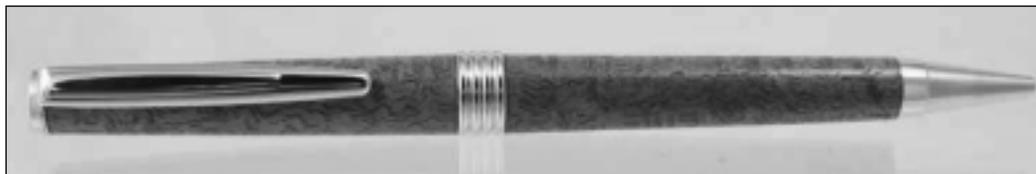


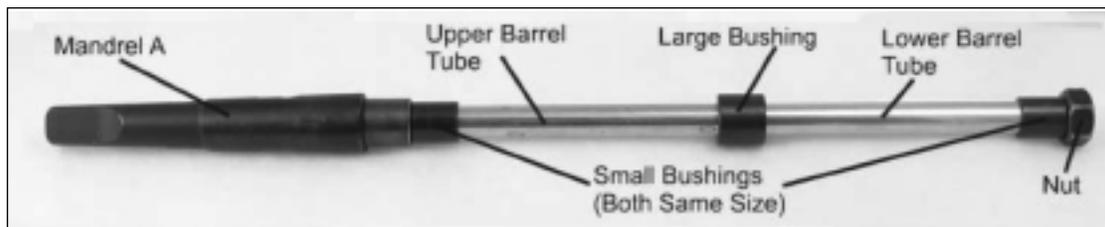
STREAMLINE PEN

Needed: Mandrel - A
 Bushing Set - 14A
 Drill-J
 Blank Size - 5/8" x 5/8"
 or 3/4" x 3/4"



Preparing the Material Blanks

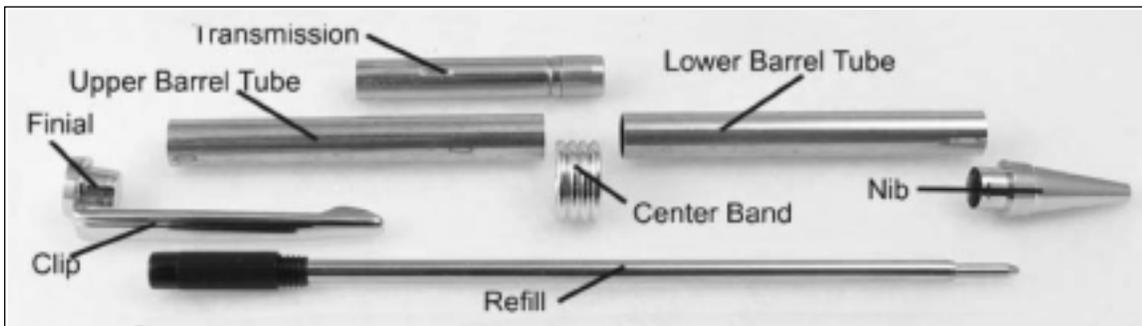
1. Cut the blanks the length of each brass tube giving a little extra length for the facing of the blank after the tubes have been glued in. Drill each blank with the letter & "J" drill bit.
2. Polish the brass tubes with sandpaper. This can be done by hand or on a power machine such as a belt sander. 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.
5. 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.
6. Place some of the epoxy into the blank using a small piece of dowel or other small stick.
7. Roll the appropriate tube in the epoxy.
8. 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.
9. 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.
10. Move it aside for 60 minutes until the epoxy has had time to reach its maximum strength.
11. If you are using CA glue, the wait is much shorter about 60 seconds. When using polyurethane the wait will be about 24 hours.
12. 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.
13. 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.
14. 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.
15. 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.
16. 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 using the right bushings in the right place. Place them in the order shown in the mandrel picture.
2. Place a small bushing on the mandrel.
3. Place the short blank on the mandrel observing any grain or pattern matching techniques desired.
4. Next place the large bushing on the mandrel and then the longest blank again watching any grain or pattern matching necessary.
5. Now place a small bushing on the mandrel. Add spacers, as needed, the washer, and the nut.
6. Tighten the tailstock before tightening the blanks on the mandrel. This will center the mandrel first. Then tighten the nut that holds the blanks.
7. When turning this pen you must realize that it tapers on both ends. The lower barrel taper more severely than the cap.
8. Turn the blanks to the desired contour making sure that the blank diameters are the same as the bushings.
9. After turning the blanks, sand the surface in progressive steps until you get to 400 or 500 grit.
10. If a higher polish finish is desired continue sanding with Micro Mesh through 12000 grit.
11. Apply the finish of your choice and polish.
12. Remove the blanks from the mandrel.

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 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 CA, on these parts before pressing them home.

1. Press the nib into the smallest end of the longest blank.
2. Next, press the transmission, or twist mechanism, into the other end of this same blank up to the notch in the transmission. It is best to & "creep up" on this pressing operation by pressing to near the right dimension, inserting the refill, twisting the transmission open, and checking the exposed tip at the nib. You want about 1/8" of refill tip exposed, but make sure that the tip is fully enclosed in the nib when it is retracted. This method can make up for slight errors made in trimming the barrel to the proper length.
3. Place the center band on the exposed transmission.
4. Press the finial into the clip.
5. Now press this assembly into one end of the other blank.
6. Align any grain or pattern with the pen retracted.

Now that's a great pen kit!