

P ENTURNING RIMER

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Easily made, the 7mm pen kit is a great entry into penturning. From here, you can take things as far as you like.

7mm kit parts



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The 7mm kit contains everything you need except the wood. There are cosmetic differences between vendors and varying price points.

Many woodturners' first foray into turning is making a pen. Young or old, beginner or experienced, penturning is fast and fun. Here is a primer on how you can get started.

The humble 7mm pen

The commonly available 7mm kit is a great starter. Every reseller has designs of their own privately labeled for them. They have several price points based on plating durability and clip designs. Cosmetically different, their similarity, popularity, and low cost make them ideal for beginning penturners. The kit's eight pieces and a turned upper and lower barrel are assembled to make a finished pen. Your kit has everything except the wood (*Photo 1*), which you can pick according to your own preference.

Special accessories

There are a few accessories needed for making pens. If you are only going to make one pen, borrow these items so you won't have to make additional purchases. If you get the bug and continue, you will soon discover there are many ways to accomplish the workholding, blank facing, and assembly, but the basics for getting started are a 7mm drill bit, a pen mandrel with 7mm bushings, and a 7mm pen mill (*Photo 2*). With these items, you can make pens on a lathe of virtually any size with a single turning tool.

Cut and drill the blank

Pick your kit and select a wood pen blank. Later, you may want to try different materials, but wood is good to start. Mark and cut your blank into two pieces slightly longer than the brass tubes in your pen kit (*Photo 3*). You will trim the blanks to final length later using a pen mill.

Taking care to drill the blanks in the center of the blank without wandering, drill a 7mm hole through both halves. You can drill the two blank pieces in a drill press (*Photo 4*), in a vise using

a pistol drill, or in your lathe. Ideally, you'll have your entrance and exit holes be centered in the blank. This will provide for the best grain match and ensure sufficient wall thickness of wood.

Gluing and facing the blanks

The next step is to glue the brass tubes into the two blank pieces. Scuffing the tubes with coarse abrasive prior to gluing them helps remove oxidation and manufacturing drawing lube, and provides a better mechanical glue bond. There is much controversy about which is the best glue to use. Epoxy, polyurethane glue, or cyanoacrylate (CA) will work fine. If you use CA, the thick version will fill the gaps and allow sufficient insertion and positioning time. I use polyurethane glue, but the foaming during the curing process is an additional cleanup process.

Put sufficient adhesive on the outside of the tube so it will coat the entire tube as you insert it (*Photo 5*). Err on the side of using too much adhesive rather than too little. Coating the entire inner surface of the wood and outer surface of the tube will provide a good bond for the life of your pen. Insert and seat the tube below the wood surface on both ends.

When the glue has cured, face the ends of the blank halves with a pen mill. Insert the pen mill's guide shaft into the tube for alignment and remove all excess wood until you just expose the brass tube, as shown in *Photo 6*. Be cautious when facing! If you remove too much brass tube, your finished pen can suffer at assembly time. When this is done properly, the end of the wood blank will be flush with the end of the tube and perpendicular to the pen's axis. This makes for accurate, gapless unions at assembly time.

Mounting and turning

Most adjustable pen mandrels come with 7mm bushings, which are needed to make a 7mm pen. These mandrels ▶

Penturning accessories



There are many accessories for making pens, but a mandrel with bushings, 7mm drill bit, pen mill, and countersink will get you going.

Cut and drill blank



Don't blindly cut blanks in half. If the wood has interesting figure, cut and mark appropriately.



Drilled on a drill press, a lathe with a drill chuck, or a pistol drill with the blanks in a vise, take care to keep the hole centered.

Glue tubes, face blank ends

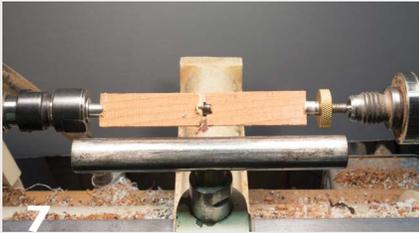


Epoxy, CA, or polyurethane glues will work to glue the brass tubes into the pen blank. I suggest scuffing the tubes before gluing for better adhesion.



A pen mill does a good job of facing the ends of the pen blanks in preparation for turning. Just expose the brass, making the wood perpendicular to the axis of the blank. A light twist with a countersink chamfers the tube's inside edge.

Mount and turn



Ready to turn, with the mandrel mounted in the lathe and from left: bushing, wood, bushing, wood, bushing, nut tightened, and tail center in place. Just support the end of the mandrel with the tail center; too much pressure will result in egg-shaped barrels and a damaged mandrel.



Turn the barrels of your pen using your favorite tool. Taper the blanks to your liking and use the bushings as a gauge for your end dimensions, as they are sized to match the press-fit parts in your pen kit. Be aware that bushings get smaller with use.



can also be used for other types of pen kits by obtaining the correct bushings.

The bushings are pre-sized to match the kit parts and are used to gauge final blank diameters at the ends and middle. Use a bushing on each end of the pen blanks and one in between them. Screw on the brass nut and tighten, compressing everything for turning. Install the mandrel into the Morse taper of your lathe spindle and bring the tailstock forward. Note that the tailcenter is advanced far enough to support the far end of the mandrel and no more. If you use too much tailcenter force, you will flex and bend the mandrel, compromising its

accuracy. You can tighten the knurled nut as needed to increase the gripping force on the wood (Photo 7).

Any tool will work for penturning. Pick your favorite. I use a $\frac{3}{4}$ " (19mm) roughing gouge because it is easy to control and sharpen (Photo 8). Penturning has very little turning involved. Since you are turning a small mass that is securely mounted, higher lathe speeds can be used safely. Knock the corners off both of the blanks, then begin shaping from the middle of each blank toward each end. Ultimately, your shape will taper to the bushing size at each end of the blank (Photo 9). Cutting cleanly minimizes

sanding. When you have cut nearly flush to the bushings at both ends of both blank halves, you are ready to sand.

Sanding and finishing

Begin sanding with the coarsest grit necessary based on your species of wood and the surface condition. Run the lathe slowly for best results, letting the abrasive do the work (Photo 10). Sand through the grits, wiping the sanding debris from the blanks with a paper towel between grits, until you have arrived at a satisfactory surface.

For finishing your first pen, I suggest a commonly available friction polish, which is made up of shellac, wax, and carrier. Once applied and burnished, it leaves a shiny finish (though not the most protective). Later on, you will probably migrate to a lacquer or CA finish.

With the toolrest moved out of the way, speed the lathe up to create the heat needed to flash off the carrier in the polish. Apply per the instructions and really squeeze the cloth to create the needed heat. Use paper towels for safe application and burnishing (Photo 11). Never use cloth around a running lathe, as it can get caught and wrapped around the turning along with your fingers.

Assembly

With your finished pen barrels, you are ready to press-fit together the balance of the components. Use a bench vise, drill press, woodworking clamp, or your lathe

Sand and finish



Sand with the lathe running slowly. Work through the grits, cleaning off the dust between grits with a paper towel. After a final dusting, apply a friction polish—fast, easy, and pretty but not terribly durable.



JOURNAL ARCHIVE CONNECTION

For instructions on applying a CA (cyanoacrylate) finish, see Don McIvor's AW article, "Finishing with Cyanoacrylate" (vol 29, no 4, page 33). AAW members can access all past journal articles online at woodturner.org.



for assembly. Two of the three press-fit operations are to a hard stop, meaning they are positioned and pressed until they can go no farther. Protect the plating on the parts from scratches with some tape or paper towel.

Position and press the nib (writing-tip end) into the end of one of the finished pen barrel sections. Then press the end cap through the clip hole and into one end of the other barrel (*Photo 12*).

The only depth-sensitive press is the installation of the transmission. Use any of the press methods suggested, but do it in stages. The transmission is installed into the open end of the nib blank. Insert the transmission's brass end into the brass tube. Press the transmission into the blank until you still have some of the brass on the transmission exposed. Thread the inkfill into the transmission and twist the transmission to fully advance the inkfill. Examine how far the end of the inkfill extends through the nib of the pen. If you like it, the transmission press is done. If it doesn't extend far enough, remove the inkfill and press the transmission into the blank slightly to make up that small distance. Install the inkfill and check the extension again. Repeat this process until you are pleased with the inkfill position at full extension.

Slide the centerband over the transmission using the force needed to get it into position. Take the top end of the pen and slide it over the transmission

until it fully seats against the centerband, and your pen is completed.

The beauty of turning pens is how you can enjoy the instant gratification while creating an enduring piece. Even with the demise of penmanship, everyone will appreciate the gift of a handcrafted pen. ■

Kurt Hertzog is a past president of the AAW, past chairman of the Rochester Woodworkers Society, and a council member of the Pen Makers Guild. He has written about woodturning and woodworking extensively for various publications, including Woodturning and Woodturning Design, where he published a long-running penmaking column. You can find all of these and many additional unpublished articles at kurthertzog.com.

Eliminating the Centerband

Many penturners feel an undesirable aspect of the 7mm kit is the centerband, as it predetermines and therefore constrains the dimensions at the center of the pen. The centerband covers ills: It compensates for grain-matching issues due to wood loss when cutting and facing the blank and allows for sloppy dimensions of the centermost wood. It is a good place to start, but I suggest ditching it at the earliest possible moment. Without the centerband, you can turn the 7mm kit to any diameter and shape you wish. You can also create your own centerband effect by gluing an accent wood to the center of your pen blank pieces.

Shorter

You can simply eliminate the centerband. The kit will create a slightly shorter pen if you just throw the centerband away, and it will still work perfectly, provided you trim the barrels only enough to barely expose the brass tubes—with the wood flush and perpendicular to the pen's axis. Mount your pen as before, except don't use the center bushing. With both halves butted to each other on the mandrel, turn the pen to any center diameter you wish. Turn, sand, and finish both pieces simultaneously, and you will end up with a perfect union where the centerband would have been (*Photo a*).

Original length

Want the original length pen with no centerband? Cut, drill, and glue your tubes as usual. Trim one end of each blank flush to the tube. Trim the other end of each blank $\frac{1}{8}$ " (3mm) proud of the brass tube. Load the mandrel for turning with the proud wood ends butted together in the middle with no bushing between them. Use your bushings on both outside ends of the blanks, and turn those ends for the prescribed press-fit union. The center portions of the pen are now free to be sized as you wish.

Assemble and press the nib and end cap/clip into the brass tubes as usual. When you press the transmission into the center end of the nib barrel, there will be a bit of wood with no brass before you actually get a press. But don't worry, the press will still be deep enough for the transmission to be supported by the brass tube. You will have the same scenario with the clip end of the pen, but sliding that barrel over the top of the transmission will still provide plenty of engagement (*Photo b*).



Not using the kit's centerband gives you lots of design flexibility. You can make the pen shorter and go with or without trim decorations added to the blank before turning.



Turning blanks for a pen with no centerband means you can turn the interface fit continuously. Makes for the perfect fit.



You can make up the difference in length, or not. This blank is left longer than the brass tube inside it to compensate for the missing centerband.

Press-fit parts together



12 The pen kit parts are press-fitted together, with no glue. There are many ways to do this; a vise works nicely, but protect the metal plating on the parts.