

## Torus Vases

### BLANK LAYOUT

- 6-1/4" w x 7" h x 2-1/4" thick block. Block size is based on the 4-3/4" long, flared vase tubes I use.
- Mark centers on front and back faces, based on 7" x 7" block.
- Mark length center on top and bottom. Do not mark width center unless you know block faces are parallel.
- Mark circle on one face and cut waste using bandsaw. Do not cut off top and bottom marks.



### INITIAL SET-UP AND FACE CLEAN-UP

- Mount vase face sides between centers.



- Make cuts across front and back faces to make them parallel. Now you can mark the width centers on the top and bottom because you know you have the correct thickness.
- Cut an expansion chucking point in the face that a 4-jaw chuck can expand into. Cut it as close to the center as possible and no deeper than necessary.

### CREATE VASE TUBE HOLE

- Mount between top and bottom centers.
- Turn a tenon on the bottom, keeping the rest of the bottom as flat as possible.
- Chuck the blank on this tenon and drill most of the vase tube hole. Be careful that you don't drill too far such that the point of the drill bit goes too far. I use a brad point drill bit with the point ground off.
- Turn the curved recess around the test tube hole. Use a jig to determine proper depth and curve. Jig is dowel that matches vase tube diameter and a curved portion to match the shape of the curved recess you are making.



- Sand the recess.
- If using flared vase tubes, cut a rebate for the top of the flared vase tube using a bedan or small skew.
- Finish drilling the vase tube hole to the proper depth.

### TURN FIRST FACE

- Mount blank on expansion chucking point on face.
- Drill face hole. I use a 2-1/4" Forstner bit. Be aware of how close you get to chuck jaws. Hopefully you will drill right between them!
- Mark center line of outside edge to guide you in rounding the outside edge.
- Round the outside edge. First do the front face. Turn inside to outside.



- Then round back face. You may need to turn from outside edge to inside. Use light cuts because this can chip out.
- Have same curve on front and back. Use center line on edge as guide. Use the shape of the bottom and area around top recess to judge uniformity.



- Join the front face to the drilled hole. You will want a smooth curve from outside edge to inside hole. Turn into the hole, but try not to make hole too much larger.
- Sand the front face and blow and/or wipe off all sanding dust.

#### TURN SECOND FACE

- On the headstock, use a wood drum chuck with a flat face. Mount in chuck or faceplate or use MDF and tap to match spindle size.



- Add double-sided tape to drum chuck.
- Alternatively, you could build a specialized vacuum chuck.
- Bring torus disc up to drum chuck or vacuum chuck. Use a large cone attachment on the live center or use a 4-jaw chuck attached to live center

adaptor (pictured) or turn a loose jam chuck to fit hole in vase and mount that on live center.



- If you are using double-sided tape, keep the tailstock pressure applied for at least a minute before removing tail stock.
- Turn second face like you did first face, but use light cuts ... no catches! Make sure the two sides meet cleanly in the center of the hole.
- Sand the second face, including the center hole.

#### REMOVE BOTTOM TENON

- Mount jig you used to turn top recess in a 4-jaw chuck.
- Bring up tailstock on bottom tenon.



- Turn off as much as you can.
- Ensure the bottom is flat. Use straightedge to judge.
- Remove any remaining tenon with carving tools and/or burrs.
- Sand bottom as needed. A sanding disk mounted on the lathe along with a flat platform attached to a dowel and mounted in the tool rest post hole works great for this.
- Apply finish of your choosing.