

Turn a Sphere

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Introduction

Turning spheres is fun and relatively simple for a novice turner. You can add several to a bowl for a centerpiece or put one on a small shallow concaved stand to allow one to easily spin it to make an “Executive desk toy”

Tools

- Wood cup chucks
- spindle gouge
- bowl gouge
- ¼” parting tool or bedan

Wood

Most any turning wood is suitable. Something figured or spalted is good but you can always embellish even a plain wood such as Bradford Pear. I have had good luck using green wood with little or no cracking. Green wood will tend to go oval, but you can allow to dry a few weeks and true up.

Steps

The steps that follow are how I do it. Engineering types may be interested in an alternative method using a little math in the article found here:

http://doctorswoodshop.com/LinkClick.aspx?fileticket=nIlz_VD2PSY%3D&tabid=80&mid=459

1. **Rough a cylinder** - Begin with a piece of square stock that is about 3/4” longer than it is square. Locate and mark the center on each end with a center punch or awl. Mount the blank between centers and turn to a cylinder with your Spindle Roughing Gouge. Mark the centerline with a pencil and then move the cylinder radius distance from the centerline to draw a line at each end. Square the ends if necessary using a peeling cut with a skew until the length and diameter are equal. You can use a parting tool or bedan to trim the ends as well.
2. **Start shaping the sphere** With a speed of about 1500 to 1800 RPMs, use a detail or spindle gouge to begin rounding starting at the corners. Be careful not to cut away the penciled centerline. Round both sides until the sphere appears fairly round. A common error is cutting away too much wood at the corner which will reduce the size of your sphere. It is not necessary to get it perfectly round at this point.

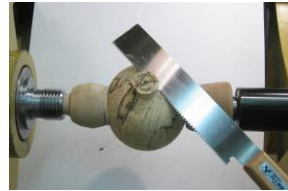


3. **Make some cup centers.** It is time to turn some sort of cup centers to hold the sphere. You will turn a concave surface in each cup to fit the size of the sphere you are turning. There are several ways to do this. For the cup on the headstock end, you can turn a scrap block of hardwood with a tenon to mount in a chuck. Alternatively, you can mount the block to a faceplate. My favored approach is to turn a cup center with its own No. 2 Morse taper that will fit directly into the spindle of the headstock. For the tailstock side there are several choices. You can turn a cup on a block that you drill, hollow or thread to fit over your live center.



If you have a live center with a removable point, you can turn a cup center with a stem that will fit into the center hole once you remove the point. A pad of thin leather or closed cell foam like Fun Foam from Michaels in each cup will reduce marring the surface of the sphere as you turn.

4. **Re-chuck your sphere between cup centers.** Align the pencil centerline with the lathe's center axis and parallel to the lathe bed. You can turn away the two nubs with a gouge but I prefer to cut them off using a handsaw. I keep a Japanese flush cut saw for these kinds of parting cuts. Adjust your tool rest so you can use the hand wheel to turn the sphere without hitting the tool rest. Locate the closet point the sphere surface gets to the tool rest and measure that gap between the sphere and the tool rest. Now loosen the cup chucks slightly and carefully adjust the sphere to increase that gap by half. For example, if you measured a gap of 1/2" add 1/4" and increase the gap to 3/4". Rotate the sphere 180 degrees by turning the hand wheel and check to see if it is now centered. If not go through the procedure again. Now rotate the sphere 90 degrees and repeat this procedure until you have your sphere truly centered.



5. **Continue shaping the sphere.** Continue to turn the sphere and monitor your progress by watching the ghost image along the back edge. Stop and check your progress periodically. You can use a section of PVC pipe, or anything round, to help evaluate the "roundness" of your sphere. If the surface is truly round, the ring will lay flat against the surface without a gap. Rotate the ring over the surface to identify any high spots needing attention.



6. **Three rotations should be enough.** Mark another centerline. Readjust your sphere 90 degrees to center in each cup chuck where the two pencil marks cross. Continue to refine the shape of the sphere.

7. **Apply your abrasive protocol.** Sand the sphere through the different grits at a slow speed by rotating a few times in the cup chucks.

Design

Stain, dye, texture, or cut concentric and overlapping rings with a skew to add interest.

Finish

Use the finish of your choice. I typically use a couple of coats of Minwax Antique Oil finish applying off the lathe with a day or so between coats. I wait at least a couple of days after I can no longer smell the finish before using the Beall Buff system.

