

2 Flute IMPACT MIRACLE Wide Ball Nose End Mill

VF-2WB

Able to machine a wide variety of complex geometries.

For machining of undercut geometries that were difficult to machine with a conventional end mill and complicated geometries using a 5-axis machine.

220°



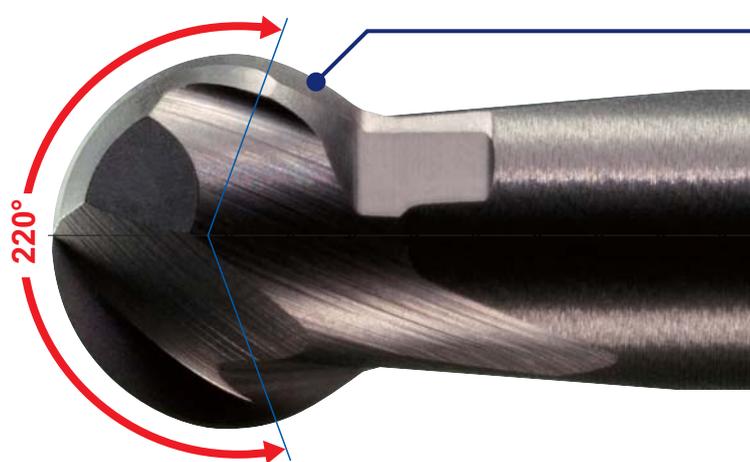
IMPACT MIRACLE end mill series

2 Flute IMPACT MIRACLE Wide Ball Nose End Mill

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Features

Special helical flute geometry for excellent cutting performance



Unique cutting edge geometry

Unique helical flute geometry ensures sharp cutting performance even with the R-shaped cutting edge over 180°.

Newly developed Impact Miracle coating

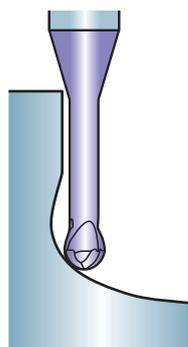
Impact Miracle coating with high heat resistance is used to ensure longer tool life.

Properties of Impact Miracle coating			
	IMPACT MIRACLE	(Al,Ti,Si)N	(Al,Ti)N
Hardness	3700HV	3200HV	2800HV
Adhesion	100N	80N	80N
Oxidation temperature	1300°C	1100°C	840°C
Coefficient of friction	0.48	0.53	0.58

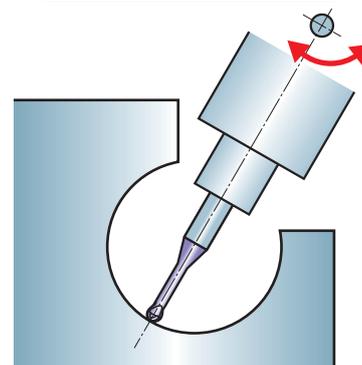
For machining of complex geometries

Possible to machine complex geometries that were difficult to machine with conventional ball nose and long neck ball nose end mills.

Undercut geometry



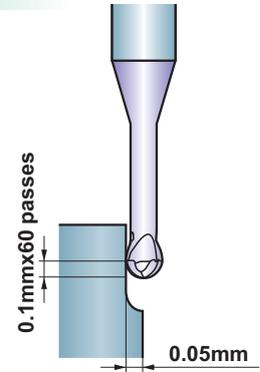
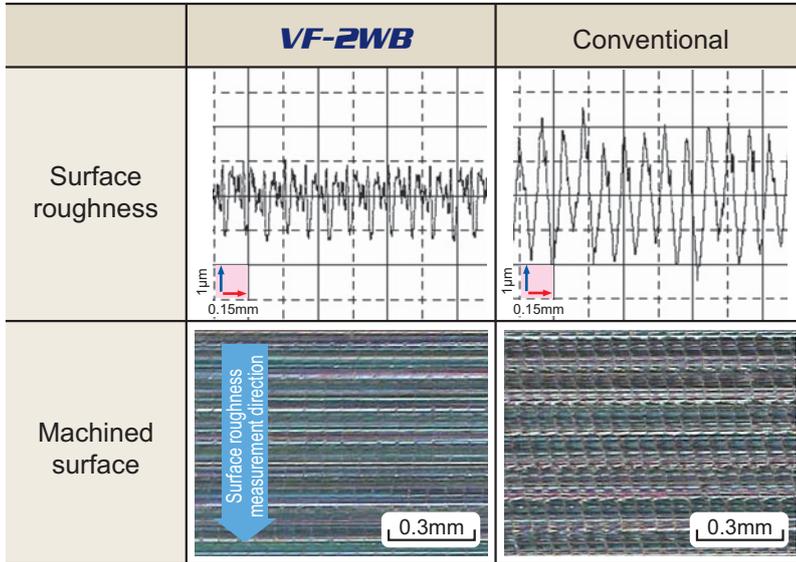
Complicated geometry using a 5-axis machine



Cutting Performance

Excellent surface finishes (vertical wall machining)

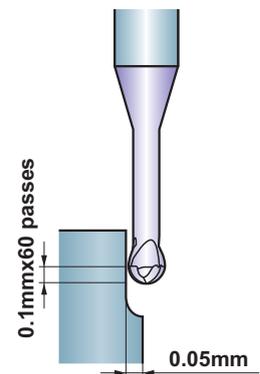
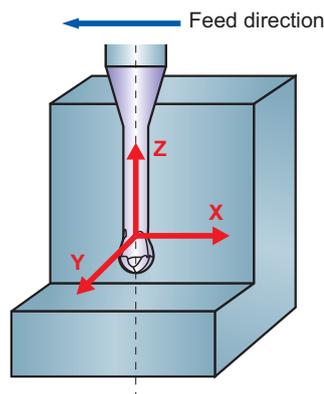
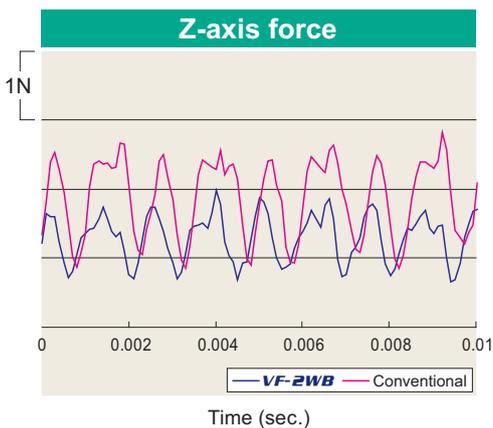
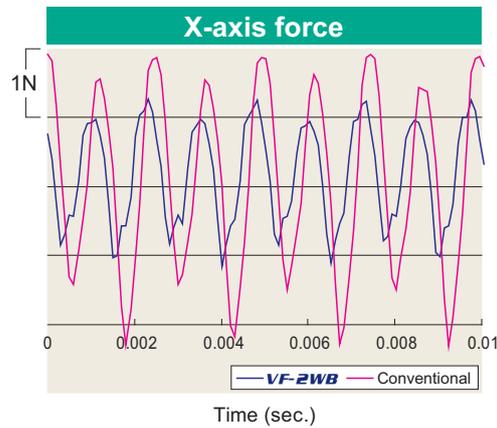
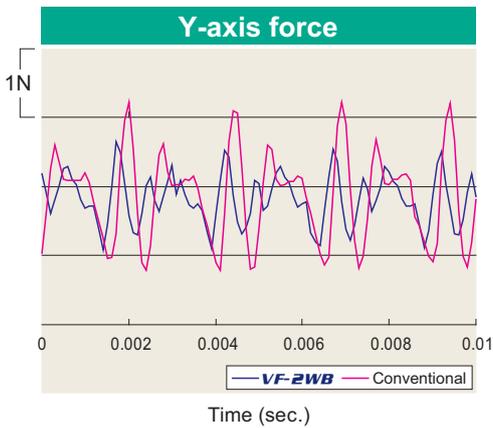
Dramatically improves surface finishes of vertical walls.



End mill	VF2WBR0100N060 (R1)
Work material	NAK80 (42HRC)
Revolution	24,800min ⁻¹ (155m/min)
Feed rate	1,350mm/min (0.028mm/tooth)
Cutting method	Down cut, Coolant mist

Cutting resistance comparison (vertical wall machining)

Unique helical flute geometry improves sharpness and substantially reduces cutting resistance.

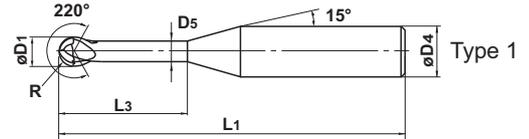


End mill	VF2WBR0100N060 (R1)
Work material	JIS SKD61 (52HRC)
Revolution	24,000min ⁻¹ (150m/min)
Feed rate	1,350mm/min (0.028mm/tooth)
Cutting method	Down cut, Coolant mist

IMPACT MIRACLE END MILL

VF-2WB

Wide ball nose, Medium cut length, 2 flute



- Ball nose end mill suitable for machining of undercut geometries and complex geometries using a 5-axis machine.

Unit : mm

Order Number	Radius of ball nose R	Dia. D1	Neck Length L3	Neck Dia D5	Overall Length L1	Shank Dia. D4	No. of Flute N	Stock	Type
VF2WBR0100N060	1	2	6	1.6	60	6	2	●	1
R0150N080	1.5	3	8	2.4	60	6	2	●	1
R0200N100	2	4	10	3.2	60	6	2	●	1
R0300N120	3	6	12	4.8	80	6	2	●	1

- : Inventory maintained.

Cutting Conditions

Work material	Carbon steel, Alloy steel (-30HRC) JIS SS400, JIS S50C, JIS SCM Cast iron, JIS FC250			Alloy steel, Tool steel Pre-hardened steel (30-45HRC) JIS SKD61, NAK			Austenitic stainless steel JIS SUS304, JIS SUS316 Titanium alloy JIS Ti-6Al-4V			Hardened steel (45-55HRC) JIS SKD61		
	R (mm)	Revolution (min ⁻¹)	Feed Rate (mm/min)	Depth of Cut ap (mm)	Revolution (min ⁻¹)	Feed Rate (mm/min)	Depth of Cut ap (mm)	Revolution (min ⁻¹)	Feed Rate (mm/min)	Depth of Cut ap (mm)	Revolution (min ⁻¹)	Feed Rate (mm/min)
R1	40,000	5,000	0.070	40,000	5,000	0.060	32,000	2,500	0.050	32,000	3,000	0.030
R1.5	32,000	5,000	0.120	32,000	5,000	0.110	26,000	2,500	0.100	26,000	3,000	0.070
R2	24,000	3,800	0.150	24,000	3,800	0.130	20,000	2,000	0.120	20,000	2,800	0.100
R3	16,000	2,800	0.200	16,000	2,800	0.180	13,000	1,500	0.150	13,000	2,100	0.120

Please refer to the list above for depth of cut.

R : Radius

- 1) If the inclination of machining surface is very big, or cutting load is big, please reduce the revolution and the feed rate proportionately.
- 2) If using the small size, we recommend coolant mist.
- 3) If the depth of cut is shallow, the feed rate can be increased.
- 4) When machining undercut geometries, care should be taken about neck interference.

For Your Safety

●Don't handle inserts and chips without gloves. ●Please machine within the recommended application range and exchange expired tools with new ones in advance of breakage. ●Please use safety covers and wear safety glasses. ●When using compounded cutting oils, please take fire precautions. ●When using rotating tools, please make a trial run to check run-out, vibration and abnormal sounds etc.

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(Tools specifications subject to change without notice.)