

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 # 5020, 5021, 5024, 5026 - EB100 Less than 35xD

Material group	Hardness	SFM	Feed Rate - IPR									
			1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	≤100 Bhn >100-260 Bhn	330 280	0.0003 0.0003	0.0006 0.0006	0.0009 0.0009	0.0015 0.0015	•	•	•	•	•	•
Free-cutting steels	≤24 Rc >24-30 Rc	295 260	0.0003 0.0003	0.0006 0.0006	0.0009 0.0009	0.0015 0.0015	•	•	•	•	•	•
Unalloyed heat-treatable steels	≤16 Rc 16-24 Rc 24-30 Rc	295 260 245	0.0002 0.0002 0.0002	0.0004 0.0004 0.0004	0.0005 0.0005 0.0005	0.0010 0.0010 0.0010	•	•	•	•	•	•
Alloyed heat-treatable steels	24-30 Rc >30-38 Rc	245 215	0.0002 0.0002	0.0004 0.0004	0.0005 0.0005	0.0010 0.0010	•	•	•	•	•	•
Unalloyed case hardened steels	≤230 Bhn	260	0.0003	0.0006	0.0009	0.0015	•	•	•	•	•	•
Alloyed case hardened steels	24-30 Rc >30-38 Rc	245 215	0.0002 0.0002	0.0004 0.0004	0.0005 0.0005	0.0010 0.0010	•	•	•	•	•	•
Nitriding steels	≥24-30 Rc >30-38 Rc	245 215	0.0002 0.0002	0.0004 0.0004	0.0005 0.0005	0.0010 0.0010	•	•	•	•	•	•
Tool steels	≤24 Rc >24-30 Rc	245 215	0.0002 0.0002	0.0003 0.0003	0.0004 0.0004	0.0006 0.0006	•	•	•	•	•	•
High speed steels	≥14-30 Rc	180	0.0001	0.0002	0.0003	0.0004	•	•	•	•	•	•
Spring steels	≤330 Bhn	215	0.0002	0.0003	0.0004	0.0006	•	•	•	•	•	•
Stainless steels, sulphured austenitic martensitic	≤24 Rc ≤24 Rc ≤24 Rc	180 150 115	0.0002 0.0002 0.0002	0.0004 0.0004 0.0004	0.0005 0.0005 0.0005	0.0010 0.0010 0.0010	•	•	•	•	•	•
Hardened steels	≤40-48 Rc >48-60 Rc	100 80	0.0002 0.0001	0.0003 0.0002	0.0004 0.0003	0.0006 0.0004	•	•	•	•	•	•
Special alloys	≤38 Rc	115	0.0001	0.0002	0.0003	0.0004	•	•	•	•	•	•
Cast iron	≤240 Bhn <300 Bhn	280 260	0.0005 0.0005	0.0009 0.0009	0.0014 0.0014	0.0020 0.0020	•	•	•	•	•	•
Spheroidal graphite iron and malleable cast iron	≤240 Bhn <300 Bhn	260 230	0.0003 0.0003	0.0006 0.0006	0.0009 0.0009	0.0015 0.0015	•	•	•	•	•	•
Chilled cast iron	≤350 Bhn	180	0.0002	0.0004	0.0005	0.0010	•	•	•	•	•	•
Ti and Ti-alloys	≤24 Rc >24-38 Rc	115 100	0.0001 0.0001	0.0002 0.0002	0.0003 0.0003	0.0004 0.0004	•	•	•	•	•	•
Aluminum and Al-alloys	≤120 Bhn	490	0.0008	0.0016	0.0024	0.0028	•	•	•	•	•	•
Al wrought alloys	≤150 Bhn	395	0.0008	0.0016	0.0024	0.0028	•	•	•	•	•	•
Al cast alloys ≤ 10 % Si > 10 % Si	≤200 Bhn ≤200 Bhn	490 425	0.0013 0.0013	0.0024 0.0024	0.0033 0.0033	0.0047 0.0047	•	•	•	•	•	•
Magnesium alloys	≤150 Bhn	360	0.0008	0.0016	0.0024	0.0028	•	•	•	•	•	•
Copper, low-alloyed	≤120 Bhn	245	0.0003	0.0006	0.0009	0.0015	•	•	•	•	•	•
Brass, short-chipping long-chipping	≤200 Bhn ≤200 Bhn	395 295	0.0013 0.0013	0.0024 0.0024	0.0033 0.0033	0.0047 0.0047	•	•	•	•	•	•
Bronze, short-chipping	≤200 Bhn >200-260 Bhn	310 310	0.0008 0.0008	0.0016 0.0016	0.0024 0.0024	0.0028 0.0028	•	•	•	•	•	•
Bronze, long-chipping	≤24 Rc >24-30 Rc	230 230	0.0008 0.0008	0.0016 0.0016	0.0024 0.0024	0.0028 0.0028	•	•	•	•	•	•
Duroplastics Thermoplastics	- -	245 230	0.0003 0.0003	0.0006 0.0006	0.0009 0.0009	0.0015 0.0015	•	•	•	•	•	•
Reinforced plastics - Kevlar	-	195	0.0002	0.0004	0.0005	0.0010	•	•	•	•	•	•
Reinforced plastics - GFK / CFK	-	165	0.0002	0.0004	0.0005	0.0010	•	•	•	•	•	•

Series # 5020, 5021, 5024, 5026 - EB100 Greater than 35xD

Material group	Hardness	SFM	Feed Rate - IPR									
			1/16 in. 1.590 mm	1/8 in. 3.170 mm	1/4 in. 6.350 mm	3/8 in. 9.520 mm	1/2 in. 12.700 mm	5/8 in. 15.870 mm	3/4 in. 19.050 mm	1 in. 25.400 mm	1 1/4 in. 31.750 mm	1 1/2 in. 38.100 mm
Common structural steels	≤100 Bhn >100-260 Bhn	310 260	0.00024 0.00024	0.00035 0.00035	0.00051 0.00051	0.00098 0.00098	•	•	•	•	•	•
Free-cutting steels	≤24 Rc >24-30 Rc	280 245	0.00024 0.00024	0.00035 0.00035	0.00051 0.00051	0.00098 0.00098	•	•	•	•	•	•
Unalloyed heat-treatable steels	≤16 Rc 16-24 Rc 24-30 Rc	280 245 230	0.00016 0.00016 0.00016	0.00026 0.00026 0.00026	0.00035 0.00035 0.00035	0.00059 0.00059 0.00059	•	•	•	•	•	•
Alloyed heat-treatable steels	24-30 Rc >30-38 Rc	230 195	0.00016 0.00016	0.00026 0.00026	0.00035 0.00035	0.00059 0.00059	•	•	•	•	•	•
Unalloyed case hardened steels	≤230 Bhn	245	0.00024	0.00035	0.00051	0.00098	•	•	•	•	•	•
Alloyed case hardened steels	24-30 Rc >30-38 Rc	230 195	0.00016 0.00016	0.00026 0.00026	0.00035 0.00035	0.00059 0.00059	•	•	•	•	•	•
Nitriding steels	≥24-30 Rc >30-38 Rc	230 195	0.00016 0.00016	0.00026 0.00026	0.00035 0.00035	0.00059 0.00059	•	•	•	•	•	•
Tool steels	≤24 Rc >24-30 Rc	230 195	0.00008 0.00008	0.00018 0.00018	0.00028 0.00028	0.00043 0.00043	•	•	•	•	•	•
High speed steels	≥14-30 Rc	165	0.00008	0.00018	0.00028	0.00043	•	•	•	•	•	•
Spring steels	≤330 Bhn	195	0.00016	0.00026	0.00035	0.00059	•	•	•	•	•	•
Stainless steels, sulphured austenitic martensitic	≤24 Rc ≤24 Rc ≤24 Rc	165 130 115	0.00016 0.00016 0.00016	0.00026 0.00026 0.00026	0.00035 0.00035 0.00035	0.00059 0.00059 0.00059	•	•	•	•	•	•
Hardened steels	≤40-48 Rc >48-60 Rc	80 65	0.00008 0.00008	0.00018 0.00018	0.00028 0.00028	0.00043 0.00043	•	•	•	•	•	•
Special alloys	≤38 Rc	100	0.00008	0.00018	0.00028	0.00043	•	•	•	•	•	•
Cast iron	≤240 Bhn <300 Bhn	260 245	0.00031 0.00031	0.00055 0.00055	0.00094 0.00094	0.00150 0.00150	•	•	•	•	•	•
Spheroidal graphite iron and malleable cast iron	≤240 Bhn <300 Bhn	245 215	0.00024 0.00024	0.00035 0.00035	0.00051 0.00051	0.00098 0.00098	•	•	•	•	•	•
Chilled cast iron	≤350 Bhn	165	0.00016	0.00026	0.00035	0.00059	•	•	•	•	•	•
Ti and Ti-alloys	≤24 Rc >24-38 Rc	100 80	0.00008 0.00008	0.00018 0.00018	0.00028 0.00028	0.00043 0.00043	•	•	•	•	•	•
Aluminum and Al-alloys	≤120 Bhn	460	0.00031	0.00055	0.00094	0.00150	•	•	•	•	•	•
Al wrought alloys	≤150 Bhn	375	0.00031	0.00055	0.00094	0.00150	•	•	•	•	•	•
Al cast alloys ≤ 10 % Si > 10 % Si	≤200 Bhn ≤200 Bhn	460 395	0.00079 0.00079	0.00157 0.00157	0.00240 0.00240	0.00276 0.00276	•	•	•	•	•	•
Magnesium alloys	≤150 Bhn	0	0.00047	0.00087	0.00138	0.00197	•	•	•	•	•	•
Copper, low-alloyed	≤120 Bhn	230	0.00024	0.00035	0.00051	0.00098	•	•	•	•	•	•
Brass, short-chipping long-chipping	≤200 Bhn ≤200 Bhn	375 280	0.00079 0.00079	0.00157 0.00157	0.00240 0.00240	0.00276 0.00276	•	•	•	•	•	•
Bronze, short-chipping	≤200 Bhn >200-260 Bhn	295 295	0.00047 0.00047	0.00087 0.00087	0.00138 0.00138	0.00197 0.00197	•	•	•	•	•	•
Bronze, long-chipping	≤24 Rc >24-30 Rc	215 215	0.00047 0.00024	0.00087 0.00035	0.00138 0.00051	0.00197 0.00098	•	•	•	•	•	•
Duroplastics Thermoplastics	- -	230 215	0.00024 0.00024	0.00035 0.00035	0.00051 0.00051	0.00098 0.00098	•	•	•	•	•	•
Reinforced plastics - Kevlar	-	180	0.00016	0.00026	0.00035	0.00059	•	•	•	•	•	•
Reinforced plastics - GFK / CFK	-	150	0.00016	0.00026	0.00035	0.00059	•	•	•	•	•	•

Feeds/Speeds