

M520 ULTRA CARBIDE END MILLS- Ball Nose- Long Neck- 4F

Technical drawing of a drill bit. The drawing shows a side view of the drill bit with the following dimensions and labels:

- $L1$: Length of the cutting edge.
- $L2$: Length of the flute.
- L : Total length of the drill bit.
- $D(h6)$: Diameter of the drill bit.
- R : Reference point at the tip of the drill bit.

超精銑 Bright Finishing	○
精銑 Finishing	◎
中銑 Semi Finishing	○
粗銑 Roughing	—



74

M520

M520 Ultra Carbide End Mills

M520 極細鎢鋼銑刀系列

Table 73

M520 極細鎢鋼銑刀-2刃(鍍膜) 切削條件表

SOLID CARBIDE END MILLS- CUTTING CONDITION TABLE

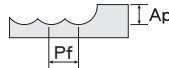
加工材質 Material	碳素鋼 Carbon Steels		合金鋼 Alloy Steels		合金鋼 Alloy Steels		調質鋼 Hardened Steels		不銹鋼 Stainless Steels		鑄鐵 Cast Iron		鋁合金,銅合金 Aluminum/Copper	
工件料號 Material Code	S35C,S45C,S50C		SCM,SKT,SKD		SCM,SKT,SKD		SKT,SKD		SUS304		FC,FCD		—	
硬度 Hardness	HRC<20		HRC20~30		HRC30~45		HRC45~55		—		HRC<30		—	
切削速度 Vc	102m/min		81m/min		67m/min		40m/min		80m/min		118m/min		30m/min	
外徑 Diameter	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)
1mm	11,340	130	25,650	110	21,600	70	12,000	60	25,650	110	37,800	300	9,000	40
2mm	16,200	170	12,960	130	10,800	90	6,480	70	12,960	130	18,900	320	4,860	50
3mm	11,340	170	8,640	150	7,020	100	4,500	70	8,640	150	12,960	320	3,350	50
4mm	8,100	180	6,480	150	5,400	110	3,240	70	6,480	150	9,720	320	2,430	60
5mm	6,750	200	5,130	150	4,320	110	2,700	80	5,130	150	7,560	360	2,030	60
切削量 Cutting Amount (mm)	Ap=0.3D (D<3, Ap≤0.15D)				Ap=0.06D (D<3, Ap≤0.03D)		Ap=0.3D (D<3, Ap≤0.15D)				Ap=0.06D (D<3, Ap≤0.03D)			

※ 切削公式 Cutting Formula : $S(\text{主軸轉速}) = Vc(\text{切削速度}) \times 1000 / D(\text{外徑}) / \pi (3.14)$ $F(\text{進給速度}) = fz(\text{每刃進給量}) \times Z(\text{刃數}) \times S(\text{主軸轉速})$

Table 74

M520 極細鎢鋼長頸型球刀-2 / 4刃(鍍膜) 切削條件表

SOLID CARBIDE END MILLS- CUTTING CONDITION TABLE

加工材質 Material	碳素鋼 Carbon Steels		合金鋼 Alloy Steels		合金鋼 Alloy Steels		調質鋼 Hardened Steels		調質鋼 Hardened Steels		不銹鋼 Stainless Steels		鑄鐵 Cast Iron	
工件料號 Material Code	S35C,S45C,S50C		SCM,SKT,SKD		SCM,SKT,SKD		SKT,SKD		SKT,SKD		SUS304		FC,FCD	
硬度 Hardness	HRC<20		HRC20~30		HRC30~45		HRC45~55		HRC55~63		—		HRC<30	
切削速度 Vc	90m/min		75m/min		65m/min		50m/min		35m/min		55m/min		90m/min	
半徑 R	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)
0.50R	28,660	790	23,890	600	20,700	500	15,920	350	11,150	200	17,520	400	28,660	870
0.75R	19,110	820	15,920	650	13,800	540	10,620	370	7,430	200	11,680	400	19,110	900
1.00R	14,330	820	11,940	680	10,350	570	7,960	370	5,570	200	8,760	430	14,330	900
1.25R	11,470	820	9,550	680	8,280	570	6,370	370	4,460	200	7,010	430	11,470	900
1.50R	9,550	820	7,960	680	6,900	570	5,310	370	3,720	200	5,840	430	9,550	900
2.00R	7,170	820	5,970	680	5,180	570	3,980	370	2,790	200	4,380	430	7,170	900
切削量 Cutting Amount (mm)	Ap=0.02D Pf=0.05D													

※ 切削公式 Cutting Formula : $S(\text{主軸轉速}) = Vc(\text{切削速度}) \times 1000 / D(\text{外徑}) / \pi (3.14)$ $F(\text{進給速度}) = fz(\text{每刃進給量}) \times Z(\text{刃數}) \times S(\text{主軸轉速})$

- 當加工聲音尖銳時，請調降主軸轉速(S) (10~40%)。 When the sound is piercing, please lower the spindle speed(S) (10~40%).
- 當機台震動太大時，請調降進給速度(F) (10~40%)。 When the machine is vibrating, please decrease the feed rate(F) (10~40%).
- 當主軸負載太大時，請調降進給速度(F) (10~40%)。 When the spindle load is high, please decrease the feed rate(F) (10~40%).
- 以上數據為建議值，適當的條件仍需視機台狀況，夾治具品質，潤滑冷卻系統...等而改變。

These are recommended values which depend on the condition of the machine, fixture, lubricating & cooling systems... etc. They may have to be adapted.