



**Metro Pen Kits**

Product #154679, 154680, 154681, 154682



**General Instructions**

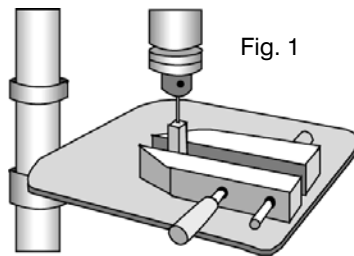
Whether you're a novice turner or a pro, you'll find these projects are all quick and easy to make. Using cut-offs and shorts, the type everyone saves but doesn't know what to do with, you'll find yourself making handsome, custom woodturning projects which are great for gifts or for sale. The following is general in nature, please refer to the instruction sheet on the opposite side for specific dimensions and sizes for your project.

**1. Cutting Blanks**

Cut wooden blanks to the size specified in the enclosed instructions. For your safety, be sure that the blanks are solid and have no holes, checks or other defects.

**2. Drilling Blanks**

Center and bore a hole through your stock as specified in the Project Instructions on the opposite side. The center of the blank can be located at the intersection of diagonal lines, drawn from opposite corners. All holes are easily drilled using a clamp and a drill press (FIG. 1). Before you start to drill be sure that your blank is at 90° to the drill press table. You may also chuck and drill the stock on your lathe.

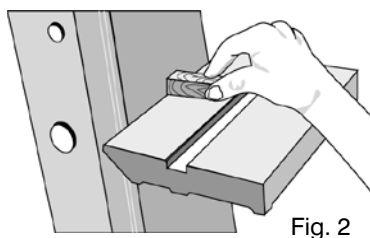


**3. Gluing Blanks to Tubes**

Rough the brass tube's surface with a fine grit sandpaper and use a quick drying CA type glue to secure the brass tubes into the blanks. Rotate the tube as you insert it to ensure maximum surface coverage of glue. If you find that CA glue is not providing adequate bonding, an alternative is any two part epoxy type glue.

**4. Sanding Blanks to Length**

Using a belt or disc sander, square the ends of the brass tube/wood blank. The blank should be flush with the brass tube on both ends. Care should be taken to not sand into the tubes (FIG. 2). If any excess glue remains inside the tubes it should be gently scraped out.



**5. Mandrel Preparation**

Woodcraft's new Pen and Pencil Maker's Mandrel system allows you to turn a variety of small projects without requiring the purchase of a unique, special mandrel each time. The only item you will need to purchase to turn new projects is the specially designed bushing set for the project of your choice. The mandrel is provided with either a #1 Morse Taper (141468) or a #2 Morse Taper (141469). If you prefer to use the mandrel in a three jaw chuck, simply loosen the Morse Taper set screw and slide the Morse Taper off of the shaft. Now the mandrel shaft may be mounted directly in your three jaw chuck. With the bushing sets specified on the project instruction sheet, mount your wood blanks and bushings as depicted for each project. With the mandrel mounted in your lathe, slide a bushing onto the mandrel, followed by a wood blank and a second bushing or spacer as required, followed by the second wood blank if required. With the wood blanks installed on the mandrel, secure the wood blank/bushing assembly using the washer and retaining nut provided. Bring up a live center in the tailstock to support the threaded end of the mandrel. Do not over tighten the tailstock or the mandrel will flex and bend causing oval shaped turnings.

**6. Turning Blanks**

Place your tool rest parallel and as close as possible to the blank. Rotate the blank by hand to ensure it will not touch the tool rest when the lathe is turned on. Using a turning speed of approximately 1,000 RPM begin turning the blank to a diameter slightly larger than the bushings. You can work the stock down to just short of the desired design or diameter by carefully scraping or sanding.

**7. Finishing the Blanks**

Blanks can be finished like any other wood project. Using a fine grit sandpaper, sand the blank until it is flush with the bushing for parallel sided projects or until the desired profile is obtained for custom projects. Use a wood filler, if desired, to fill any grain openings in the blank. Final sanding with a wet/dry paper will create a blank which is glass smooth. *Tip: We have found that use of Micro Mesh sanding paper (145982) after wet/dry sanding creates a perfect, glass smooth finish.*

**8. Assembly**

All parts should fit together as depicted in the parts diagram for each project. In some cases a pen press or machinists vise will be needed to completely press the parts together. Protect all plated parts from scratching by covering them with a cloth or thin pad before placing them in a vise. Proceed carefully, many of the kit components are delicate and uneven or excessive pressure will cause permanent damage.



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### 1. Cutting Blanks

Cut two 3/4" x 3/4" blanks. The shortest blank (Cap) will need to be approximately 1 15/16" long while the longest blank (Body) will need to be approximately 2 1/2" long.

### 2. Drilling Blanks

Using a 15/32" bit bore a hole lengthwise through the center of the shortest blank (Cap). Next using a 25/64" bit bore a hole lengthwise through the center of the longest blank (Body).

### 3. Gluing Blanks to Tubes

See General Instructions for details.

### 4. Sanding Blanks to Length

See General Instructions for details.

### 5. Mandrel Preparation

This pen uses a four bushing set (#154684), three large shouldered bushings and one small shouldered bushings. Two of the three large shouldered bushings will have a larger step diameter, these will be for the short blank (Cap). The smaller stepped bushing will be for the longer blank (Body). Slide one of the two larger bushings with the larger diameter step onto the mandrel with the shoulder, or lip, facing the tailstock. Slide the shortest blank onto the mandrel and over the lip of the first bushing, followed by the second large bushing, lip first, making sure the lip slides inside the blank already on the mandrel. Place the last larger diameter bushing with the smaller step diameter bushings on the mandrel with the lip facing the tailstock, followed by the longer blank, and

finally place the smallest bushing, lip end first. Make sure the lips of all the bushings are inside the respective tubes. Install the washer and the nut on the mandrel to secure the bushings/tubes. Do not over tighten the nut or damage to your mandrel may occur. If you are not using the Woodcraft Professional Mandrel you may have to make a wooden spacer to fill any gap on your mandrel between the bushings and blank assembly and threaded portion of your mandrel. Secure the bushings and blank assembly (and spacer if necessary) with the mandrel washer and nut.

### 6. Turning the Blanks

See General Instructions for details.

### 7. Finishing the Barrels

See General Instructions for details.

### 8. Assembly

#### Roller Ball Lower Barrel:

Begin by sliding Nib Decorative Ring (C) lip end first onto one of the two Nib Adapters (B) and press into the larger diameter end of the Lower Barrel (D). Next press End Cap (F) into the threaded end of the other Nib Adapter (B) then slide the Trim Ring (E) lip end first onto the other end of the Nib Adapter and press into the open end of the Lower Barrel (D). Slide the spring (large end first) into the open end of the Lower Barrel (D) followed by the Ink Refill (L), finish the assembly by threading Nib (A) into place.

#### Fountain Pen Lower Barrel:

Plug the pump (L) or ink cartridge (M) into the fountain pen nib (A), and screw assembly into the threaded body connector (B).

#### Upper Barrel (cap):

Slide the smaller diameter end of the Cap Thread Tube (H) into the Center Band Assembly (G) and press into one of the open ends of the Upper Barrel (I). Next slide the Clip (J) over the lip of the Finial (K) and press into the open end of the Upper Barrel (I).

