MMU STORAGE ASSEMBLY

Version 2024-04-19

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INTRODUCTION

THE MMU STORAGE PROJECT

This project is meant to be uses with an MMU like the ERCF (https://github.com/EtteGit/EnragedRabbitProject) and aims add on seamlessly to VORON printers design wise, while keeping your filament dry.

Currently this project has alpha status and is not fully finished. Some prototypes are built, but not all features are present or fully fledged out.

For Example future revision may use a heater to dry up already wet filament, therefore high temperature tolerant materials (e.g. polycarbonate instead of acrylic panels) are used. If the project deviates from that, it might switch to using acrylic panels.

ACKNOWLEDGMENTS

This project is heavily inspired by VORON DESIGN and even uses Parts from the VORON TRIDENT project (https://github.com/VoronDesign/Voron-Trident), namely:

- STLs/Panels/bottom_panel_clip_x4.stl
- STLs/Panels/bottom_panel_hinge_x2.stl
- STLs/Panels/midspan_panel_clip_4mm_x7.stl
- STLs/Panels/corner_panel_clip_4mm_x8.stl
- STLs/Skirt/[a]_corner_baseplate_a_x2.stl
- STLs/Skirt/[a]_corner_baseplate_b_x2.stl
- STLs/Skirt/corner_a_x2.stl
- STLs/Skirt/corner_b_x2.stl

This projects also heavily relies on the INTEGRATED AUTO-REWIND SPOOL HOLDER by VINCENT GROENHUIS (https://www.thingiverse.com/thing:3781815). Without this design, this project would not be possible!

Special Thanks to the VORON TEAM and VINCENT GROENHUIS for their awesome work!

INTRODUCTION

FILE NAMING
The STL file naming convention is the same as for VORON designs, namely:

PRIMARY COLOR

Example z_joint_lower_x4.stl
These files will have nothing at the start of the filename.

ACCENT COLOR

Example [a]_tensioner_left.stl
We have added "[a]" to the front of any STL file that is intended to be printed with accent color.

QUANTITY REQUIRED

Example [a]_z_belt_clip_lower_x4.stl
If any file ends with "_x#", that is telling you the quantity of that part required to build the machine.

PART PRINTING GUIDELINES
The print guidelines are also the same as for VORON designs, namely:

3D PRINTING PROCESS
Fused Desposition Modeling (FDM)

MATERIAL
ABS

LAYER HEIGHT
Recommended: 0.2mm

EXTRUSION WIDTH
Recommended: Forced 0.4mm

INFILL TYPE
Grid, Gyroid, Honeycomb, Triangle or Cubic

INFILL PERCENTAGE
Recommended: 40%

WALL COUNT
Recommended: 4

SOLID TOP/BOTTOM LAYERS
Recommended: 5

INTRODUCTION

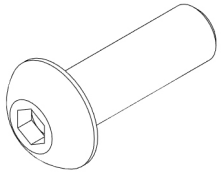
REPORTING ISSUES

Should you find an issue in the documentation or have a suggestion for an improvement please consider opening an issue on GitHub (https://github.com/Zergie/MMU-Filament-Storage/issues). When raising an issue please include the relevant page numbers and a short description; annotated screenshots are also very welcome. We periodically update the manual based on the feedback we get.

THIS IS JUST A REFERENCE

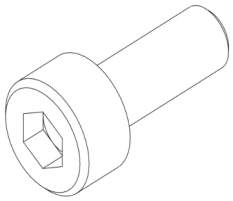
This manual is designed to be a simple reference manual. Building this project can be a complex endeavor and for that reason we recommend downloading the CAD files off our GitHub repository if there are sections you need clarification on. It can sometimes be easier to follow along when you have the whole assembly in front of you.

HARDWARE REFERENCE



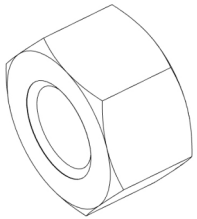
BUTTON HEAD CAP BOLT (BHCS)
Metric fastener with a domed shape head and hex drive. Most commonly found in locations where M5 fasteners are used.

ISO 7380-1



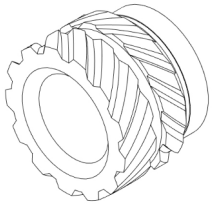
SOCKET HEAD CAP BOLT (SHCS)
Metric fastener with a cylindrical head and hex drive. The most common fastener used in this project.

ISO 4762

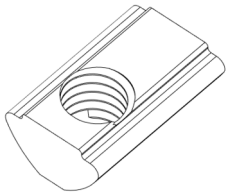


HEX NUT
Hex nuts couple with bolts to create a tight, secure joint. You'll see these used in both M3 and M5 variants throughout this guide.

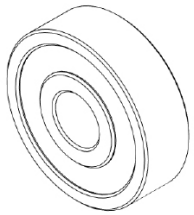
ISO 4032



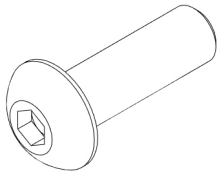
HEAT SET INSERT
Heat inserts with a soldering tip so that they melt the plastic when installed. As the plastic cools, it solidifies around the knurls and ridges on the insert for excellent resistance to both torque and pull-out.



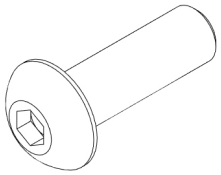
POST INSTALL T-SLOT NUT (T-NUT)
Nut that can be inserted into the slot of an aluminium profile. Used in M3, M4 and M5 variants throughout this guide. Often also called "roll-in t-nut".



608 BEARING
A ball bearing used on the auto rewind filament spools.



Adsadasd
asdasdasd



Adsadasd
asdasdasd

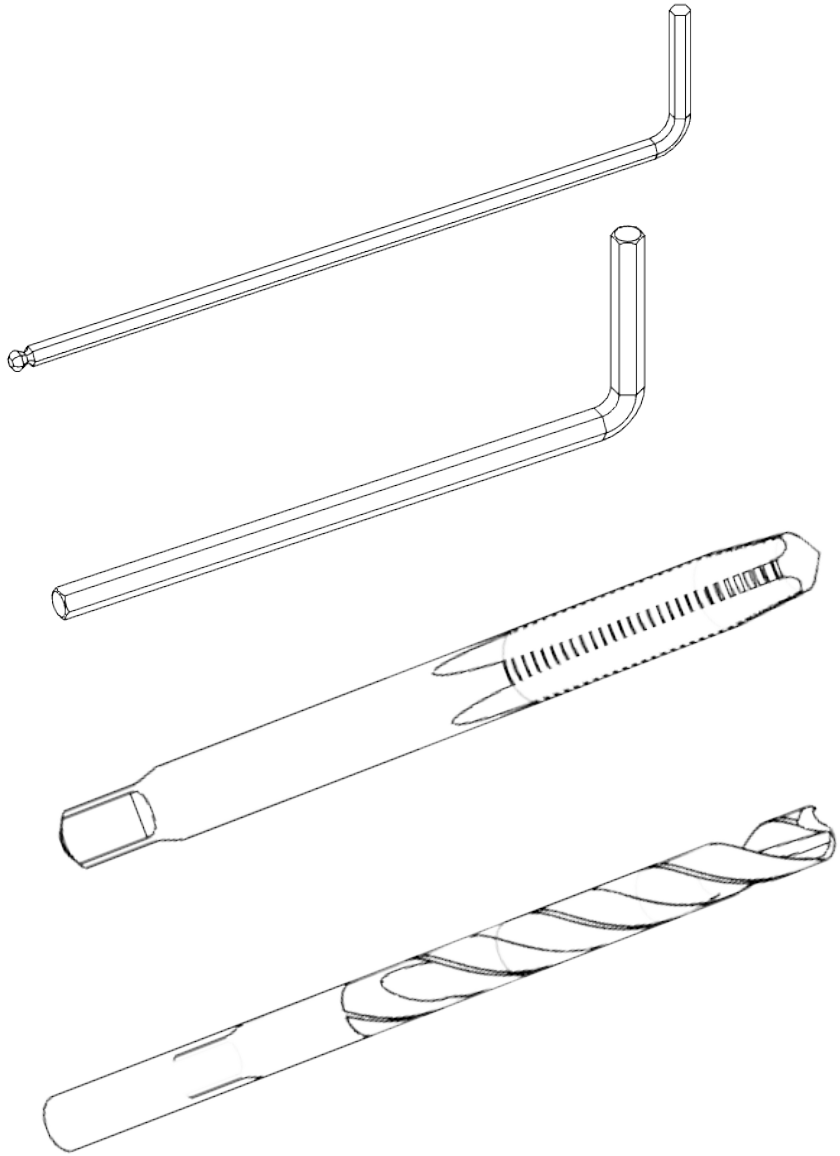
HARDWARE REFERENCE

BALL-END DRIVER
Some parts of this design require the use of a ball-end hex driver for assembly. We recommend you get a 2.0mm, 2.5mm and 3mm one.

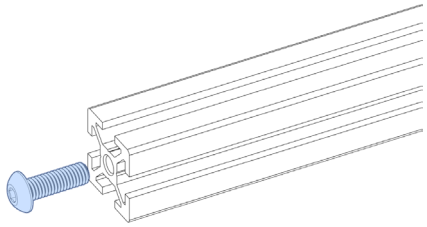
2.5MM HEX DRIVER
The 2.5mm hex driver will see a lot of use in this build. A quality driver is strongly recommended.

M5 TAP
Some extrusions need additional M5 threads. A tap with a tap handle will be needed. Be aware that for tapping aluminum you also need a lubricant for example tapping oil or WD40. Pre-tapped extrusions can also be used.

METAL DRILL BIT
Some extrusions also need access holes for the blind joints. A metal drill bit between 2-6 mm will work. Even not strictly necessary getting also a center punch can increase accuracy.



HARDWARE REFERENCE



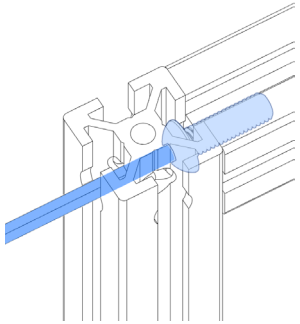
BLIND JOINT BASICS

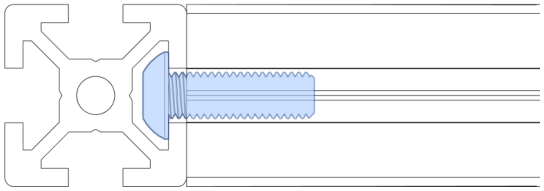
Blind Joints provide a cost effective and rigid assembly method.

The head of the BHCS is slid into the channel of another extrusion and securely fastened through a small access hole in the extrusion.

If you've never assembled one before we recommend you watch the linked guide.

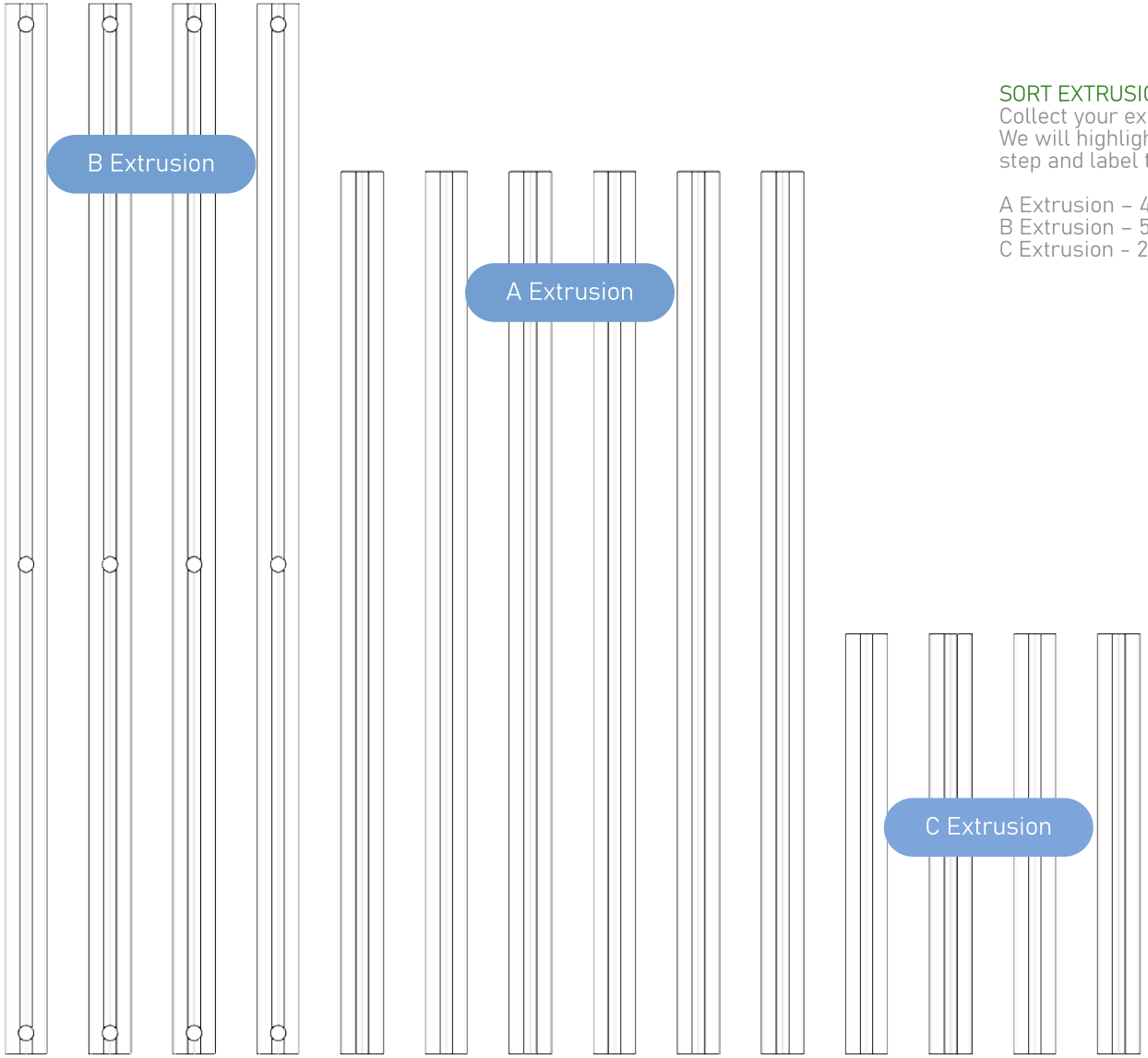
https://voron.link/onjwmcd





FRAME

FRAME

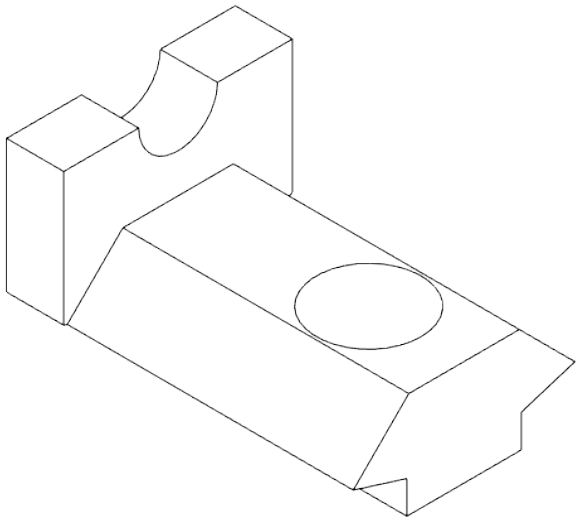


SORT EXTRUSIONS

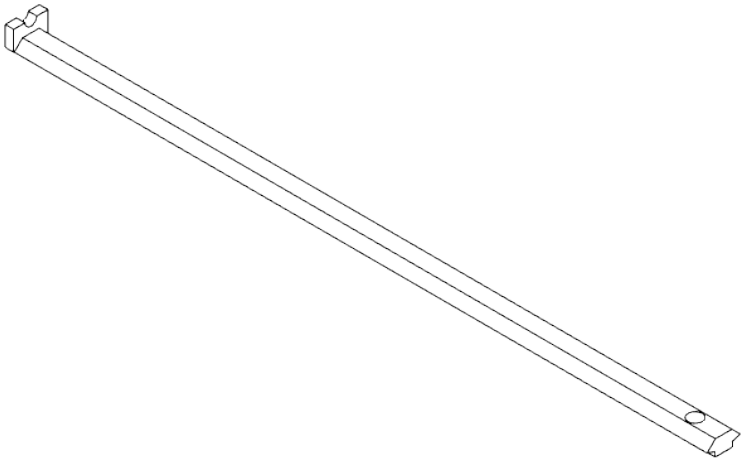
Collect your extrusions and sort them by length. We will highlight the extrusions used in each step and label them as shown on this page

A Extrusion – 420mm Length
B Extrusion – 500mm Length
C Extrusion - 200mm Length

FRAME



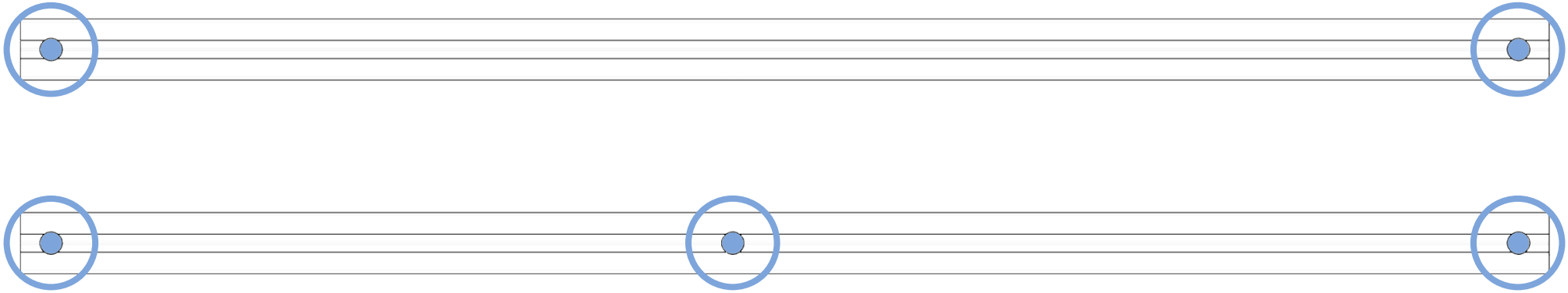
10MM Drill Guide
For blind joint access holes located at the edge of the B extrusions.



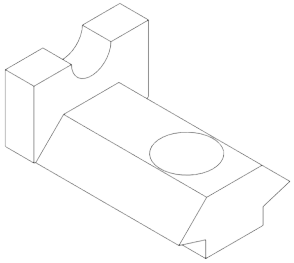
233MM Drill Guide
For the upper drawer support blind joint access holes located on the B extrusions.

FRAME

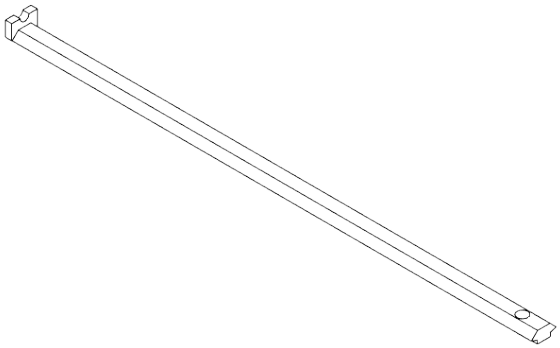
B Extrusion



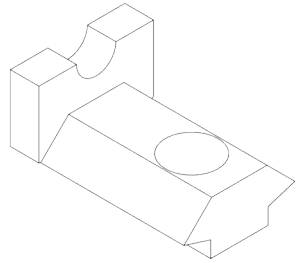
DRILL ACCESS HOLES
Drill access holes for the blind joint 10mm from the edge of the extrusion.



DRILL ACCESS HOLES
Drill access holes for the blind joint 233mm from the left edge of the extrusion



DRILL ACCESS HOLES
Drill access holes for the blind joint 10mm from the edge of the extrusion.



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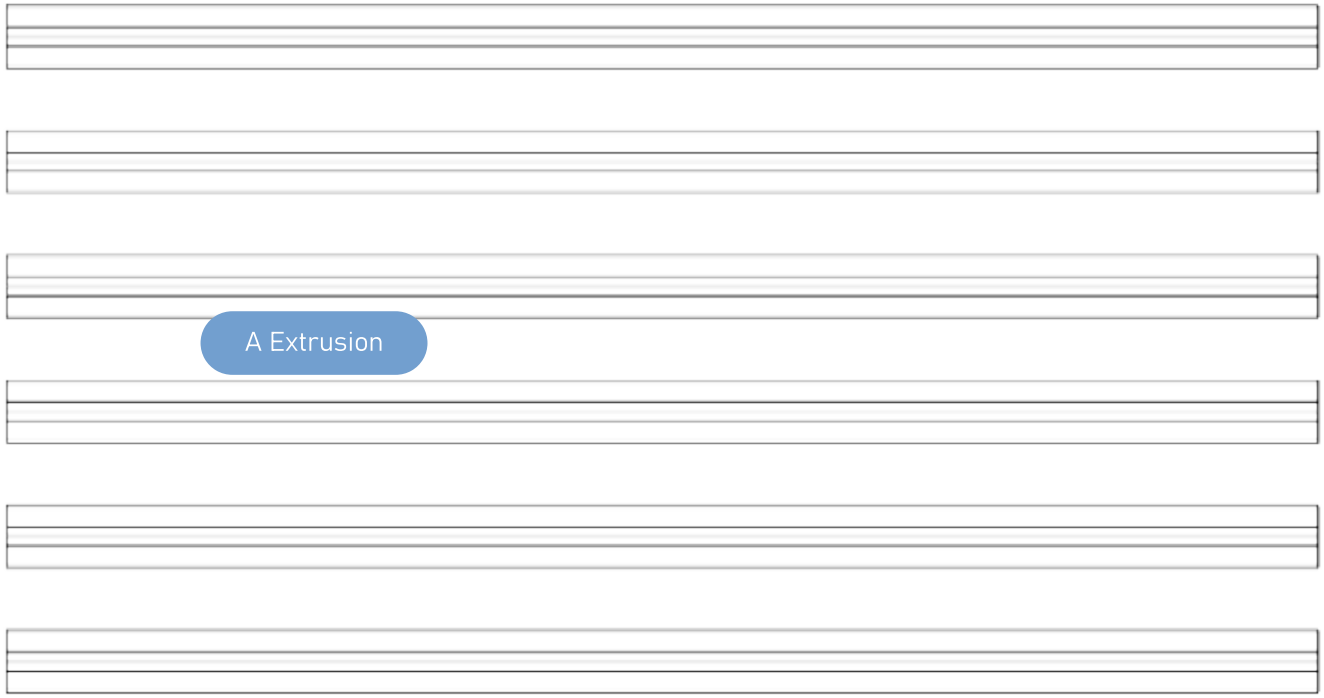
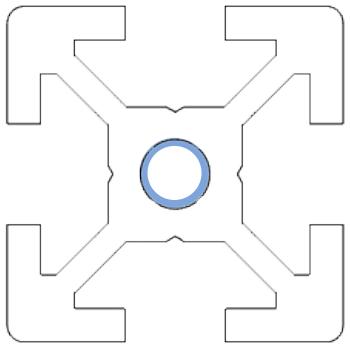
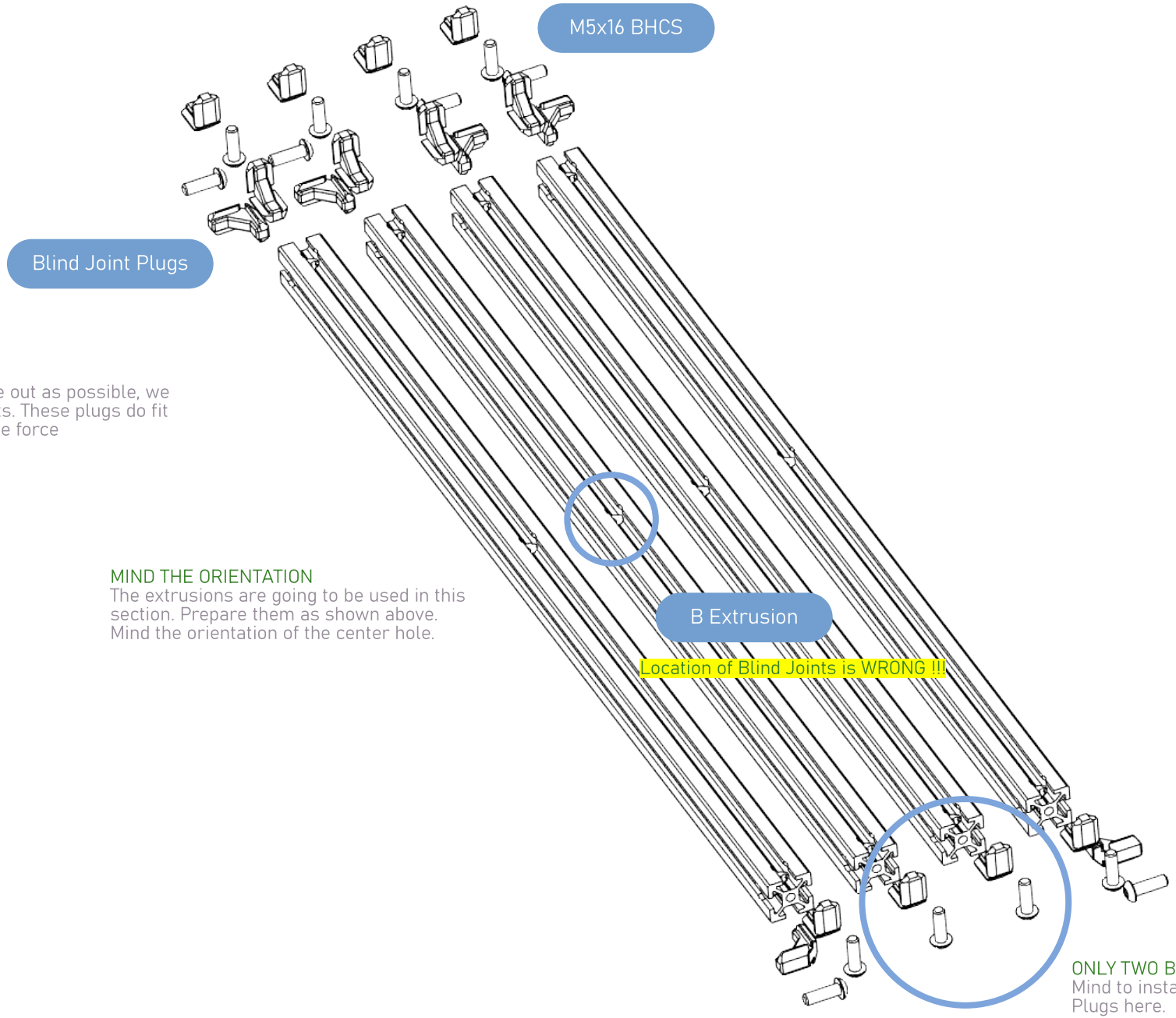




TAP M5
Tap both ends of the extrusion for a M5 screw.

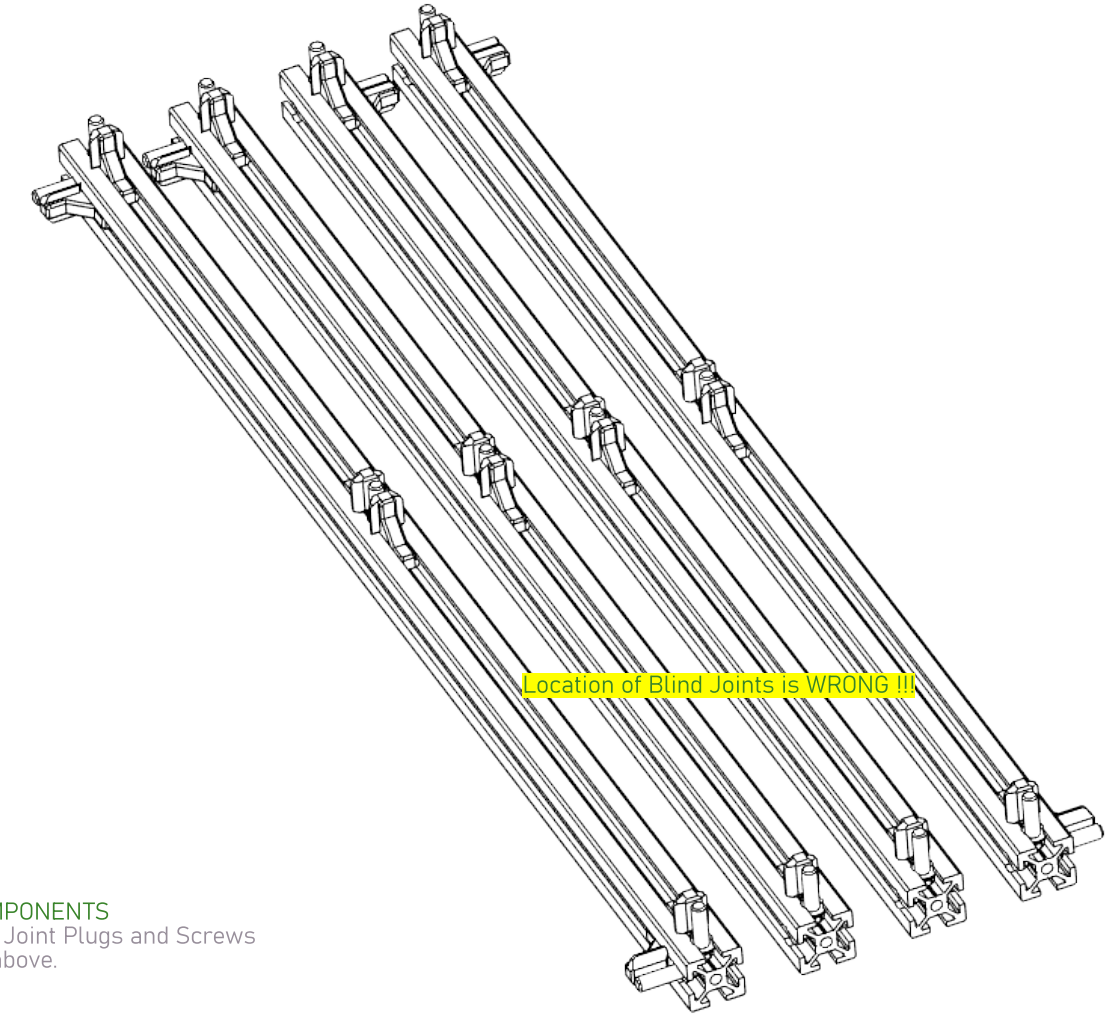
FRAME



BLIND JOINT PLUGS
To keep as much moisture out as possible, we need to plug all blind joints. These plugs do fit very tightly and need some force

MIND THE ORIENTATION
The extrusions are going to be used in this section. Prepare them as shown above. Mind the orientation of the center hole.

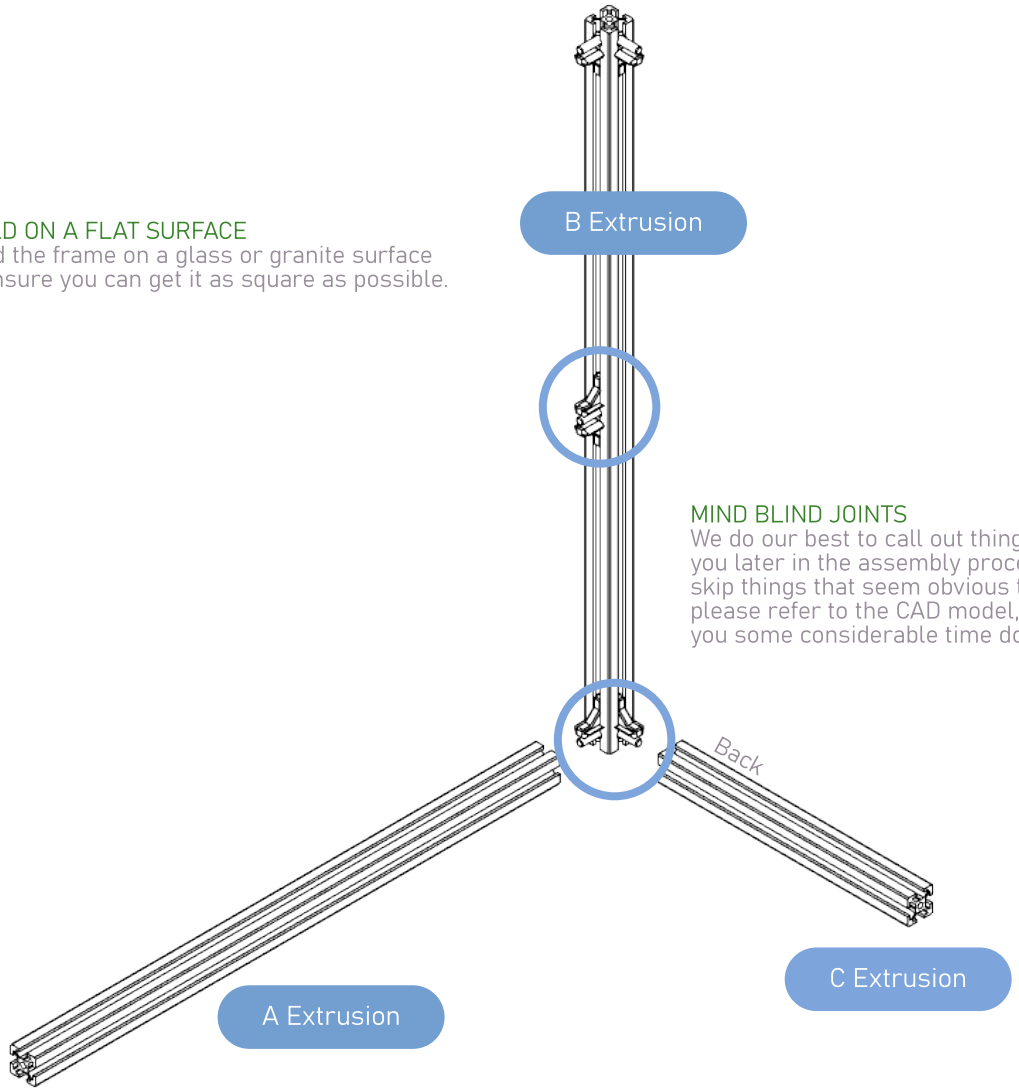
ONLY TWO BLIND JOINT PLUGS
Mind to install only two Blind Joint Plugs here.



ALIGN COMPONENTS
Align Blind Joint Plugs and Screws as shown above.

FRAME

BUILD ON A FLAT SURFACE
Build the frame on a glass or granite surface to ensure you can get it as square as possible.

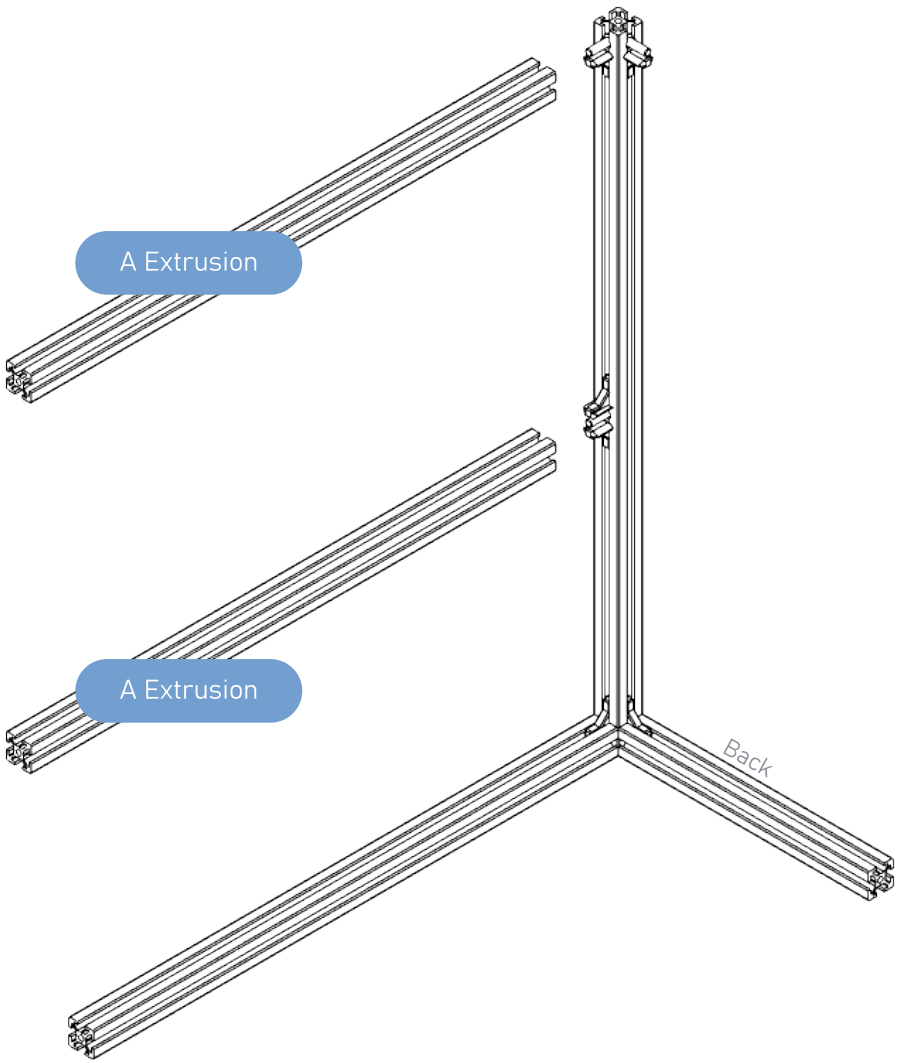


MIND BLIND JOINTS
We do our best to call out things that may bite you later in the assembly process but may skip things that seem obvious to us. If in doubt please refer to the CAD model, it might save you some considerable time down the road.

FIRST BLIND JOINT
This design relies on blind joints to assemble the frame. We outlined the basics of blind joints on page 7
.
If you've never assembled one before we recommend you watch the linked guide.

https://voron.link/onjwmcd

FRAME



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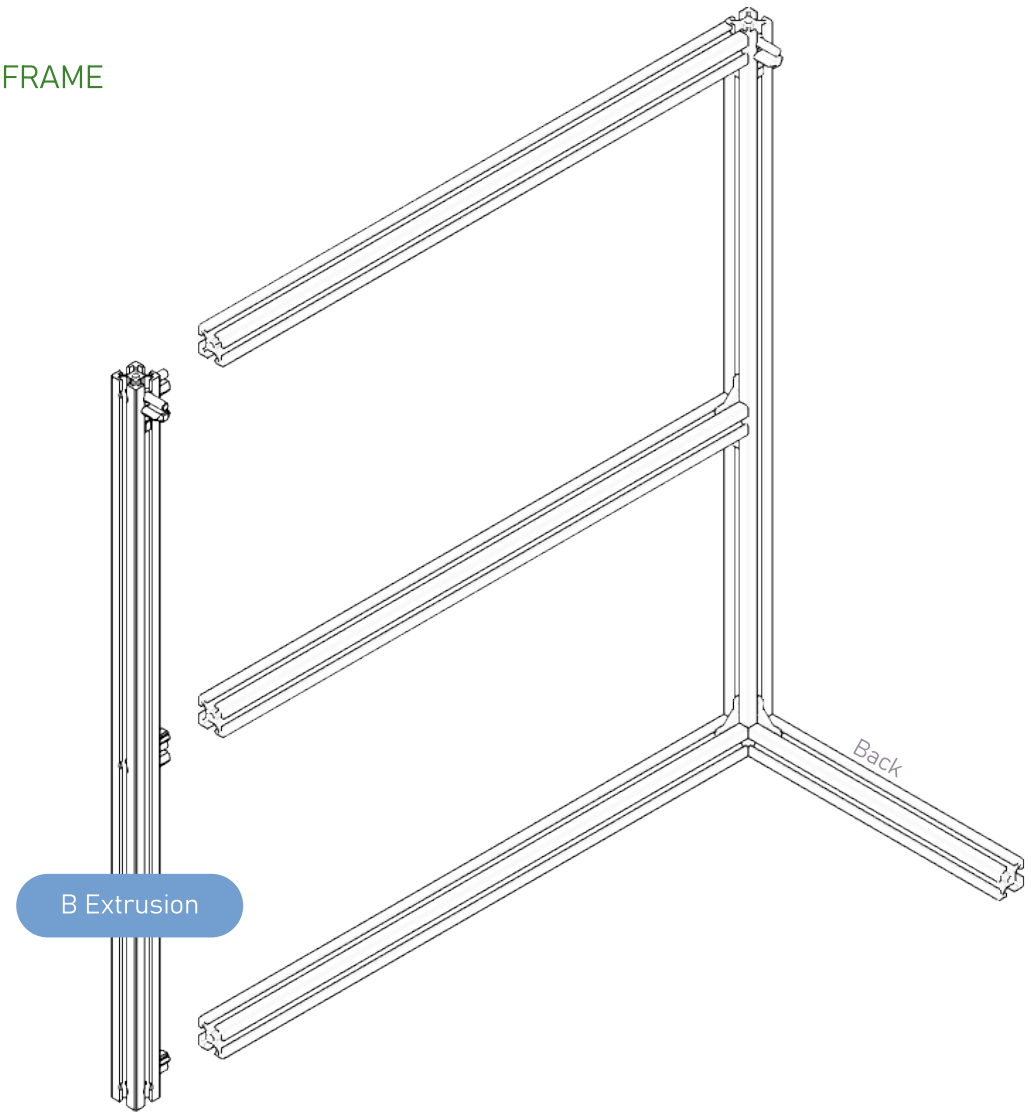

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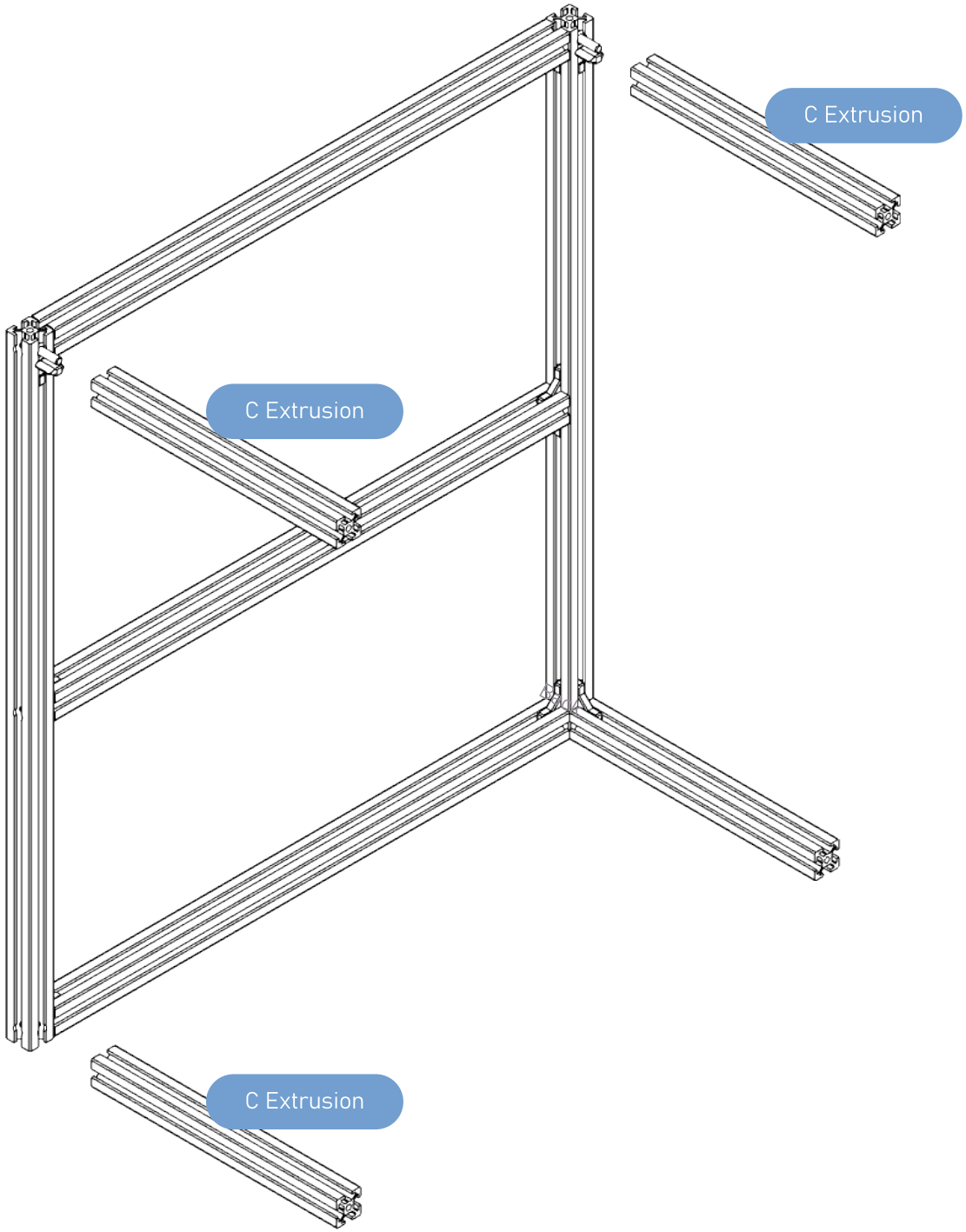

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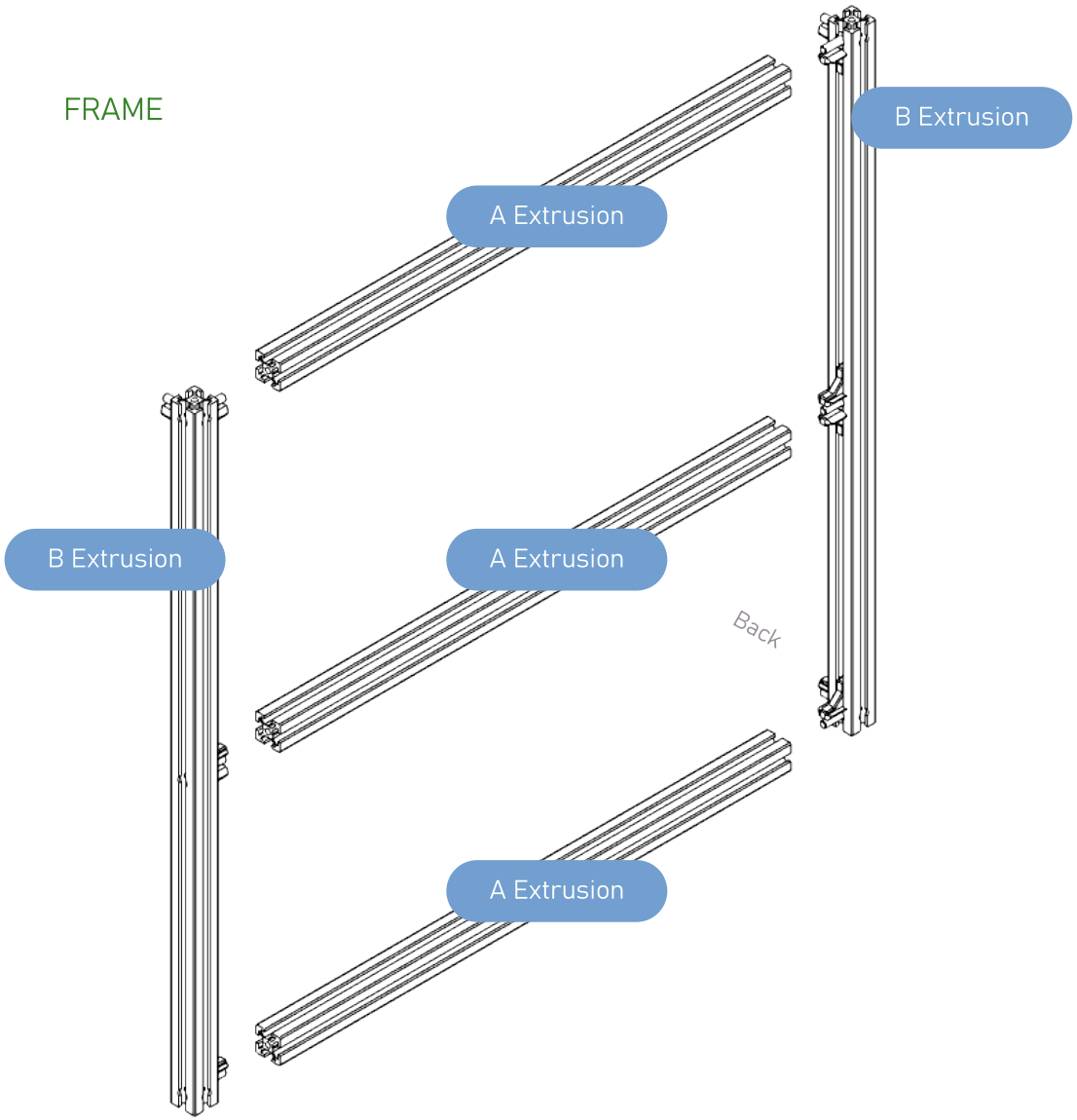
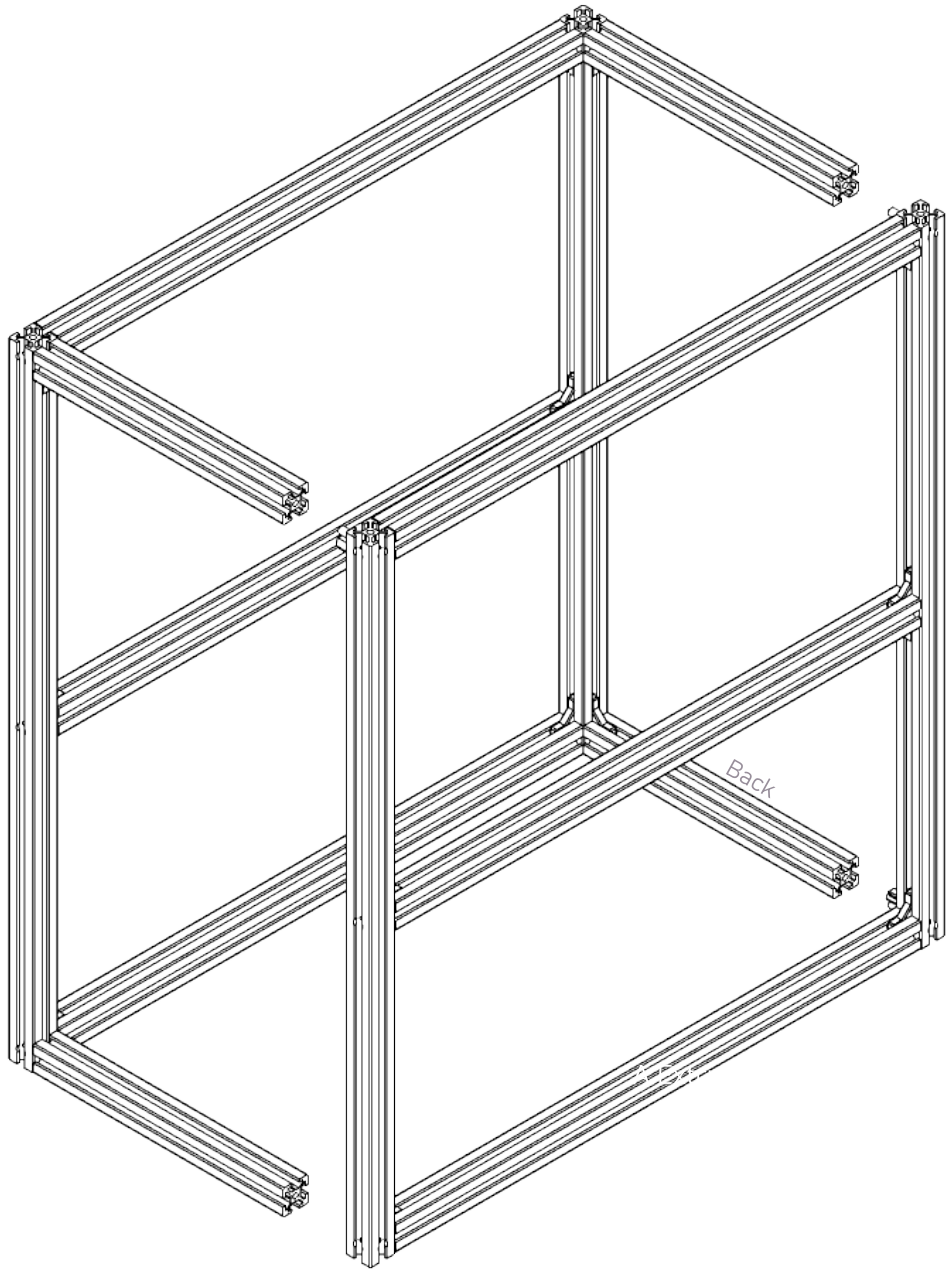

B Extrusion
A Extrusion
B Extrusion
A Extrusion
Back
A Extrusion

FRAME



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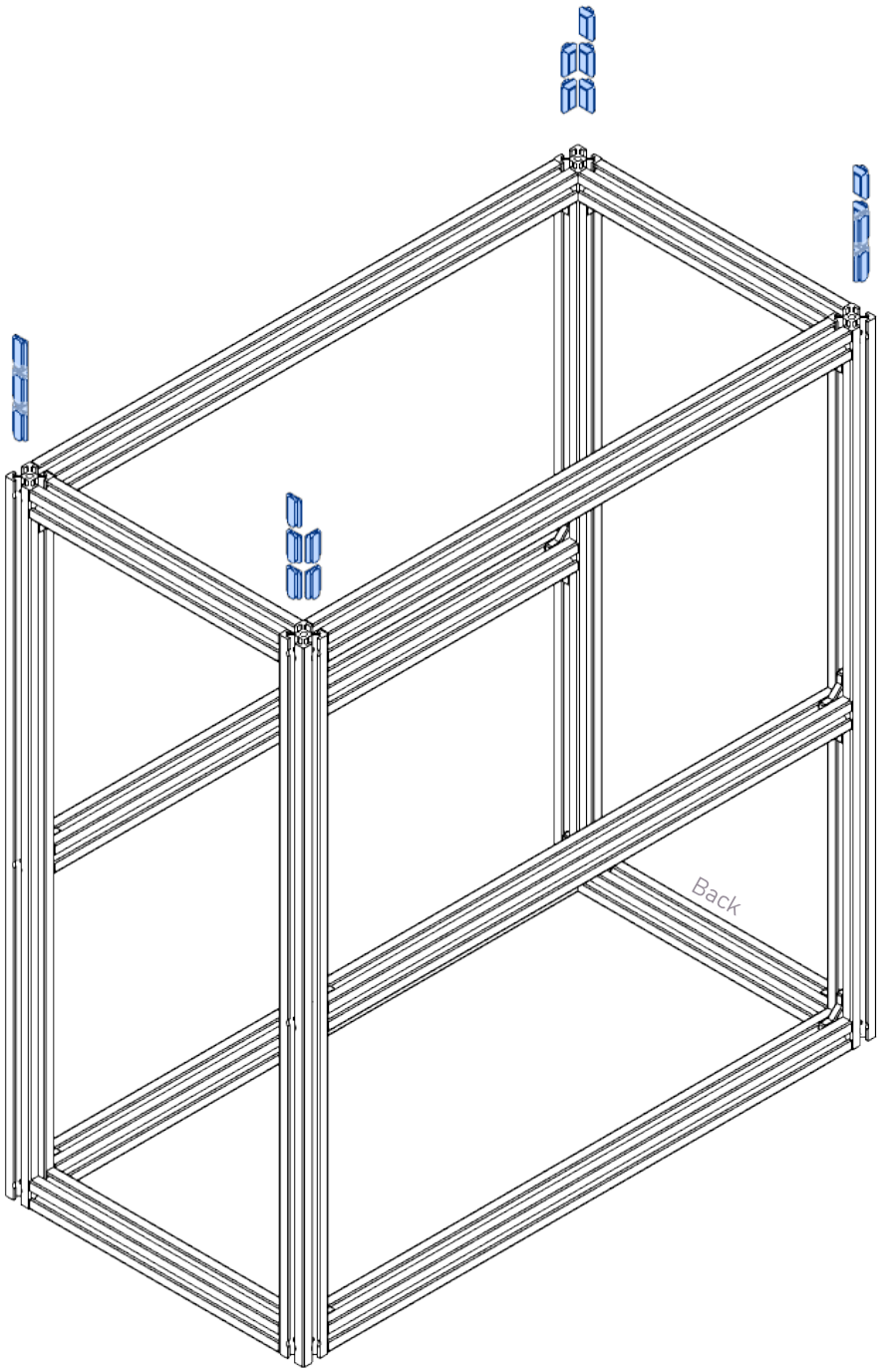

COVER BLIND JOINT ACCESS

Cover up all Blind Joint screws with the Blind Joint Plates.

FRAME

MMU STORAGE

WEBSITE

GITHUB
https://github.com/Zergie/MMU-Filament-Storage