

For machining a wide variety of complex geometries.

Suitable for undercut geometries and ideal for machining complex shapes using 5-axis machining.

220°



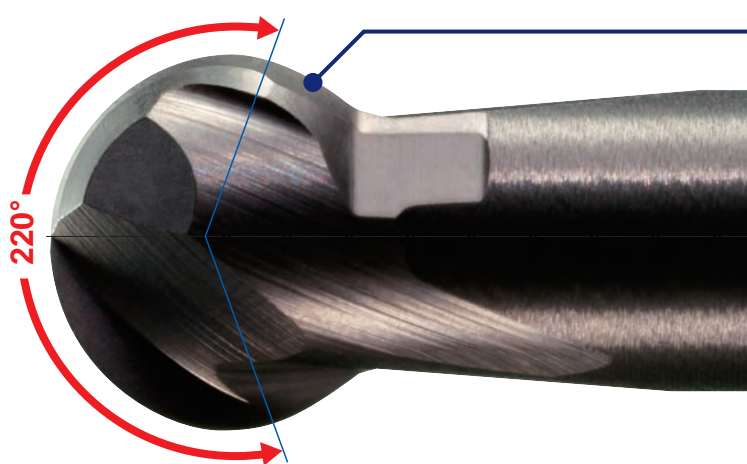
IMPACT MIRACLE end mill series

2 Flute IMPACT MIRACLE Wide Ball Nose End Mill

VF2WB

Features

Special helical flute geometry for excellent cutting performance



Unique cutting edge geometry

Unique helical flute geometry ensures sharp cutting performance even past the 180° area of the cutting edge.

Newly developed Impact Miracle coating

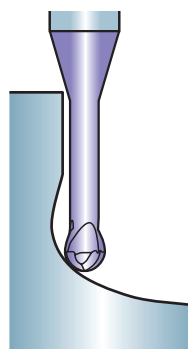
Impact Miracle coating with high heat resistance is used to ensure longer tool life.

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

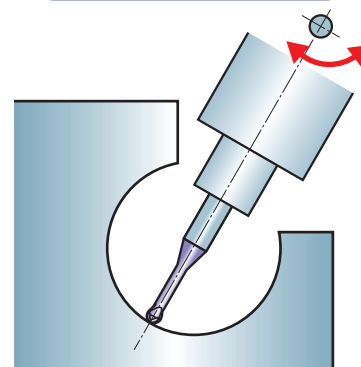
For machining of complex geometries

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

Undercut geometry



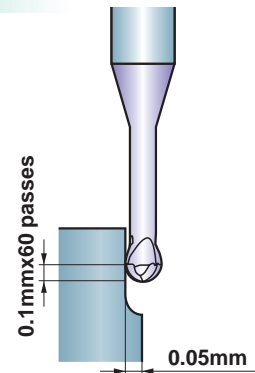
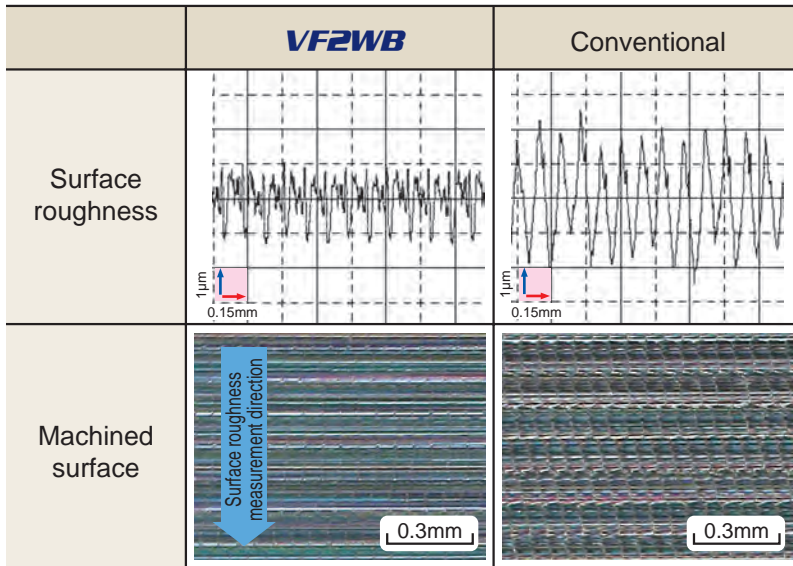
Complicated geometry using a 5-axis machine



Cutting Performance

Excellent surface finishes

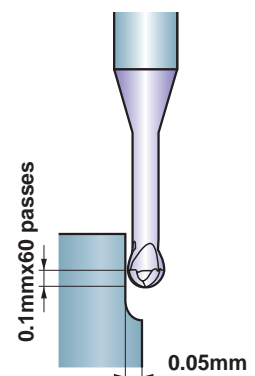
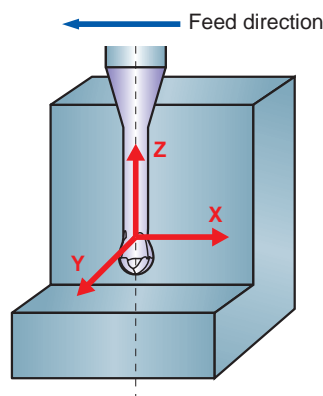
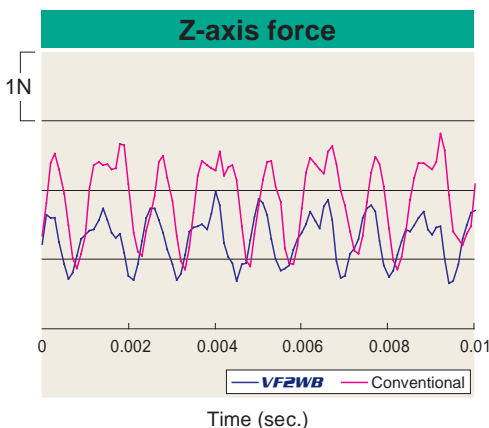
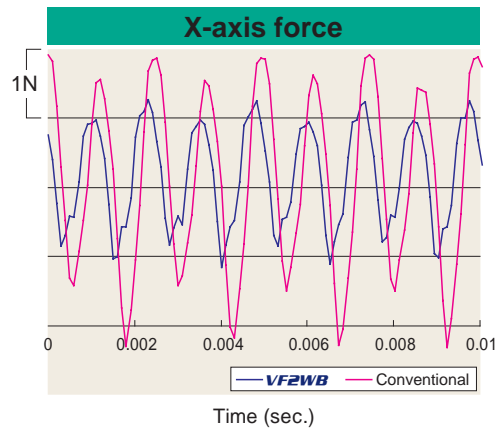
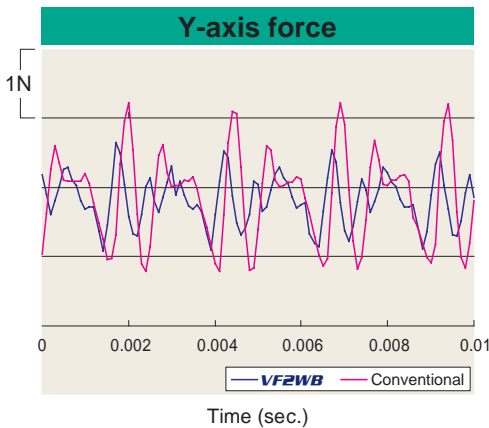
Dramatically improves surface finishes of vertical walls.



End mill	VF2WBR0100N060 (R1)
Work material	W.Nr. 1.2344(H13) (42HRC)
Revolution	24800min ⁻¹ (155m/min)
Feed rate	1350mm/min (0.028mm/tooth)
Cutting method	Down cut, Coolant mist

Cutting resistance comparison

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

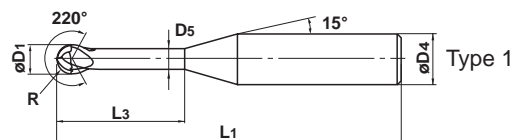


End mill	VF2WBR0100N060 (R1)
Work material	W.Nr. 1.2344(H13) (52HRC)
Revolution	24000min ⁻¹ (150m/min)
Feed rate	1350mm/min (0.028mm/tooth)
Cutting method	Down cut, Coolant mist

IMPACT MIRACLE END MILL

VF2WB

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 in Japan.

Cutting Conditions

Work material	Carbon steel, Alloy steel (30HRC) Ck55, 070M55 Cast iron GG25			Alloy steel, Tool steel Pre-hardened steel (30 45HRC) W.Nr. 1.2344(H13)			Austenitic stainless steel X5CrNiMo1810 X5CrNiMo17122 Titanium alloy			Hardened steel (45 55HRC) W.Nr. 1.2344(H13)		
	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 surface to be machined has a steep incline, or the cutting load is heavy, please reduce the revolution and the feed rate proportionately.
- 2) If using the smaller sizes, we recommend coolant mist.
- 3) When using smaller sizes, the feed rate can be increased.
- 4) When machining undercut geometries, care should be taken with neck interference.



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