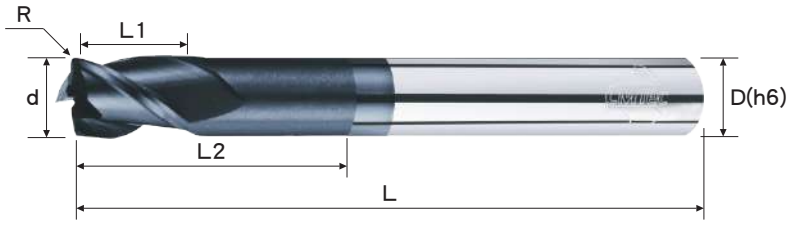
# M520 極細鎢鋼圓鼻銑刀- 短刃長柄型- 3刃

## M520 ULTRA CARBIDE END MILLS- Corner Radius- Short Flute & Long Shank- 3F

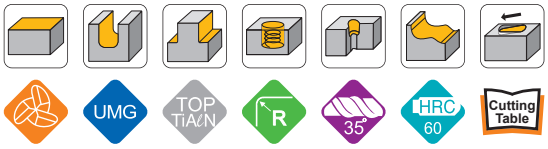
· MECDL3000000A




| 刃徑 d | 公差 Tolerance |
|---|---|
| Φ<3 | 0 ~ -0.02 |
| 3≦Φ≦10 | -0.01 ~ -0.03 |
| 10<Φ | -0.01 ~ -0.04 |

| 半徑 R | 公差 Tolerance |
|---|---|
| R | ±0.02 |

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

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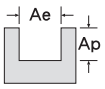
| 刃徑 d | R角 R | 刃長 L1 | 有效長 L2 | 全長 L | 柄徑 D | 刃數 F | 白刃訂購編號 Uncoated Order No. | 鍍膜訂購編號 Coated Order No. |
|---|---|---|---|---|---|---|---|---|
| 3.0 | 0.3R | 3 | 7.5 | 75 | 6 | 3 | MECDL3030003 | MECDL3030003A |
| 3.0 | 0.5R | 3 | 7.5 | 75 | 6 | 3 | MECDL3030005 | MECDL3030005A |
| 3.0 | 1.0R | 3 | 7.5 | 75 | 6 | 3 | MECDL3030010 | MECDL3030010A |
| 4.0 | 0.3R | 4 | 10.0 | 75 | 6 | 3 | MECDL3040003 | MECDL3040003A |
| 4.0 | 0.5R | 4 | 10.0 | 75 | 6 | 3 | MECDL3040005 | MECDL3040005A |
| 4.0 | 1.0R | 4 | 10.0 | 75 | 6 | 3 | MECDL3040010 | MECDL3040010A |
| 5.0 | 0.3R | 5 | 12.5 | 75 | 6 | 3 | MECDL3050003 | MECDL3050003A |
| 5.0 | 0.5R | 5 | 12.5 | 75 | 6 | 3 | MECDL3050005 | MECDL3050005A |
| 5.0 | 1.0R | 5 | 12.5 | 75 | 6 | 3 | MECDL3050010 | MECDL3050010A |
| 6.0 | 0.5R | 6 | 15.0 | 75 | 6 | 3 | MECDL3060005 | MECDL3060005A |
| 6.0 | 1.0R | 6 | 15.0 | 75 | 6 | 3 | MECDL3060010 | MECDL3060010A |
| 8.0 | 0.5R | 8 | 20.0 | 100 | 8 | 3 | MECDL3080005 | MECDL3080005A |
| 8.0 | 1.0R | 8 | 20.0 | 100 | 8 | 3 | MECDL3080010 | MECDL3080010A |
| 8.0 | 1.5R | 8 | 20.0 | 100 | 8 | 3 | MECDL3080015 | MECDL3080015A |
| 10.0 | 0.5R | 10 | 25.0 | 100 | 10 | 3 | MECDL3100005 | MECDL3100005A |
| 10.0 | 1.0R | 10 | 25.0 | 100 | 10 | 3 | MECDL3100010 | MECDL3100010A |
| 10.0 | 1.5R | 10 | 25.0 | 100 | 10 | 3 | MECDL3100015 | MECDL3100015A |
| 10.0 | 2.0R | 10 | 30.0 | 100 | 10 | 3 | MECDL3100020 | MECDL3100020A |
| 12.0 | 0.5R | 12 | 30.0 | 100 | 12 | 3 | MECDL3120005 | MECDL3120005A |
| 12.0 | 1.0R | 12 | 30.0 | 100 | 12 | 3 | MECDL3120010 | MECDL3120010A |
| 12.0 | 1.5R | 12 | 30.0 | 100 | 12 | 3 | MECDL3120015 | MECDL3120015A |
| 12.0 | 2.0R | 12 | 30.0 | 100 | 12 | 3 | MECDL3120020 | MECDL3120020A |

➡ 切削條件表 Cutting Condition P.547 ➡ 技術資料 Technical Data P.622

## Table 25 M520 極細鎢鋼短刃型 / 短刃長柄型銑刀- 2刃(鍍膜) 切削條件表

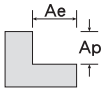
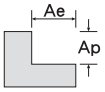
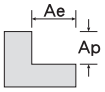
### SOLID CARBIDE END MILLS- CUTTING CONDITION TABLE

| 加工材質 Material | 合金鋼 Alloy Steels | | 合金鋼 Alloy Steels | | 調質鋼 Hardened Steels | | 調質鋼 Hardened Steels | | 鑄鐵 Cast Iron | |
|---|---|---|---|---|---|---|---|---|---|---|
| 工件料號 Material Code | SCM,SKT,SKD | | SCM,SKT,SKD | | SKT,SKD | | SKT,SKD | | FC,FCD | |
| 硬度 Hardness | HRC20~30 | | HRC30～45 | | HRC45～55 | | HRC55～63 | | HRC<30 | |
| 切削速度 Vc | 94m/min | | 79m/min | | 55m/min | | 39m/min | | 94m/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) |
| 1mm | 22,650 | 410 | 20,200 | 320 | 15,130 | 220 | 10,060 | 100 | 23,920 | 430 |
| 2mm | 12,280 | 420 | 10,690 | 320 | 7,840 | 220 | 5,300 | 100 | 12,590 | 440 |
| 3mm | 8,390 | 460 | 6,730 | 320 | 5,030 | 220 | 3,800 | 110 | 8,390 | 480 |
| 4mm | 6,940 | 450 | 5,660 | 320 | 4,080 | 220 | 2,980 | 110 | 6,940 | 450 |
| 6mm | 5,030 | 420 | 4,200 | 420 | 2,930 | 200 | 2,100 | 100 | 5030 | 420 |
| 8mm | 3,800 | 420 | 3,170 | 300 | 2,220 | 200 | 1,580 | 100 | 3,800 | 420 |
| 10mm | 3,010 | 420 | 2,540 | 300 | 1,780 | 200 | 1,260 | 100 | 3,010 | 420 |
| 12mm | 2,540 | 420 | 2,100 | 300 | 1,470 | 200 | 1,070 | 100 | 2,540 | 420 |
| 切削量 Cutting Amount (mm) | D≦3, Ap=0.15D<br>D>3, Ap=0.2D<br>D≦6, Ap=0.1D<br>D>6, Ap=0.15D | | | |  | | | | | |

※ 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 26 M520 極細鎢鋼銑刀- 3 / 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 | | HRC 30~45 | | HRC45~55 | | HRC55~63 | | — | | HRC<30 | |
| 切削速度 Vc | 136m/min | | 107m/min | | 90m/min | | 54m/min | | 41m/min | | 107m/min | | 158m/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) |
| 3mm | 15,120 | 735 | 11,520 | 517 | 9,360 | 247 | 6,040 | 300 | 4,600 | 225 | 11,520 | 517 | 17,280 | 1,350 |
| 4mm | 10,800 | 735 | 8,640 | 517 | 7,200 | 247 | 4,320 | 300 | 3,240 | 225 | 8,640 | 517 | 12,960 | 1,620 |
| 5mm | 9,000 | 735 | 6,840 | 517 | 5,760 | 247 | 3,600 | 300 | 2,700 | 225 | 6,840 | 517 | 10,080 | 1,620 |
| 6mm | 7,200 | 735 | 5,760 | 517 | 4,680 | 247 | 2,880 | 300 | 2,160 | 225 | 5,760 | 517 | 8,640 | 1,620 |
| 8mm | 5,400 | 735 | 4,320 | 517 | 3,600 | 262 | 2,160 | 300 | 1,620 | 225 | 4,320 | 517 | 6,480 | 1,620 |
| 10mm | 4,320 | 757 | 3,420 | 540 | 2,880 | 262 | 1,720 | 315 | 1,300 | 232 | 3,420 | 540 | 5,040 | 1,755 |
| 12mm | 3,600 | 757 | 2,880 | 540 | 2,400 | 262 | 1,440 | 315 | 1,080 | 232 | 2,880 | 540 | 4,320 | 1,890 |
| 14mm | 3,600 | 840 | 2,720 | 600 | 2,280 | 285 | 1,440 | 345 | 1,080 | 255 | 2,720 | 600 | 4,000 | 2,100 |
| 16mm | 3,120 | 900 | 2,400 | 630 | 2,000 | 300 | 1,240 | 360 | 940 | 270 | 2,400 | 630 | 3,600 | 2,250 |
| 18mm | 3,120 | 900 | 2,120 | 630 | 1,760 | 300 | 1,120 | 360 | 940 | 270 | 2,120 | 630 | 3,200 | 2,250 |
| 20mm | 2,400 | 900 | 1,920 | 630 | 1,600 | 300 | 960 | 360 | 720 | 270 | 1,920 | 630 | 2,800 | 2,400 |
| | | | | | | | | | | | | | | |
| 切削量 Cutting Amount (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(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)

1. 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%).
2. 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%).
3. 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%).
4. 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.