

# High Efficiency Deep Hollowing

with

## Steve Sinner

*The tools and procedures Steve uses were developed over a period exceeding fifteen years. During that time, he has completed more than 500 deep hollow vessels for the art marketplace, and at least that many more just for fun, experimentation, and instruction. Many of his works are in prestigious private and public collections.*

*A primary objective has been constant improvement of tools and techniques, which helps to keep the excitement level high and to foster new work.*



### **PART I—The Beginnings of A Hollow Vessel - Rough Turning -**

It is difficult to find dry wood more than four inches thick that is not cracked. So most hollow vessels of any size are turned from green wood, and oriented so that the grain runs top to bottom rather than across the piece.

Choose your wood carefully. While many turners seek out the most highly figured wood, try to concentrate on the plainest wood you can find until you have mastered the hollowing techniques. That will minimize the amount of movement when the wood dries. Look for a piece with the pith as centered as possible, and regular con-

centric growth rings.

When mounting the wood, remember that the pith *must* be centered in the bottom of the finished piece. You usually have more leeway on the top, but there the pith must be turned out.



If you are turning a large work, use two small scissor jacks to position the blank on the lathe. Get them for a few bucks each at the local junkyard. When using the jacks, position the banjo with a tool rest between you and the wood and keep the piece on the lifting device for safety until the wood is firmly locked between centers.

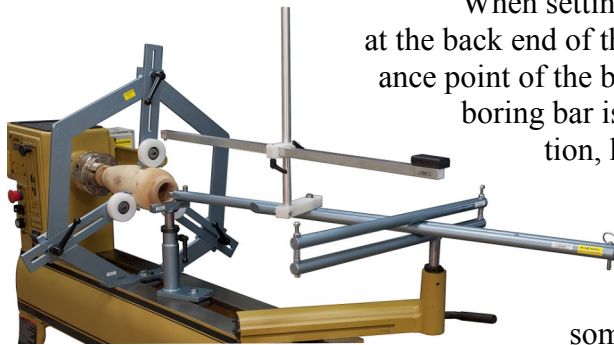
Once the wood is mounted, turn it to a cylinder. At this point, you can make a final determination of which end will be the top. Don't let the wood seduce you into violating the principles of good line and form, or of using questionable quality wood just to save a particularly attractive portion of grain. That would practically guarantee the ultimate failure of the finished piece.

Rough out the shape you want. If you find any problems with the wood, decide whether to change your objective or throw it away and start over. Create a foot, establishing the bottom of the piece. Cut a dovetail in the foot to match your chuck. Turn the tenon between the foot and the bottom of the vessel as small as you dare. Just leave enough tenon to drive the piece, usually about 1 1/4" diameter.



Remove the piece from between centers and mount the foot in the chuck. Bring up the tailstock center and turn the blank to the desired shape. This is where you make or break the work. Line and form are absolutely essential. Using this method, you may complete the entire shape of the vessel before beginning the hollowing process. Leave an extra 1/8" thick band around the piece at its widest point for the wheels of the center steady to ride on. As you complete portions of your shape, coat all exposed end grain with sealant. When finished turning, coat the entire outside of the vessel, including the foot and drive tenon.

When you are satisfied with the shape, you may wish to begin the hollowing with conventional bowl gouges, depending on desired final shape.



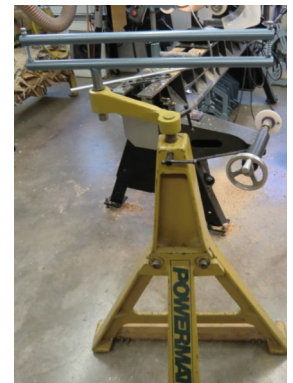
When setting up the boring system, be certain to use the safety pin at the back end of the bar. I usually try to set the trap just beyond the balance point of the bar. Use a level or measure carefully to assure that the boring bar is parallel to the ways of the lathe. To minimize vibration, keep the bar's nose support as close to the vessel as possible.

While this system is capable of turning to the center of a piece, it is generally faster and easier to bore out the center with a drill of some sort. I prefer to use a 1 1/2" Colt Maxicut bit mounted on the boring bar. This is very fast and easy to do. Use a piece of tape on the bar to mark the correct depth before starting.

There are generally two schools of thought about hollowing. Some prefer to make each cut from the center to the outer part of the vessel. I feel it is faster and safer to make my cuts nearly parallel to the axis of the lathe. Doing this, I can cut both moving in and out, and there is little chance of accidentally going through the side of the work.

Once you have the inside roughed out, adjust the laser to the required wall thickness and finish the hollowing. Remove the boring setup, bring up the tailstock center and turn off the 1/8" wheel track. Recoat this area with sealant. Hang the vessel upside down to begin the drying process. If the humidity is low in your drying area, you may wish to rubber band some wax paper over the open top to retard interior drying. I punch holes in the wax paper according to how low the humidity is. The objective is to dry the inside and outside at the same rate, and slow the process to the point where no portion of the wood dries faster than any other.

I use a pinless moisture meter to determine when the rough turning is ready for the next step. Lacking a meter, you might consider weighing the piece periodically and recording the result. When weight loss stops, the wood has probably reached equilibrium moisture content and is ready to finish turn.

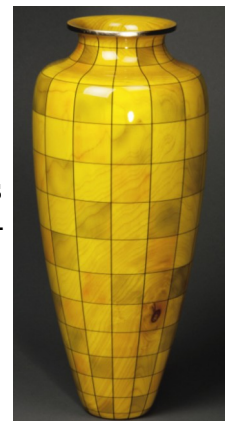


*An off-lathe stand may be used to support the trap for tall pieces.*

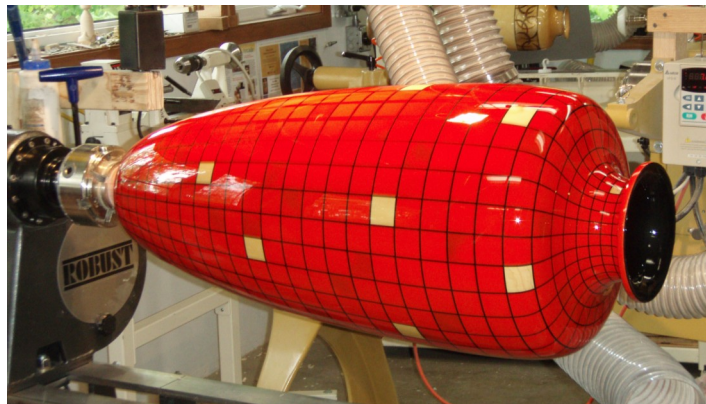
## **PART II—Reveal the Beauty of a Hollow Vessel - Finish Turning -**

Drying can take from a couple of weeks to several months or more. Some distortion will occur on every piece, and a few will inevitably crack. There are many ways to dry a rough turning, and some are more likely than others to be problematic. Regardless of which way you prefer to dry your works, keeping a consistent wall thickness and carefully choosing the wood will help to minimize losses.

The first thing you have to do to finish turn a rough piece is to true up the foot. Place a piece of scrap in your chuck and turn a taper on it at about 45 degrees and large



enough to fit in the top of the vessel. Bring the tailstock center up to the foot (remove the point if possible or use a cup style) and use gentle pressure from the tailstock to push the vessel onto the tapered drive you just made. Bring a tool rest up to support the bottom of the vessel and turn the lathe a couple of revolutions. Observe the runout and make a correction. Repeat until you are satisfied that you cannot get the vessel any closer to center. Put just enough pressure on the tailstock to be able to true up the dovetail in the foot safely.



Remove the drive and reverse the piece, this time using a live cone center in the tailstock. You are now ready to finish turn your work. I like to begin at the widest point, work to the top, then back to the wide part and go to the bottom. This is when you will be glad that you spent some time getting the shape right when roughing. If you did not get a good shape then, you are unlikely to be able to fix it now. While there is no limit to the number of shapes that can be done, every one of them must have good form and line to be attractive. Our senses have been honed to recognize pleasing forms. In many cases, just a few thousandths of an inch more or less can add or detract from the beauty of the work.



Be sure to true up the bottom now. I like to make the bottom slightly concave so the vessel will sit solidly when completed. Don't worry about the drive tenon, just leave it in place for now.

Once you have finish turned the entire outside of the piece, set up the boring system once again and turn the inside to final thickness. The guarded ring tools make this system highly efficient will likely leave small ridges on the inside of the vessel. Replace the guarded ring tool with a teardrop scraper and gently scrape the interior walls smooth. If you desire, sand them also. Inertial sanders work very well for this.

When the interior is completed, take away the center steady and bring up the tailstock with a live cone center to support the top of the piece. Sand the exterior of the work. Using an inertial sander makes this a quick process.

Your vessel is now ready for finishing or surface decoration.

I prefer a gloss finish on most of my work, and it is applied on the lathe. In order to do this, you must be able to turn your lathe down to about 20-30 rpm. I use Minwax Helmsman Spar Urethane Clear Gloss, which is widely available. Using a JEN foam brush, the Minwax is applied in a uniform thin coat while the lathe turns. The lathe is left turning for at least 15 minutes while the varnish sets up, assuring no runs. Use only varnish that was made within the last year, and throw it away the first time you open it up and find it has skinned over in the can.



Each coat of varnish must be sanded prior to applying the next coat. I use 3M 260L sandpaper in 3" disks on an inertial sander.

When you are finished with the piece, it is time to part it off. Use a non-mar cone center to support the top while you carefully and slowly feed a thin parting tool into the drive tenon to remove it. Leave about 1/4" to be removed by a flush cut saw. Sand, sign and finish the bottom and you are done.

  
**SINNER**