

## RECOMMENDED CUTTING CONDITIONS

Drill Dia.		Mild Steel ( $\leq 180\text{HB}$ ) Carbon Steel, Alloy Steel (180-280HB) AISI 1010, 1045, 4140 etc.			Austenitic Stainless Steel ( $\leq 200\text{HB}$ ) Ferritic, Martensitic Stainless Steel ( $>200\text{HB}$ ) AISI 304, 316 AISI 431, 420 etc.		
		Cutting Speed (SFM)	Revolution (min <sup>-1</sup> )	Feed (Min.—Max.) (IPR)	Cutting Speed (SFM)	Revolution (min <sup>-1</sup> )	Feed (Min.—Max.) (IPR)
inch	mm						
<b>.0394</b>	<b>1.0</b>	130	12700	.0012 (.0008—.0016)	65	6400	.0012 (.0008—.0016)
<b>.0472</b>	<b>1.2</b>	160	13200	.0014 (.0010—.0020)	95	8000	.0014 (.0010—.0020)
<b>.0630</b>	<b>1.6</b>	195	11900	.0020 (.0012—.0026)	130	8000	.0020 (.0012—.0026)
<b>.0787</b>	<b>2.0</b>	230	11100	.0024 (.0016—.0031)	160	8000	.0024 (.0016—.0031)
<b>.0984</b>	<b>2.5</b>	260	10200	.0030 (.0020—.0039)	195	7600	.0030 (.0020—.0039)
<b>.1260</b>	<b>3.2</b>	260	8000	.0039 (.0028—.0051)	195	6000	.0039 (.0028—.0051)
<b>.1575</b>	<b>4.0</b>	260	6400	.0039 (.0035—.0043)	190	4800	.0035 (.0031—.0035)
<b>.1969</b>	<b>5.0</b>	260	5100	.0051 (.0043—.0055)	195	3800	.0043 (.0039—.0047)
<b>.2480</b>	<b>6.3</b>	260	4000	.0063 (.0055—.0071)	195	3000	.0055 (.0051—.0059)
<b>.3150</b>	<b>8.0</b>	255	3200	.0079 (.0071—.0091)	190	2400	.0067 (.0063—.0075)
<b>.3937</b>	<b>10.0</b>	255	2600	.0098 (.0087—.0110)	195	1900	.0087 (.0079—.0091)
<b>.4724</b>	<b>12.0</b>	260	2100	.0118 (.0106—.0134)	185	1600	.0102 (.0094—.0110)

Drill Dia.		Pre-hardened Steel (35-45HRC) Alloy Tool Steel ( $\leq 350\text{HB}$ ) AISI P21, P20 ASTM H13, AISI L6 etc.			Hardened Steel (40-55HRC) Precipitation Hardening Martensitic Stainless Steel ( $<450\text{HB}$ ) AISI 431, 420 S17400, S17700 etc.		
		Cutting Speed (SFM)	Revolution (min <sup>-1</sup> )	Feed (Min.—Max.) (IPR)	Cutting Speed (SFM)	Revolution (min <sup>-1</sup> )	Feed (Min.—Max.) (IPR)
inch	mm						
<b>.0394</b>	<b>1.0</b>	65	6400	.0010 (.0008—.0012)	65	6400	.0008 (.0006—.0010)
<b>.0472</b>	<b>1.2</b>	95	8000	.0012 (.0008—.0014)	95	8000	.0010 (.0008—.0012)
<b>.0630</b>	<b>1.6</b>	130	8000	.0016 (.0012—.0018)	130	8000	.0014 (.0010—.0016)
<b>.0787</b>	<b>2.0</b>	160	8000	.0018 (.0014—.0024)	160	8000	.0016 (.0012—.0020)
<b>.0984</b>	<b>2.5</b>	195	7600	.0024 (.0018—.0030)	195	7600	.0020 (.0016—.0026)
<b>.1260</b>	<b>3.2</b>	195	6000	.0031 (.0024—.0035)	195	6000	.0024 (.0020—.0031)
<b>.1575</b>	<b>4.0</b>	190	4800	.0031 (.0028—.0039)	190	4800	.0031 (.0024—.0039)
<b>.1969</b>	<b>5.0</b>	195	3800	.0043 (.0035—.0051)	195	3800	.0039 (.0031—.0051)
<b>.2480</b>	<b>6.3</b>	195	3000	.0051 (.0043—.0063)	195	3000	.0043 (.0035—.0051)
<b>.3150</b>	<b>8.0</b>	190	2400	.0067 (.0055—.0079)	190	2400	.0055 (.0047—.0063)
<b>.3937</b>	<b>10.0</b>	195	1900	.0083 (.0067—.0098)	195	1900	.0067 (.0055—.0079)
<b>.4724</b>	<b>12.0</b>	185	1600	.0098 (.0083—.0118)	185	1600	.0083 (.0067—.0094)

Drill Dia.		Hardened Steel (40-55HRC) Heat Resistant Alloy ASTM H13, AISI L6 Inconel718 etc.		
		Cutting Speed (SFM)	Revolution (min <sup>-1</sup> )	Feed (Min.—Max.) (IPR)
inch	mm			
<b>.0394</b>	<b>1.0</b>	30	3200	.0006 (.0006—.0008)
<b>.0472</b>	<b>1.2</b>	30	2700	.0008 (.0006—.0010)
<b>.0630</b>	<b>1.6</b>	30	2000	.0010 (.0008—.0012)
<b>.0787</b>	<b>2.0</b>	60	3200	.0014 (.0010—.0016)
<b>.0984</b>	<b>2.5</b>	65	2600	.0016 (.0012—.0020)
<b>.1260</b>	<b>3.2</b>	60	2000	.0020 (.0016—.0028)
<b>.1575</b>	<b>4.0</b>	95	2400	.0028 (.0020—.0031)
<b>.1969</b>	<b>5.0</b>	95	1900	.0031 (.0024—.0039)
<b>.2480</b>	<b>6.3</b>	95	1500	.0035 (.0031—.0043)
<b>.3150</b>	<b>8.0</b>	120	1500	.0047 (.0039—.0051)
<b>.3937</b>	<b>10.0</b>	120	1300	.0059 (.0051—.0067)
<b>.4724</b>	<b>12.0</b>	120	1100	.0071 (.0059—.0079)

(Note 1) When using the drill with a length over  $l/d$  10, it is necessary to use a pilot hole as a guide. (If no pilot hole is used then drill breakage can occur)

(Note 2) Use the shortest flute drill in the respective size as a pilot drill.

(Note 3) For the spindle revolution of diameters not shown in the table, please adjust to the conditions of larger and closest diameter, or calculate from the cutting speed of the closest diameter. For the feed rate per revolution, please set up within the recommended feed rate of the closest diameter appropriately.