F-Engrave Cheat Sheet

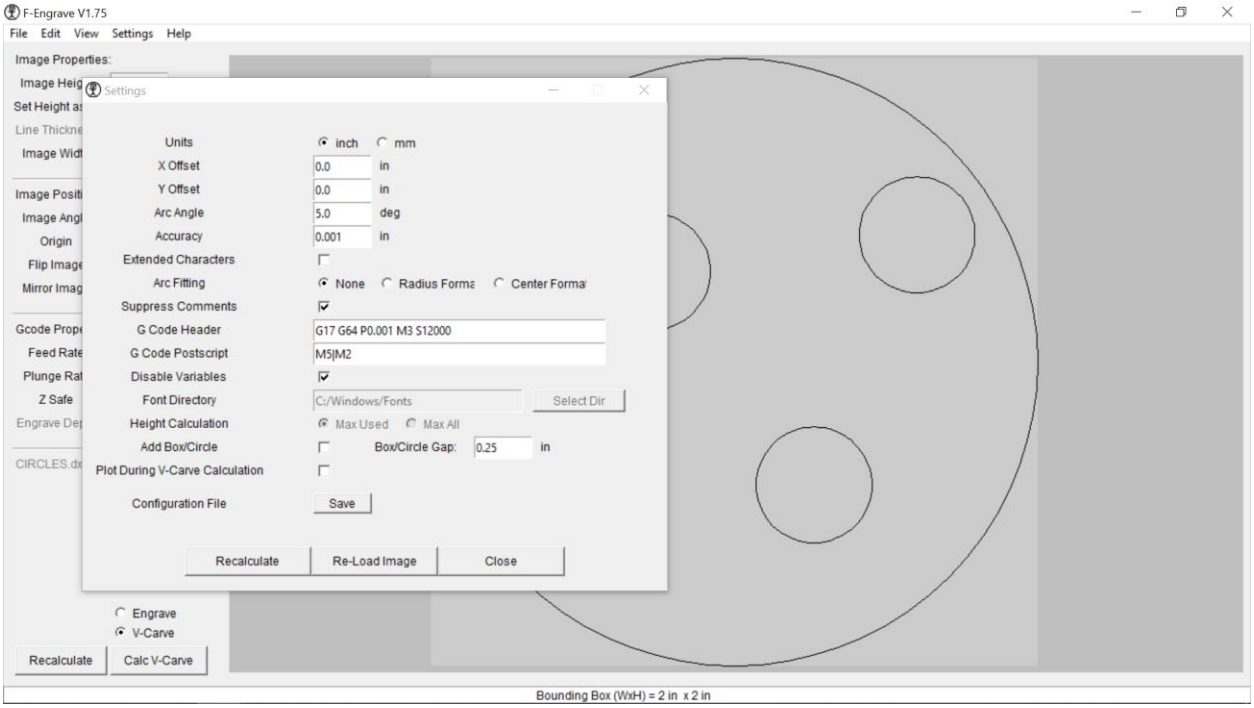
When you first open F-Engrave the screen will look like this: Got to the Settings drop down first.

Settings/General: Use the screen shot below to check the values. The two critical lines are G-Code Header and Postscript.

G-Code Header: G17 G64 P0.001 M3 S12000

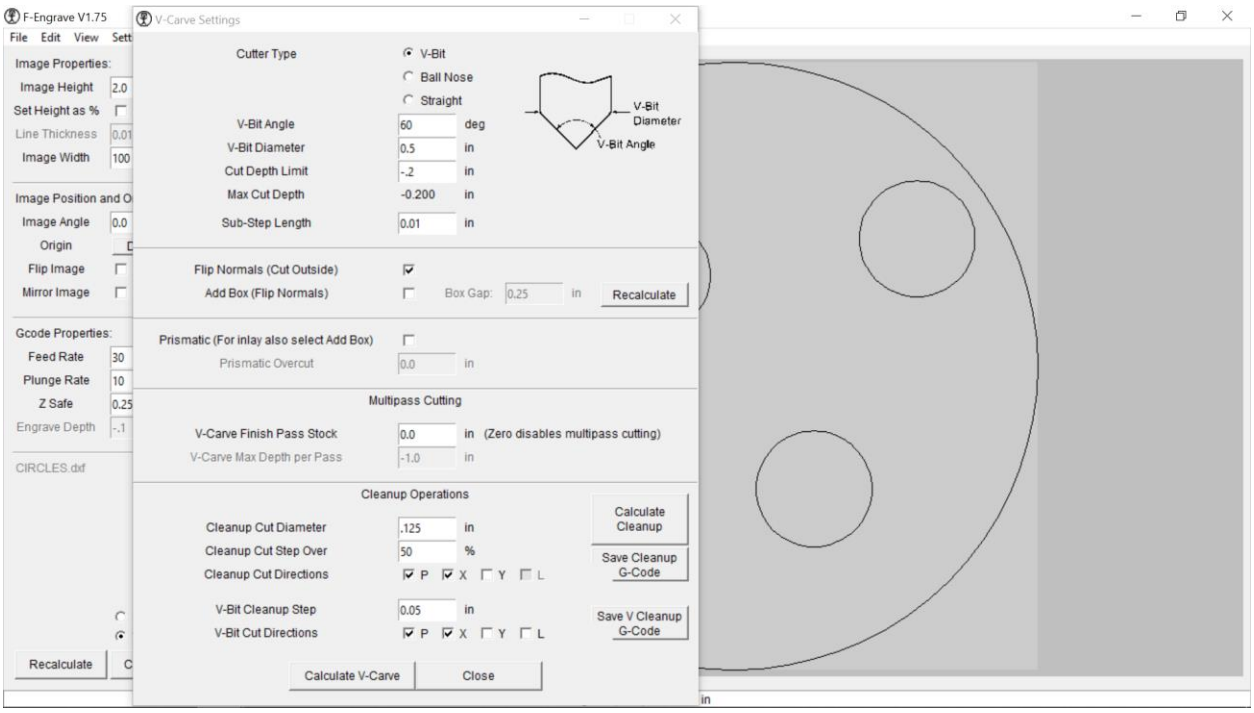
G-Code Postscript should be: M5 M2

You can also adjust the **Box/Circle gap** here.



You do not need to save the Configuration File, but if you restart the program, you will need to reset the values.
The reason for not saving is that you are in a shared environment. Thus, everyone saves to the same location. The values you see when you open the program will be whatever was saved last. You **must** check these values each time you open the program.

Settings/V-carve Settings: Below are good starting values.



V-bit Angle: 60 degree is what I normally use. 30 degree works for deeper carves.

V-bit Diameter: Equals maximum diameter of bit

Cut Depth Limit: How far below the surface the bit can cut. I try to leave at least .1 inches uncut. Note that this number is **negative**.

Sub-Step Length: This number is used to determine the minimum size of each straight line segment that follows a curve int the geometry being cut. I do not change this. Making it smaller will greatly increase calculation time.

Flip Normals (Cut outside): If checked, F-engrave starts cutting on the outside of the first closed geometry that it encounters. It does not cut at the inside of this line, but looks for the next closed geometry inside of this one. It cuts the inside of that next line. See examples below.

Add Box (Flip Normals): This adds a box (or circle) around your geometery. (The distance between the box and you geometry is set in Settings/General.) F-engrave then cuts outside of the box (unless Flip Normals is also checked) and skips the space between the box and the outside line of your geometry.

Prismatic: Is used to cut a 'positive' (mirrored) image to fit into a V-carve design. Glue in the 'positive', cut off the waste and you have an inlay.

Multi Pass Cutting

V-carve Finish Pass Stock: This is the vertical thickness of material that F-engrave will leave for a final finish pass.

V-carve Max Depth per Pass: If Finish Pass is greater than zero, this number sets the depth of each pass of the v-bit. I usually set this to one half of the **Cut Depth Limit**.

Cleanup Operations:

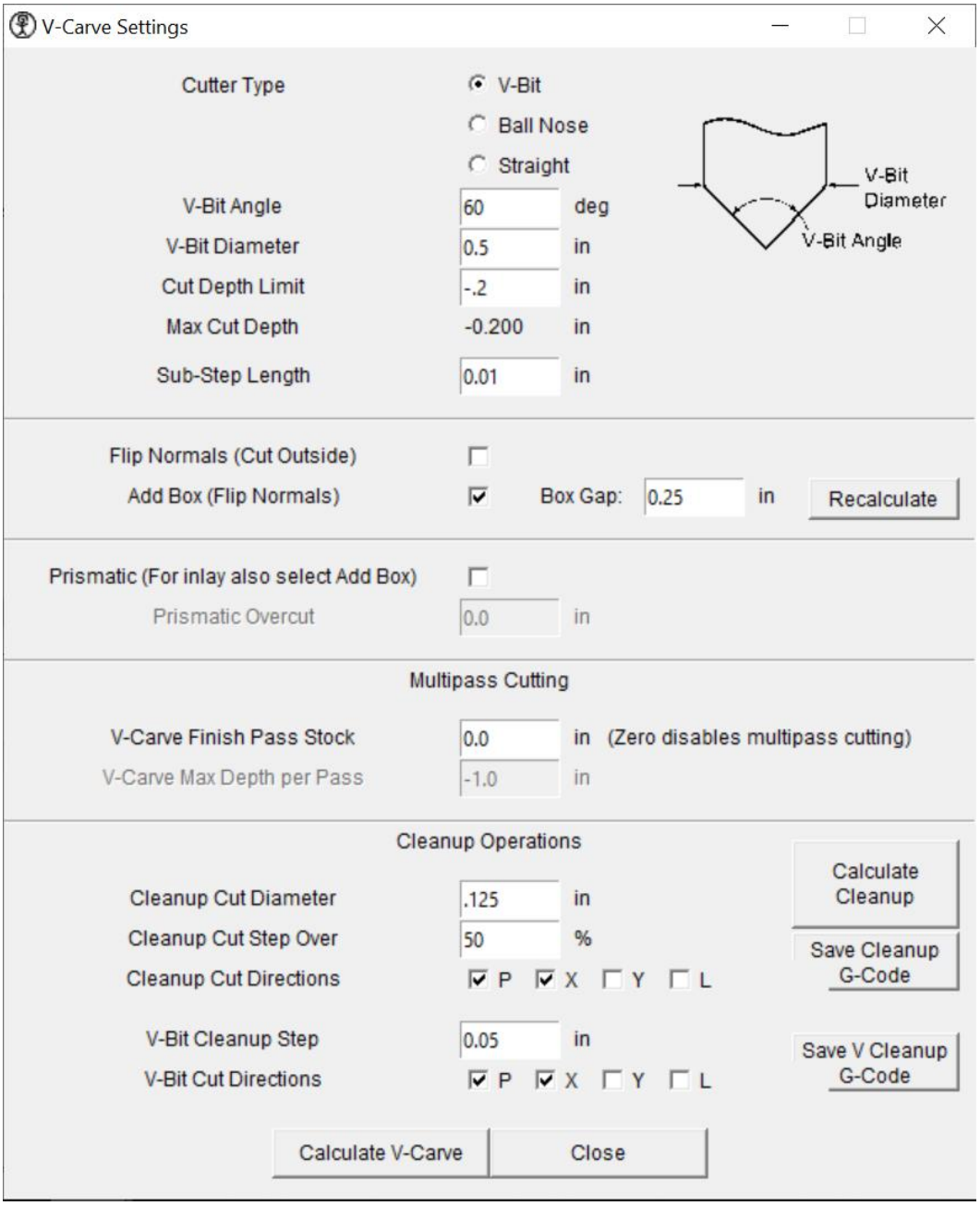
Cleanup Cut Diameter: I normally use a 1/8” straight bit for cleanup, but with a larger pattern you could use a bigger bit. The 1/8” bit does a good job of cleaning up most of the detail in a smaller project.

Stepover Percent: 50 will give a clean flat surface.

Cut Directions: I have not played with these, but you could to see what difference this makes in the generated tool paths.

V-bit Step: 0.05 Is a compromise between longer cut times and cleaner cuts, since the cutting is being done with the sharp point of the bit.

V-bit cut directions: I have not played with these.



Now you are ready to Set the values on the main page.

Image Height: 2 inches is the default, but you can set this to whatever you like. The picture on the screen will not change, but there will be a difference in the generated tool paths.

Origin: Normally you will set this to Mid-Center, and you will se the X/Y axis in the middle of your drawing.

Feed Rate: 30

Plunge Rate: 10

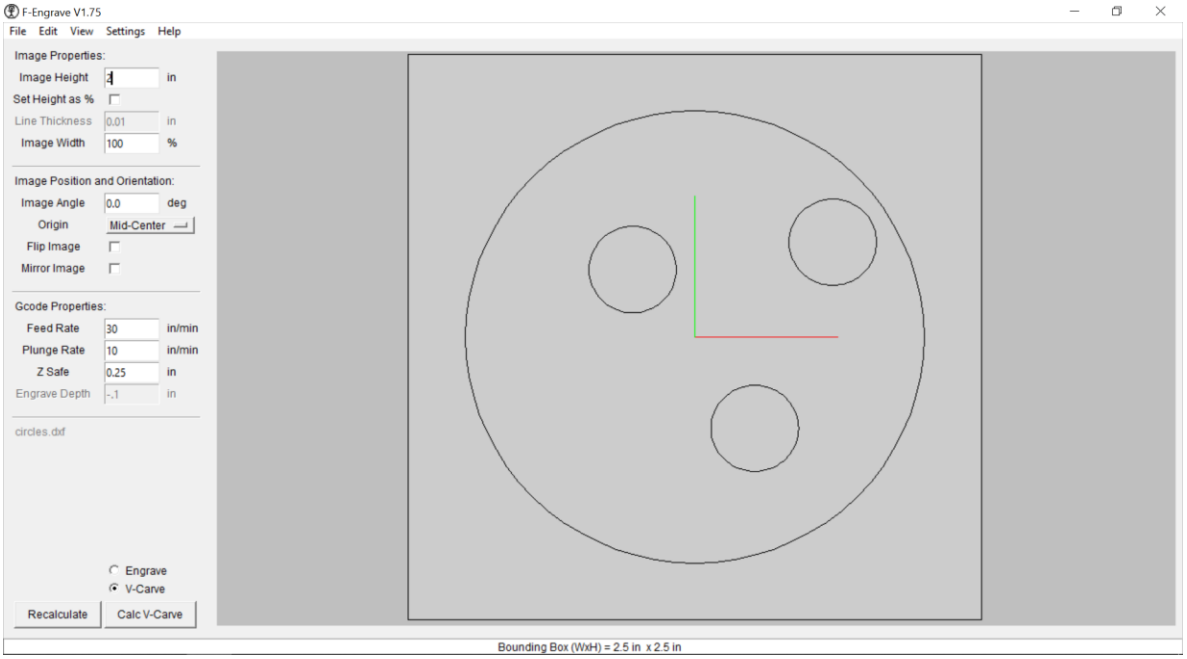
Z Safe: .25

These are usually good numbers to start with.

(Bottom Left of Page)

- **V-Carve** (Check this choice)

Then select **File/Open DXF/Image** and locate your file. F-Engrave works best with dxf files. Note that 'open' geometry will cause erratic behavior in path generation.



Once you have the desired v-carve result, then you need to save three programs.

File/Save G-Code: (On the main page) Choose a file name and save to the desired location.

(On the Settings/V-Carve Settings page)

Save Cleanup G-Code: F-engrave will add "_clean" to the name of the file as originally open. If you change the name for the main file, you must change it here also.

Save V Cleanup G-Code: F-engrave will add "_v_clean" to the name of the file as originally open. If you change the name for the main file, you must change it here also.

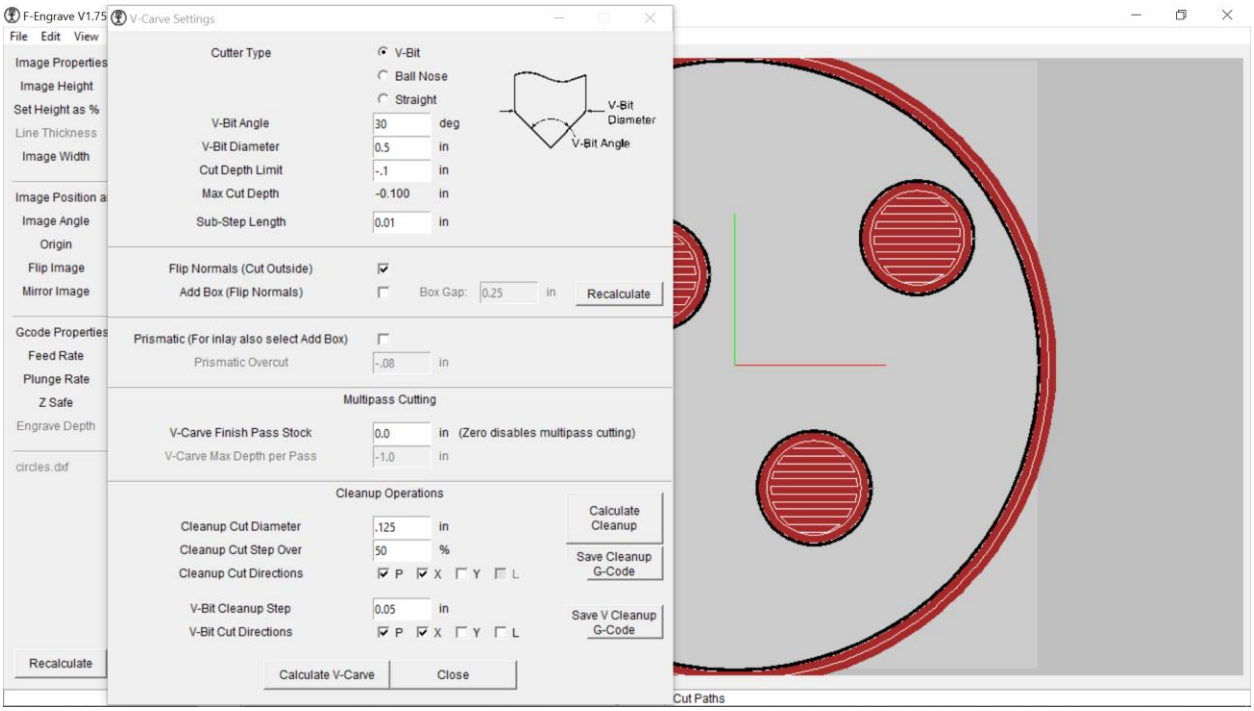
(Running the programs)

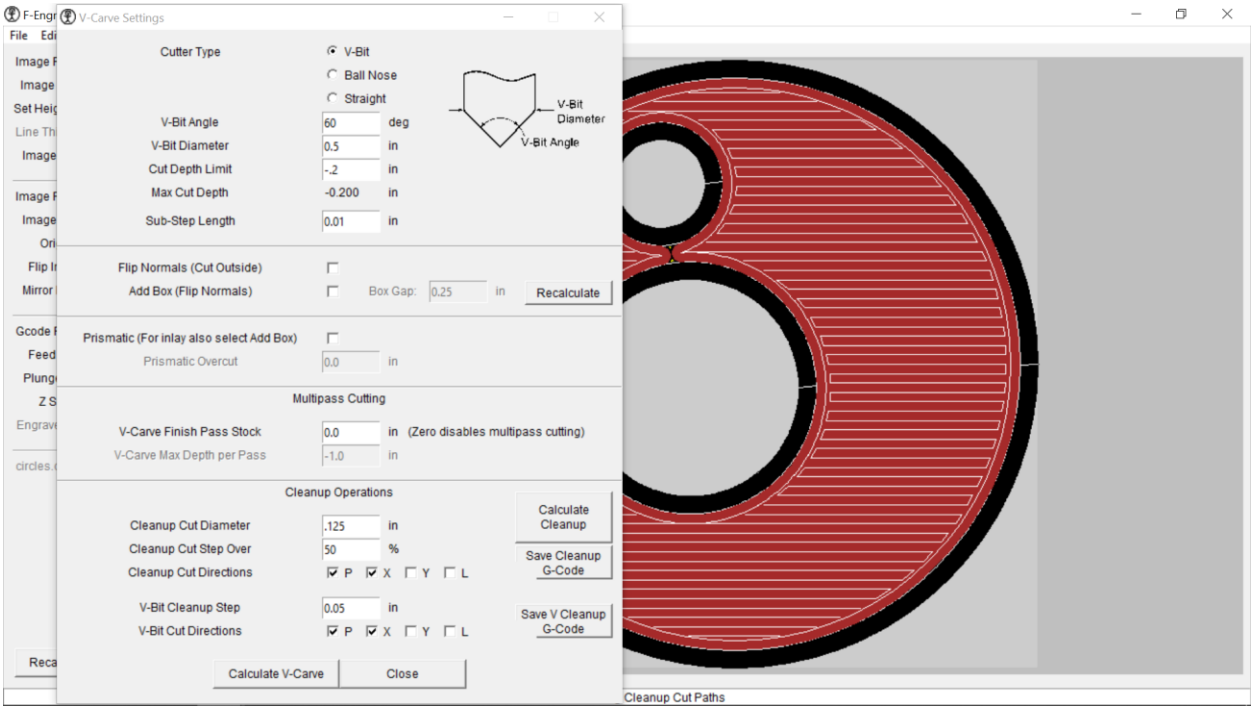
Run the 'main' program first with the v-bit, then the '_v_clean' program. Change bits and run the '_clean' program.

F-engrave Behavior

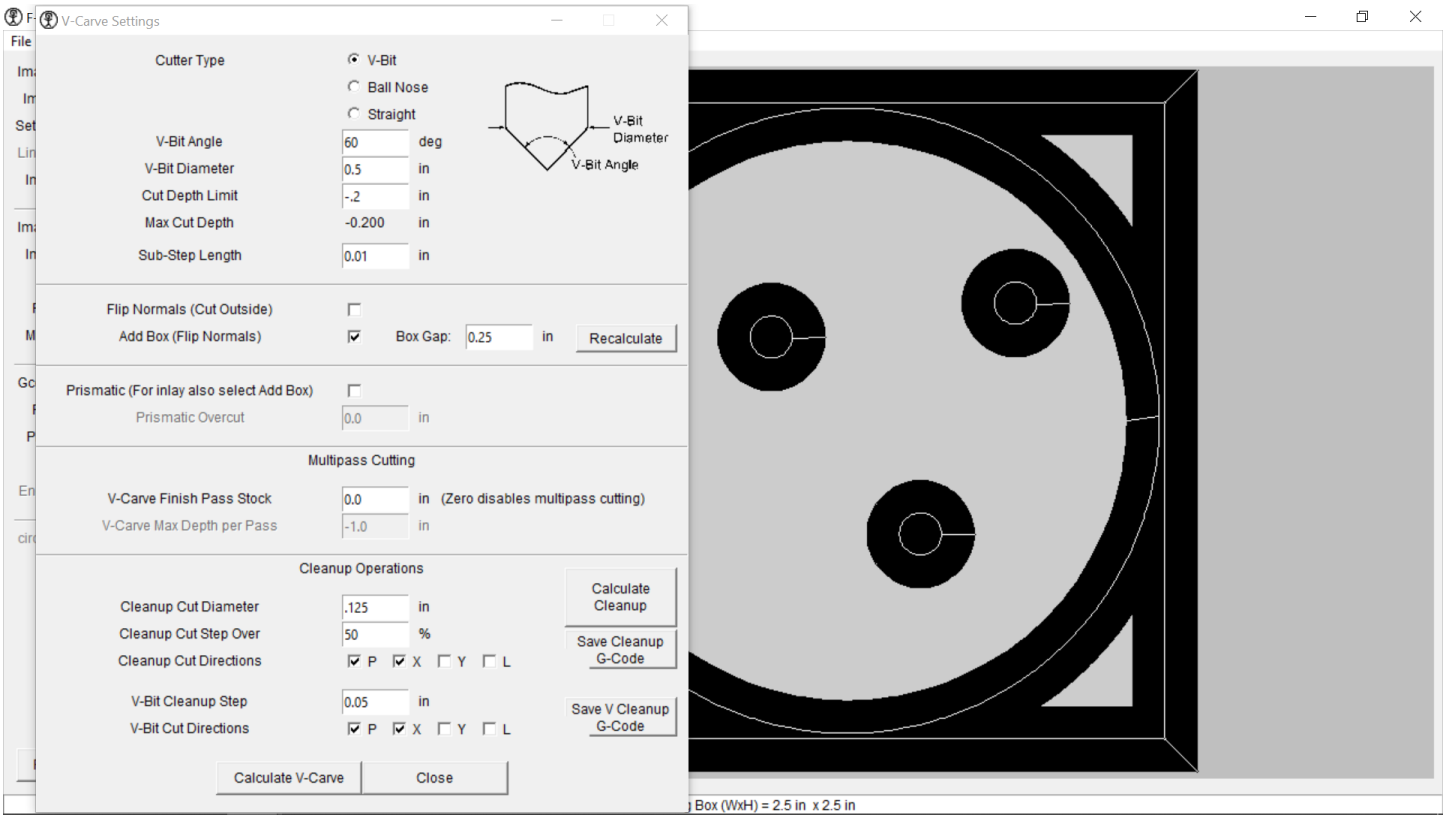
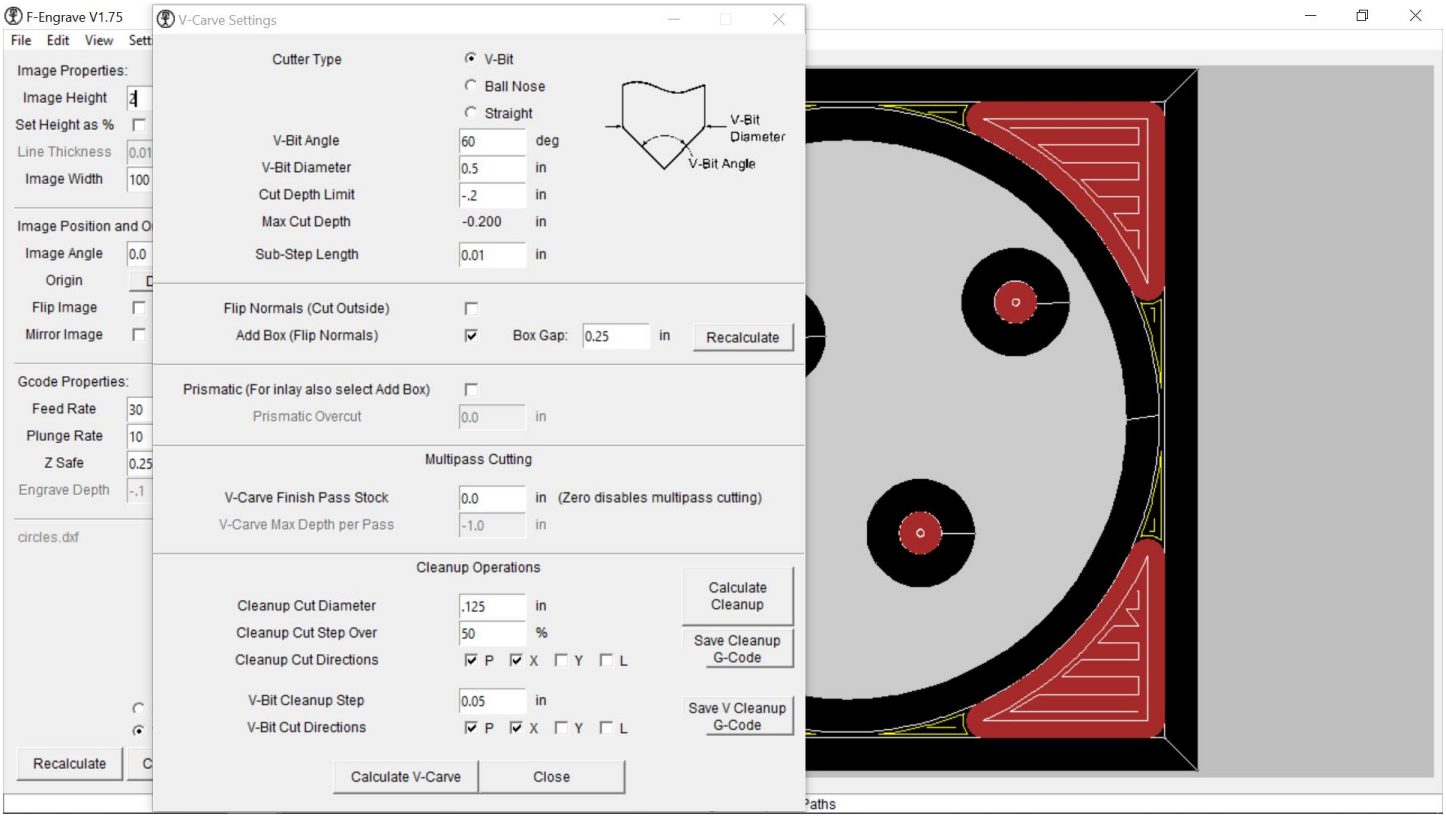
How F-engrave cuts your geometry is determined by **Flip Normals** and **Add Box**. The best way to find your desired settings is to check/uncheck these boxes and **Calculate V-carve** repeatedly. (Note: that you may need to revise your geometry in your graphics program)

Flip Normals – Checked and Unchecked





Add Box Flip Normals: This adds a box around your geometry. (The Box Gap is set in Settings/General).



After **Calculate Cleanup**: The red is what the straight bit will cut. The yellow is cut by the V-bit. These are each separate G-code programs that need to be saved separately.