

Upside Down Hollowing (Hollowing through the Bottom)

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Why hollow through the bottom? Maybe you don't have curved hollowing tools to reach around the corners. Or you want a piece with a tiny opening, or a long tall neck, or an off-center opening.

The process is reasonably simple. Cut a plug from the bottom of the piece, hollow the body, and replace the plug. The challenge is keeping the grain aligned and hiding the glue line. In this demonstration, I make a hollow form with a tiny opening.



Exterior

Start with a blank mounted between centers. The eventual top of the hollow form should be at the tailstock end.

True up the outside and create a tenon on the tailstock end.

Flip the piece around in a chuck on the tenon you just created, so now the hollow form's top is in the chuck.

Shape the outside. A good shape for your first piece has the widest diameter about $\frac{1}{3}$ of the way down from the top. You can't turn the entire top side of the form, because it is in the chuck. But make a fair curve, aiming for the curve to top out at about the face of the chuck jaws. This gives you a good reference point to finish the top later, and leaves some wood in the tenon to make a flared opening.

Leave some wood below the foot for chucking and to make a plug for the bottom. Once you get to the bottom, make a short cylinder below the foot - this will become the plug for the hole in the bottom. Add a tenon.

Mark reference lines on the side of the form, so you can re-align the grain later. Draw one or two lines down the whole form and plug. Use the tool rest as a pencil guide. Some of the marks will be turned or sanded away later, so do enough that you can recreate them if needed.

Part off the cylinder (bottom plug) near the foot of the hollow form. Make a narrow parting cut. The less material you remove, the closer the grain will match when you replace the plug.

Hollowing

I like to drill a reference hole down the center of a hollow form. This gives your hollowing tool a place to start cutting, and helps you feel when you reach the proper depth.

Use a long aircraft or electrician's bit (about $\frac{3}{8}$ " - and any bit that's long enough is ok). You need a handle. Could be a turned wooden handle glued to the end, or a Jacobs chuck, or just vice-grips. Or chuck it in the tailstock if hand-drilling makes you nervous.

Use a spindle gouge or scraper to create a divot in the center of the bottom - a place for the drill to start. Drill only as deep as you want to hollow, allowing about $\frac{1}{4}$ " wall thickness at the top (from the bottom of the hole to the chuck jaws, where we visualized the top to be).

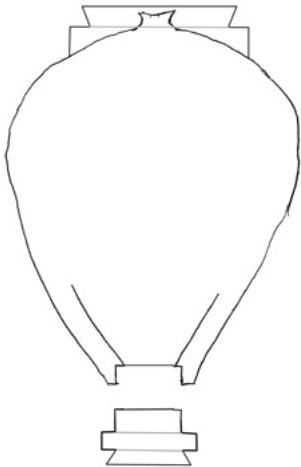
With a square scraper or skew on its side, create a lip (or ledge or shelf) around the bottom of the hollow form to accept the plug. If we want a $\frac{1}{4}$ " wall thickness and about a $\frac{1}{8}$ " recess in the bottom, the lip should be about $3/16$ " deep. Make it the diameter of the inside of the foot.

Use a straight hollowing tool to hollow out the form. I start by widening the opening - cut from the hole out to make a cylindrical hole. Rock the tool back and forth, going a little deeper with each cut. Feel your way to the bottom of the depth hole.

Next, widen that cylinder towards the sides. It's the same rocking motion - not jabbing the tip of the tool into the wood, but cutting back and forth.

For your first hollow form, a $\frac{1}{4}$ " wall thickness is good. Stop the lathe often to measure your progress. You can measure with calipers or a wire bent into a loop or just use your fingers. Be especially mindful around the hollow form's top as the outside is not cut yet so it's easy to go too deep.

With a tiny opening in the top, nobody will see or feel your inside wall surface. But aim for a consistent wall thickness anyway.



Plug the Bottom

Chuck up the bottom plug. Turn it down so it fits snugly in the recess. This is a finesse move, probably best done with a flat scraper. Make very light cuts, removing little wood and testing the fit often.

Once it fits, glue it in. I prefer traditional (PVA) wood glue or epoxy, but CA works for the impatient (put CA in the recess and spray the plug with accelerator). Line up the marks so the grain matches. Use the tailstock to hold things together (and aligned) while the glue sets.

Finish the Bottom

Once the glue has set up, drill a small hole in the center top of the form. This will be the hollow form's opening.

Then flip the piece around and chuck it from the top so that the bottom is at the tail stock end. You might need to use the live center to help align it so the plug runs true. Part off the bulk of the plug, then remove the tail stock.

Use a small scraper to complete the bottom. Leave a foot around the outside and recess the inside (as much as you can with the tailstock in the way). Line up the inside edge of the foot with the glue line to hide it.

Back to the Top

Re-mount the piece in a friction chuck. Make a cup in some scrap wood (or use a short length of PVC pipe) to accept the bottom of the hollow form. Add some padding like craft foam or an old mouse pad. Use a cone center in the hole you drilled in the top. Between centers, the pressure of the tailstock will hold the piece.

Finish turning the top. Try to follow the shape that you visualized earlier. Make a little lip around the hole, being careful not to cut into the cone center.

Etcetera

Ideas: Add something inside like a marble. Drill the top off-center. No hole at all, and thin enough walls so it is obviously hollow. For a piece with no foot, add decorative grooves or beads and hide the glue line in one of them. A short and wide piece can be hollowed from both top and bottom to access the entire inside.

