

Speed & Feed Recommendations

55M, 55MCR Metric		HARDNESS		CUT	SPEED	FEED (mm/flute)				
		BRINELL	Type			m/min	6	8	10	12
<div></div> CARBON STEEL 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536	≤ 175	Slot	107	0.0192	0.032	0.040	0.048	0.064	0.064	
		Profile	133	0.0192	0.032	0.040	0.048	0.064	0.064	
		Light	219	0.0432	0.073	0.091	0.110	0.147	0.147	
	> 175 ≤ 275	Slot	93	0.0192	0.032	0.040	0.048	0.064	0.064	
		Profile	116	0.0192	0.032	0.040	0.048	0.064	0.064	
		Light	192	0.0432	0.073	0.091	0.110	0.147	0.147	
<div></div> ALLOY STEEL 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 50100	≤ 275	Slot	78	0.0144	0.023	0.029	0.036	0.048	0.048	
		Profile	98	0.0144	0.023	0.029	0.036	0.048	0.048	
		Light	162	0.0336	0.055	0.069	0.082	0.109	0.109	
	> 275 ≤ 375	Slot	53	0.0144	0.023	0.029	0.036	0.048	0.048	
		Profile	67	0.0144	0.023	0.029	0.036	0.048	0.048	
		Light	110	0.0336	0.055	0.069	0.082	0.109	0.109	
<div></div> TOOL STEEL A2, D2, H13, L2, M2, P20, S7, T15, W2	≤ 250	Slot	70	0.0144	0.023	0.029	0.034	0.045	0.045	
		Profile	87	0.0144	0.023	0.029	0.034	0.045	0.045	
		Light	143	0.0312	0.051	0.064	0.077	0.102	0.104	
	> 250 ≤ 375	Slot	43	0.0096	0.017	0.021	0.026	0.035	0.035	
		Profile	53	0.0096	0.017	0.021	0.026	0.035	0.035	
		Light	88	0.0240	0.041	0.051	0.060	0.080	0.080	
<div></div> CAST IRON Gray, Malleable, Ductile	≤ 220	Slot	104	0.0192	0.032	0.040	0.048	0.064	0.064	
		Profile	131	0.0192	0.032	0.040	0.048	0.064	0.064	
		Light	215	0.0432	0.073	0.091	0.110	0.147	0.147	
	> 220 ≤ 260	Slot	78	0.0192	0.032	0.040	0.048	0.064	0.064	
		Profile	98	0.0192	0.032	0.040	0.048	0.064	0.064	
		Light	160	0.0432	0.073	0.091	0.110	0.147	0.147	
<div></div> STAINLESS (free machining) 303, 416, 420F, 430F, 440F	≤ 275	Slot	82	0.0144	0.023	0.029	0.036	0.048	0.048	
		Profile	104	0.0144	0.023	0.029	0.036	0.048	0.048	
		Light	171	0.0336	0.055	0.069	0.082	0.109	0.109	
<div></div> STAINLESS (difficult) 304, 304L, 316, 316L	≤ 275	Slot	56	0.0120	0.019	0.024	0.029	0.038	0.037	
		Profile	72	0.0120	0.019	0.024	0.029	0.038	0.037	
		Light	117	0.0264	0.045	0.056	0.067	0.090	0.088	
<div></div> STAINLESS (PH) 17-4PH, 15-5PH, Custom 450, 16- 6PH, PH13-8Mo	≤ 325	Slot	52	0.0120	0.019	0.024	0.029	0.038	0.037	
		Profile	66	0.0120	0.019	0.024	0.029	0.038	0.037	
		Light	108	0.0264	0.045	0.056	0.067	0.090	0.088	
<div></div> TITANIUM Ti5Al-5V-5Mo, Ti6Al4V, Ti-7Al4Mo	≤ 350	Slot	58	0.0144	0.023	0.029	0.034	0.045	0.045	
		Profile	72	0.0144	0.023	0.029	0.034	0.045	0.045	
		Light	119	0.0312	0.051	0.064	0.077	0.102	0.104	
<div></div> HIGH TEMPERATURE ALLOY A-286, Hastelloy, Incoloy, Inconel, Rene, Waspalloy	≤ 300	Slot	16	0.0120	0.019	0.024	0.029	0.038	0.037	
		Profile	20	0.0120	0.019	0.024	0.029	0.038	0.037	
		Light	33	0.0264	0.045	0.056	0.067	0.090	0.088	

CUT TYPE						<div>rpm = (1000 x m/min) / (3.14 x D₁)</div> <div>mm/min = (mm/flute) x 5 x rpm</div> <div><div>• maximum recommended depths shown</div><div>• reduce speed and feed for materials harder than listed</div><div>• long flute tools not recommended for Slot or Profile</div></div> <div>* finish cuts typically require reduced feed and cutting depths of .02 x D1 maximum</div> <div>• refer to the SGS Tool Wizard for more complete technical information (available at)</div> <div>• ramping not recommended</div>
SLOT		PROFILE		LIGHT*		
Short a _p = 0.6 x D ₁ a _e = D ₁	Regular a _p = 0.5 x D ₁ a _e = D ₁	Short a _p = L ₂ a _e = 0.5 x D ₁	Regular a _p = 1.5 x D ₁ a _e = 0.3 x D ₁	Short, Regular a _p = L ₂ a _e = 0.05 x D ₁	Long a _p = 3 x D ₁ a _e = 0.02 x D ₁	
						