



Lineux Toolchanger



LINEUX

- lee-knee-yurks-

(noun)

toolchanger that print things you never know
you need in a way you can't imagine

- see also wizardry, mesmerizing

[Lineux One r2.1 Build Guide](#)

2025-06-27



<https://discord.gg/Xwqbjj4VjH>



<https://github.com/Bikin-Creative/Lineux-Toolchanger>

A big thank you to everyone who
made this project possible.



IMPORTANT



- Please take careful precautions with safety in mind when attempting to build Lineux.
- Only attempt the build if you are knowledgeable with 3d printer mechanics and electronics.
- Failure to follow safety precautions may result in things going against you, or even harm you.
- Magnets are extremely strong and may cause injuries. Please handle them with extra care.
- If things start to get confusing or you're stuck at some point during the build, do ask questions on our discord.
- We try to keep things as simple and as clear as possible for a fun and enjoyable build for everyone.
- We are humans and are prone to mistakes. If you encounter any issues/faults with the build guide, please raise them on our Discord.

<u>Introduction</u>	<u>05</u>	<u>Toolhead</u>	<u>63</u>
<u>Hardware</u>	<u>07</u>	<u>Dock</u>	<u>94</u>
<u>Preparation</u>	<u>10</u>	<u>Completion</u>	<u>105</u>
<u>Carriage Voron</u>	<u>18</u>	<u>Toolboard Wiring</u>	<u>107</u>
<u>Carriage Vzbot</u>	<u>39</u>		

Part Printing Recommendations

Recommended setting/material to print your parts.

Material

ABS

Infil

40% Grid, Gyroid, Honeycomb,
Triangle, Cubic

Layer Height

0.2mm

Number of Walls

4

Extrusion Width

0.4mm

Number of Top/Bottom

5

Parts Filename Guide

Primary Colour

Eg. carriage_A.stl

These are to be printed with your primary/base colour.

Accent Colour

Eg. (a)_locking_plate.stl

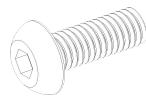
Files with (a) in front are to be printed with your secondary/accent colour. Parts will be indicated with the Lineux Logo beside it in this guide.

Quantity Required

Eg. belt_tensioner_x2.stl

Files ending with x# indicate the quantity required to be printed

To make your build easier, we recommend you to download the cad from our github to enable you to visualize the whole assembly.



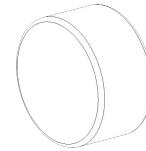
Button Head Cap Screw
(BHCS)



Socket Head Cap Screw
(SHCS)



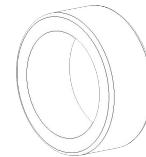
Heat Insert



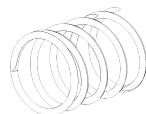
n52 Magnet



Dowel Pin



Stainless Steel Spacer /
Bushing



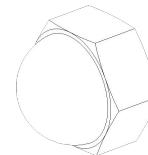
Compression Spring



Hex Nut



Ring Terminal



Cap Nut / Dome Nut



Set Screw / Grub Screw



Washer



T-Nut



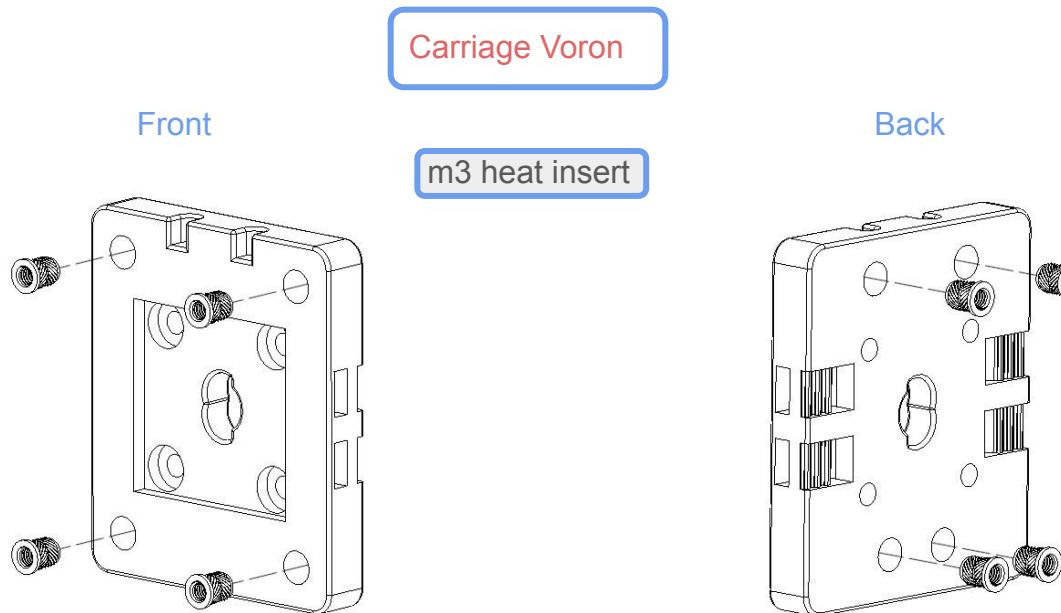
Threaded Dowel Pin



AA Battery Terminal

Lineux was first developed on a Vzbot 330 printer.

It is recommended to install all heat inserts first on all the parts prior to starting the build.

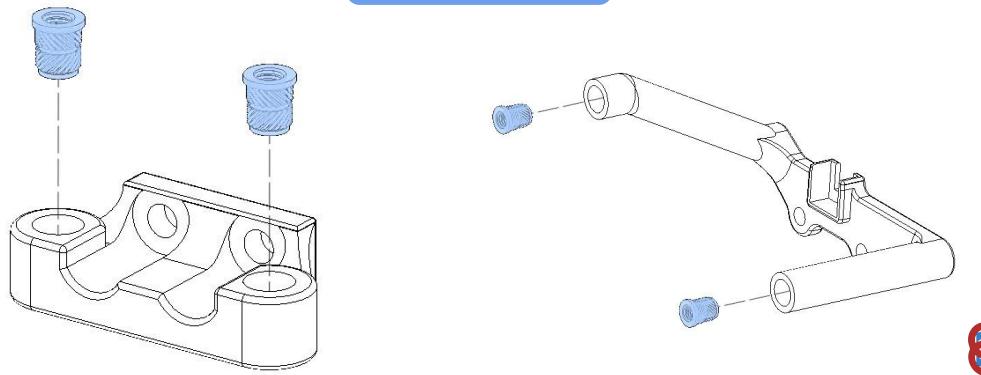


Preparation

Insert the heat insert to Carriage A in the respective slots as shown.

Carriage Voron

m3 heat insert

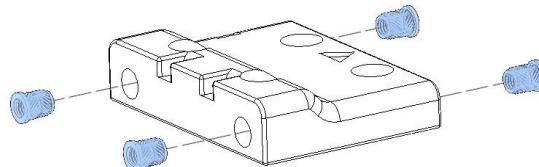


Preparation

Insert heat inserts to both 5015 Mount
and 5015 Standoff.

Carriage Vzbot

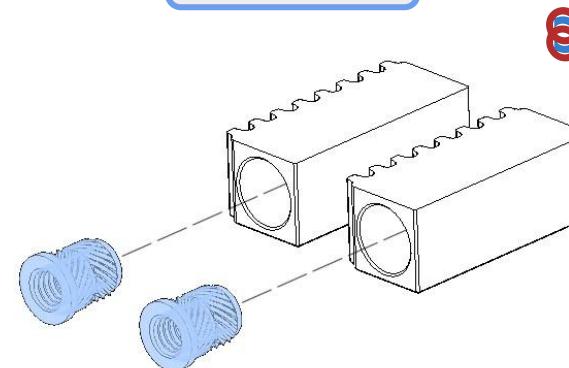
m3 heat insert



Preparation

Insert the heat insert to Carriage Top in the respective slots as shown.

m3 heat insert

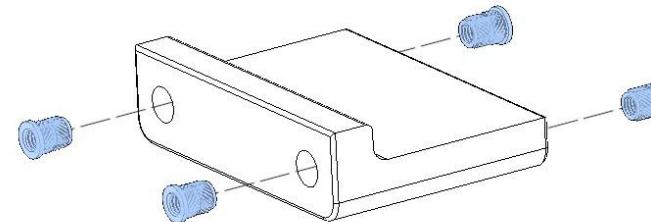
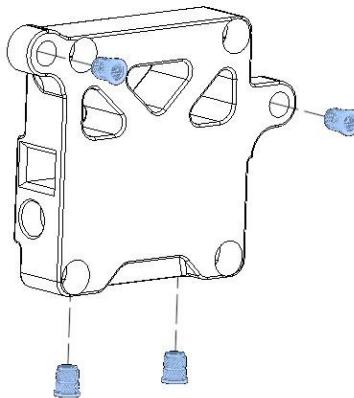


Preparation

Insert the heat inserts to both Belt Tensioner.

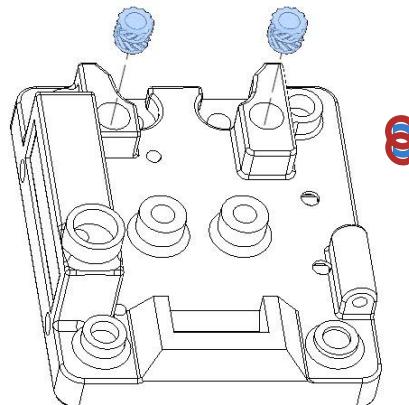
Carriage Vzbot

m3 heat insert

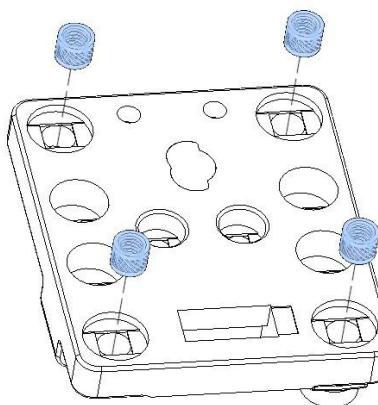


Preparation

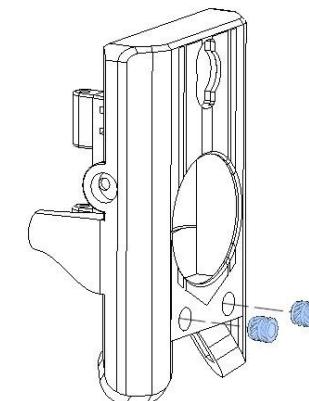
Insert the heat insert to Carriage A and Carriage Bottom in the respective slots as shown.



m3 heat insert



m4 heat insert



m3 heat insert

Preparation

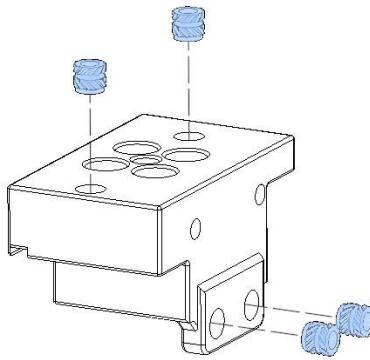
Insert the heat insert to the Backplate in the respective slots as shown.

Preparation

Insert the heat inserts to the Cowl Klicky.

Toolhead

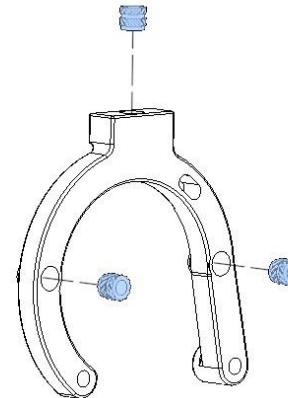
m3 heat insert



Preparation

Insert the heat inserts to the
Revo Voron Plate.

m3 heat insert

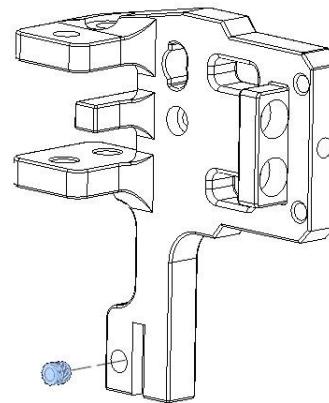


Preparation

Insert the heat inserts
to the Sherpa Micro
Ebb Mount.

Dock

m3 heat insert

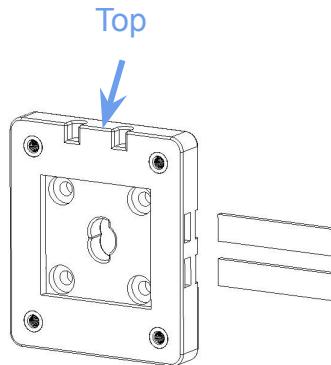


Preparation

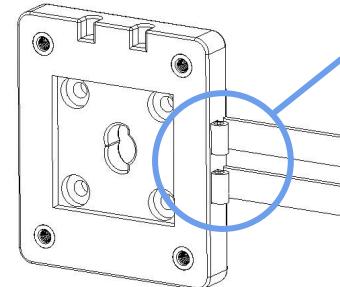
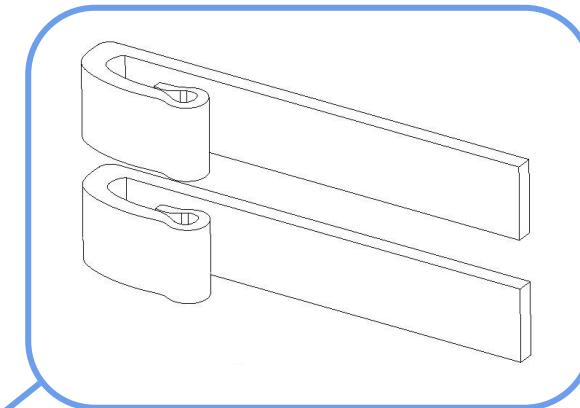
Insert the heat insert to the Dock Body.

Lineux started with a modified Dragonburner as its toolhead but has since uses
its own Lineux One toolhead.

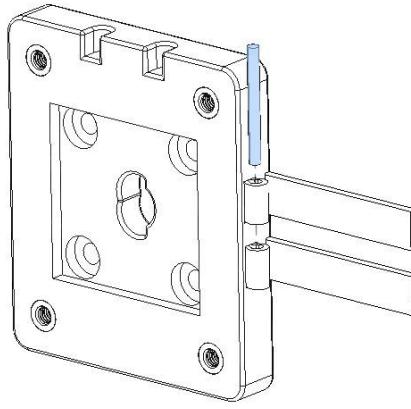




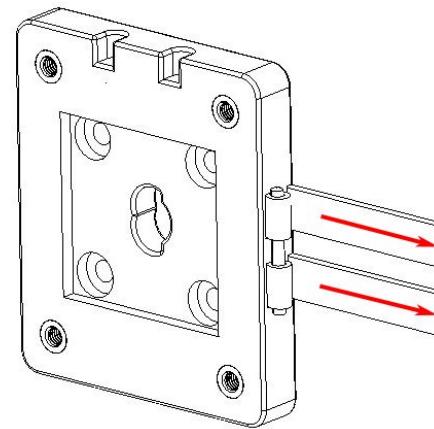
Thread both A belt and B belt from the right through the back of Carriage A and into the belt slots. The 2 indentation will be at the top.



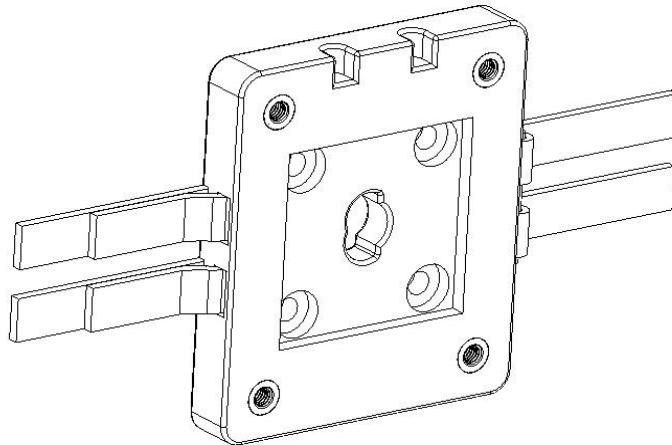
Make a loop and thread it back into the slots.



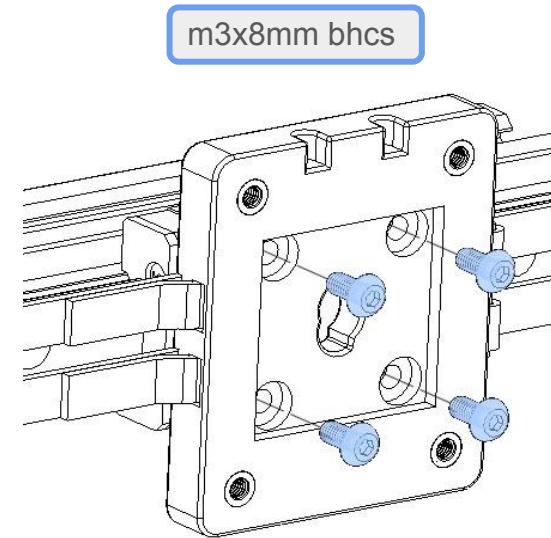
Cut a filament about 18mm
and insert it through the belt
loop.



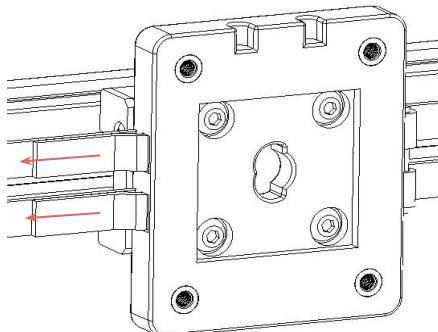
Pull the belt tight and the
belt will be secured on
Carriage A.



Thread both belts on the left the same way you did for the right side. This time, you don't have to make a loop. Do not cut the belts yet and leave them as is for now.

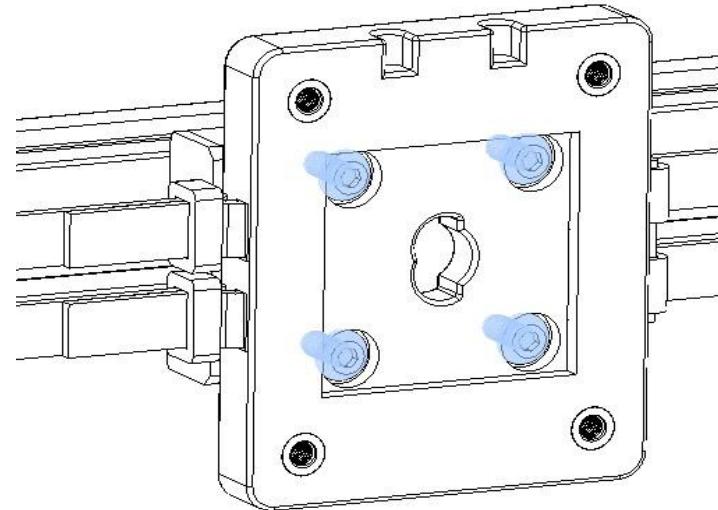
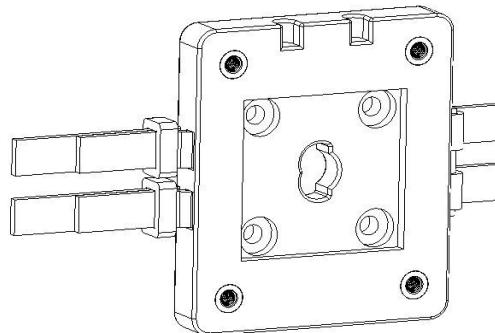


Screw in the bolts but leave them loose for now.

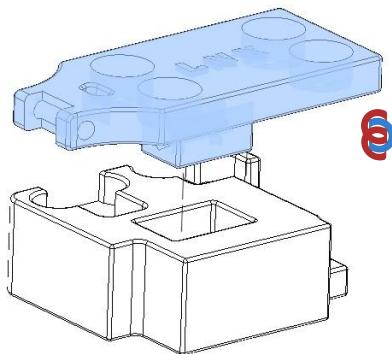


Pull the ends of both belts tightly.

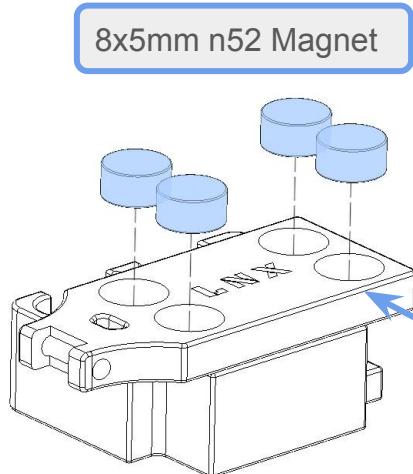
Tie each belts with cable tie.



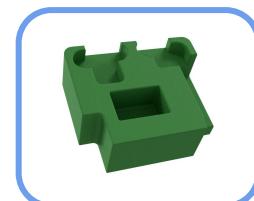
Tighten all 4 bolts now.



Place the Locking Plate on the Magnet Mounting Tool. This will make installing the magnets easier.



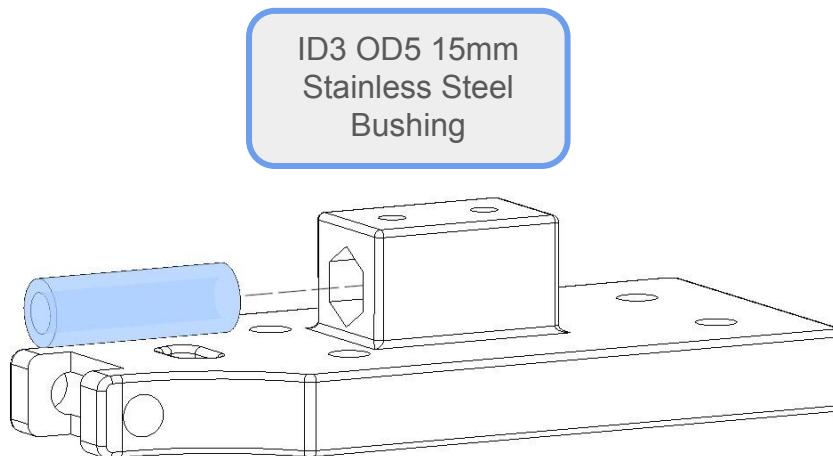
Insert the magnets in the respective slots. Apply a bit of epoxy or glue before inserting the magnets. You may use a mallet or a wrench to push the magnets in and ensure they are flushed with the top surface. **Take note of the magnet polarity configuration.**



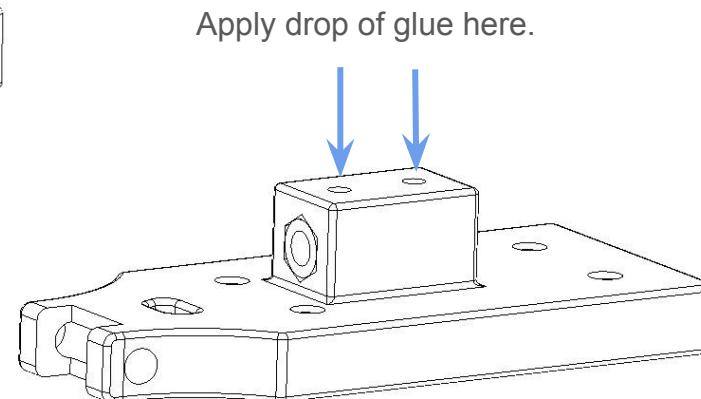
Magnet Mounting Tool

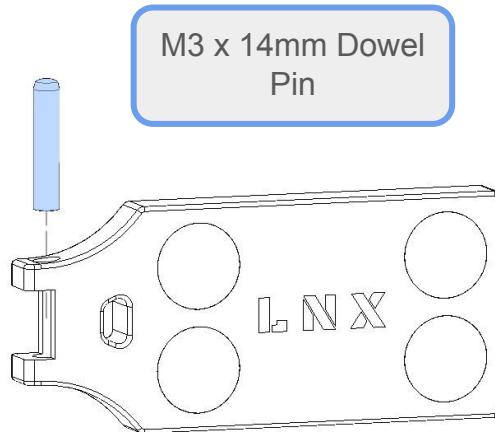


Magnet Polarity Configuration

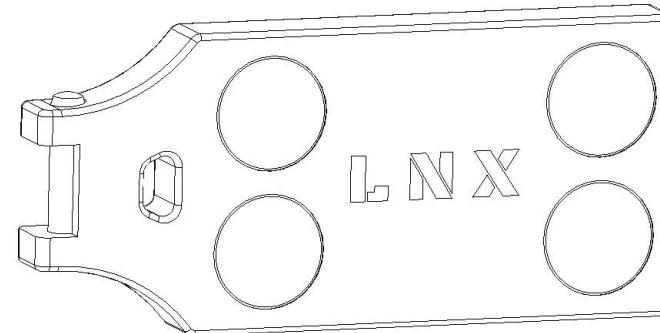


Slide in and keep
both ends flushed.

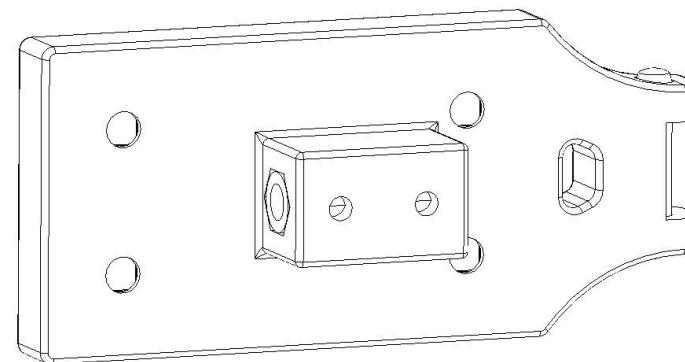


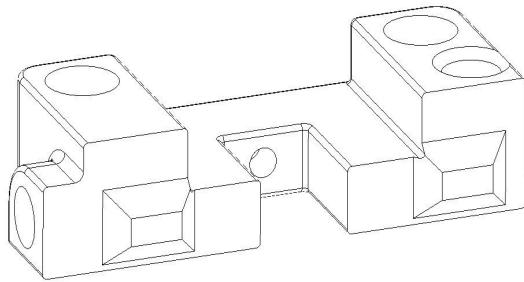


Slide in the dowel pin
and keep both ends
equal.

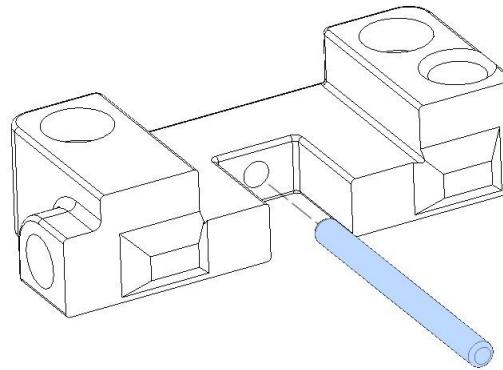


Completed Locking Plate Assembly

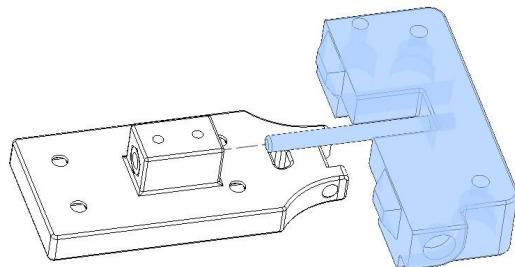




Place Carriage B Left on its back on a flat surface. It's easier to assemble it this way.

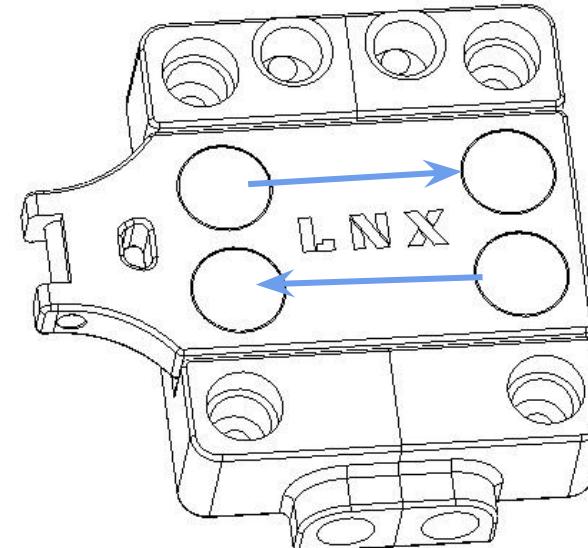
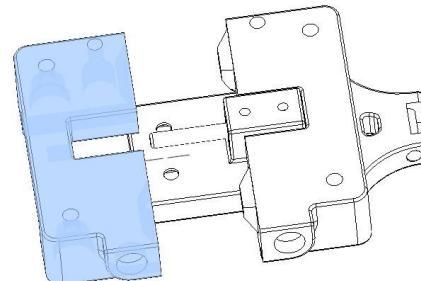


Push the dowel all the way in. It should be a tight fit.



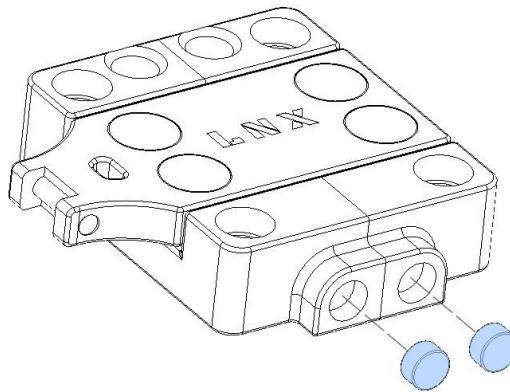
Turn the assembly over. Apply some grease/lubricant on the dowel pin before sliding the Locking Plate in.

Join Carriage B Right together with the assembly. The tabs should aligned and the parts should be flushed together.



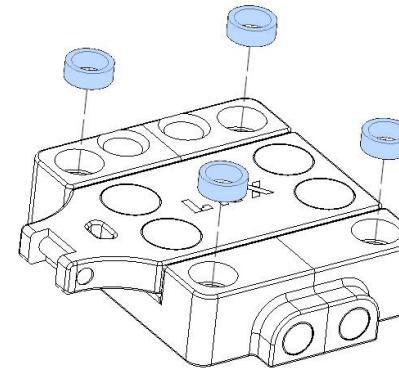
The Locking Plate
should be able to
slide freely.

6x3mm n52 magnet



Apply glue before pushing in the magnets. Ensure they sit flushed in the slots.
We recommend to reverse the polarity of both magnet to each other.

OD8 ID6 3mm Stainless Steel Bushing



Apply glue before pushing in the bushings. Ensure they sit all the way in the slots.

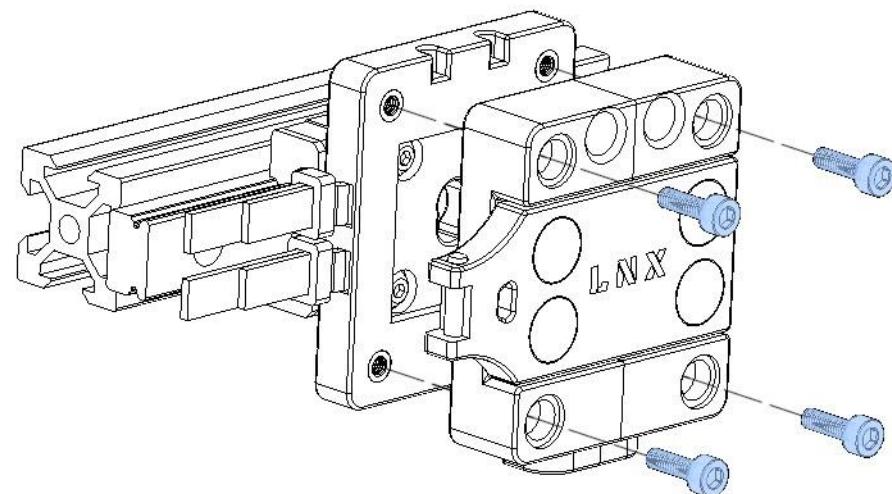
OD6 ID5 spring 10mm



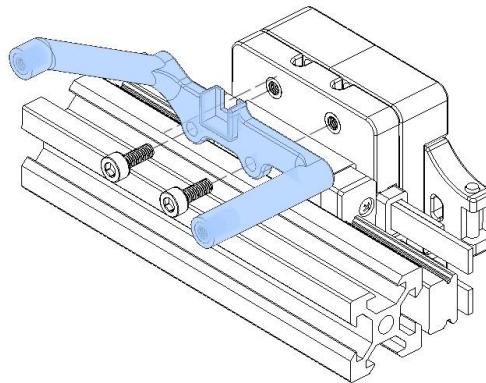
Preparation

Solder about 50mm red and black wire to the end of both springs. Stainless steel solder flux will help to make the soldering easier.

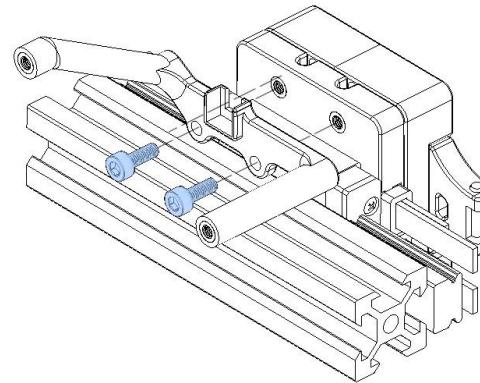
M3 x 10mm shcs



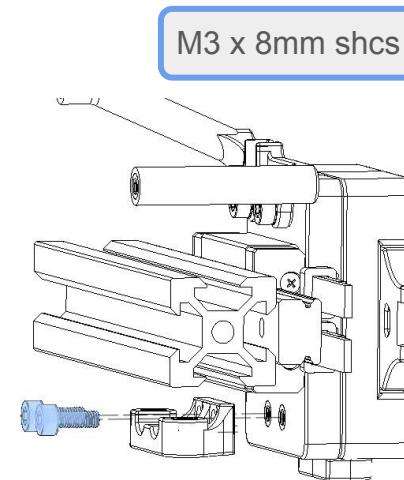
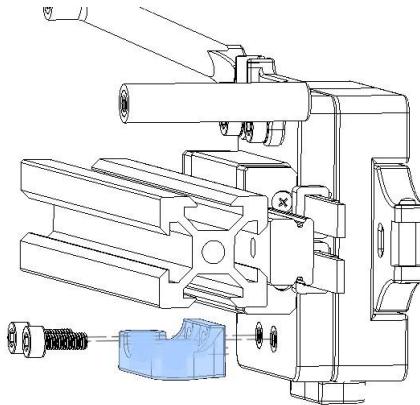
Attach Carriage B to the carriage as shown. Ensure the Locking Plate can still slide freely.



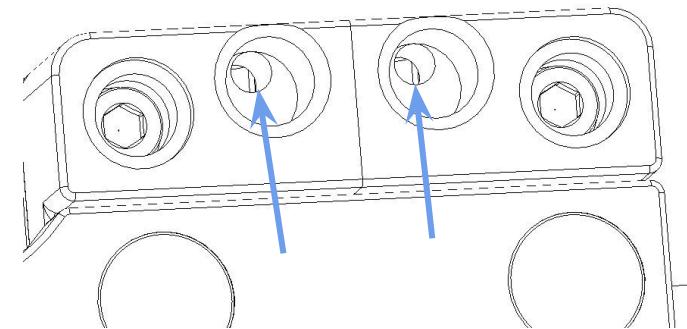
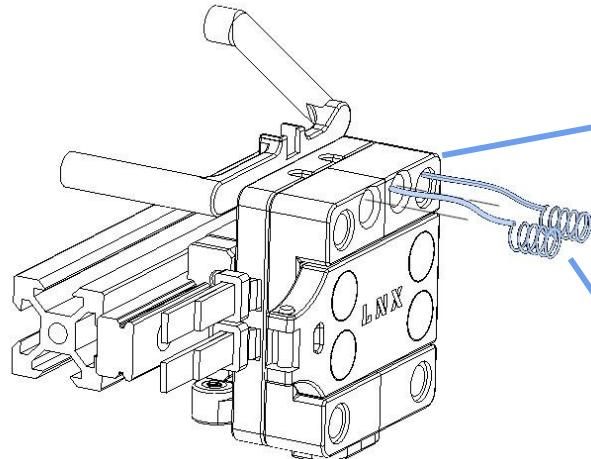
M3 x 8mm shcs



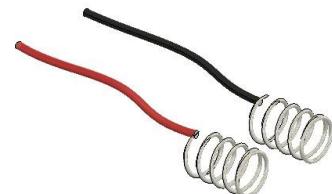
Attach the 5015 Standoff to the back of Carriage A as shown.

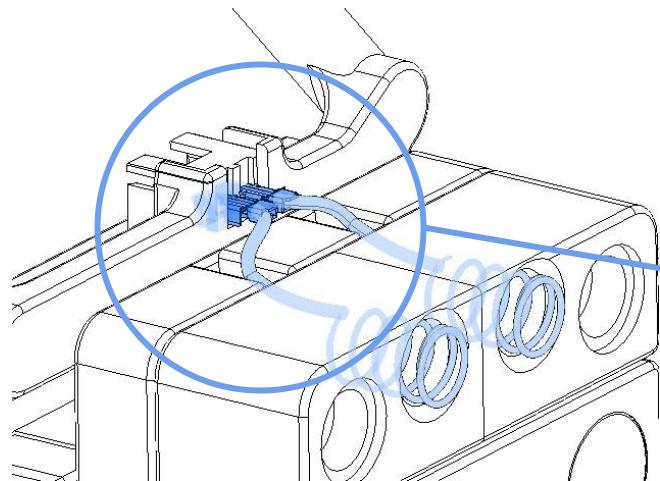


Attach the 5015 Mount to the back of Carriage A as shown.

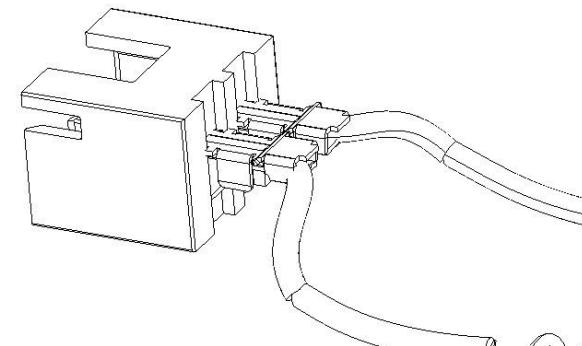


Thread both wires through the wire slots in the spring slots and slide both springs in fully. Take note that the spring with the red wire should be on the left and the spring with the black wire should be on the right.

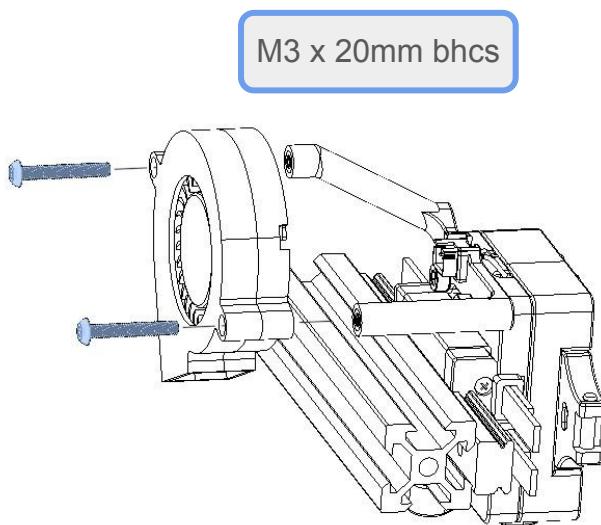




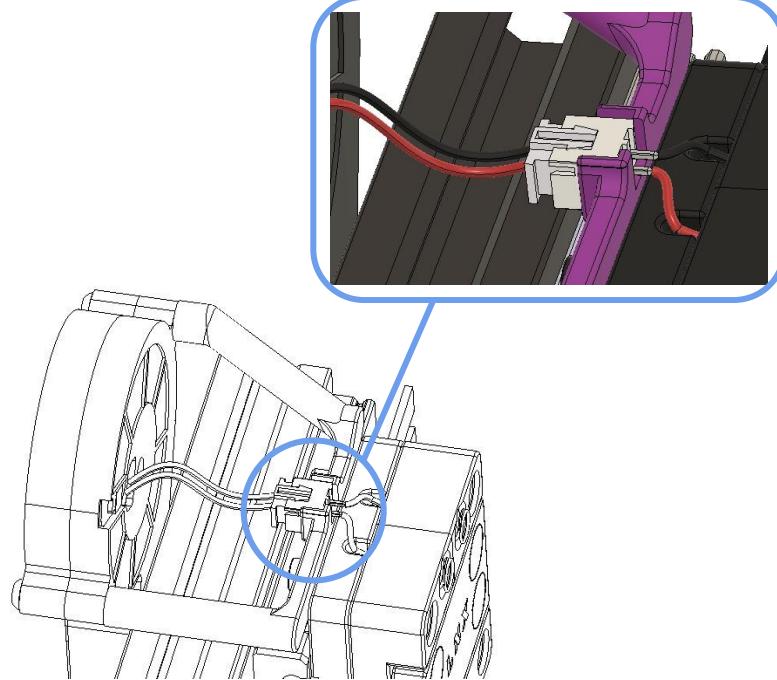
2-pin JST XH2.4 Male Connector



Cut the spring wires to length and crimp them with the appropriate connector. Insert them into the jst female connector. Slot the connector in position on the 5015 Standoff. You can apply a drop of glue to keep it in place.

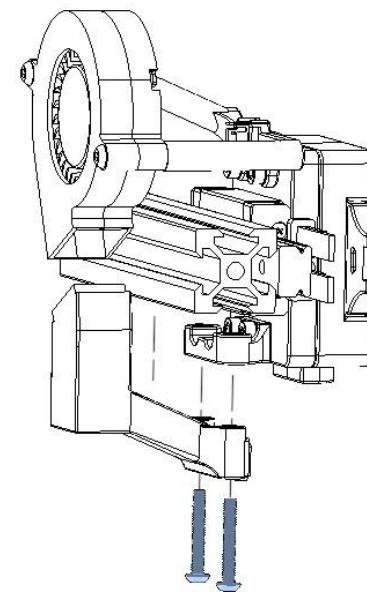
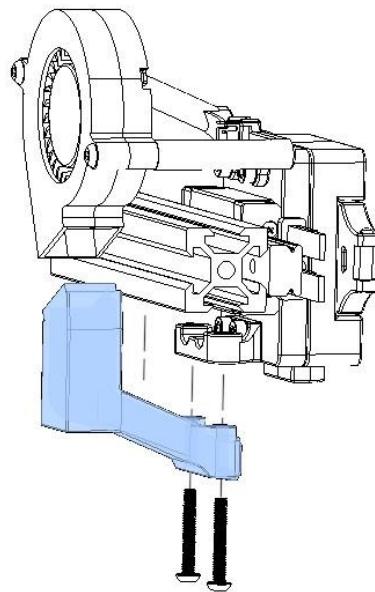


Attach the 5015 fan to the carriage as shown.

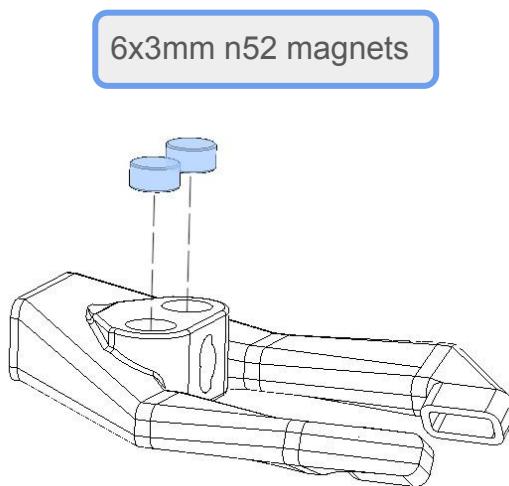


Connect 5015 fan connector to the 5015 Standoff JST connector. **Ensure the wire colours matched.**

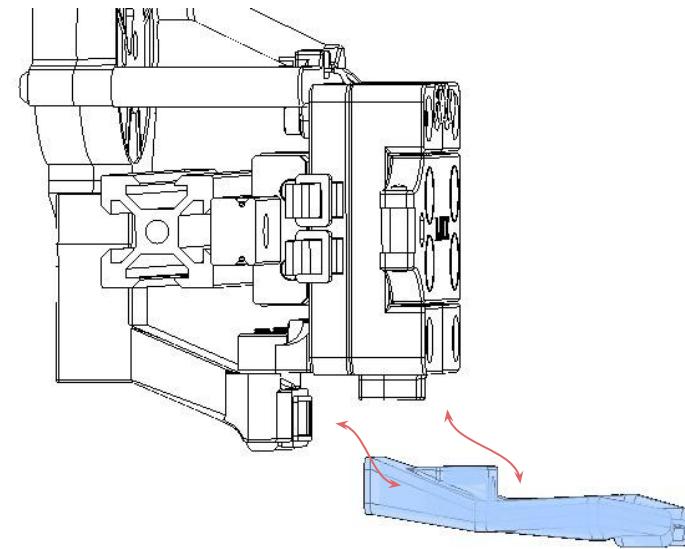
M3 x 20mm bhcs



Attach the 5015 Adapter to the 5015 mount as shown.



Apply glue before inserting the magnets in the Duct. Push them in until they are flushed in the slots. **Take note of the polarity of the magnets.** Make sure they matched the polarity on Carriage B that you installed earlier.



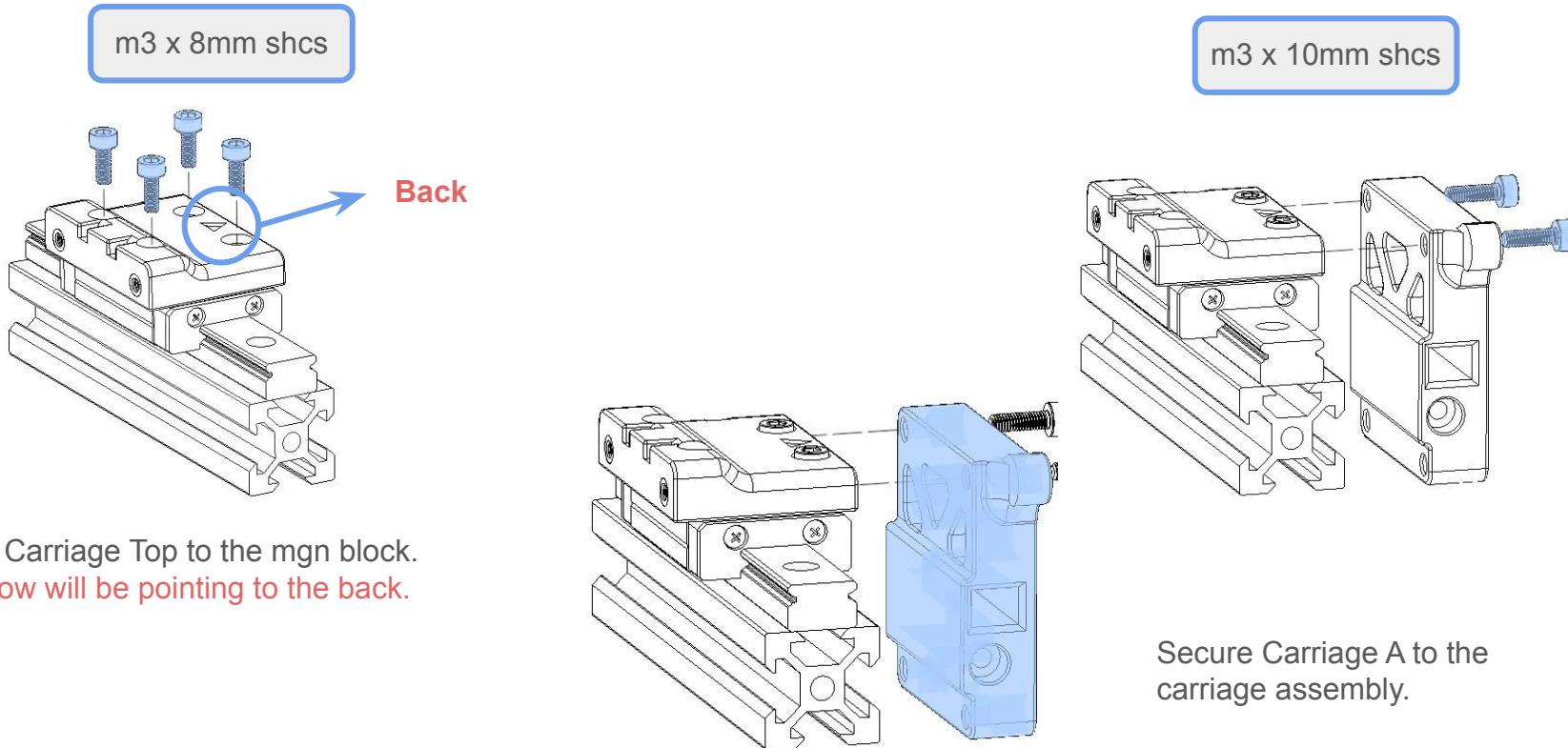
Align the intake of the Duct to the 5015 Adapter. The magnets will automatically pull them together and hold them in place. You can tilt the Duct a bit to help make the assembly easier.

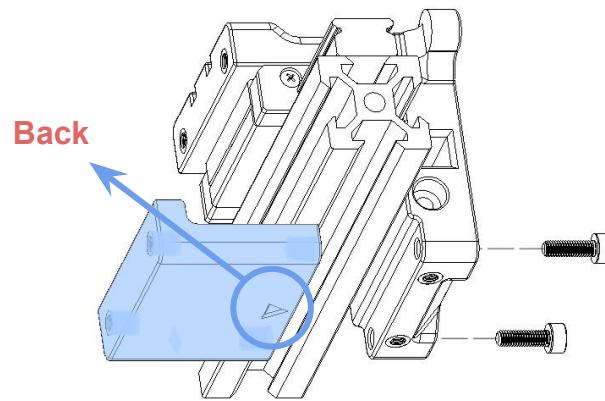


Completed Voron Carriage Assembly

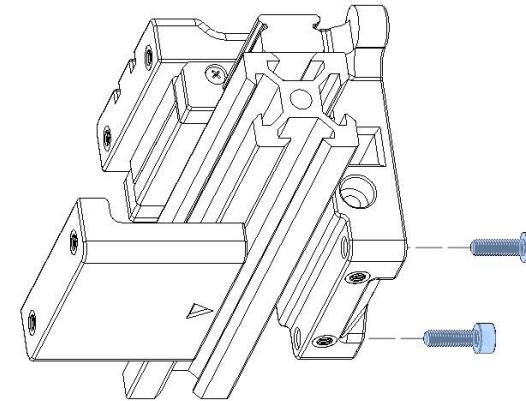
Lineux is a derivative of 2 words, Linear and Flux.



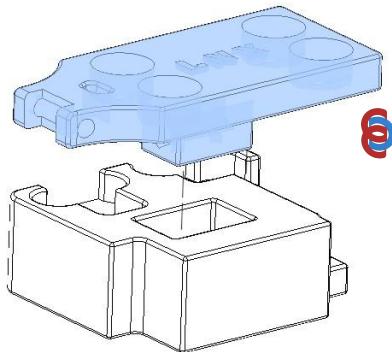




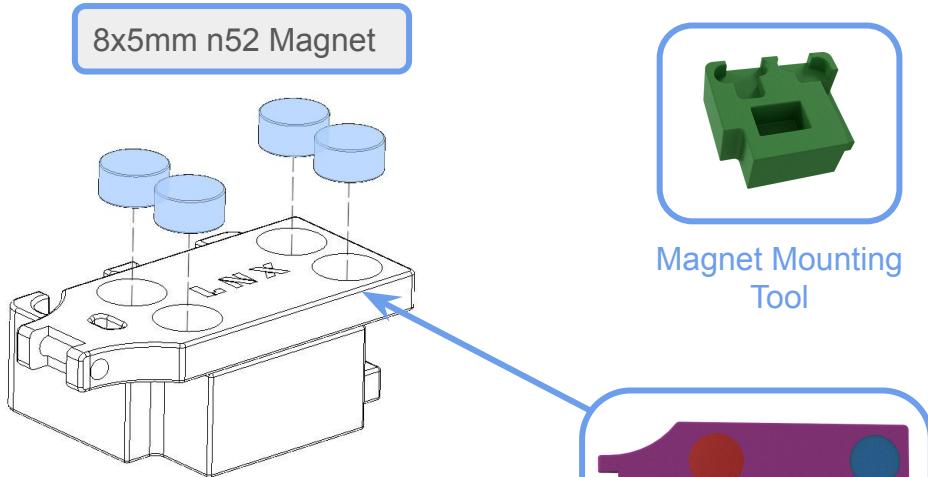
m3 x 10mm shcs



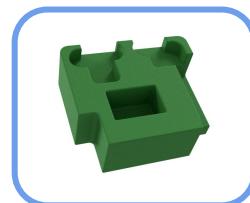
Secure Carriage Bottom to the carriage assembly. **The arrow will be pointing to the back.**



Place the Locking Plate on the Magnet Mounting Tool. This will make installing the magnets easier.



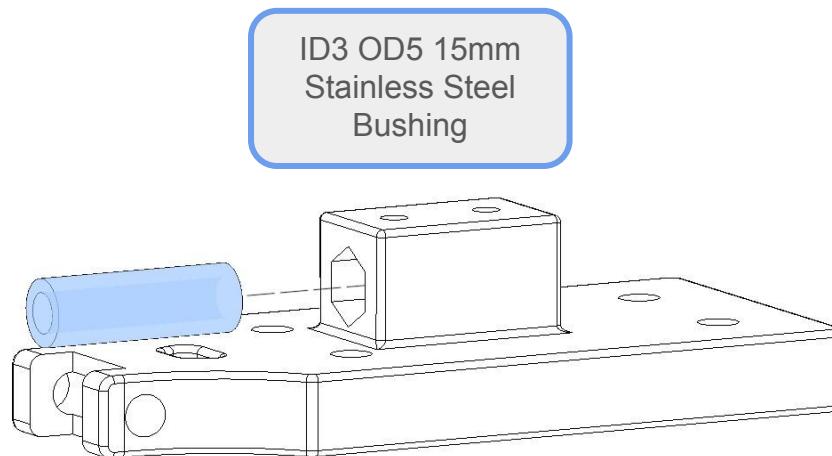
Insert the magnets in the respective slots. Apply a bit of epoxy or glue before inserting the magnets. You may use a mallet or a wrench to push the magnets in and ensure they are flushed with the top surface. **Take note of the magnet polarity configuration.**



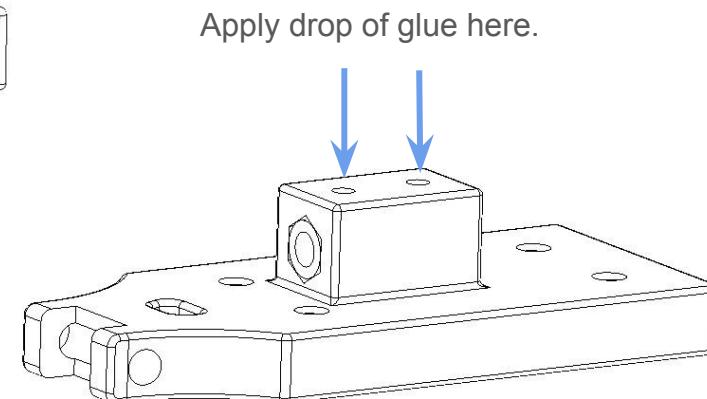
Magnet Mounting Tool

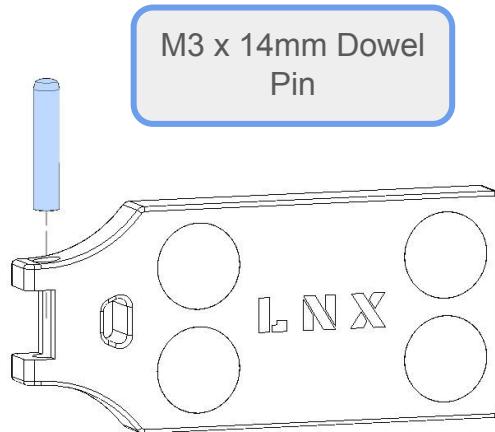


Magnet Polarity Configuration

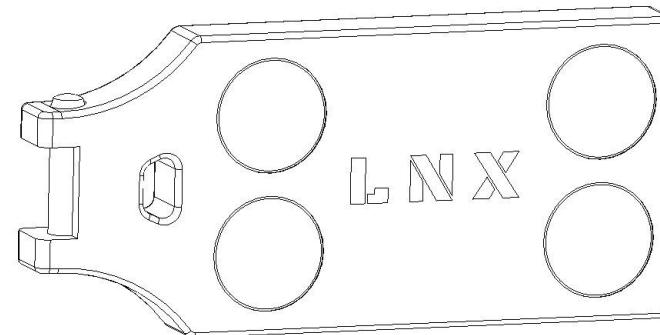


Slide in and keep
both ends flushed.

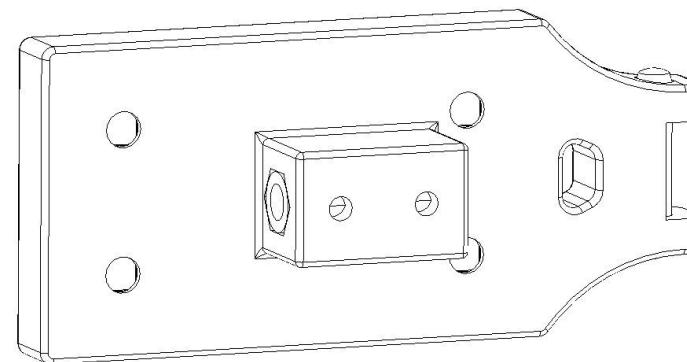


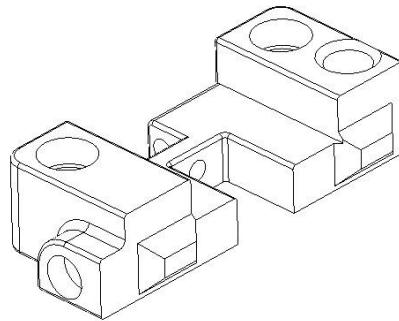


Slide in the dowel pin
and keep both ends
equal.



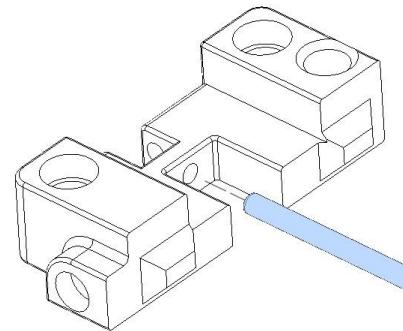
Completed Locking Plate Assembly



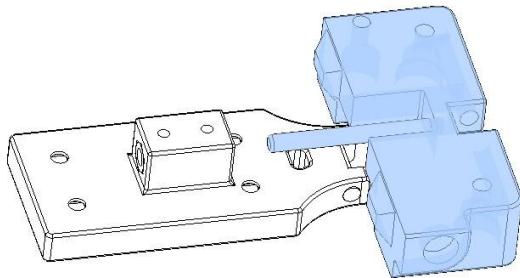


Place Carriage B Left on its back on a flat surface. It's easier to assemble it this way.

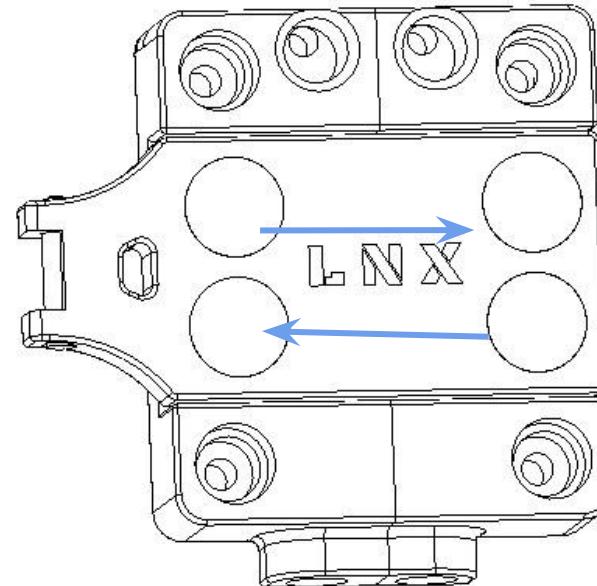
M3 x 30mm Dowel Pin



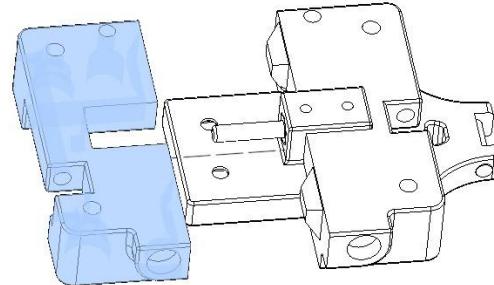
Push the dowel all the way in. It should be a tight fit.



Turn the assembly over. Apply some grease/lubricant on the dowel pin before sliding the Locking Plate in.

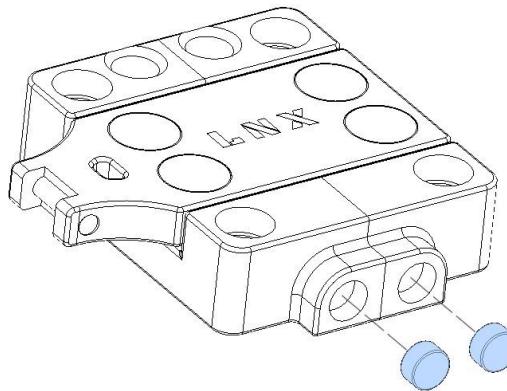


Join Carriage B Right together with the assembly. The tabs should aligned and the parts should be flushed together.



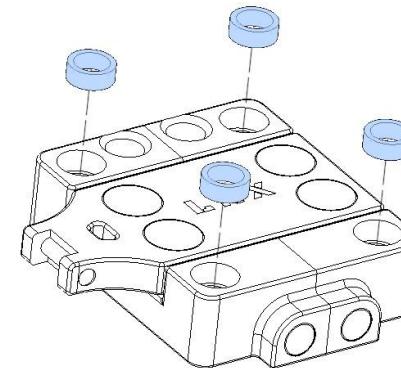
The Locking Plate should be able to slide freely.

6x3mm n52 magnet

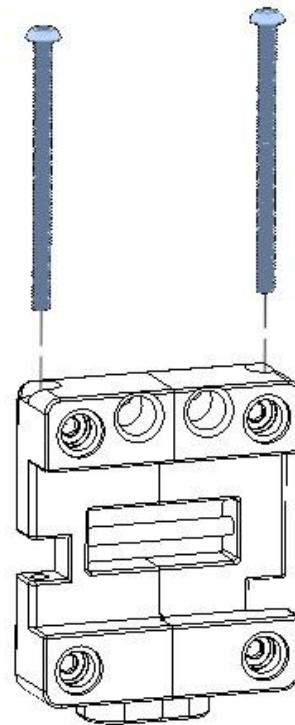


Apply glue before pushing in the magnets. Ensure they sit flushed in the slots.
We recommend to reverse the polarity of both magnet to each other.

OD8 ID6 3mm Stainless Steel Bushing



Apply glue before pushing in the bushings. Ensure they sit all the way in the slots.



m3 x 45mm bhcs

Screw the bolts all the way in. Be careful as you will be screwing in to plastic towards the end of the bolt.

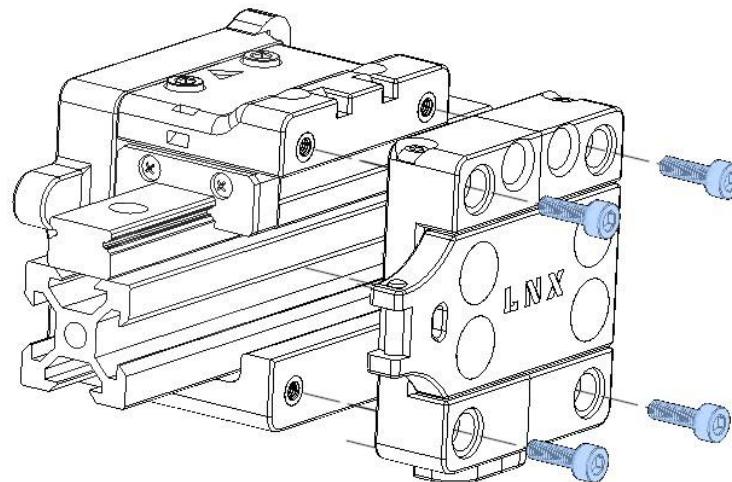
OD6 ID5 spring 10mm



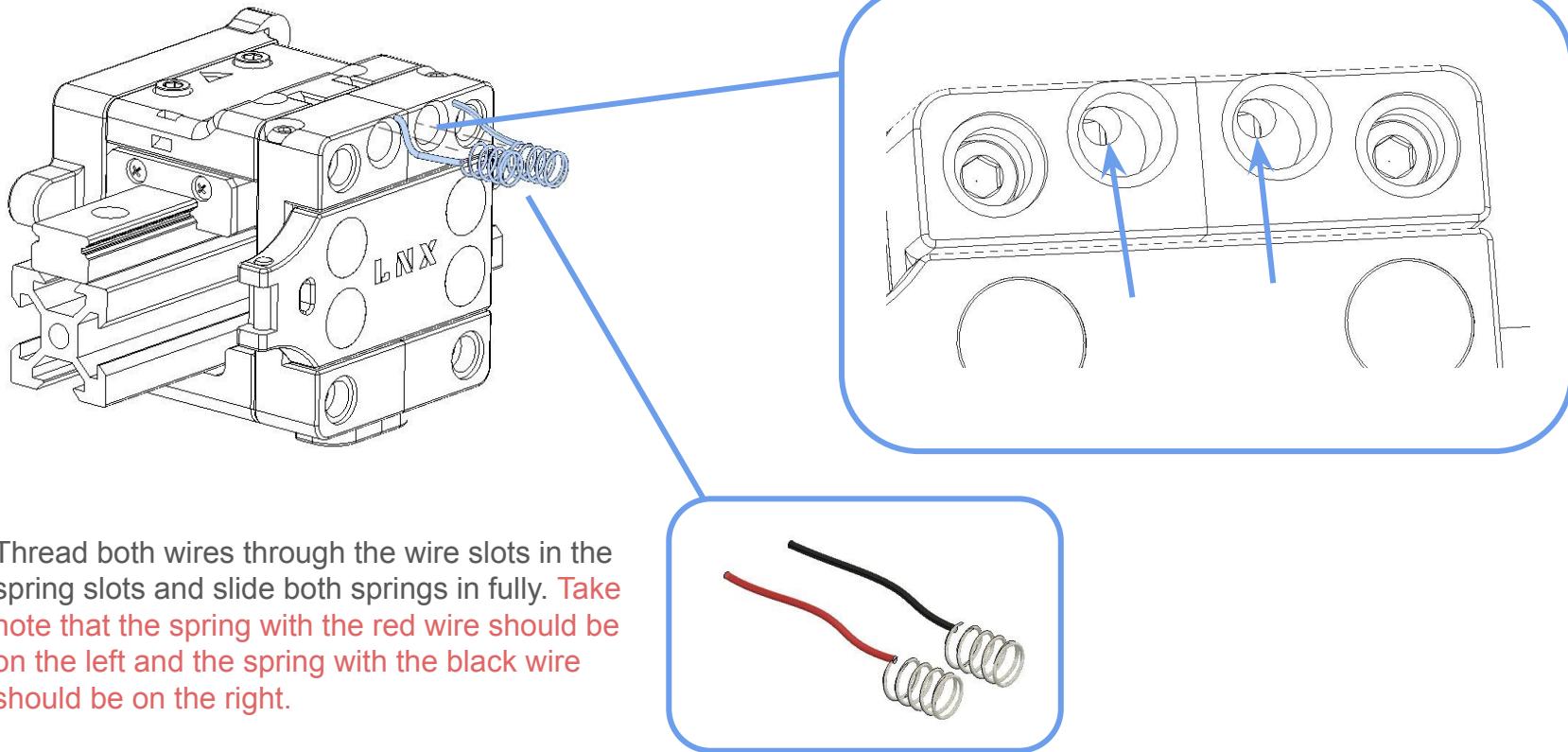
Preparation

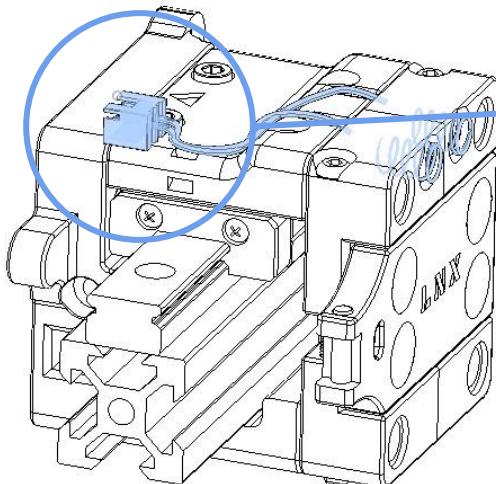
Solder about 50mm red and black wire to the end of both springs. Stainless steel solder flux will help to make the soldering easier.

M3 x 10mm shcs

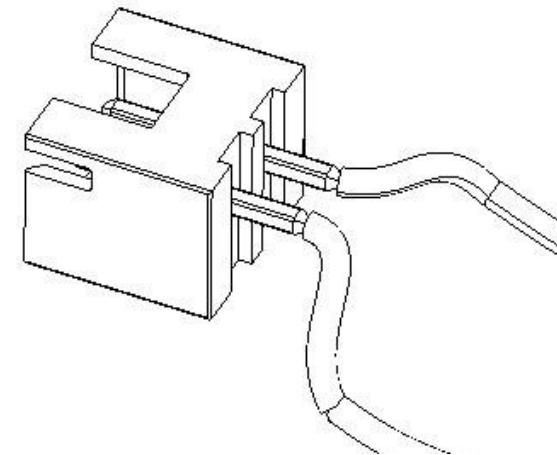


Attach Carriage B to the carriage as shown. Ensure the Locking Plate can still slide freely.

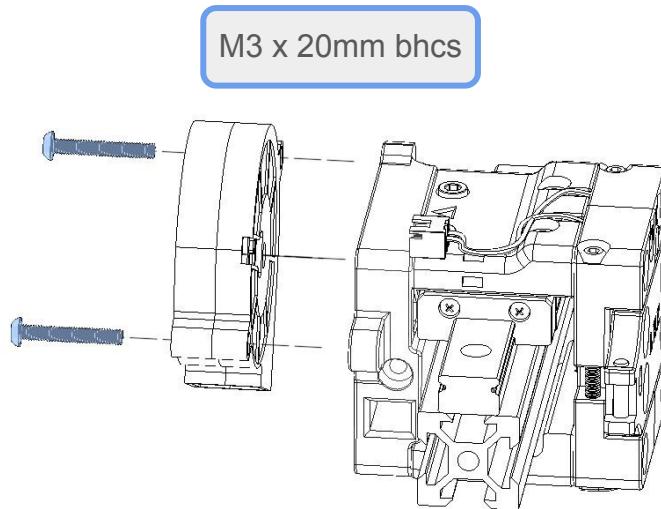




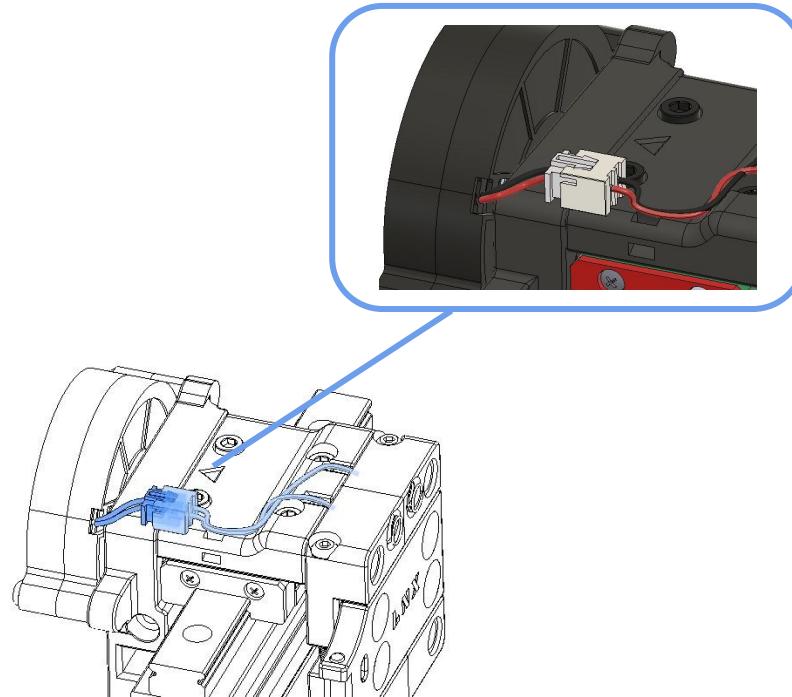
2-pin JST XH2.4 Male Connector



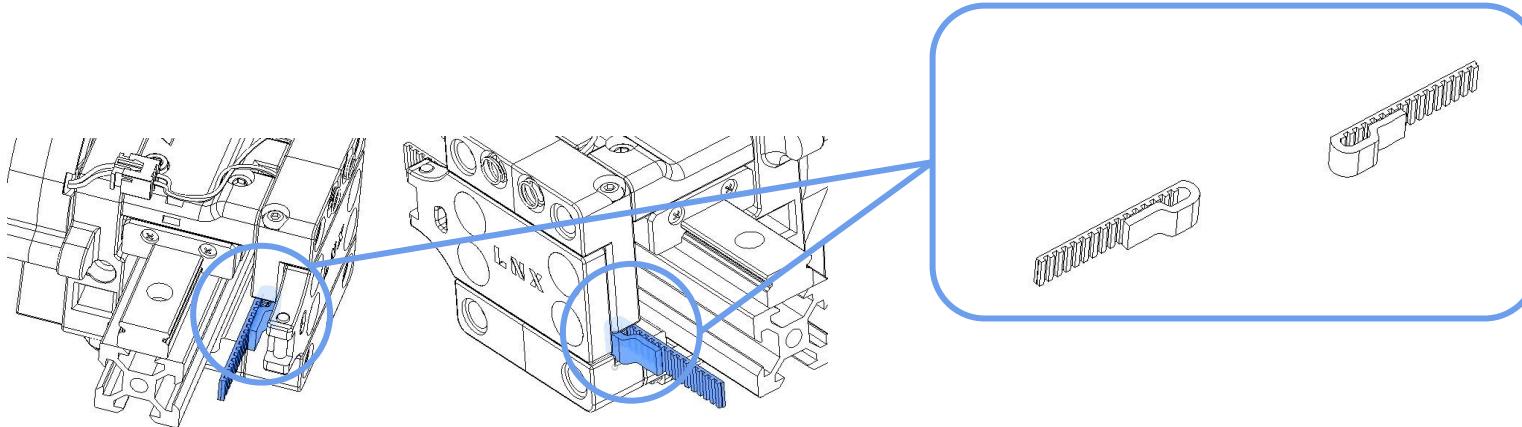
Cut the spring wires to length and solder them to the 2-pin jst connector.



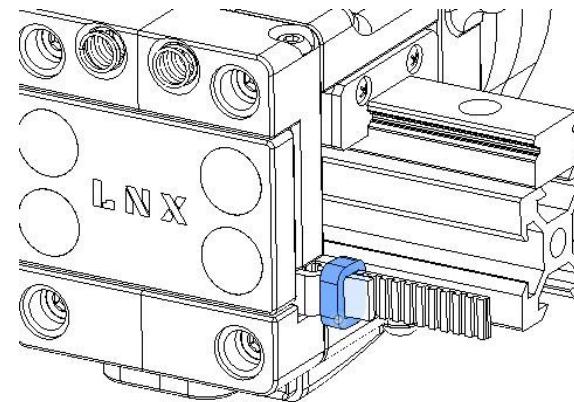
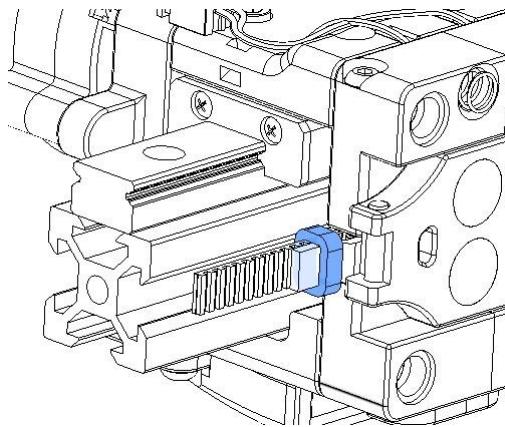
Attach the 5015 fan to the carriage as shown.



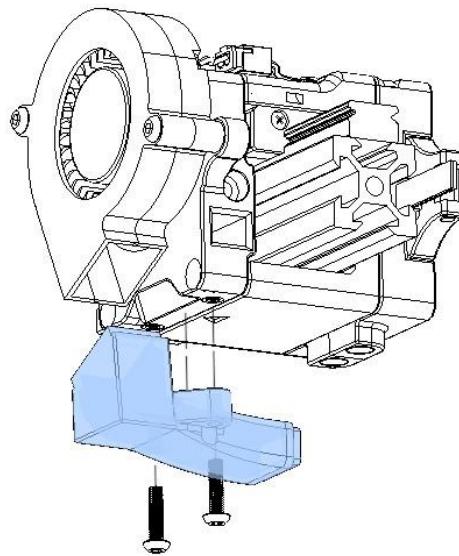
Connect 5015 fan connector to the Carriage B JST connector. Use a cable tie to secure the wire to the Carriage Top. **Ensure the wire colours matched.**



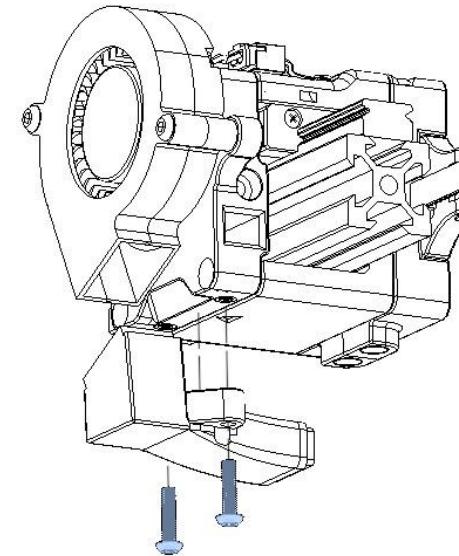
Thread both A belt and B front belts through the back of the bolts on Carriage B and back out making a loop.
You may unscrew the belt bolts first to make it easier and screw them back once the belt is in position.



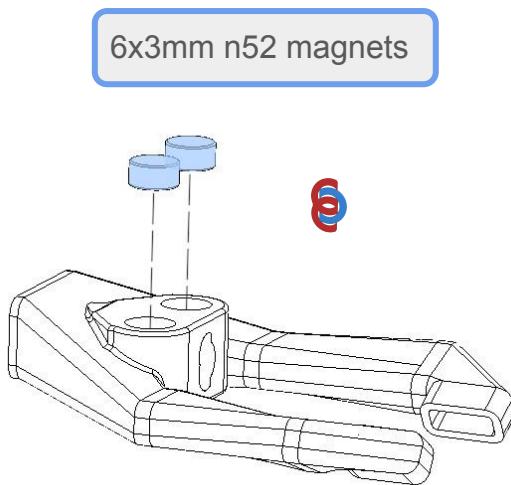
Secure both belts with cable tie. Get the cable tie as close as possible to the Carriage B body before tightening them. Cut any excess belt if necessary.



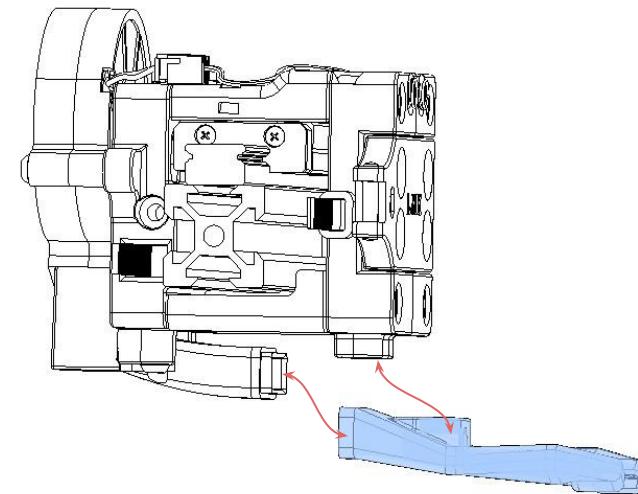
M3 x 12mm bhcs



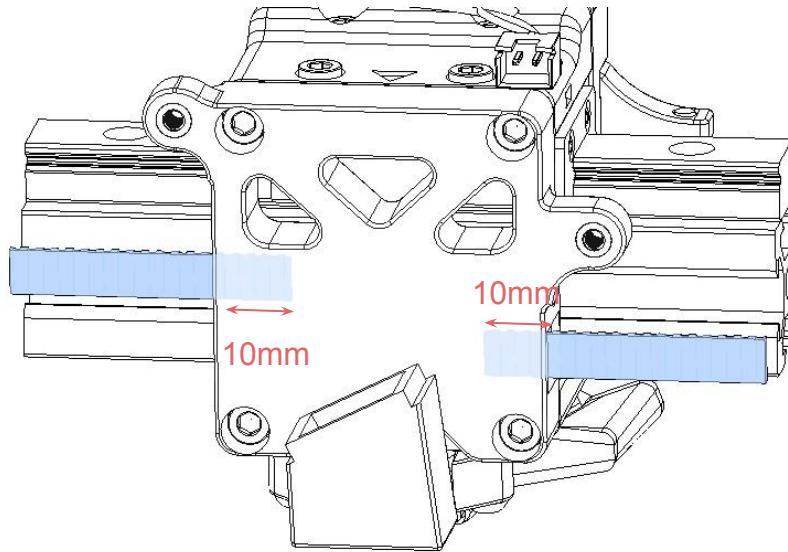
Attach the 5015 Adapter to the Carriage A as shown.



Apply glue before inserting the magnets in the Duct. Push them in until they are flushed in the slots. **Take note of the polarity of the magnets.** Make sure they matched the polarity on Carriage B that you installed earlier.

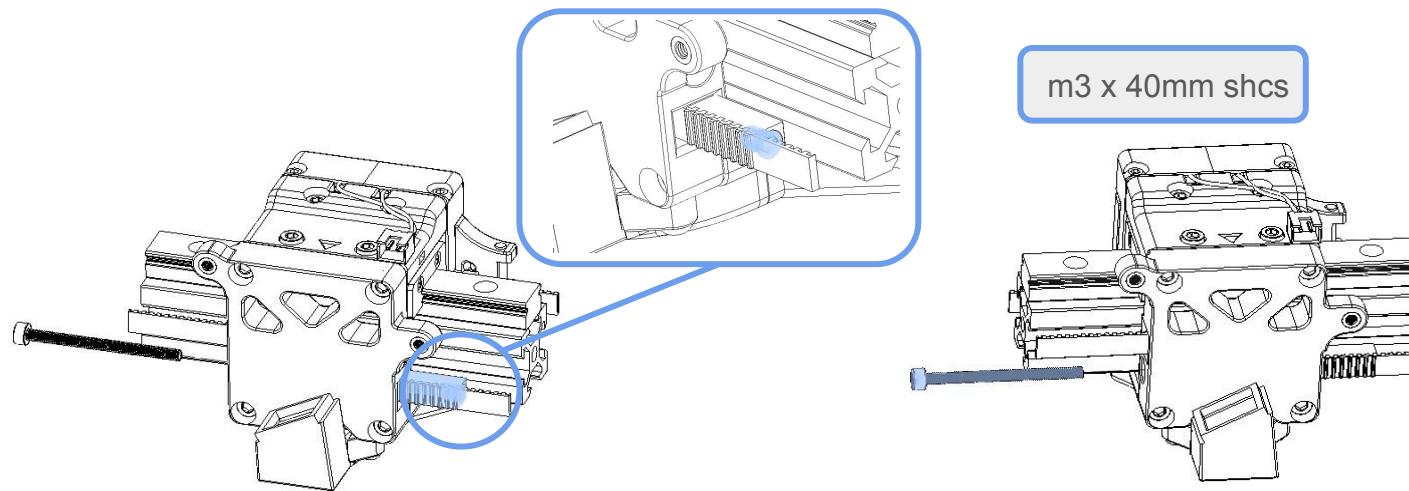


Align the intake of the Duct to the 5015 Adapter. The magnets will automatically pull them together and hold them in place. You can tilt the Duct a bit to help make the assembly easier.



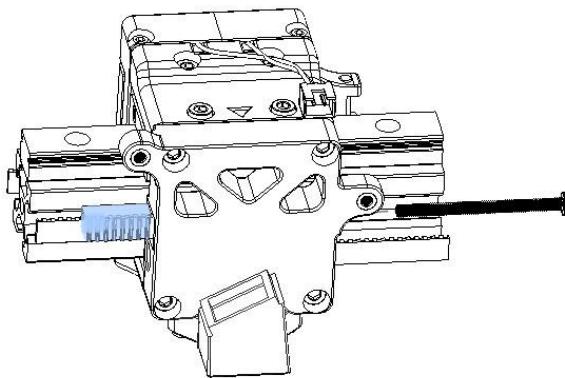
Cut the rear belts with an excess of about 10mm on both sides from the Carriage A body. **Ensure the belts are riding correctly on all the pulleys and idlers before committing to the cut.**

* 5015 fan is removed for illustration purpose

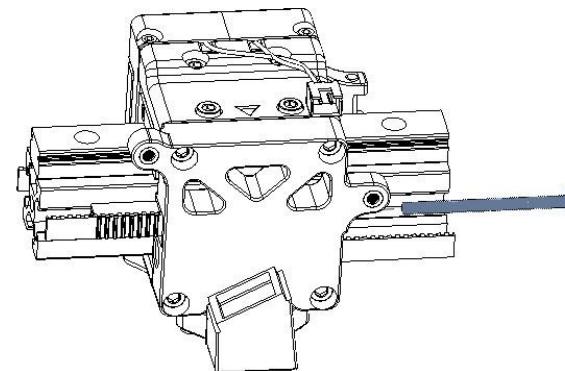


Align the Belt Tensioner at the slot with the teeth facing the belt teeth and secure them with the bolt. Keep them loose for now. **The heat insert should be facing outwards.**

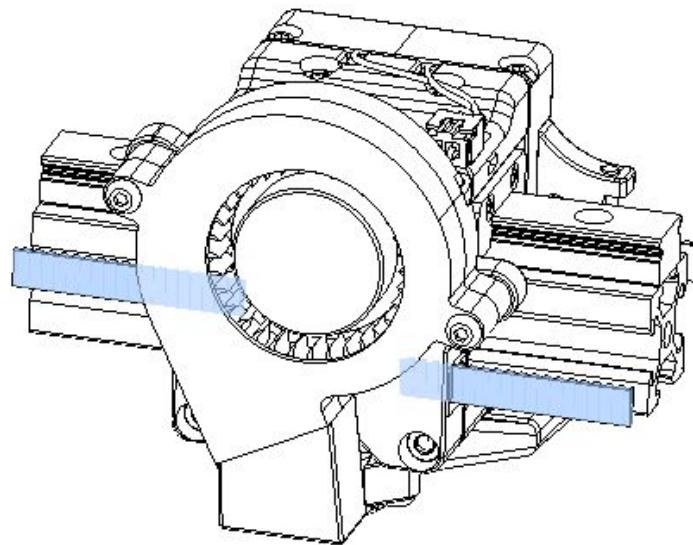
* 5015 fan is removed for illustration purpose



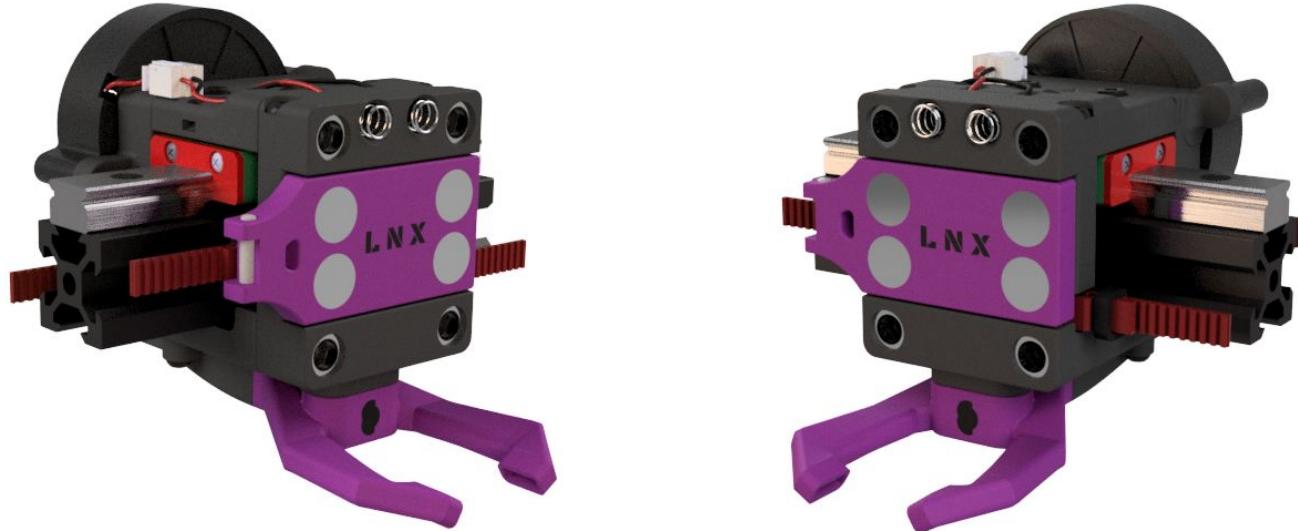
m3 x 40mm shcs



Repeat the same step for the opposite side.



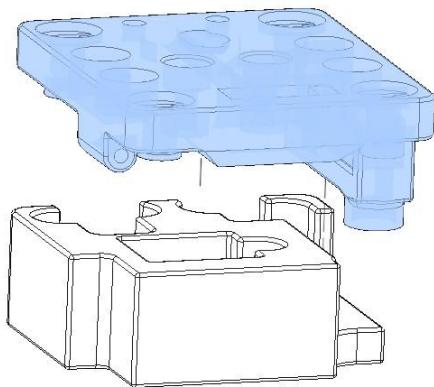
You can now tighten the belts as per your printer's recommended settings.



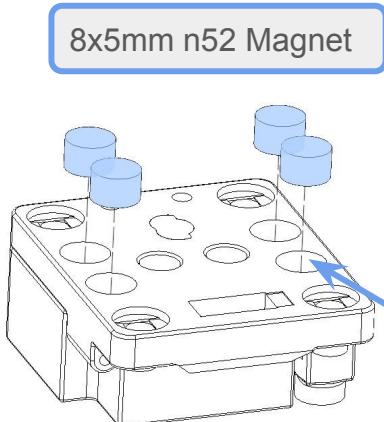
Completed Vzbot Carriage Assembly

Lineux (toolchanger), BTC Klipper (macros), Dockslide (stowable dock) and
Tubby (nozzle offset calibration tool) are created by Bikin Creative Team.





Place the Backplate on the Magnet Mounting Tool. This will make installing the magnets easier.



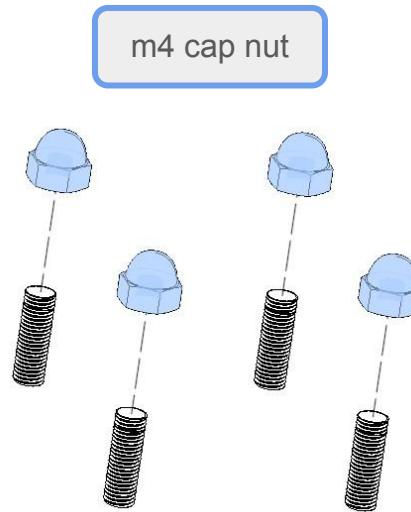
Insert the magnets in the respective slots. Apply a bit of epoxy or glue before inserting the magnets. You may use a mallet or a wrench to push the magnets in and ensure they are flushed with the top surface. **Take note of the magnet polarity configuration.** Ensure they are the opposite polarity to the configuration on your Locking Plate. This will enable the respective magnets to attract when the Toolhead is engaged to the Carriage.



Magnet Mounting Tool



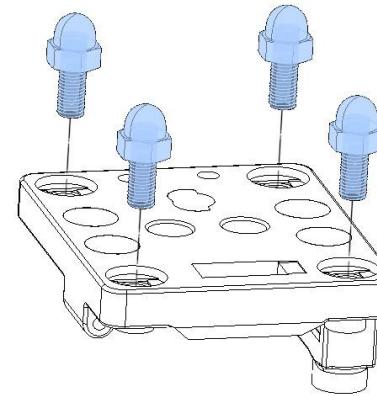
Magnet Polarity Configuration



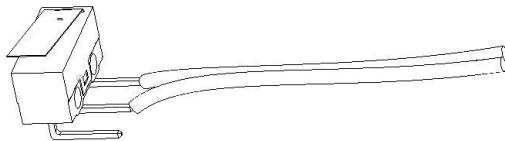
m4 x 12mm set screw

Preparation

Screw in the set screw to the cap nuts. Apply loctite before screwing.



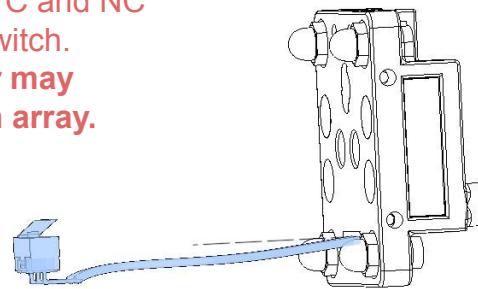
Apply just a bit of Loctite on the set screw thread close to the cap nut before installing. The set screw will screw through the heat insert and into plastic. **Be careful not to allow the Loctite to touch any printed part of the Backplate as it will degrade the material.**



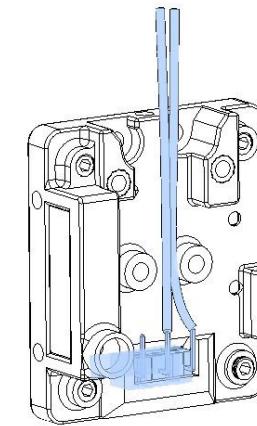
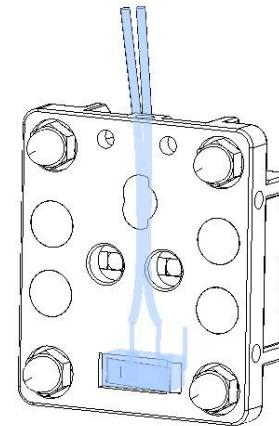
Carriage Sense

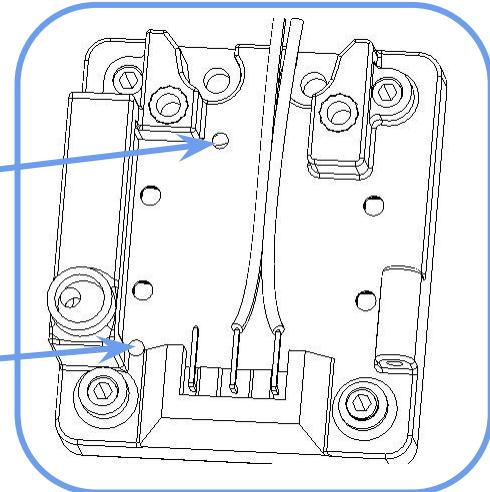
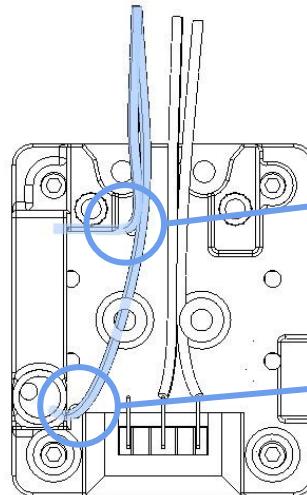
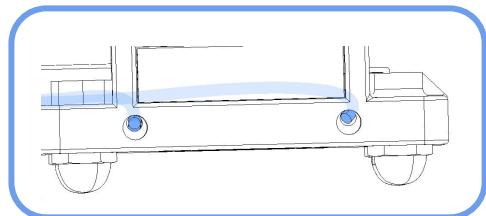
Preparation

Solder 2 wires to the 90deg micro switch. **Take note to solder the wires to C and NC pin on the micro switch. Different supplier may have different pin array.**



Thread the wire into the cutout slot and rotate the switch as you push it in. It should sit all the way in the slot.

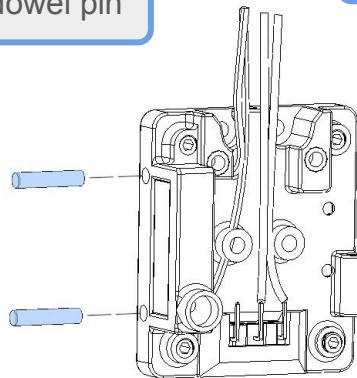


Dock Sense

Strip the end of 2 wires
and thread them into the
wire slot. Ensure the
stripped ends exit into
the dowel slots.

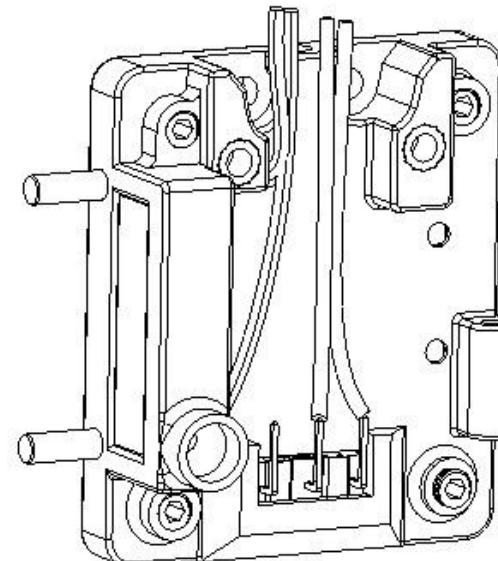
Dock Sense

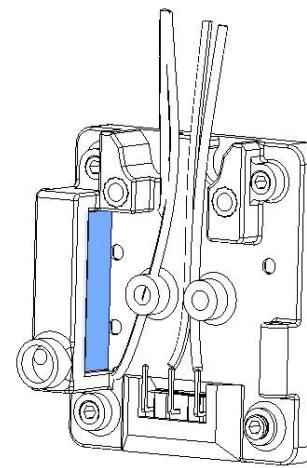
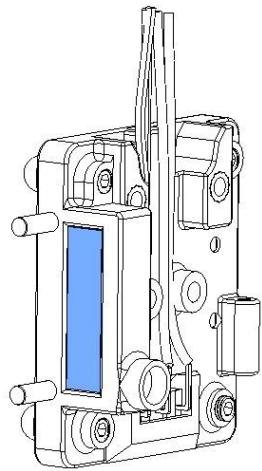
m3 x 14mm dowel pin



Apply a bit of glue before inserting the dowel pins.

Ensure the dowel pins are resting and pushed against the stripped end of the 2 individual wires. Use a multimeter to check for continuity.

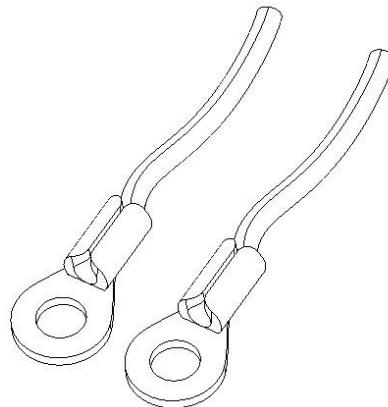




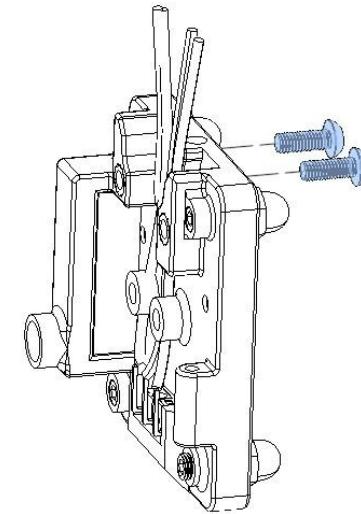
Remove the 2 cutaway support included in the Backplate during printing.

Part Cooling
Fan Connector

ring terminal ot1.5-3



m3 x 8mm bhcs

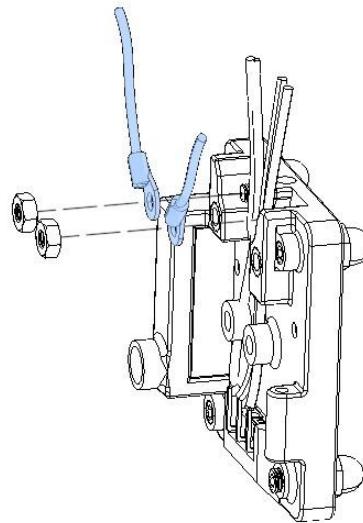


Preparation

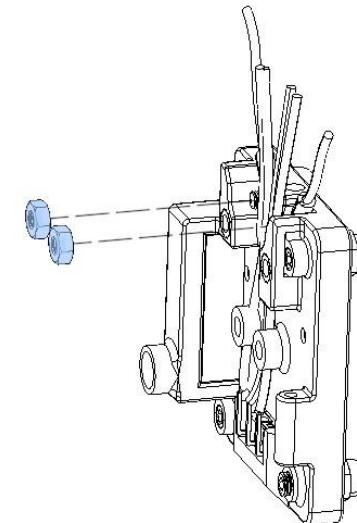
Crimp 2 wires to both ring terminals.

Part Cooling
Fan Connector

m3 hex nut

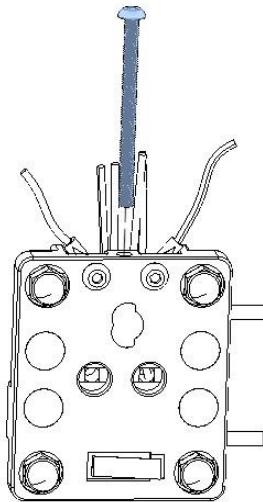


Slide the ring terminals
on the bolt.



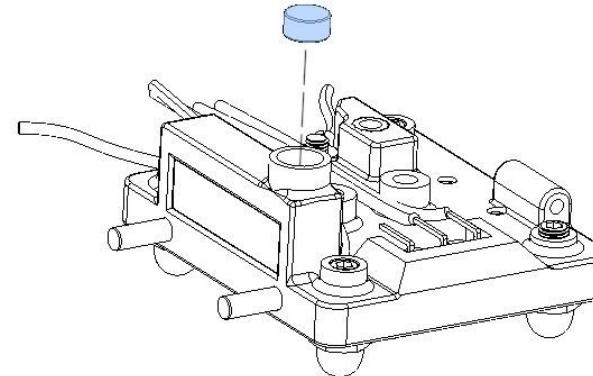
Secure the ring terminals.

m3 x 40mm bhcs

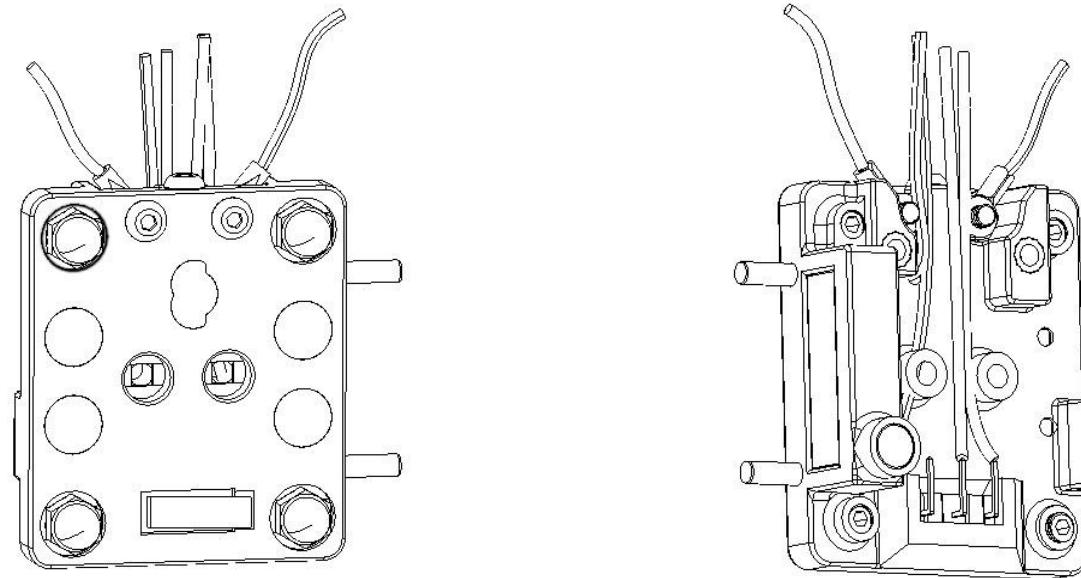


Do not overtighten as
you are screwing into
plastic.

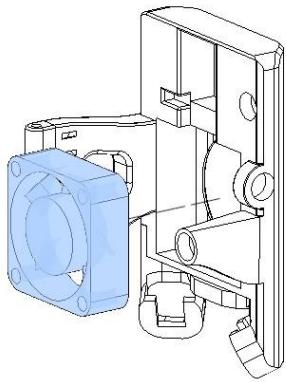
6x3mm n52 magnet



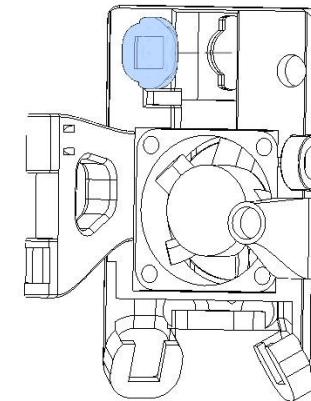
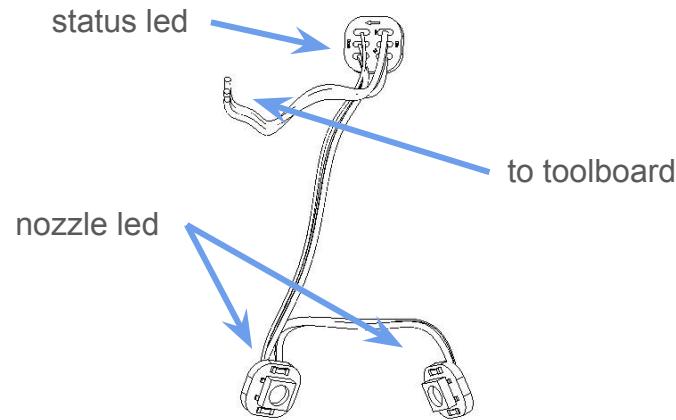
Apply glue before pushing
in the magnet. Ensure they
sit flushed in the slot.



Completed Backplate assembly.



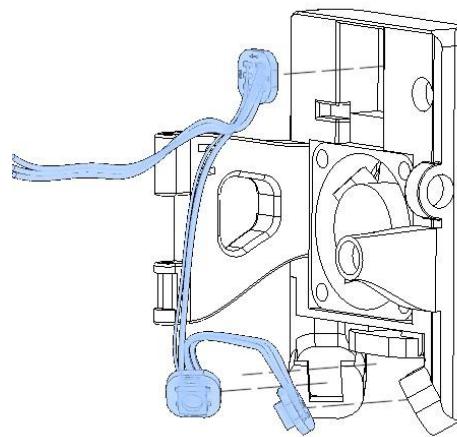
Slot in the 3010 fan into position.



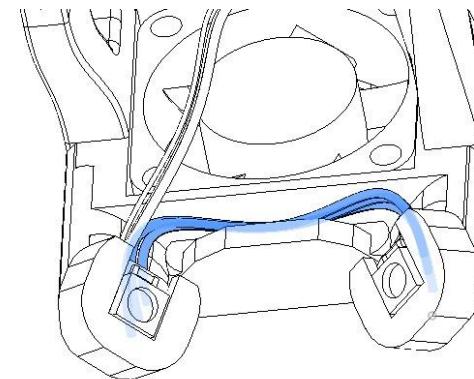
Slot in the Led Diffuser.

Preparation

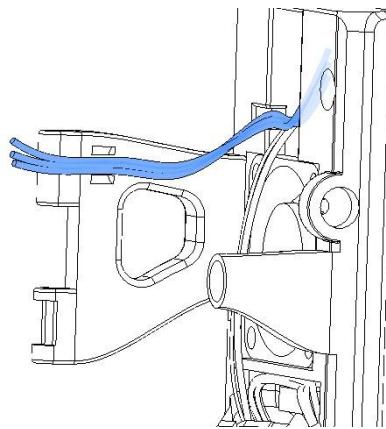
Wire the neopixel leds in this array. The first led from the toolboard will be the status led and the next 2 are the nozzle leds.



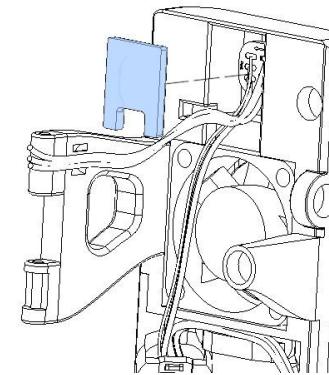
Insert the leds into position in their respective slots.



You can tuck in any excess wire in the wire channel.

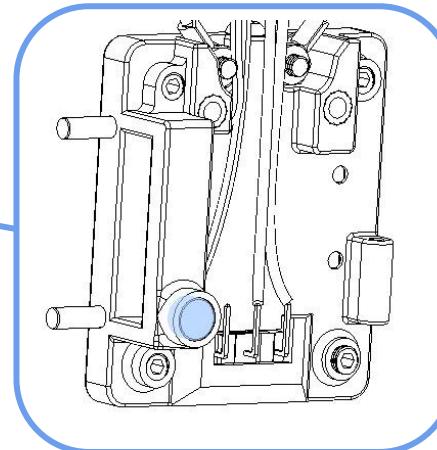
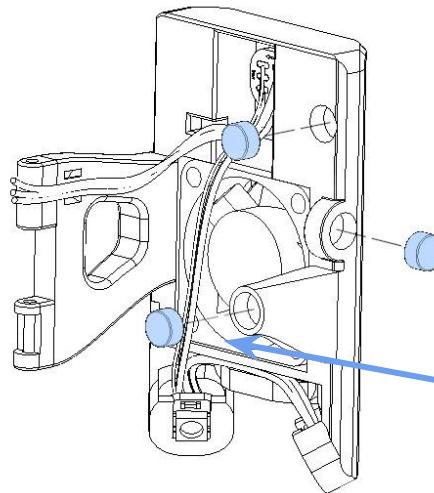


Route the wire
along the side arm
of the Cowl. You will
cable tie the wires
together later.



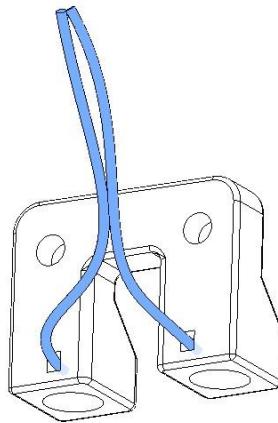
Cover the status led
with the Led
Stopper.

6x3mm n52 magnet

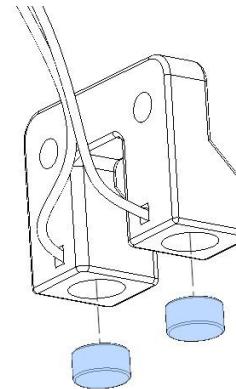


Apply a bit of glue/epoxy before inserting the magnets. Take note of the indicated magnet. Ensure the polarity matches the magnet on the Backplate that you install earlier. They should be attracted to each other.

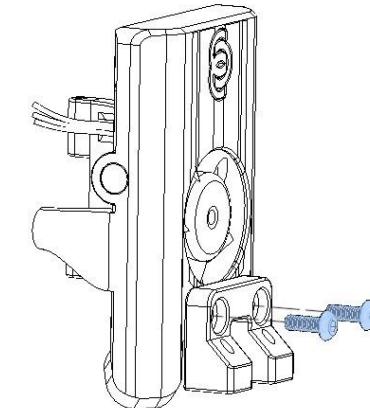
* This step is for Klicky Probe. You may skip this if you are not using Klicky Probe.



6x3mm n52 magnet



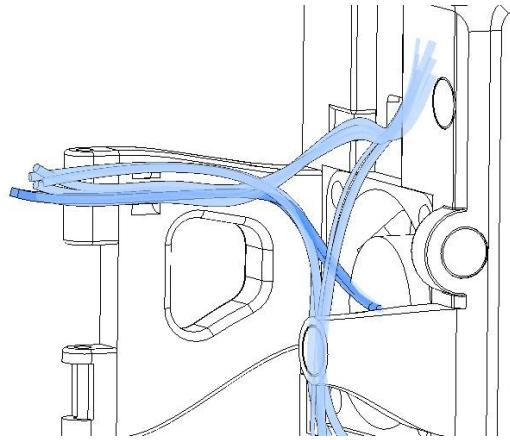
m3 x 8mm bhcs



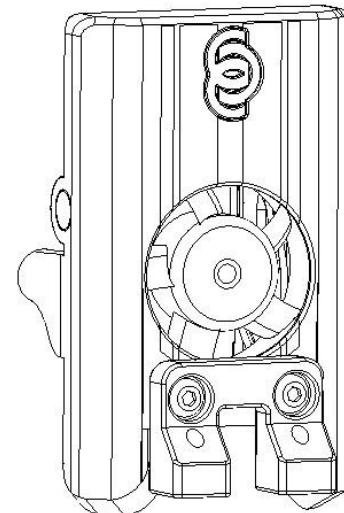
Strip the end of 2 wires and thread them into the 2 holes in the Klicky Mount. Ensure the stripped exposed end are fully inside the magnet slot.

Apply a bit of glue before inserting the magnets. **Ensure the magnets are touching the stripped ends of the wires. Use a multimeter to check for continuity.**

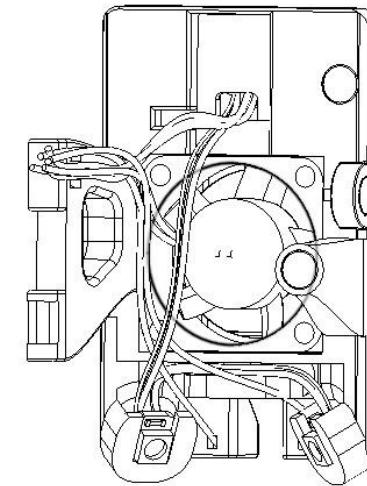
Attached the Klicky Mount to the Cowl.



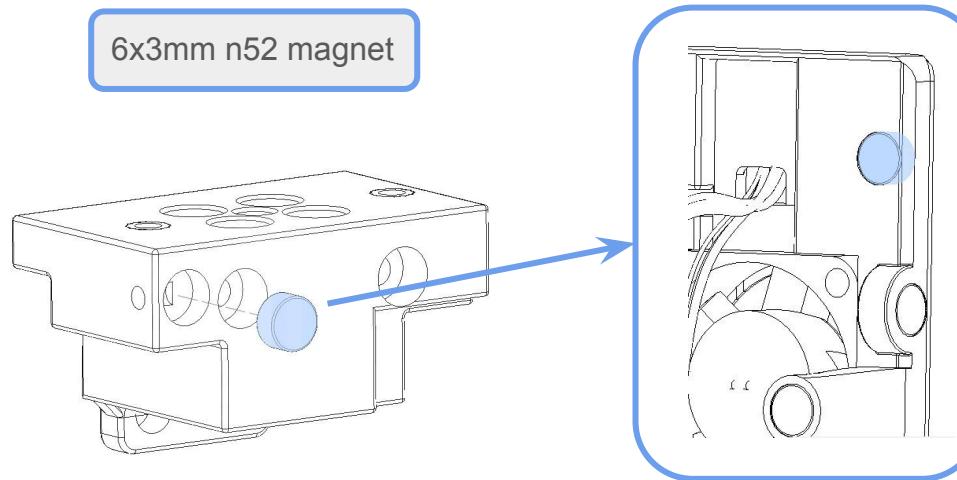
You can now cable tie the led wires, fan wires and klicky wires together on the cowl arm.



Completed Cowl Assembly

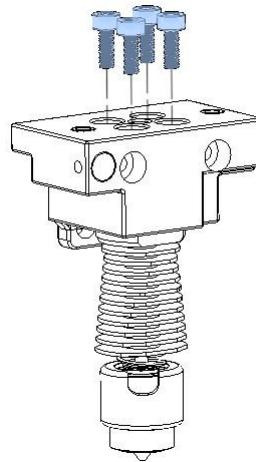


* This guide is showing the Revo Voron hotend. Other hotends may require different printed parts, hardware or steps.



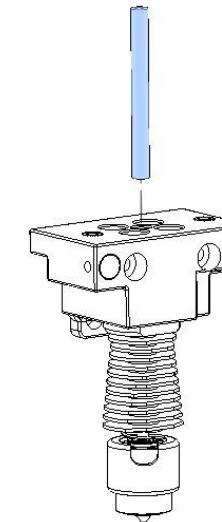
Apply a bit of glue/epoxy before inserting the magnet. Ensure the polarity matches the magnet on the Cowl that you install earlier. They should be attracted to each other.

m3 x 8mm shcs



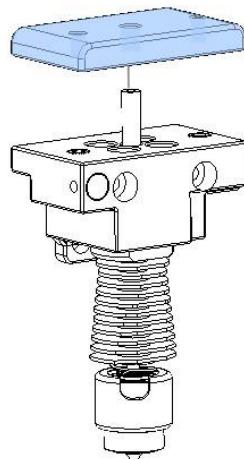
Attached the Revo Voron hotend.

Ptfe tube 40mm

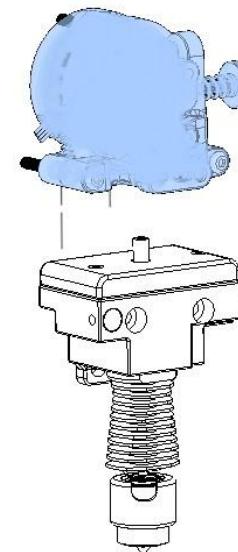


Slide the Ptfe tube fully in.

* This guide is showing the Sherpa Micro Extruder. Other extruders may require different printed parts, hardware or steps.

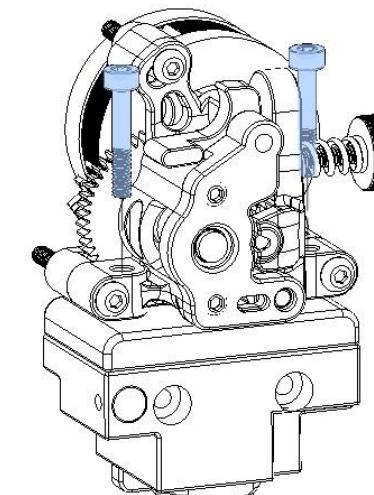


Place the Sherpa Micro Plate over the assembly.

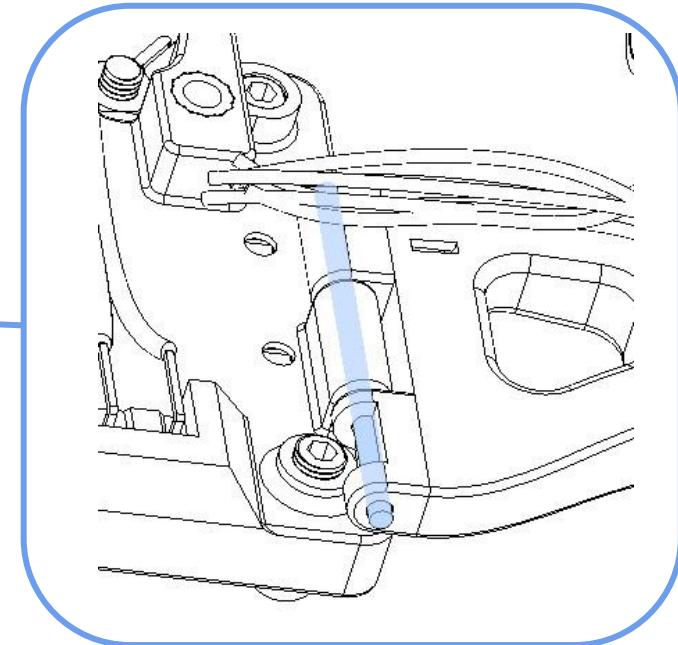
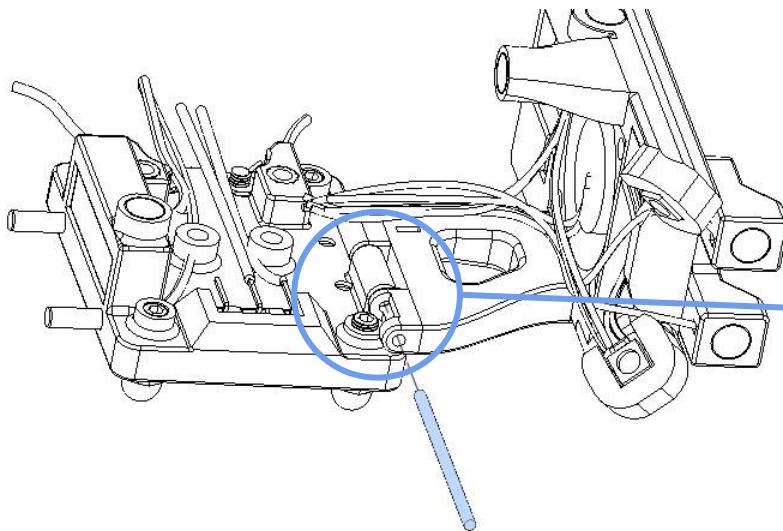


Secure the Sherpa Micro Extruder to the assembly.

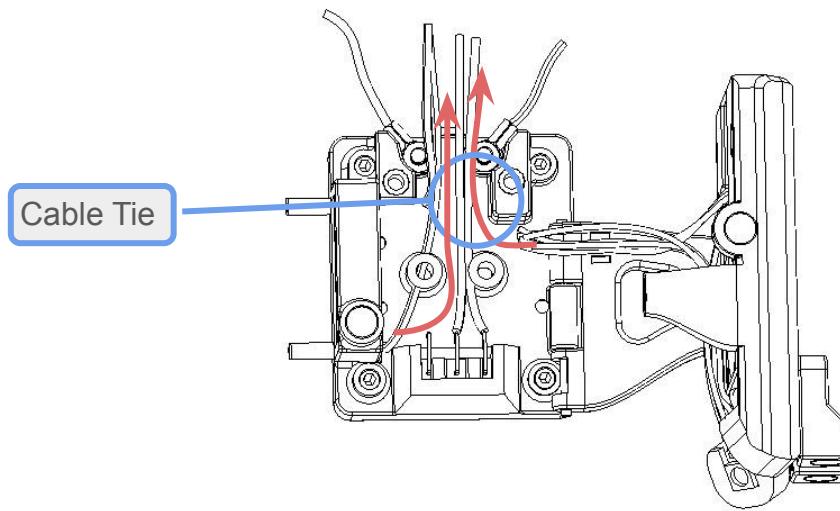
m3 x 18mm shcs



filament 37mm

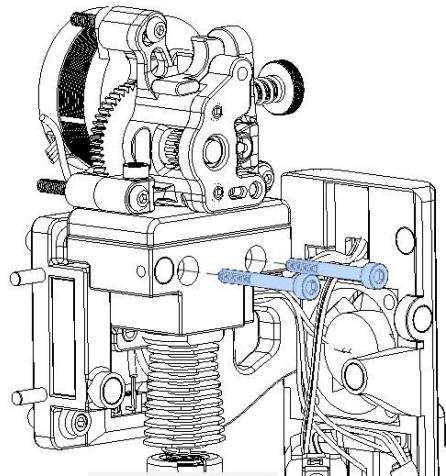


Rotate the Cowl assembly 90° and align the swivel hinge with the Backplate assembly. Slide in the filament to secure both assemblies together. You can pinch both ends of the filament using a plier to secure it in place.

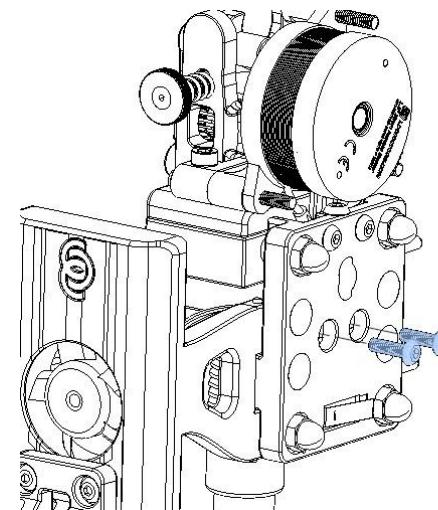


Route all the wires from the Cowl into the middle channel of the Backplate as shown. Keep the Cowl in the 90° position. Cable tie the whole wires in the middle of the channel.

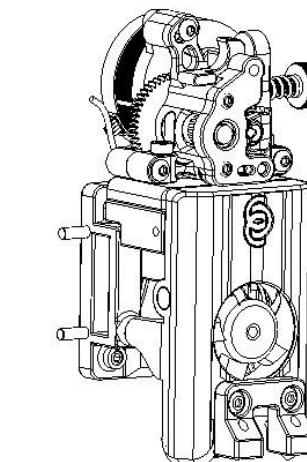
m3 x 25mm shcs



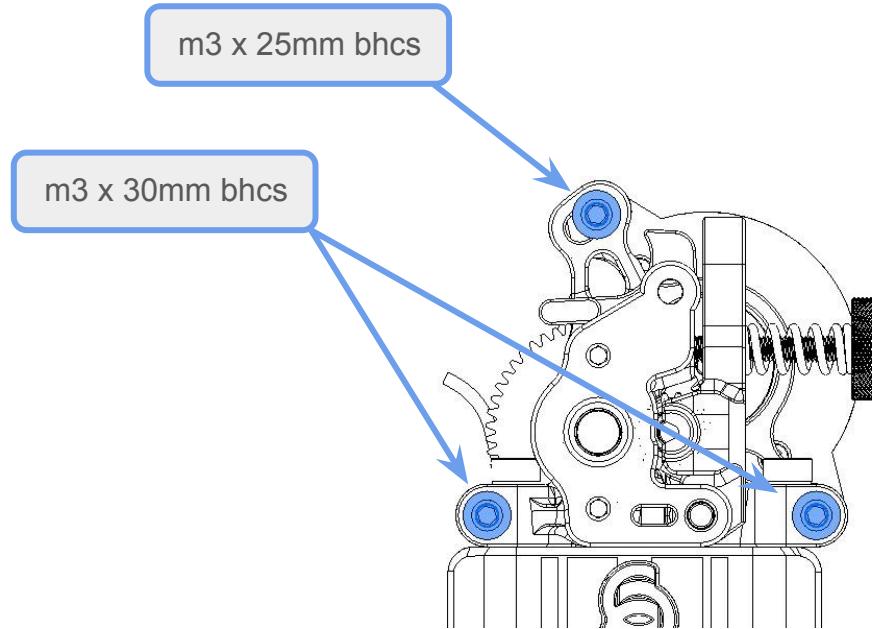
m3 x 10mm bhcs



Secure the hotend/extruder assembly to the Backplate.

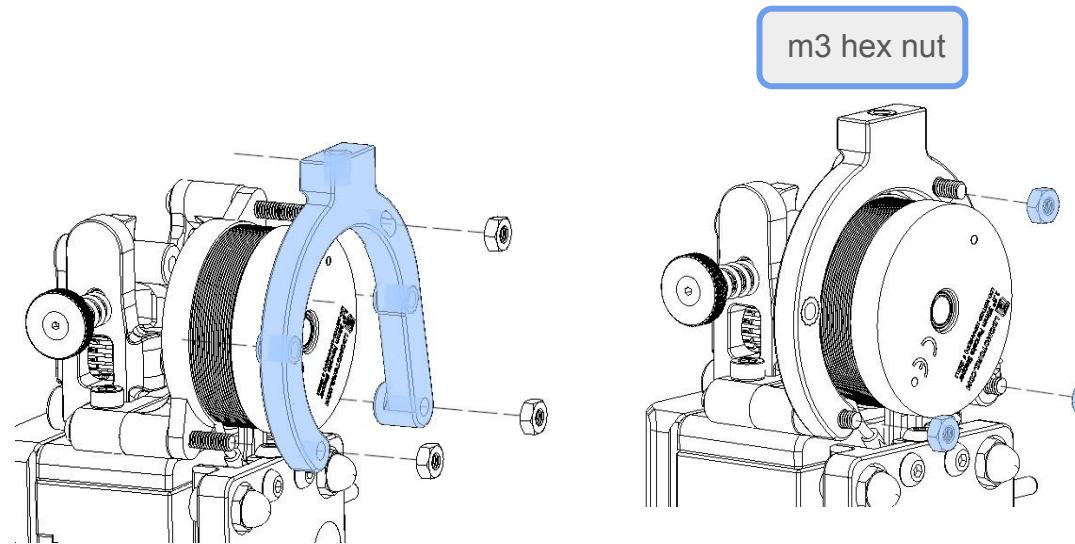


Close the Cowl. It should stay securely in place via the magnets.



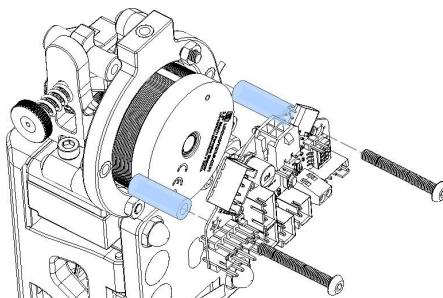
Replace the 3 bolts of Sherpa Micro extruder.

* This guide is showing the Bigtreetech Ebb36 toolboard. Other toolboards may require different printed parts, hardware or steps.

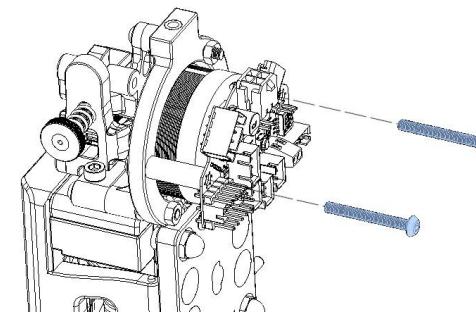
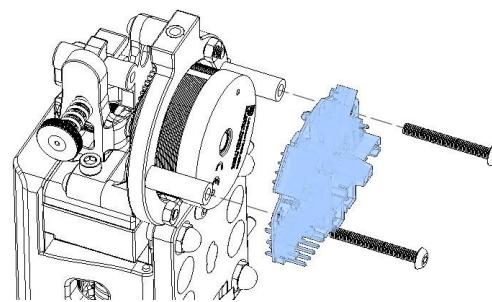


Attach the Sherpa Micro Ebb Mount to the extruder and secure them with the hex nuts.

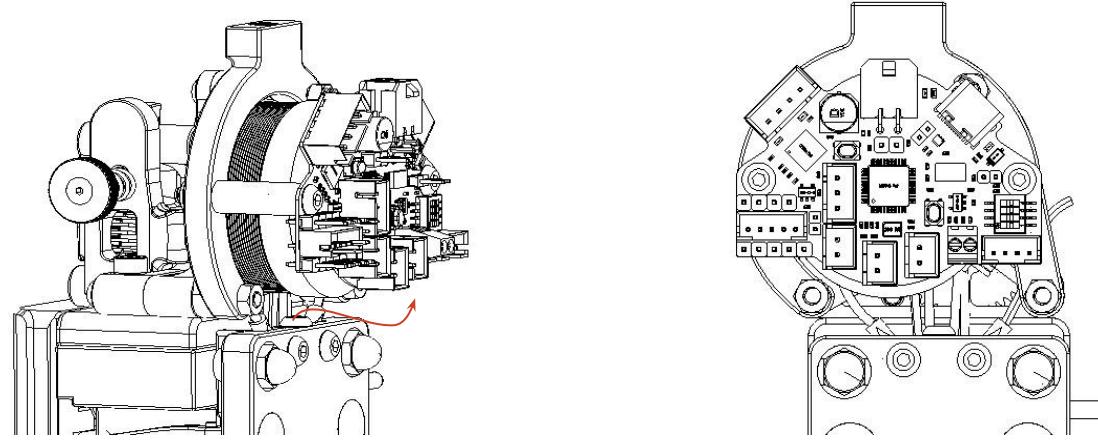
Toolboard Spacer



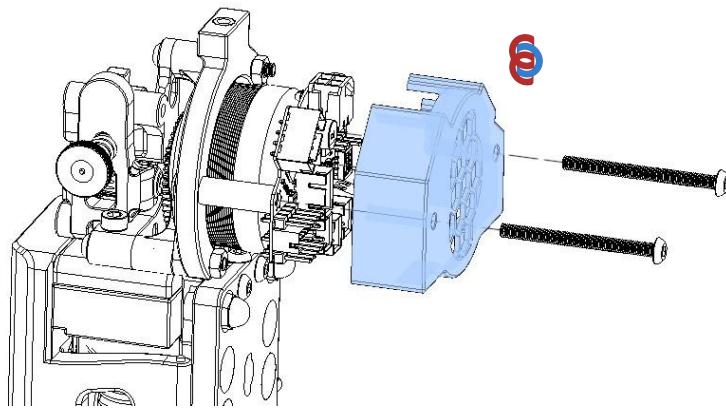
m3 x 25mm bhcs



Temporary attach the Ebb36 to the
Ebb mount.

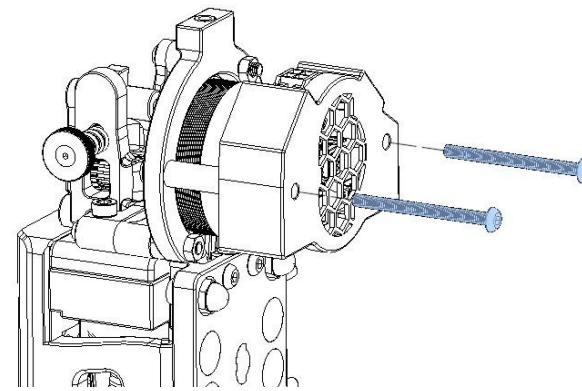


Route all the wires from the Backplate and connect them to their respective connectors/pins on the toolboard. Trim the wires as required and crimp their appropriate connector. Refer to the **toolboard wiring diagram (page 107)** for reference.

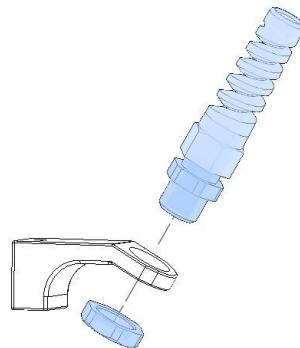


Remove the 2 bolts and attach the Toolboard Cover after you have connected all the wires.

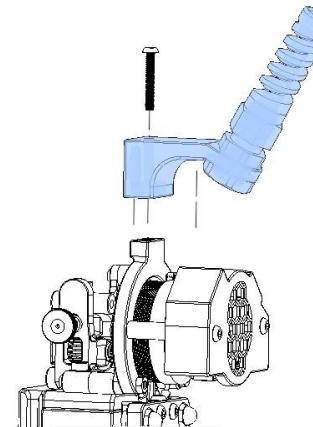
m3 x 35mm bhcs



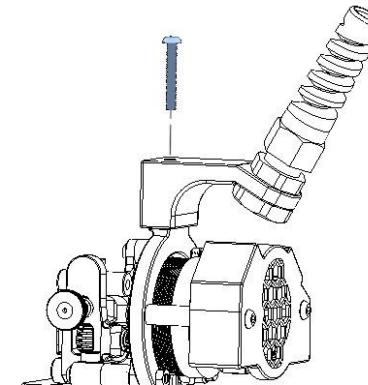
Use the longer bolts and secure the assembly in place.



Attach the PG7 Flex Gland
to the Umbilical Adapter.



m3 x 20mm bhcs



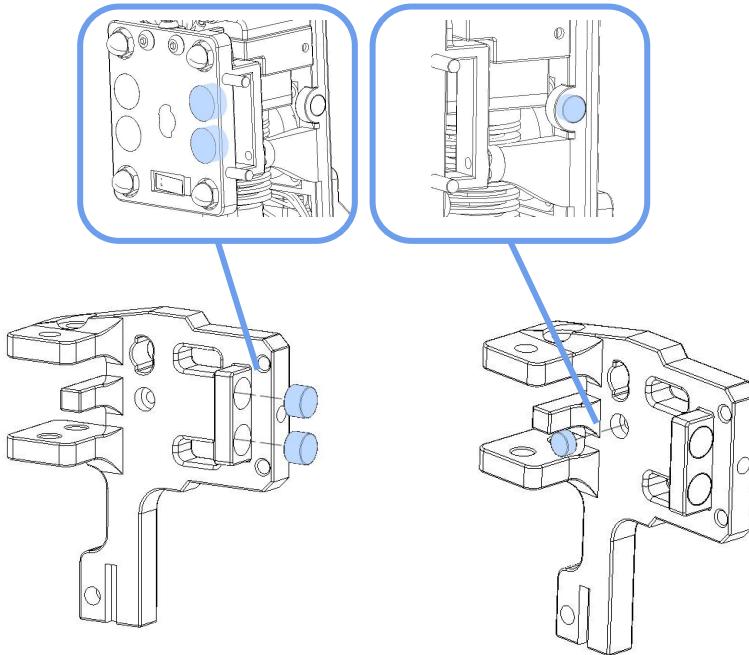
Secure the Umbilical Adapter to
the Ebb36 Mount.



Completed Toolhead Assembly

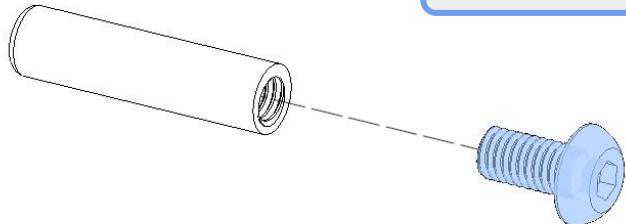
Lineux has since been adapted on different printers eg, Ratríg Vcore 3.1, Voron Trident, Voron 2.4, Ender 5, BLV Mgn Cube, Flatland, etc, by the community around the world.





Apply a bit of glue/epoxy before inserting the magnets. Ensure the polarity matches the magnet on the Cowl and Backplate that you install earlier. They should be attracted to each other when the toolhead is on the dock.

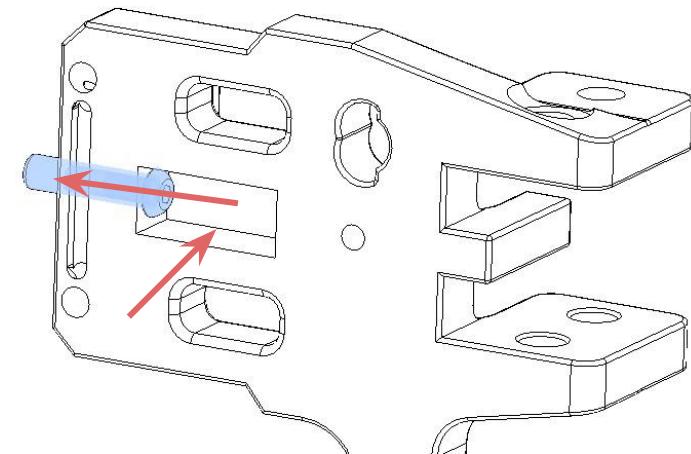
m3 od4 15mm
threaded dowel pin



m3 x 6mm bhcs

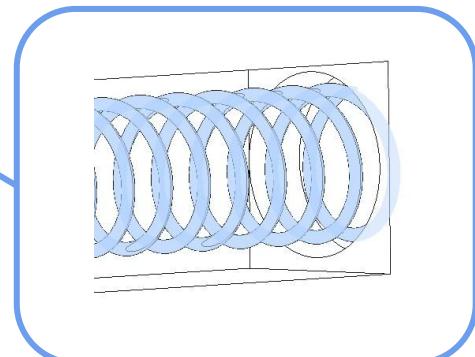
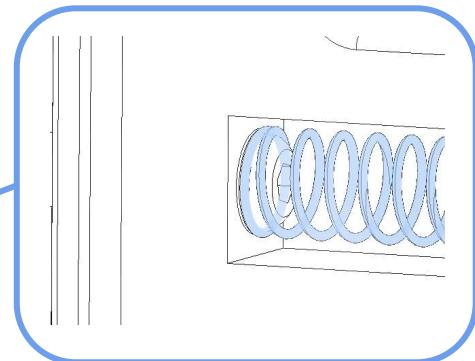
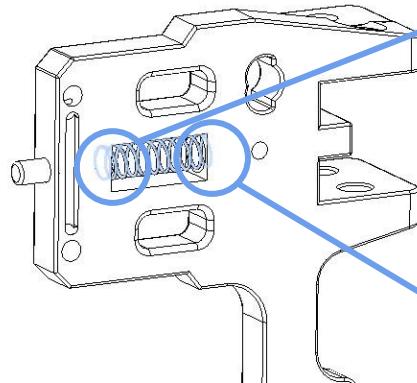
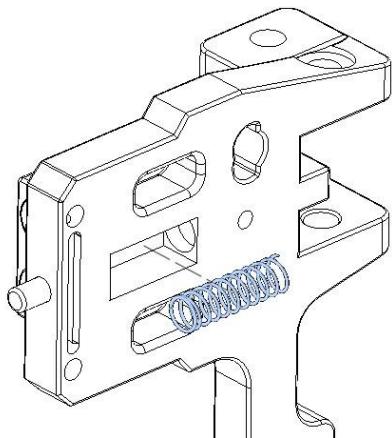
Preparation

Apply Loctite before
screwing in fully.

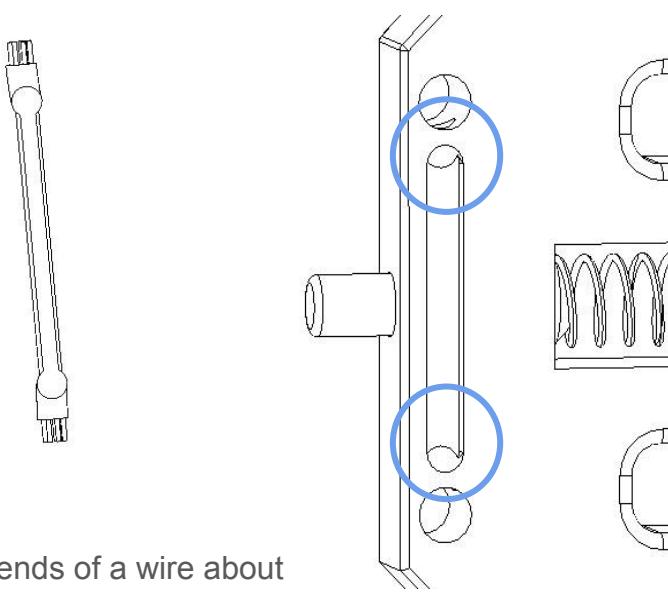


Slide the dowel pin in the slot and
push it all the way to the front.

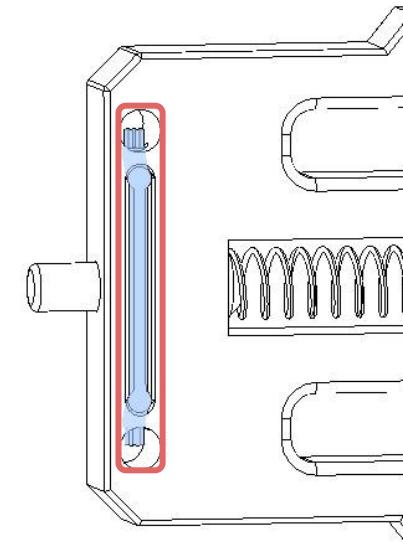
od5 id6 20mm spring



Slide the spring in the slot. Ensure the spring is seated properly on the buttonhead screw and the spring cutout.

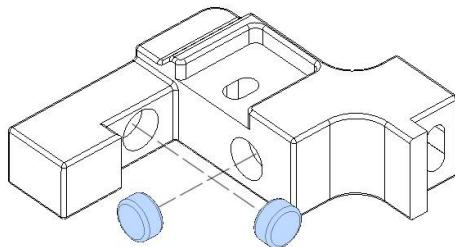


Strip the ends of a wire about 30mm long and thread the exposed ends into the 2 slots on the Dock. Ensure the exposed ends exit into the dowel slots as they will be forming the connection for the Dock Sense.



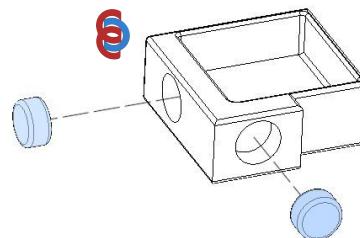
You may tape the wire down to secure it in place.

6x3mm n52 magnet

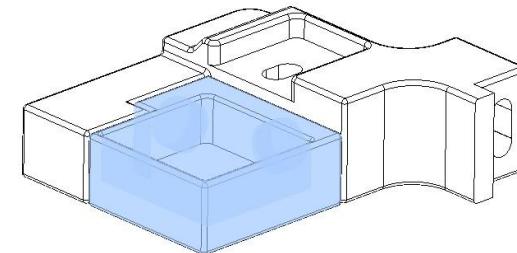


Apply a bit of glue/epoxy before inserting the magnets to the Nozzle Blocker Mount. **Ensure they are flushed with the surface.**

6x3mm n52 magnet

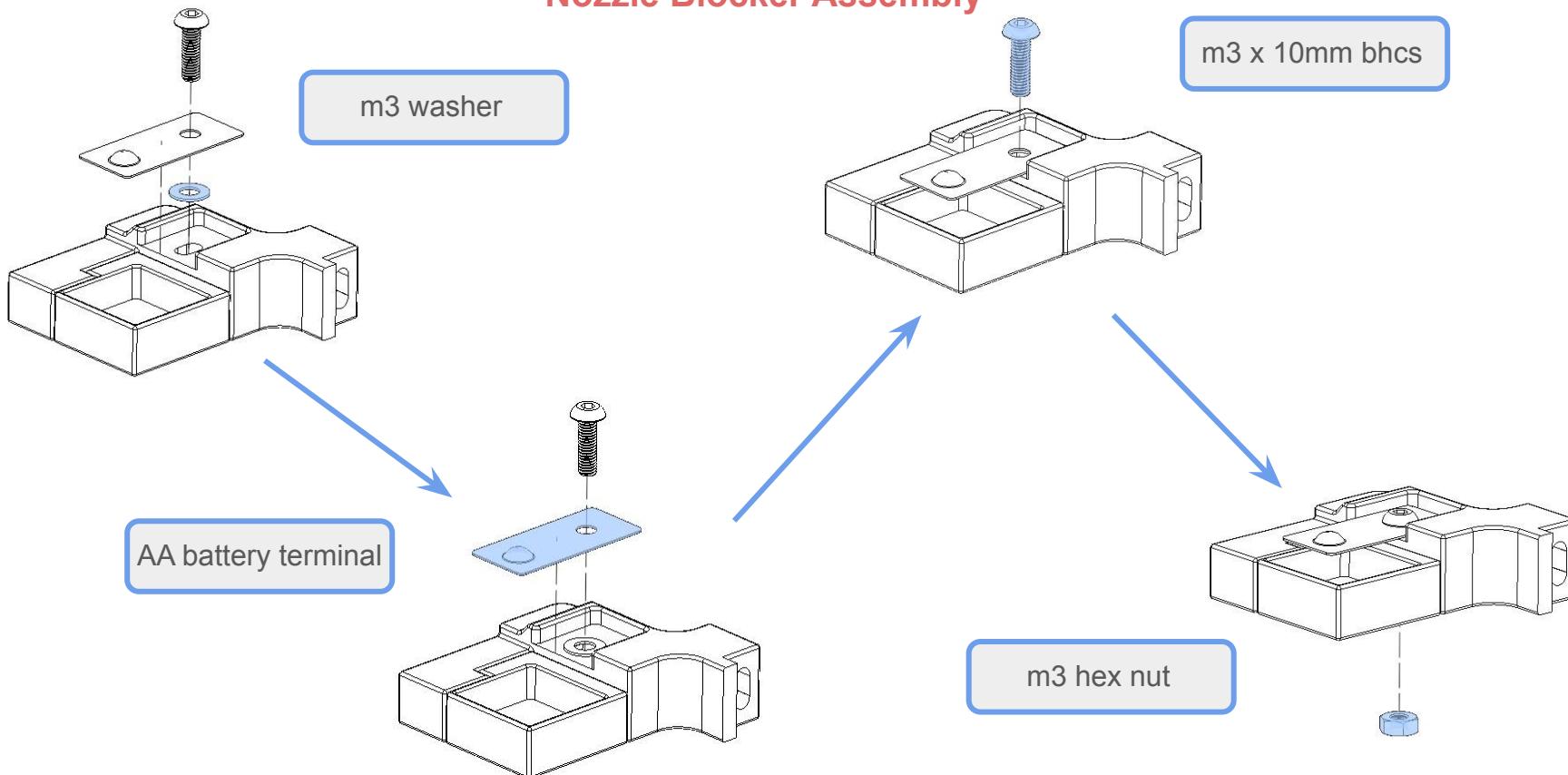


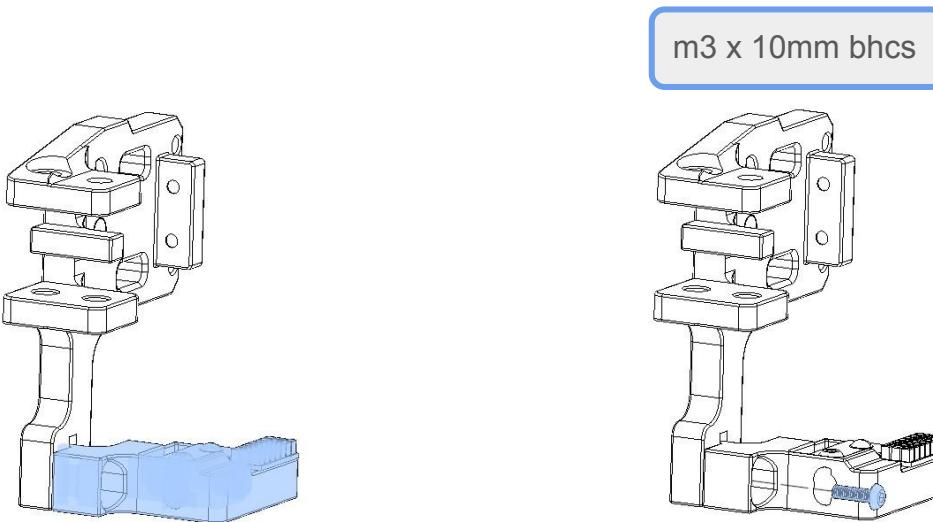
Apply a bit of glue/epoxy before inserting the magnets to the Drip Tray. **Ensure the polarity matches the magnet on the Nozzle Blocker Mount that you have just installed. They should be attracted to each other.**



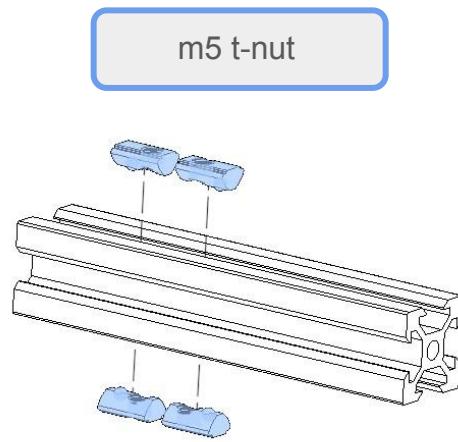
Attach the Drip Tray to the Nozzle Blocker Mount.

Nozzle Blocker Assembly

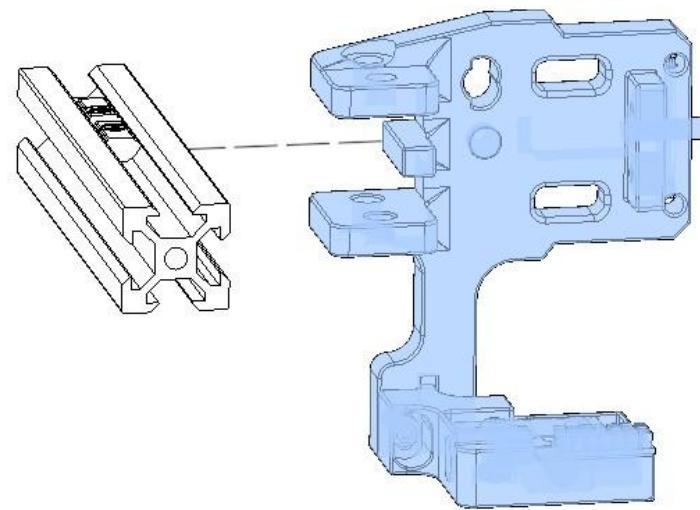




Attach the Nozzle Blocker assembly to the Dock.

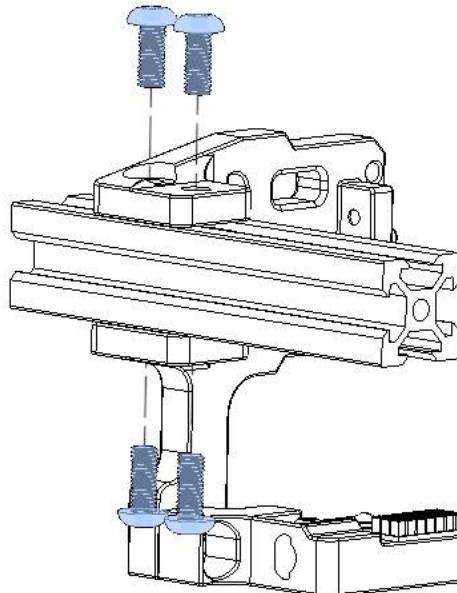


Slide in to both top and bottom of the dock extrusion bar.



Slide in the complete Dock assembly to the dock extrusion bar.

m5 x 12mm bhcs



Secure the Dock to the dock
extrusion bar.



Completed Dock Assembly.

Congratulations on completing your Lineux build. Your next step will be to setup the software configurations and calibrations. Do join us on Discord if you need help or have any questions.



<https://discord.gg/Xwqbjj4VjH>



<https://github.com/Bikin-Creative/Lineux-Toolchanger>

DONATE

We are humans and are prone to mistakes. If you encounter any issues/faults with the build guide, please raise them on our Discord with the relevant page number or a screenshot of the issues/fault.

This guide may be subjected to changes regularly based on feedbacks from the community.

Fysect H36 v1.3

Extruder Stepper Motor

Hotend Fan

Part Cooling Fan

Thermistor

***Ensure the fan jumper is set to the correct voltage.**

Hotend Heater

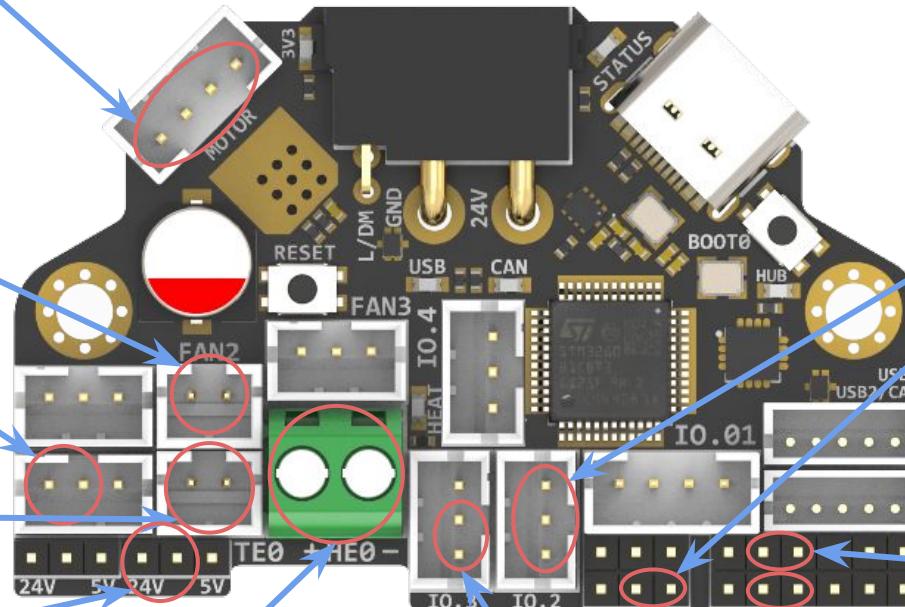
Klicky Probe

Dock Sense

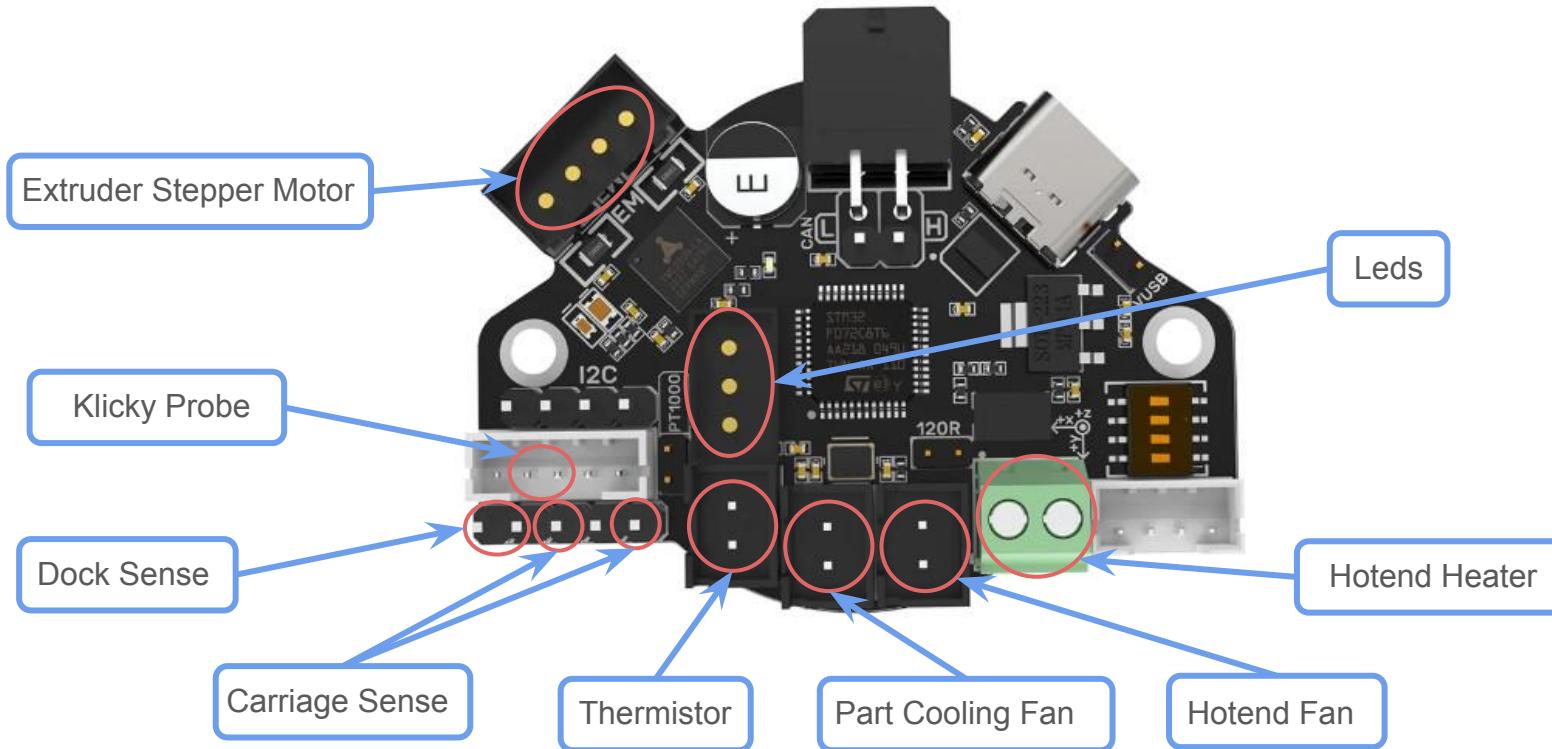
Leds

***Ensure the led jumper is set to the correct voltage.**

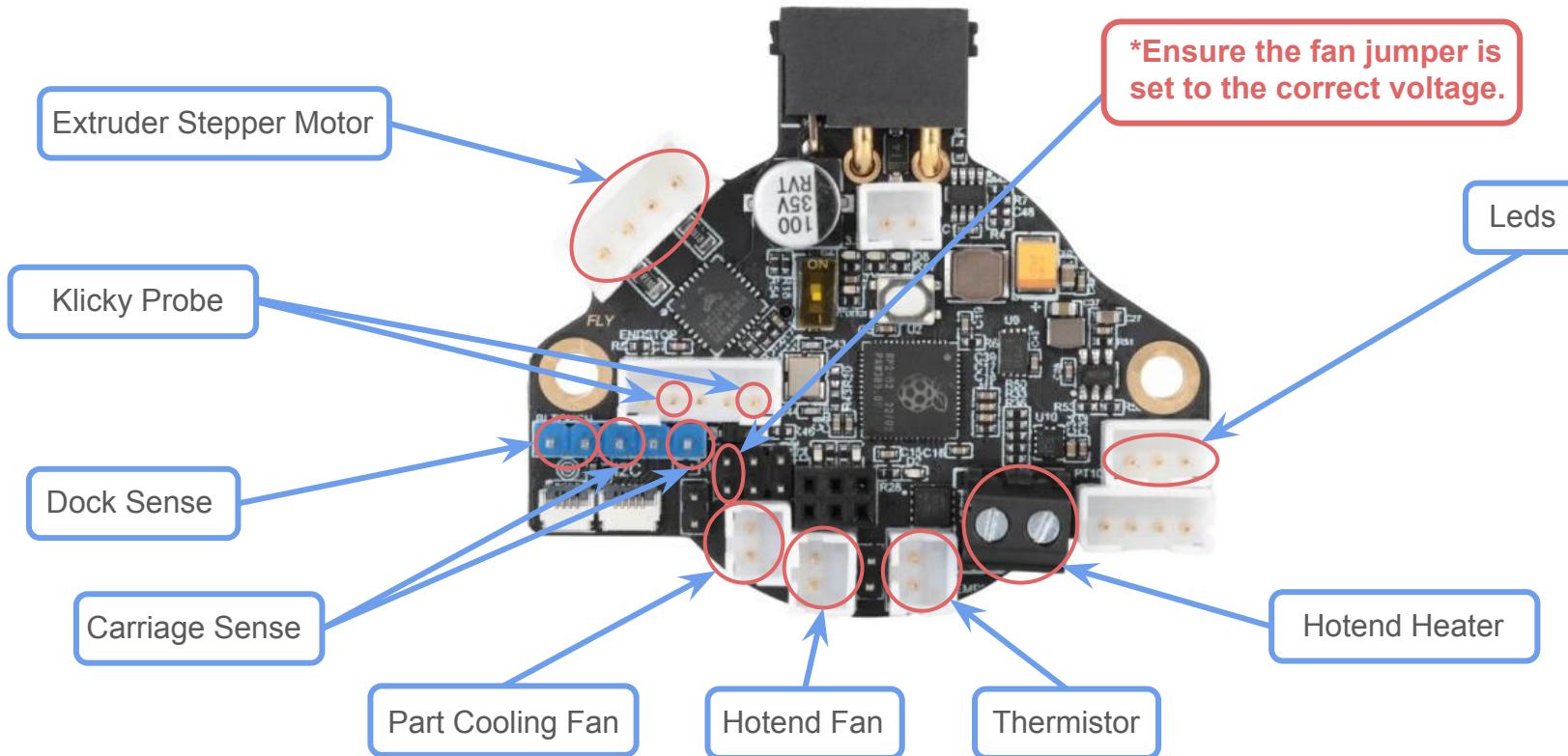
Carriage Sense



Bigtreetech EBB36 v2.1



Mellow SHT36 v3





Lineux Toolchanger

