

Point Angle SIG 60°

RECOMMENDED CUTTING CONDITIONS

| Drill Dia. DC (mm) | Mild Steel ($\leq 180\text{HB}$) JIS SS400, S10C etc. | | Carbon Steel, Alloy Steel (180—280HB) JIS S45C, SCM440 etc. | | Carbon Steel, Alloy Steel (280—350HB) JIS SNCM439 etc. | |
|--------------------------|--|--------------------------------------|--|--------------------------------------|---|--------------------------------------|
| | Revolution (min^{-1}) | Feed rate (Min.—Max.) (mm/rev) | Revolution (min^{-1}) | Feed rate (Min.—Max.) (mm/rev) | Revolution (min^{-1}) | Feed rate (Min.—Max.) (mm/rev) |
| 3.0 | 7900 | 0.05(0.03—0.07) | 6800 | 0.05(0.03—0.07) | 6300 | 0.04(0.02—0.06) |
| 4.0 | 5900 | 0.05(0.03—0.07) | 5100 | 0.05(0.03—0.07) | 4700 | 0.04(0.02—0.06) |
| 5.0 | 5000 | 0.06(0.04—0.08) | 4400 | 0.06(0.04—0.08) | 4100 | 0.05(0.03—0.07) |
| 6.0 | 4200 | 0.06(0.04—0.08) | 3700 | 0.06(0.04—0.08) | 3400 | 0.05(0.03—0.07) |
| 7.0 | 3600 | 0.07(0.04—0.09) | 3100 | 0.07(0.04—0.09) | 2900 | 0.05(0.03—0.07) |
| 8.0 | 3100 | 0.07(0.04—0.09) | 2700 | 0.07(0.04—0.09) | 2500 | 0.05(0.03—0.07) |
| 10.0 | 2700 | 0.08(0.04—0.10) | 2300 | 0.08(0.04—0.10) | 2200 | 0.06(0.03—0.08) |
| 12.0 | 2200 | 0.08(0.04—0.10) | 1900 | 0.08(0.04—0.10) | 1800 | 0.06(0.03—0.08) |

| Drill Dia. DC (mm) | Austenitic Stainless Steel ($\leq 200\text{HB}$) JIS SUS304, SUS316 etc. | | Gray Cast Iron ($\leq 350\text{MPa}$) JIS FC300 etc. | | Ductile Cast Iron ($\leq 450\text{MPa}$) JIS FCD450 etc. | |
|--------------------------|---|--------------------------------------|---|--------------------------------------|---|--------------------------------------|
| | Revolution (min^{-1}) | Feed rate (Min.—Max.) (mm/rev) | Revolution (min^{-1}) | Feed rate (Min.—Max.) (mm/rev) | Revolution (min^{-1}) | Feed rate (Min.—Max.) (mm/rev) |
| 3.0 | 1500 | 0.03(0.01—0.05) | 7900 | 0.05(0.03—0.07) | 5800 | 0.05(0.03—0.07) |
| 4.0 | 1100 | 0.03(0.01—0.05) | 5900 | 0.05(0.03—0.07) | 4300 | 0.05(0.03—0.07) |
| 5.0 | 1200 | 0.04(0.02—0.06) | 5000 | 0.06(0.04—0.08) | 3800 | 0.06(0.04—0.08) |
| 6.0 | 1000 | 0.04(0.02—0.06) | 4200 | 0.06(0.04—0.08) | 3100 | 0.06(0.04—0.08) |
| 7.0 | 900 | 0.04(0.02—0.06) | 3600 | 0.07(0.04—0.09) | 2700 | 0.06(0.04—0.08) |
| 8.0 | 790 | 0.04(0.02—0.06) | 3100 | 0.07(0.04—0.09) | 2300 | 0.06(0.04—0.08) |
| 10.0 | 630 | 0.04(0.02—0.06) | 2700 | 0.08(0.04—0.10) | 1900 | 0.07(0.04—0.09) |
| 12.0 | 530 | 0.04(0.02—0.06) | 2200 | 0.08(0.04—0.10) | 1500 | 0.07(0.04—0.09) |

Note 1) Select a tool diameter (DC) that is larger than the pilot hole diameter (D) and less than twice the pilot hole diameter.

Note 2) When centering into curved or inclined surfaces, please reduce the feed rate.

Note 3) When V-grooving and chamfering, please reduce cutting conditions.

Note 4) When chatter vibration or abnormal noise is generated, please shorten the dwell time or reduce the revolutions.

Note 5) When centering, please do not exceed the **LU** (usable length).

Point Angle SIG 90°, 120° and 145°

RECOMMENDED CUTTING CONDITIONS

| Drill Dia. DC (mm) | Mild Steel ($\leq 180\text{HB}$) JIS SS400, S10C etc. | | Carbon Steel, Alloy Steel (180—280HB) JIS S45C, SCM440 etc. | | Carbon Steel, Alloy Steel (280—350HB) JIS SNCM439 etc. | |
|--------------------------|--|--------------------------------------|--|--------------------------------------|---|--------------------------------------|
| | Revolution (min^{-1}) | Feed rate (Min.—Max.) (mm/rev) | Revolution (min^{-1}) | Feed rate (Min.—Max.) (mm/rev) | Revolution (min^{-1}) | Feed rate (Min.—Max.) (mm/rev) |
| 1.0 | 9500 | 0.02 (0.01—0.03) | 6300 | 0.02 (0.01—0.03) | 4700 | 0.02 (0.01—0.03) |
| 1.5 | 9500 | 0.02 (0.01—0.03) | 7400 | 0.02 (0.01—0.03) | 6300 | 0.02 (0.01—0.03) |
| 2.0 | 9500 | 0.04 (0.03—0.05) | 7900 | 0.04 (0.03—0.05) | 7100 | 0.04 (0.03—0.05) |
| 2.5 | 9500 | 0.04 (0.03—0.05) | 8200 | 0.04 (0.03—0.05) | 7600 | 0.04 (0.03—0.05) |
| 3.0 | 7900 | 0.06 (0.04—0.08) | 6800 | 0.06 (0.04—0.08) | 6300 | 0.05 (0.03—0.07) |
| 4.0 | 5900 | 0.06 (0.04—0.08) | 5100 | 0.06 (0.04—0.08) | 4700 | 0.05 (0.03—0.07) |
| 5.0 | 5000 | 0.07 (0.05—0.09) | 4400 | 0.07 (0.05—0.09) | 4100 | 0.06 (0.04—0.08) |
| 6.0 | 4200 | 0.07 (0.05—0.09) | 3700 | 0.07 (0.05—0.09) | 3400 | 0.06 (0.04—0.08) |
| 7.0 | 3600 | 0.08 (0.05—0.10) | 3100 | 0.08 (0.05—0.10) | 2900 | 0.06 (0.04—0.08) |
| 8.0 | 3100 | 0.08 (0.05—0.10) | 2700 | 0.08 (0.05—0.10) | 2500 | 0.06 (0.04—0.08) |
| 10.0 | 2700 | 0.09 (0.05—0.11) | 2300 | 0.09 (0.05—0.11) | 2200 | 0.07 (0.04—0.09) |
| 12.0 | 2200 | 0.09 (0.05—0.11) | 1900 | 0.09 (0.05—0.11) | 1800 | 0.07 (0.04—0.09) |
| 16.0 | 1700 | 0.12 (0.10—0.14) | 1500 | 0.12 (0.10—0.14) | 1400 | 0.08 (0.06—0.10) |

| Drill Dia. DC (mm) | Austenitic Stainless Steel ($\leq 200\text{HB}$) JIS SUS304, SUS316 etc. | | Gray Cast Iron ($\leq 350\text{MPa}$) JIS FC300 etc. | | Ductile Cast Iron ($\leq 450\text{MPa}$) JIS FCD450 etc. | |
|--------------------------|---|--------------------------------------|---|--------------------------------------|---|--------------------------------------|
| | Revolution (min^{-1}) | Feed rate (Min.—Max.) (mm/rev) | Revolution (min^{-1}) | Feed rate (Min.—Max.) (mm/rev) | Revolution (min^{-1}) | Feed rate (Min.—Max.) (mm/rev) |
| 1.0 | 6300 | 0.01 (0.005—0.015) | 9500 | 0.02 (0.01—0.03) | 3100 | 0.02 (0.01—0.03) |
| 1.5 | 4200 | 0.01 (0.005—0.015) | 9500 | 0.02 (0.01—0.03) | 5300 | 0.02 (0.01—0.03) |
| 2.0 | 3100 | 0.04 (0.03—0.05) | 9500 | 0.04 (0.03—0.05) | 6300 | 0.04 (0.03—0.05) |
| 2.5 | 2500 | 0.04 (0.03—0.05) | 9500 | 0.04 (0.03—0.05) | 7000 | 0.04 (0.03—0.05) |
| 3.0 | 2100 | 0.04 (0.02—0.06) | 7900 | 0.06 (0.04—0.08) | 5800 | 0.06 (0.04—0.08) |
| 4.0 | 1600 | 0.04 (0.02—0.06) | 5900 | 0.06 (0.04—0.08) | 4300 | 0.06 (0.04—0.08) |
| 5.0 | 1200 | 0.06 (0.04—0.08) | 5000 | 0.07 (0.05—0.09) | 3800 | 0.07 (0.05—0.09) |
| 6.0 | 1000 | 0.06 (0.04—0.08) | 4200 | 0.07 (0.05—0.09) | 3100 | 0.07 (0.05—0.09) |
| 7.0 | 900 | 0.06 (0.04—0.08) | 3600 | 0.08 (0.05—0.10) | 2700 | 0.07 (0.05—0.09) |
| 8.0 | 790 | 0.06 (0.04—0.08) | 3100 | 0.08 (0.05—0.10) | 2300 | 0.07 (0.05—0.09) |
| 10.0 | 630 | 0.06 (0.04—0.08) | 2700 | 0.09 (0.05—0.11) | 1900 | 0.08 (0.05—0.10) |
| 12.0 | 530 | 0.06 (0.04—0.08) | 2200 | 0.09 (0.05—0.11) | 1500 | 0.08 (0.05—0.10) |
| 16.0 | 390 | 0.08 (0.06—0.10) | 1700 | 0.12 (0.10—0.14) | 1100 | 0.11 (0.09—0.13) |

Note 1) Select a tool diameter (DC) that is larger than the pilot hole diameter (D) and less than twice the pilot hole diameter.

Note 2) When centering into curved or inclined surfaces, please reduce the feed rate.

Note 3) When V-grooving and chamfering, please reduce cutting conditions.

Note 4) When chatter vibration or abnormal noise is generated, please shorten the dwell time or reduce the revolutions.

Note 5) When centering, please do not exceed the **LU** (usable length).