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How to replace the Hotend assembly (XL multi-tool)

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STEP 1 Introduction

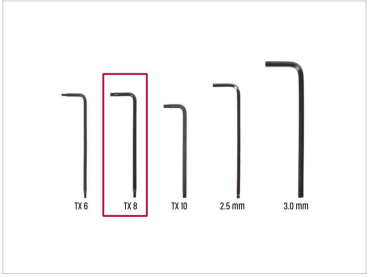
- This guide will take you through the replacement of the **hotend assembly** on the **Original Prusa XL multi-tool**.
  - To replace the Hotend assembly on the Original Prusa XL (single-tool) go to How to replace the Prusa Nozzle (XL single-tool)

ⓘ The following instructions are compatible with all Prusa Nozzle diameters.

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

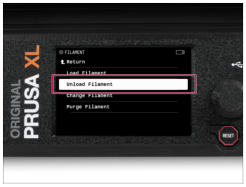
ⓘ Note that you have to be logged in to have access to the spare parts section.

STEP 2 Necessary tools



- **For this guide, please prepare:**
- TX 8 Torx key
- A cardboard box for use as a heatbed protection during the assembly. *Hint: use the Prusament box*.
- Small brass brush for *cleaning the nozzle*

STEP 3 Preparing the printer

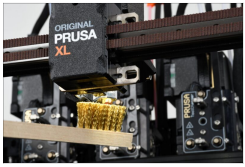


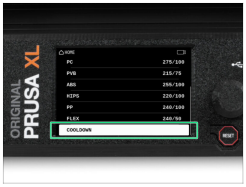
- On the printer screen, navigate to *Control ->Pick/Park Tool ->Pick tool*, and select the tool that has the nozzle to be changed.
- Move the extruder approximately to the center of the X-axis.
- If you have loaded the filament, unload it from the hotend. On the screen, navigate to *Filament -> Unload Filament*.

⚠ **WARNING: The hotend and heatbed are very HOT. Do not touch these parts!!!**

- Remove the filament from the hotend. It is not necessary to completely remove it from the printer. Just a few centimeters (inches) above the extruder.

STEP 4 Cleaning the hotend





⚠ **WARNING: The hotend and heatbed are very HOT. Do not touch these parts!!!**

ⓘ If you have a Prusa hotend sock on the hotend, remove it.

- On the printer screen, go to Control -> Temperature and set the nozzle temperature to 250°C on the selected tool head.
- Wait at least 5 minutes. The remains of the filament must be warmed up slightly so that they can be removed more easily.
- Using the brass brush, carefully clean the heaterblock and the hotend from the filament residue. Avoid contact of the brush with the hotend cables, as this could cause a short circuit.
- When the heaterblock and the hotend are perfectly clean, cool down the printer. On the screen, navigate to *Preheat -> Cooldown*.

⚠ **Wait until the hot parts are cooled down** to ambient temperature. It takes approximately 10 minutes.

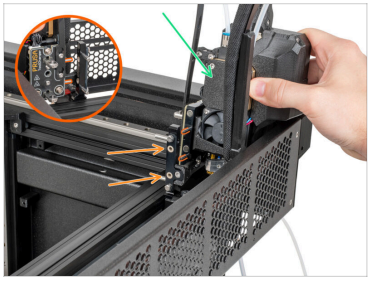
STEP 5 Parking the tool

- On the printer screen, navigate to *Control ->Pick/Park Tool ->Park Current Tool*.
- Turn the power switch OFF (symbol "O").
- From the rear side of the printer, unplug the PSU cable.

STEP 6 Protecting the heatbed

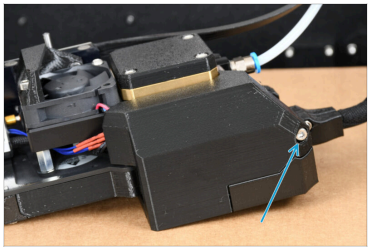
- Before you proceed, it is recommended to protect the heatbed.
- **Make sure the heatbed is cooled down** to ambient temperature. Place the empty cardboard box approximately to the front center part of the heatbed.

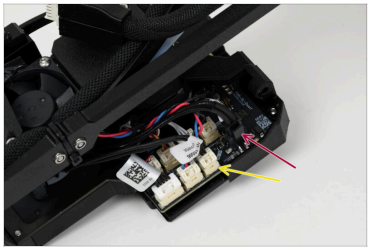
STEP 7 Removing the Nextruder



- Remove the Nextruder, by pulling it outwards from the metal inserts.
  - ⓘ Although a small resistance is expected, as the metal inserts are magnetic, **use moderate force**.
- Carefully place the Nextruder on the cardboard box.

STEP 8 Disconnecting the hotend



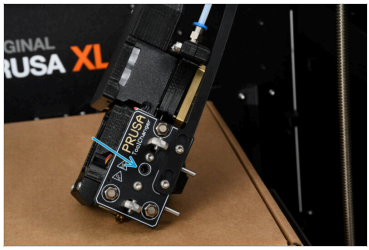


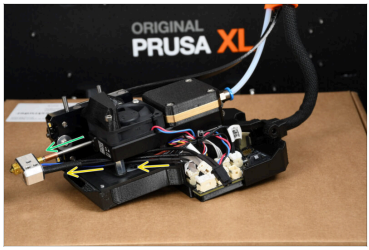
- Loosen the M3x12 screw to open the dwarf-cover-door.

⚠ Each connector has a safety latch. **It is necessary to press the latch before disconnecting**. Otherwise, the connector may get damaged.

- Disconnect the hotend thermistor cable.
- Disconnect the hotend heater cable.
- Leave both cables free for now.

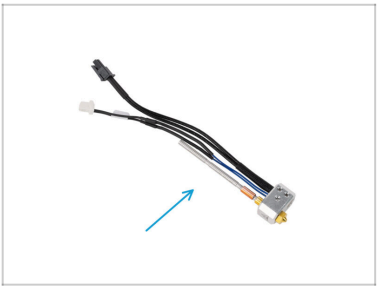
STEP 9 Removing the hotend





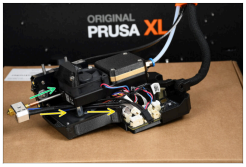
- Insert the Torx TX 8 key all the way through the Tool Plate until it reaches the grub screw in the extruder. Loosen the screw. **Do not remove the screw**, a few turns are enough!
- Carefully pull the hotend assembly out of the extruder.
- At the same time push the hotend cables behind the fan out of the extruder.

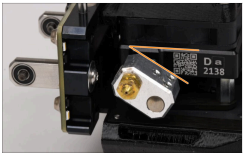
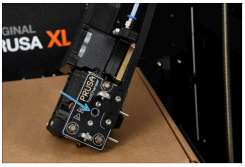
STEP 10 Installing the XL Hotend: parts preparation



- **For the following steps, please prepare:**
- New XL Hotend assembly (1x)

STEP 11 Inserting the hotend

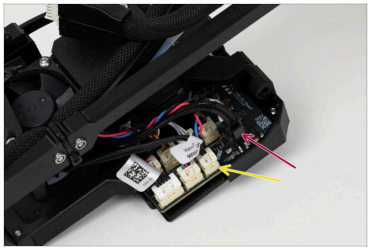


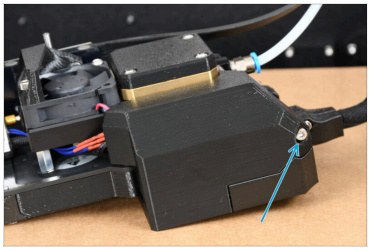



- Push the hotend cable behind the heatsink fan up to the electronics.
- Locate the hole in the heatsink from the bottom of the extruder and insert the hotend nub into the heatsink.
- Push the hotend assembly all the way in.
- Rotate the heaterblock as in the picture. There must be approximately 35° - 40° angle to avoid damaging the hotend cables. (picture of angle)
- Maintain the position and using the TX 8 Torx key tighten the grub screw to secure the hotend. Do not use extra force while tightening, it may damage the hotend tube.

⚠ Do not use extra force while tightening, it may damage the hotend tube.

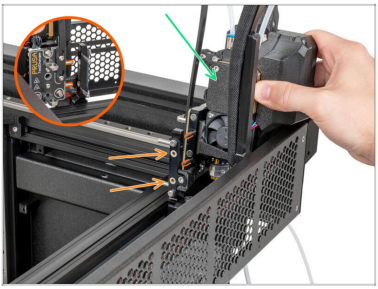
STEP 12 Connecting the hotend





- Connect the hotend heater to the upper slot on the electronics board.
- Connect the hotend thermistor to the lower slot on the electronics board.
- Tighten the M3x12 screw and close the dwarf-cover-door.
- Remove the cardboard box from the heatbed.

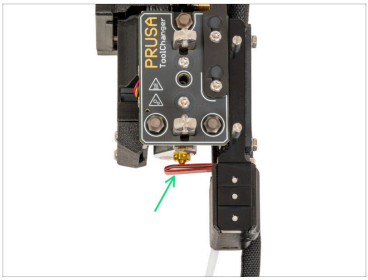
STEP 13 Docking the Nextruder

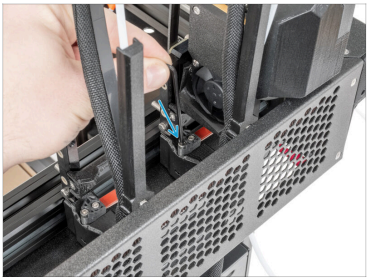


- Take the Nextruder and place it carefully next to the dock.
- Place the two metal inserts through the white holes in the dock. The magnets will help you dock the Nextruder.

ⓘ Check that the Nozzle seal lightly touches the nozzle.

STEP 14 Nozzle seal height calibration





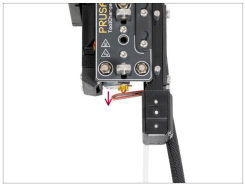
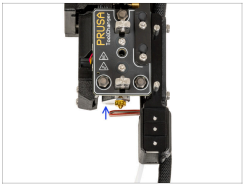
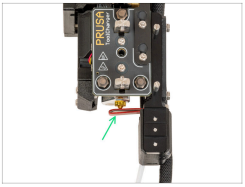
ⓘ Starting from May 2024, you may receive a gray nozzle seal. The assembly and functionality remain identical to the red one.

- The following image was made with the Nextruder and dock removed from the printer for better visibility of how it should be set. **Please do not remove the docks from the printer and set the seal height with the dock still connected to the printer.**
- In the next step, we'll calibrate the height of the nozzle seal.
- Using the 2.5 mm Allen key, tighten or untighten the M3x30 screw to calibrate the height of the nozzle seal.

ⓘ If you have an older version of the XL-dock-cable-router, follow the instructions for the new XL-dock-cable-router.

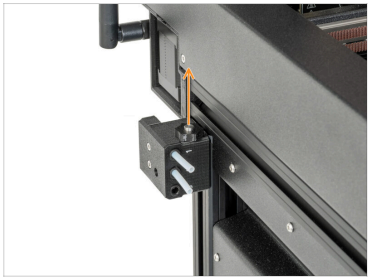
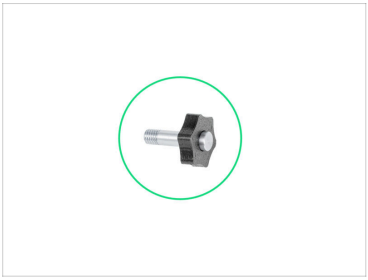
- Proceed to the next step.

STEP 15 Nozzle seal height calibration

- If is the Nozzle seal too low or too high, we need to reposition its height.
- Using a 2.5 mm Allen key:
  - Turn the M3x30 screw clockwise to set the Nozzle seal lower.
  - Turn the M3x30 screw counterclockwise to set the Nozzle seal higher.
- The correct position of the nozzle seal is when it isn't bent and is touching the nozzle.

STEP 16 Calibration pin: parts preparation

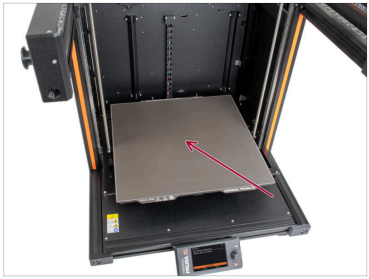



- Pull out the calibration pin.
- Calibration pin (1x)

STEP 17 Wizard: Tool Offset Calibration

- After Hotend replacement, the **Tool Offset Calibration** must be performed.
- Go to *Control > Calibrations & Tests > Tool Offset Calibration.*
- During offset calibration, you will need to screw the calibration pin into the center of the heatbed.
- Click on *Continue* to start the Tool Offsets Calibration.

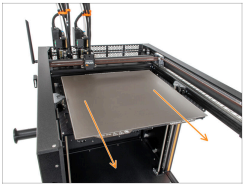
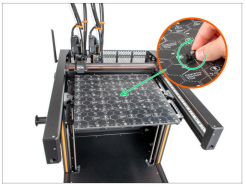
STEP 18 Wizard: Sheet install



- Follow the wizard instructions on the screen.
- Put the print sheet on a heatbed.

ⓘ Now, the printer starts short calibration.

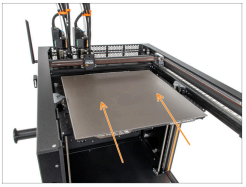
STEP 19 Wizard: Calibration pin installation

- Follow the wizard instructions on the screen.
- Take off the print sheet from the heatbed.
- Install the calibration pin into the middle of the heatbed. Turn the pin clockwise.

ⓘ Now, the printer will calibrate all five tool heads.

STEP 20 Wizard: Offset calibration done

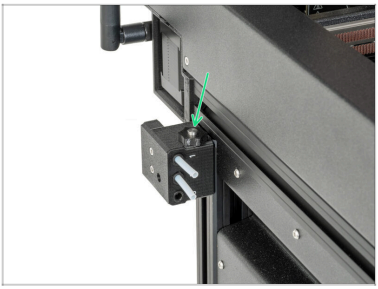



- Follow the wizard instructions on the screen.
- Untighten the calibration pin from the heatbed and take it off. Rotate counterclockwise.
- Place the print sheet onto the heatbed.

ⓘ The printer will finish the calibration.

- Good job! The Tool Offset calibration is done.

STEP 21 Calibration pin



- Insert the calibration pin into the side filament sensor.

STEP 22 Final check

- On the printer screen, navigate to *Control -> Pick/Park Tool -> Pick tool*, and pick the tool with the replaced hotend.
- Go to *Preheat* and select any of the material temperatures (e.g. ABS with 255°C on hotend).
- Go back to the main screen and watch on the bottom bar to see if the temperature rises.
- Before you proceed to the next step, cool down the printer. On the screen, navigate to *Preheat -> Cooldown*.

⚠ **Wait until the hot parts are cooled down** to ambient temperature. It takes approximately 10 minutes.

STEP 23 It's done

- **That's it, good job!** You just successfully installed the hotend on your multi-tool Original Prusa XL.

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