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SKU M3213

Micro Swiss NG™ Direct Drive Extruder for Creality CR-10S Pro V2 and CR-10 Max

INSTALLATION INSTRUCTIONS

TOOLS NEEDED

- Phillips-head screwdriver
- 1.5mm Allen wrench (included)
- 2.0mm Allen wrench
- 2.5mm Allen wrench
- 3.0mm Allen wrench
- 8mm Spanner wrench
- 10mm Spanner wrench
- Flush cutters

WHAT'S IN THE BOX

1x Master Extruder Assembly
1x Adaptation Plate (M2715)
1x LDO Stepper motor
1x Fan Shroud (NG4020B)
1x Extension Cable (M2721)
5x Zip Ties

Hotend
1x All Metal hotend (M2707-04)
- Thermal Break (M2593)
- Heater Block (M2587)
- Silicone Sock (M2588)
- MK8 Nozzle (M2549-04)

Hardware
1x M5 x 30mm Cap screw
2x M5 x 20mm Nylon Patch Cap screw
1x 5mm ID 10mm OD Washer
1x M5 Nylon Lock Nut

3x M3 x 18mm Thread Forming Screw
4x M3 x 12mm Thread Forming Screw

1x 7mm Low-profile spanner wrench
1x 1.5mm Allen wrench
1x 3D Printed C-clip

2x M3 x 6mm screws

PTFE Guide Tube Assembly
1x 3D Printed PTFE Bracket (MS-PTFE-A)
1x Bowden Coupler (M2594)
1x 3D Printed C-clip
2x M3 x 10mm Button Head Screw
2x M3 Nuts

Spare Hardware
1x Bowden Coupler
1x 3D Printed C-clip

PREPARATION

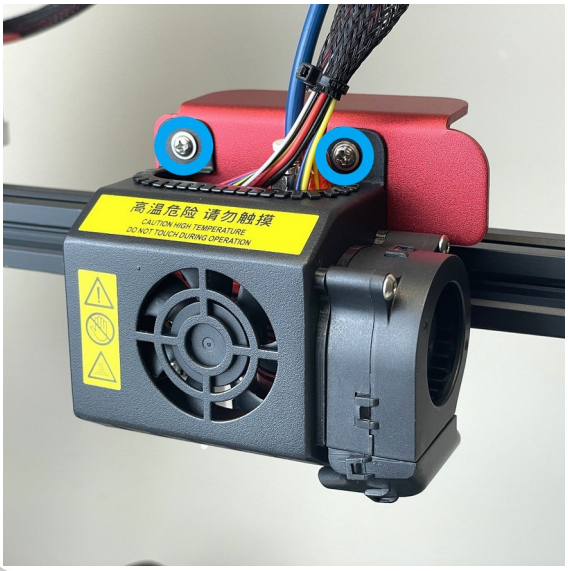
Remove the filament from your original hotend and allow the printer to cool down completely.

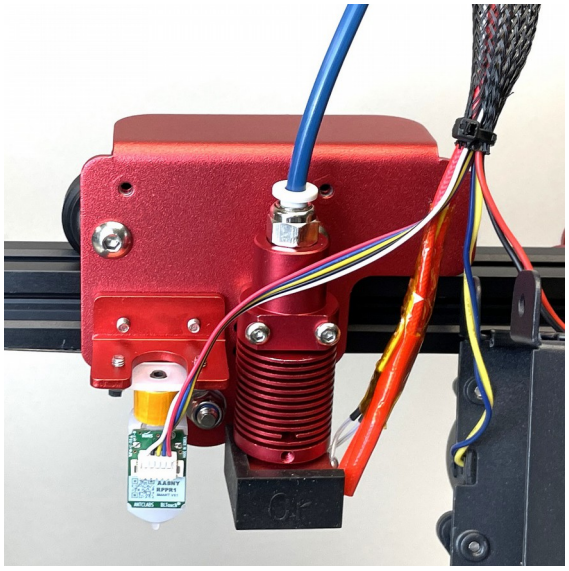
STEP 1 - SAFETY

Verify that the hotend and bed have cooled down to room temperature before starting any work on the printer.

⚠ For your safety, turn off and unplug your printer.

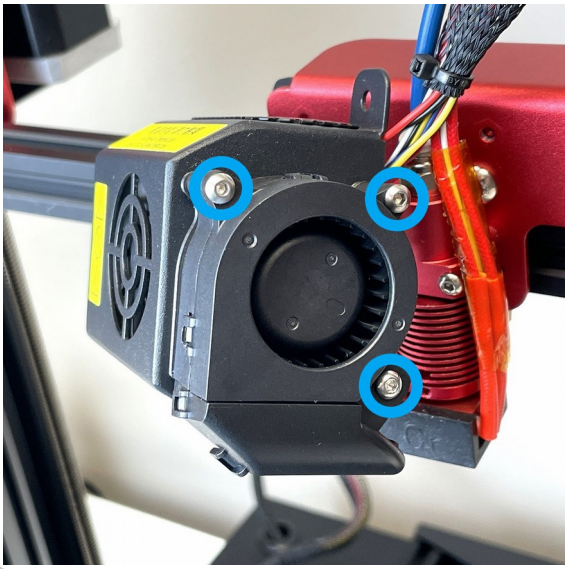
STEP 2 - REMOVE THE FAN SHROUD

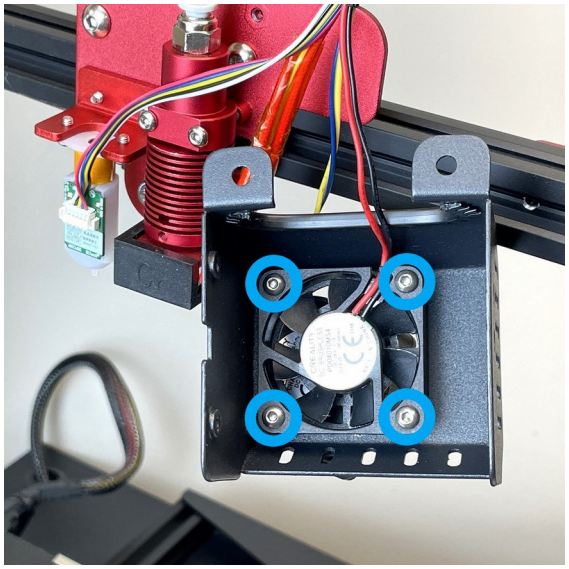




- Remove the two screws holding the fan shroud.
(Phillips-head screwdriver)

STEP 3 - DETACH THE FANS FROM THE SHROUD

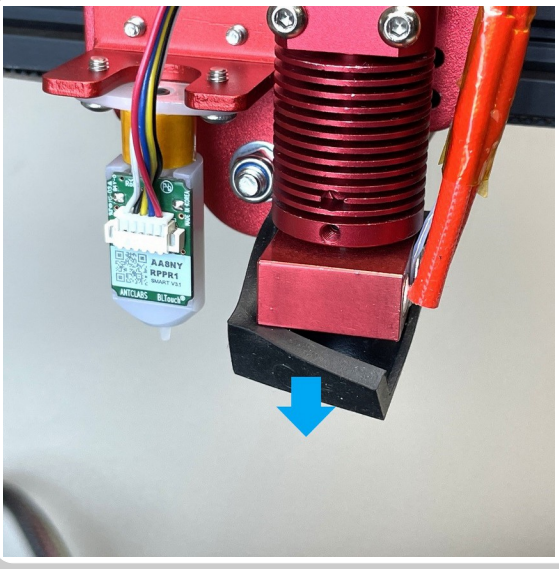


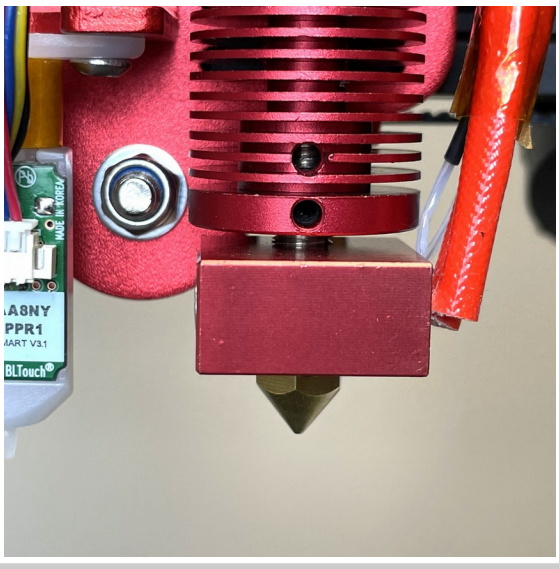


- Detach the part cooling fan from the fan shroud.
(2.0mm Allen wrench)

- Detach the hotend fan from the shroud.
(2.0mm Allen wrench)

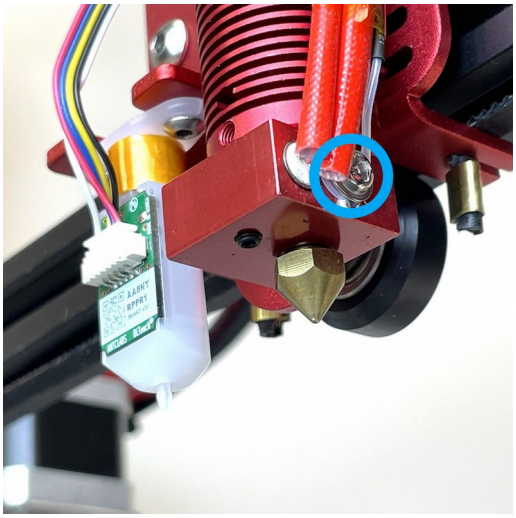
STEP 4 - REMOVE THE SILICONE SOCK

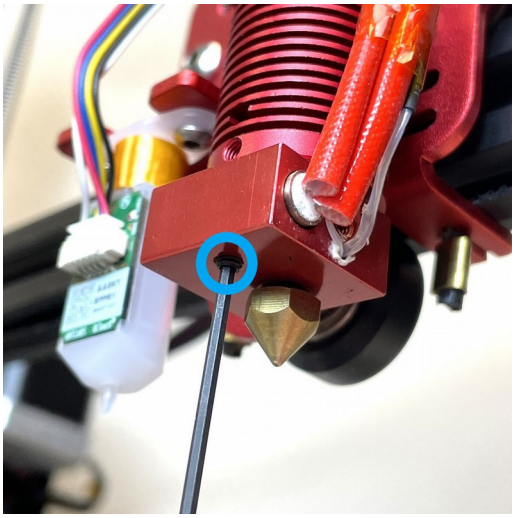


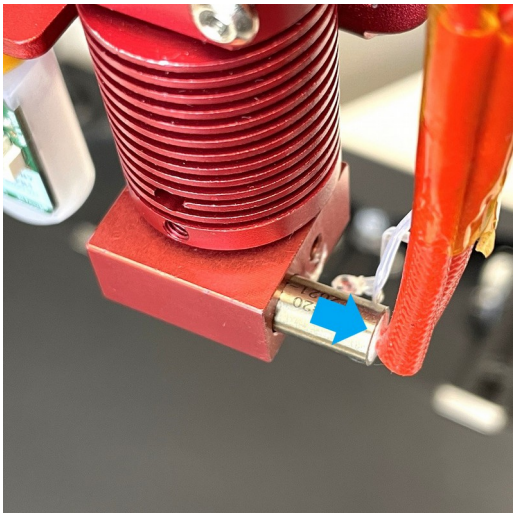


- Take the silicone sock off of the heater block.

STEP 5 - REMOVE THE HEATER CARTRIDGE AND THERMISTOR







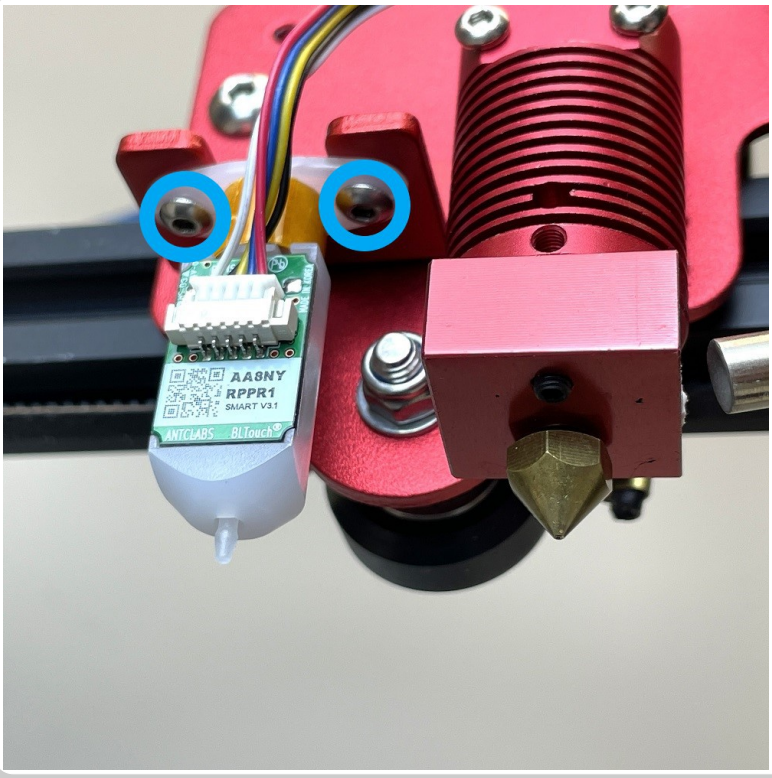
- Remove the screw holding the thermistor wires.
(Phillips-head screwdriver)

- Loosen the set-screw holding the heater cartridge.
(1.5mm Allen wrench)

- Pull the thermistor and heater cartridge out of the heater block.

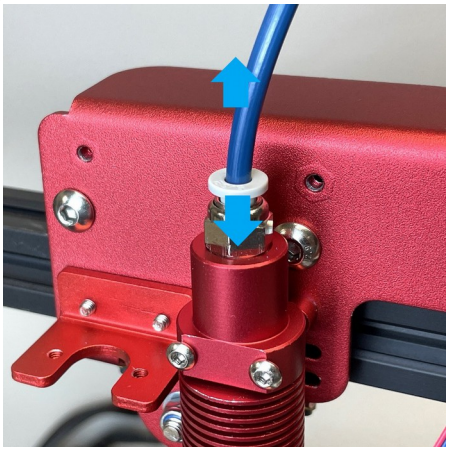
Be careful not to damage the delicate wires.

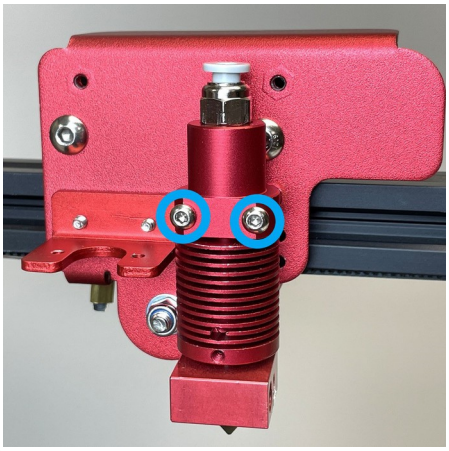
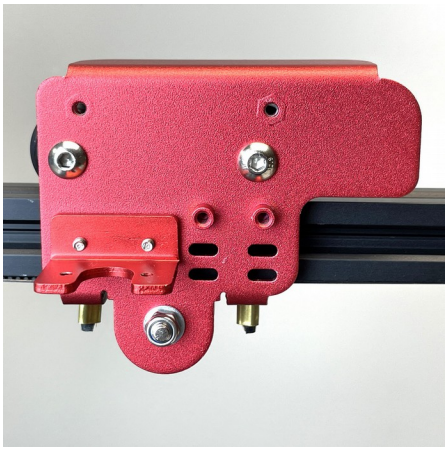
STEP 6 - REMOVE THE BL-TOUCH



- Remove the two screws holding the BL-Touch.
(2.0mm Allen wrench)

STEP 7 - REMOVE THE HOTEND

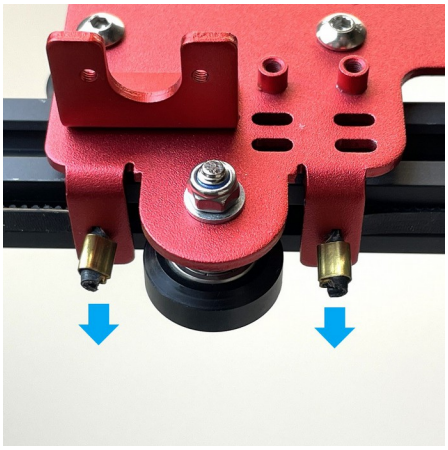
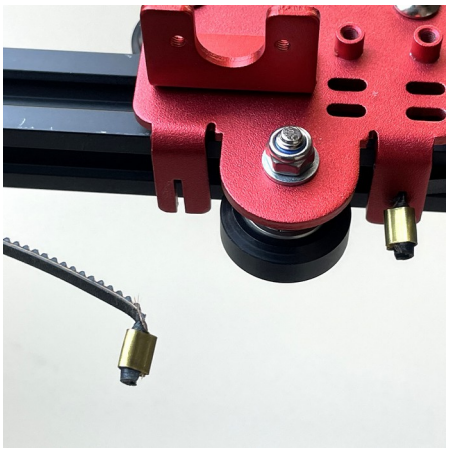
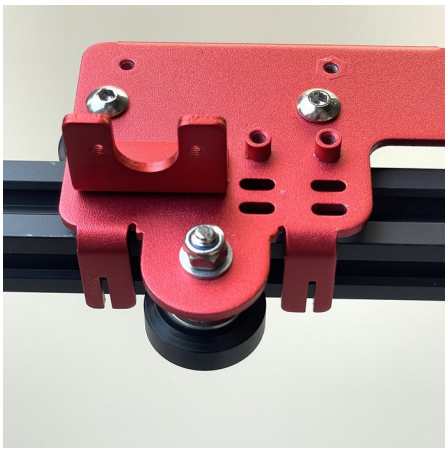


- Disconnect the PTFE tube from the hotend by pressing the Bowden coupler down, and then pulling the PTFE tube out.

- Remove the two screws holding the hotend. (2.0mm Allen wrench)

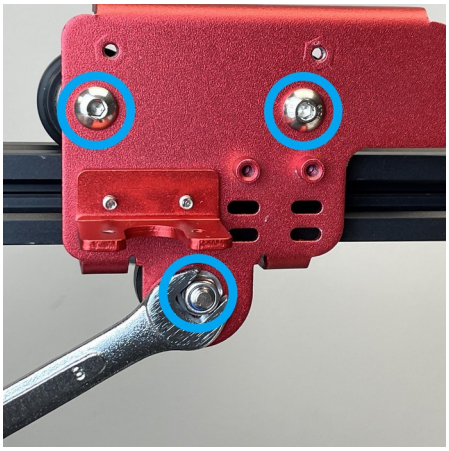
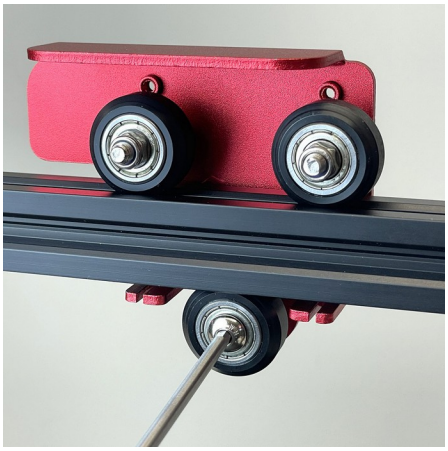
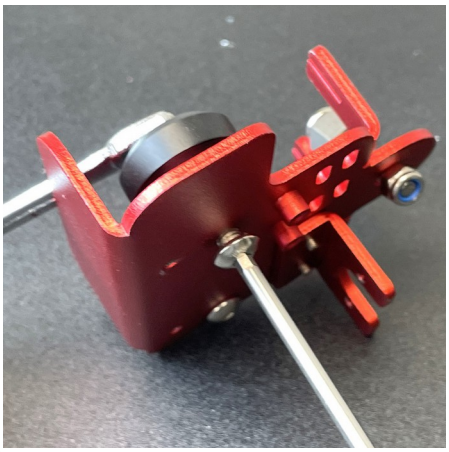
STEP 8 - DETACH THE BELT

- Loosen the belt tensioner. (3.0mm Allen wrench)

- Detach the X-axis belt from the carriage plate.

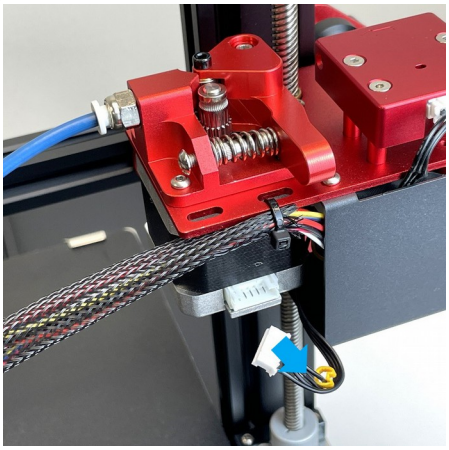
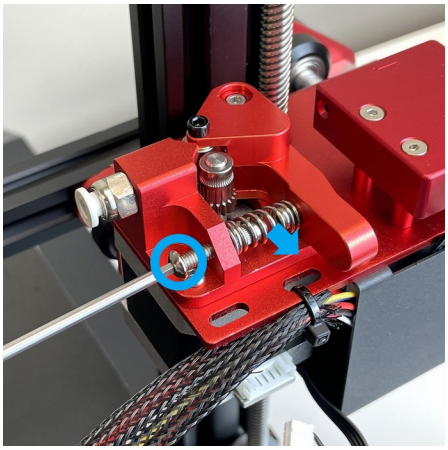
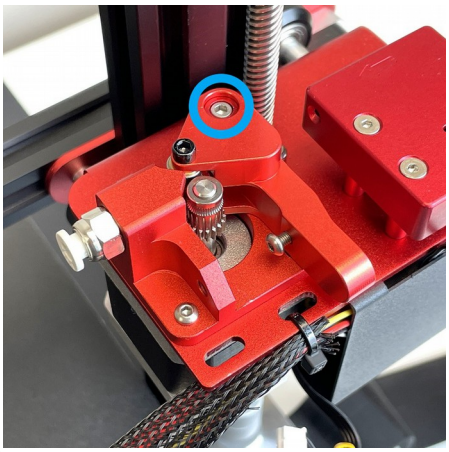
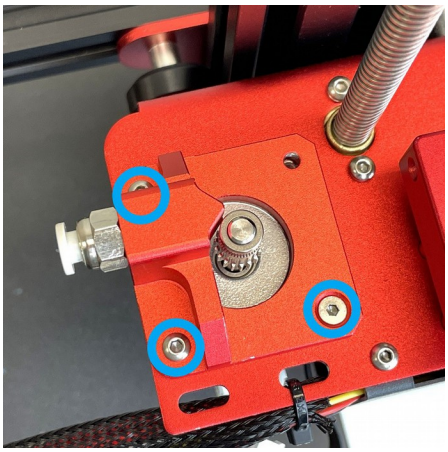
STEP 9 - REMOVE THE CARRIAGE PLATE AND WHEELS


- Remove the three V-Roller wheels.
(3.0mm Allen wrench and 8mm spanner wrench)

The three V-Roller wheels will be reused during the installation of the NG Extruder.

STEP 10 - DISASSEMBLE THE ORIGINAL EXTRUDER

- Disconnect the stepper motor cable.

- Detach the PTFE tube from the extruder by pressing the Bowden Coupler in and then pulling the PTFE tube out.

- Remove the screw holding the gear tensioning spring in place.
(2.5mm Allen wrench)

- Remove the gear tensioning spring.

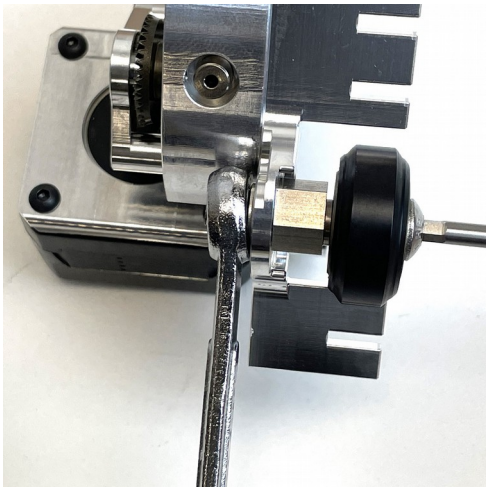
- Remove the screw holding the extruder arm.
(2.5mm Allen wrench)

- Remove the remaining three screws holding the stepper motor and extruder main body.
(2.0mm Allen wrench)

STEP 11 - PREPARE THE NG EXTRUDER

- Detach the NG fan shroud from the extruder by removing the two screws that secure it in place.
(2.0mm Allen wrench)

STEP 12 - INSTALL THE ECCENTRIC NUT AND BOTTOM WHEEL

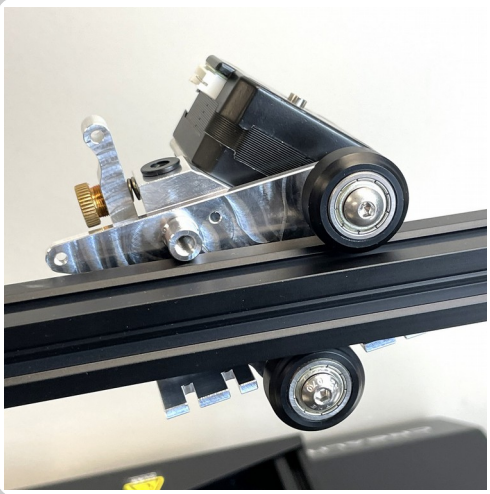


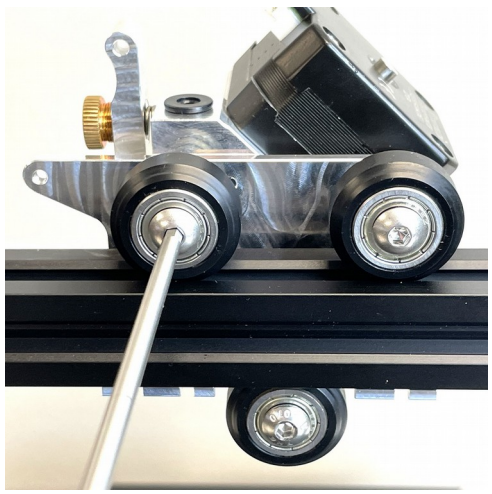
- Insert the longer M5 screw provided with the kit into one of the V-Roller wheels.

- Position the eccentric nut onto the M5 screw as shown in the image.
⚠ Note the correct orientation - the longer boss facing away from the wheel.

- Fasten the screw and wheel assembly to the bottom hole of the NG carriage using the supplied washer and lock nut.
(3.0mm Allen wrench and 8mm spanner wrench)

STEP 13 - INSTALL THE TOP TWO WHEELS



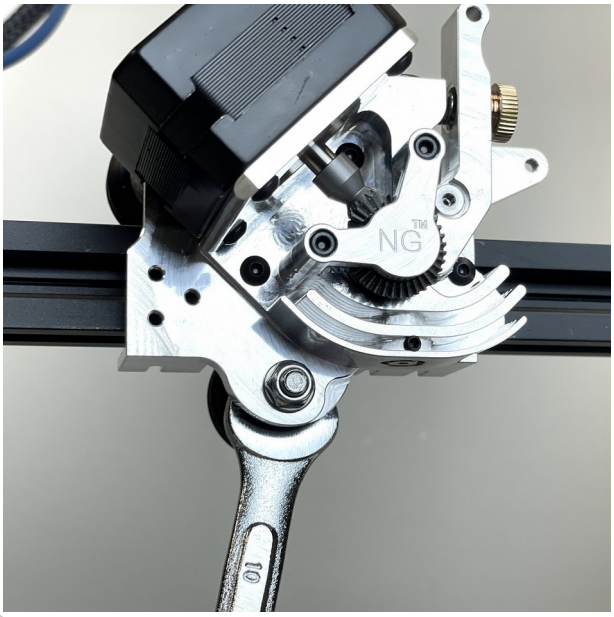


- Insert the shorter two M5 screws provided with the kit into the two remaining V-Roller wheels.

- Hold the carriage in place on the 3D printer gantry and install the top two V-Roller wheels.
(3.0mm Allen wrench)

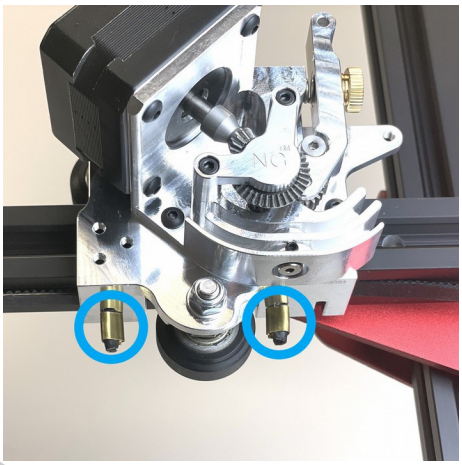
If it is difficult to install the last wheel, reposition the bottom wheel by rotating the eccentric nut.
(10mm spanner wrench)

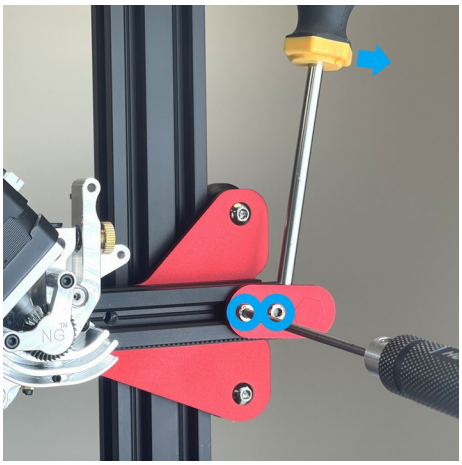
STEP 14 - ELIMINATE CARRIAGE WOBBLE



• Adjust the bottom V-Roller wheel position by rotating the eccentric nut to eliminate any carriage wobble.
(10mm spanner wrench)

STEP 15 – ATTACH THE BELT



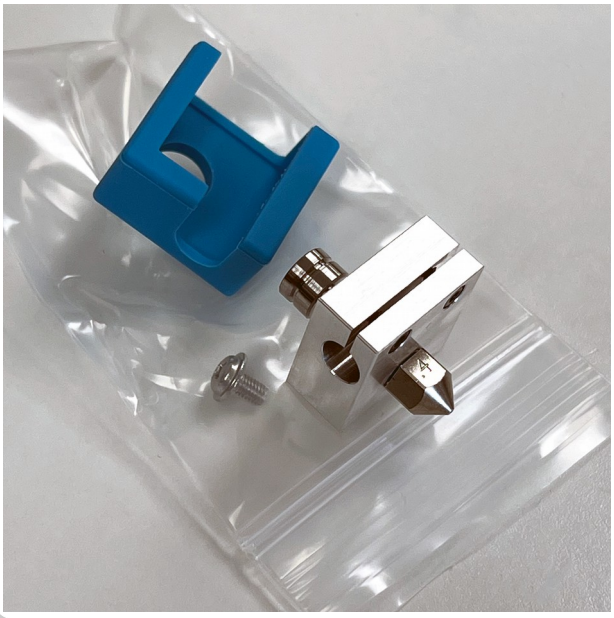


• Attach the X-axis belt to the slots located at the bottom of the carriage plate.
Use the slot closer to the wheel

• Tension the X-axis belt by prying the tensioner bracket and then tightening the two screws .
(3.0mm Allen wrench + any screwdriver)

• Confirm the proper seating of the belt by moving the carriage from side to side.

STEP 16 - PREPARE THE HOTEND

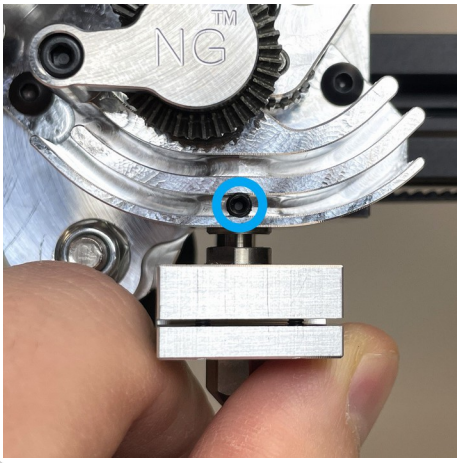


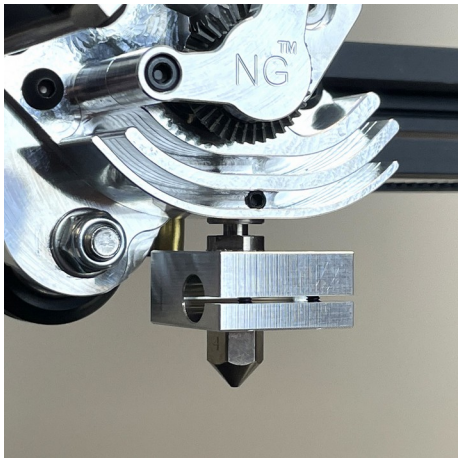
• Take the silicone sock off of the hotend.

The hotend has been heated and tightened to spec at the factory, so there is no need to do the nozzle hot tightening procedure on a brand new hotend unless you are replacing the nozzle.

See the last page of this document for the complete nozzle replacement procedure. Most importantly, ensure the thermal break is full seated first, then tighten the nozzle to 30 inch pounds of torque while preheated to precisely 220C.

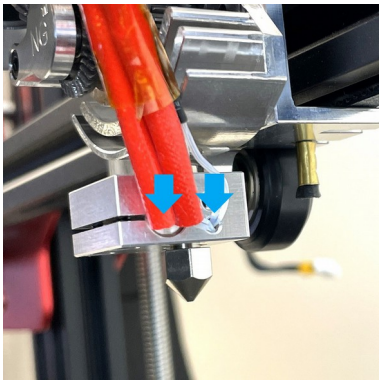
STEP 17 - INSTALL THE HOTEND

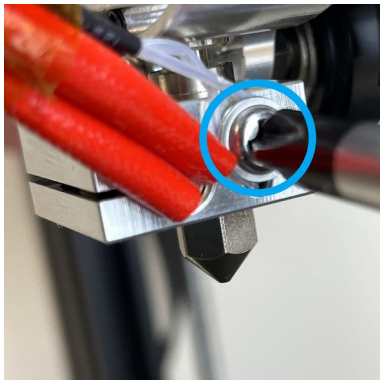


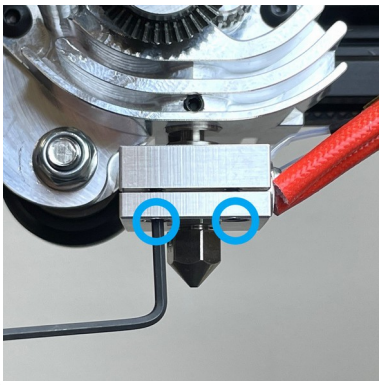


- Insert the hotend assembly into the extruder.
- Verify the thermal break is seated as deep as possible in the extruder.
Compare with reference image on the left.
- Tighten the set screw.
(1.5mm wrench)

STEP 18 - INSTALL THE THERMISTOR AND HEATER CARTRIDGE

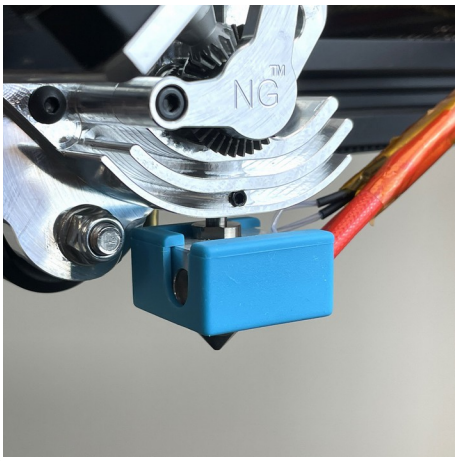






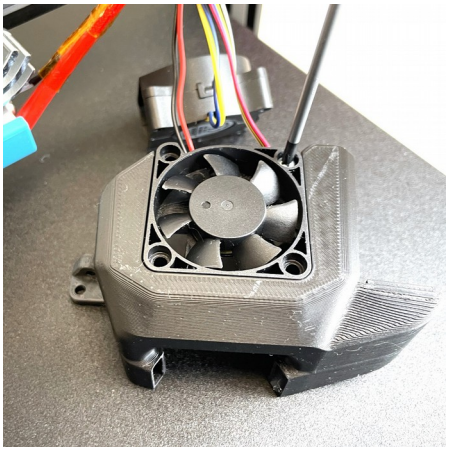
- Place the heater cartridge and thermistor into the heater block.
Ensure the thermistor is fully inserted into the heater block, with the glass bead not visible.
- Secure the thermistor by installing the washer head screw to hold the wires in place.
(Phillips head screwdriver)
Be cautious not to overtighten and damage the delicate wires.
- Secure the heater cartridge by tightening the two screws at the bottom of the heater block.
(1.5mm Allen wrench)

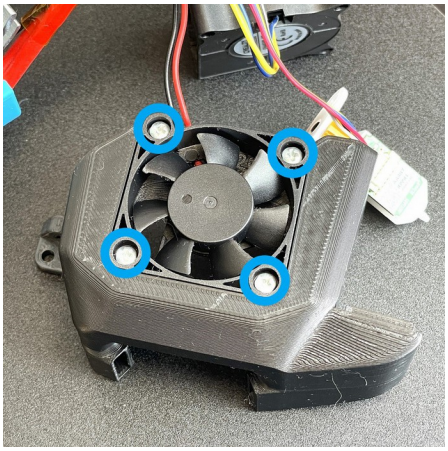
STEP 19 - INSTALL THE SILICONE SOCK

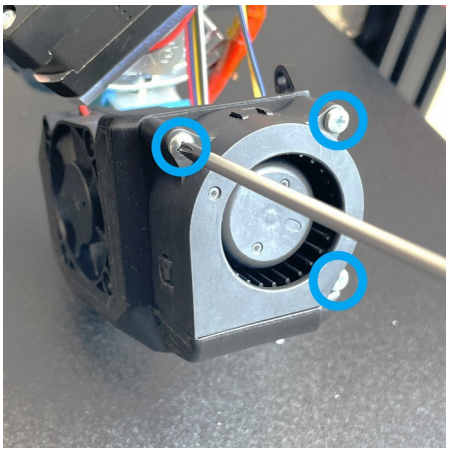


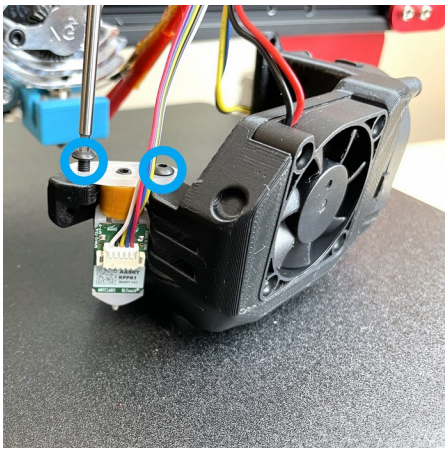
- Place the silicone sock over the heater block.

STEP 20 - ATTACH THE FANS AND PROBE TO THE FAN SHROUD







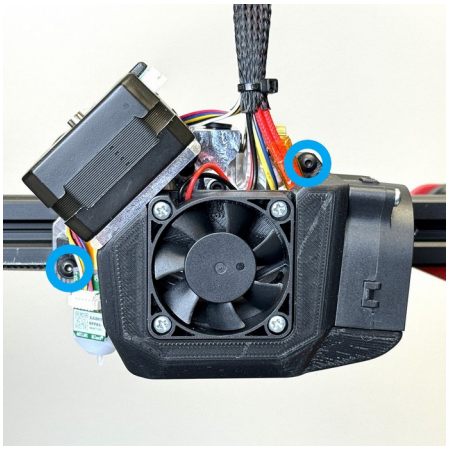


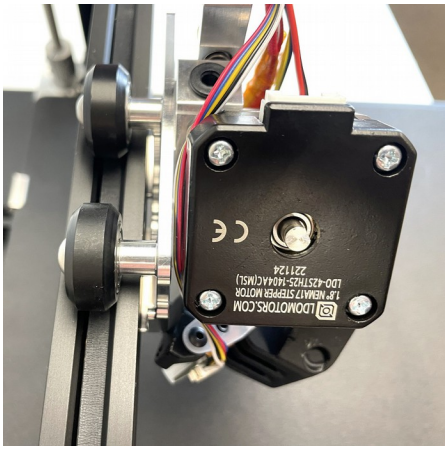
- Attach the hotend cooling fan to the shroud using the smaller self tapping screws.
(Phillips-head screwdriver)

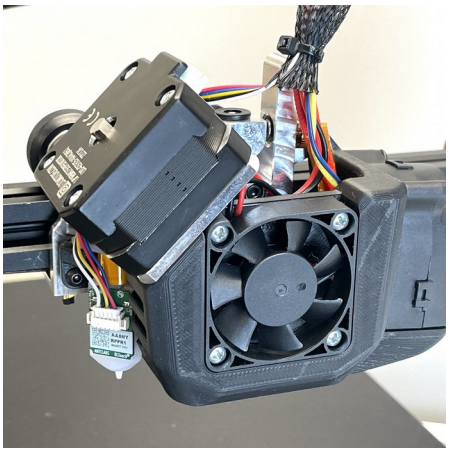
- Attach the part cooling fan to the shroud using the larger self tapping screws.
(Phillips-head screwdriver)

- Attach the BL-Touch to the fan shroud using two M3 screws.
(2.0mm Allen wrench)

STEP 21 - INSTALL THE FAN SHROUD



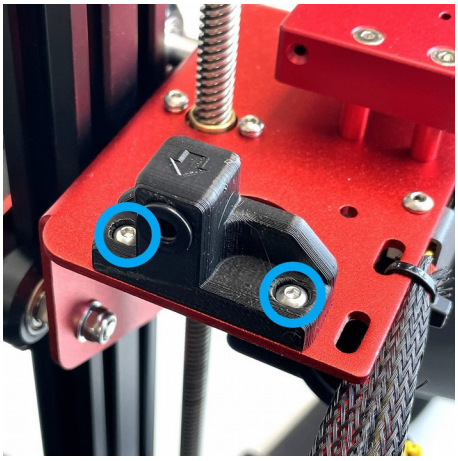


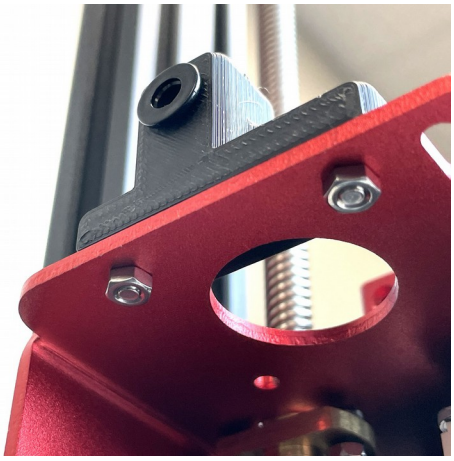


- Attach the assembled fan shroud to the extruder using two M3 screws.
(2.0mm Allen wrench)

- Guide the BL-Touch cable behind the stepper motor as shown in the image.

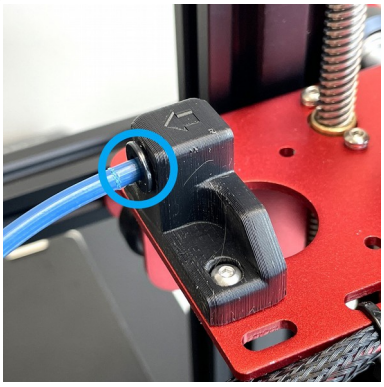
STEP 22 - INSTALL THE PTFE BRACKET

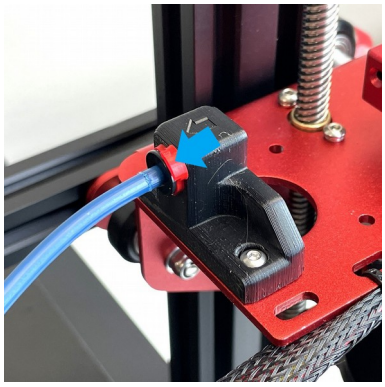


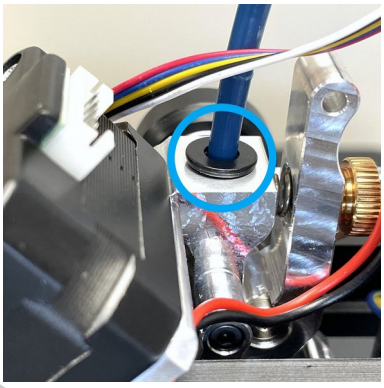


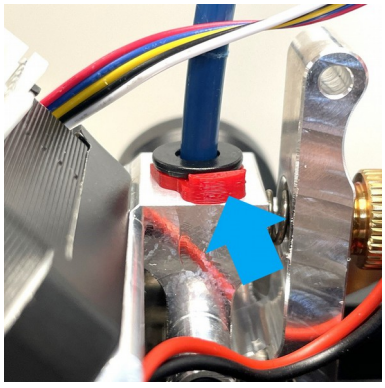
• Attach the 3D printed PTFE Bracket beside the Filament Runout Sensor using the provided M3 screws and M3 nuts.
(2.0mm Allen wrench)

STEP 23 - ATTACH THE FILAMENT GUIDE TUBE







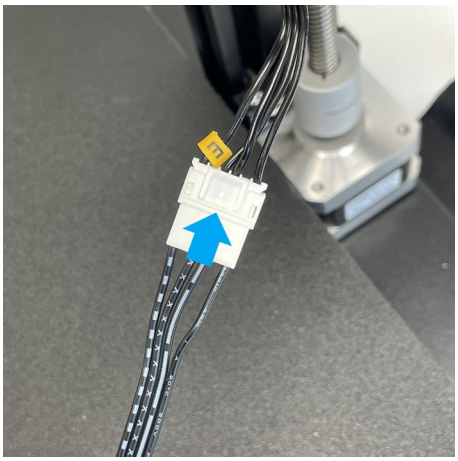


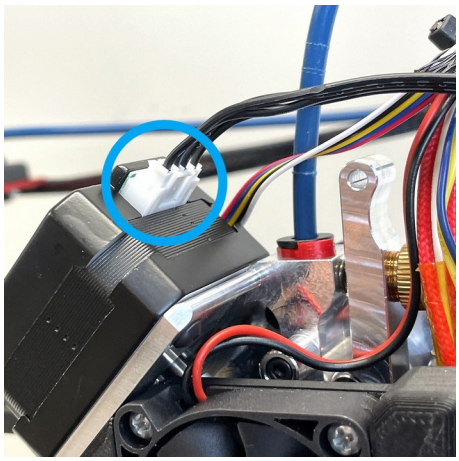
• Insert the filament guide tube (original Bowden tube) into the PTFE Bracket.

• Insert the other end of the filament guide tube into the top of the NG Extruder.

• Secure both ends of the filament guide tube in place by installing a red C-clip under the Bowden couplers on each end of the guide tube.

STEP 24 - INSTALL THE EXTENSION CABLE



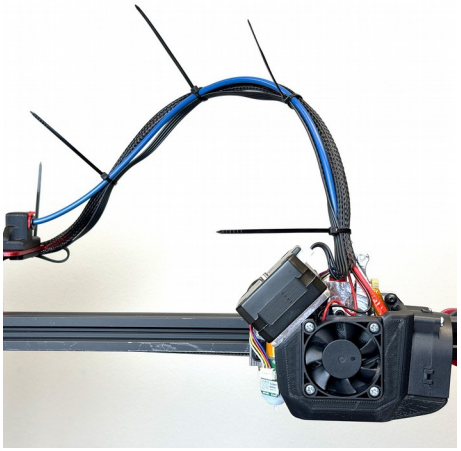


• Attach the provided extension cable to the printer's original E cable.

• Attach the other end of the extension cable to the NG Extruder motor.

Use the provided extension cable.
The provided cable has the special wiring pinout required to connect the LDO motor to the CR-10S Pro V2 and CR-10 Max.
A different extension cable will not work properly.

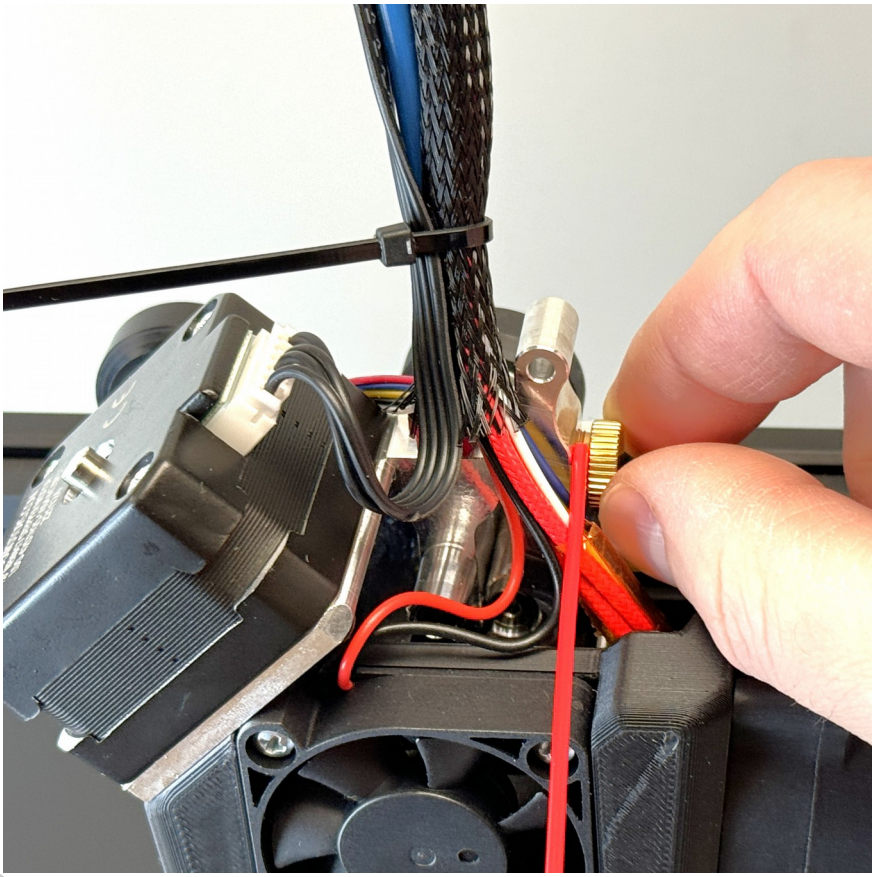
STEP 25 - CABLE MANAGEMENT



- Use the provided zip-ties to manage the cables neatly

Ensure there is some slack in the stepper motor extension cable near the motor

STEP 26 - ADJUST THE GEAR TENSION



- Adjust the gear tension by rotating the brass knob.

The gear tension can be gauged by measuring how much of the brass knob's threads are exposed. (Distance from the head of the brass knob to the aluminum extruder arm.)

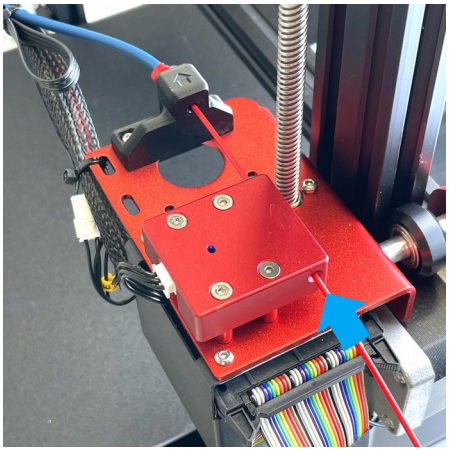
The good starting point for stiff filaments such as PLA, PTEG, ABS is 1.75mm of exposed threads (use a piece of 1.75mm filament as a gauge as shown in the image on the left).

A good starting point for flexible filaments such as TPU, loosen the knob until about 2.75mm of the threads are exposed. Loosen the knob two full turns, if starting from 1.75mm.

STEP 27 - POWER ON THE PRINTER

- Plug the power cable in.
- Turn the 3D printer on.

STEP 28 - UPDATE THE ESTEPS



The E-steps will need to be set to 400 in the printer settings by printing a g-code file.

- Download the Esteps G-code from the link below.

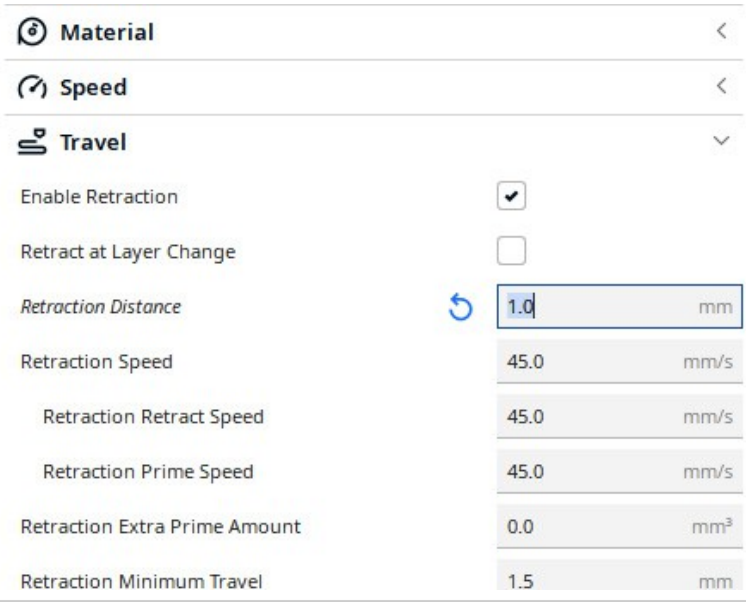
Download

- Save the G-code file onto your MicroSD card.
- Insert some filament into the Filament Runout Sensor, so that it does not trigger a Filament Runout Alarm in the next step.
- "Print" the Esteps G-code file on your printer.

The gcode should complete printing in approximately 15 seconds. It won't generate a 3D printed object and won't provide a confirmation of success, so please allow it sufficient time to finish before proceeding.

When utilizing the SonicPad/Klipper firmware, adjust the Extruder Rotation Distance to 8 instead of modifying the Esteps.

STEP 29 - CONFIGURE SLICER SETTINGS



- Set the Retraction Distance to **1.0mm** in your slicer software.

⚠ Do not use any g-codes that were sliced with a Retraction Distance higher than 1.5mm.

INSTALLATION COMPLETE!

SERVICE TIPS

REMOVING FILAMENT

- Preheat the hotend to printing temperature.
- Press the extruder arm to release the gear tension.
- Push the filament down about 10mm to extrude any melted plastic from the hotend.
- Quickly pull the filament out of the extruder.

LOADING FILAMENT

- Preheat the hotend to printing temperature.
- Cut the tip of the filament at a 45-degree angle.
- Straighten the tip of the filament out.
- Using the printer menu issue an Extrude command.
- Insert the filament into the extruder as the gears are rotating.

When loading filament do not press the extruder arm until the filament has made it into the tube below the extruder drive gears.

NOZZLE REPLACEMENT PROCEDURE

- Unload the filament from the hotend and allow it to cool to room temperature.

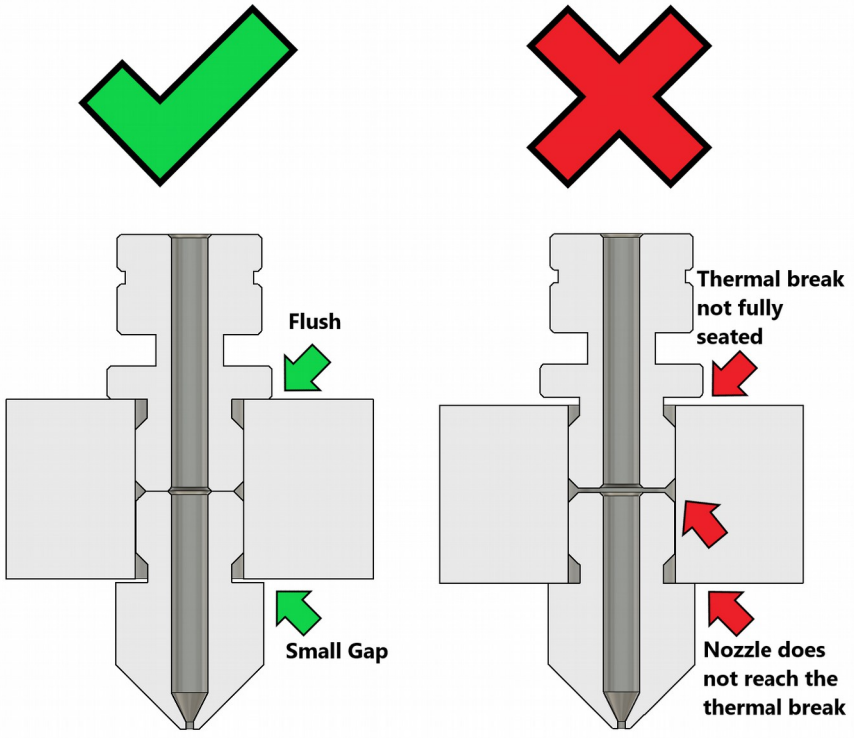
- Remove the fan shroud and silicone sock.
(2.0mm Allen wrench)

- Preheat the hotend to precisely **220°C**.

- Unscrew the existing nozzle while stabilizing the heater block using an adjustable wrench.
(7mm wrench and adjustable wrench)

Verify the thermal break is fully screwed into the heater block.

- Tighten the new MK8 nozzle to 30-inch pounds (3.4Nm) while stabilizing the heater block using ar adjustable wrench.
(7mm wrench and adjustable wrench)



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