








Guide to Laser Files



How to create a file for the laser cutter

1 / 3

1. QUICK CHECKLIST BEFORE YOU COME TO FABLAB

- ✓  Draw in 1:1 – meaning at the actual size the object should be cut or engraved.
- ✓  Use vector graphics for all lines that should be cut or line engraved.
- ✓  Convert text to curves/outlines.
- ✓  Delete guide lines, hidden layers, and anything that should not be cut or engraved.
- ✓  Check for duplicate lines on top of each other.
- ✓  Use different colors or layers for cutting, line engraving, and fill engraving.
- ✓  Save preferably as SVG, PDF, DXF or AI – depending on which program you are working in.



2. VECTOR OR IMAGE?

Vector



VS.

Image




The laser cutter works best with vector graphics. Vectors are lines and shapes that the machine can follow precisely.

JPG or PNG can be used for fill engraving. It works best with clear contrast.



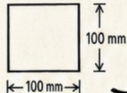
Many small details and low contrast often give an unclear result.

 For example from Inkscape, Illustrator, CorelDRAW, AutoCAD, Rhino, or Fusion 360.

3. DRAW AT THE CORRECT SIZE

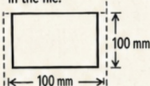
1

Always make the drawing in 1:1.



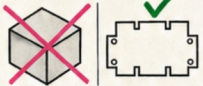
2

If the object should be 100 mm wide, it must also be 100 mm wide in the file.



3

Export a 2D drawing, a sketch, or a top view – not a 3D model.



The laser needs a flat 2D file.

Next page: Cutting, engraving and cleaning up the file

Cutting, engraving and cleaning up



What do the colors mean – and how do you clean up the file?

2 / 3

3. CUTTING, LINE ENGRAVING AND FILL ENGRAVING

Cutting

Lines that should be cut all the way through the material.

Use a very thin stroke/hairline and a clear color.



Line engraving

Lines that should be marked in the surface, but not cut through.

Use a different color than the cut lines.



Fill engraving

Filled areas, images or text that should be engraved as a filled area.

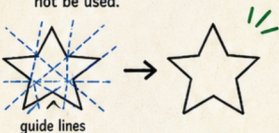
Use fill or a raster image with good contrast.



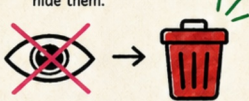
Tip: Use colors or layers to distinguish between the actions.

4. CLEAN UP THE FILE

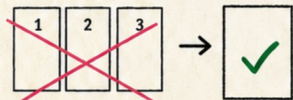
- 1 Delete lines, guide lines and objects that should not be used.



- 2 Delete layers that should not be cut or engraved – it is not always enough to hide them.



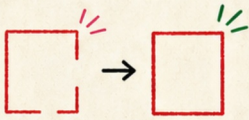
- 3 Avoid multiple pages or artboards in the same document, unless otherwise agreed.



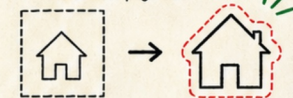
- 4 Check that there are no identical lines lying on top of each other. Duplicate lines can cause the laser to cut the same place several times.



- 5 Make sure shapes connect in the corners if they should be cut as closed forms.



- 6 If something should be cut around an object, there must be an actual cut line – it is not enough that the document has the correct page size.

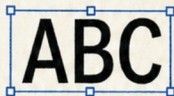


Next page: Converting text to curves, images for engraving and final checks before you bring the file



5. TEXT MUST BE CONVERTED TO CURVES

Text should usually be converted to curves/outlines before the file is used for the laser. Otherwise the font may be missing or change when the file is opened on another computer.





Editable text



Vector curves (outlines)

Ai **Illustrator:** Select the text, right-click and choose **Create Outlines**.

 **Inkscape:** Select the text and choose **Path > Object to Path**.

 **Rhino and other CAD programs:** Use the program's function to convert text to curves/outlines before export.



6. PROGRAM-SPECIFIC TIPS

Ai Adobe Illustrator

- Draw in 1:1.
- Use thin strokes/hairline for cut lines.
- Stroke thickness does not determine how wide the laser cuts — the machine follows the line.
- Convert text to outlines.
- Save as PDF or AI.



Inkscape

- Draw in 1:1 and check the document units, for example mm.
- Convert text with **Path > Object to Path**.
- Use very thin strokes for cut lines.
- Save as SVG or PDF — DXF may also be relevant.



Fusion 360 / SolidWorks / other 3D programs

- Export a 2D drawing, sketch or profile — not the 3D model itself.
- Check dimensions after export.
- Save or export typically as DXF, SVG or PDF.



Rhino / AutoCAD / other CAD programs

- Clean up guide lines, construction lines and hidden elements before export.
- Check that curves are closed if the shapes are to be cut out.
- Export as DXF, PDF or AI/SVG depending on the workflow.



SketchUp

- Be extra careful with scale when exporting.
- Export only the 2D geometry that should be used.
- Check the file in another program before you bring it.

7. IMAGES FOR ENGRAVING

- Digital images can be engraved, but the result depends a lot on the material, contrast and the machine settings.
- Images with clear contrast and simple shapes work best.
- Use black/white or high contrast if the motif should be clear.
- Avoid very dark or very detailed photos without clear contrast.
- Expect test cuts/test engravings, especially if the material has not been tried before.
- Save the image in a suitable resolution.

GOOD



NOT GOOD



8. BEFORE YOU BRING THE FILE

- Open the file again and check that everything still looks correct.
- Check dimensions and units.
- Check that text is converted to curves/outlines.
- Check that cut lines, line engraving and fill engraving are clearly separated.
- Check for duplicate lines.
- Delete hidden layers, empty objects and elements outside the working area.
- Bring both the original file and an export file, for example SVG/PDF/DXF.



9. RECOMMENDED FILE FORMATS

FORMAT	TYPICAL USE
SVG	Vector files from Inkscape and many other programs.
PDF	Good exchange format, especially from Illustrator, Inkscape and CAD programs.
DXF	Often used from CAD programs and 3D programs.
AI	Illustrator format. Only use it if the workflow requires it.
JPG/PNG	Images for fill engraving — not for precise cut lines.

REMEMBER



- ★ A laser cutter does exactly what the file tells it. If there are extra lines, duplicate lines or hidden objects in the file, they may end up being cut or engraved.
- ★ If you are in doubt, bring both your working file and an export file to FabLab — then it is easier to help.

