Assembling Segmented Rings

Version 1.0.0

This member of *The SegMaster Series* is a quick overview of Assembling the Rings that you created in previous tutorials.

Part of

The SegMaster Series

The SegMaster Series is a set of tutorials provided for new or experienced woodworkers interested in Segmented Wood Turning. They are short, concise, and filled with tips and techniques that readers may or may not have thought of themselves. They maximize photos and illustrations and can be skimmed quickly or read slowly and studied. They can be printed, taken to the shop, and used as tutorials. Please enjoy them and let me know how they can be improved.

Written By

The SegMaster

Visit our Webpage

Assembling Segmented Rings

Previous tutorials showed you how to create rings using segments. This tutorial covers assembly of these rings into a bowl or other turning. Even if you are already doing this, you might find some useful tips in this Tutorial.

Starting Point

Previous tutorials in this series have shown you how to solidly mount your bowl base to your lathe and how to create smooth rings. You are now ready to add these rings to this base.

While it certainly is possible to do this "by eye", and I started out this way, I now much prefer to use my Nova ™ chuck with Cole Jaws to hold the ring in place while I position it.

This tutorial might seem to suggest completing all the rings before gluing any of them. This is certainly not necessary. Feel free to glue the first ring as soon as it is smooth if you want.

Mount the Ring into the Nova Chuck and Cole Jaws

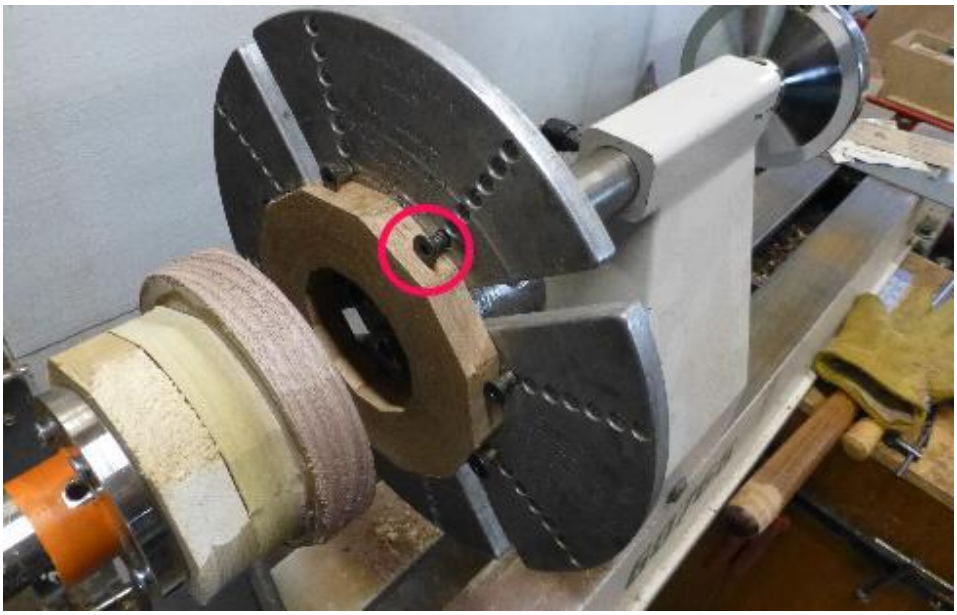
Install Cole Jaws onto your Nova Chuck. Then mount the first ring onto the Cole Jaws. I use 6mm x 20mm flat head screws for this. They are lower profile than the bumpers that some with the Cole Jaws and do not get in the way while mounting. They should be snug enough to hold the ring in place, but do not have to be particularly tight.

Next, you need some way to mount the Nova Chuck to your tailstock. I prefer to use a Live Tailstock Adapter available from Amazon or PSI Woodworking. Lacking this, you might already have a tail stock adapter that does not spin. That too will work for this step.

Another option is a fixed adapter such as shown at the right. This adapter is available from Amazon for 1¼" x 8tpi.

I could not find a corresponding 1" x 8tpi fixed tailstock adapter. (The "live" one shown above is not much more expensive and is much more useful.) However, I designed and printed one on the 3D printer. Notice the ½" steel rod in the center for strength.

The photo below shows the base of the bowl with the ring, held in the Cole Jaws, ready for gluing and assembly. Notice that a 6mm x 16mm flat head screw is holding the ring rather than a rubber bumper.



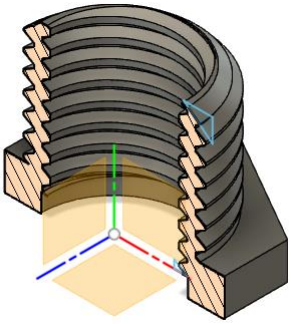
The Cole Jaws hold the ring perfectly centered on the axis of the lathe and therefore on the bowl.

Note that 8 screws are used here because the Cole Jaws were most recently used for smoothing this ring. If all you are doing is centering, no significant force is applied to the ring and 4 screws suffice.

A Word About Spindle Threads

A started out with a small Jet lathe with a 1” x 8tpi drive spindle. **I** proceeded to purchase a fair number of tools compatible with this thread pitch, including a couple of Nova Chucks and the live tailstock adapter shown above. I also had a tap for cutting threads into waste blocks.

When I started using larger lathes with a 1.25 x 8tpi spindle, these tools no longer fit. For the Nova Chucks, I solved this with a different insert for the chuck. To use a 1” faceplate on my new lathe, I purchased a Headstock Spindle Adapter.



To use the tailstock adapter above on a 1.25” waste block, I made an adapter on a 3D printer. The Tutorial entitled *3D Printing for Woodturners* covers this and more.

In any case, you need some way to mount your ring onto your tailstock.

Apply Glue

I wear a nitrile glove to transfer glue from a glue pot to the base of the bowl to both surfaces to be glued. I prefer to do this while both surfaces are off the lathe and level, but you might not want to bother taking them off the lathe. When the pieces are on the lathe, bring them together with the lathe still turned off. It is best to get them close but not touching by moving the tailstock and then securing the tailstock assembly to the lathe bed. Bring them together using the crank on the tailstock. As they begin to touch turn the headstock by hand so that there is rubbing between the two surfaces. As they begin to bind make sure that the segments are aligned the way you want them relative to the ring below. Finish tightening. The lathe will be acting as a clamp.

After 10 or 15 minutes, you can loosen the tailstock and then loosen the Nova Chuck and slide the tailstock out of the way. You can add the next segment.

Note that TiteBond™ recommends 30 minutes of clamp time and 6 – 24 hours cure time.

Clamping

Sometimes, you will want to work on the current ring before adding the next one. Perhaps you want to make the ring thinner. Perhaps you want to work on the inner portion of the bowl before you have attached so many rings that the inside is difficult to get to. Perhaps you glued a ¾" ring where you want a ¼" ring and you plan to split the ring. In these cases, you should let the glue set for at least 6 hours.

At this point, your lathe is working as a very expensive clamp. That is fine if you do not need it for anything else, but I often have several pieces going at once and I do not want to sit around and read tutorials for several hours. I remove the work from the lathe after 10 minutes and place it on another "clamp". There are several possibilities.

Easiest is to use my old lathe for the clamping. See my note on spindle adapters above.

Weights make a quick and easy clamp. I have some old 6# SCUBA weights. I pile 4 of these onto the bowl for a few hours.

A large Bench Vice works well for small bowls. Be sure to include a board under the ring to assure even pressure over the entire ring.

One of my favorite “clamps” is a Drill Press. I crank up the base so that it puts pressure on the work piece.

And of course, the easiest method is to leave the work “Clamped” on the lathe for 30+ minutes and then let it sit for 6+ hours before working on it.

Turning

Eventually, your bowl will be fully assembled and ready for completed turning. By this time, I have often done some turning on the lower layers, but there is a bit of danger here. Your eye can best visualize your completed bowl when the full bowl is assembled.

I will not give you advice on bowl turning; you are probably better at it that I am. I will suggest that you rough turn the outside, then the inside then back and forth until both the lines of the bowl and the thickness are what you want. On single piece bowls, I always complete the outside first, but with segmented bowls, you might end up with a thin spot if you do it this way.

Combining Smoothing and Assembly

These days, I mostly smooth my rings by putting them on the lathe in Cole Jaws and using my turning skills to smooth them.

Before I got the idea to do it this way, I made a sanding disk for my lathe. I smoothed the rings on the sanding disk. It was time consuming. I therefore often sanded one side of the ring. I mounted this sanded side to the bowl. Once the glue was cured, I then smoothed the other side using lathe tools.

If you are doing things this way, you most likely do not have Cole Jaws. You will therefore be mounting the next ring “by eye”. If this is the case, it is a good idea to round the ring at the same time to remove and placement error. This ring thus provides a reference for mounting the following ring.

Conclusion

Now you know what I know about assembling rings. You are ready to move on to the Tutorial on *Completing the Bowl.*