

## Voyager ballpoint pen



### Recommended tooling:

7mm mandrel; drill 15/32"; drill 25/64"; bushing set 123A

### Preparing the blanks

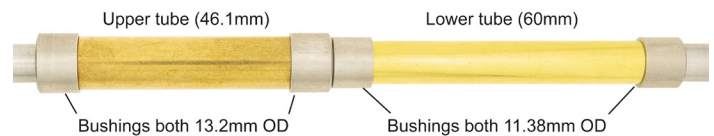
1. Cut the blanks about ¼" longer than the length of the brass tubes.
2. Drill the upper (shorter) blank through the centre, length-wise, with a 15/32" drill bit.
3. Drill the lower (longer) blank through the center, length-wise, with a 25/64" drill bit.
4. Scuff the brass tubes with sandpaper to clean off the oxidation and give the glue a better adhesion surface.
5. Plug the ends of the tubes with a material of your choice – we recommend base plate wax– to keep the glue from getting into the tubes. Just push the ends of the tubes into a thin section of the material to form a plug. *This is very important: glue inside the tubes is a common cause of kit failure.*
6. Roll the tubes in glue.
7. Insert the tubes into the corresponding blanks with a twisting motion.
8. When the glue has cured, use a hobby knife to remove the plugs from the ends. Using a

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barrel trimmer of the proper size, square off the ends of the blanks until you can see bright brass tube. STOP at this point. This can also be done with the proper jig and a disk sander. *Not having the proper tube length is another common cause of pen failure.*

### Turning the blanks



1. Assemble the blanks on the mandrel, using the 123A bushings, according to the diagram above.
2. Lightly tighten the mandrel and secure. Do not over-tighten – this can bend the mandrel which will result in an oval pen.
3. Turn the blanks to the desired shape using the bushings as a sizing guide.
4. After turning the blanks, sand the surface in progressive steps until you get to 400 or 600 grit.
5. For a smooth finish, sand with Micro Mesh to 12,000 grit. Then use a finish of your choice and polish.
6. Remove the blank from the mandrel.

## Assembling the pen

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1. Press the nib into either end of the lower tube.
2. Press the coupler into the other end of the lower tube.
3. Slide the spring onto the front of the refill and insert the refill through the coupler.
4. Screw the twist mechanism on over the back of the refill.
5. Press the centre band into one end of the upper tube.
6. Press the finial/clip assembly into the other end of the upper tube.
7. Push the upper tube on over the twist mechanism.

### Finial/clip assembly

