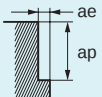
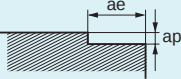


RECOMMENDED CUTTING CONDITIONS

Shoulder milling

Work material		Carbon steel, Alloy steel, Mild steel, Alloy tool steel, Austenitic stainless steels, Titanium alloys, Cobalt chromium alloy, Copper, Copper alloy					Heat resistant alloys, Pre-hardened steel, Hardened steel				
		Ck45, 41CrMo4, 36CrNiMo4, X5CrNi189, X5CrNiMo1810, X2CrNiN1810, X2CrNiMoN1813					Inconel 718, NAK, X36CrMo17, X40CrMoV51, 55NiCrMoV6, X46Cr13				
Dia. (mm)	Neck Length (mm)	Cutting speed (m/min)	Revolution (min ⁻¹)	Feed rate (mm/min)	Depth of cut ap (mm)	Depth of cut ae (mm)	Cutting speed (m/min)	Revolution (min ⁻¹)	Feed rate (mm/min)	Depth of cut ap (mm)	Depth of cut ae (mm)
0.2	0.6	25	40000	360	0.03	0.01	20	32000	290	0.03	0.01
0.3	0.9	40	40000	480	0.04	0.01	20	21000	250	0.04	0.01
0.3	1.5	40	40000	360	0.04	0.01	20	21000	190	0.04	0.01
0.4	1.2	50	40000	800	0.06	0.02	20	16000	320	0.06	0.02
0.4	2	50	40000	560	0.06	0.02	20	16000	220	0.06	0.02
0.5	1.5	60	38000	910	0.07	0.02	20	13000	310	0.07	0.02
0.5	2.5	60	38000	610	0.07	0.02	20	13000	210	0.07	0.02
0.5	3	60	38000	550	0.07	0.02	20	13000	180	0.07	0.02
0.6	3	60	32000	640	0.09	0.03	20	10500	210	0.09	0.03
0.7	3.5	60	27000	650	0.11	0.03	20	9100	200	0.11	0.03
0.8	2.4	60	24000	960	0.12	0.04	20	8000	260	0.12	0.04
0.8	3	60	24000	860	0.12	0.04	20	8000	230	0.12	0.04
0.8	4	60	24000	670	0.12	0.04	20	8000	190	0.12	0.04
1	5	60	20000	800	0.15	0.05	20	6500	210	0.15	0.05
Depth of cut											

Face milling

Work material		Carbon steel, Alloy steel, Mild steel, Alloy tool steel, Austenitic stainless steels, Titanium alloys, Cobalt chromium alloy, Copper, Copper alloy					Heat resistant alloys, Pre-hardened steel, Hardened steel				
		Ck45, 41CrMo4, 36CrNiMo4, X5CrNi189, X5CrNiMo1810, X2CrNiN1810, X2CrNiMoN1813					Inconel 718, NAK, X36CrMo17, X40CrMoV51, 55NiCrMoV6, X46Cr13				
Dia. (mm)	Neck Length (mm)	Cutting speed (m/min)	Revolution (min ⁻¹)	Feed rate (mm/min)	Depth of cut ap (mm)	Depth of cut ae (mm)	Cutting speed (m/min)	Revolution (min ⁻¹)	Feed rate (mm/min)	Depth of cut ap (mm)	Depth of cut ae (mm)
0.2	0.6	25	40000	360	0.01	≤0.2	20	32000	290	0.015	≤0.1
0.3	0.9	40	40000	480	0.02	≤0.3	20	21000	250	0.025	≤0.1
0.3	1.5	40	40000	360	0.02	≤0.3	20	21000	190	0.02	≤0.1
0.4	1.2	50	40000	800	0.03	≤0.4	20	16000	320	0.03	≤0.2
0.4	2	50	40000	560	0.02	≤0.4	20	16000	220	0.02	≤0.2
0.5	1.5	60	38000	910	0.04	≤0.5	20	13000	310	0.04	≤0.2
0.5	2.5	60	38000	610	0.03	≤0.5	20	13000	210	0.03	≤0.2
0.5	3	60	38000	550	0.03	≤0.5	20	13000	180	0.03	≤0.2
0.6	3	60	32000	640	0.03	≤0.6	20	10500	210	0.035	≤0.3
0.7	3.5	60	27000	640	0.03	≤0.7	20	9100	190	0.035	≤0.3
0.8	2.4	60	24000	960	0.06	≤0.8	20	8000	260	0.06	≤0.4
0.8	3	60	24000	840	0.05	≤0.8	20	8000	230	0.05	≤0.4
0.8	4	60	24000	670	0.04	≤0.8	20	8000	190	0.04	≤0.4
1	5	60	20000	800	0.05	≤1	20	6500	210	0.05	≤0.5
Depth of cut											

- 1) VQ coating has less electrical conductivity; therefore an external contact type (electrically transmitted) tool setter may not work. When measuring the tool length, please use an internal contact type (non-electrical type) tool setter or a laser type tool setter.
- 2) Effective cutting of stainless steel, titanium alloys and heat-resistant alloys etc. can be achieved with the use of emulsion coolant.
- 3) Chattering can still occur if the machine rigidity and clamping method are insufficient. In these cases the feed and speed should be reduced proportionately.