

## Afinia Emblaser 2 Laser Cutter

The Afinia Laser Cutter uses a laser beam to cut wood, plastic, or cloth. You can develop the prototype of a shape or design using a Silhouette digital die cutter to create a cardstock version of the shape. Once the design is perfected, you can create an identical copy in wood or plastic with the laser cutter.

In the example below, the shape of a holiday ornament has been fabricated from acrylic using a laser cutter. A decorative overlay that is the same size and shape has been printed onto cardstock with an inkjet printer and cut out with a Silhouette die cutter.



The cardstock overlay was glued to the acrylic. In this example, the letters are cut out of the cardstock, allowing the acrylic material below to be visible. There are many other applications in which the combination of an inkjet printer, a digital die cutter, and a laser cutter can be useful.

### 1. Creating an Overlay with the Silhouette Die Cutter

The current version of the laser cutter software (LaserWeb) uses metric measurements. If you are creating an overlay with the Silhouette die cutter, you should also set the Silhouette Studio application to metric. To set this preference,

1. On the home screen of Silhouette Studio select *Edit -> Preferences*
2. A pop-up window will appear. Select the *General* tab.
3. Set “Unit of Measurement” to *Millimeters*.
4. Click “OK” to confirm selection.

When you have completed your design in Silhouette Studio and tested it by using the Silhouette Die Cutter to create an overlay in card stock, save the file.

### 2. Converting the File to SVG Format

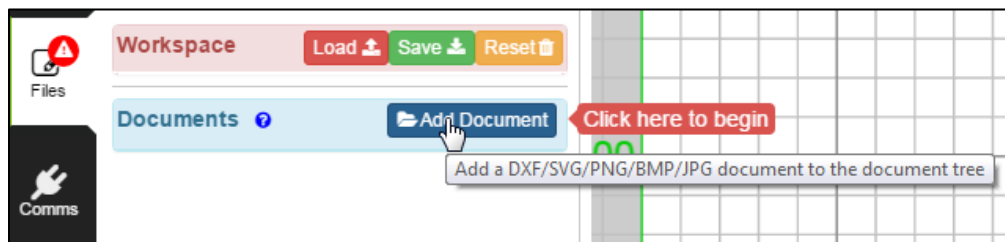
The laser cutter uses the Scalable Vector Graphic (SVG) file format. The laptop beside the Afinia Emblaser laser cutter has a special edition of Silhouette Studio that can save a file in this format. (The standard, free version of Silhouette Studio can only save the file in a format that can be used with the Silhouette Die Cutter.)

Insert the USB drive with the shape file into the laptop beside the laser cutter. Open the file with Silhouette Studio. Select “Save As” and choose the SVG format.

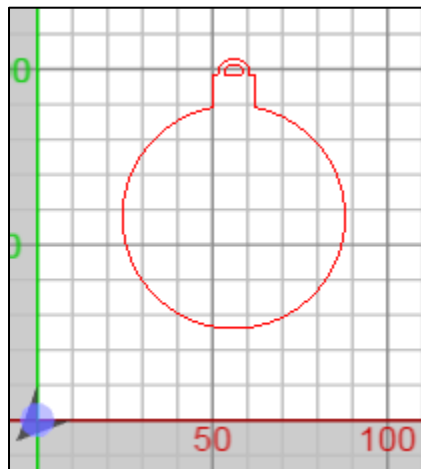
### 3. Replicating the Shape with the Emblaser Laser Cutter

A program called *LaserWeb* is used to cut out the shape on the laser cutter. There is an icon for this program on the desktop of the laptop computer beside the laser cutter.

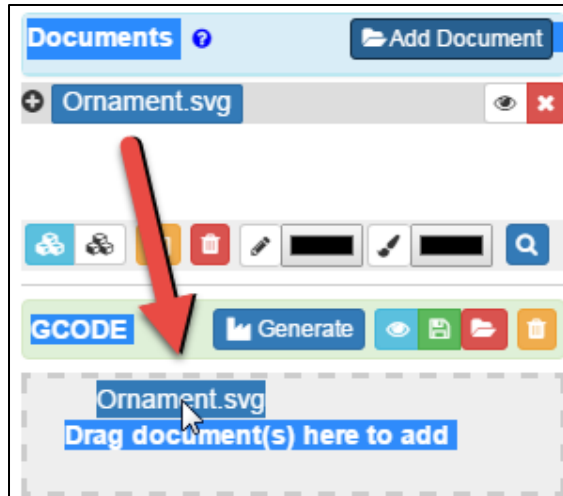
1. Launch the LaserWeb program.
2. Close the “Assistant” screen that appears when the program is launched.
3. There are series of tabs on the left side of the screen (Files, Comms, Controls).
4. The *Files* tab is selected by default. On this tab:
  - a. Click the button labeled “Add Doc.”



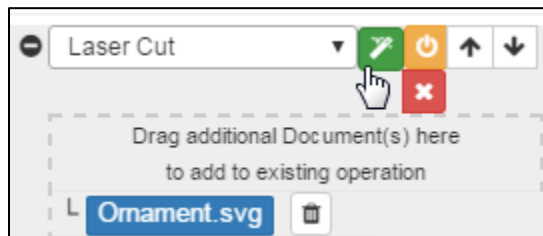
- b. A dialog box appears that allows a file to be imported.
- c. Select the SVG file with your shape.
- d. The shape will appear in the lower left-hand corner of the workspace grid.



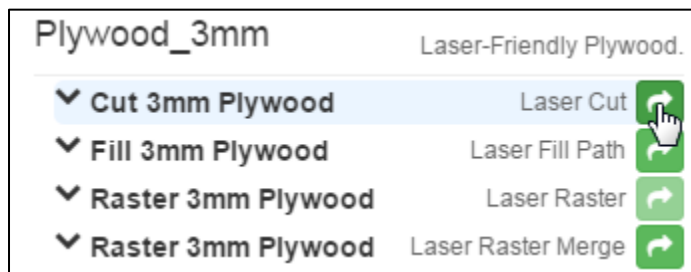
5. Drag the file name from the dialog box near the top of the “Files” tab down to the area labeled “G code.” (*G code* is the code that specifies the sequence of actions that the laser cutter will perform to cut out the shape.) The red arrow below depicts the path of this operation.



6. Select the media type to choose your material (such as cloth, wood, or plastic). The laser cutter can handle a wide range of materials. Click the *green icon* in the G code box to list a menu of materials that are available.



In the example below, 3 millimeter thick plywood has been selected by clicking on the green arrow beside the “Laser Cut” option.



Selection of the material that will be used fills in pre-set options such as those listed below:

- Laser Power: 100 %
- Passes: 2
- Start Height: 1.5 mm

7. Other options must be completed manually, including those shown below

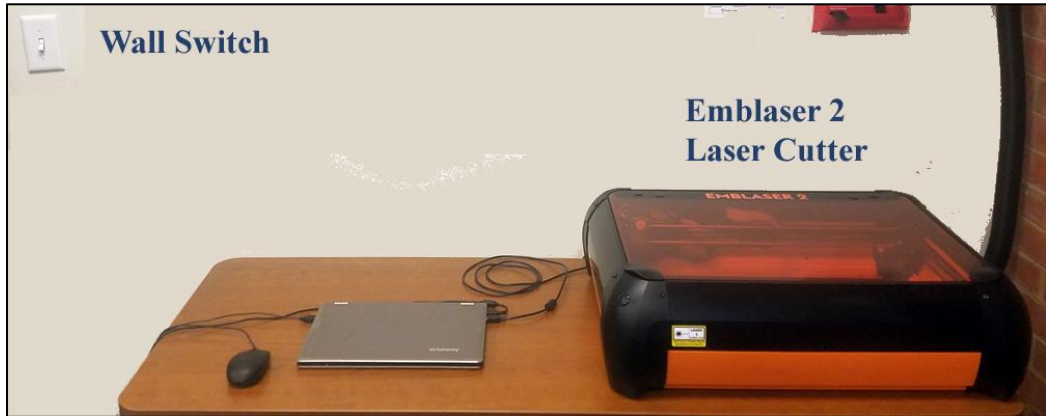
- *Filter Stroke*: set to red (be sure the shape is not selected or red will not display)
- *Start Height*: set to the thickness of the material plus 10 millimeters
- *Pass Depth*: if the number of passes is greater than “1”, set pass depth to the amount that the laser should be lowered after each pass.

8. Place the media (cloth, wood, plastic, etc.) on the lower-left corner of the laser cutter bed. Then lower the lid of the laser cutter.
9. Generate the G code by selecting the “Generate” button at the top of the “G code” box.



When this step is completed after a few seconds to generate the code, a diagonal slash will appear through the shape. (Note: if further changes are made to the parameters (such as size or type of materials), the G code will need to be generated again to reflect those changes.)

10. Turn on the Emblaser laser cutter.
  - a. A switch on the wall to the left of the laser cutter controls an electrical outlet that powers both the laser cutter and a ventilation fan that will exhaust any fumes produced by the laser cutter.

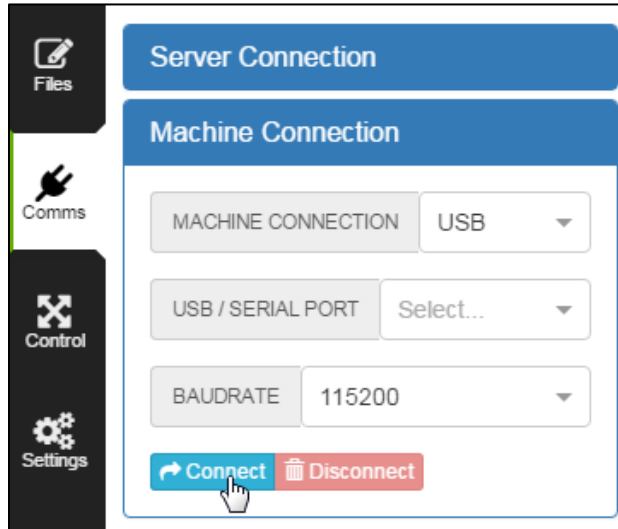


Turn on the wall switch.

- b. After the wall switch is turned on, press the switch on the left-hand corner of the Emblaser laser cutter to turn on its power.

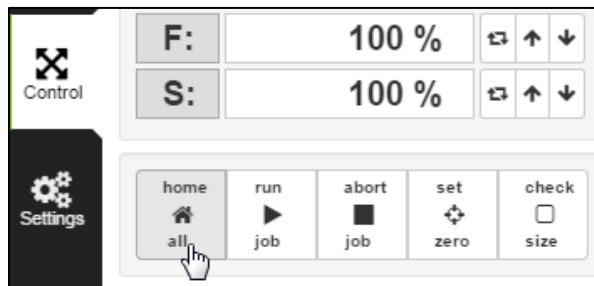


11. Select the “Comm” tab. Select the “Connect” button.



12. Select the “Control” tab.

a. Select the “Home All” button to position the laser head in the upper-left corner.



b. Select “Run Job” to verify that the path of the laser matches the intended shape. The laser is not yet enabled, so this will provide an opportunity to observe the path that the laser head will follow. Wait until the laser head completes the cutting path.



c. If the laser path is correct, enable the laser by pressing the switch on the right-hand side of the laser cutter.



- d. Select the “Run Job” button a second time to initiate the job with the laser powered on. This will cut out the material.

Note: If there is a problem with the job, the laser program can be halted by selecting the “Abort Job” button. If it is necessary to abort a job, the “Clear” button should be selected to reset the laser.

Also note that for safety reasons, the laser is disabled whenever the lid is opened.