Solid wood body, segmented feature ring

Transitional Vessels

A feature ring of segmented turning adds interest to these small vessels. Burl turning stock adds appeal and ensures stability.

By Jim Rodgers

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American Association of Woodturners

Transitional vessels highlight beautiful turning stock with a feature ring that adds minimal decoration. Although there are many different methods to construct this vessel, the one shown here is a simple and reliable method using two faceplates, a live center system, and standard lathe tools.

The two-faceplate method allows you to form the vessel as a whole unit, separate it into two halves, hollow the interior like a bowl, and then glue the parts together as a completed vessel. The chucking method for this technique has another important advantage over traditional chucking methods: You keep the components in alignment each time you remove and remount them from the lathe.

Because the diameter of the vessel is less than 4½", cross-grain movement should not be a problem. However, it's always wise to incorporate completely dried and stable hardwood (moisture content at 6–8 percent) into your segmented projects.

Note: Always make your glue blocks from a dense hardwood such as maple or ash. MDF, particleboard, or plywood could delaminate and cause an accident. Use high-quality machine screws to fasten glue blocks to the faceplates. Drywall screws are too brittle for this task. For this project, #8×1½" machine screws are a good match.

After you absorb the information in this article, view the step-by-step slide show on the AAW website. Follow the links from woodturner.org to the American Woodturner *tab.*

Get started

For turning tools, you'll need a ⅜"-deep fluted gouge, a narrow parting tool, a heavy-duty bowl scraper, and a ¼" shallow fluted gouge. You'll need two 3"-diameter faceplates; for these smaller projects, aluminum faceplates are acceptable. You'll also need a revolving center system and a Oneway thread adapter.

To machine the segmented sections, you'll need a cutting sled for your tablesaw. For details on building a 15-degree cutting sled, follow the journal links on the AAW website to the Winter 2005 issue, "Building a 15-Degree Cutting Sled." To prepare the segmented parts, make a sanding stick described on *page 24.*

The finished size for this vessel is 7x4½"; the size of the body defines the size of the feature ring. You probably have the materials for the body and segmented feature ring in your scrap box.

Select hardwood stock for a solid body, bandsaw it into rectangular stock, and cut it into bottom and top

portions. The bottom portion should be about 80 percent of the block. When the feature ring is built, it's diameter will be the widest diameter of the vessel and fit within the Golden Mean design consideration.

Select other components based on the size of the vessel: a base (usually a darker wood) and neck (possibly a burl of contrasting color or grain). The base width is normally about 50 percent of the final body and the neck about 30–40 percent of the same.

Cut veneers to the same outer dimensions of the body to emphasize the color transitions from base to body to feature ring to top of body and to the neck. Dark veneers sharpen the transitions.

Design and build the feature ring

The feature ring is a segmented ring built from an accent or decorative wood using veneers for spacers. A 12-segment ring is a good starting point. You can find the segment edge length on the "Segment Edge Estimation Table" posted on the AAW website.

Measure the diameter of the body and look up the segment edge length required. (Because there is little vertical curvature at the center of the vessel, a ¾" thickness is generous.) Cut the pieces with a cutting sled (**Photo 1**).

For more details on assembling the feature ring, see the article "Segmented Turning School" in the Winter 2005 issue of the journal. As detailed in that article, cut, sand, and glue together segments 1–6 and 7–12 by clamping them in a hose clamp and using two small dowels to separate the unglued segments (**Photo 2**). These dowels force any minor cutting errors to accumulate at the dowel pivot point. Use a polyvinyl acetate (PVA) glue such as Titebond II to glue together the pieces.

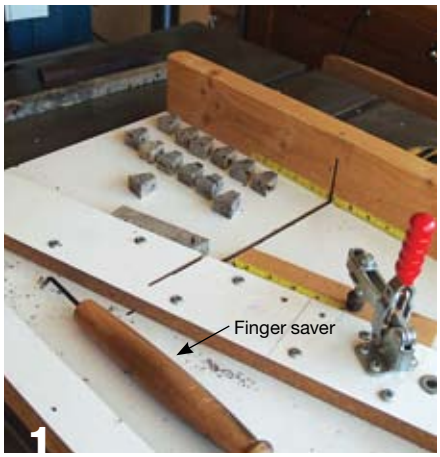
After the glue dries, sand the two half rings flat. Then glue and clamp the feature ring together.

Stack your vessel pieces to get a rough idea of the appearance and proportion (**Photo 3**).

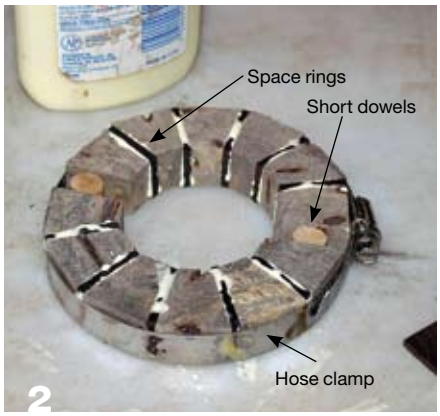
Prepare the faceplates

The glue surfaces must be flat for the components (subassemblies) to align well and for the glue to hold securely during turning. If the surfaces are flat, the feature ring will look crisp.

Flatten the glue block attached to the faceplate with either a deep-fluted gouge or a skew chisel laid on its side and worked as a negative-rake scraper. When you think the surface is flat, check it with a bright



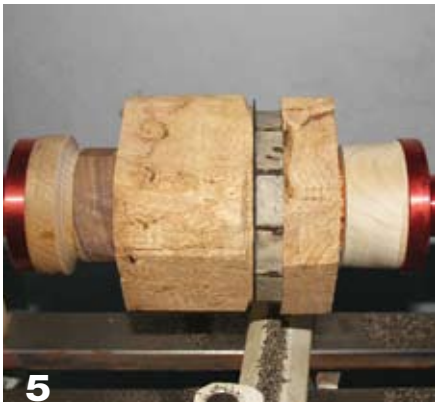
With a cutting sled, cut 12 pieces for the feature ring. The finger saver (a sharpened Allen wrench in a handle) helps hold and retrieve small segmented pieces.



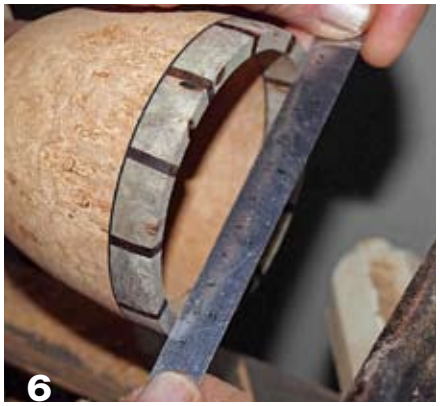
With two small dowels as spacers, use a hose clamp to hold two half rings together while the glue dries.

After assembling the feature ring, check the proportions of the vessel sections.

With the lathe running at a slow speed, flatten the glue block with a sanding stick.



Apply pressure to the assembly by tightening the tailstock quill.



True the edge of the mounted feature ring and check for flatness with a straightedge.

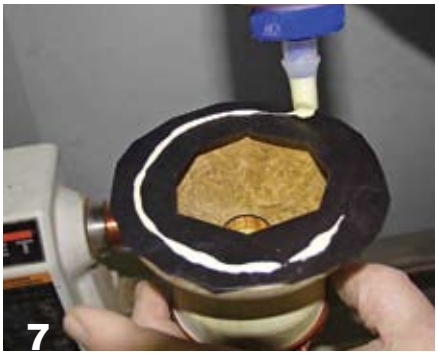
light held against a straightedge. No light shining through ensures flatness. When you get close to flat, use a sanding stick with the lathe running at slow speed (500–800 rpm) to finish flattening the block (**Photo 4**).

Build the assemblies

Sand the components, including the feature ring, flat on one side. To avoid mounting the wrong side on the faceplate, mark the exact center of the opposite side.

Glue the base to one of the faceplates and glue blocks. Then flatten the base as described earlier. After the glue tacks (about 5 minutes), remove the assembly and place it in another clamping device to dry. (I use my drill press.) After the base section is glued and removed, assemble the top to the second faceplate following the same procedure.

Remount the base and glue the lower body to it. If you insert a veneer between layers, you must keep a constant clamping pressure until the glue is dry. If you remove the clamping pressure too early, the moisture from the glue may crinkle the veneer and open the glue joint.



Dry-clamp the sections to test the fit and apply a bead of glue to the veneer section.

Align the two sections and apply clamping pressure with the tailstock.

After the glue dries, remount the lower body and use a sanding stick to flatten the assembly. Install the feature ring as the last layer on the bottom assembly. Repeat this procedure for the top assembly.

Turn the exterior shape

After flattening the abutting surfaces, press the two halves together. Mount the top assembly (faceplate, glue block, and turning stock) on the revolving center thread adapter. Press the two halves together, using the tailstock quill to apply pressure (**Photo 5**).

Then turn and refine the exterior shape of the vessel with a deep-fluted bowl gouge. Do not reduce the diameter of the base or neck section at this step; postponing this provides more strength during hollowing. Slide the top assembly out of the way.

Hollow the interior halves

With your ⅜" deep-fluted gouge, hollow the base interior using standard steps for hollowing a bowl. If your vessel is deeper than the diameter, you may find a large bowl scraper helpful. (I turn the wall thickness to 3⁄16" or ¼". When I later reshape the outside, I can correct for

Flattening Stick Improves Assembly

Make a flattening stick like the one shown at *right* from a 3⁄16" strip of 80-grit sandpaper. Adhere the sanding paper to the hardwood with 3M Type 77 adhesive.

alignment issues or problems generated during the initial shaping). Sand the interior to 180-grit and seal the interior. (I use a coat of 3-pound cut shellac.)

After the sealer dries, true the edge, check it with a straightedge (**Photo 6**), and sand it with a flattening stick. Repeat these steps for the top assembly.

Join the two halves

Remount the top portion onto the tailstock/live center adapter. Then attach the base to the headstock and glue together the two sections. First apply a bead of glue to the top. Then run a bead of glue around the veneer section (**Photo 7**). For accent, insert a sheet of veneer. The live center will help you get close alignment of the two sections (**Photo 8**). Use the tailstock to apply clamping pressure. Allow the glue to dry.

Part off the top section

With a narrow parting tool, part off the top section from the live center, allowing the entire vessel to rotate on the headstock. If your design includes a natural-edge neck, flatten the top and glue on the neck stock using the method described earlier.

Complete the shaping of the top/neck sections carefully. Increasing the lathe speed and using a ¼" shallow fluted gouge makes the turning task easier. Take your time and take light cuts, which will minimize vibrations.

Complete the vessel

Reduce the base to its final proportions (the vessel at *left* has a 1½"-diameter base). By adding a small parting cut at the exact bottom of the vessel, your eyes get a confirmation of the base shape. This will help you refine the shape before you begin sanding and finishing the vessel.

Finish the vessel while it is still attached to the faceplate. Sand to 220-grit and then apply three to five coats of a wipe-on polyurethane finish. Resand between each coat of finish with 320-grit sandpaper and use 0000 steel wool before wiping on the final finish.

Finish the base

Part off the vessel with a thin parting tool angled slightly toward the tailstock to create a small concave shape on the bottom. If you fear catching the vessel with a lathe tool, stop the lathe with a ½" tenon still remaining. Then saw through the remaining tenon (I use a Japanese pull saw) and remove any tenon remnants with a small carving tool.

With a small sanding disc mounted in the lathe or drill press, carefully sand the remaining center of the foot and repeat the finishing steps *above*.

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Understanding Cross-Grain Glue-Ups

I have built these transitional vessels for five or six years and have made quite a few for gift shops and galleries. They have ended up in collections in both dry and humid locations, and I have never had one come apart. Maybe it is luck, but I believe that there are mechanical considerations that also help with the construction:

- Keep the size of the vessel small for several reasons. Due to their cross-grain structure, burls aren't affected much during seasonal wood movement. Also, a small piece is easier for the vacationing customer to pack, less costly for the galleries to sell, and you use more shop scraps.
- For the body, I use only burl woods that I have dried for several months. Burls are stable and don't move. In my area, maple and redwood burl are readily available and sell well when incorporated into a vessel.
- The glue that I use is Titebond or Titebond II, which will creep with the wood movement. I never use cyanoacrylate (CA) glue because it doesn't move with the wood.
- The glue joints are as tight as I can make them. The rings and the face of the burl are flattened and sanded with the sanding stick. If I insert veneer, my clamps keep positive pressure for 3–4 hours before next construction stage.
- All wood is sealed inside and outside, which minimizes absorption of moisture. As the vessels are constructed, I apply shellac inside. If they are more open in design, the inside is finished with a urethane oil varnish such as Waterlox or Minwax Wipe-On Poly.

—Jim Rodgers