



Stave Construction of Boxes and Bowls

Boxes and Bowls can be made from staves (slats), glued together, then turned. That allows the box or bowl to be made from a board, rather than a solid block of wood. It saves a great deal of waste. It also allows some interesting design possibilities.

Thin strips of contrasting wood can be glued between the staves. Alternating staves can be made from contrasting wood, as seen at the top of the page.

There are two ways the sides of the staves can be cut to shape so they will fit together. One way, the staves are cut to both the proper width and the proper angle on a table saw. The other way utilizes a special router bit (birds mouth bit) and a router table, to shape the edges. Lee Valley and Yonica are two brands of birds mouth router bits that I have used. Lee Valley has an excellent instruction sheet with tips on bit height and fence settings, along with formulas for determining stave width for different diameter pieces.



Stave vessels can be made with 6, 8, 12 or 16 sides. 8 sided and 16 sided vessels each require a unique router bit. 6 and 12 sided vessels can both be made with a shared bit. When deciding how many sides (staves) to use, the main consideration is that it is easier to shape a vessel to a smooth round surface, with more sides. The thickness of your wood should also be taken into consideration. For Beads of Courage boxes, I prefer using 12 staves. I also found that when using $\frac{3}{4}$ " lumber, the Lee Valley bit did not work. The lower cutting edge is too short to get a good joint. The Yonico bit has a much longer lower cutting edge, which solves the problem.

Cutting the staves using only a table saw requires setting the saw blade to an accurate angle. I recommend using a Wixey Digital Angle Gauge, or something similar to set blade angle. Here are the required angles:

| <u>Number of Sides</u> | <u>Miter angle</u> |
|------------------------|--------------------|
| 8 | 22 ½ degrees |
| 10 | 18 degrees |
| 12 | 15 degrees |

These are the Stave Widths necessary to achieve the following diameters:

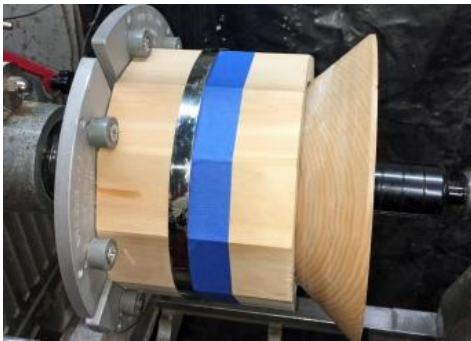
| Diameter | Number of Staves | | |
|----------|------------------|-----------|-----------|
| | <u>8</u> | <u>10</u> | <u>12</u> |
| 6" | 2 1/2" | 1 15/16" | 1 5/8" |
| 7" | 2 29/32" | 2 9/32" | 1 7/8" |
| 8" | 3 5/16" | 2 5/8" | 2 5/32" |

After cutting the staves, assemble them into a cylinder, using masking tape. If the angles don't fit perfectly, glue each half of the cylinder, using masking tape to hold. Then sand each half flat, until they mate perfectly and glue together.



Long hose clamps work well for final assembly.

Holding the piece on the lathe can be done in several ways. I prefer using Cole jaws at the headstock end. On the tailstock end, I use a large cone shaped block. That allows me to smooth the cylinder, round, all the way from the Cole jaws to the end. I can then flip the piece and turn the part that was held by the Cole jaws. Rounding the inside can also be done using the Cole jaws, but I recommend using a steady rest for support.



For a base, I rough cut the piece round, on the bandsaw and use the live center to hold the disk against the chuck and turn it round.



I again like using the Cole jaws to hold the base as I turn a recess into which I will expand the chuck jaws into the bottom of the base. I will finish the bottom of the base before turning it around and gripping it with the chuck jaws. To join the staved cylinder to the base, you can use a mortise and tendon. This is probably best if the inside of the cylinder has not been rounded. If the

inside has been smoothed round, you can use the mortice and tendon or just cut a groove in the bottom to insert the cylinder.



For the lid, if a knob will be attached, the lid can be held with a worm screw. If not, the Cole jaws are a good way to hold the lid to be turned.

Have Fun...and be safe!

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