Speeds and Feeds

1) Select your material in the ISO colored chart.
2) Start with the recommended cutting speed, v_c (ft/min) and feed per tooth, f_z (in). Adjust the cutting speed and/or feed based on your cutting conditions. Calculated RPM may exceed the maximum RPM of the cutter body. **WARNING: Never exceed the maximum RPM rating of the cutter body.**

						HVPP - Haas Polygon Positive Positive		
Material				Recommended Cutting Speed		Recommended Feed Per Tooth		
Group	Description	Condition	Hardness (HB)	Insert Grades		Application		
				HN25		Finishing	Medium Cut	Roughing
				a_e / D	a_e / D			
				1/1 | 3/4	1/10			
N Non-Ferrous	Aluminum Alloys Wrought	Cannot be Hardened	60	900-1800	1500-2200	0.10-1.20	0.10-0.80	0.10-0.50
		Hardened	100	700-1500	800-1800	0.10-0.80	0.10-0.50	0.10-0.50
	Cast Aluminum Alloys	≤ 12% Si, not Hardened	75					
		≤ 12% Si, Hardened	90					
		> 12% Si, not Hardened	130	600-1300	700-1500			
	Copper and Copper Alloys (bronze/brass)	Machining Steel, PB> 1%	110	700-1500	900-1800	0.10-0.50	0.10-0.50	0.10-0.40
		CuZn, CuSnZn	90					
		CuSn, Pb-free Copper, Electrolytic Copper	100					

Speeds and Feeds

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

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

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

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

Cutting Speed (m/min)
$v_c = \frac{\pi \cdot D_{tool} \cdot n}{1000}$

Spindle Speed (rev/min)
$n = \frac{v_c \cdot 1000}{\pi \cdot D_{tool}}$

Material Removal Rate (cm^3/min)
$MMR = \frac{a_p \cdot a_e \cdot v_f}{1000}$

Metric

Symbol	Definition	Unit
v_f	Feed rate	*mm/min*
f_n	Feed per revolution	*mm/rev*
f_z	Feed per tooth	*mm*
v_c	Cutting speed	*m/min (SMM)*
n	Spindle speed	*rev/min (RPM)*
D_{tool}	Tool cutting diameter	*mm*
MRR	Material removal rate	*(cm^3/min)*
a_e	Radial depth of cut	*mm*
a_p	Axial depth of cut	*mm*
Z	Number of teeth/flutes	