

# Stainless Steel Travel Mug Instructions



*Note: The finished mug shown was constructed using the stave construction method on page 2.*

The Travel Mug requires both spindle turning and hollowing skills. While a lot of the interior waste can be removed by drilling, you must be able to complete the interior diameter of the blank using lathe chisels. You'll need a faceplate or chuck for mounting the blank so you can hollow in from one end (a chuck is significantly easier to use). Read through all instructions before starting this project.

Because of the large blank size this project calls for, it's likely you'll have to glue material up to achieve the required dimensions. You can do this by gluing material face to face or by creating a stave assembly.

## TRAVEL MUG

- 1 Stainless Steel Travel Mug Liner
- 2 Finished Travel Mug

## MATERIAL LIST

	W x D x H
Wood Blank	3 <sup>5</sup> / <sub>8</sub> " x 3 <sup>5</sup> / <sub>8</sub> " x 7"
2 <sup>7</sup> / <sub>8</sub> " Forstner Bit	
2 <sup>1</sup> / <sub>2</sub> " Forstner Bit	
Tape	
Glue	

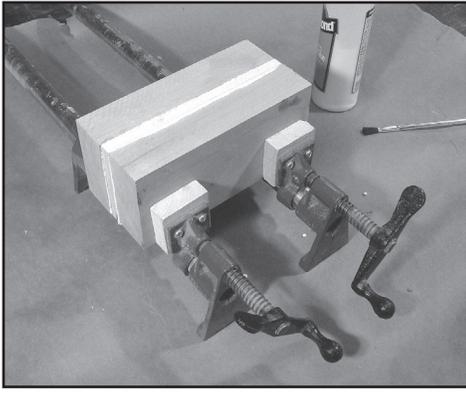


Fig. 1

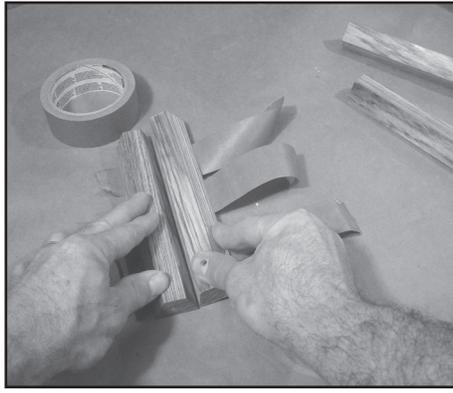


Fig. 2

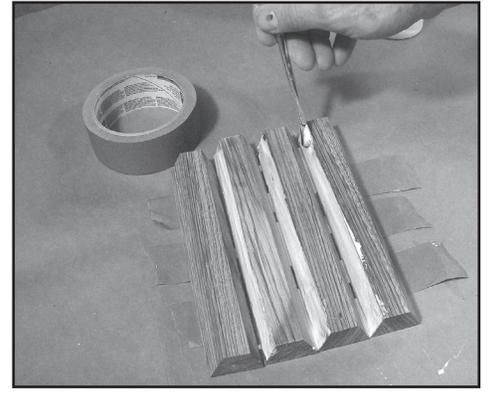


Fig. 3

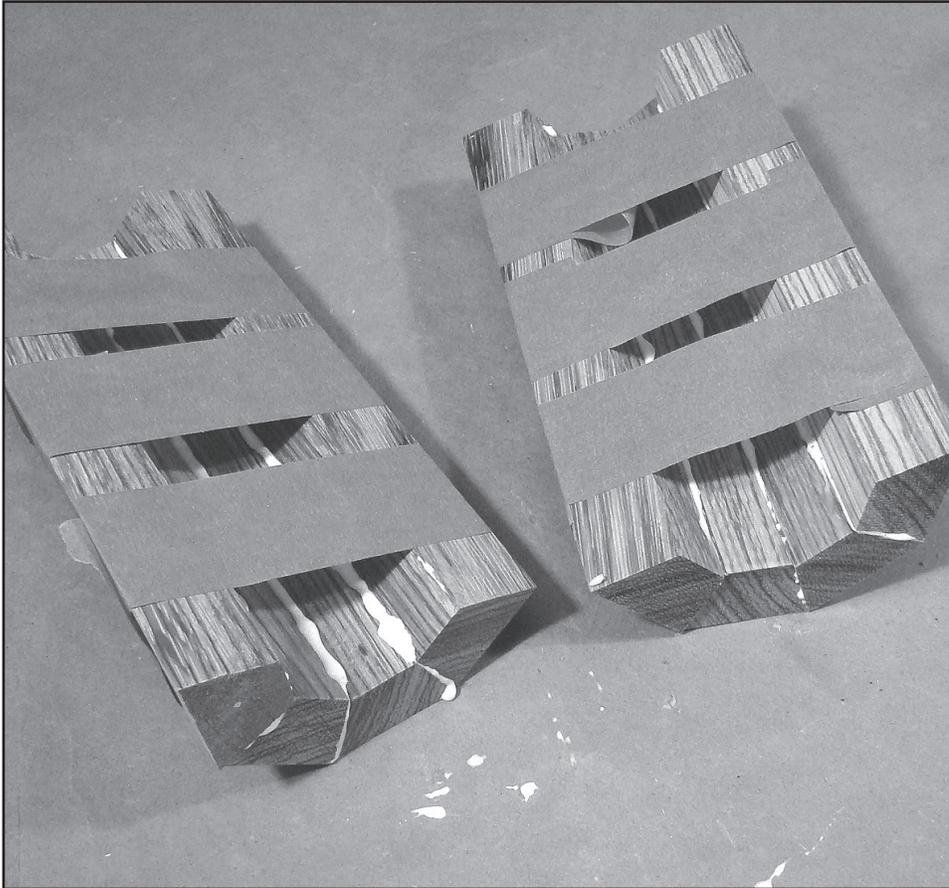


Fig. 4

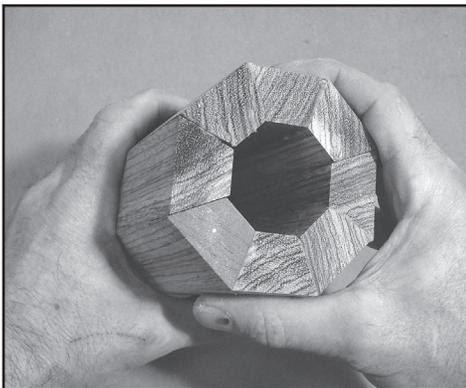


Fig. 5



Fig. 6

## Face-To-Face Construction

This is a great opportunity to use small pieces of scrap and create a unique mug by using contrasting woods. When preparing a blank by gluing pieces face to face be certain, before gluing, that each glue surface is dead flat. Clamp the material and allow it to dry overnight.

**Fig. 1.** Before turning this blank use the bandsaw or tablesaw to cut off the corners.

## Stave Construction

In order to get the correct inside and outside dimensions for turning the mug, material used for stave construction should be at least 7/8" thick.

1. Each of the eight staves, cut at 22.5 degrees, must be 1 1/6" wide from long point to long point.
2. Assemble each half by laying the staves, long point to long point, on strips of masking tape. **Fig. 2.**
3. Apply glue to the joints and use additional masking tape to draw the half-section closed. **Fig. 3 and 4.** Let the glue dry.
4. After the glue is dry remove the masking tape and test the final two joints. They should close seamlessly. **Fig. 5.** If they don't, gently sand the half-section on a piece of sandpaper laid on the tablesaw. **Fig. 6.**
5. Once the joints close, glue the two half-sections together. **Fig. 7.**
6. After the glue is dry remove the masking tape and cut each end of the blank square using the miter saw.

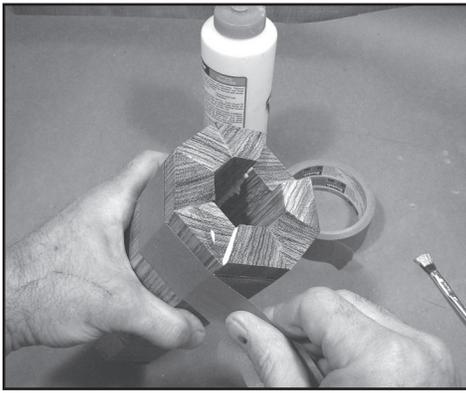


Fig. 7

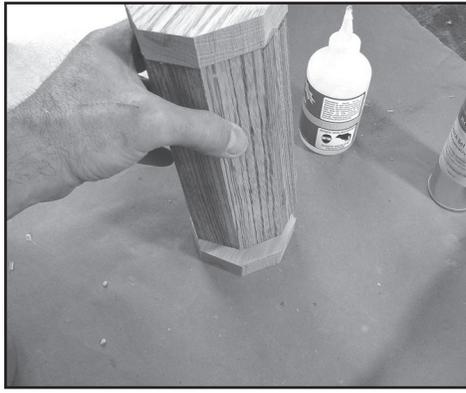


Fig. 8

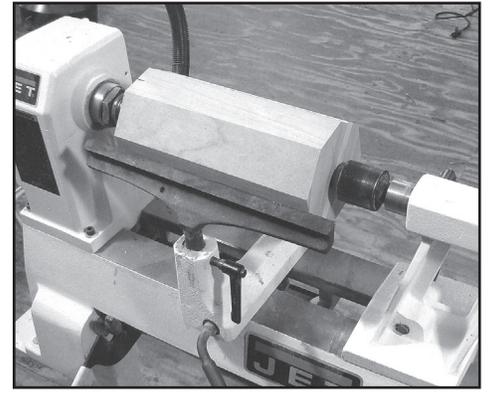


Fig. 9

7. Cut a pad of solid wood for each end. Do this by tracing the octagonal end onto a board and cutting to the lines on the bandsaw.

8. Glue the pads onto each end of the blank using CA (cyanoacrylate) glue. Fig. 8.

### Getting Started-Faceplate

1. Center the faceplate on the end of the blank and secure it with screws. Use sheet metal screws, which have deep threads and will get a good bite on the blank.

2. Thread the faceplate onto the headstock.

3. Position the live center against tailstock end of the blank.

4. Turn the blank round.

5. Carefully part off the pad on the tailstock end of the blank.

### Getting Started-Chuck

1. Mark out centers on each end of the blank. Mount it between the spur center and tail stock. Fig. 9.

2. Turn the blank round. Fig. 10.

3. Make a tenon on the headstock end of the blank that will fit into the jaws of your chuck. Fig. 11.

4. Remove the blank from the lathe, replace the spur center with the chuck, and mount the blank in the chuck.

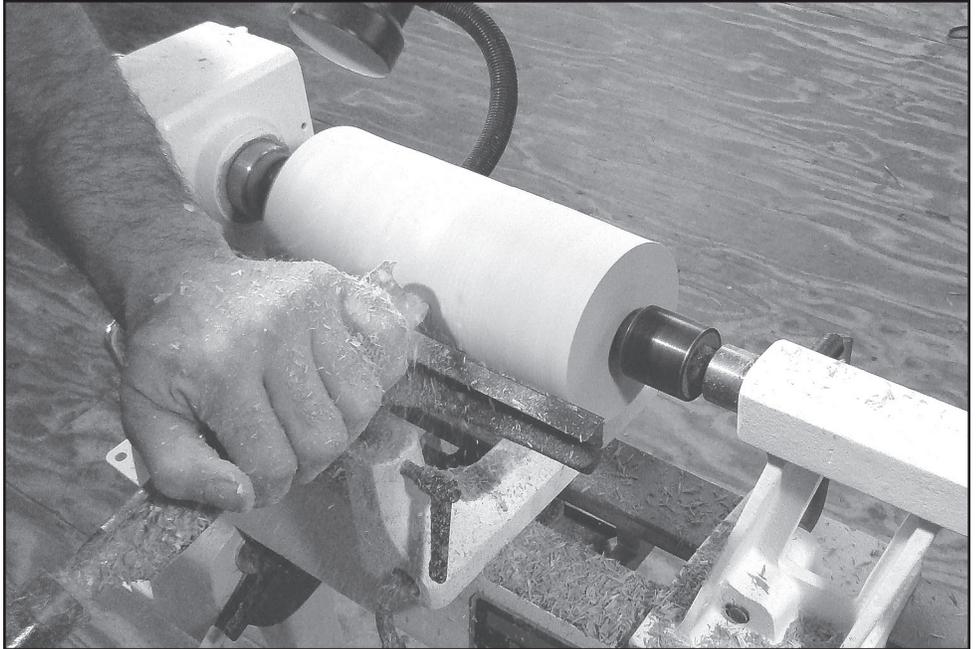


Fig. 10

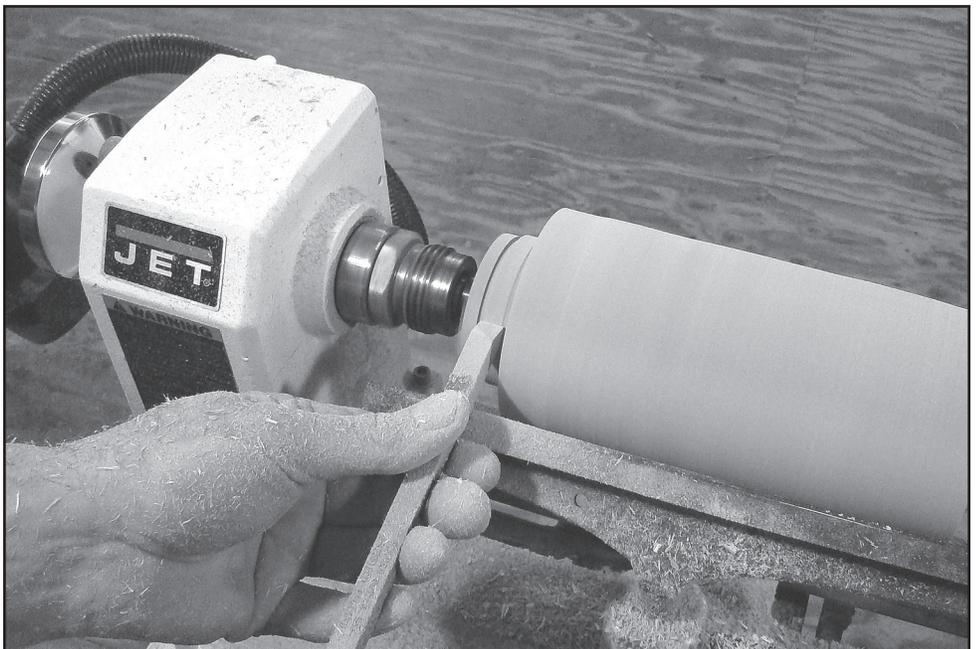


Fig. 11

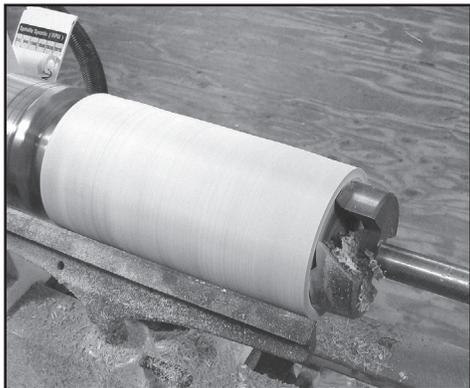


Fig. 12

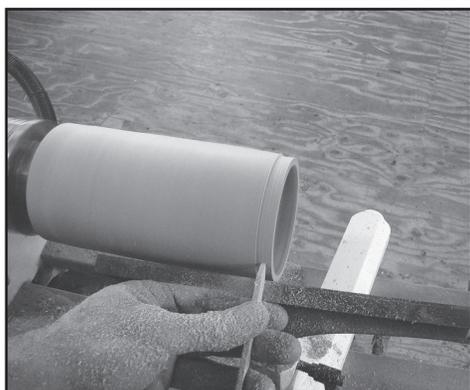


Fig. 13

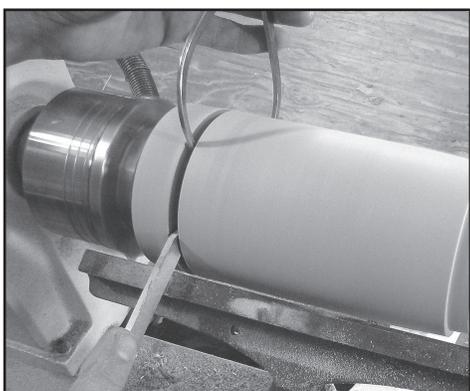


Fig. 14

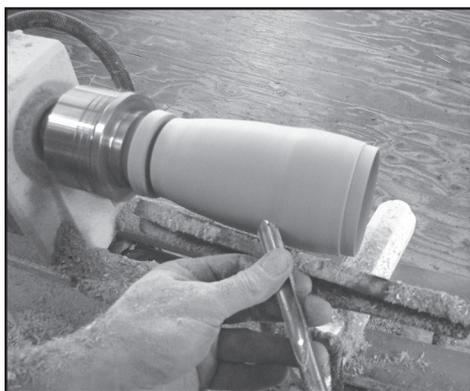


Fig. 15

## Turning The Mug Sleeve

Any material you can drill out of the blank will simplify the hollowing process. This step is easiest with  $2\frac{7}{8}$ " and  $2\frac{1}{2}$ " Forstner bits. If you don't have these bits, drill the largest hole you can and hollow the rest with a lathe chisel.

1. Mount the  $2\frac{7}{8}$ " Forstner bit in a drill chuck in the tailstock. Be certain to reduce the speed of the lathe to an rpm suitable for the bit.
2. Bore  $1\frac{1}{4}$ " into the end of the blank. Take it easy feeding the bit in. Drilling end grain, especially with this large bit, builds up heat. Excess heat can destroy your bit and your blank. **Fig. 12.**
3. Switch to the  $2\frac{1}{2}$ " bit. Drill a hole  $6$ " deep from the end of the blank,  $4\frac{3}{4}$ " beyond the bottom of the first hole.
4. Slide the tailstock out of the way. You now have two holes, stepped, inside the blank.
5. Hollow the blank by "connecting the dots" from the step at the bottom of the large diameter hole to the bottom of the  $2\frac{1}{2}$ " hole. Use a round nose scraper or similar hollowing tool. Stop the lathe frequently to check the fit between the mug insert and the hole. The insert must slip in all the way up to the rolled over lip on the mug insert.
6. When the insert slides all the way into the blank, make a mark  $3/8$ " down from the end of the blank. Use a parting tool cut a rabbet up to this line, making a lip that will fit under the rolled over lip on the mug insert. **Fig. 13.** Be conservative with your cuts, doing frequent fit tests. If the insert won't seat all the way in make certain it's not being restricted by the hole inside the blank before removing too much material from the rabbet.
7. When the insert fully seats into the blank, mark out the bottom of the turning. Do this by accurately measuring the depth of the hole in the blank, add  $3/8$ ", and place a parting line on the blank at this point. Part to the left of this line to define the bottom of the mug.
8. Use a parting tool and calipers to set the outside diameter of the base of the mug. Set the calipers to  $2\frac{5}{8}$ ". **Fig. 14.**
9. Shape the outside of the blank. Turn the top so it transitions nicely into the stainless steel insert lip. Gently taper the blank from top to bottom and add beads and coves as you like. Be aware of the wall thickness so you don't cut through. **Fig. 15.**
10. Sand and finish the turning. Polyurethane is an excellent choice of finish for this project, as it holds up to damp environments.
11. Part the blank from the lathe.
12. With a bead of CA glue inside the lip of the insert, push the wooden blank in place. **Fig. 21.** Allow the glue to dry.
13. On a stave constructed blank you can leave the hole in the bottom of the blank, fill the hole with epoxy, or turn a plug to fill the hole. On a solid blank you'll have a solid bottom if you accurately located the parting location in Step 7.

Hardware to complete this project is available from Rockler Woodworking and Hardware. Call 1-800-279-4441 or visit [www.rockler.com](http://www.rockler.com)



Fig. 16