R2D2 Wood CNC Frame Kit.
DIY Tips and Guidance Sheet.

The following, along with the print pack will help you make your own Mike Senna style R2D2 frame from wood. Mike is the designer. He has allowed me to put out these prints with his permission for members of the R2 Builders Club. If you are not a member in good standing then the use of these prints in forbidden.

If you have any questions along the way do not hesitate to email me. (mjhenks@yahoo.com) If you find that the amount of work needed is beyond your skills or desire then contact me as I make kits from time to time and may have one to sell. I also have leg kits as well.

The parts you will have to make include:

One ¾" plywood Upper plate (R2D2 Top Sheet 1.pdf & R2D2 Top Sheet 2.pdf)
One ¾" plywood Lower Plate (R2D2 Base Sheet 1.pdf, R2D2 Base Sheet 2.pdf & R2D2 Base Sheet 3.pdf)
One ½" plywood Middle Ring (R2D2 Middle Ring.pdf)
2 long ½" plywood Middle Curve pieces with cut outs (R2D2 Quarter Ring Cut.pdf)
1 long ½" plywood Middle Curve pieces with out cut outs (R2D2 Quarter Ring Solid.pdf)
1 short ½" plywood Middle Curve pieces (R2D2 Eighth Ring.pdf)
1 long ¼" MDF Middle Curve pieces (R2D2 Quarter Ring Solid.pdf)
10 Uprights. (5 long, 2 medium and 3 short) (R2D2 Uprights.pdf)
Two ¾" plywood side plates (R2D2 Side Plates.pdf)
One each ½" plywood side plate support pieces (R2D2 Shoulder Wings.pdf)

Take care in making these parts. The more accurate you are now (at the beginning) then the easier the frame will go together. Tools you will need include: a router with ½" bit; a following bearing (will help you as free-hand routing is difficult); a table saw with ½" dado blade; scrap wood to make templates; sand paper, glue and other garage type tools.

WARNING!!!!

The tools needed to make this kit can and will remove fingers, limbs and anything else they touch far faster then you can get out of the way. Be careful. Always where eye protection. Do not wear loose clothing and if you have long hair put it up in a hat. Undertaking this project can be dangerous. I nor any of the members of the R2 Builders club are or can be held responsible for injuries as a result of making this kit or any other parts for your Astromech Droid. If you do not know how to use any of the tools needed then ask and learn before you cut any wood.

Note, this frame was designed to be used with the Club spec two layer aluminum skins. (By John Sherell) If you are using something else you may have to alter the frame. Also, a lot of the cut-out for various detail pieces are already in the frame for you. They may need to be tweaked though as you go to fit your specific parts.

Some words of warning.

1. These parts are wood. Wood is very forgiving and almost any error can be corrected with filler or another piece of wood. Take your time. Think about what you are doing before you do it. Remember the old adage, Measure twice, cut once.

2. Once cut, you will find "fuzz" on the edges of your parts. This is part of working with wood. Hit the edges with a light sanding and all the fuzz will be gone. You may also find a slight break outs on the edges. This is also normal. Most of it will never be seen so not to worry.

Assembly Tips.

1. Do not glue anything together until you test fit everything and have a good plan for what your next step will be. Think ahead to the rest of the frame details. Are any modifications or additional holes needed now? How will you attach the other pieces? A little planning now will save you time and frustration later.

2. When you actually glue it up, remember to have at hand the glue, some rope, a bungee cord and something to wrap the frame in like your skins or a piece of flat plastic. It is better to lay them out before you apply the glue then after and scramble to get it done. Typically, once you start applying glue you need to be done in about 15 minutes. A helper is highly advised.

3. You can only glue it once. Once the glue is applied you have to go for it so DO NOT take it apart and try and clean the glue off. It is too late. Clamp them up and work with what comes out. Another reason to plan ahead.

Guidance

If you have never worked with wood these may help you out. If you have then much of this will be obvious. Just trying to help.

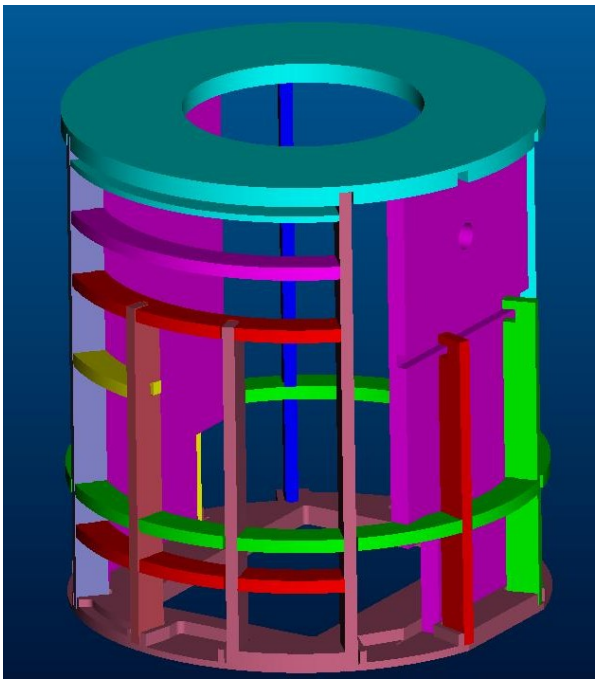
1. Assembly. Depending on how close you follow the prints, you may or may not have accurate parts. No matter, there are tolerances involved so expect some slight mismatch. When you pre-assembly the parts, look for your errors or parts that need some additional work for proper fit. You may want to do some sanding in local area prior to gluing them up. (Like any fuzz on the parts) This would be considered normal.

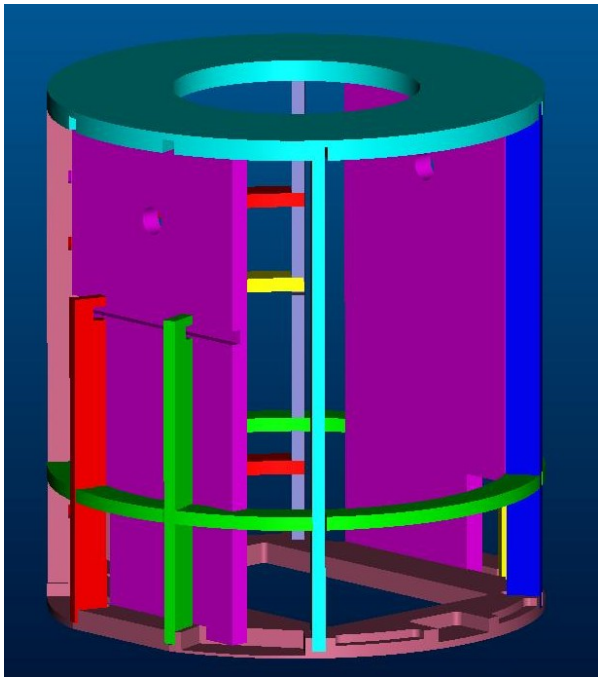
2. So you screwed up and cut something wrong or miss-drilled a hole. It is not the end of the world. Again, this is wood and it is very forgiving. Try filling the void or gluing in another piece of wood. Here are some recovery options.
    a. Fill it with filler, sand and prime it. I bet if it is small, you will never see it.
    b. Back to basics. Make it again.
    c. Dowel each piece, glue them back together, fill, sand and primer.
    d. Miss drilled holes can be filled with a piece of dowel. Glue it in, let it dry and re-drill. Just remember that if your new hole is just off center to the

dowel you glued in that the new hole will be hard to drill and want to wonder since the dowel's wood may be harder or softer then the rest of the wood.

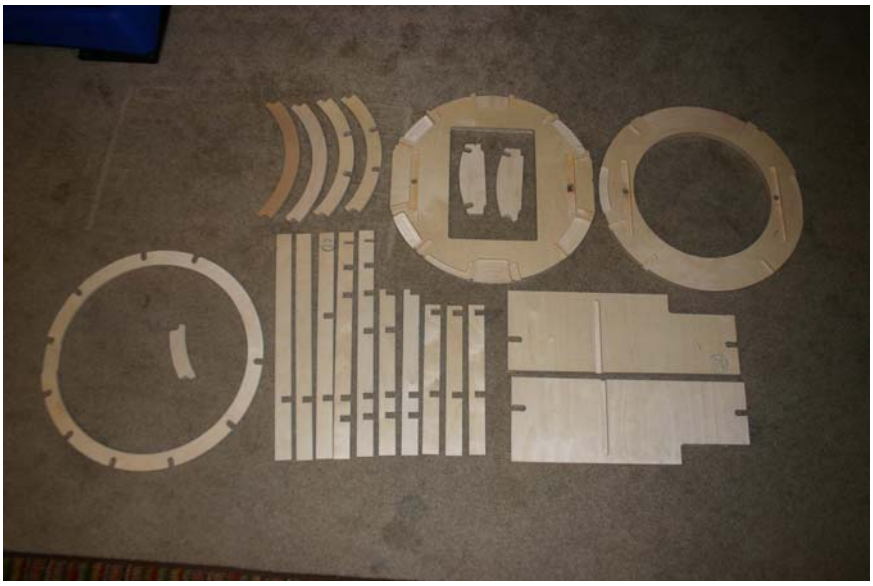
e. So you stripped out a screw. What do I do. Two tricks. Stick a toothpick into the hole and re-screw in the screw. Stick some Steel wool and glue into the hole and re-screw the screw in. Both work well but this hole is now compromised and will not take a lot of screwing in and out any more.

3. Attaching legs to your frame. Again, you will need to be creative. Remember that this needs to be strong if you plan to R/C you robot. Plan out what you want to do before you cut anything





Pictorial Assembly:



All 22 Pieces

Base

Four corner pieces and middle ring. Note the rear uprights have no slots. Note the left front has an extra slot. Note the cut out on the middle ring faces up.

All 10 uprights installed around middle ring. Note the front 2 are short. The front left has the extra cut out to match the front left from the previous step. Note the rear right has the short upright and the rear left the long one.

5 partial rings installed. Note that the top two do not have middle cut outs and note the side the small ring is on.

Reverse view of the same thing.

Side pieces installed.

Side plates installed. Showing left side

Side plate, showing right side

Top installed. All done.

Helpful web sites: Please keep in mind that these guys did not make your parts so if you did not follow the prints very well it may be hard to help you. Please read all the info posted and email me before you bug them or flood the board with questions. I should be your first point of contact otherwise these guy's will not allow others to use their web sites as references.

1. http://vfranco.blogspot.com
    a. Awesome build of 2 wood based droids from beginning to end. A must read. Frame covered in the beginning and again in early 2009.

2. http://www.sci-fire.com/R2D2.htm
    a. Similar wood frame being built up.

3. http://www.starwarstoycollector.com/R2Frame1page.html
    a. Pictures of one being built by hand.

Acknowledgments:

Special thanks to Mike Senna for his wisdom and R2 Design skills. These prints would not have happened if it were not for him. He is the man!

Victor Franco. For his excellent web diary on how to make a R2D2 following the Mike Senna School of thought.

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Astromech.net and all the other builders for trying things out, posting prints and overall generally being helpful.

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