

# Micro Swiss Direct Drive Extruder for Creality CR-10 / Ender 3 Printers INSTALLATION INSTRUCTIONS

## Tools needed

Gather the required tools before starting installation.

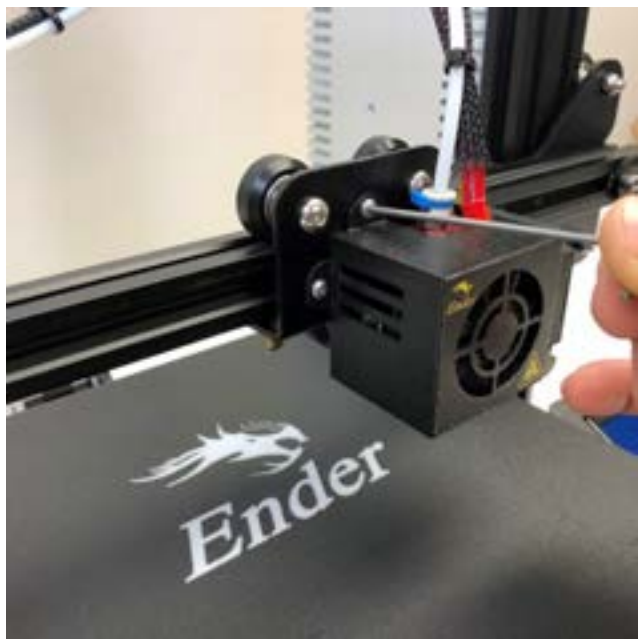
- Adjustable wrench
- Phillips-Head screwdriver
- 7mm socket wrench
- 7mm spanner wrench (supplied)
- 10mm spanner wrench
- 1.5mm Allen wrench (supplied)
- 2mm Allen wrench
- 2.5mm Allen wrench
- 3mm Allen wrench



## Step 1

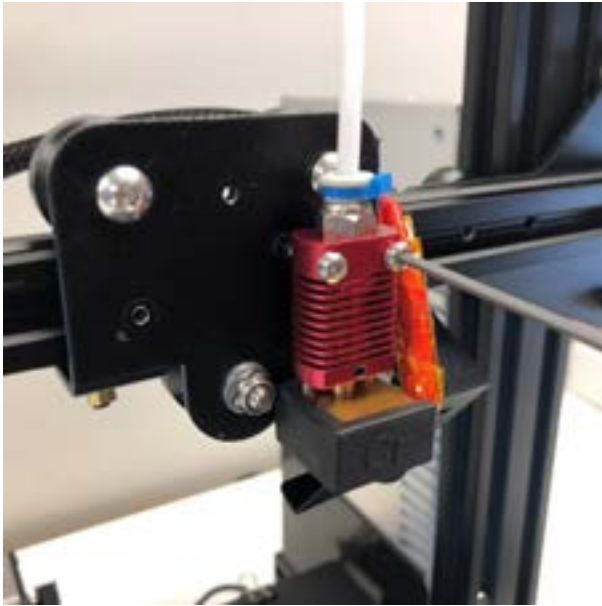
⚠ For your safety, turn off and unplug your printer.

## Step 2 - Remove the fan shroud



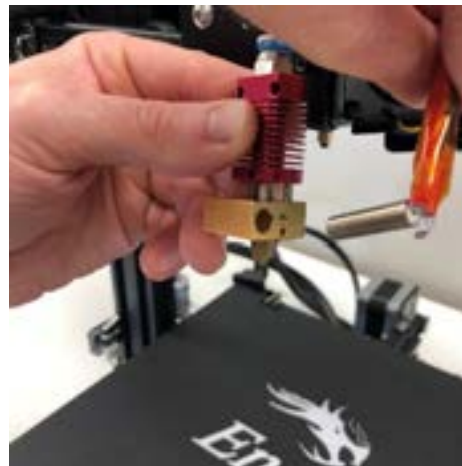
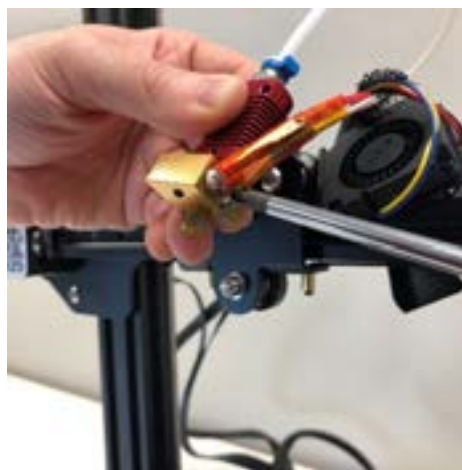
- Use the 2mm Allen wrench to remove the fan shroud

### 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

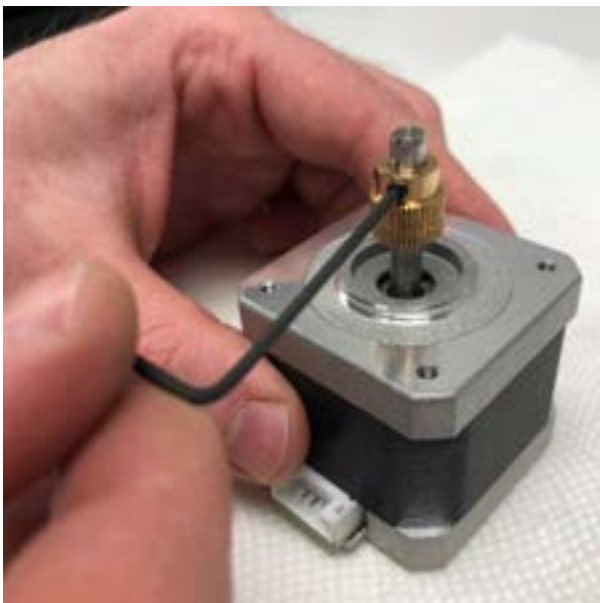
## Step 5 – Remove the extruder



- 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



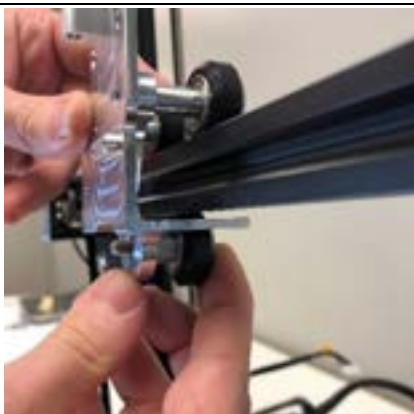


## Step 9 – Begin installing Micro Swiss extruder



- 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 nut  
**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
- **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

## Step 12 – Install extruder motor



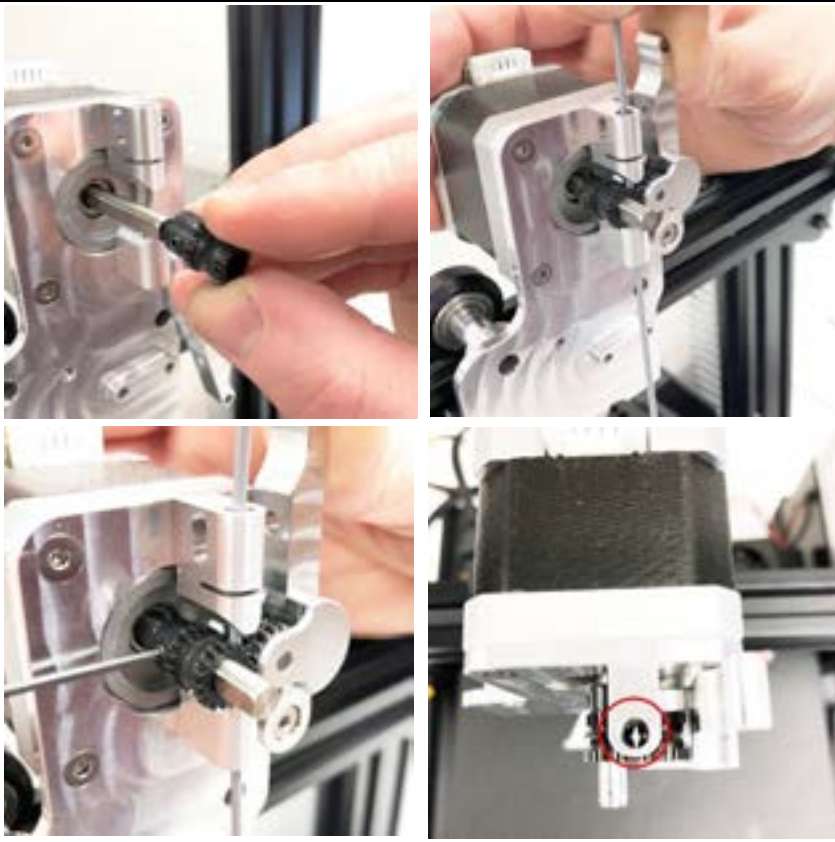
- Install the extruder motor on the aluminum cartridge
- Use the provided M3 screws  
**Make sure the motor connector is facing upwards.**

## Step 13 – Install the lever



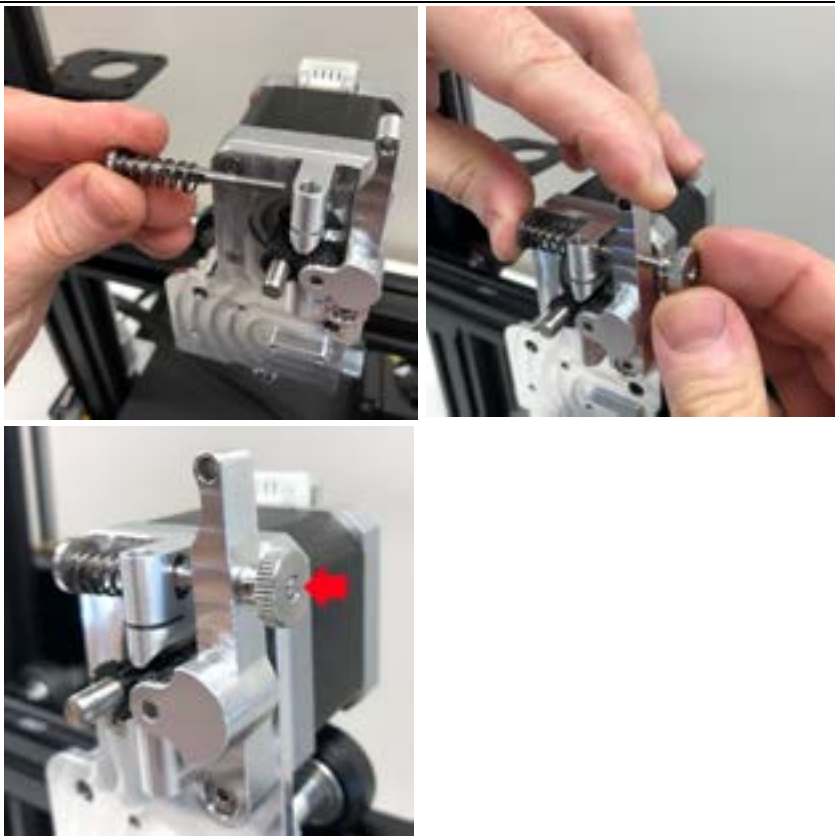
- Insert the precision shoulder screw into the lever
- Install the lever. Use the 2mm Allen wrench

## Step 14 – Install the drive gear



- Install the drive gear on the extruder motor. **Note the correct orientation - set screw sides faces the motor.**
- 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

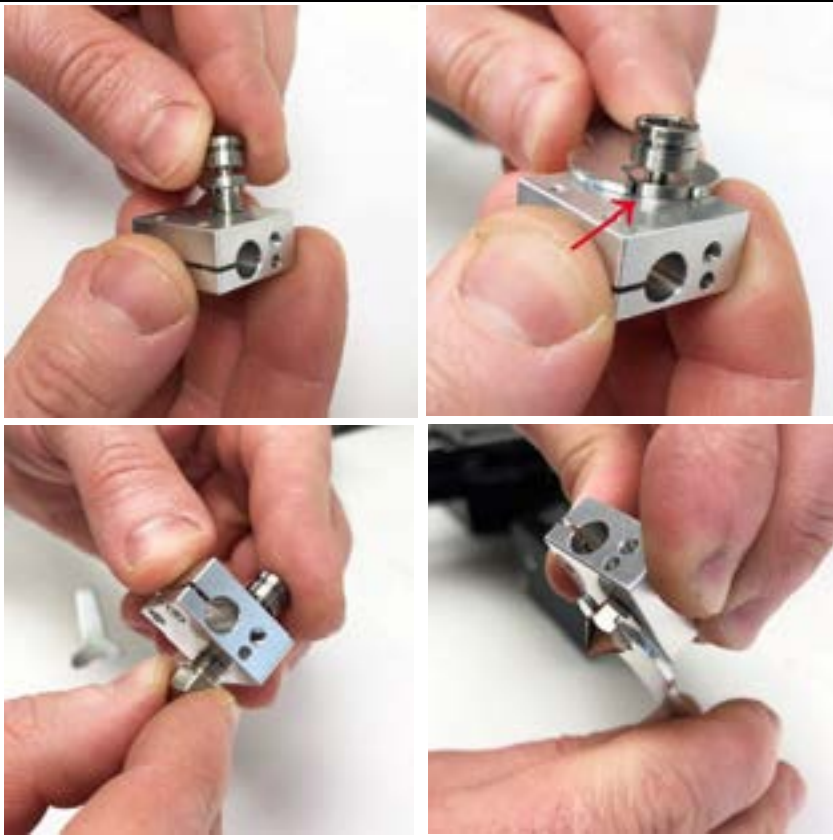
## Step 15 – Install the lever pin



- 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*

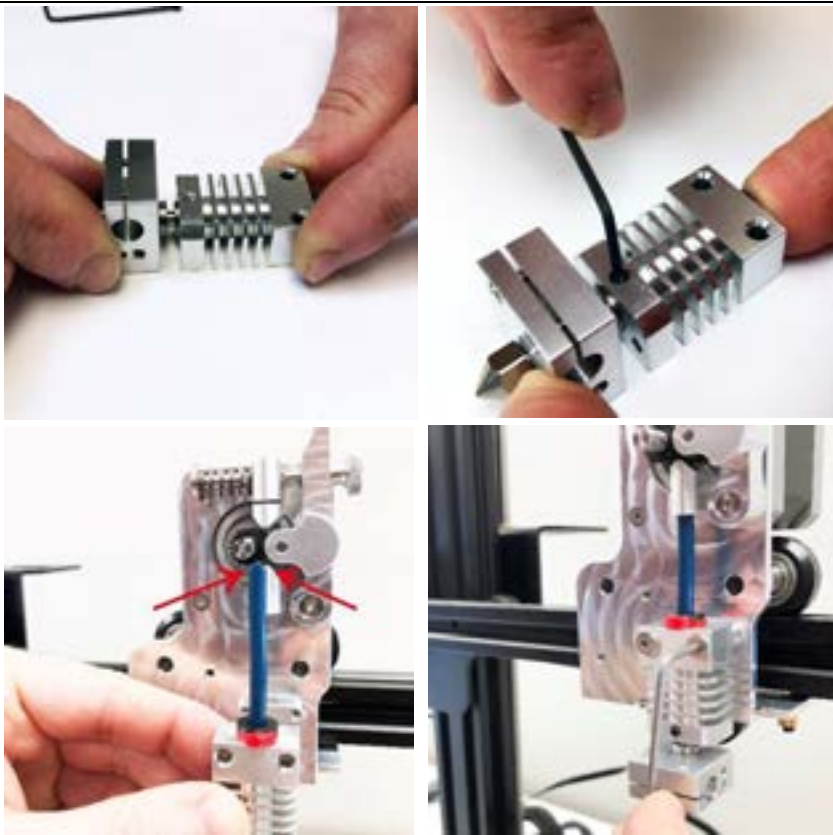


## Step 16 - Assembling the hotend



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

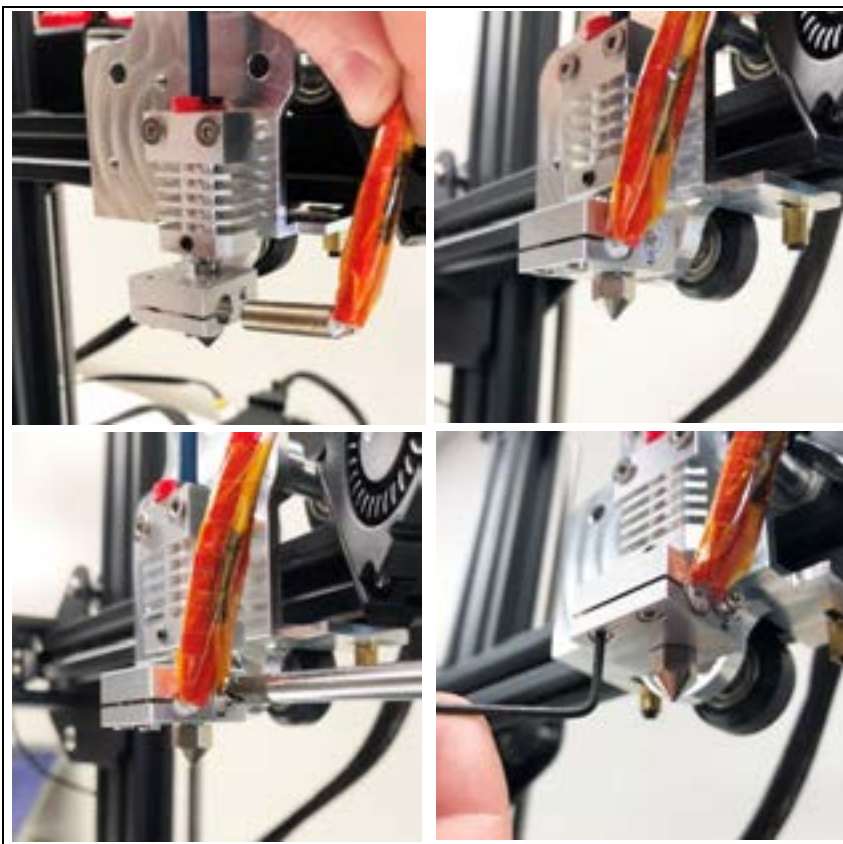
## Step 17 - Assembling the hotend



- 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



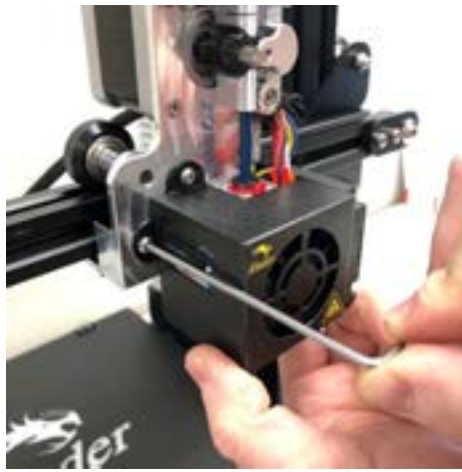
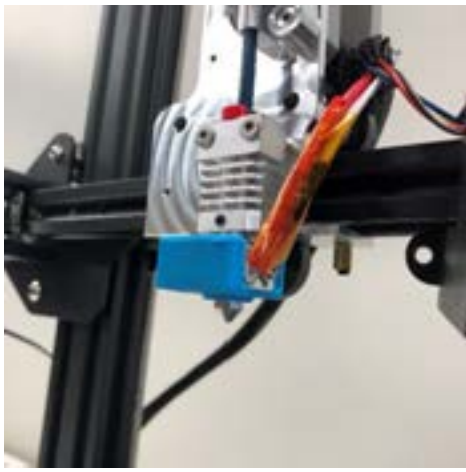
- Turn on the printer and preheat the hotend to 220 degrees Celsius  
  
**⚠ The hotend is now at 220 degrees Celsius. Be extremely careful not to burn your fingers when tightening the nozzle and the grub screws**
- Hold the heater block with the adjustable wrench and use the 7mm socket wrench to tighten the nozzle
- 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



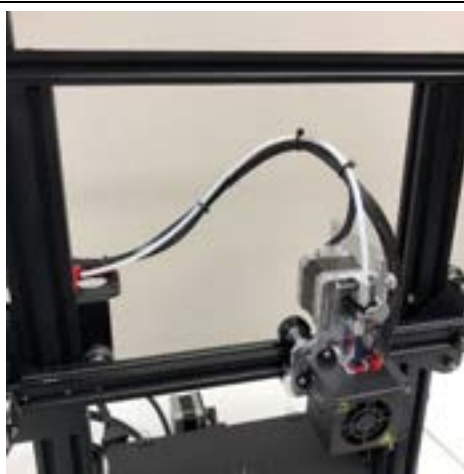
- Insert the filament guide tube and secure it with the provided retaining clip

### Step 24 – Connect the motor



- Connect the extruder motor with the provided custom extension cord

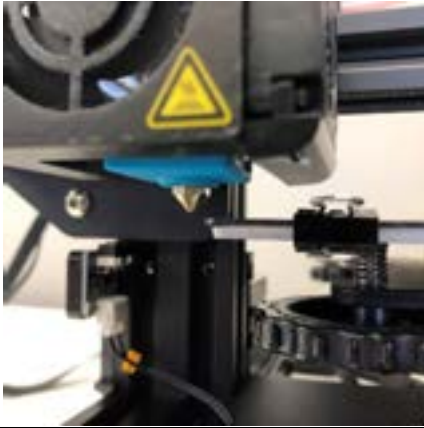
### Step 25 – Finishing the installation



- Secure the cables and filament guide tube with zip ties

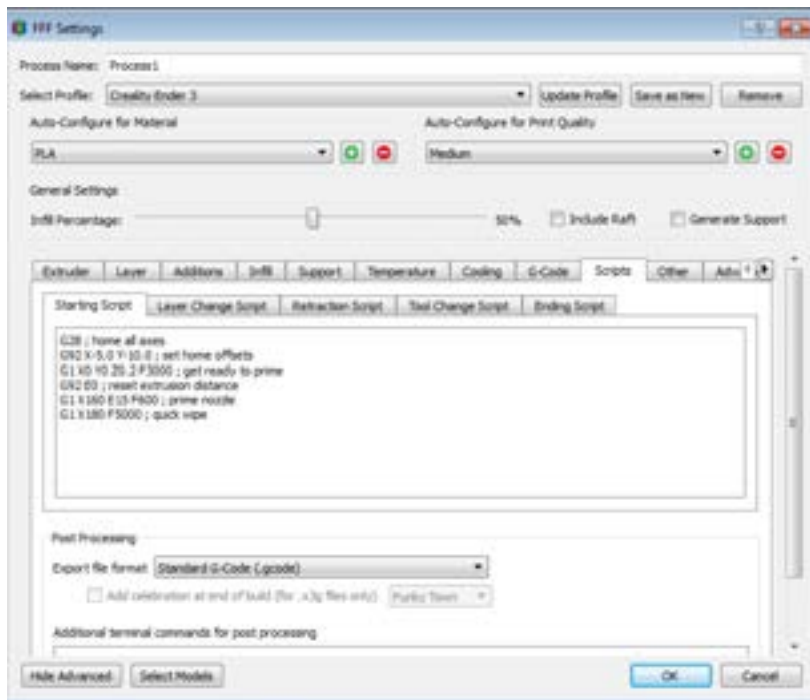


## Step 26 – Adjusting origin offsets



After the installation, X and Y origins will be off the bed

- To adjust the X and Y origins, you will need to include a custom starting script in your slicer



- Copy and Paste this code into your starting Script/Gcode

```
G28 ; home all axes
G92 X-5.0 Y-10.0 ; set home offsets
G1 X0 Y0 Z0.2 F3000 ; get ready to prime
G92 E0 ; reset extrusion distance
G1 X160 E15 F600 ; prime nozzle
G1 X180 F5000 ; quick wipe
```

- The line: "G92 X-5.0 Y-10.0 ; set home offsets" might need to be tweaked slightly for different printers

## Step 27 – 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!  
Please see the next page for tips and tricks on how to successfully use Micro Swiss Direct Drive Extruder

## 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.