

Lasercutter Tsar Ben Norcutt @plexer



Using the lasercutter - if in doubt, ask!

Important rules:

You can only use the laser cutter if you have had an induction by one of the experienced hackspace members.

NEVER leave the laser cutter running unattended - watch it constantly

Know what to do if a fire breaks out - there is a high risk of this

Never cut materials that are not on the materials list

This sheet is only a reminder of the induction and not a substitute.

It takes a while to get used to all the stages so please ask someone if you are not sure.

The lasercutter is a machine which uses a laser to cut and engrave materials such as paper, wood, acrylic and other materials. The maximum sheet size is 600x400mm and cutting thickness approx 8mm. It burns very hot and there is a high risk of burning the material you are cutting - do not leave it unattended even for a moment. Only cut materials that are approved for cutting - if in doubt check with the Lasercutter Tsar, Ben @plexer.

There is also a risk of personal damage from the laser which is powerful but it is safe if you follow the procedures and don't try and operate the cutter with the lid open or circumvent the safety measures.

The cutter produces fumes. Some fumes are poisonous which is why we don't cut certain materials, most create a smell which is why we vent out of the window. They are mostly vapour and not harmful but if you feel dizzy or otherwise affected switch off the machine.

These instructions are about using the cutter, not about preparing the file which you will need to bring on a USB stick. You will also need to complete a log file to record what you have cut/engraved - found on Slack.

Setting up

- If it's not already on, turn PC under desk on (the blue light on top indicates it is on), switch monitor on.
- Open the window shutter, open window, place hose out of window
- On 4 plug block to the left switch on laser cutter and water switches.
- Turn on laser cutter (key on right hand side) if it doesn't power on check that red e-stop knob is up
- On the PC Desktop there is a shortcut to 'start laser cutter'. Double click to Lasercut 5.3 (Lasercut 5.3 imports a v14 DXF file and will also engrave from a jpeg)
- In Lasercut 5.3 Import .dxf file from USB using the File – Import menu
- Settings for layers depends on the material and design
- Adjust artwork to cut or engrave - you may need to adjust layer settings
- Power and speed settings for material are displayed on the wall and there is a shortcut to a spreadsheet on the lasercutter PC

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- Ensure 'immediate' check box is selected if required (this allows the cut to start where the head is positioned. Datum starts the cut at the top right-hand corner)
- Click Download which will bring up a dialogue box
- Delete any existing files showing (del all)
- Download 'current' to laser cutter – file name will in appear in laser cutter control panel window
- At laser cutter lift the cover up. It can stay up until just before you're about to start cutting

Cutting

- Place material on the honeycomb bed and focus laser using height gauge - it's a small lasercut piece of wood
- Select **Z-Axis** button on control panel and then arrow use nudge arrows to move bed up until gauge just touches the material
- Come out of **Z-Axis** by pressing button again
- Using arrow keys on control panel to position cutting head, if the head doesn't move press the 'esc' button on the control panel
- Press Test button - which will cause the laser head to move around the perimeter of the cut to check positioning
- If you're happy with the positioning of the material close the lid
- Turn on air and fan (see multi-block)
- Press start - check it is cutting what you want
- If it's not don't panic press Stop on control panel and start again
- Don't leave the cutter unattended even for a minute, if you need to leave it press the Start/Pause button on the control panel and press it again to resume when you are ready, don't even walk away from the machine
- Watch for flames, some smoke/fumes/vapour is normal and small sparks.
- Keep fire blanket and fire extinguisher to hand, if flames get out of control use one or both to get it under control. Make sure you know how to use them in a hurry.
- Once your cut has finished leave the air and fan turned on for a few more seconds and then turn them off.
- Before you lift the lid to take out your cut press the Datum button to send the head to its home position, if it doesn't move press the Esc button and then Datum.
- Make a note of the laser time as shown on the control panel LCD and fill out the laser cutter log file, a shortcut to this is on the laser cutter PC desktop
- Make sure that you clean all the debris out of the cutter, clean the honeycomb bed and tidy up after you.
- Stand back and admire your work

Golden rule: If in doubt, don't struggle, ASK - use Slack if no-one there