VORON

VORON0 ASSEMBLY MANUAL

We build space shuttles with gardening tools
so anyone can have a space shuttle of their own.

VERSION 2021-04-22

Before you begin on your journey, a word of caution.

In the comfort of your own home you are about to assemble a robot. This machine can maim, burn, and electrocute you if you are not careful. Please do not become the first VORON fatality. There is no special Reddit flair for that.

Please, read the entire manual before you start assembly. As you begin wrenching, please check our Discord channels for any tips and questions that may halt your progress.

Most of all, good luck!

THE VORON TEAM

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PART PRINTING GUIDELINES

The Voron Team has provided the following print guidelines for you to follow in order to have the best chance at success with your parts. There are often questions about substituting materials or changing printing standards, but we recommend you follow these.

3D PRINTING PROCESS

Fused Deposition 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

PRINT IT FORWARD (PIF)

Often times community members that have issues printing ABS will bootstrap themselves into a VORON using our Print It Forward program. This is a service where approved members with VORON printers can make you a functional set of parts to get your own machine up and running.
Check Discord if you have any interest in having someone help you out.

HOW TO GET HELP

If you need assistance with your build, we're here to help. Head on over to our Discord group and post your questions. This is our primary medium to help VORON Users and we have a great community that can help you out if you get stuck.

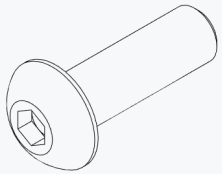
https://discord.gg/voron

THIS IS JUST A REFERENCE

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

https://github.com/vorondesign

https://docs.vorondesign.com/



BUTTON HEAD CAP SCREW (BHCS)

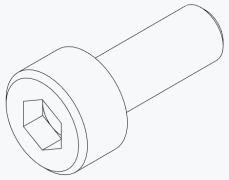
Metric fastener with a domed shaped head and hex drive. Most commonly found in locations where M3 fasteners are used.

ISO 7380-1

FLAT HEAD COUNTERSUNK SCREW (FHCS)

Metric fastener with a cone shaped head and a flat top.

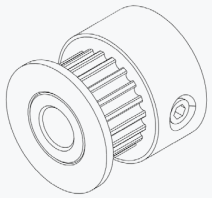
ISO 10642



SOCKET HEAD CAP SCREW (SHCS)

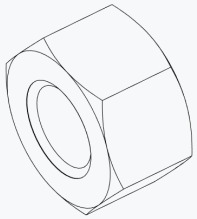
Metric fastener with a cylindrical head and hex drive. The most common fastener used on the Voron.

ISO 4762 / DIN 912



PULLEY

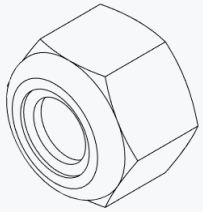
GT2 pulley used on the motion system of the Voron.



HEX NUT

Hex nuts couple with bolts to create a tight, secure joint. You'll see these used in both M2 and M3 variants throughout this guide.

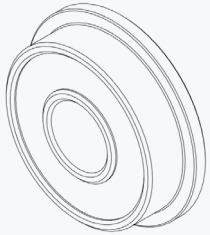
ISO 4032 / DIN 934



LOCK NUT

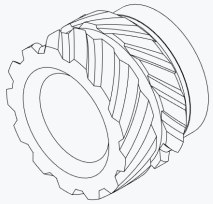
Hex nut with a nylon filled center which prevents the components from loosening.

ISO 10511 / DIN 982



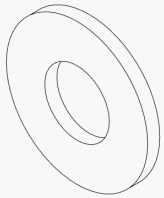
F623 BEARING

A ball bearing with a flange used in various gantry locations.



HEAT SET INSERT

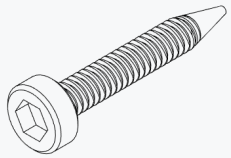
Heat inserts with a soldering tip so that they melt the plastic when installed. As the plastic cools, it solidifies around the knurls and ridges on the insert for excellent resistance to both torque and pull-out.



SHIM

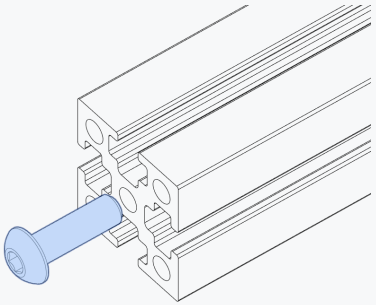
Not to be confused with stamped washers. These are used in all M3 call-out locations in this manual. 3x6x0.5

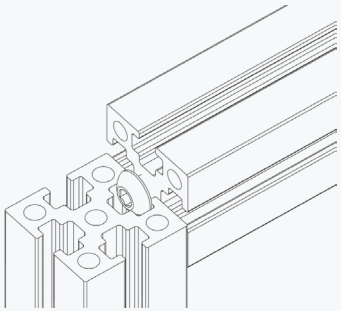
DIN 988



SELF TAPPING SCREW

Fastener with a pronounced thread profile that is screwed directly into plastic.

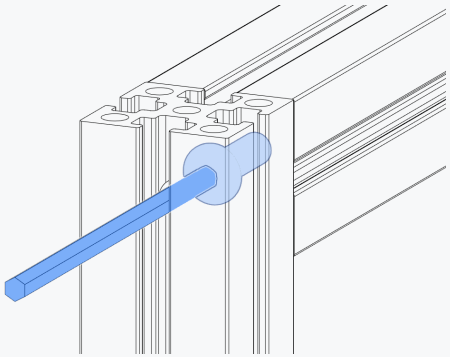


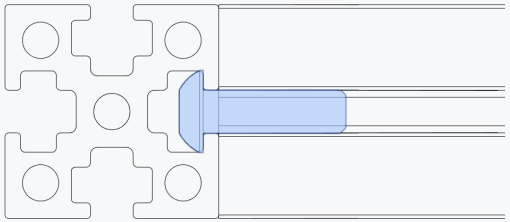


BLIND JOINT BASICS

Blind Joints provide a cost effective and rigid assembly method.

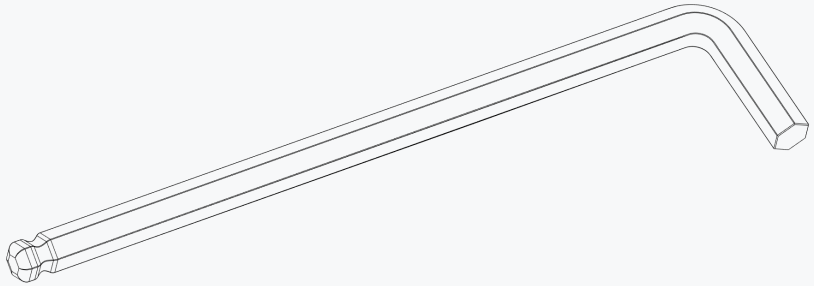
The head of the BHCS is slid into the channel of another extrusion and securely fastened through a small access hole in the extrusion.





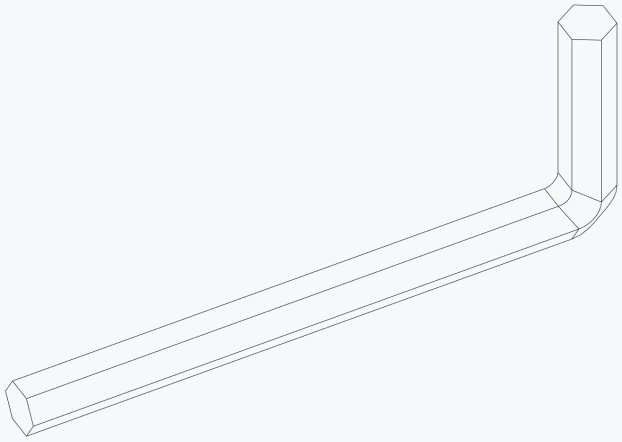
BALL-END DRIVER

Some parts of this design require the use of a 2mm and 2.5mm ball-end hex driver for assembly.



2MM HEX DRIVER

The 2mm hex driver will see a lot of use in this build. A quality driver is strongly recommended. Refer to the sourcing guide for suggestions.

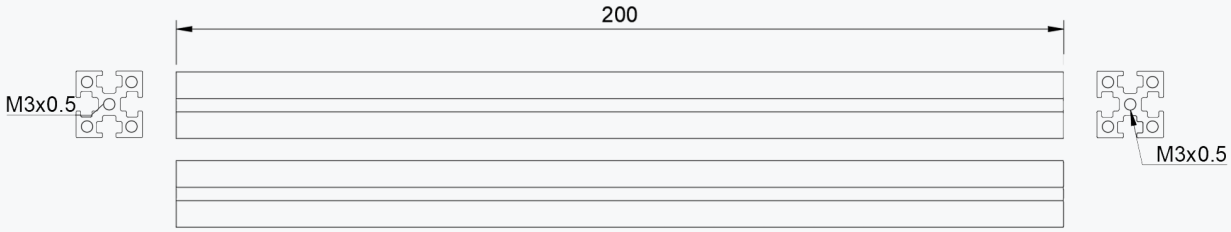


"A EXTRUSION"

Qty 1

"B EXTRUSION"

Qty 5

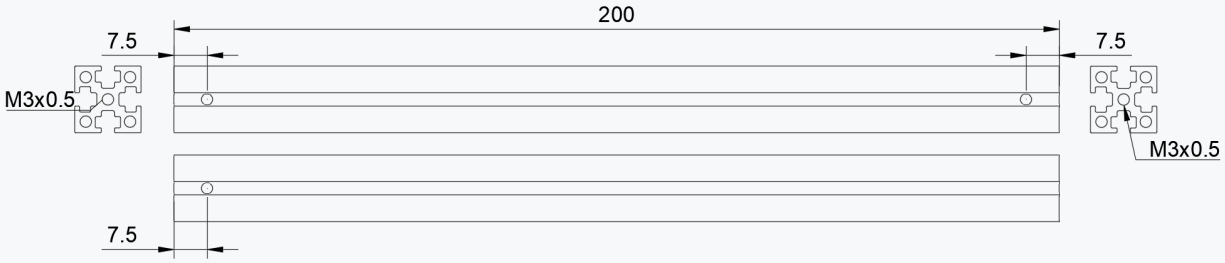


"C EXTRUSION"

Qty 4

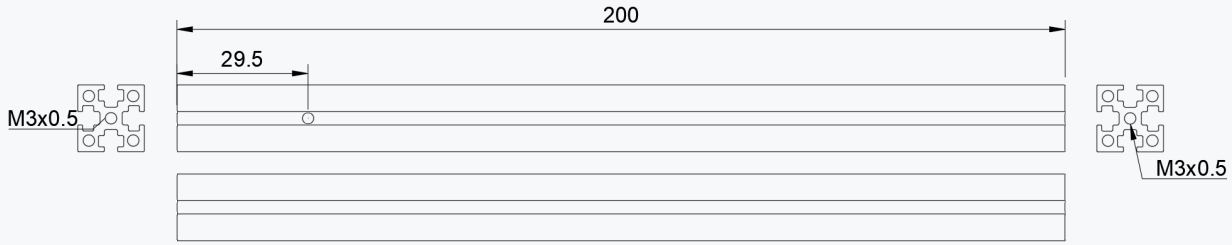
"D EXTRUSION"

Qty 2



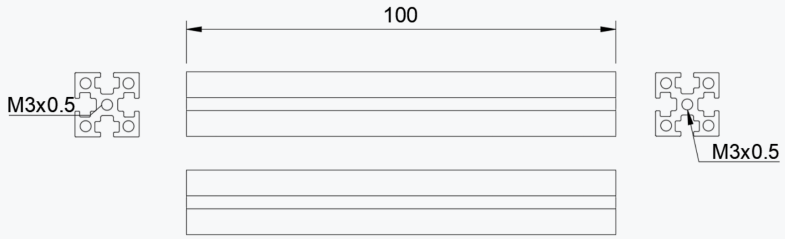
"E EXTRUSION"

Qty 4



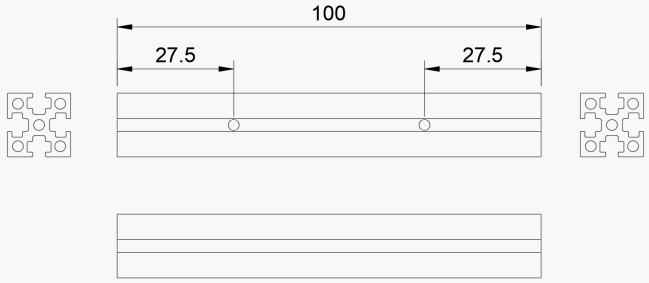
"F EXTRUSION"

Qty 2



"G EXTRUSION"

Qty 1



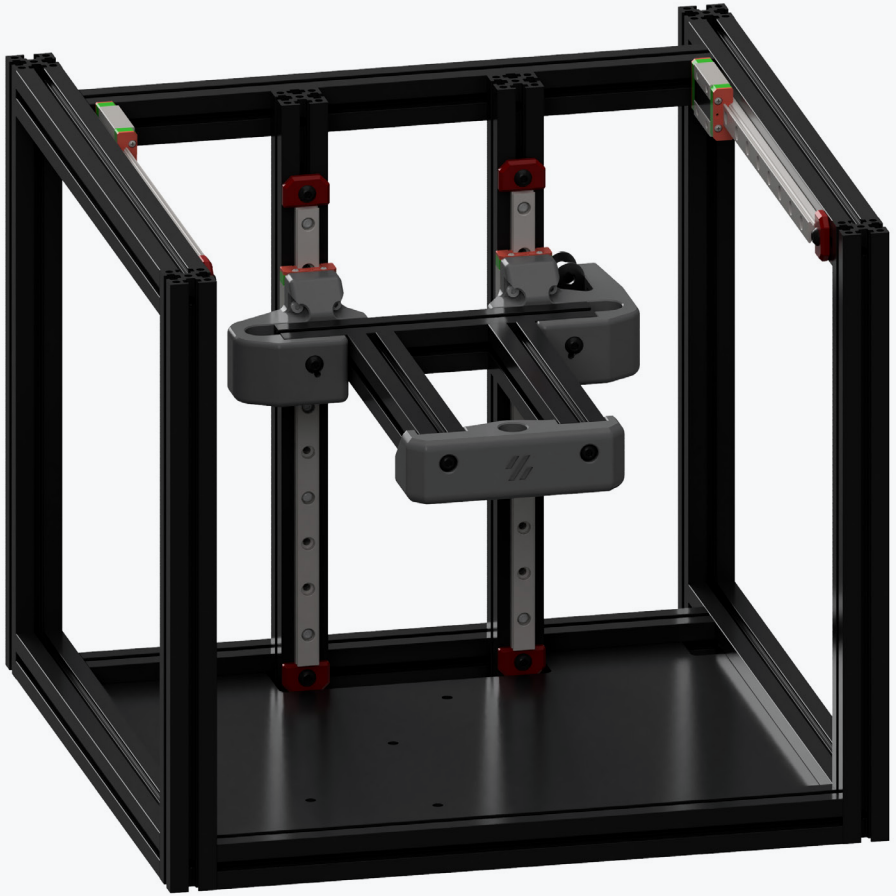
EXTRUSION CALL OUTS

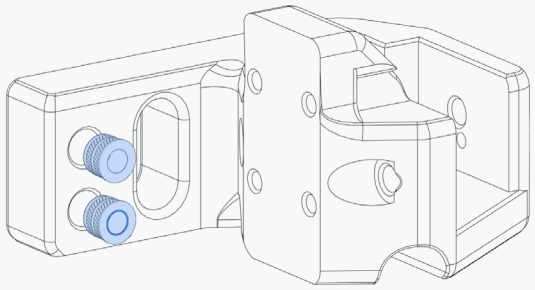
To avoid confusion we will call out the extrusions by the names shown on this reference pages.

To help assembly along you may want to label the extrusions or print the reference for a faster lookup.

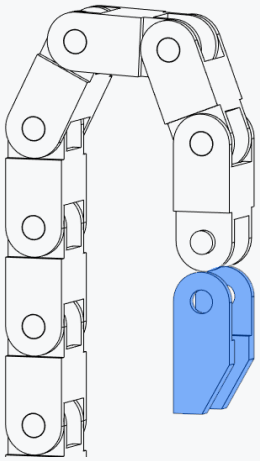
ALL UNITS ARE METRIC

If a unit is not specified assume it's metric.





Heat Set Insert



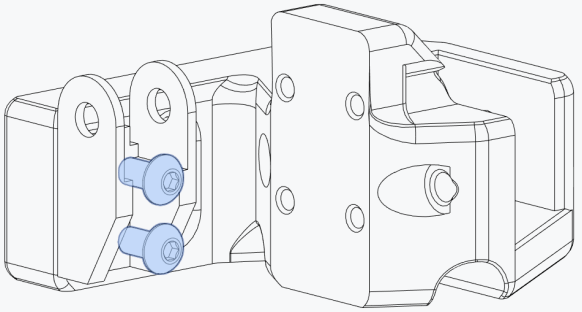
Cable Chain

REMOVE END LINK

Reattaching the chain later makes the assembly a lot easier.

CHAIN VISIBILITY

We won't be showing the chain in later pictures.



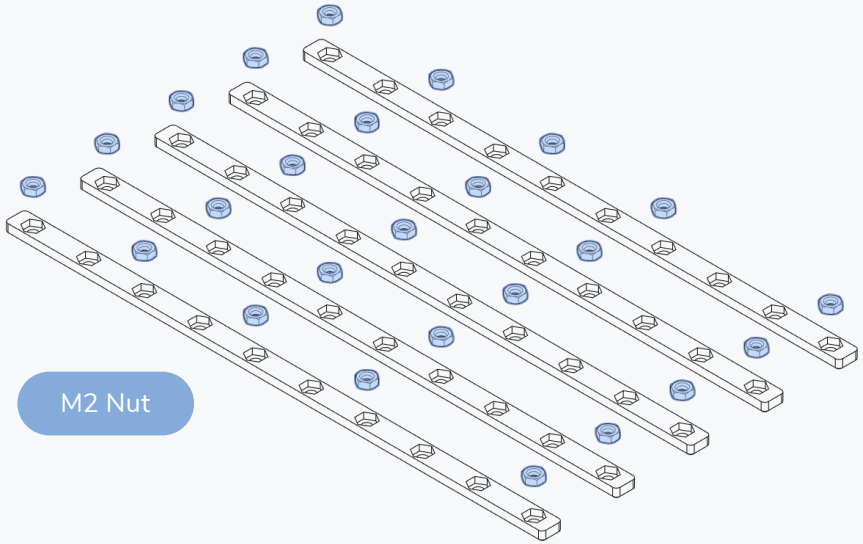
M3x8 BHCS

HEAT SET INSERTS

This design relies heavily on heat set inserts. Make sure you got the proper inserts (check the hardware reference for a close up picture).

If you've never worked with heat set inserts before we recommend you watch a guide.

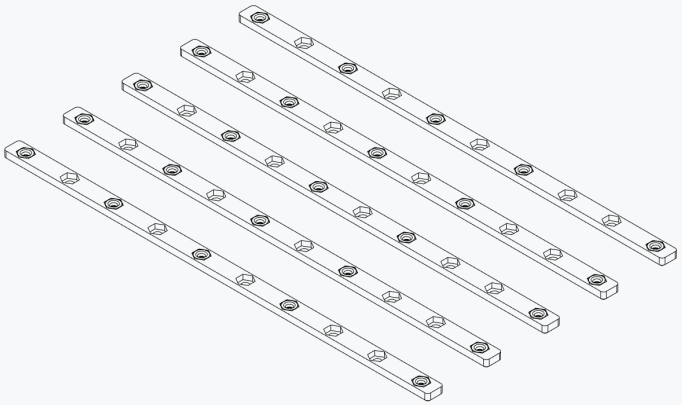
https://voron.link/cubk4lh

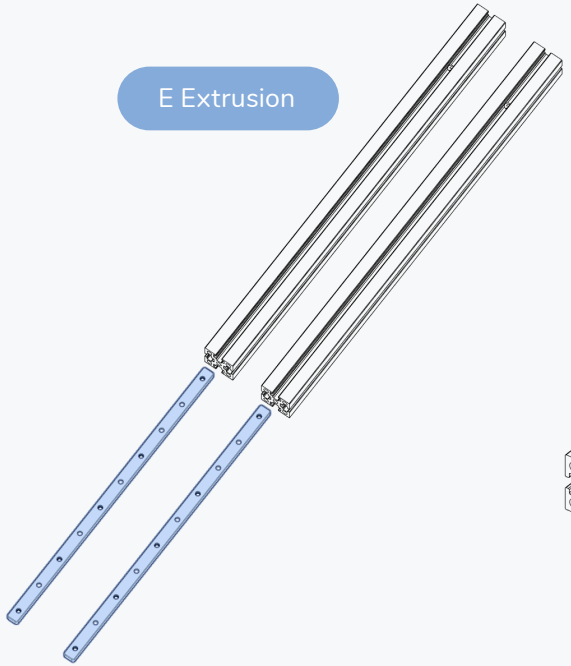


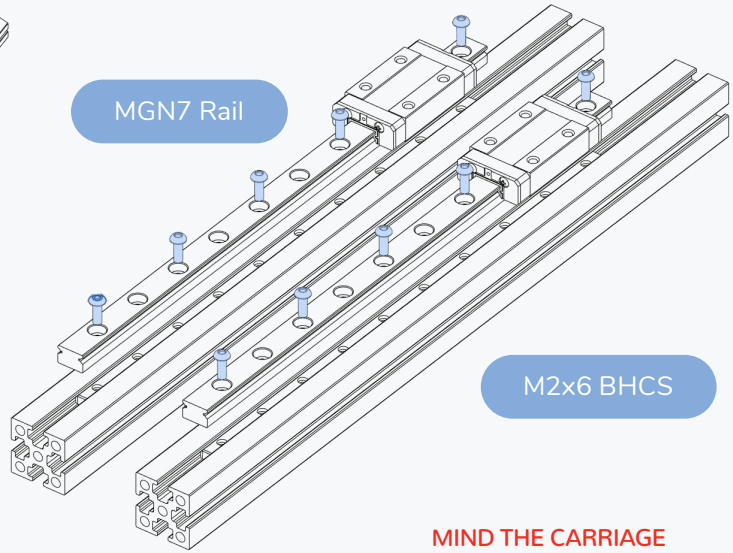
POPULATING NUT CARRIERS

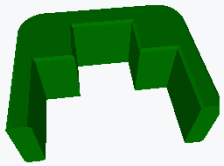
Depending on how much M2 hardware you sourced you may not be able to fully populate the M2 Nut Adapters.

To fully populate all 5 adapters you need 50 M2x6 screws and M2 nuts.









CENTRED RAIL INSTALLATION GUIDE

Use the guides to position the rail in the centre of the extrusion prior to fastening the screws.

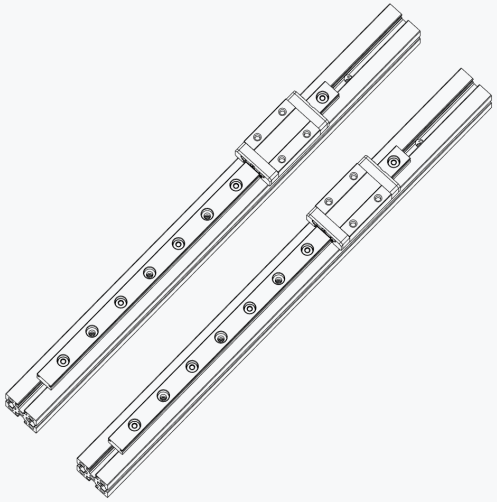
MIND THE ACCESS HOLE POSITION

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

MIND THE CARRIAGE

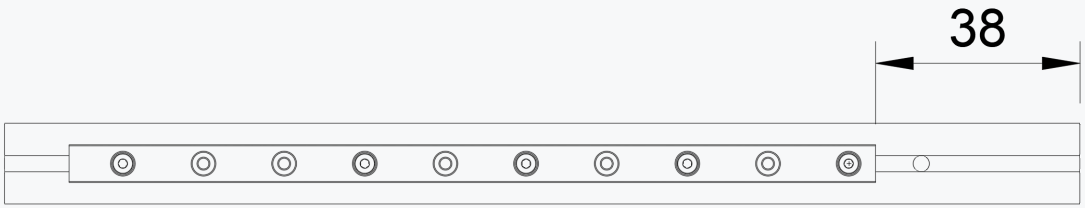
The carriages are designed to slide along the rail easily. This unfortunately also includes sliding off the rails.

Dropping the carriage likely irreparably damages it.



RAIL POSITIONING

Use the centring guides to align the rails on the extrusion.
Position the end of the rail 38mm from the extrusions edge.

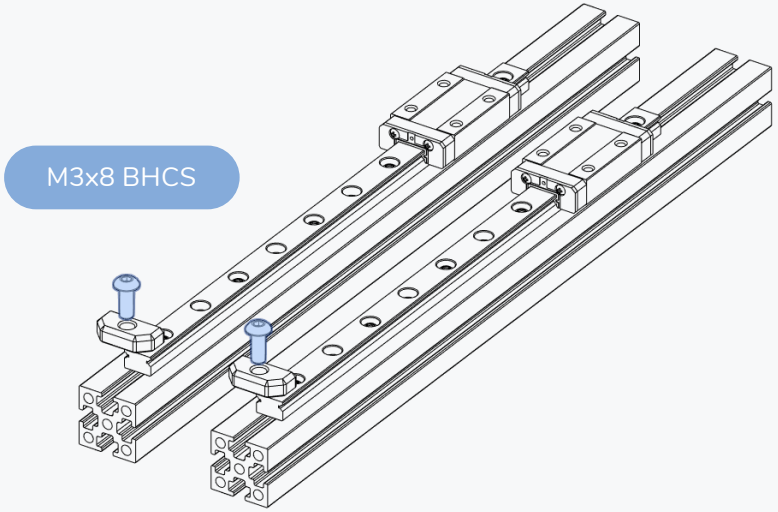


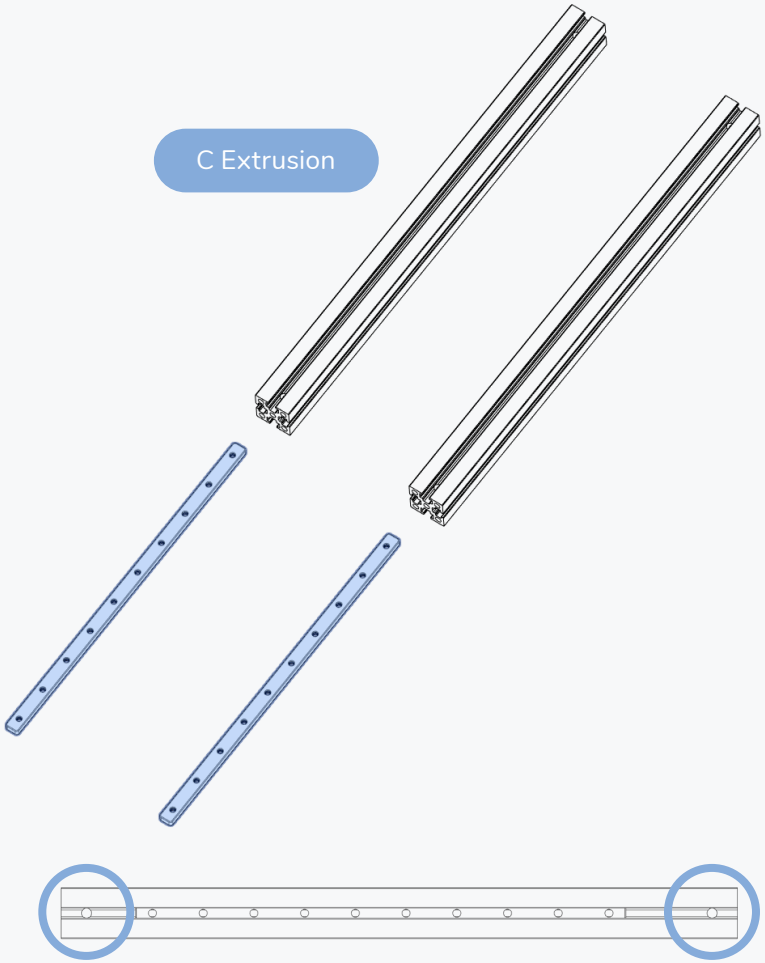
PREVENTING MISHAPS

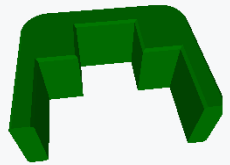
During assembly some rail ends won't be supported by stoppers that prevent the carriage from coming of the rails. Some rails come with little plastic stop pins, you can leave those in place for the assembly.

If your rail does not have these stop pins leave the last screws slightly loose to act as a stopper.

Alternatively use some tape to fix the carriage in place.

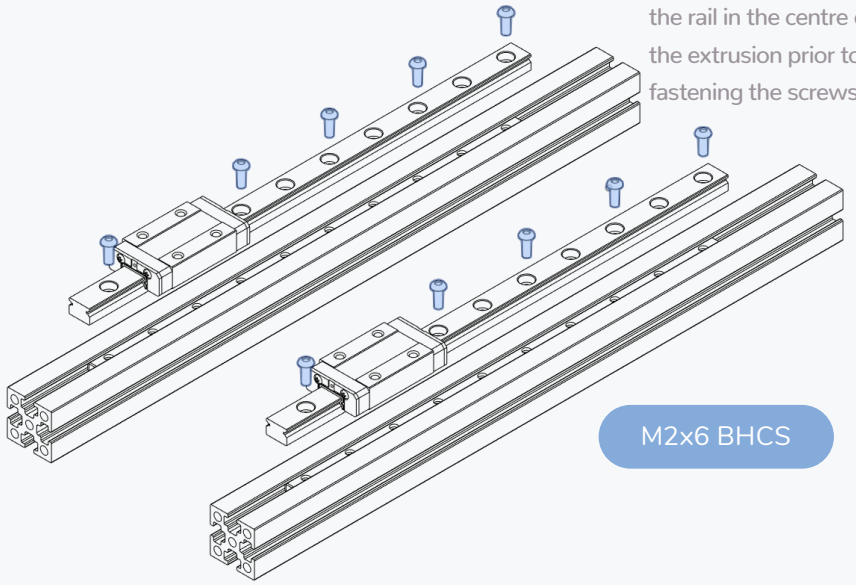


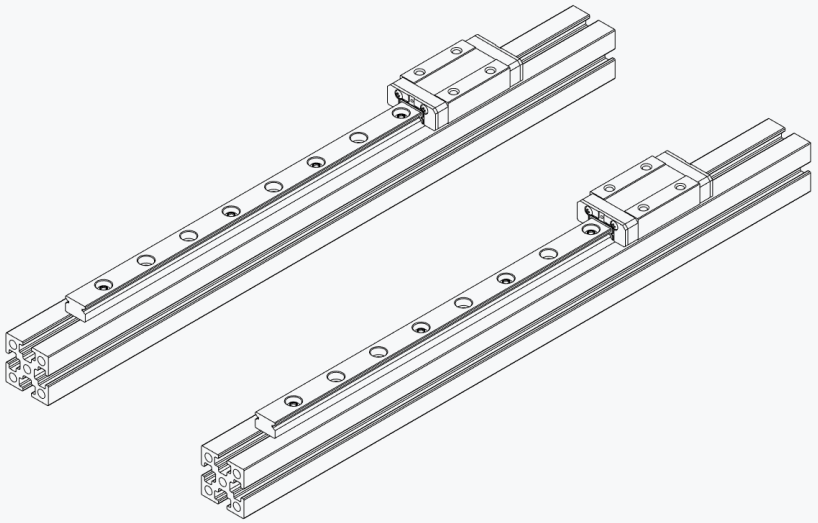


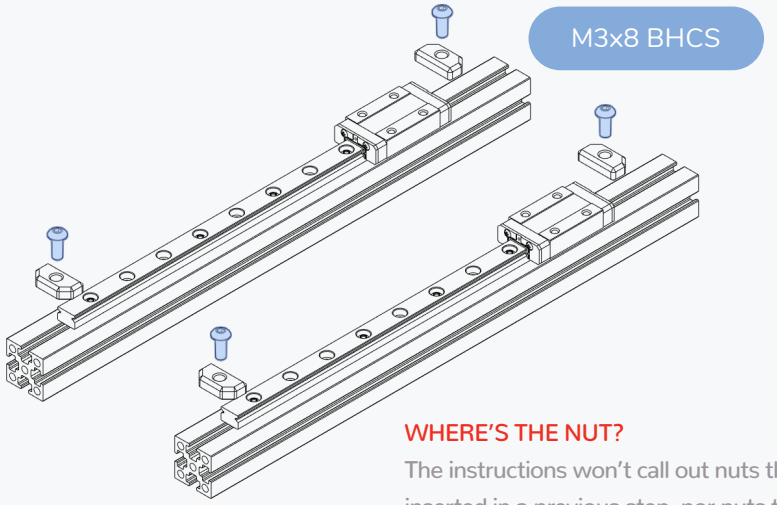


CENTRED RAIL INSTALLATION GUIDE

Use the guides to position the rail in the centre of the extrusion prior to fastening the screws.





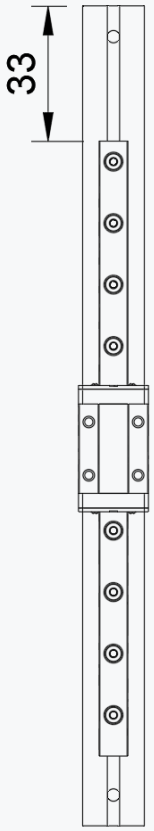


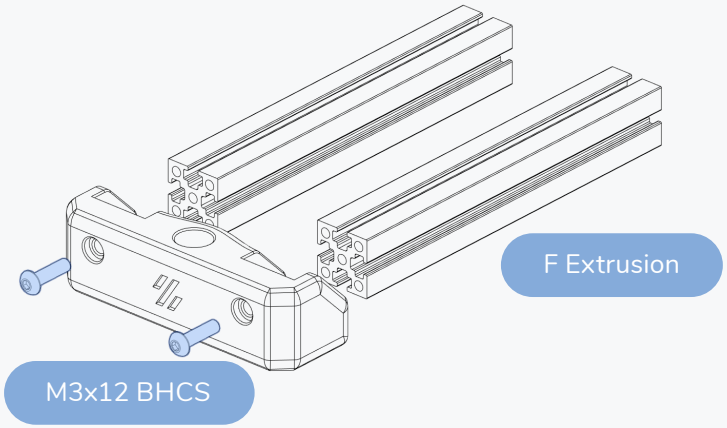
WHERE'S THE NUT?

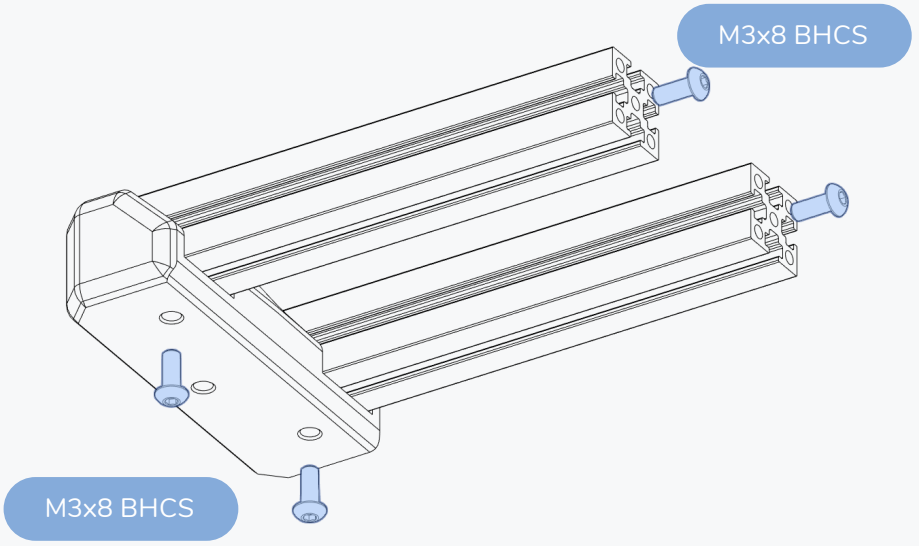
The instructions won't call out nuts that were inserted in a previous step, nor nuts that can be easily inserted in the current step.

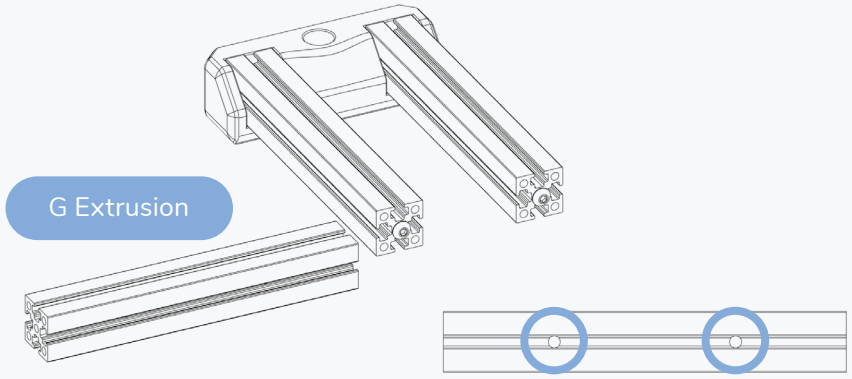
RAIL POSITIONING

Use the centring guides to align the rails on the extrusion.
Position the end of the rail 33 mm from the extrusions edge.



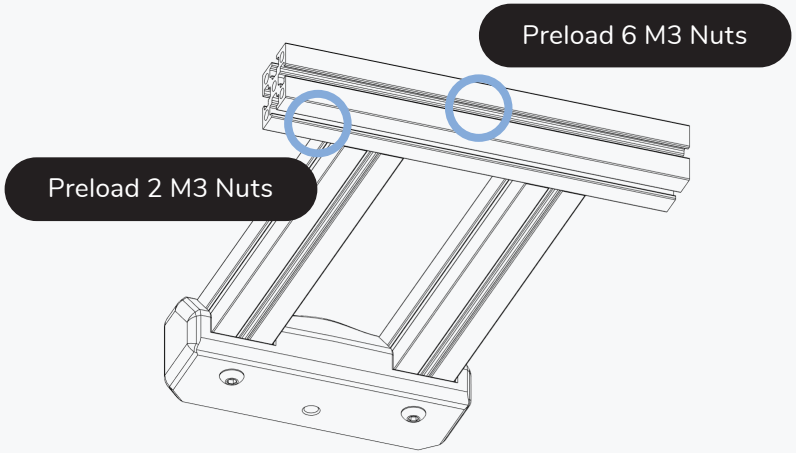

F Extrusion
M3x12 BHCS

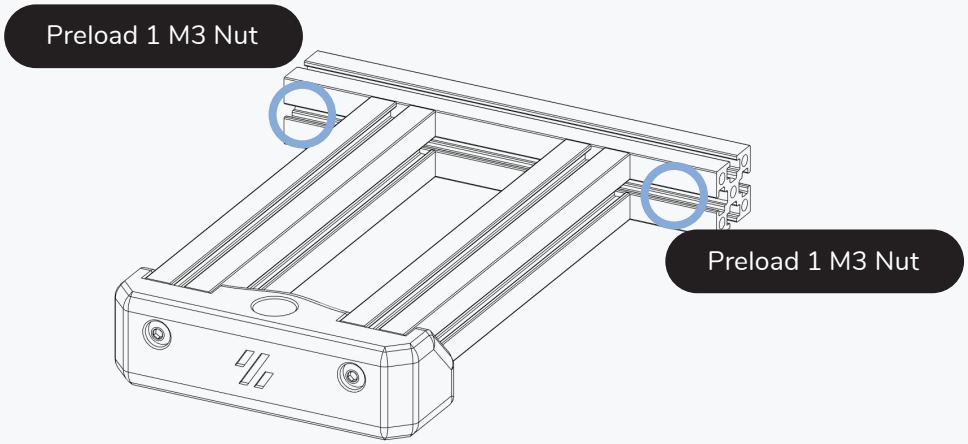

M3x8 BHCS
M3x8 BHCS



WRENCH ACCESS

Use a 2mm hex drive to tighten the screws behind the access holes.

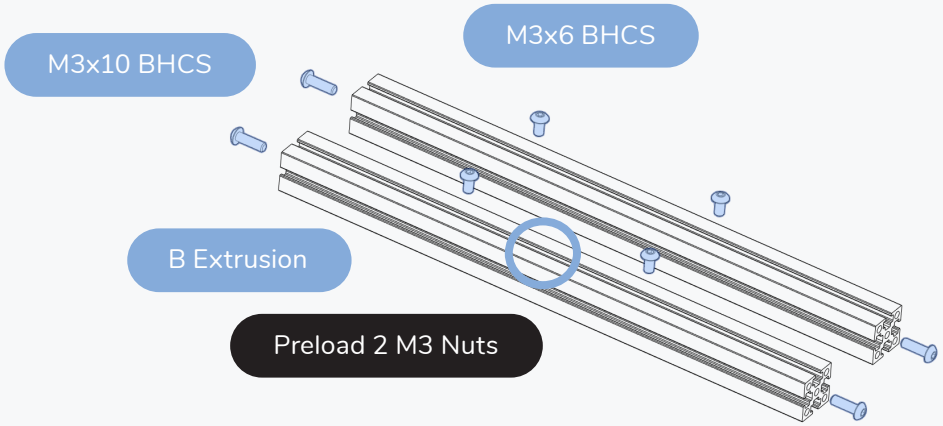




PRELOADING M3 NUTS

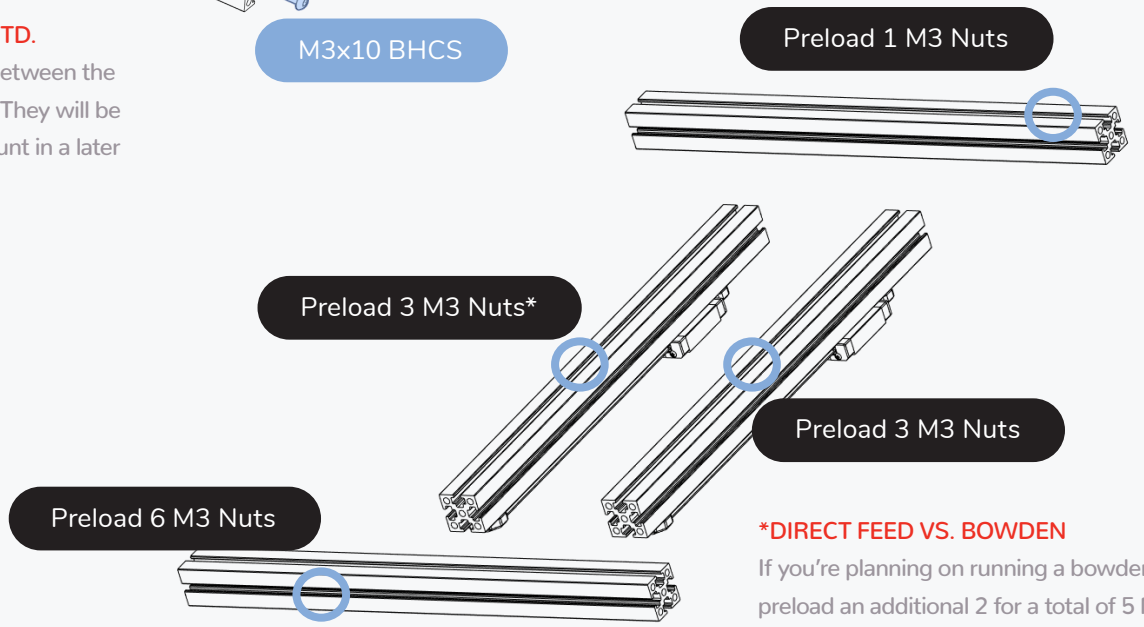
This call out means you need to add the specified number of nuts into the indicated slot/position at this step.

You can use a M3 fastener to temporarily fix them in place and prevent the from sliding out of the slot.



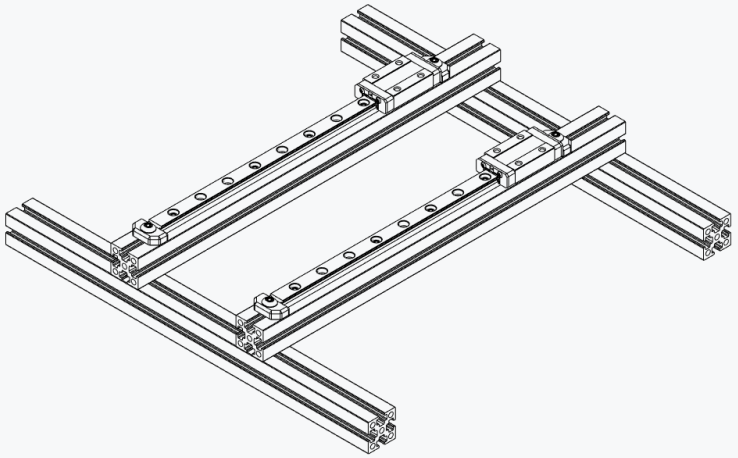
PRELOADING M3 NUTS CONTD.

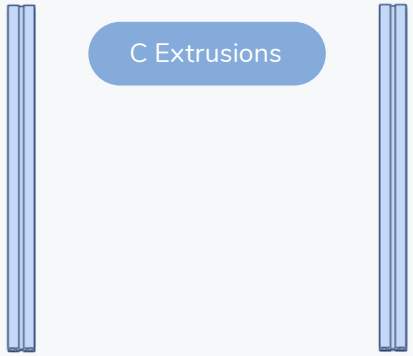
Preload 2 additional M3 nuts between the ones added to affix the M3x6. They will be used to attach the stepper mount in a later step.

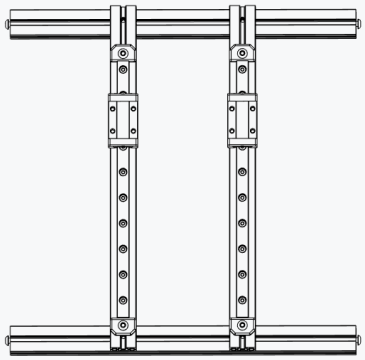


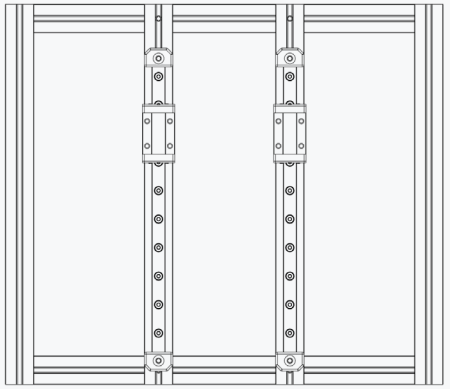
***DIRECT FEED VS. BOWDEN**

If you're planning on running a bowden setup preload an additional 2 for a total of 5 M3 nuts into the left upright extrusion. The extruder can be mounted to those later.









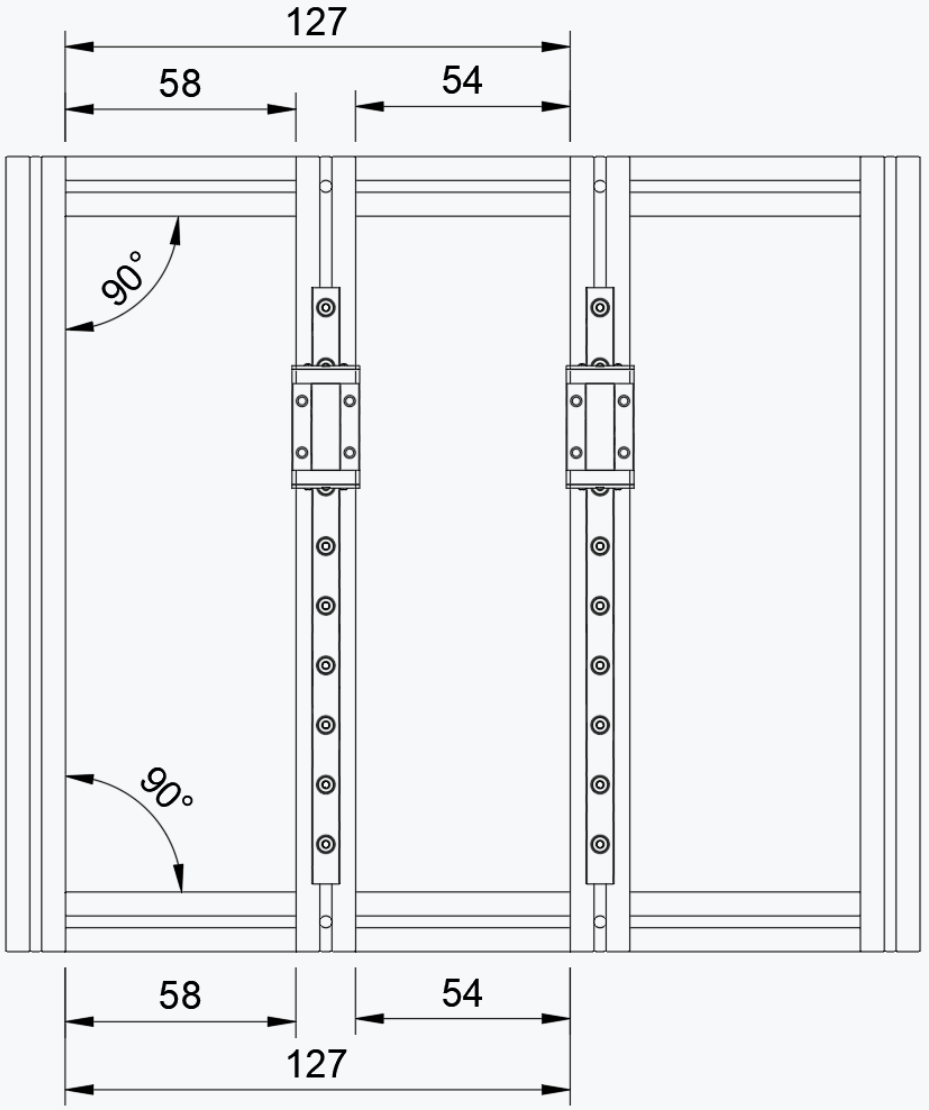
BUILD ON A FLAT SURFACE

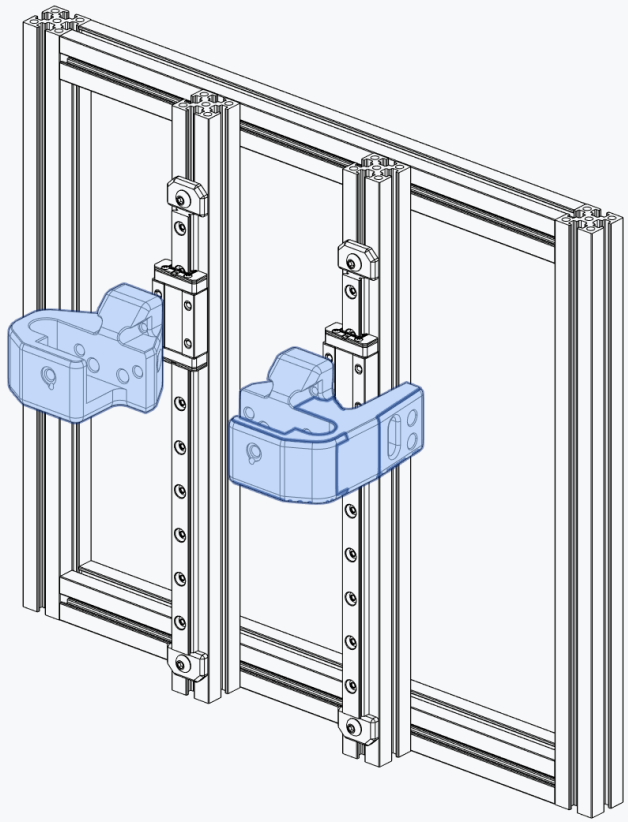
Build the frame and it's components on a glass or granite surface to ensure you can get it as square as possible.

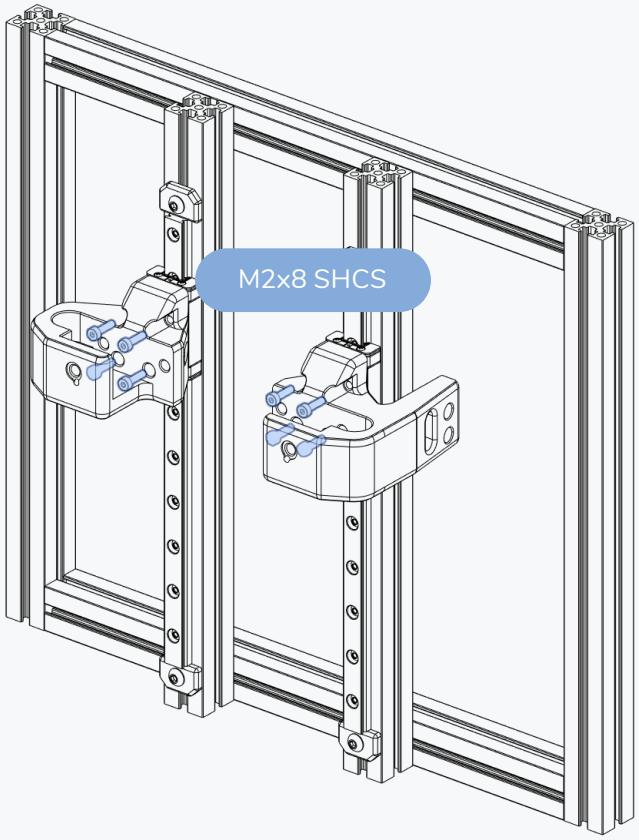
ADJUST POSITIONING

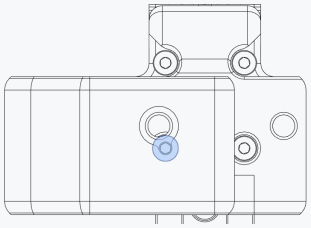
Adjust the position of the Z rails to match the dimensions shown on the right.

Ensure that the extrusions are parallel to each other as this will help tramming the Z axis.



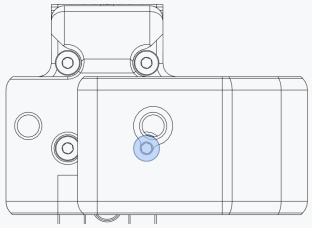


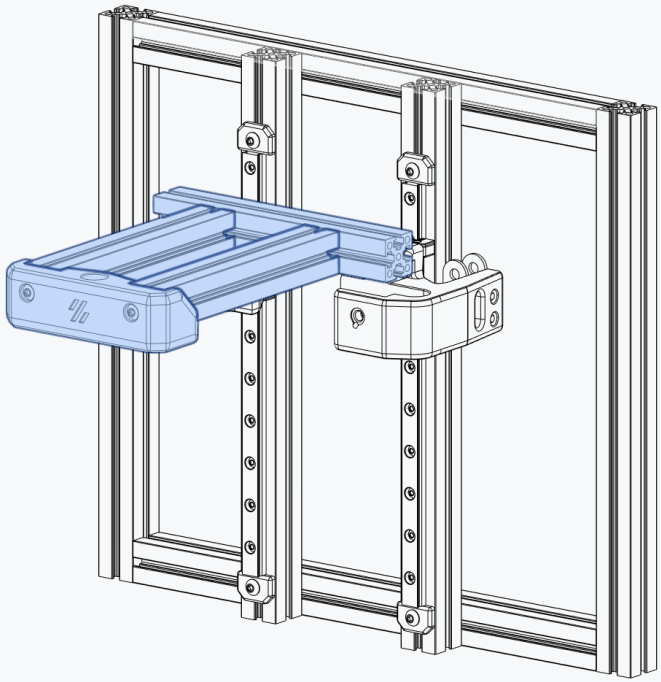


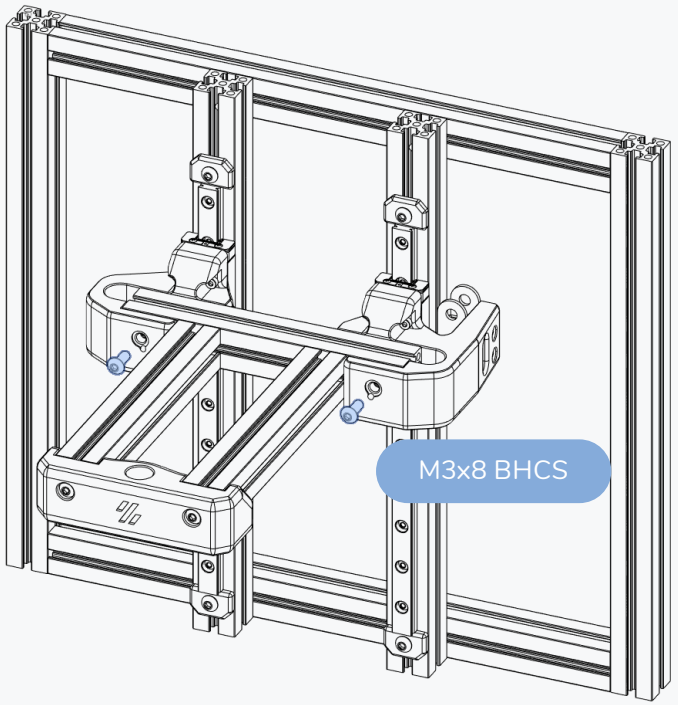


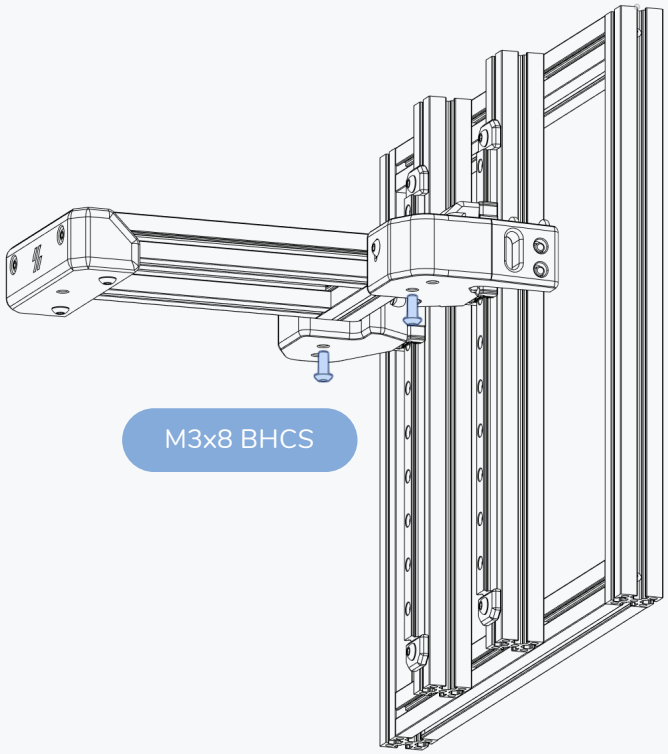
SCREW ACCESS

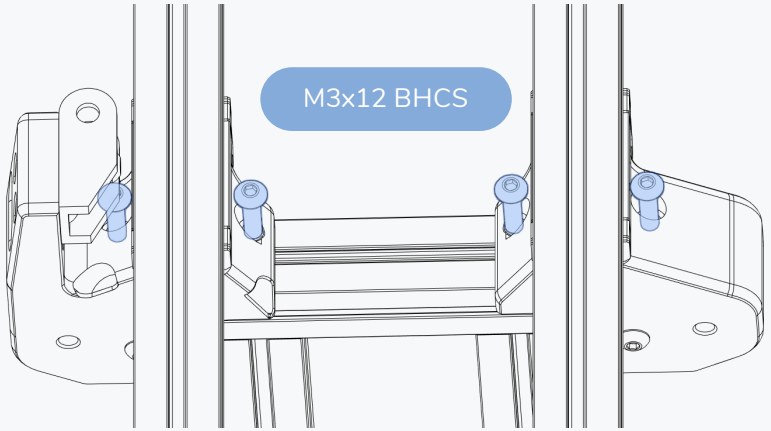
Use the small access hole and a long hex driver to fasten the hidden screws.





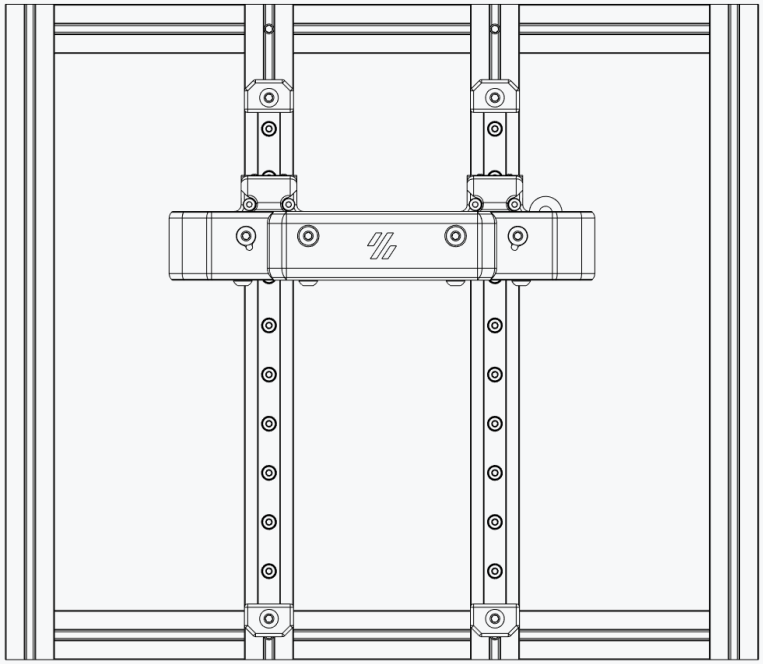

M3x8 BHCS

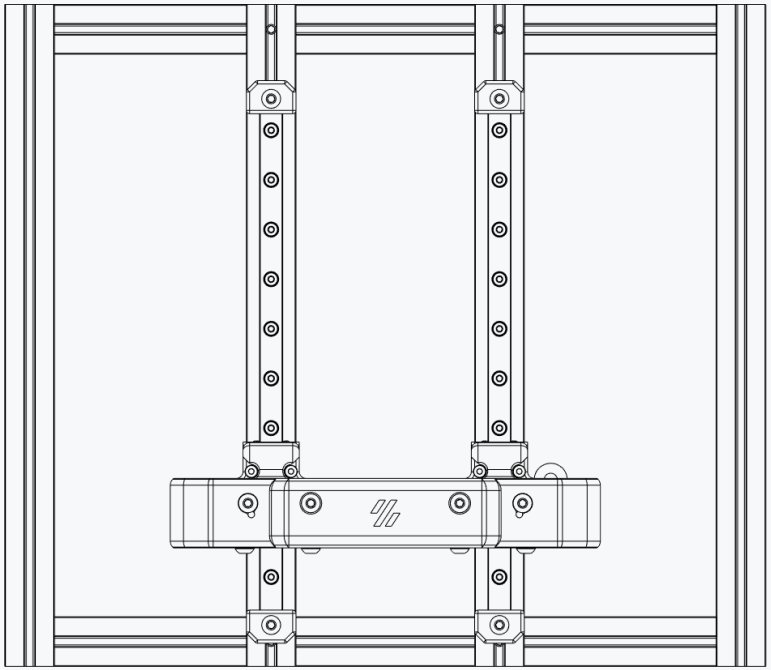




USE A BALL-END DRIVER

Use a 2.5mm ball-end driver to fasten the left screw.

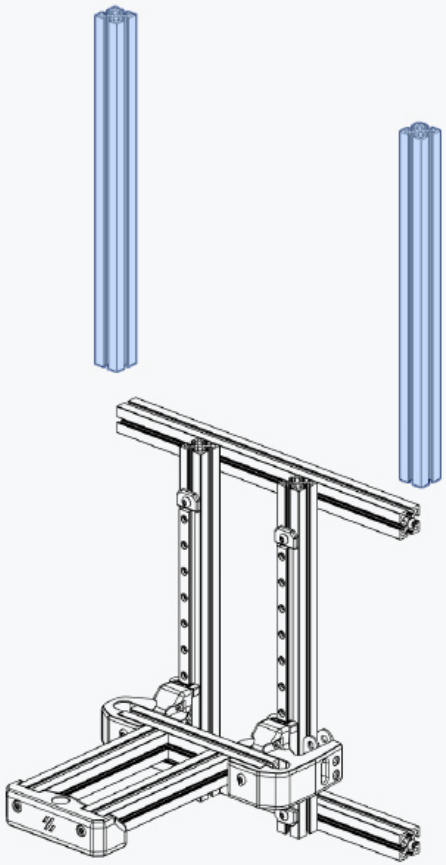




TRAMMING

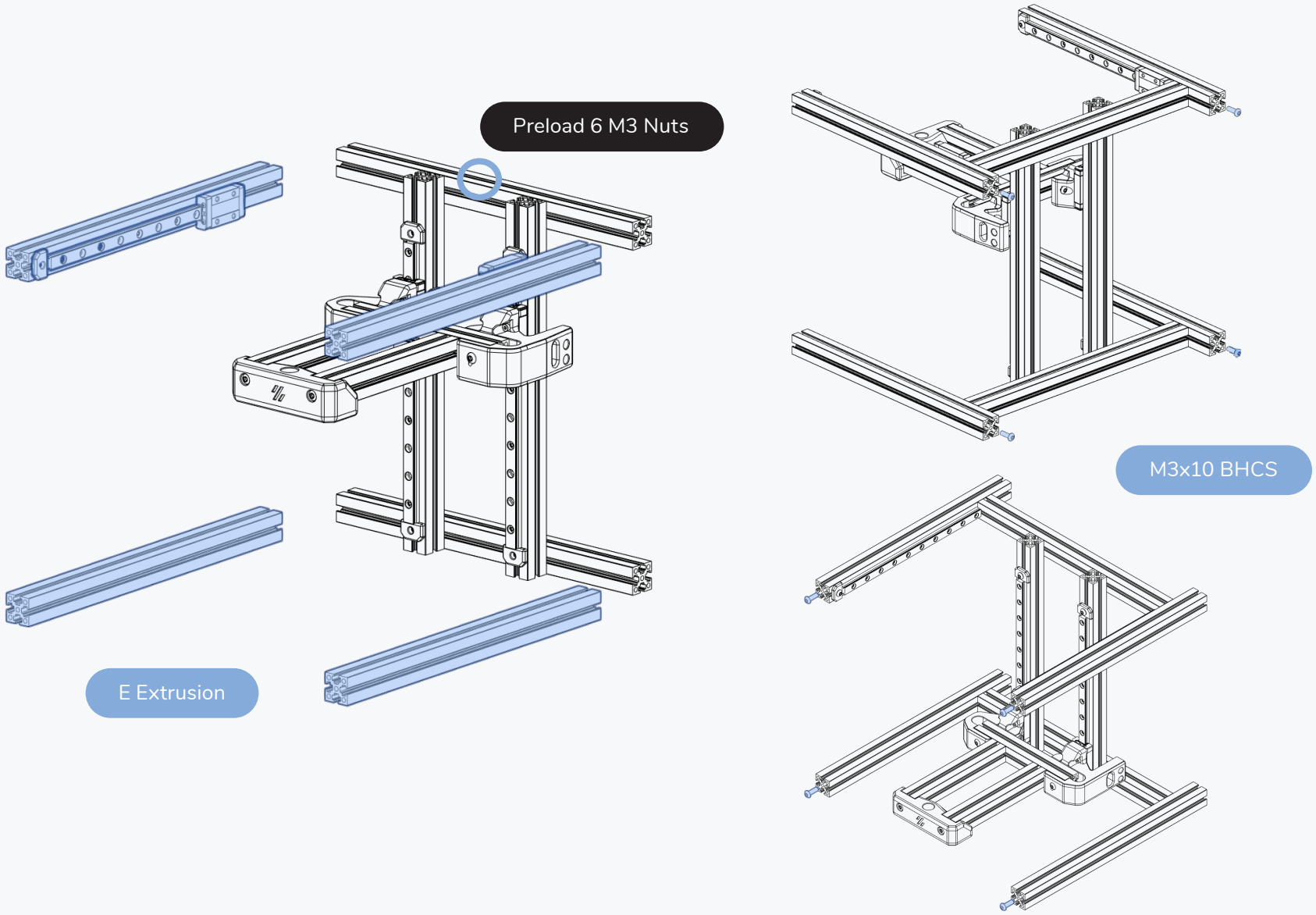
Check for any binding or snags while moving the bed carrier up and down the rails.
The bed carrier must be able to move freely along the entire length of the rail.

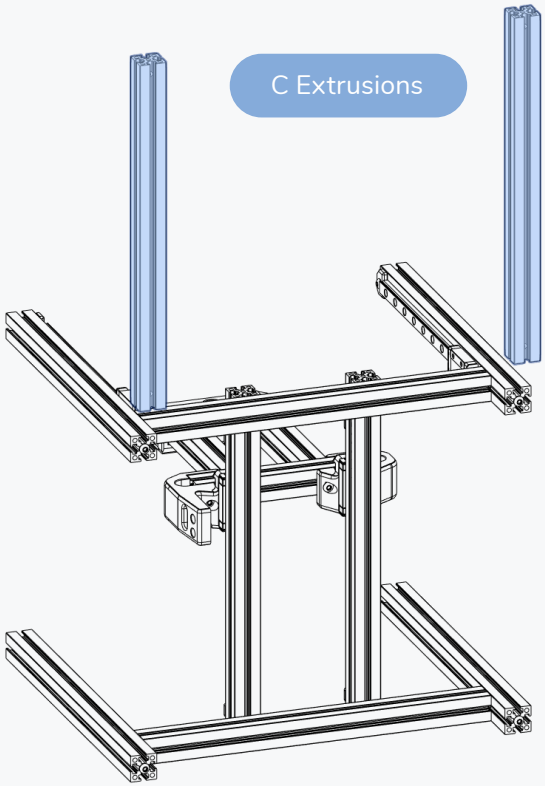
If it does not loosen the blind joints of the extrusion that hold the right rail. You'll need to remove the rail stopper on the right extrusion to access the screw.
Move the bed carrier along the entire length and progressively tighten the blind joint.
Should it start to bind loosen the blind joints again and retry. It may take a couple of attempts to get it right.

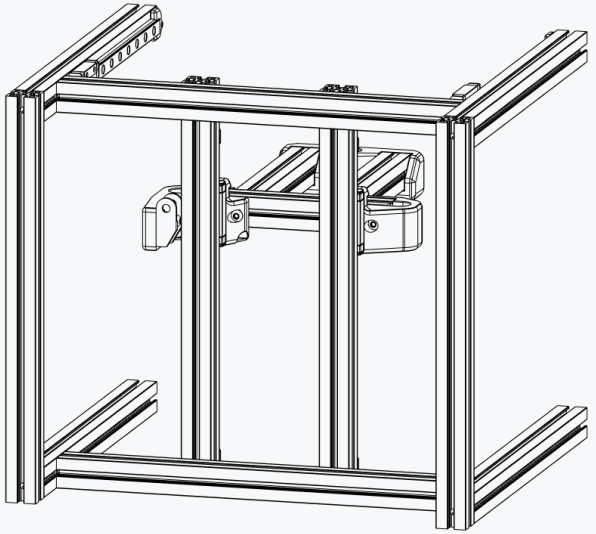


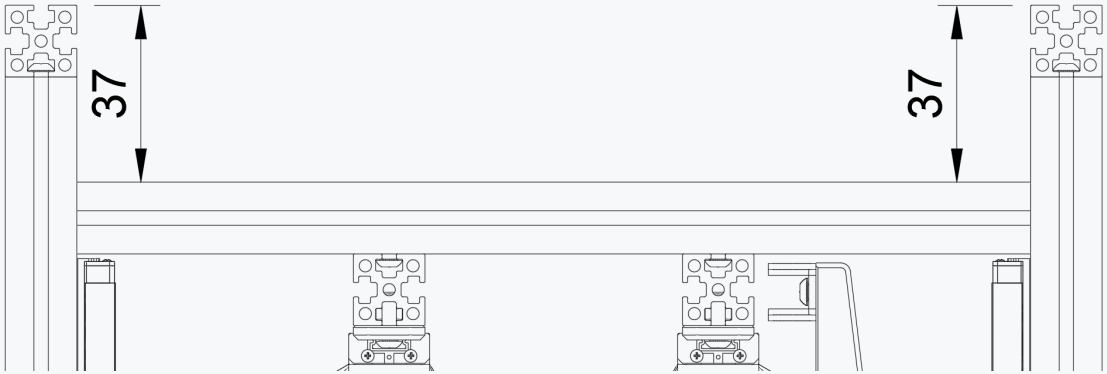
REMOVE UPRIGHTS

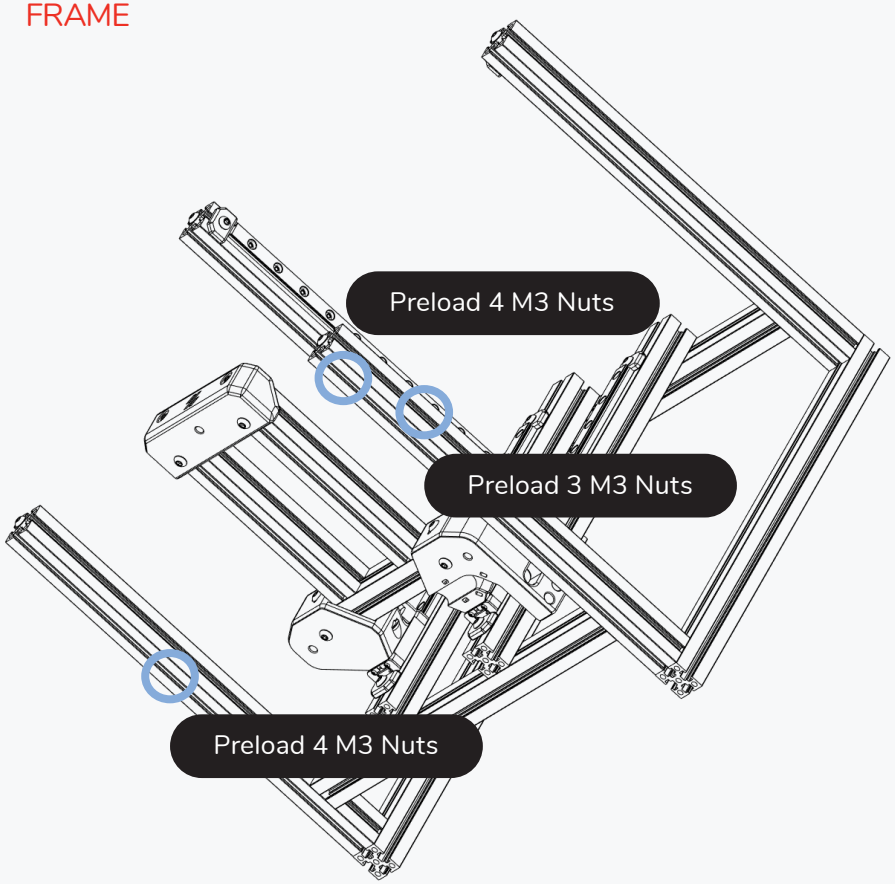
The extrusions were temporarily attached to help with the tramming.

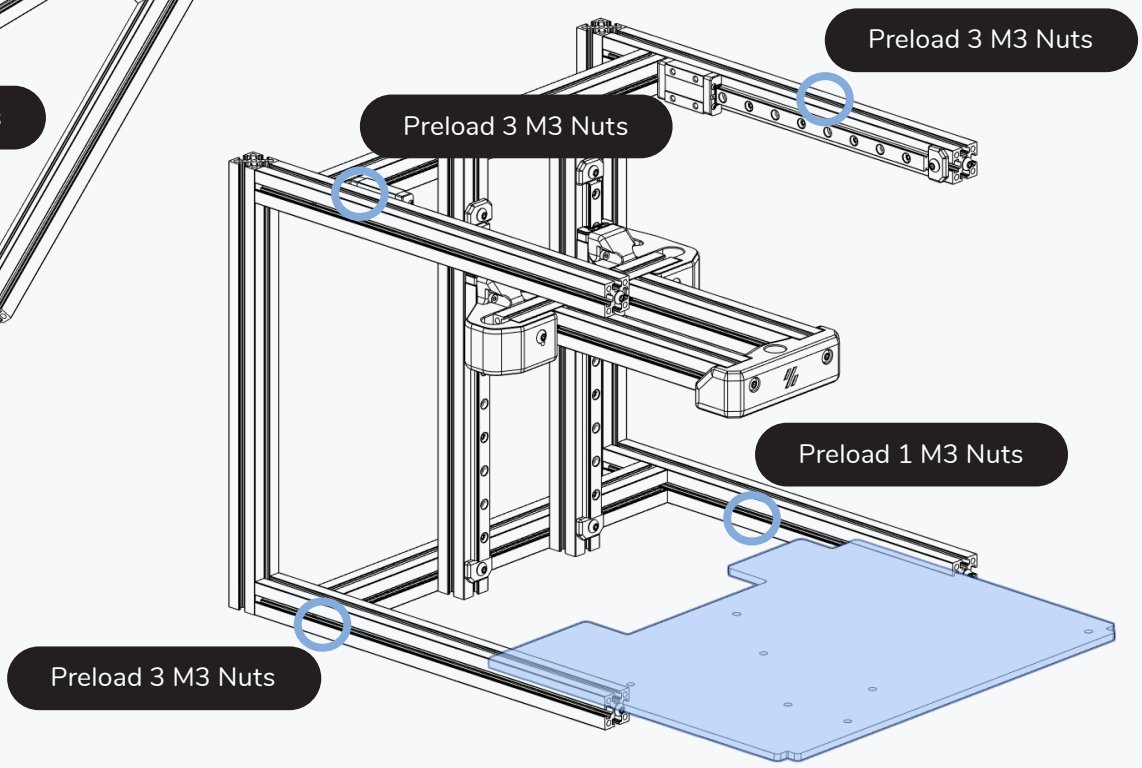

Preload 6 M3 Nuts
E Extrusion
M3x10 BHCS

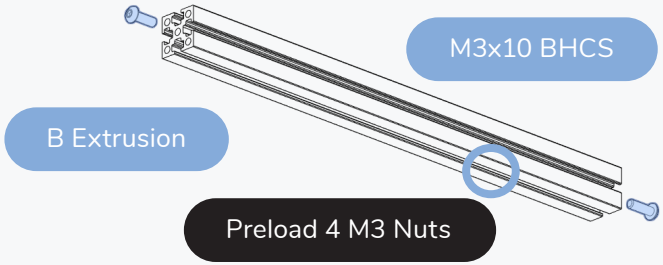

C Extrusions




37
37

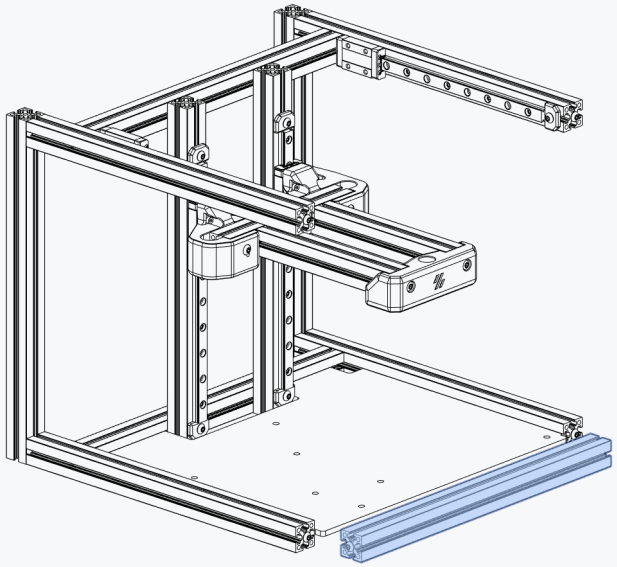

Preload 4 M3 Nuts
Preload 3 M3 Nuts
Preload 4 M3 Nuts

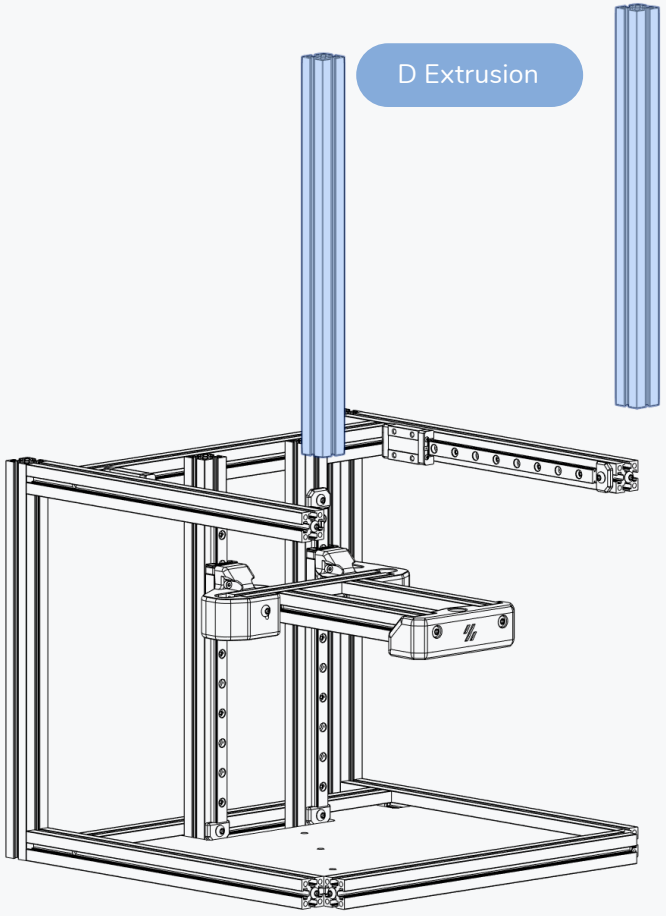

Preload 3 M3 Nuts
Preload 3 M3 Nuts
Preload 1 M3 Nuts
Preload 3 M3 Nuts

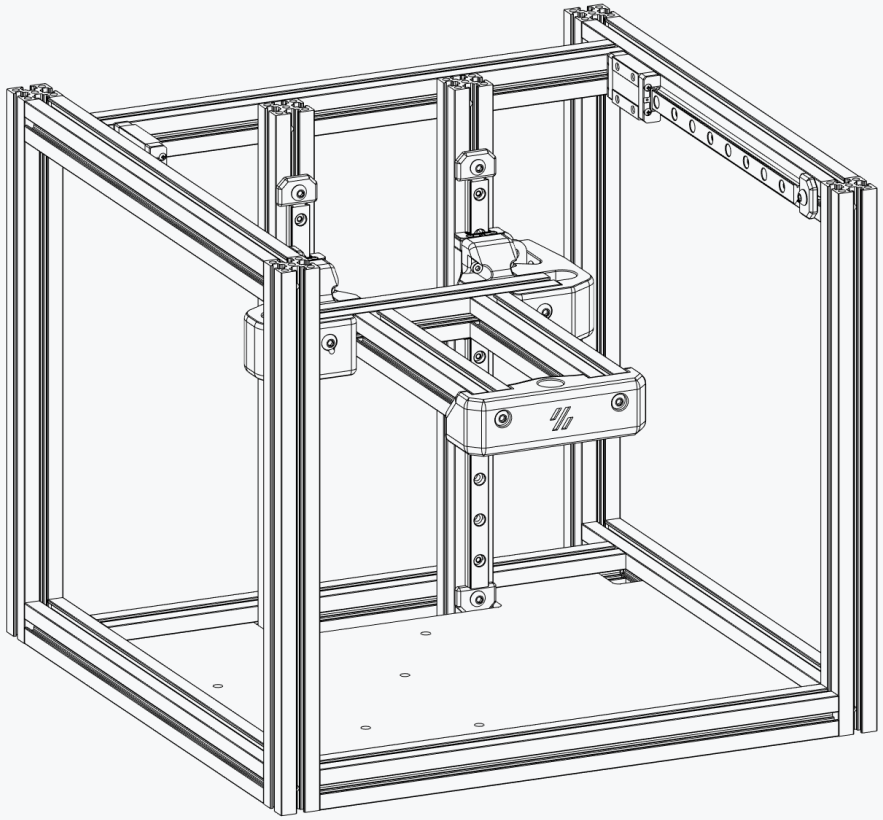


PRELOADED NUTS

Preload the nuts into the bottom facing channel. The skirts will mount to them.



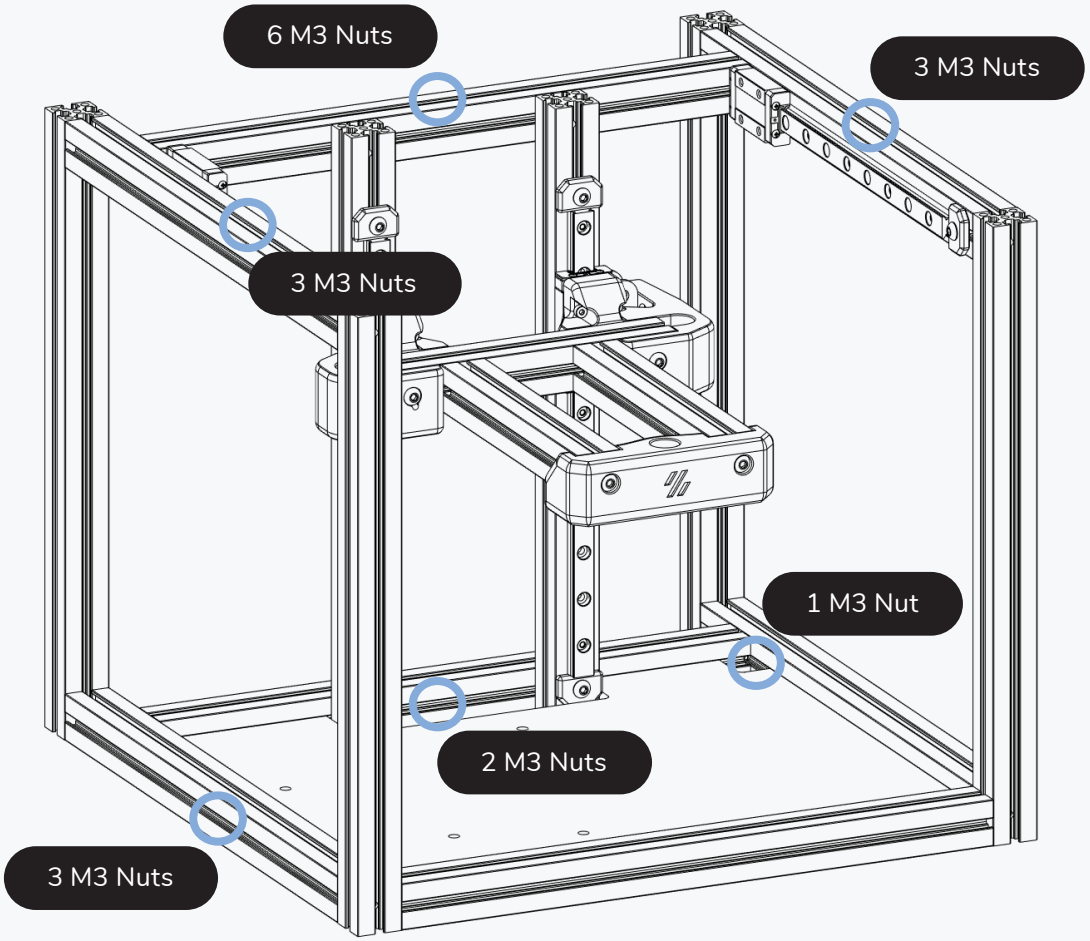


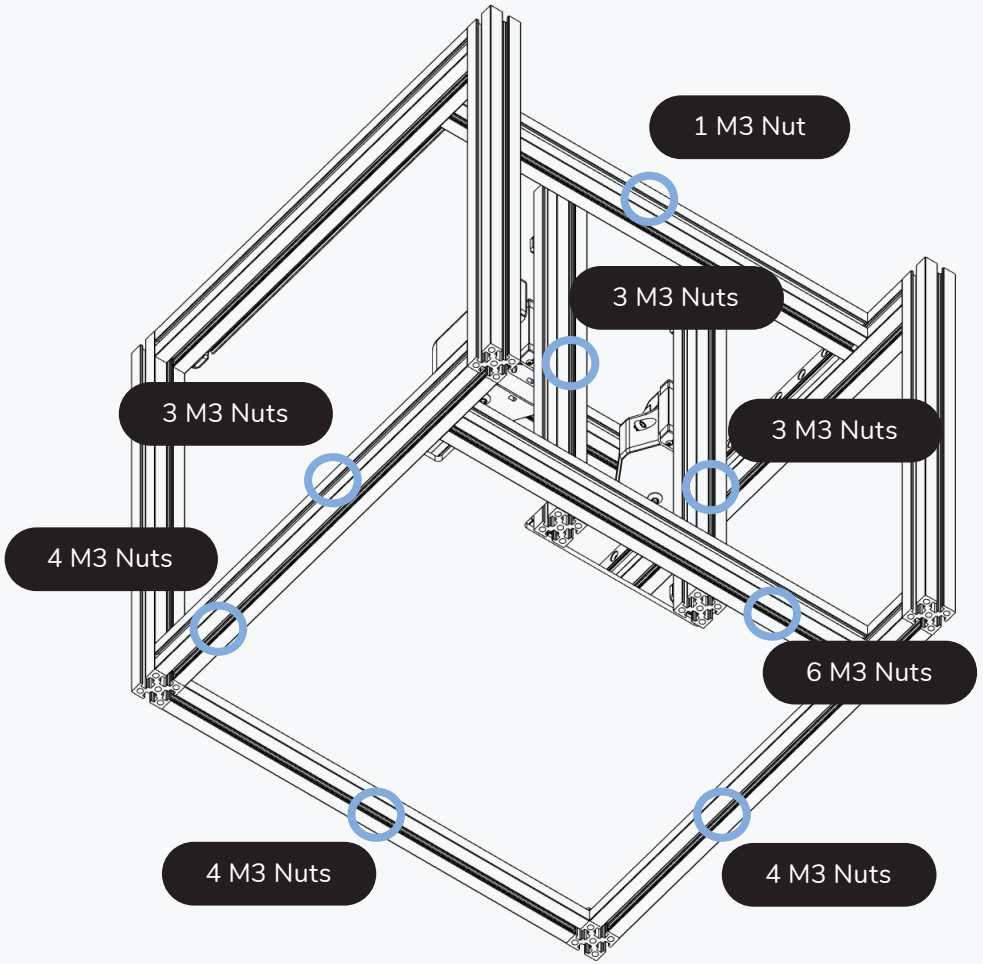


VERIFY PRELOADED NUT COUNT

Check that you preloaded the required amount of M3 hex nuts in the slots.

Adding missing nuts will become increasingly harder the further you progressed into the build.





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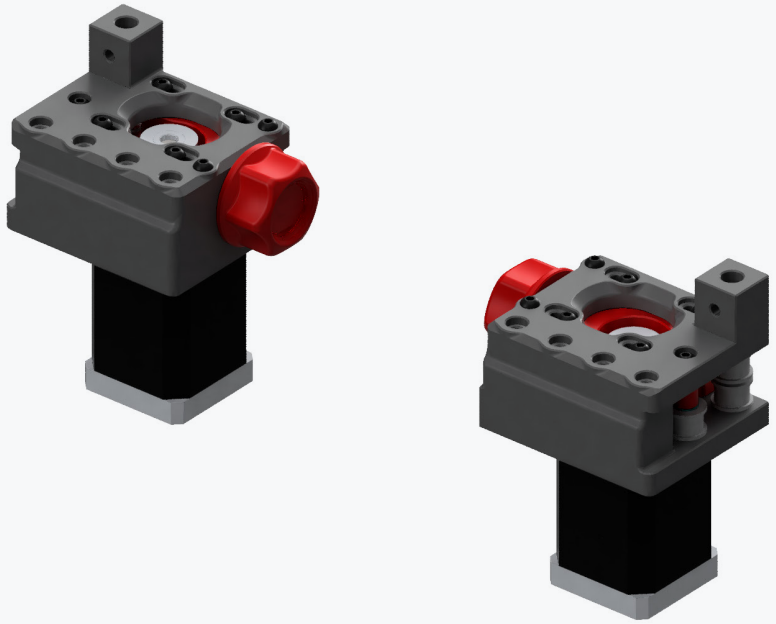
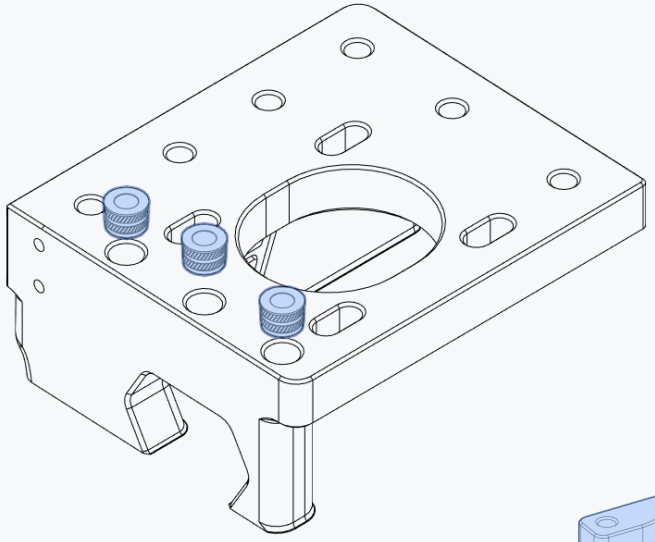
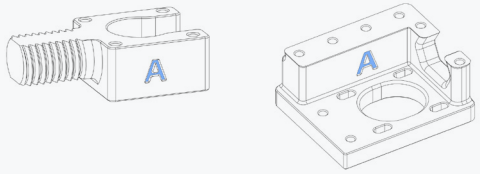


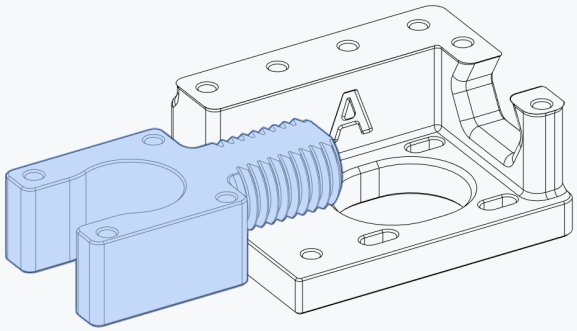


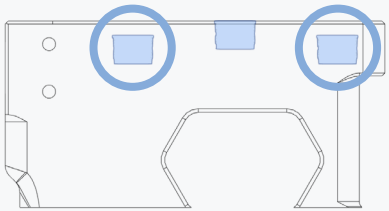
Heat Set Insert

IDENTIFYING THE RIGHT PART

The parts have their sides embossed.

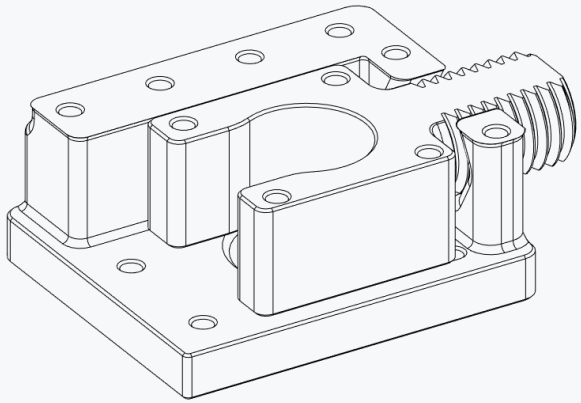


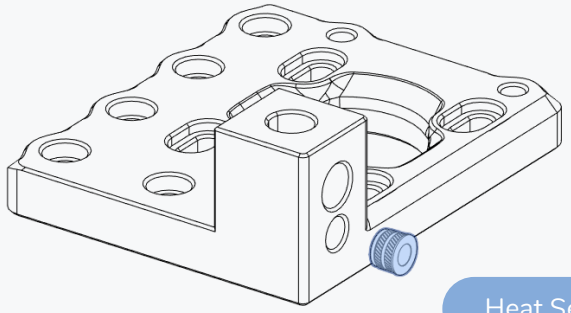




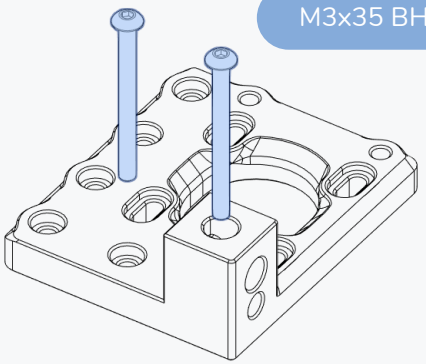
INSERTS SIT BELOW THE SURFACE

The outer heat set inserts sit below the surface of the part. When installing make sure the heat set inserts bottom out in their hole.





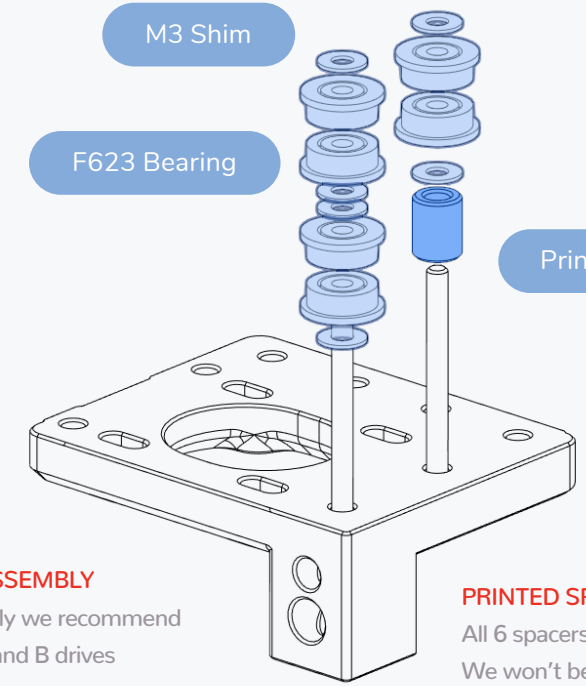
Heat Set Insert



M3x35 BHCS

A NOTE ON SHIMS

We specify shims as they have a consistent thickness compared to regular washers. If you sourced washers instead make sure to measure their thickness (target = 0.5mm) to avoid issues with the stackup.

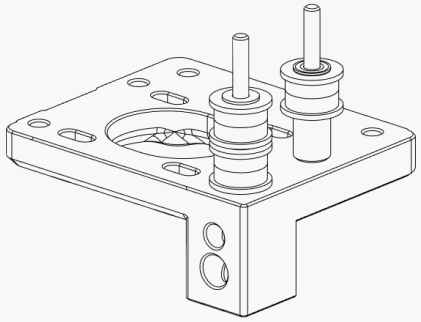


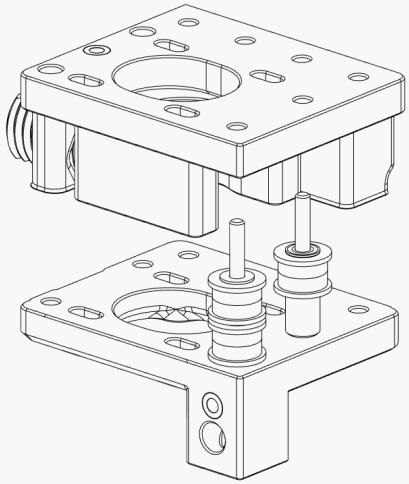
UPSIDE DOWN ASSEMBLY

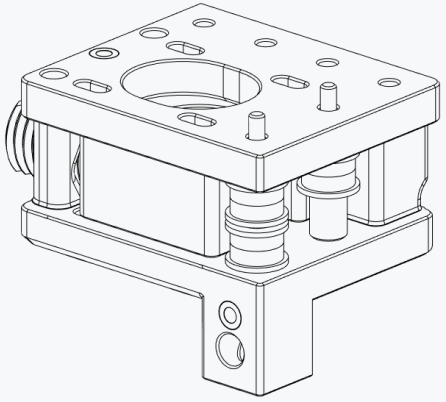
For ease of assembly we recommend to assemble the A and B drives upside down.

PRINTED SPACER

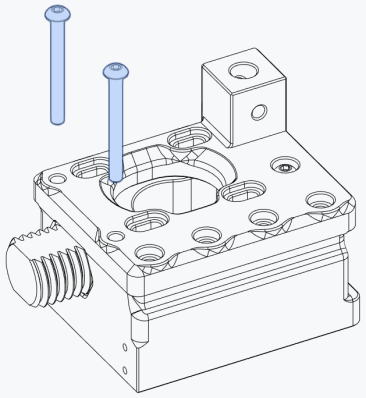
All 6 spacers are identical. We won't be calling them out going forward.



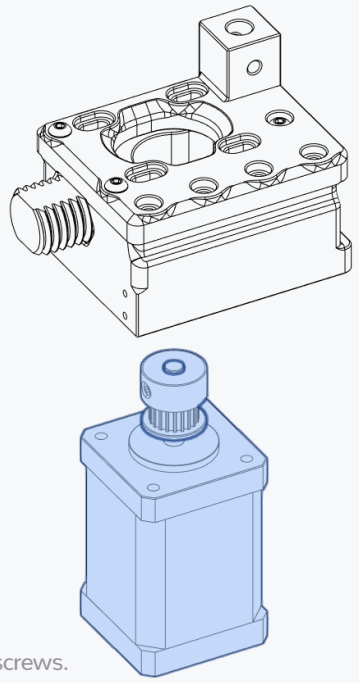


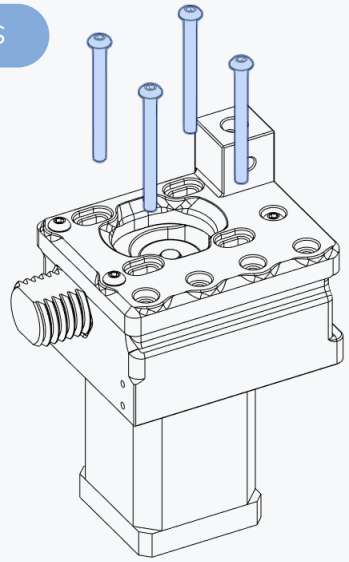


M3x30 BHCS

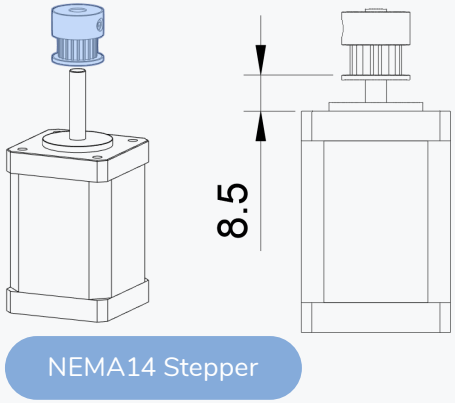


M3x35 BHCS





GT2 20T Pulley



NEMA14 Stepper

GRUB SCREWS

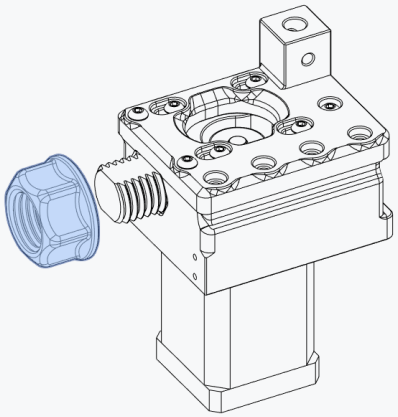
AKA THE ROOT OF ALL ISSUES

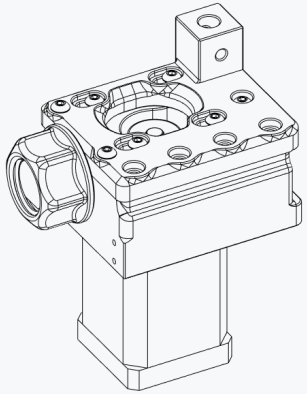
Use thread locker on all grub screws.

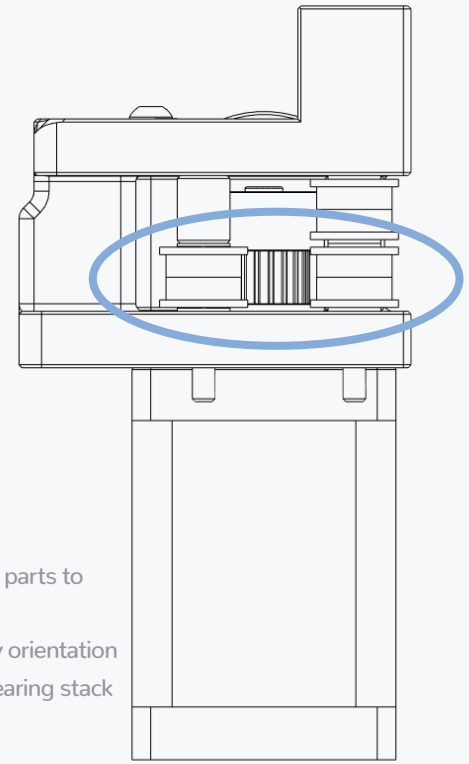
Loose grub screws account for a large percentage of issues that our users report. Save yourself hours of troubleshooting and apply thread locker to all grub screws during the build.
See the products application notes for instructions.

DON'T TIGHTEN

Leave the screws slightly loose. Tightening them fully will lock the tension adjustment.

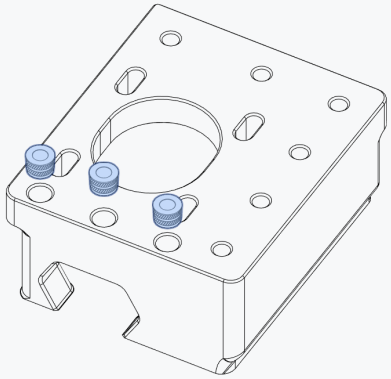




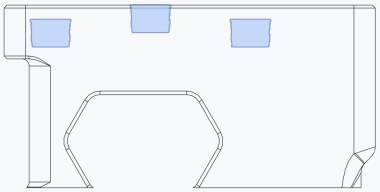


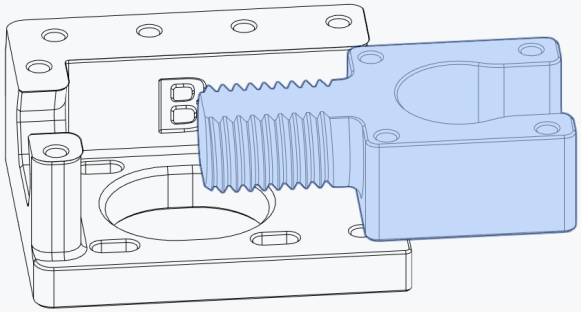
CHECK YOUR WORK

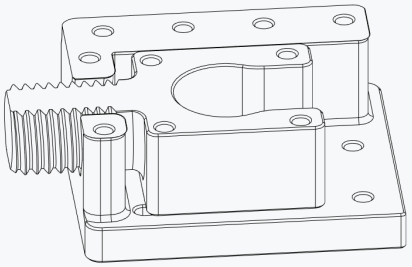
Compare your assembled parts to the graphic shown here.
Pay attention to the pulley orientation and alignment with the bearing stack ups.



Heat Set Insert

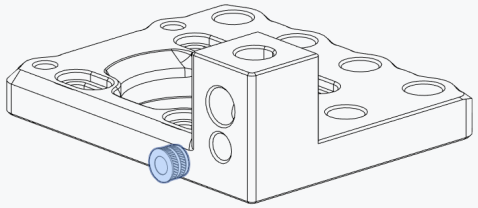




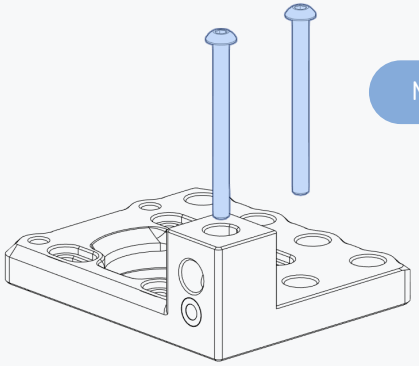


INSERTS SIT BELOW THE SURFACE

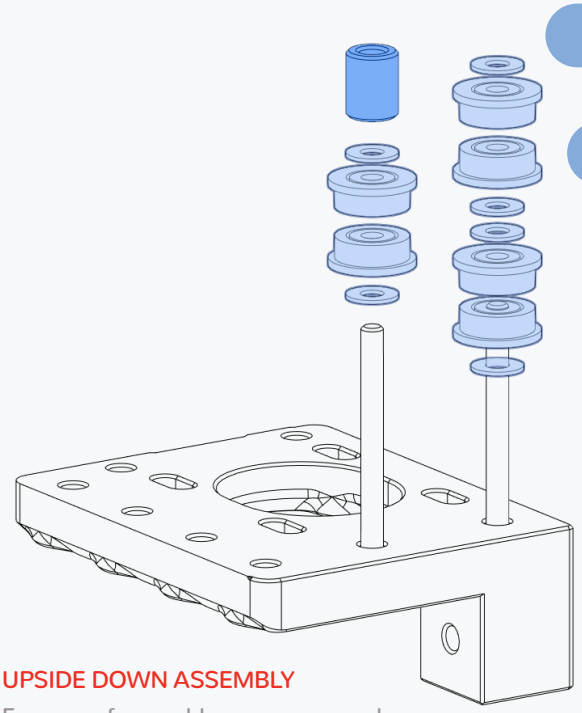
The outer heat set inserts sit below the surface of the part. When installing make sure the heat set inserts bottom out in their hole.



Heat Set Insert



M3x35 BHCS

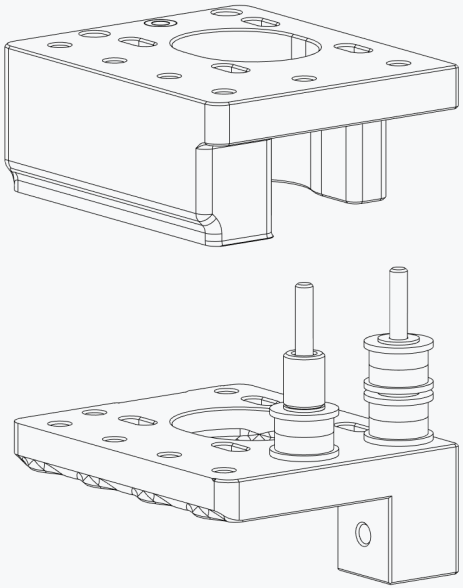


M3 Shim

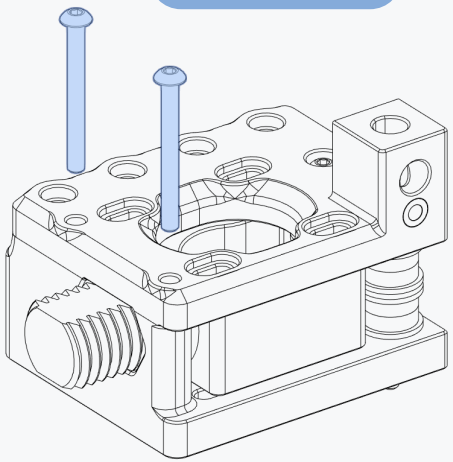
F623 Bearing

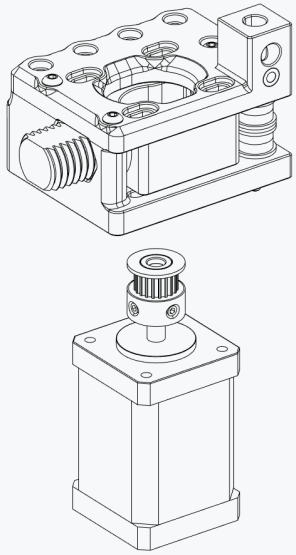
UPSIDE DOWN ASSEMBLY

For ease of assembly we recommend to assemble the A and B drives upside down.

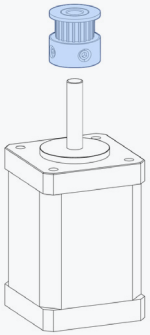


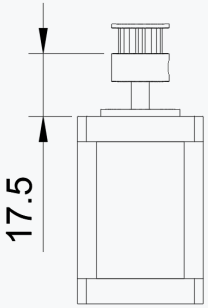
M3x30 BHCS

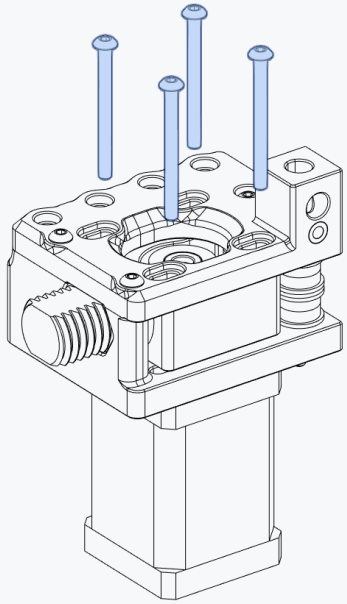




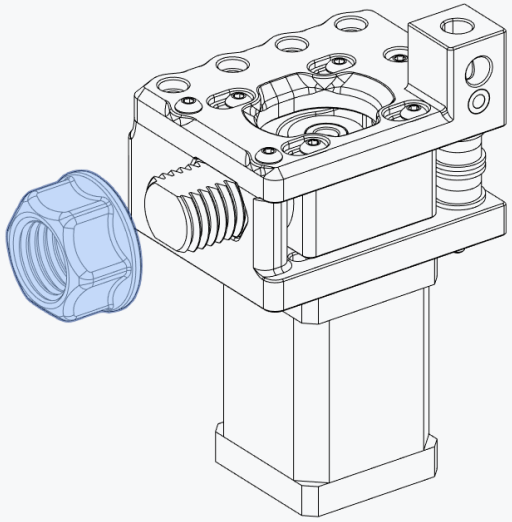
GT2 20T Pulley





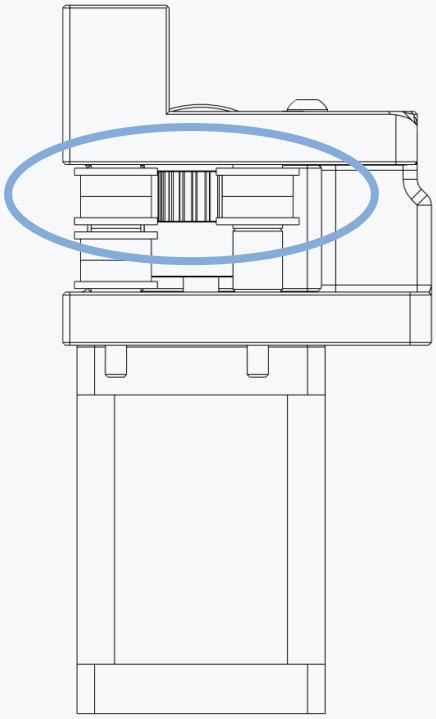


M3x35 BHCS



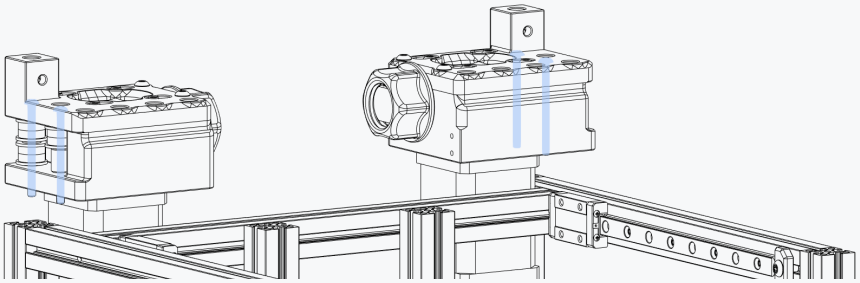
DON'T TIGHTEN

Leave the screws slightly lose. Tightening them fully will lock the tension adjustment.



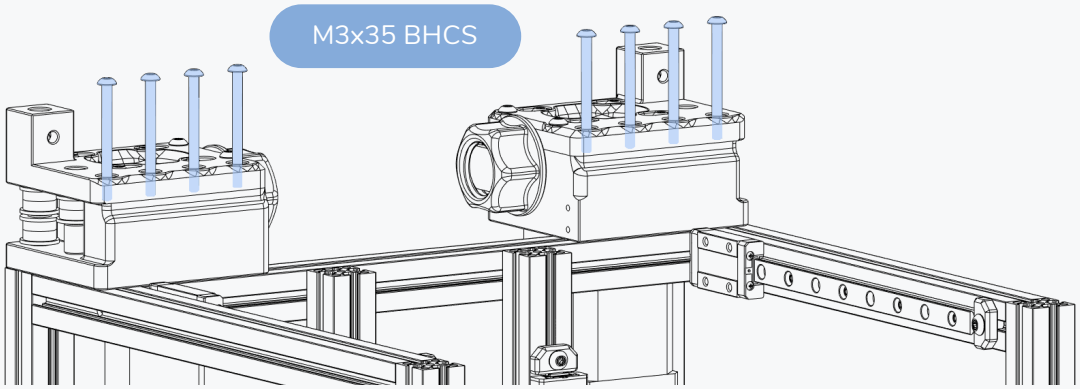
CHECK YOUR WORK

Compare your assembled parts to the graphic shown here.
Pay attention to the pulley orientation and alignment with the bearing stack ups.



PRELOADED NUTS

The screws are fastened into the preloaded nuts.
Slide the nuts into position prior to placing the part. Use a skewer to align them with the screwhole.



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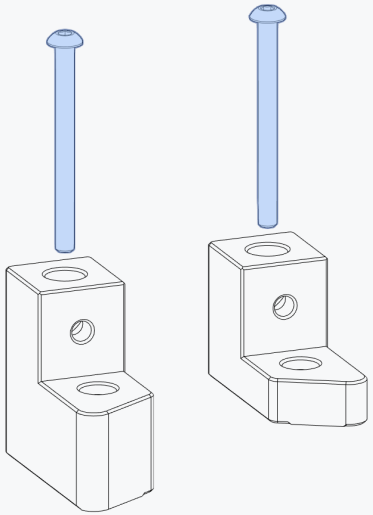
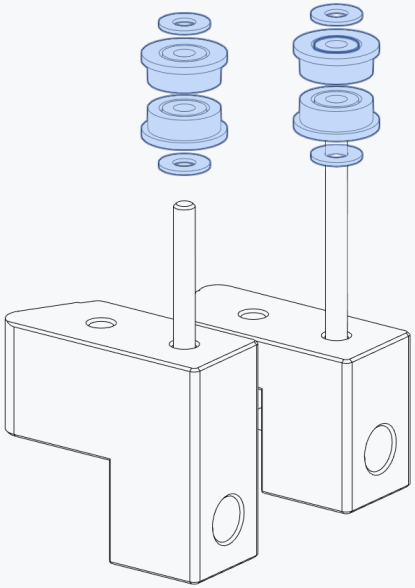
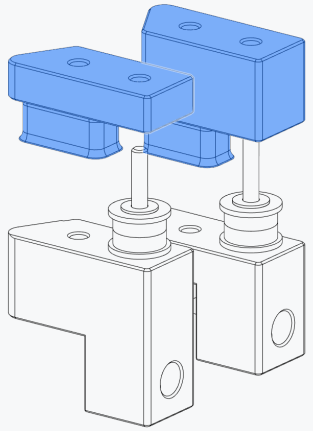
M3x35 BHCS

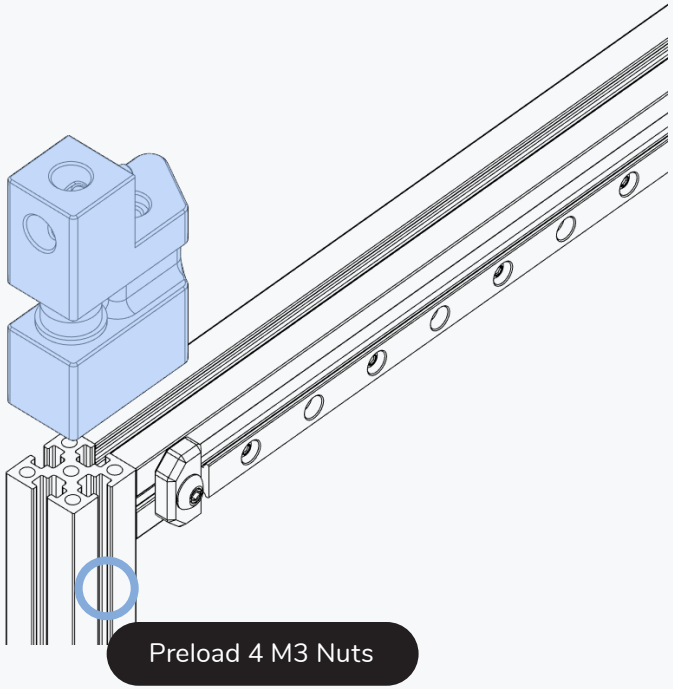


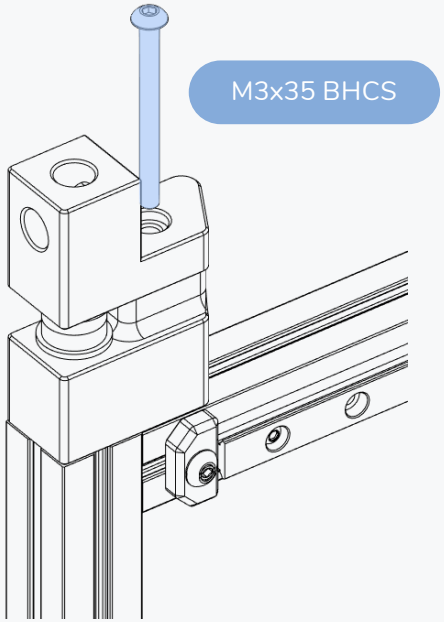
M3 Shim

F623 Bearing



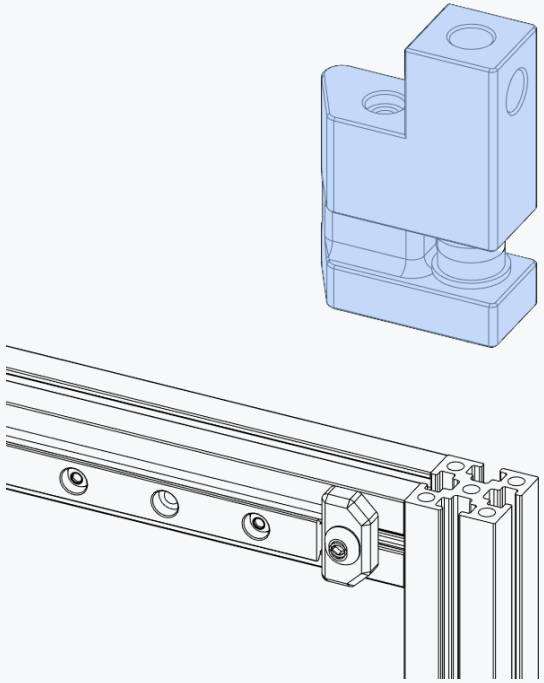


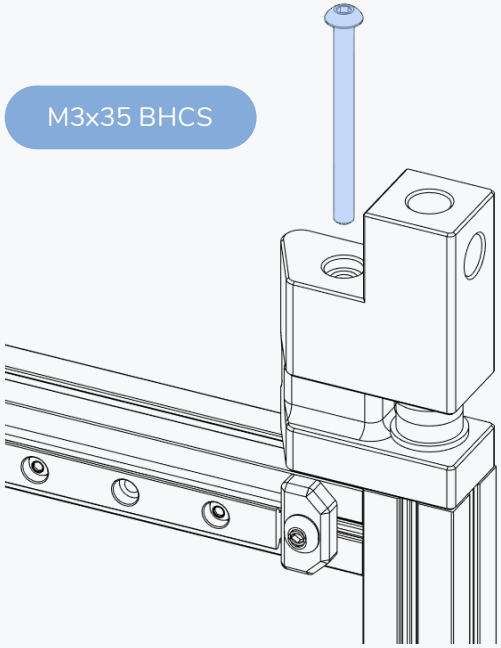


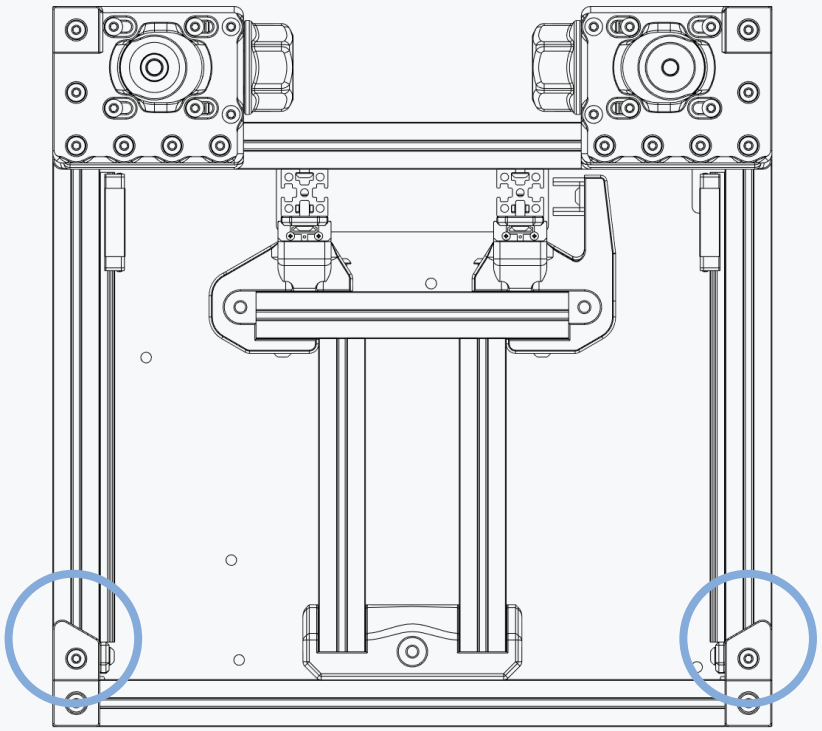


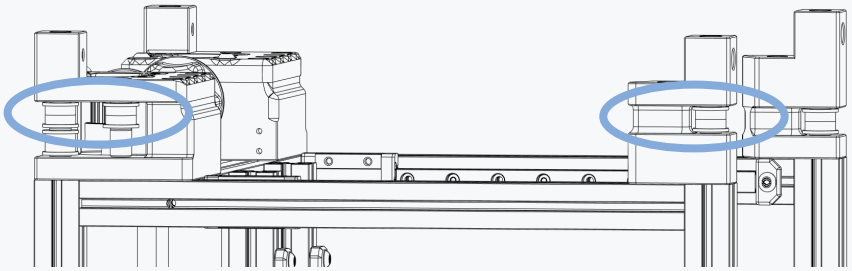
PRELOADED NUTS

The screws are fastened into the preloaded nuts.
Slide the nuts into position prior to placing the part. Use a skewer to align them with the screwhole.




M3x35 BHCS





CHECK YOUR WORK

Compare your assembled parts to the graphics shown here.

Pay attention to the pulley orientation and alignment with the bearing stack ups.

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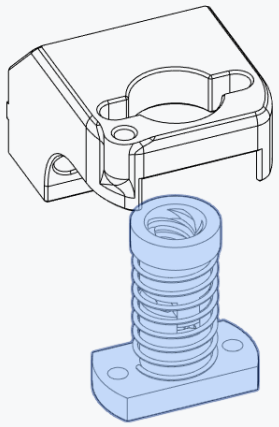
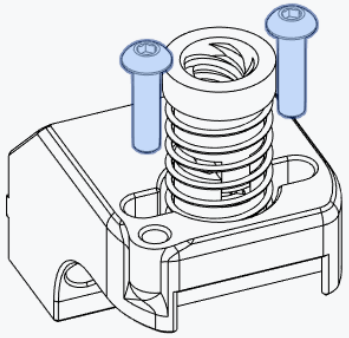


Leadscrew Nut



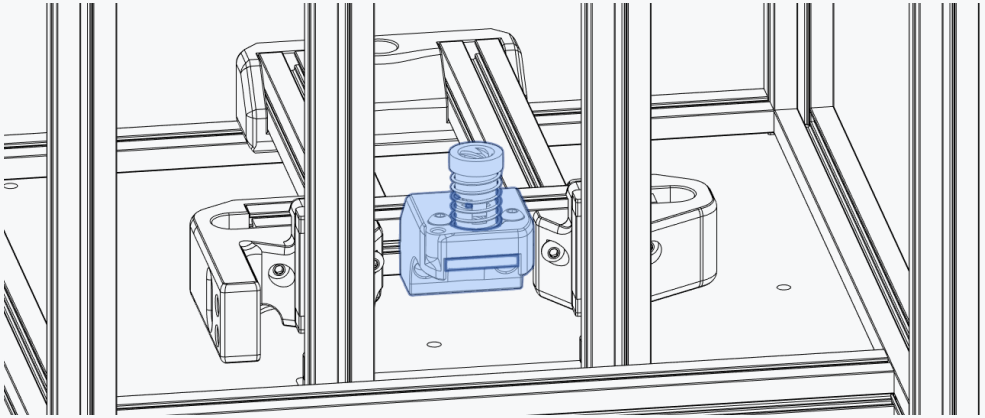
M3x12 BHCS

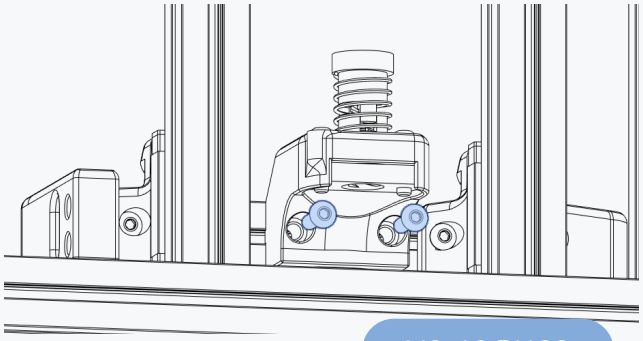
THROUHOLE NUT?

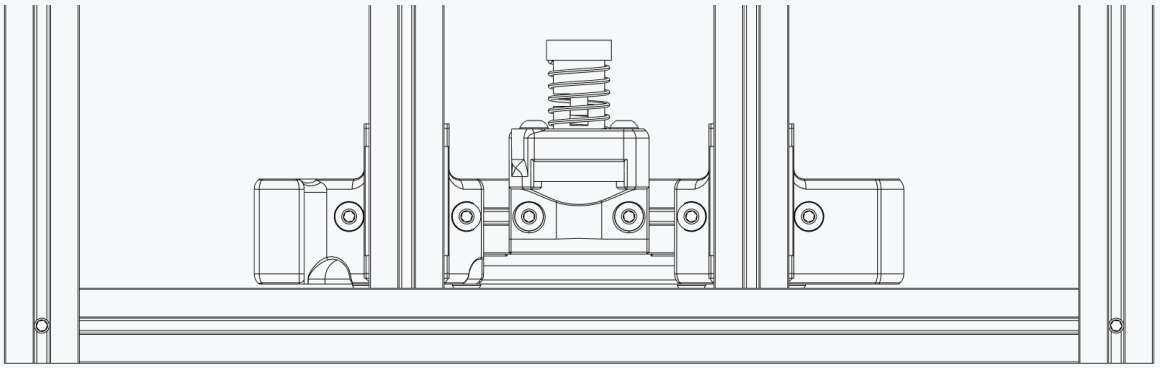
If your leadscrew nut does not have M3 threads use longer screws and M3 nuts to secure it.

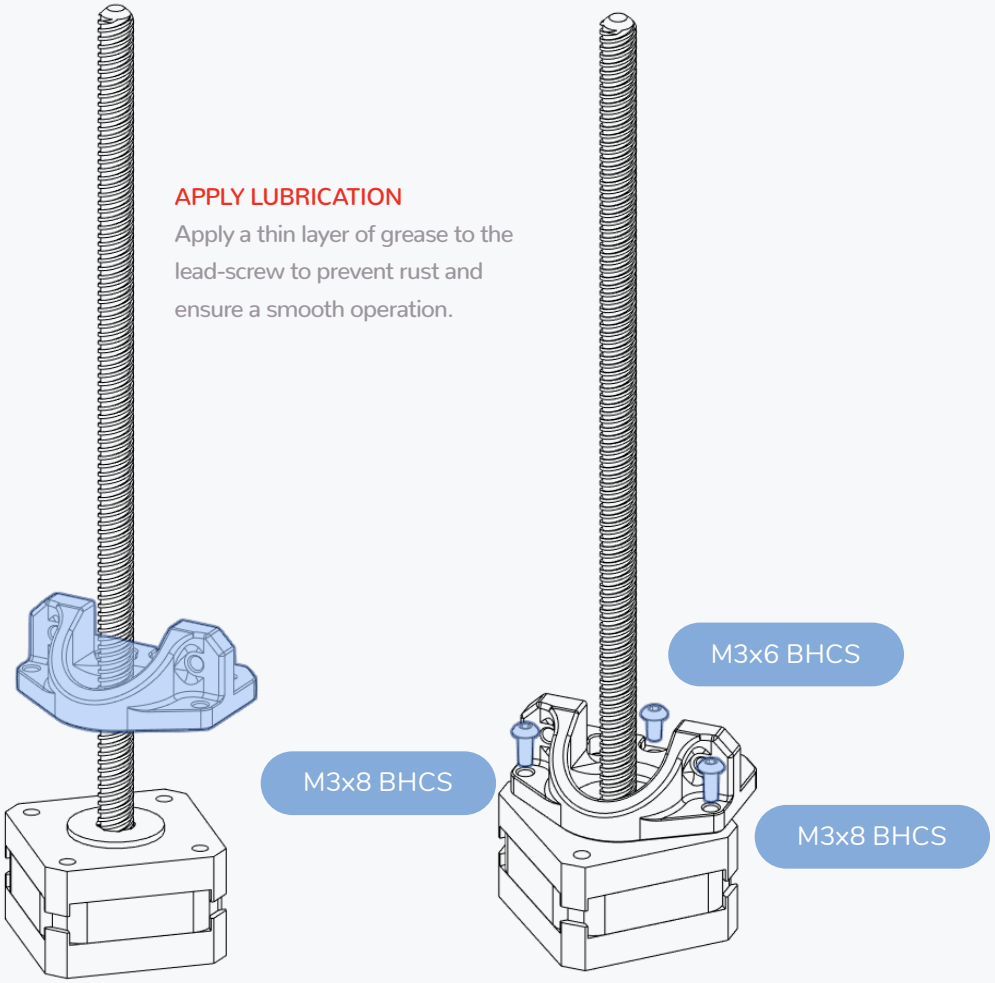
NUT HOLDER

Models for different sized leadscrew nuts are included in the released files.



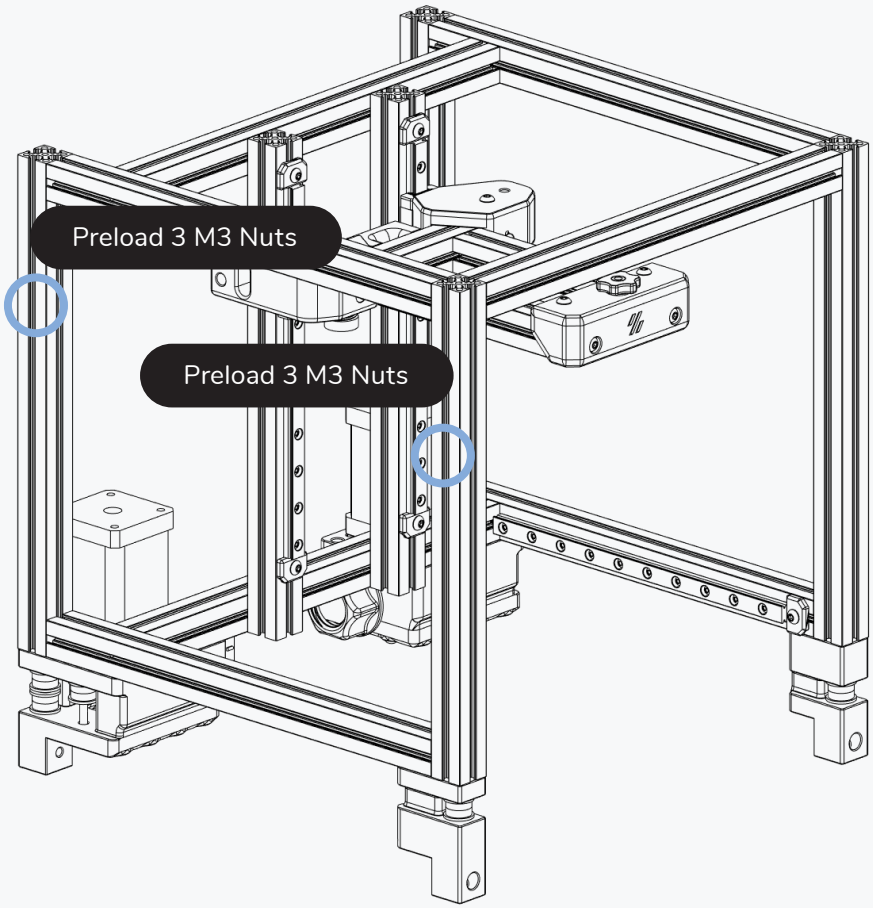

M3x12 BHCS

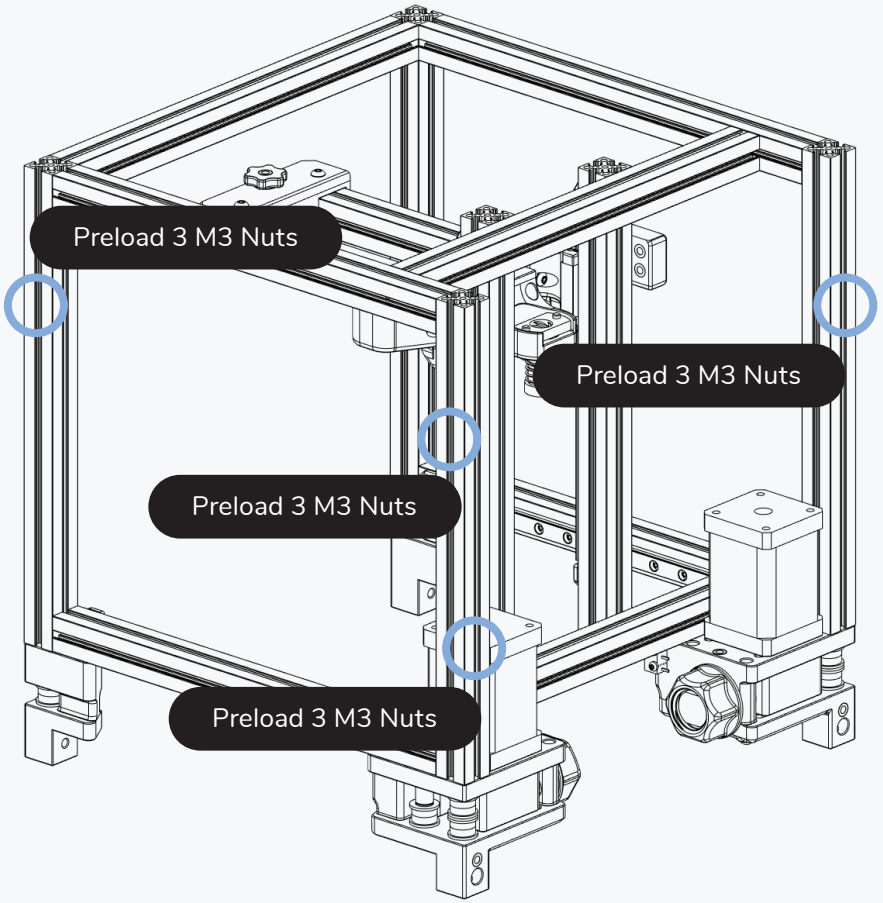




APPLY LUBRICATION

Apply a thin layer of grease to the lead-screw to prevent rust and ensure a smooth operation.


Preload 3 M3 Nuts
Preload 3 M3 Nuts


Preload 3 M3 Nuts
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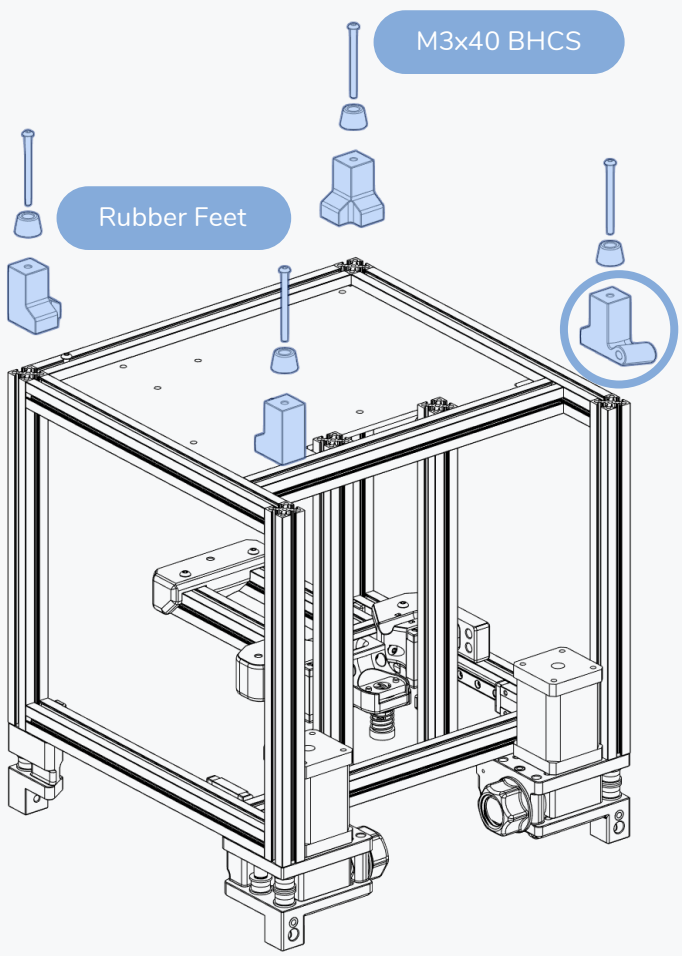
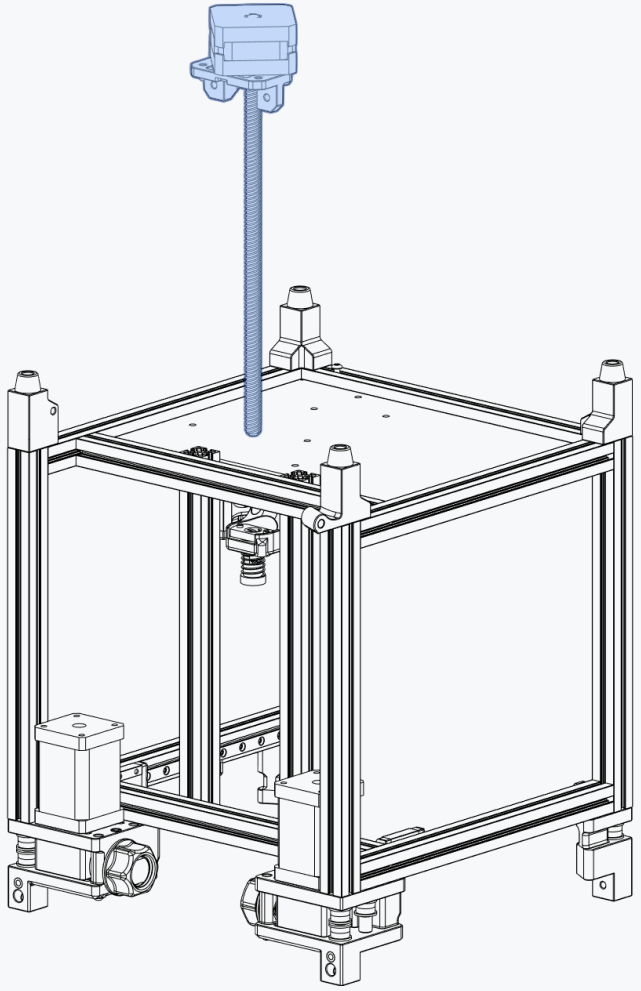
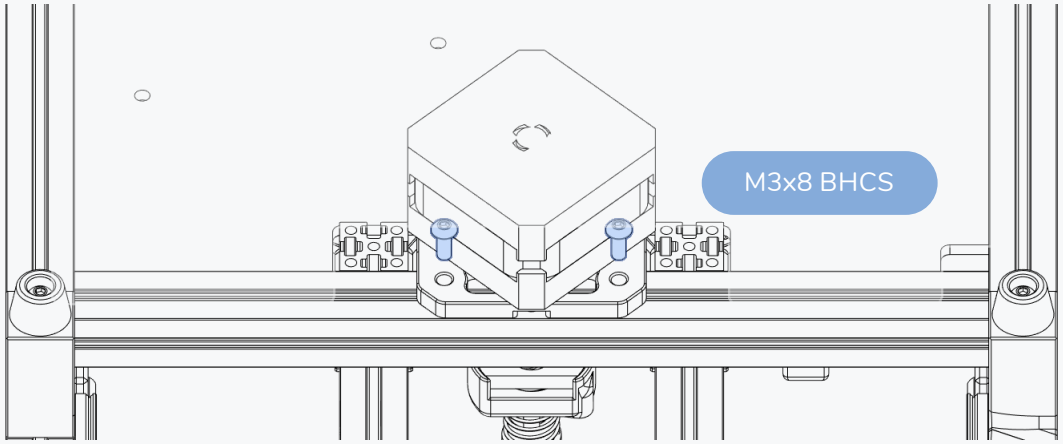
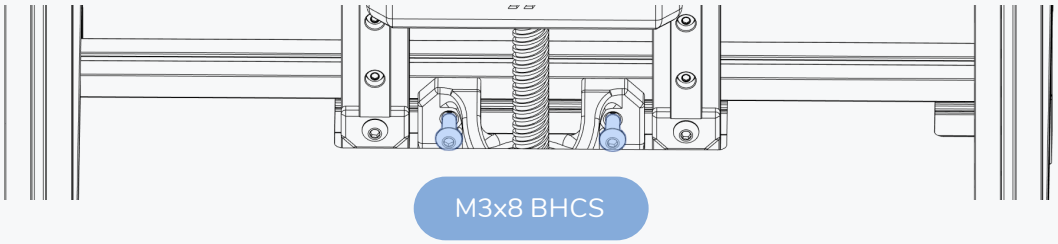

M3x40 BHCS
Rubber Feet





PRELOADED NUT POSITIONING

Move 2 of the preloaded nuts to the left of the stepper mount.
The stepper mounts to the center nuts.



USE A BALL-END DRIVER

Use a 2.5mm ball-end driver to fasten the screws.

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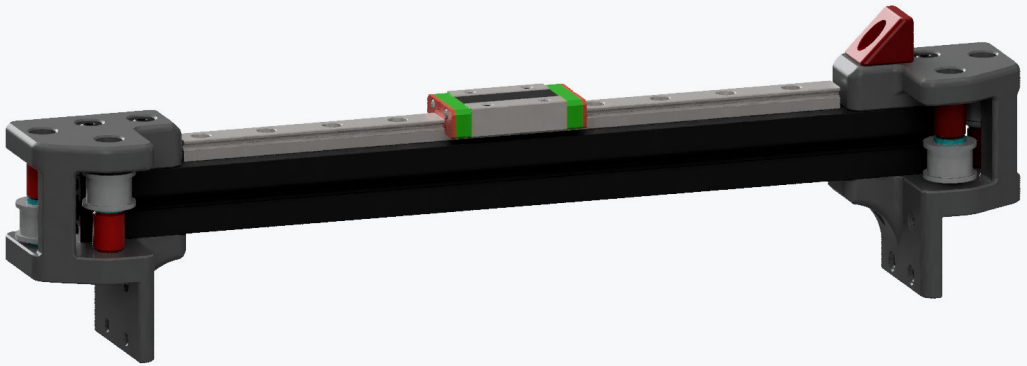
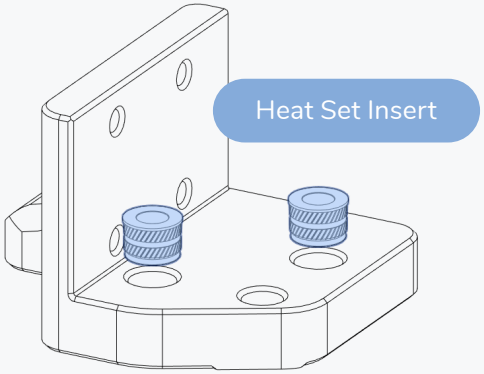
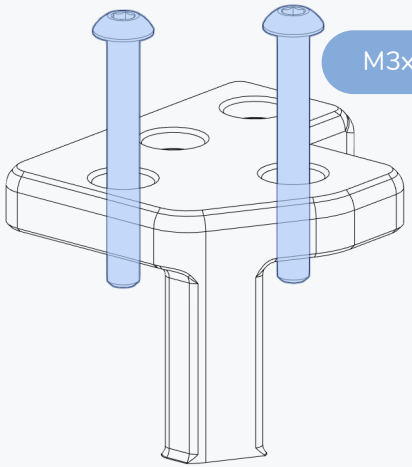
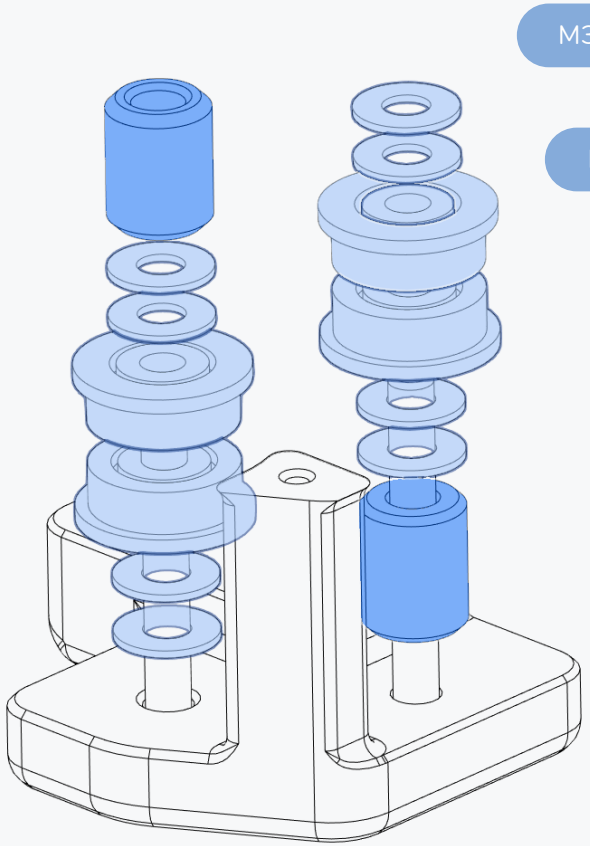


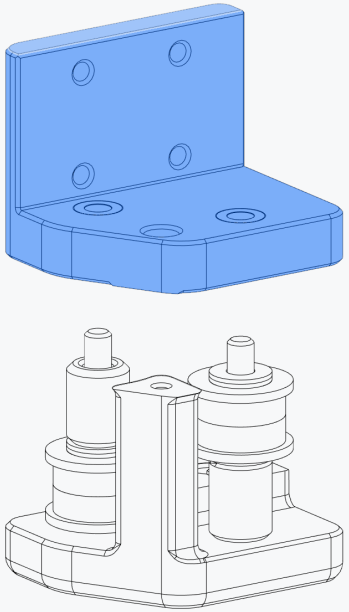


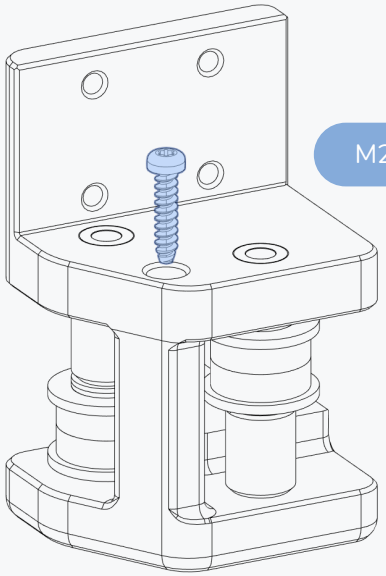


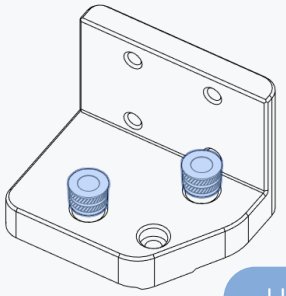


UPSIDE DOWN ASSEMBLY

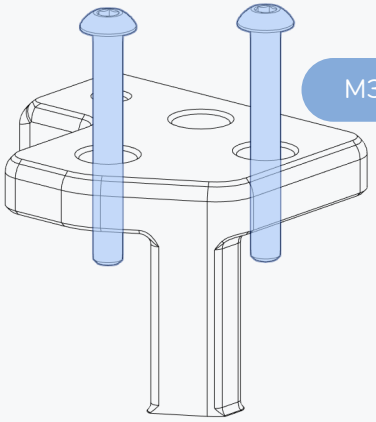
For ease of assembly we recommend to assemble the XY joints upside down.



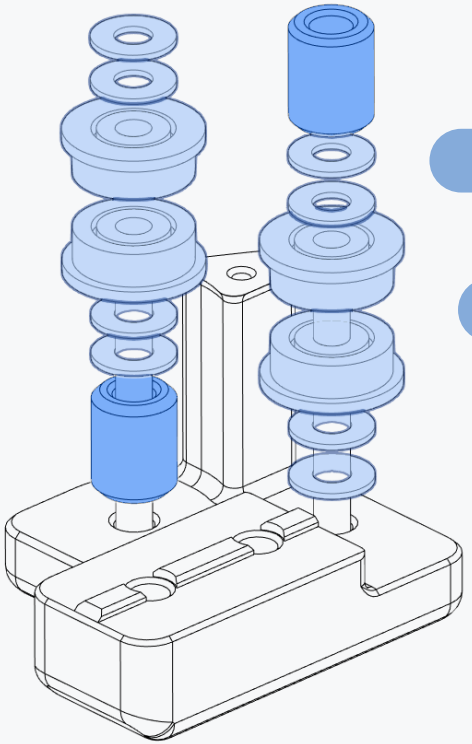

M2x10 Self Tapping



Heat Set Insert



M3x25 BHCS

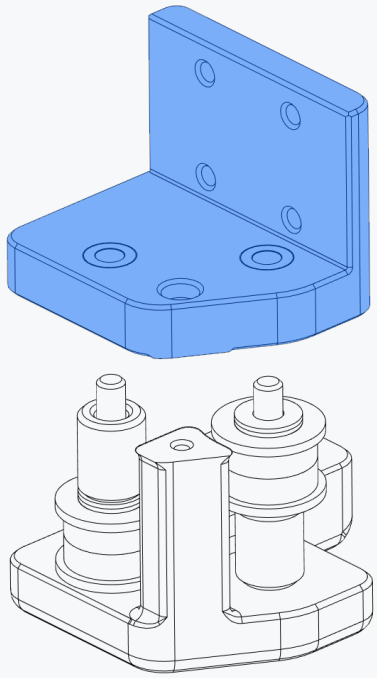


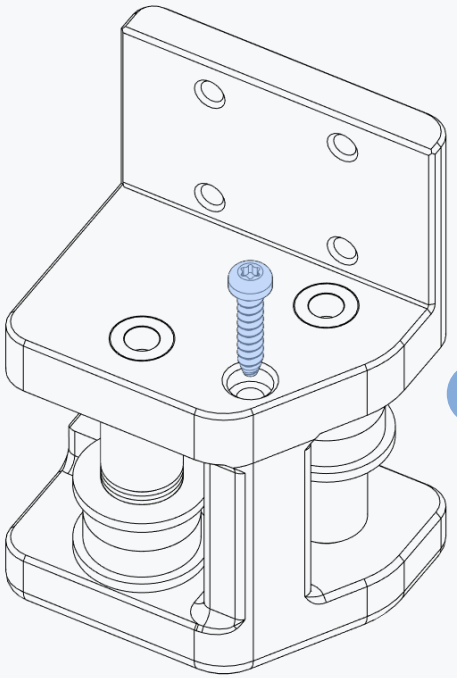
M3 Shim

F623 Bearing

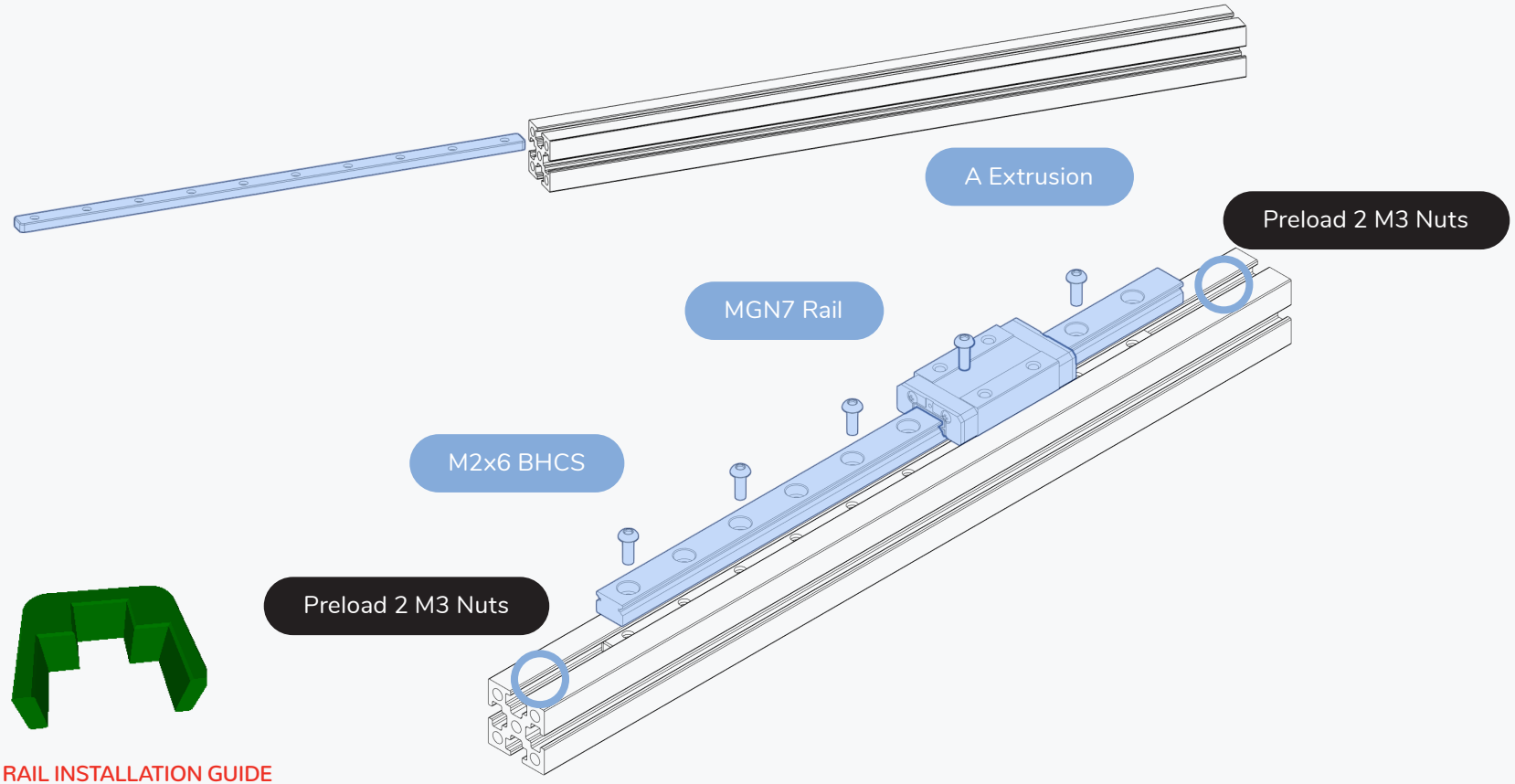
UPSIDE DOWN ASSEMBLY

For ease of assembly we recommend to assemble the XY joints upside down.



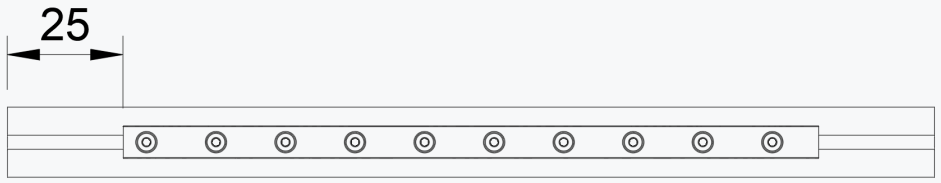


M2x10 Self Tapping



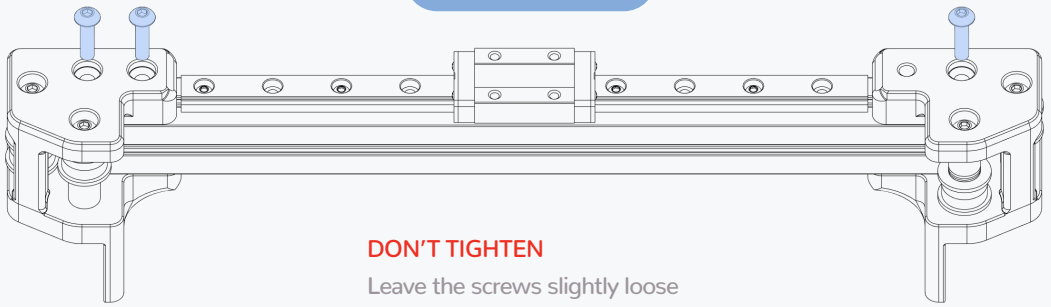
CENTRED RAIL INSTALLATION GUIDE

Use the guides to position the rail in the centre of the extrusion prior to fastening the screws.



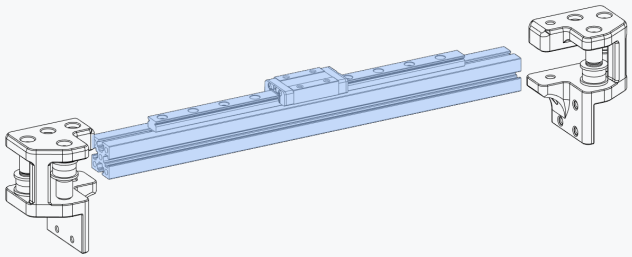
Preload 2 M3 Nuts

M3x12 BHCS

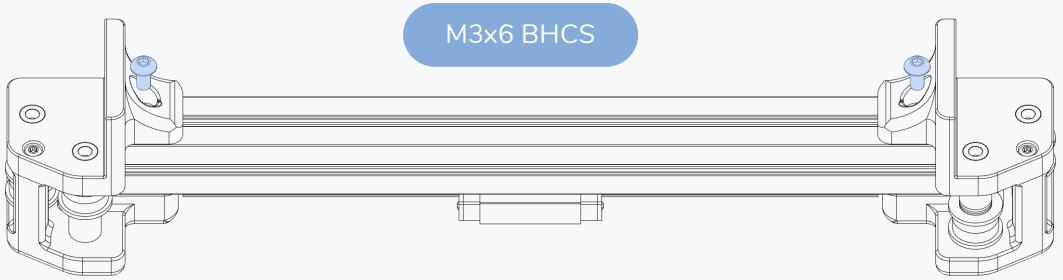


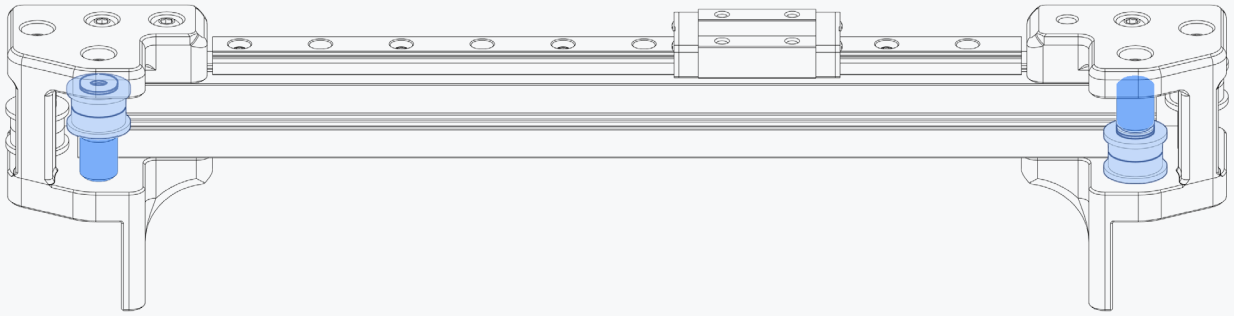
DON'T TIGHTEN

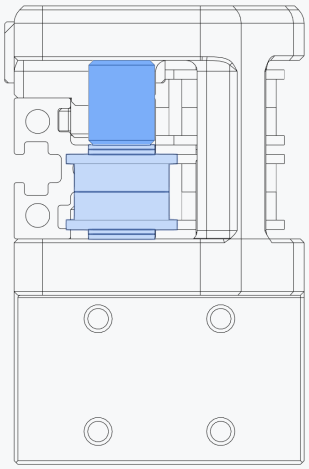
Leave the screws slightly loose for the next step.



M3x6 BHCS

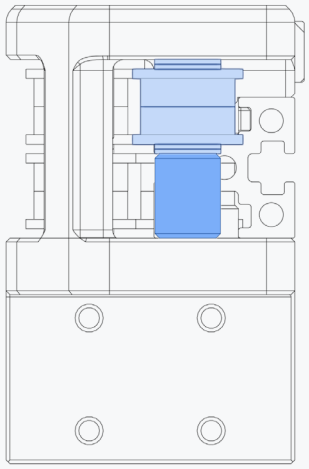


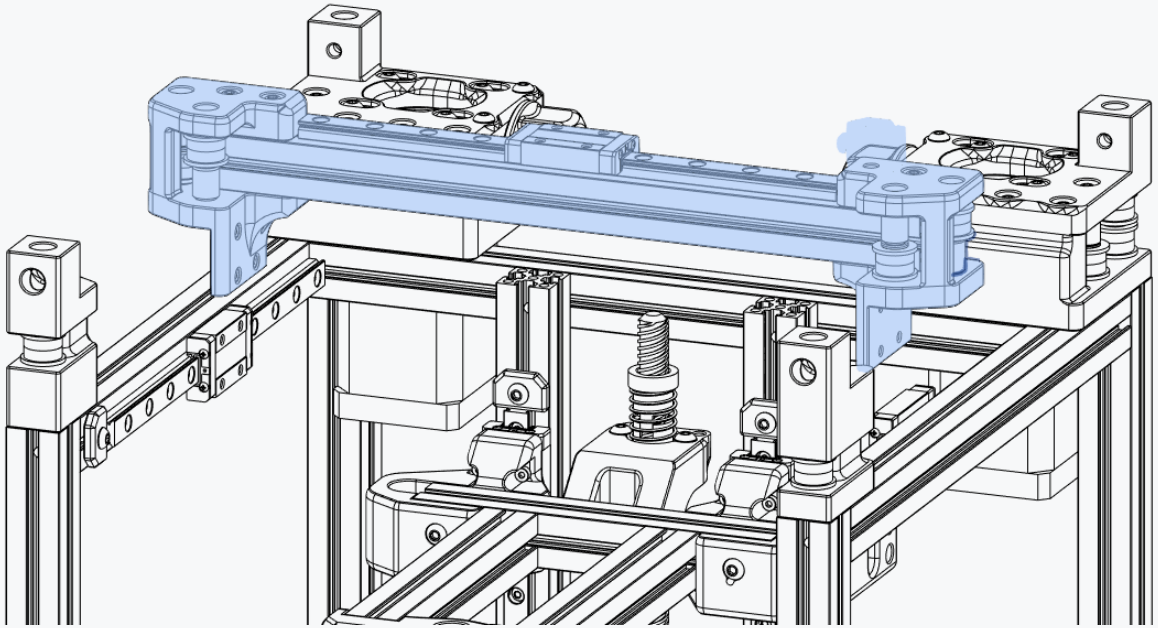


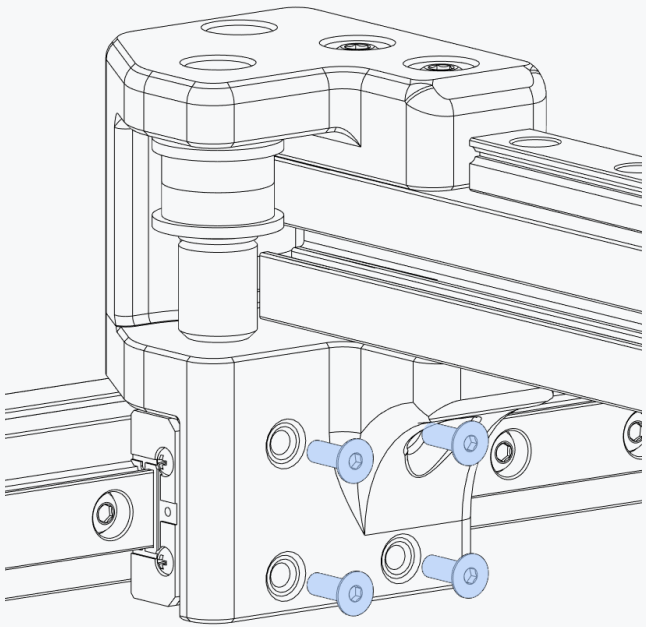


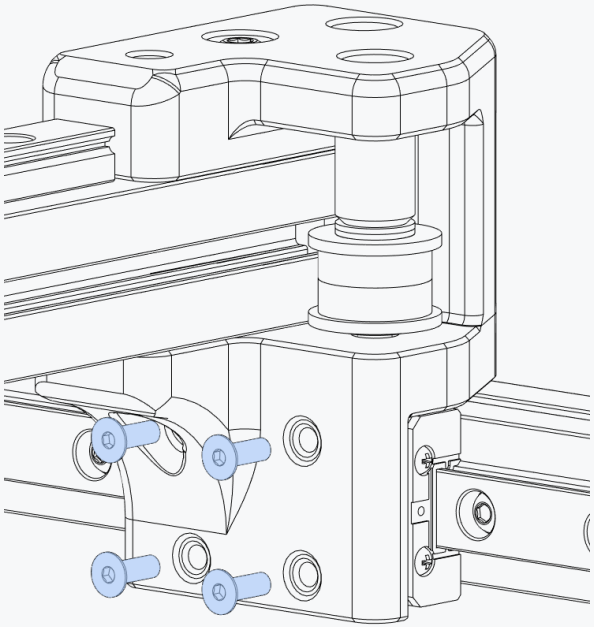
CHECK YOUR WORK

Compare your assembled parts to the graphic shown here. Pay attention to the pulley orientation and alignment with the bearing stack ups.

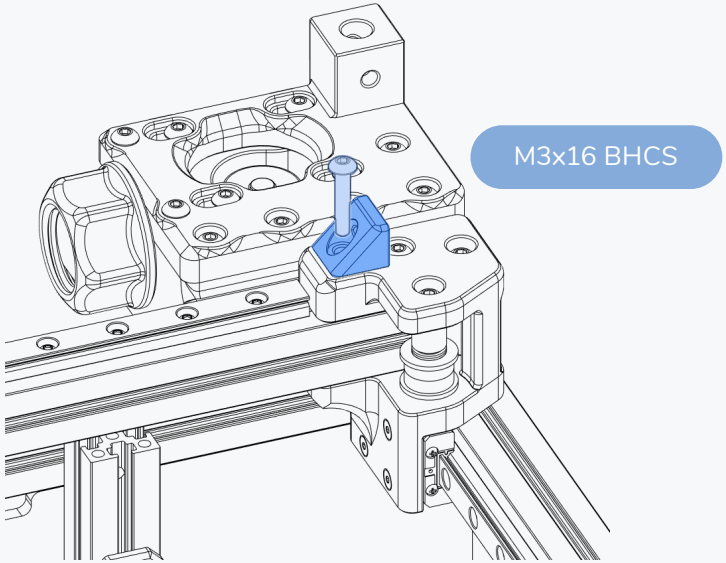


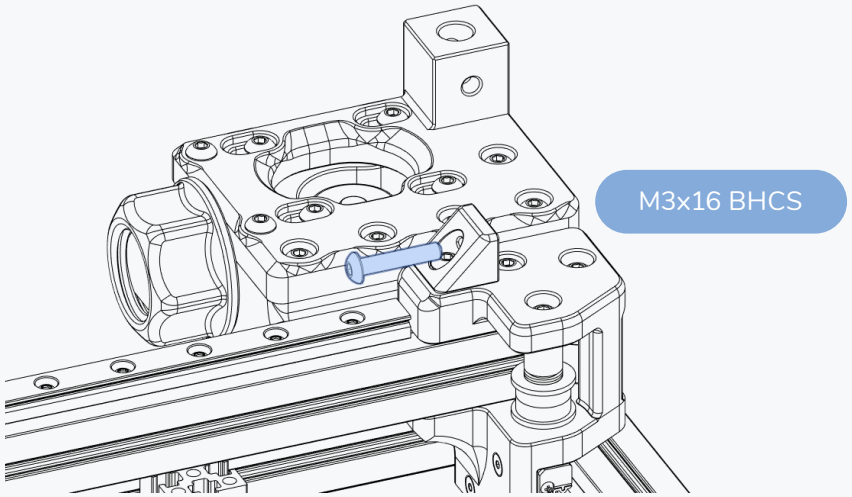


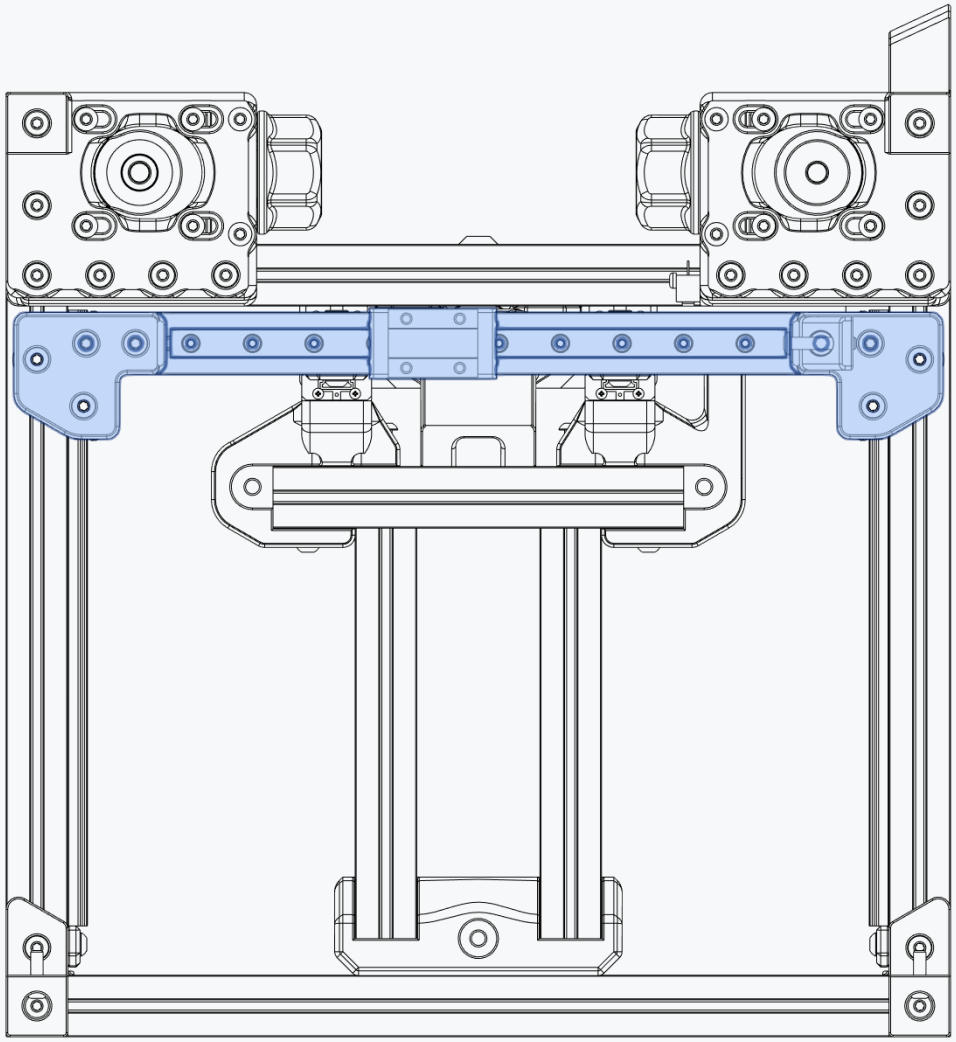




M2x6 FHCS


M3x16 BHCS


M3x16 BHCS

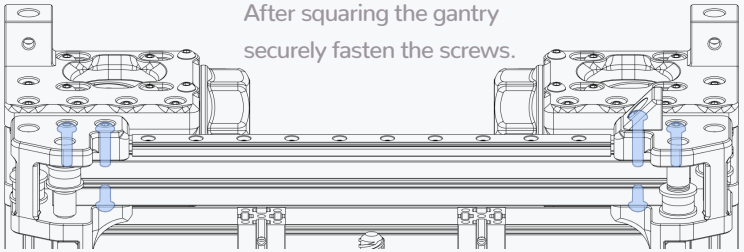


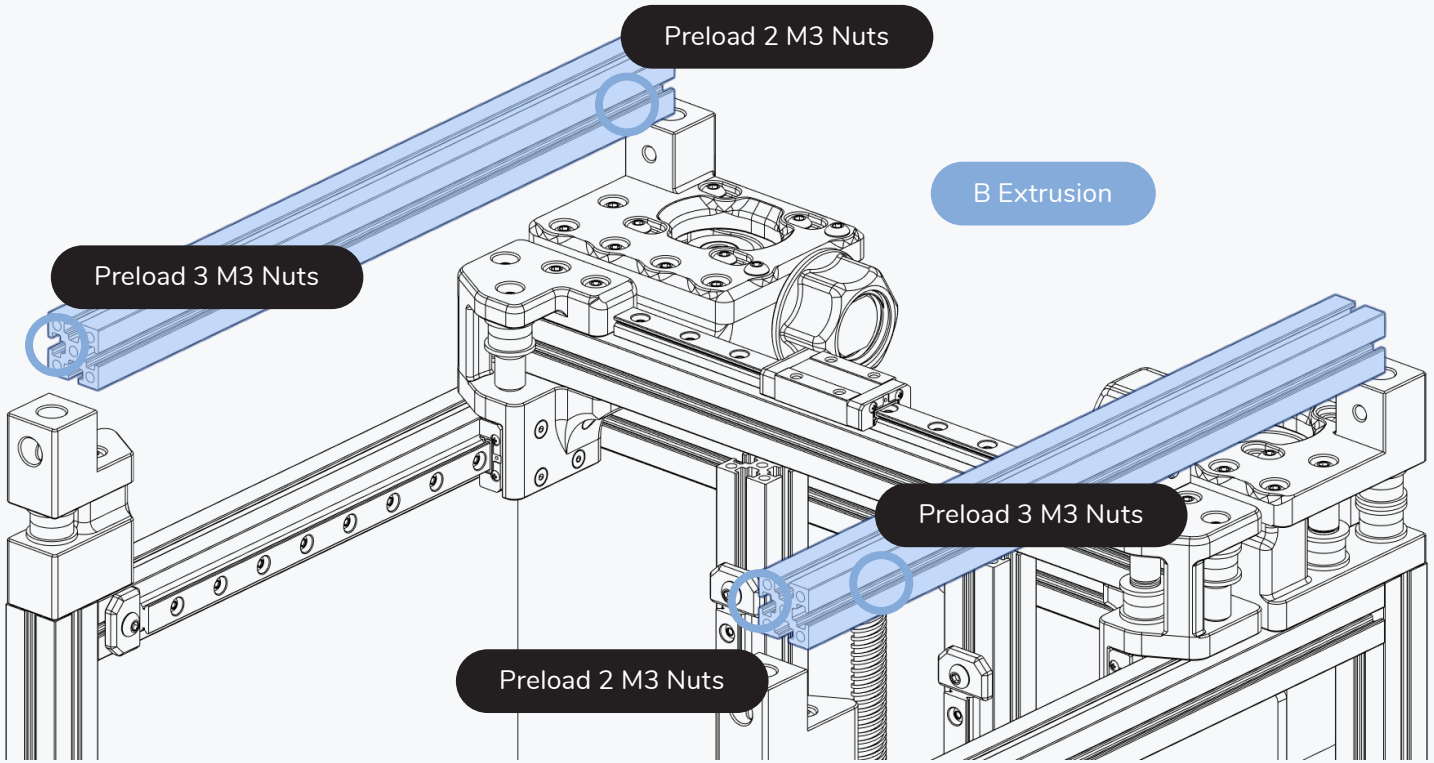
SQUARING THE GANTRY

Move the gantry all the way back until it hits the A and B drive on both sides.

TIGHTEN SCREWS

After squaring the gantry securely fasten the screws.



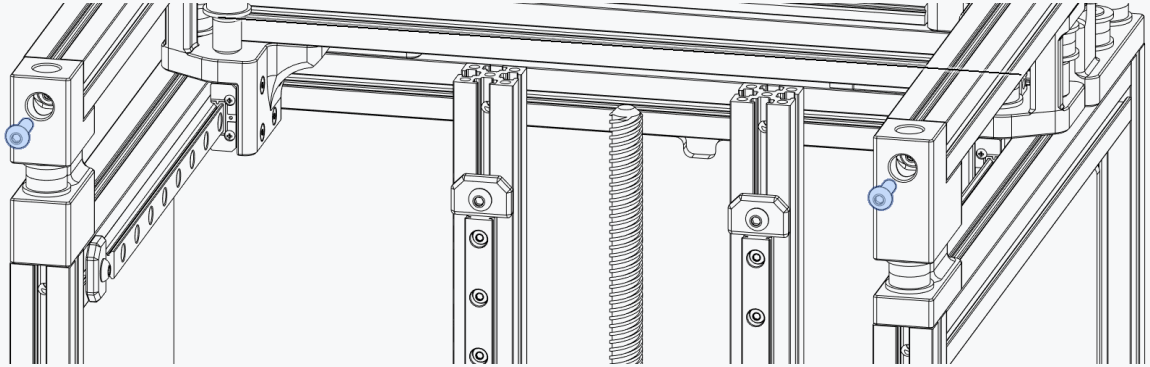


PRELOADING NUTS

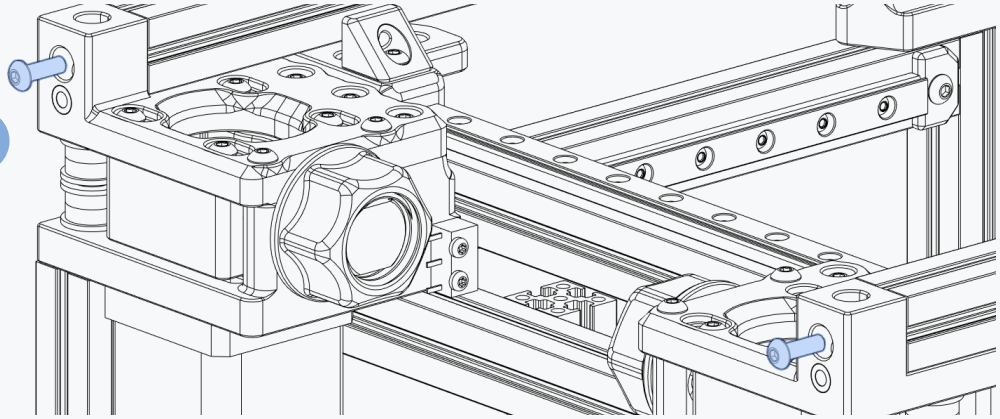
Preload 3 M3 nuts into the outer channels of each extrusion.

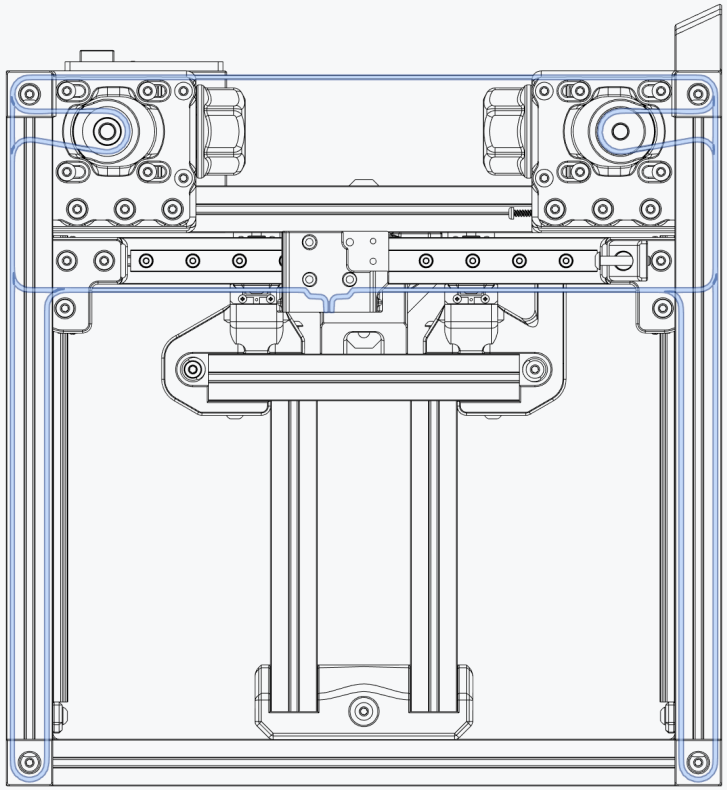
2 M3 nuts into the inside channels.

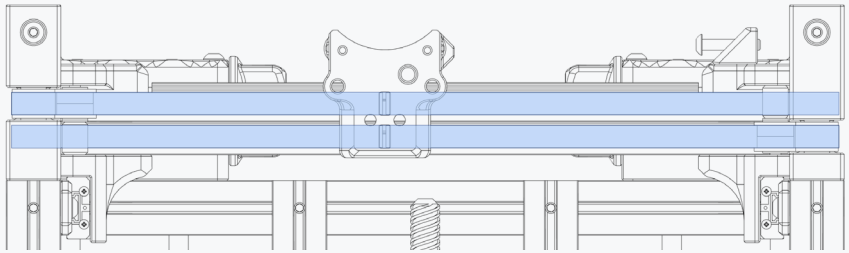
M3x10 BHCS



M3x10 BHCS







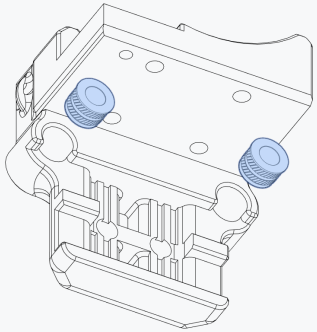
THE VORON BELT PATH

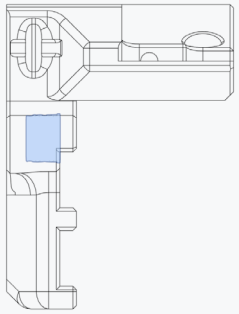
Voron printers use a belt path based on the popular CoreXY pattern.

The individual belt paths are stacked on top of each and the crossing often found in CoreXY designs is omitted. Compared to many other implementations, the motors are moved to a less intrusive position. To learn more about the principles behind CoreXY visit https://voron.link/ef72dd6

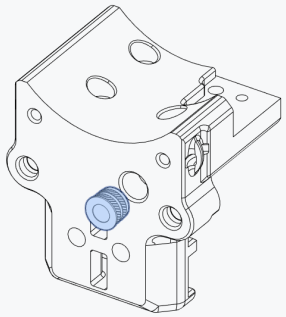
Equal belt tension is important to the proper function of a CoreXY motion system.

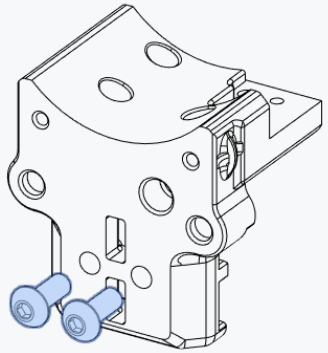
We recommend to run one belt to get the required length, remove the belt from the printer and cut the second belt to the exact same length.
As both belt paths have the same length this is an easy way of getting a consistent tension.



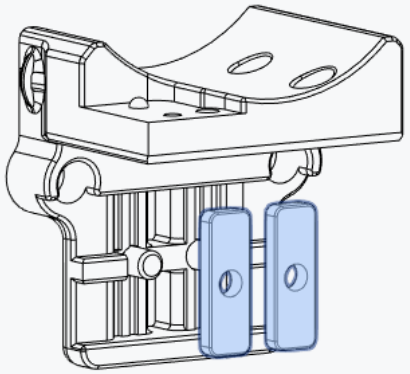


Heat Set Insert





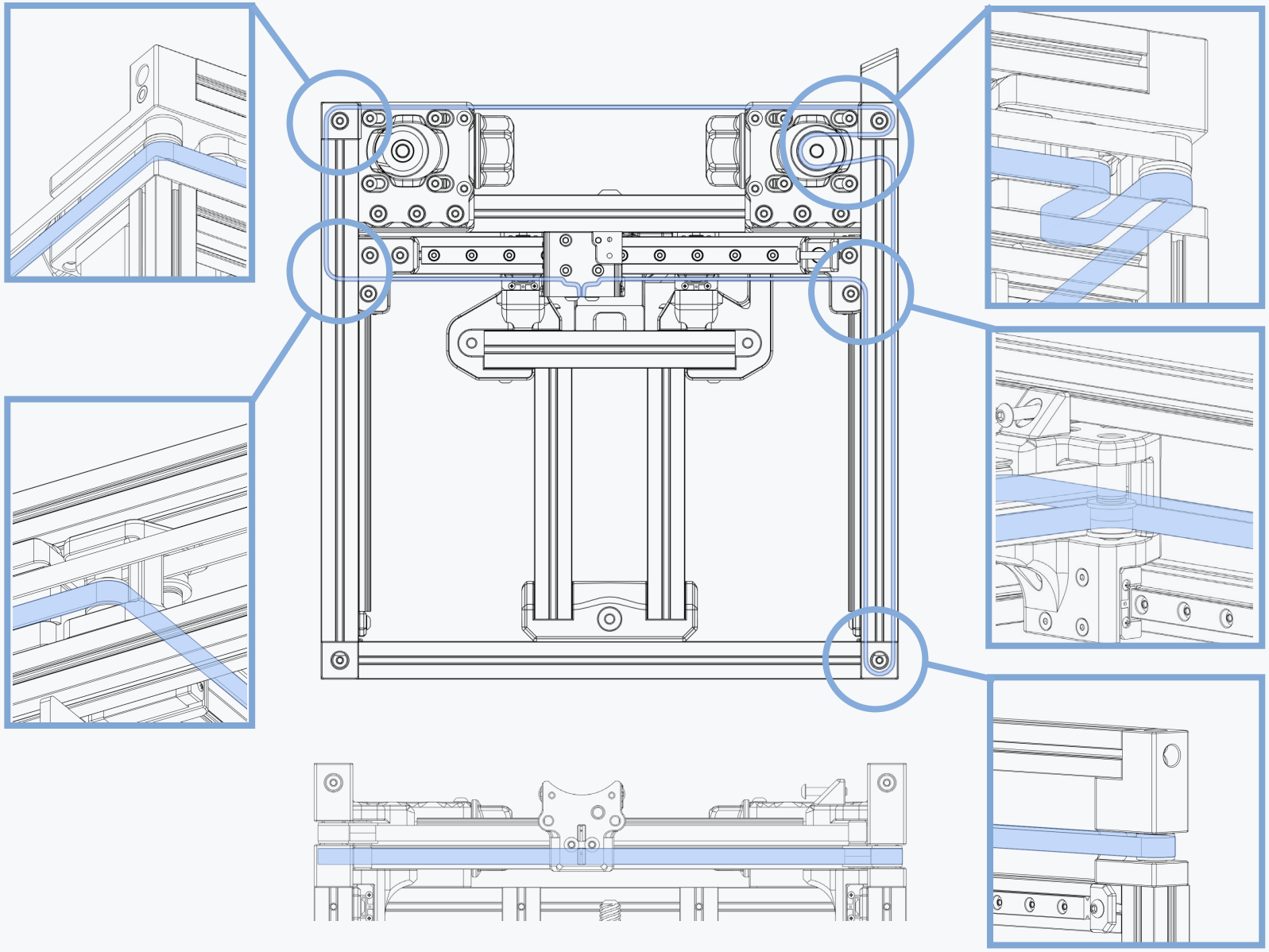
M3x8 BHCS

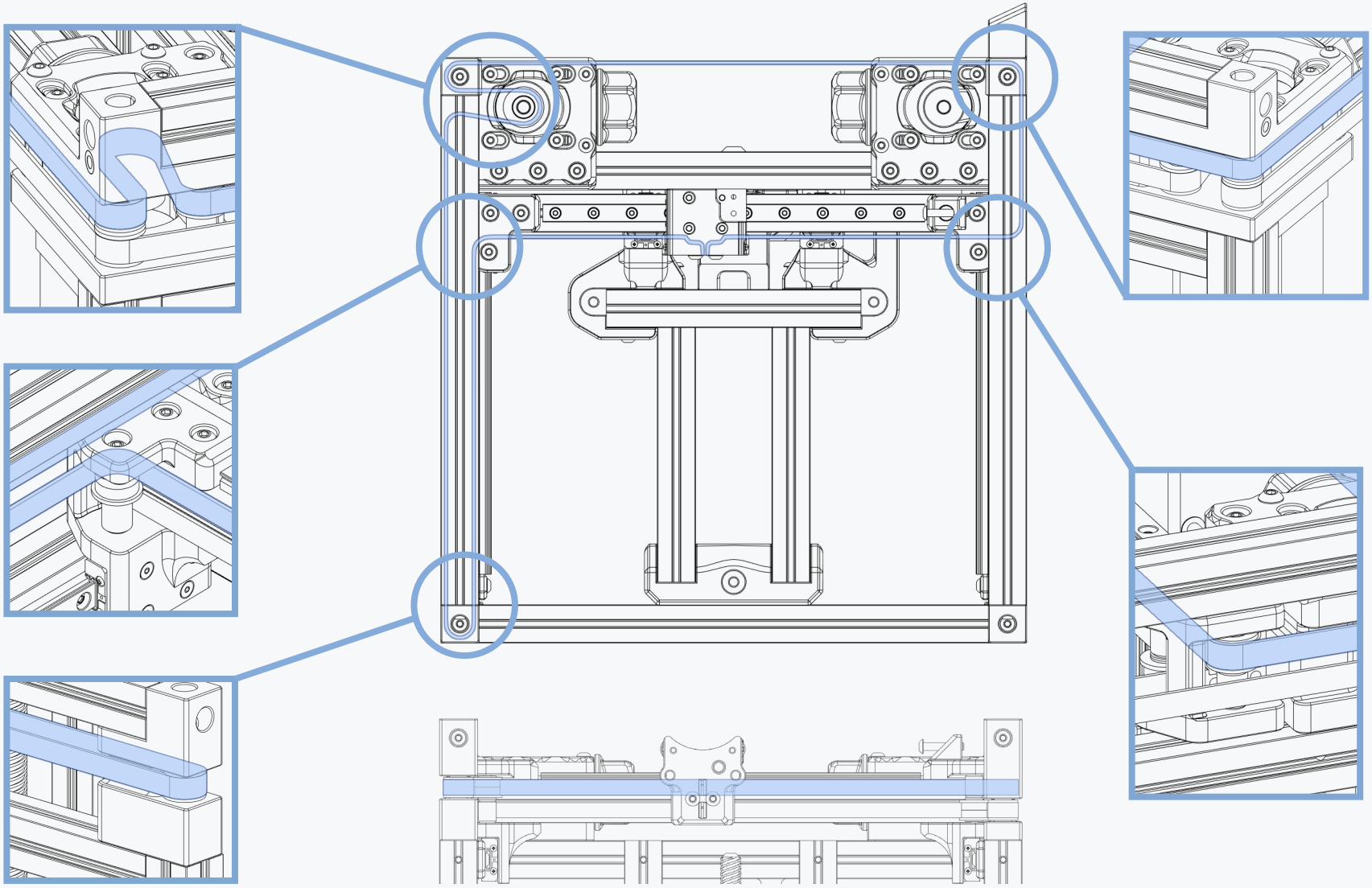


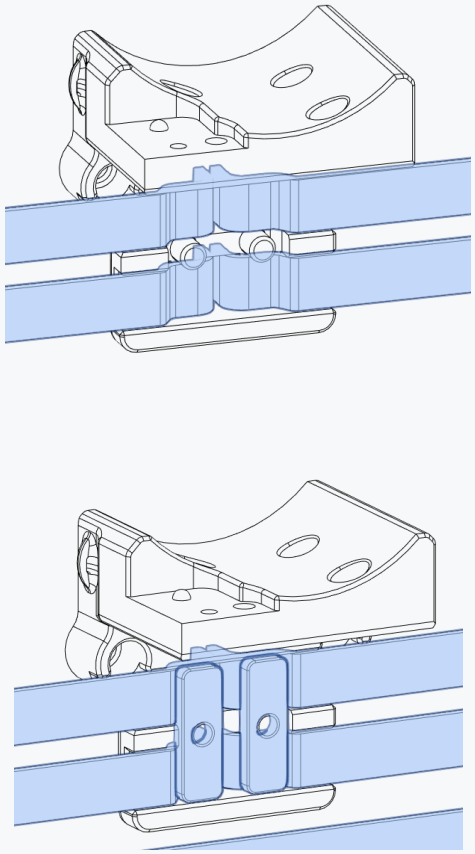
M3 “MakerBeam XL” Nuts

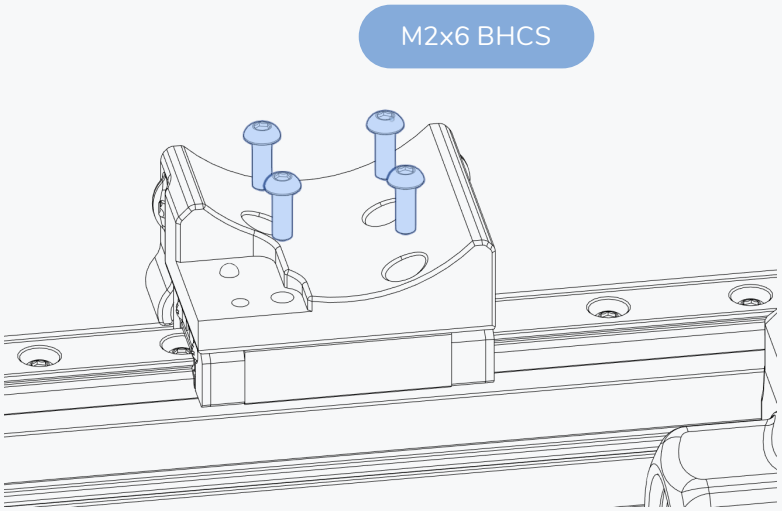
DON’T TIGHTEN

Leave the nuts loose. The belt is threaded into this part in the next step.





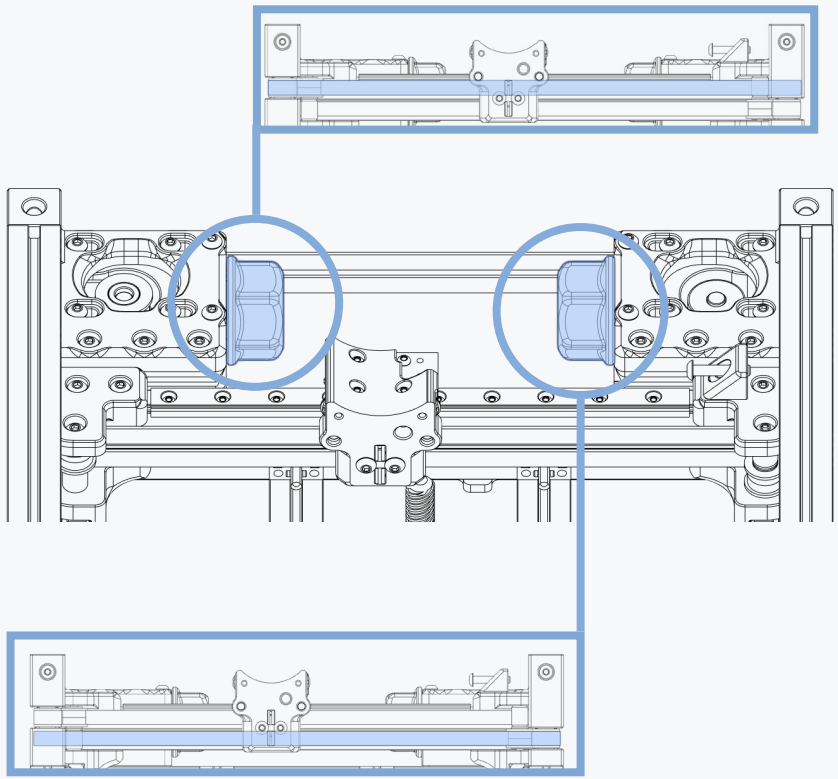



M2x6 BHCS

BELT TENSION

Equal belt tension is important to the proper function of a corexy motion system. Even slight differences in belt tension will result in skewed motion.

Due to the small size of the V0 belt path the required tension may feel higher compared to larger printer but this is mainly due to the short belt runs and belt stiffness.



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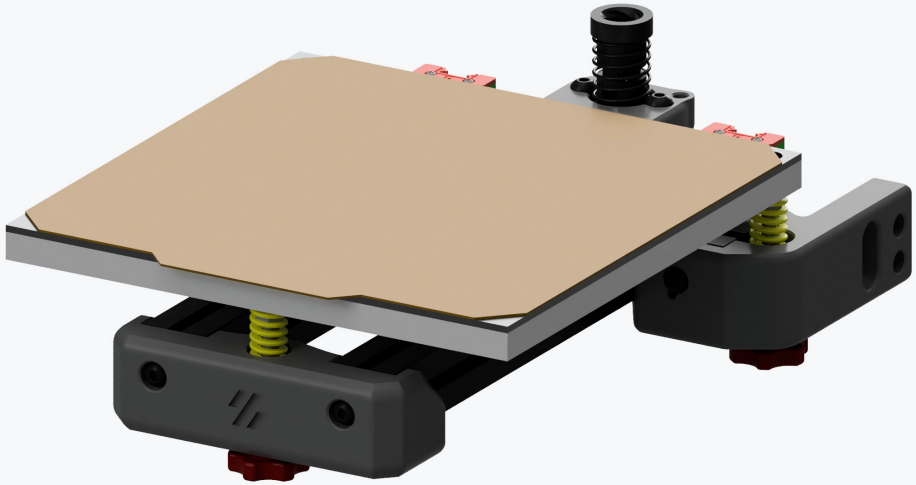
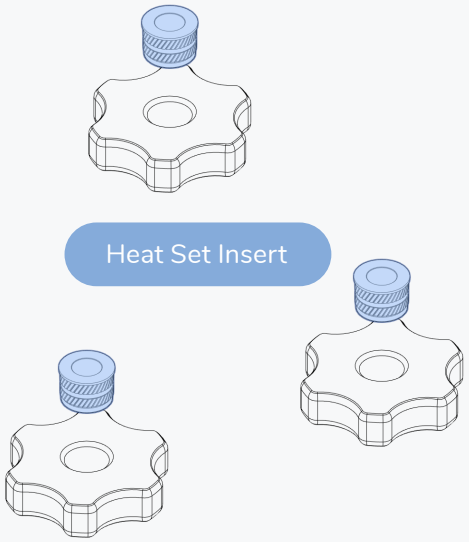
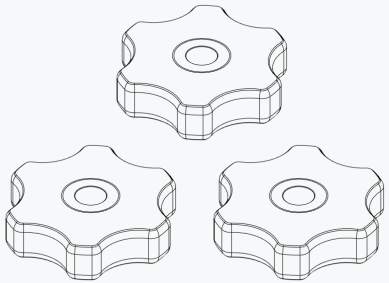
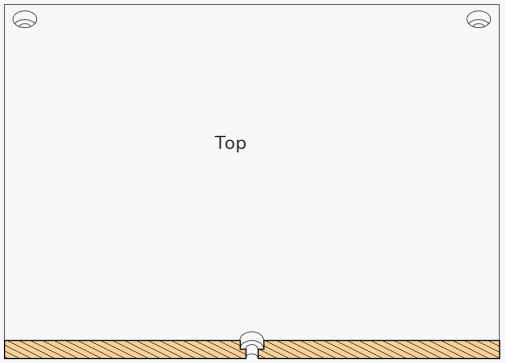


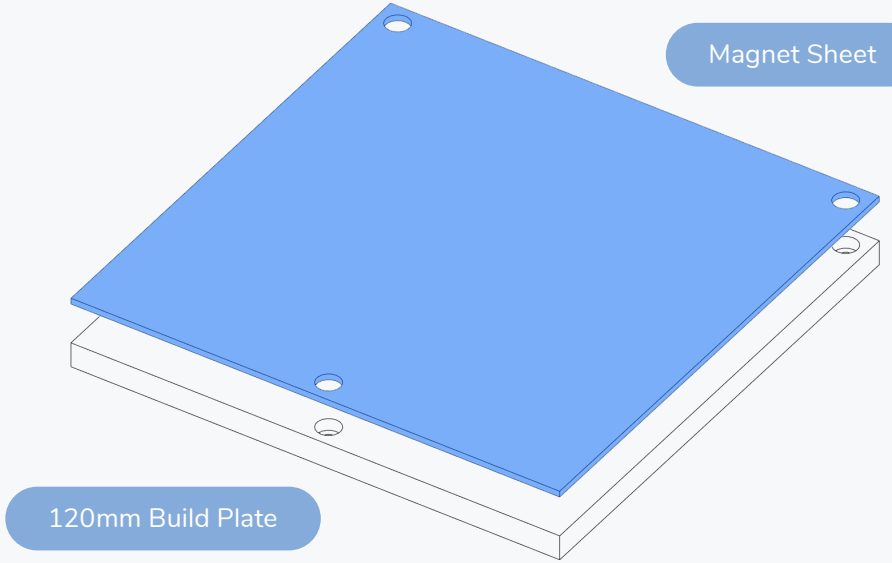

Heat Set Insert





ORIENTATION OF THE BUILD PLATE

The side with the single hole is the front of the build plate.
The counterbores are on the top of the build plate.



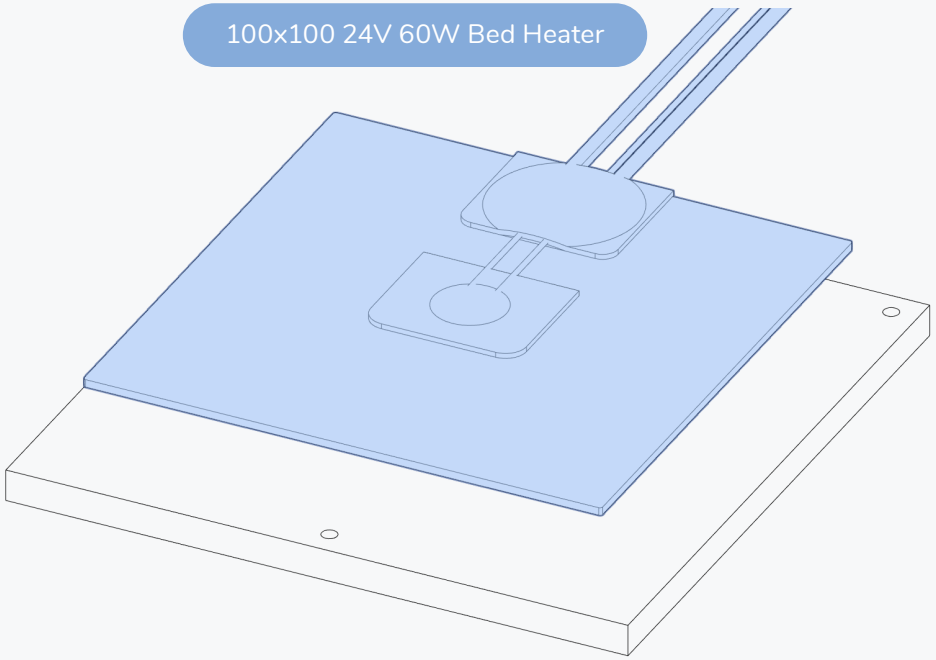
MAGNET APPLICATION

Clean the plate with isopropyl alcohol or similar cleaner prior to applying the magnet.

Use the edge of a plastic object or a small roller to firmly press the magnet on the plate to get a good bond.

If you have never done this before we recommend you watch the linked guide.

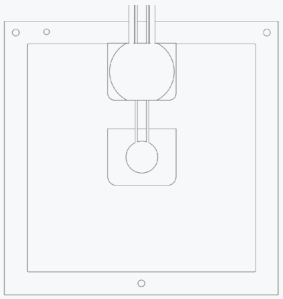
https://voron.link/rm6tpld

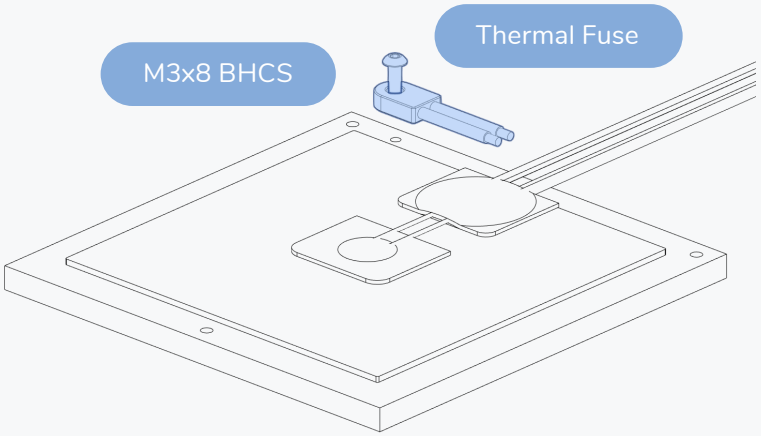


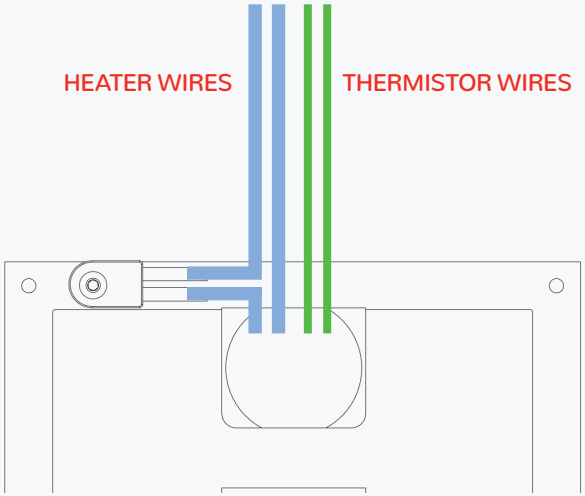
HEATER APPLICATION

The heater is installed in the same fashion as the magnet.

Centre it on the underside of the build plate and make sure to firmly press it on the build plate.



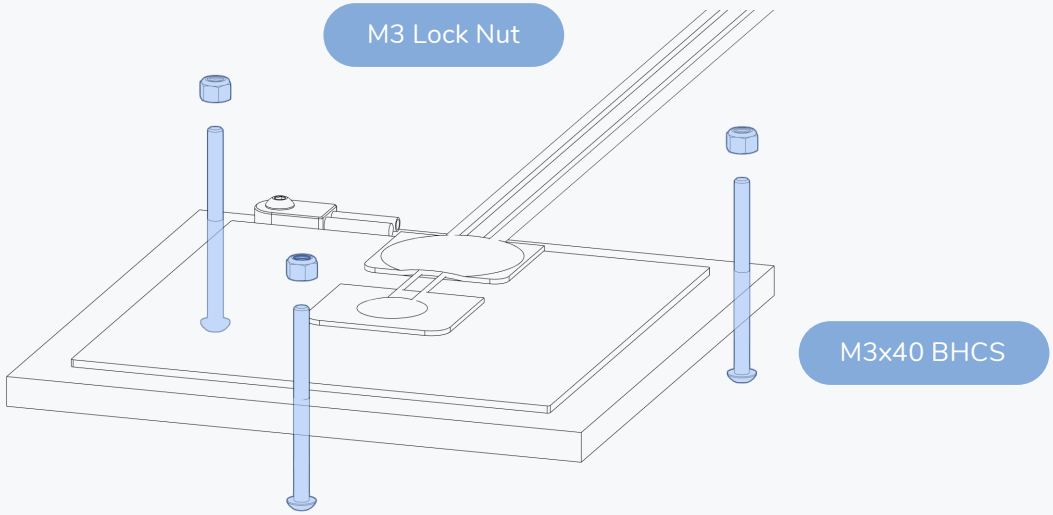


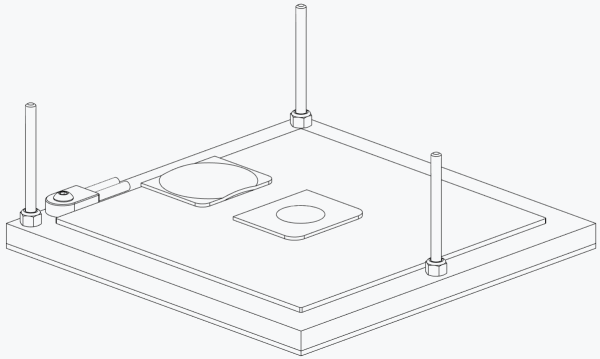


THERMAL FUSE

While not required to operate the printer, a thermal fuse attached to the build plate adds an additional layer of protection against potentially dangerous malfunctions.

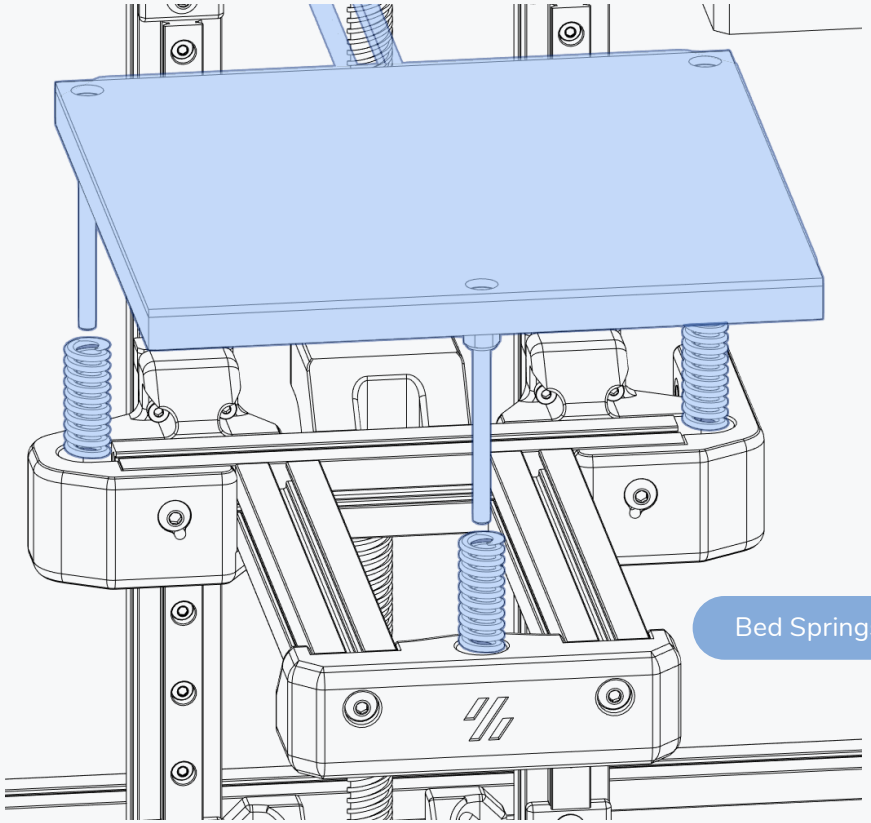
The thermal fuse is wired in-line with the heater wires.

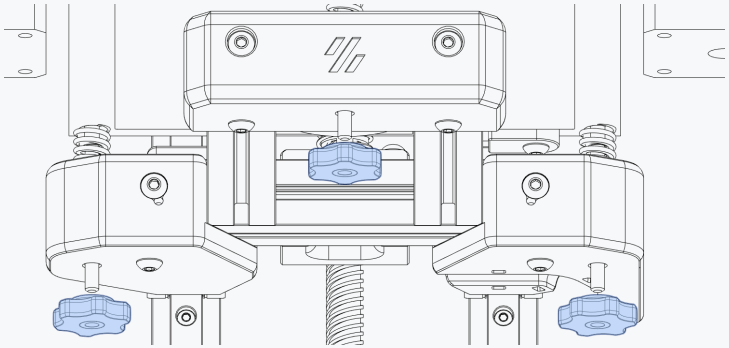




FULLY TIGHTEN

Tighten the lock nuts to prevent the screws from rotating.

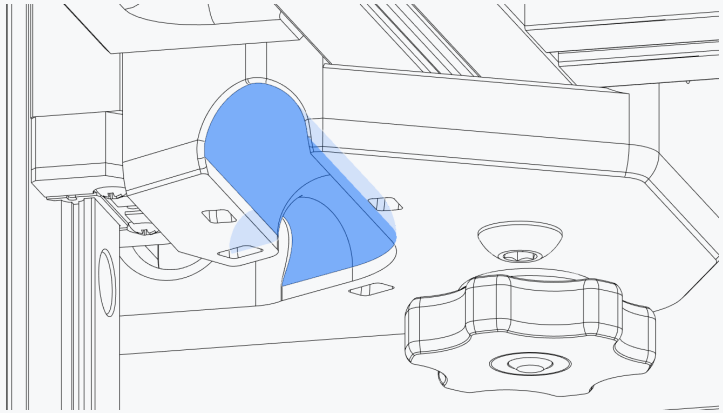

Bed Springs

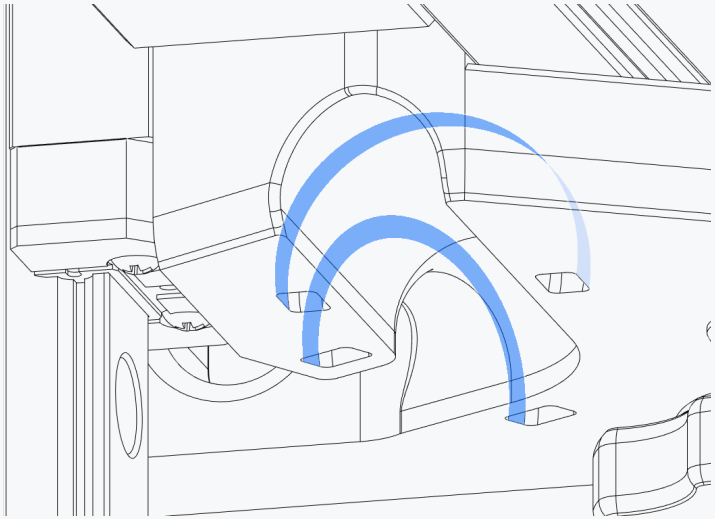


A NOTE ON HEAT BED WIRES AND CABLE CHAINS

The heat bed that we specify in our sourcing guide has individual wires. This allows for an easy installation into these parts and the cable chain.

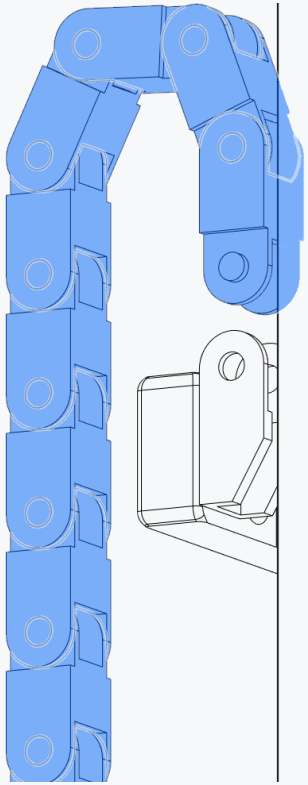
If you sourced a different model the next steps might not be as easy.





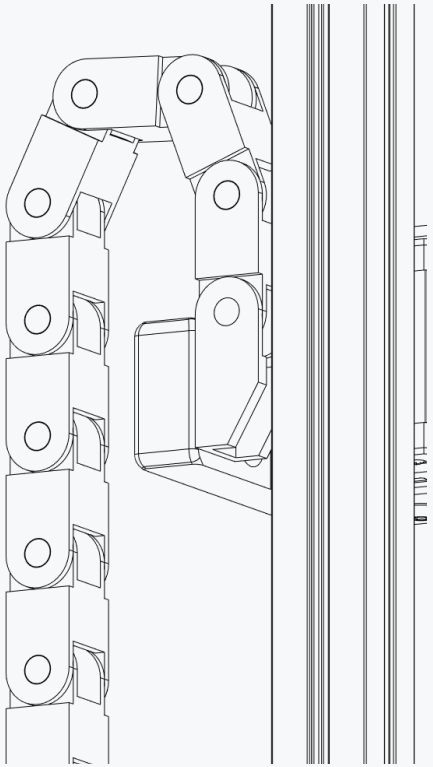
PATH FOR HEATER WIRES

Guide the heater wires in the highlighted path and secure them using the zip tie loops.



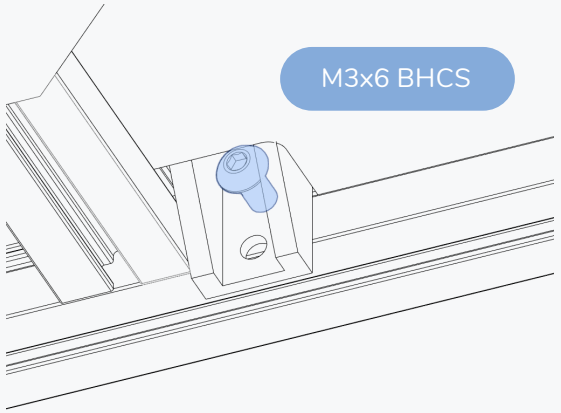
CABLE CHAIN

Attach the previously removed parts of the cable chain to the end link.



CABLE CHAIN

Guide the heater wires through the cable chain.



USE A BALL-END DRIVER

Use a 2mm ball-end driver to fasten the screw.

END LINK? WHAT END LINK?

The end piece of the chain was attached in an earlier step.
If you missed the installation you may be able to mount it to the outside.
A printed cable chain with a small bend radius is included in the released files.

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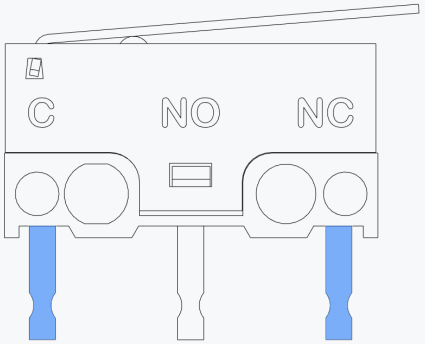
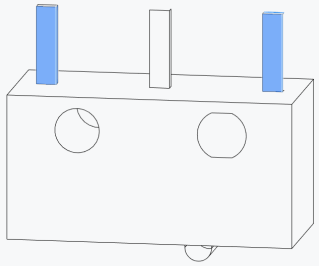


PREPARE 2 END-STOP SWITCHES FOR X AND Y

End-stops are wired in a “Normally Closed” configuration. On microswitches those are the 2 outer terminals indicated by C and NC.

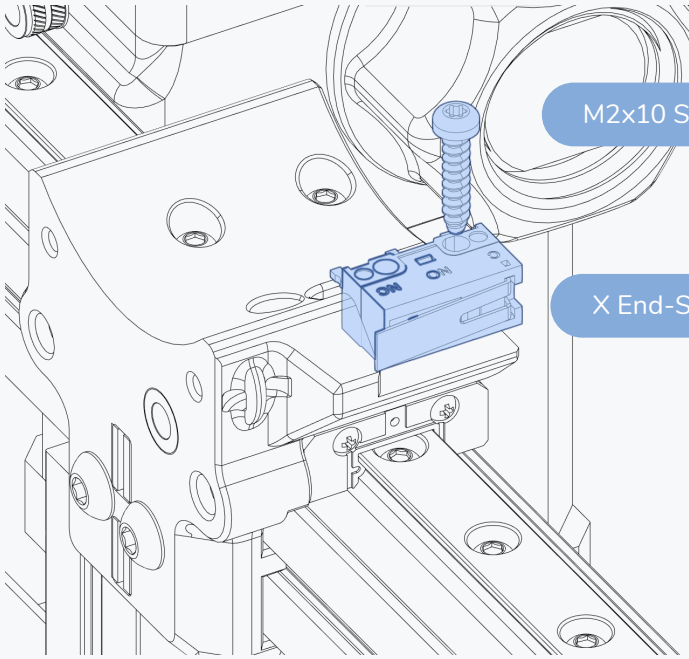
Prepare the switch for Y by soldering 250mm of wire to each of the outer terminals.

Solder 400mm of wire to each of the terminals of the X end-stop.



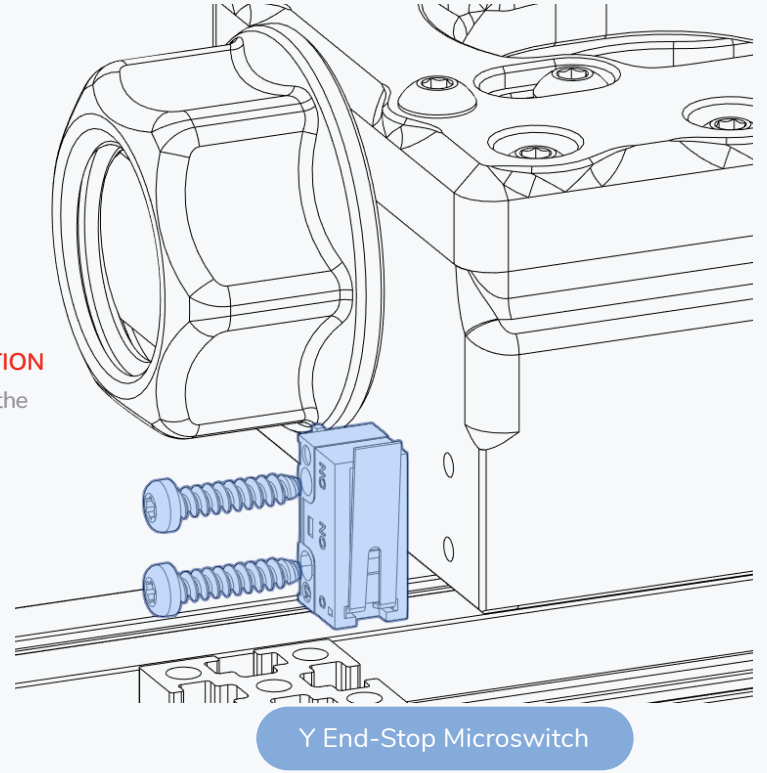
PREPARE 1 END-STOP SWITCH WITHOUT LEVER FOR Z

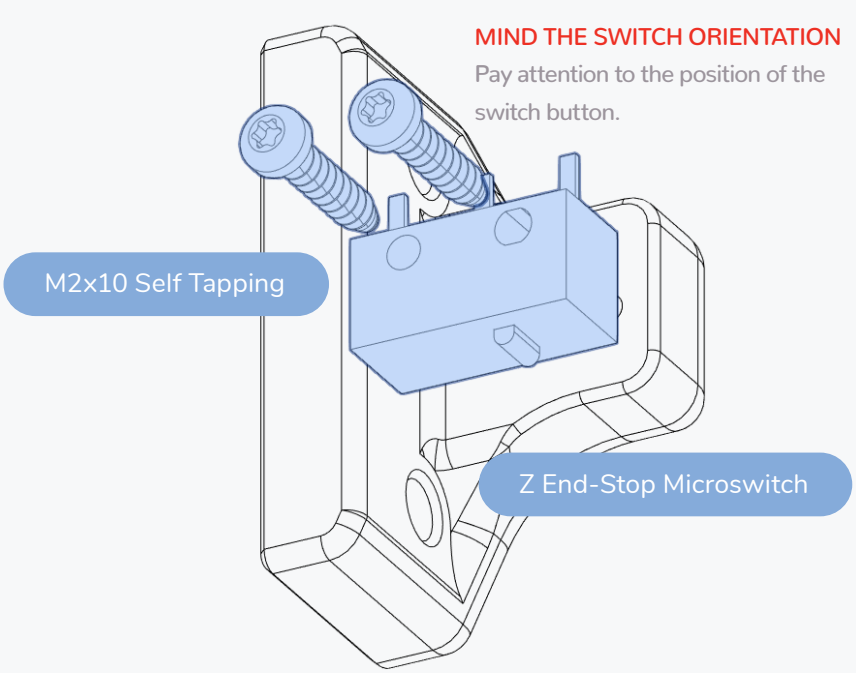
Prepare the switch for Z by soldering 250mm of wire to each of the outer terminals. If the switch has a lever carefully remove the lever from the switch.



MIND THE SWITCH ORIENTATION

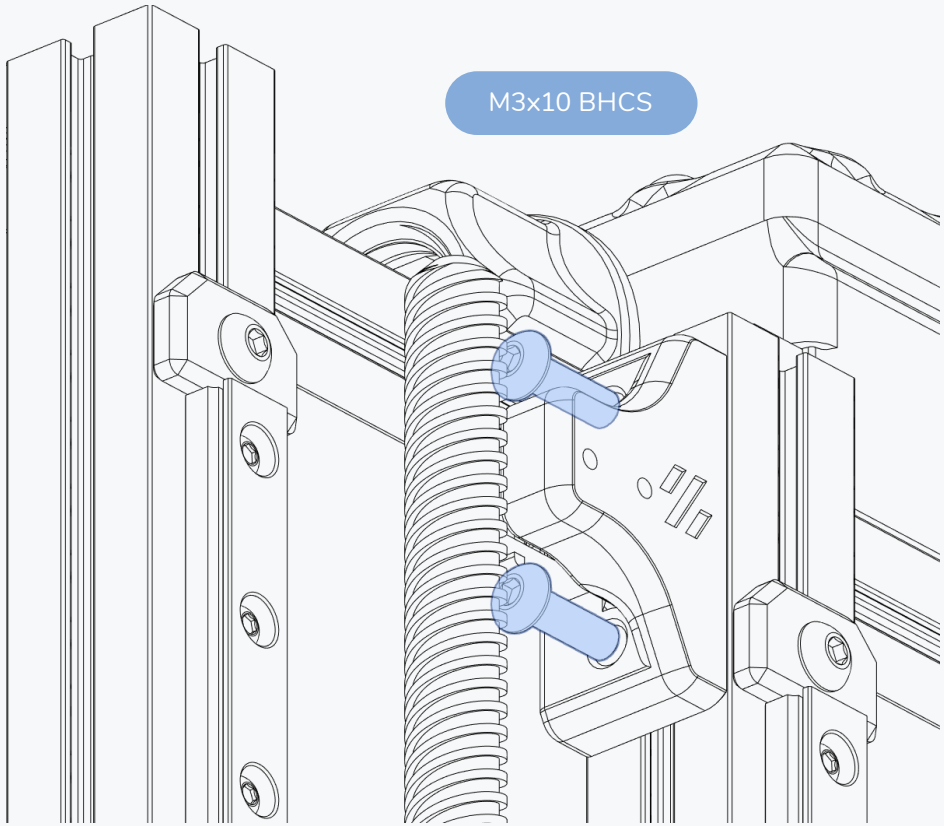
Pay attention to the position of the switch lever.





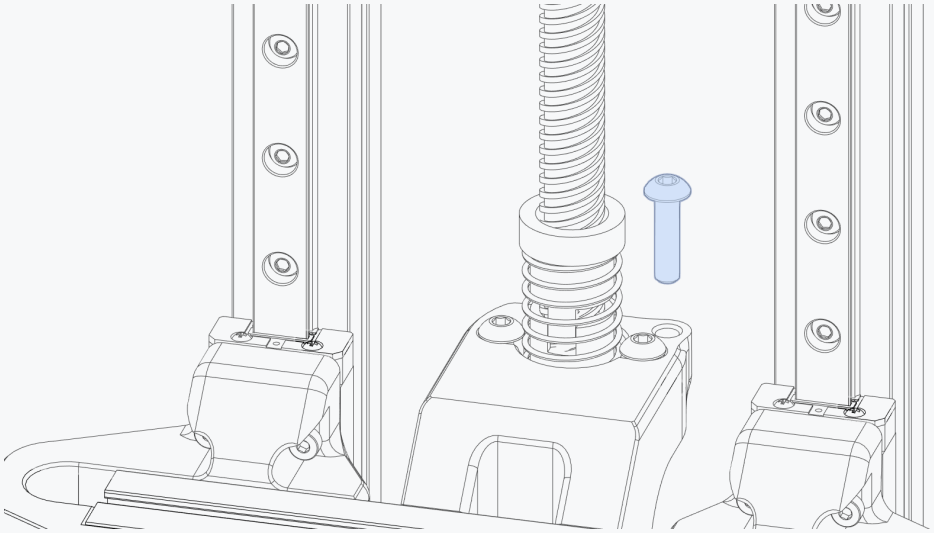
MIND THE SWITCH ORIENTATION

Pay attention to the position of the switch button.

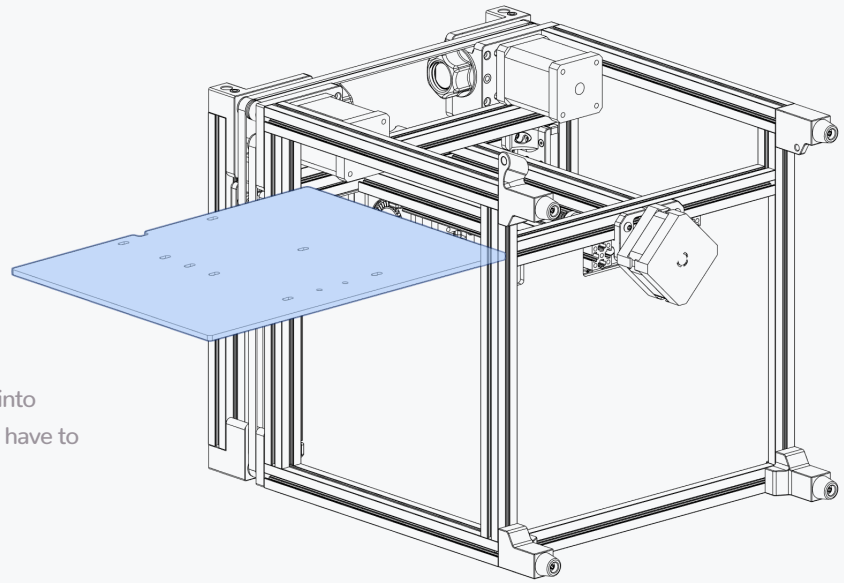


END-STOP MOUNTING

The 2 M3 nuts are dropped in from the top.
Use a 2mm ball-end driver to fasten the screws.
Position the end-stop housing about 2mm below the end of the extrusion.

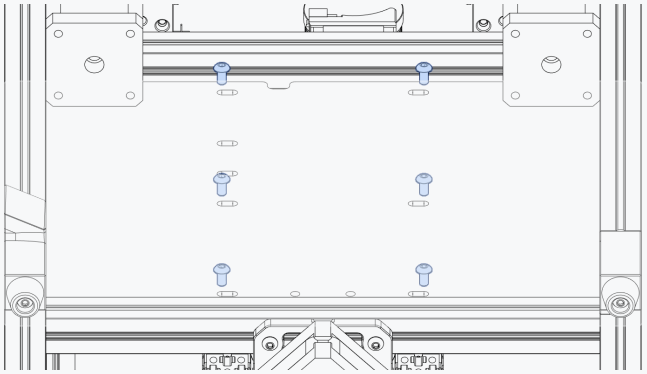


M3x12 BHCS

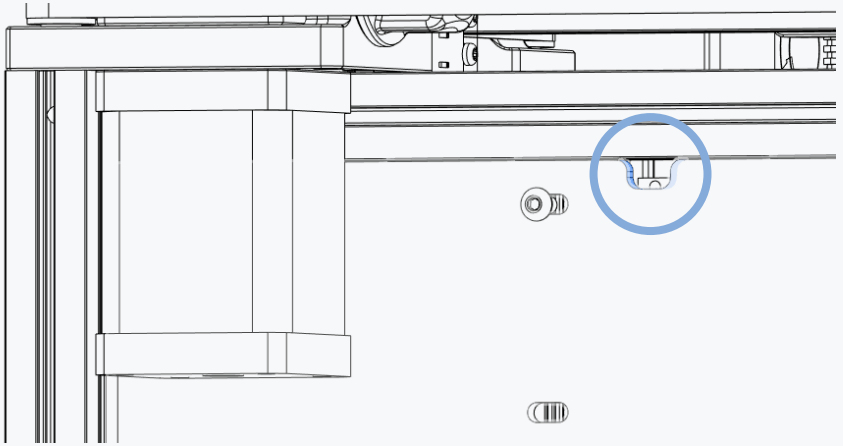


FLIP PRINTER

Aligning the preloaded nuts into position is easier if you don't have to fight gravity.

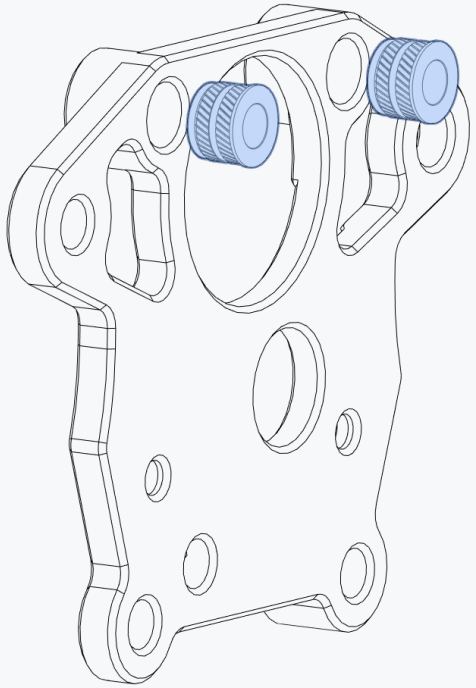


M3x6 BHCS

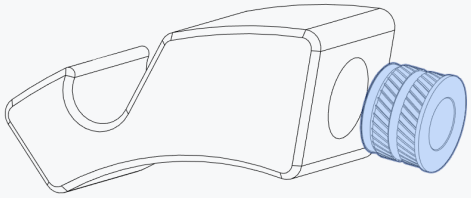


NOTCH FOR Z END-STOP WIRES

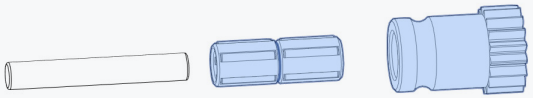
Aligning the preloaded nuts into position is easier if you don't have to fight gravity.

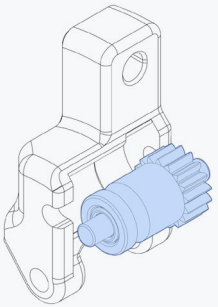


Heat Set Insert



BMG Idler Assembly

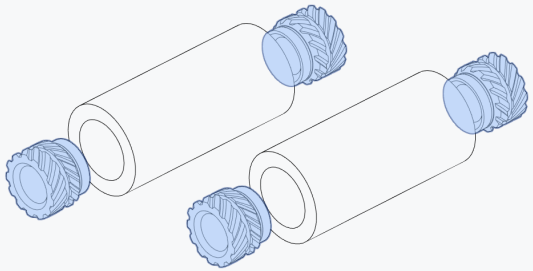


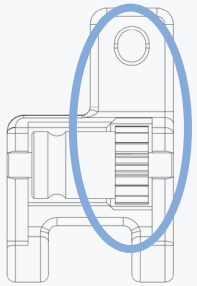


LUBRICATE BEARINGS

A lubrication film is required to ensure smooth operation and longevity.
Refer to the BOM for lubricant options.

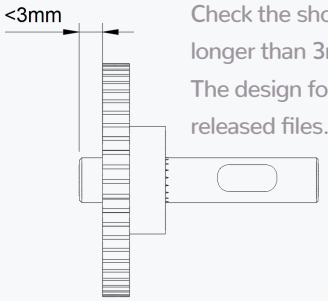
Heat Set Inserts





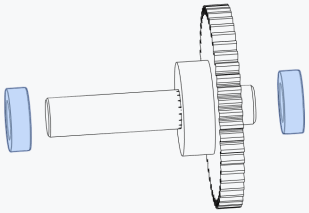
CHECK ORIENTATION

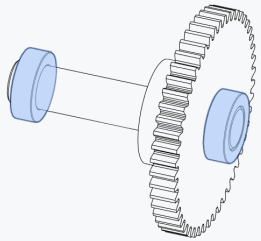
The larger gear section must be on the right hand side. Check for any rubbing or binding.

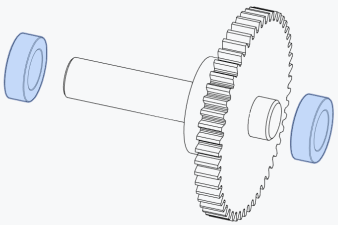


SHORT END OF THE SHAFT

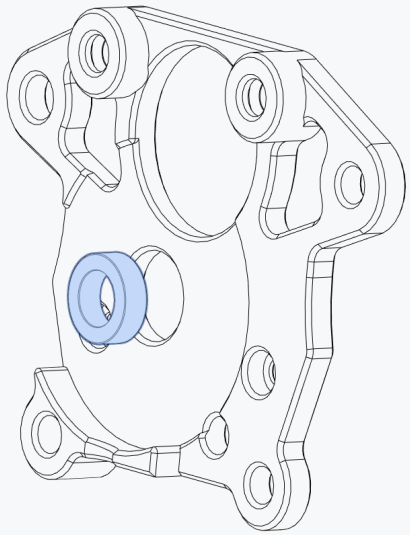
Check the short end of the shaft. If it is longer than 3mm shorten it to under 3mm. The design for a printed jig is included in the released files.







MR85 Bearing

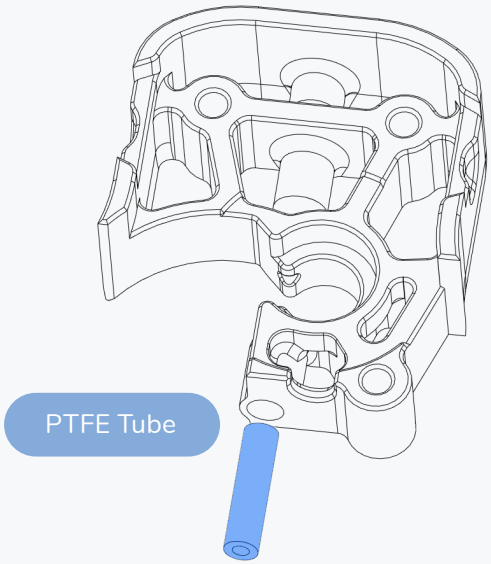


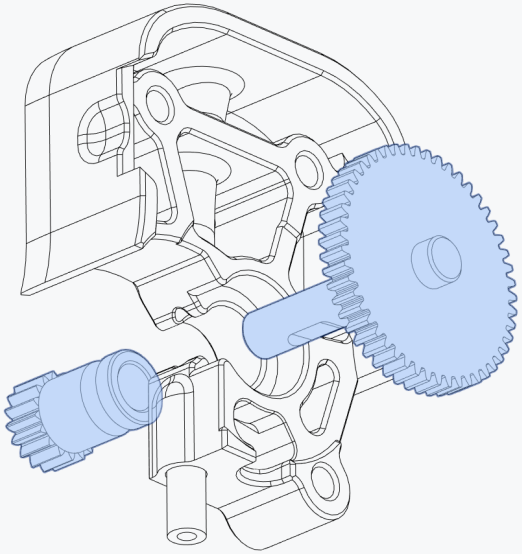
CHECK BEARING FIT

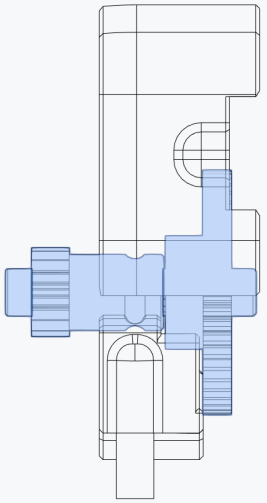
The bearings must slip on and off the shaft easily to allow the gear to self centre. Do not shim into position.

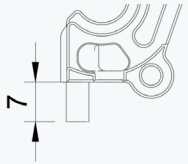
Pressing the bearings on the shaft will damage them.
Lightly sand the shaft if required.

Remove the bearings from the shaft after you checked the fit.



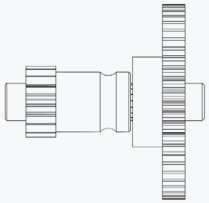






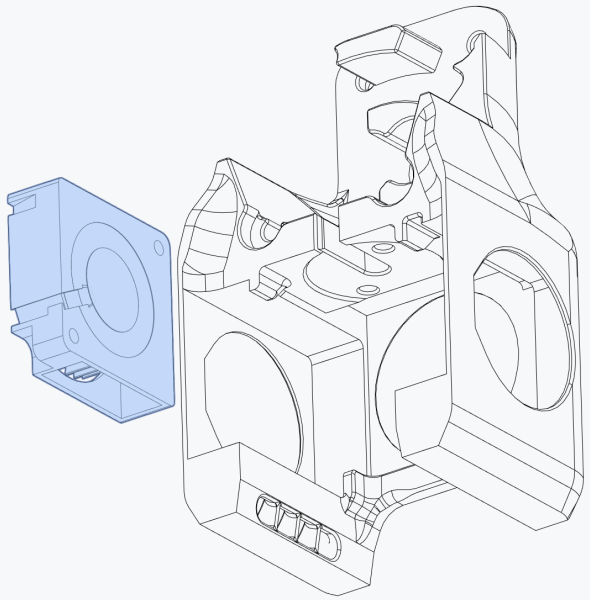
PTFE LENGTH

7mm of PTFE tube should stick out the bottom of the part.

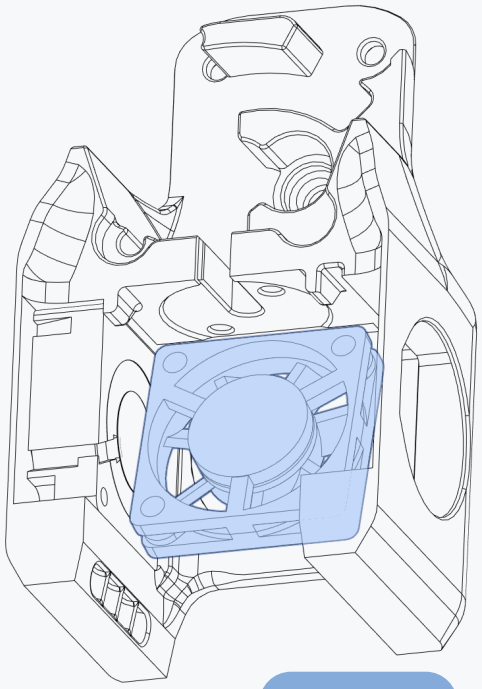


CHECK ORIENTATION

The drive gear is mounted opposite of how it is usually mounted in an extruder. Make sure that the grub screw has sufficient contact with the flat.



Blower Fan



Axial Fan

AIRFLOW DIRECTION

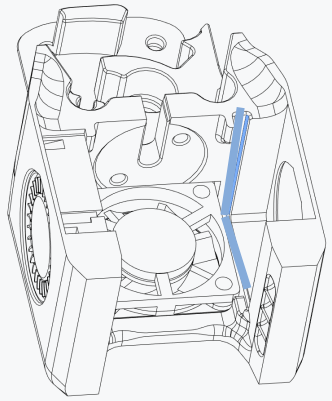
Orient the fan in such a way that the air is pushed into the cowling. You'll find small arrows on the fan indicating the air flow direction.

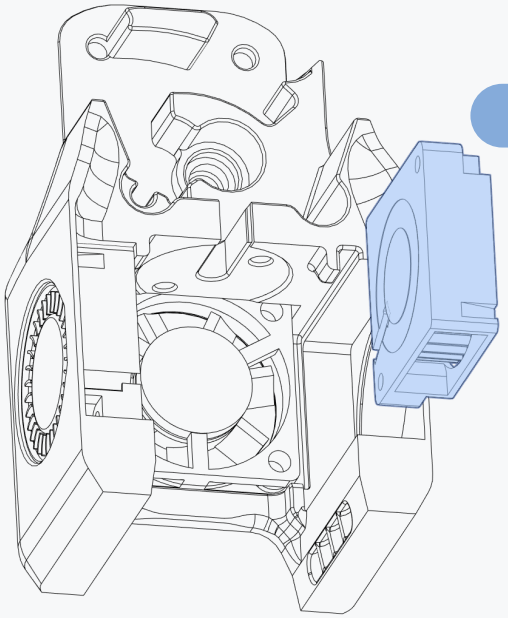
INSERT AT AN ANGLE

Angle the fan and clip in place.

WIRING PATH

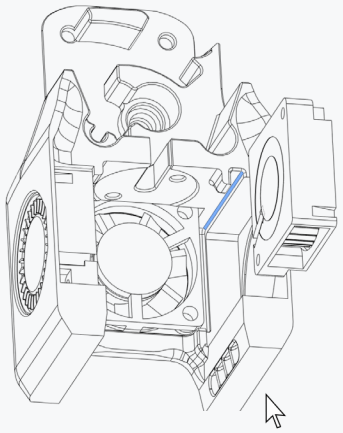
Orient the fan in such a way that you can guide the wires in the highlighted path.

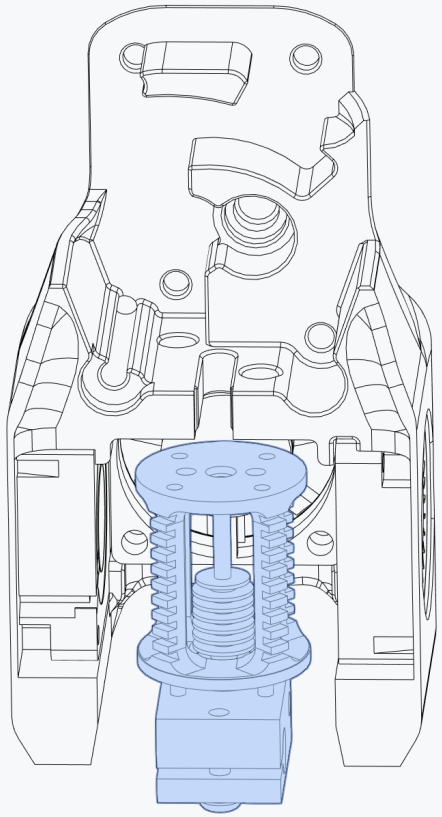




WIRING PATH

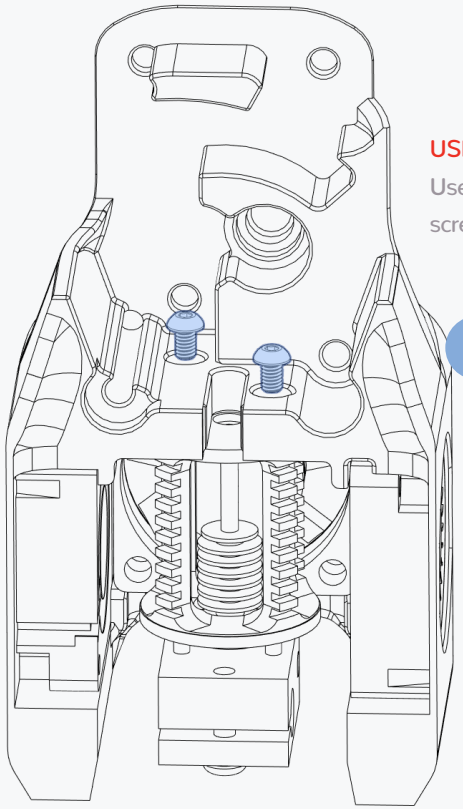
Guide the wires in the highlighted path.





HEATER AND SENSOR

We do not show the heater and temperature sensor cartridge in the drawing. Install them prior to assembling the toolhead.



USE A BALL-END DRIVER

Use a 2mm ball-end driver to fasten the left screw.

M2.5x6 BHCS

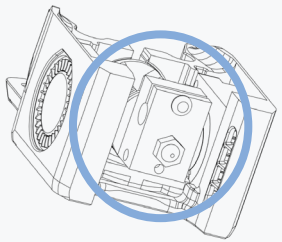
OTHER HOTENDS?

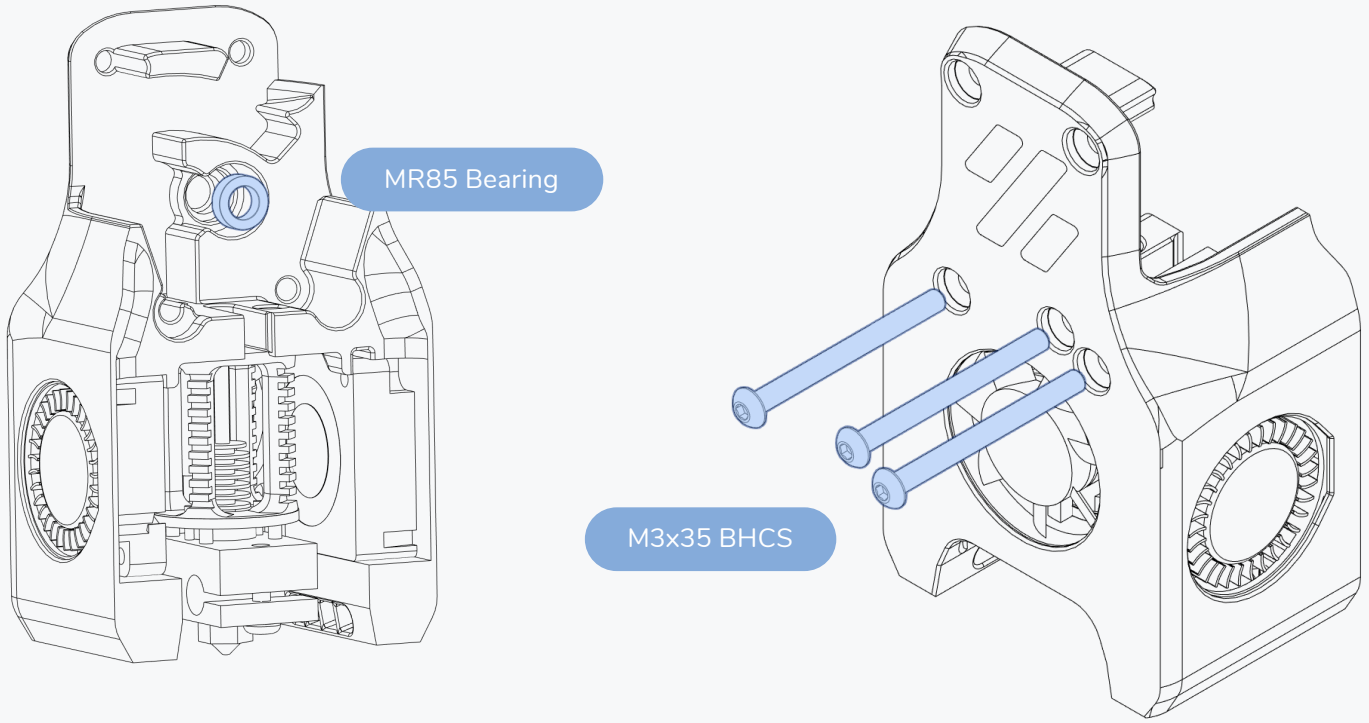
We are showing the assembly steps using a Dragon hotend.

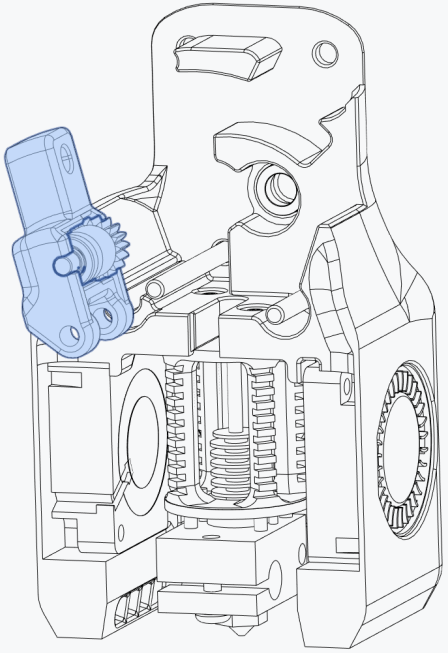
Toolheads for other hotends are included in the released files and assembled in a similar manner.

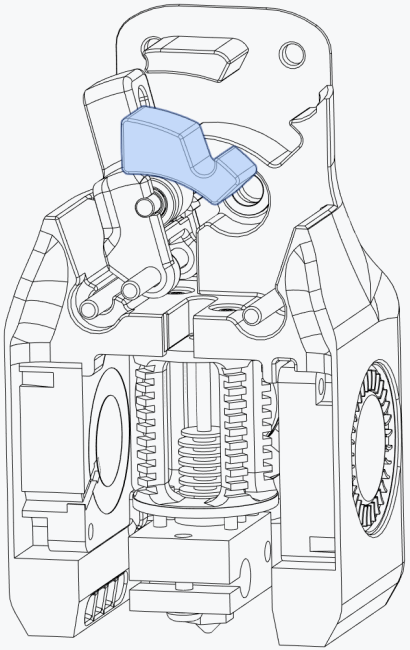
CHECK ORIENTATION

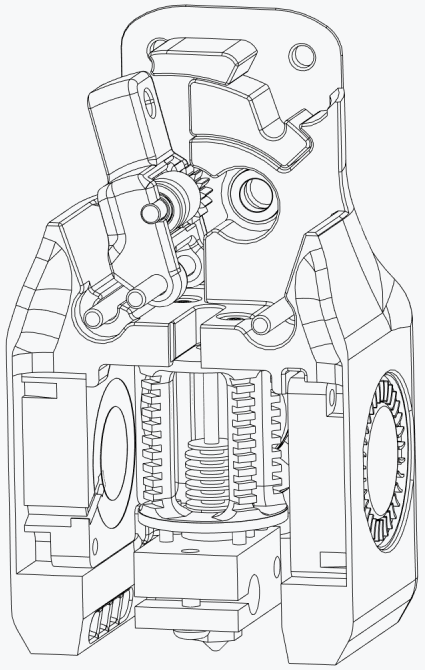
The heater block must point backwards.

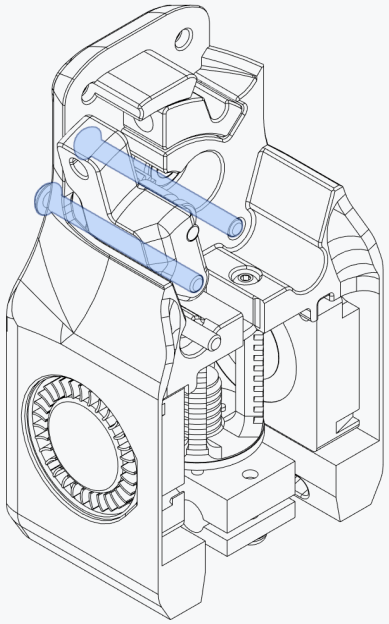



MR85 Bearing
M3x35 BHCS



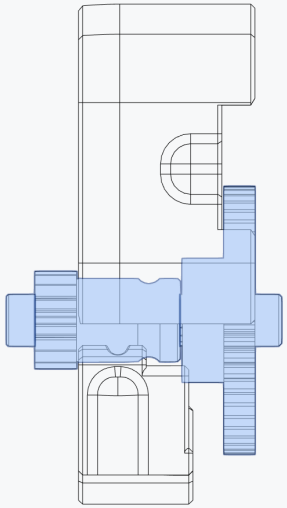






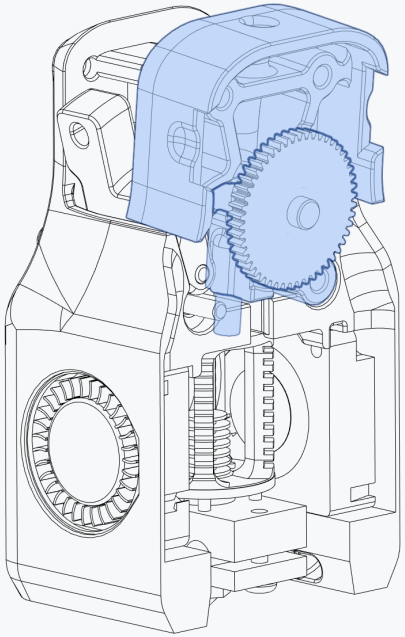
MOVE SCREWS FORWARD

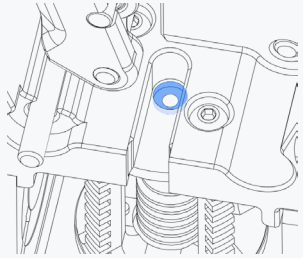
Push the screws forward until they sit flush with the printer part.



PUSH DRIVE GEAR BACKWARDS

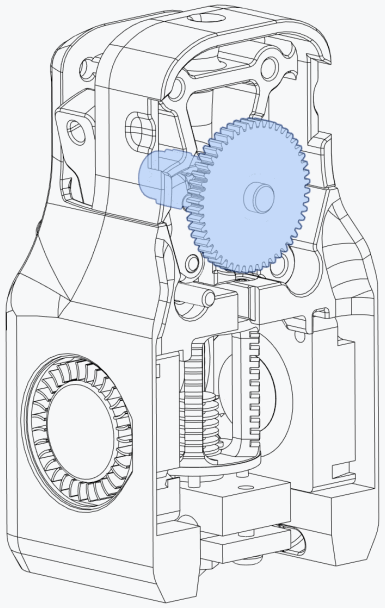
Push the drive gear all the way to the back to help screws forward until they sit flush with the printer part.





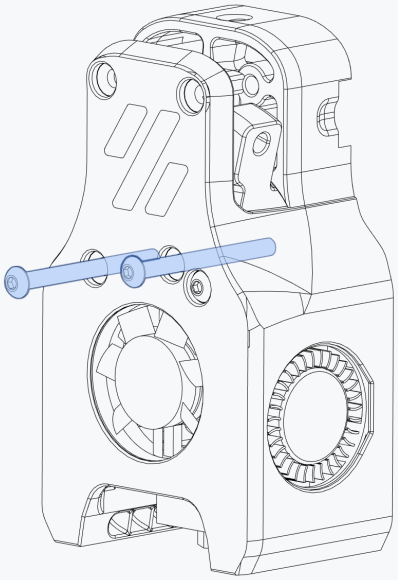
INSERT AT ANGLE AND PUSH INTO PLACE

Tilt the part slightly backwards.
The part will clip into place with the drive shaft sitting in line with the front MR85 bearing and the PTFE tube in the circular recess in the hotend.



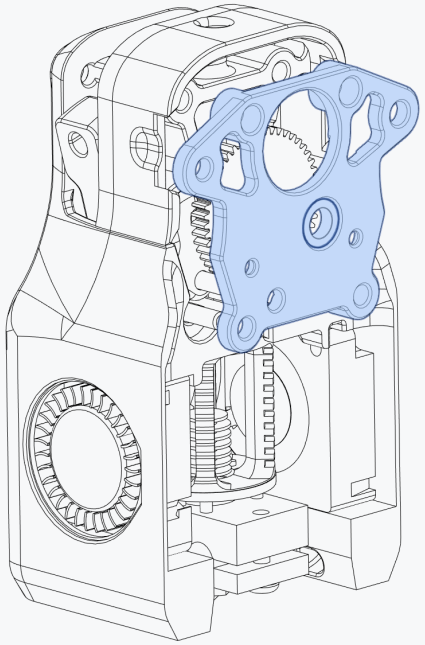
PUSH DRIVE GEAR FORWARD

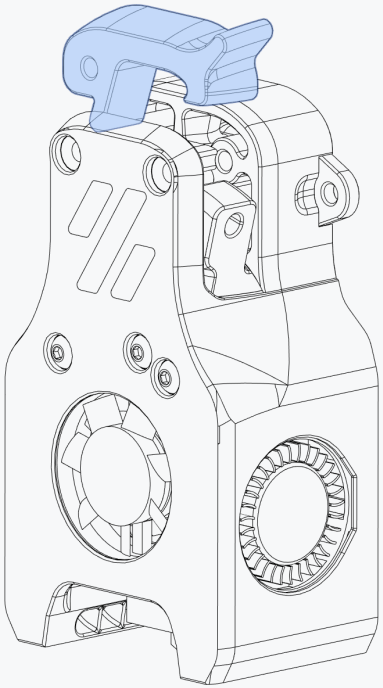
Push the drive gear all the way to the front to seat it in the MR85 bearing.

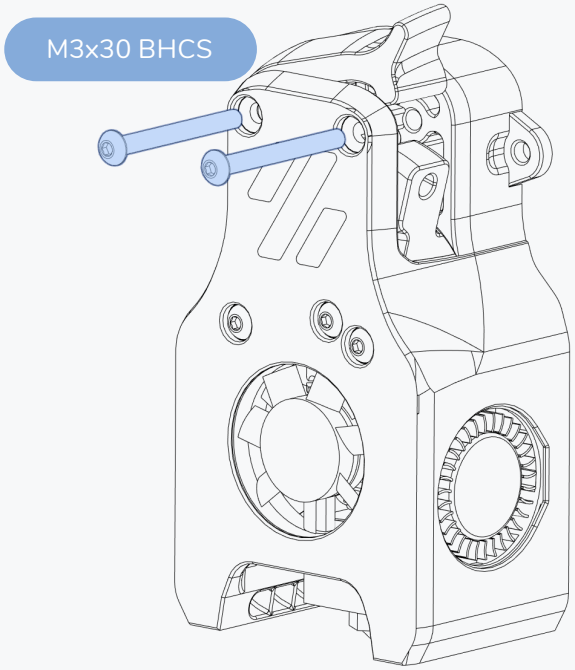


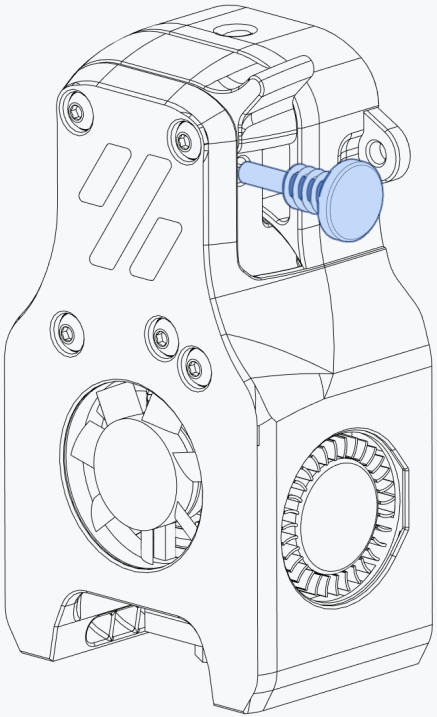
PUSH SCREWS BACK

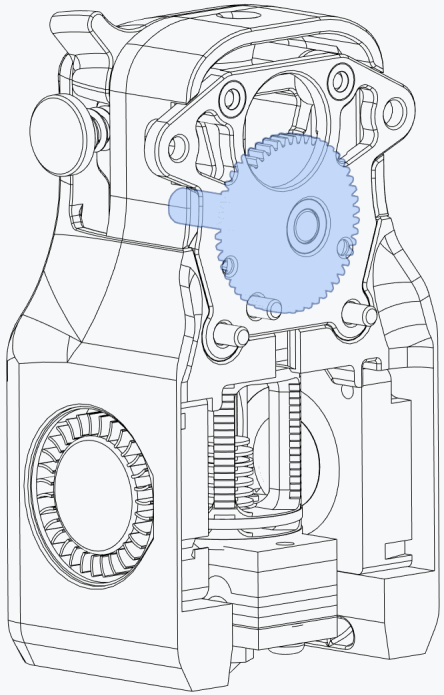
Insert the screws all the way.





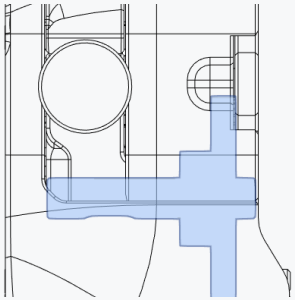

M3x30 BHCS


BMG Thumb Screw



CHECK FOR BINDING

Turn the drive gear and check if there is any binding or snags. Disassemble the toolhead and inspect if required.

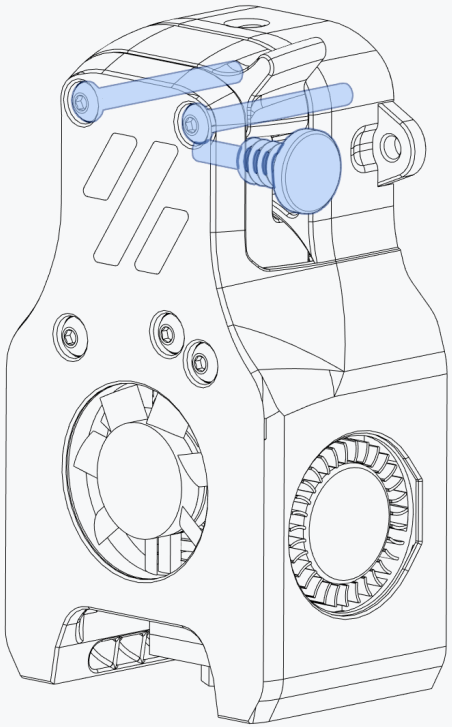


CHECK FOR CLEARANCE

The drive shaft must not extend past the printed body as it would rub on the motor.

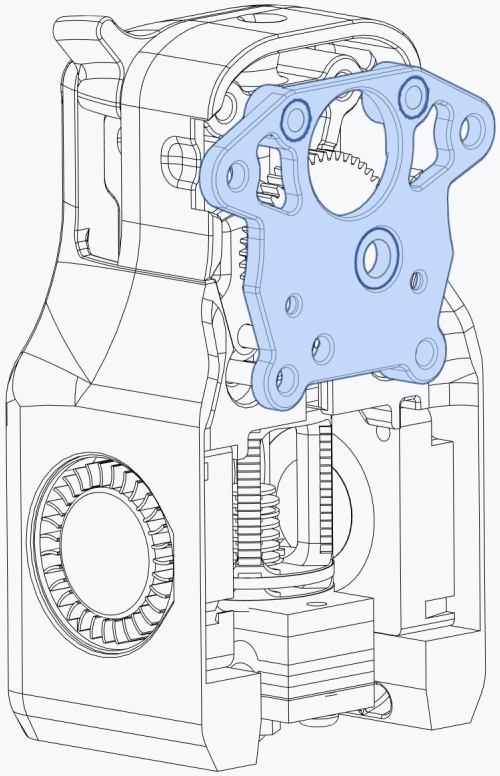
Check if the shaft has sufficient clearance when fully seated.

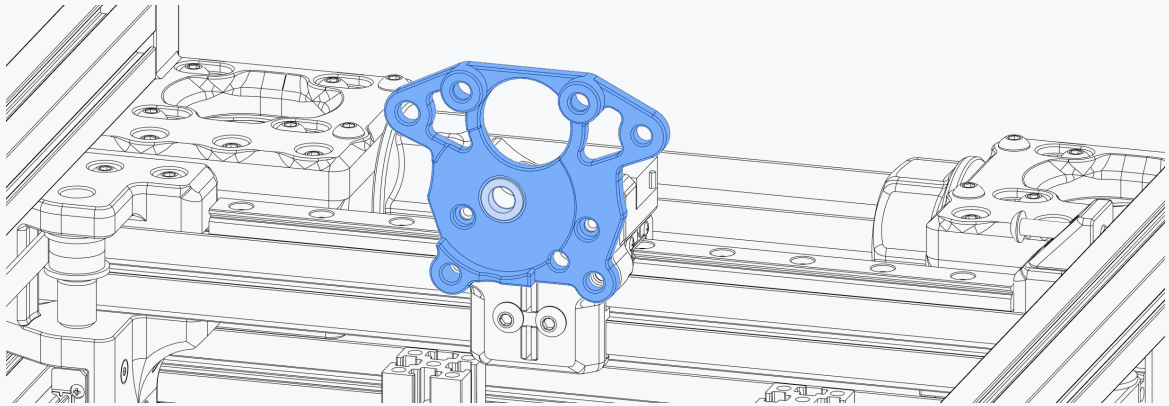
Sand the face of shaft if required.



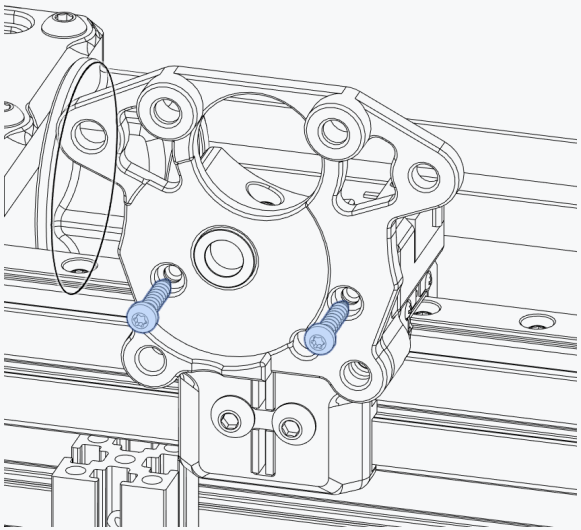
PARTIAL DISASSEMBLY

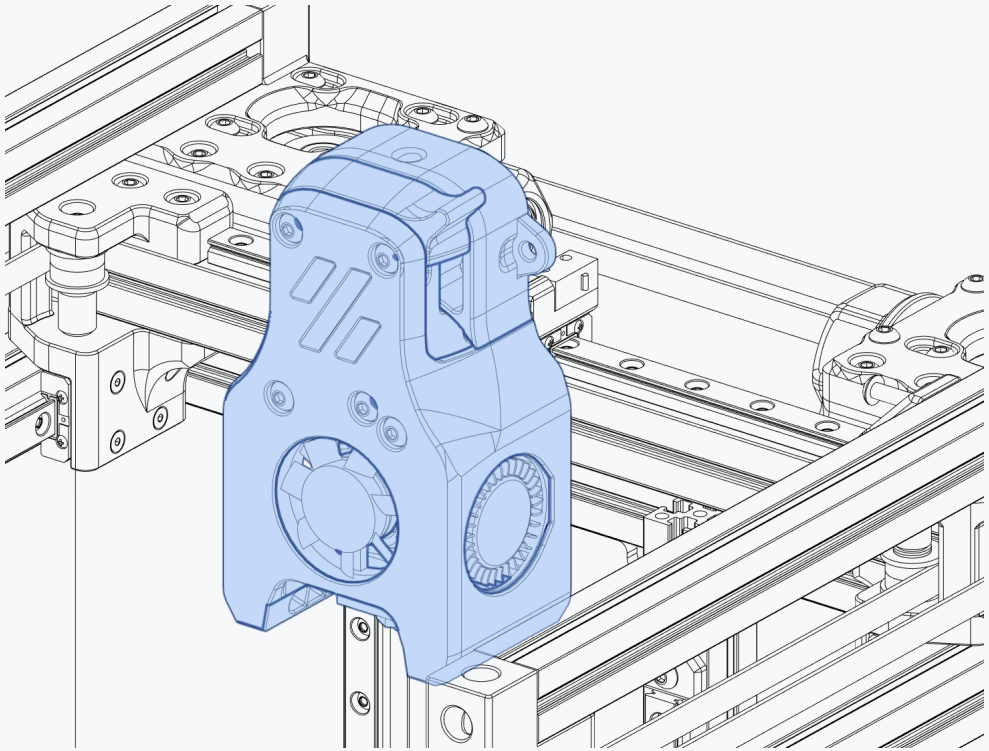
Remove the thumb screw.
Loosen the top screws and
remove the back plate.

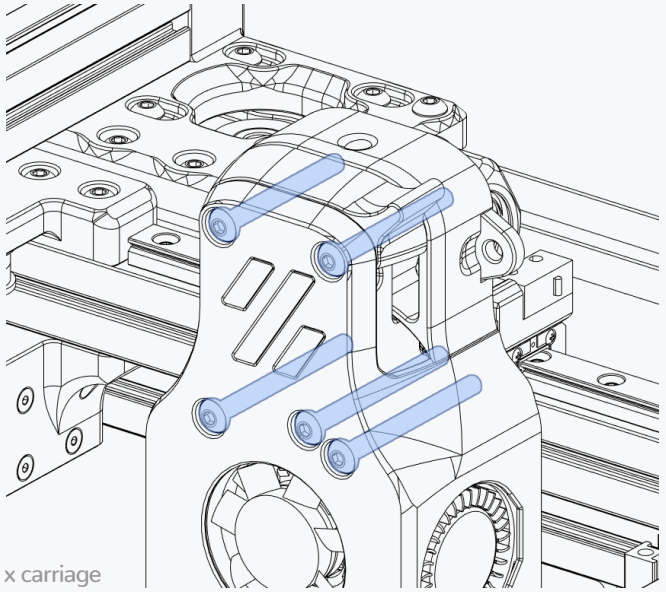




M2x10 Self Tapping

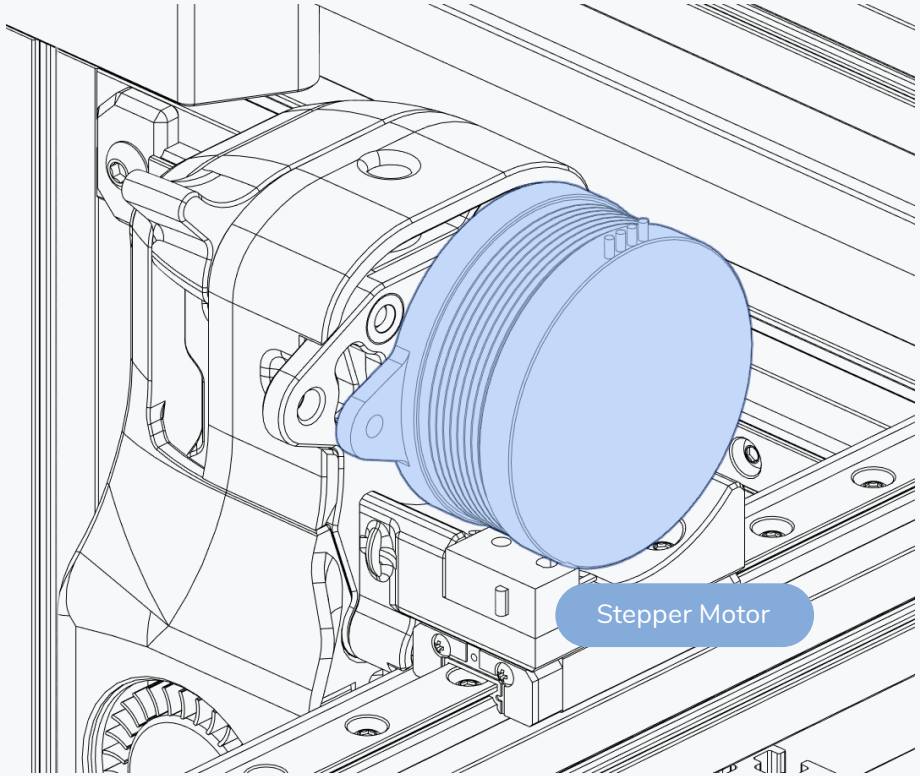


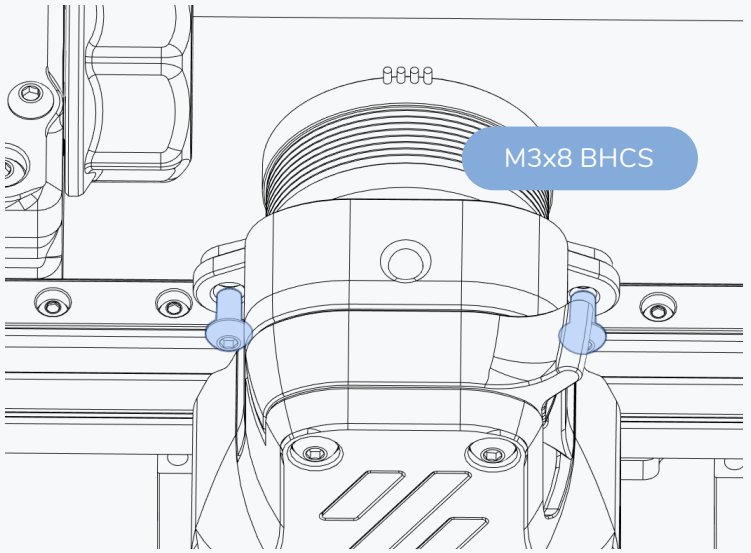


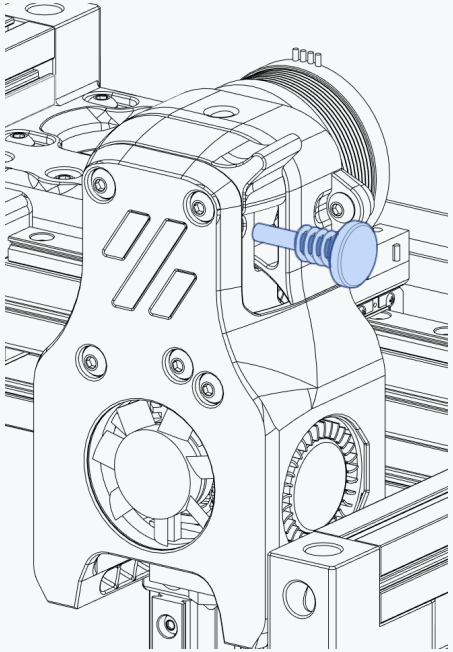


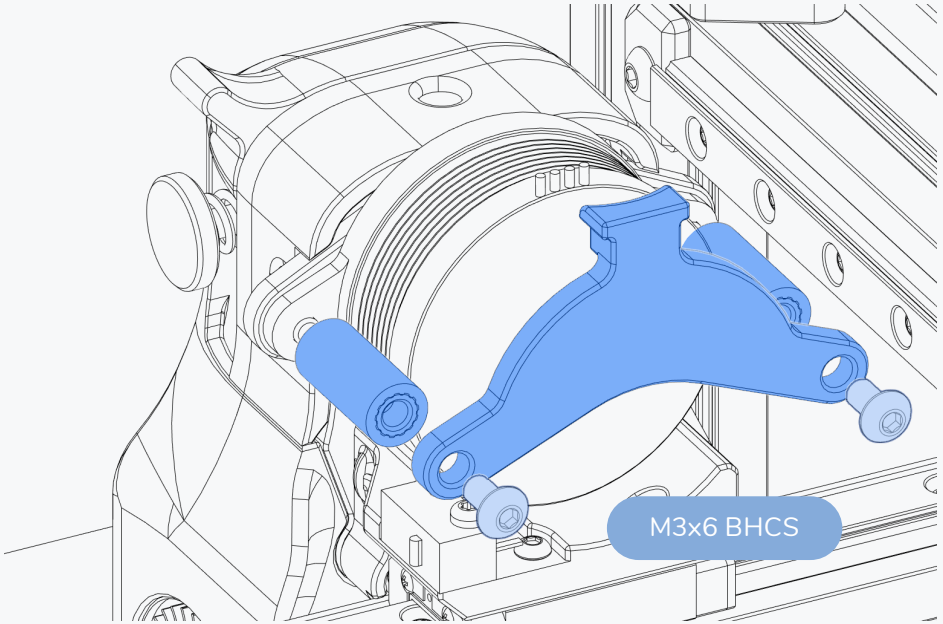
TIGHTEN SCREWS

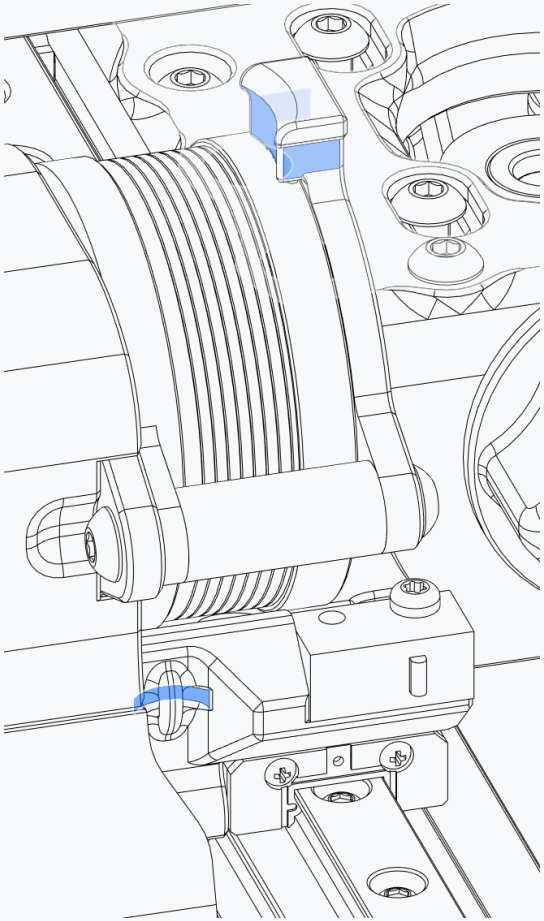
Secure the print head to the x carriage
by fastening the highlighted screws


Stepper Motor


M3x8 BHCS

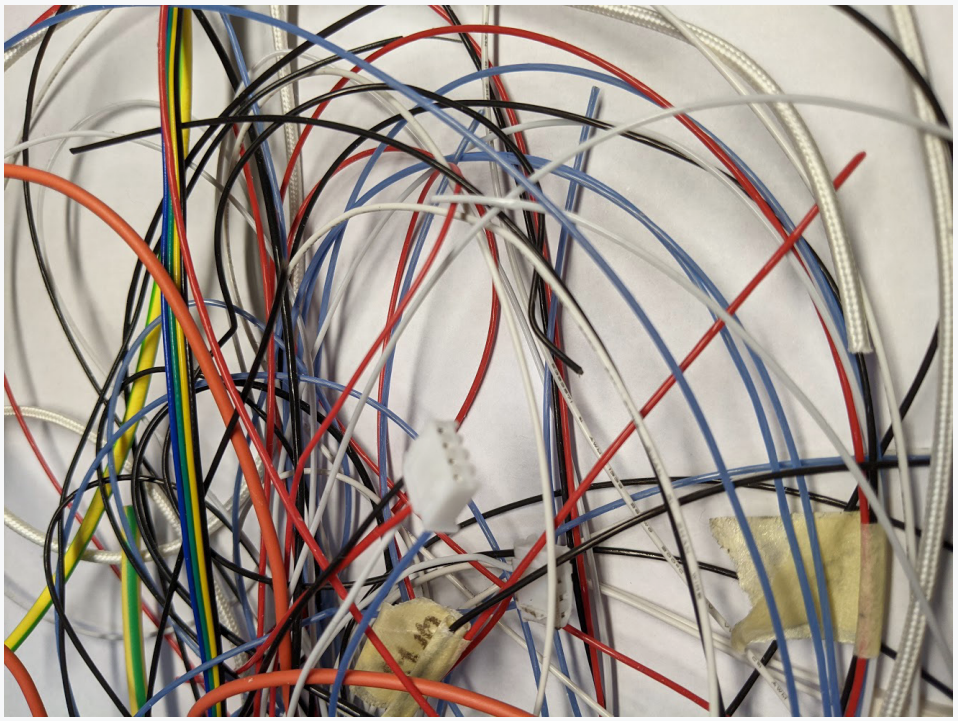


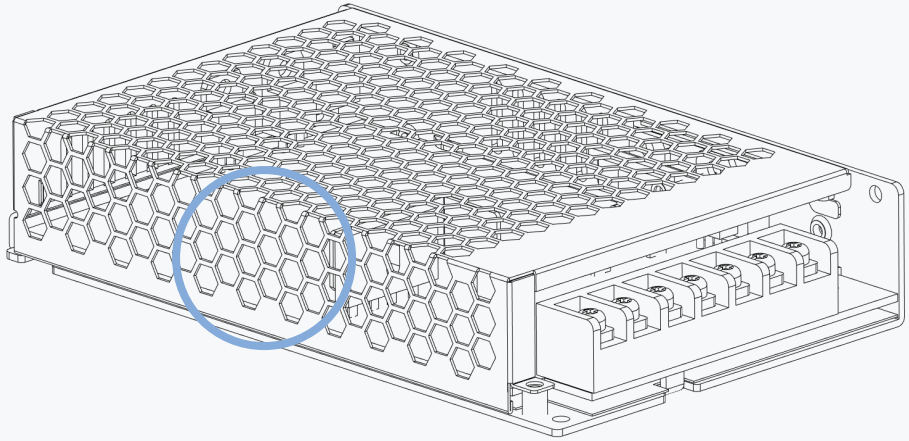

M3x6 BHCS



CABLE MANAGEMENT

There are loops for zip-ties on either side of the x carriage and a strain relief on the top.



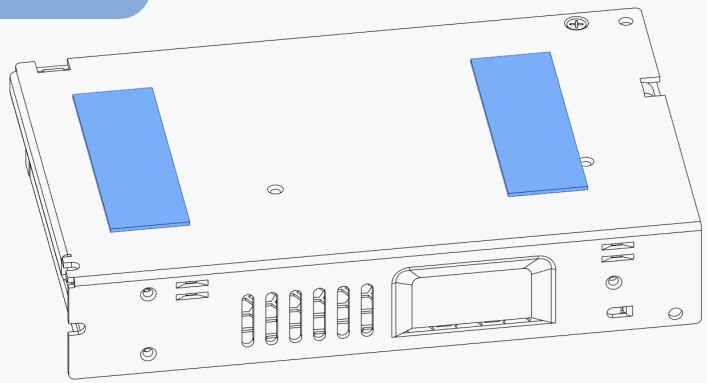


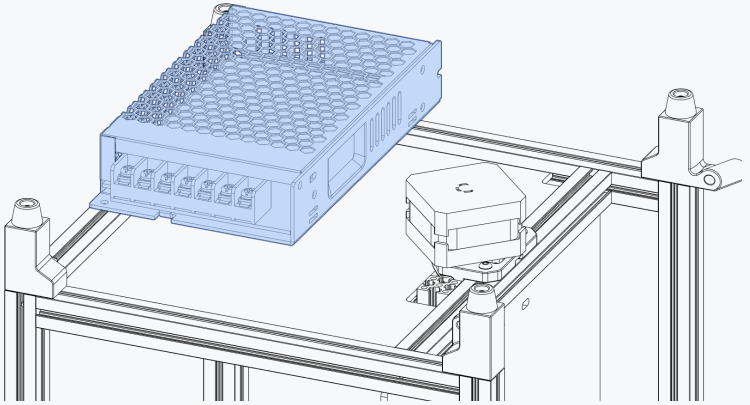
INPUT VOLTAGE SWITCH

Check the input voltage switch of the power supply. It is located in the highlighted area behind the metal mesh.

Make sure the selection matches your local mains voltage. Refer to the Mean Well LRS-150 datasheet for possible settings (https://voron.link/ibwf2uu).

24V Power Supply



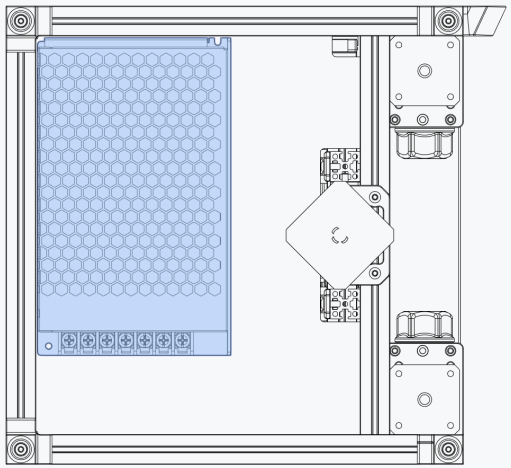


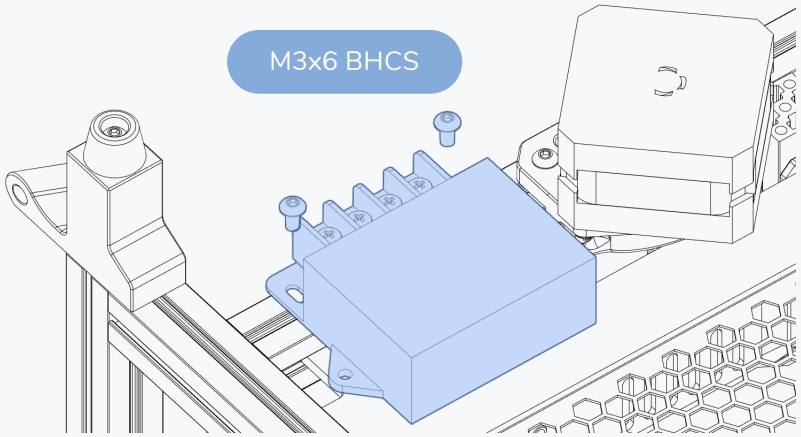
APPLY VHB TAPE

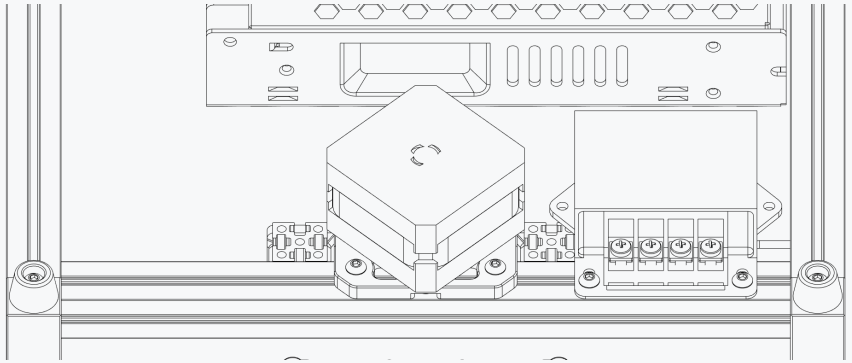
3M VHB tape is a double sided pressure sensitive adhesive tape.
Other vendors have similar products that you can use as a substitute.

Support the deck panel with one hand and firmly press the power supply against the panel to achieve a strong bond.

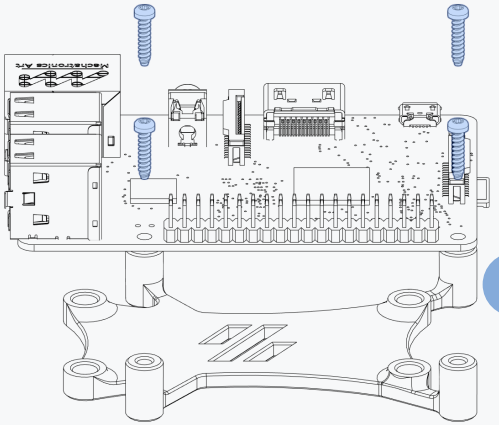
Should you distrust modern adhesives you can alternatively mount it by drilling 2 holes in the deck panel and securing it with 2 M3x6 BHCS. Refer to the LRS150 datasheet for dimensions (https://voron.link/ibwf2uu).




M3x6 BHCS
5V DC/DC Converter

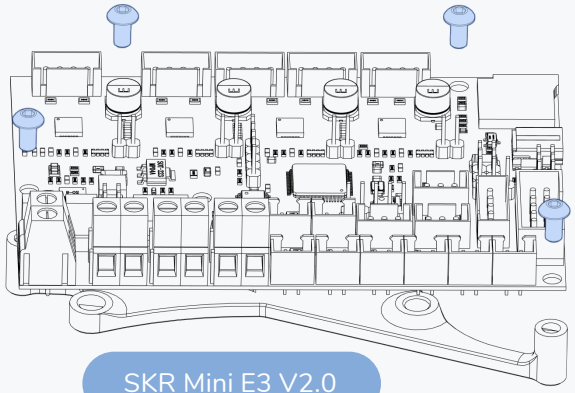


M2x10 Self Tapping

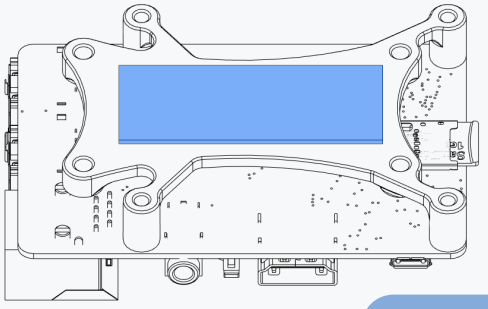


Raspberry Pi

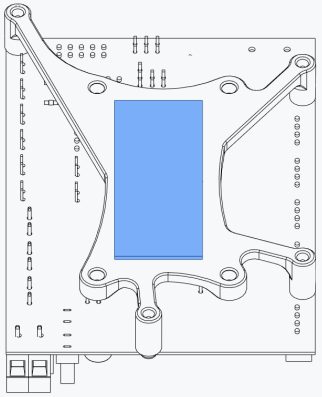
M3x6 BHCS

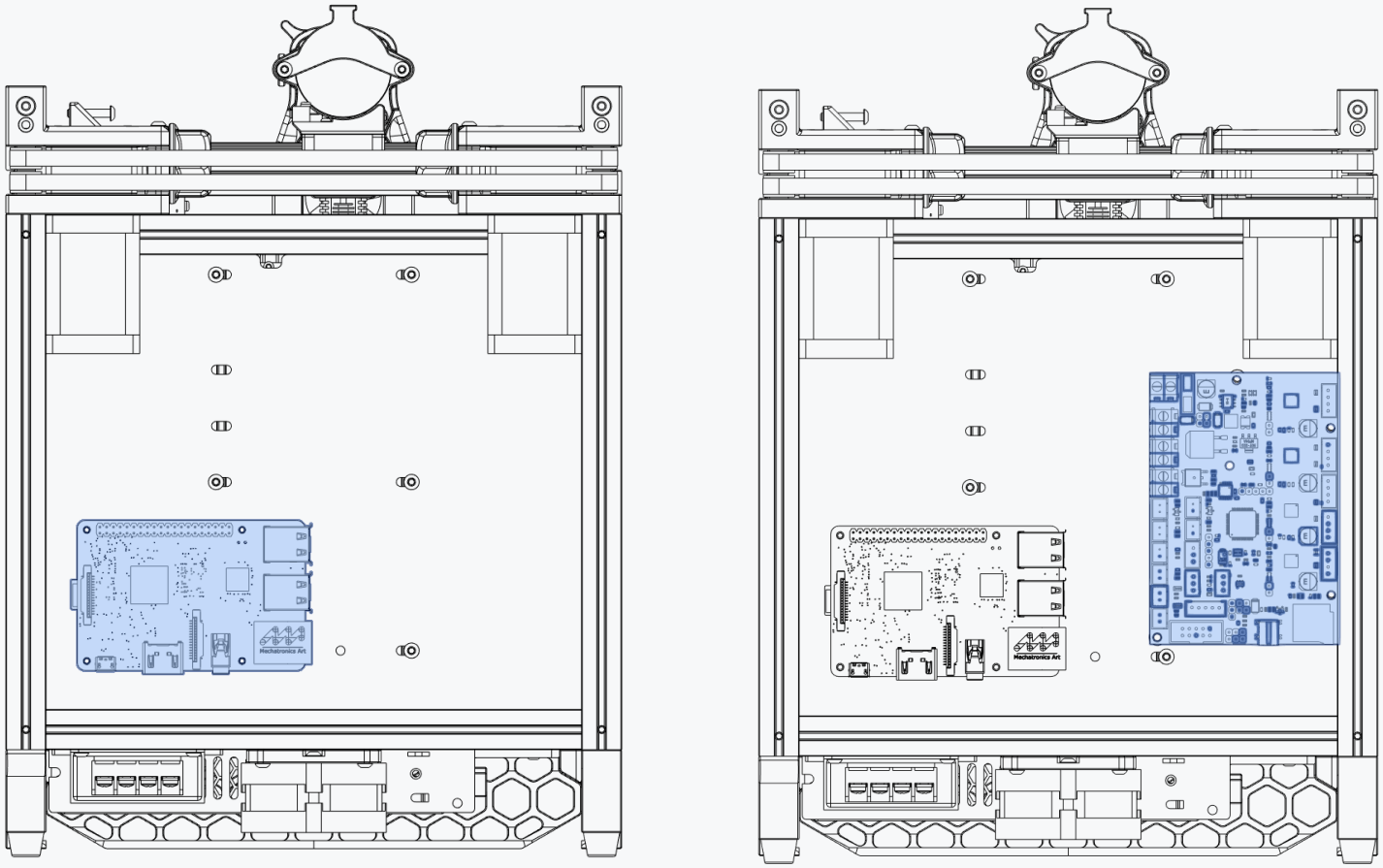


SKR Mini E3 V2.0



Apply VHB Tape

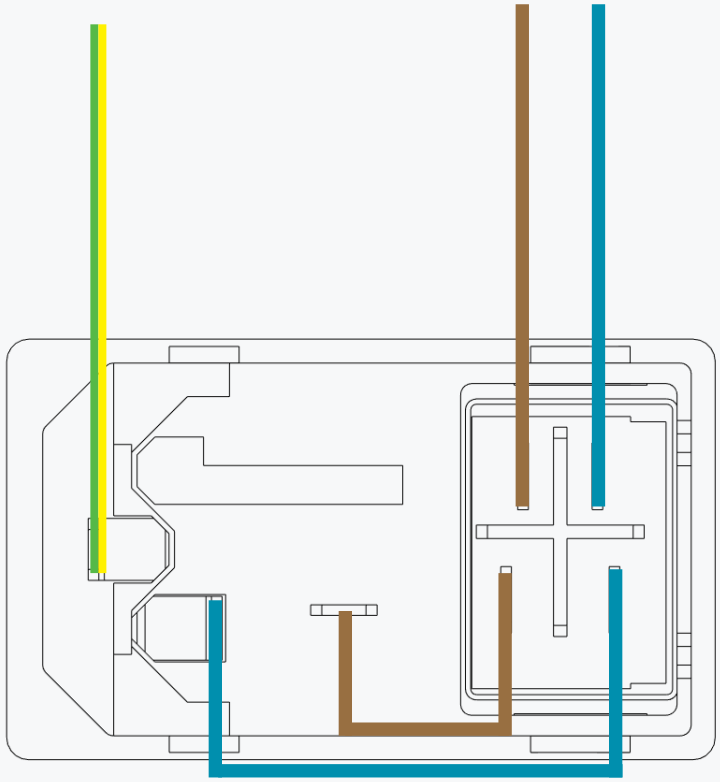




ELECTRONICS PLACEMENT

Above is our suggested placement. If you modify the placement, make sure that you have access to all connectors and the SD Card of the Raspberry Pi.

Carefully press the holders against the panel to get a good bond.



ATTACH 250MM OF WIRE

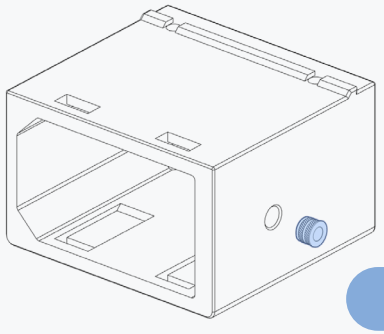
Cables should be at least 0.75mm² (AWG18) or thicker depending on local regulations.

MAINS INLET WIRING

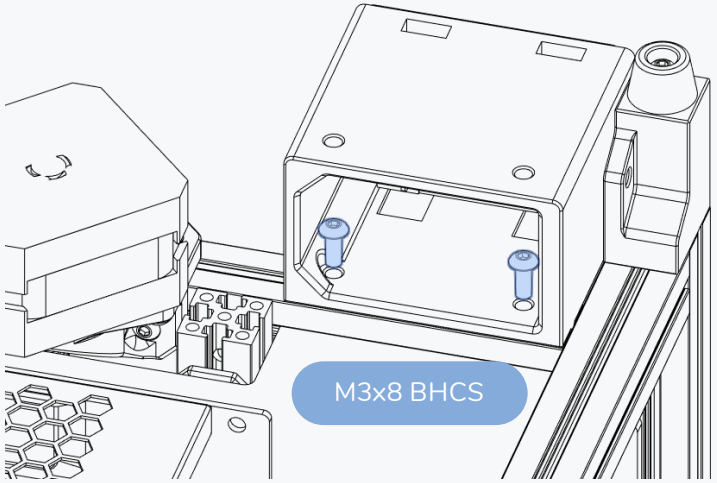
We show the wiring in the IEC colour scheme. Depending on your region the colour scheme and wiring standards will differ.

Mains wiring should only be done by qualified personnel trained in local regulations and safety standards.

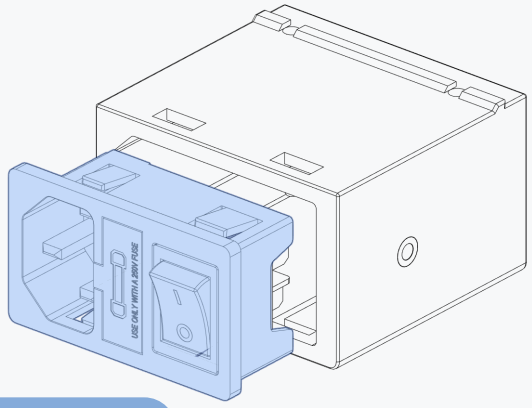
Failure to observe those could result in bodily harm.



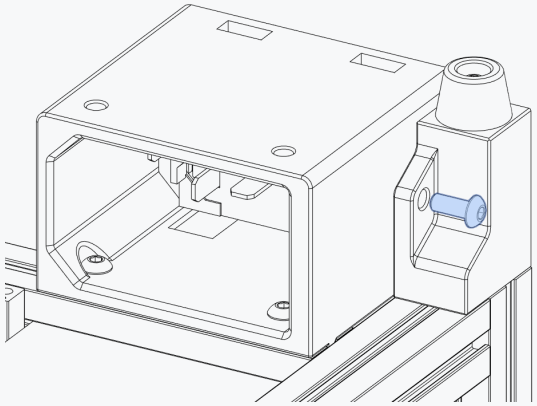
Heat Set Insert



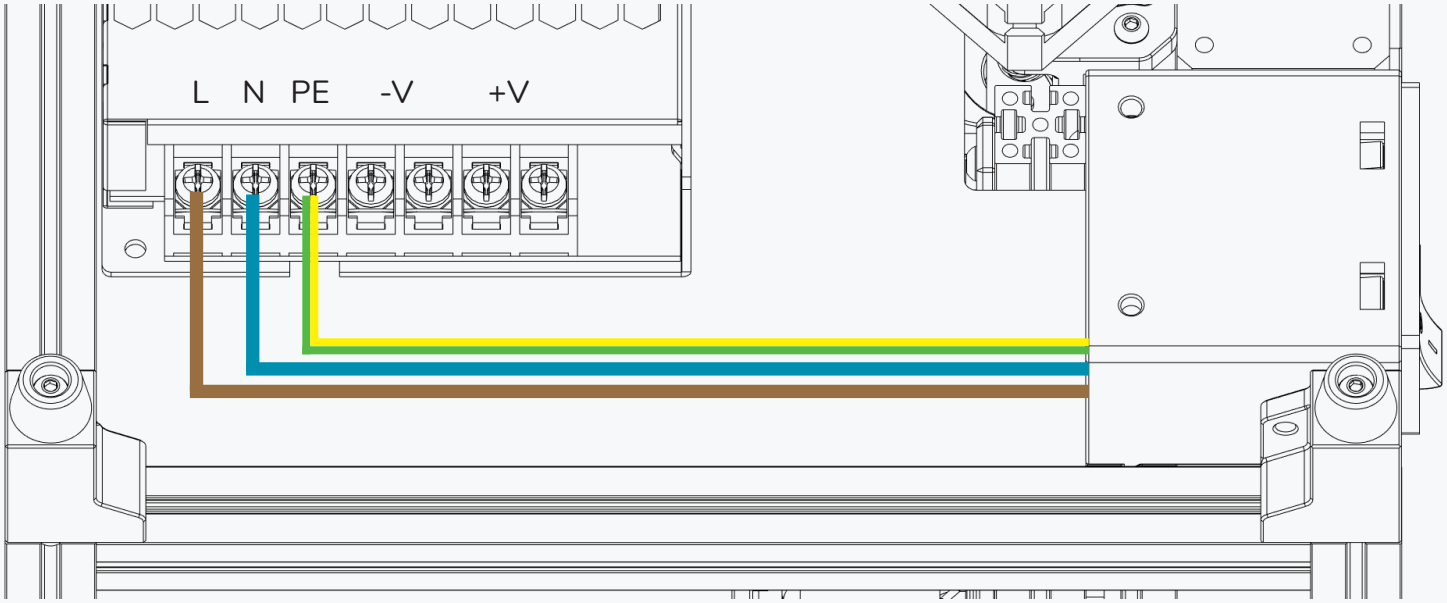
M3x8 BHCS



Prepared Mains Inlet



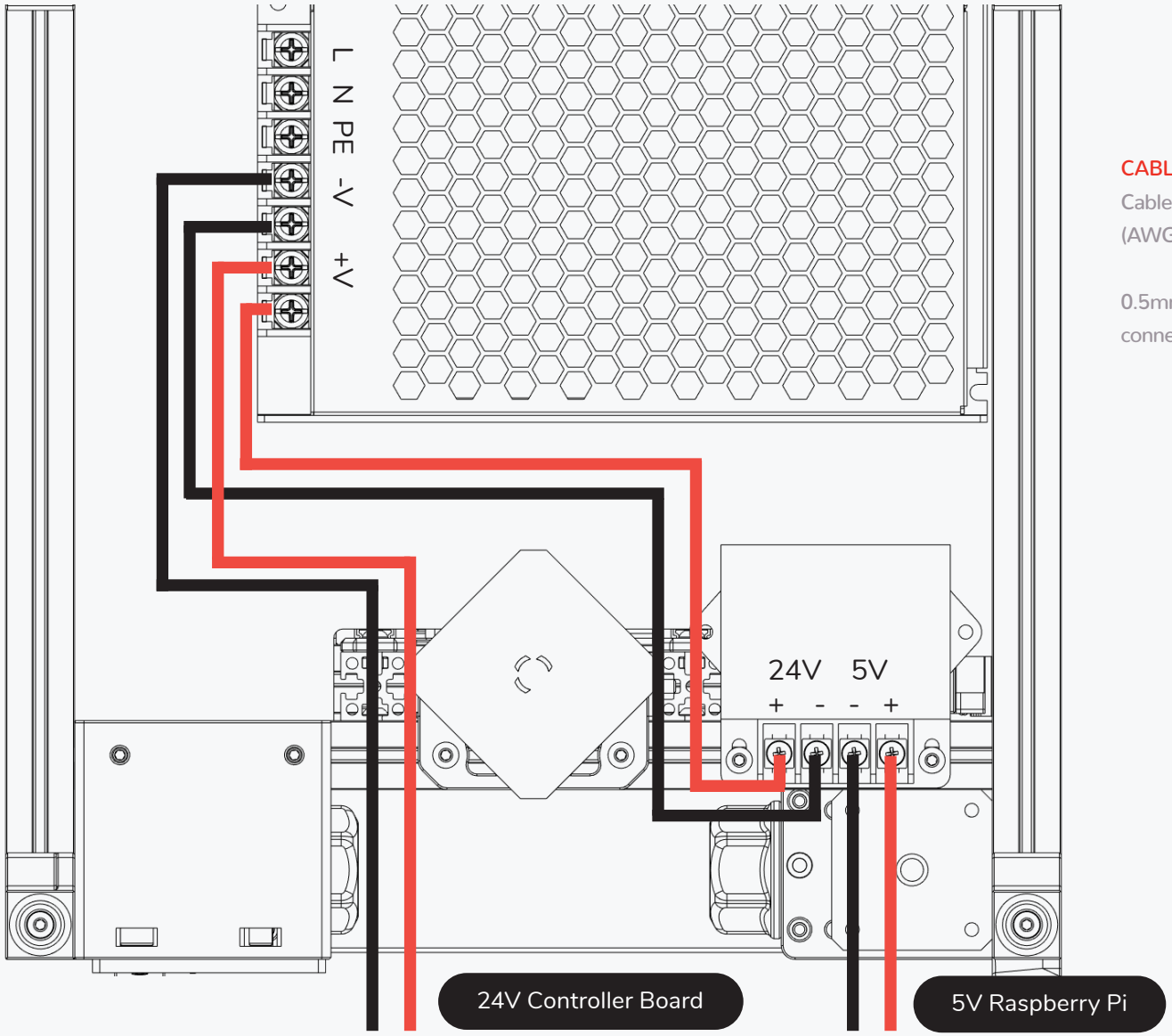
M3x8 BHCS



MAINS WIRING CONTINUED

This completes the mains wiring on a V0.1. A guard cover will be installed in a later step.
Secure the wires with cable clips / cable tie anchors.

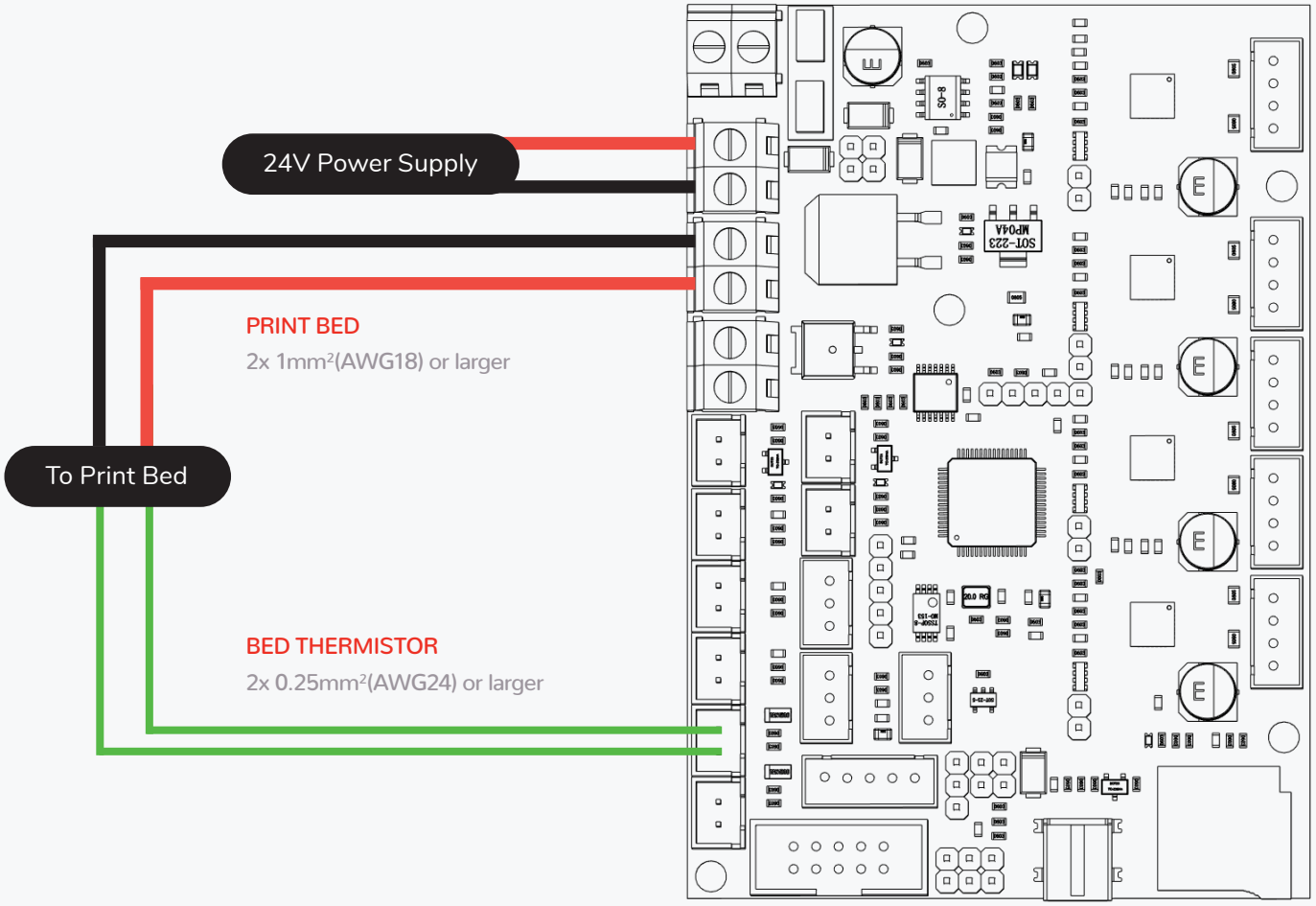
The bed heater is powered by DC voltage, grounding the print bed should not be required.
Observe your local regulations in regards to grounding the frame/other components.

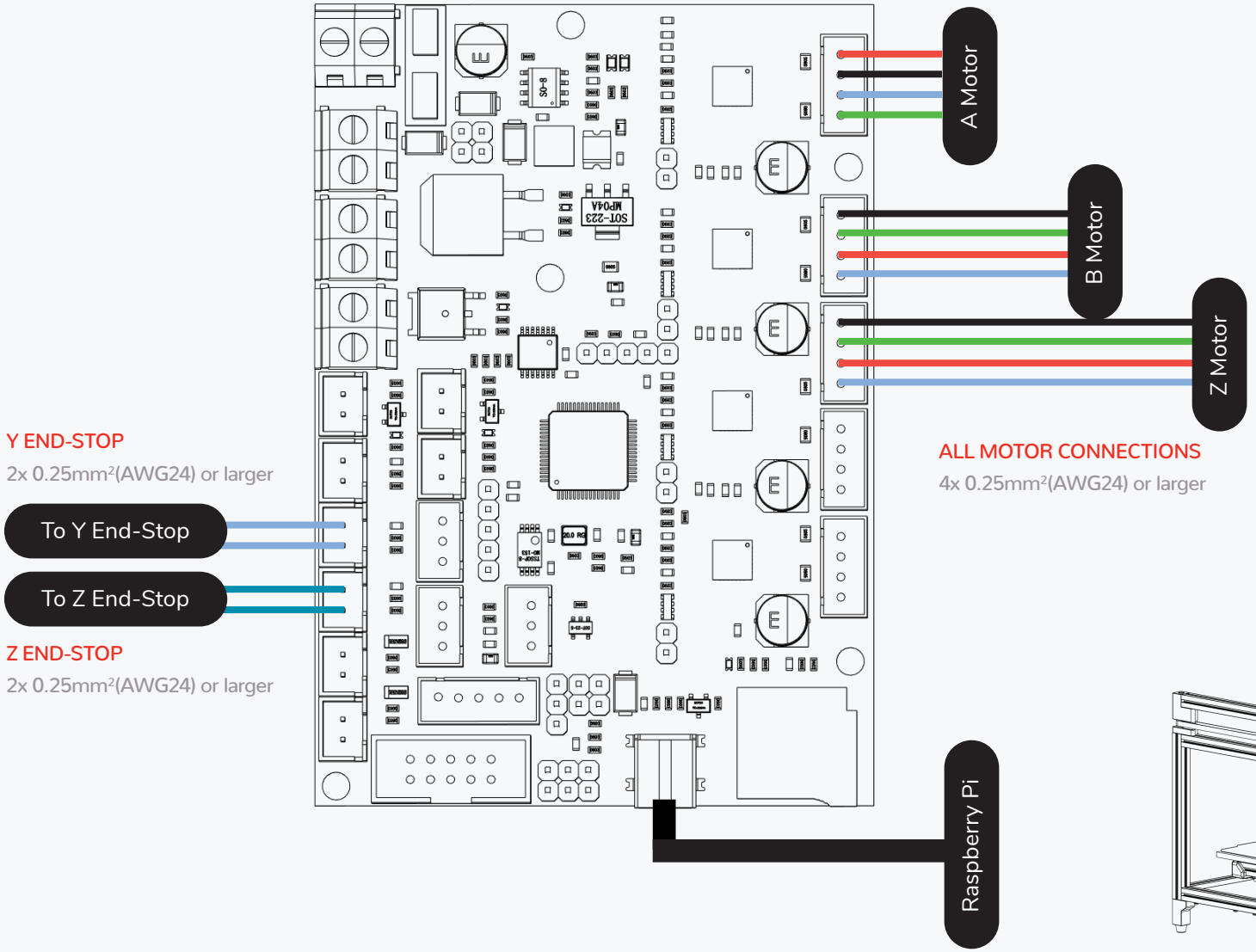


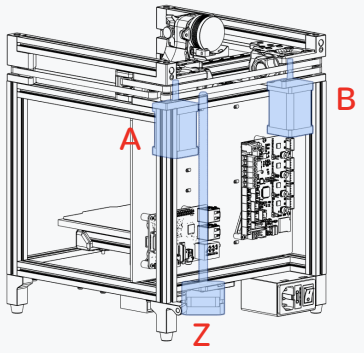
CABLE CROSS SECTION

Cables to the controller board should be 1mm² (AWG18) or larger.

0.5mm² (AWG20) is sufficient for the connection to the Raspberry Pi.

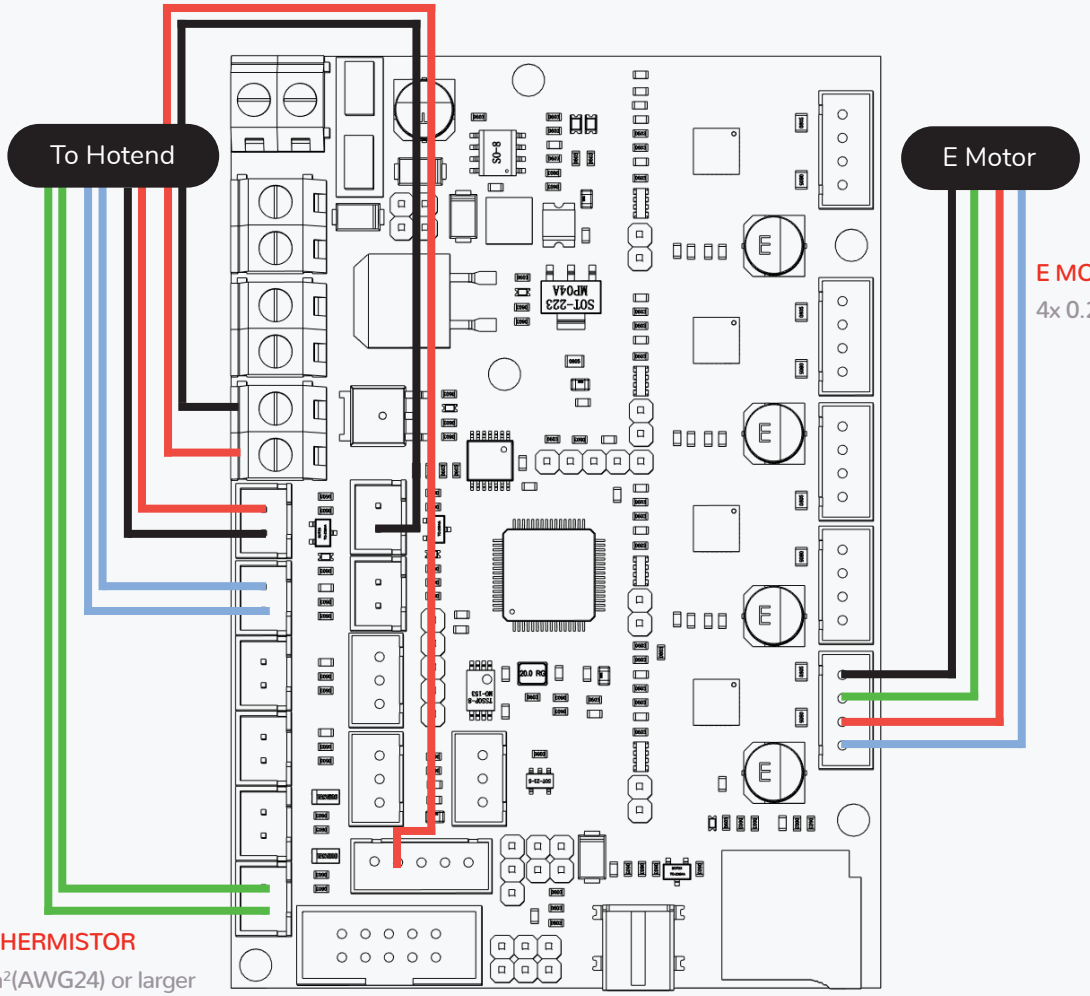

24V Power Supply
PRINT BED
2x 1mm²(AWG18) or larger
To Print Bed
BED THERMISTOR
2x 0.25mm²(AWG24) or larger


A Motor
B Motor
Z Motor
Y END-STOP
2x 0.25mm²(AWG24) or larger
To Y End-Stop
To Z End-Stop
Z END-STOP
2x 0.25mm²(AWG24) or larger
ALL MOTOR CONNECTIONS
4x 0.25mm²(AWG24) or larger
Raspberry Pi


B
A
Z

HOTEND COOLING FAN (5V)

2x 0.25mm²(AWG24) or larger



E MOTOR

4x 0.25mm²(AWG24) or larger

HOTEND HEATER

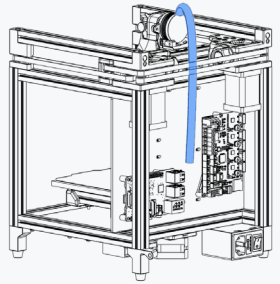
2x 0.5mm²(AWG20) or larger

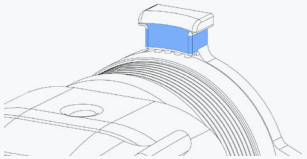
PART COOLING FANS (24V)

2x 0.25mm²(AWG24) or larger

X END-STOP

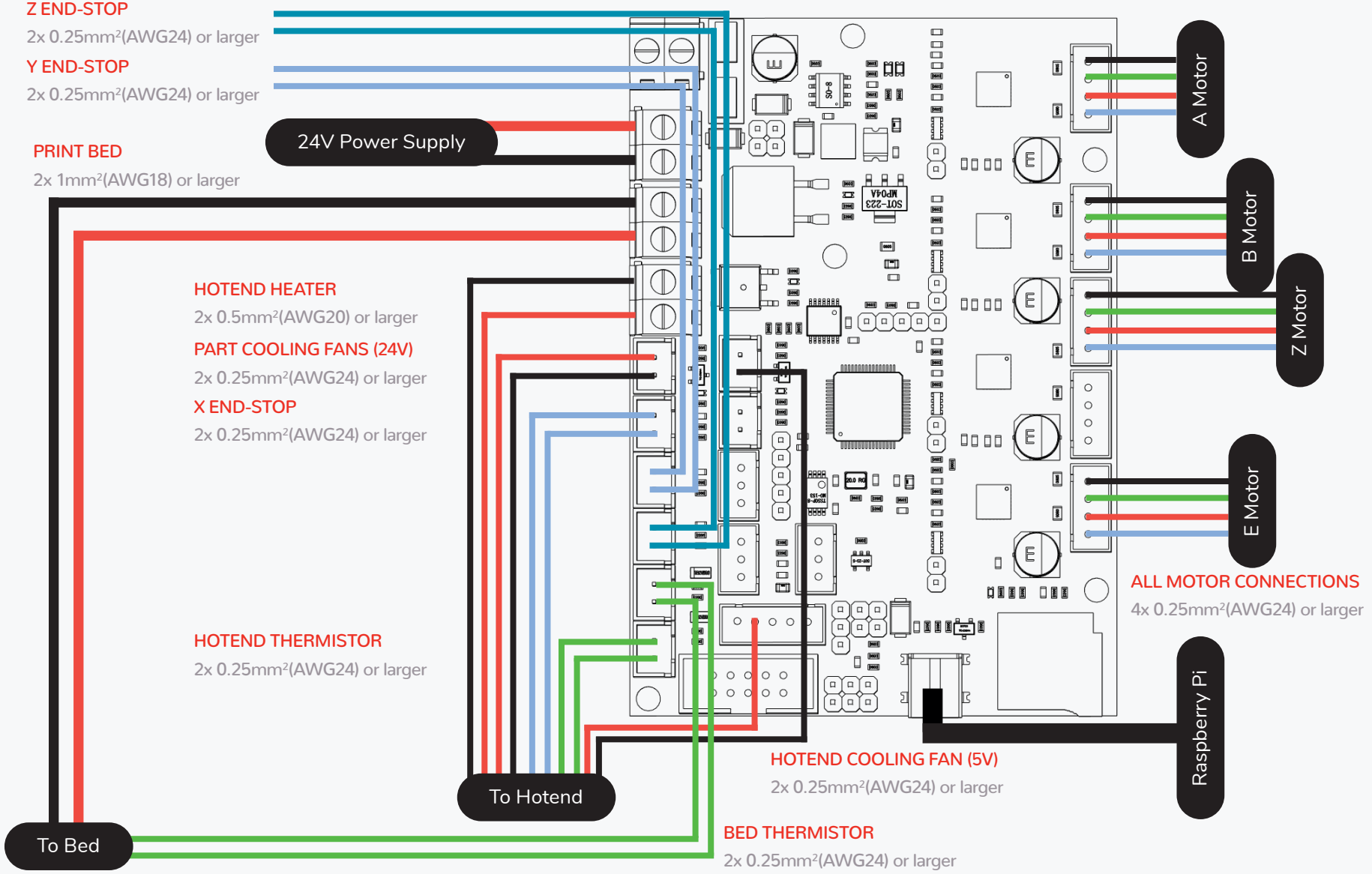
2x 0.25mm²(AWG24) or larger

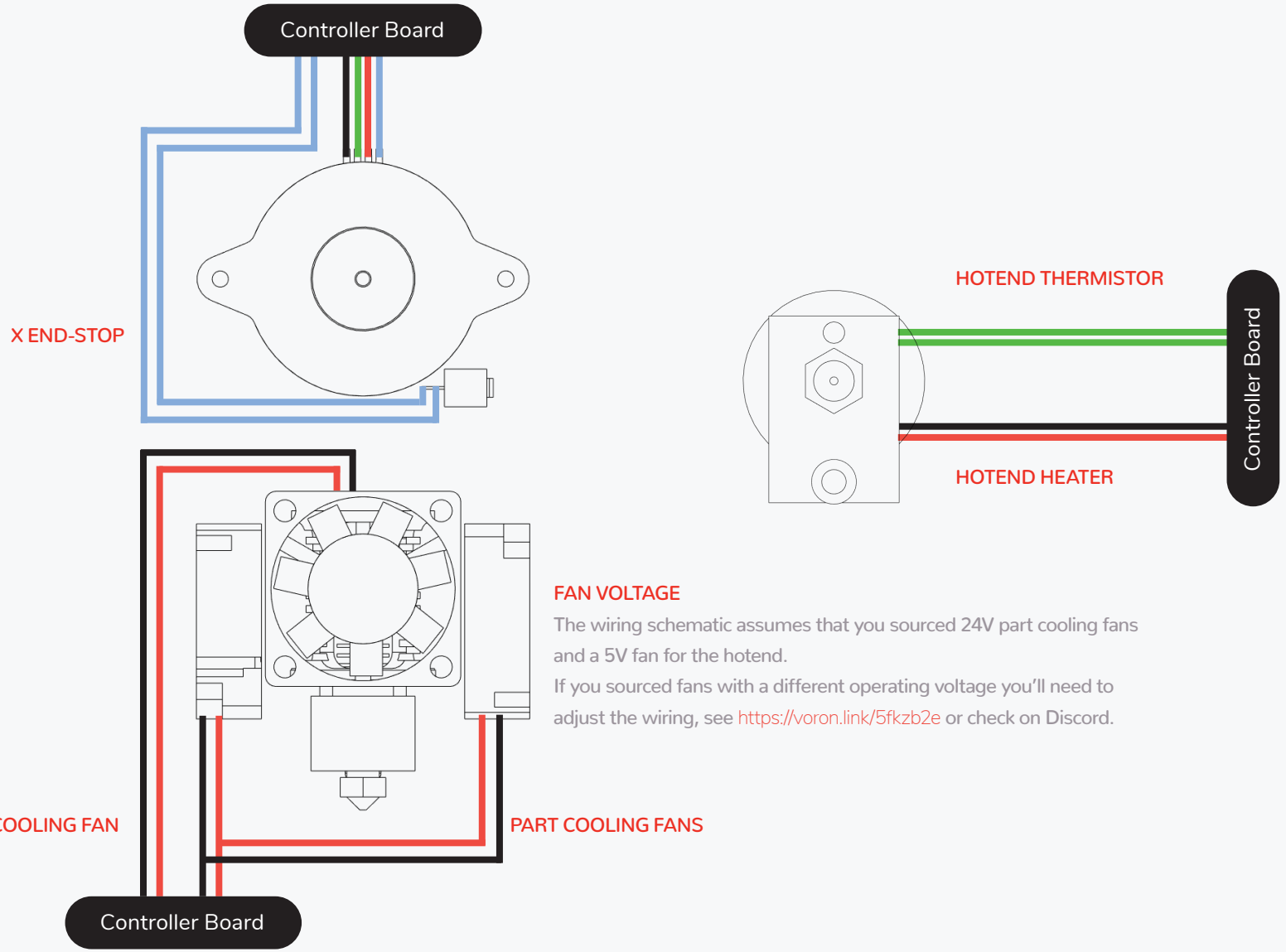




HOTEND THERMISTOR

2x 0.25mm²(AWG24) or larger

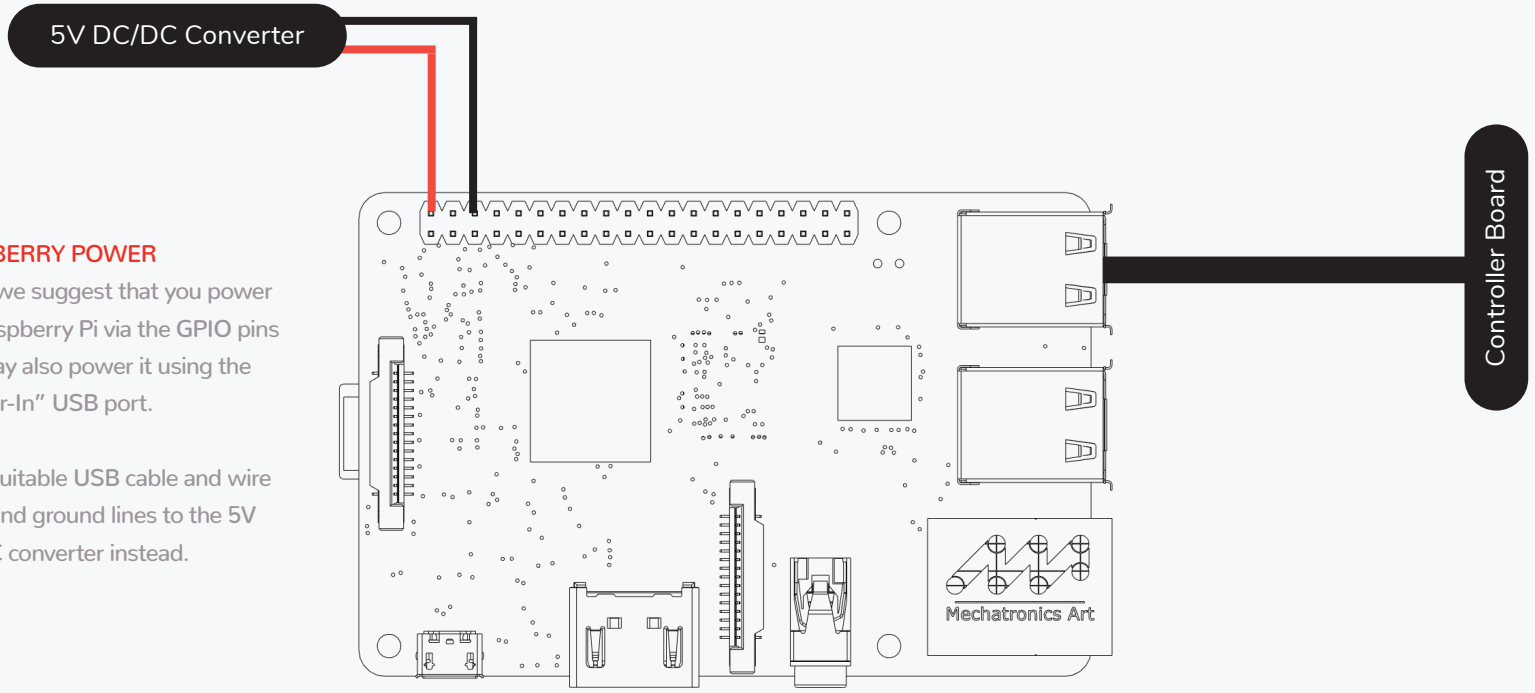

Z END-STOP
2x 0.25mm²(AWG24) or larger
Y END-STOP
2x 0.25mm²(AWG24) or larger
24V Power Supply
PRINT BED
2x 1mm²(AWG18) or larger
HOTEND HEATER
2x 0.5mm²(AWG20) or larger
PART COOLING FANS (24V)
2x 0.25mm²(AWG24) or larger
X END-STOP
2x 0.25mm²(AWG24) or larger
HOTEND THERMISTOR
2x 0.25mm²(AWG24) or larger
To Hotend
To Bed
A Motor
B Motor
Z Motor
E Motor
ALL MOTOR CONNECTIONS
4x 0.25mm²(AWG24) or larger
Raspberry Pi
HOTEND COOLING FAN (5V)
2x 0.25mm²(AWG24) or larger
BED THERMISTOR
2x 0.25mm²(AWG24) or larger



FAN VOLTAGE

The wiring schematic assumes that you sourced 24V part cooling fans and a 5V fan for the hotend.

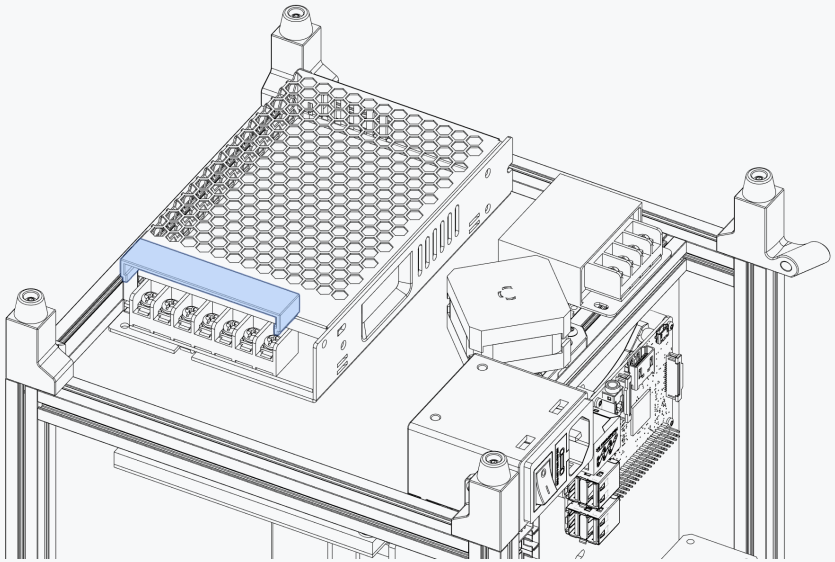
If you sourced fans with a different operating voltage you'll need to adjust the wiring, see https://voron.link/5fkzb2e or check on Discord.

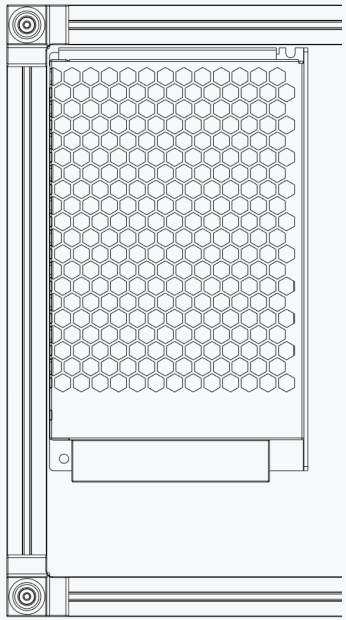


RASPBERRY POWER

While we suggest that you power the Raspberry Pi via the GPIO pins you may also power it using the "Power-In" USB port.

Cut a suitable USB cable and wire the + and ground lines to the 5V DC/DC converter instead.





FINGER GUARD

The guard reduces the risk of accidentally touching the terminals.

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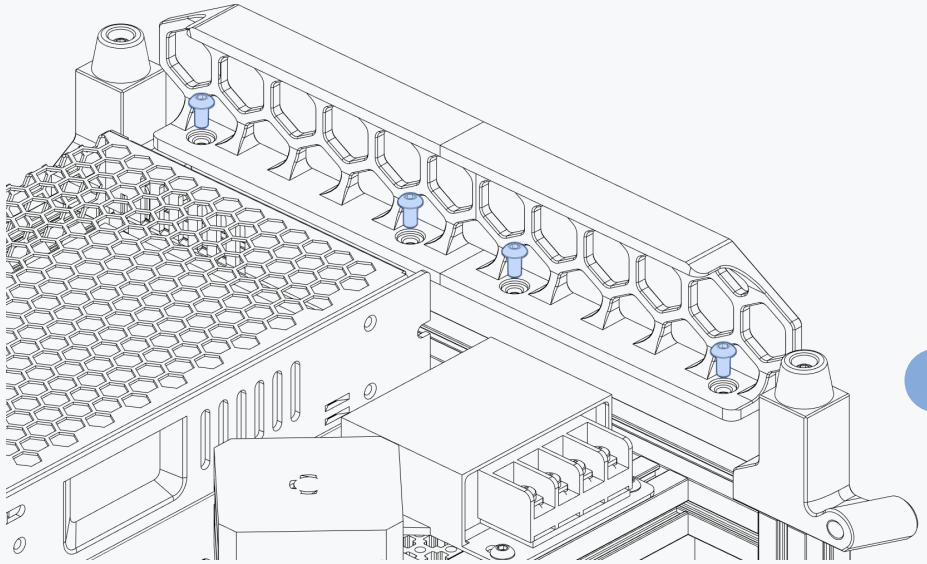
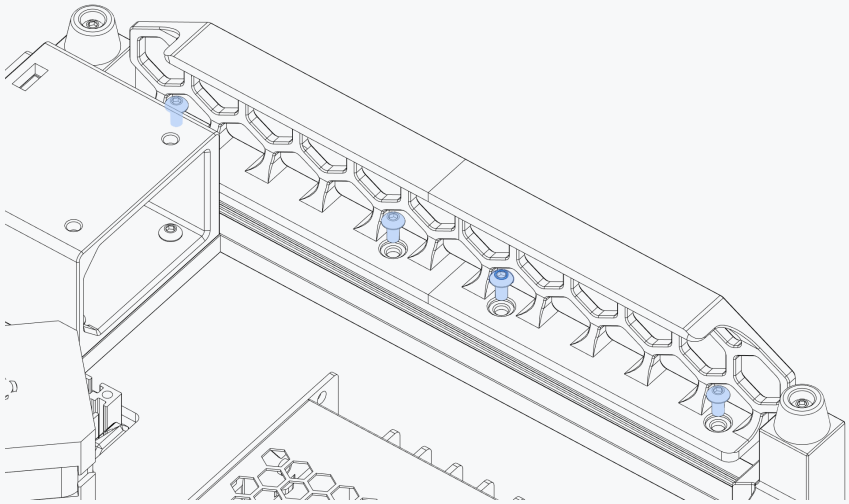
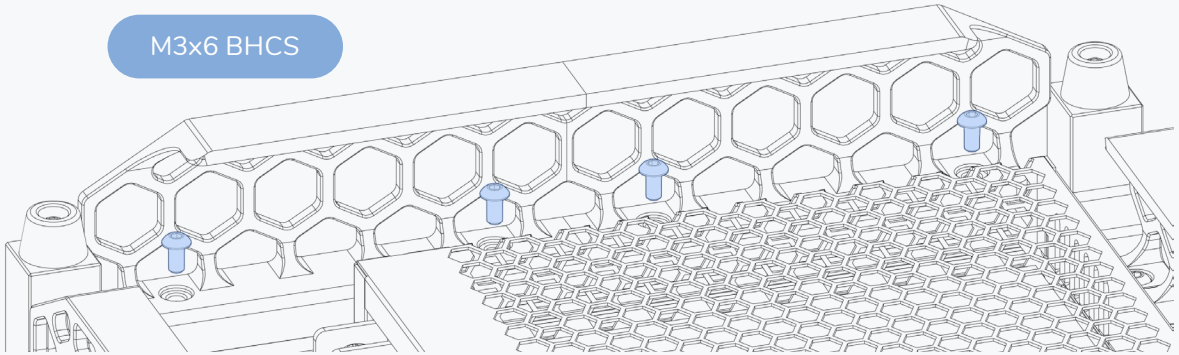


M3x6 BHCS

USE A BALL-END DRIVER

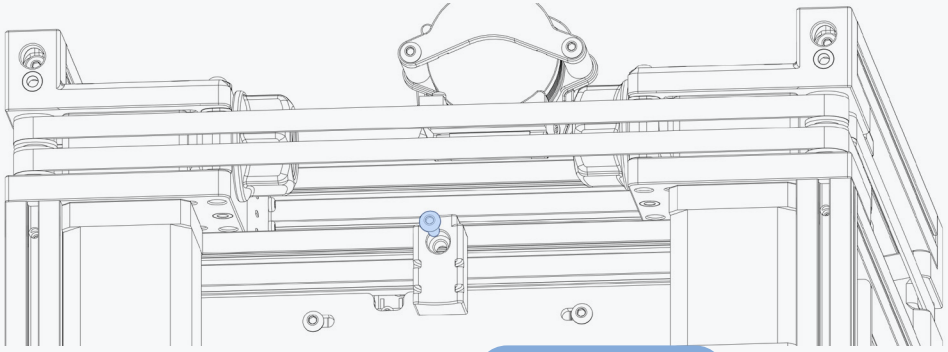
Use a 2mm ball-end driver to fasten the screws.



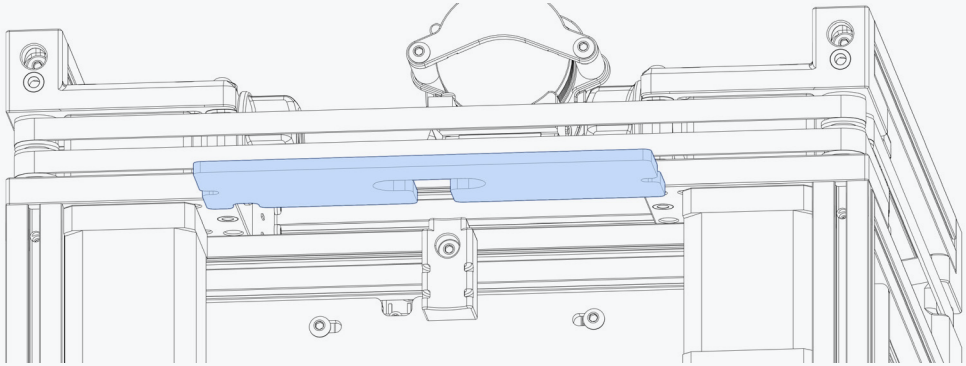


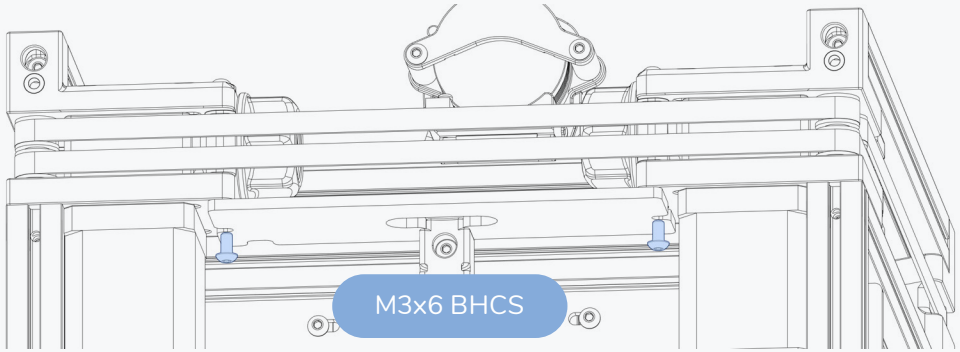
USE A BALL-END DRIVER

Use a 2mm ball-end driver to fasten the screws.



M3x10 BHCS

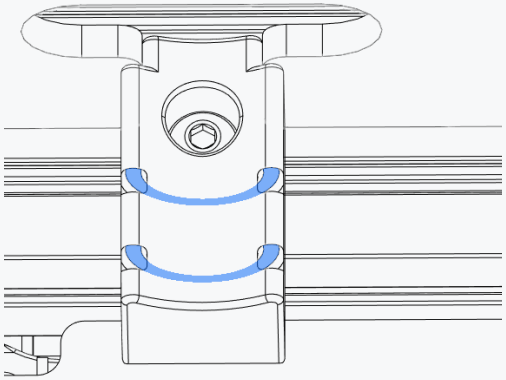




M3x6 BHCS

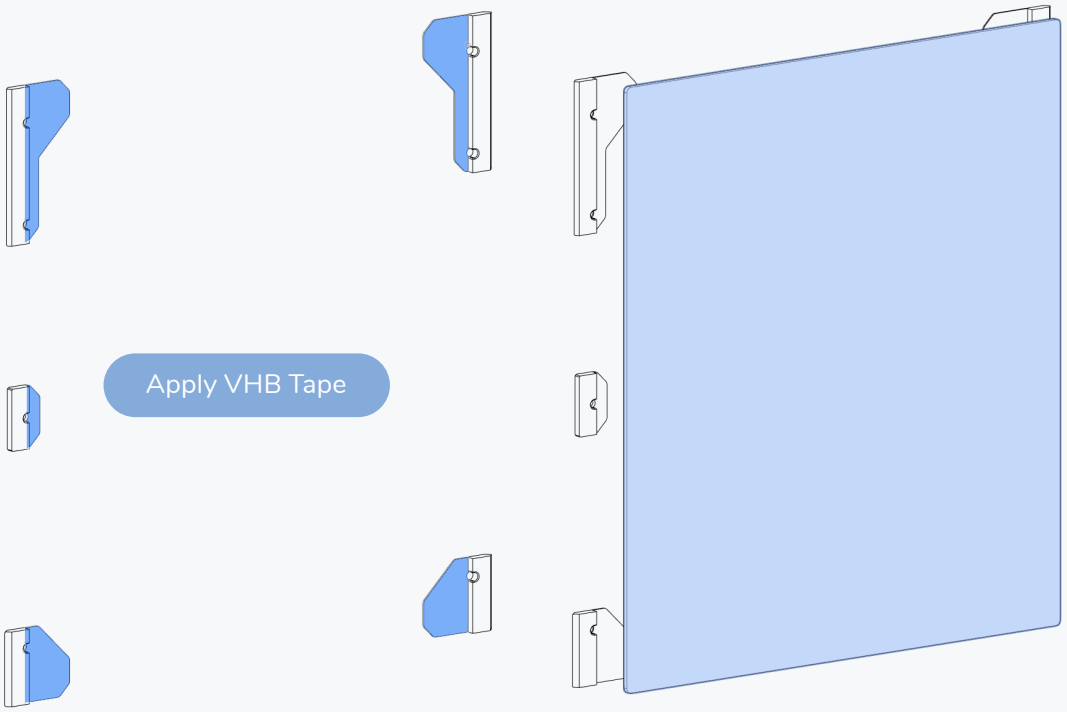
CABLE PASSTHROUGH

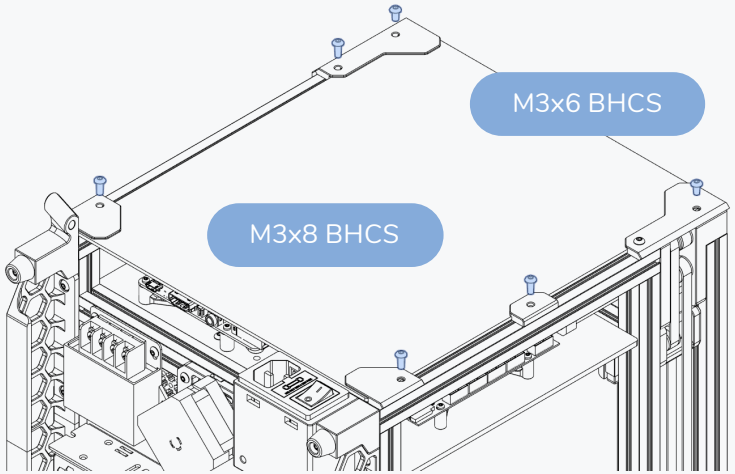
Align the strain relief with the cutout in the motor panel. Route the wire bundle and bowden tube through the cutout prior to fastening the panel.

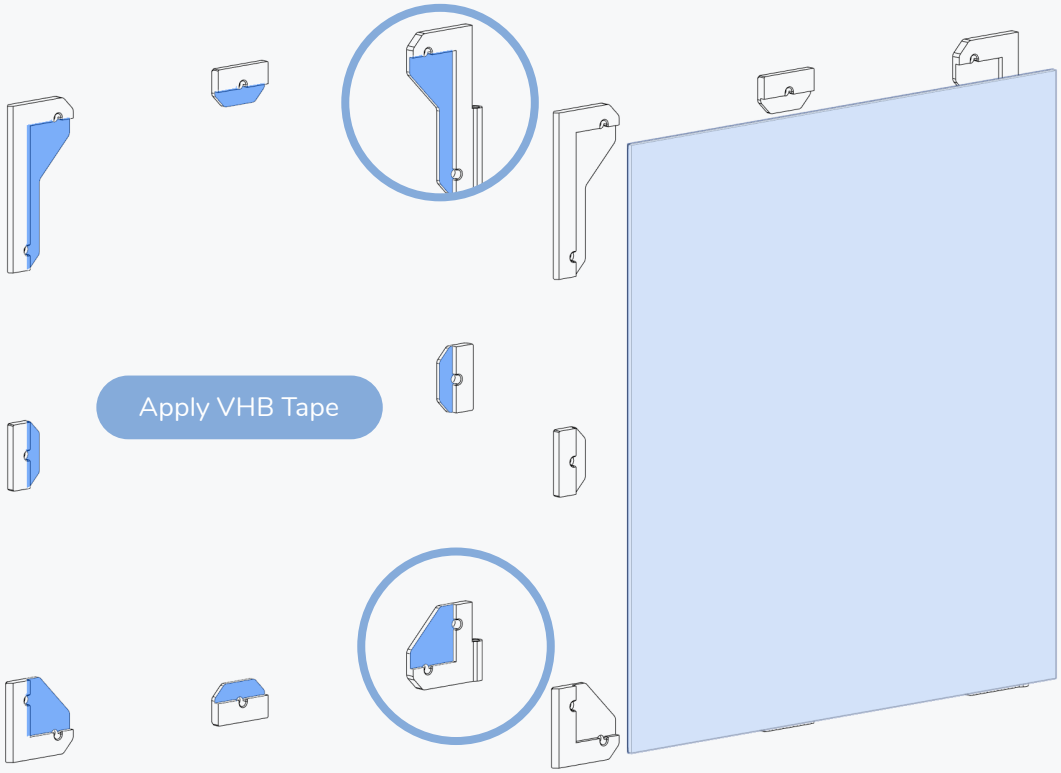


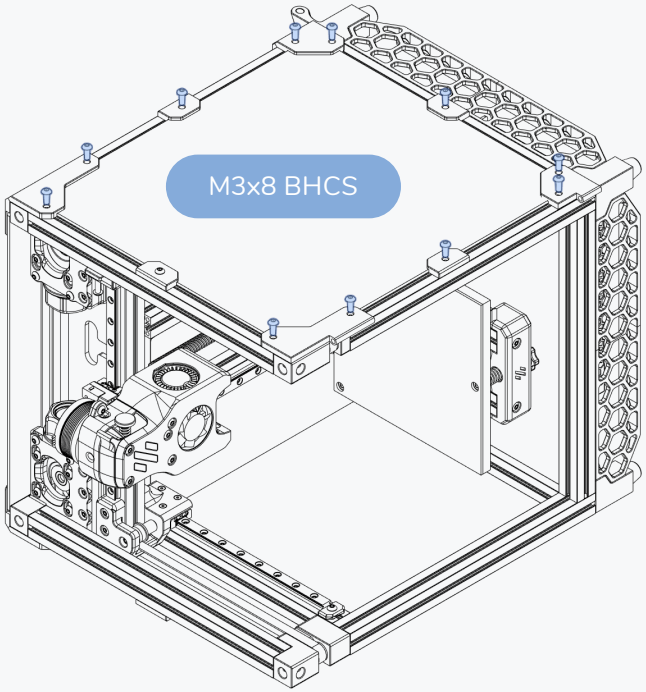
ZIP TIE LOOPS

Secure the wire bundle to the strain relief using small zip ties.


Apply VHB Tape

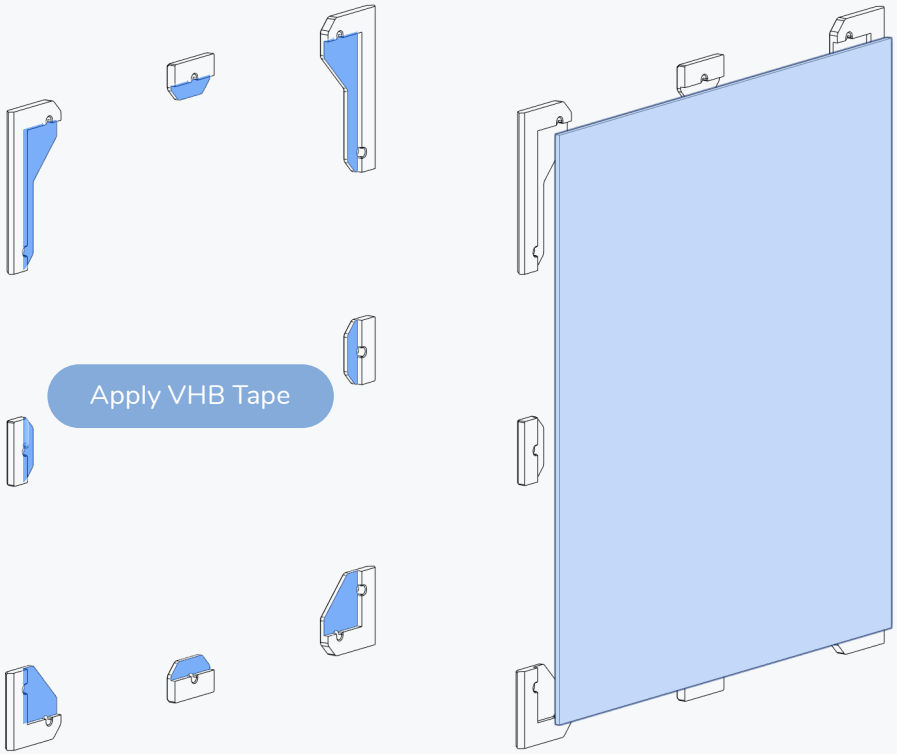

M3x6 BHCS
M3x8 BHCS

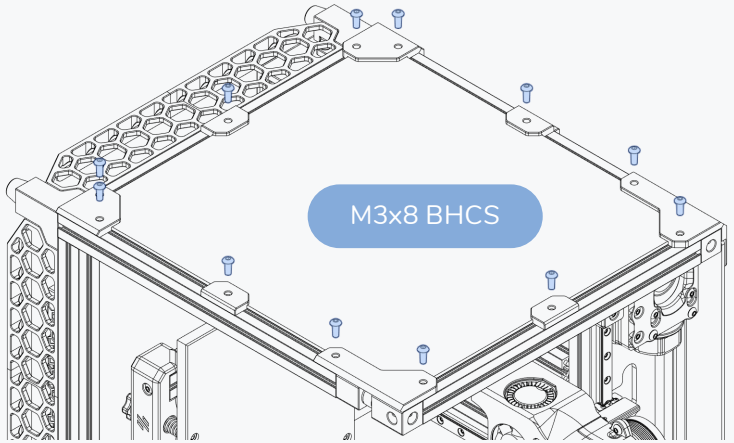




HINGES

Use the hinge parts for the right hand side panel.


Apply VHB Tape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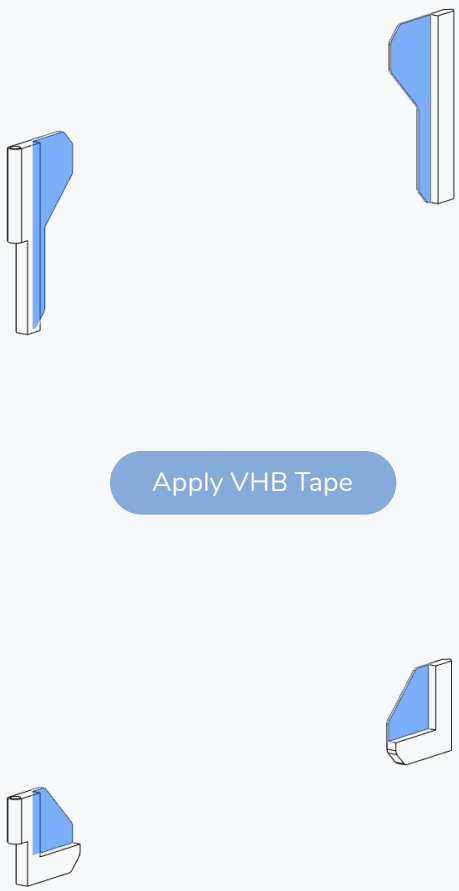
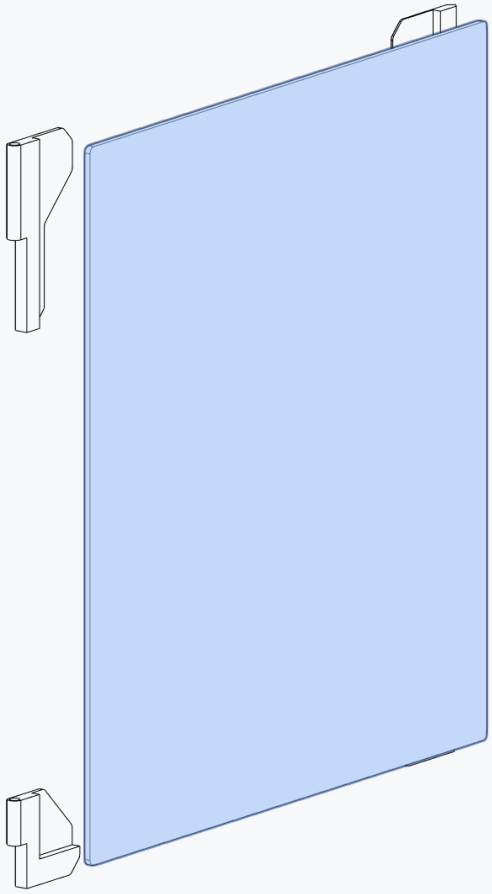
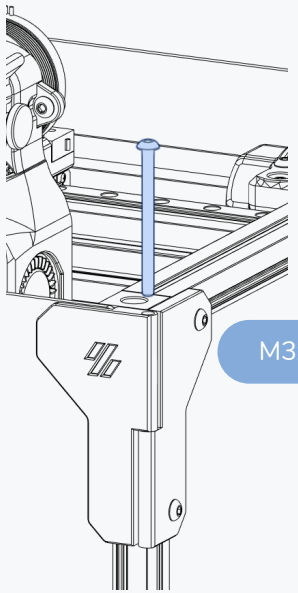
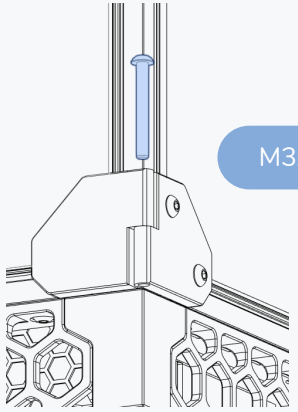


Apply VHB Tape



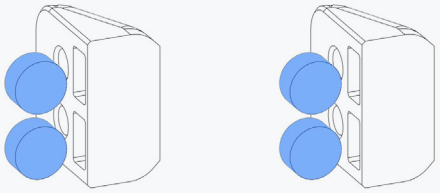


M3x40 BHCS



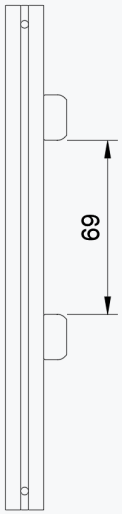
M3x25 BHCS

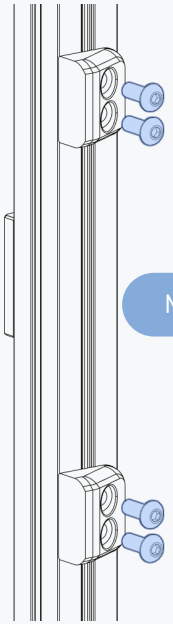
3x6 Magnet



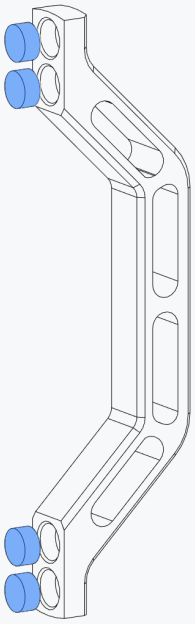
MIND THE MAGNET POLARITY

To properly function the magnets in the latch must attract the magnets in the handle. Install all magnets in the latch with the same polarity and test the handle before glueing the magnets.





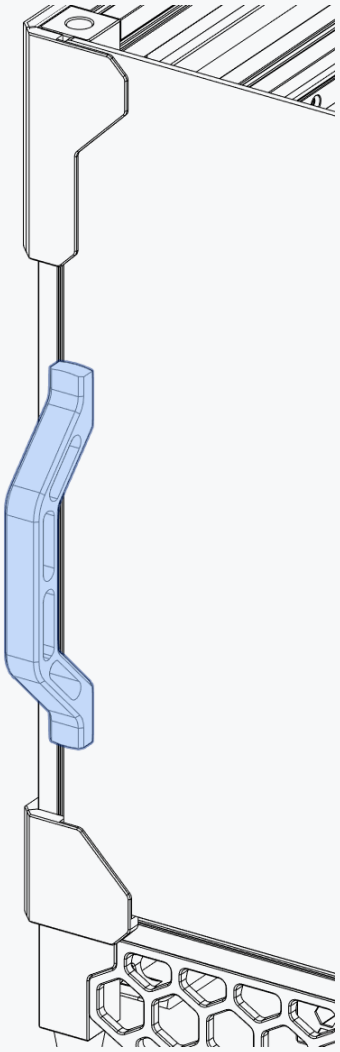
M3x8 BHCS

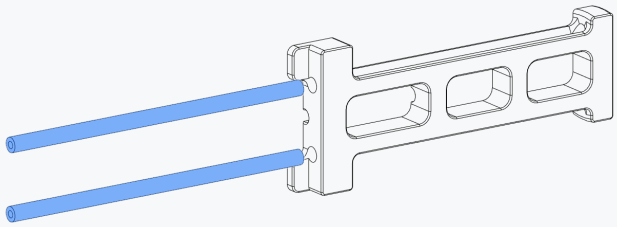


USE SUPERGLUE

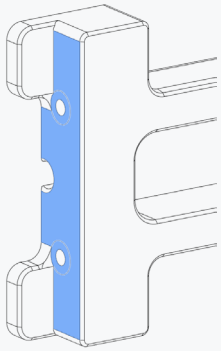
Use a drop of superglue to fix the magnets in place.

Apply VHB Tape



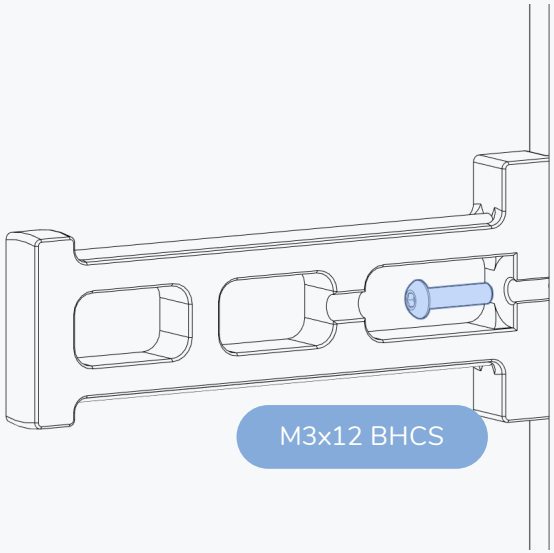


PTFE Tube

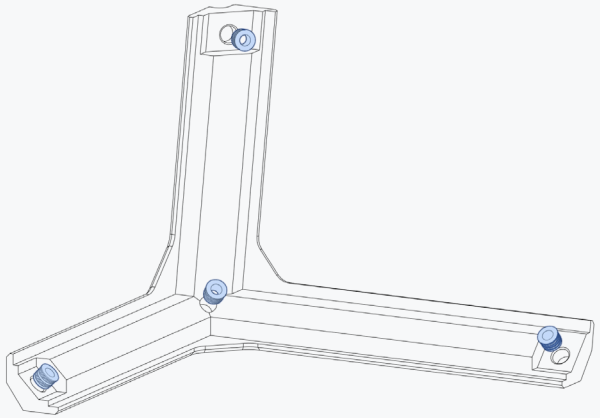


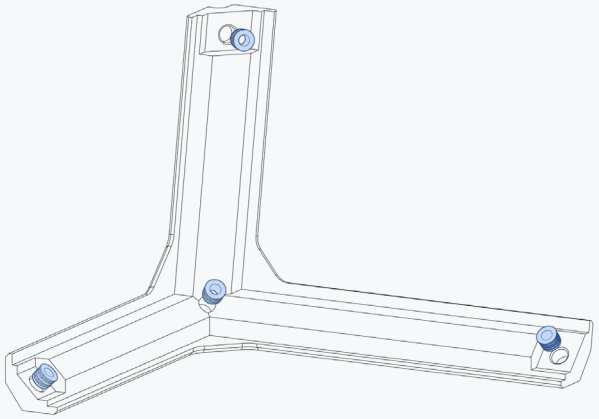
CUT FLUSH

Cut the PTFE tube flush
with the surface of the part.

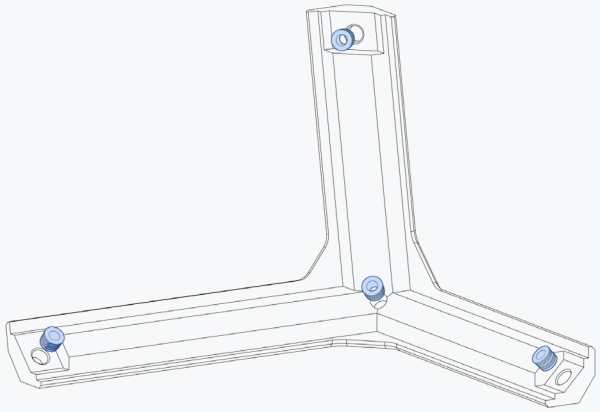


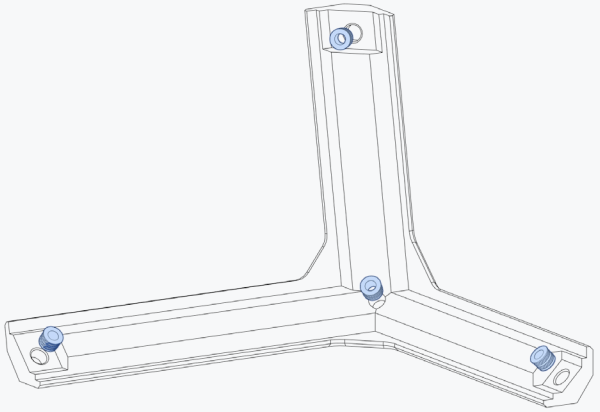
M3x12 BHCS

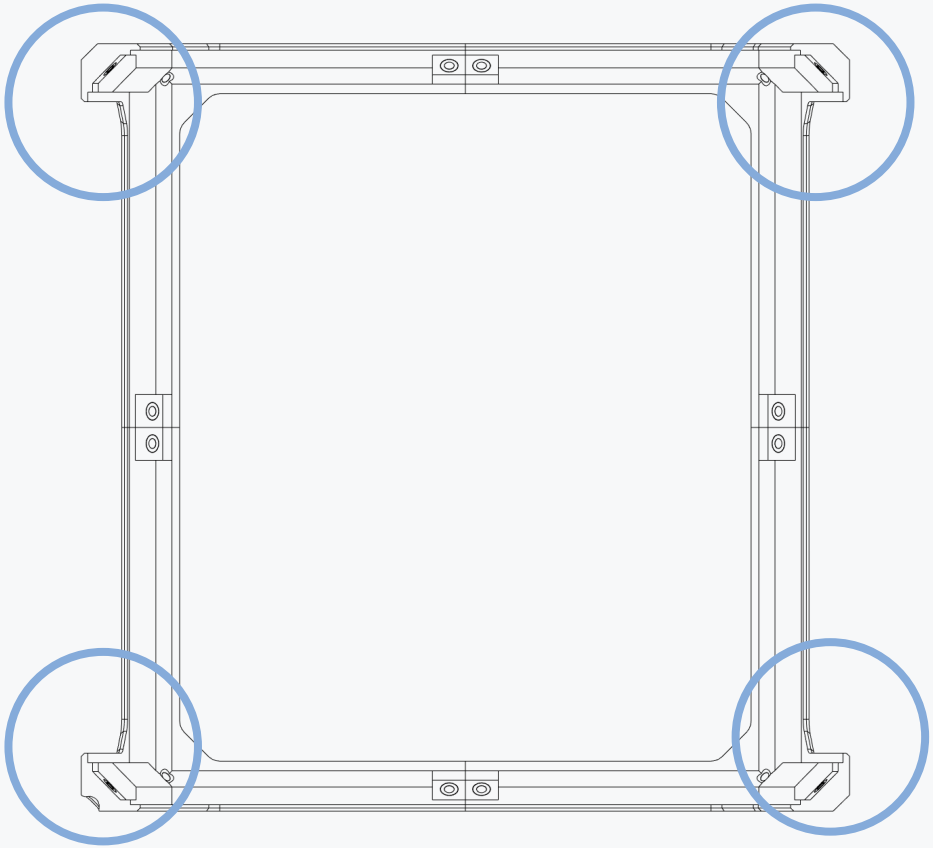


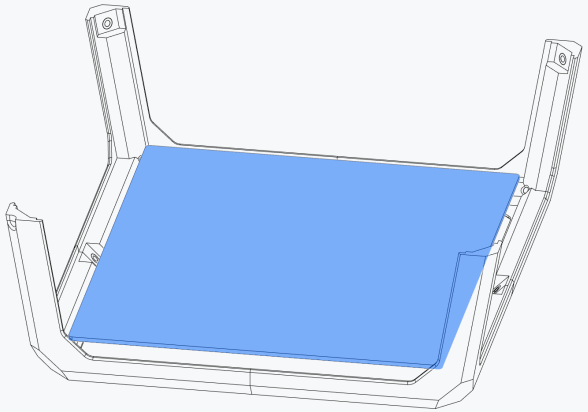


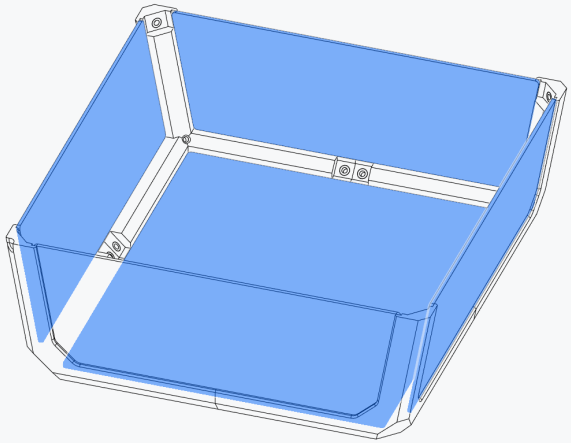
Heat Set Insert





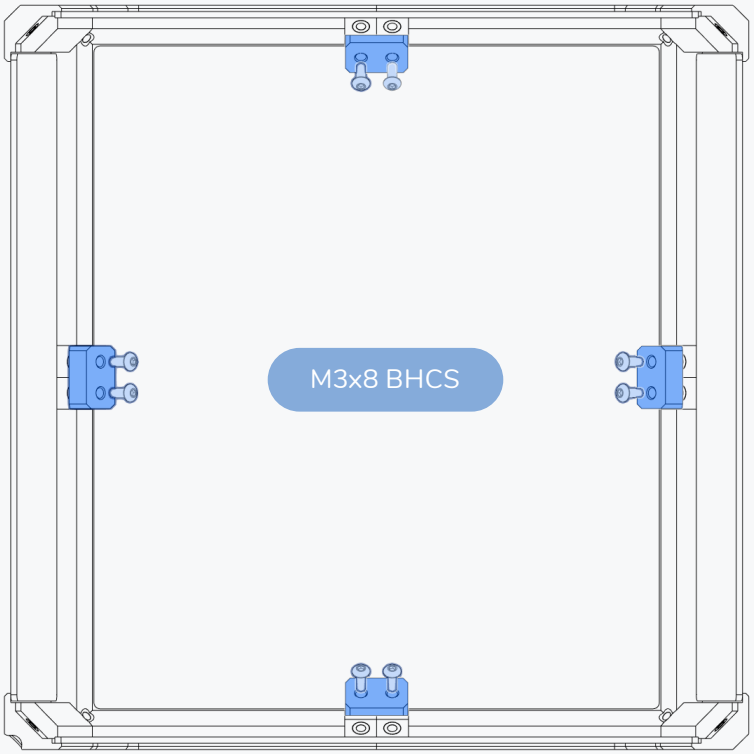


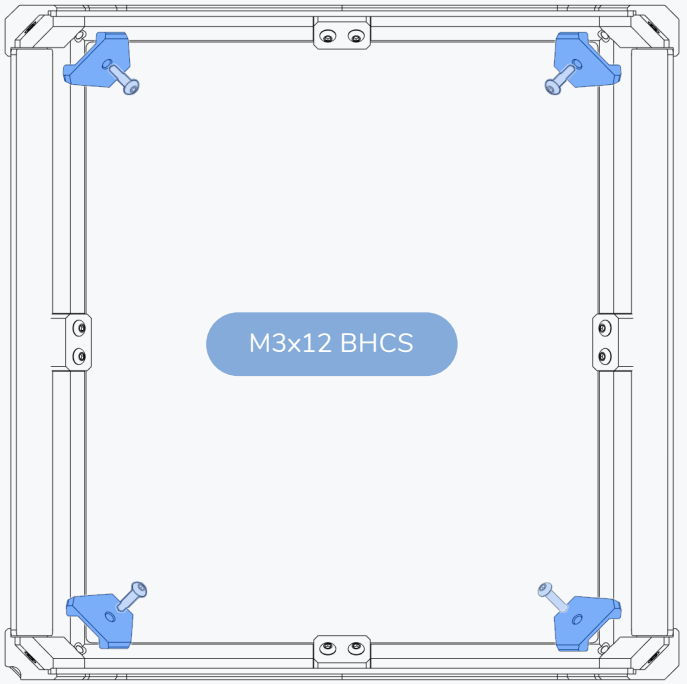




PART ORIENTATIONS

The tophat has 2 square panels.
Align the parts as shown.


M3x8 BHCS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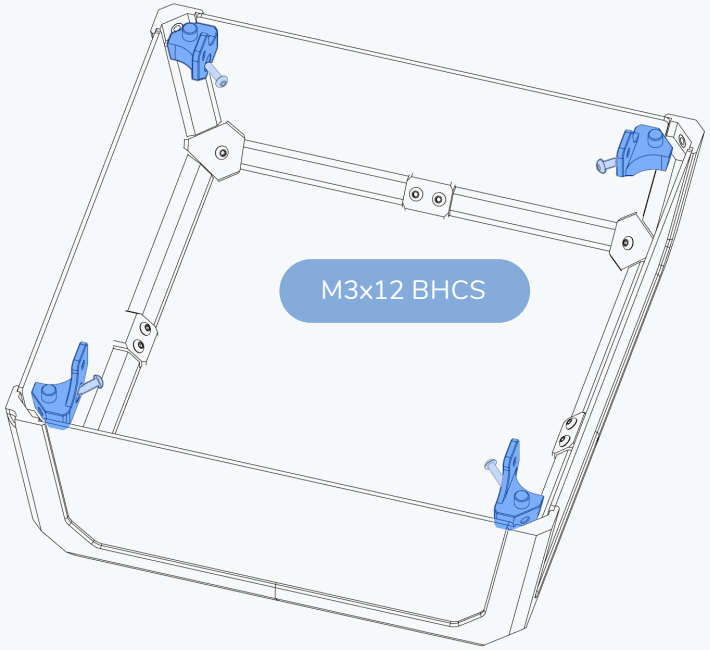

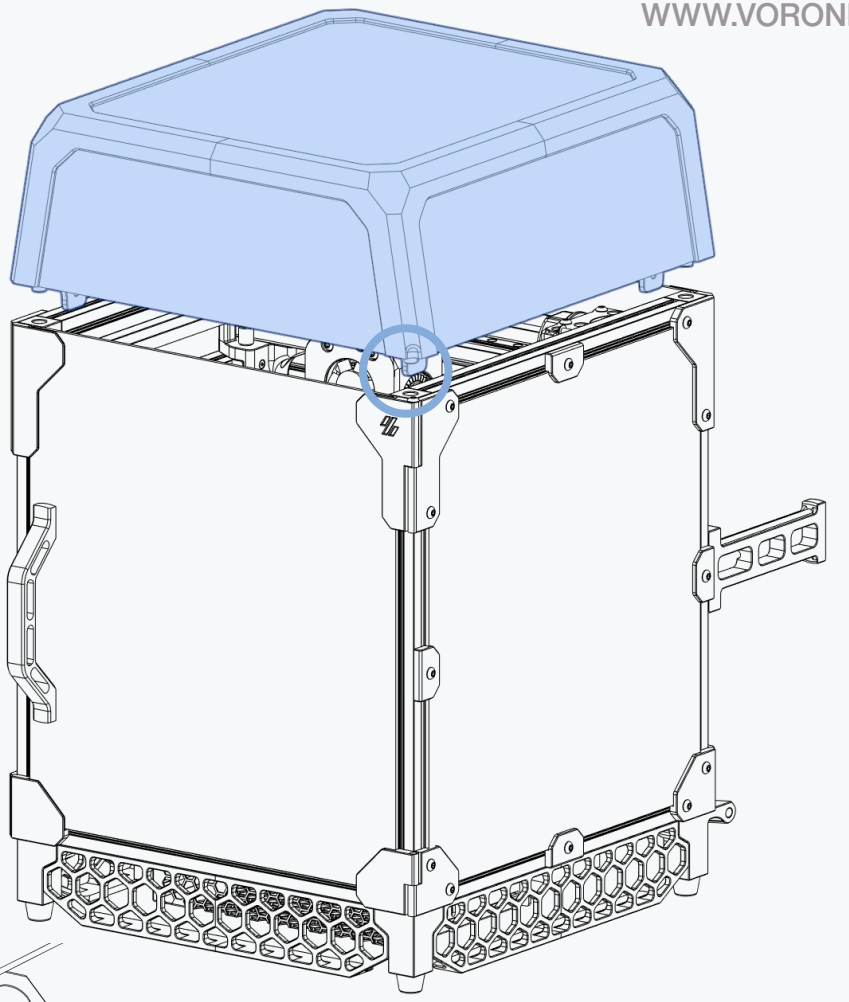

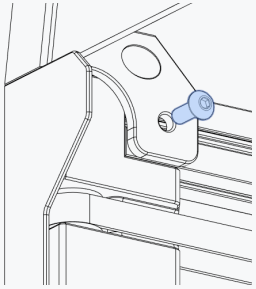

SECURING THE TOPHAT

Optional: use M3x8 screws to mount the flaps to the top extrusion.

ASSEMBLY COMPLETED ... NEXT STEP SETUP & CALIBRATION

This manual is designed to be a simple reference manual for the build process.
For details on the setup of the electronics and other initial steps of your new printer please visit our documentation available on github and docs.vorondesign.com.

GitHub https://github.com/VoronDesign/Voron-0

DOCS https://docs.vorondesign.com/

HOW TO GET HELP

If you need assistance with your build, we're here to help. Head on over to our Discord group and post your questions. This is our primary medium to help VORON Users and we have a great community that can help you out if you get stuck.

DISCORD https://discord.gg/voron

Website
www.vorondesign.com

Github
https://github.com/vorondesign

Discord
https://discord.gg/voron