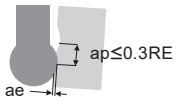
RECOMMENDED CUTTING CONDITIONS

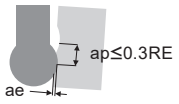
■ Internal Profile Milling, Undercut Machining (L/D=3)

(mm)

Workpiece Material		Mild steel, Carbon steel, Alloy steel, Pre-hardened steel, Copper steel AISI 1045, AISI 4140, AISI 4340, ASTM A36, AISI 1010, AISI P21, AISI P20					Austenitic stainless steel, Ferritic and Martensitic stainless steels, Cobalt chromium alloy, Titanium alloy AISI 304, AISI 316, AISI 431, AISI 420J2, AISI 630, AISI 631, Ti-6Al-4V					Heat resistant alloys Inconel718				
Dia. **DC**	Radius of Ball Nose **RE**	Cutting Speed (m/min)	Revolution (min^{-1})	Feed per Tooth (mm/t)	Feed rate (mm/min)	Width of cut ae	Cutting Speed (m/min)	Revolution (min^{-1})	Feed per Tooth (mm/t)	Feed rate (mm/min)	Width of cut ae	Cutting Speed (m/min)	Revolution (min^{-1})	Feed per Tooth (mm/t)	Feed rate (mm/min)	Width of cut ae
12	**6**	100	2700	0.090	970	0.45	80	2100	0.075	630	0.45	30	800	0.040	130	0.36
16	**8**	100	2000	0.100	800	0.60	80	1600	0.080	510	0.60	30	600	0.045	110	0.48
20	**10**	100	1600	0.100	640	0.75	80	1300	0.090	470	0.75	30	480	0.050	96	0.60
Depth of Cut																

■ Internal Profile Milling, Undercut Machining (L/D=5)

(mm)

Workpiece Material		Mild steel, Carbon steel, Alloy steel, Pre-hardened steel, Copper steel AISI 1045, AISI 4140, AISI 4340, ASTM A36, AISI 1010, AISI P21, AISI P20					Austenitic stainless steel, Ferritic and Martensitic stainless steels, Cobalt chromium alloy, Titanium alloy AISI 304, AISI 316, AISI 431, AISI 420J2, AISI 630, AISI 631, Ti-6Al-4V					Heat resistant alloys Inconel718				
Dia. **DC**	Radius of Ball Nose **RE**	Cutting Speed (m/min)	Revolution (min^{-1})	Feed per Tooth (mm/t)	Feed rate (mm/min)	Width of cut ae	Cutting Speed (m/min)	Revolution (min^{-1})	Feed per Tooth (mm/t)	Feed rate (mm/min)	Width of cut ae	Cutting Speed (m/min)	Revolution (min^{-1})	Feed per Tooth (mm/t)	Feed rate (mm/min)	Width of cut ae
12	**6**	70	1900	0.070	530	0.30	50	1300	0.050	260	0.30	20	530	0.030	64	0.24
16	**8**	70	1400	0.080	450	0.40	50	990	0.060	240	0.40	20	400	0.040	64	0.32
20	**10**	70	1100	0.080	350	0.50	50	800	0.070	220	0.50	20	320	0.040	51	0.40
Depth of Cut																

■ Internal Profile Milling, Undercut Machining (L/D=7)

(mm)

Workpiece Material		Mild steel, Carbon steel, Alloy steel, Pre-hardened steel, Copper steel AISI 1045, AISI 4140, AISI 4340, ASTM A36, AISI 1010, AISI P21, AISI P20					Austenitic stainless steel, Ferritic and Martensitic stainless steels, Cobalt chromium alloy, Titanium alloy AISI 304, AISI 316, AISI 431, AISI 420J2, AISI 630, AISI 631, Ti-6Al-4V				
Dia. **DC**	Radius of Ball Nose **RE**	Cutting Speed (m/min)	Revolution (min^{-1})	Feed per Tooth (mm/t)	Feed rate (mm/min)	Width of cut ae	Cutting Speed (m/min)	Revolution (min^{-1})	Feed per Tooth (mm/t)	Feed rate (mm/min)	Width of cut ae
12	**6**	50	1300	0.030	160	0.15	30	800	0.025	80	0.15
16	**8**	50	990	0.035	140	0.20	30	600	0.030	72	0.20
20	**10**	50	800	0.040	130	0.25	30	480	0.035	67	0.25
Depth of Cut											

Note 1) If the machine or workpiece material is not rigid, or if chatter or abnormal noises occur, adjust the revolution, feed rate and depth of cut.
Note 2) If the depth of cut is smaller, the revolution and the feed rate can be increased.
Note 3) In case of L/D >5, It is recommended to use taper neck type holder.
Note 4) For stainless steels, titanium alloys and heat resistant alloys, the use of water-soluble coolant is effective.