APLUS

APLUS

APLUS HIGH SPEED CUTTING

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2007.09

APLUS

APLUS HIGH SPEED CUTTING

Machine from Swiss / Material from Germany / Technology from Swiss

END MILLS

APLUS

HIGH

SPEED

CUTTING

APLUS

APLUS is a professional cutting tool supplier, that offers a complete range tungsten carbide end mill made of premium nano super, super and micro grain substrates to satisfy not only general purpose but also through to high hard, high speed and soft metal machining applications.

Best material from Germany and Japan, as well as best CNC grinding equipment from Switzerland, Germany and Australia. Plus leading coating technology from "Balzer" of Swiss, and strict quality inspecting standard makes Janpo solid carbide end mills are extremely durable and ideal for variety and different drill/milling requirements.

We strive to understand your application and provide the best solution that represents the lowest cost for your customer. Our goal is to make your company cost-effective so that we can participate in the success of the industry's premier companies

All **APLUS** products meet or exceed industry standards for tolerance, quality and customer satisfaction. Other than standard series that you can see in our catalog, special sizes are also available upon your requirements.

Give us a call and experience the difference **APLUS** Tool can make to your company

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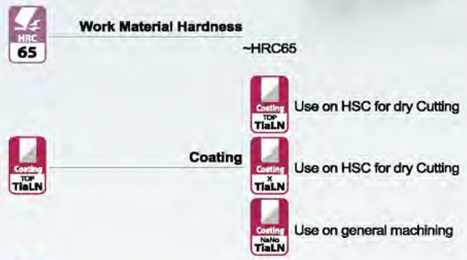
Guide Lines to ICONS



Solid Carbide

At present, four types of solid carbide material are being utilized for APLUS end mills.
According to the characteristics and the tests that we've done.
each material is well selected and respectively applied to various applications to achieve its best solutions!
The material is from Germany and Japan.

Material Code	Wc%	Co%	Average Grain Size 〔μm〕	Hardness HV30 〔Kg/mm²〕	Hardness HRA 〔ISO3738〕	TRS 〔N/mm²〕	KIC 〔MNm-3/2〕	ISO Classification
B Series	90	10	0.6	1610	92.2	3800	10.7	K20-K40
M Series	90	10	0.6	1610	92.3	4000	10.5	K30-K40
V Series	88	12	0.4-0.5	1680	92.5	4000	10.0	K40-K50
A Series	91	9	0.2	1920	93.9	4000	9.3	K10-K30

Coating

Balzers coating technology furnishes APLUS cutting tools with best solutions during the engineering process!

1. BALINIT@FUTURA NANO (NaNo TiAlN)

Microhardness (HV 0.05)	3300
Coating Thickness (μm)	3
Max Working Temperature	900°C

2. BALINIT@X. TREME (X TiAlN)

Microhardness (HV 0.05)	3500
Coating Thickness (μm)	4
Max Working Temperature	800°C

・High Speed Cutting and High Hard Cutting (DRY CUT)

3. BALINIT@X. CEED (TOP TiAlN)

Microhardness (HV 0.05)	3300
Coating Thickness (μm)	4
Max Working Temperature	900°C

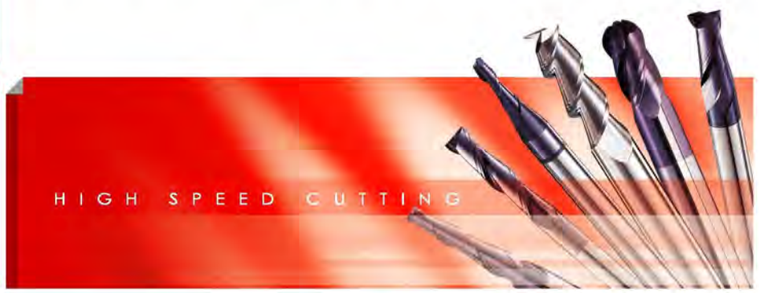
・High Speed Cutting and High Hard Cutting (High Hard over HRC 60)

奈米極細超微粒
NANO SUPER MICRO GRAIN

APLUS HIGH SPEED CUTTING

A SERIES

ABA・ABM・ANB・AEA・ANE・AHP・AEM



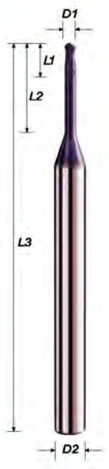
ABA 圓頭立銑刀 Ball Nose End Mills

Carbide Nano MG | Grain Size 0.2μm | Helix Angle 30° | Flutes 2 | HRC 65 | Coating TOP TiaLN | Flute Edge BALL

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
ABA 0102	R0.5	2	50	4
ABA 0152	R0.75	3	50	4
ABA 0202	R1	4	50	4
ABA 0252	R1.25	5	50	4
ABA 0302	R1.5	6	50	4
ABA 0402	R2	8	50	4
ABA 0502	R2.5	10	50	6
ABA 0602	R3	12	50	6
ABA 0802	R4	16	60	8
ABA 1002	R5	20	75	10
ABA 1202	R6	24	75	12
ABA 1602	R8	30	100	16
ABA 2002	R10	30	100	20

ANB 深溝用圓頭立銑刀 Ball Nose End Mills



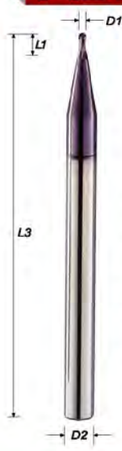
Carbide Nano MG | Grain Size 0.2μm | Helix Angle 30° | Flutes 2 | HRC 65 | Coating TOP TiaLN | Flute Edge BALL

Long Neck

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	Effective Length 有效長L2	O.A.L. 全長L3	Shank Dia 柄徑D2
ANB 05022	R0.25	0.8	2	50	4
ANB 05042	R0.25	0.8	4	50	4
ANB 05062	R0.25	0.8	6	50	4
ANB 06022	R0.3	1.0	2	50	4
ANB 06042	R0.3	1.0	4	50	4
ANB 06062	R0.3	1.0	6	50	4
ANB 06082	R0.3	1.0	8	50	4
ANB 08032	R0.4	1.2	3	50	4
ANB 08042	R0.4	1.2	4	50	4
ANB 08062	R0.4	1.2	6	50	4
ANB 08082	R0.4	1.2	8	50	4
ANB 10062	R0.5	1.2	6	50	4
ANB 10082	R0.5	1.2	8	50	4
ANB 10102	R0.5	1.2	10	50	4
ANB 10122	R0.5	1.2	12	50	4
ANB 15082	R0.75	1.7	8	50	4
ANB 15102	R0.75	1.7	10	50	4
ANB 15122	R0.75	1.7	12	50	4
ANB 20082	R1	2.2	8	50	4
ANB 20102	R1	2.2	10	50	4
ANB 20122	R1	2.2	12	50	4
ANB 20162	R1	2.2	16	75	4
ANB 30082	R1.5	3.2	8	50	4
ANB 30102	R1.5	3.2	10	50	4
ANB 30122	R1.5	3.2	12	50	4
ANB 30162	R1.5	3.2	16	75	4
ANB 30202	R1.5	3.2	20	75	4
ANB 40122	R2	4.2	12	60	6
ANB 40162	R2	4.2	16	75	6
ANB 40202	R2	4.2	20	75	6
ANB 40252	R2	4.2	25	75	6

ABM 微小徑圓頭立銑刀 Ball Nose End Mills



Carbide Nano MG | Grain Size 0.2μm | Helix Angle 30° | Flutes 2 | HRC 65 | Coating TOP TiaLN | Flute Edge BALL

Micro Diameter

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
ABM 0032	R0.15	0.6	50	4
ABM 0042	R0.2	0.8	50	4
ABM 0052	R0.25	1	50	4
ABM 0062	R0.3	1.2	50	4
ABM 0072	R0.35	1.4	50	4
ABM 0082	R0.4	1.6	50	4
ABM 0102	R0.5	2	50	4
ABM 0122	R0.6	2.4	50	4
ABM 0142	R0.7	2.8	50	4
ABM 0152	R0.75	3	50	4
ABM 0162	R0.8	3.2	50	4
ABM 0182	R0.9	3.6	50	4
ABM 0202	R1	4	50	4

AEA 立銑刀 Square End Mills

Carbide Nano MG | Grain Size 0.2μm | Helix Angle 35° | Flutes 2 | HRC 65 | Coating TOP TiaLN | Flute Edge Square

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
AEA 0102	1	3	50	4
AEA 0152	1.5	4.5	50	4
AEA 0202	2	6	50	4
AEA 0252	2.5	7	50	4
AEA 0302	3	8	50	4
AEA 0402	4	11	50	4
AEA 0502	5	13	50	6
AEA 0602	6	15	50	6
AEA 0702	7	17	60	8
AEA 0802	8	20	60	8
AEA 0902	9	23	75	10
AEA 1002	10	25	75	10
AEA 1102	11	28	75	12
AEA 1202	12	30	75	12
AEA 1602	16	40	100	16
AEA 2002	20	40	100	20

AEA 立銑刀 Square End Mills

Carbide Nano MG | Grain Size 0.2μm | Helix Angle 35° | Flutes 4 | HRC 65 | Coating TOP TiaLN | Flute Edge Square

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
AEA 0104	1	3	50	4
AEA 0154	1.5	4.5	50	4
AEA 0204	2	6	50	4
AEA 0254	2.5	7	50	4
AEA 0304	3	8	50	4
AEA 0404	4	11	50	4
AEA 0504	5	13	50	6
AEA 0604	6	15	50	6
AEA 0704	7	17	60	8
AEA 0804	8	20	60	8
AEA 0904	9	23	75	10
AEA 1004	10	25	75	10
AEA 1104	11	28	75	12
AEA 1204	12	30	75	12
AEA 1604	16	40	100	16
AEA 2004	20	40	100	20

ANE 深溝用立銑刀 Square End Mills

Carbide Nano MG | Grain Size 0.2μm | Helix Angle 35° | Flutes 2 | HRC 65 | Coating TOP TiaLN | Flute Edge Long Neck

Long Neck

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	Effective Length 有效長L2	O.A.L. 全長L3	Shank Dia 柄徑D2
ANE 04022	0.4	0.6	2	50	4
ANE 04042	0.4	0.6	4	50	4
ANE 05022	0.5	0.8	2	50	4
ANE 05042	0.5	0.8	4	50	4
ANE 05062	0.5	0.8	6	50	4
ANE 06022	0.6	1	2	50	4
ANE 06042	0.6	1	4	50	4
ANE 06062	0.6	1	6	50	4
ANE 08032	0.8	1.2	3	50	4
ANE 08042	0.8	1.2	4	50	4
ANE 08062	0.8	1.2	6	50	4
ANE 10062	1	1.2	6	50	4
ANE 10082	1	1.2	8	50	4
ANE 10102	1	1.2	10	50	4
ANE 10122	1	1.2	12	50	4
ANE 15082	1.5	1.7	8	50	4
ANE 15102	1.5	1.7	10	50	4
ANE 15122	1.5	1.7	12	50	4
ANE 15162	1.5	1.7	16	50	4
ANE 20082	2	2.2	8	50	4
ANE 20102	2	2.2	10	50	4
ANE 20122	2	2.2	12	50	4
ANE 20162	2	2.2	16	75	4
ANE 30102	3	3.2	10	50	4
ANE 30122	3	3.2	12	50	4
ANE 30162	3	3.2	16	75	4
ANE 30202	3	3.2	20	75	4

AHP 重切削立銑刀 Heavy Cutting Square End Mills

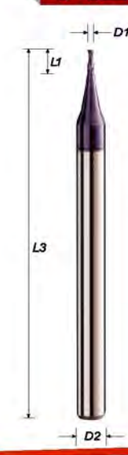
Carbide Nano MG | Grain Size 0.2μm | Helix Angle 45° | Flutes 4 | HRC 65 | Coating TOP TiaLN

Long Shank

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
AHP 0204	2.0	6	50	4
AHP 0254	2.5	7	50	4
AHP 0304	3.0	8	50	4
AHP 0354	3.5	10	50	4
AHP 0404	4.0	11	50	4
AHP 0454	4.5	13	50	6
AHP 0504	5.0	13	50	6
AHP 0554	5.5	13	50	6
AHP 0604	6.0	15	50	6
AHP 0704	7.0	17	60	8
AHP 0804	8.0	20	60	8
AHP 0904	9.0	23	75	10
AHP 1001	10.0	25	75	10
AHP 1104	11.0	28	75	12
AHP 1204	12.0	30	75	12
AHP 1604	16.0	40	100	16
AHP 2004	20.0	40	100	20

AEM 微小徑立銑刀 Square End Mills



Carbide Nano MG | Grain Size 0.2μm | Helix Angle 35° | Flutes 2 | HRC 65 | Coating TOP TiaLN | Flute Edge Square

Micro Diameter

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
AEM 0022	0.2	0.4	50	4
AEM 0032	0.3	0.6	50	4
AEM 0042	0.4	0.8	50	4
AEM 0052	0.5	1	50	4
AEM 0062	0.6	1.2	50	4
AEM 0072	0.7	1.4	50	4
AEM 0082	0.8	1.6	50	4
AEM 0092	0.9	1.8	50	4
AEM 0102	1.0	3	50	4
AEM 0122	1.2	3	50	4
AEM 0142	1.4	3	50	4
AEM 0152	1.5	4	50	4
AEM 0162	1.6	4	50	4
AEM 0182	1.8	5	50	4
AEM 0202	2.0	6	50	4

極細超微粒
SUPER MICRO GRAIN

APLUS
HIGH SPEED CUTTING

V SERIES

VBA · VNB · VBH · VBI · VBJ · VBM · VEM · VEA · VUV · VEH · VEI · VEJ · VNE · VHP · VRT · VRB · VRL · VRLL

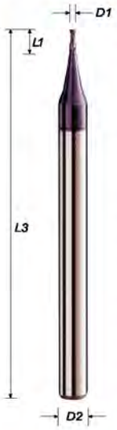
VBM 微小徑圓頭立銑刀 Ball Nose End Mills

Micro Diameter

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
VBM 0032	R0.15	0.6	50	4
VBM 0042	R0.2	0.8	50	4
VBM 0052	R0.25	1	50	4
VBM 0062	R0.3	1.2	50	4
VBM 0072	R0.35	1.4	50	4
VBM 0082	R0.4	1.6	50	4
VBM 0102	R0.5	2	50	4
VBM 0122	R0.6	2.4	50	4
VBM 0142	R0.7	2.8	50	4
VBM 0152	R0.75	3	50	4
VBM 0162	R0.8	3.2	50	4
VBM 0182	R0.9	3.6	50	4
VBM 0202	R1	4	50	4

VEM 微小徑立銑刀 Square End Mills



Micro Diameter

unit:mm

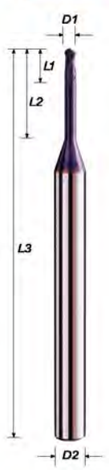
Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
VEM 0022	0.2	0.4	50	4
VEM 0032	0.3	0.6	50	4
VEM 0042	0.4	0.8	50	4
VEM 0052	0.5	1	50	4
VEM 0062	0.6	1.2	50	4
VEM 0072	0.7	1.4	50	4
VEM 0082	0.8	1.6	50	4
VEM 0092	0.9	1.8	50	4
VEM 0102	1.0	3	50	4
VEM 0122	1.2	3	50	4
VEM 0142	1.4	3	50	4
VEM 0152	1.5	4	50	4
VEM 0162	1.6	4	50	4
VEM 0182	1.8	5	50	4
VEM 0202	2.0	6	50	4

VBA 圓頭立銑刀 Ball Nose End Mills

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
VBA 0102	R0.5	2	50	4
VBA 0152	R0.75	3	50	4
VBA 0202	R1	4	50	4
VBA 0252	R1.25	5	50	4
VBA 0302	R1.5	6	50	4
VBA 0402	R2	8	50	4
VBA 0502	R2.5	10	50	6
VBA 0602	R3	12	50	6
VBA 0802	R4	16	60	8
VBA 1002	R5	20	75	10
VBA 1202	R6	24	75	12
VBA 1602	R8	30	100	16
VBA 2002	R10	30	100	20

VNB 深溝用圓頭立銑刀 Ball Nose End Mills



Long Neck

unit:mm

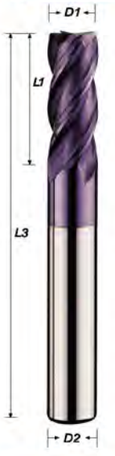
Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	Effective Length 有效長L2	O.A.L. 全長L3	Shank Dia 柄徑D2
VNB 05022	R0.25	0.8	2	50	4
VNB 05042	R0.25	0.8	4	50	4
VNB 05062	R0.25	0.8	6	50	4
VNB 06022	R0.3	1.0	2	50	4
VNB 06042	R0.3	1.0	4	50	4
VNB 06062	R0.3	1.0	6	50	4
VNB 06082	R0.3	1.0	8	50	4
VNB 08032	R0.4	1.2	3	50	4
VNB 08042	R0.4	1.2	4	50	4
VNB 08062	R0.4	1.2	6	50	4
VNB 08082	R0.4	1.2	8	50	4
VNB 10062	R0.5	1.2	6	50	4
VNB 10082	R0.5	1.2	8	50	4
VNB 10102	R0.5	1.2	10	50	4
VNB 10122	R0.5	1.2	12	50	4
VNB 15082	R0.75	1.7	8	50	4
VNB 15102	R0.75	1.7	10	50	4
VNB 15122	R0.75	1.7	12	50	4
VNB 20082	R1	2.2	8	50	4
VNB 20102	R1	2.2	10	50	4
VNB 20122	R1	2.2	12	50	4
VNB 20162	R1	2.2	16	75	4
VNB 30082	R1.5	3.2	8	50	4
VNB 30102	R1.5	3.2	10	50	4
VNB 30122	R1.5	3.2	12	50	4
VNB 30162	R1.5	3.2	16	75	4
VNB 30202	R1.5	3.2	20	75	4
VNB 40122	R2	4.2	12	60	6
VNB 40162	R2	4.2	16	75	6
VNB 40202	R2	4.2	20	75	6
VNB 40252	R2	4.2	25	75	6

VEA 立銑刀 Square End Mills

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
VEA 0102	1	3	50	4
VEA 0152	1.5	4.5	50	4
VEA 0202	2	6	50	4
VEA 0252	2.5	7	50	4
VEA 0302	3	8	50	4
VEA 0402	4	11	50	4
VEA 0502	5	13	50	6
VEA 0602	6	15	50	6
VEA 0702	7	17	60	8
VEA 0802	8	20	60	8
VEA 0902	9	23	75	10
VEA 1002	10	25	75	10
VEA 1102	11	28	75	12
VEA 1202	12	30	75	12
VEA 1602	16	40	100	16
VEA 2002	20	40	100	20

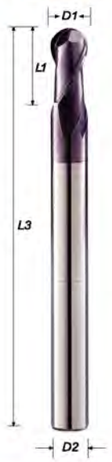
VEA 立銑刀 Square End Mills



unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
VEA 0104	1	3	50	4
VEA 0154	1.5	4.5	50	4
VEA 0204	2	6	50	4
VEA 0254	2.5	7	50	4
VEA 0304	3	8	50	4
VEA 0404	4	11	50	4
VEA 0504	5	13	50	6
VEA 0604	6	15	50	6
VEA 0704	7	17	60	8
VEA 0804	8	20	60	8
VEA 0904	9	23	75	10
VEA 1004	10	25	75	10
VEA 1104	11	28	75	12
VEA 1204	12	30	75	12
VEA 1604	16	40	100	16
VEA 2004	20	40	100	20

VBH.VBI.VBJ 長柄圓頭立銑刀 Ball Nose End Mills

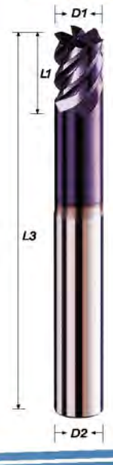


Long Shank

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
VBH 0202	R1	4	75	4
VBH 0252	R1.25	5	75	4
VBH 0302	R1.5	6	75	4
VBH 0402	R2	8	75	4
VBH 0502	R2.5	10	75	6
VBH 0602	R3	12	75	6
VBH 0802	R4	16	75	8
VBI 0202	R1	4	100	6
VBI 0302	R1.5	6	100	6
VBI 0402	R2	8	100	6
VBI 0602	R3	12	100	6
VBI 0802	R4	16	100	8
VBI 1002	R5	20	100	10
VBI 1202	R6	24	100	12
VBJ 0602	R3	12	150	6
VBJ 0802	R4	16	150	8
VBJ 1002	R5	20	150	10
VBJ 1202	R6	24	150	12
VBJ 1602	R8	30	150	16

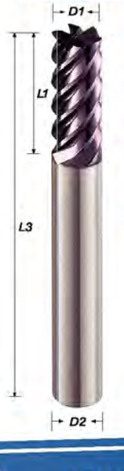
VRV 高硬度圓鼻立銑刀 Corner Radius End Mills



unit:mm

Type No. 型號	Diameter 直徑D1	Corner R R角	Flute Length 刃長L1	Effective Length 有效長L2	O.A.L. 全長L3	Shank Dia 柄徑D2
VRV 06036	6	0.3	8	20	50	6
VRV 08036	8	0.3	10	25	60	8
VRV 10056	10	0.5	12	30	75	10
VRV 12056	12	0.5	15	36	75	12
VRV 16106	16	1	24	40	100	16
VRV 20106	20	1	30	50	100	20

VEA 高硬度用立銑刀 Square End Mills



High Hardness

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
VEA 0606	6	16	50	6
VEA 0806	8	20	60	8
VEA 1006	10	25	75	10
VEA 1206	12	30	75	12
VEA 1606	16	40	100	16
VEA 2006	20	45	100	20

VEH.VEI.VEJ 長柄立銑刀 Square End Mills

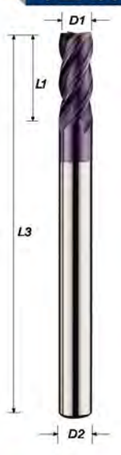
Carbide Super MG | Grain Size 0.4μm | Helix Angle 35° | Flutes 2 | HRC 60 | Coating X TiAlN | Flute Edge Square

Long Shank

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
VEH 0302	3	8	75	4
VEH 0402	4	11	75	4
VEH 0502	5	13	75	6
VEH 0602	6	15	75	6
VEH 0802	8	20	75	8
VEI 0302	3	8	100	6
VEI 0502	5	13	100	6
VEI 0602	6	15	100	6
VEI 0802	8	20	100	8
VEI 1002	10	25	100	10
VEI 1202	12	30	100	12
VEJ 0802	8	20	150	8
VEJ 1002	10	25	150	10
VEJ 1202	12	30	150	12
VEJ 1602	16	40	150	16
VEJ 1802	18	40	150	20
VEJ 2002	20	40	150	20

VEH.VEI.VEJ 長柄立銑刀 Square End Mills



Carbide Super MG | Grain Size 0.4μm | Helix Angle 35° | Flutes 4 | HRC 60 | Coating X TiAlN | Flute Edge Square

Long Shank

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
VEH 0304	3	8	75	4
VEH 0404	4	11	75	4
VEH 0504	5	13	75	6
VEH 0604	6	15	75	6
VEH 0804	8	20	75	8
VEI 0404	4	11	100	6
VEI 0604	6	15	100	6
VEI 0804	8	20	100	8
VEI 1004	10	25	100	10
VEI 1204	12	30	100	12
VEJ 0804	8	20	150	8
VEJ 1004	10	25	150	10
VEJ 1204	12	30	150	12
VEJ 1604	16	40	150	16
VEJ 1804	18	40	150	20
VEJ 2004	20	40	150	20

VNE 深溝用立銑刀 Square End Mills

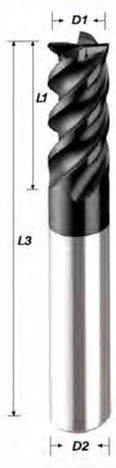
Carbide Super MG | Grain Size 0.4μm | Helix Angle 35° | Flutes 2 | HRC 60 | Coating X TiAlN | Flute Edge Long Neck

Long Neck

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	Effective Length 有效長L2	O.A.L. 全長L3	Shank Dia 柄徑D2
VNE 04022	0.4	0.6	2	50	4
VNE 04042	0.4	0.6	4	50	4
VNE 05022	0.5	0.8	2	50	4
VNE 05042	0.5	0.8	4	50	4
VNE 05062	0.5	0.8	6	50	4
VNE 06022	0.6	1	2	50	4
VNE 06042	0.6	1	4	50	4
VNE 06062	0.6	1	6	50	4
VNE 08032	0.8	1.2	3	50	4
VNE 08042	0.8	1.2	4	50	4
VNE 08062	0.8	1.2	6	50	4
VNE 10062	1	1.2	6	50	4
VNE 10082	1	1.2	8	50	4
VNE 10102	1	1.2	10	50	4
VNE 10122	1	1.2	12	50	4
VNE 15082	1.5	1.7	8	50	4
VNE 15102	1.5	1.7	10	50	4
VNE 15122	1.5	1.7	12	50	4
VNE 15162	1.5	1.7	16	50	4
VNE 20082	2	2.2	8	50	4
VNE 20102	2	2.2	10	50	4
VNE 20122	2	2.2	12	50	4
VNE 20162	2	2.2	16	75	4
VNE 30102	3	3.2	10	50	4
VNE 30122	3	3.2	12	50	4
VNE 30162	3	3.2	16	75	4
VNE 30202	3	3.2	20	75	4

VHP 重切削立銑刀 Heavy Cutting Square End Mills



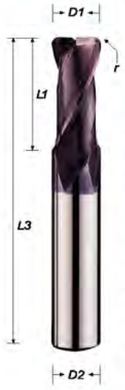
Carbide Super MG | Grain Size 0.4μm | Helix Angle 45° | Flutes 4 | HRC 60 | Coating X TiAlN

Long Shank

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
VHP 0204	2.0	6	50	4
VHP 0254	2.5	7	50	4
VHP 0304	3.0	8	50	4
VHP 0354	3.5	10	50	4
VHP 0404	4.0	11	50	4
VHP 0454	4.5	13	50	6
VHP 0504	5.0	13	50	6
VHP 0554	5.5	13	50	6
VHP 0604	6.0	15	50	6
VHP 0704	7.0	17	60	8
VHP 0804	8.0	20	60	8
VHP 0904	9.0	23	75	10
VHP 1001	10.0	25	75	10
VHP 1104	11.0	28	75	12
VHP 1204	12.0	30	75	12
VHP 1604	16.0	40	100	16
VHP 2004	20.0	40	100	20

VRT 圓鼻角立銑刀 Corner Radius End Mills

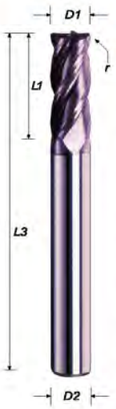


Carbide Super MG | Grain Size 0.4μm | Helix Angle 30° | Flutes 2 | HRC 60 | Coating X TiAlN | Flute Edge Corner

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	Corner R R角	O.A.L. 全長L3	Shank Dia 柄徑D2
VRT 01022	1.0	2	0.2	50	4
VRT 01522	1.5	3	0.2	50	4
VRT 01552	1.5	3	0.5	50	4
VRT 02022	2.0	5	0.2	50	4
VRT 02052	2.0	4	0.5	50	4
VRT 02522	2.5	5	0.2	50	4
VRT 02552	2.5	5	0.5	50	4
VRT 03022	3.0	6	0.2	50	4
VRT 03052	3.0	6	0.5	50	4
VRT 04022	4.0	8	0.2	50	4
VRT 04052	4.0	8	0.5	50	4
VRT 05052	5.0	10	0.5	50	6
VRT 06022	6.0	12	0.2	50	6
VRT 06052	6.0	12	0.5	50	6
VRT 06102	6.0	12	1.0	50	6
VRT 08052	8.0	16	0.5	60	8
VRT 08102	8.0	16	1.0	60	8
VRT 10052	10.0	20	0.5	75	10
VRT 10102	10.0	20	1.0	75	10
VRT 10152	10.0	20	1.5	75	10
VRT 10202	10.0	20	2.0	75	10
VRT 12052	12.0	24	0.5	75	12
VRT 12102	12.0	24	1.0	75	12
VRT 12152	12.0	24	1.5	75	12
VRT 12202	12.0	24	2.0	75	12

VRB 圓鼻角立銑刀 Corner Radius End Mills

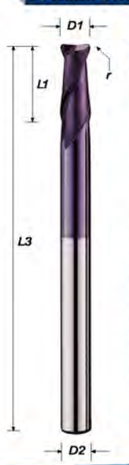


Carbide Super MG | Grain Size 0.4μm | Helix Angle 30° | Flutes 4 | HRC 60 | Coating X TiAlN | Flute Edge Corner

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	Corner R R角	O.A.L. 全長L3	Shank Dia 柄徑D2
VRB 01022	1.0	2	0.2	50	4
VRB 01522	1.5	3	0.2	50	4
VRB 01552	1.5	3	0.5	50	4
VRB 02022	2.0	5	0.2	50	4
VRB 02052	2.0	4	0.5	50	4
VRB 02522	2.5	5	0.2	50	4
VRB 02552	2.5	5	0.5	50	4
VRB 03022	3.0	6	0.2	50	4
VRB 03052	3.0	6	0.5	50	4
VRB 04022	4.0	8	0.2	50	4
VRB 04052	4.0	8	0.5	50	4
VRB 05052	5.0	10	0.5	50	6
VRB 06022	6.0	12	0.2	50	6
VRB 06052	6.0	12	0.5	50	6
VRB 06102	6.0	12	1.0	50	6
VRB 08052	8.0	16	0.5	60	8
VRB 08102	8.0	16	1.0	60	8
VRB 10052	10.0	20	0.5	75	10
VRB 10102	10.0	20	1.0	75	10
VRB 10152	10.0	20	1.5	75	10
VRB 10202	10.0	20	2.0	75	10
VRB 12052	12.0	24	0.5	75	12
VRB 12102	12.0	24	1.0	75	12
VRB 12152	12.0	24	1.5	75	12
VRB 12202	12.0	24	2.0	75	12

VRL.VRLL 長柄圓鼻角立銑刀 Corner Radius End Mills



Carbide Super MG | Grain Size 0.4μm | Helix Angle 30° | Flutes 2 | HRC 60 | Coating X TiAlN | Flute Edge Corner

Long Shank

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	Corner R R角	O.A.L. 全長L3	Shank Dia 柄徑D2
VRL 04052	4.0	8	0.5	75	4
VRL 04102	4.0	8	1.0	75	4
VRL 06022	6.0	12	0.2	75	6
VRL 06052	6.0	12	0.5	75	6
VRL 06102	6.0	12	1.0	75	6
VRL 06152	6.0	12	1.5	75	6
VRL 06202	6.0	12	2.0	75	6
VRLL 06022	6.0	12	0.2	100	6
VRLL 06052	6.0	12	0.5	100	6
VRLL 06102	6.0	12	1.0	100	6
VRLL 06152	6.0	12	1.5	100	6
VRLL 06202	6.0	12	2.0	100	6
VRLL 08052	8.0	16	0.5	100	8
VRLL 08102	8.0	16	1.0	100	8
VRLL 10052	10.0	20	0.5	100	10
VRLL 10102	10.0	20	1.0	100	10
VRLL 10152	10.0	20	1.5	100	10
VRLL 10202	10.0	20	2.0	100	10
VRLL 12052	12.0	24	0.5	100	12
VRLL 12102	12.0	24	1.0	100	12
VRLL 12152	12.0	24	1.5	100	12
VRLL 12202	12.0	24	2.0	100	12
VRLL 12252	12.0	24	2.5	100	12
VRLL 12302	12.0	24	3.0	100	12

VRL.VRLL 長柄圓鼻角立銑刀 Corner Radius End Mills

Carbide Super MG | Grain Size 0.4μm | Helix Angle 30° | Flutes 4 | HRC 60 | Coating X TiAlN | Flute Edge Corner

Long Shank

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	Corner R R角	O.A.L. 全長L3	Shank Dia 柄徑D2
VRL 04054	4.0	8	0.5	75	4
VRL 04104	4.0	8	1.0	75	4
VRL 06024	6.0	12	0.2	75	6
VRL 06054	6.0	12	0.5	75	6
VRL 06104	6.0	12	1.0	75	6
VRL 06154	6.0	12	1.5	75	6
VRL 06204	6.0	12	2.0	75	6
VRLL 06024	6.0	12	0.2	100	6
VRLL 06054	6.0	12	0.5	100	6
VRLL 06104	6.0	12	1.0	100	6
VRLL 06154	6.0	12	1.5	100	6
VRLL 06204	6.0	12	2.0	100	6
VRLL 08054	8.0	16	0.5	100	8
VRLL 08104	8.0	16	1.0	100	8
VRLL 10054	10.0	20	0.5	100	10
VRLL 10104	10.0	20	1.0	100	10
VRLL 10154	10.0	20	1.5	100	10
VRLL 10204	10.0	20	2.0	100	10
VRLL 12054	12.0	24	0.5	100	12
VRLL 12104	12.0	24	1.0	100	12
VRLL 12154	12.0	24	1.5	100	12
VRLL 12204	12.0	24	2.0	100	12
VRLL 12254	12.0	24	2.5	100	12
VRLL 12304	12.0	24	3.0	100	12

超微粒 MICRO GRAIN

APLUS HIGH SPEED CUTTING

M SERIES

MBA・MBT・MBH・MBI・MBJ・MNB・MBMT・MBM・MEA・MET・MEG・MEH
MEI・MEJ・MEF・MEMT・MEM・MRT・MRB・MRL・MRLL・MUU・MHP・MTE
MTF・MNE・MAB・MAE

MBA 圓頭立銑刀 Ball Nose End Mills

Carbide MG | Grain Size 0.6μm | Helix Angle 30° | Flutes 2 | HRC 55 | Coating Nano TiaLN | Flute Edge BALL

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
MBA 0102	R0.5	2	50	4
MBA 0152	R0.75	3	50	4
MBA 0202	R1	4	50	4
MBA 0252	R1.25	5	50	4
MBA 0302	R1.5	6	50	4
MBA 0402	R2	8	50	4
MBA 0502	R2.5	10	50	6
MBA 0602	R3	12	50	6
MBA 0802	R4	16	60	8
MBA 1002	R5	20	75	10
MBA 1202	R6	24	75	12
MBA 1602	R8	30	100	16
MBA 2002	R10	30	100	20

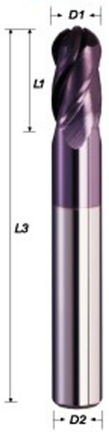
MBT 圓頭立銑刀 Ball Nose End Mills

Carbide MG | Grain Size 0.6μm | Helix Angle 30° | Flutes 2 | HRC 55 | Coating Nano TiaLN | Flute Edge BALL

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
MBT 0102	R0.5	2	50	6
MBT 0152	R0.75	3	50	6
MBT 0202	R1	4	50	6
MBT 0252	R1.25	5	50	6
MBT 0302	R1.5	6	50	6
MBT 0402	R2	8	50	6
MBT 0502	R2.5	10	50	6
MBT 0602	R3	12	50	6

MBA 圓頭立銑刀 Ball Nose End Mills

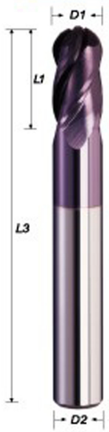


Carbide MG | Grain Size 0.6μm | Helix Angle 30° | Flutes 4 | HRC 55 | Coating Nano TiaLN | Flute Edge BALL

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
MBA 0104	R0.5	2	50	4
MBA 0154	R0.75	3	50	4
MBA 0204	R1	4	50	4
MBA 0304	R1.5	6	50	4
MBA 0404	R2	8	50	4
MBA 0504	R2.5	10	50	6
MBA 0604	R3	12	50	6
MBA 0804	R4	16	60	8
MBA 1004	R5	20	75	10
MBA 1204	R6	24	75	12
MBA 1604	R8	30	100	16

MBT 圓頭立銑刀 Ball Nose End Mills

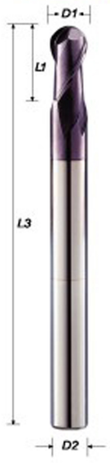


Carbide MG | Grain Size 0.6μm | Helix Angle 30° | Flutes 4 | HRC 55 | Coating Nano TiaLN | Flute Edge BALL

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
MBT 0204	R1	4	50	6
MBT 0304	R1.5	6	50	6
MBT 0404	R2	8	50	6
MBT 0504	R2.5	10	50	6
MBT 0604	R3	12	50	6

MBH.MBI.MBJ 長柄圓頭立銑刀 Ball Nose End Mills



Carbide MG | Grain Size 0.6μm | Helix Angle 30° | Flutes 2 | HRC 55 | Coating Nano TiaLN | Flute Edge BALL

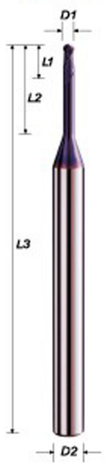
Long Shank

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
MBH 0202	R1	4	75	4
MBH 0252	R1.25	5	75	4
MBH 0302	R1.5	6	75	4
MBH 0402	R2	8	75	4
MBH 0502	R2.5	10	75	6
MBH 0602	R3	12	75	6
MBH 0802	R4	16	75	8
MBI 0202	R1	4	100	6
MBI 0302	R1.5	6	100	6
MBI 0402	R2	8	100	6
MBI 0602	R3	12	100	6
MBI 0802	R4	16	100	8
MBI 1002	R5	20	100	10
MBI 1202	R6	24	100	12
MBJ 0602	R3	12	150	6
MBJ 0802	R4	16	150	8
MBJ 1002	R5	20	150	10
MBJ 1202	R6	24	150	12
MBJ 1602	R8	30	150	16

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
MBS 0102	R0.5	2	50	3
MBS 0152	R0.75	3	50	3
MBS 0202	R1	4	50	3
MBS 0252	R1.25	5	50	3
MBS 0312	R1.5	6	50	3
MBS 0322	R1.5	6	75	3
MBS 0332	R1.5	6	100	3
MBS 0422	R2	8	75	4
MBS 0432	R2	8	100	4

MNB 深溝用圓頭立銑刀 Ball Nose End Mills



Carbide MG | Grain Size 0.6μm | Helix Angle 30° | Flutes 2 | HRC 55 | Coating Nano TiaLN | Flute Edge BALL

Long Neck

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	Effective Length 有效長L2	O.A.L. 全長L3	Shank Dia 柄徑D2
MNB 05022	R0.25	0.75	2	50	4
MNB 05042	R0.25	0.75	4	50	4
MNB 05062	R0.25	0.75	6	50	4
MNB 05082	R0.25	0.75	8	50	4
MNB 06022	R0.3	0.9	2	50	4
MNB 06042	R0.3	0.9	4	50	4
MNB 06062	R0.3	0.9	6	50	4
MNB 06082	R0.3	0.9	8	50	4
MNB 08022	R0.4	1.2	2	50	4
MNB 08042	R0.4	1.2	4	50	4
MNB 08062	R0.4	1.2	6	50	4
MNB 08082	R0.4	1.2	8	50	4
MNB 10062	R0.5	1.5	6	50	4
MNB 10082	R0.5	1.5	8	50	4
MNB 10102	R0.5	1.5	10	50	4
MNB 10122	R0.5	1.5	12	50	4
MNB 15082	R0.75	2.3	8	50	4
MNB 15102	R0.75	2.3	10	50	4
MNB 15122	R0.75	2.3	12	50	4
MNB 15162	R0.75	2.3	16	50	4
MNB 15202	R0.75	2.3	20	50	4
MNB 20082	R1	3	8	50	4
MNB 20102	R1	3	10	50	4
MNB 20122	R1	3	12	50	4
MNB 20162	R1	3	16	50	4
MNB 20202	R1	3	20	50	4
MNB 30082	R1.5	4.5	8	50	6
MNB 30102	R1.5	4.5	10	50	6
MNB 30122	R1.5	4.5	12	50	6
MNB 30162	R1.5	4.5	16	50	6
MNB 30202	R1.5	4.5	20	60	6
MNB 30252	R1.5	4.5	25	75	6
MNB 40122	R2	6	12	60	6
MNB 40162	R2	6	16	60	6
MNB 40202	R2	6	20	60	6
MNB 40252	R2	6	25	75	6
MNB 40302	R2	6	30	75	6

MBMT 微小徑圓頭立銑刀 Ball Nose End Mills

Carbide MG | Grain Size 0.6μm | Helix Angle 30° | Flutes 2 | HRC 55 | Coating Nano TiaLN | Flute Edge BALL

Micro Diameter

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
MBMT 0032	R0.15	0.6	50	3
MBMT 0042	R0.2	0.8	50	3
MBMT 0052	R0.25	1	50	3
MBMT 0062	R0.3	1.2	50	3
MBMT 0072	R0.35	1.4	50	3
MBMT 0082	R0.4	1.6	50	3
MBMT 0102	R0.5	2	50	3
MBMT 0122	R0.6	2.4	50	3
MBMT 0142	R0.7	2.8	50	3
MBMT 0152	R0.75	3	50	3
MBMT 0162	R0.8	3.2	50	3
MBMT 0182	R0.9	3.6	50	3
MBMT 0202	R1	4	50	3
MBMT 0302	R1.5	6	50	3

MBM 微小徑圓頭立銑刀 Ball Nose End Mills

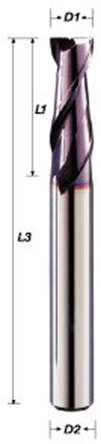
Carbide MG | Grain Size 0.6μm | Helix Angle 30° | Flutes 2 | HRC 55 | Coating Nano TiaLN | Flute Edge BALL

Micro Diameter

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
MBM 0032	R0.15	0.6	50	4
MBM 0042	R0.2	0.8	50	4
MBM 0052	R0.25	1	50	4
MBM 0062	R0.3	1.2	50	4
MBM 0072	R0.35	1.4	50	4
MBM 0082	R0.4	1.6	50	4
MBM 0102	R0.5	2	50	4
MBM 0122	R0.6	2.4	50	4
MBM 0142	R0.7	2.8	50	4
MBM 0152	R0.75	3	50	4
MBM 0162	R0.8	3.2	50	4
MBM 0182	R0.9	3.6	50	4
MBM 0202	R1	4	50	4

MEA 立銑刀 Square End Mills

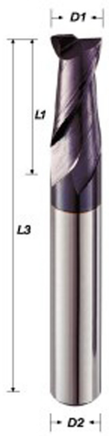


Carbide MG | Grain Size 0.6μm | Helix Angle 35° | Flutes 2 | HRC 55 | Coating TiaLN | Flute Edge Square

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
MEA 0102	1	3	50	4
MEA 0152	1.5	4.5	50	4
MEA 0202	2	6	50	4
MEA 0252	2.5	7	50	4
MEA 0302	3	8	50	4
MEA 0352	3.5	10	50	4
MEA 0402	4	11	50	4
MEA 0452	4.5	13	50	6
MEA 0502	5	13	50	6
MEA 0552	5.5	13	50	6
MEA 0602	6	15	50	6
MEA 0652	6.5	17	60	8
MEA 0702	7	17	60	8
MEA 0802	8	20	60	8
MEA 0852	8.5	23	75	10
MEA 0902	9	23	75	10
MEA 0952	9.5	25	75	10
MEA 1002	10	25	75	10
MEA 1052	10.5	25	75	12
MEA 1102	11	28	75	12
MEA 1152	11.5	28	75	12
MEA 1202	12	30	75	12
MEA 1602	16	40	100	16
MEA 1802	18	40	100	20
MEA 2002	20	40	100	20

MET 立銑刀 Square End Mills

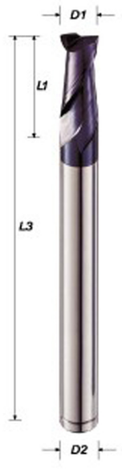


Carbide MG | Grain Size 0.6μm | Helix Angle 35° | Flutes 2 | HRC 55 | Coating TiaLN | Flute Edge Square

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
MET 0102	1	3	50	6
MET 0152	1.5	4	50	6
MET 0202	2	6	50	6
MET 0252	2.5	8	50	6
MET 0302	3	8	50	6
MET 0402	4	11	50	6

MEH.MEI.MEJ 長柄立銑刀 Square End Mills



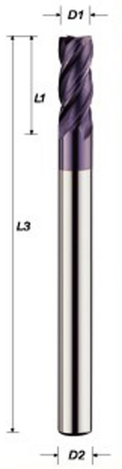
Carbide MG | Grain Size 0.6μm | Helix Angle 35° | Flutes 2 | HRC 55 | Coating TiaLN | Flute Edge Square

Long Shank

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
MEH 0302	3	8	75	4
MEH 0402	4	11	75	4
MEH 0502	5	13	75	6
MEH 0602	6	15	75	6
MEH 0802	8	20	75	8
MEI 0302	3	8	100	6
MEI 0502	5	13	100	6
MEI 0602	6	15	100	6
MEI 0802	8	20	100	8
MEI 1002	10	25	100	10
MEI 1202	12	30	100	12
MEJ 0802	8	20	150	8
MEJ 1002	10	25	150	10
MEJ 1202	12	30	150	12
MEJ 1602	16	40	150	16
MEJ 1802	18	40	150	20
MEJ 2002	20	40	150	20

MEH.MEI.MEJ 長柄立銑刀 Square End Mills



Carbide MG | Grain Size 0.6μm | Helix Angle 35° | Flutes 4 | HRC 55 | Coating TiaLN | Flute Edge Square

Long Shank

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
MEH 0304	3	8	75	4
MEH 0404	4	11	75	4
MEH 0504	5	13	75	6
MEH 0604	6	15	75	6
MEH 0804	8	20	75	8
MEI 0404	4	11	100	6
MEI 0604	6	15	100	6
MEI 0804	8	20	100	8
MEI 1004	10	25	100	10
MEI 1204	12	30	100	12
MEJ 0804	8	20	150	8
MEJ 1004	10	25	150	10
MEJ 1204	12	30	150	12
MEJ 1604	16	40	150	16
MEJ 1804	18	40	150	20
MEJ 2004	20	40	150	20

MEA 立銑刀 Square End Mills

Carbide MG | Grain Size 0.6μm | Helix Angle 35° | Flutes 4 | HRC 55 | Coating TiaLN | Flute Edge Square

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
MEA 0104	1	3	50	4
MEA 0154	1.5	4.5	50	4
MEA 0204	2	6	50	4
MEA 0254	2.5	7	50	4
MEA 0304	3	8	50	4
MEA 0354	3.5	10	50	4
MEA 0404	4	11	50	4
MEA 0454	4.5	13	50	6
MEA 0504	5	13	50	6
MEA 0554	5.5	13	50	6
MEA 0604	6	15	50	6
MEA 0654	6.5	17	60	8
MEA 0704	7	17	60	8
MEA 0804	8	20	60	8
MEA 0854	8.5	23	75	10
MEA 0904	9	23	75	10
MEA 0954	9.5	25	75	10
MEA 1004	10	25	75	10
MEA 1054	10.5	25	75	12
MEA 1104	11	28	75	12
MEA 1154	11.5	28	75	12
MEA 1204	12	30	75	12
MEA 1604	16	40	100	16
MEA 1804	18	40	100	20
MEA 2004	20	40	100	20

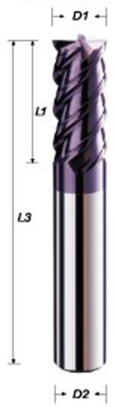
MET 立銑刀 Square End Mills

Carbide MG | Grain Size 0.6μm | Helix Angle 35° | Flutes 4 | HRC 55 | Coating TiaLN | Flute Edge Square

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
MET 0104	1	3	50	6
MET 0154	1.5	4	50	6
MET 0204	2	6	50	6
MET 0254	2.5	8	50	6
MET 0304	3	8	50	6
MET 0404	4	11	50	6

MEG 立銑刀 Square End Mills



Carbide MG | Grain Size 0.6μm | Helix Angle 45° | Flutes 4 | HRC 55 | Coating TiaLN | Flute Edge Square

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
MEG 0104	1	3	50	4
MEG 0154	1.5	4.5	50	4
MEG 0204	2	6	50	6
MEG 0254	2.5	7	50	6
MEG 0304	3	8	50	6
MEG 0354	3.5	9	50	6
MEG 0404	4	11	50	6
MEG 0454	4.5	13	50	6
MEG 0504	5	13	50	6
MEG 0604	6	15	50	6
MEG 0804	8	20	60	8
MEG 1004	10	25	75	10
MEG 1204	12	30	75	12
MEG 1604	16	40	100	16
MEG 2004	20	40	100	20

MEG 高螺旋立銑刀 Square End Mills

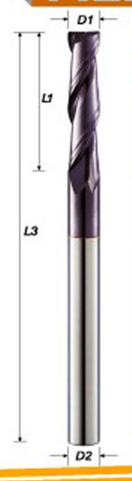
Carbide MG | Grain Size 0.6μm | Helix Angle 45° | Flutes 3 | HRC 55 | Coating TiaLN | Flute Edge Square

High Helix

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
MEG 0203	2	6	50	4
MEG 0303	3	8	50	4
MEG 0403	4	11	50	4
MEG 0503	5	13	50	6
MEG 0603	6	15	50	6
MEG 0803	8	20	60	8
MEG 1003	10	30	75	10
MEG 1203	12	32	75	12
MEG 1603	16	40	100	16
MEG 2003	20	40	100	20

MEF 長刃立銑刀 Square End Mills



Carbide MG | Grain Size 0.6μm | Helix Angle 30° | Flutes 2 | HRC 55 | Coating TiaLN | Flute Edge Square

Long Flute

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
MEF 0102	1	5	75	4
MEF 0152	1.5	6	75	4
MEF 0202	2	9	75	4
MEF 0252	2.5	10	75	4
MEF 0302	3	15	75	4
MEF 0352	3.5	15	75	4
MEF 0402	4	20	75	6
MEF 0452	4.5	20	75	6
MEF 0502	5	25	75	6
MEF 0552	5.5	25	75	6
MEF 0602	6	25	75	6
MEF 0702	7	35	100	8
MEF 0802	8	35	100	8
MEF 0902	9	40	100	10
MEF 1002	10	40	100	10
MEF 1102	11	45	100	12
MEF 1202	12	45	100	12
MEF 1602	16	70	150	16
MEF 2002	20	80	150	20

MEF 長刃立銑刀 Square End Mills

Carbide MG | Grain Size 0.6μm | Helix Angle 30° | Flutes 4 | HRC 55 | Coating TiaLN | Flute Edge Square

Long Flute

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
MEF 0104	1	5	75	4
MEF 0154	1.5	6	75	4
MEF 0204	2	9	75	4
MEF 0254	2.5	10	75	4
MEF 0304	3	15	75	4
MEF 0354	3.5	15	75	4
MEF 0404	4	20	75	6
MEF 0454	4.5	20	75	6
MEF 0504	5	25	75	6
MEF 0554	5.5	25	75	6
MEF 0604	6	25	75	6
MEF 0704	7	35	100	8
MEF 0804	8	35	100	8
MEF 0904	9	40	100	10
MEF 1004	10	40	100	10
MEF 1104	11	45	100	12
MEF 1204	12	45	100	12
MEF 1604	16	70	150	16
MEF 2004	20	80	150	20

PRECISION TOOL

VEH.VEI.VEJ 長柄立銑刀 Square End Mills

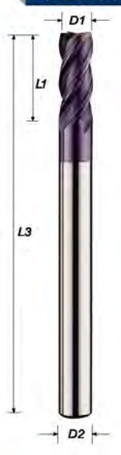
Carbide Super MG | Grain Size 0.4μm | Helix Angle 35° | Flutes 2 | HRC 60 | Coating X TiAlN | Flute Edge Square

Long Shank

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
VEH 0302	3	8	75	4
VEH 0402	4	11	75	4
VEH 0502	5	13	75	6
VEH 0602	6	15	75	6
VEH 0802	8	20	75	8
VEI 0302	3	8	100	6
VEI 0502	5	13	100	6
VEI 0602	6	15	100	6
VEI 0802	8	20	100	8
VEI 1002	10	25	100	10
VEI 1202	12	30	100	12
VEJ 0802	8	20	150	8
VEJ 1002	10	25	150	10
VEJ 1202	12	30	150	12
VEJ 1602	16	40	150	16
VEJ 1802	18	40	150	20
VEJ 2002	20	40	150	20

VEH.VEI.VEJ 長柄立銑刀 Square End Mills



Carbide Super MG | Grain Size 0.4μm | Helix Angle 35° | Flutes 4 | HRC 60 | Coating X TiAlN | Flute Edge Square

Long Shank

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
VEH 0304	3	8	75	4
VEH 0404	4	11	75	4
VEH 0504	5	13	75	6
VEH 0604	6	15	75	6
VEH 0804	8	20	75	8
VEI 0404	4	11	100	6
VEI 0604	6	15	100	6
VEI 0804	8	20	100	8
VEI 1004	10	25	100	10
VEI 1204	12	30	100	12
VEJ 0804	8	20	150	8
VEJ 1004	10	25	150	10
VEJ 1204	12	30	150	12
VEJ 1604	16	40	150	16
VEJ 1804	18	40	150	20
VEJ 2004	20	40	150	20

VNE 深溝用立銑刀 Square End Mills

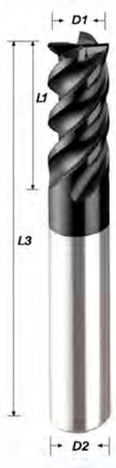
Carbide Super MG | Grain Size 0.4μm | Helix Angle 35° | Flutes 2 | HRC 60 | Coating X TiAlN | Flute Edge Long Neck

Long Neck

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	Effective Length 有效長L2	O.A.L. 全長L3	Shank Dia 柄徑D2
VNE 04022	0.4	0.6	2	50	4
VNE 04042	0.4	0.6	4	50	4
VNE 05022	0.5	0.8	2	50	4
VNE 05042	0.5	0.8	4	50	4
VNE 05062	0.5	0.8	6	50	4
VNE 06022	0.6	1	2	50	4
VNE 06042	0.6	1	4	50	4
VNE 06062	0.6	1	6	50	4
VNE 08032	0.8	1.2	3	50	4
VNE 08042	0.8	1.2	4	50	4
VNE 08062	0.8	1.2	6	50	4
VNE 10062	1	1.2	6	50	4
VNE 10082	1	1.2	8	50	4
VNE 10102	1	1.2	10	50	4
VNE 10122	1	1.2	12	50	4
VNE 15082	1.5	1.7	8	50	4
VNE 15102	1.5	1.7	10	50	4
VNE 15122	1.5	1.7	12	50	4
VNE 15162	1.5	1.7	16	50	4
VNE 20082	2	2.2	8	50	4
VNE 20102	2	2.2	10	50	4
VNE 20122	2	2.2	12	50	4
VNE 20162	2	2.2	16	75	4
VNE 30102	3	3.2	10	50	4
VNE 30122	3	3.2	12	50	4
VNE 30162	3	3.2	16	75	4
VNE 30202	3	3.2	20	75	4

VHP 重切削立銑刀 Heavy Cutting Square End Mills



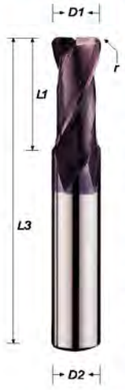
Carbide Super MG | Grain Size 0.4μm | Helix Angle 45° | Flutes 4 | HRC 60 | Coating X TiAlN

Long Shank

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
VHP 0204	2.0	6	50	4
VHP 0254	2.5	7	50	4
VHP 0304	3.0	8	50	4
VHP 0354	3.5	10	50	4
VHP 0404	4.0	11	50	4
VHP 0454	4.5	13	50	6
VHP 0504	5.0	13	50	6
VHP 0554	5.5	13	50	6
VHP 0604	6.0	15	50	6
VHP 0704	7.0	17	60	8
VHP 0804	8.0	20	60	8
VHP 0904	9.0	23	75	10
VHP 1001	10.0	25	75	10
VHP 1104	11.0	28	75	12
VHP 1204	12.0	30	75	12
VHP 1604	16.0	40	100	16
VHP 2004	20.0	40	100	20

VRT 圓鼻角立銑刀 Corner Radius End Mills

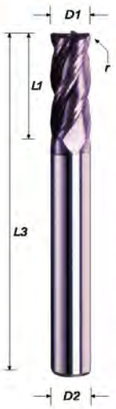


Carbide Super MG | Grain Size 0.4μm | Helix Angle 30° | Flutes 2 | HRC 60 | Coating X TiAlN | Flute Edge Corner

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	Corner R R角	O.A.L. 全長L3	Shank Dia 柄徑D2
VRT 01022	1.0	2	0.2	50	4
VRT 01522	1.5	3	0.2	50	4
VRT 01552	1.5	3	0.5	50	4
VRT 02022	2.0	5	0.2	50	4
VRT 02052	2.0	4	0.5	50	4
VRT 02522	2.5	5	0.2	50	4
VRT 02552	2.5	5	0.5	50	4
VRT 03022	3.0	6	0.2	50	4
VRT 03052	3.0	6	0.5	50	4
VRT 04022	4.0	8	0.2	50	4
VRT 04052	4.0	8	0.5	50	4
VRT 05052	5.0	10	0.5	50	6
VRT 06022	6.0	12	0.2	50	6
VRT 06052	6.0	12	0.5	50	6
VRT 06102	6.0	12	1.0	50	6
VRT 08052	8.0	16	0.5	60	8
VRT 08102	8.0	16	1.0	60	8
VRT 10052	10.0	20	0.5	75	10
VRT 10102	10.0	20	1.0	75	10
VRT 10152	10.0	20	1.5	75	10
VRT 10202	10.0	20	2.0	75	10
VRT 12052	12.0	24	0.5	75	12
VRT 12102	12.0	24	1.0	75	12
VRT 12152	12.0	24	1.5	75	12
VRT 12202	12.0	24	2.0	75	12

VRB 圓鼻角立銑刀 Corner Radius End Mills

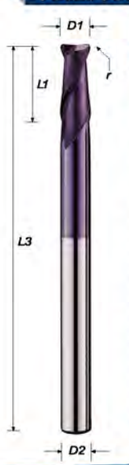


Carbide Super MG | Grain Size 0.4μm | Helix Angle 30° | Flutes 4 | HRC 60 | Coating X TiAlN | Flute Edge Corner

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	Corner R R角	O.A.L. 全長L3	Shank Dia 柄徑D2
VRB 01022	1.0	2	0.2	50	4
VRB 01522	1.5	3	0.2	50	4
VRB 01552	1.5	3	0.5	50	4
VRB 02022	2.0	5	0.2	50	4
VRB 02052	2.0	4	0.5	50	4
VRB 02522	2.5	5	0.2	50	4
VRB 02552	2.5	5	0.5	50	4
VRB 03022	3.0	6	0.2	50	4
VRB 03052	3.0	6	0.5	50	4
VRB 04022	4.0	8	0.2	50	4
VRB 04052	4.0	8	0.5	50	4
VRB 05052	5.0	10	0.5	50	6
VRB 06022	6.0	12	0.2	50	6
VRB 06052	6.0	12	0.5	50	6
VRB 06102	6.0	12	1.0	50	6
VRB 08052	8.0	16	0.5	60	8
VRB 08102	8.0	16	1.0	60	8
VRB 10052	10.0	20	0.5	75	10
VRB 10102	10.0	20	1.0	75	10
VRB 10152	10.0	20	1.5	75	10
VRB 10202	10.0	20	2.0	75	10
VRB 12052	12.0	24	0.5	75	12
VRB 12102	12.0	24	1.0	75	12
VRB 12152	12.0	24	1.5	75	12
VRB 12202	12.0	24	2.0	75	12

VRL.VRLL 長柄圓鼻角立銑刀 Corner Radius End Mills



Carbide Super MG | Grain Size 0.4μm | Helix Angle 30° | Flutes 2 | HRC 60 | Coating X TiAlN | Flute Edge Corner

Long Shank

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	Corner R R角	O.A.L. 全長L3	Shank Dia 柄徑D2
VRL 04052	4.0	8	0.5	75	4
VRL 04102	4.0	8	1.0	75	4
VRL 06022	6.0	12	0.2	75	6
VRL 06052	6.0	12	0.5	75	6
VRL 06102	6.0	12	1.0	75	6
VRL 06152	6.0	12	1.5	75	6
VRL 06202	6.0	12	2.0	75	6
VRLL 06022	6.0	12	0.2	100	6
VRLL 06052	6.0	12	0.5	100	6
VRLL 06102	6.0	12	1.0	100	6
VRLL 06152	6.0	12	1.5	100	6
VRLL 06202	6.0	12	2.0	100	6
VRLL 08052	8.0	16	0.5	100	8
VRLL 08102	8.0	16	1.0	100	8
VRLL 10052	10.0	20	0.5	100	10
VRLL 10102	10.0	20	1.0	100	10
VRLL 10152	10.0	20	1.5	100	10
VRLL 10202	10.0	20	2.0	100	10
VRLL 12052	12.0	24	0.5	100	12
VRLL 12102	12.0	24	1.0	100	12
VRLL 12152	12.0	24	1.5	100	12
VRLL 12202	12.0	24	2.0	100	12
VRLL 12252	12.0	24	2.5	100	12
VRLL 12302	12.0	24	3.0	100	12

VRL.VRLL 長柄圓鼻角立銑刀 Corner Radius End Mills

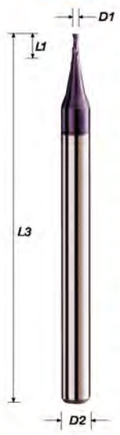
Carbide Super MG | Grain Size 0.4μm | Helix Angle 30° | Flutes 4 | HRC 60 | Coating X TiAlN | Flute Edge Corner

Long Shank

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	Corner R R角	O.A.L. 全長L3	Shank Dia 柄徑D2
VRL 04054	4.0	8	0.5	75	4
VRL 04104	4.0	8	1.0	75	4
VRL 06024	6.0	12	0.2	75	6
VRL 06054	6.0	12	0.5	75	6
VRL 06104	6.0	12	1.0	75	6
VRL 06154	6.0	12	1.5	75	6
VRL 06204	6.0	12	2.0	75	6
VRLL 06024	6.0	12	0.2	100	6
VRLL 06054	6.0	12	0.5	100	6
VRLL 06104	6.0	12	1.0	100	6
VRLL 06154	6.0	12	1.5	100	6
VRLL 06204	6.0	12	2.0	100	6
VRLL 08054	8.0	16	0.5	100	8
VRLL 08104	8.0	16	1.0	100	8
VRLL 10054	10.0	20	0.5	100	10
VRLL 10104	10.0	20	1.0	100	10
VRLL 10154	10.0	20	1.5	100	10
VRLL 10204	10.0	20	2.0	100	10
VRLL 12054	12.0	24	0.5	100	12
VRLL 12104	12.0	24	1.0	100	12
VRLL 12154	12.0	24	1.5	100	12
VRLL 12204	12.0	24	2.0	100	12
VRLL 12254	12.0	24	2.5	100	12
VRLL 12304	12.0	24	3.0	100	12

MEMT 微小徑立銑刀 Square End Mills



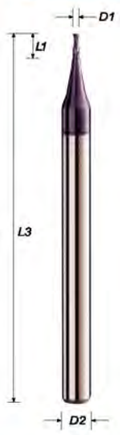
Carbide MG | Grain Size 0.6μm | Helix Angle 35° | Flutes 2 | HRC 55 | Coating Nano TiaLN | Flute Edge Square

Micro Diameter

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
MEMT 0022	0.2	0.4	50	3
MEMT 0032	0.3	0.6	50	3
MEMT 0042	0.4	0.8	50	3
MEMT 0052	0.5	1	50	3
MEMT 0062	0.6	1.2	50	3
MEMT 0082	0.8	1.6	50	3
MEMT 0102	1	3	50	3
MEMT 0122	1.2	3	50	3
MEMT 0142	1.4	3	50	3
MEMT 0152	1.5	4	50	3
MEMT 0162	1.6	4	50	3
MEMT 0182	1.8	4	50	3
MEMT 0202	2	6	50	3
MEMT 0252	2.5	8	50	3
MEMT 0302	3	8	50	3

MEM 微小徑立銑刀 Square End Mills



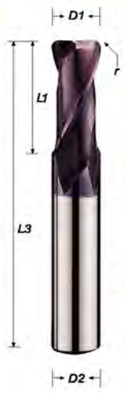
Carbide MG | Grain Size 0.6μm | Helix Angle 35° | Flutes 2 | HRC 55 | Coating Nano TiaLN | Flute Edge Square

Micro Diameter

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
MEM 0022	0.2	0.4	50	4
MEM 0032	0.3	0.6	50	4
MEM 0042	0.4	0.8	50	4
MEM 0052	0.5	1	50	4
MEM 0062	0.6	1.2	50	4
MEM 0072	0.7	1.4	50	4
MEM 0082	0.8	1.6	50	4
MEM 0092	1.9	1.8	50	4
MEM 0102	1.0	3	50	4
MEM 0122	1.2	3	50	4
MEM 0142	1.4	3	50	4
MEM 0152	1.5	4	50	4
MEM 0162	1.6	4	50	4
MEM 0182	1.8	5	50	4
MEM 0202	2.0	6	50	4

MRT 圓鼻角立銑刀 Corner Radius End Mills

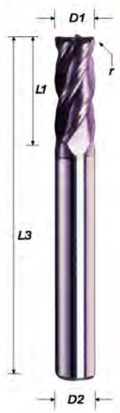


Carbide MG | Grain Size 0.6μm | Helix Angle 30° | Flutes 2 | HRC 55 | Coating Nano TiaLN | Flute Edge Corner

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	Corner R R角	O.A.L. 全長L3	Shank Dia 柄徑D2
MRT 01022	1.0	2	0.2	50	4
MRT 01522	1.5	3	0.2	50	4
MRT 01552	1.5	3	0.5	50	4
MRT 02022	2.0	5	0.2	50	4
MRT 02052	2.0	4	0.5	50	4
MRT 02522	2.5	5	0.2	50	4
MRT 02552	2.5	5	0.5	50	4
MRT 03022	3.0	6	0.2	50	4
MRT 03052	3.0	6	0.5	50	4
MRT 03102	3.0	6	1.0	50	4
MRT 04022	4.0	8	0.2	50	4
MRT 04052	4.0	8	0.5	50	4
MRT 04102	4.0	8	1.0	50	4
MRT 05052	5.0	10	0.5	50	6
MRT 05102	5.0	10	1.0	50	6
MRT 06022	6.0	12	0.2	50	6
MRT 06052	6.0	12	0.5	50	6
MRT 06102	6.0	12	1.0	50	6
MRT 06152	6.0	12	1.5	50	6
MRT 06202	6.0	12	2.0	50	6
MRT 08052	8.0	16	0.5	60	8
MRT 08102	8.0	16	1.0	60	8
MRT 08152	8.0	16	1.5	60	8
MRT 08202	8.0	16	2.0	60	8
MRT 10052	10.0	20	0.5	75	10
MRT 10102	10.0	20	1.0	75	10
MRT 10152	10.0	20	1.5	75	10
MRT 10202	10.0	20	2.0	75	10
MRT 10252	10.0	20	2.5	75	10
MRT 10302	10.0	20	3.0	75	10
MRT 12052	12.0	24	0.5	75	12
MRT 12102	12.0	24	1.0	75	12
MRT 12152	12.0	24	1.5	75	12
MRT 12202	12.0	24	2.0	75	12
MRT 12252	12.0	24	2.5	75	12
MRT 12302	12.0	24	3.0	75	12

MRB 圓鼻角立銑刀 Corner Radius End Mills



Carbide MG | Grain Size 0.6μm | Helix Angle 30° | Flutes 4 | HRC 55 | Coating Nano TiaLN | Flute Edge Corner

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	Corner R R角	O.A.L. 全長L3	Shank Dia 柄徑D2
MRB 01022	1.0	2	0.2	50	4
MRB 01522	1.5	3	0.2	50	4
MRB 01552	1.5	3	0.5	50	4
MRB 02022	2.0	5	0.2	50	4
MRB 02052	2.0	4	0.5	50	4
MRB 02522	2.5	5	0.2	50	4
MRB 02552	2.5	5	0.5	50	4
MRB 03022	3.0	6	0.2	50	4
MRB 03052	3.0	6	0.5	50	4
MRB 03102	3.0	6	1.0	50	4
MRB 04022	4.0	8	0.2	50	4
MRB 04052	4.0	8	0.5	50	4
MRB 04102	4.0	8	1.0	50	4
MRB 05052	5.0	10	0.5	50	6
MRB 05102	5.0	10	1.0	50	6
MRB 06022	6.0	12	0.2	50	6
MRB 06052	6.0	12	0.5	50	6
MRB 06102	6.0	12	1.0	50	6
MRB 06152	6.0	12	1.5	50	6
MRB 06202	6.0	12	2.0	50	6
MRB 08052	8.0	16	0.5	60	8
MRB 08102	8.0	16	1.0	60	8
MRB 08152	8.0	16	1.5	60	8
MRB 08202	8.0	16	2.0	60	8
MRB 10052	10.0	20	0.5	75	10
MRB 10102	10.0	20	1.0	75	10
MRB 10152	10.0	20	1.5	75	10
MRB 10202	10.0	20	2.0	75	10
MRB 10252	10.0	20	2.5	75	10
MRB 10302	10.0	20	3.0	75	10
MRB 12052	12.0	24	0.5	75	12
MRB 12102	12.0	24	1.0	75	12
MRB 12152	12.0	24	1.5	75	12
MRB 12202	12.0	24	2.0	75	12
MRB 12252	12.0	24	2.5	75	12
MRB 12302	12.0	24	3.0	75	12

MRL.MRLL 長柄圓鼻角立銑刀 Corner Radius End Mills

Carbide MG | Grain Size 0.6μm | Helix Angle 30° | Flutes 2 | HRC 55 | Coating Nano TiaLN | Flute Edge Corner

Long Shank

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	Corner R R角	O.A.L. 全長L3	Shank Dia 柄徑D2
MRL 04052	4.0	8	0.5	75	4
MRL 04102	4.0	8	1.0	75	4
MRL 06022	6.0	12	0.2	75	6
MRL 06052	6.0	12	0.5	75	6
MRL 06102	6.0	12	1.0	75	6
MRL 06152	6.0	12	1.5	75	6
MRL 06202	6.0	12	2.0	75	6
MRLL 06022	6.0	12	0.2	100	6
MRLL 06052	6.0	12	0.5	100	6
MRLL 06102	6.0	12	1.0	100	6
MRLL 06152	6.0	12	1.5	100	6
MRLL 06202	6.0	12	2.0	100	6
MRLL 08052	8.0	16	0.5	100	8
MRLL 08102	8.0	16	1.0	100	8
MRLL 10052	10.0	20	0.5	100	10
MRLL 10102	10.0	20	1.0	100	10
MRLL 10152	10.0	20	1.5	100	10
MRLL 10202	10.0	20	2.0	100	10
MRLL 12052	12.0	24	0.5	100	12
MRLL 12102	12.0	24	1.0	100	12
MRLL 12152	12.0	24	1.5	100	12
MRLL 12202	12.0	24	2.0	100	12
MRLL 12252	12.0	24	2.5	100	12
MRLL 12302	12.0	24	3.0	100	12

MRL.MRLL 長柄圓鼻角立銑刀 Corner Radius End Mills

Carbide MG | Grain Size 0.6μm | Helix Angle 30° | Flutes 4 | HRC 55 | Coating Nano TiaLN | Flute Edge Corner

Long Shank

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	Corner R R角	O.A.L. 全長L3	Shank Dia 柄徑D2
MRL 04054	4.0	8	0.5	75	4
MRL 04104	4.0	8	1.0	75	4
MRL 06024	6.0	12	0.2	75	6
MRL 06054	6.0	12	0.5	75	6
MRL 06104	6.0	12	1.0	75	6
MRL 06154	6.0	12	1.5	75	6
MRL 06204	6.0	12	2.0	75	6
MRLL 06024	6.0	12	0.2	100	6
MRLL 06054	6.0	12	0.5	100	6
MRLL 06104	6.0	12	1.0	100	6
MRLL 06154	6.0	12	1.5	100	6
MRLL 06204	6.0	12	2.0	100	6
MRLL 08054	8.0	16	0.5	100	8
MRLL 08104	8.0	16	1.0	100	8
MRLL 10054	10.0	20	0.5	100	10
MRLL 10104	10.0	20	1.0	100	10
MRLL 10154	10.0	20	1.5	100	10
MRLL 10204	10.0	20	2.0	100	10
MRLL 12054	12.0	24	0.5	100	12
MRLL 12104	12.0	24	1.0	100	12
MRLL 12154	12.0	24	1.5	100	12
MRLL 12204	12.0	24	2.0	100	12
MRLL 12254	12.0	24	2.5	100	12
MRLL 12304	12.0	24	3.0	100	12

MUU 粗齒粗目立銑刀 Roughing End Mills

Carbide MG | Grain Size 0.6μm | Helix Angle 25° | Flutes 3 | HRC 55 | Coating Nano TiaLN | Roughing

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
MUU 0403	4	8	50	6
MUU 0503	5	13	50	6
MUU 0603	6	16	50	6
MUU 0703	7	16	60	8
MUU 0803	8	19	60	8
MUU 0903	9	25	75	10
MUU 1003	10	25	75	10
MUU 1103	11	30	75	12
MUU 1203	12	30	75	12
MUU 1603	16	35	100	16
MUU 2003	20	45	100	20

MUU 粗齒粗目立銑刀 Roughing End Mills

Carbide MG | Grain Size 0.6μm | Helix Angle 25° | Flutes 4 | HRC 55 | Coating Nano TiaLN | Roughing

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
MUU 0504	5	13	50	6
MUU 0604	6	16	50	6
MUU 0704	7	16	60	8
MUU 0804	8	19	60	8
MUU 0904	9	25	75	10
MUU 1004	10	25	75	10
MUU 1104	11	30	75	12
MUU 1204	12	30	75	12
MUU 1604	16	35	100	16
MUU 2004	20	45	100	20

MHP 重切削立銑刀 Heavy Cutting Square End Mills

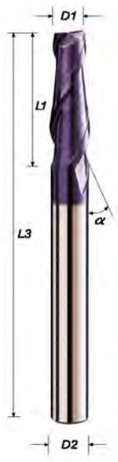
Carbide MG | Grain Size 0.6μm | Helix Angle 45° | Flutes 4 | HRC 55 | Coating Nano TiaLN

Long Shank

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
MHP 0204	2.0	6	50	4
MHP 0254	2.5	7	50	4
MHP 0304	3.0	8	50	4
MHP 0354	3.5	10	50	4
MHP 0404	4.0	11	50	4
MHP 0454	4.5	13	50	6
MHP 0504	5.0	13	50	6
MHP 0554	5.5	13	50	6
MHP 0604	6.0	15	50	6
MHP 0704	7.0	17	60	8
MHP 0804	8.0	20	60	8
MHP 0904	9.0	23	75	10
MHP 1001	10.0	25	75	10
MHP 1104	11.0	28	75	12
MHP 1204	12.0	30	75	12
MHP 1604	16.0	40	100	16
MHP 2004	20.0	40	100	20

MTE 斜度立銑刀 Taper End Mills

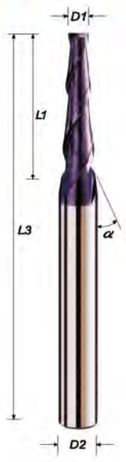


Carbide MG | Grain Size 0.6μm | Helix Angle 35° | Flutes 2 | HRC 55 | Coating Nano TiaLN | Flute Edge Tapered

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	Taper Angle 斜度 α	O.A.L. 全長L3	Shank Dia 柄徑D2
MTE 0050052	0.5	2	30'	50	4
MTE 0050102	0.5	2	1°	50	4
MTE 0050152	0.5	2	1°30'	50	4
MTE 0050202	0.5	2	2°	50	4
MTE 0050252	0.5	2	2°30'	50	4
MTE 0050302	0.5	2	3°	50	4
MTE 0050502	0.5	2	5°	50	4
MTE 0050702	0.5	2	7°	50	4
MTE 0051002	0.5	2	10°	50	4
MTE 0100052	1	4	30'	50	4
MTE 0100102	1	4	1°	50	4
MTE 0100152	1	4	1°30'	50	4
MTE 0100202	1	4	2°	50	4
MTE 0100252	1	4	2°30'	50	4
MTE 0100302	1	4	3°	50	4
MTE 0100502	1	4	5°	50	4
MTE 0100702	1	4	7°	50	4
MTE 0101002	1	4	10°	50	4
MTE 0150052	1.5	5	30'	50	4
MTE 0150102	1.5	5	1°	50	4
MTE 0150152	1.5	5	1°30'	50	4
MTE 0150202	1.5	5	2°	50	4
MTE 0150252	1.5	5	2°30'	50	4
MTE 0150302	1.5	5	3°	50	4
MTE 0150502	1.5	5	5°	50	4
MTE 0150702	1.5	5	7°	50	4
MTE 0151002	1.5	5	10°	50	4
					4
MTE 0200052	2	6	30'	50	4
MTE 0200102	2	6	1°	50	4
MTE 0200152	2	6	1°30'	50	4
MTE 0200202	2	6	2°	50	4
MTE 0200252	2	6	2°30'	50	4
MTE 0200302	2	6	3°	50	4
MTE 0200502	2	6	5°	50	4
MTE 0200702	2	6	7°	50	4
MTE 0201002	2	6	10°	50	4
MTE 0250052	2.5	8	30'	50	4
MTE 0250102	2.5	8	1°	50	4
MTE 0250152	2.5	8	1°30'	50	4
MTE 0252022	2.5	8	2°	50	4
MTE 0250252	2.5	8	2°30'	50	4
MTE 0250302	2.5	8	3°	50	4
MTE 0250502	2.5	8	5°	50	4
MTE 0250702	2.5	8	7°	50	6
MTE 0251002	2.5	8	10°	50	6
MTE 0300052	3	10	30'	50	6
MTE 0300102	3	10	1°	50	6
MTE 0300152	3	10	1°30'	50	6
MTE 0300202	3	10	2°	50	6
MTE 0300252	3	10	2°30'	50	6
MTE 0300302	3	10	3°	50	6
MTE 0300502	3	10	5°	50	6
MTE 0300702	3	10	7°	50	6
MTE 0301002	3	10	10°	50	6
MTE 0400052	4	15	30'	50	6
MTE 0400102	4	15	1°	50	6
MTE 0400152	4	15	1°30'	50	6
MTE 0400202	4	15	2°	50	6
MTE 0400252	4	15	2°30'	50	6
MTE 0400302	4	15	3°	50	6
MTE 0400502	4	15	5°	50	6
MTE 0400702	4	15	7°	60	6
MTE 0500052	5	20	30'	60	6
MTE 0500102	5	20	1°	60	6
MTE 0500152	5	20	1°30'	60	6
MTE 0500202	5	20	2°	60	6
MTE 0500252	5	20	2°30'	60	6
MTE 0500302	5	20	3°	60	6
MTE 0500502	5	20	5°	70	6
MTE 0500702	5	20	7°	70	6
MTE 0600052	6	20	30'	60	6
MTE 0600102	6	20	1°	60	6
MTE 0600152	6	20	1°30'	60	6
MTE 0600202	6	20	2°	60	6
MTE 0600252	6	20	2°30'	60	6
MTE 0600302	6	20	3°	60	8
MTE 0600502	6	20	5°	80	8
MTE 0800052	8	25	30'	70	8
MTE 0800102	8	25	1°	70	8
MTE 0800152	8	25	1°30'	70	8
MTE 0800202	8	25	2°	70	8
MTE 0800252	8	25	2°30'	70	10
MTE 0800302	8	25	3°	70	10
MTE 0800502	8	25	5°	90	12
MTE 1000052	10	35	30'	90	10
MTE 1000102	10	35	1°	90	10
MTE 1000152	10	35	1°30'	90	10
MTE 1000202	10	35	2°	90	12
MTE 1000252	10	35	2°30'	90	12
MTE 1000302	10	35	3°	90	12
MTE 1000502	10	35	5°	115	16

MTF 長刃斜角立銑刀 Taper End Mills



Carbide MG | Grain Size 0.6μm | Helix Angle 35° | Flutes 2 | HRC 55 | Coating Nano TiaLN | Flute Edge Square

Long Flute

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	Taper Angle 斜度 α	O.A.L. 全長L3	Shank Dia 柄徑D2
MTF 0100052	1	10	30'	50	4
MTF 0100102	1	10	1°	50	4
MTF 0100152	1	10	1°30'	50	4
MTF 0100202	1	10	2°	50	4
MTF 0100252	1	10	2°30'	50	4
MTF 0100302	1	10	3°	50	4
MTF 0100502	1	10	5°	50	4
MTF 0100702	1	10	7°	50	4
MTF 0150052	1.5	10	30'	50	4
MTF 0150102	1.5	10	1°	50	4
MTF 0150152	1.5	10	1°30'	50	4
MTF 0150202	1.5	10	2°	50	4
MTF 0150252	1.5	10	2°30'	50	4
MTF 0150302	1.5	10	3°	50	4
MTF 0200052	2	10	30'	50	4
MTF 0200102	2	10	1°	50	4
MTF 0200152	2	10	1°30'	50	4
MTF 0200202	2	10	2°	50	4
MTF 0200252	2	10	2°30'	50	4
MTF 0200302	2	10	3°	50	4
MTF 0200502	2	10	5°	50	4
MTF 0250052	2.5	15	30'	50	4
MTF 0250102	2.5	15	1°	50	4
MTF 0250152	2.5	15	1°30'	50	4
MTF 0250202	2.5	15	2°	50	4
MTF 0250252	2.5	15	2°30'	50	4
MTF 0250302	2.5	15	3°	50	4
MTF 0250502	2.5	15	5°	50	4
MTF 0300052	3	20	30'	60	6
MTF 0300102	3	20	1°	60	6
MTF 0300152	3	20	1°30'	60	6
MTF 0300202	3	20	2°	60	6
MTF 0300252	3	20	2° 30'	60	6
MTF 0300302	3	20	3°	60	6
MTF 0300502	3	20	5°	60	6
MTF 0400052	4	25	30'	60	6
MTF 0400102	4	25	1°	60	6
MTF 0400152	4	25	1°30'	60	6
MTF 0400202	4	25	2°	60	6
MTF 0400252	4	25	2°30'	60	6
MTF 0400302	4	25	3°	60	6
MTF 0405002	4	25	5°	60	6

MEG 高硬度用立銑刀 Square End Mills

Carbide MG | Grain Size 0.6μm | Helix Angle 45° | Flutes 6 | HRC 55 | Coating Nano TiaLN | Flute Edge Square

High Hardness

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
MEG 0406	4	11	50	6
MEG 0506	5	13	50	6
MEG 0606	6	15	50	6
MEG 0806	8	20	60	8
MEG 1006	10	30	75	10
MEG 1206	12	32	75	12
MEG 1606	16	40	100	16
MEG 2006	20	40	100	20
MEG 2506	25	45	100	25

MNE 深溝用立銑刀 Square End Mills

Carbide MG | Grain Size 0.6μm | Helix Angle 35° | Flutes 2 | HRC 55 | Coating Nano TiaLN | Flute Edge Long Neck

Long Neck

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	Effective Length 有效長L2	O.A.L. 全長L3	Shank Dia 柄徑D2
MNE 04022	0.4	1	2	50	4
MNE 04042	0.4	1	4	50	4
MNE 05022	0.5	1	2	50	4
MNE 05042	0.5	1	4	50	4
MNE 05062	0.5	1	6	50	4
MNE 06022	0.6	1	2	50	4
MNE 06042	0.6	1	4	50	4
MNE 06062	0.6	1	6	50	4
MNE 07022	0.7	1	2	50	4
MNE 07042	0.7	1	4	50	4
MNE 07062	0.7	1	6	50	4
MNE 08022	0.8	1	2	50	4
MNE 08042	0.8	1	4	50	4
MNE 08062	0.8	1	6	50	4
MNE 10062	1	1.5	6	50	4
MNE 10082	1	1.5	8	50	4
MNE 10102	1	1.5	10	50	4
MNE 10122	1	1.5	12	50	4
MNE 15082	1.5	2	8	50	4
MNE 15102	1.5	2	10	50	4
MNE 15122	1.5	2	12	50	4
MNE 15162	1.5	2	16	50	4
MNE 20082	2	3	8	50	4
MNE 20102	2	3	10	50	4
MNE 20122	2	3	12	50	4
MNE 20162	2	3	16	50	4
MNE 20202	2	3	20	50	4
MNE 25102	2.5	3	10	50	4
MNE 25122	2.5	3	12	50	4
MNE 25162	2.5	3	16	50	4
MNE 25202	2.5	3	20	50	4
MNE 30102	3	4	10	50	6
MNE 30122	3	4	12	50	6
MNE 30162	3	4	16	50	6
MNE 30202	3	4	20	60	6
MNE 30252	3	4	25	60	6

MAE 鋁用立銑刀 Square End Mills

Carbide MG | Grain Size 0.6μm | Helix Angle 55° | Flutes 2 | Flute Edge H

Aluminum Cutting

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
MAE 0052	0.5	1.5	50	4
MAE 0102	1	3	50	4
MAE 0152	1.5	4	50	4
MAE 0202	2	6	50	4
MAE 0302	3	8	50	4
MAE 0402	4	12	50	4
MAE 0502	5	16	50	6
MAE 0602	6	18	50	6
MAE 0802	8	22	60	8
MAE 1002	10	28	75	10
MAE 1202	12	30	75	12

MAB 鋼鋁用圓頭立銑刀 Ball Nose End Mills

Carbide MG | Grain Size 0.6μm | Helix Angle 25° | Flutes 2

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
MAB 0102	R0.5	2	50	4
MAB 0152	R0.75	3	50	4
MAB 0202	R1	4	50	4
MAB 0302	R1.5	6	50	3
MAB 0402	R2	8	50	4
MAB 0602	R3	12	50	6
MAB 0802	R4	16	60	8
MAB 1002	R5	20	75	10
MAB 1202	R6	24	75	12

MAE 鋁用立銑刀 Square End Mills

Carbide MG | Grain Size 0.6μm | Helix Angle 45° | Flutes 3 | Flute Edge H

Aluminum Cutting

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
MAE 0203	2	6	50	6
MAE 0303	3	10	50	6
MAE 0403	4	12	50	6
MAE 0503	5	16	50	6
MAE 0603	6	18	50	6
MAE 0803	8	20	60	8
MAE 1003	10	25	75	10
MAE 1203	12	30	75	12
MAE 1603	16	40	100	16

超微粒 MICRO GRAIN

APLUS HIGH SPEED CUTTING

B SERIES

BBA · BBH · BBI · BBJ · BBM · BEM · BEA · BEH · BEI · BEJ · BRT · BRB

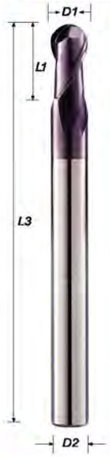
BBA 圓頭立銑刀 Ball Nose End Mills

Carbide MG | Grain Size 0.6μm | Helix Angle 30° | Flutes 2 | HRC 55 | Coating Nano TiaLN | Flute Edge BALL

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
BBA 0102	R0.5	2	50	4
BBA 0152	R0.75	3	50	4
BBA 0202	R1	4	50	4
BBA 0252	R1.25	5	50	4
BBA 0302	R1.5	6	50	4
BBA 0402	R2	8	50	4
BBA 0502	R2.5	10	50	6
BBA 0602	R3	12	50	6
BBA 0802	R4	16	60	8
BBA 1002	R5	20	75	10
BBA 1202	R6	24	75	12
BBA 1602	R8	30	100	16
BBA 2002	R10	30	100	20

BBH.BBI.BBJ 長柄圓頭立銑刀 Ball Nose End Mills



Carbide MG | Grain Size 0.6μm | Helix Angle 30° | Flutes 2 | HRC 55 | Coating Nano TiaLN | Flute Edge BALL

Long Shank

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
BBH 0202	R1	4	75	4
BBH 0252	R1.25	5	75	4
BBH 0302	R1.5	6	75	4
BBH 0402	R2	8	75	4
BBH 0502	R2.5	10	75	6
BBH 0602	R3	12	75	6
BBH 0802	R4	16	75	8
BBI 0202	R1	4	100	6
BBI 0302	R1.5	6	100	6
BBI 0402	R2	8	100	6
BBI 0602	R3	12	100	6
BBI 0802	R4	16	100	8
BBI 1002	R5	20	100	10
BBI 1202	R6	24	100	12
BBJ 0602	R3	12	150	6
BBJ 0802	R4	16	150	8
BBJ 1002	R5	20	150	10
BBJ 1202	R6	24	150	12
BBJ 1602	R8	30	150	16

BBM 微小徑圓頭立銑刀 Ball Nose End Mills

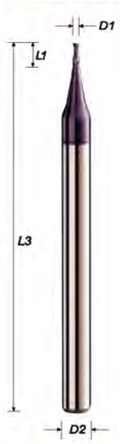
Carbide MG | Grain Size 0.6μm | Helix Angle 30° | Flutes 2 | HRC 55 | Coating Nano TiaLN | Flute Edge BALL

Micro Diameter

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
BBM 0032	R0.15	0.6	50	4
BBM 0042	R0.2	0.8	50	4
BBM 0052	R0.25	1	50	4
BBM 0062	R0.3	1.2	50	4
BBM 0072	R0.35	1.4	50	4
BBM 0082	R0.4	1.6	50	4
BBM 0102	R0.5	2	50	4
BBM 0122	R0.6	2.4	50	4
BBM 0142	R0.7	2.8	50	4
BBM 0152	R0.75	3	50	4
BBM 0162	R0.8	3.2	50	4
BBM 0182	R0.9	3.6	50	4
BBM 0202	R1	4	50	4

BEM 微小徑立銑刀 Square End Mills



Carbide MG | Grain Size 0.6μm | Helix Angle 35° | Flutes 2 | HRC 55 | Coating Nano TiaLN | Flute Edge Square

Micro Diameter

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
BEM 0022	0.2	0.4	50	4
BEM 0032	0.3	0.6	50	4
BEM 0042	0.4	0.8	50	4
BEM 0052	0.5	1	50	4
BEM 0062	0.6	1.2	50	4
BEM 0072	0.7	1.4	50	4
BEM 0082	0.8	1.6	50	4
BEM 0092	0.9	1.8	50	4
BEM 0102	1.0	3	50	4
BEM 0122	1.2	3	50	4
BEM 0142	1.4	3	50	4
BEM 0152	1.5	4	50	4
BEM 0162	1.6	4	50	4
BEM 0182	1.8	5	50	4
BEM 0202	2.0	6	50	4

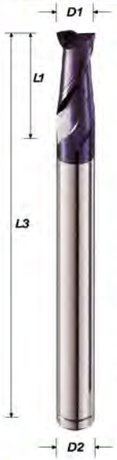
BEA 立銑刀 Square End Mills

Carbide MG | Grain Size 0.6μm | Helix Angle 35° | Flutes 2 | HRC 55 | Coating Nano TiaLN | Flute Edge Square

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
BEA 0102	1	3	50	4
BEA 0152	1.5	4.5	50	4
BEA 0202	2	6	50	4
BEA 0252	2.5	7	50	4
BEA 0302	3	8	50	4
BEA 0352	3.5	10	50	4
BEA 0402	4	11	50	4
BEA 0452	4.5	13	50	6
BEA 0502	5	13	50	6
BEA 0552	5.5	13	50	6
BEA 0602	6	15	50	6
BEA 0652	6.5	17	60	8
BEA 0702	7	17	60	8
BEA 0802	8	20	60	8
BEA 0852	8.5	23	75	10
BEA 0902	9	23	75	10
BEA 0952	9.5	25	75	10
BEA 1002	10	25	75	10
BEA 1052	10.5	25	75	12
BEA 1102	11	28	75	12
BEA 1152	11.5	28	75	12
BEA 1202	12	30	75	12
BEA 1602	16	40	100	16
BEA 1802	18	40	100	20
BEA 2002	20	40	100	20

BEH.BEI.BEJ 長柄立銑刀 Square End Mills



Carbide MG | Grain Size 0.6μm | Helix Angle 35° | Flutes 2 | HRC 55 | Coating Nano TiaLN | Flute Edge Square

Long Shank

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	O.A.L. 全長L3	Shank Dia 柄徑D2
BEH 0302	3	8	75	4
BEH 0402	4	11	75	4
BEH 0502	5	13	75	6
BEH 0602	6	15	75	6
BEH 0802	8	20	75	8
BEI 0302	3	8	100	6
BEI 0502	5	13	100	6
BEI 0602	6	15	100	6
BEI 0802	8	20	100	8
BEI 1002	10	25	100	10
BEI 1202	12	30	100	12
BEJ 0802	8	20	150	8
BEJ 1002	10	25	150	10
BEJ 1202	12	30	150	12
BEJ 1602	16	40	150	16
BEJ 1802	18	40	150	20
BEJ 2002	20	40	150	20

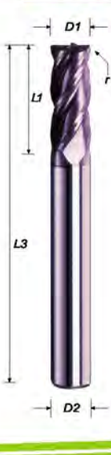
BRT 圓鼻角立銑刀 Corner Radius End Mills

Carbide MG | Grain Size 0.6μm | Helix Angle 30° | Flutes 2 | HRC 55 | Coating Nano TiaLN | Flute Edge R Corner

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	Corner R R角	O.A.L. 全長L3	Shank Dia 柄徑D2
BRT 01022	1.0	2	0.2	50	4
BRT 01522	1.5	3	0.2	50	4
BRT 01552	1.5	3	0.5	50	4
BRT 02022	2.0	5	0.2	50	4
BRT 02052	2.0	4	0.5	50	4
BRT 02522	2.5	5	0.2	50	4
BRT 02552	2.5	5	0.5	50	4
BRT 03022	3.0	6	0.2	50	4
BRT 03052	3.0	6	0.5	50	4
BRT 04022	4.0	8	0.2	50	4
BRT 04052	4.0	8	0.5	50	4
BRT 05052	5.0	10	0.5	50	6
BRT 06022	6.0	12	0.2	50	6
BRT 06052	6.0	12	0.5	50	6
BRT 06102	6.0	12	1.0	50	6
BRT 08052	8.0	16	0.5	60	8
BRT 08102	8.0	16	1.0	60	8
BRT 10052	10.0	20	0.5	75	10
BRT 10102	10.0	20	1.0	75	10
BRT 10152	10.0	20	1.5	75	10
BRT 10202	10.0	20	2.0	75	10
BRT 12052	12.0	24	0.5	75	12
BRT 12102	12.0	24	1.0	75	12
BRT 12152	12.0	24	1.5	75	12
BRT 12202	12.0	24	2.0	75	12

BRB 圓鼻角立銑刀 Corner Radius End Mills



Carbide MG | Grain Size 0.6μm | Helix Angle 30° | Flutes 4 | HRC 55 | Coating Nano TiaLN | Flute Edge R Corner

unit:mm

Type No. 型號	Diameter 直徑D1	Flute Length 刃長L1	Corner R R角	O.A.L. 全長L3	Shank Dia 柄徑D2
BRB 01022	1.0	2	0.2	50	4
BRB 01522	1.5	3	0.2	50	4
BRB 01552	1.5	3	0.5	50	4
BRB 02022	2.0	5	0.2	50	4
BRB 02052	2.0	4	0.5	50	4
BRB 02522	2.5	5	0.2	50	4
BRB 02552	2.5	5	0.5	50	4
BRB 03022	3.0	6	0.2	50	4
BRB 03052	3.0	6	0.5	50	4
BRB 04022	4.0	8	0.2	50	4
BRB 04052	4.0	8	0.5	50	4
BRB 05052	5.0	10	0.5	50	6
BRB 06022	6.0	12	0.2	50	6
BRB 06052	6.0	12	0.5	50	6
BRB 06102	6.0	12	1.0	50	6
BRB 08052	8.0	16	0.5	60	8
BRB 08102	8.0	16	1.0	60	8
BRB 10052	10.0	20	0.5	75	10
BRB 10102	10.0	20	1.0	75	10
BRB 10152	10.0	20	1.5	75	10
BRB 10202	10.0	20	2.0	75	10
BRB 12052	12.0	24	0.5	75	12
BRB 12102	12.0	24	1.0	75	12
BRB 12152	12.0	24	1.5	75	12
BRB 12202	12.0	24	2.0	75	12

切削條件 RECOMMENDED CUTTING CONDITION

APLUS
HIGH
SPEED
CUTTING

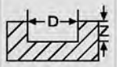
List of recommended milling conditions for ANB VNB

Work Material	S50C. PX5. SKD11. HPM-1. NAK55					
RADIUS	EFFECTIVE LENGTH	SPEED (min⁻¹)	FEED (mm/min)	LONG NECK MILLING (mm/per time)	FEED (mm/min)	3D MILLING (mm/per time)
R0.5	6L	12800-30000	300-800	0.01-0.05	800-1200	0.1-0.3
R0.5	8L	12800-30000	300-800	0.01-0.05	800-1200	0.1-0.3
R0.5	10L	12800-30000	300-800	0.01-0.05	800-1200	0.1-0.3
R0.5	12L	12800-30000	300-800	0.01-0.05	800-1200	0.1-0.3
R0.75	8L	8500-30000	300-800	0.02-0.10	800-1200	0.1-0.4
R0.75	12L	8500-30000	300-800	0.02-0.10	800-1200	0.1-0.4
R0.75	16L	8500-30000	300-800	0.02-0.10	800-1200	0.1-0.4
R0.75	20L	8500-30000	300-800	0.02-0.10	800-1200	0.1-0.4
R1	8L	6400-30000	300-800	0.02-0.30	800-2000	0.1-0.4
R1	12L	6400-30000	300-800	0.02-0.30	800-2000	0.1-0.4
R1	16L	6400-30000	300-800	0.02-0.30	800-2000	0.1-0.4
R1	20L	6400-30000	300-800	0.02-0.30	800-2000	0.1-0.4
R1.5	8L	4200-20000	300-800	0.02-0.30	800-2000	0.1-0.4
R1.5	10L	4200-20000	300-800	0.02-0.30	800-2000	0.1-0.4
R1.5	16L	4200-20000	300-800	0.02-0.30	800-2000	0.1-0.4
R1.5	20L	4200-20000	300-800	0.02-0.30	800-2000	0.1-0.4
R1.5	25L	4200-20000	300-800	0.02-0.30	800-2000	0.1-0.4
R2	10L	3200-15000	300-800	0.02-0.30	800-1500	0.1-0.5
R2	15L	3200-15000	300-800	0.02-0.30	800-1500	0.1-0.5
R2	20L	3200-15000	300-800	0.02-0.30	800-1500	0.1-0.5
R2	25L	3200-15000	300-800	0.02-0.30	800-1500	0.1-0.5
R2	30L	3200-15000	300-800	0.02-0.30	800-1500	0.1-0.5

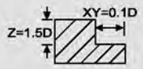
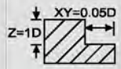
List of recommended milling conditions for VBH-2T VBI-2T

Work Material	HRC30-50		HRC50-55		HRC55-62	
Velocity	V=380m/min		V=300m/min		V=150m/min	
RADIUS	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)
R1	15000	1000	15000	875	15000	750
R1.5	15000	1500	15000	1200	12000	660
R2	15000	1500	15000	1250	10000	600
R2.5	15000	1500	15000	1300	9000	580
R3	15000	1500	15000	1300	8000	550
R4	15000	1500	12000	1000	6000	420
R5	12500	1250	9500	800	4800	340
R6	10000	1000	8000	700	4000	280
D : Diameter	XY=0.2D Z=0.05D					

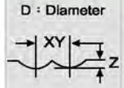
List of recommended milling conditions for AEA-2T VEA-2T

Work Material	Carbon Steels S45C.S50C HB225		Alloy Steels SK.SCM.SUS HB225-325		Prehardened Steels NAK.SKD HRC30-45		Hardened Steels SKD11,61.SKT HBC45-55	
DIAMETER	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)
1	20000	125	15000	120	12000	65	7100	30
2	11000	130	8500	120	6400	70	4000	40
3	7400	195	6400	145	4500	80	2800	45
4	5900	230	5000	190	3500	90	2150	50
5	5300	310	4200	230	2950	90	1850	55
6	4400	305	3500	230	2450	100	1500	55
8	3300	290	2600	230	1850	95	1200	50
10	2600	275	2100	225	1450	95	950	50
12	2200	275	1750	225	1200	90	800	45
D : Diameter 	Slot Milling D≤Ø1 , Z=0.1D Ø1≤D<Ø3 , Z=0.3D Ø3≤D , Z=0.5D						D<Ø1, Z=0.01D Ø1≤D<Ø3, Z=0.02D Ø3≤D, Z=0.05D	

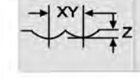
List of recommended milling conditions for AEA-4T VEA-4T

Work Material	HRC20-30		HRC30-48		HRC48-58		HRC58-62	
Velocity	V=170m/min		V=110m/min		V=80m/min		V=50m/min	
DIAMETER	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)
2	26500	850	17500	560	12800	410	8000	250
3	18000	720	11500	465	8500	340	3200	130
4	13500	810	8800	525	6350	380	2400	145
5	11000	650	7000	420	5100	305	1900	115
6	9000	720	5800	465	4250	340	1600	130
8	6800	675	4400	440	3200	320	1200	120
10	5400	755	3500	490	2500	355	1000	140
12	4500	720	2900	465	2100	340	800	130
16	3400	745	2200	480	1600	350	600	130
20	2700	745	1750	480	1280	350	320	130
D : Diameter	Side Milling 						Side Milling 	

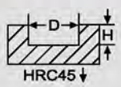
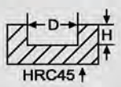
List of recommended milling conditions for ABM VBM

Work Material	Carbon Steels S45C.S50C HB150-250		Alloy Steels SCM.PDS5.PDS3 HRC20-35		Prehardened Steels NAK80.SKD11 HRC35-45		Hardened Steels SKD61 HBC45-55	
Velocity	V=80-120m/min		V=60-100m/min		V=40-80m/min		V=40m/min	
RADIUS	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)
R0.1	30000	500-700	30000	450-600	25000	300-600	20000	200-400
R0.15	30000	500-700	30000	450-600	25000	300-600	20000	200-400
R0.2	30000	600-800	30000	500-700	25000	300-600	20000	200-400
R0.25	30000	600-800	30000	500-700	25000	300-600	20000	200-400
R0.3	25000	800-1000	25000	600-1000	20000	300-600	18000	200-400
R0.35	25000	800-1000	25000	600-1000	20000	300-600	18000	200-400
R0.4	20000	800-1000	20000	600-1000	20000	300-600	18000	200-400
R0.5	20000	800-1000	20000	600-1000	20000	300-600	18000	200-400
D : Diameter 	(Z) HRC45 below 0.05-0.15R HRC50 below 0.05-0.15R		(Z) HRC45 below 0.05-0.15R HRC50 below 0.05-0.08R					

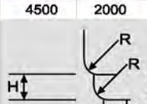
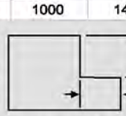
List of recommended milling conditions for ABA-2T VBA-2T

Work Material	NAK80 HRC40					
Velocity	V=376m/min		V=250m/min		V=188m/min	
RADIUS	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)
R1	40000	2000	40000	2000	30000	2000
R1.5	30000	2000	26000	2000	20000	2000
R2	25000	4800	20000	3200	15000	2400
R3	20000	6000	13000	4800	10000	4000
R4	15000	4500	10000	4000	7500	3300
R5	12000	4000	8000	3600	6000	2200
R6	10000	3500	6600	2400	5000	1800
D : Diameter 	XY=0.3D Z=0.05D		XY=0.5D Z=0.1D		XY=0.6D Z=0.1D	

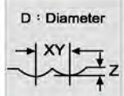
List of recommended milling conditions for VRT

Work Material	Carbon Steels.Alloy Steels S45C, FC, FCD, SCM, S50C, SKS···		Alloy Steels.Tool Steels SCr, SNCM, SKD11, SKD61, NAK80···		Hardened Steels SKD11	
HARDNESS	~HRC30		~HRC50		~HRC60	
DIAMETER	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)
3	7600	180	4800	120	2900	50
4	6500	260	4000	160	2500	55
5	5500	270	3200	160	2000	60
6	4800	300	2900	170	1800	70
8	3700	325	2200	170	1500	85
10	2900	280	1700	140	1100	70
12	2400	230	1400	120	1000	65
16	1800	170	1100	90	700	45
DEPTH OF CUT	 H≤0.3D		 H≤0.15D			

List of recommended milling conditions for VRB

Work Material	Carbon Steels.Alloy Steels S45C, FC, FCD, SCM, S50C, SKS···		Alloy Steels.Tool Steels SCr, SNCM, SKD11, SKD61, NAK80···		Hardened Steels SKD11	
HARDNESS	~HRC30		~HRC50		~HRC60	
DIAMETER	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)
2	26000	1600	16500	1000	7500	300
3	19000	1800	12000	1200	5400	360
4	16000	3200	10000	1900	4800	480
5	14000	3300	8000	2000	3800	500
6	12000	3600	7200	2200	3500	650
8	9600	4000	5600	2200	2700	750
10	7000	3400	4400	1700	2100	650
12	6000	2800	3600	1400	1800	600
16	4500	2000	2800	1000	1400	450
DEPTH OF CUT	 H≤0.02R P≤0.02R		 H≤0.1D W≤0.02D			

List of recommended milling conditions for VBM

Work Material	Copper		HRC20-30		HRC30-48	
Velocity	V=230m/min		V=100m/min		V=70m/min	
RADIUS	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)
R0.15	60000	600	60000	600	60000	500
R0.2	60000	600	60000	600	45000	500
R0.25	60000	600	45000	600	45000	500
R0.3	60000	1000	45000	900	32000	600
R0.35	60000	1200	45000	950	32000	650
R0.4	60000	1200	36000	950	25000	650
R0.5	60000	1800	32000	950	18500	650
R0.75	49000	1800	21000	850	15000	550
R1	36500	1800	16000	850	11000	550
R1.5	24000	1800	10000	850	7400	550
R2	18000	1800	8000	850	5500	550
D : Diameter 	XY=0.1D Z=0.01D		XY=0.1D Z=0.01D		XY=0.1D Z=0.01D	

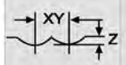
List of recommended milling conditions for

Work Material	Hardened Steels SKD61 HRC52					
Velocity	V=376m/min		V=250m/min		V=188m/min	
RADIUS	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)
R1	20000	2000	15000	1200	10000	1000
R1.5	20000	2000	15000	1200	10000	1000
R2	20000	2000	15000	1200	10000	1000
R3	20000	6000	13000	4500	6400	1500
R4	15000	4000	10000	3600	4800	1500
R5	12000	4000	8000	3200	3800	1500
R6	10000	3600	6600	1800	3200	1500
D : Diameter	XY=0.1D Z=0.02D		XY=0.15D Z=0.04D		XY=0.2D Z=0.04D	

List of recommended milling conditions for VBJ-2T

Work Material	Carbon Steels S45C.S50C HB150-250		Alloy Steels SCM.P20.PDS5.PDS3 HRC20-35		Prehardened Steels NAK80 HRC35-48		Hardened Steels SKD61 HBC48-60	
RADIUS	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)
R5	4400	990	3650	640	2950	510	1830	260
R6	3700	990	3050	720	2500	540	1530	300
R8	2800	1080	2300	720	1850	540	1150	270
R10	2200	1080	1850	720	14500	540	750	270

D : Diameter



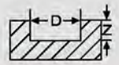
XY=0.1D
Z=0.03D

List of recommended milling conditions for AEM VEM

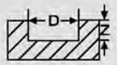
Work Material	Carbon Steels S45C.S50C HB150-250		Alloy Steels SCM.P20.PDS5.PDS3.SKD11 HRC20-35		Prehardened Steels NAK80 HRC35-45		Hardened Steels SKD61 HBC45-55	
Velocity	V=80-120m/min		V=60-100m/min		V=40-80m/min		V=40m/min	
DIAMETER	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)
0.2	30000	90	30000	80	30000	40	20000	25
0.3	30000	100	30000	80	30000	60	16500	25
0.4	25000	110	25000	90	25000	65	12500	25
0.5	25000	110	25000	90	25000	65	10000	25
0.6	25000	110	25000	90	25000	65	8500	25
0.7	25000	110	25000	90	25000	65	6500	25
0.8	25000	110	25000	90	25000	65	6500	25
1	20000	120	15000	100	13000	70	6000	30
1.2	20000	120	15000	100	13000	70	5000	30
1.5	15000	120	10000	100	8500	70	4500	35
1.6	15000	120	10000	100	8500	70	4500	35
1.8	11000	120	7500	110	6800	80	4000	35
2	11000	130	7500	110	6800	80	4000	40
2.5	9000	150	6500	110	6000	80	3500	40
3	7500	195	6000	110	5500	80	2800	40

D : Diameter

D≦Ø1
Z=0.1D
Ø1≦D<Ø3
Z=0.3D



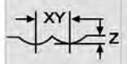
D≦Ø1
Z=0.1D
Ø1≦D<Ø3
Z=0.3D



List of recommended milling conditions for MBA-2T/MBT-2T/MBH-2T/MBI-2T/MBJ-2T MBA-4T/MBT-4T

Work Material	Carbon Steels S45C.S50C HB150-250		Alloy Steels SCM.P20.PDS5.PDS3.SKD11 HRC20-35		Prehardened Steels NAK80 HRC35-45		Hardened Steels SKD61 HBC45-55	
Velocity	V=100m/min		V=80m/min		V=70m/min		V=40m/min	
RADIUS	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)
R1	16000	400-1000	12700	300-800	11000	200-400	6400	80-250
R1.5	10600	400-1000	8500	300-800	7430	200-400	4250	80-250
R2	8000	400-1000	6400	300-800	5650	200-400	3200	80-250
R3	5300	400-1000	4200	300-800	3750	200-400	2100	80-250
R4	4000	400-1000	3200	300-800	2800	200-400	1600	80-250
R5	3200	400-1000	2500	300-800	2250	200-400	1200	80-250
R6	2700	400-1000	2100	300-800	1900	200-400	1000	80-250

D : Diameter



XY=0.2D
Z=0.1-0.3D

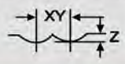
XY=0.2D
(Z)
HRC45 below 0.1-0.3D
HRC50 below 0.05-0.02D

List of recommended milling conditions for MBMT MBM

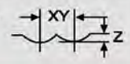
Work Material	Carbon Steels S45C.S50C HB150-250		Alloy Steels SCM.P20.PDS5.PDS3.SKD11 HRC20-35		Prehardened Steels NAK80 HRC35-45		Hardened Steels SKD61 HBC45-55	
Velocity	V=100m/min		V=80m/min		V=70m/min		V=40m/min	
RADIUS	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)
R0.15	32000	450	32000	400	32000	200	25000	140
R0.2	32000	460	32000	410	32000	200	25000	135
R0.25	32000	480	32000	550	32000	230	25000	150
R0.3	32000	530	32000	550	32000	250	25000	160
R0.35	32000	580	32000	580	30000	250	24000	160
R0.4	32000	610	32000	620	28000	280	23500	210
R0.5	32000	750	32000	620	22000	280	19000	210
R0.6	30000	750	30000	620	18500	280	15500	210
R0.7	27000	750	22000	620	15500	280	13500	210
R0.75	25000	750	21000	620	14200	280	12000	210
R0.8	23500	750	19000	620	13500	280	11500	210
R0.9	21000	750	18000	620	12000	280	10500	210
R1.0	19000	750	16000	620	11000	280	9500	210

D : Diameter

XY=0.05D
Z=0.2D



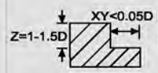
XY=0.05D
Z=0.1D

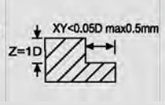


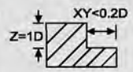
List of recommended milling conditions for VEA-6T

Work Material	Carbon Steels Alloy Steels <HRC50		Hardened Steels HRC50-60		Hardened Steels >HRC60	
DIAMETER	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)
6	16000	5800	8000	2900	4000	1400
8	12000	5800	6000	2900	3000	1400
10	9500	5700	4800	2900	2400	1400
12	8000	4800	4000	2400	2000	1200
16	6000	3600	3000	1800	1500	900

D : Diameter



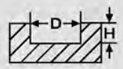




List of recommended milling conditions for ANE VNE

Work Material	Alloy Steels.Tool Steels.Hardened Steels S45C, SCM, S50C, SCr, SNCM, SKD11, SKD61, NAK80			
DIAMETER	EFFECTIVE LENGTH	SPEED (min⁻¹)	FEED (mm/min)	DEPTH OF CUT H(mm)
1	4	30000	2200	0.15
1	6	30000	2200	0.12
1	8	30000	2200	0.12
1	10	30000	2200	0.12
1.5	4	25000	1800	0.20
1.5	6	25000	1800	0.18
1.5	8	25000	1800	0.15
1.5	10	25000	1800	0.15
1.5	12	25000	1800	0.15
2	8	20000	1500	0.30
2	10	20000	1500	0.30
2	12	20000	1500	0.25
2	16	20000	1500	0.25
3	8	12000	900	0.40
3	12	12000	900	0.40
3	16	12000	900	0.30
3	20	12000	900	0.30
4	10	9000	850	0.50
4	16	9000	850	0.40

DEPTH OF CUT



List of recommended milling conditions for MNB

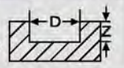
Work Material		S50C.PX-5.SKD11.HPM-1.NAK55 HRC30-40			S50C.PX-5.SKD11.HPM-1.NAK55 HRC30-40						NAK80 HRC40		
		Standard			High Speed								
RADIUS	EFFECTIVE LENGTH	SPEED (min⁻¹)	FEED (mm/min)	Cutting Depth (mm per time)	SPEED (min⁻¹)	FEED (mm/min)	LONG NECK MILLING (mm per time)	FEED (mm/min)	3D MILLING Cutting Depth	SPEED (min⁻¹)	FEED (mm/min)	Cutting Depth (mm per time)
R0.5	6L	30000	800	0.05	28000-30000	300-800	0.01-0.05	800-1200	0.1-0.3	20000	1000	0.05
R0.5	8L		800	0.04							1000	0.04
R0.5	10L		800	0.02							1000	0.02
R0.5	12L		800	0.02							1000	0.02
R0.75	8L	24000	1000	0.1	9500-30000	300-800	0.01-0.15	800-1500	0.1-0.3	16000	2000	0.1
R0.75	10L		1000	0.08							2000	0.08
R0.75	12L		1000	0.06							2000	0.06
R0.75	16L		800	0.04							1600	0.04
R0.75	20L		800	0.02							1600	0.02
R1	8L	20000	1200	0.12	6400-30000	300-800	0.01-0.3	800-2000	0.1-0.5	12000	2500	0.2
R1	10L		1200	0.12							2500	0.2
R1	12L		1200	0.1							2500	0.16
R1	16L		1000	0.06							2000	0.1
R1	20L		1000	0.06							2000	0.1
R1.5	10L	13000	1500	0.2	4200-20000	300-800	0.01-0.3	800-2000	0.1-0.5	10000	2500	0.25
R1.5	12L		1500	0.2							2500	0.25
R1.5	16L		1500	0.16							2500	0.2
R1.5	20L		1200	0.16							2000	0.18
R1.5	25L		1200	0.1							2000	0.15
R2	12L	9000	1200	0.2	3200-15000	300-800	0.01-0.3	800-1500	0.1-0.5	8000	1600	0.3
R2	16L		1200	0.2							1600	0.3
R2	20L		1200	0.2							1600	0.3
R2	25L		1200	0.16							1600	0.2
R2	30L		1200	0.16							1600	0.2

List of recommended milling conditions for MEMT MEM

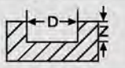
Work Material	Carbon Steels S45C.S50C HB150-250		Alloy Steels SCM.P20.PDS5.PDS3.SKD11 HRC20-35		Prehardened Steels NAK80 HRC35-45		Hardened Steels SKD61 HBC45-55	
Velocity	V=80-120m/min		V=60-100m/min		V=40-80m/min		V=40m/min	
DIAMETER	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)
0.2	30000	90	30000	80	30000	40	20000	25
0.3	30000	100	30000	80	30000	60	16500	25
0.4	25000	110	25000	90	25000	65	12500	25
0.5	25000	110	25000	90	25000	65	10000	25
0.6	25000	110	25000	90	25000	65	8500	25
0.7	25000	110	25000	90	25000	65	6500	25
0.8	25000	110	25000	90	25000	65	6500	25
1.0	20000	120	15000	100	13000	70	6000	30
1.2	20000	120	15000	100	13000	70	5000	30
1.4	20000	120	15000	100	13000	70	5000	30
1.5	15000	120	10000	100	8500	70	4500	35
1.6	15000	120	10000	100	8500	70	4500	35
1.8	11000	120	7500	110	6800	80	4000	35
2.0	11000	130	7500	110	6800	80	4000	40
2.5	9000	150	6500	110	6000	80	3500	40
3.0	7500	195	6000	110	5500	80	2800	40

D : Diameter

D≦Ø1
Z=0.1D
Ø1≦D<Ø3
Z=0.3D



D≦Ø1
Z=0.1D
Ø1≦D<Ø3
Z=0.3D

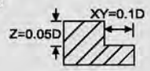


List of recommended milling conditions for VRV

Work Material	HRC40-80		HRC48-55		HRC55-65	
Velocity	V=160m/min		V=140m/min		V=110m/min	
DIAMETER	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)
6	8500	5100	7400	4450	5800	3000
8	6400	4400	5580	3800	4400	2600
10	5100	3800	4450	3350	3500	2300
12	4250	3450	3700	3000	2900	2100
16	3200	3200	2800	2800	2200	2200

D : Diameter

Side Milling



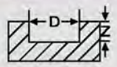
List of recommended milling conditions for MNE

Work Material		S50C.NAK.HPM.SUS				
		Standard		High Speed		
DIAMETER	EFFECTIVE LENGTH	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)
1	6L	16000	400	24000	2000	0.06
1	8L	16000	400	24000	2000	0.04
1	10L	16000	400	24000	2000	0.03
1	12L	16000	400	24000	2000	0.02
1.5	8L	12000	400	16000	1400	0.12
1.5	10L	12000	400	16000	1400	0.08
1.5	12L	12000	400	16000	1400	0.05
1.5	16L	12000	400	16000	1400	0.02
2	10L	8000	400	12000	1000	0.20
2	12L	8000	400	12000	1000	0.15
2	16L	8000	400	8000	700	0.08
2	20	8000	400	8000	650	0.04
2.5	10L	6600	450	10000	800	0.25
2.5	12L	6600	450	8000	600	0.20
2.5	16L	6600	450	5000	400	0.15
2.5	20L	6600	450	4000	400	0.10
3	10L	5600	450	8000	680	0.30
3	12L	5600	450	8000	680	0.30
3	16L	5600	450	5500	450	0.25
3	20L	5600	450	4000	350	0.25
3	25L	5600	450	3200	260	0.20

List of recommended milling conditions for MEA-2T/MET-2T MEH-2T/MEI-2T/MEJ-2T

Work Material	Mild Steels, Carbon steels, Cast iron, SS400, S55C, FC250(-750N/mm²)		Alloy Steels, Tool Steels, SCM, SKT, SKS, SKD(-30HRC)		Stainless Steels, Prehardened Steels, SKT,SKD,NAK55 HPM(30-38HRC)		Stainless Steels, Prehardened Steels, SUS304,SKD,NAK80, HPM50(38-45HRC)		Hardened Steels, (45-55HRC) Heat resistant, Alloy steels		Hardened Steels, (55-60HRC)	
DIAMETER	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)
1	19500	130	14500	125	12500	90	11000	65	7000	30	5050	25
1.5	14000	130	10500	125	8900	90	7950	65	5050	40	3550	25
2	11000	135	8400	125	7000	90	6350	70	3950	40	2750	25
2.5	8900	170	7250	135	6000	95	5200	70	3250	40	2300	25
3	7450	200	7200	230	5850	125	5300	100	3200	45	2100	25
3.5	6650	225	6200	230	5000	125	4550	100	2750	45	1800	25
4	6000	235	5400	230	4400	125	4000	100	2400	45	1600	25
4.5	5650	270	4800	230	3900	125	3550	100	2100	45	1400	25
5	5300	315	4350	235	3500	130	3200	100	1900	55	1300	30
5.5	4800	310	3950	235	3250	130	2750	100	1750	55	1150	30
6	4400	310	3600	235	2900	130	2650	100	1600	55	1050	25
8	3300	295	2700	235	2200	125	2000	100	1200	50	795	25
10	2650	280	2150	230	1750	125	1600	95	955	50	635	25
12	2200	280	1800	230	1450	125	1350	95	795	45	530	20

Depth of cut



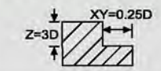
	Z		Z		Z
D≦Ø1	0.3D	D≦Ø1	0.1D	D≦Ø1	0.05D
Ø6<D	0.5D	Ø6<D	0.2D	Ø6<D	0.1D

List of recommended milling conditions for MEF-2T

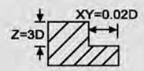
Work Material	Carbon Steels S45C.S50C HB150-250		Alloy Steels SCM(HPM) HRC20-35		Prehardened Steels NAK(HPM) HRC40		Hardened Steels SKD61 HBC50	
DIAMETER	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)
2	4800	60	2850	30	2250	20	1650	15
3	3700	60	2250	40	2000	30	1800	20
4	3200	80	1900	50	1700	40	1500	30
5	2850	100	1700	65	1550	50	1350	45
6	2650	120	1600	70	1450	60	1250	55
8	2000	120	1200	70	1100	60	950	55
10	1600	120	950	70	850	60	750	55
12	1300	120	800	70	700	60	600	15

D : Diameter

Side Milling



Side Milling

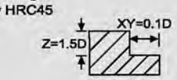


List of recommended milling conditions for MRB-4T/MRL-4T MRLL-4T

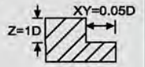
Work Material	Carbon Steels S45C.S50C HRC20-40		Alloy Steels NAK80 HRC40-50		Prehardened Steels SKD61 HRC50-60		Hardened Steels SKD11 UP HBC60	
DIAMETER	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)
6	4300	780	3200	580	2200	380	1100	160
8	3200	780	2400	580	1600	380	800	160
10	2600	780	1900	580	1300	380	650	160
12	2100	780	1600	580	1000	380	530	160

D : Diameter

Side Milling below HRC45



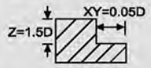
Side Milling up HRC45



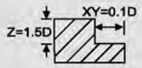
List of recommended milling conditions for MEA-4T/MET-4T/MEG-4T MEH-4T/MEI-4T/MEJ-4T

Work Material	Carbon Steels S45C.S50C HB150-250		Alloy Steels SCM.SUS(HPM) HBC20-35		Prehardened Steels NAK(HPM) HRC40		Hardened Steels SKD61 HBC50	
DIAMETER	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)
1	21000	400	18000	210	16000	160	9800	110
2	14000	400	9600	250	8000	180	4800	110
3	9500	450	6400	250	5300	200	3200	120
4	7200	550	4800	320	4000	200	2400	120
5	5700	700	3800	350	3200	220	1900	160
6	4800	700	3200	380	2650	220	1600	180
8	3600	600	2400	380	2000	220	1200	180
10	2900	600	1900	380	1600	220	950	180
12	2400	430	1600	300	1300	200	800	150

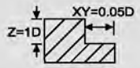
Side Milling below Ø3



Side Milling up to Ø4



Side Milling

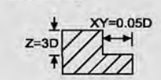


List of recommended milling conditions for MEF-4T

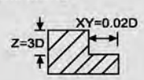
Work Material	Carbon Steels S45C.S50C HB150-250		Alloy Steels SCM.SUS(HPM) HRC20-35		Prehardened Steels NAK(HPM) HRC40		Hardened Steels SKD61 HBC50	
DIAMETER	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)
2	4800	70	2850	40	2250	35	1650	20
3	3700	100	2250	60	2000	50	1800	40
4	3200	150	1900	90	1700	70	1500	50
5	2850	160	1700	100	1550	80	1350	60
6	2650	200	1600	135	1450	100	1250	80
8	2000	200	1200	135	1100	100	950	80
10	1600	200	950	135	850	100	750	80
12	1300	200	800	135	700	100	600	80
16	1000	160	600	90	500	80	450	65
20	800	130	500	80	400	60	350	50

D : Diameter

Side Milling



Side Milling

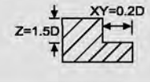


List of recommended milling conditions for MEG-3T

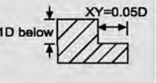
Work Material	Carbon Steels S50C.SCM.SS below HRC30		Alloy Steels SUS304.SUS316		Prehardened Steels NAK80.SKD61 HRC35-45		Hardened Steels SKD61.SKD11 HRC45-55	
DIAMETER	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)
2	9500	150	8000	120	6400	80	3200	25
3	6400	150	5300	100	4200	80	2100	30
4	4800	180	4000	150	3200	100	1600	40
5	3800	240	3200	180	2550	100	1300	40
6	3200	260	2700	200	2100	130	1000	50
8	2400	260	2000	200	1600	130	800	45
10	1900	260	1600	200	1300	130	650	45
12	1600	260	1300	200	1000	130	530	40
16	1200	180	1000	140	800	90	400	30

D : Diameter

Side Milling



Side Milling

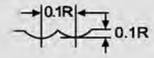


List of recommended milling conditions for MAB(Side Milling)

Work Material	Copper			Aluminum		
Velocity	V=70-120m/min			V=100-250m/min		
RADIUS	SPEED (min⁻¹)	FEED (mm/min) Rough Milling	FEED (mm/min) Refined Milling	SPEED (min⁻¹)	FEED (mm/min) Rough Milling	FEED (mm/min) Refined Milling
R0.5	37680	250	700	47000	320	860
R0.75	25500	250	700	47000	320	860
R1	19100	250	700	23800	600	1650
R1.5	12700	300	900	16000	750	1650
R2	9500	300	900	12000	750	1650
R3	6400	300	900	8000	750	1650
R4	4800	300	900	6000	750	1650
R5	3800	300	900	4800	750	1650
R6	3200	300	900	4200	750	1650

Rough Milling

Refined Milling

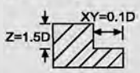


List of recommended milling conditions for MRT-2T/MRL-2T MRLL-2T

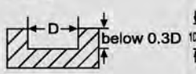
Work Material	Carbon Steels S50C		Alloy Steels SCM.SKD.SUS		Prehardened Steels HPM.NAK		Hardened Steels SKD61 -HRC52	
Velocity	V=60-80m/min		V=50-70m/min		V=30-50m/min		V=20-30m/min	
DIAMETER	SPINDLE SPEED (min⁻¹)	FEED (mm/min) Side Milling	SPINDLE SPEED (min⁻¹)	FEED (mm/min) Side Milling	SPINDLE SPEED (min⁻¹)	FEED (mm/min) Side Milling	SPINDLE SPEED (min⁻¹)	FEED (mm/min) Side Milling
		Slotting		Slotting		Slotting		Slotting
2	12800	400 150	9600	210 70	6400	110 55	3200	80 40
3	8500	450 160	6400	250 80	4300	120 60	2100	100 50
4	6400	450 160	4800	250 80	3200	120 60	1600	100 50
5	5100	600 200	3800	300 90	2600	150 75	1300	120 60
6	2400	170 70	2100	140 55	1600	110 45	1100	80 30
8	1800	170 70	1600	140 55	1200	110 45	800	80 30
10	1400	170 70	1300	140 55	1000	110 45	650	80 30
12	1200	170 70	1100	140 55	800	110 45	530	80 30

D : Diameter

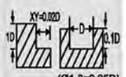
Side Milling



Slotting



Side Milling Slotting

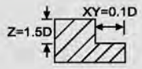


- Adjust feed according to inclined angle.
- When corner processing, reduce the feed by approximately 50%-30%.
- When using low speed machine, reduce feed and depth of cut.

List of recommended milling conditions for MEA-3T/MET-3T MEH-3T/MEI-3T/MEJ-3T

Work Material	Alloy Steels SCM.SUS(HPM) HRC20-35		Prehardened Steels NAK80(HPM) HRC35-45		Hardened Steels SKD61 HBC45-55	
Velocity	V=170m/min		V=110m/min		V=80m/min	
DIAMETER	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)
3	18000	720	11500	465	8500	340
4	13500	810	8800	525	6400	380
5	10800	650	7000	420	5100	300
6	9000	720	5800	465	4250	340
8	6800	675	4400	440	3200	320
10	5400	755	3500	490	2550	355
12	4500	720	2900	465	2100	340
16	3400	745	2200	480	1600	350

D : Diameter

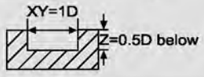


List of recommended milling conditions for MEG-4T

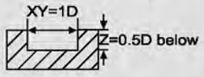
Work Material	Carbon Steels S50C.SCM.SS below HRC30		Alloy Steels SUS304.SUS316		Prehardened Steels NAK80.SKD61 HRC35-45		Hardened Steels SKD61.SKD11 HRC45-55	
DIAMETER	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)
2	8000	90	6400	40	6400	30	3200	20
3	5300	100	4200	50	4200	40	2100	20
4	4000	120	3200	60	3200	50	1600	25
5	3200	170	2550	75	2550	65	1300	30
6	2700	180	1500	85	1500	70	1100	35
8	2000	190	1100	95	1100	80	800	35
10	1600	190	960	90	960	85	650	35
12	1300	190	800	90	800	70	530	25
16	1000	120	600	60	600	50	400	20

D : Diameter

Neck Milling-Front Milling



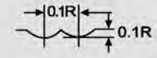
Neck Milling-Front Milling



List of recommended milling conditions for MAB(Side Milling)

Work Material	Copper Alloys		Aluminum Alloys	
Velocity	V=70-120m/min		V=100-250m/min	
RADIUS	SPEED (min⁻¹)	FEED (mm/min) Refined Milling	SPEED (min⁻¹)	FEED (mm/min) Refined Milling
R3	13000	4800	26500	8000
R4	10000	4000	19500	9500
R5	8000	3200	15500	9000
R6	6600	2400	13000	8000

Refined Milling



List of recommended milling conditions for MUU-3T(Side Milling)

Work Material	Cast iron, FC, FCD		Mild Steels,Carbon Steels, SS400, S55C, (-750N/mm²)		Alloy Steels,Tool Steels, SCM,SKT,SKS, SKD(-30HRC)		Prehardened Steels SKT, SKD,NAK55 HPM(30-38HRC)		Stainless Steels, SUS304,SKD (38-45HRC)	
Velocity	100-140m/min		80-120m/min		70-100m/min		50-80m/min		35-65m/min	
DIAMETER	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)
6	6350	760	5300	640	4500	360	3450	280	2650	210
8	4750	760	4000	640	3400	410	2600	310	2000	240
10	3800	760	3200	640	2700	430	2050	330	1600	260
12	3200	770	2650	640	2250	450	1700	340	1350	270
14	2750	770	2250	650	1950	470	1500	360	1150	280
16	2400	770	2000	640	1700	780	1300	360	1000	280
18	2100	760	1750	630	1500	480	1150	350	900	270
20	1900	760	1600	610	1350	470	1050	350	800	260
Depth of cut	XY=0.4D Z=1.5D				XY=0.3D Z=1.5D					

(Slotting)

Work Material	Cast iron, FC, FCD		Mild Steels,Carbon Steels, SS400, S55C, (-750N/mm²)		Alloy Steels,Tool Steels, SCM,SKT,SKS, SKD(-30HRC)		Prehardened Steels SKT, SKD,NAK55 HPM(30-38HRC)		Stainless Steels, SUS304,SKD (38-45HRC)	
Velocity	100-140m/min		80-120m/min		70-100m/min		50-80m/min		35-65m/min	
DIAMETER	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)
6	5300	640	4500	540	3700	300	2900	230	2400	190
8	4000	640	3400	540	2800	340	2200	260	1800	220
10	3200	640	2700	540	2250	360	1750	280	1450	230
12	2650	640	2250	540	1850	370	1450	290	1200	240
14	2250	630	1950	570	1600	380	1250	300	1000	240
16	2000	640	1700	540	1400	390	1100	310	900	250
18	1750	630	1500	540	1250	400	950	290	800	240
20	1600	640	1350	510	1100	390	900	300	700	230
Depth of cut	Z=0.75D				Z=0.5D					

List of recommended milling conditions for MUU-4T(Side Milling)

Work Material	Cast iron, FC, FCD		Mild Steels,Carbon Steels, SS400, S55C, (-750N/mm²)		Alloy Steels,Tool Steels, SCM,SKT,SKS, SKD(-30HRC)		Prehardened Steels SKT, SKD,NAK55 HPM(30-38HRC)		Stainless Steels, SUS304,SKD (38-45HRC)	
Velocity	100-140m/min		80-120m/min		70-100m/min		50-80m/min		35-65m/min	
DIAMETER	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)
6	6350	760	5300	640	4500	360	3450	280	2650	210
8	4750	760	4000	640	3400	410	2600	310	2000	240
10	3800	760	3200	640	2700	430	2050	330	1600	260
12	3200	770	2650	640	2250	450	1700	340	1350	270
14	2750	770	2250	650	1950	470	1500	360	1150	280
16	2400	770	2000	640	1700	780	1300	360	1000	280
18	2100	760	1750	630	1500	480	1150	350	900	270
20	1900	760	1600	610	1350	470	1050	350	800	260
Depth of cut	XY=0.4D Z=1.5D				XY=0.3D Z=1.5D					

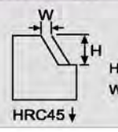
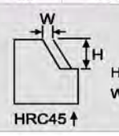
- Use an air blow. When using cutting fluids,use high-quality fluid with high smoke retardant properties.
- When chattering occurs, reduce the speed and feed simultaneously.
- Use a rigid and precise machine and holder.

(Slotting)

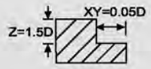
Work Material	Cast iron, FC, FCD		Mild Steels,Carbon Steels, SS400, S55C, (-750N/mm²)		Alloy Steels,Tool Steels, SCM,SKT,SKS, SKD(-30HRC)		Prehardened Steels SKT, SKD,NAK55 HPM(30-38HRC)		Stainless Steels, SUS304,SKD (38-45HRC)	
Velocity	80+120m/min		70-100m/min		55-85m/min		40-70m/min		30-60m/min	
DIAMETER	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)
6	5300	640	4500	540	3700	300	2900	230	2400	190
8	4000	640	3400	540	2800	340	2200	260	1800	220
10	3200	640	2700	540	2250	360	1750	280	1450	230
12	2650	640	2250	540	1850	370	1450	290	1200	240
14	2250	630	1950	570	1600	380	1250	300	1000	240
16	2000	640	1700	540	1400	390	1100	310	900	250
18	1750	630	1500	540	1250	400	950	290	800	240
20	1600	640	1350	510	1100	390	900	300	700	230
Depth of cut	XYmax=12mm Z=0.75D				Z=0.5D					

- Use an air blow. When using cutting fluids,use high-quality fluid with high smoke retardant properties.
- When chattering occurs, reduce the speed and feed simultaneously.
- Use a rigid and precise machine and holder.

List of recommended milling conditions for MTE MTF

Work Material	Carbon Steels,Alloy Steels S45C, FC, FCD, SCM, S50C, SKS···		Alloy Steels,Tool Steels SCr, SNCM, SKD11, SKD61, NAK80···		Hardened Steels SKD11	
HARDNESS	~HRC30		~HRC50		~HRC60	
DIAMETER	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)
1	12000	65	6800	40	2500	15
1.5	9600	70	5200	45	2000	15
2	7500	85	4000	48	1500	18
2.5	6800	100	3700	60	1700	20
4	3500	120	1800	60	600	20
6	2500	150	1600	80	550	25
8	2000	150	1200	80	450	25
10	1500	150	1000	80	350	25
DEPTH OF CUT	 H≦2.5D W≦0.02D HRC45↓		 H≦2.5D W≦0.01D HRC45↑			

List of recommended milling conditions for MEG-6T

Work Material	Alloy Steels <HRC50		Prehardened Steels HRC50-60		Hardened Steels >HRC60	
Velocity	V=170m/min		V=110m/min		V=80m/min	
DIAMETER	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)	SPEED (min⁻¹)	FEED (mm/min)
6	9000	800	5800	525	4250	380
8	6800	1000	4400	660	3200	480
10	5400	980	3500	630	2500	460
12	4500	950	2900	615	2100	450
16	3400	1200	2200	790	1600	570
D : Diameter	 XY=0.05D Z=1.5D					

技術資料

Comparison Chart Scale For Harness 硬度對照表

布氏硬度 Brinell Hardness			Diamond Pyramid Hardness Number. Vickers 維克氏硬度	洛氏硬度 Rockwell Hardness				Shore Scleroscope Hardness Number 蕭氏硬度	Approx. Tensile Strength 抗拒強度 (近似值)
Standard 10mm Ball 標準球	Halt-Gren 10mm Ball 球	Tungsten 10mm Ball 碳化鎢球		A Scale 60Kgf 鑽石圓錐	B Scale 100Kfg 1/16in球	C Scale 150Kgf 鑽石圓錐	D Scale 100Kgf 鑽石圓錐		
	HB		HV	HRA	HRB	HRC	HRD	HS	N/mm²
			940	85.6		68.0	76.9	97	
			920	85.3		67.5	76.5	96	
			900	85.0		67.0	76.1	95	
		767	880	84.7		66.4	75.7	93	
		757	860	84.4		65.9	75.3	92	
		745	840	84.1		65.3	74.8	91	
		733	820	83.8		64.7	74.3	90	
		722	800	83.4		64.0	73.8	88	
		712							
		710	780	83.0		63.3	73.3	87	
		698	760	82.6		62.5	72.6	86	
		684	740	82.2		61.8	72.1		
		682	737	82.2		61.7	72.0	84	
		670	720	81.8		61.0	71.5	83	
		656	700	81.3		60.1	70.8		
		653	697	81.2		60.0	70.7	81	
		647	690	81.1		59.7	70.5		
		638	680	80.8		59.2	70.1	80	
		630	670	80.6		58.8	69.8		
		627	667	80.5		58.7	69.7	79	
	601		677	80.7		59.1	70.0		
		601	640	79.8		57.3	68.7	77	
	578		640	79.8		57.3	68.7		
		578	615	79.1		56.0	67.7	75	
	555		607	78.8		55.6	67.4		
		555	591	78.4		54.7	66.7	73	2055
	534		579	78.0		54.0	66.1		2015
		534	569	77.8		53.5	65.8	71	1985
	514		533	77.1		52.5	65.0		1915
		514	547	76.9		52.1	64.7	70	1890
495			539	76.7		51.6	64.3		1855
	495		530	76.4		51.1	63.9		1825
		496	528	76.3		51.0	63.8	68	1820
477			516	75.9		50.3	63.2		1780
	477		508	75.6		49.6	62.7		1740
		477	508	75.6		49.6	62.7	66	1740
461			495	75.1		48.8	61.9		1680
	461		491	74.9		48.5	61.7		1670
		461	491	74.9		48.5	61.7	65	1670
444			474	74.3		47.2	61.0		1595
	444		472	74.2		47.1	60.8		1585
		444	472	74.2		47.1	60.8	63	1585

布氏硬度 Brinell Hardness			Diamond Pyramid Hardness Number. Vickers 維克氏硬度	洛氏硬度 Rockwell Hardness				Shore Scleroscope Hardness Number 蕭氏硬度	Approx. Tensile Strength 抗拒強度 (近似值)
Standard 10mm Ball 標準球	Halt-Gren 10mm Ball 球	Tungsten 10mm Ball 碳化鎢球		A Scale 60Kgf 鑽石圓錐	B Scale 100Kfg 1/16in球	C Scale 150Kgf 鑽石圓錐	D Scale 100Kgf 鑽石圓錐		
	HB		HV	HRA	HRB	HRC	HRD	HS	N/mm²
429	429	429	455	73.4		45.7	59.7	61	1510
415	415	415	440	72.8		44.5	58.8	59	1460
401	401	401	425	72.0		43.1	57.8	58	1390
388	388	388	410	71.4		41.8	56.8	56	1330
375	375	375	396	70.6		40.4	55.7	54	1270
363	363	363	383	70.0		39.1	54.6	52	1220
352	352	352	372	69.3	110.0	37.9	53.8	51	1180
341	341	341	360	68.7	109.0	36.6	52.8	50	1130
331	331	331	350	68.1	108.5	35.5	51.9	48	1095
321	321	321	339	67.5	108.0	34.3	51.0	47	1060
311	311	311	328	66.9	107.5	33.1	50.0	46	1025
302	302	302	319	66.3	107.0	32.1	49.3	45	1005
293	293	293	309	65.7	106.0	30.9	48.3	43	970
285	285	285	301	65.3	105.5	29.9	47.6		950
277	277	277	292	64.6	104.5	28.8	46.7	41	925
269	269	269	284	64.1	104.0	27.8	45.9	40	895
262	262	262	276	63.6	103.0	26.6	45.0	39	875
255	255	255	269	63.0	102.0	25.4	44.2	38	850
248	248	248	261	62.5	101.0	24.2	43.2	37	825
241	241	241	253	61.8	100.0	22.8	42.0	36	800
235	235	235	247	61.4	99.0	21.7	41.4	35	785
229	229	229	241	60.8	98.2	20.5	40.5	34	765
223	223	223	234		97.3	18.8			
217	217	217	228		96.4	17.5		33	725
212	212	212	222		95.5	16.0			705
207	207	207	218		94.6	15.2		32	690
201	201	201	212		93.8	13.8		31	675
197	197	197	207		92.8	12.7		30	655
192	192	192	202		91.9	11.5		29	640
187	187	187	196		90.7	10.0			620
183	183	183	192		90.9	9.0		28	615
179	179	179	188		89.0	8.0		27	600
174	174	174	182		87.8	6.4			585
170	170	170	178		86.8	5.4		26	570
167	167	167	175		86.0	4.4			560
163	163	163	171		85.0	3.3		25	545
156	156	156	163		82.9	0.9			525
149	149	149	156		80.8			23	505
143	143	143	150		78.8			22	490
137	137	137	143		76.4			21	460
131	131	131	137		74.0				450
126	126	126	132		72.0			20	435
121	121	121	127		69.8			19	415
116	116	116	122		67.6			18	400
111	111	111	117		65.7			15	985