

# Micro Swiss NG™ Direct Drive Extruder for Creality Ender 5 Linear Rail Edition INSTALLATION INSTRUCTIONS

## TOOLS NEEDED

Gather the required tools before starting installation.

- Phillips-Head Screwdriver
- 3mm Allen wrench
- 2mm Allen wrench
- 1.5mm Allen wrench (included with kit)
- Flush cutters



## WHAT'S IN THE BOX

- 1x Master Extruder Assembly
- 1x Ender 5 Adaptation plate
- 1x LDO Stepper motor
- 1x Fan Shroud
- 1x Custom Extension Cable
- 1x All Metal Hotend Assembly
- 1x Printed PTFE Tube bracket
- 1x Printed BLTouch bracket
- 1x Printed Endstop switch bracket

Hardware:

- 4x M3 x .5 x 6mm Flat Head 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



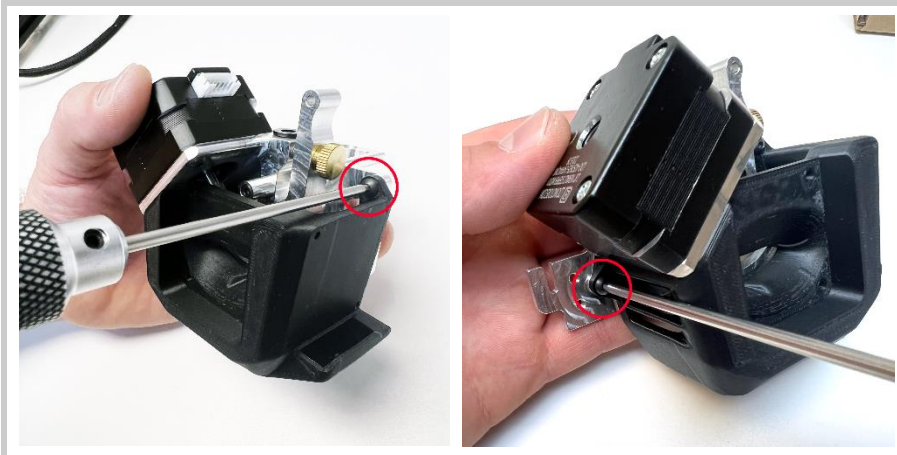
## PREPARATION

- If your printer has a bed leveling probe, print the required probe mounting bracket for the NG Extruder.  
[Download here](#)
- Remove the filament from your original hotend and allow it to cool down completely.
- Disassemble and remove the original print head
- Install your own **MGN12 Linear Rail** with the **MGN12H Carriage Block** to the top of the printers X-axis aluminum extrusion using at least two **M3 T-nuts** and **M3x8mm screws**.

## • Step 1 - SAFETY

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

## Step 2 - UNFASTEN THE FAN SHROUD



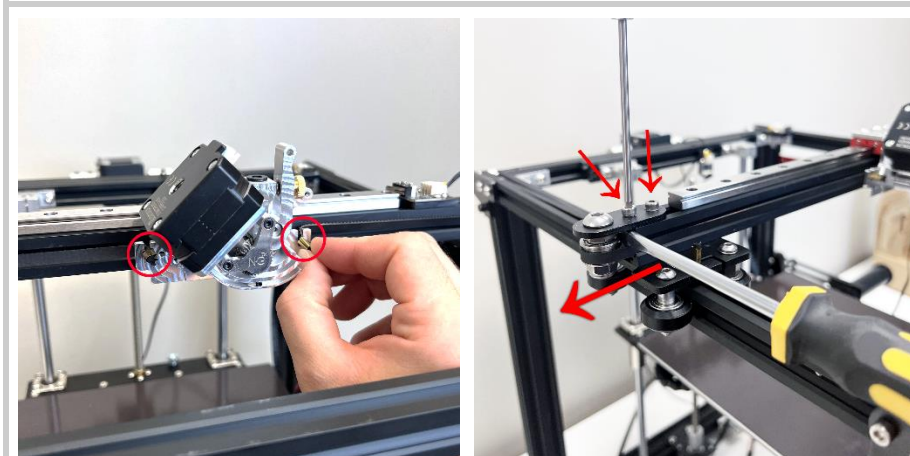
- Detach the fan shroud from the extruder assembly by removing the two screws using a 2mm Allen wrench

## Step 3 – ATTACH THE EXTRUDER TO THE LINEAR RAIL CARRIAGE



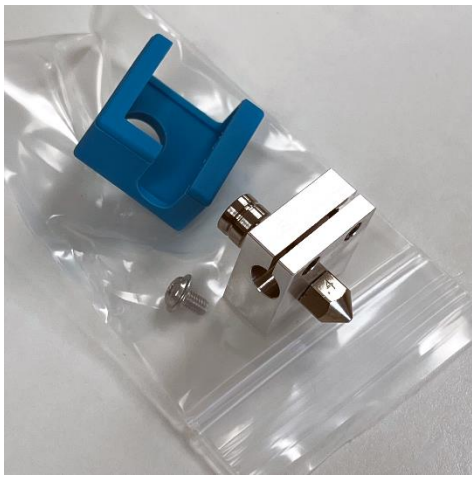
- Attach the Extruder assembly to your MGN12 Carriage Block using the provided M3 x .5 x 6mm Flat Head Cap screws

## Step 4 – ATTACH THE BELT



- Clip the X-axis belt into the two slots at the bottom of the Linear Rail Adaptation Plate
- Tighten the X-axis belt

## Step 5 – PREPARE THE HOTEND



- Remove the silicone sock from the all metal hotend

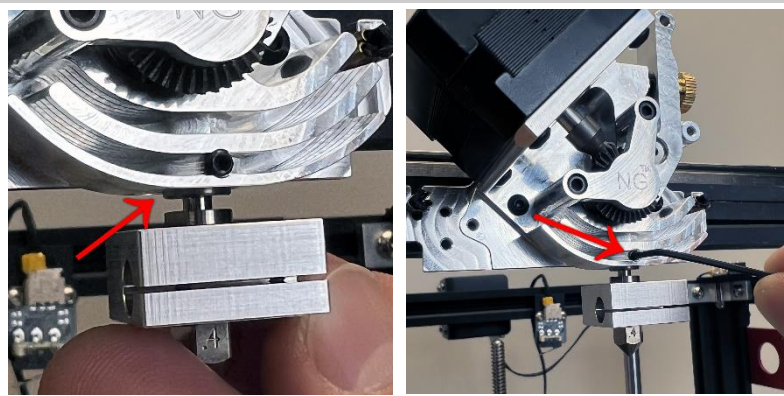
The included hotend has already been preheated and the nozzle has been tightened to spec at the factory.

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 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 6 – INSTLL THE HOTEND

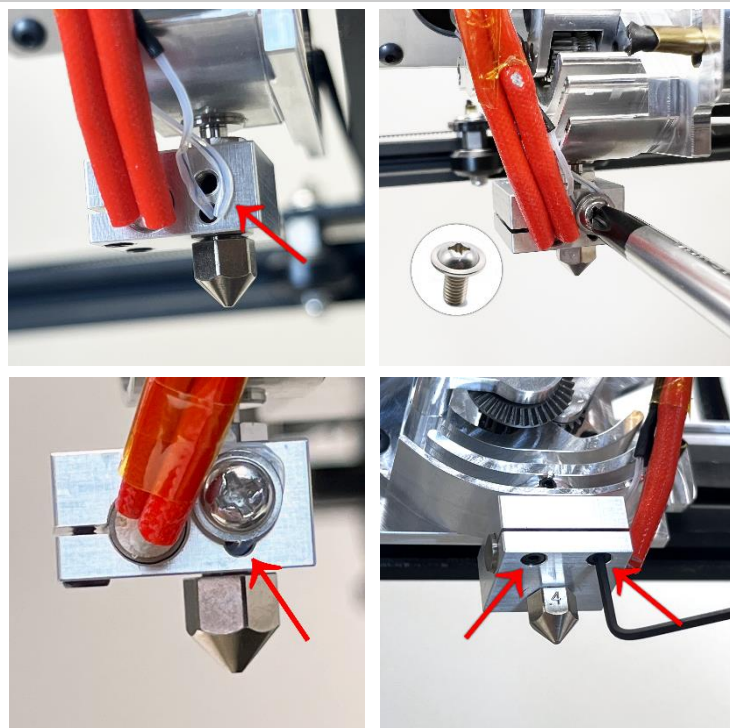


- Insert the hotend assembly into the extruder

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 a 1.5mm Allen wrench

## Step 7 – INSTALL THE THERMISTOR AND HEATER CARTRIDGE



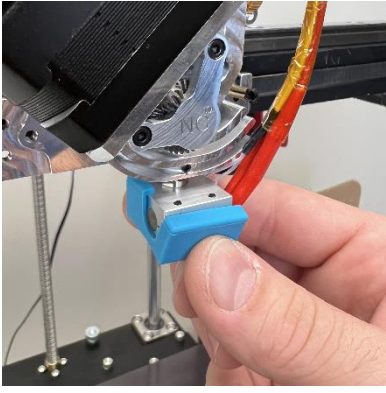
- Install the heater cartridge and the thermistor
- Secure the thermistor wires in place using the Phillips head screw

Be careful not to overtighten the Phillips head screw as this can damage delicate wires

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

- Tighten the two heater cartridge screws using the 1.5mm Allen wrench

## Step 8 – INSTALL THE SILICONE SOCK

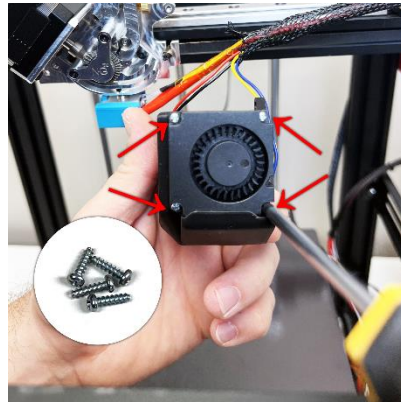
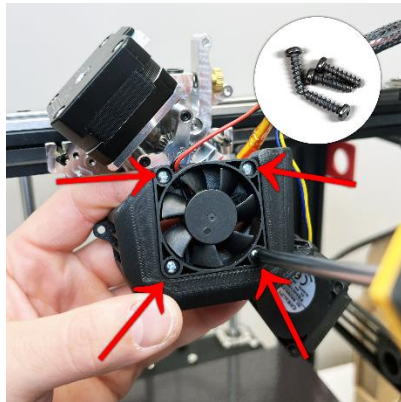


- Install the silicone sock

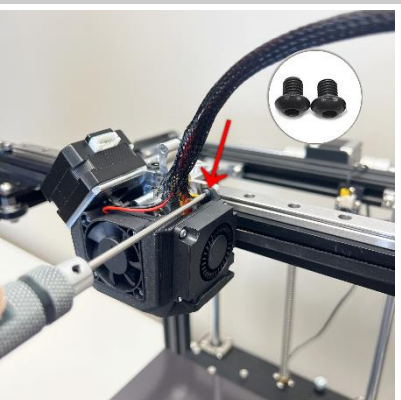
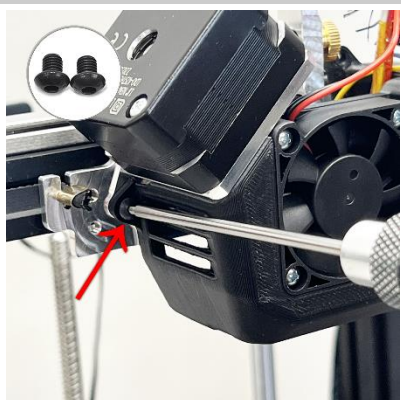
## Step 9 – ATTACH THE FANS TO THE FAN SHROUD



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

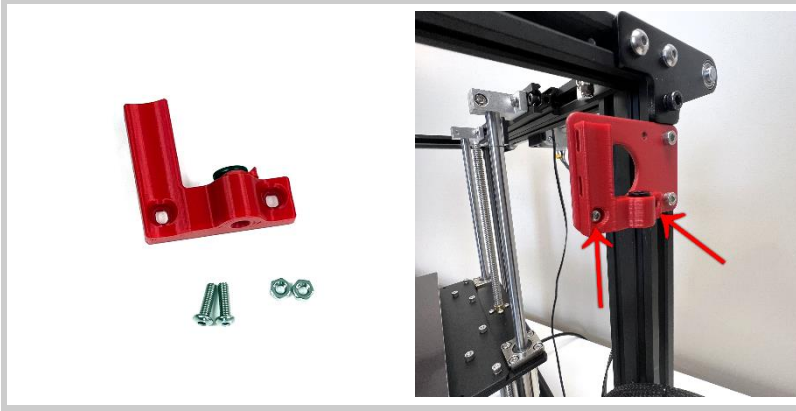


## Step 10 – INSTALL THE FAN SHROUD



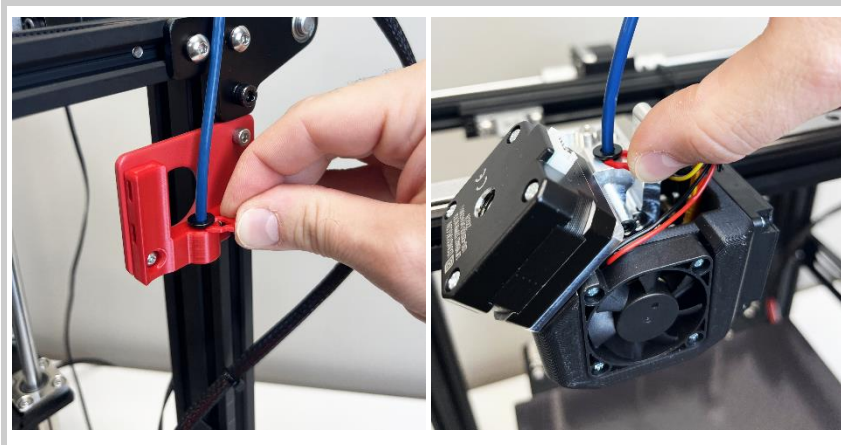
- Install the assembled fan shroud back on the extruder

## Step 11 – INSTALL THE FILAMENT GUIDE BRACKET



- Install the filament guide bracket where the original Bowden extruder used to sit, using provided M3 nuts and bolts.

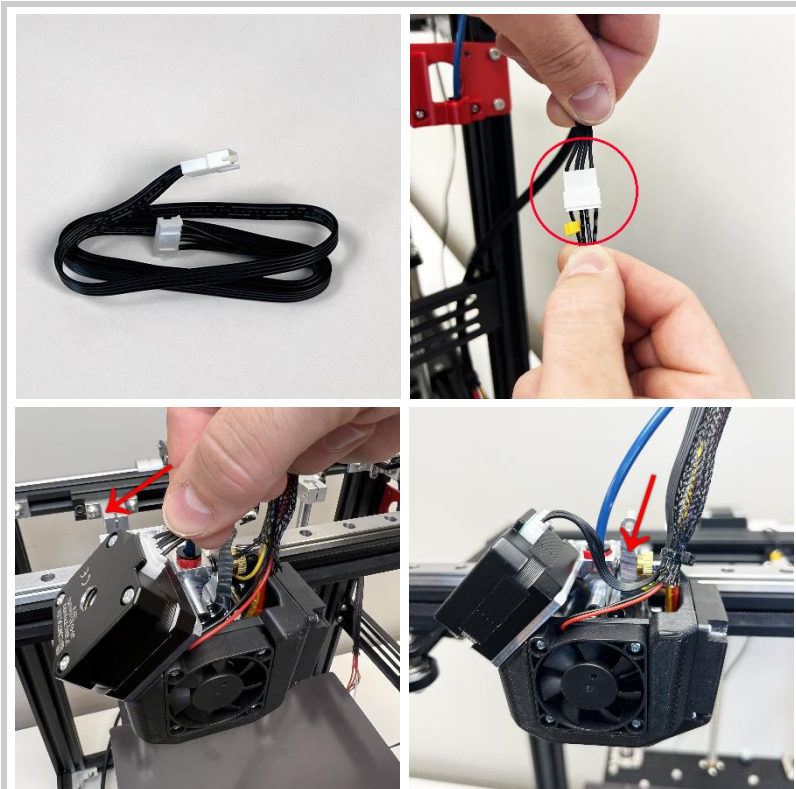
## Step 12 – INSTALL THE FILAMENT GUIDE TUBE



The printer's original Bowden tube will be reused to help guide filament from the spool into the extruder.

- Insert the filament guide tube into the Filament Guide Bracket and secure it using one of the provided retaining clips.
- Insert the other end of the filament guide tube into the top of the extruder and secure it using one of the provided retaining clips.

## Step 13 – INSTALL THE EXTENSION CABLE

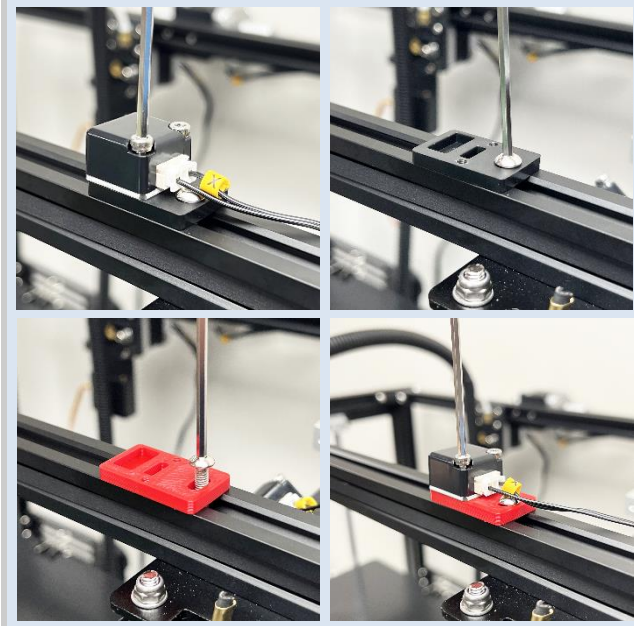


**⚠ It is very important to use the provided extension cable.**

This cable has a special pinout for the NG Extruder's LDO motor.

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

## ENDSTOP SWITCH (ENDER 5 PLUS ONLY)

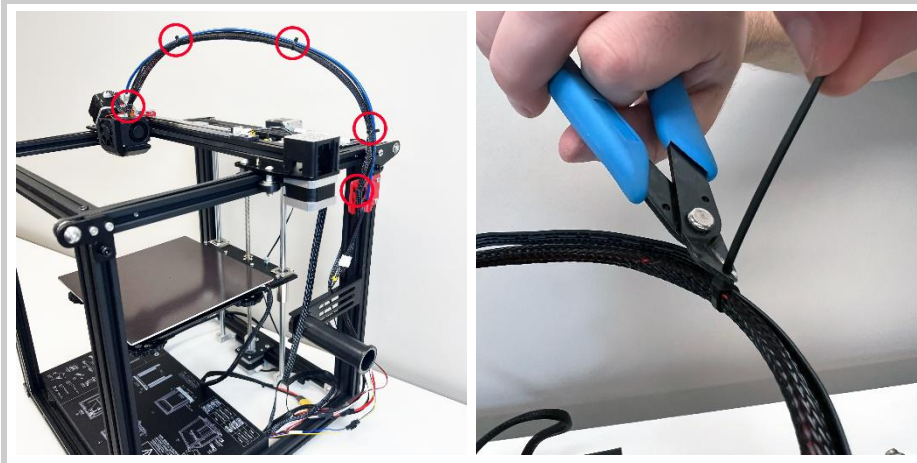


The Ender 5 Plus requires the X-axis endstop switch to be installed onto the provided bracket. This will prevent the NG fan shroud from touching the gantry wheel when Auto Homing the printer.

**(Only use this bracket on the Ender 5 Plus, it is not needed on the Ender 5 or Ender 5 Pro)**

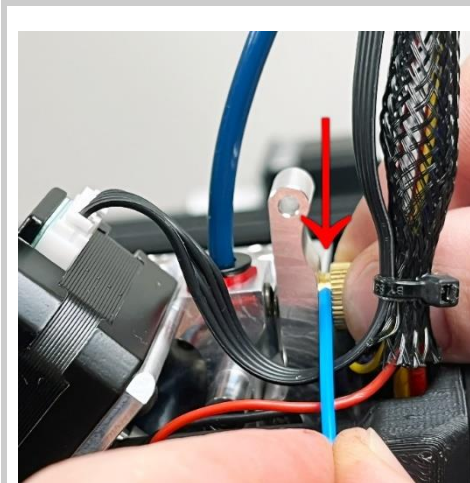
- Unfasten the X-axis endstop switch
- Remove the stock endstop bracket
- Install provided endstop bracket
- Reinstall the x-axis endstop switch

## Step 14 – CABLE MANAGEMENT



- Use provided zip ties to managed your cables neatly

## Step 15 – ADJUST THE GEAR TENSION



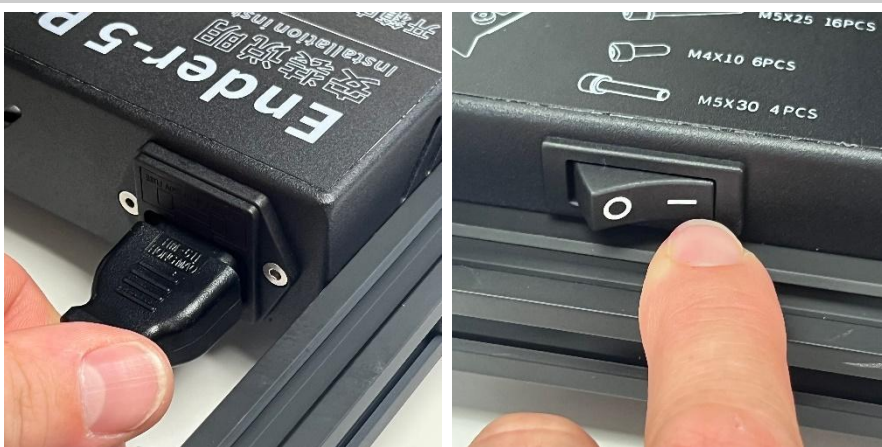
- Adjust the gear tension by rotating the brass knob

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)

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 16 – POWER ON THE PRINTER



- Plug the power cable in and turn the printer on

## Step 17 – UPDATE E-STEPS



The E-steps will need to be set to 400 in the printer settings.

- Download the Esteps [G-code](#)
- Copy the Esteps G-code file onto your Micro CD card
- “Print” the Esteps G-code using the printer menus, as you would with a regular G-code that was made using a slicer.

Some printers will save the printer settings to a file on the MicroSD card.

For those printers, the MicroSD card has to be inside of the printer when the printer is being turned on, otherwise the new settings will not be loaded.

## Step 18 – CONFIGURE SLICER SETTINGS

<p>Material</p> <p>Speed</p> <p>Travel</p> <p>Enable Retraction <input checked="" type="checkbox"/></p> <p>Retract at Layer Change <input type="checkbox"/></p> <p>Retraction Distance <input type="text" value="1.0"/> mm</p> <p>Retraction Speed 45.0 mm/s</p> <p>Retraction Retract Speed 45.0 mm/s</p> <p>Retraction Prime Speed 45.0 mm/s</p> <p>Retraction Extra Prime Amount 0.0 mm<sup>3</sup></p> <p>Retraction Minimum Travel 1.5 mm</p>	<ul style="list-style-type: none"><li>Set the <b>Retraction Distance to 1.0mm</b> in your slicer software</li></ul> <p><b>Maximum Retraction Distance: 1.5mm</b></p> <p><b>Do not use any gcodes that were sliced with a Retraction Distance higher than 1.5mm.</b></p>
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**INSTALLATION COMPLETE**



# 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 tube below the extruder gears. After that you can then either continue to issue more Extrude commands using the printer menu or press the extruder arm back and push the filament down 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
- 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, 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

