MICRO SWISS
www.micro-swiss.com

Micro Swiss Direct Drive Extruder for Creality Ender 5 / 5 Plus Printers
INSTALLATION INSTRUCTIONS

Tools needed

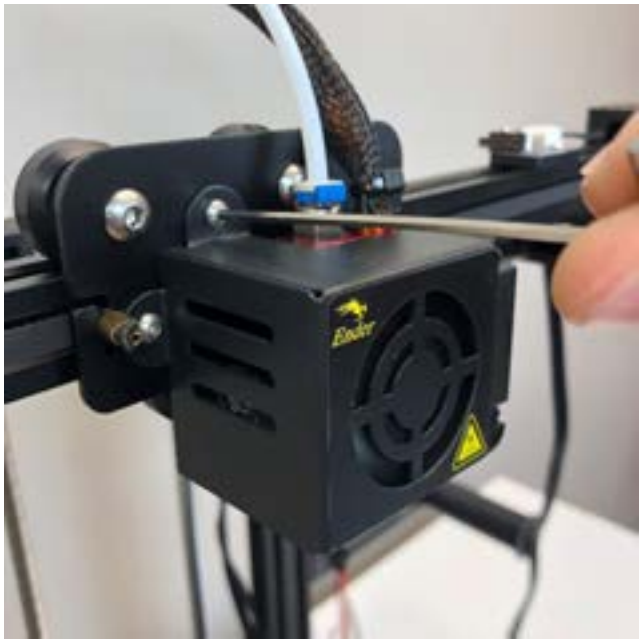
Gather the required tools before starting installation.

- Adjustable wrench
- Phillips-Head screwdriver
- 7mm socket wrench
- 7mm spanner wrench (supplied)
- 10mm spanner wrench
- 1.5mm Allen wrench (supplied)
- 2mm Allen wrench
- 2.5mm Allen wrench
- 3mm Allen wrench

Step 1

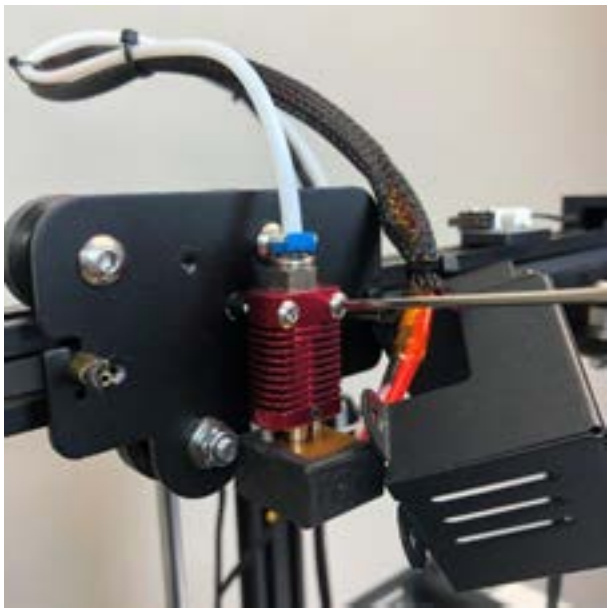
⚠ For your safety, turn off and unplug your printer.

Step 2 - Remove the fan shroud



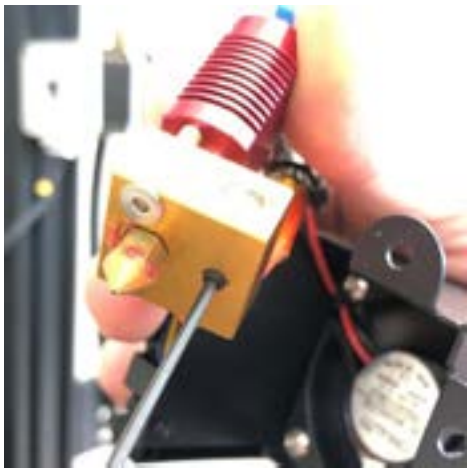
- Use the 2mm Allen wrench to remove the fan shroud

Step 3 – Remove stock hotend



- Remove the hotend using the 2.5mm Allen wrench
- Unscrew the two screws holding the hotend to the mounting bracket
- ⚠ Make sure the hotend is at room temperature!

Step 4 – Remove heater cartridge, thermistor and bowden tube



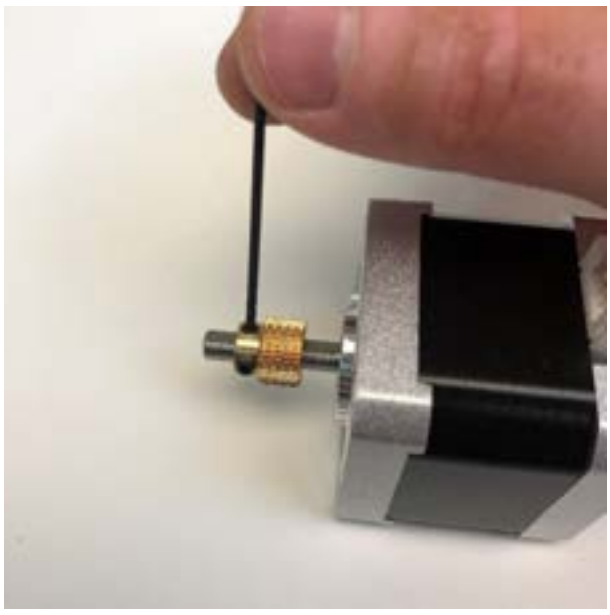
- Loosen the heater cartridge with the 1.5mm Allen wrench
- Remove the thermistor screw with the Phillips-Head screwdriver
- Carefully remove the heater cartridge and thermistor assembly
- Remove the Bowden tube

Step 5 – Remove the extruder



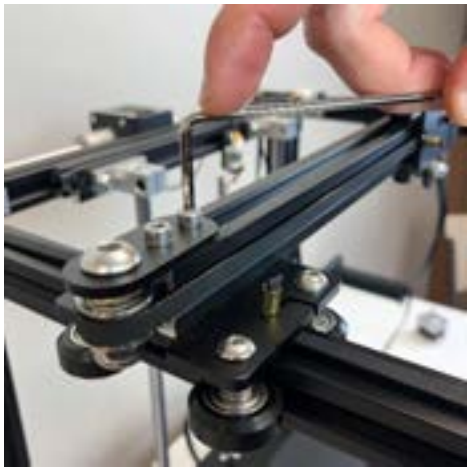

- Use the 2.5mm Allen wrench to remove the plastic extruder lever
- Unplug the extruder motor connector
- Use the 2mm Allen wrench to remove the extruder stepper motor

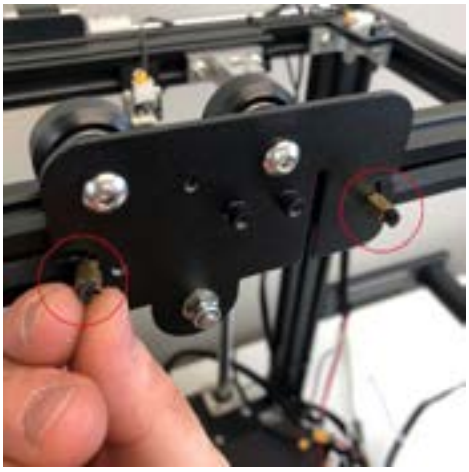
Step 6 – Remove the extruder gear



- Remove the extruder gear using the 1.5mm Allen wrench

Step 7 – Remove the belt



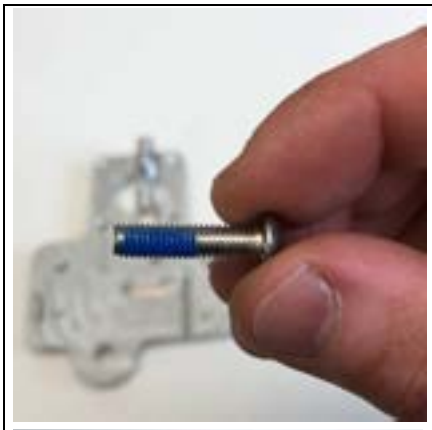
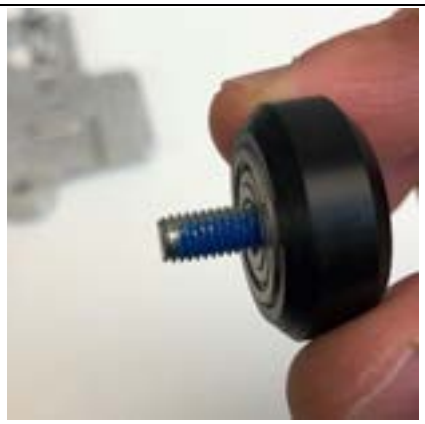


- Loosen the belt with the 3mm Allen wrench
- Unclip the belt

Step 8 – Remove cartridge plate

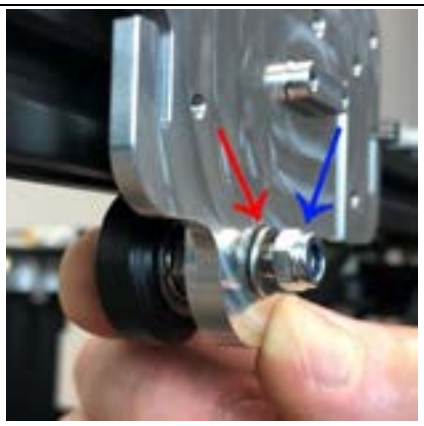
- Unscrew the lower roller wheel. Hold one side with the 3mm Allen wrench and unscrew the nut with the 8mm spanner
- Remove the cartridge plate
- Remove the other two roller wheels
- Please keep stepper motor, 3 roller wheels and eccentric spacer. These parts will be reused when installing the direct drive kit

Step 9 – Begin installing Micro Swiss Direct Drive Extruder

- Insert the provided 5mm nylon patched screw into the roller wheel. At this point, only install the top two rollers.
  Be sure to use provided nylon patched screws!
- As you install those rollers, keep tightening the screws until the wobble disappears, but the rollers are still free spinning
- Insert the unpatched 5mm screw into the third roller
- Insert the eccentric spacer
  Note the correct orientation - the longer boss facing away from the roller

Step 10 – Installing Micro Swiss aluminum cartridge on the rail

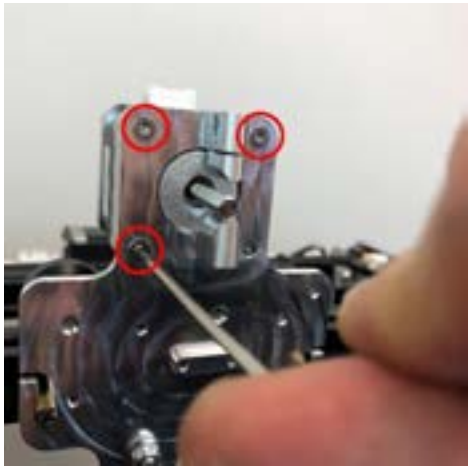



- Install the new Micro Swiss aluminum cartridge on the rail
- Use provided washer cartridge and a nylon lock nut
- Make sure you are using a nylon lock nut
- Tighten the nut. Make sure the roller is still free spinning
- Adjust the eccentric nut to remove any cartridge wobble

Step 11 – Reinstall the belt

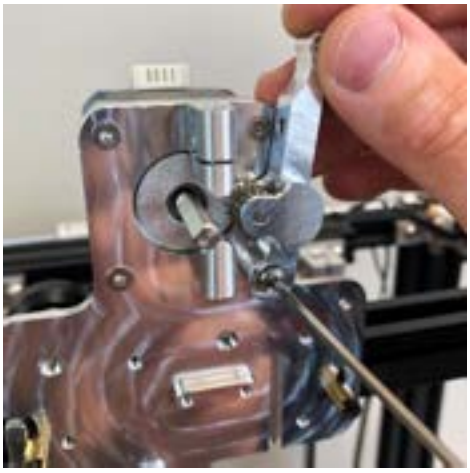
- Reinstall the belt
- Tighten the belt by pulling on the belt tensioner

Step 12 – Install extruder motor



- Install the extruder motor on the aluminum cartridge
- Use the provided M3 screws
  Make sure the motor connector is facing upwards.

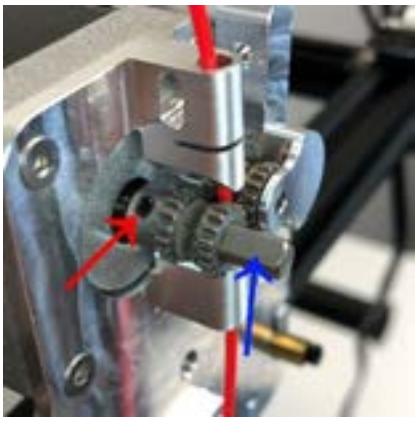
Step 13 – Install the lever



- Insert the precision shoulder screw into the lever
- Install the lever. Use the 2mm Allen wrench

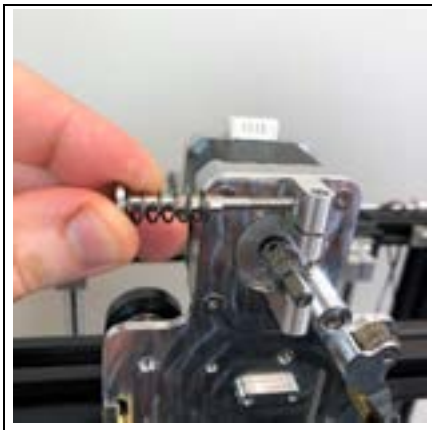
Step 14 – Install the drive gear



- Install the drive gear on the extruder motor. Note the correct orientation - set screw against the flat part of the shaft
- Engage the lever and insert a piece of filament, preferably rigid PLA. Use back and forth motion to align the center line of lever and drive gear
- Once aligned, keep applying pressure to the lever and tighten the grub screw
- Double check to see if the gears are centered
- Make sure the set screw is on the flat part of the shaft and when tightened, should be flush with the gear shank

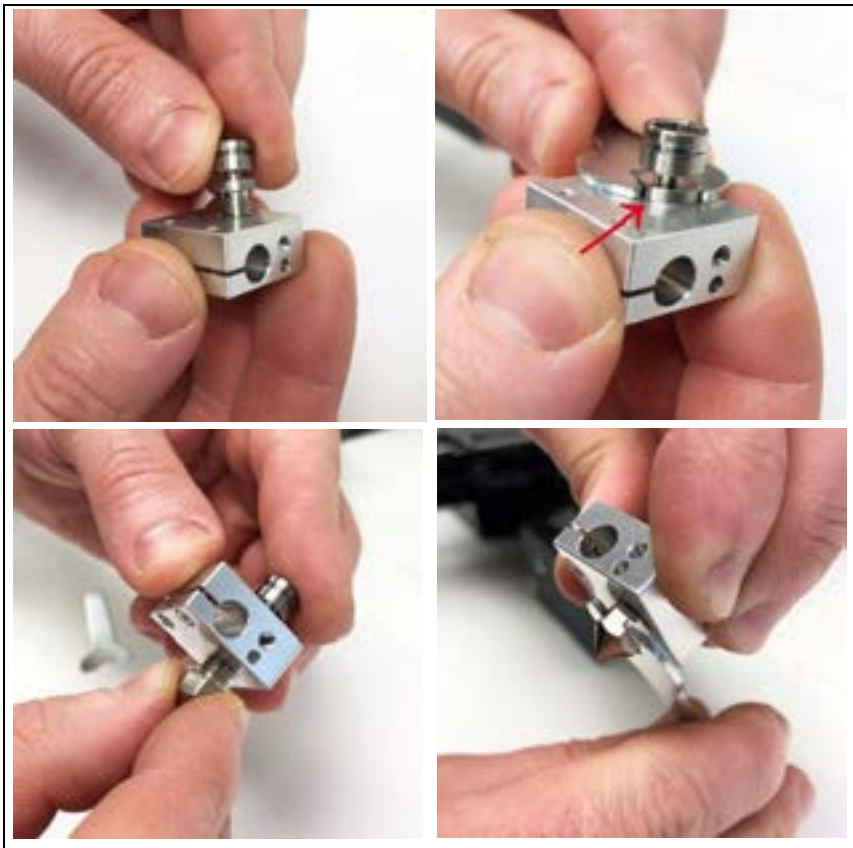
Step 15 – Install the lever pin



- Screw in the lever adjusting knob until the pin is flush with the knob. *This should be a good starting point for the filament grip*

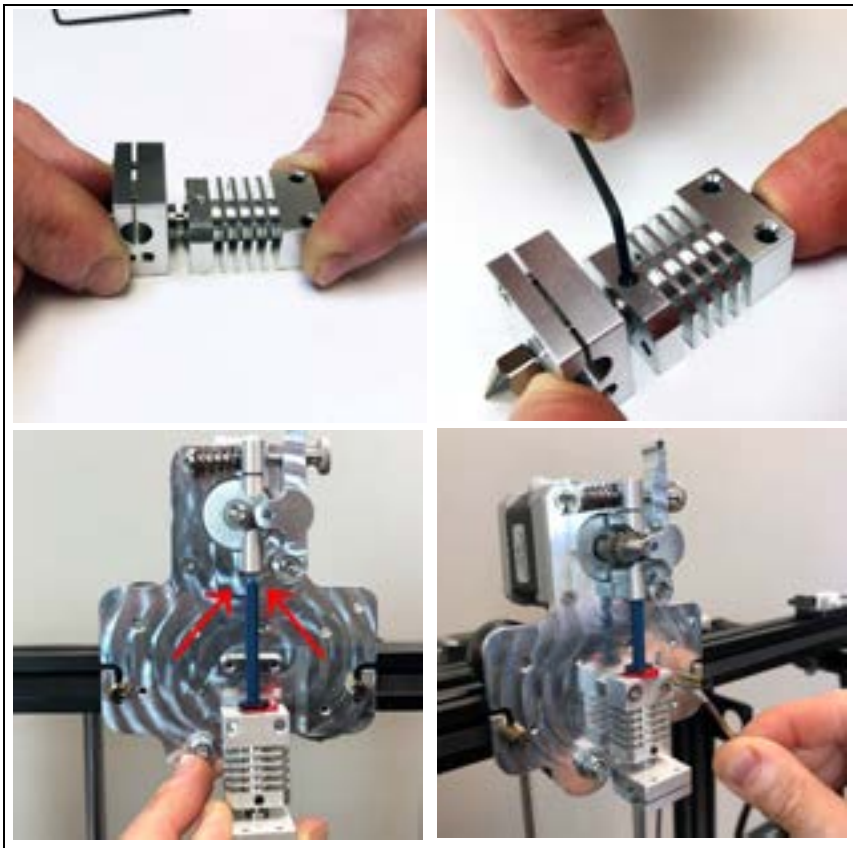
* For Flexible filament, use less pressure

Step 16 - Assembling the hotend



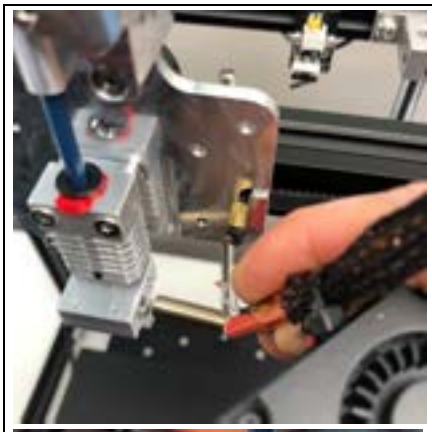
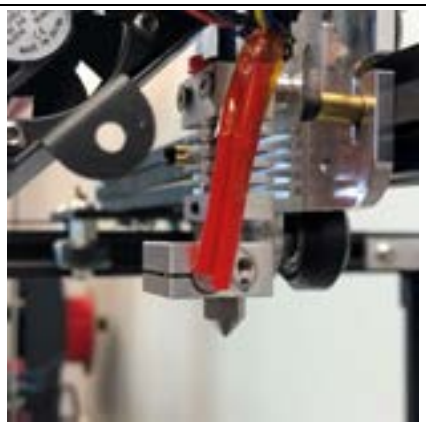
- Start by screwing in and tightening the titanium thermal break. Make sure it is flush with the heater block
- Install the nozzle

Step 17 - Assembling the hotend



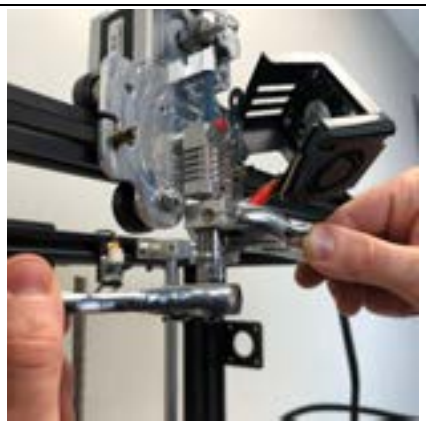
- Insert the heater block assembly into the cooling block and tighten the grub screw
- Insert the provided PTFE liner. Make sure the beveled edge is facing up
- Install the hotend assembly on the extruder plate. The beveled end of the tube should align with the extruder gear, to provide duly constrained filament path

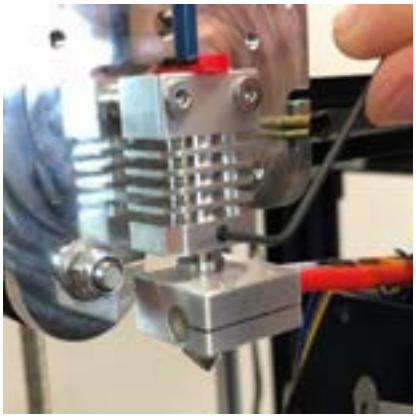
Step 18 - Reinstall the heater cartridge and thermistor

- Reinstall the heater cartridge and thermistor
- Tighten the heater cartridge using the 1.5mm Allen wrench
- Secure the thermistor. Be careful not to overtighten the screw as this can damage delicate wires

Step 19 - Fully seat the nozzle





- Turn on the printer and preheat the hotend to 220 degrees Celsius

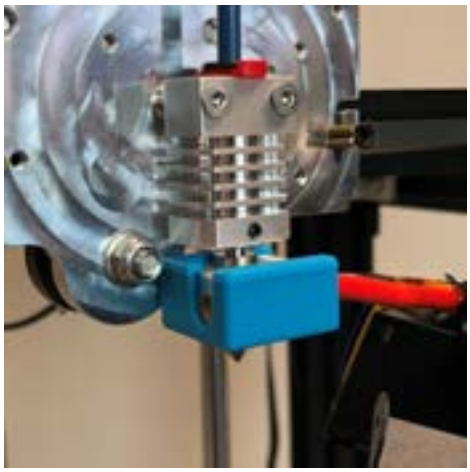
  ⚠ The hotend is now at 220 degrees Celsius. Be extremely careful not to burn your fingers when tightening the nozzle and the grub screws

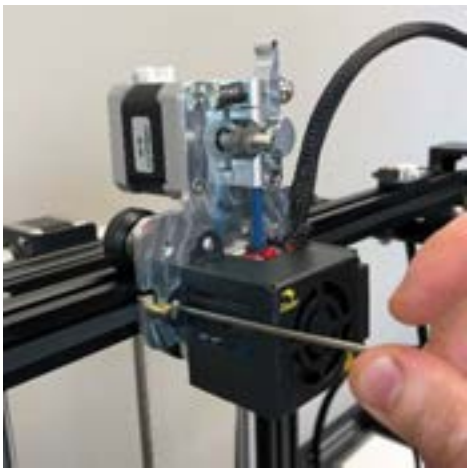
- Hold the heater block with the adjustable wrench and use the 7mm socket wrench to tighten the nozzle. If using torque wrench, set it to 30in-lb setting
- The heater cartridge might become loose after initial heat up. Make sure it is fully tightened. Be careful not to burn your fingers!
- Tighten the grub screws on the cooling block. Again, be careful not to burn your fingers!

Step 20 – Cool down your printer

- Cool down your printer and shut it off
- ⚠ Make sure the printer is fully cooled down. Turn off and unplug your printer before finishing installation

Step 21 – Reinstall the fan





- Install the silicone sock
- Reinstall the cooling fan shroud

Step 22 – Install the filament guide bracket

- Install the filament guide bracket using provided M3 bolts and nuts

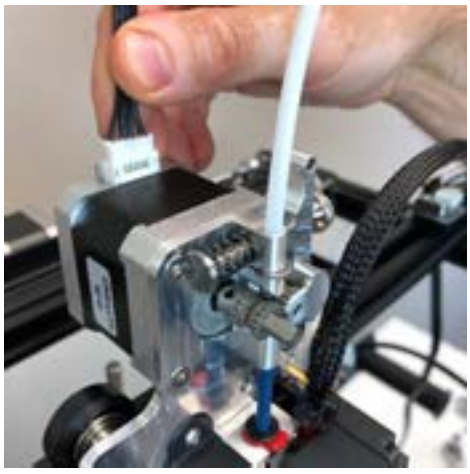
Step 23 – Install the filament guide tube

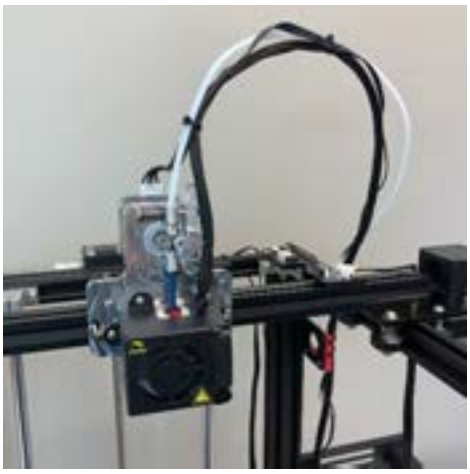
- Insert the filament guide tube and secure it with the provided retaining clip

Step 24 – Connect the motor

- Connect the extruder motor with the provided custom extension cord

Step 25 – Finishing the installation





- Secure the cables and filament guide tube with zip ties

Step 26 – Fine tune

Extruder steps/mm needs to be calibrated.
Good starting point is 130 steps/mm

- Download this custom **G-code** file to your SD card and run it in your printer. This will set the steps/mm to 130.
- For best results, you will have to fine tune the extrusion multiplier/flow rate in your slicer.

The installation is now complete!

Tips and Tricks

- Reduce the retraction amount. Maximum recommended retraction is 1.5mm @ 35mm/sec.
- With All Metal Hotend, the nozzle temperature might need to be increased by 5-10 °C.
- Make sure the Z-axis rail wheels are adjusted properly to eliminate rail sagging.
- Download and print the **Extruder Knob** from Thingiverse. This makes the manual filament changing process very easy.