

Turning SPHERES

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Spheres are simple to turn and lots of fun. There are many ways to turn them. The system described here works for me but your local mentors may have tips and tricks that work just as well. The system of cutting three grooves is one that I learned from Stuart Batty who learned it from his father, Allan Batty, who learned it from the ancient Greeks. It is a system that was used to turn cue balls from ivory. For me it is quite simple and takes a bit of the mystery out of “chasing the illusive ghost”. Spheres can be turned in all sizes and from any kind of wood you choose. The sphere in these photos is about 4” in diameter and turned from dry ambrosia maple. You may use green wood if you wish, but know that as it dries it may crack and most certainly will change shape



Begin with a piece of square stock that is slightly longer than it is square. Locate and mark the center on each end.



Mount the blank between centers. I prefer using the OneWay safe center in the headstock end but if you only have that standard spur drive center that came with your lathe, that may be used as well. For the tailstock side, use whatever live center came with your lathe.



Turn the rectangular blank down to a cylinder using a roughing gouge.



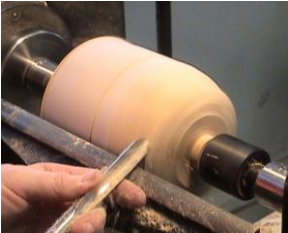
Locate the center and mark it with a pencil.



Square ends and trim until the length and diameter are equal. The parting tool or bedan are excellent for this.



Use a parting tool to cut a slight groove on the center line.



Use a detail or spindle gouge to begin rounding starting at the corners. Be careful not to cut away the center groove or take away too much wood at the top of the curve.



Continue to round both sides until the sphere appears fairly round.

To re-chuck the sphere, you will need to turn some sort of cup centers. There are several ways to do this. The cup on the headstock end can be turned on a faceplate, a screw center or cut with a spigot or groove to mount in a chuck. It is also possible to turn a cup center with its own No. 2 morse taper stem that will fit directly into the headstock. Mr. Hockenberry has instructions for this type of cup chuck in another lesson.



For the tailstock side there are several options as well. 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 the point is removed. If you do not have a live center with a removable point you will need to turn a cup on a block that is drilled or hollowed to fit over your live center. Size of the cup will depend upon the size of the sphere you wish to turn.



Re-chuck your sphere between the two cup centers. Make sure that the 1st groove is now aligned with the lathe's center axis and parallel to the lathe bed.



The easiest way to remove the "ears" is with a small hand saw.



Locate the center and cut a second groove perpendicular to your first groove. This second groove must be to the exact same depth as the first one without cutting any deeper.

Watch the shadow along the top edge of the sphere, turn away any material that does not appear solid down to, but not beyond, the first two grooves.



Rotate the sphere one more time to create the third groove. Do this by turning the sphere 90 degrees to the right and keeping the 1st groove on the center axis. Make sure that the third groove does not extend deeper than the previous two.

Continue to turn away excess wood until you have cut evenly and smoothly down to the three grooves without removing your original lines.

Repeat the three rotations if necessary to perfect the shape. Keep your eye on the top edge of the sphere and trim away all wood that does not appear to be solid. It may help to lay a piece of dark fabric or paper behind your lathe so you can see the shape more clearly. A good light is essential as well.

Finally, rotate one last time to sand through whatever grits you wish. You might want to place a piece of rubber shelf paper or some masking tape on the centers when making your finish cuts and sanding to prevent marks from the cups on your finished sphere. Have a ball!!!

