# Lasercutting 101

## File Storage

The lasercutting PC has the common storage location T: mapped as a temporary volume.

Use the folder T:\DIRTY_LAB_TEMP_STORAGE to transfer files between your own system and the lasercutter PC.

- Do not use USB sticks
- Do not use Dropbox etc.
- Do not log in to the PC with your own account

Instructions for mapping the drives are here:

https://intranet.itu.dk/administrative-abc/n/network_drives

**Once in a while, this location is cleaned so do not use it to store important files.**

## File Formats and Standards

- You can import vector graphic formats into Illustrator for cutting, e.g. .svg, .pdf, .ai .dxf
- Vector lines to be **CUT** must be 0.01 pt or less.
- Vector lines to be **ETCHED** must be larger than 0.01pt
- **Any** shapes with solid fills will be **ETCHED**
- Gradients and pattern fills must be rasterized.

## Materials

- Do not cut anything not on the laser materials shelf
- Ask in 5A58 if you need materials
- Do not cut your own materials without asking

## Cleaning up

- Remove materials from the laser bed after use.
- Put reusable materials back on the shelf or in the scraps bin.
- Non reusable scraps should be put into the appropriate bin (wood/plastic/everything else)

## Tips

- Use scraps as much as possible, especially to test a design
- Add a very light vector cut to the edges of etched objects to improve sharpness.
- Do not use the laser for deep etching jobs.
- The laser kerf is 0.1mm, include tolerance for this in your designs.
- Align your design to share edges and closely space components to cut down on waste
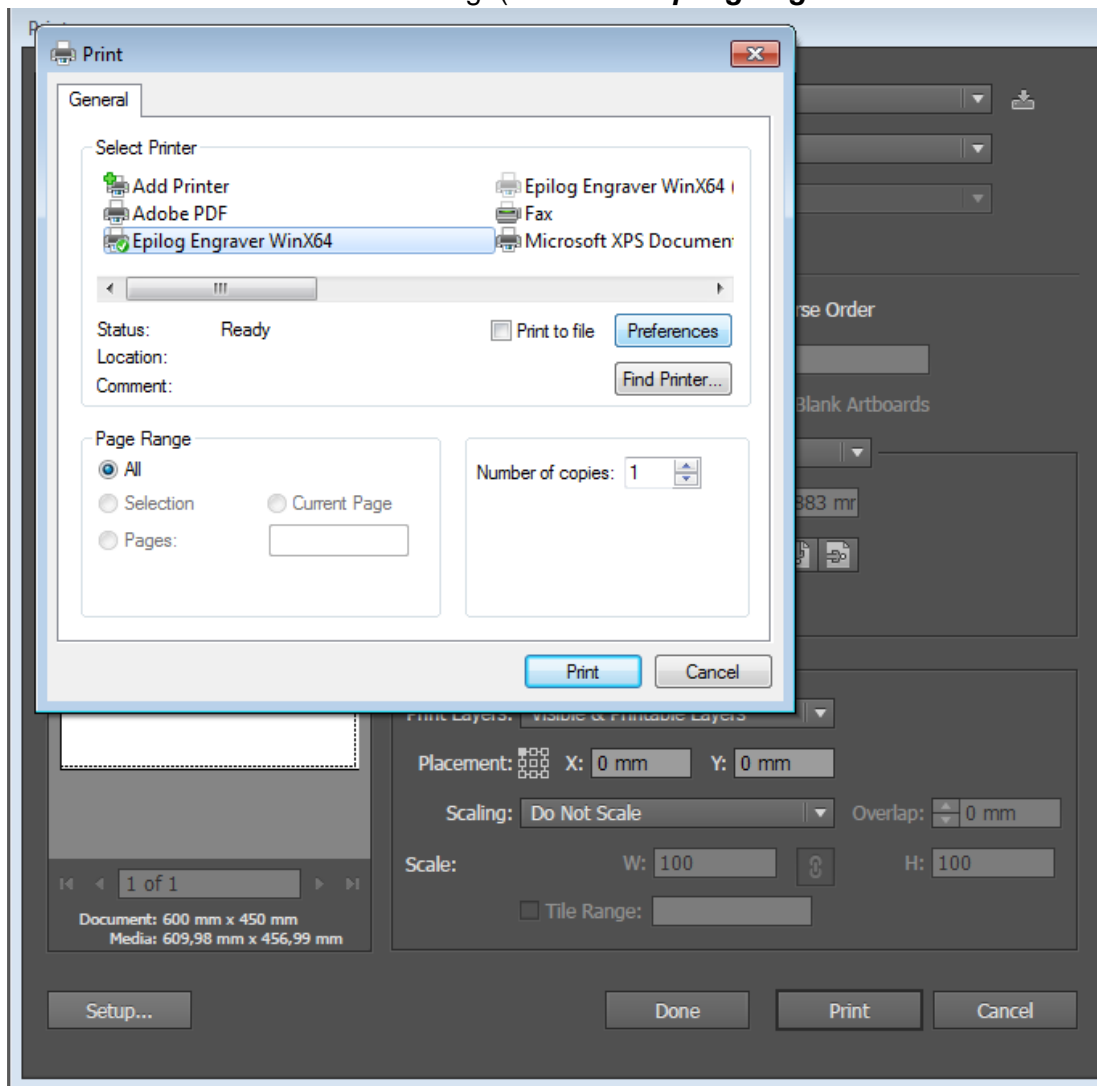
## Lasercutting from Adobe Illustrator

## Uploading the File

1. Choose **File > Print**
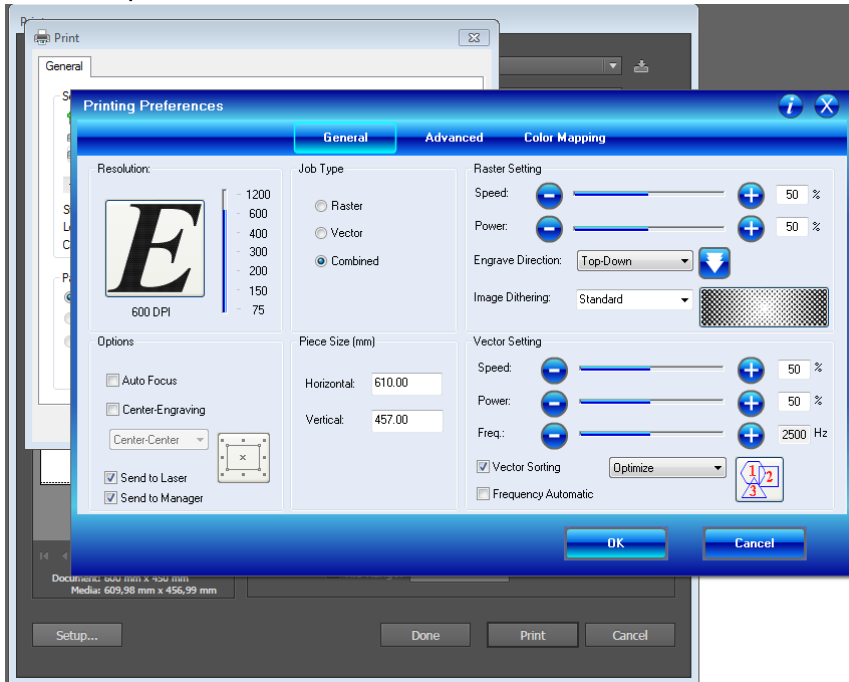2. Choose "LASER_CUTTER" from the Print Preset menu. This will set up the correct document size
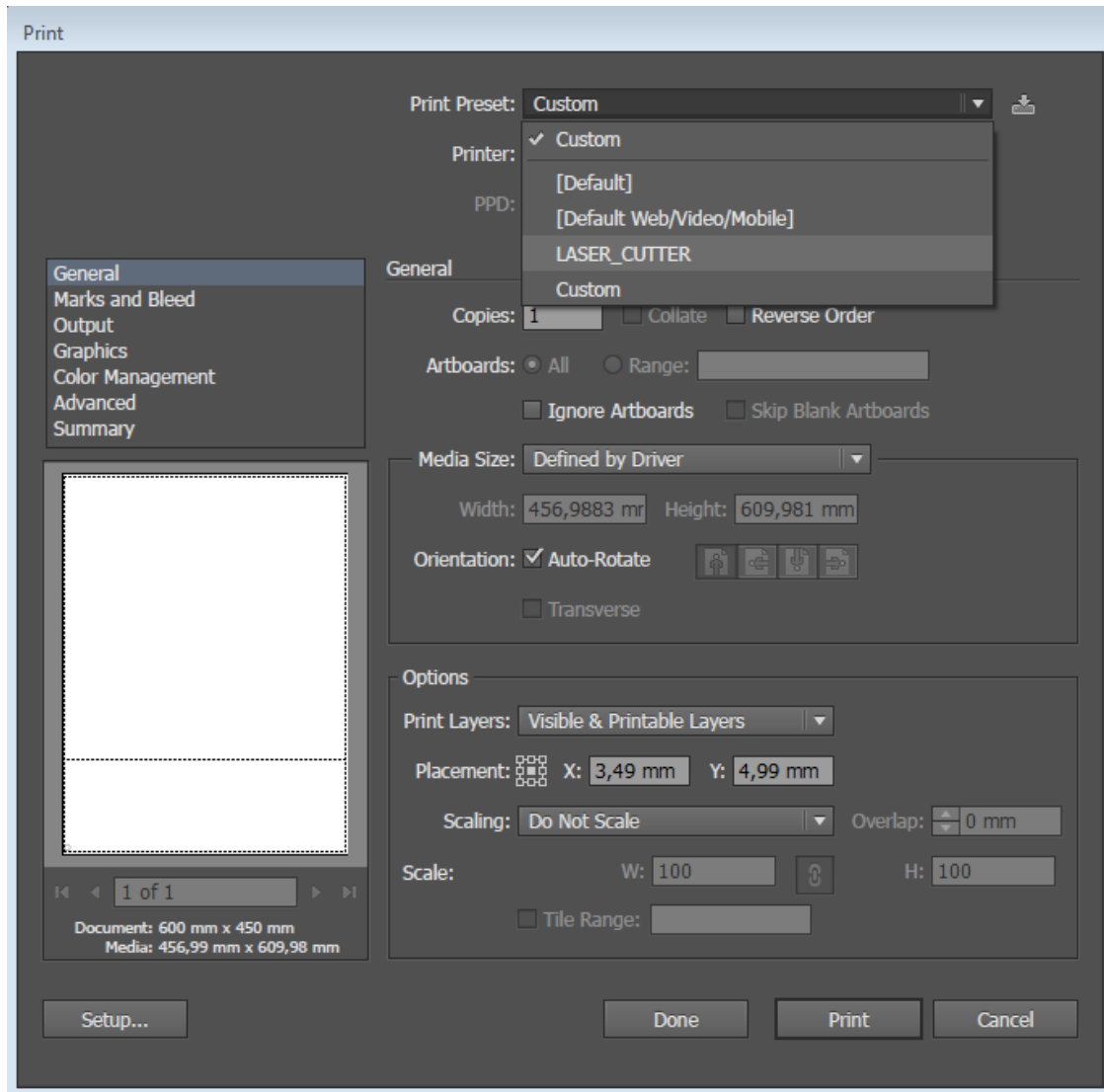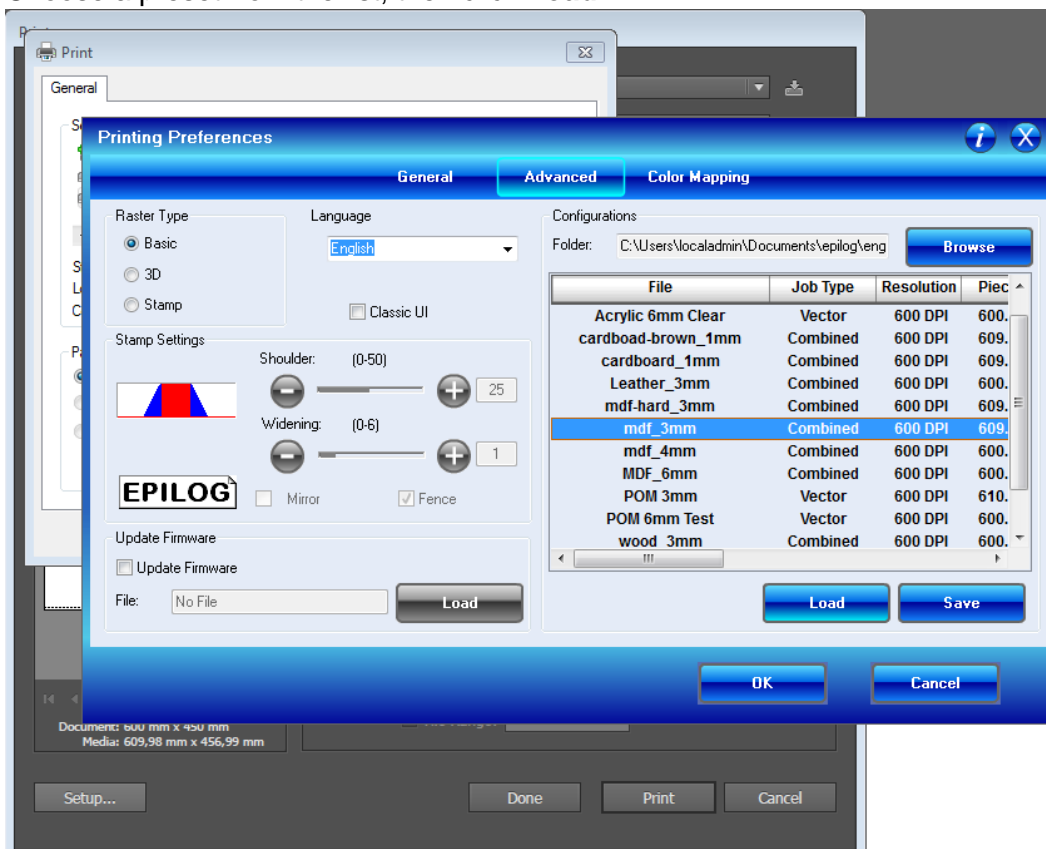


3. Click **Setup** at the bottom-left of the dialog.

4.  Click **Preferences** in the Print dialog. (Make sure *Epilog Engraver WinX64* is selected)
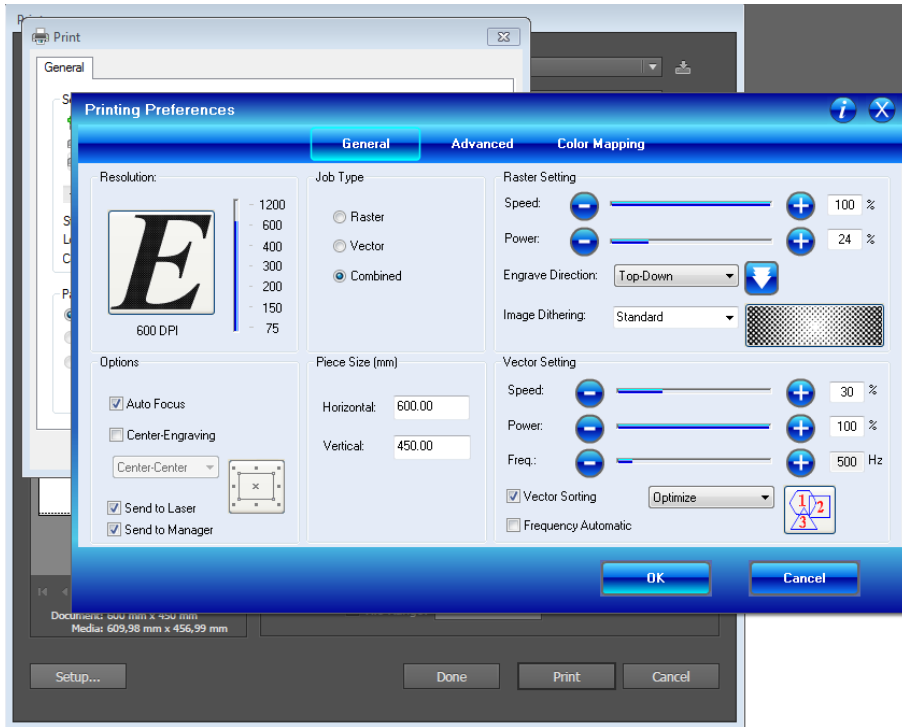
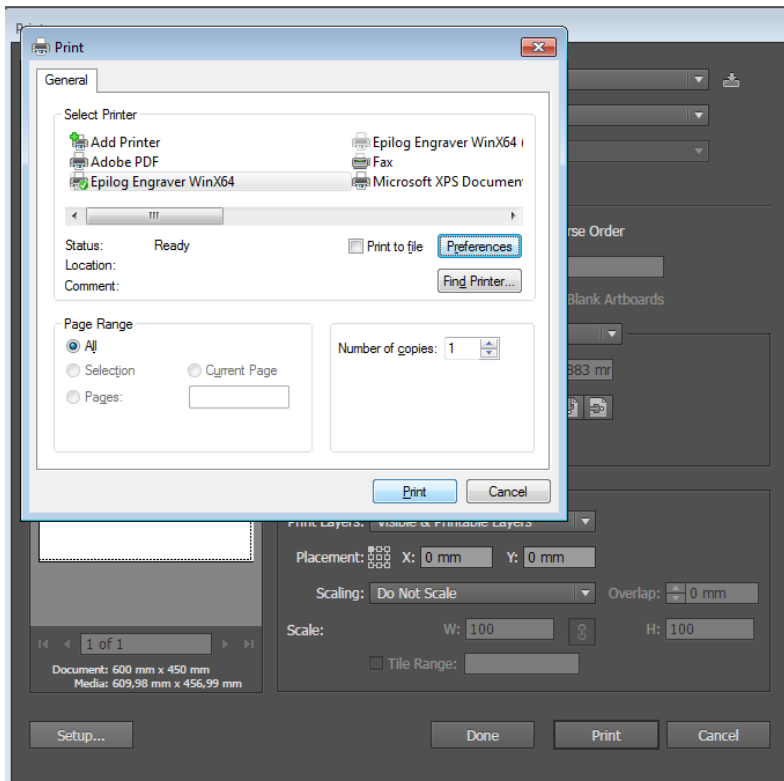5.  To use a preset, click on the **Advanced** tab
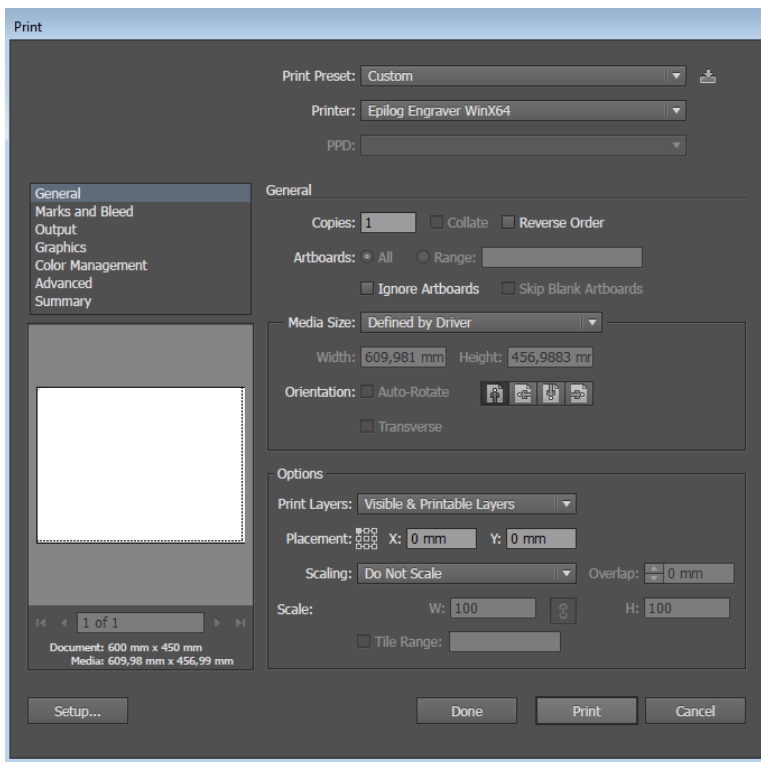


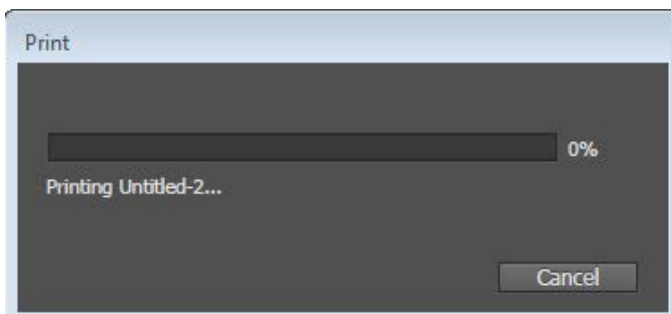6.  Choose a preset from the list, then click **Load**

7. Click **OK**



8. Click **Print**

9. Click **Print**



10. If the machine is on, the file will now be uploaded to the machine.



## Running the job

1. Turn on the large fume extractor to the left of the laser cutter. Turn on the air compressor under the machine.
2. Home the laser to the (0,0) position if required (See below)
3. Press **Go**
4. When the job is done, leave the fume extractor running for a minute.
5. When you are done, lock the machine and return the key to 5A58

# Cutting from Scrap and Used Material

If you want to cut something from a piece of scrap or from a piece of material that has already been used, it is necessary to adjust the Home Position of the cutter. The Home Position corresponds to (0,0) in the document you are cutting, e.g. the upper-left corner.



In the figure, A is the pattern to cut, B is the piece of material with the Home Position in the upper-left corner and C shows the Home point moved to a position where the pattern can be cut without issues.



## Adjusting the Home (0,0) Point on the Laser Cutter

1. Turn off the motors by pressing **X/Y Off** on the control panel, then pressing **Go** when prompted with *"XY OFF? GO/STOP"*
2. The display will read *"X/Y Disabled"* DO NOT CONTINUE UNTIL THIS HAPPENS!
3. Turn on the laser pointer to help judge the position by pressing **Pointer**.
   a. If you are cutting acrylic, it may be helpful to put a piece of paper on top of the material to see the laser more clearly. Remember to remove it!
4. Gently pull the bar to position the laser on the Y axis. Push the aluminium part of the laser assembly to position it on the X axis. Avoid touching the glass lens.
5. When the laser is in position, press **Set Home** then **Reset**.
6. You can now start the job.