NMWT demo: July 1 2023, state fair items: Pens (also pens for troops); Hy Tran

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There are many videos out there, websites, (and of course, the printed directions) on how to turn pens. Here are some of my own notes and thinking:

First of all: Safety. You'll be working with power tools, abrasives, and chemicals. How do you stay safe?

For "pens for the troops," we do slimline pens. These are one of the basic, inexpensive, and easy to turn pens. Don't get too creative with the shape, as the troops who receive the pen should be able to insert the pen in their sleeve pocket. For other types of pens, the pen kits are typically either one-tube kits or two-tube kits. Slimlines are two-tube kits. Other, more "premium" pens are outside the scope of this short demo.

What do you need?

- Lathe, spindle roughing gouge, finishing supplies, adhesives
    - Pen mandrel, appropriate pen bushings (more advanced turners may choose to "turn between centers," not in scope for today), mandrel-saver tailstock (optional)
    - Appropriate drill bit for the tubes (7mm for slimlines) & drilling method
    - Tube insertion tool (helps keep glue off your fingers)
    - Pen mill to true up the blanks after tubes have been inserted
- Pen kits, wood, pen press (you can make do with your lathe, but it's a pain…)

What are the steps? (specific to slimlines, but can be adapted for other types).

- Prep the wood blank: Cut to length, mark for grain match if you wish.
    - Make a length template, such as a popsicle stick, if you'll do multiple blanks, or set the fence on your bandsaw correctly. Cutting blank too short is not good. Cutting a blank too long is OK, but wastes effort. Account for the kerf from the saw cut. Aim for a length about 1/8" longer than your tube overall, so that you can trim the wood down to the brass tubes
- Drill a 7 mm hole through the blanks.
    - Some folks use a vise and drill press. I don't have a drill press (and I don't "production-turn")—I use the lathe to drill. I use pin (or spigot) jaws. For this demo, we have pen jaws, but I'll show a couple of things that I do to assure squareness. Drill press and vise are the fastest drilling method, especially if you production-turn.
    - Think about breakout at the end of the blank as you drill through, especially if you're using burl or other cross-grain woods or synthetic blanks. If you're using a burl or synthetic, think about drilling a blind hole, then, cutting the blind end to length.
- Glue the brass tubes inside the blanks.
    - Make sure to scuff the tubes before gluing. I like using epoxy. Others use thick CA glue (cyanoacrylate glue, superglue, instant glue), but I've never really liked using superglue here. Use an insertion tool to help keep glue only on the outside of the tubes (and off of your fingers). Apply the glue to the brass tube and insert into the wood blank. Make sure the tube is completely inside the wood. There should be a small amount of wood beyond the tube on each

side. Wear gloves if you're worried about getting glue on your fingers. Epoxy can sensitize you and give you allergies, superglue will glue your fingers together…
    - Let the glue cure completely. If you use superglue, consider spraying a bit of accelerator on the inside of the wood blank before inserting the tube. If you're using plastic blanks, think about painting your brass tube black or white (or a matching color to your plastic) before gluing.
- After the tube-and-glue have cured, mill the ends square, so the wood is square with the tube, and you've taken the wood to the level of the brass tube. It's OK to get a very fine shaving of brass, but no more than that! One trick is to use a sharpie or similar to mark the end of your brass tube—when it's shiny, you know you've gotten to the level of the brass tube!
    - If you're working with a brittle wood, or punky wood: Consider strengthening the end-grain by moistening the end-grain with thin CA glue. Shellac won't alter the color of pale woods as much.
- Mark the inside the tube with a marker for grain match if you wish.
- Place mandrel in MT2 headstock of lathe (clean out the taper in the lathe and on the mandrel before putting the mandrel in!!!)
- Assemble tubes on mandrel, with bushings. You'll want a tip/nib bushing, a center bushing, and a clip/cap bushing. Assemble the way a pen would look. For the slimlines, all three bushings are the same. I use a mandrel saver tailstock: Tighten the tailstock on, so the tubes are held tight enough to turn. No need to be extra tight. Especially important if you don't use a mandrel saver: If you tighten the tubes too hard with the brass screw, the mandrel and tubes will bow, and you'll get lopsided pens.
- Turn the pen. I like a nice gentle arc shape, others like a bit of "beef" at the nib end (to help grip), others like doing a pure cylinder. Turn just about level with the bushings. Don't turn the bushings down! For slimlines for the troops, don't make the pen too bulky, as it won't fit the sleeve of the uniforms.
    - I typically only use my spindle roughing gouge. If you're using a burl wood, a cross-grain blank, or a segmented blank, you might think about using a bowl gouge, or a carbide tool.
- Sand the pen. (Lower speed, sand just enough to remove tooling marks, work through the grits to at least 400, stop the lathe and sand by hand after sanding with lathe on, to remove circular scratches. Light pressure! Don't re-use sandpaper; used 180-grit is not the same as 240-grit!)
- Apply finish (in order of amount of time that it takes). Be sure to protect the bedways of the lathe first!
    - Bare wood? Only good for things like desert ironwood, lignum vitae…
    - Only wax—HUT brown wax followed by HUT white wax
        - Apply at high speed, work into the wood, polish with cloth/paper towel
    - Friction polish
        - Apply with a cloth/paper towel with the lathe off. Turn the lathe on medium-high speed, use pressure with your fingers on the cloth to squeeze on to the wood to get it hot. What direction will the friction polish spray off the pen as you spin it?
    - CA glue finish: Outside the scope of the demo. There are a bunch of youtube videos out there. This is my "go-to" finish for the pens that I make. The finish looks and feels like the clearcoat finish on your car.
    - Polymerizing oil, such as (boiled) linseed oil, tung oil, polyurethane, etc: Outside the scope of the demo.
- Remove from lathe, assemble the pen using a pen press (or the lathe as the press).
- CLEAN all the finishes, adhesives, etc. from your bushings, etc.!