Béton3 // Build Guide

Béton3-Specific Parts

Welcome to the second Build Guide for Béton3. This Build Guide outlines the custom designed parts you'll need to build Béton3, along with links to 3D and physical files for each, and some raw materials you'll need for final assembly.

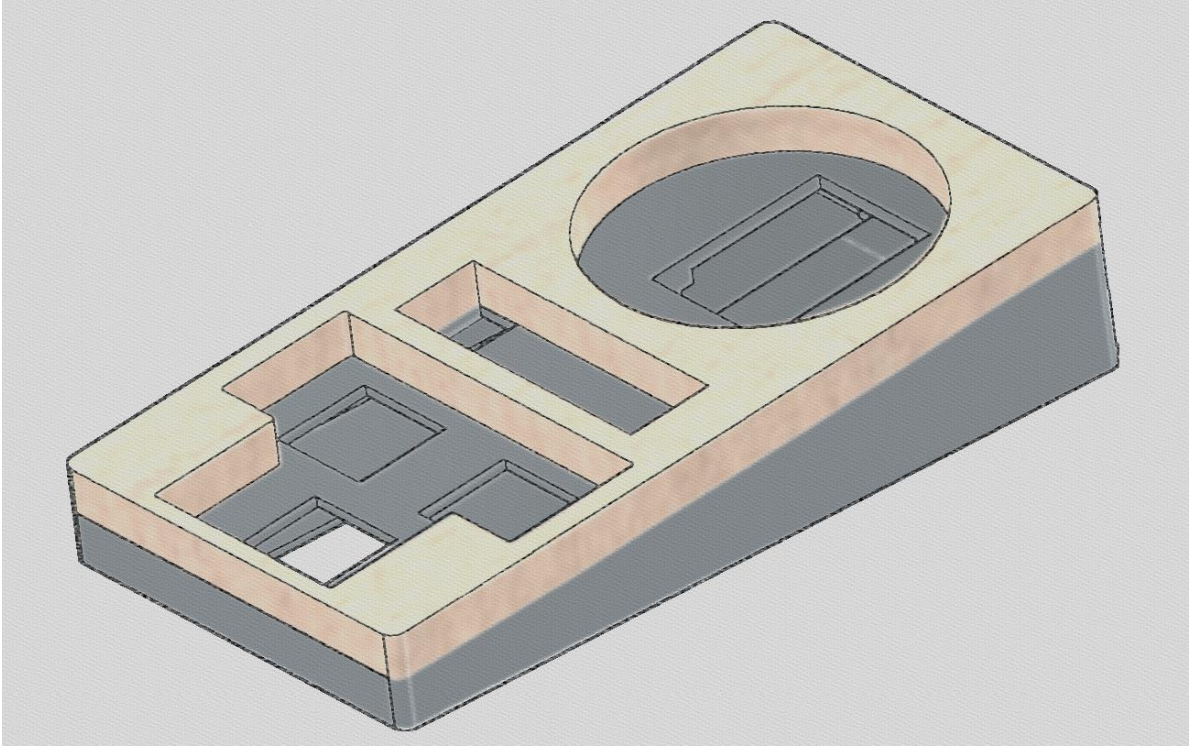

Table of Contents

Main Chassis (3D Printed)

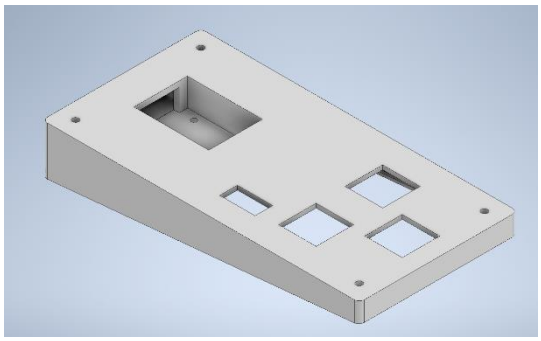

Figure 1 – A rendering of the main chassis for Béton3

Béton3's main chassis is a 3D-printed part. For best results, I would recommend using a printing service with a high-resolution printer. I have had great success with the Multijet Fusion 3D printing process, available on many sites such as Shapeways and Sculpteo. Notably, for my rendition of Béton3, I used Multijet Fusion (Not Dyed, Grey) plastic, which is generally the cheapest option on these printing sites and results in a unique rough finish that hides layers and blends with the "concrete" aesthetic reinforced by the encoder knob.

Printing

3D files for the main chassis are available on the Beton3 GitHub repository, with the filenames **betonbase.ipt** and **betonbase.stl**. If you are just printing, you'll want to download the STL file as it is compatible with most 3D printing sites (Units are in millimeters).

(Link to files)

Bottom Cover (3D Printed)

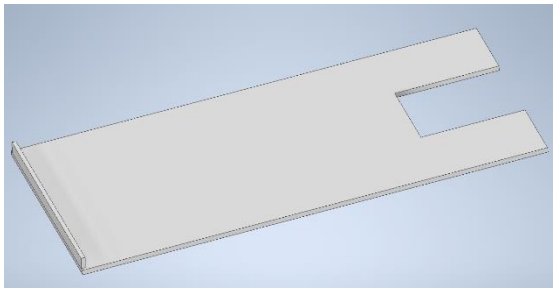

Figure 2 – A rendering of the sliding bottom cover

Béton3's sliding bottom cover is also a 3D printed part, which slides along rails shaped into the main chassis. For best results, I would recommend using a printing service with a high-resolution printer. I have had great success with the Multijet Fusion 3D printing process, available on many sites such as Shapeways and Sculpteo. Notably, for my rendition of Béton3, I used Multijet Fusion (Not Dyed, Grey) plastic, which is generally the cheapest option on these printing sites and results in a unique rough finish that hides layers and blends with the "concrete" aesthetic reinforced by the encoder knob.

You may notice that the bottom cover is not fully rectangular – this is a result of clearance issues with the frontmost switch. The small cutout allows for plenty of space to solder wires to that front switch – and don't worry, it isn't just left open like that. The gap will be covered later with a piece of foam, and is completely invisible once assembled.

If you feel strongly about this gap, you could solve this clearance issue by essentially making the main chassis taller to allow more room – I decided the extra height wasn't worth it for my own means.

Printing

3D files for the sliding cover are available on the Beton3 GitHub repository, with the filenames **betonbottom.ipt** and **betonbottom.stl**. If you are just printing, you'll want to download the STL file as it is compatible with most 3D printing sites (Units are in millimeters).

(Link to files)

Top Bezel (Laser-cut)

Next to the concrete encoder knob, Béton3's laser-cut top bezel constitutes the most distinctive aspect of the design.

The symmetrical layout of the top bezel is encoded in an Adobe Illustrator file that can be used with online laser-cutting services such as Ponoko.

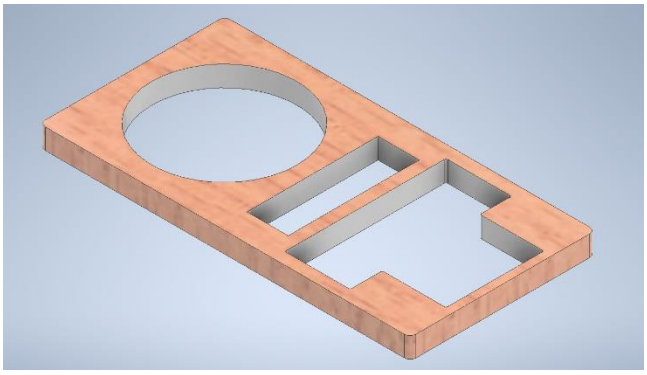

Figure 3 – A rendering of the laser-cut top bezel.

If you haven't used an online laser-cutting service, it works much the same way as an online 3D printing service and should be fairly self-explanatory.

Laser Cutting Options

Because the Adobe Illustrator file for this aspect of Béton3 is essentially a 2D file, the top bezel offers a lot of opportunity for variation and personalization.

For a standard design I would recommend anywhere between 0.24" and 0.26" thickness for the bezel.

Using Ponoko as an example, there is a wide variety of potential materials to use. You could use anything from the most basic particleboard to solid walnut hardwood (the price will reflect your choice, of course). There are also acrylic options, but they may crack using wood screws, so you might have to devise a different "attachment method", so to speak. For my rendition of Béton3, I used Ponoko's 0.26" thick "Amber Bamboo Plywood" option, which turned out great. Experiment!

(Link to file)

Concrete Knob Mold (3D-printed, 3 pieces)

Béton3's signature feature is a cast, concrete knob for the rotary encoder. In order to create the knob, I designed a specific mold that is 3D printable and splits into 3 pieces for easy casting, and features a spiral pattern along the wall of the knob for grip.

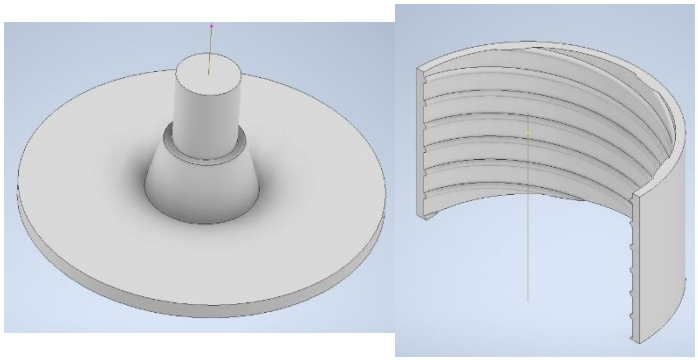

Figure 4 - The side and base of the concrete mold

Like all other 3D printed parts, I would recommend using a printing service with a high-resolution printer. I have had great success with the Multijet Fusion 3D printing process, available on many sites such as Shapeways and Sculpteo. For my mold, I used Multijet Fusion (Not Dyed, Grey) plastic, which is generally the cheapest option on these printing sites.

The actual process of casting the knob is detailed later in the Build Guide, but essentially two mold sides combine with a mold base to create the full mold.

Printing

3D files for the mold are available on the Beton3 GitHub repository, with the filenames **moldside.ipt, moldside.stl**, **moldbase.ipt, and moldbase.stl.** If you are just printing, you'll want to download the STL files as they are compatible with most 3D printing sites (Units are in millimeters).

You'll need to print **two of the moldside file**, and **one of the moldbase file**.

(Link to files)

Raw Materials

Finally, you'll need some basic raw materials to be used for final assembly. These are commodity items and brand/source isn't super important, but I have linked some examples from Amazon that I used/found useful. You may already have some of these materials. Be sure to check out the later build guides for more information on how I chose all of these, in case you want to make adjustments:

- Regular Wire – (Amazon)
- Dupont Wires (with connectors) – (Amazon)
- Soldering Iron (with solder) – (Amazon)
- Black Matte Plasti Dip (black spray paint should also work) – (Amazon)
- Electrical Tape, Masking Tape
- 1/16" thick Polycarbonate Sheet – (Amazon)
- Cement (any kind should work, Rockite is a safe and cheap choice) – (Amazon)
- Hot Glue Gun with Glue Sticks (any temp should work, high temp preferred)
- Sand (any should work as long as doesn't have too many large rocks or pieces)
- 1/16" thick Neoprene Foam (preferably with adhesive preapplied) – (Amazon)