

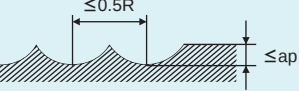
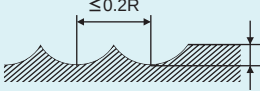
IMPACT MIRACLE END MILLS

VF45VB

Ball nose, Short cut length, 4 flute, Variable curve

CARBIDE

RECOMMENDED CUTTING CONDITIONS

R (mm)	Alloy steel, Tool steel, Pre-hardened steel X40CrMoV51						Austenitic stainless steel, Titanium alloy X5CrNi1810, X5CrNiMo17-12-2, Ti6Al4V						Heat resistant alloys Inconel718					
	$\alpha \leq 15^\circ$		$\alpha > 15^\circ$		Depth of cut ap (mm)	Pick feed pf (mm)	$\alpha \leq 15^\circ$		$\alpha > 15^\circ$		Depth of cut ap (mm)	Pick feed pf (mm)	$\alpha \leq 15^\circ$		$\alpha > 15^\circ$		Depth of cut ap (mm)	Pick feed pf (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)	Feed rate (mm/min)			Revolution (min ⁻¹)	Feed rate (mm/min)	Revolution (min ⁻¹)	Feed rate (mm/min)		
R 1	40000	8000	32000	3800	0.17	≤0.5	36000	6500	24000	2900	0.17	≤0.5	9600	960	6400	510	0.08	≤0.2
R 1.5	32000	7700	21000	3200	0.25	≤0.75	24000	4800	16000	1900	0.25	≤0.75	6400	640	4200	340	0.13	≤0.3
R 2	24000	5800	16000	2800	0.33	≤1	18000	4000	12000	1700	0.33	≤1	4800	580	3200	260	0.17	≤0.4
R 2.5	19000	5300	12700	2600	0.42	≤1.25	14400	3500	9600	1500	0.42	≤1.25	3800	530	2500	250	0.21	≤0.5
R 3	16000	4800	10600	2100	0.5	≤1.5	12000	3200	8000	1400	0.5	≤1.5	3200	500	2100	210	0.25	≤0.6
R 4	12000	4300	8000	1900	0.8	≤2	9000	3200	6000	1400	0.8	≤2	2400	430	1600	190	0.4	≤0.8
R 5	9600	4100	6400	1800	1	≤2.5	7200	3000	4800	1300	1	≤2.5	2000	420	1300	180	0.5	≤1
R 6	8000	4000	5300	1800	1.2	≤3	6000	3000	4000	1300	1.2	≤3	1700	350	1100	150	0.6	≤1.2
R 8	6000	3200	4000	1400	1.6	≤4	4500	2500	3000	1100	1.6	≤4	1200	300	800	130	0.8	≤1.6
R10	4800	3000	3200	1300	2	≤5	3600	2300	2400	1000	2	≤5	1000	250	640	100	1	≤2
Depth of cut																		

R:Radius

- 1) α is the inclination angle of the machined surface.
- 2) When 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) The irregular helix flute end mill has a larger effect on controlling vibration when compared to standard end mills. However, if the rigidity of the machine or the workpiece installation is poor, vibration or abnormal sound can occur. In this case, please reduce the revolution and feed rate proportionately, or set a lower depth of cut.

