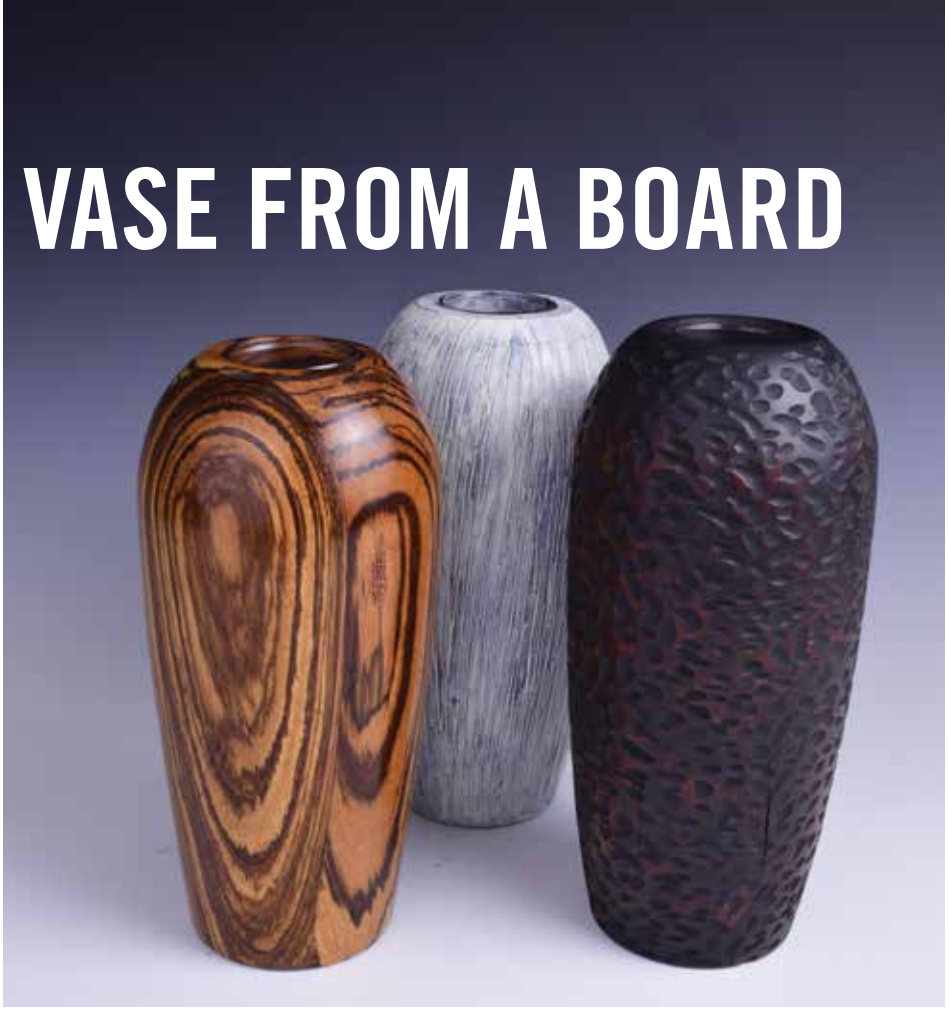
FUNCTIONAL VASE FROM A BOARD

Dennis Belcher

Photos by Jeff King.



All woodturners have limitations. We might be constrained by our equipment or our own bodies. Here is a project that does not require a chain saw, heavy lifting, an extensive shop, deep hollowing tools, a truck, or a strong back. To prepare turning blanks for these vases, I use a table saw and chop saw, but you could also use a portable circular saw if need be. Clamps and some wood glue complete the list of necessary tools, other than a lathe and a basic set of turning tools.

The idea is to glue up a vase blank from just one board, rather than turning it from a solid block of wood. A glass tube insert, which can be purchased online from woodturning supply outlets, allows you to use the vase with water. No hollowing necessary.

A wide range of woods can be used. When carving or texturing the vase, cherry and maple are my favorites. Glue lines vanish when the vase is textured. Figured woods also work well, but when showcasing the natural beauty of wood, glue lines will be more visible.

Material prep

Have the glass insert on hand before starting the project. The insert I use measures about 1 13/16" (46mm) in diameter and 7½" (19cm) tall. Adjust the vase opening dimensions and height to the insert you use. Start with a board at least 4⅝" (12cm) wide, 1" (25mm) thick, and 31" (79cm) long (*Photo 1*). Boards less than 1" thick can be used but will limit the potential curve on the form's outside profile.

As shown in *Photo 2*, the turning blank comprises six 1"-thick pieces cut from the board:

- Two wide sides, each 4¼" × 8½"
- Two narrow sides, each 2¼" × 8½"
- Two end caps, each 2¼" square

The board's edges should be straight and true. Any irregularity in the edges

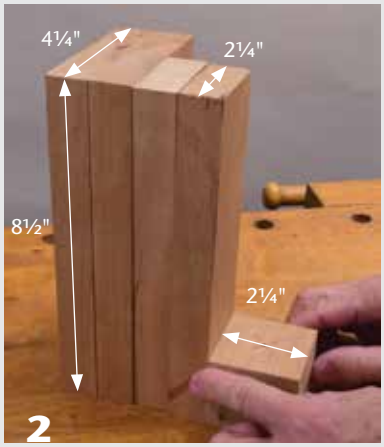
From a single board

1

This vase project is made from one 31"-long board, cut into sections and glued up in a blank. Glass inserts of various sizes can be purchased online.

Cut pieces to size

Cut two wide sides, two narrow sides, and two end caps. Confirm that the four sides are of consistent length and that the end caps and narrow sides are of consistent width.



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will cause a gap in the glued form. My table saw has a fine-cut blade that produces a crisp, straight edge with no saw marks. A hand plane, or power jointer, can also be used to achieve true edges.

I use a table saw to cut the boards to width and a miter saw to cut them to length. Small boards such as the end caps can be dangerous to cut. The safest way is to cut them from the board while it is still long enough to keep your fingers at a safe distance from the blade. Following is a suggested cutting sequence that will lessen the hazard of cutting small boards:

1. First, true one long edge the length of the uncut board, and square up both ends.
2. Crosscut the two wide sides to length (8½") and then to final width (4¼").
3. From the remaining length of the board, rip a strip 2¼" wide.
4. True up the sawn edge, then rip a second strip 2¼" wide.
5. Crosscut an end cap from each of those two strips, 2¼" long.
6. Crosscut the two narrow sides to length from the remaining strips, 8½" long.

The faces of the boards are of little concern. One face will be inside the vessel and will not be seen, and the outer faces will be turned away.

To lessen the amount of movement of the glass insert in the completed vase, drill a shallow hole 1¾" (4cm) in diameter centered on the inside of each end cap (*Photo 3*). The glass inserts I use have a slight curve at the bottom, which will sit in this hole, or recess. As an alternative, the recess can also be formed on the lathe using a parting tool (*Photo 4*). Which end cap will be at the bottom of the vase will not be determined until glue-up is completed, so form this recess in both end caps. Note: Avoid drilling deeper than ¼" (6mm), as this will lessen the hold of the screw chuck we'll use to mount the glue-up on the lathe.

Form recess in end caps


3


4

Two ways to form a recess in the end caps. Either drill a 1¾"-diameter hole ¼" deep, or turn the recess on the lathe using a parting tool. The shallow recess will restrict movement of the glass insert once installed.

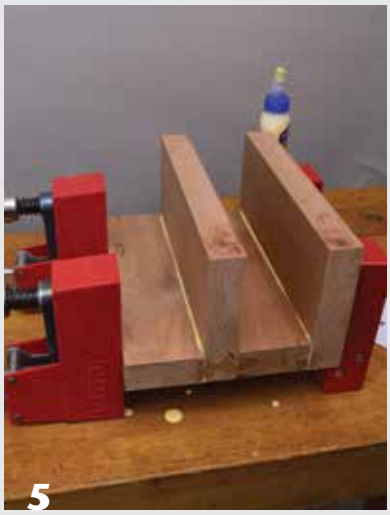
Glue-up

Apply glue liberally to the edges of one narrow and one wide board as a set. Glue up each set separately, rather than attempting to glue all six pieces at the same time (*Photo 5*). My preference is a yellow carpenter's glue as the adhesive.

It is important that the excess glue be removed from the first inch on the inside of the joints. The end caps will need to come in full contact with all edges, and any dried glue can cause a gap.

After the glue has cured on the two side sets, glue and clamp the end caps to one pair of sides. Then glue the two side sets with end caps together (*Photos 6, 7*). The result is a closed box with 1"-thick walls. ▸

Glue up turning blank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One set of clamps can be used to glue both pairs of sides at one time, even though they are not being glued to one another just yet.


6

Glue the end caps to the sides.


7

Mate the two sets for final glue-up. Be careful to not starve the joint for glue.

Turn a tailstock plug/jam chuck

From scrap wood, turn an aid that will serve two purposes, first as a hole plug, providing a surface for the tailstock live center to make contact, and later as a jam chuck for reverse-mounting the vase to complete the bottom.

Locate centers accurately

It is important to locate the turning centers on the glued-up blank accurately.

True bottom, mount on screw chuck

With the blank mounted between centers, bottom of the vase at the tailstock end, use a parting tool to clean up any irregularities in the surface.

Flip the piece around and mount the bottom end on a screw chuck.

Drill and fine-tune insert opening

Use a Forstner bit to drill a hole in the vase top to accept the glass insert. Enlarge the hole as needed using the point of a skew, test-fitting the insert until it fits with little play.

Prepare tailstock plug

Before mounting and turning the vase, we need to prepare a plug that will be used to allow the tailstock live center to support the workpiece after the glass insert hole has been drilled. Turn a plug with a clean shoulder and a taper to center it in the glass insert hole, which will be drilled with a 1¾" Forstner bit. Mount scrap wood between centers and turn the plug (*Photo 8*).

Mount and drill

With the glue fully cured, find the center points on the two end caps (*Photo 9*). If the center points are not set accurately, wall thickness will be inconsistent, increasing the risk of blowing through the side. Now determine which end will be the top and which end the bottom. The end cap with the most visible glue-joint gaps should be at the bottom. Create a dimple at the center point on both ends to aid in mounting the box between centers.

My holding method of choice is a screw chuck, or wood worm. Drill a pilot hole centered in the end cap, sized to correspond with the shaft diameter inside the threads of your screw chuck. My screw chuck has an inner shaft diameter of about ⅜" (9.5mm), so I use a ⅜" drill bit.

For a solid screw-chuck hold, the wood surface registering against the jaws of the scroll chuck must be true and flat. So before I mount the glued-up box on the screw chuck, I mount it between centers, bottom at the tailstock end, and use a parting tool to remove any unevenness across the bottom (*Photo 10*). I am then able to mount the workpiece on the screw chuck (*Photo 11*). Thread the box onto the screw chuck until the flat end seats solidly against the tops of the chuck jaws.

Drilling the insert hole before shaping the vase retains maximum

JOURNAL ARCHIVE CONNECTION

EXPLORE!

Want to learn more about using the lathe as a drilling machine? See Dennis Belcher's August 2019 *AW* article, "A Primer for Drilling on the Lathe" (vol 34, no 4, page 18). Log on at woodturner.org and use the Explore! search tool.

Turn vase round

14 Position the tailstock plug you turned earlier to give the live center a surface to contact. Tailstock support will increase stability while shaping the vase.

15 A spindle-roughing gouge is used to turn away the edges of the box.

mass and rigidity for drilling. The glass insert will vary in diameter over is length. Drill a 1¾" hole and then enlarge the hole using the tip of a skew chisel until there is a tight fit to the insert (*Photos 12, 13*). Making the hole too large allows the insert to rattle at the top of the vase. Take your time and creep up on it, test-fitting as you go until the insert slides all the way to the bottom.

Shape the vase

Before shaping the vase, place the tapered plug you had turned earlier into the insert hole and bring up the tailstock for support (*Photo 14*). A spindle-roughing gouge is the appropriate tool to take down the edges (*Photo 15*). It is good practice to stop the lathe before moving the tool-rest as the diameter of the turning decreases.

With the piece roughly rounded, stop the lathe and consider what the final shape should be. Remember, the sidewalls are only 1" thick, so be careful not to cut through a wall. This limited amount of material means you should decide on a shape before a tool touches the wood.

Focus on the diameter at the top and bottom, as these two areas are critical to achieving a pleasing form. The top and bottom of a vase should never be the same size. In this case, the top diameter is set by the size of the insert hole, plus a margin of wood. This equates to a top diameter of approximately 2½". The jaw size of the scroll chuck impacts the bottom diameter. Using a smaller chuck allows greater freedom in setting the bottom diameter. A diameter of 2¾" to 3" (7cm to 8cm) for the bottom keeps the form from looking bottom heavy and is pleasing to my eye.

Draw a pencil line where you want to position the curve change (*Photo 16*). With a bowl gouge, cut from this line to the bottom and then from the line to the top, striving for a cut line with no valleys or ridges. To gauge whether you are about to go through a wall, watch the amount of end cap showing. When the full thickness of the end cap shows, you have turned through the wall.

As you refine the curves on your vase, inspect the glue joints closely. Fill any holes or gaps with a mixture of glue and sanding dust ▸

Considering Vase Shapes

One important design consideration is the point on your vase where the curve changes direction. At what height should this transition point be placed? Think in terms of 20/80, 30/70, or 40/60. Moving the point at which the curve changes alters the look of the form significantly.

Turn several vase forms with differing change points, and see which is most pleasing to your eye. Training your eye can be more important than learning how to turn the vase itself. I prefer a curve change at about 25/75, or about one-quarter of the way down from the top.

Design and shape vase

16 Mark the curve change point on the vase, then turn it to your desired shape.

(*Photo 17*). The wood fibers in the mix will keep the repair from being highlighted by your finish. Allow the glue to dry before sanding flush.

Sandpaper presented diagonally across the vase is the final step in refining the shape (*Photo 18*). The wide surface area of the strip of sandpaper will knock down any high spots. I prefer a grit of 150 to 180 for this operation, followed by 220 grit. Coarser grits leave sanding marks that are difficult to remove. Finally, sand through the higher grits. I reverse the direction of lathe rotation with every change of grit.

Complete the bottom

Remove the vase from the screw chuck and reverse-mount it to complete the bottom. Since the vase is sanded smooth, it can be very difficult to grip it by hand to unscrew it from the screw chuck. I find that an oil-filter strap wrench helps immensely (*Photo 19*).

Use the tailstock plug you had turned earlier as a jam chuck to drive the vase. Mount the jam chuck in a scroll chuck at the headstock, and true it up. Position the vase's mouth on the jam chuck, and bring up the tailstock to apply holding pressure. Many tailstock live centers will register nicely in the screw chuck hole to center the vase (*Photo 20*). If yours does not, glue a dowel in the hole and center the tip of your live center on the dowel.

Complete the base by turning a shallow depression in the center so it will sit solidly on a table. Glue a plug in the screw chuck hole and sand, blending it into the surrounding area.

Final thoughts

This technique, allowing you to make functional vase forms from a single board, can be scaled up or down. *Photo 21* shows a taller vase made using the same process. The diameter of the blank can also be adjusted to allow for a wide range of projects. The vase can be painted, carved, or textured according to your preference. But what really makes it a winner is when you present the vase to your spouse with a bouquet of flowers in the center. ■

Dennis Belcher retired from a 30+ year career in the investment world to his lifelong passion of working with wood. A member of the Wilmington Area Woodturners Association (North Carolina), Dennis demonstrates for clubs and participates in juried art shows. Contact Dennis at Dennis.M.Belcher@gmail.com or visit his website, DennisBelcher.com.

Fill voids, sand

17 Fill any gaps in the glue joints with a paste of sanding dust and yellow glue.

18 Hold a strip of sandpaper diagonally against the form to smooth out high spots. Note that the toolrest has been moved out of the way.

Remove vase from screw chuck

19 A strip wrench is invaluable in gripping the completed vase when removing it from the screw chuck.

Reverse-mount, complete bottom

20 Mount the scrap jam chuck turned earlier in the scroll chuck. Then reverse-mount the vase, positioning the hole in the top on the jam chuck. Tailstock pressure holds the work in place as you complete the bottom.

Variations on a theme

21 The vase-from-a-board technique can be scaled up to larger forms, such as this 14"- (36cm-) tall version made from a 2"- (5cm-) thick board.