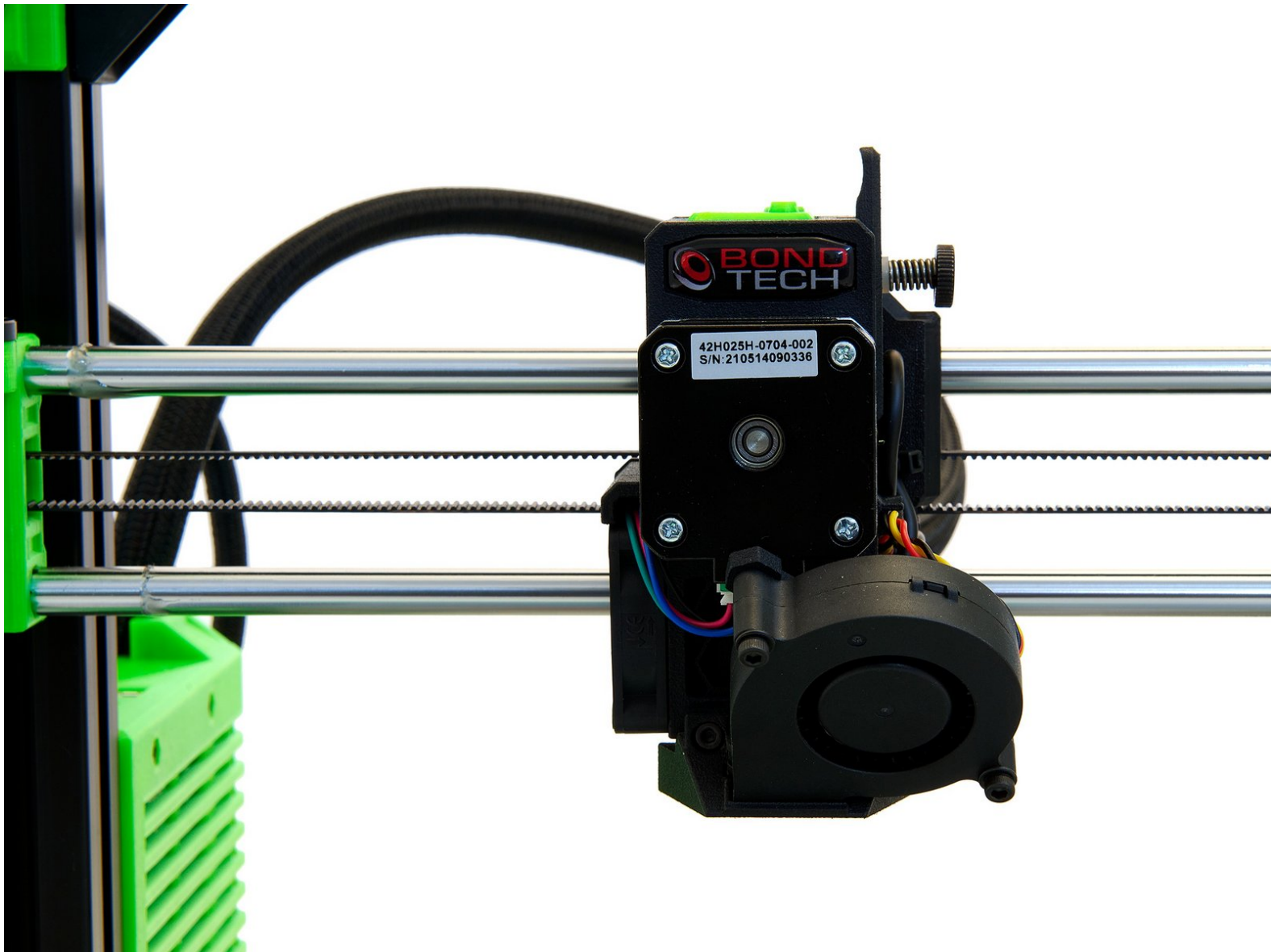


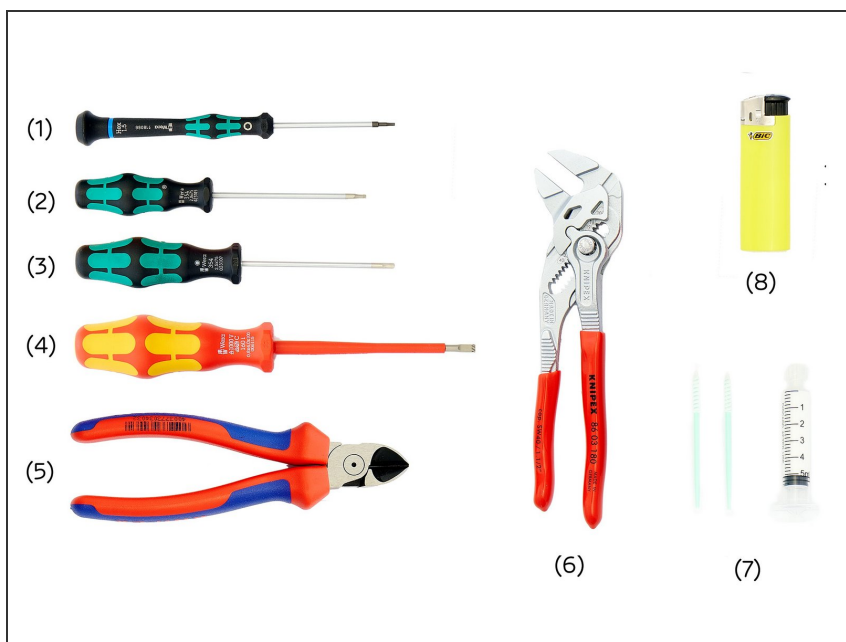
caribou3d

# 16.1 Installation and Wiring of the Bondtech MK3S Mosquito Extruder

Written By: Katja Aller

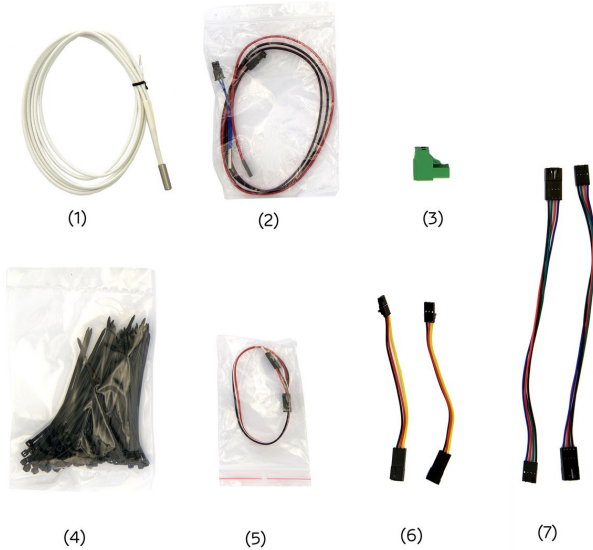


## Step 1 — Required Tools



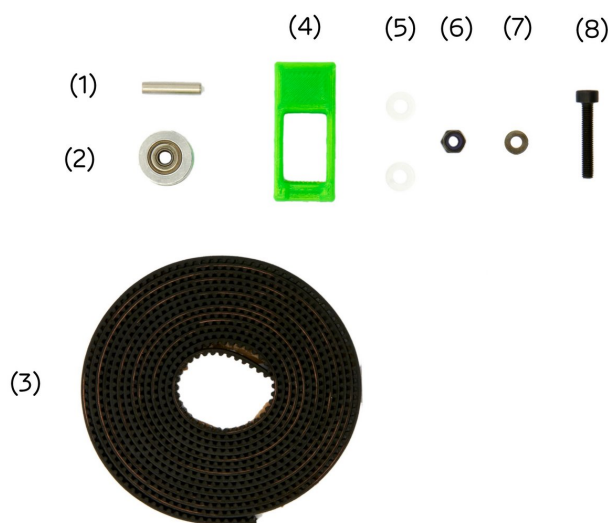
- (1) [2.0x75mm Hexagonal Screwdriver](#)
- (2) [2.5x75mm Hexagonal Screwdriver](#)
- (3) [1.5x60mm Hexagon Socket Head Screwdriver for Electronic Applications](#)
- (4) [0.4x2.5mm Insulated Screwdriver Slotted Screws](#)
- (5) [Diagonal Cutter](#)
- (6) [Lighter](#)
- (7) [Boron Nitrid Paste](#)
- (8) [Pliers Wrench](#)

## Step 2 — Required Parts (1 / 4)



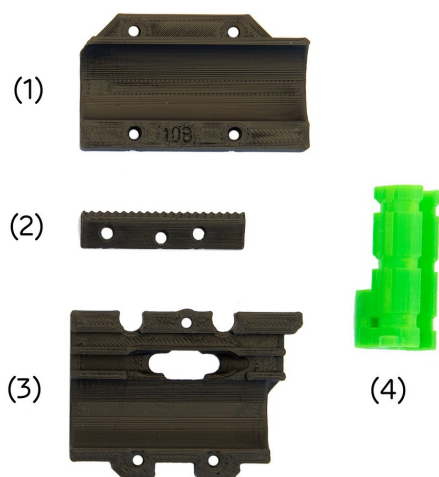
- (1) [Heater Cartridge](#)
- (2) Thermistor Extension Cable
- (3) [Terminal Block](#)
- (4) [Zip Ties](#)
- If you are building a *Caribou 320* or *420* you will need the following extension cables:
- (5) [Filament Sensor Extension Cable](#)
- (6) **2x** [Fan Extension Cable](#)
- (7) **2x** [Motor Extension Cable 20cm](#)

## Step 3 — Required Parts (2 / 4)



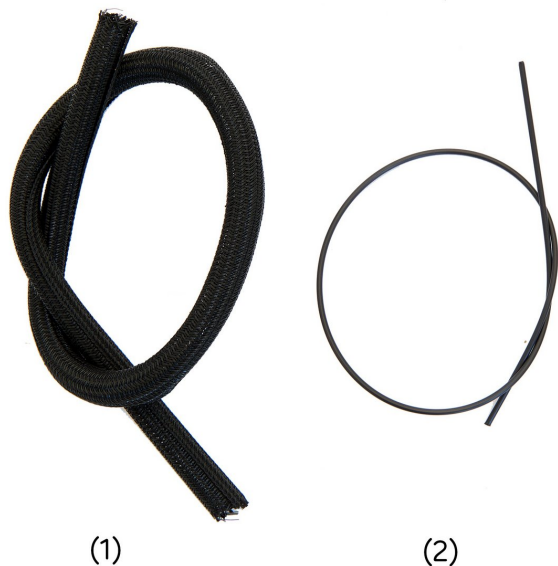
- (1) [Dowel Pin](#)
- (2) [2GT Toothless Pulley](#)
- (3) [GT3 Belt](#)
- (4) xy-Belt Tensioner Insert
- (5) **2x** M3 Plastic Washers
- (6) [M3 Self Securing Nut](#)
- (7) [M3 Washer](#)
- (8) [M3x18mm Hexagon Socket Head Cap Screw](#)

## Step 4 — Required Parts (3 / 4)



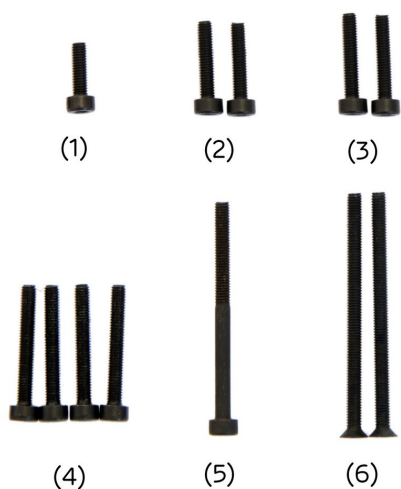
- (1) x-Carriage Back (Top)
- (2) Belt Holder
- (3) x-Carriage Back (Bottom)
- (4) x-Cable Holder

## Step 5 — Required Parts (4 / 4)



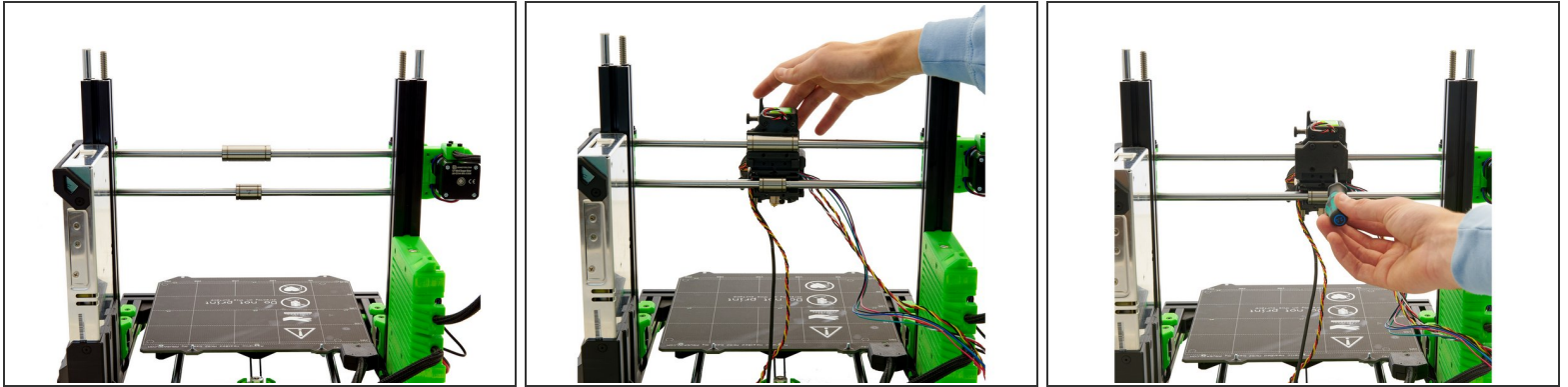
- (1) [Techflex-Cable Tube \(Diameter 12,7mm\)](#)
  - Caribou 220: 45cm
  - Caribou 320: 55cm
  - Caribou 420: 65cm
- (2) Nylonfilament
  - Caribou 220: 47cm
  - Caribou 320: 57cm
  - Caribou 420: 67cm

## Step 6 — Required Screws



- (1) [M3x10mm Hexagon Socket Head Cap Screw](#)
- (2) **2x** [M3x14mm Hexagon Socket Head Cap Screws](#)
- (3) **2x** [M3x16mm Hexagon Socket Head Cap Screws](#)
- (4) **4x** [M3x22mm Hexagon Socket Head Cap Screws](#)
- (5) [M3x40mm Hexagon Socket Head Cap Screw](#)
- (6) **2x** M3x45mm Hexagon Socket Head Cap Torx Screws

## Step 7 — Installing the Extruder



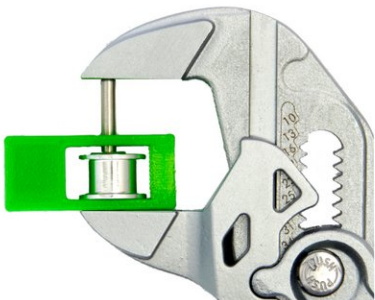
- Turn your 3D printer around.
  - Move the x-axis to the upper third of the z-axis and push the two bushings on the x-axis to its center.
- ⚠ Check whether the two square nuts are located in the lower part (insertion for the lower bushing) of the x-carriage.
- Hold the extruder against the bushings and make sure they are positioned in their designated openings.
  - Cover the upper bushing with the back of the x-carriage. Then, fasten the x-carriage back to the extruder with **4x M3x22mm Hexagon Socket Head Cap Screws**.

## Step 8 — Assembling the xy-Belt Tensioner Insert (1 / 2)



- Take the xy-belt tensioner insert and enlarge one of the two holes on its side (e.g. with a 2.5x75mm hexagonal screwdriver).
- Slide a dowel pin through the hole you just enlarged and push it in until it is just visible inside the xy-belt tensioner insert.
- Place a **M3 Plastic Washer** on the dowel pin. (Fig. 2).

## Step 9 — Assembling the xy-Belt Tensioner Insert (2 / 2)

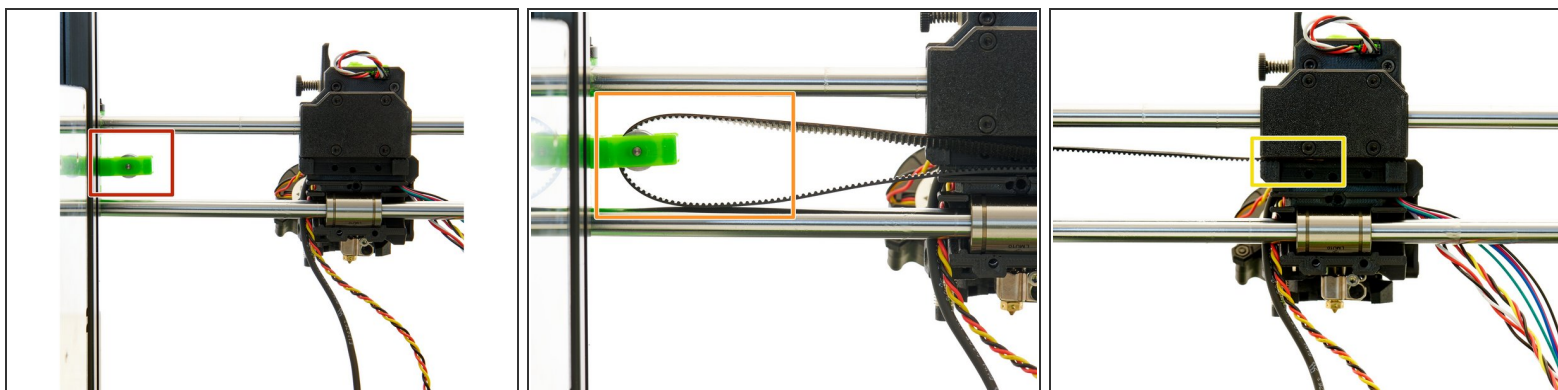


- Now place a toothless pulley on the dowel pin. Continue to push the pin down until it reaches the end of the toothless pulley (Fig. 1).
- Place a **M3 Plastic Washer** on the toothless pulley and, with the pliers wrench, push the dowel pin as far as possible through the opening of the xy-belt tensioner insert (Fig. 2)
- Finally, place an **M3 Self-Securing Nut** into the designated slot. Press the nut completely into the slot.

 **Pay attention to the orientation. The blue circlip must point towards the pulley.**

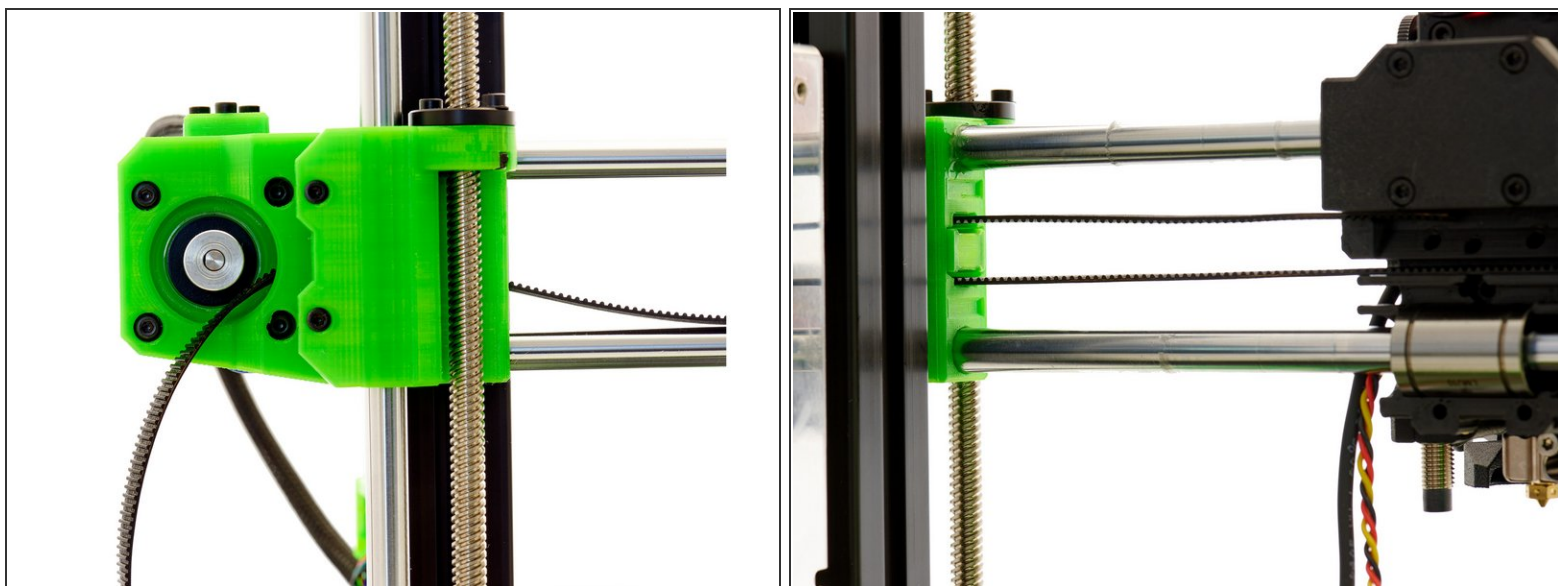
- The xy-belt tensioner insert is now fully assembled.
- Since you will need a second xy-belt tensioner insert for the x-axis, you can build another one in this step.

## Step 10 — Installing the Belt (1 / 3)



- Insert the xy-belt tensioner insert into the idler.
- Take the second half of the GT3 belt and shorten it to the length of 82 cm.
- Cut the remaining GT3 belt to the length of 82cm.
- Pull the belt through the xy-belt tensioner insert (Fig. 2).
- Push the end of the belt to approximately the center of the mount provided for it in the x-carriage.

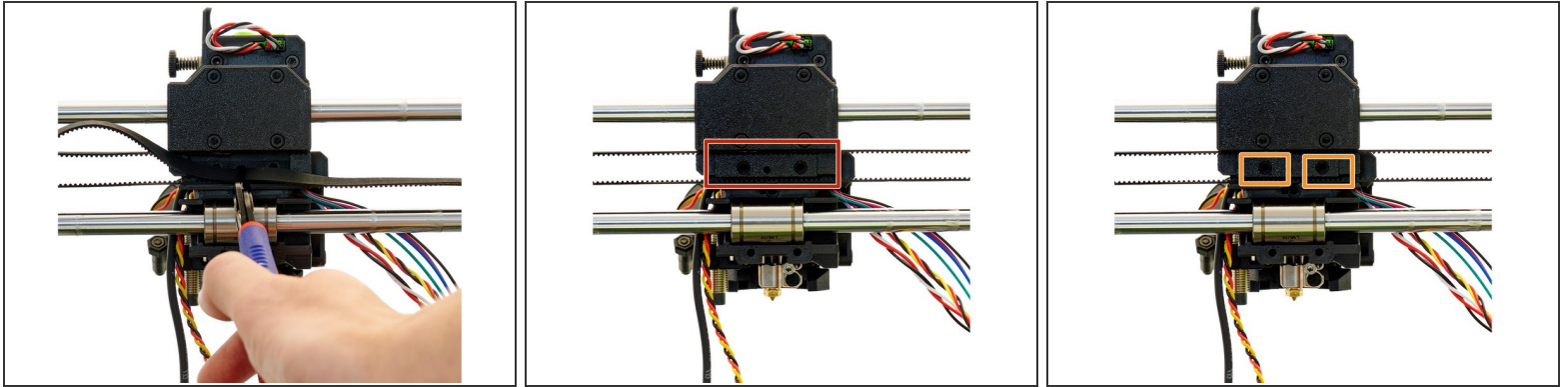
## Step 11 — Installing the Belt (2 / 3)



- Place the GT3 belt around the GT3 toothed pulley on the stepper motor at the x-motor holder.
- Slide the xy-belt tensioner insert into the y-Idler.
- Secure the xy-belt tensioner insert with an **M3 Washer** and an **M3x18mm Hexagon Socket Head Cap Screw**.

 **Make sure the strap holder is flush with the idler for this step.**

## Step 12 — Installing the Belt (3 / 3)



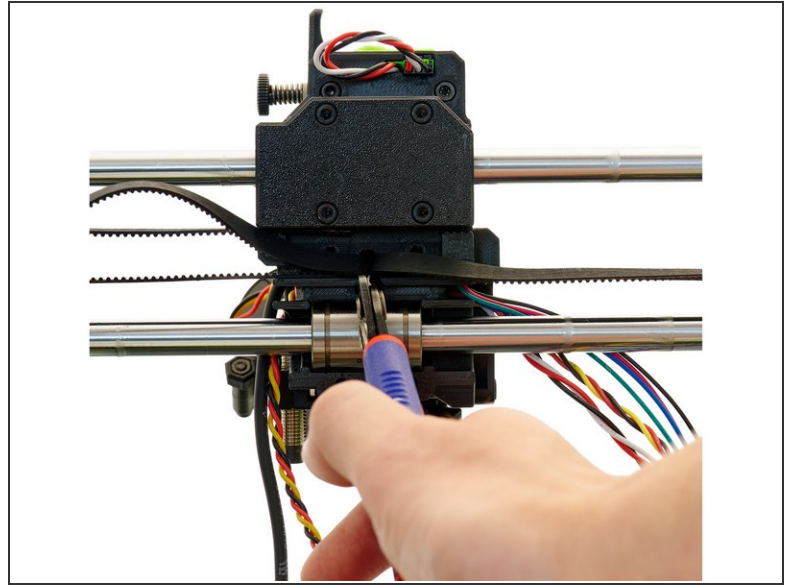
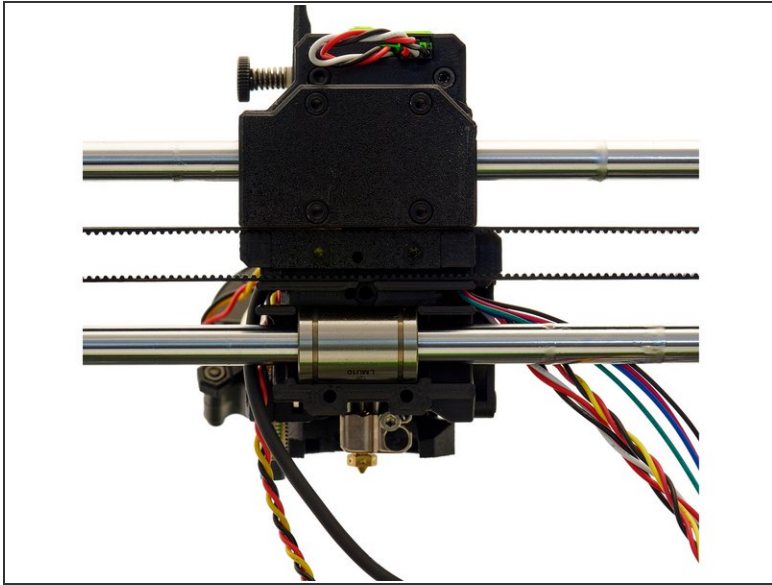
- Now, guide the belt back to the x-carriage. If the two belt ends are overlapping in the middle, cut the protruding end.
- Place the belt holder in the x-carriage.
- Fasten the belt holder with **2x M3x45mm FlatHead Screws**.

## Step 13 — Installing the Nylon Filament (1 / 2)



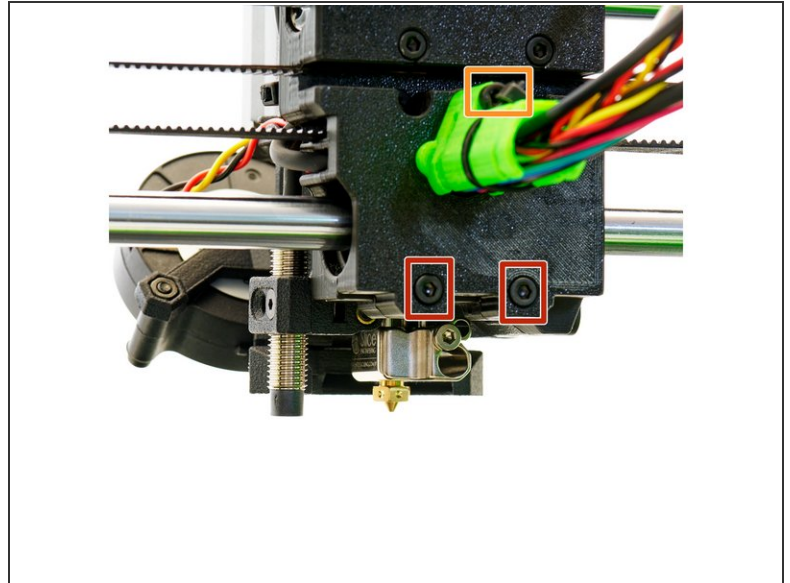
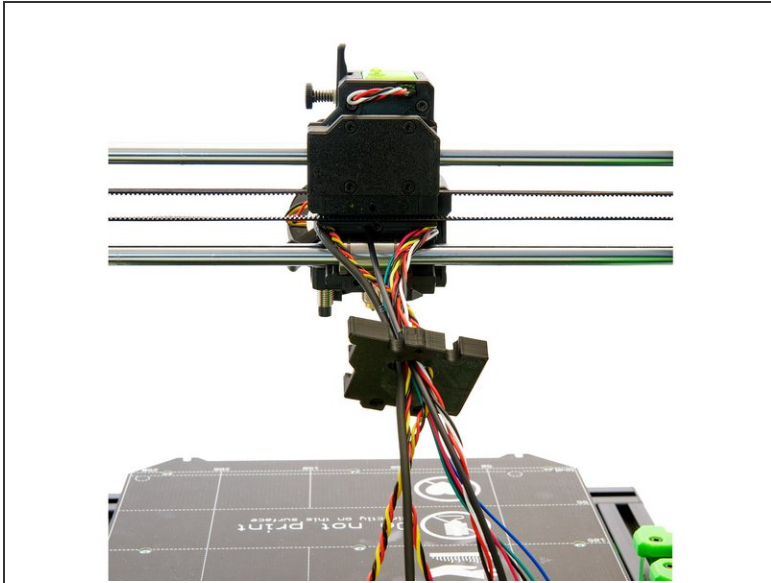
- Cut your nylon filament so that the length fits your printer model (see Step 5).
- Now, cut a slanted edge from one of the ends to make it pointed.

## Step 14 — Installing the Nylon Filament (2 / 2)



- Insert the pointed end of the nylon filament into the left hole in the center of the x-carriage.
- Use a **M3x10mm Hexagon Socket Head Cap Screw** in the right hole in the center of the x-carriage to attach the nylon filament.

## Step 15 — Routing the Extruder Cables (1 / 2)



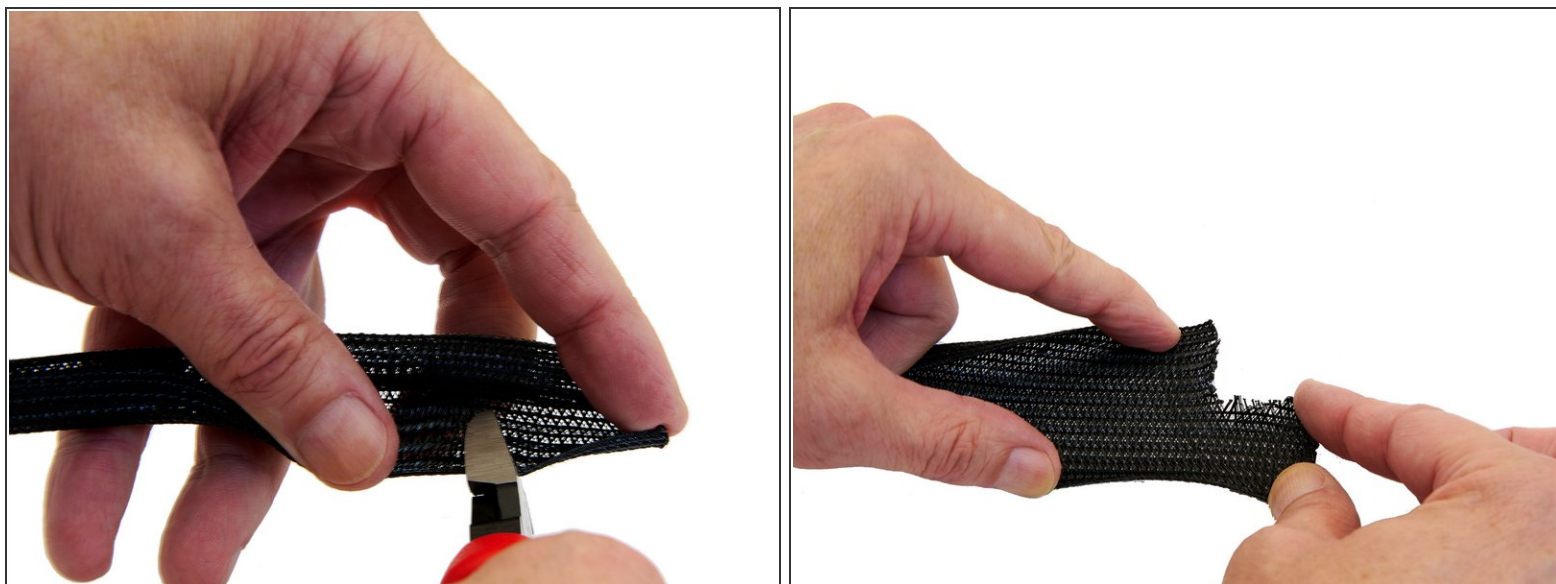
- After that, pass the pinda cable, the filament sensor cable, the motor cable, the two fan cables and finally the nylon through the hole in the center of the x-carriage back (bottom).
- Attach the x-carriage back (bottom) using **2x M3x16mm Hexagon Socket Head Cap Screws**.
- Fasten the x-cable holder to the extruder with a **M3x40mm Hexagon Socket Head Cap Screw**.

## Step 16 — Installing the Heater Cartridge and the Thermistor Cartridge



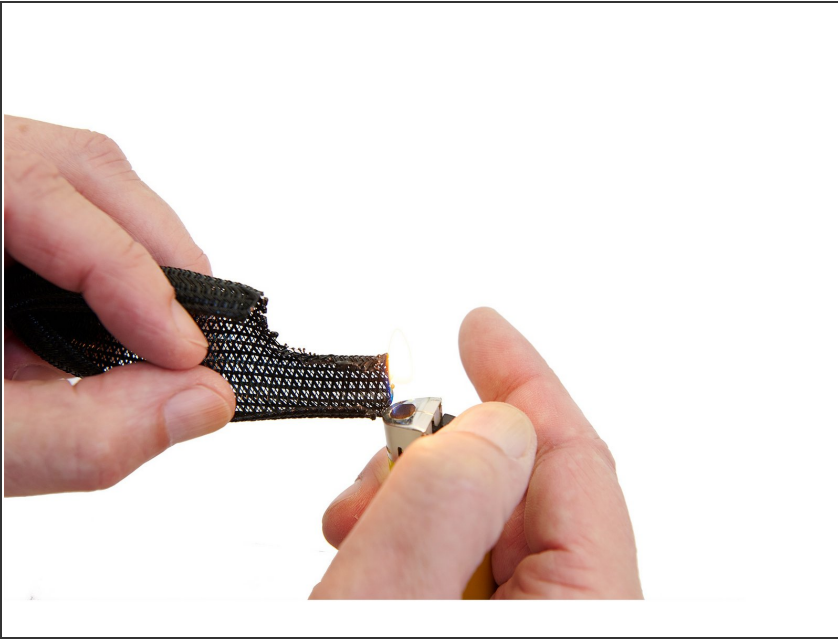
- Loosen the **M2x5mm Hexagon Socket Head Cap Screw** on the Slice Engineering Hotend.
- Open the boron nitride paste and apply it to the heater cartridge and the thermistor cartridge.
- Insert the heater cartridge into the lower opening and the thermistor into the upper opening in the hotend. Secure both with a (previously removed) **M2x5mm Hexagon Socket Head Cap Screw**.

## Step 17 — Preparing the Techflex Tube (1 / 2)



- Cut Techflex tube and nylon to fit your printer model (see Step 5).
- Cut an approximately 3x2cm rectangle from on one side of the Techflex tube (about 5cm before the end of the tube).

## Step 18 — Preparing the Techflex Tube (2 / 2)



- The two ends of the Techflex tube are then briefly heated with a lighter.

## Step 19 — Wiring the Extruder (1 / 6)



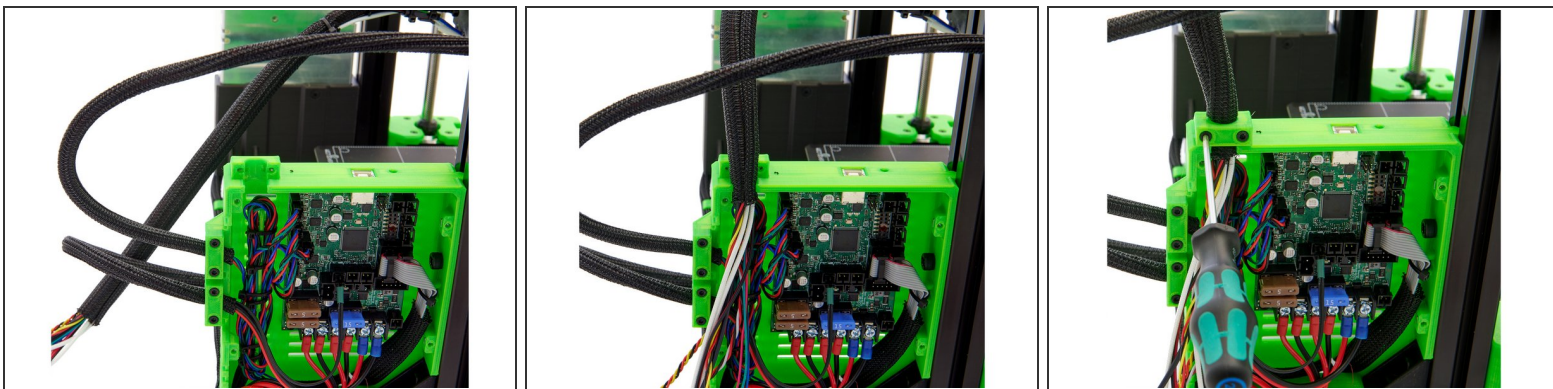
- Push all the cables and the nylon filament through the Techflex tube you just prepared. Here, the end of the tube with the cut-out rectangle must be directed at the extruder.
- Slide the Techflex tube completely into the x-cable holder and align the rectangle with the bottom to position the heater cartridge and thermistor cartridge cables there.

## Step 20 — Wiring the Extruder (2 / 6)



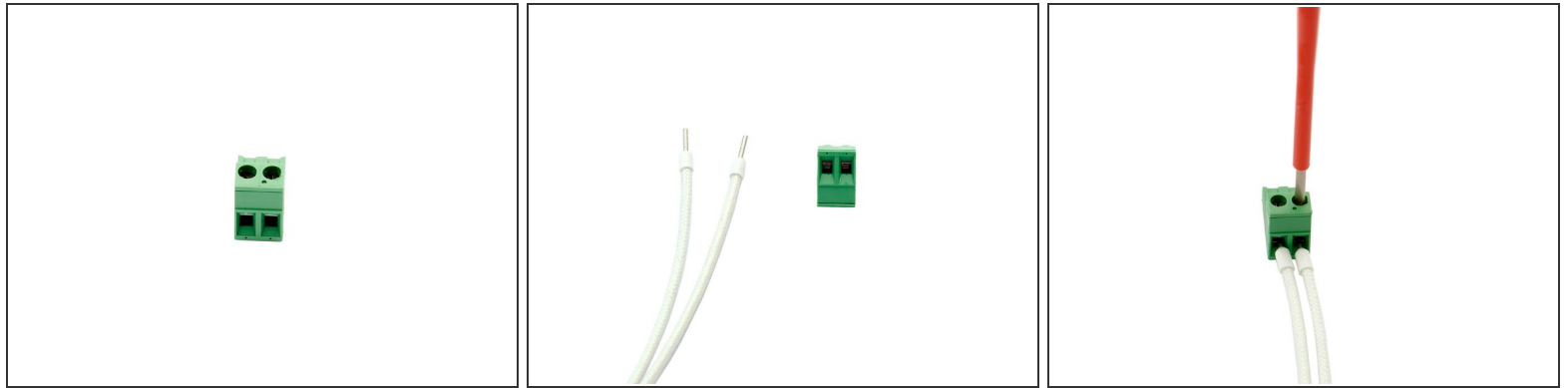
- Now, route the heater cable and the thermistor cable through the rectangle and into the Techflex tube.
- Secure the cables in the x-cable holder with **3x Zip Ties**.

## Step 21 — Wiring the Extruder (3 / 6)



- If you are building a *Caribou 320* or *Caribou 420*, you will need to extend the pinda cable and extruder motor cable with a motor extension cable, the filament sensor cable with a filament sensor extension cable, and both fan cables with a fan extension cable.
- Attach the Techflex tube to the Einsy box using the cable holder (straight) and **2x M3x14mm Hexagon Socket Head Cap Screws**.

## Step 22 — Wiring the Extruder (4 / 6)



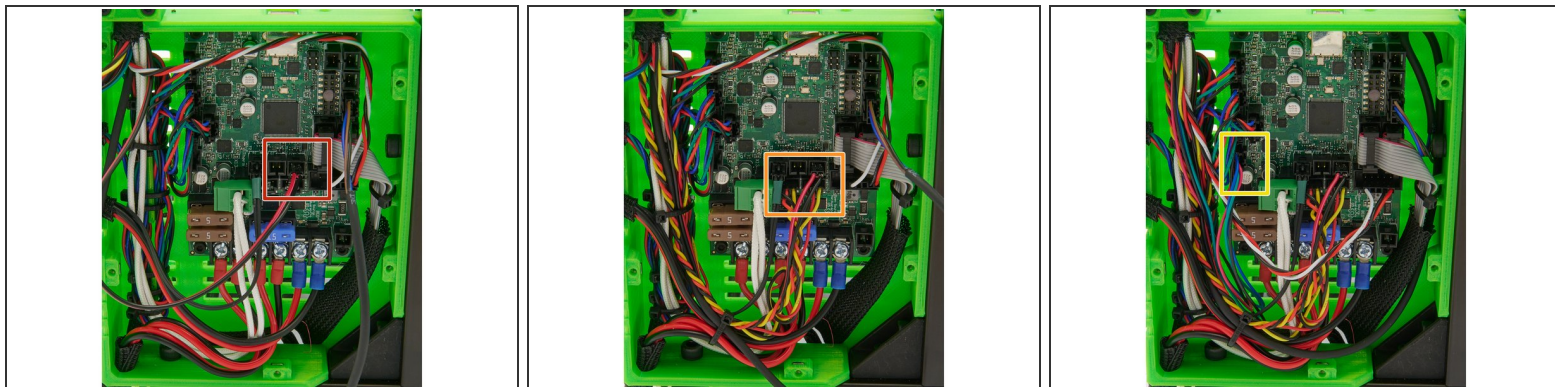
- Use a screwdriver for slotted screws to loosen the two screws on the terminal block.
- Push each of the two cable ends of the thermistor cartridge into one opening and secure them.

## Step 23 — Wiring the Extruder (5 / 6)



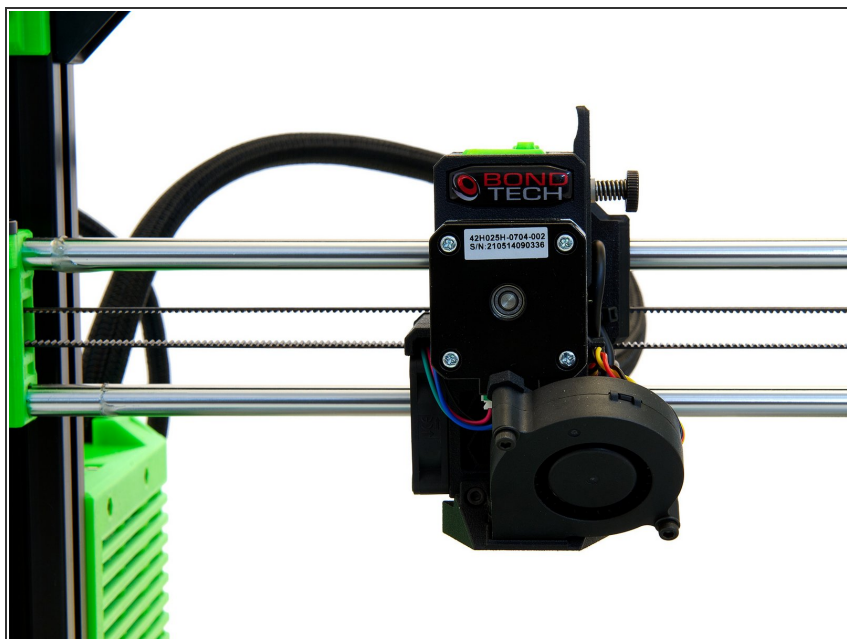
- Now, connect the components to the board:
- Heater cartridge
- PINDA2 / SuperPINDA
- Filament sensor (lower row of pins at the tub connector, white cable to the left)

## Step 24 — Wiring the Extruder (6 / 6)



- Thermistor
- Extruder-Fan (left), Radial-Fan (right)
- Extruder-Motor
- The extruder is now completely wired.

## Step 25



- ① The installation of the extruder is completed now.
- Continue with instructions [17. Installation of the Upper x-Profile.](#)