

N620 奈米鎢鋼平銑刀- 短刃型- 2刃

N620 NANO CARBIDE END MILLS- Square Type- Short Flute- With Corner Radii- 2F

· NESDM20000A

· NESD20000A

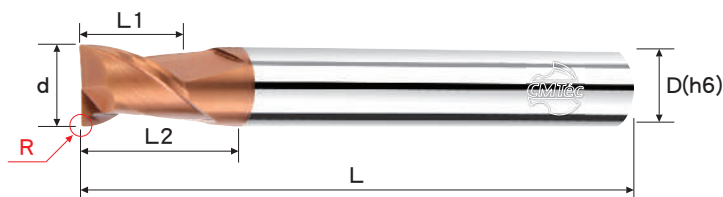
刃徑 d	公差 Tolerance
$\phi < 3$	0 ~ -0.015
$3 \leq \phi \leq 10$	0 ~ -0.03
$10 < \phi$	0 ~ -0.03

半徑 R	公差 Tolerance
R	± 0.02

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



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刃徑 d	R角 R	刃長 L1	有效長 L2	全長 L	柄徑 D	刃數 F	鍍膜訂單編號 Coated Order No.
1.0	0.1R	1	2	50	4	2	NESDM20100A
2.0	0.1R	2	4	50	4	2	NESDM20200A
3.0	0.1R	3	6	50	4	2	NESDM20300A
4.0	0.2R	4	8	50	4	2	NESDM20400A
6.0	0.2R	6	12	50	6	2	NESD20600A
8.0	0.3R	8	16	60	8	2	NESD20800A
10.0	0.3R	10	20	75	10	2	NESD21000A
12.0	0.3R	12	24	75	12	2	NESD21200A

N620 奈米鎢鋼平銑刀- 短刃型- 3刃

N620 NANO CARBIDE END MILLS- Square Type- Short Flute- With Corner Radii- 3F

· NESD30000A

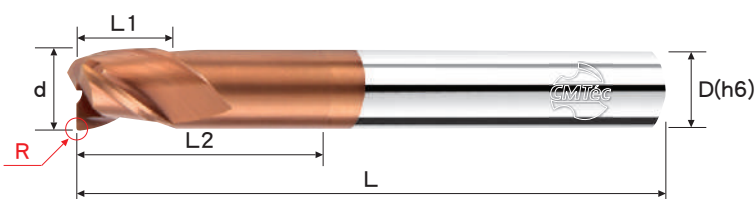
刃徑 d	公差 Tolerance
$\phi < 3$	0 ~ -0.015
$3 \leq \phi \leq 10$	0 ~ -0.03
$10 < \phi$	0 ~ -0.03

半徑 R	公差 Tolerance
R	± 0.02

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



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刃徑 d	R角 R	刃長 L1	有效長 L2	全長 L	柄徑 D	刃數 F	鍍膜訂單編號 Coated Order No.
3.0	0.1R	3	9	50	6	3	NESD30300A
4.0	0.2R	4	12	50	6	3	NESD30400A
6.0	0.2R	6	18	50	6	3	NESD30600A
8.0	0.3R	8	24	60	8	3	NESD30800A
10.0	0.3R	10	30	75	10	3	NESD31000A
12.0	0.3R	12	36	75	12	3	NESD31200A

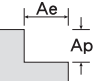
→ 切削條件表
Cutting Condition P.551, 552

→ 技術資料
Technical Data P.622

Table 33

M520 極細鎢鋼圓鼻銑刀- 4刃(鍍膜) 切削條件表

SOLID CARBIDE END MILLS- CUTTING CONDITION TABLE

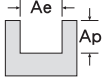
加工材質 Material	碳素鋼 Carbon Steels		合金鋼 Alloy Steels		合金鋼 Alloy Steels		調質鋼 Hardened Steels		調質鋼 Hardened Steels		不銹鋼 Stainless Steels		鑄鐵 Cast Iron	
工件料號 Material Code	S35C,S45C,S50C		SCM,SKT,SKD		SCM,SKT,SKD		SKT,SKD		SKT,SKD		SUS304		FC,FCD	
硬度 Hardness	HRC<20		HRC20~30		HRC30~45		HRC45~55		HRC55~63		—		HRC<30	
切削速度 Vc	94m/min		75m/min		63m/min		37m/min		28m/min		75m/min		110m/min	
外徑 Diameter	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)
3mm	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 Cutting Amount (mm)	Ap=1.5D Ae≤0.1D 						Ap=1D Ae≤0.05D 						Ap=1.5D Ae≤0.1D 	

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

Table 34

N620 奈米鎢鋼短刃型銑刀- 2刃(鍍膜) 切削條件表

SOLID CARBIDE END MILLS- CUTTING CONDITION TABLE

加工材質 Material	合金鋼 Alloy Steels		合金鋼 Alloy Steels		調質鋼 Hardened Steels		調質鋼 Hardened Steels		鑄鐵 Cast Iron	
工件料號 Material Code	SCM,SKT,SKD		SCM,SKT,SKD		SKT,SKD		SKT,SKD		FC,FCD	
硬度 Hardness	HRC20~30		HRC30~45		HRC45~55		HRC55~63		HRC<30	
切削速度 Vc	118m/min		108m/min		68m/min		48m/min		118m/min	
外徑 Diameter	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)
1mm	28,310	510	25,245	405	18,910	270	12,570	120	29,900	540
2mm	15,345	520	13,365	405	9,800	270	6,630	120	15,740	550
3mm	10,490	570	8,415	405	6,290	280	4,750	140	10,490	600
4mm	8,670	560	7,080	400	5,100	270	3,720	135	8,670	560
6mm	6,290	530	5,250	530	3,660	250	2,630	130	6,290	530
8mm	4,750	530	3,960	380	2,770	250	1,980	130	4,750	530
10mm	3,760	530	3,170	380	2,230	250	1,580	130	3,760	530
12mm	3,170	530	2,620	380	1,840	250	1,340	130	3,170	530
切削量 Cutting Amount (mm)	D≤3, Ap=0.15D D>3, Ap=0.2D D≤6, Ap=0.1D D>6, Ap=0.15D 									

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

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

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

Table 35

N620 奈米鎢鋼短刃型銑刀- 3刃(鍍膜) 切削條件表

SOLID CARBIDE END MILLS- CUTTING CONDITION TABLE

側銑加工 Side Milling

溝銑加工 Slot Milling

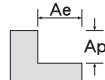
加工材質 Material	合金鋼 Alloy Steels		合金鋼 Alloy Steels		調質鋼 Hardened Steels		調質鋼 Hardened Steels		鑄鐵 Cast Iron		合金鋼 Alloy Steels	合金鋼 Alloy Steels		調質鋼 Hardened Steels		鑄鐵 Cast Iron		
工件料號 Material Code	SCM,SKT,SKD		SCM,SKT,SKD		SKT,SKD		SKT,SKD		FC,FCD		SCM,SKT,SKD	SCM,SKT,SKD		SKT,SKD		FC,FCD		
硬度 Hardness	HRC20~30		HRC30~45		HRC45~55		HRC55~63		HRC<30		HRC20~30	HRC30~45		HRC45~55		HRC<30		
切削速度 Vc	179m/min		179m/min		134m/min		90m/min		179m/min		90m/min	89m/min		58m/min		107m/min		
外徑 Diameter	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)
3mm	19,080	1,260	19,080	790	14,310	480	9,540	310	19,080	1,575	9,540	625	8,595	355	6,210	256	11,430	945
4mm	14,310	1,305	14,310	820	10,710	520	7,160	330	14,310	1,620	7,155	652	6,435	373	4,635	270	8,595	990
6mm	9,540	1,440	9,540	945	7,155	550	4,770	360	9,540	1,800	4,770	747	4,275	409	3,105	297	5,715	1,080
8mm	7,155	1,305	7,155	895	5,355	500	3,600	330	7,155	1,620	3,600	729	3,240	396	2,340	270	4,275	945
10mm	5,715	1,170	5,715	880	4,275	480	2,880	280	5,715	1,440	3,600	706	2,565	378	1,845	234	3,420	855
12mm	4,770	1,170	4,770	860	3,600	450	2,385	280	4,770	1,440	2,385	661	2,160	364	1,530	234	2,880	855
切削量 Cutting Amount (mm)	D≤6, Ap=1D, Ae=0.02D D>6, Ap=1D, Ae=0.05D 										Ap=0.3D Ap(Max)=3mm 							

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

Table 36

N620 奈米鎢鋼短刃型銑刀- 4刃(鍍膜) 切削條件表

SOLID CARBIDE END MILLS- CUTTING CONDITION TABLE

加工材質 Material	合金鋼 Alloy Steels		合金鋼 Alloy Steels		調質鋼 Hardened Steels		調質鋼 Hardened Steels		鑄鐵 Cast Iron	
工件料號 Material Code	SCM,SKT,SKD		SCM,SKT,SKD		SKT,SKD		SKT,SKD		FC,FCD	
硬度 Hardness	HRC20~30		HRC30~45		HRC45~55		HRC55~63		HRC<30	
切削速度 Vc	139m/min		139m/min		118m/min		98m/min		158m/min	
外徑 Diameter	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)
3mm	14,750	1,580	14,750	1,440	12,570	1,040	10,490	630	16,830	1,935
4mm	10,990	1,485	10,990	1,340	9,460	980	7,875	570	12,570	1,840
5mm	8,810	1,440	8,810	1,240	7,580	910	6,290	530	10,100	1,640
6mm	7,380	1,340	7,380	1,140	6,290	830	5,250	500	8,415	1,540
8mm	5,500	1,240	5,500	1,040	4,750	760	3,960	500	6,290	1,440
10mm	4,410	1,240	4,410	1,040	3,760	760	3,170	500	5,050	1,440
12mm	3,660	1,240	3,660	1,040	3,170	760	2,630	500	4,210	1,440
切削量 Cutting Amount (mm)	$D \leq 6, A_p = 1D, A_e = 0.02D$ $D > 6, A_p = 1D, A_e = 0.05D$ 									

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

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

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