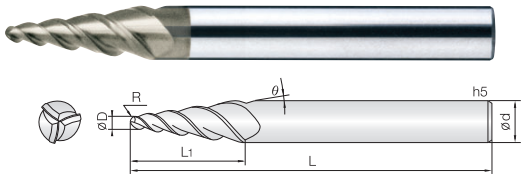
3TBIC

3 Flutes Taper Ball End Mills for Impellers



Pre-hardened steel, Cast iron, Non-metallic materials

JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications.
Suitable for special components with 3 axes and 5 axes sector such as impellers, blisks, tire profiles, turbine blades.
Available for simultaneous machining of roughing and finishing with only one tool.

D Size	D Tolerance
Ø4 ~ 6	+0.01 ~ −0.01 mm

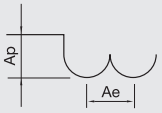
mm

3TBIC Cutting Condition

• RPM : rev./min • Feed : mm/min

Material			Prehardened Steels/ Hardened Steels				Hardened Steels				Hardened Steels			
Hardness			30 ~ 45HRC				45 ~ 55HRC				55~ 62HRC			
Radius	Effective Length	Taper Angle	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth
R 0.5	12	1°	38,000	2,500	0.110	0.16	35,000	1,600	0.080	0.13	25,000	800	0.050	0.08
〃	20	1°	38,000	2,500	0.060	0.09	35,000	1,600	0.050	0.07	25,000	800	0.030	0.05
〃	15	2°	38,000	2,500	0.090	0.14	35,000	1,600	0.070	0.11	25,000	800	0.050	0.07
〃	20	2°	38,000	2,500	0.060	0.09	35,000	1,600	0.050	0.07	25,000	800	0.030	0.05
〃	15	3°	38,000	2,500	0.090	0.14	35,000	1,600	0.070	0.11	25,000	800	0.050	0.07
〃	20	3°	38,000	2,500	0.060	0.09	35,000	1,600	0.050	0.07	25,000	800	0.030	0.05
〃	20	4°	38,000	2,500	0.070	0.1	35,000	1,600	0.060	0.08	25,000	800	0.030	0.05
〃	20	5°	38,000	2,500	0.080	0.11	35,000	1,600	0.060	0.09	25,000	800	0.040	0.06
〃	20	7°	38,000	2,500	0.080	0.11	35,000	1,600	0.060	0.09	25,000	800	0.040	0.06
R 1	12	1°	35,000	2,800	0.180	0.27	30,000	1,800	0.140	0.22	15,000	1,000	0.090	0.14
〃	20	1°	35,000	2,800	0.400	0.21	30,000	1,800	0.110	0.17	15,000	1,000	0.070	0.11
〃	15	2°	35,000	2,800	0.160	0.24	30,000	1,800	0.130	0.19	15,000	1,000	0.080	0.12
〃	20	2°	35,000	2,800	0.400	0.21	30,000	1,800	0.110	0.17	15,000	1,000	0.070	0.11
〃	15	3°	35,000	2,800	0.160	0.24	30,000	1,800	0.130	0.19	15,000	1,000	0.080	0.12
〃	20	3°	35,000	2,800	0.400	0.21	30,000	1,800	0.110	0.17	15,000	1,000	0.070	0.11
〃	30	3°	35,000	2,800	0.3	0.2	30,000	1,800	0.12	0.18	15,000	1,000	0.08	0.12
〃	20	4°	35,000	2,800	0.400	0.21	30,000	1,800	0.110	0.17	15,000	1,000	0.070	0.11
〃	20	5°	35,000	2,800	0.15	0.22	30,000	1,800	0.12	0.18	15,000	1,000	0.08	0.12
〃	30	5°	35,000	2,800	0.13	0.2	30,000	1,800	0.11	0.18	15,000	1,000	0.07	0.12
〃	29	6°	35,000	2,800	0.14	0.2	30,000	1,800	0.1	0.18	15,000	1,000	0.07	0.12
〃	25	7°	35,000	2,800	0.15	0.25	30,000	1,800	0.12	0.18	15,000	1,000	0.07	0.11
R 2	20	1°	24,000	3,500	0.23	0.34	20,000	2,500	0.18	0.27	12,000	1,500	0.11	0.17
〃	20	2°	24,000	3,500	0.23	0.34	20,000	2,500	0.18	0.27	12,000	1,500	0.11	0.17
〃	21	3°	24,000	3,500	0.23	0.34	20,000	2,500	0.18	0.27	12,000	1,500	0.11	0.17
〃	20	4°	24,000	3,500	0.23	0.34	20,000	2,500	0.18	0.27	12,000	1,500	0.11	0.17
〃	20	5°	24,000	3,500	0.24	0.37	20,000	2,500	0.19	0.29	12,000	1,500	0.12	0.18
〃	20	6°	24,000	3,500	0.22	0.32	20,000	2,500	0.17	0.25	12,000	1,500	0.1	0.16
〃	18	7°	24,000	3,500	0.23	0.34	20,000	2,500	0.18	0.27	12,000	1,500	0.11	0.17
R 3	32	1°	16,000	3,500	0.23	0.41	13,500	2,500	0.23	0.35	8,000	1,500	0.14	0.21
〃	30	2°	16,000	3,500	0.25	0.42	13,500	2,500	0.23	0.35	8,000	1,500	0.14	0.21
〃	22	3°	16,000	3,500	0.3	0.45	13,500	2,500	0.24	0.36	8,000	1,500	0.15	0.23
〃	40	3°	16,000	3,500	0.2	0.4	13,500	2,500	0.2	0.35	8,000	1,500	0.13	0.19
〃	25	4°	16,000	3,500	0.22	0.43	13,500	2,500	0.22	0.36	8,000	1,500	0.14	0.2
〃	21	5°	16,000	3,500	0.25	0.45	13,500	2,500	0.23	0.36	8,000	1,500	0.14	0.23
〃	21	6°	16,000	3,500	0.25	0.45	13,500	2,500	0.23	0.36	8,000	1,500	0.14	0.23
〃	19	7°	16,000	3,500	0.21	0.43	13,500	2,500	0.25	0.36	8,000	1,500	0.15	0.25

Depth of Cut



Ap : Axial Depth (mm)
Ae : Radial Depth (mm)
D : Outside Diameter (mm)
n : Speed (min^{-1})
Vf : Feed (mm/min)

- If there is no parameter for the angle of your tool, refer to the previous angle, and adjust compare to it.
- Consider the RPM and feed based on the taper angle and adjust it with milling condition.
- Use this table for your reference. Adjust the parameters depending on your machining geometry, machining purpose and CNC.
- If you want to increase metal removal rates, raise up the feed up to 20%.
- During the chip evacuation, note for heat and ignition.