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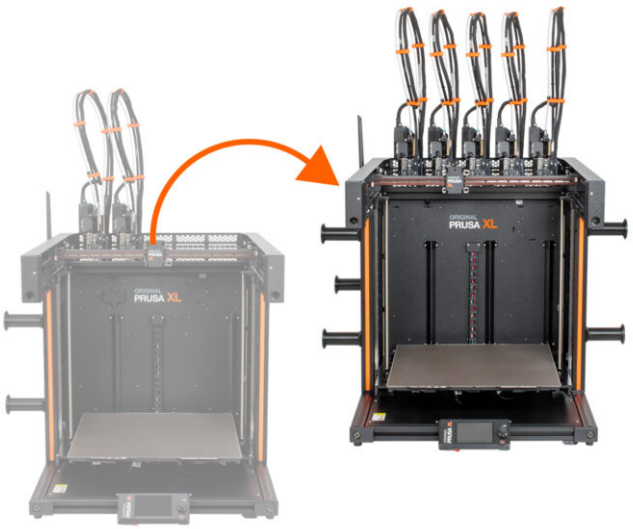
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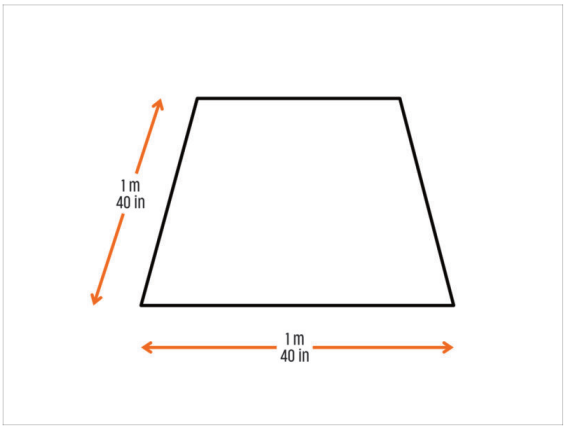
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1. Introduction



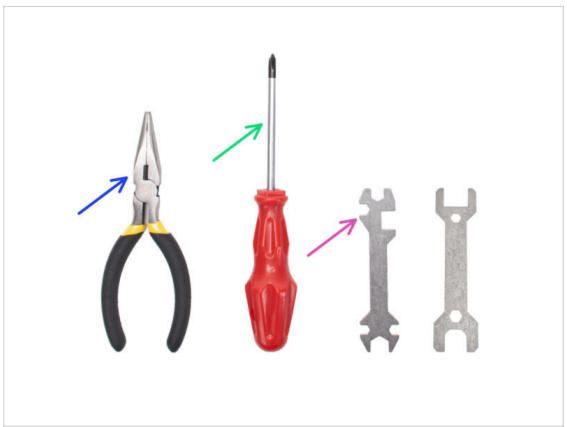
STEP 1 Preparing the upgrade kit





- Welcome to the tutorial on how to upgrade your Original Prusa XL+ Dual-Head to **Original Prusa XL+ Five-Head**.
- Please prepare the upgrade kit received from Prusa Research.
- For the assembly, prepare a clean workbench with a space of at least 1 m x 1 m (40 in x 40 in).

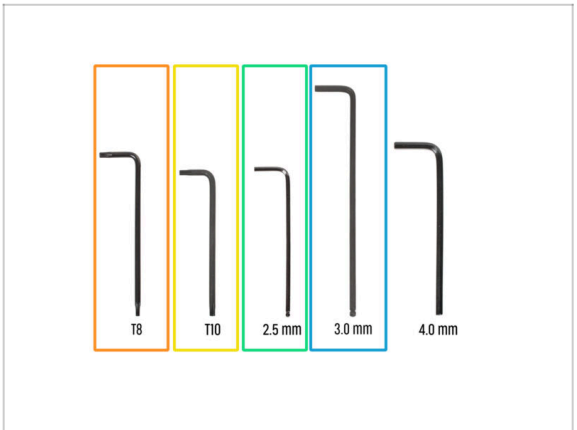
STEP 2 Getting the necessary tools





- **The package includes:**
- Needle-nose pliers (1x)
- Philips (PH2) screwdriver (1x)
- Universal wrench (1x)
- Nextruder box as a heatbed cover.
- Continue to the next step.

STEP 3 Getting the necessary tools



- **The package includes:**
- T8 Torx key
- T10 Torx key (T10 Torx screwdriver)
- 2.5 mm Allen key
- 3.0 mm Allen key

STEP 4 Labels guide



- All the boxes and bags including parts for the build are labeled.
- The amount of parts is written on the label. This number is included in the total number of each type of part.

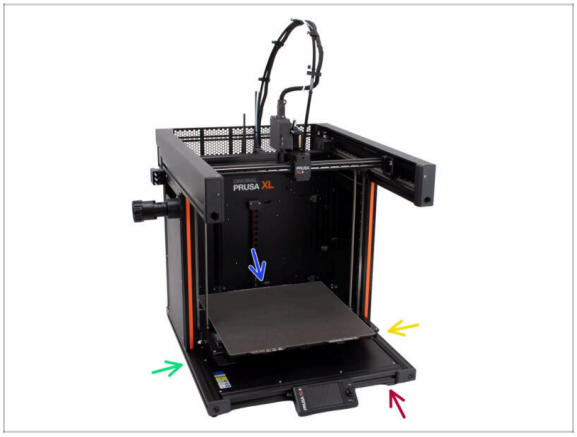
STEP 5 Cheatsheet





- For accurate assembly, it is recommended to use a Cheatsheet that contains 1:1 scale drawings for accurate comparison of fasteners and some other parts.
- You can download it from our site prusa.io/cheatsheet-xl. Print it at 100 %, don't rescale it, otherwise, it won't work.
- The frame covers are 1:1 scale, so you can compare the size by placing the frame cover on the paper to make sure you are using the correct type.

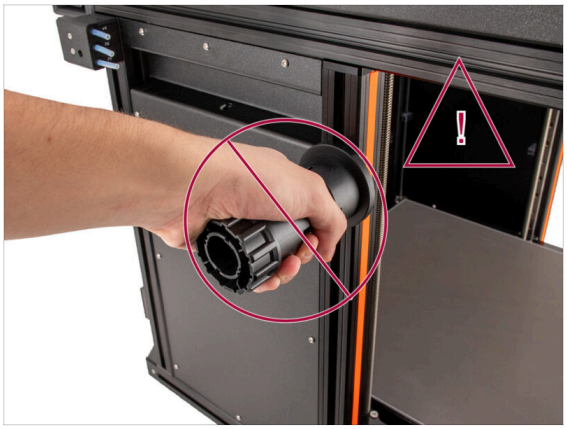
STEP 6 Front, left, right and rear side



IMPORTANT: The XL printer is large and it is almost impossible to have the entire body in every single picture. Throughout the manual, there will used terms to **describe the side you will be working on**:

- **Front side** - a place where is **xLCD screen**.
- **Left side** - can be recognized thanks to the **safety sticker** near its edge.
- **Right side** - opposite to the left side, there is **no safety sticker** on this side.
- **Rear side** - the remaining side, where is **PSU.**

STEP 7 Manipulating with the printer

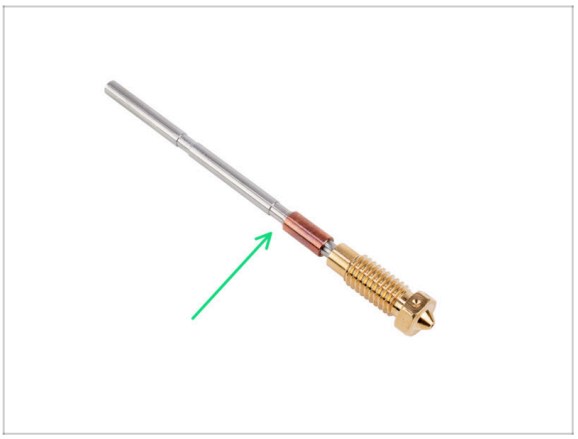




⚠ **Never manipulate the printer by using the upper metal flanges. You can damage the LED lights hidden inside.**

- During the assembly manipulate the base using the extrusions.

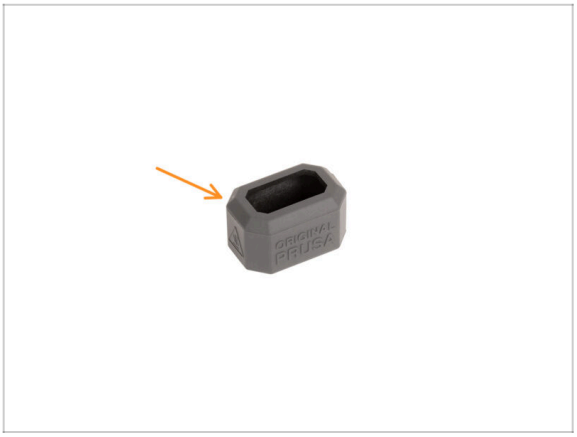
STEP 8 Spare nozzles



ⓘ The Nextruder upgrades come with pre-installed 0.4mm nozzles.

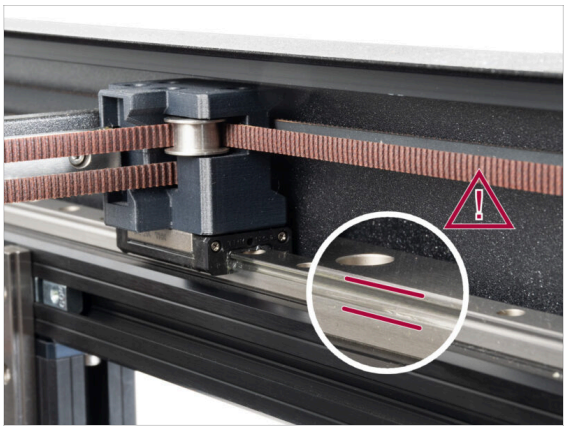
- You'll find spare nozzles in the upgrades. You can replace the nozzle on your existing Nextruder with a new 0.4 mm diameter nozzle
- For replacing the Prusa nozzle, go to **How to replace the Prusa Nozzle (XL multi-tool)**

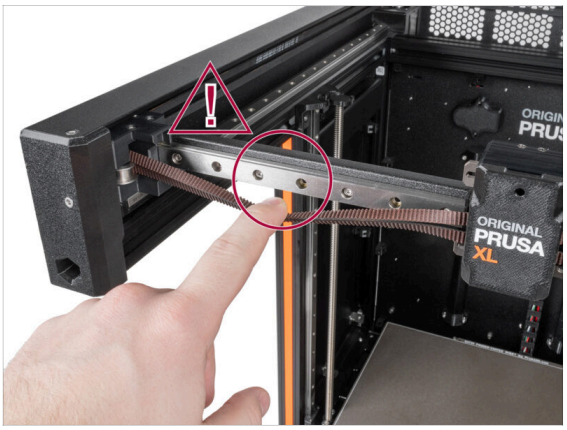
STEP 9 Silicone sock



- A silicone sock is supplied with each Nextruder package.
- The main function of a silicone sock is to keep the temperature in the heater block stable, which improves the printer's performance.
  - ⓘ Also, it keeps your hotend clean from filament dirt and protects it in case the print detaches from the print surface.
- You will be asked to install the sock later in this guide.
  - ⓘ How to install the sock - check the article.

STEP 10 CAUTION: Lubricant Handling

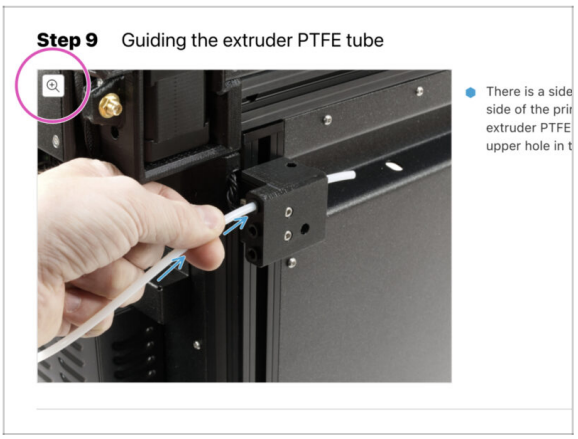




⚠ **CAUTION: Avoid direct skin contact with the lubricant used for the linear rails** in this printer. If a contact occurs, **wash your hands immediately. Especially before eating, drinking, or touching your face.**

- Lubricant accumulates in the printer's bearings, mainly in the linear rail channels.

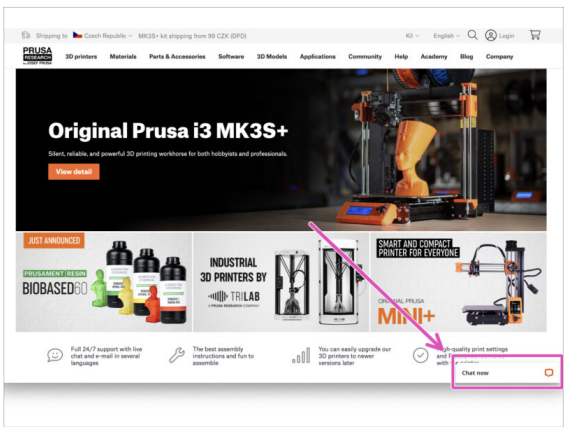
STEP 11 View high resolution images

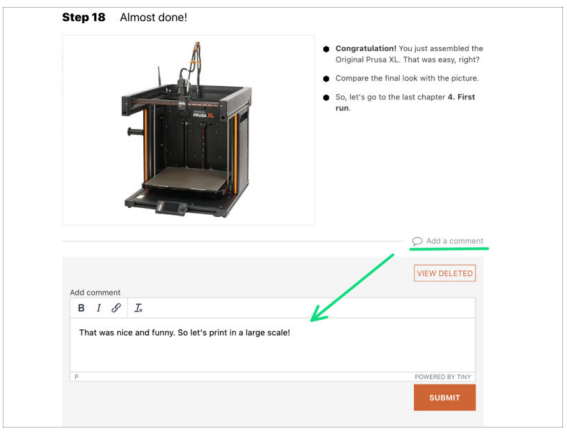


When you browse the guide on help.prusa3d.com, you can view the original images in high resolution for clarity.

- Just hover your cursor over the image and click the Magnifier button ("View original") in the top left corner.

STEP 12 We are here for you!





- Lost in the instructions? Missing screw or cracked printed part? **Let us know!**
- You can contact us using following channels:
  - Using comments under each step.
  - Using our 24/7 live chat at shop.prusa3d.com
  - Writing an email to info@prusa3d.com

STEP 13 How to successfully finish the assembly



⚠ To successfully finish the upgrade please follow all these:

- **Always read all the instructions at the current step first**, it will help you to understand what you need to do. Don't cut or trim unless you are told to!!!
- **Don't follow pictures only!** It is not enough, the written instructions are as brief as they could be. **Read them!**
- Read the comments from the other users, they are a great source of ideas. We read them too and based on your feedback improve the manual and the entire assembly.
- **Use a reasonable force**, the printed parts are tough, but not unbreakable. If it doesn't fit, check your approach twice.
- **Most important: Enjoy the build, have fun**. Cooperate with your kids, friends or partners.

STEP 14 Reward yourself



- Look in the box and find bag of Haribo Bears.
- After years of thorough scientific research, we came to a solution => At the end of each chapter, you will be told a specific amount of bears to consume.
- Eating incorrect amount than prescribed in the manual might lead to sudden boost of energy. Please consult a professional in the closest candy store.

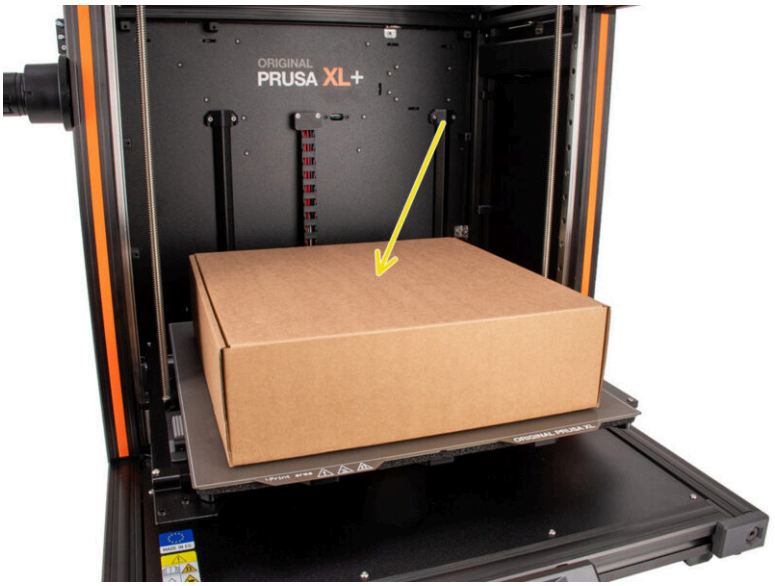
⚠ **Hide the Haribo for now!** From our experience an unattended bag with sweets will suddenly disappear. Confirmed by multiple cases all around the World.

STEP 15 Prepare your desk

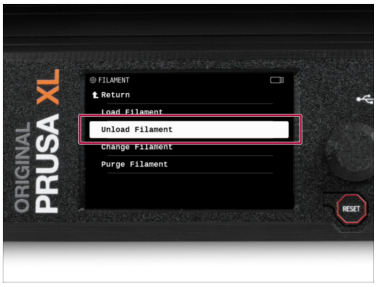


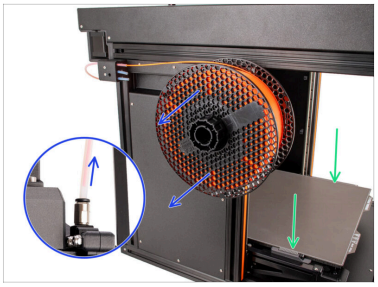
- Tidy up your desk! Tidying up decreases the probability of losing small parts.
- **Clear your workspace.** Make sure you have enough room. A nice clear flat workbench will get you the results you are aiming for.
- **Let there be light!** Make sure you are in a well-lit environment. Another lamp or even an extra flashlight will probably come in handy.
- Prepare something to contain the plastic bags and the removed packing materials so you can recycle them afterwards. Make sure there are no important parts being discarded.
- OK, we are ready. Let's start! Let's go the next chapter: **2. Printer preparing**

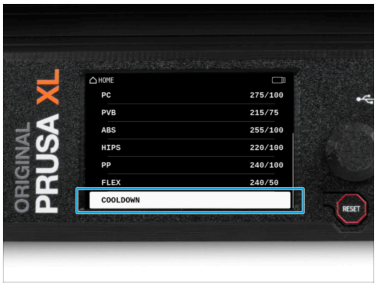
2. Printer preparation



STEP 1 Preparing the printer







- If you have loaded the filament, unload it from the hotend. On the screen, navigate to *Filament -> Unload Filament*.
- Remove the filament from the hotend. It is is necessary to completely remove it from the printer.

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

- Move the Z-axis down. On the screen, navigate to *Control -> Move axis -> Move Z.*
- 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 2 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 3 Printer unpluging



- From the rear side of the printer, turn the power switch OFF (symbol "O").
- Unplug the PSU cable.

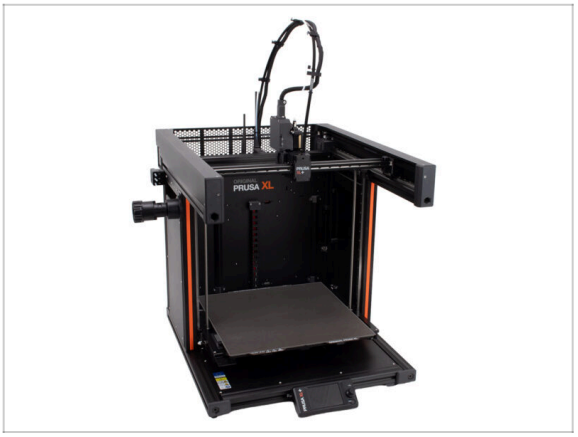
STEP 4 Can I open the Haribo?



⚠ **Keep the Haribo bag closed for now!**

- This dose of energy is primarily for printer assembly. **Wait until you are prompted to open it.**

STEP 5 Let's get started

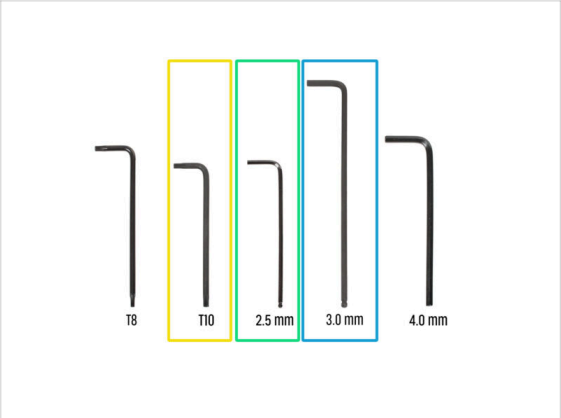


- Everything checked? So, let's start with disassembling the printer. Let's go to the next chapter: **3. Nextruder detaching**

3. PSU and electronics assembly



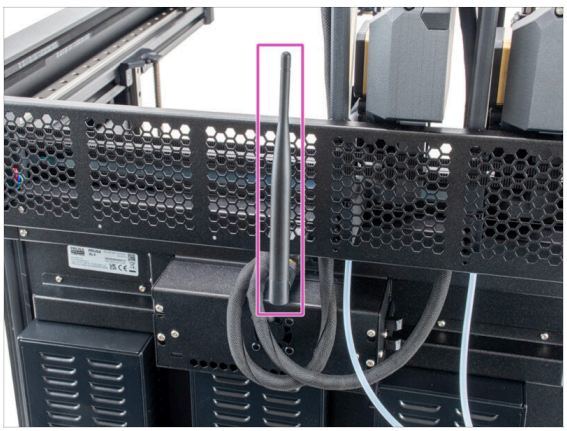
STEP 1 Tools necessary for this chapter

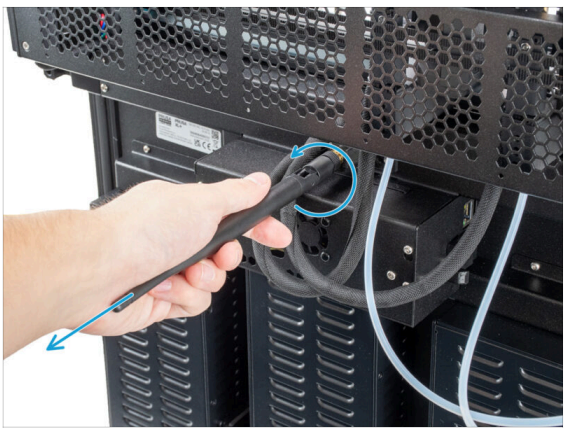




- **For the next steps, please prepare:**
- T10 Torx key / screwdriwer
- 2.5 mm Allen key
- 3.0 mm Allen key
- Needle-nose pliers (1x)
- Philips (PH2) screwdriver (1x)

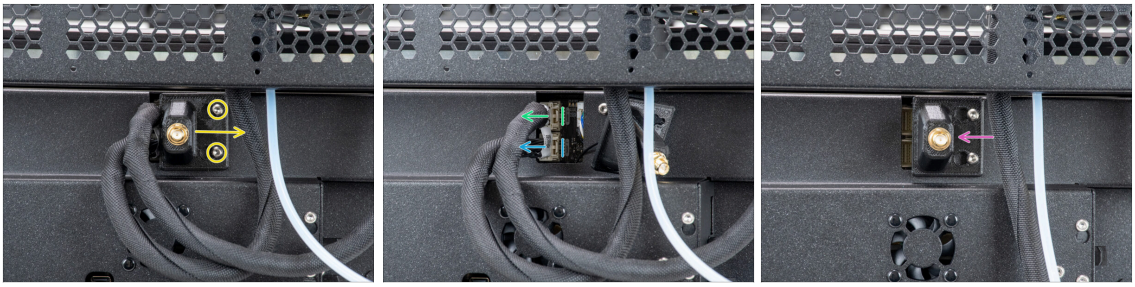
STEP 2 Detaching the Wi-Fi antenna





- Turn the printer, so the back side of the printer is facing you.
- Locate the Wi-Fi antenna connector in the middle of the printer.
- Loosen the Wi-Fi antenna from the antenna connector and set it aside.

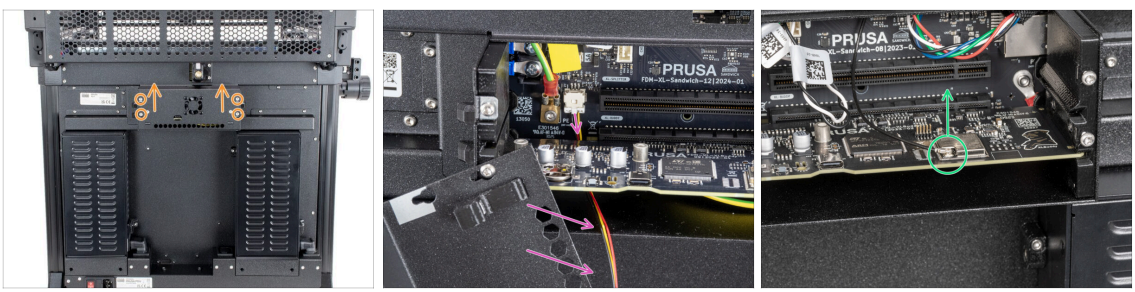
STEP 3 Disconnecting the Nextruder cable



There is an antenna cable behind the antenna-holder, do not pull the connector!

- Loosen the two screws on the cover slightly. There's no need to completely remove them. Slide the cover to the right and take it off from the printer.
- Push the secure pin and disconnect the first Nextruder cable from the upper slot labeled DWARF 1.
- Push the secure pin and disconnect the second Nextruder cable from the lower slot labeled DWARF 2.
- Attach the cover to the screws and push it all the way to the left. You do not have to tighten the screws.

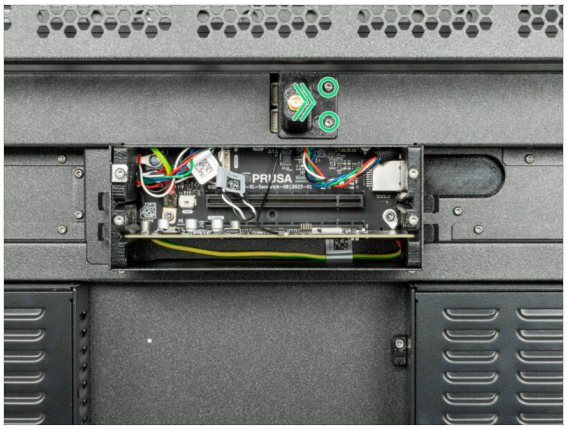
STEP 4 Disconnecting the back antenna

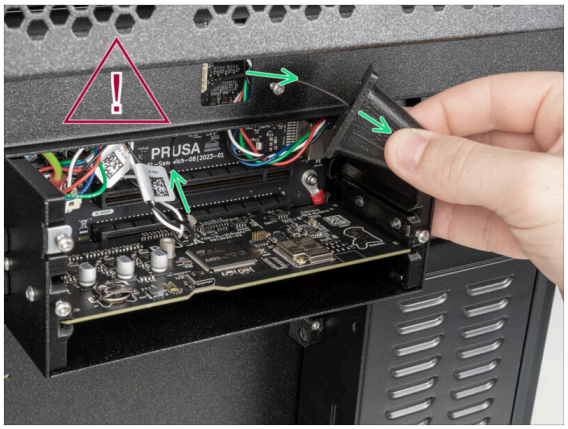


The docks and Nextruders were removed from the illustrations for better visibility. They will be shown again at the end of the guide when they are relevant.

- Turn the printer, so the back side is facing you.
- Using a T10 Torx key, **loosen** four screws securing the electronics cover. Support the cover with your hand so it doesn't hang on the fan cable.
- Unplug the fan cable for the Sandwich board and remove the electronics cover
- Locate and unplug the Wi-Fi connector.

STEP 5 Disassembling the back antenna

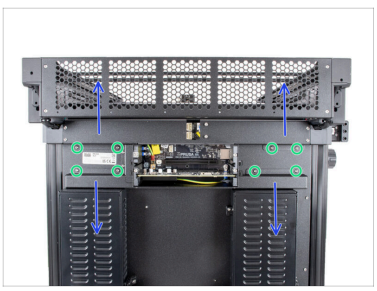




⚠ **Be careful, do not damage the Wi-Fi antenna cable.**

- Push the cover to the right and remove it from the printer.

STEP 6 Back covers disassembly



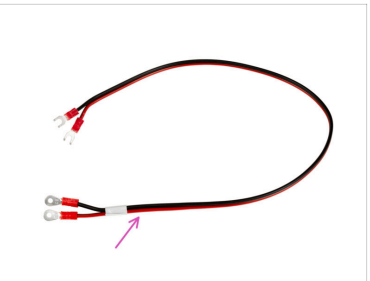




- Using a T10 Torx key, remove eight M3x4rT screws from the covers.
- Gently remove the rear-cable-management-upper and rear-cable-management-lower. Be aware of the cables.
- Using a T10 Torx key, remove two M3x4rT screws holding the rear-cable-management-base and remove it.
- Cut two zip ties. **Be aware of cables!**
- Good job. The back side of the printer is ready for the third PSU assembly.

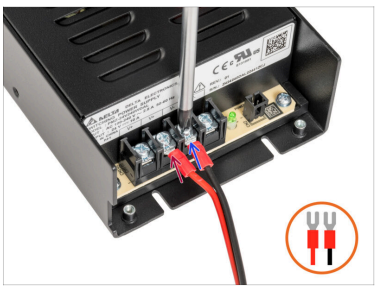
STEP 7 PSU assembly: parts preparation





- **For the following steps, please prepare:**
- PSU (1x)
- M3x6 screws (2x)
- M3x20rT screw (1x)
- M4x12 screw (1x)
- PSU-upper-cover-mount (1x)
- Down-angled-ac-adapter (1x)
- Power cable (1x)

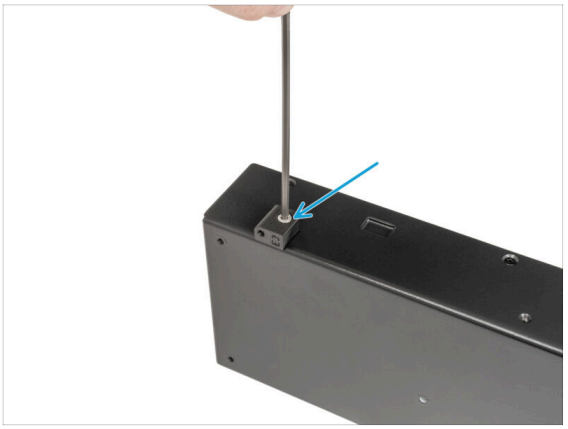
STEP 8 PSU assembly: PSU preparing


- Using a Phillips screwdriver, release two Terminal screws.
- Place the red cable on the left terminal and secure it with the terminal screw.
- Place the black cable on the right terminal and secure it with the terminal screw.
- From the side of the PSU, insert the Down-angled-ac-adapter as described in the picture.
- Turn the power switch ON (symbol "I").

STEP 9 PSU assembly: PSU preparing





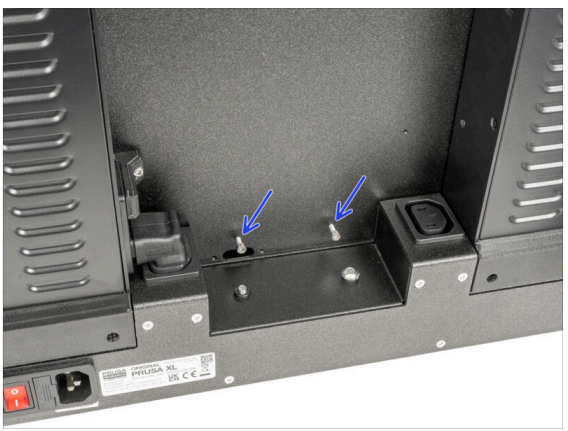
- Insert an M4x12 screw into the PSU-upper-cover-mount.

ⓘ On the opposite side than the Down-angled-ac-adapter assembly.

- Attach the PSU-upper-mount-cover to the PSU and secure the M4x12 screw using a 3mm Allen key.

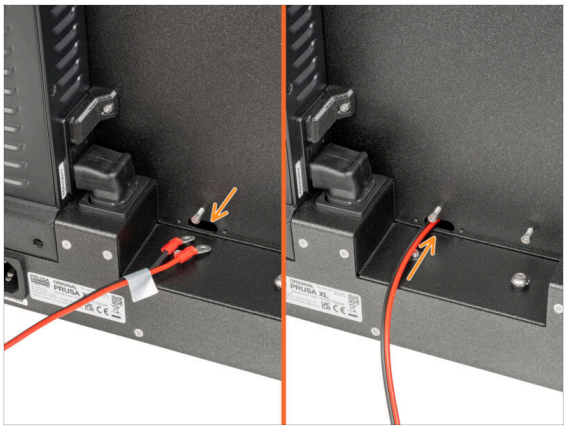
STEP 10 PSU assembly: printer preparing

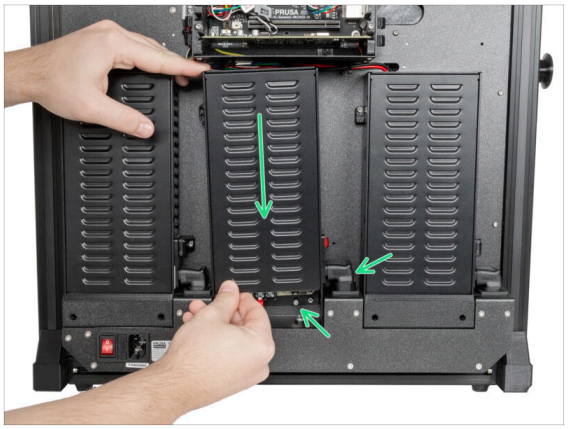




- Locate two holes on the back of the printer.
- Insert two M3x6 screws and secure them. **A few turns are enough for now.**

STEP 11 Attaching the PSU

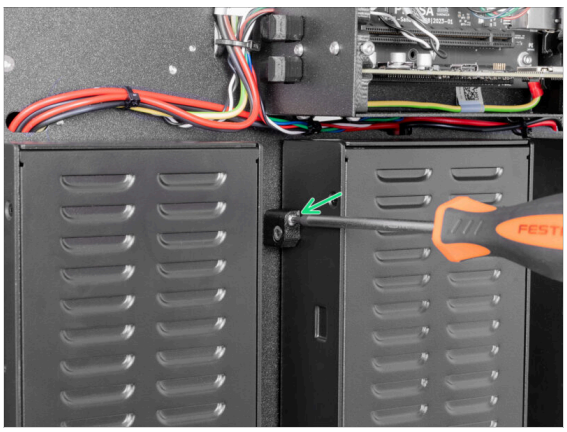


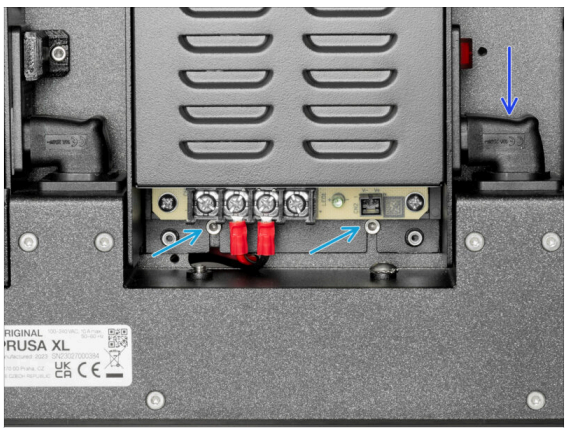


ⓘ Prepare the PSU behind the back side of the printer.

- Insert the power cable through the hole in the back of the printer.
- Gently attach the PSU using two M3x6 screws. Mind the Down-angled-ac-adapter.

STEP 12 Securing the PSU





- On the left side of the PSU, insert the M3x20rT screw into the PSU-upper-cover-mount and secure the cover with the back plate of the printer.
- On the bottom of the PSU, tighten two M3x6 screws using a 2.5mm Allen key.
- Pushing down the Down-angled-ac-adapter, secure its position.

STEP 13 PSU covers: parts preparations

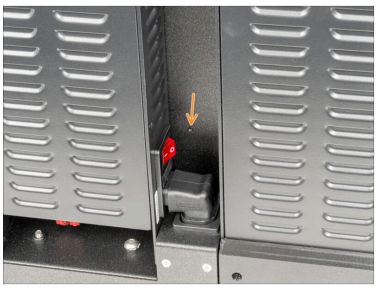




- **From the upgrade kit, please prepare:**
- Switch cover (1x)
- M3x8 screw (1x)
- PSU cover (1x)
- M3x10 screw (2x)

STEP 14 PSU covers: side cover





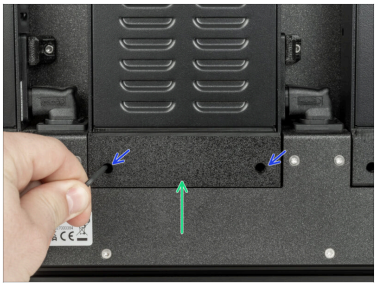


- Insert the M3x8 screw into the switch-cover.
- On the right side of the PSU, locate the hole in the back plate of the printer.
- Using a 2.5mm Allen key, secure the cover screw with the back of the printer.

STEP 15 PSU covers: lower cover

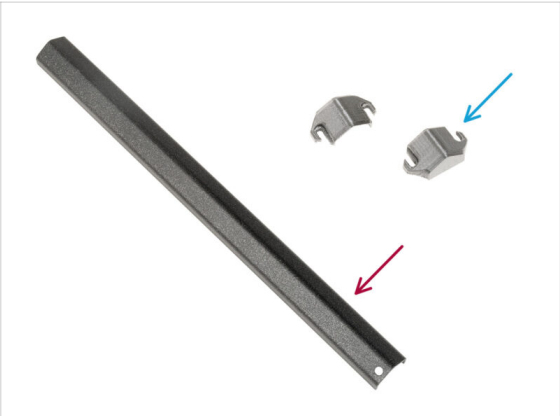


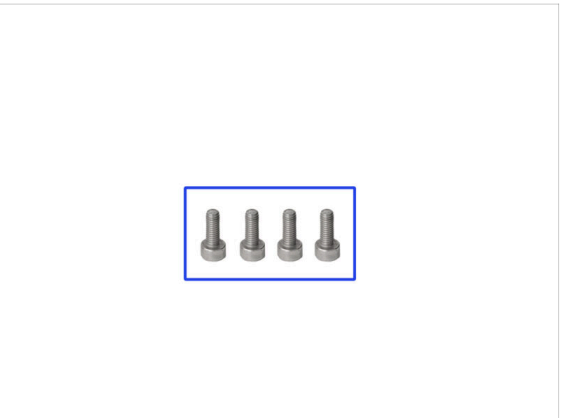




- Insert both M3x10 screws into the PSU cover.
- Insert the prepared PSU cover under the PSU.
- Tighten both M3x10 screws using a 2.5mm Allen key.

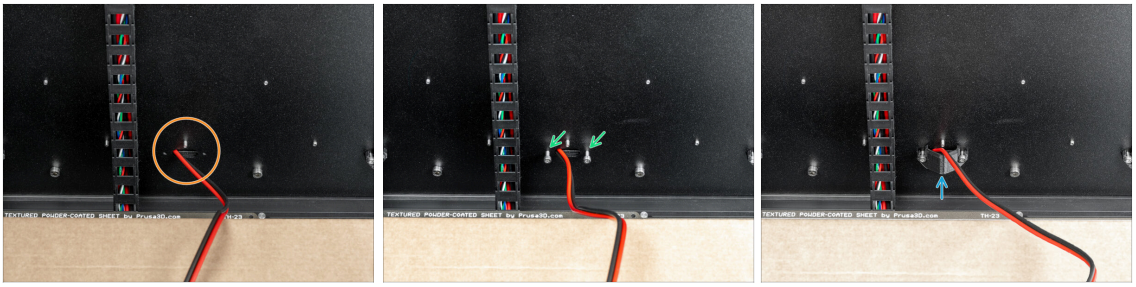
STEP 16 PSU power cable cover: parts preparation





- **For the next step, please prepare:**
- Cover PSU cable (1x)
- PSU-cable-cover (2x)
- M3x8 (4x)

STEP 17 PSU power cable cover: lower cover

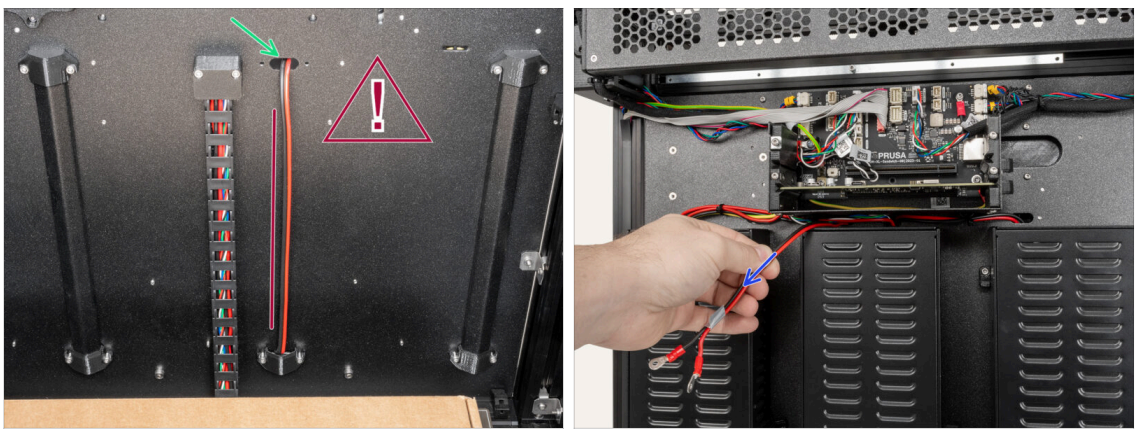


- Turn the printer, so the front side is facing you.
- Locate the hole with the power cable next to the heatbed cable bundle.

ⓘ This part is a little bit tricky because of the manipulation space with the 2.5mm Allen key.

- Insert two M3x8 screws into the holes as described in the picture.
- Between the screws and back plate, insert a PSU-cable-cover. **Do not tighten the screws yet!**

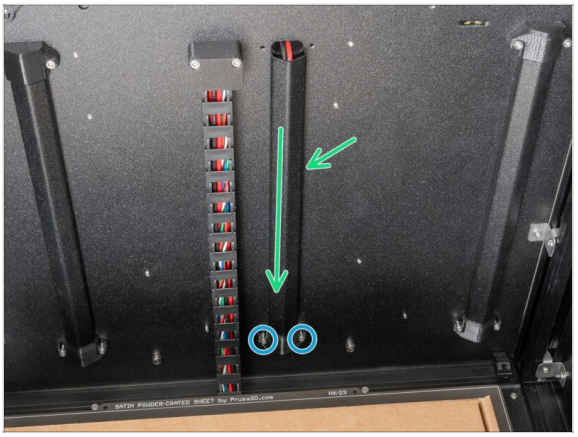
STEP 18 PSU power cable cover: power cable



⚠ **Do not twist the cable.**

- Insert the power cable through the upper hole.
- From the back side of the printer, gently pull the power cable out.

STEP 19 PSU power cable cover: middle cover



- Between the PSU-cable-cover and the back plate, insert the metal part.
- With the 2.5mm Allen key, tighten two M3x8 screws.

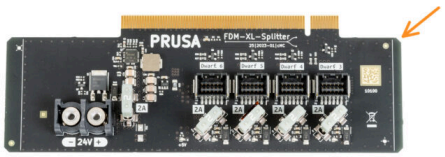
STEP 20 PSU power cable cover: upper cover





- Insert two M3x8 screws into the back plate as described in the picture.
- Insert the PSU-cable-cover onto the screws.
- Tighten two M3x8 screws using a 2.5mm Allen key.

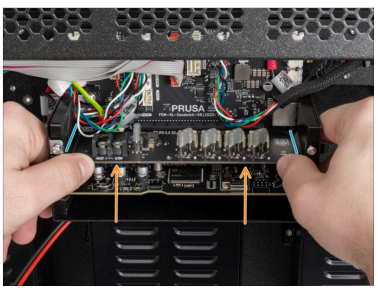
STEP 21 XL-splitter: parts preparation





- **For the next steps, please prepare:**
- XL-splitter (1x)
- Terminal screws 6/32 (2x)

STEP 22 XL_splitter installation







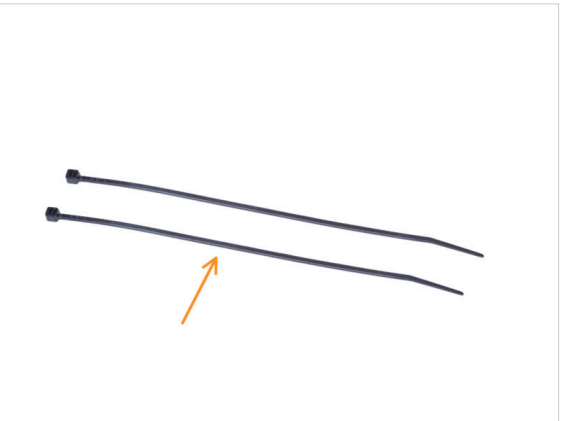
⚠ **Be careful, don't pinch any cables!**

- There are prepared guide grooves on the sides of the XL-buddy-box.
- Using both hands, insert the XL-splitter into the slot in the XL-sandwich-board.
- Take the power cable and turn it around the left side of the XL-buddy-box.
- Place the black cable on the left terminal and secure it with the terminal screw.
- Place the red cable on the right terminal and secure it with the terminal screw.

⚠ Note the correct orientation of the PE cable connector.

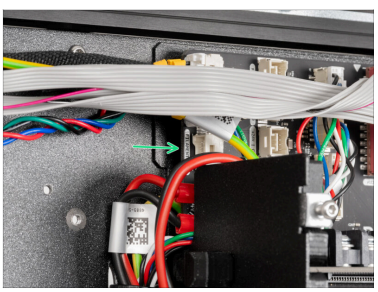
STEP 23 Filament sensor cable: parts preparation

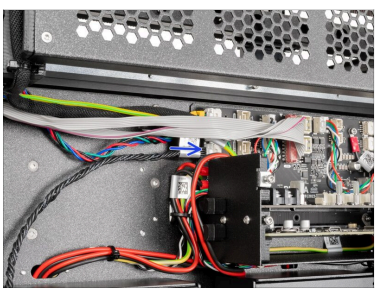


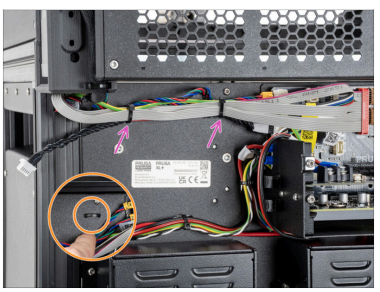


- **For the next step, please prepare:**
- Filament sensor cable (1x)
- Zip-ties (2x)

STEP 24 Filament sensor cable: connecting the cable

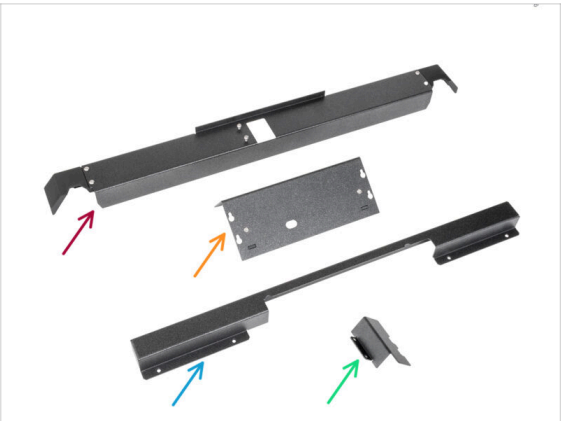


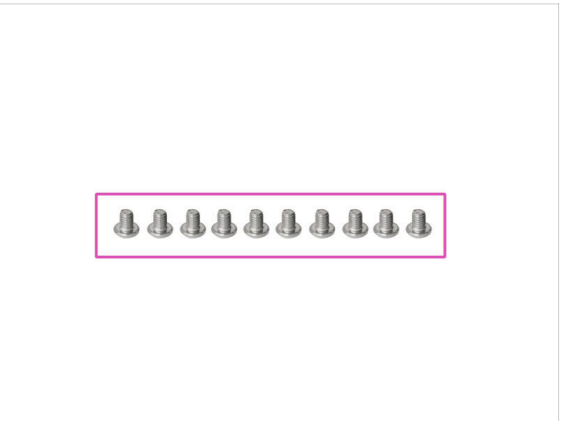




- Locate the filament sensor cable connector on the left side of the XL-sandwich board.
- Plug one end of the filament sensor cable to the connector.
- Locate the perforations in the metal sheet for the zip-ties.
- Push two zip ties through the perforations in the metal sheet to secure all the cables guiding from the electronics box. Tighten them gently. Cut the excess of the zip ties.
- ⓘ The black twisted cable is for the second filament sensor, which will be installed later in the next chapter.
- Good job! Now we can cover the cables.

STEP 25 Metal plate cable covers: parts preparation

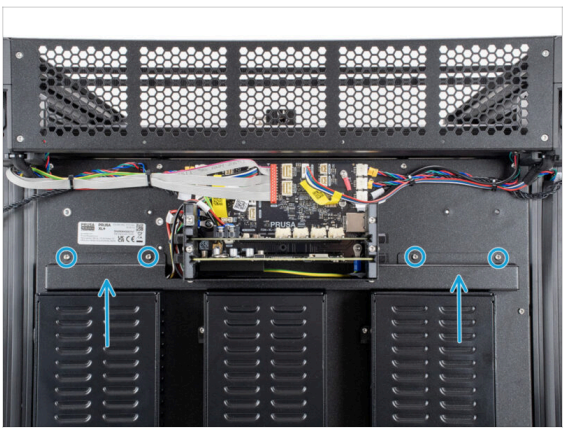


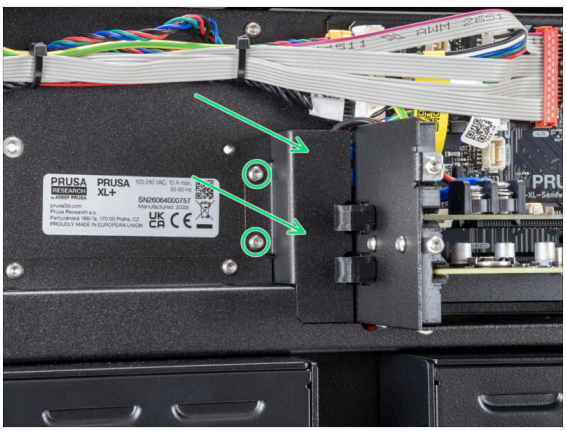


- **For the next steps, please prepare:**

- Rear-cable-management-upper (1x) *you removed in the previous steps*
- XL-buddy-box-cover (1x) *you removed in the previous steps*
- Rear-cable-management-lower (1x) *you removed in the previous steps*
- Rear-cable-management-base (1x) *you removed in the previous steps*
- M3x4rT screws (10x) *you removed in the previous steps*

STEP 26 Lower metal plate cable covers

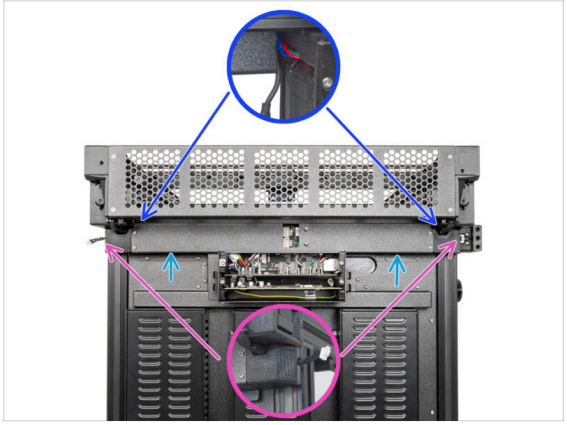




⚠ **Do not pinch any cables!**

- Gently attach the Rear-cable-management-lower and secure it with four M3x4rT screws using a T10 Torx key.
- From the left side, attach the rear-cable-management-base and secure it with two M3x4rT screws using a T10 Torx key.

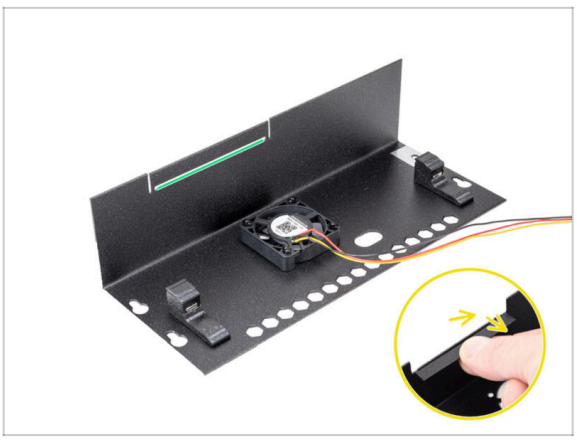
STEP 27 Upper metal plate cable covers





- Attach the Rear-cable-management-upper.
  - Make sure that no cable is pinched in the plastic covers.
  - Make sure that the metal cover does not pinch the motor cable.
- Secure the rear-cable-management-upper with four M3x4rT screws using a T10 Torx key.

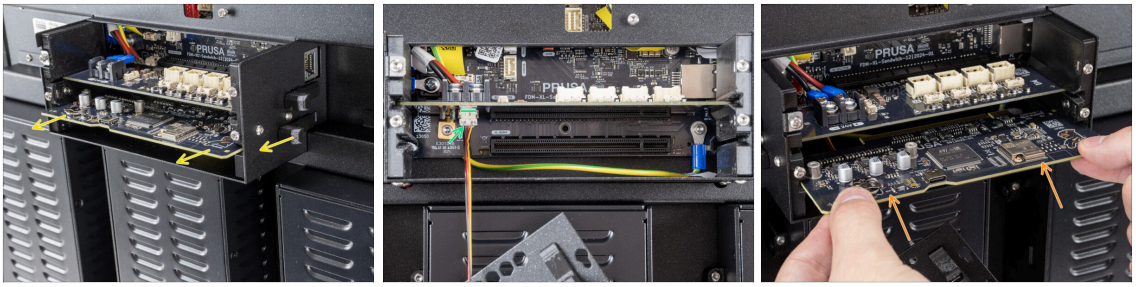
STEP 28 Adjusting the XL-buddy-box-cover



⚠ **CAUTION: Exercise caution as the sheets may have sharp edges.**

- Take the XL-buddy-box-cover and locate a rectangular cutout on it.
- Bend the cutout "inside" the cover. The sheet must be bent to 90 °.

STEP 29 Installing the XL buddy cover I.



- Slide out the XL-buddy board. Push the ejectors so the board disconnects from the Sandwich board and then slides out using the side rails.

  ⚠ Touch any electronic board **by its edges**. Avoid damaging the board components.

  Place it on safe anti-static surface, such as the anti-static bubble wrap

- Connect the fan cable to the designated connector on the XL Sandwich board.

  Make sure that the XL buddy cover is always supported and not hanging by the cable.

- Carefully slide the XL buddy board back into the side rails as far as possible.

STEP 30 Installing the XL buddy cover II.



ⓘ In this step, temporarily cover the electronics. This is to protect the electronics during the installation of the tool heads in the following chapter. The electronics cover does not need to be tightened.

- Attach the XL buddy box cover to the screws on the electronics box. And slide it down to lock it on the screws.

STEP 31 Filament sensor: parts preparation





- **For the following steps, please prepare:**
- Side filament sensor assembly - right (1x)
- M3x10 screw (1x)
- M3nEs nut (1x)

STEP 32 Right filament sensor



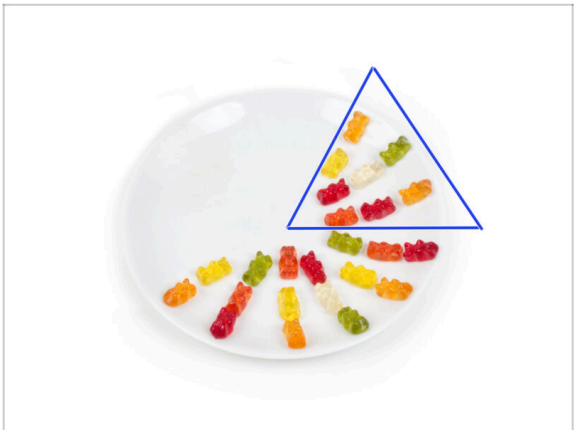




- From the right side of the printer:
- Insert the M3nEs nut into the extrusion.
- Connect the filament sensor cable to the filament sensor.
- Insert and tighten the M3x10 screw using a 2.5 mm Allen key.

ⓘ You should now have both Side Filament sensors attached.

STEP 33 Reward yourself!



- Eat eight gummy bears.

Did you know that in 2014, a gummy bear-inspired emoji was added to the Unicode Standard, allowing gummy bear enthusiasts to express their love for the candy in digital conversations.

STEP 34 Well done!

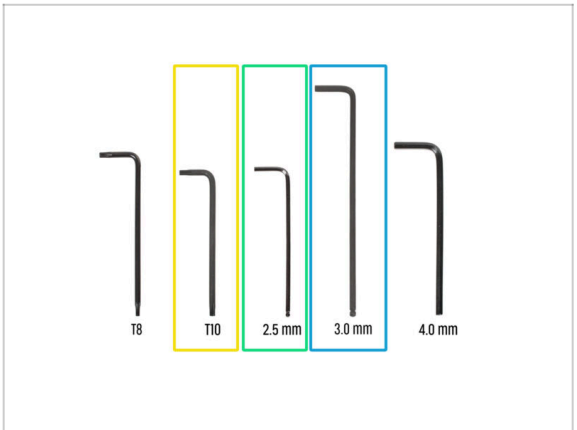


- Good job! The third PSU is attached. Let's go to the next chapter: **7. Extruder & accessories assembly**

4. Nextruder & accessories assembly



STEP 1 Tools necessary for this chapter



- **For the next steps, please prepare:**
- T10 Torx key (T10 Torx screwdriver)
- 2.5 mm Allen key
- 3.0 mm Allen key

STEP 2 Preparing the printer





- Reminder: To handle the printer, **always grab the handles on both sides of the printer**. Do not lift the printer by the aluminum extrusions or the metal sheet profiles on top.
- Place the empty cardboard box approximately to the front center part of the heatbed.

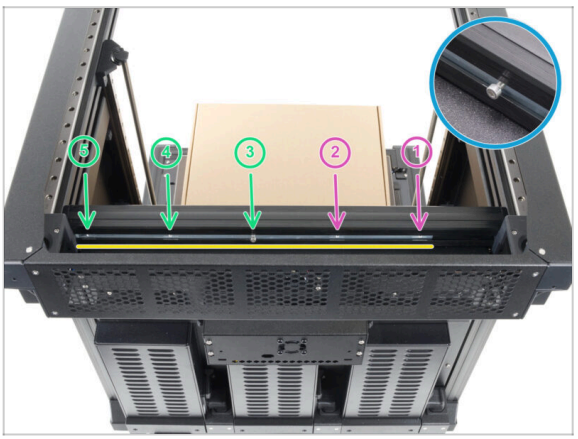
  ⓘ In the following steps, we will work with tools and install the extruder above the heatbed. Protect the print surface against any possible damage. An empty Nextruder box can serve this purpose.
- Manually move the X-axis assembly all the way to the front of the printer.
- Manually move the X-carriage approximately to the center of the X-axis.

STEP 3 Nextruder cable: parts preparation



- **For the Nextruder cable bundle assembly please prepare:**
  - Cable bundle (3x)

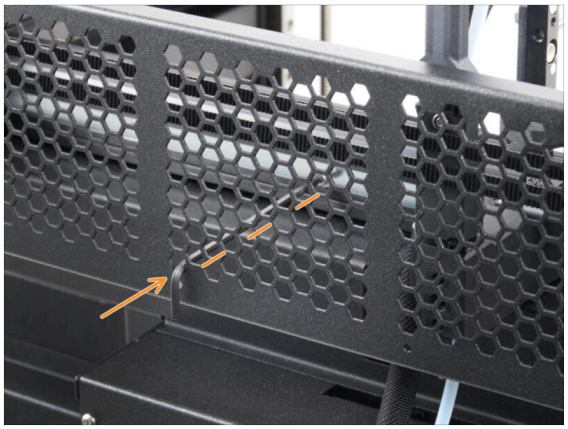
STEP 4 Guiding the nextruder cable



- Carefully rotate the printer 180° so that the PSU (Power Supply Unit) side is facing you.
- Locate the long metal profile with five M3 holes inside the rear aluminum extrusion.
  - Secure it with a screw to fix the part during dock installation.
- We will use three holes (holes 3, 4, 5) in the left side of the metal profile (tch-mounting-insert).
- Holes number 1 and 2 are the ones with docks installed already.

STEP 5 Third dock: removing the screw





- Locate the M3 screw in the metal insert.
- Using a 2.5mm Allen key, remove the screw from the metal insert.

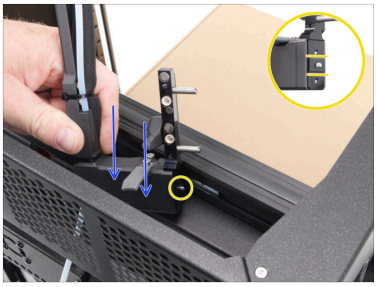
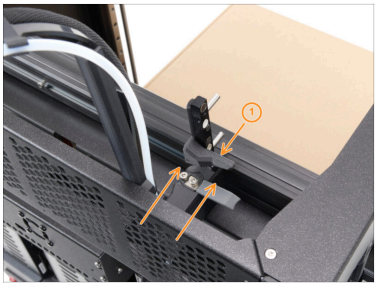
STEP 6 Inserting the first nextruder dock

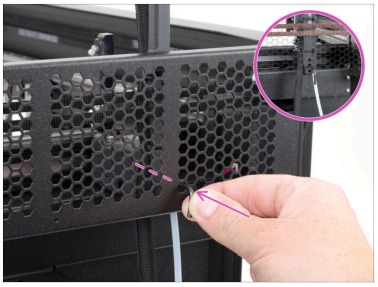


The dock installation procedure is demonstrated on dock 1 for a clearer view. The assembly steps are exactly the same for all of the docks.

- Insert the dock assembly behind the rear metal sheet. Route the cable and the PTFE tube downward **behind the metal sheet**.

STEP 7 Attaching the nextruder dock

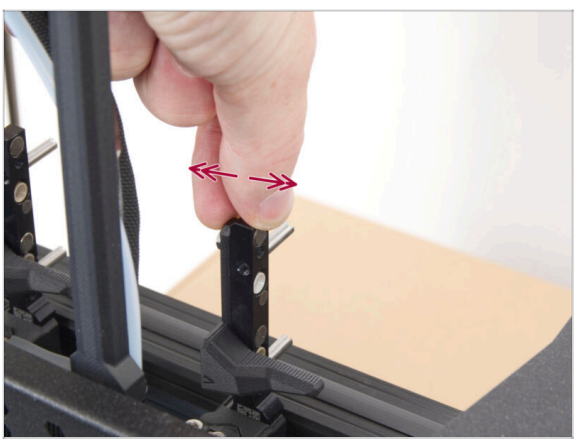





- Place the XL-dock-cable-router on the bottom metal sheet at position 1 in the metal profile.
  - Note the tab next to the protruding screw. Once aligned, the **tab must fit into the groove** in the frame extrusion.
- Attach the screw to the **first M3 hole** in the long metal profile. Check through the hole in the rear if the cable holder is lined up with the hole.
- Push the 2.5 mm Allen key all the way through the hole in the rear metal sheet until you reach the **middle** screw in the xl-dock-cable-router and tighten the screw.
- **Tighten the screw firmly.** The dock is designed to be held in place by a press fit.

Repeat the same procedure for the other two tool heads.

STEP 8 Dock inspection



Check that the dock is properly tightened. **The dock must not move.**

The dock is a press fit, the screw must be tightened firmly.

STEP 9 Dock inspection: video

This step is the same for all versions of the dock assembly.

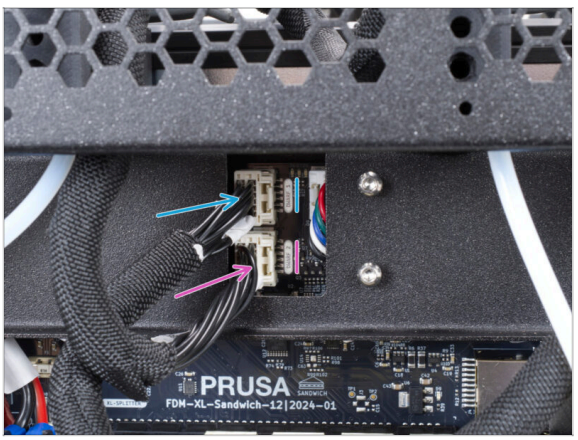
- The following instructions need to be done correctly and carefully. Achieve better understanding and successful assembly by watching the video alongside the guide.

STEP 10 Uncovering the electronics



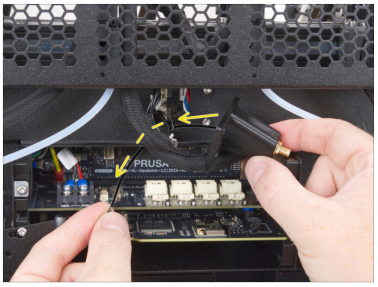
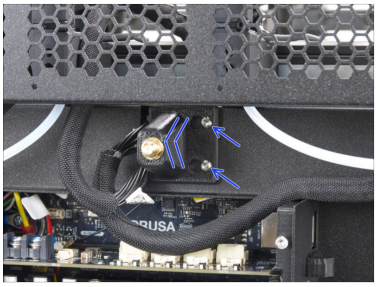
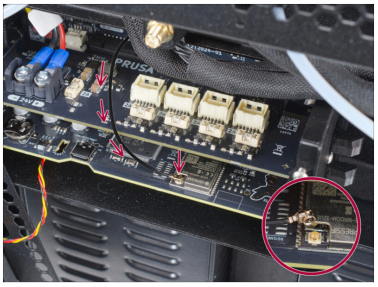
- Loosen all four screws securing the electronics cover. Two to three turns are enough.
- Slide the electronics cover upward slightly, then remove it from the electronics box.
- **Be careful with the fan cable** when removing the cover. Temporarily hang the cover on the loosened lower-left screw of the electronics cover.

STEP 11 Connecting the DWARF cables (1-2)



- Locate the rectangular opening in the metal sheet above the electronics area, providing access to the DWARF connectors.
- Connect the **first dock** (from the right side) cable to the **upper slot** labeled DWARF 1.
- Connect the **second dock** (from the right side) cable to the **lower slot** labeled DWARF 2.

STEP 12 Installing the Wi-Fi antenna holder

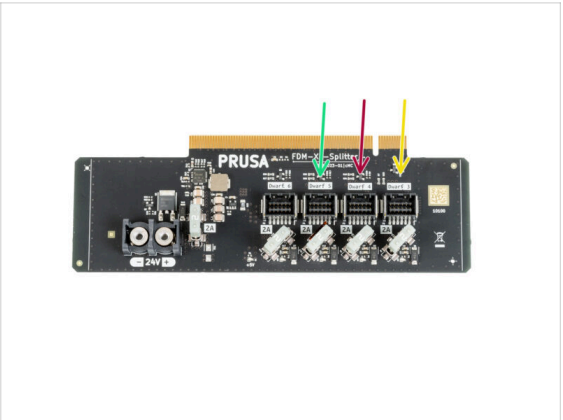




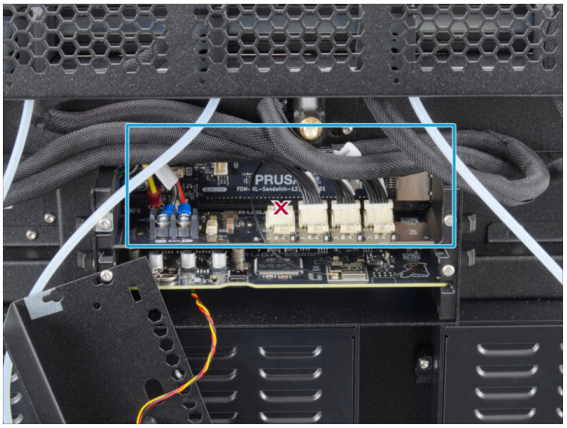
Dual-Head info: The upper board shown in the photo is the XL-splitter board, which is present only in the Five-Head version. This difference does not affect the assembly procedure.

- Push the antenna cable through the opening in the cable cover (metal sheet) and guide it **behind the cover** to the electronics box.
- Attach the antenna-holder on the screws, slide the cover to the left, and tighten the screws.
- Gently, but firmly, connect the antenna cable with the antenna connector on the XL buddy board.

  Support the board from underneath with your finger while connecting the antenna cable. This prevents damage to the board.

STEP 13 Connecting the DWARF cables (3-5)



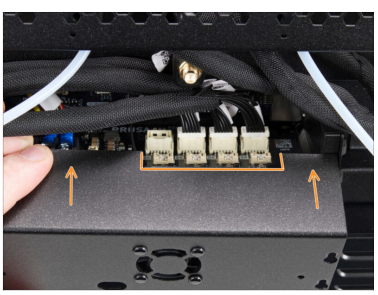


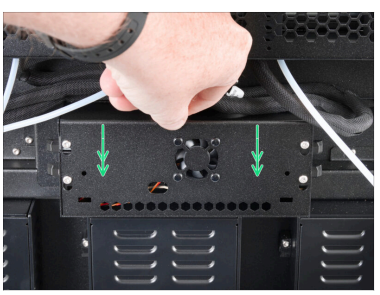
This step applies only to the Five-Head version. If you have the Dual-Head version, skip this step.

Do not remove the XL-splitter board from the printer. The splitter board is shown outside the printer in the photo only for illustration purposes, to show where to connect the DWARF cables.

- Connect the third, fourth, and fifth DWARF cables from the right to the splitter:
  - Third dock -> DWARF 3
  - Fourth dock -> DWARF 4
  - Fifth dock -> DWARF 5
- The XL-splitter with connected Nextruder cables should look like this.

STEP 14 Covering the electronics box



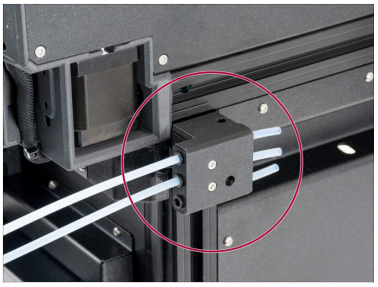




Be carefull, do not pinch any cables!

- Slide the electronics cover onto the electronics box.
  - Make sure the DWRAF cables 3-5 are routed through the cutout in the cover.
- Push the electronics cover down into position.
- With a T10 key tighten the four screws.

STEP 15 Guiding the PTFE tubes (1-3)





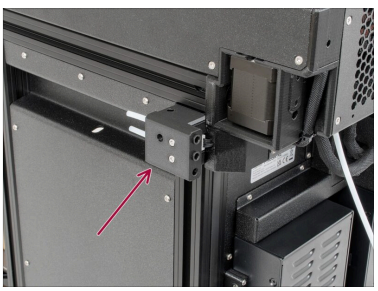
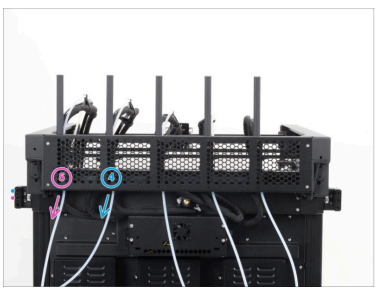
- Locate the side filament sensor on the left side of the printer.
- In this step, connect the PTFE tubes from the individual docks to the corresponding openings in the filament sensor. **Follow the correct order:**

  The positions on the front side of the filament sensor are numbered.

  The first two PTFE tubes should already be installed in the filament sensor.

  - Insert the **third dock** PTFE tube all the way into the **lower hole** in the filament sensor.

STEP 16 Guiding the PTFE tubes (4-5)

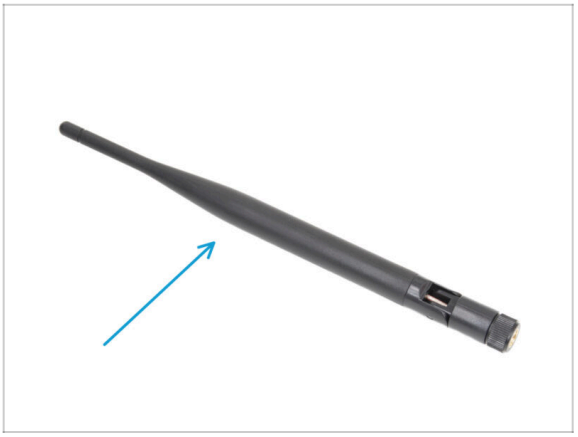




- Locate the left filament sensor.
- In this step, connect the PTFE tubes from the individual docks to the corresponding openings in the filament sensor. **Follow the correct order:**

  The positions on the front side of the filament sensor are numbered.

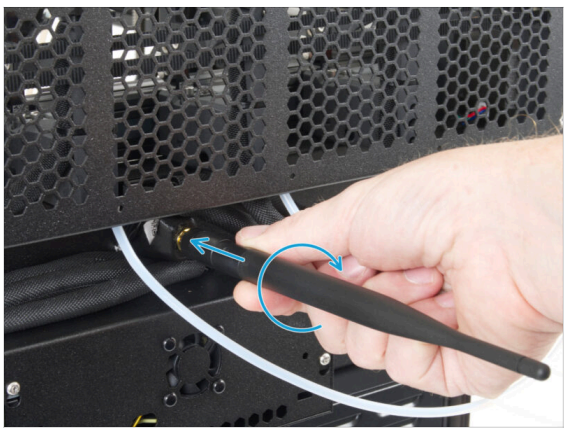
  - Insert the **fourth dock** PTFE tube all the way into the **upper hole** in the part.
  - Insert the **fifth dock** PTFE tube all the way into the **middle hole** in the part.
  - **The lower opening remains unused.**

STEP 17 Wi-Fi antenna: parts preparation



- **For the following steps, please prepare:**
- Wi-Fi antenna (1x)

STEP 18 Installing the Wi-Fi antenna





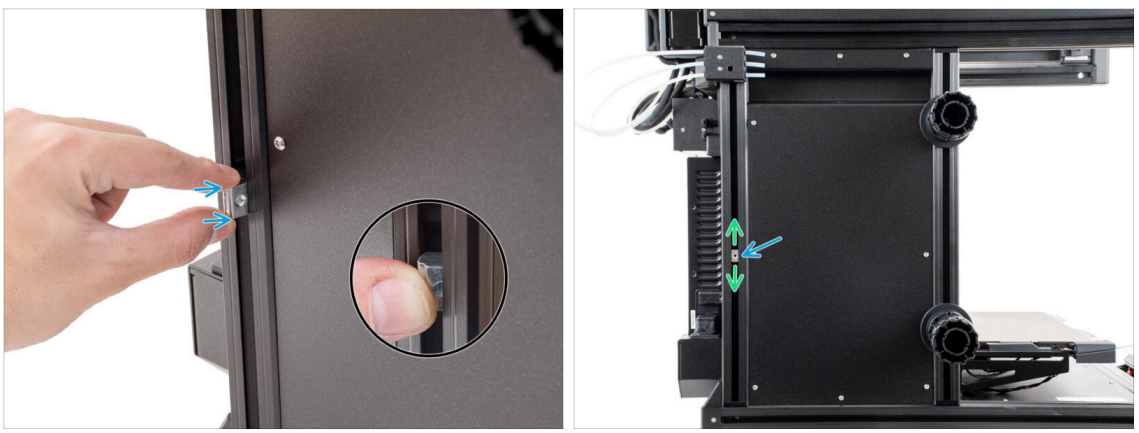
- Screw the Wi-Fi antenna on the antenna connector. The antenna can be rotated around and bent in two directions.
- We recommend pointing the antenna straight upwards.
- Well done, the Wi-Fi antenna is installed, let's move on to the spool holders.

STEP 19 Universal spool holder: parts preparation



- **For the following steps, please prepare:**
- Puck-universal (3x)
- XL+-universal-spoolholder-adapter (3x)
- Spoolholder-static (3x)
- O-ring (3x)
- M4nEs nut (3x)
- M4x12 screw (3x)

STEP 20 Adjusting the spool holder nut



- Carefully turn the printer so that the left side is facing you.
- Insert the M4nEs nut into the back support extrusion.
  - Insert the side with the spring (metal plate) first, then push the nut inside.
- The M4nEs nut can move freely. Adjust its position as needed and push it slightly inward to move them smoothly. Refer to the image for the recommended placement.

STEP 21 Mounting the Puck-universal





- Insert the M4x12 screw into the Puck-universal.
- Align the Puck-universal with the nut in the extrusion.

  Note the tabs on the part. They must **fit into the groove in the aluminum extrusion**.
- Tighten the screw firmly using a 3.0 mm Allen key.

  Once tightened, the **position can no longer be adjusted**.

STEP 22 Installing the spoolholder (left side)

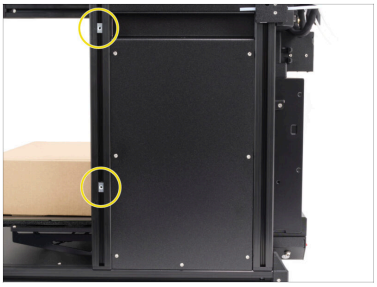


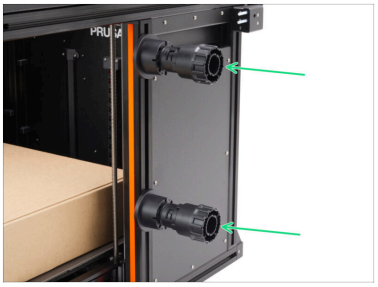




- Put the O-ring onto the Spoolholder-static.
- Push the Spoolholder-static into the Puck-universal dock.
- Lock the Spoolholder-static in by turning it clockwise.
- Compare the left side of your printer with the third picture.

STEP 23 Installing the spoolholder (right side)



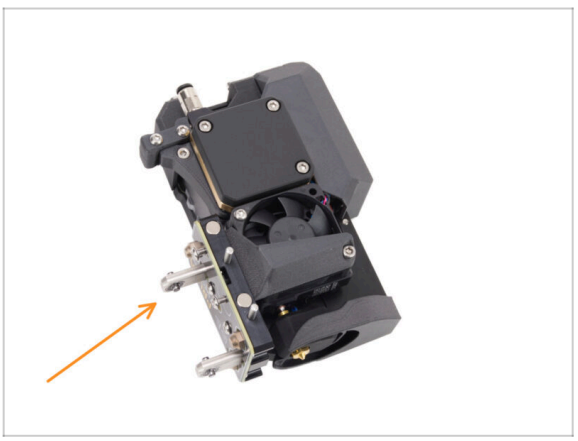


This step applies only to the Five-Head version. If you have the Dual-Head version, skip this step.

- Insert two M4nEs nuts into the right side of the printer and adjust their positions approximately according to the image.
- Install two Puck-universal units following the procedure from the previous step.
- Install the remaining Spoolholder-static units into the Puck-universal units.

Don't forget to install the O-ring.

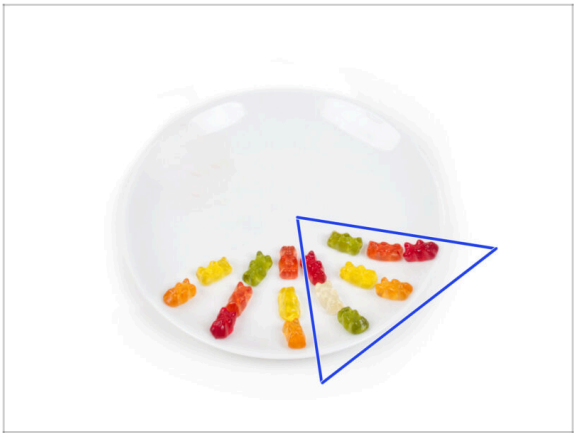
STEP 24 Nextruder assembly: parts preparation



- For the next steps, please prepare:
  - Nextruder unit (3x)

We recommend keeping all Nextruder units in their original boxes until needed. Take them out one by one during assembly.

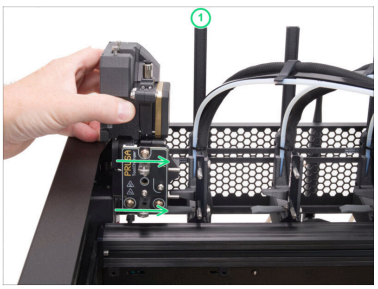
STEP 25 Haribo time!

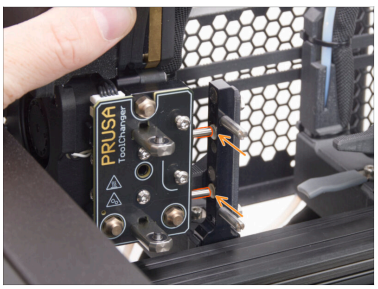


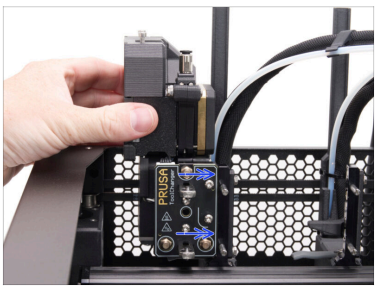
- Eat another eight gummy bears.

Did you know that the bright colors of gummy bears are achieved through the use of food coloring, which adds to their visual appeal.

STEP 26 Docking the Nextruder





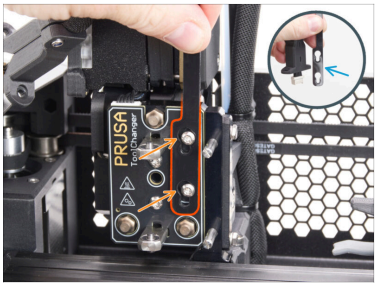


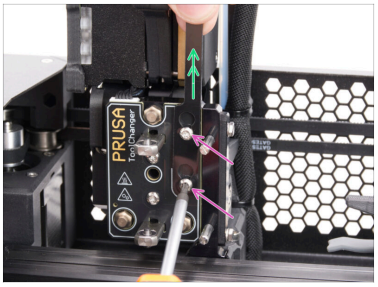
For a clearer view, the installation is demonstrated on dock 1. **Please perform these steps on the third, fourth and fifth dock.**

- Take the Nextruder and place it carefully next to the first dock.
- Align the two pins on the Nextruder with the corresponding openings in the dock.
- Once aligned, the magnets will pull the Nextruder into place.

You can now let go of the Nextruder. The magnets will hold it in place.

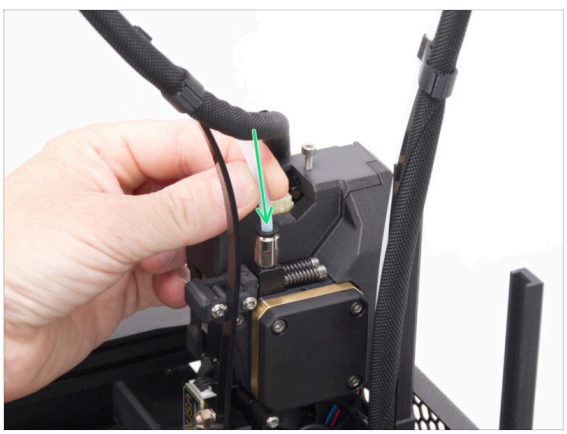
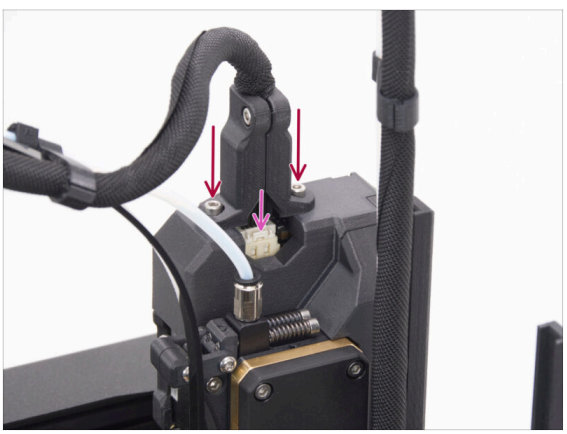
STEP 27 Nextruder cable bundle assembly



- For a clearer view, the installation is demonstrated on dock 1. **Please perform these steps on the third, fourth and fifth dock.**
  - Take the first Nextruder cable bundle.
  - ⚠ Check that the **cable bundle is not twisted!** Compare it with the image.
- Take the flexible plate.
  - Hook up the keyhole openings in the flexible plate onto the screw heads.
  - ⓘ If you cannot attach the flexible plate, slightly loosen the screws and try again.
  - Pull it up to correct the position.
  - Hold the Nextruder and using a T10 Torx screwdriver tighten the two screws.

STEP 28 Two screws version: Nextruder cable bundle assembly

- **Repeat this step for all tool heads:**
  - Insert the semi-transparent PTFE tube into the fitting on the nextruder. Push it all the way in.
  - Plug the cable connector to the top of the nextruder.
  - Secure the connector with two M3x10 screws.
- **Repeat the same procedure for the remaining Nextruders.**

STEP 29 Almost done!





- Compare the final look with the picture.
- **Congratulation!** Your Original Prusa XL+ is ready to be fired up!

5. First run


ORIGINAL PRUSA XL
SELFTEST
08:17
Filament sensor test
Great! We need to start without the filament. Please make sure there is no filament in the tool and side filament sensors.
UNLOAD
CONTINUE
N/A
N/A
RESET
ORIGINAL PRUSA XL
ORIGINAL PRUSA XL
SELFTEST
08:12
Loadcell Test
Tap nozzle in 1s
24°C
23°C
370.0
RESET

STEP 1 Before you start with Multi-Tool



ⓘ This chapter shows a brief description of the wizard. Please note that the screenshots are illustrative and might differ from those in the firmware.

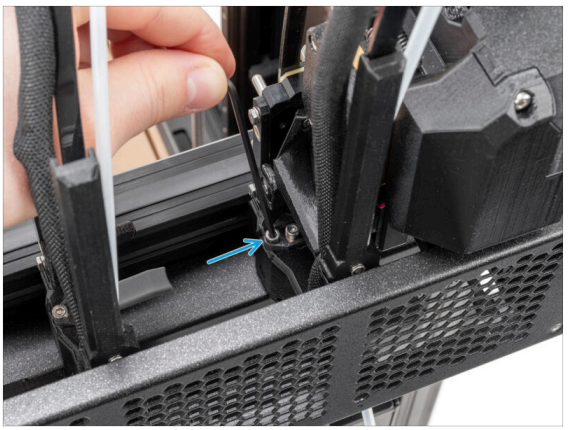
ⓘ Make sure you are running **Firmware 6.2.4 or newer.**

ⓘ Some parts of the wizard must be done multiple times, this depends on the number of tool-heads. For example:

- Dock Calibration
- Loadcell calibration
- Filament sensor calibration

STEP 2 Nozzle seal height calibration





- On the Nozzle seal heigh calibration steps were used docked Nextruder without the printer for better visibility, proceed next steps on your printer. **Do not dismantle the docks.**
- 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.

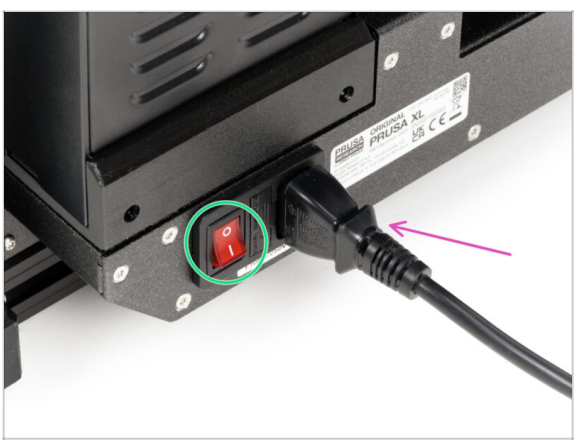
STEP 3 Nozzle seal height calibration





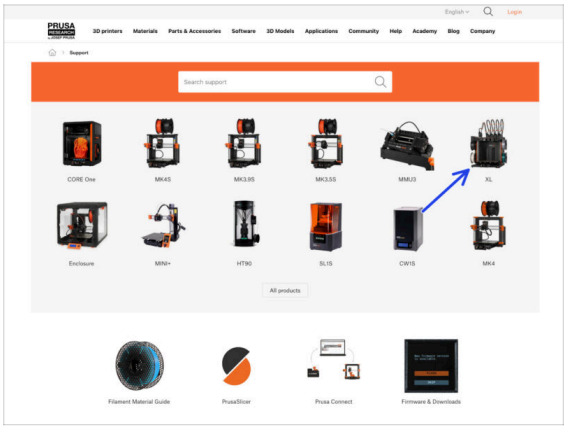
- If the nozzle seal is too low or too high, we need to reposition its height.
- Using a 2.5 mm Allen key, turn the M3x30 screw clockwise to set the Nozzle seal lower.
  - ⓘ If you are having trouble reaching the screw, then you can detach the adjacent printhead to gain better access.
- If the Nozzle seal is not bent and it is touching the nozzle, it is in the correct position.
  - ⓘ Try gently pushing on the bottom of the nozzle seal with your finger to check that the nozzle seal is touching the nozzle.

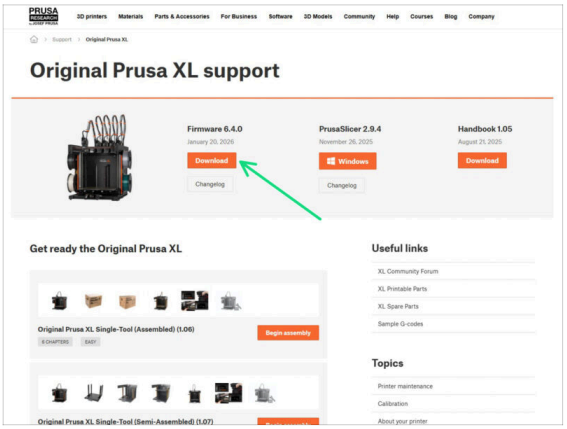
STEP 4 Preparing the printer



- ⚠ Make sure that the printer is placed in a stable place where no ambient vibrations are transmitted (for example, where other printers are printing).
- From the rear side of the printer, plug in the PSU cable.
- Turn the power switch ON (symbol "**I**").

STEP 5 Firmware update





ⓘ All shipped printer packages include a USB drive with the latest firmware. However, it is recommended to check and possibly upgrade the firmware version.

- Visit the help.prusa3d.com page.
- Navigate to the Prusa XL page.
- Save the firmware file (*.bbf) onto the bundled USB drive.

ⓘ Pro tip: To access Prusa XL homepage you can use the URL: prusa.io/XL

STEP 6 Wizard: Network and Prusa Connect setup



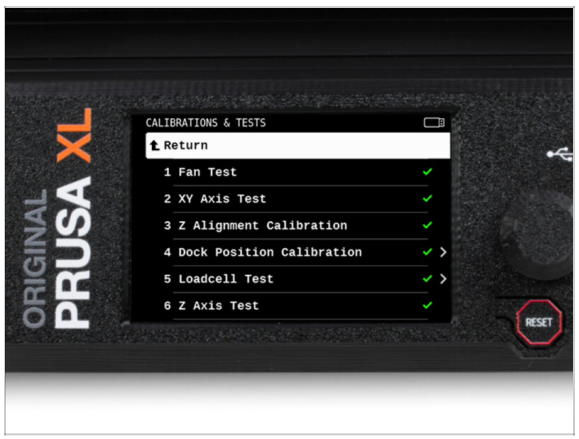




ⓘ After the printer starts up, the screen prompts for the printer test and setup wizard.

- The initial setup starts with the optional NETWORK SETUP, which also includes PRUSA CONNECT SETUP. Follow the instructions on the screen if you want your printer connected to Wi-Fi and Prusa Connect.

STEP 7 Wizard: Calibration tests



The wizard will test all important components of the printer. Some parts of the wizard require direct user interaction. Follow the instructions on the screen.

WARNING: Do not touch the printer during the wizard unless prompted! Some parts of the printer may be HOT and moving at high speed.

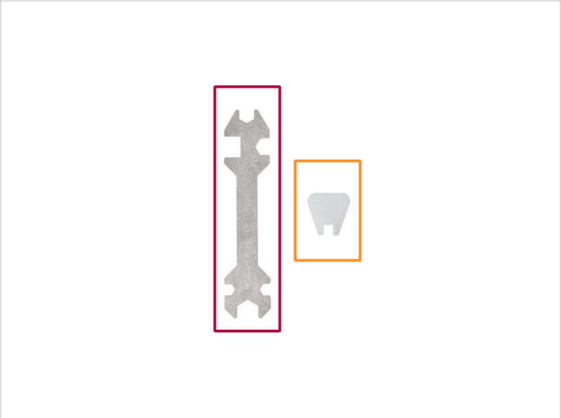
The wizard starts with these tests:

- Fan test
- X-axis and Y-axis test
- Z-axis alignment calibration

- **These first tests are fully automatic during the first calibration.**

While testing the axes, make sure that there is nothing in the printer that is obstructing the movement of the axes.

STEP 8 Wizard: Dock Position Calibration





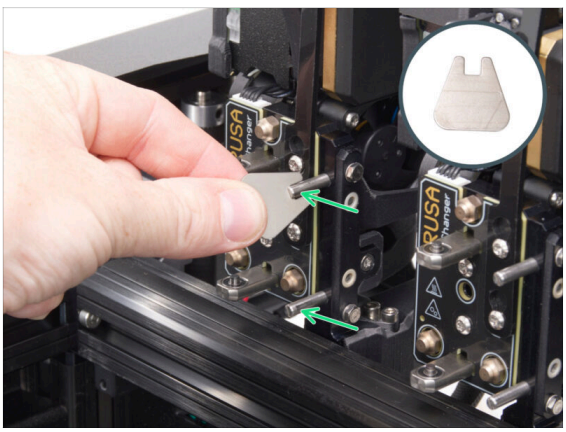
ⓘ This test will require your input. The printer will guide you through properly calibrating the position of individual tool heads on the printer.

- You will need:
  - Universal wrench (1x)
  - Mini wrench (1x)

⚠ It is necessary to follow every step in the dock calibration properly! **Do not rush. Read every step twice, then proceed with the instruction.**

STEP 9 Wizard: Remove the dock pins

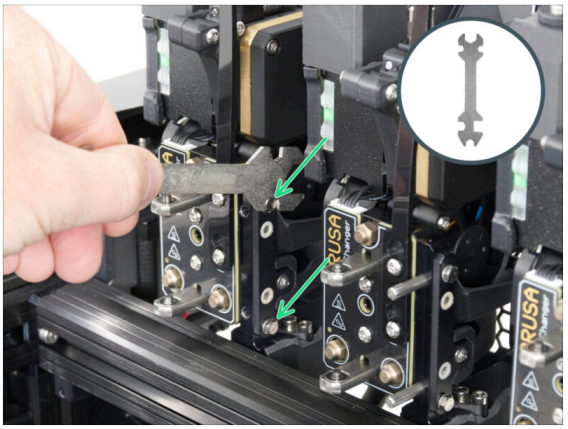




- Follow the wizard instructions on the screen.
- Using a Mini wrench, unscrew and remove both dock pins on Dock 1. Set them aside, we will use them again soon.

STEP 10 Wizard: Loosen screws

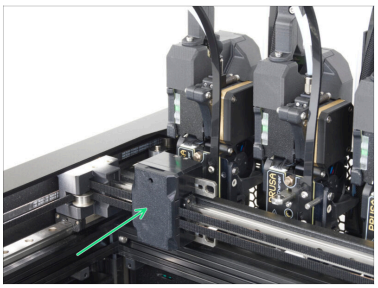


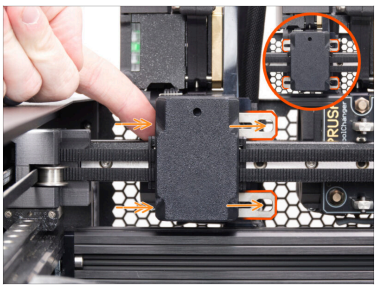


- Follow the wizard instructions on the screen.
- Using a Uni wrench, loosen two screws. **A few turns are enough; do not remove the screws.**

STEP 11 Wizard: Lock the tool





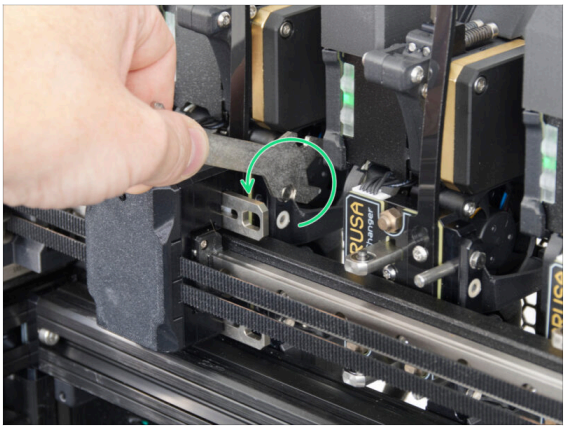


- Follow the wizard instructions on the screen.
- Slowly and carefully move the tool changing mechanism by hand to the first (leftmost) tool.
- Manually lock the metal bars as indicated in the picture.

⚠ **The tool has to be locked in the tool changer.**

STEP 12 Wizard: Tighten the upper screw



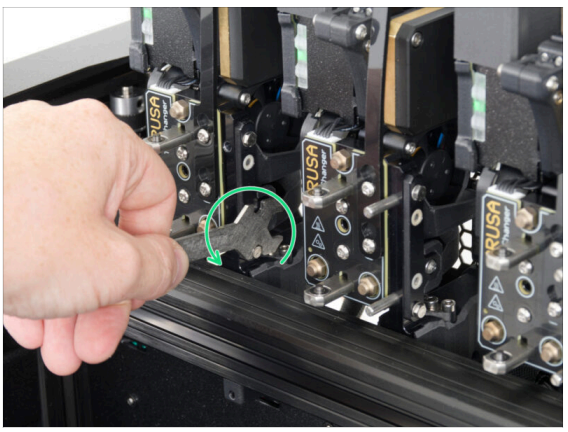


- Follow the wizard instructions on the screen.
- Using a Uni wrench, tighten the upper screw on the side of the dock.

⚠ After confirming by the *continue* button on the LCD, the XY axis will leave the dock with the tool. **Make sure that there are no obstacles in the way.**

STEP 13 Wizard: Tighten the lower screw

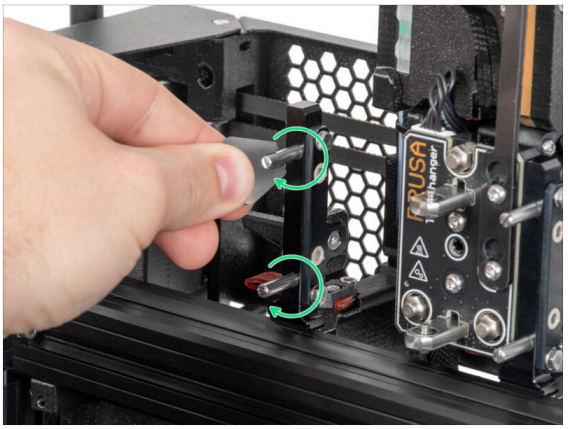




- Follow the wizard instructions on the screen.
- Using a Uni wrench, tighten the lower screw on a side of the dock.

STEP 14 Wizard: Install the dock pins





- Follow the wizard instructions on the screen.
- Insert the two metal pins and tighten them with a Mini wrench.
- After clicking on the *continue* button on the LCD, the printer will put the tool back into dock 1 and perform a few calibration moves.

STEP 15 Wizard: Dock successfully calibrated

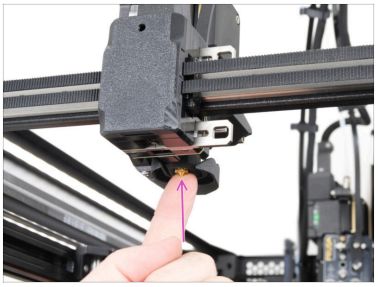


- Good job! Dock 1 is calibrated.
- Repeat the calibration process for all printheads.

STEP 16 Wizard: Loadcell test







- The next step of the wizard will prompt you to touch the nozzle to test and calibrate the Loadcell. Parts of the printer are not heated during this test; you can touch the parts of the printer. Click on ***Continue***.
- **Do not touch the nozzle yet.** Wait until the countdown finishes and the printer notifies you with a sound and display prompt.
- Tap the nozzle gently but firmly. Do not use excessive force. In case the loadcell does not detect your touch, you will be prompted to repeat the step.

Repeat the loadcell test according to the number of print heads.

After this step, proceed to the **Z Axis test** and the **Nozzle heater test** respectively. These two tests are automatic and require minimal input.

STEP 17 Wizard: Calibrate Filament Sensors



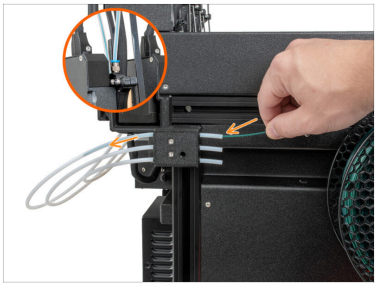


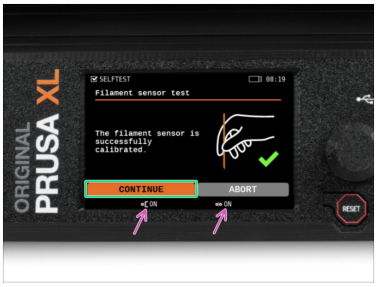


- The printer will ask if you would like to remap the third side filament sensor. Select ***Left***. Change the side only in case you do not have enough space around the printer for the third spoolholder on the left side.
- During the calibration of the filament sensors, you will be prompted to use at least 130 cm of filament. Use the Prusament shipped with your printer and mount it on the spool holder.
- When you have prepared the filament, click on ***Yes***.
- Wait for the printer to prompt you to insert the filament into the side filament sensor.

STEP 18 Wizard: Calibrate Filament Sensors







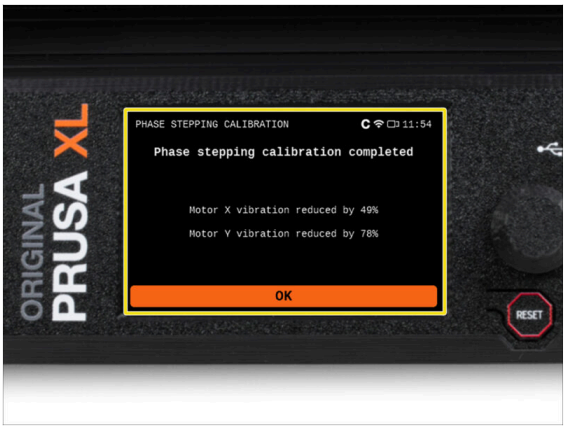
- Insert the filament into the side filament sensor through the PTFE tube. Push it in until it reaches the filament sensor in the extruder (you will feel a slight resistance).
- You can check the side filament sensor (left) and extruder filament sensor (right) status on the bottom bar on the screen.
- At the end of the test, you will be prompted to **remove the filament from the sensor.**

ⓘ According to the number of print heads, repeat the filament sensor calibration process.

- Once all five filament sensors are successfully calibrated and tested, the printer will move on to the tool offset calibration. This will require your input. Move on to the next step →

STEP 19 Wizard: Phase stepping





- **The last step is the phase stepping calibration**. This feature was introduced in firmware version 6.0.0. The calibration is automatic. Follow the instructions on the screen.

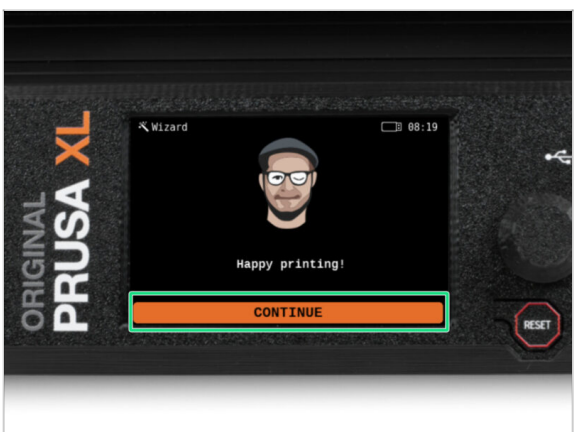
ⓘ You can find more information about the phase stepping via the following links:

- **PHASE STEPPING GUIDE**: Necessary information about the phase stepping calibration.
- **PHASE STEPPING BLOG ARTICLE**: A more in-depth look at the phase stepping feature.

ⓘ The printer will move the first print head to the middle of the heatbed and move the tool diagonally for the X and Y axes at different speeds.

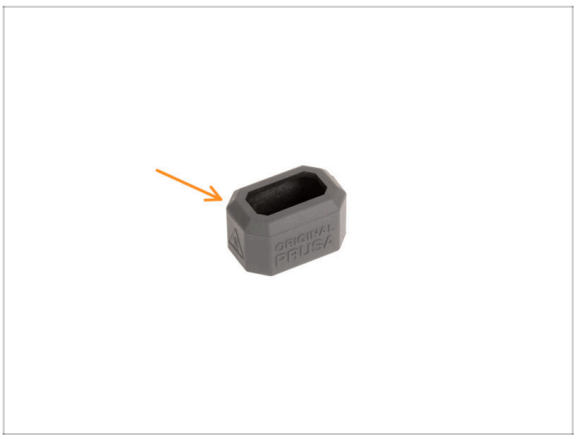
- After the printer completes the test, the screen will show by how much the motor vibrations were reduced.

STEP 20 It's done



- **Well done! The printer is ready to print.** However, follow the instructions in this manual to the end.

STEP 21 Prusa nextruder sock (Optional)



The nextruder sock helps to keep the temperature in the heater block stable. It also keeps your hotend clean from filament dirt and protects it in case the print detaches from the print surface.

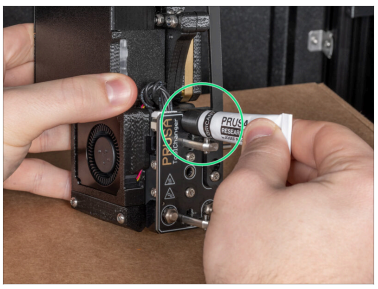
- A silicone sock is supplied with each Nextruder package.
- **If you want to install the sock, we recommend doing it after the calibration.**

How to install the sock - check the article.

STEP 22 Regular printer maintenance







To keep your printer working properly over time, it is highly recommended to do regular maintenance.

- For regular printer maintenance, follow the Regular printer maintenance (XL) article for information and instructions.

On multi-tool printers, it is necessary to focus on lubricating the coupler pins of the ToolHeads.

Lubricating the coupler pins can be made along with the rest of the maintenance, or it can also be done if you notice that your prints have banding or ringing issues.

- To lubricate the coupler pins use our dedicated online guide How to lubricate the coupler pins on Original Prusa XL.

You will need to print an applicator to lubricate the pins. Please refer to the dedicated guide for more information.

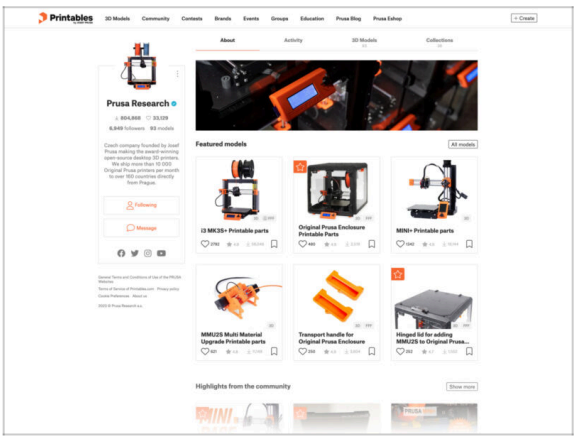
STEP 23 Quick guide for your first prints



Now, please read the **3D Printing Handbook**, which is tailor-made for your printer and **follow the instructions to set up the printer properly**. The latest version is always available at **this link**.

Read the chapters *Disclaimer* and *Safety instructions*.

STEP 24 Printable 3D models



- **Congratulations! You should be ready to print by now ;-)**
- You can start by printing some of our test objects bundled on the included USB stick - you can check them out in this collection.

STEP 25 Give us feedback

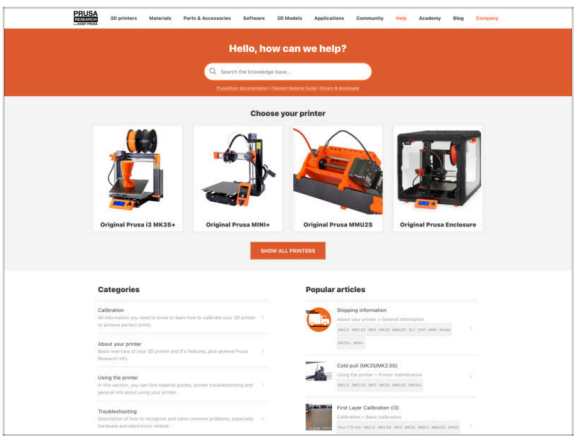


- We know you're eager to start printing, but we'd really appreciate it if you could take 3–4 minutes to **share your thoughts** on this manual: how clear it was, how easy it was to follow, and any ideas to improve it.

  ⓘ This feedback is a little different from the usual comments you might leave on individual steps.

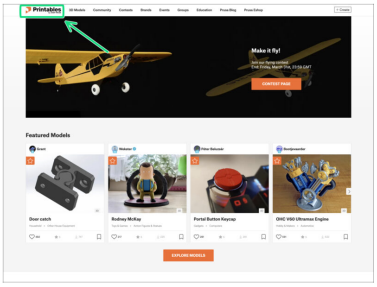
- **Share your feedback here.**
- Thank you for helping us make our manuals even better!

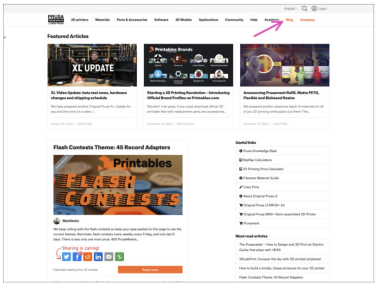
STEP 26 Prusa knowledge base

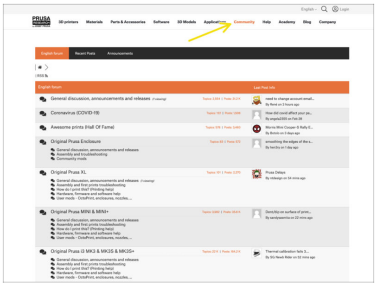


- If you encounter any problems at all, don't forget you can always check out our knowledge base at help.prusa3d.com
- We're adding new topics every day!

STEP 27 Join Printables!







- **Don't forget to join the biggest Prusa community! Download the latest models in STL or G-code tailored for your printer. Register at Printables.com**
- Looking for inspiration on new projects? Check our blog for weekly updates.
- If you need help with the build, check out our forum with a great community :-)
- ⓘ All services share one account.

STEP 28 Reward yourself!



- It looks like you have successfully assembled and connected everything. No doubt ;). **Congratulations!** You deserve a big reward for that. Eat all the remaining gummy bears... and don't forget to share with those who supported you during the assembly.
- ⓘ **Did you know that** Haribo gummy bears are one of the most important parts of the Original Prusa printers assembly instructions.

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