



Photo: Mike Mahoney

# Spherical Box

By Christian Delhon  
Photos: Deryl Duer

It's a ball that begs to be handled. It's a box that stirs your curiosity. It's a container that will open your eyes.

At the Utah Woodturning Symposium, French woodturner Christian Delhon held attendees on the edge of their seats while he effortlessly hollowed and shaped a chunk of maple into a lidded box. Not content to stop there, he added beads to half of the ball before dividing the other half into eight segments.

With Christian's commentary, Deryl Duer's helpful step-by-step photos, and a sprinkling of illustrations, we're confident you're up to the task of completing this project. Let's roll.

## Get started

For tools, you'll need a  $\frac{3}{8}$ " spindle gouge or  $\frac{3}{8}$ " bowl gouge, parting tool, and ring tool. I also use a bedan and a custom-ground V-tool from a spindle gouge as shown in the sidebar on *page 49*. You may get similar results with a point tool. For chucking, this project requires a 4-jaw self-centering scroll chuck and two 4-prong drive centers.

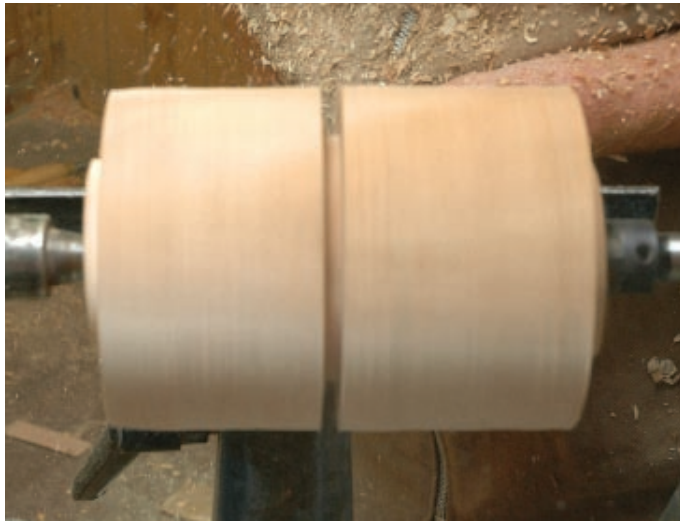
For turning stock, I selected a 5×5×5" block of seasoned maple. You'll also need a 6½×6½" block of green wood for a jam chuck.



**3** With a bowl gouge and a ring tool, begin removing stock from the unchucked end. The depth should match the interior radius of the ball. This ball has a 4"-diameter interior.



**4** To form the mortise shoulder, use a parting tool or bedan to remove stock. This joint is 1 cm deep (about  $\frac{3}{8}$ " ) and is half the thickness of the box. Once you're satisfied with the profile, sand through 150, 220, and 320 grits. Then by hand, apply a penetrating finish of your choice.



**1** Mount the piece of 5×5×5" stock between centers. True the ends. After turning a cylinder with a spindle or bowl gouge, true up both ends with a  $\frac{3}{8}$ " spindle gouge or  $\frac{3}{8}$ " bowl gouge. Then, create a  $\frac{3}{8}$ " tenon at both ends to hold the piece in your 4-jaw chuck. (My tenons are  $\frac{3}{8}$ ×2½".) With a parting tool, cut the turning stock into two equal parts.



**2** Mount one end of the piece in a 4-jaw chuck, then true up the unchucked end with your spindle or bowl gouge.



**5** Clamp the bottom half of the ball onto a 4-jaw chuck and remove stock with a bowl gouge and ring tool, using the same steps described above.



**6** Record measurements from the top of the ball (mortise) to cut an accurate tenon. To create an accurate joint, I measure the inside of the completed piece and adjust the second piece. With a parting tool, slowly reduce the tenon diameter to accept the lid. Remember that every fitting cut removes double what you think. Aim for a fit that is tight enough to hold the lid on the base while turning the outside of the box.



**9** Accent the assembly joint with a V-tool (see the sidebar on page 49) or point tool.



**7** After you're satisfied with the fit, hollow out and finish the base as described above with the bowl gouge and ring tool. The radius should match the lid plus 1 cm (about  $\frac{3}{8}$ "), equal to the depth of the tenon.



**10** With a caliper, measure the outside diameter of the ball, then use a pencil to mark half of the distance from the center joint. Then mark the center of the piece with a pencil.



**8** Reassemble the two halves and secure them between centers. Adjust the assembly as necessary. With a bowl or spindle gouge, remove any discrepancies created when turning the joint.



**11** Reduce the stock surrounding the spurs of your drive centers, taking care not to remove the pencil lines defining the ball diameter.



**12** With a detail gouge, remove stock to form half of the sphere. To make this step foolproof, you may wish to cut a plywood template to guide you in shaping the profile.



**15** Put the assembled ball in the jam chuck, being careful to place the assembly joint exactly perpendicular in the hollow. Use the tailstock to help with this alignment. Jam the sphere into the hollow by tapping lightly underneath. Remove rough areas with a detail gouge, taking light sweeps in the direction of the jam chuck to avoid accidentally popping out the ball.

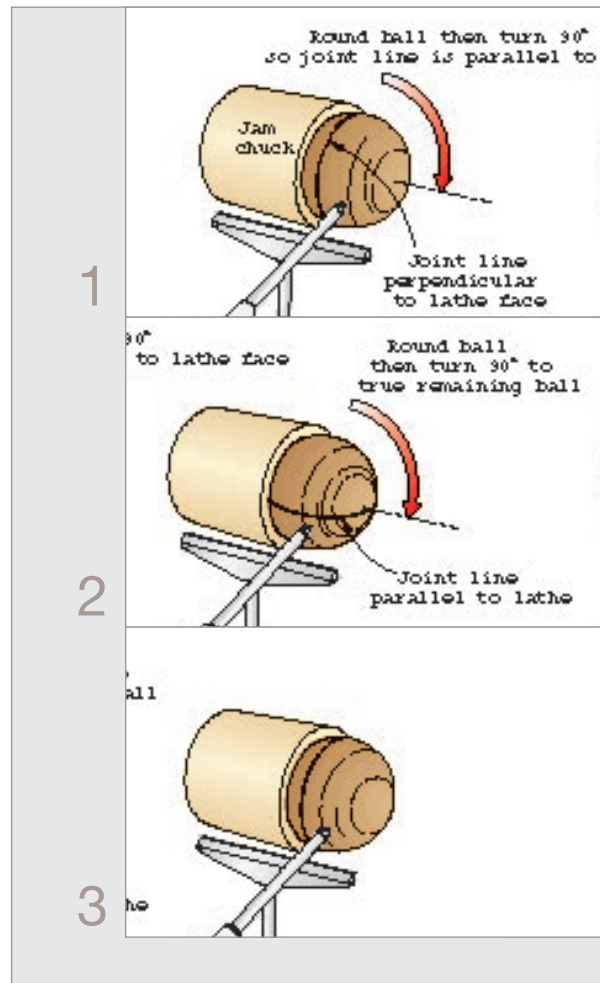


**13** Slow down the lathe to about 50 rpm (or the slowest setting possible), then use a detail gouge for the final touches. To help separate the pieces, use a parting tool. Do not force apart the two sections; doing so may tear off fibers in your joint.



**14** Before proceeding, make a jam chuck from green wood, which provides elasticity in the wood fibers you'll need to successfully grip your turned wood halves. Form the jam chuck by removing stock with a bowl gouge and ring tool. Use a ruler to monitor this step as shown above.

### 3 steps to a round ball





**16** Frequently monitor the smoothing process by stopping the lathe and by running your finger over the piece to check for the feel of a false curve.



**19** With a pencil, draw rings on the bottom of the ball. Carve the grooves with a custom-ground tool as shown opposite below or with a point tool. With a detail gouge, cut the beads and add finishing touches. Then sand to 320-grit smoothness.



**17** Mark two pencil lines approximately 1/4" from the joint. These pencil lines reference what not to remove. At this point, it is important to cease stock removal at the joint. Otherwise, the ball will not end up round. Sand the piece to finish smoothness.

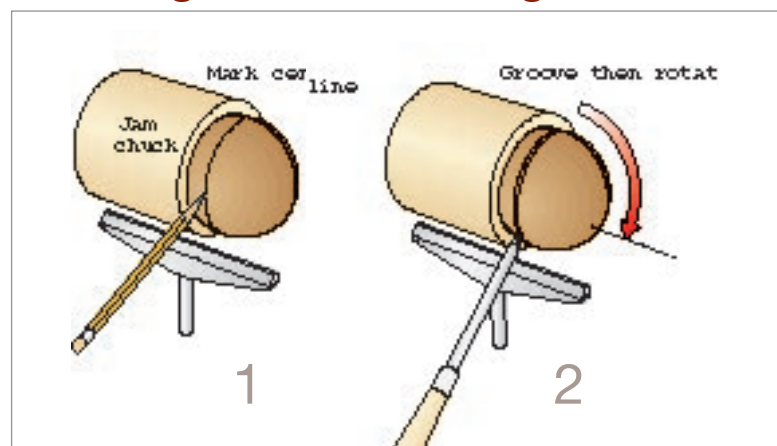


**20** Return the ball to the jam chuck—this time with the grooved half facing inward and the assembly joint parallel to the hollow. With the lathe turning, mark the tip of the ball with a pencil. Then, divide the sphere's diameter into eight segments. The drawings below and a compass may help you lay out this step.



**18** Turn the ball 90 degrees so the assembly joint is now parallel to the hollow. Repeat the detail steps performed previously. When finished, the ball should be round on the outside.

## Detailing the ball into segments





**21** Position the joint of the sphere at a 90-degree angle to the hollow. Use light pressure to lock the piece in the jam chuck. Rotate the lid by hand to verify the correct position.



**23** While the lathe is stopped, verify that your traced markings and the tip are on the same layout. This is important to ensure accurate segments. You can also trace the grooves with a wooden pencil. This will help you visualize any errors early on and also will help properly position the half-sphere in the hollow.



**22** With light touch, gently remove stock for a groove about 1/16" deep. Stop the lathe frequently to monitor progress. This groove should follow the pencil mark from steps 20 and 21.



### Christian's custom tool

To make the grooves in the spheres, I ground an old spindle gouge as shown above to a shape similar to a V-tool. You may be able to accomplish similar results with a point tool. —Christian Delhon

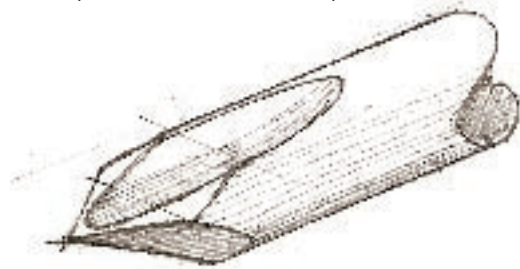
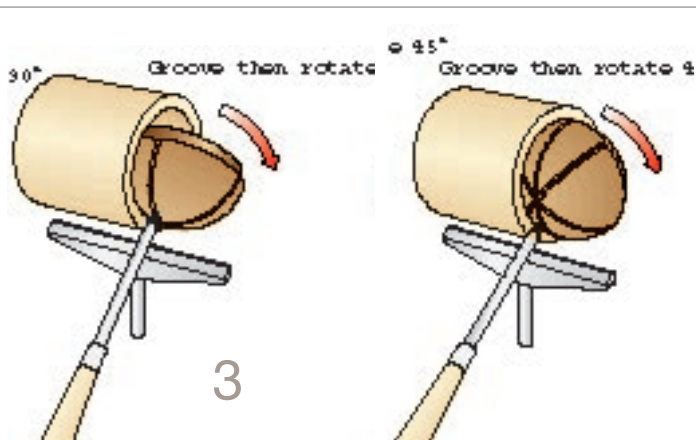


Illustration: Angelo Ifrate



Illustrations: Roxanne LeMoine

A cabinetmaker by trade, Christian Delhon has been woodturning for more than 10 years. He has demonstrated his turning projects—inspired by 18th-century work—at many international events. Christian ([christiandelhon.com](http://christiandelhon.com)) lives in Rue des Halles, France.