

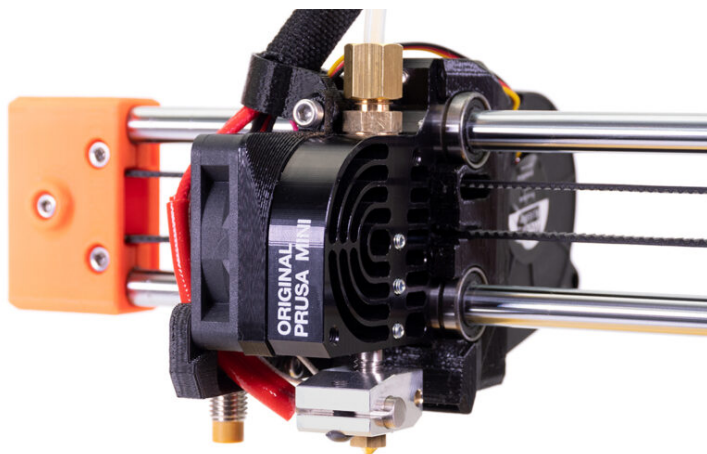
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How to replace a hotend thermistor

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How to replace a hotend thermistor (MINI/MINI+)



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STEP 1 Introduction



◆ This guide will take you through the replacement of the **hotend thermistor** on the **Original Prusa MINI and MINI+**.

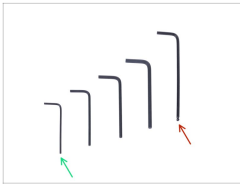
ⓘ Some parts might slightly differ. However, it does not affect the procedure.





◆ If the heatbed thermistor is damaged, you will see the **MINTEMP** error message on the display when you preheat the printer.

◆ 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 necessary for this guide



-  1.5mm Allen key
-  2.5mm Allen key (ball-end is recommended)
-  Needle-nose pliers
-  Cloth or piece of fabric 15x15cm (2x)

STEP 3 Preparing the printer



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

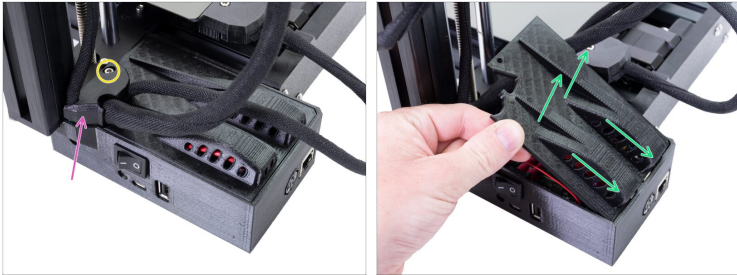
⚠ Turn the printer off and unplug it from the socket!

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

⚠ Take off the flexible steel sheet.

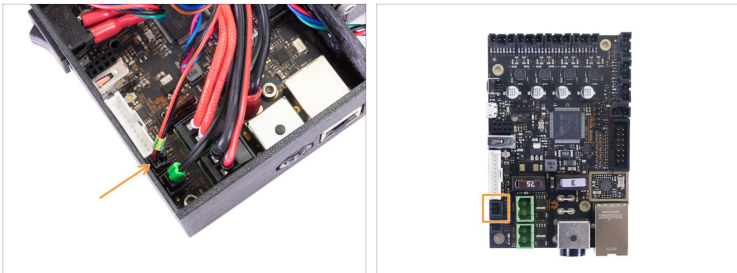
◆ Use any cloth or piece of fabric, which is thick enough and cover the heatbed. This will ensure you won't damage (scratch) the surface during the disassembly.

STEP 4 Opening the box with the electronics



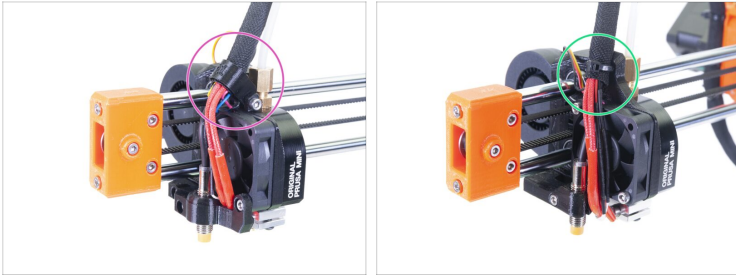
- Release and remove the M3 screw on the box with the electronics.
- Remove the printed cable cover.
- Lift the second electronics cover slightly. Before you remove it completely, pull it first towards the aluminium extrusion to release both pins from the holes.

STEP 5 Disconnecting the thermistor



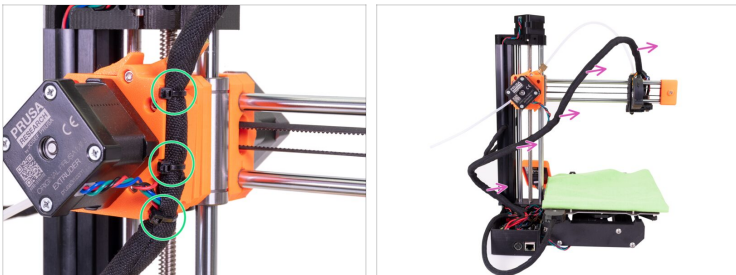
- Disconnect the thermistor (red-black) cable from the Buddy board. Note there is a security latch on the connector, you have to press it first.

STEP 6 New vs old design



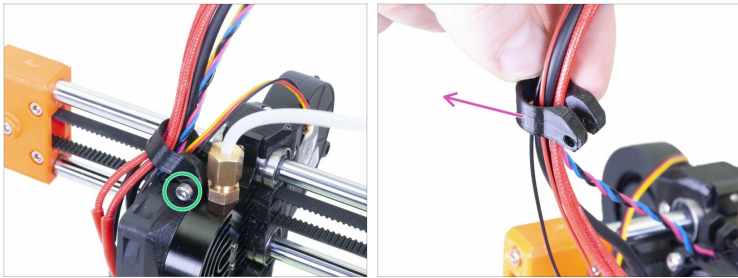
- i** There are two designs of the print head cable bundle guidance.
- ◆ **Before you start**, please check, whether you have:
 - ◆ **The MINI's new design without a zip tie.** Also used on **MINI+**. Move to the next step Removing the textile sleeve (new design).
 - ◆ **The MINI's old design with a zip tie.** Skip to Removing the textile sleeve (old design).

STEP 7 Removing the textile sleeve (new design)



- ◆ Cut the zip ties attached to the extruder.
- ◆ **Carefully remove the entire textile sleeve** from the cable bundle. **Avoid pulling the cables!**

STEP 8 Removing the fan-spacer-clip (new design)



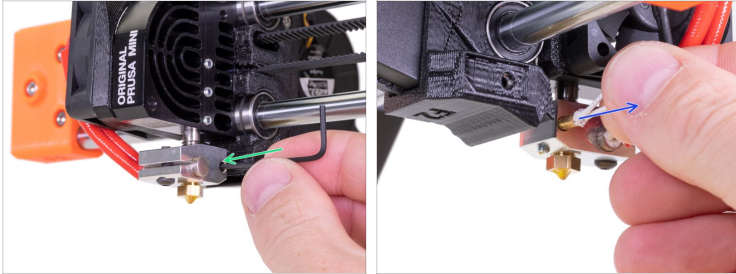
- ◆ Release the M3x20 screw.
- ◆ Remove the MINI-fan-spacer-clip from the cable bundle.

STEP 9 Removing the hotend thermistor (new design)



- ◆ Release the M3x12 screw.
- ◆ Release the M3x20 screw.
- ◆ Remove the minda-holder with the M.I.N.D.A./SuperPINDA sensor.
- ◆ Loosen the smallest (silver) grub screw on the bottom side of the heaterblock to release the thermistor.

STEP 10 Removing the hotend thermistor (new design)



- ◆ Using the Allen key gently push the thermistor out.
- ◆ Pull out the thermistor from the heaterblock on the opposite side of the hotend.

STEP 11 New hotend thermistor - parts preparation (new design)



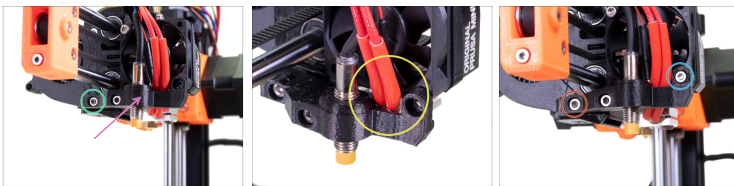
- ◆ **For the following steps, please prepare:**
- ◆ New hotend thermistor (1x)
- ◆ Zip tie (3x)

STEP 12 Hotend thermistor installation (new design)



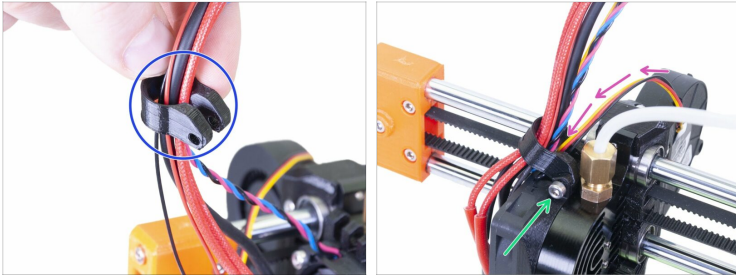
- Insert the thermistor all the way into the heaterblock from the left side of the hotend.
- Look from the right side of the hotend and check the tip of the thermistor reaches the end of the hole in the heaterblock like in the picture.
- Secure it by tightening the smallest grub screw. **Do not overtighten, you may damage the thermistor!**

STEP 13 Mounting the minda-holder (new design)



- Place the minda-holder with the M.I.N.D.A./SuperPINDA sensor back to the hotend.
- Insert and slightly tighten the M3x12 screw in the minda-holder.
- Make sure the cables from the hotend are not pinched.
- Secure minda-holder with M3x20 screw.
- Tighten fully the M3x12 screw on the minda-holder.

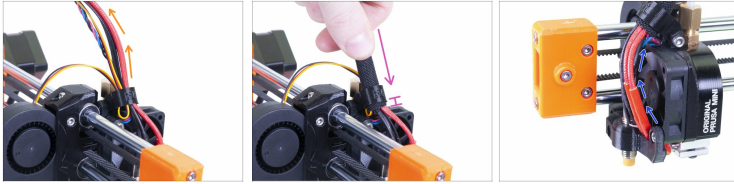
STEP 14 Guiding the cable bundle (new design)



- ◆ Push all the cables from the print head into the MINI-fan-spacer-clip. Orient the clip as shown in the picture, the beveled side is up.
- ◆ Guide the print fan cable trough MINI-fan-spacer-clip groove.
- ◆ Slide down the MINI-fan-spacer-clip and mount it on the spacer with the M3x20 screw. Tighten the screw, then release it slightly by 1/4 of turn (90 °). No nut is needed here.

 **The MINI-fan-spacer-clip must move freely.**

STEP 15 Guiding the cable bundle (new design)



- 🟠 Merge all cables leading from the hotend together and guide them up.
- 🟡 Place the textile sleeve on the cable bundle and slide it into the MINI-fan-spacer-clip so that 2-5 mm of the sleeve extends over on the other side.
- 🟢 **Don't pull the cables, leave some slack around the fan.**

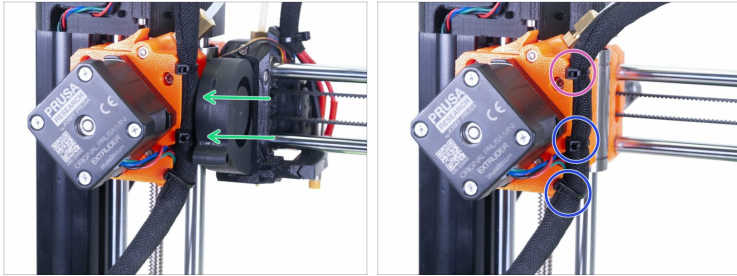
STEP 16 Guiding the cable bundle (new design)



⚠ WARNING: Follow these instructions carefully! If you mount the cable bundle at an incorrect position, you will have issues while printing!

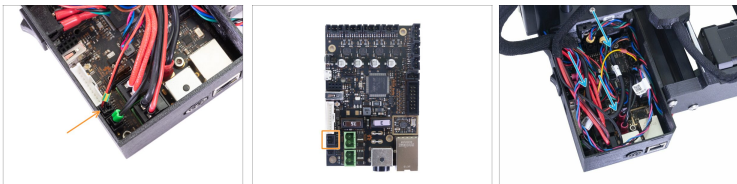
- ◆ Start by rotating the lead screw until the X-axis is all the way up.
- ◆ Move the print head all the way to the right and ensure it is touching the printed part.
- ◆ Bend the cable bundle slightly and use the upmost zip tie slot to partly tighten the entire bundle.
- ◆ Add the EXTRUDER motor cable to the bundle and use the textile sleeve to cover the cables all the way down to the electronics.
- ◆ Check whether the textile sleeve can reach the inner space of the electronics cover. If not, you left too much slack above the X-axis, readjust it.
- ◆ Go back to the X-axis and check once again, that the print head can move all the way to the right without being pulled back by the cable bundle.

STEP 17 Guiding the cable bundle (new design)



- ◆ Tighten the zip tie, you've installed in the previous step, but use a reasonable force or you might break the cables. Rotate the zip tie's head to the left.
- ◆ Add a second and third zip tie. Again, tighten carefully and rotate the heads to the left.
- ◆ Move the print head all the way to the left to ensure there is no collision between the zip ties and the fan's casing.

STEP 18 Connecting the hotend thermistor (new design)



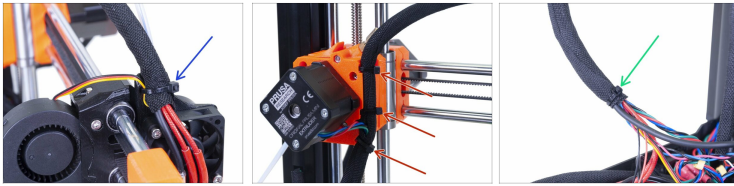
- ◆ Connect the hotend thermistor cable to the connector on the Buddy board.
- ◆ Gently push the cables inside the box.

STEP 19 Covering the electronics (new design)



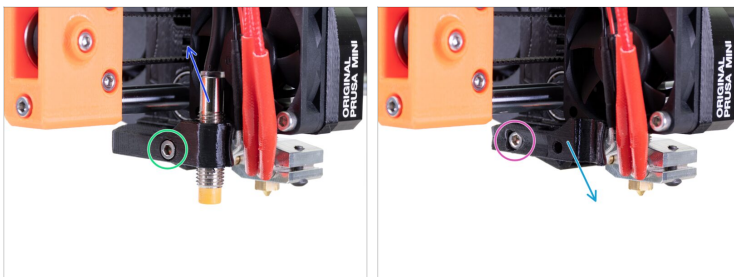
- ◆ Before covering the electronics, make sure the square nut is correctly positioned in the printed part. **The nut must not fall out!** This can cause fatal damage to the electronics.
- ◆ Insert the cover back in, make sure it is properly seated in the slot. *Note: on an older design, there are holes instead of slots, the assembly procedure is the same.*
- ◆ **Place the second cover on the top and arrange the cables:**
 - ◆ **Extruder bundle**, ensure the textile sleeve is partially in. Also, it must be tilted away from the printer.
 - ◆ **Heatbed bundle**, ensure the textile sleeve is partially inside the box.
 - ◆ **Filament sensor cable** (optional), ensure that the textile sleeve wrapped around the cables is partially inside the box.
- ◆ Now, tighten the second cover. Check that no cable is pinched.
- ◆ Skip to: Final check

STEP 20 Removing the textile sleeve (old design)



- ◆ Cut off the first zip tie on the print head. **Avoid cutting the print fan cable!**
- ◆ Cut the 3 zip ties attached to the extruder.
- ◆ Cut the remaining zip tie at the end of the textile sleeve. *(The zip tie might not be used on the early units.)*
- ◆ **Carefully remove the entire textile sleeve** from the cable bundle. Avoid pulling the cables!

STEP 21 Removing the M.I.N.D.A. sensor (old design)



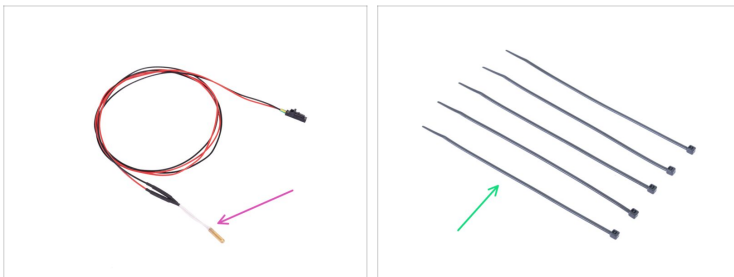
- ◆ Release the screw on the minda-clip.
- ◆ Remove the M.I.N.D.A. sensor.
- ◆ Release the screw on the minda-holder.
- ◆ Remove the minda-holder.

STEP 22 Removing the hotend thermistor (old design)



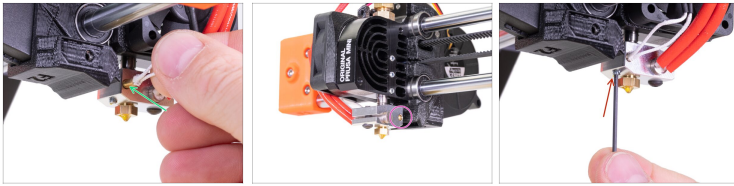
- Loosen the smallest (silver) grub screw on the bottom side of the heaterblock to release the thermistor.
- Using the Allen key gently push the thermistor out.
- Remove the thermistor from the opposite side of the hotend.

STEP 23 New hotend thermistor - parts preparation (old design)



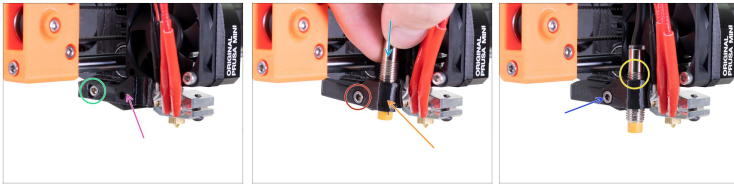
- For the following steps, please prepare:**
- New hotend thermistor (1x)
- Zip tie (5x)

STEP 24 Hotend thermistor installation (old design)



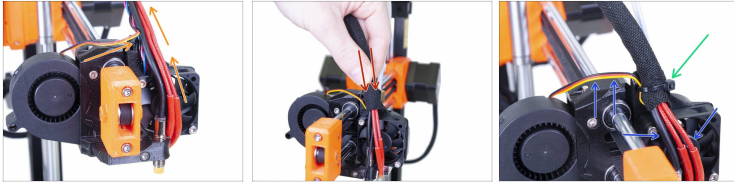
- ◆ Insert the thermistor all the way into the heaterblock from the left side of the hotend.
- ◆ Look from the right side of the hotend and check the tip of the thermistor reaches the end of the hole in the heaterblock like in the picture.
- ◆ Secure it by tightening the smallest grub screw. **Do not overtighten, you may damage the thermistor!**

STEP 25 Mounting the minda-holder (old design)



- ◆ Place the minda-holder back to the hotend.
- ◆ Secure it with the M3x12 screw.
- ◆ Place the minda-holder-clip to the minda-holder.
- ◆ Insert the M3x12 screw in the minda-holder-clip and slightly tighten.
- ◆ Insert and adjust the M.I.N.D.A. sensor.
- ◆ Adjust the M.I.N.D.A. sensor position, there should be about 2-3 threads above the minda-holder. *This a temporary position for now. We will set the proper one later on.*
- ◆ Tighten the screw on the minda-holder. **Do not use excessive force, you can damage the minda-holder!**

STEP 26 Guiding the cable bundle (old design)



- 🟠 Merge all cables leading from the hotend together and guide them up. **Don't pull the cables, leave some slack around the fan.**
- 🟠 Carefully wrap the sleeve around the cable bundle.
- ⚠️ **WARNING: Read this first, don't overtighten the zip tie around cables, leave some slack or you might break some of them!**
- 🟢 Secure 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.

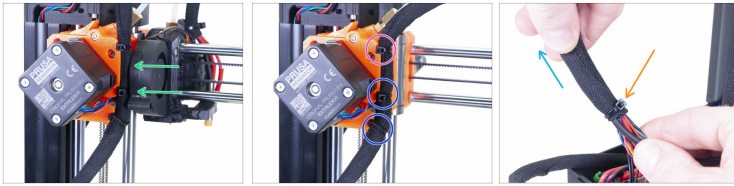
STEP 27 Guiding the cable bundle (old design)



⚠ WARNING: Follow these instructions carefully! If you mount the cable bundle at an incorrect position, you will have issues while printing!

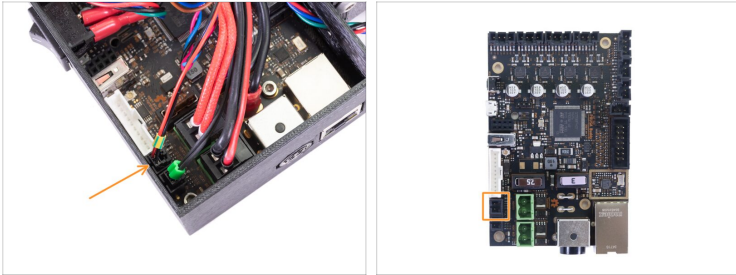
- ◆ Start by rotating the lead screw until the X-axis is all the way up.
- ◆ Move the print head all the way to the right and ensure it is touching the printed part.
- ◆ Bend the cable bundle slightly and use the upmost zip tie slot to partly tighten the entire bundle.
- ◆ Add the EXTRUDER motor cable to the bundle and use the textile sleeve to cover the cables all the way down to the electronics.
- ◆ Check whether the textile sleeve can reach the inner space of the electronics cover. If not, you left too much slack above the X-axis, readjust it.
- ◆ Go back to the X-axis and check once again, that the print head can move all the way to the right without being pulled back by the cable bundle.

STEP 28 Guiding the cable bundle (old design)



- ◆ Tighten the zip tie, you've installed in the previous step, but use a reasonable force or you might break the cables. Rotate the zip tie's head to the left.
- ◆ Add a second and third zip tie. Again, tighten carefully and rotate the heads to the left.
- ◆ Move the print head all the way to the left to ensure there is no collision between the zip ties and the fan's casing.
- ◆ Secure the textile sleeve with a fourth zip-tie 1-2 mm before the end of the wiring harness. Tighten so that the textile sleeve doesn't move freely. Do not tighten too much, cables may get pinched.
- ◆ Try to pull the sleeve by hand and make sure it does not move.

STEP 29 Connecting the thermistor (old design)



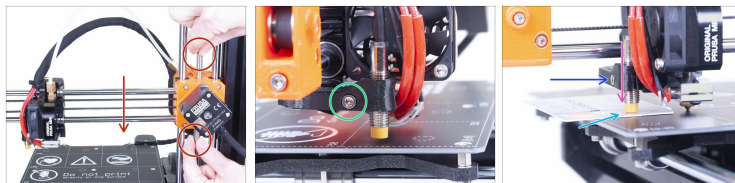
- Connect the hotend thermistor cable to the connector on the Buddy board.

STEP 30 Covering the electronics (old design)



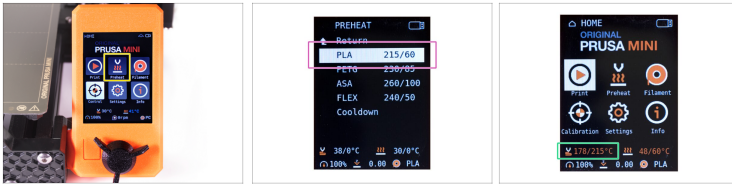
- ◆ Before covering the electronics, make sure the square nut is correctly positioned in the printed part. **The nut must not fall out!** This can cause fatal damage to the electronics.
- ◆ Insert the cover back in, make sure it is properly seated in the holes.
- ◆ **Place the second cover on the top and arrange the cables:**
 - ◆ **Extruder bundle**, ensure the textile sleeve is partially in. Also, it must be tilted away from the printer.
 - ◆ **Heatbed bundle**, ensure the textile sleeve is partially inside the box.
 - ◆ **Filament sensor cable** (optional), ensure that the textile sleeve wrapped around the cables is partially inside the box.
- ◆ Now, tighten the second cover. Check that no cable is pinched.

STEP 31 M.I.N.D.A. sensor height adjustment (old design)



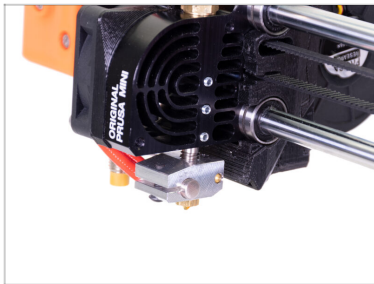
- ◆ Using your fingers turn the lead screw and move the entire X-axis down. **Stop when the hotend touches the heatbed! Avoid bending the heatbed!**
- ◆ Release slightly the screw on the minda-holder so you are able to adjust the position of the M.I.N.D.A. sensor.
- ◆ Place a credit card under the M.I.N.D.A. sensor or use a tip of the bundled zip tie.
- ◆ Gently press the M.I.N.D.A. sensor down against the credit card.
- ◆ Tighten the screw on the minda-holder. **Do not use 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.

STEP 32 Final check



- Connect the printer and turned it ON.
- Use the knob and navigate to the **Preheat** in the Menu.
- Select **PLA**.
- Navigate back to the **Info** screen and check if the temperature rises.

STEP 33 It's done!



- **Good job. Enjoy your printer ;)**
- **i** The printers with "old design", please follow the instructions for the First Layer Calibration (MINI/MINI+).
