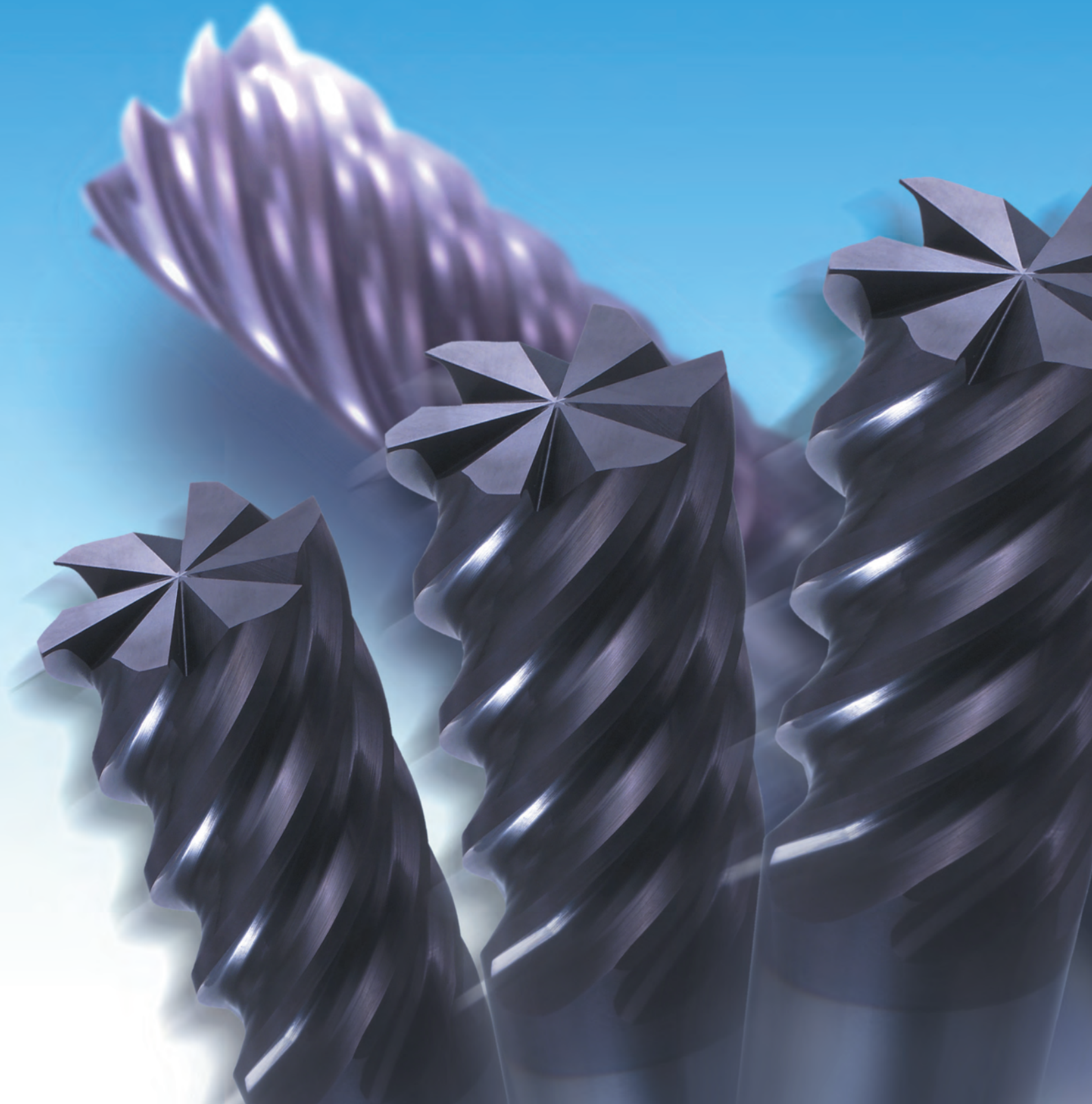


MIRACLE Multi-flute High-helix Endmill

VC-6MH, VC-8MH

High efficiency cutting is possible for difficult-to-cut materials (titanium alloy, inconel, stainless steel and so on) and soft materials.



MIRACLE Multi-flute High-helix Endmill

VC-6MH, VC-8MH

High efficiency cutting is possible for difficult-to-cut materials (titanium alloy, inconel, stainless steel and so on) and soft materials. Additionally, these endmills provide for cutting to stability and high-precision.

Features 1 High web thickness, high rigidity, multi-flute

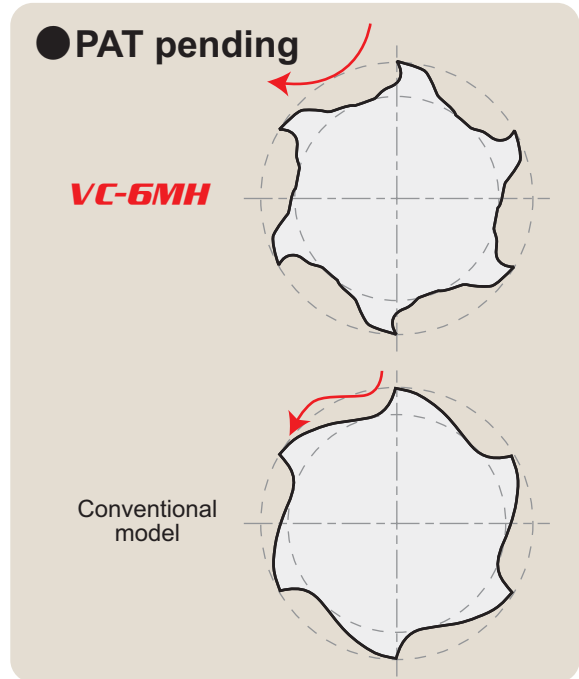
These endmills exhibits high efficiency during low depth of cut, high feed rate machining.

Features 2 Positive rake angle and high-helix flute

These cutting edges are sharp, and the cutting resistance is small.

Features 3 Special form of cross section

Cutting resistance and adhesion are decreased.

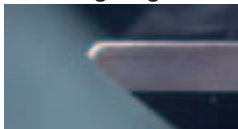


Machining Example

Example 1

Work material : Inconel 718

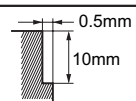
● Cutting length 5m



VC-6MH



Competitor

Endmill	VC-6MH $\phi 10$
Work material	Inconel 718
Revolution	1,400min ⁻¹ (44m/min)
Feed rate	420mm/min (0.05mm/tooth)
Cutting method	Down cut, Emulsion
	

Example 2

Work material : Titanium alloy (Ti-6Al-4V)

● Cutting length 70m



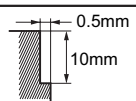
VC-6MH



Competitor A



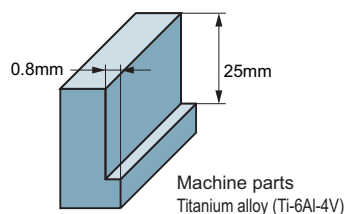
Competitor B

Endmill	VC-6MH $\phi 10$
Work material	Ti-6Al-4V
Revolution	4,800min ⁻¹ (151m/min)
Feed rate	2,000mm/min (0.07mm/tooth)
Cutting method	Down cut, Emulsion
	

Performance report

VC-6MH $\phi 16$

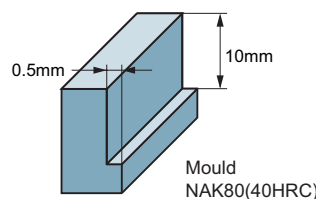
Stable cutting of difficult-to-cut materials is possible.



Machine parts
Titanium alloy (Ti-6Al-4V)
Revolution : 1,000–1,500min⁻¹ (50–75m/min)
Feed rate : 130-260mm/min
(0.022–0.030mm/tooth)
Machine : MC
Oli : Air blow

VC-6MH $\phi 10$

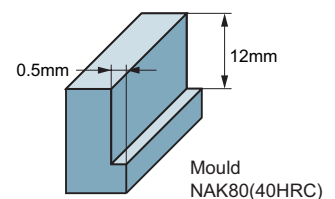
The endmill made a 20% decrease of spindle load than the conventional endmill.



Mould
NAK80(40HRC)
Revolution : 10,000min⁻¹ (314m/min)
Feed rate : 3,000mm/min(0.05mm/tooth)
Machine : MC
Oli : Air blow

VC-8MH $\phi 20$

High speed cutting more than 600m/min is possible.



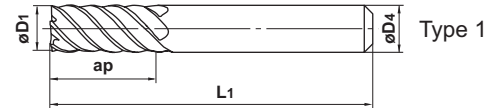
Mould
NAK80(40HRC)
Revolution : 9,600min⁻¹ (603m/min)
Feed rate : 9,600mm/min(0.125mm/tooth)
Machine : MC
Oli : Air blow

VC-6MH

MIRACLE Multi-flute High-helix Endmill



$D_1 \leq 12$ 0 - -0.02
 $12 < D_1$ 0 - -0.03



- Best for processing of difficult-to-cut materials such as titanium alloy, heat resistance alloy and so on, and soft materials.

Unit : mm

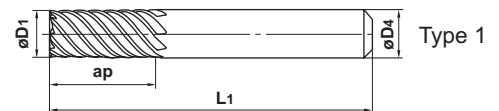
Order Number	Dia. D1	Length of Cut ap	Overall Length L1	Shank Dia. D4	No. of Flute N	Stock	Type
VC6MHD0600	6	13	50	6	6	●	1
D0800	8	19	60	8	6	●	1
D1000	10	22	70	10	6	●	1
D1200	12	26	75	12	6	●	1
D1600	16	32	90	16	6	●	1
D2000	20	38	100	20	6	●	1
D2500	25	45	120	25	6	●	1

VC-8MH

MIRACLE Multi-flute High-helix Endmill



0 - -0.03



- Best for processing of difficult-to-cut materials such as titanium alloy, heat resistance alloy and so on, and soft materials.

Unit : mm

Order Number	Dia. D1	Length of Cut ap	Overall Length L1	Shank Dia. D4	No. of Flute N	Stock	Type
VC8MHD2000	20	38	100	20	8	●	1
D2500	25	45	120	25	8	●	1

VC-6MH

MIRACLE Multi-flute High-helix Endmill

VC-8MH

MIRACLE Multi-flute High-helix Endmill

Work material	Carbon steel, Alloy steel (-30HRC) SS400, AISI 1049, SCM Cast iron, FC250		Alloy steel, Tool steel Pre-hardened steel (30-45HRC) AISI H13, NAK, SUS630		Austenitic stainless steel AISI 304, AISI 316 Titanium alloy Ti-6Al-4V		Heat resistant alloy Inconel etc.	
	Dia. (mm)	Revolution (min ⁻¹)	Feed rate (mm/min)	Revolution (min ⁻¹)	Feed rate (mm/min)	Revolution (min ⁻¹)	Feed rate (mm/min)	Revolution (min ⁻¹)
6	10,600	2,900	8,000	2,000	4,200	900	2,100	320
8	8,000	2,900	6,000	2,000	3,200	900	1,600	300
10	6,400	2,700	4,800	2,000	2,500	870	1,300	260
12	5,300	2,700	4,000	2,000	2,100	830	1,100	230
16	4,000	2,200	3,000	1,600	1,600	740	800	180
20	3,200	1,900	2,400	1,400	1,300	710	640	150
25	2,500	1,600	1,900	1,200	1,000	560	510	120
Depth of cut								

D:Dia.

- 1) In case of VC8MH, please set the feed rate at 120% of the above value.
- 2) In cutting austenitic stainless steels, the use of water-soluble cutting fluid is effective.
- 3) If the depth of cut is shallow, the revolution and feed rate can be increased.
- 4) If the rigidity of the machine or the work material installation is very low, or chattering is generated, please reduce the revolution and feed rate proportionately, or set the depth of cut smaller.
- 5) For side milling, climb cut is recommended.

MITSUBISHI MATERIALS KOBE TOOLS



JQA-2522
JQA-EM0941

**MITSUBISHI MATERIALS CORPORATION
MARKETING DEPT.**

KFC bldg., 8F, 1-6-1, Yokoami, Sumida-ku, Tokyo 130-0015, Japan
TEL 81-3-5819-8772 FAX 81-3-5819-8774

MMC HARTMETALL GmbH

Comeniusstr.2, 40670, Meerbusch GERMANY
TEL 49-2159-9189-0 FAX 49-2159-50462

**MITSUBISHI MATERIALS U.S.A. CORPORATION
Headquarters**

17401, Eastman Street, Irvine, California, 92614, USA
TEL 1-949-862-5100 FAX 1-949-862-5180

MMC METAL SINGAPORE PTE LTD.

10, Arumugam Road, #04-00 Lion Industrial Bldg., 409957, SINGAPORE
TEL 65-6743-9370 FAX 65-6749-1469