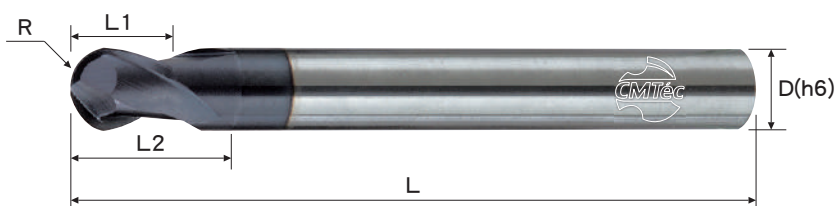


## M520 ULTRA CARBIDE END MILLS- Ball Nose- Short Flute & Long Shank- 2F

- **MEBDL20000A**



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



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M520

## M520 Ultra Carbide End Mills

M520 極細鎢鋼銑刀系列

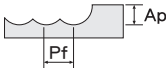
→ 切削條件表 P.549  
Cutting Condition

→ 技術資料  
Technical Data

Table 29

M520 極細鎢鋼短刀型 / 短刃長柄型球刀- 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 Steels                                                                                     |               | 合金鋼<br>Alloy Steels |               | 合金鋼<br>Alloy Steels |               | 調質鋼<br>Hardened Steels |               | 調質鋼<br>Hardened Steels |               | 不銹鋼<br>Stainless Steels |               | 鑄鐵<br>Cast 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                                                                                                   | 850           | 28,660              | 680           | 23,890              | 440           | 19,110                 | 230           | 14,330                 | 150           | 22,290                  | 320           | 31,850          | 850           |
| 1.0R                          | 15,920                                                                                                   | 850           | 14,330              | 680           | 11,940              | 440           | 9,550                  | 230           | 7,170                  | 150           | 11,150                  | 320           | 15,920          | 1,030         |
| 2.0R                          | 7,960                                                                                                    | 850           | 7,170               | 690           | 5,970               | 500           | 4,780                  | 300           | 3,580                  | 200           | 5,570                   | 410           | 7,960           | 1,030         |
| 3.0R                          | 5,310                                                                                                    | 950           | 4,780               | 740           | 3,980               | 520           | 3,190                  | 330           | 2,390                  | 210           | 3,720                   | 430           | 5,310           | 1,160         |
| 4.0R                          | 3,980                                                                                                    | 1,160         | 3,580               | 870           | 2,990               | 620           | 2,390                  | 360           | 1,790                  | 230           | 2,790                   | 510           | 3,980           | 1,430         |
| 5.0R                          | 3,190                                                                                                    | 950           | 2,870               | 830           | 2,390               | 580           | 1,910                  | 370           | 1,430                  | 230           | 2,230                   | 470           | 3,190           | 1,320         |
| 6.0R                          | 2,650                                                                                                    | 980           | 2,390               | 770           | 1,990               | 540           | 1,590                  | 340           | 1,190                  | 220           | 1,860                   | 470           | 2,650           | 1,210         |
| 8.0R                          | 1,990                                                                                                    | 920           | 1,790               | 720           | 1,490               | 530           | 1,190                  | 300           | 900                    | 210           | 1,390                   | 420           | 1,990           | 1,160         |
| 10.0R                         | 1,590                                                                                                    | 850           | 1,430               | 630           | 1,190               | 500           | 960                    | 280           | 720                    | 190           | 1,120                   | 410           | 1,590           | 1,030         |
| 切削量<br>Cutting Amount<br>(mm) | Ap=0.05D<br>Pf=0.1D<br> |               |                     |               |                     |               |                        |               |                        |               |                         |               |                 |               |

※ 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 30

M520 極細鎢鋼短刀型 / 短刃長柄型圓鼻銑刀- 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 Steels |               | 合金鋼<br>Alloy Steels                                                                 |               | 調質鋼<br>Hardened Steels |               | 調質鋼<br>Hardened Steels                                                                |               | 鑄鐵<br>Cast 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                       | 128m/min            |               | 108m/min                                                                            |               | 65m/min                |               | 48m/min                                                                               |               | 189m/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                           | 13,820              | 620           | 11,230                                                                              | 300           | 7,250                  | 360           | 5,520                                                                                 | 270           | 20,740              | 1,620         |
| 4mm                           | 10,370              | 620           | 8,640                                                                               | 300           | 5,180                  | 360           | 3,890                                                                                 | 270           | 15,550              | 1,940         |
| 5mm                           | 8,210               | 620           | 6,910                                                                               | 300           | 4,320                  | 360           | 3,240                                                                                 | 270           | 12,100              | 1,940         |
| 6mm                           | 6,910               | 620           | 5,620                                                                               | 300           | 3,460                  | 360           | 2,590                                                                                 | 270           | 10,370              | 1,940         |
| 8mm                           | 5,180               | 620           | 4,320                                                                               | 310           | 2,590                  | 360           | 1,940                                                                                 | 270           | 7,780               | 1,940         |
| 10mm                          | 4,100               | 650           | 3,460                                                                               | 310           | 2,060                  | 380           | 1,560                                                                                 | 280           | 6,050               | 2,100         |
| 12mm                          | 3,460               | 650           | 2,880                                                                               | 310           | 1,730                  | 380           | 1,300                                                                                 | 280           | 5,180               | 2,270         |
| 14mm                          | 3,260               | 720           | 2,740                                                                               | 340           | 1,730                  | 410           | 1,300                                                                                 | 310           | 4,800               | 2,520         |
| 16mm                          | 2,880               | 760           | 2,400                                                                               | 360           | 1,490                  | 430           | 1,130                                                                                 | 320           | 4,320               | 2,700         |
| 18mm                          | 2,540               | 760           | 2,110                                                                               | 360           | 1,340                  | 430           | 1,130                                                                                 | 320           | 3,840               | 2,700         |
| 20mm                          | 2,300               | 760           | 1,920                                                                               | 360           | 1,150                  | 430           | 860                                                                                   | 320           | 3,360               | 2,880         |
|                               |                     |               |                                                                                     |               |                        |               |                                                                                       |               |                     |               |
| 切削量<br>Cutting Amount<br>(mm) | Ap=1.5D<br>Ae=0.06D |               |  |               | Ap=1D<br>Ae=0.03D      |               |  |               | Ap=1.5D<br>Ae=0.06D |               |

※ 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.