Pen Turning 101

Turning a beautiful writing implement is as easy as 1-2-3.

By Joe Hurst-Wajszczuk

In this day of text-messaging and emails, one might assume that handwritten notes are a thing of the past, yet custom pens are more popular than ever, and they’re super easy to make. With a lathe, a few scraps of wood, and a pen kit, any woodworker possessing basic turning skills can create a writing implement that’s useful and unique. With a little practice, you’ll soon be turning out pens in less time than it takes to read this article.

In the next few pages, I’ll show you what you’ll need to get started, walk you through the pen-making process, and then suggest a few products that can save time, stock, and frustration for beginner and experienced turners alike.

For this exercise, I used an attractive, inexpensive, and easy-to-turn olivewood blank (Woodcraft #826211A, $2.79), pairing it with a Premier Cigar Ballpoint Pen Kit (Woodcraft #828439, $7.25). (For other combinations, see “Pen Preview,” on page 51.) The same techniques can be applied to any of the other styles, but you may need to purchase additional drill bits, mills, and bushings to match the kit.

Getting started

As the figure at right illustrates, pen turning boils down to turning a cylinder. The body, consisting of one or more blanks, is bored and fitted with a brass cylinder, mounted to a lathe, and then turned, finished, and assembled. A particular pen kit may have more or fewer parts than those shown here.

The instructions included with the kit will explain the exact assembly sequence.

Tooling up

Entire catalogs are dedicated to pen-making accessories, but if you own a lathe and a few turning tools, you won’t need to spend a lot of money to start. Check your arsenal against the Pen Turner’s Start-Up Kit, shown at right. A few of these items don’t need any introduction; you may have some of them sitting around your shop. A few of the specialty items deserve explanation.

Pen Blanks. You can buy ready-made blanks, or saw your own. Advanced turners can make pens out of plastic, metal, and even bone, but when starting out, stick
with less-exotic woods that are stable and easier to work, such as cherry, maple, or walnut.

**Drill Bits.** The blanks must be drilled to fit the kit. You can use a good brad-point bit, but pen maker’s bits are ground to drill straight, deep holes without clogging. Make sure your bit matches your pen kit. (For the Cigar pen, you’ll need a 10mm bit.)

**Epoxy.** You’ll need a sure-fire means of attaching the brass to the blank. Epoxy isn’t as quick-setting as cyanoacrylate glue (CA), but until you master the art of fitting the tube, you will appreciate a few extra minutes of working time.

**Pen Mill.** This two-part cutter helps ensure easy-to-assemble barrels and gap-free pens. The shaft slides into the brass tube and cleans the barrel while the trimmer head squares the ends for perfect-fitting parts. (For the Cigar pen, you’ll need a trimmer with a 10mm shaft.)

**Mandrel and Live Center.** These two items partner up to secure the blank to your lathe. Insert the mandrel into the headstock, slide the bushings and blank on the shaft, and then secure the assembly with the mandrel nut. The rod’s free end is dimpled to fit the live center at the tailstock. Mandrels and live centers are available with #1 and #2 Morse tapers. Buy the size that fits your lathe.

**Bushings.** These metal rings are mounted on either end of your blank to provide an indication of when to stop turning. (For this project, you need bushing set #147161, $4.29.)

**Friction Finish.** Finish your blank before it leaves the lathe. To create a glass-smooth finish, simply apply, let dry, and then buff.
Pen Turning Step-by-Step

Step 1
Draw a line along one face of your blank, and mark the cap end with an arrow to help you realign the parts. Using measurements from the kit’s brass tubes, cut your blanks to rough length (about ¾” longer than the tubes).

Next, draw a pair of intersecting lines on the ends of both blanks from corner to corner to determine the center points. Check that your drill press table is perpendicular to the chuck, hold the blank in the clamp as shown, and drill completely through each blank. (To ensure that the blanks line up at the middle of the finished pen, start the holes from the inside ends.)

Step 2
Scuff-sand the brass barrels with fine-grit sandpaper. Mix a small batch of 5-minute epoxy, and then coat the outside of the brass tube. To ensure good glue coverage, rotate the tube as you insert it into the blank. Make sure that it fits completely in the blank. (To keep glue from clogging the tube, plug the end with a piece of painter’s tape.)

Step 3
After giving the epoxy time to cure, square both ends of both blanks. To do this, chuck a pen mill in a cordless drill. Secure the blank in a bench vise; then slide the shaft into the brass tube and trim any overhanging wood from the end of the brass tube. (The object is to touch—but not cut into—the tube. If you listen carefully, you’ll hear when the trimmer touches the brass.)

Step 4
Insert the mandrel into the headstock, and then sandwich the blank between two bushings, as shown. Secure the assembly with the locknut. Finally, slide the tailstock and live center against the mandrel’s free end.

Step 5
Adjust your tool rest parallel and as close as possible to your work. Rotate the blank by hand to make sure that it does not touch. Now set the lathe to 1,000 RPM, and round the blank with a roughing gouge. To do this, place the gouge perpendicular to the rest, touch
the bevel against spinning blank, and then raise the handle until the tool starts to cut. Rotate the handle so that the flute faces in the direction of your cut.

Once you've turned a smooth cylinder, set the lathe to 1,500-2,000 RPM and continue shaping the blank. You have some leeway here, but be careful not to cut into the bushing or brass tubes. (Leave the ends of the blanks a hair larger than the bushings). Repeat the turning process with the second blank.

**Step 6**

Paying attention to the grain orientation of the finished pen, arrange both blanks onto the mandrel. Remove the tool rest and set the speed to 500 RPM.

**Step 7**

Starting with small strips of 150-grit sandpaper, remove tool marks and shape the ends of the blanks flush to the adjacent bushings. Continue sanding both blanks through 600 grit. (Pinch the strips of sandpaper, as shown, so that if the abrasive catches the work, the paper will slip from your grip without pulling your fingers in.)

**Step 8**

Turn the lathe off and apply a small amount of finish to a small piece of cloth or paper towel. Spread the polish onto the barrels. Now turn on the lathe and adjust the speed to 1,000 RPM. Working from beneath, apply even pressure with the still-damp pad. Move the applicator from side to side until the solvent evaporates and the surface begins to build a finish. Apply additional coats until you achieve the desired sheen.

**Step 8**

Inspect the brass tubes to make certain that they're free from any clogs that might prevent assembly. Arrange the rings and bands as shown in the figure on page 47, or according to the instructions included with your kit. Now assemble your pen. To prevent cracks or splits when pressing parts together, apply smooth steady pressure. (If using a metal-faced vise, attach wood or MDF pads to both faces to protect the pen's metal parts.)
Like pens? Here are some more turns to take.

As your hobby progresses from pastime to passion (or profession) you’ll want to consider a few items that can help turn pen-making pains into pleasure. I’ve arranged the list in order of importance. Start with the ones at the beginning; save up for a few at the end.

Pen Maker’s Bits
Don’t run the risk of ruining blanks with run-of-the-mill bits. These specialized drill bits sport sharp points to cut quickly and accurately and deep flutes to clear chips. The six-piece set provides ample opportunity to experiment with different pen kits.

Pen Turners Press
Have a pen slip in the vise, or the wood split because the one part isn’t perfectly square with its mate, and you’ll appreciate the value of a dedicated press. The spring-loaded self-feeding mandrel holds the pen parts in place while the solid steel head provides the leverage needed to smoothly assemble pen after pen.

Pen Mill Set
The two-piece mill trims and cleans barrels, ensuring gap-free assemblies. You can buy the shafts individually, but if you plan on making a few different kinds of pens, it makes sense (and cents) to invest in the multi-shaft set right from the start.

Self-Centering Vise
A self-centering vise makes blank drilling a set-and-forget operation and eliminates the risk of blowing a bit out one side of your blank. The V-slotted jaws provide a solid grip on round and square blanks. In addition to pens, the vise proves useful for turning bottle stoppers, key chains, perfume vials, and more.
Carbide Turning Tools
Advanced turners step up to carbide-tipped tools because they require less sharpening, but many beginners start with them because they're easier to master. To use, simply advance the cutter slowly into the workpiece, and then sweep the tool from side to side.
Contrary to its name, the round-headed mini finisher is also well suited for rounding square blanks and general shaping. Equipped with the radius ed R2 cutter (shown), the mini rougher tool is actually useful for finishing the blank right up to the edge of the bushing.

Better Blanks
Exotic blanks offer experience turners opportunities to try new materials that will produce one-of-a-kind pens and also test their technique. Laminated and figured woods require sharp tools and a light touch. Acrylic blanks come in countless color combinations and can be polished without finish. (Note: Composite materials containing stone or metal will make mincemeat of high-speed steel. You’ll want to step up to carbide cutters.)

Finishes
HUT bars are great for beginners because they’re simple to use and solvent-free. Simply press either stick against the spinning pen to polish out small scratches while melting material onto the wood to create a durable finish. Acrylic blanks don’t require a finish but, you’ll need super-fine abrasive papers and a plastic polish to build a shine. Experienced turners often use CA glue as pen finish. Apply a few drops to a paper towel, wipe down the blank, allow the glue to cure, and then buff.

Pen Preview: Woodcraft’s Pen Designer
With so many blanks and kits to choose from, coming up with an attractive combination can be the hardest part of the turning process. To save time and reduce frustration of a mismatch, you can “turn” your pen online at www.woodcraft.com/createit. The design program allows you to mix and match blanks and kits and preview more than 39,000 possible combinations. The step-by-step format makes experimenting as easy as clicking a mouse.
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