產品分類 Category
捨棄式 Indexable
焊刃式 Welded
全鎢鋼 Solid carbide

加工分類
精加工
半精加工
粗加工
Application
Finishing
Semi-finishing
Roughing

工件材料 Workpiece Material
鋼料 Steel
不鏽鋼 Stainless
鑄鐵 Cast iron
非鐵金屬 Nonferrous
熱處理 Hardened steel

切削角度
Edge Angle

Operation Type
加工型態
側面 Shoulder
平面 Face
曲面 Profile

加工用途
Cutting Mode

照片
Photo

平面圖
Drawing

產品規格
Product Table

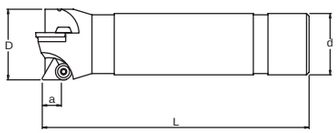
切削條件表
Cutting Data

Shoulder milling cutters

P M K N H 90°

TPR Series

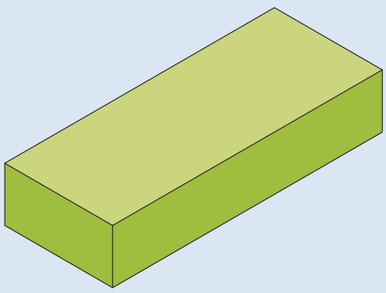
Dimensions



Shim(+)

Ordering Code	Dimensions, mm D	d	L	a		Flutes	Clamp	Key (mm)	Shim	Shim Screw	KG
TPR-20-16-100	20	16	100	8	TPMN-110308(222)	2	Y-TPR3 3/16-32	3	—	—	0.15
TPR-20-16-100S					TPMN-110208(832)						0.15
TPR-20-20-100		20			TPMN-110308(222)						0.23
TPR-20-20-100S					TPMN-110208(832)						0.23
TPR-20-20-150			150		TPMN-110308(222)						0.36
TPR-20-20-150S					TPMN-110208(832)						0.35
TPR-25-20-100	25	20	100		TPMN-110308(222)						0.25
TPR-25-20-100S					TPMN-110208(832)						0.24
TPR-25-20-150			150		TPMN-110308(222)						0.37
TPR-25-20-150S					TPMN-110208(832)						0.37
TPR-25-25-100		25	100		TPMN-110308(222)						0.35
TPR-25-25-100S					TPMN-110208(832)						0.35
TPR-25-25-150			150		TPMN-110308(222)						0.54
TPR-25-25-150S					TPMN-110208(832)						0.55
TPR-30-20-120	30	20	120	12.5	TPMN-160308		Y-TPR4 1/4-28	4			0.32
TPR-30-25-120		25	120								0.45
TPR-30-25-150			150								0.58
TPR-32-20-120	32	20	120								0.36
TPR-32-25-120		25									0.46
TPR-32-25-150			150								0.51
TPR-35-20-120	35	20	120								0.36
TPR-35-25-120		25									0.5
TPR-35-25-150			150								0.61
TPR-35-25-200			200								0.8
TPR-35-32-120		32	120								0.6
TPR-35-32-150			150								0.72
TPR-35-32-200			200								1.25
TPR-35-32-250			250								1.5
TPR-35-32-300			300								1.85

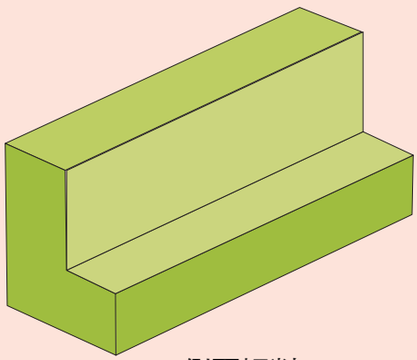
加工用途 cutting modes



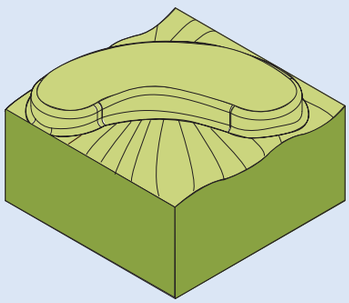
平面切削 Face milling

- 連續面銑 General face milling
- 斷續面銑 Intermit machining
- 伸長加工 Overhang
- 薄板面銑 Thin wall

- 台階側銑 Repeated shoulder milling
- 深壁側銑 Deep shoulder machining
- 輪廓側銑 Edging / contouring
- 一般側銑 General shoulder milling



側面切削 Shoulder milling

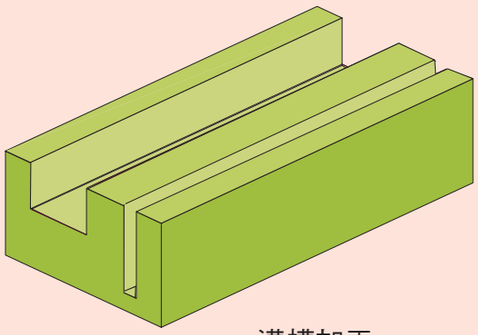


曲面加工 Profile milling

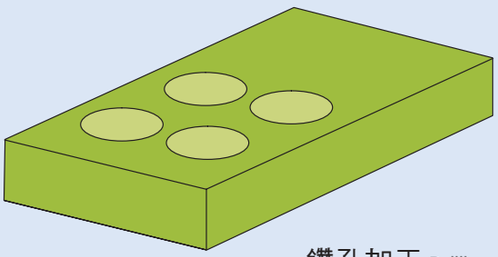
- 曲面加工 Profiling
- 斜坡式下刀 Ramping
- 螺旋式下刀 Helical

TAI JENG MACHINERY TOOL CO., LTD
TEL:886-2-29967563 FAX:886-2-29974671

溝槽加工 Slotting



溝槽加工 Slot milling



鑽孔加工 Drilling

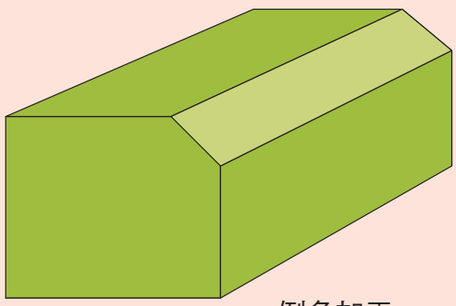
鑽孔 Drilling

啄鑽 Peck drilling

倒角 Chamfering

背面倒角 Back chamfering

內孔倒角 Hole chamfering



倒角加工 Chamfering

圖像指南 icons guide

工件材料 Workpiece Material

P — Carbon Steel (SS、S50C) Tool Steel (SKD、SKT)
Alloy Steel (SCM、SNCM)

M — Stainless steel (SUS304)

K — Cast iron (FC200、FCD)

N — Non Ferrous (Aluminium、Wood、Plastic)

H — Pre-Hardened、Hardened Steel (SKD、HPM1、SKH、NAK55)

工件硬度 Workpiece Hardness

50 HRC

62 HRC

刀刃數 Number of edges

2 Flutes

3 Flutes

4 Flutes

TAI JENG MACHINERY TOOL CO., LTD
TEL:886-2-29967563 FAX:886-2-29974671

刀刃角度 Edge Angle

3° 5° 7° 10° 15°

25° 30° 45° 60° 90°

加工分類 Applications

精加工 Finishing

粗加工 Roughing

半精加工 Semi-Finishing

-0.02 外徑公差 Diameter Tolerance

R 角R銑刀 Radius

立銑刀 Flat Ends

斜度刀 Taper

球刀 Ball

長頸深溝 Long neck

A

專利後拉模組化銑刀、搪孔系統 PAT. connecting

◆TJUM A01 ◆TSJM A01 ◆T2039M A02 ◆T2039LM A02
◆TCFM A03 ◆TCFLM A03 ◆T2139M A04 ◆TBPM A04
◆T2038M A05 ◆TAPM A05 ◆TEXM A06 ◆TRSM A06
◆EMRM-5R.6R A07 ◆EMRWM-6R A07 ◆TMC A08
◆TBR A09 ◆TRBH-C A10 ◆TRBH-S A11
◆CMF-BT40.50 A12-15 ◆TBR-C A16

側固式搪孔系統 Side-lock boring system

◆TBRA A17 ◆TRBHA-C A18 ◆TRBHA-S A19
◆CMFA-BT40.50 A20 ◆TBRA-C A21

鎖固式銑刀 Screw-lock

◆HRS A22 ◆HB-BT40 A23

側面切削 Shoulder milling

◆TAPE A24 ◆TAPL A24 ◆THSR A25 ◆THSR1 A26
◆TMP A27 ◆TMP1 A28 ◆CAP10 A29 ◆TAP300R A30
◆TAP400R A31 ◆TAPW400R A32 ◆TAP500R A33 ◆TJU A34
◆TSJ A35 ◆TJE A35 ◆TPR A36-37 ◆TEX A38-39
◆T2038 A40

Indexable Cutters

曲面切削 Profile milling

◆TSR A41 ◆EMR A42 ◆TRS A43 ◆EMRW A44 ◆TJR A45

◆TCF A46 ◆TCFL A47 ◆TBP A48 ◆T2039 A49 ◆T2139 A50

平面切削 Face milling

◆SE445 A51 ◆SE545 A51 ◆EMCF A52 ◆SEX A53

◆525 A54 ◆435 A54 ◆445 A55 ◆545 A55 ◆FP A56

◆TPR A57

倒角 Chamfering

◆TPR A58 ◆TSK A58 ◆EMCD A59 ◆TCR A59

鑽孔 Drilling

◆THD A60 ◆JD A61

沉頭加工 Sinking

◆TCD A62 ◆TSP A63

搪刀柄 Boring cutter / bar

◆TDL A64-65 ◆SBS A66 ◆CBS A67

切斷刀 Parting

◆CUT A68

切削條件表 Cutting data

1 ～ 25

B

焊刃T型刀 T-slot

◆TWTS B01 ◆TWTM B02-03 ◆TWTB B04-05 ◆TWTL B06

焊刃銑刀 End mill

◆TWE B07 ◆TWEB1 B08-09 ◆TWEB1D B10 ◆TWEH B11
◆TWEHB1 B12 ◆TWEL B13 ◆TWER5 B14 ◆TWER6 B15
◆TWERL6 B16

焊刃莫氏斜柄鉸刀 Morse taper reamer

◆TWRI B17 ◆TWR B18-19 ◆TWRL B20 ◆TWRA B21
◆TWRAX B21

焊刃直柄鉸刀 Straight reamer

◆TWRS B22-23 ◆TWRSI B24 ◆TWRM B24 ◆TWRMA B25
◆TWRMAX B25

焊刃倒角刀 Chamfering cutter

◆TWA1 B26 ◆TWA3 B26 ◆TWA45 B27 ◆TWAB45 B28
◆TWAB60 B28 ◆TWA B29 ◆TWAD1 B29

焊刃鳩尾槽刀 Dove-tail

◆TWD60 B30 ◆TWDB60 B31 ◆TWDB45 B32

Welded Cutters

焊刃外角R銑刀 Corner rounding

◆TWCR B32

千鳥刃 / 平刃 側銑刀 Staggered / Parallel side cutter

◆TWSS B33 ◆TWS B34-35 ◆TWSB B36-37

焊刃平面銑刀 Face milling

◆TWF B33

焊刃筒狀銑刀 Shell end mill

◆TWESA B38 ◆TWER1 B38

焊刃沉頭銑刀 Sinking

◆TWC B39

焊刃粗搪刀 Rough boring

◆TWST B40

切削條件表 Cutting data

26 ～ 29

C Solid Carbide

鎢鋼立銑刀 Square

◆TJF-2T C01 ◆TJF-4T C02 ◆TJF-H C02

鎢鋼角R銑刀 Corner radius

◆TJFR1 C03

鎢鋼球刀 Ball nose

◆TJF-R C04

鎢鋼長頸立銑刀 / 球刀 Rib

◆TJF-11 C05 ◆TJF-12 C06

鎢鋼粗銑刀 Roughing

◆TJFER C07

鎢鋼鋁用刀 Aluminum

◆TJFA C07

鎢鋼斜度刀 Taper

◆TJFT C08-09 ◆TJFT-L C10

切削條件表 **Cutting data**

30 ～ 38

END MILL ARBOR

側固直柄延長桿	Straight shank	1 - 1
側固式銑刀柄	BT30 / BT40 / BT50	1 - 2
側固式銑刀柄	NT30 / BT40 / NT50 / R8	1 - 3
油路刀把	Oil feed	1 - 4
直筒式銑刀柄	SHOWA JAPAN milling arbor	1 - 5
直筒式銑刀柄	NIKKEN JAPAN milling arbor	1 - 6
直筒式銑刀柄	TAIWAN milling arbor	1 - 7
直筒式彈性筒夾	Straight collect	1 - 8
ER 扳手	ER wrench	1 - 8
ER 銑刀柄	ER BT30 / BT40 / BT50	1 - 9~10
ER 筒夾	ER collect	1 - 11
ER 銑刀柄 M type	ER BT30 / BT40 / BT50 (M type)	1 - 12
ER 螺帽	ER nut	1 - 13
ER 直柄延長桿	ER straight shank	1 - 14
ER 直柄延長桿 M type	ER straight shrank (M type)	1 - 15
德製高精度ER銑刀柄	Centro P GERMANY	1 - 17~21
EOC 銑刀柄	EOC milling arbor / collect / nut / wrench	1 - 22~24

FACE MILL ARBOR

面銑刀把	BT30 / BT40 / BT50	2 - 1~2
面銑刀把	R8 / NT30 / NT40 / NT50	2 - 3

BORING ARBOR

BSA 搪孔刀柄	Boring bar BSA	3 - 1~4
BSB 搪孔刀柄	Boring bar BSB	3 - 5~6
BST 搪孔刀柄	Boring bar BST	3 - 7
直柄 / ABH 搪孔刀柄	Boring bar straight shank / ABH	3 - 8~11
小徑搪頭 / 接柄	Boring head / bar	3 - 12~13
BYB 搪孔刀柄	Boring bar BYB	3 - 14~16
NBJ16 / NBH2084	Boring head NBJ16 / NBH2084	3 - 17~18

TAP ARBOR

扭力伸縮攻牙本體	BT30 / 40 / 50 TPM / TPC 316, 830	4 - 1
扭力伸縮攻牙本體	NT30 / 40 / 50 TPM / TPC 316, 830	4 - 2
旋臂鑽床攻牙組	DT24 / 33 / 52	4 - 3
攻牙套筒規格	Specification	4 - 4
快換式攻牙刀桿	BT30 / 40 / 50 TC 312 / 820	4 - 5~7

SIDE CUTTER ARBOR

側銑刀刀柄	BT30 / 40 / 50 SCA	5 - 1
側銑刀刀柄	NT30 / 40 / 50 SCA	5 - 2

MORSE TAPER HOLDER

莫氏斜柄刀把	BT30 / BT40 / BT50	6 - 1
莫氏斜柄刀把	NT30 / BT40 / NT50 / R8	6 - 2
莫氏延長鑽頭套筒	AW Morse taper sleeve	6 - 2
夾頭柄 / 鑽頭套筒	Drill sleeve	6 - 3
莫氏斜柄規格	Morse taper dimensions	6 - 4
莫氏延長鑽頭套筒	SYIC Morse taper sleeve	6 - 5
自動鑽夾頭	Drill arbor	6 - 6~8

HSS / HSE END MILL

HSS 立銑刀	CME 2T / 4T	7 -	1~2
HSS 立銑刀TICN	TWEA 2T / 4T (TICN)	7 -	3
HSS 長刃銑刀	CMH 2T / 4T	7 -	4
HSS 超長刃銑刀	CMH4L	7 -	5
HSS 長柄銑刀	CML 2T /4T	7 -	6
HSS 粗銑刀 / TICN	CMER / CMER(TICN)	7 -	7
HSS 長刃粗銑刀 / TICN	CMERH / CMERH(TICN)	7 -	8
HSS 長柄粗銑刀	CMERL	7 -	8
HSS 細齒銑刀TICN	CMER4(TICN)	7 -	9
HSS 細齒長刃銑刀TICN	CMER4H(TICN)	7 -	10
HSS 細齒長柄銑刀TICN	CMER4L(TICN)	7 -	10
HSS 斜度刀	CMT	7 -	11
HSS 長刃斜度刀	CMTL	7 -	12
HSS 球型銑刀	CMR	7 -	13
HSS 加長直柄球型銑刀	CMRL	7 -	13
HSS 加長 / 超長斜柄球型銑刀	CMRSL / CMRSLL	7 -	14
HSS 粗齒球型銑刀	CMRR	7 -	14
HSS 外角R刀	CMCR / CMCR(TICN)	7 -	15
HSS 錐柄沉頭銑刀TICN	CMCT(TICN)	7 -	15
HSS 六角沉頭銑刀TICN	CMC / CMC(TICN)	7 -	16
HSS 插梢沉頭銑刀	CMCK	7 -	16
HSS 側銑刀 / 圓鋸片	CMS / CMM	7 -	17
焊刃過中心 / 前波刃 銑刀	CMWD / CMWR	7 -	18
CM 卡尺 / 高度計 / 分厘卡	CM measurement	7 -	19~20
HSE 高鈷銑刀 / TICN	HSE CO. 8% end mill(TICN)	7 -	21~25
DLC 鋁用銑刀	DLC aluminium end mill	7 -	26
AG HSE 粗銑刀	AG HSE roughing end mill	7 -	26
HSE 細工銑刀	HSE decimal point end mill	7 -	27~28
HSE 方形齒粗銑刀	HSE square roughing end mill	7 -	29
HSE 球型銑刀	HSE ball end mill	7 -	30
HSE 鍵槽銑刀	HSE keyway end mill	7 -	30
HSE 三刃銑刀	HSE 3-flutes end mill	7 -	31
灌嘴鉸刀	Sprue reamer SD / SP	7 -	32
SANKYO HSS 側銑刀	SANKYO HSS side cutter	7 -	33
SANKYO HSS 圓鋸片 / 鳩尾槽銑刀	SANKYO saw / dovetail end mill	7 -	34
HSE o-ring 銑刀	HSE o-ring end mill	7 -	35
HSS / HSE 倒角刀(TICN)	HSS / HSE 倒角刀(TICN)	7 -	36

HSS HSE DRILL

NACHI 麻花鑽	HSS straight shank drill	8 - 1
NACHI 直柄長鑽	HSS long straight shank drill	8 - 2~5
SUS 高速短刃鑽TiAlN	HSE short flute drill (TiAlN)	8 - 6
SUS 深孔強力鑽	HSE deep hole power drill	8 - 7~9
SUS 直柄高鈷鑽	HSE CO. 8% drill for stainless	8 - 10
SUS 沉頭鑽	HSS sink drill for screw	8 - 11
SUS NC定點鑽	HSE NC spot drill	8 - 12
SUS 直柄長鑽	HSS straight shank drill	8 - 13~15
SUS 諾氏鑽	HSS / HSE noss drill	8 - 16
HSS 斜柄鑽	HSS taper drill	8 - 17

CARBIDE DRILL

全鎢鋼直柄短刃鑽	DIN 1897 TiAlN coated	9 - 1
全鎢鋼直柄鑽	DIN 338 TiAlN coated	9 - 2
全鎢鋼定點鑽	NC Spot drill TiAlN coated	9 - 3

HSE HAND REAMER

手鉸刀	Hand reamer	10 - 1~4

HSE TAP

YAMAWA 螺旋絲攻	YAMAWA SP(0X) tap	11 - 1
YAMAWA 長柄螺旋絲攻	YAMAWA SP long shank tap	11 - 2
YAMAWA 先端絲攻	YAMAWA PO(0X) tap	11 - 3
YAMAWA 長柄先端絲攻	YAMAWA PO long shank tap	11 - 4
YAMAWA 英制管牙絲攻	YAMAWA pipe tap	11 - 5
YAMAWA 中心鑽	YAMAWA center drill / long shank	11 - 6
攻牙速度建議值	Tapping speed & revolution	11 - 7
絲攻鑽頭孔徑對照表	Recommended tap drill sizes	11 - 8

TURNING HOLDER

外徑刀	MCLN / MTJN / MVJN / SCLC	12 -	1~2
外徑刀 / 內孔刀	SVJC / MCLN	12 -	3
內孔刀	MSKN / MTFN / MTUN-A / MWLN / SDUC / SCLC	12 -	4~6
內孔刀 / 牙刀	STUP / SIR	12 -	7

VICE

超大開口倍力式虎鉗	HSAC super open	13 -	1
直立型倍力式虎鉗	HAPQ multi-power	13 -	2~3
精密直立型倍力式 / 角固式虎鉗	HPAC / HPAV multi-power / fixed angle	13 -	4~5
傾斜式油壓虎鉗	HW tilting hydraulic	13 -	6
角固虎鉗	HMC fixed angle simple style	13 -	6
萬用三向角度虎鉗 / 精密平夾	HY 3-way tiling / HL slotted angle plate	13 -	7
Z軸設定器	Z axial preset gauge	13 -	8
尋邊器	Edge finder	13 -	9~10
冷卻噴霧器	Mist coolant	13 -	10
落地式倒角機 / 鎖刀座	Chamfering machine / locking device	13 -	11
手提倒角機	Hand chamfering tool	13 -	12
工作定位器	Work stop tool	13 -	13
車床頂針	Live center	13 -	14
虎鉗平行板	Ground parallel	13 -	15
萬向磁行座	Hydraulic / mechanical arm	13 -	16~17
電鑄 / 樹脂 砂輪	Diamond wheel	13 -	18~19
焊接式車刀	carbide tipped turning tool	13 -	20
銑刀刀座	Cuboid outlet / carriage / rack	13 -	21~22
3D設定器	3D tester	13 -	23~25
手提式鑽頭 / 絲攻 / 銑刀 研磨機	Portable drill / tap / end mill grinder	13 -	26~28

MEASUREMENT

外徑測微器	Micrometers	14 - 1
卡尺	JAPAN Calipers	14 - 2
盤針 / 槓桿 量表	Indicators	14 - 3
TESA 卡尺	TESA Calipers	14 - 4

CLAMPING JIG

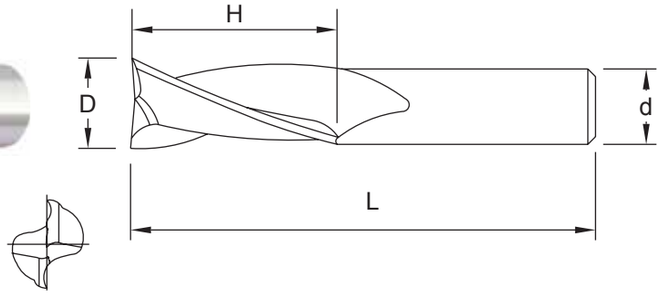
壓板 / 自由虎鉗	Clamp strap / free vise	15 - 1
雙頭牙螺絲 / T型螺帽	Clamp stud / T-slot nut	15 - 2
接管 / 法蘭螺帽 / 三角級枕	Coupling / flange nut / step block	15 - 3
千斤頂 / 萬能夾具組	Screw jack / clamping kit	15 - 4

兩刃立銑刀
Square

50 HRC | 62 HRC | 2 Flutes | -0.02

TJF-2T Series

Dimensions



- NC240 ≦ 50 HRC
- ASC240 ≦ 62 HRC

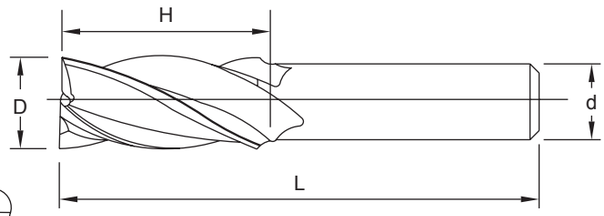
Ordering Code	D	d	H	L	Flutes	KG
TJF-2T-0.3	0.3	4	0.6	53	2	0.012
TJF-2T-0.4	0.4		0.8			0.012
TJF-2T-0.5	0.5		1.5			0.012
TJF-2T-0.6	0.6					0.012
TJF-2T-0.7	0.7		2			0.012
TJF-2T-0.8	0.8					0.012
TJF-2T-0.9	0.9		2.5			0.012
TJF-2T-01.0-4	1		3			0.012
TJF-2T-01.0-6		6				0.02
TJF-2T-01.5-4	1.5	4	4			0.012
TJF-2T-01.5-6		6				0.02
TJF-2T-02.0-4	2	4	5			0.012
TJF-2T-02.0-6		6				0.02
TJF-2T-02.5-4	2.5	4	8			0.012
TJF-2T-02.5-6		6				0.02
TJF-2T-03.0-3	3	3	10			0.012
TJF-2T-03.0-4		4				0.012
TJF-2T-03.0-6		6				0.02
TJF-2T-03.5-6	3.5					0.02
TJF-2T-04.0-4	4	4	11			0.012
TJF-2T-04.0-6		6				0.02
TJF-2T-04.5	4.5					0.02
TJF-2T-05.0	5		13			0.02
TJF-2T-05.5	5.5		16			0.02
TJF-2T-06.0-S	6					0.02
TJF-2T-06.0-M			20	80		0.035
TJF-2T-06.0-L				107		0.05
TJF-2T-06.5	6.5	8	16	64		0.05
TJF-2T-07.0	7		20			0.05
TJF-2T-07.5	7.5		19			0.05
TJF-2T-08.0-S	8		20			0.05
TJF-2T-08.0-M			25	80		0.06
TJF-2T-08.0-L				107		0.08
TJF-2T-08.5	8.5	10	19	64		0.09
TJF-2T-09.0	9		25	80		0.09
TJF-2T-09.5	9.5		22			0.09
TJF-2T-10.0	10		25			0.09
TJF-2T-10.0-L			40	107		0.12
TJF-2T-11.0	11	12	30	80		0.11
TJF-2T-12.0	12					0.12
TJF-2T-12.0-L			40	107		0.15

四刃立銑刀
Square

50 HRC | 62 HRC | 4 Flutes | -0.02

TJF-4T Series

Dimensions



- NC240 ≦ 50 HRC
- ASC240 ≦ 62 HRC

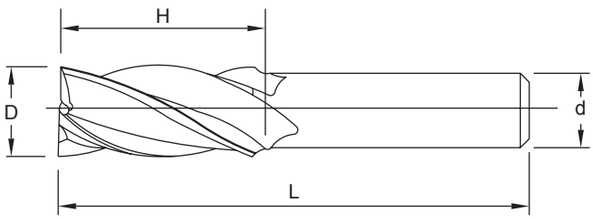
Ordering Code	D	d	H	L	Flutes	KG
TJF-4T-03-3	3	3	10	53	4	0.012
TJF-4T-03-6		6				0.02
TJF-4T-04-4	4	4	11			0.012
TJF-4T-04-6		6				0.02
TJF-4T-05	5		13			0.02
TJF-4T-06-S	6		16			0.02
TJF-4T-06-M			20	80		0.035
TJF-4T-06-L				107		0.05
TJF-4T-08-S	8	8		64		0.05
TJF-4T-08-M			25	80		0.06
TJF-4T-08-L				107		0.08
TJF-4T-10	10	10		80		0.09
TJF-4T-10-L			40	107		0.12
TJF-4T-12	12	12	30	80		0.15
TJF-4T-12-L			40	107		0.12
TJF-4T-16	16	16	32	80		0.23
TJF-4T-16-L			40	107		0.3

長刃立銑刀
Long flutes square

50 HRC | 62 HRC | 4 Flutes | -0.02

TJF-H Series

Dimensions



- NC240 ≦ 50 HRC
- ASC240 ≦ 62 HRC

Ordering Code	D	d	H	L	Flutes	KG
TJF-H-06-064	6	6	25	64	4	0.03
TJF-H-08-080	8	8	35	80		0.06
TJF-H-10-107	10	10	45	107		0.12
TJF-H-12-107	12	12	55	107		0.12

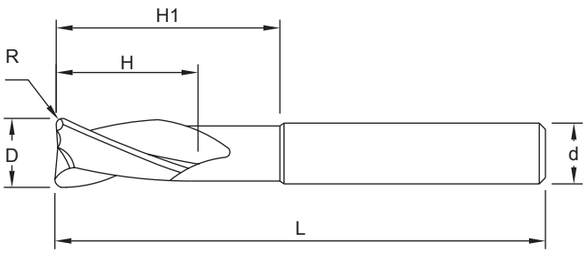
泰精超硬刀具有限公司 TEL:886-2-29967563
TAI JENG MACHINERY TOOL CO., LTD

角R銑刀
Corner Radius end mills

50 HRC | 62 HRC | 4 Flutes | R | -0.02

TJFR1 Series

Dimensions



- NC240 ≦ 50 HRC
- ASC240 ≦ 62 HRC

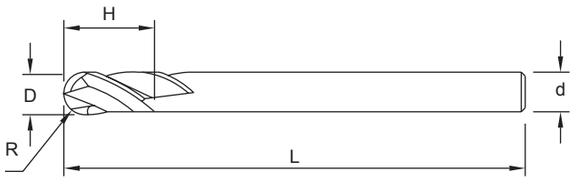
Ordering Code	D	R	H	H1	d	L	Flutes	KG
TJFR1-1.0-0.2R	1	0.2	2	6	4	53	2	0.012
TJFR1-1.5-0.2R	1.5		3	6				0.012
TJFR1-2.0-0.2R	2		4	6			4	0.012
TJFR1-3.0-0.2R	3		6	—				0.012
TJFR1-3.0-0.5R		0.5						0.012
TJFR1-4.0-0.2R	4	0.2	8					0.012
TJFR1-4.0-0.5R		0.5						0.012
TJFR1-6.0-0.2R	6	0.2	12	—	6			0.12
TJFR1-6.0-0.2R-L				24		80		0.035
TJFR1-6.0-0.5R		0.5		—		53		0.02
TJFR1-6.0-0.5R-L				24		80		0.035
TJFR1-6.0-1.0R		1		—		53		0.02
TJFR1-6.0-1.0R-L				24		80		0.035
TJFR1-8.0-0.2R	8	0.2	16	—	8	60		0.05
TJFR1-8.0-0.2R-L				30		107		0.08
TJFR1-8.0-0.5R		0.5		—		60		0.05
TJFR1-8.0-0.5R-L				30		107		0.08
TJFR1-8.0-1.0R		1		—		60		0.05
TJFR1-8.0-1R-L				30		107		0.08
TJFR1-10-0.5R	10	0.5	20		10	80		0.09
TJFR1-10-0.5R-L				35		107		0.13
TJFR1-10-1.0R		1		30		80		0.09
TJFR1-10-1.0R-L				35		107		0.13
TJFR1-12-0.5R	12	0.5	25	32	12	80		0.13
TJFR1-12-0.5R-L				36		107		0.17
TJFR1-12-1.0R		1		32		80		0.13
TJFR1-12-1.0R-L				36		107		0.17

球型銑刀
Ball nose

50 HRC | 62 HRC | 2 Flutes

TJF-R Series

Dimensions



- NC240 ≦ 50 HRC
- ASC240 ≦ 62 HRC

Ordering Code	R	D	d	H	L	Flutes	KG
TJF-R0.2	0.2	0.4	4	0.08	53	2	0.012
TJF-R0.25	0.25	0.5		1			0.012
TJF-R0.3	0.3	0.6		1.2			0.012
TJF-R0.4	0.4	0.8		1.6			0.012
TJF-R0.5	0.5	1		2.5			0.012
TJF-R0.6	0.6	1.2		2.4			0.012
TJF-R0.75	0.75	1.5		4			0.012
TJF-R0.8	0.8	1.6					0.012
TJF-R1-4	1	2					0.012
TJF-R1-6			6				0.012
TJF-R1.25-4	1.25	2.5	4	6			0.012
TJF-R1.25-6			6				0.012
TJF-R1.5-3	1.5	3	3				0.012
TJF-R1.5-4			4				0.012
TJF-R1.5-6			6				0.02
TJF-R1.5-L					80		0.035
TJF-R1.75	1.75	3.5	6	8	53		0.02
TJF-R2-4	2	4	4				0.012
TJF-R2-6			6				0.02
TJF-R2-L					80		0.035
TJF-R2.5-S	2.5	5	6	12	53		0.02
TJF-R2.5-M					80		0.035
TJF-R3-S	3	6	6	12	53		0.02
TJF-R3-M					80		0.035
TJF-R3-L					107		0.05
TJF-R4-S	4	8	8	16	64		0.05
TJF-R4-M					107		0.08
TJF-R5-S	5	10	10	20	80		0.09
TJF-R5-M					107		0.12
TJF-R6-S	6	12	12	24	80		0.12
TJF-R6-M					107		0.17
TJF-R8	8	16	16	32	107		0.3

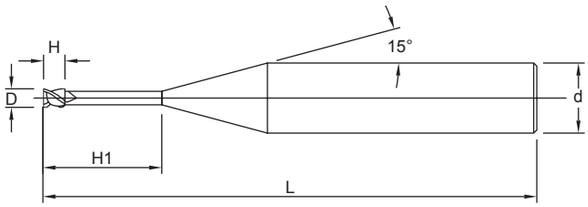
泰精超硬刀具有限公司 TEL:886-2-29967563
TAI JENG MACHINERY TOOL CO., LTD

深溝立銑刀
Square for rib

50 HRC | 62 HRC | 2 Flutes | -0.02

TJF-11 Series

Dimensions



- NC240 ≦ 50 HRC
- ASC240 ≦ 62 HRC

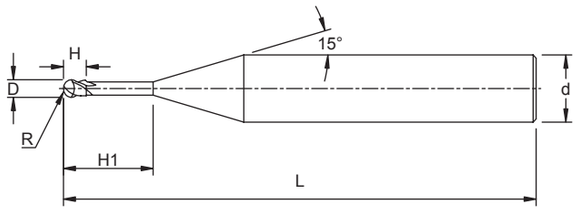
Ordering Code	D	H1	H	d	L	Flutes	KG
TJF11-0.5-02	0.5	2	1	4	53	2	0.01
TJF11-0.5-04		4					
TJF11-0.5-06		6					
TJF11-1.0-06	1	6	1.5				
TJF11-1.0-08		8					
TJF11-1.0-10		10					
TJF11-1.0-12		12					
TJF11-1.5-06	1.5	6	2.5				
TJF11-1.5-08		8					
TJF11-1.5-10		10					
TJF11-1.5-12		12					
TJF11-1.5-14		14					
TJF11-1.5-16		16					
TJF11-1.5-18		18					
TJF11-2.0-06	2	6	3				
TJF11-2.0-08		8					
TJF11-2.0-10		10					
TJF11-2.0-12		12					
TJF11-2.0-14		14					
TJF11-2.0-16		16					
TJF11-2.0-18		18					
TJF11-2.5-08	2.5	8	4				
TJF11-2.5-12		12					
TJF11-2.5-16		16					
TJF11-3.0-08	3	8	4.5				
TJF11-3.0-10		10					
TJF11-3.0-12		12					
TJF11-3.0-16		16					
TJF11-3.0-18		18					

深溝球型銑刀
Ball nose for rib

50 HRC | 62 HRC | 2 Flutes | -0.02

TJF-12 Series

Dimensions



- NC240 ≦ 50 HRC
- ASC240 ≦ 62 HRC

Ordering Code	D	R	H1	H	d	L	Flutes	KG
TJF12-0.5R-08	1	0.5	8	1.5	4	53	2	0.01
TJF12-0.5R-10	1		10					
TJF12-0.5R-12	1		12					
TJF12-0.75R-08	1.5	0.75	8	2.5				
TJF12-0.75R-10	1.5		10					
TJF12-0.75R-12	1.5		12					
TJF12-0.75R-16	1.5		16					
TJF12-1.0R-08	2	1	8	3				
TJF12-1.0R-10	2		10					
TJF12-1.0R-12	2		12					
TJF12-1.0R-16	2		16					
TJF12-1.0R-20	2		20					
TJF12-1.25R-08	2.5	1.25	8	4				
TJF12-1.25R-10	2.5		10					
TJF12-1.25R-12	2.5		12					
TJF12-1.25R-16	2.5		16					
TJF12-1.5R-08	3	1.5	8	4.5				
TJF12-1.5R-10	3		10					
TJF12-1.5R-12	3		12					
TJF12-1.5R-16	3		16					

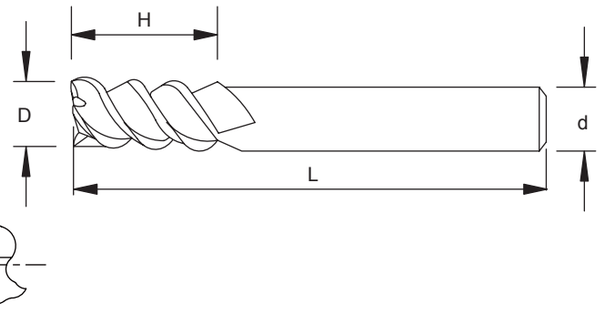
泰精超硬刀具有限公司 TEL:886-2-29967563
TAI JENG MACHINERY TOOL CO., LTD

鋁 用 刀
Square for aluminum

2 Flutes | 3 Flutes | -0.02

TJFA Series

Dimensions



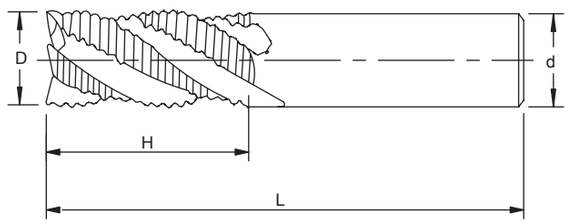
Ordering Code	D	H	d	L	Flutes	KG
TJFA-02	2	5	6	53	2	0.02
TJFA-03	3	8				0.02
TJFA-04-4	4	11	4			0.015
TJFA-04-6			6			0.02
TJFA-05	5	13	6			0.02
TJFA-06-2T	6	16				0.02
TJFA-06-3T					3	0.02
TJFA-08	8	19	8	64		0.05
TJFA-10	10	25	10	80		0.08
TJFA-12	12	30	12			0.13
TJFA-16	16	32	16			0.23

粗 銑 刀
Roughing

50 HRC | 4 Flutes | -0.02

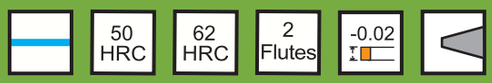
TJFER Series

Dimensions



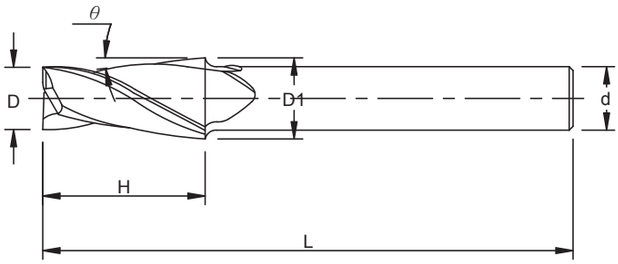
- NC240 ≦ 50 HRC
- ASC240 ≦ 62 HRC

Ordering Code	D	d	H	L	Flutes	KG
TJFER-06	6	6	15	53	4	0.02
TJFER-07	7	8	20	64		0.05
TJFER-08	8					0.05
TJFER-09	9	10	25	80		0.09
TJFER-10	10					0.09
TJFER-11	11	12	30			0.11
TJFER-12	12					0.15



TJFT Series

Dimensions



- NC240 ≦ 50 HRC
- ASC240 ≦ 62 HRC

Odering Code	D	H	θ	D1	d	L	Flutes	KG
TJFT-1.0-0.5°	1	4	0.5	1.07	4	53	2	0.011
TJFT-1.0-1.0°			1	1.14				0.011
TJFT-1.0-1.5°			1.5	1.21				0.011
TJFT-1.0-2.0°			2	1.28				0.011
TJFT-1.0-2.5°			2.5	1.35				0.011
TJFT-1.0-3.0°			3	1.42				0.011
TJFT-1.0-5.0°			5	1.7				0.011
TJFT-1.0-7.0°			7	1.98				0.011
TJFT-1.0-10°			10	2.41				0.011
TJFT-1.5-0.5°	1.5	5	0.5	1.59				0.015
TJFT-1.5-1.0°			1	1.67				0.015
TJFT-1.5-1.5°			1.5	1.76				0.015
TJFT-1.5-2.0°			2	1.85				0.015
TJFT-1.5-2.5°			2.5	1.93				0.015
TJFT-1.5-3.0°			3	2.02				0.015
TJFT-1.5-5.0°			5	2.37				0.015
TJFT-1.5-7.0°			7	2.72				0.015
TJFT-1.5-10°			10	3.26				0.015
TJFT-2.0-0.5°	2	6	0.5	2.1				0.015
TJFT-2.0-1.0°			1	2.21				0.015
TJFT-2.0-1.5°			1.5	2.31				0.015
TJFT-2.0-2.0°			2	2.41				0.015
TJFT-2.0-2.5°			2.5	2.52				0.015
TJFT-2.0-3.0°			3	2.62				0.015
TJFT-2.0-5.0°			5	3.05				0.015
TJFT-2.0-7.0°			7	3.47				0.015
TJFT-2.0-10°			10	4				0.015
TJFT-2.5-0.5°	2.5	8	0.5	2.64				0.015
TJFT-2.5-1.0°			1	2.78				0.015
TJFT-2.5-1.5°			1.5	2.91				0.015
TJFT-2.5-2.0°			2	3.05				0.015
TJFT-2.5-2.5°			2.5	3.2				0.015
TJFT-2.5-3.0°			3	3.33				0.015
TJFT-2.5-5.0°			5	3.9				0.015
TJFT-2.5-7.0°			7	4.46	6			0.02
TJFT-2.5-10°			10	6				0.02

泰精超硬刀具有限公司 TEL:886-2-29967563
TAI JENG MACHINERY TOOL CO., LTD

斜 度 刀
Taper

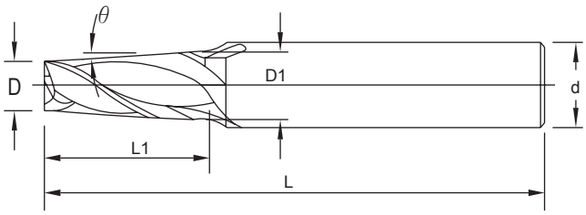
Odering Code	D	H	θ	D1	d	L	Flutes	KG
TJFT-3.0-0.5°	3	10	0.5	3.17	6	53	2	0.02
TJFT-3.0-1.0°			1	3.35				0.02
TJFT-3.0-1.5°			1.5	3.52				0.02
TJFT-3.0-2.0°			2	3.69				0.02
TJFT-3.0-2.5°			2.5	3.87				0.02
TJFT-3.0-3.0°			3	4.05				0.02
TJFT-3.0-5.0°			5	4.75				0.02
TJFT-3.0-7.0°		12.4	7	6				0.02
TJFT-3.0-10°		10	10	6.53	8	64		0.045
TJFT-4.0-0.5°	4	15	0.5	4.26	6	53		0.02
TJFT-4.0-1.0°			1	4.52				0.02
TJFT-4.0-1.5°			1.5	4.79				0.02
TJFT-4.0-2.0°			2	5.04				0.02
TJFT-4.0-2.5°			2.5	5.31				0.02
TJFT-4.0-3.0°			3	5.57				0.02
TJFT-4.0-5.0°			5	6.62	8	64		0.044
TJFT-4.0-7.0°		16.3	7	8				0.046
TJFT-4.0-10°		17	10	10	10	80		0.086
TJFT-5.0-0.5°	5	20	0.5	5.34	6	64		0.02
TJFT-5.0-1.0°			1	5.7				0.03
TJFT-5.0-1.5°			1.5	6.04				0.03
TJFT-5.0-2.0°			2	6.39	8			0.043
TJFT-5.0-2.5°			2.5	6.74				0.043
TJFT-5.0-3.0°			3	7.1				0.044
TJFT-5.0-5.0°			5	8.5	10	80		0.083
TJFT-5.0-7.0°			7	9.91				0.09
TJFT-5.0-10°			10	12.05	12			0.11
TJFT-6.0-0.5°	6	20	0.5	6.35	8	64		0.04
TJFT-6.0-1.0°			1	6.7				0.045
TJFT-6.0-1.5°			1.5	7.05				0.046
TJFT-6.0-2.0°			2	7.4				0.046
TJFT-6.0-2.5°			2.5	7.75				0.046
TJFT-6.0-3.0°			3	8				0.047
TJFT-6.0-5.0°			5	10	10	80		0.06
TJFT-6.0-7.0°			7	10.91	12			0.12
TJFT-6.0-10°			10	13.05				0.12
TJFT-8.0-0.5°	8	25	0.5	8.44	10			0.07
TJFT-8.0-1.0°			1	8.87				0.08
TJFT-8.0-1.5°			1.5	9.31				0.08
TJFT-8.0-2.0°			2	9.74				0.09
TJFT-8.0-2.5°			2.5	10.18				0.09
TJFT-8.0-3.0°			3	10.62	12			0.11
TJFT-8.0-5.0°			5	12.37		90		0.15
TJFT-8.0-7.0°			7	14.14				0.16
TJFT-10-0.5°	10	35	0.5	10.61	12	107		0.13
TJFT-10-1.0°			1	11.22				0.13
TJFT-10-1.5°			1.5	11.83				0.13
TJFT-10-2.0°			2	12.44				0.13
TJFT-10-2.5°			2.5	13.06				0.14
TJFT-10-3.0°			3	13.67				0.14
TJFT-10-5.0°			5	16.12	16			0.27

長刃斜度刀
Long flutes taper

50 HRC | 62 HRC | 2 Flutes | -0.02

TJFT-L Series

Dimensions



- NC240 ≦ 50 HRC
- ASC240 ≦ 62 HRC

Odering Code	D	H	θ	D1	d	L	Flutes	KG
TJFT-L-1.0-0.5°	1	10	0.5	1.175	4	53	2	0.011
TJFT-L-1.0-1.0°			1	1.35				0.011
TJFT-L-1.0-1.5°			1.5	1.52				0.011
TJFT-L-1.0-2.0°			2	1.7				0.011
TJFT-L-1.0-2.5°			2.5	1.87				0.011
TJFT-L-1.0-3.0°			3	2.05				0.011
TJFT-L-1.5-0.5°			5	1.675				0.011
TJFT-L-1.5-1.0°			7	1.85				0.011
TJFT-L-1.5-1.5°			10	2.02				0.011
TJFT-L-1.5-2.0°	1.5		0.5	2.2				0.015
TJFT-L-1.5-2.5°			1	2.37				0.015
TJFT-L-1.5-3.0°			1.5	2.55				0.015
TJFT-L-2.0-0.5°		13	2	2.23				0.015
TJFT-L-2.0-1.0°			2.5	2.45				0.015
TJFT-L-2.0-1.5°			3	2.68				0.015
TJFT-L-2.0-2.0°			5	2.91				0.015
TJFT-L-2.0-2.5°			7	3.13				0.015
TJFT-L-2.0-3.0°			10	3.36				0.015
TJFT-L-3.0-0.5°	2	20	0.5	3.35	6	64		0.015
TJFT-L-3.0-1.0°			1	3.7				0.015
TJFT-L-3.0-1.5°			1.5	4.05				0.015
TJFT-L-3.0-2.0°			2	4.4				0.015
TJFT-L-3.0-2.5°			2.5	4.75				0.015
TJFT-L-3.0-3.0°			3	5.1				0.015

切削條件表 Cutting Conditions

(Vc) Cutting speed

$$Vc = \frac{\pi \times D \times n}{1000} \text{ (m/min)}$$

(n) Revolution

$$n = \frac{1000 \times Vc}{\pi \times D} \text{ (min}^{-1}\text{)}$$

Vc : m/min	切削速度 Cutting speed
D : mm	刀具外徑 Cutter diameter
n : min^{-1}	主軸轉速 Revolution
π : 3.14	圓周率 Circumference raito

(Vf) Feed rate

$$Vf = fz \times Z \times n \text{ (m/min)}$$

(fz) Feed rate per tooth

$$fz = \frac{Vf}{Z \times n} \text{ (mm/tooth)}$$

Vf : mm/min	進給 Feed rate
Z :	刀刃數 Number of flutes
n : min^{-1}	轉速 Revolution
fz : mm/tooth	進給(單刃) Feed per tooth

(Tc) Cutting time

$$Tc = \frac{L}{Vf} \text{ (min)}$$

Tc : min	加工時間 Cutting time
Vf : mm/min	進給(每分鐘) Feed rate per minute of table
L : mm	總加工長度 (包含刀具外徑) Overall table feed length(workpiece length + grinder dia.)

(Q) Chip removal volume

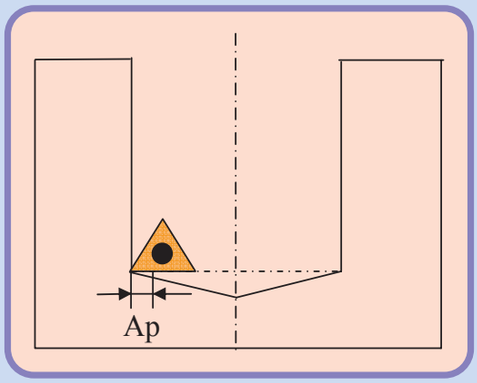
$$Q\ (cm^3/min) = \frac{ap \times ae \times Vf}{1000} \ (cm^3/min)$$

Q : cm^3 /min	排屑量 Chip removal volume
ae : mm	切削寬度 Cutting width
ap : mm	切削深度 Cutting depth
Vf : mm/min	進給(每分鐘) Feed rate per minte of table

TBR

■ Recommended cutting conditions

Work Material		Vc(mm/min)
P	S40C 、S50C	60 - 120
	SCM、SKD	40 - 100
M	SUS	40 - 80
K	FC、FCD	120 - 150
N	Aluminum	300 - 600



Dia.	Prime Finishing		Cut Max	
	Ap(mm / φ)	fr	Ap(mm / φ)	fr
20 - 26	0.2 - 0.4	0.05 - 0.07	1.5	0.1
25 - 33	0.2 - 0.4	0.05 - 0.07	2	0.1
32 - 42	0.2 - 0.4	0.05 - 0.08	2	0.2
41 - 54	0.2 - 0.5	0.05 - 0.08	4	0.2
53 - 70	0.2 - 0.5	0.05 - 0.08	4	0.2
68 -100	0.2 - 0.8	0.05 - 0.1	4	0.25

<Note>

- 請根據實際加工條件、機台剛性，調整轉速和進給。
- Cutting speed / feed need to be modified according to to stability of workpieces and machine.

(Vc) Boring speed

$$Vc = \frac{\pi \times D \times n}{1000} \quad (m/min)$$

(n) Revolution

$$n = \frac{Vc \times 1000}{\pi \times D} \quad (min^{-1})$$

Vc : m/min 切削速度 Cutting speed
D : mm 刀具外徑 Cutter diameter
n : min^{-1} 轉速 Revolution
π : 3.14 圓周率 Circumference raito

(Vf) Feed rate

Vf = fr × n (m/min)

Vf : mm/min 進給 Feed rate
n : min^{-1} 轉速 Revolution
f r : mm/rev 每轉 進給Feed per revolution

(Tc) Boring time

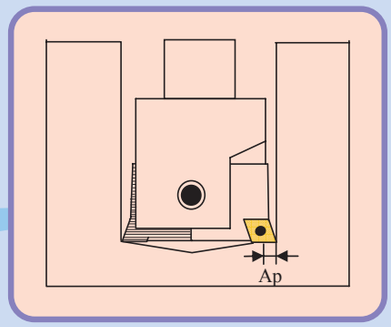
$$Tc = \frac{Id \times i}{fr \times n} \quad (m/min)$$

Tc : min 搪孔時間 Boring time
f r : mm/rev 每轉進給 Feed per revolution
n : min^{-1} 轉速 Revolution
Id : 加工深度 Hole depth
i : 孔數 Number of holes

TRBH

■ Recommended cutting conditions

Work Material		Vc(mm/min)
P	S40C 、S50C	60 - 150
	SCM、SKD	80 - 100
M	SUS	40 - 80
K	FC、FCD	60 - 150
N	Aluminum	150 - 300



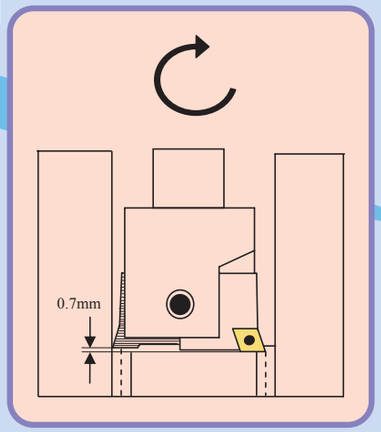
Dia.	Best choice		Cut Max	
	Ap(mm/ φ)	fr(mm/rev)	Ap(mm / φ)	fr(mm/rev)
25 - 33	1 - 3	0.1 - 0.2	0.5 - 4	0.1 - 0.4
32 - 42	1 - 3	0.1 - 0.2	0.5 - 4	0.1 - 0.4
41 - 54	1 - 4	0.2 - 0.3	1 - 7	0.1 - 0.5
53 - 70	1 - 4	0.2 - 0.3	1 - 7	0.1 - 0.5
68 - 91	1 - 5	0.3 - 0.4	1 - 9	0.1 - 0.5
90 -122	1 - 5	0.3 - 0.4	1 - 9	0.1 - 0.5

【STEP BORING】

爲了能搪較大的孔徑和易於排屑，可將任一刃向上調整一格(0.7mm)做斷差加工。

For cutting bigger diameter and good chip removal these reason, TBRH-C、TBRH-S could rasie one scale(0.7mm) to cut different diameter.

Speed and feed rate need to be reduced 50% to achieve the result.



<Note>

- 請根據實際加工條件、機台剛性，調整轉速和進給。
- Cutting speed / feed need to be modified according to stability of workpieces and machine.

(Vc) Boring speed

$$Vc = \frac{\pi \times D \times n}{1000} \quad (m/min)$$

(n) Revolution

$$n = \frac{Vc \times 1000}{\pi \times D} \quad (min^{-1})$$

Vc : m/min 切削速度 Cutting speed
D : mm 刀具外徑 Cutter diameter
n : min^{-1} 轉速 Revolution
π : 3.14 圓周率 Circumference raito

(Vf) Feed rate

Vf = fr × n (m/min)

Vf : mm/min 進給 Feed rate
n : min^{-1} 轉速 Revolution
f r : mm/rev 每轉進給 Feed per revolution

(Tc) Boring time

$$Tc = \frac{Id \times i}{fr \times n} \quad (m/min)$$

Tc : min 搪孔時間 Boring time
f r : mm/rev 每轉進給 Feed per revolution
n : min^{-1} 轉速 Revolution
Id : 加工深度 Hole depth
i : 孔數 Number of holes

HRS

■ Recommended cutting conditions

Work Material		16Ø		20Ø		25Ø		30Ø	
		S	F	S	F	S	F	S	F
P	S40C 、S50C	3600	2150	2850	1700	2300	1350	1900	1150
	SCM、SKD	3200	1250	2550	1000	2000	820	1700	700
M	SUS	1800	720	1450	600	1150	460	950	380

Work Material		Vc (mm/in)	16Ø		20Ø		25Ø		30Ø	
			ap (mm)	fz	ap (mm)	fz	ap (mm)	fz	ap (mm)	fz
P	S40C 、S50C	140 - 200	≦0.3	≦0.3	≦0.6	≦0.3	≦1.0	≦0.3	≦1.2	≦0.3
	SCM、SKD	120 - 180	≦0.1	≦0.2	≦0.4	≦0.2	≦0.8	≦0.2	≦1.0	≦0.2
M	SUS	80 - 100	≦0.1	≦0.2	≦0.4	≦0.2	≦0.8	≦0.2	≦1.0	≦0.2

<Note>

以上建議值是根據標準長度夾持而進行公式運算，如有以下的情形請降低切削深度及加工條件。

These cutting conditions are a guide to the standard shank and arbor type, please reduce the depth of cut and cutting conditions in following cases.

- 使用加長夾具 Using long shank type
- 使用標準夾具但夾持長的刀具 Using overhang with the standard or arbor type
- 使用剛性、穩定性低的機台 Using low rigidity machine
- 加工件固定效果較差 Poor clamping rigidity

TAPE

■ Recommended cutting conditions

Work Material		16Ø		20Ø	
		S	F	S	F
P	S40C 、S50C	4000	1200	3000	1000
	SCM、SKD	3600	700	2850	600
M	SUS	2800	550	2200	450
K	FC、FCD	4000	1200	3000	1000
N	Aluminum	4800	1900	3800	1550

Work Material		Vc (mm/min)	16Ø		20Ø	
			ap (mm)	fz (mm/tooth)	ap (mm)	fz (mm/tooth)
P	S40C 、S50C	180 - 220	≦0.5	≦0.15	≦0.6	≦0.15
	SCM、SKD	160 - 200	≦0.3	≦0.1	≦0.4	≦0.1
M	SUS	140 - 180	≦0.3	≦0.1	≦0.4	≦0.1
K	FC、FCD	180 - 220	≦0.5	≦0.15	≦0.6	≦0.15
N	Aluminum	200 - 260	≦0.8	≦0.2	≦1.0	≦0.2

<Note>

以上建議值是根據標準長度夾持而進行公式運算，如有以下的情形請降低切削深度及加工條件。

These cutting conditions are a guide to the standard shank and arbor type, please reduce the depth of cut and cutting conditions in following cases.

- 使用加長夾具 Using long shank type
- 使用標準夾具但夾持長的刀具 Using overhang with the standard or arbor type
- 使用剛性、穩定性低的機台 Using low rigidity machine
- 加工件固定效果較差 Poor clamping rigidity

TAPL

■ Recommended cutting conditions

Work Material		10Ø		12Ø	
		S	F	S	F
P	S40C 、S50C	4500	1350	3700	1100
	SCM、SKD	3800	750	3200	650
M	SUS	3000	650	2600	500

16Ø		20Ø		25Ø	
S	F	S	F	S	F
2750	850	2200	650	1800	1050
2400	450	1900	400	1500	600
1950	400	1600	320	1250	500

Work Material		Vc (mm/min)	10Ø		12Ø	
			ap (mm)	fz	ap (mm)	fz
P	S40C、S50C	120 - 160	≦0.5	≦0.15	≦0.6	≦0.15
	SCM、SKD	100 - 140	≦0.2	≦0.1	≦0.3	≦0.1
M	SUS	80 - 120	≦0.2	≦0.1	≦0.3	≦0.1

16Ø		20Ø		25Ø	
ap (mm)	fz	ap (mm)	fz	ap (mm)	fz
≦1.0	≦0.15	≦1.2	≦0.15	≦1.5	≦0.15
≦0.5	≦0.1	≦0.6	≦0.1	≦0.8	≦0.1
≦0.5	≦0.1	≦0.6	≦0.1	≦0.8	≦0.1

<Note>

以上建議值是根據標準長度夾持而進行公式運算，如有以下的情形請降低切削深度及加工條件。

These cutting conditions are a guide to the standard shank and arbor type, please reduce the depth of cut and cutting conditions in following cases.

- 使用加長夾具 Using long shank type
- 使用標準夾具但夾持長的刀具 Using overhang with the standard or arbor type
- 使用剛性、穩定性低的機台 Using low rigidity machine
- 加工件固定效果較差 Poor clamping rigidity

THSR

■ Recommended cutting conditions

Work Material		R 2.5		R 3.0		R 3.5		R 4.0		R 5.0	
		S	F	S	F	S	F	S	F	S	F
P	S40C 、S50C	5000	3000	4200	2500	3000	2500	2500	2200	2500	1500
P	SCM、SKD	4500	1700	3700	1450	2700	1650	2200	1300	2200	900
M	SUS	3800	1500	3100	1200	2350	1400	1900	1100	1900	750

Work Material		Vc (m/min)	R 2.5		R 3.0		R 3.5		R 4.0		R 5.0	
			ap (mm)	fz	ap (mm)	fz	ap (mm)	fz	ap (mm)	fz	ap (mm)	fz
P	S40C 、S50C	100 - 180	≦0.3	≦0.3	≦0.5	≦0.3	≦0.6	≦0.3	≦1.0	≦0.3	≦1.2	≦0.3
P	SCM、SKD	80 - 150	≦0.2	≦0.2	≦0.3	≦0.2	≦0.4	≦0.2	≦0.8	≦0.2	≦1.0	≦0.2
M	SUS	80 - 120	≦0.2	≦0.2	≦0.3	≦0.2	≦0.4	≦0.2	≦0.8	≦0.2	≦1.0	≦0.2

<Note>

以上建議值是根據標準長度夾持而進行公式運算，如有以下的情形請降低切削深度及加工條件。

These cutting conditions are a guide to the standard shank and arbor type, please reduce the depth of cut and cutting conditions in following cases.

- 使用加長夾具 Using long shank type
- 使用標準夾具但夾持長的刀具 Using overhang with the standard or arbor type
- 使用剛性、穩定性低的機台 Using low rigidity machine
- 加工件固定效果較差 Poor clamping rigidity

TMP

■ Recommended cutting conditions

Work Material		12Ø		16Ø	
		S	F	S	F
P	S40C 、S50C	4200	1300	3200	1000
	SCM、SKD	3700	750	2800	550
M	SUS	3200	650	2400	500

20Ø		25Ø		30Ø	
S	F	S	F	S	F
2550	750	2050	600	1700	500
2200	450	1800	350	1500	300
1900	400	1550	305	1300	250

Work Material		Vc (mm/min)	12Ø		16Ø	
			ap (mm)	fz	ap (mm)	fz
P	S40C 、S50C	140 - 200	≦0.1	≦0.15	≦0.2	≦0.15
	SCM、SKD	120 - 180	≦0.05	≦0.1	≦0.1	≦0.1
M	SUS	100 - 160	≦0.05	≦0.1	≦0.1	≦0.1

20Ø		25Ø		30Ø	
ap (mm)	fz	ap (mm)	fz	ap (mm)	fz
≦0.3	≦0.15	≦0.4	≦0.15	≦0.5	≦0.15
≦0.2	≦0.1	≦0.3	≦0.1	≦0.3	≦0.1
≦0.2	≦0.1	≦0.3	≦0.1	≦0.3	≦0.1

<Note>

以上建議值是根據標準長度夾持而進行公式運算，如有以下的情形請降低切削深度及加工條件。

These cutting conditions are a guide to the standard shank and arbor type, please reduce the depth of cut and cutting conditions in following cases.

- 使用加長夾具 Using long shank type
- 使用標準夾具但夾持長的刀具 Using overhang with the standard or arbor type
- 使用剛性、穩定性低的機台 Using low rigidity machine
- 加工件固定效果較差 Poor clamping rigidity

TAP300R

■ Recommended cutting conditions

Work Material		Cutting Modes	Vc (mm/min)	fz (mm/tooth)	ae	ap
P	S40C、S50C	Slotting	60 - 90	≦0.1	1D	≦7
		Side milling	150 - 200	≦0.15	≦0.4D	≦4
	SCM、SKD	Slotting	50 - 120	≦0.08	1D	≦7
		Side milling	120 - 180	≦0.15	≦0.4D	≦3
M	SUS	Slotting	40 - 70	≦0.1	1D	≦7
		Side milling	120 - 160	≦0.15	≦0.4D	≦3
K	FC、FCD	Slotting	60 - 90	≦0.15	1D	≦7
		Side milling	150 - 200	≦0.2	≦0.4D	≦4
N	Aluminum	Slotting	100 - 250	≦0.1	1D	≦7
		Side milling	200 -500	≦0.3	≦0.4D	≦4

Work Material		Cutting Modes	$10^{Ø}$		$16^{Ø}$		$20^{Ø}$	
			S	F	S	F	S	F
P	S40C、S50C	Slotting	1900	200	1200	240	950	200
		Side milling	4500	720	2950	900	2400	720
	SCM、SKD	Slotting	1500	130	1000	160	800	130
		Side milling	3600	380	2400	500	1900	380
M	SUS	Slotting	1300	130	800	160	650	130
		Side milling	3200	550	2200	700	1900	550
K	FC、FCD	Slotting	1900	280	1150	360	950	300
		Side milling	4300	450	2600	550	2200	480
N	Aluminum	Slotting	3000	480	1950	600	1550	480
		Side milling	6000	1800	3800	2200	3000	1800

<Note>

以上建議值是根據標準長度夾持而進行公式運算，如有以下的情形請降低切削深度及加工條件。

These cutting conditions are a guide to the standard shank and arbor type, please reduce the depth of cut and cutting conditions in following cases.

- 使用加長夾具 Using long shank type
- 使用標準夾具但夾持長的刀具 Using overhang with the standard or arbor type
- 使用剛性、穩定性低的機台 Using low rigidity machine
- 加工件固定效果較差 Poor clamping rigidity

TAP400R & TAP500R

■ Recommended cutting conditions

Work Material		Cutting Modes	Vc (mm/min)	fz (mm/tooth)	ae	ap
P	S40C 、S50C	Slotting	60 - 90	≦0.1	1D	≦12
		Side milling	150 - 200	≦0.15	≦0.5D	≦6
	SCM、SKD	Slotting	50 - 120	≦0.08	1D	≦12
		Side milling	120 - 180	≦0.15	≦0.5D	≦4
M	SUS	Slotting	40 - 70	≦0.1	1D	≦12
		Side milling	120 - 160	≦0.15	≦0.5D	≦4
K	FC、FCD	Slotting	60 - 90	≦0.15	1D	≦12
		Side milling	150 - 200	≦0.2	≦0.5D	≦6
N	Aluminum	Slotting	100 - 250	≦0.1	1D	≦12
		Side milling	200 -500	≦0.3	≦0.5D	≦6

Work Material		Cutting Modes	25Ø		32Ø		40Ø		50Ø		100Ø	
			S	F	S	F	S	F	S	F	S	F
P	S40C、S50C	Slotting	760	150	600	180	480	140	400	150	200	130
		Side milling	1900	580	1450	660	1150	500	950	560	480	500
	SCM、SKD	Slotting	630	100	500	120	400	95	300	100	160	90
		Side milling	1500	460	1150	500	950	420	760	460	380	400
M	SUS	Slotting	500	100	400	100	300	95	250	100	130	90
		Side milling	1500	460	1150	500	950	420	760	460	380	400
K	FC、FCD	Slotting	760	220	600	250	480	220	380	220	190	200
		Side milling	1900	760	1450	900	1150	700	950	760	480	650
N	Aluminum	Slotting	1250	250	1000	300	800	240	630	250	320	220
		Side milling	2500	1500	1950	1800	1600	1400	1250	1500	630	1200

<Note>

以上建議值是根據標準長度夾持而進行公式運算，如有以下的情形請降低切削深度及加工條件。

These cutting conditions are a guide to the standard shank and arbor type, please reduce the depth of cut and cutting conditions in following cases.

- 使用加長夾具 Using long shank type
- 使用標準夾具但夾持長的刀具 Using overhang with the standard or arbor type
- 使用剛性、穩定性低的機台 Using low rigidity machine
- 加工件固定效果較差 Poor clamping rigidity

TJU

■ Recommended cutting conditions

Work Material		Vc (mm/min)	Cutting modes	16Ø S	16Ø F	20Ø S	20Ø F	25Ø S	25Ø F	32Ø S	32Ø F
p	SCM、SKD	65 - 120	Side milling	2980	420	2400	384	1910	382	1500	450
			Helical		1200		1150		1150		1350
			Drilling	1280	100	1280	100	1020	100	1200	120
M	SUS	60 - 110	Side milling	2000	280	1600	256	1270	254	1050	320
			Helical		800		770		770		960
			Drilling	1120	90	1120	90	890	90	1050	100
K	FC、FCD	40 - 80	Side milling	3000	600	2400	480	1910	380	1500	450
			Helical		1250		1000		120		1320
			Drilling	700	60	720	60	570	60	680	70

<Note>

以上建議值是根據標準長度夾持而進行公式運算，如有以下的情形請降低切削深度及加工條件。

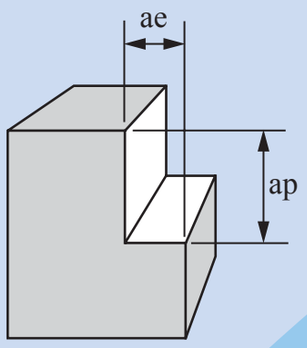
These cutting conditions are a guide to the standard shank and arbor type, please reduce the depth of cut and cutting conditions in following cases.

- 使用加長夾具 Using long shank type
- 使用標準夾具但夾持長的刀具 Using overhang with the standard or arbor type
- 使用剛性、穩定性低的機台 Using low rigidity machine
- 加工件固定效果較差 Poor clamping rigidity

TSJ

■ Recommended cutting conditions

Work Material		Vc (mm/min)	fz (mm/tooth	Spindle Of Machine	20Ø		25Ø		32Ø		35Ø		40Ø	
					S	F	S	F	S	F	S	F	S	F
P	S40C、S50C	120 - 200	0.10 - 0.25	BT40	3600	900	2400	700	2000	600	1800	550	1600	450
				BT50	2600	1000	2000	800	1800	750	1600	650	1400	550
	SCM、SKD	50 - 100	0.05 - 0.20	BT40	1200	250	900	200	850	170	750	150	650	130
				BT50	1000	300	800	250	700	210	650	190	550	150
M	SUS	120 - 220	0.08 - 0.25	BT40	3200	1000	2600	700	2200	650	2000	600	1700	500
				BT50	3000	1200	2200	900	2000	800	1800	700	1550	650
K	FC、FCD	120 - 180	0.08 - 0.25	BT40	2600	800	2000	650	1800	530	1600	500	1400	400
				BT50	2200	1000	1800	800	1600	650	1400	600	1200	500



<Note>

以上建議值是根據標準長度夾持而進行公式運算，如有以下的情形請降低切削深度及加工條件。

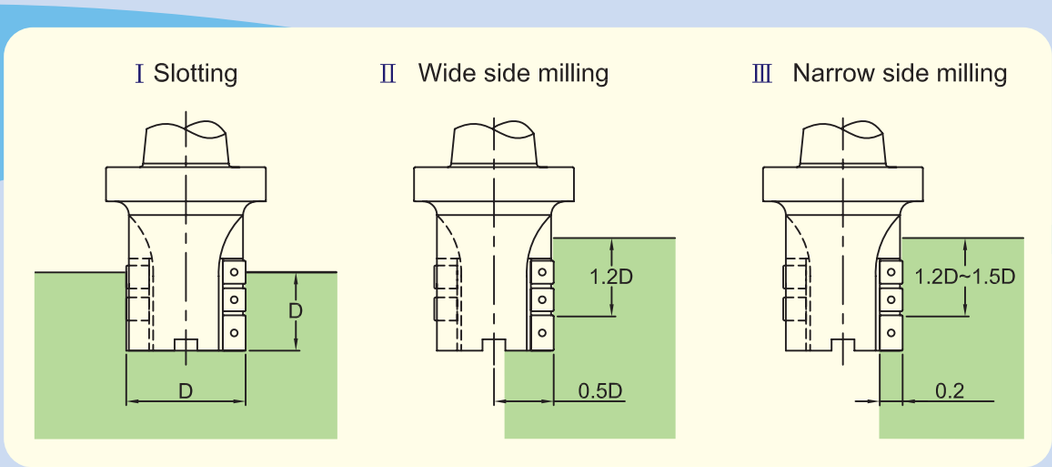
These cutting conditions are a guide to the standard shank and arbor type, please reduce the depth of cut and cutting conditions in following cases.

- 使用加長夾具 Using long shank type
- 使用標準夾具但夾持長的刀具 Using overhang with the standard or arbor type
- 使用剛性、穩定性低的機台 Using low rigidity machine
- 加工件固定效果較差 Poor clamping rigidity

T2038

■ Recommended cutting conditions

Work Material		Vc (mm/min)	Cutting Modes	25Ø		32Ø		40Ø		50Ø		80Ø	
				S	F	S	F	S	F	S	F	S	F
p	S40C、S50C	60 - 150	Ⅰ	750	200	700	200	650	250	570	270	450	260
			Ⅱ	950	250	900	250	800	350	760	400	600	370
			Ⅲ	950	300	900	300	800	500	760	570	600	550
	SCM、SKD	55 - 120	Ⅰ	640	160	600	160	550	200	510	200	400	200
			Ⅱ	850	200	800	200	680	250	570	255	450	240
			Ⅲ	850	250	800	250	680	300	570	360	450	340
M	SUS	50 - 100	Ⅰ	640	160	600	160	550	200	510	200	400	200
			Ⅱ	850	200	800	200	680	250	570	255	450	240
			Ⅲ	850	250	800	250	680	300	570	360	450	340
K	FC、FCD	55 - 120	Ⅰ	1000	300	1000	300	800	300	640	300	510	300
			Ⅱ	1400	400	1400	400	1000	400	760	400	600	360
			Ⅲ	1400	570	1400	570	1000	570	760	570	700	550



<Note>

以上建議值是根據標準長度夾持而進行公式運算，如有以下的情形請降低切削深度及加工條件。

These cutting conditions are a guide to the standard shank and arbor type, please reduce the depth of cut and cutting conditions in following cases.

- 使用加長夾具 Using long shank type
- 使用標準夾具但夾持長的刀具 Using overhang with the standard or arbor type
- 使用剛性、穩定性低的機台 Using low rigidity machine
- 加工件固定效果較差 Poor clamping rigidity

TEX

■ Recommended cutting conditions

Work Material		Insert Grades	Vc (mm/min)	16Ø		20Ø		25Ø		32Ø	
				S	F	S	F	S	F	S	F
P	S40C、S50C	CH550	180	3580	180	2860	290	2290	370	1910	370
		HC844	140	2780	220	2230	360	1780	360	1490	360
	SCM、SKD	CH550	50	990	80	800	130	640	130	530	130
		HC844	80	1590	130	1270	200	1020	200	850	200
M	SUS	HC844	125	2490	200	1990	320	1590	320	1330	320
K	FC、FCD	WH10	80	1590	160	1270	250	1020	250	850	250
N	Aluminum	WH10	350	6960	1040	5570	1670	4460	1340	3710	1110

TJR

■ Recommended cutting conditions

Work Material		Vc (mm/min)	fz (mm/tooth)	ap (mm)	55Ø		65Ø		96Ø	
					S	F	S	F	S	F
P	SCM、SKD	80 - 120	≦0.3	4	690	620	580	520	390	590
M	SUS	80 - 120	≦0.3	3	580	520	480	440	330	490
K	FC、FCD	120 - 180	≦0.4	4.5	750	900	630	760	430	800

<Note>

以上建議值是根據標準長度夾持而進行公式運算，如有以下的情形請降低切削深度及加工條件。

These cutting conditions are a guide to the standard shank and arbor type, please reduce the depth of cut and cutting conditions in following cases.

- 使用加長夾具 Using long shank type
- 使用標準夾具但夾持長的刀具 Using overhang with the standard or arbor type
- 使用剛性、穩定性低的機台 Using low rigidity machine
- 加工件固定效果較差 Poor clamping rigidity

TSR

■ Recommended cutting conditions

Work Material		12Ø		16Ø		20Ø		25Ø	
		S	F	S	F	S	F	S	F
P	S40C、S50C	3150	950	2400	700	1900	600	1500	500
	SCM、SKD	2650	530	2000	400	1600	300	1250	250
M	SUS	2650	530	2000	400	1600	300	1250	250
N	Aluminum	3700	1100	2750	830	2200	650	1750	530

Work Material		Vc (mm/min)	12Ø		16Ø		20Ø		25Ø	
			ap (mm)	fz	ap (mm)	fz	ap (mm)	fz	ap (mm)	fz
P	S40C、S50C	100 - 140	≦0.3	≦0.15	≦0.4	≦0.15	≦0.5	≦0.15	≦0.8	≦0.15
	SCM、SKD	80 - 120	≦0.1	≦0.1	≦0.2	≦0.1	≦0.2	≦0.1	≦0.4	≦0.1
M	SUS	80 - 120	≦0.1	≦0.1	≦0.2	≦0.1	≦0.2	≦0.1	≦0.4	≦0.1
N	Aluminum	120 - 160	≦0.3	≦0.15	≦0.4	≦0.15	≦0.5	≦0.15	≦0.8	≦0.15

EMR

< profile milling, heavy duty not recommended >

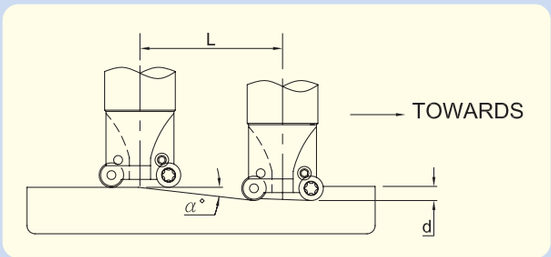
■ Recommended cutting conditions

Work Material		Vc (mm/min)	25Ø (R5)		32Ø (R5)		40Ø (R6)		50Ø (R6)	
			ap (mm)	fz	ap (mm)	fz	ap (mm)	fz	ap (mm)	fz
P	S40C 、S50C	60 - 100	≦2.0	≦0.3	≦2.0	≦0.3	≦2.0	≦0.3	≦2.0	≦0.3
	SCM、SKD	50 - 100	≦1.5	≦0.2	≦1.5	≦0.2	≦1.5	≦0.2	≦1.5	≦0.2
M	SUS	60 - 90	≦1.5	≦0.2	≦1.5	≦0.2	≦1.5	≦0.2	≦1.5	≦0.2

Dia.	tan α	d = 2mm	d = 4mm	d = 5mm	d = 6mm
25Ø (R5)	0.257	7	15	19	—
32Ø (R5)	0.147	13	27	33	—
40Ø (R6)	0.181	11	22	27	33
50Ø (R6)	0.125	16	32	40	48

Length of ramping :

$$L = \frac{d\ (mm)}{\tan\ \alpha^{\circ}}$$



TRS & EMRW

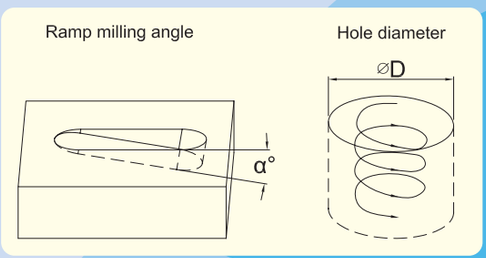
■ Recommended cutting conditions

Ramping, Helical milling

Dia.	20Ø (R4)	25Ø (R5)	32Ø (R5)	40Ø (R6)	50Ø (R6)
α°	＜ 3	＜ 3	＜ 3	＜ 3	＜ 3
Helical dia.	28 - 38	34 - 48	48 - 62	60 - 78	75 - 78

Side milling

Work Material		Vc (mm/min)	fz (mm/toot)	Spindle Of	20Ø (R4)		25Ø (R5)		32Ø (R5)		40Ø (R6)		50Ø (R6)	
					ap (mm)	fz	ap (mm)	fz	ap (mm)	fz	ap (mm)	fz	ap (mm)	fz
P	S40C、S50C	120 - 230	0.3 - 0.8	BT40	3000	2500	2550	2000	2000	2400	1600	1900	1300	2000
				BT50	3000	2500	2550	2000	2000	2400	1600	2800	1300	3000
	SCM、SKD	60 - 150	0.2 - 0.6	BT40	1600	500	1300	400	1000	450	800	350	650	400
				BT50	1600	650	1300	500	1000	600	800	500	650	500
M	SUS	100 - 200	0.2 - 0.6	BT40	2350	960	1900	750	1500	900	1200	700	950	750
				BT50	2350	1400	1900	1150	1500	1300	1200	1000	950	1050
K	FC、FCD	100 -220	0.3 - 1.0	BT40	2800	2250	2250	1800	1750	2100	1400	2100	1150	2200
				BT50	2800	2850	2250	2200	1750	2600	1400	3300	1150	3400



Length of ramping : $Q\ (cm^3/min) = \frac{ap \times ae \times Vf}{1000}$

<Note>

以上建議值是根據標準長度夾持而進行公式運算，如有以下的情形請降低切削深度及加工條件。

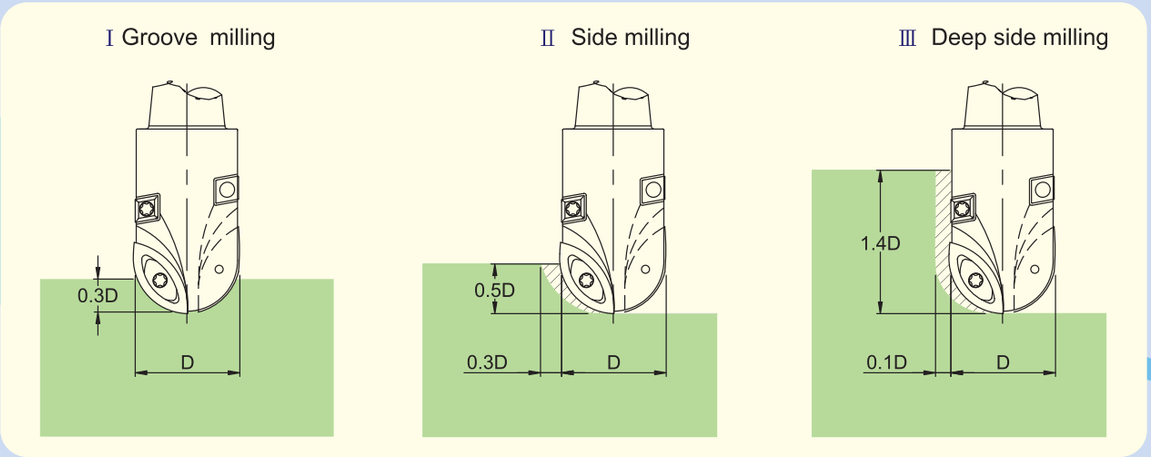
These cutting conditions are a guide to the standard shank and arbor type, please reduce the depth of cut and cutting conditions in following cases.

- 使用加長夾具 Using long shank type
- 使用標準夾具但夾持長的刀具 Using overhang with the standard or arbor type
- 使用剛性、穩定性低的機台 Using low rigidity machine
- In steel exceeding 60HRC, please setting fz value per edge about 1/2
- 加工件固定效果較差 Poor clamping rigidity

TCF

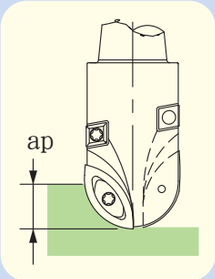
■ Recommended cutting conditions

Work Material		Vc (mm/min)	fz (mm/tooth)	Cutting Modes	20Ø		25Ø		30Ø	
					S	F	S	F	S	F
P	S40C、S50C	140 - 200	0.01 - 0.4	Ⅰ	3000	320	2500	450	2000	400
		100 - 180	0.05 - 0.4	Ⅱ	3000	540	2500	660	2000	400
		160 - 260	0.10 - 0.6	Ⅲ	2500	300	2000	400	1700	350
	SCM、SKD	120 - 140	0.06 - 0.2	Ⅰ	2000	120	1650	200	1400	200
		100 - 120	0.04 - 0.1	Ⅱ	2000	450	1650	500	1400	450
		160 - 260	0.08 - 0.2	Ⅲ	1700	220	1400	320	1200	250
K	FC、FCD	120 - 240	0.05 - 0.2	Ⅰ	3500	450	2800	650	2350	540
		120 - 240	0.02 - 0.1	Ⅱ	3500	650	2800	900	2350	900
		140 - 220	0.06 - 0.2	Ⅲ	2700	400	2200	530	1800	450



※ RPM for high-speed machine is calculated by following formula.

$$N = \frac{500 \times \text{Actual Maximum Cutting Speed}}{\pi \times \sqrt{2} \times R \times ap - ap^2}$$



R : Radius of the ball ap : Axial depth of cut π : Circumference raito

Maximum cutting speed at boundary of contact part with work material under the above recommended cutting condition(ap = 0.5mm and 1mm)

<Note>

以上建議值是根據標準長度夾持而進行公式運算，如有以下的情形請降低切削深度及加工條件。

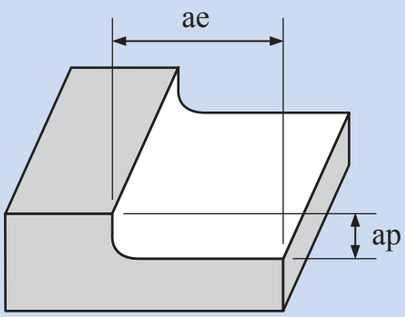
These cutting conditions are a guide to the standard shank and arbor type, please reduce the depth of cut and cutting conditions in following cases.

- 使用加長夾具 Using long shank type
- 使用標準夾具但夾持長的刀具 Using overhang with the standard or arbor type
- 使用剛性、穩定性低的機台 Using low rigidity machine
- 加工件固定效果較差 Poor clamping rigidity

TBP

■ Recommended cutting conditions

Work Material		Vc (mm/min)	fz (mm/tooth)	16Ø		20Ø		25Ø		30Ø	
				S	F	S	F	S	F	S	F
P	S40C、S50C	80 - 150	0.2 - 0.3	2400	1200	1900	950	1500	750	1300	640
P	SCM、SKD	70 - 100	0.1 - 0.15	1600	380	1300	300	1000	250	850	200
K	FC、FCD	100 - 200	0.3 - 0.4	3200	2240	2500	180	2000	1400	1700	1200



<Note>

以上建議值是根據標準長度夾持而進行公式運算，如有以下的情形請降低切削深度及加工條件。

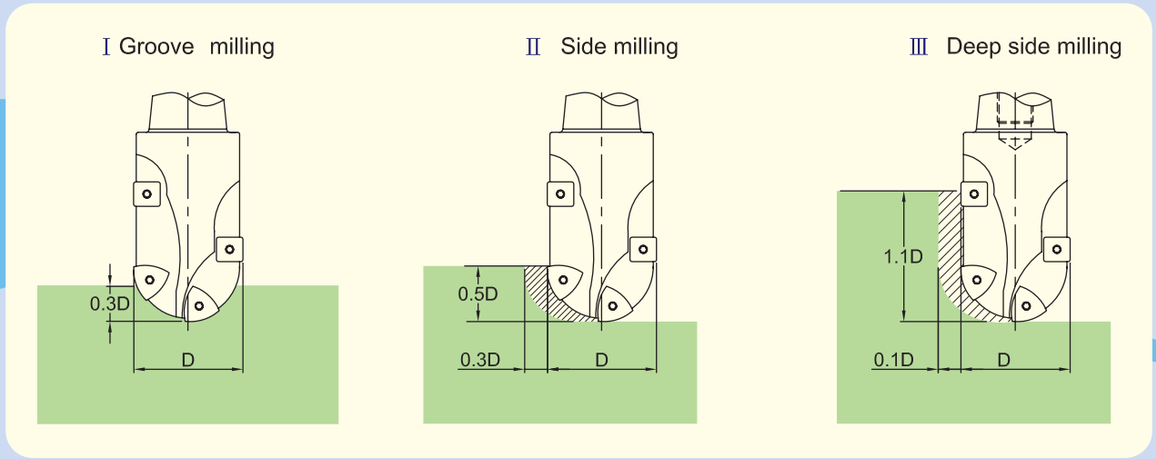
These cutting conditions are a guide to the standard shank and arbor type, please reduce the depth of cut and cutting conditions in following cases.

- 使用加長夾具 Using long shank type
- 使用標準夾具但夾持長的刀具 Using overhang with the standard or arbor type
- 使用剛性、穩定性低的機台 Using low rigidity machine
- 加工件固定效果較差 Poor clamping rigidity

T2039

■ Recommended cutting conditions

Work Material		Milling Types	Vc (mm/min)	S	F
P	S40C、S50C	Ⅰ	180	1140	450
		Ⅱ	180	1140	540
		Ⅲ	140	890	420
	SCM、SKD	Ⅰ	110	700	180
		Ⅱ	110	700	330
		Ⅲ	100	640	300
K	FC、FCD	Ⅰ	180	1140	560
		Ⅱ	180	1140	560
		Ⅲ	140	890	420



<Note>

以上建議值是根據標準長度夾持而進行公式運算，如有以下的情形請降低切削深度及加工條件。

These cutting conditions are a guide to the standard shank and arbor type, please reduce the depth of cut and cutting conditions in following cases.

- 使用加長夾具 Using long shank type
- 使用標準夾具但夾持長的刀具 Using overhang with the standard or arbor type
- 使用剛性、穩定性低的機台 Using low rigidity machine
- 加工件固定效果較差 Poor clamping rigidity

T2139

■ Recommended cutting conditions

Work Material		8Ø		10Ø		12Ø		16Ø		20Ø		25Ø		32Ø	
		S	F	S	F	S	F	S	F	S	F	S	F	S	F
P	S40C 、S50C	6000	1800	4800	1450	4000	1200	3000	900	2400	720	1900	600	1500	500
P	SCM、SKD	3500	360	2900	300	2400	250	1900	200	1540	150	1200	120	900	100
K	FC、FCD	6000	1800	4800	1450	4000	1200	3000	900	2400	720	1900	600	1500	500

Work Material		Vc (mm/in)	8Ø		10Ø		12Ø		16Ø		20Ø		25Ø		32Ø	
			ap (mm)	fz	ap (mm)	fz	ap (mm)	fz	ap (mm)	fz	ap (mm)	fz	ap (mm)	fz	ap (mm)	fz
P	S40C 、S50C	100 - 200	≦0.025	≦0.3	≦0.025	≦0.3	≦0.025	≦0.3	≦0.05	≦0.3	≦0.05	≦0.3	≦0.05	≦0.3	≦0.05	≦0.3
P	SCM、SKD	70 - 100	≦0.01	≦0.1	≦0.01	≦0.1	≦0.01	≦0.1	≦0.01	≦0.1	≦0.01	≦0.1	≦0.01	≦0.1	≦0.01	≦0.1
K	FC、FCD	100 - 200	≦0.025	≦0.3	≦0.025	≦0.3	≦0.025	≦0.3	≦0.05	≦0.3	≦0.05	≦0.3	≦0.05	≦0.3	≦0.05	≦0.3

<Note>

以上建議值是根據標準長度夾持而進行公式運算，如有以下的情形請降低切削深度及加工條件。

These cutting conditions are a guide to the standard shank and arbor type, please reduce the depth of cut and cutting conditions in following cases.

- 使用加長夾具 Using long shank type
- 使用標準夾具但夾持長的刀具 Using overhang with the standard or arbor type
- 使用剛性、穩定性低的機台 Using low rigidity machine
- 加工件固定效果較差 Poor clamping rigidity

445 & 545

■ Recommended cutting conditions

Work Material		Vc (mm/min)	fz (mm/tooth)	80Ø		125Ø		200Ø		300Ø	
				S	F	S	F	S	F	S	F
P	SCM、SKD	125 - 200	0.12	630	380	400	280	250	360	170	280
M	SUS	100 - 160	0.1	520	260	320	190	200	240	170	280
K	FC、FCD	100 - 150	0.15	470	350	300	270	200	360	160	330
N	Aluminum	150 - 300	0.15	800	600	500	450	320	380	220	460

SE445 & SE545

■ Recommended cutting conditions

Work Material		Vc (mm/min)	fz (mm/tooth)	80Ø		125Ø		200Ø		300Ø	
				S	F	S	F	S	F	S	F
P	SCM、SKD	160 - 250	0.2	880	880	560	780	350	700	230	650
M	SUS	125 - 200	0.2	550	550	350	500	200	450	150	400
K	FC、FCD	130 - 200	0.2	680	680	430	600	270	540	180	500
N	Aluminum	400 -1000	0.2	2500	2500	1650	2200	1000	2050	700	1900

<Note>

以上建議值是根據標準長度夾持而進行公式運算，如有以下的情形請降低切削深度及加工條件。

These cutting conditions are a guide to the standard shank and arbor type, please reduce the depth of cut and cutting conditions in following cases.

- 使用加長夾具 Using long shank type
- 使用標準夾具但夾持長的刀具 Using overhang with the standard or arbor type
- 使用剛性、穩定性低的機台 Using low rigidity machine
- 加工件固定效果較差 Poor clamping rigidity

EMCF

■ Recommended cutting conditions

Work Material		Vc (mm/min)	fz (mm/tooth)	ap (mm)	50Ø		80Ø		100Ø		160Ø	
					S	F	S	F	S	F	S	F
P	Mild steel	200 - 250	≦0.15	≦2	1400	840	875	650	700	630	430	650
	Alloy steel	100 - 180	≦0.12	≦2	1000	480	630	450	500	360	300	360
M	SUS	120 - 160	≦0.12	≦2	900	430	550	400	450	320	280	340
K	FC、FCD	150 - 250	≦0.2	≦2	1200	960	800	960	630	750	400	800
N	Aluminum	200 - 300	≦0.2	≦2	1400	1120	1000	1200	800	960	500	1000

SEX

■ Recommended cutting conditions

Work Material		Cutting Method	Vc (mm/min)	fz (mm/tooth)	ap (mm)	80Ø		100Ø		160Ø		260Ø	
						S	F	S	F	S	F	S	F
P	Mild steel	Light	200 - 300	≦0.15	≦1	1000	750	800	600	500	520	300	450
		Medium	180 - 280	≦0.2	≦2	800	800	630	630	400	550	240	480
		Heavy	150 - 250	≦0.3	≦3	630	950	500	750	300	650	200	580
	Alloy steel	Light	180 - 280	≦0.15	≦1	880	660	700	500	430	460	260	400
		Medium	150 - 250	≦0.2	≦2	720	720	580	580	350	500	220	440
		Heavy	130 - 230	≦0.3	≦3	550	800	440	660	280	580	170	500
M	SUS	Light	180 - 240	≦0.15	≦1	700	530	570	420	350	380	220	330
		Medium	160 - 200	≦0.2	≦2	630	630	500	500	320	440	200	400
		Heavy	120 - 160	≦0.3	≦3	480	720	380	570	240	500	150	440
K	FC、FCD	Light	200 - 260	≦0.15	≦1	1000	750	800	600	500	520	300	450
		Medium	180 - 220	≦0.2	≦2	800	800	630	630	400	550	240	480
		Heavy	150 - 200	≦0.3	≦3	630	950	500	750	300	650	200	580
N	Aluminum	Light	200 - 300	≦0.15	≦1	1050	800	850	640	530	550	330	500
		Medium	180 - 280	≦0.2	≦2	950	950	750	750	470	660	300	600
		Heavy	150 - 250	≦0.3	≦3	700	1000	570	850	350	750	220	660

Wiper

TPR

■ Recommended cutting conditions

Work Material		Vc (mm/min)	fz (mm/tooth)	20 - 35Ø		40 - 50Ø		100Ø		200Ø	
				S	F	S	F	S	F	S	F
P	S40C、S50C	100 - 160	≦0.3	1800	750	950	570	380	550	200	450
	SCM、SKD	60 - 120	≦0.15	1200	400	630	280	250	200	120	150
K	FC、FCD	80 - 130	≦0.3	1550	950	800	700	320	450	160	380

435 & 525

■ Recommended cutting conditions

Work Material		Vc (mm/min)	fz (mm/tooth)	80Ø		125Ø		200Ø		300Ø	
				S	F	S	F	S	F	S	F
P	SCM、SKD	100 - 160	0.1	600	300	380	220	240	240	160	220
K	FC、FCD	80 - 170	0.12	400	240	300	220	200	240	180	300

FP

■ Recommended cutting conditions

Work Material		Vc (mm/min)	fz (mm/tooth)	80Ø		100Ø		125Ø	
				S	F	S	F	S	F
P	S45C	80 - 120	0.1	360	180	320	190	280	220
	SCM、SKD	60 - 100	0.1	360	160	250	150	250	120
M	SUS	60 - 100	0.1	280	140	220	130	220	90
K	FC、FCD	80 - 120	0.1	400	200	350	210	350	280
N	Aluminum	160 - 220	0.1	720	360	600	360	460	370

fz (mm/tooth)	150Ø		200Ø		250Ø		300Ø	
	S	F	S	F	S	F	S	F
0.06	250	150	220	160	200	190	180	210
0.06	200	120	200	144	180	170	170	200
0.06	200	120	180	130	160	120	130	160
0.06	250	150	220	160	200	190	180	210
0.1	380	380	300	360	230	370	200	400

THD

■ Recommended cutting conditions

Work Material		16 - 18 Dia(3D)		19 - 24 Dia(3D)		25 - 32 Dia(3D)		33 - 40 Dia(3D)		41 - 50 Dia(3D)	
		S	F	S	F	S	F	S	F	S	F
P	S40C、S50C	2950	350	2400	290	1750	210	1350	165	1100	135
P	SCM、SKD	2600	310	2100	250	1500	180	1200	140	950	120
M	SUS	2200	180	1800	145	1300	110	1000	80	850	70
K	FC、FCD	2600	500	2100	400	1500	300	1200	240	990	200
N	Aluminum	3300	670	2700	540	1950	400	1500	300	1250	250

Work Material		Vc (mm/min)		fr				
		3D	4D	16 - 18 Dia	19 - 24 Dia	25 - 32 Dia	33 - 40 Dia	41 - 50 Dia
P	S40C、S50C	140 - 200	80 - 120	0.12	0.12	0.12	0.12	0.12
P	SCM、SKD	120 - 180	70 - 110	0.12	0.12	0.12	0.12	0.12
M	SUS	100 - 160	60 - 100	0.08	0.08	0.08	0.08	0.08
K	FC、FCD	120 - 180	100 - 140	0.2	0.2	0.2	0.2	0.2
N	Aluminum	200 - 240	160 - 200	0.2	0.2	0.2	0.2	0.2

<Note>

- 使用加長夾具 Using long shank type
- 使用標準夾具但夾持長的刀具 Using overhang with the standard or arbor type

(Vc) Boring speed

$$Vc = \frac{\pi \times D \times n}{1000} \quad (m/min)$$

(n) Revolution

$$n = \frac{Vc \times 1000}{\pi \times D} \quad (min^{-1})$$

Vc : m/min 切削速度 Cutting speed
D : mm 刀具外徑 Cutter diameter
n : min^{-1} 轉速 Revolution
π : 3.14 圓周率 Circumference raito

(Vf) Feed rate

Vf = fr × n (m/min)

Vf : mm/min 進給 Feed rate
n : min^{-1} 轉速 Revolution
f r : mm/rev 每轉進給 Feed per revolution

(Tc) Boring time

$$Tc = \frac{Id \times i}{fr \times n} \quad (m/min)$$

Tc : min 搪孔時間 Boring time
f r : mm/rev 每轉進給 Feed per revolution
n : min^{-1} 轉速 Revolution
Id : 加工深度 Hole depth
i : 孔數 Number of holes

JD

■ Recommended cutting conditions

Work Material		50 - 60Ø		60 - 70Ø		70 - 80Ø		80 - 90Ø		90 - 100Ø	
		S	F	S	F	S	F	S	F	S	F
P	S40C、S50C	180	≦0.15	160	0.06 - 0.12	140	0.06 - 0.12	120	0.06 - 0.12	100	0.06 - 0.12
	SCM、SKD	80	≦0.1	70	≦0.1	55	≦0.1	50	≦0.1	40	≦0.1
M	SUS	75	0.06 - 0.12	60	0.06 - 0.12	55	0.06 - 0.12	50	0.06 - 0.12	40	0.06 - 0.12
K	FC、FCD	150	≦0.25	140	≦0.3	120	≦0.3	100	≦0.3	90	≦0.3
N	Aluminum	450	≦0.25	400	≦0.3	350	≦0.3	300	≦0.3	300	≦0.3

<Note>

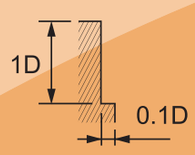
加工調質鋼、建築結構鋼需視其硬度降低RPM約 30%～50%

Reduce RPM by 30%~ 50% in case of quenched and tempered Chromoly, structural steel, etc. depending on the hardness.

TWE

■ Recommended cutting conditions

Side milling

Work Material	FC、FCD		Aluminium	
Dia.(mm)	S	F	S	F
14	1300	375	2400	650
16	1200	375	2250	650
18	1100	375	2100	650
20	975	375	1950	650
22	910	375	1800	650
24	845	375	1650	650
25	780	375	1500	650
28	715	375	1350	650
30	680	375	1200	650
32	620	375	1163	650
35	585	375	1125	650
40	520	375	1050	650
45	450	375	930	650
50	410	375	750	650
Depth of cut				

<Note>

以上建議值是根據標準長度夾持而進行公式運算，如有以下的情形請降低切削深度及加工條件。

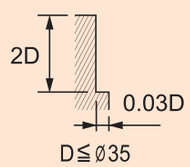
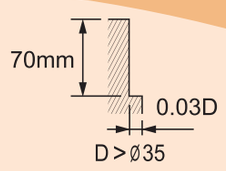
These cutting conditions are a guide to the standard shank and arbor type, please reduce the depth of cut and cutting conditions in following cases.

- 使用加長夾具 Using long shank type
- 使用標準夾具但夾持長的刀具 Using overhang with the standard or arbor type
- 使用剛性、穩定性低的機台 Using low rigidity machine
- 加工件固定效果較差 Poor clamping rigidity

TWEH

■ Recommended cutting conditions

Side milling

Work Material	FC、FCD		Aluminium	
Dia.(mm)	S	F	S	F
14	1750	480	2800	720
16	1550	480	2600	720
18	1400	480	2400	720
20	1250	480	2200	720
22	1150	480	2000	720
24	1050	480	1800	720
25	1000	480	1600	720
28	900	480	1400	720
30	850	480	1200	720
32	800	480	1000	720
35	700	480	900	720
40	600	480	850	720
45	550	480	800	720
50	500	480	750	720
Depth of cut				

<Note>

以上建議值是根據標準長度夾持而進行公式運算，如有以下的情形請降低切削深度及加工條件。

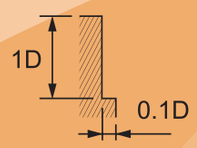
These cutting conditions are a guide to the standard shank and arbor type, please reduce the depth of cut and cutting conditions in following cases.

- 使用加長夾具 Using long shank type
- 使用標準夾具但夾持長的刀具 Using overhang with the standard or arbor type
- 使用剛性、穩定性低的機台 Using low rigidity machine
- 加工件固定效果較差 Poor clamping rigidity

TWEB1

■ Recommended cutting conditions

Side milling

Work Material	S40C、S50C		SCM、SKD		FC、FCD	
Dia.(mm)	S	F	S	F	S	F
14	1170	280	975	210	1000	325
16	1100	280	870	210	1000	325
18	975	280	780	210	780	325
20	910	280	715	210	700	325
22	845	290	650	210	650	325
24	740	290	585	220	610	325
25	715	290	553	220	550	325
28	650	290	488	225	520	325
30	610	290	481	225	480	325
32	570	290	442	225	455	325
35	520	290	390	225	420	325
40	450	290	350	225	390	325
45	400	290	312	225	350	325
50	350	195	286	180	325	325
Depth of cut						

<Note>

以上建議值是根據標準長度夾持而進行公式運算，如有以下的情形請降低切削深度及加工條件。

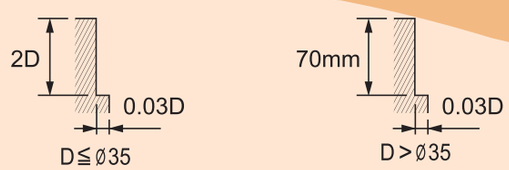
These cutting conditions are a guide to the standard shank and arbor type, please reduce the depth of cut and cutting conditions in following cases.

- 使用加長夾具 Using long shank type
- 使用標準夾具但夾持長的刀具 Using overhang with the standard or arbor type
- 使用剛性、穩定性低的機台 Using low rigidity machine
- 加工件固定效果較差 Poor clamping rigidity

TWEHB1

■ Recommended cutting conditions

Side milling

Work Material	S40C、S50C		SCM、SKD		FC、FCD	
Dia.(mm)	S	F	S	F	S	F
14	1500	330	1200	230	1400	350
16	1300	330	1100	230	1350	350
18	1100	330	990	230	1100	350
20	1000	330	850	230	1000	350
22	900	330	800	230	900	350
24	850	330	750	230	800	350
25	800	330	700	230	850	350
28	750	330	630	230	800	350
30	700	330	600	230	700	350
32	650	330	550	230	650	350
35	600	330	500	230	600	350
40	550	450	450	350	550	350
45	500	350	400	250	500	350
50	450	250	350	200	450	350
Depth of cut						

<Note>

以上建議值是根據標準長度夾持而進行公式運算，如有以下的情形請降低切削深度及加工條件。

These cutting conditions are a guide to the standard shank and arbor type, please reduce the depth of cut and cutting conditions in following cases.

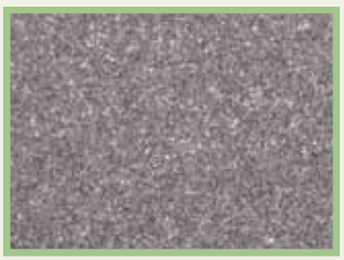
- 使用加長夾具 Using long shank type
- 使用標準夾具但夾持長的刀具 Using overhang with the standard or arbor type
- 使用剛性、穩定性低的機台 Using low rigidity machine
- 加工件固定效果較差 Poor clamping rigidity

Grades

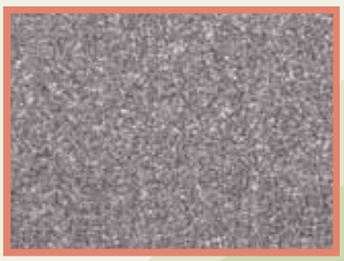
Composition and properties

Grade	ISO code	Code USA	Grain size	Tic/ Ta(Nb)C	Binder	Density	Hardness			Transverse rupture		K_{IC}* SEVNB
					(%)	g/cm^3	HV10	HV30	HRA	Mpa	P.S.I	Mpa*m$^{1/2}$
TSF44	K10 - K30	C-2	Ultrafine	—	12.0	14.10	1760	1730	92.7	4600	66700	7.8

Classification of tungsten carbide grain size	
Tungsten carbide grain size〔μm〕	Classification
0.2 - 0.5	**ultrafine**
0.5 - 0.8	submicron
0.8 - 1.3	fine
1.3 - 2.5	medium
2.5 - 6.0	coarse

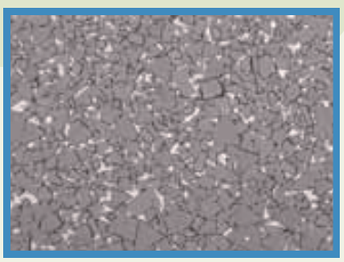


Ultrafine grade

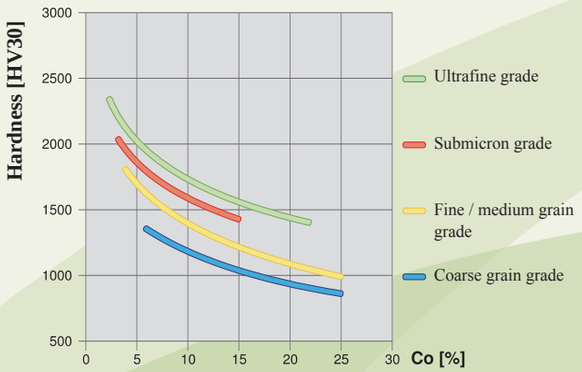


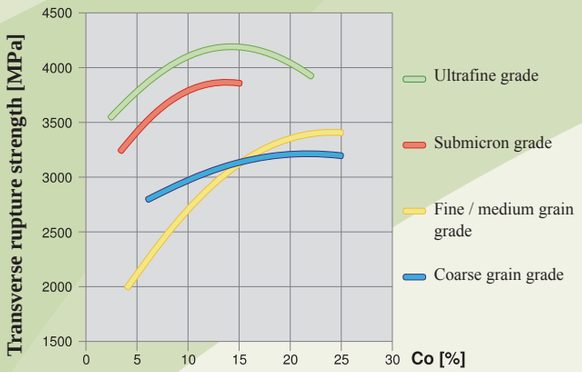
Submicron grade

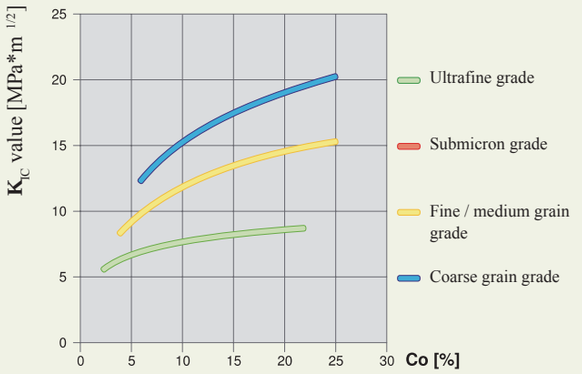
Fine / medium grain grade



Coarse grain grade







NC240 Series AlTiN < HRC 50

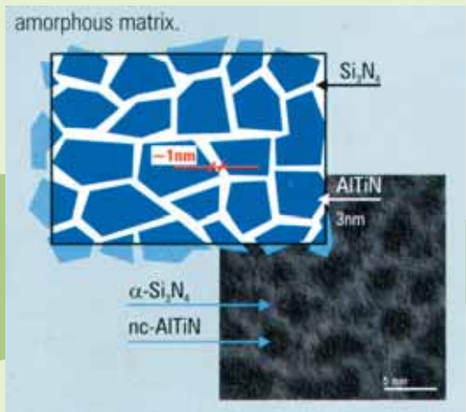
Highly 67(Al) : 33(TiN) ratio & oxidation resistance

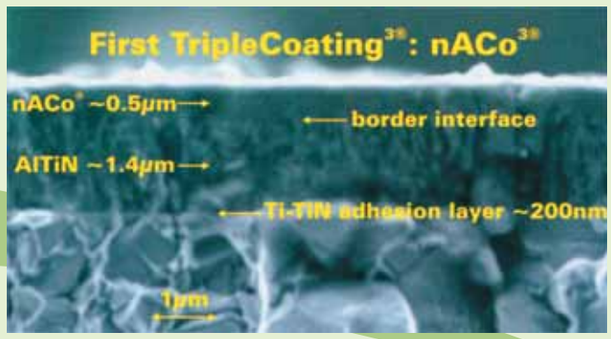
Standard coating	color	hardness 〔GPa〕	Thickness 〔μm〕	Friction coifficient	Max usage Temp 〔°c〕	Coating Temp 〔°c〕
AlTiN	Black	38	1 - 4	0.6	900	450

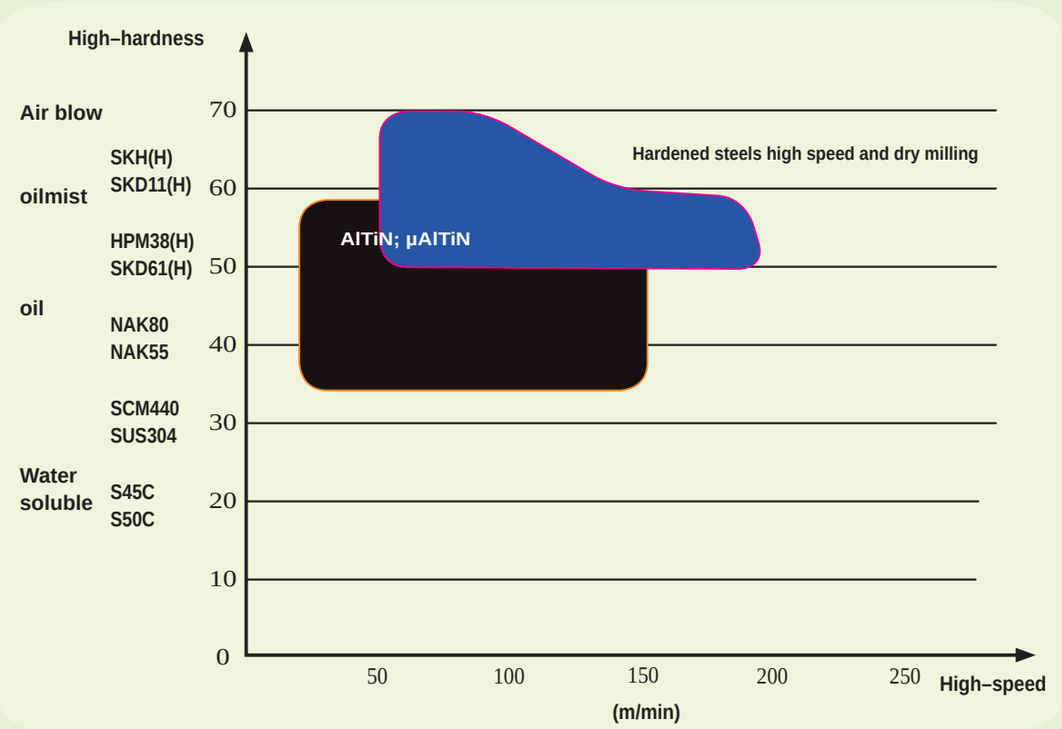
ASC240 Series nACo < HRC 62

AlTiN /a-Si_3N_4

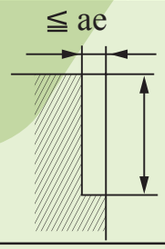
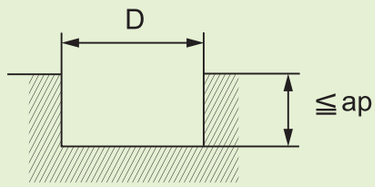
Nano coating	color	hardness 〔GPa〕	Thickness 〔μm〕	Friction coifficient	Max usage Temp 〔°c〕	Coating Temp 〔°c〕
nACo	Violet	45	1 - 4	0.45	1200	400





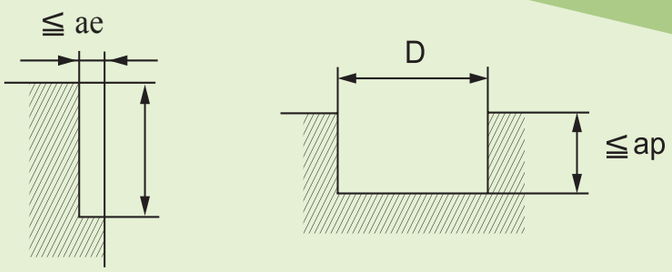


TJF-(2T) (4T) (H)

work material	≦ 45HRC S50C、SCM、SKD			45 - 62 HRC SKD61、STAVAX		
Dia (mm)	RPM (min-1)	Feed Speed (mm/min)	ap (mm)	RPM (min-1)	Feed Speed (mm/min)	ap (mm)
0.3	20000	300	0.005	20000	300	0.005
0.4	20000	400	0.01	20000	400	0.01
0.5	20000	500	0.015	20000	500	0.015
0.6	20000	600	0.02	20000	600	0.02
0.7	20000	700	0.02	20000	700	0.02
0.8	20000	800	0.03	20000	800	0.03
0.9	20000	900	0.04	20000	900	0.04
1	20000	1000	0.06	16000	800	0.06
1.5	20000	1200	0.12	16000	1000	0.08
2	15000	1500	0.18	12000	1000	0.10
2.5	12000	1300	0.25	9500	950	0.13
3	10000	1150	0.30	8000	900	0.15
3.5	7500	1000	0.35	8000	900	0.15
4	7500	1000	0.40	6000	800	0.20
4.5	6500	960	0.45	4500	600	0.25
5	6500	960	0.50	4500	600	0.25
5.5	5000	840	0.55	4000	600	0.25
6	5000	840	0.60	3000	500	0.30
6.5	4500	800	0.65	3000	500	0.30
7	4000	740	0.70	2500	450	0.35
7.5	3200	600	0.75	2500	450	0.35
8	3200	600	0.80	2000	400	0.40
8.5	3000	570	0.85	2000	400	0.45
9	3000	570	0.90	1300	350	0.45
9.5	2500	540	0.95	1300	350	0.50
10	2500	540	1.00	1000	320	0.50
11	2000	500	1.00	950	300	0.50
12	2000	500	1.00	950	300	0.50
16	1600	350	1.00	800	280	0.50
Depth of cut						
						D : end mill Dia.

Please select appropriate cutting conditions based on you own machine conditions.

TJF-R

work material	≦ 45HRC S50C、SCM、SKD					45 - 62 HRC SKD61、STAVAX				
Ball nose (mm)	α≦15°		α＞15°		ap (mm)	α≦15°		α＞15°		ap (mm)
	RPM (min-1)	Feed Speed (mm/min)	RPM (min-1)	Feed Speed (mm/min)		RPM (min-1)	Feed Speed (mm/min)	RPM (min-1)	Feed Speed (mm/min)	
R 0.2	20000	800	20000	600	0.02	20000	650	20000	475	0.02
R 0.25	20000	1200	20000	700	0.25	20000	950	20000	550	0.02
R 0.3	20000	1600	20000	800	0.03	20000	1250	20000	650	0.03
R 0.4	20000	3200	20000	1200	0.05	20000	2500	20000	950	0.04
R 0.5	20000	4000	20000	1600	0.06	20000	3750	20000	1500	0.05
R 0.6	20000	4000	20000	1800	0.07	20000	4200	16000	1500	0.07
R 0.75	20000	4800	20000	2000	0.09	20000	4500	16000	1600	0.08
R 0.8	20000	4800	20000	2150	0.10	20000	4500	16000	1600	0.09
R 1.0	20000	5200	19000	2300	0.11	16000	4500	15500	1750	0.11
R 1.25	20000	5500	16000	2200	0.12	16000	3850	11000	1700	0.13
R 1.5	20000	6000	13500	2150	0.13	14000	3850	11000	1700	0.14
R 2.0	16000	5500	10000	1800	0.15	12500	4000	8000	1350	0.15
R 2.5	12500	4500	8000	1450	0.20	10000	3600	6500	1150	0.20
R 3.0	10500	4200	6500	1300	0.25	8500	3150	5000	1000	0.25
R 4.0	8000	3200	5000	1000	0.30	6500	2400	4000	750	0.30
R 5.0	6500	2600	4000	850	0.50	5000	1950	3200	600	0.50
R 6.0	4500	1800	3000	650	0.50	3600	1350	2400	500	0.50
Depth of cut	 R : Ball nose									

Please select appropriate cutting conditions based on you own machine conditions.

TJFR1

work material	≦ 45HRC S50C、SCM、SKD			45 - 62 HRC SKD61、STAVAX		
Dia (mm)	RPM (min-1)	Feed Speed	ap (mm)	RPM (min-1)	Feed Speed	ap (mm)
1	20000	1000	0.06	16000	800	0.06
1.5	20000	1500	0.12	16000	1200	0.08
2	15000	2250	0.18	12000	1800	0.10
2.5	12000	1950	0.25	9500	1500	0.13
3	10000	1750	0.30	8000	1300	0.15
4	7500	1500	0.40	6000	1200	0.20
6	5000	1050	0.60	3500	750	0.30
8	4000	750	0.80	2800	500	0.40
10	3200	700	1.00	2250	450	0.50
12	2700	600	1.00	1900	400	0.50
Depth of cut	≦ ae ≦ D			D ≦ ap		

D : end mill Dia.

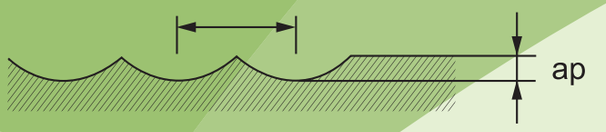
Please select appropriate cutting conditions based on you own machine conditions.

TJF-11

work material		≦ 45HRC S55C、NAK、HAP			45 - 62HRC SKD61、STAVAX		
Dia. (mm)	H (mm)	RPM (min-1)	Feed Speed (mm/min)	ap (mm)	RPM (min-1)	Feed Speed (mm/min)	ap (mm)
0.5	2	20000	450	0.01	16000	360	0.01
	4	20000	400	0.002	16000	320	0.002
	6	20000	300	0.003	16000	240	0.003
1.0	6	20000	800	0.04	16000	640	0.04
	8	20000	800	0.03	16000	640	0.03
	10	16000	600	0.025	12800	720	0.025
	12	15000	500	0.02	12000	400	0.02
1.5	6	20000	1200	0.10	16000	960	0.10
	8	17000	1000	0.03	13600	800	0.03
	10	15000	900	0.05	12000	720	0.05
	12	10000	800	0.04	8000	640	0.04
	14	9000	700	0.03	7200	560	0.03
	16	8500	600	0.02	6800	480	0.02
	18	7500	400	0.02	6800	320	0.02
2.0	6	20000	1200	0.18	16000	960	0.18
	8	17000	1050	0.14	13600	840	0.14
	10	15000	900	0.10	12000	720	0.10
	12	13000	750	0.08	10400	600	0.08
	14	11000	600	0.07	8800	480	0.07
	16	10000	500	0.06	8000	400	0.06
	18	8000	400	0.03	6400	320	0.03
2.5	8	12500	1250	0.20	10000	1000	0.20
	12	11000	1000	0.015	8800	800	0.015
	16	9000	850	0.10	7200	680	0.10
3.0	8	10000	1000	0.30	8000	800	0.30
	10	9500	900	0.20	7600	720	0.20
	12	8500	800	0.15	6800	640	0.15
	16	7500	700	0.15	6000	560	0.15
	18	5000	500	0.10	4000	400	0.10

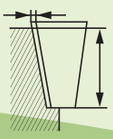
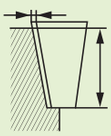
Please select appropriate cutting conditions based on you own machine conditions.

TJF-12

work material		≦ 45HRC S55C、NAK、HAP			45 - 62HRC SKD61、STAVAX		
Dia. (mm)	H (mm)	RPM (min-1)	Feed Speed (mm/min)	ap (mm)	RPM (min-1)	Feed Speed (mm/min)	ap (mm)
R 0.5	8	20000	1000	0.02	16000	800	0.02
	10	20000	500	0.01	16000	400	0.01
	12	20000	500	0.01	16000	400	0.01
R 0.75	8	20000	3000	0.07	16000	2400	0.07
	10	20000	2500	0.06	16000	2000	0.06
	12	16000	1700	0.04	12800	1360	0.04
	16	7500	700	0.03	6000	560	0.03
R 1.0	8	20000	2500	0.10	16000	2000	0.10
	10	20000	2500	0.08	16000	2000	0.08
	12	20000	2500	0.08	16000	2000	0.08
	16	16000	1750	0.05	16000	1400	0.05
	20	5000	500	0.04	4000	400	0.04
R 1.25	8	18000	3000	0.15	14400	2400	0.15
	10	18000	3000	0.15	14400	2400	0.15
	12	18000	2500	0.10	14400	2000	0.10
	16	18000	2500	0.10	14400	2000	0.10
R 1.5	8	16000	3000	0.15	12800	2400	0.15
	10	16000	3000	0.15	12800	2400	0.15
	12	16000	2500	0.10	12800	2000	0.10
	16	16000	2500	0.10	12800	2000	0.10
Deep of cut	≦0.1R (R≦1) ≦0.2R (R＞1)  R : Ball nose						

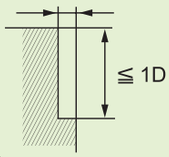
Please select appropriate cutting conditions based on you own machine conditions.

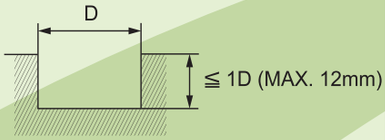
TJFT (L)

work material	≦ 45HRC S50C、SCM、SKD		45 - 62HRC SKD61、STAVAX	
Dia (mm)	RPM (min^{-1})	Feed Speed (mm/min)	RPM (min^{-1})	Feed Speed (mm/min)
1	5500	350	6500	250
1.5	5000	350	4250	250
2	4000	350	3200	250
2.5	3150	350	2500	250
3	2700	350	2100	250
4	2000	350	1600	250
5	1600	350	1250	250
6	1300	350	1050	250
8	1000	300	800	200
10	800	250	600	180
Depth of cut	≦ 0.05D  ≦ 2.5D		≦ 0.03D  ≦ 2.5D D : end mill Dia.	

Please select appropriate cutting conditions based on you own machine conditions.

TJFA

work material		Aluminum
Dia (mm)	RPM (min^{-1})	Feed Speed (mm/min)
2	20000	550
3	16000	700
4	12000	750
5	9500	800
6	8000	950
8	6000	950
10	4750	950
12	4000	950
16	3000	950
Depth of cut	≦0.2D (D< Ø3) ≦0.5D (D≧Ø3)  D : end mill Dia.	

work material		Aluminum
Dia (mm)	RPM (min^{-1})	Feed Speed (mm/min)
2	19000	250
3	12500	450
4	9500	500
5	7500	500
6	6500	550
8	4750	600
10	3800	600
12	3200	600
16	2400	500
Depth of cut	 D : end mill Dia.	

Please select appropriate cutting conditions based on you own machine conditions.