

**Berea Hardwoods Co., Inc.**

**Olmsted Ballpoint Pen Assembly (Berea # 17145/x-xx-1)**



Needed: Mandrel-A  
Bushings- 63A  
Drill-O  
Wood Size-3/4" x 3/4" Square x 5" Long

**Preparing the material blanks**

There are 2 methods for cutting your blanks for this pen. While one may suit some, the other may be more suitable for others. Read both carefully and select the one 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 parting off a portion of the material down to the brass tube to accept the center band.

**Method 2**

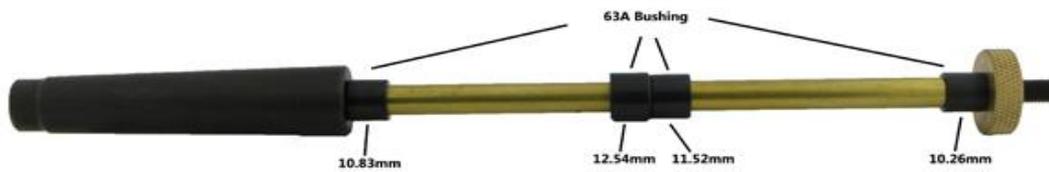
1. This method will cut the blank for the cap the size needed at the out set. Therefore, there will be no need for parting off a portion of the material.
2. Cut the blank for the cap exactly 1.7125" long or 43.50mm long.

Follow these steps for both methods.

1. Drill each blank with the letter "O" 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, stop the lathe and,
6. **IF USING METHOD 1-** measure 1.7125" 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.
7. **IF USING METHOD 2-**Your blanks are finished.
8. If a higher polish finish is desired continue sanding with Micro Mesh through 12000 grit.
9. Apply the finish of your choice and polish.
10. Remove the blanks from the mandrel.

## Assembling the Pen



Pen Parts Diagram

**!!Important: You must do the following or your pen will not operate properly!!**

**ATTENTION:**

After you have pressed the center band on the cap blank, but before you press the twist mechanism into the cap blank, slide the twist mechanism through the cap tube. If it does not slide through the cap tube easily then use a small round file or course sandpaper wrapped on a dowel or other suitable rod to clean out the tube in the cap. Retest the fit and repeat the above procedure until the twist mechanism slides freely through the tube.

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 and 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 the worst, you may have a pen that is not usable. Exercise caution here!

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 Red Loctite, on these parts before pressing them home.

**ASSEMBLY METHOD #1**

1. Slide the two decorative rings on the nib, notice the taper on the black ring, taper end towards nib and press this into the barrel tip end of the appropriate blank.
2. Press the twist holder into the other end of this blank.
3. Press the decorative ring and center band onto the exposed tube of the other blank.
4. Press the finial into the unthreaded end of the twist mechanism.
5. Press the twist assembly, with the clip attached, into the cap clip end of the cap blank. Press it flush with the end of the blank.
6. Place the refill in the barrel with the spring attached to the tip.
7. Slide the cap over the refill and screw this cap assembly into place.
8. Check to see that the pen operates properly.
9. Admire your work.

**ASSEMBLY METHOD #2**

1. Slide the two decorative rings on the nib, notice the taper on the black ring, taper end towards nib and press this into the barrel tip end of the appropriate blank.
2. Press the twist holder into the other end of this blank.
3. Press the decorative ring and center band onto the exposed tube of the other blank.
4. Press the finial, with clip into other end of blank.
5. Press twist mechanism into cap blank at center band end, unthreaded end first.
6. Place the refill in the barrel with the spring attached to the tip.
7. Slide the cap over the refill and screw this cap assembly into place.
8. Check to see that the pen operates properly.
9. Admire your work.

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