Project Tutorial

Compatible with almost all CNC Machines

Make on:

FLA100
FLA200
FLA300
FLA400
FLA500
Any Router with a 12"x24" Working Area

File Formats:

VCarve Pro 6
Aspire 3
DXF

Sample Carved With:

FLA100

Wire Spool Rack

Designed By FLA

The Wire Spool Rack project helps store reels of wire and keeps them off your workbench. The design based upon a modular design that allows you to add an extra stack with just one side. It will make a wonderful addition to any electronics lab.

The finished Wire Spool Rack is about 5" W X 8" D x 16".

Main items you will need:

1) **The Project Files (included):**
   - WireReelHolder.crv3d

2) **Plywood:**
   - 1/8" x 12" x 24"

3) **The following fasteners**
   - (14) 4-40 x 5/8 SHCS
   - (14) 4-40 Hex Nuts
   - (6) 3/8 -16 x 4" Hex Bolt
   - (6) 3/8 -16 Hex Nut

4) **Sandpaper, wood stain, and/or paint and clear finish.**

5) **A Dremel-type rotary tool with assorted sanding wheels and bits to sand small details and Speed up preparation for finishing.**

CNC Bits used:

1/16" downcut end mill

STEP 1 – Open and Review the Project Files

Start your Aspire of software and open the Project files. (fig. 1)
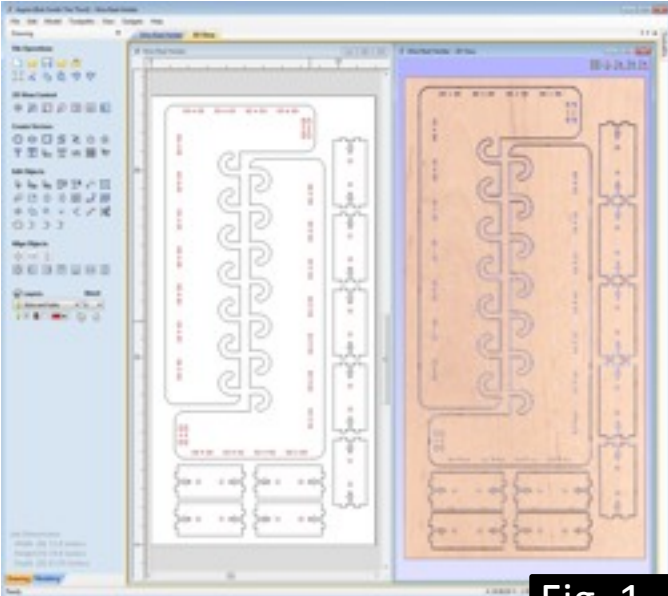

Fig. 1

Please review the toolpaths and make any necessary changes to feed/speed, RPM settings, etc. to suit your particular bits and machine.

The toolpaths are currently set with the same feeds, speeds, pass depths and other settings that were used to create the original sample. Please don't use them directly until you review them for your own setup. This setup should work on all FLA routers. **It is very important to recalculate all toolpaths after making any edits/changes.**

Once you have recalculated the toolpaths for your own machine and bits, reset the preview, then preview all toolpaths again to visually verify the project outcome on-screen.

The project is designed with tabs to hold parts in place during the final part cut outs. You may delete the tabs if you use some other reliable hold-down method.

If you are using the DXF file, we recommend running the 1/16" endmill at 50ipm with a 1/32" depth of cut. Please use a DOWNCUT endmill for the project and not an upcut. With this thin of a sheet, an upcut endmill will lift the sheet in the center an ruin your project.

STEP 2 - Run the Project

When you are satisfied with your settings, save the toolpaths to the appropriate Post Processor for your machine. If you have Mach 3, use the Mach 3 post processor. Be sure to save both toolpaths to the same file.

Place your material on your machine bed and proceed to run the project. Be sure to use a spoilboard because the project cuts all the way through the sheet. We have provided enough clearance around the edge to use clamps to hold down the sheet. By using the downcut endmill the clamps are only needed on the top and bottom sides. We used 4 clamps to hold the sheet.

Make sure that the machine is zeroed to the bottom left corner of the sheet. The measurement doesn't need to be exact, just close. Next, zero the Z-Axis to the top of your spoilboard. All of our projects are zeroed to the top of the table/spoilboard to eliminate issues with varying thickness of material. Your Z-Axis zero measurement should be precise. We recommend using an electronic edge finder to find the Z-Axis zero.

STEP 3 – Clean the Project Parts

After the CNC is done cutting the sheet, take the sheet off the machine and cut the tabs off the parts to free them from the sheet. Use the Dremel or a sander to sand the tabs and the fuzzies from the parts. When you are done, you should have a parts that look like Fig 2.

Fig. 2

STEP 4 – Assemble the Project

To assemble the project, each side needs 6-7 Side pieces and 2 main pieces. If you cut 2 Panels, you have enough parts for 3 total Sections. Each Panel needs 14x 4-40 SHCS and Nuts as well as 5x 3/8 Hex Bolts and nuts. (Fig 3)

Fig. 3

Start by putting the nuts in the T slots on the spars (Fig 4). There should be 2 nuts per spar. The nuts should fit in snugly and hold themselves in place with friction.
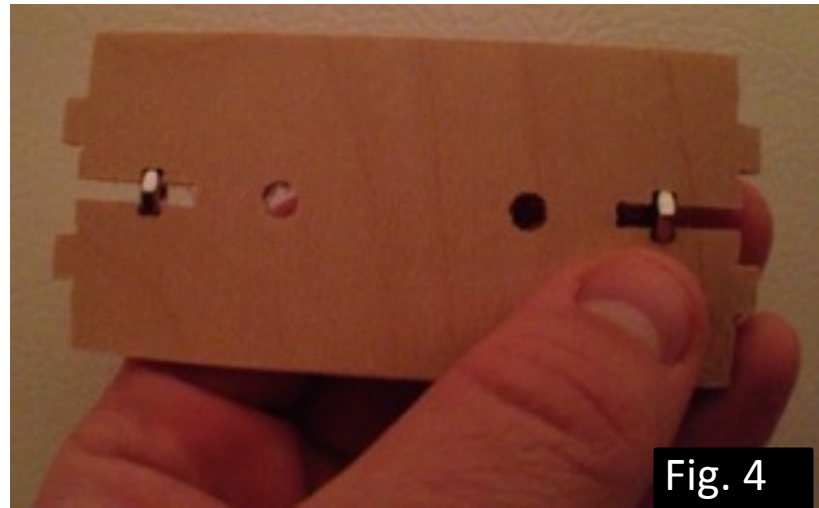

Fig. 4

Put the spars into the slots on one of the sides. You Should only load every other slot (Fig 5). For each spar, push the screw through the hole on the outside of the side piece and screw it into the nut on the spar (Fig 6). Tighten the screw to lock the spar in the slot. Repeat for all of the spars in the side.
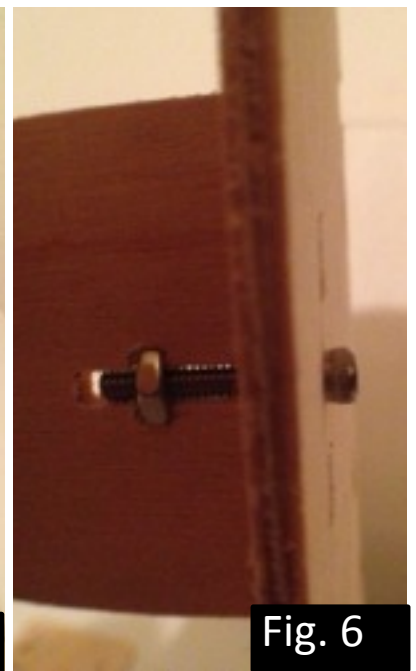

Fig. 5

Fig. 6

Connect the other side into the slots. Push each slot into the side one at a time (Fig 7).

Fig. 7

Insert the screws and tighten down all the spars against the sides. The unit should now be assembled and ready to hold the wire spools. Take one of the 3/8 screws and thread a nut onto the end of it. Lock the nut in place with some thread fastener like Loctite. Put the screw through the middle of the wire spool(s) you want to hang and slide them into the slots (Fig 8). Use every other slot.
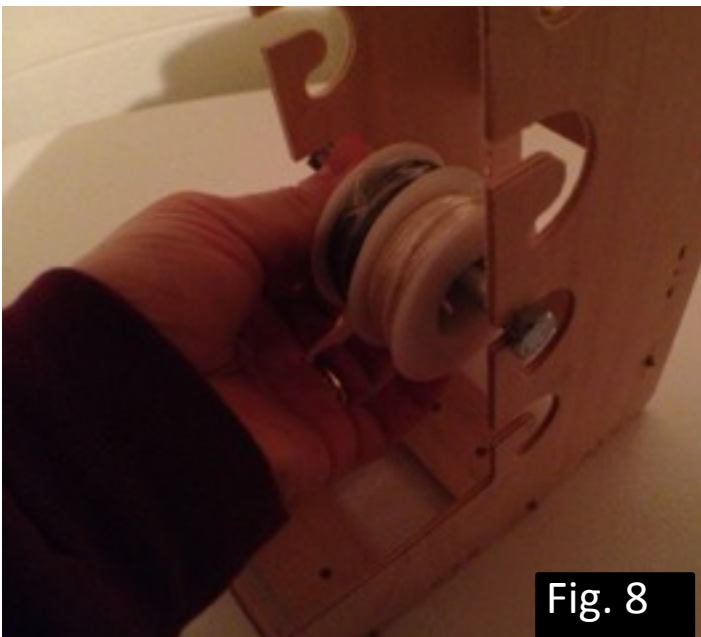

Fig. 8

Step 5 – Add-on to the rack (Optional)

If you would like to add on to the rack, the process is the same as assembling the original rack except that you are using one of the existing the sides as a starting. The spars should go in the alternate slots that you didn't fill during the original assembly. The wire spools should seat in the slots not filled in the original assembly. See the circled areas on Fig 9 for reference.
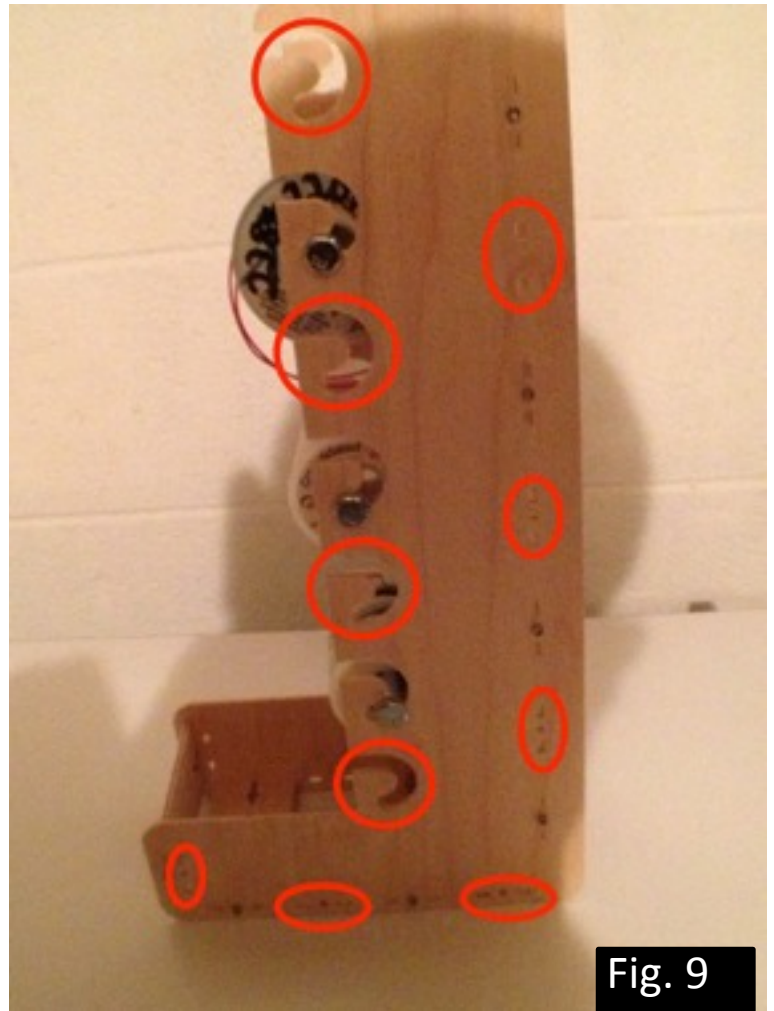

Fig. 9

Materials Source Page

MSC Industrial Supply

- 3M Radial Bristle Discs
  - Stack 3 discs on a mandrel at a time to sand parts.
  - 80-grit: Part # 07646342
  - 120-grit: Part # 65028995
- 4-40 x 5/8" SHCS: Part # 05664065
- 4-40 Hex Nut: Part # 87921243
- 3/8-16 x 4" Hex Bolt: Part # 67434720
- 3/8-16 Hex Nut: Part # 87920922

Note, instead of buying 100 packs of fasteners, we offer a hardware pack for this project.