HAPPYSHIELD

Laser-cut and Pressure Creasing

Centre for Natural Material Innovation

https://happyshield.github.io

This document is current as of 2020 04 07 13:00. Please refer to the latest version of the documentation at happyshield.github.io.

Materials:

3-Part Press Jig

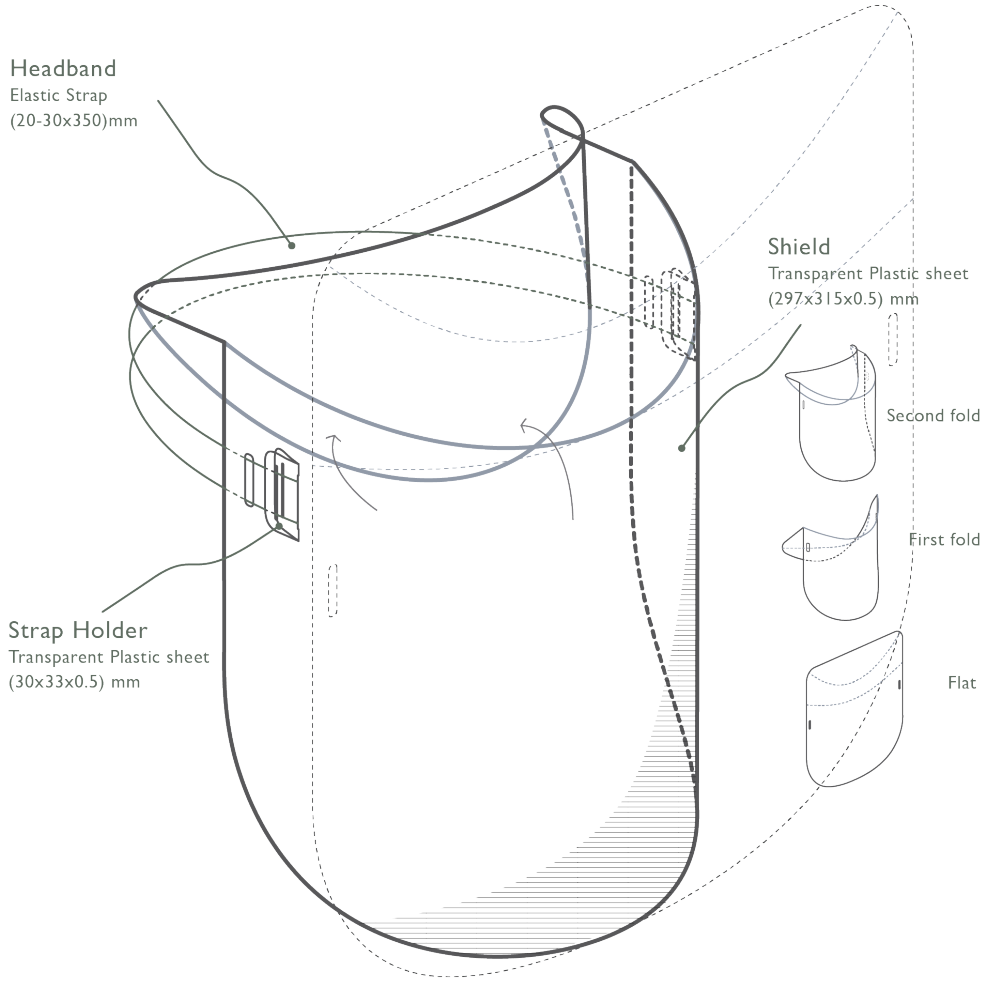
- 4 mm MDF
- 1 mm steel wire rope
- 6-20 mm wood screws
- Clear plastic tape

Shield

- 0.5 mm thick Polyethylene terephthalate (PET) or Acetate sheet
- 20 mm wide knit elastic strap (70% polyester 30% rubber)

Tools:

- Laser-cutter
- 10-tonne press
- Pliers capable of cutting 1 mm steel wire rope
- Scissors or razor blade
- Drill or screw-driver



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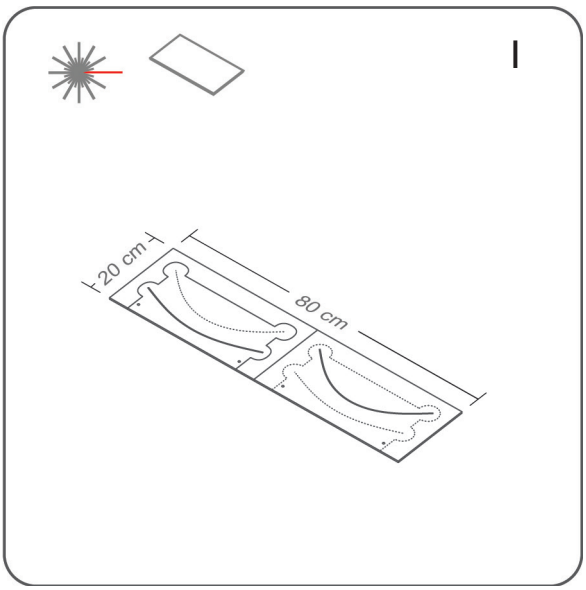
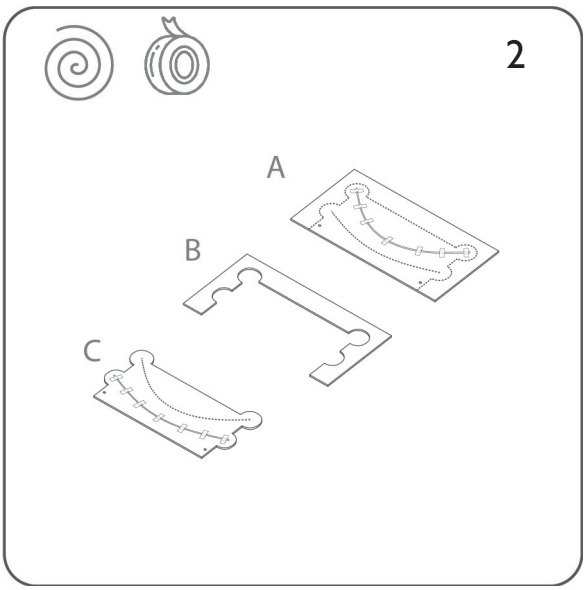
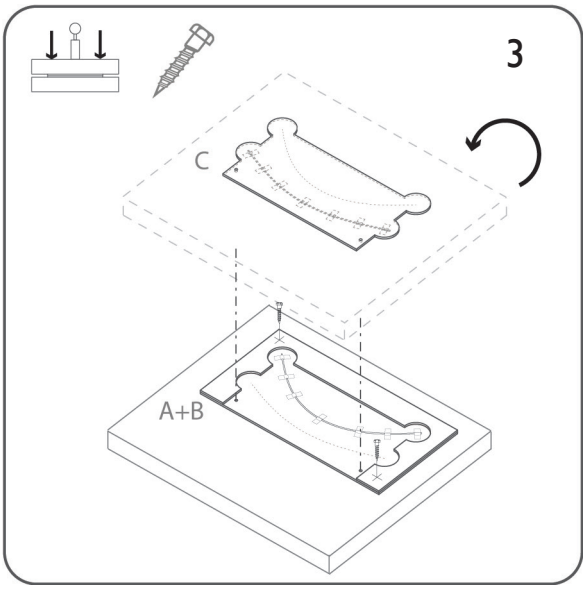
3-PART PRESS JIG



Download the laser-cutting template for the 3-part press jig which fits the bed of your laser-cutting machine. (The dimensions of the cutting templates are given in the filenames.) Laser-cut the MDF using the template file.



Remove the 3 parts of the press jig from the laser-cutter. Cut the wire rope to the length of the dashed curves in parts A and C of the template. Tape the metal wire onto the dashed curve the groove of the parts A and C of the press jig, being sure not to deviate from the dashed curve, and not to extend beyond the ends of the dashed curve.



Attach Part B to top A using short wood screws. Attach the combined Part A and B to a block as needed to distribute pressure evenly across the jig surface. Do the same for Part C.

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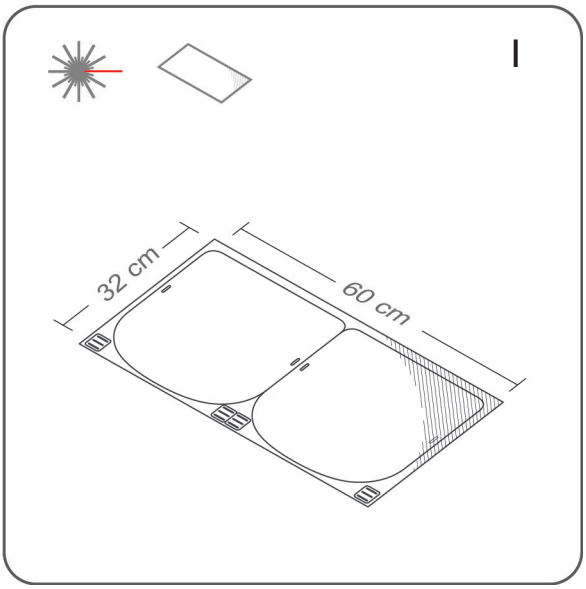

Download the HappyShield laser-cutting template which fits in the bed of your laser-cutting machine. (The dimensions of the cutting templates are given in the filenames.)

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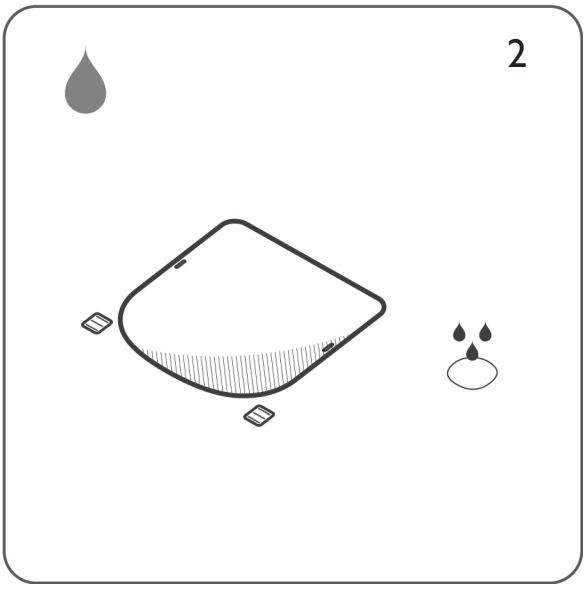
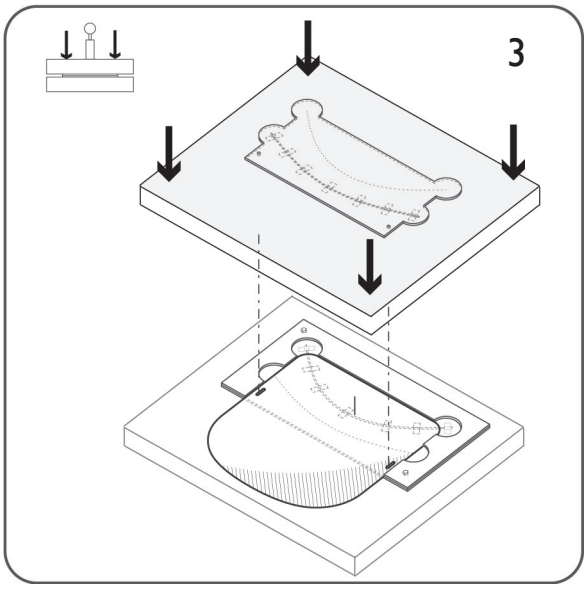
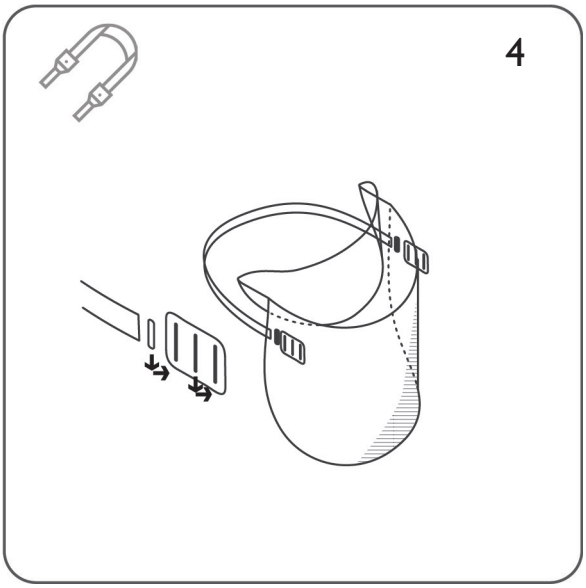


Laser-cut the clear plastic sheet material using the template file, ensuring that your laser-cutter power and speed settings ensure a cut completely through the depth of the material.

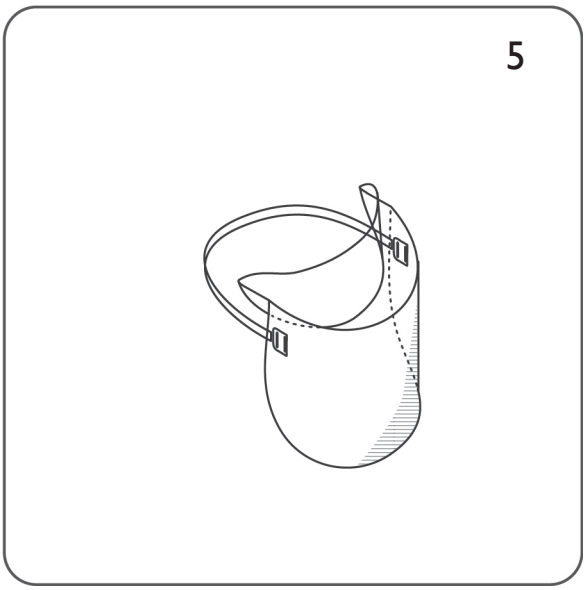
Once cut, remove the resulting shields and friction clips from the laser-cutter bed. If desired, wipe the edges of the shields and clips with alcohol, or wash with any soap to remove any laser-cutting residues from the sheet.



Insert shield into the 3-part press jig and press to create the curved creases.



Cut a 400 mm length of elastic strap. Thread the strap through the friction clips on both ends.



Pass the threaded friction clips through the holes in the shield from back to front.