Making A Pen Mill/Sanding Sleeve

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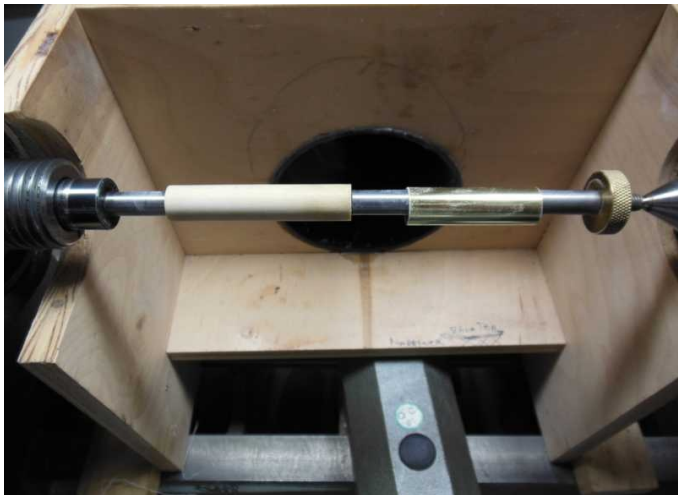
Pen sleeves are used with larger brass tube blanks to keep the 7mm pilot shaft square with the pen blank ends. The sleeve goes on the 7mm pilot of either a pen mill or sanding jig and the outside of the sleeve is sized to just fit inside the brass tube of the pen. You can purchase sleeves for some (many?) pen kits, but it is easy to make them yourself. I figured out a slick way to make and size the sleeve accurately. See the second page at the bottom to see the setup.

On the left, you see a pen mill, the sleeve, and the blank to be milled. On the right, you see my sanding jig block, the sleeve, and the blank to be milled.

The photos below show the sleeve inserted in the blank and how it looks on the pen mill and sanding jig.

Items Needed:
A Pen Mandrel
several (6?) long 7mm bushings
the brass tube you want to fit the pen mill.

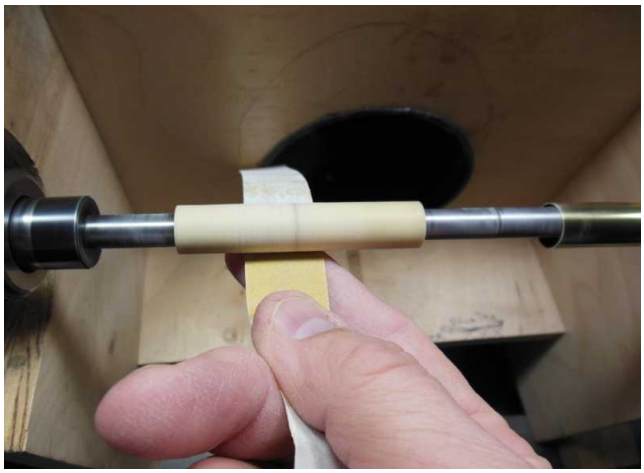
Preparation includes making a blank with a 7mm brass tube. We all have blanks that for one reason or another will never become pens. You can purchase 10" lengths of 7mm tube or slim line brass tubes from any supplier. Mill the end of the blank, and prep the blank as if you are going to make a pen.



This is the key concept of this technique. You can accurately size the sleeve with the brass tube quickly and easily.

Setup the pen mandrel as shown here. First a long 7mm bushing, then the sleeve, then several 7mm bushings up to the end of the mandrel. Put the brass tube over the bushings and finally, thread the brass nut on the end. Mount the mandrel on the lathe. In this photo, I've already rounded the blank. Please practice safety! Turn off the lathe when testing / measuring sizes.

Start turning down the blank so the right side is smaller than the left side. Check the size of the blank against the brass tube regularly. Turn down the right end of the blank until the brass tube just fits over the very end of the sleeve. Now switch to 120 grit sandpaper until the brass tube just fits over the end of the blank. Mark the blank with a pencil to show where you need to sand down the blank further.



Move the brass tube to the side as you continue to refine the size of the sleeve. Here I am about halfway across the length of the blank.

When the tube slides entirely over the sleeve, you are done. Now put a light coat of CA glue on the blank to preserve it. Sand with fine 600 grit sandpaper to smooth the sleeve. Write the name of the pen on the sleeve. With practice, you can knock one of these out in under 10 minutes. The sleeve should be a gentle press fit; it should not fall out of the brass tube without some force applied.

I make several of the raw blanks at a time and stash them for later use. I try to make the sleeve long enough to cover the pointed cutting edge of the pen mill.

I prefer using a sanding jig instead of the pen mill. The sanding jig puts less stress on the blank ends when doing embedded or segmented blanks. The sanding jig is easy to "sharpen" by running an abrasive cleaner (rubber eraser) over the sand paper or replacing the sand paper.

This shows my sanding disk setup and yes, that is a Shopsmith.