

## M520 ULTRA CARBIDE END MILLS- Ball Nose- Long Shank- 2F

▪ **MEBL2000A**

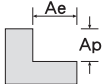


→ 技術資料  
Technical Data

Table 27

M520 極細鎢鋼短刀型 / 短刀長柄型銑刀- 4刃(鍍膜) 切削條件表

## SOLID CARBIDE END MILLS- CUTTING CONDITION TABLE

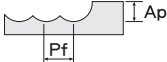
| 加工材質<br>Material              | 合金鋼<br>Alloy<br>Steels                                                                                                         |               | 合金鋼<br>Alloy<br>Steels |               | 調質鋼<br>Hardened<br>Steels |               | 調質鋼<br>Hardened<br>Steels |               | 鑄鐵<br>Cast<br>Iron |               |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------|---------------|------------------------|---------------|---------------------------|---------------|---------------------------|---------------|--------------------|---------------|
| 工件料號<br>Material Code         | SCM,SKT,SKD                                                                                                                    |               | SCM,SKT,SKD            |               | SKT,SKD                   |               | SKT,SKD                   |               | FC,FCD             |               |
| 硬度<br>Hardness                | HRC20~30                                                                                                                       |               | HRC30~45               |               | HRC45~55                  |               | HRC55~63                  |               | HRC<30             |               |
| 切削速度 Vc                       | 110m/min                                                                                                                       |               | 110m/min               |               | 95m/min                   |               | 79m/min                   |               | 126m/min           |               |
| 外徑<br>Diameter                | S<br>(rpm)                                                                                                                     | F<br>(mm/min) | S<br>(rpm)             | F<br>(mm/min) | S<br>(rpm)                | F<br>(mm/min) | S<br>(rpm)                | F<br>(mm/min) | S<br>(rpm)         | F<br>(mm/min) |
| 3mm                           | 11,800                                                                                                                         | 1,260         | 11,800                 | 1,150         | 10,060                    | 830           | 8,390                     | 500           | 13,460             | 1,550         |
| 4mm                           | 8,790                                                                                                                          | 1,190         | 8,790                  | 1,070         | 7,570                     | 780           | 6,300                     | 460           | 10,060             | 1,470         |
| 5mm                           | 7,050                                                                                                                          | 1,150         | 7,050                  | 990           | 6,060                     | 730           | 5,030                     | 420           | 8,080              | 1,310         |
| 6mm                           | 5,900                                                                                                                          | 1,070         | 5,900                  | 910           | 5,030                     | 660           | 4,200                     | 400           | 6,730              | 1,230         |
| 8mm                           | 4,400                                                                                                                          | 990           | 4,400                  | 830           | 3,800                     | 610           | 3,170                     | 400           | 5,030              | 1,150         |
| 10mm                          | 3,530                                                                                                                          | 990           | 3,530                  | 830           | 3,010                     | 610           | 2,540                     | 400           | 4,040              | 1,150         |
| 12mm                          | 2,930                                                                                                                          | 990           | 2,930                  | 830           | 2,540                     | 610           | 2,100                     | 400           | 3,370              | 1,150         |
| 切削量<br>Cutting Amount<br>(mm) | D<6, Ap=1D, Ae=0.02D<br>D≥6, Ap=1D, Ae=0.05D  |               |                        |               |                           |               |                           |               |                    |               |

※ 切削公式 Cutting Formula : S(主軸轉速) = Vc(切削速度) × 1000 / D(外徑) / π (3.14)      F(進給速度) = fz(每刃進給量) × Z(刃數) × S(主軸轉速)

Table 28

M520 極細鎢鋼球刀- 2刃(鍍膜) 切削條件表

## SOLID CARBIDE END MILLS- CUTTING CONDITION TABLE

| 加工材質<br>Material              | 碳素鋼<br>Carbon<br>Steels                                                                                 |               | 合金鋼<br>Alloy<br>Steels |               | 合金鋼<br>Alloy<br>Steels |               | 調質鋼<br>Hardened<br>Steels |               | 調質鋼<br>Hardened<br>Steels |               | 不銹鋼<br>Stainless<br>Steels |               | 鑄鐵<br>Cast<br>Iron |               |
|-------------------------------|---------------------------------------------------------------------------------------------------------|---------------|------------------------|---------------|------------------------|---------------|---------------------------|---------------|---------------------------|---------------|----------------------------|---------------|--------------------|---------------|
| 工件料號<br>Material Code         | S35C,S45C,S50C                                                                                          |               | SCM,SKT,SKD            |               | SCM,SKT,SKD            |               | SKT,SKD                   |               | SKT,SKD                   |               | SUS304                     |               | FC,FCD             |               |
| 硬度<br>Hardness                | HRC<20                                                                                                  |               | HRC20~30               |               | HRC30~45               |               | HRC45~55                  |               | HRC55~63                  |               | —                          |               | HRC<30             |               |
| 切削速度 Vc                       | 100m/min                                                                                                |               | 90m/min                |               | 75m/min                |               | 60m/min                   |               | 45m/min                   |               | 70m/min                    |               | 100m/min           |               |
| 半徑<br>R                       | S<br>(rpm)                                                                                              | F<br>(mm/min) | S<br>(rpm)             | F<br>(mm/min) | S<br>(rpm)             | F<br>(mm/min) | S<br>(rpm)                | F<br>(mm/min) | S<br>(rpm)                | F<br>(mm/min) | S<br>(rpm)                 | F<br>(mm/min) | S<br>(rpm)         | F<br>(mm/min) |
| 0.5R                          | 31,850                                                                                                  | 770           | 28,660                 | 620           | 23,890                 | 400           | 19,110                    | 210           | 14,330                    | 140           | 22,290                     | 290           | 31,850             | 770           |
| 1.0R                          | 15,920                                                                                                  | 770           | 14,330                 | 620           | 11,940                 | 400           | 9,550                     | 210           | 7,170                     | 140           | 11,150                     | 290           | 15,920             | 940           |
| 2.0R                          | 7,960                                                                                                   | 770           | 7,170                  | 630           | 5,970                  | 450           | 4,780                     | 270           | 3,580                     | 180           | 5,570                      | 370           | 7,960              | 940           |
| 3.0R                          | 5,310                                                                                                   | 860           | 4,780                  | 670           | 3,980                  | 470           | 3,190                     | 300           | 2,390                     | 190           | 3,720                      | 390           | 5,310              | 1,050         |
| 4.0R                          | 3,980                                                                                                   | 1,050         | 3,580                  | 790           | 2,990                  | 560           | 2,390                     | 330           | 1,790                     | 210           | 2,790                      | 460           | 3,980              | 1,300         |
| 5.0R                          | 3,190                                                                                                   | 860           | 2,870                  | 750           | 2,390                  | 530           | 1,910                     | 340           | 1,430                     | 210           | 2,230                      | 430           | 3,190              | 1,200         |
| 6.0R                          | 2,650                                                                                                   | 890           | 2,390                  | 700           | 1,990                  | 490           | 1,590                     | 310           | 1,190                     | 200           | 1,860                      | 430           | 2,650              | 1,100         |
| 8.0R                          | 1,990                                                                                                   | 840           | 1,790                  | 650           | 1,490                  | 480           | 1,190                     | 270           | 900                       | 190           | 1,390                      | 380           | 1,990              | 1,050         |
| 10.0R                         | 1,590                                                                                                   | 770           | 1,430                  | 570           | 1,190                  | 450           | 960                       | 250           | 720                       | 170           | 1,120                      | 370           | 1,590              | 940           |
| 切削量<br>Cutting Amount<br>(mm) | Ap=0.05D<br>Pf=0.1D  |               |                        |               |                        |               |                           |               |                           |               |                            |               |                    |               |

※ 切削公式 Cutting Formula : S(主軸轉速) = Vc(切削速度) × 1000 / D(外徑) / π (3.14)      F(進給速度) = fz(每刃進給量) × Z(刃數) × S(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.