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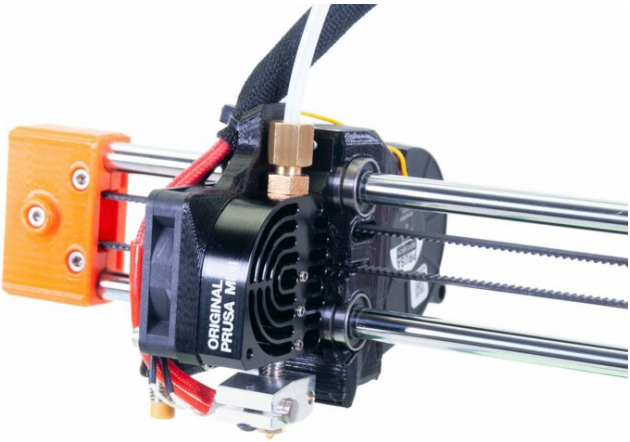
How to replace a heaterblock/heatbreak (MINI/MINI+)



help.prusa3d.com/g122769

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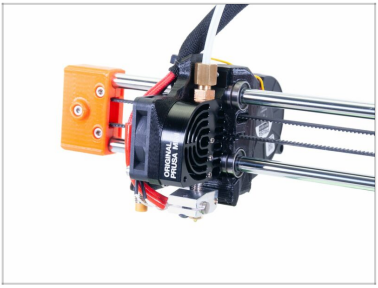
STEP 1 Introduction



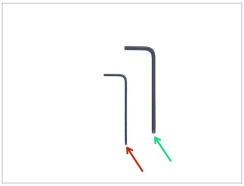
- This guide will take you through the replacement of the **heaterblock** on the **Original Prusa MINI** and **MINI+**.

  ⓘ Some parts might slightly differ. However, it does not affect the procedure.

- All necessary parts are available in our eshop shop.prusa3d.com

ⓘ Note that you have to be logged in to have access to the spare parts section.

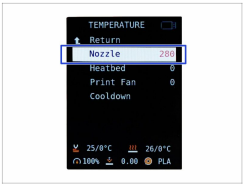
STEP 2 Tools and fasteners necessary for this guide



- Allen key 1.5 mm (1x)
- Allen key 2 mm (1x)
- Torque wrench (1x)
- Standard socket size 7mm (1x)
- Needle-nose pliers for zip ties (1x)
- Wrench sizes 16 mm / 10mm (1x)
- Cloth or piece of fabric 15x15cm (1x)

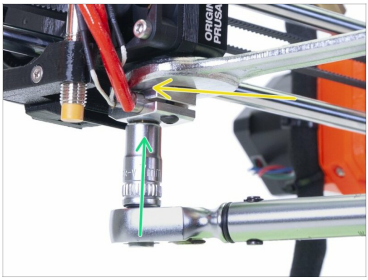
ⓘ The cloth will be used to protect the heatbed. You can use any similar material.

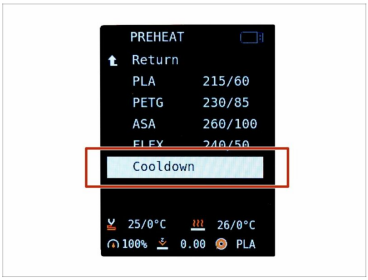
STEP 3 Preheating the nozzle



- Plug in the printer and turn it on.
- On the information screen navigate to the **Settings**.
- Open the **Temperature** menu.
- Set the **nozzle** temperature to **280 °C** by turning the knob.

STEP 4 Removing the nozzle





⚠ **Make sure the filament is unloaded from the hotend!**

⚠ **WARNING:** Avoid touching the **HOT nozzle!!!**

⬢ Set the torque wrench to 2.5 Nm.

ⓘ Some torque wrenches are not intended for loosening. **Read the instructions** for your torque wrench. Alternatively, you can use a ratchet or a side wrench size 7 mm.

⬢ With one hand, hold the heaterblock using the wrench size 16 mm. **Place the wrench above the cables to avoid damage.**

⬢ With the other hand, use a torque wrench, place it on the nozzle and slightly loosen it.

⬢ Navigate to the Preheat menu and at the end of the menu select **Cooldown**.

⚠ **Wait 15 - 20 minutes to cool down completely before proceeding to the next step.**

STEP 5 Protecting the heatbed

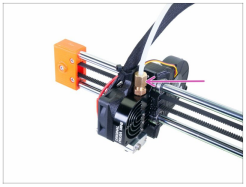
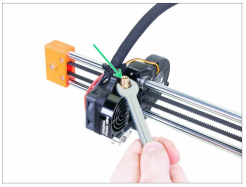
⚠ **Make sure the printer parts - print head and heatbed are cooled down at room temperature.**

⚠ **Turn the printer off and unplug it from the socket!**

⚠ **Before these steps, it is recommended to protect the heatbed!**

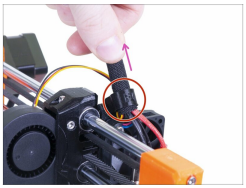
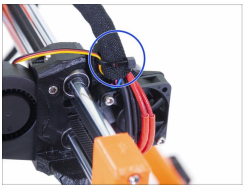
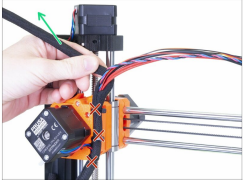
- Take off the flexible steel sheet.
- Use any cloth or piece of fabric, which is thick enough and cover the heatbed. This will ensure you won't damage (scratch) the surface during the disassembly.

STEP 6 Disassembly of fittings


- Loosen the upper fitting and remove the long PTFE tube from the hotend.
- Release and remove the lower fitting from the heatsink.
- Carefully pull out the PTFE tube from the heatsink using pliers or tweezers.

STEP 7 Removing the textile sleeve

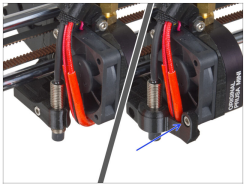
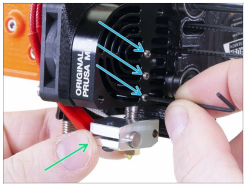
ⓘ There are two designs of the textile sleeve mount on the print head:

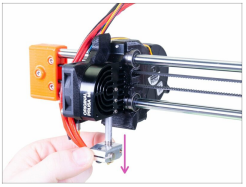
- **The new design without a zip tie:** Gently pull out the textile sleeve from the MINI-fan-spacer-clip. **Do not pull on the cables!**
- **The old design with a zip tie:** Cut off the zip tie on the print head. **Avoid cutting the print fan cable!**

- Remove the textile sleeve to the extruder.

⚠ **There is no need to cut another zip ties!**

STEP 8 Disassembly of the hotend

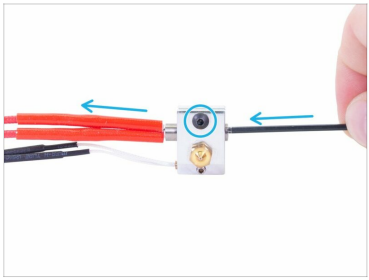



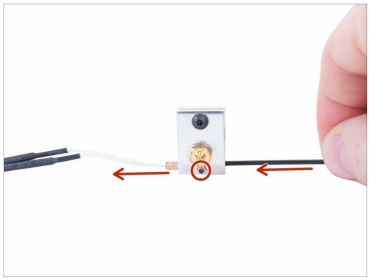


⚠ **Loosen the hotend cables for this step.**Move the print head a few centimetres towards the center of the X-axis, see the picture.

- If you have the newer version of the MINI-MINDA-holder, remove the indicated M3x20 screw to release the cables underneath.
- Loosen three screws on the side of the heatsink with 1.5 mm Allen key.
- Hold the heaterblock with the other hand.
- Gently slide out the heaterblock with the heatbreak from the heatsink.

STEP 9 Disassembly of the hotend

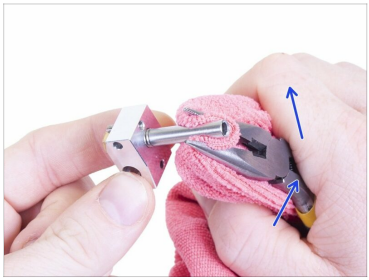




⚠ **WARNING**: Do not pull the thermistor or heater cables. Follow the instructions!

- Release the heater screw and using the Allen key gently push the heater out.
- Release the thermistor screw and using the Allen key gently push the thermistor out.

STEP 10 Removing the heatbreak



- Clean the heatbreak from the old paste by using a paper towel.

⚠ Use the second cloth to protect the thread of the heatbreak.

- Hold the heaterblock and using pliers release and remove the heatbreak.
- We are done with removing the old heatbreak, let's move to the next step and install a new one ;)

STEP 11 Heaterblock parts - preparation

If you are installing a new **heatbreak**, please skip this step.

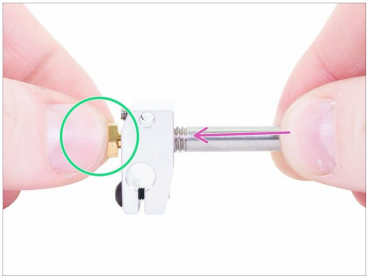
- **For the following steps, please prepare:**
  - New heaterblock (1x)
  - Thermal paste (1x)

STEP 12 Heatbreak parts - preparation

If you are installing a new **heaterblock**, please skip this step.

- **For the following steps, please prepare:**
  - New heatbreak (1x)
  - Thermal paste (1x)

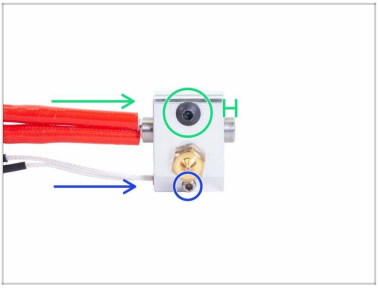
STEP 13 Reassembly of the hotend



This step is the same for assembly of the new **heaterblock** or the new **heatbreak**.

- Screw the nozzle slightly in the heaterblock. Create a 0,5 mm gap, see the picture.
- Secure the nozzle against movement with one hand.
- With the other hand, screw the heatbreak into the heaterblock from the opposite side until it touches the nozzle inside. **Do not tighten anything by torque wrench for now!!!.**

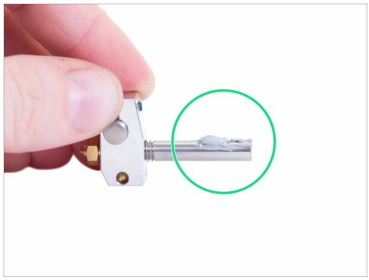
STEP 14 Reassembly of the hotend

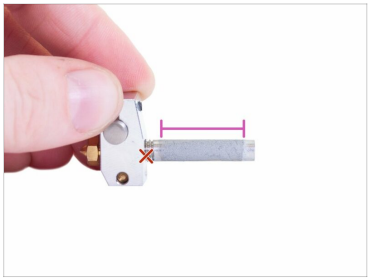


- Insert the thermistor to the heaterblock and secure by tightening the lock screw.
- Insert the heater to the heaterblock and secure it by tightening the black screw. Make sure the heater goes through and sticks out slightly on the right side, see the picture.

⚠ Ensure both **thermistor and the heater** are **properly inserted** and **tightened!**

STEP 15 Applying the thermal paste

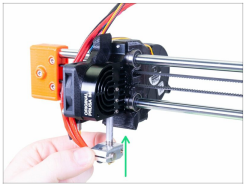
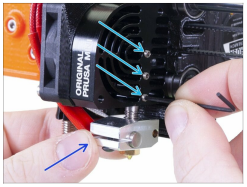
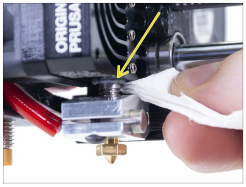




- Apply 1/4 of the content of the thermal paste package on the heatbreak.
- Spread the paste evenly over the surface. Do not spread to the ends. Leave at least 2 mm from each end of the heatbreak.

⚠ **Do not apply the paste on the thread!**

STEP 16 Hotend installation

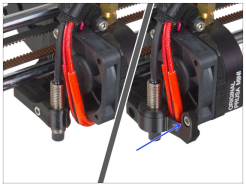
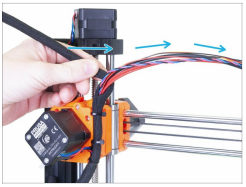
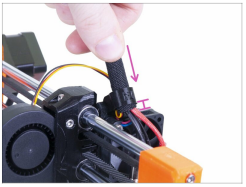




- Insert and gently slide the hotend into the heatsink. Make sure the nozzle cables are on the left side.
- Hold the heaterblock with the other hand.
- Slightly tighten the three screws on the side. You will loosen them again later.

  ⓘ The exact gap between the heatsink and the heaterblock doesn't matter at this point. We will adjust it later.

- Remove excess paste with a paper towel or cotton bud.

STEP 17 Covering the cables (new design)

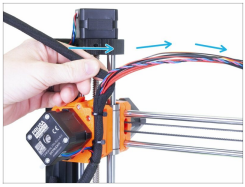




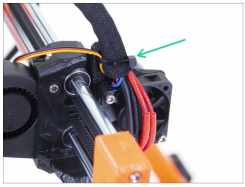
- If you have the newer version of the MINI-MINDA-holder, guide the hotend cables are under the plastic part. Then, fix the part in place using the M3x20 screw.

ⓘ If you have a version with the textile sleeve secured with a zip tie on the print head **skip this step.**

- Wrap the cable bundle inside the textile sleeve.
- Slide the textile sleeve into the MINI-fan-spacer-clip so that the sleeve sticks out on the other side about 2-5 mm.
- Now skip to Hotend PTFE tube installation

STEP 18 Covering the cables (old design)





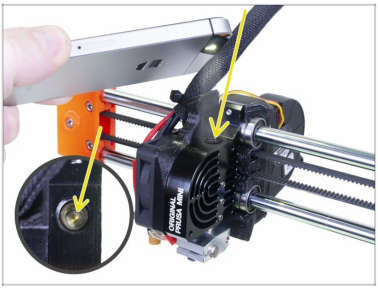
This step is for the version with the textile sleeve secured with a zip tie on the print head.

- Wrap the cable bundle with the textile sleeve.

WARNING: Don't overtighten the zip tie around cables, leave some slack or you might break some of them!

- Secure the textile sleeve with a zip tie to the fan-spacer.
- **Double-check all cables aren't stretched**, if so, please cut the zip tie, make them slightly more loose and tighten the zip tie again.

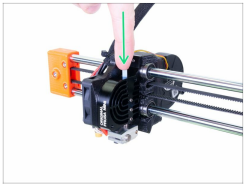
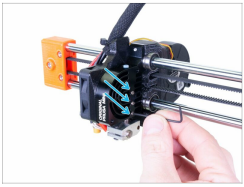
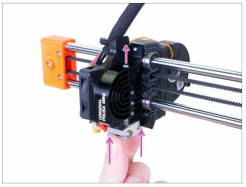
STEP 19 Hotend PTFE tube installation



- Use your phone LED flash or similar device to shine into the hole from the top of the print head. Take a look inside and check there is no filament. It must be clean and you should see only the metal surface inside. Open the full-size image if needed.

⚠ **A clean print head is essential for successful prints.** Double-check, there is no filament inside!!!

STEP 20 Hotend PTFE tube installation

- Insert and push the PTFE tube into the heatbreak all the way down.

ⓘ Orientation of the PTFE tube installation does not matter. Both ends are symmetrical.

- Loosen tree screws on the side of the heatsink with 1.5 Allen key.
- Push the nozzle up. You must see the PTFE tube moving up a bit.

STEP 21 Hotend PTFE tube installation

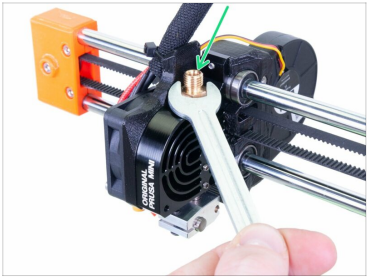
- Mount the "lower" fitting to the top of the heatsink. Screw it all the way, but don't tighten it. As soon as you reach the end of the thread, release it by a full turn (360 °).

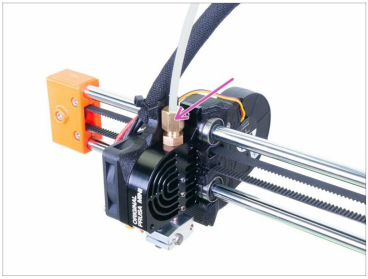
  ⚠ **Pay attention to the correct orientation of the fitting**. Insert the coarse-threaded side into the heatsink.

- Push the heaterblock up against the fitting with a reasonable force. No need to bend the entire axis. This will pre-stress the PTFE tube inside. **Now, it is important to keep the pressure.**
- Make sure the heaterblock is aligned with the heatsink. If not, realign it, but keep the pressure.
- While holding the heaterblock from below (pressing the tube inside), tighten all three grub screws.
- Now, you can release the heaterblock. Make sure it doesn't move. If so, the grub screws were not tightened properly. Release them and return to the beginning of this step.

⚠ **It is crucial there is no gap** between the PTFE tube and other parts of the hotend. This is why we are "pre-stressing" it.

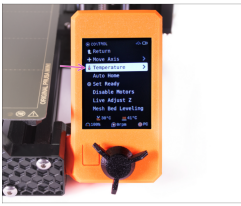
STEP 22 Hotend PTFE tube installation

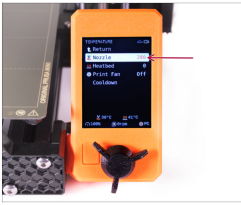




- Finish tightening of the "lower fitting", you should do a full turn to compensate for the turn we did in the previous step.
- Mount and tighten the upper fitting with the long PTFE tube with a wrench. **Do not use excessive force!**

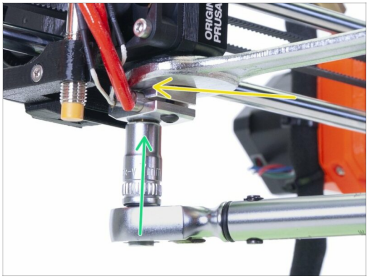
STEP 23 Preheating the nozzle

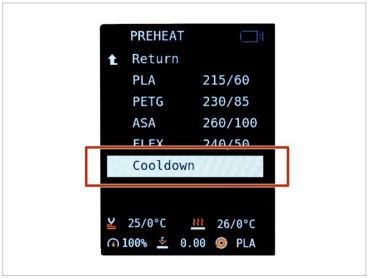




- Plug in the printer and turn it on.
- On the home screen, navigate to **Control**.
- Open the **Temperature** menu.
- Set the **nozzle** temperature to **280 °C** by turning the knob.

STEP 24 Tightening the nozzle

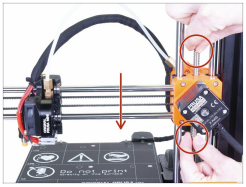
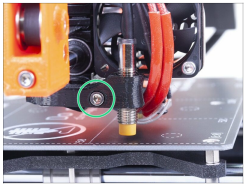
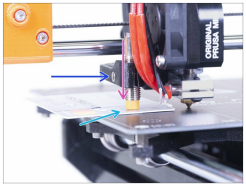




⚠ **WARNING:** Avoid touching the **HOT nozzle!!!**

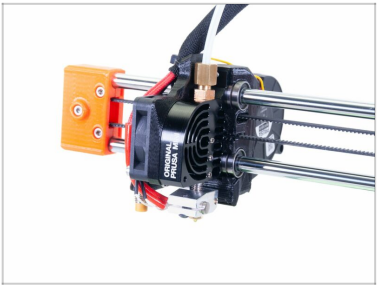
- Set the torque wrench to 2.5Nm.
- With one hand, hold the heaterblock using the wrench size 16 mm. **Place the wrench above the cables to avoid damage.**
- With the other hand, use a torque wrench, place it on the nozzle and tighten it.
- Navigate to the Preheat menu and at the end of the menu select **Cooldown**.

STEP 25 M.I.N.D.A./SuperPINDA sensor height adjustment

- Using your fingers turn the lead screw and move the entire X-axis down. **Stop when the hotend touches the heatbed! Avoid bending the heatbed!**
- Release slightly the screw on the minda-holder so you are able to adjust position of the M.I.N.D.A./SuperPINDA sensor.
- Place a credit card under the M.I.N.D.A. sensor or use a tip of the bundled zip tie.
- Gently press the M.I.N.D.A./SuperPINDA sensor down against the credit card.
- Tighten the screw on the minda-holder. **Do not use an excessive force, you can break the printed part!**
- Rotate the lead screw manually in the opposite direction to move the axis at least 5 mm up.
- Now, please follow the instructions for the First Layer Calibration (MINI/MINI+).

STEP 26 It is done!



- **Great job!**
- Heat the printer up and try it out ;)

Notes:

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