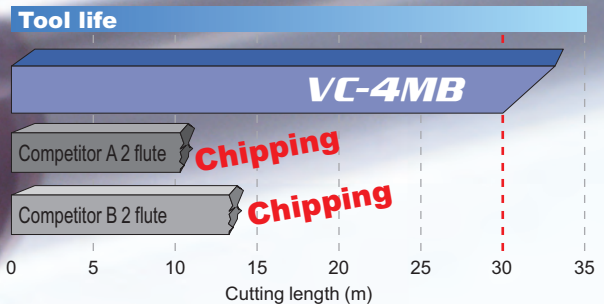


MIRACLE END MILL SERIES

VC-4MB

Expand
minimun R0.5

Additional Lineup of small radius for VC4MB.

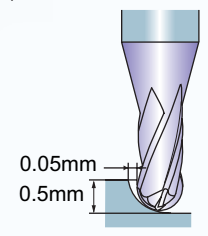


Feature

- 1** Best for milling of hardened material over 60HRC.
- 2** High feed milling is realized by adopting original design of chipping resistance. High efficient milling is possible when using high-speed machining center.
- 3** Long tool life is achieved by adopting Miracle coating (Al,Ti,Si)N and original micro grain carbide in milling high hardened material.

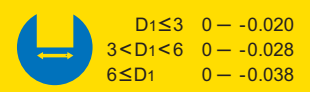
Cutting conditions

End mill	VC-4MB R0.5
Work material	SKD11 (60HRC)
Revolution	20,000min ⁻¹
Feed rate	1,000mm/min
Cutting method	Climb cut, Air blow

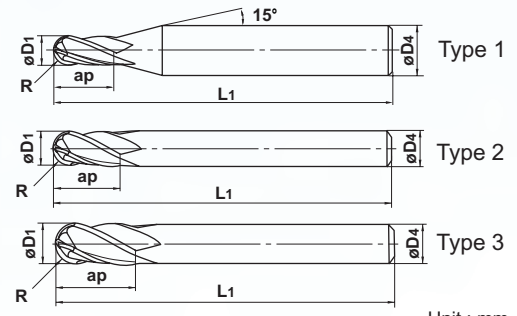


VC-4MB **Expand**

Ball Nose, Medium, 4 flute



● Best for milling of hardened material over 60HRC.



Unit : mm

Order Number	Radius of ball nose R	Dia. D1	Length of Cut ap	Overall Length L1	Shank Dia. D4	No. of Flute N	Stock	Type
Expand VC4MBR0050	0.5	1	2.5	50	6	4	■	1
Expand R0075	0.75	1.5	4	50	6	4	■	1
Expand R0100	1	2	6	60	6	4	■	1
Expand R0150	1.5	3	8	70	6	4	■	1
Expand R0200	2	4	8	70	6	4	■	1
Expand R0250	2.5	5	12	80	6	4	■	1
R0300	3	6	12	80	6	4	■	2
R0400	4	8	14	90	8	4	■	2
R0500	5	10	18	100	10	4	■	2
R0600	6	12	22	110	12	4	■	2
R0700	7	14	26	120	12	4	■	3
R0800	8	16	30	140	16	4	■	2
R0900	9	18	34	140	16	4	■	3
R1000	10	20	38	160	20	4	■	2

■ : Inventory maintained in Japan.

VC-4MB

Ball Nose, Medium, 4 flute

Work material	Alloy steel, Tool steel Pre-hardened steel (-45HRC) SCM, AISI H13, AISI D2, NAK etc.		Hardened steel (45-55HRC) AISI H13, AISI D2, SUS420 etc.		Hardened steel (55-62HRC) AISI D2, SKH, SKS etc.	
	R (mm)	Revolution (min ⁻¹)	Feed rate (mm/min)	Revolution (min ⁻¹)	Feed rate (mm/min)	Revolution (min ⁻¹)
R 0.5	40,000	1,900 - 4,800	35,000	1,300 - 3,600	21,000	600 - 1,100
R 0.75	40,000	2,000 - 6,000	30,000	1,400 - 3,800	18,000	700 - 1,300
R 1.0	35,000	2,000 - 6,000	25,000	1,300 - 3,600	16,000	800 - 1,500
R 1.5	33,000	2,000 - 6,000	20,000	1,200 - 3,400	13,000	800 - 1,500
R 2	25,000	2,000 - 6,000	17,000	1,200 - 3,400	10,000	800 - 1,500
R 2.5	23,000	2,000 - 6,000	15,000	1,200 - 3,400	9,000	800 - 1,500
R 3	20,000	1,800 - 5,500	13,000	1,200 - 3,700	8,300	700 - 1,500
R 4	15,000	2,200 - 5,000	10,000	1,400 - 3,400	6,200	700 - 1,300
R 5	12,000	2,300 - 4,600	8,000	1,500 - 3,000	5,000	800 - 1,200
R 6	10,000	1,900 - 4,100	6,600	1,300 - 2,700	4,100	700 - 1,000
R 8	7,500	1,600 - 3,200	5,000	1,100 - 2,200	3,100	600 - 800
R10	6,000	1,300 - 2,600	4,000	900 - 1,700	2,500	500 - 700

Depth of cut	Alloy steel, Tool steel Pre-hardened steel (-45HRC) SCM, AISI H13, AISI D2, NAK etc.		Hardened steel (45-55HRC) AISI H13, AISI D2, SUS420 etc.		Hardened steel (55-62HRC) AISI D2, SKH, SKS etc.	

R:Radius

- 1) Please use rigid machining center and NC milling machine.
If chattering generates due to the low rigidity of the machine or installation of work material, please reduce the revolution and the feed rate proportionately.
- 2) The above table shows cutting conditions in counter line machining center (side milling). In shape milling like mould, cutting condition changes substantially due to the machined shape, milling method and depth of cut (pick feed axis).
- 3) When the overhang of end mill (milling depth) is long, reduce the revolution and feed rate proportionally to prevent chattering.
- 4) Air blow is recommended to dispose chips compulsorily.

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