

Speeds and Feeds



INCH									
N - Low SI Aluminum		N - Brass and Copper		K - Cast Iron		P - Steel			
750-1000 SFM		225-500 SFM		225-400 SFM		400-600 SFM			
Neck Dia	Chip Load (IPT)	Neck Dia	Chip Load (IPT)	Neck Dia	Chip Load (IPT)	Neck Dia	Chip Load (IPT)		
0.068	0.00061	0.068	0.00055	0.068	0.00055	0.068	0.00021		
0.073	0.00077	0.073	0.00069	0.073	0.00069	0.073	0.00027		
0.095	0.00092	0.095	0.00082	0.095	0.00082	0.095	0.00032		
0.125	0.0012	0.125	0.0011	0.125	0.0011	0.125	0.0004		
0.187	0.0019	0.187	0.0017	0.187	0.0017	0.187	0.0007		
0.25	0.0025	0.25	0.0022	0.25	0.0022	0.25	0.0009		
0.312	0.0031	0.312	0.0028	0.312	0.0028	0.312	0.0011		
0.375	0.0037	0.375	0.0033	0.375	0.0033	0.375	0.0013		
M - Stainless Steels		S - Super Alloys		S - Titanium		H - Hardened Steel (>48 Rc)			
200-450 SFM		70-90 SFM		100-150 SFM		80-100 SFM			
Neck Dia	Chip Load (IPT)	Neck Dia	Chip Load (IPT)	Neck Dia	Chip Load (IPT)	Neck Dia	Chip Load (IPT)		
0.068	0.00021	0.068	0.00013	0.068	0.00013	0.068	0.00011		
0.073	0.00027	0.073	0.00017	0.073	0.00017	0.073	0.00013		
0.095	0.00032	0.095	0.0002	0.095	0.0002	0.095	0.00016		
0.125	0.0004	0.125	0.0003	0.125	0.0003	0.125	0.0002		
0.187	0.0007	0.187	0.0004	0.187	0.0004	0.187	0.0003		
0.25	0.0009	0.25	0.0005	0.25	0.0005	0.25	0.0004		
0.312	0.0011	0.312	0.0007	0.312	0.0007	0.312	0.0005		
0.375	0.0013	0.375	0.0008	0.375	0.0008	0.375	0.0007		



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Feed Rate, Per Revolution (in/min)
$v_f = f_n \cdot n$

Feed Rate, Per Tooth (in/min)
$v_f = f_z \cdot n \cdot Z$

Feed Per Revolution (in/rev)
$f_n = \frac{v_f}{n}$

Feed Per Tooth (in)
$f_z = \frac{v_f}{n \cdot Z}$

Cutting Speed (ft/min)
$v_c = \frac{\pi \cdot D_{tool} \cdot n}{12}$

Spindle Speed (rev/min)
$n = \frac{v_c \cdot 12}{\pi \cdot D_{tool}}$

Material Removal Rate (in ³ /min)
$MMR = a_p \cdot a_e \cdot v_f$

Inch

Symbol	Definition	Unit
v_f	Feed rate	<i>in/min</i>
f_n	Feed per revolution	<i>in/rev</i>
f_z	Feed per tooth	<i>in</i>
v_c	Cutting speed	<i>ft/min (SFM)</i>
n	Spindle speed	<i>rev/min (RPM)</i>
D_{tool}	Tool cutting diameter	<i>in</i>
MMR	Material removal rate	<i>(in³/min)</i>
a_e	Radial depth of cut	<i>in</i>
a_p	Axial depth of cut	<i>in</i>
Z	Number of teeth/flutes	