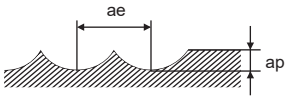
Recommended Cutting Conditions

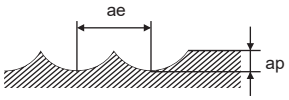
■ Shoulder milling (L/D=5)

(mm)

Workpiece Material		Pre-hardened steels, Alloy tool steels										Hardened steels (40−55HRC)									
Inclination angle		α≤15°				α>15°				Depth of Cut	Width of Cut	α≤15°				α>15°				Depth of Cut	Width of Cut
Dia DC	Radius of Ball Nose RE	Cutting Speed (m/min)	Revolution (min-1)	Feed per Tooth (mm/t)	Feed rate (mm/min)	Cutting Speed (m/min)	Revolution (min-1)	Feed per Tooth (mm/t)	Feed rate (mm/min)	ap	ae	Cutting Speed (m/min)	Revolution (min-1)	Feed per Tooth (mm/t)	Feed rate (mm/min)	Cutting Speed (m/min)	Revolution (min-1)	Feed per Tooth (mm/t)	Feed rate (mm/min)	ap	ae
10	**5**	175	5600	0.22	3700	115	3700	0.15	1700	0.7	2.6	150	4800	0.18	2600	100	3200	0.12	1200	0.5	2
12	**6**	175	4600	0.22	3000	115	3100	0.15	1400	1	3.2	150	4000	0.18	2200	100	2700	0.12	970	0.7	2.5
16	**8**	175	3500	0.22	2300	115	2300	0.15	1000	1.1	3.8	150	3000	0.18	1600	100	2000	0.12	720	0.9	3.5
20	**10**	175	2800	0.22	1800	115	1800	0.15	810	1.2	4.8	150	2400	0.18	1300	100	1600	0.12	580	1.1	4.2
Depth of Cut																					

■ Shoulder milling (L/D=7)

(mm)

Workpiece Material		Pre-hardened steels, Alloy tool steels AISI P21, AISI P20、AISI D2、AISI H13、AISI L6										Hardened steels (40−55HRC) AISI H13, AISI L6									
Inclination angle		α≤15°				α>15°				Depth of Cut	Width of Cut	α≤15°				α>15°				Depth of Cut	Width of Cut
Dia DC	Radius of Ball Nose RE	Cutting Speed (m/min)	Revolution (min-1)	Feed per Tooth (mm/t)	Feed rate (mm/min)	Cutting Speed (m/min)	Revolution (min-1)	Feed per Tooth (mm/t)	Feed rate (mm/min)	ap	ae	Cutting Speed (m/min)	Revolution (min-1)	Feed per Tooth (mm/t)	Feed rate (mm/min)	Cutting Speed (m/min)	Revolution (min-1)	Feed per Tooth (mm/t)	Feed rate (mm/min)	ap	ae
10	**5**	120	3800	0.2	2300	80	2500	0.13	980	0.5	1.3	100	3200	0.13	1200	65	2100	0.085	540	0.4	1
12	**6**	120	3200	0.2	1900	80	2100	0.13	820	0.7	1.6	100	2700	0.13	1100	65	1700	0.085	430	0.6	1.3
16	**8**	120	2400	0.2	1400	80	1600	0.13	620	0.8	1.9	100	2000	0.13	780	65	1300	0.085	330	0.7	1.8
20	**10**	120	1900	0.2	1100	80	1300	0.13	510	0.9	2.4	100	1600	0.13	620	65	1000	0.085	260	0.8	2.1
Depth of Cut																					

Note 1) If the depth of cut is shallow, the revolution and feed rate can be increased.
Note 2) Vibration may occur if there is poor rigidity of the machine or workpiece material. In that case, please adjust the revolution, feed rate and depth of cut.
Note 3) α is the inclination angle of the machined surface.