

Laser Cutter Design Guidelines

Material

Most of our stock material comes in 600x300mm sheets, which is almost the maximum bed size of our laser cutter. We recommend you make the page size the same size as the material to assist in positioning drawings on the sheet.

Our laser cutter is 40watt, therefore we can only advise cutting of material up to 6mm thick. Though we can cut thicker material, this would require multiple passes, increasing the kerf and adding more burn marks if using wood.

We can not accurately set a depth of cutting/engraving on the laser cutter. If you need material cut to an accurate depth CNC machining may be a better option.

We can not use the following materials with our laser cutters;

- Mirrored/Reflective materials (unless cutting a reverse non-reflective side)
- MDF
- Any composite material made with/containing PVC

Settings and Colour Mapping

For clarity, vector cutting lines where the laser should cut all the way through the material should have a stroke width of 0.01mm and be full black (0, 0, 0). If all the engraving is to be done at the same setting, these objects can be black as well, otherwise use colour mapping and provide details of what you need doing for each separate colour when ordering.

If your design requires colour mapping (engraving/cutting at different strengths) please ensure your files colour profile is set to RGB. Start with full colour values first as these are faster to program (i.e. full red being 255, 0, 0). The colour values in the design must match exactly with what is programmed for the laser cutter so it's worth double checking.

Kerf

The nature of laser cutting means that a portion of the material is burnt away when the laser cuts through, leaving a small gap. This 'gap' is known as the laser kerf and ranges from 0.08 - 0.45mm depending on the material type, thickness and other conditional factors.

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For some applications (for example a slot together product), you will need to account for the kerf within your drawing by adding or subtracting the kerf width from your component dimensions. Generally for 3-6mm acrylic and birch plywood, a kerf of 0.25mm is adequate for push fit assemblies. Please bare in mind that this measurement is to be treated as a guideline only, use it as a starting point. We always recommend prototyping a portion of your design taking into account the kerf and tweaking if necessary.

Kerf also has an impact on layout of parts. We recommend leaving a minimum distance of 1-2mm between parts to avoid accidental crossover cutting. It is also advised to keep parts 2-5mm away from the edge of the material due to some sheets being warped or slightly off in their sizing. Though we visually inspect material before use, we can not guarantee our suppliers will provide exactly the correct material 100% of the time.

File Formats

For laser cutting we can accept SVG, AI, PDF and DXF file formats.

You can upload your files via our enquiry form at <https://machinesroom.co.uk/fabrication-enquiry/>