MICRON

Assembly Manual

Small package. Big fun. Micron.

VERSION 2021.09.15

TABLE OF CONTENTS

MICRON

This printer wouldn't have happened if it were not for all the hard work from the following users on the Voron Discord and Doom Discord

- TheWarolf
- L.e.o.p.a.r.d
- deepfriedheroin
- faithblinded
- zruncho
- Finn
- DocSparky
- gfunnymoney

STL FILE KEY

The STL files naming convention is the same as for VORON designs, namely :

PRIMARY COLOR

Example z_drive_main_a_x2.stl
These files will have nothing at the start of the filename.

ACCENT COLOR

Example [a]_z_motor_mount_a_x2.stl
These files will have ‘‘[a]’’ to the front to mention that they are intended to be printed with an accent color.

QUANTITY REQUIRED

Example [a]_z_motor_mount_a_x2.stl
If a file ends with ‘‘_x#’’, that is telling you the quantity of that part required to build this system..

PRINT GUIDELINES

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

FDM MATERIAL

As with the standard Voron Design printers, Its is recommended to print these parts in ABS.

LAYER HEIGHT

Recommended : 0.2mm

EXTRUSION WIDTH

Recommended : Forced 0.4mm

INFILL PERCENTAGE

Recommended : 40%

INFILL TYPE

Grid, Gyroid, Honeycomb, Triangle or Cubic.

WALL COUNT

Recommended : 4

SOLID TOP/BOTTOM LAYERS

Recommended : 5

SUPPORTS REQUIRED

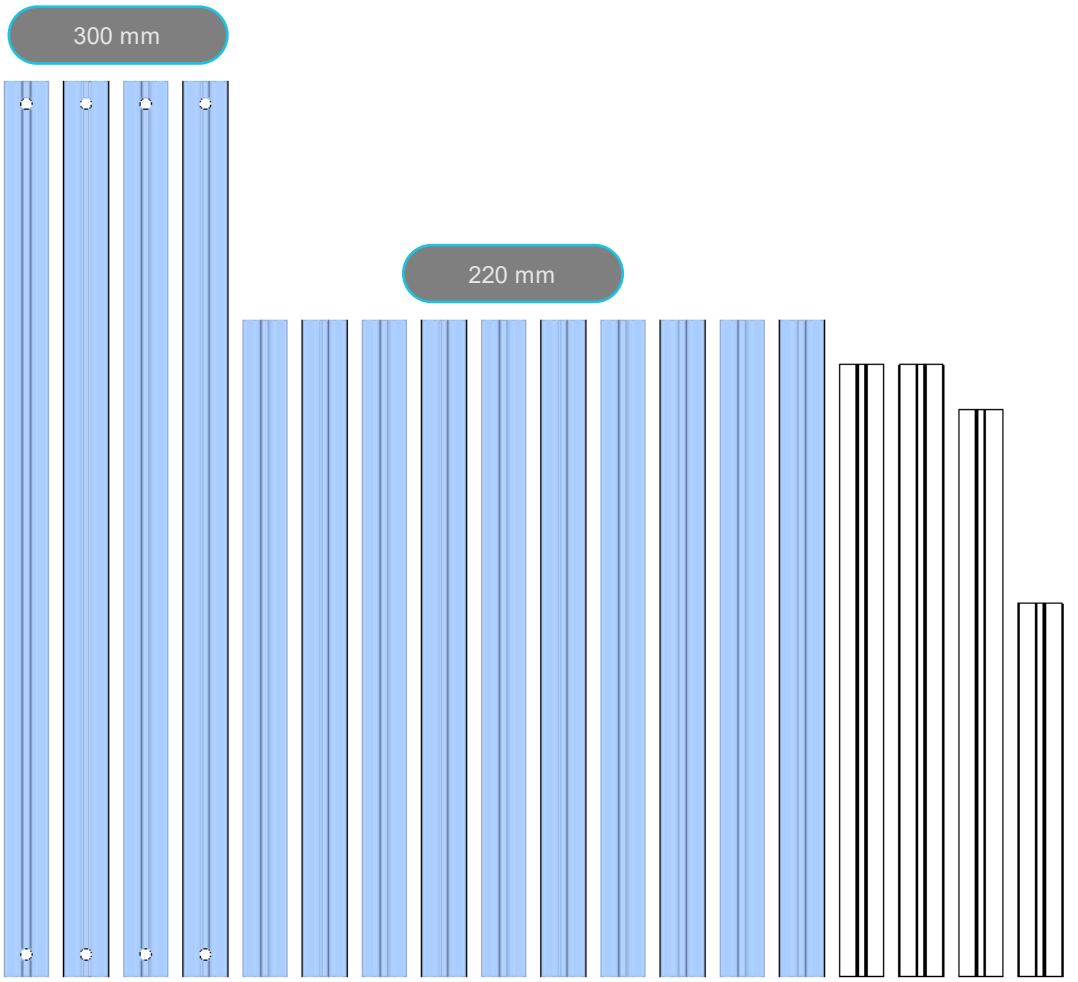
None at all.

HOW TO GET HELP

If you need assistance with your build you can head over the DOOMCUBE Discord group and post your questions (typically in the « micron » channel). It is the primary development channel involving the Micron! You can also check the Github page for the latest releases.

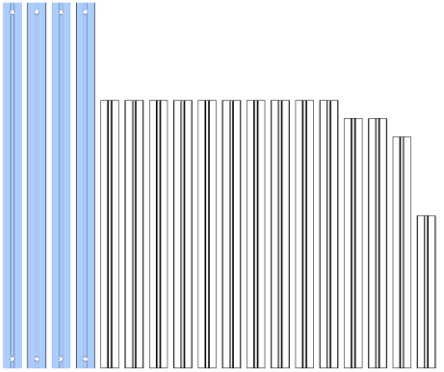
https://discord.gg/EAANfEk25f

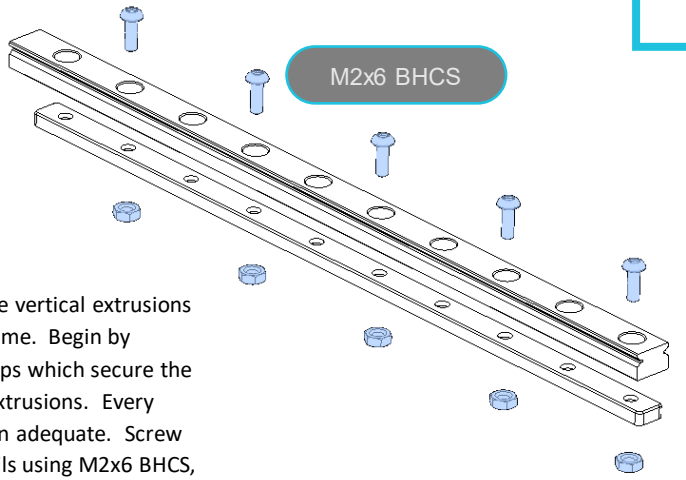
https://github.com/hartk1213/Micron

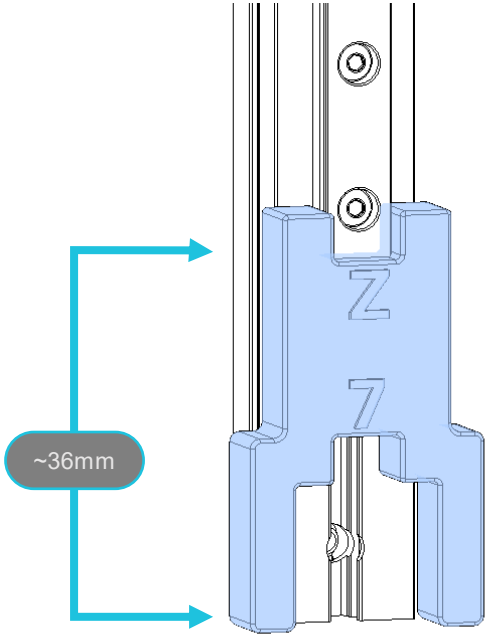


GETTING EXTRUSIONS TOGETHER

Separate the extrusions you're going to need for this section of the build. We've laid out all the parts you should have and highlighted the ones that will be used in the following sections.





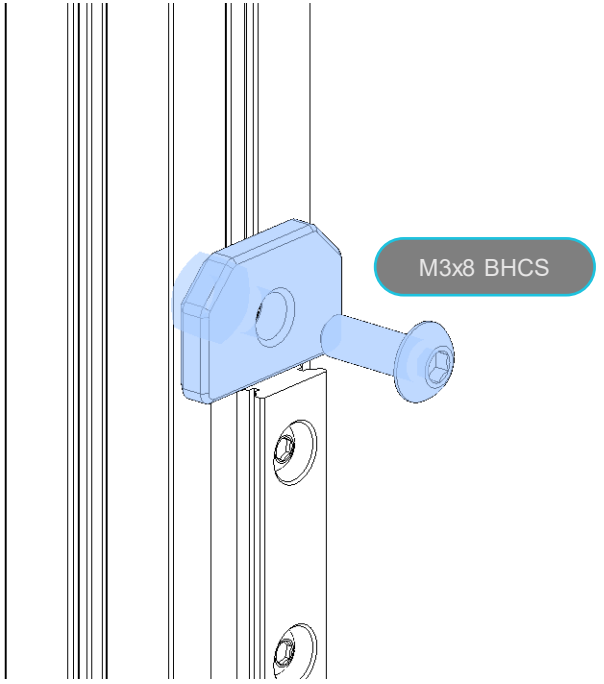


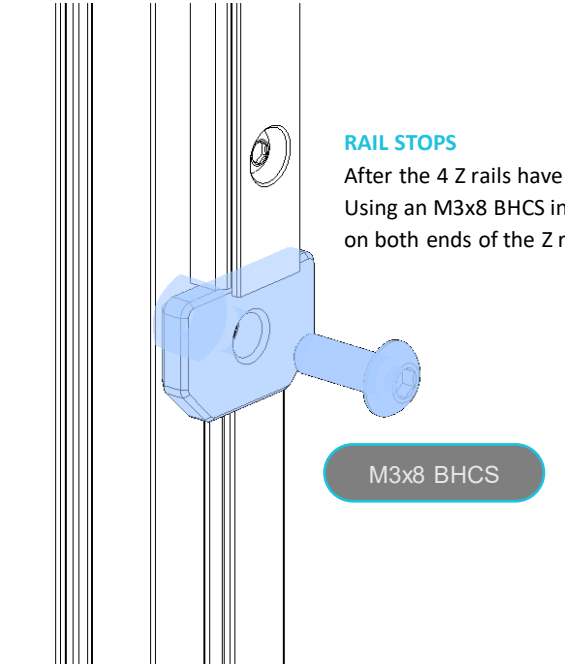
Z RAILS

The Z rails attach to the vertical extrusions before building the frame. Begin by loading the M2 nut traps which secure the Z rails to the vertical extrusions. Every other hole is more than adequate. Screw the nut traps to the rails using M2x6 BHCS, leaving them loose enough so they may be easily slid into place on the extrusions. We will align and secure them in the next step.

Z RAILS ALIGNMENT

Stand up one of the vertical extrusions and use the printed rail alignment tool as shown to align the bottom of the rail. It should end up ~36mm from the bottom of the vertical extrusion. Use a second rail alignment tool on the upper half of the rail, using the section marked ‘7’, to properly center the rail on the extrusion. Repeat this process for all 4 Z extrusions and rails.



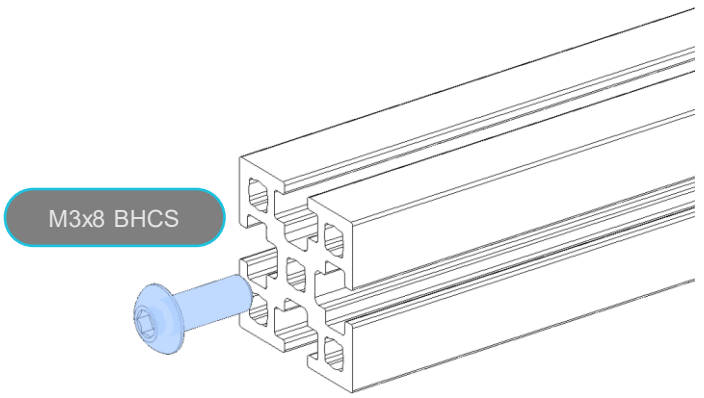


RAIL STOPS

After the 4 Z rails have been installed. Using an M3x8 BHCS install the rail stops on both ends of the Z rails.

BLIND JOINTS

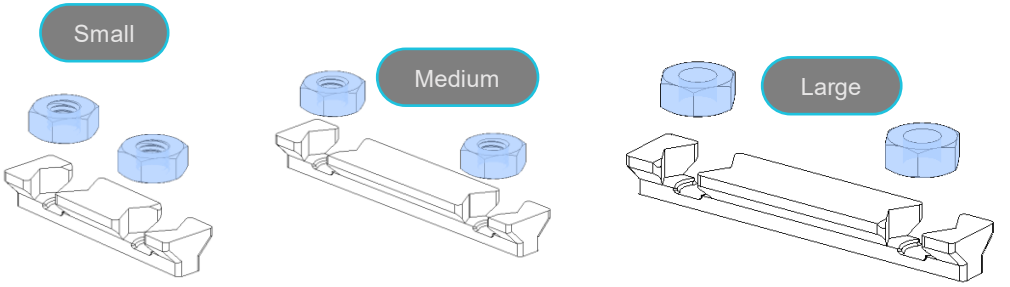
BLIND JOINT ASSEMBLY DESCRIPTION.



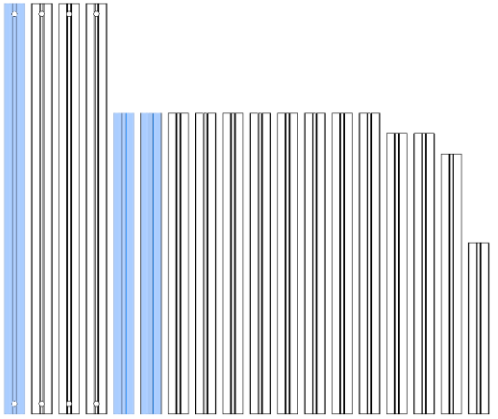
NO DROP NUTS

To make it easier to align the preloaded nuts, you can use the printed holders referred to from now on as NDN that keep them in the correct spacing. Note that there are 3 different sizes, the manual will call out where they can be helpful.

Large – 21.7mm
Medium – 12mm
Small – 10mm

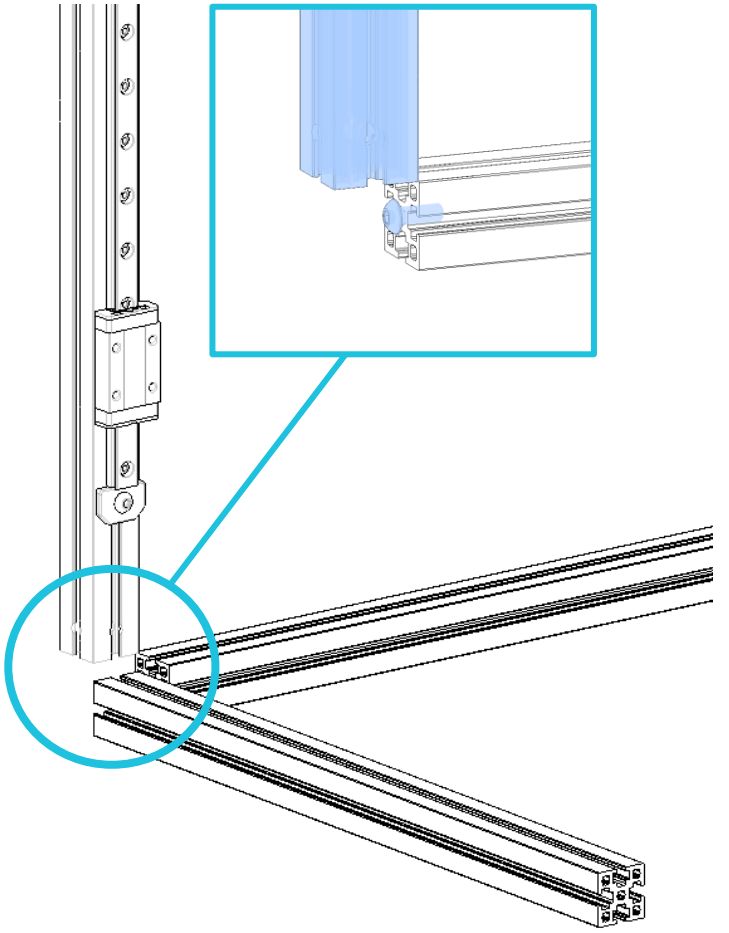


ASSEMBLE FIRST CORNER



ASSEMBLE FIRST CORNER

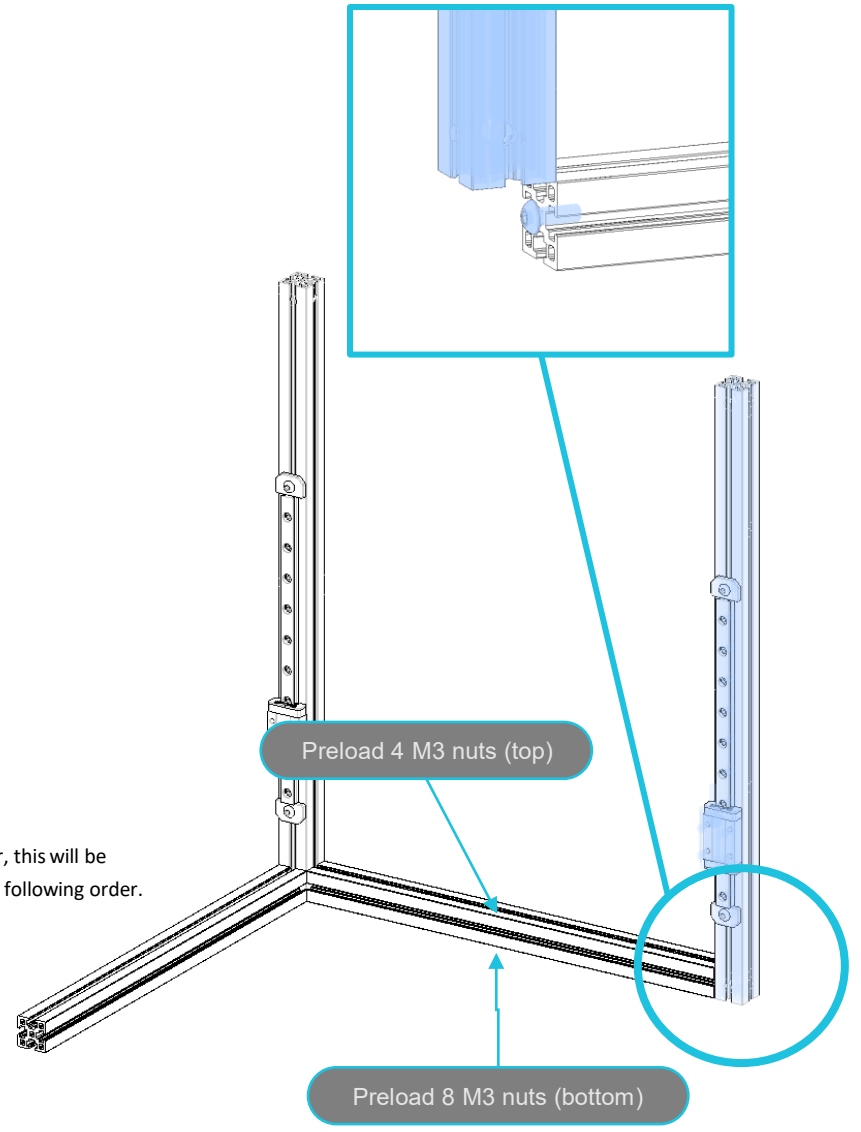
S



ASSEMBLE SECOND CORNER

SECOND CORNER

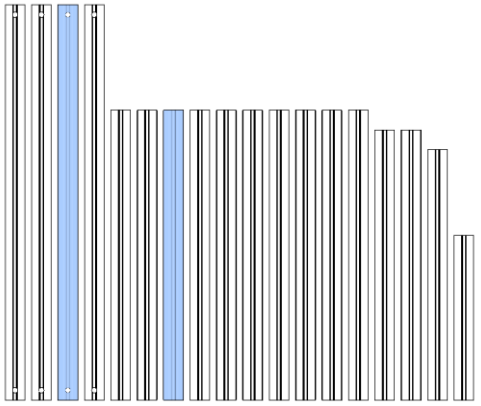
Before attaching the 2nd vertical extrusion, you need to preload 4 m3 nuts on top, and 8 m3 nuts on the bottom of the extrusion.



PRELOADING NUTS

If using the printed nut holder, this will be inserted on the bottom in the following order.

- Single Nut
- Large NDN
- Single Nut
- Single Nut
- Large NDN
- Single Nut



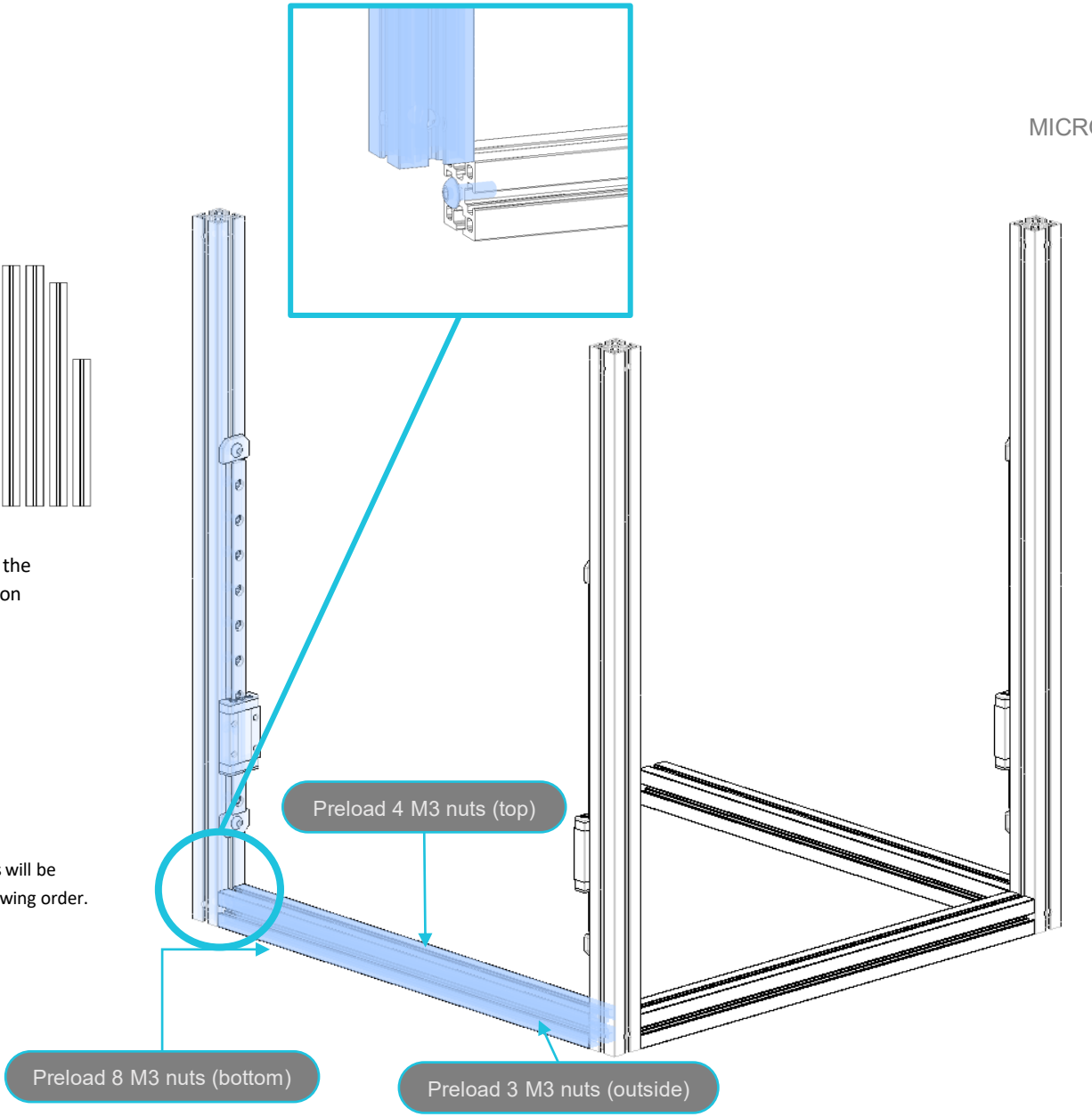
THIRD CORNER

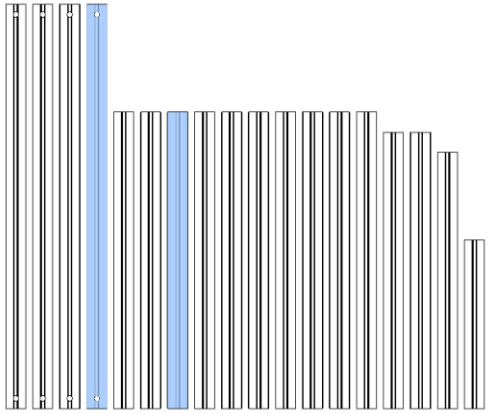
In the same way to the previous step, the horizontal extrusion needs 4 m3 nuts on top and 8 m3 nuts on the bottom. In addition, you need 3 m3 nuts on the outside of the extrusion as well.

PRELOADING NUTS

If using the printed nut holder, this will be inserted on the bottom in the following order.

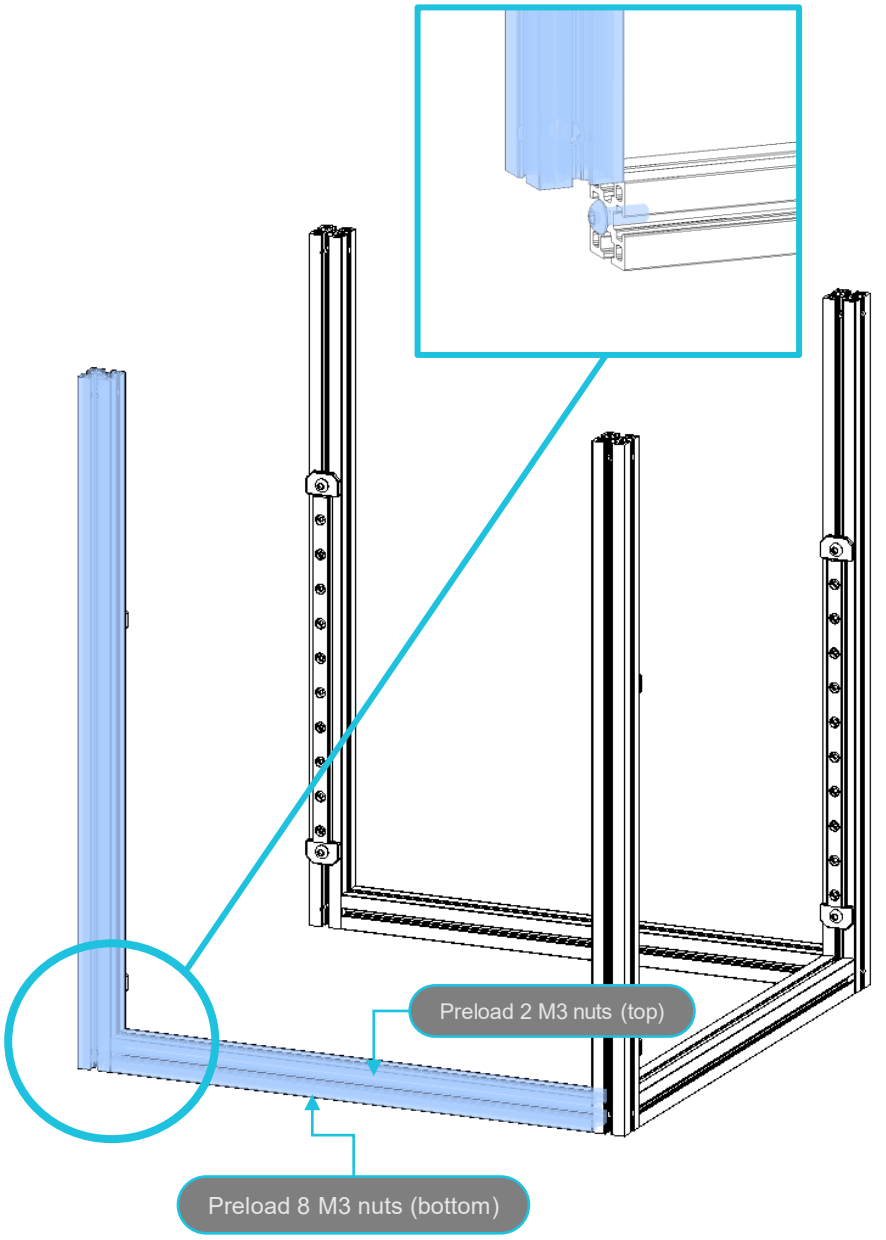
- Small NDN
- 4 Loose M3 Nuts
- Small NDN





FOURTH CORNER

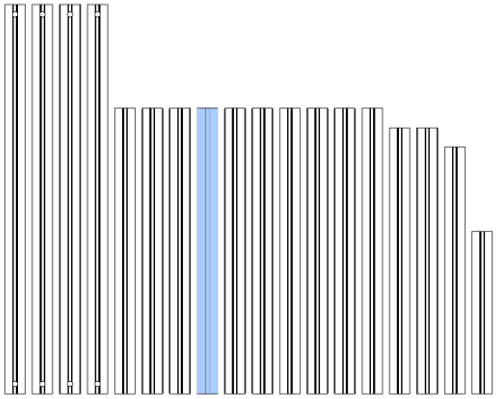
The final vertical extrusion will now be installed along with the front bottom extrusion. The front extrusion needs 8 m3 nuts in the bottom of it and 2 on top



PRELOADING NUTS

If using the printed nut holder, this will be inserted on the bottom in the following order.

- Single Nut
- Large NDN
- Single Nut
- Single Nut
- Large NDN
- Single Nut



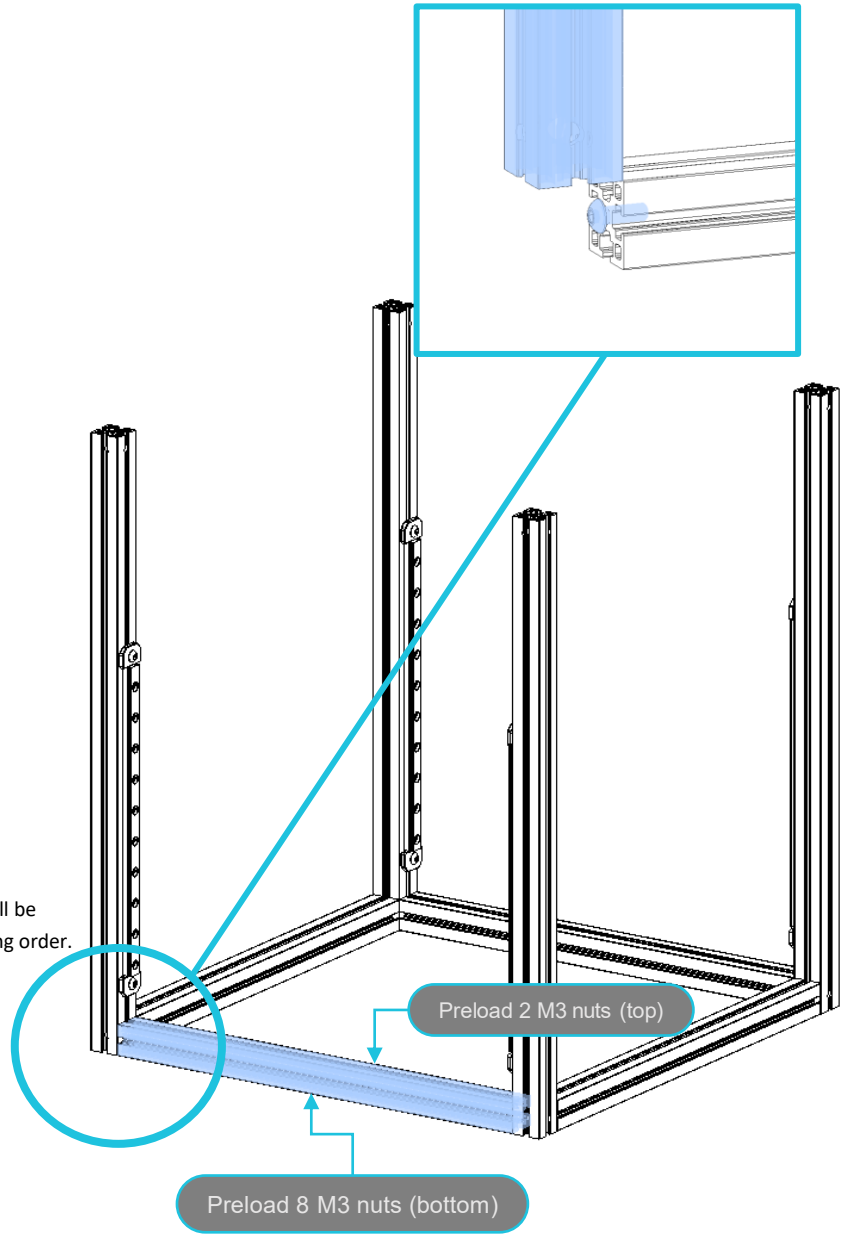
FINAL LOWER EXTRUSION

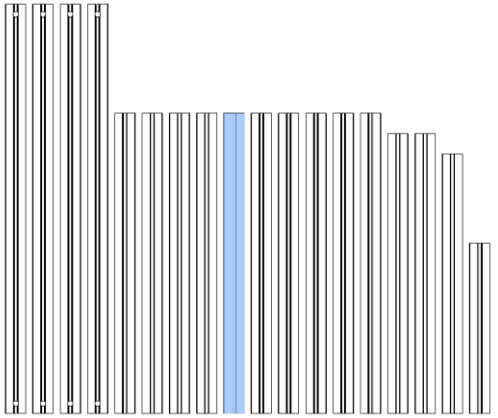
The final lower extrusion which is located on the side needs 3 on the outside, 4 on top, and 8 on the bottom

PRELOADING NUTS

If using the printed nut holder, this will be inserted on the bottom in the following order.

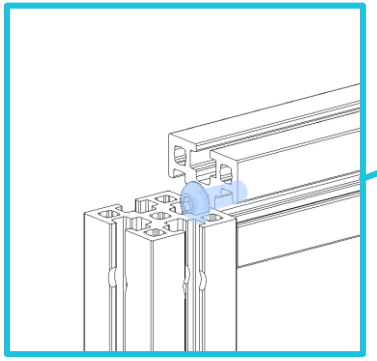
- Small NDN
- 4 Loose M3 Nuts
- Small NDN

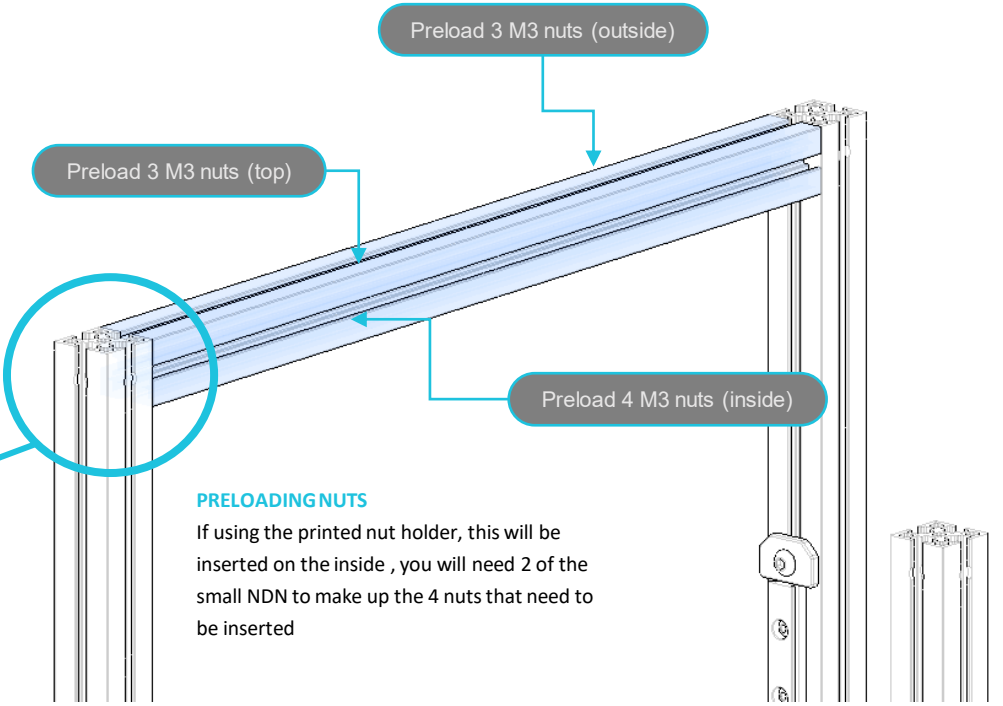




TOP OF FRAME

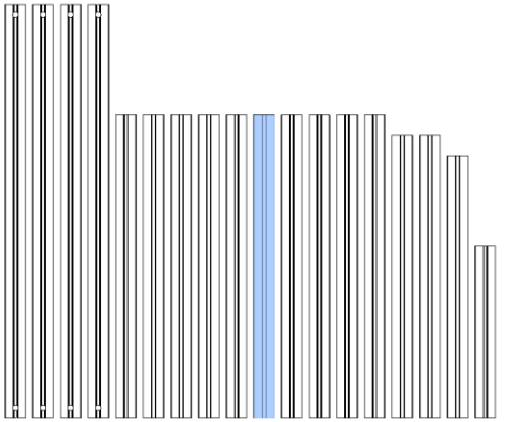
The first of the top extrusions needs 4 nuts on the inside, 3 on top, and 3 on the outside.

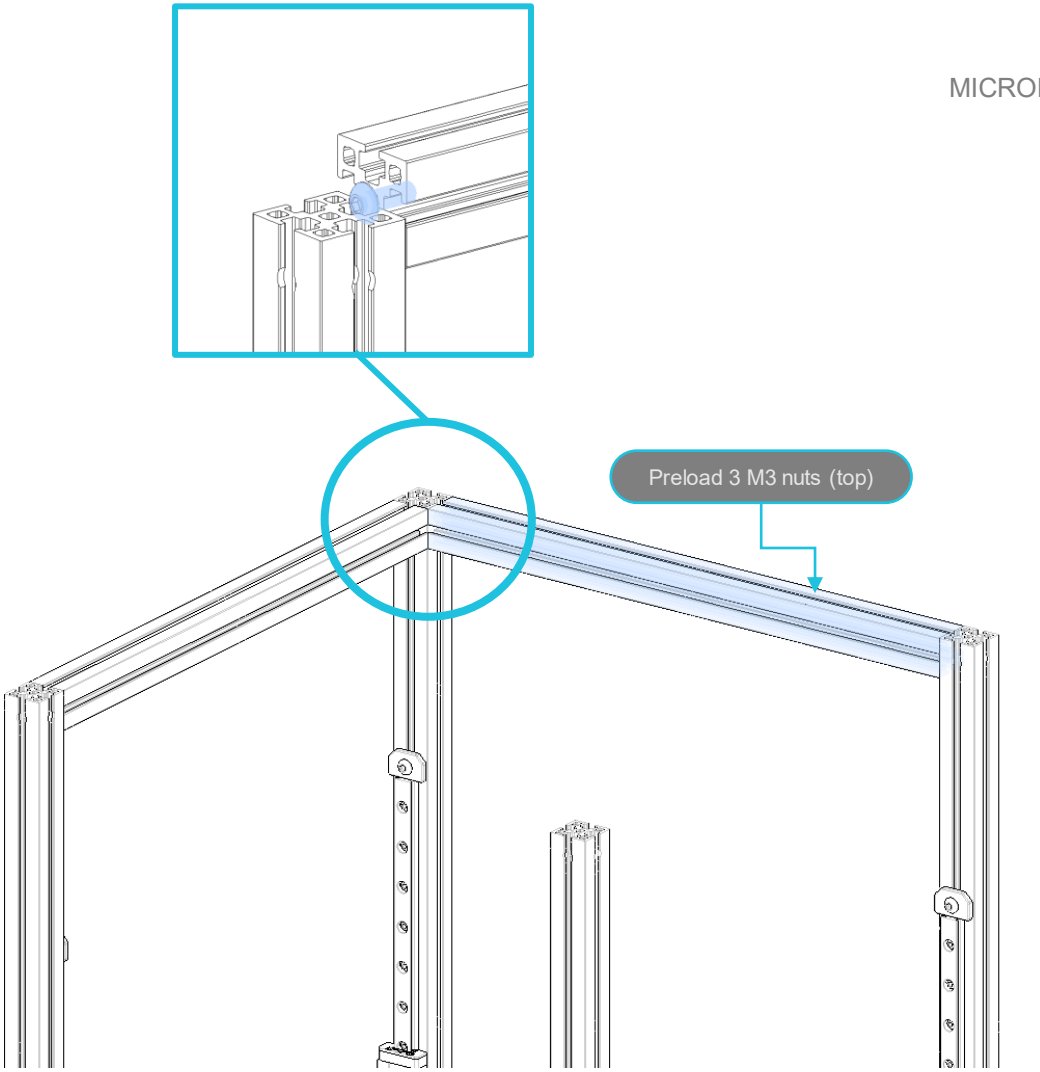




PRELOADING NUTS

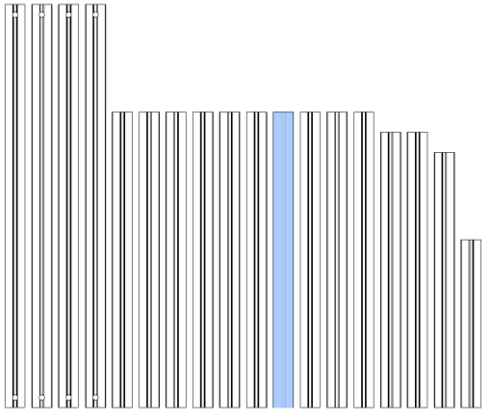
If using the printed nut holder, this will be inserted on the inside , you will need 2 of the small NDN to make up the 4 nuts that need to be inserted





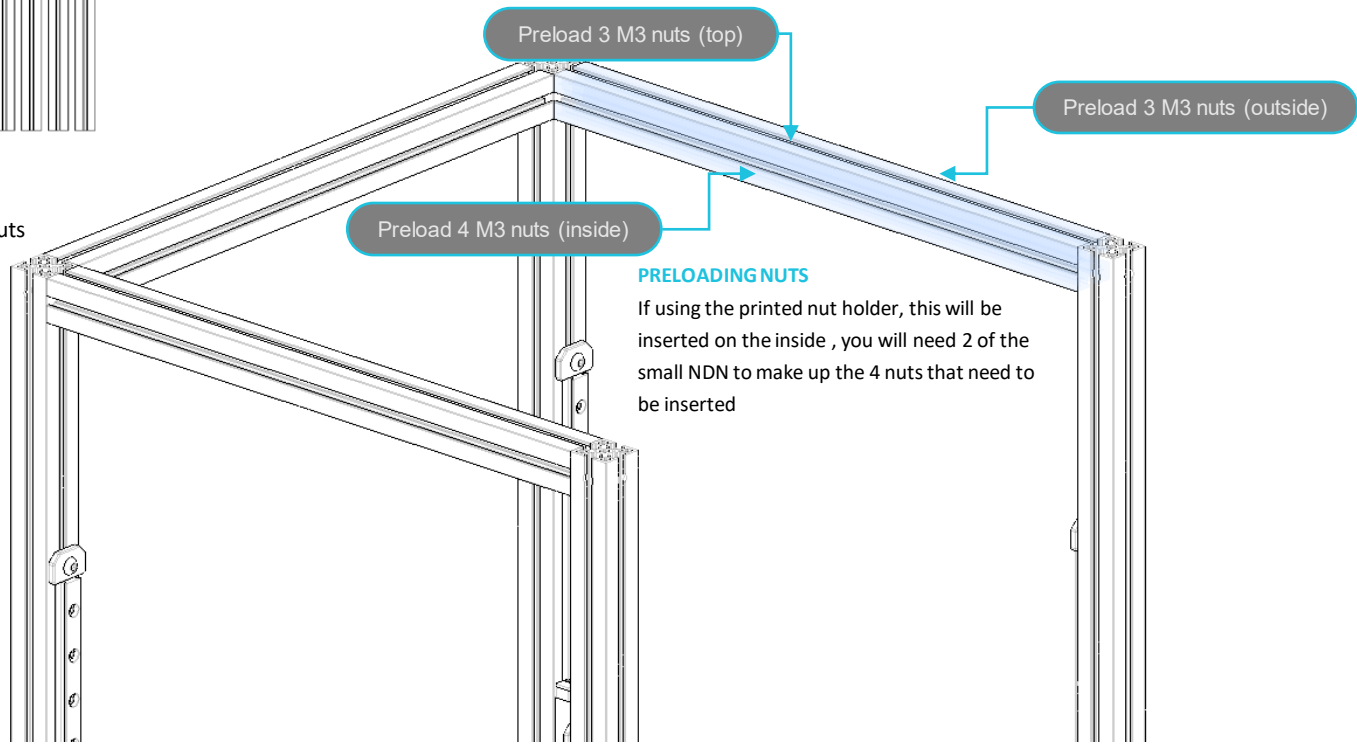
TOP OF FRAME

The rear of the top extrusions needs only 3 nuts in the top of it



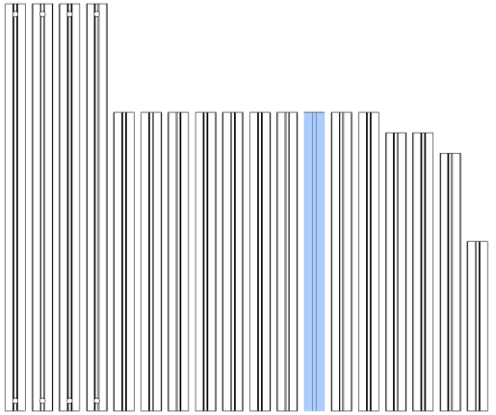
TOP OF FRAME

The first of the top extrusions needs 4 nuts on the inside, 3 on top, and 3 on the outside.



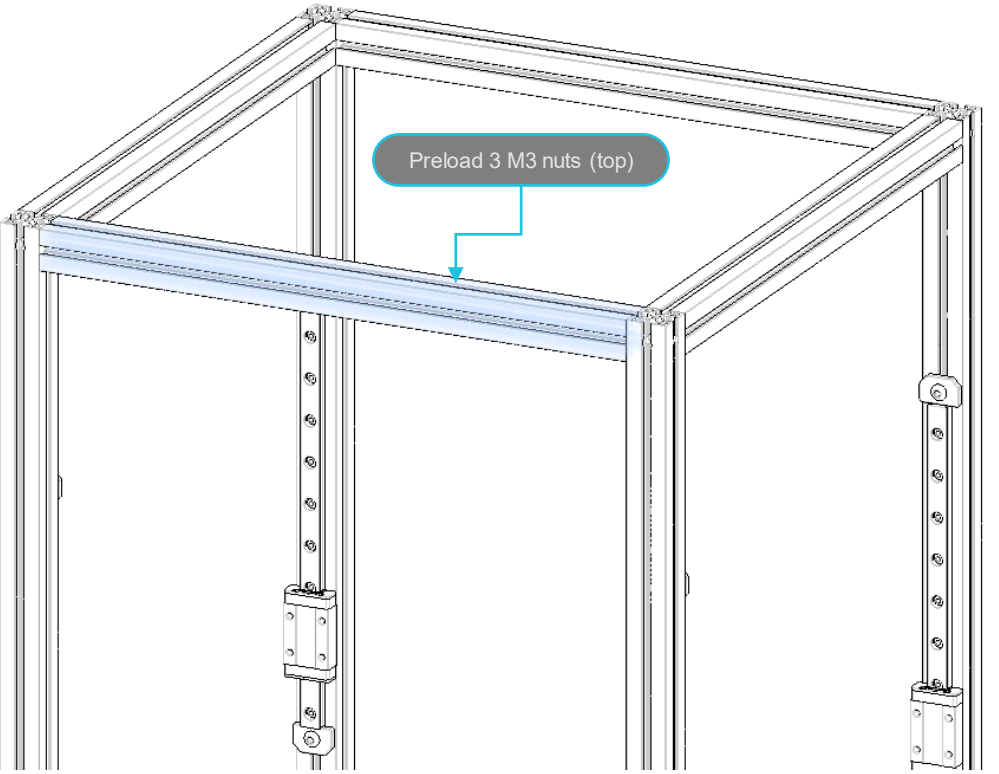
PRELOADING NUTS

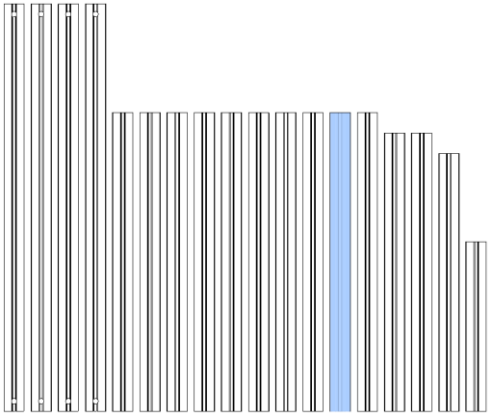
If using the printed nut holder, this will be inserted on the inside , you will need 2 of the small NDN to make up the 4 nuts that need to be inserted

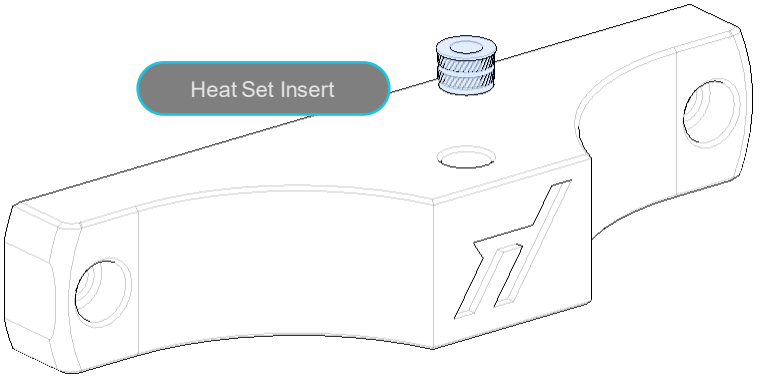


TOP OF FRAME

The final top extrusion requires 3 preloaded nuts

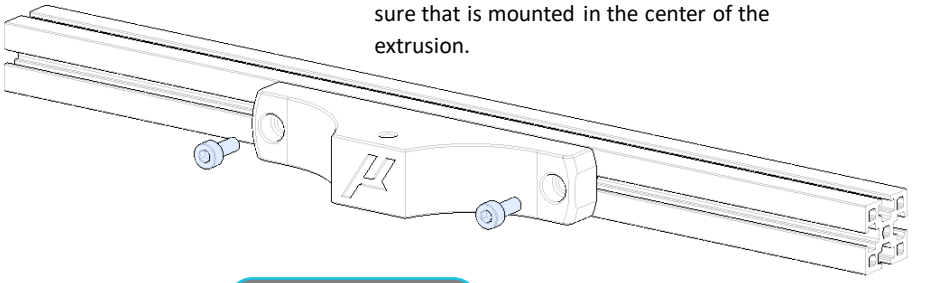




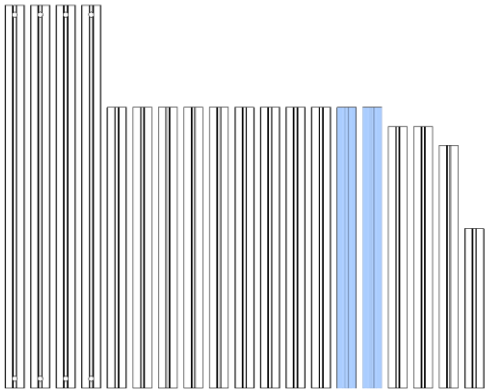


FRONT BED MOUNT

After the heat set has been inserted, make sure that is mounted in the center of the extrusion.

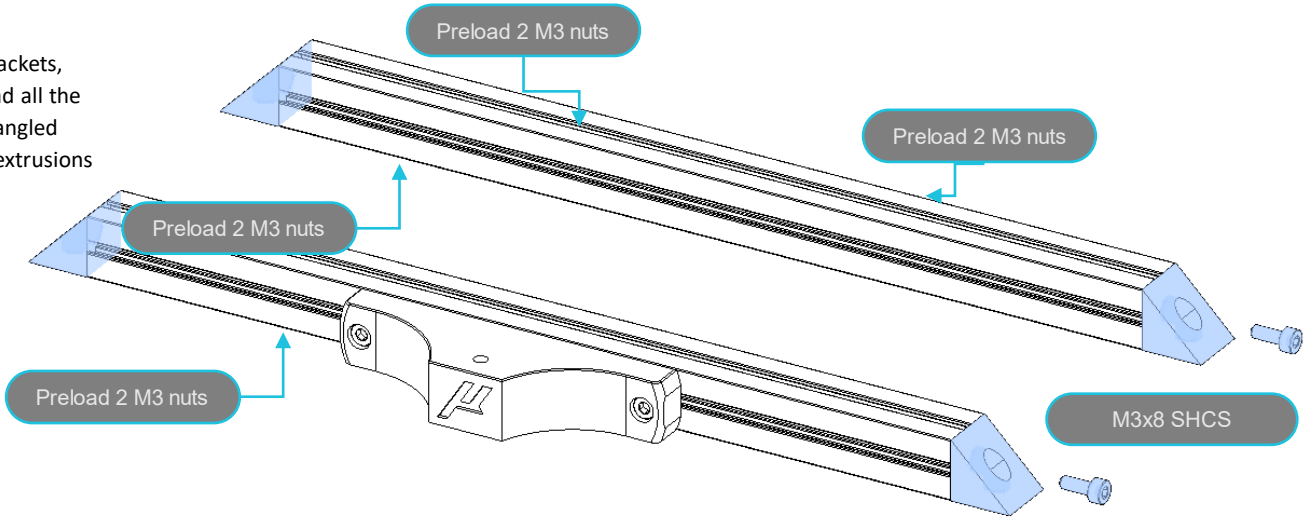


M3x8 SHCS



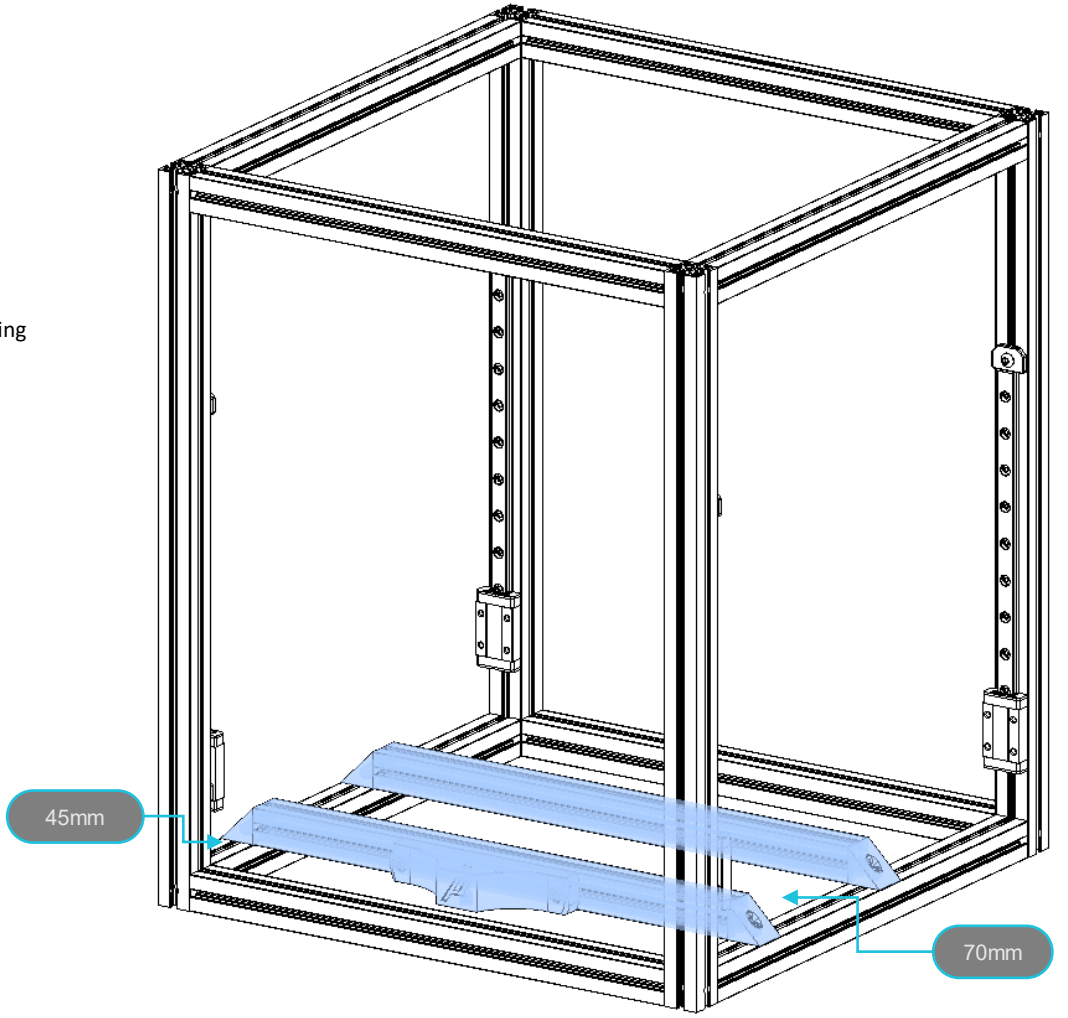
BED EXTRUSIONS

Before you attach the 4 angled brackets, you need to make sure you preload all the M3 nuts. Then screw in the 1515 angled brackets to the ends of both bed extrusions using M3x8 SHCS



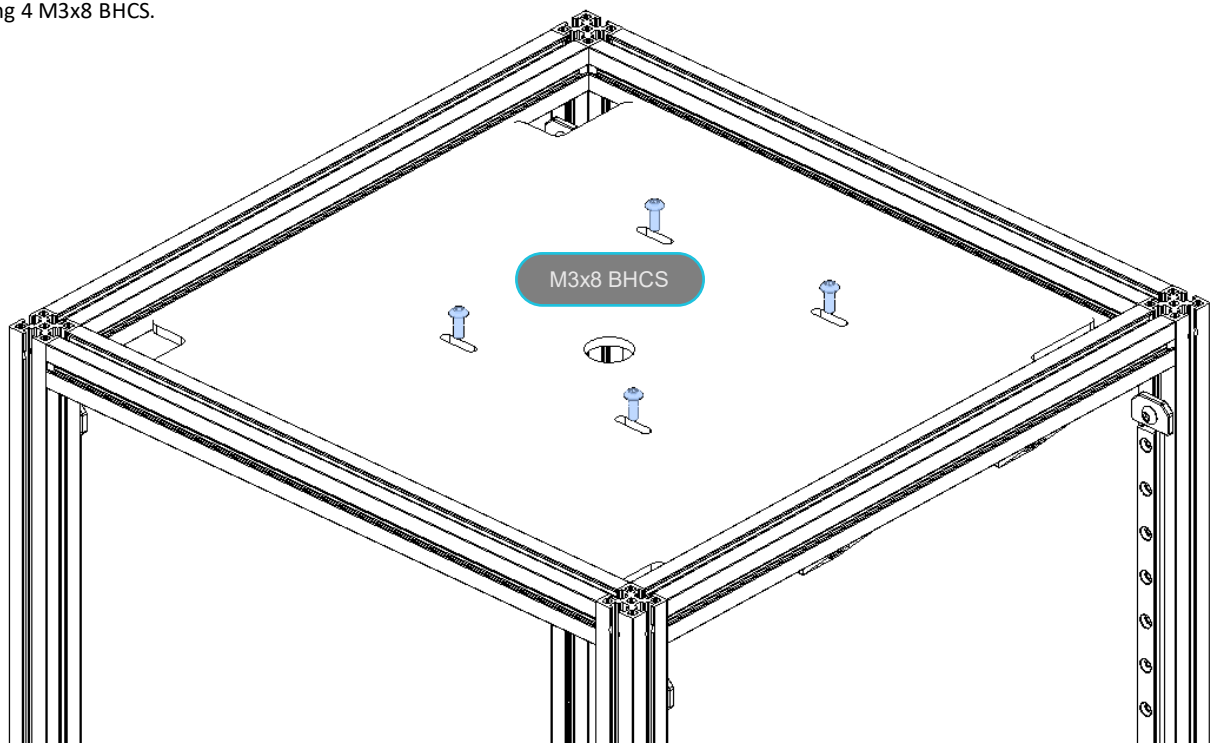
BED EXTRUSIONS

Mount the bed extrusion as shown, making sure to space them out 45mm from the front and then 70mm apart



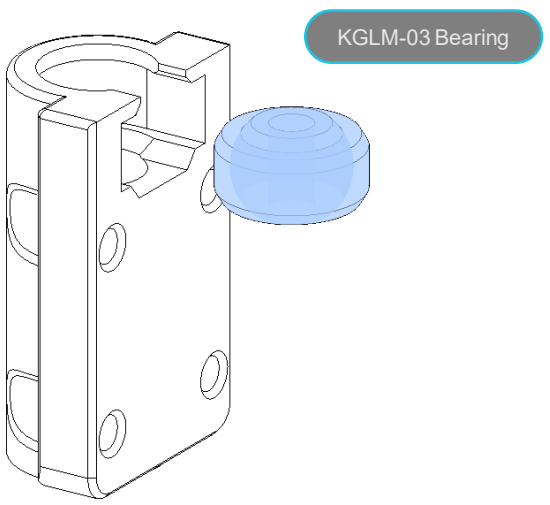
DECK PANEL

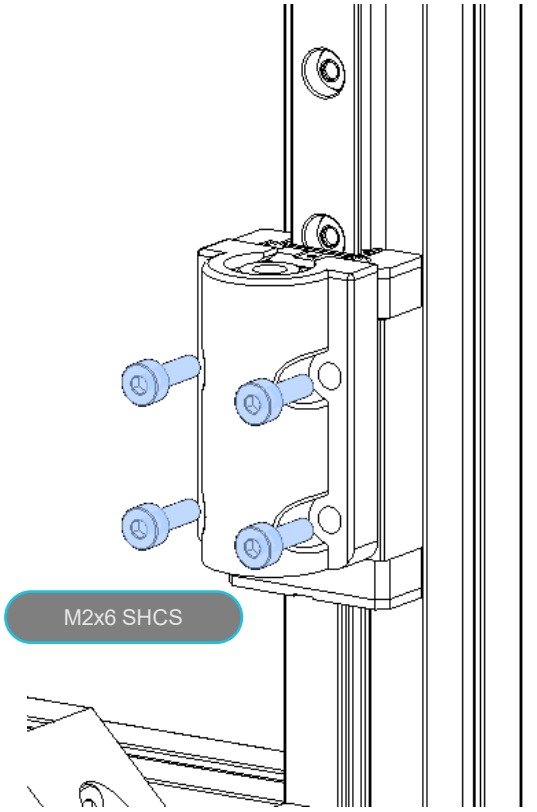
Install the deck panel , using 4 M3x8 BHCS.



Z JOINTS

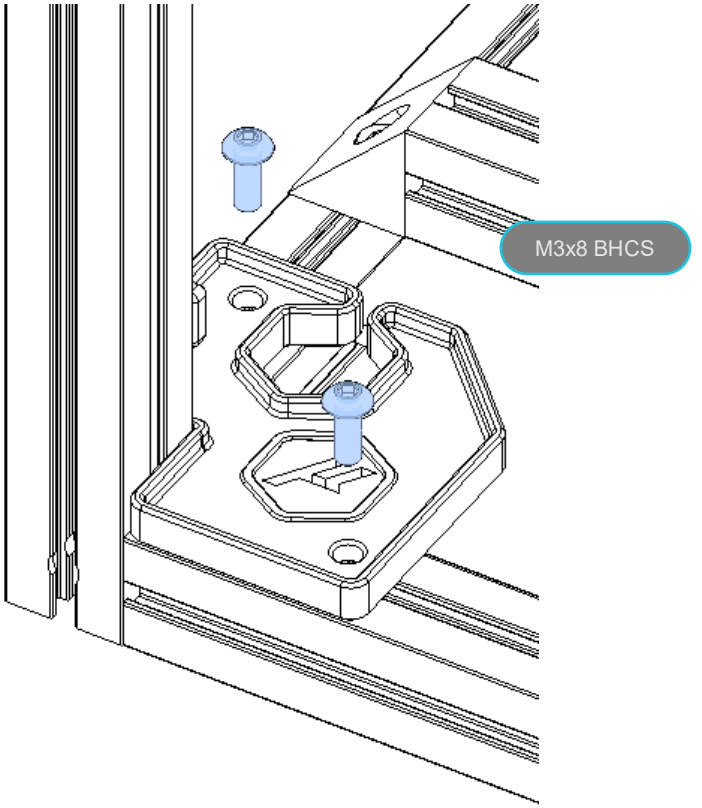
Install the 4 KGLM-03 bearings into the printed part. Attach these to the Z rail carriages using 4 M2x6 SHCS





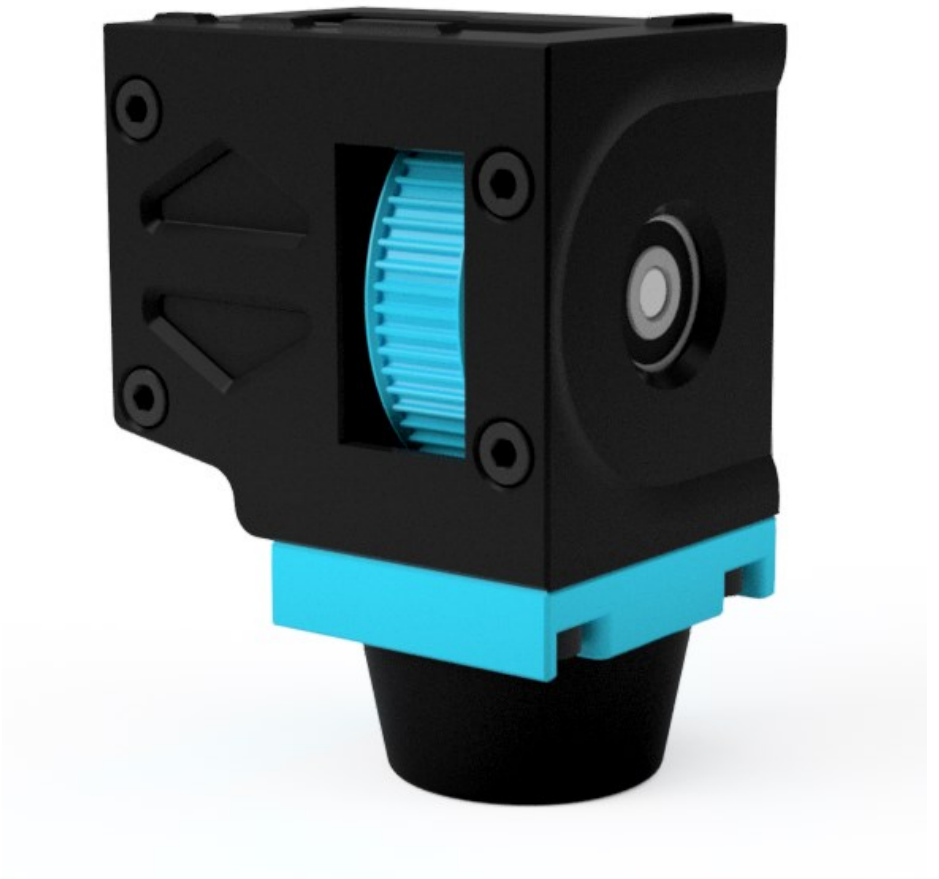
Z BELT COVERS

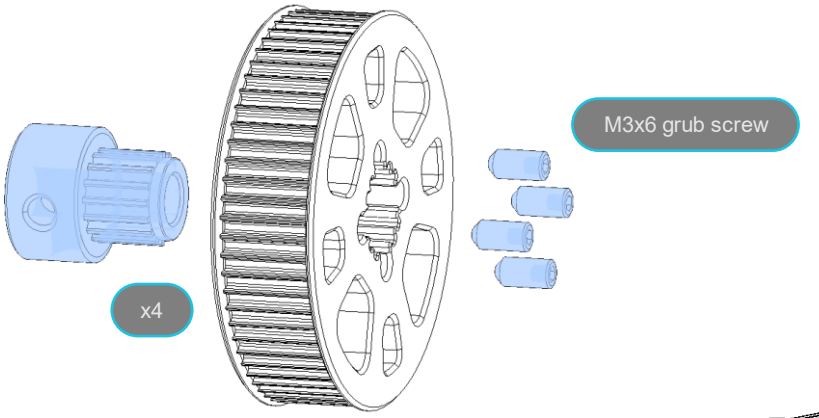
mounting the Z belt covers uses 2 M3x8 BHCS each



FRAME

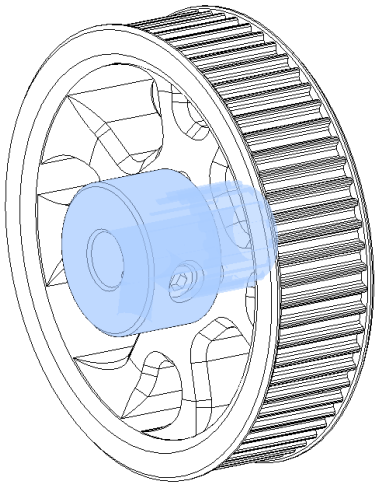
At this point your frame should be looking like this.

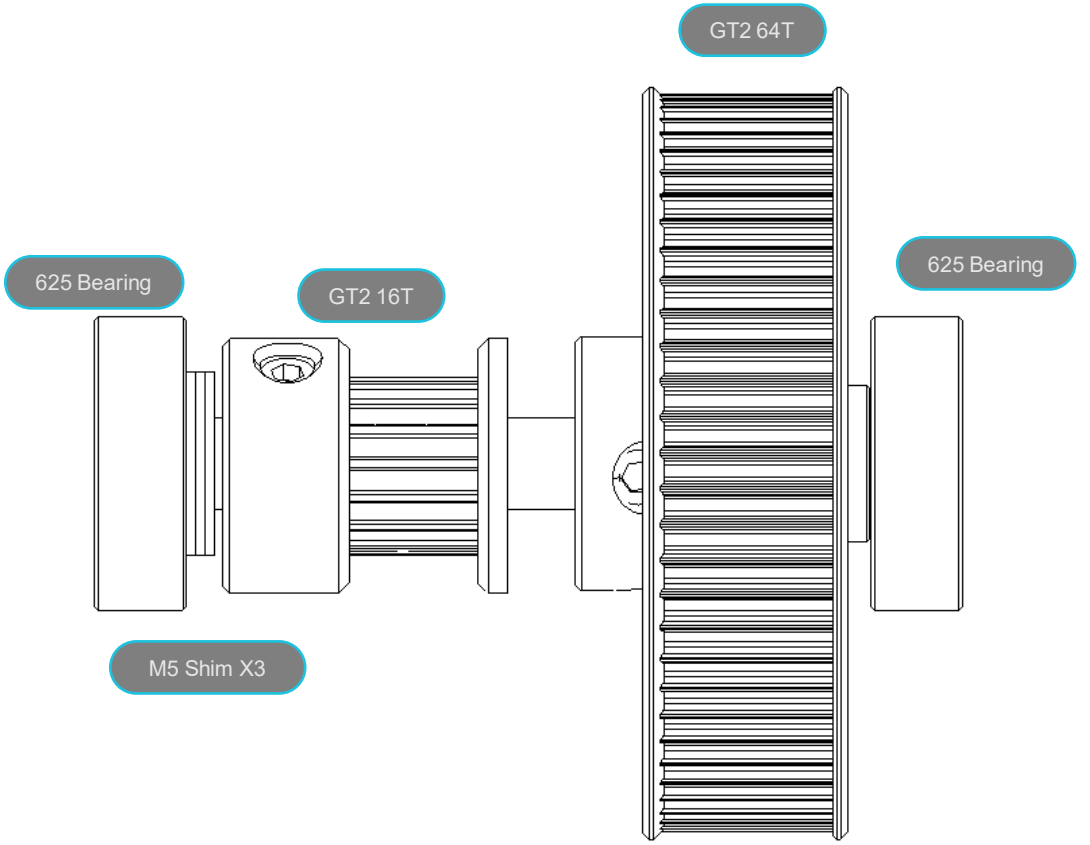




ASSEMBLING 64T PULLEY

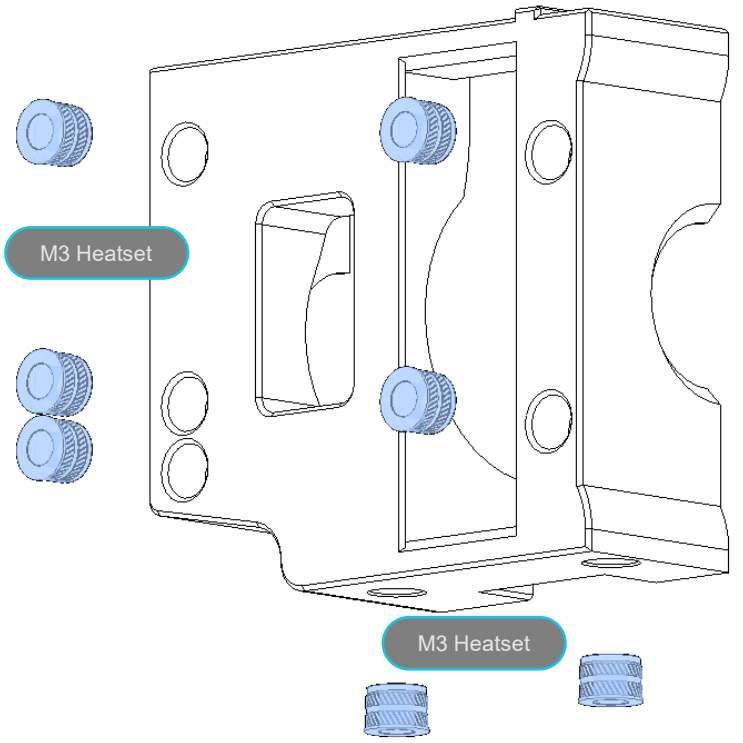
Assembly of the printed 64T pulley is simple. Observe that one side of the printed part is flat, and the other concave. Insert a deflanged 16T pulley into the socket on the concave side of the printed part, as shown below. Use 4 M3x6 grub screws to lock the two components together. Repeat for all 4 64T gears.

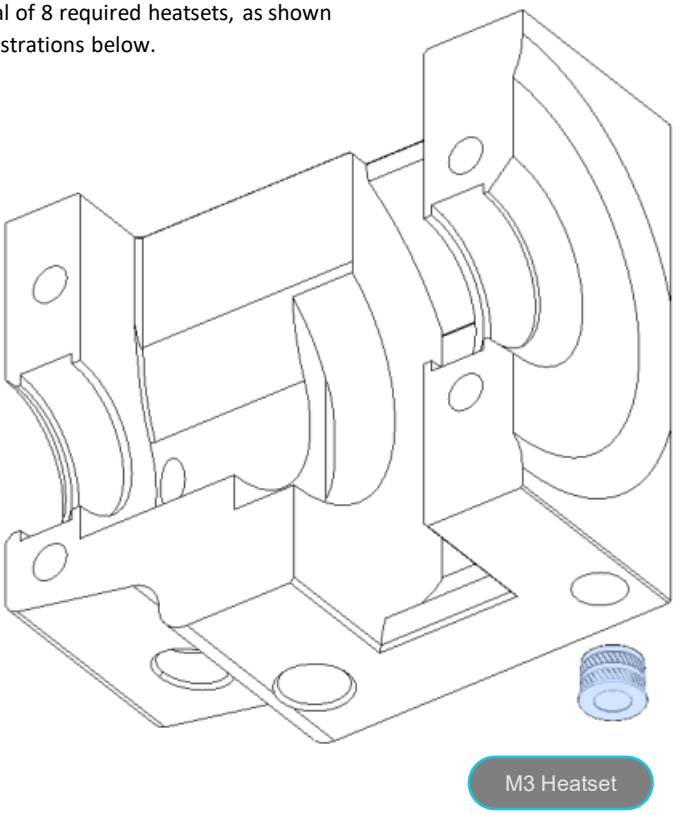


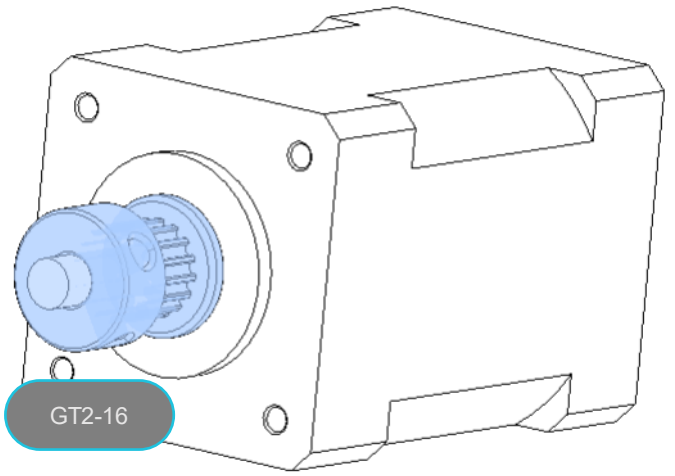

GT2 64T
625 Bearing
GT2 16T
625 Bearing
M5 Shim X3

Z DRIVE ASSEMBLY

Begin by installing the heatset inserts into the Z drive parts. Each pair of Z drive halves has a total of 8 required heatsets, as shown in the illustrations below.

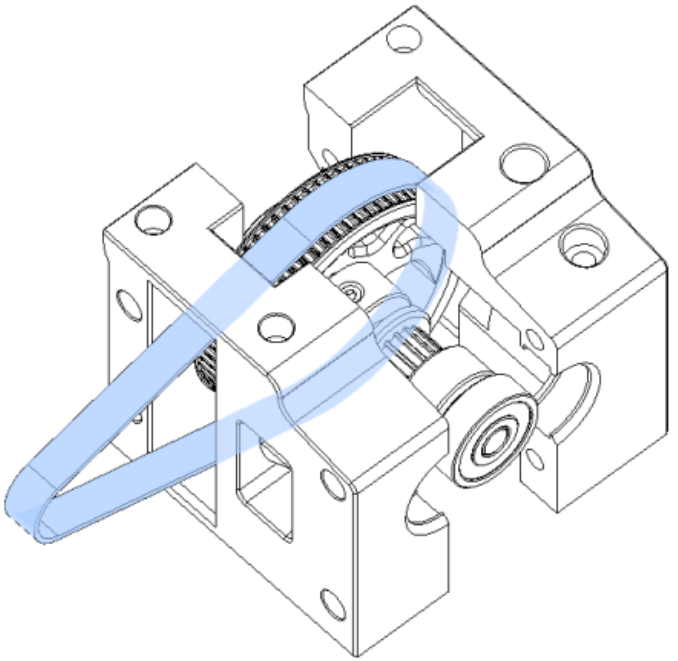






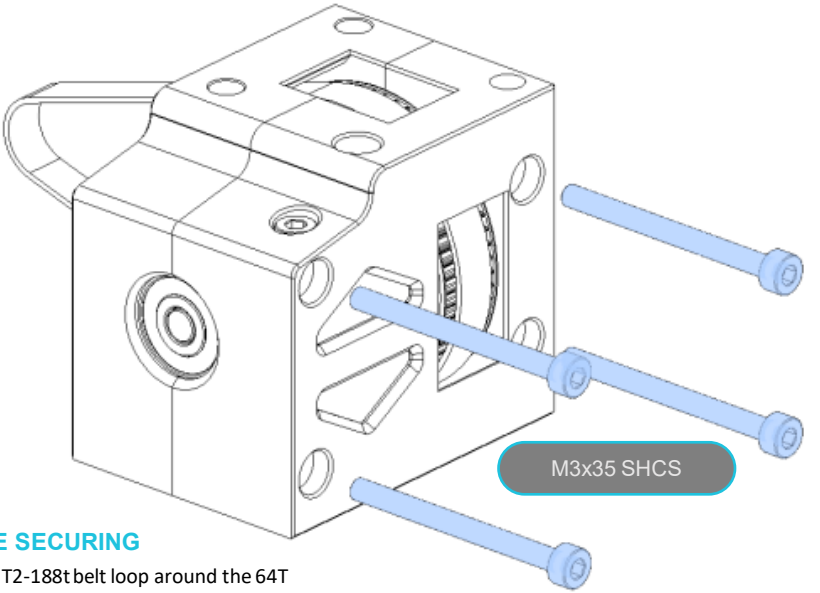
Z MOTOR PULLEY

To continue with the Z drive assembly, attach a GT2 16T pulley as shown to each of the 4 Z motors. Tighten one of the set screw just tight enough to keep the pulleys from falling off. DO NOT USE LOCTITE AT THIS POINT! We will determine the precise positioning of these pulleys once the motors are mounted to the printer. For now, we are just putting the pulleys in place, so we don't have to slide them on to mounted motors.



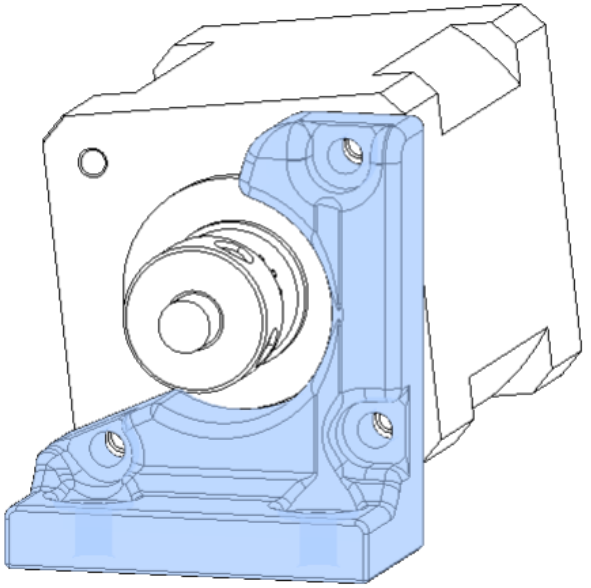
Z DRIVE BELT

Add the GT2-188t belt loop around the 64T pulley before closing it off.



Z DRIVE SECURING

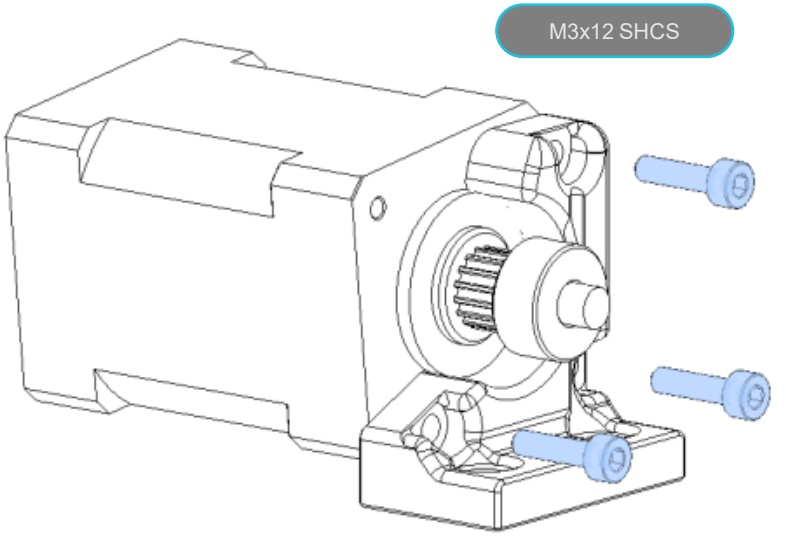
Add the GT2-188t belt loop around the 64T pulley before closing it off.

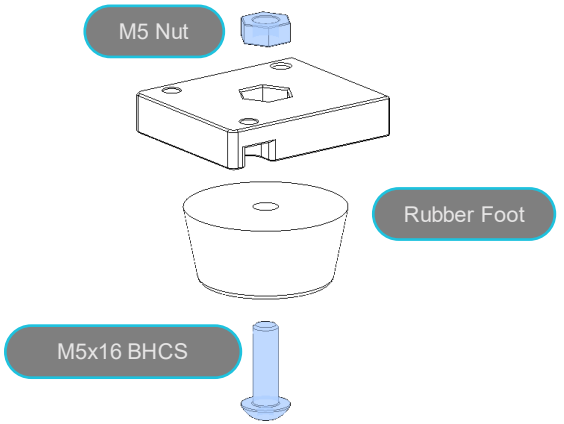


Z MOTOR MOUNT

Z motor mount is best used with the wires for the z to be facing down or towards the inside of the printer

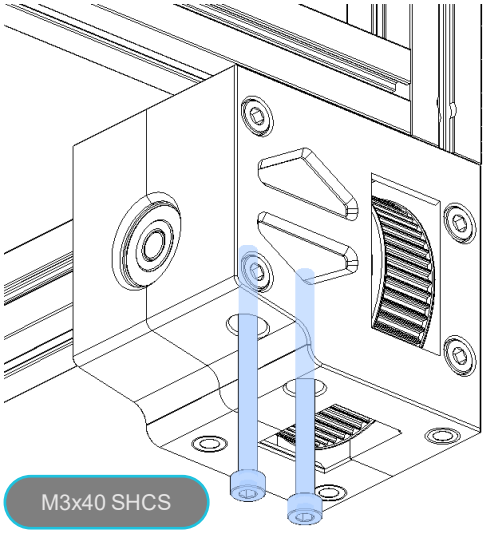
Note: The motor is on a slight angle in relation to the motor mount.





FEET ASSEMBLY

To assembly the Z drive cap / feet, you need to insert an M5 nut into the drive cover

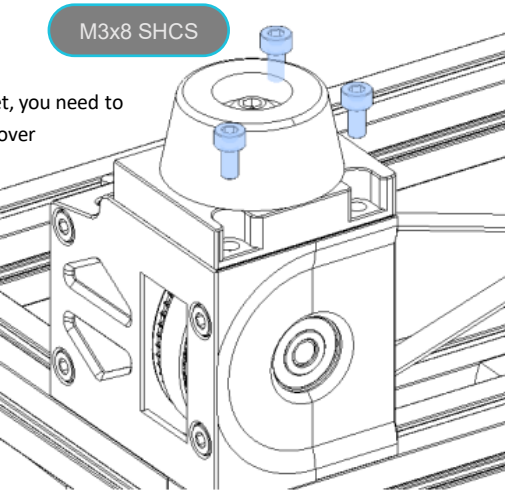


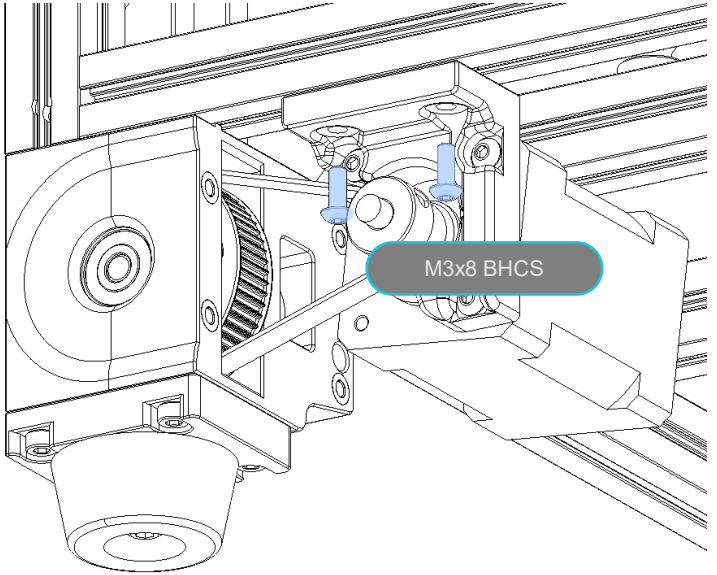
Z DRIVE MOUNT

Z Drive is mounted using the new M3x40 bolts. If you installed the printed NDN nut holder then this is where you will use that to secure the drive housing.

FEET ASSEMBLY

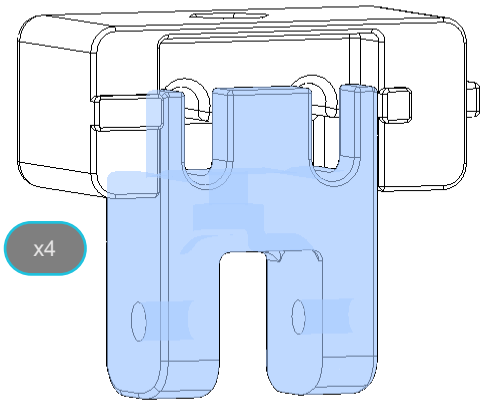
To assembly the Z drive cap / feet, you need to insert an M5 nut into the drive cover





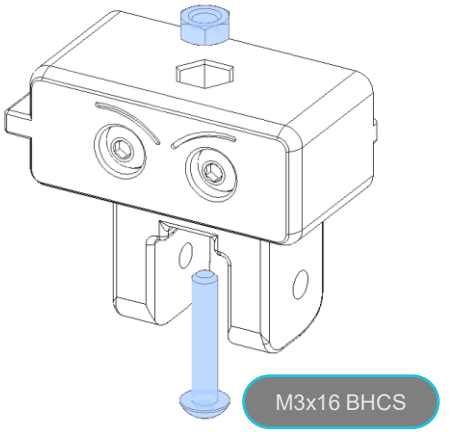
Z MOTOR MOUNTING

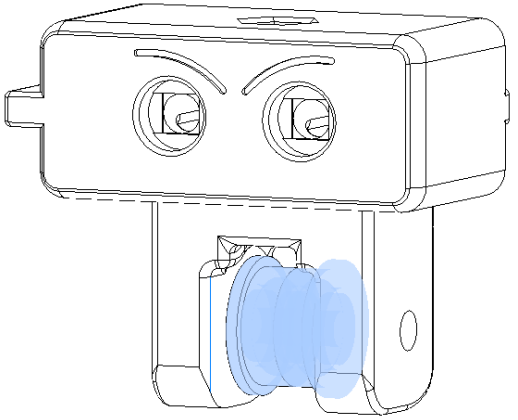
Using 2 M3x8 BHCS and the printed nut holder on this side attach the Z motor. This is when you will tension the 188 tooth belt loop. The motor should be



Z TENSIONER

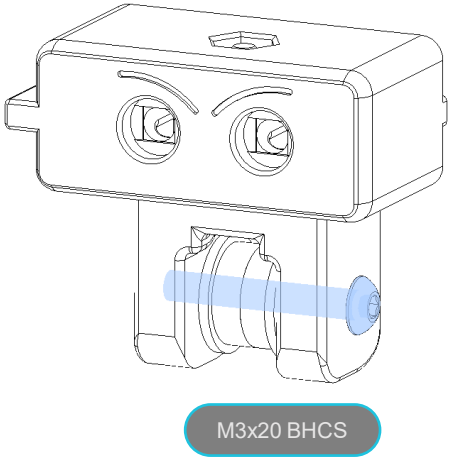
Slide the tensioner into the main body securing them together with an M3x16 BHCS and M3 hex nut.

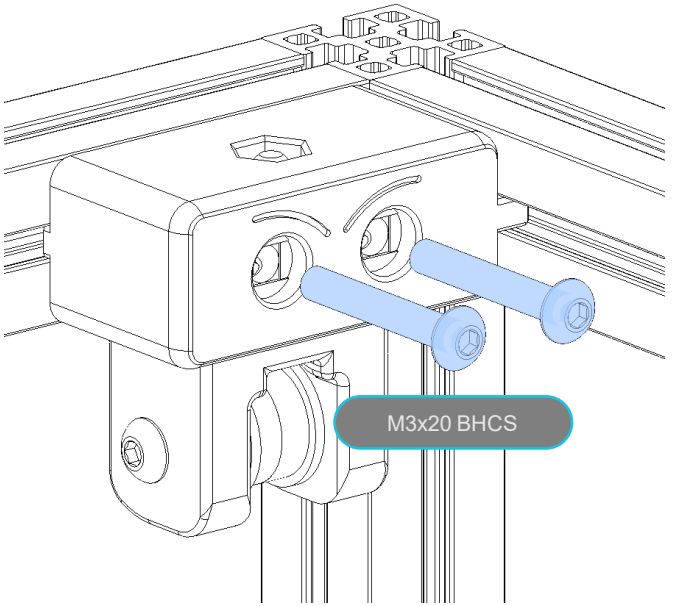




Z TENSIONER PULLEY

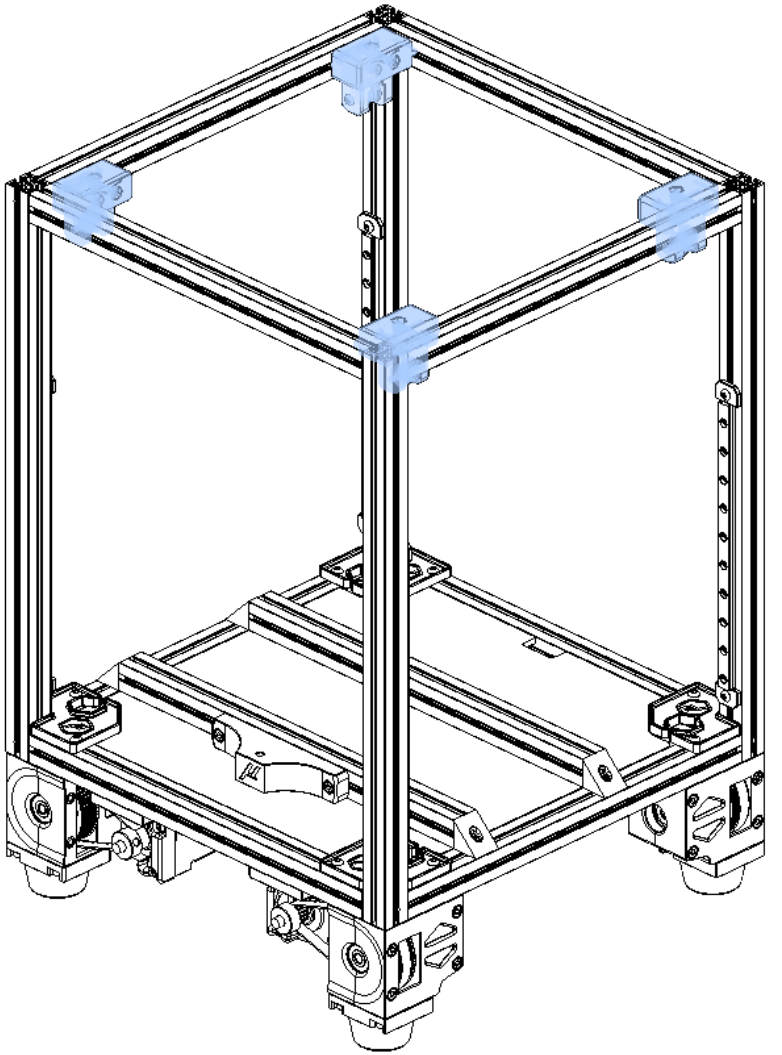
Take the F623 bearing stack and place them between the idler securing them using an M3x20. Note the direction the screw is going.

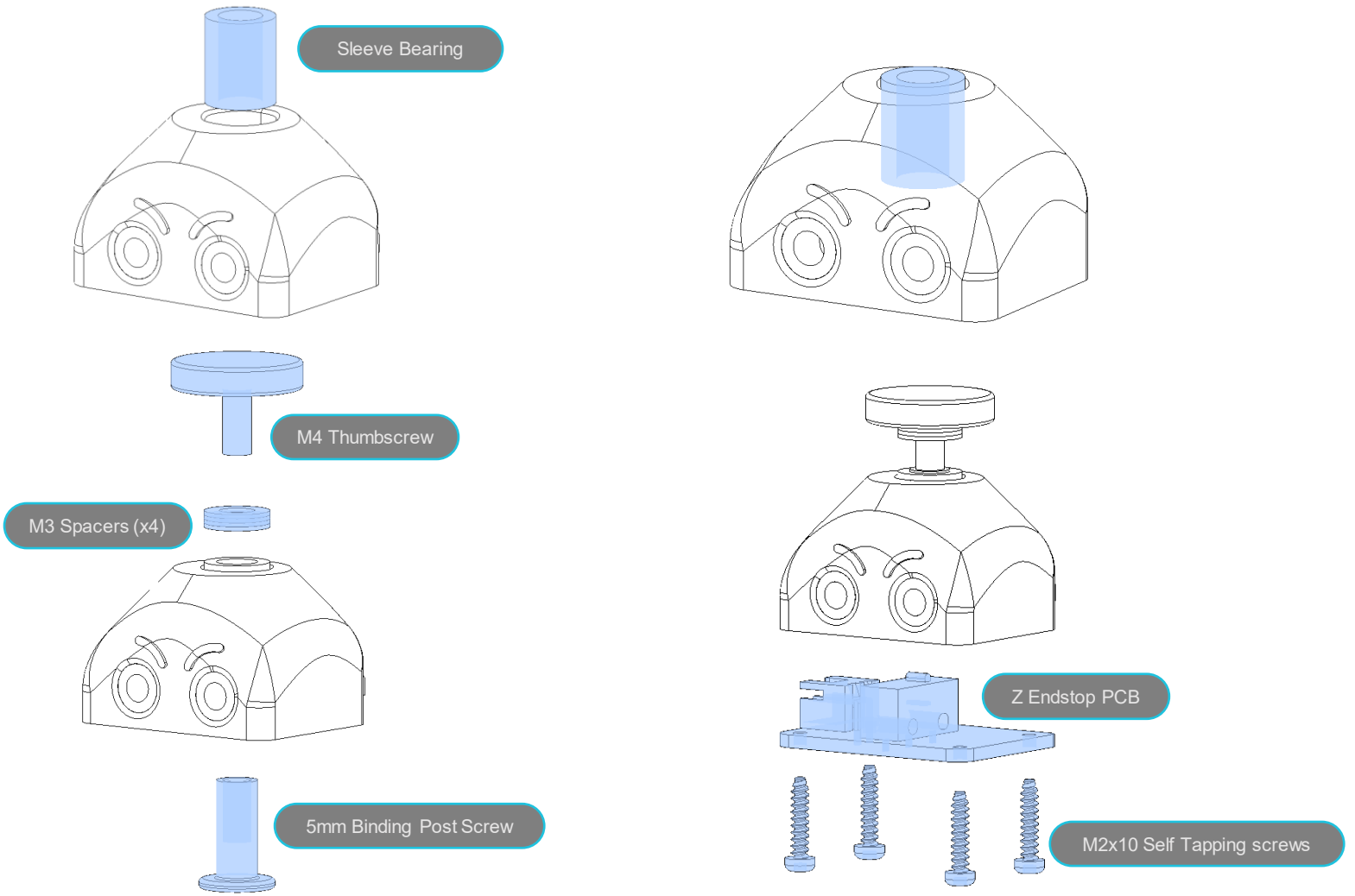




Z IDLER MOUNTING

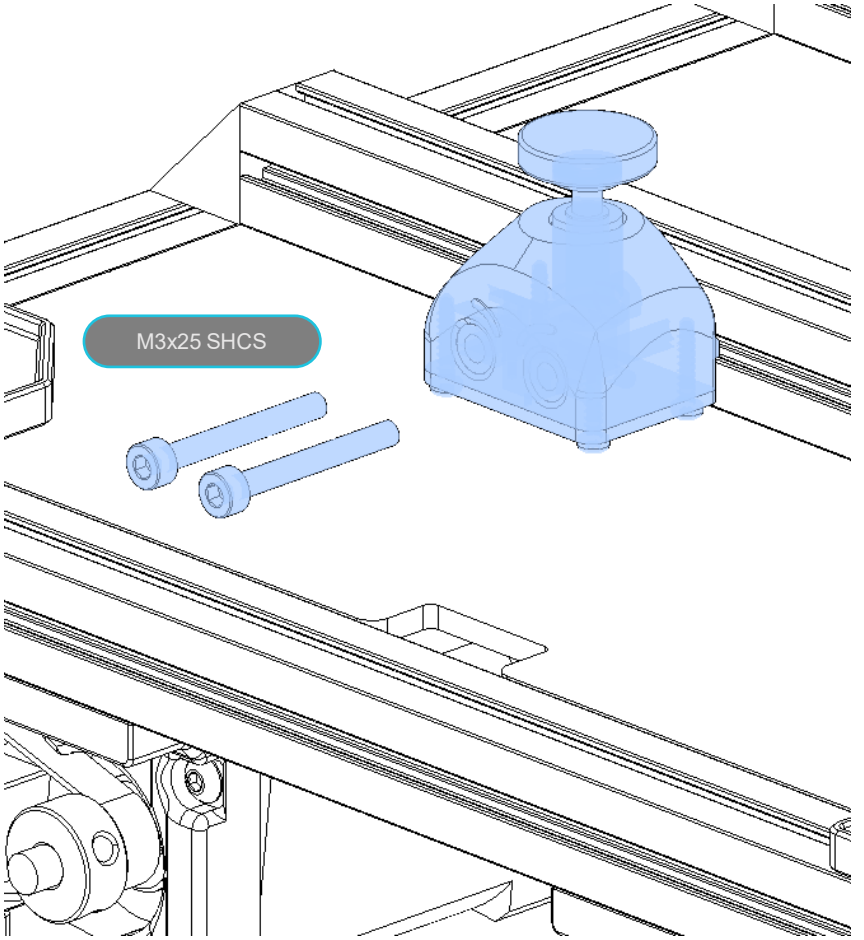
mounting the Z idlers on the top of the frame along the side extrusion. These can be mounted using the printed nut holders as well.

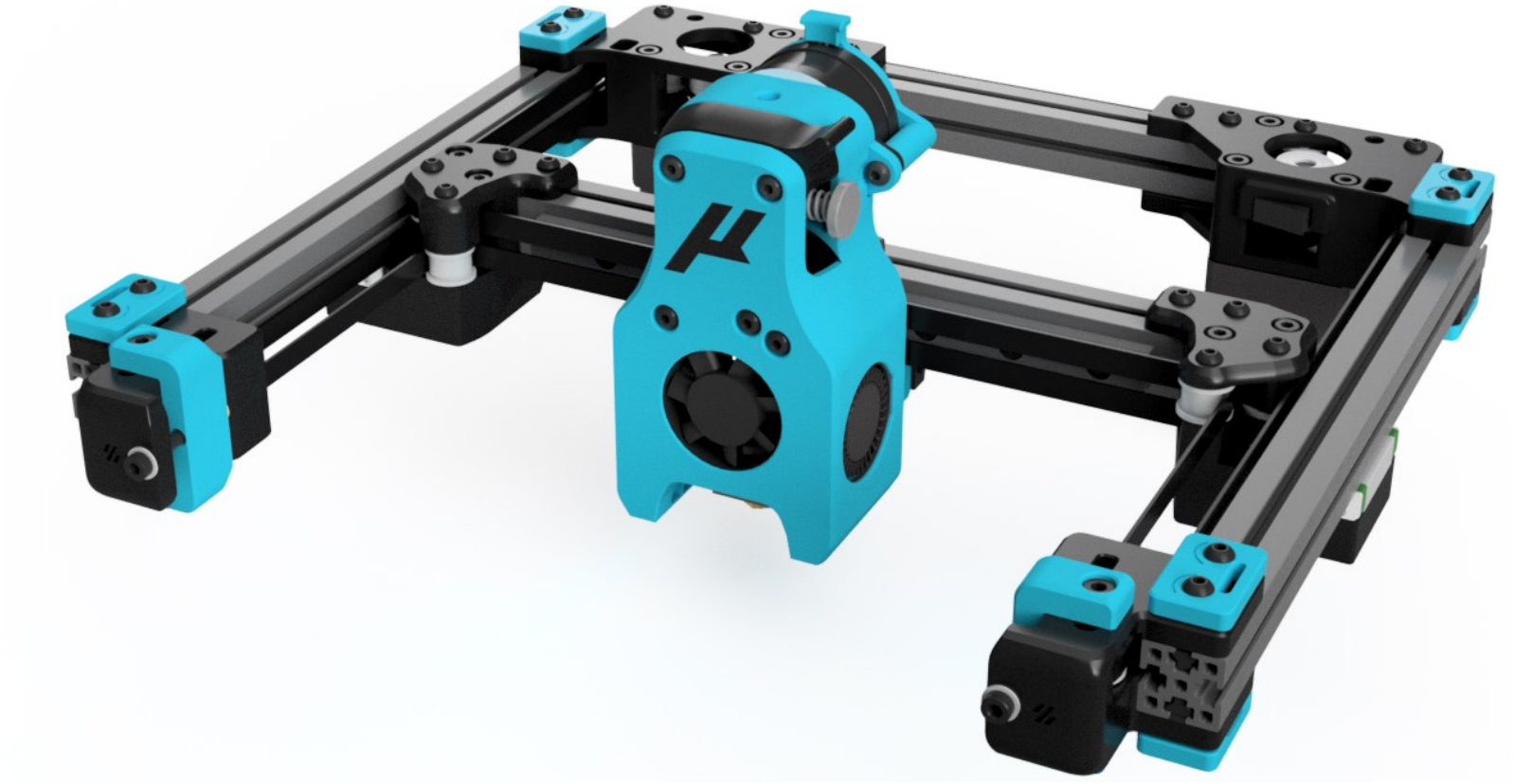


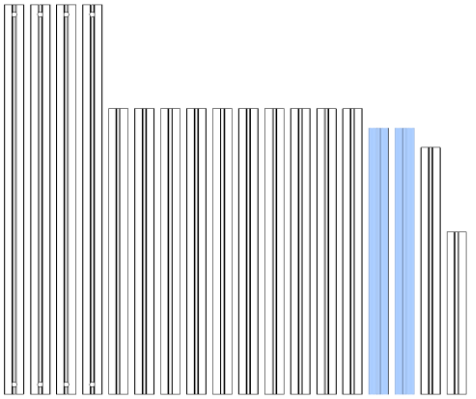

Sleeve Bearing
M4 Thumbscrew
M3 Spacers (x4)
5mm Binding Post Screw
Z Endstop PCB
M2x10 Self Tapping screws

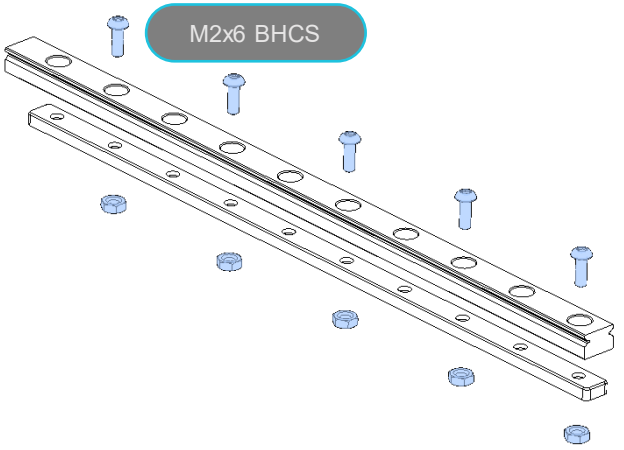
Z ENDSTOP MOUNTING

Mount the Z endstop along the back side of the rear bed extrusion, doesn't really matter exactly where, as you will finalize that later with the firmware.



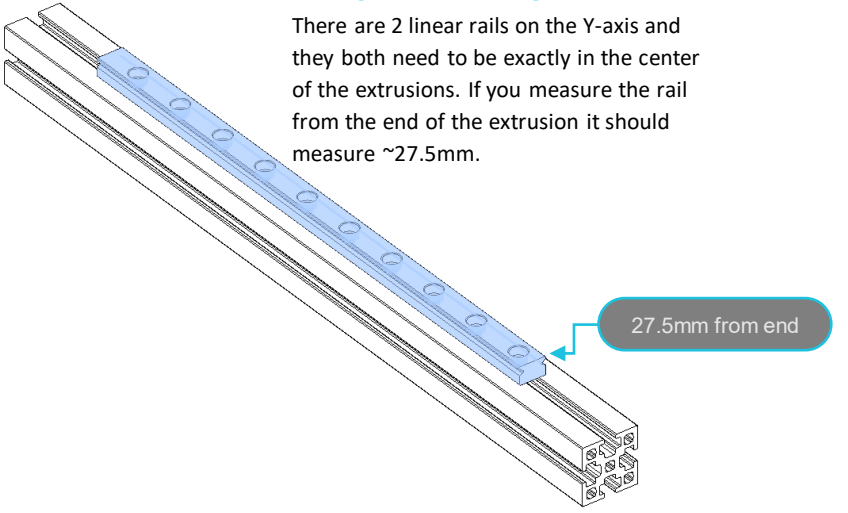


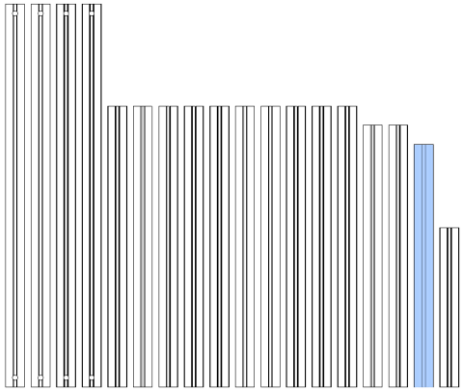


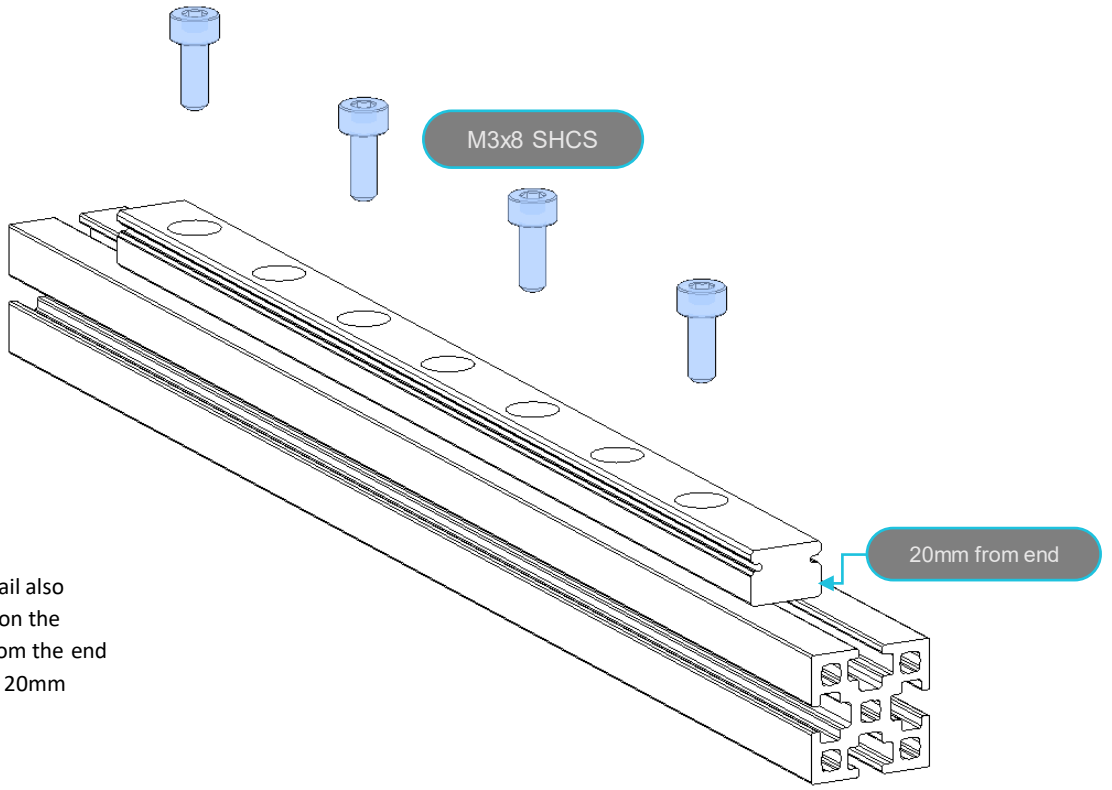


Y AXIS LINEAR RAILS

There are 2 linear rails on the Y-axis and they both need to be exactly in the center of the extrusions. If you measure the rail from the end of the extrusion it should measure ~27.5mm.

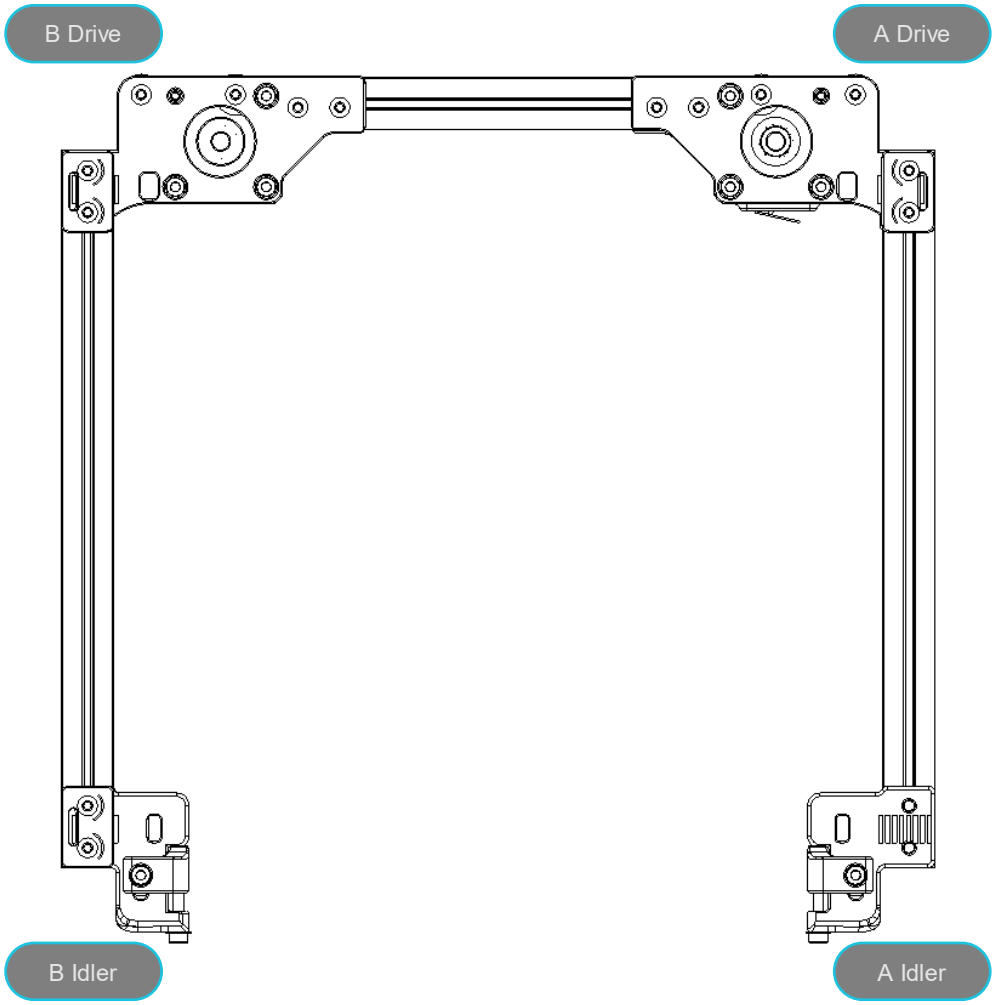


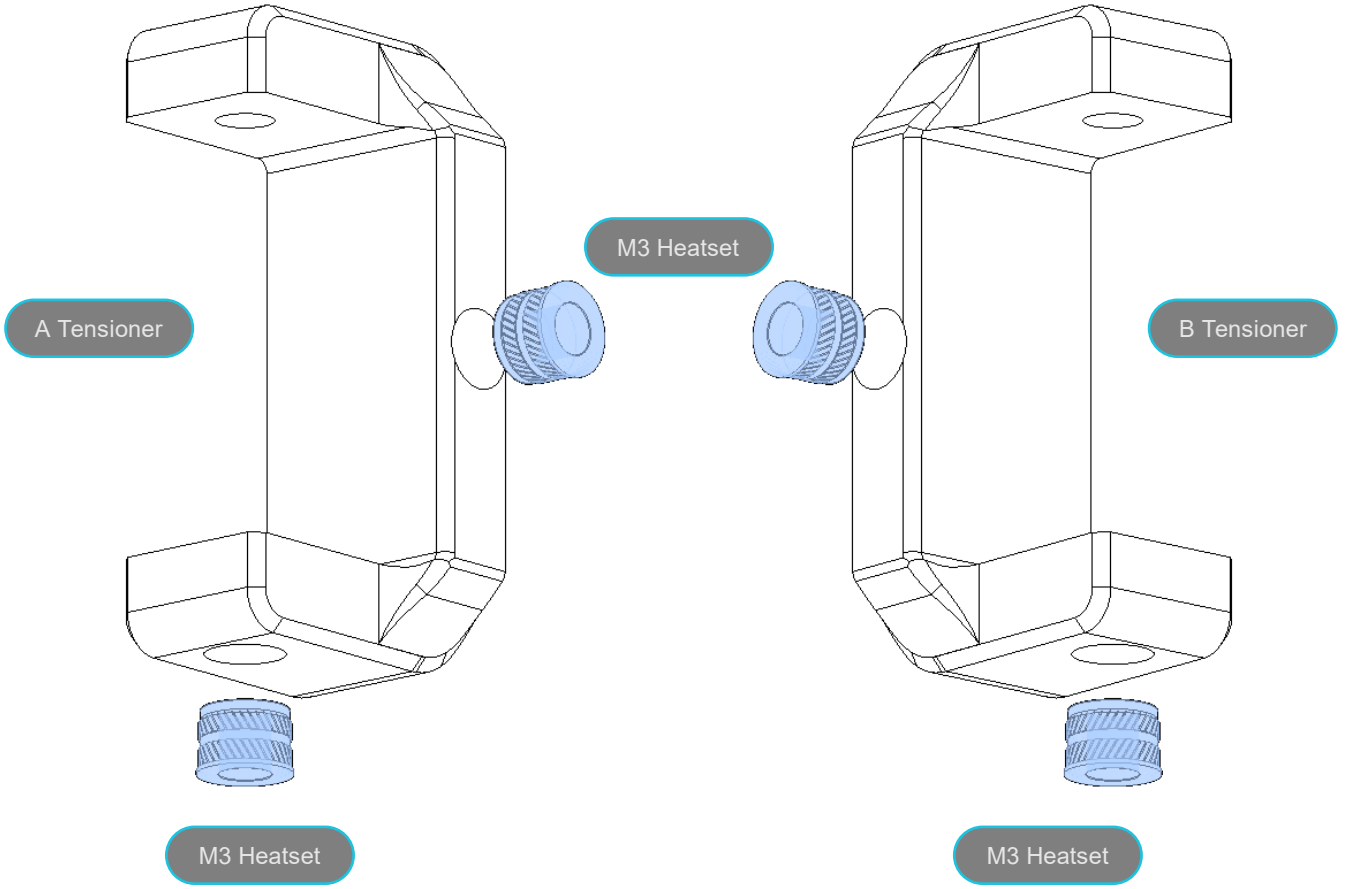


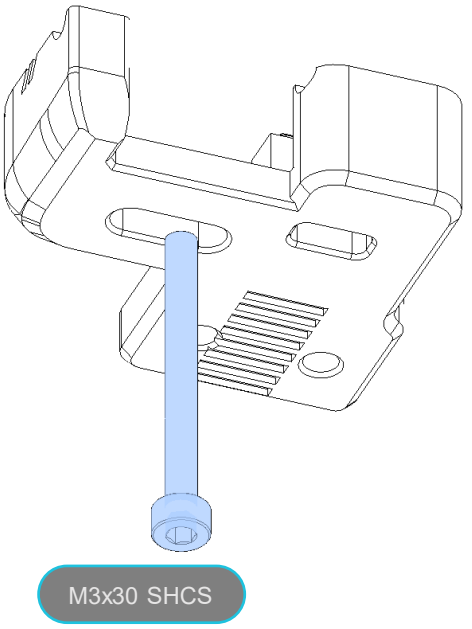


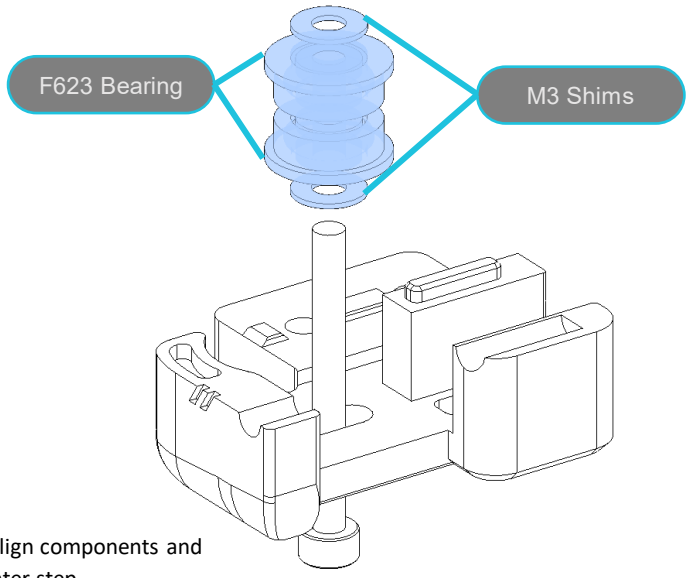
X Axis Linear Rail

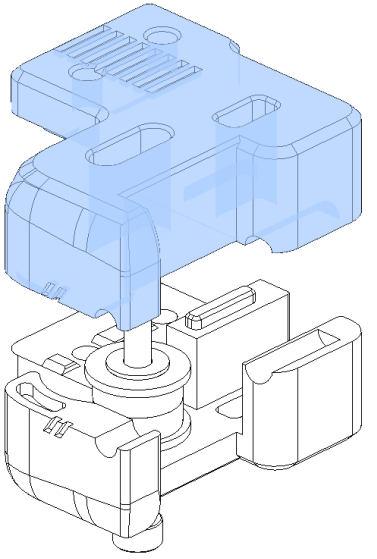
As with the Y linear rail , the X rail also needs to be perfectly centered on the extrusion. The measurement from the end of the rail to end of extrusion is 20mm


B Drive
A Drive
B Idler
A Idler


A Tensioner
M3 Heatset
B Tensioner
M3 Heatset
M3 Heatset

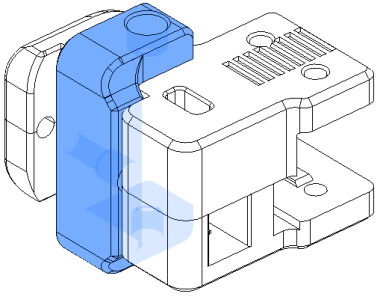


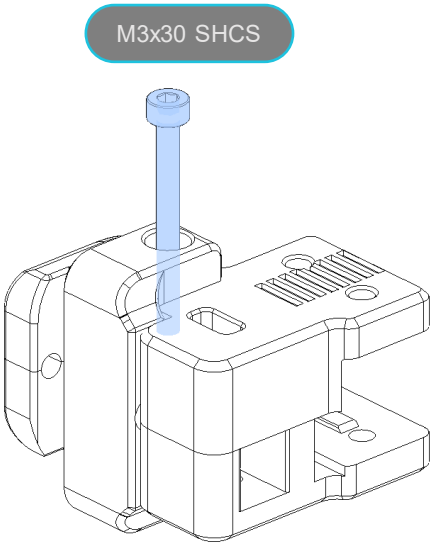




ASSEMBLY AID

This screw is used to align components and will be removed in a later step



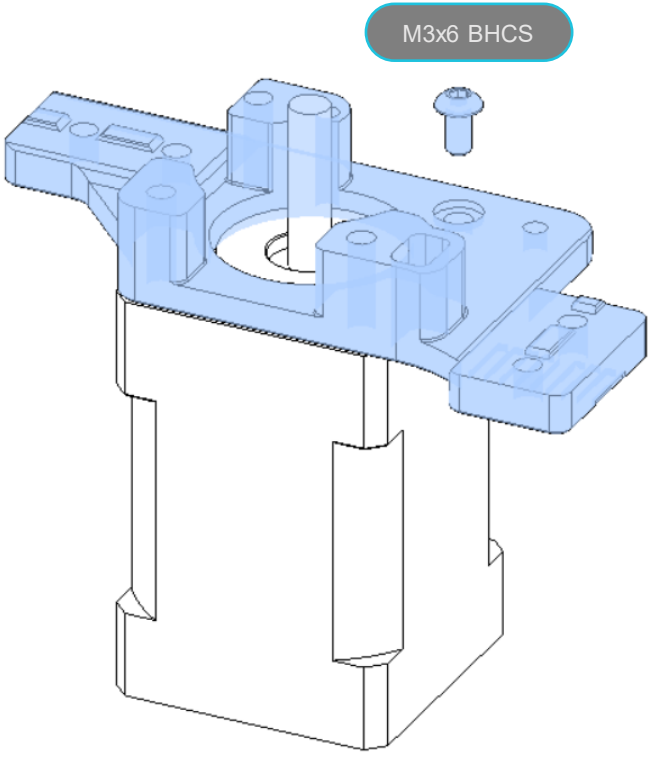


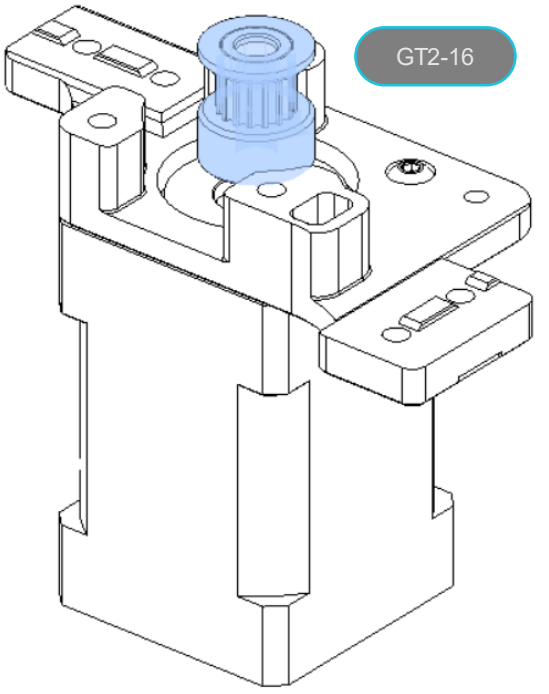
REMOVE ASSEMBLY AID

Remove the assembly aid screw as you insert the tensioner screw and slide the tension arm into place.

A MOTOR PULLEY

To attach the A drive stepper, orient the motor so the wiring is facing in towards the middle of the printer . Using 1 m3x6 BHCS to secure the stepper to the lower half of the A drive. Install a GT2-16 tooth pulley on the stepper as shown. Don't tighten it down just yet until you run the belts later in the assembly.





A DRIVE UPPER / Y ENDSTOP

Start by installing the Y endstop switch into the upper A drive, securing it with 2 m2x10 self tapping screws. Insert 2 wires into the hole next to the microswitch and solder them to the 2 outer pins as shown.