

Recommended Cutting Conditions

(inch)

Material			Mild Steel Carbon Steel, Alloy Steel AISI 1010, 1045, 4140 etc.	Austenitic Stainless Steel, Ferritic Stainless Steel Ferritic and Martensitic Stainless Steel Precipitation Hardening Stainless Steel AISI 304, 316, 410 etc.		
DC		Hole Depth L/D	Cutting Speed vc (Min.—Max.) (SFM)	Feed fr (Min.—Max.) (IPR)	Cutting Speed vc (Min.—Max.) (SFM)	Feed fr (Min.—Max.) (IPR)
mm	inch					
1.0	.0394	2-30	210(100—330)	.0014(.0008—.0020)	195(65—330)	.0010(.0004—.0016)
1.0	.0394	40, 50	210(100—330)	.0012(.0008—.0016)	195(65—330)	.0008(.0004—.0012)
1.5	.0591	2-30	210(100—330)	.0021(.0012—.0030)	195(65—330)	.0015(.0006—.0024)
1.5	.0591	40, 50	210(100—330)	.0018(.0012—.0024)	195(65—330)	.0012(.0006—.0018)
2.0	.0787	2-30	230(130—330)	.0028(.0016—.0039)	195(65—330)	.0020(.0008—.0031)
2.0	.0787	40, 50	230(130—330)	.0024(.0016—.0031)	195(65—330)	.0016(.0008—.0024)
2.5	.0984	2-30	230(130—330)	.0035(.0020—.0049)	195(65—330)	.0025(.0010—.0039)
2.5	.0984	40, 50	230(130—330)	.0030(.0020—.0039)	195(65—330)	.0020(.0010—.0030)
2.9	.1142	2-30	230(130—330)	.0040(.0023—.0057)	195(65—330)	.0029(.0011—.0046)
2.9	.1142	40, 50	230(130—330)	.0034(.0023—.0046)	195(65—330)	.0023(.0011—.0034)

Material			Cast Iron Ductile Cast Iron ASTM No 45B, 60-60-8 etc.	Aluminum Alloys ASTM 6061, 7075 etc.		
DC		Hole Depth L/D	Cutting Speed vc (Min.—Max.) (SFM)	Feed fr (Min.—Max.) (IPR)	Cutting Speed vc (Min.—Max.) (SFM)	Feed fr (Min.—Max.) (IPR)
mm	inch					
1.0	.0394	2-30	230(130—330)	.0014(.0008—.0020)	460(330—590)	.0016(.0008—.0024)
1.0	.0394	40, 50	230(130—330)	.0012(.0008—.0016)	460(330—590)	.0014(.0008—.0020)
1.5	.0591	2-30	230(130—330)	.0021(.0012—.0030)	460(330—590)	.0024(.0012—.0035)
1.5	.0591	40, 50	230(130—330)	.0018(.0012—.0024)	460(330—590)	.0021(.0012—.0030)
2.0	.0787	2-30	230(130—330)	.0028(.0016—.0039)	460(330—590)	.0031(.0016—.0047)
2.0	.0787	40, 50	230(130—330)	.0024(.0016—.0031)	460(330—590)	.0028(.0016—.0039)
2.5	.0984	2-30	230(130—330)	.0035(.0020—.0049)	460(330—590)	.0039(.0020—.0059)
2.5	.0984	40, 50	230(130—330)	.0030(.0020—.0039)	460(330—590)	.0035(.0020—.0049)
2.9	.1142	2-30	230(130—330)	.0040(.0023—.0057)	460(330—590)	.0046(.0023—.0069)
2.9	.1142	40, 50	230(130—330)	.0034(.0023—.0046)	460(330—590)	.0040(.0023—.0057)

Material			Heat Resistant Alloys Inconel718 etc.	Titanium Alloys Ti-6Al-4V etc.		
DC		Hole Depth L/D	Cutting Speed vc (Min.—Max.) (SFM)	Feed fr (Min.—Max.) (IPR)	Cutting Speed vc (Min.—Max.) (SFM)	Feed fr (Min.—Max.) (IPR)
mm	inch					
1.0	.0394	2-30	100(30—165)	.0006(.0004—.0008)	100(65—130)	.0008(.0004—.0012)
1.0	.0394	40, 50	100(30—165)	.0006(.0004—.0008)	100(65—130)	.0008(.0004—.0012)
1.5	.0591	2-30	100(30—165)	.0009(.0006—.0012)	100(65—130)	.0012(.0006—.0018)
1.5	.0591	40, 50	100(30—165)	.0009(.0006—.0012)	100(65—130)	.0012(.0006—.0018)
2.0	.0787	2-30	100(30—165)	.0012(.0008—.0016)	100(65—130)	.0016(.0008—.0024)
2.0	.0787	40, 50	100(30—165)	.0012(.0008—.0016)	100(65—130)	.0016(.0008—.0024)
2.5	.0984	2-30	100(30—165)	.0015(.0010—.0020)	100(65—130)	.0020(.0010—.0030)
2.5	.0984	40, 50	100(30—165)	.0015(.0010—.0020)	100(65—130)	.0020(.0010—.0030)
2.9	.1142	2-30	100(30—165)	.0017(.0011—.0023)	100(65—130)	.0023(.0011—.0034)
2.9	.1142	40, 50	100(30—165)	.0017(.0011—.0023)	100(65—130)	.0023(.0011—.0034)

Material			Cobalt Chrome Alloys ASTM F1537, F799 etc.
DC		Hole Depth L/D	Cutting Speed vc (Min.—Max.) (SFM)
mm	inch		
1.0	.0394	2-30	195(100—295)
1.0	.0394	40, 50	195(100—295)
1.5	.0591	2-30	195(100—295)
1.5	.0591	40, 50	195(100—295)
2.0	.0787	2-30	195(100—295)
2.0	.0787	40, 50	195(100—295)
2.5	.0984	2-30	195(100—295)
2.5	.0984	40, 50	195(100—295)
2.9	.1142	2-30	195(100—295)
2.9	.1142	40, 50	195(100—295)

Note 1) This recommended condition is only when using internal coolant through.

Note 2) Check the condition of chips and perform step machining if necessary. * Reference 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 recommended.

Note 5) Ensure the drill runout is within .00012 inch.

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