Full-size Three-legged Stools

Design Considerations

My large stools are designed in a similar fashion as the mini stools. I prefer the seats to be made from figured maple and the legs to be of a contrasting wood. The seat is indented in the top for a more comfortable seat. The 24" stools and taller require cross bracing to prevent the legs from spreading out and breaking. I like to angle the back brace down to the foot brace. A design technique, that I first saw on David Scotts stools and have since adapted to my own stools. In general I turn my seats approximately 13.25" to 14.5" for 24" and higher stools and 10.75" to 12" for 17" high stools. It all depends upon the availability of wood and the customers' preference. I also adjust the splay of the legs on the 27" stools to insure that they do not extend too far beyond the seat foot print as this could create a tripping hazard. The straighter the grain is in the legs the easier they are to turn and they will be much stronger.

Materials

Figured wood seat (I prefer figured maple) 12" to 15"

Wood for legs & braces (I prefer a contrasting color wood such as Walnut) 2" x 2" x 25"

Wood for braces 1.5" x 1.5" x cut to fit (legs must be in Tension and compression the size of the braces is dictated by the height of the stool and the final splay of the legs)

Spacer disk for screw chuck

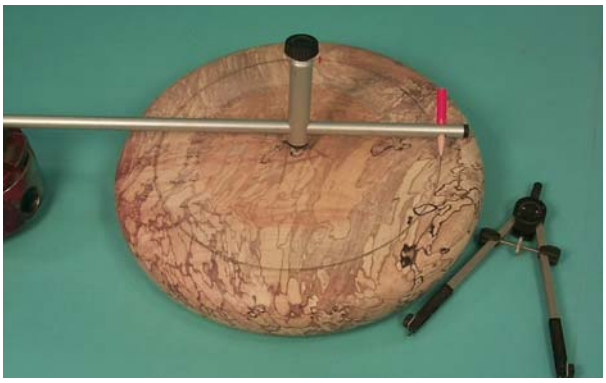
Tools

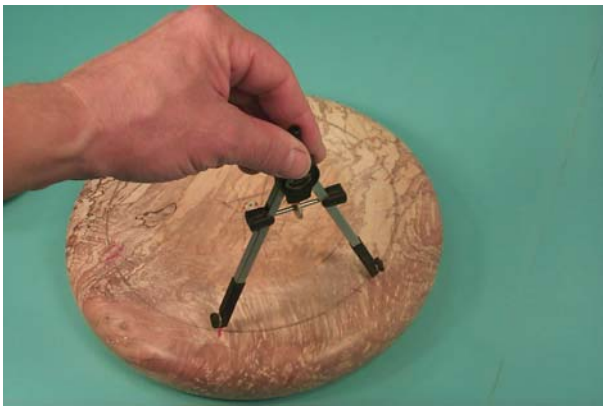
5/8 bowl gouge with finger nail grind
5/8 bowl gouge with traditional grind
3/8 detail spindle gouge
3/8 beading & parting tool
5/8 spur drill bit
1" spur bit
3/8 screw center
Strong hold chuck
½" Steb center
Live center or cone center

Turning the Stool

1. The steps for turning full size stools are the same as in turning the miniature stool with the exception of the added braces. 17" stools and smaller do not need cross bracing. The 24" high stools and taller need cross bracing to prevent the legs from splaying out and breaking.
2. I always turn my seat first and drill the holes in it for the legs. I then finish the seat with wipe on poly or spray on polyurethane.

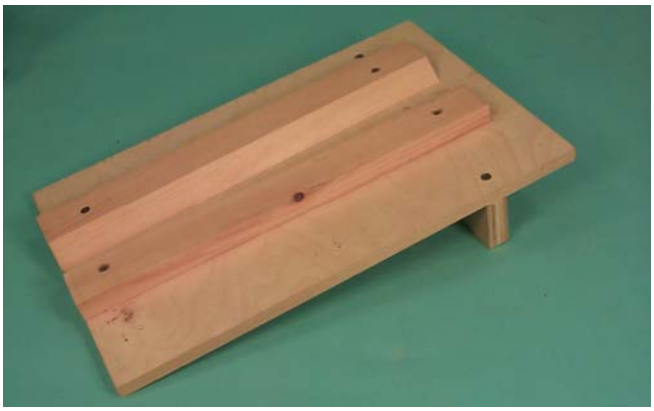
3. The holes are 1” in diameter to accept the 1” tenon on the legs. The angle of the hole varies between 10 degrees and a hair shy of 15 degrees depending upon the height of the stool. For stools 24” and above I drill the mortise at 10 degrees, for stools 17” and smaller I drill the mortise at 15 degrees.

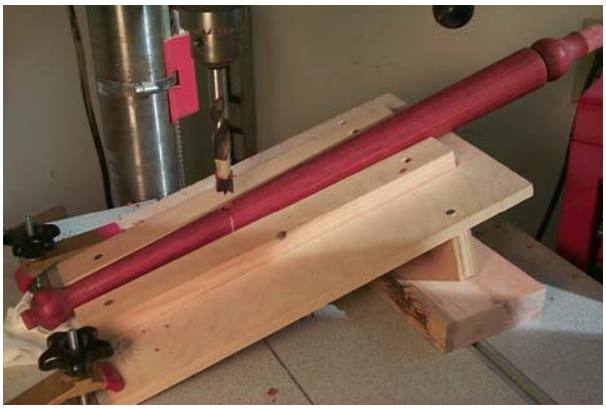




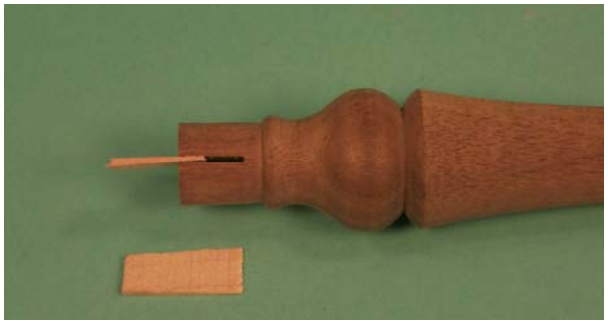
4. The size of the seat and the finished thickness of the legs will determine the length of the cross braces. The length of the braces will very a bit from stool to stool. So I do not cut them to length, until after I dry fit the legs and check the length needed for the braces.

5. Before drilling the holes in the legs, I place them into the seat.
6. I use a straight edge and some clamps to line up the holes and measure for the braces. At this time, I also mark the angle on the leg for drilling the mortice with a watercolor pencil. (I find that a white watercolor pencil shows up better on dark woods and is easily removed with a bit of moisture.)
7. The holes on the two front legs as measured down from the top of the tenon is 17".
8. The location of the hole for the back leg is approximately 12.5" down from the top of the tenon, depending upon the design of your legs.
9. After marking the legs I drill a 5/8" diameter hole approximately 5/8" to ¾" deep in them to accept the 5/8" tenon on the braces. It is best when designing your legs to take the positioning of the leg braces into consideration and insure that the area for the mortise is thick enough, thus avoiding any problems with drilling the holes for the tenons.





10. After cutting the braces to length, I turn them and test fit the tenons into the appropriate leg mortise.
11. I am now ready to sand and apply finish to the legs and braces.
12. I use masking tape to cover up the tenons to prevent the finish from interfering with the glue bond.
13. If all the tenons fit snuggly into the mortices, I then proceed to glue up the stool.
14. If some are loose. I take the offending tenon to the band saw and cut a groove to accept a wedge on the face grain side of the tenon to just shy of where the tenon meets the turning. When it is glued up the wedge and groove will not be seen. The wedge should be trimmed smaller than the width of the end grain portion of the tenon and shorter than the length of the tenon and thick enough to spread the tenon out in the hole to lock the leg in place.



15. I use either a rubber mallet or a wooden maul to drive the legs into the mortises.
16. Stand back and admire your finished stool. Give it a test run.