

“Sphere Box”: (designed by: Mark St.Leger)



Sphere Box with Hand-Chased Threads

2” diameter

Materials:

- 1) **Box: 2 ¼” x 2 ¼” x 3 ½”**, a tight-grained wood that will accept threading. Hard Maple works well.

Tool List:

- 1) 5/8” Roughing Gouge
- 2) ½” Detail Spindle Gouge (fingernail grind)
- 3) Parting Tool (standard & thin kerf)
- 4) Hollowing Tools (3/8” Ball End Mill work well or Hunter Tool)
- 5) Thread Chasers 20 TPI or 16 TPI
- 6) Vernier Calipers

Turning Steps:

- 1) Mount box blank between centers and round it to a 2” diameter, then turn a ¼” long tenon on each end for mounting in your chuck.
- 2) While between centers, part the 2” cylinder for the two halves of the box.
- 3) Mount one half in your chuck and drill a depth hole ¾”, hollow a bowl shape with a tool of your choice leaving a ¼” wall thickness for threads.
- 4) Turn the first ¼” of the inside parallel with the lathe bed and cut a recess for the threading.
- 5) Set your lathe speed around 300 RPM, using the inside chaser and arm brace lightly strike the inside corner to get your threading pattern started. You must slowly advance the chaser manually until you have created the desired pitch pattern. Once the threads are struck, apply some paste wax with a toothbrush and continue threading to the desired depth.
- 6) Mount the second blank on your chuck and turn a ¼” tenon 1/16” larger than your opening on the first blank. This will be a little larger than what you need so that you can sneak up on a good fit for your threading.
- 7) Cut a recess at the end of your tenon, (I use a point tool for this) which allows a place for your chaser to be pulled out before hitting the lip of the box.
- 8) Again set your speed for 300 RPM, using the male Thread Chaser strike your thread lightly on the corner of the tenon and move slowly towards the headstock. Once the threads are struck apply wax and make them deeper. (Be sure to pull the chaser out at the recess or you will strip all the threads).
- 9) Try the first half to see if the fit what you want, if it is to big turn the top of the threads down and re-chase for a desired fit.
- 10) Drill a depth hole 1” deep and hollow the same as the first half.
- 11) Screw the blanks together and mount back between centers.

- 12) Measure 1" on both sides of the box joint and turn both ends down to around 5/8", this will leave you with a 2" x 2" cylinder.
- 13) With a spindle gouge start turning your spherical shape from center down to the 5/8" ends. Use a ring made from PVC to lay on your sphere to check for the correct shape.
- 14) Using the 3-axis method for making a true sphere, take your piece from between centers (which is the 1st axis), and mount in the cup chucks with the 5/8" tenons facing you.
- 15) When you turn the lathe on you will see the ghost image of the sphere, carefully turn the nubs off, this is the 2nd axis. Check for accuracy with your PVC ring.
- 16) Rotate your sphere 90 degrees and turn the 3rd axis, which should be just light cuts to finalize the sphere. (I usually just use a shear cut for this).

Sand all three axis and have a ball!!!