

Legacy “Stick Shift with Reverse” Pen Kit

Assembly Instructions

Available at www.thewoodturningstore.com

Description:

The “Stick Shift” model is a single tube pen kit that uses a 3/8” tube and is one of the simplest pens to make, yet looks more complicated than it is. The mechanism is a simple push and lock of the stick shift. It is a full-size, mid-weight pen that is extremely popular with car enthusiasts, and can be very profitable, when assembled with a fine turned blank. The “Stick Shift Pen with Reverse” pen is exactly the same pen as our Stick Shift Pen, except the gear shift knob has an “R” instead of 6th Gear.

The Stick Shift pen uses a single 3/8” brass tube, that is 2 3/16” long. You do not have to worry about an “upper” and “lower” tube. The pen is usually turned straight to the diameter of the top and bottom bushings.

The Stick Shift pen is available in three finishes (Gold, Chrome, Gun Metal).

Getting Started:

You will need the following accessories to make a Stick Shift pen. Many of these accessories can be used with other pen kits. (All accessories are available at www.thewoodturningstore.com)

- 1 wood or acrylic blank, approximately 3 inches long x 3/4” x 3/4”
- 3/8” mm drill bit
- Woodturning pen mandrel with 7mm rod
- Stick Shift pen bushing set
- Pen barrel trimmer (3/8”)
- Glue (CA, epoxy or polyurethane [Gorilla])
- Lathe, turning tools, sandpaper, pen finish
- Other items may be needed as desired



Parts of the Stick Shift Pen Kit:



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Preparing the Blank for Turning:

- Start with your wood or acrylic blank and cut it so it is slightly longer than the pen tube, about 3” in length.
- Using a 3/8” twist drill, drill a hole through the blank. Be careful to drill slowly to avoid chipping and tearing the material. Also, it is highly recommended that you clamp the blank in a vise and use a drill press for the most accurate and straight hole. You could also mount the blank in a lathe chuck and drill the hole using your lathe.
- Roughen the surface of the brass tube with steel wool or fine sandpaper. Using one of the glues mentioned previously, glue the brass tube into the blank. Twist the tube when inserting it into the blank to insure good glue coverage. Center the tube in the blank, make sure the tube is at least 1/16” - 1/8” inside the blank so you can trim the blank end cleanly.
- Use a pen barrel trimmer (3/8”) to square the ends of the blank to the brass tube. This is an important step which will create a clean line between the turned blank and the metal components of the pen kit.
- Your blank is now ready to be mounted on the lathe.

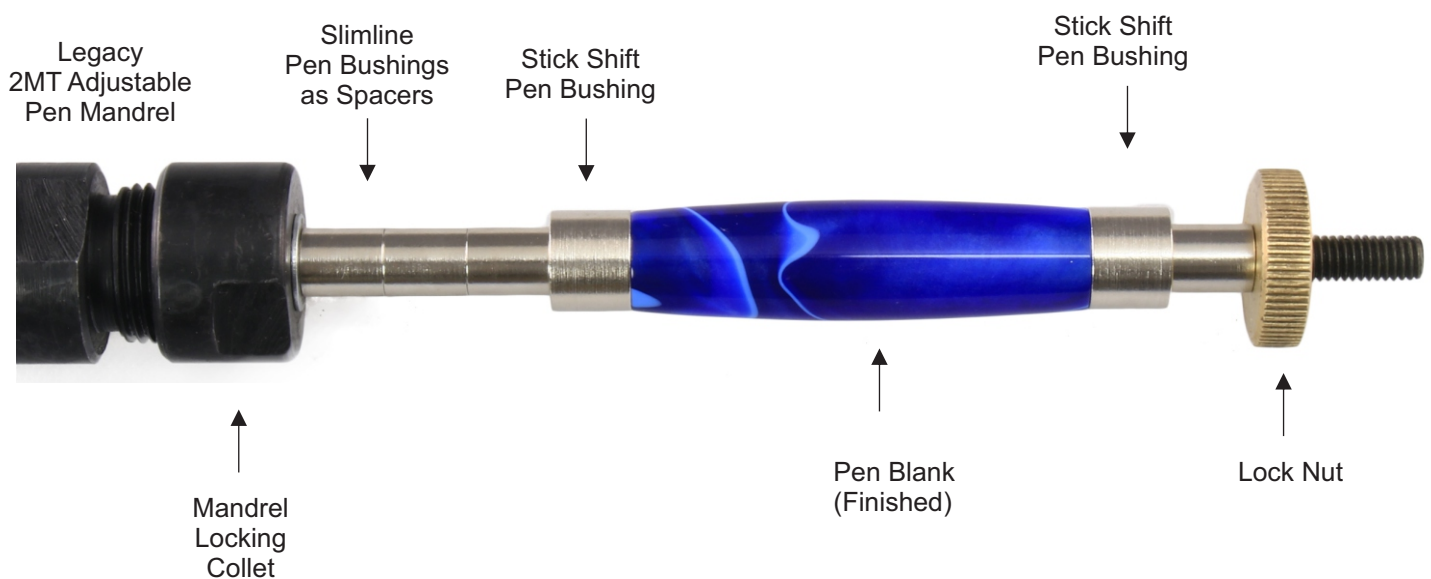
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Turning the blanks on the lathe

- Use a pen turning mandrel with a 7mm shaft and Stick Shift pen bushings (available at our store). You might want to add Slimline bushings to the shaft to move the pen blank away from the mandrel collet.
- Mount the pen blank on the mandrel as shown in the diagram below. Adjust the mandrel shaft so that the lock nut will tighten down on the assembly of pen blanks and bushings. Hand tighten the nut.
- Put a live center in your lathe’s tailstock and bring it in to support the mandrel shaft and keep it stable while turning.
- Using turning tools, turn the blank to a cylinder which is about equal to the diameter of the bushings.
- Note: Many turners prefer to turn the blank slightly oversize and then sand and polish the blank down to the exact size of the bushings.



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Sanding, Polishing and Finishing the blank

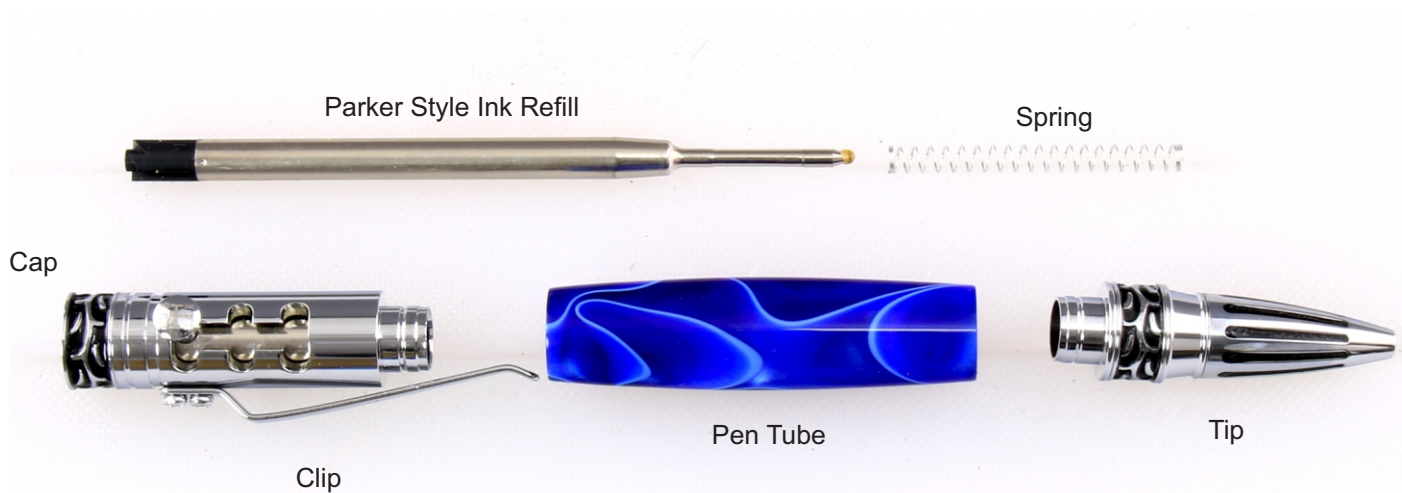
- Most pens are finished to a high luster and finished with a durable coating of protective finish. Depending on your skill level and the material being used, you will need to sand with aluminum oxide paper of progressively finer grits, starting with a grit coarse enough to remove all tool marks and possibly shape the blank.
- If you have turned your piece oversize or if it is rough, you can smooth and even shape your blank with 80-100 grit sandpaper. Use a high lathe speed (2000+ RPM) but be careful not to overheat your piece which could cause heat checking.
- Progress through finer and finer grits 120, 180, 240, 320, 400, 600, etc.
- For acrylic materials you can use sandpaper up to 1000 grit then switch to micro mesh pads (up to 12000) and polishing cream to get a superior glossy finish.
- There are many finishes available for pens and you can experiment with what works best for you and the materials you use. Try to use a finish which will be durable and long lasting because the pen will be handled thousands of times and you want the finish to stay on and not be worn away (especially if you have sold the pen!)
- Remove the blank from the pen mandrel and you are ready to assemble your pen.

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Assembly of the Finished Pen:



- Now that you have turned and finished the blank, you are ready to assemble your pen.
- It is highly recommended that you use a vise or clamp to assemble the pen. It is essential that you press the parts together “straight”. If you press the parts together and they are not straight, they will not straighten as you continue to press. There are many commercially available pen presses which make the process simple and easy.
- Before you press the parts together, lay out your blank with the parts so you can visualize how to assemble it. If you have turned your tube to have a “top” and “bottom”, now is the time to be certain of the orientation.
- Press the lower coupler into the bottom (tip) end of your turned blank.
- Press the clip assembly into the top end of your turned blank.
- Unscrew the tip from the lower threaded coupler.
- Insert the spring over the refill and place it into the open end of the lower coupler.
- Screw the tip over the lower coupler.
- Move the stick shift lever into the various positions to extend or retract the pen tip.
- Your pen is complete.
- To replace the pen refill, unscrew the tip assembly from the lower coupler.