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How to replace a heatbed thermistor

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How to replace a heatbed thermistor (MK3S+/MK3S/MK2.5S/MK2S)







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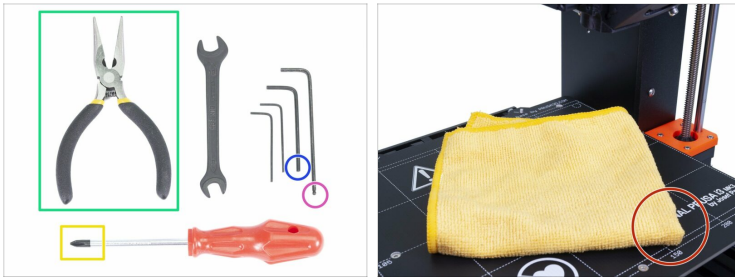


STEP 1 Getting the replacement set



-  This guide will take you through the entire process of how to disassemble the heated bed, **replace the broken thermistor** and assemble it all back.
-  The instructions are primarily shown on the Original Prusa i3 MK3S and if necessary other printers are added as well. In general, all Original Prusa printers share similar design and service procedures.
-  In case you have damaged the thermistor yourself, you can buy the set from our eshop.
-  Old printers (e.g. MK2/S) might need zip ties to finish the reassembly, which aren't part of this replacement set.

STEP 2 Tools necessary for this guide

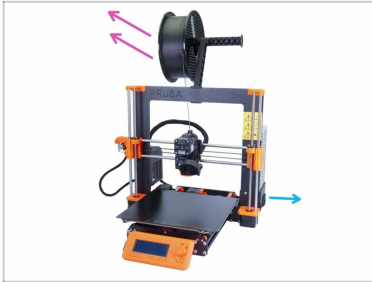


◆ **Please prepare the following tools for this chapter:**

- ◆ 2.5mm Allen key for M3 screws
- ◆ 2.0mm Allen key (only MK2/S owners)
- ◆ Needle-nose pliers for zip ties and nylock nuts
- ◆ Philips screwdriver (only MK3S and MK3 owners)
- ◆ Microfiber cloth
- ◆ Window cleaner, IPA or similar degreaser

ⓘ Apart from the mentioned tools, it is recommended getting a bowl or a small box for the screws and parts you will remove during the disassembly, you will need them later.

STEP 3 Getting the printer ready

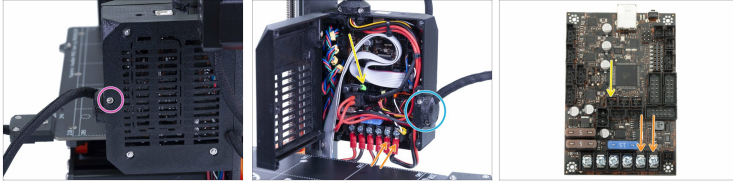


**Before you start,
make sure that:**

- ◆ the spool is removed from the printer
- ◆ the printer is properly cooled down
- ◆ the printer is unplugged from the power socket

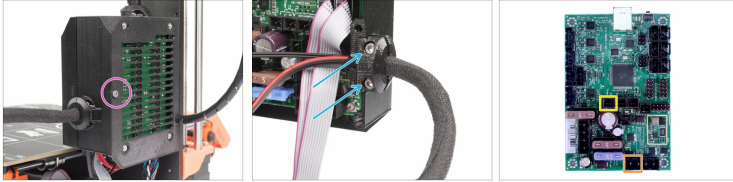
STEP 4 Disconnecting the heatbed

MK3S+/MK3S/MK3



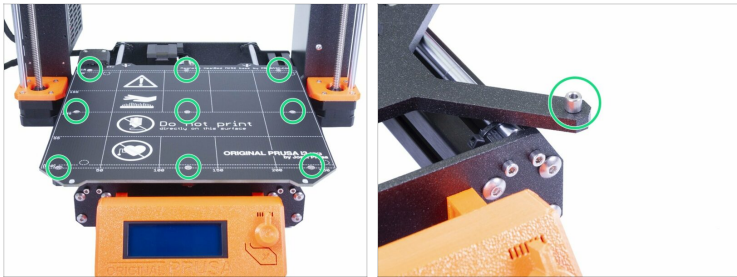
- ◆ Release the M3x40 screw so you can open the case with the electronics.
- ◆ Release and remove two M3x10 screws including the printed cover.
- ◆ Follow the cable bundle from the heatbed and unplug:
 - ◆ The heatbed thermistor (mind the safety latch)
 - ◆ Both power wires (use Philips screwdriver)
- ◆ Remove the cables from the box with the electronics. We need them free to remove the heatbed.
- ⓘ For **MK2.5S/MK2.5/MK2S/MK2** please skip to the next step.

STEP 5 Disconnecting the heatbed MK2.5S/MK2.5/MK2S



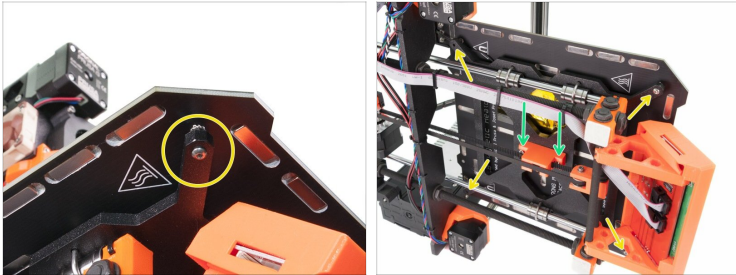
- ◆ Release the M3x40 screw so you can open the case with the electronics.
- ◆ Release and remove two M3x10 screws including the printed cover. On old printers, cut the zip tie holding the wrap.
- ◆ Follow the cable bundle from the heatbed and unplug:
 - ◆ The heatbed thermistor (mind the safety latch)
 - ◆ Heatbed heater (don't pull the cable, grab the connector)
- ◆ Remove the cables from the box with the electronics. We need them free to remove the heatbed.

STEP 6 Removing the heated MK3S+/MK3S/MK3



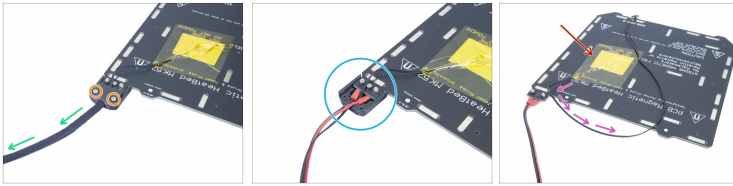
- ◆ In order to replace the thermistor, we need to remove the heated bed. Keep in mind the procedure might slightly differ on your printer.
- ⚠ **Regardless of the type of the printer, the heated must be always removed without any force. In case of any resistance, make sure you have removed all the screws.**
- ◆ **MK3S and MK3:** you need to remove 9 screws from the top. Be careful while removing the heated bed as there are 9 spacers below the heated bed.
- ⓘ For **MK2.5S/MK2.5/MK2S/MK2** please skip to the next step.

STEP 7 Removing the heatbed MK2.5S/MK2.5/MK2S



- In order to replace the thermistor, we need to remove the heatbed. Keep in mind the procedure might slightly differ on your printer.
- ⚠ **Regardless of the type of the printer, the heatbed must be always removed without any force.** In case of any resistance, make sure you have removed all the screws.
- ⚠ **HOLD THE HEATBED!** As soon as you remove the last screw, the heatbed will fall off.
- **MK2.5S/MK2.5/MK2S/MK2:** the heatbed is held from below by two sets of screws. Rotate and lay the printer on the PSU side, then release/remove:
 - Four screws, which are in the corners.
 - Two screws, which are in the middle of the heatbed, inside a printed part (Y-belt-holder). No need to remove them entirely. Unscrew them until the threads of the screws "leave" the heatbed.

STEP 8 Removing the cover and sleeve/wrap



- Based on the generation of your printer you might have slightly **different protection of the cables**:
 - **Old printers** used a plastic spiral wrap with zip tie.
 - **New printers** are using a textile sleeve held by printed parts.
- Most of the time, it will be enough to remove two screws (MK3S, MK3, MK2.5S, MK2.5) or cut the zip tie (MK2S and MK2)
- Remove the textile sleeve or the spiral wrap all the way, but keep it for reassembly.
- In rare scenarios, you might have to release the entire cover, or even the power wires to get access to the thermistor wire.
- Regardless of the type of the cable management, in this step, you need to remove the wrap and get access to the entire length of the thermistor cable.
- Now, carefully remove the thermistor with both the tapes (yellow and aluminium) from the heatbed.

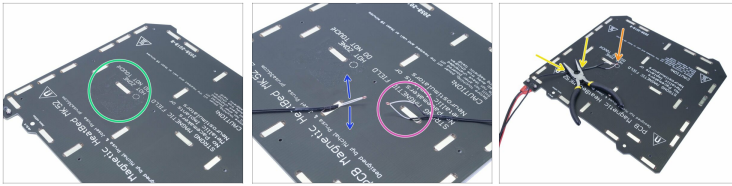
STEP 9 Preparing the replacement set



- **For the following steps, please prepare:**
- The new thermistor (1x)
- "Silver" aluminium tape (1x)
- "Yellow" polyimide/Kapton tape (1x)
- Zip tie (2x) - optional for old printer design

⚠ Pay attention to the instructions! The "yellow" Kapton tape tends to curl up and you won't be able to restore its initial shape!!

STEP 10 Preparing the heatbed and thermistor



- ◆ After you have removed the thermistor and the tapes, clean the entire board to remove any grease. You can leave the glue, which was under the aluminium tape.
- ⚠ **IMPORTANT:** we need to adjust the shape of the **new thermistor** to match the old one.
 - ◆ **The new thermistor** has a pair of straight wires.
 - ◆ **The old thermistor** is shaped in an "oval".
- ⚠ **Carefully adjust the shape of the new thermistor** to match the old one. Before you do so, make sure you can distinguish between them (e.g.: mark the new one with a marker).
- ◆ Lay the new and properly shaped thermistor on the heatbed and fix it temporarily using pliers or any other tool.
- ◆ Make sure the tip of the thermistor is in the circle. If you miss this spot, the printer will read incorrect temperature values.

How to replace a heatbed thermistor (MK3S+/MK3S/MK2.5S/MK2S)

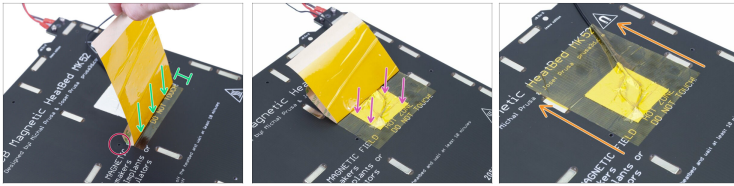
STEP 11 Fixing the thermistor in place



- Take the silver aluminium tape and carefully peel off the protective film.
- Glue the tape to the heatbed, **BUT ONLY** in the centre of the thermistor (inside the oval shape). We need to double-check the correct position.
- Peel or bend the tape slightly, to reveal the tip of the thermistor.
- Ensure again, that the tip is right above the circle. If you miss this spot, the printer will read incorrect values.
- As soon as the correct position is ensured glue the entire tape to the board.

How to replace a heatbed thermistor
(MK3S+/MK3S/MK2.5S/MK2S)

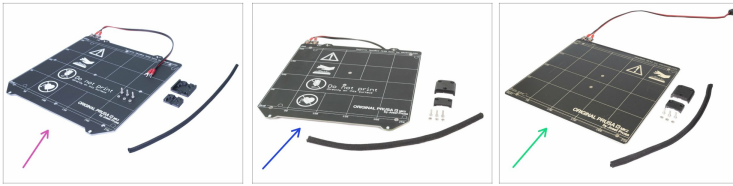
STEP 12 Fixing the thermistor in place



Now it is time to apply the final "yellow" Kapton tape. **DON'T PEEL OFF the entire tape, it will curl up!!!**

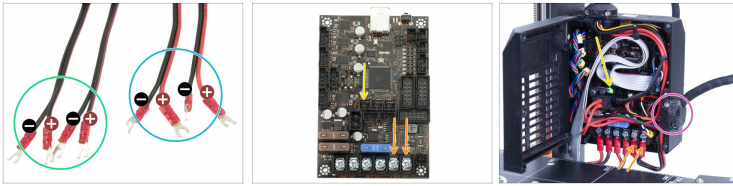
- The Kapton tape has a bigger area than the silver tape. Make sure the silver tape is overlapped from all sides.
- Make sure the Kapton tape does not overlap any hole in the heatbed.
- Peel off about 1 cm (0.5 inch) strip of the Kapton tape and stick it to the heatbed, like in the picture. Ensure the tape is properly connected.
- Continue with gluing the tape and stop for a second above the area with the thermistor. Pay great attention to sticking the tape everywhere.
- Finish gluing the tape to the heatbed. Double-check the entire surface is properly connected.

STEP 13 Reassembling the heatbed



- The thermistor replacement is done! Now it is time to cover the cables and place the heatbed back on the printer.
- Since every printer requires slightly different assembly method, please follow these chapters and when you finish them, return back to this guide to connect the wires:
 - **MK3S/MK3** - Follow chapter 7, Step 5 - 16
 - **M2.5S/MK2.5** - Follow chapter 4, Step 5 - 13
 - **MK2S/MK2** - Follow chapter 7, Step 14 - 30

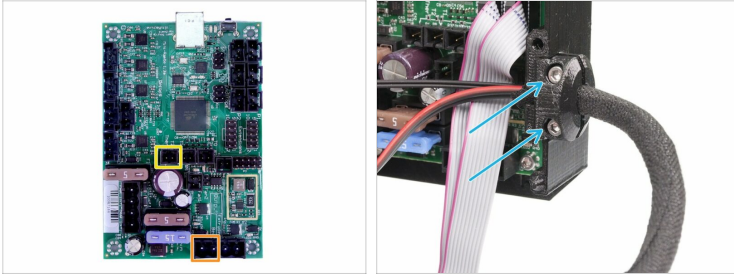
STEP 14 Connecting the heatbed MK3S/MK3



IMPORTANT: it is **CRUCIAL** to connect the HB cables in the correct order to the EINSY board. **POSITIVE WIRE** must be connected to **POSITIVE SLOT**. There are **TWO VERSIONS** of the cables with different coloring system:

- **Version A:** both wires on each pair are black, **POSITIVE WIRE** is marked with a **RED LINE**
- **Version B:** on each pair, there is a red and black wire. **POSITIVE WIRE** is **FULLY RED**.
- Follow the cable bundle from the heatbed and plug:
 - The heatbed thermistor (mind the safety latch)
 - Both power wires (use Philips screwdriver)
- Insert the heatbed cable bundle including the textile sleeve in the Einsy-base.
- Use the Heatbed-cable-clip and two M3x10 screws to fix the cable bundle in place. Note the correct orientation of the clip, try closing the door.

STEP 15 Connecting the heatbed MK2.5S/MK2.5/MK2S



- Follow the cable bundle from the heatbed and plug:
 - The heatbed thermistor (mind the safety latch)
 - Heatbed heater (push the connector carefully all the way in)
- Insert the heatbed cable bundle including the textile sleeve in the Einsy-base.
- Use the Heatbed-cable-clip and two M3x10 screws or a zip tie to fix the cable bundle in place.

STEP 16 Find check



- ◆ Close the door and **MAKE SURE NO CABLE IS PINCHED!** Only then use M3x40 screw to tighten the door.
- ◆ Connect the printer to the grid and turn it on.
- ◆ Preheat the printer to the PLA and check, whether the heated temperatures are steadily growing.
Ensure stable room temperature and no drift, which might cool down the printer.
- ◆ **Does the heatbed temperature grow as expected? Are you able to reach the desired temperatures? Great! Enjoy the printer ;)**
