

Recommended Cutting Conditions

(mm)

Workpiece Material		Mild Steels Carbon Steels, Alloy Steels JIS SS400, S10C, S45C, SCM440 etc			Austenitic Stainless Steels, Ferritic Stainless Steels Ferritic and Martensitic Stainless Steels Precipitation Hardening Stainless Steels JIS SUS410, SUS420J2, SUS304, SUS316, SUS630 etc		
DC	Hole Depth L/D	Cutting Speed vc (Min.—Max.) (m/min)	Revolution n (min ⁻¹)	Feed fr (Min.—Max.) (mm/rev.)	Cutting Speed vc (Min.—Max.) (m/min)	Revolution n (min ⁻¹)	Feed fr (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 Irons Ductile Cast Irons JIS FC300, FCD450 etc			Aluminium Alloys JIS A5052, A6061, A7075		
DC	Hole Depth L/D	Cutting Speed vc (Min.—Max.) (m/min)	Revolution n (min ⁻¹)	Feed fr (Min.—Max.) (mm/rev.)	Cutting Speed vc (Min.—Max.) (m/min)	Revolution n (min ⁻¹)	Feed fr (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		
DC	Hole Depth L/D	Cutting Speed vc (Min.—Max.) (m/min)	Revolution n (min ⁻¹)	Feed fr (Min.—Max.) (mm/rev.)	Cutting Speed vc (Min.—Max.) (m/min)	Revolution n (min ⁻¹)	Feed fr (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)

Workpiece Material		Cobalt Chrome Alloys T7402-2, ASTM F1537, F799 etc		
DC	Hole Depth L/D	Cutting Speed vc (Min.—Max.) (m/min)	Revolution n (min ⁻¹)	Feed fr (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) This recommended condition is only when using internal coolant.

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

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.