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SKU M3201

Micro Swiss NG™ Direct Drive Extruder for Creality CR-10 / Ender 3 Printers

INSTALLATION INSTRUCTIONS

Tools needed

Gather the required tools before starting installation.

- Phillips-Head Screwdriver
- Flat Head Screwdriver
- Utility knife
- 3mm Allen wrench
- 2.5mm Allen wrench
- 2mm Allen wrench
- 1.5mm Allen wrench (included with the kit)
- 10mm spanner wrench
- 8mm spanner wrench
- Flush cutters

What's in the box:
1x Master Extruder Assembly
1x Adaptation plate
1x Stepper motor
1x Fan Shroud
1x Custom extension cable
1x Hotend assembly

Hardware:
1x Eccentric nut
1x M5 x .8 x 30mm CAP SCREW
1x 5mm ID 10mm OD Washer
1x M5 x .8 Nylon Lock Nut
2x M5 x .8 x 20mm Nylon Patch CAP SCREWs
4x M2.2 x 8mm Thread Forming Screw for Plastic
4x M3 x 12mm Thread Forming Screw for Plastic
1x 7mm spanner wrench
1x 1.5mm Allen wrench
5x Zip Ties

Preparation

Print a probe mounting bracket if your printer has BL-Touch, CR-Touch or a proximity sensor.
Download here

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

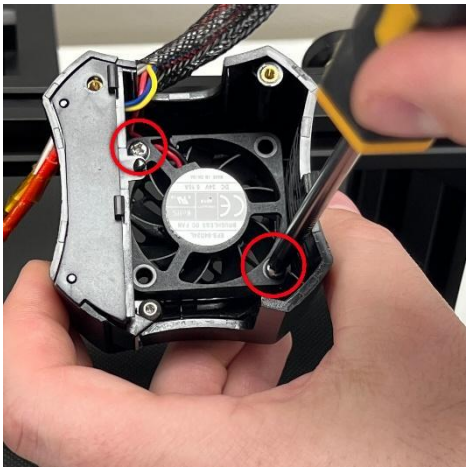
Step 1

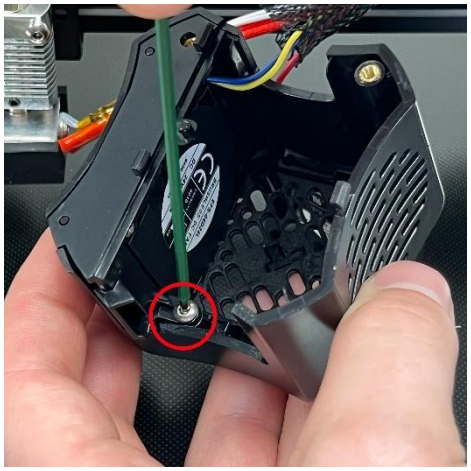
⚠ For your safety, turn off and unplug your printer.

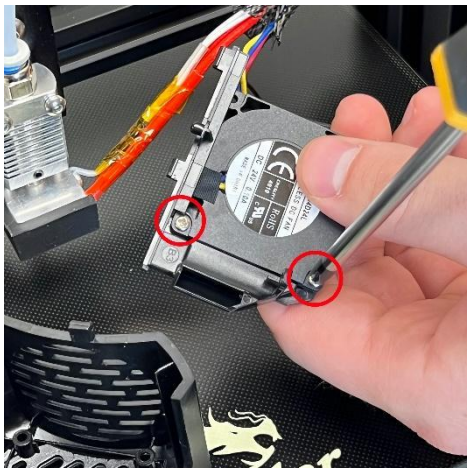
Step 2 - Remove the fan shroud

- Remove the fan shroud by unscrewing the two screws holding the shroud to the carriage plate
- Cut the zip ties holding the Bowden Tube and cables together

Step 3 – Remove fans and fan duct

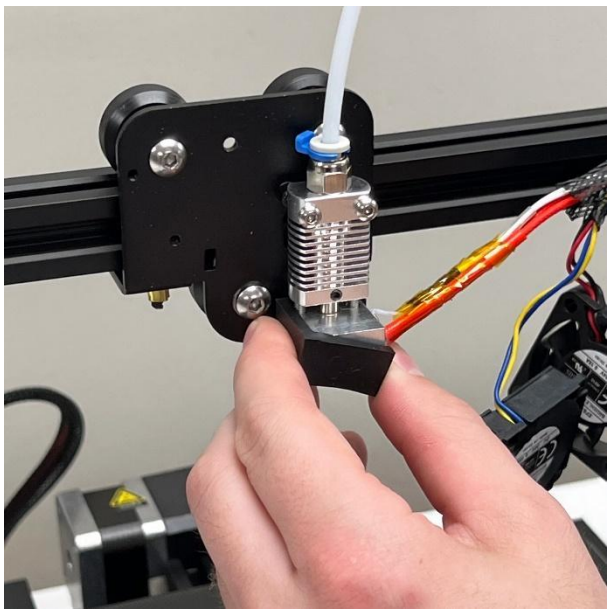






- Remove the screws holding the hotend fan
- Remove the fan duct to get access to the part cooling fan screws (some printers)
- Remove the screws holding the part cooling fan

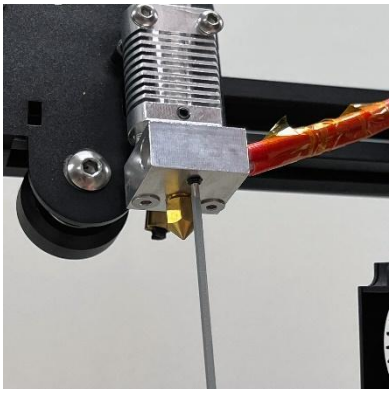
Step 4 – Remove the silicon sock

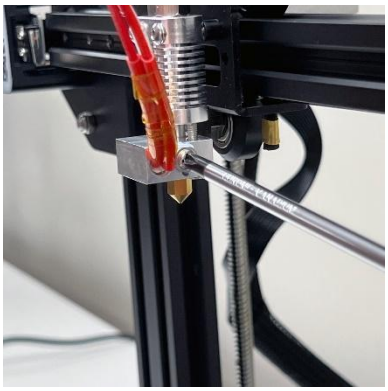


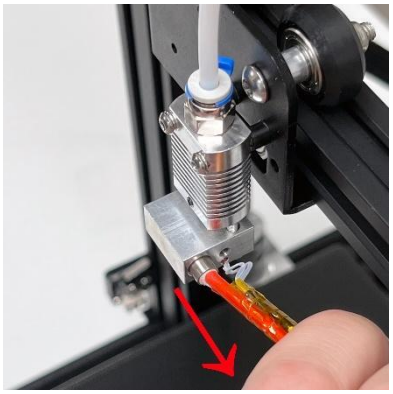
⚠ Make sure the hotend is at room temperature!

- Remove the silicon sock off the heater block.

Step 5 – Remove heater cartridge and thermistor

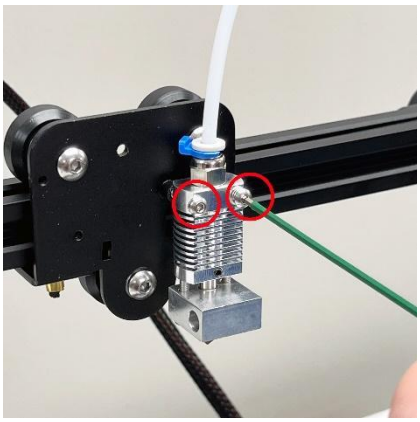


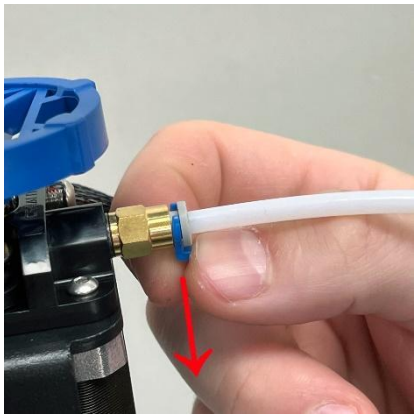


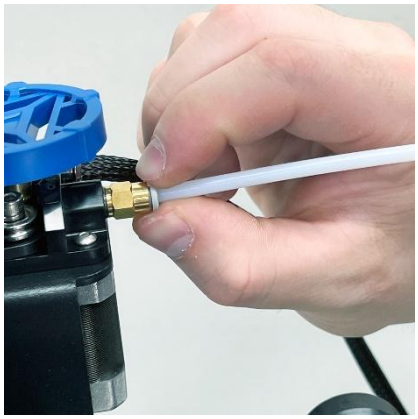


- Remove the heater cartridge set screw using 1.5mm Allen wrench.
- Remove the thermistor screw using the Phillips-Head Screwdriver
- Gently pull the thermistor and heater cartridge out of the heater block.
  ⚠ Be careful not to damage the delicate wires

Step 6 – Remove the hotend



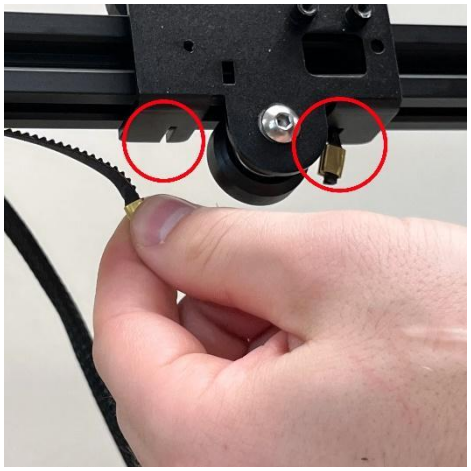




- Remove the two screws holding the hotend using a 2mm Allen wrench
- Remove the retaining C-clip from the Bowden extruder
- Press the plastic Bowden Coupler lip down and pull the PTFE tube out of the original extruder
- Remove both the hotend and PTFE tube from the printer together

  (Save the PTFE tube to be reused during the installation of the NG Extruder)

Step 7 – Remove the belt



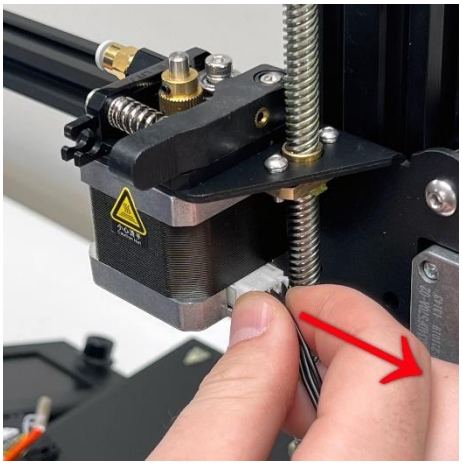
- Loosen the X-axis belt tension
  (either unscrew the knob or loosen the screws holding the tensioner in place)
- Remove the belt from the carriage plate

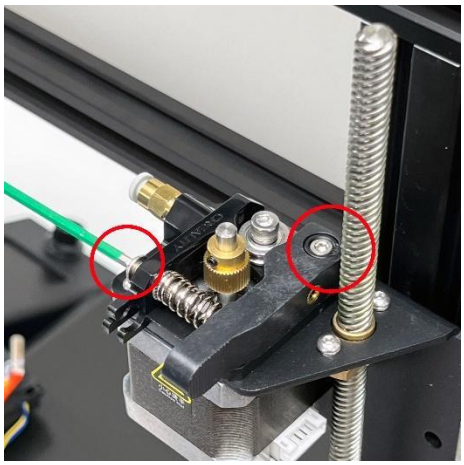
Step 8 – Remove the roller wheels and the carriage plate

- Unscrew the roller wheels by holding one side with the 3mm Allen wrench and unscrew the nut with the 8mm spanner
- Remove the cartridge plate

  (Save the V-rollers to be reused during the installation of the NG Extruder)

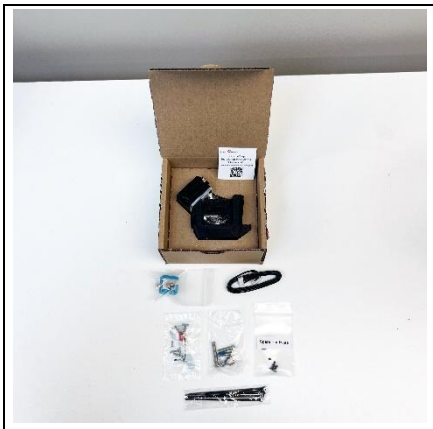
Step 9 – Remove Extruder

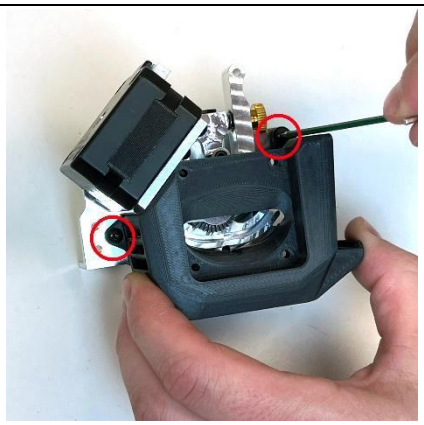




- Unplug the extruder motor cable connector
- Use the 2.5mm Allen wrench to remove the plastic extruder arm and the tension screw
- Use the 2mm Allen wrench to release the extruder stepper motor

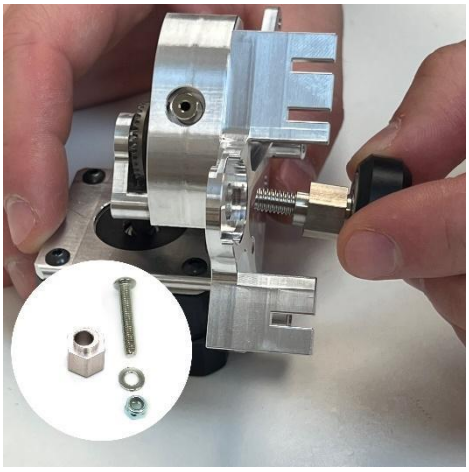
Step 10 – Prepare the NG extruder for assembly

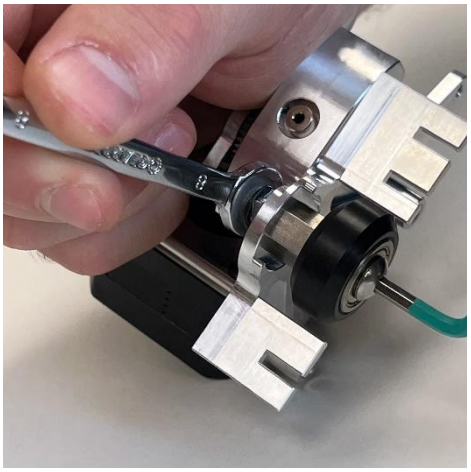




- Prepare the NG extruder for assembly by removing the fan shroud

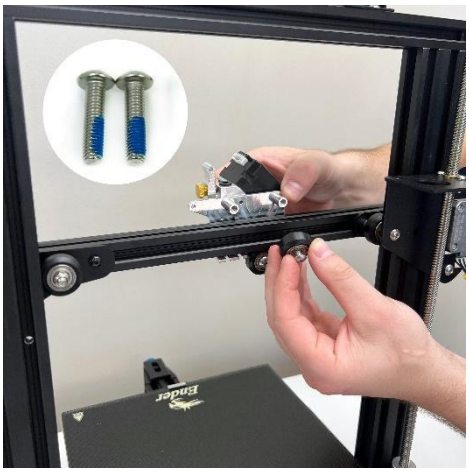
Step 11 – Install the eccentric nut and a bottom roller

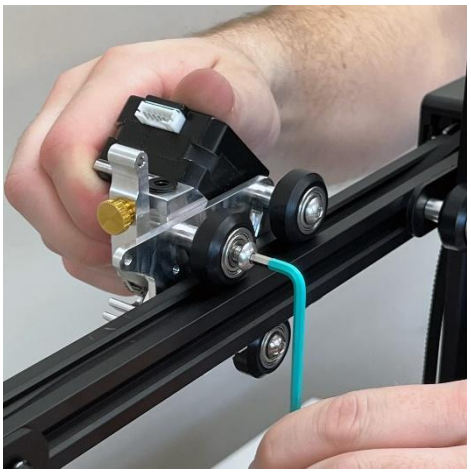




- Start by installing the bottom V-Roller first
- Insert the <u>longer</u> M5 screw into a V-Roller
- Insert the eccentric nut
  Note the correct orientation – the longer boss facing away from the roller
- Install the <u>provided</u> washer and a nylon lock nut
- Tighten the lock nut. Make sure the roller is still free spinning

Step 12 – Install the top V-rollers

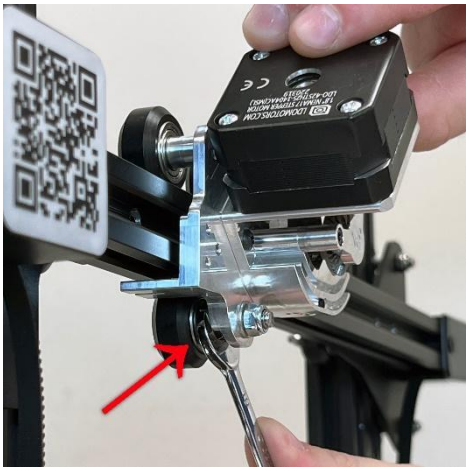




- Insert the provided shorter M5 screws into the two remaining V-Roller wheels.
  Be sure to use provided nylon patched screws!
- Install the two V-rollers onto the carriage

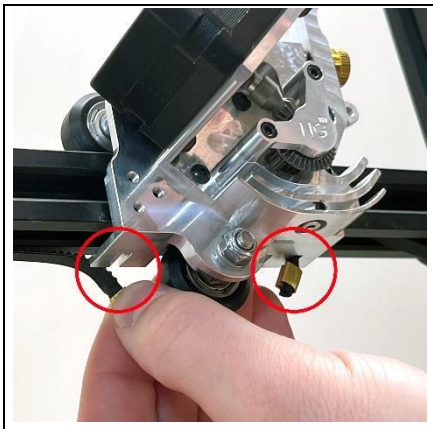
  If it is difficult to fit the last V-Roller wheel, adjust the bottom V-Roller position by rotating the eccentric nut using a 10mm wrench

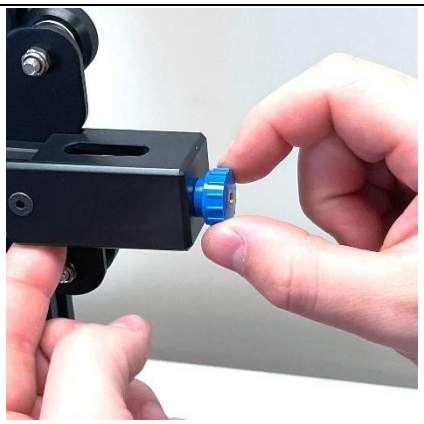
Step 13 – Adjust the eccentric nut



- Adjust the bottom V-roller position by rotating the eccentric nut using a 10mm wrench to eliminate any carriage wobble

Step 14 – Reinstall the belt





- Insert the X-axis belt into the carriage plate slots
- Tighten the X-axis belt
- Move the carriage left to right to verify the belt is seated properly

Step 15 – Prepare the Hotend

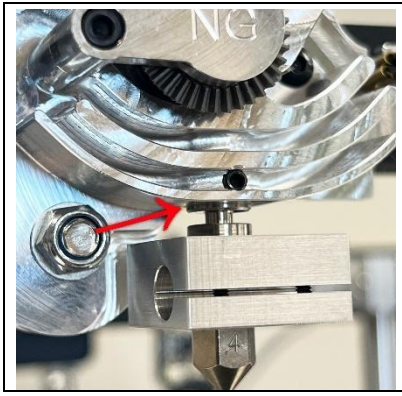
- The included hotend has already been preheated and the nozzle has been tightened to spec at the factory.

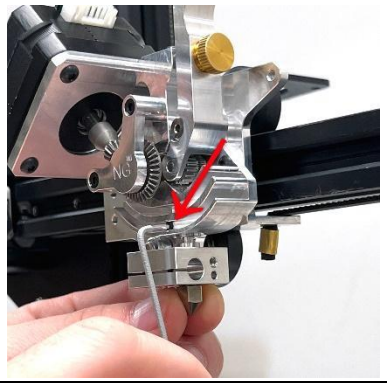
  There is no need to do the nozzle tightening procedure on the new hotend unless you are replacing the nozzle.

  When replacing nozzles in the future, the hotend will need to be preheated to exactly 220C and the new nozzle should be torqued to 30-inch pounds.

  The thermal break needs to be fully seated before the nozzle is tightened down

Step 16 – Install the hotend



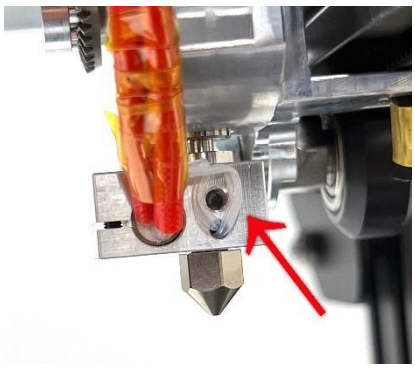


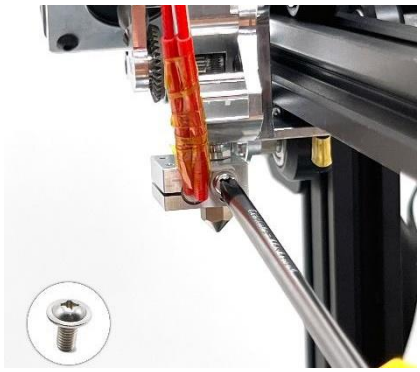
- Insert the hotend assembly into the extruder

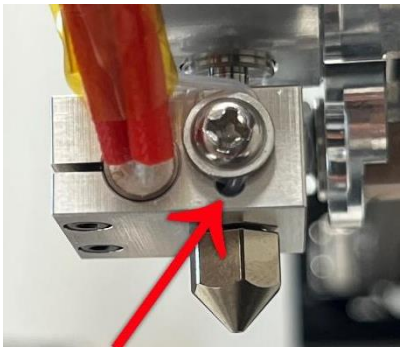
  Verify the thermal break is seated as deep as possible in the extruder (compare with reference image on the left)

- Tighten the grub screw using an 1.5mm wrench

Step 17 – Install thermistor and heater cartridge







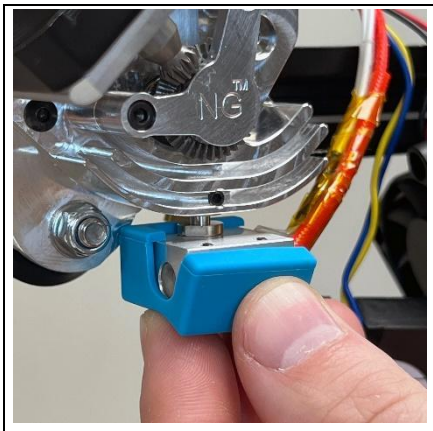
- Reinstall the heater cartridge and the thermistor

- Secure the thermistor
  Be careful not to overtighten the screw as this can damage delicate wires

  Make sure the thermistor sits all the way inside the thermistor hole. If you can see the glass thermistor bead, adjust

- Tighten the heater cartridge using the 1.5mm Allen wrench

Step 18 – Install silicone sock

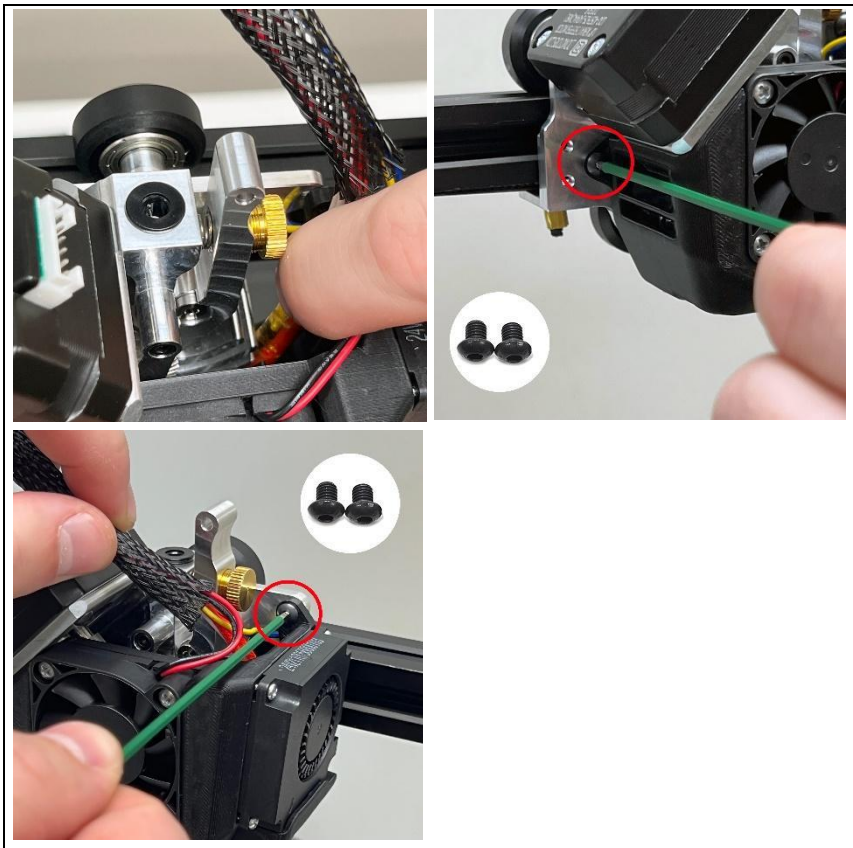


- Install the silicone sock

Step 19 – Install fans on the fan shroud

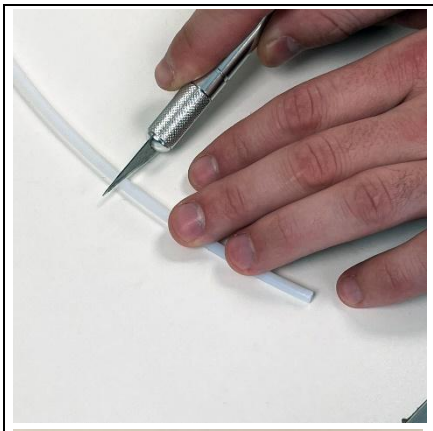
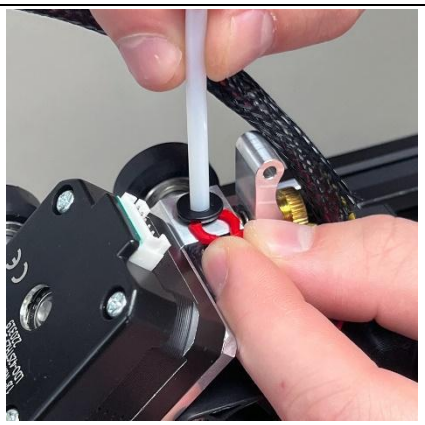
- Install the hotend cooling fan onto the fan shroud using the provided larger self-tapping screws
- Install the part cooling fan onto the fan shroud using the provided smaller self-tapping screws

Step 20 – Install fan shroud



- Install the assembled fan shroud back on the extruder

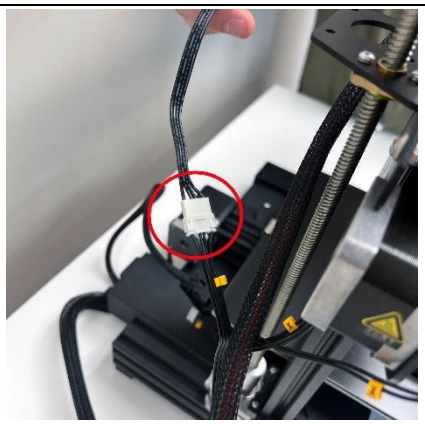
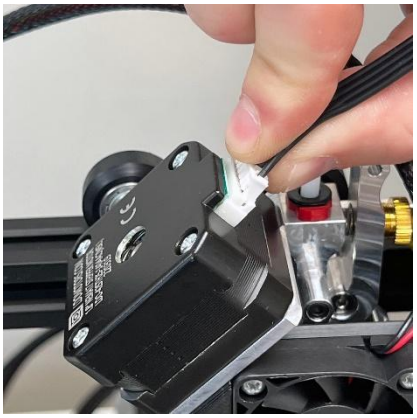
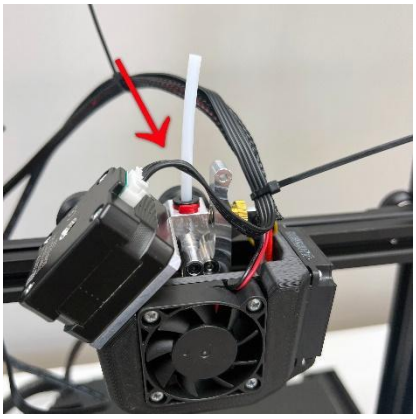
Step 21 – Install filament guide tube

- Cut about 2.5 inch of PTFE tubing from the original Bowden tube that was previously removed
- Install the PTFE liner on the extruder

  This will help smoothly guide the filament inside the extruder

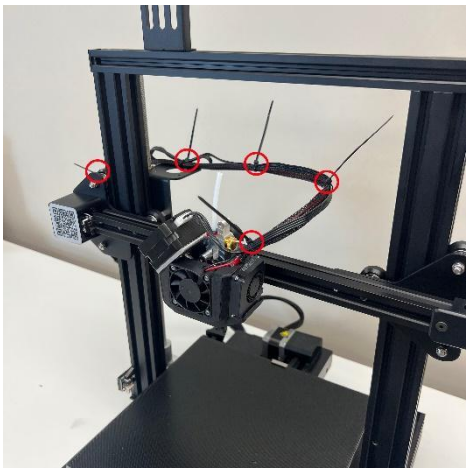
Step 22 – Install extruder cable

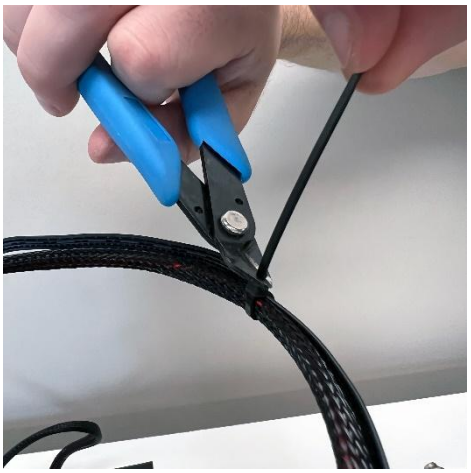




⚠ **It is very important to use the provided extension cable.** This cable has a special pinout to use the NG Extruder's LDO motor on the specific printer listed as compatible in the NG Extruder's fitment page.

- Connect on end of the extension cable to the original E cable and the other end to the LDO stepper motor
- Make sure to give the stepper motor cable some slack

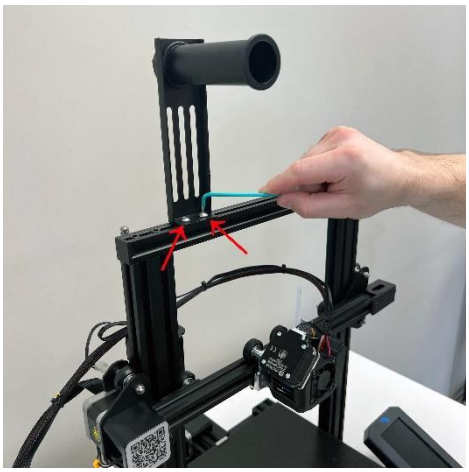
Step 23 – Cable management





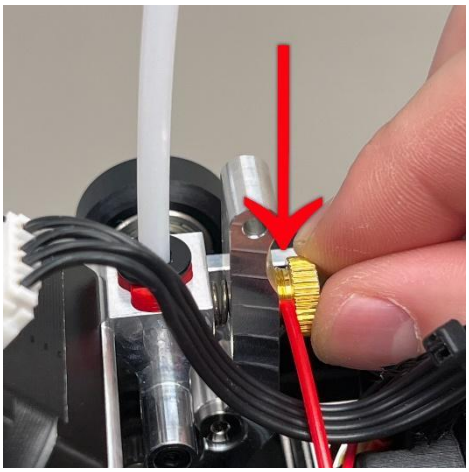
- Use provided zip ties to managed your cables neatly

Step 24 – Filament holder



- Loosen the two screws holding the Filament Holder
- Rotate the Filament Holder so that the spool hangs in front of the frame
- Retighten two screws to secure the Filament Holder

Step 25 – Adjust tension knob



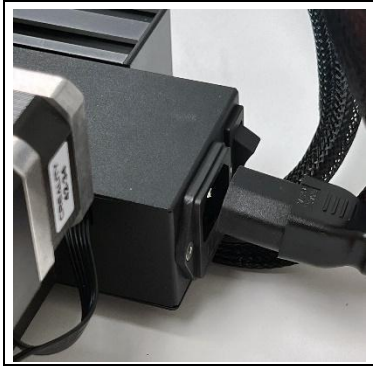
- Adjust the gear tension by rotating the brass knob

  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)

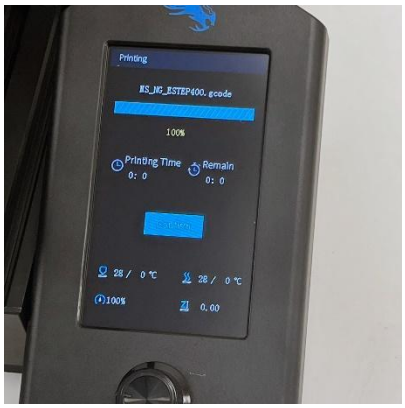
  For flexible filaments such as TPU, loosen the knob until about 2.75mm of the threads are exposed. (Loosen the knob two full turns, if starting from 1.75mm)

Step 26 – Power up printer



- Plug the power cable in and turn the printer on

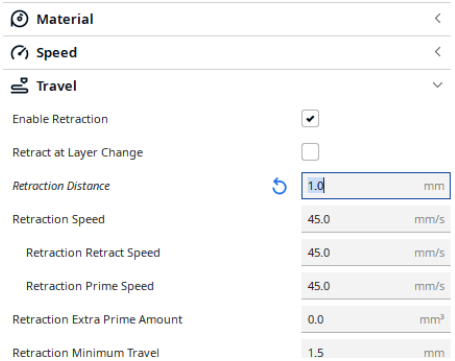
Step 27 – Update e-steps



The e-steps will need to be set to 400

- Download the Esteps G-code
- Put the G-code on your Micro CD card
- “Print” the Estep G-code on your printer as you would with any G-code that was made using a slicer.

Step 28 – Reduce the Retraction Distance



⚠ Important

Set the Retraction Distance to 1.0mm in your slicer software

Service Tips

Removing Filament

- Preheat the hotend to printing temperature
- Press the extruder arm to release the gear tension
- Purge the nozzle by manually pushing the filament down about 10mm to extrude any melted plastic
- Quickly pull the filament out of the extruder

Loading Filament

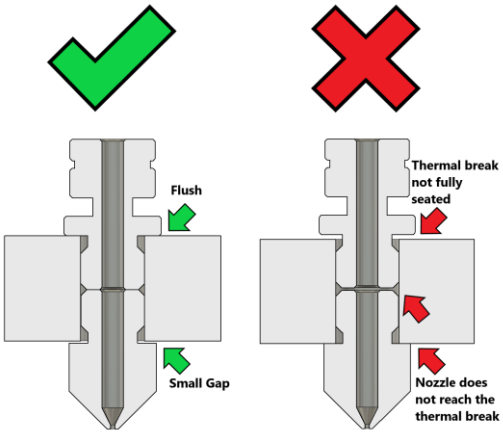
- Preheat the hotend to printing temperature
- Cut the tip of the filament at a 45-degree angle
- Straighten the tip of the filament out
- Using the printer menus issue an Extrude command
- Insert the filament into the extruder as the gears are rotating

When loading filament initially do not press the extruder arm, until after the filament has made it into the lower guide tube below the extruder gears.

After the filament is in that lower guide tube, you can then either continue to issue Extrude commands using the printer menus or pull the lever back and push the filament manually until you see melted filament coming out of the hot nozzle.

Nozzle Replacement Procedure

- Preheat the hotend to exactly **220C**
- Remove the filament from the hotend
  (First push the filament down in order to extrude any melted plastic and then quickly pull it out.)
- Unscrew the old nozzle while holding the heater block using an adjustable wrench to prevent it from rotating.
- Screw in the new **MK8** nozzle and torque it to 30-inch pounds.
- Verify that the thermal break is still seated flush on top of the heater block.



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