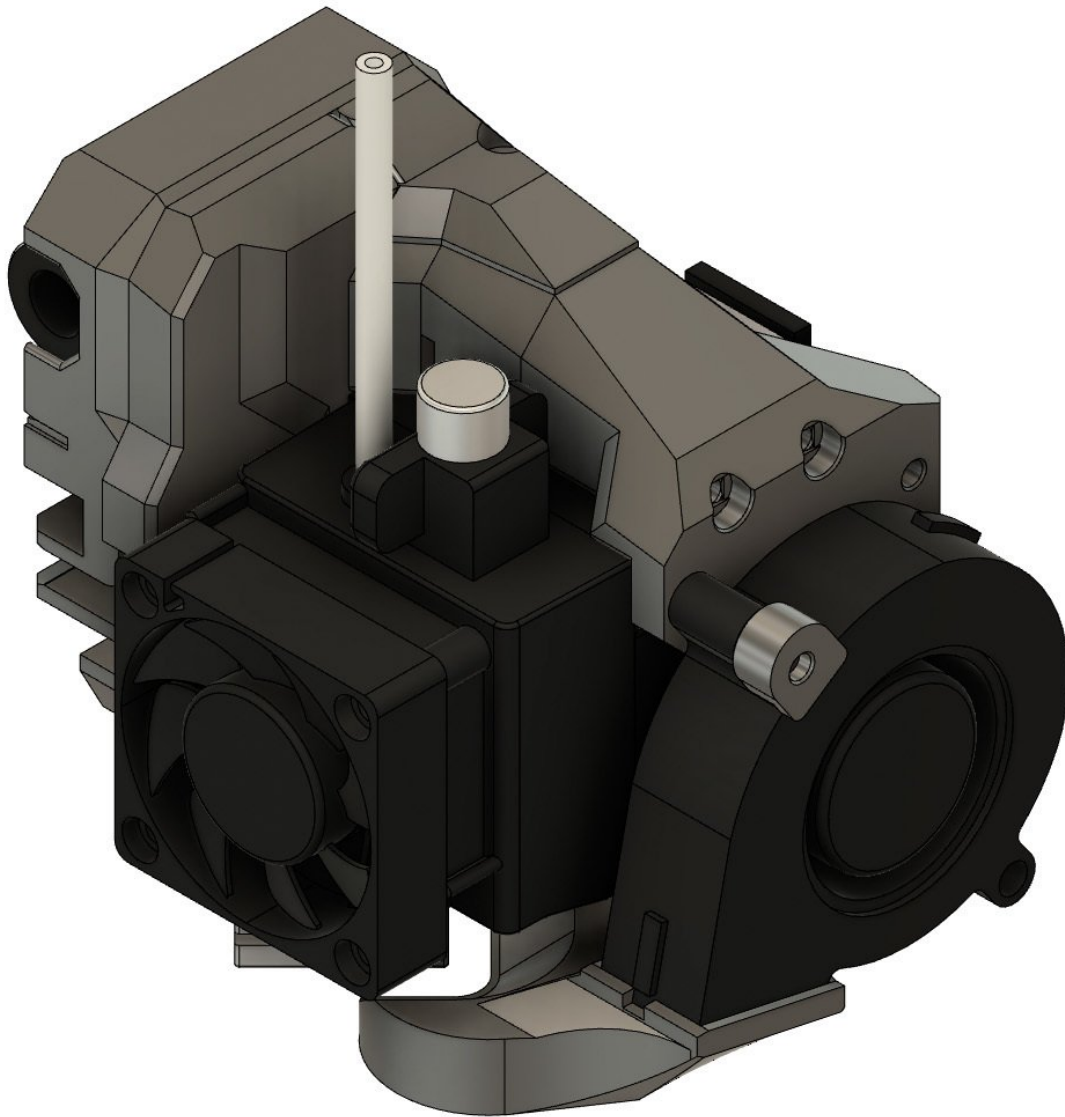


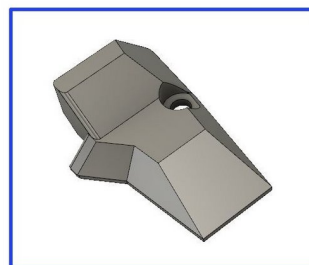
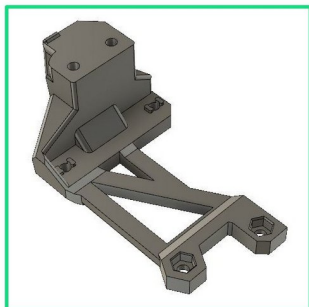
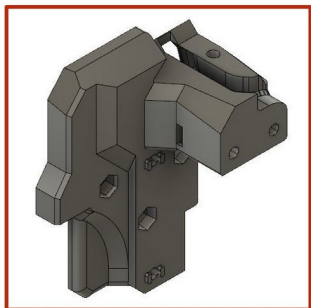
Bear Lab

3. BearMera extruder

Written By: Grégoire Saunier

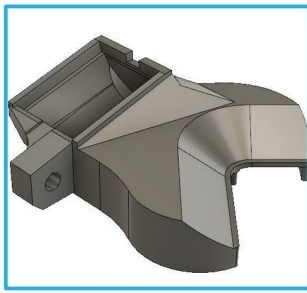


Step 1 — BearMera parts



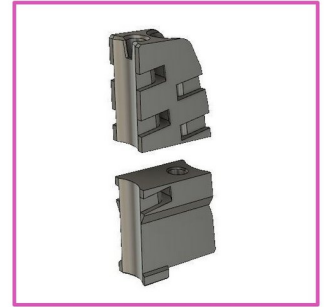
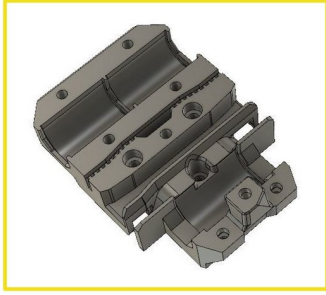
- *body_back*
- *body_front*
- *cable_cover*

Step 2 — BearMera parts



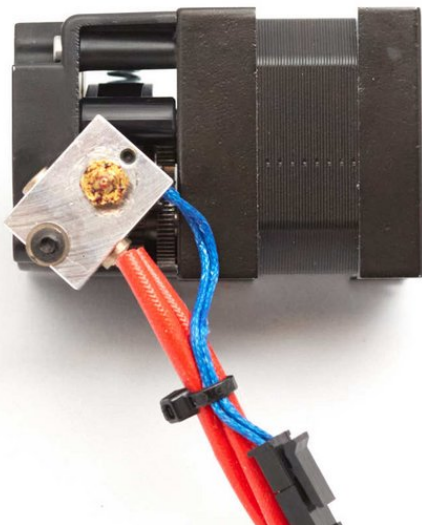
- *pinda_mount*
- *nozzle_fan_duct*
- *nozzle_fan_spacer*

Step 3 — BearMera parts



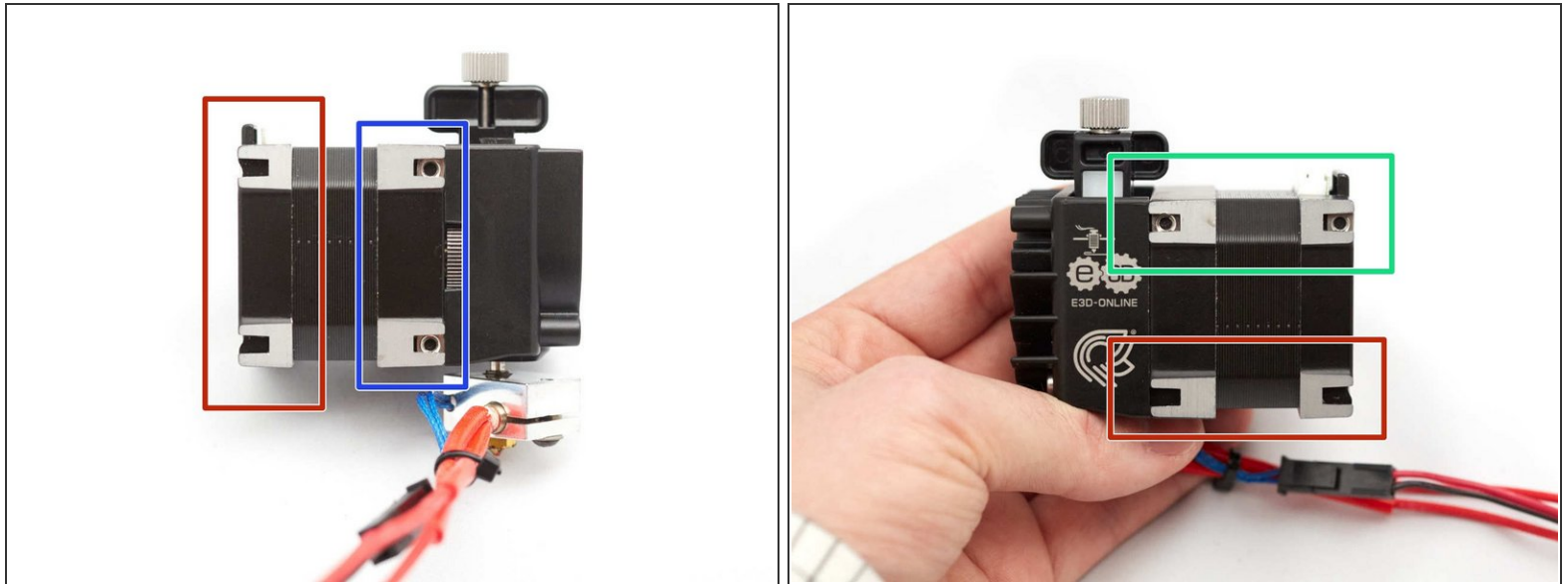
- *x_carriage*
- *x_carriage_back*
- *cable_guide_back*

Step 4 — Prepare the Hemera



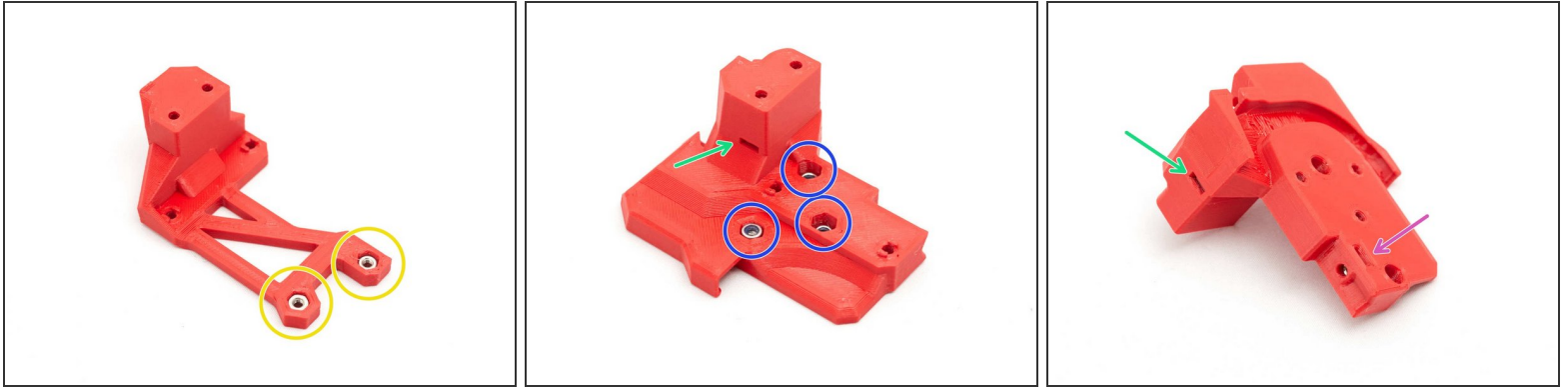
- Orientate the heater block at 135° as shown in the image.
- Install heater and thermistor as shown in the image.

Step 5 — Prepare the Hemera



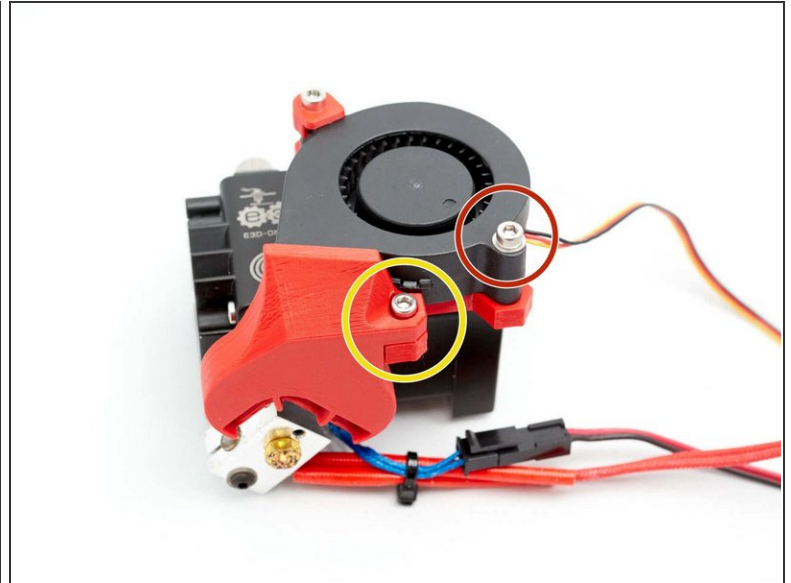
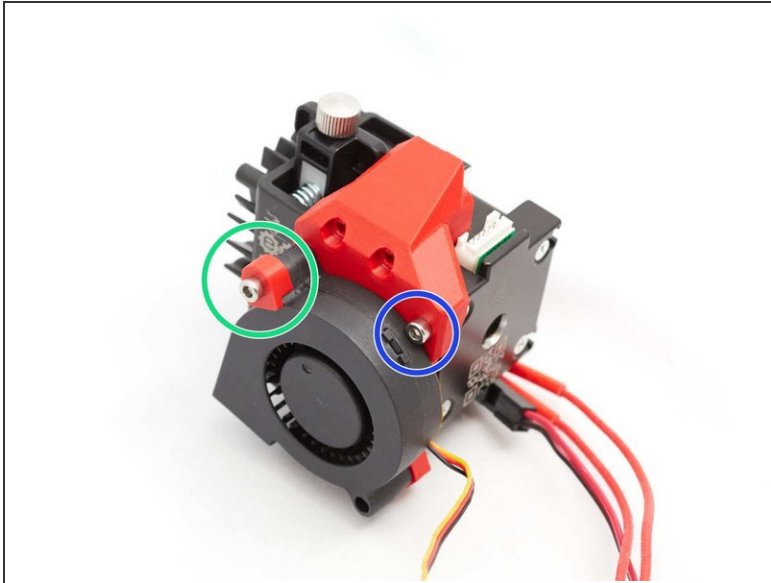
- Insert two M3 square nuts in vertical on the back of the stepper
- Insert two M3 square nuts on top front of stepper
- Verify you do not have M3 square nuts in those holes

Step 6 — Prepare extruder body



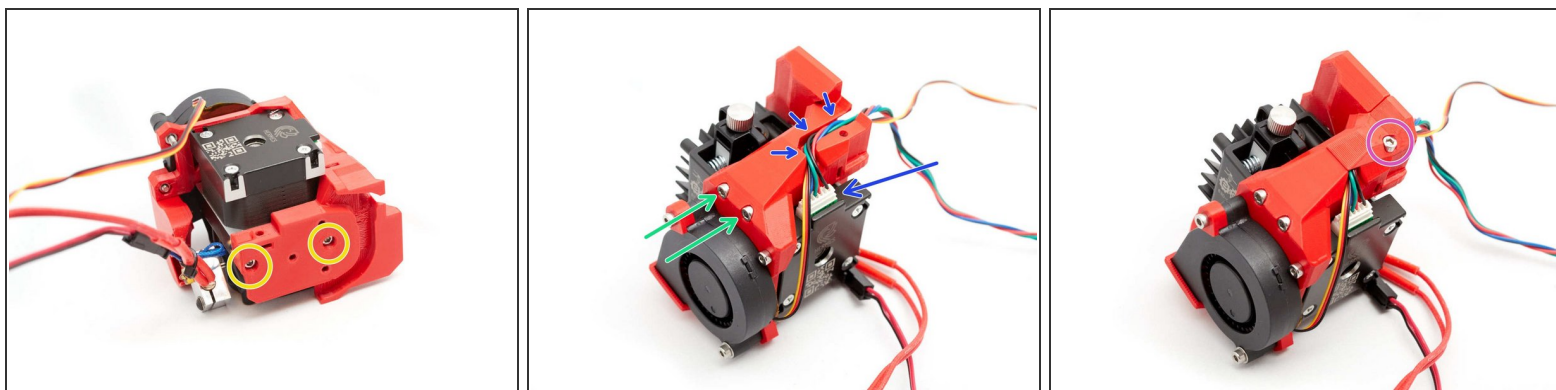
- Insert two M3 hex nuts in *body_front*
- Insert three M3 nylock nuts in *body_back*
- Insert two square nuts in *body_back*
- Insert one square nut in *body_back*


Step 7 — Assemble extruder body front



- Secure the nozzle fan to the *body_front* with an M3x25 screw and the printed part *nozzle_fan_spacer*.
 - Tighten an M3x8 screw
 - Secure the *nozzle_fan_duct* with an M3x10 screw
 - Finish to secure the nozzle fan with an M3x25 screw and a washer
- ⚠ To avoid breaking the nozzle fan, make sure you have used the washer as shown in the second picture.

Step 8 — Assemble extruder body back

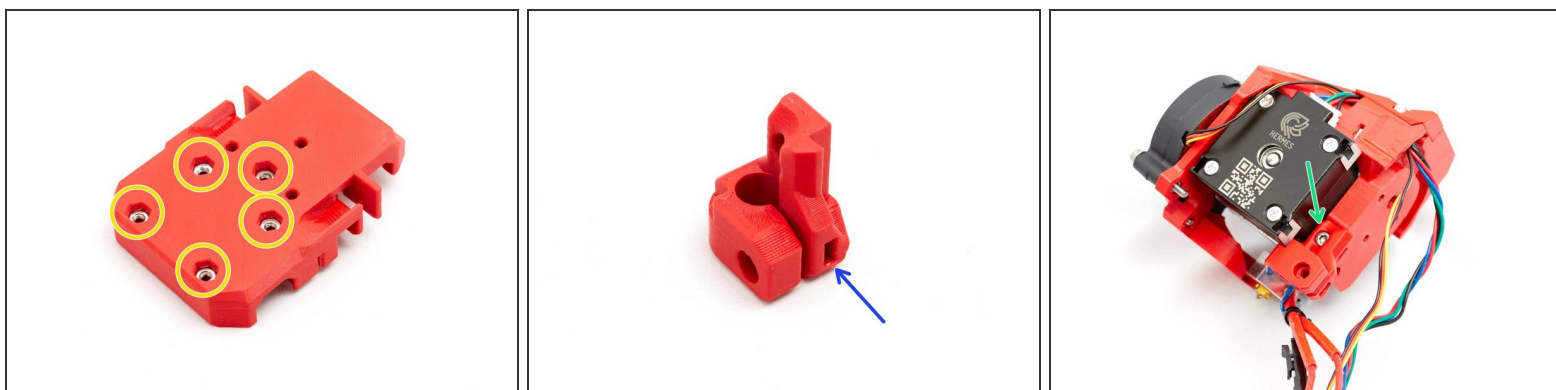


 Stepper cable comes with a sleeve you need to remove

- Assemble *body_back* with two M3x8 screws. Make sure to not pinch any wires
- Secure the *body_back* with two M3x40 screws
- Connect the stepper cable and route them in the top groove with the nozzle fan wires
- Secure the cables with the *cable_cover* and an M3x10 screw

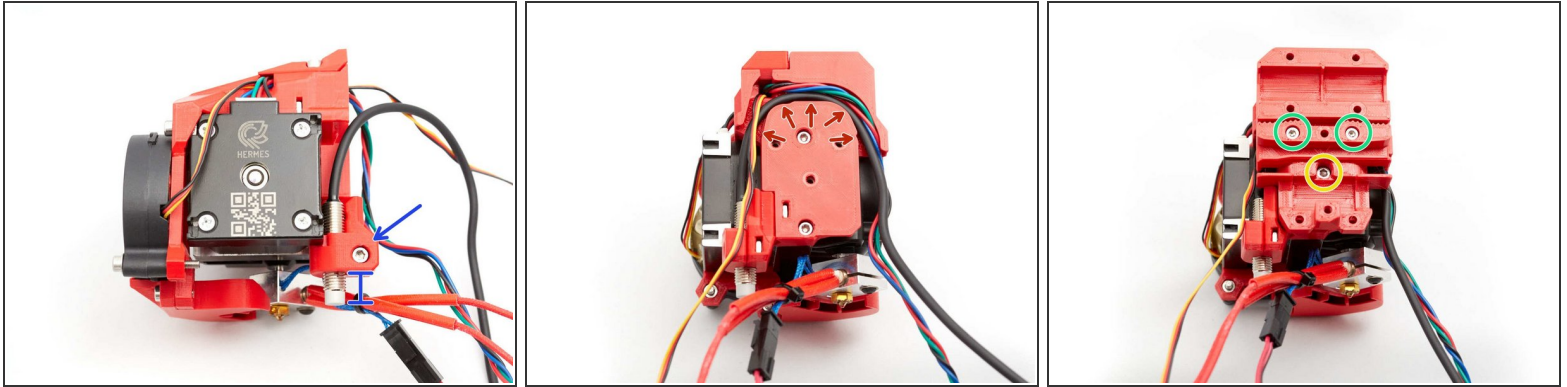
 Verify that no wires are pinched

Step 9 — Assemble X carriage



- Insert five M3 hex nuts in the back of the *x_carriage*
- Insert an M3 square nut on the back of the *pinda_mount*
- Install the *pinda_mount* on the *body_back* and secure it with an M3x10 screw

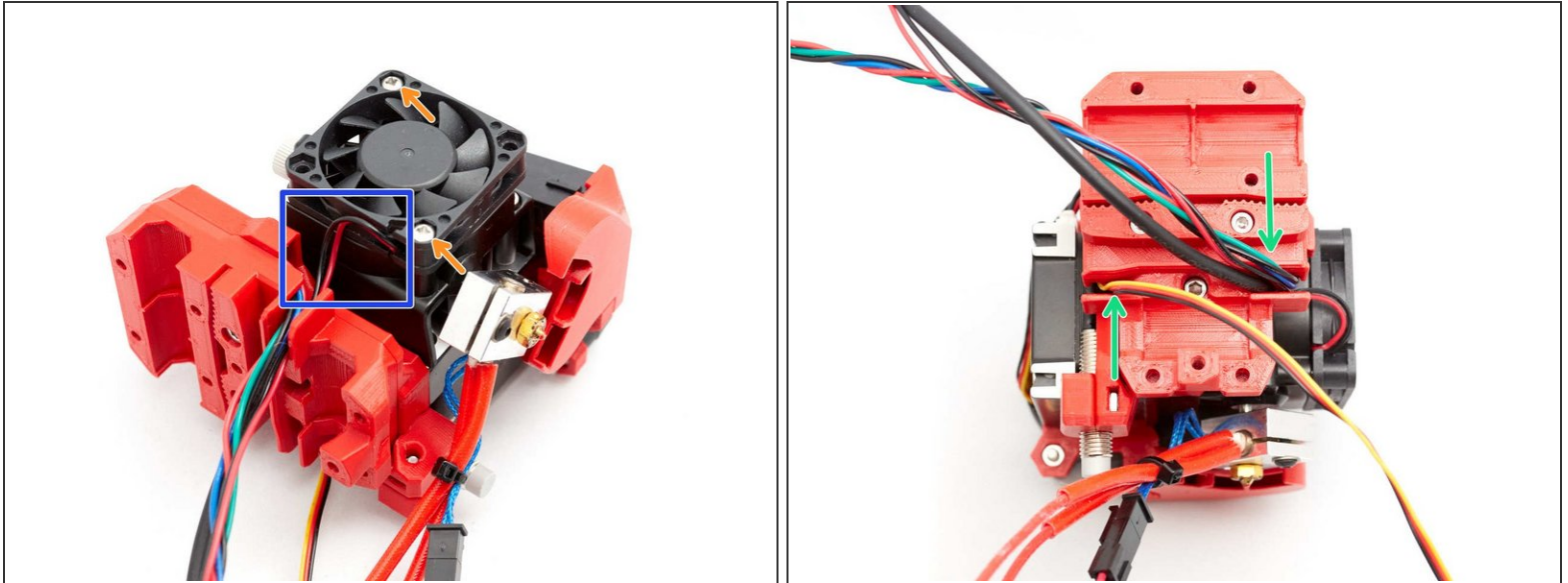
Step 10 — Assemble X carriage



- Secure the Pinda on the *pinda_mount* with an M3x10 screw. The PINDA should be out in the bottom by approx. 10mm
- Route the stepper motor, nozzle fan and PINDA as shown in the second image. Make sure to not pinch any wires
- Attach the *x_carriage* on the *body_back* with two M3x18 screws
- And one M3x10

⚠ Double check you didn't pinch any wires. You should be able to slide them a little if you push/pull on them.

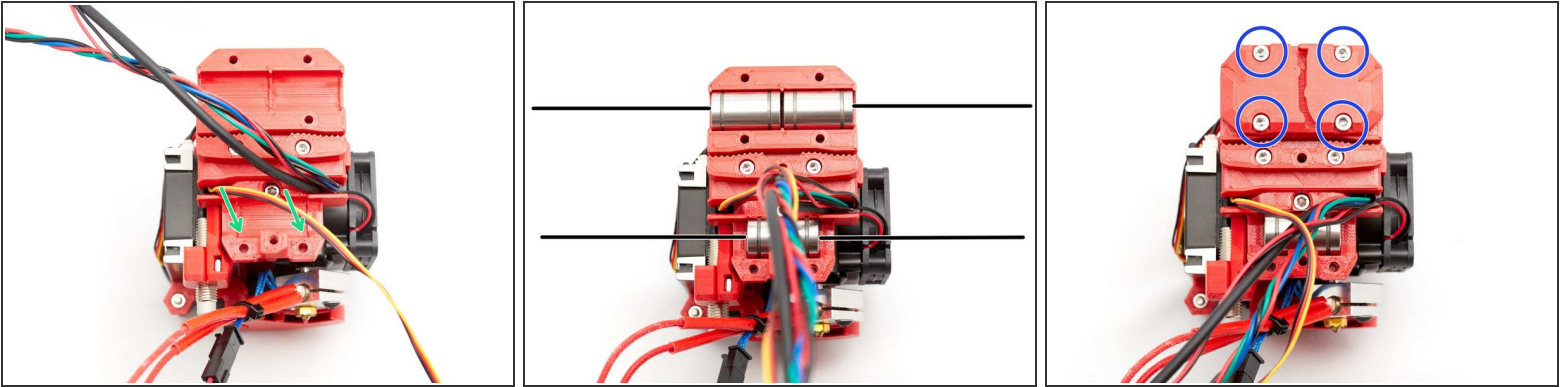
Step 11 — Install hotend fan



⚠ Do not use the Noctua coming with your Prusa printer, it is not strong enough for the Hemera. As of today the E3D fan specs are unknown and so we recommend to use the fan that comes with your Hemera.

- Attach the Hemera fan with the self tapping screws provided with your Hemera.
- Create a small loop for the fan wires to reduce tension on the cable
- Route all wires as shown in the last image

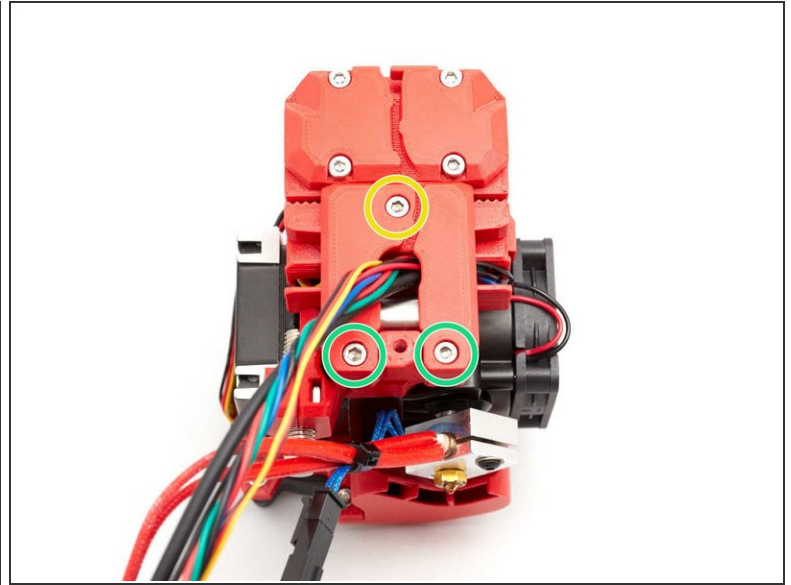
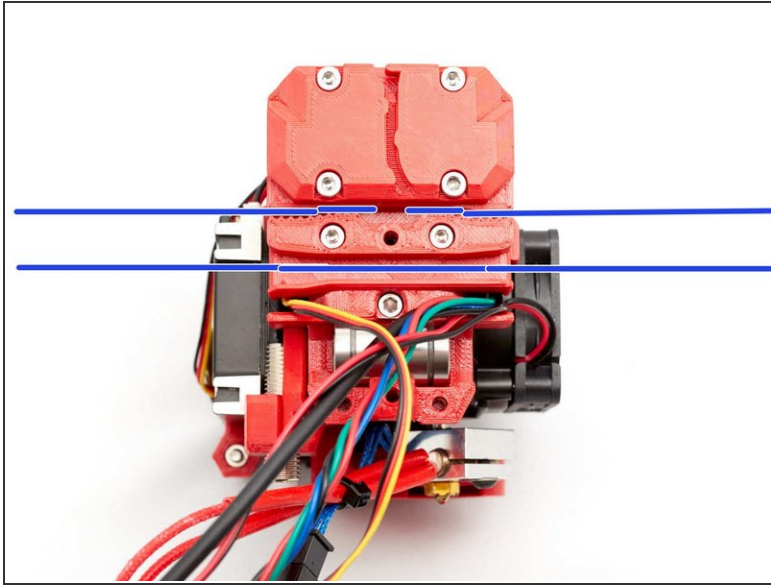
Step 12 — Assemble BearMera on X axis



- Insert two M3 square nuts
- Attach the BearMera on the Bear X axis (only the bearings are visible on this picture)
- Make sure the nozzle fan, stepper motor, pinda and hotend fan cables are routed in between the smooth rods
- Close the top bearings using four M3x18 screws and the top of `x_carriage_back`.

 Do not over tighten the four M3x18 screws.

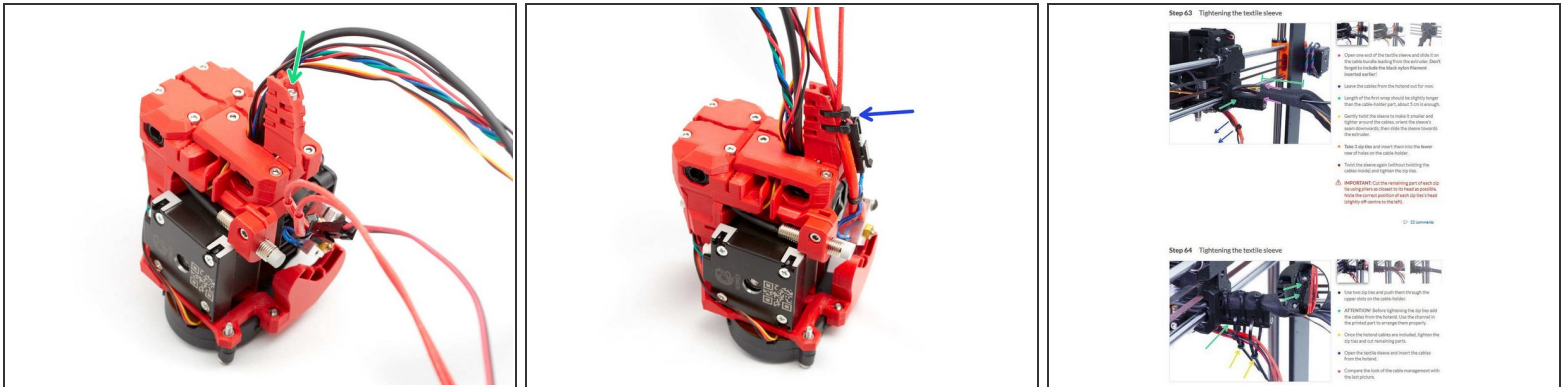
Step 13 — Assemble BearMera on X axis



- Route the belt
 - ❗ If you have trouble inserting the belt, it might be due to an extrusion multiplier issue (over-extrusion) or due to the use of a non-genuine or non-2GT belt. Check the [step 5 of Preflight check and disassembly](#) chapter for more details.
- Add the bottom of *x_carriage_back* as shown in the second image. Make sure to not pinch any wires. You should not have to use any force to close it
- Secure the *x_carriage_back* with an M3x18 screw
- And two M3x10 screws

⚠ Double check that no wires are pinched, this is very important!

Step 14 — Assemble cable guide back

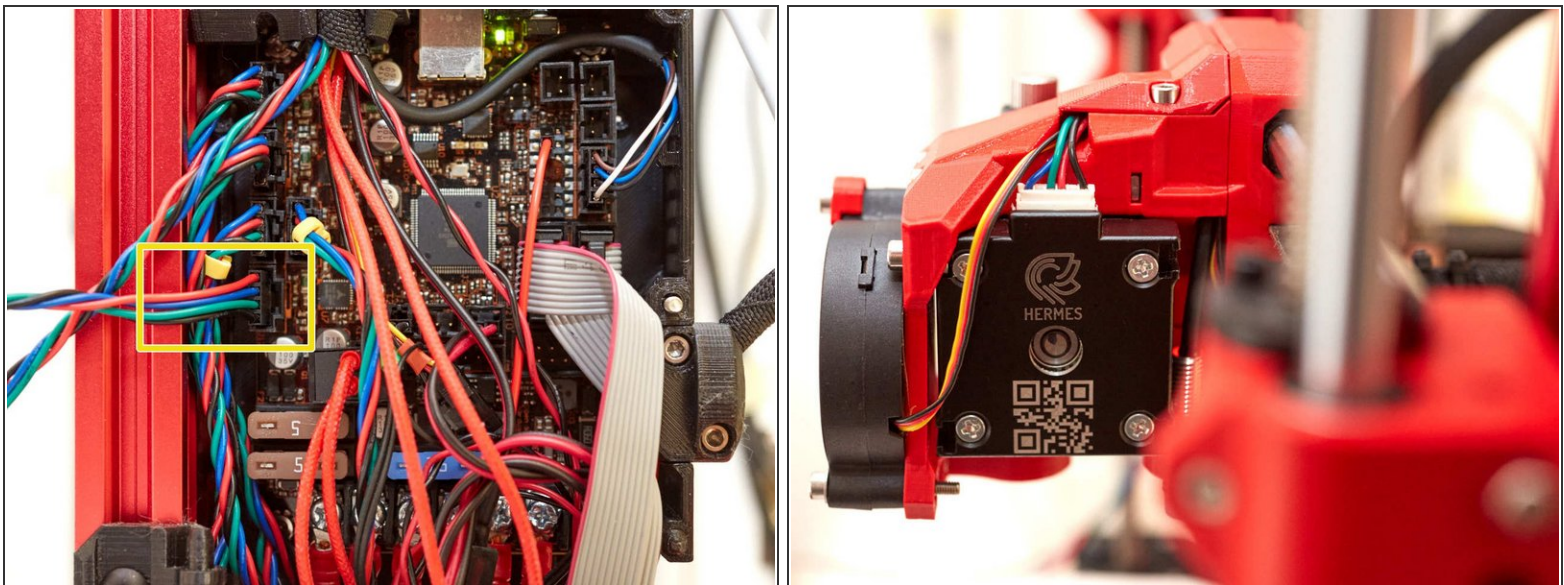


- Screw *cable_guide_back_a* and *cable_guide_back_b* to the *x_carriage* using an M3x40 screw

⚠ The M3x40 screw should be at a slight angle to the horizontal while you are tightening it.

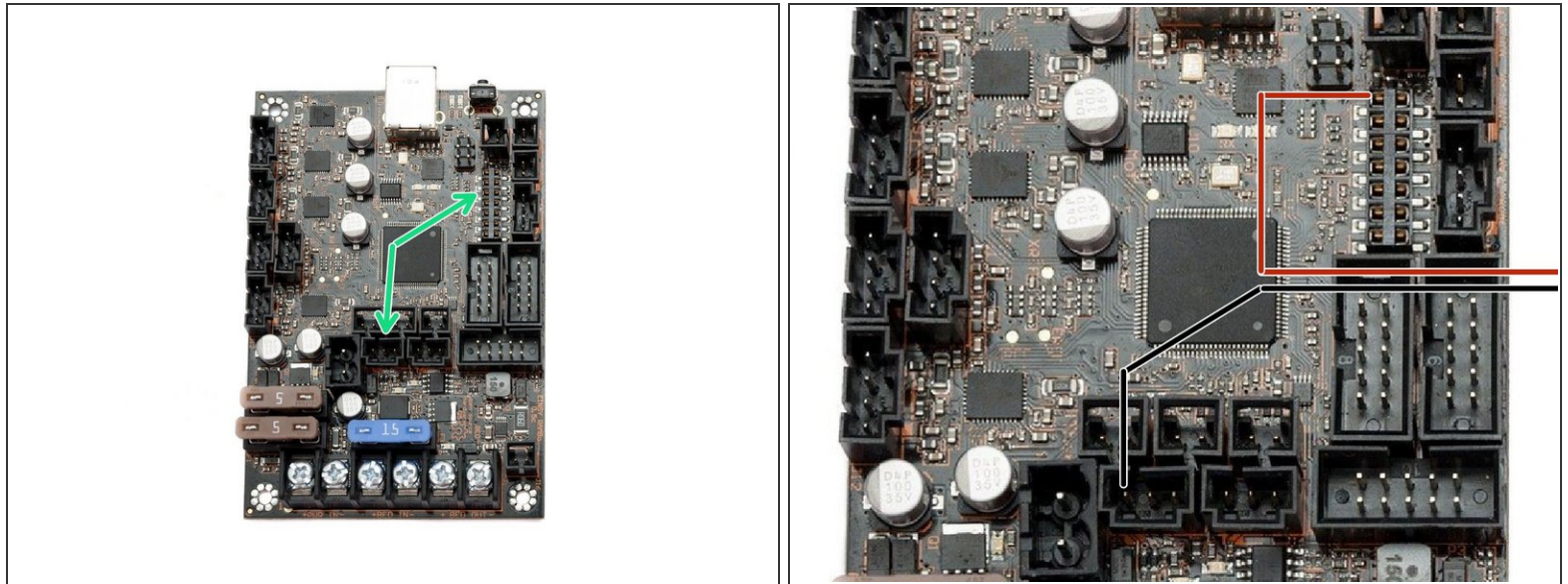
- The M3x40 screw should be at a slight angle to the horizontal while you are tightening it.
- Add the textile sleeve as explained in the Prusa manual for MK3S (steps 62 to 64):
<https://manual.prusa3d.com/Guide/5.+E-ax...>

Step 15 — Connect the extruder motor



- Verify the wire positions and adapt them if they are not matching the pictures. Then, connect your extruder stepper to your Rambo Mini or Einsy Rambo

Step 16 — Connect hotend fan for MK3(S)



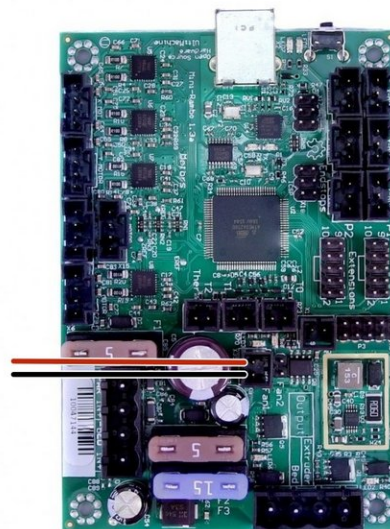
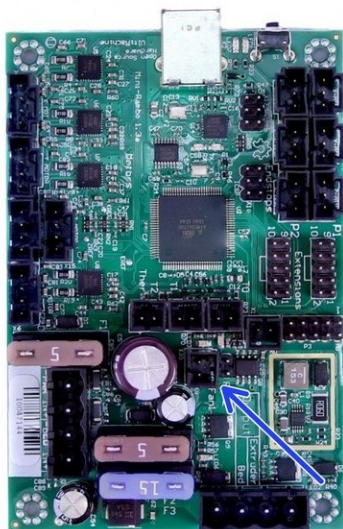
⚠ This step is for MK3(S) only, go to next step for MK2.5(S) or MK2(S).

⚠ Do not use the Noctua coming with your Prusa printer, it is not strong enough for the Hemera. As of today the E3D fan specs are unknown and so we recommend to use the fan that comes with your Hemera.

⚠ Hemera comes in 12V or 24V version. The 24V version has a 24V hotend fan that needs to be used on MK3(S) Einsy Rambo. The 12V version has a 12V hotend fan that needs to be used on MK2(S) or MK2.5(S) Rambo Mini. Double check the voltage of the hotend fan on its sticker.

- **MK3 only:** As the Hemera hotend fan works with 24V you will need to connect it differently (Prusa uses 5V fans). You can use jumper wires or build an adapter.
 - +24V goes to pin1 of J19 connector
 - Ground goes to left pin of the hotend fan connector

Step 17 — Connect hotend fan for MK2.5(S)



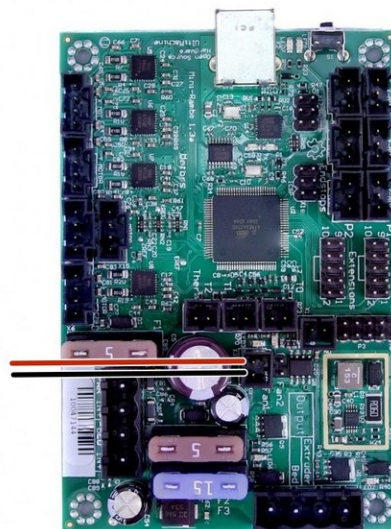
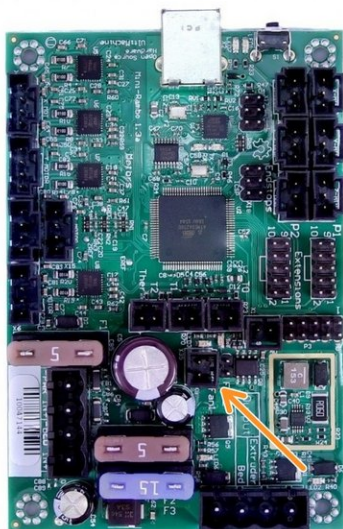
⚠ This step is for MK2.5(S) only, go to the next step for MK2(S) or previous step for MK3(S) .

⚠ Do not use the Noctua coming with your Prusa printer, it is not strong enough for the Hemera. As of today the E3D fan specs are unknown and so we recommend to use the fan that comes with your Hemera.

⚠ Hemera comes in 12V or 24V version. The 24V version has a 24V hotend fan that needs to be used on MK3(S) Einsy Rambo. The 12V version has a 12V hotend fan that needs to be used on MK2(S) or MK2.5(S) Rambo Mini. Double check the voltage of the hotend fan on its sticker.

- **MK2.5(S) only:** You need to remove the adapter for the hotend fan (black-red-yellow adapter) and plug the fan directly into the hotend fan connector
 - +12V goes to top pin of the hotend fan connector
 - Ground goes to bottom pin of the hotend fan connector

Step 18 — Connect hotend fan for MK2(S)



⚠ This step is for MK2(S) only, go to the previous steps for MK2.5(S) or MK3(S)

⚠ Do not use the Noctua coming with your Prusa printer, it is not strong enough for the Hemera. As of today the E3D fan specs are unknown and so we recommend to use the fan that comes with your Hemera.

⚠ Hemera comes in 12V or 24V version. The 24V version has a 24V hotend fan that needs to be used on MK3(S) Einsy Rambo. The 12V version has a 12V hotend fan that needs to be used on MK2(S) or MK2.5(S) Rambo Mini. Double check the voltage of the hotend fan on its sticker.

- **MK2(S) only:** Connect the hotend fan to the Rambo Mini just like on stock Prusa MK2(S). Make sure the polarity is correct.
 - +12V goes to top pin of the hotend fan connector
 - Ground goes to bottom pin of the hotend fan connector

Step 19 — Wiring extruder to Rambo



- Follow the original Prusa manual to connect the other cables of your extruder to the Mini-Rambo / Einsy-Rambo:
 - [MK3S guide](#)
 - [MK2.5S guide](#)
 - [MK2S guide](#)

Step 20 — Next chapter



- Congratulations you have finished this chapter :-)
- Go to the next chapter: [4. Adjustments](#)