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	2953-5906	4921-7218	0.004-0.047	0.004-0.031	0.004-0.02
		Hardened	100	2297-4921	2625-5906	0.004-0.031	0.004-0.02	0.004-0.02
	Cast Aluminum Alloys	≤ 12% Si, not Hardened	75					
		≤ 12% Si, Hardened	90					
		> 12% Si, not Hardened	130	1969-4265	2297-4921			
	Copper and Copper Alloys (bronze/brass)	Machining Steel, PB> 1%	110	2297-4921	2953-5906	0.004-0.02	0.004-0.02	0.004-0.016
		CuZn, CuSnZn	90					
		CuSn, Pb-free Copper, Electrolytic Copper	100					

Speeds and Feeds

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	*in/min*
f_n	Feed per revolution	*in/rev*
f_z	Feed per tooth	*in*
v_c	Cutting speed	*ft/min (SFM)*
n	Spindle speed	*rev/min (RPM)*
D_{tool}	Tool cutting diameter	*in*
MRR	Material removal rate	*(in^3/min)*
a_e	Radial depth of cut	*in*
a_p	Axial depth of cut	*in*
Z	Number of teeth/flutes	