

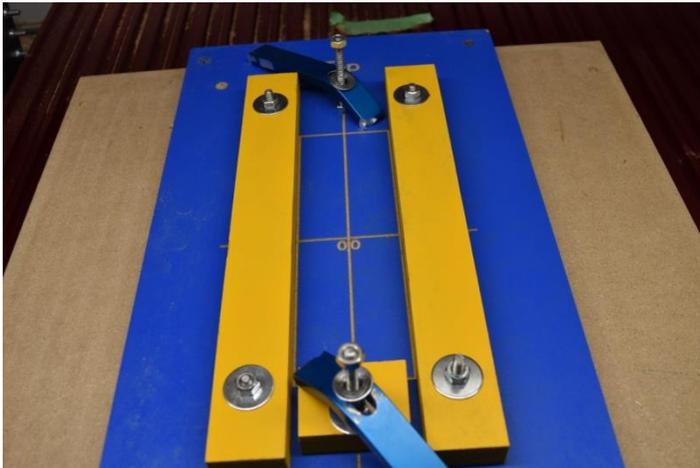


Next Wave Commemorative Chess Board Piece “The Fixture”

Design by Rick Frazier

Next Wave Automation is celebrating the 10th Anniversary of their “CNC Shark” by building a unique chess set. This unique set will be revealed one project each month, starting with a chess board, followed by individual pieces. This project is the Fixture. This project is aimed at the woodworker with moderate to intermediate skills. You will need access to V-Carve 9.0 with updates, and the tools listed below. With the V-Carve software, open the project CNC files. Carefully review all the toolpaths and make necessary changes to suit your tools and machine. The toolpaths are currently set with tool, feeds and speeds that were used in designing the original project. Don't use them directly until you review them for your machine. You can edit the tools and change the settings to fit you own machine and requirements. It is very important to recalculate all toolpaths after making any changes. Once you have recalculated for your own machine and tools, reset the preview, and then preview all toolpaths again to visually verify the project outcome. Then create the tap file for your machine using the correct post processor. Now you're ready to make your own Next Wave Automation 10th Anniversary Chess Set, fixture.

Next Wave Automation 10th Anniversary Chess Board Piece “Piranha Pawn”



For this project we will be building a Next Wave Automation Commemorative chess set fixture. This fixture is necessary for the machining of the chess set pieces in this chess set. You will find a material list, tool list, videos and the V-Carve files on Next Wave Automation's Website to complete the project.

Project material list:

4- 1 ¼"x¼" threaded Rod

2- 3 ½"x¼" threaded Rod

6- ¼" fender washers

2- 1"x 5/16 dowel

2- ¾"x8"x10" MDF

CA Glue

2 colors of paint

2- Aluminum CNC clamps

Project Tool List:

1/4" up cut Spiral straight bit

¼" 60° V-bit

Project CNC Files:

Fixture2 base.crv

Video Files:

Alignment Lines.mp4

Bottom Machining.mp4

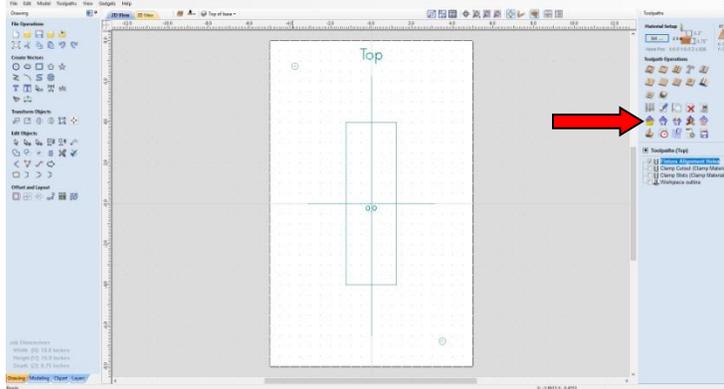


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Squaring machine to spoilboard.mp4

Step 1: Creating Tap Files:



Start by opening fixture2base.crv to create the tap files. After opening Fixture2 base.crv go over to the tool path menu and save each individual tool path using your corresponding post processor file. For this project you should create six tap files. Retain the tool path names for your tap file with top and bottom attached so they match the tap files that are in the instructions. For more information please watch the video on Creation of Tap Files.

Step 2: Machining the materials:

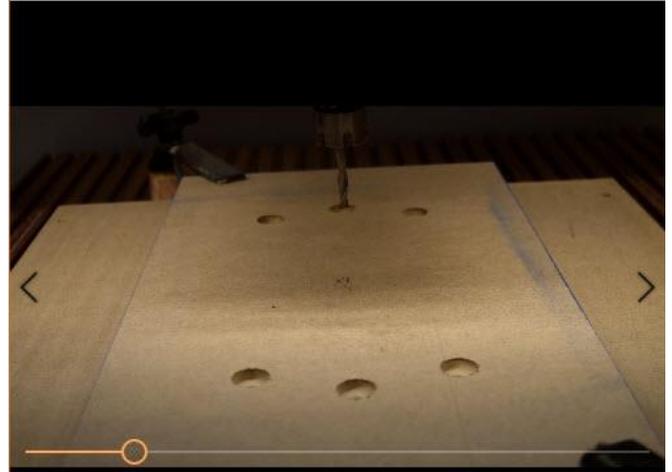
Gather your materials

- 2 pieces of MDF,
3/4" x 8" x 10"
- 4 pieces of threaded rod,
1/4" x 1 1/4"
- 2 pieces of threaded rod,
1/4" x 3 1/2"
- 2 pieces of dowel,
5/16" x 1"

Cut the materials to the sizes in the list above.

Paint one side of the MDF.

Step 3: Machining the Bottom of the Fixture.



Align and secure the material to the centerline of the Spoil board. Secure with clamps as in the figure above.

Install a 1/4" spiral up cut bit. Touch off the Z-axis on the **“TOP of the Material”**

Load the Bottom Counterbores.tap file. **“Bottom Counterbores.tap”**.

Run the tap file with a router speed at 12,000 to 16,000 RPM. See Reference video, Bottom Machining.mp4.

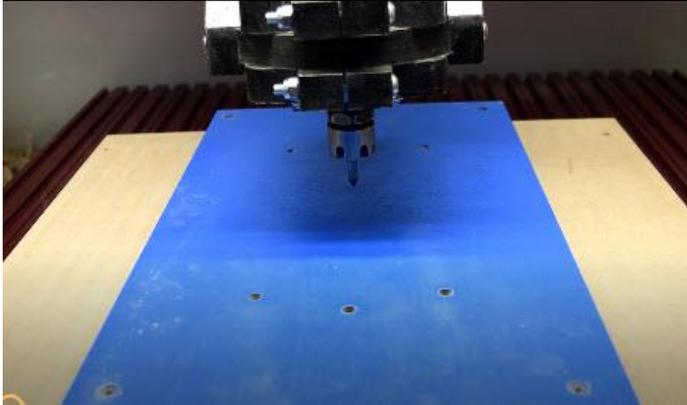
Install t-nut and secure with CA adhesive. From the painted side, drill and countersink, 1/8" holes to screw fixture to spoil board.



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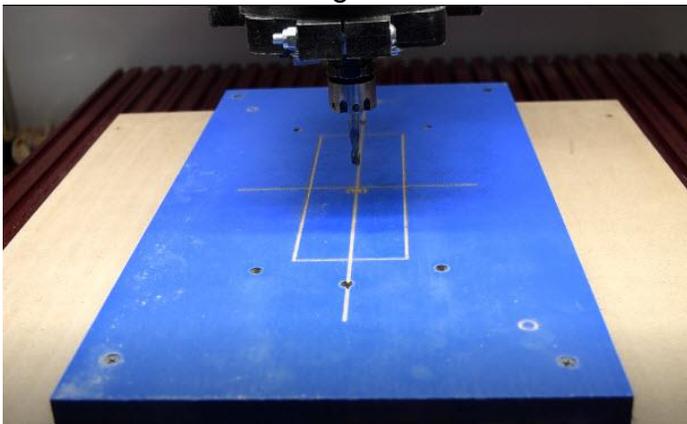
Step 4: Flipping and machining the Top of the Fixture.



Flip and install the fixture on the spoilboard with screws in the 4 corners. Make sure that the centerline of the fixture is lined up with the centerline on the spoilboard.

Install the 1/4" upcut spiral bit. Touch the Z-axis off on top of the material; Load the Fixture Alignment Holes tap file. **“Fixture Alignment Holes. tap.”** Run the tap file. [See Reference video, Alignment Lines.mp4.](#)

Install the 60° V-bit. Touch off the Z-axis on the top of the material; Load the Workpiece outline.tap file. **“Workpiece outline. tap.”** When done it should like the figure below.



Step 5: Machining the clamps:



Align and secure the 8"x 10" MDF material with the centerline of the spoilboard.

Install the 1/4" upcut spiral bit. Touch off the Z-axis on the top of the MDF material. Load the Clamp Cutout (Clamp Material).tap file. **“Clamp Cutout (Clamp Material).tap”** Run the tap file with a router speed at 12,000 to 16,000 RPM.

Step 6: Finishing assembling the Fixture:

Paint and assemble parts as shown in the figure below.



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This is the finished fixture for using. You will use this fixture for the machining of all of the chess pieces.

Watch for the reveal of the newest Next Wave Automation 10th anniversary chess piece, Coming Soon!.