RECOMMENDED CUTTING CONDITIONS

Work Material	Mild Steel (≤180HB) Ck10						Carbon steel, Alloy steel (180−280HB) Ck45, 41CrMo4					
Drill Dia. (mm)	Cutting Speed (m/min)	Revolution (min^{-1})	Feed rate (Min.−Max.) (mm/rev)		Step (mm)	Table Feed (mm/min)	Cutting Speed (m/min)	Revolution (min^{-1})	Feed rate (Min.−Max.) (mm/rev)		Step (mm)	Table Feed (mm/min)
0.1	6	20000	0.002	(0.001−0.003)	0.02	40	6	20000	0.002	(0.001−0.003)	0.02	40
0.12	8	20000	0.002	(0.001−0.003)	0.02	40	8	20000	0.002	(0.001−0.003)	0.02	40
0.16	10	20000	0.002	(0.001−0.003)	0.02	40	10	20000	0.002	(0.001−0.003)	0.02	40
0.2	13	20000	0.003	(0.002−0.004)	0.04	60	13	20000	0.003	(0.002−0.004)	0.04	60
0.25	16	20000	0.003	(0.002−0.004)	0.04	60	16	20000	0.003	(0.002−0.004)	0.04	60
0.32	20	20000	0.004	(0.003−0.005)	0.05	80	20	20000	0.004	(0.003−0.005)	0.05	80
0.4	25	20000	0.004	(0.003−0.005)	0.05	80	25	20000	0.004	(0.003−0.005)	0.05	80
0.5	31	20000	0.006	(0.005−0.007)	0.1	120	31	20000	0.006	(0.005−0.007)	0.1	120
0.63	40	20000	0.008	(0.006−0.01)	0.1	160	40	20000	0.008	(0.006−0.01)	0.1	160
0.8	50	20000	0.02	(0.015−0.025)	0.3	400	50	20000	0.015	(0.012−0.018)	0.3	300
0.99	62	20000	0.04	(0.03−0.05)	0.3	800	62	20000	0.02	(0.015−0.025)	0.3	400

Work Material	Carbon steel, Alloy steel (280−350HB) 36CrNiMo4						Pre-Hardened Steel (35−45HRC) X36CrMo17					
Drill Dia. (mm)	Cutting Speed (m/min)	Revolution (min^{-1})	Feed rate (Min.−Max.) (mm/rev)		Step (mm)	Table Feed (mm/min)	Cutting Speed (m/min)	Revolution (min^{-1})	Feed rate (Min.−Max.) (mm/rev)		Step (mm)	Table Feed (mm/min)
0.1	6	20000	0.002	(0.001−0.003)	0.02	40	6	20000	0.002	(0.001−0.003)	0.02	40
0.12	8	20000	0.002	(0.001−0.003)	0.02	40	8	20000	0.002	(0.001−0.003)	0.02	40
0.16	10	20000	0.002	(0.001−0.003)	0.02	40	10	20000	0.002	(0.001−0.003)	0.02	40
0.2	13	20000	0.003	(0.002−0.004)	0.04	60	13	20000	0.003	(0.002−0.004)	0.04	60
0.25	16	20000	0.003	(0.002−0.004)	0.04	60	16	20000	0.003	(0.002−0.004)	0.04	60
0.32	20	20000	0.004	(0.003−0.005)	0.05	80	20	20000	0.004	(0.003−0.005)	0.05	80
0.4	25	20000	0.004	(0.003−0.005)	0.05	80	25	20000	0.004	(0.003−0.005)	0.05	80
0.5	31	20000	0.006	(0.005−0.007)	0.1	120	31	20000	0.006	(0.005−0.007)	0.1	120
0.63	40	20000	0.008	(0.006−0.01)	0.1	160	40	20000	0.008	(0.006−0.01)	0.1	160
0.8	50	20000	0.015	(0.012−0.018)	0.3	300	50	20000	0.015	(0.012−0.018)	0.3	300
0.99	62	20000	0.02	(0.015−0.025)	0.3	400	62	20000	0.02	(0.015−0.025)	0.3	400

(Notes)
- When drilling holes up to ϕ0.3mm, the use of a spot drill is recommended.
- Change the cutting conditions depending on your machine and workpiece rigidity.
- When machining holes over 5D, reduce the peck distance stated above.
- The use of water-soluble fluid (diluted 20 times) is recommended for drilling using the cutting conditions above.
  Lower the revolutions if oil fluid or mist is used.
- Work materials marked by "−" in the tables above are difficult to drill with external coolant.
  The use of internal coolant type MWS or VAPDSSUS is recommended.

RECOMMENDED CUTTING CONDITIONS

Work Material	Austenitic Stainless Steel (≤200HB) X5CrNi1810, X5CrNiMo17-12-2					Gray Cast Iron (≤350MPa) GG30				
Drill Dia. (mm)	Cutting Speed (m/min)	Revolution (min^{-1})	Feed rate (Min.—Max.) (mm/rev)	Step (mm)	Table Feed (mm/min)	Cutting Speed (m/min)	Revolution (min^{-1})	Feed rate (Min.—Max.) (mm/rev)	Step (mm)	Table Feed (mm/min)
0.1	6	20000	0.002 (0.001—0.003)	0.02	40	6	20000	0.002 (0.001—0.003)	0.02	40
0.12	8	20000	0.002 (0.001—0.003)	0.02	40	8	20000	0.002 (0.001—0.003)	0.02	40
0.16	10	20000	0.002 (0.001—0.003)	0.02	40	10	20000	0.002 (0.001—0.003)	0.02	40
0.2	11	18000	0.003 (0.002—0.004)	0.04	54	13	20000	0.003 (0.002—0.004)	0.04	60
0.25	14	18000	0.003 (0.002—0.004)	0.04	54	16	20000	0.003 (0.002—0.004)	0.04	60
0.32	15	15000	0.004 (0.003—0.005)	0.05	60	20	20000	0.004 (0.003—0.005)	0.05	80
0.4	19	15000	0.004 (0.003—0.005)	0.05	60	25	20000	0.004 (0.003—0.005)	0.05	80
0.5	16	10000	0.006 (0.005—0.007)	0.1	60	31	20000	0.006 (0.005—0.007)	0.1	120
0.63	20	10000	0.008 (0.006—0.01)	0.1	80	40	20000	0.008 (0.006—0.01)	0.1	160
0.8	15	6000	0.015 (0.012—0.018)	0.2	90	50	20000	0.02 (0.015—0.025)	0.3	400
0.99	19	6000	0.02 (0.015—0.025)	0.2	120	62	20000	0.04 (0.03—0.05)	0.3	800

Work Material	Aluminium Alloy (Si<5%)					Heat Resistant Alloy Inconel718				
Drill Dia. (mm)	Cutting Speed (m/min)	Revolution (min^{-1})	Feed rate (Min.—Max.) (mm/rev)	Step (mm)	Table Feed (mm/min)	Cutting Speed (m/min)	Revolution (min^{-1})	Feed rate (Min.—Max.) (mm/rev)	Step (mm)	Table Feed (mm/min)
0.1	6	20000	0.002 (0.001—0.003)	0.05	40	2	7000	0.001 (0.0005—0.001)	0.02	7
0.12	8	20000	0.003 (0.002—0.004)	0.05	60	3	7000	0.001 (0.0005—0.001)	0.02	7
0.16	10	20000	0.004 (0.003—0.005)	0.05	80	4	7000	0.001 (0.0005—0.001)	0.02	7
0.2	13	20000	0.006 (0.005—0.007)	0.1	120	3	5000	0.002 (0.001—0.002)	0.04	10
0.25	16	20000	0.008 (0.006—0.01)	0.1	160	4	5000	0.002 (0.001—0.002)	0.04	10
0.32	20	20000	0.01 (0.008—0.012)	0.3	200	4	4000	0.002 (0.001—0.002)	0.05	8
0.4	25	20000	0.02 (0.015—0.025)	0.3	400	5	4000	0.002 (0.001—0.002)	0.05	8
0.5	31	20000	0.03 (0.025—0.035)	0.5	600	5	3000	0.003 (0.001—0.003)	0.1	9
0.63	40	20000	0.04 (0.035—0.045)	0.5	800	6	3000	0.004 (0.002—0.004)	0.1	12
0.8	50	20000	0.05 (0.045—0.055)	0.8	1000	5	1800	0.006 (0.004—0.006)	0.2	10.8
0.99	62	20000	0.06 (0.055—0.065)	0.8	1200	6	1800	0.01 (0.008—0.01)	0.2	18

(Notes)
- When drilling holes up to ϕ0.3mm, the use of a spot drill is recommended.
- Change the cutting conditions depending on your machine and workpiece rigidity.
- When machining holes over 5D, reduce the peck distance stated above.
- The use of water-soluble fluid (diluted 20 times) is recommended for drilling using the cutting conditions above. Lower the revolutions if oil fluid or mist is used.
- Work materials marked by "—" in the tables above are difficult to drill with external coolant. The use of internal coolant type MWS or VAPDSSUS is recommended.