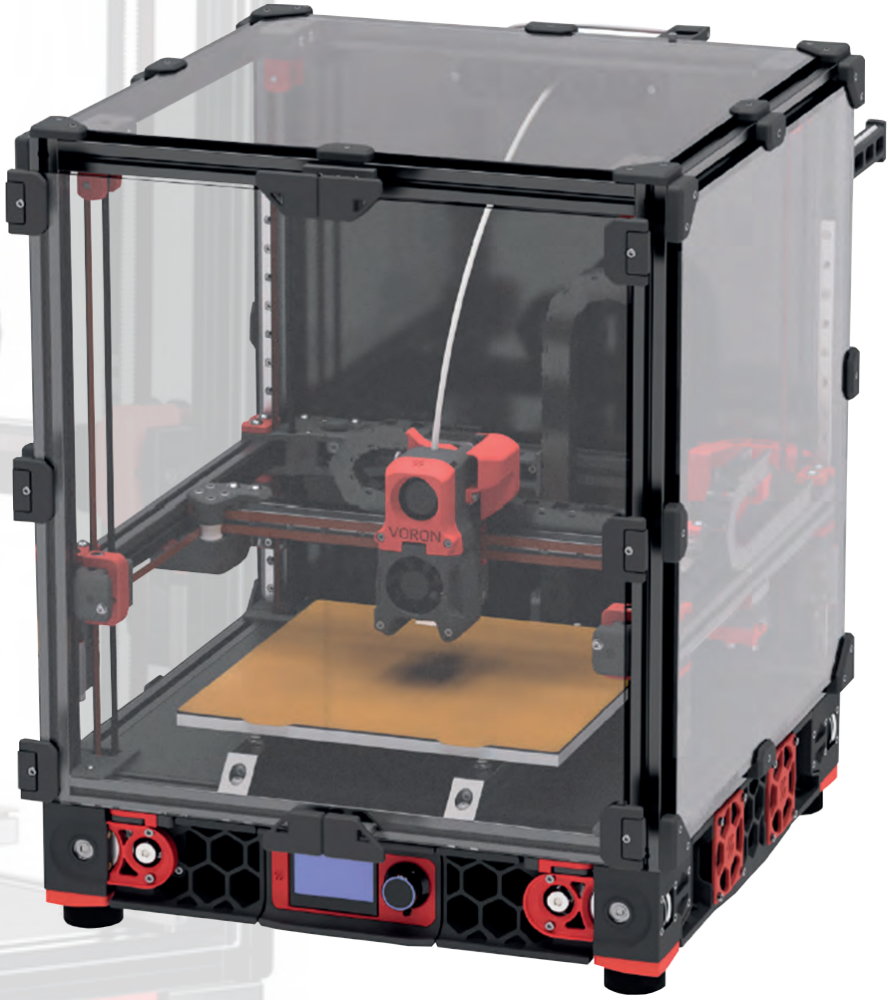
VORON 2.4

KIT 7

- EXTRUDER
- HOTEND



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

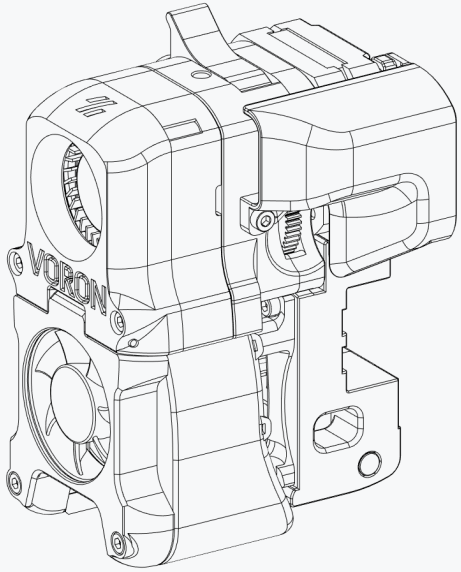
In the comfort of your own home you are about to assemble a robot. This machine can maim, burn, and electrocute you if you are not careful. Please do not become the first VORON fatality. There is no special Reddit flair for that.

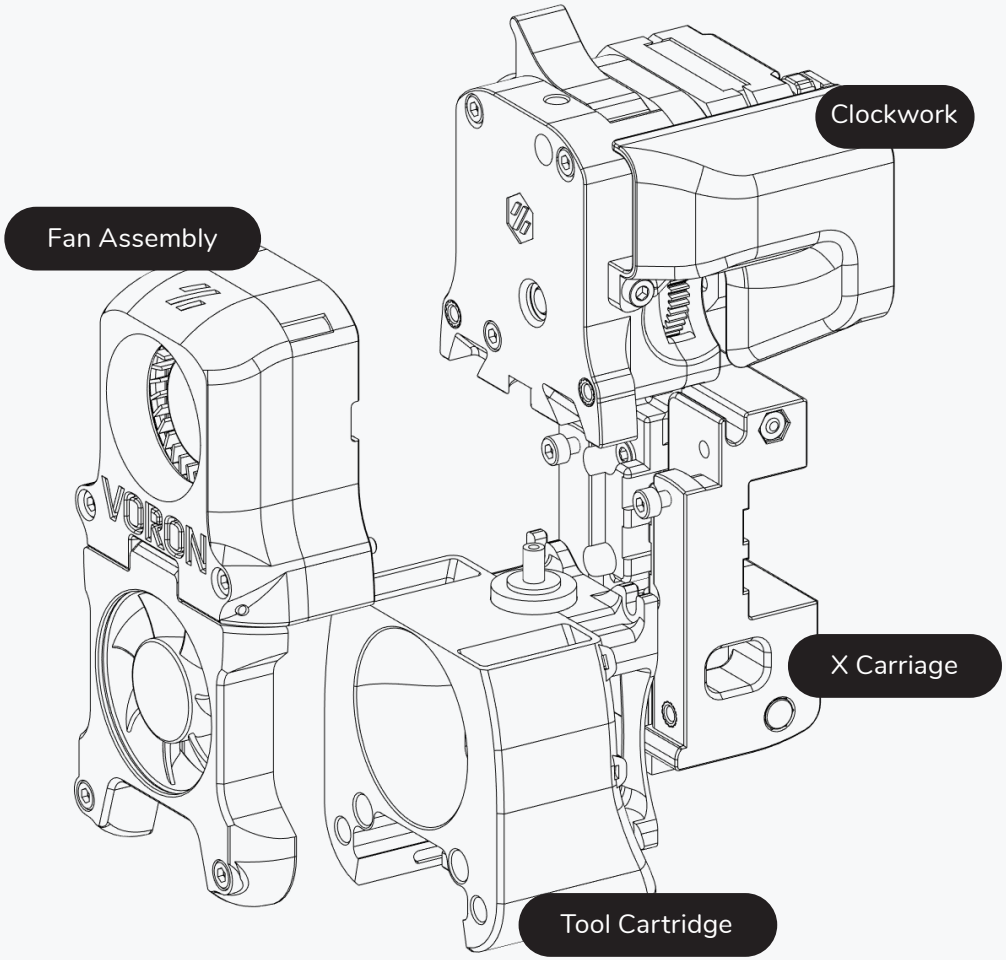
Please, read the entire manual before you start assembly. As you begin wrenching, please check our Discord channels for any tips and questions that may halt your progress.

Most of all, good luck!

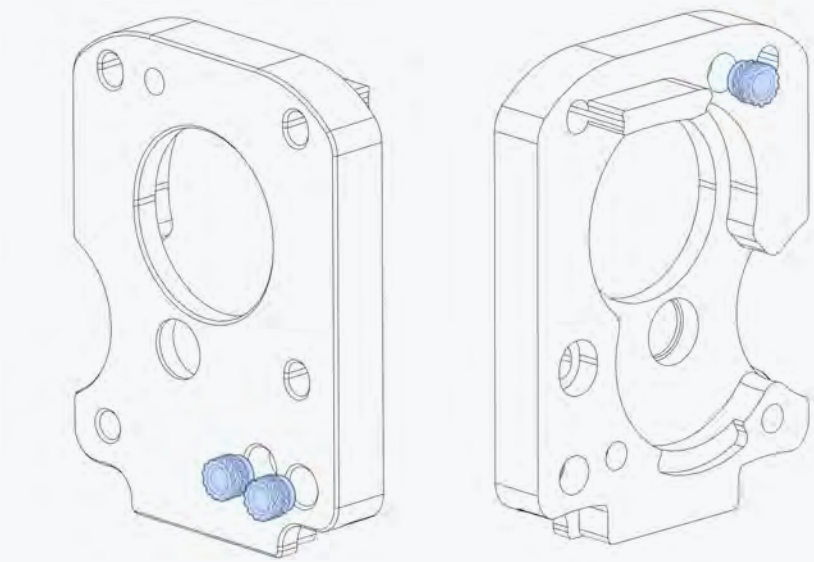
THE VORON TEAM

AFTERBURNER


VORON


Clockwork
Fan Assembly
VORON
X Carriage
Tool Cartridge

HEAT SET INSERTS



Heat Set Insert

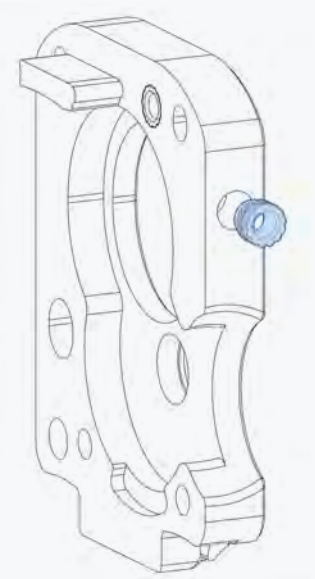
HEAT SET INSERTS

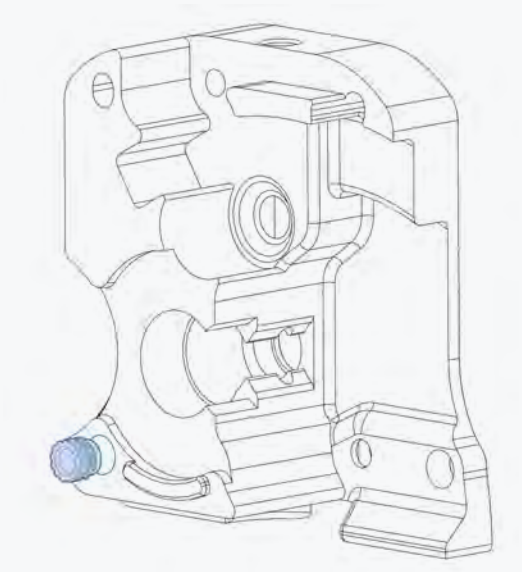
You will need to install heat set inserts into various plastic parts.

If you need help on the correct procedure, ask in Discord.

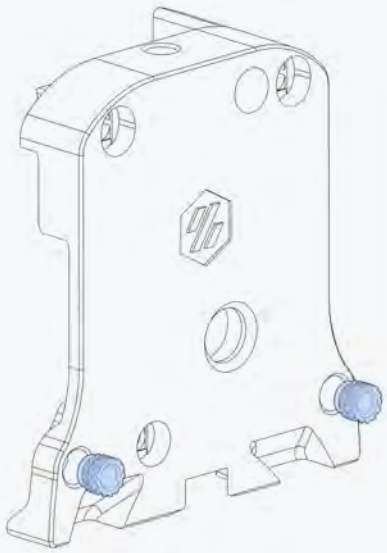
OPTION: TOOLHEAD PCB

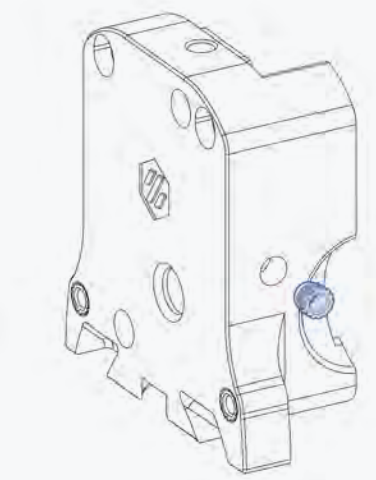
If you opt to use a toolhead PCB, add an additional heat set insert into the alternate part.





Heat Set Insert

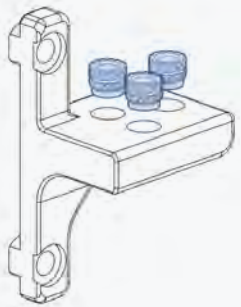




HEAT SET INSERTS

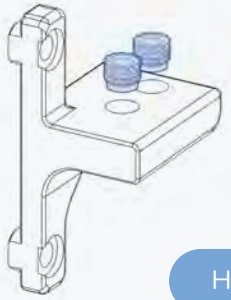
GENERIC CABLE CHAINS

The 3 hole pattern is usually found on generic cable chains.

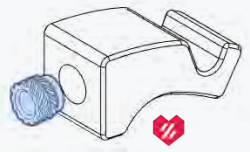


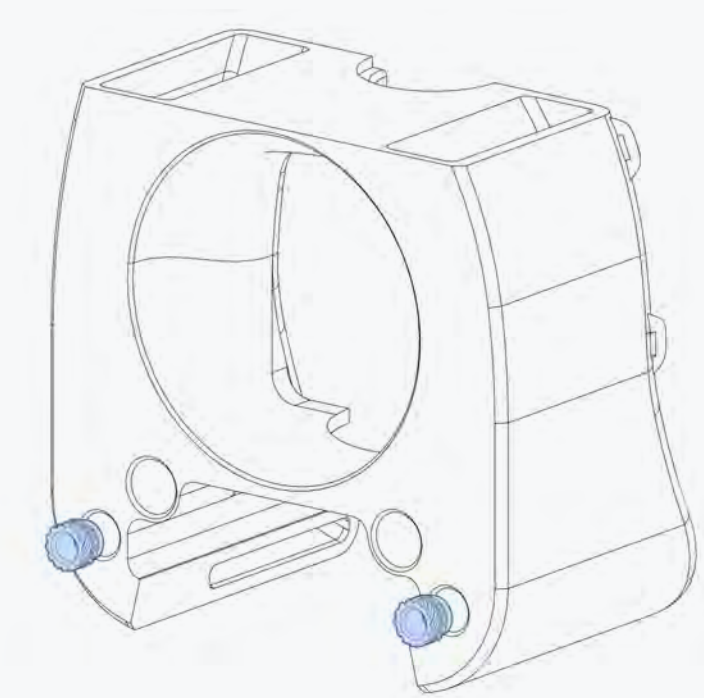
IGUS CABLE CHAINS

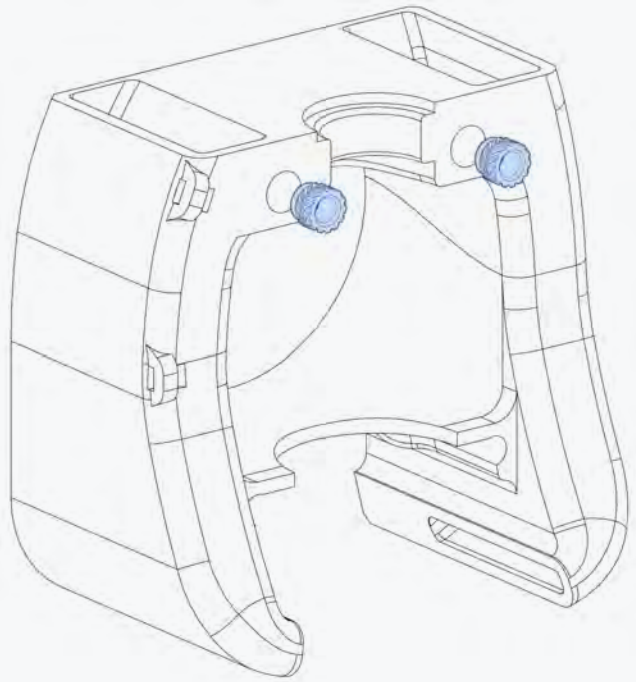
IGUS chains have 2 mounting holes.



Heat Set Insert





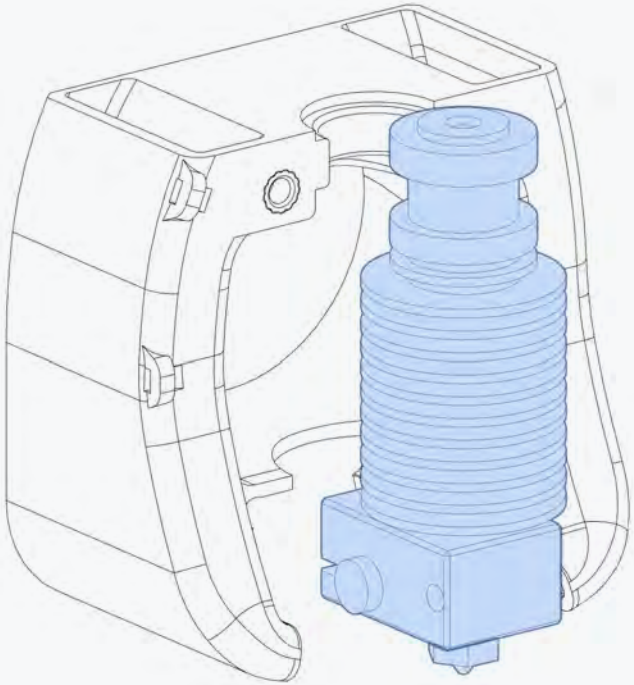


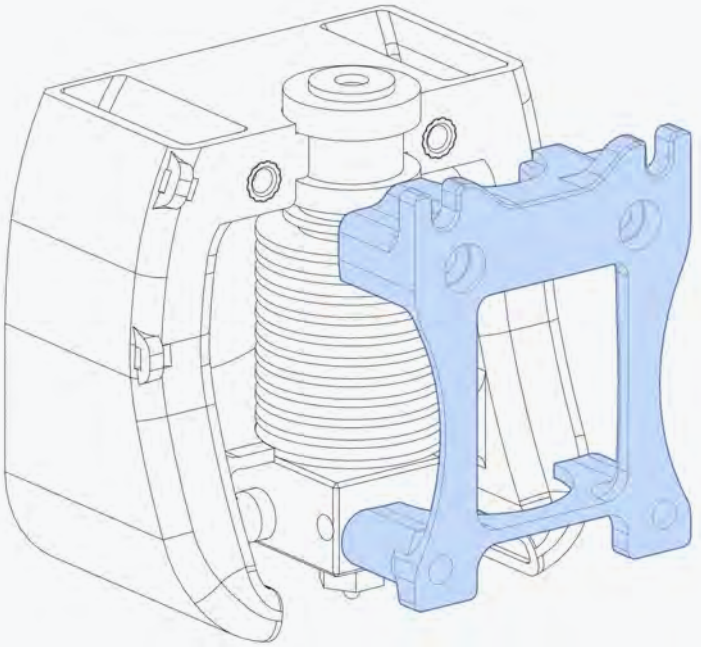
Heat Set Insert

AVAILABLE MOUNTS

We also provide mounts for other hotends.
They are assembled in a similar manner.

E3D V6 Hot End





FUNDUCT AND HOTEND SUPPORT

Funduct and HotEnd support differ depending on the hotEnd chosen. The drawings represents the suitable attachment for V6.

HEATER AND SENSOR

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

ALTERNATIVE HOT END

As an alternative to the standard V6, we tested higher-performance HotEnds:

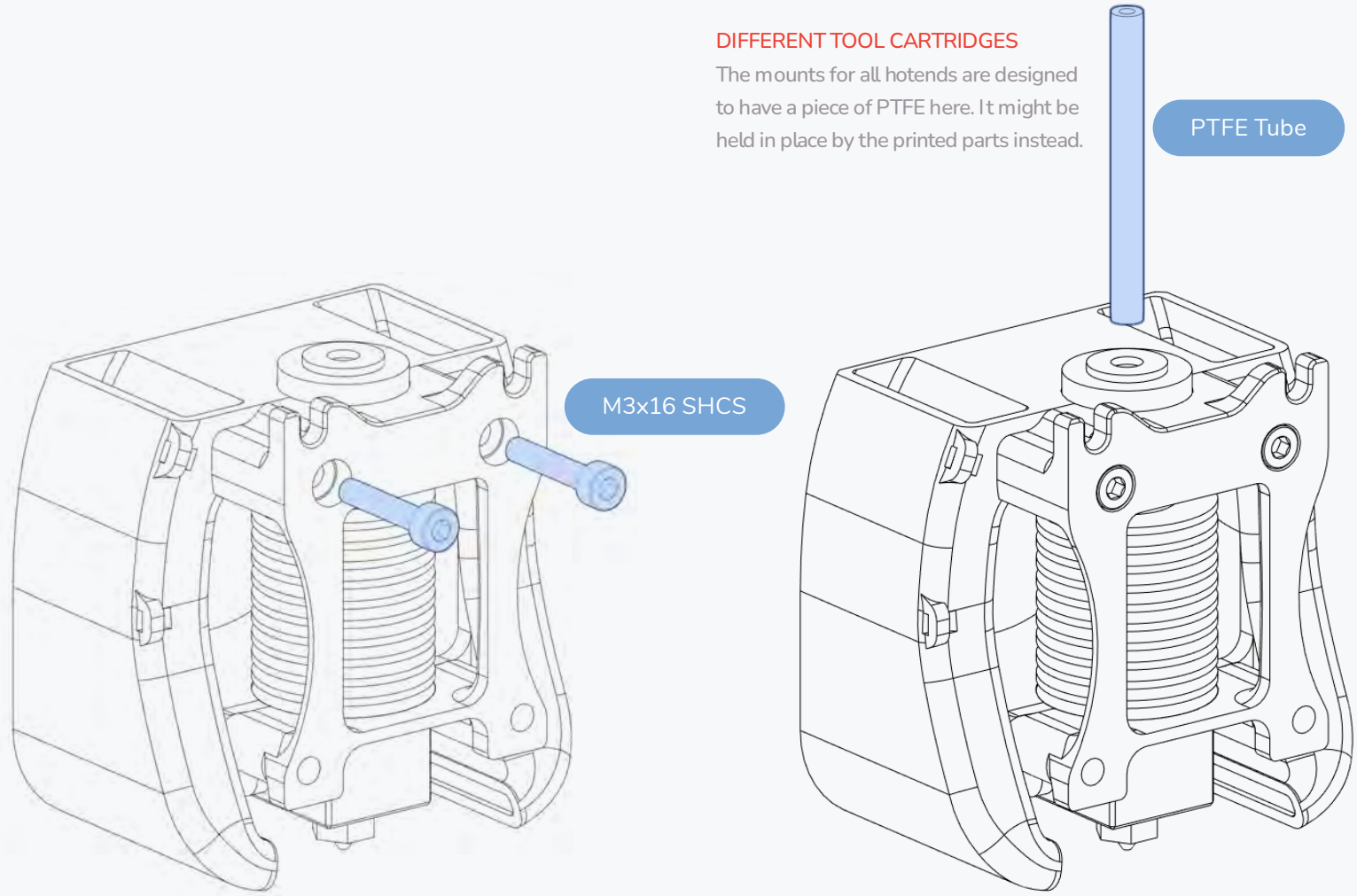
Revo Voron Hot End

Mosquito Magnum Hot End

Dragonfly Hot End

DIFFERENT TOOL CARTRIDGES

The mounts for all hotends are designed to have a piece of PTFE here. It might be held in place by the printed parts instead.

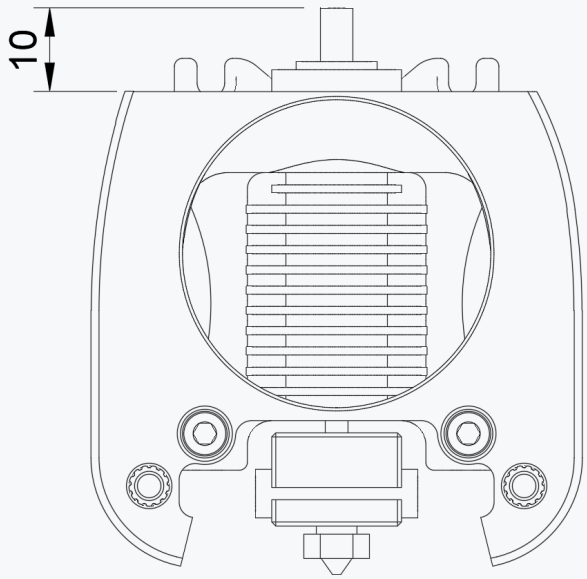


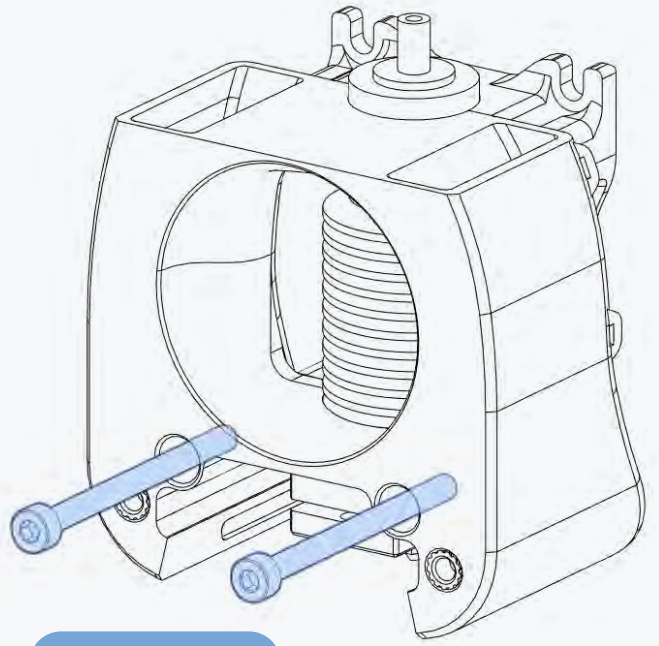
TOOL CARTRIDGE

PTFE STICKOUT

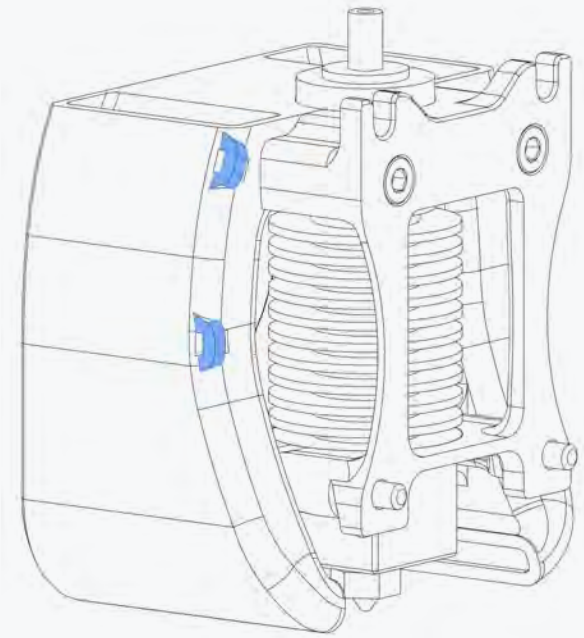
The PTFE tube should end 10mm above the surface of the printed part.

The stick out length might vary if you use an extruder other than the Clockwork.



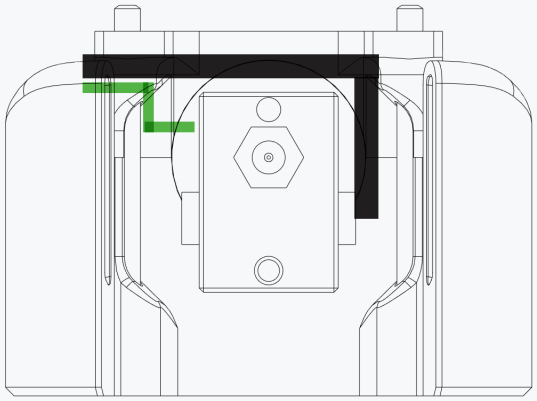


M3x40 SHCS



WIRING PATH

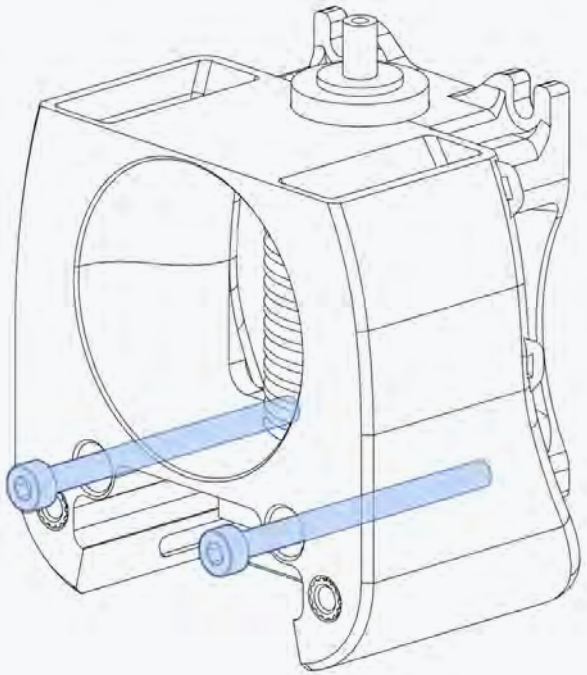
Guide the wires in the highlighted path.

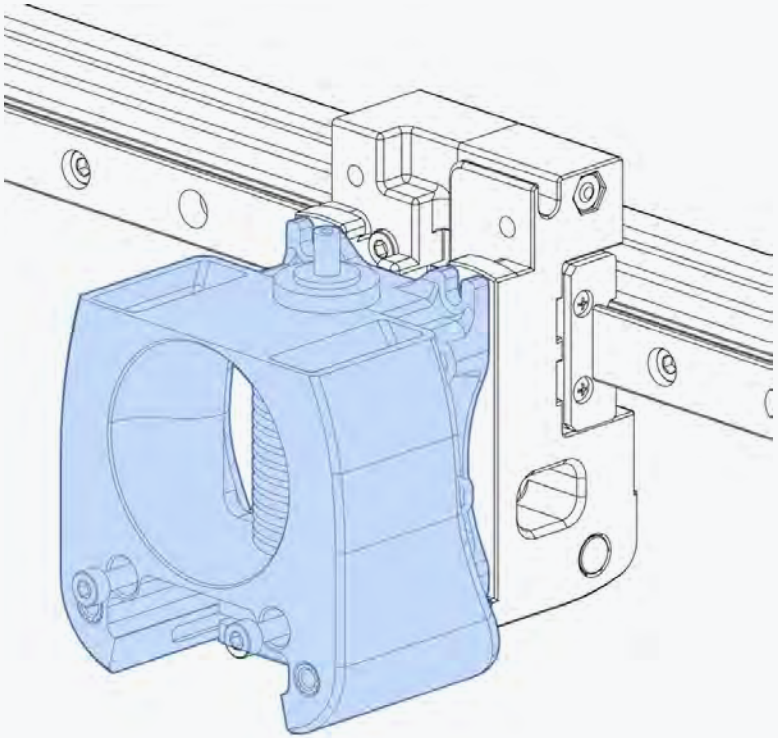


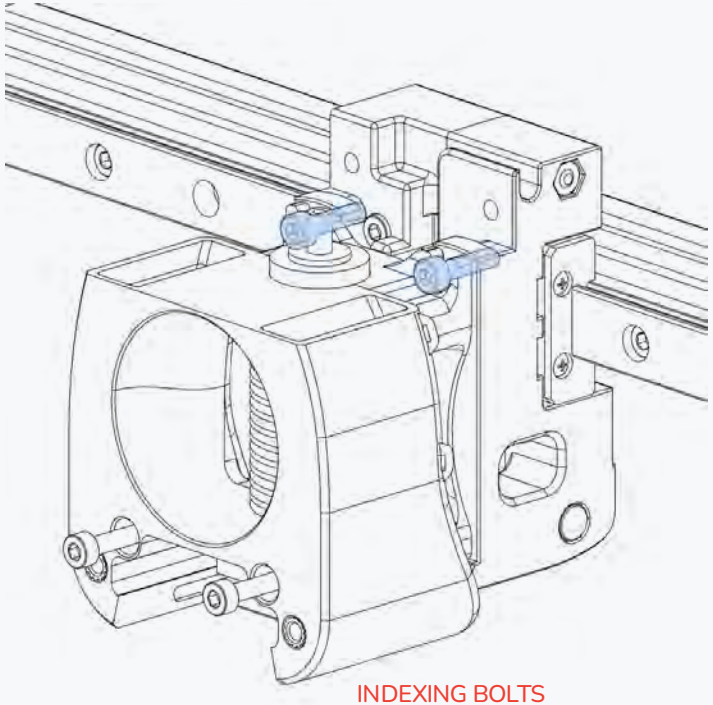
CHECK ORIENTATION

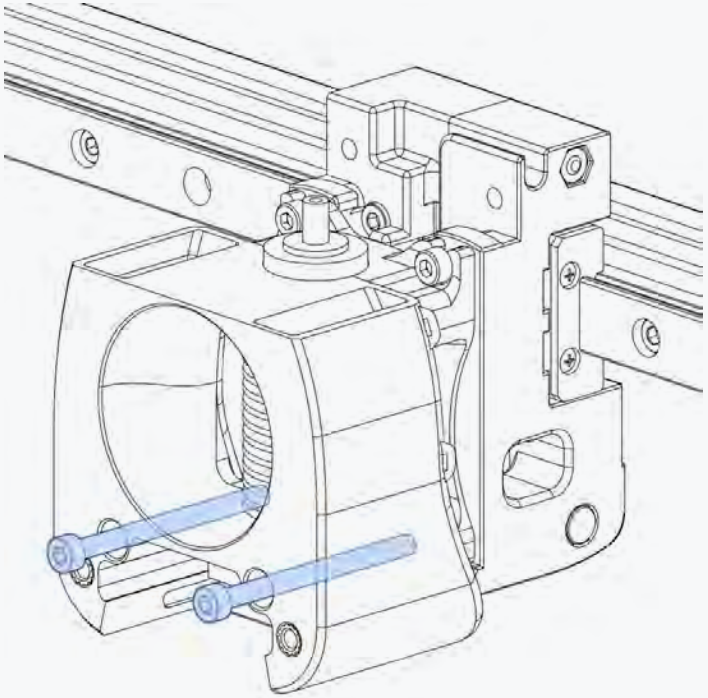
The heater block must point forwards.

TOOL CARTRIDGE









INDEXING BOLTS

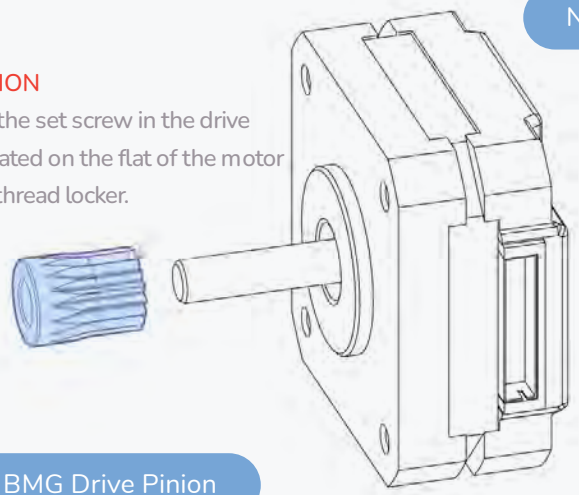
The bolts are used to index the tool cartridge. Leave them slightly loose so that the cartridge can be slid out.

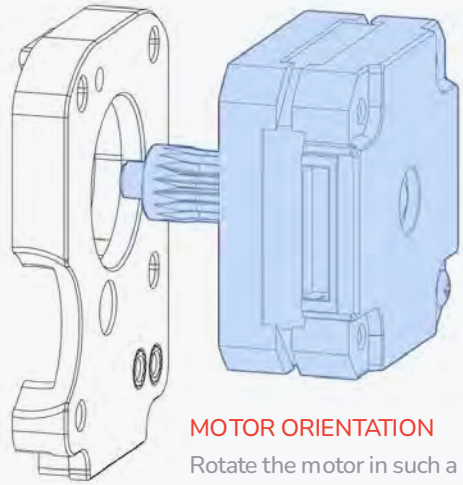
MOTOR PLATE

NEMA 17 Stepper

DRIVE PINION

Make sure the set screw in the drive pinion is seated on the flat of the motor shaft. Use thread locker.



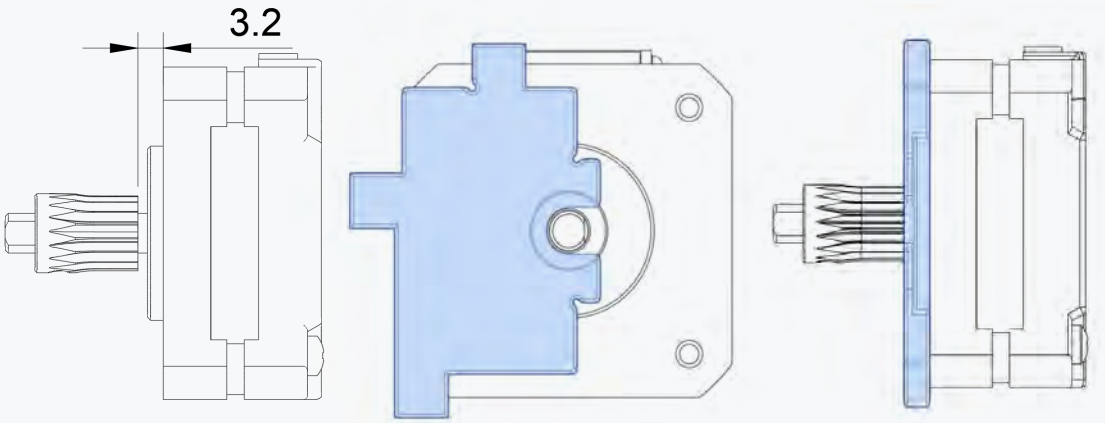


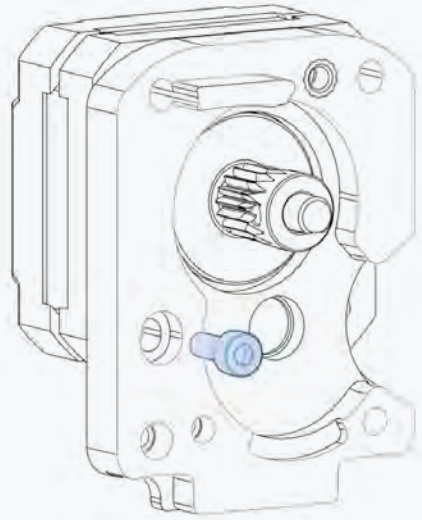
MOTOR ORIENTATION

Rotate the motor in such a way that the connector/wires are on the left side when looking at it from the back.

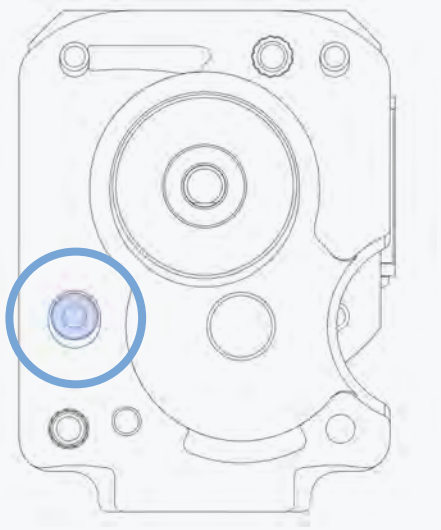
This side will be covered by the cable cover later.

BMG Drive Pinion





M3x8 SHCS

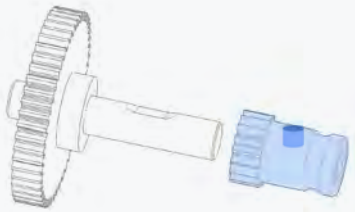


ADJ USTABLE M OTOR POSITION

The motor position is adjustable to allow for a proper meshing of the drive gears.

Start in the top most position of the slot.

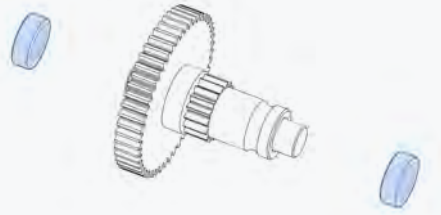
DRIVE GEAR



BMG Drive Gear

DRIVE GEAR

Make sure the set screw in the filament drive gear is seated against the notch in the shaft. Carefully tighten the set screw, the head is easy to strip.

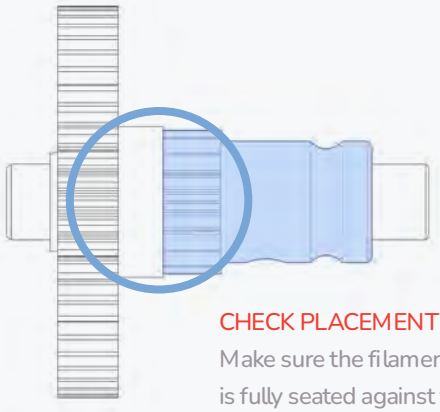


MR85 Bearing

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.

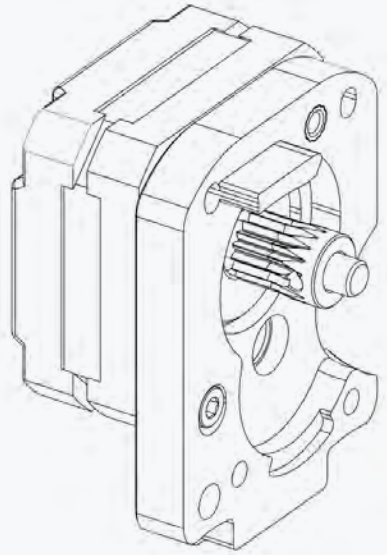
Pressing the bearings on the shaft will damage them.
Lightly sand the shaft if required.

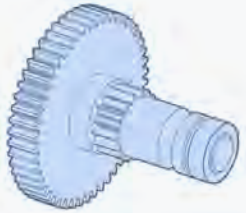


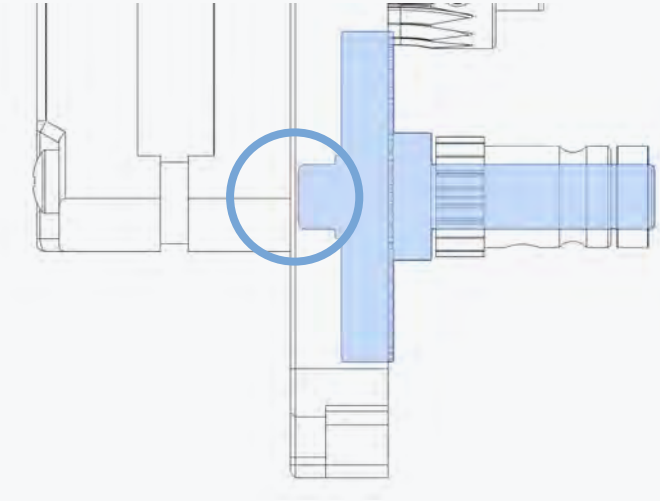
CHECK PLACEMENT

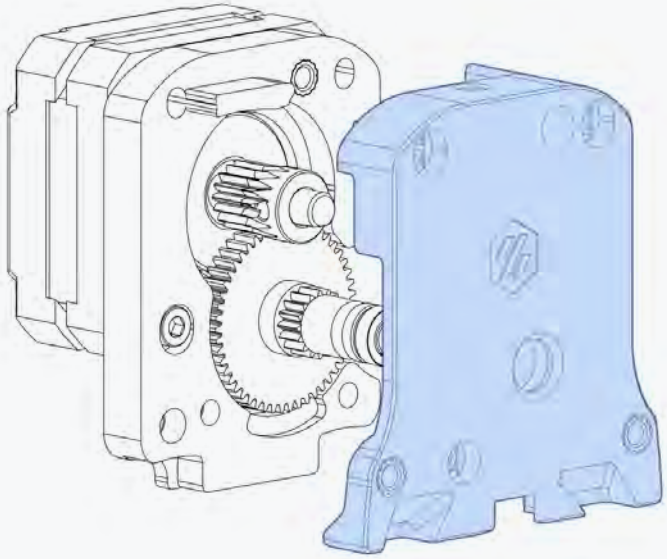
Make sure the filament drive gear is fully seated against the drive shaft gear.

https://voron.link/p0xac5e

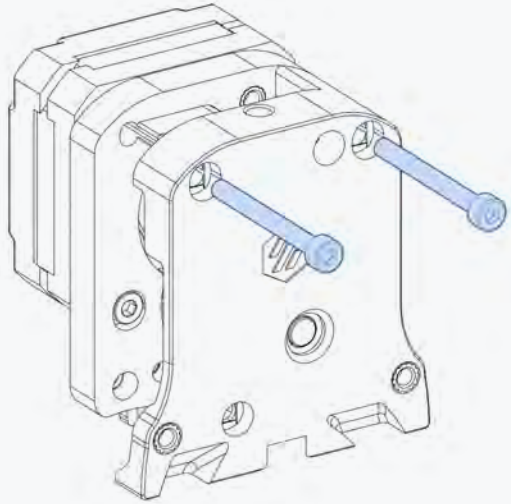








M3x30 SHCS



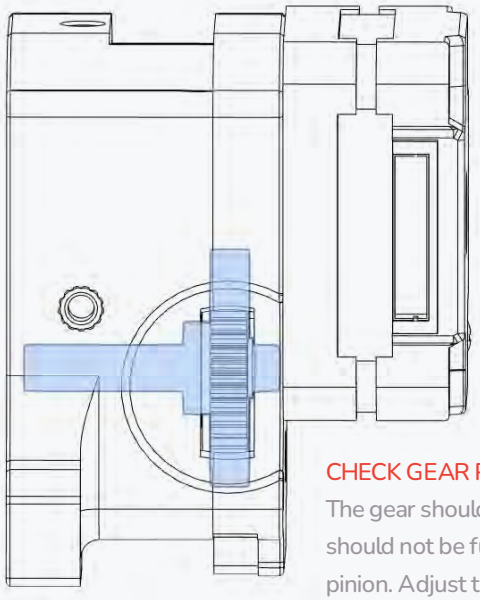
CHECK FOR CLEARANCE

The drive shaft must not touch the motor housing.

Check if the shaft has sufficient clearance when fully seated.

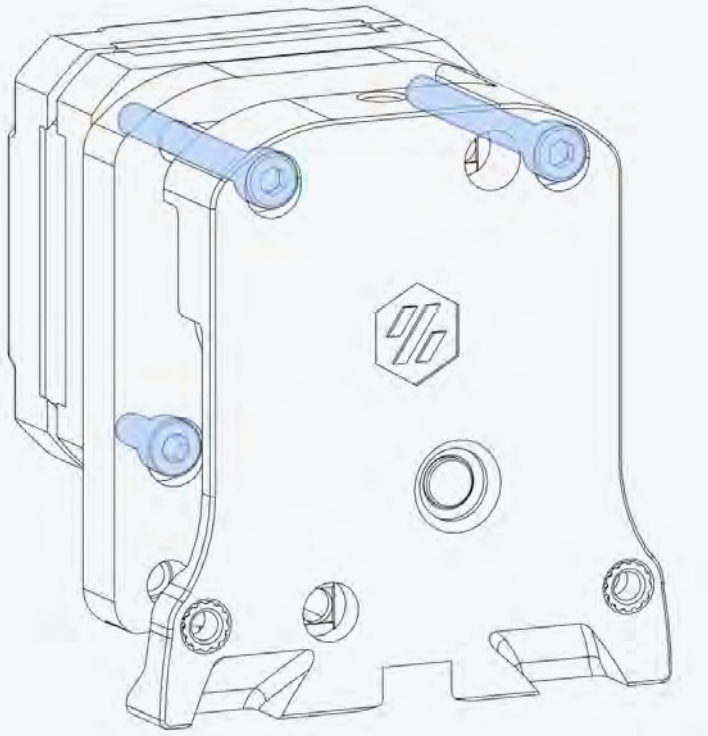
Sand the face of shaft if required.

GEAR LASH CHECK



CHECK GEAR PLAY

The gear should have a slight play and should not be fully tight against the pinion. Adjust the position of the motor until you have a faint play.

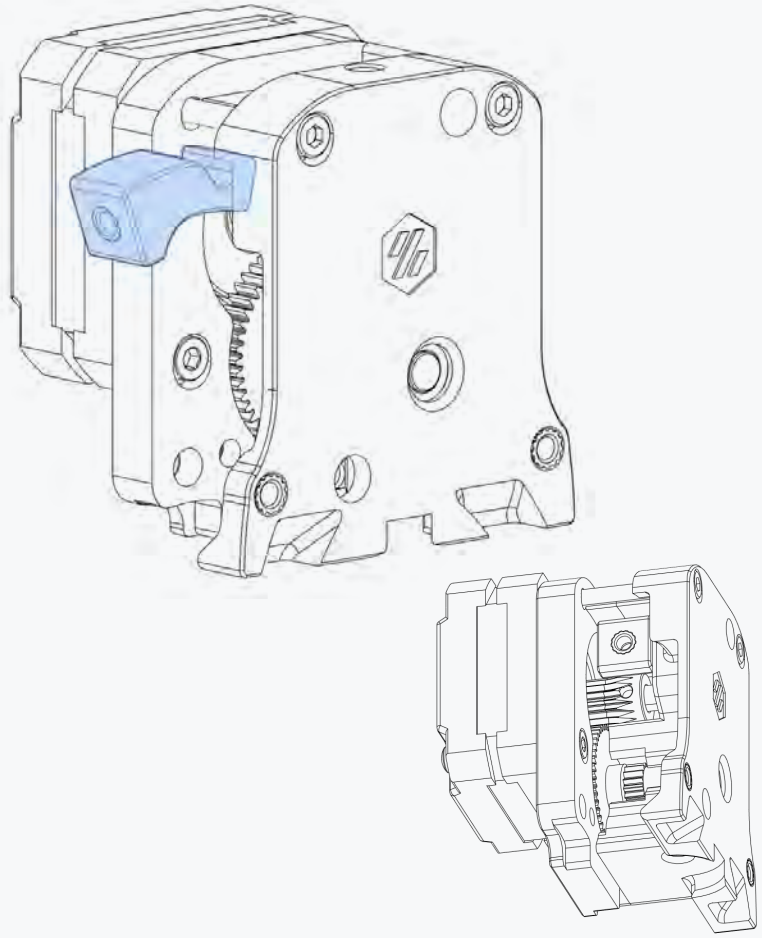


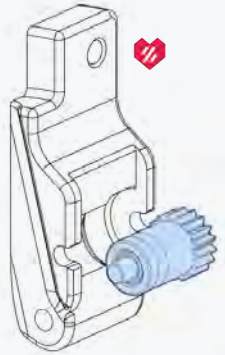
LUBRICATE BEARINGS

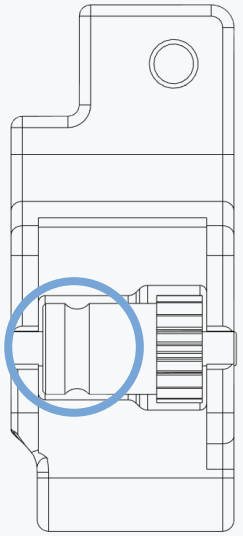
A lubrication film is required to ensure smooth operation and longevity.
Refer to the BOM for lubricant options - look for a “light grease”.

https://voron.link/dncvwdm

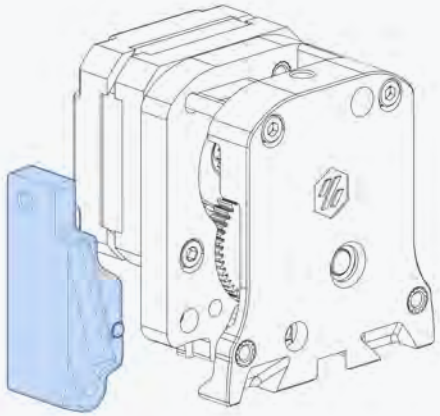
BMG Idler Assembly

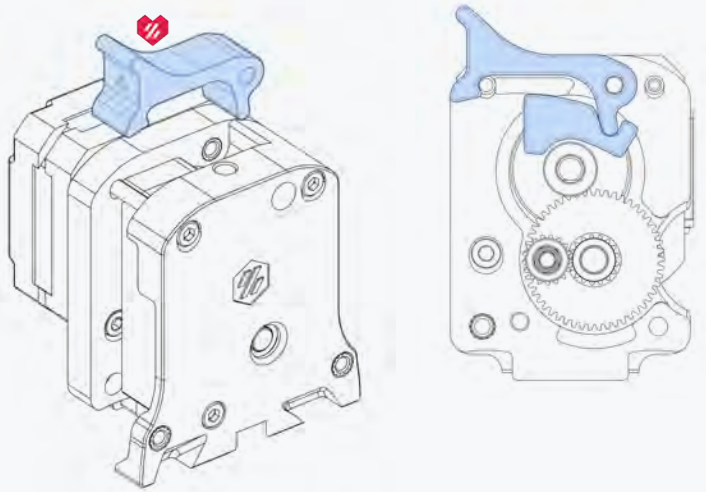


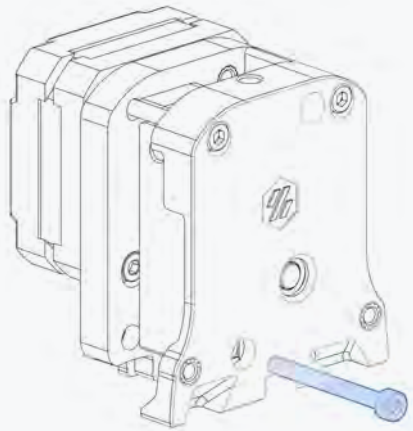




GUIDLER & LATCH

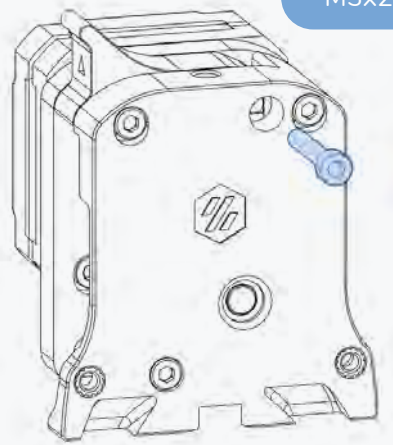




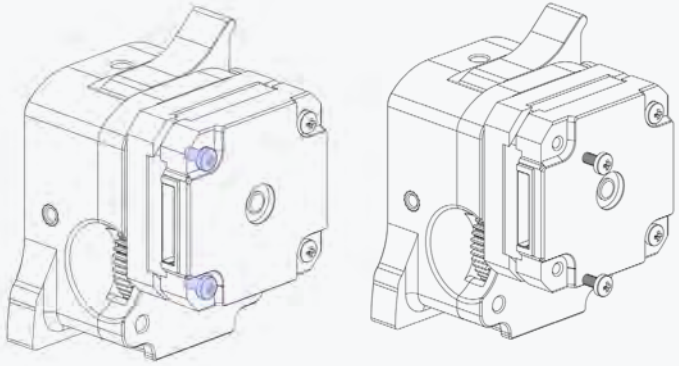


M3x30 SHCS

M3x20 SHCS

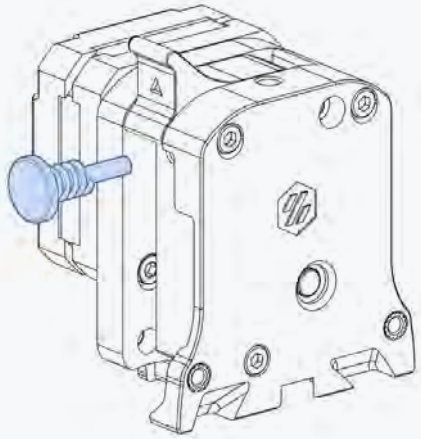


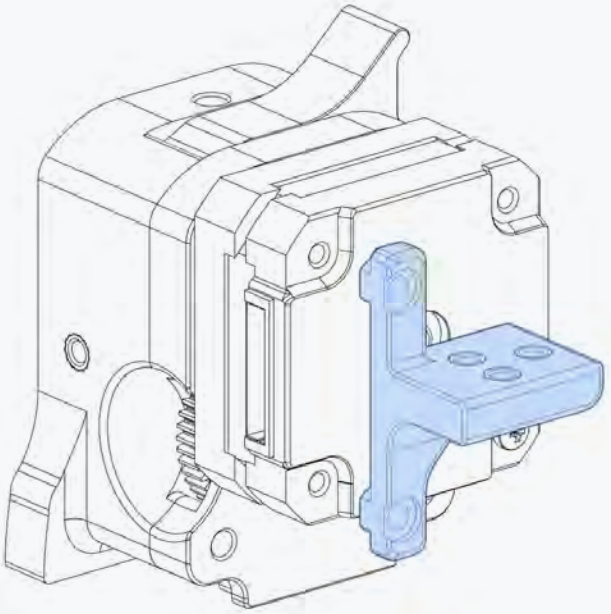
BMG Thumb Screw



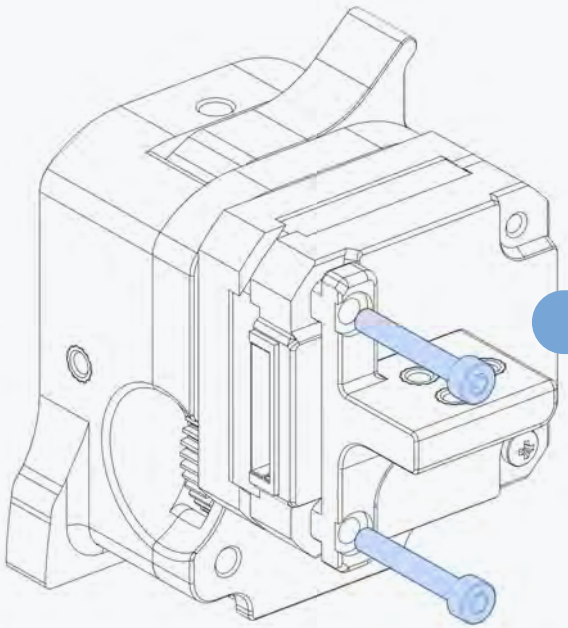
REMOVE SCREWS

Carefully remove the screws from the left side of the motor. They will be replaced with new bolts in the next step.

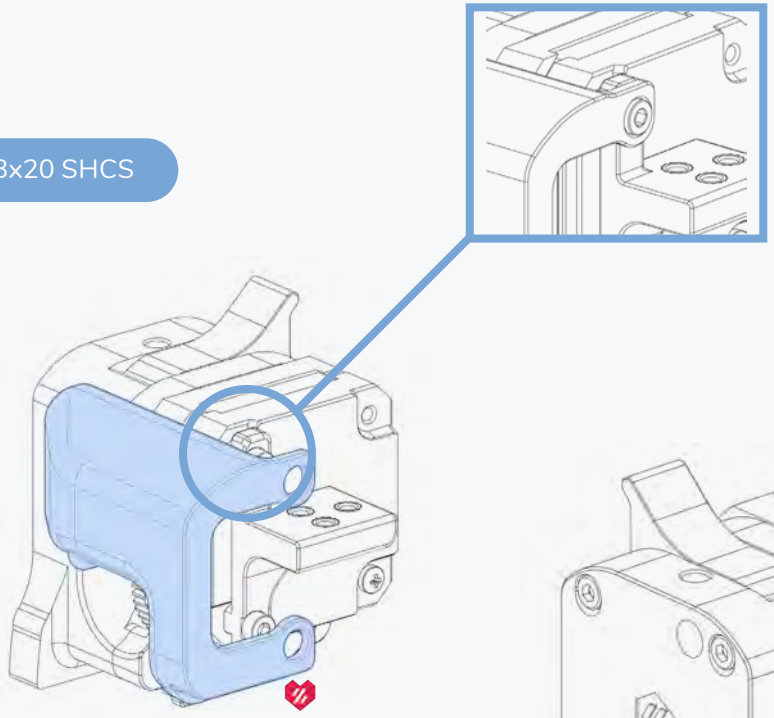




CLOCKWORK

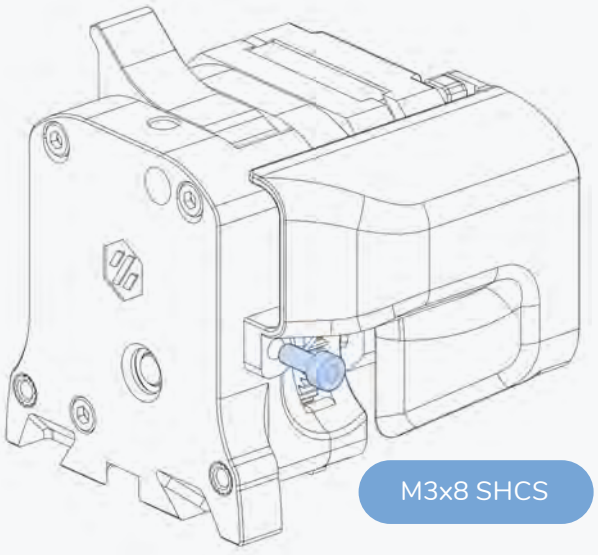


M3x20 SHCS

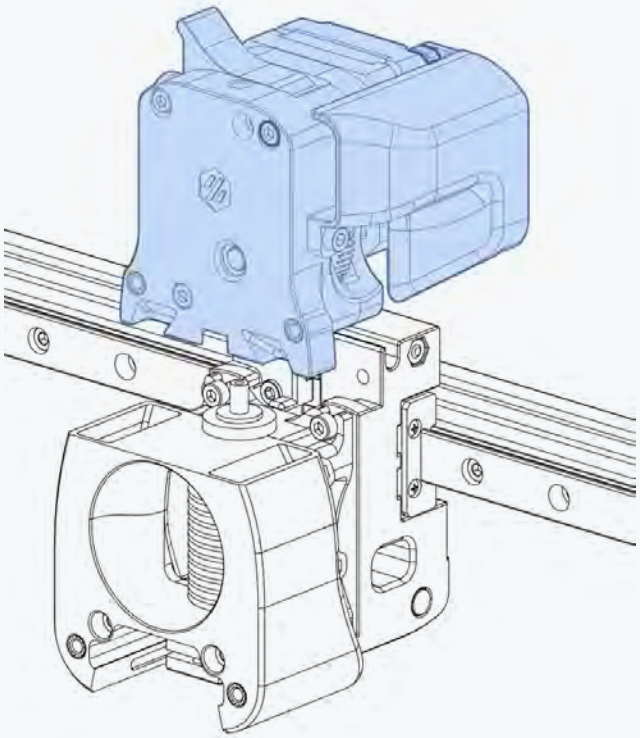


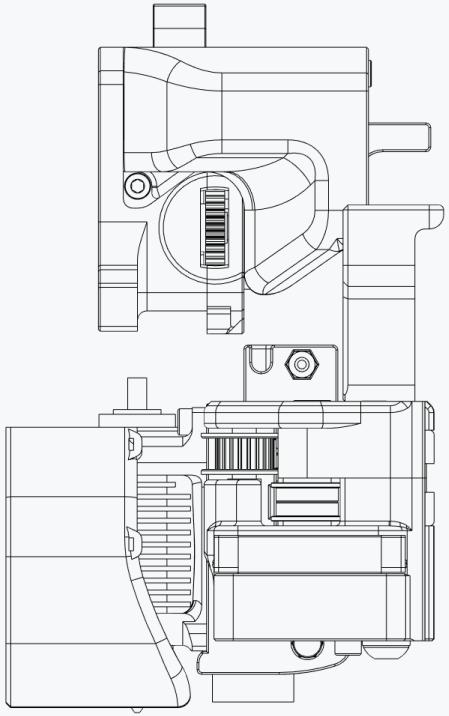
OPTION: TOOLHEAD PCB

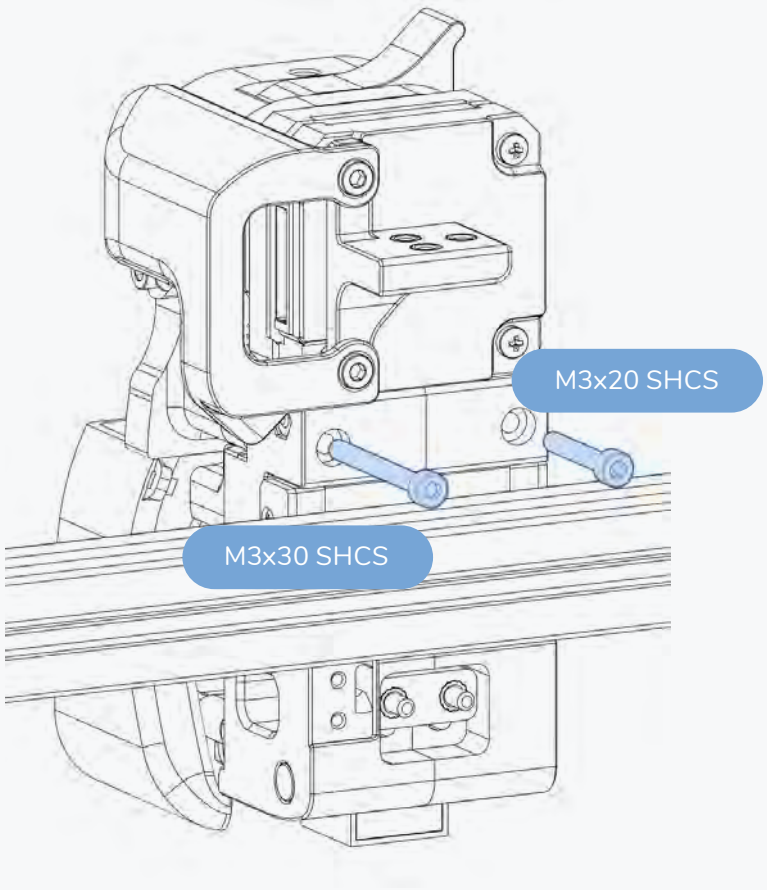
If you opted to use a toolhead PCB, skip the wire cover.

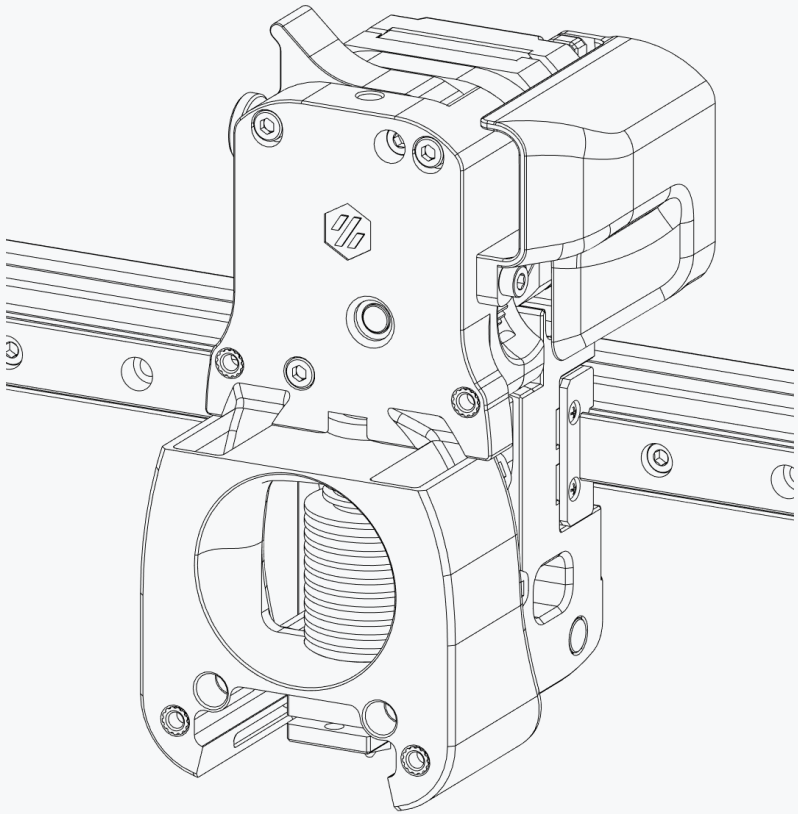


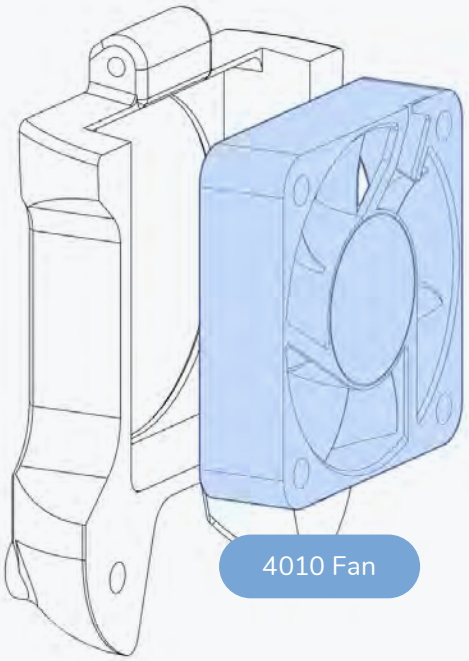
M3x8 SHCS

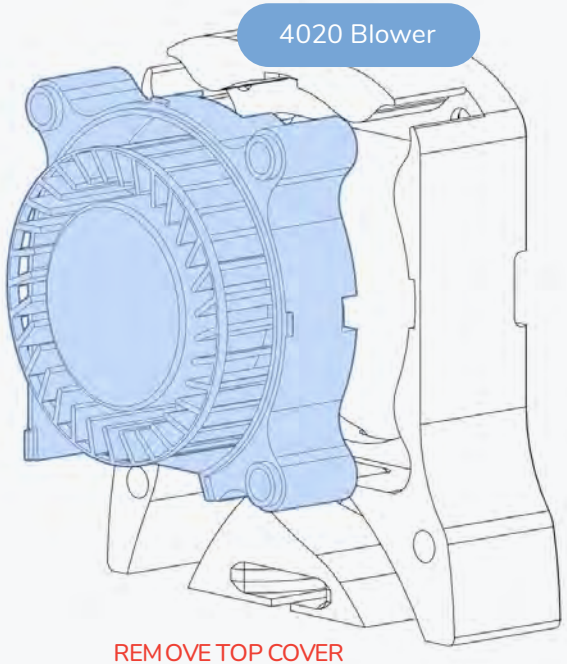





M3x20 SHCS
M3x30 SHCS





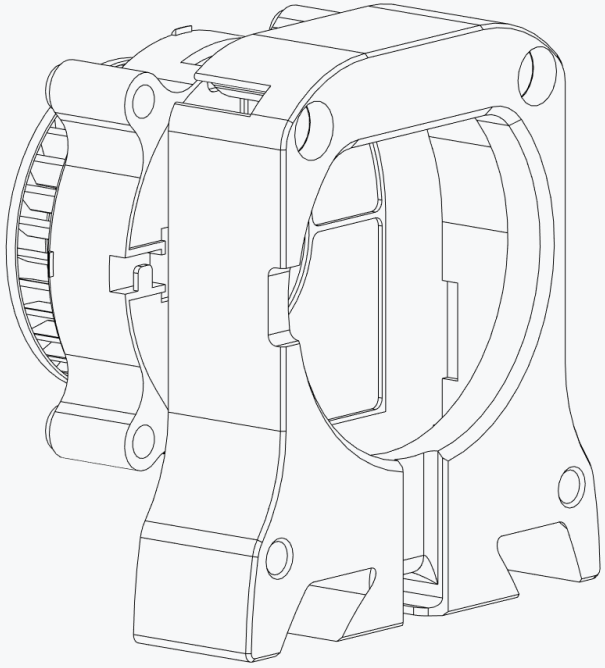


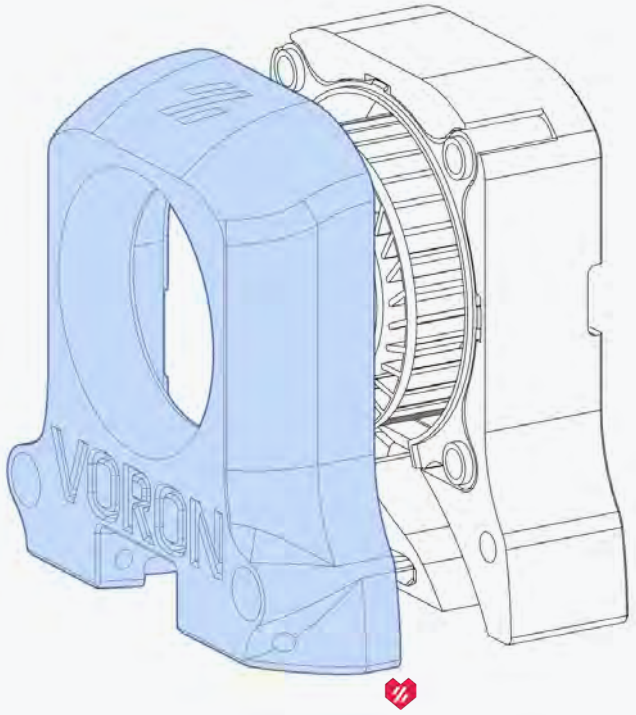
REMOVE TOP COVER

Split the fan open by bending the tabs on the side.

https://voron.link/vyvtcpa

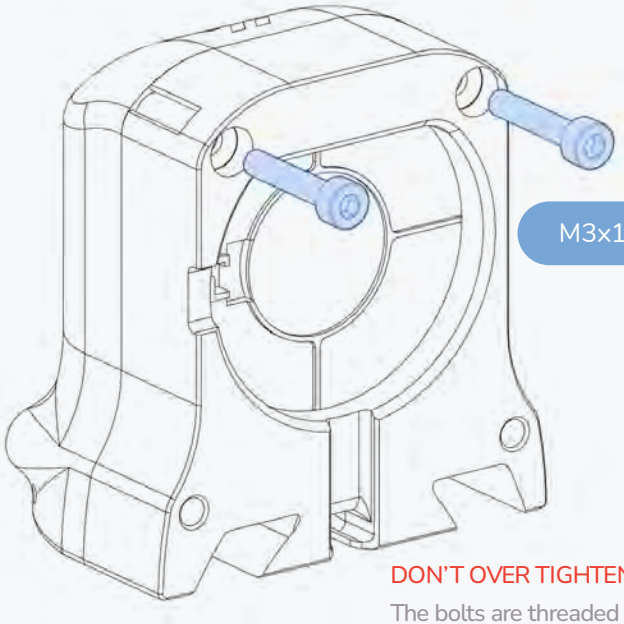
FAN ASSEMBLY





WIRING PATH

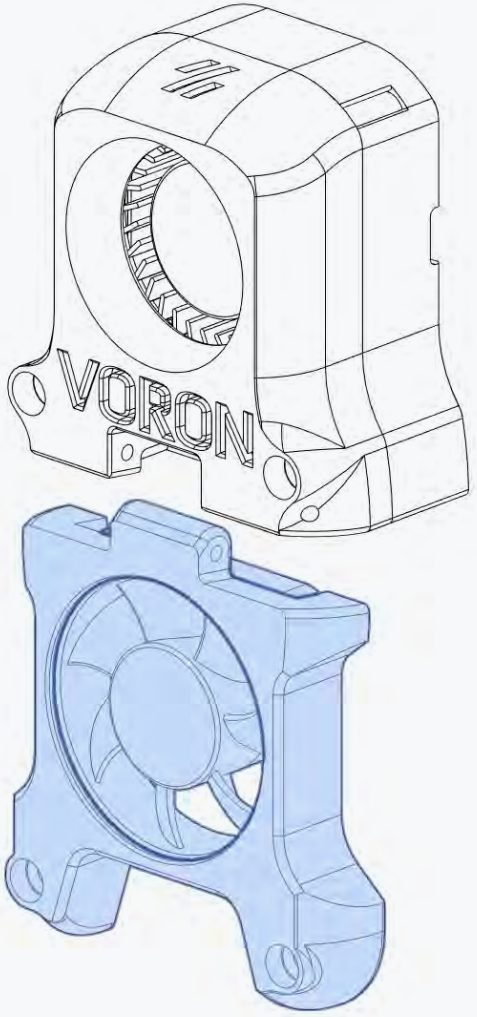
Route the wires through the large opening in the back.



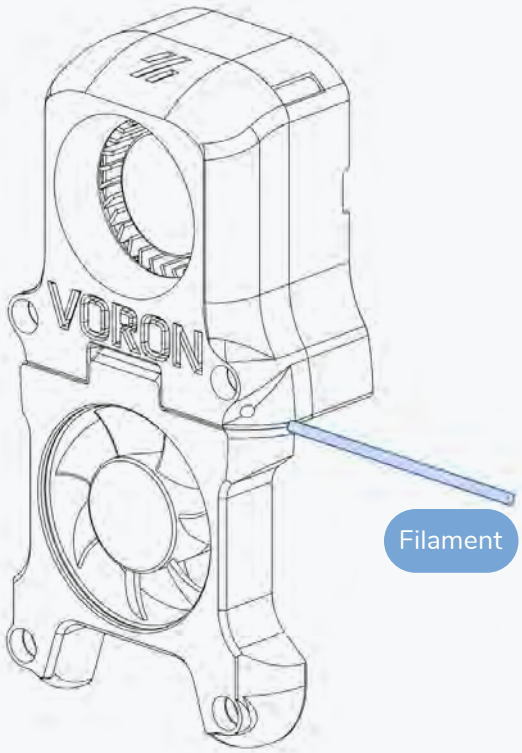
M3x16 SHCS

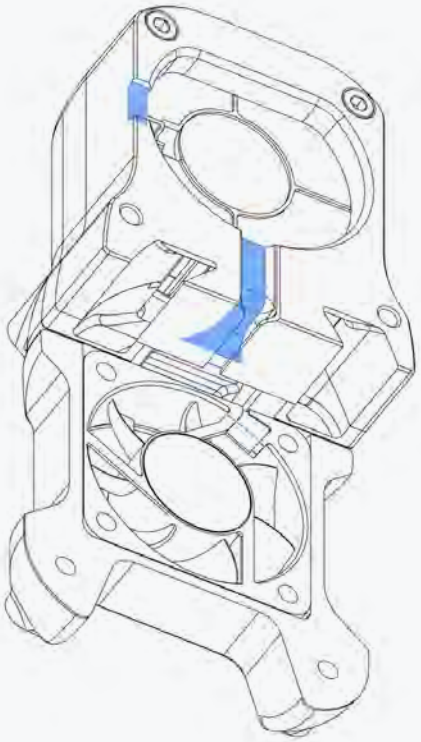
DON'T OVER TIGHTEN

The bolts are threaded directly into plastic.



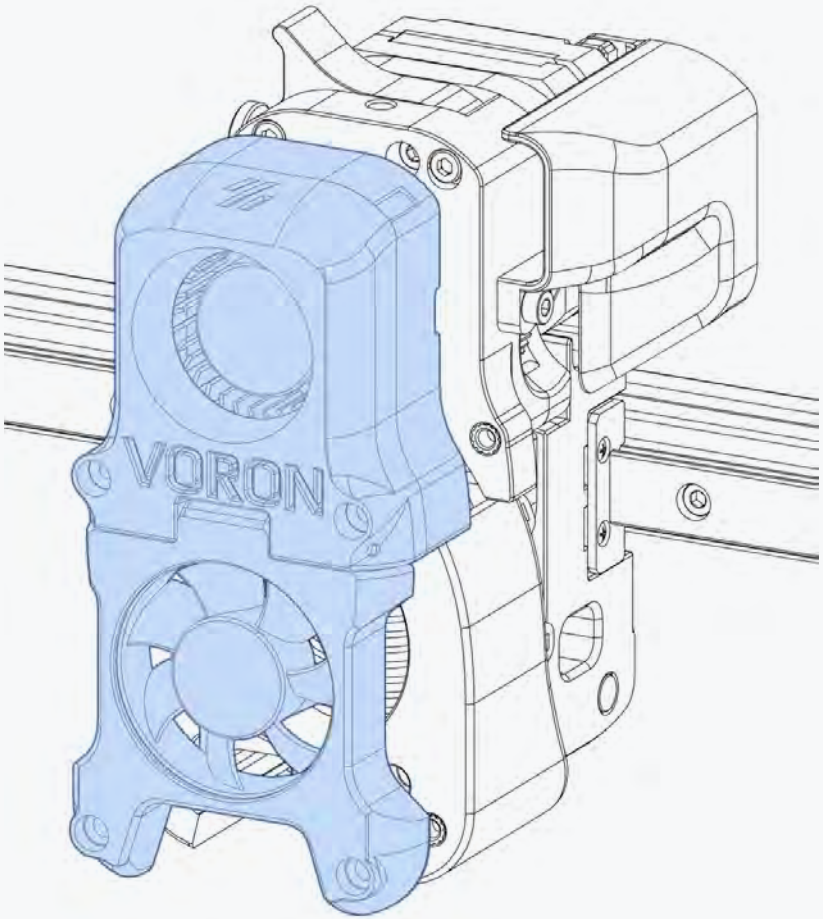
FAN ASSEMBLY

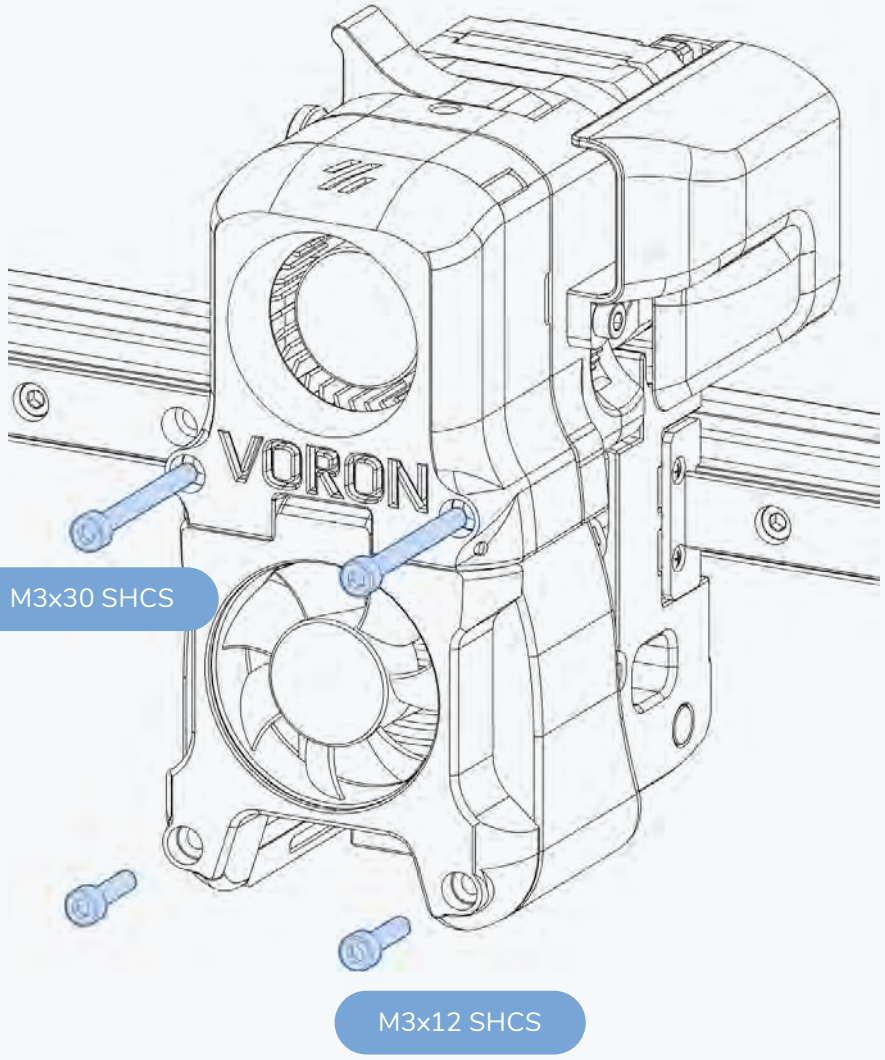




WIRING PATH

Guide the wires in the highlighted path.


VORON

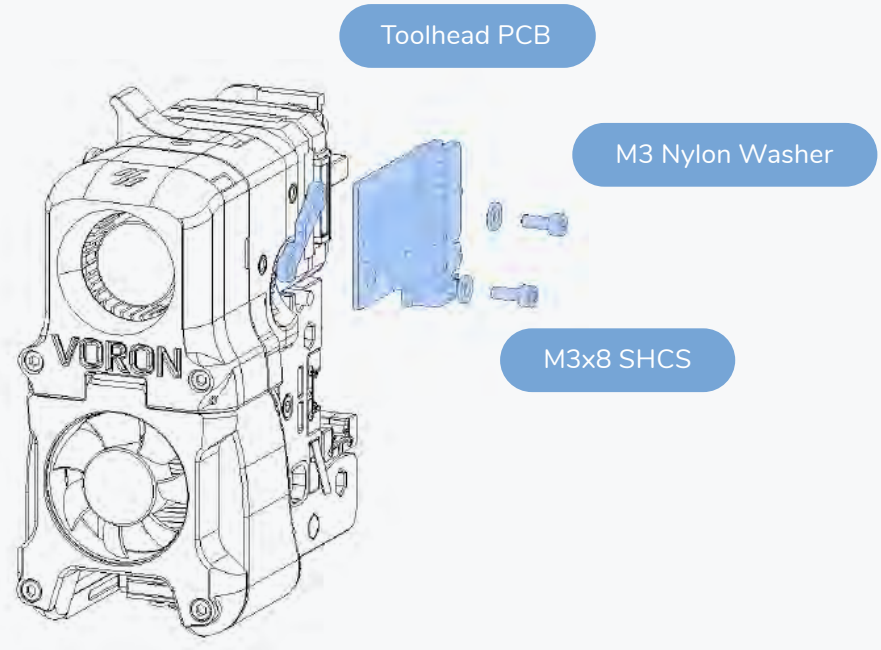

VORON
M3x30 SHCS
M3x12 SHCS

TOOLHEAD PCB

OPTION: TOOLHEAD PCB

If you opted to use a toolhead PCB, install it instead of the cable cover.

While not strictly required the use of plastic (e.g. nylon) washers is recommended.

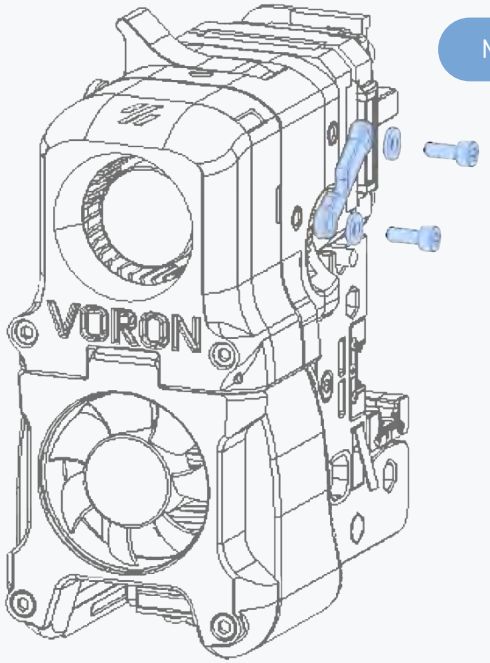


TOOLBOARD 1LC DUET 3D

OPTION: TOOLHEAD PCB

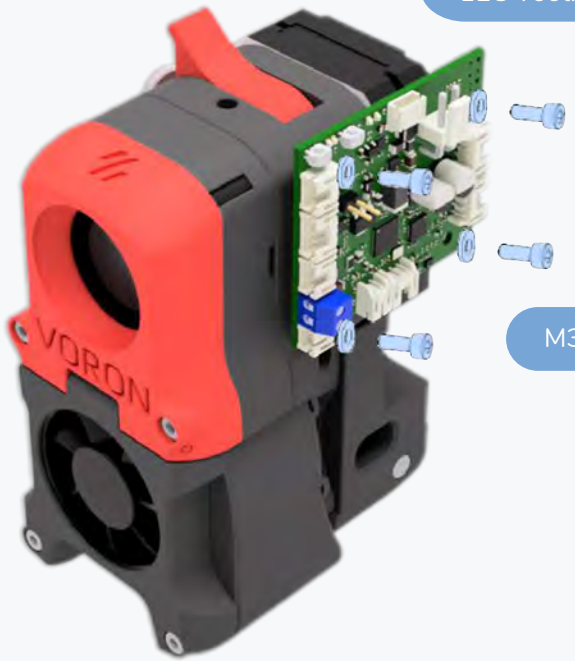
If you opted to use a Toolboard 1LC Duet 3D, you have to print the holder and cover specifically for this Toolboard.

While not strictly required the use of plastic (e.g. nylon) washers is recommended.



M3x8 SHCS

1LC Toolboard Duet3D

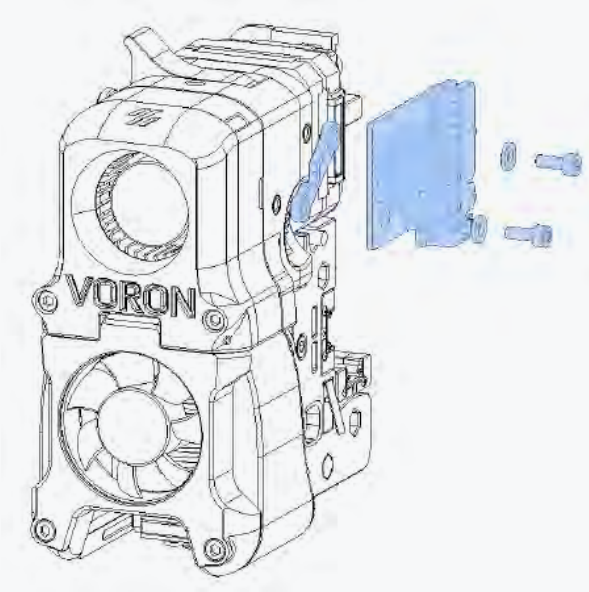


M3x16 SHCS

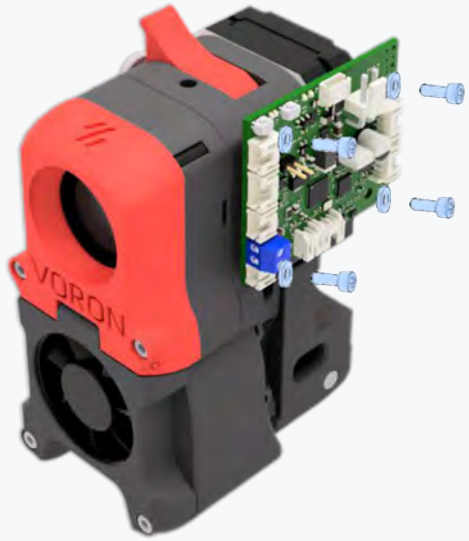
NOTE:B

These are only indicative images. We always advise you to check the version of the toolboard in use and consult the documentation for the version to be wired on the official DUET 3D platform.

https://docs.duet3d.com



TOOLHEAD PCB



TOOLBOARD 1LC DUET

NOTE:

You will receive the article you have chosen from the two proposed (Toolhead PCB, Toolboard 1LC) with the electronics kit.