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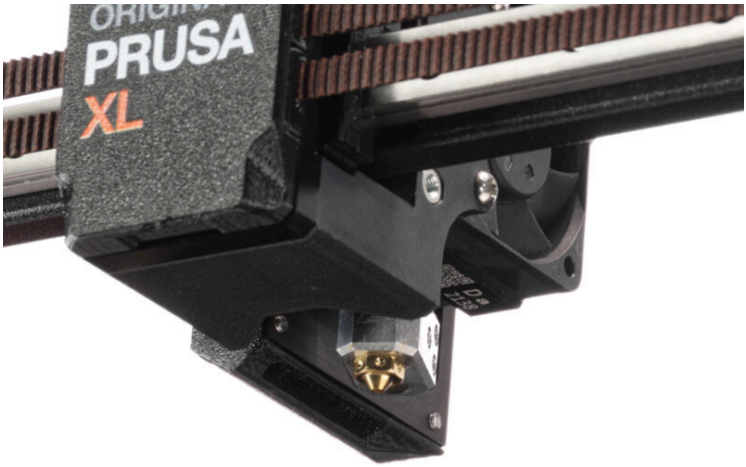
How to replace the Prusa Nozzle (XL single-tool)



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STEP 1 Introduction

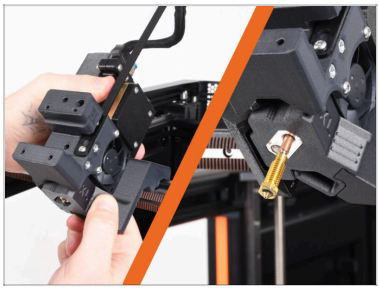
- This guide will take you through the replacement of the **Prusa Nozzle** on the **Original Prusa XL**.
  - To replace the **Prusa Nozzle** on the **Original Prusa XL (multi-tool)** go to How to replace the Prusa Nozzle (XL multi-tool).
  - To replace the **Prusa Nozzle** on the **Original Prusa MK4** go to How to replace the Prusa Nozzle (MK4).

ⓘ 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 Nozzle Replacement Tool



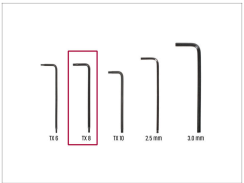
Recommendation: There is an alternative nozzle replacement method that **requires using a printed replacement tool**. This approach is quicker and simpler, allowing you to replace the nozzle directly on the printer.

This method requires printing the Nozzle Replacement Tool. If you do not have the possibility to print the tool, follow the instructions in the next steps.

- The Nozzle Replacement Tool part is available for download on Printables.com.
  - After printing the part, **follow the quick guide on the same Printables page.**

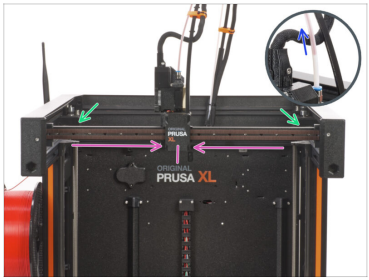
Note, the page includes instructions for Multi-tool and Single-head XL versions.

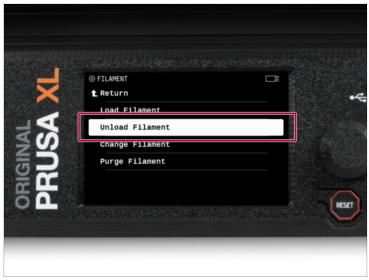
STEP 3 Tools necessary for this chapter



- **For this chapter, please prepare:**
- TX 8 Torx key
- Wrench 13-16
- Universal wrench
- 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 4 Preparing the printer



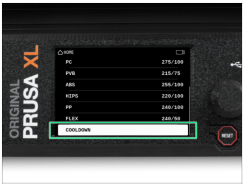


- Manually move the X-axis assembly all the way to the front side of the printer.
- Move the extruder approximately to the center of the X-axis.
- If you have loaded the filament, unload it from the hotend. On the screen, navigate to *Filament -> Unload Filamen*t.

⚠ **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 5 Cleaning the hotend



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

ⓘ For the following steps, it is necessary to have the heaterblock and the hotend clean from the remains of the filament. Otherwise, it can be difficult to release the nozzle.

ⓘ 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.

⬢ 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.**

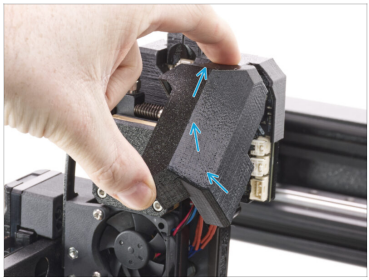
⬢ When the heaterblock and the hotend are perfectly clean, cool down the printer. On the screen, navigate to *Preheat -> Cooldown*.

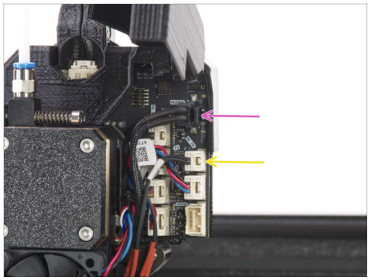
⚠ **Wait until the hot parts are cooled down** to ambient temperature. It takes approximately 10 minutes.

STEP 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 Disconnecting the hotend



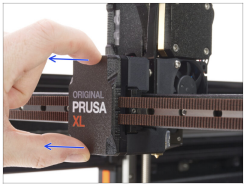


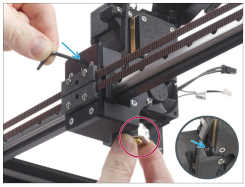
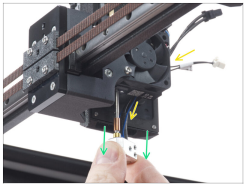
- Open the dwarf-cover-door to access the electronics board.
- Disconnect the hotend thermistor cable.

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

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

STEP 8 Removing the hotend

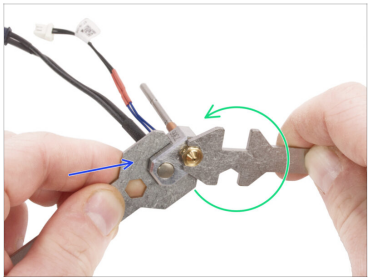


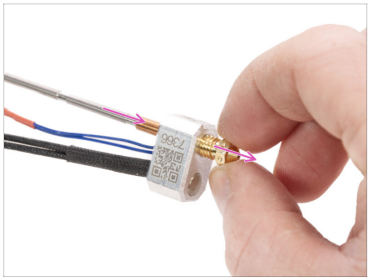



ⓘ You may have a newer version of a plastic cover with a hole. In this case, it doesn't require to remove the cover.

- Remove the x-carriage-cover from the X-carriage.
- Hold the hotend with your right hand.
- Using your left hand, insert the Torx TX 8 key all the way through the X-carriage 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 9 Removing the Prusa Nozzle



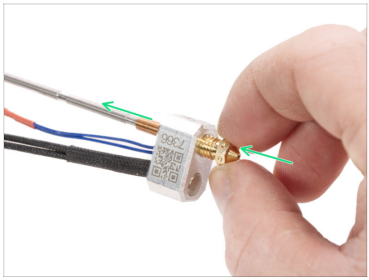


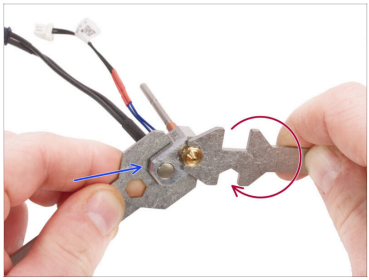
- Using the wrench 13-16 grasp the heaterblock.
- Using the 7mm cutout in the universal wrench, grasp the nozzle and loosen it.
- Manually release and remove the Prusa Nozzle from the hotend assembly.

STEP 10 Installing the Prusa Nozzle: parts preparation

- **For the following steps, please prepare:**
- New Prusa Nozzle (1x)

STEP 11 Installing the Prusa Nozzle

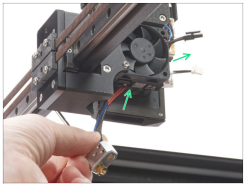
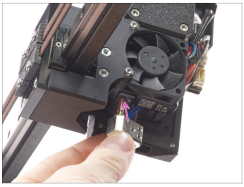
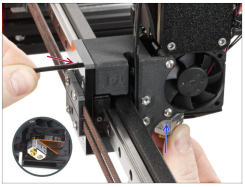




- Screw the nozzle all the way into the heaterblock until the nozzle touches the heaterblock surface.
- Grasp the heaterblock with the wrench 13-16.
- Using the 7mm cutout in the universal wrench, tighten the nozzle against the heaterblock. **Do not use any extra force!**

  ⓘ The specified torque value is 1.5 Nm (13.3 lb-in).

STEP 12 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 into the heatsink.

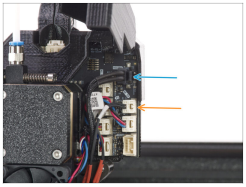
⚠ **Verify that the nozzle is fully inserted into the heatsink!** If not fully inserted, the nozzle can cause poor heat transfer, potentially leading to clogs.

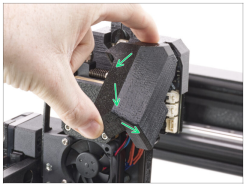
ⓘ To adjust the nozzle, loosen the thumbscrews, reposition it until the copper ring on the nozzle is not visible, and then retighten the screws.

- Rotate the heaterblock as in the picture. There must be approximately 35° - 40° angle to avoid damaging the hotend cables.
- 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.**

STEP 13 Connecting the hotend



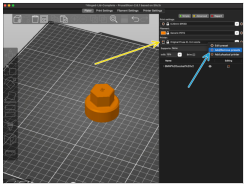
- Connect the hotend heater to the upper slot on the electronics board.
- Connect the hotend thermistor to the lower slot on the electronics board.
- Remove the cardboard box from the heatbed.
- Close the dwarf-cover-door.

STEP 14 Final check

- To check if everything is connected correctly 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*.

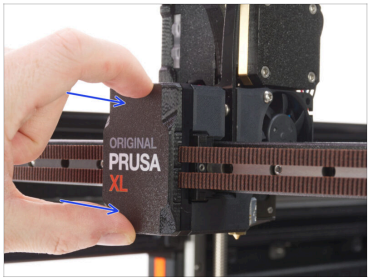
⚠ **Wait until the hot parts are cooled down** to ambient temperature. It takes approximately 10 minutes.

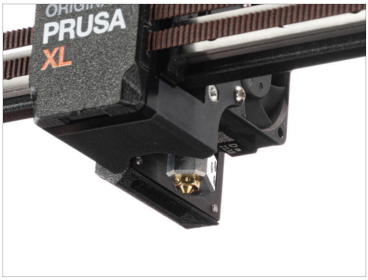
STEP 15 Setting the nozzle diameter




- If you have replaced your nozzle twith the one having a different diameter, you have to change the **nozzle diameter** setting in the printer's menu too.
- Go to **Settings > Hardware > Nozzle Diameter** and set it to the corresponding size.
- When slicing in PrusaSlicer, make sure to have the correct nozzle diameter selected in the **Printer:** menu.
  - To add other nozzle diameter versions of the printer profile in PrusaSlicer, hit the small cog icon and select **Add/Remove Presets**. Then, select the nozzle diameters you are going to use.

STEP 16 It's done





- Snap the x-carriage-cover back onto the X-carriage. You must feel a slight "click" to ensure the cover fits on the part.
- **That's it, good job!** You just successfully installed the Prusa Nozzle on your Original Prusa XL.

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