MG Carbide | AlTiCrN HX

38° 41° | 不等 4 | N 75° | 90°

Type of Operation

Work Material

P	H	M	K	N	S
●	●	●	●	○	○

- P 鋼鐵 Steel
- H 硬化鋼 <38HRC Hardened Steel
- H 硬化鋼 <48HRC Hardened Steel
- M 不銹鋼 Stainless Steel
- K 鑄鐵 Cast Iron
- N 鋁 Aluminium
- N 銅 Copper
- S 鈦合金 Titanium
- S 鎳 Nickel
- S 高溫合金 High Temp Alloys

平刀

Dc 0 -0.02	Lc mm	L mm	d h6
5	13	50	6
6	16	50	6
7	20	60	8
8	20	60	8
9	22	72	10
10	22	72	10
11	26	75	12
12	26	75	12

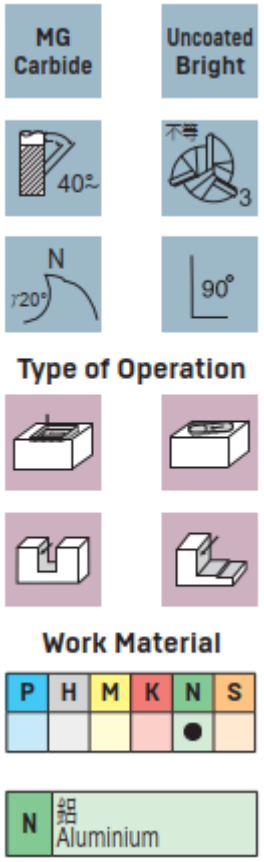
Side Milling 側面切削

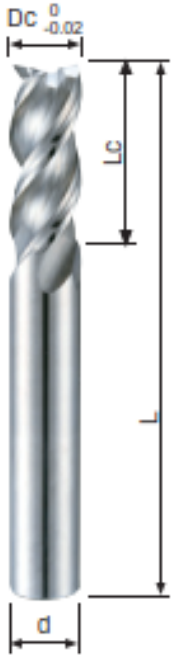
被削材 Work Material		GR.1 碳鋼 Carbon Steel		GR.2 低合金鋼 Low-alloyed Steel (~24HRC)		GR.3 高合金鋼 Hi-alloyed Steel (~30HRC)		GR.4 硬化鋼 Hardened Steel (30~38HRC)		GR.5 硬化鋼 Hardened Steel (38~48HRC)		GR.8 不銹鋼 Stainless Steel		GR.9 鑄鐵 Cast Iron		GR.15 鈦合金 Titanium	
型號 Code No.	刃徑 Dc	RPM 迴轉速度 (min-1)	Feed 進給速度 (mm/min)	RPM 迴轉速度 (min-1)	Feed 進給速度 (mm/min)	RPM 迴轉速度 (min-1)	Feed 進給速度 (mm/min)	RPM 迴轉速度 (min-1)	Feed 進給速度 (mm/min)	RPM 迴轉速度 (min-1)	Feed 進給速度 (mm/min)	RPM 迴轉速度 (min-1)	Feed 進給速度 (mm/min)	RPM 迴轉速度 (min-1)	Feed 進給速度 (mm/min)	RPM 迴轉速度 (min-1)	Feed 進給速度 (mm/min)
E140HX-5	5	4,550	875	4,550	875	3,550	625	2,800	448	2,730	125	2,800	448	4,550	875	2,000	190
E140HX-6	6	3,540	875	3,540	875	2,760	600	2,200	413	2,100	125	2,200	413	3,540	875	1,600	190
E140HX-7	7	3,360	820	3,360	820	2,620	600	2,075	413	2,000	125	2,075	413	3,360	820	1,400	180
E140HX-8	8	3,185	770	3,185	770	2,480	600	1,975	413	1,900	125	1,975	413	3,185	770	1,200	170
E140HX-9	9	3,410	770	3,410	770	2,280	595	1,800	390	1,750	120	1,800	390	3,410	770	1,100	165
E140HX-10	10	3,650	770	3,650	770	2,070	595	1,645	375	1,595	120	1,645	375	3,650	770	1,000	160
E140HX-11	11	2,950	720	2,950	720	1,920	575	1,520	360	1,475	120	1,520	360	2,275	720	900	160
E140HX-12	12	2,275	670	2,275	670	1,770	560	1,410	350	1,365	120	1,410	350	2,275	670	800	160
切入深度 (mm)		ap:1.5D		ap:1.5D		ap:1.5D		ap:1.5D		ap:1.5D		ap:1.5D		ap:1.5D		ap:1.5D	
		ae:0.2D		ae:0.2D		ae:0.2D		ae:0.2D		ae:0.1D		ae:0.2D		ae:0.2D		ae:0.1D	

Slotting 溝切削

被削材 Work Material		GR.1 碳鋼 Carbon Steel		GR.2 低合金鋼 Low-alloyed Steel (~24HRC)		GR.3 高合金鋼 Hi-alloyed Steel (~30HRC)		GR.4 硬化鋼 Hardened Steel (30~38HRC)		GR.5 硬化鋼 Hardened Steel (38~48HRC)		GR.8 不銹鋼 Stainless Steel		GR.9 鑄鐵 Cast Iron		GR.15 鈦合金 Titanium	
型號 Code No.	刃徑 Dc	RPM 迴轉速度 (min-1)	Feed 進給速度 (mm/min)	RPM 迴轉速度 (min-1)	Feed 進給速度 (mm/min)	RPM 迴轉速度 (min-1)	Feed 進給速度 (mm/min)	RPM 迴轉速度 (min-1)	Feed 進給速度 (mm/min)	RPM 迴轉速度 (min-1)	Feed 進給速度 (mm/min)	RPM 迴轉速度 (min-1)	Feed 進給速度 (mm/min)	RPM 迴轉速度 (min-1)	Feed 進給速度 (mm/min)	RPM 迴轉速度 (min-1)	Feed 進給速度 (mm/min)
E140HX-5	5	4,550	775	4,550	775	3,550	525	2,800	348	2,730	125	2,800	348	4,550	775	2,000	160
E140HX-6	6	3,540	775	3,540	775	2,760	500	2,200	313	2,100	125	2,200	313	3,540	775	1,600	145
E140HX-7	7	3,360	710	3,360	710	2,620	500	2,075	313	2,000	125	2,075	313	3,360	710	1,400	130
E140HX-8	8	3,185	650	3,185	650	2,480	500	1,975	313	1,900	125	1,975	313	3,185	650	1,200	120
E140HX-9	9	3,410	660	3,410	660	2,280	495	1,800	300	1,750	120	1,800	300	3,410	660	1,100	130
E140HX-10	10	3,650	670	3,650	670	2,070	490	1,645	288	1,595	120	1,645	288	3,650	670	1,000	145
E140HX-11	11	2,950	615	2,950	615	1,920	475	1,520	280	1,475	120	1,520	280	2,275	615	900	150
切入深度 (mm)		ap:0.5D		ap:0.5D		ap:0.5D		ap:0.5D		ap:0.05D		ap:0.5D		ap:0.5D		ap:0.05D	

平刀





Dc 0 -0.02	Lc mm	L mm	d h6
5	15	50	6
6	18	50	6
8	24	60	8
10	30	72	10
12	36	75	12

Side Milling 側面切削

被削材 Work Material		GR.10 鋁 Aluminium	
切削速度 Vc m/min		400	
型號 Code No.	刃徑 Dc	RPM 迴轉速度 (min-1)	Feed 進給速度 (mm/min)
E143-5	5	25,000	2,200
E143-6	6	21,000	2,400
E143-7	7		
E143-8	8	16,000	2,600
E143-9	9		
E143-10	10	12,700	3,000
E143-12	12	10,600	3,200
切入深度 (mm)		ap:1.5D	
		ae:0.1D	

Slotting 溝切削

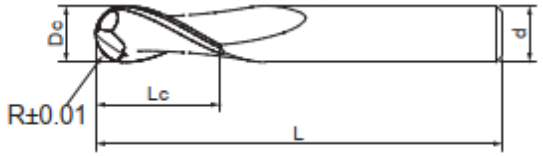
被削材 Work Material		GR.10 鋁 Aluminium	
切削速度 Vc m/min		400	
型號 Code No.	刃徑 Dc	RPM 迴轉速度 (min-1)	Feed 進給速度 (mm/min)
E143-5	5	25,000	1,480
E143-6	6	21,000	1,640
E143-7	7		
E143-8	8	16,000	1,720
E143-9	9		
E143-10	10	12,700	1,940
E143-12	12	10,600	2,100
切入深度 (mm)		0.5D	

球刀

Work Material

P	H	M	K	N	S
●		○	○	●	○

- P 鋼鐵 Steel
- M 不銹鋼 Stainless Steel
- K 鑄鐵 Cast Iron
- N 鋁 Aluminium
- N 銅 Copper
- N 塑膠 Plastics
- S 鈦合金 Titanium
- S 鎳 Nickel

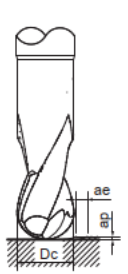


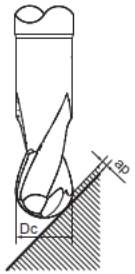
Standard Length

Dc 0 -0.03	R ±0.01	Lc mm	L mm	d h6
6	3R	20	63	6
6.5	3.25R	20	63	8
7	3.5R	20	63	8
7.5	3.75R	20	63	8
8	4R	20	63	8
8.5	4.25R	22	72	10
9	4.5R	22	72	10
9.5	4.75R	22	72	10
10	5R	22	72	10
11	5.5R	26	75	12
12	6R	26	75	12

切削條件

Cutting Conditions





		cutting speed Vc (m/min)	feed per tooth fz(mm)	ae	ap	cutting speed Vc (m/min)	feed per tooth fz(mm)	ae	ap
Hardened Steel Materials									
H	38~48HRC Hardened Steel	65	0.015xDc	0.02xDc	0.02xDc	65	0.015xDc	0.02xDc	0.02xDc
	48~56HRC Hardened Steel	60	0.012xDc	0.02xDc	0.02xDc	60	0.012xDc	0.02xDc	0.02xDc
	56~68HRC Hardened Steel	55	0.011xDc	0.02xDc	0.02xDc	55	0.011xDc	0.02xDc	0.02xDc

倒角刀

Work Material

P	H	M	K	N	S
●	●	○	●	●	

- P 鋼鐵 Steel
- H 硬化鋼 <38HRC Hardened Steel
- H 硬化鋼 <48HRC Hardened Steel
- H 硬化鋼 <56HRC Hardened Steel
- M 不銹鋼 Stainless Steel
- K 鑄鐵 Cast Iron
- N 鋁 Aluminium
- N 銅 Copper

Dc 0 -0.02	Lc mm	L mm	d h6
2	4	38	3
3	6	38	3
4	9	50	4
5	10	50	6
6	12	50	6
8	15	60	8
10	16	72	10
12	18	75	12
16	25	90	16
20	30	100	20

E108X / E109X / Chamfering 倒角加工

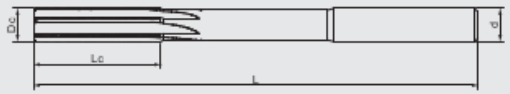
被削材 Work Material		GR.1 碳鋼 Carbon Steel		GR.2 低合金鋼 Low-alloyed Steel (~24HRC)		GR.3 高合金鋼 Hi-alloyed Steel (~30HRC)		GR.4 硬化鋼 Hardened Steel (30-38HRC)		GR.5 硬化鋼 Hardened Steel (38-48HRC)		GR.8 不銹鋼 Stainless Steel 使用切削液		GR.9 鑄鐵 Cast Iron		GR.10 鋁 Aluminium	
型號 Code No.	刃徑 Dc	RPM 迴轉速度 (min-1)	Feed 進給速度 (mm/min)	RPM 迴轉速度 (min-1)	Feed 進給速度 (mm/min)	RPM 迴轉速度 (min-1)	Feed 進給速度 (mm/min)	RPM 迴轉速度 (min-1)	Feed 進給速度 (mm/min)	RPM 迴轉速度 (min-1)	Feed 進給速度 (mm/min)	RPM 迴轉速度 (min-1)	Feed 進給速度 (mm/min)	RPM 迴轉速度 (min-1)	Feed 進給速度 (mm/min)	RPM 迴轉速度 (min-1)	Feed 進給速度 (mm/min)
E108X/E109X-2	2	11,670	700	11,670	700	11,670	700	4,774	143	4,774	143	4,774	143	11,670	700	15,915	1,432
E108X/E109X-3	3	8,753	525	8,753	525	8,753	525	3,183	100	3,183	100	3,183	100	8,753	525	10,610	954
E108X/E109X-4	4	7,000	420	7,000	420	7,000	420	3,183	100	3,183	100	3,183	100	7,000	420	9,550	955
E108X/E109X-5	5	5,729	343	5,729	343	5,729	343	2,546	100	2,546	100	2,546	100	5,729	343	7,639	763
E108X/E109X-6	6	4,774	286	4,774	286	4,774	286	2,122	90	2,122	90	2,122	90	4,774	286	6,366	700
E108X/E109X-8	8	3,580	358	3,580	358	3,580	358	1,989	120	1,989	120	1,989	120	3,580	358	5,570	668
E108X/E109X-10	10	2,864	286	2,864	286	2,864	286	1,591	95	1,591	95	1,591	95	2,864	286	4,456	712
E108X/E109X-12	12	2,387	238	2,387	238	2,387	238	1,591	127	1,591	127	1,591	127	2,387	238	3,978	716
E108X/E109X-16	16	1,790	116	1,790	116	1,790	116	1,193	119	1,193	119	1,193	119	1,790	116	2,984	537
E108X/E109X-20	20	1,432	186	1,432	186	1,432	186	954	95	954	95	954	95	1,432	186	2,387	477

鉸刀

Machine Reamers

Designed with left helix and right cutting flutes.
Downward chip evacuation.
左螺旋右刀刃設計。
排屑方向往下。

Tolerance: Dc
+0.004/+0.008: 0.5-3.0
+0.005/+0.010: 3.0-6.0
+0.006/+0.012: 6.0-10
+0.008/+0.015: 10-18
+0.009/+0.017: 18-30



VHM Carbide | HM Carbide Tipped | Uncoated Bright | 0° | Z | Steel Cast Iron AL, Copper

Application for reaming different steels below 48HRC, cast iron...and etc.
適用切削於48HRC以下各種鋼材及鑄鐵…等材料鉸孔應用。

P
H
K

VHM

Standard Length

Dc H7	Lc mm	L mm	d mm	Z teeth	R300 Bright
1	6	34	1	4	●
1.5	8	40	1.5	4	●
2	11	49	2	4	●
2.5	14	57	2.5	4	●
3	15	61	3	4	●
3.5	18	70	3.5	4	●
4	19	75	4	4	●
4.5	21	80	4.5	4	●
5	23	86	5	6	●
6	26	93	6	6	●
7	31	109	7	6	●
8	33	117	8	6	●
9	36	125	9	6	●
10	38	133	10(※10)	6	●
11	41	142	10(※11)	6	●
12	44	151	10(※12)	6	●
13	44	151	10	6	
14	47	160	12.5	6	
15	50	162	12.5	6	
16	52	170	12.5	6	
18	56	182	14.0	6	
20	60	195	16.0	6	

切削條件
Cutting Conditions

R300

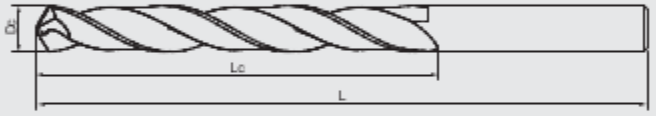
		cutting speed Vc [m/min]	feed per tooth fz[mm]
Carbon Steel Materials			
P	GR1 Carbon Steel	15	0.008xDc
P	GR2 <24HRC Low-alloyed Steel	15	0.008xDc
P	GR3 <30HRC Hi-alloyed Steel	12	0.006xDc
Hardened Steel Materials			
H	GR4 30-38HRC Hardened Steel	8	0.005xDc
H	GR5 38-48HRC Hardened Steel	5	0.003xDc
Stainless Steel Materials			
M	GR8-1 Ferritic、Martensitic	12	0.006xDc
M	GR8-2 Austenitic	12	0.006xDc
M	GR8-3 Austenitic-ferritic	12	0.006xDc
M	GR8-4 Austenitic-ferritic Heat-resistant	8	0.004xDc
Cast Iron Materials			
K	GR9-1 Grey cast iron	15	0.006xDc
K	GR9-2 Nodular cast iron	15	0.006xDc
Aluminium Steel Materials			
N	GR10-1 Wrought Aluminium alloys	20	0.006xDc
N	GR10-2 Aluminium cast alloys <10%	20	0.006xDc
N	GR10-3 Aluminium cast alloys >10%	20	0.006xDc
Copper Steel Materials			
N	GR11-1 Pure Copper	15	0.006xDc
N	GR11-2 Brass	15	0.006xDc
N	GR11-2 Bronze	15	0.006xDc

鑽頭

Twist Drills / High Performance Drills

D413 118° X-type drill point design is easy for positioning.
Designed with sharp drill point.
D433FN 140° S-type drill point design with centring and positioning function, reduce axial drilling force.
Designed with high chip evacuating flutes.
Good wear resistance and lubricating effect with Nano multilayer coating.

D413 118° X型鑽尖設計具有定位功能。
具有銳利度鑽尖形狀設計。
D433FN 140° S型鑽尖設計具有減少軸向力。
高排屑的溝槽形狀設計。
採用奈米多層塗層具有優異的潤滑及耐磨性。



VHM Carbide | 5XD | 2 | DIN 338

Suitable for drilling with 5XD depth.
D413 Application for drilling cast iron, aluminium, copper, plastic, composite materials...and etc.
D433FN Application for drilling steels below 48HRC, cast iron...and etc.

適合5倍Dc鑽孔深度。
D413 適用切削於鑄鐵、鋁合金、銅合金、塑膠、複合材料…等鑽孔應用。
D433FN 適用切削48HRC以下的各種鋼材、鑄鐵…等材料鑽孔應用。

K
N

Uncoated Bright
118°
AL, Cu, PVC, CFRP

Twist Drills / High Performance Drills

Dc h7	Lc mm	L mm
5	52	86
5.1	52	86
5.2	52	86
5.3	52	86
5.4	57	93
5.5	57	93
5.6	57	93
5.7	57	93
5.8	57	93
5.9	57	93
6	57	93
6.1	63	101
6.2	63	101
6.3	63	101
6.4	63	101
6.5	63	101
6.6	63	101
6.7	63	101
6.8	69	109
6.9	69	109
7	69	109
7.1	69	109
7.2	69	109
7.3	69	109
7.4	69	109
7.5	69	109
7.6	75	117
7.7	75	117
7.8	75	117
7.9	75	117
8	75	117
8.1	75	117
8.2	75	117
8.3	75	117
8.4	75	117
8.5	75	117
8.6	81	125
8.7	81	125
8.8	81	125
8.9	81	125
9	81	125

切削條件

Cutting Cond

D412
D430FN
D413
D433FN

D433FN

			cutting speed Vc [m/min]	feed per tooth fz[mm]
P	GR1	Carbon Steel	80	0.023xDc
	GR2	<24HRC Low-alloyed Steel	80	0.023xDc
	GR3	<30HRC Hi-alloyed Steel	70	0.021xDc
H	GR4	30-38HRC Hardened Steel	50	0.020xDc
	GR5	38-48HRC Hardened Steel	40	0.015xDc
M	GR8-1	Ferritic、Martensitic		
	GR8-2	Austenitic		
	GR8-3	Austenitic-ferritic		
	GR8-4	Austenitic-ferritic Heat-resistant		
K	GR9-1	Grey cast iron	80	0.023xDc
	GR9-2	Nodular cast iron	80	0.023xDc