

Heater and Thermocouple Replacement

SOURCE:

<https://support.zortrax.com/thermocoupler-and-heater-replacement/>

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The heater and thermocouple are responsible for providing and maintaining the appropriate temperature in the hotend during material loading and the printing process. Also, the heater transfers the signal required for the printer to complete the platform calibration. Therefore, if the extruder is overheating or the heating is insufficient, or if your prints have blisters and hanging strands on their surface, the heater and thermocouple may be faulty and require replacement. Also, the extruder heating problems are indicated by the firmware messages: Error #010 Extruder heating error, Error #011 Extruder temperature is too high, and Error #013 Unexpected extruder temperature drop. Sometimes, if you are unable to finish platform calibration or if the nozzle hits the platform during the pre-print calibration, it may be necessary to replace the heater and thermocouple.

Before replacing the heater and thermocouple, make sure that they are properly installed in the hotend.

If you have the heater&thermocouple v1, you also have to replace the hotend and the extruder PCB.

The following manual shows the M200 repair work. For the M300, M200 Plus, and M300 Plus, these procedures are the same.

Unloading the Material



If the material is loaded into the extruder, unload the material using the “Material” -> “Unload the material” option in the menu.

Unplugging the Power Cable



Turn off the printer and unplug the power cable.

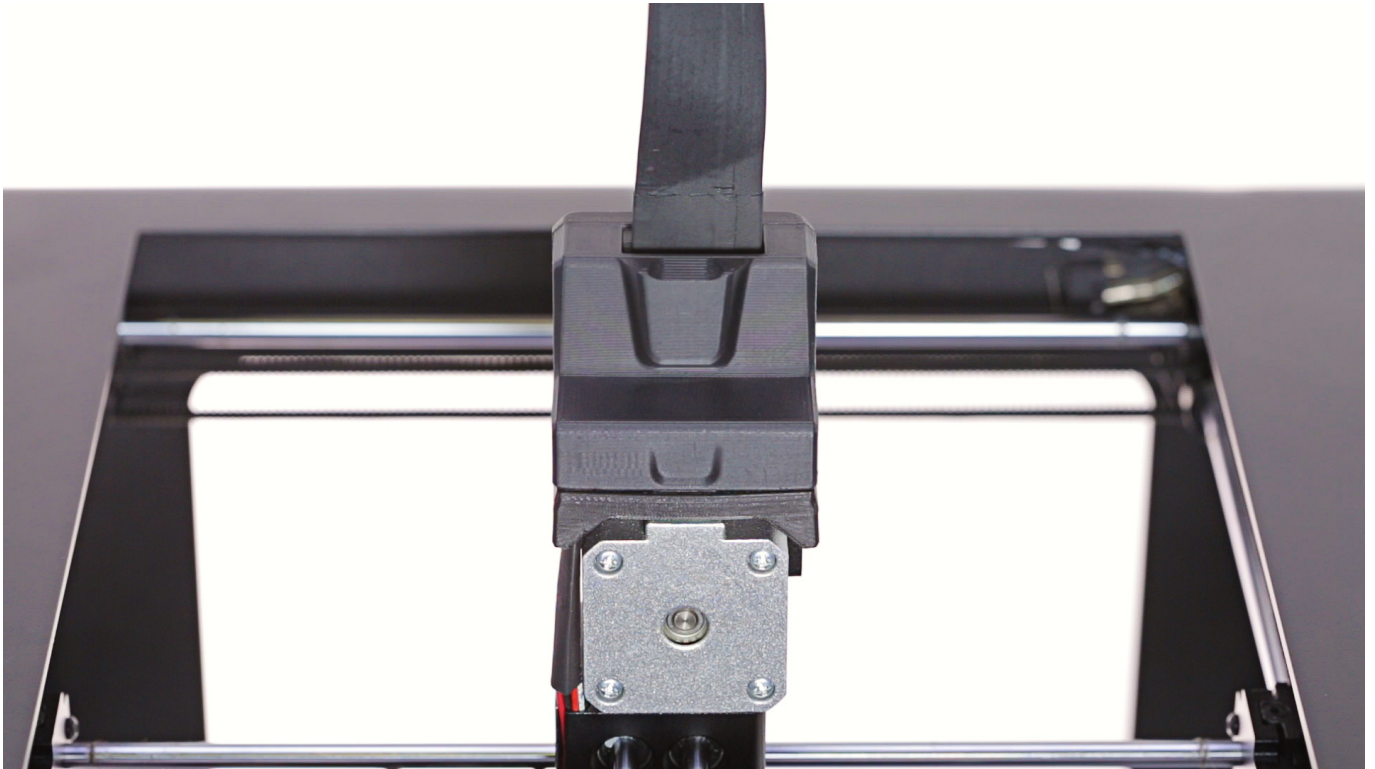
Wait until the printer – especially the hotend – cools down completely.

Material Guide Removal



Detach the material guide from the extruder cover. Next, separate the guide from the extruder cable.

Unplugging the Extruder Cable



Detach the extruder upper printed cover and unplug the extruder cable.

Hotend Removal



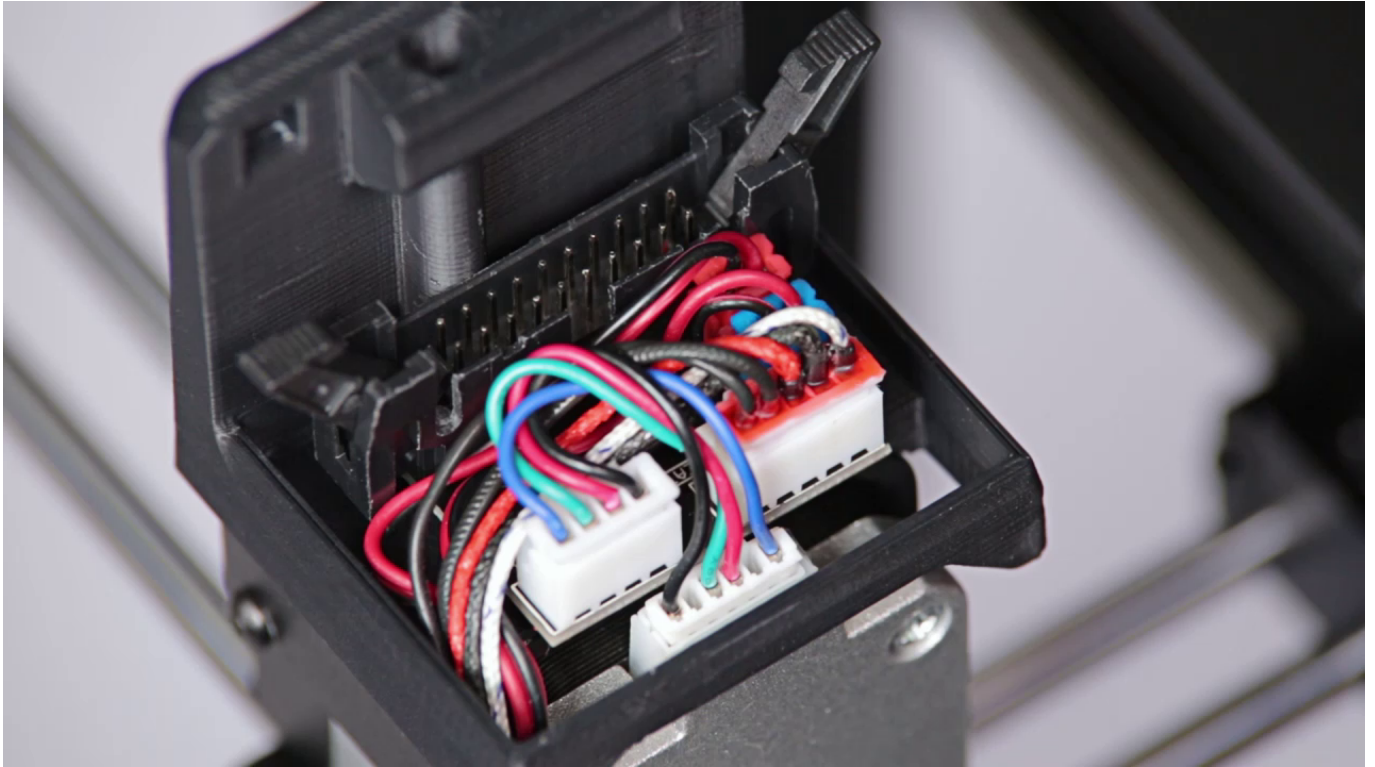
With a 1.5mm Allen key loosen the two screws that secure the hotend and remove the hotend from the extruder.

Heater and Thermocouple Removal (from the Hotend)



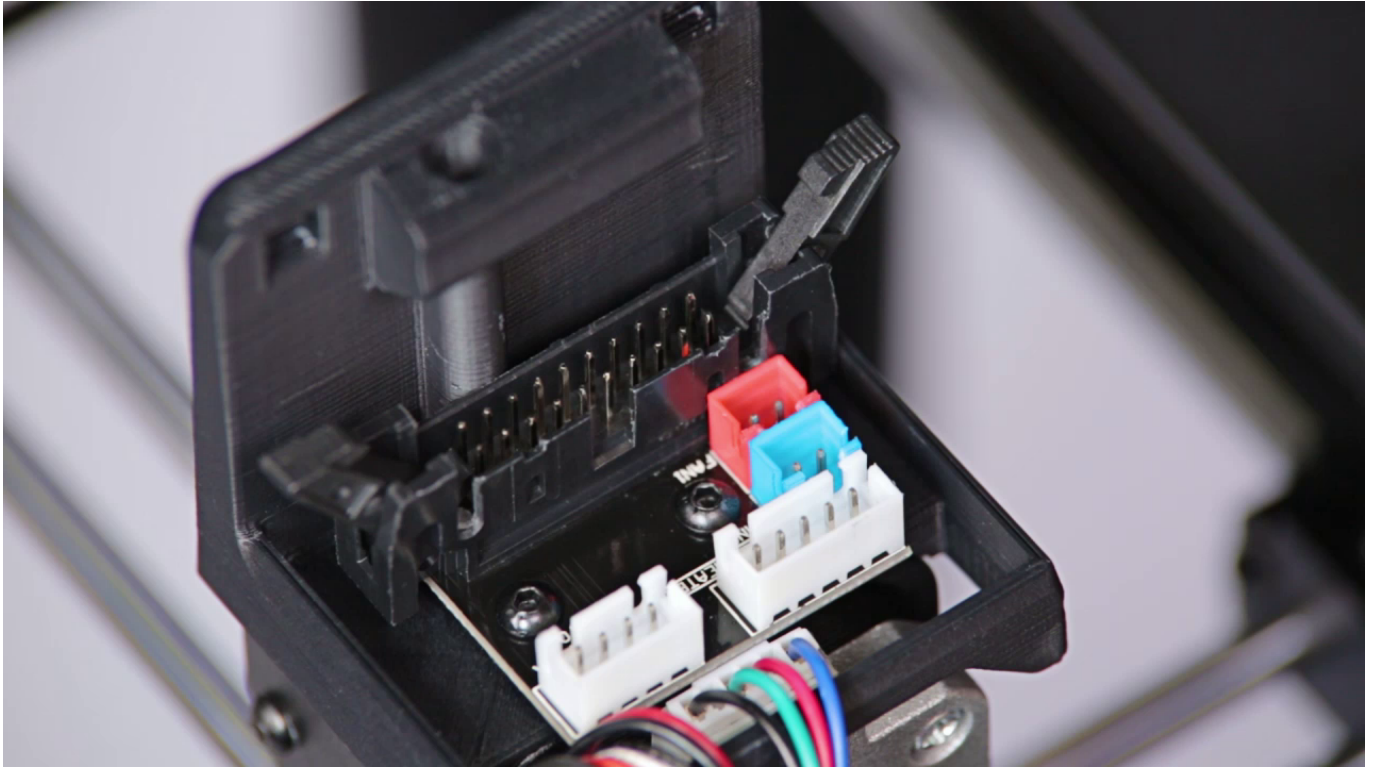
With a 1.5mm Allen key loosen the two screws that secure the heater and thermocouple in the hotend. Then remove the heater and thermocouple.

Unplugging all Cables from the Extruder PCB



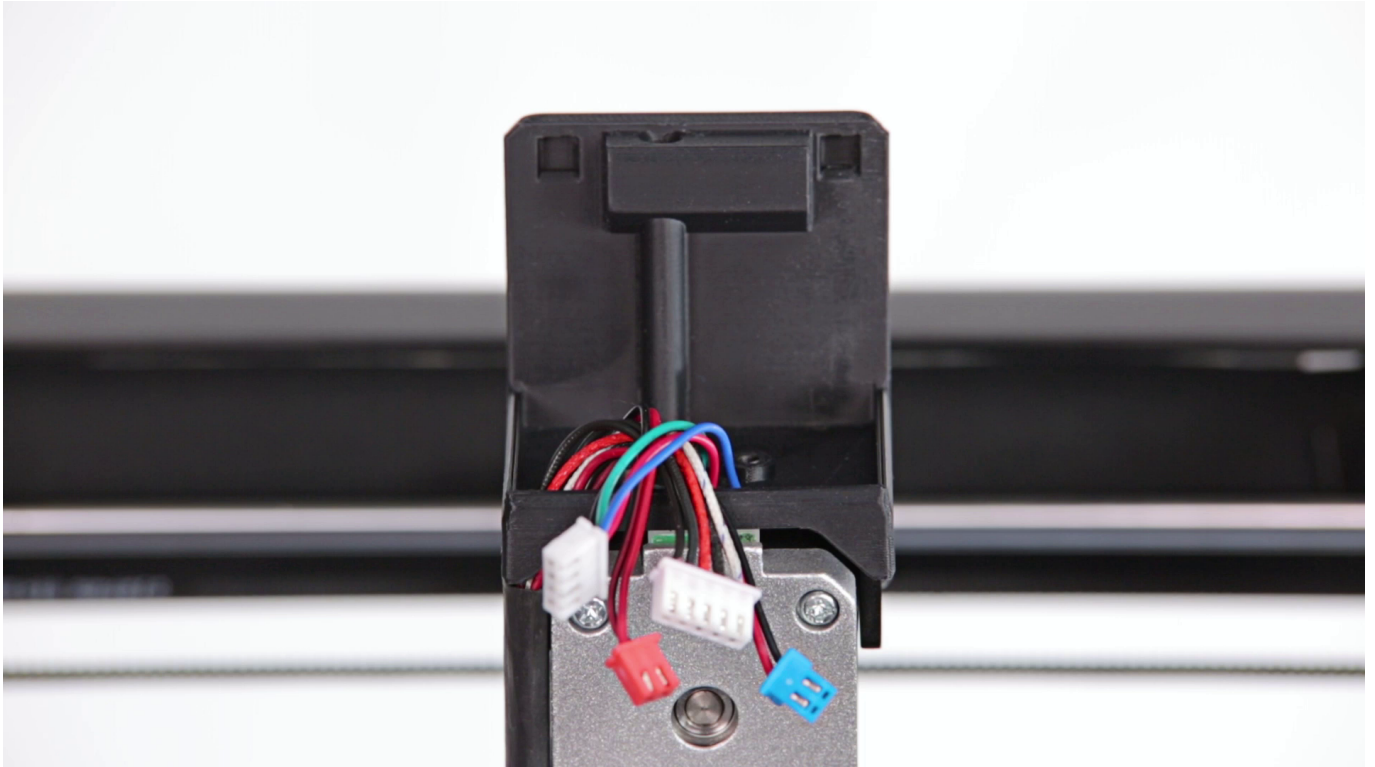
Unplug all the cables from the extruder PCB.

Unscrewing the Extruder PCB



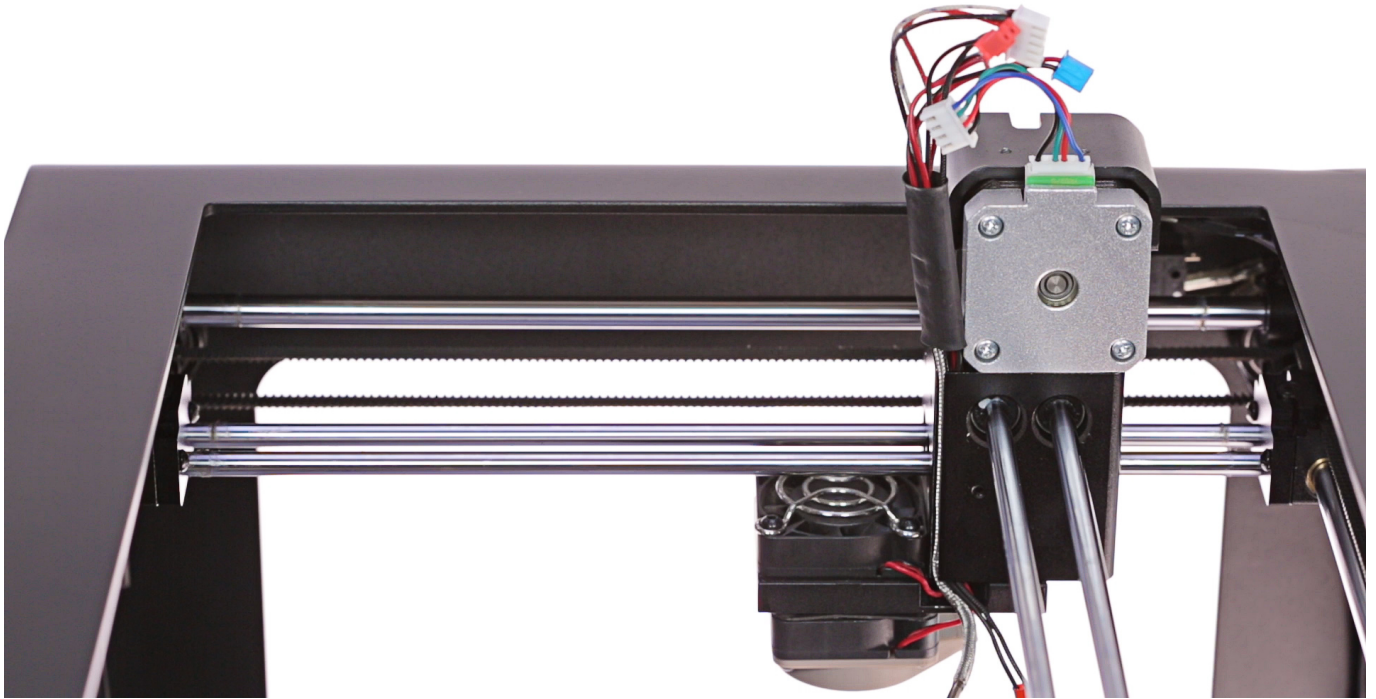
Unscrew the two screws that secure the extruder PCB using a 2mm Allen key. Remove the PCB from the extruder.

Extruder Lower Printed Cover Removal



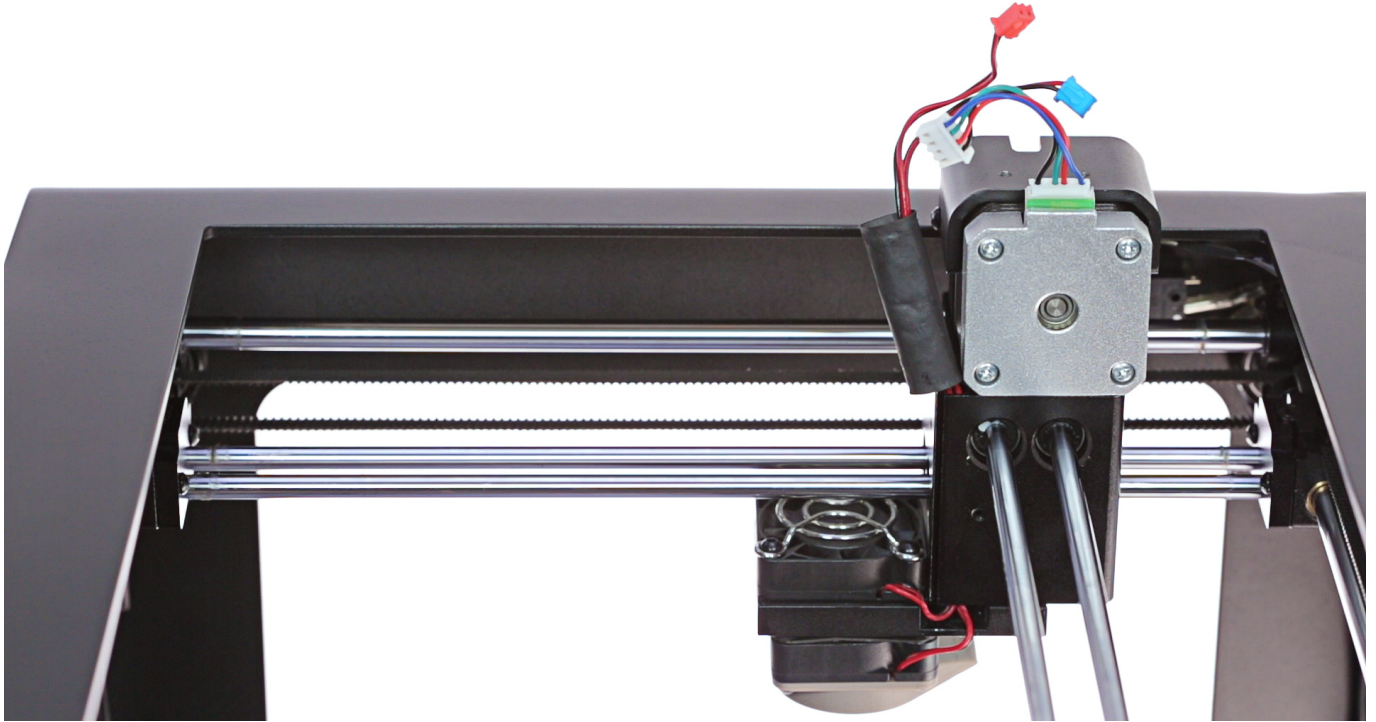
Remove the extruder lower printed cover.

Heater and Thermocouple Removal (from the Extruder)



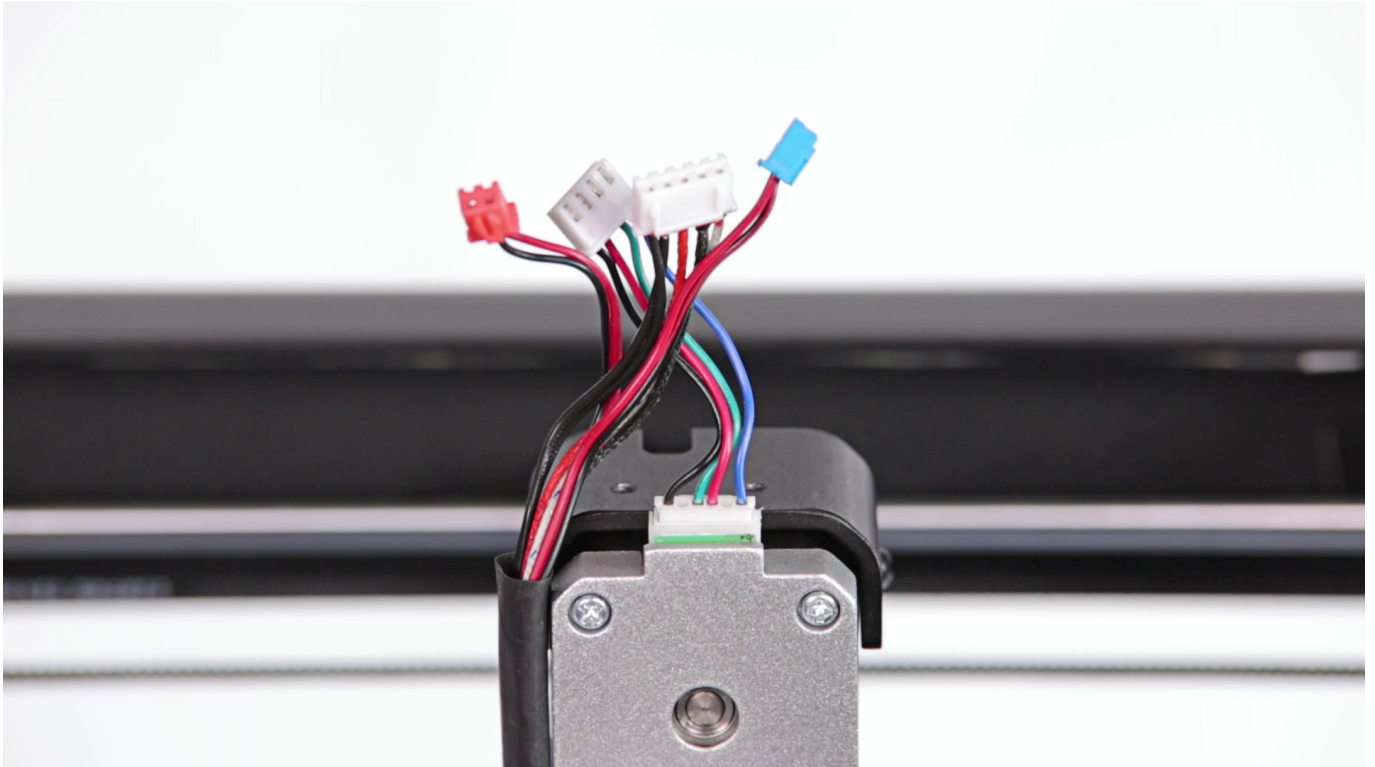
Remove the heater and thermocouple from the extruder block and from the heat shrink tubing. Unplug the cables from the extruder PCB.

New Heater and Thermocouple Assembly (in the Extruder)



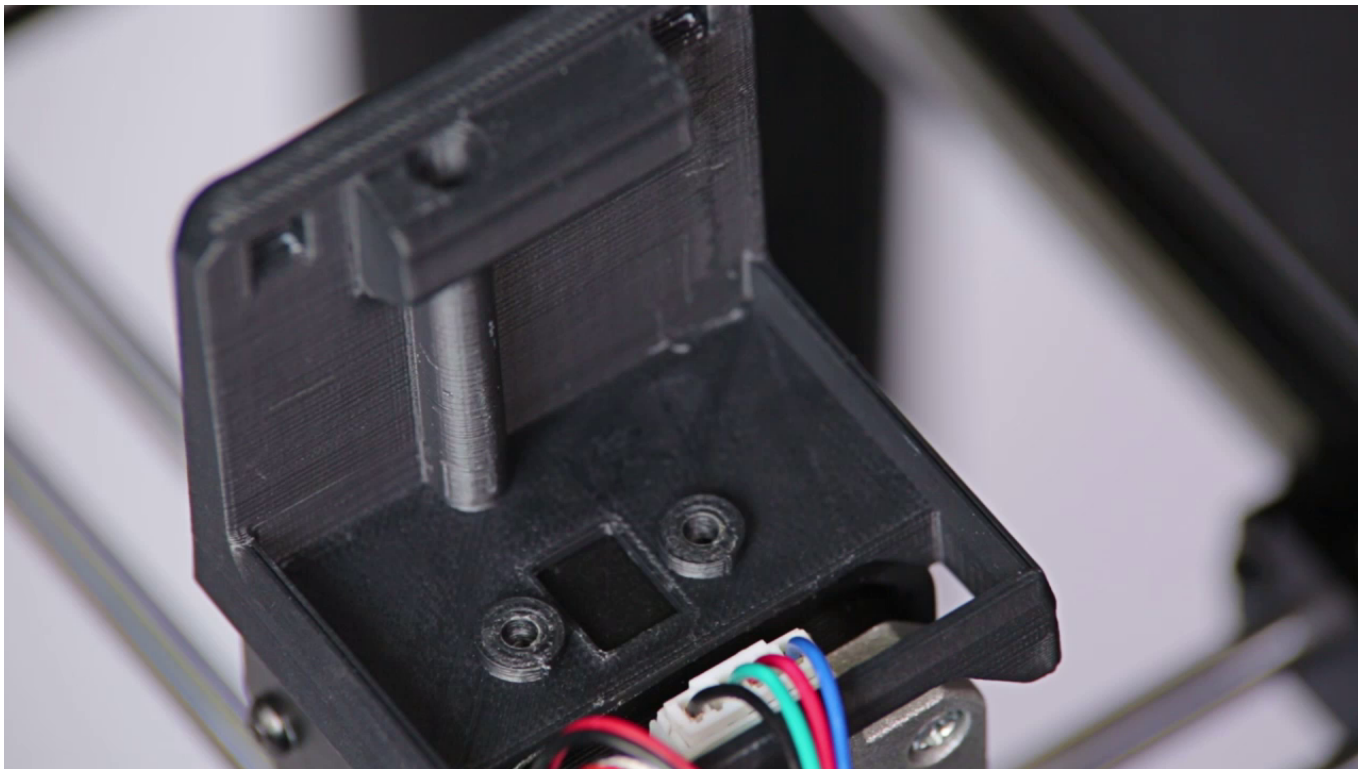
Plug the heater and thermocouple cables into the extruder PCB. Put them through the heat shrink tubing and inside the extruder's block.

Extruder Lower Printed Cover Assembly



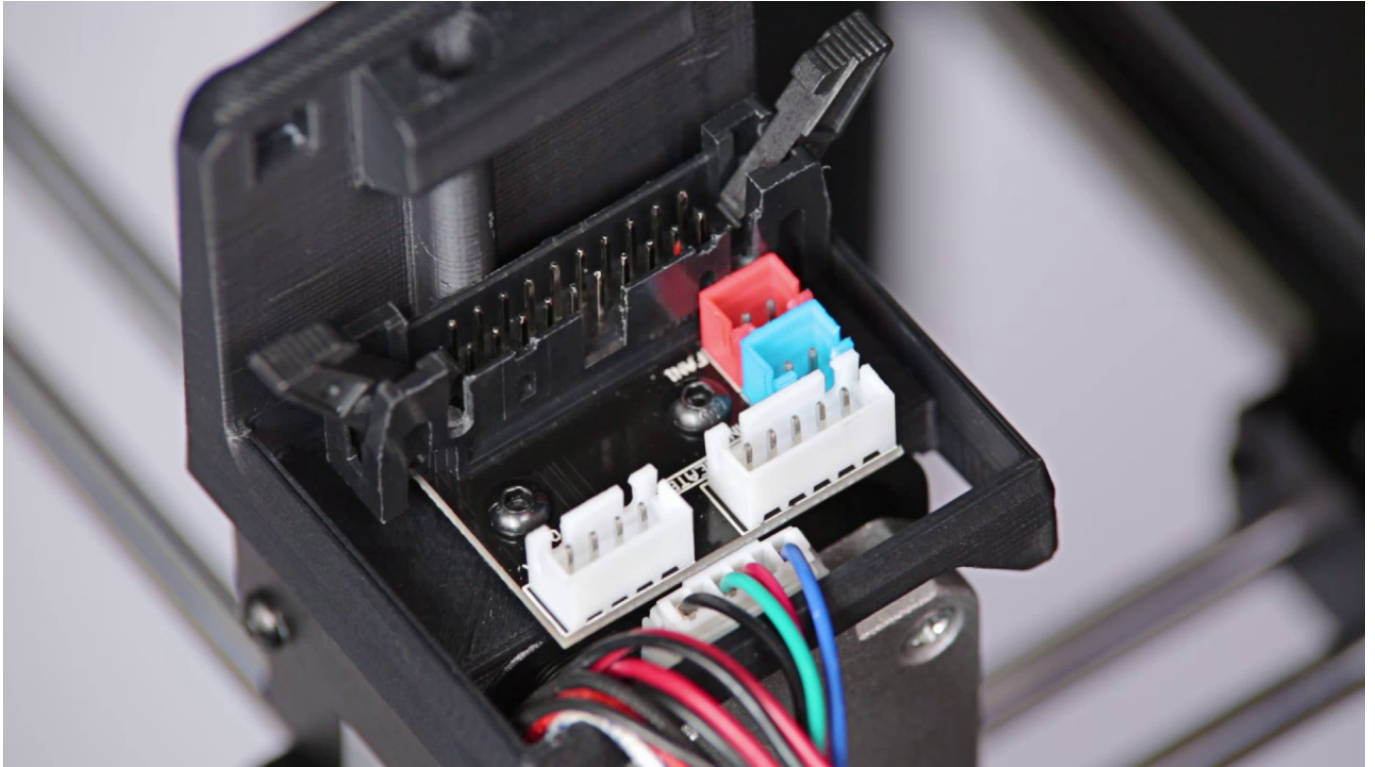
Attach the extruder lower printed cover to the extruder.

Extruder PCB Assembly



Place the extruder PCB in its place and secure it with the two screws.

Plugging all Cables into the Extruder PCB



Plug all the cables in. Remember to arrange the cables so that they don't get damaged, e.g. by wrapping against each other.

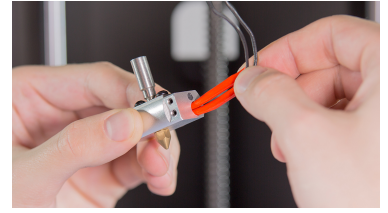
Heater and the Thermocouple Assembly (in the Hotend)



Insert the heater and thermocouple into the hotend and firmly tighten the two screws that secure them (using a 1.5mm Allen key).

Make sure that the screws don't go through the insulation that covers the wires (this can happen if the heater goes too deep into the slot).

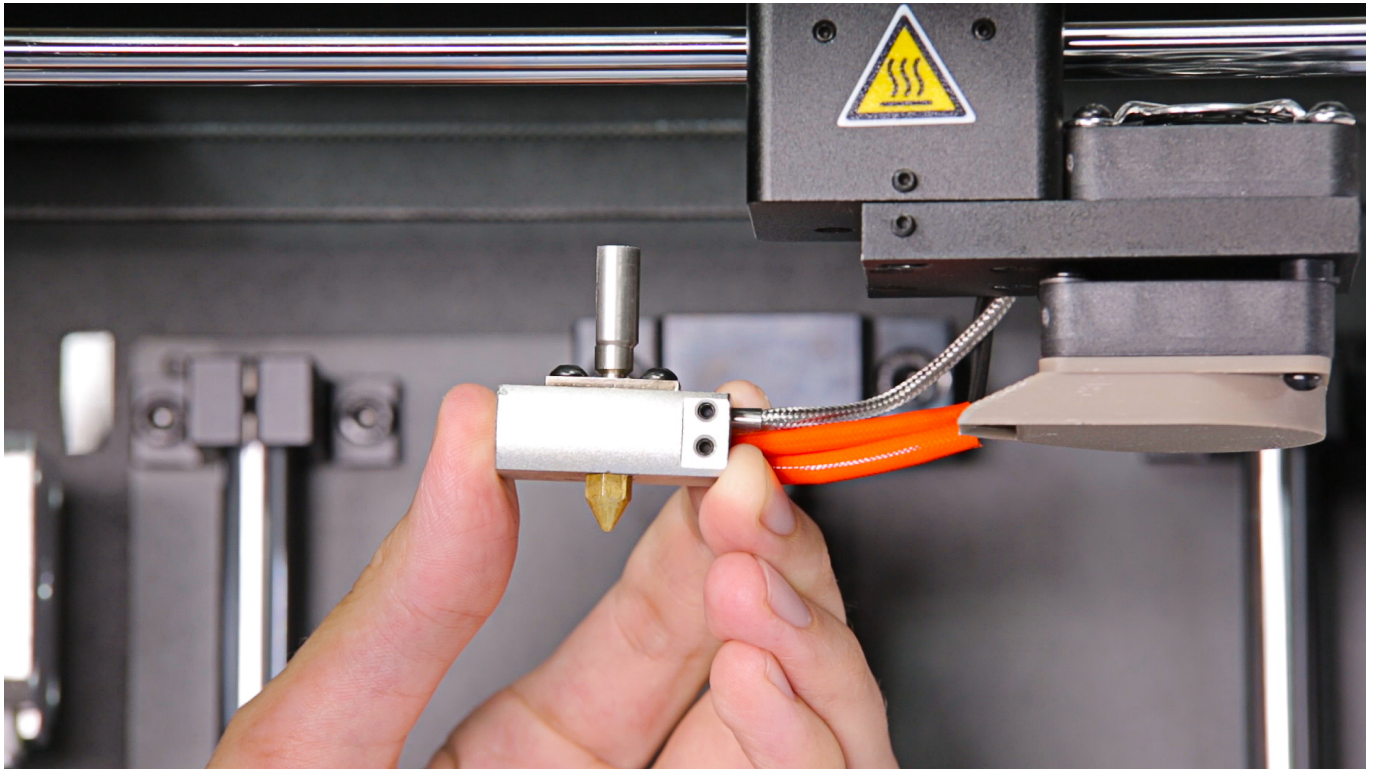




This picture shows the heater inserted correctly.

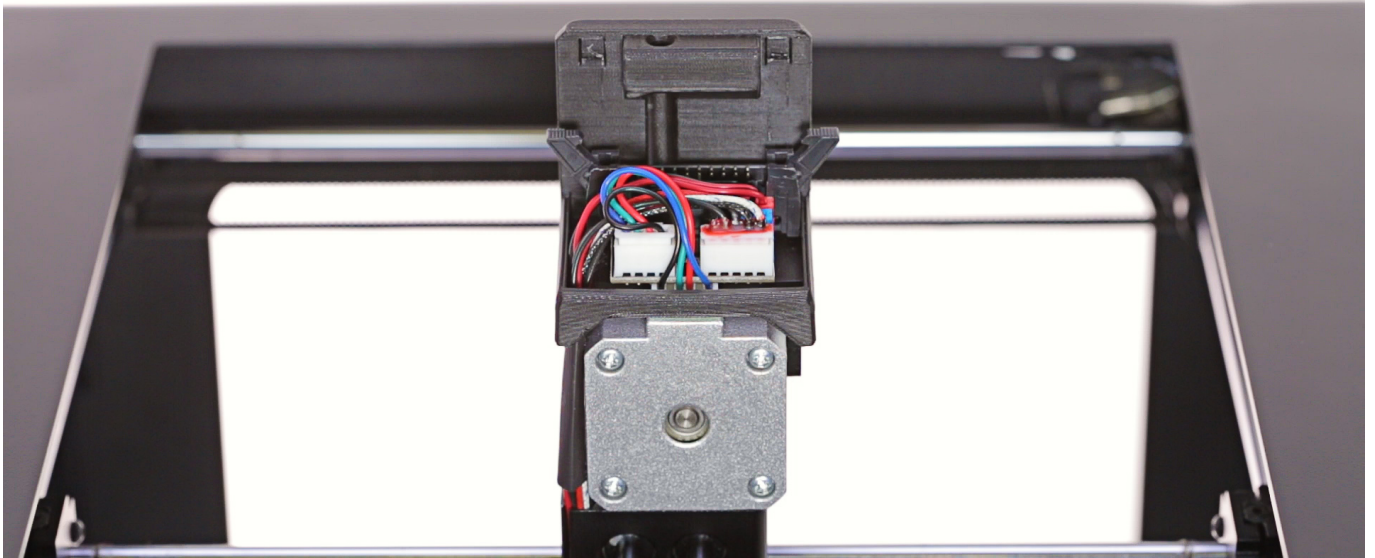
This picture shows the heater pushed too far into the slot in the hotend.

Hotend Assembly



Insert the hotend into the extruder and tighten the two screws that secure it (using a 1.5mm Allen key).

Plugging the Extruder Cable



Plug the extruder cable in, and then attach the extruder upper cover to the lower cover.

Material Guide Installation



Attach the material guide to the extruder cover. Next, secure the guide to the extruder cable with the material guide clamps.

Plugging the Power Cable



Plug the power cable in.