Laser Cutting

How to use and troubleshoot issues using our Laser Cutter

- Laser Safe Materials
  - Laser Safe Materials
- Preparing your file for the Epilog Laser
  - File Prep
- Laser Cutter Operations

Laser Safe Materials

A list of materials that are safe to cut and engrave on a laser as well as forbidden materials

Laser Safe Materials

In general, organic products like wood, cardboard, leather, can be cut and engraved.

Additionally, acrylic plastics can be cut and engraved.

Many harder materials like stone, ceramic & glass can be engraved but not cut.

If you are not sure PLEASE ASK staff! DO NOT CUT any material that you are not sure if it is safe!!!

- APPROVED LIST:
  - Wood
  - Plywood
  - Cardboard: try to remove any tape before cutting
  - Acrylic (Plexiglass) both cast and extruded acrylic are ok, but cast seems to engrave nicer
  - Most fabrics (as long as it doesn't have vinyl or metals in it)
  - Leather (veggie tanned only)
  - EVA Foam (closed cell foam) an example is garage floor relief mats
  - Glass (engrave only)
  - Marble (engrave only)
  - Ceramics (engrave only)
  - Tile (engrave only)
- DO NOT Cut or Engrave
  - PVC!!!!!!
  - Anything with vinyl in it
  - Anything made from petrochemicals (made from oil)
  - Resin
  - Fiberglass
  - Polycarbonate (Lexan)
  - Circuit Boards
  - Foam Core Boards

- # Approved with Extra Care

- Cedar & Teak (oily woods like these create excessive smoke which can damage the laser. OK to cut but requires frequent lens cleaning.

Preparing your file for the Epilog Laser

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File Prep

Preparing your file for Vector Cutting (cutting through material)

1. Use Inkscape (free) or another vector graphic program like Adobe Illustrator or CorelDRAW.
2. Vector cuts need a stroke (or outline) on your objects' path. Set the stroke to black and the width to .001".
3. "Save As" your file in PDF format. Try to limit filename to 8 characters or less.
4. Copy PDF onto our PC next to the laser (use SD card, USB Drive or Google Drive or similiar)
5. Double-click file to launch in Adobe Acrobat PDF Viewer, then hit CTRL+P to print
6. At Print Dialog Screen, Click on "Properties" tab (top-center)
7. At Epilog Dialog Screen, Click on "Advanced"
8. Click once onto chosen Material & Setting, then Click "LOAD"
9. Click on General Tab to return to Epilog Dialog Screen
10. Review speed and power settings
11. Adjust size of your project (bottom-center)
12. Click OK
13. Back at Printer Dialog Screen, verify thumbnail looks accurate. Verify "Actual Size" is checked, not "Fit"
14. Click PRINT
15. Go to Laser Control Panel on laser and select your job. Jobs are listed in the order they were sent and show the minutes and seconds each job will take.
16. After operation, take note of the minutes of laser time used and pay the makerspace $1 per minute via Paypal manager@bellinghammakerspace.org

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

1. Use any kind of graphics program you are comfortable with. Photoshop or GIMP (free) are popular.
2. Consider your DPI (or resolution). 300 or above is photo quality, but will also take longer to engrave.
3. Test our different Dithering modes for best quality with your art and material. Black-only art does not need a dithering setting, only grays.
4. Save your file as a PDF.

5. Prepare your laser cutter settings.

Laser Cutter Operations

- SETTING FOCUS: First in JOG mode, movie the laser carriage to approximately the middle of your cutting area. Switch mode to FOCUS. Attach focusing jig to screws on front of carriage. Raise or lower bed so that the jig is pushed slightly off your material. This sets your focus at the top of your material. Push straight down on joystick to set.
- Press red button to turn on laser pointer and set mode to JOG. Drive the laser dot to the top-left corner of the cutting area of your material. Push straight down on the joystick to set.
- 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 carriage, the exhaust fan is on, and Air Assist pump (under computer on shelf) is on if vector cutting. Make sure the Halotron fire extinguisher is nearby.
- Note your times for each job, along with how many times you ran each of them. Pay the front desk or give via Paypal to manager@bellinghammakerspace.org. Price is $1 per minute. We use this money to replace lens and laser tubes when they burn out.
- SAFETY RULE: Watch the laser for the duration of your job! You must watch out for flare-ups and other problems and know what to do when they pop up. Find the Emergency Stop button. You can also use the "STOP" button on the control panel (it's more of a Pause button because you can resume your job)