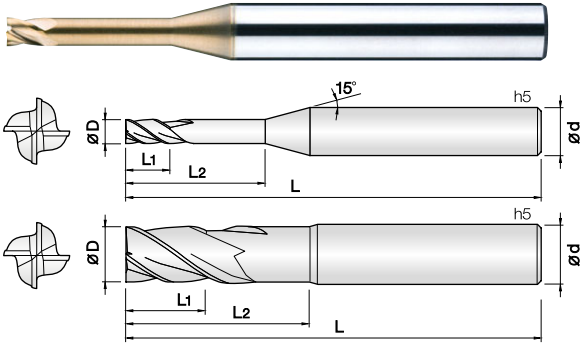


4HRE 4 Flutes High Speed Rib End Mills



D Size	D Tolerance
ø0.8 ~ 5	+0 ~ -0.01 mm
ø6 ~ 12	-0.01 ~ -0.025 mm

4HRE Cutting Condition

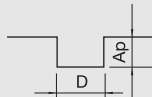
• RPM: rev./min • Feed: mm/min

Material		Carbon Steels				Alloy steel				Prehardened Steel / Hardened Steel				Hardened Steels			
Hardness		S45C / S50C (~225HB)				225 ~ 325HB				30 ~ 45HRC				45 ~ 60HRC			
Outside Diameter	Effective Length	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth
ø0.8	8	25,000	750	0.009	0.01	21,600	560	0.008	0.01	18,300	450	0.006	0.01	15,900	300	0.004	0.009
	16	16,800	340	0.002	0.001	15,700	270	0.020	0.001	13,300	240	0.001	0.001	10,400	200	0.001	0.001
ø1	8	24,000	720	0.014	0.024	20,300	490	0.013	0.024	16,900	390	0.010	0.024	14,200	265	0.007	0.022
	16	15,800	325	0.004	0.003	14,300	250	0.003	0.003	12,200	220	0.003	0.003	9,200	178	0.002	0.003
	25	12,600	165	0.003	0.001	11,200	120	0.002	0.001	10,800	105	0.002	0.001	8,300	88	0.001	0.001
ø1.5	8	21,000	980	0.041	0.124	18,800	740	0.037	0.124	14,600	520	0.029	0.124	12,400	355	0.020	0.112
	16	13,600	544	0.013	0.015	12,200	410	0.012	0.015	10,500	322	0.009	0.015	8,000	230	0.007	0.014
	25	11,400	318	0.005	0.004	10,500	240	0.005	0.004	8,600	196	0.004	0.004	6,200	138	0.003	0.004
ø2	8	19,600	1,197	0.054	0.391	17,000	970	0.048	0.391	12,800	630	0.038	0.391	10,600	470	0.027	0.352
	16	12,300	740	0.026	0.049	11,600	574	0.024	0.049	9,800	378	0.018	0.049	7,300	268	0.013	0.044
	25	10,100	456	0.012	0.013	9,700	348	0.011	0.013	7,900	262	0.008	0.013	6,400	184	0.006	0.012
ø2.5	10	16,600	1,240	0.068	0.488	14,300	1,035	0.061	0.488	10,200	689	0.048	0.488	8,350	510	0.034	0.439
	16	11,600	890	0.045	0.119	9,800	710	0.040	0.119	7,220	480	0.031	0.119	6,700	326	0.022	0.107
	25	8,700	630	0.022	0.031	8,300	460	0.019	0.031	6,360	338	0.015	0.031	5,500	273	0.011	0.028
ø3	8	14,800	1,390	0.092	1.978	12,100	1,100	0.083	1.978	8,800	736	0.064	1.978	6,900	553	0.046	1.780
	16	10,200	968	0.064	0.247	8,600	816	0.058	0.247	6,300	543	0.045	0.247	5,890	362	0.032	0.222
	25	7,600	740	0.036	0.038	7,100	518	0.032	0.038	5,880	397	0.025	0.038	3,900	293	0.018	0.034
	35	6,200	415	0.018	0.024	5,300	374	0.016	0.024	4,730	322	0.013	0.024	3,300	216	0.009	0.022
ø4	8	12,300	1,830	0.014	1.990	10,200	1,210	0.140	1.990	7,400	848	0.093	1.990	6,300	500	0.070	1.791
	16	8,600	1,240	0.093	0.781	7,200	860	0.084	0.781	5,100	573	0.065	0.781	5,150	397	0.046	0.703
	25	6,400	890	0.061	0.205	5,000	590	0.055	0.205	4,180	433	0.042	0.205	3,180	304	0.030	0.185
	40	4,950	510	0.030	0.050	3,900	385	0.027	0.050	3,300	341	0.021	0.050	2,770	208	0.015	0.045
ø5	16	7,200	1,280	0.127	1.907	6,400	944	0.114	1.907	4,387	554	0.089	1.907	4,220	378	0.064	1.716
	25	5,400	955	0.109	0.500	4,600	665	0.099	0.500	3,668	412	0.077	0.500	2,740	280	0.055	0.450
	40	4,100	660	0.060	0.122	3,300	470	0.054	0.122	3,655	298	0.042	0.122	2,320	180	0.030	0.110
ø6	20	4,880	1,088	0.126	2.025	4,433	726	0.114	2.025	2,980	528	0.088	2.025	2,640	356	0.063	1.823
	40	3,800	720	0.083	0.253	2,950	497	0.074	0.253	2,100	326	0.058	0.253	2,078	226	0.041	0.228
ø8	20	4,460	980	0.180	1.600	3,600	787	0.160	1.600	2,540	487	0.130	1.600	2,430	343	0.090	1.440
	40	3,400	780	0.120	0.200	2,460	516	0.100	0.200	1,890	297	0.080	0.200	1,770	211	0.060	0.180
ø10	25	3,400	926	0.200	1.760	3,160	726	0.180	1.760	2,360	467	0.130	1.760	1,650	326	0.080	1.584
	35	2,170	640	0.140	0.240	2,120	615	0.120	0.240	1,780	412	0.090	0.240	1,180	192	0.070	0.216
ø12	30	2,500	710	0.220	1.840	2,300	580	0.200	1.840	2,000	400	0.140	1.840	1,400	280	0.080	1.656
	40	1,880	526	0.120	0.280	1,820	474	0.110	0.280	1,690	345	0.080	0.280	1,020	184	0.060	0.252

Depth of Cut

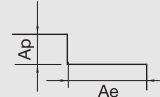
Slotting

- Ap : Axial Depth
- D : Outside Diameter



Side Milling

- Ap : Axial Depth
- Ae : Radial Depth



- The edge of the flute precisely grinded. If you want to measure the tool, and to avoid damaging on the flutes, use non-contact measuring method.
- When milling workpiece, HRC over 60 hardened steel, reduce 20% of the RPM and feed compared to the same diameter.
- Use this table for your reference. Adjust the parameters depending on your machining geometry, machining purpose and CNC.
- Use a machine with low vibration and good rigidity (ø1 or less, the vibration tolerance management should be within 5 μm).
- Air blow or mist coolants are recommended and note for chip emission, heat, or ignition.