

### Table 1 鎢鋼平銑刀-2刃/3刃(鍍膜)切削條件表

SOLID CARBIDE END MILLS-MILLING CONDITION TABLE  
 CES2-A, CELF2-A, CECR2-A, CEI2-A, CER3-A, CETF2-A, CLES2-A, CEN2-A, CEFF2-A, CELS2-A

加工材質 WORKING MATERIAL	碳素鋼/合金鋼 CARBON STEEL / ALLOY STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		調質鋼 HARDENED STEEL		調質鋼 HARDENED STEEL		不鏽鋼 STAINLESS STEEL		鑄鐵 CAST IRON	
MATERIAL CODE	(S45C,S50C,SCM)		(SCM,SKT,SKD)		(SCM,SKT,SKD)		(SKT,SKD)		(SKT,SKD)		(SUS304)		FC/FCD	
HARDNESS GRADE	HRC <20		HRC 20~30		HRC 30~40		HRC 45~55		HRC 55~60		—		—	
切削速度 Vc	68M/min		54M/min		45M/min		27M/min		20M/min		54M/min		79M/min	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
1MM	20,000	120	17,100	100	14,400	65	8,000	50	6,000	35	17,100	100	25,200	270
2MM	10,800	155	8,640	120	7,200	85	4,320	65	3,240	45	8,640	120	12,600	290
3MM	7,560	155	5,760	135	4,680	90	3,000	65	2,230	45	5,760	135	8,640	290
4MM	5,400	165	4,320	135	3,600	100	2,160	65	1,620	50	4,320	135	6,480	290
5MM	4,500	180	3,420	135	2,880	100	1,800	75	1,350	55	3,420	135	5,040	325
6MM	3,600	180	2,880	135	2,340	100	1,440	75	1,080	55	2,880	135	4,320	360
8MM	2,700	180	2,160	155	1,800	110	1,080	75	810	55	2,160	155	3,240	360
10MM	2,160	180	1,710	155	1,440	120	870	75	650	55	1,710	155	2,520	380
12MM	1,800	180	1,440	155	1,200	120	720	75	540	55	1,440	155	2,160	400
14MM	1,800	200	1,360	170	1,140	130	720	80	540	60	1,360	170	2,000	440
16MM	1,560	220	2,100	180	1,000	140	630	90	470	65	2,100	180	1,800	480
18MM	1,560	220	1,060	180	880	140	630	90	470	65	1,060	180	1,600	480
20MM	1,200	220	960	180	800	140	480	90	360	65	960	180	1,400	480
切削量 Milling Amount (mm)	AD=0.5D(D<3, AD ≤ 0.25D)						AD=0.1D(D<3, AD ≤ 0.05D)						AD=0.5D(D<3, AD ≤ 0.25D)	



### Table 2 鎢鋼平銑刀-3刃/4刃(鍍膜)切削條件表

SOLID CARBIDE END MILLS-MILLING CONDITION TABLE  
 CES4-A, CESM4-A, CECL4-A, CLES3-A, CLES4-A, CEH4-A, CEHF4-A, CERR3-A, CERR4-A, CEFF4-A, CELF4-A, CECR4-A, CELS4-A, CER4-A

加工材質 WORKING MATERIAL	碳素鋼/合金鋼 CARBON STEEL / ALLOY STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		調質鋼 HARDENED STEEL		調質鋼 HARDENED STEEL		不鏽鋼 STAINLESS STEEL		鑄鐵 CAST IRON	
MATERIAL CODE	(S45C,S50C,SCM)		(SCM,SKT,SKD)		(SCM,SKT,SKD)		(SKT,SKD)		(SKT,SKD)		(SUS304)		FC/FCD	
HARDNESS GRADE	HRC <20		HRC 20~30		HRC 30~40		HRC 45~55		HRC 55~60		—		—	
切削速度 Vc	68M/min		54M/min		45M/min		27M/min		20M/min		54M/min		79M/min	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	7,560	490	5,760	345	4,680	165	3,020	200	2,300	150	5,760	345	8,640	900
4MM	5,400	490	4,320	345	3,600	165	2,160	200	1,620	150	4,320	345	6,480	1,080
5MM	4,500	490	3,420	345	2,880	165	1,800	200	1,350	150	3,420	345	5,040	1,080
6MM	3,600	490	2,880	345	2,340	165	1,440	200	1,080	150	2,880	345	4,320	1,080
8MM	2,700	490	2,160	345	1,800	175	1,080	200	810	150	2,160	345	3,240	1,080
10MM	2,160	505	1,710	360	1,440	175	860	210	650	155	1,710	360	2,520	1,170
12MM	1,800	505	1,440	360	1,200	175	720	210	540	155	1,440	360	2,160	1,260
14MM	1,800	560	1,360	400	1,140	190	720	230	540	170	1,360	400	2,000	1,400
16MM	1,560	600	1,200	420	1,000	200	620	240	470	180	1,200	420	1,800	1,500
18MM	1,400	600	1,060	420	880	200	560	240	420	180	1,060	420	1,600	1,500
20MM	1,200	600	960	420	800	200	480	240	360	180	960	420	1,490	1,400
切削量 Milling Amount (mm)	AD=1.5D, RD ≤ 0.1D						AD=1.5D, RD ≤ 0.05D						AD=1.5D, RD ≤ 0.1D	






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.

### Table 3 CEP3-A 雙心徑不等分割型(鍍膜) 切削條件表

#### SOLID CARBIDE END MILLS-MILLING CONDITION TABLE (側銑粗加工 Side Milling Roughing)

加工材質 WORKING MATERIAL	碳素鋼/合金鋼 CARBON STEEL / ALLOY STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		預硬鋼 / 調質鋼 PREHARDENED STEEL /HARDENED STEEL		不鏽鋼 STAINLESS STEEL		鈦合金 TITANIUM ALLOY		鎳基耐熱合金鋼 NI-BASED ALLOY	
MATERIAL CODE	(SS400,S55C,FC250)		(SCM,SKT,SKD)		(SKT,SKD,NAK55)		(SUS304,SKD)		—		—	
HARDNESS GRADE	HRC <20		HRC 20~30		HRC 30~40		HRC 38~45		—		—	
切削速度 Vc	130M/min		120M/min		110M/min		70M/min		60M/min		20M/min	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
2MM	21,170	1,200	19,500	890	13,370	790	11,140	420	10,020	380	3,340	150
3MM	14,110	1,200	13,000	890	8,920	790	7,430	420	6,690	380	2,230	150
4MM	10,580	1,200	9,750	890	6,690	790	5,570	420	5,010	380	1,670	150
5MM	8,470	1,200	7,800	890	5,350	790	4,460	420	4,010	380	1,340	150
6MM	7,060	1,200	6,500	890	4,460	790	3,720	420	3,340	380	1,110	150
8MM	5,290	1,200	4,870	890	3,350	790	2,790	420	2,510	380	830	150
10MM	4,240	1,200	3,900	890	2,670	790	2,230	420	2,000	380	670	150
12MM	3,530	1,200	3,250	890	2,230	790	1,860	420	1,670	380	560	160
14MM	3,020	1,200	2,790	890	1,910	790	1,590	420	1,440	380	480	150
16MM	2,650	1,200	2,440	890	1,670	790	1,390	420	1,250	380	420	160
20MM	2,110	1,200	1,950	890	1,340	790	1,110	420	1,000	380	340	160
25MM	1,690	1,200	1,560	890	1,070	790	890	420	810	380	270	150
切削量 Milling Amount (mm)	AD=1D RD=0.4D				AD=1D RD=0.4D				AD=1D RD=0.4D			

#### SOLID CARBIDE END MILLS-MILLING CONDITION TABLE (溝銑加工 Slotting)



加工材質 WORKING MATERIAL	碳素鋼/合金鋼 CARBON STEEL / ALLOY STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		預硬鋼 / 調質鋼 PREHARDENED STEEL /HARDENED STEEL		不鏽鋼 STAINLESS STEEL		鈦合金 TITANIUM ALLOY		鎳基耐熱合金鋼 NI-BASED ALLOY	
MATERIAL CODE	(SS400,S55C,FC250)		(SCM,SKT,SKD)		(SKT,SKD,NAK55)		(SUS304,SKD)		—		—	
HARDNESS GRADE	HRC <20		HRC 20~30		HRC 30~40		HRC 38~45		—		—	
切削速度 Vc	110M/min		100M/min		80M/min		56M/min		50M/min		17.5M/min	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
2mm	19,100	700	15,600	650	13,370	480	8,910	270	7,800	230	2,790	50
3mm	12,740	700	10,400	650	8,910	480	6,260	270	5,200	230	1,860	50
4mm	9,550	700	7,800	650	6,690	480	4,460	270	3,900	230	1,390	50
5mm	7,640	700	6,240	650	5,350	480	3,560	270	3,120	230	1,110	50
6mm	6,370	700	5,200	650	4,460	480	2,970	270	2,600	230	930	50
8mm	4,780	700	3,900	650	3,340	480	2,230	270	1,950	230	690	50
10mm	3,820	700	3,120	650	2,670	480	1,790	270	1,560	230	560	50
12mm	3,180	700	2,600	650	2,230	480	1,480	270	1,300	230	460	50
14mm	2,730	700	2,230	650	1,910	480	1,270	270	1,110	230	400	50
16mm	2,380	700	1,950	650	1,670	480	1,110	270	970	230	350	50
20mm	1,910	700	1,560	650	1,340	480	890	270	780	230	280	50
25mm	1,530	700	1,250	650	1,070	480	710	270	620	230	220	50
切削量 Milling Amount (mm)	AD=1D RD=1D				AD=0.8D RD=1D				AD=0.8D RD=1D			

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.

**Table 4 CEP4-A 雙心徑不等分割型(鍍膜) 切削條件表**

**SOLID CARBIDE END MILLS-MILLING CONDITION TABLE (側銑粗加工 Side Milling Roughing)**

加工材質 WORKING MATERIAL	碳素鋼/合金鋼 CARBON STEEL / ALLOY STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		預硬鋼 / 調質鋼 PREHARDENED STEEL / HARDENED STEEL		不鏽鋼 STAINLESS STEEL		鈦合金 TITANIUM ALLOY		鎳基耐熱合金鋼 NI-BASED ALLOY	
MATERIAL CODE	(SS400,S55C,FC250)		(SCM,SKT,SKD)		(SKT,SKD,NAK55)		(SUS304,SKD)		—		—	
HARDNESS GRADE	HRC <20		HRC 20~30		HRC 30~40		HRC 38~45		—		—	
切削速度 Vc	130M/min		120M/min		110M/min		70M/min		60M/min		20M/min	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3mm	14,110	1,610	13,000	1,480	11,140	1,060	7,430	560	6,690	510	2,230	210
4mm	10,580	1,610	9,750	1,480	8,360	1,060	5,570	560	5,010	510	1,670	210
5mm	8,470	1,610	7,800	1,480	6,690	1,060	4,460	560	4,010	510	1,340	210
6mm	7,060	1,610	6,500	1,480	5,570	1,060	3,720	560	3,340	510	1,110	210
8mm	5,290	1,610	4,870	1,480	4,180	1,060	2,790	560	2,510	510	830	210
10mm	4,240	1,610	3,900	1,480	3,340	1,060	2,230	560	2,000	510	670	210
12mm	3,530	1,610	3,250	1,480	2,790	1,060	1,860	560	1,670	510	560	210
16mm	2,650	1,610	2,440	1,480	2,090	1,060	1,390	560	1,250	510	420	210
20mm	2,110	1,610	1,950	1,480	1,670	1,060	1,110	560	1,000	510	340	210
25mm	1,690	1,610	1,560	1,480	1,340	1,060	890	560	810	510	270	210
切削量 Milling Amount (mm)	AD=1D RD=0.4D				AD=1D RD=0.4D				AD=1D RD=0.4D		AD=0.5D RD=0.15D	

**SOLID CARBIDE END MILLS-MILLING CONDITION TABLE (溝銑加工 Slotting)**

加工材質 WORKING MATERIAL	碳素鋼/合金鋼 CARBON STEEL / ALLOY STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		預硬鋼 / 調質鋼 PREHARDENED STEEL / HARDENED STEEL		不鏽鋼 STAINLESS STEEL		鈦合金 TITANIUM ALLOY		鎳基耐熱合金鋼 NI-BASED ALLOY	
MATERIAL CODE	(SS400,S55C,FC250)		(SCM,SKT,SKD)		(SKT,SKD,NAK55)		(SUS304,SKD)		—		—	
HARDNESS GRADE	HRC <20		HRC 20~30		HRC 30~40		HRC 38~45		—		—	
切削速度 Vc	110M/min		100M/min		80M/min		56M/min		60M/min		20M/min	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3mm	11,140	800	10,400	750	8,910	540	5,940	290	5,200	250	1,860	70
4mm	8,360	800	7,800	750	6,690	540	4,460	290	3,900	250	1,390	70
5mm	6,690	800	6,240	750	5,350	540	3,560	280	3,120	250	1,110	70
6mm	5,570	800	5,200	750	4,460	540	2,970	280	2,600	250	930	70
8mm	4,180	800	3,900	750	3,340	540	2,230	280	1,950	250	690	70
10mm	3,340	800	3,120	750	2,670	540	1,790	290	1,560	250	560	70
12mm	2,790	800	2,600	750	2,230	540	1,480	280	1,300	250	460	70
16mm	2,090	800	2,080	750	1,670	540	1,110	280	970	250	350	70
20mm	1,670	800	1,560	750	1,340	540	890	280	780	250	280	70
25mm	1,340	800	1,250	750	1,070	540	710	290	620	250	220	70
切削量 Milling Amount (mm)	AD=1D RD=1D				AD=0.8D RD=1D				AD=1D RD=0.4D		AD=0.5D RD=15D	

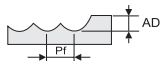
以上數據為建議值，適當的條件仍需視機台狀況，夾治具品質，潤滑冷卻系統...等而改變。

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

**Table 5 鎢鋼球型銑刀-2刃/4刃(鍍膜)切削條件表**

**SOLID CARBIDE END MILLS-MILLING CONDITION TABLE  
CEB2-A, CEBL2-A, CEBLL2-A,CEB4-A, CEBL4-A,CETB2-A, CENL2-A, CENL4-A, CEBN2-A**

加工材質 WORKING MATERIAL	碳素鋼/合金鋼 CARBON STEEL / ALLOY STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		調質鋼 HARDENED STEEL		調質鋼 HARDENED STEEL		不鏽鋼 STAINLESS STEEL		鑄鐵 CAST IRON	
MATERIAL CODE	(S45C,S50C,SCM)		(SCM,SKT,SKD)		(SCM,SKT,SKD)		(SKT,SKD)		(SKT,SKD)		(SUS304)		FC/FCD	
HARDNESS GRADE	HRC <20		HRC 20~30		HRC 30~40		HRC 40~50		HRC 50~60		—		—	
切削速度 Vc	72M/min		54M/min		34M/min		29M/min		22M/min		54M/min		72M/min	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
0.5R	36,000	4,280	32,400	3,380	21,600	2,570	14,400	1,720	10,800	1,280	32,400	3,380	45,000	7,500
1.0R	20,520	2,440	16,200	1,690	11,700	1,390	8,200	980	6,160	730	16,200	1,690	22,860	3,810
2.0R	11,520	1,370	8,640	900	6,300	750	4,600	550	3,460	410	8,640	900	11,520	1,920
3.0R	7,560	900	5,760	600	3,780	450	3,020	360	2,270	270	5,760	600	7,560	1,260
4.0R	5,760	690	4,320	450	2,880	340	2,300	270	1,730	205	4,320	450	5,760	960
5.0R	4,590	550	3,420	360	2,160	255	1,830	215	1,380	160	3,420	360	4,590	765
6.0R	3,780	450	2,880	300	1,800	210	1,520	180	1,140	130	2,880	300	3,780	630
8.0R	3,200	380	2,400	250	1,560	180	1,280	150	960	110	2,400	250	3,200	530
10.0R	2,600	310	1,920	200	1,300	150	1,040	120	780	90	1,920	200	2,600	430
切削量 Milling Amount (mm)	AD=0.05D, Pf=0.1D													



**Table 6 CEB3-A鎢鋼球形銑刀-3刃(鍍膜) 切削條件表**

**SOLID CARBIDE END MILLS-MILLING CONDITION TABLE  
CEB3-A**

加工材質 WORKING MATERIAL	碳素鋼/合金鋼 CARBON STEEL / ALLOY STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		調質鋼 HARDENED STEEL	
MATERIAL CODE	(S45C,S50C,SCM)		(SCM,SKT,SKD)		(SCM,SKT,SKD)		(SKT,SKD)	
HARDNESS GRADE	HRC <20		HRC 20~30		HRC 30~40		HRC 40~50	
切削速度 Vc	103M/min		76M/min		48M/min		42M/min	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
1.0R	24,620	2,930	19,440	2,030	14,040	1,670	9,840	1,180
2.0R	13,820	1,640	10,370	1,080	7,560	900	5,520	660
3.0R	9,070	1,080	6,910	720	4,540	540	3,620	430
4.0R	6,910	830	5,180	540	3,460	410	2,760	320
5.0R	5,510	660	4,100	430	2,590	310	2,200	260
6.0R	4,540	540	3,460	360	2,160	250	1,820	220
8.0R	3,840	460	2,880	300	1,870	220	1,540	180
10.0R	3,120	370	2,300	240	1,560	180	1,250	140
切削量 Milling Amount (mm)	AD=0.05D, Pf=0.1D							



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.

**Table 7 CECR2-A鎢鋼圓鼻銑刀-小柄型/標準型-2刀(鍍膜) 切削條件表**

**SOLID CARBIDE END MILLS - MILLING CONDITION TABLE**

加工材質 WORKING MATERIAL	碳素鋼/合金鋼 CARBON STEEL / ALLOY STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		調質鋼 HARDENED STEEL		調質鋼 HARDENED STEEL		不銹鋼 STAINLESS STEEL		鑄鐵 CAST IRON			
MATERIAL CODE	(S45C,S50C,SCM)		(SCM,SKT,SKD)		(SCM,SKT,SKD)		(SKT,SKD)		(SKT,SKD)		(SUS304)		FC/FCD			
HARDNESS GRADE	HRC<20		HRC20~30		HRC30~40		HRC45~55		HRC55~60		—		—			
切削速度 Vc	95M/min		75M/min		63M/min		38M/min		28M/min		75M/min		110M/min			
外徑 DIAMETER	R.P.M		FEED (mm/min)		R.P.M		FEED (mm/min)		R.P.M		FEED (mm/min)		R.P.M			
	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M (*0.8)	FEED (mm/min)	R.P.M	FEED (mm/min)		
1MM	22,400	140	19,150	110	16,130	70	8,960	60	6,720	40	19,150	110	28,220	300		
2MM	12,100	180	9,680	140	8,060	100	4,840	70	3,630	50	9,680	140	14,110	330		
3MM	8,460	180	6,450	150	5,240	100	3,360	70	2,500	50	6,450	150	9,680	330		
4MM	6,050	180	4,840	150	4,030	110	2,420	70	1,820	60	4,840	150	7,260	330		
5MM	5,040	200	3,830	150	3,220	110	2,020	80	1,510	60	3,830	150	5,650	360		
6MM	4,030	200	3,220	150	2,620	110	1,620	80	1,210	60	3,220	150	4,840	400		
8MM	3,020	200	2,420	180	2,020	120	1,210	80	900	60	2,420	180	3,630	400		
10MM	2,420	200	1,910	180	1,620	140	980	80	730	60	1,910	180	2,820	420		
12MM	2,020	200	1,620	180	1,340	140	810	80	610	60	1,620	180	2,420	450		
14MM	2,020	220	1,520	190	1,280	140	810	90	610	60	1,520	190	2,240	500		
16MM	1,740	250	1,340	200	1,120	160	700	100	530	70	1,340	200	2,020	540		
18MM	1,740	250	1,180	200	980	160	700	100	530	70	1,180	200	1,790	540		
20MM	1,340	250	1,070	200	900	160	540	100	400	70	1,070	200	1,570	540		
切削量 Milling Amount (mm)	AD=0.5D(D<3, AD ≤ 0.25D)						AD=0.1D(D<3, AD ≤ 0.05D)						AD=0.5D(D<3, AD ≤ 0.25D)			



**Table 8 CECR4-A,CECL4-A鎢鋼圓鼻銑刀-小柄型/標準型-4刀(鍍膜) ; 長柄型-4刀(鍍膜) 切削條件表**

**SOLID CARBIDE END MILLS - MILLING CONDITION TABLE**

加工材質 WORKING MATERIAL	碳素鋼/合金鋼 CARBON STEEL / ALLOY STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		調質鋼 HARDENED STEEL		調質鋼 HARDENED STEEL		不銹鋼 STAINLESS STEEL		鑄鐵 CAST IRON			
MATERIAL CODE	(S45C,S50C,SCM)		(SCM,SKT,SKD)		(SCM,SKT,SKD)		(SKT,SKD)		(SKT,SKD)		(SUS304)		FC/FCD			
HARDNESS GRADE	HRC<20		HRC20~30		HRC30~40		HRC45~55		HRC55~60		—		—			
切削速度 Vc	94M/min		75M/min		63M/min		37M/min		28M/min		75M/min		110M/min			
外徑 DIAMETER	R.P.M		FEED (mm/min)		R.P.M		FEED (mm/min)		R.P.M		FEED (mm/min)		R.P.M			
	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M (mm/min)	FEED (mm/min)	R.P.M	FEED (mm/min)		
3MM	5,040	550	6,450	380	5,240	180	3,380	220	2,580	170	6,450	380	9,680	1,010		
4MM	6,050	550	4,840	380	4,030	180	2,420	220	1,820	170	4,840	380	7,260	1,210		
5MM	5,040	550	3,830	380	3,220	180	2,020	220	1,510	170	3,830	380	5,650	1,210		
6MM	4,030	550	3,220	380	2,620	180	1,620	220	1,210	170	3,220	380	4,840	1,210		
8MM	3,020	550	2,420	380	2,020	200	1,210	220	900	170	2,420	380	3,630	1,210		
10MM	2,420	570	1,910	400	1,620	200	960	230	730	180	1,910	400	2,820	1,310		
12MM	2,020	570	1,620	400	1,340	200	810	230	610	180	1,620	400	2,420	1,410		
14MM	2,020	620	1,520	450	1,280	220	810	260	610	190	1,520	450	2,240	1,570		
16MM	1,740	670	1,340	470	1,120	220	700	270	530	200	1,340	470	2,020	1,680		
18MM	1,570	670	1,180	470	980	220	620	270	470	200	1,180	470	1,790	1,680		
20MM	1,340	670	1,070	470	900	220	540	270	400	200	1,070	470	1,570	1,790		
切削量 Milling Amount (mm)	AD=1.5D, RD ≤ 0.1D						AD=1D, RD ≤ 0.05D						AD=1.5D, RD ≤ 0.1D)			




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.

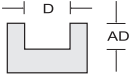
**Table 9** CEH3-A 鎢鋼平銑刀-高導標準型-3刃(鍍膜) 切削條件表

**SOLID CARBIDE END MILLS-MILLING CONDITION TABLE**

加工材質 WORKING MATERIAL	合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		調質鋼 HARDENED STEEL		調質鋼 HARDENED STEEL	
MATERIAL CODE	(SCM,SKT,SKD)		(SKT,SKD)		(SKT,SKD)	
HARDNESS GRADE	HRC 40~50		HRC 50~60		HRC 60~65	
切削速度 Vc	27M/min		18M/min		16M/min	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	2,880	75	1,890	75	1,710	70
4MM	2,160	80	1,440	80	1,300	75
5MM	1,710	80	1,170	80	1,040	70
6MM	1,440	155	990	110	860	90
8MM	1,080	155	720	110	650	90
10MM	860	155	580	90	520	75
12MM	720	155	480	80	430	65
14MM	600	130	450	75	410	60
16MM	540	120	360	75	320	55
18MM	480	100	350	60	310	50
20MM	430	95	290	65	270	45
切削量 Milling Amount (mm)	AD=0.1D					

**Table 10** 鎢鋼平銑刀-6刃(鍍膜) 切削條件表

**SOLID CARBIDE END MILLS-MILLING CONDITION TABLE  
CEHD6-A, CEHF6-A, CEHFF6-A, CLES6-A**

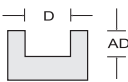
加工材質 WORKING MATERIAL	合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		調質鋼 HARDENED STEEL		調質鋼 HARDENED STEEL	
MATERIAL CODE	(SCM,SKT,SKD)		(SKT,SKD)		(SKT,SKD)	
HARDNESS GRADE	HRC 40~50		HRC 50~60		HRC 60~65	
切削速度 Vc	27M/min		18M/min		16M/min	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	2,880	75	1,890	75	1,710	70
4MM	2,160	80	1,440	80	1,300	75
5MM	1,710	80	1,170	80	1,040	70
6MM	1,440	155	990	110	860	90
8MM	1,080	155	720	110	650	90
10MM	860	155	580	90	520	75
12MM	720	155	480	80	430	65
14MM	600	130	450	75	410	60
16MM	540	120	360	75	320	55
18MM	480	100	350	60	310	50
20MM	430	95	290	65	270	45
切削量 Milling Amount (mm)	AD=0.1D					

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.

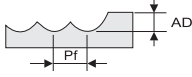
**Table 11** 鎢鋼平銑刀-(特)高導鋁用型-2刃/3刃(白刀)切削條件表

**SOLID CARBIDE END MILLS-MILLING CONDITION TABLE  
CEX2, CEX3, CEXX3, CEXF3**

加工材質 WORKING MATERIAL	鋁合金 ALUMINUM ALLOYS		銅合金 COPPER ALLOYS	
MATERIAL CODE	A5052		—	
切削速度 Vc	140M/min		150M/min	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	16,000	1,200	16,000	1,100
4MM	12,000	1,000	12,000	900
5MM	9,600	900	9,600	800
6MM	8,000	820	8,000	650
8MM	6,000	750	6,000	600
10MM	4,800	680	4,800	550
12MM	4,000	620	4,000	500
切削量 Milling Amount (mm)	AD=0.1D 			

**Table 12** 鎢鋼鋁用球型銑刀-2刃(白刀)切削條件表

**SOLID CARBIDE BALL NOSED END MILLS-MILLING CONDITION TABLE  
CEXB2, CEXBL2**

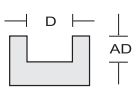
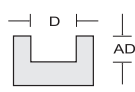
加工材質 WORKING MATERIAL	鋁合金 ALUMINUM ALLOYS		銅合金 COPPER ALLOYS					
材質 MATERIAL CODE	(A5052)		—					
切削速度 VC (M/min)	100~200(M/min)		70~110(M/min)					
外徑 DIAMETER	主軸轉速 R.P.M	FEED 進給速度 (mm/min)	主軸轉速 R.P.M	FEED 進給速度 (mm/min)				
1.0R	21,420	1,485	17,190	630				
2.0R	10,800	1,485	8,550	810				
3.0R	7,200	1,485	5,760	810				
4.0R	5,400	1,485	4,320	810				
5.0R	7,320	1,485	3,420	810				
6.0R	3,780	1,485	2,880	810				
8.0R	2,980	1,170	1,790	500				
切削量 Milling Amount (mm)	<table border="1"> <tr> <td>AD</td> <td>Pf</td> </tr> <tr> <td>0.02D</td> <td>0.05D</td> </tr> </table>		AD	Pf	0.02D	0.05D		
AD	Pf							
0.02D	0.05D							

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.


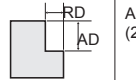
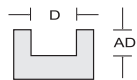
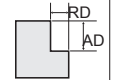
**Table 13** CEXRS3 鎢鋼鋁用平銑刀-波浪型-3刃(白刀)切削條件表

**SOLID CARBIDE END MILLS-MILLING CONDITION TABLE**

加工材質WORKING MATERIAL	鋁合金 ALUMINUM ALLOYS			
MATERIAL CODE	A5052			
切削速度 Vc	200M/min		250M/min	
外徑 DIAMETER	R.P.M.	FEED (mm/min)	R.P.M.	FEED (mm/min)
6MM	10600	2000	13200	2300
8MM	8000	1500	10000	2000
10MM	6400	1200	8000	1900
12MM	5300	1000	6600	1600
16MM	4000	750	5000	1200
20MM	3200	600	4000	960
切削量 Milling Amount (mm)	AD=1.0D 		AD=0.5D 	

**Table 14** CERS2-A,CERS3-A,CERS4-A 鎢鋼平銑刀-波浪型-2、3、4刃(鍍膜)切削條件表

**SOLID CARBIDE END MILLS-MILLING CONDITION TABLE**

加工材質WORKING MATERIAL	鈦合金 Titanium Alloys		鈦合金 Titanium Alloys		鈦合金 Titanium Alloys		鈦合金 Titanium Alloys	
MATERIAL CODE	TiAl6V4(DIN)		TiAl5Sn2(DIN)		TiAl6V4(DIN)		TiAl5Sn2(DIN)	
HARDNESS GRADE	HRC > 32		HRC ≒ 32		HRC > 32		HRC ≒ 32	
切削速度 Vc	40 M/min		60 M/min		40 M/min		60 M/min	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
6MM	2120	100	3180	150	2120	80	3180	125
8MM	1590	125	2390	180	1590	90	2390	140
10MM	1270	140	1910	205	1270	105	1910	160
12MM	1060	155	1590	230	1060	120	1590	180
16MM	790	145	1190	210	790	110	1190	160
20MM	630	150	950	220	630	115	950	170
切削量 Milling Amount	AD=0.5D (2/3刃2/3F) 		AD=0.6D RD=0.1D (4刃4F) 		AD=1.0D (2/3刃2/3F) 		AD=1.2D RD=0.1D (4刃4F) 	

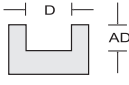
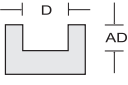
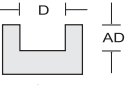
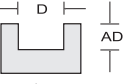
※ 側銑時依上表可適時提高(溝銑)30%以上。  
 ※ Side Milling could increase than 30% from Slotting one.

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.



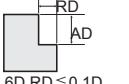
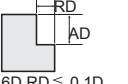
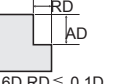
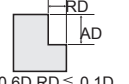
**Table 15 CESH2-F 鎢鋼平銑刀-強力型-2刃(鍍膜) 切削條件表**

**SOLID CARBIDE END MILLS-MILLING CONDITION TABLE**

加工材質 WORKING MATERIAL	鈦合金 Titanium Alloys		鈦合金 Titanium Alloys		不鏽鋼 STAINLESS STEEL		鋁合金(含矽) SILICON-ALUMINUM ALLOY	
MATERIAL CODE	TiAl5Sn2(DIN)		TiAl6V4(DIN)		(SUS304)		(Si>10%)	
HARDNESS GRADE	HRC ≒ 32		HRC > 32		—		—	
切削速度 Vc	60M/min		40M/min		54 M/min		120 M/min	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
2MM	9550	375	6370	240	8600	515	19110	150
3MM	6370	250	4250	160	5760	345	12740	190
4MM	4780	190	3180	120	4320	345	9550	140
5MM	3820	150	2550	95	3420	345	7640	190
6MM	3180	125	2120	80	2880	345	6370	160
8MM	2390	140	1590	90	2160	345	4780	170
10MM	1910	160	1270	105	1710	360	3820	190
12MM	1590	180	1060	120	1440	360	3180	160
16MM	1190	160	790	110	1200	420	2390	190
切削量 Milling Amount	AD=0.5D 		AD=1.0D 		AD=0.5D(D<3, AD≦0.25D) 		AD=1.0D(D<3, AD≦0.5D) 	

**Table 16 CESH4-F 鎢鋼平銑刀-強力型-4刃(鍍膜) 切削條件表**

**SOLID CARBIDE END MILLS-MILLING CONDITION TABLE**

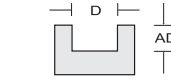
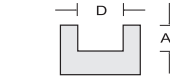
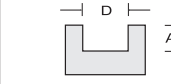
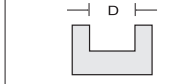
加工材質 WORKING MATERIAL	鈦合金 Titanium Alloys		鈦合金 Titanium Alloys		不鏽鋼 STAINLESS STEEL		鋁合金(含矽) SILICON-ALUMINUM ALLOY	
MATERIAL CODE	TiAl5Sn2(DIN)		TiAl6V4(DIN)		(SUS304)		(Si>10%)	
HARDNESS GRADE	HRC ≒ 32		HRC > 32		—		—	
切削速度 Vc	60M/min		40M/min		54 M/min		120 M/min	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
2MM	9550	450	6370	300	8600	515	19110	180
3MM	6370	300	4250	200	5760	345	12740	230
4MM	4780	225	3180	150	4320	345	9550	170
5MM	3820	180	2550	120	3420	345	7640	230
6MM	3180	150	2120	100	2880	345	6370	190
8MM	2390	180	1590	125	2160	345	4780	200
10MM	1910	205	1270	140	1710	360	3820	230
12MM	1590	230	1060	155	1440	360	3180	190
16MM	1190	210	790	145	1200	420	2390	230
切削量 Milling Amount	 AD=0.6D, RD ≦ 0.1D		 AD=0.6D, RD ≦ 0.1D		 AD=0.6D, RD ≦ 0.1D		 AD=0.6D, RD ≦ 0.1D	

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.

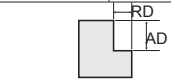
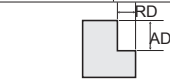
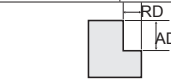
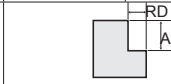
**Table 17 CEHS2- F 鎢鋼平銑刀- 高導強力型- 2刃(鍍膜) 切削條件表**

**SOLID CARBIDE END MILLS-MILLING CONDITION TABLE**

加工材質 WORKING MATERIAL	鈦合金 Titanium Alloys		鈦合金 Titanium Alloys		不鏽鋼 STAINLESS STEEL		鋁合金(含矽) SILICON- ALUMINUM ALLOY	
MATERIAL CODE	TiAl5Sn2(DIN)		TiAl6V4(DIN)		(SUS304)		(Si>10%)	
HARDNESS GRADE	HRC ≈ 32		HRC > 32		—		—	
切削速度 Vc	60M/min		40M/min		54 M/min		120 M/min	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
2MM	11460	450	7640	290	10320	620	22930	180
3MM	7640	300	5100	190	6910	410	15290	230
4MM	5740	230	3820	140	5180	410	11460	170
5MM	4580	180	3060	110	4100	410	9170	230
6MM	3820	150	2540	100	3460	410	7640	190
8MM	2870	170	1910	110	2590	410	5740	200
10MM	2290	190	1520	130	2050	430	4580	230
12MM	1910	220	1270	140	1730	430	3820	190
16MM	1430	190	950	130	1440	500	2870	230
切削量 Milling Amount	 AD=1.0D		 AD=0.5D		 AD=0.5D(D=3, AD ≤ 0.25D)		 AD=1.0D(D=3, AD ≤ 0.5D)	

**Table 18 CEHS4- F 鎢鋼平銑刀- 高導強力型- 4刃(鍍膜) 切削條件表**

**SOLID CARBIDE END MILLS-MILLING CONDITION TABLE**



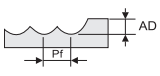
加工材質 WORKING MATERIAL	鈦合金 Titanium Alloys		鈦合金 Titanium Alloys		不鏽鋼 STAINLESS STEEL		鋁合金(含矽) SILICON- ALUMINUM ALLOY	
MATERIAL CODE	TiAl5Sn2(DIN)		TiAl6V4(DIN)		(SUS304)		(Si>10%)	
HARDNESS GRADE	HRC ≈ 32		HRC > 32		—		—	
切削速度 Vc	60M/min		40M/min		54 M/min		120 M/min	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
2MM	11460	540	7640	360	10320	620	22930	220
3MM	7640	360	5100	240	6910	410	15290	280
4MM	5740	270	3820	180	5180	410	11460	200
5MM	4580	220	3060	140	4100	410	9170	280
6MM	3820	180	2540	120	3460	410	7640	230
8MM	2870	220	1910	150	2590	410	5740	240
10MM	2290	250	1520	170	2050	430	4580	280
12MM	1910	280	1270	190	1730	430	3820	230
16MM	1430	250	950	170	1440	500	2870	280
切削量 Milling Amount	 AD=0.6D, RD ≤ 0.1D		 AD=0.6D, RD ≤ 0.1D		 AD=0.6D, RD ≤ 0.1D		 AD=0.6D, RD ≤ 0.1D	

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.

**Table 19** 鎢鋼立銑刀-石墨專用型-2刃/4刃(鍍膜)切削條件表

**SOLID CARBIDE END MILLS-MILLING CONDITION TABLE  
CESG2-A, CESG4-A, CEBG2-A**

刀具 END MILLS	CESG2-A		CESG4-A		CEBG2-A	
切削速度 Vc	225M/min		250M/min		250M/min	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	23,000	800	25,000	960	25,000	1,000
4MM	17,000	700	19,000	820	19,000	850
5MM	14,000	650	15,500	750	15,500	800
6MM	11,500	600	12,600	700	12,600	750
8MM	8,500	400	9,300	600	9,300	640
10MM	6,900	450	7,600	550	7,600	600
12MM	5,700	400	6,300	340	6,300	580
切削量 Milling Amount (mm)						

**Table 20** CESC2-A 鎢鋼銅鋁用平銑刀-小柄/標準型-2刃(鍍膜)切削條件表

**SOLID CARBIDE END MILLS-MILLING CONDITION TABLE**

加工材質 WORKING MATERIAL	銅 Copper		鋁 Aluminum	
切削速度 Vc	50M/min		60~120M/min	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
0.5	30,400	120	40,000	420
1.0	15,200	120	38,400	640
1.5	10,400	120	25,600	800
2.0	7,680	120	19,200	800
2.5	6,160	160	15,200	800
3.0	5,120	160	12,800	800
4.0	3,840	160	9,600	800
5.0	3,040	160	7,680	800
6.0	2,560	160	6,400	800
8.0	1,920	160	4,800	800
10.0	1,520	160	3,840	800
12.0	1,280	160	3,200	800
16.0	960	160	2,400	800
20.0	770	160	1,920	800

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.

**Table 21** CELFC2-A 鎢鋼銅鋁用平銑刀-長刃型-2刃(鍍膜)切削條件表

**SOLID CARBIDE END MILLS-MILLING CONDITION TABLE**

加工材質 WORKING MATERIAL	銅 Copper		鋁 Aluminum	
切削速度 Vc	30M/min		40~80M/min	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3.0	3,440	100	8,000	530
4.0	2,560	100	6,400	530
5.0	2,080	100	5,120	530
6.0	1,680	100	4,240	530
8.0	1,280	100	3,200	530
10.0	1,040	100	2,560	530
12.0	800	100	2,080	530
16.0	640	100	1,600	530
20.0	510	100	960	530

**Table 22** CEBC2-A 鎢鋼銅鋁用球型銑刀-小柄/標準型-2刃(鍍膜)切削條件表

**SOLID MICRO GRAIN CARBIDE END MILLS-MILLING CONDITION TABLE**

加工材質 WORKING MATERIAL	銅 Copper			鋁 Aluminum		
切削速度 Vc	50~80M/min			80~160M/min		
R 半徑	R.P.M	FEED (mm/min)		R.P.M	FEED (mm/min)	
		粗加工	精加工		粗加工	精加工
		Roughing	Finishing		Roughing	Finishing
0.5R	25,600	160	440	37,600	270	690
0.75R	16,800	160	440	37,600	270	690
1.0R	12,800	160	440	19,040	480	690
1.25R	10,400	200	560	15,200	600	1,320
1.5R	8,800	200	560	12,800	600	1,320
2.0R	6,400	200	560	9,600	600	1,320
2.5R	5,120	200	560	7,680	600	1,320
3.0R	4,240	200	560	6,400	600	1,320
4.0R	3,200	200	560	4,800	600	1,320
5.0R	2,560	200	560	3,840	600	1,320
6.0R	2,160	200	560	3,360	600	1,320
8.0R	1,600	200	560	2,400	600	1,320
10.0R	1,280	200	560	1,840	600	1,320

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.

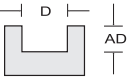
**Table 23** CEBNC2-A鎢鋼銅鋁用球型銑刀-長頸型-2刃(鍍膜)切削條件表

**SOLID MICRO GRAIN CARBIDE END MILLS-MILLING CONDITION TABLE**

加工材質 WORKING MATERIAL		銅 Copper		鋁 Aluminum		塑膠 Plastics	
切削速度 Vc		40~120M/min		80~160M/min		30~50M/min	
R 半徑	切削量mm	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
0.5R	0.015~0.18	12720~38240	360~960	25440~	600~1280	10600~15280	200~260
1.0R	0.03~0.3	6400~19120	360~960	12720~25440	600~1280	5120~7680	200~260
1.5R	0.03~0.3	4240~12720	360~960	8480~16960	600~1280	3360~5120	200~260
2.0R	0.07~0.4	3200~9520	360~960	6400~12720	600~1280	2560~3840	150~190
3.0R	2~3	2160~6400	160~200	4240~8480	480~600	1680~2560	150~190
4.0R	2~4	1600~4800	160~200	3200~4800	480~600	1280~1920	150~190
5.0R	3~5	1280~3840	160~200	2560~5120	480~600	1040~1520	150~190
6.0R	3.5~6	1040~3200	160~200	2160~4240	480~600	880~1280	150~190

**Table 24** 極細鎢鋼平銑刀-2刃(鍍膜) 切削條件表

**SOLID CARBIDE END MILLS-MILLING CONDITION TABLE  
MESS2-A, MES2-A, MESM2-A**

加工材質 WORKING MATERIAL	碳素鋼/合金鋼 CARBON STEEL / ALLOY STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		調質鋼 HARDENED STEEL		調質鋼 HARDENED STEEL		不鏽鋼 STAINLESS STEEL		鑄鐵 CAST IRON			
MATERIAL CODE	(S45C,S50C,SCM)		(SCM,SKT,SKD)		(SCM,SKT,SKD)		(SKT,SKD)		(SKT,SKD)		(SUS304)		FC/FCD			
HARDNESS GRADE	HRC <20		HRC 20~30		HRC 30~40		HRC 40~50		HRC 50~60		—		—			
切削速度 Vc	136M/min		107M/min		90M/min		55M/min		41M/min		107M/min		158M/min			
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)		
1MM	40,000	180	34,200	150	28,800	97	16,000	75	12,000	52	34,200	150	50,400	405		
2MM	21,600	232	17,280	180	14,400	127	8,640	97	6,480	67	17,280	180	25,200	435		
3MM	15,120	232	11,520	202	9,360	135	6,000	97	4,460	67	11,520	202	17,280	435		
4MM	10,800	247	8,640	202	7,200	150	4,320	97	3,240	75	8,640	202	12,960	435		
5MM	9,000	270	6,840	202	5,760	150	3,600	112	2,700	82	6,840	202	10,080	487		
6MM	7,200	270	5,760	202	4,680	150	2,880	112	2,160	82	5,760	202	8,640	540		
8MM	5,400	270	4,320	232	3,600	165	2,160	112	1,620	82	4,320	232	6,480	540		
10MM	4,320	270	3,420	232	2,880	180	1,740	112	1,300	82	3,420	232	5,040	570		
12MM	3,600	270	2,880	232	2,400	180	1,440	112	1,080	82	2,880	232	4,320	600		
14MM	3,600	300	2,720	255	2,280	195	1,440	120	1,080	90	2,720	255	4,000	660		
16MM	3,120	330	2,400	270	2,000	210	1,260	135	940	97	2,400	270	3,600	720		
18MM	3,120	330	2,120	270	1,760	210	1,260	135	940	97	2,120	270	3,200	720		
20MM	2,400	330	1,920	270	1,600	210	960	135	720	97	1,920	270	2,800	720		
切削量 Milling Amount (mm)	AD=0.3D(D<3, AD ≤ 0.15D)								AD=0.06D(D<3, AD ≤ 0.03D)				AD=0.3D(D<3, AD ≤ 0.15D)			

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。

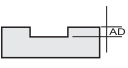
These are recommended values which depend on the condition of the machine, fixture, lubricating & cooling systems... etc. They may have to be adapted.

**Table 25** MESD2- A 極細鎢鋼平銑刀-短刃型-2刃(鍍膜) 切削條件表  
MESDL2- A 極細鎢鋼平銑刀-短刃長柄型-2刃(鍍膜) 切削條件表

**SOLID CARBIDE END MILLS-MILLING CONDITION TABLE**

加工材質 WORKING MATERIAL	鑄鐵 CAST IRON		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		調質鋼 HARDENED STEEL		調質鋼 HARDENED STEEL		調質鋼 HARDENED STEEL	
MATERIAL CODE	FC/FCD		(SCM,SKT,SKD)		(SKT, SKD)		(SKT, SKD)		(SKT, SKD)	
HARDNESS GRADE	—		HRC:20~30		HRC: 30~40		HRC:45~55		HRC:55~60	
切削速度 Vc	94M/min		94M/min		79M/min		55M/min		39M/min	
外徑 DIAMETER	R.P.M (rev/min)	FEED (mm/min)	R.P.M (rev/min)	FEED (mm/min)	R.P.M (rev/min)	FEED (mm/min)	R.P.M (rev/min)	FEED (mm/min)	R.P.M (rev/min)	FEED (mm/min)
1MM	23920	430	22650	410	20200	320	15130	220	10060	100
2MM	12590	440	12280	420	10690	320	7840	220	5300	100
3MM	8390	480	8390	460	6730	320	5030	220	3800	110
4MM	6940	450	6940	450	5660	320	4080	220	2980	110
6MM	5030	420	5030	420	4200	420	2930	200	2100	100
8MM	3800	420	3800	420	3170	300	2220	200	1580	100
10MM	3010	420	3010	420	2540	300	1780	200	1260	100
12MM	2540	420	2540	420	2100	300	1470	200	1070	100

切削量 Milling Amount (mm)	AD			AD	
	$D \leq \phi 3$	0.15D		$D \leq \phi 6$	0.1D
	$\phi 3 < D$	0.2D		$\phi 6 < D$	0.15D



**Table 26** 極細鎢鋼平銑刀-3刃/4刃(鍍膜) 切削條件表

**SOLID CARBIDE END MILLS-MILLING CONDITION TABLE**

**MECDL3-A, MESM4-A, MES4-A**

加工材質 WORKING MATERIAL	碳素鋼/合金鋼 CARBON STEEL / ALLOY STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		調質鋼 HARDENED STEEL		調質鋼 HARDENED STEEL		不鏽鋼 STAINLESS STEEL		鑄鐵 CAST IRON	
MATERIAL CODE	(S45C,S50C,SCM)		(SCM,SKT,SKD)		(SCM,SKT,SKD)		(SKT,SKD)		(SKT,SKD)		(SUS304)		FC/FCD	
HARDNESS GRADE	HRC <20		HRC 20~30		HRC 30~40		HRC 40~50		HRC 50~60		—		—	
切削速度 Vc	136M/min		107M/min		90M/min		54M/min		41M/min		107M/min		158M/min	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (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 Milling Amount (mm)	AD=1.5D, RD=0.06D		AD=1D, RD=0.03D		AD=1.5D, RD=0.06D

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.

**Table 27** MESD4- A 極細鑄鋼平銑刀-短刃型-4刃(鍍膜) 切削條件表  
MESDL4- A 極細鑄鋼平銑刀-短刃長柄型-4刃(鍍膜) 切削條件表

**SOLID CARBIDE END MILLS-MILLING CONDITION TABLE**

加工材質 WORKING MATERIAL	鑄鐵 CAST IRON		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		調質鋼 HARDENED STEEL		調質鋼 HARDENED STEEL		調質鋼 HARDENED STEEL	
MATERIAL CODE	FC/FCD		(SCM,SKT,SKD)		(SKT, SKD)		(SKT, SKD)		(SKT, SKD)	
HARDNESS GRADE	—		HRC:20~30		HRC: 30~40		HRC:45~55		HRC:55~60	
切削速度 Vc	126M/min		110M/min		110M/min		95M/min		79M/min	
外徑 DIAMETER	R.P.M (rev/min)	FEED (mm/min)	R.P.M (rev/min)	FEED (mm/min)	R.P.M (rev/min)	FEED (mm/min)	R.P.M (rev/min)	FEED (mm/min)	R.P.M (rev/min)	FEED (mm/min)
3MM	13460	1550	11800	1260	11800	1150	10060	830	8390	500
4MM	10060	1470	8790	1190	8790	1070	7570	780	6300	460
5MM	8080	1310	7050	1150	7050	990	6060	730	5030	420
6MM	6730	1230	5900	1070	5900	910	5030	660	4200	400
8MM	5030	1150	4400	990	4400	830	3800	610	3170	400
10MM	4040	1150	3530	990	3530	830	3010	610	2540	400
12MM	3370	1150	2930	990	2930	830	2540	610	2100	400

切削量 Milling Amount (mm)		AD	RD			AD	RD
	D < φ 6	1.0D	0.02D		D < φ 6	1.0D	0.01D
	φ 6 ≤ D	1.0D	0.05D		φ 6 ≤ D	1.0D	0.02D

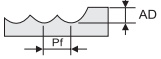
**Table 28** 極細鑄鋼球型銑刀-2刃(鍍膜) 切削條件表

**SOLID CARBIDE END MILLS-MILLING CONDITION TABLE**

**MEBS2-A, MEB2-A, MEBL2-A**

加工材質 WORKING MATERIAL	碳素鋼/合金鋼 CARBON STEEL / ALLOY STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		調質鋼 HARDENED STEEL		調質鋼 HARDENED STEEL		不鏽鋼 STAINLESS STEEL		鑄鐵 CAST IRON	
MATERIAL CODE	(S45C,S50C,SCM)		(SCM,SKT,SKD)		(SCM,SKT,SKD)		(SKT,SKD)		(SKT,SKD)		(SUS304)		FC/FCD	
HARDNESS GRADE	HRC <20		HRC 20~30		HRC 30~40		HRC 40~50		HRC 50~60		—		—	
切削速度 Vc	144M/min		107M/min		68M/min		57M/min		43M/min		107M/min		144M/min	
外徑 DIAMETER	R.P.M (rev/min)	FEED (mm/min)	R.P.M (rev/min)	FEED (mm/min)	R.P.M (rev/min)	FEED (mm/min)	R.P.M (rev/min)	FEED (mm/min)	R.P.M (rev/min)	FEED (mm/min)	R.P.M (rev/min)	FEED (mm/min)	R.P.M (rev/min)	FEED (mm/min)
0.5R	72,000	675	64,800	570	43,200	435	28,800	270	21,600	202	64,800	570	90,000	1,110
1.0R	41,040	900	32,400	735	23,400	570	16,400	360	12,320	270	32,400	735	45,720	1,350
2.0R	23,040	1,080	17,280	840	12,600	652	9,200	435	6,920	324	17,280	840	23,040	1,545
3.0R	15,120	1,350	11,520	900	7,560	675	6,040	540	4,540	405	11,520	900	15,120	1,890
4.0R	11,520	1,350	8,640	900	5,760	675	4,600	540	3,460	405	8,640	900	11,520	1,890
5.0R	9,180	1,350	6,840	900	4,320	675	3,660	540	2,760	405	6,840	900	9,180	1,890
6.0R	7,560	1,350	5,760	930	3,600	705	3,040	540	2,280	405	5,760	930	7,560	2,025
8.0R	6,400	1,500	4,800	1,020	3,120	780	2,560	600	1,920	450	4,800	1,020	6,400	2,250
10.0R	5,200	1,500	3,840	1,020	2,600	780	2,080	600	1,650	450	3,840	1,020	5,200	2,250

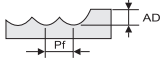
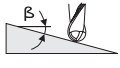
切削量 Milling Amount (mm)	AD=0.03D, Pf=0.06D		

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.

**Table 29** **MEBD(M)L2 -A 極細鎢鋼球型銑刀- 短刃長柄型- 2刃(鍍膜) 切削條件表**  
**MEBD(M)2 -A 極細鎢鋼球型銑刀- 短刃型- 2刃(鍍膜) 切削條件表**


**SOLID CARBIDE END MILLS-MILLING CONDITION TABLE**

加工材質 WORKING MATERIAL	鑄鐵 CAST IRON		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		調質鋼 HARDENED STEEL		調質鋼 HARDENED STEEL		調質鋼 HARDENED STEEL							
MATERIAL CODE	FC/FCD		(SCM,SKT,SKD)		(SKT, SKD)		(SKT, SKD)		(SKT, SKD)							
HARDNESS GRADE	—		HRC:20~30		HRC: 30~40		HRC:45~55		HRC:55~60							
切削速度 Vc	190M/min		185M/min		135M/min		120M/min		90M/min							
半徑 R	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)						
0.5R	39600	2220	39600	2220	37620	1780	25340	1150	19800	790						
1.0R	24950	2770	19800	2220	18620	1780	13460	1230	9900	790						
1.5R	16630	2770	13070	2220	12280	1780	8710	1230	6700	790						
2.0R	14260	2930	12280	2700	10700	1940	8710	1500	6300	870						
2.5R	12280	3170	11880	3210	8710	1820	7920	1660	6020	950						
3.0R	11880	3800	10690	3410	7520	1780	7520	1780	5220	910						
4.0R	9110	2900	7920	2540	5660	1340	5540	1340	3920	700						
5.0R	7520	2380	6540	2060	4510	1070	4510	1070	3130	560						
6.0R	6300	1980	5430	1700	3770	870	3770	870	2620	470						
切削量 Milling Amount (mm)			<table border="1"> <tr><td>AD</td><td>Pf</td></tr> <tr><td>0.02D</td><td>0.05D</td></tr> </table>		AD	Pf	0.02D	0.05D								
AD	Pf															
0.02D	0.05D															

傾斜角β在15°以下時，上表中的轉速和進給可以相應地提高1~1.2倍。  
 When β is less than 15° milling speed and feed speed in the table can be increased 1.0~1.2 times.

**Table 30** **MECD(M)4-A 極細鎢鋼圓鼻銑刀- 短刃型- 4刃(鍍膜) 切削條件表**  
**MECDL4-A 極細鎢鋼圓鼻銑刀- 短刃長柄型- 4刃(鍍膜) 切削條件表**

**SOLID CARBIDE END MILLS-MILLING CONDITION TABLE**

加工材質 WORKING MATERIAL	鑄鐵 CAST IRON		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		調質鋼 HARDENED STEEL		調質鋼 HARDENED STEEL		調質鋼 HARDENED STEEL	
MATERIAL CODE	FC/FCD		(SCM,SKT,SKD)		(SKT,SKD)		(SKT,SKD)		(SKT,SKD)	
HARDNESS GRADE	—		HRC 20~30		HRC 30~40		HRC 45~55		HRC 55~60	
切削速度 Vc	189M/min		128M/min		108M/min		65M/min		48M/min	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	20740	1620	13820	620	11230	300	7250	360	5520	270
4MM	15550	1940	10370	620	8640	300	5180	360	3890	270
5MM	12100	1940	8210	620	6910	300	4320	360	3240	270
6MM	10370	1940	6910	620	5620	300	3460	360	2590	270
8MM	7780	1940	5180	620	4320	310	2590	360	1940	270
10MM	6050	2100	4100	650	3460	310	2060	380	1560	280
12MM	5180	2270	3460	650	2880	310	1730	380	1300	280
14MM	4800	2520	3260	720	2740	340	1730	410	1300	310
16MM	4320	2700	2880	760	2400	360	1490	430	1130	320
18MM	3840	2700	2540	760	2110	360	1340	430	1130	320
20MM	3360	2880	2300	760	1920	360	1150	430	860	320
切削量 Milling Amount (mm)	AD=1.5D RD=0.06D				AD=1.5D RD=0.06D		AD=1D RD=0.03D			

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.



**Table 31 極細鎢鋼平銑刀-強重型3/4刀(鍍膜)切削條件表**

**SOLID CARBIDE END MILLS-MILLING CONDITION TABLE  
MEHHD3-A, MEHHD4-A, MEHH4-A, MEHHC4-A**

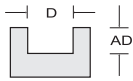
加工材質 WORKING MATERIAL	碳素鋼/合金鋼 CARBON STEEL / ALLOY STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		調質鋼 HARDENED STEEL		調質鋼 HARDENED STEEL		不鏽鋼 STAINLESS STEEL		鑄鐵 CAST IRON	
MATERIAL CODE	(S45C,S50C,SCM)		(SCM,SKT,SKD)		(SCM,SKT,SKD)		(SKT,SKD)		(SKT,SKD)		(SUS304)		FC/FCD	
HARDNESS GRADE	HRC <20		HRC 20~30		HRC 30~40		HRC 40~50		HRC 50~60		—		—	
切削速度 Vc	95M/min		75M/min		63M/min		38M/min		28M/min		75M/min		110M/min	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	10,500	675	8,000	475	6,500	225	4,200	250	3,150	200	8,000	475	12,000	1,250
4MM	7,500	675	6,000	475	5,000	225	3,000	275	2,250	200	6,000	475	9,000	1,500
5MM	6,250	675	4,000	475	4,000	225	2,500	275	1,875	200	4,750	475	7,000	1,500
6MM	5,000	675	3,250	475	3,250	225	2,000	275	1,500	200	4,000	475	6,000	1,500
8MM	3,750	675	3,000	475	2,500	238	1,500	275	1,125	200	3,000	475	4,500	1,500
10MM	3,000	700	2,375	500	2,000	238	1,200	275	900	213	2,375	500	3,500	1,625
12MM	2,500	700	2,000	500	1,650	238	1,000	275	750	213	2,000	500	3,000	1,750
14MM	2,250	700	1,700	500	1,425	238	900	275	675	213	1,700	500	2,500	1,750
16MM	1,950	750	1,500	525	1,250	250	800	300	575	225	1,500	525	2,250	1,875
18MM	1,750	750	1,325	525	1,100	250	700	300	525	225	1,325	525	2,000	1,875
20MM	1,500	750	1,200	525	1,000	250	600	300	450	225	1,200	525	1,750	2,000
切削量 Milling Amount (mm)	AD=1.5D, RD ≤ 0.1D						AD=1D, RD ≤ 0.05D						AD=1.5D, RD ≤ 0.1D	



**Table 32 MECR2-A 極細鎢鋼圓鼻銑刀-小柄型/標準型-2刃(鍍膜) 切削條件表**

**SOLID CARBIDE END MILLS-MILLING CONDITION TABLE**

加工材質 WORKING MATERIAL	碳素鋼/合金鋼 CARBON STEEL / ALLOY STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		調質鋼 HARDENED STEEL		調質鋼 HARDENED STEEL		不鏽鋼 STAINLESS STEEL		鑄鐵 CAST IRON	
MATERIAL CODE	(S45C,S50C,SCM)		(SCM,SKT,SKD)		(SCM,SKT,SKD)		(SKT,SKD)		(SKT,SKD)		(SUS304)		FC/FCD	
HARDNESS GRADE	HRC <20		HRC 20~30		HRC 30~40		HRC 45~55		HRC 55~60		—		—	
切削速度 Vc	95M/min		75M/min		63M/min		38M/min		28M/min		75M/min		110M/min	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
1MM	28,000	170	23,940	140	20,160	90	11,200	70	8,400	50	23,940	140	35,280	380
2MM	15,120	220	12,100	170	10,080	120	6,050	90	4,540	60	12,100	170	17,640	410
3MM	10,580	220	8,060	190	6,550	125	4,200	90	3,120	60	8,060	190	12,100	410
4MM	7,560	230	6,050	190	5,040	140	3,020	90	2,270	70	6,050	190	9,070	410
5MM	6,300	250	4,790	190	4,030	140	2,520	105	1,890	80	4,790	190	7,060	455
6MM	5,040	250	4,030	190	3,280	140	2,020	105	1,510	80	4,030	190	6,050	500
8MM	3,780	250	3,020	220	2,520	150	1,510	105	1,130	80	3,020	220	4,540	500
10MM	3,020	250	2,390	220	2,020	170	1,220	105	910	80	2,390	220	3,530	530
12MM	2,520	250	2,020	220	1,680	170	1,010	105	760	80	2,020	220	3,020	560
14MM	2,520	280	1,900	240	1,600	180	1,010	110	760	80	1,900	240	2,800	620
16MM	2,180	310	1,680	250	1,400	200	880	130	660	90	1,680	250	2,520	670
18MM	2,180	310	1,480	250	1,230	200	880	130	660	90	1,480	250	2,240	670
20MM	1,680	310	1,340	250	1,120	200	670	130	500	90	1,340	250	1,960	670
切削量 Milling Amount (mm)	AD=0.5D(D<3, AD ≤ 0.25D)						AD=0.1D(D<3, AD ≤ 0.05D)						AD=0.5D(D<3, AD ≤ 0.25D)	



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.

**Table 33 MECR4-A 極細鎢鋼圓鼻銑刀-標準型-4刃(鍍膜) 切削條件表**

**SOLID CARBIDE END MILLS-MILLING CONDITION TABLE**

加工材質 WORKING MATERIAL	碳素鋼/合金鋼 CARBON STEEL / ALLOY STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		調質鋼 HARDENED STEEL		調質鋼 HARDENED STEEL		不鏽鋼 STAINLESS STEEL		鑄鐵 CAST IRON			
MATERIAL CODE	(S45C,S50C,SCM)		(SCM,SKT,SKD)		(SCM,SKT,SKD)		(SKT,SKD)		(SKT,SKD)		(SUS304)		FC/FCD			
HARDNESS GRADE	HRC <20		HRC 20~30		HRC 30~40		HRC 45~55		HRC 55~60		—		—			
切削速度 Vc	94M/min		75M/min		63M/min		37M/min		28M/min		75M/min		110M/min			
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)		
3MM	10,580	690	8,060	480	6,550	230	4,230	280	3,220	210	8,060	480	12,100	1,260		
4MM	7,560	690	6,050	480	5,040	230	3,020	280	2,270	210	6,050	480	9,070	1,510		
5MM	6,300	690	4,790	480	4,030	230	2,520	280	1,890	210	4,790	480	7,060	1,510		
6MM	5,040	690	4,030	480	3,280	230	2,020	280	1,510	210	4,030	480	6,050	1,510		
8MM	3,780	690	3,020	480	2,520	245	1,510	280	1,130	210	3,020	480	4,540	1,510		
10MM	3,020	710	2,390	500	2,020	245	1,200	290	910	220	2,390	500	3,530	1,640		
12MM	2,520	710	2,020	500	1,680	245	1,010	290	760	220	2,020	500	3,020	1,760		
14MM	2,520	780	1,900	560	1,600	270	1,010	320	760	240	1,900	560	2,800	1,960		
16MM	2,180	840	1,680	590	1,400	280	870	340	660	250	1,680	590	2,520	2,100		
18MM	1,960	840	1,480	590	1,230	280	780	340	590	250	1,480	590	2,240	2,100		
20MM	1,680	840	1,340	590	1,120	280	670	340	500	250	1,340	590	1,960	2,240		
切削量 Milling Amount (mm)	AD=1.5D, RD ≤ 0.1D						AD=1D, RD ≤ 0.05D						AD=1.5D, RD ≤ 0.1D)			



**Table 34 NESD2-A 奈米鎢鋼平銑刀-短刃型-2刃(鍍膜) 切削條件表**

**SOLID CARBIDE END MILLS-MILLING CONDITION TABLE**

加工材質 WORKING MATERIAL	鑄鐵 CAST IRON		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		調質鋼 HARDENED STEEL		調質鋼 HARDENED STEEL		調質鋼 HARDENED STEEL	
MATERIAL CODE	FC/FCD		(SCM,SKT,SKD)		(SKT,SKD)		(SKT,SKD)		(SKT,SKD)	
HARDNESS GRADE	—		HRC:20~30		HRC: 30~40		HRC:45~55		HRC:55~60	
切削速度 Vc	118M/min		118M/min		108M/min		68M/min		48M/min	
外徑 DIAMETER	R.P.M (rev/min)	FEED (mm/min)	R.P.M (rev/min)	FEED (mm/min)	R.P.M (rev/min)	FEED (mm/min)	R.P.M (rev/min)	FEED (mm/min)	R.P.M (rev/min)	FEED (mm/min)
1MM	29900	540	28310	510	25245	405	18910	270	12570	120
2MM	15740	550	15345	520	13365	405	9800	270	6630	120
3MM	10490	600	10490	570	8415	405	6290	280	4750	140
4MM	8670	560	8670	560	7080	400	5100	270	3720	135
6MM	6290	530	6290	530	5250	530	3660	250	2630	130
8MM	4750	530	4750	530	3960	380	2770	250	1980	130
10MM	3760	530	3760	530	3170	380	2230	250	1580	130
12MM	3170	530	3170	530	2620	380	1840	250	1340	130
切削量 Milling Amount (mm)	D ≤ φ3 0.15D		φ3 < D 0.2D		D ≤ φ6 0.1D		φ6 < D 0.15D			


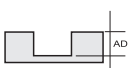


以上數據為建議值，適當的條件仍需視機台狀況，夾治具品質，潤滑冷卻系統...等而改變。

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


**Table 35 NESD3- A 奈米鎢鋼平銑刀- 短刃型- 3刃(鍍膜) 切削條件表**

**SOLID CARBIDE END MILLS-MILLING CONDITION TABLE**

側面切削 Side Milling										槽切削 Slotting								
加工材質 WORKING MATERIAL	鑄鐵 CAST IRON		合金鋼/工具鋼 ALLOY STEEL/ TOOL STEEL		調質鋼 HARDENED STEEL		調質鋼 HARDENED STEEL		調質鋼 HARDENED STEEL		鑄鐵 CAST IRON	合金鋼/工具鋼 ALLOY STEEL/ TOOL STEEL		調質鋼 HARDENED STEEL		調質鋼 HARDENED STEEL		
MATERIAL CODE	FC/FCD		(SCM,SKT,SKD)		(SKT,SKD)		(SKT,SKD)		(SKT,SKD)		FC/FCD	(SCM,SKT,SKD)		(SKT,SKD)		(SKT,SKD)		
HARDNESS GRADE	—		HRC 20~30		HRC 30~40		HRC 45~55		HRC 55~60		—	HRC 20~30		HRC 30~40		HRC 45~55		
切削速度 Vc	179M/min		179M/min		179M/min		134M/min		90M/min		107M/min		90M/min		89M/min		58M/min	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	19080	1575	19080	1260	19080	790	14310	480	9540	310	11430	945	9540	625	8595	355	6210	256
4MM	14310	1620	14310	1305	14310	820	10710	520	7160	330	8595	990	7155	652	6435	373	4635	270
6MM	9540	1800	9540	1440	9540	945	7155	550	4770	360	5715	1080	4770	747	4275	409	3105	297
8MM	7155	1620	7155	1305	7155	895	5355	500	3600	330	4275	945	3600	729	3240	396	2340	270
10MM	5715	1440	5715	1170	5715	880	4275	480	2880	280	3420	855	3600	706	2565	378	1845	234
12MM	4770	1440	4770	1170	4770	860	3600	450	2385	280	2880	855	2385	661	2160	364	1530	234
切削量 Milling Amount (mm)					AD RD		AD RD		AD RD				AD=0.3D ADMax=3mm					
					D < φ 6 1.5D 0.02D		1D 0.02D		φ 6 ≤ D 1.5D 0.05D									

**Table 36 NESD4- A 奈米鎢鋼平銑刀- 短刃型- 4刃(鍍膜) 切削條件表**

**SOLID CARBIDE END MILLS-MILLING CONDITION TABLE**

加工材質 WORKING MATERIAL	鑄鐵 CAST IRON		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		調質鋼 HARDENED STEEL		調質鋼 HARDENED STEEL		調質鋼 HARDENED STEEL	
MATERIAL CODE	FC/FCD		(SCM,SKT,SKD)		(SKT, SKD)		(SKT, SKD)		(SKT, SKD)	
HARDNESS GRADE	—		HRC:20~30		HRC: 30~40		HRC:45~55		HRC:55~60	
切削速度Vc	158M/min		139M/min		139M/min		118M/min		98M/min	
DIAMETER 外徑	R.P.M (rev/min)	FEED (mm/min)	R.P.M (rev/min)	FEED (mm/min)	R.P.M (rev/min)	FEED (mm/min)	R.P.M (rev/min)	FEED (mm/min)	R.P.M (rev/min)	FEED (mm/min)
3MM	16830	1935	14750	1580	14750	1440	12570	1040	10490	630
4MM	12570	1840	10990	1485	10990	1340	9460	980	7875	570
5MM	10100	1640	8810	1440	8810	1240	7580	910	6290	530
6MM	8415	1540	7380	1340	7380	1140	6290	830	5250	500
8MM	6290	1440	5500	1240	5500	1040	4750	760	3960	500
10MM	5050	1440	4410	1240	4410	1040	3760	760	3170	500
12MM	4210	1440	3660	1240	3660	1040	3170	760	2630	500
切削量 Milling Amount (mm)					AD RD		AD RD		AD RD	
					D < φ 6 1.0D 0.02D		φ 6 ≤ D 1.0D 0.05D		D < φ 6 1.0D 0.01D	
									φ 6 ≤ D 1.0D 0.02D	

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.

**Table 37 NEHD6-A 奈米鎢鋼平銑刀-高導短刃型-6刃(鍍膜) 切削條件表**

**SOLID CARBIDE END MILLS-MILLING CONDITION TABLE**

加工材質 WORKING MATERIAL	合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		調質鋼 HARDENED STEEL		調質鋼 HARDENED STEEL		調質鋼 HARDENED STEEL	
MATERIAL CODE	(SCM,SKT,SKD)		(SKT,SKD)		(SKT,SKD)		(SKT,SKD)	
HARDNESS GRADE	HRC 20~30		HRC 30~40		HRC 45~55		HRC 55~60	
切削速度 Vc	178M/min		150M/min		117M/min		89M/min	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
6MM	9600	3630	7950	1875	6300	1305	4800	900
8MM	7200	3630	6000	1890	4800	1335	3600	900
10MM	5700	3450	4800	1815	3750	1245	2850	855
12MM	4800	3225	4050	1695	3150	1170	2400	810
16MM	3600	3105	3000	1620	2400	1140	1800	780
20MM	2850	2880	2400	1515	1950	1080	1500	750
切削量 Milling Amount (mm)	AD=1.5D RD=0.1D		AD=1.5D RD=0.1D		AD=1.5D RD=0.06D		AD=1.5D RD=0.04D	

**Table 38 NECD4-A 奈米鎢鋼圓鼻銑刀-短刃型-4刃(鍍膜) 切削條件表**

**SOLID CARBIDE END MILLS-MILLING CONDITION TABLE**

加工材質 WORKING MATERIAL	鑄鐵 CAST IRON	合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		調質鋼 HARDENED STEEL		調質鋼 HARDENED STEEL		調質鋼 HARDENED STEEL		
MATERIAL CODE	FC/FCD	(SCM,SKT,SKD)		(SKT,SKD)		(SKT,SKD)		(SKT,SKD)		
HARDNESS GRADE	—	HRC 20~30		HRC 30~40		HRC 45~55		HRC 55~60		
切削速度 Vc	237M/min	161M/min		135M/min		81M/min		61M/min		
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	25920	2025	17280	775	14040	370	9060	450	6900	337
4MM	19440	2430	12960	775	10800	370	6480	450	4860	337
5MM	15120	2430	10260	775	8640	370	5400	450	4050	337
6MM	12960	2430	8640	775	7020	370	4320	450	3240	337
8MM	9720	2430	6480	775	5400	393	3240	450	2430	337
10MM	7560	2630	5130	810	4320	393	2580	472	1950	348
12MM	6480	2835	4320	810	3600	393	2160	472	1620	348
14MM	6000	3150	4080	900	3420	427	2160	517	1620	382
16MM	5400	3375	3600	945	3000	450	1860	540	1410	405
18MM	4800	3375	3180	945	2640	450	1680	540	1410	405
20MM	4200	3600	2880	945	2400	450	1440	540	1080	405
切削量 Milling Amount (mm)	AD=1.5D RD=0.06D		AD=1.5D RD=0.06D		AD=1D RD=0.03D					

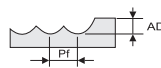
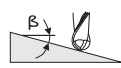
以上數據為建議值，適當的條件仍需視機台狀況，夾治具品質，潤滑冷卻系統...等而改變。

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

Table 39

NEBD(M)L2 -A 奈米鎢鋼球型銑刀-短刃長柄型-2刃(鍍膜) 切削條件表  
NEBD(M)2 -A 奈米鎢鋼球型銑刀-短刃型-2刃(鍍膜) 切削條件表

## SOLID CARBIDE END MILLS-MILLING CONDITION TABLE

加工材質 WORKING MATERIAL	鑄鐵 CAST IRON		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		調質鋼 HARDENED STEEL		調質鋼 HARDENED STEEL		調質鋼 HARDENED STEEL							
MATERIAL CODE	FC/FCD		(SCM,SKT,SKD)		(SKT,SKD)		(SKT,SKD)		(SKT,SKD)							
HARDNESS GRADE	—		HRC 20~30		HRC 30~40		HRC 45~55		HRC 55~60							
切削速度Vc	240M/min		230M/min		170M/min		155M/min		115M/min							
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)						
0.5R	49500	2770	49500	2770	47030	2230	31680	1440	24750	990						
1.0R	31185	3465	24750	2770	23270	2230	16830	1540	12380	990						
1.5R	20790	3465	16335	2770	15350	2230	10890	1540	8370	990						
2.0R	17820	3660	15345	3370	13370	2430	10890	1880	7875	1090						
2.5R	15345	3960	14850	4010	10890	2280	9900	2080	7520	1190						
3.0R	14850	4750	13365	4260	9405	2230	9405	2230	6530	1140						
4.0R	11385	3620	9900	3170	7080	1680	6920	1680	4905	880						
5.0R	9405	2970	8170	2570	5640	1340	5640	1340	3915	700						
6.0R	7875	2475	6790	2130	4710	1090	4710	1090	3270	585						
切削量 Milling Amount (mm)			<table border="1"> <tr><td>AD</td><td>Pf</td></tr> <tr><td>0.02D</td><td>0.05D</td></tr> </table>		AD	Pf	0.02D	0.05D								
AD	Pf															
0.02D	0.05D															

傾斜角 $\beta$ 在 $15^\circ$ 以下時，上表中的轉速和進給可以相應地提高1~1.2倍。

When  $\beta$  is less than  $15^\circ$  milling speed and feed speed in the table can be increased 1.0~1.2 times.

Table 40

NESND2- A 奈米鎢鋼平銑刀-短刃長頸型-2刃(鍍膜) 切削條件表

## SOLID CARBIDE END MILLS-MILLING CONDITION TABLE

## Slotting槽切削

加工材質 WORKING MATERIAL	鑄鐵 CAST IRON			合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL			調質鋼 HARDENED STEEL			調質鋼 HARDENED STEEL			調質鋼 HARDENED STEEL		
MATERIAL CODE	FC/FCD			(SCM,SKT,SKD)			(SKT,SKD)			(SKT,SKD)			(SKT,SKD)		
HARDNESS GRADE	—			HRC 20~30			HRC 30~40			HRC 45~55			HRC 55~60		
切削速度 Vc	67M/min			59M/min			59M/min			42M/min			25M/min		
外徑(有效長) DIAMETER	R.P.M	FEED (mm/min)	AD	R.P.M	FEED (mm/min)	AD	R.P.M	FEED (mm/min)	AD	R.P.M	FEED (mm/min)	AD	R.P.M	FEED (mm/min)	AD
0.5MM (2)	25,200	360	0.049	25,200	270	0.045	25,200	135	0.038	18,900	45	0.019	13,500	27	0.009
0.5MM (4)	21,600	225	0.023	21,600	180	0.021	21,600	90	0.018	16,200	27	0.009	13,500	27	0.009
1MM (6)	19,800	630	0.07	18,000	540	0.07	17,100	450	0.06	10,800	135	0.03	7,200	45	0.014
1MM (8)	16,200	360	0.05	15,300	315	0.04	14,400	270	0.04	9,000	90	0.02	7,200	45	0.014
1.5MM (8)	11,700	360	0.11	10,800	315	0.1	9,900	270	0.08	6,300	90	0.04	4,500	45	0.021
2MM (8)	9,900	630	0.29	9,000	540	0.26	9,000	450	0.22	5,400	135	0.11	3,600	90	0.06
2MM (10)	8,100	360	0.26	7,200	315	0.24	8,100	270	0.2	4,500	90	0.1	2,700	45	0.05
2MM (12)	8,100	360	0.14	7,200	315	0.13	8,100	270	0.11	4,500	90	0.06	2,700	45	0.03
3MM (8)	7,200	630	0.39	6,300	540	0.36	6,300	450	0.3	4,500	135	0.15	2,700	90	0.08
3MM (12)	7,200	630	0.29	6,300	540	0.27	6,300	450	0.23	4,500	135	0.11	2,700	90	0.055
3MM (16)	6,300	360	0.22	6,300	315	0.2	5,400	270	0.17	3,600	90	0.08	2,250	45	0.04
3MM (20)	6,300	360	0.14	6,300	315	0.13	5,400	270	0.11	3,600	90	0.05	2,250	45	0.025
4MM (16)	4,500	630	0.39	4,500	540	0.36	4,500	450	0.3	2,700	135	0.15	1,800	90	0.075
4MM (20)	4,500	360	0.36	4,500	315	0.34	3,600	270	0.28	1,800	90	0.14	900	90	0.07
5MM (20)	3,600	540	0.49	3,600	450	0.45	3,150	450	0.38	1,800	135	0.19	1,800	90	0.09
5MM (30)	2,700	270	0.36	2,700	270	0.33	2,700	180	0.28	1,800	135	0.14	1,800	90	0.07
切削量 Milling Amount (mm)															

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.

**Table 41 NEBND2- A 奈米鎢鋼球型銑刀- 短刃長頸型- 2刃(鍍膜) 切削條件表**

**SOLID CARBIDE END MILLS-MILLING CONDITION TABLE**

加工材質 WORKING MATERIAL	鑄鐵 CAST IRON				合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL				調質鋼 HARDENED STEEL				調質鋼 HARDENED STEEL				調質鋼 HARDENED STEEL			
MATERIAL CODE	FC/FCD				(SCM,SKT,SKD)				(SKT,SKD)				(SKT,SKD)				(SKT,SKD)			
HARDNESS GRADE	—				HRC 20~30				HRC 30~40				HRC 45~55				HRC 55~60			
切削速度Vc	79M/min				79M/min				73M/min				56M/min				31M/min			
外徑(有效長) DIAMETER	R.P.M	FEED (mm/min)	AD	Pf	R.P.M	FEED (mm/min)	AD	Pf	R.P.M	FEED (mm/min)	AD	Pf	R.P.M	FEED (mm/min)	AD	pf	R.P.M	FEED (mm/min)	AD	Pf
0.3R (3)	27,000	360	0.03	0.12	27,000	360	0.03	0.12	22,500	225	0.03	0.12	21,600	180	0.03	0.06	15,300	135	0.02	0.04
0.3R (4)	27,000	360	0.03	0.12	27,000	360	0.03	0.12	22,500	225	0.03	0.12	21,600	180	0.03	0.06	15,300	135	0.02	0.04
0.4R (4)	24,300	540	0.04	0.16	24,300	540	0.04	0.16	20,700	405	0.04	0.16	18,900	270	0.04	0.08	13,050	180	0.04	0.08
0.4R (6)	21,600	360	0.04	0.12	21,600	360	0.04	0.12	18,900	225	0.04	0.12	17,100	180	0.02	0.04	10,800	135	0.02	0.04
0.5R (6)	18,900	360	0.05	0.2	18,900	360	0.05	0.2	17,100	270	0.05	0.2	14,400	180	0.05	0.1	10,350	135	0.05	0.1
0.5R (8)	18,900	360	0.05	0.15	18,900	360	0.05	0.15	17,100	270	0.05	0.15	14,400	180	0.03	0.05	10,350	135	0.03	0.05
0.75R (9)	15,300	540	0.08	0.3	15,300	540	0.08	0.3	13,500	270	0.08	0.3	10,800	225	0.08	0.15	7,200	180	0.08	0.15
0.75R (12)	15,300	540	0.08	0.23	15,300	540	0.08	0.23	13,500	270	0.08	0.23	10,800	225	0.08	0.15	7,200	180	0.08	0.15
1R (12)	12,600	630	0.1	0.4	12,600	630	0.1	0.4	11,700	450	0.1	0.4	9,000	270	0.1	0.2	4,950	180	0.1	0.2
1R (16)	12,600	630	0.1	0.3	12,600	630	0.1	0.3	11,700	450	0.1	0.3	9,000	270	0.06	0.1	4,950	180	0.06	0.1
1.5R (12)	9,000	540	0.15	0.6	9,000	540	0.15	0.6	7,650	270	0.15	0.6	5,850	225	0.15	0.3	2,700	135	0.15	0.3
1.5R (25)	9,000	540	0.15	0.6	9,000	540	0.15	0.6	7,650	270	0.15	0.6	5,850	225	0.09	0.15	2,700	135	0.09	0.15
2R (25)	6,300	540	0.2	0.8	6,300	540	0.2	0.8	5,400	360	0.2	0.8	4,500	225	0.2	0.4	2,250	90	0.2	0.4
2R (30)	6,300	540	0.2	0.8	6,300	540	0.2	0.8	5,400	360	0.2	0.8	4,500	225	0.12	0.2	2,250	90	0.12	0.2
2.5R (30)	5,400	450	0.25	1	5,400	450	0.25	1	4,500	450	0.25	1	3,600	225	0.25	0.5	2,700	90	0.25	0.5
2.5R (40)	5,400	450	0.25	1	5,400	450	0.25	1	4,500	450	0.25	1	3,600	225	0.25	0.5	2,700	90	0.25	0.5
3R (30)	4,500	450	0.3	1.2	4,500	450	0.3	1.2	3,600	360	0.3	1.2	3,600	270	0.3	0.6	2,700	180	0.3	0.6
3R (45)	4,500	450	0.3	1.2	4,500	450	0.3	1.2	3,600	360	0.3	1.2	3,600	270	0.3	0.6	2,700	180	0.3	0.6
切削量 Milling Amount (mm)																				

**Table 42 CEK,AEK 鎢鋼T型銑刀切削條件表**

**Table 43 CEC, AEC 鎢鋼外圓槽銑刀**

**SOLID CARBIDE SPECIAL CUTTING TOOLS-MILLING CONDITION TABLE**

加工材質 WORKING MATERIAL	一般鋼 NORMAL STEEL						鋁合金 ALUMINUM ALLOY						加工材質 WORKING MATERIAL	一般鋼 NORMAL STEEL			
材質 MATERIAL CODE	(S45C)						—						材質 MATERIAL CODE	(S45C)			
硬度 HARDNESS GRADE	HRC<20						—						硬度 HARDNESS GRADE	HRC<20			
外徑 DIAMETER	切削速度 Vc (M/min)	主軸轉速 R.P.M	FEED 進給速度 (mm/min)	切削速度 Vc (M/min)	主軸轉速 R.P.M	FEED 進給速度 (mm/min)	外徑 DIAMETER	Vc 切削速度 (M/min)		主軸轉速 R.P.M							
4MM	6~10	640~1000	25~170	15~30	1500~3100	60~510	4MM	20	25	1600	1990						
5MM	10~20	640~1200	25~200	30~50	1900~3100	70~510	5MM	20	25	1280	1600						
6MM	10~20	540~1070	30~250	30~50	1500~2600	90~630	6MM	20	25	1060	1330						
8MM	10~20	400~790	24~190	30~50	1100~1900	70~470	8MM	20	25	800	1000						
10MM	10~20	320~640	20~150	30~50	950~1600	60~380	10MM	30	35	960	1110						
12MM	10~20	270~530	16~130	30~50	800~1330	50~320	12MM	30	35	800	930						

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.

**Table 44** CECS 鎢鋼鳩尾槽銑刀切削條件表

**Table 45** CECSW 鎢鋼等角鳩尾槽銑刀

**SOLID CARBIDE SPECIAL CUTTING TOOLS-MILLING CONDITION TABLE**

加工材質 WORKING MATERIAL	一般鋼 NORMAL STEEL				加工材質 WORKING MATERIAL	一般鋼 NORMAL STEEL			
材質 MATERIAL CODE	(S45C)				材質 MATERIAL CODE	(S45C)			
硬度 HARDNESS GRADE	HRC<20				硬度 HARDNESS GRADE	HRC<20			
外徑 DIAMETER	切削速度 Vc(M/min)		主軸轉速 R.P.M		外徑 DIAMETER	切削速度 Vc(M/min)		主軸轉速 R.P.M	
5MM	15	20	950	1270	5MM	15	20	950	1270
6MM	15	20	800	1060	6MM	15	20	800	1060
8MM	15	20	600	800	8MM	15	20	600	800
10MM	20	25	640	800	10MM	20	25	640	800
12MM	20	25	530	660	12MM	20	25	530	660

**Table 46** CEC2- A 鎢鋼倒角兼用銑刀- 2刃(鍍膜) 切削條件表

**SOLID CARBIDE SPECIAL CUTTING TOOLS-MILLING CONDITION TABLE**  
先端角(Tip Angle)=90°

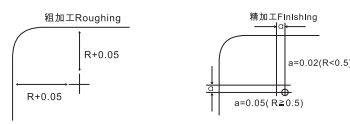
加工材質 WORKING MATERIAL	一般鋼 NORMAL STEEL			合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL			不鏽鋼 STAINLESS STEEL			鋁合金 ALUMINUM ALLOY		
材質 MATERIAL CODE	(S45C)			(SCM, SKT, SKD)			(SUS304)			—		
硬度 HARDNESS GRADE	HRC<20			HRC<30~40			—			—		
切削速度 Vc	60 M/min			50 M/min			40 M/min			50 M/min		
外徑 DIAMETER	主軸轉速 R.P.M.	縱向 Vertical (mm/min)	橫向 Horizontal (mm/min)	主軸轉速 R.P.M.	縱向 Vertical (mm/min)	橫向 Horizontal (mm/min)	主軸轉速 R.P.M.	縱向 Vertical (mm/min)	橫向 Horizontal (mm/min)	主軸轉速 R.P.M.	縱向 Vertical (mm/min)	橫向 Horizontal (mm/min)
3MM	6400	25	50	5300	20	40	4200	20	40	5300	40	80
4MM	4800	25	55	4000	20	45	3200	20	45	4000	40	85
6MM	3200	25	60	2650	20	50	2100	20	50	2650	40	90
8MM	2400	25	65	2000	20	55	1600	20	55	2000	40	110
10MM	1900	25	70	1600	20	60	1300	20	60	1600	40	110
12MM	1600	25	70	1350	20	60	1050	20	60	1350	40	120
16MM	1200	30	80	1000	25	65	800	25	65	1000	50	120
20MM	950	30	80	800	25	65	640	25	65	800	50	110

先端角=120°，可將進給量增加30%。  
Tip Angle=120°，might increase 30% Feed Speed.

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.

## Table 47 CEIR2 鎢鋼內R角銑刀-2刃 切削條件表

### SOLID CARBIDE SPECIAL CUTTING TOOLS-MILLING CONDITION TABLE

加工材質 WORKING MATERIAL	碳素鋼 CARBON STEEL			合金鋼 ALLOY STEEL			調質鋼 HARDENED STEEL		
MATERIAL CODE	(S50C)			(SCM, SKD)			(SKT, SKD)		
HARDNESS GRADE	HRC<20			HRC<30~40			HRC<40~50		
切削速度 Vc	30~40 M/min			20~30 M/min			15~25 M/min		
半徑 R	主軸轉速 R.P.M.	粗加工 Roughing (mm/min)	細加工 Finishing (mm/min)	主軸轉速 R.P.M.	粗加工 Roughing (mm/min)	細加工 Finishing (mm/min)	主軸轉速 R.P.M.	粗加工 Roughing (mm/min)	細加工 Finishing (mm/min)
0.5R	9,900	50	90	7,200	45	60	5,760	35	50
0.75R	8,100	50	90	5,760	45	60	4,590	35	50
1R	5,580	50	90	3,960	45	60	3,780	35	50
1.25R	4,860	50	90	3,510	45	60	3,240	35	50
1.5R	3,330	50	90	2,430	45	60	2,880	35	50
1.75R	3,060	50	90	2,160	45	60	2,520	35	50
2R	2,880	50	90	2,070	45	60	2,250	35	50
2.5R	2,520	50	90	1,800	45	60	1,890	35	50
3R	2,250	50	90	1,620	45	60	1,620	35	50
4R	1,665	50	90	1,170	45	60	1,260	35	50
5R	1,440	50	90	990	45	60	1,080	35	50
6R	1,250	50	90	810	45	60	900	35	50
切削量 Depth of Cut (mm)									
備註 Remarks	※ 切削量須區分多次切削。 ※ Divide the cutting depth into several time paths. ※ 須使用切削油。 ※ Use cutting fluid.								

## Table 48 CDC 鎢鋼中心鑽頭(60°, 90°) 切削條件表

### SOLID CARBIDE CENTER DRILLS (60°, 90°) -DRILLING CONDITION TABLE

加工材質 WORKING MATERIAL	碳素鋼 CARBON STEEL		合金鋼 ALLOY STEEL		鈦合金 TITANIUM ALLOY		不鏽鋼 STAINLESS STEEL		鑄鐵 CAST IRON	
MATERIAL CODE	(S45C, S50C, SCM)		(SCM, SKT, SKD)		—		(SUS304)		FC/FCD	
HARDNESS GRADE	HRC <20		HRC 20~30		—		—		—	
切削速度 Vc	60M/min		50M/min		50M/min		50M/min		50M/min	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
1MM	12740	200	9550	124	15920	365	15920	254	15920	207
1.5MM	12740	382	10620	244	10615	244	11990	359	10615	244
2MM	9550	382	7960	239	7960	239	7960	318	7960	239
3MM	6370	318	5305	121	5310	212	5310	212	5310	212
5MM	3820	382	3185	255	3185	255	3185	318	3185	255

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.



**Table 49** CDP 鎢鋼定點鑽頭 (90°, 120°) -標準型 切削條件表  
CDPL 鎢鋼定點鑽頭 (90°, 120°) -長柄型 切削條件表

**SOLID CARBIDE SPOTTING DRILLS 90°, 120° -DRILLING CONDITION TABLE**

加工材質 WORKING MATERIAL	碳素鋼/合金鋼 CARBON STEEL / ALLOY STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		鈦 TITANIUM		不鏽鋼 STAINLESS STEEL		鑄鐵 CAST IRON	
MATERIAL CODE	(S45C,S50C,SCM)		(SCM,SKT,SKD)		—		(SUS304)		FC/FCD	
HARDNESS GRADE	HRC <20		HRC 20~30		—		—		—	
切削速度 Vc	48M/min		40M/min		24M/min		28M/min		40M/min	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
4MM	3820	310	3180	220	1910	110	2230	160	3180	220
5MM	3060	240	2550	180	1530	90	1780	120	2550	180
6MM	2550	200	2120	150	1270	80	1490	100	2120	150
8MM	1910	210	1590	140	960	80	1110	100	1590	140
10MM	1530	240	1270	170	760	80	890	120	1270	170
12MM	1270	360	1060	220	640	130	740	160	1060	220
16MM	960	310	800	190	480	120	560	130	800	190

**Table 50** CDM2-F 鎢鋼非鐵金屬專用微小徑鑽頭- 2刃(鍍膜) 切削條件表

**SOLID CARBIDE DRILLS For Non-Ferrous Metal Only- Miniature- 2F-DRILLING CONDITION TABLE**

加工材質WORKING MATERIAL	碳素鋼/合金鋼 CARBON STEEL / ALLOY STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		軟灰鑄鐵 SOFT GREY CAST IRON		硬灰鑄鐵 HARD GREY CAST IRON		不鏽鋼 STAINLESS STEEL	
MATERIAL CODE	(S45C,S50C,SCM)		(SCM,SKT,SKD)		(GG25)		(GG40)		(SUS304)	
HARDNESS GRADE	HRC<20		HRC20~30		>HB240		>HB300		—	
切削速度 Vc	58M/min		41M/min		53M/min		46M/min		19M/min	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
0.50MM	31,300	625	22,100	400	28,600	720	24,900	550	10,200	70
0.95MM	16,600	700	11,600	450	15,100	830	13,100	610	5,400	80
1.00MM	15,600	630	11,000	380	14,300	750	12,400	550	5,100	70
1.45MM	10,800	670	7,600	450	9,800	580	8,500	610	3,500	60
1.50MM	10,500	640	7,400	400	9,500	720	8,200	550	3,400	70
1.95MM	8,000	700	5,700	450	7,300	830	6,400	615	2,600	80
2.00MM	7,800	640	5,500	380	7,100	720	6,200	555	2,600	70
2.45MM	6,400	700	4,500	440	5,800	825	5,100	510	2,100	80
2.50MM	6,300	630	4,400	410	5,700	720	5,000	540	2,000	70
2.95MM	5,400	700	3,700	450	4,800	810	4,200	605	1,700	75

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.

**Table 51 CDS2-F 鎢鋼同柄鑽頭- 2刃(鍍膜) 切削條件表**

**SOLID CARBIDE DRILLS-DRILLING CONDITION TABLE**

**濕式鑽孔 Wet-Drilling**

加工材質 WORKING MATERIAL	碳素鋼 CARBON STEEL		合金鋼 ALLOY STEEL		預硬鋼 PREHARDENED STEEL		不鏽鋼 STAINLESS STEEL		鑄鐵 CAST IRON	
MATERIAL CODE	(S45,S50C)		(SCM,SKT,SKD)		(NAK,HPM)		(SUS304)		FC/FCD	
HARDNESS GRADE	HRC <20		HRC 20~30		HRC 30~40		—		—	
切削速度 Vc	108M/min		100M/min		60M/min		48M/min		120M/min	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	11460	860	8280	620	6360	480	5090	240	12730	780
5MM	6880	860	4970	640	3820	480	3060	190	7640	760
8MM	4300	820	3110	600	2390	460	1910	180	4780	740
10MM	3440	800	2480	560	1910	440	1520	140	3820	730
12MM	2870	770	2060	550	1600	430	1270	130	3180	720
備註 Remarks	※ 未鍍膜鑽頭，請依照上表，減少30%左右轉速和進給量。 ※ Uncoated Drills Reduce 30% RPM & FEED From Coating One.									

**SOLID CARBIDE DRILLS-DRILLING CONDITION TABLE**

**乾式鑽孔 Dry-Drilling**

加工材質 WORKING MATERIAL	碳素鋼 CARBON STEEL		合金鋼 ALLOY STEEL		預硬鋼 PREHARDENED STEEL		不鏽鋼 STAINLESS STEEL		鑄鐵 CAST IRON	
MATERIAL CODE	(S45,S50C)		(SCM,SKT,SKD)		(NAK,HPM)		(SUS304)		FC/FCD	
HARDNESS GRADE	HRC <20		HRC 20~30		HRC 30~40		—		—	
切削速度 Vc	90M/min		65M/min		50M/min		40M/min		100M/min	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	9550	720	6900	520	5300	400	4240	200	10610	650
5MM	5730	720	4140	530	3180	400	2550	160	6370	630
8MM	3580	680	2590	500	1990	380	1590	150	3980	620
10MM	2870	670	2070	470	1590	370	1270	120	3180	610
12MM	2390	640	1720	460	1330	360	1060	110	2650	600
備註 Remarks	※ 未鍍膜鑽頭，請依照上表，減少30%左右轉速和進給量。 ※ Uncoated Drills Reduce 30% RPM & FEED From Coating One.									

1. 工件及機械若有震動或異聲時，請視情況變更切削條件。
2. 乾式切削請用空氣冷卻及排屑，並避免因切削產生之高溫鑽頭所燙傷。
1. Drilling conditions should be changed as the real situations if the tools or the machines vibrating or nosing during operation.
2. Dry-drilling should be cooled and chip-flowed by air. And pay attention not to be scalded by the heat while drilling.

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.

**Table 52 CDH2-F 鎢鋼高速鑽頭-短刃型-2刃(鍍膜) 切削條件表**

**SOLID CARBIDE DRILLS-DRILLING CONDITION TABLE**

加工材質 WORKING MATERIAL	碳素鋼/合金鋼 CARBON STEEL / ALLOY STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		軟灰鑄鐵 SOFT GREY CAST IRON		硬灰鑄鐵 HARD GREY CAST IRON		不鏽鋼 STAINLESS STEELS	
MATERIAL CODE	(S45C,S50C,SCM)		(SCM,SKT,SKD)		(GG25)		(GG40)		(SUS304)	
HARDNESS GRADE	HRC <20		HRC 20~30		>HB240		>HB300		—	
切削速度 Vc	120M/min		100M/min		200M/min		130M/min		40M/min	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	12740	1660	10620	1380	21230	2760	13800	1790	4250	300
4MM	9550	1340	7960	1110	15920	2230	10350	1450	3180	250
5MM	7640	1150	6370	960	12740	1910	8280	1240	2550	230
6MM	6370	1080	5310	900	10620	1810	6900	1170	2120	210
8MM	4780	1000	3980	840	7960	1670	5180	1090	1590	190
10MM	3820	960	3180	800	6370	1590	4140	1040	1270	190
12MM	3180	860	2650	720	5310	1430	3450	930	1060	180
14MM	2730	790	2270	660	4550	1320	2960	860	910	170
16MM	2390	740	1990	620	3980	1230	2590	800	800	170
18MM	2120	700	1770	580	3540	1170	2300	760	710	160
20MM	1910	670	1590	560	3180	1110	2070	720	640	160
備註 Remarks	※未鍍膜鑽頭，請依照上表，減少30%左右轉速和進給量。 ※Uncoated Drills Reduce 30% RPM & FEED From Coating One.									

**Table 53 CDHF2-F 鎢鋼高速鑽頭-標準型-2刃(鍍膜) 切削條件表**

**SOLID CARBIDE DRILLS-DRILLING CONDITION TABLE**

加工材質 WORKING MATERIAL	碳素鋼/合金鋼 CARBON STEEL / ALLOY STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		軟灰鑄鐵 SOFT GREY CAST IRON		硬灰鑄鐵 HARD GREY CAST IRON		不鏽鋼 STAINLESS STEELS	
MATERIAL CODE	(S45C,S50C,SCM)		(SCM,SKT,SKD)		(GG25)		(GG40)		(SUS304)	
HARDNESS GRADE	HRC <20		HRC 20~30		>HB240		>HB300		—	
切削速度 Vc	120M/min		100M/min		200M/min		130M/min		40M/min	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	12740	1410	10620	1170	21230	2350	13800	1520	4250	250
4MM	9550	1140	7960	950	15920	1890	10350	1230	3180	220
5MM	7640	970	6370	810	12740	1620	8280	1060	2550	200
6MM	6370	920	5310	770	10620	1530	6900	1000	2120	180
8MM	4780	850	3980	710	7960	1420	5180	920	1590	160
10MM	3820	810	3180	680	6370	1350	4140	880	1270	160
12MM	3180	730	2650	610	5310	1220	3450	790	1060	150
14MM	2730	670	2270	560	4550	1120	2960	730	910	150
16MM	2390	630	1990	520	3980	1050	2590	680	800	140
18MM	2120	590	1770	500	3540	990	2300	650	710	140
20MM	1910	570	1590	470	3180	950	2070	620	640	140
備註 Remarks	※未鍍膜鑽頭，請依照上表，減少30%左右轉速和進給量。 ※Uncoated Drills Reduce 30% RPM & FEED From Coating One.									

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.

**Table 54 CDHC2-F 鎢鋼高速內冷鑽頭-短刃型-2刃(鍍膜) 切削條件表**

**SOLID CARBIDE DRILLS-DRILLING CONDITION TABLE**

加工材質 WORKING MATERIAL	碳素鋼/合金鋼 CARBON STEEL / ALLOY STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		軟灰鑄鐵 SOFT GREY CAST IRON		硬灰鑄鐵 HARD GREY CAST IRON		不鏽鋼 STAINLESS STEEL	
MATERIAL CODE	(S45C,S50C,SCM)		(SCM,SKT,SKD)		(GG25)		(GG40)		(SUS304)	
HARDNESS GRADE	HRC <20		HRC 20~30		>HB240		>HB300		—	
切削速度 Vc	150M/min		135M/min		250M/min		160M/min		60M/min	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
4MM	11940	2030	10750	1830	19900	3380	12740	2170	4780	530
5MM	9550	1720	8600	1550	15920	2870	10190	1830	3820	500
6MM	7960	1590	7170	1430	13270	2650	8490	1700	3180	450
8MM	5970	1430	5370	1290	9950	2390	6370	1530	2390	410
10MM	4780	1430	4300	1290	7960	2390	5100	1530	1910	400
12MM	3980	1310	3580	1180	6630	2190	4250	1400	1590	380
14MM	3410	1230	3070	1110	5690	2050	3640	1310	1360	370
16MM	2990	1170	2690	1050	4980	1940	3180	1240	1190	350
18MM	2650	1110	2390	1000	4420	1860	2830	1190	1060	340
20MM	2390	1080	2150	970	3980	1790	2550	1150	960	340
備註 Remarks	※未鍍膜鑽頭，請依照上表，減少30%左右轉速和進給量。 ※Uncoated Drills Reduce 30% RPM & FEED From Coating One.									

**Table 55 CDHCF2-F 鎢鋼高速內冷鑽頭-標準型-2刃(鍍膜) 切削條件表**

**SOLID CARBIDE DRILLS-DRILLING CONDITION TABLE**

加工材質 WORKING MATERIAL	碳素鋼/合金鋼 CARBON STEEL / ALLOY STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		軟灰鑄鐵 SOFT GREY CAST IRON		硬灰鑄鐵 HARD GREY CAST IRON		不鏽鋼 STAINLESS STEEL	
MATERIAL CODE	(S45C,S50C,SCM)		(SCM,SKT,SKD)		(GG25)		(GG40)		(SUS304)	
HARDNESS GRADE	HRC <20		HRC 20~30		>HB240		>HB300		—	
切削速度 Vc	150M/min		135M/min		250M/min		160M/min		60M/min	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
4MM	11940	1730	10750	1550	19900	2880	12740	1840	4780	450
5MM	9550	1460	8600	1320	15920	2440	10190	1560	3820	420
6MM	7960	1350	7170	1220	13270	2260	8490	1440	3180	380
8MM	5970	1220	5370	1100	9950	2030	6370	1300	2390	350
10MM	4780	1220	4300	1100	7960	2030	5100	1300	1910	340
12MM	3980	1120	3580	1000	6630	1860	4250	1190	1590	320
14MM	3410	1040	3070	940	5690	1740	3640	1110	1360	310
16MM	2990	990	2690	890	4980	1650	3180	1050	1190	290
18MM	2650	950	2390	850	4420	1580	2830	1010	1060	290
20MM	2390	910	2150	820	3980	1520	2550	980	960	290
備註 Remarks	※未鍍膜鑽頭，請依照上表，減少30%左右轉速和進給量。 ※Uncoated Drills Reduce 30% RPM & FEED From Coating One.									

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.

**Table 56 CDHCS2-F 鎢鋼高速內冷鑽頭-長刃型-2刃 切削條件表**

**SOLID CARBIDE DRILLS-DRILLING CONDITION TABLE**

加工材質WORKING MATERIAL	碳素鋼/合金鋼 CARBON STEEL / ALLOY STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		軟灰鑄鐵 SOFT GREY CAST IRON		硬灰鑄鐵 HARD GREY CAST IRON		不銹鋼 STAINLESS STEEL	
MATERIAL CODE	(S45C,S50C,SCM)		(SCM,SKT,SKD)		(GG25)		(GG40)		(SUS304)	
HARDNESS GRADE	HRC<20		HRC20~30		>HB240		>HB300		—	
切削速度 Vc	120M/min		85M/min		200M/min		130M/min		40M/min	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3 MM	12,700	725	10,600	795	21,200	2,540	13,800	1,240	4,200	200
4 MM	9,500	720	8,000	800	16,000	2,560	10,300	1,235	3,100	200
5 MM	7,600	720	6,400	800	12,800	2,560	8,200	1,230	2,500	200
6 MM	6,400	730	5,300	795	10,600	2,540	6,900	1,240	2,100	200
8 MM	4,800	730	4,000	800	8,000	2,560	5,100	1,220	1,600	205
10 MM	3,800	720	3,200	800	6,400	2,560	4,100	1,230	1,300	205
12 MM	3,200	730	2,600	780	5,300	2,540	3,500	1,260	1,000	190
14 MM	2,700	720	2,300	805	4,500	2,520	3,000	1,260	910	200
16 MM	2,400	730	2,000	800	4,000	2,560	2,300	1,240	700	200
18 MM	2,100	720	1,800	810	3,500	2,520	2,300	1,240	700	200
20 MM	1,900	720	1,600	800	3,100	2,480	2,000	1,200	650	205
備註 Remarks	※未鍍膜鑽頭，請依照上表，減少30%左右轉速和進給量。 ※ Uncoated Drills Reduce 30% RPM & FEED From Coating One.									

**Table 57 CDR2 鎢鋼銅鋁用直刃鑽鉸刀(白刀)切削條件表**

**SOLID CARBIDE STRAIGHT FLUTE DRILLS For Aluminum & Copper-DRILLING CONDITION TABLE**

加工材質 WORKING MATERIAL	青銅 BRONZE		鋁合金(含矽) SILICON-ALUMINUM ALLOY		鑄鐵 CAST IRON	
MATERIAL CODE	—		Si >10%		—	
HARDNESS GRADE	HRC ≤ 25		—		HRC ≤ 22	
切削速度 Vc	80M/min		140M/min		120M/min	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
5MM	5100	410	8920	1430	7640	960
6MM	4250	340	7430	1190	6370	800
8MM	3190	260	5570	890	4780	600
10MM	2550	200	4460	710	3820	480
12MM	2120	170	3720	600	3190	400
16MM	1590	130	2790	450	2390	300
20MM	1270	100	2230	360	1910	240

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.

**Table 58 CRD4/6(CRS4/6) 鎢鋼螺旋機械鉸刀(白刀)切削條件表**
**SOLID CARBIDE REAMER(STRAIGHT SHANK)-REAMING CONDITION TABLE**

加工材質 WORKING MATERIAL	碳素鋼/合金鋼 CARBON STEEL / ALLOY STEEL			合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL			銅 COPPER			鋁合金 ALUMINUM ALLOYS			鑄鐵 CAST IRON		
MATERIAL CODE	(SCM,SKD, SUS )			(SCM,SKT, SKD )			—			A5052			—		
HARDNESS GRADE	HRC <20			HRC 20~30			—			—			—		
切削速度 Vc	16M/min			12M/min			30M/min			30M/min			18M/min		
外徑 DIAMETER	R.P.M	FEED (mm/ min)	預留量 Stock Amount	R.P.M	FEED (mm/ min)	預留量 Stock Amount	R.P.M	FEED (mm/ min)	預留量 Stock Amount	R.P.M	FEED (mm/ min)	預留量 Stock Amount	R.P.M	FEED (mm/ min)	預留量 Stock Amount
2MM	2550	200	0.1~0.2	1910	100	0.1~0.2	4780	480	0.1~0.2	4780	480	0.1~0.2	2870	180	0.1~0.2
4MM	1270	200	0.1~0.2	960	100	0.1~0.2	2390	480	0.1~0.2	2390	480	0.1~0.2	1430	180	0.1~0.2
5MM	1020	160	0.1~0.2	760	80	0.1~0.2	1910	380	0.1~0.2	1910	380	0.1~0.2	1150	140	0.1~0.2
8MM	640	160	0.2	480	80	0.2	1190	370	0.2~0.3	1190	370	0.2	720	140	0.2
10MM	510	160	0.2	380	80	0.2	960	380	0.2~0.3	960	380	0.2~0.3	570	140	0.2

**Table 59 鎢鋼車刀(鍍膜)切削條件表(內孔專用!)**
**SOLID CARBIDE TURNING TOOLS CUTTING CONDITION TABLE  
(FOR INTERNAL CUTTING ONLY!)**

材料種類 Material Group	工件材料 Material	Vc (m/min)	Feed Rate (mm/rev.)
<b>P</b>	非合金鋼 Unalloyed steels	低碳Low carbon	20-125
		中碳Medium carbon	20-125
		高碳High carbon	30-90
	合金鋼 Alloy steels		40-80
<b>M</b>	不鏽鋼 Stainless steels		20-80
	鑄鋼 Cast steels		40-80
<b>K</b>	鑄鐵 Cast Iron		40-110
<b>N</b>	非金屬 & 鋁 Non-Ferrous & Aluminium		50-110
<b>S</b>	高溫合金 High temperature alloys		15-25
	鈦 Titanium		15-25
<b>H</b>	高硬度材 Hard Materials		13-25

**車牙進刀數Threading Passes**

牙距 Pitch:	mm	0.5	0.7	0.8	1.0	1.25	1.5
進刀數Number of Passes		6-12	7-14	7-16	8-18	8-20	10-22

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.

**Table 60 CSHI2-A 鎢鋼多功能螺旋鑽銑牙刀(鍍膜)切削條件表**

**SOLID CARBIDE THREAD TOOL MILLING CONDITION TABLE**

材料種類 Material Group	工件材料 Material		布式硬度 HB	抗拉強度 Strength (N-mm <sup>2</sup> )	Vc (m/min)	f(mm/rev)		fz(mm)	
						≤6mm	≤12mm	≤6mm	≤12mm
<b>K</b>	灰鑄鐵 Grey Cast Iron	灰鑄鐵 Grey Cast Iron	≤150	≤500	55-85	0.07-0.105	0.105-0.154	0.014-0.035	0.035-0.07
		灰鑄鐵(熱處理) Grey Cast Iron (Heat Treated)	150-300	500-1000	55-85	0.07-0.105	0.105-0.154	0.014-0.035	0.035-0.07
	銅 Copper	短屑、黃銅、青銅 Short Chips、Brass、Bronze	≤200	≤700	—	0.07-0.21	0.042-0.07	0.021-0.042	0.042-0.07
<b>N</b>	鋁 / 鎂 Aluminium / Magnesium	鋁、鎂(非合金) Aluminium、Magnesium Non-Alloy	≤100	≤350	70-280	0.07-0.175	0.175-0.21	0.021-0.042	0.042-0.07
		鋁鑄造合金 Aluminium、Cast Alloy (矽 Si<10%)	≤180	≤600	70-280	0.07-0.175	0.175-0.21	0.021-0.042	0.042-0.07
		鋁鑄造合金 Aluminium、Cast Alloy (矽 Si≥10%)	≤180	≤600	70-280	0.07-0.175	0.175-0.21	0.021-0.042	0.042-0.07
<b>K</b>	塑膠 Plastic	熱塑性塑膠 Thermoplastics	—	—	40-80	0.07-0.175	0.175-0.21	0.021-0.042	0.042-0.07
		熱固性塑膠 Thermosetting Plastic	—	—	40-70	0.07-0.175	0.175-0.21	0.021-0.042	0.042-0.07
		纖維增強塑膠 Fiber Reinforce Plastic	—	—	40-55	0.07-0.105	0.105-0.154	0.014-0.035	0.035-0.07

\* f(鑽孔) - 每轉進給(mm)  
\* fz(銑削) - 每齒進給(mm)

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.

**Table 61 CTSE/CTS/CTSIU/CTSEU/CTHI/CTHIU 鎢鋼直刃/螺旋銑牙刀(鍍膜)切削條件表**

**SOLID CARBIDE THREAD TOOL MILLING CONDITION TABLE**

材料種類 Material Group	工件材料 Material	布式硬度 HB	直刃Straight		螺旋Helix		
			Vc (m/min)	FEED (mm)	Vc (m/min)	FEED (mm)	
P	非合金鋼 Unalloyed steels	低碳(C=0.1~0.25%) Low carbon	125	40-140	0.008-0.08	65-200	0.024-0.12
		中碳(C=0.25~0.55%) Medium carbon	150	40-110	0.008-0.064	65-185	0.024-0.08
		高碳(C=0.55~0.85%) High carbon	170	40-100	0.008-0.04	65-160	0.024-0.064
	低合金鋼(含量5%) Low alloy steels	易切的 Non hardened	180	50-140	0.024-0.06	50-145	0.024-0.08
		調質的 Hardened	275	50-130	0.024-0.06	50-135	0.024-0.056
		調質的 Hardened	350	50-130	0.004-0.008	50-130	0.008-0.024
	高合金鋼(含量>5%) High alloy steels	退火的 Annealed	200	30-70	0.008-0.024	30-80	0.024-0.04
		淬硬的 Hardened	325	20-60	0.004-0.008	25-65	0.008-0.024
鑄鋼 Cast steels	低合金鋼(含量≤5%) Low alloy	200	60-160	0.008-0.024	65-200	0.024-0.08	
	高合金鋼(含量>5%) High alloy	225	50-120	0.004-0.008	50-135	0.008-0.024	
M	鐵素不鏽鋼 Stainless steels Ferritic	易切的 Non hardened	200	40-110	0.008-0.04	50-120	0.032-0.08
		淬硬的 Hardened	330	40-90	0.004-0.008	50-95	0.008-0.04
	奧氏不鏽鋼 Stainless steels Austenitic	奧氏 Austenitic	180	50-100	0.006-0.016	50-110	0.032-0.08
		優良奧氏 Super Austenitic	200	40-100	0.006-0.016	50-105	0.032-0.08
	鐵素鑄造不鏽鋼 Stainless steels Cast Ferritic	易切的 Non hardened	200	40-120	0.008-0.024	50-130	0.032-0.08
		淬硬的 Hardened	330	40-80	0.004-0.008	50-90	0.024-0.04
奧氏鑄造不鏽鋼 Stainless steels Cast Austenitic	奧氏 Austenitic	200	40-110	0.008-0.024	50-120	0.032-0.08	
	淬硬的 Hardened	330	40-70	0.008-0.024	50-80	0.024-0.04	
K	球墨鑄鐵 Malleable Cast Iron	鐵素(短屑) Ferritic(short chips)	130	50-120	0.004-0.008	50-55	0.008-0.024
		珠光(長屑) Pearlitic(long chips)	230	40-110	0.004-0.008	50-120	0.024-0.04
	灰鑄鐵 Grey Cast Iron	低抗拉強度 Low tensile strength	180	40-110	0.006-0.016	55-130	0.02-0.08
		高抗拉強度 High tensile strength	260	30-90	0.004-0.008	30-95	0.024-0.04
可鍛造鑄鐵 Nodular SG Iron	鐵素 Ferritic	160	30-80	0.006-0.016	30-90	0.04-0.08	
	珠光 Pearlitic	260	30-70	0.004-0.12	30-80	0.024-0.04	
N	可鍛壓鋁合金 Aluminium Alloys Wrought	鍛造 Non aging	60	120-200	0.04-0.12	160-240	0.08-0.2
		時效處理 Aged	100	80-180	0.024-0.12	120-200	0.08-0.16
	鋁合金 Aluminium Alloys	鑄造 Cast	75	60-120	0.04-0.12	80-160	0.08-0.16
		鑄造和時效 Cast & Aged	90	70-130	0.24-0.08	95-175	0.08-0.12
	鋁合金 Aluminium Alloys	鑄鋁，含矽量13~22% Cast Si	130	120-200	0.04-0.12	160-240	0.08-0.16
銅及鋁合金 Copper & Aluminium Alloys	黃銅 Brass	90	120-200	0.04-0.12	160-240	0.08-0.2	
	青銅、紫銅 Bronze & non leaded copper	100	80-180	0.024-0.08	120-200	0.08-0.16	
S	高溫合金 High temperature Alloys	退火的(鐵基) Annealed(Iron based)	200	20-40	0.006-0.016	25-50	0.032-0.08
		時效的(鐵基) Aged(Iron based)	280	15-30	0.004-0.008	15-40	0.008-0.024
		退火的(鎳或鈷基) Annealed(Nickel or Cobalt based)	250	10-20	0.004-0.008	10-30	0.008-0.024
		時效的(鎳或鈷基) Aged(Nickel or Cobalt based)	350	12-20	0.004-0.008	10-25	0.008-0.024
	鈦合金 Titanium Alloys	純鈦(99.5%) Pure(99.5% Ti)	400Rm	20-60	0.006-0.016	30-65	0.024-0.04
		α+β 合金 α+β alloys	1050Rm	15-40	0.006-0.016	15-40	0.024-0.04
H	超硬鋼 Extra Hard Steel	調質鋼 Hardened & Tempered	45-50HRC	10-30	0.002-0.005	10-35	0.004-0.008
			51-55HRC	10-20	0.002-0.005	10-30	0.004-0.008

\* 註：刀具「切入進給量」建議採取低於「螺紋切削時進給量」60%。  
\* Note : At tool entry, set the Feed (mm/tooth) to 60% lower than the threading Feed.

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.



**Table 62** 鎢鋼鋸片 切削條件表

**MICRO GRAIN CARBIDE SLITTING SAWS-MILLING CONDITION TABLE**

加工材質 WORKING MATERIAL	碳素鋼/合金鋼 CARBON STEEL / ALLOY STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		調質鋼 HARDENED STEEL		銅, 鋁 COPPER ALUMINUM		不銹鋼 STAINLESS STEEL		鑄鐵 CAST IRON	
MATERIAL CODE	(S45C,S50C,SCM)		(SCM,SKT,SKD)		(SCM,SKT,SKD)		(SKT,SKD)		—		(SUS304)		FC/FCD	
HARDNESS GRADE	HRC<20		HRC20~30		HRC30~40		HRC45~以上		—		—		—	
切削速度 Vc	68M/min		59M/min		45M/min		28M/min		148M/min		59M/min		68M/min	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
30MM	740	280	630	240	470	180	310	120	1590	620	630	240	740	280
45MM	490	280	420	240	310	180	210	120	1060	620	420	240	490	220
70MM	310	330	270	280	200	210	130	140	680	710	270	280	310	330
75MM	290	330	250	280	190	210	120	140	630	710	250	280	290	330
100MM	220	370	190	320	140	230	90	150	470	800	190	320	220	370
125MM	170	360	150	310	110	220	70	140	380	790	150	310	170	360

**Table 63** 高速鋼(高鈷鋼)鋸片 切削條件表

**HSS & HSS-Co SLITTING SAWS-MILLING CONDITION TABLE**

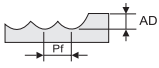
加工材質 WORKING MATERIAL	碳素鋼/合金鋼 CARBON STEEL / ALLOY STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		調質鋼 HARDENED STEEL		銅, 鋁 COPPER ALUMINUM		不銹鋼 STAINLESS STEEL		鑄鐵 CAST IRON	
MATERIAL CODE	(S45C,S50C,SCM)		(SCM,SKT,SKD)		(SCM,SKT,SKD)		(SKT,SKD)		—		(SUS304)		FC/FCD	
HARDNESS GRADE	HRC<20		HRC20~30		HRC30~40		HRC45~以上		—		—		—	
切削速度 Vc	48M/min		41M/min		32M/min		20M/min		104M/min		41M/min		48M/min	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
30MM	520	200	440	170	330	130	220	80	1110	430	440	170	520	200
45MM	340	230	290	170	220	130	150	80	740	430	290	170	340	150
70MM	220	230	190	200	140	150	90	100	480	500	190	200	220	230
75MM	200	260	175	200	130	150	80	100	440	500	175	200	200	230
100MM	150	250	130	220	100	160	60	105	330	560	130	220	150	260
125MM	120	250	105	220	80	150	50	100	270	550	105	220	120	252

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.

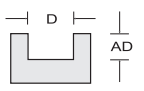
**Table 64 極細鎢鋼球型銑刀-2刃/4刃(鍍膜)切削條件表**

**SOLID CARBIDE END MILLS-MILLING CONDITION TABLE  
MEBYS2-A, MEBYM2-A, MEBY2-A, MEBYM4-A, MEBY4-A**

加工材質 WORKING MATERIAL	碳素鋼/合金鋼 CARBON STEEL / ALLOY STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		調質鋼 HARDENED STEEL		調質鋼 HARDENED STEEL		不銹鋼 STAINLESS STEEL		鑄鐵 CAST IRON	
MATERIAL CODE	(S45C,S50C,SCM)		(SCM,SKT,SKD)		(SCM,SKT,SKD)		(SKT,SKD)		(SKT,SKD)		(SUS304)		FC/FCD	
HARDNESS GRADE	HRC <20		HRC 20~30		HRC 30~40		HRC 40~50		HRC 50~60		—		—	
切削速度 Vc	72M/min		54M/min		34M/min		29M/min		22M/min		54M/min		72M/min	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
	0.5R	36,000	4,280	32,400	3,380	21,600	2,570	14,400	1,720	10,800	1,280	32,400	3,380	45,000
1.0R	20,520	2,440	16,200	1,690	11,700	1,390	8,200	980	6,160	730	16,200	1,690	22,860	3,810
2.0R	11,520	1,370	8,640	900	6,300	750	4,600	550	3,460	410	8,640	900	11,520	1,920
3.0R	7,560	900	5,760	600	3,780	450	3,020	360	2,270	270	5,760	600	7,560	1,260
4.0R	5,760	690	4,320	450	2,880	340	2,300	270	1,730	205	4,320	450	5,760	960
5.0R	4,590	550	3,420	360	2,160	255	1,830	215	1,380	160	3,420	360	4,590	765
6.0R	3,780	450	2,880	300	1,800	210	1,520	180	1,140	130	2,880	300	3,780	630
8.0R	3,200	380	2,400	250	1,560	180	1,280	150	960	110	2,400	250	3,200	530
10.0R	2,600	310	1,920	200	1,300	150	1,040	120	780	90	1,920	200	2,600	430
切削量 Milling Amount (mm)	Ad=0.05D, Pf=0.1D													
														

**Table 65 MECY(M)2-A極細鎢鋼圓鼻銑刀-小柄型/標準型-2刃(鍍膜) 切削條件表**

**SOLID CARBIDE END MILLS - MILLING CONDITION TABLE**

加工材質 WORKING MATERIAL	碳素鋼/合金鋼 CARBON STEEL / ALLOY STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		調質鋼 HARDENED STEEL		調質鋼 HARDENED STEEL		不銹鋼 STAINLESS STEEL		鑄鐵 CAST IRON			
MATERIAL CODE	(S45C,S50C,SCM)		(SCM,SKT,SKD)		(SCM,SKT,SKD)		(SKT,SKD)		(SKT,SKD)		(SUS304)		FC/FCD			
HARDNESS GRADE	HRC<20		HRC20~30		HRC30~40		HRC45~55		HRC55~60		—		—			
切削速度 Vc	95M/min		75M/min		63M/min		38M/min		28M/min		75M/min		110M/min			
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M (*0.8)	FEED (mm/min)	R.P.M	FEED (mm/min)		
	1MM	22,400	140	19,150	110	16,130	70	8,960	60	6,720	40	19,150	110	28,220	300	
2MM	12,100	180	9,680	140	8,060	100	4,840	70	3,630	50	9,680	140	14,110	330		
3MM	8,460	180	6,450	150	5,240	100	3,360	70	2,500	50	6,450	150	9,680	330		
4MM	6,050	180	4,840	150	4,030	110	2,420	70	1,820	60	4,840	150	7,260	330		
5MM	5,040	200	3,830	150	3,220	110	2,020	80	1,510	60	3,830	150	5,650	360		
6MM	4,030	200	3,220	150	2,620	110	1,620	80	1,210	60	3,220	150	4,840	400		
8MM	3,020	200	2,420	180	2,020	120	1,210	80	900	60	2,420	180	3,630	400		
10MM	2,420	200	1,910	180	1,620	140	980	80	730	60	1,910	180	2,820	420		
12MM	2,020	200	1,620	180	1,340	140	810	80	610	60	1,620	180	2,420	450		
14MM	2,020	220	1,520	190	1,280	140	810	90	610	60	1,520	190	2,240	500		
16MM	1,740	250	1,340	200	1,120	160	700	100	530	70	1,340	200	2,020	540		
18MM	1,740	250	1,180	200	980	160	700	100	530	70	1,180	200	1,790	540		
20MM	1,340	250	1,070	200	900	160	540	100	400	70	1,070	200	1,570	540		
切削量 Milling Amount (mm)	AD=0.5D(D<3, AD ≤ 0.25D)						AD=0.1D(D<3, AD ≤ 0.05D)						AD=0.5D(D<3, AD ≤ 0.25D)			
																

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.

**Table 66 MECY4-A,極細鎢鋼圓鼻銑刀-標準型-4刃(鍍膜) 切削條件表**

**SOLID CARBIDE END MILLS - MILLING CONDITION TABLE**

加工材質 WORKING MATERIAL	碳素鋼/合金鋼 CARBON STEEL / ALLOY STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		調質鋼 HARDENED STEEL		調質鋼 HARDENED STEEL		不銹鋼 STAINLESS STEEL		鑄鐵 CAST IRON	
MATERIAL CODE	(S45C,S50C,SCM)		(SCM,SKT,SKD)		(SCM,SKT,SKD)		(SKT,SKD)		(SKT,SKD)		(SUS304)		FC/FCD	
HARDNESS GRADE	HRC<20		HRC20~30		HRC30~40		HRC45~55		HRC55~60		—		—	
切削速度 Vc	94M/min		75M/min		63M/min		37M/min		28M/min		75M/min		110M/min	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M (*0.8)	FEED (mm/min)	R.P.M	FEED (mm/min)
1MM	5,040	550	6,450	380	5,240	180	3,380	220	2,580	170	6,450	380	9,680	1,010
2MM	6,050	550	4,840	380	4,030	180	2,420	220	1,820	170	4,840	380	7,260	1,210
3MM	5,040	550	3,830	380	3,220	180	2,020	220	1,510	170	3,830	380	5,650	1,210
4MM	4,030	550	3,220	380	2,620	180	1,620	220	1,210	170	3,220	380	4,840	1,210
5MM	3,020	550	2,420	380	2,020	200	1,210	220	900	170	2,420	380	3,630	1,210
6MM	2,420	570	1,910	400	1,620	200	960	230	730	180	1,910	400	2,820	1,310
8MM	2,020	570	1,620	400	1,340	200	810	230	610	180	1,620	400	2,420	1,410
10MM	2,020	620	1,520	450	1,280	220	810	260	610	190	1,520	450	2,240	1,570
12MM	1,740	670	1,340	470	1,120	220	700	270	530	200	1,340	470	2,020	1,680
14MM	1,570	670	1,180	470	980	220	620	270	470	200	1,180	470	1,790	1,680
16MM	1,340	670	1,070	470	900	220	540	270	400	200	1,070	470	1,570	1,790
18MM	1,740	250	1,180	200	980	160	700	100	530	70	1,180	200	1,790	540
20MM	1,340	250	1,070	200	900	160	540	100	400	70	1,070	200	1,570	540
切削量 Milling Amount (mm)	AD=1.5D, RD ≤ 0.1D						AD=1D, RD ≤ 0.05D						AD=1.5D, RD ≤ 0.1D	



**Table 67 MEV4-A極細鎢鋼平銑刀-變導型-4刃(鍍膜) 切削條件表**

**SOLID CARBIDE END MILLS - MILLING CONDITION TABLE**

**溝加工 SLOTTING**

加工材質 WORKING MATERIAL	軟鋼/碳素鋼/鑄鐵 MILD STEEL / CARBON STEEL / CAST IRON		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		預硬鋼/調質鋼 PREHARDENED STEELS/HARDENED STEELS		不銹鋼 STAINLESS STEEL		鈦合金鋼 TITANIUM ALLOY STEELS	
MATERIAL CODE	(SS400, S55C,FC250)		(SCM,SKT,SKD)		(SKT,SKD)		(SUS304)		—	
HARDNESS GRADE	~750N/mm2		~30HRC		30~38HRC		38~45HRC		—	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	7,880	550	6,410	510	5,890	390	5,590	350	5,400	330
4MM	5,810	550	4,800	580	4,430	390	4,160	390	4,050	370
5MM	4,650	550	3,830	570	3,530	410	3,340	410	3,230	400
6MM	3,860	560	3,190	480	2,960	430	2,780	430	2,700	410
8MM	2,890	450	2,400	410	2,210	410	2,100	390	2,030	380
10MM	2,330	440	1,910	410	1,760	360	1,690	360	1,610	340
12MM	1,950	420	1,610	360	1,460	350	1,390	330	1,350	330
切削量 Milling Amount (mm)	 AD ≤ 1D AD MAX = 9mm						AD ≤ 0.5D		AD ≤ 0.2D	

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.

**Table 68 MEV4-A極細鎢鋼平銑刀-變導型-4刃(鍍膜) 切削條件表**

**SOLID CARBIDE END MILLS - MILLING CONDITION TABLE**

**側加工SIDE MILLING**

加工材質 WORKING MATERIAL	軟鋼/碳素鋼/鑄鐵 MILD STEEL / CARBON STEEL / CAST IRON		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		預硬鋼/調質鋼 PREHARDENED STEELS/HARDENED STEEL		不鏽鋼 STAINLESS STEEL		鈦合金鋼 TITANIUM ALLOY STEELS	
MATERIAL CODE	(SS400, S55C, FC250)		(SCM, SKT, SKD)		(SKT, SKD)		(SUS304)		—	
HARDNESS GRADE	~750N/mm2		~30HRC		30~38HRC		38~45HRC		—	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	9,380	830	7,160	630	6,080	470	5,740	460	5,550	410
4MM	7,310	900	5,660	740	4,800	510	4,540	530	4,390	470
5MM	5,960	980	4,610	790	3,940	540	3,710	580	3,600	500
6MM	5,060	1,200	3,940	900	3,340	670	3,150	630	3,040	520
8MM	3,790	1,160	2,960	830	2,510	610	2,360	610	2,290	510
10MM	3,080	1,090	2,400	790	2,030	540	1,910	540	1,840	480
12MM	2,550	1,050	1,990	750	1,690	540	1,580	510	1,540	450
切削量 Milling Amount (mm)										

**Table 69 MEVC4-A極細鎢鋼圓鼻銑刀-變導型-4刃(鍍膜) 切削條件表**

**SOLID CARBIDE END MILLS - MILLING CONDITION TABLE**

**溝加工 SLOTTING**

加工材質 WORKING MATERIAL	軟鋼/碳素鋼/鑄鐵 MILD STEEL / CARBON STEEL / CAST IRON		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		預硬鋼/調質鋼 PREHARDENED STEEL /HARDENED STEEL		不鏽鋼 STAINLESS STEEL		鈦合金鋼 TITANIUM ALLOY STEELS	
MATERIAL CODE	(SS400, S55C, FC250)		(SCM, SKT, SKD)		(SKT, SKD)		(SUS304)		—	
HARDNESS GRADE	~750N/mm2		~30HRC		30~38HRC		38~45HRC		—	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	7,880	550	6,410	510	5,890	390	5,590	350	5,400	330
4MM	5,810	550	4,800	580	4,430	390	4,160	390	4,050	370
5MM	4,650	550	3,830	570	3,530	410	3,340	410	3,230	400
6MM	3,860	560	3,190	480	2,960	430	2,780	430	2,700	410
8MM	2,890	450	2,400	410	2,210	410	2,100	390	2,030	380
10MM	2,330	440	1,910	410	1,760	360	1,690	360	1,610	340
12MM	1,950	420	1,610	360	1,460	350	1,390	330	1,350	330
切削量 Milling Amount (mm)										

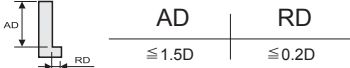
以上數據為建議值，適當的條件仍需視機台狀況，夾治具品質，潤滑冷卻系統...等而改變。

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

**Table 70 MEVC4-A極細鎢鋼圓鼻銑刀-變導型-4刃(鍍膜) 切削條件表**

**SOLID CARBIDE END MILLS - MILLING CONDITION TABLE**

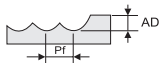
**側加工SIDE MILLING**

加工材質 WORKING MATERIAL	軟鋼/碳素鋼/鑄鐵 MILD STEEL / CARBON STEEL / CAST IRON		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		預硬鋼/調質鋼 PREHARDENED STEEL /HARDENED STEEL		不鏽鋼 STAINLESS STEEL		鈦合金鋼 TITANIUM ALLOY STEELS	
MATERIAL CODE	(SS400, S55C, FC250)		(SCM, SKT, SKD)		(SKT, SKD)		(SUS304)		—	
HARDNESS GRADE	~750N/mm2		~30HRC		30~38HRC		38~45HRC		—	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	9,380	830	7,160	630	6,080	470	5,740	460	5,550	410
4MM	7,310	900	5,660	740	4,800	510	4,540	530	4,390	470
5MM	5,960	980	4,610	790	3,940	540	3,710	580	3,600	500
6MM	5,060	1,200	3,940	900	3,340	670	3,150	630	3,040	520
8MM	3,790	1,160	2,960	830	2,510	610	2,360	610	2,290	510
10MM	3,080	1,090	2,400	790	2,030	540	1,910	540	1,840	480
12MM	2,550	1,050	1,990	750	1,690	540	1,580	510	1,540	450
切削量 Milling Amount (mm)	 $AD$   $RD$ $\leq 1.5D$   $\leq 0.2D$						$AD$   $RD$ $\leq 1.5D$   $\leq 0.1D$		$AD$   $RD$ $\leq 1.5D$   $\leq 0.05D$	

**Table 71 MEVB4-A極細鎢鋼球型銑刀-變導型-4刃(鍍膜) 切削條件表**

**SOLID CARBIDE END MILLS - MILLING CONDITION TABLE**

**溝加工 SLOTTING**

加工材質 WORKING MATERIAL	軟鋼/碳素鋼/鑄鐵 MILD STEEL / CARBON STEEL / CAST IRON		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		預硬鋼/調質鋼 PREHARDENED STEELS /HARDENED STEEL		不鏽鋼 STAINLESS STEEL		鈦合金鋼 TITANIUM ALLOY STEELS		耐熱合金鋼 HEAT RESISTANT ALLOY	
MATERIAL CODE	(SS400, S55C, FC250)		(SCM, SKT, SKD)		(SKT, SKD, NAK55)		(SUS304)		—		—	
HARDNESS GRADE	HRC <20		HRC 20~30		HRC 30~40		HRC 38~45		HRC 45~55		—	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
2.5R	5,565	910	4,305	735	3,675	508	3,465	543	3,360	469	1,715	172
3.0R	4,725	1,120	3,675	840	3,115	623	2,940	585	2,835	487	1,470	175
4.0R	3,535	1,085	2,765	770	2,345	571	2,205	567	2,135	473	1,120	158
5.0R	2,870	1,015	2,240	735	1,890	508	1,785	501	1,715	445	875	151
6.0R	2,380	980	1,855	700	1,575	504	1,470	473	1,435	424	735	147
8.0R	1,785	840	1,400	658	1,190	445	1,120	389	1,085	354	536	147
10.0R	1,435	690	1,120	529	945	413	875	361	875	322	445	140
切削量 Milling Amount (mm)	AD=1.0D, Pf=0.5D						AD=1.0D, Pf=0.4D		AD=1.0D, Pf=0.2D			
												


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.

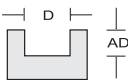
**Table 72** CEXSH3 鎢鋼鋁用銑刀-強力型-3刃(白刀) 切削條件表

**SOLID CARBIDE END MILLS - MILLING CONDITION TABLE**

**Side Milling側面切削**

加工材質 WORKING MATERIAL	鋁合金鑄件/壓鑄 <Si 13% Aluminum Alloy Casting /Die Casting		銅合金 Copper Alloy	
MATERIAL CODE	-		C1100	
HARDNESS GRADE	-		-	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	18,000	810	7,200	290
4MM	13,500	950	5,400	320
5MM	10,800	990	4,320	340
6MM	9,000	1,080	3,600	360
8MM	7,200	1,170	2,700	410
10MM	5,760	1,260	2,030	430
12MM	4,680	1,350	1,710	460
16MM	3,510	1,350	1,260	460
切削量 Milling Amount (mm)	AD=1.5D RD=0.1D			

**Slotting槽切削**


加工材質 WORKING MATERIAL	鋁合金鑄件/壓鑄 <Si 13% Aluminum Alloy Casting /Die Casting		銅合金 Copper Alloy	
MATERIAL CODE	-		C1100	
HARDNESS GRADE	-		-	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	17,100	590	7,110	270
4MM	13,050	620	5,310	290
5MM	10,350	630	4,230	320
6MM	8,100	720	3,510	330
8MM	7,160	750	2,610	380
10MM	5,670	850	2,070	410
12MM	4,590	900	1,710	440
16MM	3,470	880	1,260	430
切削量 Milling Amount (mm)	AD=0.5D D=1.0D			

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.

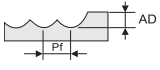
**Table 73 MEN2-A 極細鎢鋼立銑刀-2刃(鍍膜) 切削條件表**

**SOLID CARBIDE END MILLS--- MILLING CONDITION TABLE**

加工材質 WORKING MATERIAL	碳素鋼/合金鋼 CARBON STEEL / ALLOY STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		調質鋼 HARDENED STEEL		銅, 鋁 COPPER ALUMINUM		不銹鋼 STAINLESS STEEL		鑄鐵 CAST IRON			
MATERIAL CODE	(S45C,S50C,SCM)		(SCM,SKT,SKD)		(SCM,SKT,SKD)		(SKT,SKD)		(SKT,SKD)		(SUS304)		FC/FCD			
HARDNESS GRADE	HRC <20		HRC 20~30		HRC 30~40		HRC 45~55		HRC 55~60		—		—			
切削速度 Vc	102M/min		81M/min		67M/min		40M/min		30M/min		80M/min		118M/min			
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)		
	1MM	11,340	130	25,650	110	21,600	70	12,000	60	9,000	40	25,650	110	37,800	300	
2MM	16,200	170	12,960	130	10,800	90	6,480	70	4,860	50	12,960	130	18,900	320		
3MM	11,340	170	8,640	150	7,020	100	4,500	70	3,350	50	8,640	150	12,960	320		
4MM	8,100	180	6,480	150	5,400	110	3,240	70	2,430	60	6,480	150	9,720	320		
5MM	6,750	200	5,130	150	4,320	110	2,700	80	2,030	60	5,130	150	7,560	360		
切削量 Milling Amount (mm)	AD=0.3D(D<3, AD<=0.15D)						AD=0.06D(D<3, AD<=0.03D)						AD=0.3D(D<3, AD<=0.15D)			
																

**Table 74 MEBN2-A 極細鎢鋼球形銑刀-2刃(鍍膜) 切削條件表**

**SOLID CARBIDE END MILLS--- MILLING CONDITION TABLE**

加工材質 WORKING MATERIAL	碳素鋼/合金鋼 CARBON STEEL / ALLOY STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		合金鋼/工具鋼 ALLOY STEEL / TOOL STEEL		調質鋼 HARDENED STEEL		銅, 鋁 COPPER ALUMINUM		不銹鋼 STAINLESS STEEL		鑄鐵 CAST IRON	
MATERIAL CODE	(S45C,S50C,SCM)		(SCM,SKT,SKD)		(SCM,SKT,SKD)		(SKT,SKD)		(SKT,SKD)		(SUS304)		FC/FCD	
HARDNESS GRADE	HRC <20		HRC 20~30		HRC 30~40		HRC 40~50		HRC 50~60		—		—	
切削速度 Vc	180M/min		158M/min		109M/min		79M/min		60M/min		158M/min		214M/min	
外徑 DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
	0.5R	54,000	675	48,600	570	32,400	435	21,600	270	16,200	202	48,600	570	67,500
1.0R	30,780	900	24,300	735	17,550	570	12,300	360	9,240	270	24,300	735	34,290	1,350
2.0R	17,280	1,080	12,960	840	9,450	652	6,900	435	5,190	324	12,960	840	17,280	1,545
3.0R	11,340	1,350	8,640	900	5,670	675	4,530	540	3,410	405	8,640	900	11,340	1,890
切削量 Milling Amount (mm)	AD=0.03D, Pf=0.06D													
														

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.