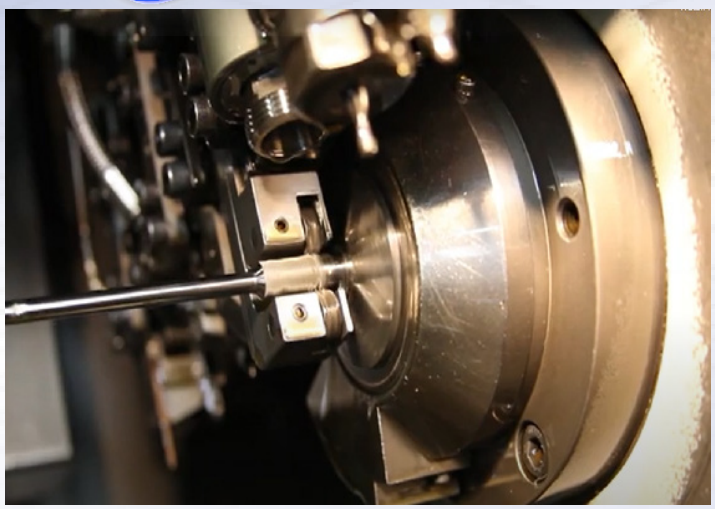
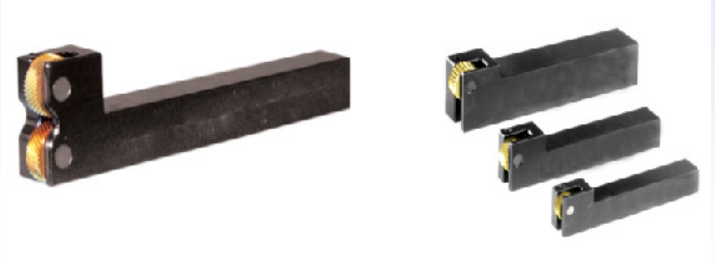
Knurling Speeds and Feeds

GenSwiss
Advancing Small Parts Manufacturing

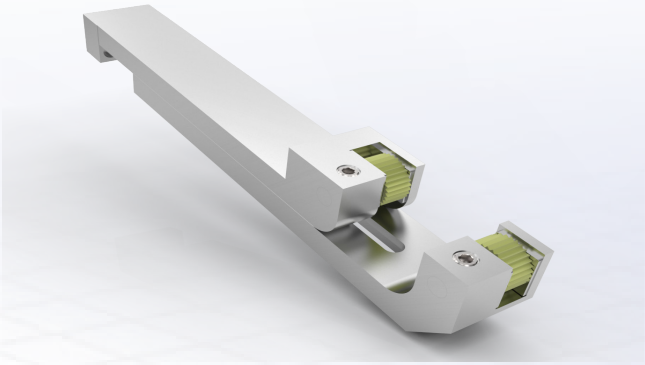
For convenience, Knurling is often performed at the same speeds used for turning operations when using high speed steel tool bits. But to prevent seizing of the rolls on the pin, we recommend a maximum surfacespeed of about 150 SFPM (Feet/Min) or 50 m/min. You may find you get longer knurl life and improved appearance by slowing down the spindle to about 50 SFPM (15 m/min) for harder steels and stainless. CARBIDE knurl pins are strongly recommended for all high speed knurl applications. DOWEL pins with a plus tolerance SHOULD NOT be used because of the possibility of the knurls seizing up and breaking.



For BUMP knurling with a SINGLE TOOL HOLDER from the cross-slide, the infeed would normally be .001-.004"/rev (.025 - .1mm) to roll the part complete 5/20 revolutions. When knurling stainless steels, it is important not to roll any longer than necessary as this material work hardens as it is formed. The total amount the tool penetrates into the workpiece is approximately 50% of the tooth depth of the wheel. You may have to travel more than this amount to allow for the flexing of the part or holder due to rolling pressure. Some trial and error will be required.



If you are using a two die STRADDLE HOLDER, the infeed rate should be 5 or 10 times faster because the wheels are coming in tangentially instead of head on. Before knurling, the holder should be set so that the distance between the two wheels is smaller than the workpiece diameter by approximately the depth of the knurl tooth. Then to knurl, move the holder so that the two wheels are as close to the centerline as possible to minimize the knurling pressure on work spindle and cross slide.



For additional information, Please refer to our support page https://www.genswiss.com/support.htm
Or contact us at (413) 562-4800.

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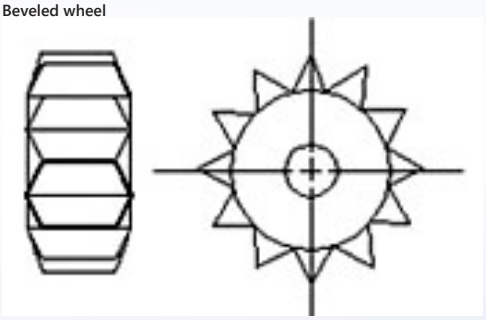
Material	Recommended SFPM [ft/Min]
Acetal (Delrin)	90-130 SFM [27-40] M/MIN
Aluminum and its alloys	90-130 SFM [27-40] M/MIN
Brass (360 high machining)	90-130 SFM [27-40] M/MIN
Bronze (high tensile)	90-130 SFM [27-40] M/MIN
Hastelloy	35-50 SFM [10-15 M/MIN]
Inconel	35-50 SFM [10-15 M/MIN]
Monel	35-50 SFM [10-15 M/MIN]
High nickel steel	35-50 SFM [10-15 M/MIN]
Mild steel (.2-.3 C)	50-70 SFM [15-21 M/MIN]
Steel (.4-.5 C)	50-70 SFM [15-21 M/MIN]
Tool steel	35-50 SFM [10-15 M/MIN]
Steel alloys (300-400 Brinell)	35-50 SFM [10-15 M/MIN]
Stainless steel (free machining)	50-70 SFM [15-21 M/MIN]
Stainless (work hardening)	35-50 SFM [10-15 M/MIN]
Titanium alloys	50-70 SFM [15-21 M/MIN]
Heat Treated Steels	
35-40 Rockwell C	35-50 SFM [10-15 M/MIN]
40-45 Rockwell C	35-50 SFM [10-15 M/MIN]
45-50 Rockwell C	35-50 SFM [10-15 M/MIN]
50-55 Rockwell C	35-50 SFM [10-15 M/MIN]

Material	Recommended Feed per Rev [in/Rev]
Acetal (Delrin)	.008 to .020
Aluminum and its alloys	.008 to .020
Brass (360 high machining)	.008 to .020
Bronze (high tensile)	.008 to .020
Hastelloy	.004 to .009
Inconel	.004 to .009
Monel	.004 to .009
High nickel steel	.004 to .009
Mild steel (.2-.3 C)	.006 to .012
Steel (.4-.5 C)	.006 to .012
Tool steel	.004 to .009
Steel alloys (300-400 Brinell)	.004 to .009
Stainless steel (free machining)	.008 to .020
Stainless steel (work hardening)	.004 to .009
Titanium alloys	.004 to .009
Heat Treated Steels	
35-40 Rockwell C	.004 to .009
40-45 Rockwell C	.004 to .009
45-50 Rockwell C	.004 to .009
50-55 Rockwell C	.004 to .009

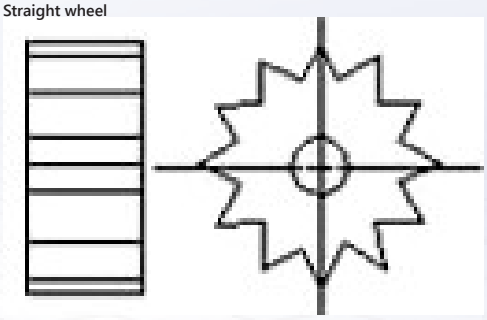
In-Feed approximate Rev			
T.P.I.	ALUMINUM & BRASS	MILD STEEL	ALLOY STEEL
12	12	15	25
16-20	10	13	22
25-35	8	11	20

End-Feed approximate Feed Per Rev			
T.P.I.	ALUMINUM & BRASS	MILD STEEL	ALLOY STEEL
12	.008	.006	.004
16-20	.010	.008	.005
25-35	.013	.010	.007

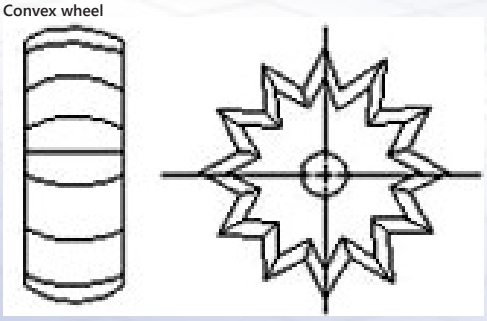
Beveled wheel



Straight wheel



Convex wheel



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