

$$\text{RPM} = \frac{\text{SFM}}{\text{DIAM. in.}} \times 3.82 \quad \text{IPM} = \text{IPR} \times \text{RPM}$$

$$\frac{\text{HOLE DEPTH in.}}{\text{IPM}} \times 60 = \text{CutTime}$$

$$\text{mm} = \text{in.} \times 25.40$$

$$\text{m/min.} = \text{SFM} \div 3.28$$

$$\text{mm/rev.} = \text{IPR} \times 25.40$$

$$\text{Bar} = \text{PSI} \div 14.50$$

$$\text{Liter} = \text{Gal.} \div 3.79$$

## Series # 1047 / # 5242 (3xD body)

Material group	Hardness	SFM	Feed Rate - IPR					
			≤16.000 mm	41/64 - 25/32 in. 16.001 - 20.000 mm	51/64 - 31/32 in. 20.001 - 25.000 mm	63/64 - 1 17/64 in. 25.001 - 31.500 mm	1 1/4 - 1 9/16 in. 31.501 - 40.000 mm	1 37/64 - 1 61/64 in. 40.001 - 50.000 mm
Common structural steels	≤100 Bhn >100-260 Bhn	330 280	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125	0.0200 0.0160	0.0250 0.0200
Free-cutting steels	≤24 Rc >24-30 Rc	330 280	0.0125 0.0100	0.0160 0.0125	0.0200 0.0160	0.0200 0.0160	0.0250 0.0200	0.0315 0.0250
Unalloyed heat-treatable steels	≤16 Rc 16-24 Rc 24-30 Rc	330 315 280	0.0100 0.0100 0.0080	0.0125 0.0125 0.0100	0.0160 0.0160 0.0125	0.0160 0.0160 0.0125	0.0200 0.0200 0.0160	0.0250 0.0250 0.0200
Alloyed heat-treatable steels	24-30 Rc >30-38 Rc	280 230	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125	0.0200 0.0160	0.0250 0.0200
Unalloyed case hardened steels	≤230 Bhn	330	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Alloyed case hardened steels	24-30 Rc >30-38 Rc	280 185	0.0100 0.0065	0.0125 0.0080	0.0160 0.0100	0.0160 0.0100	0.0200 0.0125	0.0250 0.0160
Nitriding steels	≥24-30 Rc >30-38 Rc	265 185	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100	0.0160 0.0125	0.0200 0.0160
Tool steels	≤24 Rc >24-30 Rc	135 115	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100	0.0160 0.0125	0.0200 0.0160
High speed steels	≥14-30 Rc	135	0.0050	0.0065	0.0080	0.0080	0.0100	0.0125
Spring steels	≤330 Bhn	115	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
Stainless steels, sulphured	≤24 Rc	135	0.0050	0.0065	0.0080	0.0080	0.0100	0.0125
austenitic	≤24 Rc	100	0.0050	0.0065	0.0080	0.0080	0.0100	0.0125
martensitic	≤24 Rc	85	0.0050	0.0065	0.0080	0.0080	0.0100	0.0125
Hardened steels	≤40-48 Rc >48-60 Rc	70 •	0.0040 •	0.0050 •	0.0065 •	0.0065 •	0.0080 •	0.0100 •
Special alloys	≤38 Rc	70	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
Cast iron	≤240 Bhn <300 Bhn	520 390	0.0125 0.0125	0.0160 0.0160	0.0200 0.0200	0.0200 0.0200	0.0250 0.0250	0.0315 0.0315
Spheroidal graphite iron and malleable cast iron	≤240 Bhn <300 Bhn	390 325	0.0125 0.0100	0.0160 0.0125	0.0200 0.0160	0.0200 0.0160	0.0250 0.0200	0.0315 0.0250
Chilled cast iron	≤350 Bhn	85	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
Ti and Ti-alloys	≤24 Rc >24-38 Rc	100 85	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100
Aluminium and Al-alloys	≤120 Bhn	725	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Al wrought alloys	≤150 Bhn	660	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Al cast alloys ≤ 10 % Si	≤200 Bhn	590	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
> 10 % Si	≤200 Bhn	490	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Magnesium alloys	≤150 Bhn	655	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Copper, low-alloyed	≤120 Bhn	260	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Brass, short-chipping	≤200 Bhn	685	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
long-chipping	≤200 Bhn	455	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Bronze, short-chipping	≤200 Bhn >200-260 Bhn	260 210	0.0100 0.0100	0.0125 0.0125	0.0160 0.0160	0.0160 0.0160	0.0200 0.0200	0.0250 0.0250
Bronze, long-chipping	≤24 Rc >24-30 Rc	160 130	0.0100 0.0080	0.0100 0.0100	0.0125 0.0125	0.0125 0.0125	0.0160 0.0160	0.0200 0.0200
Duroplastics	–	260	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Thermoplastics	–	260	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Reinforced plastics - Kevlar	–	260	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Reinforced plastics - GFK / CFK	–	260	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200

## Series # 1047 / # 5243 (5xD body)

Material group	Hardness	SFM	Feed Rate - IPR					
			≤16.000 mm	41/64 - 25/32 in. 16.001 - 20.000 mm	51/64 - 31/32 in. 20.001 - 25.000 mm	63/64 - 1 17/64 in. 25.001 - 31.500 mm	1 1/4 - 1 9/16 in. 31.501 - 40.000 mm	1 37/64 - 1 61/64 in. 40.001 - 50.000 mm
Common structural steels	≤100 Bhn >100-260 Bhn	315 265	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125	0.0200 0.0160	0.0250 0.0200
Free-cutting steels	≤24 Rc >24-30 Rc	315 265	0.0125 0.0100	0.0160 0.0125	0.0200 0.0160	0.0200 0.0160	0.0250 0.0200	0.0315 0.0250
Unalloyed heat-treatable steels	≤16 Rc 16-24 Rc 24-30 Rc	315 300 265	0.0100 0.0100 0.0080	0.0125 0.0125 0.0100	0.0160 0.0160 0.0125	0.0160 0.0160 0.0125	0.0200 0.0200 0.0160	0.0250 0.0250 0.0200
Alloyed heat-treatable steels	24-30 Rc >30-38 Rc	265 215	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125	0.0200 0.0160	0.0250 0.0200
Unalloyed case hardened steels	≤230 Bhn	315	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Alloyed case hardened steels	24-30 Rc >30-38 Rc	265 185	0.0100 0.0065	0.0125 0.0080	0.0160 0.0100	0.0160 0.0100	0.0200 0.0125	0.0250 0.0160
Nitriding steels	≥24-30 Rc >30-38 Rc	265 185	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100	0.0160 0.0125	0.0200 0.0160
Tool steels	≤24 Rc >24-30 Rc	135 115	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100	0.0125 0.0100	0.0160 0.0125	0.0200 0.0160
High speed steels	≥14-30 Rc	135	0.0050	0.0065	0.0080	0.0080	0.0100	0.0125
Spring steels	≤330 Bhn	115	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
Stainless steels, sulphured	≤24 Rc	135	0.0050	0.0065	0.0080	0.0080	0.0100	0.0125
austenitic	≤24 Rc	100	0.0050	0.0065	0.0080	0.0080	0.0100	0.0125
martensitic	≤24 Rc	85	0.0050	0.0065	0.0080	0.0080	0.0100	0.0125
Hardened steels	≤40-48 Rc >48-60 Rc	70 •	0.0040 •	0.0050 •	0.0065 •	0.0065 •	0.0080 •	0.0100 •
Special alloys	≤38 Rc	70	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
Cast iron	≤240 Bhn <300 Bhn	490 360	0.0125 0.0125	0.0160 0.0160	0.0200 0.0200	0.0200 0.0200	0.0250 0.0250	0.0315 0.0315
Spheroidal graphite iron and malleable cast iron	≤240 Bhn <300 Bhn	360 295	0.0125 0.0100	0.0160 0.0125	0.0200 0.0160	0.0200 0.0160	0.0250 0.0200	0.0315 0.0250
Chilled cast iron	≤350 Bhn	85	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
Ti and Ti-alloys	≤24 Rc >24-38 Rc	100 85	0.0050 0.0040	0.0065 0.0050	0.0080 0.0065	0.0080 0.0065	0.0100 0.0080	0.0125 0.0100
Aluminium and Al-alloys	≤120 Bhn	660	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Al wrought alloys	≤150 Bhn	660	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Al cast alloys ≤ 10 % Si	≤200 Bhn	555	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
> 10 % Si	≤200 Bhn	455	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Magnesium alloys	≤150 Bhn	655	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
Copper, low-alloyed	≤120 Bhn	260	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Brass, short-chipping	≤200 Bhn	685	0.0125	0.0160	0.0200	0.0200	0.0250	0.0315
long-chipping	≤200 Bhn	455	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Bronze, short-chipping	≤200 Bhn >200-260 Bhn	260 210	0.0100 0.0100	0.0125 0.0125	0.0160 0.0160	0.0160 0.0160	0.0200 0.0200	0.0250 0.0250
Bronze, long-chipping	≤24 Rc >24-30 Rc	160 130	0.0100 0.0080	0.0125 0.0100	0.0160 0.0125	0.0160 0.0125	0.0200 0.0160	0.0250 0.0200
Duroplastics	–	260	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Thermoplastics	–	260	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Reinforced plastics - Kevlar	–	260	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Reinforced plastics - GFK / CFK	–	260	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200

Feeds/Speeds

Using These Tables. The Speeds & Feeds listed below are conservative recommendations for initial setup. In actual use, depending on the machining environment and workpiece material, significantly higher speeds and feeds may be achievable. Using the below as a starting point, cutting speed/feed can be gradually adjusted upwards until the optimum settings per application are found. Questions? Contact us by telephone at (800) 776-6170.

## Series # 1047 / # 5248 (7xD body)

Material group	Hardness	SFM	Feed Rate - IPR					
			≤16.000 mm	41/64 - 25/32 in. 16.001 - 20.000 mm	51/64 - 31/32 in. 20.001 - 25.000 mm	63/64 - 1 17/64 in. 25.001 - 31.500 mm	1 1/4 - 1 9/16 in. 31.501 - 40.000 mm	1 37/64 - 1 61/64 in. 40.001 - 50.000 mm
Common structural steels	≤100 Bhn	300	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
	>100-260 Bhn	265	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
Free-cutting steels	≤24 Rc	300	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	>24-30 Rc	265	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Unalloyed heat-treatable steels	≤16 Rc	300	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
	16-24 Rc	280	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
	24-30 Rc	250	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
Alloyed heat-treatable steels	24-30 Rc	250	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
	>30-38 Rc	215	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
Unalloyed case hardened steels	≤230 Bhn	300	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Alloyed case hardened steels	24-30 Rc	250	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
	>30-38 Rc	185	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
Nitriding steels	≥24-30 Rc	265	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
	>30-38 Rc	185	0.0050	0.0065	0.0080	0.0080	0.0100	0.0125
Tool steels	≤24 Rc	135	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
	>24-30 Rc	115	0.0050	0.0065	0.0080	0.0080	0.0100	0.0125
High speed steels	≥14-30 Rc	135	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
Spring steels	≤330 Bhn	115	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
Stainless steels, sulphured	≤24 Rc	135	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
	austenitic	100	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
	martensitic	85	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
Hardened steels	≤40-48 Rc	70	0.0035	0.0040	0.0050	0.0065	0.0065	0.0080
	>48-60 Rc	•	•	•	•	•	•	•
Special alloys	≤38 Rc	70	0.0035	0.0040	0.0050	0.0065	0.0065	0.0080
Cast iron	≤240 Bhn	490	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	<300 Bhn	360	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Spheroidal graphite iron and malleable cast iron	≤240 Bhn	360	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	<300 Bhn	295	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Chilled cast iron	≤350 Bhn	85	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
Ti and Ti-alloys	≤24 Rc	100	0.0040	0.0050	0.0065	0.0065	0.0080	0.0100
	>24-38 Rc	85	0.0035	0.0040	0.0050	0.0065	0.0065	0.0080
Aluminium and Al-alloys	≤120 Bhn	660	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Al wrought alloys	≤150 Bhn	660	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Al cast alloys ≤ 10 % Si	≤200 Bhn	555	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	> 10 % Si	455	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Magnesium alloys	≤150 Bhn	655	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
Copper, low-alloyed	≤120 Bhn	260	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Brass, short-chipping	≤200 Bhn	685	0.0100	0.0125	0.0160	0.0160	0.0200	0.0250
	long-chipping	455	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Bronze, short-chipping	≤200 Bhn	260	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
	>200-260 Bhn	210	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
Bronze, long-chipping	≤24 Rc	160	0.0080	0.0100	0.0125	0.0125	0.0160	0.0200
	>24-30 Rc	130	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
Duroplastics	-	260	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
Thermoplastics	-	260	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
Reinforced plastics - Kevlar	-	260	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160
Reinforced plastics - GFK / CFK	-	260	0.0065	0.0080	0.0100	0.0100	0.0125	0.0160