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Berea Hardwoods Co., Inc.
Pen Instructions

Round Top European Style Screw Cap Roller Ball and Fountain Pen(Berea #41788/R-*xxx*)

Needed: Mandrel-B
Bushing-8B
Drill-V
Wood Size- 5/8” x 5/8”

Preparing the Material Blanks

There are 2 methods for cutting your blanks for this pen. While one may suit some craftsmen the other may be more suitable for others. Read both carefully and select the one that you feel would suit you the best. Note that if the wood for the cap is not cut or parted to 1 7/8” the pen will not operate properly.

Method 1

1. Cut the blanks the length of each brass tube giving a little extra length for the facing of the blank after the tubes have been glued in.
2. This method will require cutting a tenon to the depth of the brass tube to accept the center band.

Method 2

1. This method will cut the blank for the cap the size needed at the out set. Therefore, there will be no need for parting the tenon.
2. Cut the blank for the cap 1 7/8”.

Follow these steps for both methods.

1. Drill each blank with the letter "V" drill bit.
2. Polish the brass tubes with sandpaper. This can be done by hand or on a power machine such as a belt sander. The purpose of the sanding is to clean off the oxidation and roughen the tube so that the glue will have a better adhesion surface.
3. Plug the ends of the tubes with the material of your choice. Some use base wax or Play Dough or even a slice of potato. Just push the ends of the tubes into a thin section of the material. This will form a plug to keep the glue from getting into the tube.
4. Clean the tube, after plugging, with acetone or alcohol on a rag.
3. Prepare your glue. We recommend two-part epoxy glue that is available in all hardware stores. Use a fast drying type, one hour or less. Be sure to mix it thoroughly. (A Post-it Note Pad makes an excellent mixing place. When you are finished just tear it off and throw it away.) Polyurethanes and thick flexible CA's can be used, but they each have their drawbacks.
4. Place some of the epoxy into the blank using a small piece of dowel or other small stick.
5. Roll the appropriate tube in the epoxy.
6. Insert the tube with a twisting motion until it is almost in the material blank. Then use the dowel to push it until the end is flush with the blank. Use the stick to rake off the excess glue even with the blank and the tube.
7. Push the brass tube through the blank until the other end is flush with the blank. Then rake the glue flush with that end. Now push the tube back into the blank until the tube is equidistant between both ends of the blank.

Note: If using Method 2, push the brass cap tube until one end is flush. This will leave a portion of the brass tube exposed on the other end. This will receive the center band.

8. Move it aside for 60 minutes until the epoxy has had time to reach its maximum strength.
9. If you are using CA glue, the wait is much shorter. When using polyurethane the wait will be about 24 hours.
10. When the glue has cured, use a hobby knife to remove the plugs from the ends. It is also a good idea to clean the tubes with a brass gun cleaning brush or a rolled up piece of sandpaper to remove any glue that may have gotten into the tubes.
11. Not cleaning out all glue from the tubes is the most common cause of pen failure. BE CERTAIN that all dried glue is removed from inside the tubes before proceeding.
12. Using a barrel trimmer of the proper size, face off the ends of the blanks until you can just see bright brass. STOP facing at this point. Your pen's proper operation is dependent on having the proper length tubes. This facing operation can also be done with the proper jig and a disk or belt sander.
13. Not having the proper tube length is the #2 cause of pen failure. Sanding, on a disk sander, using a jig to hold the tube square with the disk, is a more sure way of getting the proper length. It should be tried if you have any doubt as to your abilities to square the material with the barrel trimmer.
14. Another good method of squaring the ends of the blank is to turn the blank until it is just round. Using a miter gauge to maintain the blank perpendicular to the sanding disk, just touch the ends to the disk. Once the blanks are square and you

can see the ends of the tubes brighten, then return the blanks to the mandrel and finish the turning until the desired contour is accomplished.

Turning the Blanks

1. Assemble the blanks on the mandrel with the right bushings in the right place. The right bushing can be found by comparing the diameter of the bushing to the piece of hardware that will be placed in that place. For instance, the bushing that is the same size as the clip will fit on the end of the blank that will eventually become the top of the cap.
2. Tighten the tailstock before tightening the blanks on the mandrel. This will center the mandrel first. Then tighten the nut that holds the blanks.
3. Turn the blanks to the desired contour making sure that the area next to the bushing is turned to the size of the adjacent bushing.
4. After turning the blank, sand the surface in progressive steps until you get to 400 or 500 grit.
5. After sanding with the 440 grit, if using method 1, stop the lathe and measure 1 7/8" from the cap clip end and mark. With a sharp parting tool cut a groove all the way to the brass tube on the cap center band end. This will receive the center band of your pen.
6. If a higher polish finish is desired continue sanding with Micro Mesh through 12000 grit.
7. Remove the blanks from the mandrel.

Parts Diagram

Assembling the Pen

Please refer to the Pen Parts Diagram

1. Press one of the reducers, they are both identical, into one end of one of the blanks.
2. Next press the center band onto the corresponding end of the other blank. If you are matching grain or pattern pay attention to the relationship of the center band and the pattern. I find it helpful to screw the center band onto the reducer and then place the blank with the exposed tube into it and turn the blank until the pattern matches. You can press this into place lightly. Remove the blank with the center band attached and finish the pressing operation of the center band.
3. Press the reducer onto the other end of the barrel tube. You can use the same technique here as with the first reducer to obtain a pattern match when the cap is posted.
4. Press the black receiver tube into the other reducer.
5. Drop in the spring with the small end up if making the roller ball.
6. Place the refill in the barrel if making the roller ball or install cartridge.
7. Screw on the nib.
8. Lay this assembly aside.
9. Press the brass stud into the end of the cap opposite the center band.
10. Install the clip using the finial.
11. If the clip is loose, then you need to seat the bushing a little deeper.
12. Place the cap on the pen and feel great about what you have made.