Stainless Steel Cutting

ETH

切削條件表 MILLING CONDITIONS

被切削材 Work Material

沃斯田鐵系不銹鋼
Stainless Steels [Easy] : **SUS304** : **1.4301** : **AISI 304** (HRc 28~32)

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
ETH0104	9	80	25000	1100~1300	0~0.1	1	溝銼 SLOTTING
ETH0104	9	80	25000	600~900	0.1~0.2	1	溝銼 SLOTTING
ETH0104	9	80	25000	400~600	0.2~0.3	1	溝銼 SLOTTING
ETH0104	9	80	25000	200~400	1~2	0~0.1	側銼 SIDE MILLING
ETH0104	9	80	25000	800~1100	1	0.15	側銼 SIDE MILLING
ETH0104	9	80	25000	600~900	1~2	0~0.06	側銼 SIDE MILLING
ETH0154	9	105	22000	1100~1300	0~0.13	1.5	溝銼 SLOTTING
ETH0154	9	105	22000	600~900	0.13~0.3	1.5	溝銼 SLOTTING
ETH0154	9	105	22000	400~600	0.3~0.5	1.5	溝銼 SLOTTING
ETH0154	9	105	22000	200~400	1.5~3	0~0.13	側銼 SIDE MILLING
ETH0154	9	105	22000	800~1100	1.5	0.25	側銼 SIDE MILLING
ETH0154	9	105	22000	600~900	1.5~3	0~0.08	側銼 SIDE MILLING
ETH0204	11	105	16500	1100~1300	0~0.18	2	溝銼 SLOTTING
ETH0204	11	105	16500	600~900	0.2~0.3	2	溝銼 SLOTTING
ETH0204	11	105	16500	400~600	0.3~0.6	2	溝銼 SLOTTING
ETH0204	11	105	16500	200~400	2~4	0~0.18	側銼 SIDE MILLING
ETH0204	11	105	16500	800~1100	2	0.35	側銼 SIDE MILLING
ETH0204	11	105	16500	600~900	2~4	0~0.1	側銼 SIDE MILLING
ETH0254	12	105	13300	1200~1600	0~0.25	2.5	溝銼 SLOTTING
ETH0254	12	105	13300	800~1000	0.25~0.6	2.5	溝銼 SLOTTING
ETH0254	12	105	13300	600~800	0.6~1	2.5	溝銼 SLOTTING
ETH0254	12	105	13300	1000~1200	2.5~5	0~0.25	側銼 SIDE MILLING
ETH0254	12	105	13300	800~1000	2.5	0.45	側銼 SIDE MILLING
ETH0254	12	105	13300	700~900	2.5~5	0~0.12	側銼 SIDE MILLING
ETH0304	15	105	11100	1200~1600	0~0.3	3	溝銼 SLOTTING
ETH0304	15	105	11100	800~1000	0.3~0.7	3	溝銼 SLOTTING
ETH0304	15	105	11100	600~800	0.8~1.5	3	溝銼 SLOTTING
ETH0304	15	105	11100	1000~1200	3~6	0~0.3	側銼 SIDE MILLING
ETH0304	15	105	11100	800~1000	3	0.65	側銼 SIDE MILLING
ETH0304	15	105	11100	700~900	3~6	0~0.12	側銼 SIDE MILLING

被切削材 Work Material
沃斯田鐵系不銹鋼
Stainless Steels [Easy] : SUS304 : 1.4301 : AISI 304 (HRc 28~32)
切削條件表 MILLING CONDITIONS

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
ETH0354	15	105	9600	1200~1600	0~0.35	3.5	溝銑 SLOTTING
ETH0354	15	105	9600	800~1000	0.35~0.8	3.5	溝銑 SLOTTING
ETH0354	15	105	9600	600~800	0.8~1.6	3.5	溝銑 SLOTTING
ETH0354	15	105	9600	1000~1200	3.5~7	0~0.35	側銑 SIDE MILLING
ETH0354	15	105	9600	800~1000	3.5	0.75	側銑 SIDE MILLING
ETH0354	15	105	9600	700~900	3.5~7	0~0.15	側銑 SIDE MILLING
ETH0404	16	105	8400	1400~1800	0~0.4	4	溝銑 SLOTTING
ETH0404	16	105	8400	1000~1200	0.4~1	4	溝銑 SLOTTING
ETH0404	16	105	8400	700~900	1~2	4	溝銑 SLOTTING
ETH0404	16	105	8400	1200~1400	4~8	0~0.4	側銑 SIDE MILLING
ETH0404	16	105	8400	900~1100	8	0.9	側銑 SIDE MILLING
ETH0404	16	105	8400	800~1000	4~8	0~0.2	側銑 SIDE MILLING
ETH0454	16	105	7500	1400~1800	0~0.45	4.5	溝銑 SLOTTING
ETH0454	16	105	7500	1000~1200	0.45~1.1	4.5	溝銑 SLOTTING
ETH0454	16	105	7500	750~950	1.1~2	4.5	溝銑 SLOTTING
ETH0454	16	105	7500	1200~1400	4.5~9	0~0.45	側銑 SIDE MILLING
ETH0454	16	105	7500	900~1100	4.5	0.9	側銑 SIDE MILLING
ETH0454	16	105	7500	800~1000	4.5~9	0~0.2	側銑 SIDE MILLING
ETH0504	19	105	6700	1400~1800	0~0.45	5	溝銑 SLOTTING
ETH0504	19	105	6700	1000~1200	0.45~1.2	5	溝銑 SLOTTING
ETH0504	19	105	6700	750~950	1.3~2.5	5	溝銑 SLOTTING
ETH0504	19	105	6700	1200~1400	5~10	0~0.45	側銑 SIDE MILLING
ETH0504	19	105	6700	900~1100	5~10	0.9	側銑 SIDE MILLING
ETH0504	19	95	6050	700~900	5~10	1.5	側銑 SIDE MILLING
ETH0504	19	95	6050	500~700	5	2	側銑 SIDE MILLING
ETH0504	19	105	6700	800~1000	5~10	0~0.25	側銑 SIDE MILLING
ETH0604	21	105	5600	1400~1800	0~0.5	6	溝銑 SLOTTING
ETH0604	21	105	5600	1000~1200	0.5~1.5	6	溝銑 SLOTTING
ETH0604	21	105	5600	800~1000	1.5~3	6	溝銑 SLOTTING
ETH0604	21	105	5600	1200~1400	6~12	0~0.5	側銑 SIDE MILLING

被切削材 Work Material

沃斯田鐵系不銹鋼

Stainless Steels [Easy] :SUS304 :1.4301 :AISI 304 (HRC 28~32)

切削條件表 MILLING CONDITIONS

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
ETH0604	21	105	5600	900~1100	6~12	1	側銑 SIDE MILLING
ETH0604	21	90	4750	700~900	6~12	2	側銑 SIDE MILLING
ETH0604	21	90	4750	550~750	6~12	3	側銑 SIDE MILLING
ETH0604	21	90	4750	400~600	6	5	側銑 SIDE MILLING
ETH0604	21	105	5600	800~1000	6~12	0~0.25	側銑 SIDE MILLING
ETH0804	27	105	4200	1300~1600	0~0.5	8	溝銑 SLOTTING
ETH0804	27	105	4200	800~1000	0.5~2	8	溝銑 SLOTTING
ETH0804	27	105	4200	600~800	3~4	8	溝銑 SLOTTING
ETH0804	27	105	4200	1000~1200	8~16	0~0.5	側銑 SIDE MILLING
ETH0804	27	70	2750	600~800	8~16	1	側銑 SIDE MILLING
ETH0804	27	70	2750	300~500	8~16	2	側銑 SIDE MILLING
ETH0804	27	70	2750	300~500	8	2~4	側銑 SIDE MILLING
ETH0804	27	115	4500	600~800	16	0~0.3	側銑 SIDE MILLING
ETH1004Z	30	115	3600	1400~1800	0~0.6	10	溝銑 SLOTTING
ETH1004Z	30	115	3600	650~850	2~3	10	溝銑 SLOTTING
ETH1004Z	30	115	3600	500~700	3~5	10	溝銑 SLOTTING
ETH1004Z	30	105	3300	1200~1500	10~25	0~0.6	側銑 SIDE MILLING
ETH1004Z	30	105	3300	600~800	20	1	側銑 SIDE MILLING
ETH1004Z	30	65	2000or2700	250~400	20	2~4	側銑 SIDE MILLING
ETH1004Z	30	65	2000	200~350	20	4~5	側銑 SIDE MILLING
ETH1004Z	30	105	3400	700~900	25	0~0.3	側銑 SIDE MILLING
ETH1004	34	105	3350	1300~1500	0~0.6	10	溝銑 SLOTTING
ETH1004	34	110	3500	600~800	2~3	10	溝銑 SLOTTING
ETH1004	34	105	3300	450~650	3~5	10	溝銑 SLOTTING
ETH1004	34	105	3300	1100~1400	10~20	0~0.6	側銑 SIDE MILLING
ETH1004	34	105	3300	600~800	10~20	1	側銑 SIDE MILLING
ETH1004	34	65	2000	250~400	20	2~4	側銑 SIDE MILLING
ETH1004	34	65	2000	200~350	20	4~5	側銑 SIDE MILLING
ETH1004	34	115	3600	700~900	10~20	0~0.3	側銑 SIDE MILLING

被切削材 Work Material
沃斯田鐵系不銹鋼
Stainless Steels [Easy]:SUS304 : 1.4301 : AISI 304 (HRc 28~32)
切削條件表 MILLING CONDITIONS

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
ETH1204	37	105	2800	1000~1300	0~0.7	12	溝銑 SLOTTING
ETH1204	37	85	2250	400~600	0.7~2	12	溝銑 SLOTTING
ETH1204	37	75	1950	300~400	3~4.5	12	溝銑 SLOTTING
ETH1204	37	105	2800	800~1000	12~24	0~0.7	側銑 SIDE MILLING
ETH1204	37	80	2100	500~700	12~24	1~1.3	側銑 SIDE MILLING
ETH1204	37	65	1700	250~400	24	1.5~3	側銑 SIDE MILLING
ETH1204	37	65	1700	200~300	24	3~5	側銑 SIDE MILLING
ETH1204	37	105	2800	600~800	12~24	0~0.35	側銑 SIDE MILLING
ETH1604	50	105	2100	800~1000	0~0.7	16	溝銑 SLOTTING
ETH1604	50	85	1700	300~500	0.7~2	16	溝銑 SLOTTING
ETH1604	50	75	1500	200~300	3~4	16	溝銑 SLOTTING
ETH1604	50	105	2100	600~800	16~32	0~0.7	側銑 SIDE MILLING
ETH1604	50	80	1600	400~600	16	1~1.3	側銑 SIDE MILLING
ETH1604	50	105	2100	400~600	16~32	0~0.35	側銑 SIDE MILLING
ETH2004	50	105	1650	600~800	0~0.7	20	溝銑 SLOTTING
ETH2004	50	85	1350	200~400	0.7~2	20	溝銑 SLOTTING
ETH2004	50	75	1200	150~250	3~4	20	溝銑 SLOTTING
ETH2004	50	105	1650	450~650	20~40	0~0.7	側銑 SIDE MILLING
ETH2004	50	80	1250	300~500	20	1~1.3	側銑 SIDE MILLING
ETH2004	50	105	1650	300~500	20~40	0~0.35	側銑 SIDE MILLING

附註

- ETH適用於粗、精銑加工，溝銑(Aa)與側銑(Ap)都有0.3~0.5D切削能力。直徑Ø10以上，需視機器剛性與主軸扭力值的不同，做適當調整。
- 建議冷卻方式為溼式。

NOTE

- ETH is good at Roughing and Finishing. It can do a 0.3~0.5D machining for both Slotting (Aa) and Side milling (Ap). For diameter above 10.0mm, make necessary adjustment as per the rigidity of machine and the torque of spindle.
- Suggest to use wet coolant.

HPC

UPS

無敵高效能立銑刀 END MILLS

	乾式切削 Dry Machining	
	油霧切削 MQL (Mist)	精銑 Finishing
	水溶性切削 Emulsion Machining	中銑 Semi-finishing
	油性切削 Oil Machining	粗銑 Roughing

Stainless Steel Cutting

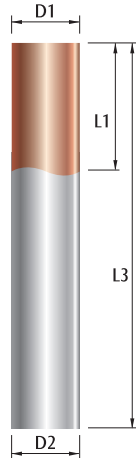


產品規格 SPECIFICATIONS

型號 Type No.	D1 直徑 Diameter	L1 刃長 Flute Length	L3 全長 O.A.L.	D2 柄徑 Shank Dia.
UPS0304	3.0	8	50	6
UPS0304L	3.0	12	60	6
UPS0404	4.0	11	50	6
UPS0404L	4.0	16	60	6
UPS0504	5.0	13	50	6
UPS0604	6.0	16	50	6
UPS0604L	6.0	20	60	6
UPS0804	8.0	20	60	8
UPS0804L	8.0	25	75	8
UPS1004	10.0	22	75	10
UPS1004L	10.0	30	80	10
UPS1204	12.0	26	75	12
UPS1204L	12.0	35	100	12
UPS1604	16.0	36	100	16
UPS1604L	16.0	50	110	16
UPS1804	18.0	40	100	18
UPS2004	20.0	40	100	20
UPS2004L	20.0	50	120	20

unit : mm

公差表 TOLERANCE



直徑 D1	直徑公差值 D1 Tolerance	柄徑 D2	柄徑公差值 D2 Tolerance
3.0	0 -0.02	Ø6	0 -0.008
4.0	0 -0.02	Ø8	0 -0.009
5.0	0 -0.02	Ø10	0 -0.009
6.0	0 -0.02	Ø12	0 -0.011
8.0	0 -0.025	Ø16	0 -0.011
10.0	0 -0.03	Ø18	0 -0.011
12.0	0 -0.035	Ø20	0 -0.013
16.0	0 -0.04		
18.0	0 -0.04		
20.0	0 -0.04		

unit : mm

UPS

切削條件表 MILLING CONDITIONS

被切削材 Work Material

沃斯田鐵系不銹鋼
Stainless Steels [Easy] :SUS304 : 1.4301 : AISI 304 (HRc 28~32)

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
UPS0304	13	110	11500	1600~2000	0~0.25	3	溝銑 SLOTTING
UPS0304	13	105	11000	800~1200	0.25~0.8	3	溝銑 SLOTTING
UPS0304	13	105	11000	400~500	0.8~1.2	3	溝銑 SLOTTING
UPS0304	13	100	14800	200~350	1.2~1.6	3	溝銑 SLOTTING
UPS0304	13	100	11000	1400~1800	3~6	0~0.25	側銑 SIDE MILLING
UPS0304	13	100	11000	500~700	3	0.25~0.8	側銑 SIDE MILLING
UPS0304	13	100	11000	200~450	3	0.8~1.2	側銑 SIDE MILLING
UPS0304	13	105	11000	700~900	3~6	0~0.1	側銑 SIDE MILLING
UPS0404	16	110	8750	1800~2200	0~0.3	4	溝銑 SLOTTING
UPS0404	16	105	8350	1000~1400	0.3~1	4	溝銑 SLOTTING
UPS0404	16	105	8350	500~600	1~2	4	溝銑 SLOTTING
UPS0404	16	100	8000	250~400	2~4	4	溝銑 SLOTTING
UPS0404	16	100	8000	1600~2000	4~8	0~0.3	側銑 SIDE MILLING
UPS0404	16	100	8000	600~800	4	0.3~1	側銑 SIDE MILLING
UPS0404	16	100	8000	300~500	4	1~2	側銑 SIDE MILLING
UPS0404	16	105	8350	800~1000	4~8	0~0.13	側銑 SIDE MILLING
UPS0404L	21	110	8750	1600~2000	0~0.3	4	溝銑 SLOTTING
UPS0404L	21	105	8350	800~1200	0.3~1	4	溝銑 SLOTTING
UPS0404L	21	105	8350	400~500	1~2	4	溝銑 SLOTTING
UPS0404L	21	100	8000	200~350	2~4	4	溝銑 SLOTTING
UPS0404L	21	100	8000	1400~1800	4~8	0~0.3	側銑 SIDE MILLING
UPS0404L	21	100	8000	500~700	4	0.3~1	側銑 SIDE MILLING
UPS0404L	21	100	8000	200~450	4	1~2	側銑 SIDE MILLING
UPS0404L	21	105	8350	700~850	4~8	0~0.13	側銑 SIDE MILLING
UPS0504	18	110	7000	1800~2200	0~0.35	5	溝銑 SLOTTING
UPS0504	18	105	6700	1000~1400	0.35~1.2	5	溝銑 SLOTTING
UPS0504	18	105	6700	500~600	1.2~2.5	5	溝銑 SLOTTING
UPS0504	18	100	6350	250~400	2.5~5	5	溝銑 SLOTTING
UPS0504	18	100	6350	1600~2000	5~10	0~0.35	側銑 SIDE MILLING
UPS0504	18	100	6350	600~800	5	2.5	側銑 SIDE MILLING
UPS0504	18	100	6350	300~500	5	4	側銑 SIDE MILLING
UPS0504	18	105	6700	800~1000	5~10	0~0.15	側銑 SIDE MILLING
UPS0604	20	110	5850	1700~2100	0~0.4	6	溝銑 SLOTTING
UPS0604	20	105	5600	1000~1200	0.4~1.5	6	溝銑 SLOTTING
UPS0604	20	105	5600	500~600	1.5~3	6	溝銑 SLOTTING
UPS0604	20	100	5300	250~400	3~6	6	溝銑 SLOTTING

被切削材 Work Material
沃斯田鐵系不銹鋼
Stainless Steels [Easy]:SUS304 : 1.4301 : AISI 304 (HRc 28~32)
切削條件表 MILLING CONDITIONS

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
UPS0604	20	100	5300	900~1300	6~12	0~0.4	側銑 SIDE MILLING
UPS0604	20	100	5300	600~800	6	3	側銑 SIDE MILLING
UPS0604	20	100	5300	300~500	6	5	側銑 SIDE MILLING
UPS0604	20	105	5600	700~900	6~12	0~0.2	側銑 SIDE MILLING
UPS0604L	26	110	5850	1500~1900	0~0.4	6	溝銑 SLOTTING
UPS0604L	26	105	5600	800~1000	0.4~1.5	6	溝銑 SLOTTING
UPS0604L	26	105	5600	400~500	1.5~3	6	溝銑 SLOTTING
UPS0604L	26	100	5300	200~300	3~6	6	溝銑 SLOTTING
UPS0604L	26	100	5300	800~1000	6~12	0~0.4	側銑 SIDE MILLING
UPS0604L	26	100	5300	500~700	6	3	側銑 SIDE MILLING
UPS0604L	26	100	5300	300~400	6	5	側銑 SIDE MILLING
UPS0604L	26	105	5600	600~800	6~12	0~0.2	側銑 SIDE MILLING
UPS0804	24	115	4500	1700~2100	0~0.5	8	溝銑 SLOTTING
UPS0804	24	115	4500	1000~1400	0.5~1	8	溝銑 SLOTTING
UPS0804	24	115	4500	600~750	3~4	8	溝銑 SLOTTING
UPS0804	24	115	4500	400~600	4~8	8	溝銑 SLOTTING
UPS0804	24	125	5000	800~1100	8~16	0~0.5	側銑 SIDE MILLING
UPS0804	24	115	4500	650~850	8	3~4	側銑 SIDE MILLING
UPS0804	24	105	4200	600~800	8	4~8	側銑 SIDE MILLING
UPS0804	24	100	4000	700~900	8~16	0~0.2	側銑 SIDE MILLING
UPS1004	27	110	3500	1600~2000	0~0.5	10	溝銑 SLOTTING
UPS1004	27	110	3500	800~1000	0.5~1	10	溝銑 SLOTTING
UPS1004	27	105	3300	400~600	3~5	10	溝銑 SLOTTING
UPS1004	27	105	3300	300~500	5~8	10	溝銑 SLOTTING
UPS1004	27	155	5000	1300~1600	10~20	0~0.6	側銑 SIDE MILLING
UPS1004	27	90	2800	200~400	10~20	2~4	側銑 SIDE MILLING
UPS1004	27	80	2500	400~500	10	3.6~5	側銑 SIDE MILLING
UPS1004	27	95	3000	700~900	10~20	0~0.25	側銑 SIDE MILLING
UPS1004L	37	110	3500	1300~1600	0~0.5	10	溝銑 SLOTTING
UPS1004L	37	110	3500	700~900	0.5~1	10	溝銑 SLOTTING
UPS1004L	37	105	3300	400~600	3~5	10	溝銑 SLOTTING
UPS1004L	37	110	3500	1000~1400	10~25	0~0.6	側銑 SIDE MILLING
UPS1004L	37	60	1800	200~400	10~25	2	側銑 SIDE MILLING
UPS1004L	37	65	2100	300~450	10	3.6~5	側銑 SIDE MILLING
UPS1004L	37	95	3000	600~800	10~25	0~0.25	側銑 SIDE MILLING

被切削材 Work Material

沃斯田鐵系不銹鋼

Stainless Steels [Easy] :SUS304 : 1.4301 : AISI 304 (HRc 28~32)

切削條件表 MILLING CONDITIONS

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
UPS1204	33	110	2900	900~1200	0~0.7	12	溝銑 SLOTTING
UPS1204	33	80	2100	600~800	2	12	溝銑 SLOTTING
UPS1204	33	80	2100	250~350	4~6	12	溝銑 SLOTTING
UPS1204	33	80	2100	800~1100	12~24	0~0.7	側銑 SIDE MILLING
UPS1204	33	80	2100	600~800	12	2	側銑 SIDE MILLING
UPS1204	33	110	2900	300~400	24	1.2	側銑 SIDE MILLING
UPS1204	33	80	2100	200~300	12	4~6	側銑 SIDE MILLING
UPS1204	33	100	2650	450~650	12~24	0~0.3	側銑 SIDE MILLING
UPS1204L	40	110	2900	800~1000	0~0.7	12	溝銑 SLOTTING
UPS1204L	40	80	2100	500~600	2	12	溝銑 SLOTTING
UPS1204L	40	80	2100	200~300	3~4	12	溝銑 SLOTTING
UPS1204L	40	80	2100	700~900	12~32	0~0.7	側銑 SIDE MILLING
UPS1204L	40	80	2100	500~700	12	2	側銑 SIDE MILLING
UPS1204L	40	80	2100	200~300	24	1.2	側銑 SIDE MILLING
UPS1204L	40	80	2100	200~300	12	3~4	側銑 SIDE MILLING
UPS1204L	40	100	2650	450~650	12~32	0~0.3	側銑 SIDE MILLING
UPS1604	43	110	2200	600~850	0~0.7	16	溝銑 SLOTTING
UPS1604	43	80	1600	400~500	2	16	溝銑 SLOTTING
UPS1604	43	80	1600	200~250	3~4	16	溝銑 SLOTTING
UPS1604	43	80	1600	600~750	16~32	0~0.7	側銑 SIDE MILLING
UPS1604	43	80	1600	400~600	16	2	側銑 SIDE MILLING
UPS1604	43	80	1600	200~250	32	1.2	側銑 SIDE MILLING
UPS1604	43	80	1600	200~250	16	3~4	側銑 SIDE MILLING
UPS1604	43	100	2000	350~550	16~32	0~0.3	側銑 SIDE MILLING
UPS1804	47	110	1950	500~700	0~0.7	18	溝銑 SLOTTING
UPS1804	47	80	1400	300~450	1.6	18	溝銑 SLOTTING
UPS1804	47	80	1400	150~200	2~3	18	溝銑 SLOTTING
UPS1804	47	80	1400	550~650	18~36	0~0.7	側銑 SIDE MILLING
UPS1804	47	80	1400	300~500	18	1.6	側銑 SIDE MILLING
UPS1804	47	80	1400	200~250	36	1	側銑 SIDE MILLING
UPS1804	47	80	1400	150~200	18	2~3	側銑 SIDE MILLING
UPS1804	47	100	1750	300~450	18~36	0~0.3	側銑 SIDE MILLING
UPS2004	47	110	1750	500~700	0~0.7	20	溝銑 SLOTTING
UPS2004	47	80	1300	300~500	1.6	20	溝銑 SLOTTING
UPS2004	47	80	1300	200~350	2~3	20	溝銑 SLOTTING
UPS2004	47	80	1300	300~450	20~40	0~0.7	側銑 SIDE MILLING

被切削材 Work Material
沃斯田鐵系不銹鋼

 Stainless Steels [Easy] : **SUS304 : 1.4301 : AISI 304** (HRc 28~32)

切削條件表 MILLING CONDITIONS

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
UPS2004	47	80	1300	500~600	20	1.6	側銑 SIDE MILLING
UPS2004	47	80	1300	500~700	40	1	側銑 SIDE MILLING
UPS2004	47	80	1300	300~500	20	2~3	側銑 SIDE MILLING
UPS2004	47	100	1600	200~400	20~40	0~0.3	側銑 SIDE MILLING
UPS2004L	55	110	1750	500~600	0~0.7	20	溝銑 SLOTTING
UPS2004L	55	80	1300	250~450	1.6	20	溝銑 SLOTTING
UPS2004L	55	80	1300	200~300	2~3	20	溝銑 SLOTTING
UPS2004L	55	80	1300	250~350	20~40	0~0.7	側銑 SIDE MILLING
UPS2004L	55	80	1300	500~600	20	1.6	側銑 SIDE MILLING
UPS2004L	55	80	1300	400~550	40	1	側銑 SIDE MILLING
UPS2004L	55	80	1300	300~400	20	2~3	側銑 SIDE MILLING
UPS2004L	55	100	1600	200~400	20~40	0~0.3	側銑 SIDE MILLING

附註

- UPS適用於粗、精銑加工，溝銑(Aa)與側銑(Ap)都有1.0D切削能力。粗切削時建議使用溼式高壓水溶性切削液，以免造成排屑不良；直徑Ø10以上，需視機器剛性與主軸扭力值的不同，做適當調整。
- 建議冷卻方式為溼式。

NOTE

- UPS is good at Roughing and Finishing. It can do a 1.0D machining for both Slotting (Aa) and Side milling (Ap). When Roughing, we suggest high pressure emulsion coolant for better chip removal. For diameter above 10.0mm, make necessary adjustment as per the rigidity of machine and the torque of spindle.
- Suggest to use wet coolant.



HPC

UPZ

抗震高效能立銑刀
END MILLS

產品規格 SPECIFICATIONS

型號 Type No.	D1 直徑 Diameter	L1 刃長 Flute Length	L3 全長 O.A.L.	D2 柄徑 Shank Dia.
UPZ0304	3.0	8	50	6
UPZ0404	4.0	11	50	6
UPZ0504	5.0	13	50	6
UPZ0604	6.0	16	50	6
UPZ0804	8.0	20	60	8
UPZ1004	10.0	22	75	10
UPZ1204	12.0	26	75	12
UPZ1604	16.0	36	100	16
UPZ2004	20.0	40	100	20

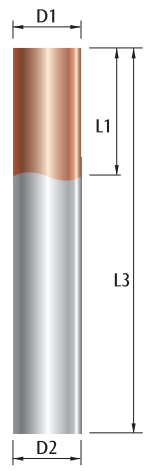
unit : mm

	乾式切削 Dry Machining		
	油霧切削 MQL (Mist)		精銑 Finishing
	水溶性切削 Emulsion Machining		中銑 Semi-finishing
	油性切削 Oil Machining		粗銑 Roughing

公差表 TOLERANCE

直徑 D1	直徑公差值 D1 Tolerance	柄徑 D2	柄徑公差值 D2 Tolerance
3.0	$\frac{0}{-0.02}$	Ø6	$\frac{0}{-0.008}$
4.0	$\frac{0}{-0.02}$	Ø8	$\frac{0}{-0.009}$
5.0	$\frac{0}{-0.02}$	Ø10	$\frac{0}{-0.009}$
6.0	$\frac{0}{-0.02}$	Ø12	$\frac{0}{-0.011}$
8.0	$\frac{0}{-0.025}$	Ø16	$\frac{0}{-0.011}$
10.0	$\frac{0}{-0.03}$	Ø20	$\frac{0}{-0.013}$
12.0	$\frac{0}{-0.035}$		
16.0	$\frac{0}{-0.04}$		
20.0	$\frac{0}{-0.04}$		

unit : mm



Stainless Steel Cutting

UPZ

被切削材 Work Material

沃斯田鐵系不銹鋼

Stainless Steels [Easy] :SUS304 : 1.4301 : AISI 304 (Hrc 28~32)

切削條件表 MILLING CONDITIONS

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
UPZ0304	13	105	11000	700~900	0~0.7	3	溝銑 SLOTTING
UPZ0304	13	105	11000	450~650	0.7~1.5	3	溝銑 SLOTTING
UPZ0304	13	105	11000	300~400	1.5~3	3	溝銑 SLOTTING
UPZ0304	13	140	14800	400~550	1.5~3	3	溝銑 SLOTTING
UPZ0304	13	105	11000	1500~1700	3~6	0~0.3	側銑 SIDE MILLING
UPZ0304	13	105	11000	600~800	3	1~1.5	側銑 SIDE MILLING
UPZ0304	13	105	11000	500~700	6	1~1.5	側銑 SIDE MILLING
UPZ0304	13	105	11000	400~500	3	1.5~3	側銑 SIDE MILLING
UPZ0304	13	140	14800	500~700	3	1.5~3	側銑 SIDE MILLING
UPZ0404	16	105	8300	800~1000	0~1	4	溝銑 SLOTTING
UPZ0404	16	105	8300	500~700	1~2	4	溝銑 SLOTTING
UPZ0404	16	105	8300	400~500	2~4	4	溝銑 SLOTTING
UPZ0404	16	140	11000	700~900	2~4	4	溝銑 SLOTTING
UPZ0404	16	105	8300	1500~1700	4~8	0~0.4	側銑 SIDE MILLING
UPZ0404	16	105	8300	800~1000	4	1.6~2	側銑 SIDE MILLING
UPZ0404	16	105	8300	600~800	8	1.6~2	側銑 SIDE MILLING
UPZ0404	16	105	8300	500~700	4	2~4	側銑 SIDE MILLING
UPZ0404	16	140	11000	700~900	4	2~4	側銑 SIDE MILLING
UPZ0504	18	105	6700	900~1100	0~1.2	5	溝銑 SLOTTING
UPZ0504	18	105	6700	600~800	1.2~2.5	5	溝銑 SLOTTING
UPZ0504	18	105	6700	500~600	2.5~5	5	溝銑 SLOTTING
UPZ0504	18	140	8900	900~1100	2.5~5	5	溝銑 SLOTTING
UPZ0504	18	105	6700	1500~1700	5~10	0~0.5	側銑 SIDE MILLING
UPZ0504	18	105	6700	900~1100	5	1.8~2.5	側銑 SIDE MILLING
UPZ0504	18	105	6700	700~900	10	1.8~2.5	側銑 SIDE MILLING
UPZ0504	18	105	6700	600~800	5	2.5~5	側銑 SIDE MILLING
UPZ0504	18	140	8900	900~1100	5	2.5~5	側銑 SIDE MILLING
UPZ0604	20	105	5500	1000~1200	0~1.5	6	溝銑 SLOTTING
UPZ0604	20	105	5500	700~900	1.5~3	6	溝銑 SLOTTING
UPZ0604	20	105	5500	600~800	3~6	6	溝銑 SLOTTING
UPZ0604	20	140	7400	1000~1200	3~6	6	溝銑 SLOTTING
UPZ0604	20	105	5500	1600~1800	6~12	0~0.5	側銑 SIDE MILLING
UPZ0604	20	105	5500	1000~1200	6	2.2~3	側銑 SIDE MILLING
UPZ0604	20	105	5500	700~900	12	2.2~3	側銑 SIDE MILLING
UPZ0604	20	105	5500	700~900	6	3~6	側銑 SIDE MILLING
UPZ0604	20	140	7400	1000~1200	6	3~6	側銑 SIDE MILLING
UPZ0804	25	105	4200	1000~1200	0~1.8	8	溝銑 SLOTTING
UPZ0804	25	105	4200	800~1000	2~4	8	溝銑 SLOTTING
UPZ0804	25	105	4200	700~900	4~8	8	溝銑 SLOTTING
UPZ0804	25	140	5600	900~1100	4~8	8	溝銑 SLOTTING
UPZ0804	25	105	4200	1400~1600	8~16	0~0.5	側銑 SIDE MILLING
UPZ0804	25	105	4200	800~1000	8	3~4	側銑 SIDE MILLING
UPZ0804	25	105	4200	600~800	16	3~4	側銑 SIDE MILLING
UPZ0804	25	105	4200	700~900	8	4~8	側銑 SIDE MILLING
UPZ0804	25	140	5600	900~1100	8	4~8	側銑 SIDE MILLING

被切削材 Work Material
沃斯田鐵系不銹鋼
Stainless Steels [Easy] : SUS304 : 1.4301 : AISI 304 (HRc 28~32)
切削條件表 MILLING CONDITIONS

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
UPZ1004	30	110	3500	1000~1200	0~2	10	溝銑 SLOTTING
UPZ1004	30	110	3500	800~1000	3~5	10	溝銑 SLOTTING
UPZ1004	30	110	3500	700~900	5~10	10	溝銑 SLOTTING
UPZ1004	30	155	5000	800~1000	5~10	10	溝銑 SLOTTING
UPZ1004	30	110	3500	1400~1600	10~20	0~0.6	側銑 SIDE MILLING
UPZ1004	30	110	3500	800~1000	10	3.6~5	側銑 SIDE MILLING
UPZ1004	30	110	3500	600~800	20	3.6~5	側銑 SIDE MILLING
UPZ1004	30	110	3500	700~900	10	5~10	側銑 SIDE MILLING
UPZ1004	30	155	5000	800~1000	10	5~10	側銑 SIDE MILLING
UPZ1204	34	110	2900	900~1100	0~2	12	溝銑 SLOTTING
UPZ1204	34	110	2900	600~800	2.5~5	12	溝銑 SLOTTING
UPZ1204	34	110	2900	500~700	5~9	12	溝銑 SLOTTING
UPZ1204	34	150	4000	650~850	5~9	12	溝銑 SLOTTING
UPZ1204	34	110	2900	1400~1600	12~24	0~0.7	側銑 SIDE MILLING
UPZ1204	34	110	2900	800~1000	12	4.3~5	側銑 SIDE MILLING
UPZ1204	34	110	2900	600~800	24	4.3~5	側銑 SIDE MILLING
UPZ1204	34	110	2900	500~700	12	5~9	側銑 SIDE MILLING
UPZ1204	34	150	4000	650~850	12	5~9	側銑 SIDE MILLING
UPZ1604	45	110	2200	700~900	0~2.5	16	溝銑 SLOTTING
UPZ1604	45	110	2200	500~700	2.5~6	16	溝銑 SLOTTING
UPZ1604	45	110	2200	350~550	6~10	16	溝銑 SLOTTING
UPZ1604	45	150	3000	450~650	6~10	16	溝銑 SLOTTING
UPZ1604	45	110	2200	1300~1500	16~32	0~0.7	側銑 SIDE MILLING
UPZ1604	45	110	2200	700~900	16	5.7~7	側銑 SIDE MILLING
UPZ1604	45	110	2200	500~700	32	5.7~7	側銑 SIDE MILLING
UPZ1604	45	110	2200	350~550	16	7~10	側銑 SIDE MILLING
UPZ1604	45	150	3000	500~700	16	7~10	側銑 SIDE MILLING
UPZ2004	50	110	1750	500~700	0~2.5	20	溝銑 SLOTTING
UPZ2004	50	110	1750	300~500	2.5~6	20	溝銑 SLOTTING
UPZ2004	50	110	1750	200~350	6~10	20	溝銑 SLOTTING
UPZ2004	50	150	2400	300~450	6~10	20	溝銑 SLOTTING
UPZ2004	50	110	1750	1000~1200	20~40	0~0.8	側銑 SIDE MILLING
UPZ2004	50	110	1750	500~700	20	7~8	側銑 SIDE MILLING
UPZ2004	50	110	1750	300~500	40	7~8	側銑 SIDE MILLING
UPZ2004	50	110	1750	200~400	20	8~10	側銑 SIDE MILLING
UPZ2004	50	150	2400	300~450	20	8~10	側銑 SIDE MILLING

- 附註**
- UPZ適用於粗、精銑加工，溝銑(Aa)與側銑(Ap)都有1.0D切削能力。0.5D以上切削時，請用濕式高壓水溶性切削液，以免造成排屑不良。直徑Ø10以上，需視機器剛性與主軸扭力值的不同，而做適當調整。
 - 注意側銑(Ap)0.2~0.35D禁止使用。
 - 建議冷卻方式為濕式。

- NOTE**
- UPZ is good at Finishing and Roughing. It can do a 1.0D machining for both Slotting (Aa) and Side milling (Ap). When it is above 0.5D machining, we suggest high pressure emulsion coolant for better chip removal. For diameter above 10.0mm, make necessary adjustment as per the rigidity of machine and the torque of spindle.
 - Do not apply it for Side milling (Ap) 0.2~0.35D.
 - Suggest to use wet coolant.

UPZ

被切削材 Work Material

(麻田散鐵, 析出硬化) 系不銹鋼
 Stainless Steels [Difficult] : **SUS420J2 / SUS630 : 1.2083 / 1.4542 : AISI 420 / 17-4PH** (HRC 28~32)

切削條件表 MILLING CONDITIONS

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
UPZ0304	13	100	10600	650~850	0~0.7	3	溝銑 SLOTTING
UPZ0304	13	100	10600	400~600	0.7~1.5	3	溝銑 SLOTTING
UPZ0304	13	100	10600	300~400	1.5~3	3	溝銑 SLOTTING
UPZ0304	13	140	14800	400~550	1.5~3	3	溝銑 SLOTTING
UPZ0304	13	100	10600	1500~1700	3~6	0~0.3	側銑 SIDE MILLING
UPZ0304	13	100	10600	550~750	3	1~1.5	側銑 SIDE MILLING
UPZ0304	13	100	10600	450~650	6	1~1.5	側銑 SIDE MILLING
UPZ0304	13	100	10600	400~500	3	1.5~3	側銑 SIDE MILLING
UPZ0304	13	140	14800	450~650	3	1.5~3	側銑 SIDE MILLING
UPZ0404	16	100	8000	800~1000	0~1	4	溝銑 SLOTTING
UPZ0404	16	100	8000	500~700	1~2	4	溝銑 SLOTTING
UPZ0404	16	100	8000	400~500	2~4	4	溝銑 SLOTTING
UPZ0404	16	140	11000	700~900	2~4	4	溝銑 SLOTTING
UPZ0404	16	100	8000	1500~1700	4~8	0~0.4	側銑 SIDE MILLING
UPZ0404	16	100	8000	800~1000	4	1.6~2	側銑 SIDE MILLING
UPZ0404	16	100	8000	600~800	8	1.6~2	側銑 SIDE MILLING
UPZ0404	16	100	8000	500~700	4	2~4	側銑 SIDE MILLING
UPZ0404	16	140	11000	700~900	4	2~4	側銑 SIDE MILLING
UPZ0504	18	100	6400	850~1050	0~1.2	5	溝銑 SLOTTING
UPZ0504	18	100	6400	600~800	1.2~2.5	5	溝銑 SLOTTING
UPZ0504	18	100	6400	500~600	2.5~5	5	溝銑 SLOTTING
UPZ0504	18	140	8900	900~1100	2.5~5	5	溝銑 SLOTTING
UPZ0504	18	100	6400	1500~1700	5~10	0~0.5	側銑 SIDE MILLING
UPZ0504	18	100	6400	900~1100	5	1.8~2.5	側銑 SIDE MILLING
UPZ0504	18	100	6400	650~850	10	1.8~2.5	側銑 SIDE MILLING
UPZ0504	18	100	6400	550~750	5	2.5~5	側銑 SIDE MILLING
UPZ0504	18	140	8900	800~1000	5	2.5~5	側銑 SIDE MILLING
UPZ0604	20	100	5300	1000~1200	0~1.5	6	溝銑 SLOTTING
UPZ0604	20	100	5300	650~850	1.5~3	6	溝銑 SLOTTING
UPZ0604	20	100	5300	550~750	3~6	6	溝銑 SLOTTING
UPZ0604	20	140	7400	1000~1200	3~6	6	溝銑 SLOTTING
UPZ0604	20	100	5300	1600~1800	6~12	0~0.5	側銑 SIDE MILLING
UPZ0604	20	100	5300	900~1100	6	2.2~3	側銑 SIDE MILLING
UPZ0604	20	100	5300	700~900	12	2.2~3	側銑 SIDE MILLING
UPZ0604	20	100	5300	700~900	6	3~6	側銑 SIDE MILLING
UPZ0604	20	140	7400	900~1100	6	3~6	側銑 SIDE MILLING
UPZ0804	25	100	4000	1000~1200	0~1.8	8	溝銑 SLOTTING
UPZ0804	25	100	4000	750~950	2~4	8	溝銑 SLOTTING
UPZ0804	25	100	4000	650~850	4~8	8	溝銑 SLOTTING
UPZ0804	25	140	5600	900~1100	4~8	8	溝銑 SLOTTING
UPZ0804	25	100	4000	1400~1600	8~16	0~0.5	側銑 SIDE MILLING
UPZ0804	25	100	4000	800~1000	8	3~4	側銑 SIDE MILLING
UPZ0804	25	100	4000	600~800	16	3~4	側銑 SIDE MILLING
UPZ0804	25	100	4000	700~900	8	4~8	側銑 SIDE MILLING
UPZ0804	25	140	5600	800~1000	8	4~8	側銑 SIDE MILLING

Stainless Steel Cutting

被切削材 Work Material

(麻田散鐵, 析出硬化) 系不銹鋼
 Stainless Steels [Difficult] : **SUS420J2 / SUS630 : 1.2083 / 1.4542 : AISI 420 / 17-4PH** (HRc 28~32)

切削條件表 MILLING CONDITIONS

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
UPZ1004	30	100	3200	1000~1200	0~2	10	溝銑 SLOTTING
UPZ1004	30	100	3200	800~1000	3~5	10	溝銑 SLOTTING
UPZ1004	30	100	3200	600~800	5~10	10	溝銑 SLOTTING
UPZ1004	30	155	5000	700~900	5~10	10	溝銑 SLOTTING
UPZ1004	30	100	3200	1400~1600	10~20	0~0.6	側銑 SIDE MILLING
UPZ1004	30	100	3200	800~1000	10	3.6~5	側銑 SIDE MILLING
UPZ1004	30	100	3200	500~700	20	3.6~5	側銑 SIDE MILLING
UPZ1004	30	100	3200	600~800	10	5~10	側銑 SIDE MILLING
UPZ1004	30	155	5000	700~900	10	5~10	側銑 SIDE MILLING
UPZ1204	34	105	2800	900~1100	0~2	12	溝銑 SLOTTING
UPZ1204	34	105	2800	600~800	2.5~5	12	溝銑 SLOTTING
UPZ1204	34	105	2800	450~650	5~9	12	溝銑 SLOTTING
UPZ1204	34	150	4000	600~800	5~9	12	溝銑 SLOTTING
UPZ1204	34	105	2800	1400~1600	12~24	0~0.7	側銑 SIDE MILLING
UPZ1204	34	105	2800	800~1000	12	4.3~5	側銑 SIDE MILLING
UPZ1204	34	105	2800	500~700	24	4.3~5	側銑 SIDE MILLING
UPZ1204	34	105	2800	500~700	12	5~9	側銑 SIDE MILLING
UPZ1204	34	150	4000	600~800	12	5~9	側銑 SIDE MILLING
UPZ1604	45	105	2100	700~900	0~2.5	16	溝銑 SLOTTING
UPZ1604	45	105	2100	500~700	2.5~6	16	溝銑 SLOTTING
UPZ1604	45	105	2100	350~550	6~10	16	溝銑 SLOTTING
UPZ1604	45	150	3000	450~650	6~10	16	溝銑 SLOTTING
UPZ1604	45	105	2100	1300~1500	16~32	0~0.7	側銑 SIDE MILLING
UPZ1604	45	105	2100	650~850	16	5.7~7	側銑 SIDE MILLING
UPZ1604	45	105	2100	450~650	32	5.7~7	側銑 SIDE MILLING
UPZ1604	45	105	2100	300~500	16	7~10	側銑 SIDE MILLING
UPZ1604	45	150	3000	450~650	16	7~10	側銑 SIDE MILLING
UPZ2004	50	105	1650	500~700	0~2.5	20	溝銑 SLOTTING
UPZ2004	50	105	1650	300~500	2.5~6	20	溝銑 SLOTTING
UPZ2004	50	105	1650	200~350	6~10	20	溝銑 SLOTTING
UPZ2004	50	150	2400	300~450	6~10	20	溝銑 SLOTTING
UPZ2004	50	105	1650	1000~1200	20~40	0~0.8	側銑 SIDE MILLING
UPZ2004	50	105	1650	500~700	20	7~8	側銑 SIDE MILLING
UPZ2004	50	105	1650	300~500	40	7~8	側銑 SIDE MILLING
UPZ2004	50	105	1650	200~350	20	8~10	側銑 SIDE MILLING
UPZ2004	50	150	2400	250~400	20	8~10	側銑 SIDE MILLING

- 附註**
- UPZ適用於粗、精銑加工，溝銑(Aa)與側銑(Ap)都有1.0D切削能力。0.5D以上切削時，請用濕式高壓水溶性切削液，以免造成排屑不良。直徑Ø10以上，需視機器剛性與主軸扭力值的不同，而做適當調整。
 - 注意側銑(Ap)0.2~0.35D禁止使用。
 - 建議冷卻方式為濕式。

- NOTE**
- UPZ is good at Finishing and Roughing. It can do a 1.0D machining for both Slotting (Aa) and Side milling (Ap). When it is above 0.5D machining, we suggest high pressure emulsion coolant for better chip removal. For diameter above 10.0mm, make necessary adjustment as per the rigidity of machine and the torque of spindle.
 - Do not apply it for Side milling (Ap) 0.2~0.35D.
 - Suggest to use wet coolant.

Titanium Cutting

UTH

鈦滿意立銑刀 END MILLS

	乾式切削 Dry Machining	
	油霧切削 MQL (Mist)	精銑 Finishing
	水溶性切削 Emulsion Machining	中銑 Semi-finishing
	油性切削 Oil Machining	粗銑 Roughing

Stainless Steel Cutting

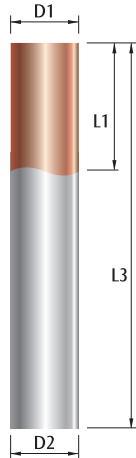


產品規格 SPECIFICATIONS

型號 Type No.	D1 直徑 Diameter	L1 刃長 Flute Length	L3 全長 O.A.L.	D2 柄徑 Shank Dia.
UTH0304	3.0	8	50	6
UTH0404	4.0	11	50	6
UTH0504	5.0	13	50	6
UTH0604	6.0	16	50	6
UTH0804	8.0	20	60	8
UTH1004	10.0	25	75	10
UTH1204	12.0	30	75	12
UTH1604	16.0	40	100	16
UTH2004	20.0	45	100	20

unit : mm

公差表 TOLERANCE



直徑 D1	直徑公差值 D1 Tolerance	柄徑 D2	柄徑公差值 D2 Tolerance
3.0	$0_{-0.02}$	Ø6	$0_{-0.008}$
4.0	$0_{-0.02}$	Ø8	$0_{-0.009}$
5.0	$0_{-0.02}$	Ø10	$0_{-0.009}$
6.0	$0_{-0.02}$	Ø12	$0_{-0.011}$
8.0	$0_{-0.025}$	Ø16	$0_{-0.011}$
10.0	$0_{-0.03}$	Ø20	$0_{-0.013}$
12.0	$0_{-0.035}$		
16.0	$0_{-0.04}$		
20.0	$0_{-0.04}$		

unit : mm

UTH

被切削材 Work Material

沃斯田鐵系不銹鋼

Stainless Steels [Easy] :SUS304 : 1.4301 : AISI 304 (Hrc 28~32)

切削條件表 MILLING CONDITIONS

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
UTH0304	13	120	12500~13000	1600~2000	0~0.25	3	溝銑 SLOTTING
UTH0304	13	120	12500~13000	800~1200	0.25~0.6	3	溝銑 SLOTTING
UTH0304	13	120	12500~13000	400~600	0.8~1.5	3	溝銑 SLOTTING
UTH0304	13	120	12500~13000	300~450	2~2.5	3	溝銑 SLOTTING
UTH0304	13	155	16000~16500	1400~1800	3~6	0~0.25	側銑 SIDE MILLING
UTH0304	13	105	11000~11500	500~700	3	0.25~0.6	側銑 SIDE MILLING
UTH0304	13	105	11000~11500	400~600	3	0.8~1.5	側銑 SIDE MILLING
UTH0304	13	105	11000~11500	300~450	3	2~2.5	側銑 SIDE MILLING
UTH0304	13	105	11000~11500	700~900	3~6	0~0.1	側銑 SIDE MILLING
UTH0404	16	120	9300~9800	2000~2400	0~0.3	4	溝銑 SLOTTING
UTH0404	16	120	9300~9800	1000~1300	0.3~0.7	4	溝銑 SLOTTING
UTH0404	16	120	9300~9800	700~900	1~2	4	溝銑 SLOTTING
UTH0404	16	120	9300~9800	500~700	3~4	4	溝銑 SLOTTING
UTH0404	16	155	12000~12500	1600~1800	4~8	0~0.3	側銑 SIDE MILLING
UTH0404	16	105	8000~8500	800~1000	4	0.3~1	側銑 SIDE MILLING
UTH0404	16	105	8000~8500	550~750	4	1~2	側銑 SIDE MILLING
UTH0404	16	105	8000~8500	500~700	4	3~4	側銑 SIDE MILLING
UTH0404	16	105	8000~8500	700~900	4~8	0~0.13	側銑 SIDE MILLING
UTH0504	18	120	7500~7800	2000~2400	0~0.35	5	溝銑 SLOTTING
UTH0504	18	120	7500~7800	1000~1300	0.35~0.8	5	溝銑 SLOTTING
UTH0504	18	120	7500~7800	700~900	1.5~2.5	5	溝銑 SLOTTING
UTH0504	18	120	7500~7800	500~700	3~5	5	溝銑 SLOTTING
UTH0504	18	155	9600~10000	1600~1800	5~10	0~0.35	側銑 SIDE MILLING
UTH0504	18	105	6500~6800	800~1000	5	0~1	側銑 SIDE MILLING
UTH0504	18	105	6500~6800	550~750	5	2.5	側銑 SIDE MILLING
UTH0504	18	105	6500~6800	500~700	5	4	側銑 SIDE MILLING
UTH0504	18	105	6500~6800	700~900	5~10	0~0.15	側銑 SIDE MILLING
UTH0604	20	120	6300~6600	2000~2400	0~0.4	6	溝銑 SLOTTING
UTH0604	20	120	6300~6600	1000~1300	0.4~1	6	溝銑 SLOTTING
UTH0604	20	120	6300~6600	800~1000	2~3	6	溝銑 SLOTTING
UTH0604	20	120	6300~6600	600~800	5~6	6	溝銑 SLOTTING
UTH0604	20	155	7800~8200	1600~1800	6~12	0~0.4	側銑 SIDE MILLING
UTH0604	20	105	5600~5800	800~1000	6	0~1.2	側銑 SIDE MILLING
UTH0604	20	105	5600~5800	600~800	6	2~3	側銑 SIDE MILLING
UTH0604	20	105	5600~5800	500~750	6	5	側銑 SIDE MILLING
UTH0604	20	105	5600~5800	700~900	6~12	0~0.2	側銑 SIDE MILLING
UTH0804	24	120	4700~5000	1300~1600	0~0.5	8	溝銑 SLOTTING
UTH0804	24	120	4700~5000	800~1000	0.5~1	8	溝銑 SLOTTING
UTH0804	24	115	4500~4700	700~900	3~4	8	溝銑 SLOTTING
UTH0804	24	115	4500~4700	600~800	4~8	8	溝銑 SLOTTING
UTH0804	24	155	6200~6400	1000~1200	8~16	0~0.5	側銑 SIDE MILLING
UTH0804	24	95	3500~3800	650~850	8~16	0~1.5	側銑 SIDE MILLING
UTH0804	24	110	4300~4600	700~900	8	3~4	側銑 SIDE MILLING
UTH0804	24	110	4300~4600	600~800	8	6~7	側銑 SIDE MILLING
UTH0804	24	90	3300~3500	400~600	8~16	0~0.2	側銑 SIDE MILLING

被切削材 Work Material
沃斯田鐵系不銹鋼
Stainless Steels [Easy] : SUS304 : 1.4301 : AISI 304 (HRc 28~32)
切削條件表 MILLING CONDITIONS

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
UTH1004	30	115	3500~3800	1500~1800	0~0.5	10	溝銑 SLOTTING
UTH1004	30	110	3300~3600	800~1000	0.5~1	10	溝銑 SLOTTING
UTH1004	30	110	3300~3600	500~700	3~5	10	溝銑 SLOTTING
UTH1004	30	110	3300~3600	400~600	10	10	溝銑 SLOTTING
UTH1004	30	150	4700~5000	1000~1200	10~20	0~0.6	側銑 SIDE MILLING
UTH1004	30	90	2800~3100	300~450	10	2	側銑 SIDE MILLING
UTH1004	30	110	3300~3600	500~700	10	4~5	側銑 SIDE MILLING
UTH1004	30	110	3300~3600	400~600	10	8~9	側銑 SIDE MILLING
UTH1004	30	90	2800~3000	500~700	10~20	0~0.25	側銑 SIDE MILLING
UTH1204	33	115	3000~3200	1000~1300	0~0.6	12	溝銑 SLOTTING
UTH1204	33	110	2800~3000	800~1000	0.6~1.2	12	溝銑 SLOTTING
UTH1204	33	110	2800~3000	400~600	4~6	12	溝銑 SLOTTING
UTH1204	33	110	2800~3000	300~500	6~8	12	溝銑 SLOTTING
UTH1204	33	150	3800~4000	900~1100	12~24	0~0.6	側銑 SIDE MILLING
UTH1204	33	90	2300~2600	300~400	12	2	側銑 SIDE MILLING
UTH1204	33	110	2800~3000	300~500	12	4~6	側銑 SIDE MILLING
UTH1204	33	110	2800~3000	300~400	12	6~8	側銑 SIDE MILLING
UTH1204	33	90	2300~2600	450~650	12~24	0~0.25	側銑 SIDE MILLING
UTH1604	43	115	2200~2400	800~1100	0~0.7	16	溝銑 SLOTTING
UTH1604	43	110	2100~2300	600~800	2	16	溝銑 SLOTTING
UTH1604	43	110	2100~2300	300~500	3~4	16	溝銑 SLOTTING
UTH1604	43	110	2100~2300	200~350	6~8	16	溝銑 SLOTTING
UTH1604	43	150	2800~3200	800~1000	16~32	0~0.7	側銑 SIDE MILLING
UTH1604	43	90	1700~1900	300~400	16	2	側銑 SIDE MILLING
UTH1604	43	110	2100~2300	250~400	16	3~4	側銑 SIDE MILLING
UTH1604	43	110	2100~2300	200~350	16	6~8	側銑 SIDE MILLING
UTH1604	43	90	1700~1900	350~550	16~32	0~0.3	側銑 SIDE MILLING
UTH2004	47	115	1750~1950	600~800	0~0.7	20	溝銑 SLOTTING
UTH2004	47	110	1700~1900	400~550	2	20	溝銑 SLOTTING
UTH2004	47	110	1700~1900	200~350	3~4	20	溝銑 SLOTTING
UTH2004	47	110	1700~1900	150~250	6~8	20	溝銑 SLOTTING
UTH2004	47	150	2300~2500	600~800	20~40	0~0.7	側銑 SIDE MILLING
UTH2004	47	90	1300~1500	300~400	20	2	側銑 SIDE MILLING
UTH2004	47	110	1700~1900	250~350	20	3~4	側銑 SIDE MILLING
UTH2004	47	110	1700~1900	200~300	20	6~8	側銑 SIDE MILLING
UTH2004	47	90	1300~1500	200~400	20~40	0~0.3	側銑 SIDE MILLING

- 附註**
- UTH適用於粗、中、精銑加工，溝銑(Aa)與側銑(Ap)都有1.0D切削能力。粗切削時，請用濕式高壓水溶性切削液，以免造成排屑不良。直徑 $\phi 10$ 以上，需視機器剛性與主軸扭力值的不同，而做適當調整。
 - 建議冷卻方式為濕式。

- NOTE**
- UTH is good at Roughing, Semi-finishing and Finishing. It can do a 1.0D machining for both Slotting (Aa) and Side milling (Ap). When it is Roughing, we suggest high pressure emulsion coolant for better chip removal. For diameter above 10.0mm, make necessary adjustment as per the rigidity of machine and the torque of spindle.
 - Suggest to use wet coolant.

Super
MG

0.4
μm

35°

4-Flutes

HRc
>60

G10

HPC

UPE

高效能立銑刀
END MILLS

產品規格 SPECIFICATIONS

型號 Type No.	D1 直徑 Diameter	L1 刃長 Flute Length	L3 全長 O.A.L.	D2 柄徑 Shank Dia.
UPE0304	3.0	8	50	6
UPE0404	4.0	11	50	6
UPE0504	5.0	13	50	6
UPE0604	6.0	16	50	6
UPE0804	8.0	20	60	8
UPE1004	10.0	22	75	10
UPE1204	12.0	26	75	12
UPE1404	14.0	30	80	14
UPE1604	16.0	36	100	16
UPE1804	18.0	40	100	18
UPE2004	20.0	40	100	20
UPE2504	25.0	45	100	25

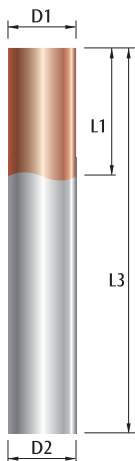
unit : mm

	乾式切削 Dry Machining		
	油霧切削 MQL (Mist)		精銑 Finishing
	水溶性切削 Emulsion Machining		中銑 Semi-finishing
	油性切削 Oil Machining		粗銑 Roughing

公差表 TOLERANCE

直徑 D1	直徑公差值 D1 Tolerance	柄徑 D2	柄徑公差值 D2 Tolerance
3.0	$0_{-0.02}$	Ø6	$0_{-0.008}$
4.0	$0_{-0.02}$	Ø8	$0_{-0.009}$
5.0	$0_{-0.02}$	Ø10	$0_{-0.009}$
6.0	$0_{-0.02}$	Ø12	$0_{-0.011}$
8.0	$0_{-0.025}$	Ø14	$0_{-0.011}$
10.0	$0_{-0.03}$	Ø16	$0_{-0.011}$
12.0	$0_{-0.035}$	Ø18	$0_{-0.011}$
14.0	$0_{-0.04}$	Ø20	$0_{-0.013}$
16.0	$0_{-0.04}$	Ø25	$0_{-0.013}$
18.0	$0_{-0.04}$		
20.0	$0_{-0.04}$		
25.0	$0_{-0.04}$		

unit : mm



Stainless Steel Cutting

UPE

被切削材 Work Material

沃斯田鐵系不銹鋼

Stainless Steels [Easy] :SUS304 : 1.4301 : AISI 304 (HRc 28~32)

切削條件表 **MILLING CONDITIONS**

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
UPE0304	13	110	11600	1200~1400	0~0.3	3	溝銑 SLOTTING
UPE0304	13	110	11600	600~800	0.3~0.7	3	溝銑 SLOTTING
UPE0304	13	110	11600	500~700	0.7~1.5	3	溝銑 SLOTTING
UPE0304	13	110	11600	350~550	1.5~2	3	溝銑 SLOTTING
UPE0304	13	110	11600	900~1200	3~6	0~0.3	側銑 SIDE MILLING
UPE0304	13	110	11600	900~1200	3~6	0~0.15	側銑 SIDE MILLING
UPE0404	16	115	9150	1200~1400	0~0.4	4	溝銑 SLOTTING
UPE0404	16	115	9150	600~800	0.4~1	4	溝銑 SLOTTING
UPE0404	16	115	9150	500~700	1~2	4	溝銑 SLOTTING
UPE0404	16	115	9150	350~550	2~3	4	溝銑 SLOTTING
UPE0404	16	115	9150	900~1200	4~8	0~0.4	側銑 SIDE MILLING
UPE0404	16	115	9150	900~1200	4~8	0~0.2	側銑 SIDE MILLING
UPE0504	18	115	7300	1200~1400	0~0.4	5	溝銑 SLOTTING
UPE0504	18	115	7300	700~900	0.4~1.2	5	溝銑 SLOTTING
UPE0504	18	115	7300	500~700	1.2~2.5	5	溝銑 SLOTTING
UPE0504	18	115	7300	400~600	2.5~4.5	0~1.2	溝銑 SLOTTING
UPE0504	18	115	7300	900~1200	5~10	0~0.4	側銑 SIDE MILLING
UPE0504	18	115	7300	900~1200	5~10	0~0.2	側銑 SIDE MILLING
UPE0604	20	115	6100	1300~1500	0~0.4	6	溝銑 SLOTTING
UPE0604	20	115	6100	700~900	0.5~1.5	6	溝銑 SLOTTING
UPE0604	20	115	6100	600~800	1.5~3	6	溝銑 SLOTTING
UPE0604	20	115	6100	500~700	3~6	6	溝銑 SLOTTING
UPE0604	20	115	6100	900~1200	6~12	0~0.4	側銑 SIDE MILLING
UPE0604	20	130	6900	900~1200	6~12	0~0.2	側銑 SIDE MILLING
UPE0804	25	115	4500	1200~1400	0~0.5	8	溝銑 SLOTTING
UPE0804	25	115	4500	700~900	0.5~2	8	溝銑 SLOTTING
UPE0804	25	115	4500	600~800	2~4	8	溝銑 SLOTTING
UPE0804	25	115	4500	400~600	4~8	8	溝銑 SLOTTING
UPE0804	25	115	4500	800~1100	8~16	0~0.5	側銑 SIDE MILLING
UPE0804	25	125	5000	800~1100	8~16	0~0.25	側銑 SIDE MILLING
UPE1004	30	110	3500	1200~1400	0~0.6	10	溝銑 SLOTTING
UPE1004	30	110	3500	600~800	0.6~2	10	溝銑 SLOTTING
UPE1004	30	110	3500	400~600	3~5	10	溝銑 SLOTTING
UPE1004	30	110	3500	300~450	5~10	10	溝銑 SLOTTING
UPE1004	30	110	3500	1300~1600	10~20	0~0.6	側銑 SIDE MILLING
UPE1004	30	115	3700	800~1000	10~20	0~0.3	側銑 SIDE MILLING

Stainless Steel Cutting

被切削材 Work Material
沃斯田鐵系不銹鋼
Stainless Steels [Easy] : SUS304 : 1.4301 : AISI 304 (HRc 28~32)
切削條件表 MILLING CONDITIONS

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
UPE1204	34	110	2900	1100~1300	0~0.7	12	溝銑 SLOTTING
UPE1204	34	110	2900	500~700	0.7~2	12	溝銑 SLOTTING
UPE1204	34	110	2900	400~600	2~4	12	溝銑 SLOTTING
UPE1204	34	110	2900	300~400	4~7	12	溝銑 SLOTTING
UPE1204	34	110	2900	1000~1300	12~24	0~0.7	側銑 SIDE MILLING
UPE1204	34	130	3450	800~1000	12~24	0~0.3	側銑 SIDE MILLING
UPE1404	40	110	2500	1000~1200	0~0.7	14	溝銑 SLOTTING
UPE1404	40	110	2500	500~700	0.7~2	14	溝銑 SLOTTING
UPE1404	40	110	2500	350~550	2~4	14	溝銑 SLOTTING
UPE1404	40	110	2500	300~500	4~7	14	溝銑 SLOTTING
UPE1404	40	110	2500	900~1100	14~28	0~0.7	側銑 SIDE MILLING
UPE1404	40	120	2700	650~850	14~28	0~0.3	側銑 SIDE MILLING
UPE1604	45	110	2200	900~1100	0~0.7	16	溝銑 SLOTTING
UPE1604	45	110	2200	400~600	0.7~2	16	溝銑 SLOTTING
UPE1604	45	110	2200	300~500	2~4	16	溝銑 SLOTTING
UPE1604	45	110	2200	250~450	4~7	16	溝銑 SLOTTING
UPE1604	45	110	2200	800~1000	16~32	0~0.7	側銑 SIDE MILLING
UPE1604	45	110	2200	500~700	16~32	0~0.3	側銑 SIDE MILLING
UPE1804	50	110	1950	800~1000	0~0.7	18	溝銑 SLOTTING
UPE1804	50	110	1950	400~500	0.7~2	18	溝銑 SLOTTING
UPE1804	50	110	1950	300~400	2~4	18	溝銑 SLOTTING
UPE1804	50	110	1950	200~400	4~7	0~2	溝銑 SLOTTING
UPE1804	50	110	1950	700~900	18~36	0~0.7	側銑 SIDE MILLING
UPE1804	50	110	1950	400~600	18~36	0~0.3	側銑 SIDE MILLING
UPE2004	50	110	1750	700~900	0~0.8	20	溝銑 SLOTTING
UPE2004	50	110	1750	300~400	0.8~2	20	溝銑 SLOTTING
UPE2004	50	110	1750	250~350	2~4	20	溝銑 SLOTTING
UPE2004	50	110	1750	200~300	4~6	20	溝銑 SLOTTING
UPE2004	50	110	1750	600~800	20~40	0~0.7	側銑 SIDE MILLING
UPE2004	50	110	1750	400~550	20~40	0~0.3	側銑 SIDE MILLING
UPE2504	55	110	1400	600~800	0~0.8	25	溝銑 SLOTTING
UPE2504	55	110	1400	250~350	0.8~2	25	溝銑 SLOTTING
UPE2504	55	110	1400	200~300	2~4	25	溝銑 SLOTTING
UPE2504	55	110	1400	150~250	4~6	25	溝銑 SLOTTING
UPE2504	55	110	1400	500~700	25~50	0~0.8	側銑 SIDE MILLING
UPE2504	55	110	1400	350~500	25~50	0~0.3	側銑 SIDE MILLING

UPE

被切削材 Work Material

(麻田散鐵, 析出硬化) 系不銹鋼
 Stainless Steels [Difficult] : **SUS420J2 / SUS630 : 1.2083 / 1.4542 : AISI 420 / 17-4PH** (HRC 28~32)

切削條件表 MILLING CONDITIONS

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
UPE0304	13	130	13800	1200~1500	0~0.35	3	溝銑 SLOTTING
UPE0304	13	130	13800	700~900	0.35~0.7	3	溝銑 SLOTTING
UPE0304	13	130	13800	500~700	0.7~1.5	3	溝銑 SLOTTING
UPE0304	13	130	13800	400~600	1.5~2	3	溝銑 SLOTTING
UPE0304	13	130	13800	1200~1400	3~6	0~0.35	側銑 SIDE MILLING
UPE0304	13	130	13800	600~800	3	0.35~0.7	側銑 SIDE MILLING
UPE0304	13	130	13800	500~700	3	0.7~1.5	側銑 SIDE MILLING
UPE0304	13	130	13800	400~600	3	1.5~2	側銑 SIDE MILLING
UPE0304	13	130	13800	900~1200	3~6	0~0.15	側銑 SIDE MILLING
UPE0404	16	130	10300	1200~1500	0~0.4	4	溝銑 SLOTTING
UPE0404	16	130	10300	700~900	0.4~1	4	溝銑 SLOTTING
UPE0404	16	130	10300	500~700	1~2	4	溝銑 SLOTTING
UPE0404	16	130	10300	400~600	2~3	4	溝銑 SLOTTING
UPE0404	16	130	10300	1200~1400	4~8	0~0.4	側銑 SIDE MILLING
UPE0404	16	130	10300	600~800	4	0.4~1	側銑 SIDE MILLING
UPE0404	16	130	10300	500~700	4	1~2	側銑 SIDE MILLING
UPE0404	16	130	10300	400~600	4	2~3	側銑 SIDE MILLING
UPE0404	16	130	10300	900~1200	4~8	0~0.15	側銑 SIDE MILLING
UPE0504	18	130	8200	1200~1500	0~0.5	5	溝銑 SLOTTING
UPE0504	18	130	8200	700~900	0.5~1.2	5	溝銑 SLOTTING
UPE0504	18	130	8200	500~700	1.2~2.5	5	溝銑 SLOTTING
UPE0504	18	130	8200	400~600	2.5~5	5	溝銑 SLOTTING
UPE0504	18	130	8200	1200~1400	5~10	0~0.5	側銑 SIDE MILLING
UPE0504	18	130	8200	600~800	5	0.5~1.2	側銑 SIDE MILLING
UPE0504	18	130	8200	500~700	5	1.2~2.5	側銑 SIDE MILLING
UPE0504	18	130	8200	400~600	5	2.5~5	側銑 SIDE MILLING
UPE0504	18	130	8200	900~1200	5~10	0~0.2	側銑 SIDE MILLING
UPE0604	20	125	6600	1300~1600	0~0.5	6	溝銑 SLOTTING
UPE0604	20	125	6600	800~1000	0.5~1.5	6	溝銑 SLOTTING
UPE0604	20	125	6600	600~800	1.5~3	6	溝銑 SLOTTING
UPE0604	20	125	6600	450~650	3~6	6	溝銑 SLOTTING
UPE0604	20	125	6600	1200~1400	6~12	0~0.4	側銑 SIDE MILLING
UPE0604	20	125	6600	700~900	6	0.5~1.5	側銑 SIDE MILLING
UPE0604	20	125	6600	550~750	6	1.5~3	側銑 SIDE MILLING
UPE0604	20	125	6600	450~650	6	3~6	側銑 SIDE MILLING
UPE0604	20	130	6900	900~1200	6~12	0~0.2	側銑 SIDE MILLING
UPE0804	25	135	5500	1800~2200	0~0.5	8	溝銑 SLOTTING
UPE0804	25	135	5500	800~1100	0.5~2	8	溝銑 SLOTTING
UPE0804	25	135	5500	700~900	2~4	8	溝銑 SLOTTING

被切削材 Work Material

(麻田散鐵, 析出硬化) 系不銹鋼
 Stainless Steels [Difficult] : **SUS420J2 / SUS630 : 1.2083 / 1.4542 : AISI 420 / 17-4PH** (HRc 28~32)

切削條件表 MILLING CONDITIONS

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
UPE0804	25	135	5500	500~700	4~8	8	溝銑 SLOTTING
UPE0804	25	135	5500	1700~2100	8~16	0~0.5	側銑 SIDE MILLING
UPE0804	25	135	5500	800~1100	8	0.5~2	側銑 SIDE MILLING
UPE0804	25	135	5500	700~900	8	2~4	側銑 SIDE MILLING
UPE0804	25	135	5500	550~750	8	4~8	側銑 SIDE MILLING
UPE0804	25	125	5000	800~1100	8~16	0~0.25	側銑 SIDE MILLING
UPE1004	30	130	4200	1400~1800	0~0.6	10	溝銑 SLOTTING
UPE1004	30	130	4200	800~1000	0.6~2	10	溝銑 SLOTTING
UPE1004	30	130	4200	600~800	3~5	10	溝銑 SLOTTING
UPE1004	30	130	4200	500~700	5~10	10	溝銑 SLOTTING
UPE1004	30	130	4200	1400~1700	10~20	0~0.6	側銑 SIDE MILLING
UPE1004	30	130	4200	700~1000	10	0.6~2	側銑 SIDE MILLING
UPE1004	30	130	4200	600~800	10	3~5	側銑 SIDE MILLING
UPE1004	30	130	4200	500~700	10	5~10	側銑 SIDE MILLING
UPE1004	30	115	3700	800~1000	10~20	0~0.3	側銑 SIDE MILLING
UPE1204	34	130	3450	1300~1600	0~0.7	12	溝銑 SLOTTING
UPE1204	34	130	3450	650~850	0.7~2	12	溝銑 SLOTTING
UPE1204	34	130	3450	450~650	2~5	12	溝銑 SLOTTING
UPE1204	34	130	3450	350~550	5~10	12	溝銑 SLOTTING
UPE1204	34	130	3450	1400~1700	12~24	0~0.7	側銑 SIDE MILLING
UPE1204	34	130	3450	800~1100	12	0.7~2	側銑 SIDE MILLING
UPE1204	34	130	3450	450~650	12	2~5	側銑 SIDE MILLING
UPE1204	34	130	3450	350~550	12	5~10	側銑 SIDE MILLING
UPE1204	34	130	3450	800~1000	12~24	0~0.3	側銑 SIDE MILLING
UPE1404	40	130	2950	1200~1500	0~0.7	14	溝銑 SLOTTING
UPE1404	40	130	2950	600~750	0.7~2	14	溝銑 SLOTTING
UPE1404	40	130	2950	400~600	2~5	14	溝銑 SLOTTING
UPE1404	40	130	2950	350~550	5~8	14	溝銑 SLOTTING
UPE1404	40	130	2950	1300~1600	14~28	0~0.7	側銑 SIDE MILLING
UPE1404	40	130	2950	700~1000	14	0.7~2	側銑 SIDE MILLING
UPE1404	40	130	2950	400~600	14	2~5	側銑 SIDE MILLING
UPE1404	40	130	2950	350~550	14	5~8	側銑 SIDE MILLING
UPE1404	40	130	2950	700~900	14~28	0~0.4	側銑 SIDE MILLING
UPE1604	45	130	2600	1100~1400	0~0.7	16	溝銑 SLOTTING
UPE1604	45	130	2600	550~700	0.7~2	16	溝銑 SLOTTING
UPE1604	45	130	2600	400~500	2~5	16	溝銑 SLOTTING
UPE1604	45	130	2600	300~500	5~8	16	溝銑 SLOTTING
UPE1604	45	130	2600	1200~1400	16~32	0~0.7	側銑 SIDE MILLING
UPE1604	45	130	2600	700~900	16	0.7~2	側銑 SIDE MILLING

被切削材 Work Material

(麻田散鐵, 析出硬化) 系不銹鋼
 Stainless Steels [Difficult]: **SUS420J2 / SUS630 : 1.2083 / 1.4542 : AISI 420 / 17-4PH** (HRC 28~32)

切削條件表 **MILLING CONDITIONS**

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
UPE1604	45	130	2600	400~500	16	2~5	側銑 SIDE MILLING
UPE1604	45	130	2600	300~450	16	5~8	側銑 SIDE MILLING
UPE1604	45	130	2600	600~800	16~32	0~0.4	側銑 SIDE MILLING
UPE1804	50	130	2300	1000~1300	0~0.7	18	溝銑 SLOTTING
UPE1804	50	130	2300	500~650	0.7~2	18	溝銑 SLOTTING
UPE1804	50	130	2300	350~450	2~5	18	溝銑 SLOTTING
UPE1804	50	130	2300	250~400	5~8	18	溝銑 SLOTTING
UPE1804	50	130	2300	1000~1200	18~36	0~0.7	側銑 SIDE MILLING
UPE1804	50	130	2300	600~800	18	0.7~2	側銑 SIDE MILLING
UPE1804	50	130	2300	300~450	18	2~5	側銑 SIDE MILLING
UPE1804	50	130	2300	250~350	18	5~8	側銑 SIDE MILLING
UPE1804	50	130	2300	500~700	18~36	0~0.4	側銑 SIDE MILLING
UPE2004	50	130	2050	900~1100	0~0.7	20	溝銑 SLOTTING
UPE2004	50	130	2050	400~600	0.7~2	20	溝銑 SLOTTING
UPE2004	50	130	2050	300~400	2~5	20	溝銑 SLOTTING
UPE2004	50	130	2050	200~350	5~8	20	溝銑 SLOTTING
UPE2004	50	130	2050	800~1000	20~40	0~0.7	側銑 SIDE MILLING
UPE2004	50	130	2050	500~700	20	0.7~2	側銑 SIDE MILLING
UPE2004	50	130	2050	250~400	20	2~5	側銑 SIDE MILLING
UPE2004	50	130	2050	200~300	20	5~8	側銑 SIDE MILLING
UPE2004	50	130	2050	450~650	20~40	0~0.7	側銑 SIDE MILLING
UPE2504	55	130	1650	700~950	0~0.7	25	溝銑 SLOTTING
UPE2504	55	130	1650	300~500	0.7~2	25	溝銑 SLOTTING
UPE2504	55	130	1650	200~300	2~5	25	溝銑 SLOTTING
UPE2504	55	130	1650	150~250	5~8	25	溝銑 SLOTTING
UPE2504	55	130	1650	600~850	25~50	0~0.7	側銑 SIDE MILLING
UPE2504	55	130	1650	300~500	25	0.7~2	側銑 SIDE MILLING
UPE2504	55	130	1650	200~300	25	2~5	側銑 SIDE MILLING
UPE2504	55	130	1650	150~250	25	5~8	側銑 SIDE MILLING
UPE2504	55	130	1650	350~550	25~50	0~0.7	側銑 SIDE MILLING

附註

- UPE適用於粗、精銑加工，溝銑(Aa)與側銑(Ap)都有1.0D切削能力。粗切削時，請用濕式高壓水溶性切削液，以免造成排屑不良。直徑 $\phi 10$ 以上，需視機器剛性與主軸扭力值的不同，而做適當調整。
- 建議冷卻方式為濕式。

NOTE

- UPE is good at Roughing and Finishing. It can do a 1.0D machining for both Slotting (Aa) and Sidemilling (Ap). When Roughing, we suggest high pressure emulsion coolant for better chip removal. For diameter above 10.0mm, make necessary adjustment as per the rigidity of machine and the torque of spindle.
- Suggest to use wet coolant.

HPC

UPG

抗震高效能立銑刀 END MILLS

	乾式切削 Dry Machining	
	油霧切削 MQL (Mist)	精銑 Finishing
	水溶性切削 Emulsion Machining	中銑 Semi-finishing
	油性切削 Oil Machining	粗銑 Roughing

Stainless Steel Cutting

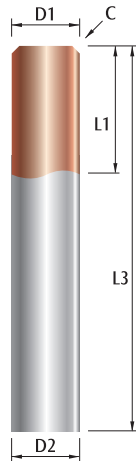


產品規格 SPECIFICATIONS

型號 Type No.	D1 直徑 Diameter	C 倒角 Chamfer	L1 刃長 Flute Length	L3 全長 O.A.L.	D2 柄徑 Shank Dia.
UPG0304	3.0	0.15	8	50	6
UPG0404	4.0	0.15	11	50	6
UPG0504	5.0	0.2	13	50	6
UPG0604	6.0	0.2	16	50	6
UPG0604L	6.0	0.2	20	60	6
UPG0804	8.0	0.25	20	60	8
UPG0804L	8.0	0.25	25	75	8
UPG1004	10.0	0.3	22	75	10
UPG1004L	10.0	0.3	30	80	10
UPG1204	12.0	0.3	26	75	12
UPG1204L	12.0	0.3	35	100	12
UPG1604	16.0	0.4	40	100	16
UPG1604L	16.0	0.4	50	120	16
UPG1804	18.0	0.5	40	100	18
UPG2004	20.0	0.5	40	100	20
UPG2004L	20.0	0.5	50	120	20

unit : mm

公差表 TOLERANCE



直徑 D1	直徑公差值 D1 Tolerance	柄徑 D2	柄徑公差值 D2 Tolerance
3.0	$0_{-0.02}$	Ø6	$0_{-0.008}$
4.0	$0_{-0.02}$	Ø8	$0_{-0.009}$
5.0	$0_{-0.02}$	Ø10	$0_{-0.009}$
6.0	$0_{-0.02}$	Ø12	$0_{-0.011}$
8.0	$0_{-0.025}$	Ø16	$0_{-0.011}$
10.0	$0_{-0.03}$	Ø18	$0_{-0.011}$
12.0	$0_{-0.035}$	Ø20	$0_{-0.013}$
16.0	$0_{-0.04}$		
18.0	$0_{-0.04}$		
20.0	$0_{-0.04}$		

unit : mm

UPG

被切削材 Work Material

沃斯田鐵系不銹鋼

Stainless Steels [Easy]: **SUS304 : 1.4301 : AISI 304** (HRc 28~32)

切削條件表 MILLING CONDITIONS

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
UPG0304	13	95	10000	400~600	0~0.5	3	溝銼 SLOTTING
UPG0304	13	95	10000	300~500	0.5~0.9	3	溝銼 SLOTTING
UPG0304	13	95	10000	200~400	0.9~1.3	3	溝銼 SLOTTING
UPG0304	13	95	10000	600~800	3	0~0.5	側銼 SIDE MILLING
UPG0304	13	95	10000	300~500	3	0.5~0.9	側銼 SIDE MILLING
UPG0304	13	95	10000	250~450	3	0.9~1.3	側銼 SIDE MILLING
UPG0404	16	95	7500	500~700	0~0.7	4	溝銼 SLOTTING
UPG0404	16	95	7500	400~600	0.7~1.1	4	溝銼 SLOTTING
UPG0404	16	95	7500	250~450	1.1~1.6	4	溝銼 SLOTTING
UPG0404	16	95	7500	600~800	4	0~0.7	側銼 SIDE MILLING
UPG0404	16	95	7500	400~600	4	0.7~1.1	側銼 SIDE MILLING
UPG0404	16	95	7500	300~500	4	1.1~1.6	側銼 SIDE MILLING
UPG0504	18	95	6050	500~700	0~0.9	5	溝銼 SLOTTING
UPG0504	18	95	6050	400~600	0.9~1.5	5	溝銼 SLOTTING
UPG0504	18	95	6050	300~500	1.5~2.2	5	溝銼 SLOTTING
UPG0504	18	95	6050	600~800	5	0~0.9	側銼 SIDE MILLING
UPG0504	18	95	6050	400~600	5	0.9~1.5	側銼 SIDE MILLING
UPG0504	18	95	6050	350~450	5	1.5~2.2	側銼 SIDE MILLING
UPG0604	20	95	5050	550~750	0~1.2	6	溝銼 SLOTTING
UPG0604	20	95	5050	500~650	1.2~2	6	溝銼 SLOTTING
UPG0604	20	95	5050	300~400	2~3	6	溝銼 SLOTTING
UPG0604	20	95	5050	700~900	6	0~1.2	側銼 SIDE MILLING
UPG0604	20	95	5050	500~700	6	1.2~2	側銼 SIDE MILLING
UPG0604	20	95	5050	450~650	6	2~3	側銼 SIDE MILLING
UPG0604L	25	95	5050	500~700	0~1	6	溝銼 SLOTTING
UPG0604L	25	95	5050	400~600	1~1.5	6	溝銼 SLOTTING
UPG0604L	25	95	5050	300~400	1.5~2	6	溝銼 SLOTTING
UPG0604L	25	95	5050	600~800	6	0~1	側銼 SIDE MILLING
UPG0604L	25	95	5050	400~600	6	1~1.5	側銼 SIDE MILLING
UPG0604L	25	95	5050	300~500	6	1.5~2	側銼 SIDE MILLING
UPG0804	25	95	3750	600~800	0~1.5	8	溝銼 SLOTTING
UPG0804	25	95	3750	400~600	2~4	8	溝銼 SLOTTING

被切削材 Work Material

沃斯田鐵系不銹鋼

Stainless Steels [Easy] : SUS304 : 1.4301 : AISI 304 (Hrc 28~32)

切削條件表 MILLING CONDITIONS

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
UPG0804	25	95	3750	350~550	4~6.5	8	溝銑 SLOTTING
UPG0804	25	95	3750	800~1100	8	0~2	側銑 SIDE MILLING
UPG0804	25	95	3750	500~700	8	2~4	側銑 SIDE MILLING
UPG0804	25	95	3750	400~600	8	4~6.5	側銑 SIDE MILLING
UPG0804L	33	95	3750	500~700	0~1	8	溝銑 SLOTTING
UPG0804L	33	95	3750	400~600	1~2	8	溝銑 SLOTTING
UPG0804L	33	95	3750	300~500	2~3	8	溝銑 SLOTTING
UPG0804L	33	95	3750	700~1000	8	0~1	側銑 SIDE MILLING
UPG0804L	33	95	3750	500~700	8	1~2	側銑 SIDE MILLING
UPG0804L	33	95	3750	400~600	8	2~3	側銑 SIDE MILLING
UPG1004	30	95	3050	600~800	0~2	10	溝銑 SLOTTING
UPG1004	30	95	3050	400~500	3~5	10	溝銑 SLOTTING
UPG1004	30	95	3050	300~400	8	10	溝銑 SLOTTING
UPG1004	30	95	3050	900~1200	10	0~2	側銑 SIDE MILLING
UPG1004	30	95	3050	500~700	10	3~5	側銑 SIDE MILLING
UPG1004	30	95	3050	300~450	10	8	側銑 SIDE MILLING
UPG1004L	40	60	1900	500~700	0~1	10	溝銑 SLOTTING
UPG1004L	40	60	1900	200~400	1~2	10	溝銑 SLOTTING
UPG1004L	40	60	1900	200~350	2~3	10	溝銑 SLOTTING
UPG1004L	40	60	1900	700~1000	10~20	0~0.5	側銑 SIDE MILLING
UPG1004L	40	60	1900	400~600	10~20	0.5~1	側銑 SIDE MILLING
UPG1004L	40	60	1900	200~300	10~20	1~1.5	側銑 SIDE MILLING
UPG1204	34	95	2500	500~700	0~2	12	溝銑 SLOTTING
UPG1204	34	95	2500	400~600	2~4	12	溝銑 SLOTTING
UPG1204	34	95	2500	300~500	4~6	12	溝銑 SLOTTING
UPG1204	34	95	2500	600~800	12	0~2	側銑 SIDE MILLING
UPG1204	34	95	2500	400~600	12	2~4	側銑 SIDE MILLING
UPG1204	34	95	2500	300~500	12	4~6	側銑 SIDE MILLING
UPG1204L	50	60	1600	400~600	0~1	12	溝銑 SLOTTING
UPG1204L	50	60	1600	300~500	1~2	12	溝銑 SLOTTING
UPG1204L	50	60	1600	200~400	2~3	12	溝銑 SLOTTING
UPG1204L	50	55	1400	500~700	12~24	0~0.5	側銑 SIDE MILLING

被切削材 Work Material

沃斯田鐵系不銹鋼

 Stainless Steels [Easy]: **SUS304 : 1.4301 : AISI 304** (HRc 28~32)

 切削條件表 **MILLING CONDITIONS**

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
UPG1204L	50	45	1200	400~600	12~24	0.5~1	側銑 SIDE MILLING
UPG1204L	50	45	1200	400~600	12~24	1~1.5	側銑 SIDE MILLING
UPG1604	45	95	1900	350~550	0~2	16	溝銑 SLOTTING
UPG1604	45	95	1900	300~500	2~3	16	溝銑 SLOTTING
UPG1604	45	95	1900	200~400	3~5	16	溝銑 SLOTTING
UPG1604	45	95	1900	500~700	16	0~2	側銑 SIDE MILLING
UPG1604	45	95	1900	400~600	16	2~3	側銑 SIDE MILLING
UPG1604	45	95	1900	300~500	16	3~5	側銑 SIDE MILLING
UPG1604L	55	60	1200	350~550	0~1	16	溝銑 SLOTTING
UPG1604L	55	60	1200	300~500	1~2	16	溝銑 SLOTTING
UPG1604L	55	60	1200	200~400	2~3	16	溝銑 SLOTTING
UPG1604L	55	50	1000	400~600	16~32	0~0.5	側銑 SIDE MILLING
UPG1604L	55	50	1000	350~550	16~32	0.5~1	側銑 SIDE MILLING
UPG1604L	55	50	1000	300~400	16~32	1~1.5	側銑 SIDE MILLING
UPG1804	50	95	1700	350~550	0~2	18	溝銑 SLOTTING
UPG1804	50	95	1700	250~450	2~4	18	溝銑 SLOTTING
UPG1804	50	95	1700	150~350	4~6	18	溝銑 SLOTTING
UPG1804	50	95	1700	450~650	18	0~2	側銑 SIDE MILLING
UPG1804	50	95	1700	350~550	18	2~4	側銑 SIDE MILLING
UPG1804	50	95	1700	250~450	18	4~6	側銑 SIDE MILLING
UPG2004	50	95	1500	250~450	0~2	20	溝銑 SLOTTING
UPG2004	50	95	1500	200~400	2~3	20	溝銑 SLOTTING
UPG2004	50	95	1500	150~300	3~5	20	溝銑 SLOTTING
UPG2004	50	95	1500	400~600	20	0~2	側銑 SIDE MILLING
UPG2004	50	95	1500	300~500	20	2~3	側銑 SIDE MILLING
UPG2004	50	95	1500	200~400	20	3~5	側銑 SIDE MILLING
UPG2004L	65	60	950	200~400	0~1	20	溝銑 SLOTTING
UPG2004L	65	60	950	150~350	1~2	20	溝銑 SLOTTING
UPG2004L	65	60	950	100~300	2~3	20	溝銑 SLOTTING
UPG2004L	65	50	800	200~400	20~40	0~0.5	側銑 SIDE MILLING
UPG2004L	65	50	800	150~350	20~40	0.5~1	側銑 SIDE MILLING
UPG2004L	65	50	800	100~300	20~40	1~1.5	側銑 SIDE MILLING

UPG

被切削材 Work Material

(麻田散鐵, 析出硬化) 系不銹鋼
 Stainless Steels [Difficult] : **SUS420J2 / SUS630 : 1.2083 / 1.4542 : AISI 420 / 17-4PH** (HRC 28~32)

切削條件表 **MILLING CONDITIONS**

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
UPG0304	13	95	10000	400~600	0~0.5	3	溝銑 SLOTTING
UPG0304	13	95	10000	300~500	0.5~0.9	3	溝銑 SLOTTING
UPG0304	13	95	10000	200~400	0.9~1.3	3	溝銑 SLOTTING
UPG0304	13	95	10000	600~800	3	0~0.5	側銑 SIDE MILLING
UPG0304	13	95	10000	300~500	3	0.5~0.9	側銑 SIDE MILLING
UPG0304	13	95	10000	250~450	3	0.9~1.3	側銑 SIDE MILLING
UPG0404	16	95	7500	500~700	0~0.7	4	溝銑 SLOTTING
UPG0404	16	95	7500	400~600	0.7~1.1	4	溝銑 SLOTTING
UPG0404	16	95	7500	250~450	1.1~1.6	4	溝銑 SLOTTING
UPG0404	16	95	7500	600~800	4	0~0.7	側銑 SIDE MILLING
UPG0404	16	95	7500	400~600	4	0.7~1.1	側銑 SIDE MILLING
UPG0404	16	95	7500	300~500	4	1.1~1.6	側銑 SIDE MILLING
UPG0504	18	95	6050	500~700	0~0.9	5	溝銑 SLOTTING
UPG0504	18	95	6050	400~600	0.9~1.5	5	溝銑 SLOTTING
UPG0504	18	95	6050	300~500	1.5~2.2	5	溝銑 SLOTTING
UPG0504	18	95	6050	600~800	5	0~0.9	側銑 SIDE MILLING
UPG0504	18	95	6050	400~600	5	0.9~1.5	側銑 SIDE MILLING
UPG0504	18	95	6050	350~450	5	1.5~2.2	側銑 SIDE MILLING
UPG0604	20	95	5050	550~750	0~1.2	6	溝銑 SLOTTING
UPG0604	20	95	5050	500~650	1.2~2	6	溝銑 SLOTTING
UPG0604	20	95	5050	300~400	2~3	6	溝銑 SLOTTING
UPG0604	20	95	5050	700~900	6	0~1.2	側銑 SIDE MILLING
UPG0604	20	95	5050	500~700	6	1.2~2	側銑 SIDE MILLING
UPG0604	20	95	5050	450~650	6	2~3	側銑 SIDE MILLING
UPG0604L	25	95	5050	500~700	0~1	6	溝銑 SLOTTING
UPG0604L	25	95	5050	400~600	1~1.5	6	溝銑 SLOTTING
UPG0604L	25	95	5050	300~400	1.5~2	6	溝銑 SLOTTING
UPG0604L	25	95	5050	600~800	6	0~1	側銑 SIDE MILLING
UPG0604L	25	95	5050	400~600	6	1~1.5	側銑 SIDE MILLING
UPG0604L	25	95	5050	300~500	6	1.5~2	側銑 SIDE MILLING
UPG0804	25	90	3600	600~800	0~1.5	8	溝銑 SLOTTING
UPG0804	25	90	3600	400~600	2~4	8	溝銑 SLOTTING
UPG0804	25	90	3600	300~500	4~6.5	8	溝銑 SLOTTING
UPG0804	25	90	3600	800~1100	8	0~2	側銑 SIDE MILLING
UPG0804	25	90	3600	500~700	8	2~4	側銑 SIDE MILLING

Stainless Steel Cutting

被切削材 Work Material

(麻田散鐵, 析出硬化) 系不銹鋼
 Stainless Steels [Difficult] : **SUS420J2 / SUS630 : 1.2083 / 1.4542 : AISI 420 / 17-4PH** (HRc 28~32)

切削條件表 MILLING CONDITIONS

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
UPG0804	25	90	3600	400~600	8	4~6.5	側銑 SIDE MILLING
UPG0804L	33	90	3600	500~700	0~1	8	溝銑 SLOTTING
UPG0804L	33	90	3600	400~600	1~2	8	溝銑 SLOTTING
UPG0804L	33	90	3600	300~500	2~3	8	溝銑 SLOTTING
UPG0804L	33	90	3600	700~1000	8	0~1	側銑 SIDE MILLING
UPG0804L	33	90	3600	500~700	8	1~2	側銑 SIDE MILLING
UPG0804L	33	90	3600	400~600	8	2~3	側銑 SIDE MILLING
UPG1004	30	90	2900	600~800	0~2	10	溝銑 SLOTTING
UPG1004	30	90	2900	400~500	3~5	10	溝銑 SLOTTING
UPG1004	30	90	2900	300~400	8	10	溝銑 SLOTTING
UPG1004	30	90	2900	800~1000	10	0~2	側銑 SIDE MILLING
UPG1004	30	90	2900	500~600	10	3~5	側銑 SIDE MILLING
UPG1004	30	90	2900	300~500	10	8	側銑 SIDE MILLING
UPG1004L	40	60	1900	500~700	0~1	10	溝銑 SLOTTING
UPG1004L	40	60	1900	200~400	1~2	10	溝銑 SLOTTING
UPG1004L	40	60	1900	200~350	2~3	10	溝銑 SLOTTING
UPG1004L	40	60	1900	700~1000	10~20	0~0.5	側銑 SIDE MILLING
UPG1004L	40	60	1900	400~600	10~20	0.5~1	側銑 SIDE MILLING
UPG1004L	40	60	1900	200~300	10~20	1~1.5	側銑 SIDE MILLING
UPG1204	34	90	2400	500~700	0~2	12	溝銑 SLOTTING
UPG1204	34	90	2400	400~600	2~4	12	溝銑 SLOTTING
UPG1204	34	90	2400	300~500	4~6	12	溝銑 SLOTTING
UPG1204	34	90	2400	600~800	12	0~2	側銑 SIDE MILLING
UPG1204	34	90	2400	400~600	12	2~4	側銑 SIDE MILLING
UPG1204	34	90	2400	300~500	12	4~6	側銑 SIDE MILLING
UPG1204L	50	60	1600	400~600	0~1	12	溝銑 SLOTTING
UPG1204L	50	60	1600	300~500	1~2	12	溝銑 SLOTTING
UPG1204L	50	60	1600	200~400	2~3	12	溝銑 SLOTTING
UPG1204L	50	55	1400	500~700	12~24	0~0.5	側銑 SIDE MILLING
UPG1204L	50	45	1200	400~600	12~24	0.5~1	側銑 SIDE MILLING
UPG1204L	50	45	1200	400~600	12~24	1~1.5	側銑 SIDE MILLING
UPG1604	45	90	1800	350~550	0~2	16	溝銑 SLOTTING
UPG1604	45	90	1800	300~500	2~3	16	溝銑 SLOTTING
UPG1604	45	90	1800	200~400	3~5	16	溝銑 SLOTTING
UPG1604	45	90	1800	500~700	16	0~2	側銑 SIDE MILLING

被切削材 Work Material

(麻田散鐵, 析出硬化) 系不銹鋼
 Stainless Steels [Difficult] : SUS420J2 / SUS630 : 1.2083 /
 1.4542 : AISI 420 / 17-4PH (HRC 28~32)

切削條件表 MILLING CONDITIONS

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
UPG1604	45	90	1800	400~600	16	2~3	側銑 SIDE MILLING
UPG1604	45	90	1800	300~500	16	3~5	側銑 SIDE MILLING
UPG1604L	55	60	1200	350~550	0~1	16	溝銑 SLOTTING
UPG1604L	55	60	1200	300~500	1~2	16	溝銑 SLOTTING
UPG1604L	55	60	1200	200~400	2~3	16	溝銑 SLOTTING
UPG1604L	55	50	1000	400~600	16~32	0~0.5	側銑 SIDE MILLING
UPG1604L	55	50	1000	350~550	16~32	0.5~1	側銑 SIDE MILLING
UPG1604L	55	50	1000	300~400	16~32	1~1.5	側銑 SIDE MILLING
UPG1804	50	90	1600	350~550	0~2	18	溝銑 SLOTTING
UPG1804	50	90	1600	250~450	2~4	18	溝銑 SLOTTING
UPG1804	50	90	1600	150~350	4~6	18	溝銑 SLOTTING
UPG1804	50	90	1600	450~650	18	0~2	側銑 SIDE MILLING
UPG1804	50	90	1600	350~550	18	2~4	側銑 SIDE MILLING
UPG1804	50	90	1600	250~450	18	4~6	側銑 SIDE MILLING
UPG2004	50	90	1450	250~450	0~2	20	溝銑 SLOTTING
UPG2004	50	90	1450	200~400	2~3	20	溝銑 SLOTTING
UPG2004	50	90	1450	150~300	3~5	20	溝銑 SLOTTING
UPG2004	50	90	1450	400~600	20	0~2	側銑 SIDE MILLING
UPG2004	50	90	1450	300~500	20	2~3	側銑 SIDE MILLING
UPG2004	50	90	1450	200~400	20	3~5	側銑 SIDE MILLING
UPG2004L	65	60	950	200~400	0~1	20	溝銑 SLOTTING
UPG2004L	65	60	950	150~350	1~2	20	溝銑 SLOTTING
UPG2004L	65	60	950	100~300	2~3	20	溝銑 SLOTTING
UPG2004L	65	50	800	200~400	20~40	0~0.5	側銑 SIDE MILLING
UPG2004L	65	50	800	150~350	20~40	0.5~1	側銑 SIDE MILLING
UPG2004L	65	50	800	100~300	20~40	1~1.5	側銑 SIDE MILLING

附註

- UPG適用於粗、精銑加工，溝銑(Aa)與側銑(Ap)都有1.0D切削能力。0.5D以上切削時，請用濕式高壓水溶性切削液，以免造成排屑不良。直徑 ϕ 10以上，需視機器剛性與主軸扭力值的不同，而做適當調整。
- 建議冷卻方式為濕式。

NOTE

- UPG is good at Roughing. It can do a 1.0D machining for both Slotting (Aa) and Sidemilling (Ap). When it is above 0.5D machining, we suggest high pressure emulsion coolant for better chip removal. For diameter above 10.0mm, make necessary adjustment as per the rigidity of machine and the torque of spindle.
- Suggest to use wet coolant.



HPC

UPJ

無敵高剛性立銑刀 END MILLS

產品規格 SPECIFICATIONS

型號 Type No.	D1 直徑 Diameter	R R角 Corner R	L1 刃長 Flute Length	L3 全長 O.A.L.	D2 柄徑 Shank Dia.
UPJ0304	3.0	0.2	8	50	6
UPJ0404	4.0	0.3	11	50	6
UPJ0504	5.0	0.3	13	50	6
UPJ0604	6.0	0.4	16	50	6
UPJ0804	8.0	0.5	20	60	8
UPJ1004	10.0	0.6	25	75	10
UPJ1204	12.0	0.6	30	75	12
UPJ1604	16.0	0.8	45	110	16
UPJ2004	20.0	1.0	50	110	20

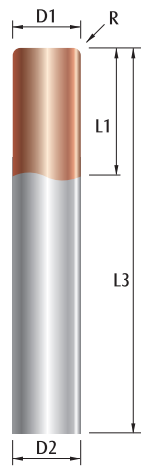
unit : mm

	乾式切削 Dry Machining		
	油霧切削 MQL (Mist)		精銑 Finishing
	水溶性切削 Emulsion Machining		中銑 Semi-finishing
	油性切削 Oil Machining		粗銑 Roughing

公差表 TOLERANCE

直徑 D1	R徑公差值 R Tolerance	直徑公差值 D1 Tolerance	柄徑 D2	柄徑公差值 D2 Tolerance
3.0	$\begin{smallmatrix} +0.02 \\ 0 \end{smallmatrix}$	$\begin{smallmatrix} 0 \\ -0.02 \end{smallmatrix}$	Ø6	$\begin{smallmatrix} 0 \\ -0.008 \end{smallmatrix}$
4.0	$\begin{smallmatrix} +0.02 \\ 0 \end{smallmatrix}$	$\begin{smallmatrix} 0 \\ -0.02 \end{smallmatrix}$	Ø8	$\begin{smallmatrix} 0 \\ -0.009 \end{smallmatrix}$
5.0	$\begin{smallmatrix} +0.02 \\ 0 \end{smallmatrix}$	$\begin{smallmatrix} 0 \\ -0.02 \end{smallmatrix}$	Ø10	$\begin{smallmatrix} 0 \\ -0.009 \end{smallmatrix}$
6.0	$\begin{smallmatrix} +0.02 \\ 0 \end{smallmatrix}$	$\begin{smallmatrix} 0 \\ -0.02 \end{smallmatrix}$	Ø12	$\begin{smallmatrix} 0 \\ -0.011 \end{smallmatrix}$
8.0	$\begin{smallmatrix} +0.02 \\ 0 \end{smallmatrix}$	$\begin{smallmatrix} 0 \\ -0.025 \end{smallmatrix}$	Ø16	$\begin{smallmatrix} 0 \\ -0.011 \end{smallmatrix}$
10.0	$\begin{smallmatrix} +0.02 \\ 0 \end{smallmatrix}$	$\begin{smallmatrix} 0 \\ -0.03 \end{smallmatrix}$	Ø20	$\begin{smallmatrix} 0 \\ -0.013 \end{smallmatrix}$
12.0	$\begin{smallmatrix} +0.02 \\ 0 \end{smallmatrix}$	$\begin{smallmatrix} 0 \\ -0.035 \end{smallmatrix}$		
16.0	$\begin{smallmatrix} +0.02 \\ 0 \end{smallmatrix}$	$\begin{smallmatrix} 0 \\ -0.04 \end{smallmatrix}$		
20.0	$\begin{smallmatrix} +0.02 \\ 0 \end{smallmatrix}$	$\begin{smallmatrix} 0 \\ -0.04 \end{smallmatrix}$		

unit : mm



Stainless Steel Cutting

UPJ

被切削材 Work Material

沃斯田鐵系不銹鋼

Stainless Steels [Easy]: **SUS304 : 1.4301 : AISI 304** (HRc 28~32)

切削條件表 MILLING CONDITIONS

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
UPJ0304	13	115	12000	2000~2200	0~0.3	3	溝銑 SLOTTING
UPJ0304	13	115	12000	1400~1600	0.3~0.8	3	溝銑 SLOTTING
UPJ0304	13	115	12000	900~1200	0.8~1.5	3	溝銑 SLOTTING
UPJ0304	13	115	12000	600~800	1.5~3	3	溝銑 SLOTTING
UPJ0304	13	115	12000	1700~2000	3~6	0~0.3	側銑 SIDE MILLING
UPJ0304	13	115	12000	1400~1600	3	0.3~0.8	側銑 SIDE MILLING
UPJ0304	13	115	12000	1100~1300	3	0.8~1.5	側銑 SIDE MILLING
UPJ0304	13	115	12000	700~900	6	0.8~1.5	側銑 SIDE MILLING
UPJ0304	13	115	12000	800~1000	3	1.5~2.5	側銑 SIDE MILLING
UPJ0404	16	115	9200	2000~2200	0~0.4	4	溝銑 SLOTTING
UPJ0404	16	115	9200	1400~1600	0.4~1	4	溝銑 SLOTTING
UPJ0404	16	115	9200	900~1200	1~2	4	溝銑 SLOTTING
UPJ0404	16	115	9200	700~900	2~4	4	溝銑 SLOTTING
UPJ0404	16	115	9200	1700~2000	4~8	0~0.4	側銑 SIDE MILLING
UPJ0404	16	115	9200	1400~1600	4	0.4~1	側銑 SIDE MILLING
UPJ0404	16	115	9200	1100~1300	4	1~2	側銑 SIDE MILLING
UPJ0404	16	115	9200	700~900	8	1~2	側銑 SIDE MILLING
UPJ0404	16	115	9200	800~1000	4	2~3	側銑 SIDE MILLING
UPJ0504	18	115	7400	2000~2200	0~0.4	5	溝銑 SLOTTING
UPJ0504	18	115	7400	1400~1600	0.4~1.2	5	溝銑 SLOTTING
UPJ0504	18	115	7400	1000~1300	1.2~2.5	5	溝銑 SLOTTING
UPJ0504	18	115	7400	800~1000	2.5~5	5	溝銑 SLOTTING
UPJ0504	18	115	7400	1700~2000	5~10	0~0.4	側銑 SIDE MILLING
UPJ0504	18	115	7400	1400~1600	5	0.4~1.2	側銑 SIDE MILLING
UPJ0504	18	115	7400	1100~1300	5	1.2~2.5	側銑 SIDE MILLING
UPJ0504	18	115	7400	700~900	10	1.2~2.5	側銑 SIDE MILLING
UPJ0504	18	115	7400	900~1100	5	2.5~4	側銑 SIDE MILLING
UPJ0604	20	115	6100	2000~2200	0~0.5	6	溝銑 SLOTTING
UPJ0604	20	115	6100	1400~1600	0.5~1.5	6	溝銑 SLOTTING
UPJ0604	20	115	6100	1000~1300	1.5~3	6	溝銑 SLOTTING
UPJ0604	20	115	6100	800~1000	3~6	6	溝銑 SLOTTING
UPJ0604	20	115	6100	1700~2000	6~12	0~0.5	側銑 SIDE MILLING
UPJ0604	20	115	6100	1400~1600	6	0.5~1.5	側銑 SIDE MILLING
UPJ0604	20	115	6100	1100~1300	6	1.5~3	側銑 SIDE MILLING
UPJ0604	20	115	6100	700~900	12	1.5~3	側銑 SIDE MILLING
UPJ0604	20	115	6100	900~1100	6	3~5	側銑 SIDE MILLING
UPJ0804	25	115	4600	2000~2200	0~0.5	8	溝銑 SLOTTING
UPJ0804	25	115	4600	1300~1500	0.5~1.8	8	溝銑 SLOTTING
UPJ0804	25	115	4600	1000~1300	2~4	8	溝銑 SLOTTING
UPJ0804	25	115	4600	800~1000	4~8	8	溝銑 SLOTTING
UPJ0804	25	115	4600	1600~1900	8~16	0~0.5	側銑 SIDE MILLING

被切削材 Work Material

沃斯田鐵系不銹鋼

Stainless Steels [Easy] :SUS304 : 1.4301 : AISI 304 (HRc 28~32)

切削條件表 **MILLING CONDITIONS**

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
UPJ0804	25	115	4600	1200~1500	8	0.5~2	側銑 SIDE MILLING
UPJ0804	25	115	4600	1100~1300	8	3~4	側銑 SIDE MILLING
UPJ0804	25	115	4600	700~900	16	3~4	側銑 SIDE MILLING
UPJ0804	25	115	4600	900~1100	8	4~7	側銑 SIDE MILLING
UPJ1004	30	115	3650	1800~2000	0~0.6	10	溝銑 SLOTTING
UPJ1004	30	115	3650	1200~1400	0.6~2	10	溝銑 SLOTTING
UPJ1004	30	115	3650	900~1100	3~5	10	溝銑 SLOTTING
UPJ1004	30	115	3650	700~900	5~10	10	溝銑 SLOTTING
UPJ1004	30	115	3650	1500~1800	10~20	0~0.5	側銑 SIDE MILLING
UPJ1004	30	115	3650	900~1100	10	0.5~2	側銑 SIDE MILLING
UPJ1004	30	115	3650	800~1000	10	3.6~5	側銑 SIDE MILLING
UPJ1004	30	115	3650	600~800	20	3.6~5	側銑 SIDE MILLING
UPJ1004	30	115	3650	600~800	10	5~8.7	側銑 SIDE MILLING
UPJ1204	34	115	3050	1600~1800	0~0.6	12	溝銑 SLOTTING
UPJ1204	34	115	3050	1000~1200	0.6~2	12	溝銑 SLOTTING
UPJ1204	34	115	3050	500~700	2~3	12	溝銑 SLOTTING
UPJ1204	34	115	3050	400~600	3~6	12	溝銑 SLOTTING
UPJ1204	34	115	3050	1400~1600	12~24	0~0.6	側銑 SIDE MILLING
UPJ1204	34	115	3050	900~1100	12	0.6~2	側銑 SIDE MILLING
UPJ1204	34	115	3050	700~900	12	2~3	側銑 SIDE MILLING
UPJ1204	34	115	3050	600~800	24	2~3	側銑 SIDE MILLING
UPJ1204	34	115	3050	500~700	12	3~6	側銑 SIDE MILLING
UPJ1604	50	115	2300	1200~1400	0~0.7	16	溝銑 SLOTTING
UPJ1604	50	115	2300	700~900	0.7~2	16	溝銑 SLOTTING
UPJ1604	50	115	2300	400~600	2~3	16	溝銑 SLOTTING
UPJ1604	50	115	2300	300~500	3~7	16	溝銑 SLOTTING
UPJ1604	50	115	2300	1100~1300	16~32	0~0.7	側銑 SIDE MILLING
UPJ1604	50	115	2300	600~800	16	0.7~2	側銑 SIDE MILLING
UPJ1604	50	115	2300	500~700	16	2~3	側銑 SIDE MILLING
UPJ1604	50	115	2300	400~600	32	2~3	側銑 SIDE MILLING
UPJ1604	50	115	2300	300~500	16	3~7	側銑 SIDE MILLING
UPJ2004	55	115	1850	900~1200	0~0.7	20	溝銑 SLOTTING
UPJ2004	55	115	1850	550~750	0.7~2	20	溝銑 SLOTTING
UPJ2004	55	115	1850	400~600	2~3	20	溝銑 SLOTTING
UPJ2004	55	115	1850	250~450	3~7	20	溝銑 SLOTTING
UPJ2004	55	115	1850	800~1100	20~40	0~0.7	側銑 SIDE MILLING
UPJ2004	55	115	1850	500~700	20	0.7~2	側銑 SIDE MILLING
UPJ2004	55	115	1850	350~550	20	2~3	側銑 SIDE MILLING
UPJ2004	55	115	1850	250~450	40	2~3	側銑 SIDE MILLING
UPJ2004	55	115	1850	200~400	20	3~7	側銑 SIDE MILLING

UPJ

被切削材 Work Material

(麻田散鐵, 析出硬化) 系不銹鋼
 Stainless Steels [Difficult] : **SUS420J2 / SUS630 : 1.2083 / 1.4542 : AISI 420 / 17-4PH** (HRC 28~32)

切削條件表 MILLING CONDITIONS

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
UPJ0304	13	120	12700	1700~1900	0~0.3	3	溝銑 SLOTTING
UPJ0304	13	120	12700	1100~1300	0.3~0.8	3	溝銑 SLOTTING
UPJ0304	13	120	12700	800~1100	0.8~1.5	3	溝銑 SLOTTING
UPJ0304	13	120	12700	500~700	1.5~3	3	溝銑 SLOTTING
UPJ0304	13	120	12700	1400~1600	3~6	0~0.3	側銑 SIDE MILLING
UPJ0304	13	120	12700	1200~1400	3	0.3~0.8	側銑 SIDE MILLING
UPJ0304	13	120	12700	1000~1200	3	0.8~1.5	側銑 SIDE MILLING
UPJ0304	13	120	12700	600~800	6	0.8~1.5	側銑 SIDE MILLING
UPJ0304	13	120	12700	700~900	3	1.5~2.5	側銑 SIDE MILLING
UPJ0404	16	120	9500	1700~1900	0~0.4	4	溝銑 SLOTTING
UPJ0404	16	120	9500	1100~1300	0.4~1	4	溝銑 SLOTTING
UPJ0404	16	120	9500	800~1100	1~2	4	溝銑 SLOTTING
UPJ0404	16	120	9500	600~800	2~4	4	溝銑 SLOTTING
UPJ0404	16	120	9500	1400~1600	4~8	0~0.4	側銑 SIDE MILLING
UPJ0404	16	120	9500	1200~1400	4	0.4~1	側銑 SIDE MILLING
UPJ0404	16	120	9500	1000~1200	4	1~2	側銑 SIDE MILLING
UPJ0404	16	120	9500	600~800	8	1~2	側銑 SIDE MILLING
UPJ0404	16	120	9500	700~900	4	2~3	側銑 SIDE MILLING
UPJ0504	18	120	7600	1800~2000	0~0.4	5	溝銑 SLOTTING
UPJ0504	18	120	7600	1200~1400	0.4~1.2	5	溝銑 SLOTTING
UPJ0504	18	120	7600	900~1200	1.2~2.5	5	溝銑 SLOTTING
UPJ0504	18	120	7600	700~900	2.5~5	5	溝銑 SLOTTING
UPJ0504	18	120	7600	1500~1700	5~10	0~0.4	側銑 SIDE MILLING
UPJ0504	18	120	7600	1300~1500	5	0.4~1.2	側銑 SIDE MILLING
UPJ0504	18	120	7600	1100~1300	5	1.2~2.5	側銑 SIDE MILLING
UPJ0504	18	120	7600	700~900	10	1.2~2.5	側銑 SIDE MILLING
UPJ0504	18	120	7600	800~1000	5	2.5~4	側銑 SIDE MILLING
UPJ0604	20	120	6400	1800~2000	0~0.5	6	溝銑 SLOTTING
UPJ0604	20	120	6400	1200~1400	0.5~1.5	6	溝銑 SLOTTING
UPJ0604	20	120	6400	900~1200	1.5~3	6	溝銑 SLOTTING
UPJ0604	20	120	6400	700~900	3~6	6	溝銑 SLOTTING
UPJ0604	20	120	6400	1500~1700	6~12	0~0.5	側銑 SIDE MILLING
UPJ0604	20	120	6400	1300~1500	6	0.5~1.5	側銑 SIDE MILLING
UPJ0604	20	120	6400	1100~1300	6	1.5~3	側銑 SIDE MILLING
UPJ0604	20	120	6400	700~900	12	1.5~3	側銑 SIDE MILLING
UPJ0604	20	120	6400	800~1000	6	3~5	側銑 SIDE MILLING
UPJ0804	25	120	4750	1800~2000	0~0.5	8	溝銑 SLOTTING
UPJ0804	25	120	4750	1200~1400	0.5~1.8	8	溝銑 SLOTTING
UPJ0804	25	120	4750	900~1100	2~4	8	溝銑 SLOTTING
UPJ0804	25	120	4750	700~900	4~8	8	溝銑 SLOTTING
UPJ0804	25	120	4750	1600~1800	8~16	0~0.5	側銑 SIDE MILLING
UPJ0804	25	120	4750	1200~1400	8	0.5~2	側銑 SIDE MILLING
UPJ0804	25	120	4750	1000~1200	8	3~4	側銑 SIDE MILLING
UPJ0804	25	120	4750	700~900	16	3~4	側銑 SIDE MILLING
UPJ0804	25	120	4750	700~800	8	4~7	側銑 SIDE MILLING

被切削材 Work Material

(麻田散鐵, 析出硬化) 系不銹鋼
Stainless Steels [Difficult]: SUS420J2 / SUS630 : 1.2083 /
1.4542 : AISI 420 / 17-4PH (HRC 28~32)

切削條件表 MILLING CONDITIONS

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
UPJ1004	30	125	4000	1500~1700	0~0.6	10	溝銑 SLOTTING
UPJ1004	30	125	4000	800~1000	0.6~2	10	溝銑 SLOTTING
UPJ1004	30	125	4000	600~800	3~5	10	溝銑 SLOTTING
UPJ1004	30	125	4000	500~700	5~10	10	溝銑 SLOTTING
UPJ1004	30	125	4000	1500~1800	10~20	0~0.5	側銑 SIDE MILLING
UPJ1004	30	125	4000	900~1100	10	0.5~2	側銑 SIDE MILLING
UPJ1004	30	125	4000	800~1000	10	3.6~5	側銑 SIDE MILLING
UPJ1004	30	125	4000	600~800	20	3.6~5	側銑 SIDE MILLING
UPJ1004	30	125	4000	500~700	10	5~8.7	側銑 SIDE MILLING
UPJ1204	34	120	3200	1600~1800	0~0.6	12	溝銑 SLOTTING
UPJ1204	34	120	3200	1000~1200	0.6~2	12	溝銑 SLOTTING
UPJ1204	34	120	3200	500~700	2~3	12	溝銑 SLOTTING
UPJ1204	34	120	3200	400~600	3~6	12	溝銑 SLOTTING
UPJ1204	34	120	3200	1400~1600	12~24	0~0.6	側銑 SIDE MILLING
UPJ1204	34	120	3200	900~1100	12	0.6~2	側銑 SIDE MILLING
UPJ1204	34	120	3200	700~900	12	2~3	側銑 SIDE MILLING
UPJ1204	34	120	3200	600~800	24	2~3	側銑 SIDE MILLING
UPJ1204	34	120	3200	500~700	12	3~6	側銑 SIDE MILLING
UPJ1604	50	120	2400	1200~1400	0~0.7	16	溝銑 SLOTTING
UPJ1604	50	120	2400	700~900	0.7~2	16	溝銑 SLOTTING
UPJ1604	50	120	2400	400~600	2~3	16	溝銑 SLOTTING
UPJ1604	50	120	2400	300~500	3~7	16	溝銑 SLOTTING
UPJ1604	50	120	2400	1100~1300	16~32	0~0.7	側銑 SIDE MILLING
UPJ1604	50	120	2400	600~800	16	0.7~2	側銑 SIDE MILLING
UPJ1604	50	120	2400	500~700	16	2~3	側銑 SIDE MILLING
UPJ1604	50	120	2400	400~600	32	2~3	側銑 SIDE MILLING
UPJ1604	50	120	2400	300~500	16	3~7	側銑 SIDE MILLING
UPJ2004	55	120	1900	900~1200	0~0.7	20	溝銑 SLOTTING
UPJ2004	55	120	1900	550~750	0.7~2	20	溝銑 SLOTTING
UPJ2004	55	120	1900	400~600	2~3	20	溝銑 SLOTTING
UPJ2004	55	120	1900	250~450	3~7	20	溝銑 SLOTTING
UPJ2004	55	120	1900	800~1100	20~40	0~0.7	側銑 SIDE MILLING
UPJ2004	55	120	1900	500~700	20	0.7~2	側銑 SIDE MILLING
UPJ2004	55	120	1900	350~550	20	2~3	側銑 SIDE MILLING
UPJ2004	55	120	1900	250~450	40	2~3	側銑 SIDE MILLING
UPJ2004	55	120	1900	200~400	20	3~7	側銑 SIDE MILLING

- 附註** 1. UPJ適用於粗、精銑加工，溝銑(Aa)與側銑(Ap)都有1.0D切削能力。0.5D以上切削時，請用濕式高壓水溶性切削液，以免造成排屑不良。直徑 ϕ 10以上，需視機器剛性與主軸扭力值的不同，而做適當調整。(BT40/SK40主軸需調降)。
2. 建議冷卻方式為濕式。

- NOTE** 1. UPJ is good at Roughing and Finishing. It can do a 1.0D machining for both Slotting (Aa) and Sidemilling (Ap). When it is above 0.5D machining, we suggest high pressure emulsion coolant for better chip removal. For diameter above 10.0mm, make necessary adjustment as per the rigidity of machine and the torque of spindle. (Lower BT40/SK40 spindle)
2. Suggest to use wet coolant.

Standard

VTB

難切削材用立銑刀 END MILLS

	乾式切削 Dry Machining		
	油霧切削 MQL (Mist)		精銑 Finishing
	水溶性切削 Emulsion Machining		中銑 Semi-finishing
	油性切削 Oil Machining		粗銑 Roughing

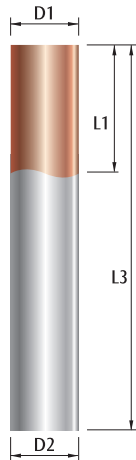


產品規格 SPECIFICATIONS

型號 Type No.	D1 直徑 Diameter	L1 刃長 Flute Length	L3 全長 O.A.L.	D2 柄徑 Shank Dia.
VTB0606	6.0	16	50	6
VTB0806	8.0	20	60	8
VTB1006	10.0	25	75	10
VTB1206	12.0	30	75	12
VTB1606	16.0	40	100	16

unit : mm

Stainless Steel Cutting



公差表 TOLERANCE

直徑 D1	直徑公差值 D1 Tolerance	柄徑 D2	柄徑公差值 D2 Tolerance
6.0	0 -0.02	Ø6	0 -0.008
8.0	0 -0.025	Ø8	0 -0.009
10.0	0 -0.03	Ø10	0 -0.009
12.0	0 -0.035	Ø12	0 -0.011
16.0	0 -0.04	Ø16	0 -0.011

unit : mm

VTB

被切削材 Work Material

沃斯田鐵系不銹鋼

Stainless Steels [Easy]: **SUS304 : 1.4301 : AISI 304** (HRc 28~32)

切削條件表 MILLING CONDITIONS

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
VTB0606	20	155	8200	1000~1300	0.05~0.12	4	面銑 SURFACE MILLING
VTB0606	20	115	6100	1600~2000	0.12~0.25	4~6	溝銑 SLOTTING
VTB0606	20	85	4500~4800	650~850	6~12	0.05~0.12	側銑 SIDE MILLING
VTB0606	20	85	4500~4800	1400~1800	6~12	0.12~0.3	側銑 SIDE MILLING
VTB0806	25	155	6200	900~1200	0.05~0.15	6	面銑 SURFACE MILLING
VTB0806	25	115	4600	1800~2200	0.15~0.3	6~8	溝銑 SLOTTING
VTB0806	25	80	3000~3200	650~850	8~16	0.05~0.15	側銑 SIDE MILLING
VTB0806	25	80	3000~3200	1800~2200	8~16	0.2~0.4	側銑 SIDE MILLING
VTB1006	28	155	4950	900~1200	0.05~0.15	8	面銑 SURFACE MILLING
VTB1006	28	115	3600	1600~2000	0.15~0.3	8~10	溝銑 SLOTTING
VTB1006	28	85	2700~2900	700~900	10~20	0.05~0.2	側銑 SIDE MILLING
VTB1006	28	85	2700~2900	1600~2000	10~20	0.2~0.45	側銑 SIDE MILLING
VTB1206	35	155	4200	900~1200	0.05~0.15	10	面銑 SURFACE MILLING
VTB1206	35	115	3000	1400~1800	0.15~0.3	10~12	溝銑 SLOTTING
VTB1206	35	85	2200~2400	700~900	12~24	0.05~0.2	側銑 SIDE MILLING
VTB1206	35	85	2200~2400	1400~1800	12~24	0.2~0.45	側銑 SIDE MILLING
VTB1606	50	155	3000	700~900	0.05~0.2	14	面銑 SURFACE MILLING
VTB1606	50	115	2250	800~1100	0.2~0.4	14~16	溝銑 SLOTTING
VTB1606	50	85	1600~1800	600~700	16~32	0.05~0.2	側銑 SIDE MILLING
VTB1606	50	85	1600~1800	800~1100	16~32	0.2~0.4	側銑 SIDE MILLING

附註

1. VTB適用於中精加工，禁止粗加工。
2. 建議冷卻方式為濕式。

NOTE

1. VTB is designed for both Semi-finishing and Finishing. Do not apply it for Roughing.
2. Suggest to use wet coolant.

Standard



RTB

超微粒圓鼻角立銑刀 END MILLS

產品規格 SPECIFICATIONS

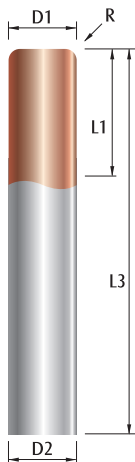
型號 Type No.	D1 直徑 Diameter	R R角 Corner R	L1 刃長 Flute Length	L3 全長 O.A.L.	D2 柄徑 Shank Dia.
RTB0305	3.0	0.5	8	50	3
RTB0405	4.0	0.5	10	50	4
RTB0505	5.0	0.5	13	50	6
RTB0510	5.0	1.0	13	50	6
RTB0605	6.0	0.5	16	50	6
RTB0610	6.0	1.0	16	50	6
RTB0805	8.0	0.5	20	60	8
RTB0810	8.0	1.0	20	60	8
RTB1005Z	10.0	0.5	25	75	10
RTB1005	10.0	0.5	30	75	10
RTB1010Z	10.0	1.0	25	75	10
RTB1010	10.0	1.0	30	75	10
RTB1020Z	10.0	2.0	25	75	10
RTB1020	10.0	2.0	30	75	10
RTB1030Z	10.0	3.0	25	75	10
RTB1030	10.0	3.0	30	75	10
RTB1210	12.0	1.0	30	75	12
RTB1220	12.0	2.0	30	75	12
RTB1230	12.0	3.0	30	75	12

unit : mm

公差表 TOLERANCE

直徑 D1	R徑公差值 R Tolerance	直徑公差值 D1 Tolerance	柄徑 D2	柄徑公差值 D2 Tolerance
3.0	$\begin{smallmatrix} +0.02 \\ 0 \end{smallmatrix}$	$\begin{smallmatrix} 0 \\ -0.02 \end{smallmatrix}$	Ø3	$\begin{smallmatrix} 0 \\ -0.006 \end{smallmatrix}$
4.0	$\begin{smallmatrix} +0.02 \\ 0 \end{smallmatrix}$	$\begin{smallmatrix} 0 \\ -0.02 \end{smallmatrix}$	Ø4	$\begin{smallmatrix} 0 \\ -0.008 \end{smallmatrix}$
5.0	$\begin{smallmatrix} +0.02 \\ 0 \end{smallmatrix}$	$\begin{smallmatrix} 0 \\ -0.02 \end{smallmatrix}$	Ø6	$\begin{smallmatrix} 0 \\ -0.008 \end{smallmatrix}$
6.0	$\begin{smallmatrix} +0.02 \\ 0 \end{smallmatrix}$	$\begin{smallmatrix} 0 \\ -0.02 \end{smallmatrix}$	Ø8	$\begin{smallmatrix} 0 \\ -0.009 \end{smallmatrix}$
8.0	$\begin{smallmatrix} +0.02 \\ 0 \end{smallmatrix}$	$\begin{smallmatrix} 0 \\ -0.025 \end{smallmatrix}$	Ø10	$\begin{smallmatrix} 0 \\ -0.009 \end{smallmatrix}$
10.0	$\begin{smallmatrix} +0.02 \\ 0 \end{smallmatrix}$	$\begin{smallmatrix} 0 \\ -0.03 \end{smallmatrix}$	Ø12	$\begin{smallmatrix} 0 \\ -0.011 \end{smallmatrix}$
12.0	$\begin{smallmatrix} +0.02 \\ 0 \end{smallmatrix}$	$\begin{smallmatrix} 0 \\ -0.035 \end{smallmatrix}$		

unit : mm



	乾式切削 Dry Machining		
	油霧切削 MQL (Mist)		精銑 Finishing
	水溶性切削 Emulsion Machining		中銑 Semi-finishing
	油性切削 Oil Machining		粗銑 Roughing



Stainless Steel Cutting

RTB

被切削材 Work Material

沃斯田鐵系不銹鋼

Stainless Steels [Easy] :SUS304 : 1.4301 : AISI 304 (HRc 28~32)

切削條件表 MILLING CONDITIONS

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
RTB0305	18	130	13500	1000~1300	0.05~0.1	1.8	面銑 SURFACE MILLING
RTB0305	18	115	12000	1600~2000	0.1~0.2	1.8~3	溝銑 SLOTTING
RTB0305	18	100	10400~10700	700~900	3~6	0.05~0.1	側銑 SIDE MILLING
RTB0305	18	85	8900~9200	1600~2000	3~6	0.1~0.2	側銑 SIDE MILLING
RTB0305	18	180	18000	1800~2200	0.05~0.1	0.12~0.16	3D銑 3D MILLING
RTB0405	18	130	10300	1000~1300	0.05~0.1	2.8	面銑 SURFACE MILLING
RTB0405	18	115	9100	1600~2000	0.1~0.2	2.8~4	溝銑 SLOTTING
RTB0405	18	100	7800~8100	700~900	4~8	0.05~0.12	側銑 SIDE MILLING
RTB0405	18	85	6600~6900	1600~2000	4~8	0.12~0.22	側銑 SIDE MILLING
RTB0405	18	180	14000	1800~2200	0.05~0.1	0.13~0.18	3D銑 3D MILLING
RTB0505	18	130	8200	1000~1300	0.05~0.12	3.8	面銑 SURFACE MILLING
RTB0505	18	115	7300	1600~2000	0.12~0.25	3.8~5	溝銑 SLOTTING
RTB0505	18	100	6200~6500	700~900	5~10	0.05~0.12	側銑 SIDE MILLING
RTB0505	18	85	5300~5600	1600~2000	5~10	0.12~0.25	側銑 SIDE MILLING
RTB0505	18	180	11000	1800~2200	0.05~0.12	0.15~0.2	3D銑 3D MILLING
RTB0510	18	130	8200	1000~1300	0.05~0.12	3.8	面銑 SURFACE MILLING
RTB0510	18	115	7300	1600~2000	0.12~0.25	3.8~5	溝銑 SLOTTING
RTB0510	18	100	6200~6500	700~900	5~10	0.05~0.12	側銑 SIDE MILLING
RTB0510	18	85	5300~5600	1600~2000	5~10	0.12~0.25	側銑 SIDE MILLING
RTB0510	18	180	11000	1800~2200	0.05~0.12	0.15~0.2	3D銑 3D MILLING
RTB0605	20	130	6900	1000~1300	0.05~0.12	4.5	面銑 SURFACE MILLING
RTB0605	20	115	6600	1600~2000	0.12~0.3	4~6	溝銑 SLOTTING
RTB0605	20	100	5200~5400	700~900	6~12	0.05~0.12	側銑 SIDE MILLING
RTB0605	20	85	4500~4800	1600~2000	6~12	0.12~0.3	側銑 SIDE MILLING
RTB0605	20	180	9500	1800~2200	0.05~0.12	0.15~0.2	3D銑 3D MILLING
RTB0610	20	130	6900	1000~1300	0.05~0.12	3.5	面銑 SURFACE MILLING
RTB0610	20	115	6600	1600~2000	0.12~0.3	4~6	溝銑 SLOTTING
RTB0610	20	100	5200~5400	700~900	6~12	0.05~0.12	側銑 SIDE MILLING
RTB0610	20	85	4500~4800	1600~2000	6~12	0.12~0.3	側銑 SIDE MILLING
RTB0610	20	180	9500	1800~2200	0.05~0.12	0.15~0.2	3D銑 3D MILLING
RTB0805	25	125	5000	900~1200	0.05~0.15	6.5	面銑 SURFACE MILLING
RTB0805	25	125	5000	1800~2200	0.15~0.3	6~8	溝銑 SLOTTING
RTB0805	25	100	3800~4000	700~900	8~16	0.05~0.15	側銑 SIDE MILLING
RTB0805	25	90	3600~3800	1600~2000	8~16	0.2~0.4	側銑 SIDE MILLING
RTB0805	25	180	7200	1600~2000	0.05~0.12	0.15~0.2	3D銑 3D MILLING

Stainless Steel Cutting

被切削材 Work Material

沃斯田鐵系不銹鋼

 Stainless Steels [Easy] : **SUS304 : 1.4301 : AISI 304** (HRc 28~32)

 切削條件表 **MILLING CONDITIONS**

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
RTB0810	25	125	5000	900~1200	0.05~0.15	5.5	面銑 SURFACE MILLING
RTB0810	25	125	5000	1800~2200	0.15~0.3	5.5~8	溝銑 SLOTTING
RTB0810	25	100	3800~4000	700~900	8~16	0.05~0.15	側銑 SIDE MILLING
RTB0810	25	90	3600~3800	1600~2000	8~16	0.2~0.4	側銑 SIDE MILLING
RTB0810	25	180	7200	1600~2000	0.05~0.12	0.15~0.2	3D銑 3D MILLING
RTB1005Z	28	125	4000	900~1200	0.05~0.15	8	面銑 SURFACE MILLING
RTB1005Z	28	125	4000	1400~1600	0.25~0.35	8~10	溝銑 SLOTTING
RTB1005Z	28	105	3000~3200	600~800	10~20	0.05~0.2	側銑 SIDE MILLING
RTB1005Z	28	90	2800~3000	1600~2000	10~20	0.2~0.4	側銑 SIDE MILLING
RTB1005Z	28	185	6000	1500~1800	0.05~0.12	0.15~0.2	3D銑 3D MILLING
RTB1005	33	125	4000	900~1200	0.05~0.15	8	面銑 SURFACE MILLING
RTB1005	33	125	4000	1400~1600	0.25~0.35	8~10	溝銑 SLOTTING
RTB1005	33	105	3000~3200	600~800	10~20	0.05~0.2	側銑 SIDE MILLING
RTB1005	33	90	2800~3000	1600~2000	10~20	0.2~0.4	側銑 SIDE MILLING
RTB1005	33	185	6000	1500~1800	0.05~0.12	0.15~0.2	3D銑 3D MILLING
RTB1010Z	28	125	4000	900~1200	0.05~0.15	7.5	面銑 SURFACE MILLING
RTB1010Z	28	125	4000	1400~1600	0.25~0.35	7.5~10	溝銑 SLOTTING
RTB1010Z	28	105	3000~3200	600~800	10~20	0.05~0.2	側銑 SIDE MILLING
RTB1010Z	28	90	2800~3000	1600~2000	10~20	0.2~0.4	側銑 SIDE MILLING
RTB1010Z	28	185	6000	1500~1800	0.05~0.12	0.15~0.2	3D銑 3D MILLING
RTB1010	33	125	4000	900~1200	0.05~0.15	7.5	面銑 SURFACE MILLING
RTB1010	33	125	4000	1400~1600	0.25~0.35	7.5~10	溝銑 SLOTTING
RTB1010	33	105	3000~3200	600~800	10~20	0.05~0.2	側銑 SIDE MILLING
RTB1010	33	90	2800~3000	1600~2000	10~20	0.2~0.4	側銑 SIDE MILLING
RTB1010	33	185	6000	1500~1800	0.05~0.12	0.15~0.2	3D銑 3D MILLING
RTB1020Z	28	125	4000	900~1200	0.05~0.15	5.5	面銑 SURFACE MILLING
RTB1020Z	28	125	4000	1400~1600	0.25~0.35	5.5~10	溝銑 SLOTTING
RTB1020Z	28	105	3000~3200	600~800	10~20	0.05~0.2	側銑 SIDE MILLING
RTB1020Z	28	90	2800~3000	1600~2000	10~20	0.2~0.4	側銑 SIDE MILLING
RTB1020Z	28	185	6000	1500~1800	0.05~0.12	0.15~0.2	3D銑 3D MILLING
RTB1020	33	125	4000	900~1200	0.05~0.15	5.5	面銑 SURFACE MILLING
RTB1020	33	125	4000	1400~1600	0.25~0.35	5.5~10	溝銑 SLOTTING
RTB1020	33	105	3000~3200	600~800	10~20	0.05~0.2	側銑 SIDE MILLING
RTB1020	33	90	2800~3000	1600~2000	10~20	0.2~0.4	側銑 SIDE MILLING
RTB1020	33	185	6000	1500~1800	0.05~0.12	0.15~0.2	3D銑 3D MILLING

被切削材 Work Material

沃斯田鐵系不銹鋼

Stainless Steels [Easy] :SUS304 : 1.4301 : AISI 304 (Hrc 28~32)

切削條件表 MILLING CONDITIONS

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
RTB1030Z	28	125	4000	900~1200	0.05~0.15	3.5	面銑 SURFACE MILLING
RTB1030Z	28	125	4000	1400~1600	0.25~0.35	3.5~10	溝銑 SLOTTING
RTB1030Z	28	105	3000~3200	600~800	10~20	0.05~0.2	側銑 SIDE MILLING
RTB1030Z	28	90	2800~3000	1600~2000	10~20	0.2~0.4	側銑 SIDE MILLING
RTB1030Z	28	185	6000	1500~1800	0.05~0.12	0.15~0.2	3D銑 3D MILLING
RTB1030	33	125	4000	900~1200	0.05~0.15	3.5	面銑 SURFACE MILLING
RTB1030	33	125	4000	1400~1600	0.25~0.35	3.5~10	溝銑 SLOTTING
RTB1030	33	105	3000~3200	600~800	10~20	0.05~0.2	側銑 SIDE MILLING
RTB1030	33	90	2800~3000	1600~2000	10~20	0.2~0.4	側銑 SIDE MILLING
RTB1030	33	185	6000	1500~1800	0.05~0.12	0.15~0.2	3D銑 3D MILLING
RTB1210	35	125	3300	800~1100	0.05~0.15	9.5	面銑 SURFACE MILLING
RTB1210	35	115	3000	1400~1600	0.15~0.3	9~12	溝銑 SLOTTING
RTB1210	35	100	2500~2700	500~700	12~24	0.05~0.2	側銑 SIDE MILLING
RTB1210	35	90	2200~2400	1400~1600	12~24	0.2~0.45	側銑 SIDE MILLING
RTB1210	35	185	4900	1400~1700	0.05~0.15	0.15~0.2	3D銑 3D MILLING
RTB1220	35	125	3300	800~1100	0.05~0.15	7.5	面銑 SURFACE MILLING
RTB1220	35	115	3000	1400~1600	0.15~0.3	7.5~12	溝銑 SLOTTING
RTB1220	35	100	2500~2700	500~700	12~24	0.05~0.2	側銑 SIDE MILLING
RTB1220	35	90	2200~2400	1400~1600	12~24	0.2~0.45	側銑 SIDE MILLING
RTB1220	35	185	4900	1400~1700	0.05~0.15	0.15~0.2	3D銑 3D MILLING
RTB1230	35	125	3300	800~1100	0.05~0.15	5.5	面銑 SURFACE MILLING
RTB1230	35	115	3000	1400~1600	0.15~0.3	5.5~12	溝銑 SLOTTING
RTB1230	35	100	2500~2700	500~700	12~24	0.05~0.2	側銑 SIDE MILLING
RTB1230	35	90	2200~2400	1400~1600	12~24	0.2~0.45	側銑 SIDE MILLING
RTB1230	35	185	4900	1400~1700	0.05~0.15	0.15~0.2	3D銑 3D MILLING

附註

1. RTB適用於中精加工及3D銑削加工。
2. 建議冷卻方式為濕式。

NOTE

1. RTB is good at Semi-finishing, Finishing and 3D milling.
2. Suggest to use wet coolant.

Titanium Cutting

UTHR

鈦滿意圓鼻角立銑刀 END MILLS



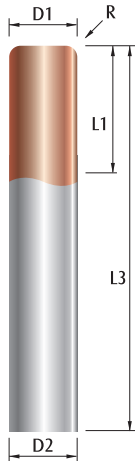
	乾式切削 Dry Machining	
	油霧切削 MQL (Mist)	精銑 Finishing
	水溶性切削 Emulsion Machining	中銑 Semi-finishing
	油性切削 Oil Machining	粗銑 Roughing

產品規格 SPECIFICATIONS

型號 Type No.	D1 直徑 Diameter	R 角 Corner R	L1 刃長 Flute Length	L3 全長 O.A.L.	D2 柄徑 Shank Dia.
UTHR0305	3.0	0.5	8	50	6
UTHR0405	4.0	0.5	10	50	6
UTHR0405S	4.0	0.5	10	50	4
UTHR0505	5.0	0.5	13	50	6
UTHR0605	6.0	0.5	16	50	6
UTHR0610	6.0	1.0	16	50	6
UTHR0805	8.0	0.5	20	60	8
UTHR0810	8.0	1.0	20	60	8
UTHR1005	10.0	0.5	25	75	10
UTHR1010	10.0	1.0	25	75	10
UTHR1020	10.0	2.0	25	75	10
UTHR1030	10.0	3.0	25	75	10
UTHR1210	12.0	1.0	30	75	12
UTHR1220	12.0	2.0	30	75	12
UTHR1230	12.0	3.0	30	75	12
UTHR1610	16.0	1.0	40	100	16
UTHR1620	16.0	2.0	40	100	16
UTHR1630	16.0	3.0	40	100	16
UTHR2010	20.0	1.0	45	100	20
UTHR2020	20.0	2.0	45	100	20
UTHR2030	20.0	3.0	45	100	20

unit : mm

Stainless Steel Cutting



公差表 TOLERANCE

直徑 D1	R 徑公差值 R Tolerance	直徑公差值 D1 Tolerance	柄徑 D2	柄徑公差值 D2 Tolerance
3.0	+0.02 0	0 -0.02	Ø6	0 -0.008
4.0	+0.02 0	0 -0.02	Ø8	0 -0.009
5.0	+0.02 0	0 -0.02	Ø10	0 -0.009
6.0	+0.02 0	0 -0.02	Ø12	0 -0.011
8.0	+0.02 0	0 -0.025	Ø16	0 -0.011
10.0	+0.02 0	0 -0.03	Ø20	0 -0.013
12.0	+0.02 0	0 -0.035		
16.0	+0.02 0	0 -0.04		
20.0	+0.02 0	0 -0.04		

unit : mm

UTHR

切削條件表 **MILLING CONDITIONS**

被切削材 Work Material

沃斯田鐵系不銹鋼

Stainless Steels [Easy]: **SUS304 : 1.4301 : AISI 304** (HRc 28~32)

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
UTHR0305	13	120	12500~13000	1600~2000	0~0.25	3	溝銑 SLOTTING
UTHR0305	13	120	12500~13000	800~1200	0.25~0.6	3	溝銑 SLOTTING
UTHR0305	13	120	12500~13000	300~500	0.8~1.5	3	溝銑 SLOTTING
UTHR0305	13	120	12500~13000	250~350	2~2.5	3	溝銑 SLOTTING
UTHR0305	13	155	16000~16500	1400~1800	3~6	0~0.25	側銑 SIDE MILLING
UTHR0305	13	105	11000~11500	500~700	3	0.25~0.6	側銑 SIDE MILLING
UTHR0305	13	105	11000~11500	300~450	3	0.8~1.5	側銑 SIDE MILLING
UTHR0305	13	105	11000~11500	200~300	3	2~2.5	側銑 SIDE MILLING
UTHR0305	13	105	11000~11500	700~900	3~6	0~0.1	側銑 SIDE MILLING
UTHR0405	16	120	9300~9800	2000~2400	0~0.3	4	溝銑 SLOTTING
UTHR0405	16	120	9300~9800	900~1200	0.3~0.7	4	溝銑 SLOTTING
UTHR0405	16	120	9300~9800	600~750	1~2	4	溝銑 SLOTTING
UTHR0405	16	120	9300~9800	400~550	3~4	4	溝銑 SLOTTING
UTHR0405	16	155	12000~12500	1600~1800	4~8	0~0.3	側銑 SIDE MILLING
UTHR0405	16	105	8000~8500	800~1000	4	0.3~1	側銑 SIDE MILLING
UTHR0405	16	105	8000~8500	500~700	4	1~2	側銑 SIDE MILLING
UTHR0405	16	105	8000~8500	400~600	4	3~4	側銑 SIDE MILLING
UTHR0405	16	105	8000~8500	700~900	4~8	0~0.13	側銑 SIDE MILLING
UTHR0505	18	120	7500~7800	2000~2400	0~0.35	5	溝銑 SLOTTING
UTHR0505	18	120	7500~7800	900~1200	0.35~0.8	5	溝銑 SLOTTING
UTHR0505	18	120	7500~7800	600~750	1.5~2.5	5	溝銑 SLOTTING
UTHR0505	18	120	7500~7800	400~550	3~5	5	溝銑 SLOTTING
UTHR0505	18	155	9600~10000	1600~1800	5~10	0~0.35	側銑 SIDE MILLING
UTHR0505	18	105	6500~6800	800~1000	5	0~1	側銑 SIDE MILLING
UTHR0505	18	105	6500~6800	500~700	5	2.5	側銑 SIDE MILLING
UTHR0505	18	105	6500~6800	400~600	5	4	側銑 SIDE MILLING
UTHR0505	18	105	6500~6800	700~900	5~10	0~0.15	側銑 SIDE MILLING
UTHR0605	20	120	6300~6600	1800~2200	0~0.4	6	溝銑 SLOTTING
UTHR0605	20	120	6300~6600	900~1200	0.4~1	6	溝銑 SLOTTING
UTHR0605	20	120	6300~6600	600~800	2~3	6	溝銑 SLOTTING
UTHR0605	20	120	6300~6600	450~600	5~6	6	溝銑 SLOTTING
UTHR0605	20	155	7800~8200	1600~1800	6~12	0~0.4	側銑 SIDE MILLING
UTHR0605	20	105	5600~5800	700~900	6	1.2	側銑 SIDE MILLING
UTHR0605	20	105	5600~5800	500~700	6	3	側銑 SIDE MILLING
UTHR0605	20	105	5600~5800	500~650	6	5	側銑 SIDE MILLING
UTHR0605	20	105	5600~5800	700~900	6~12	0~0.2	側銑 SIDE MILLING

被切削材 Work Material

沃斯田鐵系不銹鋼

Stainless Steels [Easy] :SUS304 : 1.4301 : AISI 304 (HRc 28~32)

切削條件表 **MILLING CONDITIONS**

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
UTHR0610	20	120	6300~6600	1800~2200	0~0.4	6	溝銑 SLOTTING
UTHR0610	20	120	6300~6600	800~1000	0.4~1	6	溝銑 SLOTTING
UTHR0610	20	120	6300~6600	500~650	2~3	6	溝銑 SLOTTING
UTHR0610	20	120	6300~6600	350~500	5~6	6	溝銑 SLOTTING
UTHR0610	20	155	7800~8200	1600~1800	6~12	0~0.4	側銑 SIDE MILLING
UTHR0610	20	105	5600~5800	700~900	6	1.2	側銑 SIDE MILLING
UTHR0610	20	105	5600~5800	500~700	6	3	側銑 SIDE MILLING
UTHR0610	20	105	5600~5800	500~650	6	5	側銑 SIDE MILLING
UTHR0610	20	105	5600~5800	700~900	6~12	0~0.2	側銑 SIDE MILLING
UTHR0805	24	120	4700~5000	1500~1800	0~0.5	8	溝銑 SLOTTING
UTHR0805	24	115	4400~4700	1100~1400	0.5~1	8	溝銑 SLOTTING
UTHR0805	24	115	4400~4700	600~800	3~4	8	溝銑 SLOTTING
UTHR0805	24	115	4400~4700	550~750	4~8	8	溝銑 SLOTTING
UTHR0805	24	155	6200~6400	1000~1200	8~16	0~0.5	側銑 SIDE MILLING
UTHR0805	24	85	3200~3500	700~900	8~16	0.5~1.5	側銑 SIDE MILLING
UTHR0805	24	110	4300~4600	700~900	8	3~4	側銑 SIDE MILLING
UTHR0805	24	110	4300~4600	600~800	8	6~7	側銑 SIDE MILLING
UTHR0805	24	90	3300~3500	700~900	8~16	0~0.2	側銑 SIDE MILLING
UTHR0810	24	120	4700~5000	1500~1800	0~0.5	8	溝銑 SLOTTING
UTHR0810	24	115	4400~4700	900~1300	0.5~1	8	溝銑 SLOTTING
UTHR0810	24	115	4400~4700	500~700	3~4	8	溝銑 SLOTTING
UTHR0810	24	115	4400~4700	450~600	4~8	8	溝銑 SLOTTING
UTHR0810	24	155	6200~6400	1000~1200	8~16	0~0.5	側銑 SIDE MILLING
UTHR0810	24	85	3200~3500	700~900	8~16	0.5~1.5	側銑 SIDE MILLING
UTHR0810	24	110	4300~4600	600~750	8	3~4	側銑 SIDE MILLING
UTHR0810	24	110	4300~4600	500~650	8	6~7	側銑 SIDE MILLING
UTHR0810	24	90	3300~3500	700~900	8~16	0~0.2	側銑 SIDE MILLING
UTHR1005	30	115	3800~4000	1300~1500	0~0.5	10	溝銑 SLOTTING
UTHR1005	30	115	3800~4000	700~800	0.5~1	10	溝銑 SLOTTING
UTHR1005	30	110	3300~3600	400~600	3~5	10	溝銑 SLOTTING
UTHR1005	30	110	3300~3600	350~450	10	10	溝銑 SLOTTING
UTHR1005	30	150	4700~5000	1300~1500	10~20	0~0.5	側銑 SIDE MILLING
UTHR1005	30	90	2800~3100	300~400	10~20	2	側銑 SIDE MILLING
UTHR1005	30	110	3300~3600	400~600	10	3.6~5	側銑 SIDE MILLING
UTHR1005	30	110	3300~3600	400~550	10	7~8	側銑 SIDE MILLING
UTHR1005	30	90	2800~3000	500~700	10~20	0~0.25	側銑 SIDE MILLING

被切削材 Work Material

沃斯田鐵系不銹鋼

 Stainless Steels [Easy]: **SUS304 : 1.4301 : AISI 304** (HRc 28~32)

 切削條件表 **MILLING CONDITIONS**

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
UTHR1010	30	115	3800~4000	1300~1500	0~0.5	10	溝銑 SLOTTING
UTHR1010	30	115	3800~4000	700~800	0.5~1	10	溝銑 SLOTTING
UTHR1010	30	110	3300~3600	400~600	3~5	10	溝銑 SLOTTING
UTHR1010	30	110	3300~3600	350~450	10	10	溝銑 SLOTTING
UTHR1010	30	150	4700~5000	1300~1500	10~20	0~0.5	側銑 SIDE MILLING
UTHR1010	30	90	2800~3100	300~400	10~20	2	側銑 SIDE MILLING
UTHR1010	30	110	3300~3600	400~600	10	3.6~5	側銑 SIDE MILLING
UTHR1010	30	110	3300~3600	400~550	10	7~8	側銑 SIDE MILLING
UTHR1010	30	90	2800~3000	500~700	10~20	0~0.25	側銑 SIDE MILLING
UTHR1020	30	115	3800~4000	1100~1300	0~0.5	10	溝銑 SLOTTING
UTHR1020	30	115	3800~4000	600~700	0.5~1	10	溝銑 SLOTTING
UTHR1020	30	110	3300~3600	300~500	3~5	10	溝銑 SLOTTING
UTHR1020	30	110	3300~3600	250~350	10	10	溝銑 SLOTTING
UTHR1020	30	150	4700~5000	1200~1400	10~20	0~0.5	側銑 SIDE MILLING
UTHR1020	30	90	2800~3100	300~400	10~20	2	側銑 SIDE MILLING
UTHR1020	30	110	3300~3600	300~500	10	3.6~5	側銑 SIDE MILLING
UTHR1020	30	110	3300~3600	300~450	10	7~8	側銑 SIDE MILLING
UTHR1020	30	90	2800~3000	500~700	10~20	0~0.25	側銑 SIDE MILLING
UTHR1210	33	115	3000~3200	1000~1300	0~0.6	12	溝銑 SLOTTING
UTHR1210	33	110	2800~3000	800~1000	0.6~1.2	12	溝銑 SLOTTING
UTHR1210	33	110	2800~3000	300~500	4~6	12	溝銑 SLOTTING
UTHR1210	33	110	2800~3000	250~400	6~8	12	溝銑 SLOTTING
UTHR1210	33	150	3800~4000	900~1100	12~24	0~0.6	側銑 SIDE MILLING
UTHR1210	33	90	2300~2600	300~400	12	2	側銑 SIDE MILLING
UTHR1210	33	110	2800~3000	300~400	12	4~6	側銑 SIDE MILLING
UTHR1210	33	110	2800~3000	250~350	12	6~8	側銑 SIDE MILLING
UTHR1210	33	90	2300~2600	450~650	12~24	0~0.25	側銑 SIDE MILLING
UTHR1220	33	115	3000~3200	900~1200	0~0.6	12	溝銑 SLOTTING
UTHR1220	33	110	2800~3000	700~900	0.6~1.2	12	溝銑 SLOTTING
UTHR1220	33	110	2800~3000	300~500	4~6	12	溝銑 SLOTTING
UTHR1220	33	110	2800~3000	250~400	6~8	12	溝銑 SLOTTING
UTHR1220	33	150	3800~4000	900~1100	12~24	0~0.6	側銑 SIDE MILLING
UTHR1220	33	90	2300~2600	300~400	12	2	側銑 SIDE MILLING
UTHR1220	33	110	2800~3000	300~400	12	4~6	側銑 SIDE MILLING
UTHR1220	33	110	2800~3000	250~350	12	6~8	側銑 SIDE MILLING
UTHR1220	33	90	2300~2600	450~650	12~24	0~0.25	側銑 SIDE MILLING

被切削材 Work Material

沃斯田鐵系不銹鋼

Stainless Steels [Easy] :SUS304 : 1.4301 : AISI 304 (HRc 28~32)

切削條件表 **MILLING CONDITIONS**

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
UTHR1230	33	115	3000~3200	900~1200	0~0.6	12	溝銑 SLOTTING
UTHR1230	33	110	2800~3000	700~900	0.6~1.2	12	溝銑 SLOTTING
UTHR1230	33	110	2800~3000	300~500	4~6	12	溝銑 SLOTTING
UTHR1230	33	110	2800~3000	250~400	6~8	12	溝銑 SLOTTING
UTHR1230	33	150	3800~4000	900~1100	12~24	0~0.6	側銑 SIDE MILLING
UTHR1230	33	90	2300~2600	300~400	12	2	側銑 SIDE MILLING
UTHR1230	33	110	2800~3000	300~400	12	4~6	側銑 SIDE MILLING
UTHR1230	33	110	2800~3000	250~350	12	6~8	側銑 SIDE MILLING
UTHR1230	33	90	2300~2600	450~650	12~24	0~0.25	側銑 SIDE MILLING
UTHR1610	43	115	2200~2400	800~1100	0~0.7	16	溝銑 SLOTTING
UTHR1610	43	110	2100~2300	600~800	2	16	溝銑 SLOTTING
UTHR1610	43	110	2100~2300	300~400	3~4	16	溝銑 SLOTTING
UTHR1610	43	110	2100~2300	200~300	6~8	16	溝銑 SLOTTING
UTHR1610	43	150	2800~3200	800~1000	16~32	0~0.7	側銑 SIDE MILLING
UTHR1610	43	90	1700~1900	300~400	16	2	側銑 SIDE MILLING
UTHR1610	43	110	2100~2300	250~400	16	3~4	側銑 SIDE MILLING
UTHR1610	43	110	2100~2300	200~350	16	6~8	側銑 SIDE MILLING
UTHR1610	43	90	1700~1900	350~550	16~32	0~0.3	側銑 SIDE MILLING
UTHR1620	43	115	2200~2400	700~1000	0~0.7	16	溝銑 SLOTTING
UTHR1620	43	110	2100~2300	500~650	2	16	溝銑 SLOTTING
UTHR1620	43	110	2100~2300	300~400	3~4	16	溝銑 SLOTTING
UTHR1620	43	110	2100~2300	200~300	5~6	16	溝銑 SLOTTING
UTHR1620	43	150	2800~3200	800~1000	16~32	0~0.7	側銑 SIDE MILLING
UTHR1620	43	90	1700~1900	300~400	16	2	側銑 SIDE MILLING
UTHR1620	43	110	2100~2300	250~400	16	3~4	側銑 SIDE MILLING
UTHR1620	43	110	2100~2300	200~350	16	6~8	側銑 SIDE MILLING
UTHR1620	43	90	1700~1900	350~550	16~32	0~0.3	側銑 SIDE MILLING
UTHR1630	43	115	2200~2400	700~1000	0~0.7	16	溝銑 SLOTTING
UTHR1630	43	110	2100~2300	500~650	2	16	溝銑 SLOTTING
UTHR1630	43	110	2100~2300	300~400	3~4	16	溝銑 SLOTTING
UTHR1630	43	110	2100~2300	200~300	5~6	16	溝銑 SLOTTING
UTHR1630	43	150	2800~3200	800~1000	16~32	0~0.7	側銑 SIDE MILLING
UTHR1630	43	90	1700~1900	300~400	16	2	側銑 SIDE MILLING
UTHR1630	43	110	2100~2300	250~400	16	3~4	側銑 SIDE MILLING
UTHR1630	43	110	2100~2300	200~350	16	6~8	側銑 SIDE MILLING
UTHR1630	43	90	1700~1900	350~550	16~32	0~0.3	側銑 SIDE MILLING

被切削材 Work Material
沃斯田鐵系不銹鋼
Stainless Steels [Easy] : SUS304 : 1.4301 : AISI 304 (HRc 28~32)
切削條件表 MILLING CONDITIONS

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
UTHR2010	47	115	1750~1950	600~800	0~0.7	20	溝銑 SLOTTING
UTHR2010	47	110	1700~1900	400~550	2	20	溝銑 SLOTTING
UTHR2010	47	110	1700~1900	200~350	3~4	20	溝銑 SLOTTING
UTHR2010	47	110	1700~1900	150~250	6~8	20	溝銑 SLOTTING
UTHR2010	47	150	2300~2500	600~800	20~40	0~0.7	側銑 SIDE MILLING
UTHR2010	47	90	1300~1500	300~400	20	2	側銑 SIDE MILLING
UTHR2010	47	110	1700~1900	250~350	20	3~4	側銑 SIDE MILLING
UTHR2010	47	110	1700~1900	200~300	20	6~8	側銑 SIDE MILLING
UTHR2010	47	90	1300~1500	200~400	20~40	0~0.3	側銑 SIDE MILLING
UTHR2020	47	115	1750~1950	600~800	0~0.7	20	溝銑 SLOTTING
UTHR2020	47	110	1700~1900	400~500	2	20	溝銑 SLOTTING
UTHR2020	47	110	1700~1900	200~300	3~4	20	溝銑 SLOTTING
UTHR2020	47	110	1700~1900	120~200	6~8	20	溝銑 SLOTTING
UTHR2020	47	150	2300~2500	600~800	20~40	0~0.7	側銑 SIDE MILLING
UTHR2020	47	90	1300~1500	300~400	20	2	側銑 SIDE MILLING
UTHR2020	47	110	1700~1900	250~300	20	3~4	側銑 SIDE MILLING
UTHR2020	47	110	1700~1900	150~1250	20	6~8	側銑 SIDE MILLING
UTHR2020	47	90	1300~1500	200~400	20~40	0~0.3	側銑 SIDE MILLING
UTHR2030	47	115	1750~1950	600~800	0~0.7	20	溝銑 SLOTTING
UTHR2030	47	110	1700~1900	400~500	2	20	溝銑 SLOTTING
UTHR2030	47	110	1700~1900	200~300	3~4	20	溝銑 SLOTTING
UTHR2030	47	110	1700~1900	120~200	6~8	20	溝銑 SLOTTING
UTHR2030	47	150	2300~2500	600~800	20~40	0~0.7	側銑 SIDE MILLING
UTHR2030	47	90	1300~1500	300~400	20	2	側銑 SIDE MILLING
UTHR2030	47	110	1700~1900	250~300	20	3~4	側銑 SIDE MILLING
UTHR2030	47	110	1700~1900	150~1250	20	6~8	側銑 SIDE MILLING
UTHR2030	47	90	1300~1500	200~400	20~40	0~0.3	側銑 SIDE MILLING

附註

- UTHR適用於粗、中、精銑加工，溝銑(Aa)與側銑(Ap)都有1.0D切削能力。粗切削時，請用濕式高壓水溶性切削液，以免造成排屑不良。直徑Ø10以上，需視機器剛性與主軸扭力值的不同，而做適當調整。
- 建議冷卻方式為濕式。

NOTE

- UTHR is good at Roughing, Semi-finishing and Finishing. It can do a 1.0D machining for both Slotting (Aa) and Side milling (Ap). When it is Roughing, we suggest high pressure emulsion coolant for better chip removal. For diameter above 10.0mm, make necessary adjustment as per the rigidity of machine and the torque of spindle.
- Suggest to use wet coolant.



HPC

UPER

高效能圓鼻角立銑刀 END MILLS

產品規格 SPECIFICATIONS

型號 Type No.	D1 直徑 Diameter	R R角 Corner R	L1 刃長 Flute Length	L3 全長 O.A.L.	D2 柄徑 Shank Dia.
UPER0405	4.0	0.5	11	50	6
UPER0502	5.0	0.2	13	50	6
UPER0505	5.0	0.5	13	50	6
UPER0605	6.0	0.5	16	50	6
UPER0610	6.0	1.0	16	50	6
UPER0805	8.0	0.5	20	60	8
UPER0810	8.0	1.0	20	60	8
UPER1005	10.0	0.5	22	75	10
UPER1010	10.0	1.0	22	75	10
UPER1020	10.0	2.0	22	75	10
UPER1210	12.0	1.0	26	75	12
UPER1220	12.0	2.0	26	75	12
UPER1610	16.0	1.0	36	100	16
UPER1620	16.0	2.0	36	100	16
UPER2010	20.0	1.0	40	100	20
UPER2020	20.0	2.0	40	100	20

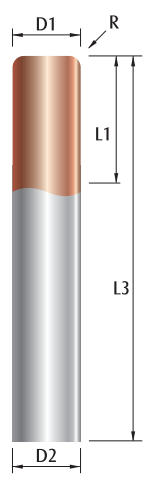
unit : mm

	乾式切削 Dry Machining		
	油霧切削 MQL (Mist)		精銑 Finishing
	水溶性切削 Emulsion Machining		中銑 Semi-finishing
	油性切削 Oil Machining		粗銑 Roughing

公差表 TOLERANCE

直徑 D1	R徑公差值 R Tolerance	直徑公差值 D1 Tolerance	柄徑 D2	柄徑公差值 D2 Tolerance
4.0	$\frac{+0.02}{0}$	$\frac{0}{-0.02}$	Ø6	$\frac{0}{-0.008}$
5.0	$\frac{+0.02}{0}$	$\frac{0}{-0.02}$	Ø8	$\frac{0}{-0.009}$
6.0	$\frac{+0.02}{0}$	$\frac{0}{-0.02}$	Ø10	$\frac{0}{-0.009}$
8.0	$\frac{+0.02}{0}$	$\frac{0}{-0.025}$	Ø12	$\frac{0}{-0.011}$
10.0	$\frac{+0.02}{0}$	$\frac{0}{-0.03}$	Ø16	$\frac{0}{-0.011}$
12.0	$\frac{+0.02}{0}$	$\frac{0}{-0.035}$	Ø20	$\frac{0}{-0.013}$
16.0	$\frac{+0.02}{0}$	$\frac{0}{-0.04}$		
20.0	$\frac{+0.02}{0}$	$\frac{0}{-0.04}$		

unit : mm



Stainless Steel Cutting

UPER

被切削材 Work Material

沃斯田鐵系不銹鋼

Stainless Steels [Easy] :SUS304 : 1.4301 : AISI 304 (Hrc 28~32)

切削條件表 MILLING CONDITIONS

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
UPER0405	13	110	8800	1800~2200	0~0.25	4	溝銑 SLOTTING
UPER0405	13	110	8800	800~1100	0.25~0.4	4	溝銑 SLOTTING
UPER0405	13	110	8800	600~800	0.4~0.6	4	溝銑 SLOTTING
UPER0405	13	100	8000	1400~1800	4~8	0~0.3	側銑 SIDE MILLING
UPER0405	13	100	8000	600~850	4~8	0~0.15	側銑 SIDE MILLING
UPER0502	16	110	7000	1800~2200	0~0.3	5	溝銑 SLOTTING
UPER0502	16	110	7000	800~1100	0.3~0.5	5	溝銑 SLOTTING
UPER0502	16	110	7000	600~800	0.5~0.7	5	溝銑 SLOTTING
UPER0502	16	100	6400	1400~1800	5~10	0~0.35	側銑 SIDE MILLING
UPER0502	16	100	6400	600~850	5~10	0~0.15	側銑 SIDE MILLING
UPER0505	16	110	7000	1800~2200	0~0.3	5	溝銑 SLOTTING
UPER0505	16	110	7000	800~1100	0.3~0.5	5	溝銑 SLOTTING
UPER0505	16	110	7000	600~800	0.5~0.7	5	溝銑 SLOTTING
UPER0505	16	100	6400	1400~1800	5~10	0~0.35	側銑 SIDE MILLING
UPER0505	16	100	6400	600~850	5~10	0~0.15	側銑 SIDE MILLING
UPER0605	18	110	5850	1800~2200	0~0.3	6	溝銑 SLOTTING
UPER0605	18	110	5850	800~1100	0.3~0.6	6	溝銑 SLOTTING
UPER0605	18	110	5850	700~900	0.6~0.9	6	溝銑 SLOTTING
UPER0605	18	100	5300	1400~1800	6~12	0~0.4	側銑 SIDE MILLING
UPER0605	18	100	5300	600~850	6~12	0~0.2	側銑 SIDE MILLING
UPER0610	18	110	5850	1800~2200	0~0.3	6	溝銑 SLOTTING
UPER0610	18	110	5850	800~1100	0.3~0.6	6	溝銑 SLOTTING
UPER0610	18	110	5850	700~900	0.6~0.9	6	溝銑 SLOTTING
UPER0610	18	100	5300	1400~1800	6~12	0~0.4	側銑 SIDE MILLING
UPER0610	18	100	5300	600~850	6~12	0~0.2	側銑 SIDE MILLING
UPER0805	22	135	5500	1800~2200	0~0.5	8	溝銑 SLOTTING
UPER0805	22	135	5500	900~1300	0.5~1	8	溝銑 SLOTTING
UPER0805	22	125	5000	700~900	1~1.5	8	溝銑 SLOTTING
UPER0805	22	135	5500	1300~1600	8~16	0~0.5	側銑 SIDE MILLING
UPER0805	22	125	5000	800~1100	8~16	0~0.25	側銑 SIDE MILLING
UPER0810	22	135	5500	1800~2200	0~0.5	8	溝銑 SLOTTING
UPER0810	22	135	5500	900~1300	0.5~1	8	溝銑 SLOTTING
UPER0810	22	125	5000	700~900	1~1.5	8	溝銑 SLOTTING
UPER0810	22	135	5500	1300~1600	8~16	0~0.5	側銑 SIDE MILLING
UPER0810	22	125	5000	800~1100	8~16	0~0.25	側銑 SIDE MILLING
UPER1005	27	130	4200	1700~2100	0~0.5	10	溝銑 SLOTTING
UPER1005	27	120	3800	900~1200	0.5~1	10	溝銑 SLOTTING
UPER1005	27	120	3800	700~900	1~1.5	10	溝銑 SLOTTING
UPER1005	27	120	3800	800~1000	10~20	0~0.6	側銑 SIDE MILLING
UPER1005	27	115	3700	800~1000	10~20	0~0.3	側銑 SIDE MILLING
UPER1010	27	130	4200	1700~2100	0~0.5	10	溝銑 SLOTTING
UPER1010	27	120	3800	900~1200	0.5~1	10	溝銑 SLOTTING
UPER1010	27	120	3800	700~900	1~1.5	10	溝銑 SLOTTING
UPER1010	27	120	3800	800~1000	10~20	0~0.6	側銑 SIDE MILLING
UPER1010	27	115	3700	800~1000	10~20	0~0.3	側銑 SIDE MILLING

被切削材 Work Material
沃斯田鐵系不銹鋼
Stainless Steels [Easy] : SUS304 : 1.4301 : AISI 304 (HRc 28~32)
切削條件表 MILLING CONDITIONS

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
UPER1020	27	130	4200	1700~2100	0~0.5	10	溝銼 SLOTTING
UPER1020	27	120	3800	900~1200	0.5~1	10	溝銼 SLOTTING
UPER1020	27	120	3800	700~900	1~1.5	10	溝銼 SLOTTING
UPER1020	27	120	3800	800~1000	10~20	0~0.6	側銼 SIDE MILLING
UPER1020	27	115	3700	800~1000	10~20	0~0.3	側銼 SIDE MILLING
UPER1210	32	130	3450	1700~2100	0~0.5	12	溝銼 SLOTTING
UPER1210	32	100	2700	900~1200	0.5~1	12	溝銼 SLOTTING
UPER1210	32	85	2200	600~900	1~1.5	12	溝銼 SLOTTING
UPER1210	32	130	3450	700~900	12~24	0~0.6	側銼 SIDE MILLING
UPER1210	32	95	2550	500~800	12~24	0~0.3	側銼 SIDE MILLING
UPER1220	32	130	3450	1700~2100	0~0.5	12	溝銼 SLOTTING
UPER1220	32	100	2700	900~1200	0.5~1	12	溝銼 SLOTTING
UPER1220	32	85	2200	600~900	1~1.5	12	溝銼 SLOTTING
UPER1220	32	130	3450	700~900	12~24	0~0.6	側銼 SIDE MILLING
UPER1220	32	95	2550	500~800	12~24	0~0.3	側銼 SIDE MILLING
UPER1610	42	130	2600	1300~1600	0~0.5	16	溝銼 SLOTTING
UPER1610	42	100	2000	700~900	0.5~1	16	溝銼 SLOTTING
UPER1610	42	85	1700	500~700	1~1.5	16	溝銼 SLOTTING
UPER1610	42	130	2600	600~800	16~32	0~0.6	側銼 SIDE MILLING
UPER1610	42	95	1900	500~650	16~32	0~0.3	側銼 SIDE MILLING
UPER1620	42	130	2600	1300~1600	0~0.5	16	溝銼 SLOTTING
UPER1620	42	100	2000	700~900	0.5~1	16	溝銼 SLOTTING
UPER1620	42	85	1700	500~700	1~1.5	16	溝銼 SLOTTING
UPER1620	42	130	2600	600~800	16~32	0~0.6	側銼 SIDE MILLING
UPER1620	42	95	1900	500~650	16~32	0~0.3	側銼 SIDE MILLING
UPER2010	48	130	2050	900~1300	0~0.5	20	溝銼 SLOTTING
UPER2010	48	100	1600	500~700	0.5~1	20	溝銼 SLOTTING
UPER2010	48	85	1350	350~550	1~1.5	20	溝銼 SLOTTING
UPER2010	48	130	2050	450~650	20~40	0~0.6	側銼 SIDE MILLING
UPER2010	48	95	1500	350~500	20~40	0~0.3	側銼 SIDE MILLING
UPER2020	48	130	2050	900~1300	0~0.5	20	溝銼 SLOTTING
UPER2020	48	100	1600	500~700	0.5~1	20	溝銼 SLOTTING
UPER2020	48	85	1350	350~550	1~1.5	20	溝銼 SLOTTING
UPER2020	48	130	2050	450~650	20~40	0~0.6	側銼 SIDE MILLING
UPER2020	48	95	1500	350~500	20~40	0~0.3	側銼 SIDE MILLING

附註

建議冷卻方式為濕式。

NOTE

Suggest to use wet coolant.

Standard

WWA

超微粒粗齒細目立銑刀 END MILLS

	乾式切削 Dry Machining		
	油霧切削 MQL (Mist)	----	精銑 Finishing
	水性切削 Emulsion Machining		中銑 Semi-finishing
	油性切削 Oil Machining		粗銑 Roughing

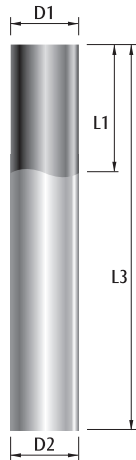


產品規格 SPECIFICATIONS

型號 Type No.	D1 直徑 Diameter	L1 刃長 Flute Length	L3 全長 O.A.L.	D2 柄徑 Shank Dia.
WWA0604	6.0	16	50	6
WWA0804	8.0	20	60	8
WWA1004	10.0	25	75	10
WWA1204	12.0	30	75	12
WWA1404	14.0	35	100	16
WWA1604	16.0	40	100	16
WWA1804	18.0	40	100	20
WWA2004	20.0	45	100	20

unit : mm

Stainless Steel Cutting



公差表 TOLERANCE

直徑 D1	直徑公差值 D1 Tolerance	柄徑 D2	柄徑公差值 D2 Tolerance
6.0	$0_{-0.04}$	Ø6	$0_{-0.008}$
8.0	$0_{-0.04}$	Ø8	$0_{-0.009}$
10.0	$0_{-0.045}$	Ø10	$0_{-0.009}$
12.0	$0_{-0.045}$	Ø12	$0_{-0.011}$
14.0	$0_{-0.045}$	Ø16	$0_{-0.011}$
16.0	$0_{-0.05}$	Ø20	$0_{-0.013}$
18.0	$0_{-0.05}$		
20.0	$0_{-0.05}$		

unit : mm

WWA

被切削材 Work Material

沃斯田鐵系不銹鋼

Stainless Steels [Easy] : **SUS304** : **1.4301** : **AISI 304** (HRC 28~32)

切削條件表 MILLING CONDITIONS

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
WWA0604	22	80	4200~4400	400~550	1	6	溝銑 SLOTTING
WWA0604	22	80	4200~4400	350~450	1.5	6	溝銑 SLOTTING
WWA0604	22	80	4200~4400	300~420	3	6	溝銑 SLOTTING
WWA0604	22	80	4200~4400	170~220	6	6	溝銑 SLOTTING
WWA0604	22	80	4200~4400	500~700	6	1	側銑 SIDE MILLING
WWA0604	22	80	4200~4400	450~600	6	2	側銑 SIDE MILLING
WWA0604	22	80	4200~4400	250~320	6	3	側銑 SIDE MILLING
WWA0604	22	80	4200~4400	170~220	6	5.7	側銑 SIDE MILLING
WWA0804	28	80	3200~3400	350~480	2	8	溝銑 SLOTTING
WWA0804	28	80	3200~3400	270~360	4	8	溝銑 SLOTTING
WWA0804	28	80	3200~3400	240~320	6	8	溝銑 SLOTTING
WWA0804	28	80	3200~3400	200~260	8	8	溝銑 SLOTTING
WWA0804	28	80	3200~3400	350~480	8	2	側銑 SIDE MILLING
WWA0804	28	80	3200~3400	270~360	8	4	側銑 SIDE MILLING
WWA0804	28	80	3200~3400	200~260	8	7.7	側銑 SIDE MILLING
WWA1004	32	80	2500~2700	350~500	2	10	溝銑 SLOTTING
WWA1004	32	80	2500~2700	300~400	3.5	10	溝銑 SLOTTING
WWA1004	32	80	2500~2700	250~320	5	10	溝銑 SLOTTING
WWA1004	32	80	2500~2700	200~260	10	10	溝銑 SLOTTING
WWA1004	32	80	2500~2700	350~500	10	1	側銑 SIDE MILLING
WWA1004	32	80	2500~2700	200~300	10	5	側銑 SIDE MILLING
WWA1004	32	80	2500~2700	200~260	10	9.7	側銑 SIDE MILLING
WWA1204	38	80	2000~2200	260~420	2	12	溝銑 SLOTTING
WWA1204	38	80	2000~2200	200~300	4	12	溝銑 SLOTTING
WWA1204	38	80	2000~2200	180~260	6	12	溝銑 SLOTTING
WWA1204	38	80	2000~2200	150~210	10	12	溝銑 SLOTTING
WWA1204	38	80	2000~2200	120~200	12	12	溝銑 SLOTTING
WWA1204	38	80	2000~2200	300~400	12	1	側銑 SIDE MILLING
WWA1204	38	80	2000~2200	180~260	12	6	側銑 SIDE MILLING
WWA1204	38	80	2000~2200	100~190	12	11.7	側銑 SIDE MILLING
WWA1404	42	80	1700~1900	200~360	2	14	溝銑 SLOTTING
WWA1404	42	80	1700~1900	150~250	4	14	溝銑 SLOTTING
WWA1404	42	80	1700~1900	120~200	6	14	溝銑 SLOTTING
WWA1404	42	80	1700~1900	100~150	10	14	溝銑 SLOTTING
WWA1404	42	80	1700~1900	200~300	14	1	側銑 SIDE MILLING
WWA1404	42	80	1700~1900	70~110	14	7	側銑 SIDE MILLING
WWA1404	42	80	1700~1900	70~110	7	13.7	側銑 SIDE MILLING

被切削材 Work Material

沃斯田鐵系不銹鋼

 Stainless Steels [Easy]: **SUS304 : 1.4301 : AISI 304** (HRc 28~32)

 切削條件表 **MILLING CONDITIONS**

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
WWA1604	47	80	1500~1700	200~280	2	16	溝銑 SLOTTING
WWA1604	47	80	1500~1700	130~200	4	16	溝銑 SLOTTING
WWA1604	47	80	1500~1700	100~170	6	16	溝銑 SLOTTING
WWA1604	47	80	1500~1700	80~100	10	16	溝銑 SLOTTING
WWA1604	47	80	1500~1700	180~260	16	1	側銑 SIDE MILLING
WWA1604	47	80	1500~1700	50~100	16	8	側銑 SIDE MILLING
WWA1604	47	80	1500~1700	50~100	8	15.7	側銑 SIDE MILLING
WWA1804	50	80	1300~1500	200~250	2	18	溝銑 SLOTTING
WWA1804	50	80	1300~1500	130~180	4	18	溝銑 SLOTTING
WWA1804	50	80	1300~1500	100~150	6	18	溝銑 SLOTTING
WWA1804	50	80	1300~1500	80~100	10	18	溝銑 SLOTTING
WWA1804	50	80	1300~1500	170~240	18	1	側銑 SIDE MILLING
WWA1804	50	80	1300~1500	50~100	18	6	側銑 SIDE MILLING
WWA1804	50	80	1300~1500	50~100	9	17.7	側銑 SIDE MILLING
WWA2004	50	80	1150~1350	180~230	2	20	溝銑 SLOTTING
WWA2004	50	80	1150~1350	120~160	4	20	溝銑 SLOTTING
WWA2004	50	80	1150~1350	100~140	6	20	溝銑 SLOTTING
WWA2004	50	80	1150~1350	70~90	10	20	溝銑 SLOTTING
WWA2004	50	80	1150~1350	160~230	20	1	側銑 SIDE MILLING
WWA2004	50	80	1150~1350	80~120	20	5	側銑 SIDE MILLING
WWA2004	50	80	1150~1350	50~80	10	19.7	側銑 SIDE MILLING

附註

建議冷卻方式為濕式。

NOTE

Suggest to use wet coolant.



產品規格 **SPECIFICATIONS**

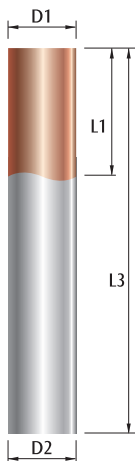
型號 Type No.	D1 直徑 Diameter	L1 刃長 Flute Length	L3 全長 O.A.L.	D2 柄徑 Shank Dia.
WWB0604	6.0	16	50	6
WWB0804	8.0	20	60	8
WWB1004	10.0	25	75	10
WWB1204	12.0	30	75	12
WWB1404	14.0	35	100	16
WWB1604	16.0	40	100	16
WWB1804	18.0	40	100	20
WWB2004	20.0	45	100	20

unit : mm

公差表 **TOLERANCE**

直徑 D1	直徑公差值 D1 Tolerance	柄徑 D2	柄徑公差值 D2 Tolerance
6.0	$\frac{0}{-0.04}$	Ø6	$\frac{0}{-0.008}$
8.0	$\frac{0}{-0.04}$	Ø8	$\frac{0}{-0.009}$
10.0	$\frac{0}{-0.045}$	Ø10	$\frac{0}{-0.009}$
12.0	$\frac{0}{-0.045}$	Ø12	$\frac{0}{-0.011}$
14.0	$\frac{0}{-0.045}$	Ø16	$\frac{0}{-0.011}$
16.0	$\frac{0}{-0.05}$	Ø20	$\frac{0}{-0.013}$
18.0	$\frac{0}{-0.05}$		
20.0	$\frac{0}{-0.05}$		

unit : mm



HPC

WWB

抗震粗齒細目銑刀
END MILLS

	乾式切削 Dry Machining		
	油霧切削 MQL (Mist)	---	精銑 Finishing
	水溶性切削 Emulsion Machining		中銑 Semi-finishing
	油性切削 Oil Machining		粗銑 Roughing



Stainless Steel Cutting

WWB

切削條件表 MILLING CONDITIONS

被切削材 Work Material

沃斯田鐵系不銹鋼
Stainless Steels [Easy] : **SUS304 : 1.4301 : AISI 304** (HRc 28~32)

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
WWB0604	22	80	4200~4400	400~550	1	6	溝銑 SLOTTING
WWB0604	22	80	4200~4400	350~450	1.5	6	溝銑 SLOTTING
WWB0604	22	80	4200~4400	300~420	3	6	溝銑 SLOTTING
WWB0604	22	80	4200~4400	200~270	6	6	溝銑 SLOTTING
WWB0604	22	80	4200~4400	200~270	6	5.7	側銑 SIDE MILLING
WWB0804	28	80	3200~3400	350~480	2	8	溝銑 SLOTTING
WWB0804	28	80	3200~3400	270~360	4	8	溝銑 SLOTTING
WWB0804	28	80	3200~3400	240~320	6	8	溝銑 SLOTTING
WWB0804	28	80	3200~3400	200~260	8	8	溝銑 SLOTTING
WWB0804	28	80	3200~3400	200~260	8	7.7	側銑 SIDE MILLING
WWB1004	32	80	2500~2700	350~500	2	10	溝銑 SLOTTING
WWB1004	32	80	2500~2700	300~400	3.5	10	溝銑 SLOTTING
WWB1004	32	80	2500~2700	250~320	5	10	溝銑 SLOTTING
WWB1004	32	80	2500~2700	200~260	10	10	溝銑 SLOTTING
WWB1004	32	80	2500~2700	200~260	10	9.7	側銑 SIDE MILLING
WWB1204	38	80	2000~2200	260~420	2	12	溝銑 SLOTTING
WWB1204	38	80	2000~2200	200~300	4	12	溝銑 SLOTTING
WWB1204	38	80	2000~2200	180~260	6	12	溝銑 SLOTTING
WWB1204	38	80	2000~2200	150~210	10	12	溝銑 SLOTTING
WWB1204	38	80	2000~2200	120~200	12	12	溝銑 SLOTTING
WWB1204	38	80	2000~2200	100~190	12	11.7	側銑 SIDE MILLING
WWB1404	42	80	1700~1900	200~360	2	14	溝銑 SLOTTING
WWB1404	42	80	1700~1900	150~250	4	14	溝銑 SLOTTING
WWB1404	42	80	1700~1900	120~200	6	14	溝銑 SLOTTING
WWB1404	42	80	1700~1900	100~150	10	14	溝銑 SLOTTING
WWB1404	42	80	1700~1900	70~110	7	13.7	側銑 SIDE MILLING
WWB1604	47	80	1500~1700	200~280	2	16	溝銑 SLOTTING
WWB1604	47	80	1500~1700	130~200	4	16	溝銑 SLOTTING
WWB1604	47	80	1500~1700	100~170	6	16	溝銑 SLOTTING
WWB1604	47	80	1500~1700	80~120	10	16	溝銑 SLOTTING
WWB1604	47	80	1500~1700	50~100	8	15.7	側銑 SIDE MILLING

被切削材 Work Material
沃斯田鐵系不銹鋼
Stainless Steels [Easy]:SUS304 : 1.4301 : AISI 304 (HRc 28~32)
切削條件表 MILLING CONDITIONS

型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 (Aa) Depth of Cut	加工寬度 (Ap) Width of Cut	加工方式 Milling Type
WWB1804	50	80	1300~1500	200~250	2	18	溝銼 SLOTTING
WWB1804	50	80	1300~1500	130~180	4	18	溝銼 SLOTTING
WWB1804	50	80	1300~1500	100~150	6	18	溝銼 SLOTTING
WWB1804	50	80	1300~1500	80~100	10	18	溝銼 SLOTTING
WWB1804	50	80	1300~1500	50~100	9	17.7	側銼 SIDE MILLING
WWB2004	50	80	1150~1350	180~230	2	20	溝銼 SLOTTING
WWB2004	50	80	1150~1350	120~160	4	20	溝銼 SLOTTING
WWB2004	50	80	1150~1350	100~140	6	20	溝銼 SLOTTING
WWB2004	50	80	1150~1350	70~90	10	20	溝銼 SLOTTING
WWB2004	50	80	1150~1350	50~80	10	19.7	側銼 SIDE MILLING

附註

1. WWB適用於粗銼加工，溝銼(Aa)有1.0D切削能力。側銼(Ap)需1.0D滿刀（側銼低於0.95D會產生加工共振，影響刀具壽命）。粗切削時，請用濕式高壓水溶性切削液，以免造成排屑不良。直徑Ø10以上，需視機器剛性與主軸扭力值的不同，而做適當調整。
2. 建議冷卻方式為濕式。

NOTE

1. WWB is good at Roughing. It can do a 1.0D machining for Slotting (Aa). Side milling (Ap) would require 1.0D full cut (When it is less than 0.95D, vibration will cause short tool life.) When Roughing, we suggest high pressure emulsion coolant for better chip removal. For diameter above 10.0mm, make necessary adjustment as per the rigidity of machine and the torque of spindle.
2. Suggest to use wet coolant.

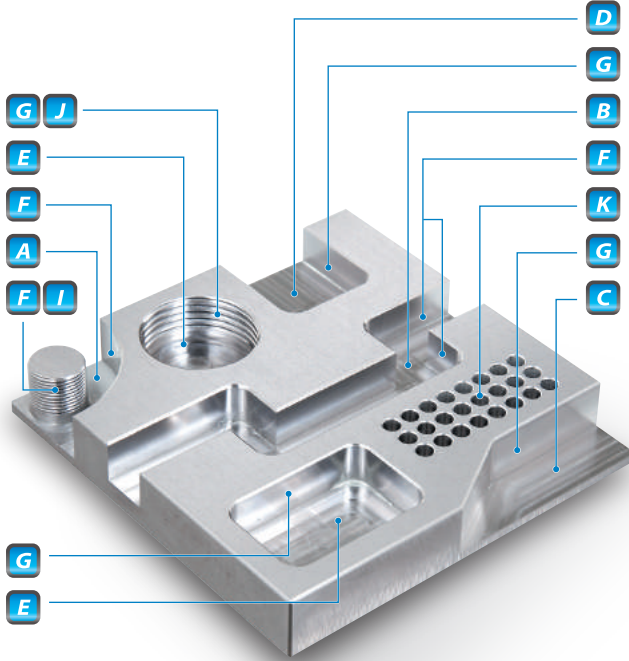
本書中所列之切削條件由DHF應用技術中心測試提供

Above milling conditions are issued by DHF Technical Applications Center.

切削實例 CUTTING DEMO

切削材規格 Material Size (mm)	總加工時間 Total Machining Time (min)
L150 x W150 x H35	25

被切削材 Work Material
沈澱不銹鋼 Stainless Steels : AISI : 17-4PH / JIS : SUS630 (HRC45)



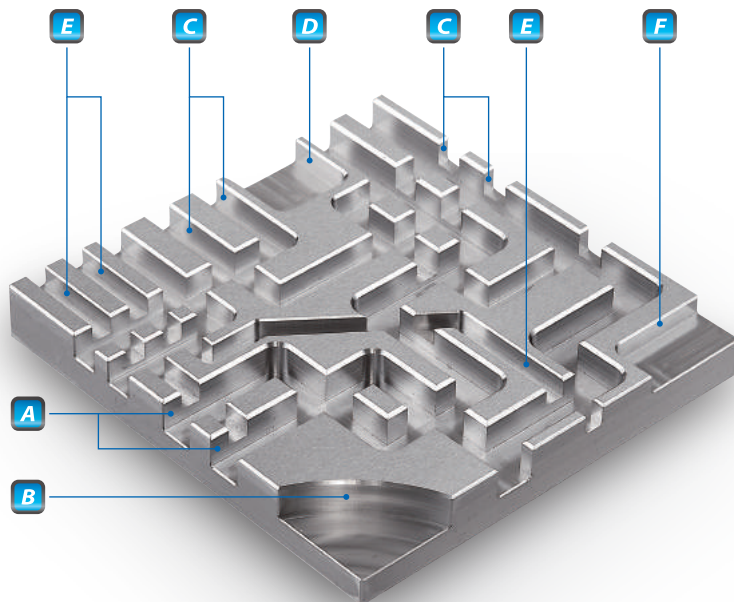
Stainless Steel Cutting

標記 Label	型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 Depth of Cut (a _s)	加工寬度 Width of Cut (a _w)	冷卻方式 Coolant Type	每刃切削量 f _z (mm)	備註 Remark
A	WWB1004	30	80	2600	200	10	10	濕式水冷 (Wet)	0.02	粗加工 Roughing
B	UEW1004	30	140	4500	600	8	10	濕式水冷 (Wet)	0.03	粗加工 Roughing
C	UPW1005	30	130	4200	600	10	6	乾式切削 (Dry)	0.03	粗加工 Roughing
D	UPW1005	30	130	4200	600	8	6	乾式切削 (Dry)	0.03	粗加工 Roughing
E	UXR1010	30	190	6000	4800	0.25	7.5	濕式水冷 (Wet)	0.2	粗加工 Roughing
F	VTB1006	30	115	3600	800	20	0.15	濕式水冷 (Wet)	0.04	精加工 Finishing
G	UET1004	30	115	3600	500	20	0.15	乾式切削 (Dry)	0.03	精加工 Finishing
H	X-TD1003	30	160	5000	700	1.5	1.5	氣冷 (Air)	0.05	倒角 Chamfering
I	TW07517 M10150	28	75	3200	240	15	0.25	濕式水冷 (Wet)	0.03	銑牙 Thread Milling
J	X-TW161830	30	90	1800	220	15	0.3	濕式水冷 (Wet)	0.03	銑牙 Thread Milling
K	DAK060	34	60	3100	300	12	6	濕式水冷 (Wet)	0.05	鑽孔 Drill

切削實例 CUTTING DEMO

切削材規格 Material Size (mm)	總加工時間 Total Machining Time (min)
L150 x W150 x H35	5

被切削材 Work Material
沃斯田鐵系不銹鋼 Austenite Stainless Steels :JIS : SUS304 / DIN : 1.4301 (HRC30)



Stainless Steel Cutting

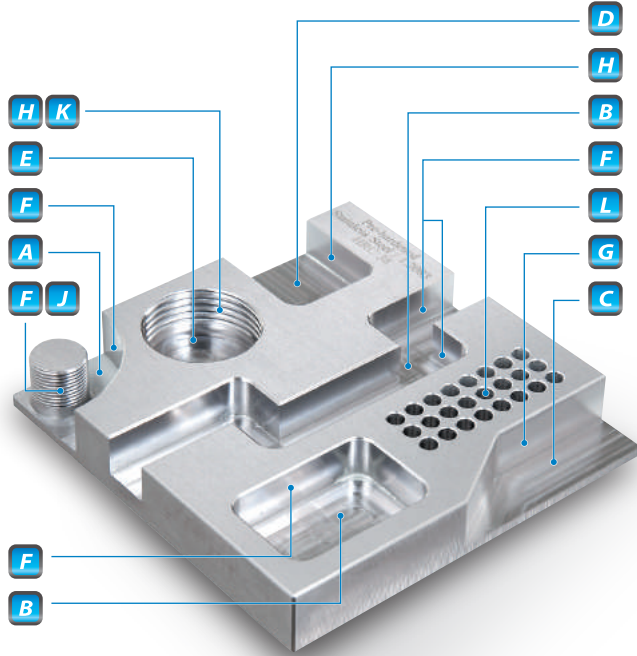
標記 Label	型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 Depth of Cut [a ₁]	加工寬度 Width of Cut [a ₂]	冷卻方式 Coolant Type	每刃切削量 fz (mm)	備註 Remark
A	UPZ1004	30	110	3500	700	10	10	濕式水冷 (Wet)	0.05	粗銑溝銑 <i>Roughing & Slotting</i>
B	UPZ1004	30	110	3500	700	10	9	濕式水冷 (Wet)	0.05	粗銑側銑 <i>Roughing & Side Milling</i>
C	UPZ0804	25	105	4200	700	8	8	濕式水冷 (Wet)	0.04	粗銑溝銑 <i>Roughing & Slotting</i>
D	UPZ0804	25	105	4200	700	8	7	濕式水冷 (Wet)	0.04	粗銑側銑 <i>Roughing & Side Milling</i>
E	UPZ0604	20	105	5500	600	6	6	濕式水冷 (Wet)	0.03	粗銑溝銑 <i>Roughing & Slotting</i>
F	UPZ0604	20	105	5500	600	6	5	濕式水冷 (Wet)	0.03	粗銑側銑 <i>Roughing & Side Milling</i>

切削實例 CUTTING DEMO

切削材規格 Material Size (mm)	總加工時間 Total Machining Time (min)
L150 x W150 x H35	13

被切削材 Work Material

預硬不銹鋼
Pre-Hardened Stainless Steels : **AISt 420 / DIN : 1.2083** (HRC38)



Stainless Steel Cutting

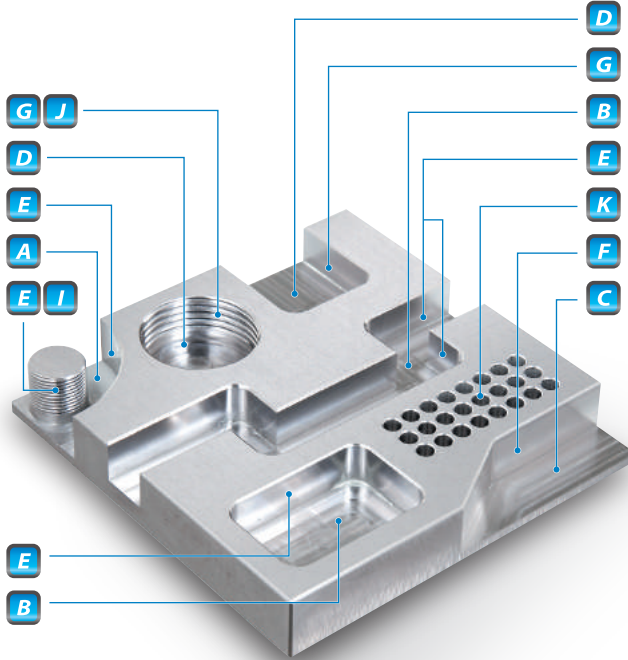
標記 Label	型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 Depth of Cut (a_p)	加工寬度 Width of Cut (a_w)	每刃 切削量 f_z (mm)	備註 Remark
A	WWB1004	35	85	2700	270	20	10	0.03	粗加工 Roughing
B	UEW1004	33	160	5000	600	8	10	0.03	粗加工 Roughing
C	UTHR1010	33	140	4500	800	10	4.5	0.04	粗加工 Roughing
D	UPZ1004	33	110	3500	1000	8	10	0.07	粗加工 Roughing
E	UPZ1004	33	110	3500	1000	8	8	0.07	粗加工 Roughing
F	VTB1006	35	100	3200	600	20	0.2	0.03	精加工 Finishing
G	UTH1004	33	110	3500	450	20	0.2	0.03	精加工 Finishing
H	UTE1004	33	110	3500	450	16	0.2	0.03	精加工 Finishing
I	X-TD1003	30	190	6000	900	1.5	1.5	0.05	倒角 Chamfering
J	TW07517 M10150	30	110	4800	300	16	0.25	0.02	銑牙 Thread Milling
K	X-TW161830	40	140	2800	300	16	0.4	0.03	銑牙 Thread Milling
L	DAK060	34	80	4200	800	12	6	0.10	鑽孔 Drill

切削實例 CUTTING DEMO

切削材規格 Material Size (mm)	總加工時間 Total Machining Time (min)
L150 x W150 x H35	14

被切削材 Work Material

不銹鋼 1.2083 熱處理前、後加工
Un-Hardened Stainless Steels / Hardened Stainless Steels
AISI : 420 / DIN : 1.2083 (HRC18) / (HRC52)



Stainless Steel Cutting

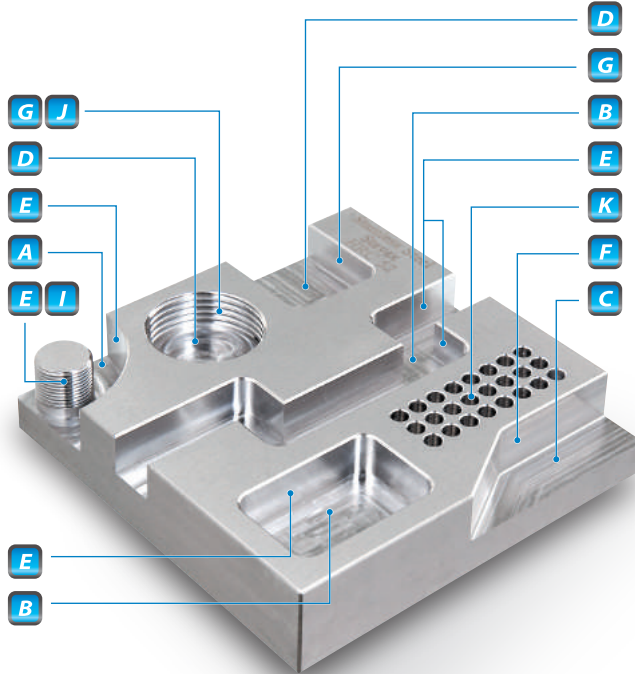
標記 Label	型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 Depth of Cut (a _z)	加工寬度 Width of Cut (a _y)	每刃 切削量 fz (mm)	備註 Remark
A	WVB1004	35	85	2700	300	20	10	0.03	粗加工 / 熱處理前加工(HRC18) Roughing / Un-Hardened Stainless Steel (HRC18)
B	UEW1004	33	160	5000	1000	8	10	0.05	粗加工 / 熱處理前加工(HRC18) Roughing / Un-Hardened Stainless Steel (HRC18)
C	UTHR1010	35	140	4500	1000	10	6	0.06	粗加工 / 熱處理前加工(HRC18) Roughing / Un-Hardened Stainless Steel (HRC18)
D	UPZ1004	35	110	3500	1000	8	10	0.07	粗加工 / 熱處理前加工(HRC18) Roughing / Un-Hardened Stainless Steel (HRC18)
E	UVT1006	33	70	2200	400	20	0.1	0.03	精加工 / 熱處理後加工(HRC52) Finishing / Hardened Stainless Steel (HRC52)
F	UVTR1010	33	60	2000	350	20	0.1	0.04	精加工 / 熱處理後加工(HRC52) Finishing / Hardened Stainless Steel (HRC52)
G	UEX1004	33	80	2500	350	16	0.1	0.04	精加工 / 熱處理後加工(HRC52) Finishing / Hardened Stainless Steel (HRC52)
H	X-TD1003	30	160	5000	500	1.5	1.5	0.03	倒角 / 熱處理後加工(HRC52) Chamfering / Hardened Stainless Steel (HRC52)
I	TW07517 M10150	30	50	2000	120	16	0.15	0.02	銑牙 / 熱處理後加工(HRC52) Thread Milling / Hardened Stainless Steel (HRC52)
J	X-TW161830	40	50	1000	220	16	0.3	0.06	銑牙 / 熱處理後加工(HRC52) Thread Milling / Hardened Stainless Steel (HRC52)
K	DAK060	34	30	1700	150	12	6	0.04	鑽孔 / 熱處理後加工(HRC52) Drill / Hardened Stainless Steel (HRC52)

切削實例 CUTTING DEMO

切削材規格 Material Size (mm)	總加工時間 Total Machining Time (min)
L150 x W150 x H35	13

被切削材 Work Material

不銹鋼STAVAX 熱處理前、後加工
Un-Hardened Stainless Steels / Hardened Stainless Steels
ASSAB : STAVAX (S136) (HRC18) / (HRC52)



Stainless Steel Cutting

標記 Label	型號 Type No.	刀具伸長量 Extension Length (mm)	切削速度 Cutting Speed (m/min)	迴轉速度 Speed (min ⁻¹)	進給速度 Feed (mm/min)	加工深度 Depth of Cut (a ₁)	加工寬度 VWidth of Cut (a ₂)	每刃 切削量 fz (mm)	備註 Remark
A	WWB1004	35	85	2700	300	20	10	0.03	粗加工 / 熱處理前加工(HRC18) Roughing / Un-Hardened Stainless Steel (HRC18)
B	UEW1004	33	160	5000	1000	8	10	0.05	粗加工 / 熱處理前加工(HRC18) Roughing / Un-Hardened Stainless Steel (HRC18)
C	UTHR1010	35	140	4500	1000	10	6	0.06	粗加工 / 熱處理前加工(HRC18) Roughing / Un-Hardened Stainless Steel (HRC18)
D	UPZ1004	35	110	3500	1000	8	10	0.07	粗加工 / 熱處理前加工(HRC18) Roughing / Un-Hardened Stainless Steel (HRC18)
E	UVT1006	33	70	2200	400	20	0.1	0.03	精加工 / 熱處理後加工(HRC52) Finishing / Hardened Stainless Steel (HRC52)
F	UVTR1010	33	60	2000	350	20	0.1	0.04	精加工 / 熱處理後加工(HRC52) Finishing / Hardened Stainless Steel (HRC52)
G	UEX1004	33	80	2500	350	16	0.1	0.04	精加工 / 熱處理後加工(HRC52) Finishing / Hardened Stainless Steel (HRC52)
H	X-TD1003	30	160	5000	500	1.5	1.5	0.03	倒角 / 熱處理後加工(HRC52) Chamfering / Hardened Stainless Steel (HRC52)
I	TW07517 M10150	30	50	2000	120	16	1.5	0.02	銼牙 / 熱處理後加工(HRC52) Thread Milling / Hardened Stainless Steel (HRC52)
J	X-TW161830	40	50	1000	220	16	0.3	0.06	銼牙 / 熱處理後加工(HRC52) Thread Milling / Hardened Stainless Steel (HRC52)
K	DAK060	34	30	1700	150	12	6	0.04	鑽孔 / 熱處理後加工(HRC52) Drill / Hardened Stainless Steel (HRC52)

DHF刀具推薦表 DHF SELECTION OF ENDMILLS

高速高硬度/破壞工/鋁用加工/標準/鈦好切/不鏽鋼/沖 系列 (HSC/HPC/ALU/STD/TAI/SUS/ECM) SERIES

平刀—粗銑 End Mills-Roughing

被切削材 Work Material	第一推薦 First Selection	第二推薦 Second Selection	第三推薦 Third Selection
沃斯田鐵系不銹鋼 <i>Stainless Steels : SUS304 : 1.4301 : AISI 304</i> (HRc 28~32)	UTH / UPZ / UPS / UPE UPG	ETH / ETB	ETA
	WWB	WWA / LFTH	LFTA
(麻田散鐵, 析出硬化) 系不銹鋼 <i>Stainless Steels : SUS420J2 / SUS630 : 1.2083 / 1.4542 : AISI 420 / 17-4PH</i> (HRc 28~32)	UTH / UPZ / UPS / UPE UPG	ETH / ETB	ETA
	WWB	WWA / LFTH	LFTA

平刀—精銑 End Mills-Finishing

被切削材 Work Material	第一推薦 First Selection	第二推薦 Second Selection	第三推薦 Third Selection
沃斯田鐵系不銹鋼 <i>Stainless Steels : SUS304 : 1.4301 : AISI 304</i> (HRc 28~32)	VTB / UTH / UPE / UPS	ETB / ETH	ETA
		LFTH	LFTA
(麻田散鐵, 析出硬化) 系不銹鋼 <i>Stainless Steels : SUS420J2 / SUS630 : 1.2083 / 1.4542 : AISI 420 / 17-4PH</i> (HRc 28~32)	VTB / UTH / UPE / UPS	ETB / ETH / ITH	ETA
		LFTH	LFTA

圓鼻刀—粗銑 Corner Radius End Mills-Roughing

被切削材 Work Material	第一推薦 First Selection	第二推薦 Second Selection	第三推薦 Third Selection
沃斯田鐵系不銹鋼 <i>Stainless Steels : SUS304 : 1.4301 : AISI 304</i> (HRc 28~32)	UTHR / UPJ	UPER	RTB
	ULR / ULXR	LRTD / LRTA	DLRA
(麻田散鐵, 析出硬化) 系不銹鋼 <i>Stainless Steels : SUS420J2 / SUS630 : 1.2083 / 1.4542 : AISI 420 / 17-4PH</i> (HRc 28~32)	UTHR / UPJ	UPER	RTB
	ULR / ULXR	LRTD / LRTA	DLRA

圓鼻刀—精銑 Corner Radius End Mills-Finishing

被切削材 Work Material	第一推薦 First Selection	第二推薦 Second Selection	第三推薦 Third Selection
沃斯田鐵系不銹鋼 <i>Stainless Steels : SUS304 : 1.4301 : AISI 304</i> (HRc 28~32)	UTHR	UPER	RTB
	ULR / ULXR	LRTD	LRTA
(麻田散鐵, 析出硬化) 系不銹鋼 <i>Stainless Steels : SUS420J2 / SUS630 : 1.2083 / 1.4542 : AISI 420 / 17-4PH</i> (HRc 28~32)	UTHR	UPER	RTB
	ULR / ULXR	LRTD	LRTA

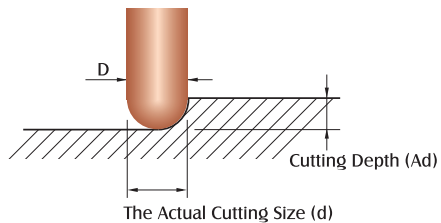
球刀實際切削直徑 BALL NOSE REAL CUTTING DIAMETER

球徑 R Ball R (mm)	直徑 Ø Mill Dia. (mm)	切削深度 (Ad) Depth of Cut (mm/min)														
		0.01	0.02	0.03	0.04	0.05	0.08	0.1	0.15	0.2	0.3	0.5	0.8	1.0	2.0	3.0
0.1	0.2	0.087	0.12	0.143	0.16	0.173	0.196	0.2	----	----	----	----	----	----	----	----
0.2	0.4	0.125	0.174	0.211	0.24	0.265	0.32	0.35	0.39	0.4	----	----	----	----	----	----
0.3	0.6	0.154	0.215	0.262	0.299	0.332	0.41	0.45	0.52	0.57	0.6	----	----	----	----	----
0.4	0.8	0.178	0.25	0.304	0.349	0.387	0.48	0.53	0.62	0.63	0.77	0.77	----	----	----	----
0.5	1	0.199	0.28	0.341	0.392	0.436	0.54	0.6	0.71	0.8	0.92	1	----	----	----	----
1	2	0.282	0.398	0.486	0.56	0.624	0.78	0.87	1.05	1.2	1.43	1.73	1.96	2	----	----
1.5	3	0.346	0.488	0.597	0.688	0.768	0.97	1.08	1.31	1.5	1.8	2.24	2.65	2.83	2.83	----
2	4	0.399	0.564	0.69	0.796	0.889	1.12	1.25	1.52	1.74	2.11	2.65	3.2	3.46	4	----
2.5	5	0.447	0.631	0.772	0.891	0.995	1.25	1.4	1.71	1.96	2.37	3	3.67	4	4.9	4.9
3	6	0.489	0.692	0.846	0.977	1.091	1.38	1.54	1.87	2.15	2.62	3.32	4.08	4.47	5.66	6
4	8	0.565	0.799	0.978	1.129	1.261	1.59	1.78	2.17	2.5	3.04	3.87	4.8	5.29	6.93	7.75
5	10	0.632	0.894	1.094	1.262	1.411	1.78	1.99	2.43	2.8	3.41	4.36	5.43	6	8	9.17
6	12	0.693	0.979	1.198	1.383	1.546	1.95	2.18	2.67	3.07	3.75	4.8	5.99	6.63	8.94	10.39
7	14	0.748	1.058	1.295	1.495	1.67	2.11	2.36	2.88	3.32	4.05	5.2	66.5	7.21	9.8	11.49
8	16	0.8	1.131	1.384	1.598	1.786	2.26	2.52	3.08	3.56	4.34	5.57	6.97	7.75	10.58	12.49
9	18	0.848	1.199	1.468	1.695	1.895	2.39	2.68	3.27	3.77	4.61	5.92	7.42	8.25	11.31	13.42
10	20	0.894	1.264	1.548	1.787	1.997	2.52	2.82	3.45	3.98	4.86	6.24	7.84	8.72	12	14.28

Stainless Steel Cutting

實際直徑計算 CALCULATION OF REAL DIA.

$$d = 2\sqrt{Ad(D-Ad)}$$





德信發企業有限公司

DHF Precision Tool Co., Ltd.

營運總部

台灣台中市南屯區大墩六街425號

TEL : 886-4-23815088 FAX : 886-4-23814488

<http://www.endmill.com.tw>

E-mail : dhf@endmill.com.tw

分公司

Italy / Pordenone

DHF Italia Srl <http://www.dhfitalia.it>

Turkey / Istanbul

DHF Sert Kesici Takimlar

Poland / Katowice

DHF Polska Sp z o.o.

China / ShangHai

上海徐匯區嘉匯國際廣場

TEL / 021-64564958 FAX / 021-64564968

China / GuangDong

東莞市虎門鎮索菲特東方時代廣場

TEL / 0769-85115970 FAX / 0769-85240930

Distributor