

Note to the Manufacturer

This design was created for manufacture on a 50 W CO₂ laser cutter. The vectorial files submitted herein have given good results on the laser cutters at the University of Ottawa Makerspace. However, there is no guarantee from the author that using these will yield the desired result.

1 Manufacturing Data

The vectorial files submitted are to be used as explained in the sections that follow. These files have been attached to this PDF document. They were not appended as to ensure they remain protected against scaling.

1.1 Jig

The jig may be cut out of scrap materials (Acrylic, MDF). The goal is to use the jig as a tool for zeroing the laser (over the target at the top left of the file) once blanks are placed in the jig. Ensure the jig's sides are parallel to the laser cutter's axes.

1.2 Blanks

The blanks are cut from base material (acrylic sheets) as specified in OUT-004-01-02 and OUT-004-02-01 (and subsequent drawings in the 02-XX package).

1.3 Grid

The 5 mm grid files are the files for making the grid that sits between the device user and the petri dish. For convenience, and as specified in the drawing for the grid, the grid is made up of 10 mm x 10 mm cells with thick borders which are subdivided equally into 4 cells of 5 mm x 5 mm, delimited by thinner lines.

Grid material used in the first prototypes of this device were Biaxially Oriented Polyethylene Terephthalate (BO-PET), rastered and cut using the laser cutter. There are three files in this package, two of which are for manufacturing using the laser cutter. The third (5x5mm Grid_Manual Cut.pdf) may be used by the user to make their own grid using an ink printer

to print on clear acetate sheeting (a minimum of 300 DPI print quality was assumed when creating the PDF).

1.4 Other Files

The other files contained within this package shall be used to generate the features of each part as per their respective drawings. The zero for each laser can be found using the jig from subsection 1.1. Deep features are to be rastered on the laser. The depths generated by your laser will have to be calibrated. It should be noted that feature depth with regards to laser rastering speeds are unfortunately not linear. Tests performed at the University of Ottawa Makerspace have shown that feature depth as a function of raster speed follows an inverse power model.