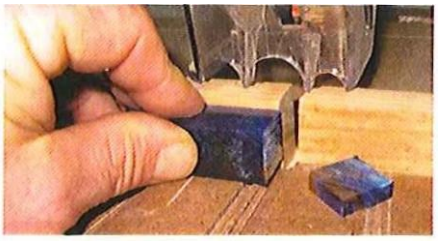
WOODTURNING

Materials Needed:

2-Wood or Acrylic blanks
1-Pen mandrel
Epoxy Cement or Gorilla Glue
1-Barell trimmer
1-pen insert tool
1- 7 mm drill bit
1- Pen Press

Procedure:

1) Cut the blank about l/32 larger than the tube in order to square up the end. **Ask Mr. Page for help on this step.**



2) Draw an X across the top to find the center of the blank and lightly center punch with an awl. Drill the 7mm hole through the blank on the drill press using the blue jig to hold the blank.

3) Rough up the outside of the brass tubes with very coarse sand paper to give the glue something to hold on to inside of the wood blanks. Make sure that the scratch marks run around the tubes, not down the length.

4) Use glue for securing the tubes within the wood blanks. Put glue inside the blank and on the tube before quickly pressing the tube into the blank. Ideally, the ends of the tube should be slightly inside either end of the blank so it can be trimmed square. Use the tube insertion tool to keep your hands clean. **Clean off glue from the tool immediately**.

5) Allow plenty of time (24 hrs) for glue to cure before continuing.

6) Use a barrel trimmer (the mandrel sized to match the inside diameter of the tube) to square the wood at either end of the blank and trim it flush to the ends of the brass tubing. Be careful not to shorten the brass tubes as they are cut to a specific length to match the pen parts. I trim the ends until the cutter just shines the ends of the brass tube.

5) Before putting the blanks on the lathe, make sure you understand how the bushings are to be arranged. Most bushing sets have tlu·ee or four pieces that must be in specific positions. These bushings are your guide to the final diameter of the wooden barrels. Again, the instructions should specify these locations. **See figure A below.**

6) With the bushings and blanks installed and their positions checked against the instructions,. Bring the tailstock up to the end of the mandrel, lock it down, then turn the point of the live center into the dimplein the end of the mandrel then tighten the jam nut on the mandrel. The live center should exert only enough pressure against the mandrel to maintain contact. Too much pressure could bow the mandrel causing a major out-of-balance condition that will instigate all sorts of bad things during turning.

7) **Get the instructor to help you** set up the metal template in the copy jig. Use the copy jig to cut your profile following the metal template inserted in the copy jig.

8) The most important thing to remember when turning is that the blanks cannot be smaller in diameter than the bushings. Leaving the wood slightly larger than the bushings and sanding them down to final size is an acceptable "cheat." It also prevents contact between the metal bushings and what I hope is the finely honed edge of your turning tool.

Sanding

9) Turn on the machine and sand as pictured with a 4"or smaller piece of 150 grit sandpaper (please do not take bigger pieces and waste it). Stop the machine and sand with the grain to remove the spiral marks left when sanding while the lathe was turning. (Note: there is no grain on acrylic but assume there is.)

10) Repeat step 9 with 240 grit sandpaper
11) Repeat step 9 with 320 grit sandpaper
12) Repeat step 9 with 400 grit sandpaper
13) Repeat step 9 with 600 grit sandpaper
14) Apply a small amount of EEE Ultrashine to the blank and buff off with a paper towel, until the paper towel comes back clean.

Finishing (for wood)

15) Then apply light coats of Hut wax, (sticks) buffing each coat with a paper towel until no wax shows on the paper.. Usually two or three coats produce the soft sheen I am looking for. Again, how many coats is up to you and what look is desired. Whatever finish is used, allow it to dry completely. Before assembly, I use the barrel trimmer (by hand) to clean up the ends of the tubes to remove any built up finish that could affect how the parts seat.

Assembly

(16) The instructions for your pen kit will specify the assembly sequence **(extremely important)** and any special considerations for this part of the process. The other important aspect of assembly is how the parts are pressed into place. **SEE diagram B below.**

The biggest trick to assembling most pens is seating the internal mechanism correctly so the cartridge tip extends far enough for writing but also fully retracts.

Pre assembling the cartridge and mechanism will provide a good idea of how deep the mechanism has to be pressed. Sneak up on that depth!

A pen press makes assembly much easier more accurate and safer for the pens.

Testing the fit as the unit is pressed into the barrel remains the easiest way for me to get this right. Remember that getting the mechanism back out once it is pressed in place is very difficult, often requiring a special tool.

Screw the pen cartridge into the mechanism and make sure it is in the extended mode. Hold that assembly next to the blank, the tip extending (whatever looks right) past the metal end. Mark the mechanism to show how much will protrude from the barrel at the other end. **Remove the cartridge** and begin pressing

the mechanism into the barrel, stopping short of the mark. Install the cartridge to check your progress. Usually the mechanism will have to be pressed further into the barrel but go in small steps to sneak up on the proper depth.

Install the cartridge and top barrel to complete the pen. Check the operation.

Your first pen is complete! However, if you are like most novice pen turners, there are many more to come.

Diagram A - Turning The Blanks

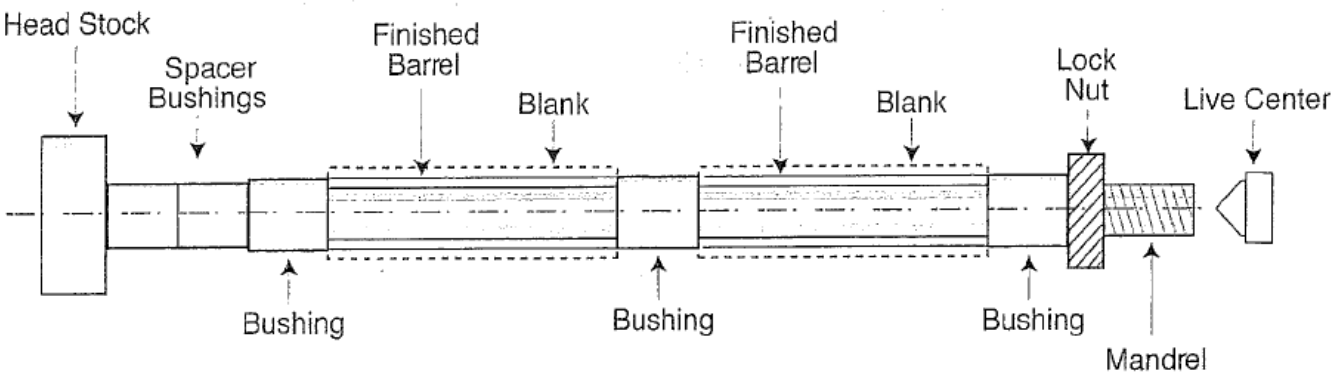


Diagram B - Assembly of Pen

Note: Line up parts according to layout below.