

Bowl from a Board

Written by John Di Stefano

Bowl from a Single Board

Turning a bowl from a board is a process of cutting rings from the board and building the bowl by stacking and gluing the rings. The bowl is finally turned and polished in the usual way. The cutting of the rings is performed on a bandsaw and the angle at which the rings are cut will determine the shape and height of the bowl. The thickness of the board will also determine the height of the bowl.

The board can be of a single timber or it can be constructed by cutting and gluing two or more different timbers. If using more than one timber to construct the board, differing patterns on the bowl can be achieved by rotating the rings a desired amount before gluing.

Some examples;



Start the project by selecting the appropriately sized stock (say 25mm to 30mm thick) and cut lengths of a similar thickness to build a board of the required size. For example, cut 300mm lengths to build a 300x300 square board.

For cutting practicalities, particularly if cutting the rings with a band saw, you should build two half boards, say 2 boards of 300x150mm rectangular size.

The thickness of the board and the spacing of the rings will determine the height of the bowl. A board thickness of 25 to 30 millimetre (or 1 to $1\frac{1}{4}$ inch) is about right but thicknesses greater or less than this may be used. The ring spacing, thickness of board and the angle of cut are interrelated and the software described in this document ***Bowl From a Board*** has been written to calculate these values. See the explanation of the software later in this document.

One very simple example is when the board thickness and ring spacing are the same. In this special case the table saw cut angle will be 45 degrees.

Build the Board

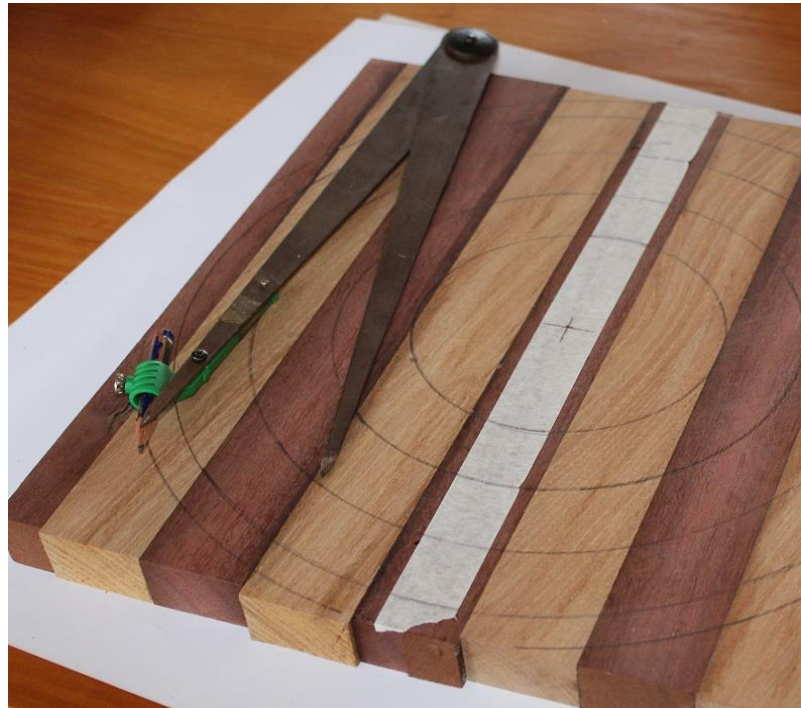
This board was built from 25mm thick and 30mm wide stock. You will normally build the board as two halves but can be constructed as a single board (300x300mm) and then cut along the centre to give the required two half boards.



Drawing the Rings

Use the software provided to determine the radii of the rings. The software allows you to enter the board thickness, maximum diameter of the bowl and the angle of the bowl with respect to the horizontal. From these input parameters the software will calculate a set of ring radii and the table angle that must be set when cutting the rings. The calculated radii will provide the compass settings to draw your rings on the board.

Since you have two half boards it is best to tape the boards together when drawing your rings.



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Bowl from a Board

Board Thickness:

Bowl Maximum Diameter:

Angle of Bowl: degrees

Units: mm inch

[Example in millimetres](#)

[Example in inches](#)

Calculate

Results

Ring	Radius
1	7.5
2	6.3
3	5.1
4	3.9
5	2.7
6	1.5

Set band saw table to: 50 degrees

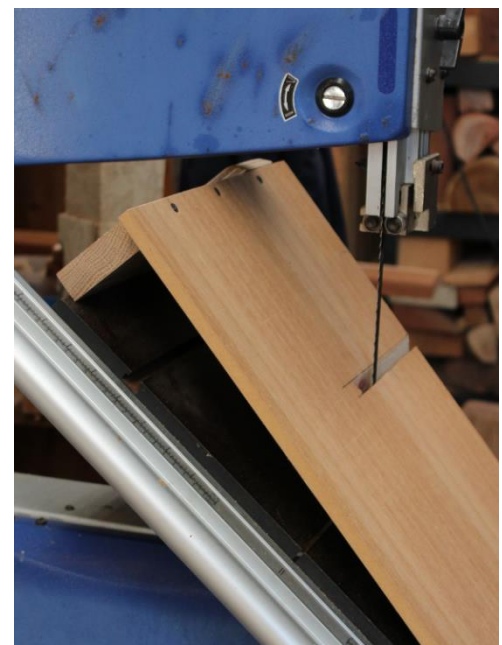
[Documentation](#)

Cutting the Rings

The rings are cut on a band saw. It is best to use a **6mm** wide saw to cut most boards. Wider band saws could be used for large boards but it may get tight when cutting the inner circles with a wide saw.

The software may provide radii that are not required. For example, the smallest diameter circle which will form the base of the bowl should be one third (approximately) the diameter of your bowl. For our 300x300mm bowl we should aim for a 100mm base. Thus, the smallest radius required is approximately 50mm. The software may calculate smaller radii, ignore these unless you wish to construct your bowl with a smaller base.

Cut the outside ring on a flat table. Next, set the table angle to the angle given by the software. Most band saw table angles cannot exceed 45 degrees.



If you aim for an angle greater than 45 degrees you will have to build an extension table similar to that shown in the photo.

The photo shows my extension table which adds a further 10 degrees to the band saw table angle, providing me with a maximum angle of cut of 55 degrees.

Note: Larger table angles give smaller bowl angles therefore lower bowl height.

Gluing the Rings

Here we see the cut rings from the half board stacked to get an impression of the final bowl. A good quality glue should be used to glue your rings

Begin the gluing process by gluing all the half rings together and when dry (allow at least 8 hours drying time) sand the discs flat so that they stack on top of each other without gaps.

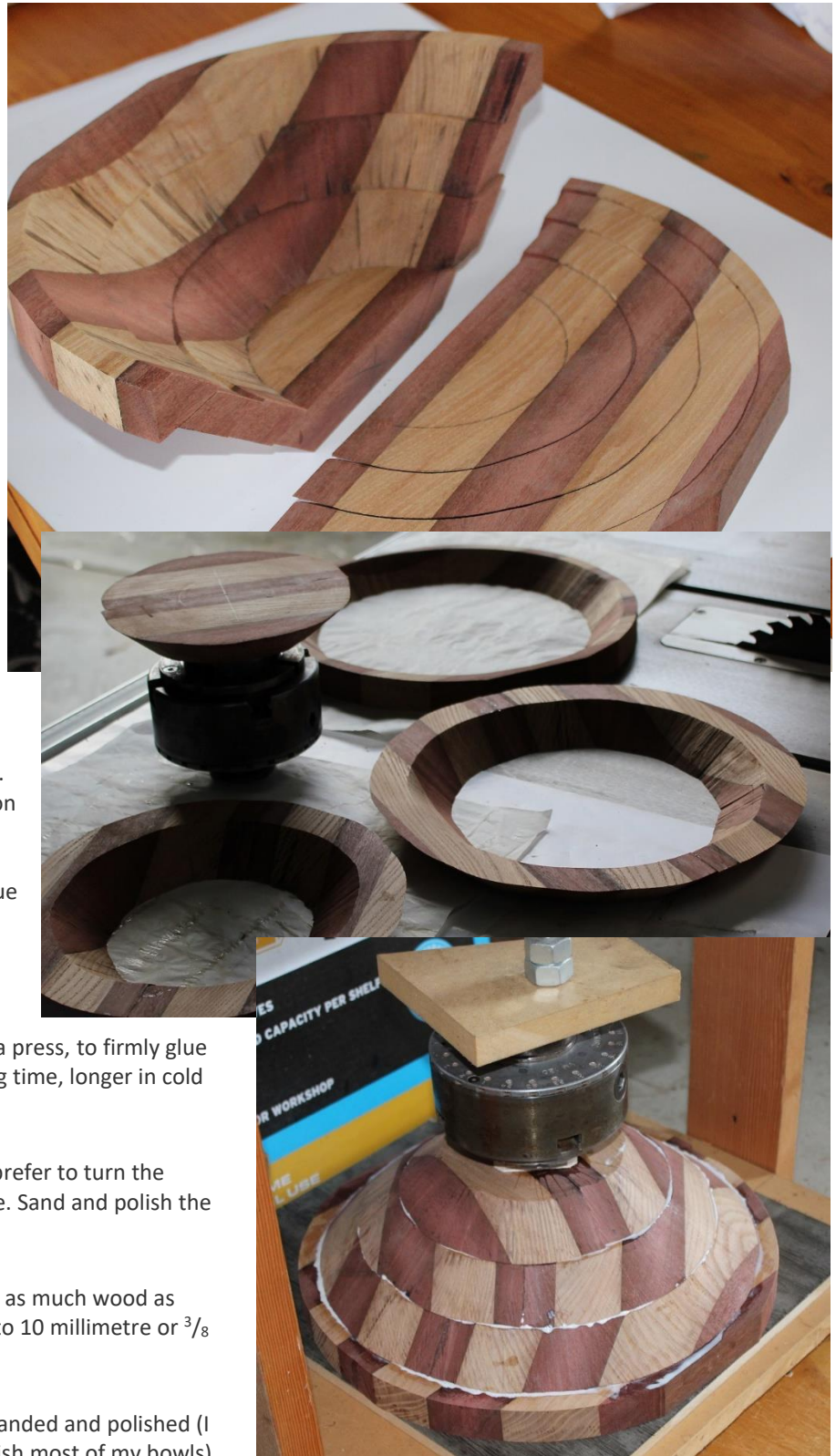
Next, turn a waste block from a piece of softwood such as pine, approximately the same size as the smallest disc from our board. Turn a spigot on the waste block and mount on a chuck. Glue the bottom disk on the waste block. This is shown in the photo with the remaining three rings sanded and ready to glue up.

Next apply glue to all the rings and stack on top of each other. When the rings are all aligned apply a weight at the top, or place in a press, to firmly glue the bowl together. Allow about 8 hours drying time, longer in cold weather.

When dry you are ready to turn your bowl. I prefer to turn the outside first leaving as much wood as possible. Sand and polish the outside.

Next turn the inside. Now you should remove as much wood as required to leave a wall thickness of about 8 to 10 millimetre or $\frac{3}{8}$ inch.

Once the inside and outside of the bowl are sanded and polished (I prefer to use two coats of clear lacquer to finish most of my bowls) the bowl may be mounted on a vacuum chuck or bowl jaws to remove the waste block and finish the base.



The finished bowl, from a board.



Description of Computer Software - Bowl from a Board

The software is accessible from my website;

<https://www.johndistefano.com.au>

Click the following icon located near the top of the home page;



[BOWL FROM
A BOARD](#)

The software assists you in calculating the ring radii based on input parameters such as diameter of bowl, board thickness and bowl angle. The screen shot below shows the general layout, input boxes and results table.

You are required to enter the;

- Board thickness
- bowl maximum diameter
- Bowl angle with respect to the horizontal

Lineal measurements are in millimetres or inches. Angle measurements are in degrees.

Ensure you have your preferred unit (**mm or inch**) by clicking the appropriate radio button.

Click the **calculate** button to calculate the table of radii. These radii are used to draw the rings on your board.

The results may be printed using the printer button at the top of the screen.

Sample screen showing calculations for a 1-inch thick board. The board size of 15x15 inch will give a bowl of 15-inch diameter.

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Board Thickness: 1
Bowl Maximum Diameter: 15
Angle of Bowl: 40 degrees

Units: mm inch

Example in millimetres
Example in inches

Calculate

Ring	Radius
1	7.5
2	6.3
3	5.1
4	3.9
5	2.7
6	1.5

Set band saw table to: 50 degrees

Bowl from a Board Results
Board Thickness: 1 inch
Bowl Diameter: 15 inch
Angle of Bowl: 40 degrees
Set band saw table angle to: 50 degrees
Spacing between rings: 1.2 inch

Draw rings on board using the following radii:
1. 7.5 inch
2. 6.3 inch
3. 5.1 inch
4. 3.9 inch
5. 2.7 inch
6. 1.5 inch

Half Bowl Cross-section

Ring: 1 2 3 4 5 6

[Documentation](#)

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Notes on Half Boards:

The software also draws the rings and a cross-section of the stacked rings (not to scale).

Use the calculated radii and your compass to scribe the rings on the board.

- Remember to cut the **first** ring on a horizontal saw table.
- All other ring must be cut at the calculated band saw table angle.

The software is free of charge and should be employed for private use only, and not for commercial profit.

About the author: When I retired in 2003, I joined the [Wonthaggi Woodcrafters](#) in an excellent part of Victoria, Australia known as Bass Coast. The club and its generous members gave me the opportunity to learn the craft of woodturning and within a few years I had purchased my own lathe and equipped myself with other essential pieces of workshop machinery, such as a band saw and table saw. But woodcraft is not my only interest. Most of my working life was spent running my own software business developing software for education and the love of writing code never left me. Now, having the freedom of not having to work, I have the time to pursue various interests. As you can gauge from this article, I have combined both my woodworking skills and my computing skills. With a little understanding of the relevant geometry and the associated mathematics I have written the software described above to assist me, and hopefully you too, in building bowls from a board.

Also see the related software and documentation on how to make [a bowl from multiple boards](#).

If you are also interested in **Segmented Turning** see [Segmented Turning Helper](#) (also available from my website).