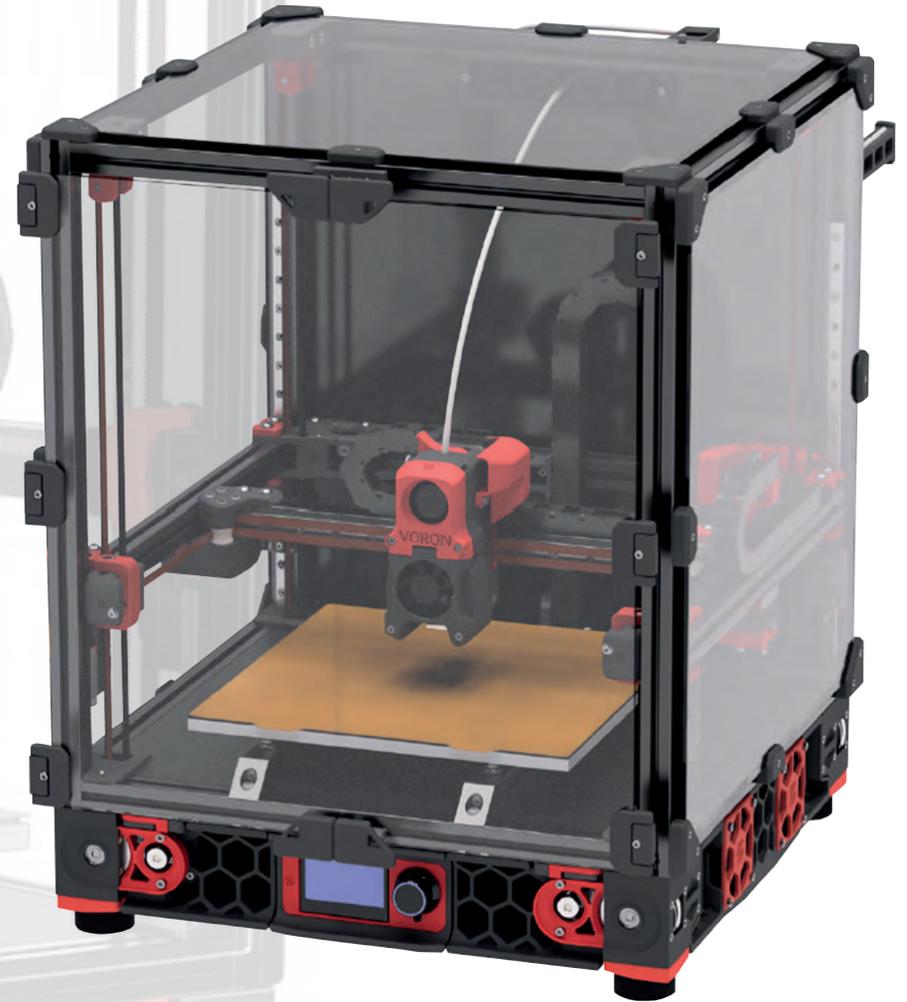




VORON 2.4

KIT 3

· Z DRIVE





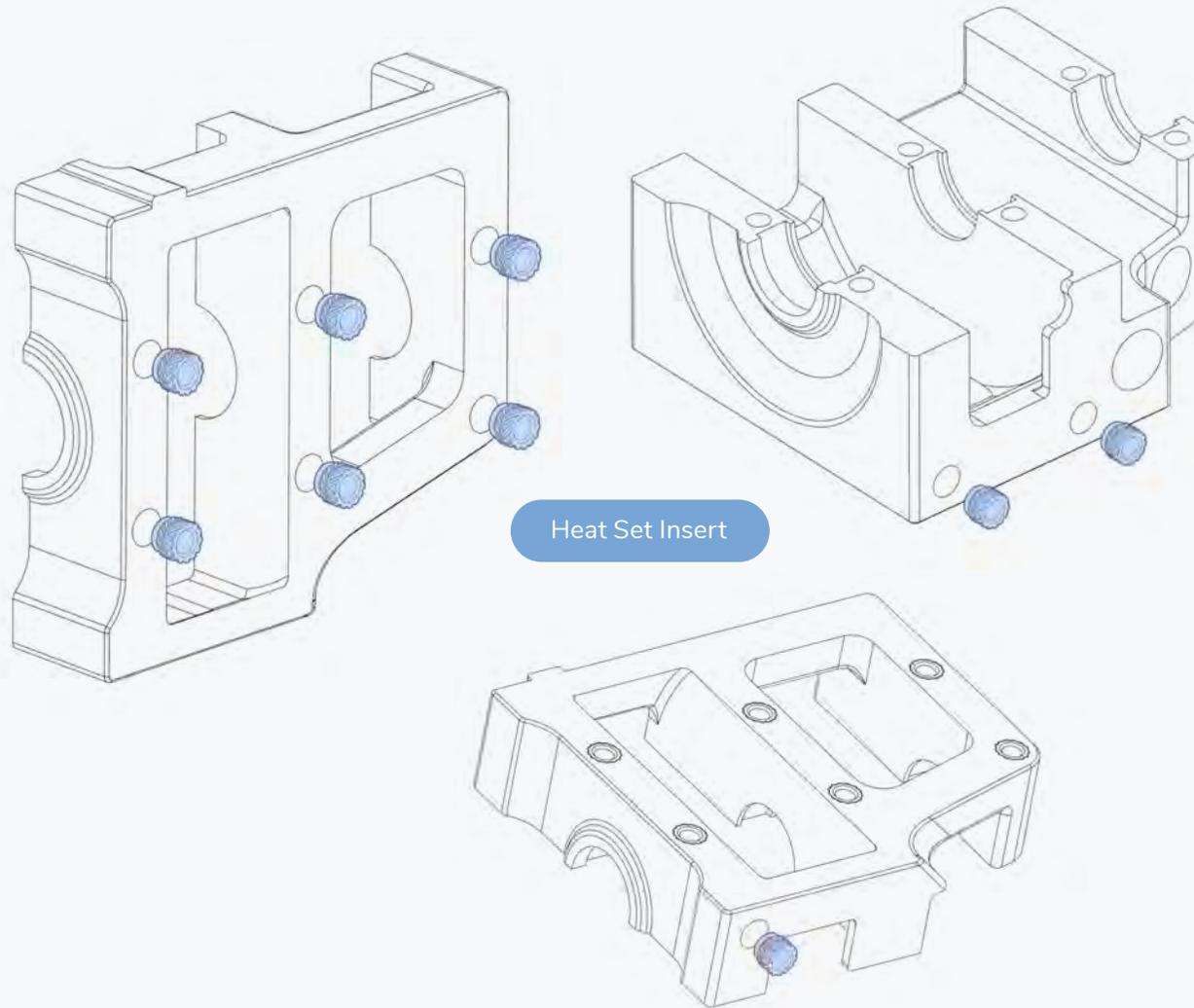
Before you begin on your journey, a word of caution.

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



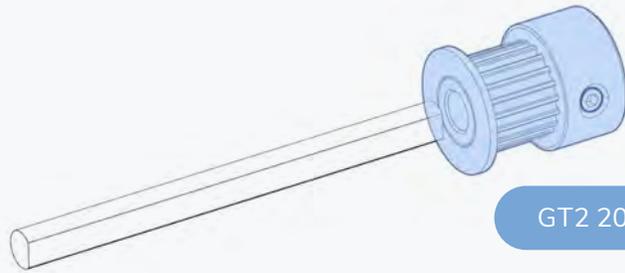
HEAT SET INSERTS

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

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



<https://voron.link/m5ybt4d>

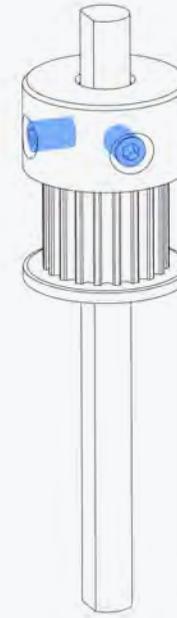
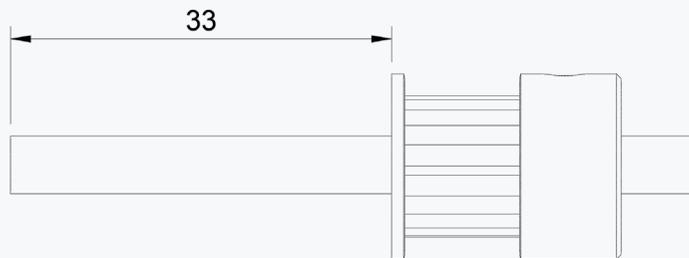


5x60 Shaft

GT2 20T 9mm wide Pulley

POSITION AS SHOWN

Make sure one of the set screws is oriented with the D cut, as shown in the image.



SET SCREWS

AKA THE ROOT OF ALL ISSUES

Insert both set screws and use thread locker on all set screws.

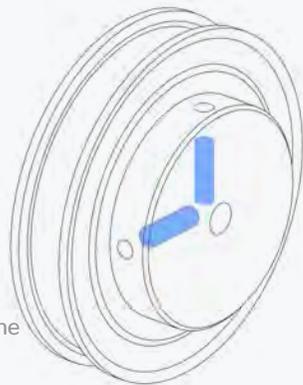
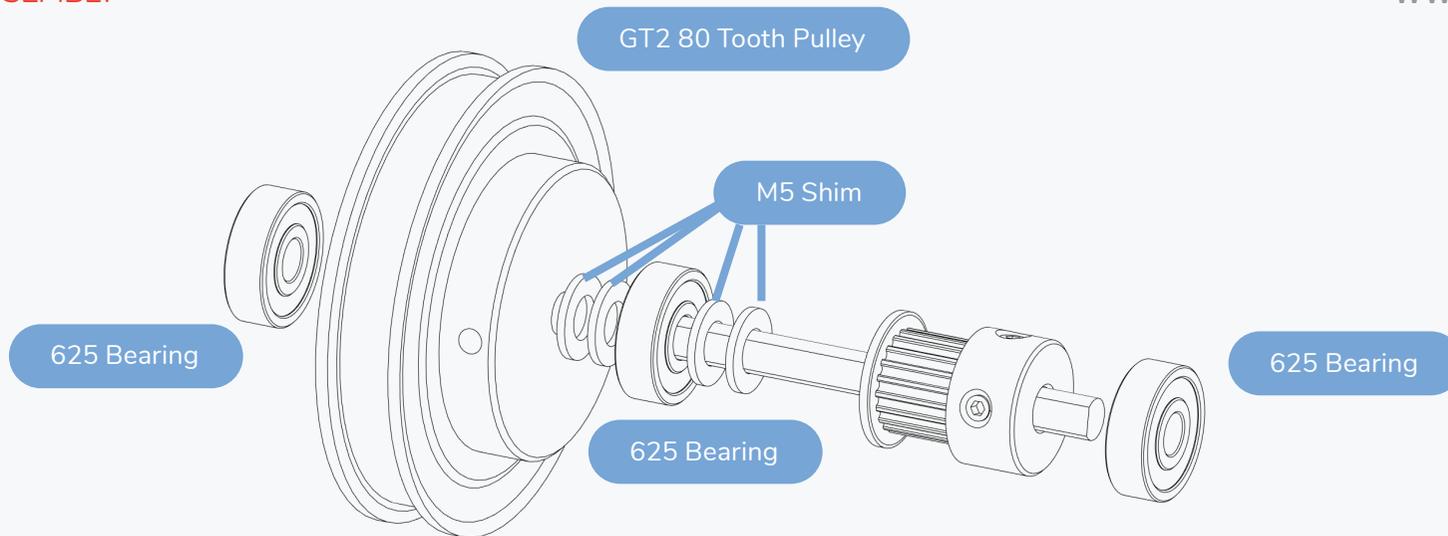
Use a high quality hex driver to prevent the hex profile from stripping. Ball-end drivers are not recommended.

Loose set screws account for the majority of issues that our users report. Save yourself hours of troubleshooting and apply thread locker to all set screws during the build.

See the products application notes for instructions - keep away from printed parts.

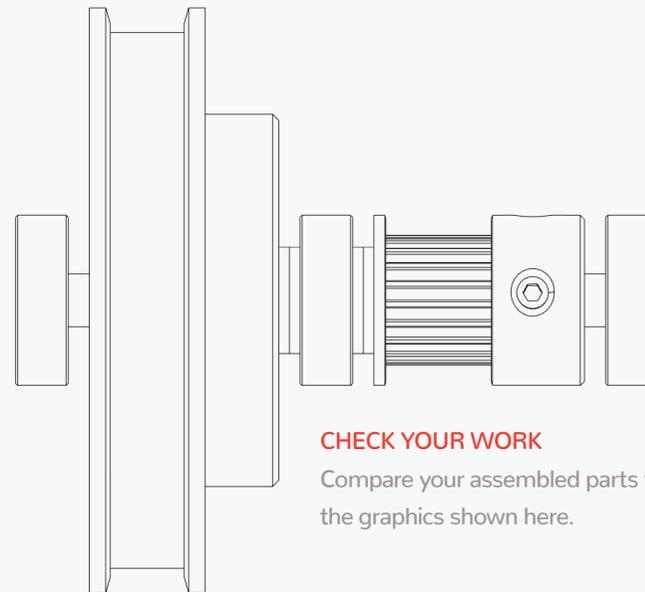
BELT DRIVE ASSEMBLY

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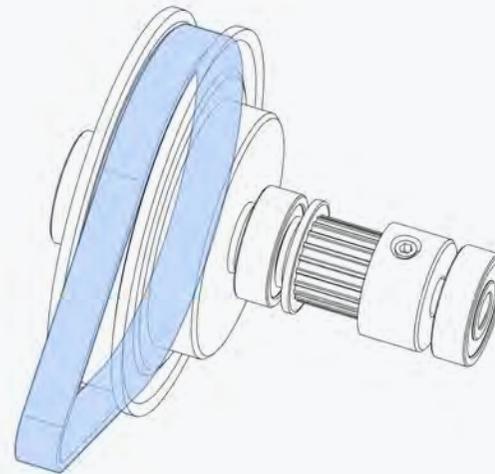
APPLY THREAD LOCKER

Make sure to use thread locker on the set screws.

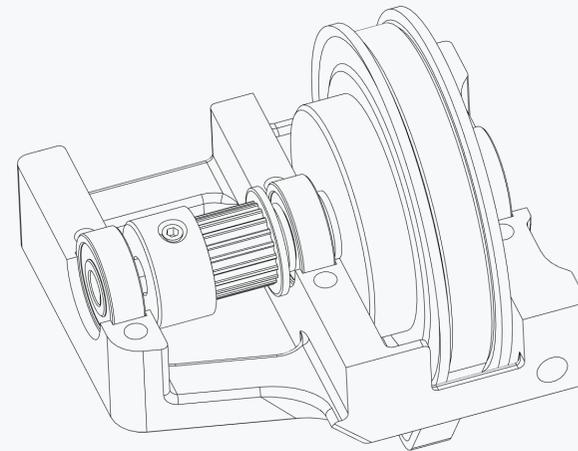
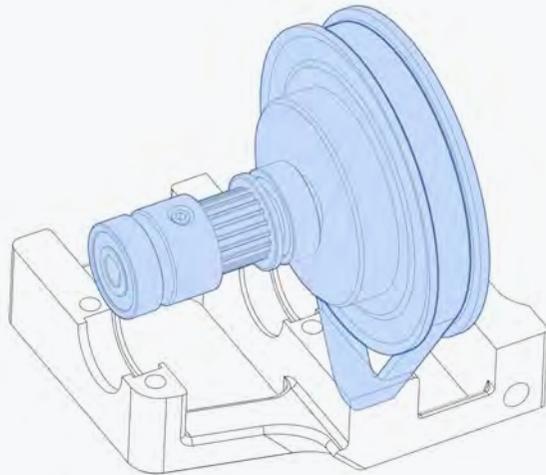


CHECK YOUR WORK

Compare your assembled parts to the graphics shown here.

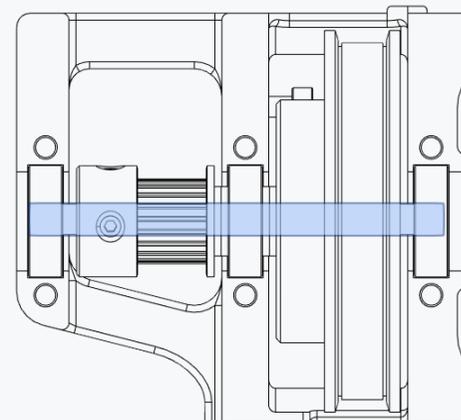


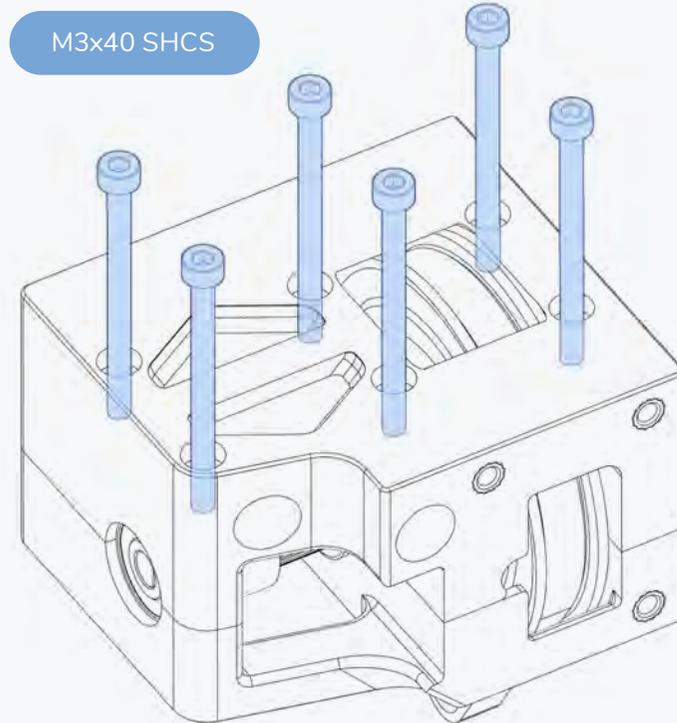
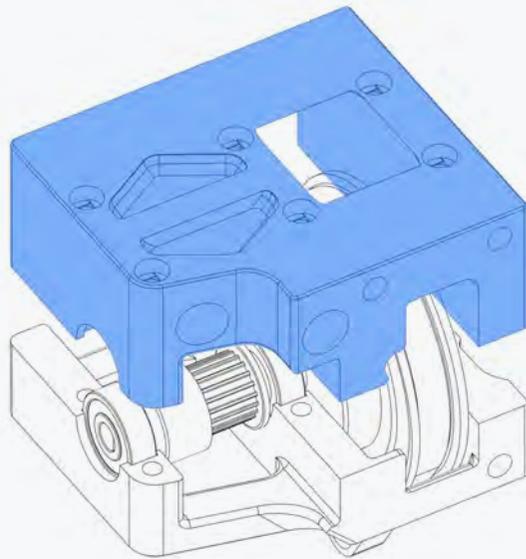
GT2 188mm Belt Loop

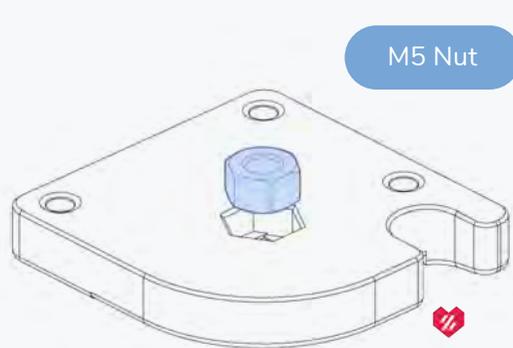


CHECK SHAFT POSITION

Compare your assembled parts to the graphics shown here.

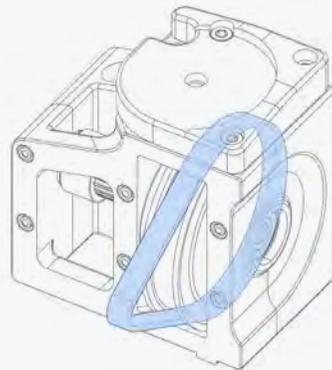
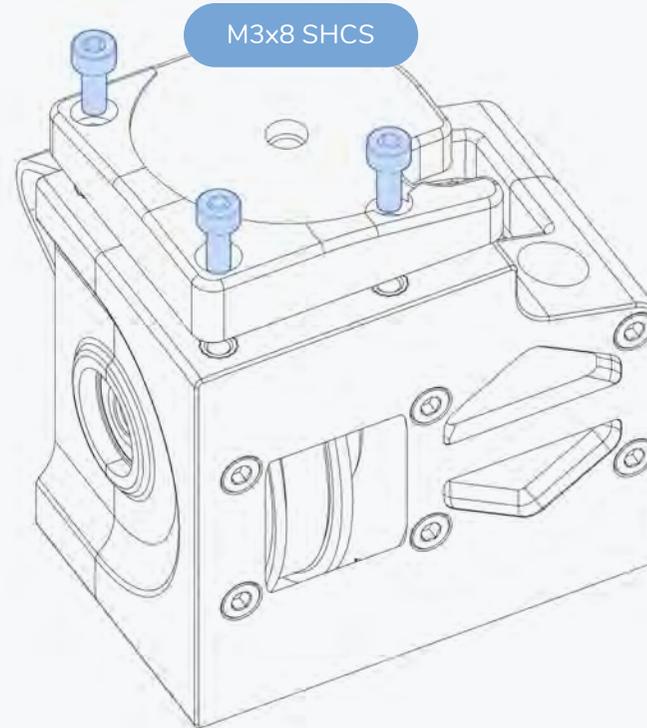






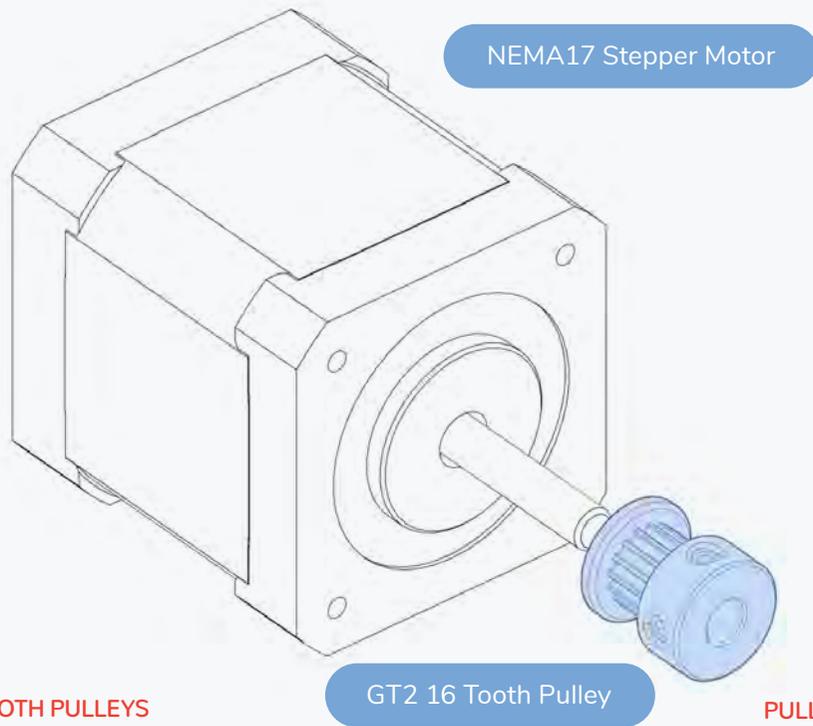
WHERE'S THAT PRINTED PART?

Look for Voron heart next to the part.
It indicates that this is an accent part.



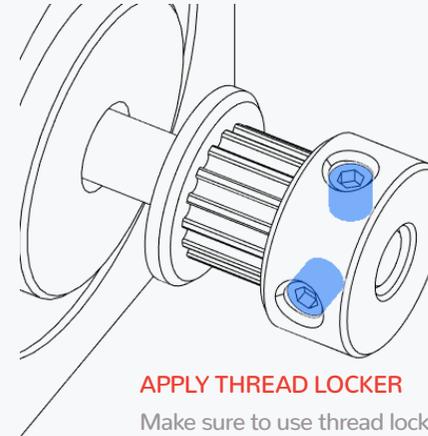
CHECK FOR BELT

Make sure the closed belt loop is in
the part.



16 TOOTH PULLEYS

The Z drive motors are the only place in the printer that use 16 tooth pulleys!
Remove them from your work surface after you finish this chapter.



APPLY THREAD LOCKER

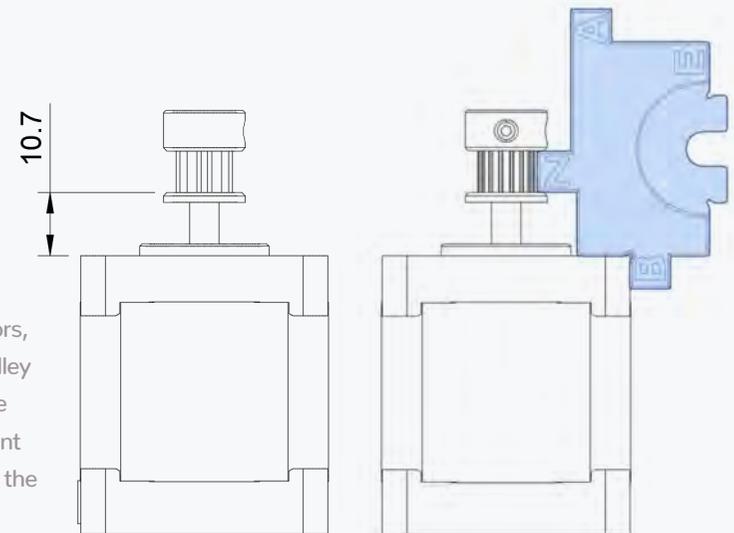
Make sure to use thread locker on the set screws.

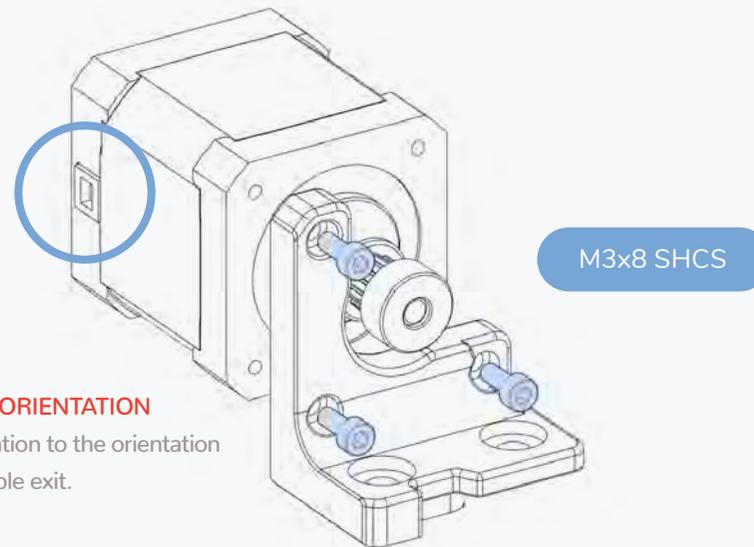
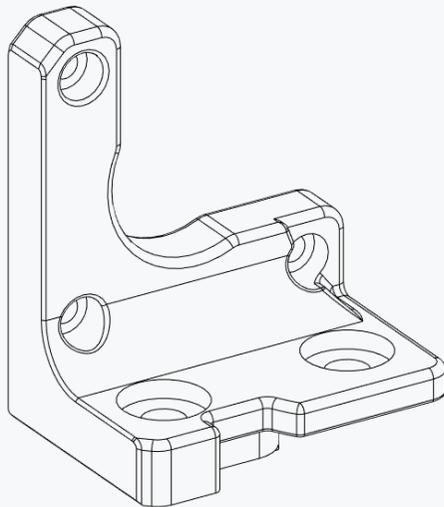


<https://voron.link/fx10m8e>

PULLEY POSITION

Depending on your motors, you may find that the pulley sits better in the opposite orientation. The important thing is the placement of the actual teeth.



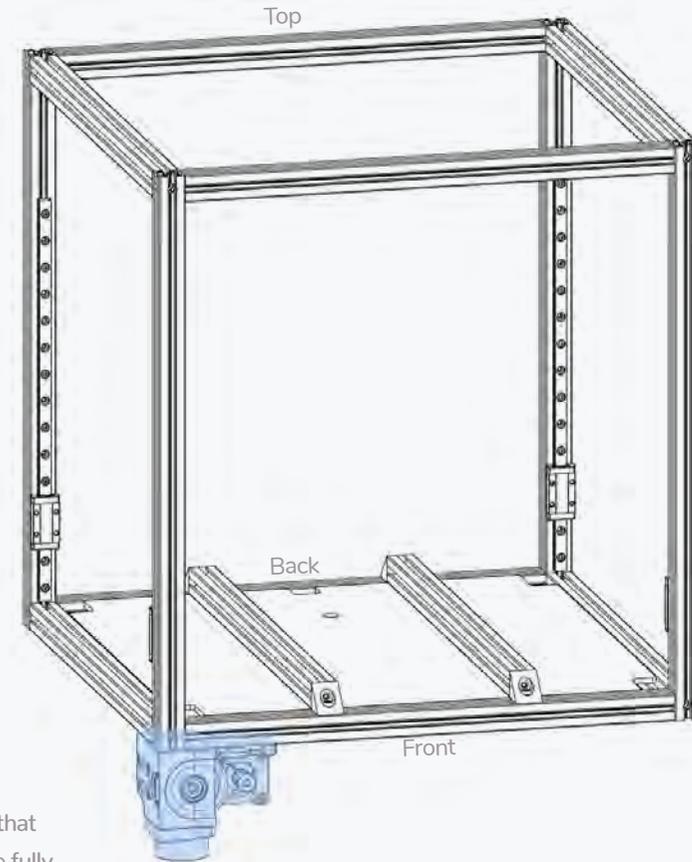
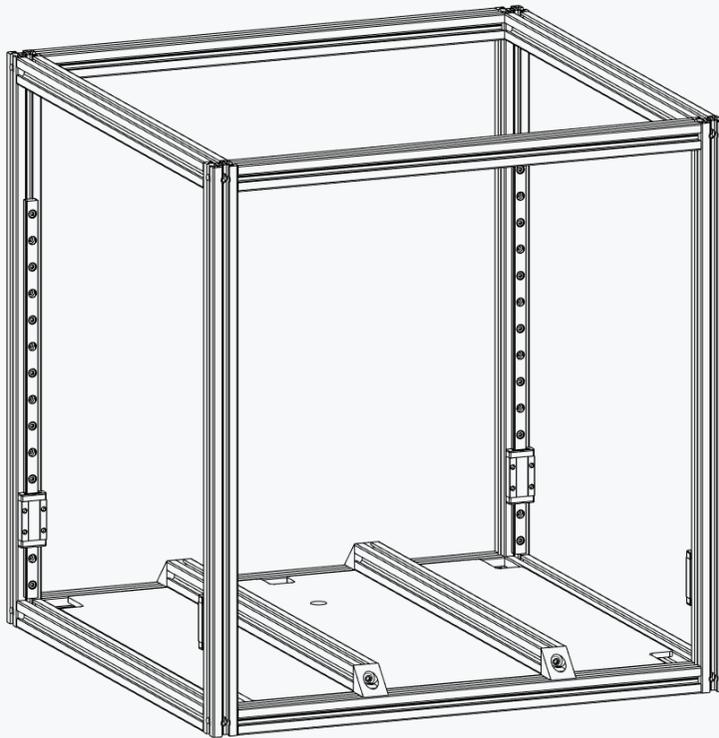


MOTOR ORIENTATION

Pay attention to the orientation of the cable exit.

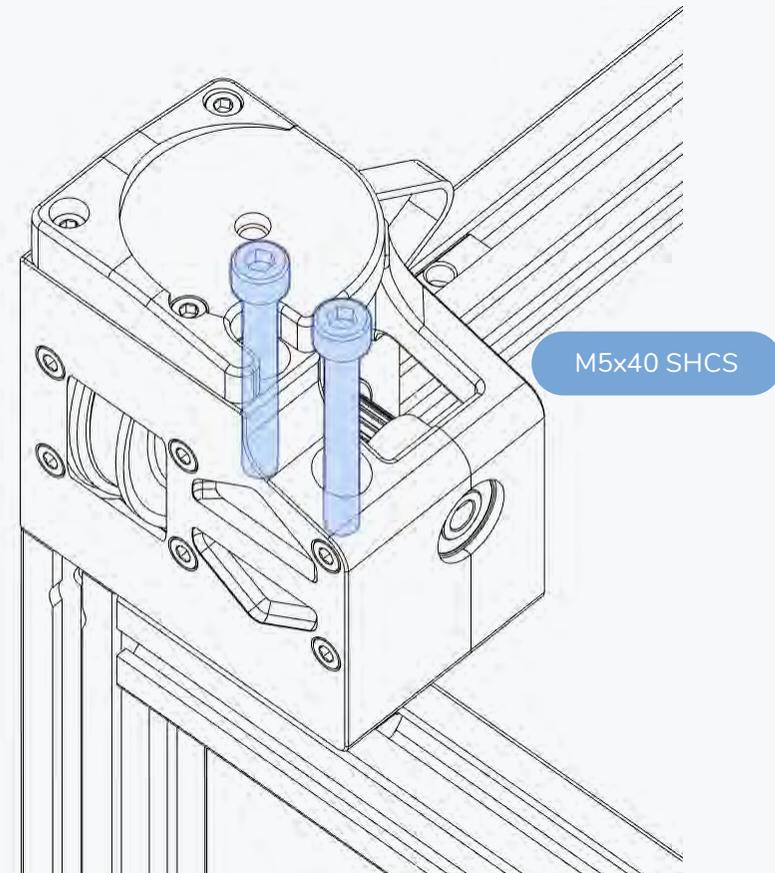
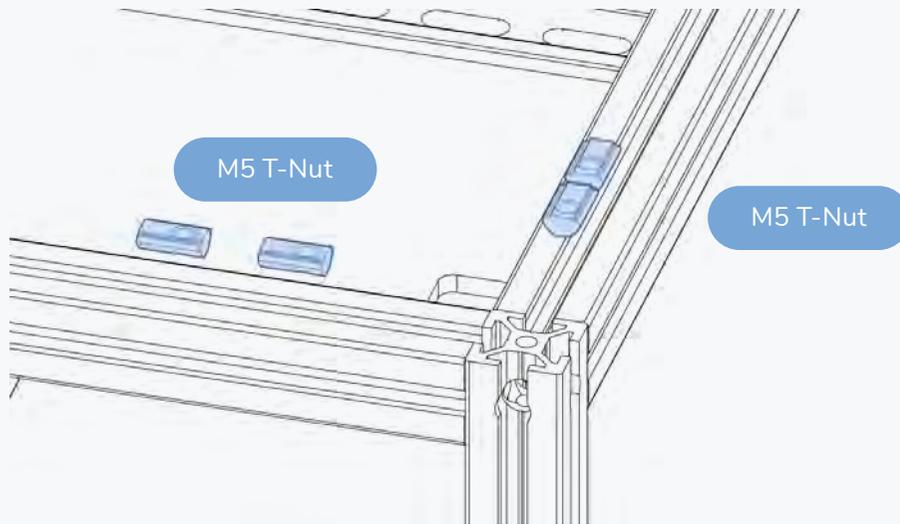
ORIENTATION

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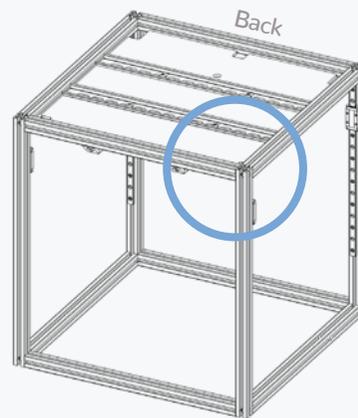
PICTURE FOR ORIENTATION

The Z0 drive is the first Z drive that will be added to the printer. The fully assembled Z Drive is highlighted in blue.



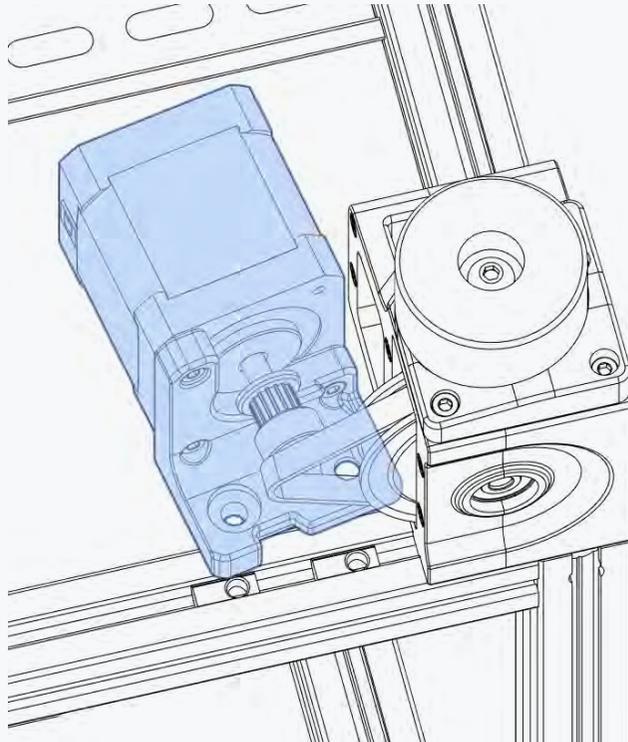
WHICH CORNER IS THIS?

We highlighted the corner with a circle.



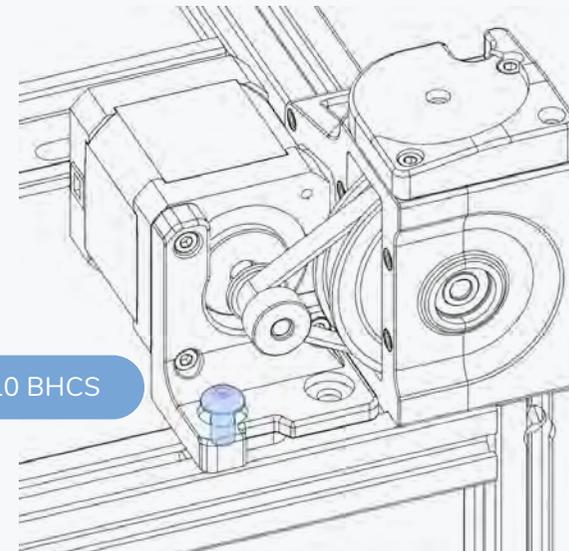
UPSIDE DOWN ASSEMBLY

For ease of assembly we recommend flipping the printer on its head for the next steps.



SLIDE INTO PLACE

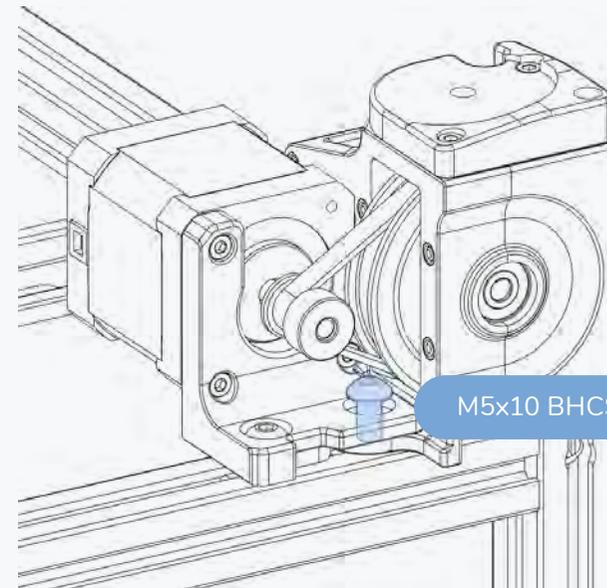
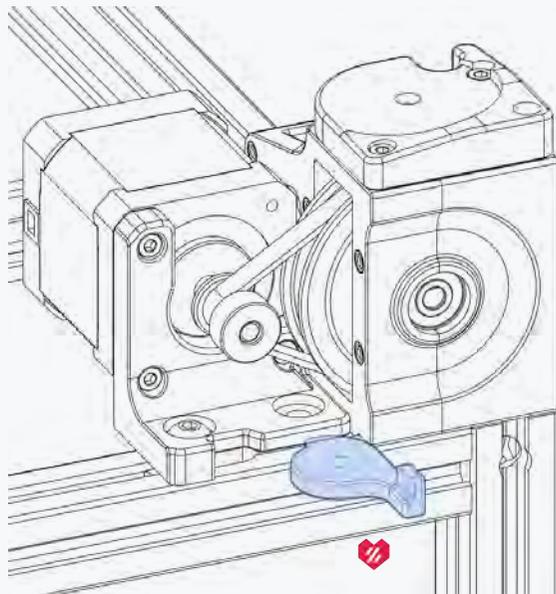
Insert at an angle and slide into place.



M5x10 BHCS

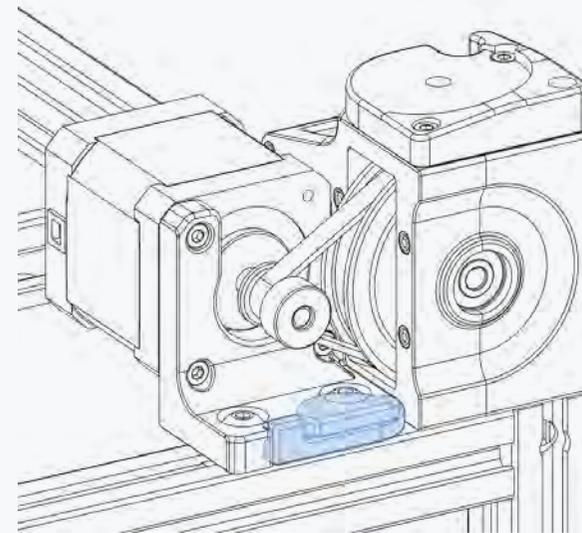
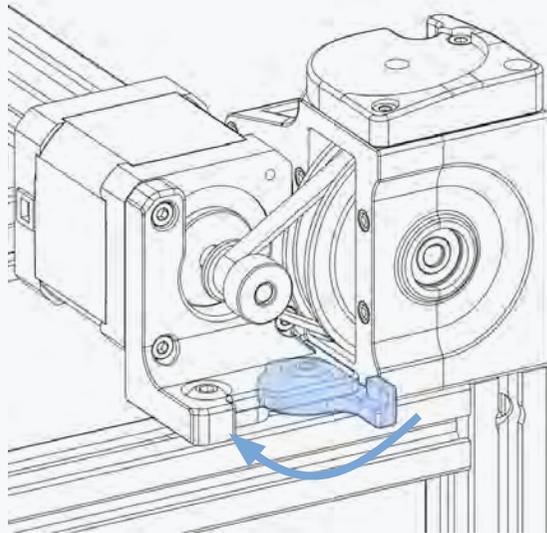
DON'T TIGHTEN

Leave the bolt loose for the next step.



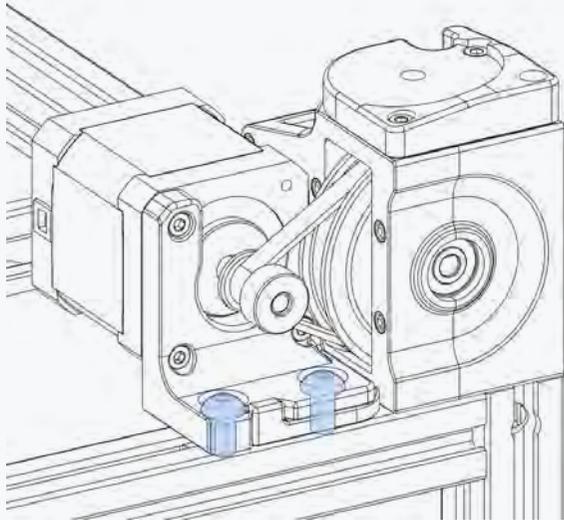
DON'T TIGHTEN

Leave the bolt loose for the next step.



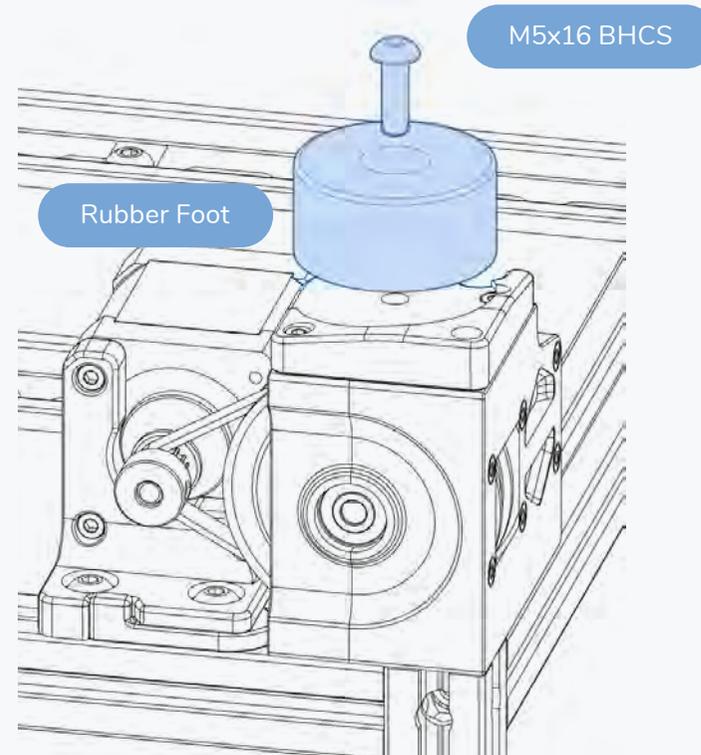
CLOSE THE BELT TENSIONER

Flip the belt tensioner latch closed.



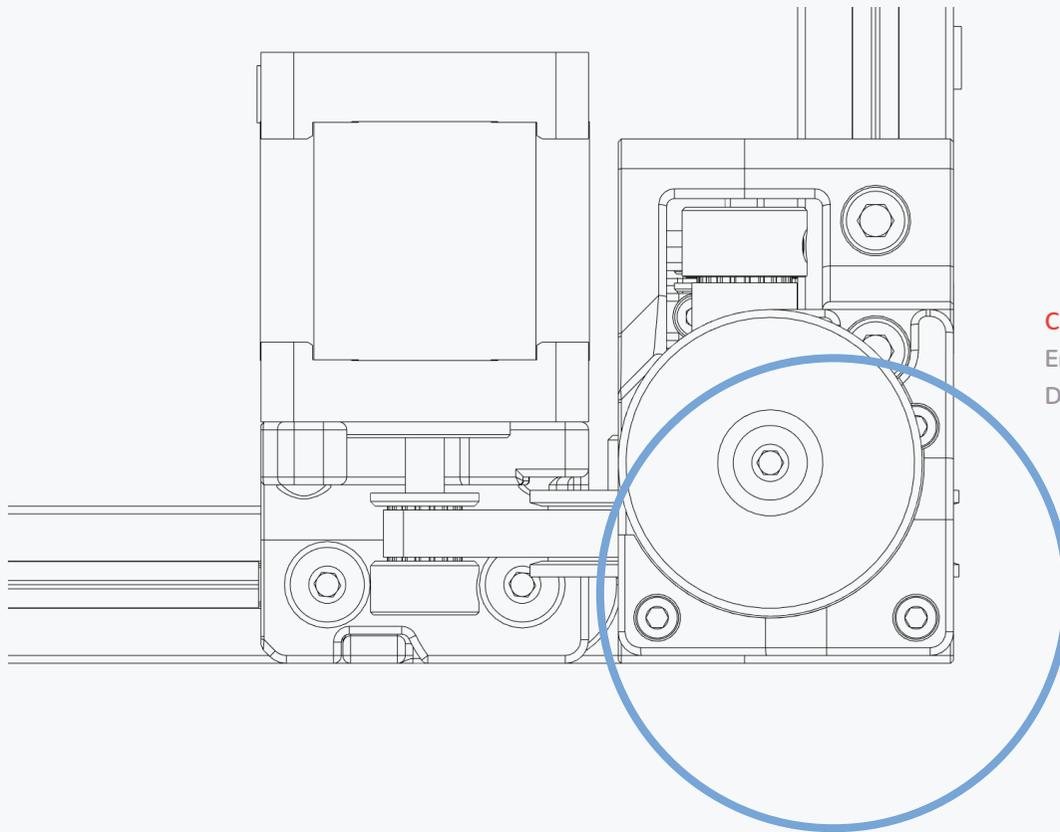
TIGHTEN BOLTS

After closing the tensioner the M5 bolts can be properly fastened.



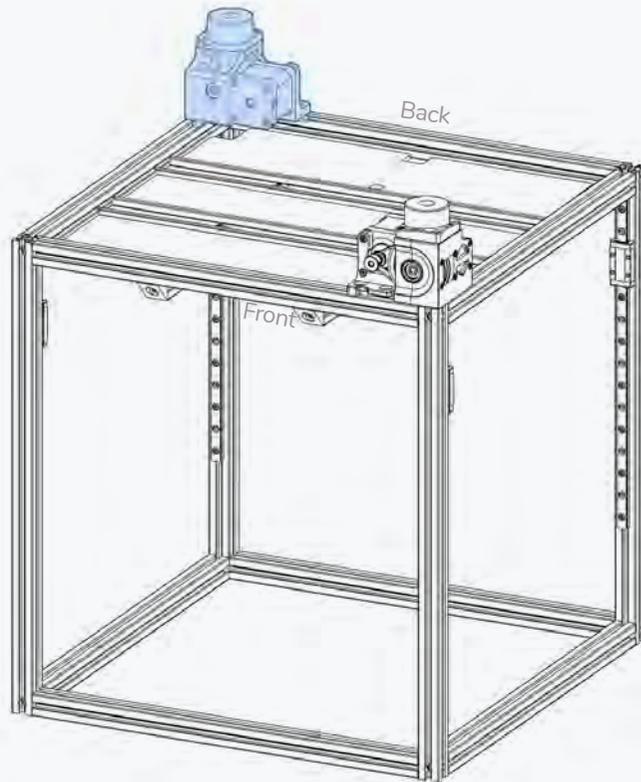
Rubber Foot

M5x16 BHCS

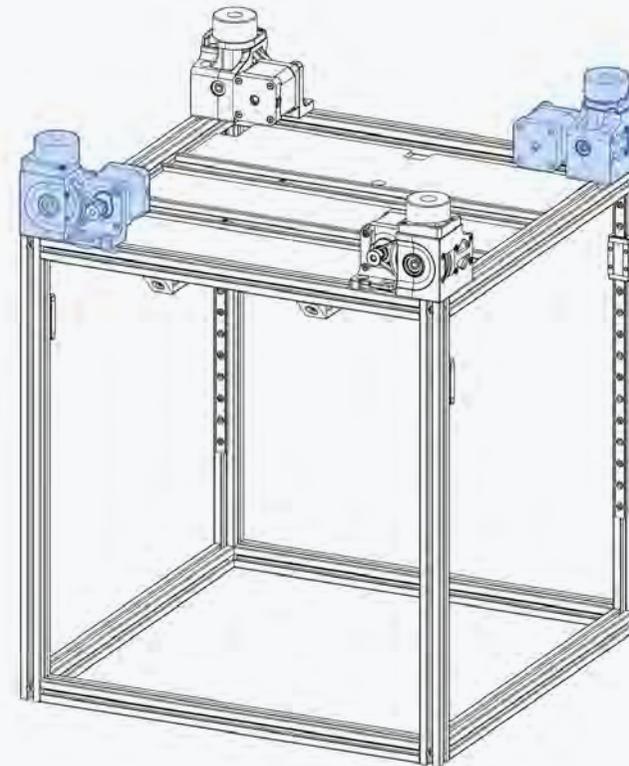


CHECK POSITION

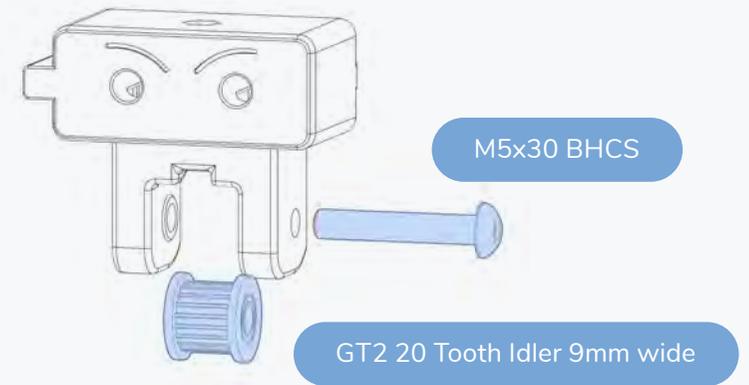
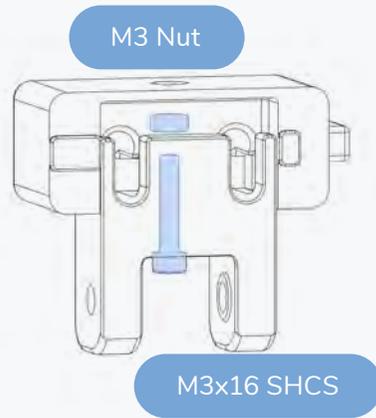
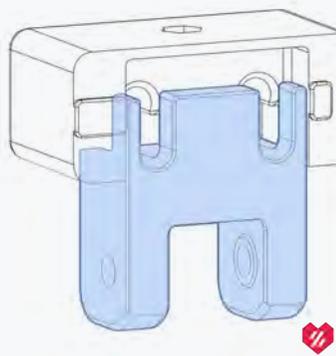
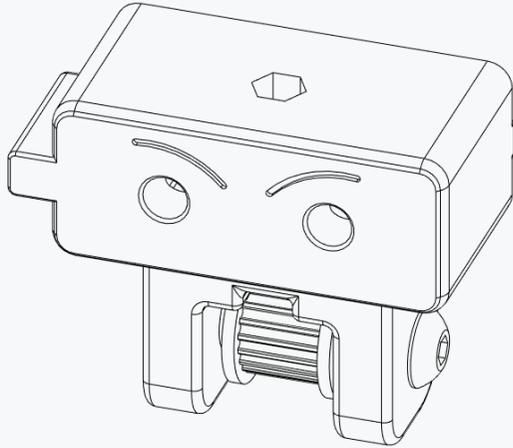
Ensure that closing the belt tensioner did not cause the Z Drive to move/shift. If it did undo the bolts and realign.

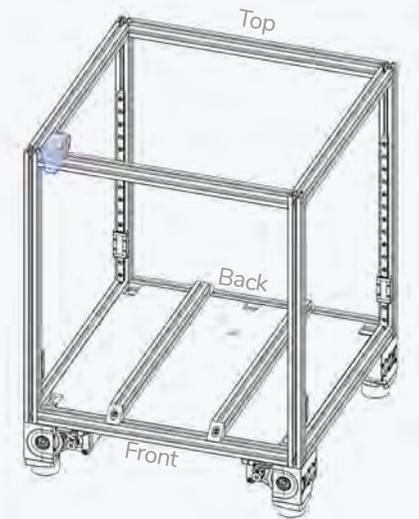


REPEAT INSTRUCTIONS FOR OPPOSING CORNER
Build another Z drives, following the same instructions.



REPEAT INSTRUCTIONS FOR THE MIRRORED DRIVES
Build two more Z drive following the instructions that came before. The printed parts are mirrored.

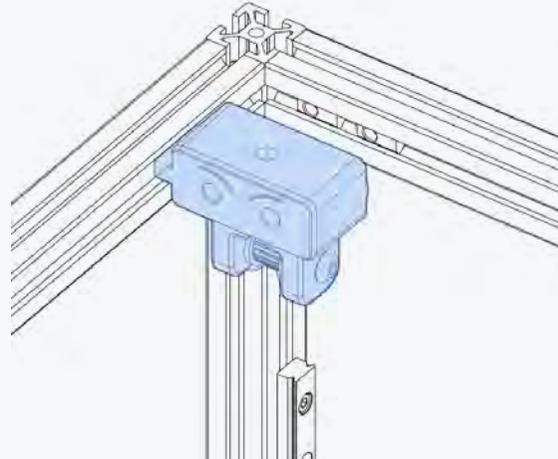
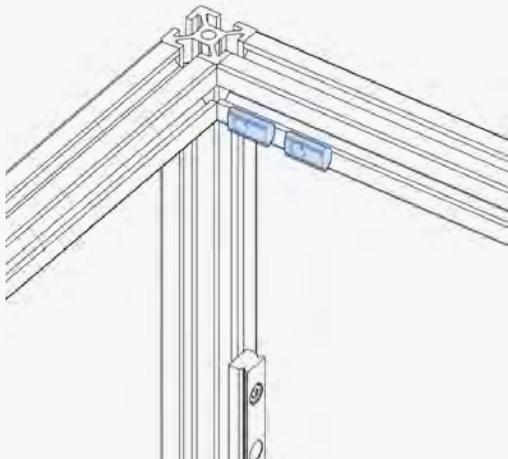




IDLER ORIENTATION

Mind the idler orientation. The idler must face in the same orientation as the pulley in the drive below it.

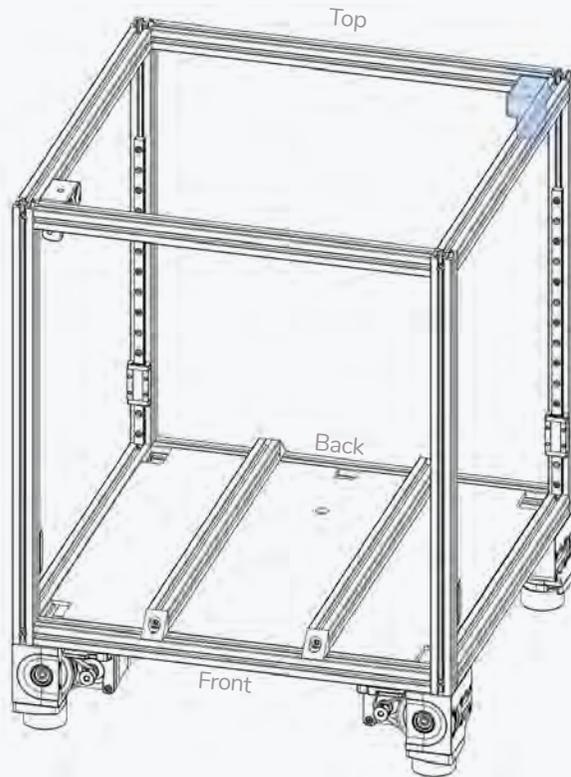
M5 T-Nut



M5x30 BHCS

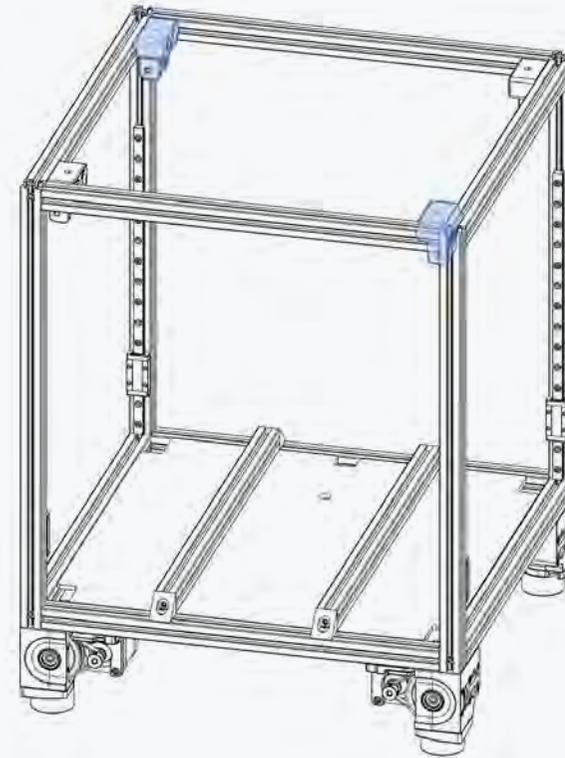
SEAT IN CORNER

Ensure idler is pressed firmly into corner before tightening.



REPEAT INSTRUCTIONS FOR OPPOSING CORNER

Build another Z idler following the same instructions.



REPEAT INSTRUCTIONS FOR THE MIRRORED DRIVES

Build two more Z idlers following the instructions that came before. The printed parts are mirrored.