Bottle Forms

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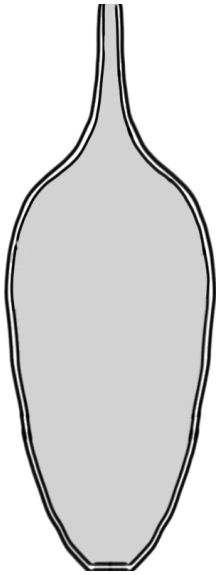
April 28, 2019

Turning a Small-Opening Bottle Form and Hollowing from the Bottom



Essential lathe accessory tools:

1. Steady rest
2. Hollowing system with boring bar
3. 4-Jaw chuck

Process

1. Between centers, using an end-grain blank, turn to a cylinder
2. Turn a 4-jaw chuck tenon on the tailstock end – this cylinder end will eventually become the bottle top
3. Remove the cylinder, reverse it, and secure the tenon in a 4-jaw chuck, and bring up the tailstock
4. Reengage the live center and turn a new tenon
5. With a parting tool, part off approximately the bottom 1"+ (including the tenon). This will be used in the final steps to make a plug with matching grain for the bottle bottom hole
6. Turn the cylinder to the desired bottle shape, temporarily turning the bottleneck diameter to only 1 1/2" to 2" diameter leaving mass for strength while hollowing
7. Sand the bottle form to 220 grit (the neck is not yet in a final form)
8. Now, we are ready to begin hollowing from the bottle bottom
9. Install a steady rest, with the wheels approximately 1/3 distance from the bottle bottom
10. Using the tailstock with a Jacob's style chuck and drill (drill size can be 1/4" to 1" diameter), drill deep to roughly the eventual bottleneck bottom. Drill a little deeper when using a smaller diameter drill (see page 4 diagram)
11. If a small diameter drill has been used, enlarge the bottle bottom opening to roughly 1" to 1 1/4" (this will depend on how deep the main part of the bottle body is and the diameter of the boring bar
12. Begin hollowing. Hollow the bottle main body to a wall thickness of 1/4" to 1/8"
13. The tricky part here is shaping the top transition from the inside of the bottle main body to the neck. Because the bottleneck is oversized at this time, calipers will not work to determine wall thickness. You just have to wing it

14. When all hollowing is done, finalize the bottom hole with a slight angle (removing as little material as possible). The smaller the hole, the smaller the bottle base can be, allowing a better tuck in shape

15. Turn the bottle neck close to final diameter (10%-20% larger than planned size)

16. Remove the bottle, or better yet, use a second 4-jaw chuck or second lathe to turn the bottom “bottle stopper” from the 1” piece created in 5. above – you want to leave the bottle form in the 4-jaw chuck if at all possible

17. Turn the “bottle bottom stopper” so that it will fit the bottle bottom hole, and so its sides mirror the angle on the bottle bottom hole. The stopper portion should be about 3/8” to 1/2” high. Remove from the 4-jaw chuck and check fit in the bottle bottom hole. Take several back and forths to sneak up to a perfect fit.

18. Draw opposing pencil lines running <u>with the grain</u> on both the plug tenon sides and the sides of the bottle bottom. Use these lines to ensure grain alignment when the plug is inserted and glued in place

19. Glue the plug into place, aligning the pencil marks, using the tailstock as a clamp and making sure the tailstock live center matches up with the indentation achieved in 4. above

20. After the glue is dry (over night is best, but a few hours is OK) remove the bottle, and place the new bottle bottom tenon into the 4-jaw chuck

21. Make sure the steady rest is properly in place and below the widest diameter, then remove the tailstock and turn down the neck (including tenon) close to final desired form

22. Using the tailstock with a Jacob’s chuck and drill, drill the neck hole until the inside cavity is pierced (use whatever drill size you desire, e.g. 3/8”-3/16”

23. Finish-turn the neck to the desired neck diameter, so that the wall thickness is approximately 1/8” to 3/16” thick. Remove the bottle

24. Make a jam chuck in the 4-jaw chuck that has a small tenon that will fit inside the bottleneck opening

25. Install the jam chuck in the 4-jaw chuck and insert the bottleneck opening onto the jam chuck small tenon. Bring up the tailstock and live center so it matches up with the indentation achieved in 4. above

26. Do final turning on the bottle neck

27. Do any final sanding on the whole bottle form down to 320 or 400 grit

28. Turn off as much of the bottom tenon as possible. Turn down to 1/8” or 1/16”. Remove from lathe, pare off the remaining nub and sand

Long Neck Turned Bottle Form