

**Berea Hardwoods Co., Inc.**

New Series Style Screw Cap Roller Ball or Fountain Pen  
(Berea # 1105/R-G2D-xx)



This pen is a beautiful writing instrument. The long barrel really shows off the material used.

- Needed: Mandrel - A (7mm)
- Bushing set - 35A
- Drill - 'V'
- Minimum blank size - 5/8" x 5/8" x 5" long

Preparing the material blanks

There are two methods for cutting your blanks for this pen. While one method may suit some craftsmen the other method may be more suitable for others. Read both carefully and select the one method that you feel would suit you the best.

**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 onset. Therefore, there will be no need for creating the tenon.**
- 2. Cut the blank for the cap 1 5/8" to 1 11/16" long.**
- 3. Cut the other blank the size of the tube plus a little extra for facing the blank.**

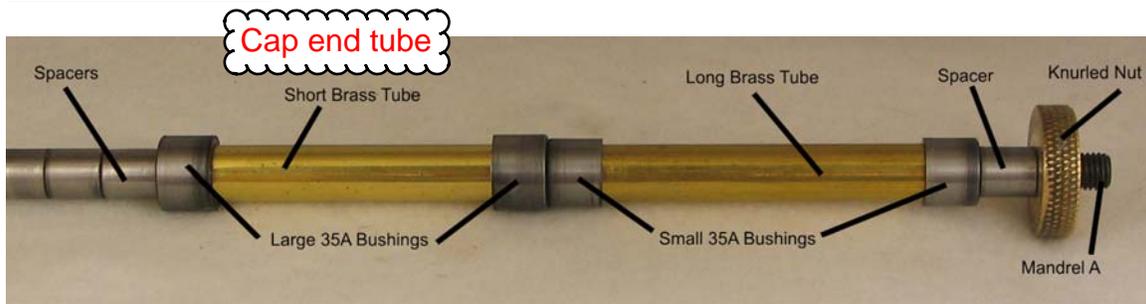
1. Drill each blank with the letter 'V' drill bit.
2. Scuff the brass tubes with 80 grit sandpaper. This can be done by hand or on a power machine such as a belt sander. The purpose of the sanding is to remove any oxidation and roughen the tube so that the glue will provide better adhesion.
3. Plug the ends of the tubes with the material of your choice. Some use baseplate 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. Clean the tube, after plugging, with acetone or alcohol on a rag.
4. 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, especially CA glue.
5. Roll the appropriate tube in the epoxy or apply with a Q-Tip (less messy).
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 a 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. Set 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 second 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, stop the lathe and
6. ***IF USING METHOD 1- measure 1 5/8" to 1 11/16" from the cap clip end and mark. With a sharp parting tool remove the wood all the way to the brass tube and all the way to the end of the tube, on the cap center band end. This will receive the center band of your pen. Your cap blank should then have 1 5/8" to 1 11/16" of finished wood and the rest should be bare brass tube.***
7. **\*\*\*IF USING METHOD 2 - your blanks are finished.**
8. Apply the finish of your choice and polish. Remove the blanks from the mandrel.



Pen Parts Diagram

## Pen Assembly

Please refer to the Pen Parts diagram

The third most common error resulting in a non-functional or damaged pen is the misalignment of the parts when pressing them in place. The use of a good pen press or small arbor press is recommended but it can be accomplished with a good “C” clamp with much care. When pressing in the various parts, by any means, BE SURE that the parts are straight and in line with the blanks. If the part is cocked or otherwise misaligned, at the very least, a poor fitting pen will result. At worst, you may have a pen that is not usable. The use of a chamfering toll prior to assembly will help in keeping parts aligned.

One other word about pen parts. Occasionally, you will encounter parts that are a little loose fitting. This can be corrected by using a SMALL spot of glue, usually epoxy, on these parts before pressing them home. CA glue is not recommended.

1. Assemble the three piece center band.
2. Press the center band on the exposed brass tube of the cap blank.
3. Press the finial bushing into the other end of the barrel.
4. Screw the finial through the clip and into the finial bushing.
5. Press the nib holder into one end of the barrel blank. IMPORTANT: if you are matching grain or pattern you should place the nib in the nib holder and just snug it into the barrel. You can then screw the nib/nib holder into the cap and then turn the barrel for matching. Once you are satisfied with the match carefully unscrew the nib from the holder, without moving the reference to the barrel, and proceed to press the nib holder into the barrel.
6. Press the finial holder into the other end of the barrel. Note: The two holders are identical.
7. Press the barrel finial stud into the finial.
8. Screw the finial/stud assembly into the finial holder.
9. Drop the spring into the barrel with the small end facing up or towards the refill.
10. Insert the refill.
11. Screw on the nib.
12. Screw on the cap and admire what you have accomplished.