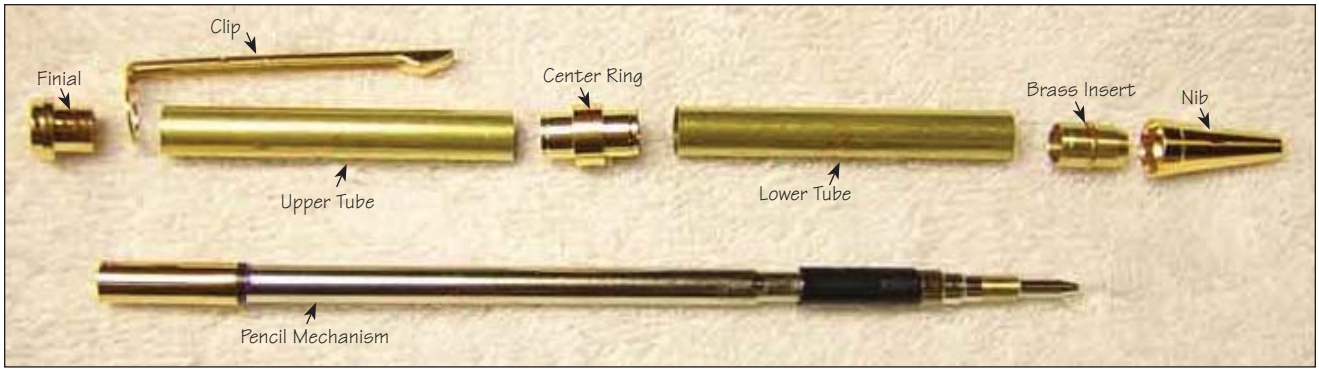
Slim Pencil Hardware Kit

Requires standard "A" mandrel, slim ballpoint pen/pencil bushings (88K78.70), 7mm or letter "J" drill bit, and minimum 1/2″ square blank.



Parts diagram for 7mm pencil.

Preparing the Material Blanks

1. Cut the material blanks a little longer, approximately 1/4″, than the pencil tubes. It is worth noting that the pencil tubes are shorter than the 7mm pen tubes. They are **not** interchangeable.
2. Drill each blank through the center, lengthwise, with a 7mm bit.
3. 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.
4. Plug the ends of the tubes with the material of your choice. Some use base wax (a dental product), 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.
5. Clean the tube, after plugging, with acetone or alcohol on a rag.
6. Prepare your glue. You can use a fast-drying, two-part epoxy, 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 cyanoacrylates (CAs) can also be used. (If not using epoxy, go to step 9.)
7. Place some epoxy into the blank using a small piece of dowel or other small stick.
8. Roll the appropriate tube in the epoxy.
9. Insert the tube with a twisting motion until it is almost all the way into the material blank. Then use the dowel to push it in until the end is flush with the blank. Use the dowel to rake off the excess glue even with the blank and the tube.
10. 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 ends are equidistant from the ends of the blank.
11. Set it aside for 60 minutes until the epoxy has had time to reach its maximum strength.
12. If you are using CA glue, the wait is only about 60 seconds. When using polyurethane the wait will be about 24 hours.
13. 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.
14. Not cleaning out all glue from the tubes is the most common cause of pencil failure. **Be certain** that all dried glue is removed from inside the tubes before proceeding.
15. Using a barrel trimmer of the proper size, face off each end of the blank until it just touches the brass end of the tube. **Stop** facing at this point. Your pencil's proper operation is dependent on having the proper length tubes. This facing operation can also be done with the proper jig and a disc or belt sander.
16. Not having the proper tube length is the #2 cause of pencil failure. Sanding, on a disc sander, using a jig to hold the tube square with the disc, 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.
17. 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 disc, just touch the ends to the disc. 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 bushings. With these bushings it is not necessary to be particular with the order they go on the mandrel. They are identical.
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 blank diameters are the same as the bushings.
4. After turning the blanks, sand the surface in progressive steps until you get to 400 or 500 grit.
5. Apply the finish of your choice and polish.
6. Remove the blanks from the mandrel.

Assembling the Pencil

Please refer to the pencil parts diagram.

The third most common error resulting in a non-functional or damaged pencil 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 pencil will result. At the worst, you may have a pencil that is not usable. Exercise caution here!

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 brass insert into one end of a turned blank. Only one end will fit the blank. The other end will be so loose that it will not stay in place.
2. Press the clip and the finial together. A split 7mm tube will help accomplish this. Start the clip over the finial. Place the split end of the tube below the clip and over the tapered end of the finial. Use the tube to press the clip into place.
3. Press the clip/finial assembly into one end of the other tube. If you are matching pattern or grain, this should be taken into account when selecting which end to use for the finial.
4. Press the center ring into the other end of either tube.
5. Press the center ring into the last remaining open end of a tube. Again, observe position when trying to match pattern or grain.
6. Insert the pencil mechanism into the finial end of the pencil as far as it will go.
7. Screw the nib onto the exposed end of the pencil mechanism and tighten finger tight.

The pencil mechanism comes from the factory already loaded with 0.7mm lead. Simply push the button on the finial end to advance the lead.