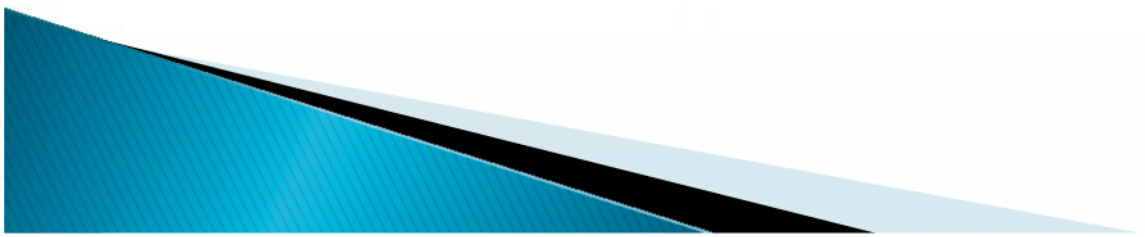
From Drafting to G Code

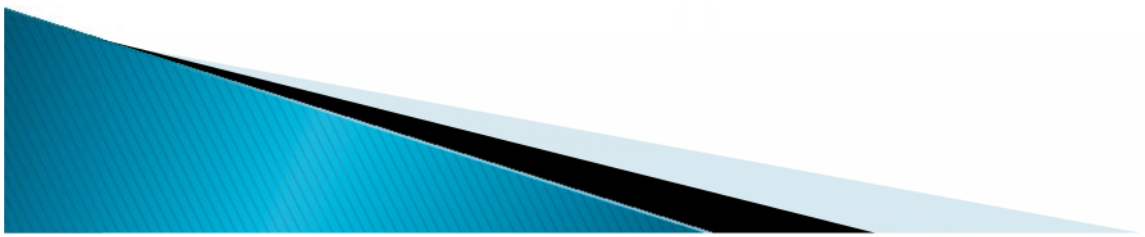
A CNC Journey

- By By Bruce Lunde
- Presented at The Home Metal Shop Club
- July 10, 2010 Meeting



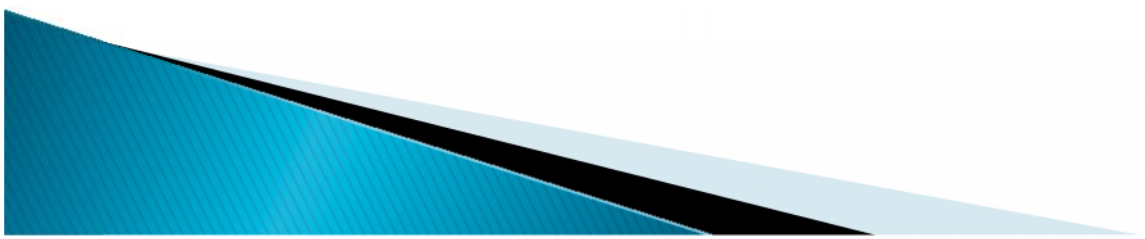
Presentation Agenda

- Walk through of a Design to G-code process
- Examine my toolset in depth
  - Alibre Features
  - Cut2D Features
  - Mach3 Features
- Wrap-Up & Questions



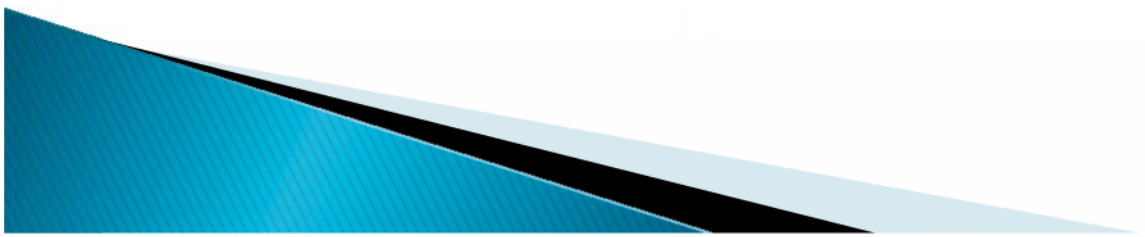
The Tools I Use

- A computer with resources to match the highest requirements (Alibre Pro)
- Alibre Design Professional
- Vectric Cut2D
- ArtSoft Mach3

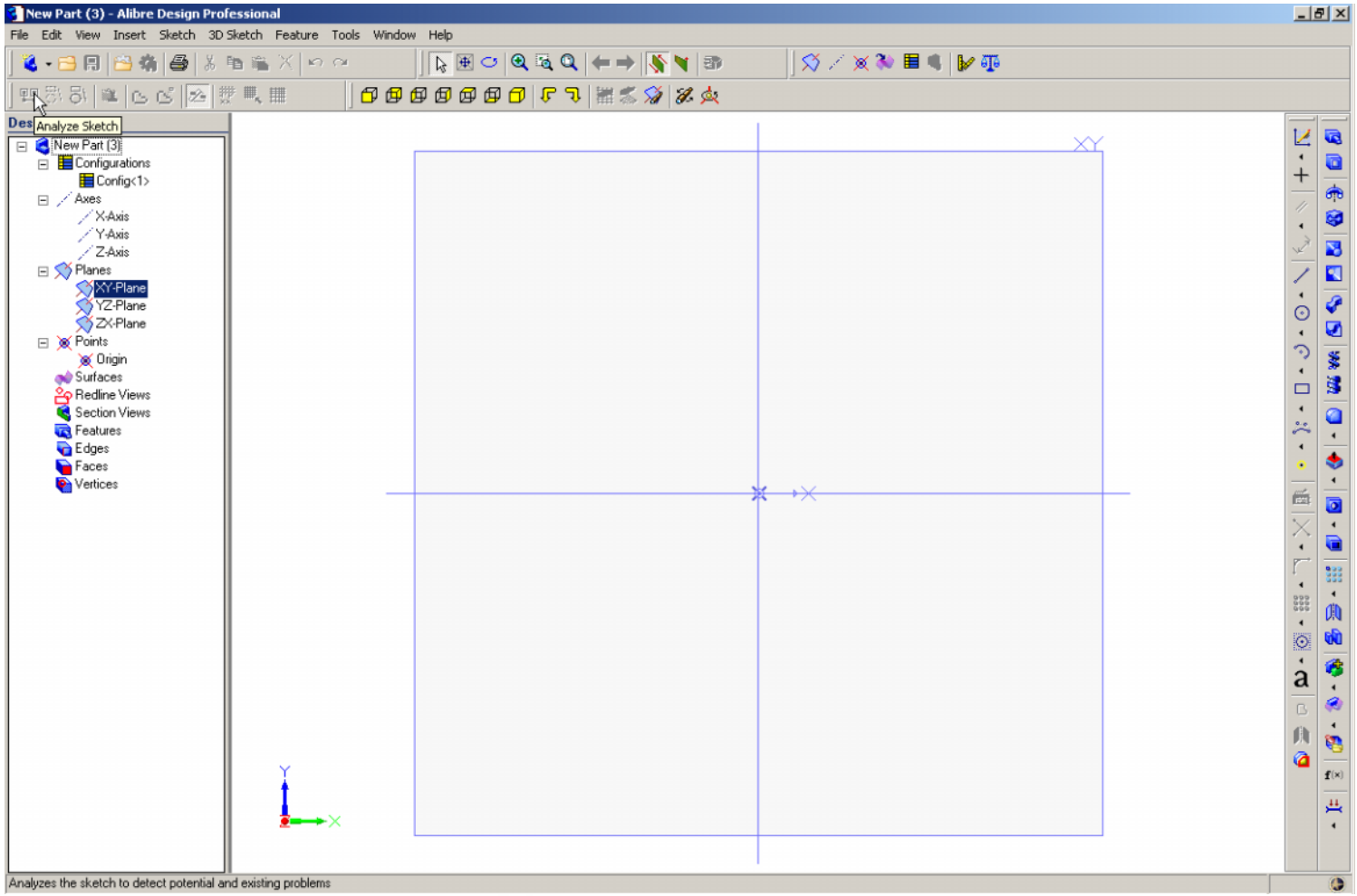


The Process

- Design a Part with Alibre Design Professional
- Create a Drawing of the Alibre Part
- Export a .dxf (AutoCad)
- Import the Drawing into Cut2D
- Create toolpaths
- Save the Cut2d drawing
- Export the g-code
- Open in Mach3, do a test run
- Make Chips!

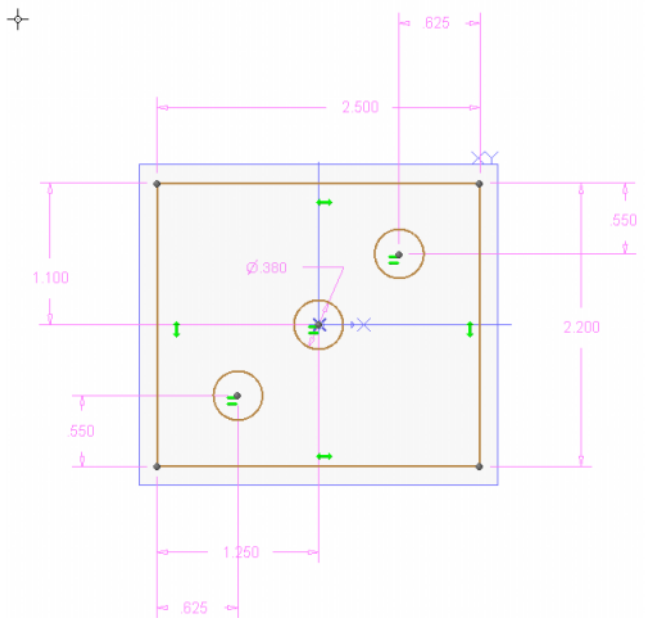


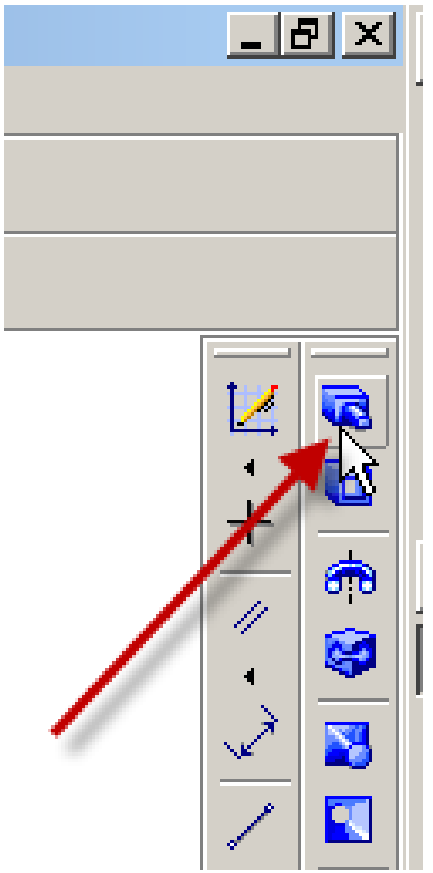
Create a Part – The Part Window



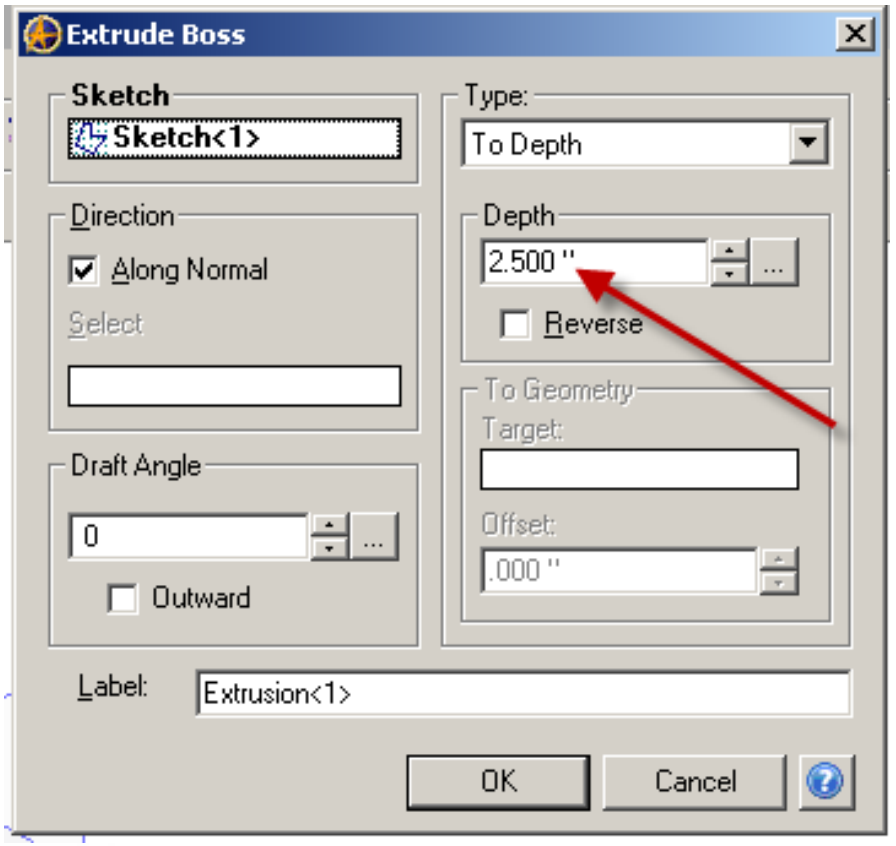
Setup the 3rd Dimension

- Now that the part is drawn, we want to "extrude" the drawing to the proper thickness.

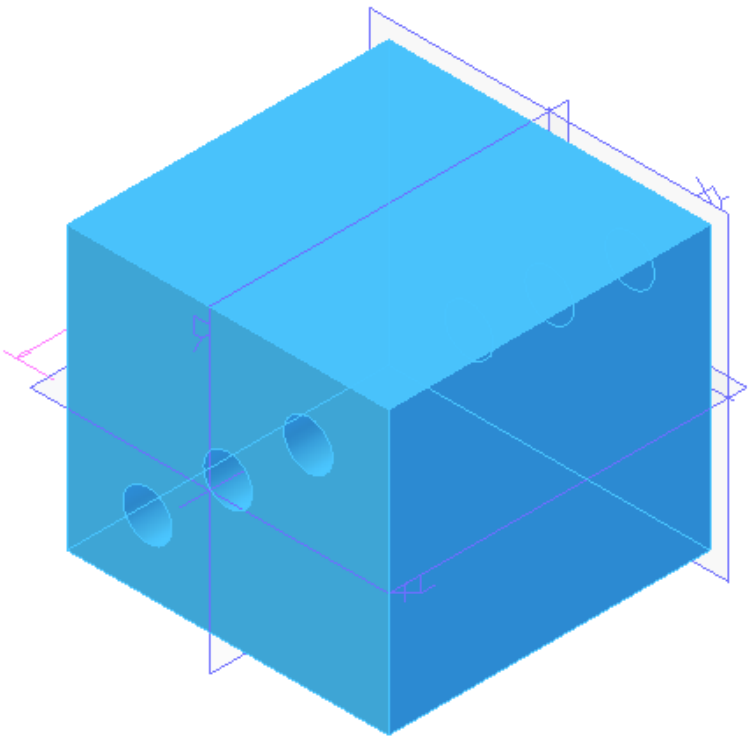




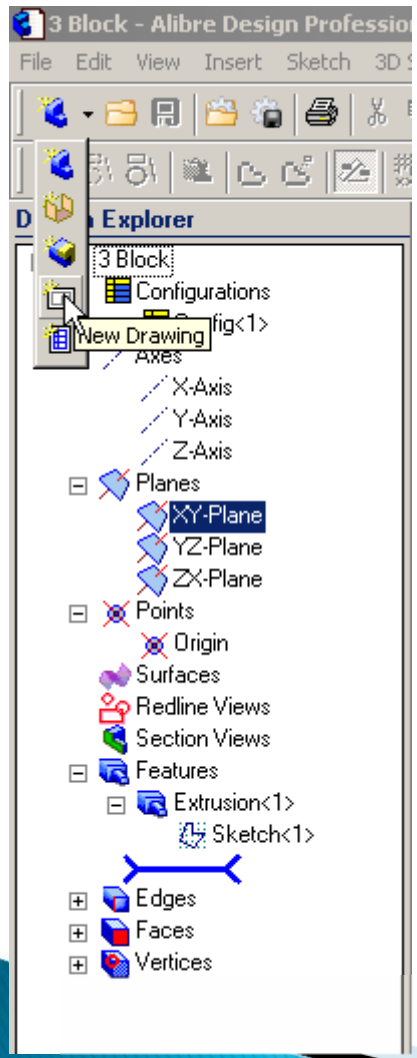
Fill out the Extrusion info screen



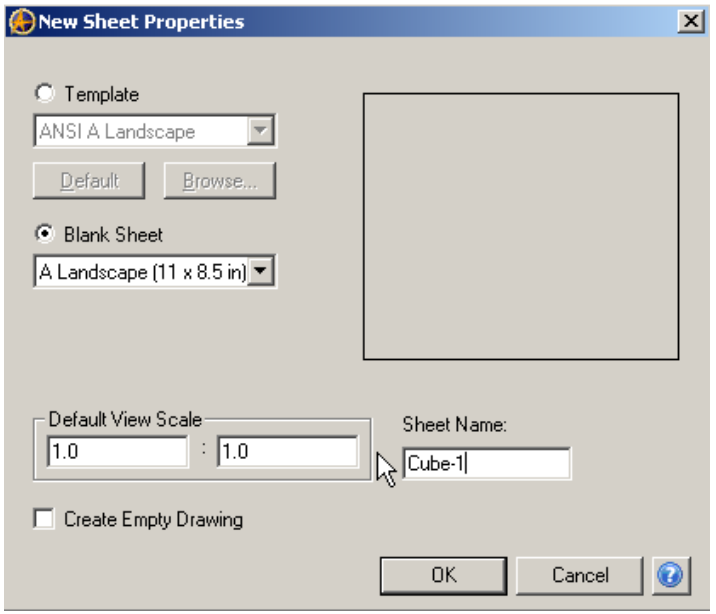
Finished 3D Part



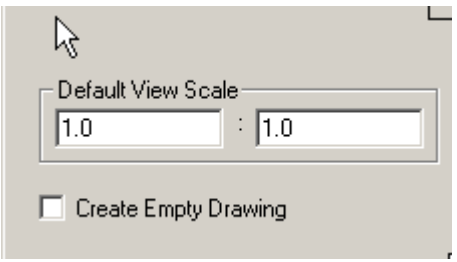
Create a Drawing file



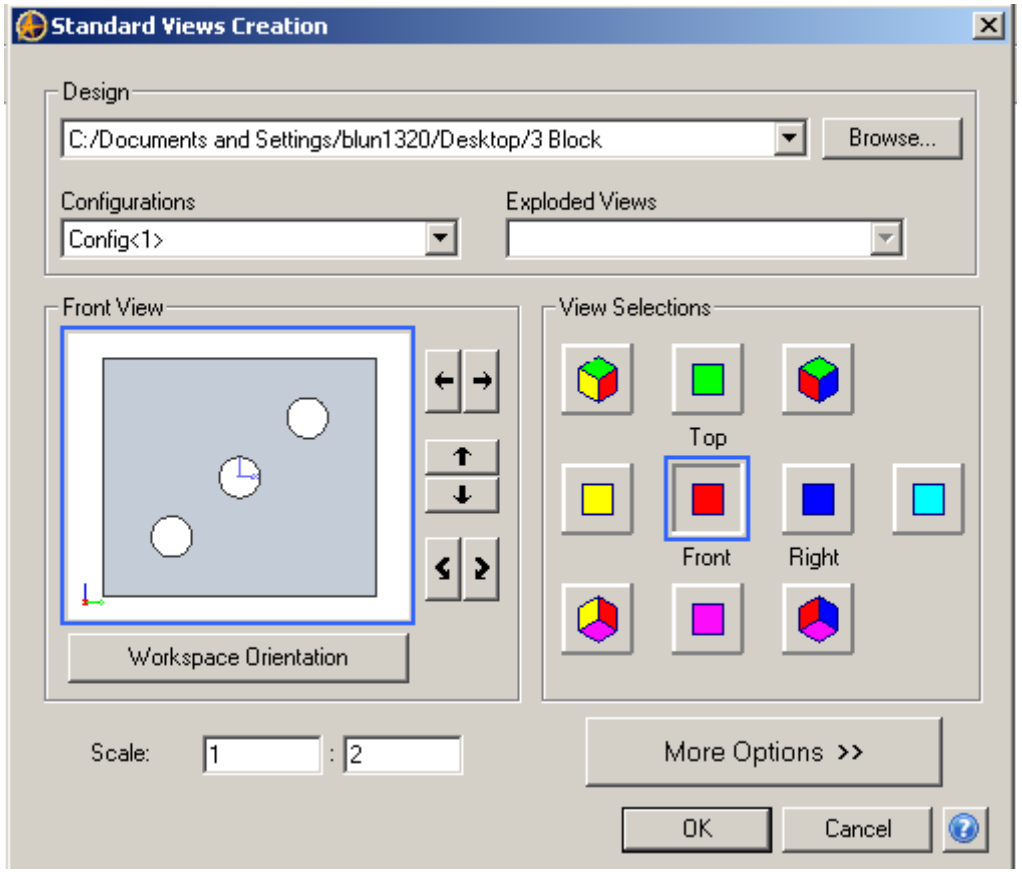
Select New Drawing from the menu



Make sure you change the scale to 1-1

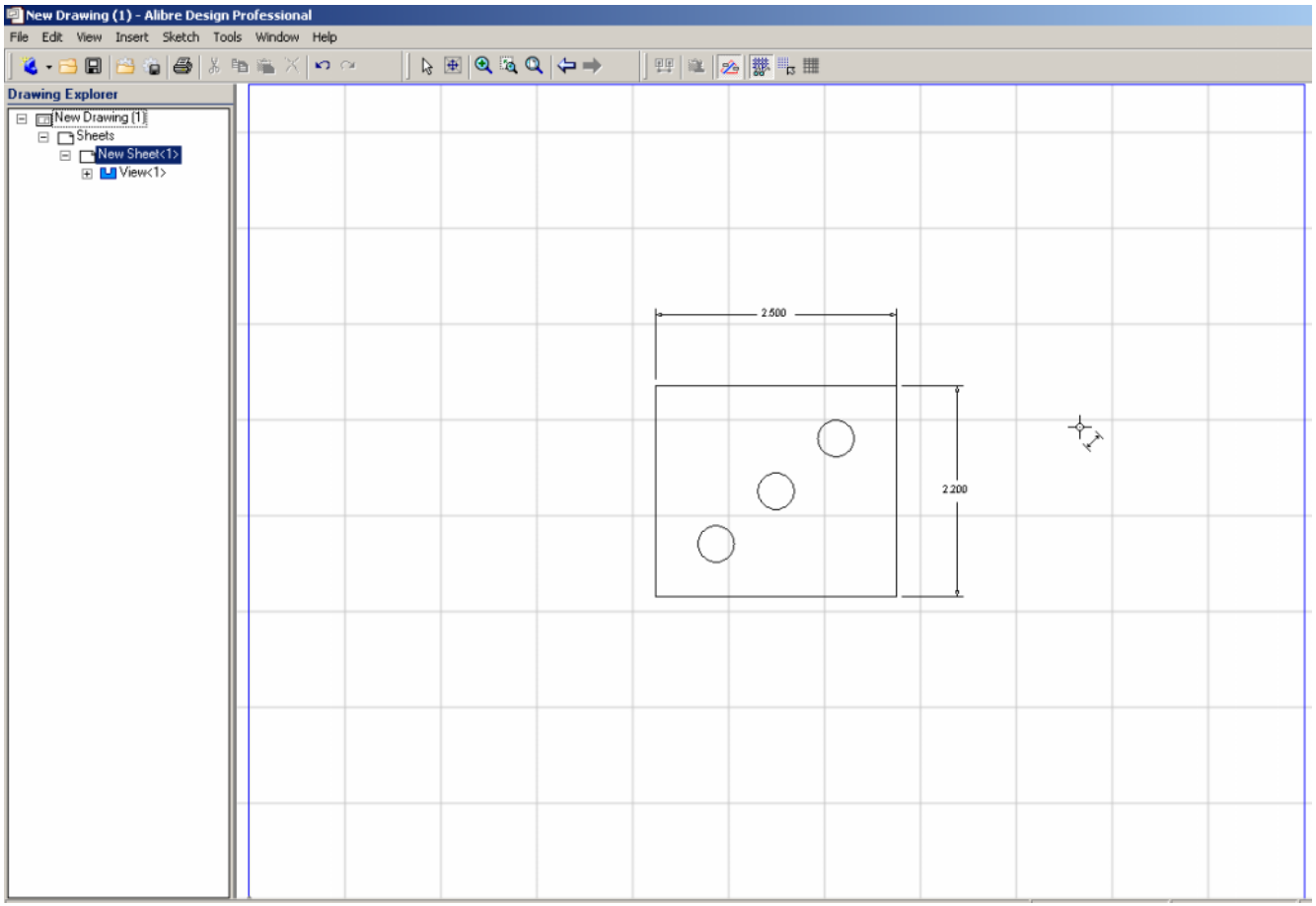


Choose the settings

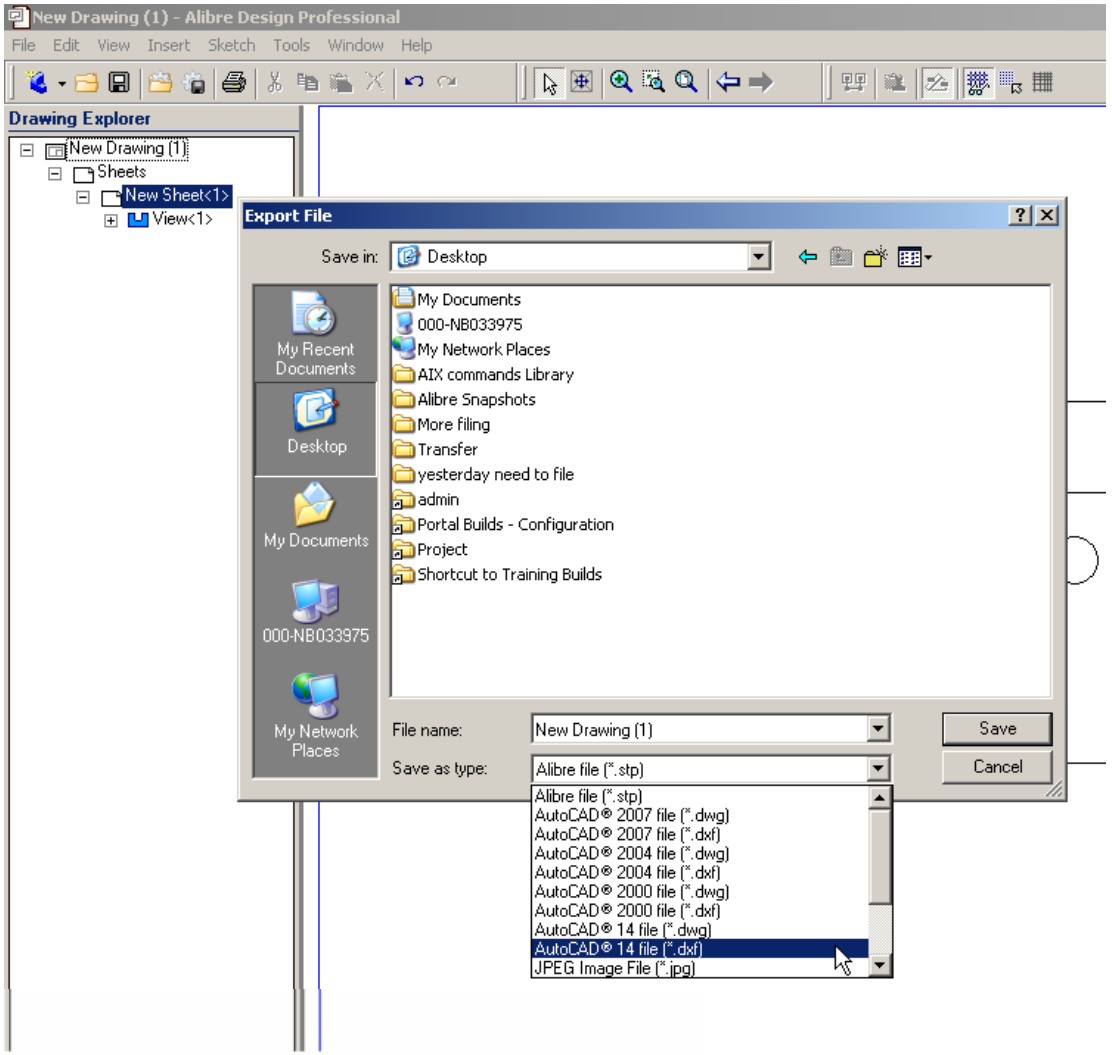


Position the Drawing

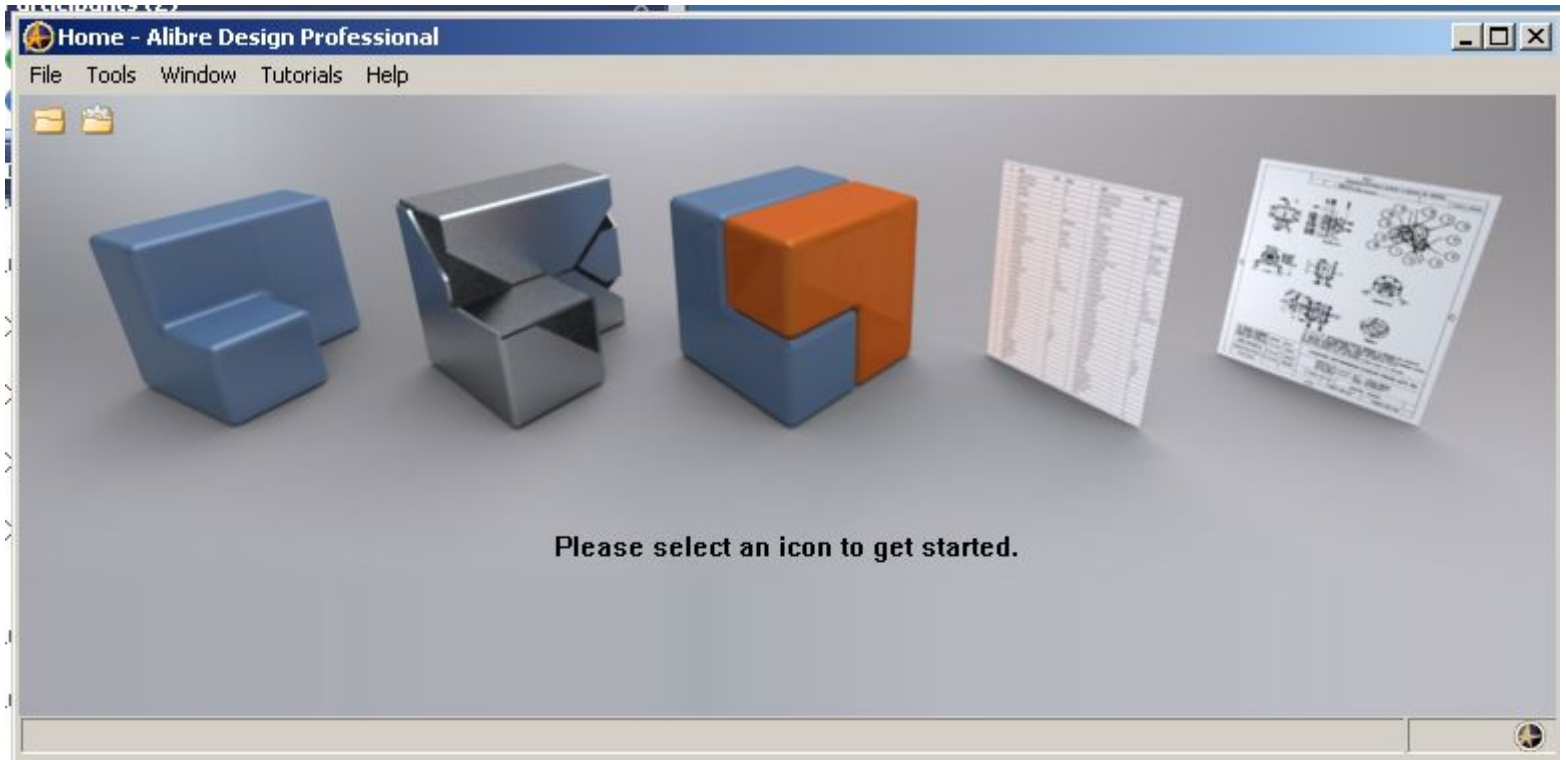
You can add Dimensions to verify!



Export to a .DXF

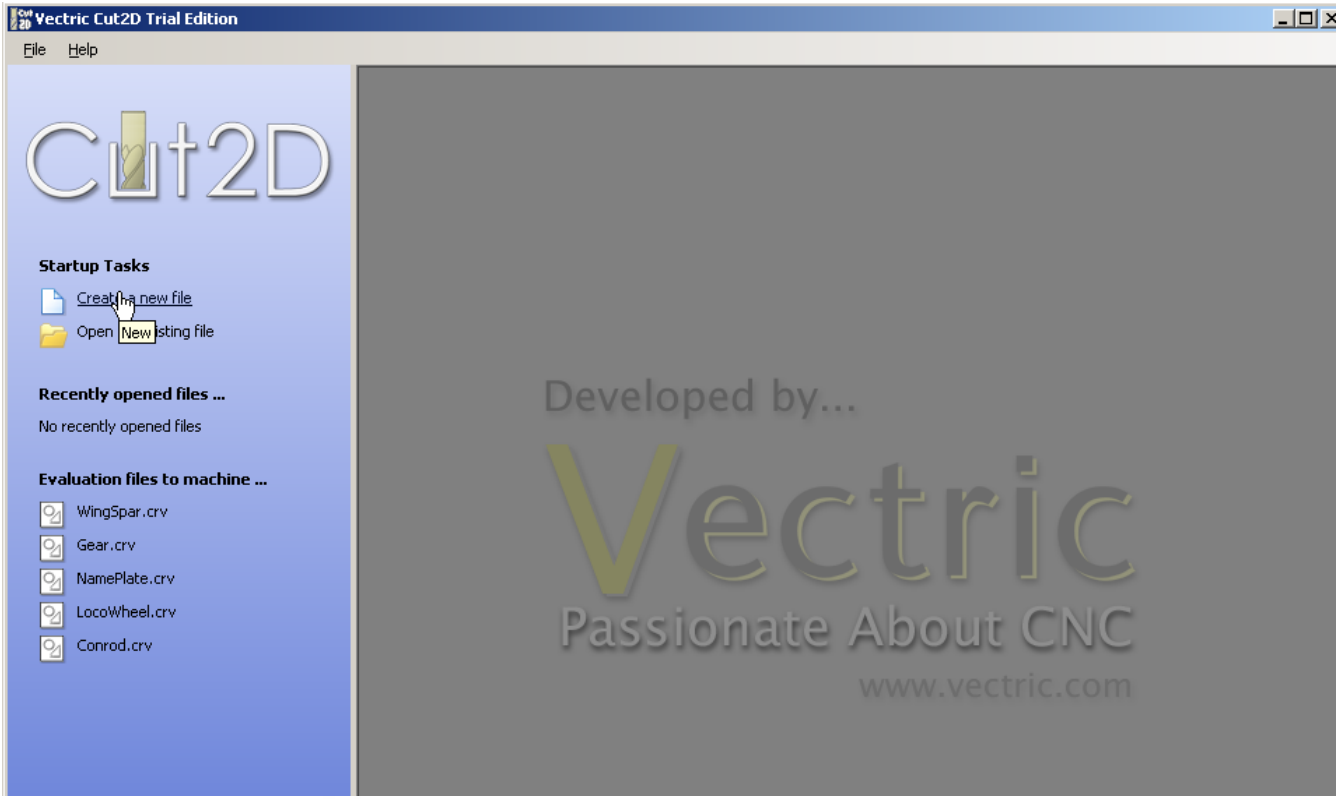


Demonstration of Alibre

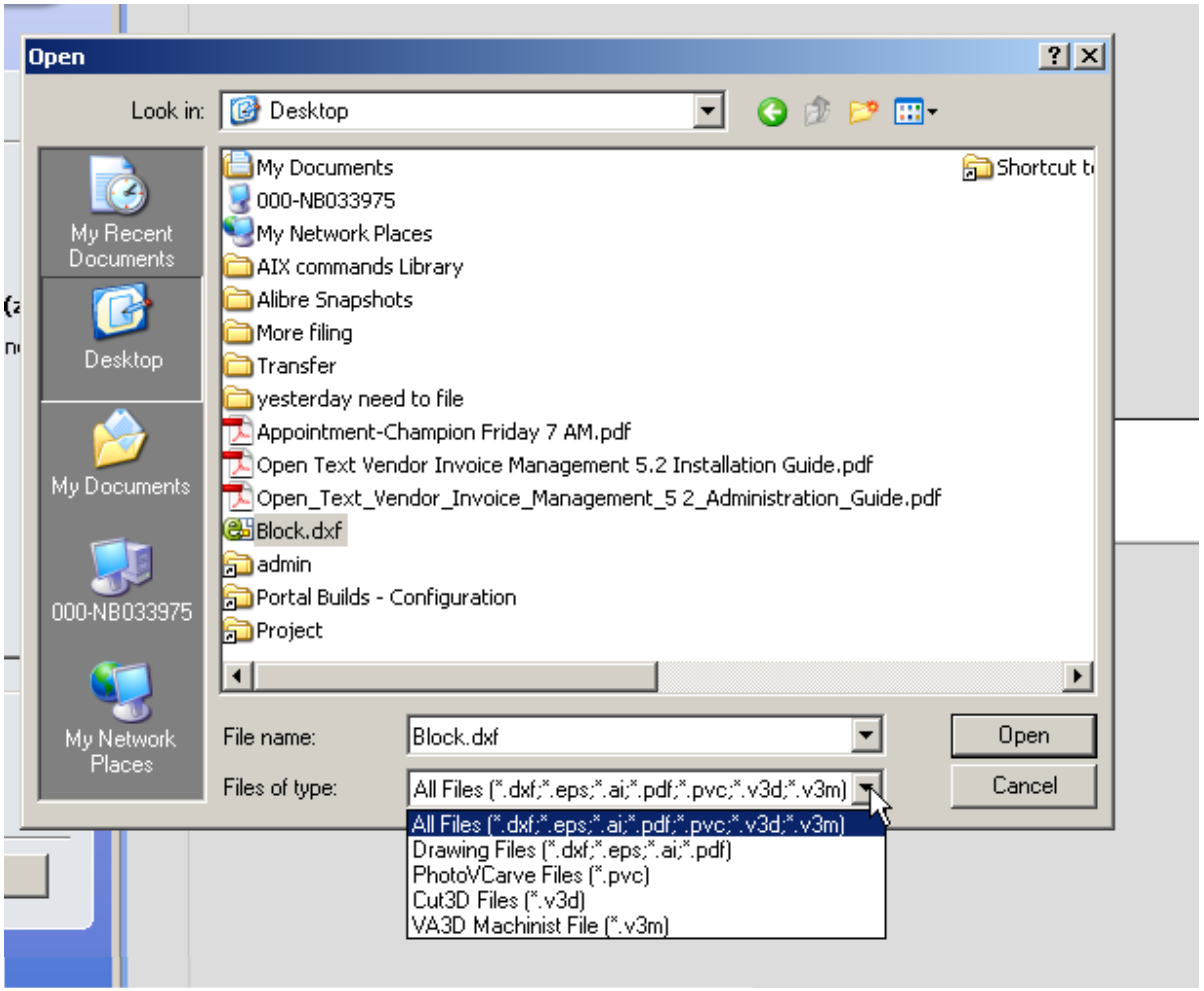


Start Cut2D

- Create a New file

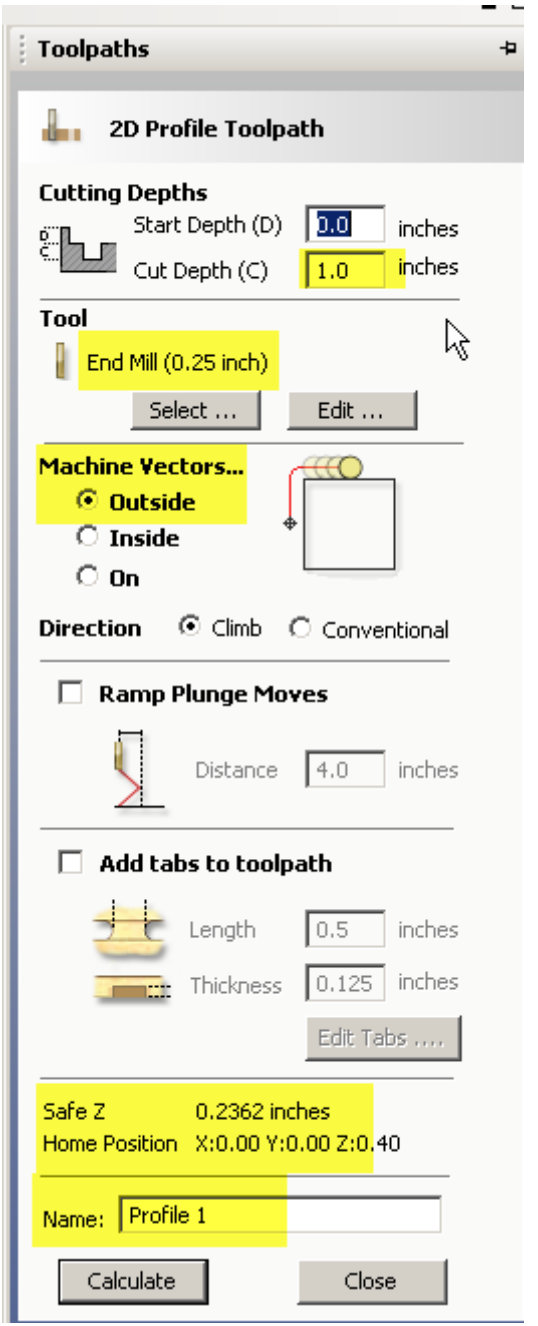


Import to Cut2D

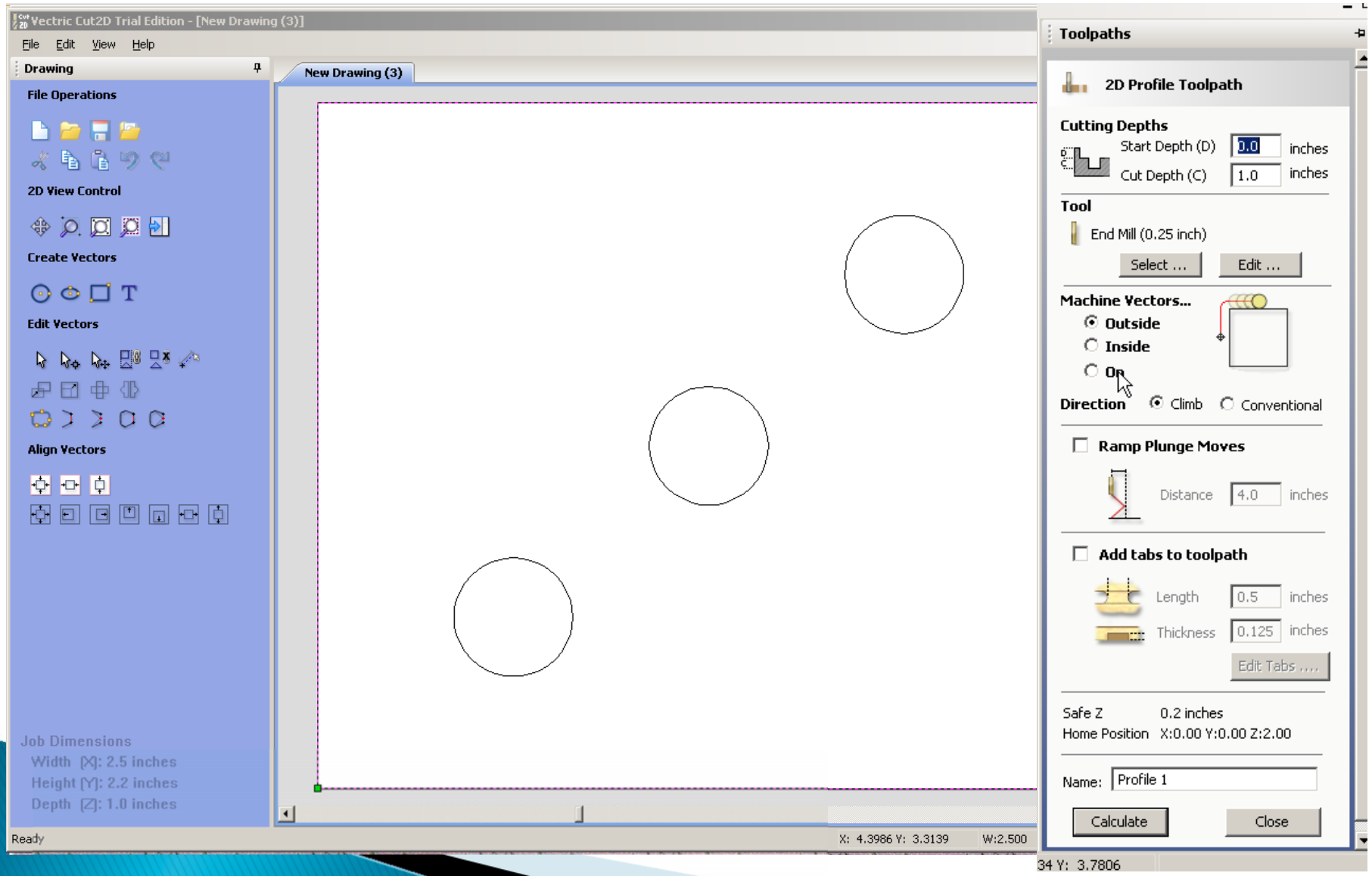


Prepare for CNC

- Import
- Check for Open Vectors
- Highlight each Cut
  - Highlight the area
    - Create a toolpath
    - Name the toolpath

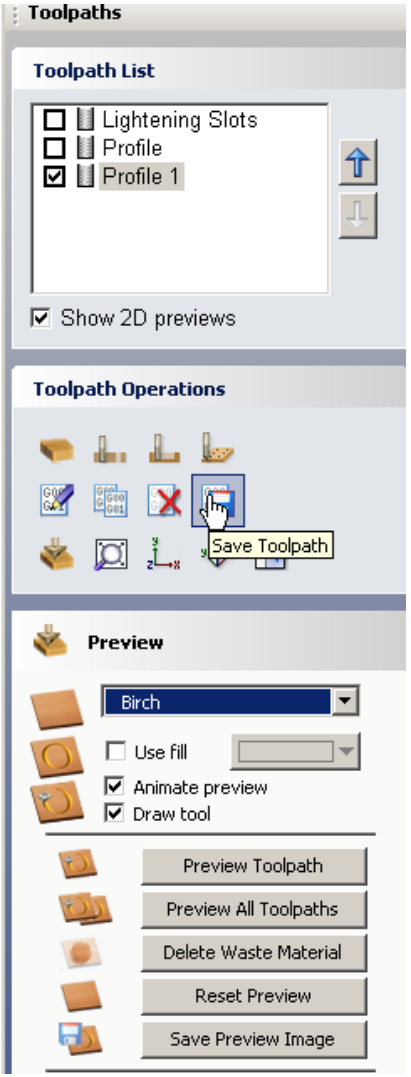


Setup the Tools, Toolpaths



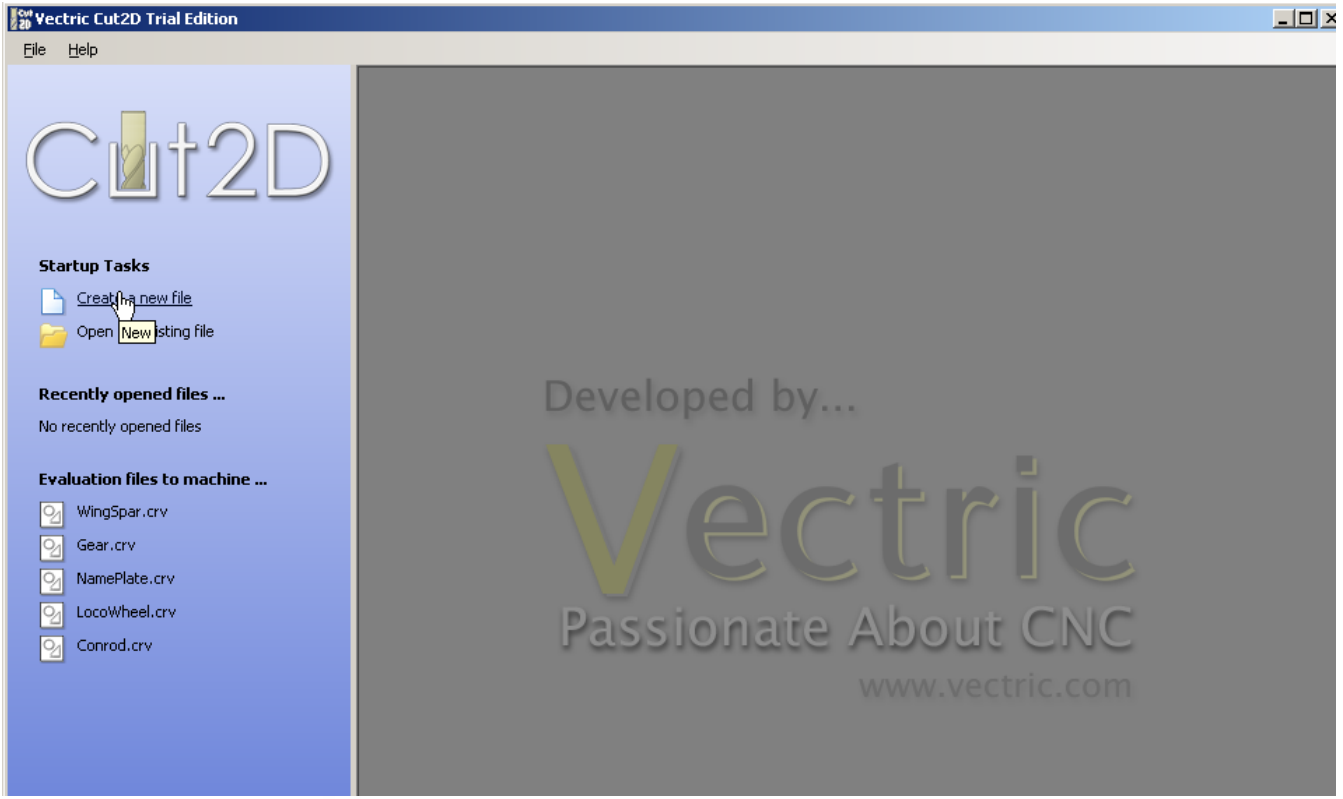
Save the toolpath files

- Starting out, save them individually!
- Later you can combine paths that use the same tools



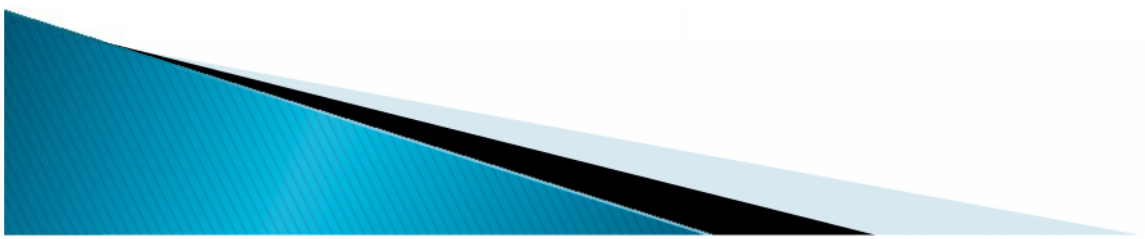
Cut2D Demonstration

- Create a New file

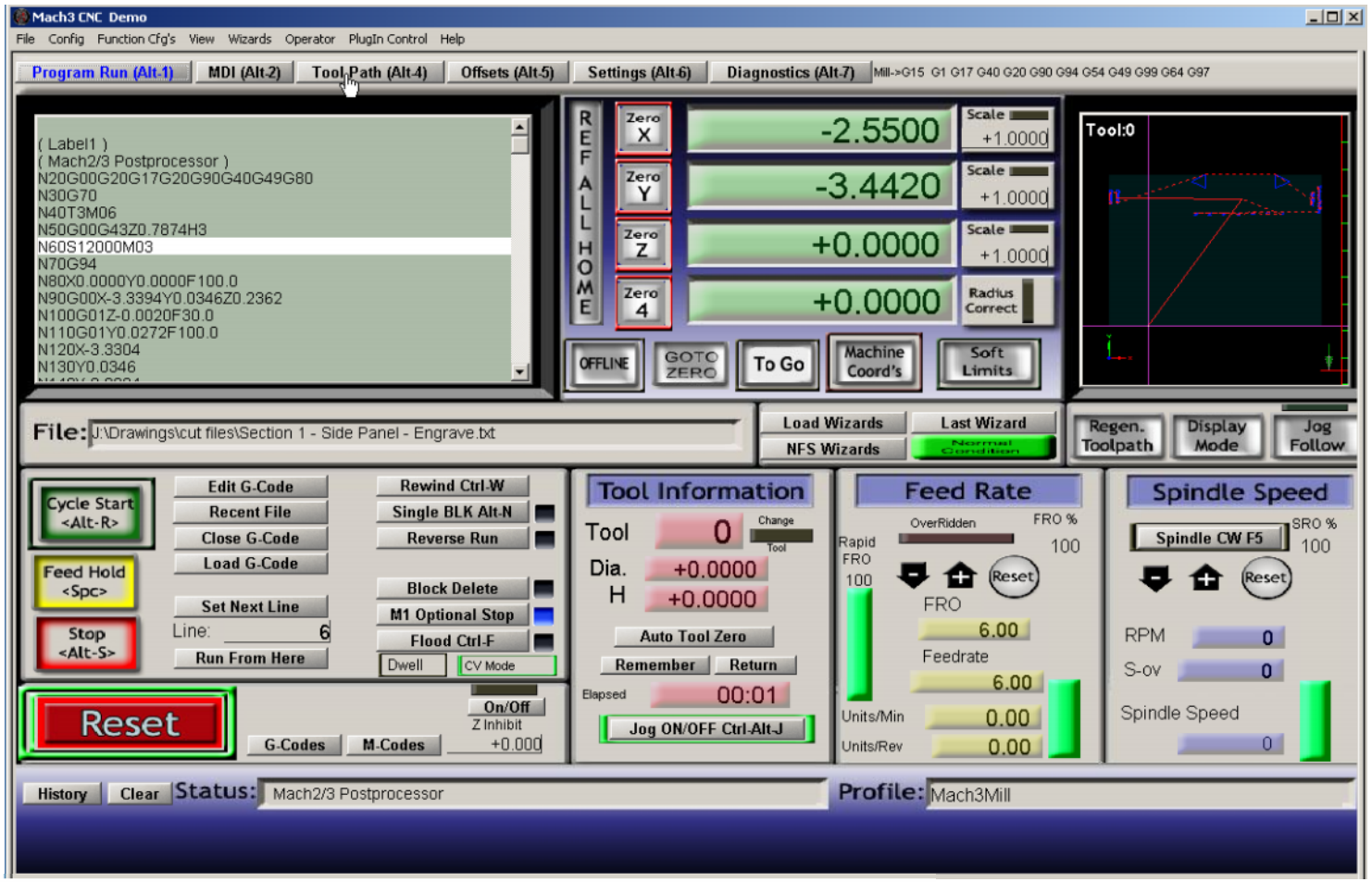


Bring in the G-code to Mach3

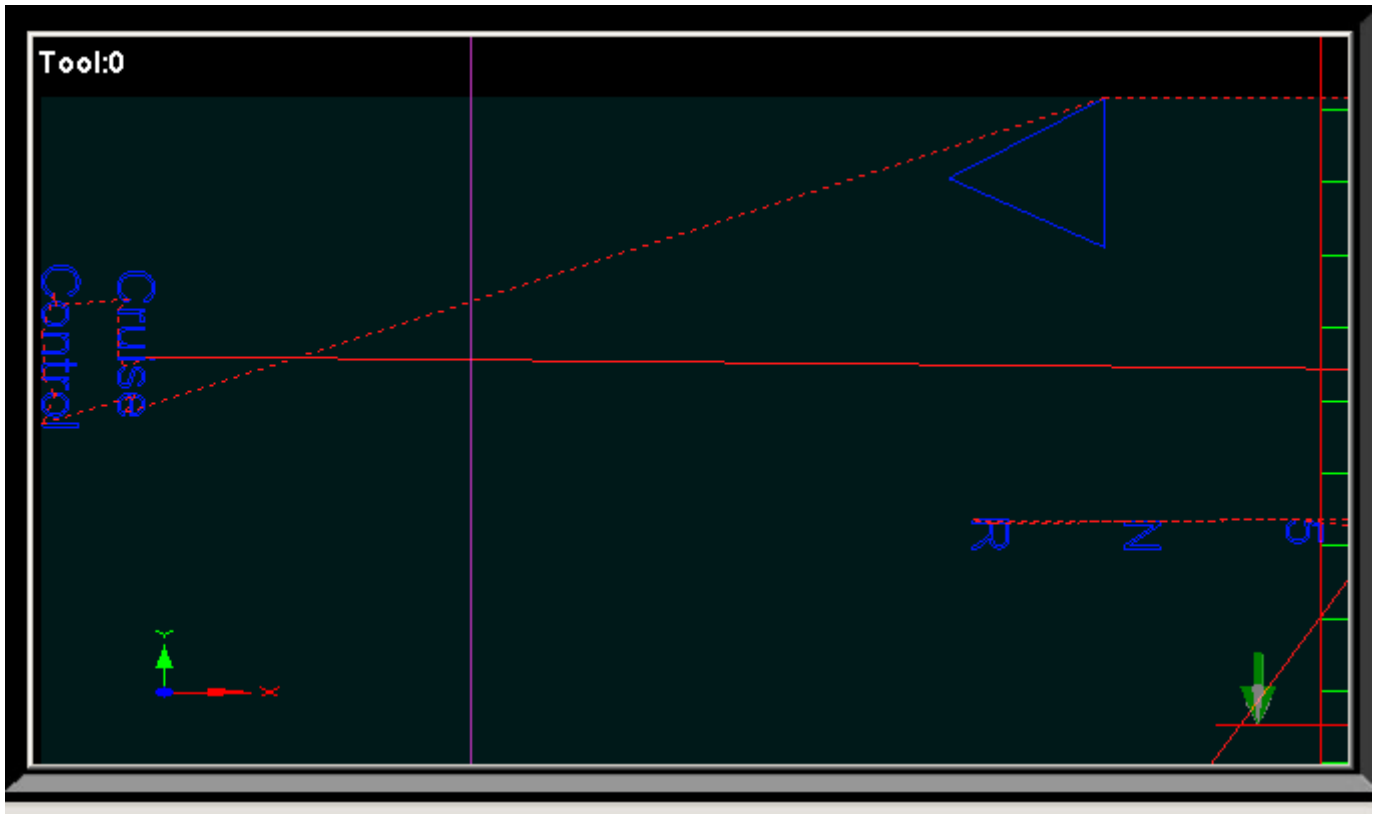
- Open Mach3
- Load the G-code in
- Make sure to test with no cutter, so you don't waste metal
- Let the chips fly!



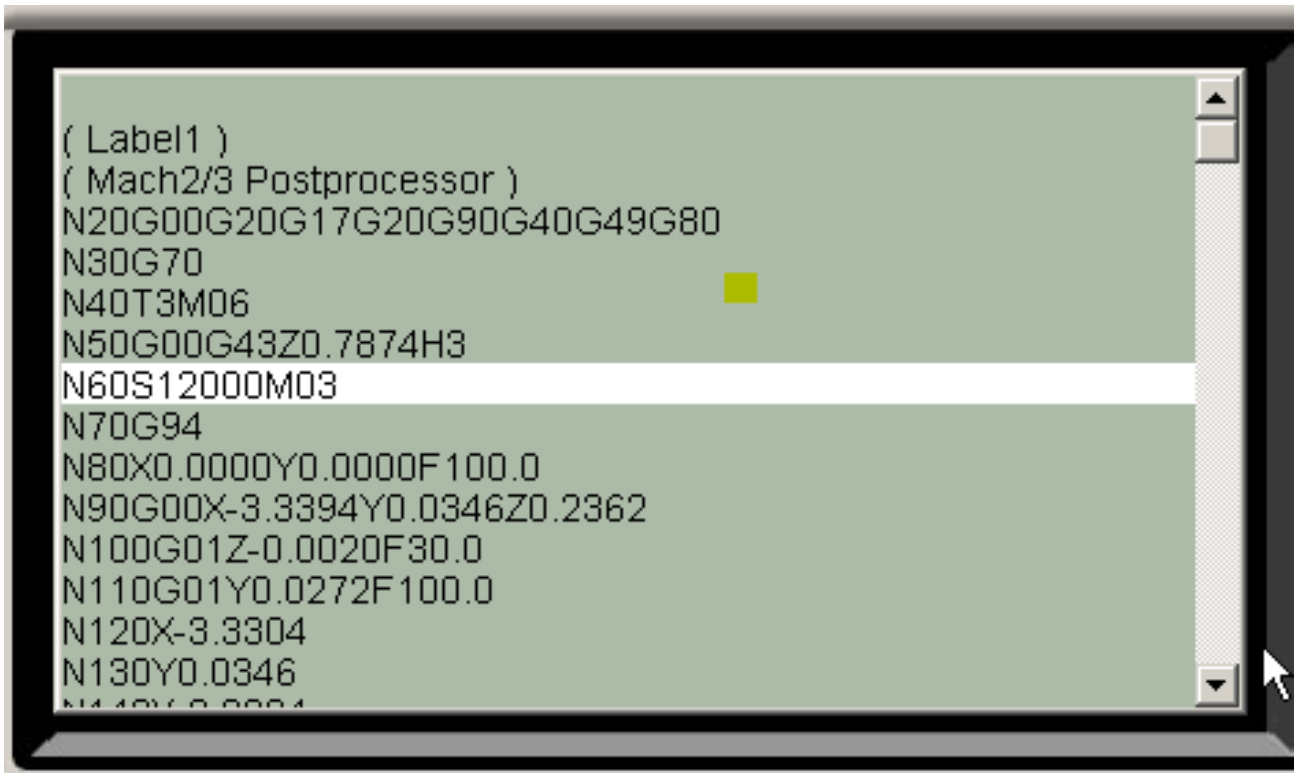
Mach 3 – Main Screen



Mach3 – Tool Path



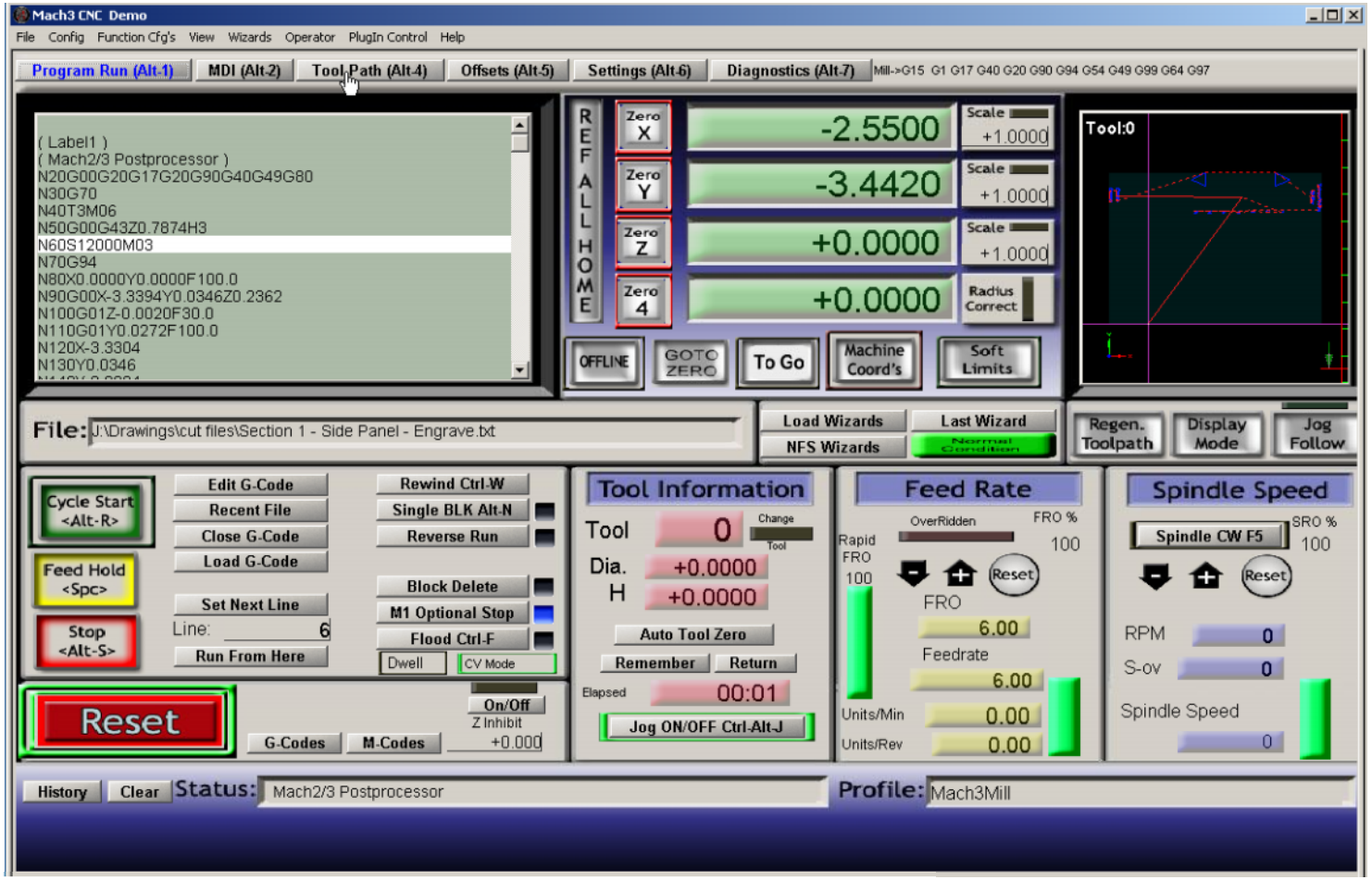
Mach3 – G-Code Window



Mach3 – DRO

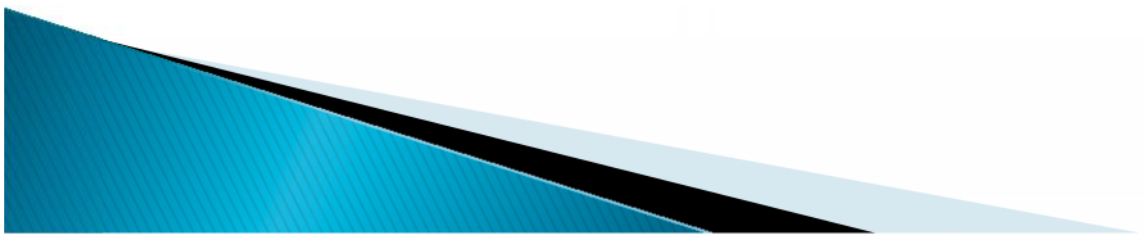

REF ALL HOME
Zero X
-2.5500
Scale
+1.0000
Zero Y
-3.4420
Scale
+1.0000
Zero Z
+0.0000
Scale
+1.0000
Zero 4
+0.0000
Radius Correct
OFFLINE
GOTO ZERO
To Go
Machine Coord's
Soft Limits

Mach 3 Demonstration

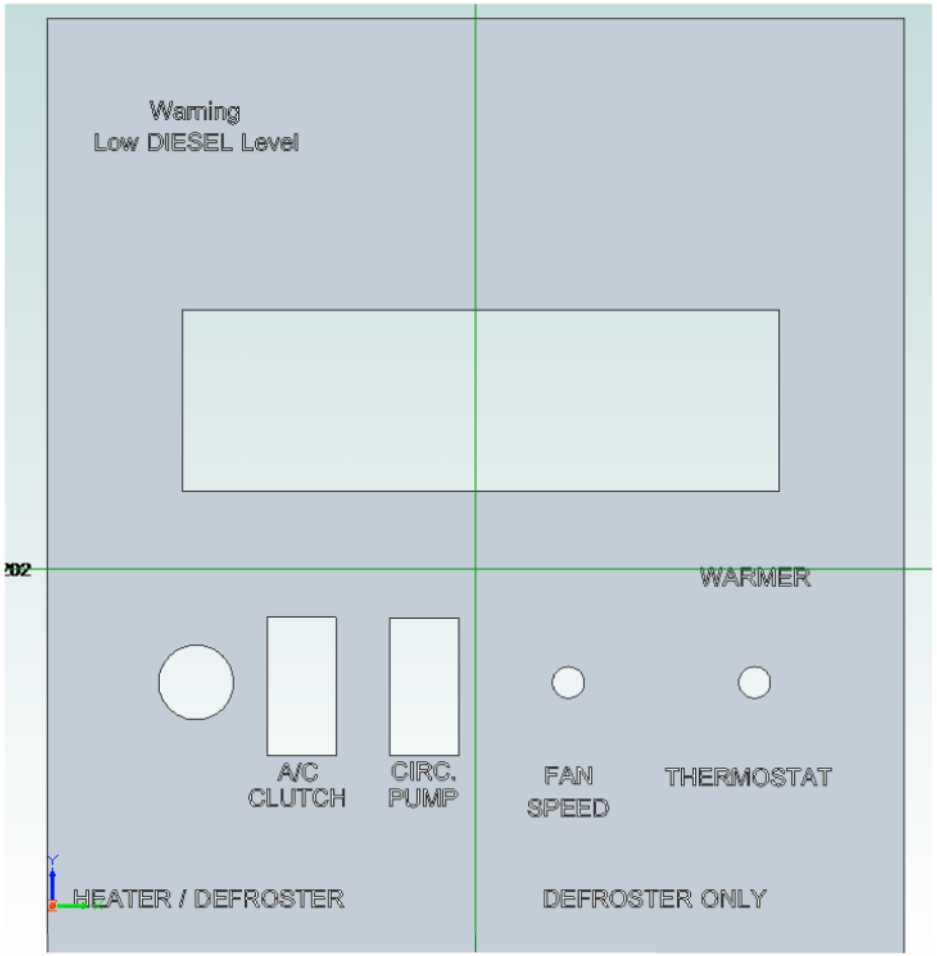


Side notes

- Lots of choices, this is just one set of tools
- Consider the functionality needed (you can work harder with the tools than needed if you're not careful!)
- Look hard at the functionality in Mach3, can save you loads of time
- Cut2D can be used by itself to do many parts



Alibre Samples



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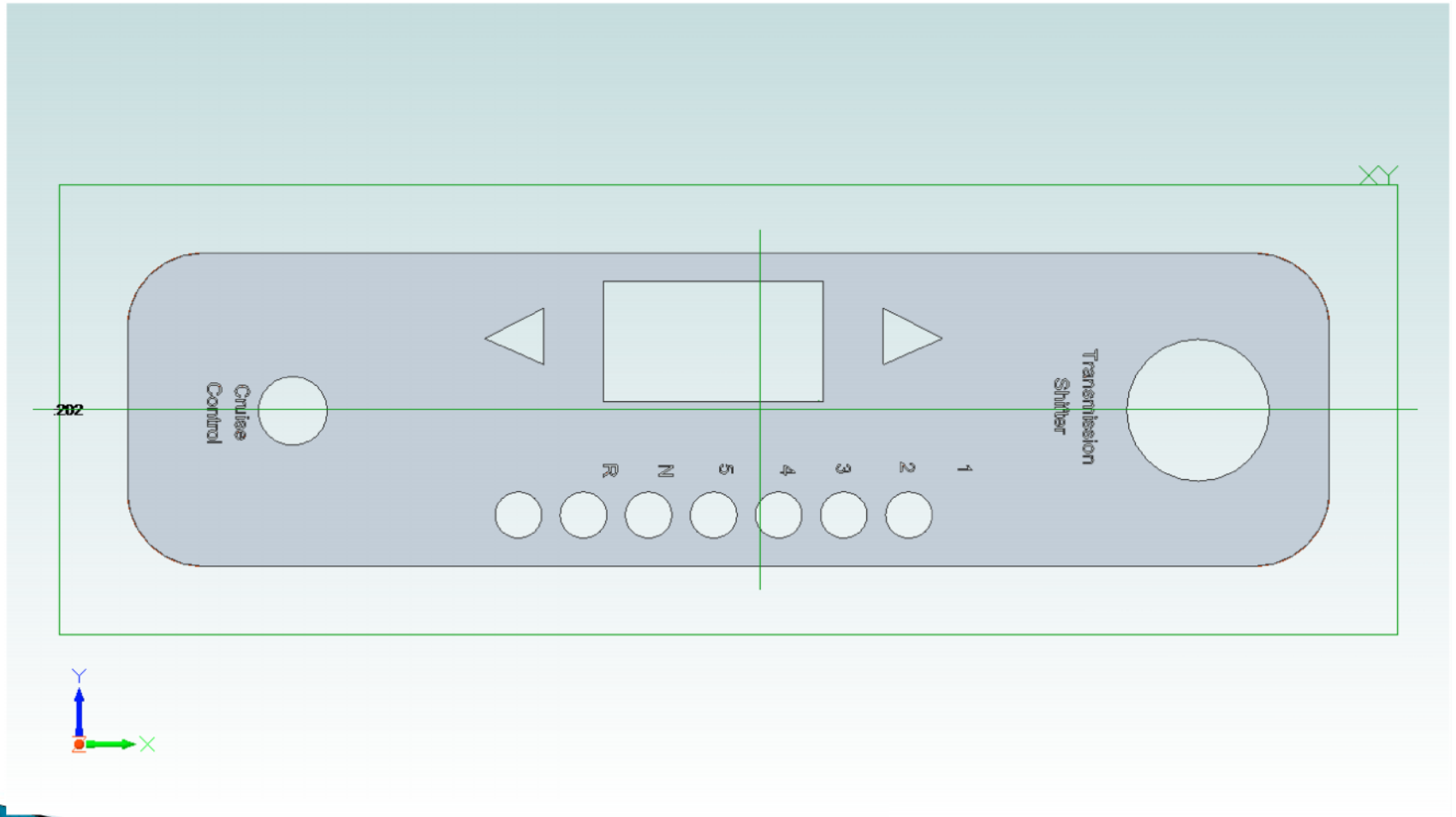
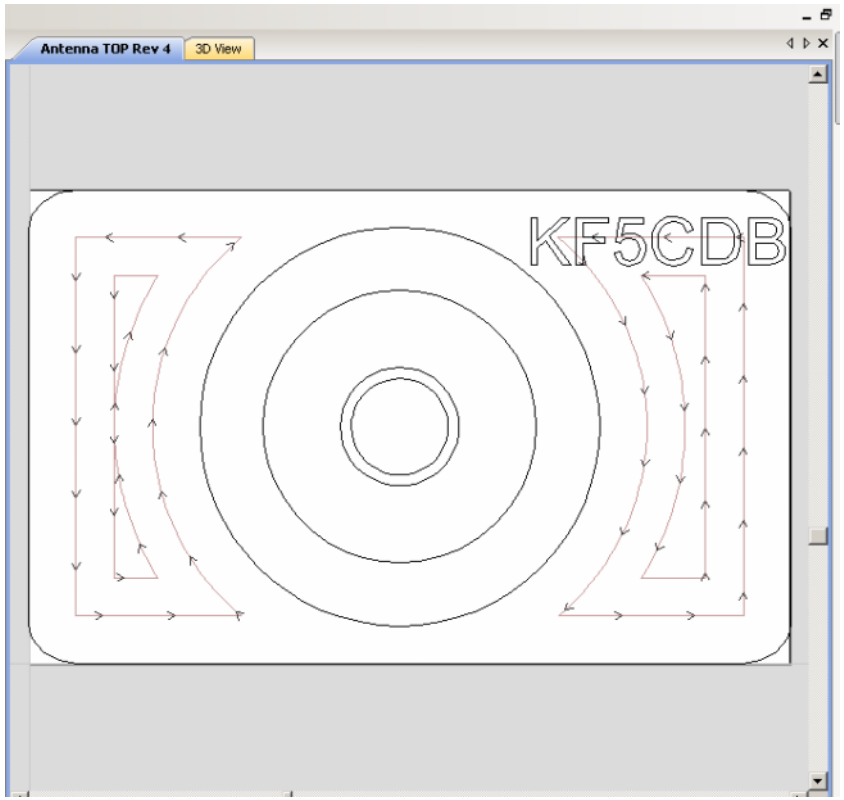
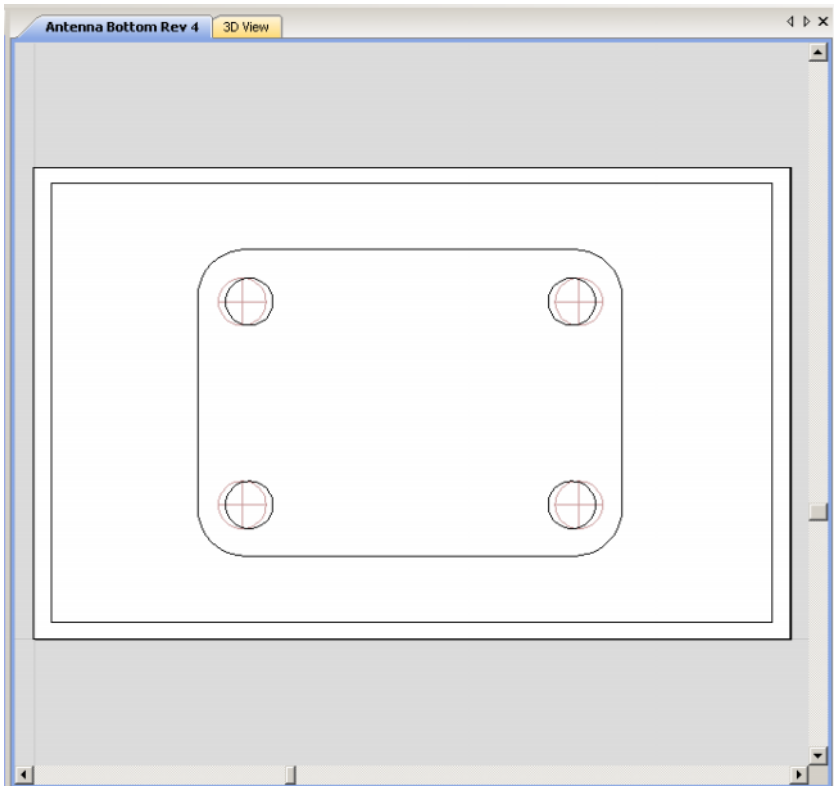


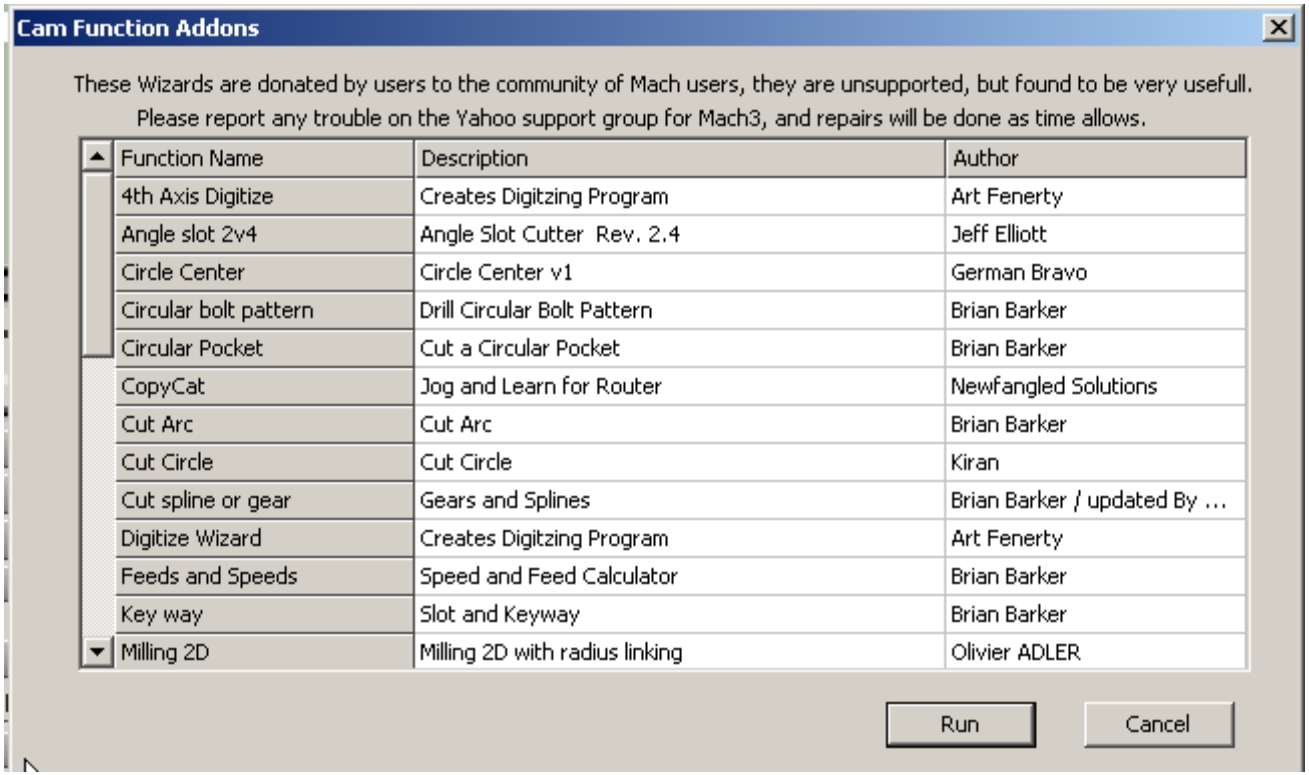
Cut2D Samples – Antenna Mount



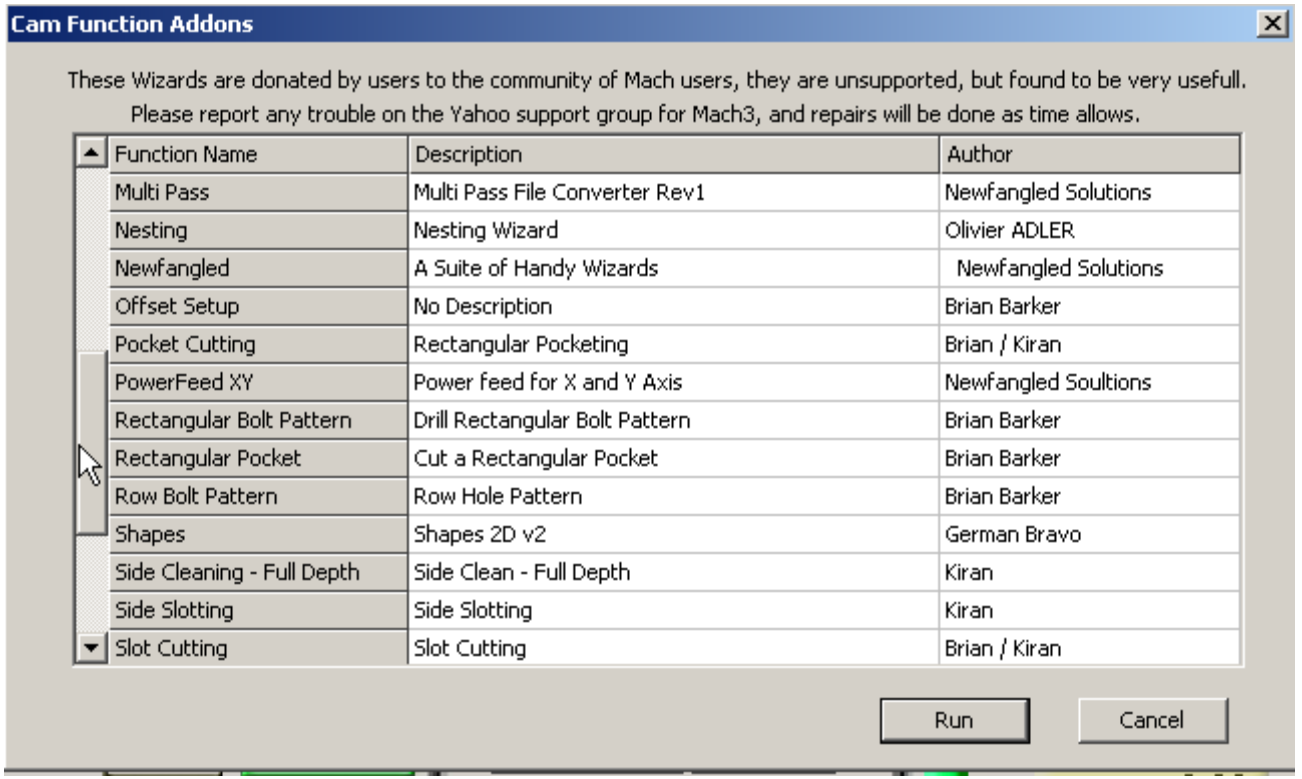


Mach3 Samples

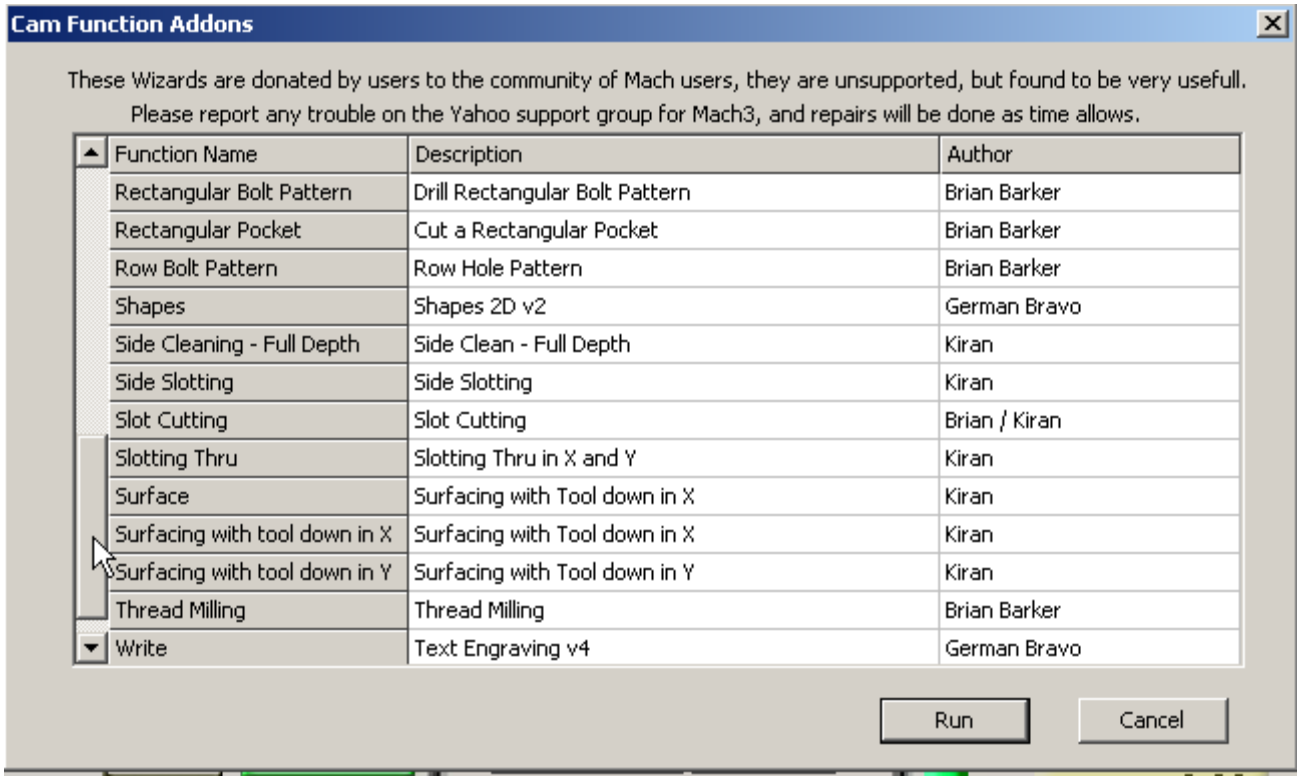
Mach3 Samples – Wizards



Mach3 Samples – Wizards



Mach3 Samples – Wizards



Mach3 Samples – Wizards