

-Glue the jig together which is made in two layers. You can see the empty jig on the left.

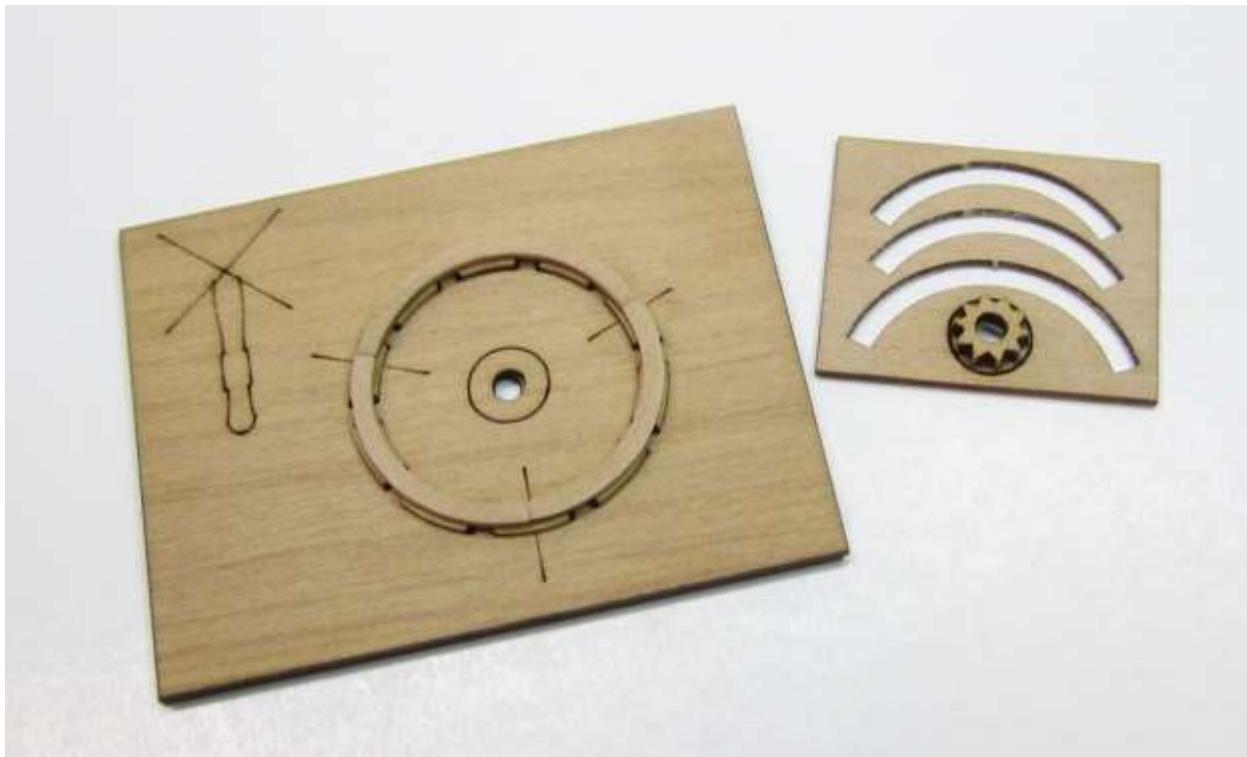


The first step would be too lightly sand both sides of all the sheets containing the pieces so you can remove the laser char before releasing them.

-Then the tiny rim segments (very small pieces) are carefully sanded on the inside and outside of the rim only. Dont sand the left and right sides because the length of these pieces needs to be constant and precise. Only sand the outside Diameter and Inside diameter of the rim pieces if that makes sense.

Use 320 grit sand paper and only barely used enough force to remove the char from those two sides. Dont take too much off.....These were only lightly sanded so they would fit snug in their little spaces in the jig. Not to tight and not too loose. The jig on the right shows the rim segments in position. These pieces are 3/64" thick and stand proud of the jigs surface.

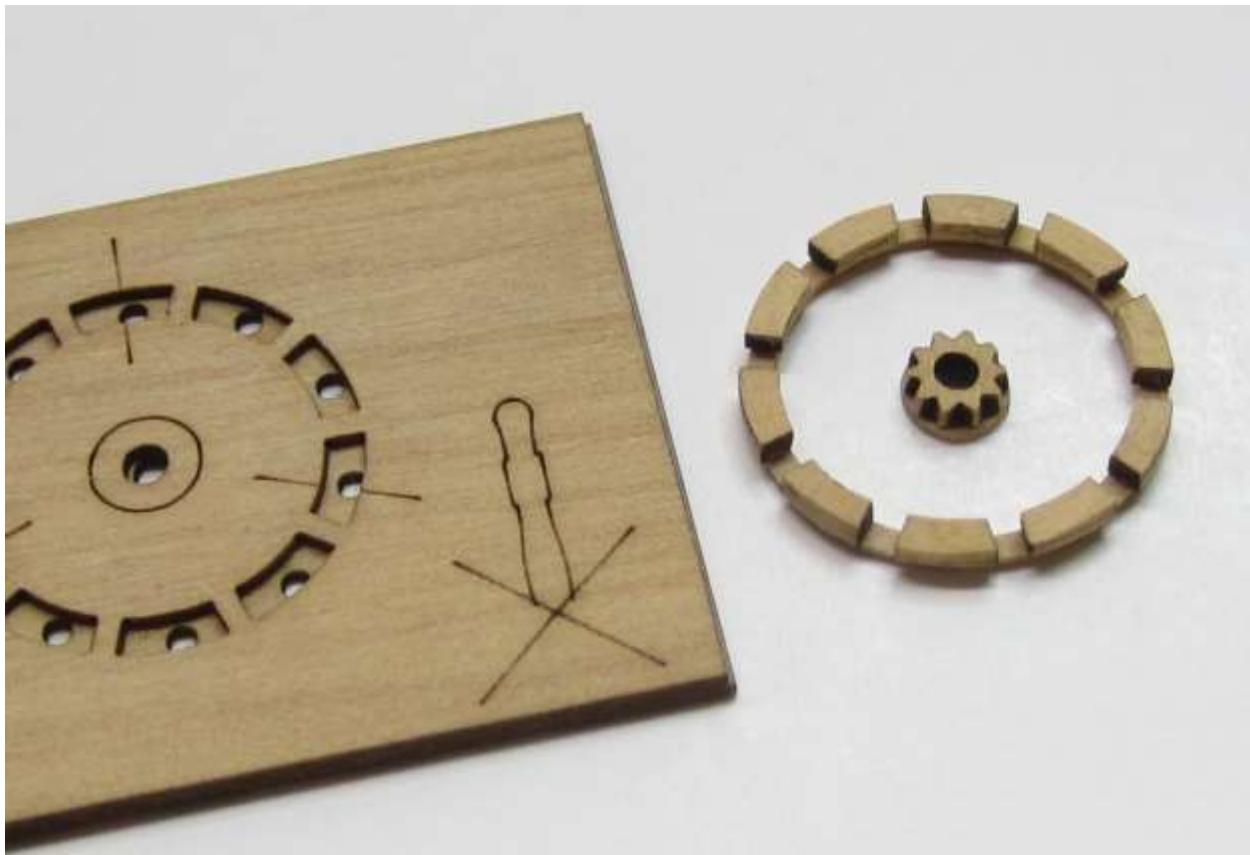
Next, you add the thin .025 boxwood ring on top of the rim segments. You use the etched reference marks on the jig to guide you. Sand the three ring pieces, once again only on the inside and outside edge to remove the char. Do NOT use CA for this. You need to use yellow glue because it has more open time and easy clean up with water. Just use a brush with some water to clean up the glue that squeezes out. Use a toothpick to apply just a tiny drop of glue on each segment. DONT GLUE THE SEGMENTS INTO THE JIG. You must be very neat here and be careful not to do that. Some of the segments may come loose from the jig as you try to add the glue. To avoid this, try holding each segment down with a toothpick on one end of the pieces while applying a dot of glue with another.



When placing these pieces you will center them so there is a slight ridge/lip on either side. You can see this in the photo. Note that even though these three ring pieces are only .025 thick, they are still too thick for the wheel. But don't sand them down thinner just yet. Keep them this thick for strength. Once the wheel is completely done it can be sanded down very very thin. One of the three ring pieces is longer than the other

two. This is the first one I placed in position....line it up with the reference marks on the jig that shows where the joints will be.

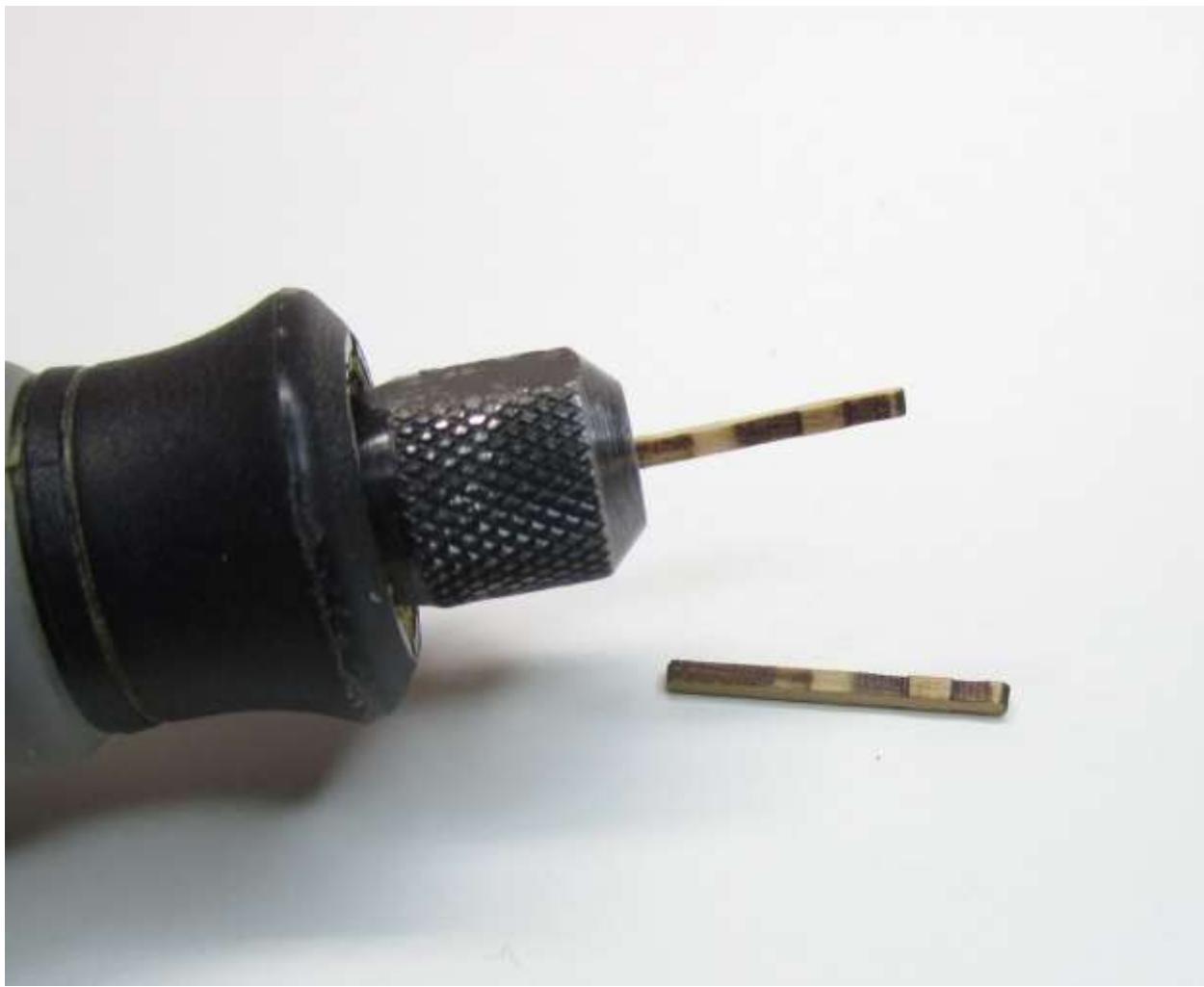
Make sure it's completely dry before you remove it from the jig. While it's drying prepare the center hub. Take the star piece and glue it to the thin circular disc. I found it easier to do before removing the disc from the small sheet. It's easier to center the star piece on top.



To remove the rim from the jig be very careful. Use the holes in the jig to slowly and gently push the rim free from behind. I used a toothpick. Dont just push one side through. Use all of the holes to progressively inch it off the jig moving from one side of the rim to the other. The rim will break if you don't use patience. Remember the ring is just .025 thick.

For the spokes....we realize everyone gets a bit nervous about these. They are not that hard to do with some prep work. To begin, they are laser cut with a slight profile of the spoke's shape. This has its advantages and disadvantages. Use a dremel pencil type rotary tool to

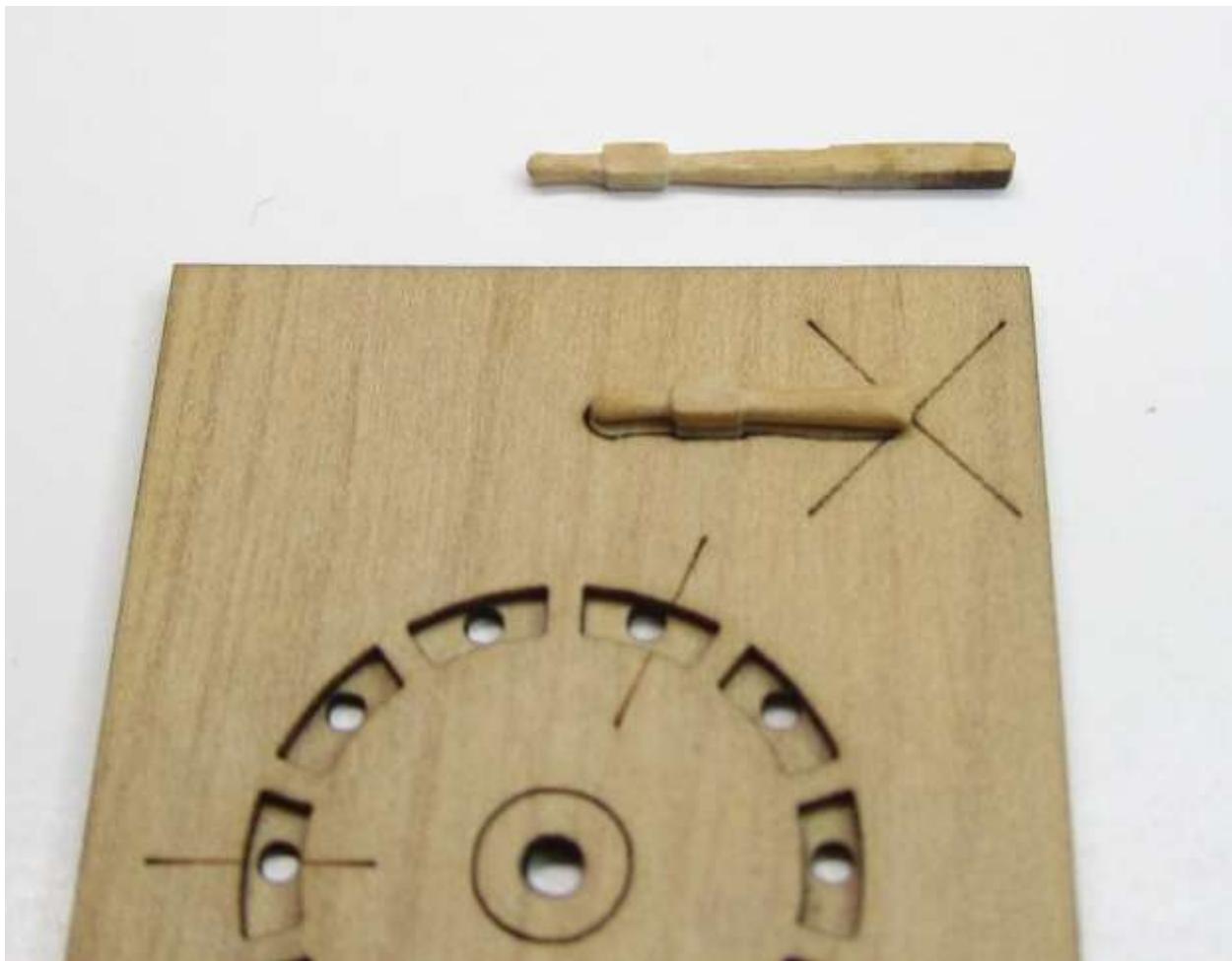
turn these. If in advance, you lightly sand the sides with the laser char so the area that must remain square is lighter, it will show up when you turn on the Dremel. It will be quite clear which area you shouldnt touch and should remain square.



Use an emery board to do this with a fine grit. You can also use the emery board to shape the round sections of the spoke while it's turning. Or you can use a variety of needle files, whichever is most comfortable for you.

You may still have a bit of clean up to do when it's done but for the most part, it does a good job of making consistent spokes. There are plenty of extras in the mini kit for the learning curve.

You can get as fancy as you want. You can turn some decorative rings on the spokes if you like. Or just round them off and create a slight taper while keeping the square portion as square as possible. Using a light touch and a fine grit will allow you to keep it a very similar diameter and shape from spoke-to-spoke.



Then use the jig to measure the length of the spokes and cut them flat....to finish it off sand a point on that end which will fit into the star shaped hub.

OK, let's finish off this wheel.

All of the spokes were made as described earlier. I recommend making all ten first before you start assembling anything. Trust me on this. By the

time you get to the tenth spoke you will have gotten so much better... that you will throw away your first few attempts and make more. If you get impatient and glue them onto the rim as you complete each spoke this wouldn't be possible.

Start by assembling two spokes only....one on each side to make a straight line. This will help you establish the hub in the center of the wheel properly. Use the jig to help you with this. There are references for the hub and rim. Then add two more so you get an "X" pattern....this will add strength to the entire wheel. You can see I have added a fifth spoke in this photo after making the "X" first.



Then slowly fill up the remaining slots.

Once done, sand everything flat on this side because you will adding the rim ring and center hub covers now. It's done the same way as you did on the first side. Only this time it's even easier. That basically completes the wheel except now you must thin down those rim cover rings. The .025 thick boxwood is too thick. You want to carefully sand it down so it's almost paper thin. This really makes the piece come together and look finished and to scale. Your wheel has probably gotten dirty while putting it together. All of that laser char dust just muddies the wood finish.



SO, this would be a good time to go wash your hands and then lightly sand everything to clean it up before you apply the finish.

That's it!!!! As you can see the wheel is just 15/16" in diameter from spoke - to - spoke. Also remember that this example pictured is built pretty straight forward. You can make the spokes as fancy as you would like....add some decorative rings while you turn the spokes....and you could add some treenails around the rim if you want. This is the bare and plain version without any bashing. I am sure you guys will have fun making these as elaborate as you want.

All of the materials are included for you to make a unique ship's wheel appropriate for your ship model project, that is to scale with no chunky parts which is usually the case with most kits and aftermarket cast wheels.

