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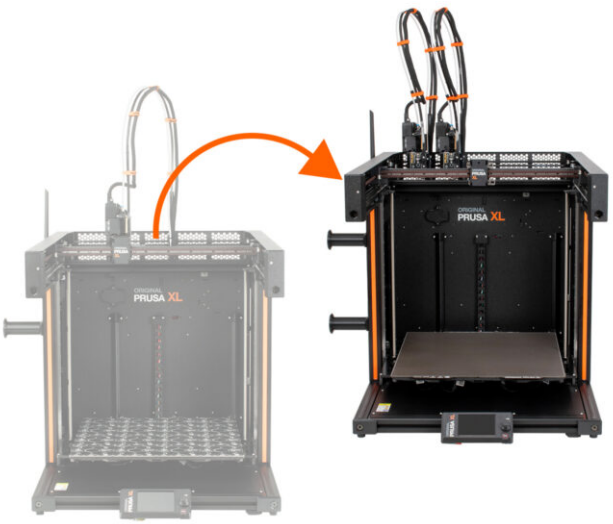
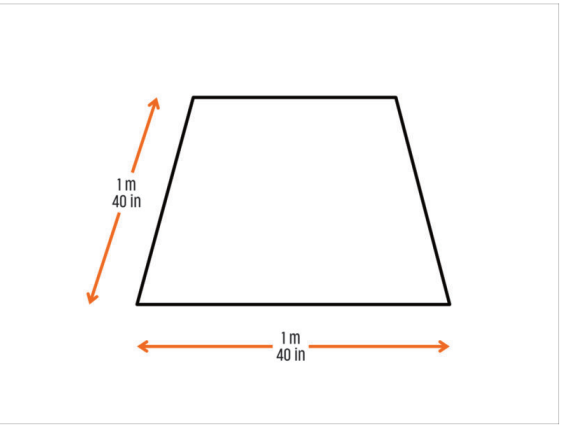
1. Introduction



STEP 1 Preparing the upgrade kit

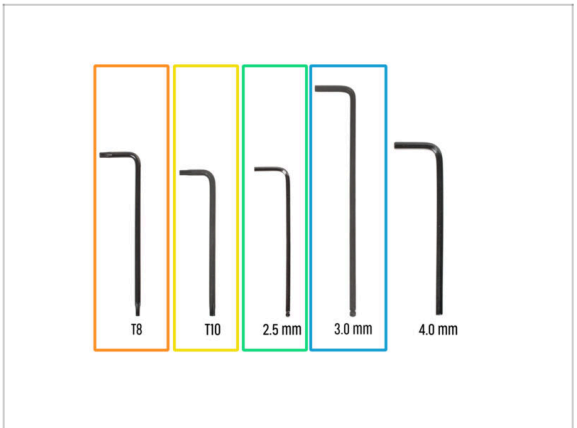


- Welcome to the tutorial on how to upgrade your Original Prusa XL Single-Tool to **Original Prusa XL Dual-Head**.
- Please prepare the upgrade kit received from Prusa Research.
- For the assembly, prepare a clean workbench with a space of at least 1 m x 1 m (40 in x 40 in).

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

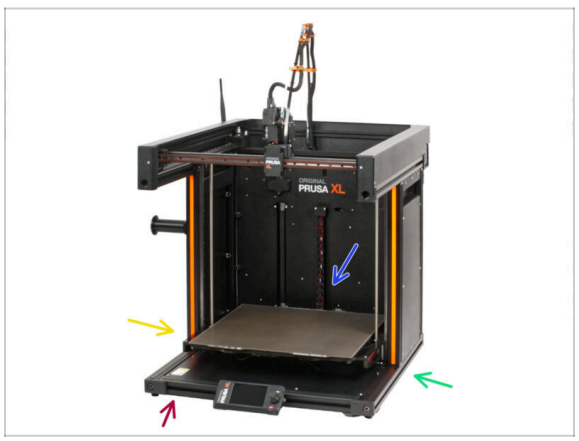
STEP 4 Labels guide

- 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.

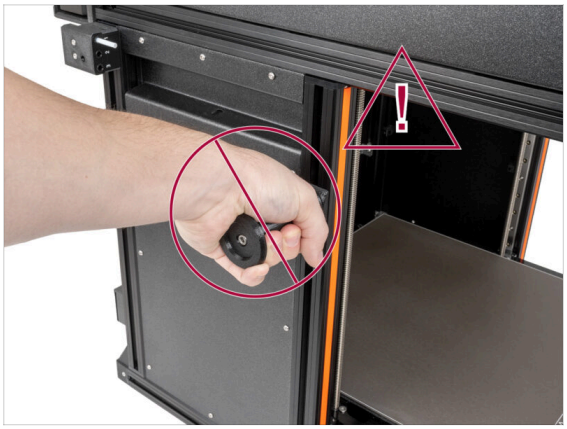
STEP 6 Front, left, right and rear side

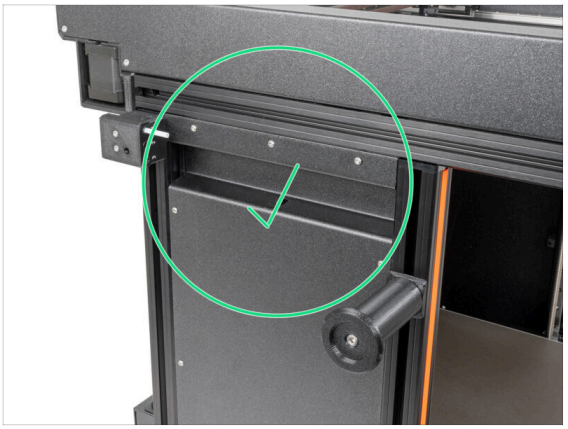


⚠ **IMPORTANT:** The XL printer is large and it is almost impossible to have the entire body in every single picture. Throughout the manual, there will used terms to **describe the side you will be working on**:

- **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

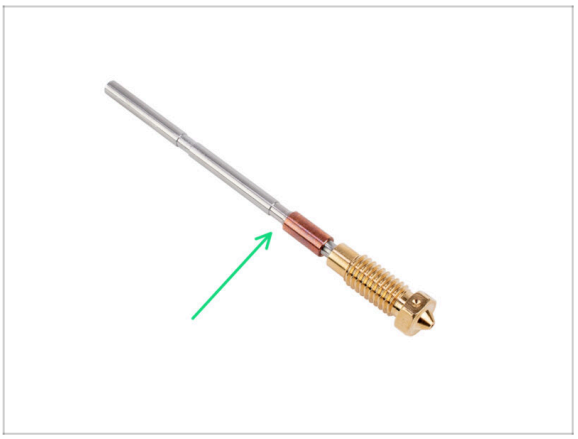




⚠ **Never manipulate the printer by using the upper metal flanges. You can damage the LED lights hidden inside.**

- During the assembly manipulate the base using the extrusions.

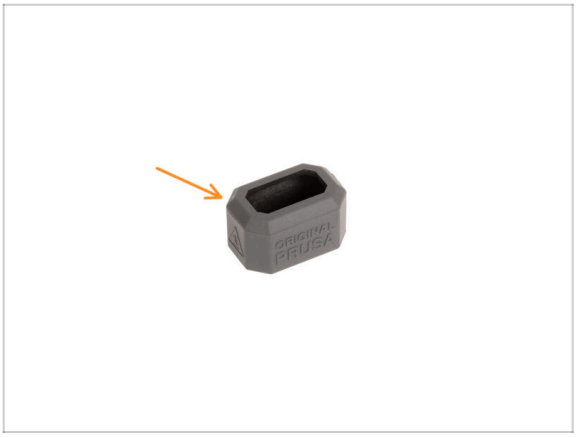
STEP 8 Spare nozzles



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

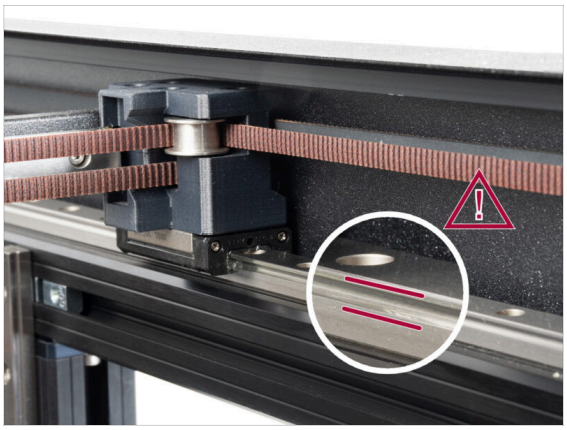
- You'll find spare nozzles in the upgrades. You can replace the nozzle on your existing Nextruder with a new 0.4 mm diameter nozzle
- For replacing the Prusa nozzle, go to **How to replace the Prusa Nozzle (XL multi-tool)**

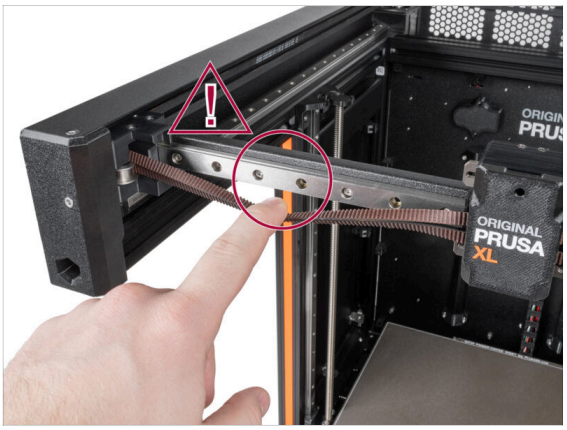
STEP 9 Silicone sock



- 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

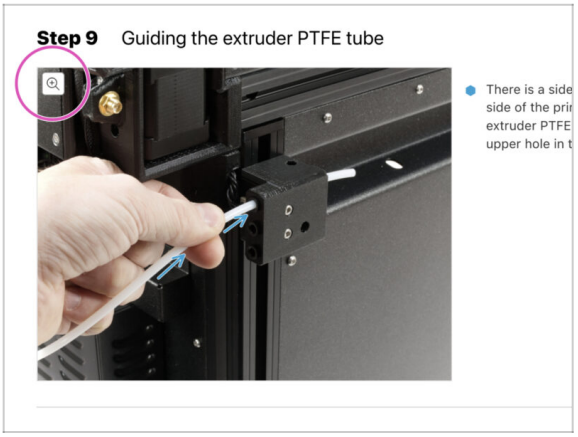




⚠ **CAUTION: Avoid direct skin contact with the lubricant used for the linear rails** in this printer. If a contact occurs, **wash your hands immediately. Especially before eating, drinking, or touching your face.**

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

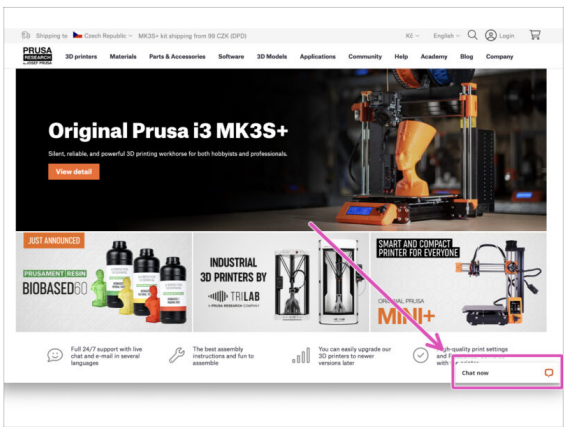
STEP 11 View high resolution images

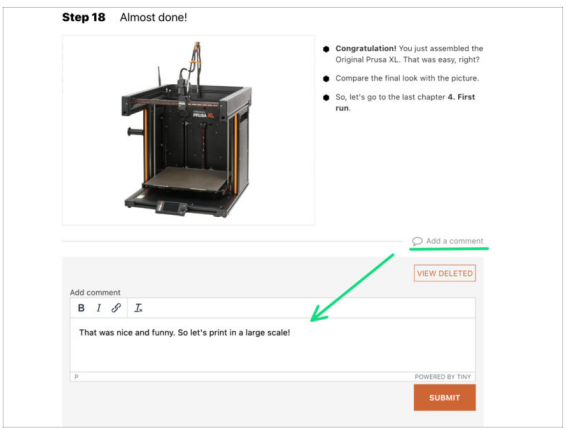


When you browse the guide on help.prusa3d.com, you can view the original images in high resolution for clarity.

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

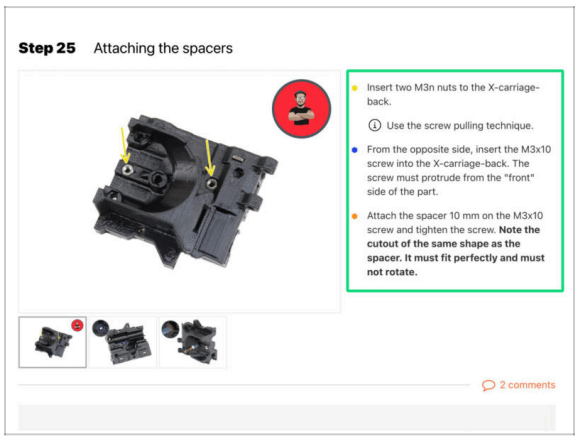
STEP 12 We are here for you!





- 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.

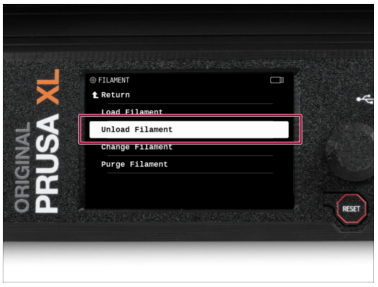
⚠ **Hide the Haribo for now!** From our experience an unattended bag with sweets will suddenly disappear. Confirmed by multiple cases all around the World.

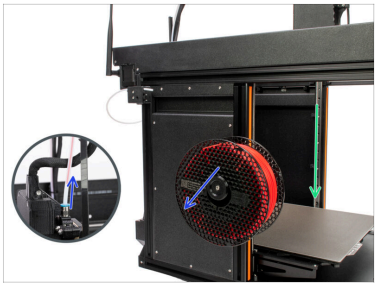
STEP 15 Prepare your desk

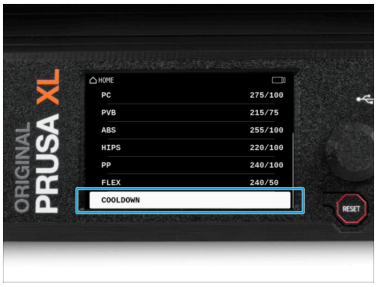
- Tidy up your desk! Tidying up decreases the probability of losing small parts.
- **Clear your workspace.** Make sure you have enough room. A nice clear flat workbench will get you the results you are aiming for.
- **Let there be light!** Make sure you are in a well-lit environment. Another lamp or 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! Go to chapter **2. Printer preparing**

2. Printer preparing

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

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

STEP 4 Can I open the Haribo?

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

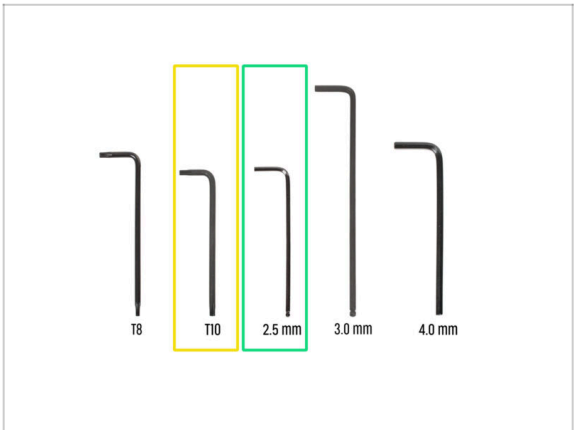
- This dose of energy is primarily for printer assembly. **Wait until you are prompted to open it.**

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 disassembly

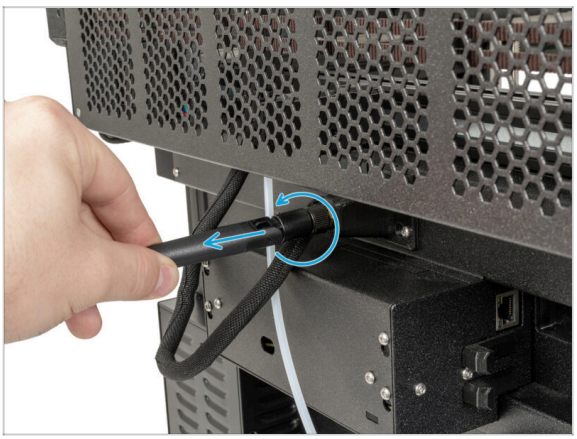
3. Nextruder disassembly

STEP 1 Tools necessary for this chapter



- **For this chapter, please prepare:**
- T10 Torx key (T10 Torx screwdriver)
- 2.5 mm Allen key

STEP 2 Wi-Fi antenna detaching



- This step is only for the printer, which has a Wi-Fi antenna on the back of the printer.
- Turn the printer, so the back side of the printer is facing you.
- Unscrew the Wi-Fi antenna from the antenna connector and place it nearby.

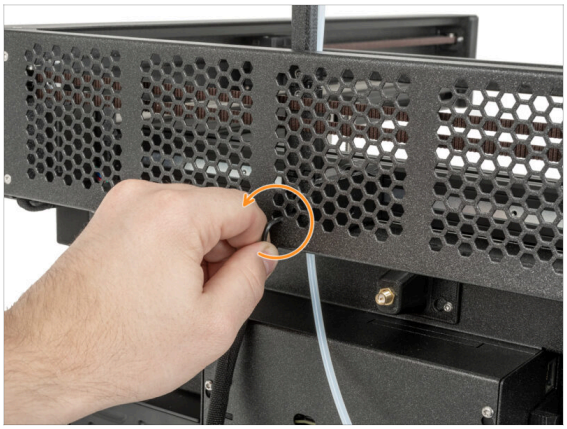
STEP 3 PTFE unpluging

- Turn the printer so the left side of the printer is facing you.
- Gently push the black collet to release the PTFE tube.
- Pull out the PTFE tube.

STEP 4 Disconnecting the Nextruder cable

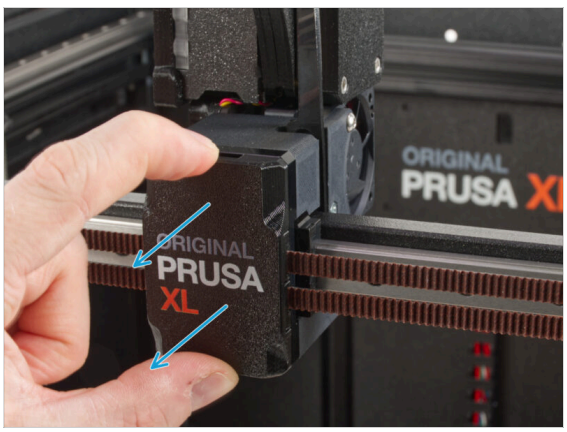
- Turn the printer, so the back side of the printer is facing you.
- ⚠ There is an antenna cable behind the antenna-holder, do not pull the connector!
- Loosen two screws on the cover slightly. No need to remove them completely. Push the cover to the right and gently remove it from the screws.
- Push the safety latch and disconnect the Nextruder cable from the connector "DWARF1".
- Attach the antenna-holder to the screws and push the cover to the left. Tighten the screws.

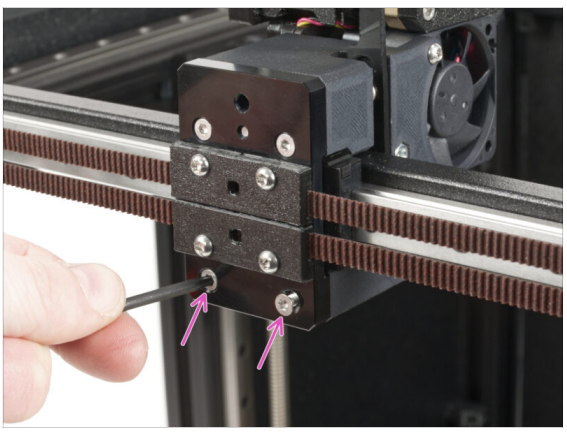
STEP 5 Detaching the dock



- Using a 2.5mm Allen key, untighten the screw inside the (middle hole) dock.
- Keep the Nextruder cable bundle next to the printer.

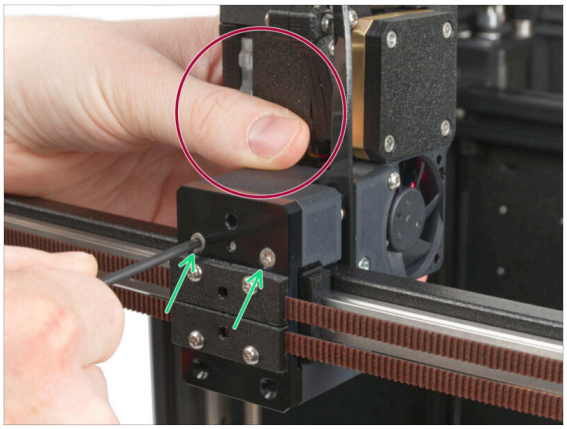
STEP 6 Detaching the Nextruder

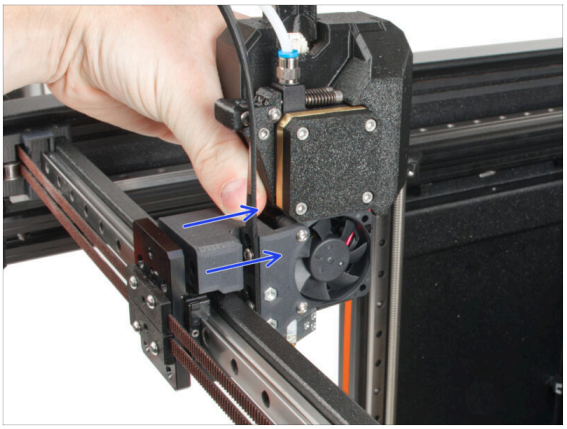




- Turn the printer, so the front side is facing you.
- Snap off the x-carriage-cover back from the X-carriage. **Do not throw it away, we'll use it later!**
- Using a T10 Torx key, remove two M3x12bT screws.

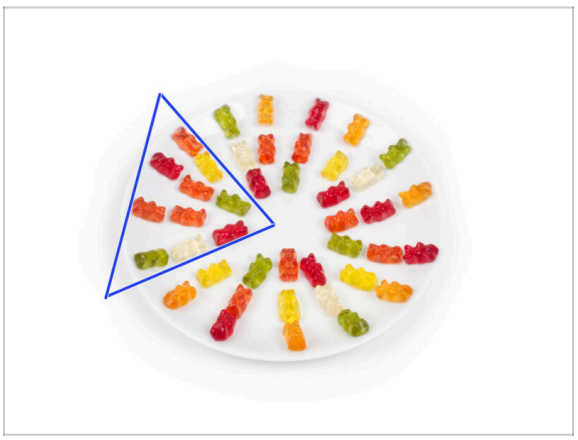
STEP 7 Detaching the Nextruder





- Hold the Nextruder during disassembly.
- Remove two M3x12bT screws using a T10 Torx key.
- Unplug the Nextruder and place it nearby, we will rebuilt it in the next steps.

STEP 8 Still no sweets?



- **Carefully and quietly** open the bag with the Haribo sweets. A high level of **noise might attract nearby predators!**
- Spread the entire contents of the bag on a clean plate and arrange them according to the picture. The color doesn't matter that much.

ⓘ The total number in your package may vary slightly. However, the exact number is important. If any gummy bears are missing, please go to your nearest candy store immediately.

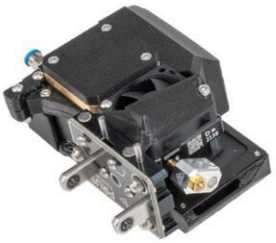
- Eat ten gummy bears.

ⓘ **Did you know that** gummy bears were first created by a German candy maker named Hans Riegel in the 1920s.

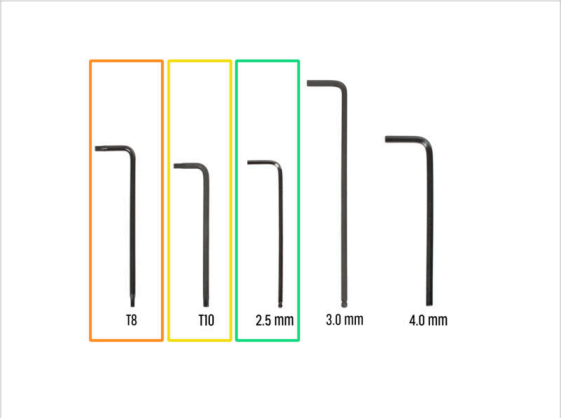
STEP 9 Good job!

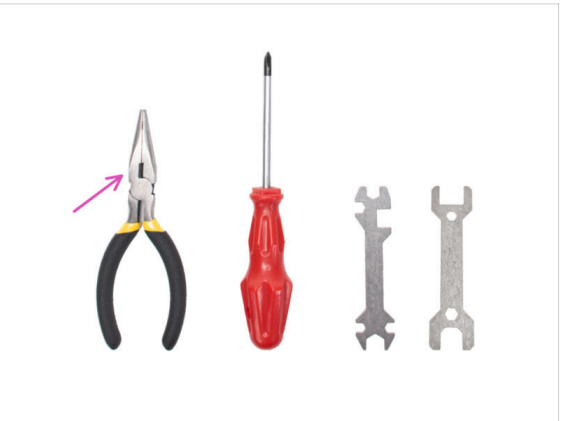
- Well done, the printer is ready for the assembly. Let's go to the next chapter: **4. Nextruder upgrade**

4. Nextruder upgrade



STEP 1 Tools necessary for this chapter





- T8 Torx key
- T10 Torx key (T10 Torx screwdriver)
- 2.5 mm Allen key
- Needle-nose pliers *for cutting zip ties*

STEP 2 Dock disassembly: parts preparation

- **For the following steps, please prepare:**
- Old Nextruder assembly (1x)

STEP 3 Dock disassembly: cable bundle

⚠ While cutting the zip-ties, be careful about the black cable bundle!

- On an xl-dock-cable-router, cut the zip-ties.
- Pull out the PTFE tube from the xl-dock-cable-router.
- Using a T10 Torx screwdriver, unscrew two M3x8rT screws. **Do not throw them away!**

STEP 4 Dock disassembly

- Using a T10 Torx key, unscrew the upper M3x10cT screw from the xl-dock-cable-router. **Keep the screw for later use.**
- Using a T10 Torx key, unscrew the lower M3x10cT screw from the xl-dock-cable-router. The screw will fall out from the lower hole. **Keep the screw for later use.**
- Pull out the dock-cable-router-single-tool_adapter from the xl-dock-cable-router.
- Remove the M3x10 screw from the dock-cable-router-single-tool-adapter. **Keep the screw for later use.**

STEP 5 New dock assembly: parts preparation

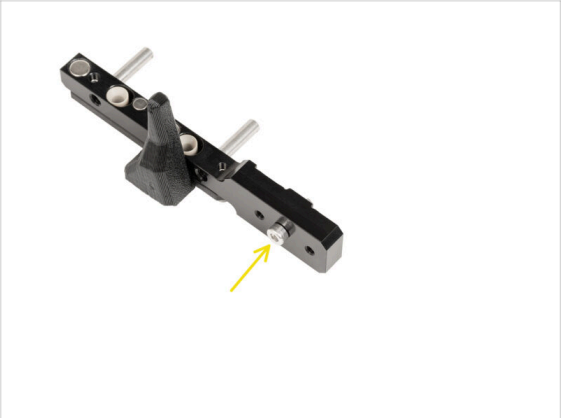


- **For the following steps, please prepare:**
- Xl-dock-cable-router (1x)
- Parking tool (1x)
- M3nS nut (1x)
  - ⓘ Take on from the **Nozzle Seal Assembly** bag.
- M3nN nut (2x)
- M3x14 (1x)
- M3x12bT screws (2x) *you removed in the previous steps*
- M3x8rT (2x) *you removed in the previous steps*

STEP 6 New dock assembly: inserting the nut

- Insert the M3nS nut into the hole in the new xl-dock-cable-router.
- ⓘ Take the new Xl-dock-cable-router from the upgrade.
- Push the nut into the xl-dock-cable-router using a 2.5mm Allen key.

STEP 7 New dock assembly: metal dock



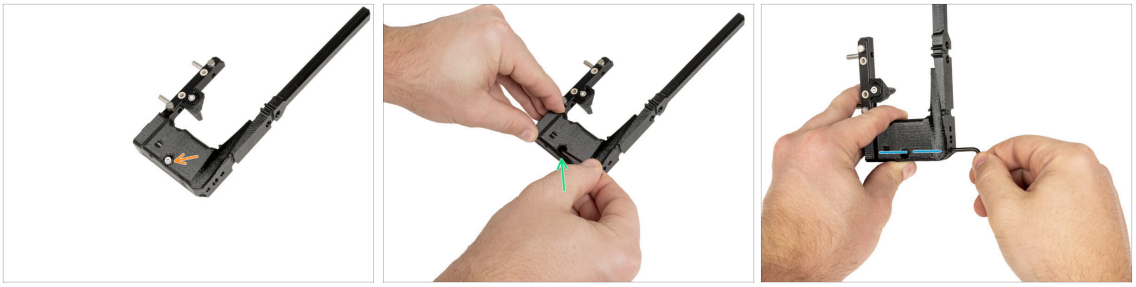
- Insert the M3x14 screw into the middle hole in the parking tool as described in the picture.
- Insert the parking tool with the screw into the new xl-dock-cable-router.

⚠ Double-check the screw. It's there? Proceed to the next step.

STEP 8 New dock assembly: upper screw

- Insert the M3x12bT screw into the plastic cutout.
- Tighten the screw with a T10 Torx key.

STEP 9 New dock assembly: lower screw

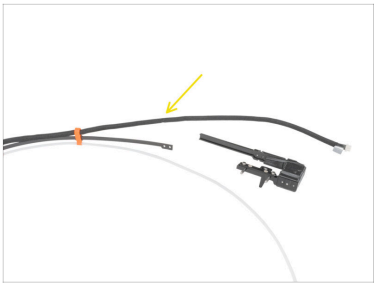


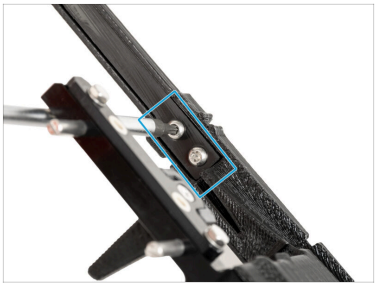
- Insert the M3x12bT screw into the lower hole.
  - ⓘ The screw has to be fully inserted into the xl-dock-cable-router.
- Push the screw into the xl-dock-cable-router with a T10 Torx key.
- Tighten the screw with the T10 Torx key.

STEP 10 New dock assembly: cable support

- From the back side of the xl-dock-cable-router:
- Locate two holes for the nuts.
- Insert two M3nN nuts into the holes.

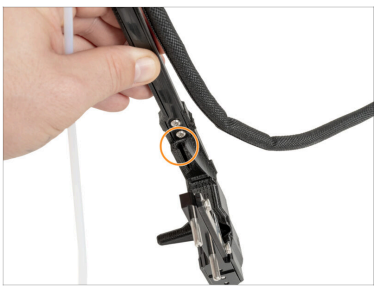
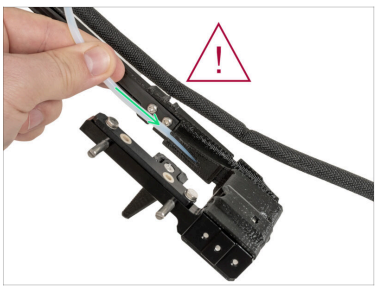
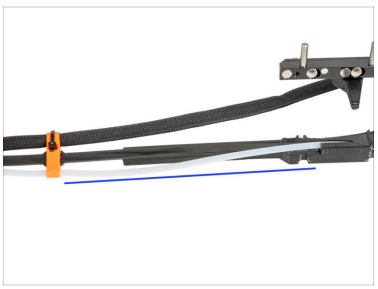
STEP 11 New dock assembly: cable support





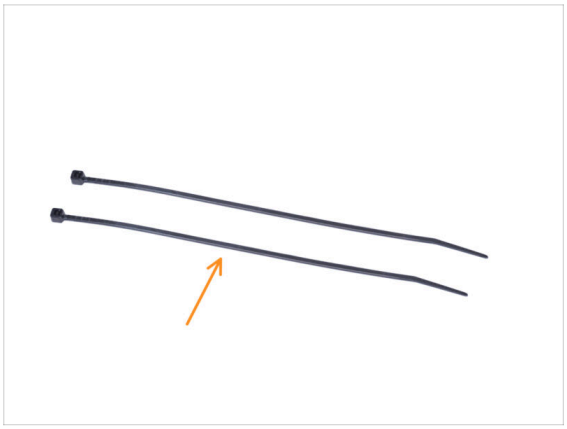
- Prepare the cable support next to the xl-dock-cable-router.
- From the front side of the xl-dock-cable-router:
- Insert the cable support into the xl-dock-cable-router as described in the picture.
- ⚠ Check that the cable support is correctly inserted as shown.
- Secure the cable support with two M3x8rT screws using a T10 Torx screwdriver.

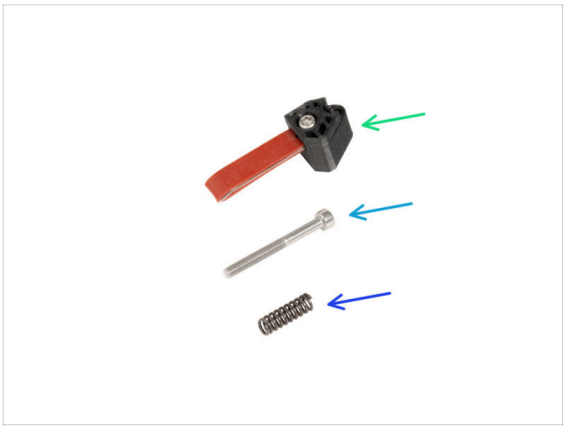
STEP 12 New dock aseembly: PTFE tube

- Locate a hole for the PTFE tube in the xl-dock-cable-router.
- ⚠ Push the PTFE tube through slowly and in a controlled, otherwise you may pinch or tangle it.
- Gently insert the PTFE tube into the cable bundle through the hole.
- The PTFE tube has to look like this.

STEP 13 New dock assembly: parts preparation



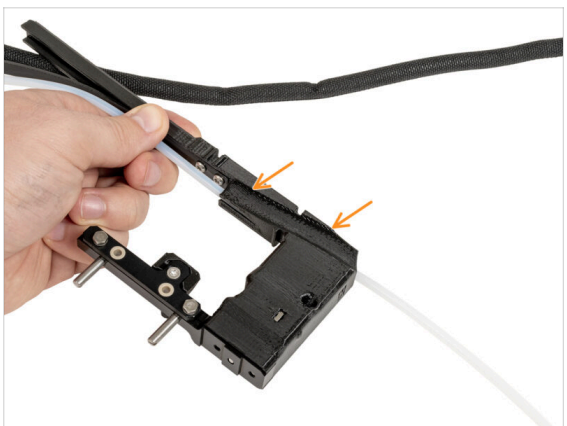


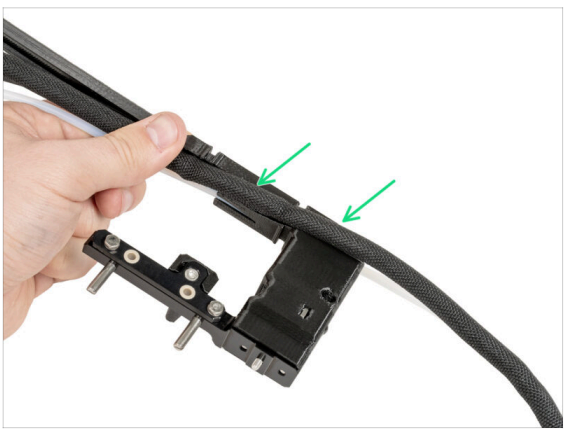
Starting in May 2024, you may receive a gray nozzle seal. The assembly and functionality remain identical to the red one.

- **For the following steps, please prepare:**
- Zip-ties (2x)
- Nozzle seal (1x)

Slide the spring over the M3x30 screw, taking care not to let it fall off.

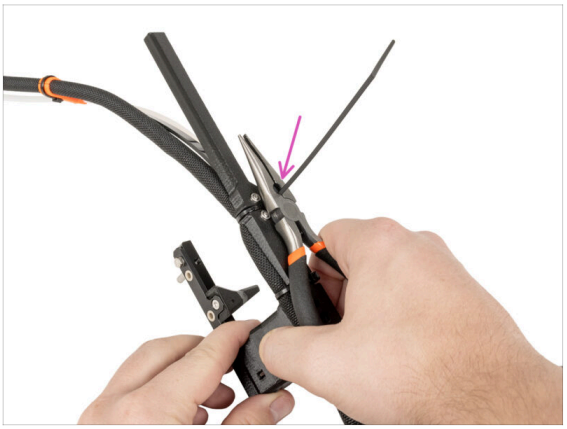
STEP 14 New dock assembly: cable bundle





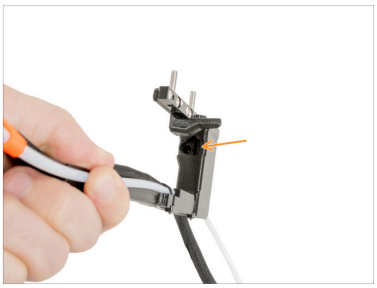
- Locate the cable bundle cutout on a side of the xl-dock-cable-router
- Insert the cable bundle into the cutout.

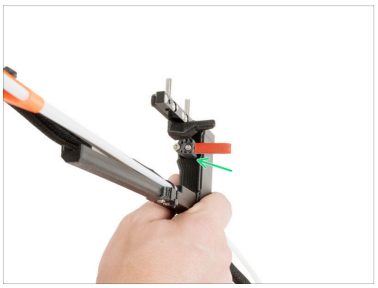
STEP 15 New dock assembly: cable bundle securing



- From the back side of the xl-dock-cable-router:
- Wrap the zip-ties around the dock and tighten it in the designated place.
- Cut the both excess of the zip ties.

STEP 16 New dock assembly: nozzle seal





- Locate the hole for the nozzle seal.
- Insert the nozzle seal (with the spring) into the hole.
- Secure the nozzle seal with a 2.5 mm Allen key. **Do not over-tighten, a few turns are enough for now.**

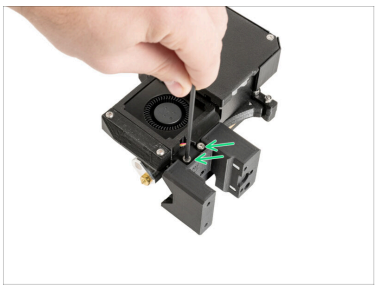
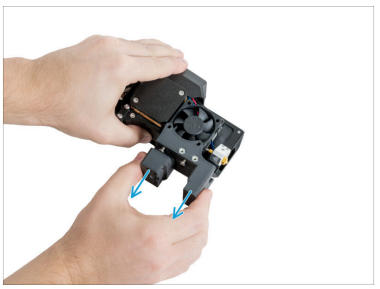
  ⓘ Height calibration will be done later after finishing the dock assembly.

STEP 17 Nextruder disassembly: cable bundle



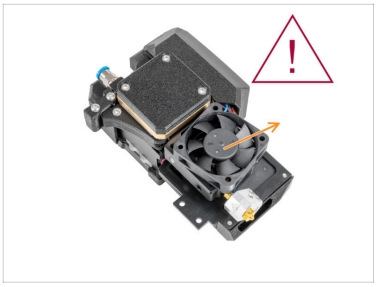
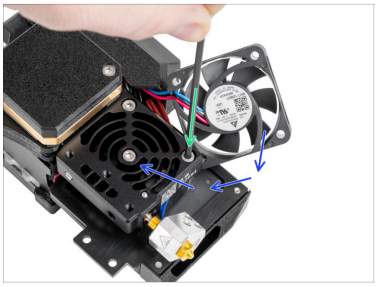
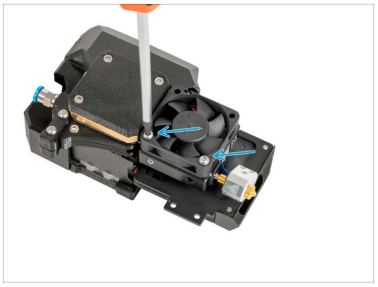
- From the front side of the Nextruder, using a T10 Torx screwdriver untighten two screws to release the cable support.
- Press the Festo fittings and pull out the PTFE tube.
- Press the secure pin and remove the Nextruder cable.

STEP 18 Nextruder disassembly: Nextruder body

- From the right side of the Nextruder, using a T10 Torx screwdriver unscrew two M3x20rT screws. **Do not throw them away!**
- From the left side of the Nextruder, unscrew two screws using a 2.5 mm Allen key.
- Pull out the Nextruder body from the Nextruder.

STEP 19 Nextruder disassembly: heatsink screw

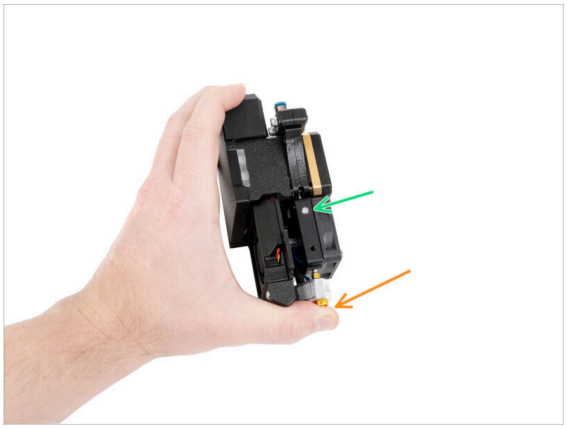
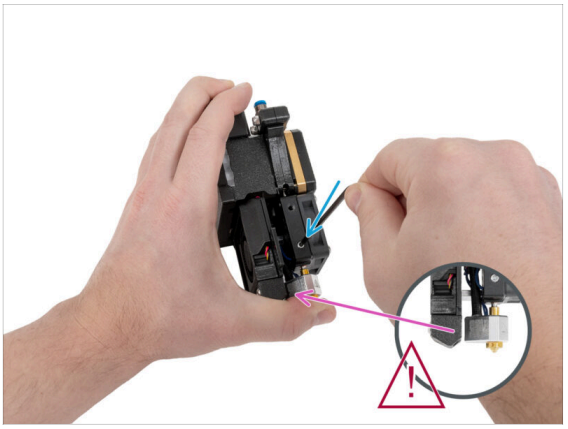




⚠ The heatsink fan is **still connected**, be gentle about the cables!

- Gently move the heatsink fan aside.
- With a 2.5 mm Allen key, remove the M3x10 screw from the lower hole. Leave the hole empty.
- Put the heatsink fan back in place.
- Insert two M3x20rT screws back into the fan holes and tighten them using a T10 Torx screwdriver.

⚠ **Don't pinch any cables!**

STEP 20 Grub screw relocate

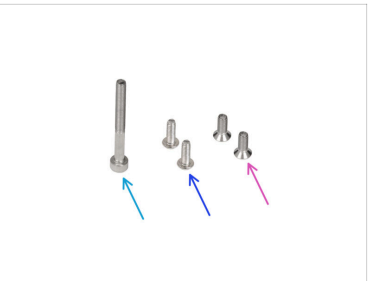



- Hold the Nextruder as described to prevent the nozzle from falling out of the heatsink after loosening the grub screw.
- Locate the grub screw in the extruder.
- Using a T8 Torx key, relocate the grub screw from the upper hole to the lower hole. **Tighten the screw gently!**

ⓘ The grub screw is for the nozzle release.

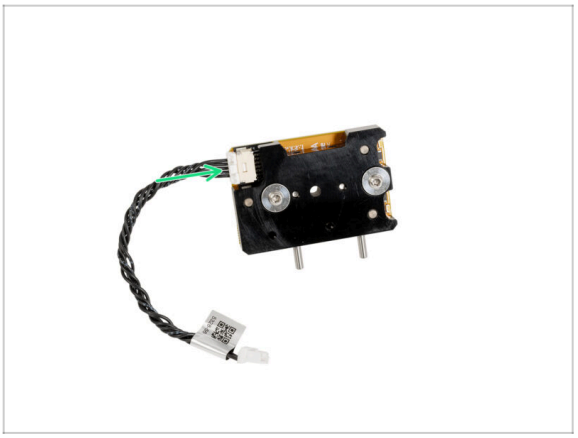
⚠ Make sure, that the Nozzle is not touching the fan-nozzle part.

STEP 21 Nextruder assembly: parts preparation



- **For the following steps, please prepare:**
- Tool-changer (1x)
- Tool-changer cable (1x)
- XL-tc-hotend-fan-shield (1x)
- M3x30 screw (1x)
- M3x8rT screw (2x)
- M3x8bT screws (2x)

STEP 22 Tool-changer cable connecting



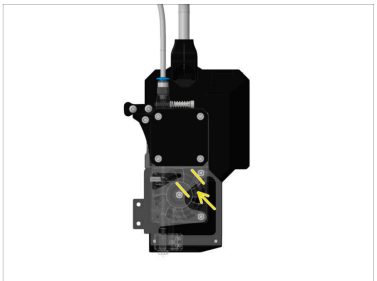
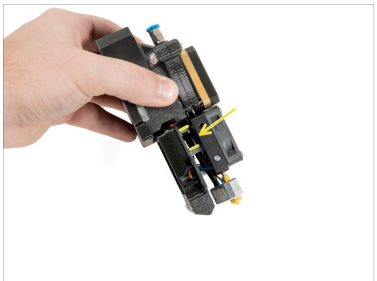
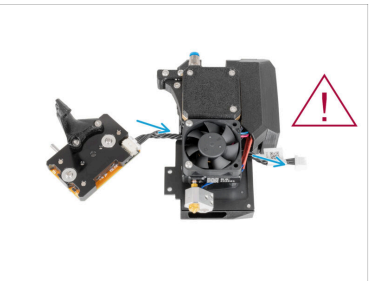
- Connect the tool-changer cable with the tool-changer.

STEP 23 Fan-shield assembly



- Insert two M3x8bT screws into the holes in the fan-shield.
- Locate two holes for the screws on the bottom side of the tool-changer.
- Attach the fan-shield and secure both M3x8bT screws using a T10 Torx screwdriver.

STEP 24 Tool-changer assembly

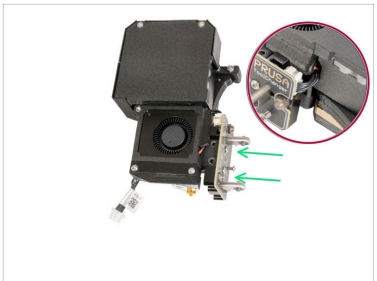




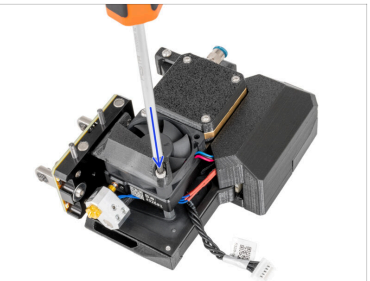
- Look at the graphic of the Nextruder.

  ⓘ The first picture shows, how it looks between the heatsink fan and the heatsink. The second photo shows a different angle.
- Locate the space between two M3nS spacers (long silver M3 nuts).
- Insert the tool-changer cable through two nuts to the back of the Nextruder.

⚠ **Be careful of cables!**

STEP 25 Tool-changer securing



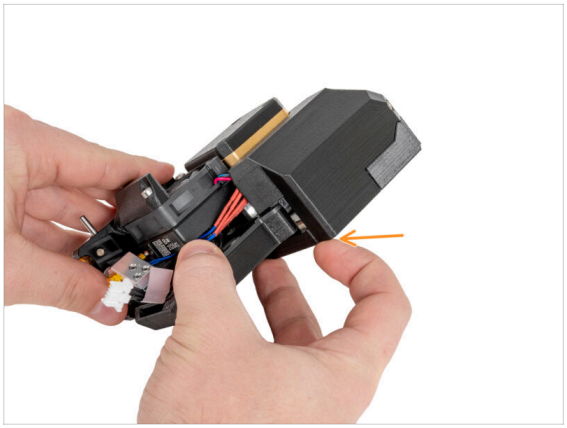
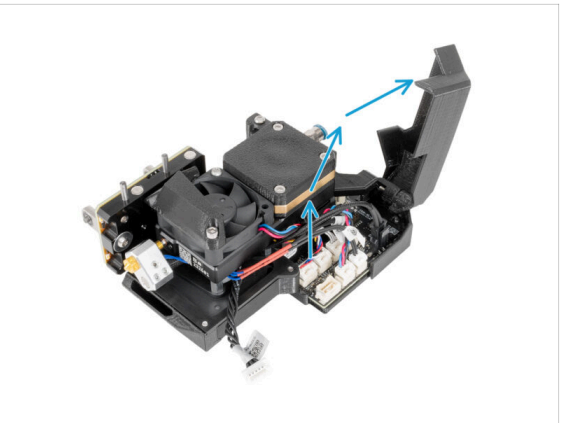


- From the Nextruder's print fan side:

⚠ The tool-changer cable has not to be pinched anywhere!

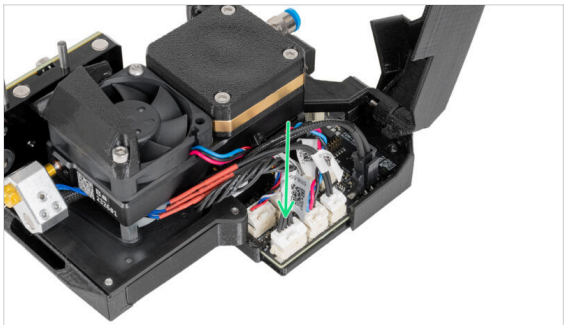
- Attach the tool-changer to the Nextruder.
- Secure the tool-changer with two M3x8rT screws using a T10 Torx screwdriver.
- From the Nextruder's heatsink fan side:
- Insert the M3x30 screw into the lower hole and tighten it using a 2.5 mm Allen key.

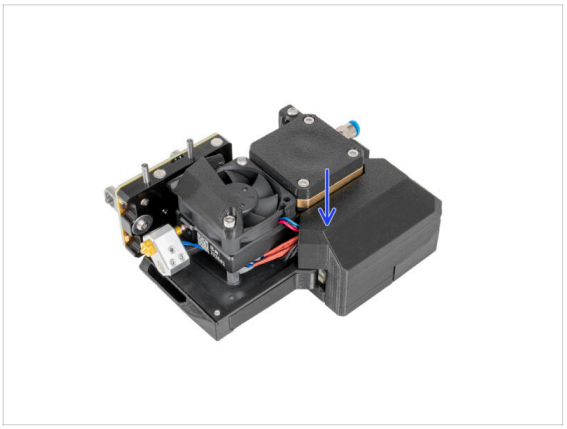
STEP 26 Tool-changer connecting

- Open the plastic cover by pulling out the bottom corner.
- Open the plastic cover.

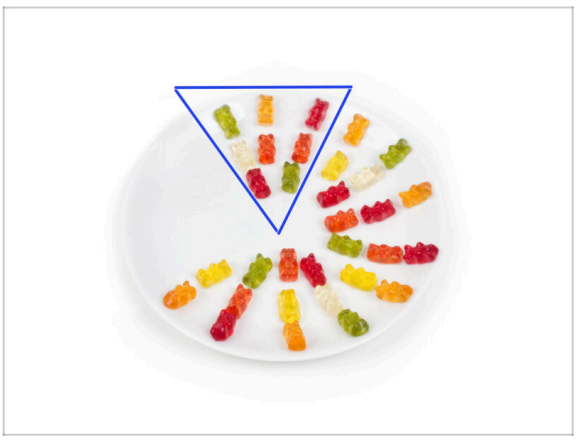
STEP 27 Tool-changer connecting





- Connect the tool-changer cable to the designated connector.
- Close the plastic cover. **Do not pinch any cables!**

STEP 28 Haribo



- Eat ten gummy bears.

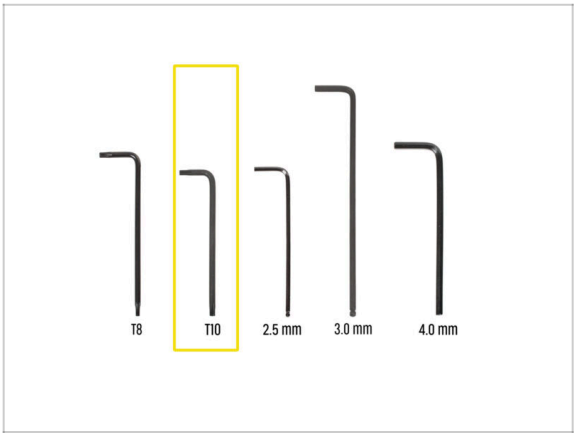
ⓘ **Did you know that** gummy bears were first created by a German candy maker named Hans Riegel in the 1920s.

STEP 29 Good job!

- Well done! Nextruder and the cable bundle are prepared for the next steps. Let's go to the next chapter: **5. ToolChanger assembly**

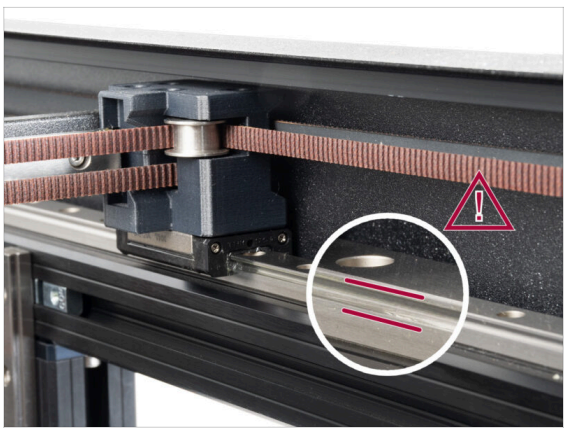
5. ToolChanger assembly

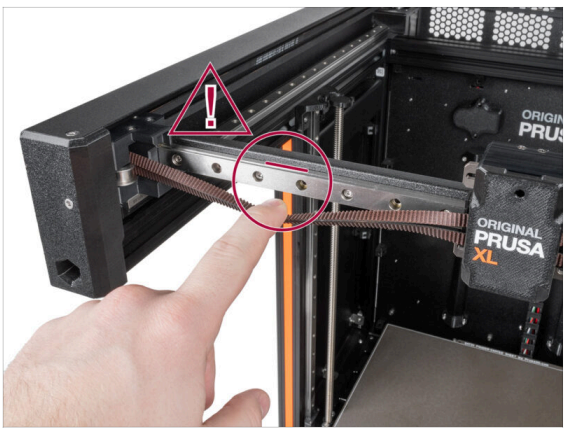
STEP 1 Tools necessary for this chapter



- **For this chapter, please prepare:**
- T10 Torx key (T10 Torx screwdriver)

STEP 2 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 mainly in the linear rail channels on the linear sides.

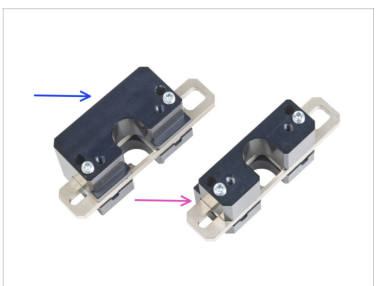
STEP 3 Preparing the X-carriage

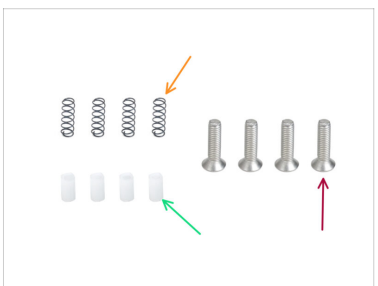
⚠ Reminder: To handle the printer, **always grab the handles on both sides of the printer**. Do not lift the printer by the aluminum extrusions or the metal sheet profiles on top.

ⓘ In the following steps, we will work with tools and install the Nextruder above the heatbed, it is recommended to protect it against any possible damage. An empty Prusament box can serve this purpouse.

- From the front side of the printer:
- Check the empty cardboard box approximately to the front center part of the heatbed.
- Move the X-axis assembly all the way to the front side of the printer.
- Move the X-carriage approximately to the center of the X-axis.

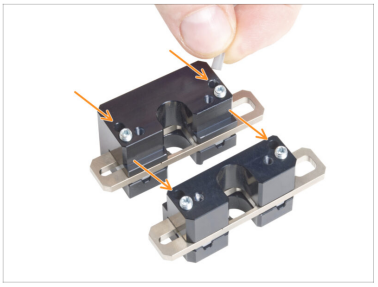
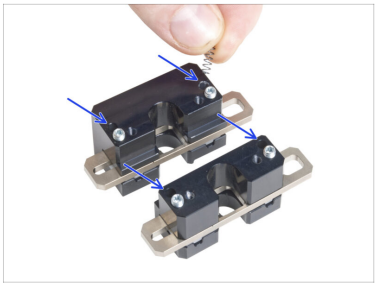
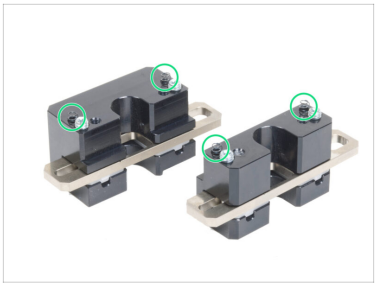
STEP 4 Installing the ToolChanger: parts preparation





- **For the following steps, please prepare:**
- Tool Changer Upper Lock (1x)
- Tool Changer Lower Lock (1x)
- Spring 3x9 (4x)
- TC push pin (4x)
- M3x12bT screw (4x) *you removed in the previous chapter*
- X-carriage-cover (1x) *you removed in the previous chapter*

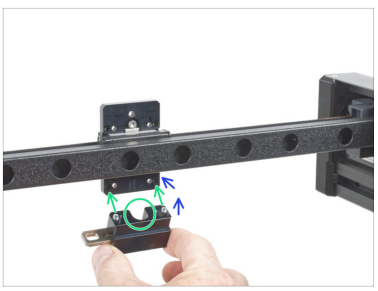
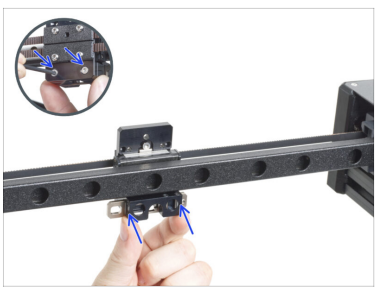
STEP 5 Preparing the ToolChanger

- Insert each TC push pin into the holes in both metal parts.
- Insert each Filament sensor spring A3 into the same holes as a TC push pins.
- The tool changer is prepared. **The springs must be sticking out.**

⚠ **Be careful that the springs and pins do not fall out when handling the parts.**

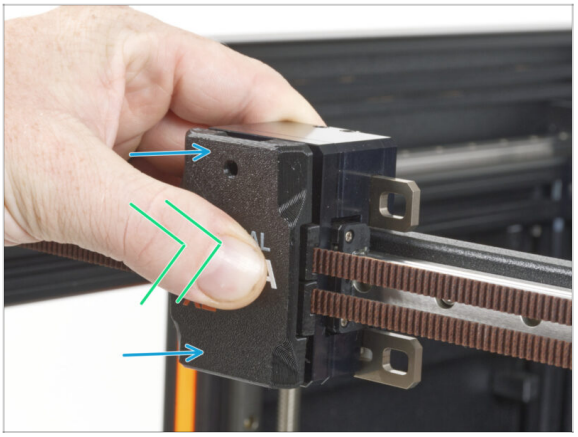
STEP 6 Installing the ToolChanger


⚠ **Be careful that the springs and pins do not fall out when handling the parts.**

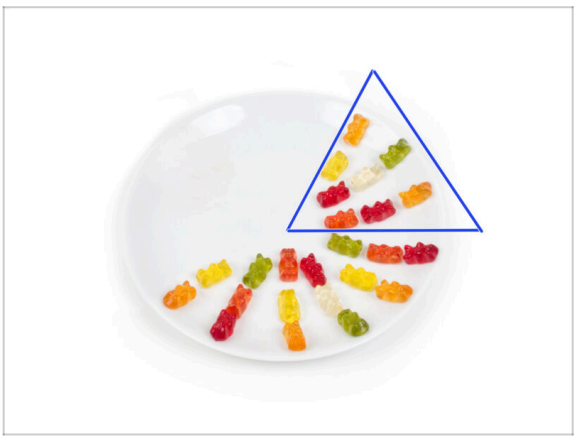
- Line up the screws in the TC block lower assembly lock with the blind holes in the X-carriage. **See the correct orientation of the part**. Use the U-shaped groove in the part.
- Take a look at the X-carriage from the rear side.
- Attach the TC block lower assembly lock to the X-carriage and secure it with two M3x12bT screws from the front side. Ensure the correct orientation of the part.
- Attach the TC block upper assembly to the X-carriage from the top and secure it with two M3x12bT screws from the front side.

STEP 7 Covering the X-carriage



- Attach the x-carriage-cover on the X-carriage with the hole up.
- Push the center of the cover using your thumb. The cover will then snap into the latches on the X-carriage. You will feel a light "click" when it is successfully snapping.

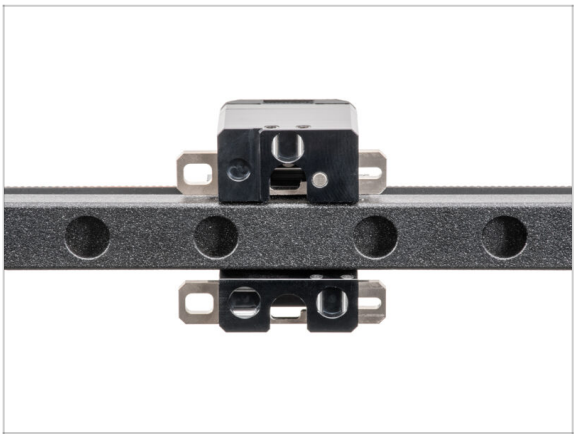
STEP 8 Reward yourself!



- 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.

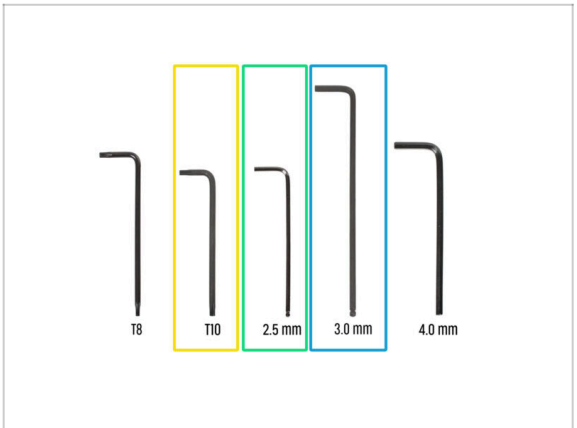
STEP 9 Almost done



- That wasn't so hard. Anyway, good job! Let's go to the next chapter: **6. Nextruder & accessories assembly**

6. 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

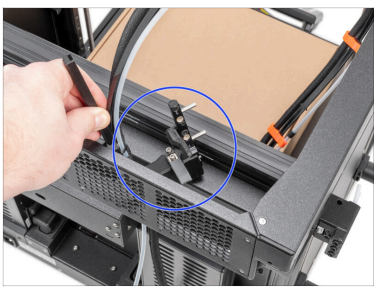
STEP 2 Nextruder cable: parts preparation

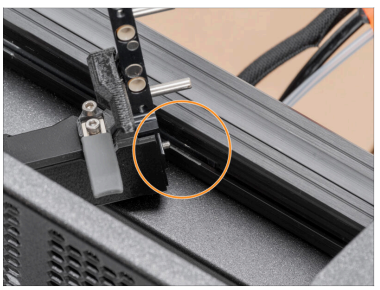
- For the next steps, please prepare:
- Cable bunde (2x)

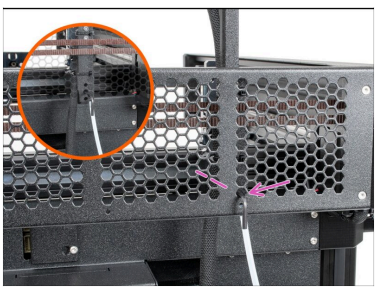
STEP 3 Guiding the Nextruder cable

- Turn the printer, so the back side is facing you:
- Locate the long metal profile with five M3 holes inside the rear aluminium extrusion and push it to the left.
- We'll use the first two M3 holes in the metal profile.

STEP 4 Attaching the Nextruder docks





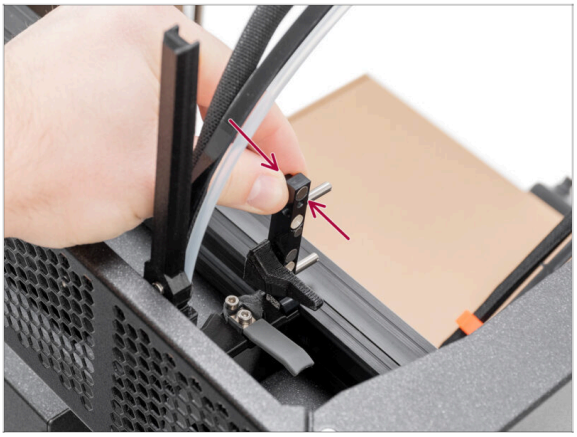


- Place the xl-dock-cable-router on the bottom metal sheet below the aluminum extrusion.
- There is a protruding screw from the xl-dock-cable-router. Attach the screw to the first screw hole on the long metal profile. Through the hole in the rear metal sheet, check if the cable holder is lined up with 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.

ⓘ **The dock is a press fit, so the screw needs to be tightened very hard.**

ⓘ **Attach all the remaining docks using the same procedure**

STEP 5 Dock inspection

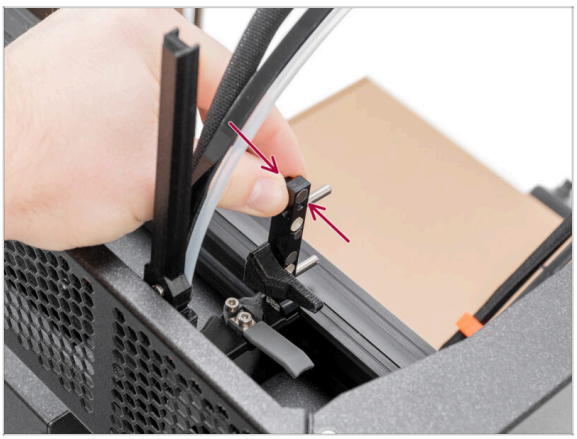


⚠ Check that the docks are properly tightened. **The dock must not move.**

⚠ **If the dock moves, tighten the screw more as per the previous step.**

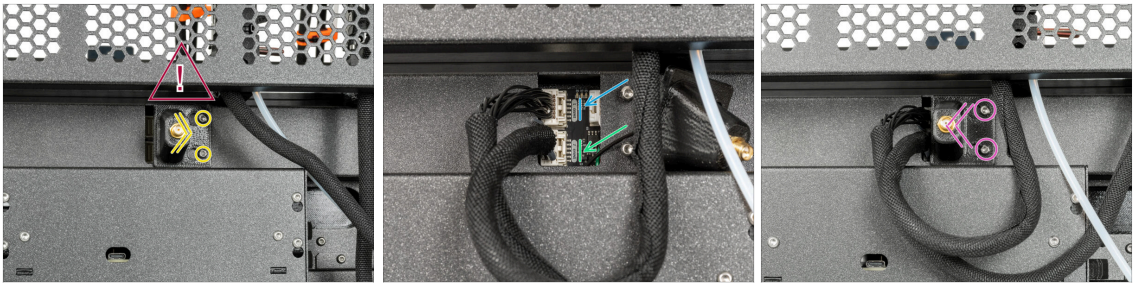
- Please watch the video in the next step for a better understanding.

STEP 6 Dock inspection: video



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

STEP 7 Connecting the Nextruder cables

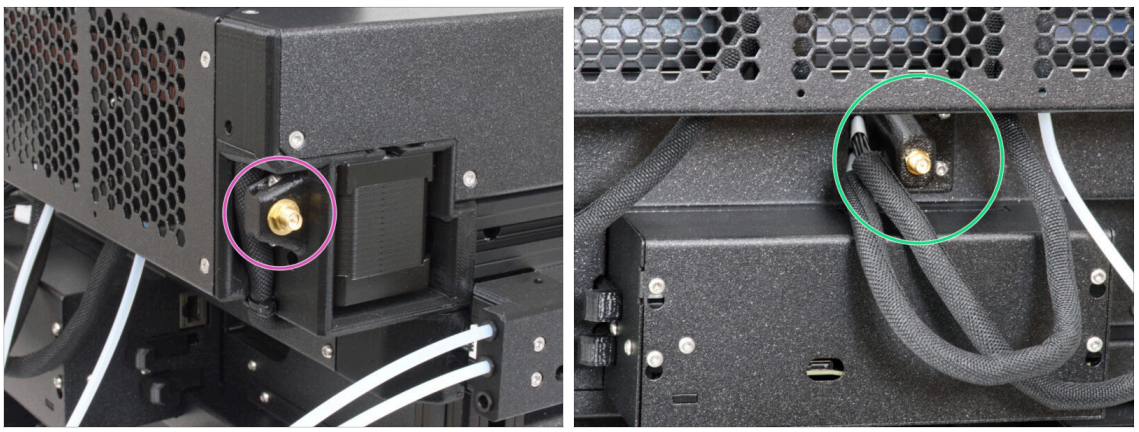


- Locate the Wi-Fi-antenna-holder (cover) on the rear of the printer.

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

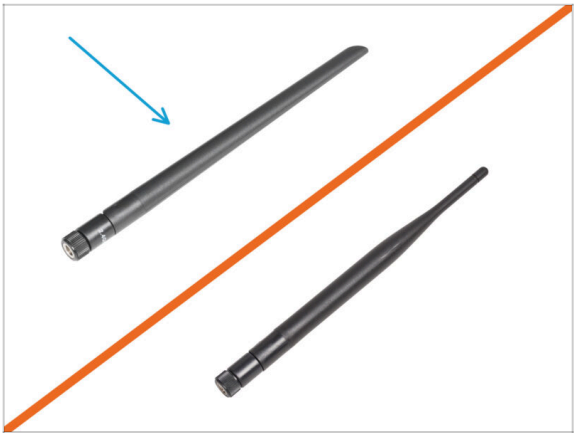
- Loosen two screws on the cover slightly. No need to remove them completely. Push the cover to the right and remove it from the printer.
- Connect the first Nextruder cable to the upper slot labeled DWARF 1.
- Connect the second Nextruder cable to the lower slot labeled DWARF 2.
- Attach the cover to the screws. Push it all the way to the left and tighten the screws.

STEP 8 Wi-fi antenna holder versions



- The antenna connector is prepared by the manufacturer:
  - Version A: The Wi-Fi antenna holder is on the side. **We haven't removed it.**
- The antenna connector has to be assembled by you:
  - Version B: The Wi-fi antenna is in the middle. **Continue to the next step.**

STEP 9 Installing the Wi-Fi antenna: parts preparation



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

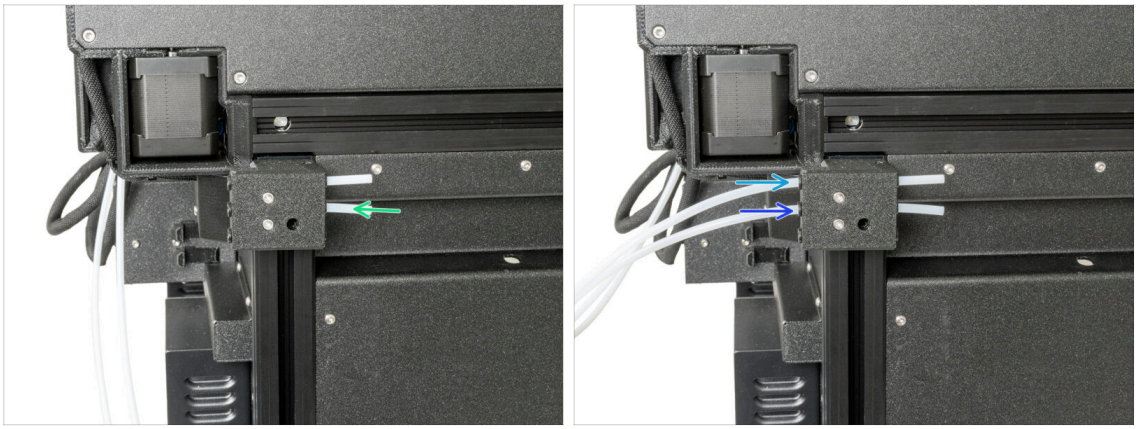
  The Original Prusa XL might be shipped with one of the two versions of the Wi-Fi antenna. Each has a different shape. Both work the same.

STEP 10 Installing the Wi-Fi antenna

This step is only for the printer, which has a Wi-Fi antenna on the back of the printer. If you have the **antenna on the side** of the printer, **proceed to the next step**.

- Locate the Wi-Fi antenna connector in the middle of the printer.
- 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.

STEP 11 Filament sensor



- Turn the printer, so that left side is facing you.
- Insert the PTFE tube into the middle slot in the filament sensor.
- Insert the first Nextruder PTFE tube all the way into the upper hole in the part.
- Insert the second Nextruder PTFE tube all the way into the middle hole in the part.

STEP 12 Spool holder: parts preparation

- **For the following steps, please prepare:**
- Spool-holder-slider (1x)
- Spool-holder-base(1x)
- M4x12 screw (1x)
- M4nEs nut (1x)

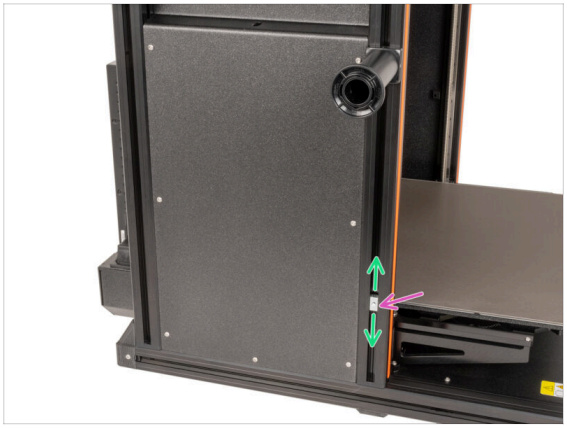
STEP 13 Assembling the spool holder

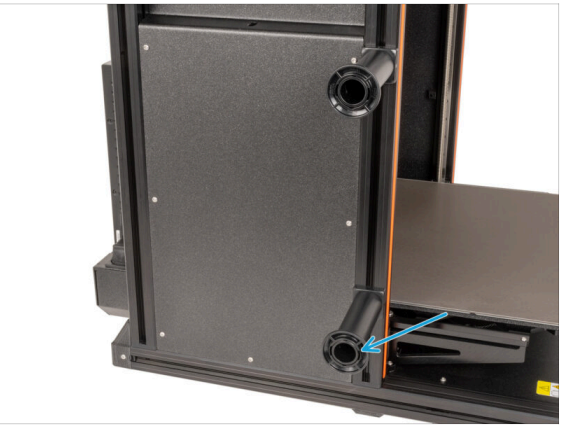
- Locate pins two pins on the spool-holder-base and line them with the rails in the spool-holder-slider.
- Insert the spool-holder-base into the spool-holder-slider and push it through a little through the part.

STEP 14 Preparing the spool holder

- Insert the M4x12 screw on the longer side of the 3mm Allen key.
- Insert the 3mm Allen key with the M4x12 screw through the assembled spool holder to the prepared hole in the spool-holder-base.
- The M4x12 screw has to protrude through the spool-holder-base.

STEP 15 Spool holder: left side assembly





- Carefully turn the printer so that the side with the Filament sensor (with 3 PTFE tubes) is facing you.
- Insert the second M4nEs nut in the extrusion. Insert the side with the spring (metal plate) first, then push the nut inside.
- The M4nEs nut is free to move, you can adjust the position as you want. But remember, the nut must be slightly pushed in to smoothly move. Anyway, we recommend approximately the same position as you can see in the picture.
- Attach and tighten the second spool holder to the M4nEs nut using a 3 mm Allen key. Note that there is a protrusion on the spool-holder-mount, which must fit into the groove in the extrusion.

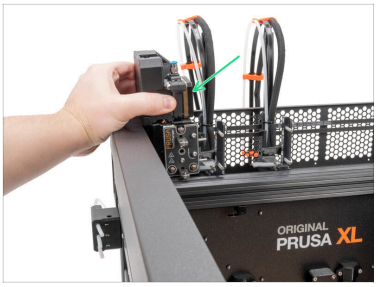
⚠ **Do not use the spool holder as a handle!**

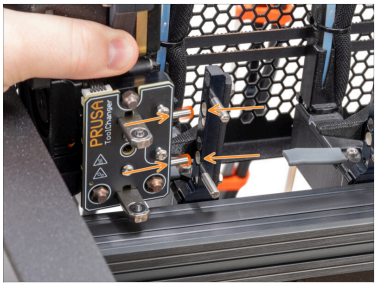
ⓘ Keep in mind that if you mount the Spool holder too high or too low, it may not fit the filament spool on it. There has to be enough space around it.

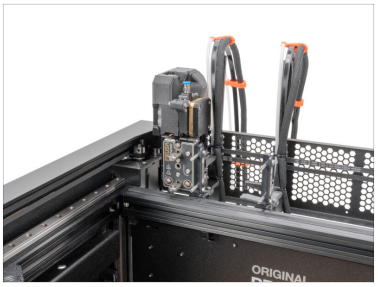
STEP 16 Nextruder assembly: parts preparation

- For the next steps, please prepare:
  - Nextruder (2x)

STEP 17 Docking the Nextruder

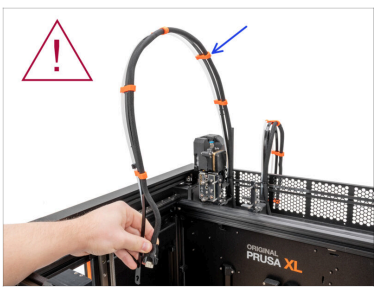


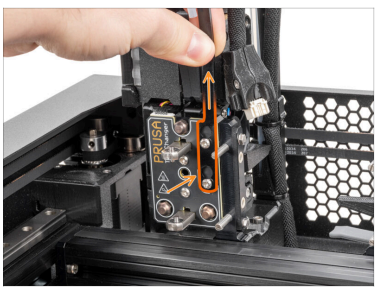


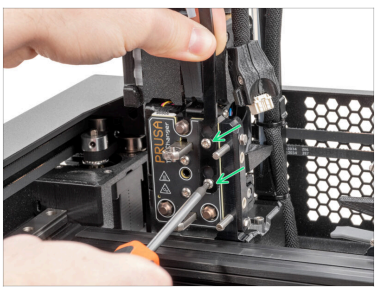


- Take the Nextruder and place it carefully next to the dock.
- Place the two metal inserts through the white holes in the dock. The magnets will help you dock the Nextruder.
- Well done, the first Nextruder is ready!
- Connect the second Nextruder in the same way as the first.

STEP 18 Nextruder cable bundle assembly

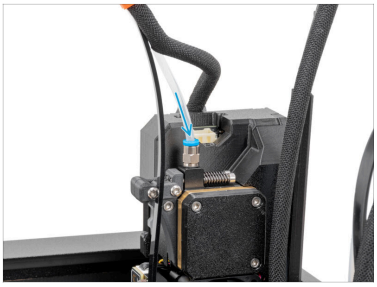
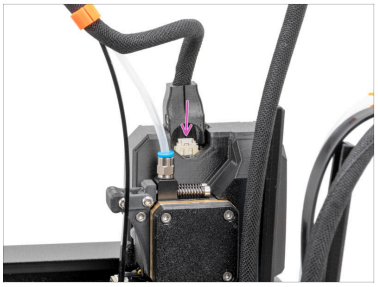
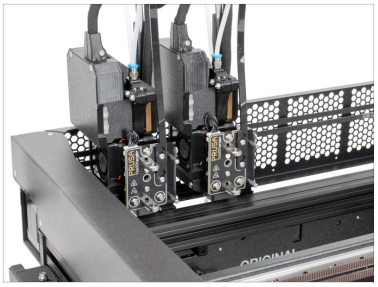






- **Repeat this step for all tool heads:**
  - Take the first Nextruder cable bundle.
  - ⚠ Check that the cable bundle is not twisted!
  - Hook up the keyhole openings in the flexible plate of the cable bundle onto the screw heads and push it up to correct the position.
  - Hold the Nextruder and using a T10 key tighten the marked two screws.

STEP 19 Nextruder cable bundle assembly

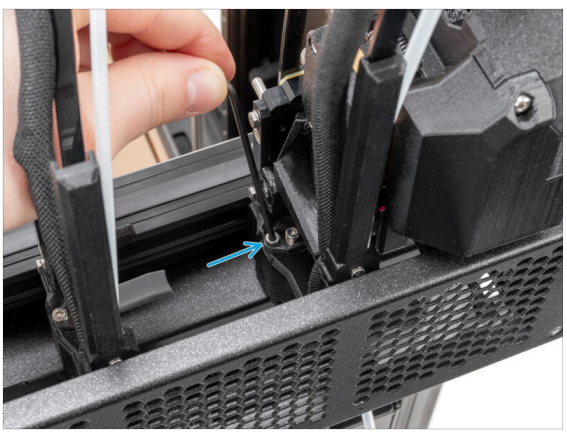




- **Repeat this step for all tool heads:**
  - Insert the semi-transparent PTFE tube into the fitting on the Nextruder. Push it all the way in.
  - Attach the cable connector into the top of the Nextruder.

ⓘ Starting from September 2024, you may receive a new black Fitting M5-4. The assembly and functionality remain identical to the blue one.

- Assemble and connect all Nextruders.
- Good job!

STEP 20 Nozzle seal heigh calibration

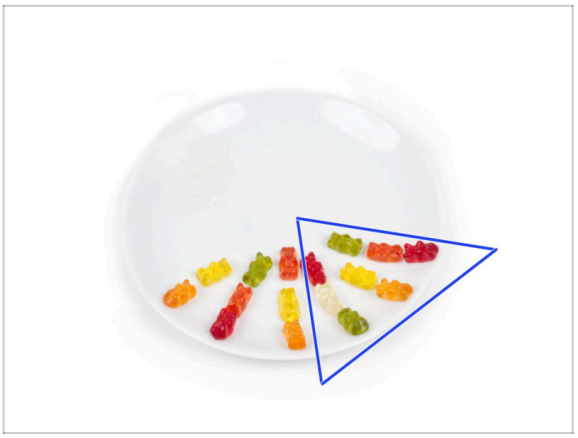
ⓘ Starting in May 2024, you may receive a gray nozzle seal. The assembly and functionality remain identical to the red one.

- 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.
- Proceed to the next step.

STEP 21 Nozzle seal heigh 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.
- The correct position of the nozzle seal is when it isn't bent and is touching the nozzle.

STEP 22 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 23 Remaining fasteners

- To avoid the concern of having leftover nuts and screws, refer to the following list of fasteners that should remain unused from the initial package upon completing the assembly.

ⓘ Note that if you have used any spare, the final count may vary.

- **Remaining fastener items:**
  - M3x8bT (1x)
  - M3x8rT (2x)
  - M3x10 (1x)
  - M3x12 (1x)
  - M3x12bt (2x)
  - M3x14 (1x)
  - M3x30 (1x)
  - M3x35 (2x)
  - M3nN (1x)
  - M3nS (1x)
  - Spring 15x5 (1x)

STEP 24 Almost done!

- **Congratulation!** Your Original Prusa XL is ready to be fired up!
- Compare the final look with the picture.
- Let's go to the next chapter: **7. First run**

7. 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
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 4.7.0 or newer**

ⓘ You can download firmware updates in **Downloads**. The guide for updating the firmware is in **How to update firmware (MK4/XL)**

ⓘ 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 Preparing the printer

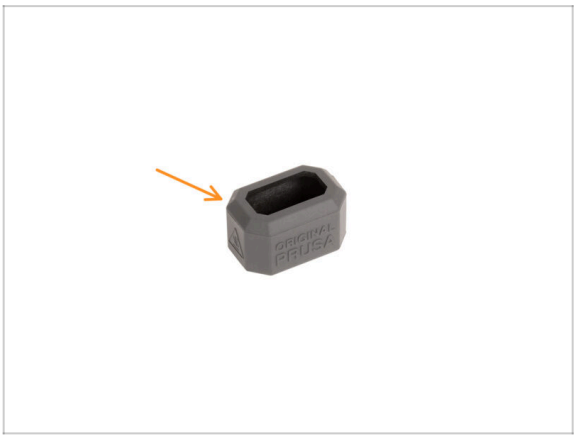
⚠ Make sure that the printer is placed in a stable place where no ambient vibrations are transmitted (for example, where other printers are printing).

- From the rear side of the printer, plug in the PSU cable.
- Turn the power switch ON (symbol "**I**").

STEP 3 Factory reset

- After upgrading, the first thing we need to do is reset the printer to factory defaults.
- On the printer screen, go to *Settings -> System -> Factory reset* and select Reset Settings & Calibrations.
- Wait till the printer is ready.
- Restart the printer.
- Select the language you prefer.
- Good job. The printer is ready for Wizzard. Proceed to the next step.

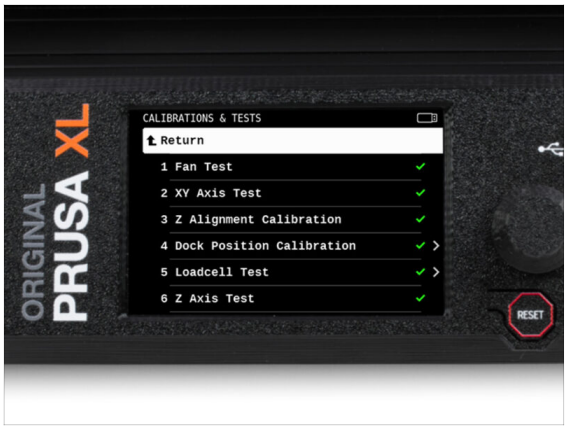
STEP 4 Prusa Nextruder sock (Optional)



- A silicone sock is supplied with each Nextruder package.
- If you want to install the sock, **do it before the calibration**.

  How to install the sock - check the article.

STEP 5 Wizard



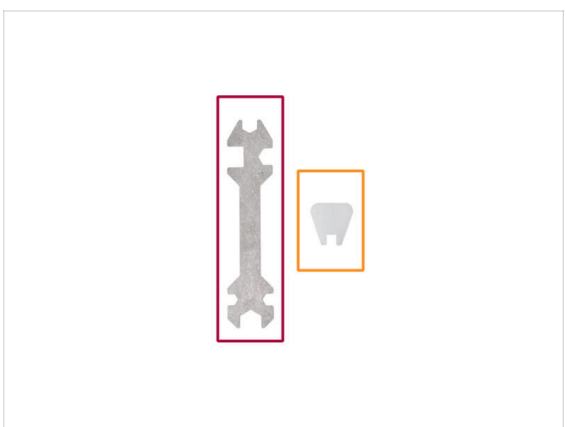
- After the printer starts up, the screen prompts for the printer test and setup wizard.

ⓘ The wizard will test all important components of the printer. The whole process takes a few minutes. Some parts of the wizard require direct user interaction. Follow the instruction on the screen.

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

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

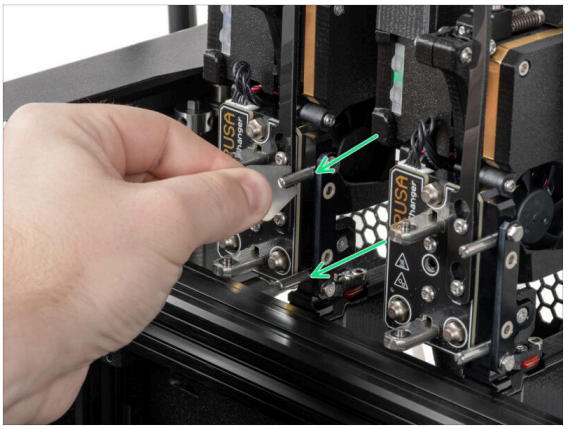
STEP 6 Wizard: Dock Position Calibration



- You will need:
  - Universal wrench (1x)
  - Mini wrench (1x)
- Dock calibration will guide you through how to properly calibrate the position of individual tool heads on the printer.

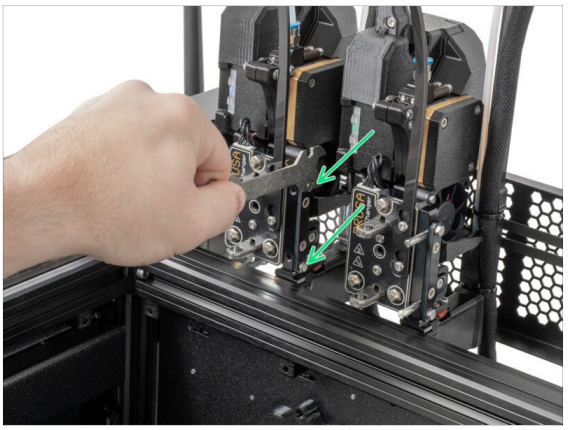
⚠ It is necessary to follow every step in the dock calibration properly! **Do not rush, read every step twice, then proceed with the instruction.**

STEP 7 Wizard: Loosen pin



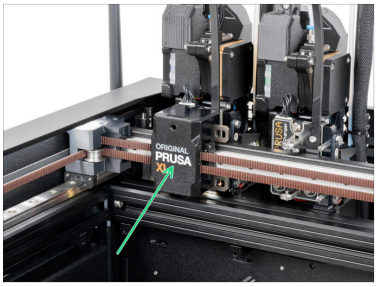
- Follow the wizard instructions on the screen.
- Using a Mini wrench, unscrew and remove both dock pins on Dock 1.

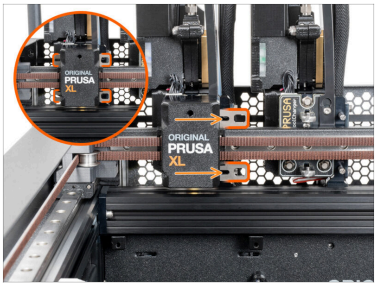
STEP 8 Wizard: Loosen screws



- Follow the wizard instructions on the screen.
- Using a Uni wrench, loosen two screws. **A few turns are enough.**

STEP 9 Wizard: Lock the tool

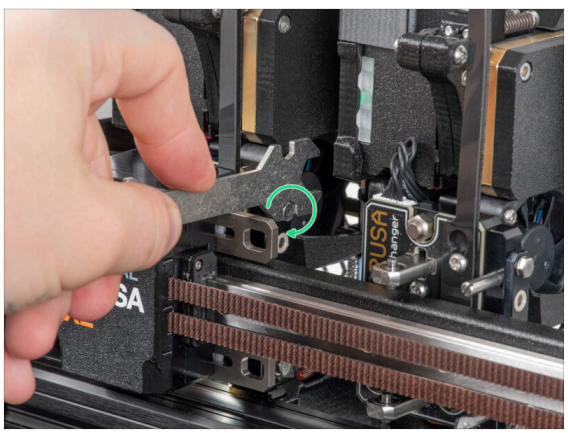




- Follow the wizard instructions on the screen.
- Manually move the Tool changing mechanism to the first tool.
- Manually lock the metal bars as described in the picture.

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

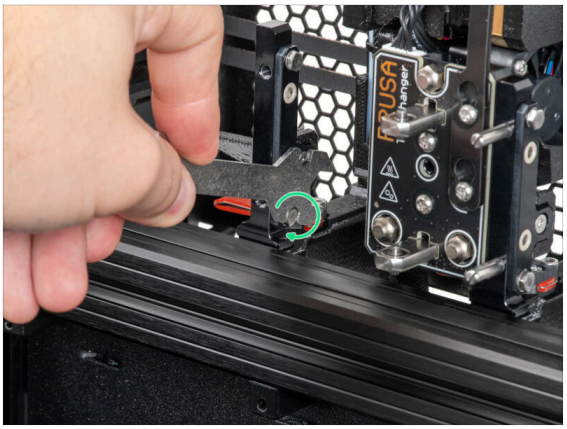
STEP 10 Wizard: Tighten the upper screw



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

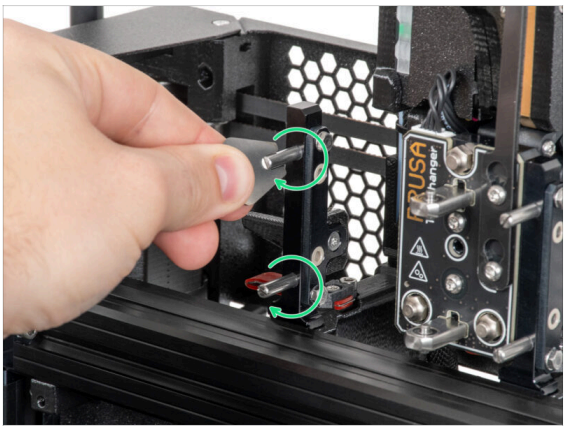
⚠ After confirming by the *continue* button on the LCD, the XY axis will leave the dock with the tool. **Clear the space.**

STEP 11 Wizard: Tighten the lower screw



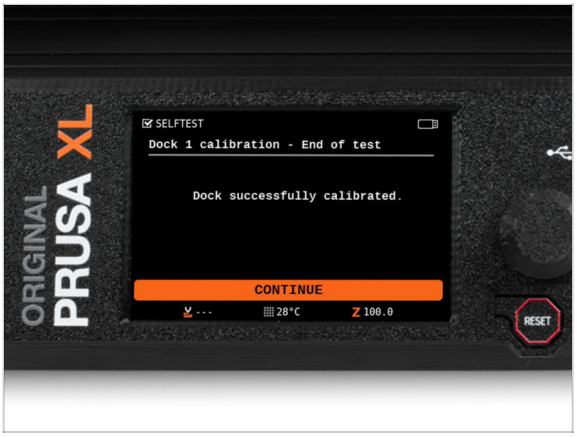
- Follow the wizard instructions on the screen.
- Using a Uni wrench, tighten the lower screw on a side of the dock.

STEP 12 Wizard: Install pins



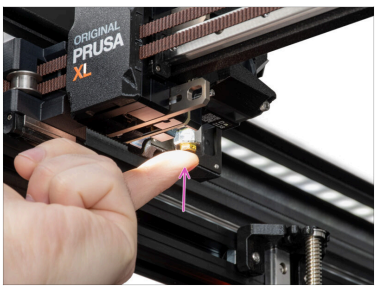
- Follow the wizard instructions on the screen.
- Insert the two metal pins and tighten them with a Mini wrench.
- After clicking on the *continue* button on the LCD, the printer will put back the tool into the dock1 and do a few calibration moves.
- After the Dock1 calibration, proceed to the Dock2 calibration and repeat the steps.

STEP 13 Wizard: Dock successfully calibrated



- Good job! The Dock1 is calibrated.
- According to the number of print heads, the dock calibration process is repeated.

STEP 14 Wizard: Test Loadcell



- The next step of the wizard will prompt you to touch the nozzle to test and calibrate the Loadcell. During this procedure, the parts of the printer are not heated, you can touch the parts of the printer. Click on **Continue**.
- Do not touch the nozzle yet, wait until prompted with the message: **Tap the nozzle NOW**.
- Slightly tap the nozzle. No need to use extra force. In case the Loadcell does not detect enough touch, you will be prompted to repeat the step. Otherwise, you will see **Loadcell test passed OK** when it succeeds.

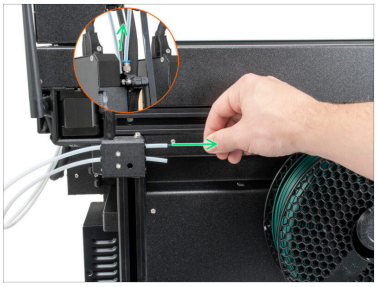
STEP 15 Wizard: Recalibrate Filament Sensors

- After the upgrade, we need to recalibrate the filament sensors.
- Your printer should have no filament at all.
- Please proceed through the filament sensor calibration. Follow the instructions on the display.
- Select **NO**, your printer has no filament at all.
- Wait for the printer to prompt you to insert the filament into the side filament sensor.
- Proceed to the next step.

STEP 16 Wizard: Recalibrate Filament Sensors

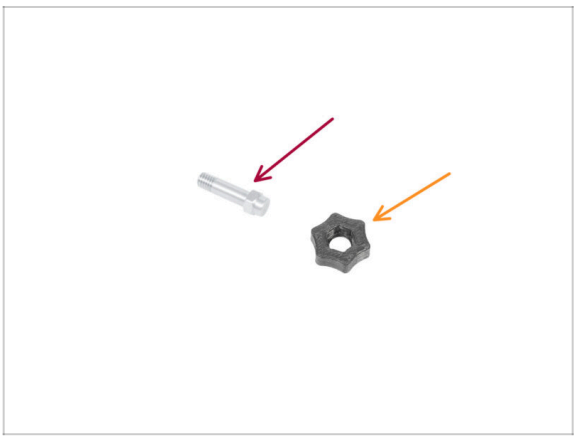
- Now, insert the filament into the PTFE tube (the tool head you selected) in the side filament sensor and push it until it reaches the filament sensor in the extruder (you will feel a slight resistance).
- You can check the side filament sensor (left) and extruder filament sensor (right) status on the bottom bar on the screen.
- It takes several seconds for the filament sensor to be calibrated.
- After the successful calibration, proceed on the screen by selecting **Continue**.
- Proceed to the next step.

STEP 17 Wizard: Recalibrate Filament Sensors



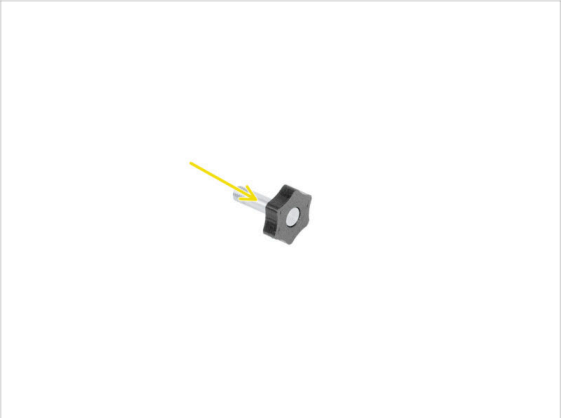
- You will be prompted to remove the filament from the side filament sensor.
- Remove completely the filament from the side filament sensor.
- On the screen, select **Finish** and proceed with the calibration with all tool heads on your printer.

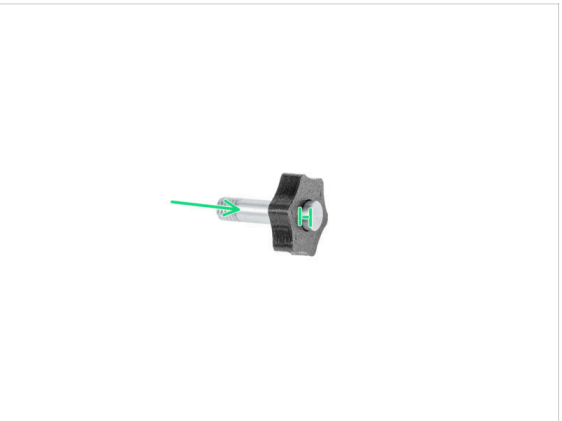
STEP 18 Calibration pin: parts preparing



- For the next step, please prepare:
  - Calibration pin (1x)
  - Calibration-pin-key (1x)

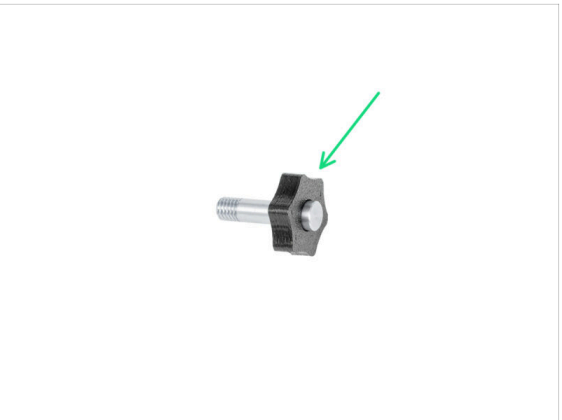
STEP 19 Calibration pin: parts assembly





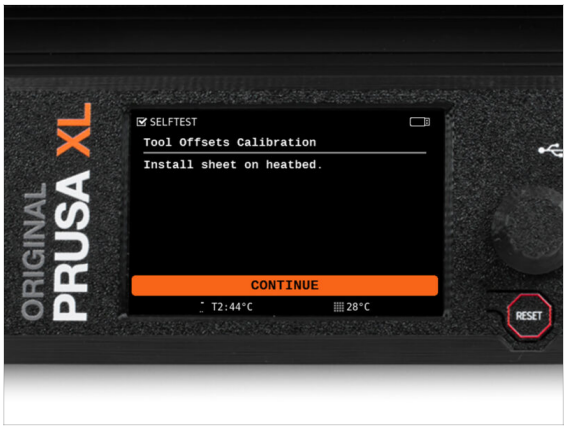
- Insert the calibration pin into the plastic part.
- Push the pin into the plastic part, so it will make a small gap on top.
- Well done, the pin is prepared.

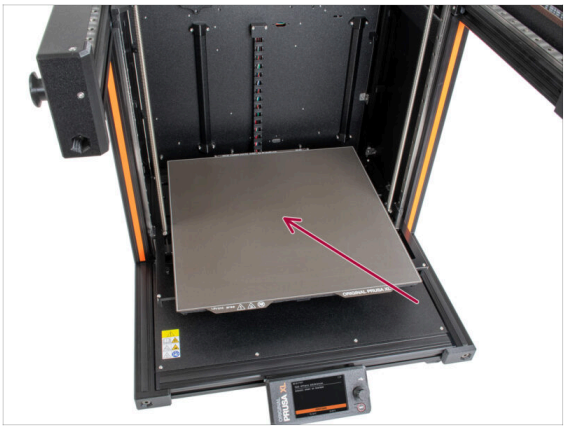
STEP 20 Wizard: Tool Offset Calibration



- 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.
- Calibration pin (1x)

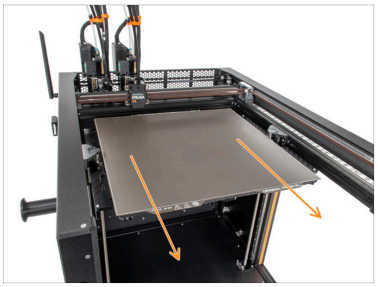
STEP 21 Wizard: Sheet install

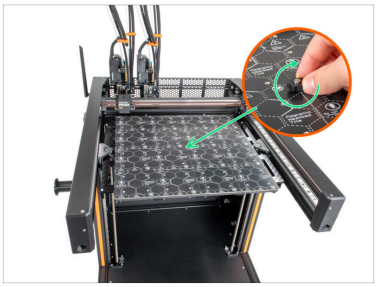




- Follow the wizard instructions on the screen.
- Put the print sheet on a heatbed.
- Now, the printer starts short calibration.

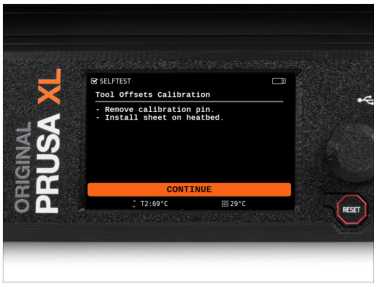
STEP 22 Wizard: Calibration pin installation

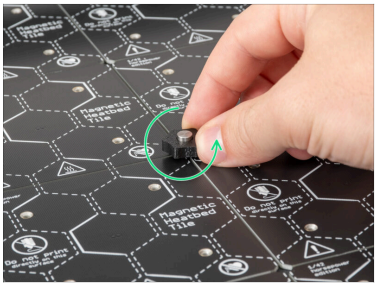


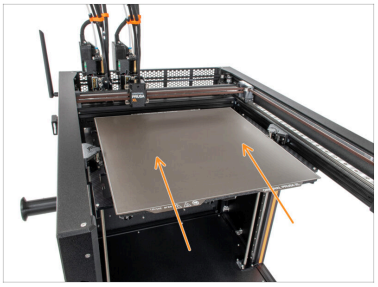


- Follow the wizard instructions on the screen.
- Take off the print sheet from the heatbed.
- Install the calibration pin into the middle of the heatbed. Turn the pin clockwise.
- Now, the printer will calibrate all five tool heads.

STEP 23 Wizard: Offset calibration done





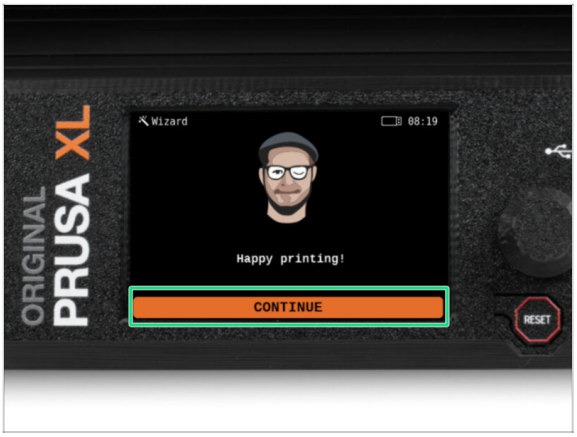


- Follow the wizard instructions on the screen.
- Untighten the calibration pin from the heatbed and take it off. Rotate counterclockwise.
- Place the print sheet onto the heatbed.
- The printer will finish the calibration.
- Good job! The Offset calibration is done.

STEP 24 Calibration pin

- Insert the calibration pin into the side filament sensor.

STEP 25 It's done



- **That's all, the printer is ready to print.** But still, follow the instructions in this manual to the end.

STEP 26 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.

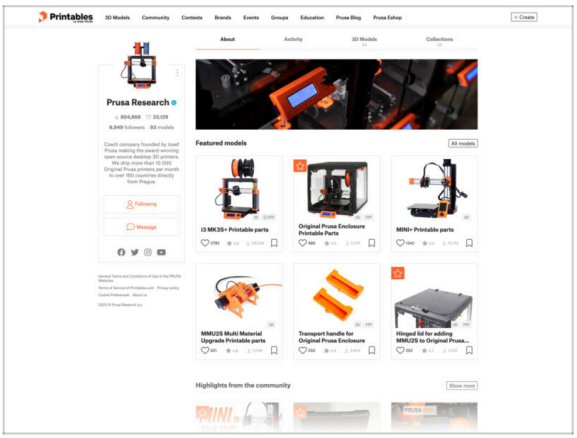
ⓘ **Did you know that** Haribo gummy bears are one of the most important parts of the Original Prusa printers assembly instructions.

STEP 27 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**.

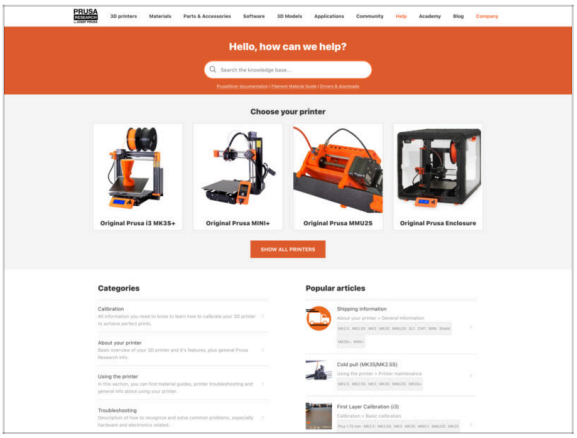
Read the chapters *Disclaimer* and *Safety instructions*.

STEP 28 Printable 3D models



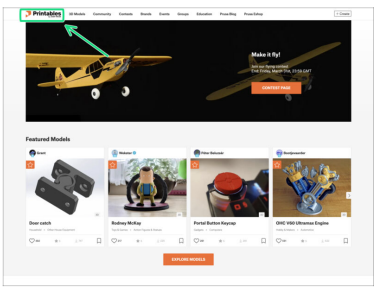
- **Congratulations! You should be ready to print by now ;-)**
- You can start by printing some of our test objects bundled on the included USB stick - you can check them out Printables.

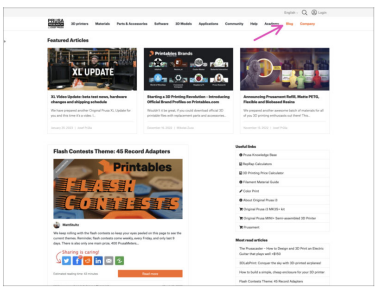
STEP 29 Prusa knowledge base

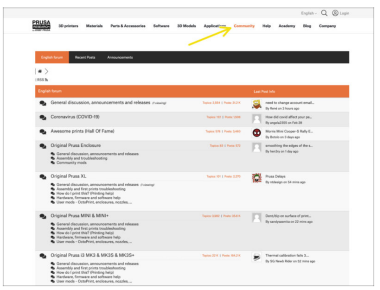


- If you encounter any problems at all, don't forget you can always check out our knowledge base at help.prusa3d.com
- We're adding new topics every day!

STEP 30 Join Printables!

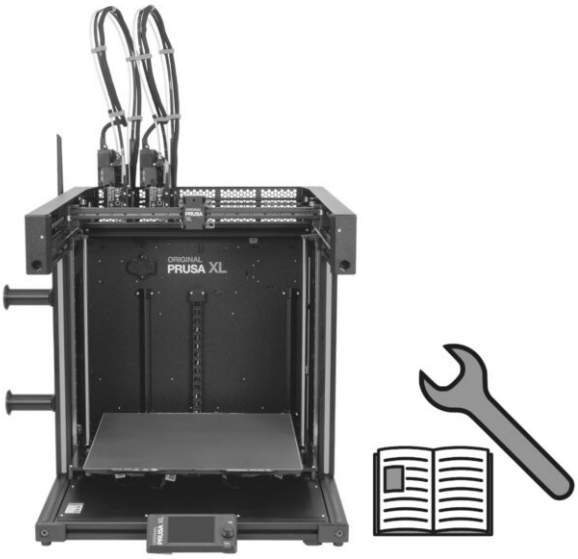




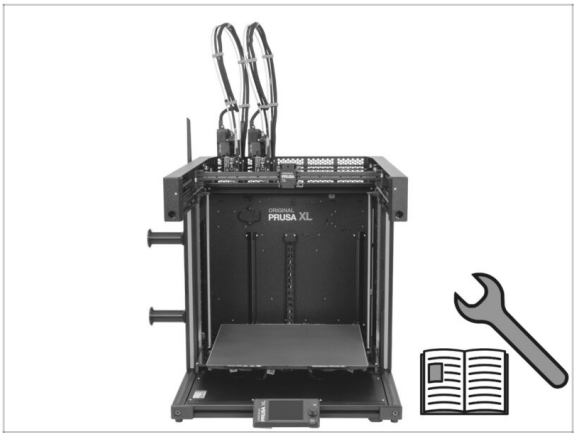


- **Don't forget to join the biggest Prusa community! Download the latest models in STL or G-code tailored for your printer. Register at Printables.com**
- Looking for inspiration on new projects? Check our blog for weekly updates.
- If you need help with the build, check out our forum with a great community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

Manual changelog (Single-Tool to Dual-Head Upgrade)

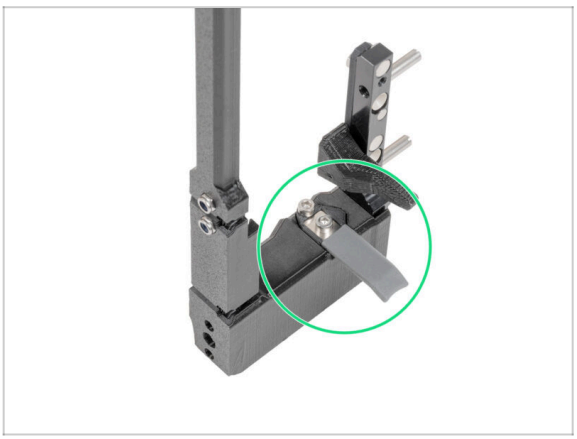


STEP 1 Version history



- Versions of the Original Prusa XL Single-Tool to Dual-head upgrade manual:
- 01/2024 - Initial version 1.00
- 05/2024 - Updated to version 1.01

STEP 2 Changes to the manual (1)



- 05/2024
  - Added information about the new gray nozzle seal.
- Manual version 1.01

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