Requires standard "A" mandrel, baron pen bushings (88K78.82), ¹⁵/₃₂" (for the upper/short barrel) and ²⁵/₆₄" (for the lower/long barrel) drill bits, and minimum ³/₄" square by 4¹/₂" long blank.



General Instructions

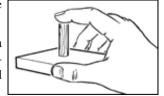
Cut the turning squares to length, center-drill each piece to accept a brass sleeve, and glue the brass sleeve into the turning blank. Mount the bushings and blanks on the mandrel and turn the blanks to size, using the bushings to gauge the proper diameter of the components to be turned.

Cutting the Turning Blanks to Length

When cutting the turning squares to length, cut the blank 1/32" longer than the brass tubing. To ensure a seamless fit between the wood and the pen hardware, the length

can be sanded flush and square at either end after the components have been turned.

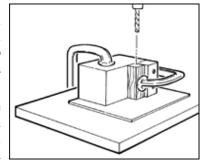
You can make a small sanding jig from a $1^{1}/2'' \times 1^{1}/2'' \times 3/4''$ square piece of wood with an accurately drilled hole matching the outside diameter of the turned components to ensure that the end is sanded squarely.



Drilling the Stock

It is strongly recommended that you drill your turning blanks on a drill press. A drill press vise or homemade jig to help keep your blanks centered and vertical is also a necessity.

You can use a standard twist bit; however, there is a chance that you will split the blank when the bit breaks through the bottom. You will not have this problem if you use a HSS lipped



brad-point bit or a HSS parabolic-flute bit (which is ideal for use in dense hardwoods, epoxy-stabilized woods, acrylic acetate, or other challenging materials). Whichever bit you choose, withdraw the drill frequently to clear chips from the flutes.

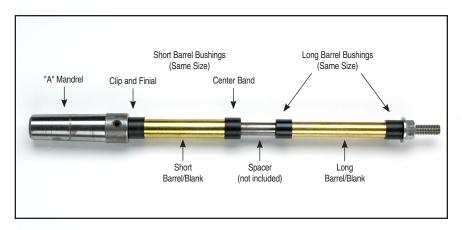
For exotic woods that have a more unstable moisture content, you can prevent cracking by first drilling a 1/8" diameter hole. Let the wood blanks dry for about a week, then redrill with the size of drill required for the sleeves. Other turners prefer to drill the wood and insert the sleeves immediately on bringing the wood in the shop, since thin walls are less likely to crack.

Gluing the Brass Sleeves

Use quick-setting epoxy, polyurethane or cyanoacrylate to glue the brass sleeves into the wood blanks. Spread a small amount of glue onto the outside of the brass sleeve and slide the sleeve into the wood. Do not put the glue into the hole in the wood because you will inevitably end up with glue inside the brass sleeve.

Turning the Bodies

Mount the bushings and turning blanks on the mandrel, as shown in the photo below. An additional spacer will be required to fill the remaining gap so that all the components on the mandrel fit tightly. (You can use one of the bushings used to turn a standard 7mm pen/pencil, or make your own by cutting a hardwood blank to length and drilling a 7mm center through hole.) In the example shown, one standard pen bushing (88K71.08) was placed in the middle of the set-up. Slide the clip and finial bushing, the short (upper) blank, the center band bushing, the spacer, one lower barrel bushing, the long (lower) blank, and the other lower barrel bushing on the mandrel. Be sure that the bushings are a snug fit on the mandrel. Clamp the components in place by threading the nut onto the end of the mandrel only finger tight.



Turn the blanks to the desired size. Use the bushings as guides for the exact diameter that each end of the turned components should be. Sand and finish the turned pieces on the lathe.

Assembly

Refer to the pen parts photo for the correct order. The pen components press-fit together. Once the components are pressed together, it is almost impossible to take them apart. **Do not** try to dry fit the assembly **before** the components are completely finished.

- Slide the clip onto the finial and install this assembly into the appropriate end of the short (upper) barrel.
- 2.. Slide the black center band coupler into the plated center band, then install the black trim ring and the plated trim ring onto the center band assembly. Press the exposed end of the black center band coupler into the other end of the short barrel.
- 3. Press the end cap coupler into the end cap. Press a coupler and trim ring into one end of the long barrel. Press the remaining coupler and trim ring into the other end of the long barrel. To ensure you do not damage the threads on the couplers as you press these into the barrel, use a drilled block (just large enough and deep enough to receive the end of each threaded coupler).

Note: For the rollerball pen only: install the spring into the end cap assembly. (To keep the spring in place, apply a drop of cyanoacrylate inside the end cap.)

- 4. Screw the end cap assembly onto the appropriate end of the long barrel.
- 5. a. For the rollerball pen: insert the refill and screw the rollerball nib assembly into the coupler.
 - b. For the fountain pen: press the ink cartridge/pump firmly into the back of the fountain nib and screw the assembly into the coupler.

