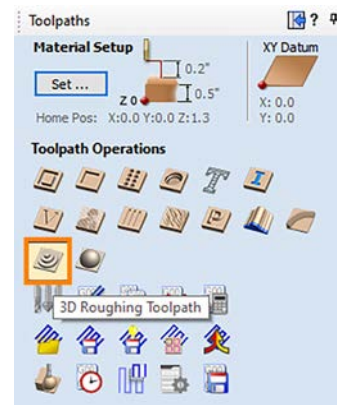


# How to 3D Rough

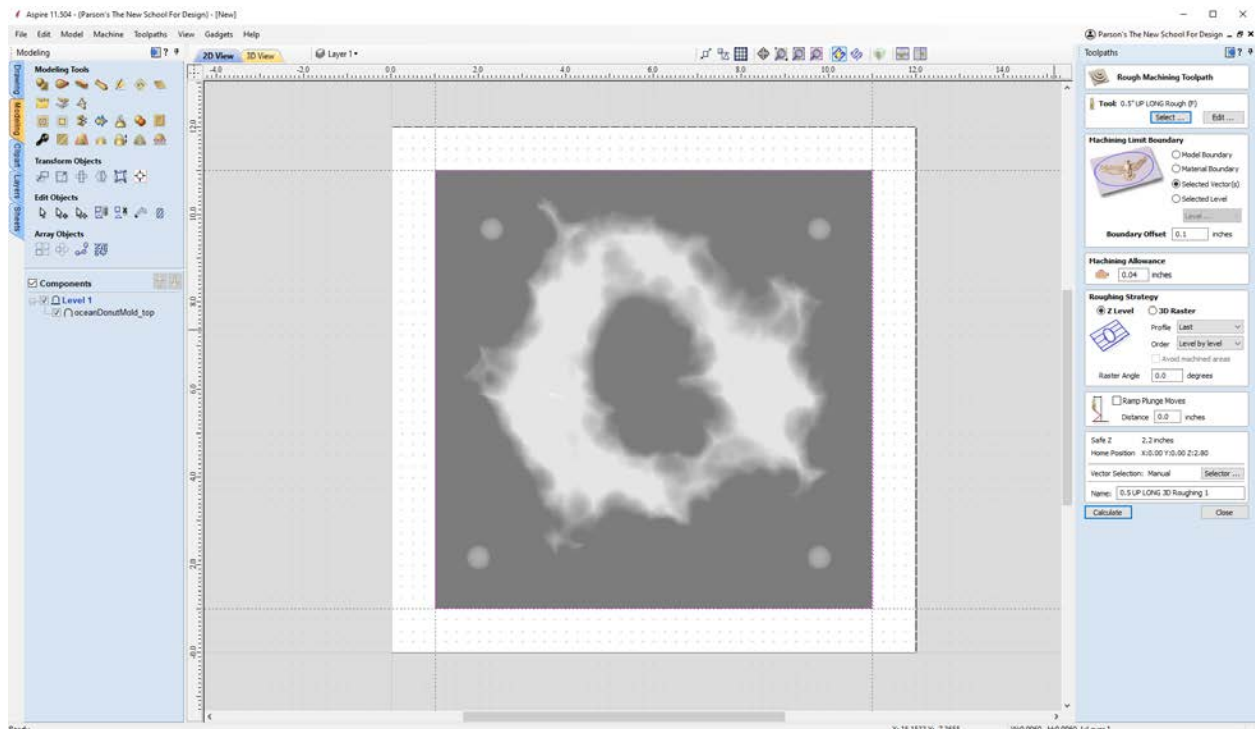
Removing the majority of material at varying depths

## STEP 1: Select 3D Roughing Toolpath Operation

On the right side of the screen, under Toolpath Operations, select the 3D Roughing Toolpath.

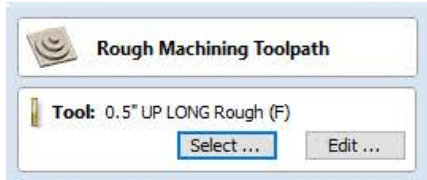


## STEP 2: Select Vectors



Select the vectors that will be your 3D roughing boundary. They will turn pink when selected.

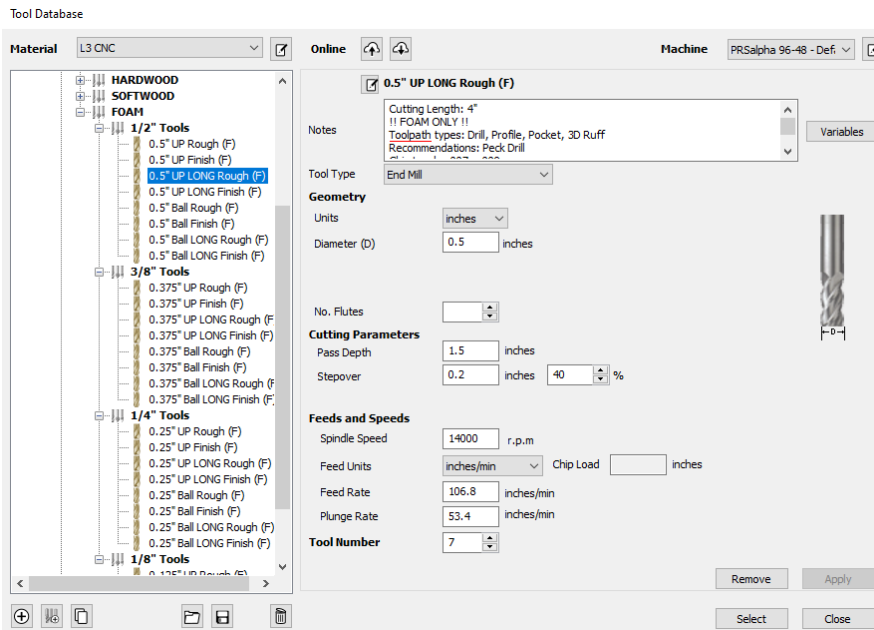
### STEP 3: Configure 3D Roughing



#### Tool

Press “Select” to open up the Tool Database and choose the most appropriate tool.

### STEP 4: Select Tool

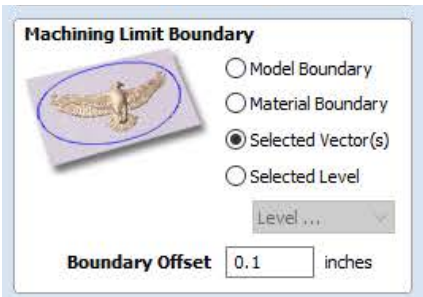


Look under the tool settings that correspond to your material. Use the **largest tool** possible, while still achieving your desired fidelity.

**Up rough** tools are generally used to 3D rough.

**Long** tools are used for foam only.

### STEP 5: Configure 3D Roughing cont.



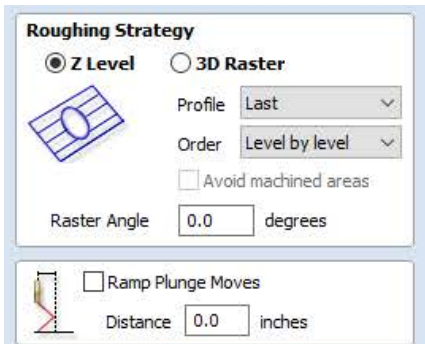
#### Machining Limit Boundary

This specifies the boundary for the 3D roughing.

Choose **Selected Vector(s)**.

## Roughing Strategy

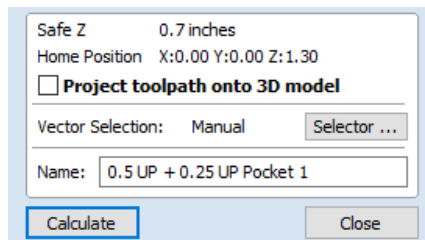
This defines the method that the machine clears away the material.



**Z Level** uses a type of pocketing that follows the **shape** of your model. It's more efficient, but leaves more stock material, making it a better choice for **soft** materials.

**3D Raster** follows the **topology** of your model. It removes more stock material, but takes much longer to machine. This is a better choice for **hard** materials.

## STEP 6: Rename + Calculate Toolpath

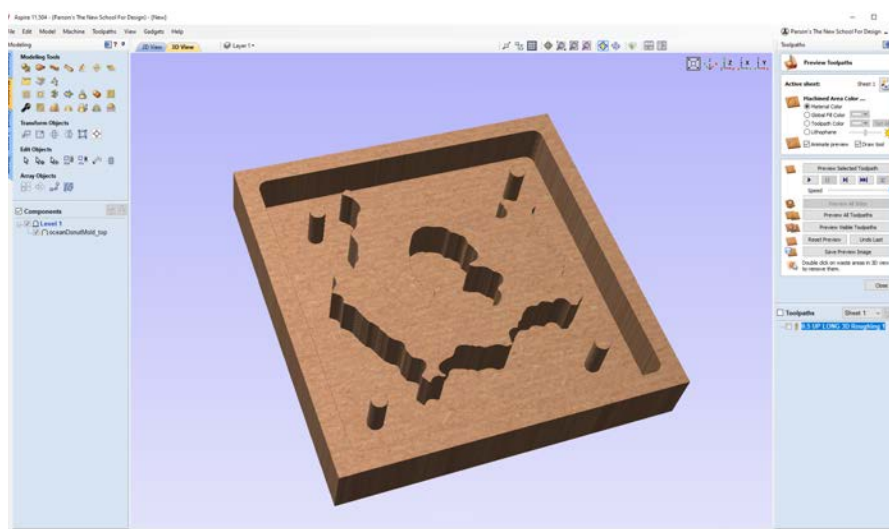


Rename your toolpath to follow the naming convention of “[toolsize] [tooltype] [operation]”.

This will come in handy when optimizing your toolpath order.

Press “Calculate” to finish the operation.

## STEP 7: Preview



Click “Preview All Toolpaths” to preview the results.

If you need to edit the toolpath, double click the name of the operation.

When finished, click “Close” to exit out of the preview and click “2D View” towards the top of the screen to continue writing your operations.