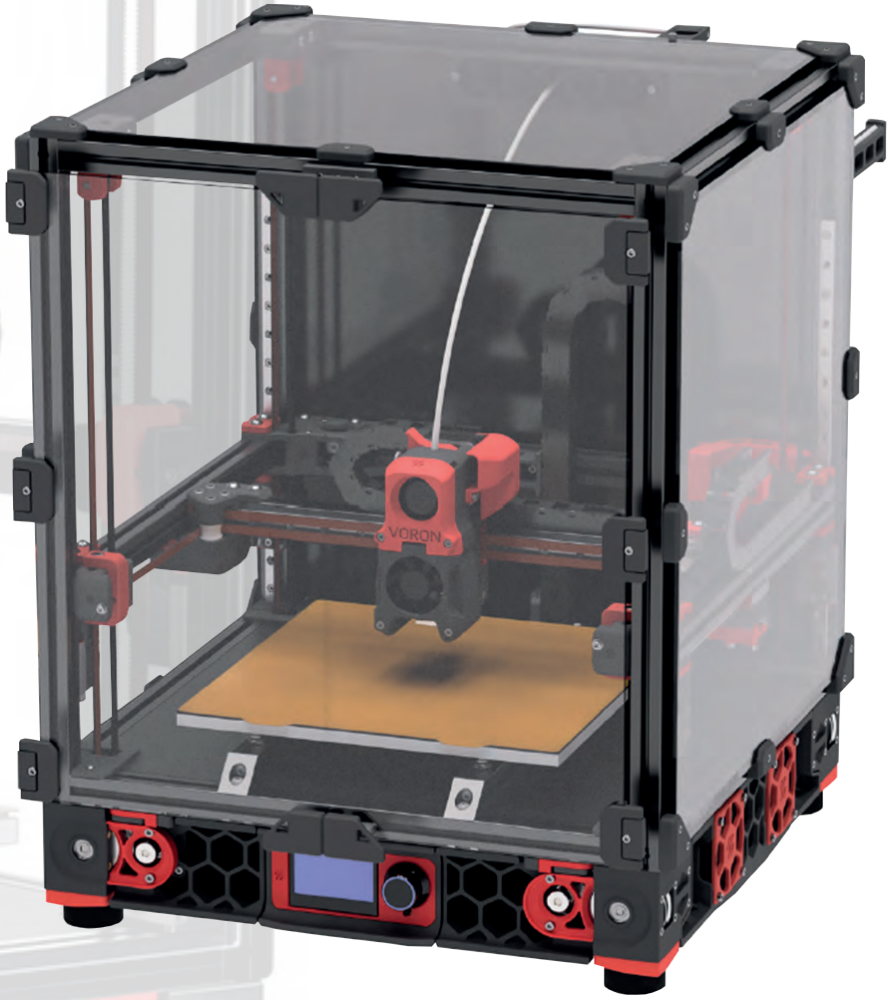
VORON 2.4

KIT 6

- Z BELT
- XY BELT
- Z PROBE



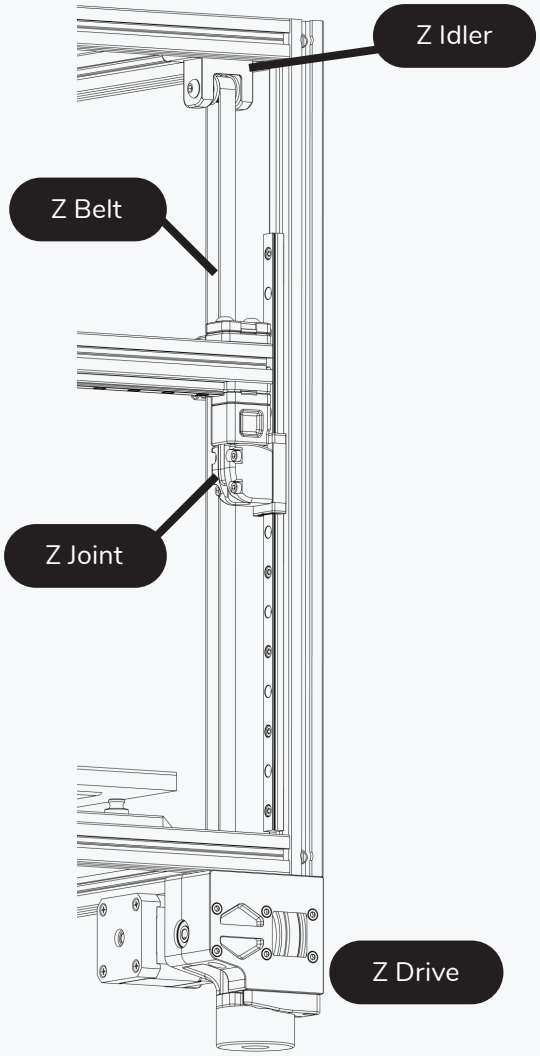
Before you begin on your journey, a word of caution.

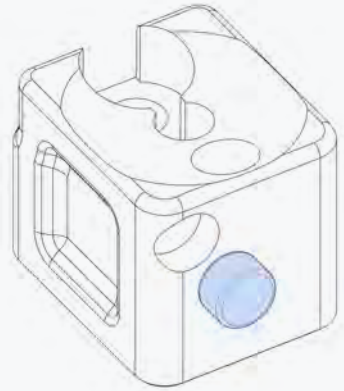
In the comfort of your own home you are about to assemble a robot. This machine can maim, burn, and electrocute you if you are not careful. Please do not become the first VORON fatality. There is no special Reddit flair for that.

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!

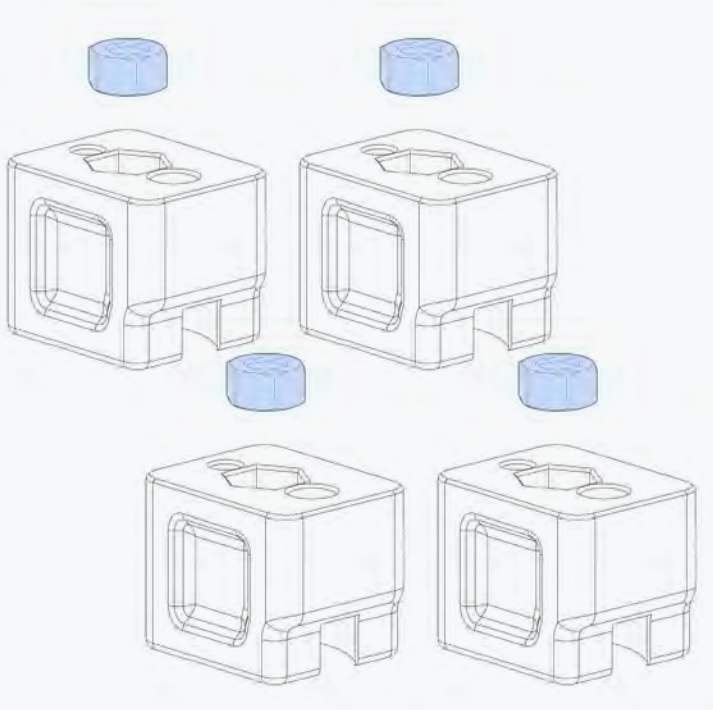
THE VORON TEAM


Z Idler
Z Belt
Z Joint
Z Drive



6x3 Magnet

M5 Nut



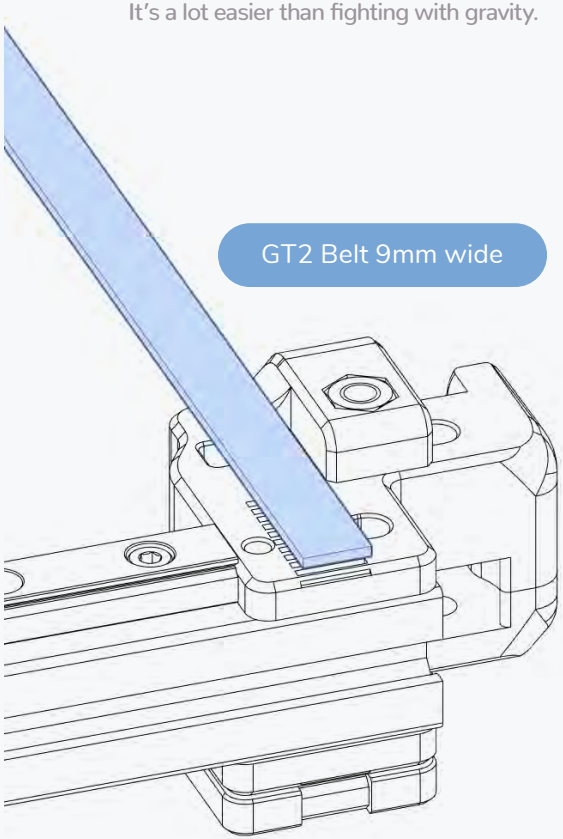
OPTION: HALL EFFECT ENDSTOP

If you are building your printer with a Hall Effect Endstop add a magnet to the cutout.

Z BEARING BLOCKS

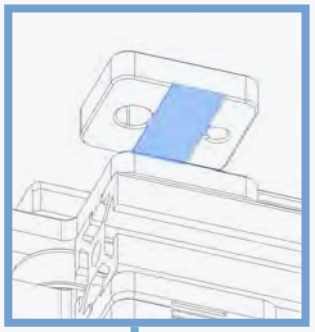
GANTRY IS STILL UPSIDE DOWN

It's a lot easier than fighting with gravity.



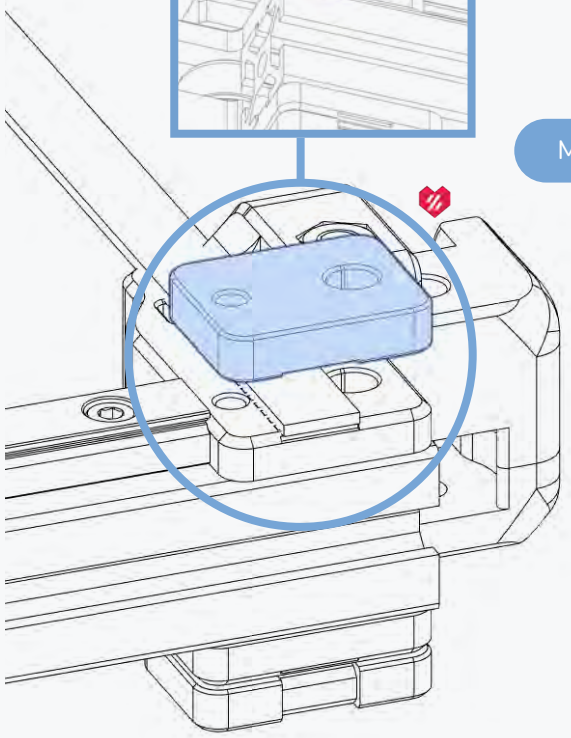
TEETH DOWN

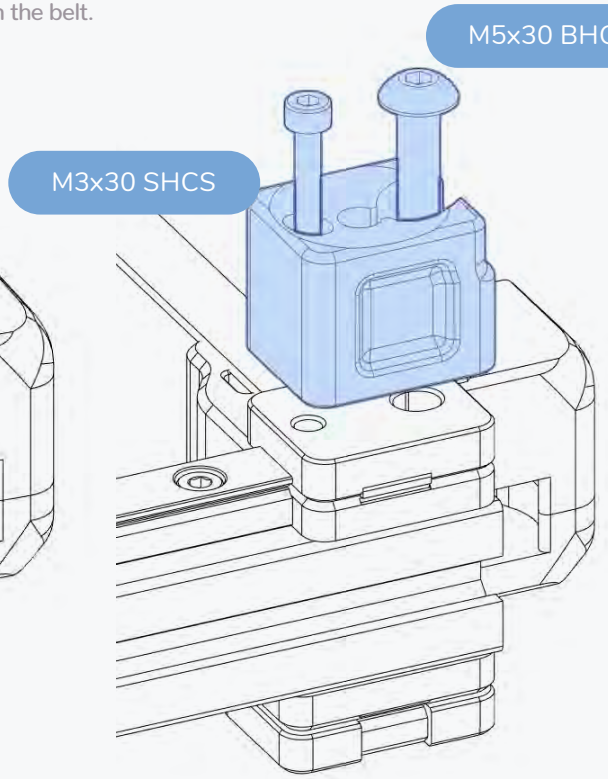
The teeth of the belts are facing down into the serrations in the printed part.



NOTCH ORIENTATION

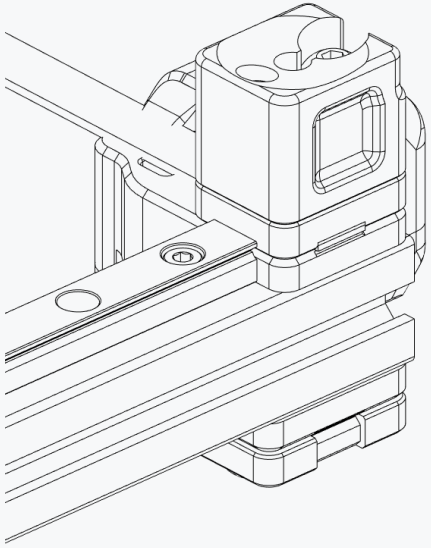
The indentation along the part is designed to clamp on the belt.





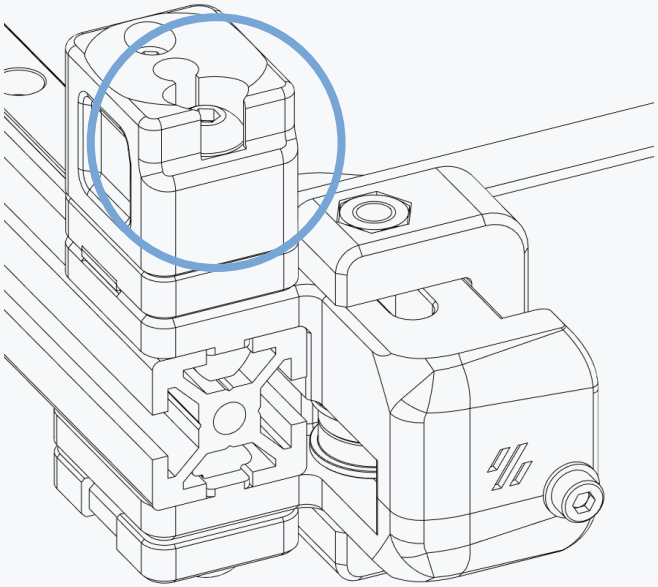
MINIMUM RECOMMENDED BELT CUT LENGTH

250 spec 1000mm
300 spec 1100mm
350 spec 1200mm



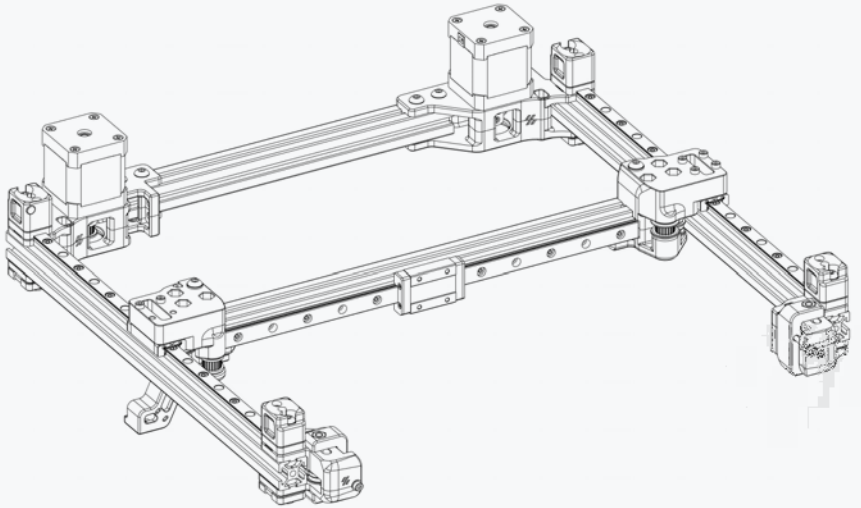
MIND THE PART ORIENTATION

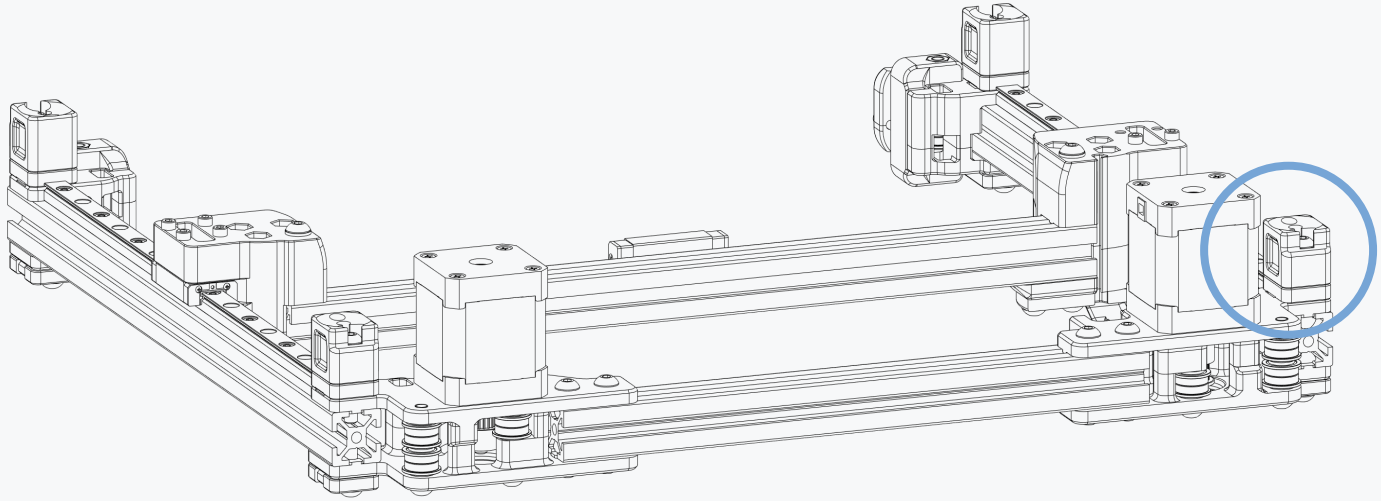
The cutout goes towards the outside.



REPEAT BELT INSTALL FOR ALL 4 BLOCKS

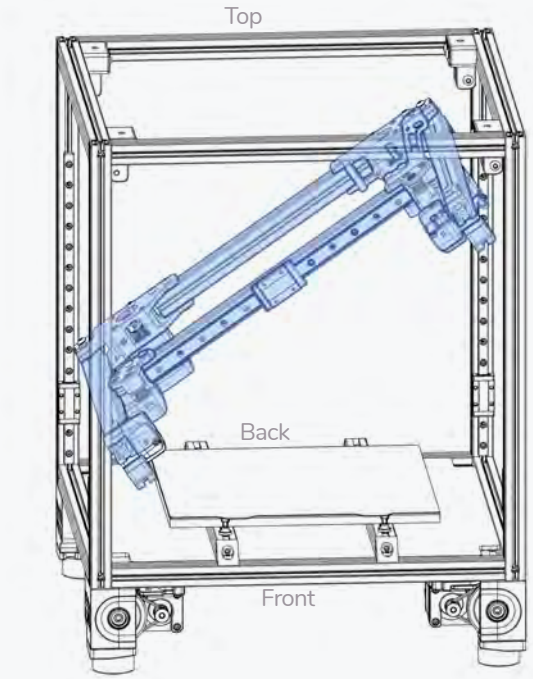
We are not showing the belts in the pictures on this page.





OPTION: HALL ENDSTOP

Install the block with the magnet in this position. The magnet faces the XY joint.



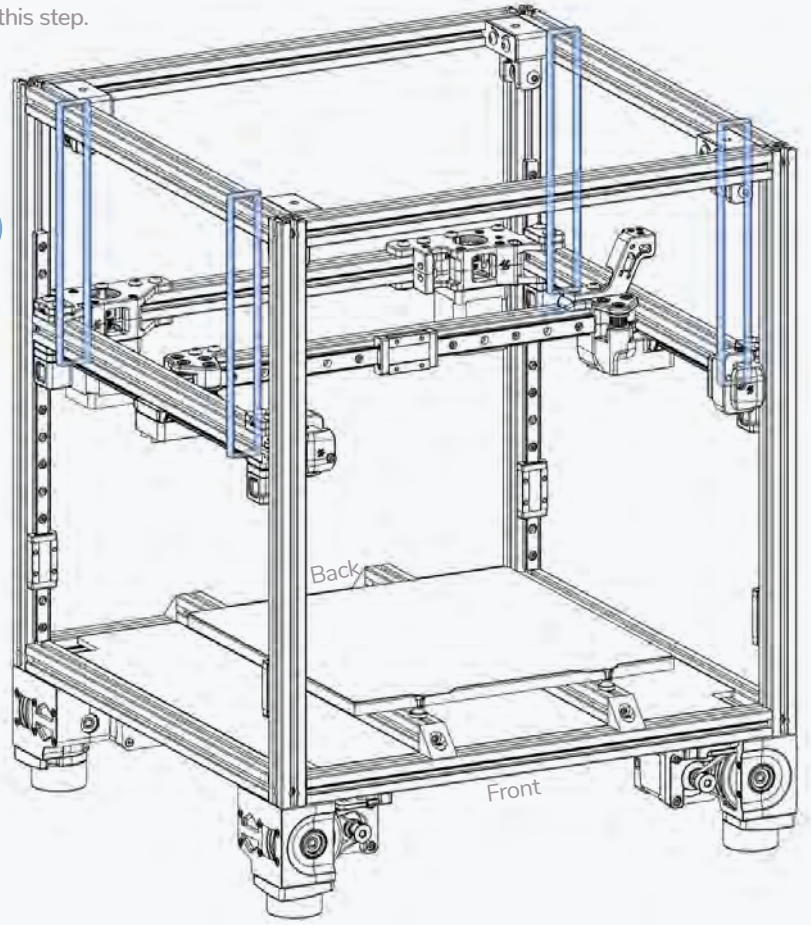
INSERT AT AN ANGLE

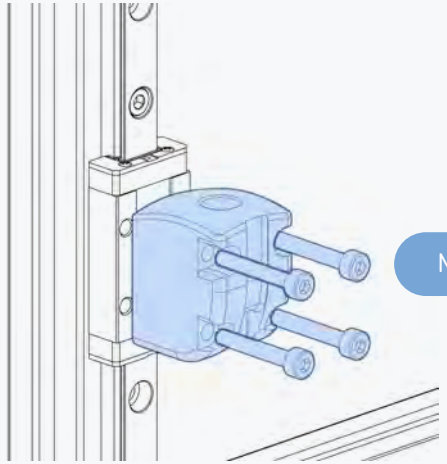
Tilt the gantry to move it past the uprights.

A HELPING HAND

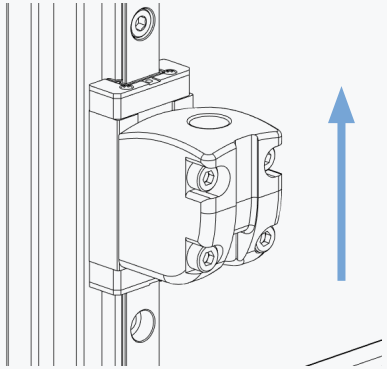
Secure the gantry with long zipties or similar while the gantry is being installed. An extra pair of hands helps with this step.

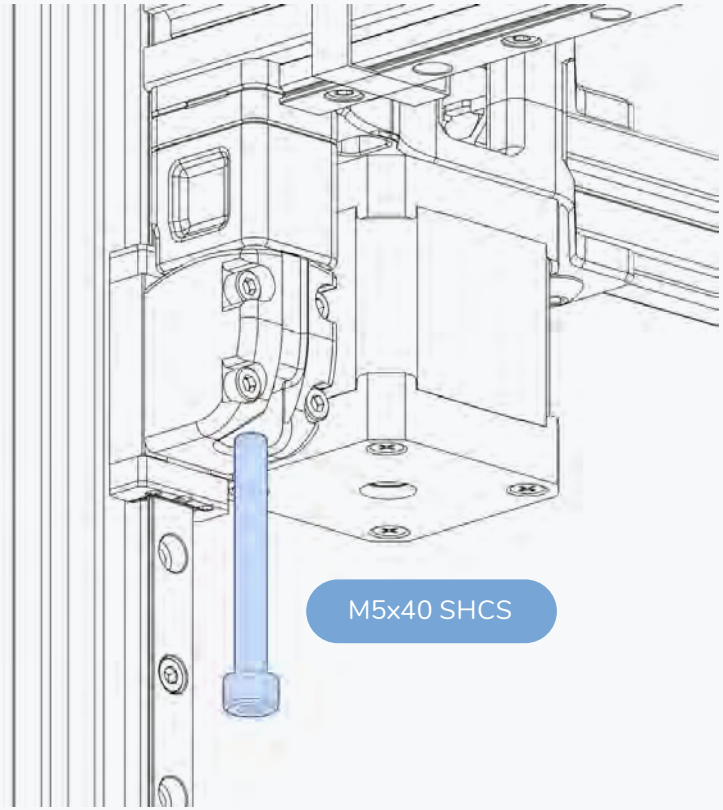
Long Zipties



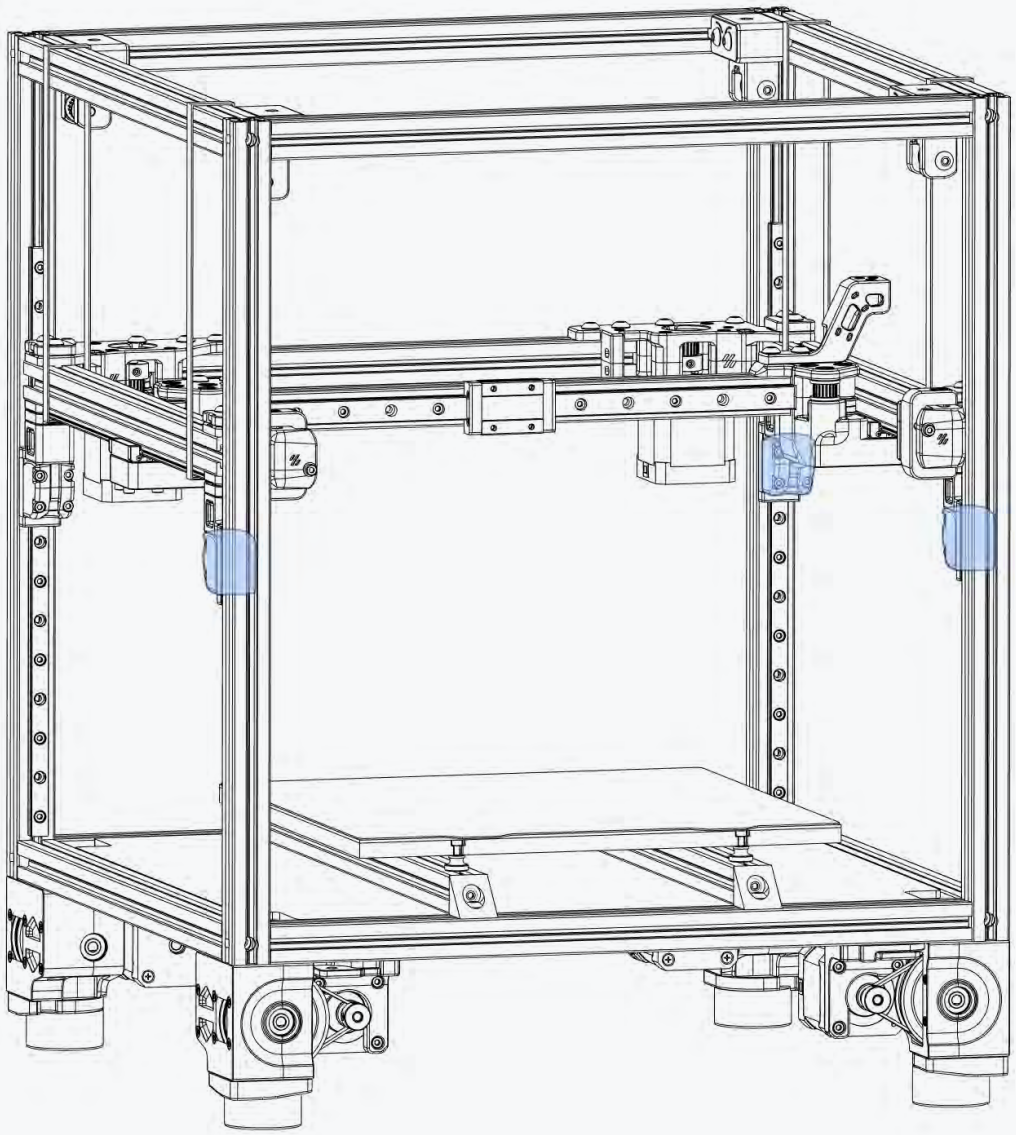


M3x20 SHCS



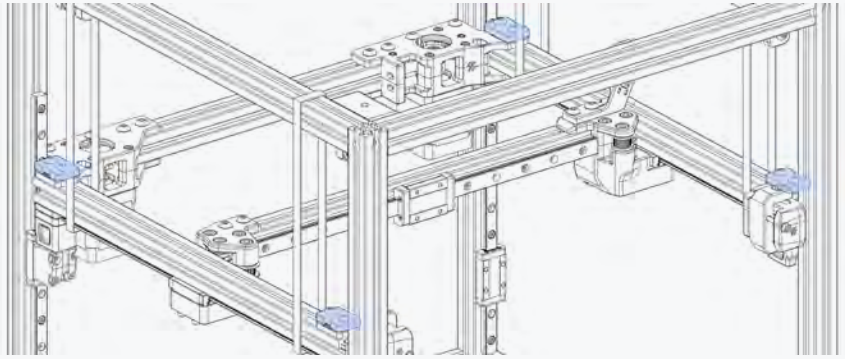


M5x40 SHCS



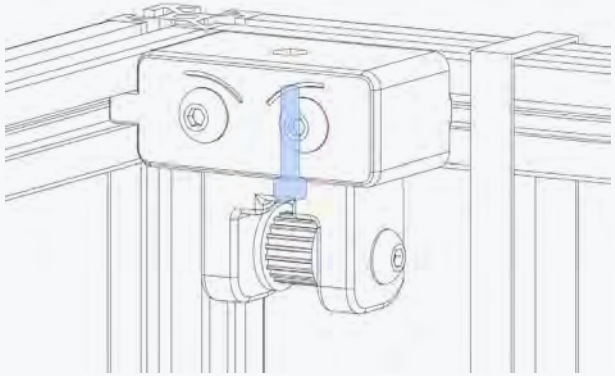
INSTALL REMAINING JOINTS

Add the other 3 joints repeating the same steps.



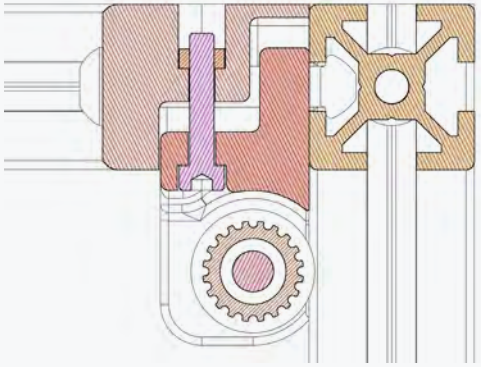
LOOSEN TOP BELT CLAMPS

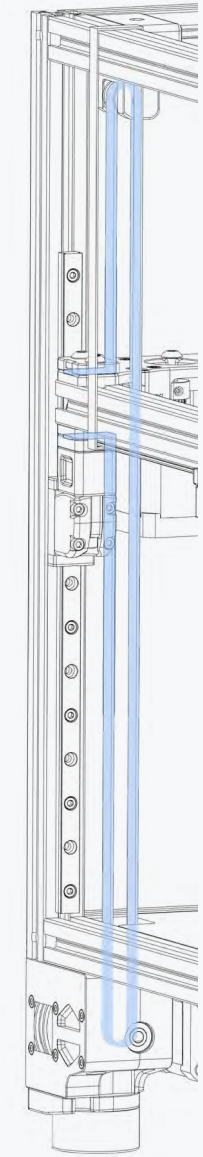
Undo the top belt clamps, we'll be installing the belts in the next steps.

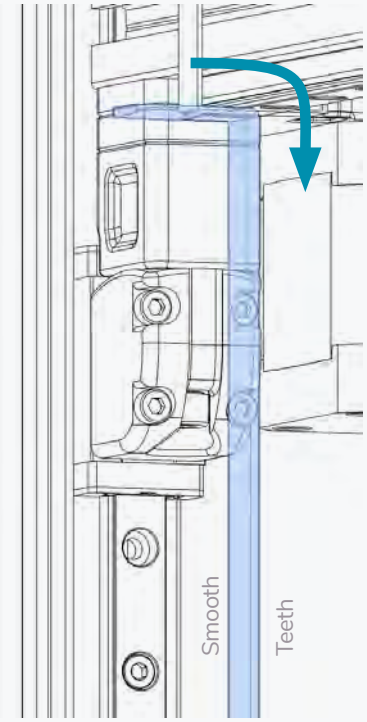


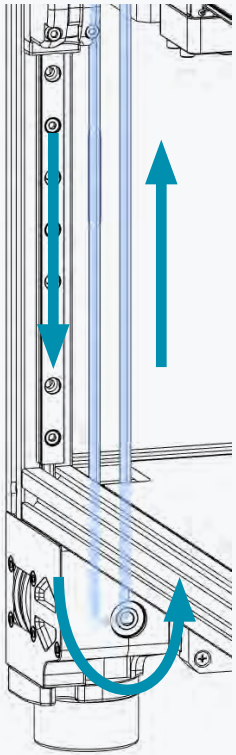
EXTEND IDLER

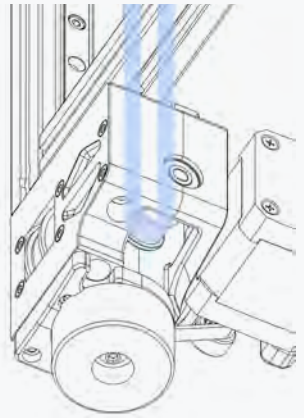
Loosen the idler bolt to extend the idler. Once extended to the maximum before becoming undone tighten 4 turns. Repeat for all 4 idlers.







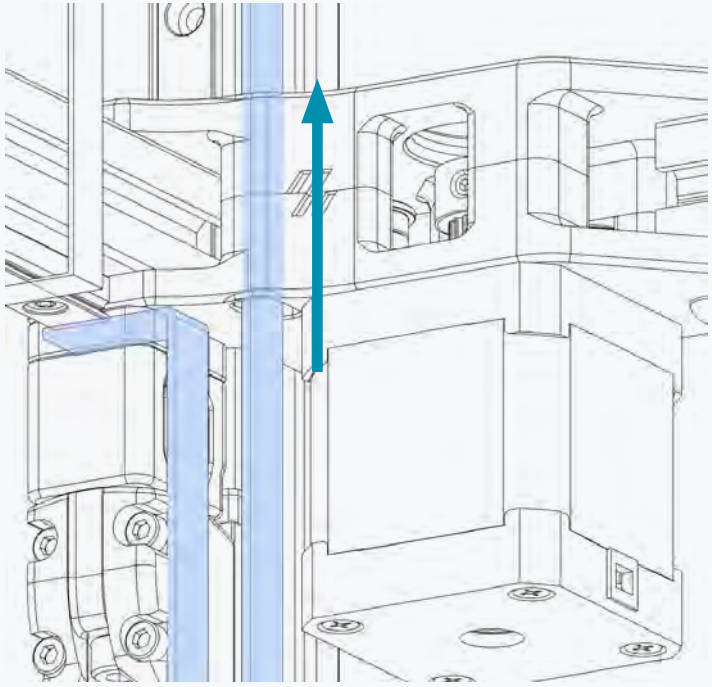


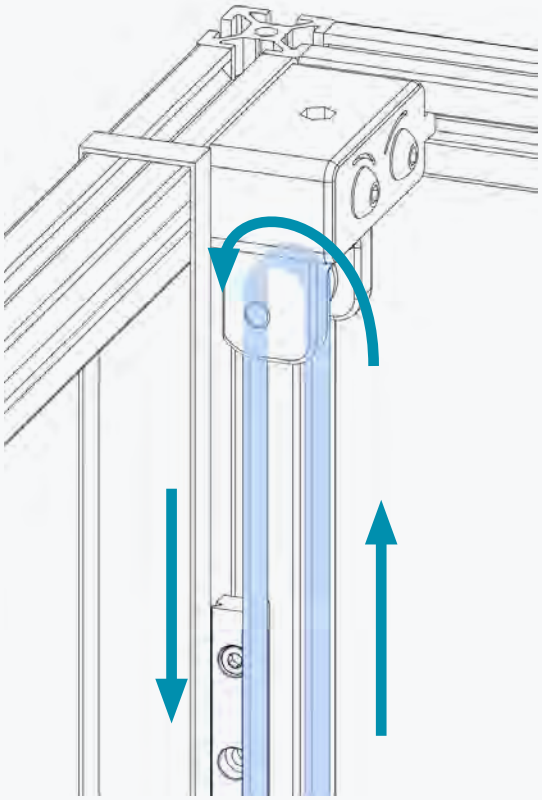


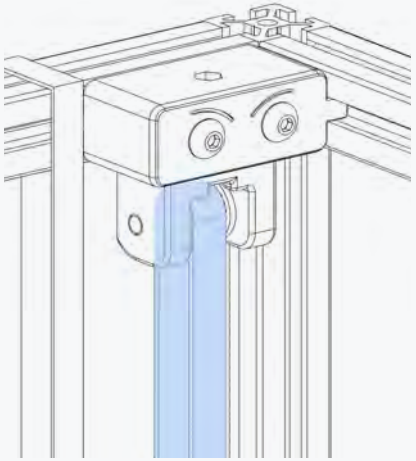
Z BELT ROUTING

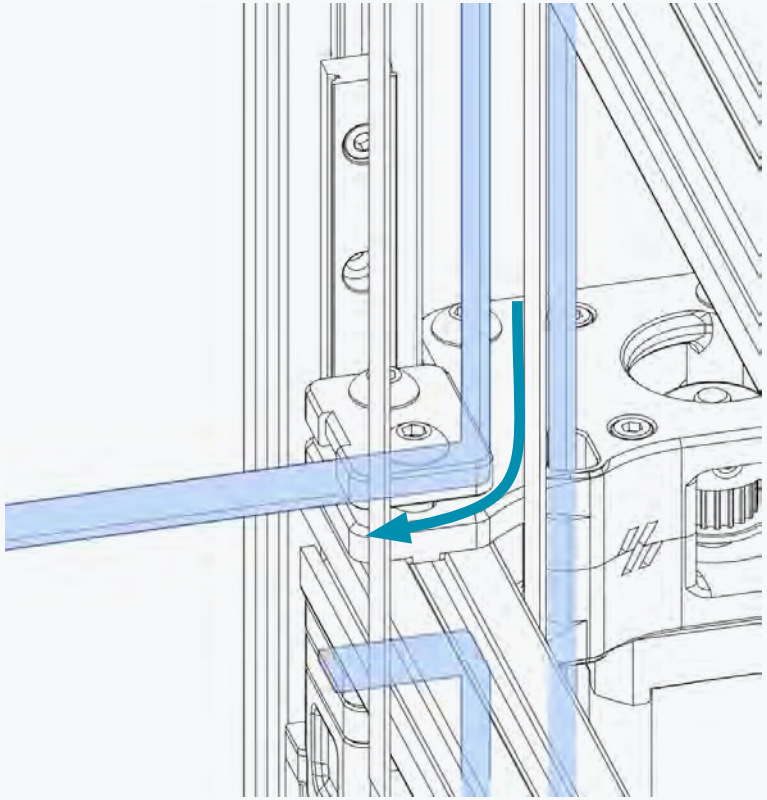
Follow the path pointed out by the arrows. Needle nose pliers, tweezers or similar tools can help in this step.

The belt teeth are on the inside of the loop.



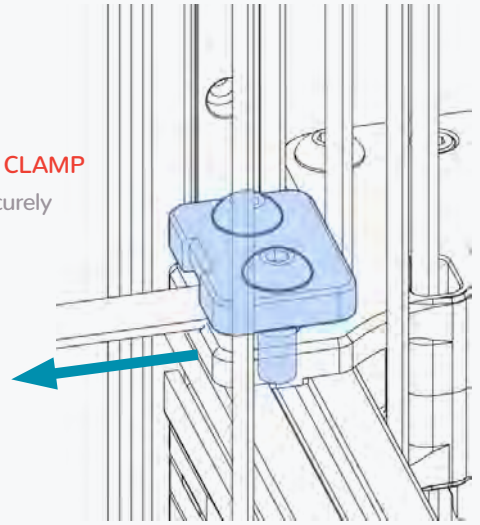






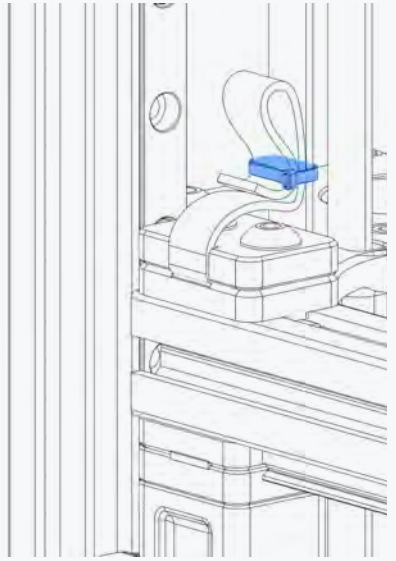
PULL TIGHT AND SECURE BELT CLAMP

Pull on the end of the belt and securely fasten the top belt clamp.



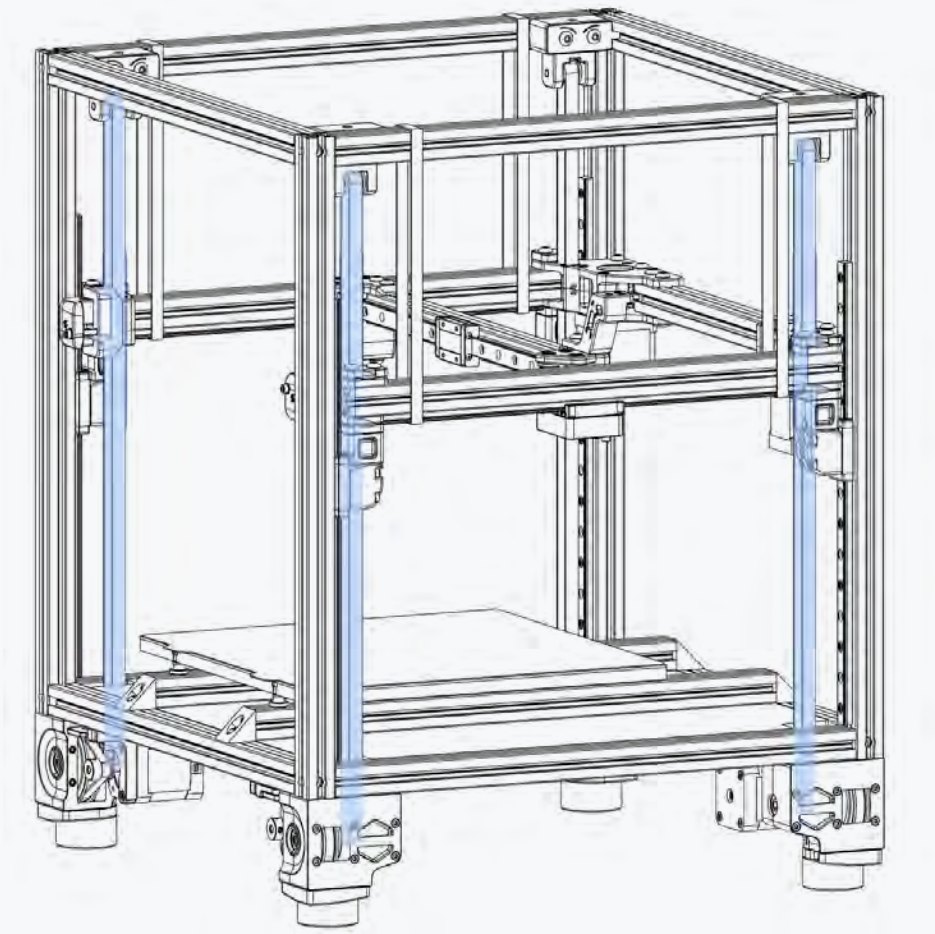
EXCESS BELT

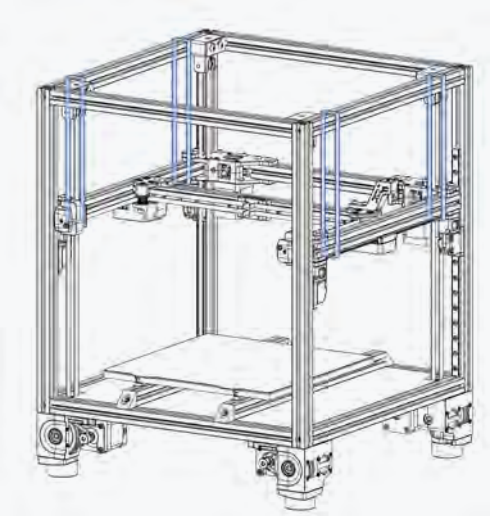
Fold the excess belt over and use a small ziptie to secure the end.



INSTALL REMAINING Z BELTS

Repeat the install instructions for the other 3 Z belts.



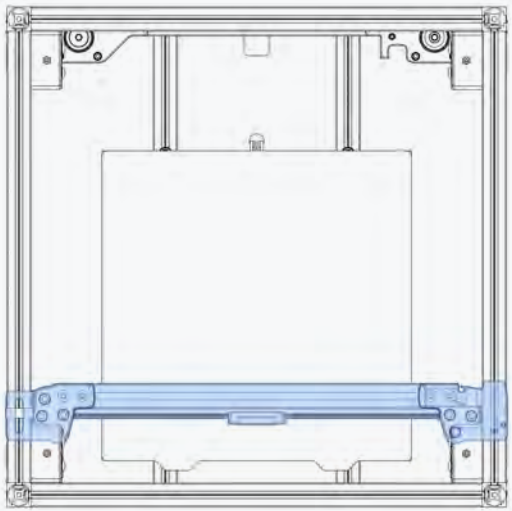


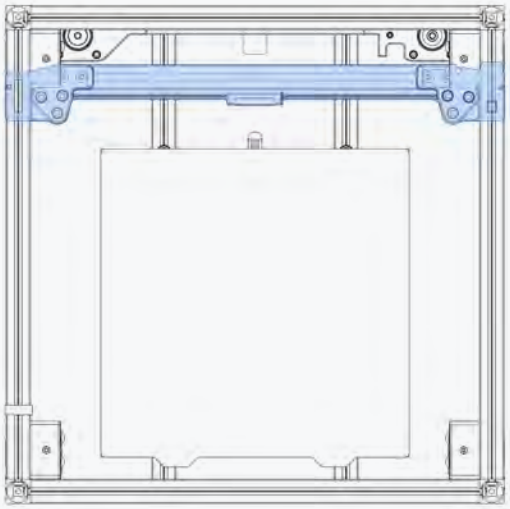
SQUARING THE GANTRY

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

Fully tighten all screws on the X axis.

https://voron.link/cekh81l





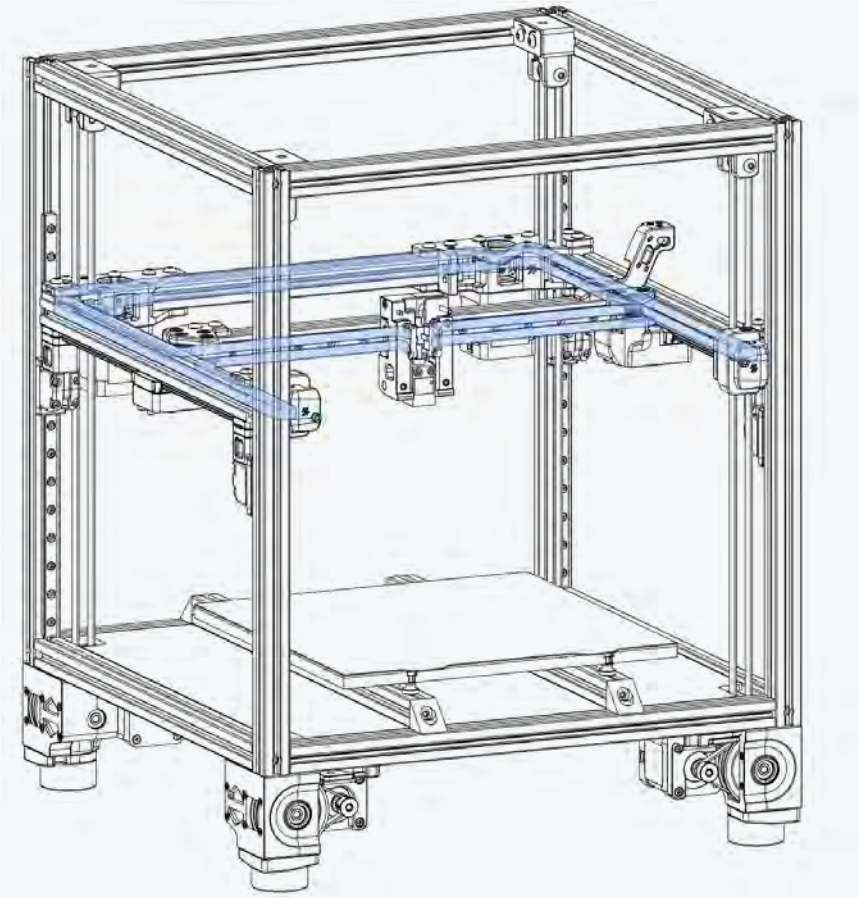
THE VORON BELT PATH

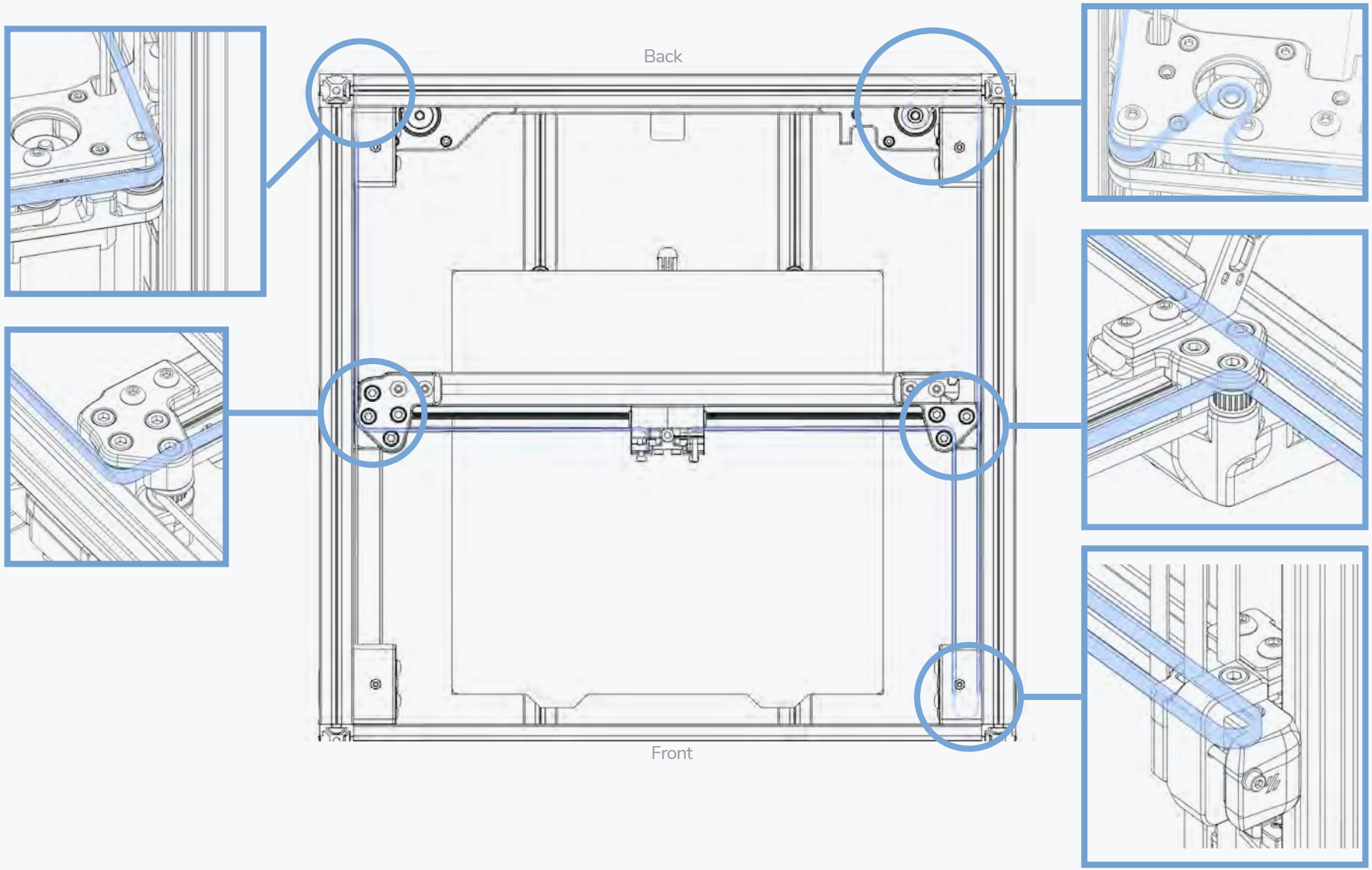
Voron printers use a belt path based on the popular CoreXY pattern.

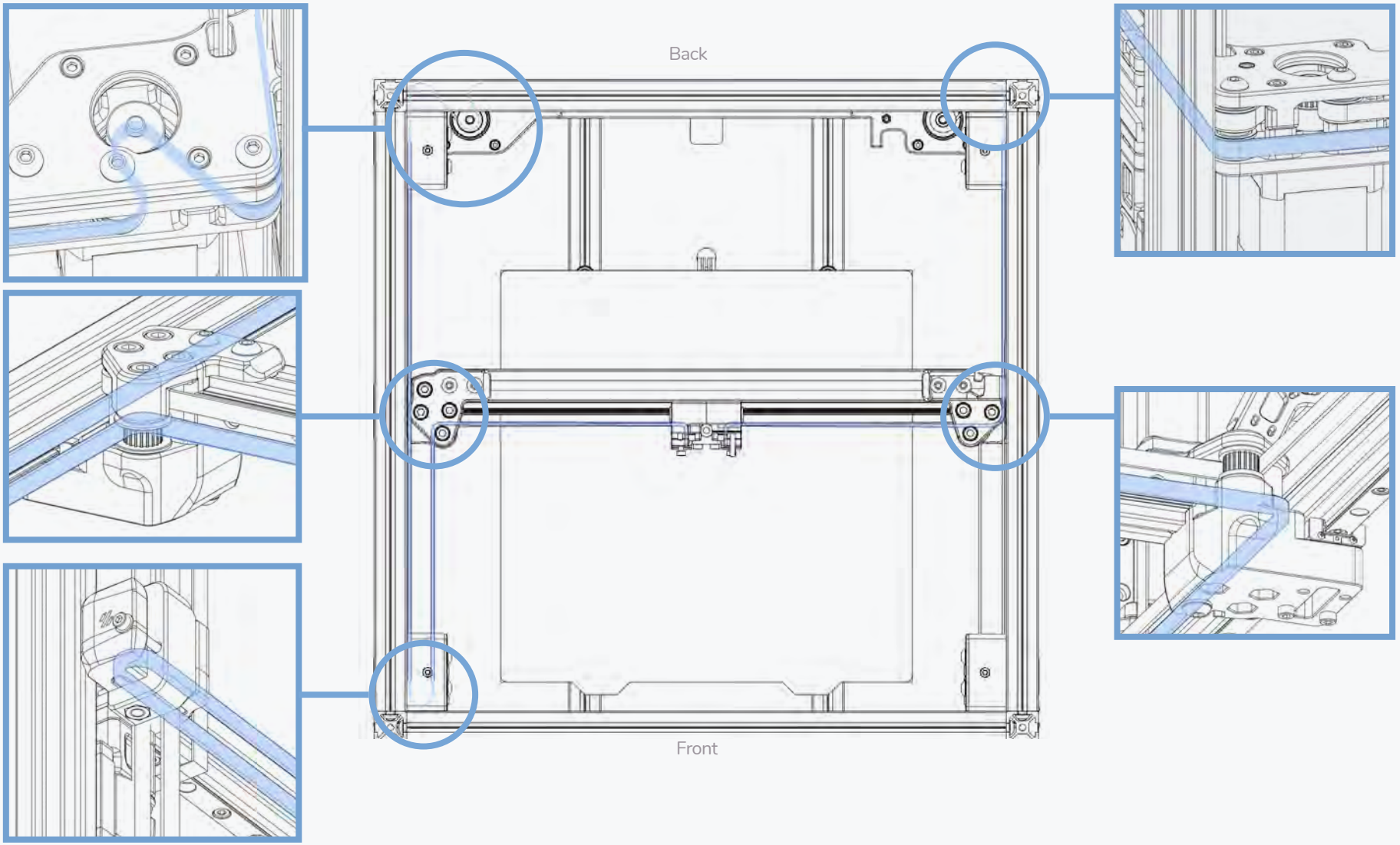
The individual belt paths are stacked on top of each other and the crossing often found in CoreXY designs is omitted. Compared to many other implementations, the motors are moved to a less intrusive position. To learn more about the principles behind CoreXY visit https://voron.link/ef72dd6

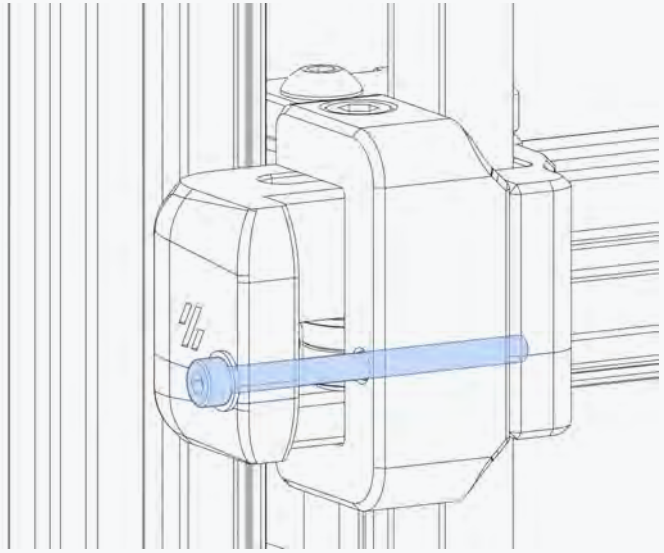
Equal belt tension is important to the proper function of a CoreXY motion system.

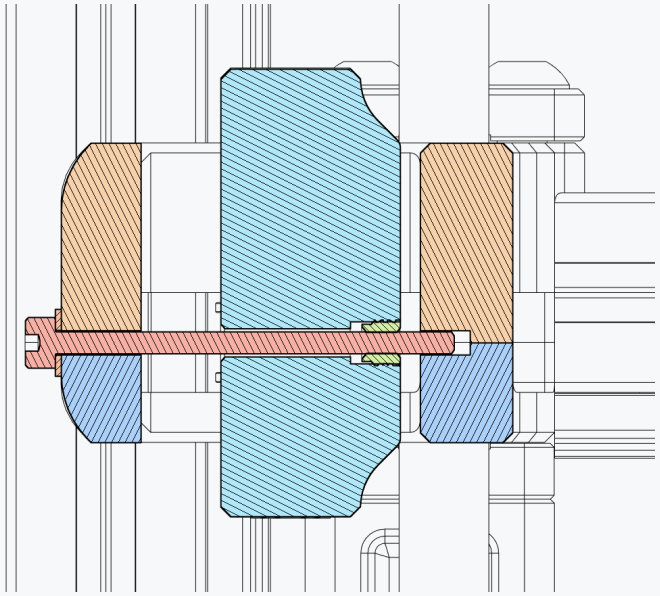
We recommend to run one belt to get the required length, remove the belt from the printer and cut the second belt to the exact same length.
As both belt paths have the same length this is an easy way of getting a consistent tension.




Back
Front


Back
Front



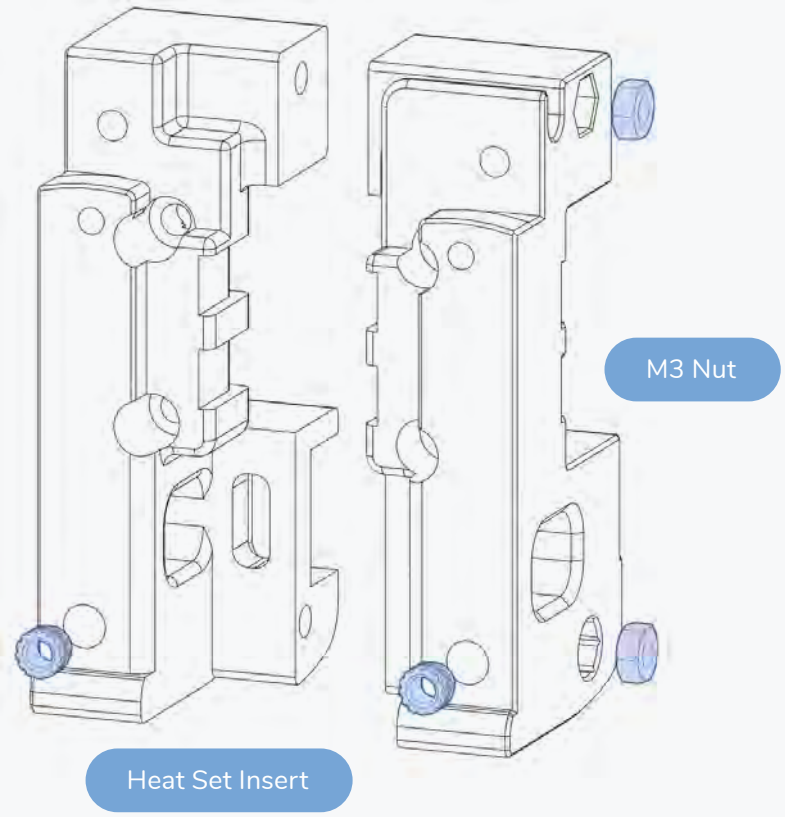


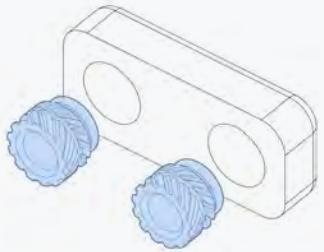
EXTEND IDLER

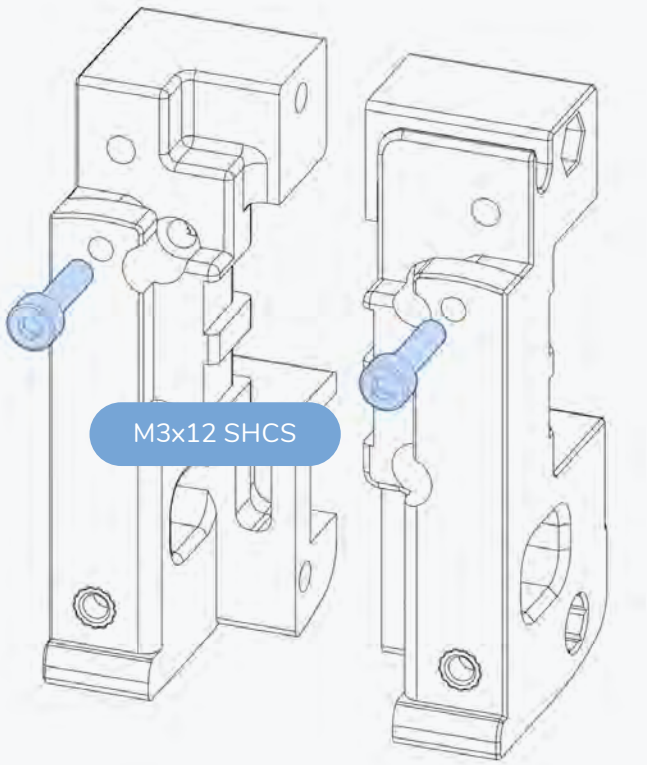
Loosen the idler bolt to extend the idler.

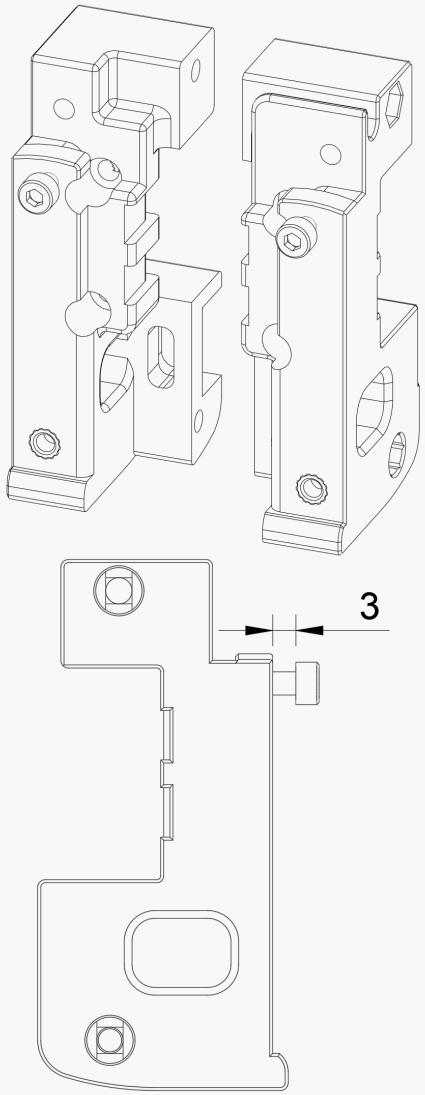
Once extended to the maximum tighten 4 turns.

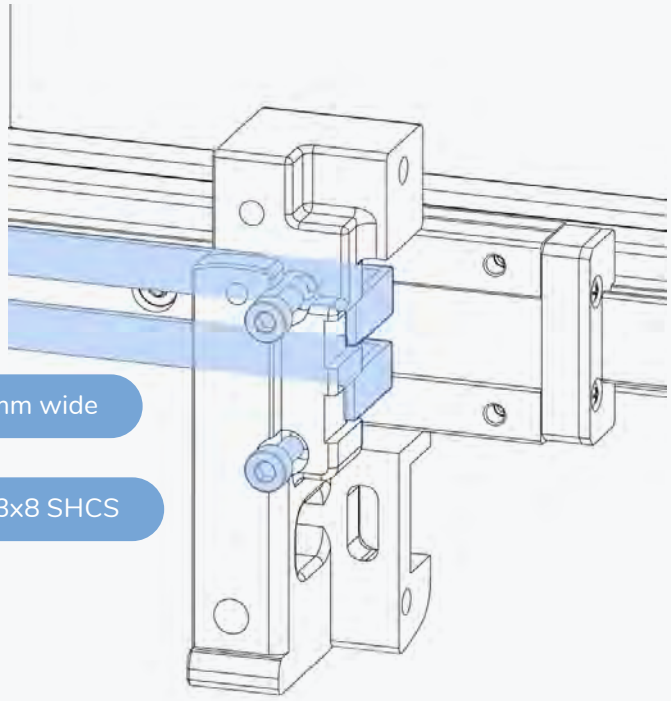
Repeat for the second idler.

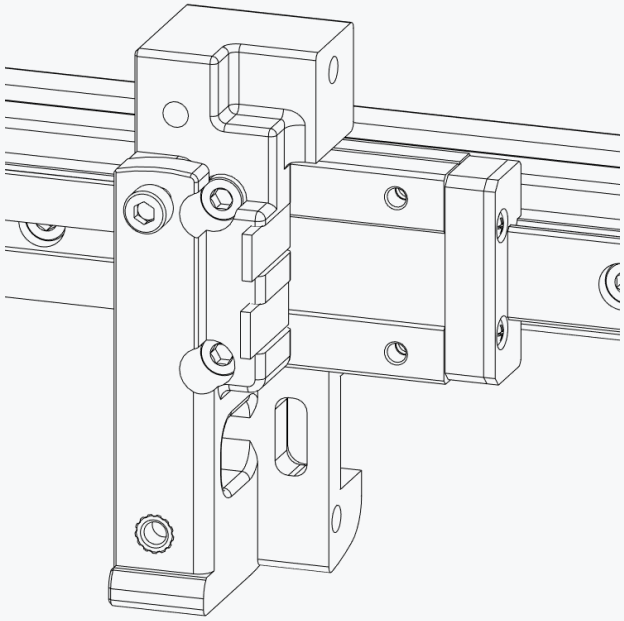

M3 Nut
Heat Set Insert


Heat Set Insert


M3x12 SHCS


3

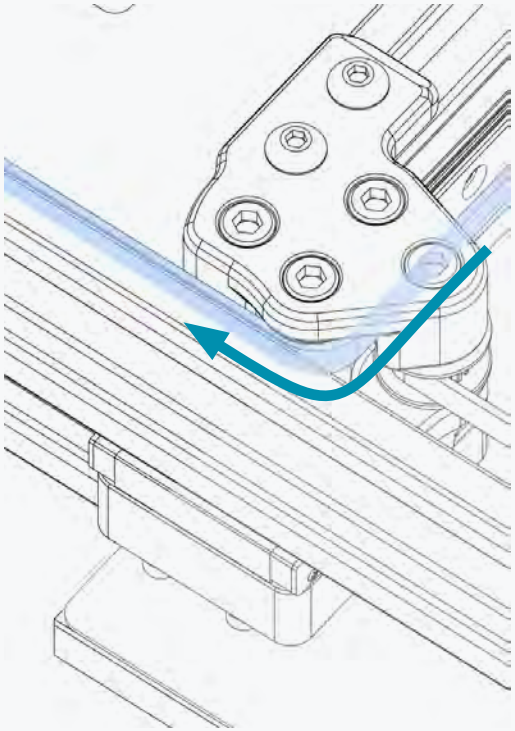


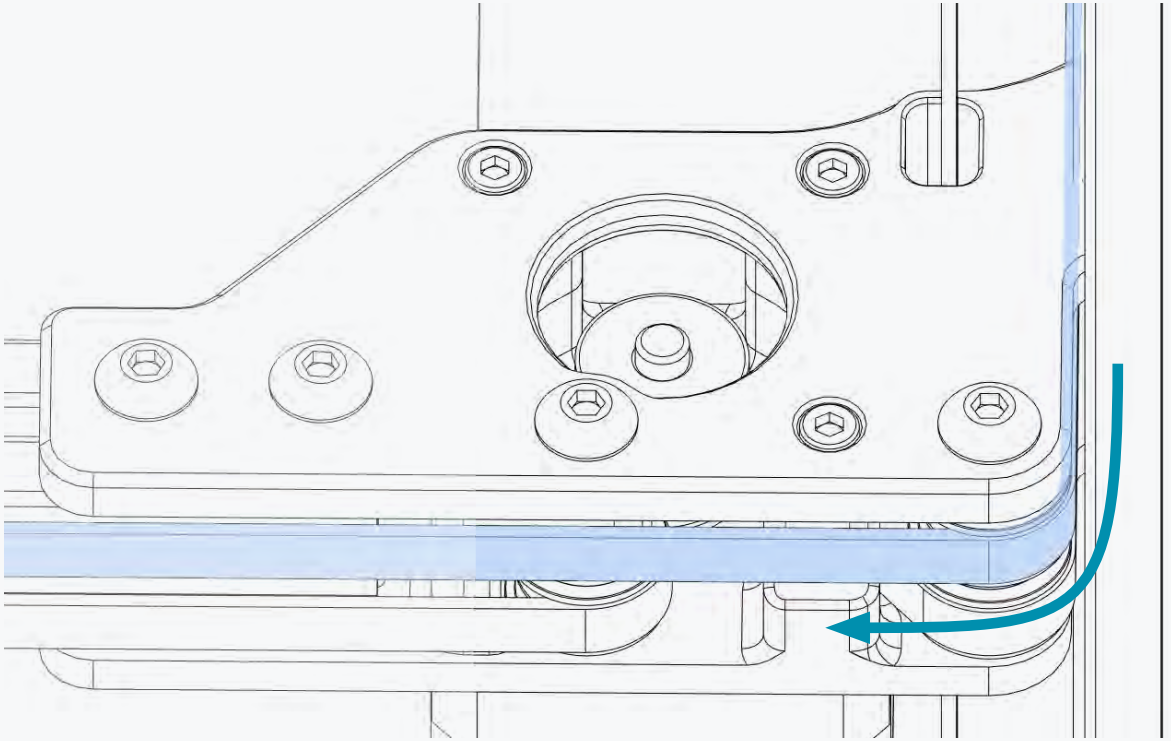


CLAMP BELTS

Clamp both A and B belts in place by installing the left X carriage part.

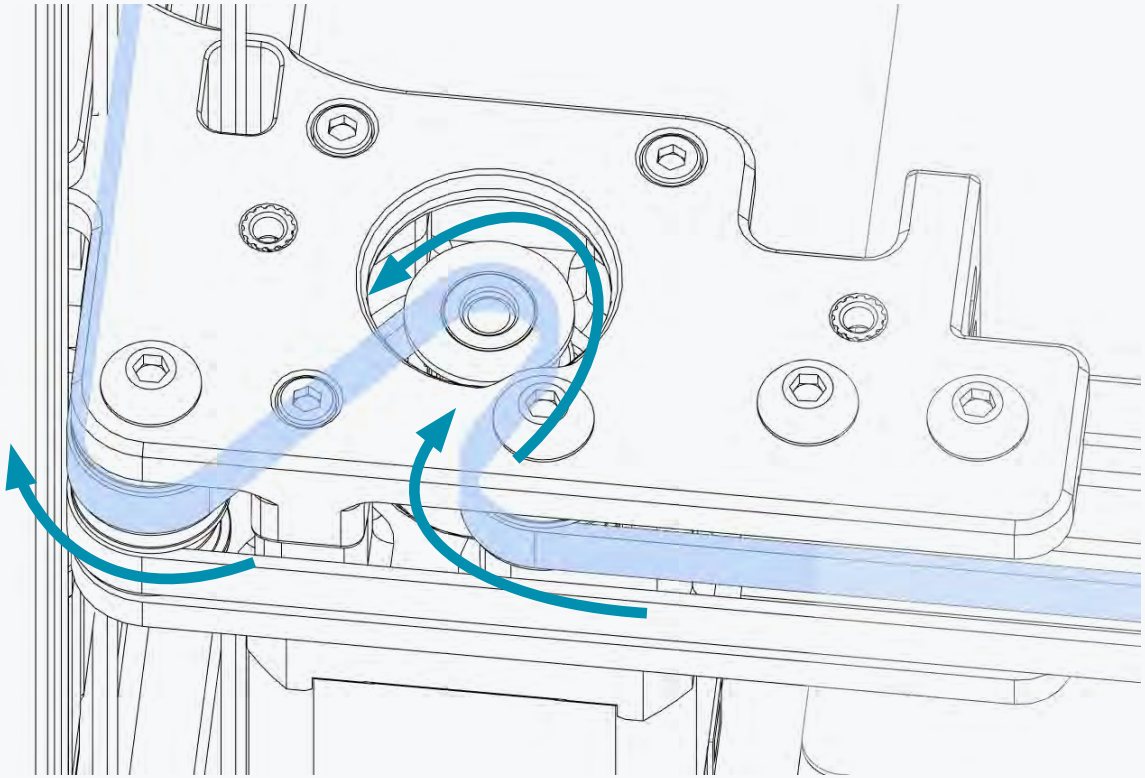
The belt teeth face away from the extrusion.

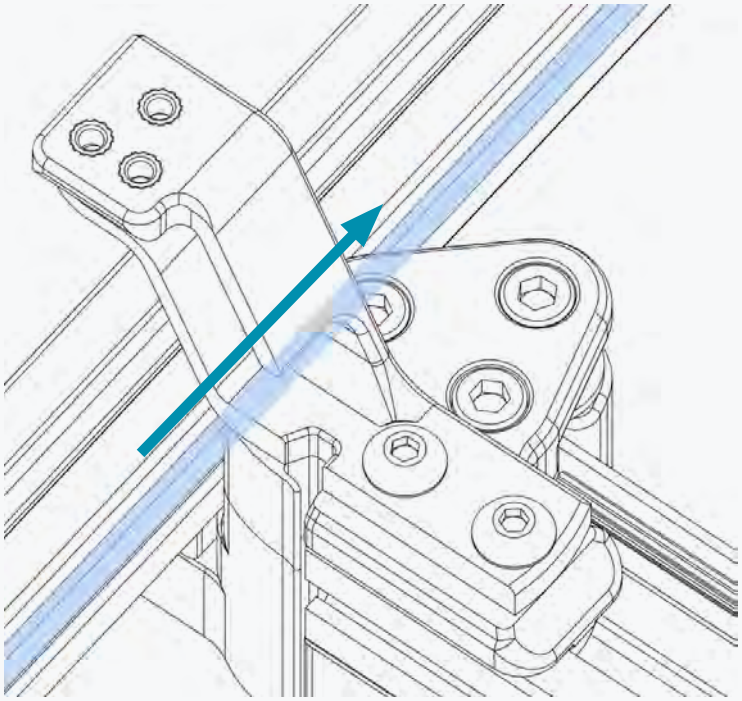


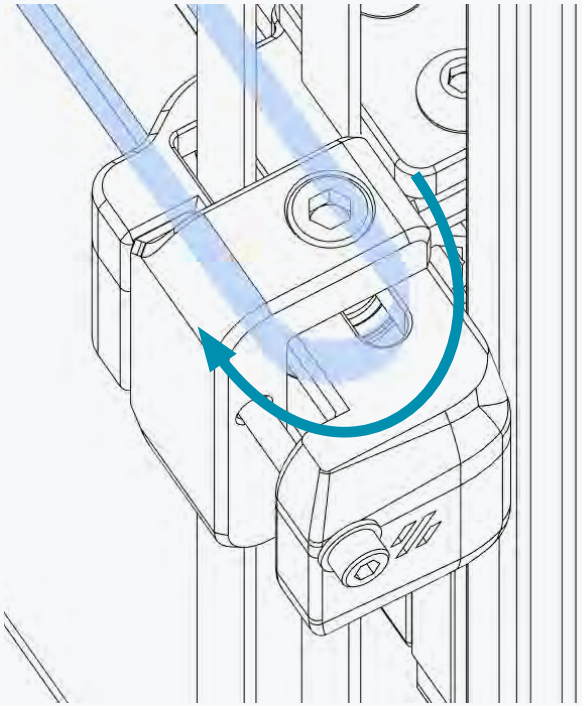


A BELT ROUTING

Follow the path pointed out by the arrows.
Needle nose pliers, tweezers or similar tools
can help in this step.

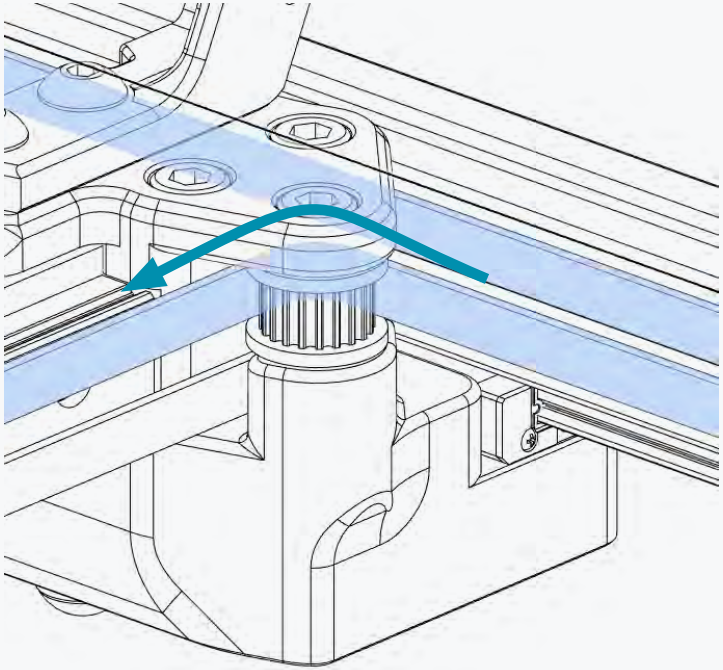


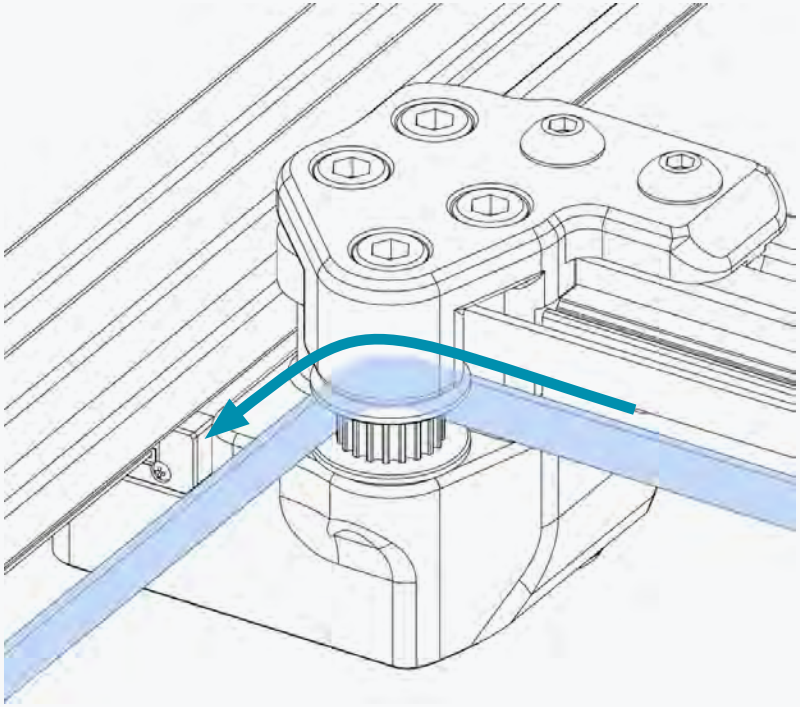




BELTING IDLERS

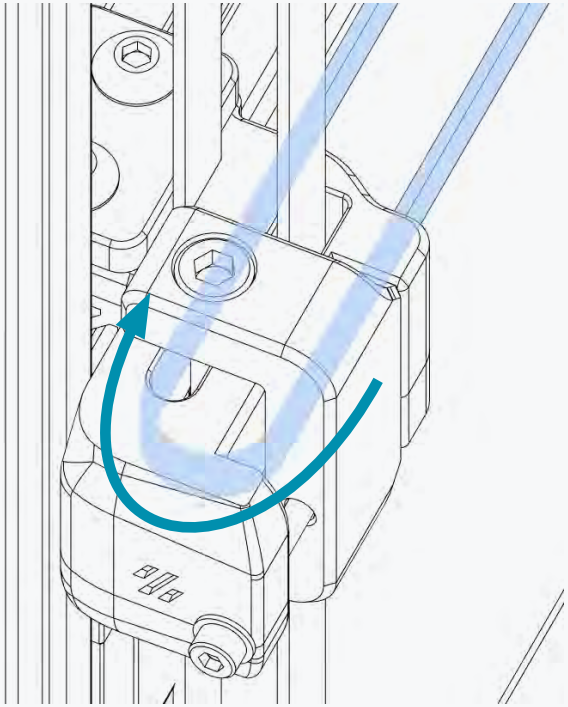
If you're having trouble guiding the belts around the bearing stack temporarily remove the M3x40 SHCS to get a better access.





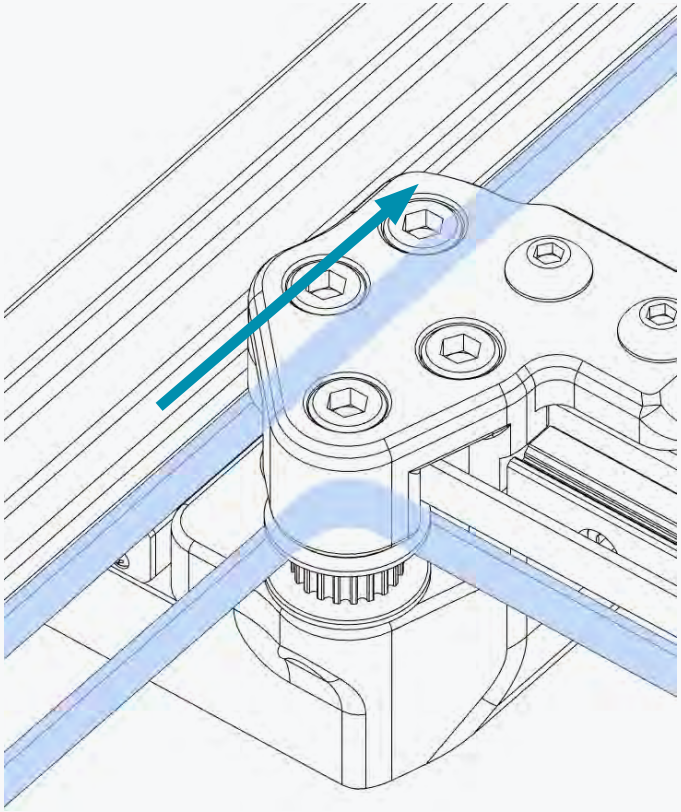
B BELT ROUTING

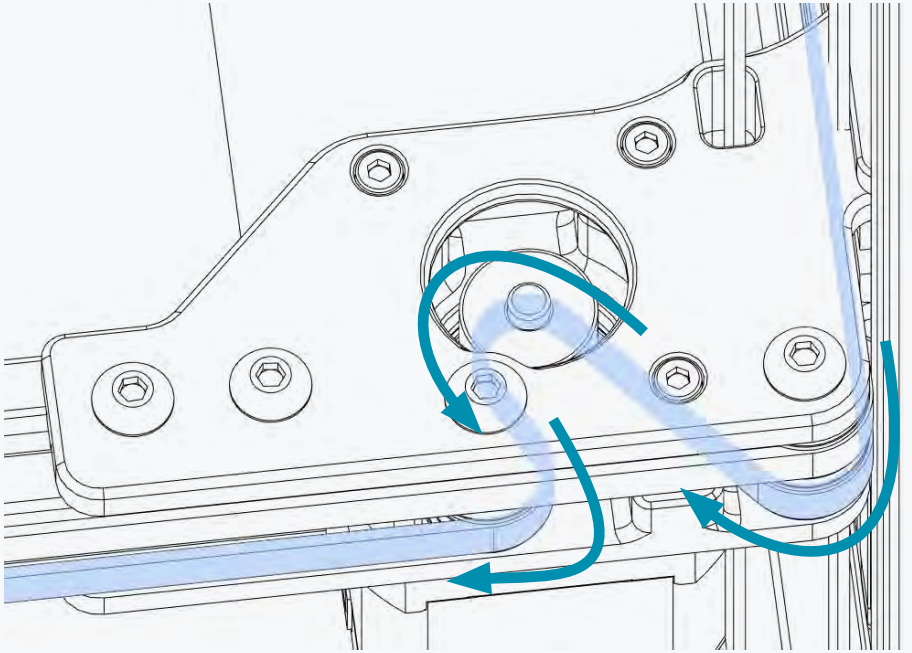
Follow the path pointed out by the arrows. Needle nose pliers, tweezers or similar tools can help in this step.

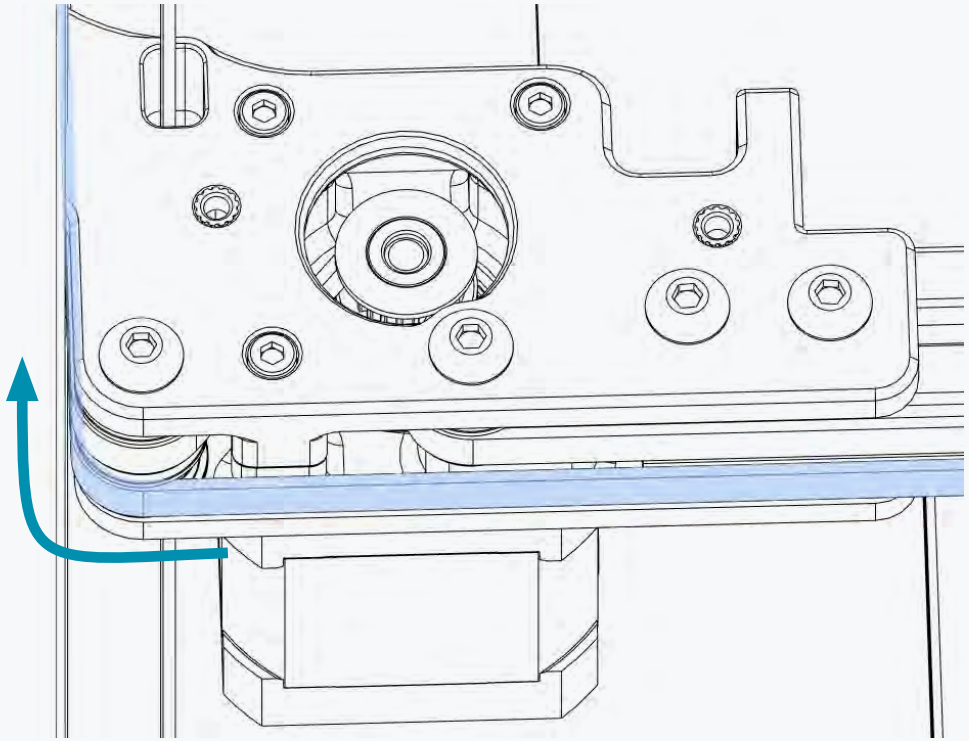


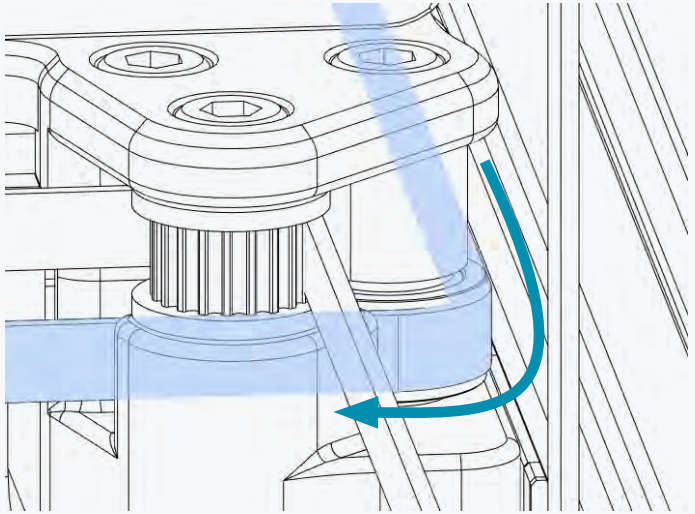
BELTING IDLERS

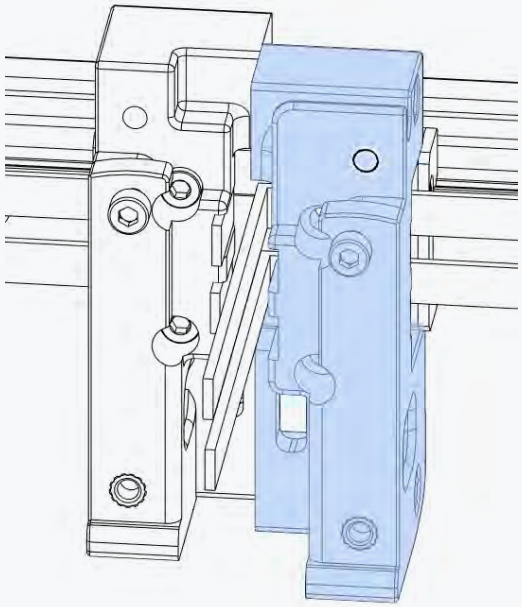
If you're having trouble guiding the belts around the bearing stack temporarily remove the M3x40 SHCS to get a better access.





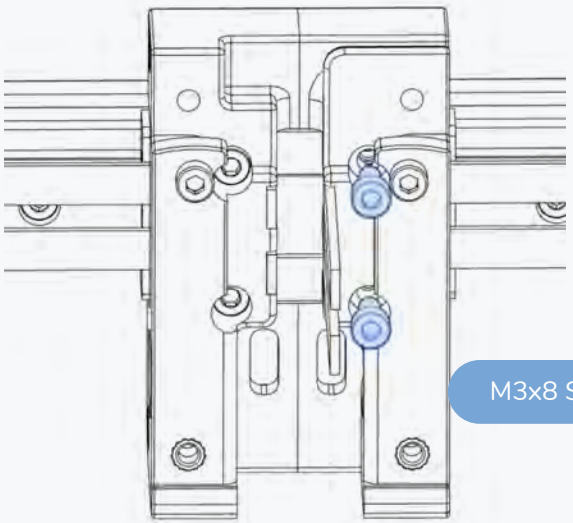






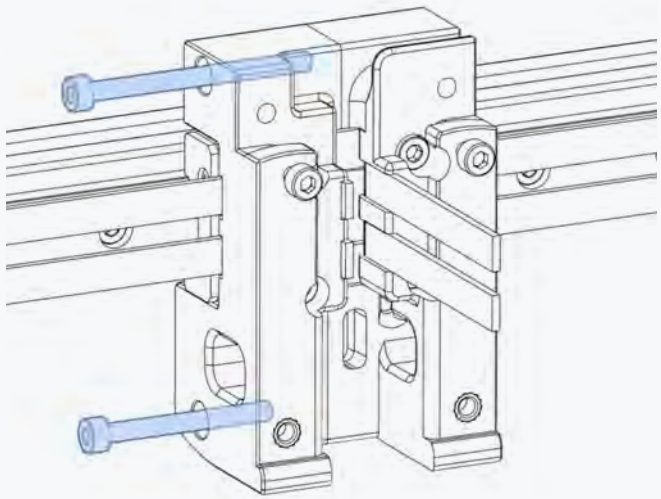
X CARRIAGE

Use the second part of the X carriage to capture the belt ends.



M3x8 SHCS

M3x40 SHCS



M3x30 SHCS

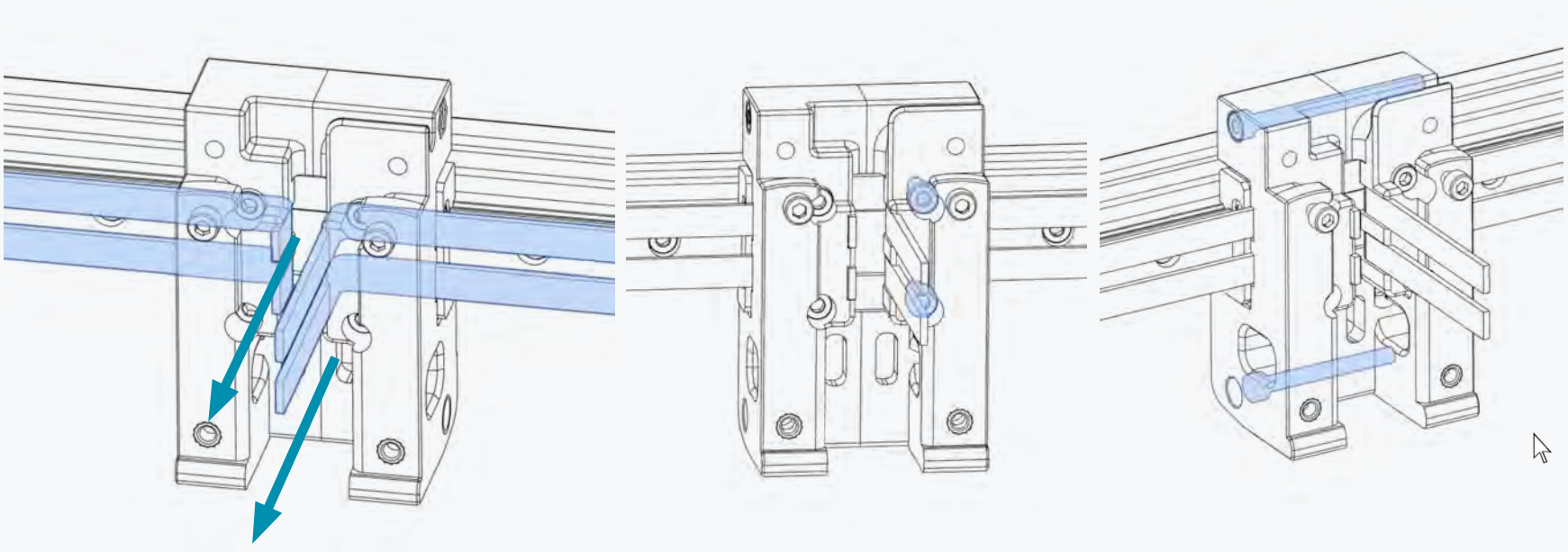
FIX BELTS

Lightly tighten the screws.

The belt must still be able to move.

LEAVE LOOSE

Lightly tighten the bolts.



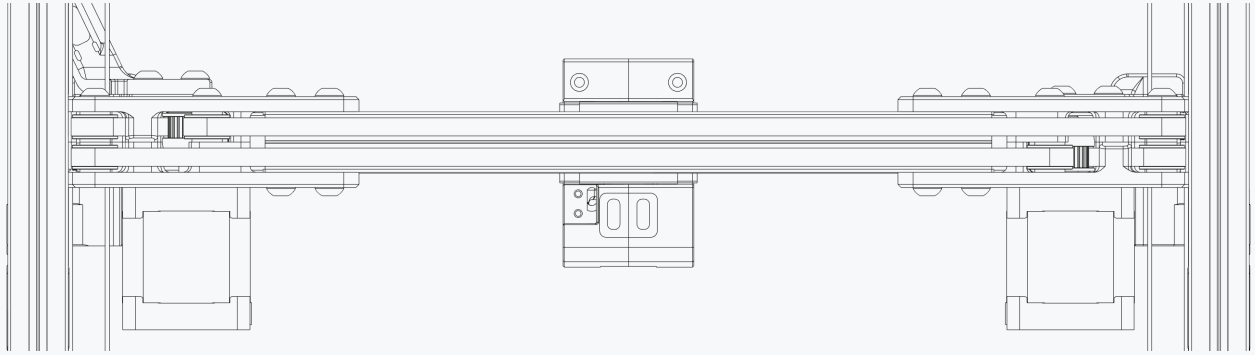
PULL TIGHT

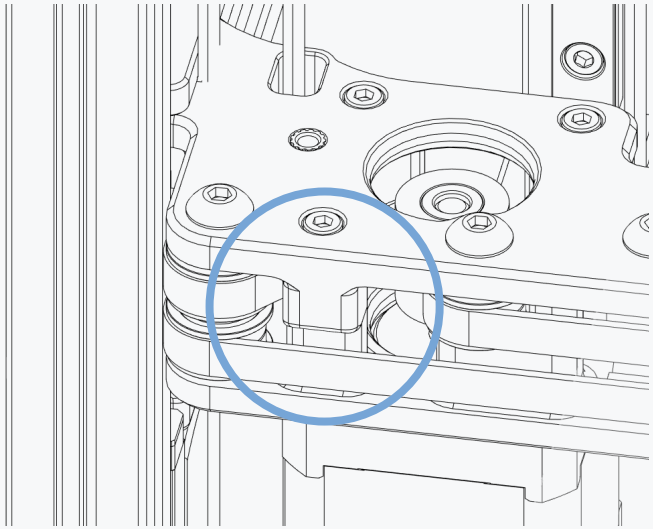
Grab both belt ends with a pair of pliers and pull the belt tight.

As both belts are cut to the exact same total length and the belt paths are equal length in this design make sure the same length of belt protrudes from the carriage.

TIGHTEN BOLTS

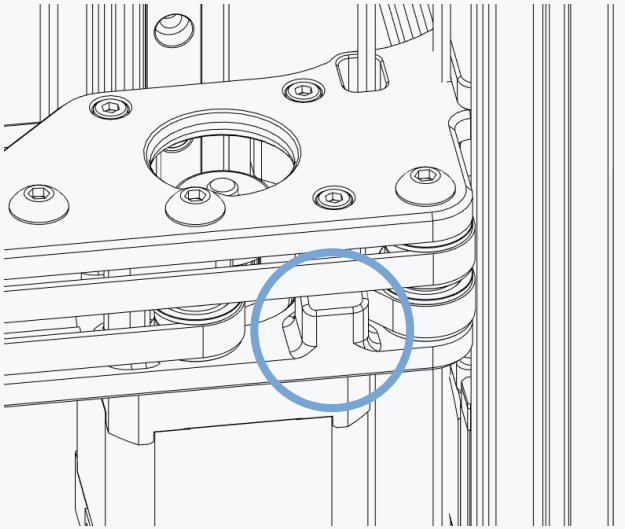
Fully tighten the carriage bolts.

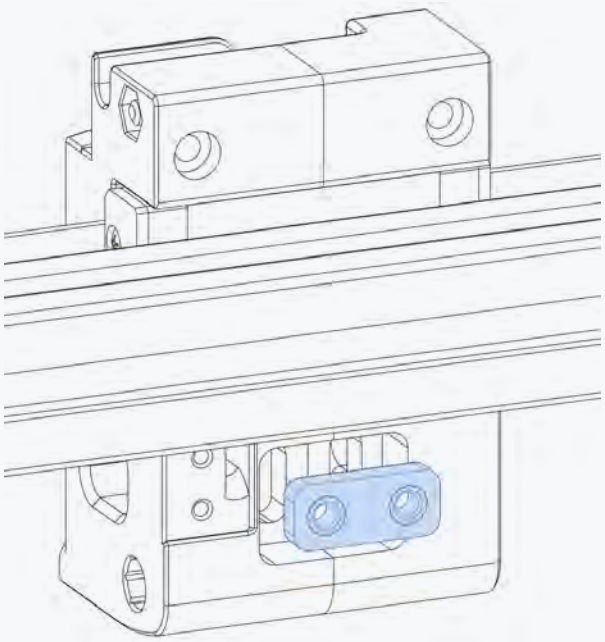




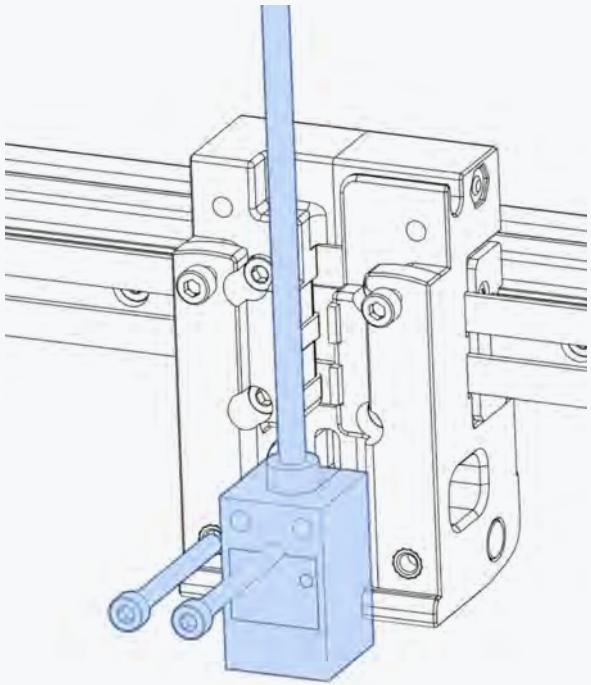
CHECK YOUR WORK

Make sure that the belt is not riding on the plastic parts.





M3x30 SHCS



Inductive Probe

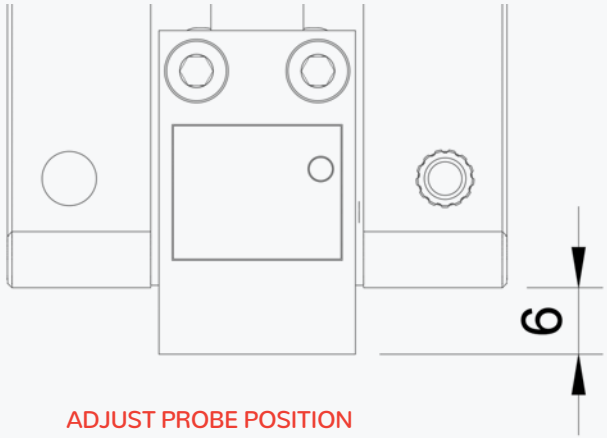
PROBE WIRES

Cut the probe wires to about 150mm.

OTHER PROBE TYPES

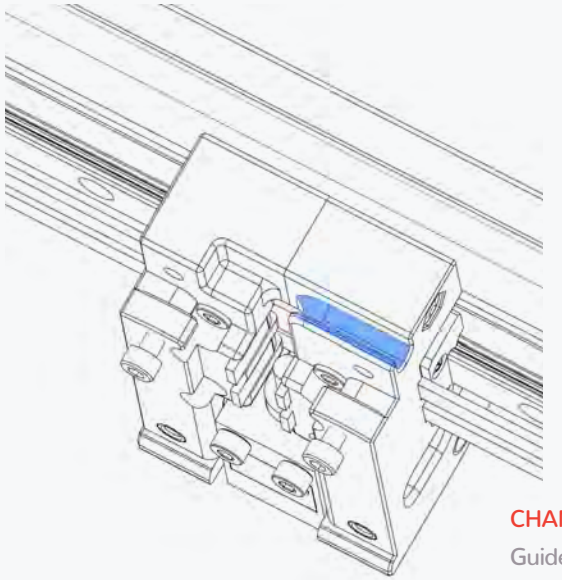
The picture shows the recommended Omron TL-Q5MC probe.

Other probes with a similar form factor and characteristics might work as well. A design for a PINDA probe adapter is included in the released files.



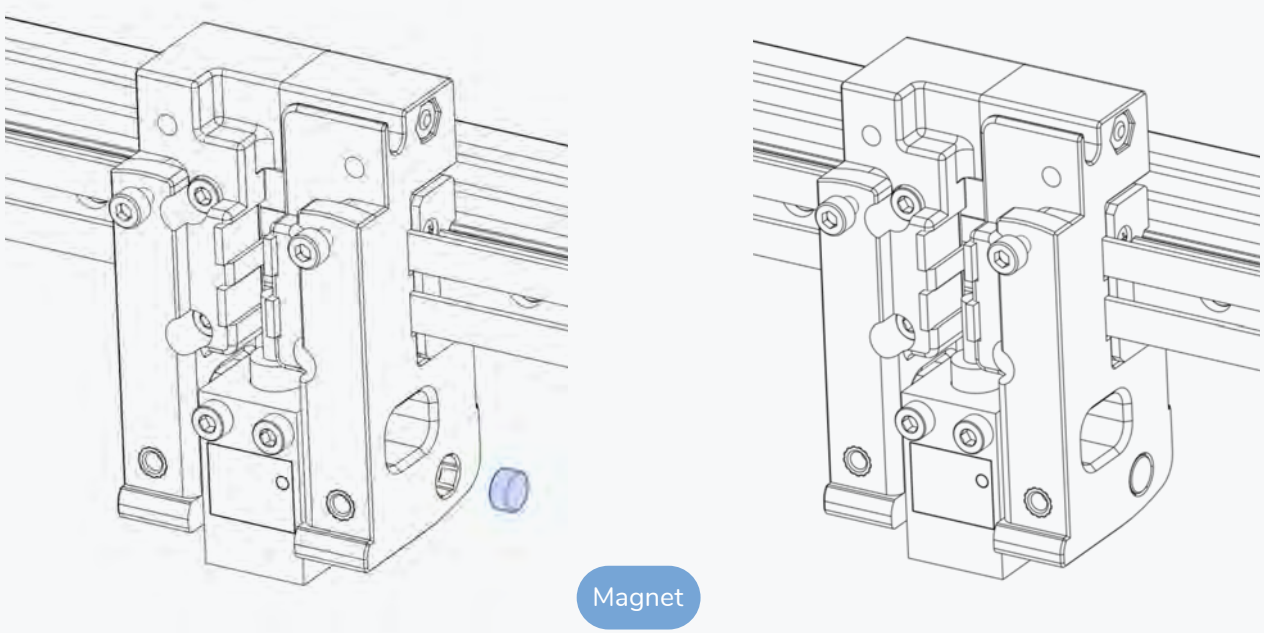
ADJUST PROBE POSITION

The position can be fine-tuned later. Set an initial position of about 6mm below the plastic part.



CHANNEL FOR PROBE CABLE

Guide the probe cable into the highlighted slot.



OPTION: HALL EFFECT ENDSTOP

If you are using a Hall Effect Endstop insert a 3x6 magnet into the highlighted position.