

PLASMATIC™

**OPERATIONS
MANUAL**

Connecting and Homing Table

Why must this be done:

So you can drive your machine.

So you can program anything over 25 lines of code.

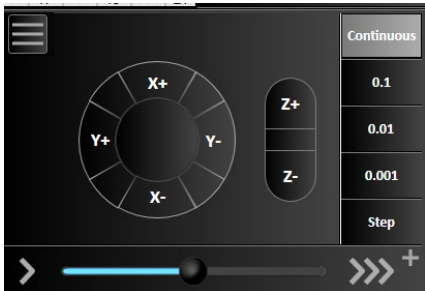
To make sure the machine knows its limits and will not crash.

Steps for **connecting and homing**:

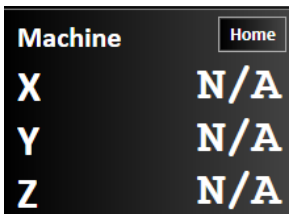
1. Turn on **Control Box**
2. Open up **Software**
3. Go to **CNC Screen**
4. Click the **connect button** on the top left of the screen (It will turn green once it is connected)



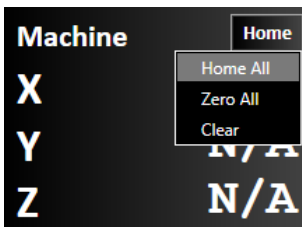
5. Drive the machine **close to home** (Right corner closest to you)



6. Click **Home**



7. Click **Home All**



CAD

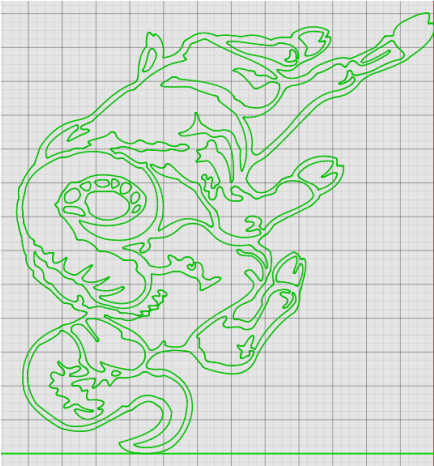
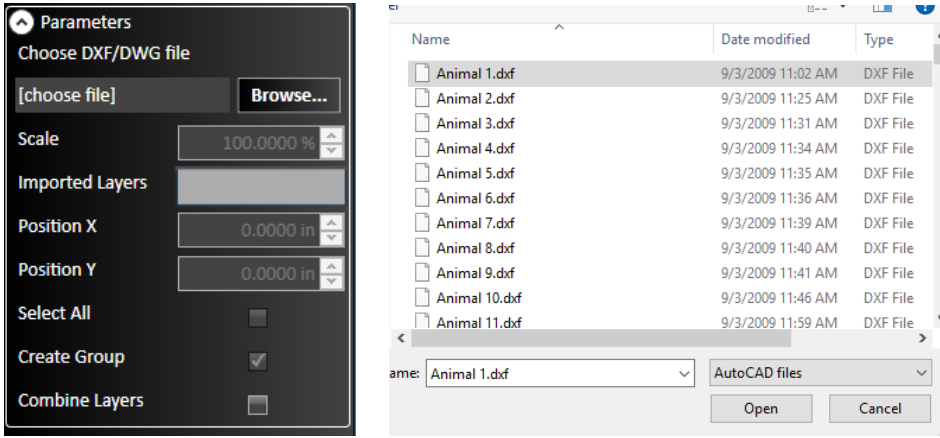
Computer Aided Design

DXF Import:

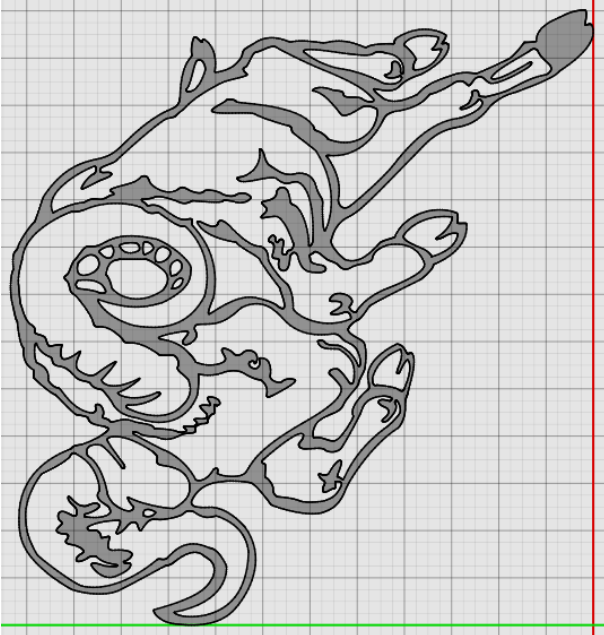
Click on the DXF/DWG Import button.



Click on Browse on the right side of the screen to choose your file. Click open to see the file in the drawing screen.



Click Enter or the Green Check Mark to accept.



Drafting Tip

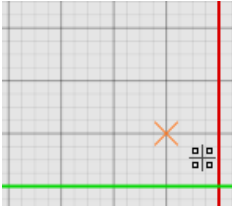
(Be sure to click the X at the bottom right of your screen or escape on your keyboard after you accept what you have drawn to close out of the current option)

Line:

Click on Line Button.



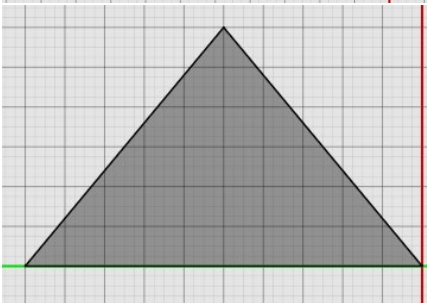
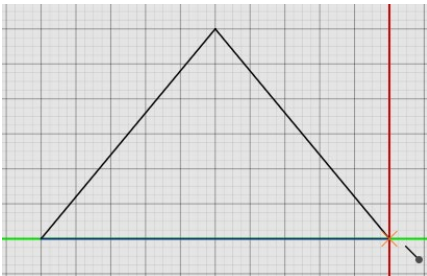
Click **Once** on where you want to start the line.



Bring your mouse out in the direction you want the line and click **Once** to anchor it.



The line will continue until you click **enter**, the **green check mark** at the bottom right of the screen or **connect to another end point**.



Drafting Tip

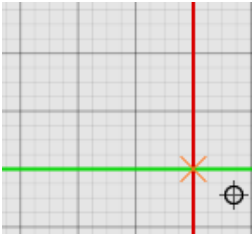
(Be sure to click the X at the bottom right of your screen or escape on your keyboard after you accept what you have drawn to close out of the current option)

Square:

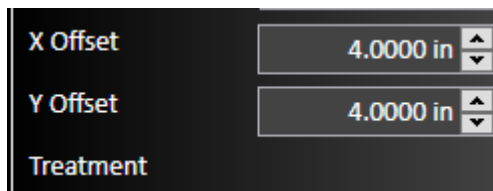
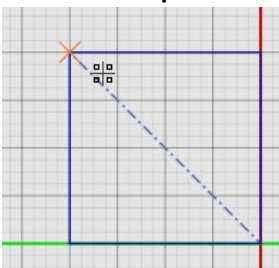
Click the square button.



Click **Once** where you want to start the square.

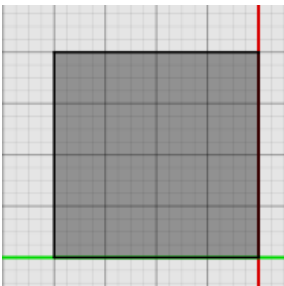


Bring your mouse out to any point on the screen in an **upwards-left direction** (use the **scales** on the screen to get a rough size, or watch the **X Offset** and **Y Offset** in the **parameters** on the right side of the screen) and **Click Once to anchor the square**.



Once the square is anchored you can go to the parameters on the right of the screen and **adjust the size** with the **X Offset** and **Y Offset**.

Click the **Enter Button**, or the **Green Check Mark** to accept the square.



Drafting Tip

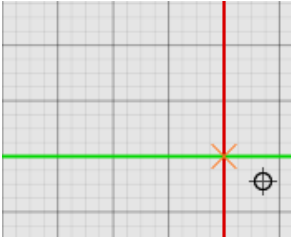
(Be sure to click the X at the bottom right of your screen or escape on your keyboard after you accept what you have drawn to close out of the current option)

Arc:

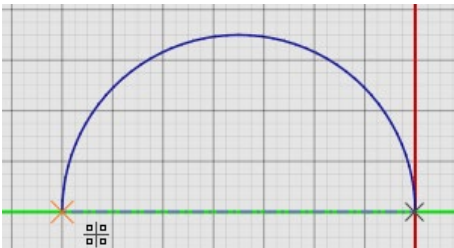
Click on the Arc Button



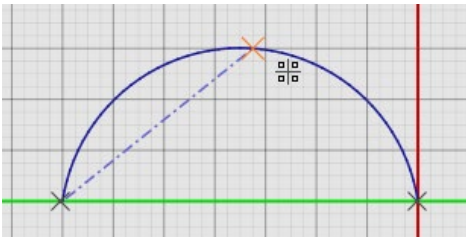
Click **Once** on where you want to start the arc



Click **Once** where you want the **end point** to be.



Click **Once** where you want the **radius** of the arc to be.



Click **Enter** or the **Green Check Mark** to accept the arc.

Drafting Tip

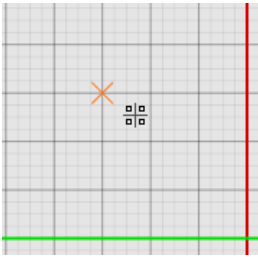
(Be sure to click the X at the bottom right of your screen or escape on your keyboard after you accept what you have drawn to close out of the current option)

Circle:

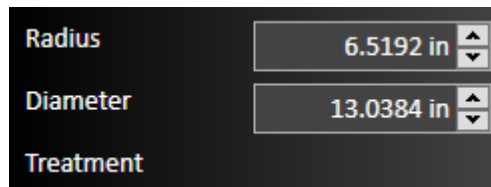
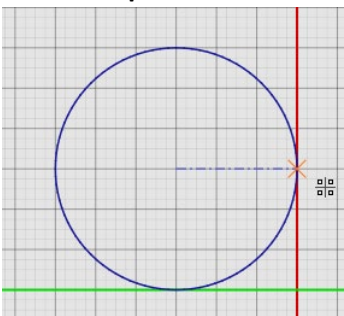
Click on the Circle button.



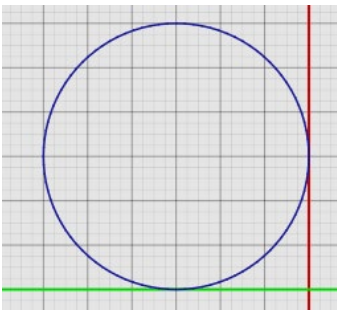
Click **Once** on a where you want to start the center of the circle.



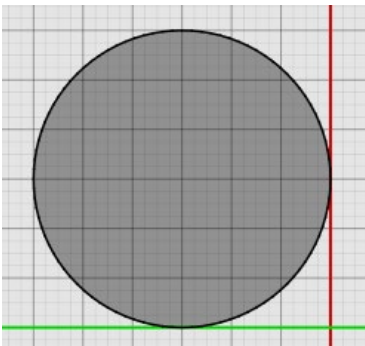
Bring your mouse out in **any direction**. You can watch the **scales** on the drafting screen, or watch the **radius or diameter** size in the **parameters** on the right of the screen.



Click **Once** to anchor the circle.



After anchoring the circle you can **adjust the size in the size in the parameters** on the right of the screen. After changing the circle to the size you want, click **Enter** or the **Green Check Mark** to accept.



Drafting Tip

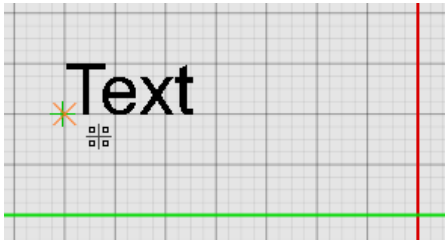
(Be sure to click the X at the bottom right of your screen or escape on your keyboard after you accept what you have drawn to close out of the current option)

Text:

Click on the Text Button:



Click **Once** to choose a start location.



Use the **Parameters** on the right of the screen to **change and adjust** the text.



Once you have the text changed to what you want, click **Enter** or the **Green Check Mark** to accept. You can always select the text again to make changes if needed and **click and drag the + mark** at the **bottom left** of the move the text around.

Drafting Tip

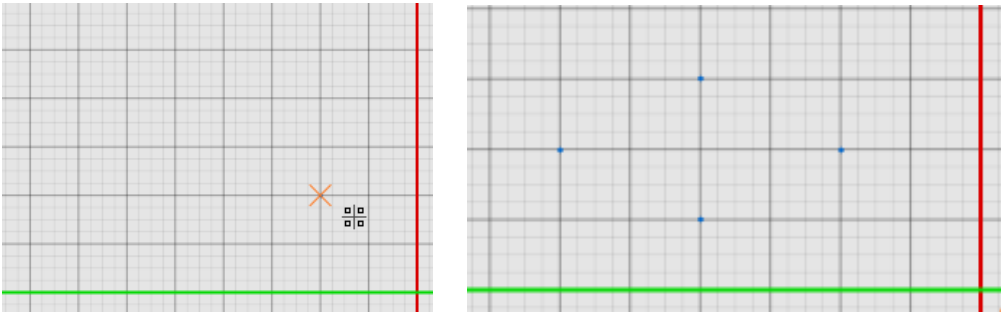
(Be sure to click the X at the bottom right of your screen or escape on your keyboard after you accept what you have drawn to close out of the current option)

Point:

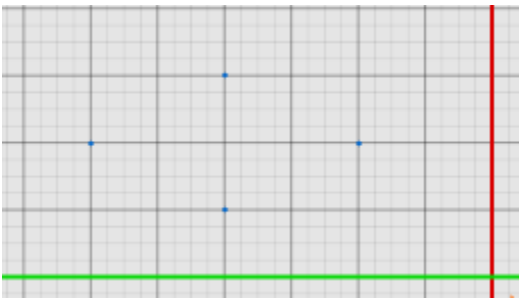
Click on the Point Button.



Click on where you want the points to be



Click **Enter** or the **Green Check Mark** to accept.



You can use the points just made as **reference** or **connection points**.

Drafting Tip

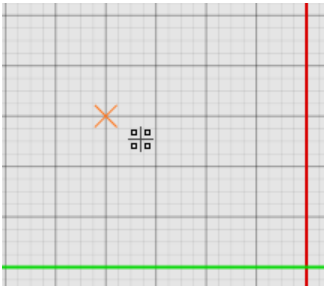
(Be sure to click the X at the bottom right of your screen or escape on your keyboard after you accept what you have drawn to close out of the current option)

Polygon:

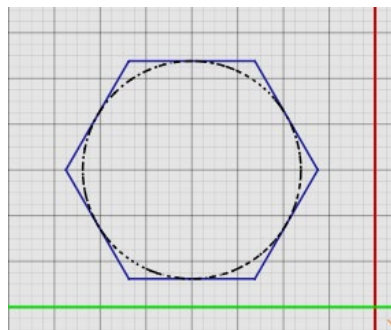
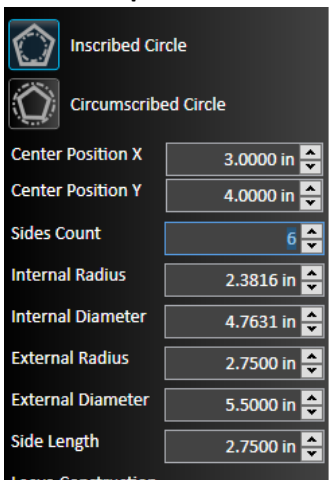
Click on the Polygon Button.



Click **Once** where you want to start the **center of the polygon** (it drafts like a circle).

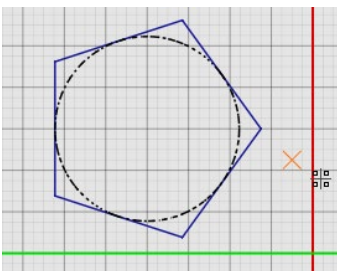


Bring your mouse out in **any direction**. You can watch the **scales** on the drafting screen or watch the **Internal Diameter** size in the **parameters** on the right of the screen.



Click **Once** to anchor the Polygon.

Once the polygon is **anchored** you can make changes in the **parameters** and **adjust the side count** as well.



After changing the polygon to what you want, click **Enter** or the **Green Check Mark** to accept.

Drafting Tip

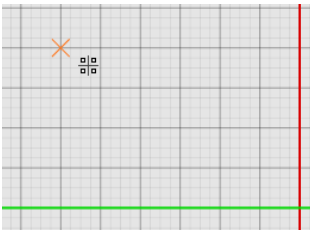
(Be sure to click the X at the bottom right of your screen or escape on your keyboard after you accept what you have drawn to close out of the current option)

Elliptic Arc:

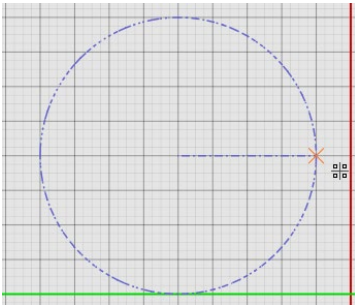
Click on the Elliptic Arc Button.



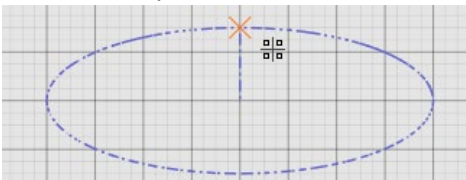
Click Once to choose the start point of the center of the Elliptic Arc.



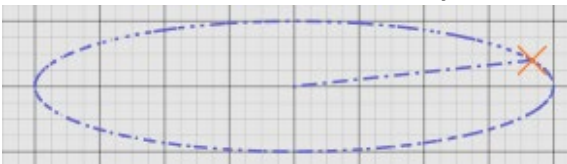
Move your mouse **out** using the **scales** as a reference or **watching the parameters** to choose the **diameter** of the Elliptic Arc. Click Once to accept. The angle that you make the radius will be the angle of the Elliptic Arc.



Move your mouse **up and down** to choose the **radius** of the arc. Use the **scales** or **parameters** as your reference. Click Once to accept.



Move your mouse to where you want to start the Elliptic Arc and **Click Once to start** the arc, move the mouse along the arc and **Click Once to choose where you want the arc to end**.



Click **Enter** or the **Green Check Mark** to accept.

Drafting Tip

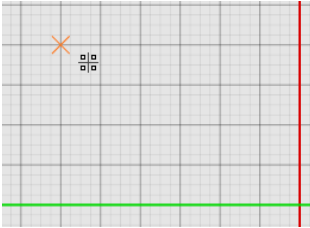
(Be sure to click the X at the bottom right of your screen or escape on your keyboard after you accept what you have drawn to close out of the current option)

Ellipse:

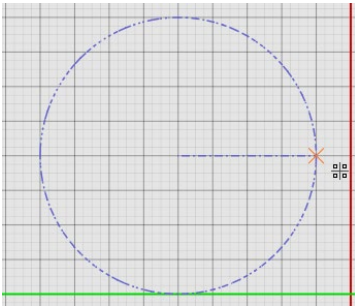
Click on the Ellipse Button.



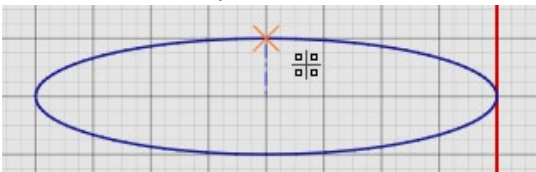
Click Once to choose the start point of the center of the Ellipse.



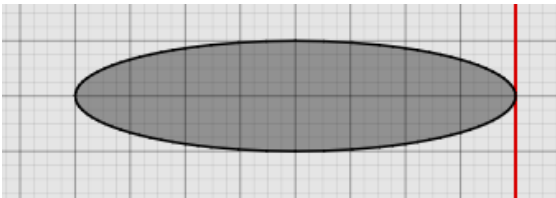
Move your mouse **out** using the **scales** as a reference or **watching the parameters** to choose the **diameter** of the Ellipse. Click Once to accept. The angle that you make the radius will be the angle of the Ellipse.



Move your mouse **up and down** to choose the **radius** of the Ellipse. Use the **scales** or **parameters** as your reference. Click Once to accept.



Click **Enter** or the **Green Check Mark** to accept.



Drafting Tip

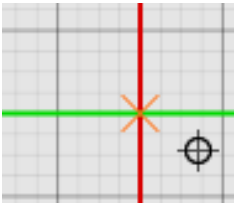
(Be sure to click the X at the bottom right of your screen or escape on your keyboard after you accept what you have drawn to close out of the current option)

Spline:

Click on the Spline Button.



Click **Once** on where you want to start the Spline.



Move the mouse out and **Click Once** to anchor the first point.

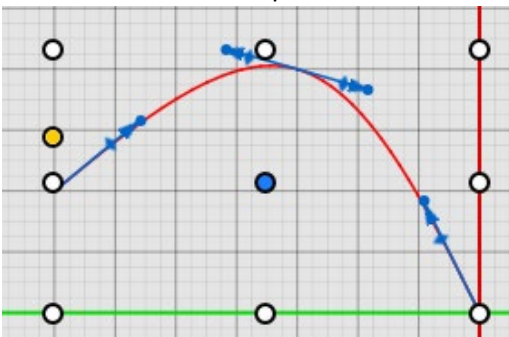


Move the mouse to the next point and **Click Once**.



Click **Enter** or the **Green Check Mark** to accept.

You can **re-select** the spline line after it is created to **make adjustments with the blue arrows**.



Drafting Tip

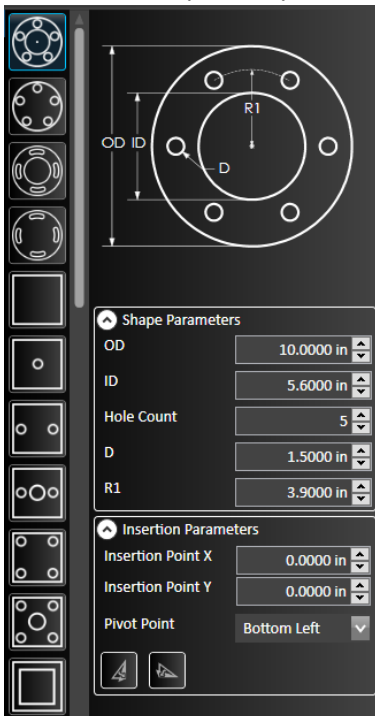
(Be sure to click the X at the bottom right of your screen or escape on your keyboard after you accept what you have drawn to close out of the current option)

Shape Library:

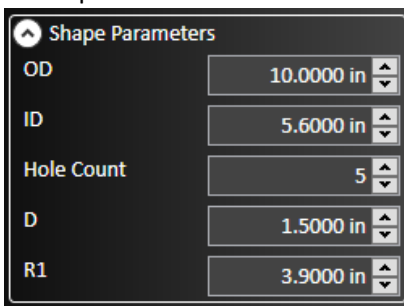
Click on the Shape Library Button.



Choose the shape that you want from the scroll down list on the right of the screen.



Once you have selected the shape you can **adjust the dimensions in the parameters** by changing the values that correspond to what is shown in the picture above the parameters section.



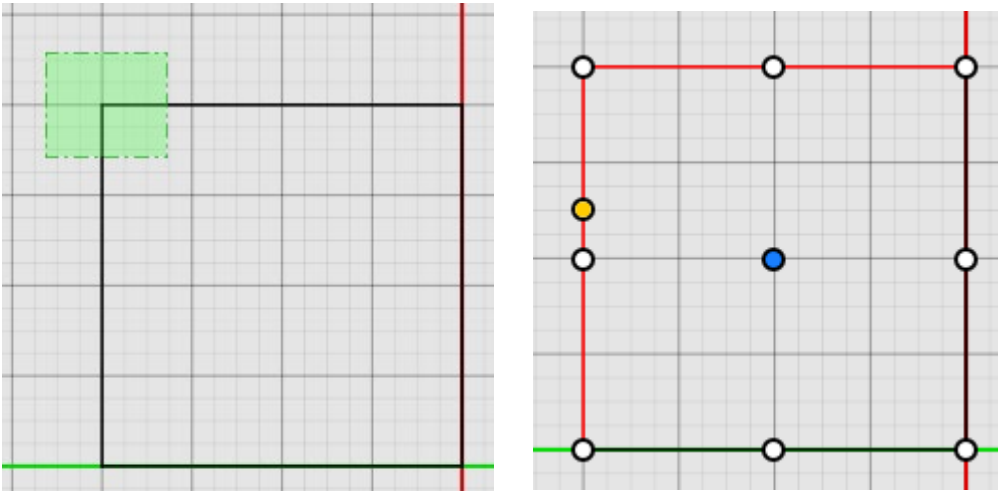
After you change the shape to the desired dimensions click **Enter** or the **Green Check Mark** to accept.

Drafting Tip

(Be sure to click the X at the bottom right of your screen or escape on your keyboard after you accept what you have drawn to close out of the current option)

Chamfer:

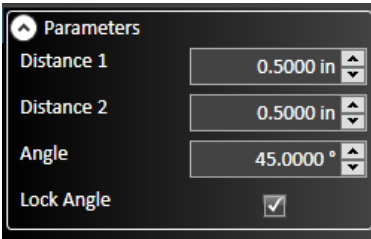
Click and drag right to left to make the green selection box and select the **corner** you want to chamfer.



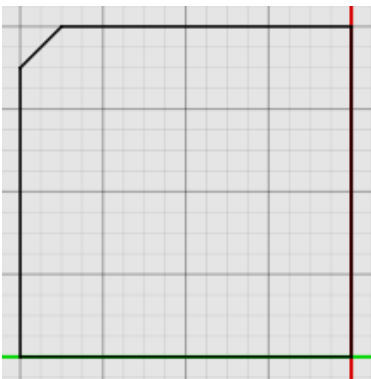
After the corner is selected click on the **Chamfer Button**. You will see a preview of the chamfer appear after clicking on the chamfer button.



Change the size of the chamfer with the **parameters** on the right of the screen.



Click **Enter** or the **Green Check Mark** to accept.

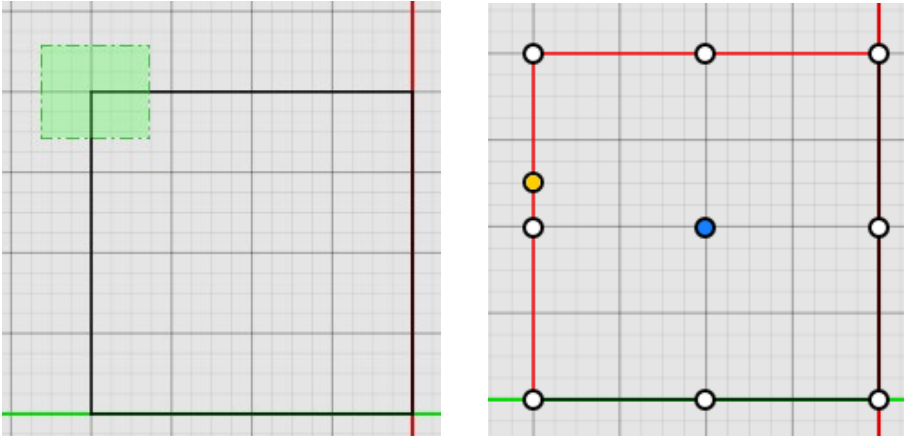


Drafting Tip

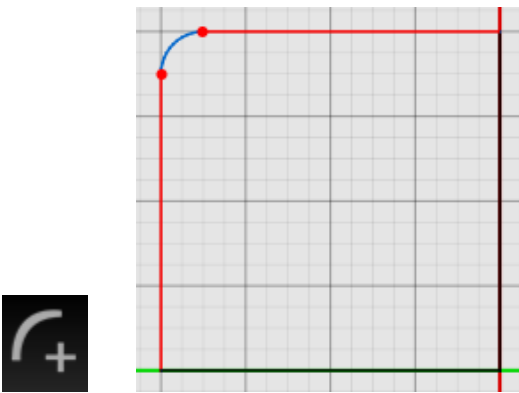
(Be sure to click the X at the bottom right of your screen or escape on your keyboard after you accept what you have drawn to close out of the current option)

Fillet:

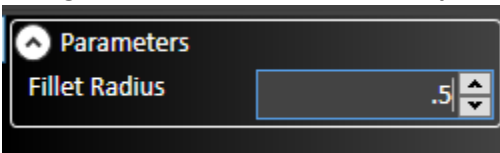
Click and drag right to left to make the green selection box and select the **corner** you want to fillet.



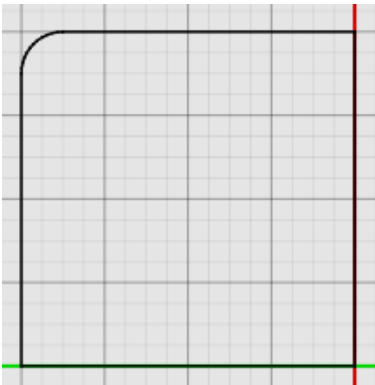
After the corner is selected click on the **Fillet Button**. You will see a preview of the fillet appear after clicking on the fillet button.



Change the size of the fillet with the **parameters** on the right of the screen.



Click **Enter** or the **Green Check Mark** to accept.



Drafting Tip

(Be sure to click the X at the bottom right of your screen or escape on your keyboard after you accept what you have drawn to close out of the current option)

Extend:

Extend works when you are trying to **complete a radial part** or **extend a line to a connection point** (anything but line end point to line end point).

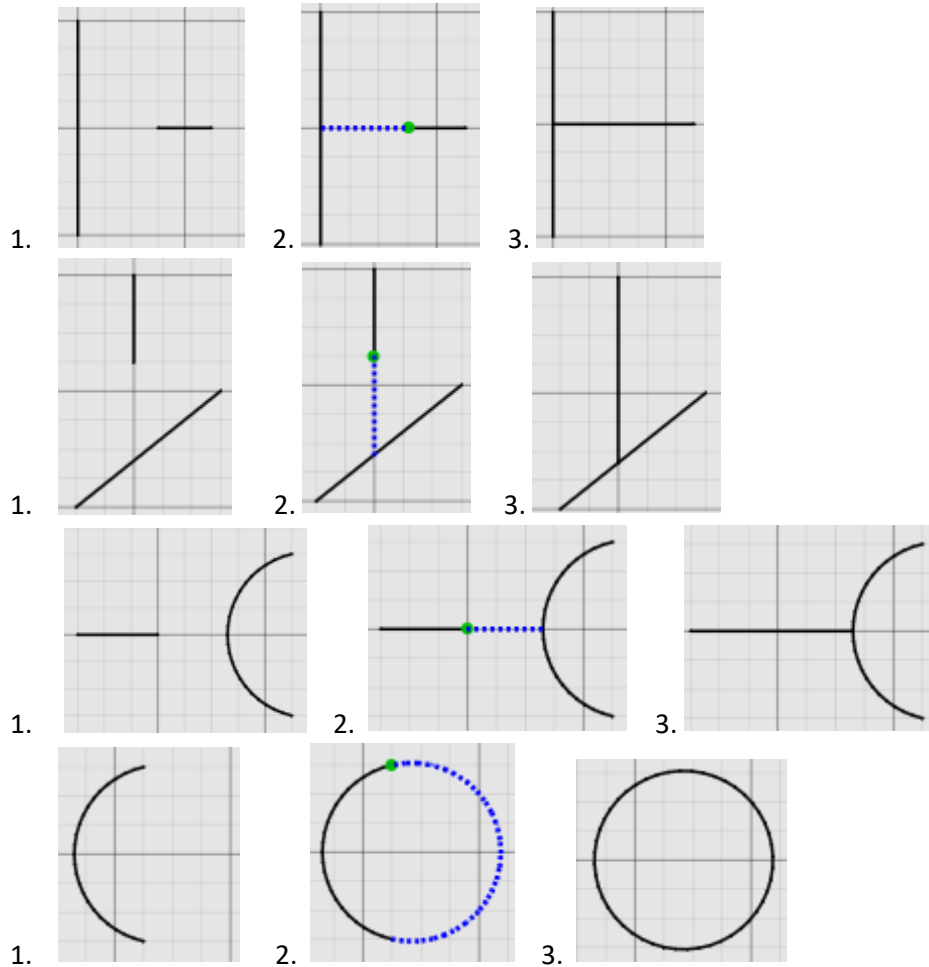
Select the Extend Button.



Move your mouse **over the end point** of the line you want to extend. You will see a preview of the where the line will extend to.

Click Once to extend the line (you can extend multiple lines without exiting from the tool).

Click **Enter** or the **Green Check Mark** to Except.



Drafting Tip

(Be sure to click the X at the bottom right of your screen or escape on your keyboard after you accept what you have just drawn to close out of the current option)

Trim:

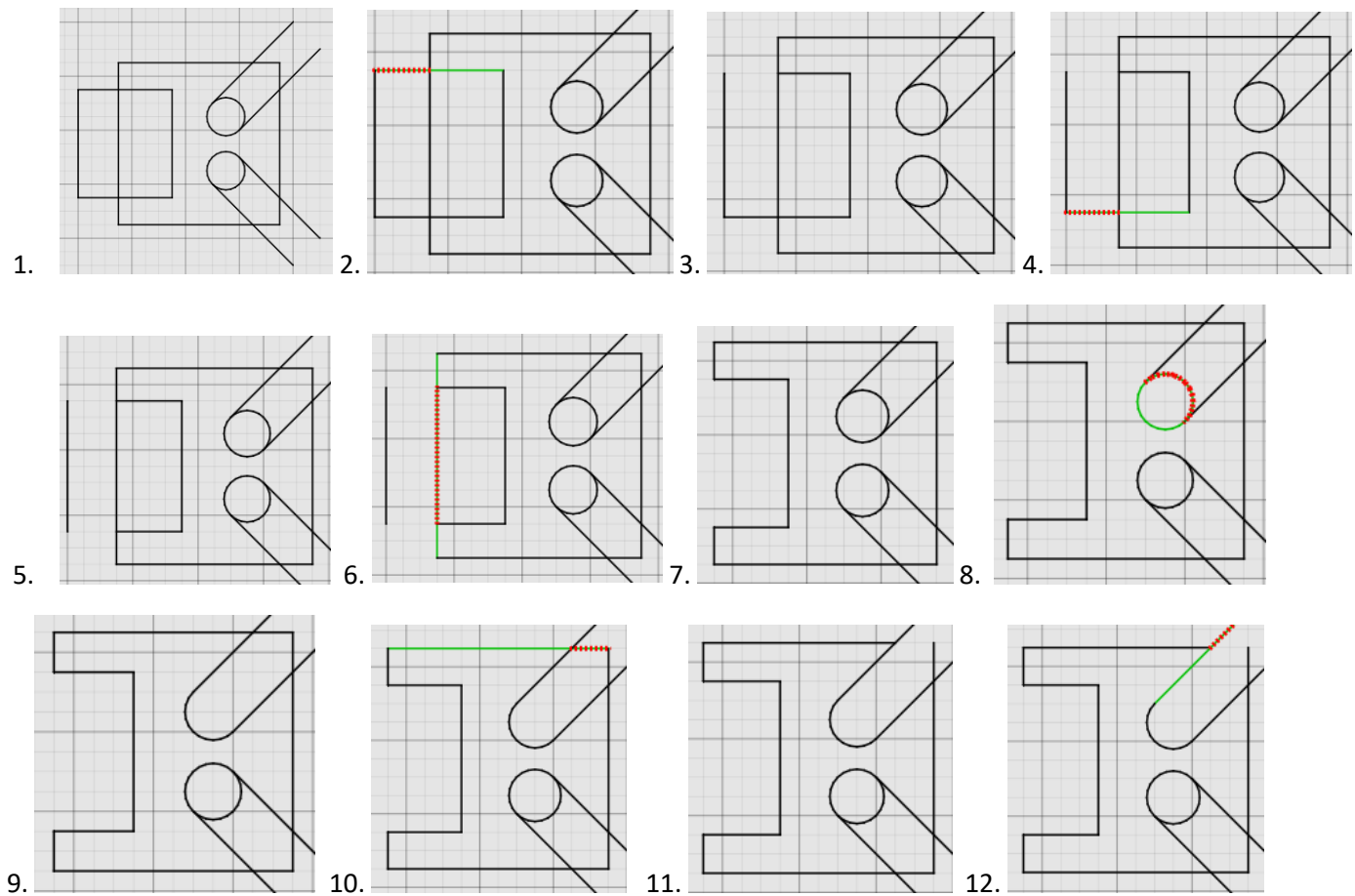
Click on the Trim Button.



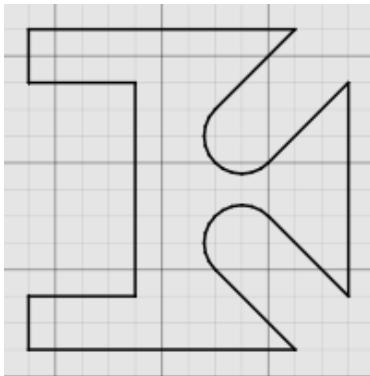
Move your mouse **over** the lines that you want to trim. The line that will be trimmed off will change to a **dotted-red line**.

Click Once to trim the line.

Trim all the lines you need trimmed and click **Enter** or the **Green Check Mark** to accept.



Completed:

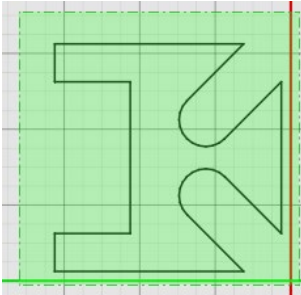


Drafting Tip

(Be sure to click the X at the bottom right of your screen or escape on your keyboard after you accept what you have drawn to close out of the current option)

Scale:

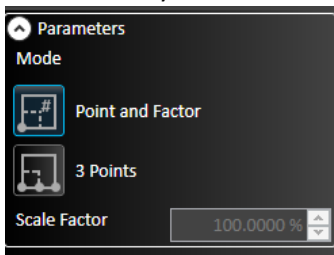
Click and drag to make a **selection box** around the part you want to scale.



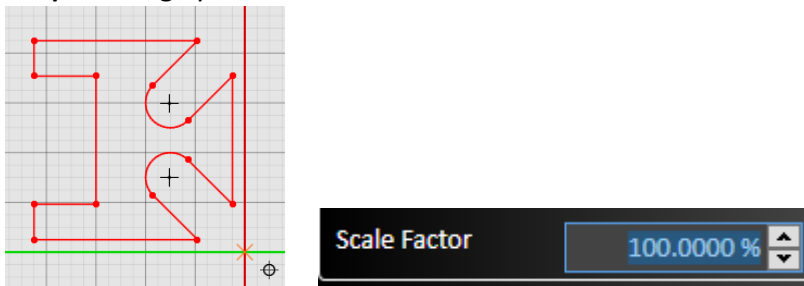
Click the Scale Button.



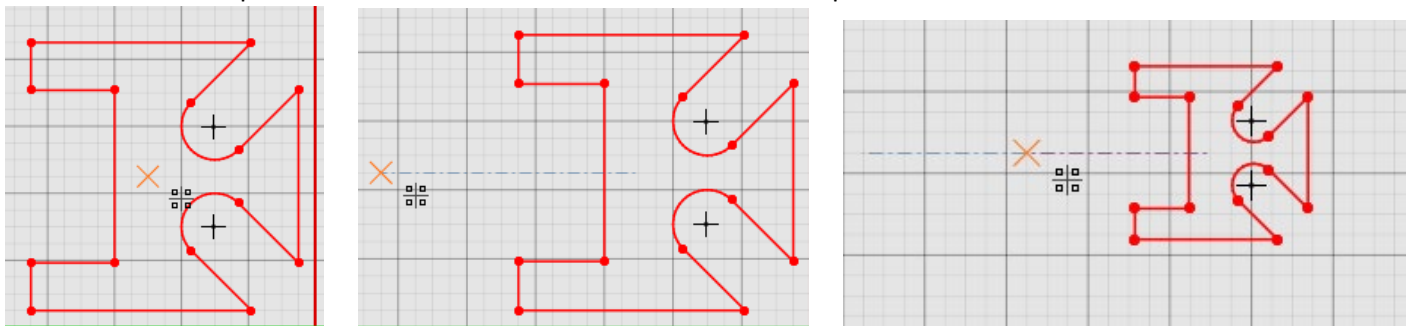
Choose how you want to scale with the **Point and Factor**, or **3 Point** buttons on the right of the screen.



To use the Point and Factor **click the point and factor button**, then **click a point you want to scale from**. Then type in the **percentage** you want to scale.



To use 3 Points **Highlight the part you want to scale**, click on the **scale button**, and click on the **3 Point button**. After clicking the 3 Point button **Click Once** on where you want to rotate from, **bring your mouse out click one more time to choose a point to scale on**, move your mouse **in and out** to scale the part larger or smaller, and **Click One More Time** to anchor the part. Click **Enter** or the **Green Check Mark** to accept.

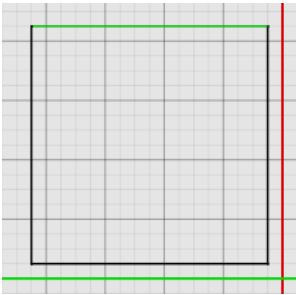


Drafting Tip

(Be sure to click the X at the bottom right of your screen or escape on your keyboard after you accept what you have drawn to close out of the current option)

Offset:

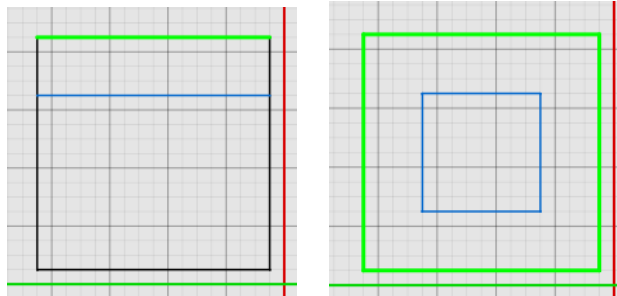
Select the **line** or **object** you want to offset.



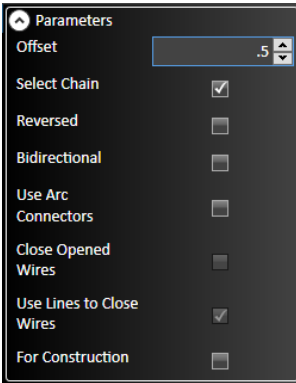
Click the Offset Button.



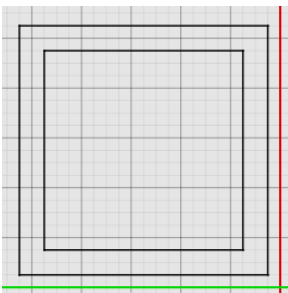
When you click the offset button you can offset everything the **selected line is touching** or just the line by itself by **checking** or **unchecking** the **Select Chain** checkbox in the parameters on the right of the screen.



Adjust the parameters of the offset on the right side of the screen.



Click **Enter** or the **Green Check Mark** to accept.



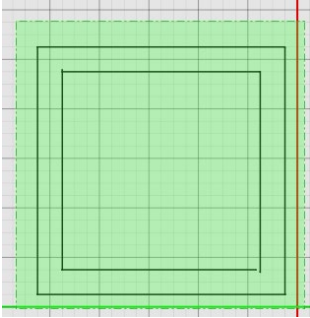
Drafting Tip

(Be sure to click the X at the bottom right of your screen or escape on your keyboard after you accept what you have drawn to close out of the current option)

Fix Drawing:

The Fix Drawing tool will look for any **unconnected or overlapping lines** within a certain tolerance determined in the parameters on the right of the screen after clicking on the Fix Drawing Button.

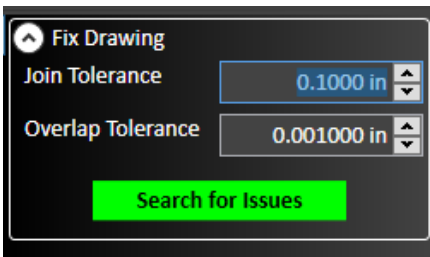
Draw a **selection box** around the part you want to repair



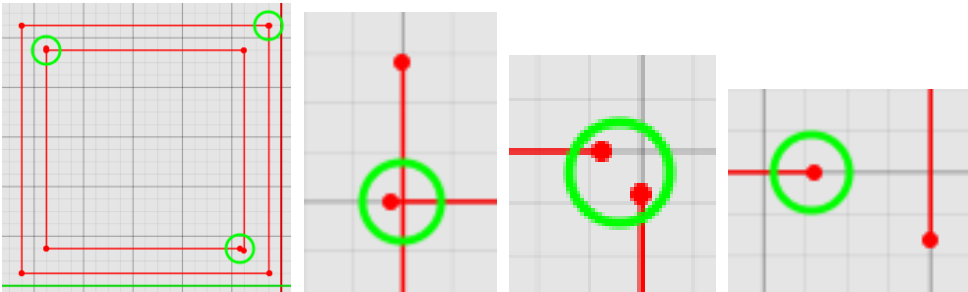
Click on the **Fix Drawing** button.



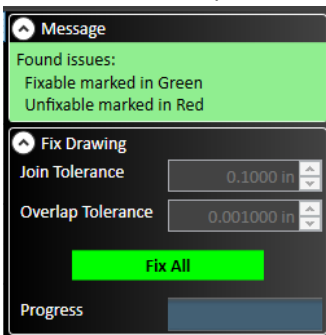
Choose the **repair tolerance** you want the software to look for in the parameters on the right of the screen and click **Search for Issues**.



The sections that will be repaired will be **Circled in Green** on the drawing.



Click **Fix All** to repair the drawing.

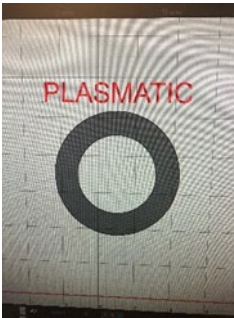


Drafting Tip

(Be sure to click the X at the bottom right of your screen or escape on your keyboard after you accept what you have drawn to close out of the current option)

Curve Text:

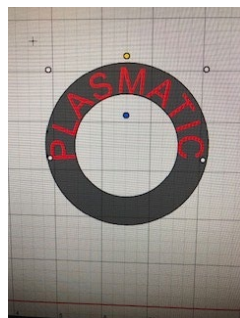
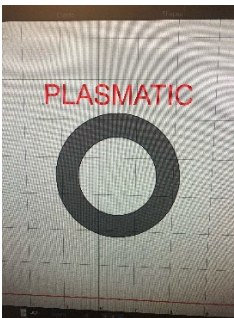
Select the text you want to curve.



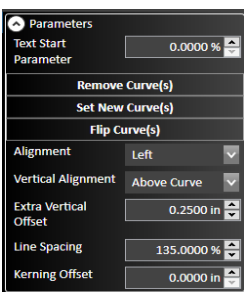
Click on the **Curve Text** button.



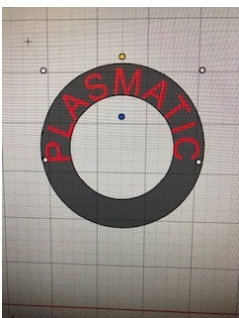
Left Click on the arc you want to curve the text around, and **Right Click** to confirm.



Use the **parameters** on the right of the screen to flip the text, offset, and adjust. **Click and drag** the **“4 Arrow”** icon on the arc to move the text around the arc.



Click **Enter** or the **Green Check Mark** to accept.

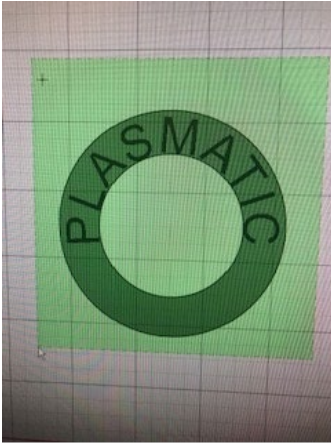


Drafting Tip

(Be sure to click the X at the bottom right of your screen or escape on your keyboard after you accept what you have drawn to close out of the current option)

Group:

Drag a **selection box** around the lines you want to group together.



Click the Group button.



Once your part is grouped you select the whole part by clicking on **one line**, or you can **click and drag on one line** on the part to move the entire part around.



Drafting Tip

(Be sure to click the X at the bottom right of your screen or escape on your keyboard after you accept what you have drawn to close out of the current option)

Explode:

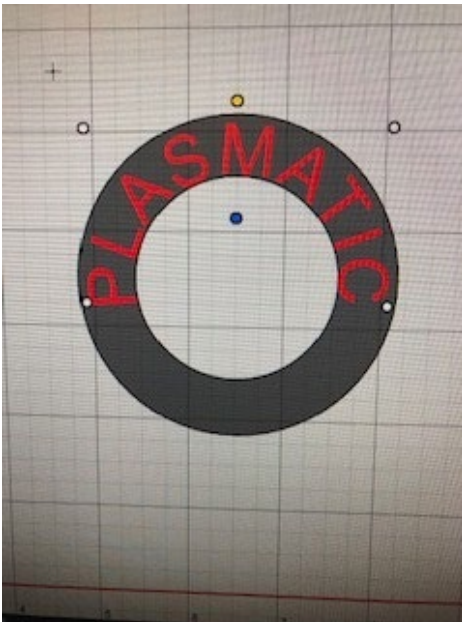
Click on the **grouped** part you want to explode.



Click on the **Explode** button then click **Enter** or the **Green Check Mark** to confirm.



Once the part is exploded it will go back to **separate lines**. You cannot edit lines in a grouped part.

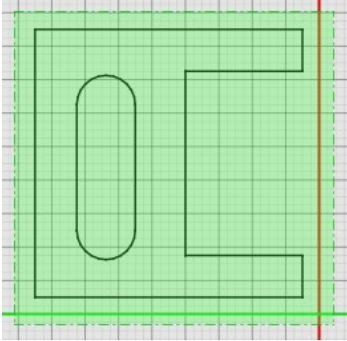


Drafting Tip

(Be sure to click the X at the bottom right of your screen or escape on your keyboard after you accept what you have drawn to close out of the current option)

Copy:

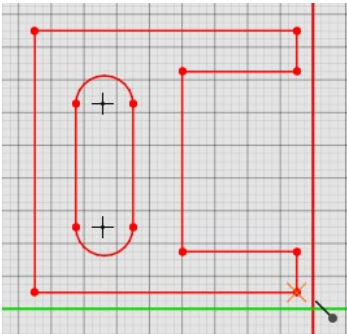
Draw a **selection box** around the parts you want to copy.



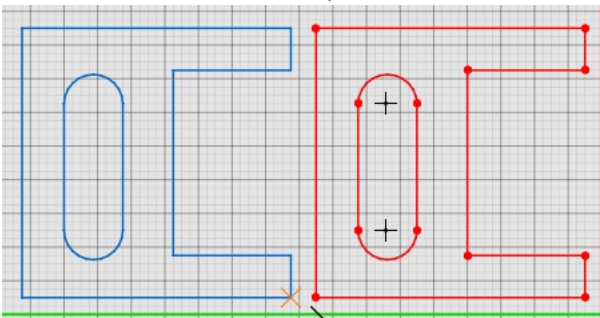
Click the **Copy** button.



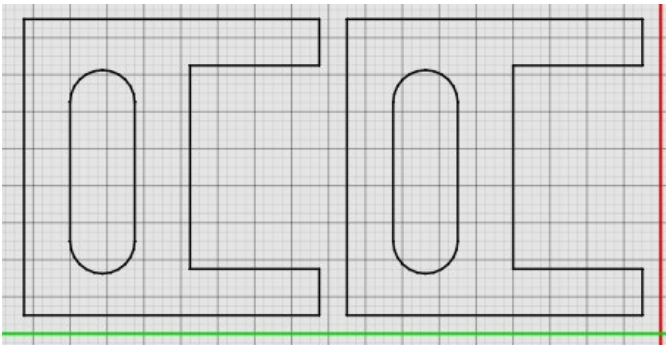
Click **Once** on an anchor point you want to copy from.



Move the mouse to where you want to move the copied part. **Click one more time** to anchor the copied parts.



Click **Enter** or the **Green Check Mark** to finish copying and accept.

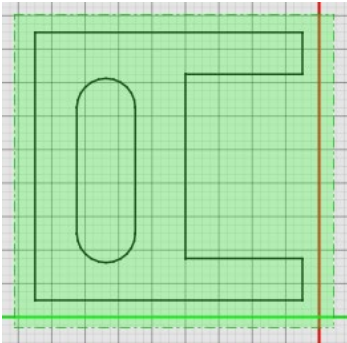


Drafting Tip

(Be sure to click the X at the bottom right of your screen or escape on your keyboard after you accept what you have drawn to close out of the current option)

Move:

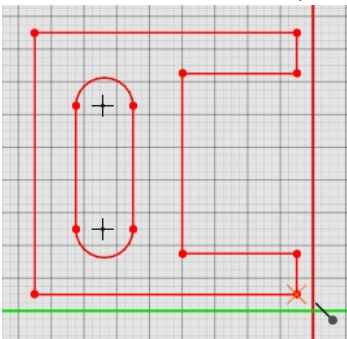
Draw a **selection box** around the parts you want to copy.



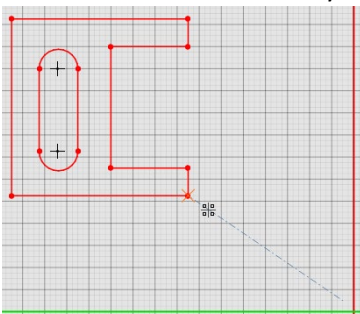
Click the **Move** button.



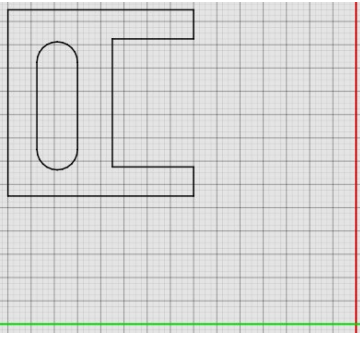
Click **Once** on an anchor point you want to move from.



Move the mouse to where you want to move the part. **Click one more time** to anchor the moved parts.



Click **Enter** or the **Green Check Mark** to finish copying and accept.

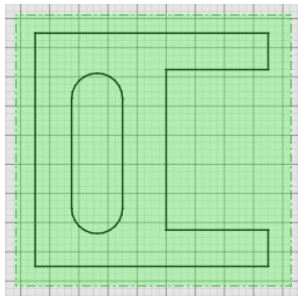


Drafting Tip

(Be sure to click the X at the bottom right of your screen or escape on your keyboard after you accept what you have drawn to close out of the current option)

Rotate:

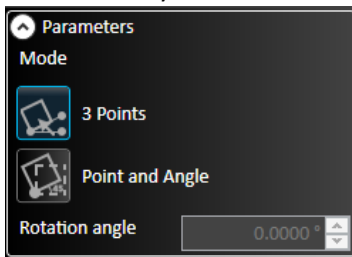
Click and drag to make a **selection box** around the part you want to scale.



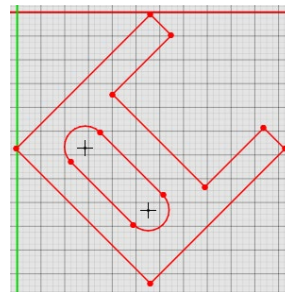
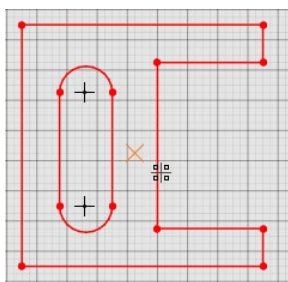
Click the **Rotate** Button.



Choose how you want to rotate with the **3 Points** or **Point and Angle** buttons on the right of the screen.

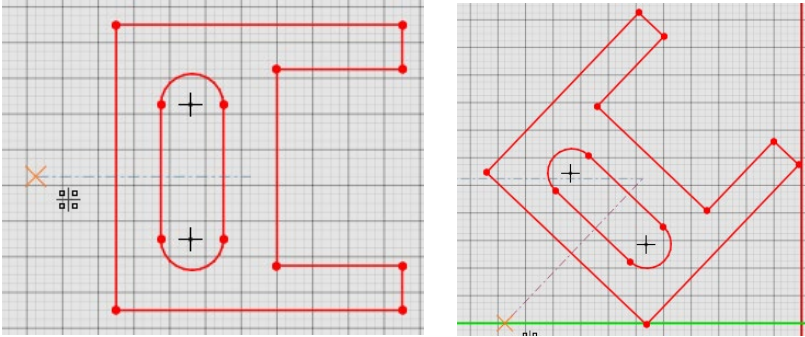


To use the Point and Angle click the **point and Angle** button, then **click a point you want to rotate from**. Then type in the **degree** you want to rotate.



To use 3 Points **Highlight the part you want to rotate**, click on the **rotate** button, and click on the **3 Point** button. After clicking the 3 Point button **Click Once** on where you want to rotate from, **bring your mouse out and click one more**

time to choose a point to start rotating from, move your mouse around to rotate the part. Click One More Time to anchor the part. Click Enter or the Green Check Mark to accept.



Drafting Tip

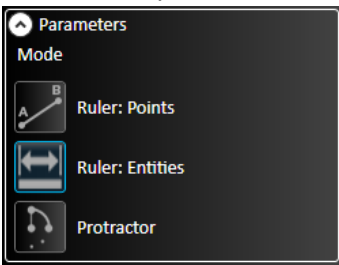
(Be sure to click the X at the bottom right of your screen or escape on your keyboard after you accept what you have drawn to close out of the current option)

Measure:

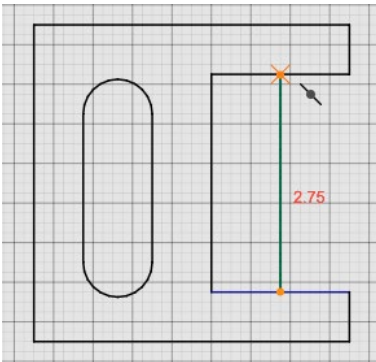
Click on the Measure button.



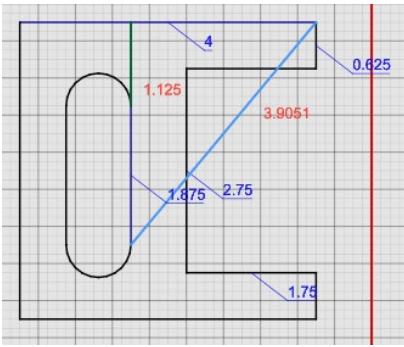
Choose how you want to measure in the parameters on the right of the screen.



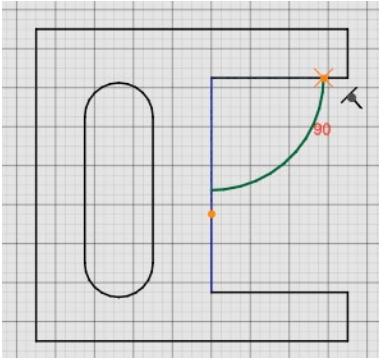
Ruler: Points measures between two lines or points.



Ruler: Entities measures the individual lines you click on.



Protractor measures angles.



Drafting Tip

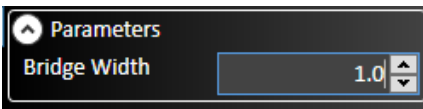
(Be sure to click the X at the bottom right of your screen or escape on your keyboard after you accept what you have drawn to close out of the current option)

Bridge Entities:

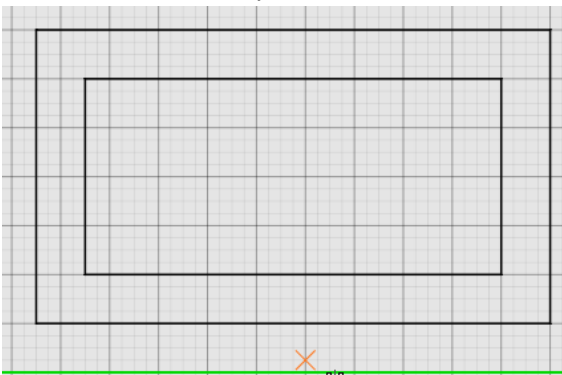
Click on the Bridge button.



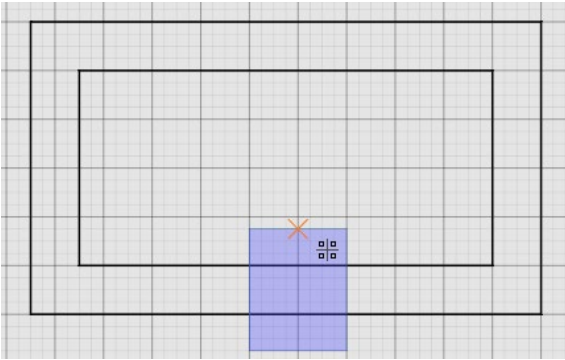
Choose the width of the bride in the parameters on the right of the screen.



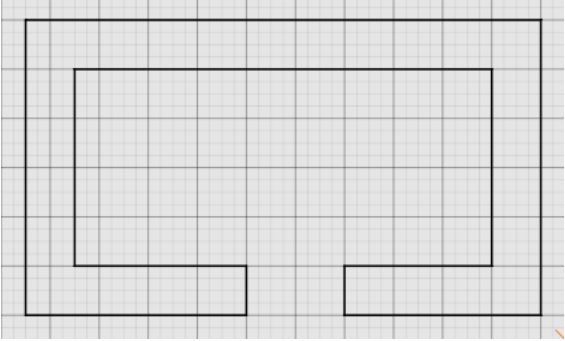
Click Once on where you want to start the bridge.



Click **Once** on where you want to end the bridge.



Click **Enter** or the **Green Check Mark**.

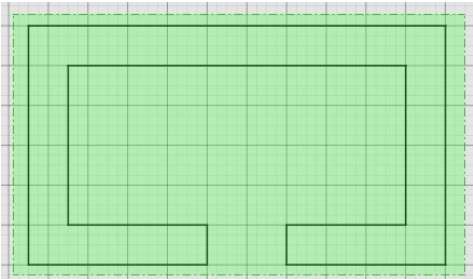


Drafting Tip

(Be sure to click the X at the bottom right of your screen or escape on your keyboard after you have drawn to close out of the current option)

Mirror:

Click and drag to make a **selection box** around the part you want to scale.



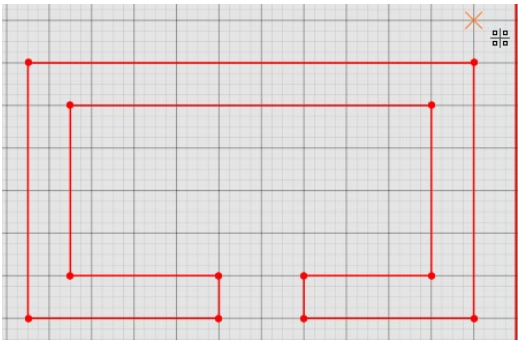
Click on the **Mirror** button.



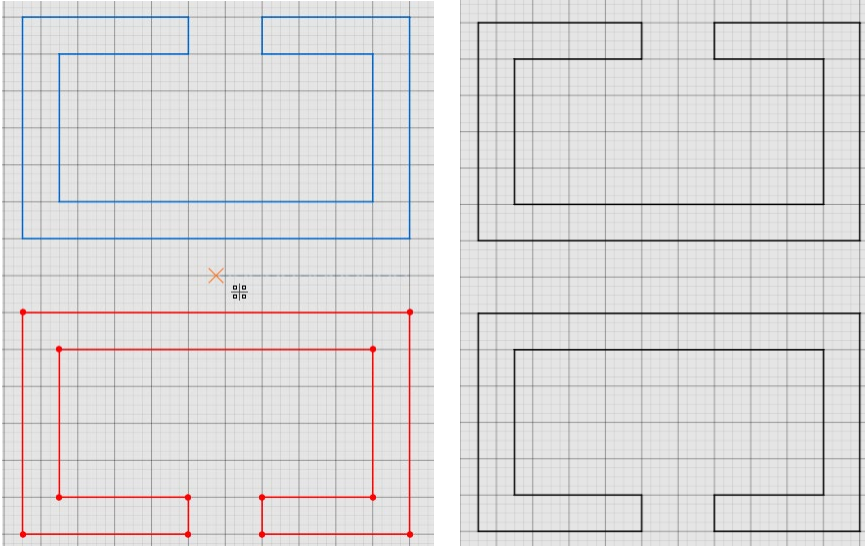
To **keep a copy** of the original part **check the copy object check box** in the parameters on the right of the screen.



Click on where you want to mirror around.



Move the mouse out to the angle you want to mirror and **click once to accept.**

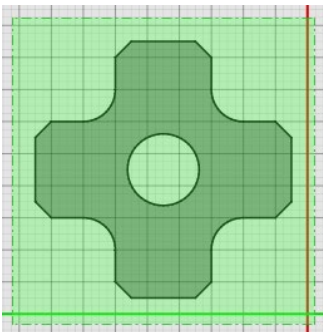


Drafting Tip

(Be sure to click the X at the bottom right of your screen or escape on your keyboard after you accept what you have drawn to close out of the current option)

Linear Pattern:

Draw a **selection box** around the part you want to make a linear pattern of.

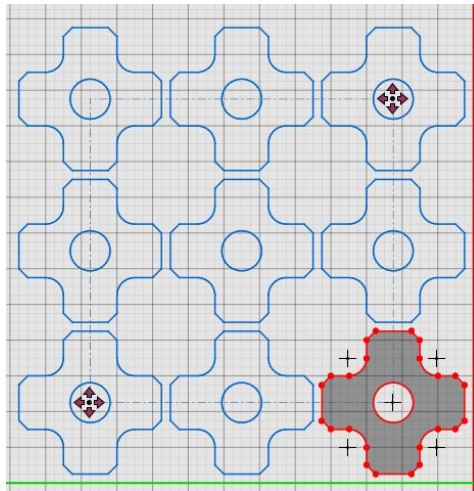


Click the **Linear Pattern** Button.

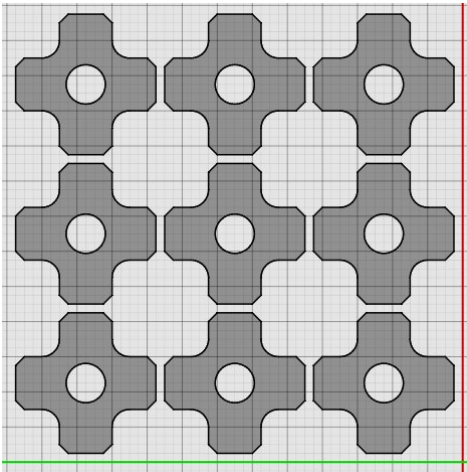


Use the **Parameters** on the right of the screen to adjust the **center to center** space of each part, and the count of how many parts you want in the patter. **Direction 1** determines the **Up and Down** direction, and **Direction 2** determines the **Left and Right** Direction.

Direction 1	
Spacing	4.2500 in
Total Distance	8.5000 in
Count	3
Angle	0.0000 °
Direction 2	
Spacing	4.2500 in
Total Distance	8.5000 in
Count	3
Angle	90.0000 °



Click **Enter** or the **Green Check Mark** to accept.

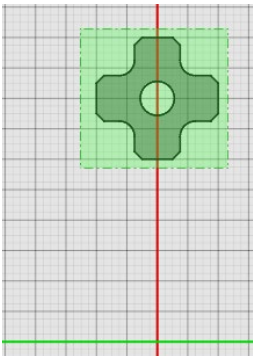


Drafting Tip

(Be sure to click the X at the bottom right of your screen or escape on your keyboard after you accept what you have drawn to close out of the current option)

Circular Pattern:

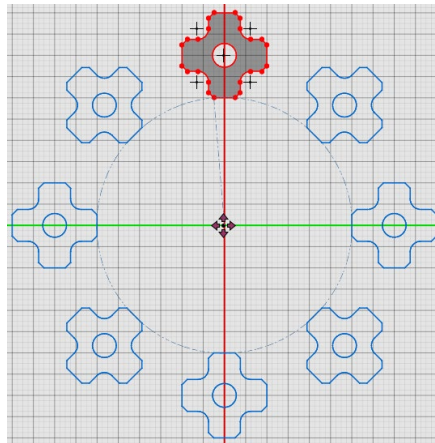
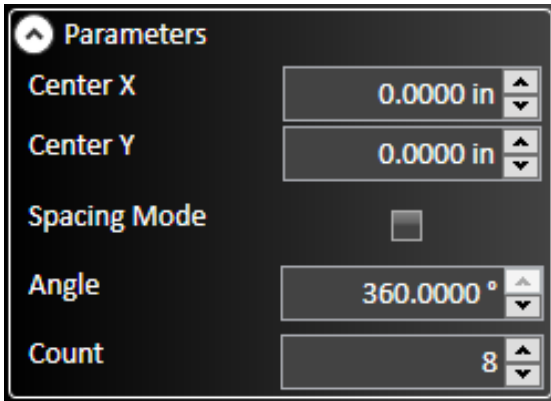
Draw a **selection box** around the part you want to make a circular pattern of.



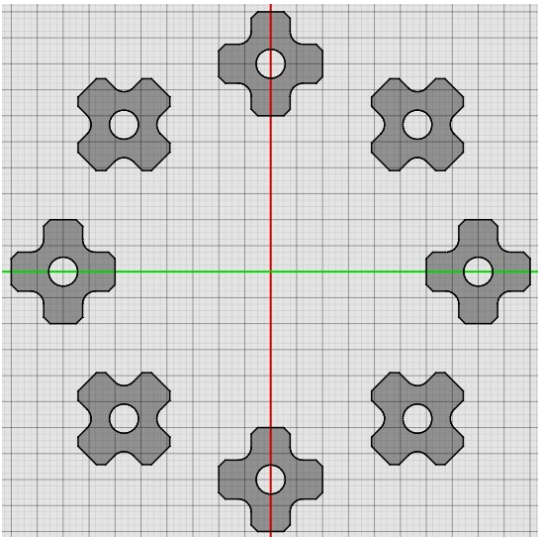
Click on the **Circular Pattern** button.



Use the **parameters** on the right of the screen to adjust the **count** and the **angle** you want to make the pattern around/



Click **Enter** or the **Green Check Mark** to accept.



Snap Toggles:



When you are drawing it will feel like your mouse is grabbing on different points on the screen. These are the **snap points it is grabbing on**. You can **toggle** different snaps **on or off** to help with drawing or to help grab specific points on a drawing.

All Snaps:



Center Snap:



End Point Snap:



Grid Snap:



Horizontal/Vertical Snap:



Intersection Snap:



Mid-point Snap:



Nearest Snap:



Parallel Snap:



Perpendicular Snap:



Quadrant Snap:



Tangent Snap:

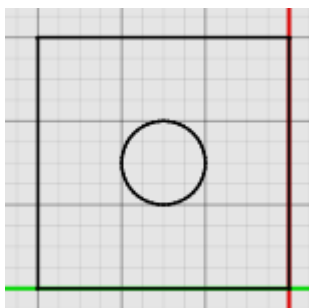
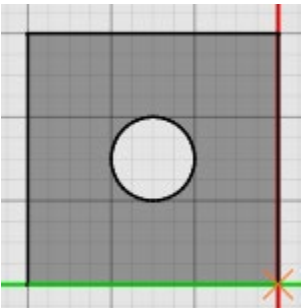


View Toggles:

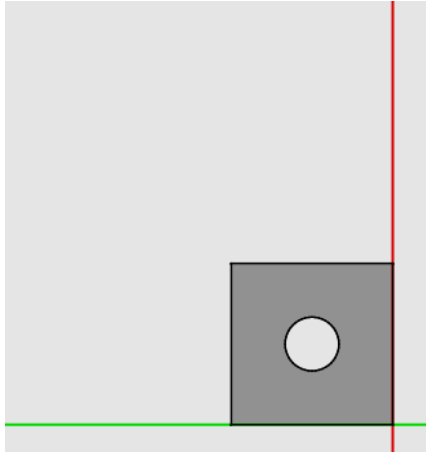
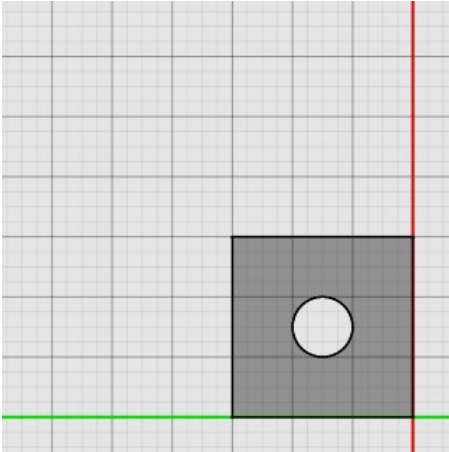


These toggles are next to the snap toggles. They change **what you see** on the drawing screen.

Shading:



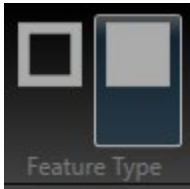
Grid:



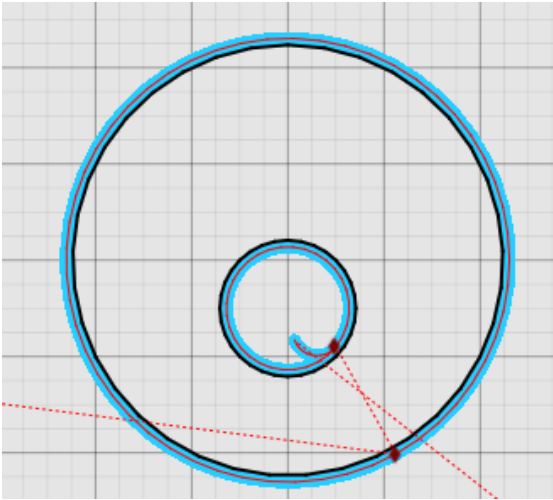
CAM

Computer Aided Manufacturing

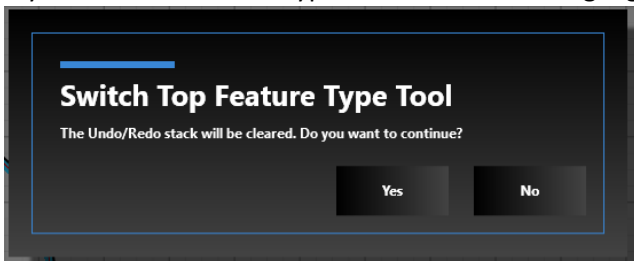
Feature Type:



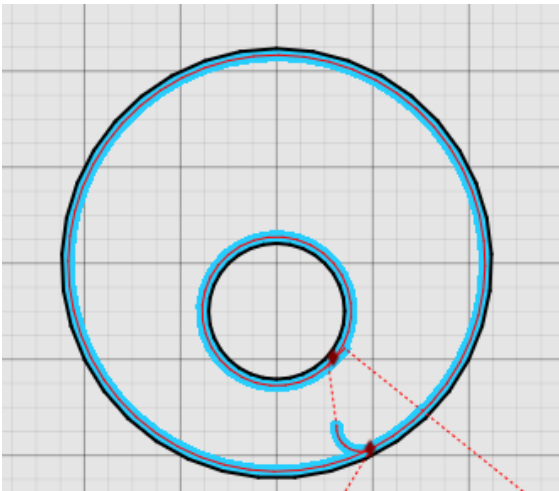
Feature Type changes the tool path of your cut to the opposite of what it currently shows (clicking this button will flip the tool paths of everything you have on the screen). The program will automatically make the tool path to what it thinks is best. If you are cutting a hole out of a circle it should cut the outside of the OD and the inside of the ID.



If you click the Feature Type button that is not highlighted, you will get a confirmation window.



After you click Yes you will see the tool paths flip to the opposite side of where they were.



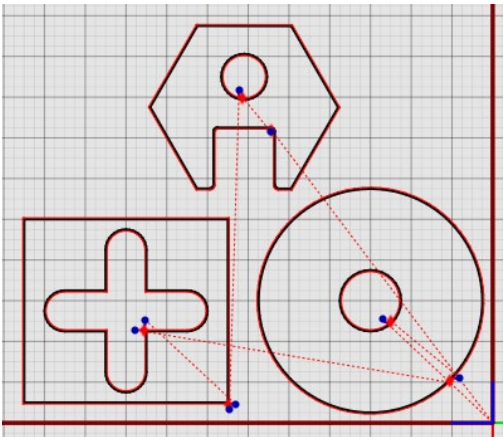
This button comes in use when you are wanting to the program to think that the sheet you have on the table is fall off to cut plugs or ODs of parts out of the sheet.

Selection Tool:

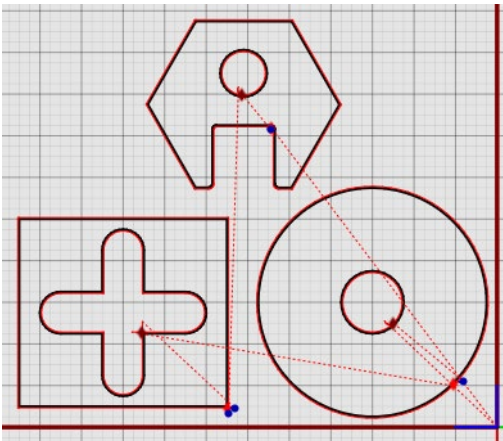


This tool is used for **selecting multiple Lead In/Lead Outs** at the same time to **adjust them uniformly**. Once you click on the selection tool you will see a drop down with 5 options. After you choose the option you want you will see the Lead In/Lead Out points highlight, and you can adjust what you want them to be in the parameters on the right of the screen. The ones you will be using are **All Breaks**, **Perimeter Breaks**, and **Cutout Breaks**.

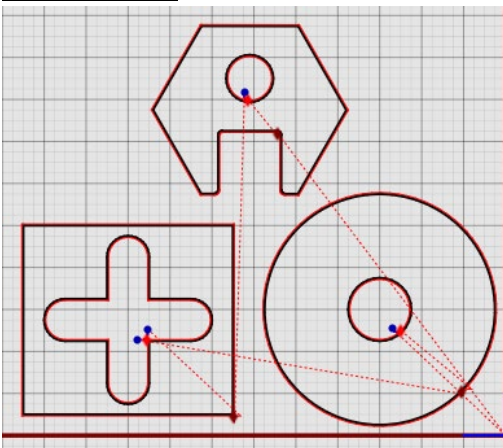
All Breaks:



Perimeter Breaks:

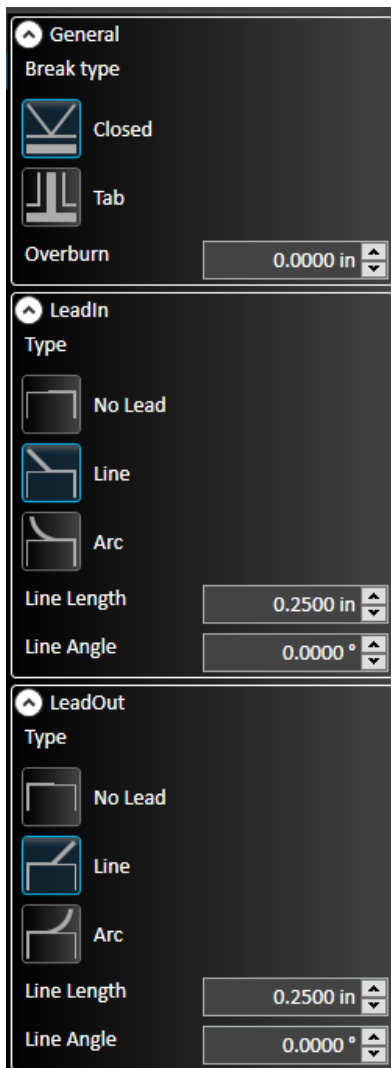
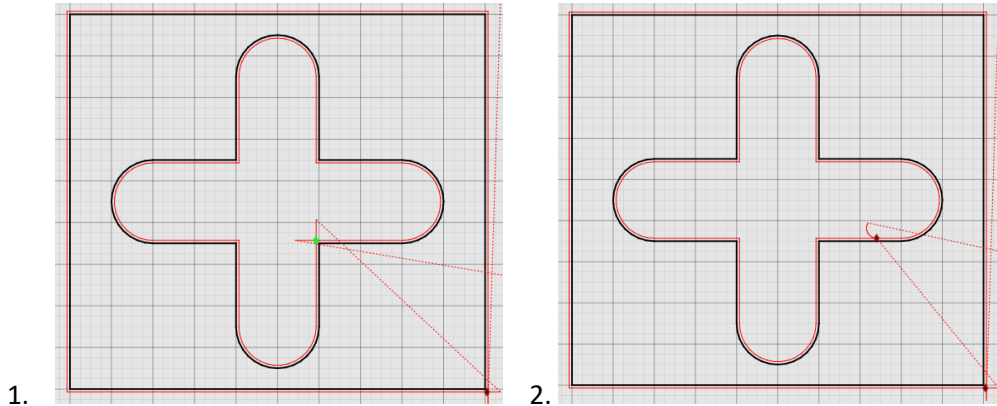


Cutout Breaks:



Lead In/Lead Out:

You can **adjust the Lead In/Lead Out** of your parts by **clicking on the diamond** at the start of the lead in/lead out. You can also **change where you want to start** the lead in/lead out by **clicking and dragging on the diamond**. Moving the lead in/lead out from a corner to a flat or radius will automatically change it to an arc lead in instead of a straight line. Once you click on the diamond you can **adjust the lead in/lead out** in the **parameters** on the **right of the screen**. If you want to make a tab on your part, click the **Tab** option and type in how **wide** you want the tab.



After you change the lead in/lead out to what you need. Click **Enter** or the **Green Check Mark** to accept.

Project Settings:



Project Setting is **one of the main things** you need to make sure is correct before cutting your part. This is where you tell the program everything it needs to know about your material. After clicking on the Project Settings button, you will see the **setting** on the **right of the screen**.

The screenshot shows a settings panel with three sections:

- General**:
 - Default Cutting Fabhead: Powermax85 (dropdown)
 - Default Marking Fabhead: (dropdown)
- Workpiece (Sheet 1)**:
 - Width: 120.0000 in (spinner)
 - Height: 60.0000 in (spinner)
 - Recent Sheet Sizes: (dropdown)
- Material**:
 - Material Type: Mild Steel (dropdown)
 - Thickness: 1/4 in (dropdown)
 - 0.2500 in (spinner)
 - Recent Materials: (dropdown)

As long as you the parts you are cutting are **smaller** than what the sheet size is you can ignore the workpiece section. This will come into play when you are doing a nesting.

Make sure you have the correct Material Type and Thickness selected and click Enter or The Green Check Mark to accept.

Plasma Settings:

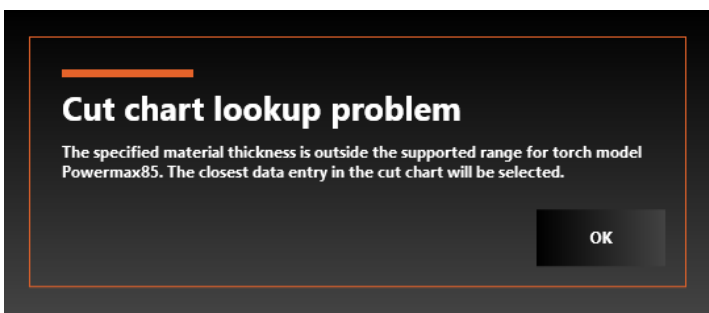


This is one of the other **most important** things you need to make sure is correct before you cut. Plasma Settings is where you set up everything for your torch. After you click on the plasma settings button you will see the settings on the **right of the screen**. The **Nozzle in your torch**, the **Nozzle selected in Plasma Settings**, and the **Amperage on the Powermax** all need to match up before running.

Setting	Value
Nozzle	65A Shielded
Quality Level	Best Quality
Feedrate (inch/min)	90.0000
Kerf Width	0.0700 in
Pierce Height	0.1500 in
Cut Height	0.0600 in
Pierce Delay	0.5000 sec
Voltage	127.0000 V
Amperage	65.0000 A
Pressure (psi)	85.0000
Corners	Sharp
Edge Start	<input type="checkbox"/>

Once you choose your Nozzle the program will automatically put in all the correct settings based on the material, and thickness of material. It is best to make the quality level "**Best Quality**". Once you choose the correct settings click **Enter** or the **Green Check Mark** to accept.

If you have a **nozzle or material thickness selected that does not match** up with the settings in the program you will get a message that looks like this:



If you get this message click ok, and double check your settings. You may need to get your **Hypertherm book** out and look at the **cut charts** to see what nozzle you can use for different material types and thicknesses.

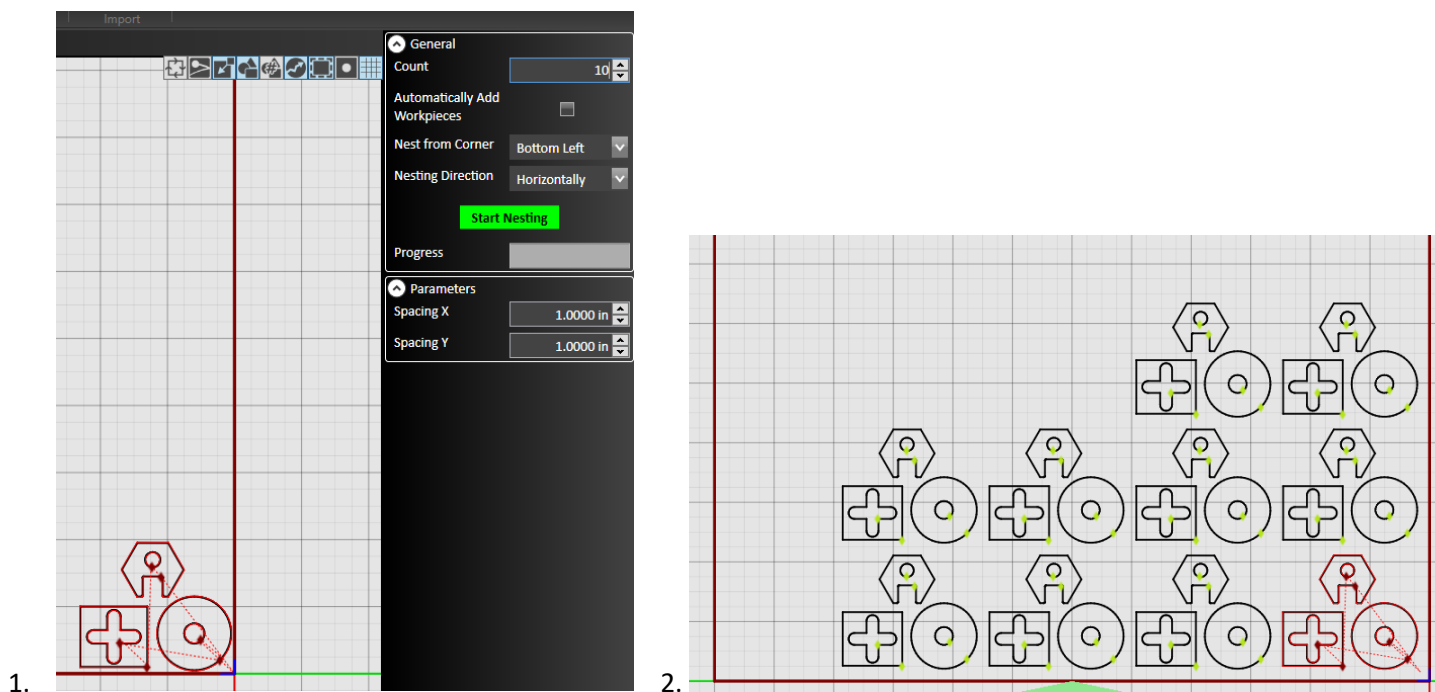
Grid Nesting:



Grid Nesting will take the **current pattern** of your parts and copy that pattern the number of times you put in your nesting count.

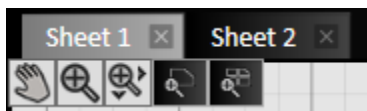
Make sure before you click the start nesting button that you change your **Sheet Size** in the **Project Settings** to your current sheet size.

Place your parts in the pattern you want to nest and click the Grid Nesting button. After you click on the button you will see the **Grid Nesting settings** on the **right of the screen**. Change the **count** to the amount of times you want to copy the parts and click **Start Nesting**.



After you have your sheet nested to what you want and click **Enter** or the **Green Check Mark** to accept.

(Checking "Automatically Add Workpieces" will create extra sheets of parts in case the count you choose will not fit on the current sheet. If multiple worksheets are selected you can switch between them by selecting the sheet in view on the top left of the drawing screen.)



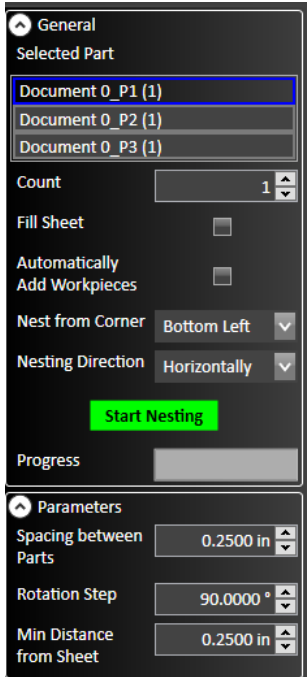
True Shape Nesting:

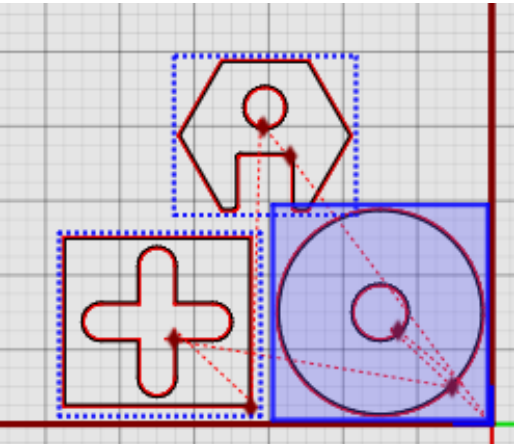


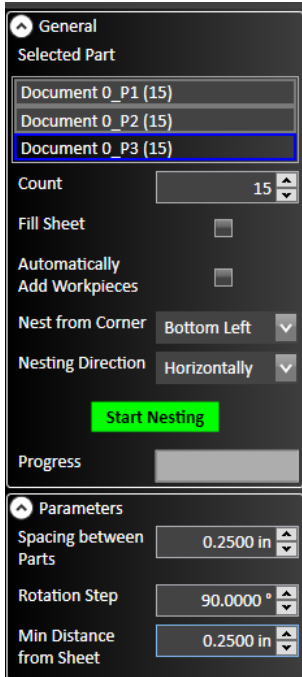
True Shape Nesting will take all the parts on your drawing and **rotate** them to fit together in the best possible way in to **save as much material as possible**.

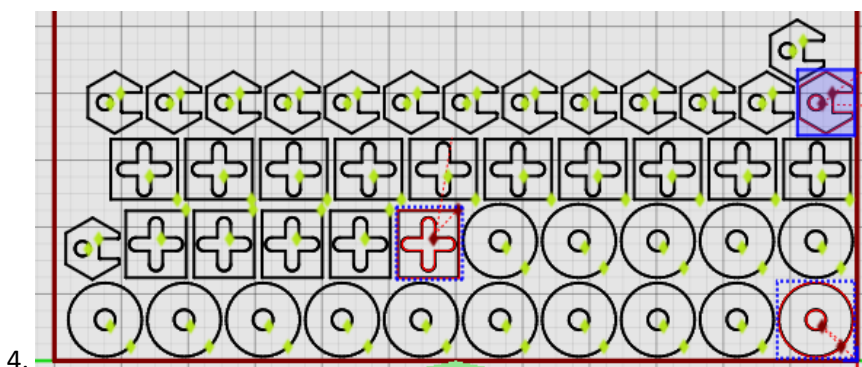
Make sure before you click the start nesting button that you change your **Sheet Size** in the **Project Settings** to your current sheet size.

Click on the True Shape Nesting button. After clicking on the button, you will see the setting on the right of the screen. You can adjust how many of each part you want by changing the count in the Selected Parts section. When you select each part the selected part will be highlighted in blue in the drawing screen. After changing the count of each part to what you want, click Start Nesting.

1. 

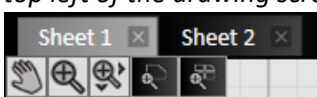
2. 

3. 



After you have your sheet nested to what you want and click **Enter** or the **Green Check Mark** to accept.

(Checking "Automatically Add Workpieces" will create extra sheets of parts in case the count you choose will not fit on the current sheet. If multiple worksheets are selected you can switch between them by selecting the sheet in view on the top left of the drawing screen.)



Nesting Information:



Nesting information will give you all **the information** you need to know about your **part** and your **sheet** and give you a good **approximate cost per part** (you need to tell the program the correct material size, thickness, and your sheet size in CAM to get accurate numbers).

Once you have your parts **nested** or have the **correct number of parts** on your sheet, click the **Nesting Information** button. You will see all the information appear on the **right side of the screen**.

Enter what you are **charging per pound** in the **Material Price section** and **click Save and Edit** on the button. Give your file a location and name in the save window that pops up.

Parameters
Nesting Info:
Material Price (per lb) 1.0000
Job Name: Document 0
Sheet No: Sheet 1
Parts List:
- Document 0_P1(1)
Part Area: 21.99 in²
Part Cost: 1.55
- Document 0_P3(1)
Part Area: 10.6 in²
Part Cost: 0.75
- Document 0_P2(1)
Part Area: 15.93 in²
Part Cost: 1.13
Sheet Size: 120 x 60 in
Material: Mild Steel
Thickness: 0.25 in
Total Cut Length: 77.368 in
Total Mark Length: 0 in
Total Pierce Count: 6
Total Part Area: 48.52 in²
Scrap Area: 7146.06 in²
Scrap Weight: 506.654 lb
Scrap Percentage: 99.25 %
Kerf Area: 5.41 in²
Scrap Cost: 506.65
Total Parts Cost: 3.44
Used Fabheads:
- Powermax85
Nozzle: 65A Shielded
Save and Edit

After saving you will see a text document will appear with all your information.

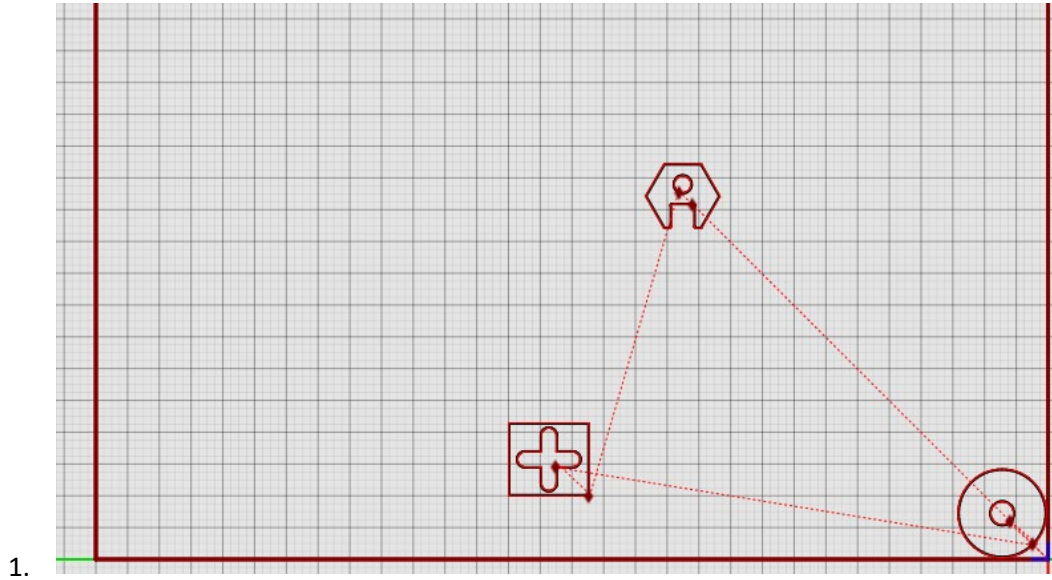
```
test nesting info - Notepad
File Edit Format View Help
Job Name: Document 0
Sheet No: Sheet 1
Parts List:
- Document 0_P1(1)
  Part Area: 21.99 in^2
  Part Cost: 1.55
- Document 0_P3(1)
  Part Area: 10.6 in^2
  Part Cost: 0.75
- Document 0_P2(1)
  Part Area: 15.93 in^2
  Part Cost: 1.13
Sheet Size: 120 x 60 in
Material: Mild Steel
Thickness: 0.25 in
Total Cut Length: 77.368 in
Total Mark Length: 0 in
Total Pierce Count: 6
Total Part Area: 48.52 in^2
Scrap Area: 7146.06 in^2
Scrap Weight: 506.654 lb
Scrap Percentage: 99.25 %
Kerf Area: 5.41 in^2
Scrap Cost: 506.65
Total Parts Cost: 3.44
Used Fabheads:
- Powermax85
  Nozzle: 65A Shielded
```

Click **Enter** or the **Green Check Mark** to accept.

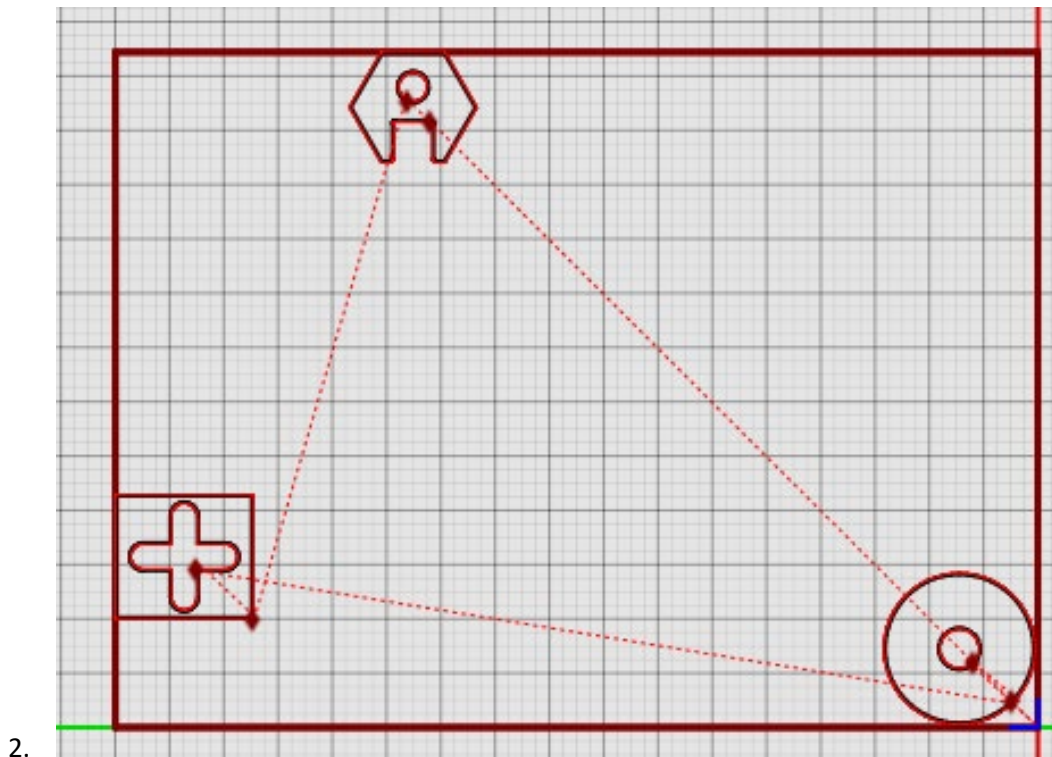
Fit Workpiece to the Parts:



The Fit Workpiece to The Parts button will take your sheet and **automatically shrink** it to fit the **highest point in the X+** location and the **farthest point in the Y-** location.



Click the Fit Workpiece to Parts button.

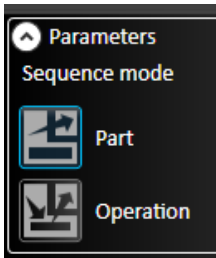


Sequence Tool:



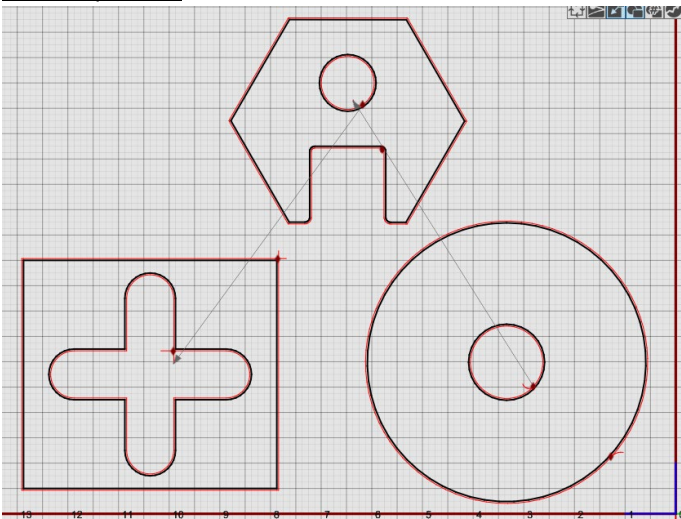
Sequence Tool will show you the **order of operations** for your cuts by the **operation** or the **part**.

After you have all your parts where you want them for the cut, click the Sequence Tool button and you will see your two options appear on the **right of the screen** (Part and Operation), as well as **blue arrows** appear on your parts.

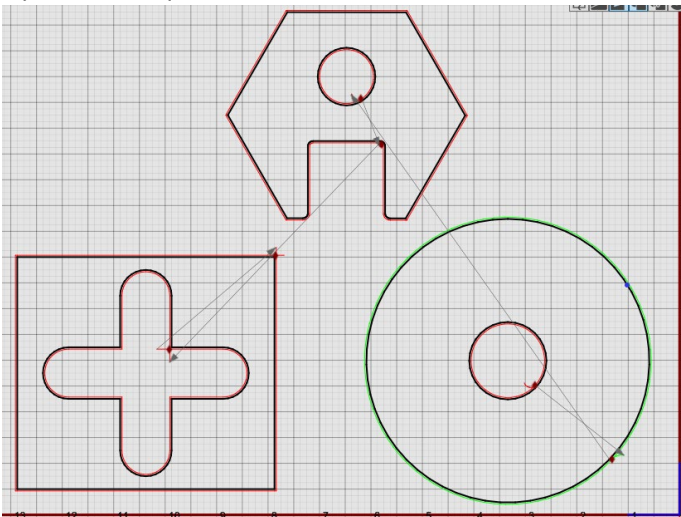


You can **click and drag the blue arrows** from one part to another to change the Part or Operation sequence to your liking.

Part Sequence:



Operation Sequence:

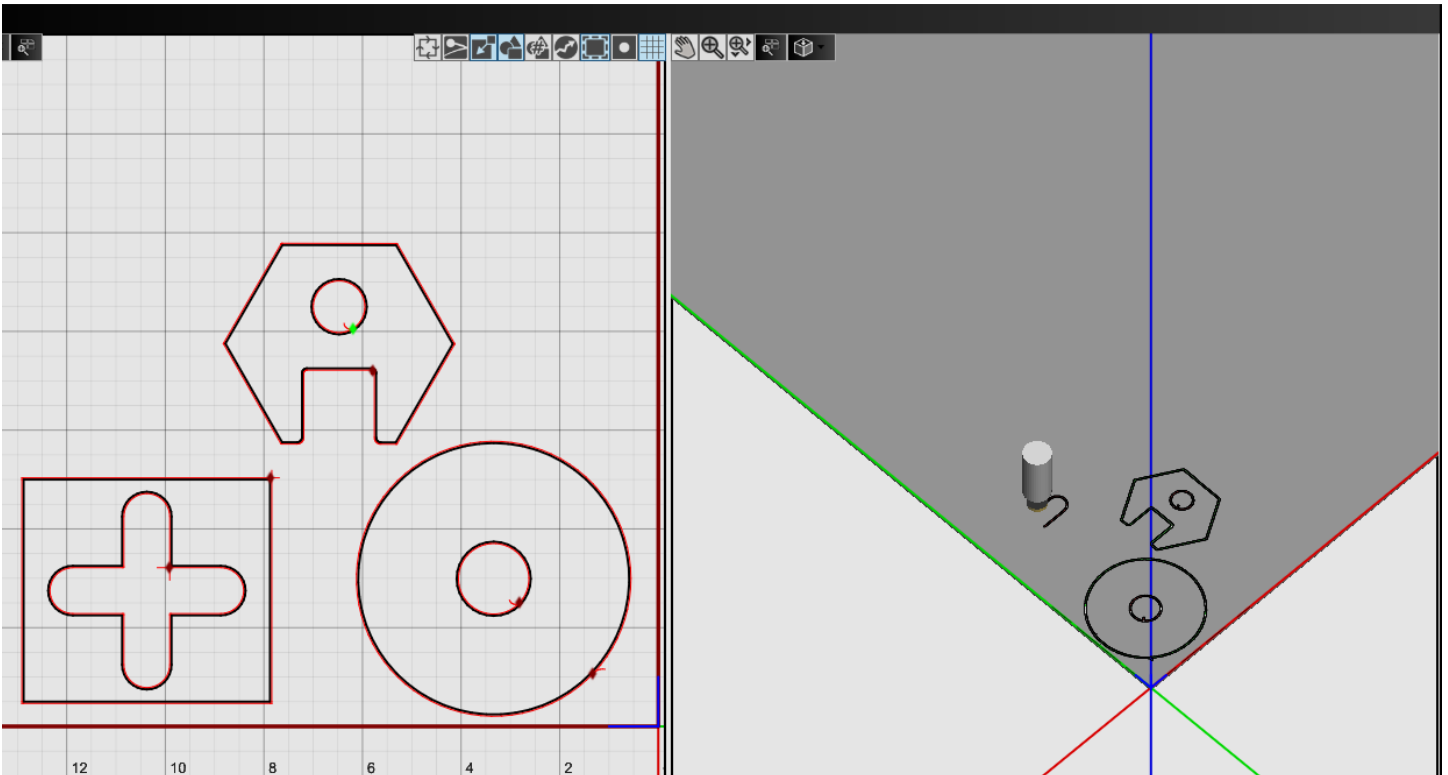
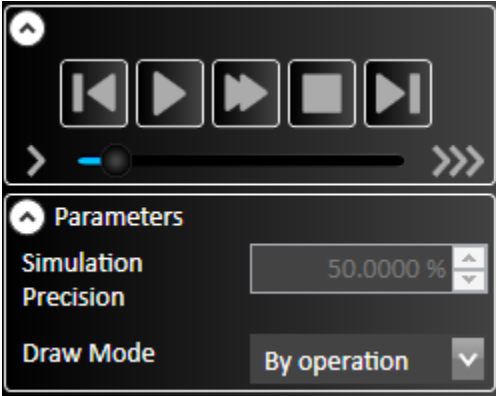


Click **Enter** or the **Green Check Mark** to accept.

Simulation Tool:

The Simulation Tool will show you an isometric **simulation of your tool path**.

After you click on the Simulation Tool button you will see your screen split in half. The **left side will be your parts**, and the **right side will be the simulation**. You can control the **speed**, **simulation precision**, and **draw mode** with the options on the right of the screen.



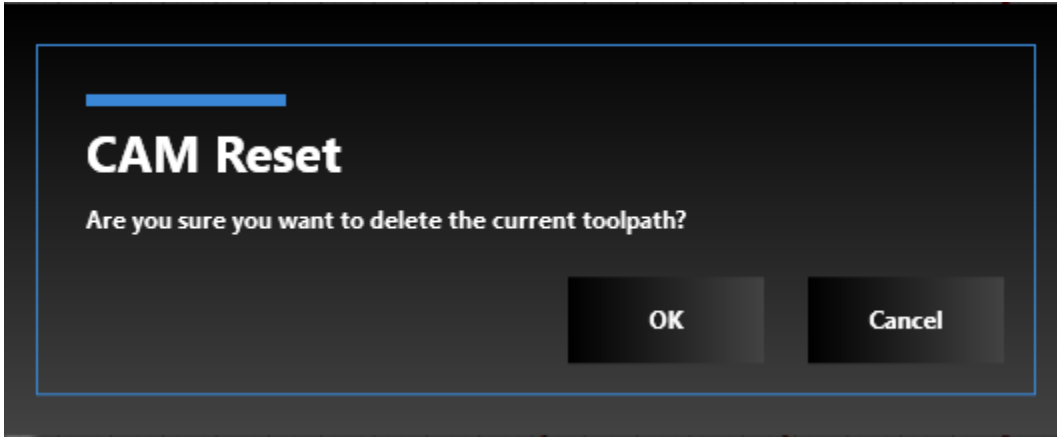
Click **Enter**, **Escape**, the **Green Check Mark**, or the **Red X** to get out of the Simulation Tool.

Cam Reset:



The **CAM Reset** button will take any changes you have made to your tool paths and reset them to the **original default**.

After you click on the CAM Reset button a **confirmation screen** will appear.



Click **OK** to reset the tool paths back to the original default.

Create G-Code File:



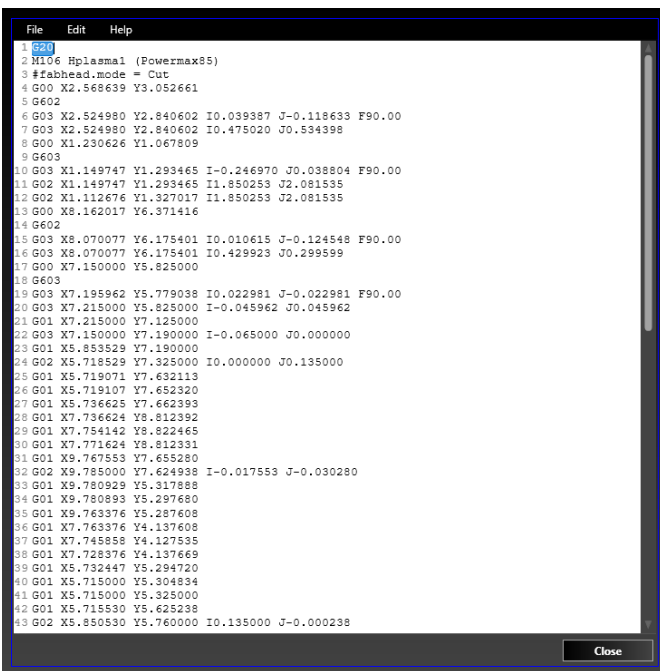
To create a G-Code File click on the Create G-Code button. A save file window will open. Give your G-Code a **name and location** and **click save**.

Edit G-Code:

To manually edit your G-Code, click the Open Editor button.

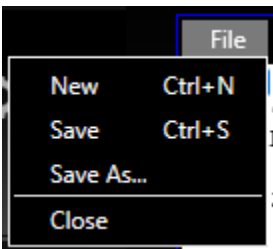


A window will open with the G-Code for your tool paths.

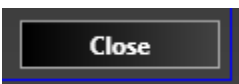
A screenshot of a G-Code editor window. The window has a menu bar with 'File', 'Edit', and 'Help'. The main area contains a list of G-Code lines, numbered 1 to 43. The lines include various G-code commands such as M106, G00, G03, G01, and G02, with numerical values for coordinates and parameters. A 'Close' button is visible at the bottom right of the window.

```
1 M106
2 M106 Hplasma1 (Powermax85)
3 #fabhead.mode = Cut
4 G00 X2.568639 Y3.052661
5 G602
6 G03 X2.524980 Y2.840602 I0.039387 J-0.118633 F90.00
7 G03 X2.524980 Y2.840602 I0.475020 J0.534398
8 G00 X1.230626 Y1.067809
9 G603
10 G03 X1.149747 Y1.293465 I-0.246970 J0.038804 F90.00
11 G02 X1.149747 Y1.293465 I1.850253 J2.081535
12 G02 X1.112676 Y1.327017 I1.850253 J2.081535
13 G00 X8.162017 Y6.371416
14 G602
15 G03 X8.070077 Y6.175401 I0.010615 J-0.124548 F90.00
16 G03 X8.070077 Y6.175401 I0.429923 J0.299599
17 G00 X7.150000 Y5.825000
18 G603
19 G03 X7.195962 Y5.779038 I0.022981 J-0.022981 F90.00
20 G03 X7.215000 Y5.825000 I-0.045962 J0.045962
21 G01 X7.215000 Y7.125000
22 G03 X7.150000 Y7.190000 I-0.065000 J0.000000
23 G01 X5.853529 Y7.190000
24 G02 X5.718529 Y7.325000 I0.000000 J0.135000
25 G01 X5.719071 Y7.632113
26 G01 X5.719107 Y7.652320
27 G01 X5.736625 Y7.662393
28 G01 X7.736624 Y8.812392
29 G01 X7.754142 Y8.822465
30 G01 X7.771624 Y8.812331
31 G01 X9.767553 Y7.655280
32 G02 X9.785000 Y7.624938 I-0.017553 J-0.030280
33 G01 X9.780929 Y5.317888
34 G01 X9.780893 Y5.297680
35 G01 X9.763376 Y5.287608
36 G01 X7.763376 Y4.137608
37 G01 X7.745858 Y4.127535
38 G01 X7.728376 Y4.137669
39 G01 X5.732447 Y5.294720
40 G01 X5.715000 Y5.304894
41 G01 X5.715000 Y5.325000
42 G01 X5.715530 Y5.625238
43 G02 X5.850530 Y5.760000 I0.135000 J-0.000238
```

Edit the G-Code to what you need, then click file and save.



After you save the edited G-Code click close.



View Toggles:



The View Toggles are located on the top right of the screen. These toggles control what you see on your workpiece (when highlighted blue, the toggle is in use).

Cutting Direction: Shows the direction of your cut path.



Kerf: Shows the width of the kerf.



Material: Shows/hides the material outline.



Parts: Shows/hides the parts being cut.



Part numbers: Shows the number of your part.



Rapid Moves: Shows rapid moves (Dotted Red Lines).



Tool Path: Shows the tool path (Solid Red Lines)



Shading: Shades the material in of the parts being cut.



Grid: Shows/hides the grid on the CAM screen.



CNC

Computer Numerical Control

Driving the Table:

Use the Section in the **bottom right** of the CNC Screen to Drive the machine.

X+ drives towards the **end** of the table.

X- drives towards the **front** of the table.

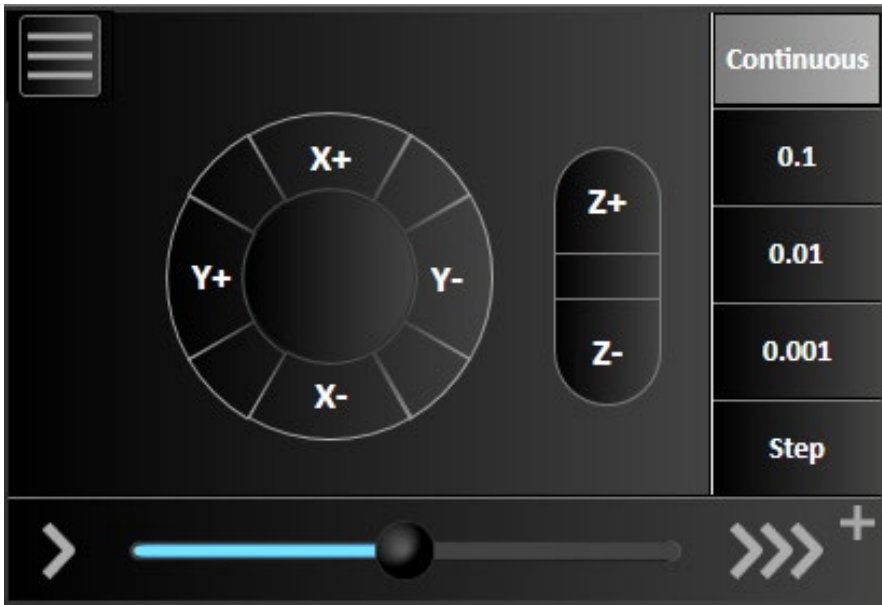
Y+ drives the gantry to the **left**.

Y- drives the gantry to the **right**.

Z+ drives the torch **up**.

Z- drives the torch **down**.

You can also click and hold on the **spaces between the X and Y** values to drive the table in a **diagonal** motion.



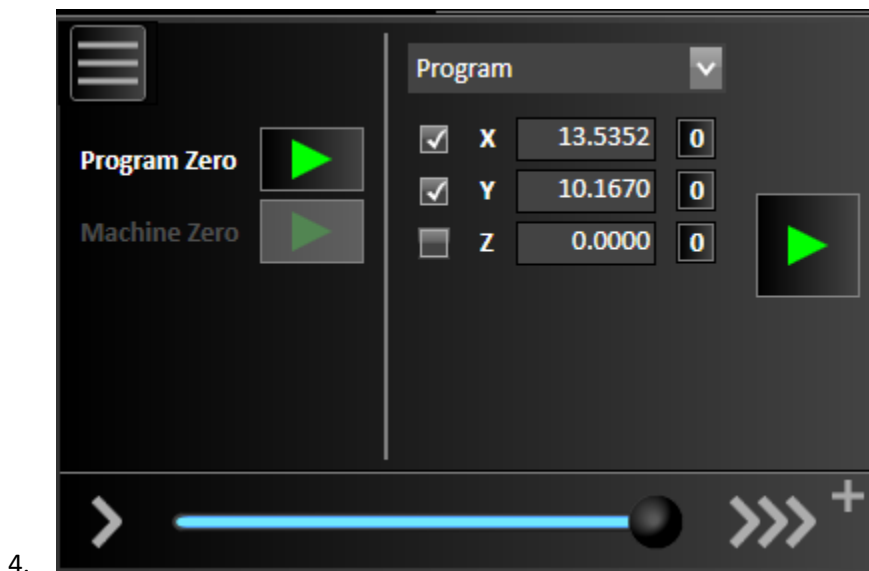
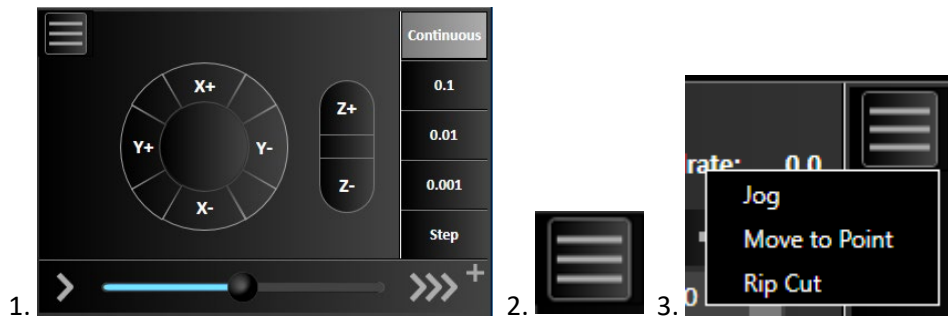
The **Blue bar controls the speed** when the table is in motion/

Having the **Continuous** option selected will make the machine move in a **continual motion** when **clicking and holding** on a direction until you release.

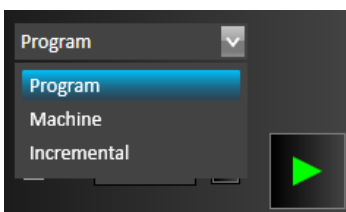
The **0.1, 0.01, and 0.001** options are **step values**. When these are selected the gantry will move the amount of the selected value. Meaning if you have 0.1 selected, every time you click on the X+ button the gantry will move 0.1 in the X+ direction.

Move To Point:

To move the machine to a specific point on the table first click on the button with the **three lines** to the upper left of the manual drive section, then click on **Move To Point**.



The **drop-down bar** lets you choose where you want to move the gantry to.



Program will move the gantry in an X and Y measurement from the last known **program Zero**.

Machine will move the gantry in an X and Y measurement from the **machine home location** (the machine must be homed to use Machine Move to Point).

Incremental will move the gantry from **where it is sitting** to the entered measurement.

After entering the measurement, you want to move. Click the Green Arrow to the right of the values.

(DO NOT CHECK OR ENTER A VALUE FOR Z)

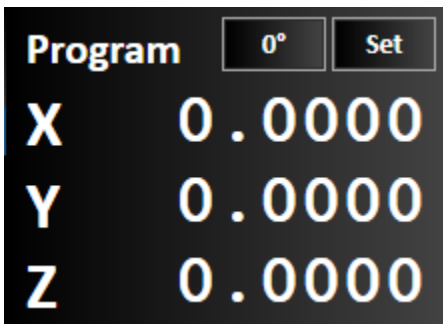
Setting Up Program Zero:

Drive the torch to the **location you want to start your program**. Imagine an invisible line going from the center of your torch to the table.

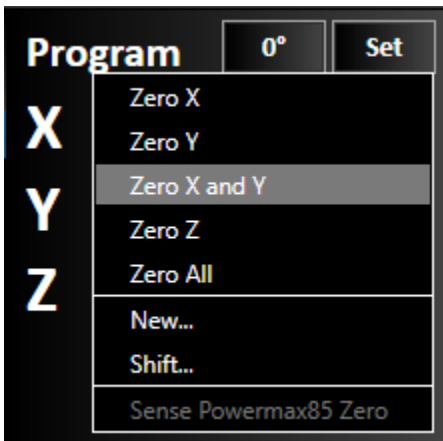
Wherever you tell the program set program zero, it will register as the **origin of the X and Y line**.

For example, if you have a hole drawn 10 inches up in the X and 10 inches over in the Y and tell the machine to set program zero at the bottom right corner of your material, it will cut the hole 10 inches up and 10 inches over from the corner of your plate. That's why it is always best to make sure your parts are close to the **X, Y origin in CAM before transferring to CNC** to make it easier on yourself.

After you drive the torch to where you want to start the program click the **Set** button in the program DRO (digital Read Out) on the **top right of the screen**.



A drop down of options will appear. The easiest and quickest way to set up program zero is to click on the **Zero X and Y** option.



You can also go back and click Set, **Sense Powermax Zero** to touch your torch off the top of the material and help it **register the start point of your Z location** (If you have the Touch Off option checked it will automatically sense Z before each cut).

Double Checking Settings:

Before starting your cut, you should **always take a look at the left of the screen** to make sure all your settings are correct.



This section will show you all the **settings you set up in CAM**. Make sure your **Material**, **Thickness**, and **Nozzle** are correct before running (the nozzle will be shown when you are connected to your Powermax).

Dry Run will run the machine along the tool path **without turning the torch on**.

Touch Off being checked will make the torch **sense the top of the material before each pierce**.

Kerf Crossing Detection will help the program register if your **kerf between parts** is going to **run into each other**. This option is useful when doing a tight nesting of parts.

Torch Height Control should always be on (Blue) so the torch can read voltage and compensate torch height for any variance in material.



Unless you are using an Omich Connector, Use Sampling should always be off (Grey).



Running the Program:

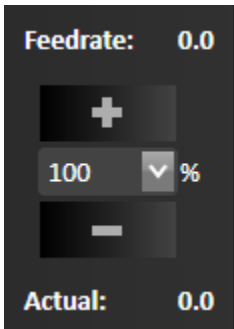
Once you set your program **Zero**, double check your **setting**, and make sure your **Powermax** is set on the right amperage, click the **Run G-Code button** (the Green Arrow) at the bottom of the screen.



You can click the **Feed hold button** (the Red Square) to **pause** the program during a run.

If you are going to pause the program, you should always try to **hit the Feed Hold button during a rapid move** (when the machine is moving without cutting).

During the run you can **increase** or **decrease** the **Feedrate** by using the + and – buttons to the right of the G-Code.



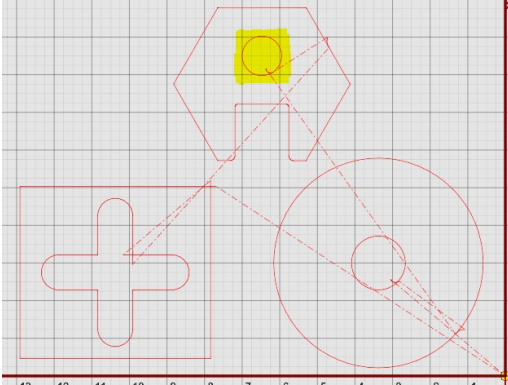
The Feedrate above the + **button** shows what the **program feed rate** is. As you change the feed rate the **current federate** will be shown in the actual value under the – **button**.

Jump To Line:

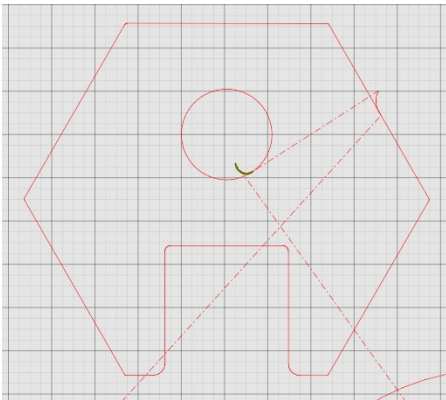
If you are running a program and it faults out, does not cut through a section because of loss of air, or if you want to **re-cut a section** you can use the **Jump to Line button** to the top right of the G-Code to go back to a specific location in your program.



If you are running **this shown program** and you lose air pressure when you're about to cut the hole on the top part, you can use jump to line to go back to the start of the hole and re-run that part of the program.



Click the **Jump to Line Button**, and then click on the line on the drawing **where you want to start at**. The **line** where the machine will move will **highlight in red**, and the section of the **G-Code will be highlighted**.

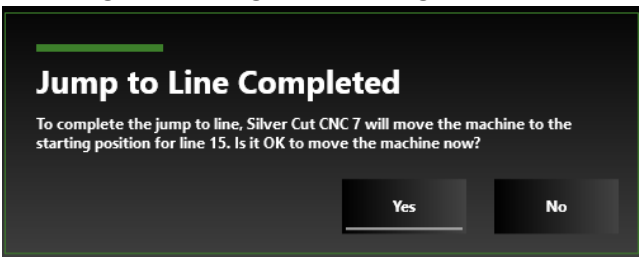


```
12 G02 X1.112676 Y1.327017 I1.850253 J2.081535
13 G00 X8.162017 Y6.371416
14 G602
15 G03 X8.070077 Y6.175401 I0.010615 J-0.124548 F90.00
16 G03 X8.070077 Y6.175401 I0.429923 J0.299599
17 G00 X9.003031 Y4.717841
18 G603
19 G03 X8.763376 Y4.712608 I-0.115038 J-0.221960 F90.00
20 G01 X7.763376 Y4.137608
21 G01 X7.745858 Y4.127535
22 G01 X7.728376 Y4.137669
23 G01 X5.728447 Y5.204720
```

To go to this point click **Execute Jump to Line** at the bottom right of the G-Code.



You will get a warning screen asking if it is **ok for the machine to move**. Click **Yes**.



After Clicking Yes. The torch will move to location. After you make sure it is in the correct location, click **Run G-Code** to start the cut.



System Status:

If you ever get an **alarm** saying the operation stopped because of a limit switch trip, or axis fault you can use the **System Status** to see **exactly where the issue is coming from**.

To see your system status, click on the **System Status** button on the top left of the drawing screen to the right of the connect button.



The screenshot shows the 'System Status' window with two tabs: 'General' and 'THC Data'. The 'General' tab is active. The window is divided into three main sections: 'Input Lines', 'Output Lines', and 'Controller'. The 'Input Lines' section has a 'Show All' checkbox and lists 12 lines with their status (N.O. or N.C.), a switch symbol, a blue dot, and a description. The 'Output Lines' section lists 16 lines, each with a power button symbol. The 'Controller' section shows 'Serial #' and 'USB Speed: N/A'.

Line	Type	Status	Description
1	N.O.	Open	X+/- Home/Limit (Subaxis 1)
2	N.O.	Open	Y+/-Home/Limit (All Subaxes)
3	N.O.	Open	X+/- Home/Limit (Subaxis 2)
4	N.C.	Closed	Pressure Touch Off
5	N.C.	Open	E-Stop
9	N.O.	Open	X1 Axis Fault
11	N.O.	Open	Y Axis Fault
13	N.O.	Open	X2 Axis Fault
15	N.O.	Open	Z Axis Fault
19	N.C.	Open	Ohmic Sensor
20	N.O.	Open	Arc Transfer

If an input line is tripped you will see one of the **blue dots lit up white**, and the symbol showing normally open or normally closed will be the opposite of what is shown it is suppose to be (N.O or N.C).

View Toggles:

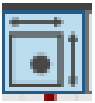
View Toggles for the CNC page are located at the top right of the drawing screen.



Material:



Machine Envelope:



Part Numbers:



Show/Hide Grid:



PLASMATIC™

PLASMATIC™ by AKS Cutting Systems, Inc.
4905 Rocky River Drive, Cleveland, OH 44135
800-962-7803 | sales@plasmaticusa.com | plasmaticusa.com

ENGINEERED & MANUFACTURED BY
aks CUTTING SYSTEMS

Contacts:

Jason Wesner

PLASMATIC Inside Sales Representative

AKS Cutting Systems

4905 Rocky River Drive

Cleveland, OH 44135

(Cell) 216-254-5631

(Work) 216-990-7938

jasonwesner@plasmaticusa.com

sales@plasmaticusa.com

Lane Stabile lanestabile@akscutting.com.com

Mike Burns mikeburns@akscutting.com

Scott Krankowski scottkrankowski@kiffer.com

Service phone line (216) 267-1818 ext 213