



# Laser Cutting Guide

Guide: Digital Fabrication  
Laser Cutting 2021



## Disclaimer

These guidelines will help you understand laser cutting in greater detail, and help you **prepare your digital file for laser cutting**. This will help us get your job done as quickly and efficiently as possible.

We can't guarantee your files will be successfully fabricated as there are many factors which can affect it.

\*There is usually a queue for fabrication, so make sure you bring in your files early.  
(1-2 days for laser cutting)

**Location:** Level 1, Architecture building  
Structure Studio



## What is Laser Cutting?

Laser cutting is the process of cutting a material using a laser beam. This can be done to either trim down a material or to help cut it into complex shapes that more conventional drills would struggle with.

A vast range of materials and thickness sizes can be cut with lasers, making it a handy and adaptable process.

## Cutting sizes

### Small machine:

59 x 47 cm

### Big machine:

89 x 59 cm

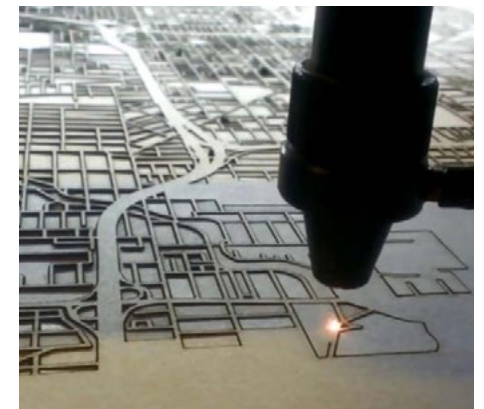
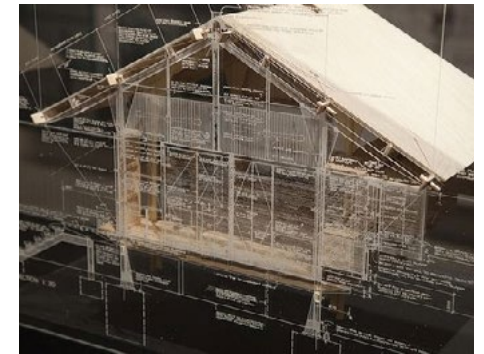
### Materials we **don't** cut/engrave:

Stainless steel, Brass, Titanium, Bare metal, PVC, PVB, Vinyl, Carbon fibre, Fibreglass, Epoxy.

### File format:

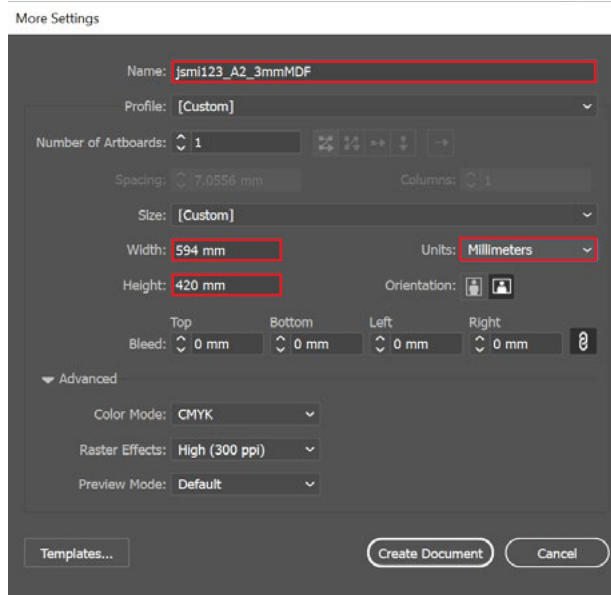
Illustrator file

\*One file must only contain **one page** vof drawings.



## How to set up your Laser Cutting File:

1. Open a new **Adobe Illustrator** document.
2. **Name** your file: your UPI and the size, thickness and type of material that the file is for.
3. Make the **Artboard size** the same as the width and height of your material.
4. **Units:** Millimeters



5. There are **four different modes** when laser cutting:  
**Line Cutting** - cuts along the outlines  
**Line Engraving** - engraves along the outlines  
**Fill** - engraves the shape  
**Fill + Line** - does a fill, followed by an outline to create a clean edge line

Please use **different colours when setting up your file**, so we can distinguish what needs to be done. (If you have specific instructions for your file please write them in **orange** text on your file.)



## Laying out your file:

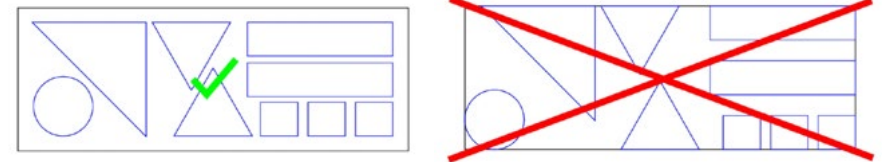
1. Draw a **box** the same size as your material

2. **Align** this box to the top left corner of the artbox.

**Note:** If you require your cuts to be in a specific area on the material then please write a small note on the side of the artboard stating this.



3. **Do not cut to the material's edge**- ensure your cut lines are all within 5mm of the edge of your material. (Sheets of your material may look straight but they do not have straight edges)



4. **Saving small parts and strips**- small parts (under 10mmx10mm) can fall through the mesh of the laser bed and cannot be retrieved, therefore make sure they are attached.

- Ask for **tabs** to be included in the objects that you are cutting so that they do not fall out immediately but can be removed later. Tabs are often less than 1mm in length. This is good for materials such as card.

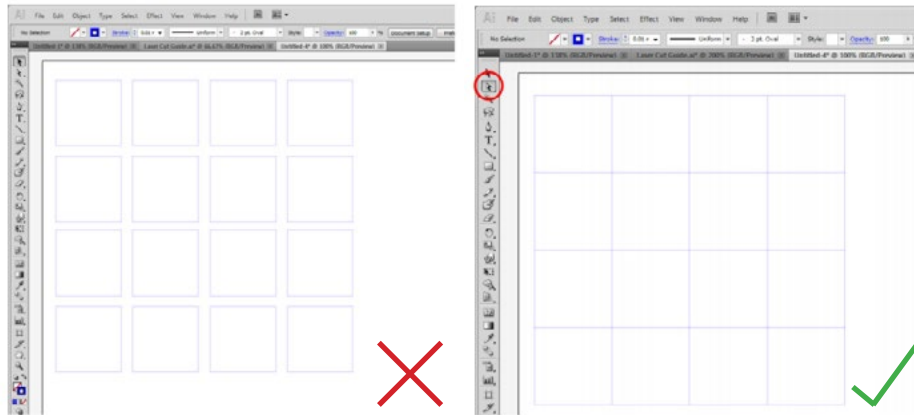
5. **Materials that are less than 3mm in thickness**- any cut pieces should have a minimum width of 1mm (excluding plastic)

**Plastics and all other materials that are 3mm or more in thickness**- any cut pieces should have a minimum width of 2mm.

**Note:** For safety reasons, please ensure you are using high quality plywood, **not** low quality plywood.

**5. Tidy your line work up:** Check that there are no multiple lines sitting on top of each other. (This will be a problem when there are multiple engrave lines which may end up cutting through your material.)

**More lines** equate to **longer cut time** which in turn means **more money spent**.



**Do NOT** lay your files out like above. This will result in multiple cut lines and taking a lot longer than required.

→ **Instead,** try to organise them so they share one or more cut lines like above. Please do not copy and paste objects so that there are multiple overlapping lines.

#### To remove overlapping lines:

- Use the white cursor (circled in red) and select all the overlapping lines and delete.
- You can check if you have double lines by closely inspecting the colours of the lines.
- If they appear darker than the other lines of the same colour then it means you have overlapping lines.

#### 6. Text- expand your typeface

- **Select all text** you want cut, etched or rastered (Select>Object>Text Object)
- **Expand the text** (Object>Expand or Right click on text>Create Outlines)

**Note:** You will not be able to edit your text after you have expanded/created outline.



#### Other points:

- Make sure we know you have dropped off your materials.
- Materials must be as **flat** as possible.
- Bring extra material if you can. We make mistakes too.
- If you can, cram everything on to your page as **tightly** as possible. This will save you material in the long run.
- If you are using a whole piece of acrylic, please take off the protective layer.
- Try not to cut strips of acrylic. The acrylic heats up and warps resulting in very curved strips of acrylic.
- Try not to cut anything smaller than **5mm x 5mm**. Small pieces tend to fall through the honeycomb on the lasercut bed.
- Advise us if you need your materials taped up.



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3D Printer Material Category 5	3D Printer Material Category 6
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**ArchPlan Laser Cutting**



**Price:** \$10.05  
**SKU:** 650030-10191

**\* Time available:**

- ☐ 5 Min
- ☐ 10 Min
- ☒ 15 Min
- ☐ 20 Mins
- ☐ 25 Mins
- ☐ 30 Mins
- ☐ 35 Mins
- ☐ 40 Mins
- ☐ 45 Mins
- ☐ 50 Mins
- ☐ 55 Mins
- ☐ 60 Mins

**Quantity:**  [Add to cart](#)

## How to pay for a job through the NICAI creative store:

\*Ask the staff for a estimated cost before the job processes

- 1.Go to <https://store.creative.auckland.ac.nz/>
- 2.Log on or create an account
- 3.Choose the ArchPlan Cutting and Printing category

**Laser Cut Jobs:** Select the number of minutes

If you are not sure, ask a DRH staff for help.

4. Select “add to cart”, then select “proceed to checkout”.
5. Comfirm the billing address and shipping detail, tick “ Pick Up from Student Centre \$0.00 ”
6. Fill in payment details. You will recieve a confirmation email from NIC-AI for your puirchase

\* All jobs must be paid before collection, otherwise a receipt must be forwarded to [digitalresearchhub@gmail.com](mailto:digitalresearchhub@gmail.com)



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