

# Micro Swiss NG™ Direct Drive Extruder for Creality CR-10 V2 and CR-10 V3

## INSTALLATION INSTRUCTIONS

### TOOLS NEEDED

Gather the required tools before starting the installation

- Phillips-Head Screwdriver
- 2.5mm Allen Wrench
- 2mm Allen Wrench
- 1.5mm Allen Wrench (included with the kit)
- Flush cutters



### WHAT'S IN THE BOX

1x Master Extruder Assembly  
1x CR-10V2/V3 Adaptation Plate  
1x LDO Stepper Motor  
1x Fan Shroud  
5x Zip Ties  
1x CR-10V2/V3 NG Extension Cable

#### Main Hardware Bag

1x M3 x 20mm Thread Forming Screw  
4x M3 x 12mm Thread Forming Screw  
3x M3 x 6mm Button Head Screws  
1x M3 Washer  
1x 7mm Spanner Wrench  
1x 1.5mm Allen Wrench  
1x 2" Capricorn PTFE Tube  
1x 3D Printed C-clip

#### PTFE Bracket Bag

1x 3D Printed Guide Tube Bracket  
1x Bowden Coupler  
1x 3D Printed C-clip  
2x M3 x 16mm Button Head Screw  
2x M3 Nuts

#### Hotend Bag

1x Thermal Break  
1x Heater Block  
1x Silicone Sock  
1x Nozzle (0.4mm Plated Brass MK8)

#### Spare Hardware Bag

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



### PREPARATION

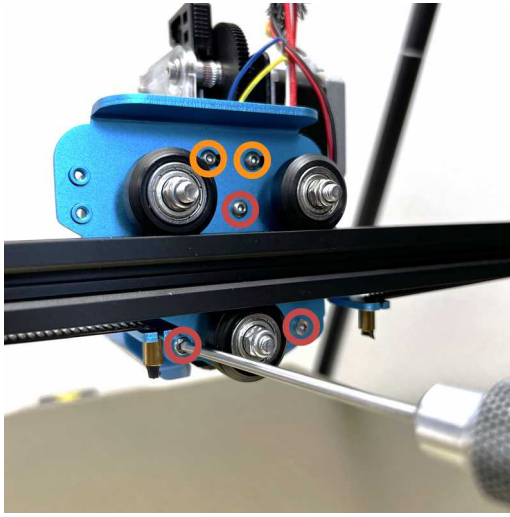
Remove the filament from your original hotend and allow the printer to cool down completely

### 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**

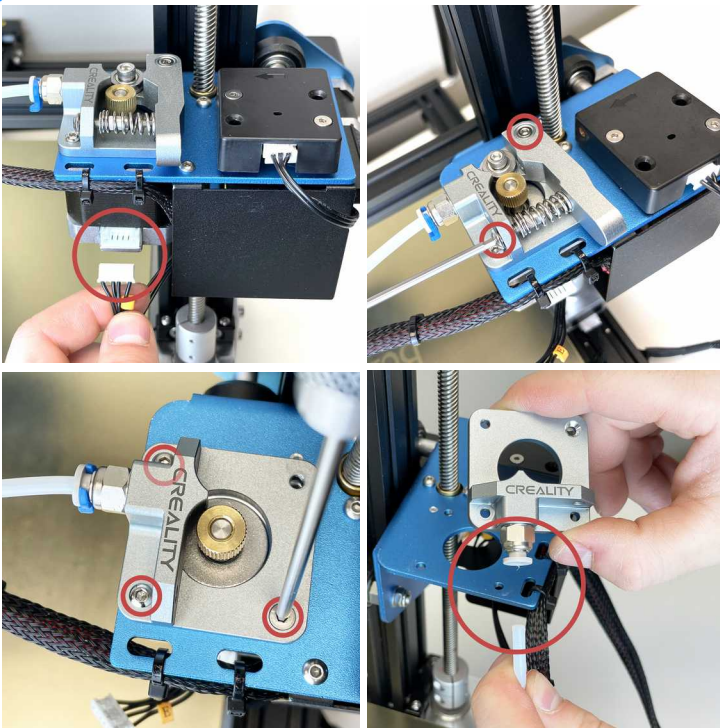
## STEP 2 - REMOVE THE ORIGINAL PRINT HEAD



- Unfasten the original print head from the printer by removing the screws located at the back of the X carriage
- **(CR-10 V3 Only)** Remove the two screws circled in orange

## STEP 3 - REMOVE THE ORIGINAL BOWDEN EXTRUDER

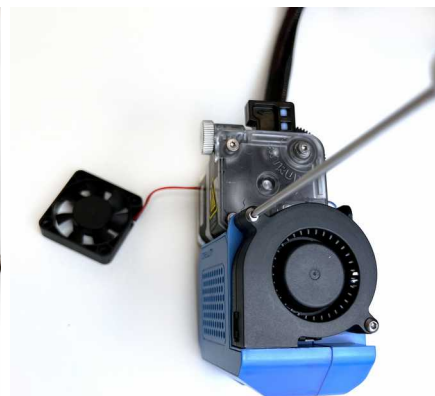
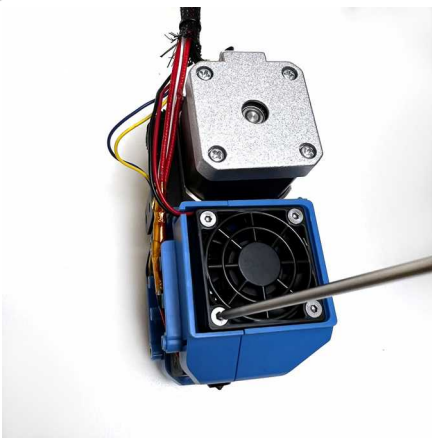
**CR-10 V2 ONLY**



- Disconnect the stepper motor
- Remove the gear tensioning screw  
*(2.5mm Allen wrench)*
- Remove the gear tensioning spring
- Remove the screw holding the extruder arm  
*(2.5mm Allen wrench)*
- Detach the extruder main-body by removing the 3 screws holding it attached to the motor  
*(2.0mm Allen wrench)*
- Remove the C-clip from the Bowden Coupler
- Press the plastic Bowden Coupler down while pulling the PTFE tube out

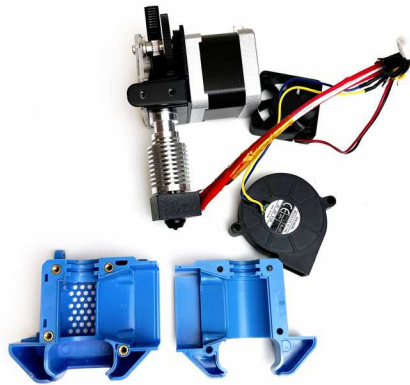
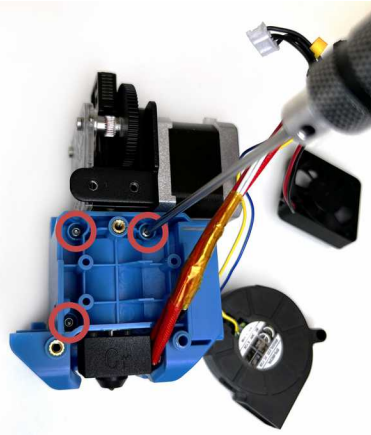
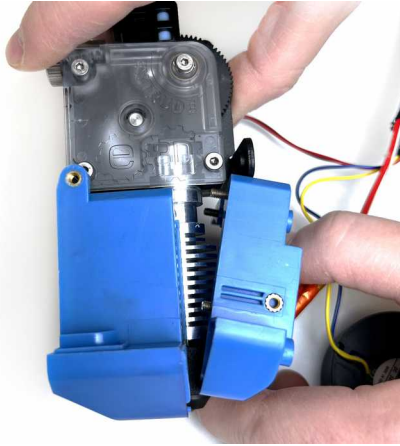
*The Bowden tube will be reused as a filament guide tube on the CR-10 V2 installation only.*

## STEP 4 – UNFASTEN THE FANS



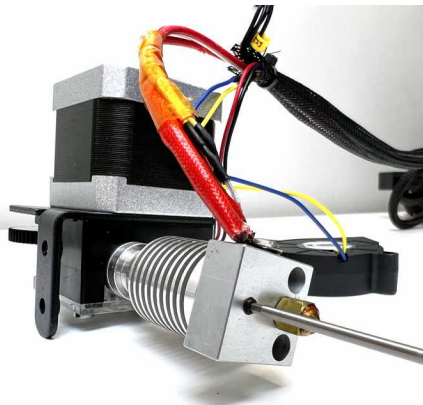
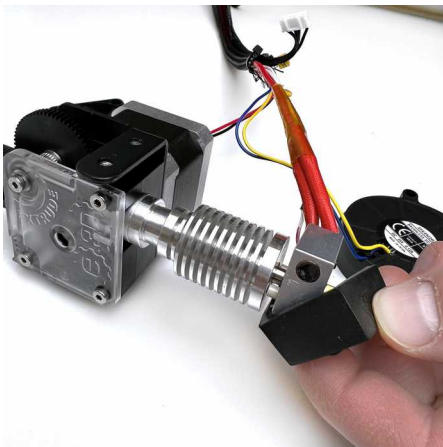
- Detach the hotend fan from the stock fan shroud by unscrewing the 4 screws  
*(2.0mm Allen wrench)*
- Detach the part cooling fan by removing the 2 screws  
*(2.0mm Allen wrench)*

## STEP 5 - DISASSEMBLE THE ORIGINAL PRINT HEAD



- **(CR-10 V3 Only)** Disconnect the stepper motor
- Remove the three screws located on the back side of the original fan shroud (2.0mm Allen wrench)
- Separate the two parts of the fan shroud

## STEP 6 - REMOVE THE HEATER CARTRIDGE AND THERMISTOR

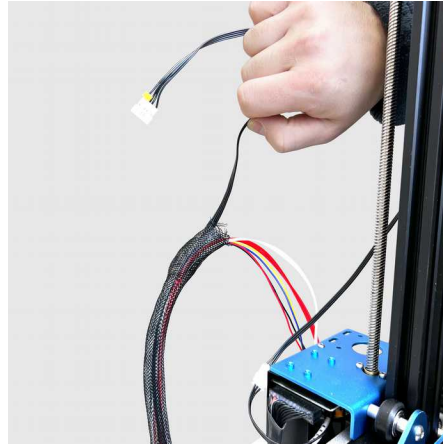
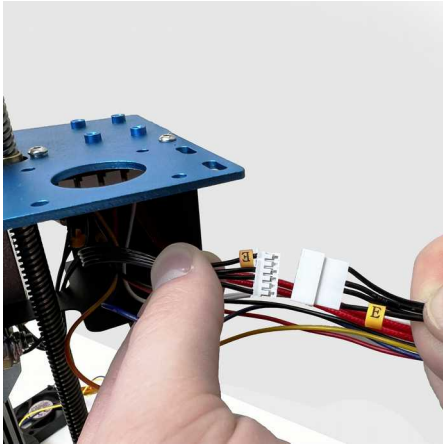
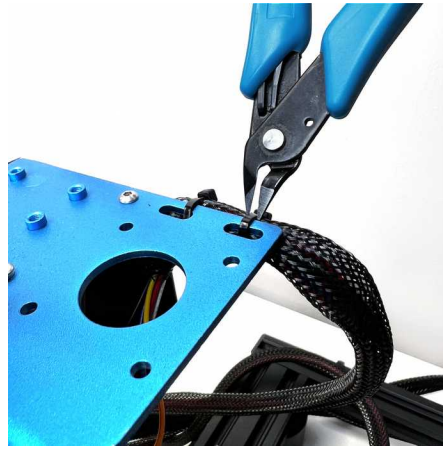


- ⚠ Make sure the hotend is at room temperature before touching the heater block or nozzle
- Remove the silicone sock
- Loosen the heater cartridge set screw (1.5mm Allen wrench)
- Remove the thermistor screw (Phillips-Head screwdriver)
- Gently pull the thermistor and heater cartridge out of the heater block
- ⚠ Be careful not to damage the delicate wires



## STEP 7 - REMOVE THE ORIGINAL EXTENSION CABLE

CR-10 V3 ONLY

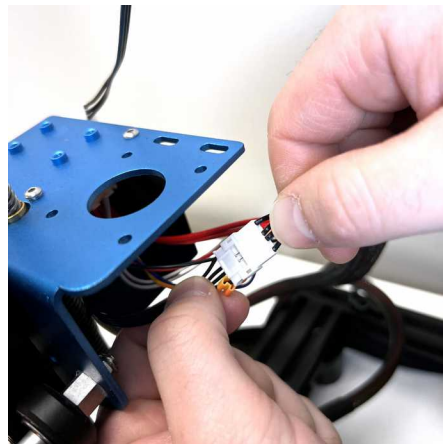
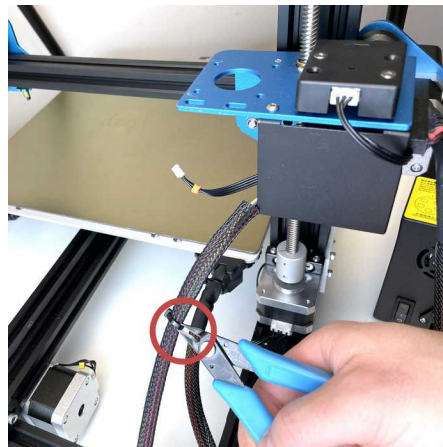


*The long stepper motor extension cable going to the print head needs to be removed because it will be replaced with the NG Extension cable in step 8*

- Cut the zip ties from the wire mesh cable sleeve
- Unplug the long extension cable from the shorter cable near the breakout board
- Remove the long extension cable from the wire mesh sleeve

Do not remove the short (4") extension cable near the breakout board

## STEP 8 - INSTALL THE NG EXTENSION CABLE



**⚠** It is very important to use the provided extension cable

*This cable has a special pinout that is required to connect the NG Extruder's LDO motor to a CR-10 V2 and CR-10 V3. The stock cable or one from a different direct drive extruder will not work.*

- Cut the zip ties from the wire harness that goes to the print head if not done in the previous step
- Feed the provided NG Extension cable through the wire mesh sleeve
- Connect the NG Extension cable to the printer's original short cable near the breakout board

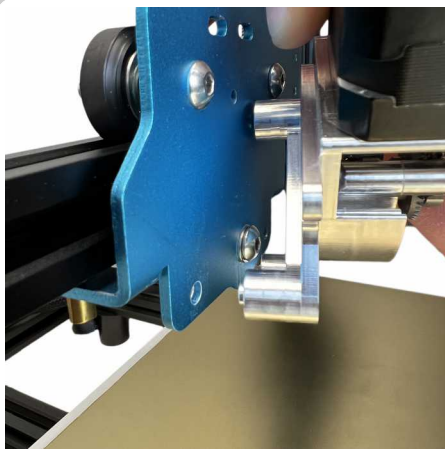
## STEP 9 - PREPARE THE NG ASSEMBLY



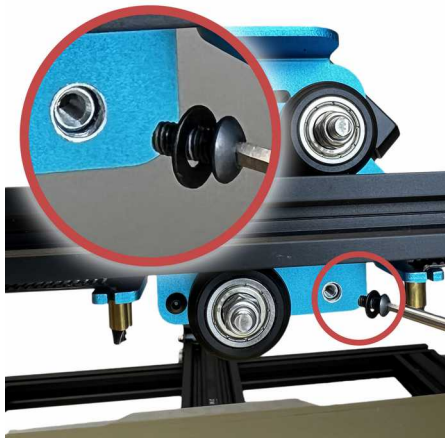
- Detach the fan shroud from the NG Extruder by removing the two screws  
*(2.0mm Allen wrench)*
- Prepare the provided M3 screws and washer by removing them from the bag



## STEP 10 - INSTALL THE NG EXTRUDER ONTO THE X CARRIAGE



- Align the NG Extruder with the holes in the X carriage plate
- Use an M3 screw and washer on the larger hole as shown in the picture  
*(2.0mm Allen wrench)*
- Use only M3 screws on the other two holes  
*(2.0mm Allen wrench)*





## STEP 11 - PREPARE THE HOTEND



- Remove the silicone sock from an all metal hotend

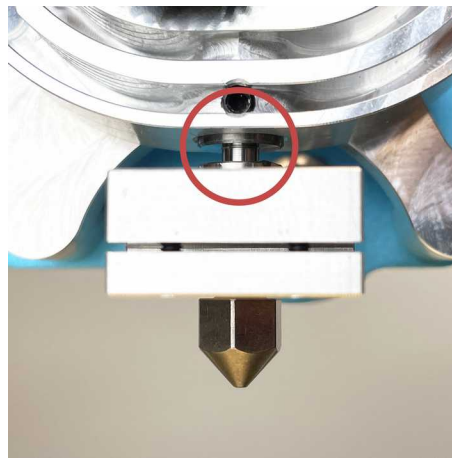
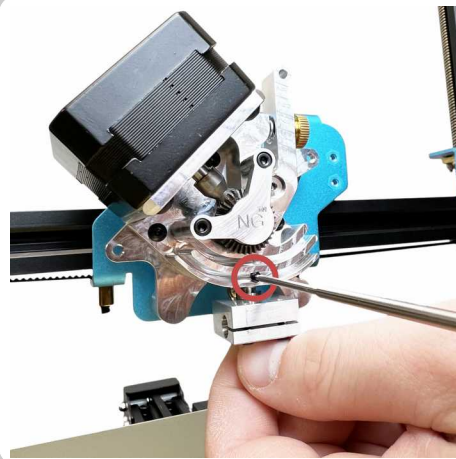
*The included hotend has already been preheated and the nozzle has been tightened to spec at the factory*

*There is no need to do the nozzle tightening procedure on the new hotend unless you are replacing the nozzle*

*When replacing nozzles in the future, the thermal break needs to be fully seated before the nozzle is tightened down. The hotend will need to be preheated to exactly 220C and then the new nozzle will need to be torqued to 30-inch pounds*

*(See nozzle change procedure on last page)*

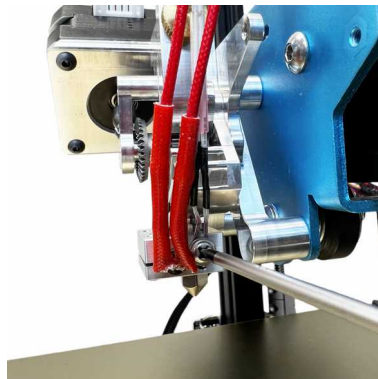
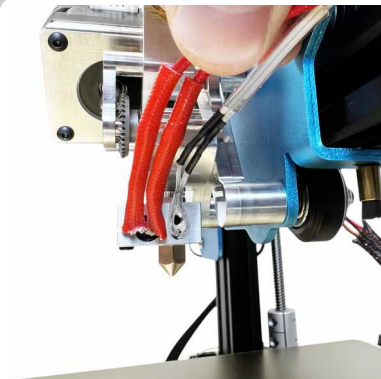
## STEP 12 - INSTALL THE HOTEND



- Insert the hotend assembly into the extruder
- Verify the thermal break is fully inserted as shown in the image
- Tighten the set screw to secure the hotend in position  
(1.5mm Allen wrench)

**⚠ Do not over-tighten the set screw**

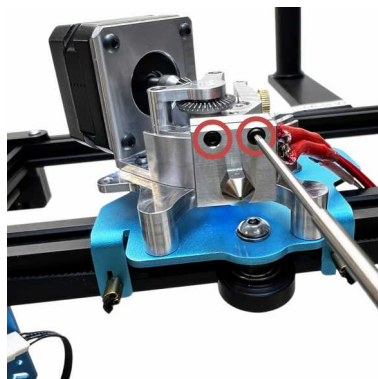
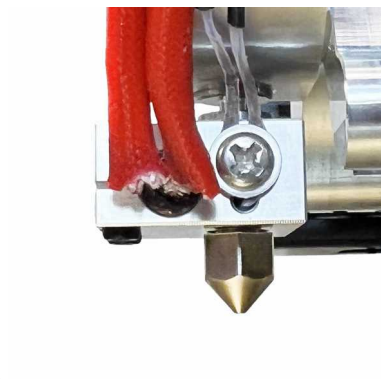
## STEP 13 - INSTALL THE THERMISTOR AND HEATER CARTRIDGE



- Install the heater cartridge and the thermistor
- Secure the thermistor using the provided Washer-Head screw  
(Phillips-Head screwdriver)

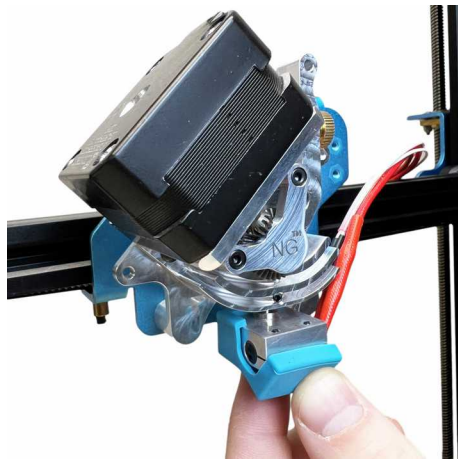
**⚠ Be careful not to over-tighten the screw as this can damage delicate wires**

*Make sure the thermistor sits all the way inside the hole. The thermistor glass bead should not be visible from the outside*



- Tighten the two heater cartridge screws  
(1.5mm Allen wrench)

## STEP 14 - INSTALL THE SILICONE SOCK



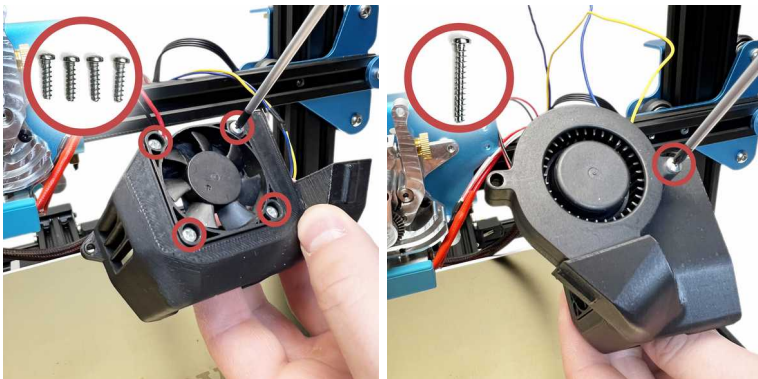
- Install the silicone sock

## STEP 15 - ATTACH THE FANS TO THE FAN SHROUD

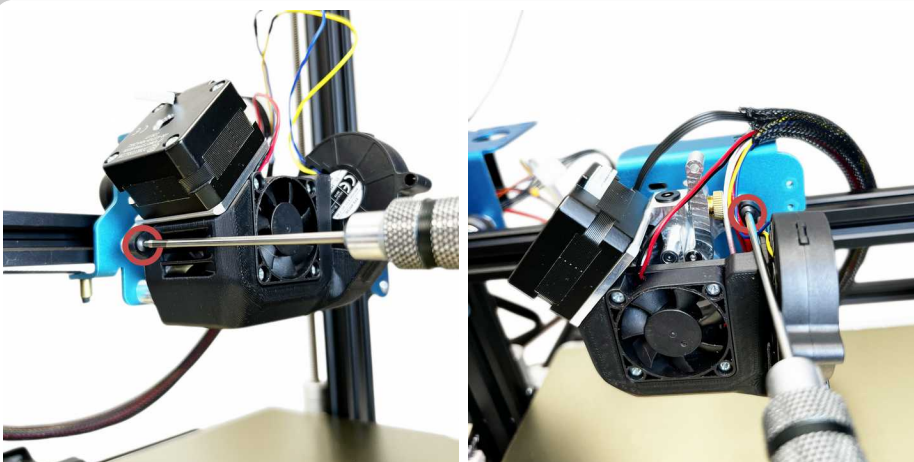


- Install the hotend cooling fan onto the fan shroud using the four smaller self-tapping screws  
*(Phillips-Head screwdriver)*

- Install the part cooling fan onto the fan shroud using the longer self-tapping screw  
*(Phillips-Head screwdriver)*



## STEP 16 - INSTALL THE FAN SHROUD

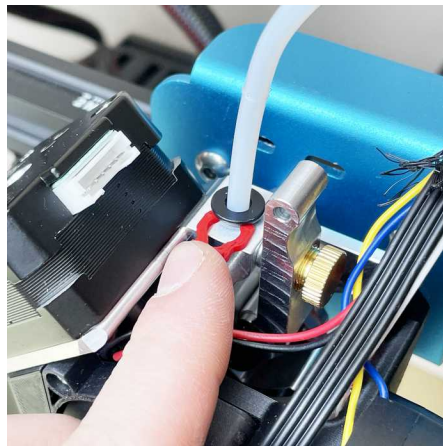
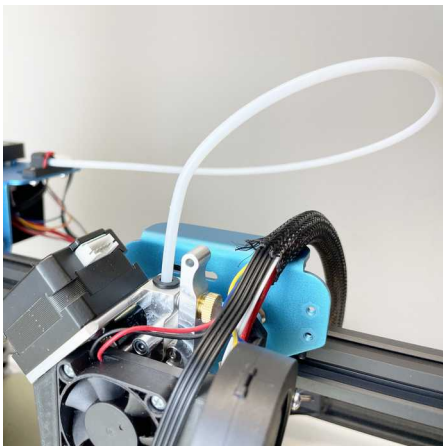
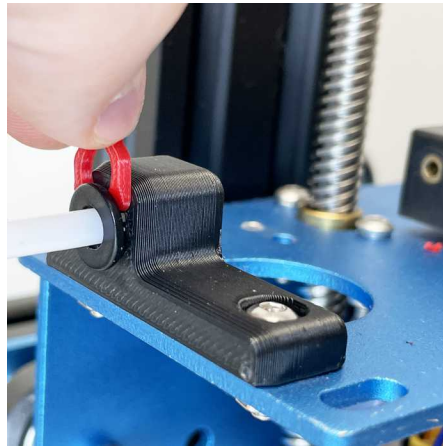
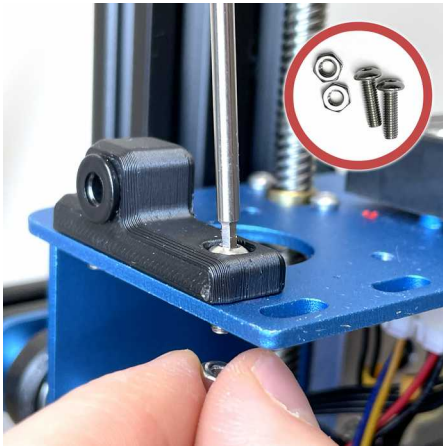


- Install the fan shroud back on to the NG Extruder  
*(2.0mm Allen wrench)*



## STEP 17 - INSTALL THE LONG FILAMENT GUIDE TUBE

CR-10 V2 ONLY



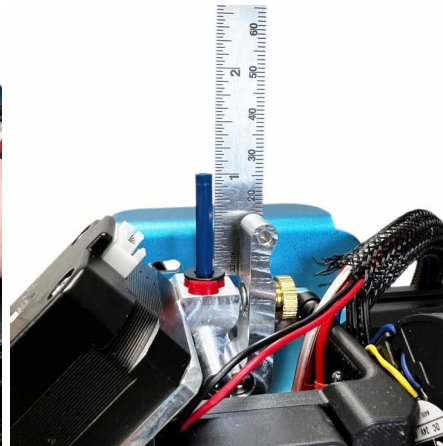
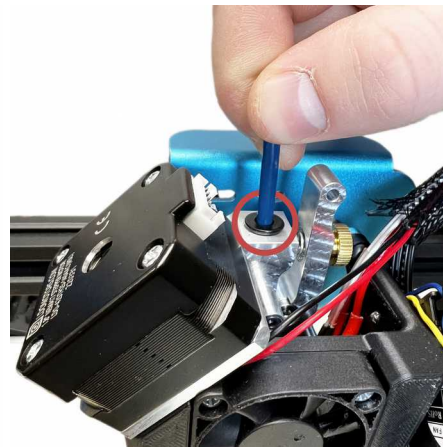
- Using the provided M3 screw and nuts, attach the 3D printed Guide Tube Bracket in the spot where the printer's original Bowden Extruder used to be  
(2.0mm Allen wrench)

*The printer's original Bowden tube will be re-used as a filament guide tube. The 2" Capricorn PTFE tube included with the NG Extruder will not be required for the CR-10 V2 installation.*

- Insert one end of the long PTFE tube into the Guide Tube Bracket
- Insert the other end of the long PTFE tube into the NG Extruder
- Secure both ends of the PTFE tube in position by inserting the red C-clips under the Bowden Collets, while pressing the PTFE tube in to prevent it from rising.

## STEP 18 - INSTALL THE SHORT FILAMENT GUIDE TUBE

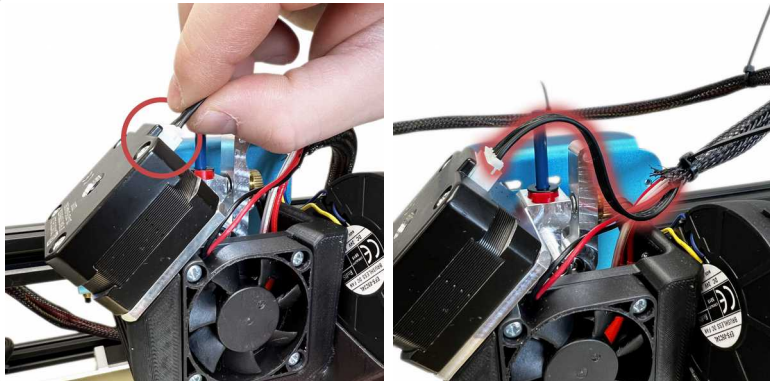
CR-10 V3 ONLY



- Insert the 2" Capricorn PTFE tube provided with the NG Extruder kit into the top of the extruder
- Secure the Capricorn PTFE tube in position by inserting the red C-clip under the Bowden Collet



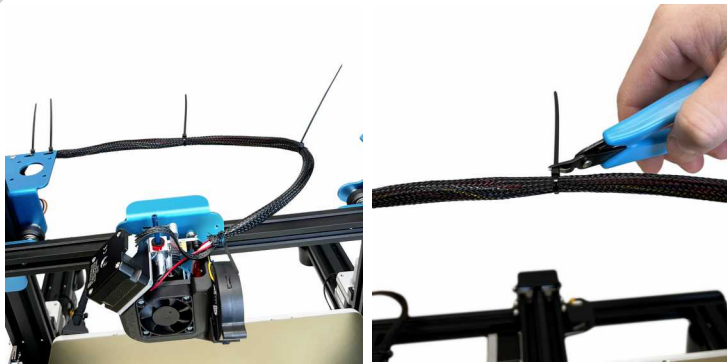
## STEP 19 - CONNECT THE STEPPER MOTOR



- Connect on NG Extension cable to the stepper motor

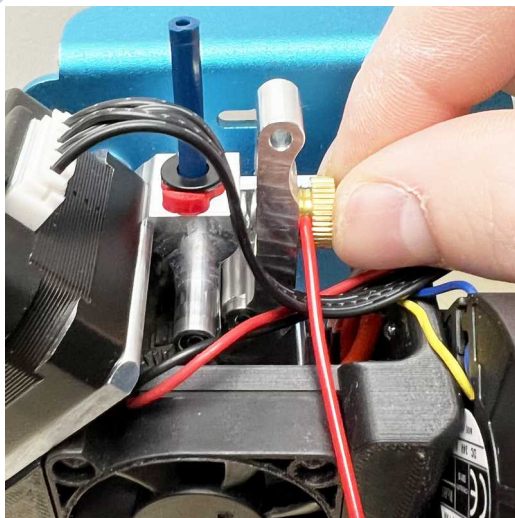
*Make sure to give the extension cable some slack near the stepper motor*

## STEP 20 - CABLE MANAGEMENT



- Use the provided zip ties for cable management

## STEP 21 - 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)*

*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 22 – POWER ON THE PRINTER



- Plug the power cable in and turn the printer on

## STEP 23 - UPDATE THE ESTEPS



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

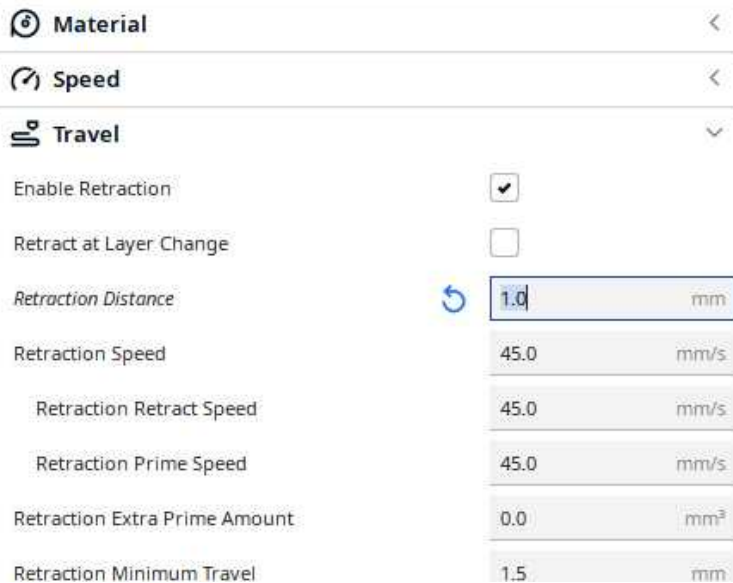
- Download the Esteps G-code from the link below

[Download](#)

- Save the G-code file onto your SD card
- “Print” the Esteps G-code file on your printer

The gcode should take about 15 seconds to finish printing. It will not produce a printed object and will not give a confirmation that it was successful so just give it time to complete before moving on.

## STEP 24 - 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

- Preheat the hotend to exactly 220C
- Remove the filament from the hotend
- Unscrew the old nozzle, while holding the heater block in position using an adjustable wrench
- Screw in the new MK8 nozzle and torque it to 30-inch pounds (3.4Nm) while holding the heater block in position using an adjustable wrench
- Verify that the thermal break is still seated flush on top of the heater block after installation

