

Turning Sphere Boxes

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Tools & Supplies

- Roughing gouge
- Spindle or bowl gouge
- Parting tool
- 3/8" Beading and parting tool or straight skew
- Round nose scraper
- Mallet
- Four-jaw chuck with smooth dovetail jaws
- Live center with removable point (or live center and separate cup center)
- Drive spur
- Masking tape
- Sand paper

Wood—two pieces

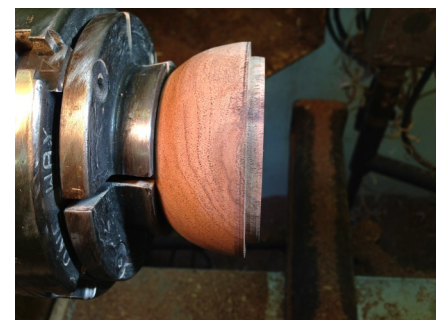
- Sphere box
- Slightly longer than diameter - suggest 3" square, 3.75" long, not smaller than 2" for first one, Length needs to account for a tenon to hold the blank in a chuck as well as the tenon length of the box, plus parting in two space.
- Must be dry or wood that doesn't move much
- Harder woods are better
- Jam chuck—see my Turning a Sphere notes for how to make the jam chuck.
- Slightly larger in diameter than sphere piece (suggest 3.5" square)
- About same length as sphere piece, but can be shorter

Process

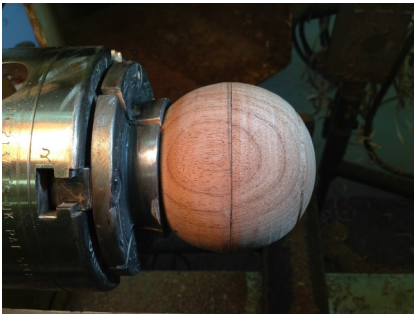
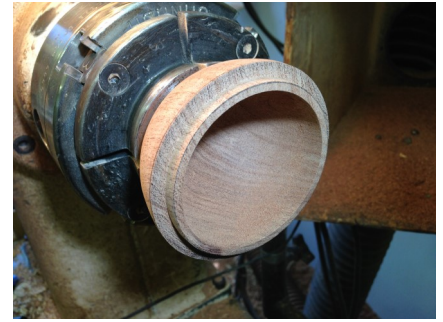
- Note: This process assumes you are familiar with the way I turn spheres. Please review my Turning a Sphere notes prior to reading these notes as I don't go into as much detail with the sphere turning aspects in these notes.
- Turn the sphere blank to a cylinder and put a tenon on one end for mounting in your four-jaw chuck. The cylinder diameter should be slightly larger than what you want the final sphere to be.
- Chuck the sphere blank into your four-jaw chuck, re-true the cylinder if needed. From the chuck end of the blank, mark the length on the cylinder to match the diameter PLUS add approximately a 1/4" for a box tenon, plus 1/16" for a parting cut. Trim the blank to this length.
- From the chuck end, mark a length half the diameter. Do the same from the end of the blank. This should leave a gap equal to the box tenon length plus room to part the blank in two. **IMPORTANT:** these lines must remain visible until the very end



- Round off half of the cylinder into a semi-circle. Mark the center point of the end of the sphere with a pencil mark. Cut a small, dovetail tenon in the end. This tenon will be use to hold this half of the sphere for hollowing. The tenon shouldn't be any deeper/longer than 1/8".
- Mount the blank in the chuck on the small tenon (smooth, dovetail jaws must be used). Cut off the original tenon and repeat the rounding of the second end. Again cut a small, dovetail tenon in the end.
- Part off the half of the box. To avoid re-chucking half of the sphere, if you want to make the bottom with the tenon first, then part off at the right line. If you like making the lid first, part off at the left line. I prefer the latter as I rather fit the tenon to the lid. (Unfortunately the picture shows the former, sorry about that.)
- I prefer hollowing the top first. With the top in the chuck, cut the recess for the tenon. NOTE: you must leave enough wall thickness for the final shaping of the sphere. Try starting with 3/16—1/4". From there you can hollow out the interior of the sphere. I typically use a bowl gouge for this step, but you can also use a round-nosed scraper.
- The sphere box looks nicer if the inside curve matches the outside. To get a close approximation, cut a circle template that matches what the inside diameter should be. Mark a center line on the template. This template now can be used to judge shape and depth.
- Sand the interior of the top and apply the finish of your choice. This is really the only chance you will be able to do this to the top.
- Mount the bottom of the box in the chuck. I like to mark approximately where the tenon diameter needs to be using a pencil or dividers.
- Cut the tenon to approximate diameter. Then work at just fitting the outer 1/16". Once you get that to fit, you can cut the rest of the tenon to match. If you make that first little bit too small you still have room to make a better fit. The fit needs to be fairly snug, but not tight at this point. Later you can use sandpaper to loosen up the fit if needed.



- With the tenon finished, you can hollow out the bottom. Just remember the center line of the template fits at the center line of the sphere, which is at the bottom of the tenon, not the top! Sand and finish the inside before moving on to the next step.
- Put the two halves together, rotate 90 degrees and using the jam chuck, mark the true sphere diameter, as explained in the sphere demo notes. Make sure you cut through your tenons with your parting cut, so that the tenons will be removed in the final sphere shaping.



- Put the sphere back in the four-jaw chuck, and using a beading and parting tool as a negative rake scraper, remove the wood down to the parting cut, the process is the same as used in making a regular sphere. In this case I like to bring the tail stock up to help hold the lid on (no point in the live center). Unlike when I make a sphere, I typically continue the rounding process past the center line. This leaves less to be removed using the jam chuck.
- I remove the bit under the live center last, but not before taping up the box joint to help hold it together. Remove the tape and sand this part of the exterior.
- With a piece of leather between the top and the live center to hold the lid in place, I add decorative grooves with a point tool or skew.



- Now reverse the sphere into the jam chuck to finish rounding the sphere. Use the masking tape to hold the piece in the jam chuck just as with the sphere, only this time, make sure the tape covers the box joint. When finished rounding, do the final sanding.



- Finish the outside with the finish of your choice.
- I typically make a ring of contrasting wood as a base to display the box.
- I have also found that a loose fit lid is best with these boxes as there is no surface area to hold on to if the lid fits tight. You can also use a threaded lid. Do the threading while you have the top and bottom in the chuck, prior to doing the final outside shaping.

