

Slimline Pencil Kit

Kit Features

- Simplified construction—same tube length for top and bottom (2-1/32")
- Pencil uses a 0.7mm lead
- A Variety of Clip and Band Styles are Available (see PSI catalog)
- Replacement Erasers available: #PK-PCLE10
- Overall Length: 5-9/16"

Required Accessories

- 7mm Pen Mandrel
- Drill Bit: #PK-7MM for Wood, #PK-7MMSG for Plastic
- Bushing Set(3pc): #PKM-BUSH3
- Barrel Trimming: #PKTRIM7 or squaring jig on disc sander
- Live Tailstock or Mandrel Saver
- 2 part Epoxy or Thick CA (Cyanoacrylate) Glue
- Chamfering Tool #BGCAM
- Pen Blank Minimum Size: 9/16" x 9/16" x 4-5/16"L

Step 1 - Cut Wood Blanks

Prior to cutting and gluing, always verify tube length is correct. A set of Digital Calipers are recommended for accuracy (rulers will not measure to 1/128 inch). Select a 9/16" to 5/8" square blank. Draw a diagonal line along the length of the blank to help match grains after cutting. Cut blanks to the length of the tubes plus 1/16".

Step 2 - Drill The Wood Blanks

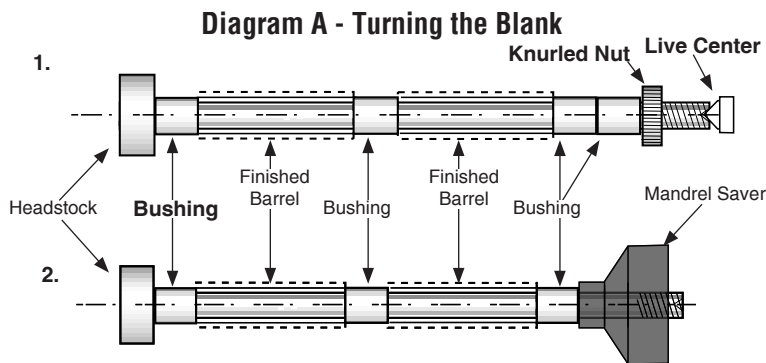
Drill a 7mm centered hole lengthwise through each blank. Excessive pressure will cause the drill bit to wander and/or split the blank. Slow the feed rate and back the bit out repeatedly for chip removal.

Step 3 - Glue The Tubes Into The Blanks

Use epoxy or a gap filling cyanoacrylate. Spread the glue on the tube. Insert into the blank with a twisting motion to spread the glue evenly inside. Center each tube lengthwise in the blank. Allow it to dry.

Step 4 - Square The Ends

With a 7mm barrel trimmer #PKTRIM7 or a squaring jig and disc sander, square the ends of the blanks 90 degrees flush to the ends of the brass tubes. Check progress frequently. Avoid over-trimming and shortening the length of the tube.



Step 5 - Turning The Blanks

Place the Bushings and Barrels (blank and tube combined) onto the Mandrel according to Diagram A(1/2). Make sure the line marked in Step 1 is matched up when mounting the blanks.

A1. If you are not using a Mandrel Saver, place enough bushings so that the last bushing starts to cover threads at the end of the mandrel. Thread the Knurled Nut against the bushing to tighten. Bring the tail stock snug with the mandrel, lock and tighten (do not over tighten, it could damage the mandrel).

A2. If using a Mandrel Saver, only 3 bushings are needed: one at each end and one in between the blanks. The Saver slides over the Mandrel Rod directly against the Bushings. Lock the Tailstock and tighten. No direct pressure goes against the Rod, so tightening will not damage Mandrel Rod.

Turn the blanks down to a diameter slightly larger than the bushings. As you approach the final size be careful since the wood is very thin.

Step 6 - Sand

As with any sanding, progress through a range of grits. PSI carries sanding rolls and systems for 150 grit to 800 grit. Past that, we have polishing pads and compounds to reach grits of 4000 or more.

Sand with blank spinning for the first grit. It is recommended to stop the lathe and cross sand (along the blank) for the next grit. Switching between spinning and cross sanding as you go to the next grit will help you track progress and make sure each step fully erases scratches from the previous one.

Step 7 - Finish

Note that finishing with any product or method takes practice to perfect. Feel free to experiment and keep trying.

Friction Polishes are recommended for wood. Penn State Industries carries a variety of Friction polishes such as Shellawax (# PK-SWAXLX) and Aussie Oil (# PKSWAUS2) provide excellent results.

CA Finishes are also popular and Starter Sets (# PKCASTART3) are available. This technique requires applying multiple coats of CA Glue to a wooden blank and then sanding and polishing to smooth and remove all scratches for a hardened high gloss coat.

Finishing Plastic Blanks only requires sanding and polishing to a high grit and applying a polishing compound such as #ONESTEP. Top coats and friction polishes are not necessary.

Step 8 - Touch Up

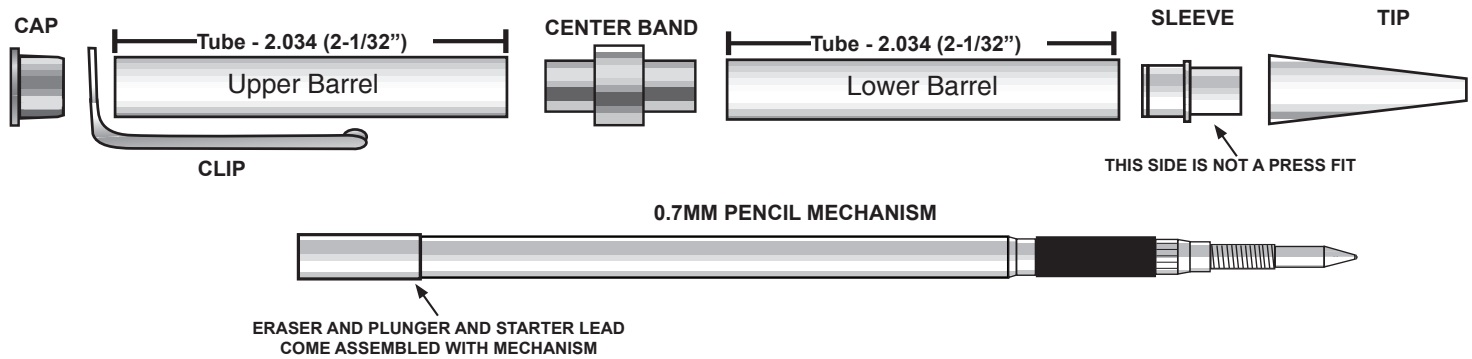
Remove Barrels from the Mandrel, If both Barrels were cut from the same blank (Step 1) it is important to make sure you track the ends to make sure you do not accidentally turn one around and lose the grain match.

If necessary, a light, angled sanding of the ends of the Barrels will soften the edge and improve the fit during assembly.

If blanks were from pre-cut sections, lay them end to end to decide which directions will look best when assembled. Remember that they will be 5/32" apart (due to Centerband) so minor differences won't show.

Select which end will be the Tip and which end will be the Cap.

NOTE: Assembly instructions are on other side.



Assembly:

- For the best Assembly experience, a dedicated Pen Press is a must.
- It is very important that the interior of the tubes be cleaned. It is recommended to carefully look in tubes and if any debris or traces of glue are found, clean them out with a barrel trimmer, file, sandpaper, etc. Even a small smear of glue can raise the difficulty of pressing.
- Try to keep the parts as straight as possible when pressing. If the parts start to misalign they can be permanently bent and interfere with operation of the mechanism.
- Fitting the parts will be eased if the ends of the tubes are deburred or chamfered. Either #MSDEBURR or #BGCAM will do this well.
- Combine the Cap and the Clip. This can sometimes be a slip fit and sometimes in can be a press fit because of manufacturing variance. As long as enough of the reduced diameter section of the cap can fit through the Clip and start into the Upper Barrel, it will be okay.
- Press the Cap, with the Clip, into the back end of the Upper Barrel. The back end would be chosen based on your selection from Step 8 on the previous page.
- In order to press the Center Band, we recommend using a scrap piece of wood with a 7mm hole drilled into it, the hole should be at least 1/4" deep. This will help to avoid damaging the centerband.
- Slide one end of the Center Band into the hole in the scrap piece. Press the other end of the Center Band into the open end of the Upper Barrel.
- Press the back end of the Lower Barrel onto the remaining unpressed side of the Center Band. Try to line up the grain of the two Barrels so that they match as closely as possible before pressing.
- Press the Sleeve gently into the remaining open end of the Lower Barrel. Do not overpress this part.
- Insert Mechanism, tip first, through the hole in the Cap. Mechanism should slide in until the threads on the tip of the Mechanism fully extend through the Sleeve.
- Thread the Tip onto the Mechanism Threads until tight.
- To extend the lead, press on the Plunger repeatedly.
- To retract the lead, press and hold the Plunger down and manually push the lead back into the mechanism.
- The Eraser can be accessed by pulling the metal Plunger off of the back of the mechanism. Replacement erasers are available (#PKPCLE10).
- Extra 0.7mm lead can be added to the mechanism by removing the Plunger and Eraser and adding lead to the storage section in the back of the mechanism. Lead will automatically feed through the mechanism from this storage location.

