

## RECOMMENDED CUTTING CONDITIONS

### ■ MWS SB/LB/XB/DB Type (l/d<10)

Drill Dia. DC		Cutting Speed (Min.—Max.) (SFM)		Feed (Min.—Max.) (IPR)		Carbon Steel, Alloy Steel (180—280HB)	
						AISI 1045, 4140 etc.	
inch	mm	Mild Steel (≤180HB) AISI 1010 etc.					
<b>.0197</b>	<b>0.50</b>	130 (100—150)	.0004 (.0002—.0006)	130 (100—150)	.0004 (.0002—.0006)	130 (100—150)	.0004 (.0002—.0006)
<b>.0248</b>	<b>0.63</b>	130 (100—150)	.0006 (.0003—.0008)	130 (100—150)	.0006 (.0003—.0008)	130 (100—150)	.0006 (.0003—.0008)
<b>.0315</b>	<b>0.80</b>	150 (115—165)	.0011 (.0006—.0016)	150 (115—165)	.0011 (.0006—.0016)	150 (115—165)	.0011 (.0006—.0016)
<b>.0394</b>	<b>1.00</b>	165 (130—180)	.0014 (.0008—.0020)	165 (130—180)	.0014 (.0008—.0020)	165 (130—180)	.0014 (.0008—.0020)
<b>.0472</b>	<b>1.20</b>	165 (130—180)	.0018 (.0012—.0024)	165 (130—180)	.0018 (.0012—.0024)	165 (130—180)	.0018 (.0012—.0024)
<b>.0630</b>	<b>1.60</b>	165 (130—180)	.0022 (.0014—.0031)	165 (130—180)	.0022 (.0014—.0031)	165 (130—180)	.0022 (.0014—.0031)
<b>.0787</b>	<b>2.00</b>	165 (130—180)	.0028 (.0016—.0039)	165 (130—180)	.0028 (.0016—.0039)	165 (130—180)	.0028 (.0016—.0039)
<b>.0984</b>	<b>2.50</b>	195 (150—230)	.0033 (.0020—.0049)	195 (150—215)	.0033 (.0020—.0049)	195 (150—215)	.0033 (.0020—.0049)

Drill Dia. DC		Cutting Speed (Min.—Max.) (SFM)		Feed (Min.—Max.) (IPR)		Carbon Steel, Alloy Steel (280—350HB)	
						AISI 4340 etc.	
inch	mm	Austenitic Stainless Steel (≤200HB)					
<b>.0197</b>	<b>0.50</b>	100 (65—115)	.0004 (.0002—.0006)	65 (50—80)	.0003 (.0002—.0004)	65 (50—80)	.0003 (.0002—.0004)
<b>.0248</b>	<b>0.63</b>	100 (65—115)	.0006 (.0003—.0008)	65 (50—80)	.0004 (.0003—.0005)	65 (50—80)	.0004 (.0003—.0005)
<b>.0315</b>	<b>0.80</b>	115 (80—130)	.0011 (.0006—.0016)	80 (65—100)	.0008 (.0006—.0010)	80 (65—100)	.0008 (.0006—.0010)
<b>.0394</b>	<b>1.00</b>	130 (100—150)	.0014 (.0008—.0020)	100 (65—115)	.0012 (.0008—.0017)	100 (65—115)	.0012 (.0008—.0017)
<b>.0472</b>	<b>1.20</b>	130 (100—150)	.0018 (.0012—.0024)	100 (65—115)	.0016 (.0012—.0021)	100 (65—115)	.0016 (.0012—.0021)
<b>.0630</b>	<b>1.60</b>	130 (100—150)	.0022 (.0014—.0031)	100 (65—115)	.0020 (.0014—.0028)	100 (65—115)	.0020 (.0014—.0028)
<b>.0787</b>	<b>2.00</b>	130 (100—150)	.0028 (.0016—.0039)	100 (65—115)	.0024 (.0016—.0031)	100 (65—115)	.0024 (.0016—.0031)
<b>.0984</b>	<b>2.50</b>	165 (130—180)	.0033 (.0020—.0049)	130 (100—150)	.0030 (.0020—.0039)	130 (100—150)	.0030 (.0020—.0039)

(Note) 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.

**■ MWS SB/LB/XB/DB Type (l/d<10)**

Drill Dia. DC		Cutting Speed (Min.—Max.) (SFM)		Feed (Min.—Max.) (IPR)		Cutting Speed (Min.—Max.) (SFM)		Feed (Min.—Max.) (IPR)	
		inch	mm						
<b>.0197</b>		<b>0.50</b>	130 (100—150)	.0004 (.0002— .0006)		100 (65—115)	.0004 (.0002— .0006)		
<b>.0248</b>		<b>0.63</b>	130 (100—150)	.0006 (.0003— .0008)		100 (65—115)	.0006 (.0003— .0008)		
<b>.0315</b>		<b>0.80</b>	150 (115—165)	.0011 (.0006— .0016)		115 (80—130)	.0011 (.0006— .0016)		
<b>.0394</b>		<b>1.00</b>	165 (130—180)	.0014 (.0008— .0020)		130 (100—150)	.0014 (.0008— .0020)		
<b>.0472</b>		<b>1.20</b>	165 (130—180)	.0018 (.0012— .0024)		130 (100—150)	.0018 (.0012— .0024)		
<b>.0630</b>		<b>1.60</b>	165 (130—180)	.0022 (.0014— .0031)		130 (100—150)	.0022 (.0014— .0031)		
<b>.0787</b>		<b>2.00</b>	165 (130—180)	.0028 (.0016— .0039)		130 (100—150)	.0028 (.0016— .0039)		
<b>.0984</b>		<b>2.50</b>	195 (150—215)	.0033 (.0020— .0049)		165 (130—180)	.0033 (.0020— .0049)		

Drill Dia. DC		Cutting Speed (Min.—Max.) (SFM)		Feed (Min.—Max.) (IPR)		Cutting Speed (Min.—Max.) (SFM)		Feed (Min.—Max.) (IPR)	
		inch	mm						
<b>.0197</b>		<b>0.50</b>	130 (100—150)	.0006 (.0003— .0008)		35 (15—50)	.0002 (.0002— .0003)		
<b>.0248</b>		<b>0.63</b>	130 (100—150)	.0008 (.0005— .0012)		35 (15—50)	.0003 (.0003— .0004)		
<b>.0315</b>		<b>0.80</b>	150 (115—165)	.0014 (.0009— .0020)		35 (15—50)	.0006 (.0005— .0008)		
<b>.0394</b>		<b>1.00</b>	195 (150—215)	.0020 (.0012— .0030)		35 (15—50)	.0008 (.0006— .0011)		
<b>.0472</b>		<b>1.20</b>	230 (180—245)	.0026 (.0018— .0035)		35 (15—50)	.0010 (.0009— .0013)		
<b>.0630</b>		<b>1.60</b>	260 (195—280)	.0033 (.0021— .0047)		35 (15—50)	.0012 (.0010— .0016)		
<b>.0787</b>		<b>2.00</b>	295 (230—310)	.0041 (.0024— .0059)		50 (35—65)	.0016 (.0013— .0020)		
<b>.0984</b>		<b>2.50</b>	330 (260—360)	.0053 (.0030— .0079)		50 (35—65)	.0020 (.0016— .0024)		

(Note) 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.

## RECOMMENDED CUTTING CONDITIONS

### ■ MWS DB Type ( $l/d \geq 10$ )

Work Material		Mild Steel ( $\leq 180\text{HB}$ )		Carbon Steel, Alloy Steel (180—280HB)	
		AISI 1010 etc.		AISI 1045, 4140 etc.	
Drill Dia. DC		Cutting Speed (Min.—Max.) (SFM)	Feed (Min.—Max.) (IPR)	Cutting Speed (Min.—Max.) (SFM)	Feed (Min.—Max.) (IPR)
inch	mm				
<b>.0394</b>	<b>1.0</b>	165 (130—180)	.0008 (.0004—.0012)	130 (100—130)	.0008 (.0004—.0012)
<b>.0472</b>	<b>1.2</b>	165 (130—180)	.0010 (.0006—.0015)	130 (100—130)	.0010 (.0006—.0015)
<b>.0630</b>	<b>1.6</b>	165 (130—180)	.0022 (.0013—.0031)	130 (100—130)	.0022 (.0013—.0031)
<b>.0787</b>	<b>2.0</b>	195 (150—215)	.0028 (.0016—.0039)	165 (130—180)	.0028 (.0016—.0039)
<b>.0984</b>	<b>2.5</b>	195 (150—215)	.0035 (.0025—.0049)	165 (130—180)	.0035 (.0022—.0049)

Work Material		Carbon Steel, Alloy Steel (280—350HB)		Austenitic Stainless Steel ( $\leq 200\text{HB}$ )	
		AISI 4340 etc.		AISI 304, 316 etc.	
Drill Dia. DC		Cutting Speed (Min.—Max.) (SFM)	Feed (Min.—Max.) (IPR)	Cutting Speed (Min.—Max.) (SFM)	Feed (Min.—Max.) (IPR)
inch	mm				
<b>.0394</b>	<b>1.0</b>	100 (65—100)	.0006 (.0004—.0011)	100 (65—115)	.0006 (.0004—.0011)
<b>.0472</b>	<b>1.2</b>	100 (65—100)	.0008 (.0005—.0014)	100 (65—115)	.0008 (.0005—.0014)
<b>.0630</b>	<b>1.6</b>	100 (65—100)	.0020 (.0011—.0030)	100 (65—115)	.0020 (.0011—.0030)
<b>.0787</b>	<b>2.0</b>	165 (130—180)	.0026 (.0013—.0037)	100 (65—115)	.0026 (.0013—.0037)
<b>.0984</b>	<b>2.5</b>	165 (130—180)	.0031 (.0018—.0047)	130 (100—150)	.0031 (.0018—.0047)

Work Material		Gray Cast Iron ( $\leq 350\text{MPa}$ )		Ductile Cast Iron ( $\leq 450\text{MPa}$ )	
		No45B etc.		60-40-8 etc.	
Drill Dia. DC		Cutting Speed (Min.—Max.) (SFM)	Feed (Min.—Max.) (IPR)	Cutting Speed (Min.—Max.) (SFM)	Feed (Min.—Max.) (IPR)
inch	mm				
<b>.0394</b>	<b>1.0</b>	130 (100—130)	.0008 (.0004—.0012)	100 (65—100)	.0006 (.0004—.0011)
<b>.0472</b>	<b>1.2</b>	130 (100—130)	.0010 (.0006—.0015)	100 (65—100)	.0008 (.0005—.0014)
<b>.0630</b>	<b>1.6</b>	130 (100—130)	.0022 (.0013—.0031)	100 (65—100)	.0020 (.0011—.0030)
<b>.0787</b>	<b>2.0</b>	165 (130—180)	.0028 (.0016—.0039)	165 (130—180)	.0026 (.0013—.0037)
<b>.0984</b>	<b>2.5</b>	165 (130—180)	.0035 (.0022—.0049)	165 (130—180)	.0031 (.0018—.0047)

Work Material		Aluminium Alloy ( $\text{Si} < 5\%$ )		Heat Resistant Alloy	
		AISI A6061, A7075 etc.		Inconel718 etc.	
Drill Dia. DC		Cutting Speed (Min.—Max.) (SFM)	Feed (Min.—Max.) (IPR)	Cutting Speed (Min.—Max.) (SFM)	Feed (Min.—Max.) (IPR)
inch	mm				
<b>.0394</b>	<b>1.0</b>	165 (130—180)	.0020 (.0012—.0030)	35 (15—50)	.0008 (.0006—.0011)
<b>.0472</b>	<b>1.2</b>	195 (150—215)	.0026 (.0018—.0035)	35 (15—50)	.0010 (.0009—.0013)
<b>.0630</b>	<b>1.6</b>	230 (180—245)	.0033 (.0021—.0047)	35 (15—50)	.0012 (.0010—.0016)
<b>.0787</b>	<b>2.0</b>	260 (195—280)	.0041 (.0024—.0059)	50 (35—65)	.0016 (.0013—.0020)
<b>.0984</b>	<b>2.5</b>	295 (230—310)	.0053 (.0030—.0079)	50 (35—65)	.0020 (.0016—.0024)

(Note) 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.