

Turning Hollow Forms: We'll Start With Miniatures

by Molly Winton

The principles and techniques of turning hollow forms are generally consistent no matter the size vessel turned. Experience has shown that learning to turn hollow forms by starting with small vessels reduces many potential anxieties that can interfere with the learning process. Anxieties may include fear of new cutting dynamics, turning/cutting blind inside a vessel, potentially ruining or wasting a valuable piece of wood, experiencing catches that could throw the piece off the lathe causing injury, and so on.

Start with wood that has straight grain, and green or air dried (kiln dried wood is very hard, and more difficult to cut). Make your first pieces out of boring, non-figured wood, so if you mess up there won't be regrets from ruining a lovely piece of wood. Give yourself permission to make an ugly piece, or ruin one or two. By giving yourself this permission (for things which may never happen), it frees up the anxiety of having to be perfect. I have learned way more from my mistakes than from not making them at all. For this article, I've used a green piece of boring and straight-grained maple, 2" square by 3" long.

Place the piece between centers, true it to a cylinder, and cut a tenon on the tailstock end (the center hole will be important for a future step). Once the tenon is turned, mount the piece in your chuck, and if it's somewhat longer than 3 inches, bring the tailstock up to provide support while you shape the exterior of the vessel.

Forming the exterior shape of the vessel is really just another form of spindle turning. Prior to turning your vessel, take a look around at various vase shapes that are appealing to you. Find one that is not too elaborate, and then do your best to duplicate it. If you've never hollowed before I recommend finding a form that is closer to a closed bowl, having a wider rim opening, so when you begin hollowing you can see the cutting edge of the hollower, and notice how the cutting edge meets and cuts the wood. As you become more experienced, you will be able to draw from this visual image when you make the openings smaller.

Forming the exterior shape:

Taper the top of the vessel by removing wood at the top, right corner (Fig. 1), setting the shoulder-to-rim profile. Follow the curve of the vessel from shoulder to the base, leaving extra width at the base for stability when hollowing. The dashed line shown at the base of the vessel indicates where the vessel will be finish-turned when you get to the parting-off phase. If you don't leave the noted bulk at the base of the vessel, as you hollow you will experience vibration and chatter. At this point, add any turned design elements desired, such as a groove, bead, or other lathe-created ornamentation.

To begin hollowing, a pilot hole should be drilled to open the interior, and set the interior depth. A drill bit attached to the tailstock can be used for the pilot hole (mark the depth of the hole with tape), or a spindle gouge that has been marked to the appropriate depth can be used. If a spindle gouge is used (Photo 1), orient the flute straight up (12 o'clock position), tip at center. Push the tip of the gouge into the center of the wood carefully at first to center your hole, and then plunge it in to drill. The shavings will climb up the flute, making it easier to clear. Clear the chips frequently, taking care when exiting and reentering the pilot hole.

Photo 1. Drilling the pilot hole with a spindle gouge.

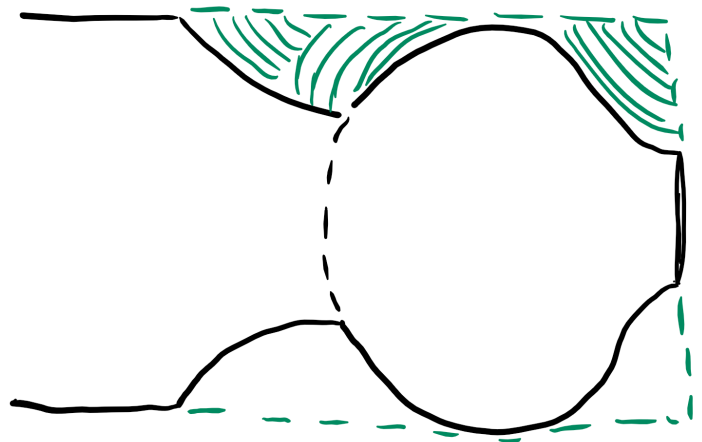


Figure 1. Shaping the exterior of the hollow form.



Figure 2 shows the interior of the vessel, with the bold red line illustrating the pilot hole, and the dashed lines indicating where to broaden out the initial pilot hole to obtain better access for hollowing tool use. Broadening out the initial pilot hole can be achieved using the spindle gouge (Photo 2). Rotate the flute towards yourself (approximate 11 o'clock position), so the left cutting edge of the gouge cuts the interior wall of the vessel. Run the gouge up and down the edge of the pilot hole, cutting away and clearing chips frequently. Be aware that when you feel the gouge bottom out at the base of the pilot hole, not to plunge or cut deeper. This will prevent making your vessel a funnel. Stop to clear the chips frequently to prevent binding the gouge on accumulated chips. Binding on chips will cause a catch, cracking your rim, or shattering the vessel.

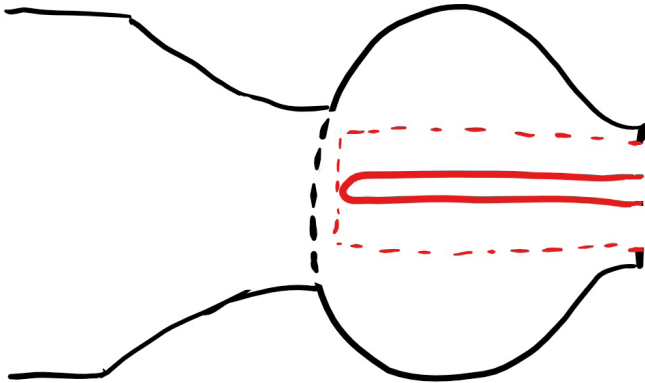


Figure 2. Interior of the vessel after pilot hole is drilled.



Photo 2. Using the spindle gouge to widen the initial pilot hole.

There are commercially made hollowing tools for turning small vessels. However, I found there weren't any small enough to use with the small openings I like to make. Commercially made tools, I have found, aren't made smaller than 1/4–3/8" diameter. If you want to make smaller openings you'll have to make your own tools as I have. Until then, make the size of your openings large enough to accommodate the diameter of commercial tools.

Two small hollowing systems, while not an exhaustive selection, are shown in Photo 3. The top set are made by Kelt-on Industries, and are their smallest hollowing set, measuring 5/16" diameter; while the red handled, Robert Sorby set are 3/8".



Photo 3. Commercially available hollowing systems.

Of my home-made hollowing tools (modified hex wrenches), I use the 90° tool to hollow from the rim, out to the shoulder (Photo 4). Cut the wood by pulling the cutting edge towards yourself, and then pushing away. You are able to cut the fibers in both directions. This cuts endgrain by approaching it from the side, thus cutting cross grain. Make gentle sweeps, and the wood will cut away easily. Remember to clear the chips frequently. Once I have the desired wall thickness from rim to shoulder (use calipers to measure wall thickness), switch to the 45° hollower (Photo 5), and cut from the base, just up the side wall, leaving a lump approximately 2/3 of the way down the piece. Check wall thickness with calipers at this point as well.



Photo 4. 90° hollowing tool, made from an allen wrench.



Photo 5. 45° hollowing tool, made from an allen wrench.

Figures 3–4 show the process of removing the interior wood. The red area represents the wood that is cut away. One of the issues when hollowing, that causes frustration and anxiety, is the fear of cutting through the wall, and blowing up the piece. The most frequent trouble spot where this occurs is approximately 2/3 of the way down the piece (noted by the yellow arrow in Figures 3–4). The process of hollowing from rim to shoulder, and then from base to slightly up the wall, yielding a triangular lump, is designed to avoid this potential problem.

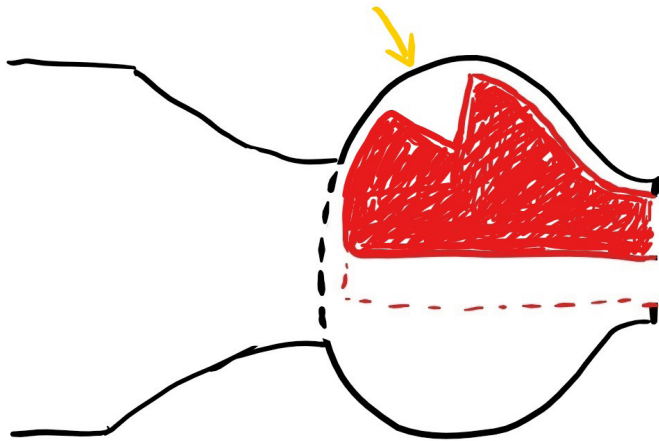


Figure 3. Red area shows the wood that is cut away.

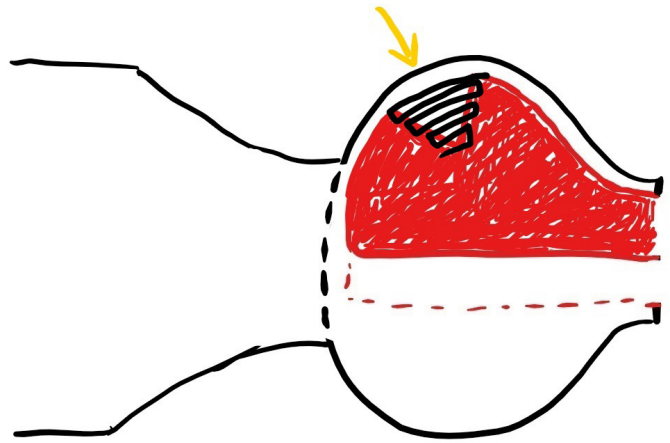


Figure 4. The black area is a triangular lump left inside.

Once you have established the desired wall thickness above and below the lump, remove the lump. As the piece is rotating, gently locate the top of the lump with your hollowing tool, to find its peak. Drop the cutting edge just below the peak and pull towards yourself, shearing off the top. When the tool drops off, move downward, and cut backwards, shearing off the next layer of the lump. Continue this back and forth cutting until your tool stops dropping down, and you make one complete pass connecting the top wall thickness to the bottom. STOP! At this point, do not make another cut until you measure the wall thickness to ensure you are consistent. If it's slightly thicker than you want, go back and make one more pass. Chances are, however, it will be spot on.

At the conclusion of hollowing, sand the exterior of your piece to your desired finish. Sand only the area that will not be surface enhanced (no need to waste time sanding areas that will be burnt or carved).

Photo 6 shows how I have continued to follow the exterior curve closer to the base, prior to parting the vessel off. The base is quite close to the chuck jaws, making it awkward to reach the bottom of the vessel. Therefore, I will turn it around and jam chuck it to reach the base more easily. This is where the tailstock's live center mark on the original tenon comes in handy (remember I mentioned this earlier?). I have mounted a waste piece of wood into my chuck (Photo 7) and turned a cone that will fit easily into the rim of my vessel, I put a scrap piece of 400 grit sandpaper between the rim and the cone to hold better (Photo 8), to prevent the piece from spinning as I remove the base. Bring up the tailstock and align the live center mark with the live center (Photo 8). Gently tighten the tail stock. Don't put too much pressure or you risk cracking the rim. Centering the rim on the cone, and aligning the live center back into its previous mark, should ensure the vessel is running true. You now have easy access to the base to maintain the established curve of the vessel from shoulder to base.

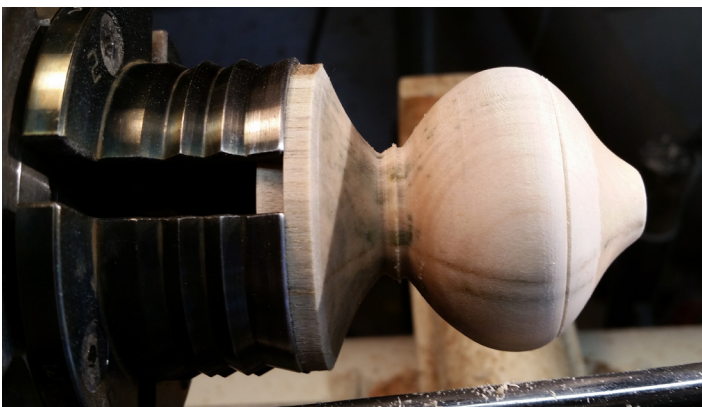


Photo 6. Shape of vessel prior to parting off.



Photo 7. Jam chuck and center mark on the tenon.

Molly Winton is currently a member of the AAW board and an internationally-recognized artist and instructor. You can see more of her beautiful embellished turnings at her website: <http://www.turningmaven.com>.

Photo 8 shows how the piece will look once mounted in reverse, ready to turn down the base. Photo 9 shows the waste wood cut away, turning down the tenon until it is slightly smaller than the desired diameter of the base you want. Finish sanding the portion you just cut away, blending in the finish to the previously-sanded area. Using a thin parting tool, cut a slight concave curve to establish the foot. My completed piece is sanded only to the groove because I will be texturing the area below the line (Photo 10). Photos 11–12 show a selection of finished pieces.

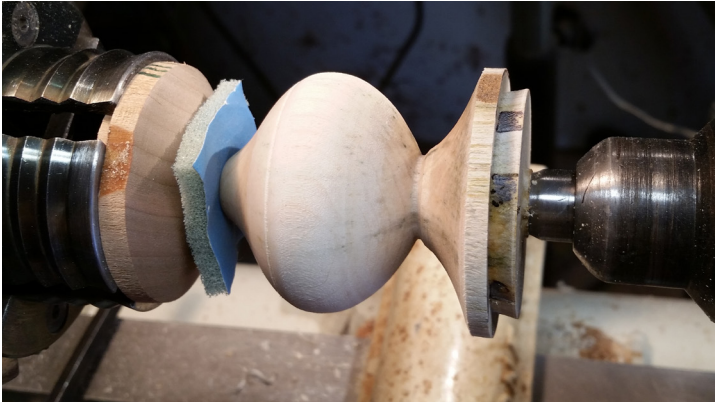


Photo 8. Vessel in the jam chuck.



Photo 9. Ready to part off.



Photo 10. The completed piece, ready for surface enhancement.



Photo 11. Molly Winton hollow forms and bowls.



Photo 12. A grouping of Molly Winton miniatures.