



金利成切削刀具
JIN LI CHENG CUTTING TOOL



航太專用刀系列

AEROSPACE
CUTTING TOOLS SERIES



APET

APEL Bullet-Shaped Generic End Mill For Steel

子彈銑刀

加工材料類別
PROCESSING MATERIAL CATEGORY

鋼件
STEEL PARTS

不銹鋼
STAINLESS STEEL

鈦合金
TITANIUM ALLOY

◦ 圓鼻款底角與R型排屑刃

擴大容量空間，德系專用棒材，壽命與表面品質雙重保證。

Radius bottom corner and R-shaped chip removal flute expander chip removal space. From German special carbide round bar The best choice, for end mill longer life time and better workpiece surface quality.



◦ 流線子彈型設計

可斜插加工與大角度切削，發揮粗加工最佳表現。

Bullet-shaped design, excellent slop processing and large angle cutting best performance in rough milling.

◦ 插銑、鑽銑的最佳利器！

子彈流體力學概念，阻力小，破壞力強大。

The best choice for broaching and drill milling, Bullet fluid mechanics concept less resistance, powerful cutting force.

◦ 雙重出水

使插銑或開槽加工時不易積屑，增加表面光滑度。

With two water through holes not only to speed up the chips removal but also reach better finished surface in slot or groove processing.



◦ 搭配頂級奈米複合鍍層

斷除鐵屑沾黏困擾

With special nano-multi layers coating and solve the chip adhesion issue.



實際測試影片
Test Video



實績測試
Benchmark Test

客製化 CUSTOMIZED SERVICE

非標準尺寸可訂製 • 請另外洽詢
Welcome to inquiry the special SPEC

APET子彈銑刀(泛用型)

APET Bullet-Shaped Generic End Mill For Steel (Generic Type)



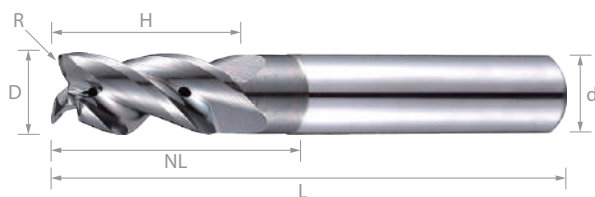
* 非標準尺寸可訂製



編號 (Number)	外徑 (D)	刃長 (H)	R角 (R)	有效長 (NL)	刃數 (T)	柄徑 (d)	全長 (L)
APET0404	4	8	0.2R	12.5	3	4	50
APET0506	5	10	0.2R	15.5	3	6	60
APET0606	6	12	0.3R	18.5	3	6	60
APET0708	7	14	0.3R	21.5	3	8	60
APET0808	8	16	0.4R	24.5	3	8	64
APET0910	9	18	0.4R	27.5	3	10	75
APET1010	10	20	0.5R	30.5	3	10	80
APET1112	11	22	0.5R	33.5	3	12	80
APET1212	12	24	0.6R	36.5	3	12	85
APET1616	16	32	0.8R	48.5	3	16	100
APET2020	20	40	1R	60.5	3	20	110

APET徑向出水子彈銑刀(泛用型)

APET Bullet Shape Ball End Mill With Radial Coolant Hole (Generic Type)



編號 (Number)	外徑 (D)	刃長 (H)	R角 (R)	有效長 (NL)	刃數 (T)	柄徑 (d)	全長 (L)
APETW0404	4	8	0.2R	12.5	3	4	50
APETW0506	5	10	0.2R	15.5	3	6	60
APETW0606	6	12	0.3R	18.5	3	6	60
APETW0708	7	14	0.3R	21.5	3	8	64
APETW0808	8	16	0.4R	24.5	3	8	64
APETW0910	9	18	0.4R	27.5	3	10	80
APETW1010	10	20	0.5R	30.5	3	10	80
APETW1112	11	22	0.5R	33.5	3	12	85
APETW1212	12	24	0.6R	36.5	3	12	85
APETW1616	16	32	0.8R	48.5	3	16	100
APETW2020	20	40	1R	60.5	3	20	110

切削條件表 Cutting Condition P.03-P.06

APET子彈銑刀 切削條件表

Solid Carbide End Mills-Cutting Condition Table

公制/側面切削 Metric (mm) / Side Milling

被削材質 Work Material	碳素鋼/鑄鐵 S45C / FC 20 HRC		合金鋼 SCM / SKT / SKD / SCr 30 HRC		合金鋼 SCM / SKT / SKD 45 HRC		不銹鋼 SUS3 / SUS4	
切削速度 Vc m / min Cutting Speed	100 – 250 m / min		100 – 200 m / min		100 – 150 m / min		80 – 120 m / min	
直徑 DC mm	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth
4	13930	0.01 – 0.04	11940	0.01 – 0.03	9950	0.01 – 0.02	7960	0.01 – 0.02
5	11140	0.02 – 0.05	9550	0.01 – 0.04	7960	0.01 – 0.03	6370	0.01 – 0.03
6	9280	0.02 – 0.06	7960	0.02 – 0.05	6630	0.01 – 0.04	5310	0.01 – 0.04
8	6960	0.03 – 0.08	5970	0.02 – 0.07	4970	0.02 – 0.05	3980	0.02 – 0.05
10	5570	0.05 – 0.10	4770	0.05 – 0.08	3980	0.02 – 0.06	3180	0.02 – 0.06
12	4640	0.05 – 0.12	3980	0.05 – 0.10	3320	0.02 – 0.07	2650	0.02 – 0.07
16	3480	0.07 – 0.15	2980	0.07 – 0.12	2490	0.03 – 0.08	1990	0.03 – 0.08
20	2790	0.07 – 0.17	2390	0.07 – 0.14	1990	0.03 – 0.09	1590	0.03 – 0.09
切削條件 Cutting Conditions	$A_p \leq 1.5D$ $A_e \leq 0.25D$ 							

英制/側面切削 Imperial (inch) / Side Milling

被削材質 Work Material	碳素鋼/鑄鐵 S45C / FC 20 HRC		合金鋼 SCM / SKT / SKD / SCr 30 HRC		合金鋼 SCM / SKT / SKD 45 HRC		不銹鋼 SUS3 / SUS4	
切削速度 Vc SFM Cutting Speed	min	max	min	max	min	max	min	max
	328.0840	820.2100	328.0840	656.1680	328.0840	492.1260	262.4672	393.7008
直徑 DC	Inches per Tooth							
inch mm	min	max	min	max	min	max	min	max
0.1575 4	0.0004	0.0016	0.0004	0.0012	0.0004	0.0008	0.0004	0.0008
0.1969 5	0.0008	0.0020	0.0004	0.0016	0.0004	0.0012	0.0004	0.0012
0.2362 6	0.0008	0.0024	0.0008	0.0020	0.0004	0.0016	0.0004	0.0016
0.3150 8	0.0012	0.0031	0.0008	0.0028	0.0008	0.0020	0.0008	0.0020
0.3937 10	0.0020	0.0039	0.0020	0.0031	0.0008	0.0024	0.0008	0.0024
0.4724 12	0.0020	0.0047	0.0020	0.0039	0.0008	0.0028	0.0008	0.0028
0.6299 16	0.0028	0.0059	0.0028	0.0047	0.0012	0.0031	0.0012	0.0031
0.7874 20	0.0028	0.0067	0.0028	0.0055	0.0012	0.0035	0.0012	0.0035
切削條件 Cutting Conditions	$A_p \leq 1.5D$ $A_e \leq 0.25D$ 							

切削條件使用須知：

- ①請使用精度高、鋼性高的設備及夾具。
- ②選擇適合被削材之冷卻方式及冷卻液。
- ③刀具裝配刀桿後切削前，需先量測偏擺值是否在標準值內，不正確使用易造成刀具損壞。
- ④本表格為切削參數基準值，實際加工情況，請依機台之鋼性、工件夾持、加工部位形狀等情況、調整切削參數及條件。

Instruction for cutting conditions:

- ①Please use equipment and fixtures with high precision and high rigidity.
- ②Please use the suitable cooling method and coolant for the workpiece.
- ③It is necessary to measure deflection before the cutting tool to be assembled in the arbor. Improper use may lead the tool damaged.
- ④This table is for the reference. Please according to the rigidity of the machine, workpiece clamping and the part processing method to adjust the parameter.

APET子彈銑刀 切削條件表

Solid Carbide End Mills-Cutting Condition Table



公制/溝切削 Metric (mm) / Slot Milling

被削材質 Work Material	碳素鋼/鑄鐵 S45C / FC 20 HRC		合金鋼 SCM / SKT / SKD / SCr 30 HRC		合金鋼 SCM / SKT / SKD 45 HRC		不銹鋼 SUS3 / SUS4	
切削速度 Vc m / min Cutting Speed	100 – 180 m / min		100 – 150 m / min		70 – 100 m / min		70 – 100 m / min	
直徑 DC mm	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth
4	11940	0.005 – 0.025	9950	0.005 – 0.020	6760	0.005 – 0.015	6760	0.005 – 0.015
5	9550	0.005 – 0.030	7960	0.005 – 0.025	5410	0.005 – 0.020	5410	0.005 – 0.020
6	7960	0.005 – 0.040	6630	0.005 – 0.030	4510	0.005 – 0.025	4510	0.005 – 0.025
8	5970	0.01 – 0.05	4970	0.010 – 0.045	3380	0.005 – 0.030	3380	0.005 – 0.030
10	4770	0.01 – 0.06	3980	0.010 – 0.055	2710	0.010 – 0.035	2710	0.010 – 0.035
12	3980	0.01 – 0.07	3320	0.010 – 0.065	2250	0.01 – 0.04	2250	0.01 – 0.04
16	2980	0.02 – 0.09	2490	0.02 – 0.08	1690	0.01 – 0.05	1690	0.01 – 0.05
20	2390	0.02 – 0.10	1990	0.02 – 0.09	1350	0.01 – 0.06	1350	0.01 – 0.06
切削條件 Cutting Conditions	$Ap \leq 1D$ 							

英制/溝切削 Imperial (inch) / Slot Milling

被削材質 Work Material	碳素鋼/鑄鐵 S45C / FC 20 HRC		合金鋼 SCM / SKT / SKD / SCr 30 HRC		合金鋼 SCM / SKT / SKD 45 HRC		不銹鋼 SUS3 / SUS4	
切削速度 Vc SFM Cutting Speed	min	max	min	max	min	max	min	max
	328.0840	590.5512	328.0840	492.1260	229.6588	328.0840	229.6588	328.0840
直徑 DC	Inches per Tooth							
inch mm	min	max	min	max	min	max	min	max
0.1575 4	0.0002	0.0010	0.0002	0.0008	0.0002	0.0006	0.0002	0.0006
0.1969 5	0.0002	0.0012	0.0002	0.0010	0.0002	0.0008	0.0002	0.0008
0.2362 6	0.0002	0.0016	0.0002	0.0012	0.0002	0.0010	0.0002	0.0010
0.3150 8	0.0004	0.0020	0.0004	0.0018	0.0002	0.0012	0.0002	0.0012
0.3937 10	0.0004	0.0024	0.0004	0.0022	0.0004	0.0014	0.0004	0.0014
0.4724 12	0.0004	0.0028	0.0004	0.0026	0.0004	0.0016	0.0004	0.0016
0.6299 16	0.0008	0.0035	0.0008	0.0031	0.0004	0.0020	0.0004	0.0020
0.7874 20	0.0008	0.0039	0.0008	0.0035	0.0004	0.0024	0.0004	0.0024
切削條件 Cutting Conditions	$Ap \leq 1D$ 							

切削條件使用須知：

- ①請使用精度高、鋼性高的設備及夾具。
- ②選擇適合被削材之冷卻方式及冷卻液。
- ③刀具裝配刀桿後切削前，需先量測偏擺值是否在標準值內，不正確使用易造成刀具損壞。
- ④本表格為切削參數基準值，實際加工情況，請依機台之鋼性、工件夾持、加工部位形狀等情況、調整切削參數及條件。

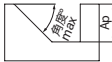
Instruction for cutting conditions:

- ①Please use equipment and fixtures with high precision and high rigidity.
- ②Please use the suitable cooling method and coolant for the workpiece.
- ③It is necessary to measure deflection before the cutting tool to be assembled in the arbor. Improper use may lead the tool damaged.
- ④This table is for the reference. Please according to the rigidity of the machine, workpiece clamping and the part processing method to adjust the parameter.

APET子彈銑刀 切削條件表

Solid Carbide End Mills-Cutting Condition Table

公制/斜向切削 Metric (mm) / Ramping

被削材質 Work Material	碳素鋼/鑄鐵 S45C / FC 20 HRC		合金鋼 SCM / SKT / SKD / SCr 30 HRC		合金鋼 SCM / SKT / SKD 45 HRC		不銹鋼 SUS3 / SUS4	
切削速度 Vc m / min Cutting Speed	100 – 180 m / min		100 – 150 m / min		70 – 100 m / min		40 – 60 m / min	
直徑 DC mm	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth
4	11940	0.005 – 0.025	9950	0.005 – 0.020	6760	0.005 – 0.015	3980	0.005 – 0.015
5	9550	0.005 – 0.030	7960	0.005 – 0.025	5410	0.005 – 0.020	3180	0.005 – 0.015
6	7960	0.005 – 0.040	6630	0.005 – 0.030	4510	0.005 – 0.025	2650	0.005 – 0.015
8	5970	0.01 – 0.05	4970	0.010 – 0.045	3380	0.005 – 0.030	1990	0.01 – 0.02
10	4770	0.01 – 0.06	3980	0.010 – 0.055	2710	0.010 – 0.035	1590	0.01 – 0.02
12	3980	0.01 – 0.07	3320	0.010 – 0.065	2250	0.01 – 0.04	1330	0.01 – 0.02
16	2980	0.02 – 0.09	2490	0.02 – 0.08	1690	0.01 – 0.05	990	0.010 – 0.025
20	2390	0.02 – 0.10	1990	0.02 – 0.09	1350	0.01 – 0.06	800	0.010 – 0.025
切削條件 Cutting Conditions	$A_p \leq 1D$ 切削角度 $\leq 45^\circ$ 				$A_p \leq 1D$ 切削角度 $\leq 15^\circ$ 			

英制/斜向切削 Imperial (inch) / Ramping

被削材質 Work Material	碳素鋼/鑄鐵 S45C / FC 20 HRC		合金鋼 SCM / SKT / SKD / SCr 30 HRC		合金鋼 SCM / SKT / SKD 45 HRC		不銹鋼 SUS3 / SUS4	
切削速度 Vc SFM Cutting Speed	min	max	min	max	min	max	min	max
	328.0840	590.5512	328.0840	492.1260	229.6588	328.0840	131.2336	196.8504
直徑 DC	Inches per Tooth							
inch mm	min	max	min	max	min	max	min	max
0.1575 4	0.0002	0.0010	0.0002	0.0008	0.0002	0.0006	0.0002	0.0006
0.1969 5	0.0002	0.0012	0.0002	0.0010	0.0002	0.0008	0.0002	0.0006
0.2362 6	0.0002	0.0016	0.0002	0.0012	0.0002	0.0010	0.0002	0.0006
0.3150 8	0.0004	0.0020	0.0004	0.0018	0.0002	0.0012	0.0004	0.0008
0.3937 10	0.0004	0.0024	0.0004	0.0022	0.0004	0.0014	0.0004	0.0008
0.4724 12	0.0004	0.0028	0.0004	0.0026	0.0004	0.0016	0.0004	0.0008
0.6299 16	0.0008	0.0035	0.0008	0.0031	0.0004	0.0020	0.0004	0.0010
0.7874 20	0.0008	0.0039	0.0008	0.0035	0.0004	0.0024	0.0004	0.0010
切削條件 Cutting Conditions	$A_p \leq 1D$ 切削角度 $\leq 45^\circ$ 				$A_p \leq 1D$ 切削角度 $\leq 15^\circ$ 			

切削條件使用須知：

- ①請使用精度高、鋼性高的設備及夾具。
- ②選擇適合被削材之冷卻方式及冷卻液。
- ③刀具裝配刀桿後切削前，需先量測偏擺值是否在標準值內，不正確使用易造成刀具損壞。
- ④本表格為切削參數基準值，實際加工情況，請依機台之鋼性、工件夾持、加工部位形狀等情況、調整切削參數及條件。

Instruction for cutting conditions:

- ①Please use equipment and fixtures with high precision and high rigidity.
- ②Please use the suitable cooling method and coolant for the workpiece.
- ③It is necessary to measure deflection before the cutting tool to be assembled in the arbor. Improper use may lead the tool damaged.
- ④This table is for the reference. Please according to the rigidity of the machine, workpiece clamping and the part processing method to adjust the parameter.

APET子彈銑刀 切削條件表

Solid Carbide End Mills-Cutting Condition Table



公制/垂直鑽孔 Metric (mm) / Drilling

被削材質 Work Material	碳素鋼/鑄鐵 S45C / FC 20 HRC		合金鋼 SCM / SKT / SKD / SCr 30 HRC	
切削速度 Vc m / min Cutting Speed	100 – 180 m / min		100 – 150 m / min	
直徑 DC mm	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth
4	11940	0.005 – 0.025	9950	0.005 – 0.020
5	9550	0.005 – 0.030	7960	0.005 – 0.025
6	7960	0.005 – 0.040	6630	0.005 – 0.030
8	5970	0.01 – 0.05	4970	0.010 – 0.045
10	4770	0.01 – 0.06	3980	0.010 – 0.055
12	3980	0.01 – 0.07	3320	0.010 – 0.065
16	2980	0.02 – 0.09	2490	0.02 – 0.08
20	2390	0.02 – 0.10	1990	0.02 – 0.09

英制/垂直鑽孔 Imperial (inch) / Drilling

被削材質 Work Material		碳素鋼/鑄鐵 S45C / FC 20 HRC		合金鋼 SCM / SKT / SKD / SCr 30 HRC	
切削速度 Vc SFM Cutting Speed		min		max	
		328.0840	590.5512	328.0840	492.1260
直徑 DC		Inches per Tooth			
inch	mm	min	max	min	max
0.1575	4	0.0002	0.0010	0.0002	0.0008
0.1969	5	0.0002	0.0012	0.0002	0.0010
0.2362	6	0.0002	0.0016	0.0002	0.0012
0.3150	8	0.0004	0.0020	0.0004	0.0018
0.3937	10	0.0004	0.0024	0.0004	0.0022
0.4724	12	0.0004	0.0028	0.0004	0.0026
0.6299	16	0.0008	0.0035	0.0008	0.0031
0.7874	20	0.0008	0.0039	0.0008	0.0035

切削條件使用須知：

- ①請使用精度高、鋼性高的設備及夾具。
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APAL

APAL Bullet-Shaped Design End Mill For Aluminum

子彈鋁刀

加工材料類別
PROCESSING MATERIAL CATEGORY

鋁合金
ALUMINUM
ALLOY

◦ 圓鼻款底角與R型排屑刀

擴大容屑空間，德系專用棒材，壽命與表面品質雙重保證。

Radius bottom corner and R-shaped chip removal flute expander chip removal space. From German special carbide round bar The best choice, for end mill longer life time and better workpiece surface quality.

◦ 雙重出水

使插銑或開槽加工時不易積屑，增加表面光滑度。

With two water through holes not only to speed up the chips removal but also reach better finished surface in slot or groove processing.

◦ 流線子彈型設計

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Bullet-shaped design, excellent slop processing and large angle cutting best performance in rough milling.

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子彈流體力學概念，阻力小，破壞力強大。

The best choice for broaching and drill milling, Bullet fluid mechanics concept less resistance, powerful cutting force.

◦ 搭配頂級類鑽鍍層

斷除鋁屑沾黏困擾

With supreme Ta-C coating and solve the Aluminum chip adhesion issue.



實際測試影片
Test Video



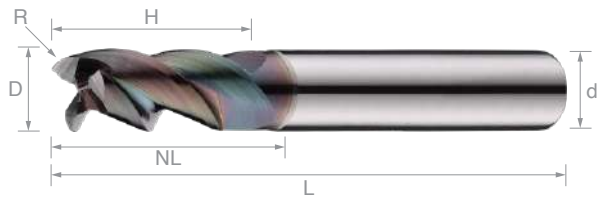
實績測試
Benchmark Test

客製化 CUSTOMIZED SERVICE

非標準尺寸可訂製・請另外洽詢
Welcome to inquiry the special SPEC

APAL子彈鋁刀

APAL Bullet-Shaped Design End Mill For Aluminum



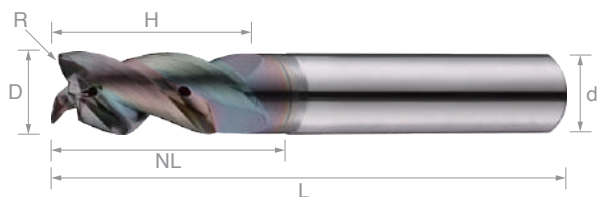
* 非標準尺寸可訂製



編號 (Number)	外徑 (D)	刃長 (H)	R角 (R)	有效長 (NL)	刃數 (T)	柄徑 (d)	全長 (L)
APAL0404	4	8	0.1R	12.5	3	4	50
APAL0506	5	10	0.1R	15.5	3	6	60
APAL0606	6	12	0.15R	18.5	3	6	60
APAL0708	7	14	0.15R	21.5	3	8	60
APAL0808	8	16	0.2R	24.5	3	8	64
APAL0910	9	18	0.2R	27.5	3	10	75
APAL1010	10	20	0.25R	30.5	3	10	80
APAL1112	11	22	0.25R	33.5	3	12	80
APAL1212	12	24	0.3R	36.5	3	12	85
APAL1616	16	32	0.4R	48.5	3	16	100
APAL2020	20	40	0.5R	60.5	3	20	110

APAL徑向出水子彈鋁刀

APAL Bullet Shape End Mill With Radial Coolant Hole For Aluminum



編號 (Number)	外徑 (D)	刃長 (H)	R角 (R)	有效長 (NL)	刃數 (T)	柄徑 (d)	全長 (L)
APALW0404	4	8	0.1R	12.5	3	4	50
APALW0506	5	10	0.1R	15.5	3	6	60
APALW0606	6	12	0.15R	18.5	3	6	60
APALW0708	7	14	0.15R	21.5	3	8	64
APALW0808	8	16	0.2R	24.5	3	8	64
APALW0910	9	18	0.2R	27.5	3	10	80
APALW1010	10	20	0.25R	30.5	3	10	80
APALW1112	11	22	0.25R	33.5	3	12	85
APALW1212	12	24	0.3R	36.5	3	12	85
APALW1616	16	32	0.4R	48.5	3	16	100
APALW2020	20	40	0.5R	60.5	3	20	110

切削條件表 Cutting Condition P.09-P.12

APAL子彈鋁刀 切削條件表

Solid Carbide End Mills-Cutting Condition Table

公制/側面切削 Metric (mm) / Side Milling

被削材質 Work Material	鋁合金 A6061 / A7075		鋁合金鑄件 AC / ACD		銅 Copper	
切削速度 Vc m / min Cutting Speed	200 – 400 m / min		200 – 350 m / min		200 – 300 m / min	
直徑 DC mm	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth
4	23870	0.03 – 0.06	21880	0.03 – 0.06	19890	0.01 – 0.04
5	19100	0.03 – 0.08	17510	0.03 – 0.08	15920	0.02 – 0.06
6	15920	0.05 – 0.10	14590	0.05 – 0.10	13260	0.03 – 0.07
8	11940	0.05 – 0.12	10940	0.05 – 0.12	9950	0.04 – 0.09
10	9550	0.10 – 0.15	8750	0.10 – 0.15	7960	0.05 – 0.11
12	7960	0.10 – 0.17	7290	0.10 – 0.17	6630	0.05 – 0.13
16	5970	0.15 – 0.22	5470	0.15 – 0.22	4970	0.10 – 0.16
20	4770	0.15 – 0.25	4380	0.15 – 0.25	3980	0.10 – 0.19
切削條件 Cutting Conditions	$A_p \leq 1.5D$ $A_e \leq 0.25D$ 					

英制/側面切削 Imperial (inch) / Side Milling

被削材質 Work Material		鋁合金 A6061 / A7075		鋁合金鑄件 AC / ACD		銅 Copper	
切削速度 Vc SFM Cutting Speed		min	max	min	max	min	max
		656.1680	1312.3360	656.1680	1148.2940	656.1680	984.2520
直徑 DC		Inches per Tooth					
inch	mm	min	max	min	max	min	max
0.1575	4	0.0012	0.0024	0.0012	0.0024	0.0004	0.0016
0.1969	5	0.0012	0.0031	0.0012	0.0031	0.0008	0.0024
0.2362	6	0.0020	0.0039	0.0020	0.0039	0.0012	0.0028
0.3150	8	0.0020	0.0047	0.0020	0.0047	0.0016	0.0035
0.3937	10	0.0039	0.0059	0.0039	0.0059	0.0020	0.0043
0.4724	12	0.0039	0.0067	0.0039	0.0067	0.0020	0.0051
0.6299	16	0.0059	0.0087	0.0059	0.0087	0.0039	0.0063
0.7874	20	0.0059	0.0098	0.0059	0.0098	0.0039	0.0075
切削條件 Cutting Conditions		Ap ≤ 1.5D Ae ≤ 0.25D 					

切削條件使用須知：

- ①請使用精度高、鋼性高的設備及夾具。
- ②選擇適合被削材之冷卻方式及冷卻液。
- ③刀具裝配刀桿後切削前，需先量測偏擺值是否在標準值內，不正確使用易造成刀具損壞。
- ④本表格為切削參數基準值，實際加工情況，請依機台之鋼性、工件夾持、加工部位形狀等情況、調整切削參數及條件。

Instruction for cutting conditions:

- ①Please use equipment and fixtures with high precision and high rigidity.
- ②Please use the suitable cooling method and coolant for the workpiece.
- ③It is necessary to measure deflection before the cutting tool to be assembled in the arbor. Improper use may lead the tool damaged.
- ④This table is for the reference. Please according to the rigidity of the machine, workpiece clamping and the part processing method to adjust the parameter.

APAL子彈鋁刀 切削條件表

Solid Carbide End Mills-Cutting Condition Table



公制/溝切削 Metric (mm) / Slot Milling

被削材質 Work Material	鋁合金 A6061 / A7075		鋁合金鑄件 AC / ACD		銅 Copper	
切削速度 Vc m / min Cutting Speed	200 – 300 m / min		150 – 250 m / min		150 – 200 m / min	
直徑 DC mm	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth
4	19890	0.01 – 0.03	17900	0.01 – 0.03	13930	0.01 – 0.03
5	15920	0.03 – 0.05	14320	0.03 – 0.05	11140	0.01 – 0.04
6	13260	0.04 – 0.07	11940	0.04 – 0.07	9280	0.02 – 0.05
8	9950	0.04 – 0.09	8950	0.04 – 0.09	6960	0.02 – 0.06
10	7960	0.05 – 0.10	7160	0.05 – 0.10	5570	0.03 – 0.07
12	6630	0.05 – 0.11	5970	0.05 – 0.11	4640	0.04 – 0.08
16	4970	0.06 – 0.13	4480	0.06 – 0.13	3480	0.05 – 0.10
20	3980	0.06 – 0.15	3580	0.06 – 0.15	2790	0.05 – 0.11
切削條件 Cutting Conditions	$A_p \leq 1D$ 					

英制/溝切削 Imperial (inch) / Slot Milling

被削材質 Work Material		鋁合金 A6061 / A7075		鋁合金鑄件 AC / ACD		銅 Copper	
切削速度 Vc SFM Cutting Speed		min	max	min	max	min	max
		656.1680	984.2520	492.1260	820.2100	492.1260	656.1680
直徑 DC		Inches per Tooth					
inch	mm	min	max	min	max	min	max
0.1575	4	0.0004	0.0012	0.0004	0.0012	0.0004	0.0012
0.1969	5	0.0012	0.0020	0.0012	0.0020	0.0004	0.0016
0.2362	6	0.0016	0.0028	0.0016	0.0028	0.0008	0.0020
0.3150	8	0.0016	0.0035	0.0016	0.0035	0.0008	0.0024
0.3937	10	0.0020	0.0039	0.0020	0.0039	0.0012	0.0028
0.4724	12	0.0020	0.0043	0.0020	0.0043	0.0016	0.0031
0.6299	16	0.0024	0.0051	0.0024	0.0051	0.0020	0.0039
0.7874	20	0.0024	0.0059	0.0024	0.0059	0.0020	0.0043
切削條件 Cutting Conditions		Ap ≤ 1D 					

切削條件使用須知：

- ①請使用精度高、鋼性高的設備及夾具。
- ②選擇適合被削材之冷卻方式及冷卻液。
- ③刀具裝配刀桿後切削前，需先量測偏擺值是否在標準值內，不正確使用易造成刀具損壞。
- ④本表格為切削參數基準值，實際加工情況，請依機台之鋼性、工件夾持、加工部位形狀等情況、調整切削參數及條件。

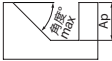
Instruction for cutting conditions:

- ①Please use equipment and fixtures with high precision and high rigidity.
- ②Please use the suitable cooling method and coolant for the workpiece.
- ③It is necessary to measure deflection before the cutting tool to be assembled in the arbor. Improper use may lead the tool damaged.
- ④This table is for the reference. Please according to the rigidity of the machine, workpiece clamping and the part processing method to adjust the parameter.

APAL子彈鋁刀 切削條件表

Solid Carbide End Mills-Cutting Condition Table

公制/斜向切削 Metric (mm) / Ramping

被削材質 Work Material	鋁合金 A6061 / A7075		鋁合金鑄件 AC / ACD		銅 Copper	
切削速度 Vc m / min Cutting Speed	200 – 300 m / min		150 – 250 m / min		150 – 200 m / min	
直徑 DC mm	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth
4	19890	0.01 – 0.03	17900	0.01 – 0.03	13930	0.01 – 0.03
5	15920	0.03 – 0.05	14320	0.03 – 0.05	11140	0.01 – 0.04
6	13260	0.04 – 0.07	11940	0.04 – 0.07	9280	0.02 – 0.05
8	9950	0.04 – 0.09	8950	0.04 – 0.09	6960	0.02 – 0.06
10	7960	0.05 – 0.10	7160	0.05 – 0.10	5570	0.03 – 0.07
12	6630	0.05 – 0.11	5970	0.05 – 0.11	4640	0.04 – 0.08
16	4970	0.06 – 0.13	4480	0.06 – 0.13	3480	0.05 – 0.10
20	3980	0.06 – 0.15	3580	0.06 – 0.15	2790	0.05 – 0.11
切削條件 Cutting Conditions	$A_p \leq 1D$ 切削角度 $\leq 45^\circ$ 					

英制/斜向切削 Imperial (inch) / Ramping

被削材質 Work Material		鋁合金 A6061 / A7075		鋁合金鑄件 AC / ACD		銅 Copper							
切削速度 Vc SFM Cutting Speed		min		max		min		max					
		656.1680		984.2520		492.1260		820.2100		492.1260		656.1680	
直徑 DC		Inches per Tooth											
inch	mm	min		max		min		max		min		max	
0.1575	4	0.0004		0.0012		0.0004		0.0012		0.0004		0.0012	
0.1969	5	0.0012		0.0020		0.0012		0.0020		0.0004		0.0016	
0.2362	6	0.0016		0.0028		0.0016		0.0028		0.0008		0.0020	
0.3150	8	0.0016		0.0035		0.0016		0.0035		0.0008		0.0024	
0.3937	10	0.0020		0.0039		0.0020		0.0039		0.0012		0.0028	
0.4724	12	0.0020		0.0043		0.0020		0.0043		0.0016		0.0031	
0.6299	16	0.0024		0.0051		0.0024		0.0051		0.0020		0.0039	
0.7874	20	0.0024		0.0059		0.0024		0.0059		0.0020		0.0043	
切削條件 Cutting Conditions		Ap ≤ 1D 切削角度 ≤ 45°											

切削條件使用須知：

- ①請使用精度高、鋼性高的設備及夾具。
- ②選擇適合被削材之冷卻方式及冷卻液。
- ③刀具裝配刀桿後切削前，需先量測偏擺值是否在標準值內，不正確使用易造成刀具損壞。
- ④本表格為切削參數基準值，實際加工情況，請依機台之鋼性、工件夾持、加工部位形狀等情況、調整切削參數及條件。

Instruction for cutting conditions:

- ①Please use equipment and fixtures with high precision and high rigidity.
- ②Please use the suitable cooling method and coolant for the workpiece.
- ③It is necessary to measure deflection before the cutting tool to be assembled in the arbor. Improper use may lead the tool damaged.
- ④This table is for the reference. Please according to the rigidity of the machine, workpiece clamping and the part processing method to adjust the parameter.

APAL子彈鋁刀 切削條件表

Solid Carbide End Mills-Cutting Condition Table



公制/垂直鑽孔 Metric (mm) / Drilling

被削材質 Work Material	鋁合金 A6061 / A7075		鋁合金鑄件 AC / ACD		銅 Copper	
切削速度 Vc m / min Cutting Speed	200 – 300 m / min		150 – 250 m / min		150 – 200 m / min	
直徑 DC mm	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth
4	19890	0.01 – 0.03	15920	0.01 – 0.03	13930	0.01 – 0.03
5	15920	0.03 – 0.05	12730	0.03 – 0.05	11140	0.01 – 0.04
6	13260	0.04 – 0.07	10610	0.04 – 0.07	9280	0.02 – 0.05
8	9950	0.04 – 0.09	7960	0.04 – 0.09	6960	0.02 – 0.06
10	7960	0.05 – 0.10	6370	0.05 – 0.10	5570	0.03 – 0.07
12	6630	0.05 – 0.11	5310	0.05 – 0.11	4640	0.04 – 0.08
16	4970	0.06 – 0.13	3980	0.06 – 0.13	3480	0.05 – 0.10
20	3980	0.06 – 0.15	3180	0.06 – 0.15	2790	0.05 – 0.11

英制/垂直鑽孔 Imperial (inch) / Drilling

被削材質 Work Material		鋁合金 A6061 / A7075		鋁合金鑄件 AC / ACD		銅 Copper	
切削速度 Vc SFM Cutting Speed		min	max	min	max	min	max
		656.1680	984.2520	492.1260	820.2100	492.1260	656.1680
直徑 DC		Inches per Tooth					
inch	mm	min	max	min	max	min	max
0.1575	4	0.0004	0.0012	0.0004	0.0012	0.0004	0.0012
0.1969	5	0.0012	0.0020	0.0012	0.0020	0.0004	0.0016
0.2362	6	0.0016	0.0028	0.0016	0.0028	0.0008	0.0020
0.3150	8	0.0016	0.0035	0.0016	0.0035	0.0008	0.0024
0.3937	10	0.0020	0.0039	0.0020	0.0039	0.0012	0.0028
0.4724	12	0.0020	0.0043	0.0020	0.0043	0.0016	0.0031
0.6299	16	0.0024	0.0051	0.0024	0.0051	0.0020	0.0039
0.7874	20	0.0024	0.0059	0.0024	0.0059	0.0020	0.0043

切削條件使用須知：

- ①請使用精度高、鋼性高的設備及夾具。
- ②選擇適合被削材之冷卻方式及冷卻液。
- ③刀具裝配刀桿後切削前，需先量測偏擺值是否在標準值內，不正確使用易造成刀具損壞。
- ④本表格為切削參數基準值，實際加工情況，請依機台之鋼性、工件夾持、加工部位形狀等情況、調整切削參數及條件。

Instruction for cutting conditions:

- ①Please use equipment and fixtures with high precision and high rigidity.
- ②Please use the suitable cooling method and coolant for the workpiece.
- ③It is necessary to measure deflection before the cutting tool to be assembled in the arbor. Improper use may lead the tool damaged.
- ④This table is for the reference. Please according to the rigidity of the machine, workpiece clamping and the part processing method to adjust the parameter.

APEF

APEF Bullet-Shaped Generic End Mill For Steel

子彈銑刀

加工材料類別
PROCESSING MATERIAL CATEGORY

鋼件
STEEL PARTS

不銹鋼
STAINLESS STEEL

鈦合金
TITANIUM ALLOY

◦ 鑽銑一體功能 ◦

APEF子彈銑刀具備業界獨有的鑽銑一體功能，能夠同時實現鑽削和銑削作業，使加工流程更為高效率，大幅度減少換刀時間，整體生產效率Plus。

Integrated Drilling and milling function. APEF bullet shape end mill integrated drilling and milling function in one tool it helps engineers to reduce the tools replacement and leads process more efficient.



◦ 獨特底刀設計

獨特的底刀設計，可執行沉頭孔或半邊孔的鑽削，充分發揮插銑的優勢，提高加工精度和效率，滿足多樣化的加工需求，擴大廣泛的應用。

The Unique bottom flute design. The unique bottom flute design is able to perform drilling of counter bore or half bore, it shows the advantage of plunge milling to improve processing accuracy and efficiency in various of demand.

◦ 全方位升級的刀刃角度設計

獨特的角度設計不僅提升排屑的流暢性，良好的排屑性能更能提高生產效率，降低刀具更換頻率，促進更高效的加工流程。

Totally upgraded Flute angle design. The unique flute angle design not only improve the chip removal, but also production efficiency. It reduces the frequency of tool replacement and achieves more efficient machining process.

◦ 減少額外刀具需求

獨特設計有效解決在加工過程中因需要額外刀具而產生的困擾，簡化了生產流程，提高了加工效率，使生產流程更加流暢。

Reduce the demand for additional tools. The unique design leads for lower additional tools usage rate and simplifies the process. It result the better efficiency and smooth production process.



實際測試影片
Test Video

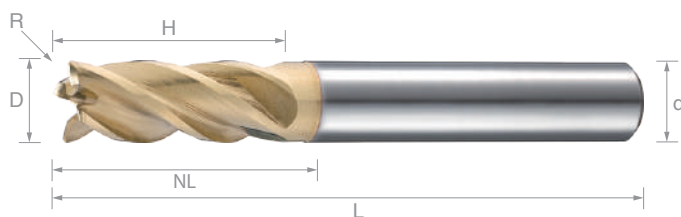


實績測試
Benchmark Test

客製化 CUSTOMIZED SERVICE

非標準尺寸可訂製 • 請另外洽詢
Welcome to inquiry the special SPEC

APEF Bullet-Shaped Generic End Mill For Steel (Generic Type)

[illegible]

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APEF子彈銑刀 切削條件表

Solid Carbide End Mills-Cutting Condition Table

公制/側面切削 Metric (mm) / Side Milling

被削材質 Work Material	碳素鋼/鑄鐵 S45C / FC 20 HRC		合金鋼 SCM / SKT / SKD / SCr 30 HRC		合金鋼 SCM / SKT / SKD 45 HRC		不銹鋼 SUS3 / SUS4	
切削速度 Vc m / min Cutting Speed	100 – 250 m / min		100 – 200 m / min		100 – 150 m / min		80 – 120 m / min	
直徑 DC mm	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth
4	13930	0.01 – 0.04	11940	0.01 – 0.03	9950	0.01 – 0.02	7960	0.01 – 0.02
5	11140	0.02 – 0.05	9550	0.01 – 0.04	7960	0.01 – 0.03	6370	0.01 – 0.03
6	9280	0.02 – 0.06	7960	0.02 – 0.05	6630	0.01 – 0.04	5310	0.01 – 0.04
8	6960	0.03 – 0.08	5970	0.02 – 0.07	4970	0.02 – 0.05	3980	0.02 – 0.05
10	5570	0.05 – 0.10	4770	0.05 – 0.08	3980	0.02 – 0.06	3180	0.02 – 0.06
12	4640	0.05 – 0.12	3980	0.05 – 0.10	3320	0.02 – 0.07	2650	0.02 – 0.07
16	3480	0.07 – 0.15	2980	0.07 – 0.12	2490	0.03 – 0.08	1990	0.03 – 0.08
20	2790	0.07 – 0.17	2390	0.07 – 0.14	1990	0.03 – 0.09	1590	0.03 – 0.09
切削條件 Cutting Conditions	$A_p \leq 1.5D$ $A_e \leq 0.25D$ 							

英制/側面切削 Imperial (inch) / Side Milling

被削材質 Work Material	碳素鋼/鑄鐵 S45C / FC 20 HRC		合金鋼 SCM / SKT / SKD / SCr 30 HRC		合金鋼 SCM / SKT / SKD 45 HRC		不銹鋼 SUS3 / SUS4	
切削速度 Vc SFM Cutting Speed	min	max	min	max	min	max	min	max
	328.0840	820.2100	328.0840	656.1680	328.0840	492.1260	262.4672	393.7008
直徑 DC	Inches per Tooth							
inch mm	min	max	min	max	min	max	min	max
0.1575 4	0.0004	0.0016	0.0004	0.0012	0.0004	0.0008	0.0004	0.0008
0.1969 5	0.0008	0.0020	0.0004	0.0016	0.0004	0.0012	0.0004	0.0012
0.2362 6	0.0008	0.0024	0.0008	0.0020	0.0004	0.0016	0.0004	0.0016
0.3150 8	0.0012	0.0031	0.0008	0.0028	0.0008	0.0020	0.0008	0.0020
0.3937 10	0.0020	0.0039	0.0020	0.0031	0.0008	0.0024	0.0008	0.0024
0.4724 12	0.0020	0.0047	0.0020	0.0039	0.0008	0.0028	0.0008	0.0028
0.6299 16	0.0028	0.0059	0.0028	0.0047	0.0012	0.0031	0.0012	0.0031
0.7874 20	0.0028	0.0067	0.0028	0.0055	0.0012	0.0035	0.0012	0.0035
切削條件 Cutting Conditions	$A_p \leq 1.5D$ $A_e \leq 0.25D$ 							

切削條件使用須知：

- ①請使用精度高、鋼性高的設備及夾具。
- ②選擇適合被削材之冷卻方式及冷卻液。
- ③刀具裝配刀桿後切削前，需先量測偏擺值是否在標準值內，不正確使用易造成刀具損壞。
- ④本表格為切削參數基準值，實際加工情況，請依機台之鋼性、工件夾持、加工部位形狀等情況、調整切削參數及條件。

Instruction for cutting conditions:

- ①Please use equipment and fixtures with high precision and high rigidity.
- ②Please use the suitable cooling method and coolant for the workpiece.
- ③It is necessary to measure deflection before the cutting tool to be assembled in the arbor. Improper use may lead the tool damaged.
- ④This table is for the reference. Please according to the rigidity of the machine, workpiece clamping and the part processing method to adjust the parameter.

APEF子彈銑刀 切削條件表

Solid Carbide End Mills-Cutting Condition Table



公制/溝切削 Metric (mm) / Slot Milling

被削材質 Work Material	碳素鋼/鑄鐵 S45C / FC 20 HRC		合金鋼 SCM / SKT / SKD / SCr 30 HRC		合金鋼 SCM / SKT / SKD 45 HRC		不銹鋼 SUS3 / SUS4	
切削速度 Vc m / min Cutting Speed	100 – 180 m / min		100 – 150 m / min		70 – 100 m / min		70 – 100 m / min	
直徑 DC mm	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth
4	11940	0.005 – 0.025	9950	0.005 – 0.020	6760	0.005 – 0.015	6760	0.005 – 0.015
5	9550	0.005 – 0.030	7960	0.005 – 0.025	5410	0.005 – 0.020	5410	0.005 – 0.020
6	7960	0.005 – 0.040	6630	0.005 – 0.030	4510	0.005 – 0.025	4510	0.005 – 0.025
8	5970	0.01 – 0.05	4970	0.010 – 0.045	3380	0.005 – 0.030	3380	0.005 – 0.030
10	4770	0.01 – 0.06	3980	0.010 – 0.055	2710	0.010 – 0.035	2710	0.010 – 0.035
12	3980	0.01 – 0.07	3320	0.010 – 0.065	2250	0.01 – 0.04	2250	0.01 – 0.04
16	2980	0.02 – 0.09	2490	0.02 – 0.08	1690	0.01 – 0.05	1690	0.01 – 0.05
20	2390	0.02 – 0.10	1990	0.02 – 0.09	1350	0.01 – 0.06	1350	0.01 – 0.06
切削條件 Cutting Conditions	$Ap \leq 1D$ 							

英制/溝切削 Imperial (inch) / Slot Milling

被削材質 Work Material	碳素鋼/鑄鐵 S45C / FC 20 HRC		合金鋼 SCM / SKT / SKD / SCr 30 HRC		合金鋼 SCM / SKT / SKD 45 HRC		不銹鋼 SUS3 / SUS4	
切削速度 Vc SFM Cutting Speed	min	max	min	max	min	max	min	max
	328.0840	590.5512	328.0840	492.1260	229.6588	328.0840	229.6588	328.0840
直徑 DC	Inches per Tooth							
inch mm	min	max	min	max	min	max	min	max
0.1575 4	0.0002	0.0010	0.0002	0.0008	0.0002	0.0006	0.0002	0.0006
0.1969 5	0.0002	0.0012	0.0002	0.0010	0.0002	0.0008	0.0002	0.0008
0.2362 6	0.0002	0.0016	0.0002	0.0012	0.0002	0.0010	0.0002	0.0010
0.3150 8	0.0004	0.0020	0.0004	0.0018	0.0002	0.0012	0.0002	0.0012
0.3937 10	0.0004	0.0024	0.0004	0.0022	0.0004	0.0014	0.0004	0.0014
0.4724 12	0.0004	0.0028	0.0004	0.0026	0.0004	0.0016	0.0004	0.0016
0.6299 16	0.0008	0.0035	0.0008	0.0031	0.0004	0.0020	0.0004	0.0020
0.7874 20	0.0008	0.0039	0.0008	0.0035	0.0004	0.0024	0.0004	0.0024
切削條件 Cutting Conditions	$Ap \leq 1D$ 							

切削條件使用須知：

- ①請使用精度高、鋼性高的設備及夾具。
- ②選擇適合被削材之冷卻方式及冷卻液。
- ③刀具裝配刀桿後切削前，需先量測偏擺值是否在標準值內，不正確使用易造成刀具損壞。
- ④本表格為切削參數基準值，實際加工情況，請依機台之鋼性、工件夾持、加工部位形狀等情況、調整切削參數及條件。

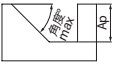
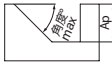
Instruction for cutting conditions:

- ①Please use equipment and fixtures with high precision and high rigidity.
- ②Please use the suitable cooling method and coolant for the workpiece.
- ③It is necessary to measure deflection before the cutting tool to be assembled in the arbor. Improper use may lead the tool damaged.
- ④This table is for the reference. Please according to the rigidity of the machine, workpiece clamping and the part processing method to adjust the parameter.

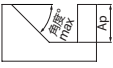
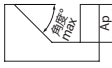
APEF子彈銑刀 切削條件表

Solid Carbide End Mills-Cutting Condition Table

公制/斜向切削 Metric (mm) / Ramping

被削材質 Work Material	碳素鋼/鑄鐵 S45C / FC 20 HRC		合金鋼 SCM / SKT / SKD / SCr 30 HRC		合金鋼 SCM / SKT / SKD 45 HRC		不銹鋼 SUS3 / SUS4	
切削速度 Vc m / min Cutting Speed	100 – 180 m / min		100 – 150 m / min		70 – 100 m / min		40 – 60 m / min	
直徑 DC mm	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth
4	11940	0.005 – 0.025	9950	0.005 – 0.020	6760	0.005 – 0.015	3980	0.005 – 0.015
5	9550	0.005 – 0.030	7960	0.005 – 0.025	5410	0.005 – 0.020	3180	0.005 – 0.015
6	7960	0.005 – 0.040	6630	0.005 – 0.030	4510	0.005 – 0.025	2650	0.005 – 0.015
8	5970	0.01 – 0.05	4970	0.010 – 0.045	3380	0.005 – 0.030	1990	0.01 – 0.02
10	4770	0.01 – 0.06	3980	0.010 – 0.055	2710	0.010 – 0.035	1590	0.01 – 0.02
12	3980	0.01 – 0.07	3320	0.010 – 0.065	2250	0.01 – 0.04	1330	0.01 – 0.02
16	2980	0.02 – 0.09	2490	0.02 – 0.08	1690	0.01 – 0.05	990	0.010 – 0.025
20	2390	0.02 – 0.10	1990	0.02 – 0.09	1350	0.01 – 0.06	800	0.010 – 0.025
切削條件 Cutting Conditions	$Ap \leq 1D$ 切削角度 $\leq 45^\circ$ 				$Ap \leq 1D$ 切削角度 $\leq 15^\circ$ 			

英制/斜向切削 Imperial (inch) / Ramping

被削材質 Work Material	碳素鋼/鑄鐵 S45C / FC 20 HRC		合金鋼 SCM / SKT / SKD / SCr 30 HRC		合金鋼 SCM / SKT / SKD 45 HRC		不銹鋼 SUS3 / SUS4	
切削速度 Vc SFM Cutting Speed	min	max	min	max	min	max	min	max
	328.0840	590.5512	328.0840	492.1260	229.6588	328.0840	131.2336	196.8504
直徑 DC	Inches per Tooth							
inch mm	min	max	min	max	min	max	min	max
0.1575 4	0.0002	0.0010	0.0002	0.0008	0.0002	0.0006	0.0002	0.0006
0.1969 5	0.0002	0.0012	0.0002	0.0010	0.0002	0.0008	0.0002	0.0006
0.2362 6	0.0002	0.0016	0.0002	0.0012	0.0002	0.0010	0.0002	0.0006
0.3150 8	0.0004	0.0020	0.0004	0.0018	0.0002	0.0012	0.0004	0.0008
0.3937 10	0.0004	0.0024	0.0004	0.0022	0.0004	0.0014	0.0004	0.0008
0.4724 12	0.0004	0.0028	0.0004	0.0026	0.0004	0.0016	0.0004	0.0008
0.6299 16	0.0008	0.0035	0.0008	0.0031	0.0004	0.0020	0.0004	0.0010
0.7874 20	0.0008	0.0039	0.0008	0.0035	0.0004	0.0024	0.0004	0.0010
切削條件 Cutting Conditions	$Ap \leq 1D$ 切削角度 $\leq 45^\circ$ 				$Ap \leq 1D$ 切削角度 $\leq 15^\circ$ 			

切削條件使用須知：

- ①請使用精度高、鋼性高的設備及夾具。
- ②選擇適合被削材之冷卻方式及冷卻液。
- ③刀具裝配刀桿後切削前，需先量測偏擺值是否在標準值內，不正確使用易造成刀具損壞。
- ④本表格為切削參數基準值，實際加工情況，請依機台之鋼性、工件夾持、加工部位形狀等情況、調整切削參數及條件。

Instruction for cutting conditions:

- ①Please use equipment and fixtures with high precision and high rigidity.
- ②Please use the suitable cooling method and coolant for the workpiece.
- ③It is necessary to measure deflection before the cutting tool to be assembled in the arbor. Improper use may lead the tool damaged.
- ④This table is for the reference. Please according to the rigidity of the machine, workpiece clamping and the part processing method to adjust the parameter.

APEF子彈銑刀 切削條件表

Solid Carbide End Mills-Cutting Condition Table



公制/垂直鑽孔 Metric (mm) / Drilling

被削材質 Work Material	碳素鋼/鑄鐵 S45C / FC 20 HRC		合金鋼 SCM / SKT / SKD / SCr 30 HRC	
切削速度 Vc m / min Cutting Speed	100 – 180 m / min		100 – 150 m / min	
直徑 DC mm	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth
4	11940	0.005 – 0.025	9950	0.005 – 0.020
5	9550	0.005 – 0.030	7960	0.005 – 0.025
6	7960	0.005 – 0.040	6630	0.005 – 0.030
8	5970	0.01 – 0.05	4970	0.010 – 0.045
10	4770	0.01 – 0.06	3980	0.010 – 0.055
12	3980	0.01 – 0.07	3320	0.010 – 0.065
16	2980	0.02 – 0.09	2490	0.02 – 0.08
20	2390	0.02 – 0.10	1990	0.02 – 0.09

英制/垂直鑽孔 Imperial (inch) / Drilling

被削材質 Work Material		碳素鋼/鑄鐵 S45C / FC 20 HRC		合金鋼 SCM / SKT / SKD / SCr 30 HRC	
切削速度 Vc SFM Cutting Speed		min		max	
		328.0840		590.5512	
直徑 DC		Inches per Tooth			
inch	mm	min		max	
0.1575	4	0.0002		0.0010	
0.1969	5	0.0002		0.0012	
0.2362	6	0.0002		0.0016	
0.3150	8	0.0004		0.0020	
0.3937	10	0.0004		0.0024	
0.4724	12	0.0004		0.0028	
0.6299	16	0.0008		0.0035	
0.7874	20	0.0008		0.0039	

切削條件使用須知：

- ①請使用精度高、鋼性高的設備及夾具。
- ②選擇適合被削材之冷卻方式及冷卻液。
- ③刀具裝配刀桿後切削前，需先量測偏擺值是否在標準值內，不正確使用易造成刀具損壞。
- ④本表格為切削參數基準值，實際加工情況，請依機台之鋼性、工件夾持、加工部位形狀等情況、調整切削參數及條件。

Instruction for cutting conditions:

- ①Please use equipment and fixtures with high precision and high rigidity.
- ②Please use the suitable cooling method and coolant for the workpiece.
- ③It is necessary to measure deflection before the cutting tool to be assembled in the arbor. Improper use may lead the tool damaged.
- ④This table is for the reference. Please according to the rigidity of the machine, workpiece clamping and the part processing method to adjust the parameter.

AP4-718

AP4-End Mill For Nickel Alloy 718 - 4 Flutes

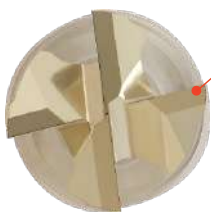
鎳基合金專用刀

加工材料類別
PROCESSING MATERIAL CATEGORY

鈦合金
TITANIUM
ALLOY

M152
STEEL

鎳基合金
NICKEL
ALLOY



◦ 不等刀設計降低與工件親附性

全方位抑制加工顫振及噪音，效果更加卓越。

Unequal flute design reduce the friction with the workpiece,
Lower machining chatter and noise.



◦ 特殊R型溝底不等螺旋與不等刀設計

增加刀具最大剛性及最大的有效排屑空間

The special R-shaped groove and unequal
helix angle design, increase the rigidity
of the tool and chip removal space.

◦ 刀具鍍層

JLC 獨家高硬度複合鍍層，
抗沾黏耐溫 1200 度以上，
有效提高刀具壽命跟加工表面精度。

Coating: JLC exclusive composite coating,
remove chips smoothly and temperature-
resistant is above 1200 degree. Improve tool
life time and surface accuracy of workpiece.

◦ 獨特外緣刀設計

加速排屑、降低排屑阻抗，
相比一般刀具壽命增加1倍以上。

Unique outer flute design,
accelerate chip out process,
double life time than the
general tools.



實際測試影片
Test Video



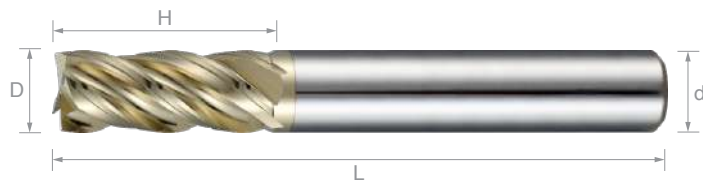
實績測試
Benchmark Test

客製化 CUSTOMIZED SERVICE

非標準尺寸可訂製・請另外洽詢
Welcome to inquire the special SPEC

AP4-718鎳基合金專用銑刀

AP4-End Mill For Nickel Alloy 718 - 4 Flutes



* 非標準尺寸可訂製

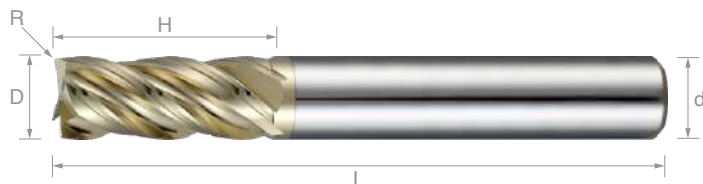


編號 (Number)	外徑 (D)	刃長 (H)	刃數 (T)	柄徑 (d)	全長 (L)
AP4-0404	4	10	4	4	50
AP4-0506	5	13	4	6	50
AP4-0606	6	15	4	6	50
AP4-0808	8	20	4	8	60
AP4-1010	10	25	4	10	75
AP4-1212	12	30	4	12	75
AP4-1616	16	45	4	16	100
AP4-2020	20	50	4	20	100

編號 (Number)	外徑 (D)	刃長 (H)	刃數 (T)	柄徑 (d)	全長 (L)
AP4L-0404	4	10	4	4	75
AP4L-0506	5	13	4	6	75
AP4L-0606	6	15	4	6	75/100
AP4L-0808	8	20	4	8	75/100
AP4L-1010	10	25	4	10	100
AP4L-1212	12	30	4	12	100
AP4L-1616	16	45	4	16	150
AP4L-2020	20	50	4	20	150

AP4-718鎳基合金專用圓鼻銑刀

AP4-Corner Radius End Mill For Nickel Alloy 718 - 4 Flutes



編號 (Number)	外徑 (D)	刃長 (H)	R角 (R)	刃數 (T)	柄徑 (d)	全長 (L)
AP4-0405R	4	10	0.5R	4	4	50
AP4-0410R	4	10	1R	4	4	50
AP4-0605R	6	15	0.5R	4	6	50
AP4-0610R	6	15	1R	4	6	50
AP4-0620R	6	15	2R	4	6	50
AP4-0805R	8	20	0.5R	4	8	60
AP4-0810R	8	20	1R	4	8	60
AP4-0820R	8	20	2R	4	8	60
AP4-1005R	10	25	0.5R	4	10	75
AP4-1010R	10	25	1R	4	10	75
AP4-1020R	10	25	2R	4	10	75
AP4-1205R	12	30	0.5R	4	12	75
AP4-1210R	12	30	1R	4	12	75
AP4-1220R	12	30	2R	4	12	75
AP4-1605R	16	45	0.5R	4	16	100
AP4-1610R	16	45	1R	4	16	100
AP4-1620R	16	45	2R	4	16	100
AP4-2010R	20	50	1R	4	20	100
AP4-2020R	20	50	2R	4	20	100

編號 (Number)	外徑 (D)	刃長 (H)	R角 (R)	刃數 (T)	柄徑 (d)	全長 (L)
AP4L-0405R	4	10	0.5R	4	4	75
AP4L-0410R	4	10	1R	4	4	75
AP4L-0605R	6	15	0.5R	4	6	75/100
AP4L-0610R	6	15	1R	4	6	75/100
AP4L-0620R	6	15	2R	4	6	75/100
AP4L-0805R	8	20	0.5R	4	8	75/100
AP4L-0810R	8	20	1R	4	8	75/100
AP4L-0820R	8	20	2R	4	8	75/100
AP4L-1005R	10	25	0.5R	4	10	100
AP4L-1010R	10	25	1R	4	10	100
AP4L-1020R	10	25	2R	4	10	100
AP4L-1205R	12	30	0.5R	4	12	100
AP4L-1210R	12	30	1R	4	12	100
AP4L-1220R	12	30	2R	4	12	100
AP4L-1605R	16	45	0.5R	4	16	150
AP4L-1610R	16	45	1R	4	16	150
AP4L-1620R	16	45	2R	4	16	150
AP4L-2010R	20	50	1R	4	20	150
AP4L-2020R	20	50	2R	4	20	150

切削條件表 Cutting Condition P.23-P.24

AP5-718

AP5-End Mill For Nickel Alloy 718 - 5 Flutes

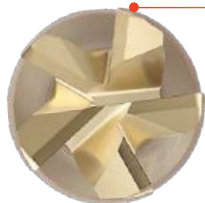
鎳基合金專用刀

加工材料類別
PROCESSING MATERIAL CATEGORY

鈦合金
TITANIUM
ALLOY

M152
STEEL

鎳基合金
NICKEL
ALLOY



5刃高剛性設計

側銑專用，精修表面品質更好，
整體F值較4刃增加2成以上，壽命更高。

5 flutes high-rigidity design for side milling, excellent finished surface quality. The overall F-value is increased more than 20% compared with the 4 flutes type, extends the tool's lifespan.

刀具鍍層

JLC 獨家高硬度複合鍍層，
抗沾黏耐溫 1200 度以上，
有效提高刀具壽命跟加工表面精度。

Coating: JLC exclusive composite coating,
remove chips smoothly and temperature-resistant
is above 1200 degree. Improve tool life time and
surface accuracy of workpiece.

特殊刃口設計

完全不用降低切削量，
達到最高效率極致。

Special flute design,
no need to reduce
the cutting feeds.



實際測試影片
Test Video



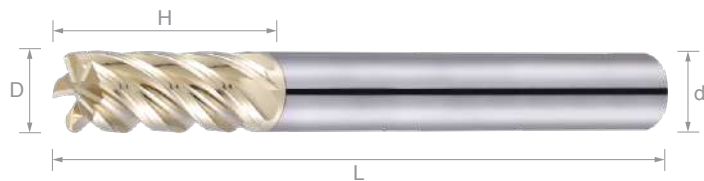
實績測試
Benchmark Test

客製化 CUSTOMIZED
SERVICE

非標準尺寸可訂製 • 請另外洽詢
Welcome to inquiry the special SPEC

AP5-718鎳基合金專用銑刀

AP5-End Mill For Nickel Alloy 718 - 5 Flutes



* 非標準尺寸可訂製



編號 (Number)	外徑 (D)	刃長 (H)	刃數 (T)	柄徑 (d)	全長 (L)
AP5-0404	4	10	5	4	50
AP5-0506	5	13	5	6	50
AP5-0606	6	15	5	6	50
AP5-0808	8	20	5	8	60
AP5-1010	10	25	5	10	75
AP5-1212	12	30	5	12	75
AP5-1616	16	45	5	16	100
AP5-2020	20	50	5	20	100

編號 (Number)	外徑 (D)	刃長 (H)	刃數 (T)	柄徑 (d)	全長 (L)
AP5L-0404	4	10	5	4	75
AP5L-0506	5	13	5	6	75
AP5L-0606	6	15	5	6	75/100
AP5L-0808	8	20	5	8	75/100
AP5L-1010	10	25	5	10	100
AP5L-1212	12	30	5	12	100
AP5L-1616	16	45	5	16	150
AP5L-2020	20	50	5	20	150

AP5-718鎳基合金專用圓鼻銑刀

AP5-Corner Radius End Mill For Nickel Alloy 718 - 5 Flutes



編號 (Number)	外徑 (D)	刃長 (H)	R角 (R)	刃數 (T)	柄徑 (d)	全長 (L)
AP5-0405R	4	10	0.5R	5	4	50
AP5-0410R	4	10	1R	5	4	50
AP5-0605R	6	15	0.5R	5	6	50
AP5-0610R	6	15	1R	5	6	50
AP5-0620R	6	15	2R	5	6	50
AP5-0805R	8	20	0.5R	5	8	60
AP5-0810R	8	20	1R	5	8	60
AP5-0820R	8	20	2R	5	8	60
AP5-1005R	10	25	0.5R	5	10	75
AP5-1010R	10	25	1R	5	10	75
AP5-1020R	10	25	2R	5	10	75
AP5-1205R	12	30	0.5R	5	12	75
AP5-1210R	12	30	1R	5	12	75
AP5-1220R	12	30	2R	5	12	75
AP5-1605R	16	45	0.5R	5	16	100
AP5-1610R	16	45	1R	5	16	100
AP5-1620R	16	45	2R	5	16	100
AP5-2010R	20	50	1R	5	20	100
AP5-2020R	20	50	2R	5	20	100

編號 (Number)	外徑 (D)	刃長 (H)	R角 (R)	刃數 (T)	柄徑 (d)	全長 (L)
AP5L-0405R	4	10	0.5R	5	4	75
AP5L-0410R	4	10	1R	5	4	75
AP5L-0605R	6	15	0.5R	5	6	75/100
AP5L-0610R	6	15	1R	5	6	75/100
AP5L-0620R	6	15	2R	5	6	75/100
AP5L-0805R	8	20	0.5R	5	8	75/100
AP5L-0810R	8	20	1R	5	8	75/100
AP5L-0820R	8	20	2R	5	8	75/100
AP5L-1005R	10	25	0.5R	5	10	100
AP5L-1010R	10	25	1R	5	10	100
AP5L-1020R	10	25	2R	5	10	100
AP5L-1205R	12	30	0.5R	5	12	100
AP5L-1210R	12	30	1R	5	12	100
AP5L-1220R	12	30	2R	5	12	100
AP5L-1605R	16	45	0.5R	5	16	150
AP5L-1610R	16	45	1R	5	16	150
AP5L-1620R	16	45	2R	5	16	150
AP5L-2010R	20	50	1R	5	20	150
AP5L-2020R	20	50	2R	5	20	150

切削條件表 Cutting Condition P.23-P.24

AP4/AP5-718 鎳基合金專用銑刀/圓鼻刀 切削條件表

Solid Carbide End Mills-Cutting Condition Table

公制/側面切削 Metric (mm) / Side Milling

被削材質 Work Material	鎳基合金 Inconel 718		鈦合金 Ti 6Al - 4V		不銹鋼 SUS630	
切削速度 Vc m / min Cutting Speed	25 – 40 m / min		60 – 80 m / min		70 – 90 m / min	
直徑 DC mm	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth
2	5170	0.010 – 0.015	11140	0.01 – 0.02	12730	0.01 – 0.02
3	3450	0.01 – 0.02	7430	0.01 – 0.03	8490	0.01 – 0.03
4	2590	0.01 – 0.03	5570	0.01 – 0.04	6370	0.01 – 0.04
5	2070	0.015 – 0.040	4460	0.015 – 0.050	5090	0.015 – 0.050
6	1720	0.02 – 0.05	3710	0.02 – 0.06	4240	0.02 – 0.06
8	1290	0.02 – 0.05	2790	0.02 – 0.06	3180	0.02 – 0.06
10	1030	0.03 – 0.06	2230	0.03 – 0.07	2550	0.03 – 0.07
12	860	0.03 – 0.07	1860	0.03 – 0.08	2120	0.03 – 0.08
16	650	0.04 – 0.08	1390	0.04 – 0.08	1590	0.04 – 0.08
20	520	0.04 – 0.09	1110	0.04 – 0.10	1270	0.04 – 0.10
切削條件 Cutting Conditions	$A_p \leq 1.5D$ $A_e \leq 0.2D$ 					

英制/側面切削 Imperial (inch) / Side Milling

被削材質 Work Material	鎳基合金 Inconel 718		鈦合金 Ti 6Al - 4V		不銹鋼 SUS630	
切削速度 Vc SFM Cutting Speed	min	max	min	max	min	max
	82.0210	131.2336	196.8504	262.4672	229.6588	295.2756
直徑 DC	Inches per Tooth					
inch mm	min	max	min	max	min	max
0.0787 2	0.0004	0.0006	0.0004	0.0008	0.0004	0.0008
0.1181 3	0.0004	0.0008	0.0004	0.0012	0.0004	0.0012
0.1575 4	0.0004	0.0012	0.0004	0.0016	0.0004	0.0016
0.1969 5	0.0006	0.0016	0.0006	0.0020	0.0006	0.0020
0.2362 6	0.0008	0.0020	0.0008	0.0024	0.0008	0.0024
0.3150 8	0.0008	0.0020	0.0008	0.0024	0.0008	0.0024
0.3937 10	0.0012	0.0024	0.0012	0.0028	0.0012	0.0028
0.4724 12	0.0012	0.0028	0.0012	0.0031	0.0012	0.0031
0.6299 16	0.0016	0.0031	0.0016	0.0031	0.0016	0.0031
0.7874 20	0.0016	0.0035	0.0016	0.0039	0.0016	0.0039
切削條件 Cutting Conditions	$A_p \leq 1.5D$ $A_e \leq 0.2D$ 					

切削條件使用須知：

- ①請使用精度高、鋼性高的設備及夾具。
- ②選擇適合被削材之冷卻方式及冷卻液。
- ③刀具裝配刀桿後切削前，需先量測偏擺值是否在標準值內，不正確使用易造成刀具損壞。
- ④本表格為切削參數基準值，實際加工情況，請依機台之鋼性、工件夾持、加工部位形狀等情況、調整切削參數及條件。

Instruction for cutting conditions:

- ①Please use equipment and fixtures with high precision and high rigidity.
- ②Please use the suitable cooling method and coolant for the workpiece.
- ③It is necessary to measure deflection before the cutting tool to be assembled in the arbor. Improper use may lead the tool damaged.
- ④This table is for the reference. Please according to the rigidity of the machine, workpiece clamping and the part processing method to adjust the parameter.

AP4/AP5-718 鎳基合金專用銑刀/圓鼻刀 切削條件表

Solid Carbide End Mills-Cutting Condition Table



公制/溝切削 Metric (mm) / Slot Milling

被削材質 Work Material	鎳基合金 Inconel 718		鈦合金 Ti 6Al - 4V		不銹鋼 SUS630	
切削速度 Vc m / min Cutting Speed	20 – 30 m / min		50 – 70 m / min		60 – 80 m / min	
直徑 DC mm	主軸轉速 Speed Rpm	每刀進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刀進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刀進給 Fz mm / tooth
2	3980	0.010 – 0.015	9550	0.01 – 0.02	11140	0.01 – 0.02
3	2650	0.010 – 0.020	6370	0.01 – 0.03	7430	0.01 – 0.03
4	1990	0.015 – 0.025	4770	0.015 – 0.035	5570	0.015 – 0.035
5	1590	0.015 – 0.030	3820	0.015 – 0.040	4460	0.015 – 0.040
6	1330	0.020 – 0.040	3180	0.020 – 0.045	3710	0.020 – 0.045
8	990	0.020 – 0.045	2390	0.02 – 0.05	2790	0.02 – 0.05
10	800	0.025 – 0.050	1910	0.025 – 0.06	2230	0.025 – 0.06
12	660	0.025 – 0.055	1590	0.03 – 0.07	1860	0.03 – 0.07
16	500	0.03 – 0.06	1190	0.04 – 0.09	1390	0.04 – 0.09
20	400	0.03 – 0.07	950	0.05 – 0.10	1110	0.05 – 0.10
切削條件 Cutting Conditions	$A_p \leq 0.25D$ 					

英制/溝切削 Imperial (inch) / Slot Milling

被削材質 Work Material		鎳基合金 Inconel 718		鈦合金 Ti 6Al - 4V		不銹鋼 SUS630	
切削速度 Vc SFM Cutting Speed		min	max	min	max	min	max
		65.6168	98.4252	164.0420	229.6588	196.8504	262.4672
直徑 DC		Inches per Tooth					
inch	mm	min	max	min	max	min	max
0.0787	2	0.0004	0.0006	0.0004	0.0008	0.0004	0.0008
0.1181	3	0.0004	0.0008	0.0004	0.0012	0.0004	0.0012
0.1575	4	0.0006	0.0010	0.0006	0.0014	0.0006	0.0014
0.1969	5	0.0006	0.0012	0.0006	0.0016	0.0006	0.0016
0.2362	6	0.0008	0.0016	0.0008	0.0018	0.0008	0.0018
0.3150	8	0.0008	0.0018	0.0008	0.0020	0.0008	0.0020
0.3937	10	0.0010	0.0020	0.0010	0.0024	0.0010	0.0024
0.4724	12	0.0010	0.0022	0.0012	0.0028	0.0012	0.0028
0.6299	16	0.0012	0.0024	0.0016	0.0035	0.0016	0.0035
0.7874	20	0.0012	0.0028	0.0020	0.0039	0.0020	0.0039
切削條件 Cutting Conditions		Ap ≦ 0.25D 					

切削條件使用須知：

- ①請使用精度高、鋼性高的設備及夾具。
- ②選擇適合被削材之冷卻方式及冷卻液。
- ③刀具裝配刀桿後切削前，需先量測偏擺值是否在標準值內，不正確使用易造成刀具損壞。
- ④本表格為切削參數基準值，實際加工情況，請依機台之鋼性、工件夾持、加工部位形狀等情況、調整切削參數及條件。

Instruction for cutting conditions:

- ①Please use equipment and fixtures with high precision and high rigidity.
- ②Please use the suitable cooling method and coolant for the workpiece.
- ③It is necessary to measure deflection before the cutting tool to be assembled in the arbor. Improper use may lead the tool damaged.
- ④This table is for the reference. Please according to the rigidity of the machine, workpiece clamping and the part processing method to adjust the parameter.

AP9-718

AP9-End Mill For Nickel Alloy 718 - 9 Flutes

鎳基合金專用刀

加工材料類別
PROCESSING MATERIAL CATEGORY

鈦合金
TITANIUM
ALLOY

M152
STEEL

鎳基合金
NICKEL
ALLOY

有效切斷廢屑， 降低積熱破壞刀刃。

絕佳的斷屑槽設計，能夠在高進給量的情況下，將工件廢屑斷成小段，減少長絲狀廢屑的產生，除了有效避免廢屑與熱能機聚在刀刃及重複切削，更進一步提高整體加工效率。

Effectively cut off the chips and reduce heat damage on the flute. The excellent chip breaker design cut off the chips smoothly under high feed rates and reduce the long filamentary waste. In addition to effectively preventing waste chips and thermal heat from gathering on the flute and repeated milling.

斷屑槽設計

Chip Breaker
Groove design

九刀設計

專業的九刀設計，讓切線速度提升至原有的兩倍以上，顯著提高加工效率，滿足現代化加工的需求。

Nine flutes design. The professional nine flutes design leads the cutting speed to twice the original and improves processing efficiency significantly.

芯厚加大

透過加大底刃芯厚及刀徑芯厚加大，提供更強的穩定性和耐用性，確保整體切削的高效表現。

Increased core diameter. By increasing the core diameter both of the bottom flute and cutting length, it provides greater stability and durability performance in overall milling process.

動態加工及擺線加工

此設計特別針對動態加工和擺線加工，能在這些特定應用中能實現至少1至2倍的效率提升，滿足高要求加工環境的需求，確保持續穩定的生產效率。

Dynamic and Trochoidal process. This design is especially for dynamic and trochoidal process. It can achieve at least 1 to 2 times efficiency improvement in these specific applications and fit the higher standard environment to ensure the stable process.

歐系棒材與鍍層技術

JLC一貫的歐系專用棒材與複合式鍍層技術，更增加刀具耐磨性，完美因應各類航太與其他產業難切削的挑戰。

Imported European carbide round bar and coating technology. JLC keep using European carbide round bar and composite coating to make sure each tool more wear resistant and longer life time. It provides the best milling solution for aerospace and other industries.



實際測試影片
Test Video



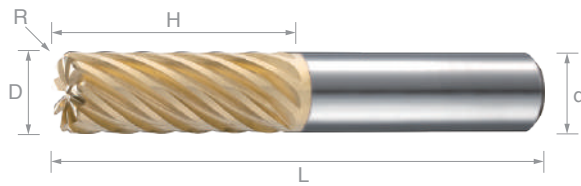
實績測試
Benchmark Test

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AP9-718鎳基合金專用圓鼻銑刀

AP9-Corner Radius End Mill For Nickel Alloy 718 - 9 Flutes



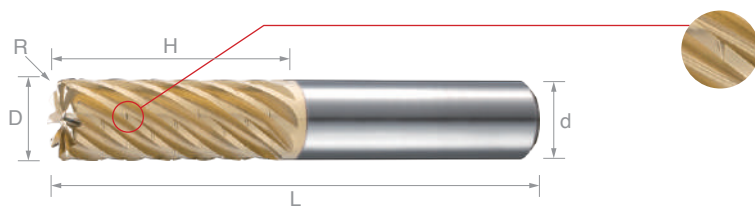
* 非標準尺寸可訂製



編號 (Number)	外徑 (D)	刃長 (H)	R角 (R)	刃數 (T)	柄徑 (d)	全長 (L)
AP9-0805R	8	20	0.5R	9	8	60
AP9-0808R	8	20	0.8R	9	8	60
AP9-0810R	8	20	1R	9	8	60
AP9-0820R	8	20	2R	9	8	60
AP9-1005R	10	25	0.5R	9	10	75
AP9-1010R	10	25	1R	9	10	75
AP9-1020R	10	25	2R	9	10	75
AP9-1205R	12	32	0.5R	9	12	75
AP9-1210R	12	32	1R	9	12	75
AP9-1220R	12	32	2R	9	12	75
AP9-1230R	12	32	3R	9	12	75
AP9-1605R	16	45	0.5R	9	16	100
AP9-1610R	16	45	1R	9	16	100
AP9-1620R	16	45	2R	9	16	100
AP9-1630R	16	45	3R	9	16	100
AP9-1640R	16	45	4R	9	16	100
AP9-2005R	20	50	0.5R	9	20	100
AP9-2010R	20	50	1R	9	20	100

AP9-718鎳基合金專用圓鼻銑刀(斷屑槽)

AP9-Corner Radius End Mill For Nickel Alloy 718 (Chip Breaker Groove) - 9 Flutes

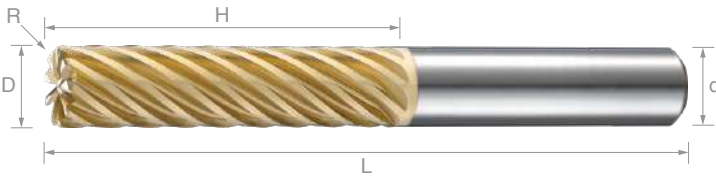


編號 (Number)	外徑 (D)	刃長 (H)	R角 (R)	刃數 (T)	柄徑 (d)	全長 (L)
AP9X-0805R	8	20	0.5R	9	8	60
AP9X-0810R	8	20	1R	9	8	60
AP9X-1005R	10	25	0.5R	9	10	75
AP9X-1010R	10	25	1R	9	10	75
AP9X-1205R	12	32	0.5R	9	12	75
AP9X-1210R	12	32	1R	9	12	75
AP9X-1605R	16	45	0.5R	9	16	100
AP9X-1610R	16	45	1R	9	16	100
AP9X-2005R	20	50	0.5R	9	20	100
AP9X-2010R	20	50	1R	9	20	100

切削條件表 Cutting Condition P.29

AP9-718鎳基合金專用圓鼻銑刀(長刃型)

AP9-Corner Radius End Mill For Nickel Alloy 718 (Long Flute) - 9 Flutes



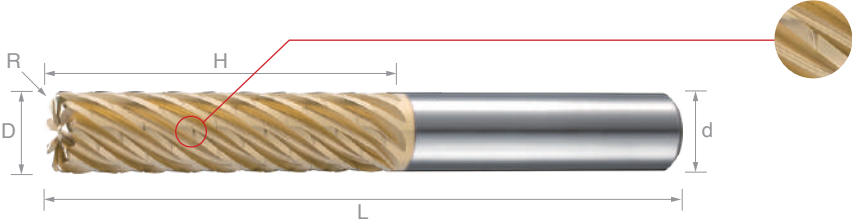
* 非標準尺寸可訂製



編號 (Number)	外徑 (D)	刃長 (H)	R角 (R)	刃數 (T)	柄徑 (d)	全長 (L)
AP9L-1210R	12	52	1R	9	12	100
AP9L-1210RS	12	62	1R	9	12	110
AP9L-1610R	16	66	1R	9	16	120
AP9L-1610RS	16	82	1R	9	16	150

AP9-718鎳基合金專用圓鼻銑刀(長刃型/斷屑槽)

AP9-Corner Radius End Mill For Nickel Alloy 718 (Long Flute/Chip Breaker Groove) - 9 Flutes

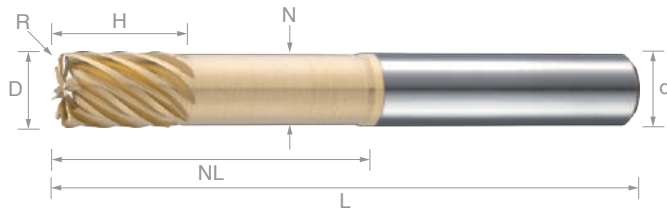


編號 (Number)	外徑 (D)	刃長 (H)	R角 (R)	刃數 (T)	柄徑 (d)	全長 (L)
AP9LX-1210R	12	52	1R	9	12	100
AP9LX-1210RS	12	62	1R	9	12	110
AP9LX-1610R	16	66	1R	9	16	120
AP9LX-1610RS	16	82	1R	9	16	150

切削條件表 Cutting Condition P.30

AP9-718鎳基合金專用圓鼻銑刀(長頸型)

AP9-Corner Radius End Mill For Nickel Alloy 718 (Long Neck) - 9 Flutes



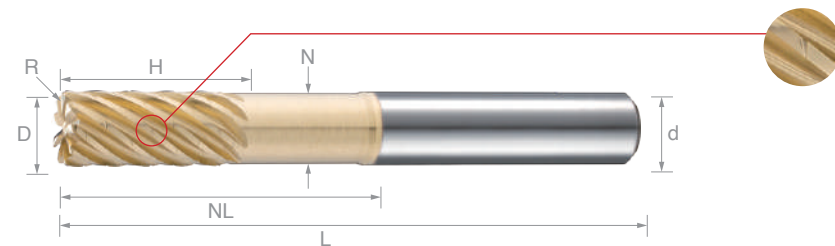
* 非標準尺寸可訂製



編號 (Number)	外徑 (D)	刃長 (H)	R角 (R)	頸徑 (N)	有效長 (NL)	刃數 (T)	柄徑 (d)	全長 (L)
AP9NL-1250	12	18	1R	11.4	50	9	12	100
AP9NL-1262	12	18	1R	11.4	62	9	12	110
AP9NL-1666	16	35	1R	15.2	66	9	16	120
AP9NL-1682	16	35	1R	15.2	82	9	16	150

AP9-718鎳基合金專用圓鼻銑刀(長頸型/斷屑槽)

AP9-Corner Radius End Mill For Nickel Alloy 718 (Long Neck/Chip Breaker Groove) - 9 Flutes



編號 (Number)	外徑 (D)	刃長 (H)	R角 (R)	頸徑 (N)	有效長 (NL)	刃數 (T)	柄徑 (d)	全長 (L)
AP9NLX-1250	12	27	1R	11.4	50	9	12	100
AP9NLX-1262	12	27	1R	11.4	62	9	12	110
AP9NLX-1666	16	35	1R	15.2	66	9	16	120
AP9NLX-1682	16	35	1R	15.2	82	9	16	150

切削條件表 Cutting Condition P.30

AP9-718 鎳基合金專用圓鼻銑刀(標準型) 切削條件表

Solid Carbide End Mills-Cutting Condition Table

公制/側面切削/擺線加工 Metric (mm) / Side Milling / Trochoidal Milling

被削材質 Work Material	碳素鋼/鑄鐵 S45C / FC 20 HRC		合金鋼 SCM / SKT / SKD / SCr		不銹鋼 SUS304		鎳基合金 Inconel 718		鈦合金 Ti 6Al - 4V	
切削速度 Vc m / min Cutting Speed	160 – 220 m / min		140 – 200 m / min		120 – 190 m / min		35 – 50 m / min		80 – 110 m / min	
直徑 DC mm	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth
8	7560	0.08 – 0.16	6760	0.06 – 0.15	6170	0.02 – 0.05	1690	0.02 – 0.04	3780	0.02 – 0.06
10	6050	0.09 – 0.17	5410	0.07 – 0.16	4930	0.03 – 0.06	1350	0.02 – 0.05	3020	0.03 – 0.07
12	5040	0.10 – 0.18	4510	0.08 – 0.17	4110	0.03 – 0.07	1130	0.02 – 0.05	2520	0.03 – 0.08
16	3780	0.11 – 0.19	3380	0.09 – 0.18	3080	0.04 – 0.08	850	0.03 – 0.06	1890	0.04 – 0.08
20	3020	0.12 – 0.20	2710	0.10 – 0.19	2470	0.05 – 0.09	680	0.03 – 0.07	1510	0.04 – 0.10
切削條件 Cutting Conditions	$A_e \leq 0.07D$ 									

英制/側面切削/擺線加工 Imperial (inch) / Side Milling / Trochoidal Milling

被削材質 Work Material		碳素鋼/鑄鐵 S45C / FC 20 HRC		合金鋼 SCM / SKT / SKD / SCr		不銹鋼 SUS304		鎳基合金 Inconel 718		鈦合金 Ti 6Al - 4V	
切削速度 Vc SFM Cutting Speed		min	max	min	max	min	max	min	max	min	max
		524.9344	721.7848	459.3176	656.1680	393.7008	623.3596	114.8294	164.0420	262.4672	360.8924
直徑 DC		Inches per Tooth									
inch	mm	min	max	min	max	min	max	min	max	min	max
0.3150	8	0.0031	0.0063	0.0024	0.0059	0.0008	0.0020	0.0008	0.0016	0.0008	0.0024
0.3937	10	0.0035	0.0067	0.0028	0.0063	0.0012	0.0024	0.0008	0.0020	0.0012	0.0028
0.4724	12	0.0039	0.0071	0.0031	0.0067	0.0012	0.0028	0.0008	0.0020	0.0012	0.0031
0.6299	16	0.0043	0.0075	0.0035	0.0071	0.0016	0.0031	0.0012	0.0024	0.0016	0.0031
0.7874	20	0.0047	0.0079	0.0039	0.0075	0.0020	0.0035	0.0012	0.0028	0.0016	0.0039
切削條件 Cutting Conditions		Ae ≤ 0.07D 									

切削條件使用須知：

- ①請使用精度高、鋼性高的設備及夾具。
- ②選擇適合被削材之冷卻方式及冷卻液。
- ③刀具裝配刀桿後切削前，需先量測偏擺值是否在標準值內，不正確使用易造成刀具損壞。
- ④本表格為切削參數基準值，實際加工情況，請依機台之鋼性、工件夾持、加工部位形狀等情況、調整切削參數及條件。

Instruction for cutting conditions:

- ①Please use equipment and fixtures with high precision and high rigidity.
- ②Please use the suitable cooling method and coolant for the workpiece.
- ③It is necessary to measure deflection before the cutting tool to be assembled in the arbor. Improper use may lead the tool damaged.
- ④This table is for the reference. Please according to the rigidity of the machine, workpiece clamping and the part processing method to adjust the parameter.

AP9-718 鎳基合金專用圓鼻銑刀(長刃型/長頸型) 切削條件表

Solid Carbide End Mills-Cutting Condition Table



公制/側面切削/擺線加工 Metric (mm) / Side Milling / Trochoidal Milling

被削材質 Work Material	碳素鋼/鑄鐵 S45C / FC 20 HRC		合金鋼 SCM / SKT / SKD / SCr		不銹鋼 SUS304		鎳基合金 Inconel 718		鈦合金 Ti 6Al - 4V	
切削速度 Vc m / min Cutting Speed	130 – 190 m / min		110 – 170 m / min		90 – 160 m / min		25 – 40 m / min		60 – 90 m / min	
直徑 DC mm	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth
12	4240	0.03 – 0.16	3710	0.03 – 0.15	3320	0.02 – 0.06	860	0.01 – 0.03	1990	0.02 – 0.05
16	3180	0.03 – 0.17	2790	0.03 – 0.16	2490	0.03 – 0.07	650	0.02 – 0.04	1490	0.03 – 0.06
切削條件 Cutting Conditions	Ae ≤ 0.04D 									

英制/側面切削/擺線加工 Imperial (inch) / Side Milling / Trochoidal Milling

被削材質 Work Material		碳素鋼/鑄鐵 S45C / FC 20 HRC		合金鋼 SCM / SKT / SKD / SCr		不銹鋼 SUS304		鎳基合金 Inconel 718		鈦合金 Ti 6Al - 4V	
切削速度 Vc SFM Cutting Speed		min	max	min	max	min	max	min	max	min	max
		426.5092	623.3596	360.8924	557.7428	295.2756	524.9344	82.0210	131.2336	196.8504	295.2756
直徑 DC		Inches per Tooth									
inch	mm	min	max	min	max	min	max	min	max	min	max
0.4724	12	0.0012	0.0063	0.0012	0.0059	0.0008	0.0024	0.0004	0.0012	0.0008	0.0020
0.6299	16	0.0012	0.0067	0.0012	0.0063	0.0012	0.0028	0.0008	0.0016	0.0012	0.0024
切削條件 Cutting Conditions		Ae ≤ 0.04D 									

切削條件使用須知：

- ①請使用精度高、鋼性高的設備及夾具。
- ②選擇適合被削材之冷卻方式及冷卻液。
- ③刀具裝配刀桿後切削前，需先量測偏擺值是否在標準值內，不正確使用易造成刀具損壞。
- ④本表格為切削參數基準值，實際加工情況，請依機台之鋼性、工件夾持、加工部位形狀等情況、調整切削參數及條件。

Instruction for cutting conditions:

- ①Please use equipment and fixtures with high precision and high rigidity.
- ②Please use the suitable cooling method and coolant for the workpiece.
- ③It is necessary to measure deflection before the cutting tool to be assembled in the arbor. Improper use may lead the tool damaged.
- ④This table is for the reference. Please according to the rigidity of the machine, workpiece clamping and the part processing method to adjust the parameter.

APB

APB-Bullet-Shaped Design-Ball End Mill - 2 Flutes

子彈球刀

加工材料類別
PROCESSING MATERIAL CATEGORY

鈦合金
TITANIUM
ALLOY

M152
STEEL

鎳基合金
NICKEL
ALLOY

靜點加大不易崩裂

Enlarge the static point to prevent damage.

加大底角排屑角度降低切削阻力及積屑

Increase the bottom chip out angle to reduce cutting resistance and chip accumulation.

主要用於開溝、 輪廓銑削

運用獨特的子彈型切削槽來做加工，
加工工件表面更均勻，去屑迅速、
不沾黏，工件光潔度更加優異。

For ditch and profile process with bullet-shaped
cutting groove. Easy to remove chips and the
surface is more equal than general type.

嚴選歐系底材，材料穩定

高剛性刀刃結構使抑制顫振及
噪音的效果更加優越。

Selected carbide round bar from
Europe high rigidity flutes lead
the effect of lower tools chatter
and processing noise.

刀具鍍層

JLC 高韌性專用鍍層，有效覆蓋靜點，
提高刀具壽命跟加工表面精度。

Coating: JLC exclusive coating
(ball end mill static point is covered)
improve tool life time and surface
accuracy of workpiece.



實際測試影片
Test Video



實績測試
Benchmark Test

客製化 CUSTOMIZED
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Welcome to inquiry the special SPEC

APB-Bullet-Shaped Design-Ball End Mill - 2 Flutes



2 Flutes 30° HRC 55 Profiling

[illegible]

APN

APN-Bullet-Shaped Design-Ball End Mill - 4 Flutes

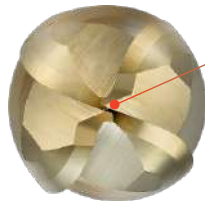
子彈球刀

加工材料類別
PROCESSING MATERIAL CATEGORY

鈦合金
TITANIUM
ALLOY

M152
STEEL

鎳基合金
NICKEL
ALLOY



特殊子彈刀型設計

流線刀口抗崩角設計，加大底角降低切削阻力。

Special bullet shape design, improve anti-chipping function, large bottom angle to reduce cutting resistance.

主要用於開溝、 輪廓銑削

運用獨特的子彈型切削槽來做加工，加工工件表面更均勻，去屑迅速、不沾黏，工件光潔度更加優異。

For ditch and profile process with bullet-shaped cutting groove. Easy to remove chips and the surface is more equal than general type.

嚴選歐系底材，材料穩定

高剛性刀刃結構使抑制顫振及噪音的效果更加優越。

Selected carbide round bar from Europe high rigidity flutes lead the effect of lower tools chatter and processing noise.

刀具鍍層

JLC 高韌性專用鍍層，有效覆蓋靜點，提高刀具壽命跟加工表面精度。

Coating: JLC exclusive coating (ball end mill static point is covered) improve tool life time and surface accuracy of workpiece.



實際測試影片
Test Video



實績測試
Benchmark Test

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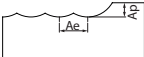
APN-Bullet-Shaped Design-Ball End Mill - 4 Flutes




[illegible]

34

Solid Carbide End Mills-Cutting Condition Table

被削材質 Work Material		鎳基合金 Inconel 718		鈦合金 Ti 6Al - 4V		不銹鋼 SUS630	
切削速度 Vc m / min Cutting Speed		20 – 40 m / min		60 – 80 m / min		80 – 100 m / min	
直徑 DC mm	半徑 R mm	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth
2	1R	4770	0.01 – 0.02	11140	0.01 – 0.03	14320	0.01 – 0.03
3	1.5R	3180	0.010 – 0.025	7430	0.01 – 0.04	9550	0.01 – 0.04
4	2R	2390	0.01 – 0.03	5570	0.015 – 0.050	7160	0.015 – 0.050
6	3R	1590	0.015 – 0.040	3710	0.015 – 0.060	4770	0.015 – 0.060
8	4R	1190	0.015 – 0.050	2790	0.02 – 0.07	3580	0.02 – 0.07
10	5R	950	0.015 – 0.060	2230	0.02 – 0.08	2860	0.02 – 0.08
12	6R	800	0.02 – 0.07	1860	0.025 – 0.090	2390	0.025 – 0.090
16	8R	600	0.02 – 0.08	1390	0.025 – 0.090	1790	0.025 – 0.090
20	10R	480	0.02 – 0.09	1110	0.03 – 0.10	1430	0.03 – 0.10
切削條件 Cutting Conditions		Ap ≦ 0.025D Ae ≦ 0.04D 					

- ①請使用精度高、鋼性高的設備及夾具。
- ②選擇適合被削材之冷卻方式及冷卻液。
- ③刀具裝配刀桿後切削前，需先量測偏擺值是否在標準值內，
不正確使用易造成刀具損壞。
- ④本表格為切削參數基準值，實際加工情況，請依機台之鋼性、
工件夾持、加工部位形狀等情況，調整切削參數及條件。

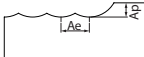
- ① Please use equipment and fixtures with high precision and high rigidity.
- ② Please use the suitable cooling method and coolant for the workpiece.
- ③ It is necessary to measure deflection before the cutting tool to be assembled in the arbor.
Improper use may lead the tool damaged.
- ④ This table is for the reference. Please according to the rigidity of the machine, workpiece clamping and the part processing method to adjust the parameter.

718鎳基合金專用球型銑刀 切削條件表

Solid Carbide End Mills-Cutting Condition Table



英制 Imperial (inch)

被削材質 Work Material				鎳基合金 Inconel 718		鈦合金 Ti 6Al - 4V		不銹鋼 SUS630	
切削速度 Vc SFM Cutting Speed				min	max	min	max	min	max
				65.6168	131.2336	196.8504	262.4672	262.4672	328.0840
直徑 DC		半徑 R		Inches per Tooth					
inch	mm	inch	mm	min	max	min	max	min	max
0.0787	2	0.0394R	1R	0.0004	0.0008	0.0004	0.0012	0.0004	0.0012
0.1181	3	0.0591R	1.5R	0.0004	0.0010	0.0004	0.0016	0.0004	0.0016
0.1575	4	0.0787R	2R	0.0004	0.0012	0.0006	0.0020	0.0006	0.0020
0.2362	6	0.1181R	3R	0.0006	0.0016	0.0006	0.0024	0.0006	0.0024
0.3150	8	0.1575R	4R	0.0006	0.0020	0.0008	0.0028	0.0008	0.0028
0.3937	10	0.1969R	5R	0.0006	0.0024	0.0008	0.0031	0.0008	0.0031
0.4724	12	0.2362R	6R	0.0008	0.0028	0.0010	0.0035	0.0010	0.0035
0.6299	16	0.3150R	8R	0.0008	0.0031	0.0010	0.0035	0.0010	0.0035
0.7874	20	0.3937R	10R	0.0008	0.0035	0.0012	0.0039	0.0012	0.0039
切削條件 Cutting Conditions				$A_p \leq 0.025D$ $A_e \leq 0.04D$ 					

切削條件使用須知：

- ①請使用精度高、鋼性高的設備及夾具。
- ②選擇適合被削材之冷卻方式及冷卻液。
- ③刀具裝配刀桿後切削前，需先量測偏擺值是否在標準值內，不正確使用易造成刀具損壞。
- ④本表格為切削參數基準值，實際加工情況，請依機台之鋼性、工件夾持、加工部位形狀等情況、調整切削參數及條件。

Instruction for cutting conditions:

- ①Please use equipment and fixtures with high precision and high rigidity.
- ②Please use the suitable cooling method and coolant for the workpiece.
- ③It is necessary to measure deflection before the cutting tool to be assembled in the arbor. Improper use may lead the tool damaged.
- ④This table is for the reference. Please according to the rigidity of the machine, workpiece clamping and the part processing method to adjust the parameter.

AP 多功能

AP Series : Multiple Function Ball End mill (Bullet Shaped)

子彈球刀

加工材料類別
PROCESSING MATERIAL CATEGORY

鈦合金
TITANIUM
ALLOY

M152
STEEL

鎳基合金
NICKEL
ALLOY

◦ 航太葉片完美的多刃切削 ◦

針對航太產業的發動機葉片，增加刀數與切線速度，多刃的設計能在同一時間內進行更多切削，提高加工效率，特別應用於航空航太發動機葉片的加工，滿足高精度和高效率的需求。

Perfect multi-flutes design for aviation engine blades. For milling aviation engine blades, the multi-flutes design can higher the cutting speed and more efficiency to meet high precision demand on the work piece.



◦ 提高切削效率與增加刀具剛性，進而提升刀具加工壽命

增加刀具的刀數，使其在切削過程中，因更強的剛性，使其能夠以更多的進給量實現更快的加工速度，並延長刀具的使用壽命。

Improve milling efficiency and tool life time. Increasing the tool numbers of flute lead it to achieve higher processing speed and better tool rigidity which will be extended the tool life time.

◦ 刀口幾何設計

特殊刀口幾何設計與底刀芯厚設計，讓工件表面光潔度提升，進一步增加刀具的整體性能。

Geometry flute design. The AP special geometry flute design and thicker bottom core diameter improve the surface roughness of the work piece and further upgrade the overall performance of the tool in process.

◦ 達到與五軸同動機台的最佳效能

此設計可在五軸同動的機台上達成客戶想要的最佳效能，實現高速精密加工，滿足對加工速度和精度的高要求。

To reach the best performance with five-axis CNC machine. The AP design can be achieved the best performance with five-axis CNC machine platform. It is totally meet the high demand for processing speed and accuracy.

◦ 歐系棒材與鍍層技術

JLC一貫的歐系專用棒材與複合式鍍層技術，更增加刀具耐磨性，壽命Plus。

Imported European carbide round bar and coating technology. JLC keep using European carbide round bar and composite coating to keep each JLC tool more wear resistant and longer life time.



實際測試影片
Test Video



實績測試
Benchmark Test

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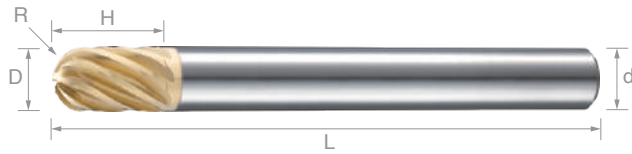
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AP子彈球刀(多刃型)

AP Bullet Shape Ball End Mill (Multi-Flutes Type)



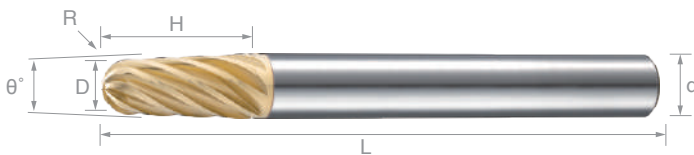
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編號 (Number)	球半徑 (R)	外徑 (D)	刃長 (H)	刃數 (T)	柄徑 (d)	全長 (L)
APB6-0606	3R	6	9	6	6	100
APB8-0808	4R	8	12	8	8	100
APB8-1010	5R	10	15	8	10	108
APB8-1212	6R	12	18	8	12	108
APB8-1616	8R	16	24	8	16	108
APB10-2020	10R	20	30	10	20	150

AP子彈球刀(斜度型)

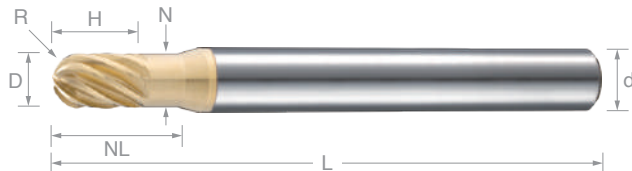
AP Bullet Shape Ball End Mill (Taper Type)



編號 (Number)	球半徑 (R)	斜度角 (θ°)	小徑 (D)	刃長 (H)	刃數 (T)	柄徑 (d)	全長 (L)
APBC2005	2R	5°	3.83	24.86	6	6	100
APBC2505	2.5R	5°	4.79	13.9	6	6	100
APBC3005	3R	5°	5.74	25.84	6	8	100
APBC4005	4R	5°	7.66	26.82	8	10	100
APBC5005	5R	5°	9.57	27.79	8	12	108
APBC6005	6R	5°	11.49	51.68	8	16	108
APBC8005	8R	5°	15.32	53.63	8	20	108

AP子彈球刀(長頸型)

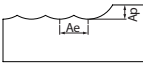
AP Bullet Shape Ball End Mill (Long Neck-Length Type)



編號 (Number)	球半徑 (R)	外徑 (D)	刃長 (H)	頸徑 (N)	有效長 (NL)	刃數 (T)	柄徑 (d)	全長 (L)
APBN2008	2R	4	6	3.8	8	6	6	100
APBN2510	2.5R	5	7.5	4.8	10	6	6	100
APBN3012	3R	6	9	5.8	12	6	8	100
APBN4016	4R	8	12	7.8	16	8	10	100
APBN5023	5R	10	15	9.8	23	8	12	108
APBN6024	6R	12	18	11.8	24	8	16	108
APBN8032	8R	16	24	15.8	32	8	20	108

切削條件表 Cutting Condition P.39-P.40

Solid Carbide End Mills-Cutting Condition Table

被削材質 Work Material		碳素鋼/鑄鐵 S45C / FC 20 HRC		合金鋼 SCM / SKT / SKD / SCr		鎳基合金 Inconel 718		鈦合金 Ti 6Al - 4V		不銹鋼 SUS630	
切削速度 Vc m / min Cutting Speed		160 – 220 m / min		140 – 200 m / min		35 – 50 m / min		80 – 110 m / min		90 – 120 m / min	
直徑 DC mm	半徑 R mm	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth	主軸轉速 Speed Rpm	每刃進給 Fz mm / tooth
4	2R	15120	0.05 – 0.13	13530	0.03 – 0.12	3380	0.015 – 0.030	7560	0.015 – 0.040	9150	0.015 – 0.040
5	2.5R	12100	0.06 – 0.14	10820	0.04 – 0.13	2710	0.015 – 0.040	6050	0.015 – 0.050	7320	0.015 – 0.050
6	3R	10080	0.07 – 0.15	9020	0.05 – 0.14	2250	0.015 – 0.040	5040	0.015 – 0.060	6100	0.015 – 0.060
8	4R	7560	0.08 – 0.16	6760	0.06 – 0.15	1690	0.015 – 0.050	3780	0.02 – 0.07	4580	0.02 – 0.07
10	5R	6050	0.09 – 0.17	5410	0.07 – 0.16	1350	0.015 – 0.060	3020	0.02 – 0.08	3660	0.02 – 0.08
12	6R	5040	0.10 – 0.18	4510	0.08 – 0.17	1130	0.02 – 0.07	2520	0.025 – 0.090	3050	0.025 – 0.090
16	8R	3780	0.11 – 0.19	3380	0.09 – 0.18	850	0.02 – 0.08	1890	0.025 – 0.090	2290	0.025 – 0.090
20	10R	3020	0.12 – 0.20	2710	0.10 – 0.19	680	0.02 – 0.09	1510	0.03 – 0.10	1830	0.03 – 0.10
切削條件 Cutting Conditions		Ap ≦ 0.07D Ae ≦ 0.07D 									

- ①請使用精度高、鋼性高的設備及夾具。
- ②選擇適合被削材之冷卻方式及冷卻液。
- ③刀具裝配刀桿後切削前，需先量測偏擺值是否在標準值內，
不正確使用易造成刀具損壞。
- ④本表格為切削參數基準值，實際加工情況，請依機台之鋼性、
工件夾持、加工部位形狀等情況，調整切削參數及條件。

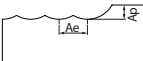
- ① Please use equipment and fixtures with high precision and high rigidity.
- ② Please use the suitable cooling method and coolant for the workpiece.
- ③ It is necessary to measure deflection before the cutting tool to be assembled in the arbor.
Improper use may lead the tool damaged.
- ④ This table is for the reference. Please according to the rigidity of the machine, workpiece clamping and the part processing method to adjust the parameter.

718 鎳基合金專用球型銑刀 (多功能型) 切削條件表

Solid Carbide End Mills-Cutting Condition Table



英制/ Imperial (inch)

被削材質 Work Material				碳素鋼/鑄鐵 S45C / FC 20 HRC		合金鋼 SCM / SKT / SKD / SCr		鎳基合金 Inconel 718		鈦合金 Ti 6Al - 4V		不銹鋼 SUS630	
切削速度 Vc SFM Cutting Speed				min	max	min	max	min	max	min	max	min	max
				524.9344	721.7848	459.3176	656.1680	114.8294	164.0420	311.6798	360.8924	295.2756	393.7008
直徑 DC		半徑 R		Inches per Tooth									
inch	mm	inch	mm	min	max	min	max	min	max	min	max	min	max
0.1575	4	0.0787R	2R	0.0020	0.0051	0.0012	0.0047	0.0006	0.0012	0.0006	0.0016	0.0006	0.0016
0.1969	5	0.0984R	2.5R	0.0024	0.0055	0.0016	0.0051	0.0006	0.0016	0.0006	0.0020	0.0006	0.0020
0.2362	6	0.1181R	3R	0.0028	0.0059	0.0020	0.0055	0.0006	0.0016	0.0006	0.0024	0.0006	0.0024
0.3150	8	0.1575R	4R	0.0031	0.0063	0.0024	0.0059	0.0006	0.0020	0.0008	0.0028	0.0008	0.0028
0.3937	10	0.1969R	5R	0.0035	0.0067	0.0028	0.0063	0.0006	0.0024	0.0008	0.0031	0.0008	0.0031
0.4724	12	0.2362R	6R	0.0039	0.0071	0.0031	0.0067	0.0008	0.0028	0.0010	0.0035	0.0010	0.0035
0.6299	16	0.3150R	8R	0.0043	0.0075	0.0035	0.0071	0.0008	0.0031	0.0010	0.0035	0.0010	0.0035
0.7874	20	0.3937R	10R	0.0047	0.0079	0.0039	0.0075	0.0008	0.0035	0.0012	0.0039	0.0012	0.0039
切削條件 Cutting Conditions				Ap ≤ 0.07D Ae ≤ 0.07D 									

切削條件使用須知：

- ①請使用精度高、鋼性高的設備及夾具。
- ②選擇適合被削材之冷卻方式及冷卻液。
- ③刀具裝配刀桿後切削前，需先量測偏擺值是否在標準值內，不正確使用易造成刀具損壞。
- ④本表格為切削參數基準值，實際加工情況，請依機台之鋼性、工件夾持、加工部位形狀等情況、調整切削參數及條件。

Instruction for cutting conditions:

- ①Please use equipment and fixtures with high precision and high rigidity.
- ②Please use the suitable cooling method and coolant for the workpiece.
- ③It is necessary to measure deflection before the cutting tool to be assembled in the arbor. Improper use may lead the tool damaged.
- ④This table is for the reference. Please according to the rigidity of the machine, workpiece clamping and the part processing method to adjust the parameter.

JJW

JJW Carbide High Speed Drill With Coolant Hole - 2 Flutes

鎢鋼高速內冷鑽頭

加工材料類別
PROCESSING MATERIAL CATEGORY

鋼件
STEEL PARTS

不銹鋼
STAINLESS STEEL

鈦合金
TITANIUM ALLOY

鎳基合金
NICKEL ALLOY

◦ 鑽削難加工材的最佳利器 ◦

內冷鑽頭特別針對難以加工的材料而開發，讓您的難加工材能夠被輕易鑽削加工，幫助用戶節省時間和成本，滿足各類加工需求，提高其切削性能和效果。

The best tool for difficult processing materials. JJW Drill with internal coolant hole is special for difficult processing material, it leads CNC users not only to save the labor time cost, but improve their performance in various process.

◦ 優化排屑性能

獨特的刀口設計有效提高排屑效率，避免切削過程中的堵塞，進一步提升加工流暢性，排屑更順暢。

Optimized the chip removal performance. The JJW unique flute design improve chip removal efficiency, it avoids chip clogging and makes chip removal smoother during the process.

◦ 顯著提升鑽削效率

透過獨特的角度設計，能夠大幅提升難加工材料的鑽削效率，提高了切削性能，使加工過程更加順暢。

Improve drilling efficiency more. With the unique angle design, the drilling efficiency for difficult process materials can be greatly improved

◦ 特殊的鑽尖設計

獨特的鑽尖設計結合R型溝槽與刀尖保護角的設計，提高了鑽尖的耐用性，使鑽尖不易崩刀。

JJW-Special drill tip design. The JJW drill tip-it combines the R-shaped groove and the tip protection angle to improve the durability and leads it not to be broken easily.

◦ 先進複合鍍層技術

採用先進的複合鍍層技術，完全降低與工件磨耗與親附性，刀具壽命比一般產品更佳提升。

Advanced composite coating technology. JJW-With advanced composite coating, it reduces wear out and lower the adhesion to the workpiece. JJW Tool life time is better than other products.



實際測試影片
Test Video



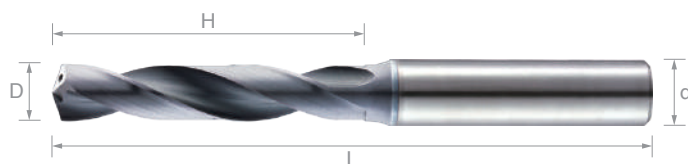
實績測試
Benchmark Test

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鎢鋼高速內冷鑽頭 (不銹鋼 / 3倍長) - 2刃

Carbide High Speed Drill With Coolant Hole (Stainless / 3xH) - 2 Flutes



編號 (Number)	外徑 (D)	溝長 (H)	刃數 (T)	柄徑 (d)	全長 (L)
JJWL040	4.0	24	2	6	66
JJWL041	4.1	24	2	6	66
JJWL042	4.2	24	2	6	66
JJWL043	4.3	24	2	6	66
JJWL044	4.4	24	2	6	66
JJWL045	4.5	24	2	6	66
JJWL046	4.6	24	2	6	66
JJWL047	4.7	24	2	6	66
JJWL048	4.8	28	2	6	66
JJWL049	4.9	28	2	6	66
JJWL050	5.0	28	2	6	66
JJWL051	5.1	28	2	6	66
JJWL052	5.2	28	2	6	66
JJWL053	5.3	28	2	6	66
JJWL054	5.4	28	2	6	66
JJWL055	5.5	28	2	6	66
JJWL056	5.6	28	2	6	66
JJWL057	5.7	28	2	6	66
JJWL058	5.8	28	2	6	66
JJWL059	5.9	28	2	6	66
JJWL060	6.0	28	2	6	66
JJWL061	6.1	34	2	8	79
JJWL062	6.2	34	2	8	79
JJWL063	6.3	34	2	8	79
JJWL064	6.4	34	2	8	79
JJWL065	6.5	34	2	8	79
JJWL066	6.6	34	2	8	79
JJWL067	6.7	34	2	8	79
JJWL068	6.8	34	2	8	79
JJWL069	6.9	34	2	8	79
JJWL070	7.0	41	2	8	79
JJWL071	7.1	41	2	8	79
JJWL072	7.2	41	2	8	79
JJWL073	7.3	41	2	8	79
JJWL074	7.4	41	2	8	79
JJWL075	7.5	41	2	8	79
JJWL076	7.6	41	2	8	79

編號 (Number)	外徑 (D)	溝長 (H)	刃數 (T)	柄徑 (d)	全長 (L)
JJWL077	7.7	41	2	8	79
JJWL078	7.8	41	2	8	79
JJWL079	7.9	41	2	8	79
JJWL080	8.0	41	2	8	79
JJWL081	8.1	47	2	10	89
JJWL082	8.2	47	2	10	89
JJWL083	8.3	47	2	10	89
JJWL084	8.4	47	2	10	89
JJWL085	8.5	47	2	10	89
JJWL086	8.6	47	2	10	89
JJWL087	8.7	47	2	10	89
JJWL088	8.8	47	2	10	89
JJWL089	8.9	47	2	10	89
JJWL090	9.0	47	2	10	89
JJWL091	9.1	47	2	10	89
JJWL092	9.2	47	2	10	89
JJWL093	9.3	47	2	10	89
JJWL094	9.4	47	2	10	89
JJWL095	9.5	47	2	10	89
JJWL096	9.6	47	2	10	89
JJWL097	9.7	47	2	10	89
JJWL098	9.8	47	2	10	89
JJWL099	9.9	47	2	10	89
JJWL100	10.0	47	2	10	89
JJWL101	10.1	55	2	12	102
JJWL102	10.2	55	2	12	102
JJWL103	10.3	55	2	12	102
JJWL104	10.4	55	2	12	102
JJWL105	10.5	55	2	12	102
JJWL106	10.6	55	2	12	102
JJWL107	10.7	55	2	12	102
JJWL108	10.8	55	2	12	102
JJWL109	10.9	55	2	12	102
JJWL110	11.0	55	2	12	102
JJWL111	11.1	55	2	12	102
JJWL112	11.2	55	2	12	102
JJWL113	11.3	55	2	12	102

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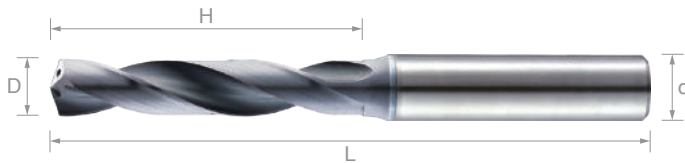
Carbide High Speed Drill With Coolant Hole (Stainless / 3xH) - 2 Flutes

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鎢鋼高速內冷鑽頭 (不銹鋼 / 5倍長) - 2刃

Carbide High Speed Drill With Coolant Hole (Stainless / 5xH) - 2 Flutes



編號 (Number)	外徑 (D)	溝長 (H)	刃數 (T)	柄徑 (d)	全長 (L)
JJWH040	4.0	36	2	6	74
JJWH041	4.1	36	2	6	74
JJWH042	4.2	36	2	6	74
JJWH043	4.3	36	2	6	74
JJWH044	4.4	36	2	6	74
JJWH045	4.5	36	2	6	74
JJWH046	4.6	36	2	6	74
JJWH047	4.7	36	2	6	74
JJWH048	4.8	44	2	6	82
JJWH049	4.9	44	2	6	82
JJWH050	5.0	44	2	6	82
JJWH051	5.1	44	2	6	82
JJWH052	5.2	44	2	6	82
JJWH053	5.3	44	2	6	82
JJWH054	5.4	44	2	6	82
JJWH055	5.5	44	2	6	82
JJWH056	5.6	44	2	6	82
JJWH057	5.7	44	2	6	82
JJWH058	5.8	44	2	6	82
JJWH059	5.9	44	2	6	82
JJWH060	6.0	44	2	6	82
JJWH061	6.1	53	2	8	91
JJWH062	6.2	53	2	8	91
JJWH063	6.3	53	2	8	91
JJWH064	6.4	53	2	8	91
JJWH065	6.5	53	2	8	91
JJWH066	6.6	53	2	8	91
JJWH067	6.7	53	2	8	91
JJWH068	6.8	53	2	8	91
JJWH069	6.9	53	2	8	91
JJWH070	7.0	53	2	8	91
JJWH071	7.1	53	2	8	91
JJWH072	7.2	53	2	8	91
JJWH073	7.3	53	2	8	91
JJWH074	7.4	53	2	8	91
JJWH075	7.5	53	2	8	91
JJWH076	7.6	53	2	8	91

編號 (Number)	外徑 (D)	溝長 (H)	刃數 (T)	柄徑 (d)	全長 (L)
JJWH077	7.7	53	2	8	91
JJWH078	7.8	53	2	8	91
JJWH079	7.9	53	2	8	91
JJWH080	8.0	53	2	8	91
JJWH081	8.1	61	2	10	103
JJWH082	8.2	61	2	10	103
JJWH083	8.3	61	2	10	103
JJWH084	8.4	61	2	10	103
JJWH085	8.5	61	2	10	103
JJWH086	8.6	61	2	10	103
JJWH087	8.7	61	2	10	103
JJWH088	8.8	61	2	10	103
JJWH089	8.9	61	2	10	103
JJWH090	9.0	61	2	10	103
JJWH091	9.1	61	2	10	103
JJWH092	9.2	61	2	10	103
JJWH093	9.3	61	2	10	103
JJWH094	9.4	61	2	10	103
JJWH095	9.5	61	2	10	103
JJWH096	9.6	61	2	10	103
JJWH097	9.7	61	2	10	103
JJWH098	9.8	61	2	10	103
JJWH099	9.9	61	2	10	103
JJWH100	10.0	61	2	10	103
JJWH101	10.1	71	2	12	118
JJWH102	10.2	71	2	12	118
JJWH103	10.3	71	2	12	118
JJWH104	10.4	71	2	12	118
JJWH105	10.5	71	2	12	118
JJWH106	10.6	71	2	12	118
JJWH107	10.7	71	2	12	118
JJWH108	10.8	71	2	12	118
JJWH109	10.9	71	2	12	118
JJWH110	11.0	71	2	12	118
JJWH111	11.1	71	2	12	118
JJWH112	11.2	71	2	12	118
JJWH113	11.3	71	2	12	118

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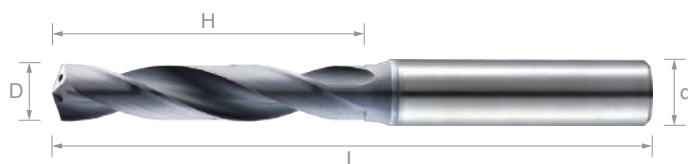
Carbide High Speed Drill With Coolant Hole (Stainless / 5xH) - 2 Flutes

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45

鎢鋼高速內冷鑽頭 (不銹鋼 / 7倍長) - 2刃

Carbide High Speed Drill With Coolant Hole (Stainless / 7xH) - 2 Flutes



編號 (Number)	外徑 (D)	溝長 (H)	刃數 (T)	柄徑 (d)	全長 (L)
JJWLH050	5.0	50	2	6	90
JJWLH051	5.1	50	2	6	90
JJWLH052	5.2	50	2	6	90
JJWLH053	5.3	50	2	6	90
JJWLH054	5.4	50	2	6	90
JJWLH055	5.5	57	2	6	97
JJWLH056	5.6	57	2	6	97
JJWLH057	5.7	57	2	6	97
JJWLH058	5.8	57	2	6	97
JJWLH059	5.9	57	2	6	97
JJWLH060	6.0	57	2	6	97
JJWLH061	6.1	57	2	8	106
JJWLH062	6.2	57	2	8	106
JJWLH063	6.3	57	2	8	106
JJWLH064	6.4	57	2	8	106
JJWLH065	6.5	66	2	8	106
JJWLH066	6.6	66	2	8	106
JJWLH067	6.7	66	2	8	106
JJWLH068	6.8	66	2	8	106
JJWLH069	6.9	66	2	8	106
JJWLH070	7.0	76	2	8	116
JJWLH071	7.1	76	2	8	116
JJWLH072	7.2	76	2	8	116
JJWLH073	7.3	76	2	8	116
JJWLH074	7.4	76	2	8	116
JJWLH075	7.5	76	2	8	116
JJWLH076	7.6	76	2	8	116
JJWLH077	7.7	76	2	8	116
JJWLH078	7.8	76	2	8	116
JJWLH079	7.9	76	2	8	116
JJWLH080	8.0	76	2	8	116
JJWLH081	8.1	87	2	10	131
JJWLH082	8.2	87	2	10	131
JJWLH083	8.3	87	2	10	131
JJWLH084	8.4	87	2	10	131
JJWLH085	8.5	87	2	10	131
JJWLH086	8.6	87	2	10	131
JJWLH087	8.7	87	2	10	131
JJWLH088	8.8	87	2	10	131
JJWLH089	8.9	87	2	10	131
JJWLH090	9.0	87	2	10	131
JJWLH091	9.1	87	2	10	131

編號 (Number)	外徑 (D)	溝長 (H)	刃數 (T)	柄徑 (d)	全長 (L)
JJWLH092	9.2	87	2	10	131
JJWLH093	9.3	87	2	10	131
JJWLH094	9.4	87	2	10	131
JJWLH095	9.5	95	2	10	139
JJWLH096	9.6	95	2	10	139
JJWLH097	9.7	95	2	10	139
JJWLH098	9.8	95	2	10	139
JJWLH099	9.9	95	2	10	139
JJWLH100	10.0	95	2	10	139
JJWLH101	10.1	106	2	12	155
JJWLH102	10.2	106	2	12	155
JJWLH103	10.3	106	2	12	155
JJWLH104	10.4	106	2	12	155
JJWLH105	10.5	106	2	12	155
JJWLH106	10.6	106	2	12	155
JJWLH107	10.7	106	2	12	155
JJWLH108	10.8	106	2	12	155
JJWLH109	10.9	106	2	12	155
JJWLH110	11.0	106	2	12	155
JJWLH111	11.1	114	2	12	163
JJWLH112	11.2	114	2	12	163
JJWLH113	11.3	114	2	12	163
JJWLH114	11.4	114	2	12	163
JJWLH115	11.5	114	2	12	163
JJWLH116	11.6	114	2	12	163
JJWLH117	11.7	114	2	12	163
JJWLH118	11.8	114	2	12	163
JJWLH119	11.9	114	2	12	163
JJWLH120	12.0	114	2	12	163
JJWLH121	12.1	133	2	14	182
JJWLH123	12.3	133	2	14	182
JJWLH125	12.5	133	2	14	182
JJWLH130	13.0	133	2	14	182
JJWLH135	13.5	133	2	14	182
JJWLH140	14.0	133	2	14	182
JJWLH141	14.1	152	2	16	204
JJWLH145	14.5	152	2	16	204
JJWLH150	15.0	152	2	16	204
JJWLH155	15.5	152	2	16	204
JJWLH157	15.7	152	2	16	204
JJWLH160	16.0	152	2	16	204

切削條件表 Cutting Condition **P.47-P.48**

鎢鋼高速內冷鑽頭 切削條件表

Solid Carbide End Mills-Cutting Condition Table

公制/ Metric (mm)

被削材質 Work Material	軟鋼/合金鋼/碳素鋼 SS / SCM / SC 210 HB		合金鋼 SCM / SCr / SNCM 28 – 35 HRC		不銹鋼 SUS3 / SUS4		鈦合金 Ti - 6Al - 4V		鎳基合金 Inconel 718	
切削速度 Vc mm / min Cutting Speed	80 – 150 mm / min		50 – 120 mm / min		40 – 80 mm / min		40 – 80 mm / min		10 – 35 mm / min	
直徑 DC mm	主軸轉速 Speed Rpm	每轉進給 F mm / rev	主軸轉速 Speed Rpm	每轉進給 F mm / rev	主軸轉速 Speed Rpm	每轉進給 F mm / rev	主軸轉速 Speed Rpm	每轉進給 F mm / rev	主軸轉速 Speed Rpm	每轉進給 F mm / rev
3	12200	0.03 – 0.09	9020	0.03 – 0.09	6370	0.015 – 0.045	6370	0.01 – 0.05	2390	0.01 – 0.05
4	9150	0.04 – 0.12	6760	0.04 – 0.12	4770	0.02 – 0.06	4770	0.01 – 0.06	1790	0.01 – 0.06
5	7320	0.05 – 0.15	5410	0.05 – 0.15	3820	0.025 – 0.075	3820	0.01 – 0.07	1430	0.01 – 0.07
6	6100	0.06 – 0.18	4510	0.06 – 0.18	3180	0.03 – 0.09	3180	0.02 – 0.08	1190	0.02 – 0.08
7	5230	0.07 – 0.21	3870	0.07 – 0.21	2730	0.035 – 0.105	2730	0.03 – 0.09	1020	0.03 – 0.09
8	4580	0.08 – 0.24	3380	0.08 – 0.24	2390	0.04 – 0.12	2390	0.04 – 0.10	900	0.04 – 0.10
9	4070	0.09 – 0.27	3010	0.09 – 0.27	2120	0.045 – 0.135	2120	0.05 – 0.12	800	0.05 – 0.12
10	3660	0.10 – 0.30	2710	0.10 – 0.30	1910	0.05 – 0.15	1910	0.06 – 0.14	720	0.06 – 0.14
11	3330	0.11 – 0.33	2460	0.11 – 0.33	1740	0.055 – 0.165	1740	0.06 – 0.15	650	0.06 – 0.15
12	3050	0.12 – 0.36	2250	0.12 – 0.36	1590	0.06 – 0.18	1590	0.07 – 0.16	600	0.06 – 0.16
13	2820	0.13 – 0.39	2080	0.13 – 0.39	1470	0.065 – 0.195	1470	0.07 – 0.17	550	0.07 – 0.17
14	2610	0.14 – 0.42	1930	0.14 – 0.42	1360	0.07 – 0.21	1360	0.08 – 0.18	510	0.07 – 0.18
15	2440	0.15 – 0.45	1800	0.15 – 0.45	1270	0.075 – 0.225	1270	0.08 – 0.19	480	0.07 – 0.19
16	2290	0.16 – 0.48	1690	0.16 – 0.48	1190	0.08 – 0.24	1190	0.09 – 0.20	450	0.08 – 0.20
17	2150	0.17 – 0.51	1590	0.17 – 0.51	1120	0.085 – 0.255	1120	0.09 – 0.21	420	0.08 – 0.21
18	2030	0.18 – 0.54	1500	0.18 – 0.54	1060	0.09 – 0.27	1060	0.10 – 0.22	400	0.08 – 0.22
19	1930	0.19 – 0.57	1420	0.19 – 0.57	1010	0.095 – 0.285	1010	0.11 – 0.23	380	0.09 – 0.23
20	1830	0.20 – 0.60	1350	0.20 – 0.60	950	0.10 – 0.30	950	0.12 – 0.24	360	0.09 – 0.24

英制/ Imperial (inch)

被削材質 Work Material		軟鋼/合金鋼/碳素鋼 SS / SCM / SC 210 HB		合金鋼 SCM / SCr / SNCM 28 – 35 HRC		不銹鋼 SUS3 / SUS4		鈦合金 Ti - 6Al - 4V		鎳基合金 Inconel 718	
切削速度 Vc SFM Cutting Speed		min	max	min	max	min	max	min	max	min	max
		262.4672	492.1260	164.0420	393.7008	131.2336	262.4672	131.2336	262.4672	32.8084	114.8294
直徑 DC		IPR									
inch	mm	min	max	min	max	min	max	min	max	min	max
0.1181	3	0.0012	0.0035	0.0012	0.0035	0.0006	0.0018	0.0004	0.0020	0.0004	0.0020
0.1575	4	0.0016	0.0047	0.0016	0.0047	0.0008	0.0024	0.0004	0.0024	0.0004	0.0024
0.1969	5	0.0020	0.0059	0.0020	0.0059	0.0010	0.0030	0.0004	0.0028	0.0004	0.0028
0.2362	6	0.0024	0.0071	0.0024	0.0071	0.0012	0.0035	0.0008	0.0031	0.0008	0.0031
0.2756	7	0.0028	0.0083	0.0028	0.0083	0.0014	0.0041	0.0012	0.0035	0.0012	0.0035
0.3150	8	0.0031	0.0094	0.0031	0.0094	0.0016	0.0047	0.0016	0.0039	0.0016	0.0039
0.3543	9	0.0035	0.0106	0.0035	0.0106	0.0018	0.0053	0.0020	0.0047	0.0020	0.0047
0.3937	10	0.0039	0.0118	0.0039	0.0118	0.0020	0.0059	0.0024	0.0055	0.0024	0.0055
0.4331	11	0.0043	0.0130	0.0043	0.0130	0.0022	0.0065	0.0024	0.0059	0.0024	0.0059
0.4724	12	0.0047	0.0142	0.0047	0.0142	0.0024	0.0071	0.0028	0.0063	0.0024	0.0063
0.5118	13	0.0051	0.0154	0.0051	0.0154	0.0026	0.0077	0.0028	0.0067	0.0028	0.0067
0.5512	14	0.0055	0.0165	0.0055	0.0165	0.0028	0.0083	0.0031	0.0071	0.0028	0.0071
0.5906	15	0.0059	0.0177	0.0059	0.0177	0.0030	0.0089	0.0031	0.0075	0.0028	0.0075
0.6299	16	0.0063	0.0189	0.0063	0.0189	0.0031	0.0094	0.0035	0.0079	0.0031	0.0079
0.6693	17	0.0067	0.0201	0.0067	0.0201	0.0033	0.0100	0.0035	0.0083	0.0031	0.0083
0.7087	18	0.0071	0.0213	0.0071	0.0213	0.0035	0.0106	0.0039	0.0087	0.0031	0.0087
0.7480	19	0.0075	0.0224	0.0075	0.0224	0.0037	0.0112	0.0043	0.0091	0.0035	0.0091
0.7874	20	0.0079	0.0236	0.0079	0.0236	0.0039	0.0118	0.0047	0.0094	0.0035	0.0094

切削條件使用須知：

- ①請使用精度高、鋼性高的設備及夾具。
- ②選擇適合被削材之冷卻方式及冷卻液。
- ③刀具裝配刀桿後切削前，需先量測偏擺值是否在標準值內，不正確使用易造成刀具損壞。
- ④本表格為切削參數基準值，實際加工情況，請依機台之鋼性、工件夾持、加工部位形狀等情況、調整切削參數及條件。

Instruction for cutting conditions:

- ①Please use equipment and fixtures with high precision and high rigidity.
- ②Please use the suitable cooling method and coolant for the workpiece.
- ③It is necessary to measure deflection before the cutting tool to be assembled in the arbor. Improper use may lead the tool damaged.
- ④This table is for the reference. Please according to the rigidity of the machine, workpiece clamping and the part processing method to adjust the parameter.

鎢鋼高速內冷鑽頭 切削條件表

Solid Carbide End Mills-Cutting Condition Table



公制/ Metric (mm)

被削材質 Work Material	模具鋼/調質鋼 SKD / NAK / HPM 30 – 40 HRC		特殊鋼/高硬度鋼 40 – 50 HRC		鑄鐵 FC250 350 N / mm ²		球墨鑄鐵 FCD600 400 – 600 N / mm ²		鋁合金/鋁鑄件 A6061 / A7075 / AC / ACD	
切削速度 Vc mm / min Cutting Speed	30 – 60 mm / min		20 – 40 mm / min		80 – 150 mm / min		60 – 130 mm / min		120 – 250 mm / min	
直徑 DC mm	主軸轉速 Speed Rpm	每轉進給 F mm / rev	主軸轉速 Speed Rpm	每轉進給 F mm / rev	主軸轉速 Speed Rpm	每轉進給 F mm / rev	主軸轉速 Speed Rpm	每轉進給 F mm / rev	主軸轉速 Speed Rpm	每轉進給 F mm / rev
3	4770	0.03 – 0.06	3180	0.03 – 0.06	12200	0.03 – 0.09	10080	0.03 – 0.09	19630	0.03 – 0.09
4	3580	0.04 – 0.08	2390	0.04 – 0.08	9150	0.04 – 0.12	7560	0.04 – 0.12	14720	0.04 – 0.12
5	2860	0.05 – 0.10	1910	0.05 – 0.10	7320	0.05 – 0.15	6050	0.05 – 0.15	11780	0.05 – 0.15
6	2390	0.06 – 0.12	1590	0.06 – 0.12	6100	0.06 – 0.18	5040	0.06 – 0.18	9810	0.06 – 0.18
7	2050	0.07 – 0.14	1360	0.07 – 0.14	5230	0.07 – 0.21	4320	0.07 – 0.21	8410	0.07 – 0.21
8	1790	0.08 – 0.16	1190	0.08 – 0.16	4580	0.08 – 0.24	3780	0.08 – 0.24	7360	0.08 – 0.24
9	1590	0.09 – 0.18	1060	0.09 – 0.18	4070	0.09 – 0.27	3360	0.09 – 0.27	6540	0.09 – 0.27
10	1430	0.10 – 0.20	950	0.10 – 0.20	3660	0.10 – 0.30	3020	0.10 – 0.30	5890	0.10 – 0.30
11	1300	0.11 – 0.22	870	0.11 – 0.22	3330	0.11 – 0.33	2750	0.11 – 0.33	5350	0.11 – 0.33
12	1190	0.12 – 0.24	800	0.12 – 0.24	3050	0.12 – 0.36	2520	0.12 – 0.36	4910	0.12 – 0.36
13	1100	0.13 – 0.26	730	0.13 – 0.26	2820	0.13 – 0.39	2330	0.13 – 0.39	4530	0.13 – 0.39
14	1020	0.14 – 0.28	680	0.14 – 0.28	2610	0.14 – 0.42	2160	0.14 – 0.42	4210	0.14 – 0.42
15	950	0.15 – 0.30	640	0.15 – 0.30	2440	0.15 – 0.45	2020	0.15 – 0.45	3930	0.15 – 0.45
16	900	0.16 – 0.32	600	0.16 – 0.32	2290	0.16 – 0.48	1890	0.16 – 0.48	3680	0.16 – 0.48
17	840	0.17 – 0.34	560	0.17 – 0.34	2150	0.17 – 0.51	1780	0.17 – 0.51	3460	0.17 – 0.51
18	800	0.18 – 0.36	530	0.18 – 0.36	2030	0.18 – 0.54	1680	0.18 – 0.54	3270	0.18 – 0.54
19	750	0.19 – 0.38	500	0.19 – 0.38	1930	0.19 – 0.57	1590	0.19 – 0.57	3100	0.19 – 0.57
20	720	0.20 – 0.40	480	0.20 – 0.40	1830	0.20 – 0.60	1510	0.20 – 0.60	2940	0.20 – 0.60

英制/ Imperial (inch)

被削材質 Work Material		模具鋼/調質鋼 SKD / NAK / HPM 30 – 40 HRC		特殊鋼/高硬度鋼 40 – 50 HRC		鑄鐵 FC250 350 N / mm2		球墨鑄鐵 FCD600 400 – 600 N / mm2		鋁合金/鋁鑄件 A6061 / A7075 / AC / ACD	
切削速度 Vc SFM Cutting Speed		min	max	min	max	min	max	min	max	min	max
		98.4252	196.8504	65.6168	131.2336	262.4672	492.1260	196.8504	426.5092	393.7008	820.2100
直徑 DC		IPR									
inch	mm	min	max	min	max	min	max	min	max	min	max
0.1181	3	0.0012	0.0024	0.0012	0.0024	0.0012	0.0035	0.0012	0.0035	0.0012	0.0035
0.1575	4	0.0016	0.0031	0.0016	0.0031	0.0016	0.0047	0.0016	0.0047	0.0016	0.0047
0.1969	5	0.0020	0.0039	0.0020	0.0039	0.0020	0.0059	0.0020	0.0059	0.0020	0.0059
0.2362	6	0.0024	0.0047	0.0024	0.0047	0.0024	0.0071	0.0024	0.0071	0.0024	0.0071
0.2756	7	0.0028	0.0055	0.0028	0.0055	0.0028	0.0083	0.0028	0.0083	0.0028	0.0083
0.3150	8	0.0031	0.0063	0.0031	0.0063	0.0031	0.0094	0.0031	0.0094	0.0031	0.0094
0.3543	9	0.0035	0.0071	0.0035	0.0071	0.0035	0.0106	0.0035	0.0106	0.0035	0.0106
0.3937	10	0.0039	0.0079	0.0039	0.0079	0.0039	0.0118	0.0039	0.0118	0.0039	0.0118
0.4331	11	0.0043	0.0087	0.0043	0.0087	0.0043	0.0130	0.0043	0.0130	0.0043	0.0130
0.4724	12	0.0047	0.0094	0.0047	0.0094	0.0047	0.0142	0.0047	0.0142	0.0047	0.0142
0.5118	13	0.0051	0.0102	0.0051	0.0102	0.0051	0.0154	0.0051	0.0154	0.0051	0.0154
0.5512	14	0.0055	0.0110	0.0055	0.0110	0.0055	0.0165	0.0055	0.0165	0.0055	0.0165
0.5906	15	0.0059	0.0118	0.0059	0.0118	0.0059	0.0177	0.0059	0.0177	0.0059	0.0177
0.6299	16	0.0063	0.0126	0.0063	0.0126	0.0063	0.0189	0.0063	0.0189	0.0063	0.0189
0.6693	17	0.0067	0.0134	0.0067	0.0134	0.0067	0.0201	0.0067	0.0201	0.0067	0.0201
0.7087	18	0.0071	0.0142	0.0071	0.0142	0.0071	0.0213	0.0071	0.0213	0.0071	0.0213
0.7480	19	0.0075	0.0150	0.0075	0.0150	0.0075	0.0224	0.0075	0.0224	0.0075	0.0224
0.7874	20	0.0079	0.0157	0.0079	0.0157	0.0079	0.0236	0.0079	0.0236	0.0079	0.0236

切削條件使用須知：

- ①請使用精度高、鋼性高的設備及夾具。
- ②選擇適合被削材之冷卻方式及冷卻液。
- ③刀具裝配刀桿後切削前，需先量測偏擺值是否在標準值內，不正確使用易造成刀具損壞。
- ④本表格為切削參數基準值，實際加工情況，請依機台之鋼性、工件夾持、加工部位形狀等情況、調整切削參數及條件。

Instruction for cutting conditions:

- ①Please use equipment and fixtures with high precision and high rigidity.
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- ④This table is for the reference. Please according to the rigidity of the machine, workpiece clamping and the part processing method to adjust the parameter.

JJFW

JJFW Micro Grain Carbide Flat Drill With Coolant Holes And Reamer Fuction

鎢鋼內冷鑽鉋平底鑽頭

加工材料類別
PROCESSING MATERIAL CATEGORY

鋼件
STEEL PARTS

不銹鋼
STAINLESS STEEL

鈦合金
TITANIUM ALLOY

鎳基合金
NICKEL ALLOY



◦ 特殊引屑溝與幾何刀款設計

產生優異的排屑能力，強力斷屑無毛邊，
泛用各類材料，包含最具黏性的不銹鋼。

Special chip out and geometric flute design.
Excellent chip out performance without burrs.
For various materials including the ductile stainless steel.

◦ 多國專利的鑽尖 角度與雙刃帶

卓越的抗崩性，長時間維持
鑽孔的高精密度。

Multinational patented drill point
angle and double flute design.
Great wear out resistance Keep
long time precise drilling.

◦ 可鑽可鉋設計

鑽鉋精度達0.01mm以內，
可為加工省下換刀及加工時間。

With both function of Drill and Reamer design
and its accuracy tolerance is within 0.01mm.
It also can save tool change time while processing.

◦ 歐系鎢鋼棒材與獨家幾何角度設計

刀具表面鏡面處理，使刀具與被削材不易沾黏，
整體壽命增加一倍以上。

With European carbide round bar and exclusive
cutting angle design, We run the polish process on
all the end mills, and it leads the tools easy to remove
chips and keep the double life time than other competitors.

◦ 獨家歐系抗沾黏複合鍍層

完美去屑保護，加上內冷油孔，
大大增加壽命，降低所有加工成本。

Based on Europe composite coating with
internal coolant holes, it leads the JLC flat
drill much longer life time and reduce
customer lots of processing cost.

複合式
專利刀具
COMPOUND DESIGN
(PATENTED CUTTING TOOL)

專利號 PATENT NUMBER
M631172



實際測試影片
Test Video



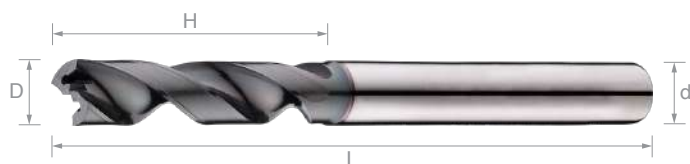
實績測試
Benchmark Test

客製化 CUSTOMIZED
SERVICE

非標準尺寸可訂製・請另外洽詢
Welcome to inquiry the special SPEC

鎢鋼內冷鑽鉋平底鑽頭 (不銹鋼/鋼件/3倍長) – 2刃

Micro Grain Carbide Flat Drill With Reamer Function (With Coolant Holes)(Stainless / Steel / 3xH) - 2 Flutes



編號 (Number)	外徑 (D)	溝長 (H)	刃數 (T)	柄徑 (d)	全長 (L)
JJFWL030	3.0	20	2	6	66
JJFWL031	3.1	20	2	6	66
JJFWL032	3.2	20	2	6	66
JJFWL033	3.3	20	2	6	66
JJFWL034	3.4	20	2	6	66
JJFWL035	3.5	20	2	6	66
JJFWL036	3.6	20	2	6	66
JJFWL037	3.7	20	2	6	66
JJFWL038	3.8	20	2	6	66
JJFWL039	3.9	20	2	6	66
JJFWL040	4.0	24	2	6	66
JJFWL041	4.1	24	2	6	66
JJFWL042	4.2	24	2	6	66
JJFWL043	4.3	24	2	6	66
JJFWL044	4.4	24	2	6	66
JJFWL045	4.5	24	2	6	66
JJFWL046	4.6	24	2	6	66
JJFWL047	4.7	24	2	6	66
JJFWL048	4.8	28	2	6	66
JJFWL049	4.9	28	2	6	66
JJFWL050	5.0	28	2	6	66
JJFWL051	5.1	28	2	6	66
JJFWL052	5.2	28	2	6	66
JJFWL053	5.3	28	2	6	66
JJFWL054	5.4	28	2	6	66
JJFWL055	5.5	28	2	6	66
JJFWL056	5.6	28	2	6	66
JJFWL057	5.7	28	2	6	66
JJFWL058	5.8	28	2	6	66
JJFWL059	5.9	28	2	6	66
JJFWL060	6.0	28	2	6	66
JJFWL061	6.1	34	2	8	79
JJFWL062	6.2	34	2	8	79
JJFWL063	6.3	34	2	8	79
JJFWL064	6.4	34	2	8	79
JJFWL065	6.5	34	2	8	79
JJFWL066	6.6	34	2	8	79

編號 (Number)	外徑 (D)	溝長 (H)	刃數 (T)	柄徑 (d)	全長 (L)
JJFWL067	6.7	34	2	8	79
JJFWL068	6.8	34	2	8	79
JJFWL069	6.9	34	2	8	79
JJFWL070	7.0	41	2	8	79
JJFWL071	7.1	41	2	8	79
JJFWL072	7.2	41	2	8	79
JJFWL073	7.3	41	2	8	79
JJFWL074	7.4	41	2	8	79
JJFWL075	7.5	41	2	8	79
JJFWL076	7.6	41	2	8	79
JJFWL077	7.7	41	2	8	79
JJFWL078	7.8	41	2	8	79
JJFWL079	7.9	41	2	8	79
JJFWL080	8.0	41	2	8	79
JJFWL081	8.1	47	2	10	89
JJFWL082	8.2	47	2	10	89
JJFWL083	8.3	47	2	10	89
JJFWL084	8.4	47	2	10	89
JJFWL085	8.5	47	2	10	89
JJFWL086	8.6	47	2	10	89
JJFWL087	8.7	47	2	10	89
JJFWL088	8.8	47	2	10	89
JJFWL089	8.9	47	2	10	89
JJFWL090	9.0	47	2	10	89
JJFWL091	9.1	47	2	10	89
JJFWL092	9.2	47	2	10	89
JJFWL093	9.3	47	2	10	89
JJFWL094	9.4	47	2	10	89
JJFWL095	9.5	47	2	10	89
JJFWL096	9.6	47	2	10	89
JJFWL097	9.7	47	2	10	89
JJFWL098	9.8	47	2	10	89
JJFWL099	9.9	47	2	10	89
JJFWL100	10.0	47	2	10	89
JJFWL101	10.1	55	2	12	102
JJFWL102	10.2	55	2	12	102
JJFWL103	10.3	55	2	12	102

續下頁 / 切削條件表 Cutting Condition P.57-P.58

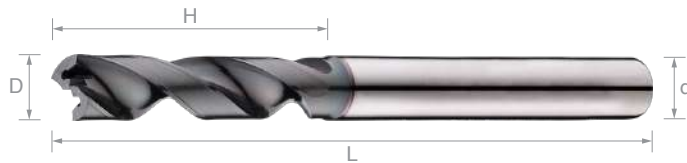
Micro Grain Carbide Flat Drill With Reamer Fuction (With Coolant Holes)(Stainless / Steel / 3xH) - 2 Flutes

[illegible][illegible]

51

鎢鋼內冷鑽鉋平底鑽頭 (不銹鋼/鋼件/5倍長) - 2刃

Micro Grain Carbide Flat Drill With Reamer Function (With Coolant Holes)(Stainless / Steel / 5xH) - 2 Flutes



編號 (Number)	外徑 (D)	溝長 (H)	刃數 (T)	柄徑 (d)	全長 (L)
JFWH030	3.0	28	2	6	66
JFWH031	3.1	28	2	6	66
JFWH032	3.2	28	2	6	66
JFWH033	3.3	28	2	6	66
JFWH034	3.4	28	2	6	66
JFWH035	3.5	28	2	6	66
JFWH036	3.6	28	2	6	66
JFWH037	3.7	28	2	6	66
JFWH038	3.8	36	2	6	74
JFWH039	3.9	36	2	6	74
JFWH040	4.0	36	2	6	74
JFWH041	4.1	36	2	6	74
JFWH042	4.2	36	2	6	74
JFWH043	4.3	36	2	6	74
JFWH044	4.4	36	2	6	74
JFWH045	4.5	36	2	6	74
JFWH046	4.6	36	2	6	74
JFWH047	4.7	36	2	6	74
JFWH048	4.8	44	2	6	82
JFWH049	4.9	44	2	6	82
JFWH050	5.0	44	2	6	82
JFWH051	5.1	44	2	6	82
JFWH052	5.2	44	2	6	82
JFWH053	5.3	44	2	6	82
JFWH054	5.4	44	2	6	82
JFWH055	5.5	44	2	6	82
JFWH056	5.6	44	2	6	82
JFWH057	5.7	44	2	6	82
JFWH058	5.8	44	2	6	82
JFWH059	5.9	44	2	6	82
JFWH060	6.0	44	2	6	82
JFWH061	6.1	53	2	6	91
JFWH062	6.2	53	2	6	91
JFWH063	6.3	53	2	6	91
JFWH064	6.4	53	2	6	91
JFWH065	6.5	53	2	6	91
JFWH066	6.6	53	2	6	91

編號 (Number)	外徑 (D)	溝長 (H)	刃數 (T)	柄徑 (d)	全長 (L)
JFWH067	6.7	53	2	8	91
JFWH068	6.8	53	2	8	91
JFWH069	6.9	53	2	8	91
JFWH070	7.0	53	2	8	91
JFWH071	7.1	53	2	8	91
JFWH072	7.2	53	2	8	91
JFWH073	7.3	53	2	8	91
JFWH074	7.4	53	2	8	91
JFWH075	7.5	53	2	8	91
JFWH076	7.6	53	2	8	91
JFWH077	7.7	53	2	8	91
JFWH078	7.8	53	2	8	91
JFWH079	7.9	53	2	8	91
JFWH080	8.0	53	2	8	91
JFWH081	8.1	61	2	10	103
JFWH082	8.2	61	2	10	103
JFWH083	8.3	61	2	10	103
JFWH084	8.4	61	2	10	103
JFWH085	8.5	61	2	10	103
JFWH086	8.6	61	2	10	103
JFWH087	8.7	61	2	10	103
JFWH088	8.8	61	2	10	103
JFWH089	8.9	61	2	10	103
JFWH090	9.0	61	2	10	103
JFWH091	9.1	61	2	10	103
JFWH092	9.2	61	2	10	103
JFWH093	9.3	61	2	10	103
JFWH094	9.4	61	2	10	103
JFWH095	9.5	61	2	10	103
JFWH096	9.6	61	2	10	103
JFWH097	9.7	61	2	10	103
JFWH098	9.8	61	2	10	103
JFWH099	9.9	61	2	10	103
JFWH100	10.0	61	2	10	103
JFWH101	10.1	71	2	12	118
JFWH102	10.2	71	2	12	118
JFWH103	10.3	71	2	12	118

續下頁 / 切削條件表 Cutting Condition P.57-P.58

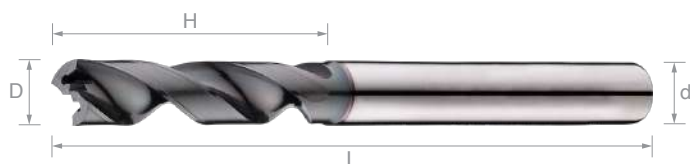
Micro Grain Carbide Flat Drill With Reamer Fuction (With Coolant Holes)(Stainless / Steel / 5xH) - 2 Flutes

[illegible][illegible]

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鎢鋼內冷鑽鉋平底鑽頭 (不銹鋼/鋼件/7倍長) - 2刃

Micro Grain Carbide Flat Drill With Reamer Function (With Coolant Holes) (Stainless / Steel / 7xH) - 2 Flutes



編號 (Number)	外徑 (D)	溝長 (H)	刃數 (T)	柄徑 (d)	全長 (L)
JFWLH030	3.0	30	2	6	75
JFWLH031	3.1	30	2	6	75
JFWLH032	3.2	30	2	6	75
JFWLH033	3.3	30	2	6	75
JFWLH034	3.4	35.5	2	6	75
JFWLH035	3.5	35.5	2	6	75
JFWLH036	3.6	35.5	2	6	75
JFWLH037	3.7	35.5	2	6	75
JFWLH038	3.8	37.5	2	6	75
JFWLH039	3.9	37.5	2	6	75
JFWLH040	4.0	37.5	2	6	75
JFWLH041	4.1	37.5	2	6	75
JFWLH042	4.2	37.5	2	6	75
JFWLH043	4.3	45	2	6	90
JFWLH044	4.4	45	2	6	90
JFWLH045	4.5	45	2	6	90
JFWLH046	4.6	45	2	6	90
JFWLH047	4.7	45	2	6	90
JFWLH048	4.8	50	2	6	90
JFWLH049	4.9	50	2	6	90
JFWLH050	5.0	50	2	6	90
JFWLH051	5.1	50	2	6	90
JFWLH052	5.2	50	2	6	90
JFWLH053	5.3	50	2	6	90
JFWLH054	5.4	50	2	6	90
JFWLH055	5.5	57	2	6	97
JFWLH056	5.6	57	2	6	97
JFWLH057	5.7	57	2	6	97
JFWLH058	5.8	57	2	6	97
JFWLH059	5.9	57	2	6	97
JFWLH060	6.0	57	2	6	97
JFWLH061	6.1	57	2	8	106
JFWLH062	6.2	57	2	8	106
JFWLH063	6.3	57	2	8	106
JFWLH064	6.4	57	2	8	106
JFWLH065	6.5	66	2	8	106
JFWLH066	6.6	66	2	8	106

編號 (Number)	外徑 (D)	溝長 (H)	刃數 (T)	柄徑 (d)	全長 (L)
JFWLH067	6.7	66	2	8	106
JFWLH068	6.8	66	2	8	106
JFWLH069	6.9	66	2	8	106
JFWLH070	7.0	76	2	8	116
JFWLH071	7.1	76	2	8	116
JFWLH072	7.2	76	2	8	116
JFWLH073	7.3	76	2	8	116
JFWLH074	7.4	76	2	8	116
JFWLH075	7.5	76	2	8	116
JFWLH076	7.6	76	2	8	116
JFWLH077	7.7	76	2	8	116
JFWLH078	7.8	76	2	8	116
JFWLH079	7.9	76	2	8	116
JFWLH080	8.0	76	2	8	116
JFWLH081	8.1	87	2	10	131
JFWLH082	8.2	87	2	10	131
JFWLH083	8.3	87	2	10	131
JFWLH084	8.4	87	2	10	131
JFWLH085	8.5	87	2	10	131
JFWLH086	8.6	87	2	10	131
JFWLH087	8.7	87	2	10	131
JFWLH088	8.8	87	2	10	131
JFWLH089	8.9	87	2	10	131
JFWLH090	9.0	87	2	10	131
JFWLH091	9.1	87	2	10	131
JFWLH092	9.2	87	2	10	131
JFWLH093	9.3	87	2	10	131
JFWLH094	9.4	87	2	10	131
JFWLH095	9.5	95	2	10	139
JFWLH096	9.6	95	2	10	139
JFWLH097	9.7	95	2	10	139
JFWLH098	9.8	95	2	10	139
JFWLH099	9.9	95	2	10	139
JFWLH100	10.0	95	2	10	139
JFWLH101	10.1	106	2	12	155
JFWLH102	10.2	106	2	12	155
JFWLH103	10.3	106	2	12	155

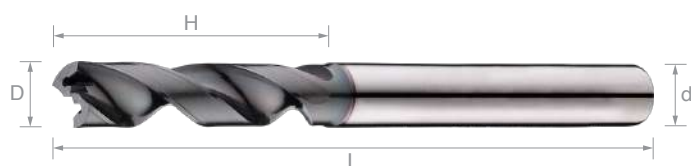
續下頁 / 切削條件表 Cutting Condition P.57-P.58

Micro Grain Carbide Flat Drill With Reamer Fuction (With Coolant Holes)(Stainless / Steel / 7xH) - 2 Flutes

[illegible][illegible]

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Micro Grain Carbide Flat Drill With Reamer Fuction (With Coolant Holes)(Stainless / Steel / Inch) - 2 Flutes

[illegible][illegible]

鎢鋼內冷鑽鉋平底鑽頭 切削條件表

Solid Carbide End Mills-Cutting Condition Table

公制/ Metric (mm)

被削材質 Work Material	軟鋼/合金鋼/碳素鋼 SS / SCM / SC 210 HB		合金鋼 SCM / SCr / SNCM 28 – 35 HRC		不銹鋼 SUS3 / SUS4		鈦合金 Ti - 6Al - 4V		鎳基合金 Inconel 718	
切削速度 Vc mm / min Cutting Speed	80 – 120 mm / min		50 – 90 mm / min		40 – 60 mm / min		40 – 60 mm / min		10 – 35 mm / min	
直徑 DC mm	主軸轉速 Speed Rpm	每轉進給 F mm / rev	主軸轉速 Speed Rpm	每轉進給 F mm / rev	主軸轉速 Speed Rpm	每轉進給 F mm / rev	主軸轉速 Speed Rpm	每轉進給 F mm / rev	主軸轉速 Speed Rpm	每轉進給 F mm / rev
3	10610	0.03 – 0.09	7430	0.03 – 0.09	5310	0.015 – 0.045	5840	0.01 – 0.05	2390	0.01 – 0.03
4	7960	0.04 – 0.11	5570	0.04 – 0.11	3980	0.02 – 0.06	4380	0.01 – 0.06	1790	0.01 – 0.04
5	6370	0.05 – 0.13	4460	0.05 – 0.13	3180	0.025 – 0.075	3500	0.01 – 0.07	1430	0.01 – 0.05
6	5310	0.06 – 0.15	3710	0.06 – 0.15	2650	0.03 – 0.09	2920	0.02 – 0.08	1190	0.02 – 0.06
7	4550	0.07 – 0.17	3180	0.07 – 0.17	2270	0.035 – 0.105	2500	0.02 – 0.09	1020	0.02 – 0.07
8	3980	0.08 – 0.19	2790	0.08 – 0.19	1990	0.04 – 0.12	2190	0.02 – 0.10	900	0.02 – 0.08
9	3540	0.09 – 0.21	2480	0.09 – 0.21	1770	0.045 – 0.135	1950	0.02 – 0.11	800	0.02 – 0.09
10	3180	0.10 – 0.23	2230	0.10 – 0.23	1590	0.05 – 0.15	1750	0.03 – 0.12	720	0.03 – 0.10
11	2890	0.11 – 0.25	2030	0.11 – 0.25	1450	0.055 – 0.165	1590	0.03 – 0.13	650	0.03 – 0.11
12	2650	0.12 – 0.27	1860	0.12 – 0.27	1330	0.06 – 0.18	1460	0.03 – 0.14	600	0.03 – 0.12
13	2450	0.13 – 0.29	1710	0.13 – 0.29	1220	0.065 – 0.195	1350	0.03 – 0.15	550	0.03 – 0.13
14	2270	0.14 – 0.31	1590	0.14 – 0.31	1140	0.07 – 0.21	1250	0.04 – 0.16	510	0.04 – 0.14
15	2120	0.15 – 0.33	1490	0.15 – 0.33	1060	0.075 – 0.225	1170	0.04 – 0.17	480	0.04 – 0.15
16	1990	0.16 – 0.35	1390	0.16 – 0.35	990	0.08 – 0.24	1090	0.04 – 0.18	450	0.04 – 0.16
17	1870	0.17 – 0.37	1310	0.17 – 0.37	940	0.085 – 0.255	1030	0.04 – 0.19	420	0.04 – 0.17
18	1770	0.18 – 0.39	1240	0.18 – 0.39	880	0.09 – 0.27	970	0.05 – 0.20	400	0.05 – 0.18
19	1680	0.19 – 0.41	1170	0.19 – 0.41	840	0.095 – 0.285	920	0.05 – 0.21	380	0.05 – 0.19
20	1590	0.20 – 0.43	1110	0.20 – 0.43	800	0.10 – 0.30	880	0.05 – 0.22	360	0.05 – 0.20

英制/ Imperial (inch)

被削材質 Work Material		軟鋼/合金鋼/碳素鋼 SS / SCM / SC 210 HB		合金鋼 SCM / SCr / SNCM 28 – 35 HRC		不銹鋼 SUS3 / SUS4		鈦合金 Ti - 6Al - 4V		鎳基合金 Inconel 718	
切削速度 Vc SFM Cutting Speed		min	max	min	max	min	max	min	max	min	max
		262.4672	393.7008	164.0420	295.2756	131.2336	196.8504	131.2336	196.8504	32.8084	114.8294
直徑 DC		IPR									
inch	mm	min	max	min	max	min	max	min	max	min	max
0.1181	3	0.0012	0.0035	0.0012	0.0035	0.0006	0.0018	0.0004	0.0020	0.0004	0.0012
0.1575	4	0.0016	0.0043	0.0016	0.0043	0.0008	0.0024	0.0004	0.0024	0.0004	0.0016
0.1969	5	0.0020	0.0051	0.0020	0.0051	0.0010	0.0030	0.0004	0.0028	0.0004	0.0020
0.2362	6	0.0024	0.0059	0.0024	0.0059	0.0012	0.0035	0.0008	0.0031	0.0008	0.0024
0.2756	7	0.0028	0.0067	0.0028	0.0067	0.0014	0.0041	0.0008	0.0035	0.0008	0.0028
0.3150	8	0.0031	0.0075	0.0031	0.0075	0.0016	0.0047	0.0008	0.0039	0.0008	0.0031
0.3543	9	0.0035	0.0083	0.0035	0.0083	0.0018	0.0053	0.0008	0.0043	0.0008	0.0035
0.3937	10	0.0039	0.0091	0.0039	0.0091	0.0020	0.0059	0.0012	0.0047	0.0012	0.0039
0.4331	11	0.0043	0.0098	0.0043	0.0098	0.0022	0.0065	0.0012	0.0051	0.0012	0.0043
0.4724	12	0.0047	0.0106	0.0047	0.0106	0.0024	0.0071	0.0012	0.0055	0.0012	0.0047
0.5118	13	0.0051	0.0114	0.0051	0.0114	0.0026	0.0077	0.0012	0.0059	0.0012	0.0051
0.5512	14	0.0055	0.0122	0.0055	0.0122	0.0028	0.0083	0.0016	0.0063	0.0016	0.0055
0.5906	15	0.0059	0.0130	0.0059	0.0130	0.0030	0.0089	0.0016	0.0067	0.0016	0.0059
0.6299	16	0.0063	0.0138	0.0063	0.0138	0.0031	0.0094	0.0016	0.0071	0.0016	0.0063
0.6693	17	0.0067	0.0146	0.0067	0.0146	0.0033	0.0100	0.0016	0.0075	0.0016	0.0067
0.7087	18	0.0071	0.0154	0.0071	0.0154	0.0035	0.0106	0.0020	0.0079	0.0020	0.0071
0.7480	19	0.0075	0.0161	0.0075	0.0161	0.0037	0.0112	0.0020	0.0083	0.0020	0.0075
0.7874	20	0.0079	0.0169	0.0079	0.0169	0.0039	0.0118	0.0020	0.0087	0.0020	0.0079

切削條件使用須知：

- ①請使用精度高、鋼性高的設備及夾具。
- ②選擇適合被削材之冷卻方式及冷卻液。
- ③刀具裝配刀桿後切削前，需先量測偏擺值是否在標準值內，不正確使用易造成刀具損壞。
- ④本表格為切削參數基準值，實際加工情況，請依機台之鋼性、工件夾持、加工部位形狀等情況、調整切削參數及條件。

Instruction for cutting conditions:

- ①Please use equipment and fixtures with high precision and high rigidity.
- ②Please use the suitable cooling method and coolant for the workpiece.
- ③It is necessary to measure deflection before the cutting tool to be assembled in the arbor. Improper use may lead the tool damaged.
- ④This table is for the reference. Please according to the rigidity of the machine, workpiece clamping and the part processing method to adjust the parameter.

鎢鋼內冷鑽鉋平底鑽頭 切削條件表

Solid Carbide End Mills-Cutting Condition Table



公制/ Metric (mm)

被削材質 Work Material	模具鋼/調質鋼 SKD / NAK / HPM 30 – 40 HRC		特殊鋼/高硬度鋼 40 – 50 HRC		鑄鐵 FC250 350 N / mm ²		球墨鑄鐵 FCD600 400 – 600 N / mm ²		鋁合金/鋁鑄件 A6061 / A7075 / AC / ACD	
切削速度 Vc mm / min Cutting Speed	20 – 40 mm / min		20 – 40 mm / min		80 – 120 mm / min		60 – 100 mm / min		120 – 200 mm / min	
直徑 DC mm	主軸轉速 Speed Rpm	每轉進給 F mm / rev	主軸轉速 Speed Rpm	每轉進給 F mm / rev	主軸轉速 Speed Rpm	每轉進給 F mm / rev	主軸轉速 Speed Rpm	每轉進給 F mm / rev	主軸轉速 Speed Rpm	每轉進給 F mm / rev
3	3180	0.02 – 0.04	3180	0.02 – 0.04	10610	0.03 – 0.09	8490	0.03 – 0.09	16980	0.03 – 0.09
4	2390	0.03 – 0.06	2390	0.03 – 0.06	7960	0.04 – 0.11	6370	0.04 – 0.11	12730	0.04 – 0.12
5	1910	0.04 – 0.08	1910	0.04 – 0.08	6370	0.05 – 0.13	5090	0.05 – 0.13	10190	0.05 – 0.15
6	1590	0.05 – 0.10	1590	0.05 – 0.10	5310	0.06 – 0.15	4240	0.06 – 0.15	8490	0.06 – 0.18
7	1360	0.06 – 0.12	1360	0.06 – 0.12	4550	0.07 – 0.17	3640	0.07 – 0.17	7280	0.07 – 0.20
8	1190	0.07 – 0.14	1190	0.07 – 0.14	3980	0.08 – 0.19	3180	0.08 – 0.19	6370	0.08 – 0.22
9	1060	0.08 – 0.16	1060	0.08 – 0.16	3540	0.09 – 0.21	2830	0.09 – 0.21	5660	0.09 – 0.24
10	950	0.09 – 0.18	950	0.09 – 0.18	3180	0.10 – 0.23	2550	0.10 – 0.23	5090	0.10 – 0.26
11	870	0.10 – 0.20	870	0.10 – 0.20	2890	0.11 – 0.25	2310	0.11 – 0.25	4630	0.11 – 0.28
12	800	0.11 – 0.22	800	0.11 – 0.22	2650	0.12 – 0.27	2120	0.12 – 0.27	4240	0.12 – 0.30
13	730	0.12 – 0.24	730	0.12 – 0.24	2450	0.13 – 0.29	1960	0.13 – 0.29	3920	0.13 – 0.32
14	680	0.13 – 0.26	680	0.13 – 0.26	2270	0.14 – 0.31	1820	0.14 – 0.31	3640	0.14 – 0.34
15	640	0.14 – 0.28	640	0.14 – 0.28	2120	0.15 – 0.33	1700	0.15 – 0.33	3400	0.15 – 0.36
16	600	0.15 – 0.30	600	0.15 – 0.30	1990	0.16 – 0.35	1590	0.16 – 0.35	3180	0.16 – 0.38
17	560	0.16 – 0.32	560	0.16 – 0.32	1870	0.17 – 0.37	1500	0.17 – 0.37	3000	0.17 – 0.40
18	530	0.17 – 0.34	530	0.17 – 0.34	1770	0.18 – 0.39	1410	0.18 – 0.39	2830	0.18 – 0.42
19	500	0.18 – 0.36	500	0.18 – 0.36	1680	0.19 – 0.41	1340	0.19 – 0.41	2680	0.19 – 0.44
20	480	0.19 – 0.38	480	0.19 – 0.38	1590	0.20 – 0.43	1270	0.20 – 0.43	2550	0.20 – 0.46

英制/ Imperial (inch)

被削材質 Work Material		模具鋼/調質鋼 SKD / NAK / HPM 30 – 40 HRC		特殊鋼/高硬度鋼 40 – 50 HRC		鑄鐵 FC250 350 N / mm2		球墨鑄鐵 FCD600 400 – 600 N / mm2		鋁合金/鋁鑄件 A6061 / A7075 / AC / ACD	
切削速度 Vc SFM Cutting Speed		min	max	min	max	min	max	min	max	min	max
		65.6168	131.2336	65.6168	131.2336	262.4672	393.7008	196.8504	328.0840	393.7008	656.1680
直徑 DC		IPR									
inch	mm	min	max	min	max	min	max	min	max	min	max
0.1181	3	0.0008	0.0016	0.0008	0.0016	0.0012	0.0035	0.0012	0.0035	0.0012	0.0035
0.1575	4	0.0012	0.0024	0.0012	0.0024	0.0016	0.0043	0.0016	0.0043	0.0016	0.0047
0.1969	5	0.0016	0.0031	0.0016	0.0031	0.0020	0.0051	0.0020	0.0051	0.0020	0.0059
0.2362	6	0.0020	0.0039	0.0020	0.0039	0.0024	0.0059	0.0024	0.0059	0.0024	0.0071
0.2756	7	0.0024	0.0047	0.0024	0.0047	0.0028	0.0067	0.0028	0.0067	0.0028	0.0079
0.3150	8	0.0028	0.0055	0.0028	0.0055	0.0031	0.0075	0.0031	0.0075	0.0031	0.0087
0.3543	9	0.0031	0.0063	0.0031	0.0063	0.0035	0.0083	0.0035	0.0083	0.0035	0.0094
0.3937	10	0.0035	0.0071	0.0035	0.0071	0.0039	0.0091	0.0039	0.0091	0.0039	0.0102
0.4331	11	0.0039	0.0079	0.0039	0.0079	0.0043	0.0098	0.0043	0.0098	0.0043	0.0110
0.4724	12	0.0043	0.0087	0.0043	0.0087	0.0047	0.0106	0.0047	0.0106	0.0047	0.0118
0.5118	13	0.0047	0.0094	0.0047	0.0094	0.0051	0.0114	0.0051	0.0114	0.0051	0.0126
0.5512	14	0.0051	0.0102	0.0051	0.0102	0.0055	0.0122	0.0055	0.0122	0.0055	0.0134
0.5906	15	0.0055	0.0110	0.0055	0.0110	0.0059	0.0130	0.0059	0.0130	0.0059	0.0142
0.6299	16	0.0059	0.0118	0.0059	0.0118	0.0063	0.0138	0.0063	0.0138	0.0063	0.0150
0.6693	17	0.0063	0.0126	0.0063	0.0126	0.0067	0.0146	0.0067	0.0146	0.0067	0.0157
0.7087	18	0.0067	0.0134	0.0067	0.0134	0.0071	0.0154	0.0071	0.0154	0.0071	0.0165
0.7480	19	0.0071	0.0142	0.0071	0.0142	0.0075	0.0161	0.0075	0.0161	0.0075	0.0173
0.7874	20	0.0075	0.0150	0.0075	0.0150	0.0079	0.0169	0.0079	0.0169	0.0079	0.0181

切削條件使用須知：

- ①請使用精度高、鋼性高的設備及夾具。
- ②選擇適合被削材之冷卻方式及冷卻液。
- ③刀具裝配刀桿後切削前，需先量測偏擺值是否在標準值內，不正確使用易造成刀具損壞。
- ④本表格為切削參數基準值，實際加工情況，請依機台之鋼性、工件夾持、加工部位形狀等情況、調整切削參數及條件。

Instruction for cutting conditions:

- ①Please use equipment and fixtures with high precision and high rigidity.
- ②Please use the suitable cooling method and coolant for the workpiece.
- ③It is necessary to measure deflection before the cutting tool to be assembled in the arbor. Improper use may lead the tool damaged.
- ④This table is for the reference. Please according to the rigidity of the machine, workpiece clamping and the part processing method to adjust the parameter.

專業品質/ *Professional Quality*

技術創新/ *Technological Innovation*

優質服務/ *Service Excellence*



金利成切削刀具有限公司

JIN LI CHENG CUTTING TOOL CO., LTD

50548 彰化縣鹿港鎮東崎二巷47號

No. 47, Dongqi 2nd Ln., Lukang Township,
Changhua County 50548, Taiwan

Tel: +886 4 7744566 +886 4 7741111

Fax: +886 4 7840657



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

E-mail: JLC@jinlicheng.com.tw