

RECOMMENDED CUTTING CONDITIONS

Workpiece Material		Mild Steel Carbon Steel, Alloy Steel JIS SS400, S10C, S45C, SCM440 etc			Ferritic Stainless Steel Ferritic and Martensitic Stainless Steel Austenitic Stainless Steel, Precipitation-Hardening Stainless Steel JIS SUS410, SUS420J2, SUS304, SUS316, SUS630 etc		
Dia. DC (mm)	Hole Depth (L/D)	Cutting Speed (Min.—Max.) (m/min)	Revolution (min ⁻¹)	Feed (Min.—Max.) (mm/rev)	Cutting Speed (Min.—Max.) (m/min)	Revolution (min ⁻¹)	Feed (Min.—Max.) (mm/rev)
1.0	2-30	65(30—100)	20700	0.035(0.020—0.050)	60(20—100)	19100	0.025(0.010—0.040)
1.0	40, 50	65(30—100)	20700	0.030(0.020—0.040)	60(20—100)	19100	0.020(0.010—0.030)
1.5	2-30	65(30—100)	13800	0.053(0.030—0.075)	60(20—100)	12700	0.038(0.015—0.060)
1.5	40, 50	65(30—100)	13800	0.045(0.030—0.060)	60(20—100)	12700	0.030(0.015—0.045)
2.0	2-30	70(40—100)	11100	0.070(0.040—0.100)	60(20—100)	9500	0.050(0.020—0.080)
2.0	40, 50	70(40—100)	11100	0.060(0.040—0.080)	60(20—100)	9500	0.040(0.020—0.060)
2.5	2-30	70(40—100)	8900	0.088(0.050—0.125)	60(20—100)	7600	0.063(0.025—0.100)
2.5	40, 50	70(40—100)	8900	0.075(0.050—0.100)	60(20—100)	7600	0.050(0.025—0.075)
2.9	2-30	70(40—100)	7700	0.102(0.058—0.145)	60(20—100)	6600	0.073(0.029—0.116)
2.9	40, 50	70(40—100)	7700	0.087(0.058—0.116)	60(20—100)	6600	0.058(0.029—0.087)

Workpiece Material		Cast Iron Ductile Cast Iron JIS FC300, FCD450 etc			Aluminium Alloys JIS A5052, A6061, A7075		
Dia. DC (mm)	Hole Depth (L/D)	Cutting Speed (Min.—Max.) (m/min)	Revolution (min ⁻¹)	Feed (Min.—Max.) (mm/rev)	Cutting Speed (Min.—Max.) (m/min)	Revolution (min ⁻¹)	Feed (Min.—Max.) (mm/rev)
1.0	2-30	70(40—100)	22300	0.035(0.020—0.050)	140(100—180)	31800	0.040(0.020—0.060)
1.0	40, 50	70(40—100)	22300	0.030(0.020—0.040)	140(100—180)	31800	0.035(0.020—0.050)
1.5	2-30	70(40—100)	14900	0.053(0.030—0.075)	140(100—180)	21200	0.060(0.030—0.090)
1.5	40, 50	70(40—100)	14900	0.045(0.030—0.060)	140(100—180)	21200	0.053(0.030—0.075)
2.0	2-30	70(40—100)	11100	0.070(0.040—0.100)	140(100—180)	15900	0.080(0.040—0.120)
2.0	40, 50	70(40—100)	11100	0.060(0.040—0.080)	140(100—180)	15900	0.070(0.040—0.100)
2.5	2-30	70(40—100)	8900	0.088(0.050—0.125)	140(100—180)	12700	0.100(0.050—0.150)
2.5	40, 50	70(40—100)	8900	0.075(0.050—0.100)	140(100—180)	12700	0.088(0.050—0.125)
2.9	2-30	70(40—100)	7700	0.102(0.058—0.145)	140(100—180)	11000	0.116(0.058—0.174)
2.9	40, 50	70(40—100)	7700	0.087(0.058—0.116)	140(100—180)	11000	0.102(0.058—0.145)

Workpiece Material		Heat Resistant Alloys Inconel718 etc			Titanium Alloys Ti-6Al-4V etc		
Dia. DC (mm)	Hole Depth (L/D)	Cutting Speed (Min.—Max.) (m/min)	Revolution (min ⁻¹)	Feed (Min.—Max.) (mm/rev)	Cutting Speed (Min.—Max.) (m/min)	Revolution (min ⁻¹)	Feed (Min.—Max.) (mm/rev)
1.0	2-30	30(10—50)	9500	0.015(0.010—0.020)	30(20—40)	9500	0.020(0.010—0.030)
1.0	40, 50	30(10—50)	9500	0.015(0.010—0.020)	30(20—40)	9500	0.020(0.010—0.030)
1.5	2-30	30(10—50)	6400	0.023(0.015—0.030)	30(20—40)	6400	0.030(0.015—0.045)
1.5	40, 50	30(10—50)	6400	0.023(0.015—0.030)	30(20—40)	6400	0.030(0.015—0.045)
2.0	2-30	30(10—50)	4800	0.030(0.020—0.040)	30(20—40)	4800	0.040(0.020—0.060)
2.0	40, 50	30(10—50)	4800	0.030(0.020—0.040)	30(20—40)	4800	0.040(0.020—0.060)
2.5	2-30	30(10—50)	3800	0.038(0.025—0.050)	30(20—40)	3800	0.050(0.025—0.075)
2.5	40, 50	30(10—50)	3800	0.038(0.025—0.050)	30(20—40)	3800	0.050(0.025—0.075)
2.9	2-30	30(10—50)	3300	0.044(0.029—0.058)	30(20—40)	3300	0.058(0.029—0.087)
2.9	40, 50	30(10—50)	3300	0.044(0.029—0.058)	30(20—40)	3300	0.058(0.029—0.087)

Note 1) These recommended conditions are only when using internal coolant.

Note 2) Check the condition of chips and perform step machining if necessary. ★ Reference of step length:DC×0.2—DC×1.0

Note 3) Adjust the cutting conditions according to machine tool and workpiece clamp rigidity and machining geometry, etc.

Note 4) Machining depths exceeding flute length (LU) are not recommend.

Note 5) Clamp the drill so that the drill runout is within 0.003mm.

Note 6) Do not clamp the flute part of the drill.

Workpiece Material		Cobalt Chrome Alloys		
		T7402-2, ASTM F1537, F799 etc		
Dia. DC (mm)	Hole Depth (L/D)	Cutting Speed (Min.—Max.) (m/min)	Revolution (min ⁻¹)	Feed (Min.—Max.) (mm/rev)
1.0	2-30	60(30-90)	19100	0.020(0.010-0.030)
1.0	40, 50	60(30-90)	19100	0.020(0.010-0.030)
1.5	2-30	60(30-90)	12700	0.030(0.015-0.045)
1.5	40, 50	60(30-90)	12700	0.030(0.015-0.045)
2.0	2-30	60(30-90)	9500	0.040(0.020-0.060)
2.0	40, 50	60(30-90)	9500	0.040(0.020-0.060)
2.5	2-30	60(30-90)	7600	0.050(0.025-0.075)
2.5	40, 50	60(30-90)	7600	0.050(0.025-0.075)
2.9	2-30	60(30-90)	6600	0.058(0.029-0.087)
2.9	40, 50	60(30-90)	6600	0.058(0.029-0.087)

Note 1) These recommended conditions are only when using internal coolant.

Note 2) Check the condition of chips and perform step machining if necessary. ★ Reference of step length:DC×0.2—DC×1.0

Note 3) Adjust the cutting conditions according to machine tool and workpiece clamp rigidity and machining geometry, etc.

Note 4) Machining depths exceeding flute length (LU) are not recommend.

Note 5) Clamp the drill so that the drill runout is within 0.003mm.

Note 6) Do not clamp the flute part of the drill.