How Do I Hold Thee? Let Me Count the Ways!

(My Apology to Elizabeth Barret Browning).

Bob Goulding WTSTL Demonstration Aug 25, 2019

Intro: Seems like a simplistic and mundane topic. Sometimes it's obvious how to hold the wood while turning an object. Sometimes it's very complex. If you don't figure out how to hold the wood and make the cuts, you're sunk.

I know most of you know lots about holding. I hope you'll still learn something and I'm sure I will, from your comments. Please feel free to holler our questions, comments or suggestions, along the way. And, if I get to intense, just holler "Hey Bob, lighten up!"

I. Face Plate: don't use drywall screws. Use Sheet Metal or Wood screws. Unless you're using a flat board, it's sometimes hard to cut a flat spot, in the right place, at the right angle, for a faceplate. You will be left with screw holes. Design around them, cut them off or drill them out and insert contrasting wooden plugs.

2. Glue/tape block: Must be flat and smooth with parallel sides. Good for turning large, thin pieces, like a platter. You can use CA glue. It is strong, but brittle, so a good smack with a chisel will normally crack it apart. Wood glue or white glue with a piece of paper (some recommend newspaper) between. Press between headstock and tailstock for at least a couple of hours. When finished, split the paper with a sharp chisel and mallet. Can hold the block with a face plate, screw drive, spur drive or a tendon in a chuck. Sand off the paper and use over and over. Double stick tape often works well if held with tailstock and light cuts made.

3. Chucks: Cost between $150 and $400. Lots of different jaws available: Pin Jaws, Pen Blank jaws, Step jaws, big jaws and tiny jaws.

A chuck usually comes with a screw drive that locks into the jaws. A screw drive is quick and easy, but has definite limits. The angle of the drill hole will define the orientation of the piece and cannot be adjusted. The depth of the screw into the piece can be adjusted with a disk with a hole in the center. Screw hole can be drilled and plugged with contrasting dowel, later.

The jaws of the chuck can either contract around a tendon or expand into a recess. If the jaws are made with a dovetail shape, the dovetail must be matched by the tendon or recess. A flat shoulder on the tendon is important to register the piece (see drawing). A dovetail can be cut on your piece with a skew chisel, small spindle gouge, cut off tool or shaped scraper. A round piece, like a dowel can be clamped in the center of the jaws, but won't be indexed with a shoulder. The diameter of the tendon or recess is important. It should be almost as small as the collapsed jaws, to be as round as possible, for maximum grip (not always necessary.)

Jaws are matched to their location on the chuck. Sometimes they are identified with only a dot or dots on the back. I write their numbers, with a marker on jaw and chuck. When installing jaws, do not fully tighten the screws until fully collapsing the jaws. That aligns them.

4. Spur Drives: Some fit into the headstock taper and others clamp into the chuck jaws. Clamping piece between spur drive and tailstock live center is convenient way to rough our piece. Stebcenter is special spur drive with many teeth and spring loaded spike in center. If

lightly clamped, will allow piece to stop when a catch happens. It's also possible to grab it and stop it to check progress if lightly loaded. When heavily clamped, it get a very solid grip.
5. Spindle Turning: Find and dimple the center of either round or square stock. Get a center finder if you don't have one. Often the piece is clamped between a spur drive and the tailstock center. It can also be clamped in a chuck and a tailstock center. Square stock can clamped between the chuck jaws.
6. Bowls: Using templates simplifies cutting bowl blanks on the band saw. The orientation of the bowl blank of a natural edge bowl is the reverse of that of a normal bowl. You can hold the bowl blank with a face plate, a screw drive, or a spur drive. The spur drive allows some alignment of the blank which is important in a natural edge bowl. If you will be holding the bowl blank with a chuck, turn a tendon or recess. Also turn the outside shape of the bowl at this time. No need to sand at this time.

Reverse the blank onto the tendon, to hollow. First give the outside a final trim and sand. Maintain the tailstock in place for support as long as possible.

Finally, reverse the bowl, again to shape and finish the bottom. There several ways to hold the bowl at this stage. A vacuum chuck works well sometimes. A vacuum pump and setup is required. Vacuum chucks can be purchased, ready made, or make your own. A threaded wood or MDF base with a PVC pipe and a flexible seal is not hard to make. Be sure to harden the cut threads with CA glue, particularly with a MDF base.
7. Cutting threads for either a headstock piece or tailstock fitting is easy with a tap and drill. Headstock taps can be purchased at a woodworking store. A tailstock tap can easily be made by cutting slots across a bolt that matches the tailstock threads.
8. Cole Jaws work well on a fairly large piece. Drawing contrasting colored circles on the Cole Jaws simplifies placing the rubber fittings.
9. Jam chucks are often a quick, simple way to hold a bowl to finish the bottom. They can be snug fitting, matched curved pieces, long or short as necessary or can be approximately shaped. There needs to be cushion between the bowl and the jam chuck unless it is a snug fit. Packing foam works, but I have found that paper towel works best. The bowl is clamped between the jam chuck and the tailstock. The bottom of the bowl is then finally shaped and the tendon reshaped into a foot or removed. The bottom should be slightly concave and the tendon reduced to a nub with a small gouge or skew chisel. The nub can be cut off and sanded smooth.
110. Special Chucks: Spheres can be refined between homemade headstock and tailstock blocks. Scraps of beautiful wood can make nice medalions with homemade blocks and some double stick tape. You can even make (or buy) an offset jig to decorate wooden medalions.
11.Mandrels: Used to turn pens, stoppers, yoyo's ect.
12. Collets: You can buy fancy collets that compress around specific, small diameter dowels or you can easily make your own with a block of wood and a pipe clamp.
13. Finally, How did I hold the sycamore bowl to recut the interior? Since the bowl had a perfectly flat bottom, I turned a snug fitting jam chuck with a flat bottom and lined it with double stick tape. I then used hot melt glue around the edge to help hold it in place and wrapped the joint in duct tape (belt and suspenders?) I then turned a stick with a tapped hole that screwed to the tailstock, to insert into the inside of the bowl to stabilize it while I thinned the walls from the inside.