Laser Cutter Safety

Preparing your file for Vector Cutting (cutting through material)

- Use Inkscape (free) or another vector graphic program like Adobe Illustrator or CorelDRAW.

- Take note of your page size. Consider sizing your page at just slightly larger than your objects and place your art in the top-left corner.

- Position the elements of your drawing near the top-left of the page in order to conserve material.

- Anything you will cut needs a stroke (or outline) on your objects' path. Set the stroke to black and the width to .001".

- "Save As" your file in PDF format.

- Prepare your laser cutter settings

Preparing your file for Raster Engraving (for etching/engraving material)

- Use any kind of graphics program you are comfortable with. Photoshop or GIMP (free) are popular.

- Consider your DPI (or resolution). 300 or above is photo quality, but will also take longer to engrave.

- The laser cutter will engrave deepest for black tones, highest for white tones (ie not at all) and in between for levels of gray.

- Save your file as a PDF onto the desktop.

- Prepare your laser cutter settings.

Printer settings

- Find the correct settings for your material in the ADVANCED tab of the printer settings, select them and hit LOAD, then go back to the GENERAL tab.

- You will most likely need to adjust the size of your document to your PDF size.

- You may need to adjust the power and speed from the suggested settings.

- Your job will be "Homed" to the top-left corner by default. If your material doesn't have a top-left corner or it is hard to find (like on a circular shape), click on "Center Engraving" and make a pencil mark on the exact center of your material.

- When your settings are good, hit OK.

- Open your PDF document, press CTRL+P to print.

Epilog Fusion 40 CO2 Laser

- The thumbnail image should show your page size and your project image should fit onto your page size the way you designed it. If not, there is something wrong, and you should ask for help.

- Hit PRINT and go to the laser cutter

At the laser

- SAFETY RULE: Never leave the laser cutter lid open unless you are loading material or using the focus gauge.

- Set your FOCUS by moving the laser head with the JOG function to the middle of your cutting area and then using FOCUS function to raise or lower the bed.

- Set your JOG HOME in order to make the best use of your material and in a way that agrees with your Print Settings.

- SAFETY RULE: Before hitting the "Go" button, verify that the lid is closed, the focus gauge is on it's shelf and not installed on the laser head, the window is open to the "LINE", outside fan is on (low switch plugged into wall), and Air Assist pump (right side on high shelf) is on.

- ALWAYS use air assist when vector cutting

- Write down the times for each of your jobs, along with how many times you ran each of them. Show these figures to the front desk when checking out.

- SAFETY RULE: Watch the laser for the duration of your job! You must watch out for flare-ups and know what to do when they pop up.

In case of flames

- Vector cutting with the laser has the most potential to create an open flame. Many materials are susceptible to igniting, but acrylic, is especially flammable when vector cutting.

- Even with ventilation, you might see small, short-lived flames. This is normal for some materials, and is generally not a problem. If the flames don't disappear within a few seconds, open the lid. This will stop the laser cutter's beam (though the laser head will continue moving) and should extinguish the flame. As always, if you have a concern, alert the front desk staff.

- If opening the lid does not extinguish the flame, CALL FOR HELP and use the HALOTRON fire extinguisher mounted nearby.

Acceptable & Unacceptable Materials

- **NEVER CUT OR ENGRAVE:** PVC, Polycarbonate, Vinyl, Fiberglass or Rubber. These will cause toxic or noxious fumes, can damage the laser cutter itself, and/or are highly flammable.

- **You can safely CUT and ENGRAVE:** paper, cardboard, most untreated woods, composite woods, cork, acrylic plastic, magnetic sheet, natural leather, and most cloth.

- **You can ENGRAVE (BUT NOT CUT):** glass, aluminum & other softer metals, ceramic tiles, stone and marble

- If you bring in a material to put in the laser cutter, be prepared to show the Material Safety Data Sheet (MSDS) to the front desk staff. If they are not absolutely sure of it's origin and composition, you will not be allowed to laser it.

Tips

- Consider trying out your design on a piece of cardboard first before you commit your finished material. Just remember to re-adjust for focus when you put your project's material in.

- Ventilation removes fumes during the laser cutter's operation, which helps keep flames at bay. Never use a laser cutter without the ventilation fan turned on and the compressor pump (ie Air Assist) on.

- We recommend you DO NOT use the Autofocus feature. Instead, manually focus each job each time.

- Sometimes it may be better to cut 2x at a faster rate than 1x at a slower rate.

- Get in the habit of moving your art file off of your thumb drive and onto the desktop, then ejecting your thumb drive.

- If your project has both cuts and engravings, send them as 2 separate jobs. This way if you need to run the "cut" job again, you won't have to redo the engraving.

Examples of laser cut and engraved items

Laser Cutter Specs

Epilog Fusion 40

Engraving Area . . . . 40" x 28"

Maximum Material Thickness . . . . 13.25"

Laser Wattage . . . . 120 watts

Laser Source: State-of-the-art, digitally controlled, air-cooled CO2 laser tubes are fully modular, permanently aligned and field replaceable.

Air Assist: Air Assist removes heat and combustible gases from the cutting surface by directing a constant stream of compressed air across the cutting surface.

Red Dot Pointer: Since the laser beam is invisible, the Red Dot Pointer on the Fusion Laser allows you to have a visual reference for locating where the laser will fire.

Resolution: User controlled from 75 to 1200 dpi.

Laser Cutter Manual available online: http://www.epiloglaser.com/downloads/pdf/fusion-web-10.30.13.pdf

For examples of things to cut: https://www.epiloglaser.com/products/fusion-laser/fusion-sample-club.htm